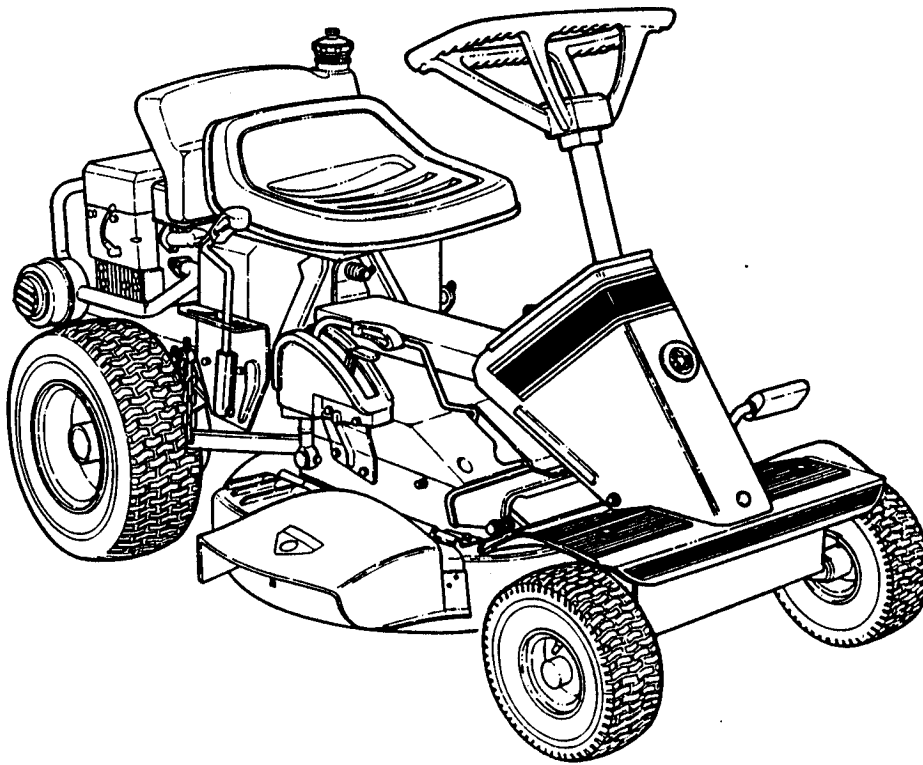


Safety Instructions & Operator's Manual for

SNAPPER®

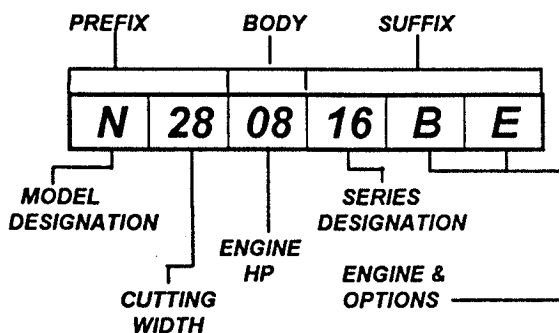
REAR ENGINE RIDING MOWER SERIES 16



MODELS

250816B
N250816B
250816BE
N250816BE
281016BE
N281016BE
301016BE
301216BE
331416BVE
331416KVE

MODEL NUMBER EXPLANATION



PREFIX EXPLANATION

N - California Model	25 - 25" Cutting Width 28 - 28" Cutting Width 30 - 30" Cutting Width 33 - 33" Cutting Width
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BODY EXPLANATION

08 - 8.0 HP Engine	12 - 12.0 HP Engine
10 - 10.0 HP Engine	14 - 14.0 HP Engine

SUFFIX EXPLANATION

16 - Series Designation	B - Briggs Engine V - Overhead Valve E - Electric Start
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Thank you for buying a SNAPPER Product! Before operating your REAR ENGINE RIDER, read this manual carefully and pay particular attention to the "IMPORTANT SAFETY INSTRUCTIONS" on Page 2. Remember that all power equipment can be dangerous if used improperly. Also keep in mind that SAFETY requires careful use in accordance with the operating instructions and common sense!

IMPORTANT SAFETY INSTRUCTIONS

WARNING: This powerful cutting machine is capable of amputating hands and feet and can throw objects that can cause injury and damage! Failure to comply with the following **SAFETY** instructions could result in serious injury or death to the operator or other persons. The owner of the machine must understand these instructions and, furthermore, must allow only persons who understand these instructions to operate machine. Each person operating the machine must be of sound mind and body and must not be under the influence of any substance which might impair vision, dexterity, or judgment. If you have any questions pertaining to your machine which your dealer cannot answer to your satisfaction, call or write the Customer Service Department at SNAPPER, McDonough, Georgia 30253. Phone: (770) 954-2500.

PROTECTION FOR CHILDREN

1. **DO NOT** allow children in yard when machine is operated (even with the blade OFF).
2. **DO NOT** allow children to ride on machine or on attachments (even with the blade OFF).
3. **DO NOT** allow pre-teenage children to operate machine.
4. Only responsible teenagers or adults with mature judgement shall be allowed to operate machine and only under close supervision.

PROTECTION AGAINST TIPOVERS

1. **DO NOT** operate machine on slopes exceeding 15 degrees (27% grade).
2. On slopes above 10 degrees (18% grade), exercise extreme **CAUTION**. Turn blade OFF when traveling uphill, also reduce speed and avoid sharp turns.
3. Avoid uphill starts. If machine is stopped going uphill, turn blade OFF and back slowly down the slope.
4. **DO NOT** mow under any condition where traction or stability is doubtful without first test driving over the terrain with blade OFF.
5. Stay alert for holes and other hidden hazards. Keep away from ditches, washouts, culverts, fences and protruding objects.
6. **DO NOT** mow back and forth across face of slopes.
7. **KEEP A SAFE DISTANCE** (at least three feet) away from edge of ditches and other drop offs.

PREPARATION

1. Read this manual, get to know where all controls are located and practice how to use them before starting for the first time, and at the beginning of each season. Pay attention to Warning and Instructional Decals on engine and machine. Read and follow operator's manuals and instructions furnished with attachments.
2. Handle fuel with care! Never remove fuel cap while engine is running. Fill fuel tank outdoors only with engine STOPPED and cool. Clean spilled fuel from machine. Store fuel in approved container, out of the reach of children, in well ventilated, unoccupied building.
3. Only mature, responsible persons shall operate the machine.
4. Mount and dismount the machine from left side.
5. Wear appropriate protective clothing when mowing, such as, long pants and substantial footwear, not barefoot or with open sandals.
6. Practice operation of machine with blade OFF to learn controls and develop skill.
7. Persons under the influence of alcohol or drugs must **NOT** operate machine.

8. Check the area to be mowed and remove all objects such as doormats, sticks, toys, wire, rocks, and other objects that could cause injury if thrown by blade.
9. Know how to **STOP** blade and engine quickly in preparation for emergencies.
10. Keep people and pets a safe distance from machine.
11. Shields, deflectors, switches, blade controls and other safety devices must be in proper position and functional.

OPERATIONAL PRECAUTIONS

1. **STOP** blade, **STOP** engine and remove key when leaving machine.
2. **DO NOT** operate machine unless properly seated with feet on foot rests or pedal.
3. Keep hands and feet away from rotating blade underneath deck. Never place foot on ground while blade is ON or when machine is in motion.
4. Turn blade OFF, **STOP** engine and wait for blade to **STOP** before attempting to unclog grass or leaves to prevent loss of fingers or hand.
5. Blade must be switched OFF except when cutting grass. Set cutter in highest position when mowing over rough ground.
6. Deflector or grass catcher must be in position. Never point discharge at people, passing cars, windows or doors. Watch out for traffic when crossing or near roadways.
7. Operate in reverse only with careful observation of entire area behind the machine. **DO NOT** mow in reverse unless absolutely necessary.
8. Service machine and make adjustments only when engine is stopped.
9. Have machine serviced by an authorized SNAPPER dealer at least once a year and have the dealer install any new safety devices.
10. Use only genuine SNAPPER replacement parts to assure that original standards are maintained.
11. Tighten all nuts, bolts and screws frequently, then check, adjust, repair or replace brakes as needed.
12. Lubricate machine at intervals specified in manual to prevent controls from binding.
13. Mow only in daylight or with good artificial light.
14. **DO NOT** change engine governor speed settings or overspeed engine.
15. Check grass catcher components frequently for signs of wear or deterioration and replace as needed to prevent injury from thrown objects going through weak or worn spots.
16. Exercise **CAUTION** when pulling loads. Limit loads to those you can safely control and attach loads to hitch plate as specified with SNAPPER attachment instructions.

Section 1 - FAMILIARIZATION

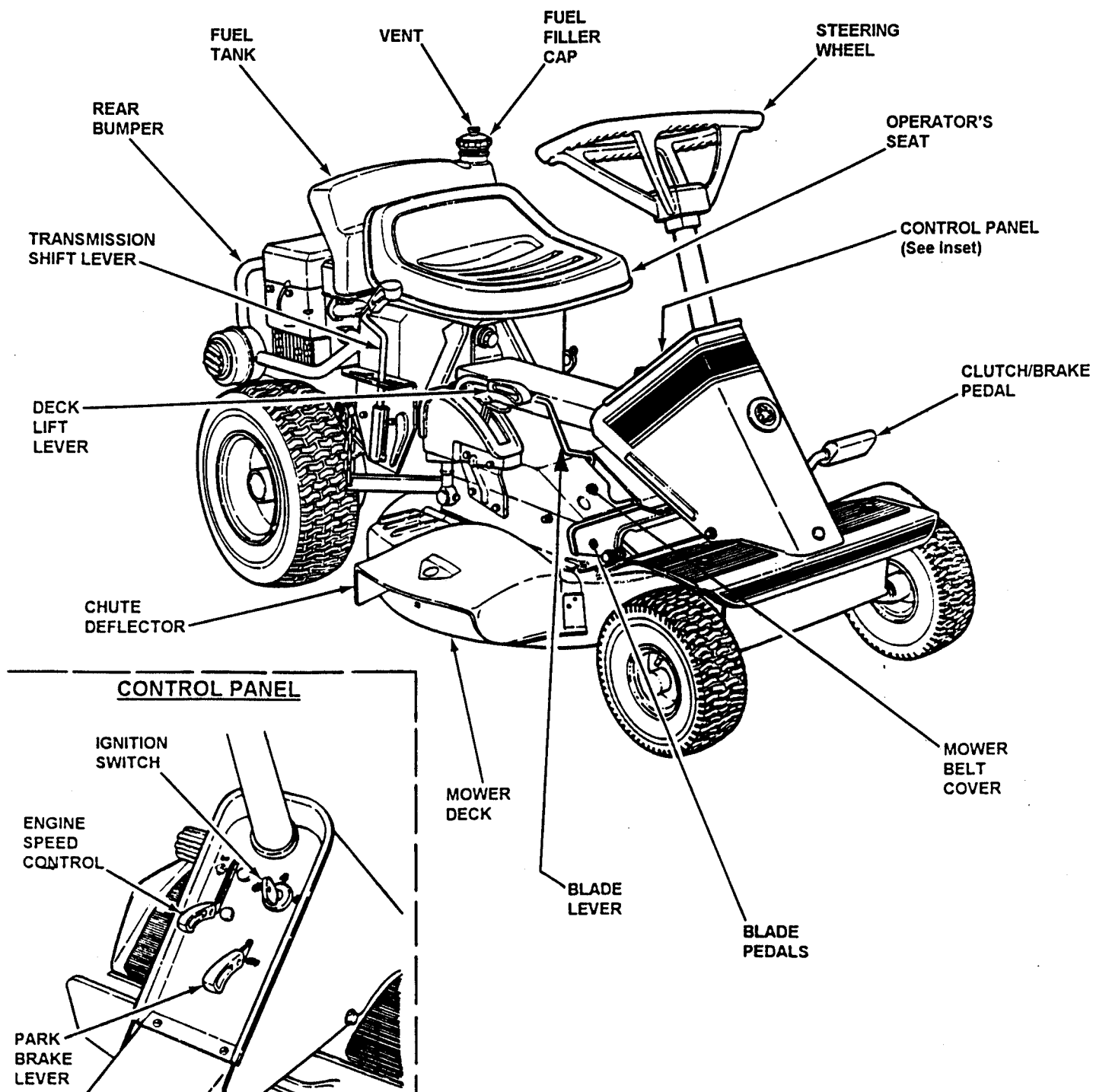


FIGURE 1.1

1.1 INTRODUCTION

This manual has been prepared for the operator's of the SNAPPER Rear Engine Rider. Its purpose, aside from recommending standard operating procedures and routine service requirements, is to promote **SAFETY** through the use of accepted operating practices. Read, **Understand and Follow** the **IMPORTANT SAFETY INSTRUCTIONS** on Page 2 of this manual and **All SAFETY** messages on the Rear Engine Rider and its attachments before operating.

1.2 NOMENCLATURE

The nomenclature drawing above, Figure 1.1, shows the essential parts of the SNAPPER Rear Engine Rider. It is recommended that all operator's of this equipment become thoroughly familiar with the controls, components, and operation of this machine before operating. Specific details involving the engine are found in the separate engine owner's manual. Study these manuals before operating and keep both handy for future reference.

Section 2 - OPERATING INSTRUCTIONS

2.1 PRE-START CHECK LIST

Make the following checks and perform the service required before each start-up.

- 2.1.1. Check tires and add or release air as needed to bring pressure to 15 psi in front and 10 psi in rear tires.
- 2.1.2. Check guards, deflectors and covers to make sure all are in place and securely tightened.
- 2.1.3. Check engine oil and add oil as needed to bring level up to the FULL mark. Refer to engine owner's manual for oil specifications. See Figure 2.1.

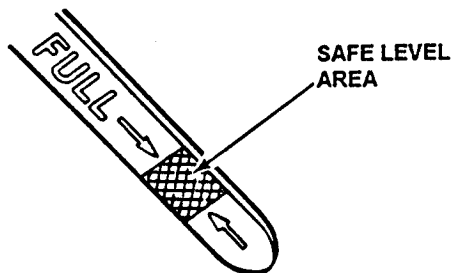


FIGURE 2.1

- 2.1.4. Adjust seat as needed to most comfortable position. See Figure 2.3.
- 2.1.5. Check blade control to insure it works freely. If blade pedals are depressed, blade lever can be moved manually from "ON" to "OFF" to stop blade.

CAUTION
The blade control lever must snap from "ON" to "OFF" when blade pedals are released. If blade control lever does NOT snap back, check mower belt tension. See 4.2.1. MOWER DRIVE BELT ADJUSTMENT on Page 13.

- 2.1.6. Clean exterior surfaces of cutting deck and engine of any accumulation of dirt, grass, oil, etc. Keep engine air intake screen and cooling fins clear at all times.
- 2.1.7. Add fuel to tank after pushing the Rear Engine Rider outside where fumes can dissipate. Make sure fuel filler cap is tight and vent is open after refueling. Refer to engine owner's manual. See Figure 2.2.

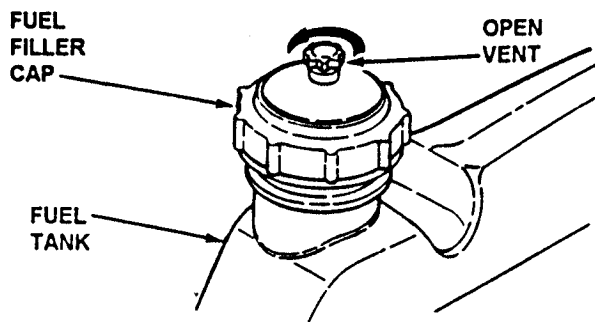


FIGURE 2.2

2.2 OPERATOR'S SEAT ADJUSTMENT

2.2.1. FRONT TO REAR ADJUSTMENT

1. With the engine stopped, loosen the two adjusting knobs and move seat to desired position. After adjustment, tighten knobs securely. If seat does not move after loosening knobs, it may be necessary to loosen the 5/16" patch lock screws located at the rear of the seat using a 1/2 inch wrench. On 12 and 14HP models, the operator's seat has a tilt-up design. The adjusting knobs need to be positioned as shown so as not to interfere with seat mounting plate when returned to sitting position. See Figure 2.3.

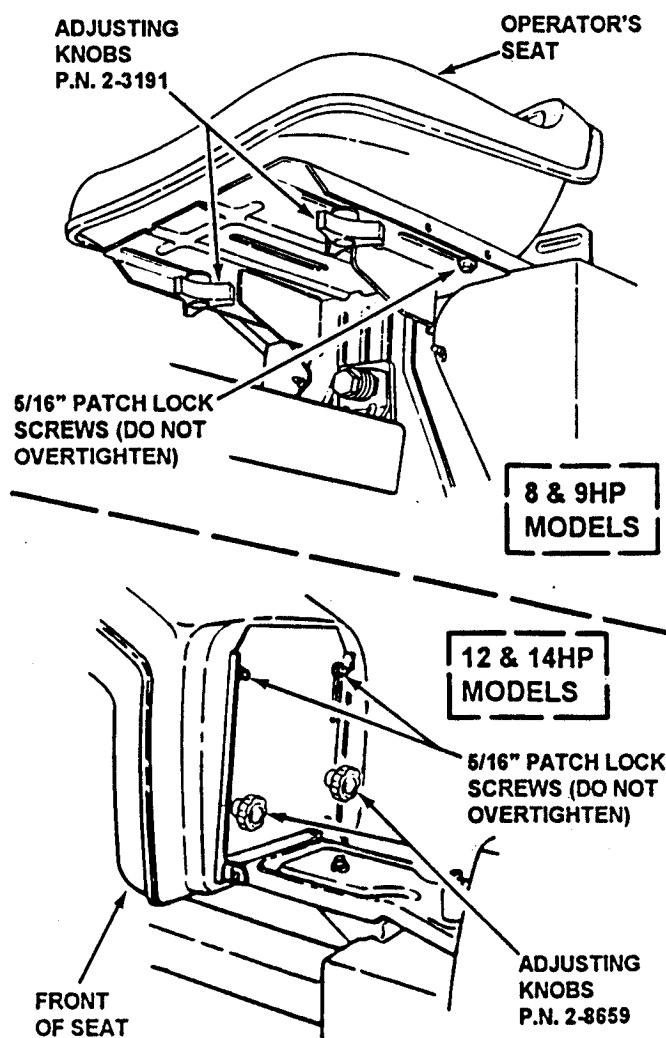


FIGURE 2.3

Section 2 - OPERATING INSTRUCTIONS

2.3 STARTING & OPERATION

2.3.1 ENGINE (ELECTRIC START)

IMPORTANT: When the ignition key is turned to "START", the engine will turn over, but will not start unless the Clutch/Brake pedal is pressed all the way down, the Blade Lever is in the "OFF" position (See Figure 2.5). The operator should be in the seat. Start engine as follows:

1. Move transmission shift lever to (N) Neutral position. **DO NOT** start engine with transmission shift lever in a drive position.

CAUTION

It is possible to start engine with transmission shift lever in a drive position. Follow starting instructions carefully.

2. Make certain the Blade Lever is in the "OFF" position. See Figure 2.4.

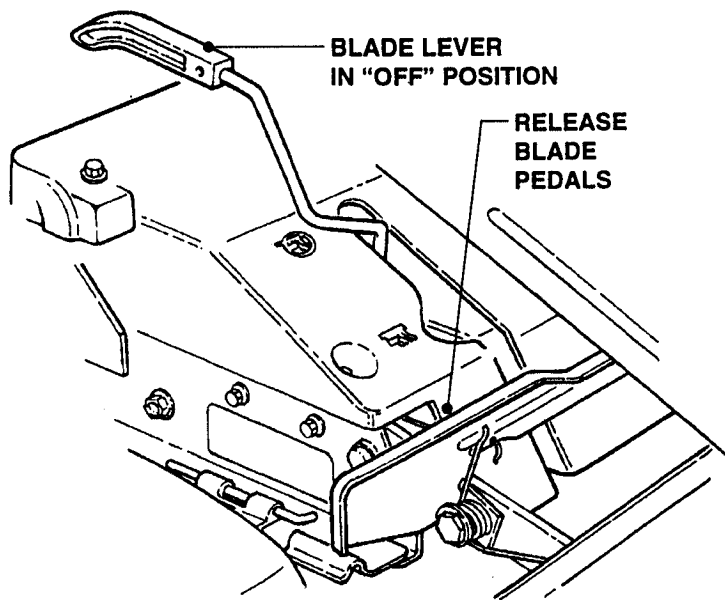


FIGURE 2.4

3. Press Clutch/Brake Pedal all the way down and hold while starting engine. See Figure 2.5.

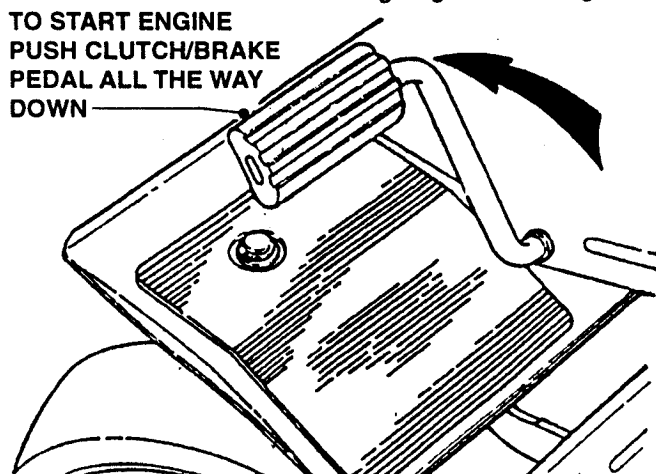


FIGURE 2.5

4. Open vent on fuel filler cap by turning counterclockwise. **IMPORTANT:** Failure to open vent on the fuel filler cap can cause engine to stall. See Figure 2.6.

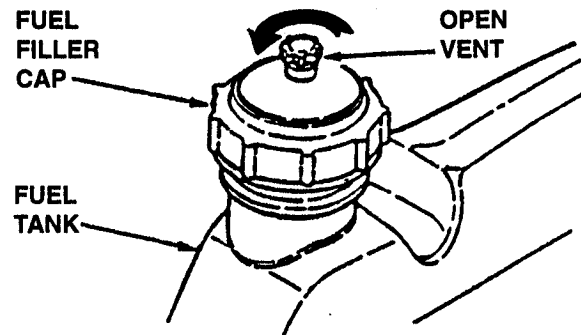


FIGURE 2.6

5. Move engine speed control to the choke position to start engine. See Figure 2.7.

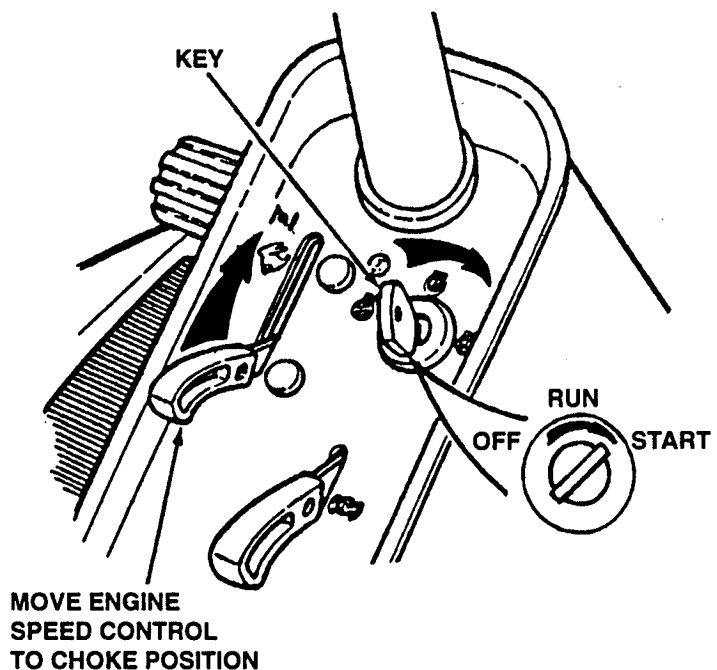


FIGURE 2.7

6. Turn key to the "START" position until engine starts. See Figure 2.7. **NOTE:** If after 5 seconds of cranking the engine and it does not start, release the key, make sure the Clutch/Brake Pedal is fully depressed and attempt starting again after waiting for approximately 20 seconds.
7. After engine starts, move engine speed control to the "FAST" position, allow a brief warm-up until engine runs smooth.

Section 2 - OPERATING INSTRUCTIONS

2.3.1 ENGINE (ELECTRIC START) (Continued)

8. Should the battery be too weak to start the engine, use the instructions shown below, 2.3.2., ENGINE (MANUAL START) to manually start the electric start engines.

9. On Model 331416BVE, the engine is equipped with a fuel shut-off solenoid. If the battery is dead, the engine can be started with the recoil back-up starter if the throttle control is in the choke position (HOT engine or COLD engine).

2.3.2. ENGINE (MANUAL START)

IMPORTANT: When the ignition key is turned to "RUN", and the recoil handle is pulled, the engine will turn over, but will not start unless the Clutch/Brake Pedal is pressed all the way down with Parking Brake engaged (See Figure 2.8) and the Blade Lever is in the "OFF" position (Refer to Figure 2.4). Start engine as follows:

1. Move transmission shift lever to (N) Neutral position. **DO NOT** start engine with transmission shift lever in a drive position.



CAUTION



It is possible to start engine with transmission shift lever in a drive position. Follow starting instructions carefully.

2. Make certain the Blade Lever is in the "OFF" position. Refer to Figure 2.4.

3. Press Clutch/Brake Pedal all the way down, lift Parking Brake Lever and release the Clutch/Brake Pedal to set Parking Brake. See Figure 2.8.

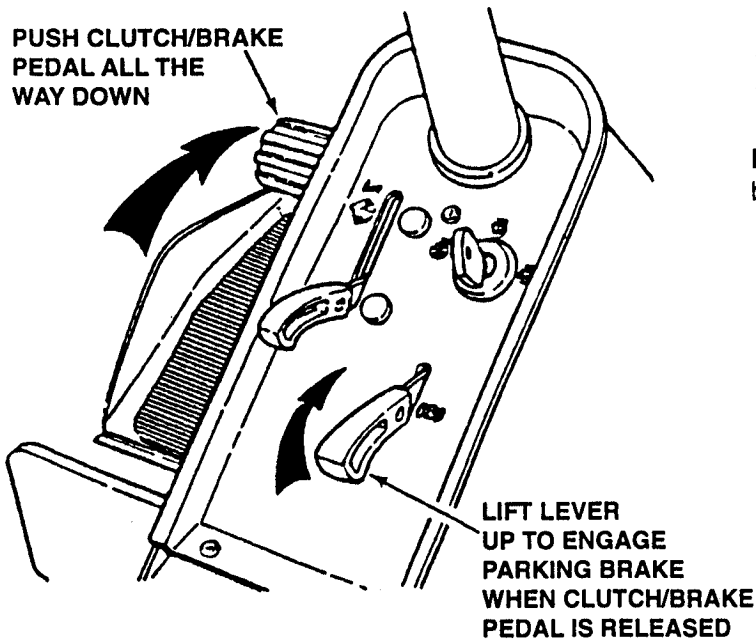


FIGURE 2.8

4. Open vent on fuel filler cap by turning counterclockwise. **NOTE:** Failure to open vent on the fuel filler cap can cause engine to stall. See Figure 2.6.

5. Move engine speed control to the choke position to start a cold engine. Refer to Figure 2.7.

6. Turn key to "RUN" position. See Figure 2.9.

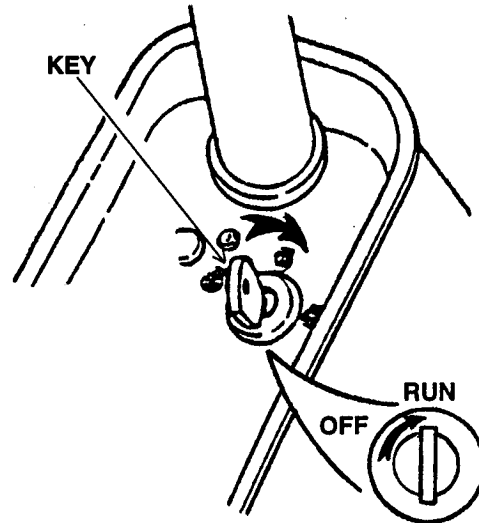


FIGURE 2.9

7. Pull starter rope with a smooth, even motion until engine starts. Always guide the starter rope back into the recoil housing. Never allow rope to snap back. After Engine starts, move engine speed control to the "FAST" position.

8. Allow a brief warm-up until engine runs smooth.

2.3.3. MOWER BLADE

1. With engine running, move engine speed control to the "FAST" position.

2. Move blade lever forward to the "ON" position, then depress blade pedals to hold blade lever in the "ON" position. See Figure 2.10.

IMPORTANT: You cannot engage the blade lever if the blade pedal is depressed first.

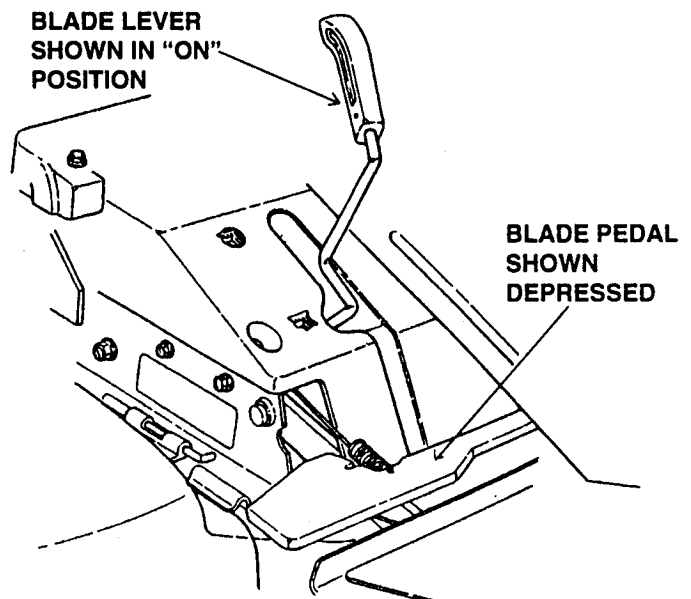


FIGURE 2.10

Section 2 - OPERATING INSTRUCTIONS



CAUTION



Before leaving the Rear Engine Rider with the engine running, **STOP** the blade, shift to neutral and engage the park brake.

2.4 STOPPING

2.4.1. ENGINE

1. Stop engine by turning key to the "OFF" position. See Figure 2.11.

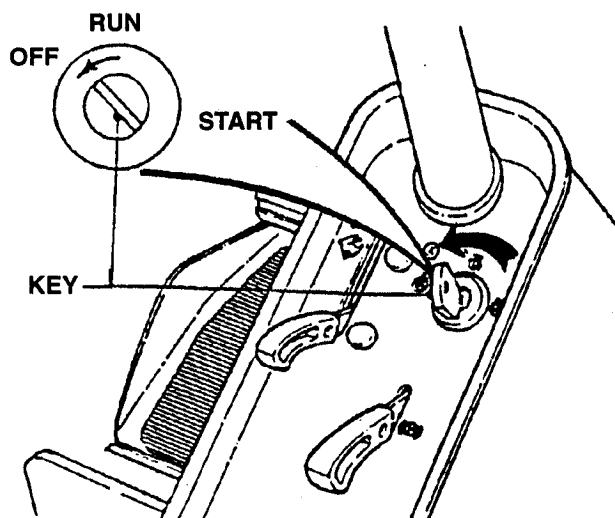


FIGURE 2.11

2.4.2. WHEEL DRIVE

1. Stop motion of Rear Engine Rider by pushing Clutch/Brake Pedal all the way "DOWN" to apply brake. See Figure 2.12.

IMPORTANT: Depressing the Clutch/Brake Pedal half way down activates the clutch to allow transmission shifting.

TO APPLY BRAKES,
PUSH CLUTCH/BRAKE
PEDAL ALL THE
WAY DOWN

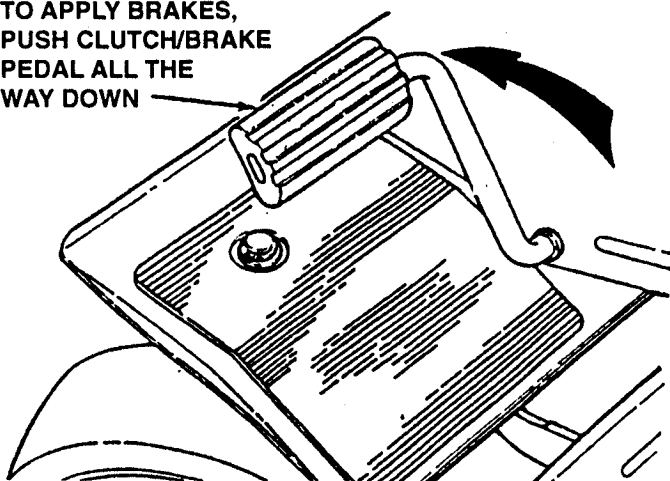


FIGURE 2.12

2.4.3. MOWER BLADE

Stop mower blade by removing feet from blade pedals or moving blade lever rearward to the "OFF" position. See Figure 2.12.

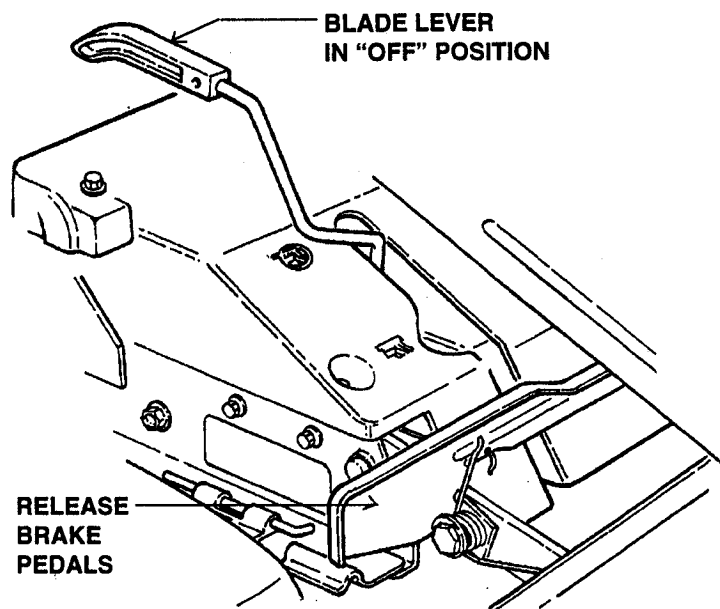


FIGURE 2.13



CAUTION



Once blade is disengaged, it should come to a complete stop in 3 seconds or less. If the blade continues to rotate after 3 seconds, the blade brake should be adjusted. See 4.2.2., **BLADE BRAKE ADJUSTMENT** on Page 14 for adjustment procedures or return machine to dealer for adjustment. **DO NOT CONTINUE** to operate mower until blade brake is properly adjusted.

2.4.4. PARK BRAKE

1. Engage park brake by pushing Clutch/Brake Pedal "DOWN" and moving the park brake lever to the "ON" POSITION. While holding the park brake lever "ON", release Clutch/Brake Pedal to set park brake. See Figure 2.14.

PUSH CLUTCH/BRAKE
PEDAL ALL THE
WAY DOWN

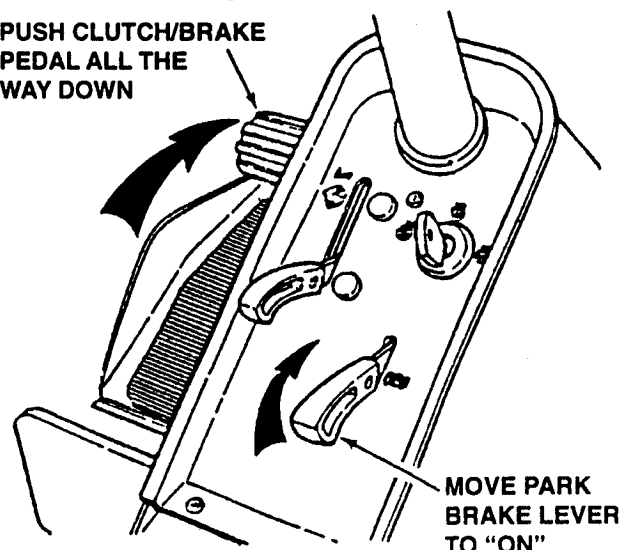


FIGURE 2.14

Section 2 - OPERATING INSTRUCTIONS

2.4.4. PARK BRAKE (Continued)

2. Release park brake by pushing down on the Clutch/Brake Pedal to release park brake lever. See Figure 2.15.

PUSH CLUTCH/BRAKE
PEDAL ALL THE
WAY DOWN

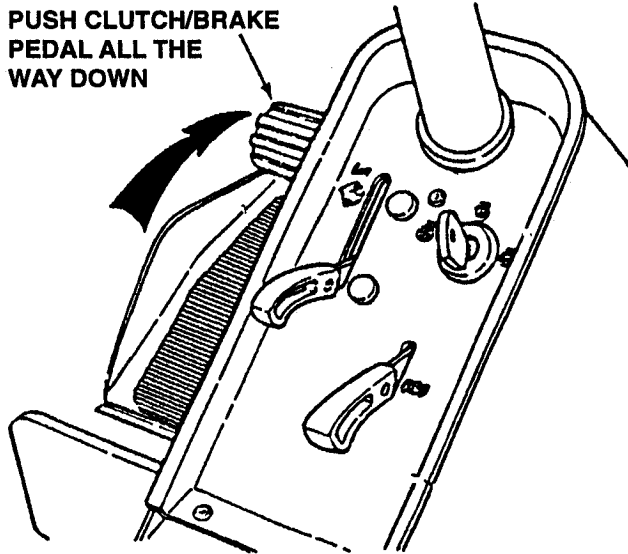


FIGURE 2.15

2.4.5. CUTTING HEIGHT ADJUSTMENT

1. Adjust cutting height as desired to any one of six positions using deck lift lever. When in desired height of cut, release latch, then try to move deck lift lever to ensure lift lever latch is fully engaged. See Figure 2.16.

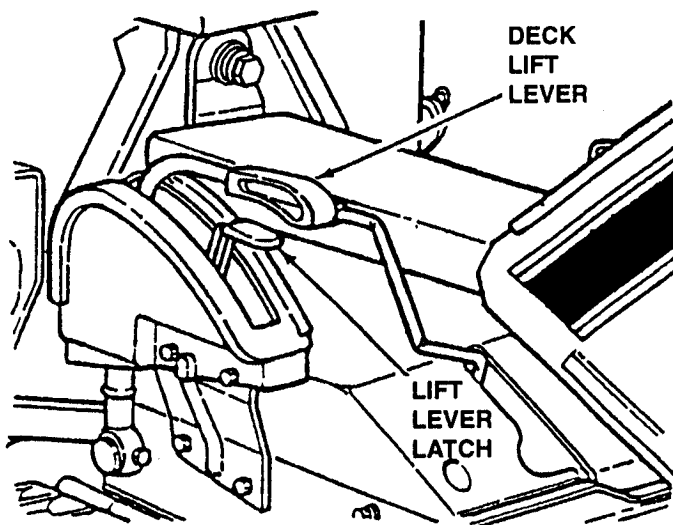


FIGURE 2.16

2.4.6. WHEEL DRIVE

1. With engine running, adjust engine speed control to "FAST" position.
2. Depress Clutch/Brake Pedal.
3. Place transmission shift lever in the notch for the desired speed.
4. Release Clutch/Brake Pedal to start desired direction.
5. During forward motion, the transmission shift lever may be placed in any desired forward speed without depressing the Clutch/Brake Pedal.

NOTE: For best cutting results, move the transmission shift lever into a slow forward speed and the engine speed control to a fast position. This combination will allow the mower blades to lift the grass while cutting smoothly and evenly.



WARNING



Never park the Rear Engine Rider on an incline or embankment.

Section 3 - MAINTENANCE

3.1 INTRODUCTION

To retain the quality of the Rear Engine Rider, use genuine SNAPPER replacement parts only. Contact a local SNAPPER dealer for parts and service assistance. For the correct part or information for a particular Rear Engine Riding Mower, always mention the model and serial number. SNAPPER recommends returning the Rear Engine Rider to an authorized SNAPPER dealer annually for inspection and addition of any new devices which might upgrade the safety of the Rear Engine Rider. For the nearest SNAPPER dealer in your area, 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.

3.2 SERVICE - AFTER FIRST 5 HOURS

CAUTION
Before performing any service or maintenance procedures, always remove key from ignition switch, remove spark plug wire from spark plug and secure spark plug wire away from spark plug.

3.2.1. CHANGE ENGINE OIL

1. Change engine oil as follows:
 - a. Place bricks or wooden blocks under the front wheels to lower rear of engine.
 - b. Loosen or remove oil fill cap on engine.
 - c. Loosen oil drain plug.
 - d. Place a 2 quart minimum capacity container under the end of the oil drain. Open oil drain. See Figure 3.1 for oil drains used on the Rear Engine Riders.

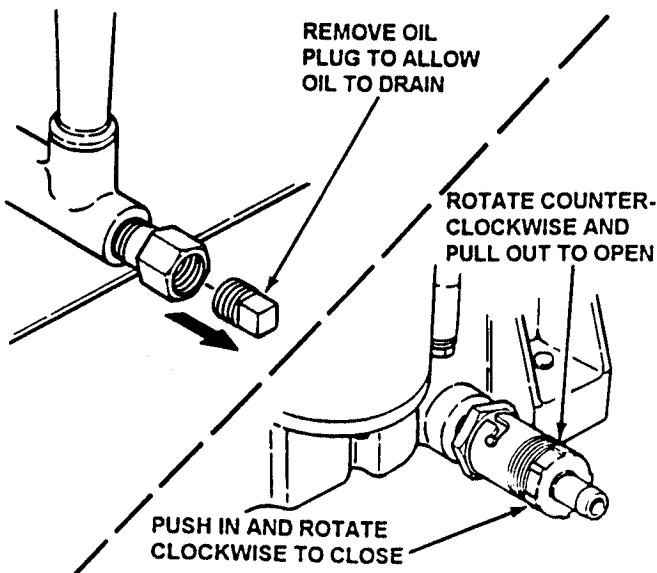


FIGURE 3.1

- e. After all the oil has drained, close the drain and wipe up any oil that may have spilled. See Figure 3.1.

- f. Fill engine crankcase with new oil. Refer to your engine owner's manual for oil specifications.
- g. Change oil filter on 14HP engines at every oil change. Refer to your engine owner's manual for service instructions.

3.2.2. CHECK MOWER BLADE

1. Check fuel level in tank. If over 3/4 full, remove tank (See Page 12 for gas tank removal). If 3/4 or less, proceed to next step.
2. Close vent on fuel filler cap.
3. Apply park brake.
4. Carefully stand Rear Engine Rider on rear bumper. It may be necessary to have help.

CAUTION
Remove the battery if the Rear Engine Rider will be left standing on the rear bumper for longer than 2 hours. See 4.6.1., BATTERY REMOVAL on Page 20. Never use a cutting blade that shows signs of excessive wear or damage on the Rear Engine Rider. Refer to 4.4, MOWER BLADE REPAIR/REPLACEMENT on Page 18 for proper blade inspection and service procedures.

5. Check torque of blade mounting bolts. As necessary, torque to 30 to 40 ft. lbs. See Figure 3.2.
6. Check blade for sharpness, wear and damage. See 4.4.1., BLADE WEAR LIMITS on Page 18.

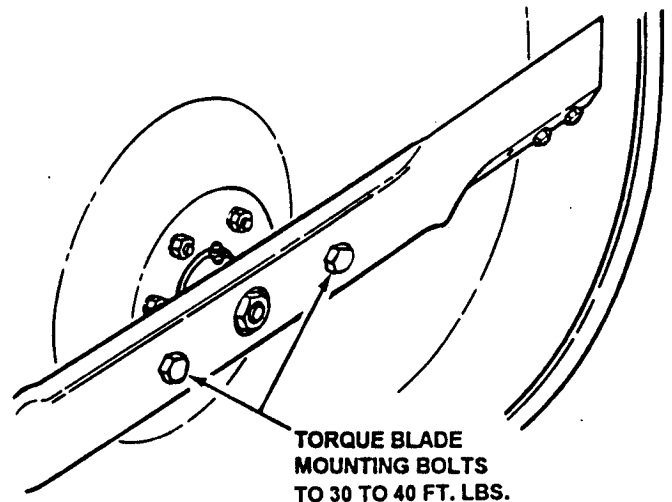


FIGURE 3.2

7. Check blade for straightness. Refer to 4.2.3., ADJUSTING MOWER BLADE on Page 14.

Section 3 - MAINTENANCE

3.2.3. CHECK MOWER DRIVE BELT

1. Drive Belt Cover Removal

- Lower deck to lowest setting.
- Remove four self-tapping screws, two on each side of mower drive belt cover. See Figure 3.3.
- Slide cover back and rotate out on left side of mower deck.

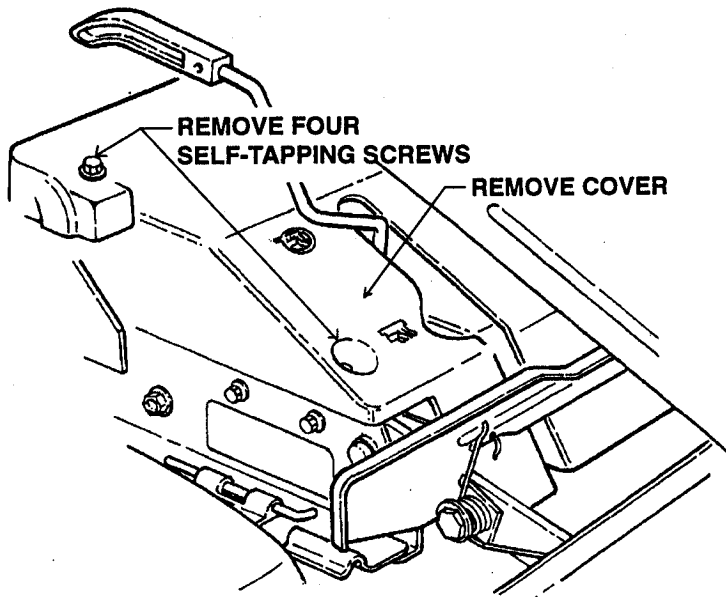


FIGURE 3.3

2A. Checking Belt Tension

- On 25" models, with engine "OFF" and deck in 3rd height of cut position, move blade lever back to the "ON" position and depress blade pedals.
- Measure the belt spacing at idler pulley. See Figure 3.4. The belt spacing should be 1 1/4" but no less than 1".

25" MODELS

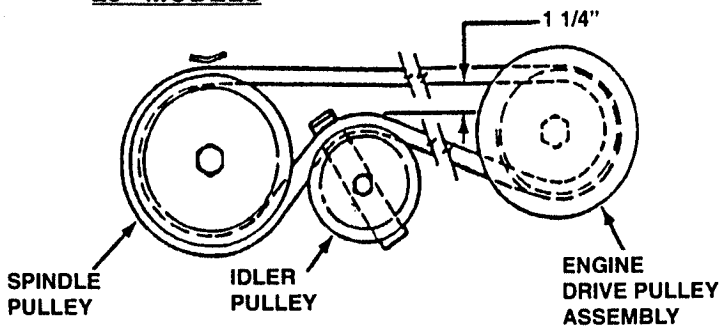


FIGURE 3.4

- If the measurement is less than 1", the belt tension should be adjusted. See 4.2.1., MOWER DRIVE BELT ADJUSTMENT on Page 13.

2B. Checking Belt Tension

- On 28", 30", and 33" Models, check belt for excessive wear or damage and replace if necessary; there are no adjustments on these models. See Figure 3.5.

28", 30", & 33" MODELS (Dual Idler System)

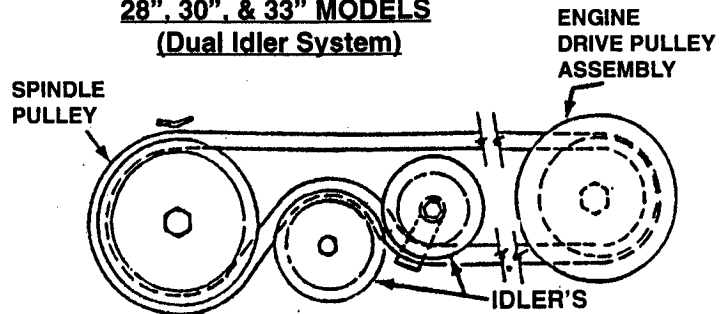


FIGURE 3.5

3.3 AFTER EVERY 25 OPERATING HOURS

3.3.1. ENGINE

1. Engine Oil

Change engine oil. Refer to 3.2.1., CHANGE ENGINE OIL on Page 8. Refer to Engine Owner's Manual for oil specifications.

2. Air Filter

Refer to Engine Owner's Manual for service instructions.

3.3.2. MOWER COMPONENTS

1. Mower Drive Belt

Check belt for proper tension. Refer to 3.2.3., CHECK MOWER DRIVE BELT.

2. Mower Blade

Check blade for sharpness, wear, damage, and torque. See 4.4, MOWER BLADE REPAIR/REPLACEMENT on Page 18.

3. Mower Deck Levelness

Check mower deck for proper levelness. Adjust as required. See 4.2.4., MOWER DECK ADJUSTMENT - LEVELNESS on Page 15.

4. Cleaning Mower Deck

- Remove key from ignition switch.
- Remove spark plug wire and secure away from spark plug.
- Check fuel level in tank. If over 3/4 full, remove tank (See Page 12 for gas tank removal). If 3/4 or less, proceed to next step.

(Continued on Next Page)

Section 3 - MAINTENANCE

3.3.2. MOWER COMPONENTS (Continued)

- d. Close vent on fuel filler cap.
- e. Carefully stand Rear Engine Rider on rear bumper.
- f. Clean underside of mower deck, removing all accumulation of grass clippings and debris.
- g. Lower Rear Engine Rider to ground and clean top of deck, removing all grass clippings and debris.

5. Mower Blade Spindle - Lubrication

With Rear Engine Rider standing on rear bumper, lubricate spindle with one shot of general purpose grease from grease gun.

IMPORTANT: If the Rear Engine Rider will be on its rear bumper for longer than two hours, remove the battery. See 4.6.1., BATTERY REMOVAL on Page 20.

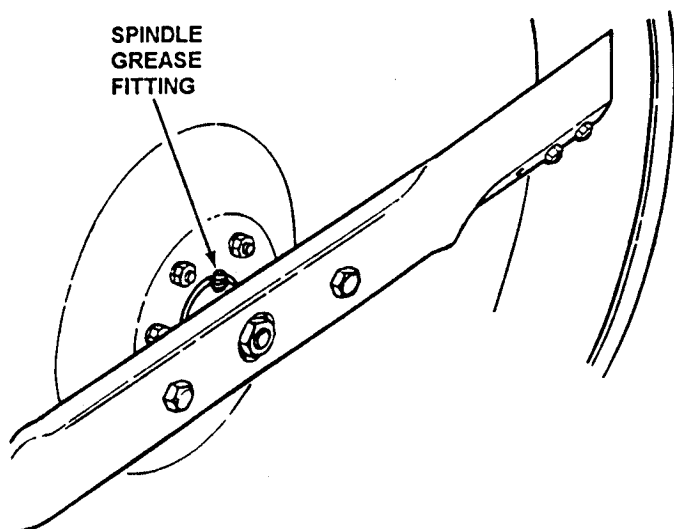


FIGURE 3.6

6. Mower Deck Linkage - Lubrication

Lubricate all mower deck linkage pivot points with a light coat of motor oil.

3.3.3. REAR ENGINE RIDER - LUBRICATION

1. Front Wheel Bearings

Lubricate front wheel bearings with five shots of general purpose grease, from grease gun. See Figure 3.7.

2. Left Rear Axle Bearing

On Rear Engine Riders powered by 14HP engines, the left rear axle does not require lubrication. However, those powered by 8HP, 9HP, or 12HP engines, the left rear axle bearing requires 3 shots of SNAPPER "00" general purpose grease from grease gun. See Figure 3.8.

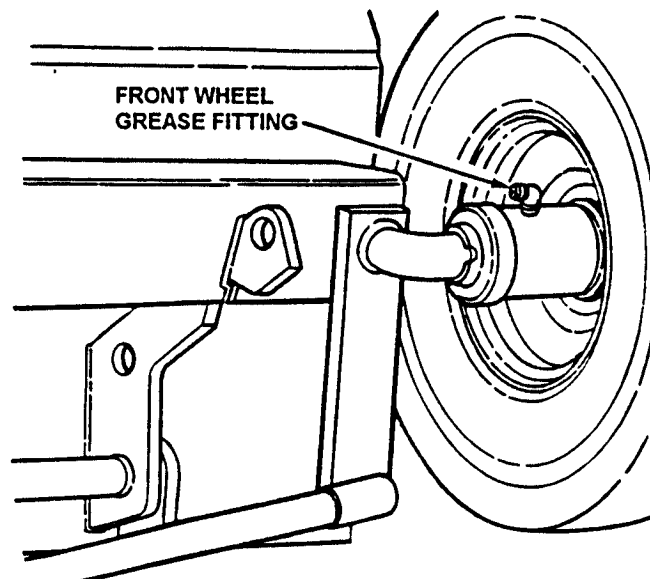


FIGURE 3.7

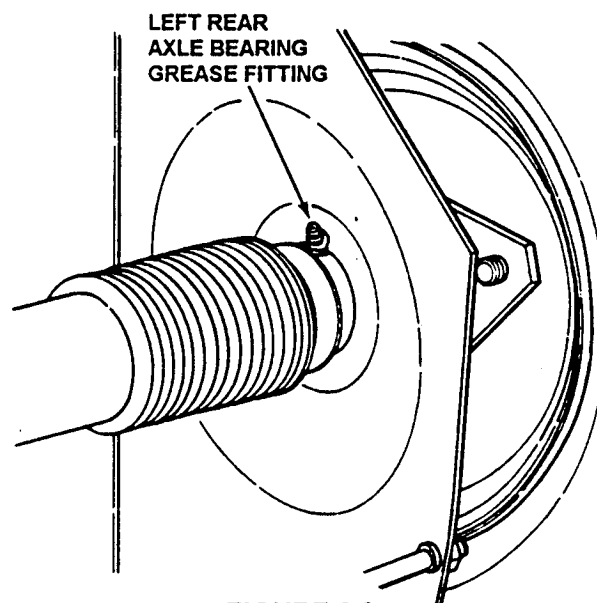


FIGURE 3.8

3. Right Rear Axle Bearing

The right rear axle bearing is lubricated by the differential lubricant.

4. Differential

- a. Stand rear engine rider on its rear bumper and check the fill/level plug, for cracks and wear. Replace fill/level plug if signs of wear are visible.
- b. To check lubricant, remove fill/level plug and visually inspect for lubricant on the internal parts of the differential. If no lubricant is visible on the internal parts of the differential, add "00" grease as needed. See Figure 3.9.

IMPORTANT: Overfilling of the differential with lubricant will cause lubricant to leak onto drive components of the Rear Engine Rider.

Section 3 - MAINTENANCE

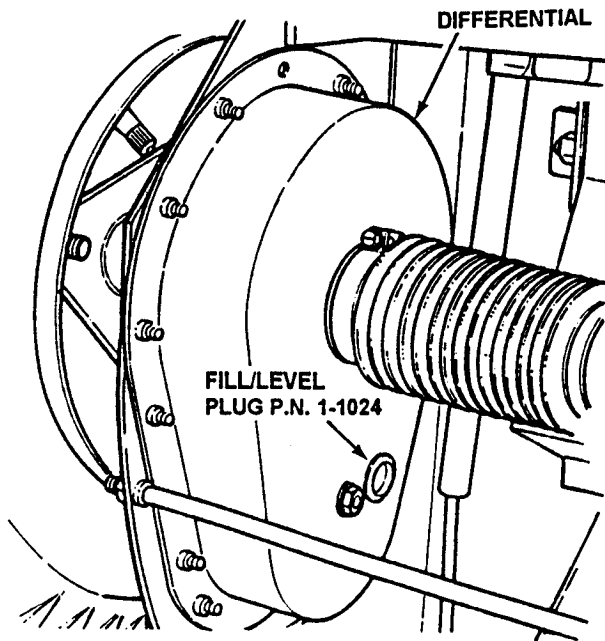


FIGURE 3.9

5. Chain Case

- Check fill/level plug for damage. If signs of wear or cracks are visible, replace plug with new plug. See Figure 3.10.
- To check lubricant in chain case, remove fill/level plug and look for lubricant on the internal components of the chain case. If no lubricant is visible, add SNAPPER "00" grease as needed. See Figure 3.10.

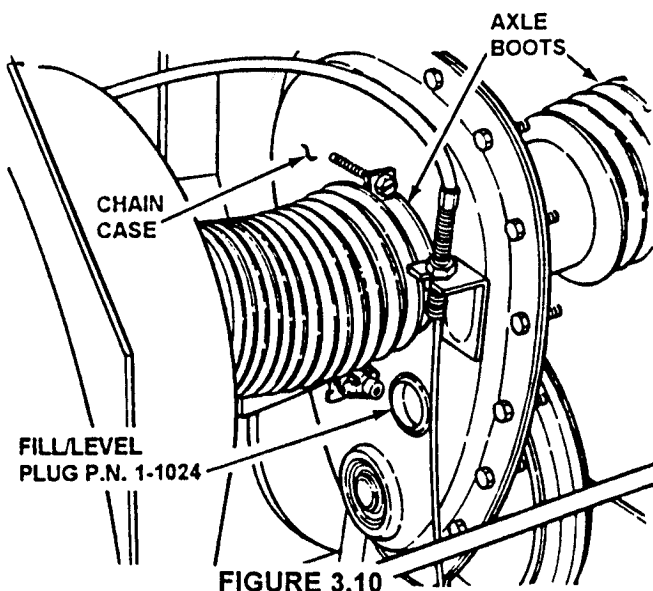


FIGURE 3.10

6. Axle Boots

Check axle boots for signs of wear or cracks. If cracks or wear are visible, contact a SNAPPER dealer for service. Refer to Figure 3.10.

3.4 ANNUALLY (END OF EACH SEASON)

Perform all maintenance as described in on Page 9.
NOTE: For complete maintenance schedule, see Page 22.

3.4.1. ENGINE

- Service engine according to engine owner's manual.

3.4.2. FUEL FILTER

Service fuel filter as instructed below, on **COLD ENGINE ONLY!**

IMPORTANT: To stop flow of fuel, tank may be removed from bracket and set on the floor so the fuel level will be below the filter. See Page 12 for gas tank removal.

- Remove hose clamps from fuel filter.
- Remove fuel lines from filter. Discard filter.
- Install new fuel filter. See Figure 3.11.
- Reinstall fuel tank into bracket.

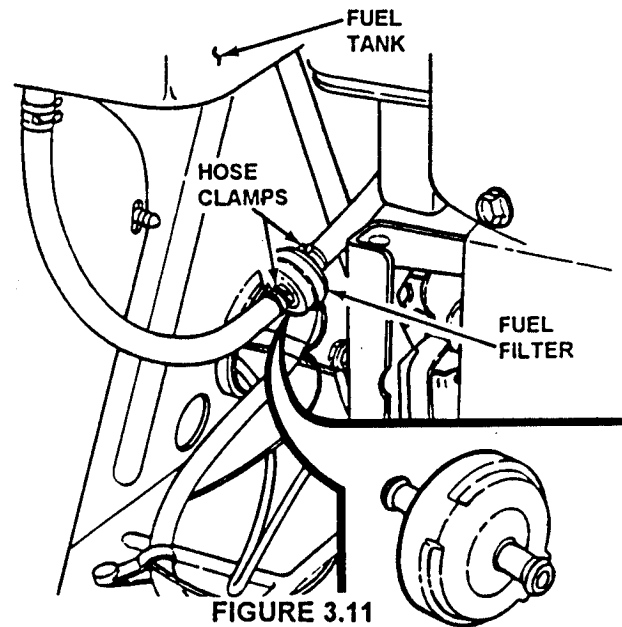


FIGURE 3.11

3.4.3. MOWER DECK

- Clean all grass clippings and debris from deck.
- Perform maintenance and lubrication as described in 3.3 on Page 9.

3.5 EVERY TWO YEARS

In addition to regular maintenance, the following components of the Rear Engine Rider should be carefully inspected every two years for wear or damage. Replace worn or damaged parts with genuine SNAPPER replacement parts available from an authorized SNAPPER dealer.

3.5.1. All bushings and pivot areas.

3.5.2. Check both front wheel king pins.

(Continued on Next Page)

Section 3 - MAINTENANCE

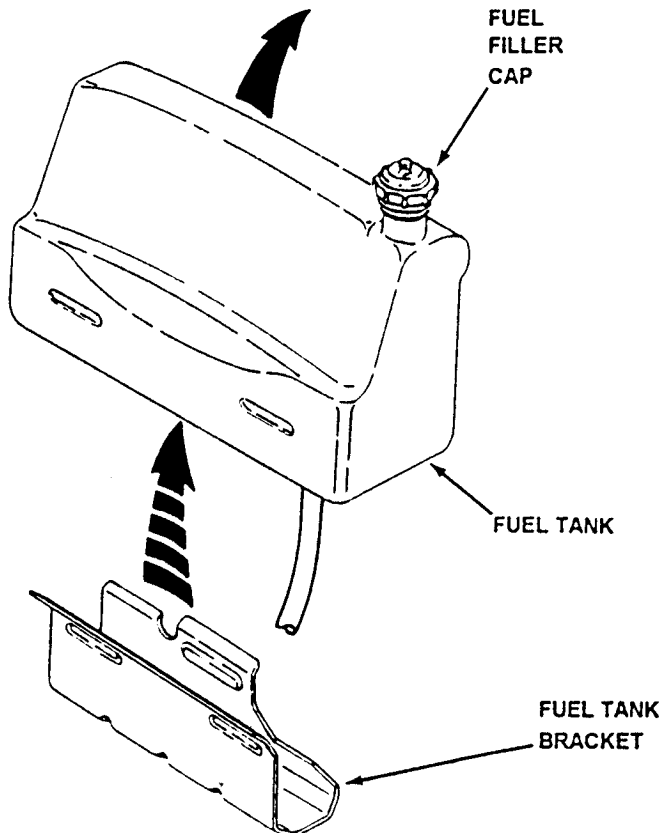
3.5 EVERY TWO YEARS

- 3.5.3. Transmission shift lever and detent.
- 3.5.4. Clutch disc.
- 3.5.5. Clutch Yoke (See Figure 4.18 on Page 18).
- 3.5.6. Mower deck linkage and pivot areas.

3.6 STORAGE (OUT OF SEASON)

If desired, the Rear Engine Rider can be stored on the rear bumper. Perform the following procedures to insure the Rear Engine Rider will operate properly when taken out of storage.

- 3.6.1. Thoroughly clean the Rear Engine Rider by removing all grass clippings and debris.
- 3.6.2. Perform maintenance and lubrication as described in 3.3 on Page 9.
- 3.6.3. Drain fuel from fuel tank.
- 3.6.4. Start engine and allow it to run until engine runs out of fuel. This allows the carburetor and fuel system to remain clean during storage.
- 3.6.5. Remove battery. See 4.6.5., BATTERY STORAGE on Page 21.
- 3.6.6. Close vent on fuel filler cap.
- 3.6.7. Carefully stand Rear Engine Rider on rear bumper in desired location for storage.



REMOVING FUEL TANK FROM REAR ENGINE RIDER

CAUTION
Before performing any service or maintenance procedures, always remove key from ignition switch, remove spark plug wire from spark plug and secure spark plug wire away from spark plug.

Before removing fuel tank from rear engine rider, move rider outdoors where fumes can be easily dissipated. Removal of the tank is most easily accomplished from the left side of the rear engine rider by pulling the tank straight up and away from the fuel tank bracket. After holding the fuel tank in your hands, carefully remove the fuel filler cap and pour remaining fuel in an approved container.

Section 4 - ADJUSTMENTS & REPAIR



CAUTION



Before performing any service or maintenance procedures, always remove key from ignition switch, remove spark plug wire from spark plug and secure spark plug wire away from spark plug.

4.1 ENGINE ADJUSTMENTS & REPAIR

Refer to the engine owner's manual for those adjustments and/or repairs that can be made by the owner.

4.2 MOWER DECK & COMPONENT ADJUSTMENTS

The following mower deck and component adjustments and repairs can be made by the owner. However, if there is difficulty in achieving these adjustments and repairs, it is recommended that these repairs be made by an authorized SNAPPER dealer.

4.2.1. MOWER DRIVE BELT ADJUSTMENT (FOR 25" MODELS)

1. Remove mower drive belt cover. Refer to 3.2.3., CHECK MOWER DRIVE BELT on Page 9.
2. Move blade lever up and over to the "ON" position.
3. Place deck cutting height in the 3rd position. Measure the belt spacing at idler pulley. The distance should measure 1-1/4" but no less than 1". See Figure 4.1.

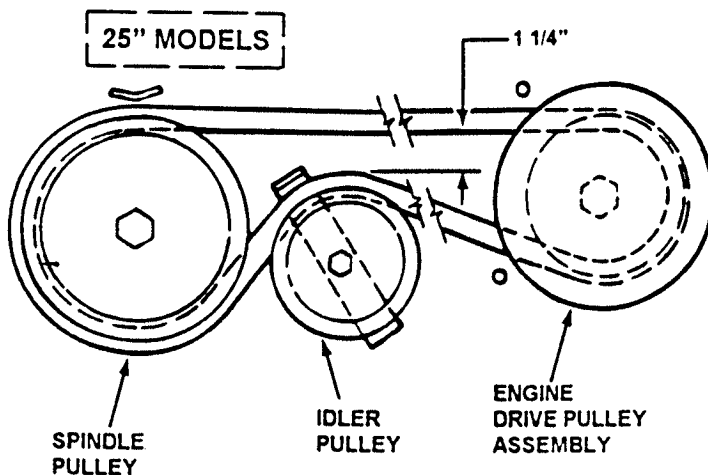


FIGURE 4.1

4. If the distance is less than 1", adjust belt tension as follows:

- a. Remove hairpin and flat washers from pivot stud. See Figure 4.2.
- b. Pull front frame forward until distance between belt, with blade lever "ON", measures 1-1/4".

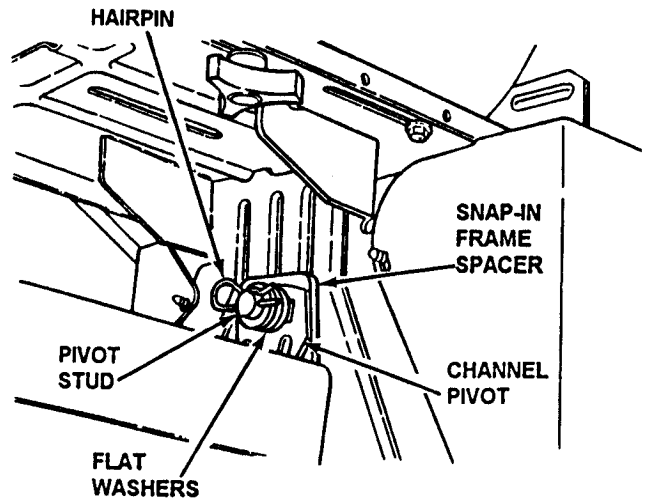


FIGURE 4.2

- c. Install required number of snap-in frame spacers behind channel pivot until the 1-1/4" distance between belt is maintained. See Figure 4.3.

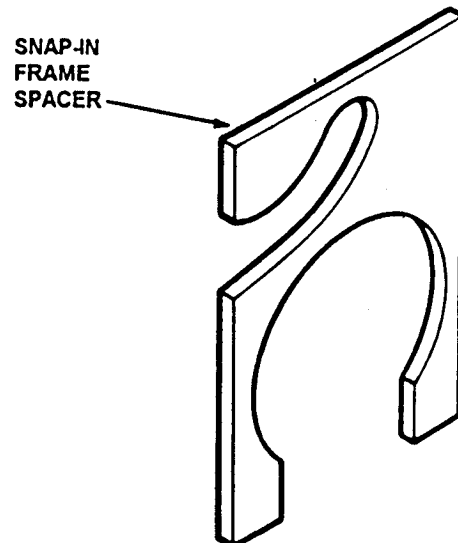


FIGURE 4.3

- d. Reinstall the required amount of flat washers removed in step "a." and install hairpin. Refer to Figure 4.2. Retain any remaining spacers for readjustment when a new belt is installed.
5. On 28", 30", and 33" models, the mower drive belt DOES NOT require adjustment. If the belt does not drive blade properly, replace belt.

IMPORTANT: The SNAPPER Rear Engine Rider 25" Model is shipped with additional spacers specifically designed for the Rear Engine Rider. Should additional spacers be required, contact an authorized SNAPPER dealer.

Section 4 - ADJUSTMENTS & REPAIR



CAUTION



Before performing any service or maintenance procedures, always remove key from ignition switch, remove spark plug wire from spark plug and secure spark plug wire away from spark plug.

4.2.2. BLADE BRAKE ADJUSTMENT

1. Remove Belt Cover; See Section 3, 3.2.3, on Page 9.
2. Pull blade engagement lever to the engaged position. The idler should move at least 1/2 inch from disengaged to engaged position. If this measurement is adequate but blade stop time is more than 3 seconds increase blade brake tension as follows.
3. Remove cotter pin from clevis pin and washer that secures anchor plate to blade brake. The factory positions the clevis pin in the middle hole. The rear hole increases tension on blade brake. The front hole decreases tension on blade brake.

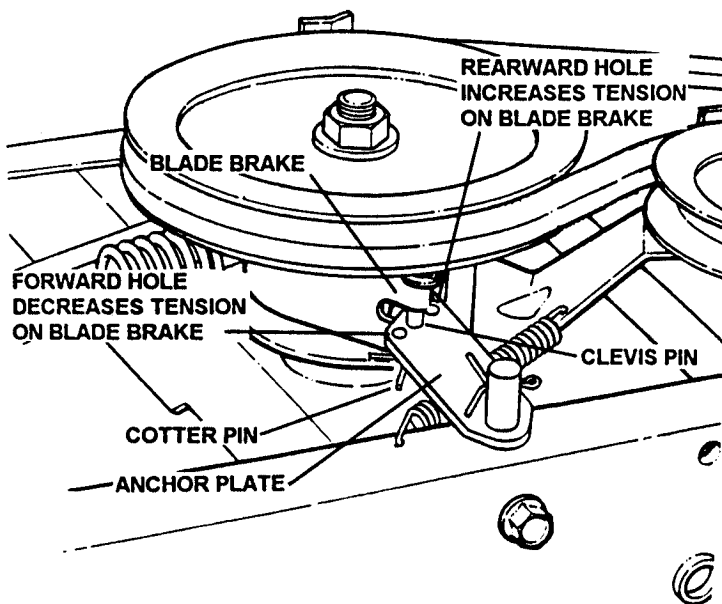


FIGURE 4.6

4. Reinstall clevis pin, washer and a new cotter pin.

IMPORTANT: The idler arm engagement spring should extend to at least 3/4" when blade engagement lever is in the engaged position. If measurement is less than 3/4" the blade belt will have to be replaced. See Section on blade belt replacement. The idler arm spring and cable should have looseness when the blade engagement lever is in the disengaged position.

4.2.3. ADJUSTING MOWER BLADE

Follow procedures for standing Rear Engine Rider on rear bumper.

IMPORTANT: If the Rear Engine Rider will be on its rear bumper for longer than two hours, remove the battery. See 4.6.1., BATTERY REMOVAL on Page 20.

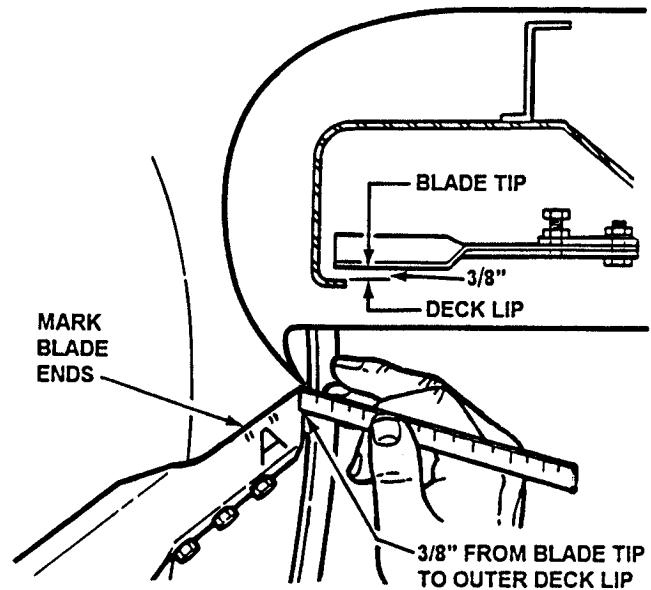


FIGURE 4.8

1. Select a point on the deck and mark for reference.
2. Mark blade tips as "A" and "B".
3. Rotate blade until blade tip "A" is at deck reference mark.
4. Measure the distance between deck lip and blade tip. Note the measurement. See Figure 4.8.

NOTE: On 25", 28", and 33" decks, the measurement between the blade tip and deck lip should be 5/16". On 30" decks, the measurement between the blade tip and deck lip should be 1/8" to 1/4" in front and 3/8" in rear.

5. Repeat steps 2 and 3 with blade tip "B".
6. If measurement between blade tips and deck are different and there is more than 1/16" difference between blade tip measurements, adjust blade as follows:
 - a. Loosen jam-nuts on blade bar.
 - b. Adjust jack screws "IN" or "OUT" until blade tip measurements are within 1/16" of each other and blade tips are 3/8" away from deck lip. See Figure 4.9.
 - c. Tighten jam-nuts.

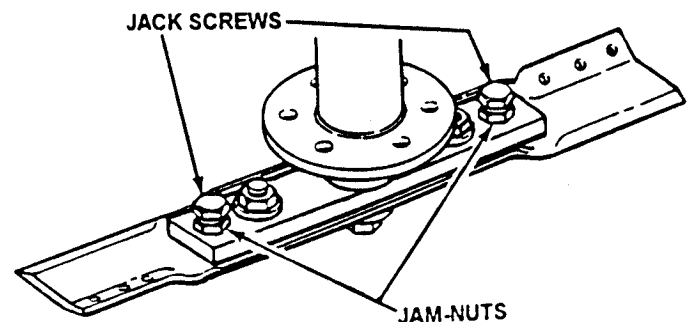


FIGURE 4.9

Section 4 - ADJUSTMENTS & REPAIR

4.2.4. MOWER DECK ADJUSTMENT (LEVELNESS)

1. Side-To-Side

Before making deck leveling adjustments, check the tire pressure. Front tires 15 psi, rear tires 10 psi. If tires are properly inflated and mowing is still uneven, adjust side-to-side deck levelness as follows:

- Place Rider on a smooth level surface.
- Turn engine off and remove key, remove spark plug wire from spark plug and secure wire away from plug.
- Place a piece of angle iron, pipe, or similar object under center of deck at the rear.
- Remove rear hanger chains and allow center, rear of deck to rest on angle iron.
- Measure the distance from blade tips to floor. If the measurement is within $1/8"$ from side-to-side, the deck attitude is satisfactory. If difference from side-to-side is greater than $1/8"$, continue with adjustment.
- Loosen the shoulder bolt retaining the left side of blade pedals.

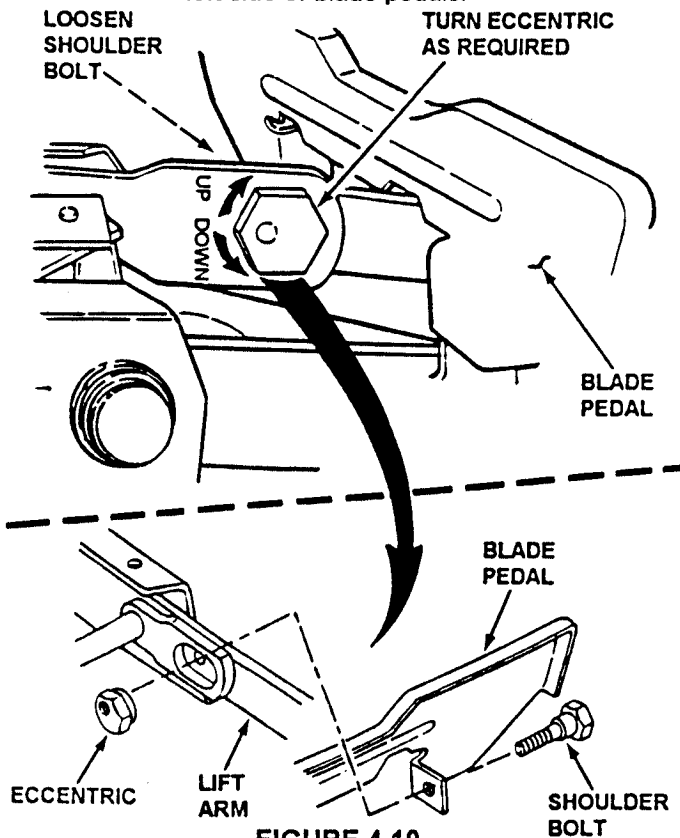


FIGURE 4.10

- Turn eccentric "UP" or "DOWN" as required until blade tips are within $1/8"$ of each other. See Figure 4.10.
- Tighten shoulder bolt loosened in step "f".
- Readjust rear hanger chain pivots to align with holes in support brackets. Refer to Figure 4.11.
- Remove angle iron, pipe, or similar object and proceed to check front to rear levelness.

2. Front to Rear Levelness

(25", 28", & 33" Decks)

With the Rear Engine Rider on a smooth, level surface, rotate blade until blade tips are at front and rear of deck. Measure the distance from blade tips to floor. The distance should be the same, or the rear $1/8"$ lower than the front. If the rear blade tip is higher or is more than $1/8"$ lower than the front, proceed with adjustment.

- Remove rear hanger chains.
- Turn each hanger pivot the same number of rotations on the eye-bolt to raise or lower the rear of the deck. See Figure 4.11.

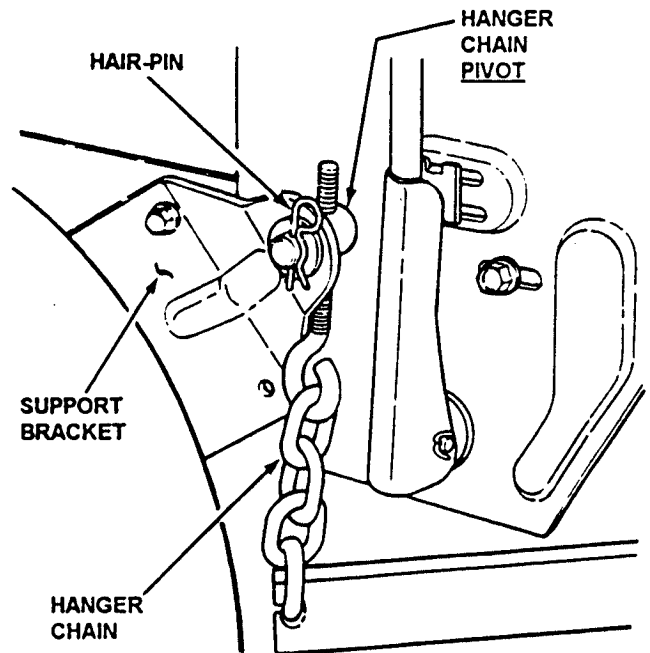
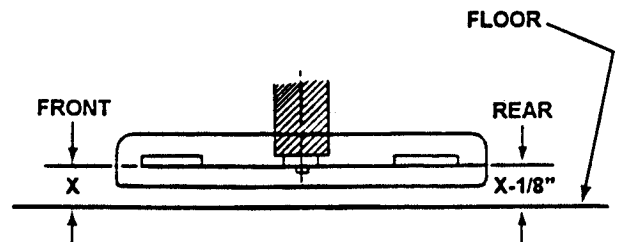


FIGURE 4.11

- Reinstall rear hanger chains and measure blade tips again.
- Repeat steps "a" through "c" until proper levelness is obtained.

NOTE: For 30" cutting decks, repeat section 2., Front to Rear Levelness, except, rear of blade should be the same or $1/8"$ higher than the front.

Section 4 - ADJUSTMENTS & REPAIR

4.2.5. MOWER DECK TIMING ROD ADJUSTMENT

The mower deck timing rod is pre-adjusted at the factory. It is set to maintain the deck in the same attitude through all heights of cut. If suspecting the timing rod requires adjustment, contact an authorized SNAPPER dealer for service. See Figure 4.12.

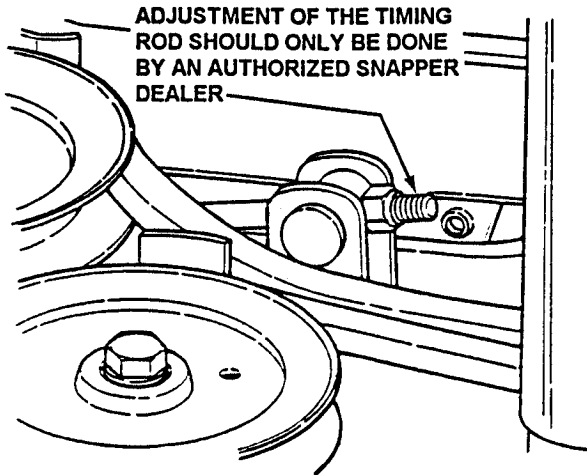


FIGURE 4.12

4.2.6. CUTTING HEIGHT ADJUSTMENT

The deck cutting height range may be adjusted to alter the maximum and minimum cutting deck lift lever.

CAUTION

Before attempting any adjustments or repairs, turn engine "OFF", remove key, remove spark plug wire from spark plug and secure wire away from plug.

1. Place the Rear Engine Rider on a smooth, level surface.
2. Move deck lift lever to the lowest cutting position.
3. Loosen the two lift quadrant mounting bolts and eccentric bolt. See Figure 4.13.

SHOWN WITH COVER REMOVED

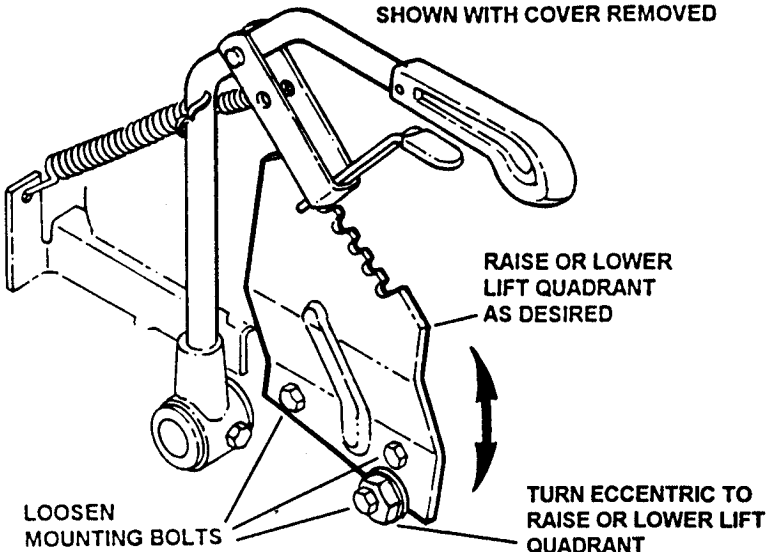


FIGURE 4.13

4. Rotate eccentric bolt to raise or lower desired cutting height range.

5. Tighten lift quadrant mounting bolts and eccentric bolt.

NOTE: Lift quadrant in lowest position gives 1" to 3 1/2" cutting height range. Lift quadrant in highest position gives 1-1/2" to 4" cutting height range.

4.3 REAR ENGINE RIDER DRIVE COMPONENTS

The following drive components may be adjusted by the owner. However, it is recommended that all adjustments to the Rear Engine Rider be made by an authorized SNAPPER dealer.

4.3.1. CLUTCH - STARTING MOTION ADJUSTMENT

If the Rear Engine Rider clutch is too positive or slips excessively when the clutch/brake pedal is released, adjust as follows:

1. Remove key from ignition switch.
2. Remove spark plug wire from spark plug and secure wire away from plug.
3. Close vent on fuel filler cap.
4. Carefully stand Rear Engine Rider on rear bumper.
5. Locate yoke arm between chain case and differential.
6. Move spring to first hole (for positive clutch action) to 4th hole (to increase clutch slippage). See Figure 4.14.

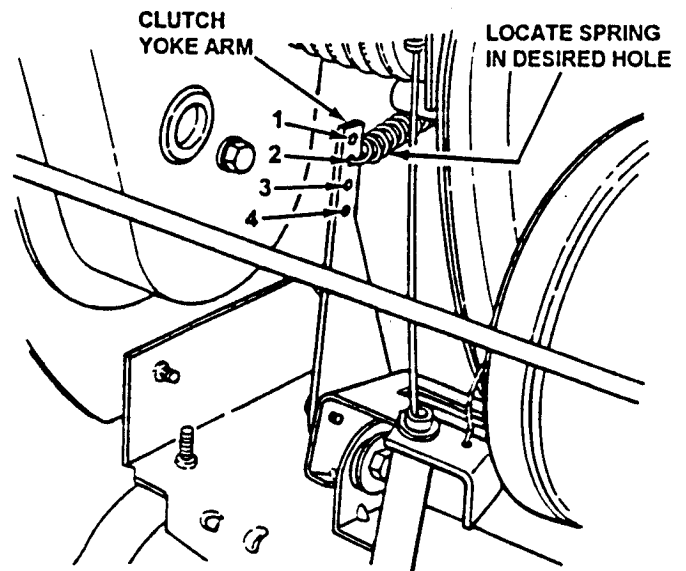


FIGURE 4.14

4.3.2. CLUTCH - SHIFTING ADJUSTMENT

With engine running, depress clutch/brake pedal and move transmission shift lever into a forward speed. If shifting is difficult or will not shift, adjust the clearance between clutch disc and drive disc as follows:

Section 4 - ADJUSTMENTS & REPAIR



CAUTION



Before attempting any adjustments or repairs, stop the engine, remove the key, remove the spark plug wire from the spark plug, and secure spark plug wire away from spark plug.

1. Follow procedures for standing Rear Engine Rider on rear bumper. Refer to Section 3.2.2.
2. Depress clutch/brake pedal all the way down. Move and hold the park brake lever in the "ON" position, then release clutch/brake pedal to lock the park brake. See Figure 4.17.
3. Move the transmission shift lever to reverse.
4. Visually inspect to make certain there is clearance between clutch disc and drive disc. See Figure 4.15.

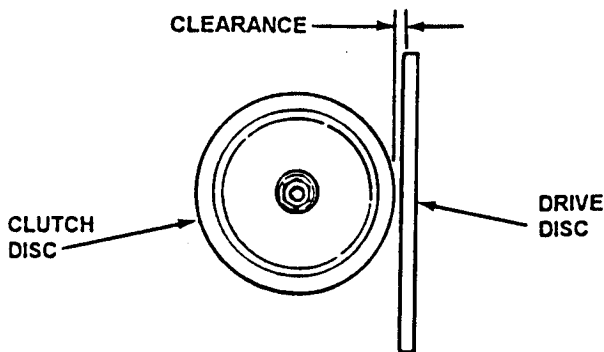


FIGURE 4.15

5. If no clearance is visible, release park brake by depressing clutch/brake pedal to release park brake lever.
6. Pull clutch/brake pedal towards operator's seat and slide one additional ferrule toward end of cable through the eye in the clutch/brake pedal arm. See Figure 4.16.

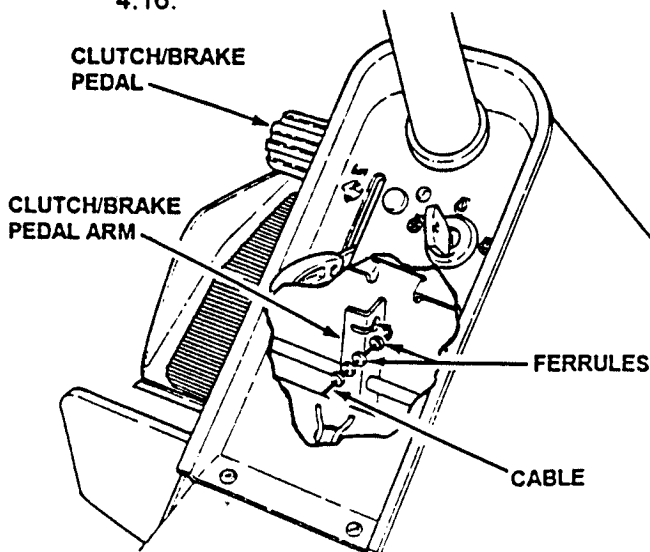


FIGURE 4.16

7. Engage park brake as described in Step 2.
8. Check for clearance between clutch disc and driven disc. If no clearance is visible, repeat steps 5 and 6 until clearance is visible. Refer to Figures 4.15 and 4.16.

NOTE: If adjustment cannot be completed or made because all ferrules have been used, contact an authorized SNAPPER dealer for service.

4.3.3. WHEEL BRAKE ADJUSTMENT

Test the wheel brake on a dry concrete surface. When properly adjusted, the Rear Engine Rider will stop within 3 feet from fastest speed. If stopping distance is more than 3 feet, the wheel brake should be adjusted as follows:

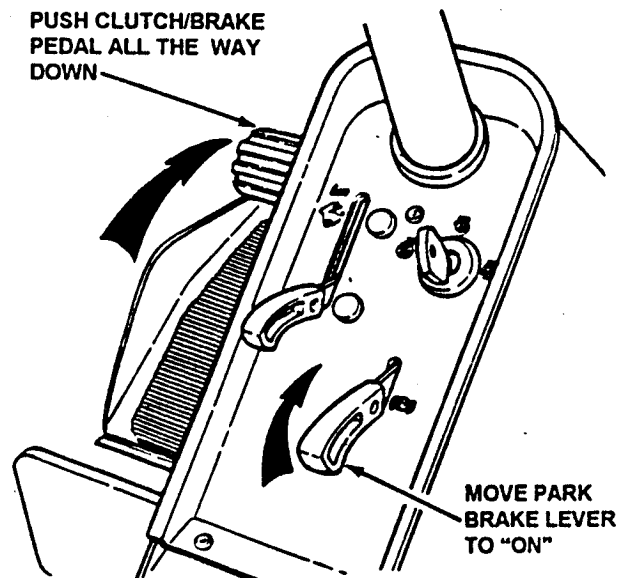


FIGURE 4.17

1. Follow procedures for standing Rear Engine Rider on rear bumper. Refer to Section 3.2.2.
2. Depress clutch/brake pedal all the way down. Move and hold the park brake lever in the "ON" position and release the clutch/brake pedal to lock the park brake. See Figure 4.17.

Section 4 - ADJUSTMENTS & REPAIR

3. Measure the distance between end of clutch/brake cable and bottom of housing. Measurement should be no less than 1/2" and no greater than 3/4". See inset, Figure 4.18.

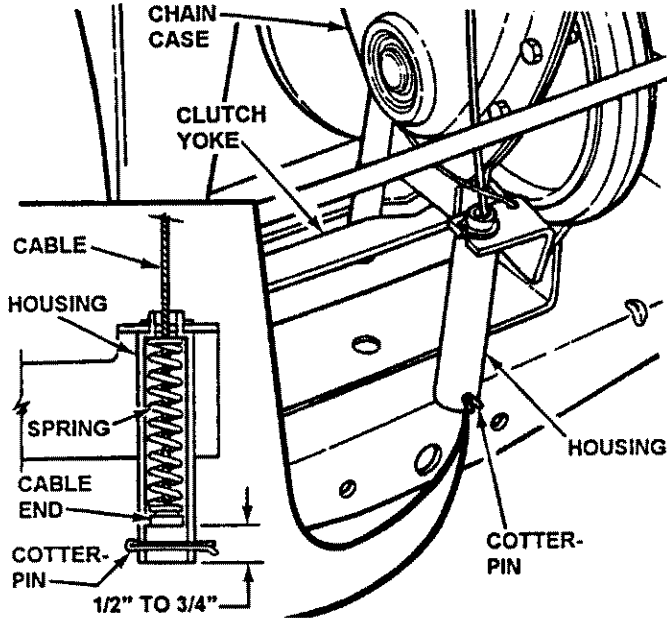


FIGURE 4.18

4. If measurement is less than 1/2" or greater than 3/4", loosen the two jam-nuts (shown in Figure 4.19) holding the clutch/brake cable to the chain case bracket.

5. Adjust cable up or down using the jam-nuts to obtain a distance of 1/2" to 3/4" between end of clutch/brake cable (adjustment shown in inset, Figure 4.18) and bottom of housing. Refer to Figure 4.18.

6. After adjustment is complete, securely tighten cable jam-nuts.

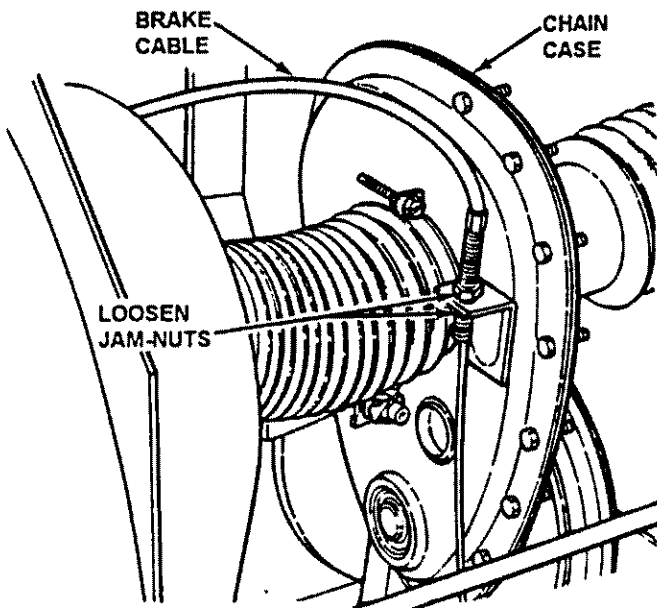


FIGURE 4.19

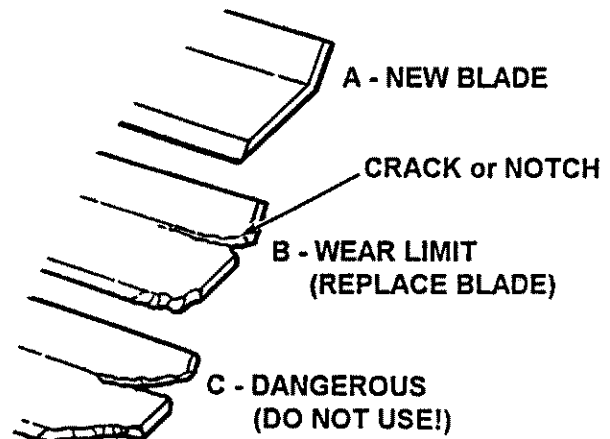


FIGURE 4.20

4.4 MOWER BLADE REPAIR/REPLACEMENT

4.4.1. BLADE WEAR LIMITS

1. Inspect blade frequently for signs of excessive wear or damage. See Figure 4.20.

CAUTION

Before performing any service to blade, turn engine OFF, remove key, remove spark plug wire from spark plug, and secure spark plug wire away from spark plug. Never use a cutting blade that shows signs of excessive wear or damage on the Rear Engine Rider. Refer to Figure 4.20.

4.4.2. BLADE SHARPENING

1. Follow procedures for standing Rear Engine Rider on rear bumper. Refer to Section 3.2.2.
2. Remove blade. See Figure 4.21.

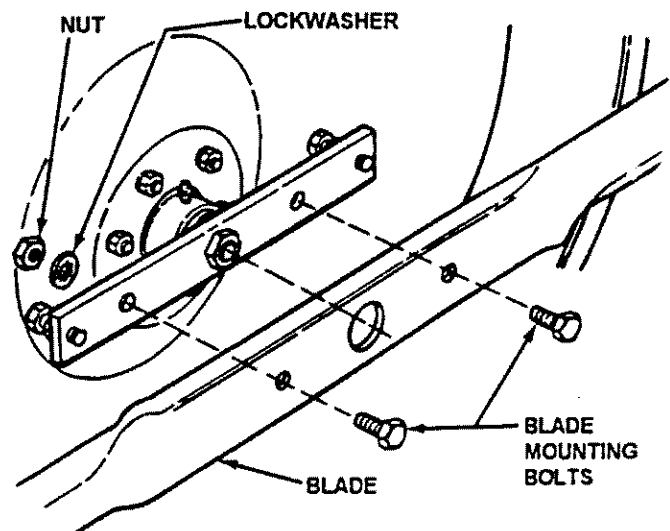


FIGURE 4.21

Section 4 - ADJUSTMENTS & REPAIR

3. Inspect condition of blade. Refer to Figure 4.20.

4. If blade is in good condition, sharpen at 22 to 28 degrees. DO NOT sharpen beyond existing cutting edge. See Figure 4.22.

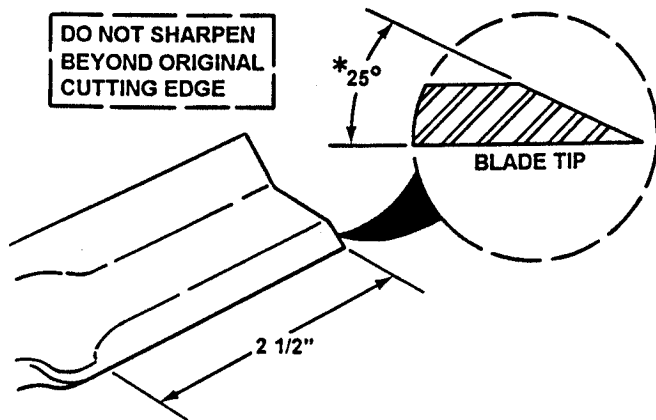


FIGURE 4.22

5. Check blade balance after sharpening. If necessary, correct blade balance by grinding the heavy end of blade.

6. Reinstall blade. Refer to Figure 4.21. Torque blade mounting bolts to recommended range of 30 to 40 ft. lbs.

CAUTION

Before attempting any adjustments or repairs, STOP the engine, remove the key, remove the spark plug wire from the spark plug and secure wire away from plug. On Rear Engine Riders equipped with a grass catcher attachment, the air lifts should be replaced when the blade is replaced.

4.5 MOWER DRIVE BELT REPLACEMENT

Inspect mower drive belt as described in 3.2.3., CHECK MOWER DRIVE BELT on Page 9. Replace belt if signs of excessive wear and/or damage are present.

4.5.1. BELT REMOVAL

1. Remove mower drive belt cover. Refer to Section 3.2.3.
2. Remove old belt.

4.5.2. BELT REPLACEMENT

1. Remove idler. See Figure 4.23.
2. Move transmission shift lever to the neutral (N) position.
3. Follow procedures for standing the Rear Engine Rider on rear bumper. Refer to Section 4.2.3.
4. Route new belt through engine belt guide (engine belt guide shown in Figure 4.24) to engine pulley. Route belt as shown for the individual models shown in Figure 4.23.

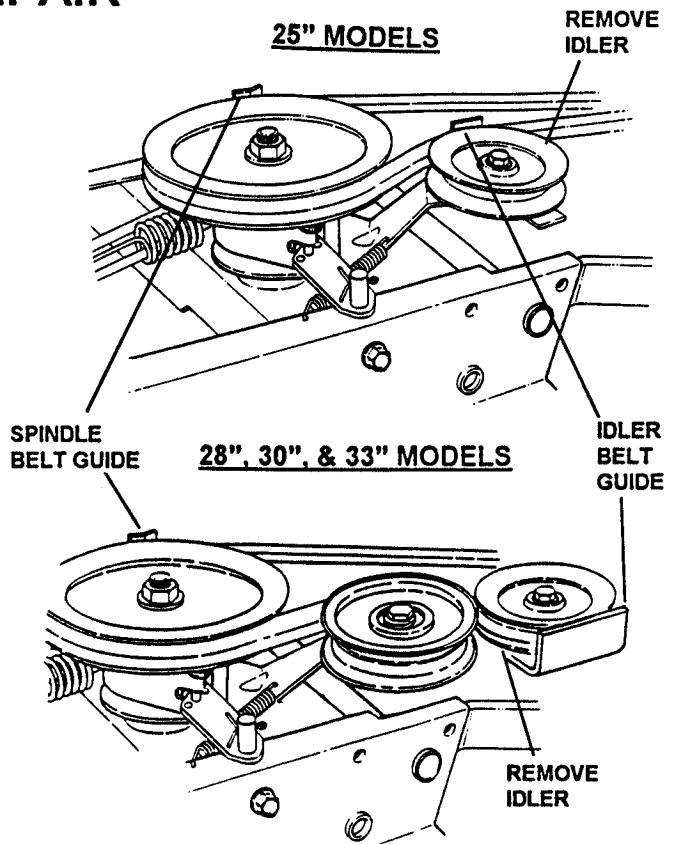


FIGURE 4.24

5. Rotate clutch yoke (clutch yoke shown in Figure 4.18) out with your hand and work belt between drive and driven discs.

6. Move transmission shift lever to the #5 position and place belt over drive disc and into drive pulley belt groove. See Figure 4.24.

7. Route belt onto spindle pulley. Make sure belt is inside spindle belt guide and idler belt guide.

8. Reinstall idler removed in Step 1. The idler belt guide will self locate on tab. Tighten bolt securely.

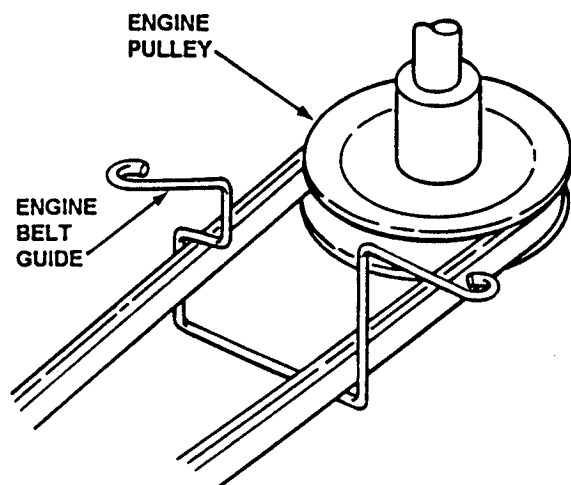


FIGURE 4.24

Section 4 - ADJUSTMENTS & REPAIR

4.5.2. BELT REPLACEMENT (Continued)

9. Adjust belt guide. See Figure 4.25 for proper belt-to-belt guide clearances.

10. Check mower drive belt tension and adjust if necessary. Refer to 4.2.1., MOWER DRIVE BELT ADJUSTMENT on Page 13.

11. Reinstall mower drive belt cover.

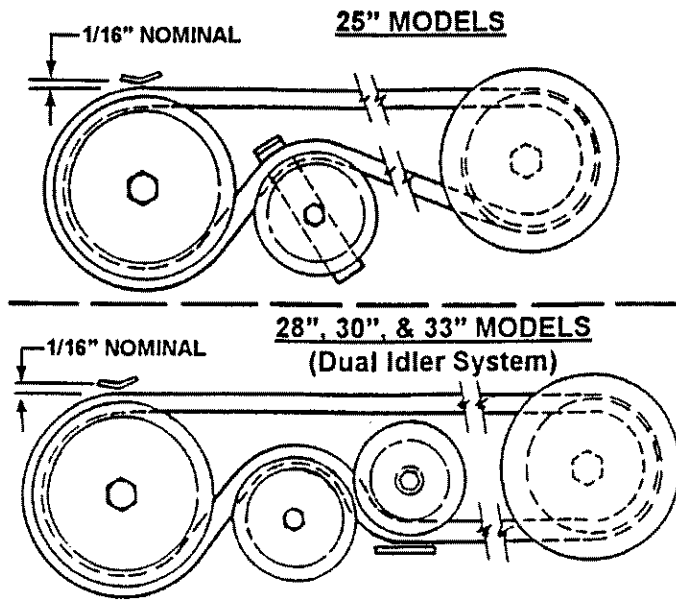


FIGURE 4.25

CAUTION
Never attempt to service or charge the battery while it is installed on the Rear Engine Rider.

4.6 BATTERY

4.6.1. BATTERY REMOVAL

1. Carefully pull each side of battery cover away from ratchet fasteners and remove cover. See Figure 4.26.

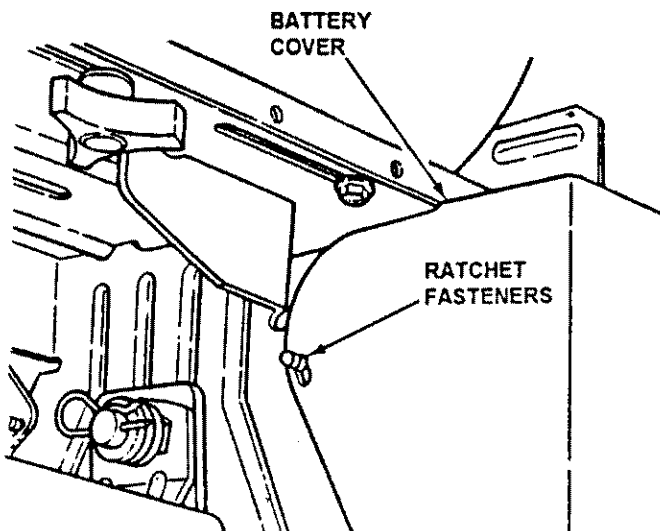


FIGURE 4.26

2. Remove the hair pin and swivel from the deck support to allow clearance for battery removal.

3. Slide battery from battery box to gain access to terminal cables.

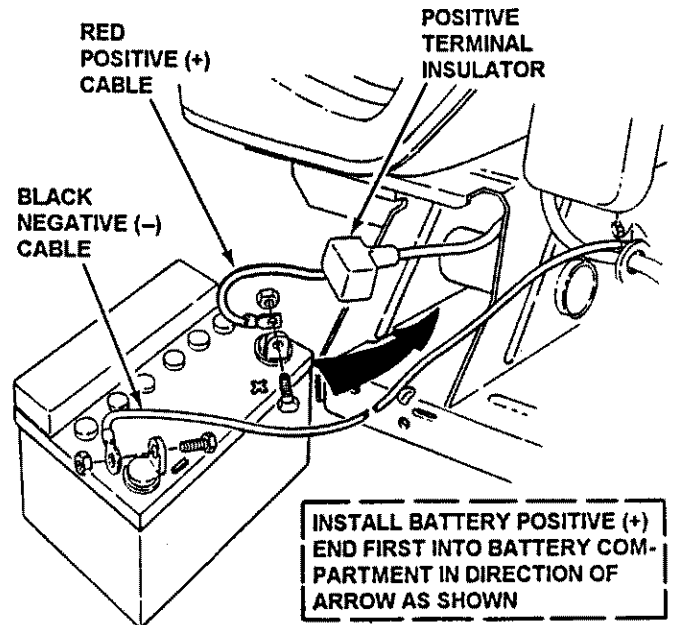


FIGURE 4.27

4. Observe and note cable positions on battery. See Figure 4.27.

5. Disconnect cables from battery terminals, disconnecting BLACK (Negative) cable first. Retain mounting bolts and nuts.

CAUTION
Cables must be connected to battery terminals in the proper position as show in Figure 4.27. Never attempt to charge battery while installed on the Rear Engine Rider. Never use "BOOST" chargers on the battery.

4.6.2. BATTERY INSTALLATION

1. Slide battery partially into battery housing.
2. Connect positive (+) cable (red) first, from wiring harness to the positive terminal (+) on battery using bolt and nut provided in hardware bag. Connect negative (-) cable (black) last, to negative terminal (-) on battery using bolt and nut. Apply a small amount of grease over terminals to prevent corrosion.
3. Insert battery completely into battery housing.
4. Reinstall battery cover. Refer to Figure 4.26.
5. Reinstall swivel and hair pin for deck support.

(Continue to next page for battery service)

Section 4 - ADJUSTMENTS & REPAIR



CAUTION



The electrolyte (acid) produces a highly explosive gas. Keep all sparks, flame and fire away from area when charging battery or when handling electrolyte or battery. Electrolyte (acid) is a highly corrosive liquid. Wear eye protection. Wash affected areas immediately after having eye or skin contact with electrolyte (acid). Battery acid is corrosive. Rinse empty acid containers with water and mutilate before discarding. If acid is spilled on battery, bench, or clothing, etc., Flush with clear water and neutralize with baking soda. Never attempt to charge battery while installed on the RIDER. Never use "BOOST" chargers on the battery.

4.6.3. BATTERY SERVICE

1. Remove battery. See Section on Battery Removal
2. Place battery in a well ventilated area on a level surface.
3. Using distilled water, refill cells as required to cover cell plates of which can also be visualized through the plastic battery case.
4. With cell caps removed, connect battery charger to battery terminals. Red to positive (+) terminal and black to negative (-) terminal.
5. Slow charge battery at 1 amp for 10 hours.
6. If battery will not accept charge or is partially charged after 10 hours of charging at 1 amp, replace with new battery.

4.6.4. BATTERY STORAGE

If mower is to be stored out of season on its rear bumper, it is recommended the battery be removed, charged and stored.

1. Remove battery. (See Section on Battery Removal)
2. Perform battery service.
3. Bring battery to full charge, if required.
4. Store battery in an area away from the RIDER on a wood surface. DO NOT STORE BATTERY ON A CONCRETE SURFACE.

4.6.5. BATTERY TESTING

There are two types of battery tests: Unloaded and Loaded. The unloaded test is the procedure that will be discussed. It's the simplest and most commonly used. An unloaded test is made on a battery without discharging current. To perform unloaded testing, check charge condition using either a hydrometer or voltmeter.

1. Using a voltmeter, voltage readings appear instantly to show the state of charge. Remember to hook the positive lead to the battery's positive terminal, and the negative lead to the negative terminal.

2. A hydrometer measures the specific gravity of each cell. The specific gravity tells the degree of charge; generally, a specific gravity of about 1.265 to 1.280 indicates full charge. A reading of 1.230 to 1.260 indicates the battery should be charged. The chart on the next page shows the charge level as measured by syringe float hydrometer, digital voltmeter and five ball hydrometer.

4.6.5. NEW BATTERY PREPARATION

1. Remove battery from carton.
2. Place battery in a well ventilated area on a level non-concrete surface.
3. Remove battery cell caps. Fill cells as required with electrolyte (purchased separately) to proper level. Fill to 3/16" above cell plates. Filling battery with electrolyte will bring the battery to 80% charged state.
4. With cell caps removed, connect battery charger to battery terminals; RED to positive (+) and BLACK to negative (-) terminal.

IMPORTANT: 3/16" above cell plates is the recommended level. However do not try to measure this dimension. Never place anything in battery other than specified electrolyte.



CAUTION



Never attempt to charge battery while installed on the Riding Mower. Never use "BOOST" chargers on the battery. DO NOT OVERFILL!

5. Slow charge the battery at 1 amp for 2 hours to bring the battery to full charge.
6. After charging, check level of electrolyte and add as needed to bring level to 3/16" above cell plates.
7. Reinstall cell caps.
8. Remove the hair pin and swivel from the deck support to allow clearance for battery installation.
9. Slide battery partially into battery housing.
10. Connect positive (+) cable (red) first, from wiring harness to the positive terminal (+) on battery using bolt and nut provided in hardware bag. Connect negative (-) cable (black) last, to negative terminal (-) on battery using bolt and nut. Apply a small amount of grease over terminals to prevent corrosion.
11. Insert battery completely into battery housing.
12. Reinstall battery cover. Refer to Figure 4.26.
13. Reinstall swivel and hair pin for deck support.



CAUTION



Shield the positive terminal with terminal cover located on battery harness. This prevents metal from touching the positive terminal which could cause sparks.

(Battery Testing Chart on Next Page)

Section 4 - ADJUSTMENTS & REPAIR

4.6.5. BATTERY TESTING

Methods of Checking Battery Condition			
State of Charge	Syringe Hydrometer	Digital Voltmeter	Five Ball Hydrometer
100% Charged w/ Sulfate Stop	1.280	12.80v	Five Balls Floating
100% Charged	1.265	12.60v	Four Balls Floating
75% Charged	1.210	12.40v	Three Balls Floating
50% Charged	1.160	12.10v	Two Balls Floating
25% Charged	1.120	11.90v	One Ball Floating
0% Charged	Less than 1.100	Less than 11.80v	Zero Balls Floating

ACCESSORIES

PART NUMBER	DESCRIPTION
6-0197	Load Carrier Kit
6-0441	Commercial Axle Bearing Kit
6-0517	Wheel Weight
6-0697	Dump Cart
6-0737	Gauge Wheel Kit
6-0941	Single Bag Catcher (25" Models)
6-0943	Single Bag Catcher (28" & 33' Models)
6-0942	Single Bag Catcher (30" Models)
6-0946	Twin Bag Catcher (28" & 33' Models)
6-0947	Bag-N-Wagon (28" & 33' Models)
6-0984	Wagon Cover Kit
6-1049	Recycling Kit (25" Model)
6-1253	Ninja Kit (28" Models)
6-1254	Ninja Kit (30" Models)
6-1255	Ninja Kit (33" Models)
6-1190	Weight Kit
6-0948	Thatcherizer

MAINTENANCE SCHEDULE

SUBJECT	SERVICE TO BE PERFORMED	REFERENCE PAGES	EACH USE	5 HOURS	25 HOURS	50 HOURS	100 HOURS	EACH SEASON
Engine	Check Oil Level	Page 4	X					
Engine	Initial Oil Change	Page 8		X				
Engine	Periodic Oil Change	Page 15				X*		
Air Pre-Cleaner	Service Sponge Pre-Cleaner Element	Engine Manual			X**			
Air Cleaner	Replace Element	Engine Manual.			X**			
Spark Plug	Replace Plugs	Engine Manual.					X	
Fuel Filter	Replace Filter	Page 11					X	
Engine Cooling System	Clean Shrouds & Fins	Engine Manual					X**	
Battery	Check Electrolyte	Page 22			X			X
Battery	Charge Battery	Page 22						X
Tires	Check Pressures	Page 4	X					
Drive Belts	Check For Wear And Tension	Pages 9, 13, 19			X			X
Mower Blades	Check For Wear And Damage	Pages 8, 14, 18			X			
Mower Deck	Clean Debris Accumulation	Page 9	X		X			X
Lubrication Points	Grease or Oil	Pages 10 & 11			X			X
Lubricate Chain Case & Transmission	Check Grease Level	Pages 10 & 11					X	X
Blade Stop Time	Check blade stopping for proper operation	Pages 7 & 14	X					X
Clutch/Brake System	Check Clutch/Brake for proper operation	Page 5 & 14	X					X

*Change oil every 25 hours when operating under heavy load or high temperatures.

**Clean more often under dusty conditions or when air debris is present

SNAPPER®

5 - 2 YEAR LIMITED WARRANTY

COMPONENT PARTS - 5 YEARS

For five (5) years from purchase date for original purchaser's residential non-commercial* use, **Snapper**, through any **Snapper** dealer will replace free of charge any part or parts found upon examination by the factory to be defective in material or workmanship or both.

ENGINE - 2 YEARS

The engine on this product is warranted by the engine manufacturer for two (2) years for the original purchaser's non-commercial* use. (See engine manufacturer's warranty statement for details.)

BATTERIES

Batteries are warranted separately and have one (1) year prorated warranty with a ninety (90) day free replacement period.

DISCLAIMER OF WARRANTIES

Implied warranties including those of merchantability and fitness for a particular purpose, are limited to five (5) years from purchase date for the original purchaser's residential, non-commercial use, for ninety (90) days from purchase date for the original purchaser's commercial, rental, or other non-residential use, and to the extent permitted by law, any and all implied warranties are excluded. This is the exclusive remedy. Liabilities for consequential damages, under any and all warranties are excluded.

Some states do not allow limitations on how long an implied warranty lasts, or do not allow the exclusion or limitation of incidental or consequential damages, so the above limitation or exclusion may not apply to you.

All transportation cost incurred by the purchaser in submitting material to a **Snapper** dealer for replacement under this warranty must be paid by the purchaser.

This warranty does not apply to parts that have been damaged by accident, alteration, abuse, improper lubrication, normal wear (things such as belts, blades, driven disc or any other normal wear item). This warranty does not cover tune-ups or other adjustments required in the normal use of the product.

There is no other express warranty.

This warranty gives you specific legal rights, and you may also have other rights which vary from state to state.

*Any use other than on the purchaser's residential lawn constitutes commercial use.

WARNING: THE USE OF REPLACEMENT PARTS OTHER THAN GENUINE SNAPPER PARTS MAY IMPAIR THE SAFETY OF SNAPPER PRODUCTS AND WILL VOID ANY LIABILITY AND WARRANTY BY SNAPPER ASSOCIATED WITH THE USE OF SUCH PARTS.

IMPORTANT: Please fill out the attached **SNAPPER** Product Registration Card immediately and mail to: **SNAPPER**, 535 Macon Rd., McDonough, Ga. 30253

1. **Introduction**
 2. **Background**
 3. **Methodology**
 4. **Results**
 5. **Discussion**
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 216. **Figure 208**
 217. **Figure 209**

SERVICE NOTES

Lined area for service notes.

Safety Instructions & Operator's Manual for

SNAPPER®

**REAR ENGINE RIDING MOWER
SERIES 16**

⚠ WARNING: The engine exhaust from this product contains chemicals known to the State of California to cause cancer, birth defects or other reproductive harm.

SNAPPER® McDonough, GA., 30253 U.S.A.

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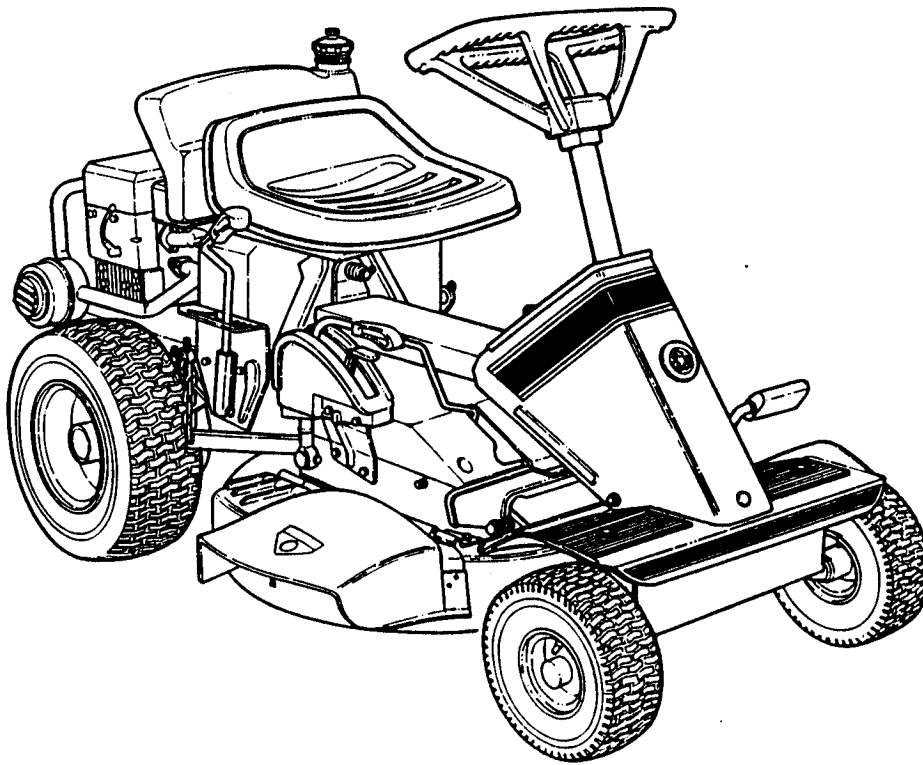
MANUAL No. 3-5620 (REV. 1, 9/97)

Printed in U.S.A.

Safety Instructions & Operator's Manual for

SNAPPER®

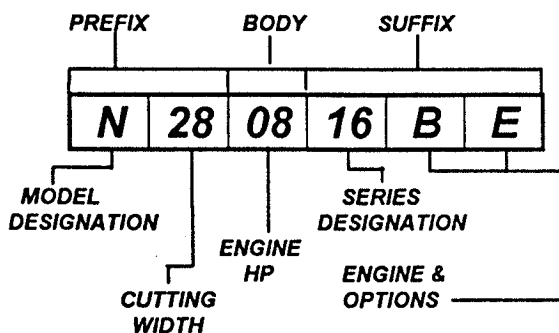
REAR ENGINE RIDING MOWER SERIES 16



MODELS

250816B
 N250816B
 250816BE
 N250816BE
 281016BE
 N281016BE
 301016BE
 301216BE
 331416BVE
 331416KVE

MODEL NUMBER EXPLANATION



PREFIX EXPLANATION

N - California Model	25 - 25" Cutting Width
	28 - 28" Cutting Width
	30 - 30" Cutting Width
	33 - 33" Cutting Width

BODY EXPLANATION

08 - 8.0 HP Engine	12 - 12.0 HP Engine
10 - 10.0 HP Engine	14 - 14.0 HP Engine

SUFFIX EXPLANATION

16 - Series Designation	B - Briggs Engine
	V - Overhead Valve
	E - Electric Start

Thank you for buying a SNAPPER Product! Before operating your REAR ENGINE RIDER, read this manual carefully and pay particular attention to the "IMPORTANT SAFETY INSTRUCTIONS" on Page 2. Remember that all power equipment can be dangerous if used improperly. Also keep in mind that SAFETY requires careful use in accordance with the operating instructions and common sense!

IMPORTANT SAFETY INSTRUCTIONS

WARNING: This powerful cutting machine is capable of amputating hands and feet and can throw objects that can cause injury and damage! Failure to comply with the following **SAFETY** instructions could result in serious injury or death to the operator or other persons. The owner of the machine must understand these instructions and, furthermore, must allow only persons who understand these instructions to operate machine. Each person operating the machine must be of sound mind and body and must not be under the influence of any substance which might impair vision, dexterity, or judgment. If you have any questions pertaining to your machine which your dealer cannot answer to your satisfaction, call or write the Customer Service Department at SNAPPER, McDonough, Georgia 30253. Phone: (770) 954-2500.

PROTECTION FOR CHILDREN

1. **DO NOT** allow children in yard when machine is operated (even with the blade OFF).
2. **DO NOT** allow children to ride on machine or on attachments (even with the blade OFF).
3. **DO NOT** allow pre-teenage children to operate machine.
4. Only responsible teenagers or adults with mature judgement shall be allowed to operate machine and only under close supervision.

PROTECTION AGAINST TIPOVERS

1. **DO NOT** operate machine on slopes exceeding 15 degrees (27% grade).
2. On slopes above 10 degrees (18% grade), exercise extreme **CAUTION**. Turn blade OFF when traveling uphill, also reduce speed and avoid sharp turns.
3. Avoid uphill starts. If machine is stopped going uphill, turn blade OFF and back slowly down the slope.
4. **DO NOT** mow under any condition where traction or stability is doubtful without first test driving over the terrain with blade OFF.
5. Stay alert for holes and other hidden hazards. Keep away from ditches, washouts, culverts, fences and protruding objects.
6. **DO NOT** mow back and forth across face of slopes.
7. **KEEP A SAFE DISTANCE** (at least three feet) away from edge of ditches and other drop offs.

PREPARATION

1. Read this manual, get to know where all controls are located and practice how to use them before starting for the first time, and at the beginning of each season. Pay attention to Warning and Instructional Decals on engine and machine. Read and follow operator's manuals and instructions furnished with attachments.
2. Handle fuel with care! Never remove fuel cap while engine is running. Fill fuel tank outdoors only with engine STOPPED and cool. Clean spilled fuel from machine. Store fuel in approved container, out of the reach of children, in well ventilated, unoccupied building.
3. Only mature, responsible persons shall operate the machine.
4. Mount and dismount the machine from left side.
5. Wear appropriate protective clothing when mowing, such as, long pants and substantial footwear, not barefoot or with open sandals.
6. Practice operation of machine with blade OFF to learn controls and develop skill.
7. Persons under the influence of alcohol or drugs must **NOT** operate machine.

8. Check the area to be mowed and remove all objects such as doormats, sticks, toys, wire, rocks, and other objects that could cause injury if thrown by blade.
9. Know how to **STOP** blade and engine quickly in preparation for emergencies.
10. Keep people and pets a safe distance from machine.
11. Shields, deflectors, switches, blade controls and other safety devices must be in proper position and functional.

OPERATIONAL PRECAUTIONS

1. **STOP** blade, **STOP** engine and remove key when leaving machine.
2. **DO NOT** operate machine unless properly seated with feet on foot rests or pedal.
3. Keep hands and feet away from rotating blade underneath deck. Never place foot on ground while blade is ON or when machine is in motion.
4. Turn blade OFF, **STOP** engine and wait for blade to **STOP** before attempting to unclog grass or leaves to prevent loss of fingers or hand.
5. Blade must be switched OFF except when cutting grass. Set cutter in highest position when mowing over rough ground.
6. Deflector or grass catcher must be in position. Never point discharge at people, passing cars, windows or doors. Watch out for traffic when crossing or near roadways.
7. Operate in reverse only with careful observation of entire area behind the machine. **DO NOT** mow in reverse unless absolutely necessary.
8. Service machine and make adjustments only when engine is stopped.
9. Have machine serviced by an authorized SNAPPER dealer at least once a year and have the dealer install any new safety devices.
10. Use only genuine SNAPPER replacement parts to assure that original standards are maintained.
11. Tighten all nuts, bolts and screws frequently, then check, adjust, repair or replace brakes as needed.
12. Lubricate machine at intervals specified in manual to prevent controls from binding.
13. Mow only in daylight or with good artificial light.
14. **DO NOT** change engine governor speed settings or overspeed engine.
15. Check grass catcher components frequently for signs of wear or deterioration and replace as needed to prevent injury from thrown objects going through weak or worn spots.
16. Exercise **CAUTION** when pulling loads. Limit loads to those you can safely control and attach loads to hitch plate as specified with SNAPPER attachment instructions.

Section 1 - FAMILIARIZATION

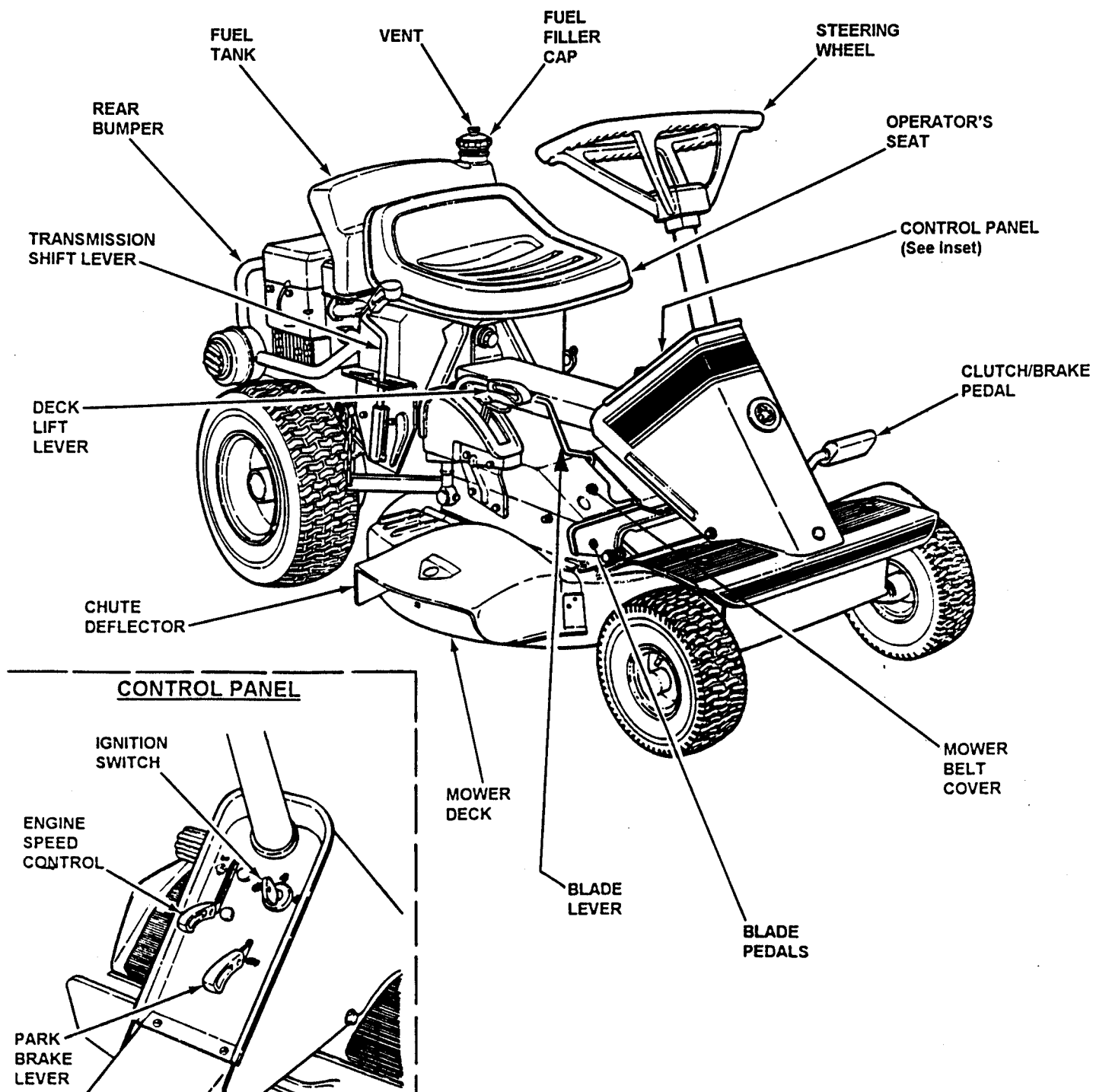


FIGURE 1.1

1.1 INTRODUCTION

This manual has been prepared for the operator's of the SNAPPER Rear Engine Rider. Its purpose, aside from recommending standard operating procedures and routine service requirements, is to promote **SAFETY** through the use of accepted operating practices. Read, **Understand and Follow** the **IMPORTANT SAFETY INSTRUCTIONS** on Page 2 of this manual and **All SAFETY** messages on the Rear Engine Rider and its attachments before operating.

1.2 NOMENCLATURE

The nomenclature drawing above, Figure 1.1, shows the essential parts of the SNAPPER Rear Engine Rider. It is recommended that all operator's of this equipment become thoroughly familiar with the controls, components, and operation of this machine before operating. Specific details involving the engine are found in the separate engine owner's manual. Study these manuals before operating and keep both handy for future reference.

Section 2 - OPERATING INSTRUCTIONS

2.1 PRE-START CHECK LIST

Make the following checks and perform the service required before each start-up.

- 2.1.1. Check tires and add or release air as needed to bring pressure to 15 psi in front and 10 psi in rear tires.
- 2.1.2. Check guards, deflectors and covers to make sure all are in place and securely tightened.
- 2.1.3. Check engine oil and add oil as needed to bring level up to the FULL mark. Refer to engine owner's manual for oil specifications. See Figure 2.1.

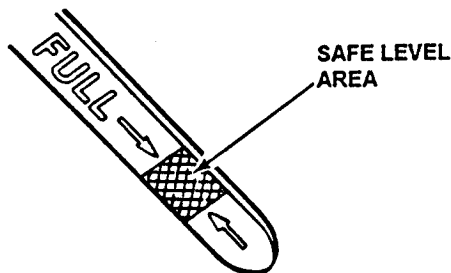


FIGURE 2.1

- 2.1.4. Adjust seat as needed to most comfortable position. See Figure 2.3.
- 2.1.5. Check blade control to insure it works freely. If blade pedals are depressed, blade lever can be moved manually from "ON" to "OFF" to stop blade.

CAUTION
The blade control lever must snap from "ON" to "OFF" when blade pedals are released. If blade control lever does NOT snap back, check mower belt tension. See 4.2.1. MOWER DRIVE BELT ADJUSTMENT on Page 13.

- 2.1.6. Clean exterior surfaces of cutting deck and engine of any accumulation of dirt, grass, oil, etc. Keep engine air intake screen and cooling fins clear at all times.
- 2.1.7. Add fuel to tank after pushing the Rear Engine Rider outside where fumes can dissipate. Make sure fuel filler cap is tight and vent is open after refueling. Refer to engine owner's manual. See Figure 2.2.

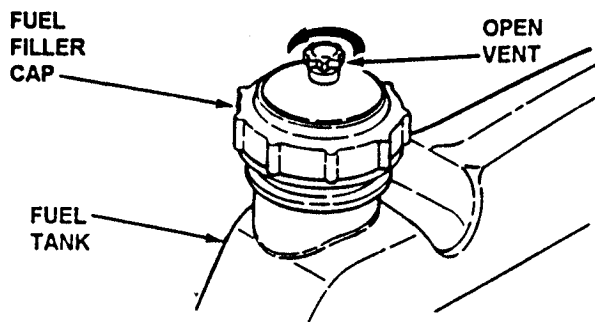


FIGURE 2.2

2.2 OPERATOR'S SEAT ADJUSTMENT

2.2.1. FRONT TO REAR ADJUSTMENT

- 1. With the engine stopped, loosen the two adjusting knobs and move seat to desired position. After adjustment, tighten knobs securely. If seat does not move after loosening knobs, it may be necessary to loosen the 5/16" patch lock screws located at the rear of the seat using a 1/2 inch wrench. On 12 and 14HP models, the operator's seat has a tilt-up design. The adjusting knobs need to be positioned as shown so as not to interfere with seat mounting plate when returned to sitting position. See Figure 2.3.

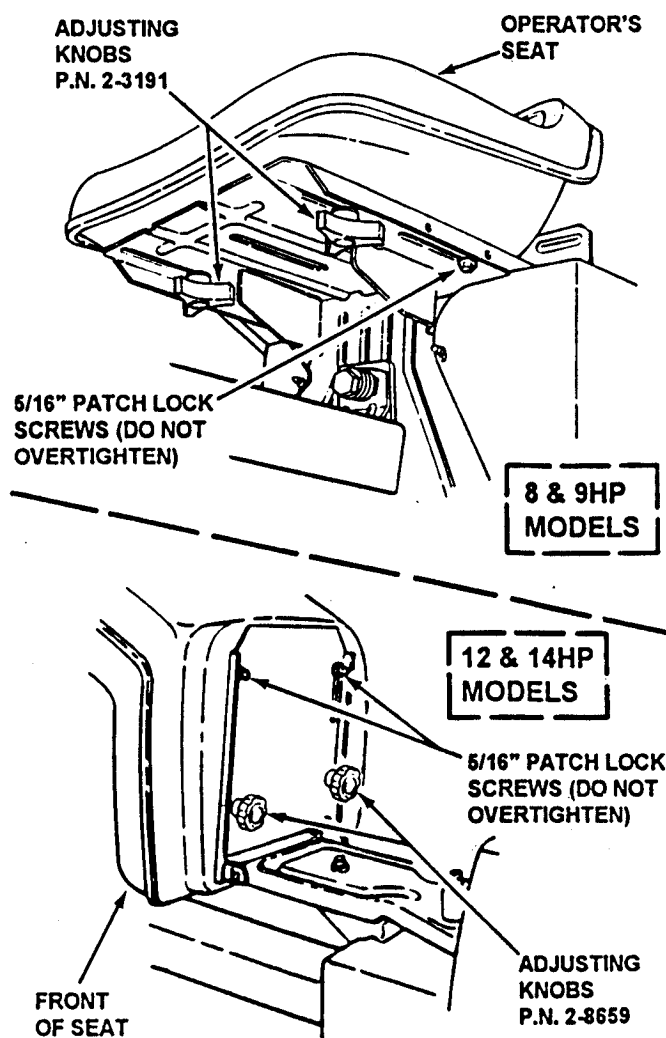


FIGURE 2.3

Section 2 - OPERATING INSTRUCTIONS

2.3 STARTING & OPERATION

2.3.1 ENGINE (ELECTRIC START)

IMPORTANT: When the ignition key is turned to "START", the engine will turn over, but will not start unless the Clutch/Brake pedal is pressed all the way down, the Blade Lever is in the "OFF" position (See Figure 2.5). The operator should be in the seat. Start engine as follows:

1. Move transmission shift lever to (N) Neutral position. **DO NOT** start engine with transmission shift lever in a drive position.

⚠**CAUTION**⚠

It is possible to start engine with transmission shift lever in a drive position. Follow starting instructions carefully.

2. Make certain the Blade Lever is in the "OFF" position. See Figure 2.4.

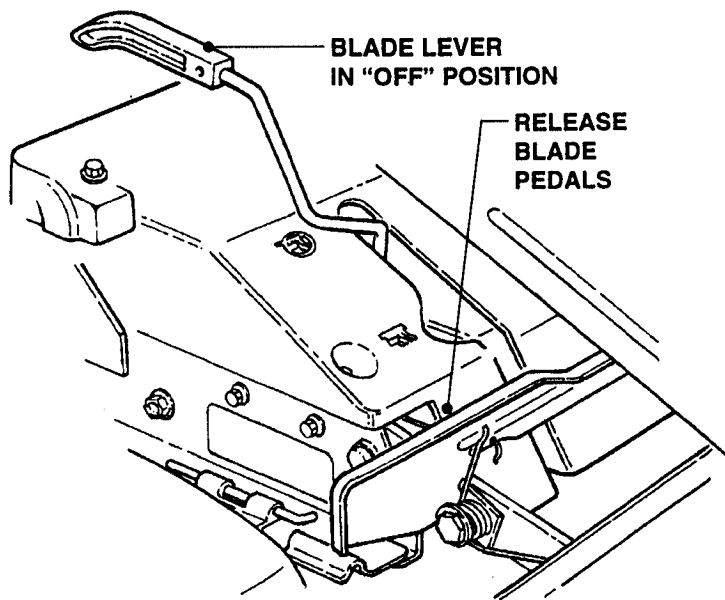


FIGURE 2.4

3. Press Clutch/Brake Pedal all the way down and hold while starting engine. See Figure 2.5.

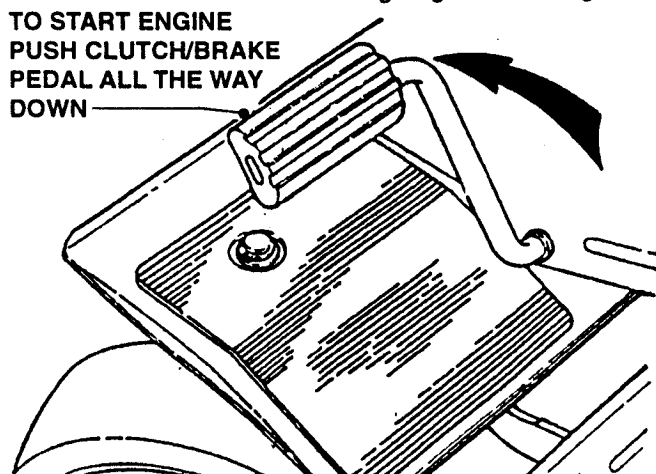


FIGURE 2.5

4. Open vent on fuel filler cap by turning counterclockwise. **IMPORTANT:** Failure to open vent on the fuel filler cap can cause engine to stall. See Figure 2.6.

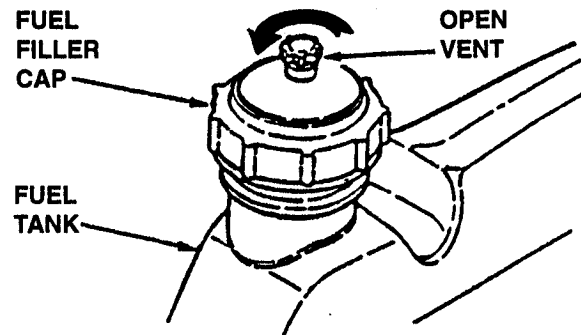


FIGURE 2.6

5. Move engine speed control to the choke position to start engine. See Figure 2.7.

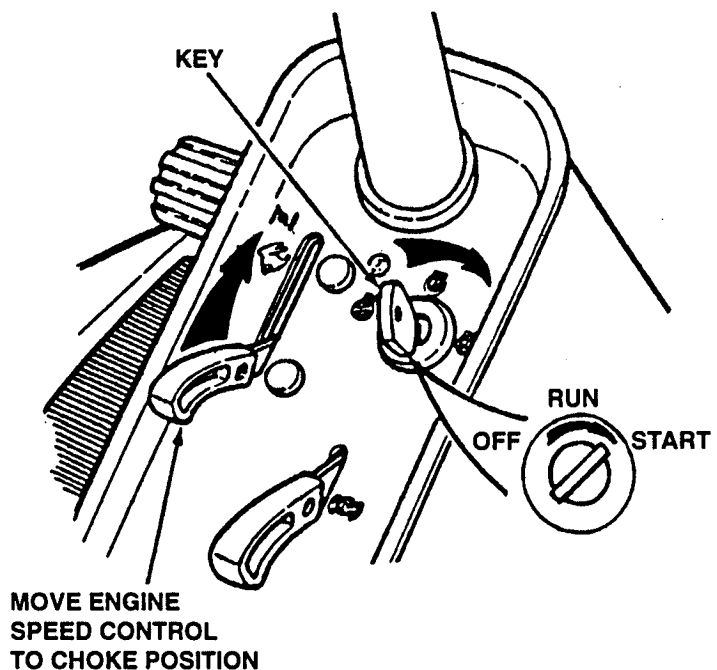


FIGURE 2.7

6. Turn key to the "START" position until engine starts. See Figure 2.7. **NOTE:** If after 5 seconds of cranking the engine and it does not start, release the key, make sure the Clutch/Brake Pedal is fully depressed and attempt starting again after waiting for approximately 20 seconds.
7. After engine starts, move engine speed control to the "FAST" position, allow a brief warm-up until engine runs smooth.

Section 2 - OPERATING INSTRUCTIONS

2.3.1 ENGINE (ELECTRIC START) (Continued)

8. Should the battery be too weak to start the engine, use the instructions shown below, 2.3.2., ENGINE (MANUAL START) to manually start the electric start engines.

9. On Model 331416BVE, the engine is equipped with a fuel shut-off solenoid. If the battery is dead, the engine can be started with the recoil back-up starter if the throttle control is in the choke position (HOT engine or COLD engine).

2.3.2. ENGINE (MANUAL START)

IMPORTANT: When the ignition key is turned to "RUN", and the recoil handle is pulled, the engine will turn over, but will not start unless the Clutch/Brake Pedal is pressed all the way down with Parking Brake engaged (See Figure 2.8) and the Blade Lever is in the "OFF" position (Refer to Figure 2.4). Start engine as follows:

1. Move transmission shift lever to (N) Neutral position. **DO NOT** start engine with transmission shift lever in a drive position.



CAUTION



It is possible to start engine with transmission shift lever in a drive position. Follow starting instructions carefully.

2. Make certain the Blade Lever is in the "OFF" position. Refer to Figure 2.4.

3. Press Clutch/Brake Pedal all the way down, lift Parking Brake Lever and release the Clutch/Brake Pedal to set Parking Brake. See Figure 2.8.

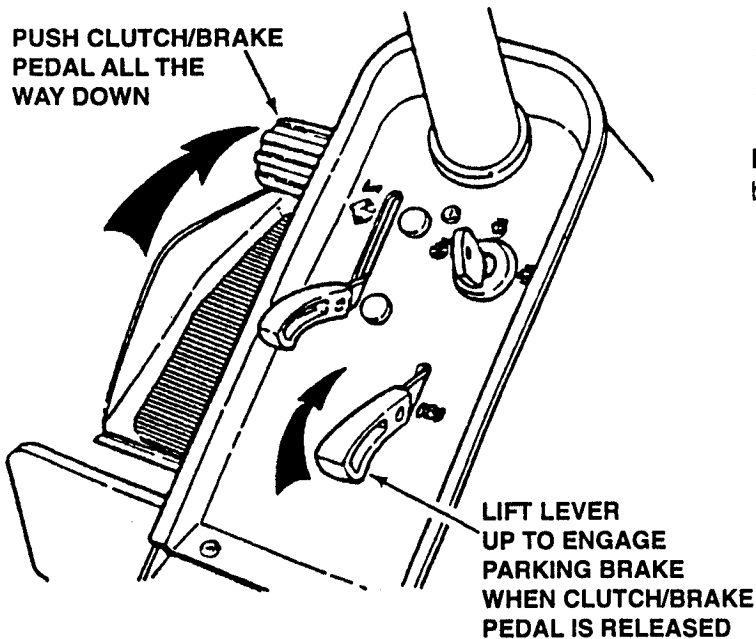


FIGURE 2.8

4. Open vent on fuel filler cap by turning counterclockwise. **NOTE:** Failure to open vent on the fuel filler cap can cause engine to stall. See Figure 2.6.

5. Move engine speed control to the choke position to start a cold engine. Refer to Figure 2.7.

6. Turn key to "RUN" position. See Figure 2.9.

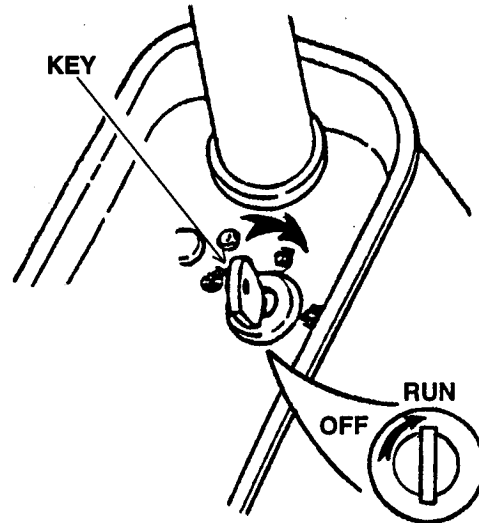


FIGURE 2.9

7. Pull starter rope with a smooth, even motion until engine starts. Always guide the starter rope back into the recoil housing. Never allow rope to snap back. After Engine starts, move engine speed control to the "FAST" position.

8. Allow a brief warm-up until engine runs smooth.

2.3.3. MOWER BLADE

1. With engine running, move engine speed control to the "FAST" position.

2. Move blade lever forward to the "ON" position, then depress blade pedals to hold blade lever in the "ON" position. See Figure 2.10.

IMPORTANT: You cannot engage the blade lever if the blade pedal is depressed first.

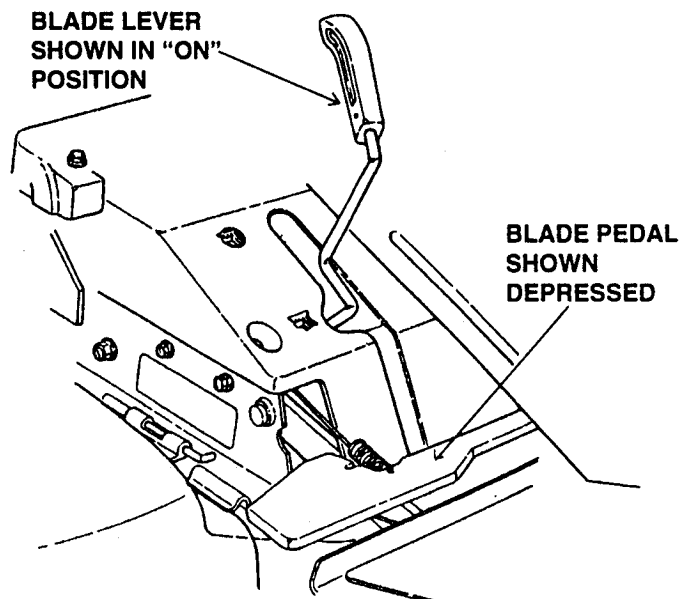


FIGURE 2.10

Section 2 - OPERATING INSTRUCTIONS



CAUTION



Before leaving the Rear Engine Rider with the engine running, **STOP** the blade, shift to neutral and engage the park brake.

2.4 STOPPING

2.4.1. ENGINE

1. Stop engine by turning key to the "OFF" position. See Figure 2.11.

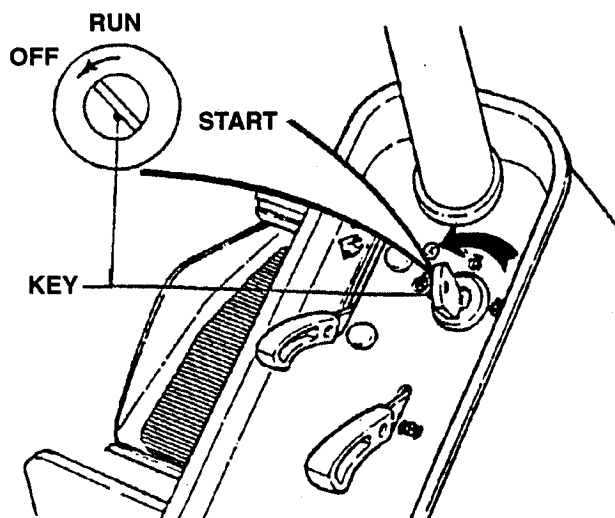


FIGURE 2.11

2.4.2. WHEEL DRIVE

1. Stop motion of Rear Engine Rider by pushing Clutch/Brake Pedal all the way "DOWN" to apply brake. See Figure 2.12.

IMPORTANT: Depressing the Clutch/Brake Pedal half way down activates the clutch to allow transmission shifting.

TO APPLY BRAKES,
PUSH CLUTCH/BRAKE
PEDAL ALL THE
WAY DOWN

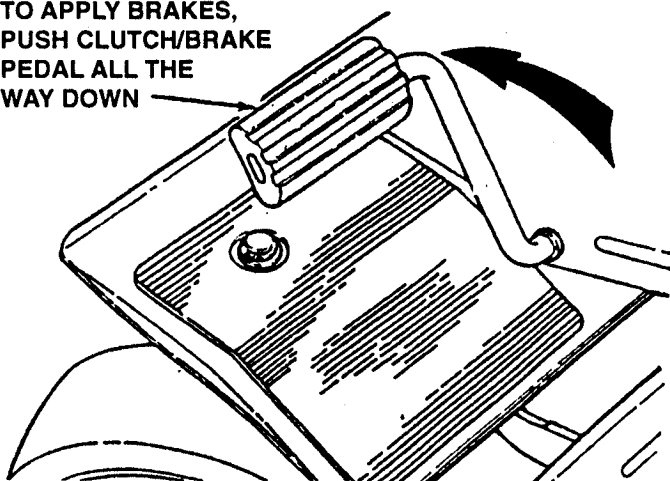


FIGURE 2.12

2.4.3. MOWER BLADE

Stop mower blade by removing feet from blade pedals or moving blade lever rearward to the "OFF" position. See Figure 2.12.

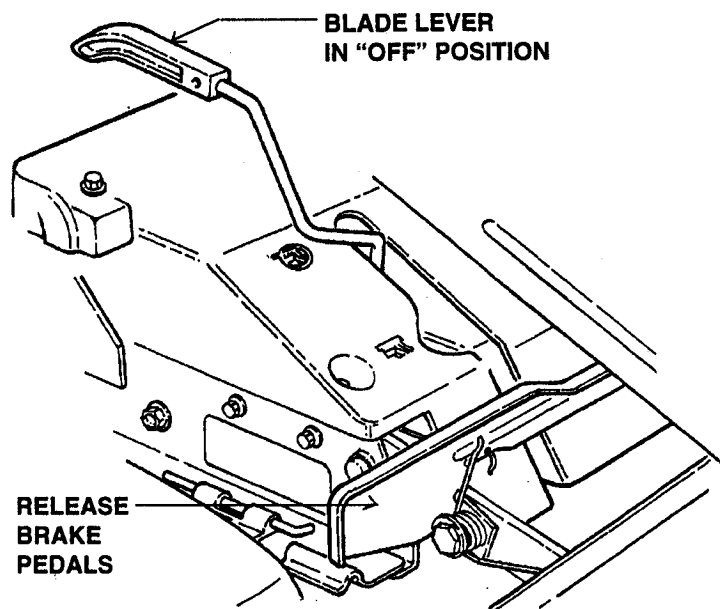


FIGURE 2.13



CAUTION

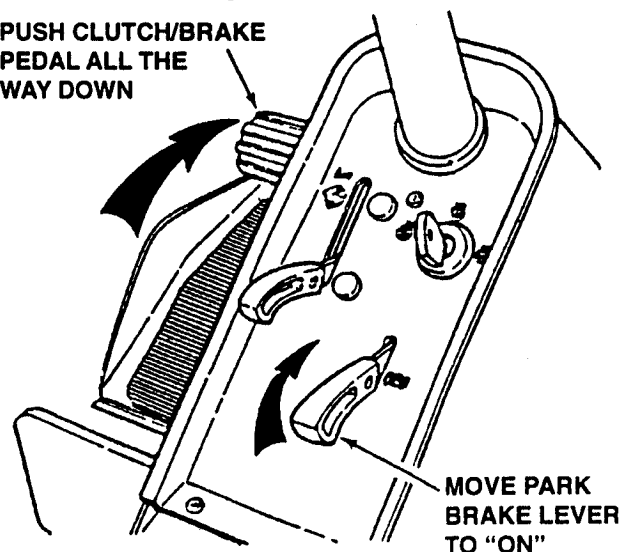


Once blade is disengaged, it should come to a complete stop in 3 seconds or less. If the blade continues to rotate after 3 seconds, the blade brake should be adjusted. See 4.2.2., **BLADE BRAKE ADJUSTMENT** on Page 14 for adjustment procedures or return machine to dealer for adjustment. **DO NOT CONTINUE** to operate mower until blade brake is properly adjusted.

2.4.4. PARK BRAKE

1. Engage park brake by pushing Clutch/Brake Pedal "DOWN" and moving the park brake lever to the "ON" POSITION. While holding the park brake lever "ON", release Clutch/Brake Pedal to set park brake. See Figure 2.14.

PUSH CLUTCH/BRAKE
PEDAL ALL THE
WAY DOWN



MOVE PARK
BRAKE LEVER
TO "ON"

FIGURE 2.14

Section 2 - OPERATING INSTRUCTIONS

2.4.4. PARK BRAKE (Continued)

2. Release park brake by pushing down on the Clutch/Brake Pedal to release park brake lever. See Figure 2.15.

PUSH CLUTCH/BRAKE
PEDAL ALL THE
WAY DOWN

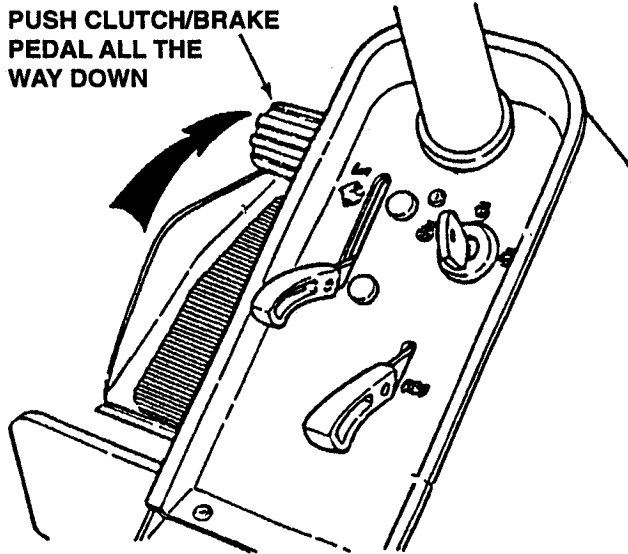


FIGURE 2.15

2.4.5. CUTTING HEIGHT ADJUSTMENT

1. Adjust cutting height as desired to any one of six positions using deck lift lever. When in desired height of cut, release latch, then try to move deck lift lever to ensure lift lever latch is fully engaged. See Figure 2.16.

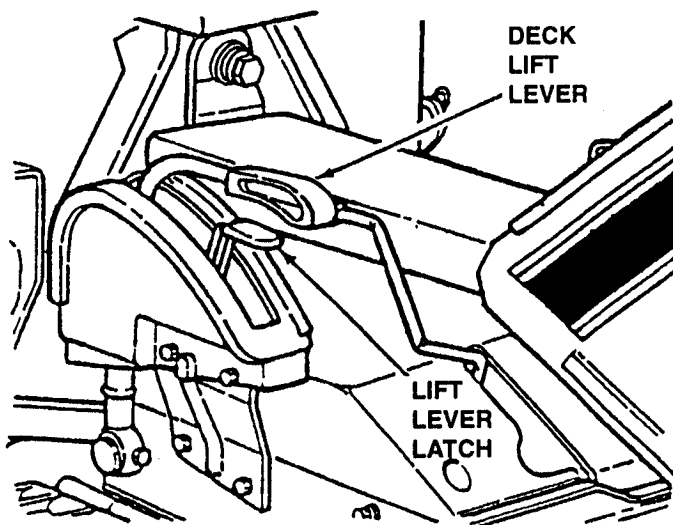


FIGURE 2.16

2.4.6. WHEEL DRIVE

1. With engine running, adjust engine speed control to "FAST" position.
2. Depress Clutch/Brake Pedal.
3. Place transmission shift lever in the notch for the desired speed.
4. Release Clutch/Brake Pedal to start desired direction.
5. During forward motion, the transmission shift lever may be placed in any desired forward speed without depressing the Clutch/Brake Pedal.

NOTE: For best cutting results, move the transmission shift lever into a slow forward speed and the engine speed control to a fast position. This combination will allow the mower blades to lift the grass while cutting smoothly and evenly.



WARNING



Never park the Rear Engine Rider on an incline or embankment.

Section 3 - MAINTENANCE

3.1 INTRODUCTION

To retain the quality of the Rear Engine Rider, use genuine SNAPPER replacement parts only. Contact a local SNAPPER dealer for parts and service assistance. For the correct part or information for a particular Rear Engine Riding Mower, always mention the model and serial number. SNAPPER recommends returning the Rear Engine Rider to an authorized SNAPPER dealer annually for inspection and addition of any new devices which might upgrade the safety of the Rear Engine Rider. For the nearest SNAPPER dealer in your area, 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.

3.2 SERVICE - AFTER FIRST 5 HOURS

CAUTION
Before performing any service or maintenance procedures, always remove key from ignition switch, remove spark plug wire from spark plug and secure spark plug wire away from spark plug.

3.2.1. CHANGE ENGINE OIL

1. Change engine oil as follows:
 - a. Place bricks or wooden blocks under the front wheels to lower rear of engine.
 - b. Loosen or remove oil fill cap on engine.
 - c. Loosen oil drain plug.
 - d. Place a 2 quart minimum capacity container under the end of the oil drain. Open oil drain. See Figure 3.1 for oil drains used on the Rear Engine Riders.

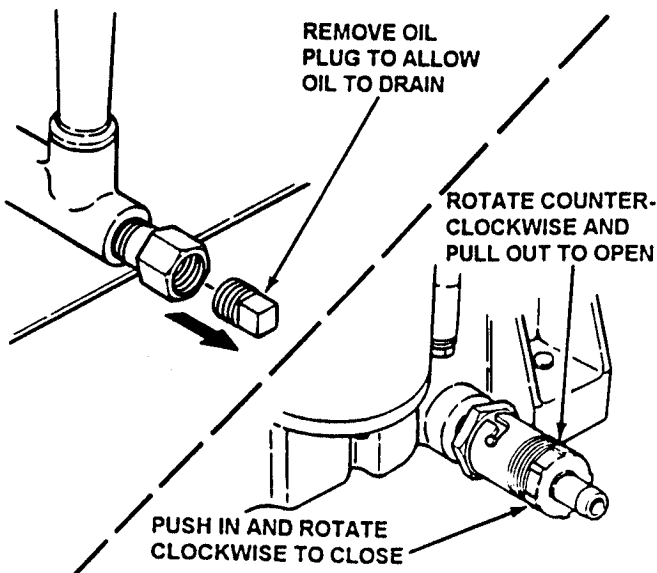


FIGURE 3.1

- e. After all the oil has drained, close the drain and wipe up any oil that may have spilled. See Figure 3.1.

- f. Fill engine crankcase with new oil. Refer to your engine owner's manual for oil specifications.
- g. Change oil filter on 14HP engines at every oil change. Refer to your engine owner's manual for service instructions.

3.2.2. CHECK MOWER BLADE

1. Check fuel level in tank. If over 3/4 full, remove tank (See Page 12 for gas tank removal). If 3/4 or less, proceed to next step.
2. Close vent on fuel filler cap.
3. Apply park brake.
4. Carefully stand Rear Engine Rider on rear bumper. It may be necessary to have help.

CAUTION
Remove the battery if the Rear Engine Rider will be left standing on the rear bumper for longer than 2 hours. See 4.6.1., BATTERY REMOVAL on Page 20. Never use a cutting blade that shows signs of excessive wear or damage on the Rear Engine Rider. Refer to 4.4, MOWER BLADE REPAIR/REPLACEMENT on Page 18 for proper blade inspection and service procedures.

5. Check torque of blade mounting bolts. As necessary, torque to 30 to 40 ft. lbs. See Figure 3.2.
6. Check blade for sharpness, wear and damage. See 4.4.1., BLADE WEAR LIMITS on Page 18.

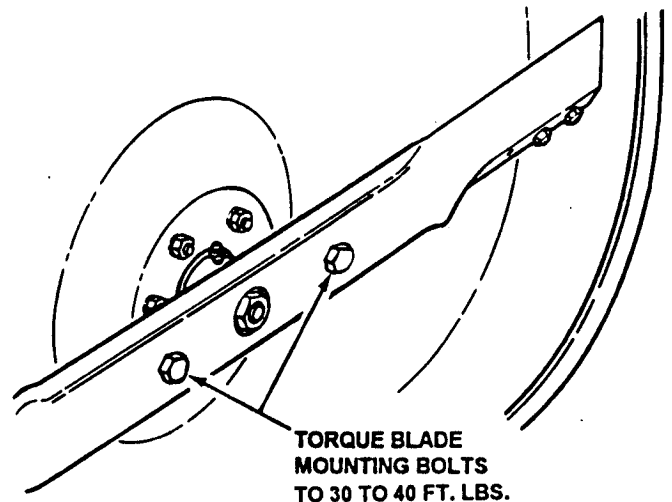


FIGURE 3.2

7. Check blade for straightness. Refer to 4.2.3., ADJUSTING MOWER BLADE on Page 14.

Section 3 - MAINTENANCE

3.2.3. CHECK MOWER DRIVE BELT

1. Drive Belt Cover Removal

- Lower deck to lowest setting.
- Remove four self-tapping screws, two on each side of mower drive belt cover. See Figure 3.3.
- Slide cover back and rotate out on left side of mower deck.

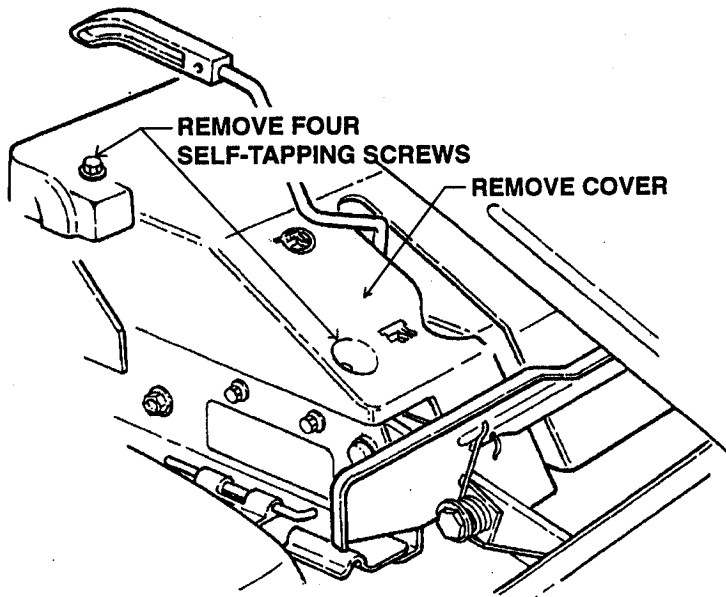


FIGURE 3.3

2A. Checking Belt Tension

- On 25" models, with engine "OFF" and deck in 3rd height of cut position, move blade lever back to the "ON" position and depress blade pedals.
- Measure the belt spacing at idler pulley. See Figure 3.4. The belt spacing should be 1 1/4" but no less than 1".

25" MODELS

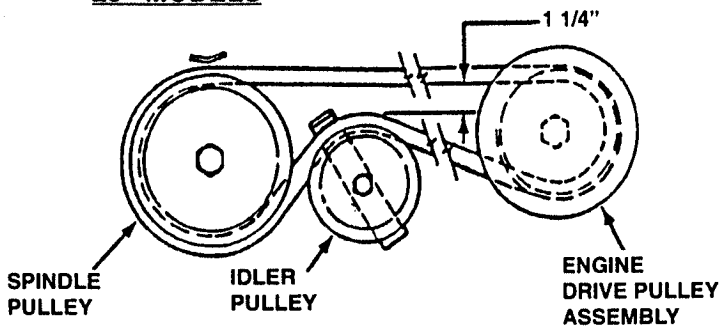


FIGURE 3.4

- If the measurement is less than 1", the belt tension should be adjusted. See 4.2.1., MOWER DRIVE BELT ADJUSTMENT on Page 13.

2B. Checking Belt Tension

- On 28", 30", and 33" Models, check belt for excessive wear or damage and replace if necessary; there are no adjustments on these models. See Figure 3.5.

28", 30", & 33" MODELS (Dual Idler System)

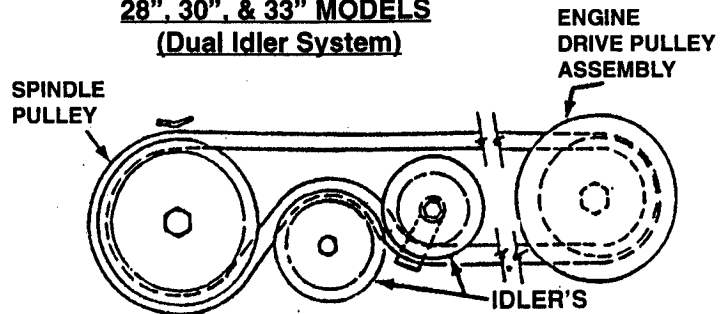


FIGURE 3.5

3.3 AFTER EVERY 25 OPERATING HOURS

3.3.1. ENGINE

1. Engine Oil

Change engine oil. Refer to 3.2.1., CHANGE ENGINE OIL on Page 8. Refer to Engine Owner's Manual for oil specifications.

2. Air Filter

Refer to Engine Owner's Manual for service instructions.

3.3.2. MOWER COMPONENTS

1. Mower Drive Belt

Check belt for proper tension. Refer to 3.2.3., CHECK MOWER DRIVE BELT.

2. Mower Blade

Check blade for sharpness, wear, damage, and torque. See 4.4, MOWER BLADE REPAIR/REPLACEMENT on Page 18.

3. Mower Deck Levelness

Check mower deck for proper levelness. Adjust as required. See 4.2.4., MOWER DECK ADJUSTMENT - LEVELNESS on Page 15.

4. Cleaning Mower Deck

- Remove key from ignition switch.
- Remove spark plug wire and secure away from spark plug.
- Check fuel level in tank. If over 3/4 full, remove tank (See Page 12 for gas tank removal). If 3/4 or less, proceed to next step.

(Continued on Next Page)

Section 3 - MAINTENANCE

3.3.2. MOWER COMPONENTS (Continued)

- d. Close vent on fuel filler cap.
- e. Carefully stand Rear Engine Rider on rear bumper.
- f. Clean underside of mower deck, removing all accumulation of grass clippings and debris.
- g. Lower Rear Engine Rider to ground and clean top of deck, removing all grass clippings and debris.

5. Mower Blade Spindle - Lubrication

With Rear Engine Rider standing on rear bumper, lubricate spindle with one shot of general purpose grease from grease gun.

IMPORTANT: If the Rear Engine Rider will be on its rear bumper for longer than two hours, remove the battery. See 4.6.1., BATTERY REMOVAL on Page 20.

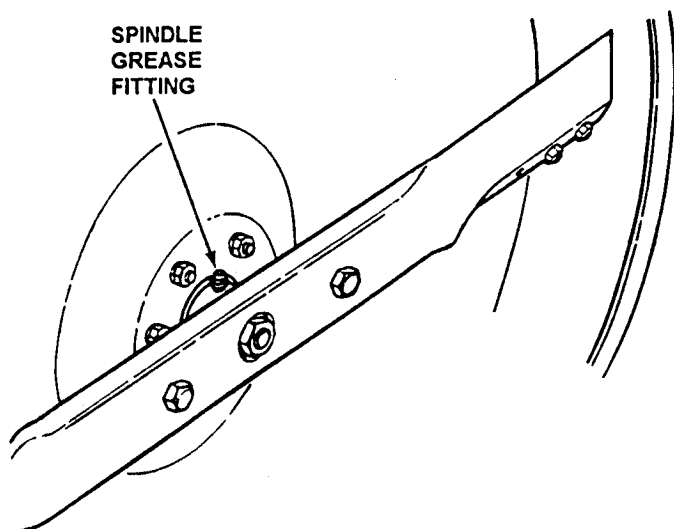


FIGURE 3.6

6. Mower Deck Linkage - Lubrication

Lubricate all mower deck linkage pivot points with a light coat of motor oil.

3.3.3. REAR ENGINE RIDER - LUBRICATION

1. Front Wheel Bearings

Lubricate front wheel bearings with five shots of general purpose grease, from grease gun. See Figure 3.7.

2. Left Rear Axle Bearing

On Rear Engine Riders powered by 14HP engines, the left rear axle does not require lubrication. However, those powered by 8HP, 9HP, or 12HP engines, the left rear axle bearing requires 3 shots of SNAPPER "00" general purpose grease from grease gun. See Figure 3.8.

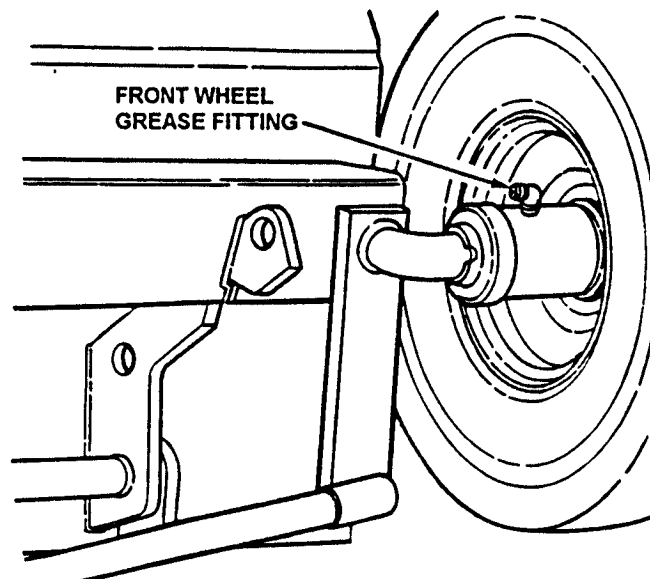


FIGURE 3.7

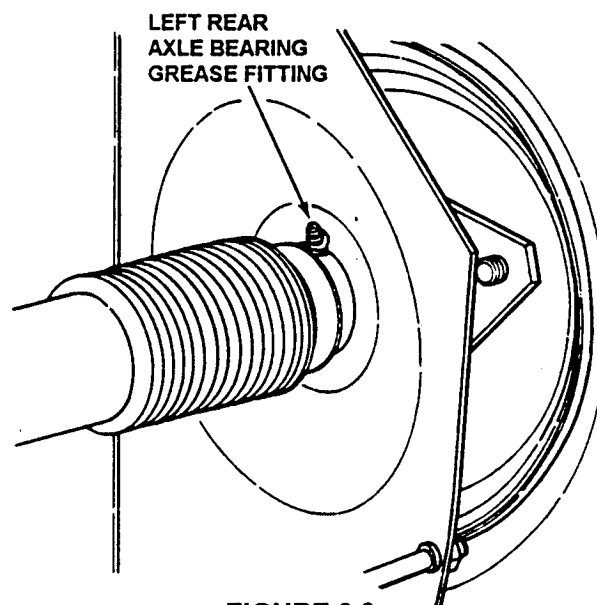


FIGURE 3.8

3. Right Rear Axle Bearing

The right rear axle bearing is lubricated by the differential lubricant.

4. Differential

- a. Stand rear engine rider on its rear bumper and check the fill/level plug, for cracks and wear. Replace fill/level plug if signs of wear are visible.
- b. To check lubricant, remove fill/level plug and visually inspect for lubricant on the internal parts of the differential. If no lubricant is visible on the internal parts of the differential, add "00" grease as needed. See Figure 3.9.

IMPORTANT: Overfilling of the differential with lubricant will cause lubricant to leak onto drive components of the Rear Engine Rider.

Section 3 - MAINTENANCE

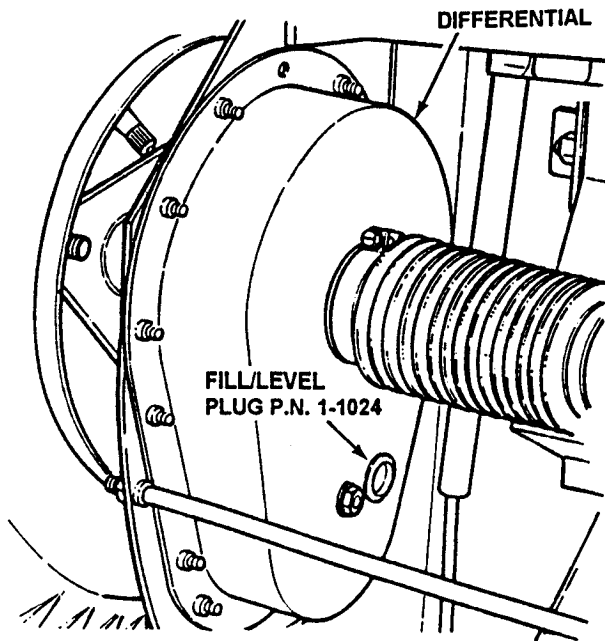


FIGURE 3.9

5. Chain Case

- Check fill/level plug for damage. If signs of wear or cracks are visible, replace plug with new plug. See Figure 3.10.
- To check lubricant in chain case, remove fill/level plug and look for lubricant on the internal components of the chain case. If no lubricant is visible, add SNAPPER "00" grease as needed. See Figure 3.10.

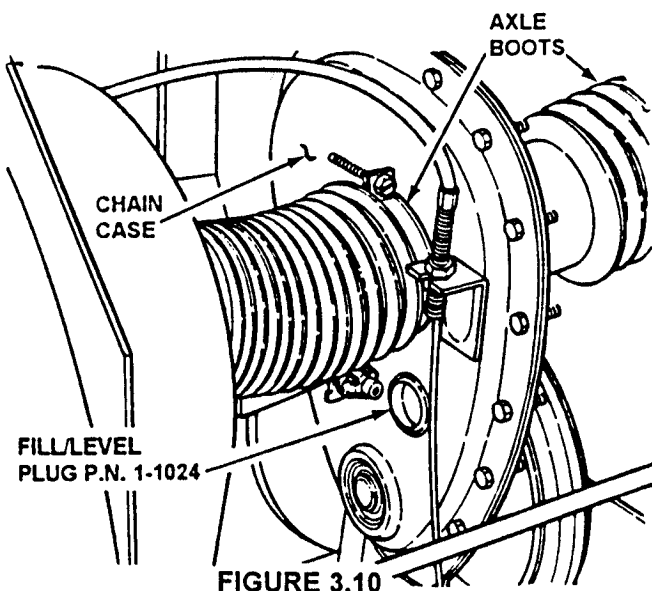


FIGURE 3.10

6. Axle Boots

Check axle boots for signs of wear or cracks. If cracks or wear are visible, contact a SNAPPER dealer for service. Refer to Figure 3.10.

3.4 ANNUALLY (END OF EACH SEASON)

Perform all maintenance as described in on Page 9.
NOTE: For complete maintenance schedule, see Page 22.

3.4.1. ENGINE

- Service engine according to engine owner's manual.

3.4.2. FUEL FILTER

Service fuel filter as instructed below, on **COLD ENGINE ONLY!**

IMPORTANT: To stop flow of fuel, tank may be removed from bracket and set on the floor so the fuel level will be below the filter. See Page 12 for gas tank removal.

- Remove hose clamps from fuel filter.
- Remove fuel lines from filter. Discard filter.
- Install new fuel filter. See Figure 3.11.
- Reinstall fuel tank into bracket.

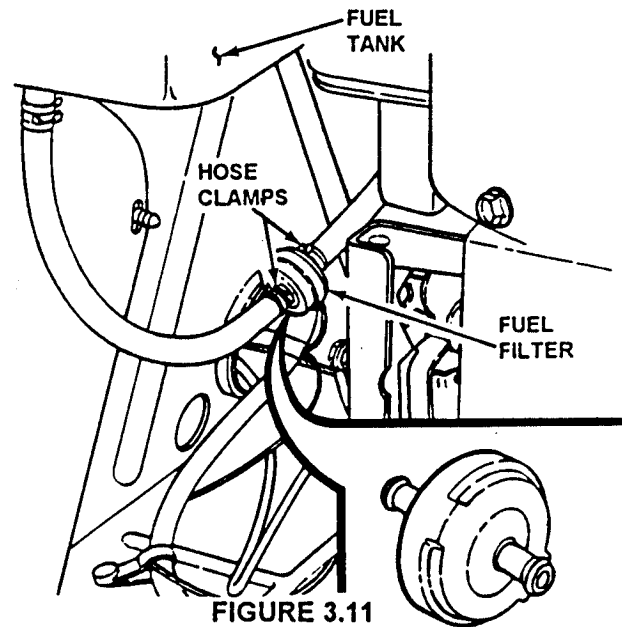


FIGURE 3.11

3.4.3. MOWER DECK

- Clean all grass clippings and debris from deck.
- Perform maintenance and lubrication as described in 3.3 on Page 9.

3.5 EVERY TWO YEARS

In addition to regular maintenance, the following components of the Rear Engine Rider should be carefully inspected every two years for wear or damage. Replace worn or damaged parts with genuine SNAPPER replacement parts available from an authorized SNAPPER dealer.

3.5.1. All bushings and pivot areas.

3.5.2. Check both front wheel king pins.

(Continued on Next Page)

Section 3 - MAINTENANCE

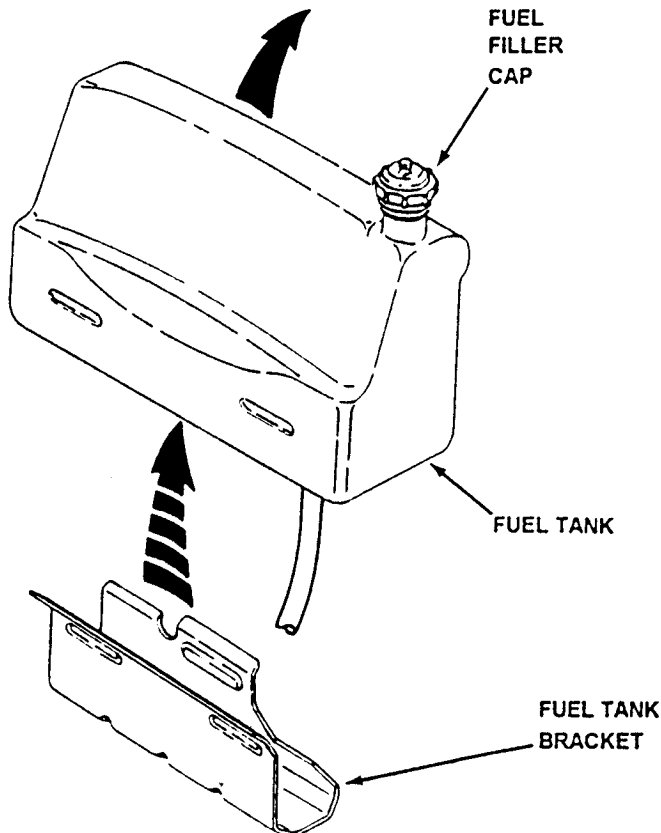
3.5 EVERY TWO YEARS

- 3.5.3. Transmission shift lever and detent.
- 3.5.4. Clutch disc.
- 3.5.5. Clutch Yoke (See Figure 4.18 on Page 18).
- 3.5.6. Mower deck linkage and pivot areas.

3.6 STORAGE (OUT OF SEASON)

If desired, the Rear Engine Rider can be stored on the rear bumper. Perform the following procedures to insure the Rear Engine Rider will operate properly when taken out of storage.

- 3.6.1. Thoroughly clean the Rear Engine Rider by removing all grass clippings and debris.
- 3.6.2. Perform maintenance and lubrication as described in 3.3 on Page 9.
- 3.6.3. Drain fuel from fuel tank.
- 3.6.4. Start engine and allow it to run until engine runs out of fuel. This allows the carburetor and fuel system to remain clean during storage.
- 3.6.5. Remove battery. See 4.6.5., BATTERY STORAGE on Page 21.
- 3.6.6. Close vent on fuel filler cap.
- 3.6.7. Carefully stand Rear Engine Rider on rear bumper in desired location for storage.



REMOVING FUEL TANK FROM REAR ENGINE RIDER

CAUTION
Before performing any service or maintenance procedures, always remove key from ignition switch, remove spark plug wire from spark plug and secure spark plug wire away from spark plug.

Before removing fuel tank from rear engine rider, move rider outdoors where fumes can be easily dissipated. Removal of the tank is most easily accomplished from the left side of the rear engine rider by pulling the tank straight up and away from the fuel tank bracket. After holding the fuel tank in your hands, carefully remove the fuel filler cap and pour remaining fuel in an approved container.

Section 4 - ADJUSTMENTS & REPAIR



CAUTION



Before performing any service or maintenance procedures, always remove key from ignition switch, remove spark plug wire from spark plug and secure spark plug wire away from spark plug.

4.1 ENGINE ADJUSTMENTS & REPAIR

Refer to the engine owner's manual for those adjustments and/or repairs that can be made by the owner.

4.2 MOWER DECK & COMPONENT ADJUSTMENTS

The following mower deck and component adjustments and repairs can be made by the owner. However, if there is difficulty in achieving these adjustments and repairs, it is recommended that these repairs be made by an authorized SNAPPER dealer.

4.2.1. MOWER DRIVE BELT ADJUSTMENT (FOR 25" MODELS)

1. Remove mower drive belt cover. Refer to 3.2.3., CHECK MOWER DRIVE BELT on Page 9.
2. Move blade lever up and over to the "ON" position.
3. Place deck cutting height in the 3rd position. Measure the belt spacing at idler pulley. The distance should measure 1-1/4" but no less than 1". See Figure 4.1.

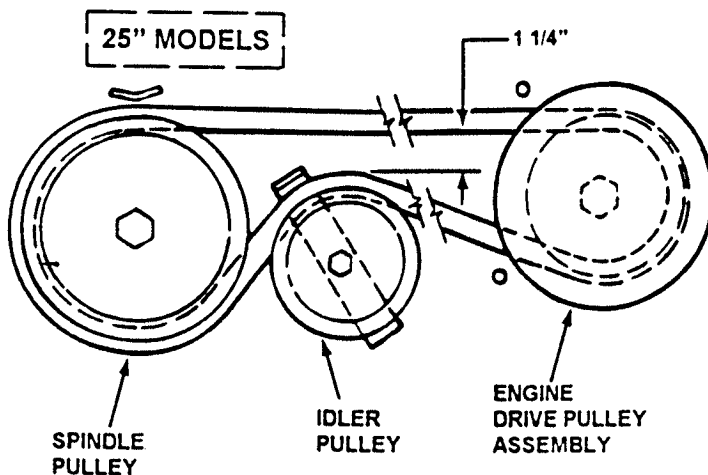


FIGURE 4.1

4. If the distance is less than 1", adjust belt tension as follows:

- a. Remove hairpin and flat washers from pivot stud. See Figure 4.2.
- b. Pull front frame forward until distance between belt, with blade lever "ON", measures 1-1/4".

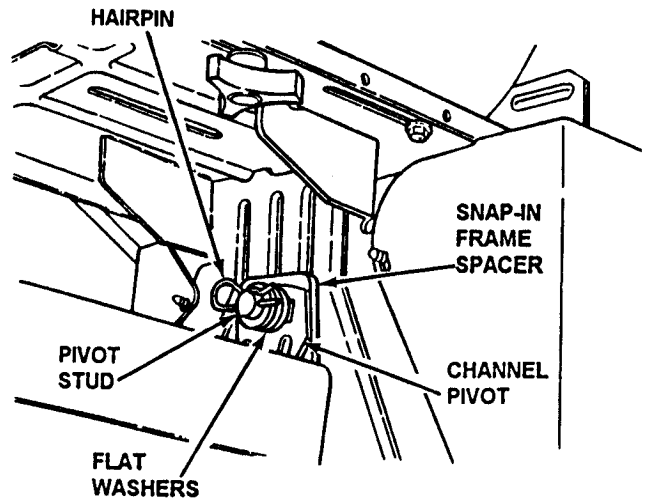


FIGURE 4.2

- c. Install required number of snap-in frame spacers behind channel pivot until the 1-1/4" distance between belt is maintained. See Figure 4.3.

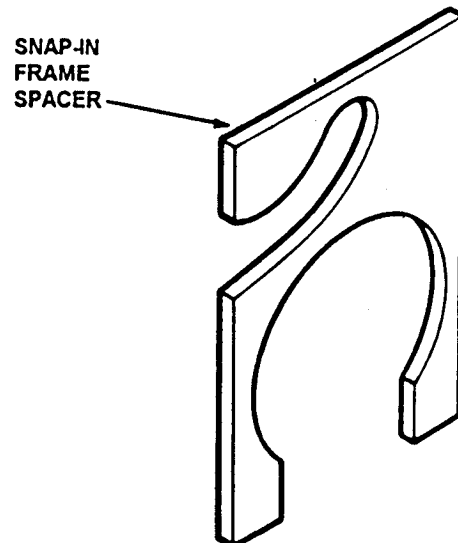


FIGURE 4.3

- d. Reinstall the required amount of flat washers removed in step "a." and install hairpin. Refer to Figure 4.2. Retain any remaining spacers for readjustment when a new belt is installed.
5. On 28", 30", and 33" models, the mower drive belt DOES NOT require adjustment. If the belt does not drive blade properly, replace belt.

IMPORTANT: The SNAPPER Rear Engine Rider 25" Model is shipped with additional spacers specifically designed for the Rear Engine Rider. Should additional spacers be required, contact an authorized SNAPPER dealer.

Section 4 - ADJUSTMENTS & REPAIR



CAUTION



Before performing any service or maintenance procedures, always remove key from ignition switch, remove spark plug wire from spark plug and secure spark plug wire away from spark plug.

4.2.2. BLADE BRAKE ADJUSTMENT

1. Remove Belt Cover; See Section 3, 3.2.3, on Page 9.
2. Pull blade engagement lever to the engaged position. The idler should move at least 1/2 inch from disengaged to engaged position. If this measurement is adequate but blade stop time is more than 3 seconds increase blade brake tension as follows.
3. Remove cotter pin from clevis pin and washer that secures anchor plate to blade brake. The factory positions the clevis pin in the middle hole. The rear hole increases tension on blade brake. The front hole decreases tension on blade brake.

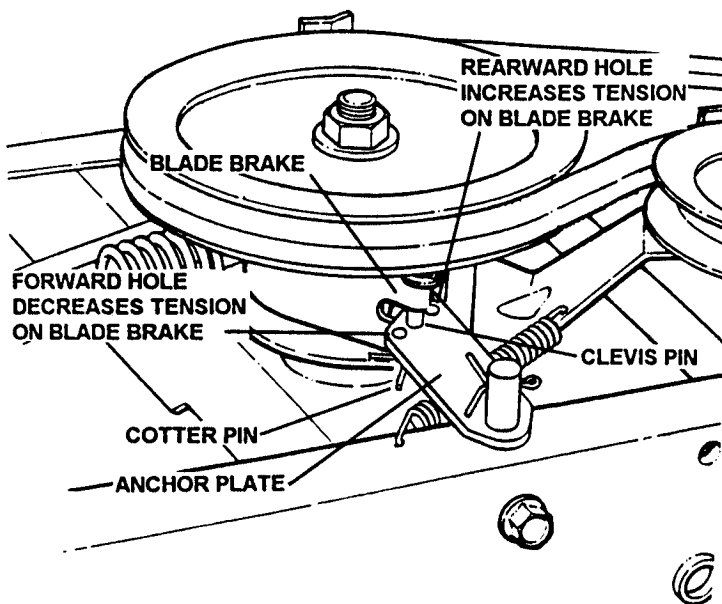


FIGURE 4.6

4. Reinstall clevis pin, washer and a new cotter pin.

IMPORTANT: The idler arm engagement spring should extend to at least 3/4" when blade engagement lever is in the engaged position. If measurement is less than 3/4" the blade belt will have to be replaced. See Section on blade belt replacement. The idler arm spring and cable should have looseness when the blade engagement lever is in the disengaged position.

4.2.3. ADJUSTING MOWER BLADE

Follow procedures for standing Rear Engine Rider on rear bumper.

IMPORTANT: If the Rear Engine Rider will be on its rear bumper for longer than two hours, remove the battery. See 4.6.1., BATTERY REMOVAL on Page 20.

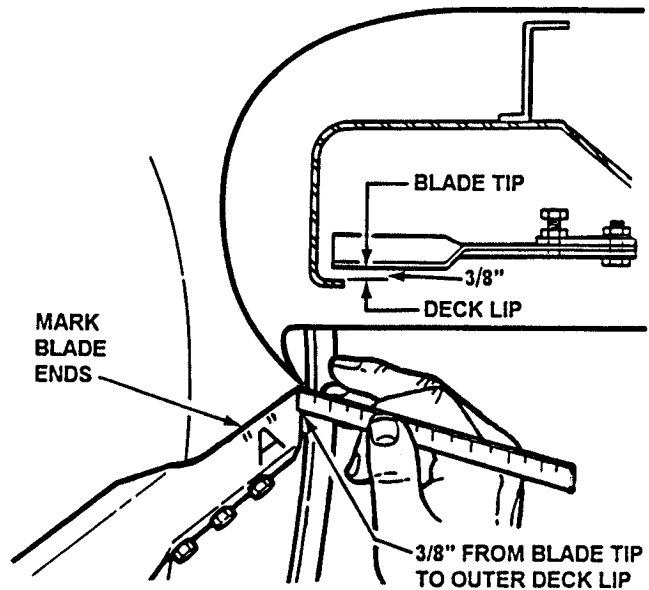


FIGURE 4.8

1. Select a point on the deck and mark for reference.
2. Mark blade tips as "A" and "B".
3. Rotate blade until blade tip "A" is at deck reference mark.
4. Measure the distance between deck lip and blade tip. Note the measurement. See Figure 4.8.

NOTE: On 25", 28", and 33" decks, the measurement between the blade tip and deck lip should be 5/16". On 30" decks, the measurement between the blade tip and deck lip should be 1/8" to 1/4" in front and 3/8" in rear.

5. Repeat steps 2 and 3 with blade tip "B".
6. If measurement between blade tips and deck are different and there is more than 1/16" difference between blade tip measurements, adjust blade as follows:
 - a. Loosen jam-nuts on blade bar.
 - b. Adjust jack screws "IN" or "OUT" until blade tip measurements are within 1/16" of each other and blade tips are 3/8" away from deck lip. See Figure 4.9.
 - c. Tighten jam-nuts.

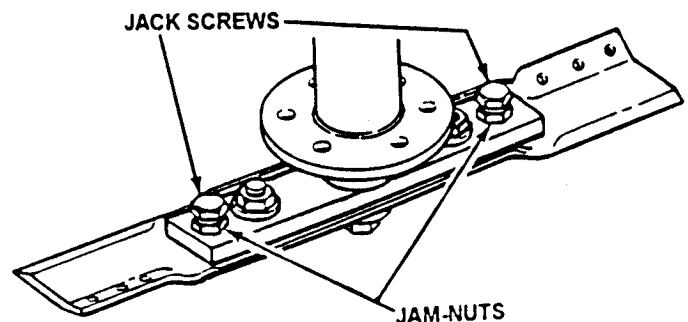


FIGURE 4.9

Section 4 - ADJUSTMENTS & REPAIR

4.2.4. MOWER DECK ADJUSTMENT (LEVELNESS)

1. Side-To-Side

Before making deck leveling adjustments, check the tire pressure. Front tires 15 psi, rear tires 10 psi. If tires are properly inflated and mowing is still uneven, adjust side-to-side deck levelness as follows:

- Place Rider on a smooth level surface.
- Turn engine off and remove key, remove spark plug wire from spark plug and secure wire away from plug.
- Place a piece of angle iron, pipe, or similar object under center of deck at the rear.
- Remove rear hanger chains and allow center, rear of deck to rest on angle iron.
- Measure the distance from blade tips to floor. If the measurement is within $1/8"$ from side-to-side, the deck attitude is satisfactory. If difference from side-to-side is greater than $1/8"$, continue with adjustment.
- Loosen the shoulder bolt retaining the left side of blade pedals.

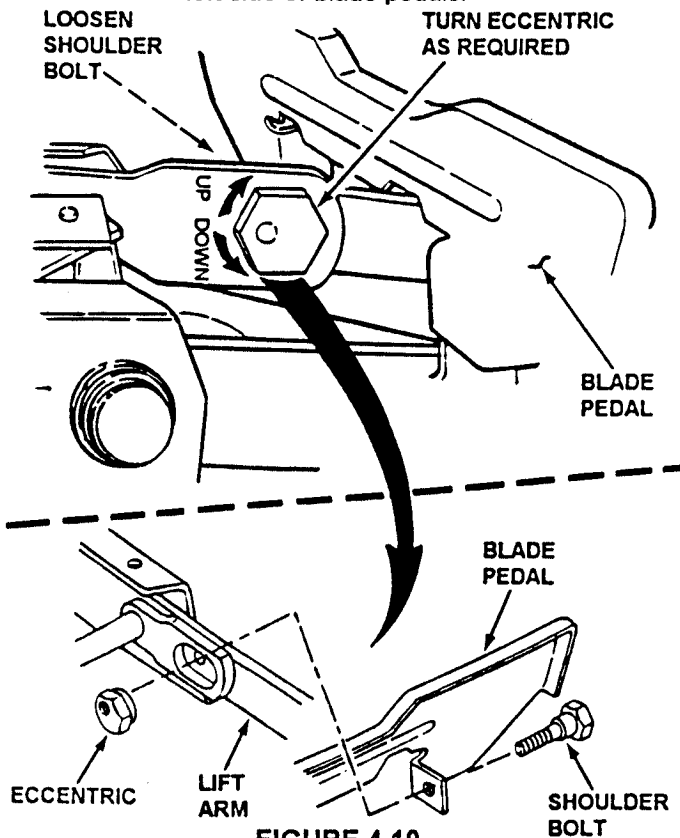


FIGURE 4.10

- Turn eccentric "UP" or "DOWN" as required until blade tips are within $1/8"$ of each other. See Figure 4.10.
- Tighten shoulder bolt loosened in step "f".
- Readjust rear hanger chain pivots to align with holes in support brackets. Refer to Figure 4.11.
- Remove angle iron, pipe, or similar object and proceed to check front to rear levelness.

2. Front to Rear Levelness

(25", 28", & 33" Decks)

With the Rear Engine Rider on a smooth, level surface, rotate blade until blade tips are at front and rear of deck. Measure the distance from blade tips to floor. The distance should be the same, or the rear $1/8"$ lower than the front. If the rear blade tip is higher or is more than $1/8"$ lower than the front, proceed with adjustment.

- Remove rear hanger chains.
- Turn each hanger pivot the same number of rotations on the eye-bolt to raise or lower the rear of the deck. See Figure 4.11.

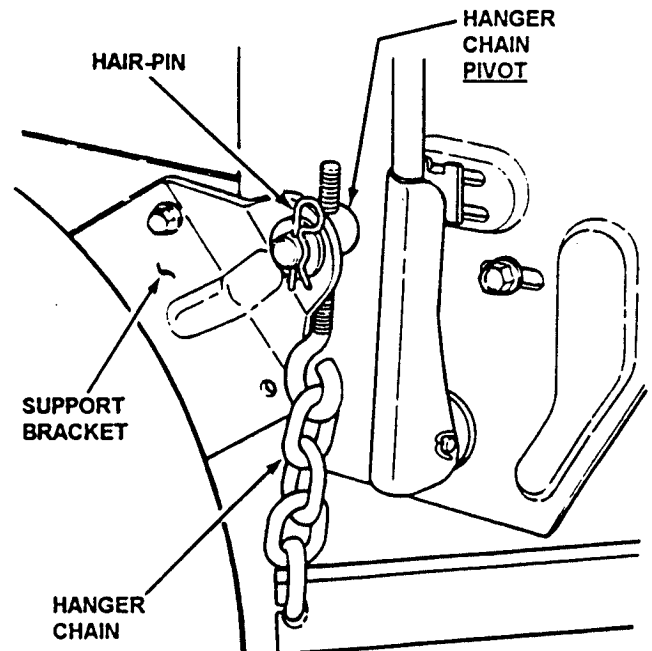
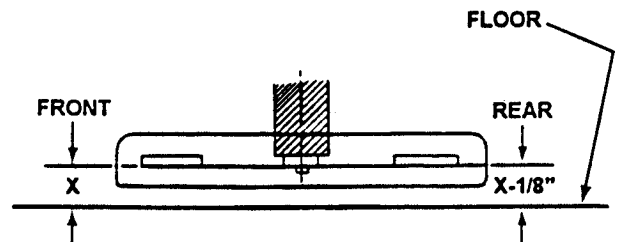


FIGURE 4.11

- Reinstall rear hanger chains and measure blade tips again.
- Repeat steps "a" through "c" until proper levelness is obtained.

NOTE: For 30" cutting decks, repeat section 2., Front to Rear Levelness, except, rear of blade should be the same or $1/8"$ higher than the front.

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4.2.5. MOWER DECK TIMING ROD ADJUSTMENT

The mower deck timing rod is pre-adjusted at the factory. It is set to maintain the deck in the same attitude through all heights of cut. If suspecting the timing rod requires adjustment, contact an authorized SNAPPER dealer for service. See Figure 4.12.

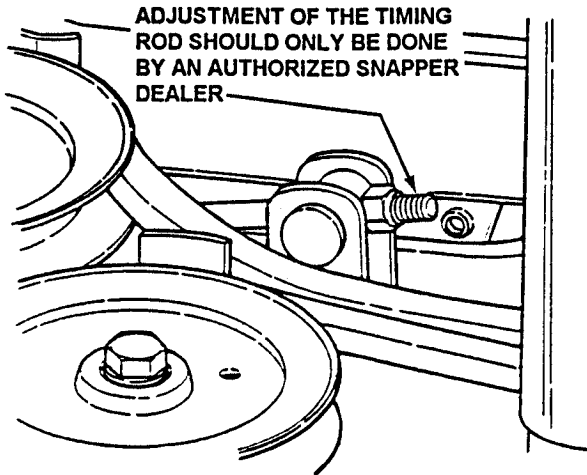


FIGURE 4.12

4.2.6. CUTTING HEIGHT ADJUSTMENT

The deck cutting height range may be adjusted to alter the maximum and minimum cutting deck lift lever.

CAUTION

Before attempting any adjustments or repairs, turn engine "OFF", remove key, remove spark plug wire from spark plug and secure wire away from plug.

1. Place the Rear Engine Rider on a smooth, level surface.
2. Move deck lift lever to the lowest cutting position.
3. Loosen the two lift quadrant mounting bolts and eccentric bolt. See Figure 4.13.

SHOWN WITH COVER REMOVED

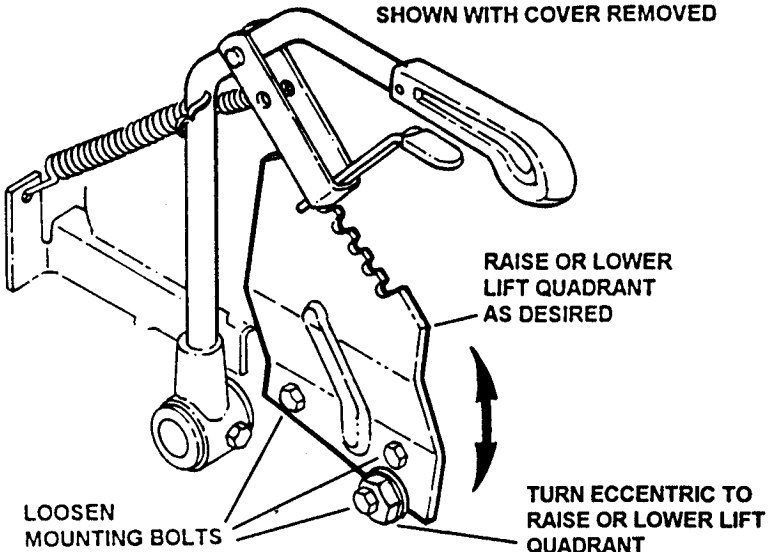


FIGURE 4.13

4. Rotate eccentric bolt to raise or lower desired cutting height range.

5. Tighten lift quadrant mounting bolts and eccentric bolt.

NOTE: Lift quadrant in lowest position gives 1" to 3 1/2" cutting height range. Lift quadrant in highest position gives 1-1/2" to 4" cutting height range.

4.3 REAR ENGINE RIDER DRIVE COMPONENTS

The following drive components may be adjusted by the owner. However, it is recommended that all adjustments to the Rear Engine Rider be made by an authorized SNAPPER dealer.

4.3.1. CLUTCH - STARTING MOTION ADJUSTMENT

If the Rear Engine Rider clutch is too positive or slips excessively when the clutch/brake pedal is released, adjust as follows:

1. Remove key from ignition switch.
2. Remove spark plug wire from spark plug and secure wire away from plug.
3. Close vent on fuel filler cap.
4. Carefully stand Rear Engine Rider on rear bumper.
5. Locate yoke arm between chain case and differential.
6. Move spring to first hole (for positive clutch action) to 4th hole (to increase clutch slippage). See Figure 4.14.

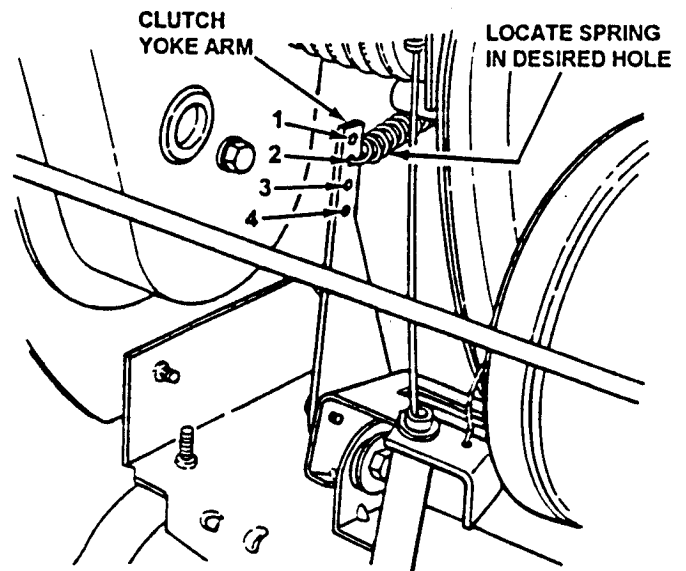


FIGURE 4.14

4.3.2. CLUTCH - SHIFTING ADJUSTMENT

With engine running, depress clutch/brake pedal and move transmission shift lever into a forward speed. If shifting is difficult or will not shift, adjust the clearance between clutch disc and drive disc as follows:

Section 4 - ADJUSTMENTS & REPAIR



CAUTION



Before attempting any adjustments or repairs, stop the engine, remove the key, remove the spark plug wire from the spark plug, and secure spark plug wire away from spark plug.

1. Follow procedures for standing Rear Engine Rider on rear bumper. Refer to Section 3.2.2.
2. Depress clutch/brake pedal all the way down. Move and hold the park brake lever in the "ON" position, then release clutch/brake pedal to lock the park brake. See Figure 4.17.
3. Move the transmission shift lever to reverse.
4. Visually inspect to make certain there is clearance between clutch disc and drive disc. See Figure 4.15.

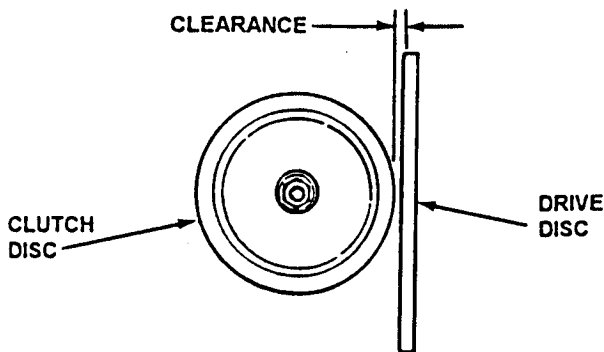


FIGURE 4.15

5. If no clearance is visible, release park brake by depressing clutch/brake pedal to release park brake lever.
6. Pull clutch/brake pedal towards operator's seat and slide one additional ferrule toward end of cable through the eye in the clutch/brake pedal arm. See Figure 4.16.

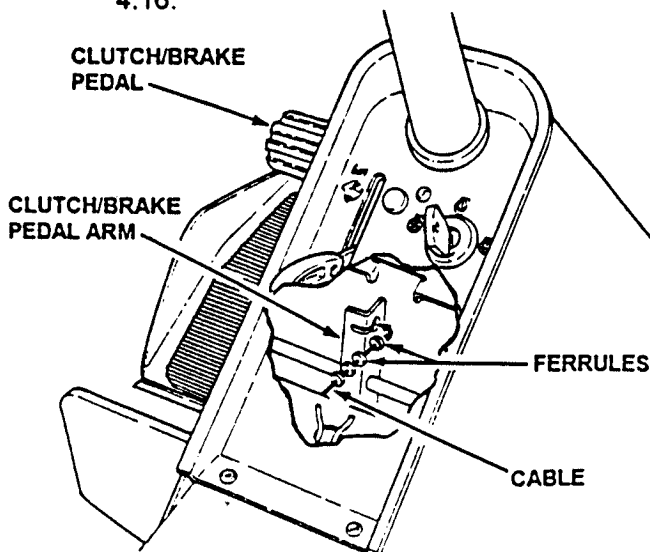


FIGURE 4.16

7. Engage park brake as described in Step 2.
8. Check for clearance between clutch disc and driven disc. If no clearance is visible, repeat steps 5 and 6 until clearance is visible. Refer to Figures 4.15 and 4.16.

NOTE: If adjustment cannot be completed or made because all ferrules have been used, contact an authorized SNAPPER dealer for service.

4.3.3. WHEEL BRAKE ADJUSTMENT

Test the wheel brake on a dry concrete surface. When properly adjusted, the Rear Engine Rider will stop within 3 feet from fastest speed. If stopping distance is more than 3 feet, the wheel brake should be adjusted as follows:

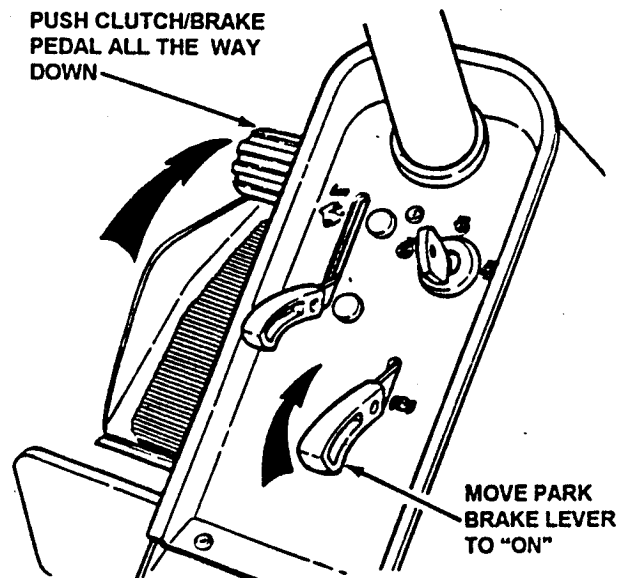


FIGURE 4.17

1. Follow procedures for standing Rear Engine Rider on rear bumper. Refer to Section 3.2.2.
2. Depress clutch/brake pedal all the way down. Move and hold the park brake lever in the "ON" position and release the clutch/brake pedal to lock the park brake. See Figure 4.17.

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3. Measure the distance between end of clutch/brake cable and bottom of housing. Measurement should be no less than 1/2" and no greater than 3/4". See inset, Figure 4.18.

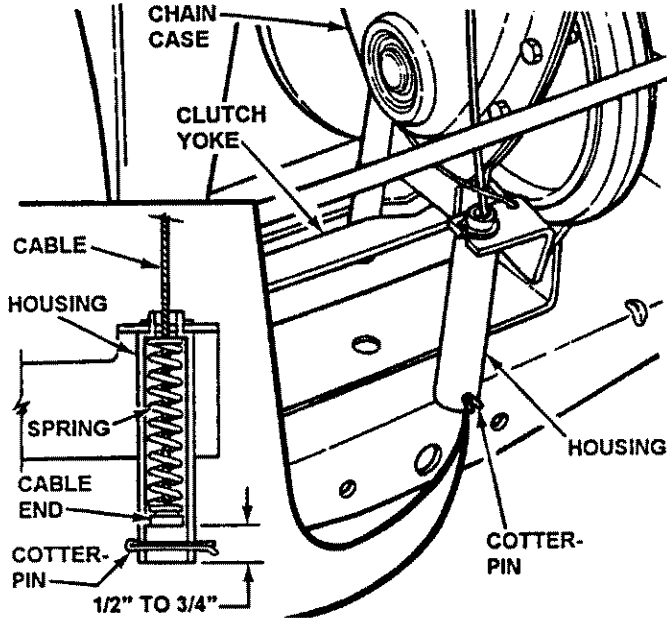


FIGURE 4.18

4. If measurement is less than 1/2" or greater than 3/4", loosen the two jam-nuts (shown in Figure 4.19) holding the clutch/brake cable to the chain case bracket.

5. Adjust cable up or down using the jam-nuts to obtain a distance of 1/2" to 3/4" between end of clutch/brake cable (adjustment shown in inset, Figure 4.18) and bottom of housing. Refer to Figure 4.18.

6. After adjustment is complete, securely tighten cable jam-nuts.

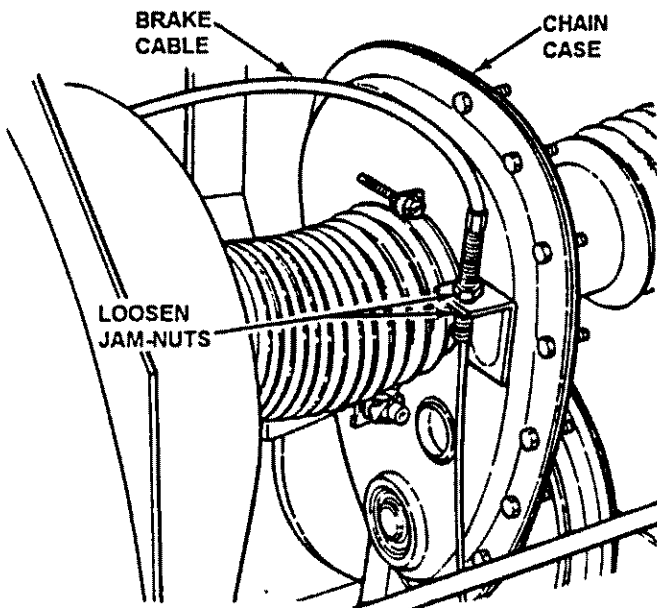


FIGURE 4.19

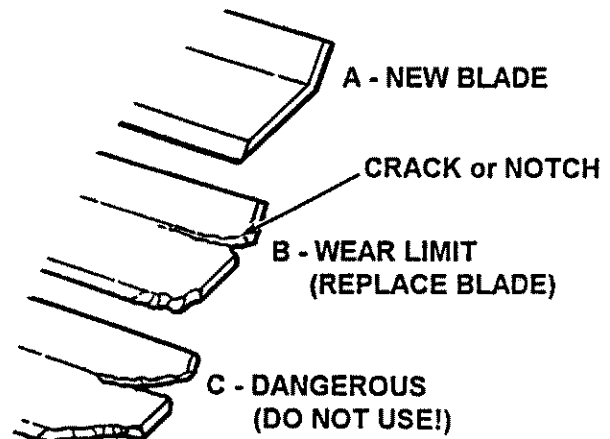


FIGURE 4.20

4.4 MOWER BLADE REPAIR/REPLACEMENT

4.4.1. BLADE WEAR LIMITS

1. Inspect blade frequently for signs of excessive wear or damage. See Figure 4.20.

CAUTION

Before performing any service to blade, turn engine OFF, remove key, remove spark plug wire from spark plug, and secure spark plug wire away from spark plug. Never use a cutting blade that shows signs of excessive wear or damage on the Rear Engine Rider. Refer to Figure 4.20.

4.4.2. BLADE SHARPENING

1. Follow procedures for standing Rear Engine Rider on rear bumper. Refer to Section 3.2.2.
2. Remove blade. See Figure 4.21.

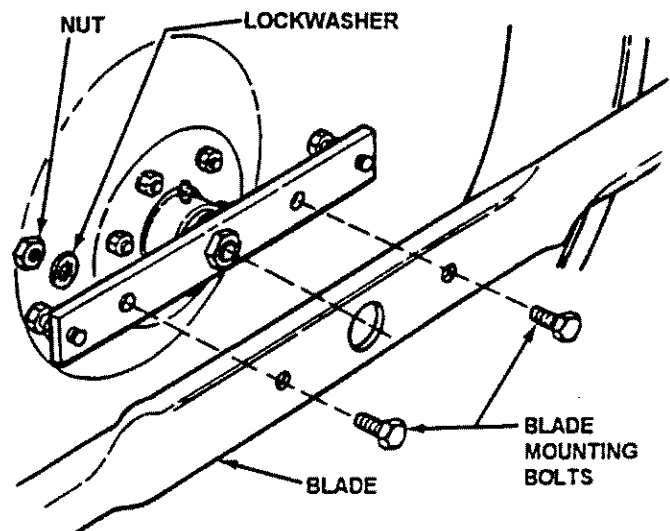


FIGURE 4.21

Section 4 - ADJUSTMENTS & REPAIR

3. Inspect condition of blade. Refer to Figure 4.20.

4. If blade is in good condition, sharpen at 22 to 28 degrees. DO NOT sharpen beyond existing cutting edge. See Figure 4.22.

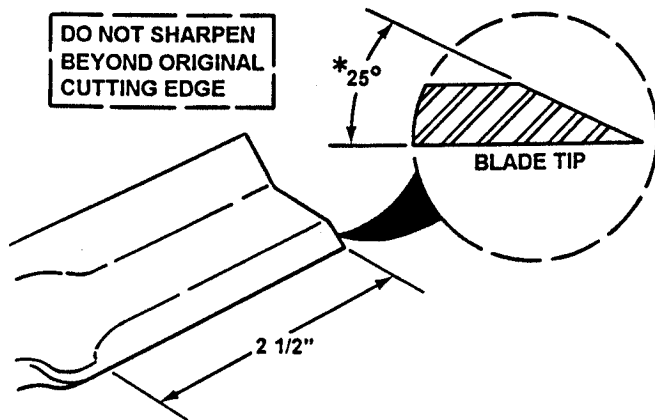


FIGURE 4.22

5. Check blade balance after sharpening. If necessary, correct blade balance by grinding the heavy end of blade.

6. Reinstall blade. Refer to Figure 4.21. Torque blade mounting bolts to recommended range of 30 to 40 ft. lbs.

CAUTION

Before attempting any adjustments or repairs, STOP the engine, remove the key, remove the spark plug wire from the spark plug and secure wire away from plug. On Rear Engine Riders equipped with a grass catcher attachment, the air lifts should be replaced when the blade is replaced.

4.5 MOWER DRIVE BELT REPLACEMENT

Inspect mower drive belt as described in 3.2.3., CHECK MOWER DRIVE BELT on Page 9. Replace belt if signs of excessive wear and/or damage are present.

4.5.1. BELT REMOVAL

1. Remove mower drive belt cover. Refer to Section 3.2.3.
2. Remove old belt.

4.5.2. BELT REPLACEMENT

1. Remove idler. See Figure 4.23.
2. Move transmission shift lever to the neutral (N) position.
3. Follow procedures for standing the Rear Engine Rider on rear bumper. Refer to Section 4.2.3.
4. Route new belt through engine belt guide (engine belt guide shown in Figure 4.24) to engine pulley. Route belt as shown for the individual models shown in Figure 4.23.

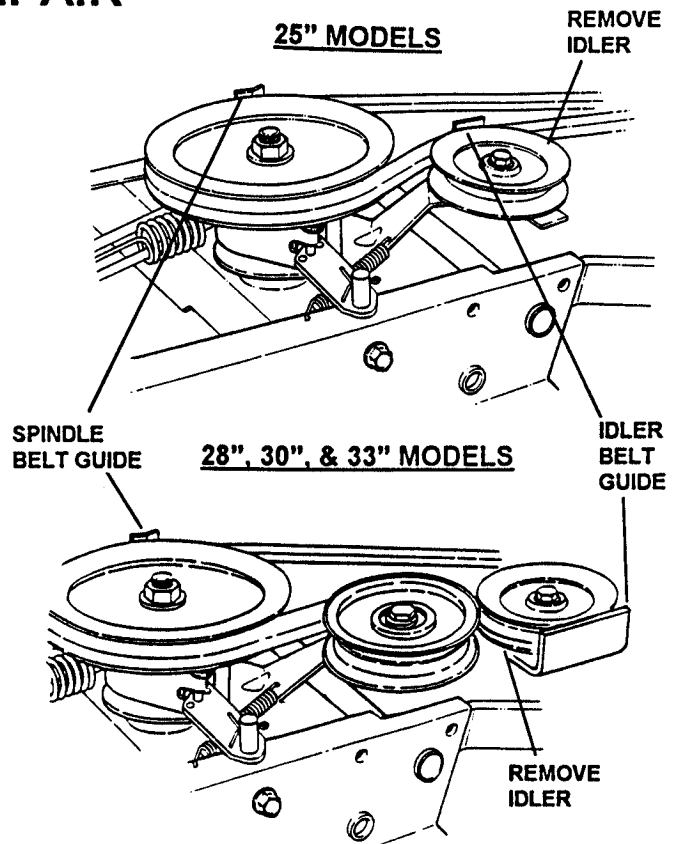


FIGURE 4.24

5. Rotate clutch yoke (clutch yoke shown in Figure 4.18) out with your hand and work belt between drive and driven discs.

6. Move transmission shift lever to the #5 position and place belt over drive disc and into drive pulley belt groove. See Figure 4.24.

7. Route belt onto spindle pulley. Make sure belt is inside spindle belt guide and idler belt guide.

8. Reinstall idler removed in Step 1. The idler belt guide will self locate on tab. Tighten bolt securely.

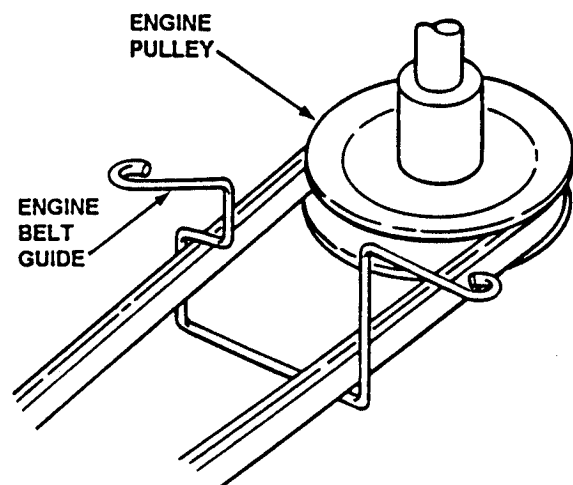


FIGURE 4.24

Section 4 - ADJUSTMENTS & REPAIR

4.5.2. BELT REPLACEMENT (Continued)

9. Adjust belt guide. See Figure 4.25 for proper belt-to-belt guide clearances.

10. Check mower drive belt tension and adjust if necessary. Refer to 4.2.1., MOWER DRIVE BELT ADJUSTMENT on Page 13.

11. Reinstall mower drive belt cover.

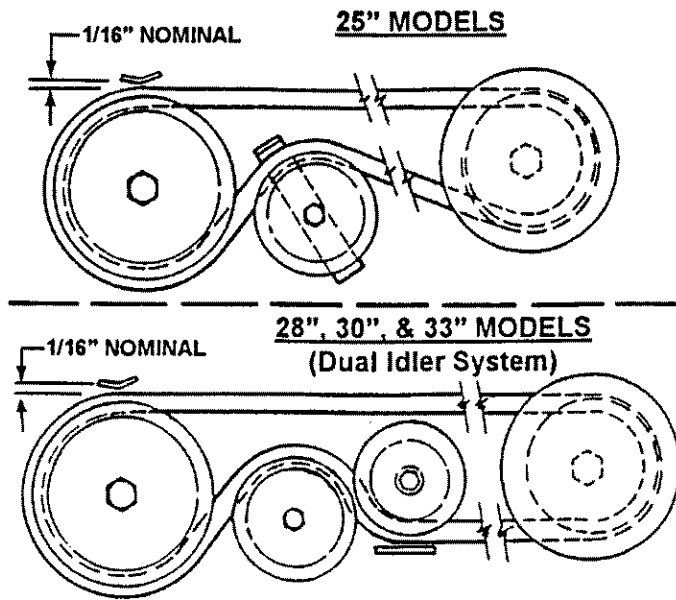


FIGURE 4.25

CAUTION
Never attempt to service or charge the battery while it is installed on the Rear Engine Rider.

4.6 BATTERY

4.6.1. BATTERY REMOVAL

1. Carefully pull each side of battery cover away from ratchet fasteners and remove cover. See Figure 4.26.

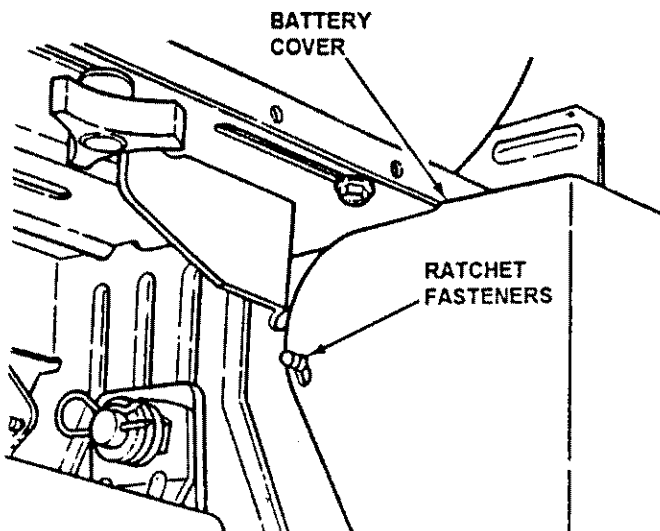


FIGURE 4.26

2. Remove the hair pin and swivel from the deck support to allow clearance for battery removal.

3. Slide battery from battery box to gain access to terminal cables.

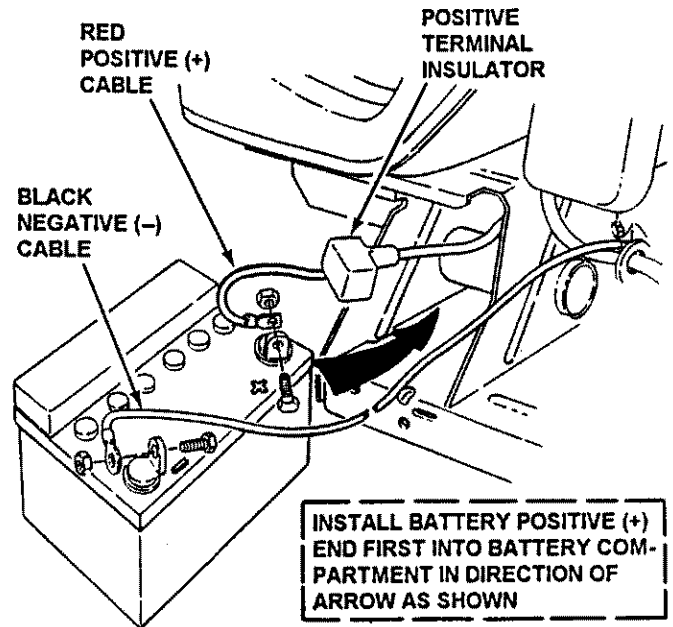


FIGURE 4.27

4. Observe and note cable positions on battery. See Figure 4.27.

5. Disconnect cables from battery terminals, disconnecting BLACK (Negative) cable first. Retain mounting bolts and nuts.

CAUTION
Cables must be connected to battery terminals in the proper position as show in Figure 4.27. Never attempt to charge battery while installed on the Rear Engine Rider. Never use "BOOST" chargers on the battery.

4.6.2. BATTERY INSTALLATION

1. Slide battery partially into battery housing.
2. Connect positive (+) cable (red) first, from wiring harness to the positive terminal (+) on battery using bolt and nut provided in hardware bag. Connect negative (-) cable (black) last, to negative terminal (-) on battery using bolt and nut. Apply a small amount of grease over terminals to prevent corrosion.
3. Insert battery completely into battery housing.
4. Reinstall battery cover. Refer to Figure 4.26.
5. Reinstall swivel and hair pin for deck support.

(Continue to next page for battery service)

Section 4 - ADJUSTMENTS & REPAIR



CAUTION



The electrolyte (acid) produces a highly explosive gas. Keep all sparks, flame and fire away from area when charging battery or when handling electrolyte or battery. Electrolyte (acid) is a highly corrosive liquid. Wear eye protection. Wash affected areas immediately after having eye or skin contact with electrolyte (acid). Battery acid is corrosive. Rinse empty acid containers with water and mutilate before discarding. If acid is spilled on battery, bench, or clothing, etc., Flush with clear water and neutralize with baking soda. Never attempt to charge battery while installed on the RIDER. Never use "BOOST" chargers on the battery.

4.6.3. BATTERY SERVICE

1. Remove battery. See Section on Battery Removal
2. Place battery in a well ventilated area on a level surface.
3. Using distilled water, refill cells as required to cover cell plates of which can also be visualized through the plastic battery case.
4. With cell caps removed, connect battery charger to battery terminals. Red to positive (+) terminal and black to negative (-) terminal.
5. Slow charge battery at 1 amp for 10 hours.
6. If battery will not accept charge or is partially charged after 10 hours of charging at 1 amp, replace with new battery.

4.6.4. BATTERY STORAGE

If mower is to be stored out of season on its rear bumper, it is recommended the battery be removed, charged and stored.

1. Remove battery. (See Section on Battery Removal)
2. Perform battery service.
3. Bring battery to full charge, if required.
4. Store battery in an area away from the RIDER on a wood surface. DO NOT STORE BATTERY ON A CONCRETE SURFACE.

4.6.5. BATTERY TESTING

There are two types of battery tests: Unloaded and Loaded. The unloaded test is the procedure that will be discussed. It's the simplest and most commonly used. An unloaded test is made on a battery without discharging current. To perform unloaded testing, check charge condition using either a hydrometer or voltmeter.

1. Using a voltmeter, voltage readings appear instantly to show the state of charge. Remember to hook the positive lead to the battery's positive terminal, and the negative lead to the negative terminal.

2. A hydrometer measures the specific gravity of each cell. The specific gravity tells the degree of charge; generally, a specific gravity of about 1.265 to 1.280 indicates full charge. A reading of 1.230 to 1.260 indicates the battery should be charged. The chart on the next page shows the charge level as measured by syringe float hydrometer, digital voltmeter and five ball hydrometer.

4.6.5. NEW BATTERY PREPARATION

1. Remove battery from carton.
2. Place battery in a well ventilated area on a level non-concrete surface.
3. Remove battery cell caps. Fill cells as required with electrolyte (purchased separately) to proper level. Fill to 3/16" above cell plates. Filling battery with electrolyte will bring the battery to 80% charged state.
4. With cell caps removed, connect battery charger to battery terminals; RED to positive (+) and BLACK to negative (-) terminal.

IMPORTANT: 3/16" above cell plates is the recommended level. However do not try to measure this dimension. Never place anything in battery other than specified electrolyte.



CAUTION



Never attempt to charge battery while installed on the Riding Mower. Never use "BOOST" chargers on the battery. DO NOT OVERFILL!

5. Slow charge the battery at 1 amp for 2 hours to bring the battery to full charge.
6. After charging, check level of electrolyte and add as needed to bring level to 3/16" above cell plates.
7. Reinstall cell caps.
8. Remove the hair pin and swivel from the deck support to allow clearance for battery installation.
9. Slide battery partially into battery housing.
10. Connect positive (+) cable (red) first, from wiring harness to the positive terminal (+) on battery using bolt and nut provided in hardware bag. Connect negative (-) cable (black) last, to negative terminal (-) on battery using bolt and nut. Apply a small amount of grease over terminals to prevent corrosion.
11. Insert battery completely into battery housing.
12. Reinstall battery cover. Refer to Figure 4.26.
13. Reinstall swivel and hair pin for deck support.



CAUTION



Shield the positive terminal with terminal cover located on battery harness. This prevents metal from touching the positive terminal which could cause sparks.

(Battery Testing Chart on Next Page)

Section 4 - ADJUSTMENTS & REPAIR

4.6.5. BATTERY TESTING

Methods of Checking Battery Condition			
State of Charge	Syringe Hydrometer	Digital Voltmeter	Five Ball Hydrometer
100% Charged w/ Sulfate Stop	1.280	12.80v	Five Balls Floating
100% Charged	1.265	12.60v	Four Balls Floating
75% Charged	1.210	12.40v	Three Balls Floating
50% Charged	1.160	12.10v	Two Balls Floating
25% Charged	1.120	11.90v	One Ball Floating
0% Charged	Less than 1.100	Less than 11.80v	Zero Balls Floating

ACCESSORIES

PART NUMBER	DESCRIPTION
6-0197	Load Carrier Kit
6-0441	Commercial Axle Bearing Kit
6-0517	Wheel Weight
6-0697	Dump Cart
6-0737	Gauge Wheel Kit
6-0941	Single Bag Catcher (25" Models)
6-0943	Single Bag Catcher (28" & 33' Models)
6-0942	Single Bag Catcher (30" Models)
6-0946	Twin Bag Catcher (28" & 33' Models)
6-0947	Bag-N-Wagon (28" & 33' Models)
6-0984	Wagon Cover Kit
6-1049	Recycling Kit (25" Model)
6-1253	Ninja Kit (28" Models)
6-1254	Ninja Kit (30" Models)
6-1255	Ninja Kit (33" Models)
6-1190	Weight Kit
6-0948	Thatcherizer

MAINTENANCE SCHEDULE

SUBJECT	SERVICE TO BE PERFORMED	REFERENCE PAGES	EACH USE	5 HOURS	25 HOURS	50 HOURS	100 HOURS	EACH SEASON
Engine	Check Oil Level	Page 4	X					
Engine	Initial Oil Change	Page 8		X				
Engine	Periodic Oil Change	Page 15				X*		
Air Pre-Cleaner	Service Sponge Pre-Cleaner Element	Engine Manual			X**			
Air Cleaner	Replace Element	Engine Manual.			X**			
Spark Plug	Replace Plugs	Engine Manual.					X	
Fuel Filter	Replace Filter	Page 11					X	
Engine Cooling System	Clean Shrouds & Fins	Engine Manual					X**	
Battery	Check Electrolyte	Page 22			X			X
Battery	Charge Battery	Page 22						X
Tires	Check Pressures	Page 4	X					
Drive Belts	Check For Wear And Tension	Pages 9, 13, 19			X			X
Mower Blades	Check For Wear And Damage	Pages 8, 14, 18			X			
Mower Deck	Clean Debris Accumulation	Page 9	X		X			X
Lubrication Points	Grease or Oil	Pages 10 & 11			X			X
Lubricate Chain Case & Transmission	Check Grease Level	Pages 10 & 11					X	X
Blade Stop Time	Check blade stopping for proper operation	Pages 7 & 14	X					X
Clutch/Brake System	Check Clutch/Brake for proper operation	Page 5 & 14	X					X

*Change oil every 25 hours when operating under heavy load or high temperatures.

**Clean more often under dusty conditions or when air debris is present

SNAPPER®

5 - 2 YEAR LIMITED WARRANTY

COMPONENT PARTS - 5 YEARS

For five (5) years from purchase date for original purchaser's residential non-commercial* use, **Snapper**, through any **Snapper** dealer will replace free of charge any part or parts found upon examination by the factory to be defective in material or workmanship or both.

ENGINE - 2 YEARS

The engine on this product is warranted by the engine manufacturer for two (2) years for the original purchaser's non-commercial* use. (See engine manufacturer's warranty statement for details.)

BATTERIES

Batteries are warranted separately and have one (1) year prorated warranty with a ninety (90) day free replacement period.

DISCLAIMER OF WARRANTIES

Implied warranties including those of merchantability and fitness for a particular purpose, are limited to five (5) years from purchase date for the original purchaser's residential, non-commercial use, for ninety (90) days from purchase date for the original purchaser's commercial, rental, or other non-residential use, and to the extent permitted by law, any and all implied warranties are excluded. This is the exclusive remedy. Liabilities for consequential damages, under any and all warranties are excluded.

Some states do not allow limitations on how long an implied warranty lasts, or do not allow the exclusion or limitation of incidental or consequential damages, so the above limitation or exclusion may not apply to you.

All transportation cost incurred by the purchaser in submitting material to a **Snapper** dealer for replacement under this warranty must be paid by the purchaser.

This warranty does not apply to parts that have been damaged by accident, alteration, abuse, improper lubrication, normal wear (things such as belts, blades, driven disc or any other normal wear item). This warranty does not cover tune-ups or other adjustments required in the normal use of the product.

There is no other express warranty.

This warranty gives you specific legal rights, and you may also have other rights which vary from state to state.

*Any use other than on the purchaser's residential lawn constitutes commercial use.

WARNING: THE USE OF REPLACEMENT PARTS OTHER THAN GENUINE SNAPPER PARTS MAY IMPAIR THE SAFETY OF SNAPPER PRODUCTS AND WILL VOID ANY LIABILITY AND WARRANTY BY SNAPPER ASSOCIATED WITH THE USE OF SUCH PARTS.

IMPORTANT: Please fill out the attached **SNAPPER** Product Registration Card immediately and mail to: **SNAPPER**, 535 Macon Rd., McDonough, Ga. 30253

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 4. **Results**
 5. **Discussion**
 6. **Conclusion**
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 160. **Figure 152**
 161. **Figure 153**
 162. **Figure 154**
 163. **Figure 155**
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 166. **Figure 158**
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 169. **Figure 161**
 170. **Figure 162**
 171. **Figure 163**
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 207. **Figure 199**
 208. **Figure 200**
 209. **Figure 201**
 210. **Figure 202**
 211. **Figure 203**
 212. **Figure 204**
 213. **Figure 205**
 214. **Figure 206**
 215. **Figure 207**
 216. **Figure 208**
 217. **Figure 209**

SERVICE NOTES

Lined area for service notes.

Safety Instructions & Operator's Manual for

SNAPPER®

**REAR ENGINE RIDING MOWER
SERIES 16**

⚠ WARNING: The engine exhaust from this product contains chemicals known to the State of California to cause cancer, birth defects or other reproductive harm.

SNAPPER® McDonough, GA., 30253 U.S.A.

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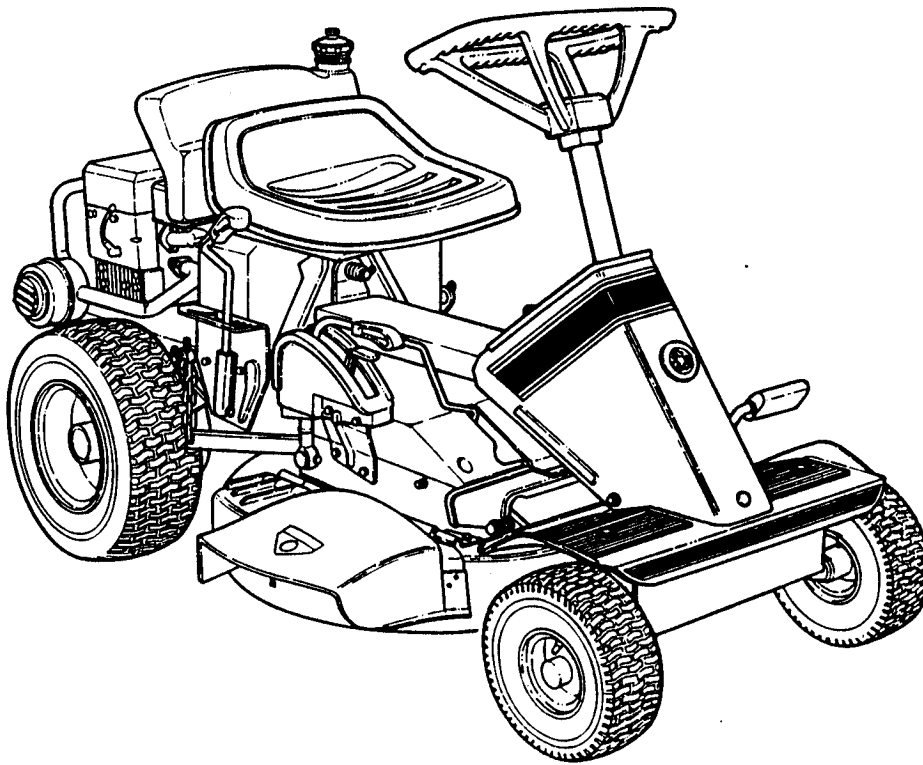
MANUAL No. 3-5620 (REV. 1, 9/97)

Printed in U.S.A.

Safety Instructions & Operator's Manual for

SNAPPER®

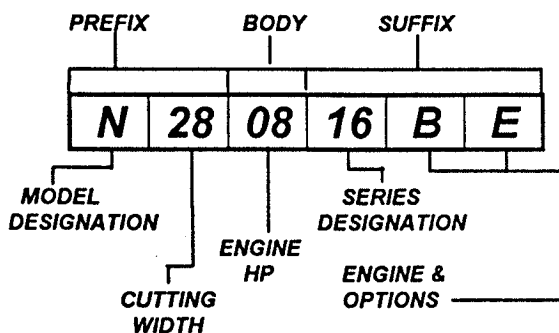
REAR ENGINE RIDING MOWER SERIES 16



MODELS

250816B
N250816B
250816BE
N250816BE
281016BE
N281016BE
301016BE
301216BE
331416BVE
331416KVE

MODEL NUMBER EXPLANATION



PREFIX EXPLANATION

N - California Model	25 - 25" Cutting Width 28 - 28" Cutting Width 30 - 30" Cutting Width 33 - 33" Cutting Width
----------------------	--

BODY EXPLANATION

08 - 8.0 HP Engine	12 - 12.0 HP Engine
10 - 10.0 HP Engine	14 - 14.0 HP Engine

SUFFIX EXPLANATION

16 - Series Designation	B - Briggs Engine V - Overhead Valve E - Electric Start
-------------------------	---

Thank you for buying a SNAPPER Product! Before operating your REAR ENGINE RIDER, read this manual carefully and pay particular attention to the "IMPORTANT SAFETY INSTRUCTIONS" on Page 2. Remember that all power equipment can be dangerous if used improperly. Also keep in mind that SAFETY requires careful use in accordance with the operating instructions and common sense!

IMPORTANT SAFETY INSTRUCTIONS

WARNING: This powerful cutting machine is capable of amputating hands and feet and can throw objects that can cause injury and damage! Failure to comply with the following **SAFETY** instructions could result in serious injury or death to the operator or other persons. The owner of the machine must understand these instructions and, furthermore, must allow only persons who understand these instructions to operate machine. Each person operating the machine must be of sound mind and body and must not be under the influence of any substance which might impair vision, dexterity, or judgment. If you have any questions pertaining to your machine which your dealer cannot answer to your satisfaction, call or write the Customer Service Department at SNAPPER, McDonough, Georgia 30253. Phone: (770) 954-2500.

PROTECTION FOR CHILDREN

1. **DO NOT** allow children in yard when machine is operated (even with the blade OFF).
2. **DO NOT** allow children to ride on machine or on attachments (even with the blade OFF).
3. **DO NOT** allow pre-teenage children to operate machine.
4. Only responsible teenagers or adults with mature judgement shall be allowed to operate machine and only under close supervision.

PROTECTION AGAINST TIPOVERS

1. **DO NOT** operate machine on slopes exceeding 15 degrees (27% grade).
2. On slopes above 10 degrees (18% grade), exercise extreme **CAUTION**. Turn blade OFF when traveling uphill, also reduce speed and avoid sharp turns.
3. Avoid uphill starts. If machine is stopped going uphill, turn blade OFF and back slowly down the slope.
4. **DO NOT** mow under any condition where traction or stability is doubtful without first test driving over the terrain with blade OFF.
5. Stay alert for holes and other hidden hazards. Keep away from ditches, washouts, culverts, fences and protruding objects.
6. **DO NOT** mow back and forth across face of slopes.
7. **KEEP A SAFE DISTANCE** (at least three feet) away from edge of ditches and other drop offs.

PREPARATION

1. Read this manual, get to know where all controls are located and practice how to use them before starting for the first time, and at the beginning of each season. Pay attention to Warning and Instructional Decals on engine and machine. Read and follow operator's manuals and instructions furnished with attachments.
2. Handle fuel with care! Never remove fuel cap while engine is running. Fill fuel tank outdoors only with engine STOPPED and cool. Clean spilled fuel from machine. Store fuel in approved container, out of the reach of children, in well ventilated, unoccupied building.
3. Only mature, responsible persons shall operate the machine.
4. Mount and dismount the machine from left side.
5. Wear appropriate protective clothing when mowing, such as, long pants and substantial footwear, not barefoot or with open sandals.
6. Practice operation of machine with blade OFF to learn controls and develop skill.
7. Persons under the influence of alcohol or drugs must **NOT** operate machine.

8. Check the area to be mowed and remove all objects such as doormats, sticks, toys, wire, rocks, and other objects that could cause injury if thrown by blade.
9. Know how to **STOP** blade and engine quickly in preparation for emergencies.
10. Keep people and pets a safe distance from machine.
11. Shields, deflectors, switches, blade controls and other safety devices must be in proper position and functional.

OPERATIONAL PRECAUTIONS

1. **STOP** blade, **STOP** engine and remove key when leaving machine.
2. **DO NOT** operate machine unless properly seated with feet on foot rests or pedal.
3. Keep hands and feet away from rotating blade underneath deck. Never place foot on ground while blade is ON or when machine is in motion.
4. Turn blade OFF, **STOP** engine and wait for blade to **STOP** before attempting to unclog grass or leaves to prevent loss of fingers or hand.
5. Blade must be switched OFF except when cutting grass. Set cutter in highest position when mowing over rough ground.
6. Deflector or grass catcher must be in position. Never point discharge at people, passing cars, windows or doors. Watch out for traffic when crossing or near roadways.
7. Operate in reverse only with careful observation of entire area behind the machine. **DO NOT** mow in reverse unless absolutely necessary.
8. Service machine and make adjustments only when engine is stopped.
9. Have machine serviced by an authorized SNAPPER dealer at least once a year and have the dealer install any new safety devices.
10. Use only genuine SNAPPER replacement parts to assure that original standards are maintained.
11. Tighten all nuts, bolts and screws frequently, then check, adjust, repair or replace brakes as needed.
12. Lubricate machine at intervals specified in manual to prevent controls from binding.
13. Mow only in daylight or with good artificial light.
14. **DO NOT** change engine governor speed settings or overspeed engine.
15. Check grass catcher components frequently for signs of wear or deterioration and replace as needed to prevent injury from thrown objects going through weak or worn spots.
16. Exercise **CAUTION** when pulling loads. Limit loads to those you can safely control and attach loads to hitch plate as specified with SNAPPER attachment instructions.

Section 1 - FAMILIARIZATION

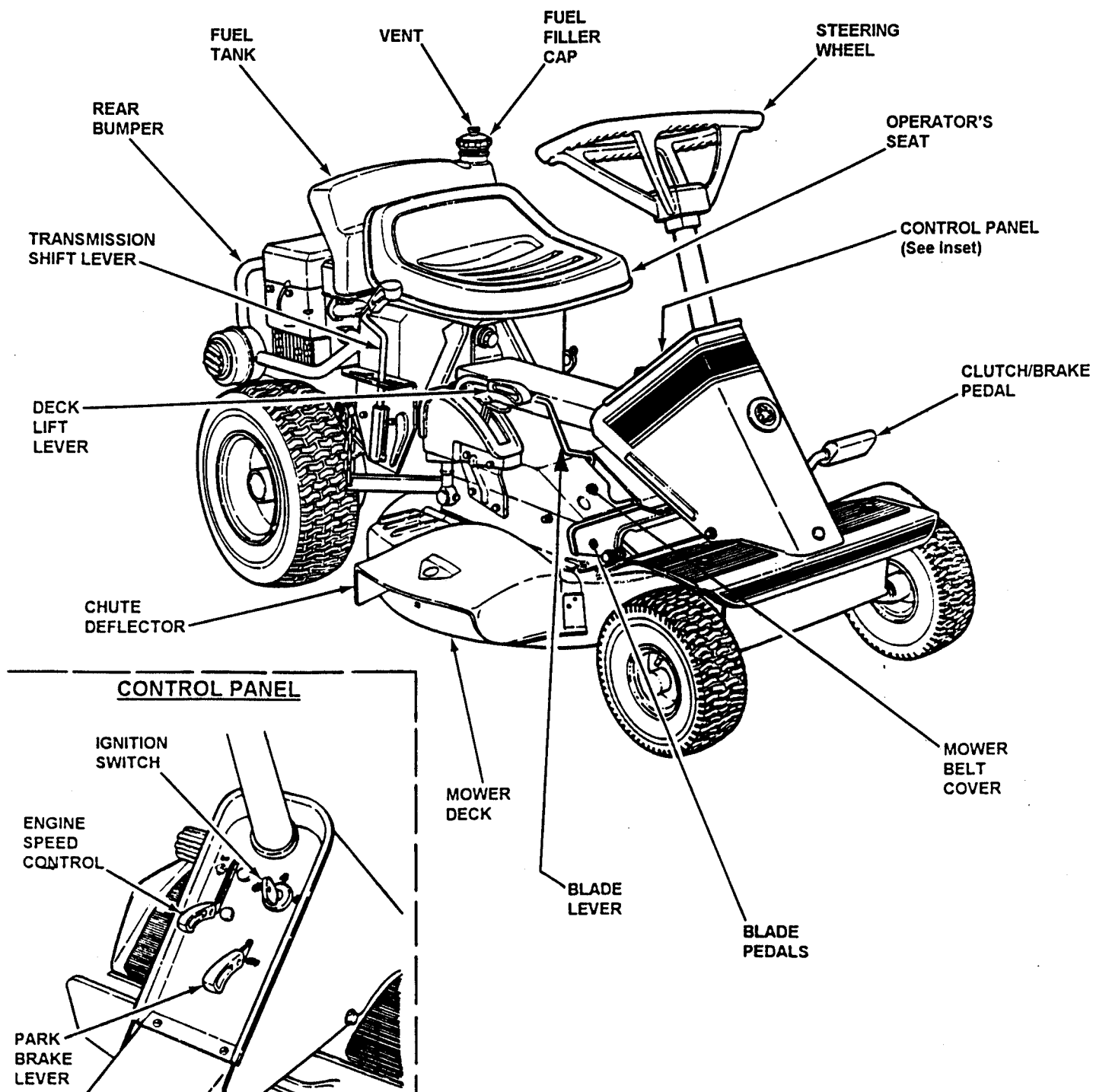


FIGURE 1.1

1.1 INTRODUCTION

This manual has been prepared for the operator's of the SNAPPER Rear Engine Rider. Its purpose, aside from recommending standard operating procedures and routine service requirements, is to promote SAFETY through the use of accepted operating practices. Read, Understand and Follow the IMPORTANT SAFETY INSTRUCTIONS on Page 2 of this manual and All SAFETY messages on the Rear Engine Rider and its attachments before operating.

1.2 NOMENCLATURE

The nomenclature drawing above, Figure 1.1, shows the essential parts of the SNAPPER Rear Engine Rider. It is recommended that all operator's of this equipment become thoroughly familiar with the controls, components, and operation of this machine before operating. Specific details involving the engine are found in the separate engine owner's manual. Study these manuals before operating and keep both handy for future reference.

Section 2 - OPERATING INSTRUCTIONS

2.1 PRE-START CHECK LIST

Make the following checks and perform the service required before each start-up.

- 2.1.1. Check tires and add or release air as needed to bring pressure to 15 psi in front and 10 psi in rear tires.
- 2.1.2. Check guards, deflectors and covers to make sure all are in place and securely tightened.
- 2.1.3. Check engine oil and add oil as needed to bring level up to the FULL mark. Refer to engine owner's manual for oil specifications. See Figure 2.1.

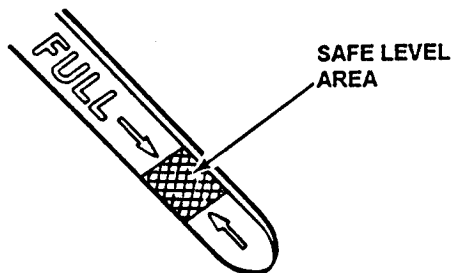


FIGURE 2.1

- 2.1.4. Adjust seat as needed to most comfortable position. See Figure 2.3.
- 2.1.5. Check blade control to insure it works freely. If blade pedals are depressed, blade lever can be moved manually from "ON" to "OFF" to stop blade.

CAUTION
The blade control lever must snap from "ON" to "OFF" when blade pedals are released. If blade control lever does NOT snap back, check mower belt tension. See 4.2.1. MOWER DRIVE BELT ADJUSTMENT on Page 13.

- 2.1.6. Clean exterior surfaces of cutting deck and engine of any accumulation of dirt, grass, oil, etc. Keep engine air intake screen and cooling fins clear at all times.
- 2.1.7. Add fuel to tank after pushing the Rear Engine Rider outside where fumes can dissipate. Make sure fuel filler cap is tight and vent is open after refueling. Refer to engine owner's manual. See Figure 2.2.

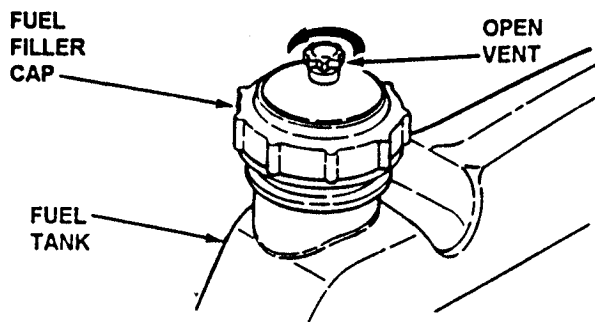


FIGURE 2.2

2.2 OPERATOR'S SEAT ADJUSTMENT

2.2.1. FRONT TO REAR ADJUSTMENT

1. With the engine stopped, loosen the two adjusting knobs and move seat to desired position. After adjustment, tighten knobs securely. If seat does not move after loosening knobs, it may be necessary to loosen the 5/16" patch lock screws located at the rear of the seat using a 1/2 inch wrench. On 12 and 14HP models, the operator's seat has a tilt-up design. The adjusting knobs need to be positioned as shown so as not to interfere with seat mounting plate when returned to sitting position. See Figure 2.3.

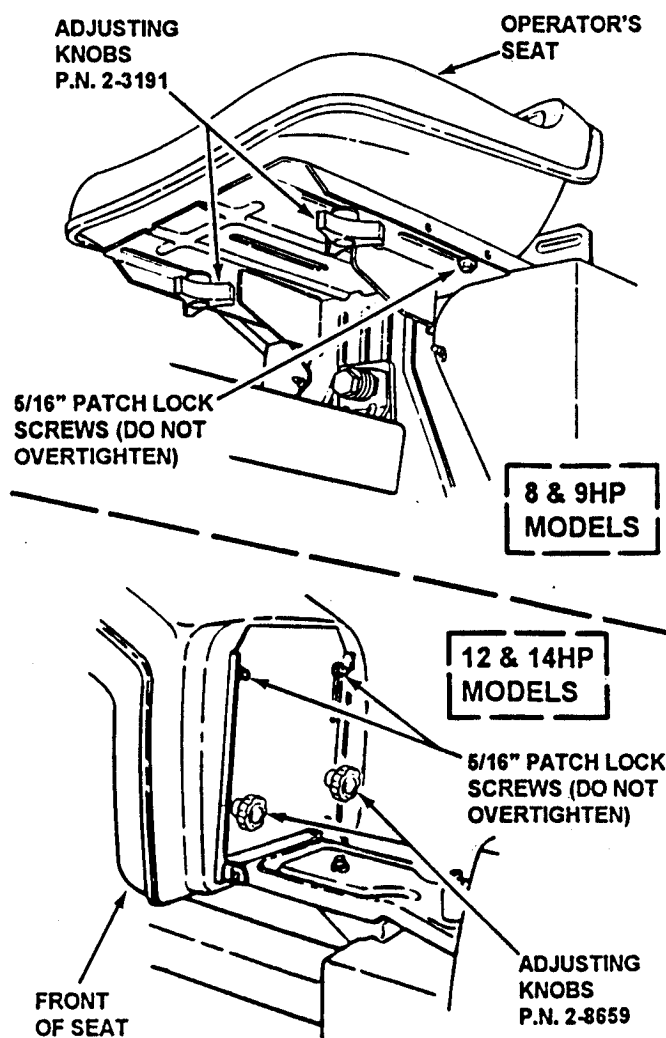


FIGURE 2.3

Section 2 - OPERATING INSTRUCTIONS

2.3 STARTING & OPERATION

2.3.1 ENGINE (ELECTRIC START)

IMPORTANT: When the ignition key is turned to "START", the engine will turn over, but will not start unless the Clutch/Brake pedal is pressed all the way down, the Blade Lever is in the "OFF" position (See Figure 2.5). The operator should be in the seat. Start engine as follows:

1. Move transmission shift lever to (N) Neutral position. **DO NOT** start engine with transmission shift lever in a drive position.

CAUTION

It is possible to start engine with transmission shift lever in a drive position. Follow starting instructions carefully.

2. Make certain the Blade Lever is in the "OFF" position. See Figure 2.4.

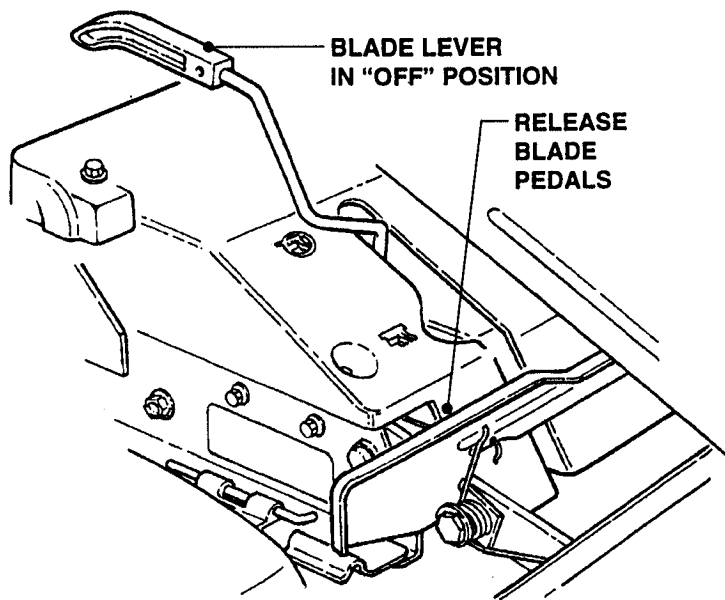


FIGURE 2.4

3. Press Clutch/Brake Pedal all the way down and hold while starting engine. See Figure 2.5.

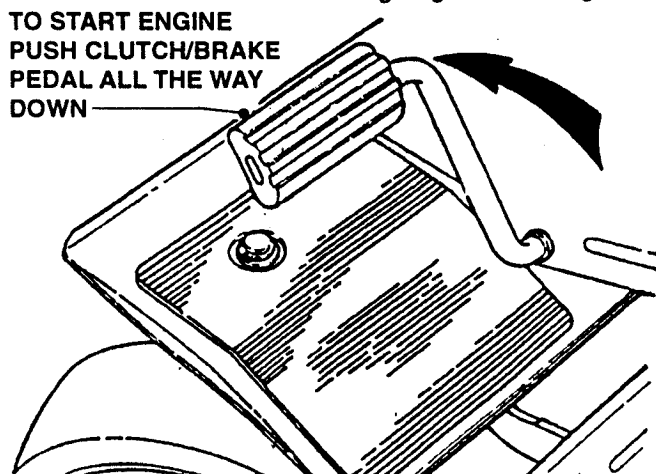


FIGURE 2.5

4. Open vent on fuel filler cap by turning counterclockwise. **IMPORTANT:** Failure to open vent on the fuel filler cap can cause engine to stall. See Figure 2.6.

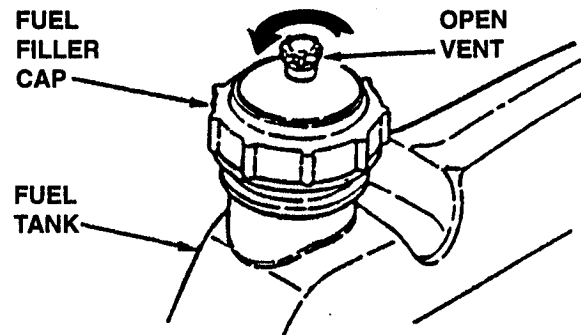


FIGURE 2.6

5. Move engine speed control to the choke position to start engine. See Figure 2.7.

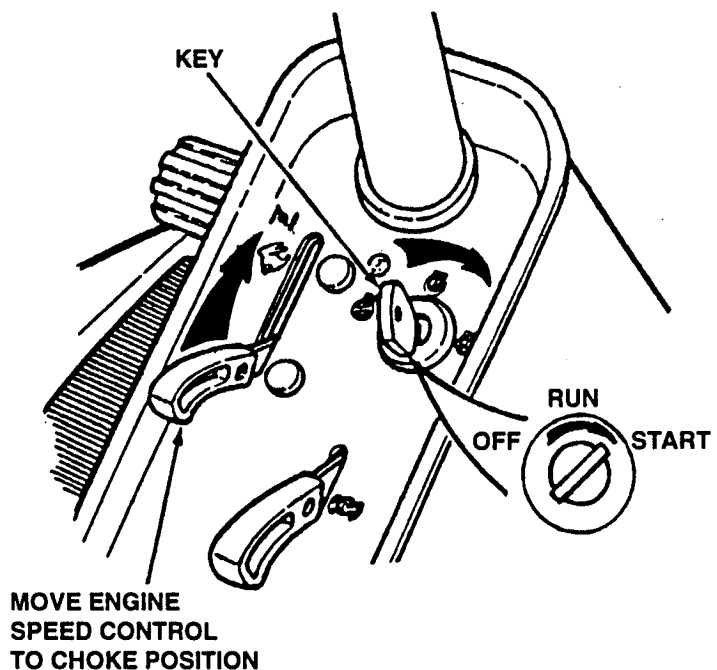


FIGURE 2.7

6. Turn key to the "START" position until engine starts. See Figure 2.7. **NOTE:** If after 5 seconds of cranking the engine and it does not start, release the key, make sure the Clutch/Brake Pedal is fully depressed and attempt starting again after waiting for approximately 20 seconds.
7. After engine starts, move engine speed control to the "FAST" position, allow a brief warm-up until engine runs smooth.

Section 2 - OPERATING INSTRUCTIONS

2.3.1 ENGINE (ELECTRIC START) (Continued)

8. Should the battery be too weak to start the engine, use the instructions shown below, 2.3.2., ENGINE (MANUAL START) to manually start the electric start engines.

9. On Model 331416BVE, the engine is equipped with a fuel shut-off solenoid. If the battery is dead, the engine can be started with the recoil back-up starter if the throttle control is in the choke position (HOT engine or COLD engine).

2.3.2. ENGINE (MANUAL START)

IMPORTANT: When the ignition key is turned to "RUN", and the recoil handle is pulled, the engine will turn over, but will not start unless the Clutch/Brake Pedal is pressed all the way down with Parking Brake engaged (See Figure 2.8) and the Blade Lever is in the "OFF" position (Refer to Figure 2.4). Start engine as follows:

1. Move transmission shift lever to (N) Neutral position. **DO NOT** start engine with transmission shift lever in a drive position.



CAUTION



It is possible to start engine with transmission shift lever in a drive position. Follow starting instructions carefully.

2. Make certain the Blade Lever is in the "OFF" position. Refer to Figure 2.4.

3. Press Clutch/Brake Pedal all the way down, lift Parking Brake Lever and release the Clutch/Brake Pedal to set Parking Brake. See Figure 2.8.

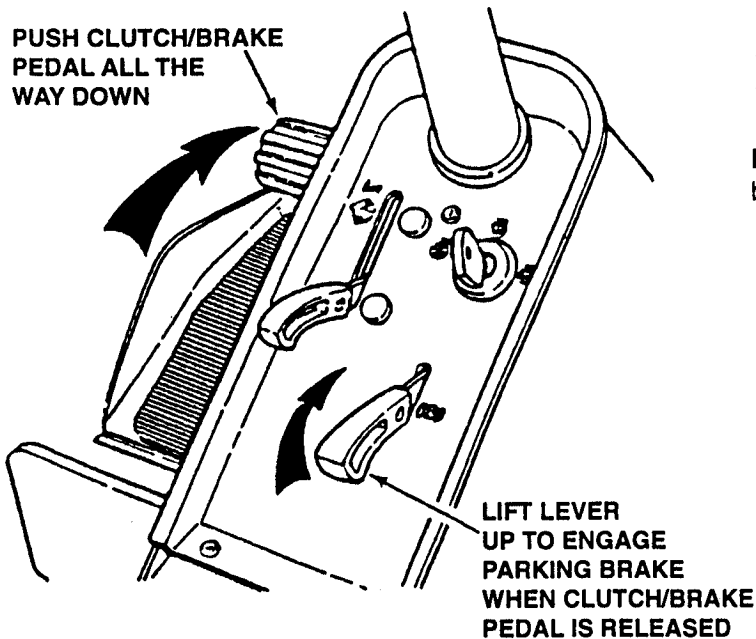


FIGURE 2.8

4. Open vent on fuel filler cap by turning counterclockwise. **NOTE:** Failure to open vent on the fuel filler cap can cause engine to stall. See Figure 2.6.

5. Move engine speed control to the choke position to start a cold engine. Refer to Figure 2.7.

6. Turn key to "RUN" position. See Figure 2.9.

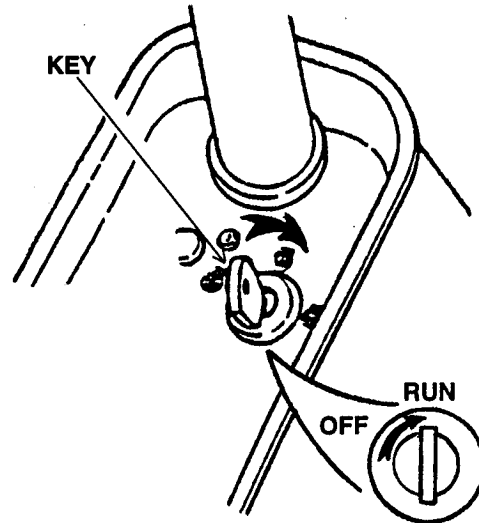


FIGURE 2.9

7. Pull starter rope with a smooth, even motion until engine starts. Always guide the starter rope back into the recoil housing. Never allow rope to snap back. After Engine starts, move engine speed control to the "FAST" position.

8. Allow a brief warm-up until engine runs smooth.

2.3.3. MOWER BLADE

1. With engine running, move engine speed control to the "FAST" position.

2. Move blade lever forward to the "ON" position, then depress blade pedals to hold blade lever in the "ON" position. See Figure 2.10.

IMPORTANT: You cannot engage the blade lever if the blade pedal is depressed first.

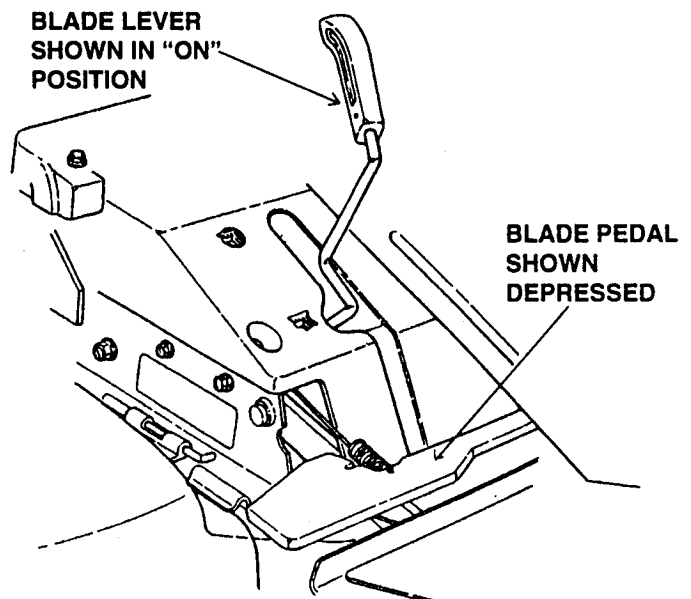


FIGURE 2.10

Section 2 - OPERATING INSTRUCTIONS



CAUTION



Before leaving the Rear Engine Rider with the engine running, **STOP** the blade, shift to neutral and engage the park brake.

2.4 STOPPING

2.4.1. ENGINE

1. Stop engine by turning key to the "OFF" position. See Figure 2.11.

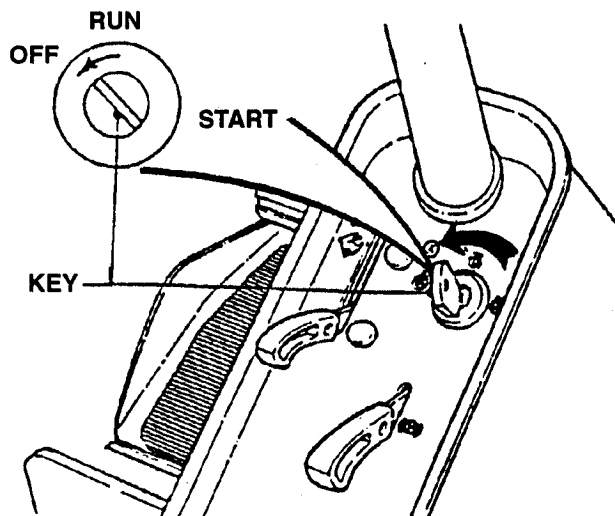


FIGURE 2.11

2.4.2. WHEEL DRIVE

1. Stop motion of Rear Engine Rider by pushing Clutch/Brake Pedal all the way "DOWN" to apply brake. See Figure 2.12.

IMPORTANT: Depressing the Clutch/Brake Pedal half way down activates the clutch to allow transmission shifting.

TO APPLY BRAKES,
PUSH CLUTCH/BRAKE
PEDAL ALL THE
WAY DOWN

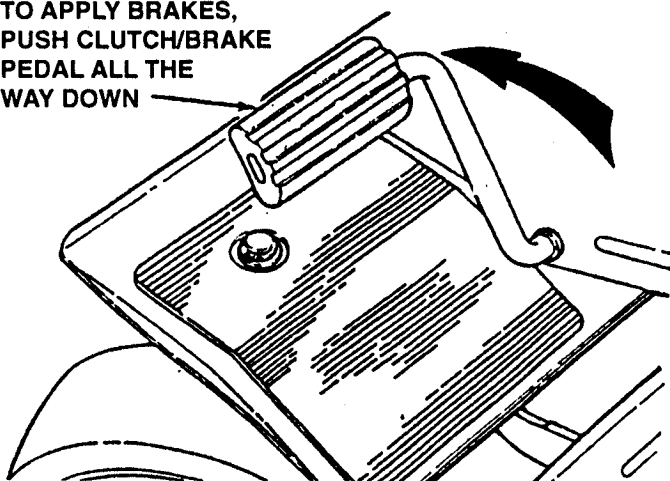


FIGURE 2.12

2.4.3. MOWER BLADE

Stop mower blade by removing feet from blade pedals or moving blade lever rearward to the "OFF" position. See Figure 2.12.

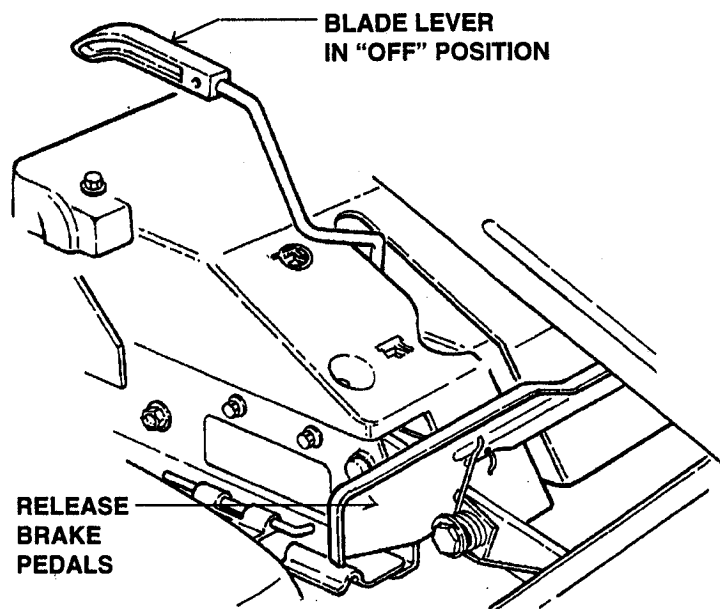


FIGURE 2.13



CAUTION

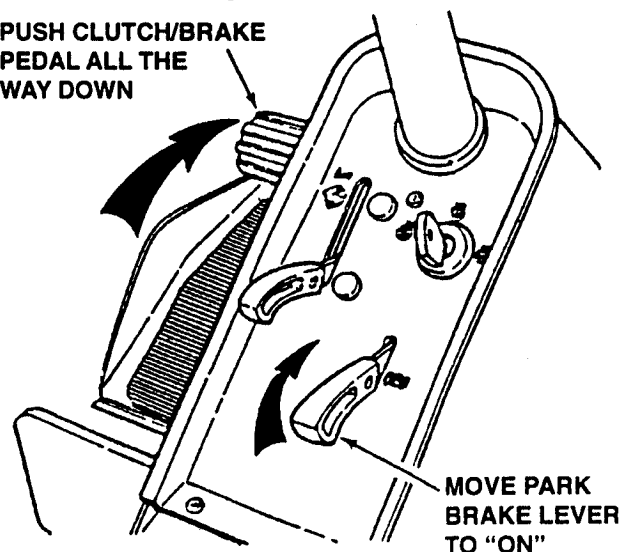


Once blade is disengaged, it should come to a complete stop in 3 seconds or less. If the blade continues to rotate after 3 seconds, the blade brake should be adjusted. See 4.2.2., **BLADE BRAKE ADJUSTMENT** on Page 14 for adjustment procedures or return machine to dealer for adjustment. **DO NOT CONTINUE** to operate mower until blade brake is properly adjusted.

2.4.4. PARK BRAKE

1. Engage park brake by pushing Clutch/Brake Pedal "DOWN" and moving the park brake lever to the "ON" POSITION. While holding the park brake lever "ON", release Clutch/Brake Pedal to set park brake. See Figure 2.14.

PUSH CLUTCH/BRAKE
PEDAL ALL THE
WAY DOWN



MOVE PARK
BRAKE LEVER
TO "ON"

FIGURE 2.14

Section 2 - OPERATING INSTRUCTIONS

2.4.4. PARK BRAKE (Continued)

2. Release park brake by pushing down on the Clutch/Brake Pedal to release park brake lever. See Figure 2.15.

PUSH CLUTCH/BRAKE
PEDAL ALL THE
WAY DOWN

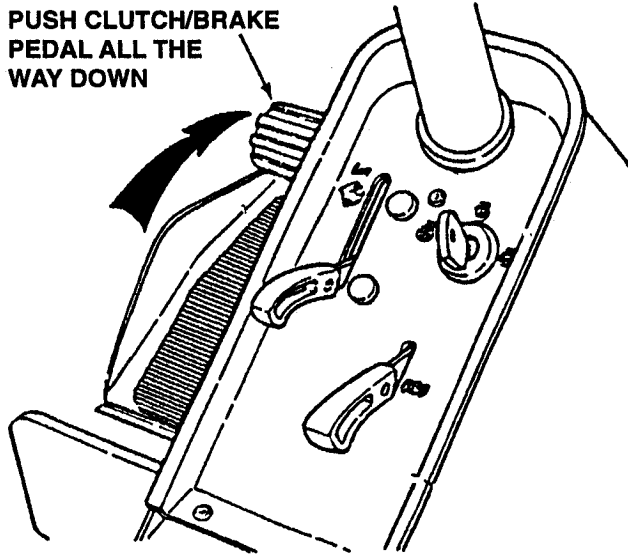


FIGURE 2.15

2.4.5. CUTTING HEIGHT ADJUSTMENT

1. Adjust cutting height as desired to any one of six positions using deck lift lever. When in desired height of cut, release latch, then try to move deck lift lever to ensure lift lever latch is fully engaged. See Figure 2.16.

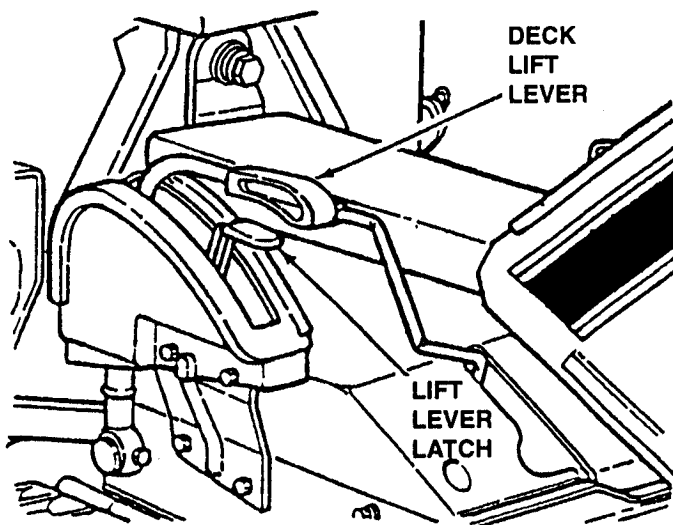


FIGURE 2.16

2.4.6. WHEEL DRIVE

1. With engine running, adjust engine speed control to "FAST" position.
2. Depress Clutch/Brake Pedal.
3. Place transmission shift lever in the notch for the desired speed.
4. Release Clutch/Brake Pedal to start desired direction.
5. During forward motion, the transmission shift lever may be placed in any desired forward speed without depressing the Clutch/Brake Pedal.

NOTE: For best cutting results, move the transmission shift lever into a slow forward speed and the engine speed control to a fast position. This combination will allow the mower blades to lift the grass while cutting smoothly and evenly.



WARNING



Never park the Rear Engine Rider on an incline or embankment.

Section 3 - MAINTENANCE

3.1 INTRODUCTION

To retain the quality of the Rear Engine Rider, use genuine SNAPPER replacement parts only. Contact a local SNAPPER dealer for parts and service assistance. For the correct part or information for a particular Rear Engine Riding Mower, always mention the model and serial number. SNAPPER recommends returning the Rear Engine Rider to an authorized SNAPPER dealer annually for inspection and addition of any new devices which might upgrade the safety of the Rear Engine Rider. For the nearest SNAPPER dealer in your area, 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.

3.2 SERVICE - AFTER FIRST 5 HOURS

CAUTION
Before performing any service or maintenance procedures, always remove key from ignition switch, remove spark plug wire from spark plug and secure spark plug wire away from spark plug.

3.2.1. CHANGE ENGINE OIL

1. Change engine oil as follows:
 - a. Place bricks or wooden blocks under the front wheels to lower rear of engine.
 - b. Loosen or remove oil fill cap on engine.
 - c. Loosen oil drain plug.
 - d. Place a 2 quart minimum capacity container under the end of the oil drain. Open oil drain. See Figure 3.1 for oil drains used on the Rear Engine Riders.

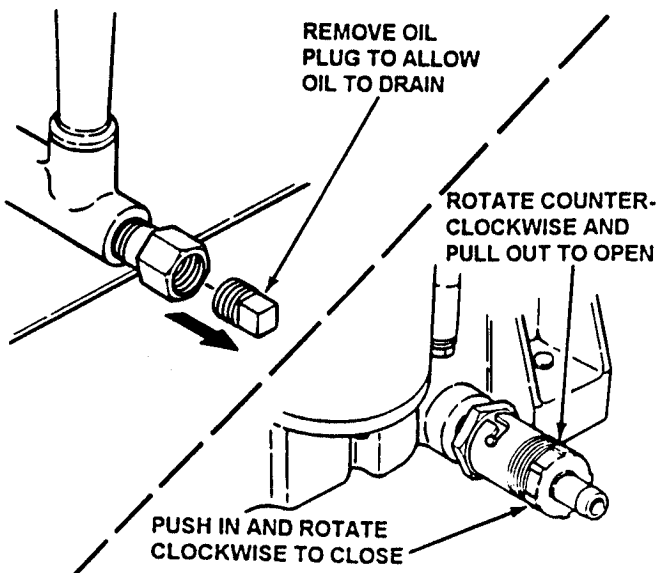


FIGURE 3.1

- e. After all the oil has drained, close the drain and wipe up any oil that may have spilled. See Figure 3.1.

- f. Fill engine crankcase with new oil. Refer to your engine owner's manual for oil specifications.
- g. Change oil filter on 14HP engines at every oil change. Refer to your engine owner's manual for service instructions.

3.2.2. CHECK MOWER BLADE

1. Check fuel level in tank. If over 3/4 full, remove tank (See Page 12 for gas tank removal). If 3/4 or less, proceed to next step.
2. Close vent on fuel filler cap.
3. Apply park brake.
4. Carefully stand Rear Engine Rider on rear bumper. It may be necessary to have help.

CAUTION
Remove the battery if the Rear Engine Rider will be left standing on the rear bumper for longer than 2 hours. See 4.6.1., BATTERY REMOVAL on Page 20. Never use a cutting blade that shows signs of excessive wear or damage on the Rear Engine Rider. Refer to 4.4, MOWER BLADE REPAIR/REPLACEMENT on Page 18 for proper blade inspection and service procedures.

5. Check torque of blade mounting bolts. As necessary, torque to 30 to 40 ft. lbs. See Figure 3.2.
6. Check blade for sharpness, wear and damage. See 4.4.1., BLADE WEAR LIMITS on Page 18.

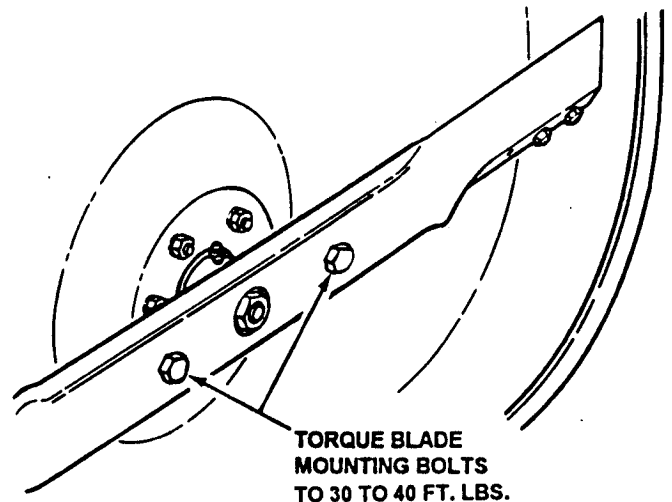


FIGURE 3.2

7. Check blade for straightness. Refer to 4.2.3., ADJUSTING MOWER BLADE on Page 14.

Section 3 - MAINTENANCE

3.2.3. CHECK MOWER DRIVE BELT

1. Drive Belt Cover Removal

- Lower deck to lowest setting.
- Remove four self-tapping screws, two on each side of mower drive belt cover. See Figure 3.3.
- Slide cover back and rotate out on left side of mower deck.

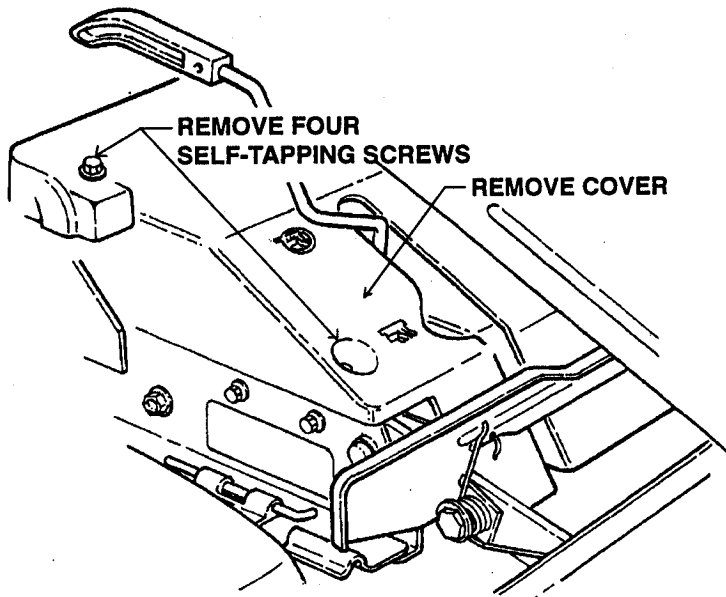


FIGURE 3.3

2A. Checking Belt Tension

- On 25" models, with engine "OFF" and deck in 3rd height of cut position, move blade lever back to the "ON" position and depress blade pedals.
- Measure the belt spacing at idler pulley. See Figure 3.4. The belt spacing should be 1 1/4" but no less than 1".

25" MODELS

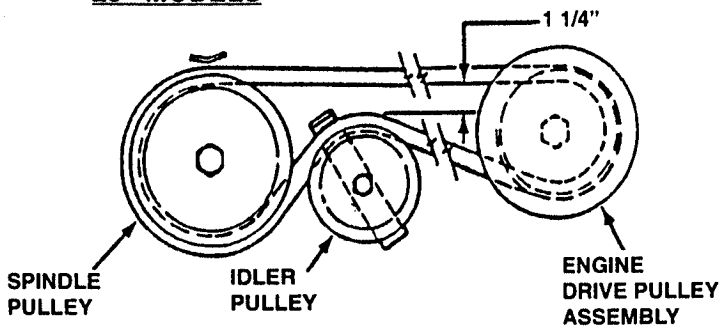


FIGURE 3.4

- If the measurement is less than 1", the belt tension should be adjusted. See 4.2.1., MOWER DRIVE BELT ADJUSTMENT on Page 13.

2B. Checking Belt Tension

- On 28", 30", and 33" Models, check belt for excessive wear or damage and replace if necessary; there are no adjustments on these models. See Figure 3.5.

28", 30", & 33" MODELS (Dual Idler System)

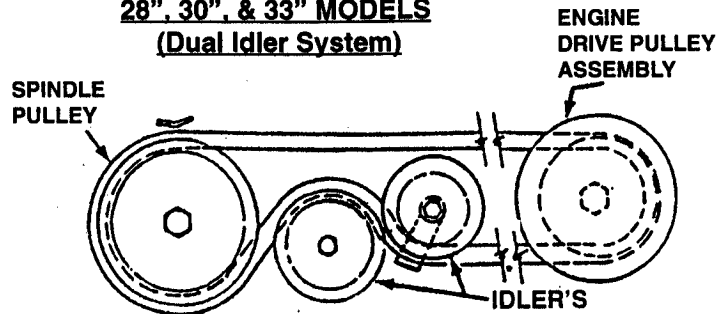


FIGURE 3.5

3.3 AFTER EVERY 25 OPERATING HOURS

3.3.1. ENGINE

1. Engine Oil

Change engine oil. Refer to 3.2.1., CHANGE ENGINE OIL on Page 8. Refer to Engine Owner's Manual for oil specifications.

2. Air Filter

Refer to Engine Owner's Manual for service instructions.

3.3.2. MOWER COMPONENTS

1. Mower Drive Belt

Check belt for proper tension. Refer to 3.2.3., CHECK MOWER DRIVE BELT.

2. Mower Blade

Check blade for sharpness, wear, damage, and torque. See 4.4, MOWER BLADE REPAIR/REPLACEMENT on Page 18.

3. Mower Deck Levelness

Check mower deck for proper levelness. Adjust as required. See 4.2.4., MOWER DECK ADJUSTMENT - LEVELNESS on Page 15.

4. Cleaning Mower Deck

- Remove key from ignition switch.
- Remove spark plug wire and secure away from spark plug.
- Check fuel level in tank. If over 3/4 full, remove tank (See Page 12 for gas tank removal). If 3/4 or less, proceed to next step.

(Continued on Next Page)

Section 3 - MAINTENANCE

3.3.2. MOWER COMPONENTS (Continued)

- d. Close vent on fuel filler cap.
- e. Carefully stand Rear Engine Rider on rear bumper.
- f. Clean underside of mower deck, removing all accumulation of grass clippings and debris.
- g. Lower Rear Engine Rider to ground and clean top of deck, removing all grass clippings and debris.

5. Mower Blade Spindle - Lubrication

With Rear Engine Rider standing on rear bumper, lubricate spindle with one shot of general purpose grease from grease gun.

IMPORTANT: If the Rear Engine Rider will be on its rear bumper for longer than two hours, remove the battery. See 4.6.1., BATTERY REMOVAL on Page 20.

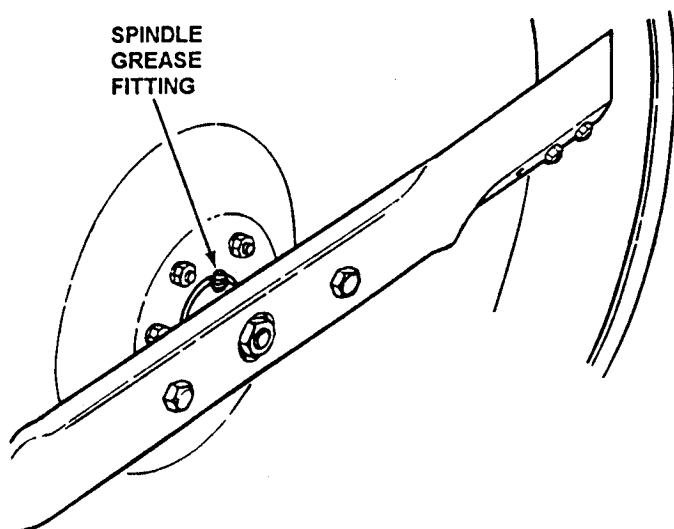


FIGURE 3.6

6. Mower Deck Linkage - Lubrication

Lubricate all mower deck linkage pivot points with a light coat of motor oil.

3.3.3. REAR ENGINE RIDER - LUBRICATION

1. Front Wheel Bearings

Lubricate front wheel bearings with five shots of general purpose grease, from grease gun. See Figure 3.7.

2. Left Rear Axle Bearing

On Rear Engine Riders powered by 14HP engines, the left rear axle does not require lubrication. However, those powered by 8HP, 9HP, or 12HP engines, the left rear axle bearing requires 3 shots of SNAPPER "00" general purpose grease from grease gun. See Figure 3.8.

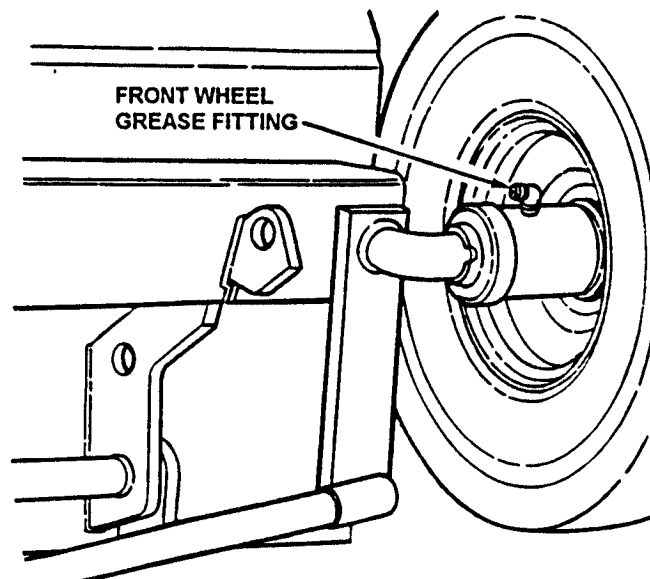


FIGURE 3.7

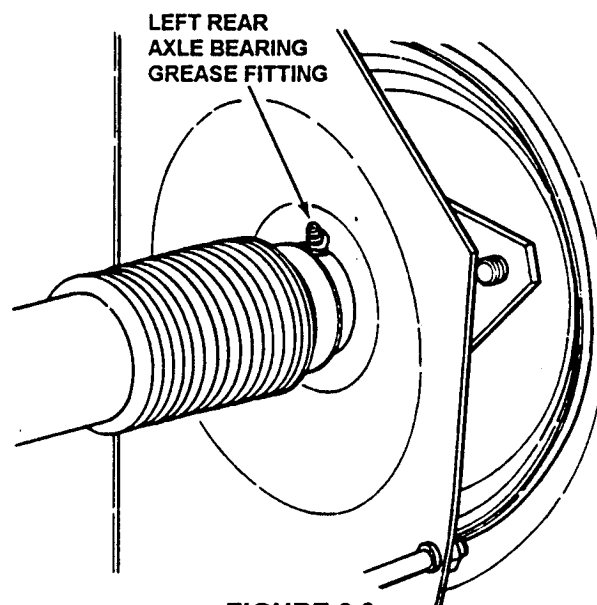


FIGURE 3.8

3. Right Rear Axle Bearing

The right rear axle bearing is lubricated by the differential lubricant.

4. Differential

- a. Stand rear engine rider on its rear bumper and check the fill/level plug, for cracks and wear. Replace fill/level plug if signs of wear are visible.
- b. To check lubricant, remove fill/level plug and visually inspect for lubricant on the internal parts of the differential. If no lubricant is visible on the internal parts of the differential, add "00" grease as needed. See Figure 3.9.

IMPORTANT: Overfilling of the differential with lubricant will cause lubricant to leak onto drive components of the Rear Engine Rider.

Section 3 - MAINTENANCE

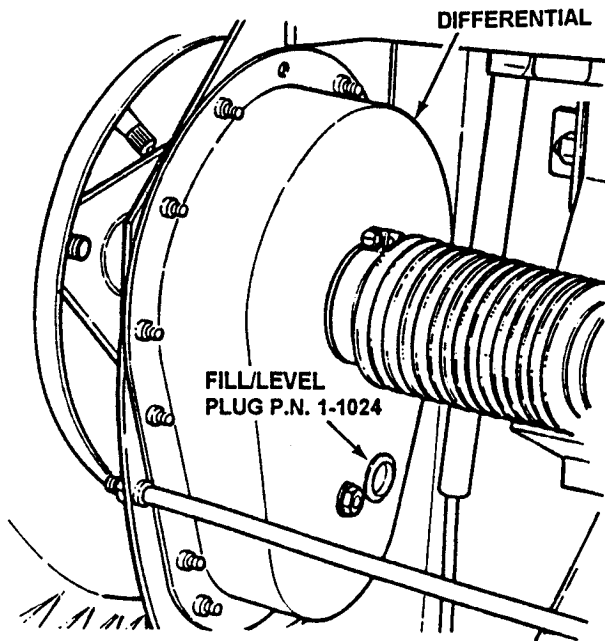


FIGURE 3.9

5. Chain Case

- Check fill/level plug for damage. If signs of wear or cracks are visible, replace plug with new plug. See Figure 3.10.
- To check lubricant in chain case, remove fill/level plug and look for lubricant on the internal components of the chain case. If no lubricant is visible, add SNAPPER "00" grease as needed. See Figure 3.10.

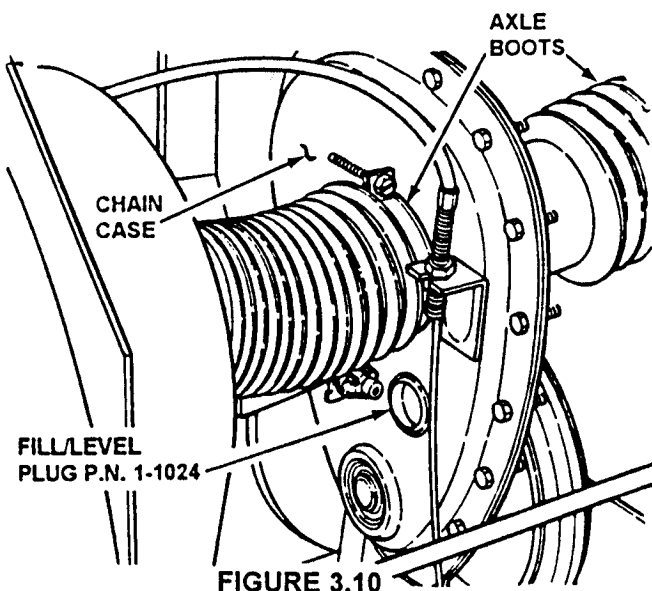


FIGURE 3.10

6. Axle Boots

Check axle boots for signs of wear or cracks. If cracks or wear are visible, contact a SNAPPER dealer for service. Refer to Figure 3.10.

3.4 ANNUALLY (END OF EACH SEASON)

Perform all maintenance as described in on Page 9.
NOTE: For complete maintenance schedule, see Page 22.

3.4.1. ENGINE

- Service engine according to engine owner's manual.

3.4.2. FUEL FILTER

Service fuel filter as instructed below, on **COLD ENGINE ONLY!**

IMPORTANT: To stop flow of fuel, tank may be removed from bracket and set on the floor so the fuel level will be below the filter. See Page 12 for gas tank removal.

- Remove hose clamps from fuel filter.
- Remove fuel lines from filter. Discard filter.
- Install new fuel filter. See Figure 3.11.
- Reinstall fuel tank into bracket.

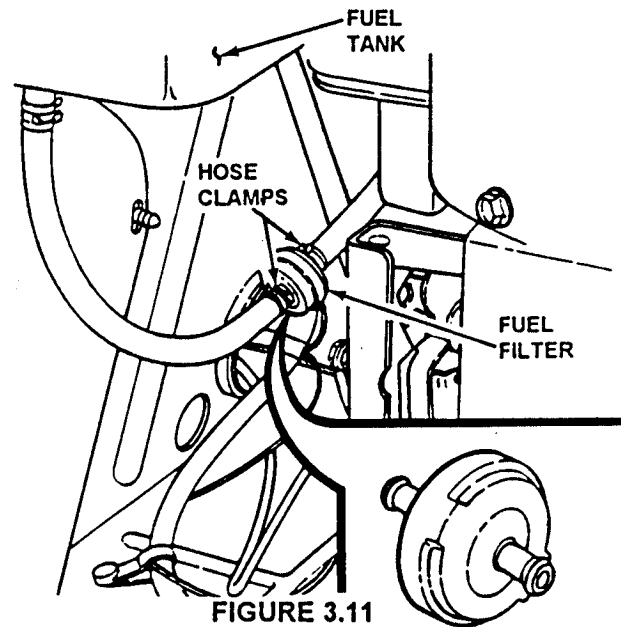


FIGURE 3.11

3.4.3. MOWER DECK

- Clean all grass clippings and debris from deck.
- Perform maintenance and lubrication as described in 3.3 on Page 9.

3.5 EVERY TWO YEARS

In addition to regular maintenance, the following components of the Rear Engine Rider should be carefully inspected every two years for wear or damage. Replace worn or damaged parts with genuine SNAPPER replacement parts available from an authorized SNAPPER dealer.

3.5.1. All bushings and pivot areas.

3.5.2. Check both front wheel king pins.

(Continued on Next Page)

Section 3 - MAINTENANCE

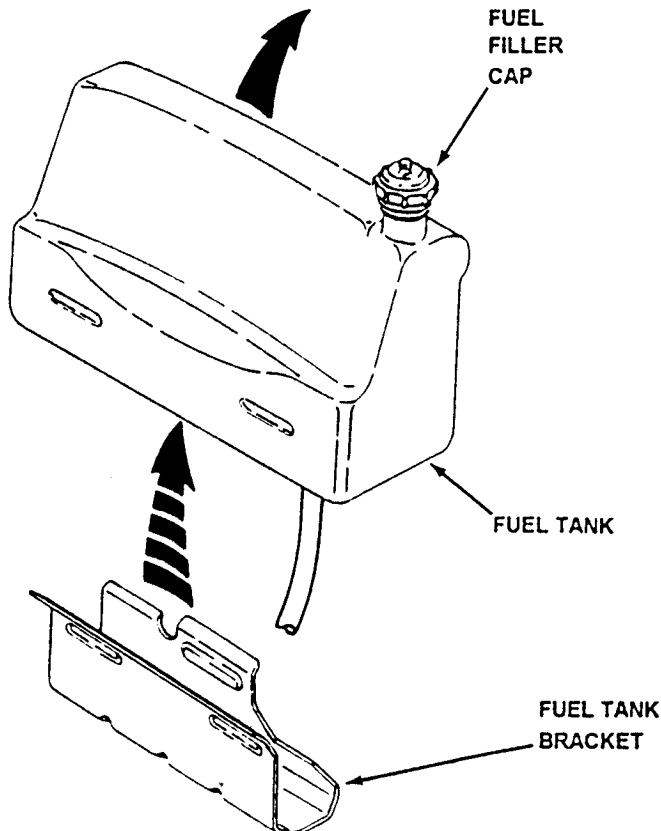
3.5 EVERY TWO YEARS

- 3.5.3. Transmission shift lever and detent.
- 3.5.4. Clutch disc.
- 3.5.5. Clutch Yoke (See Figure 4.18 on Page 18).
- 3.5.6. Mower deck linkage and pivot areas.

3.6 STORAGE (OUT OF SEASON)

If desired, the Rear Engine Rider can be stored on the rear bumper. Perform the following procedures to insure the Rear Engine Rider will operate properly when taken out of storage.

- 3.6.1. Thoroughly clean the Rear Engine Rider by removing all grass clippings and debris.
- 3.6.2. Perform maintenance and lubrication as described in 3.3 on Page 9.
- 3.6.3. Drain fuel from fuel tank.
- 3.6.4. Start engine and allow it to run until engine runs out of fuel. This allows the carburetor and fuel system to remain clean during storage.
- 3.6.5. Remove battery. See 4.6.5., BATTERY STORAGE on Page 21.
- 3.6.6. Close vent on fuel filler cap.
- 3.6.7. Carefully stand Rear Engine Rider on rear bumper in desired location for storage.



REMOVING FUEL TANK FROM REAR ENGINE RIDER

CAUTION
Before performing any service or maintenance procedures, always remove key from ignition switch, remove spark plug wire from spark plug and secure spark plug wire away from spark plug.

Before removing fuel tank from rear engine rider, move rider outdoors where fumes can be easily dissipated. Removal of the tank is most easily accomplished from the left side of the rear engine rider by pulling the tank straight up and away from the fuel tank bracket. After holding the fuel tank in your hands, carefully remove the fuel filler cap and pour remaining fuel in an approved container.

Section 4 - ADJUSTMENTS & REPAIR



CAUTION



Before performing any service or maintenance procedures, always remove key from ignition switch, remove spark plug wire from spark plug and secure spark plug wire away from spark plug.

4.1 ENGINE ADJUSTMENTS & REPAIR

Refer to the engine owner's manual for those adjustments and/or repairs that can be made by the owner.

4.2 MOWER DECK & COMPONENT ADJUSTMENTS

The following mower deck and component adjustments and repairs can be made by the owner. However, if there is difficulty in achieving these adjustments and repairs, it is recommended that these repairs be made by an authorized SNAPPER dealer.

4.2.1. MOWER DRIVE BELT ADJUSTMENT (FOR 25" MODELS)

1. Remove mower drive belt cover. Refer to 3.2.3., CHECK MOWER DRIVE BELT on Page 9.
2. Move blade lever up and over to the "ON" position.
3. Place deck cutting height in the 3rd position. Measure the belt spacing at idler pulley. The distance should measure 1-1/4" but no less than 1". See Figure 4.1.

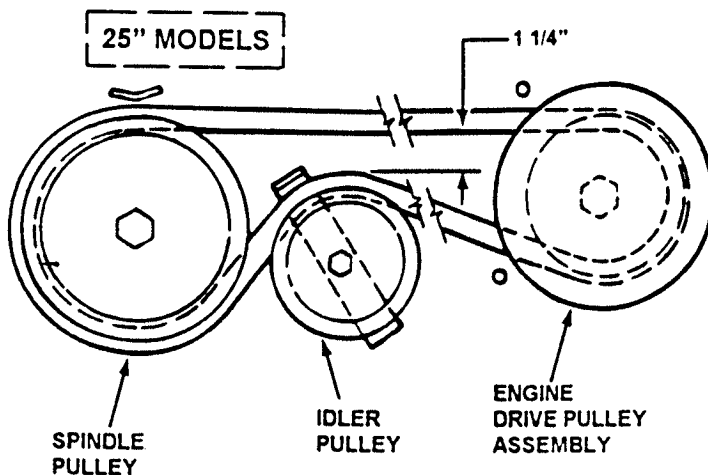


FIGURE 4.1

4. If the distance is less than 1", adjust belt tension as follows:

- a. Remove hairpin and flat washers from pivot stud. See Figure 4.2.
- b. Pull front frame forward until distance between belt, with blade lever "ON", measures 1-1/4".

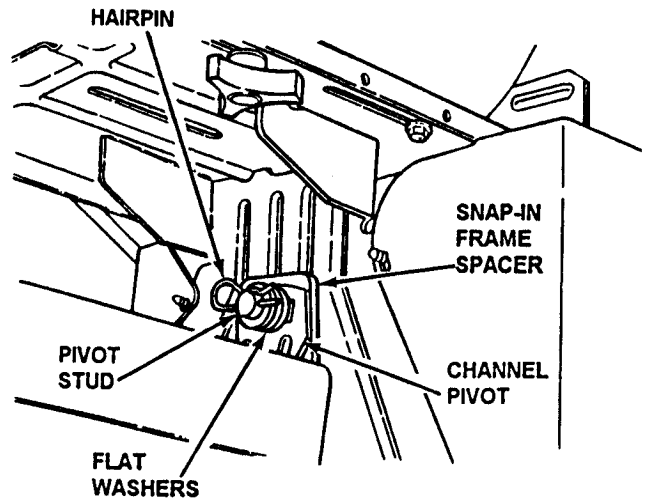


FIGURE 4.2

- c. Install required number of snap-in frame spacers behind channel pivot until the 1-1/4" distance between belt is maintained. See Figure 4.3.

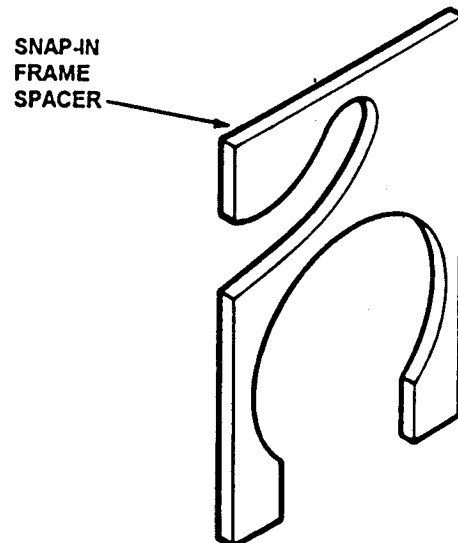


FIGURE 4.3

- d. Reinstall the required amount of flat washers removed in step "a." and install hairpin. Refer to Figure 4.2. Retain any remaining spacers for readjustment when a new belt is installed.
5. On 28", 30", and 33" models, the mower drive belt DOES NOT require adjustment. If the belt does not drive blade properly, replace belt.

IMPORTANT: The SNAPPER Rear Engine Rider 25" Model is shipped with additional spacers specifically designed for the Rear Engine Rider. Should additional spacers be required, contact an authorized SNAPPER dealer.

Section 4 - ADJUSTMENTS & REPAIR



CAUTION



Before performing any service or maintenance procedures, always remove key from ignition switch, remove spark plug wire from spark plug and secure spark plug wire away from spark plug.

4.2.2. BLADE BRAKE ADJUSTMENT

1. Remove Belt Cover; See Section 3, 3.2.3, on Page 9.
2. Pull blade engagement lever to the engaged position. The idler should move at least 1/2 inch from disengaged to engaged position. If this measurement is adequate but blade stop time is more than 3 seconds increase blade brake tension as follows.
3. Remove cotter pin from clevis pin and washer that secures anchor plate to blade brake. The factory positions the clevis pin in the middle hole. The rear hole increases tension on blade brake. The front hole decreases tension on blade brake.

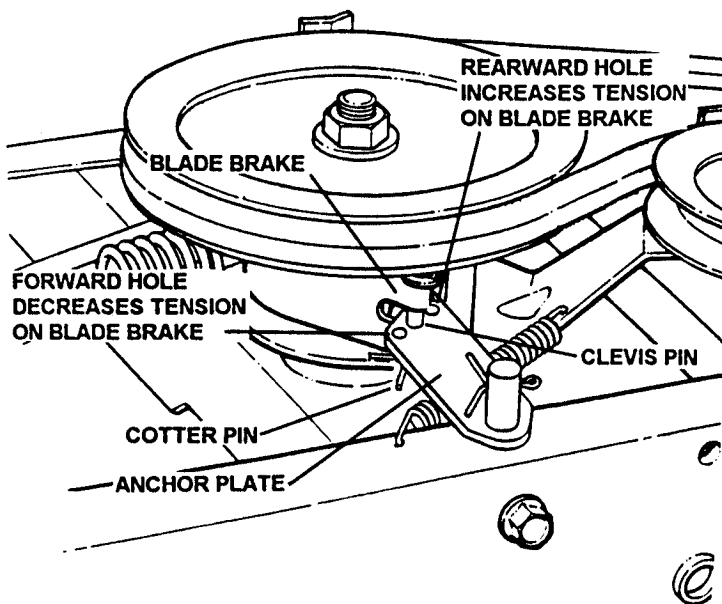


FIGURE 4.6

4. Reinstall clevis pin, washer and a new cotter pin.

IMPORTANT: The idler arm engagement spring should extend to at least 3/4" when blade engagement lever is in the engaged position. If measurement is less than 3/4" the blade belt will have to be replaced. See Section on blade belt replacement. The idler arm spring and cable should have looseness when the blade engagement lever is in the disengaged position.

4.2.3. ADJUSTING MOWER BLADE

Follow procedures for standing Rear Engine Rider on rear bumper.

IMPORTANT: If the Rear Engine Rider will be on its rear bumper for longer than two hours, remove the battery. See 4.6.1., BATTERY REMOVAL on Page 20.

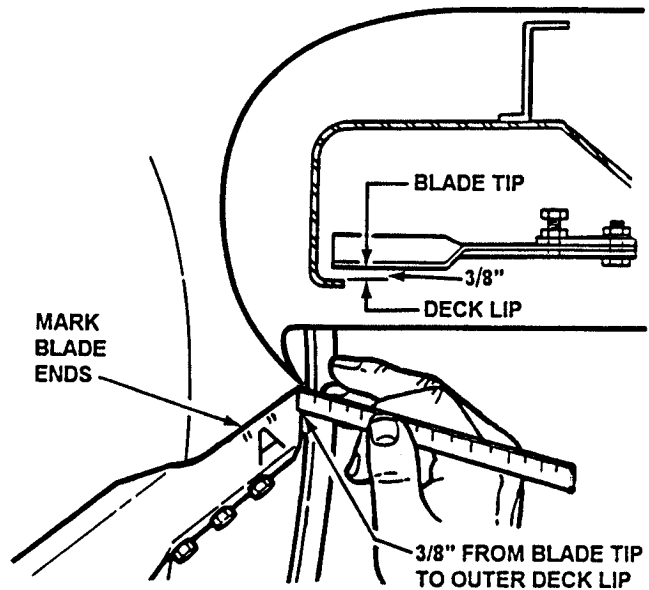


FIGURE 4.8

1. Select a point on the deck and mark for reference.
2. Mark blade tips as "A" and "B".
3. Rotate blade until blade tip "A" is at deck reference mark.
4. Measure the distance between deck lip and blade tip. Note the measurement. See Figure 4.8.

NOTE: On 25", 28", and 33" decks, the measurement between the blade tip and deck lip should be 5/16". On 30" decks, the measurement between the blade tip and deck lip should be 1/8" to 1/4" in front and 3/8" in rear.

5. Repeat steps 2 and 3 with blade tip "B".
6. If measurement between blade tips and deck are different and there is more than 1/16" difference between blade tip measurements, adjust blade as follows:
 - a. Loosen jam-nuts on blade bar.
 - b. Adjust jack screws "IN" or "OUT" until blade tip measurements are within 1/16" of each other and blade tips are 3/8" away from deck lip. See Figure 4.9.
 - c. Tighten jam-nuts.

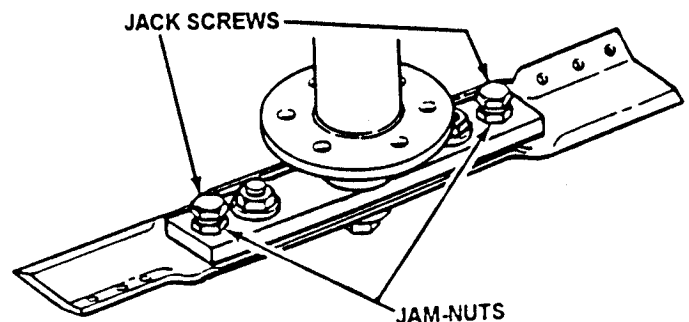


FIGURE 4.9

Section 4 - ADJUSTMENTS & REPAIR

4.2.4. MOWER DECK ADJUSTMENT (LEVELNESS)

1. Side-To-Side

Before making deck leveling adjustments, check the tire pressure. Front tires 15 psi, rear tires 10 psi. If tires are properly inflated and mowing is still uneven, adjust side-to-side deck levelness as follows:

- Place Rider on a smooth level surface.
- Turn engine off and remove key, remove spark plug wire from spark plug and secure wire away from plug.
- Place a piece of angle iron, pipe, or similar object under center of deck at the rear.
- Remove rear hanger chains and allow center, rear of deck to rest on angle iron.
- Measure the distance from blade tips to floor. If the measurement is within $1/8"$ from side-to-side, the deck attitude is satisfactory. If difference from side-to-side is greater than $1/8"$, continue with adjustment.
- Loosen the shoulder bolt retaining the left side of blade pedals.

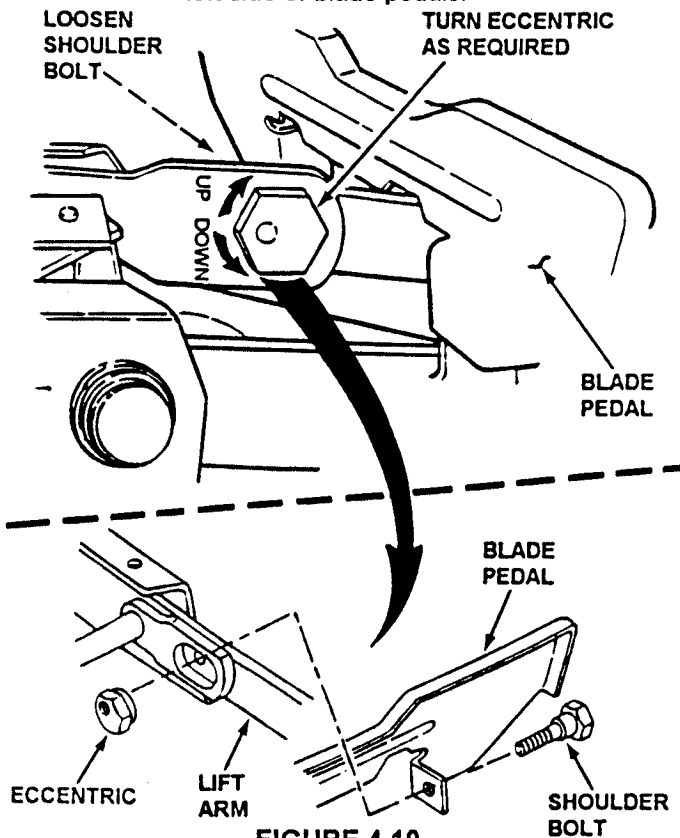


FIGURE 4.10

- Turn eccentric "UP" or "DOWN" as required until blade tips are within $1/8"$ of each other. See Figure 4.10.
- Tighten shoulder bolt loosened in step "f".
- Readjust rear hanger chain pivots to align with holes in support brackets. Refer to Figure 4.11.
- Remove angle iron, pipe, or similar object and proceed to check front to rear levelness.

2. Front to Rear Levelness

(25", 28", & 33" Decks)

With the Rear Engine Rider on a smooth, level surface, rotate blade until blade tips are at front and rear of deck. Measure the distance from blade tips to floor. The distance should be the same, or the rear $1/8"$ lower than the front. If the rear blade tip is higher or is more than $1/8"$ lower than the front, proceed with adjustment.

- Remove rear hanger chains.
- Turn each hanger pivot the same number of rotations on the eye-bolt to raise or lower the rear of the deck. See Figure 4.11.

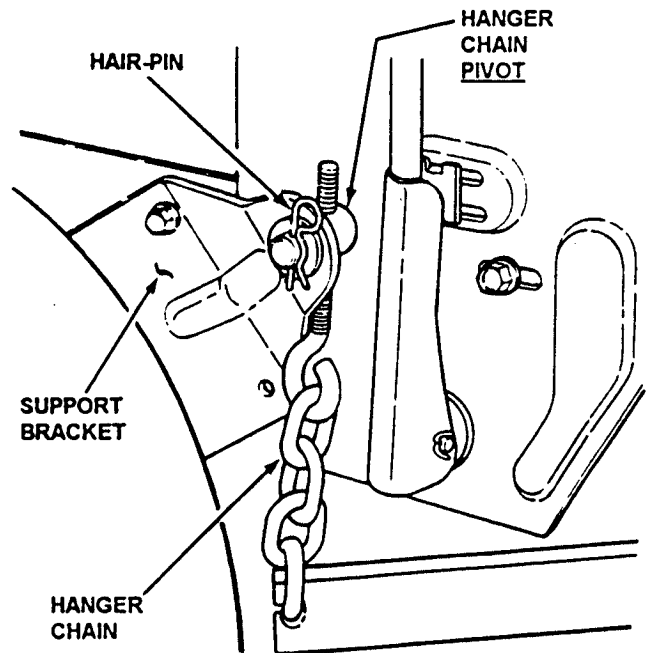
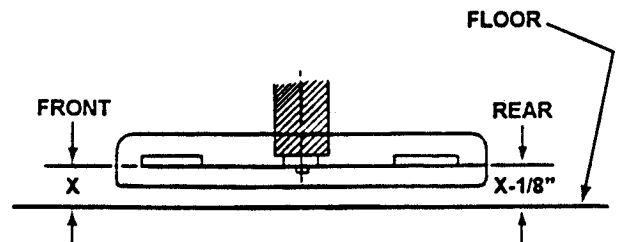


FIGURE 4.11

- Reinstall rear hanger chains and measure blade tips again.
- Repeat steps "a" through "c" until proper levelness is obtained.

NOTE: For 30" cutting decks, repeat section 2., Front to Rear Levelness, except, rear of blade should be the same or $1/8"$ higher than the front.

Section 4 - ADJUSTMENTS & REPAIR

4.2.5. MOWER DECK TIMING ROD ADJUSTMENT

The mower deck timing rod is pre-adjusted at the factory. It is set to maintain the deck in the same attitude through all heights of cut. If suspecting the timing rod requires adjustment, contact an authorized SNAPPER dealer for service. See Figure 4.12.

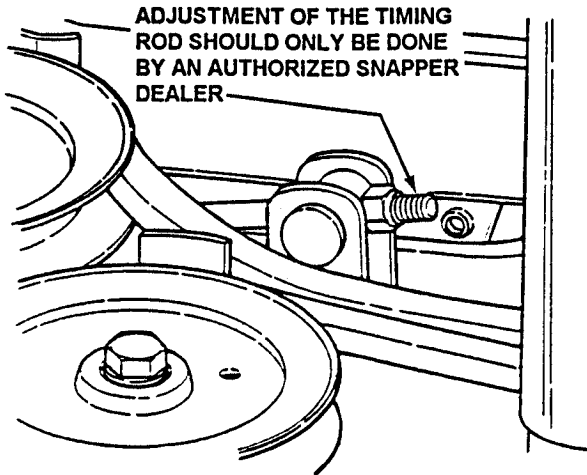


FIGURE 4.12

4.2.6. CUTTING HEIGHT ADJUSTMENT

The deck cutting height range may be adjusted to alter the maximum and minimum cutting deck lift lever.



CAUTION



Before attempting any adjustments or repairs, turn engine "OFF", remove key, remove spark plug wire from spark plug and secure wire away from plug.

1. Place the Rear Engine Rider on a smooth, level surface.
2. Move deck lift lever to the lowest cutting position.
3. Loosen the two lift quadrant mounting bolts and eccentric bolt. See Figure 4.13.

SHOWN WITH COVER REMOVED

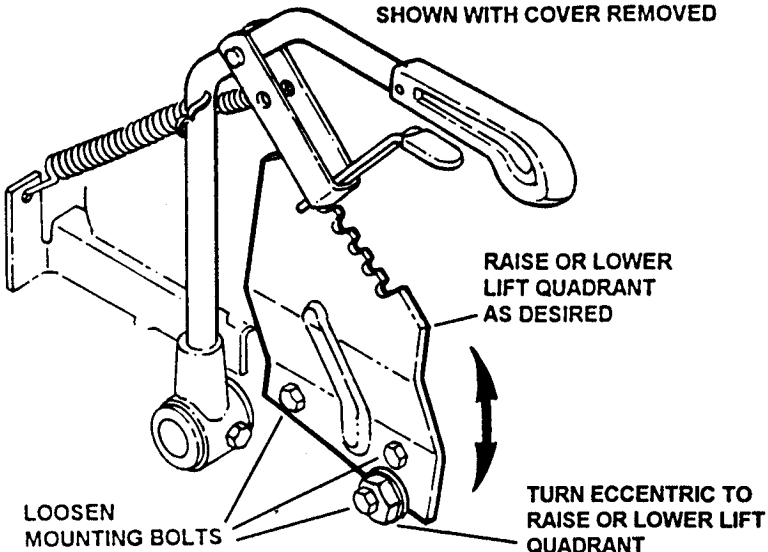


FIGURE 4.13

4. Rotate eccentric bolt to raise or lower desired cutting height range.

5. Tighten lift quadrant mounting bolts and eccentric bolt.

NOTE: Lift quadrant in lowest position gives 1" to 3 1/2" cutting height range. Lift quadrant in highest position gives 1-1/2" to 4" cutting height range.

4.3 REAR ENGINE RIDER DRIVE COMPONENTS

The following drive components may be adjusted by the owner. However, it is recommended that all adjustments to the Rear Engine Rider be made by an authorized SNAPPER dealer.

4.3.1. CLUTCH - STARTING MOTION ADJUSTMENT

If the Rear Engine Rider clutch is too positive or slips excessively when the clutch/brake pedal is released, adjust as follows:

1. Remove key from ignition switch.
2. Remove spark plug wire from spark plug and secure wire away from plug.
3. Close vent on fuel filler cap.
4. Carefully stand Rear Engine Rider on rear bumper.
5. Locate yoke arm between chain case and differential.
6. Move spring to first hole (for positive clutch action) to 4th hole (to increase clutch slippage). See Figure 4.14.

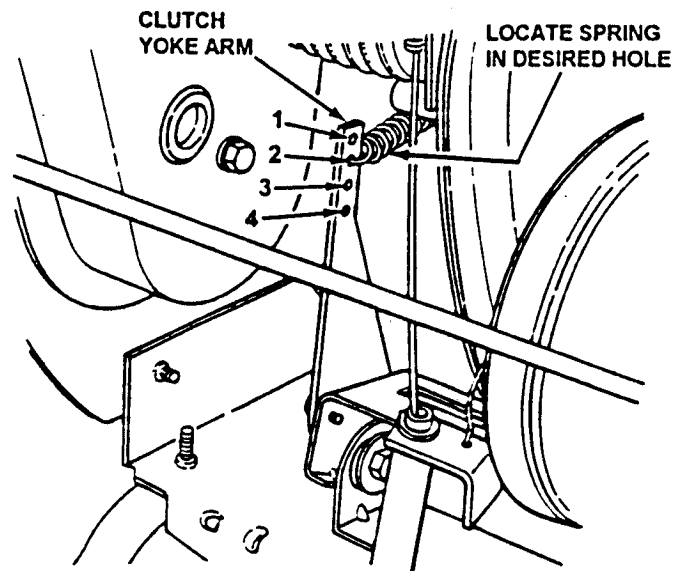


FIGURE 4.14

4.3.2. CLUTCH - SHIFTING ADJUSTMENT

With engine running, depress clutch/brake pedal and move transmission shift lever into a forward speed. If shifting is difficult or will not shift, adjust the clearance between clutch disc and drive disc as follows:

Section 4 - ADJUSTMENTS & REPAIR



CAUTION



Before attempting any adjustments or repairs, stop the engine, remove the key, remove the spark plug wire from the spark plug, and secure spark plug wire away from spark plug.

1. Follow procedures for standing Rear Engine Rider on rear bumper. Refer to Section 3.2.2.
2. Depress clutch/brake pedal all the way down. Move and hold the park brake lever in the "ON" position, then release clutch/brake pedal to lock the park brake. See Figure 4.17.
3. Move the transmission shift lever to reverse.
4. Visually inspect to make certain there is clearance between clutch disc and drive disc. See Figure 4.15.

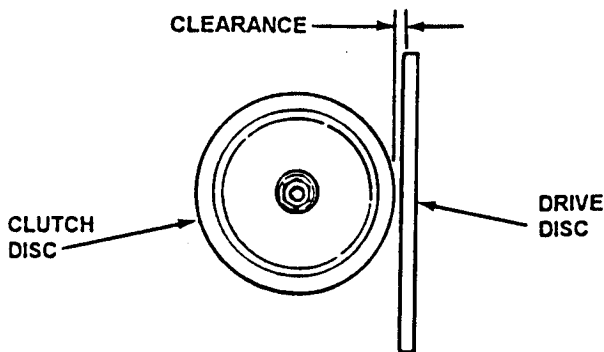


FIGURE 4.15

5. If no clearance is visible, release park brake by depressing clutch/brake pedal to release park brake lever.
6. Pull clutch/brake pedal towards operator's seat and slide one additional ferrule toward end of cable through the eye in the clutch/brake pedal arm. See Figure 4.16.

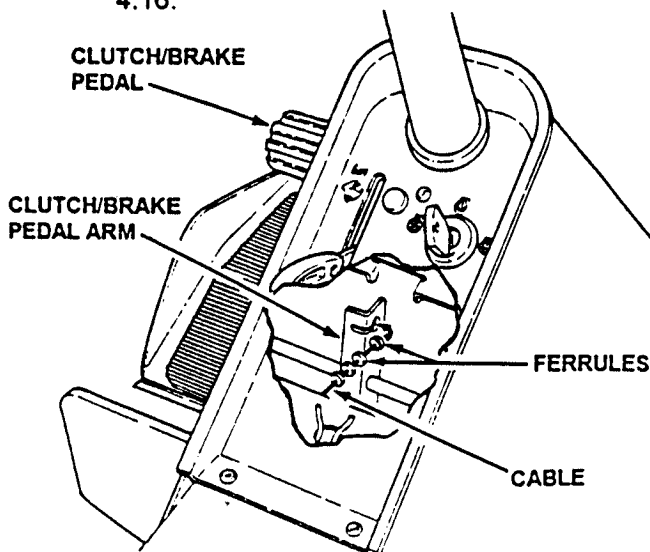


FIGURE 4.16

7. Engage park brake as described in Step 2.
8. Check for clearance between clutch disc and driven disc. If no clearance is visible, repeat steps 5 and 6 until clearance is visible. Refer to Figures 4.15 and 4.16.

NOTE: If adjustment cannot be completed or made because all ferrules have been used, contact an authorized SNAPPER dealer for service.

4.3.3. WHEEL BRAKE ADJUSTMENT

Test the wheel brake on a dry concrete surface. When properly adjusted, the Rear Engine Rider will stop within 3 feet from fastest speed. If stopping distance is more than 3 feet, the wheel brake should be adjusted as follows:

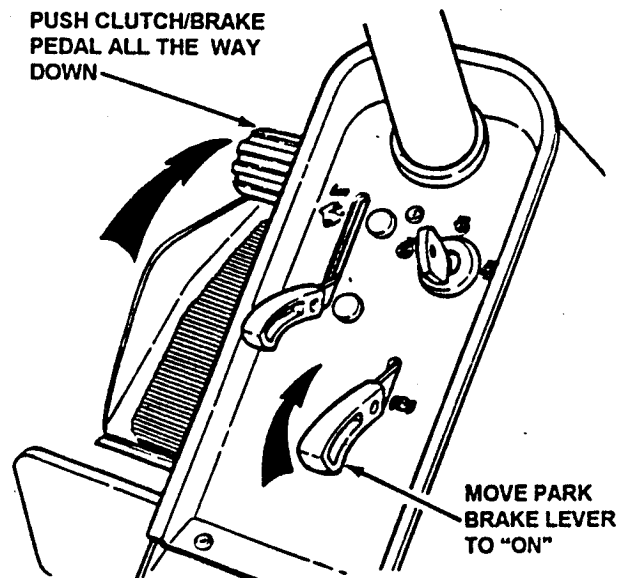


FIGURE 4.17

1. Follow procedures for standing Rear Engine Rider on rear bumper. Refer to Section 3.2.2.
2. Depress clutch/brake pedal all the way down. Move and hold the park brake lever in the "ON" position and release the clutch/brake pedal to lock the park brake. See Figure 4.17.

Section 4 - ADJUSTMENTS & REPAIR

3. Measure the distance between end of clutch/brake cable and bottom of housing. Measurement should be no less than 1/2" and no greater than 3/4". See inset, Figure 4.18.

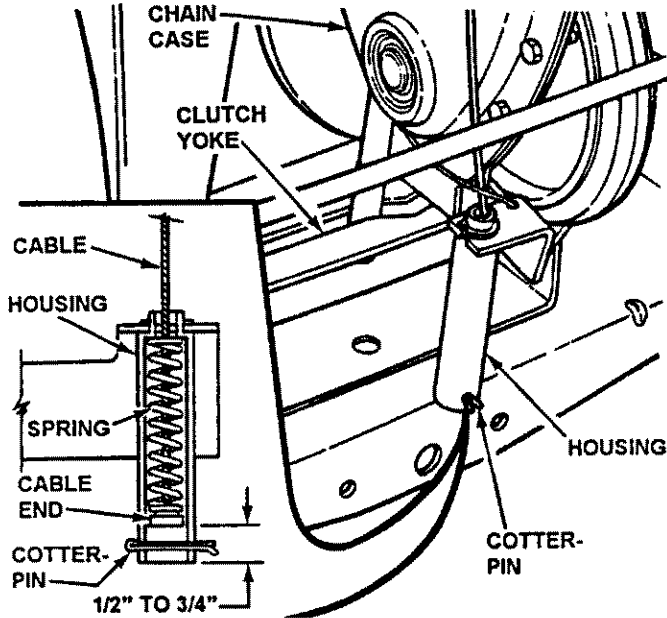


FIGURE 4.18

4. If measurement is less than 1/2" or greater than 3/4", loosen the two jam-nuts (shown in Figure 4.19) holding the clutch/brake cable to the chain case bracket.

5. Adjust cable up or down using the jam-nuts to obtain a distance of 1/2" to 3/4" between end of clutch/brake cable (adjustment shown in inset, Figure 4.18) and bottom of housing. Refer to Figure 4.18.

6. After adjustment is complete, securely tighten cable jam-nuts.

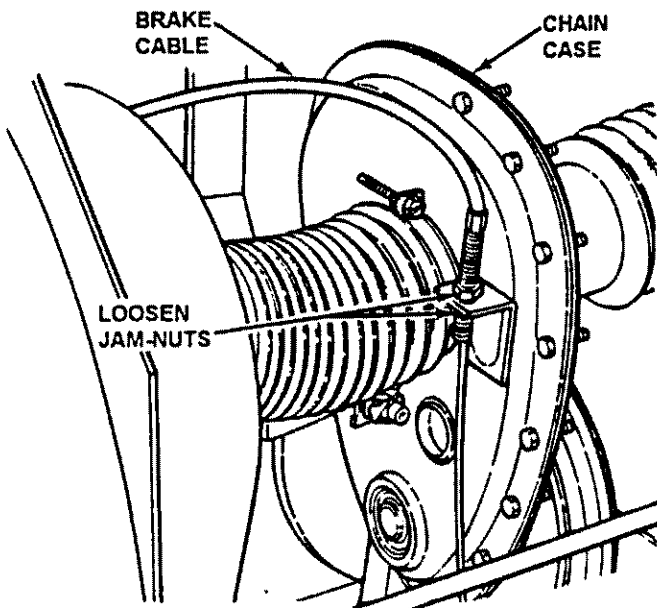


FIGURE 4.19

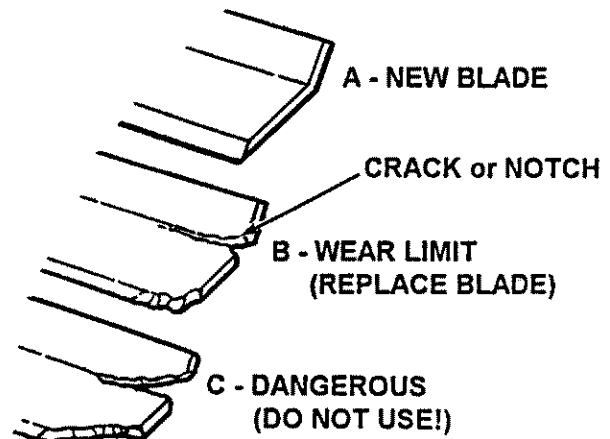


FIGURE 4.20

4.4 MOWER BLADE REPAIR/REPLACEMENT

4.4.1. BLADE WEAR LIMITS

1. Inspect blade frequently for signs of excessive wear or damage. See Figure 4.20.

CAUTION

Before performing any service to blade, turn engine OFF, remove key, remove spark plug wire from spark plug, and secure spark plug wire away from spark plug. Never use a cutting blade that shows signs of excessive wear or damage on the Rear Engine Rider. Refer to Figure 4.20.

4.4.2. BLADE SHARPENING

1. Follow procedures for standing Rear Engine Rider on rear bumper. Refer to Section 3.2.2.
2. Remove blade. See Figure 4.21.

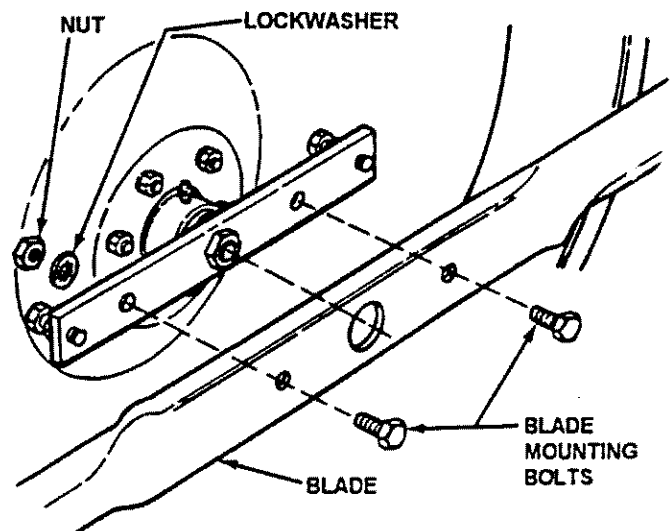


FIGURE 4.21

Section 4 - ADJUSTMENTS & REPAIR

3. Inspect condition of blade. Refer to Figure 4.20.

4. If blade is in good condition, sharpen at 22 to 28 degrees. DO NOT sharpen beyond existing cutting edge. See Figure 4.22.

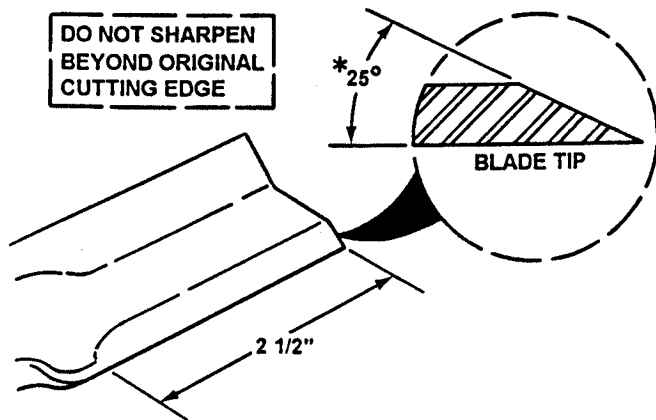


FIGURE 4.22

5. Check blade balance after sharpening. If necessary, correct blade balance by grinding the heavy end of blade.

6. Reinstall blade. Refer to Figure 4.21. Torque blade mounting bolts to recommended range of 30 to 40 ft. lbs.

CAUTION

Before attempting any adjustments or repairs, STOP the engine, remove the key, remove the spark plug wire from the spark plug and secure wire away from plug. On Rear Engine Riders equipped with a grass catcher attachment, the air lifts should be replaced when the blade is replaced.

4.5 MOWER DRIVE BELT REPLACEMENT

Inspect mower drive belt as described in 3.2.3., CHECK MOWER DRIVE BELT on Page 9. Replace belt if signs of excessive wear and/or damage are present.

4.5.1. BELT REMOVAL

1. Remove mower drive belt cover. Refer to Section 3.2.3.
2. Remove old belt.

4.5.2. BELT REPLACEMENT

1. Remove idler. See Figure 4.23.
2. Move transmission shift lever to the neutral (N) position.
3. Follow procedures for standing the Rear Engine Rider on rear bumper. Refer to Section 4.2.3.
4. Route new belt through engine belt guide (engine belt guide shown in Figure 4.24) to engine pulley. Route belt as shown for the individual models shown in Figure 4.23.

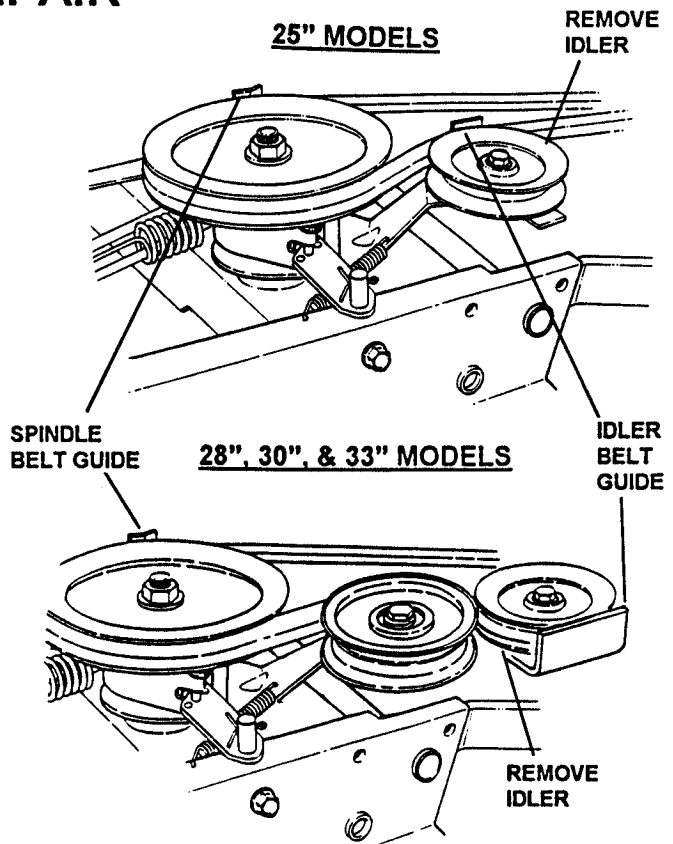


FIGURE 4.24

5. Rotate clutch yoke (clutch yoke shown in Figure 4.18) out with your hand and work belt between drive and driven discs.

6. Move transmission shift lever to the #5 position and place belt over drive disc and into drive pulley belt groove. See Figure 4.24.

7. Route belt onto spindle pulley. Make sure belt is inside spindle belt guide and idler belt guide.

8. Reinstall idler removed in Step 1. The idler belt guide will self locate on tab. Tighten bolt securely.

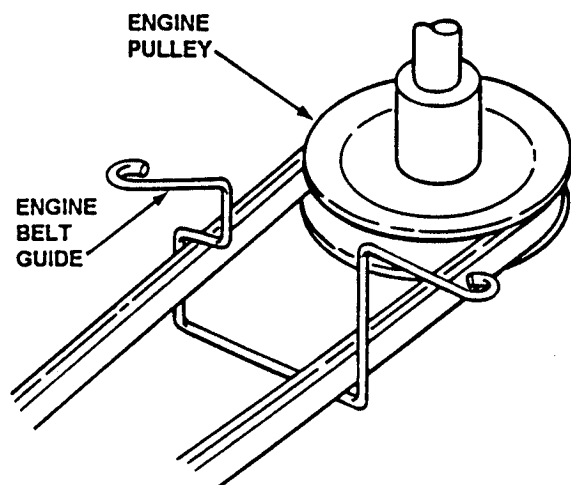


FIGURE 4.24

Section 4 - ADJUSTMENTS & REPAIR

4.5.2. BELT REPLACEMENT (Continued)

9. Adjust belt guide. See Figure 4.25 for proper belt-to-belt guide clearances.

10. Check mower drive belt tension and adjust if necessary. Refer to 4.2.1., MOWER DRIVE BELT ADJUSTMENT on Page 13.

11. Reinstall mower drive belt cover.

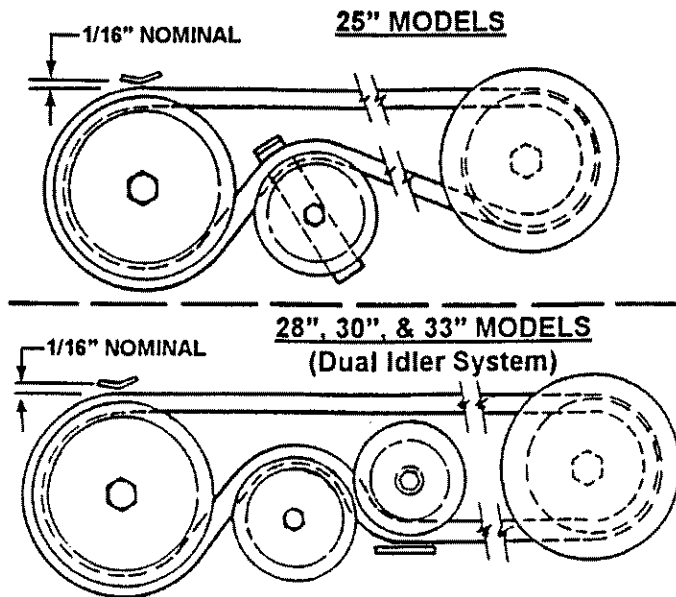


FIGURE 4.25

CAUTION
Never attempt to service or charge the battery while it is installed on the Rear Engine Rider.

4.6 BATTERY

4.6.1. BATTERY REMOVAL

1. Carefully pull each side of battery cover away from ratchet fasteners and remove cover. See Figure 4.26.

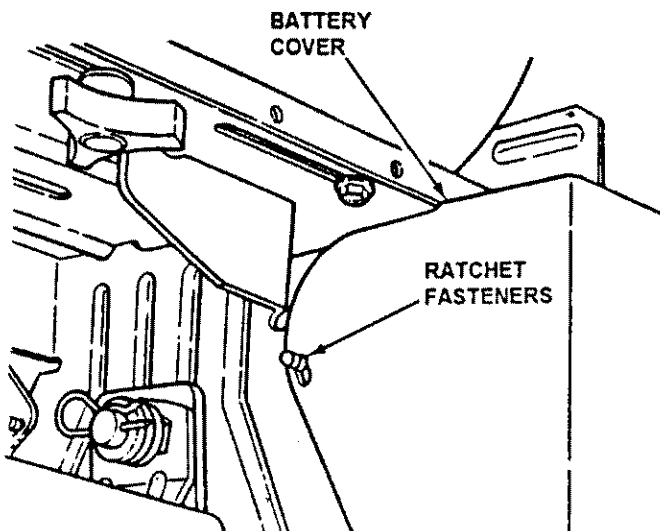


FIGURE 4.26

2. Remove the hair pin and swivel from the deck support to allow clearance for battery removal.

3. Slide battery from battery box to gain access to terminal cables.

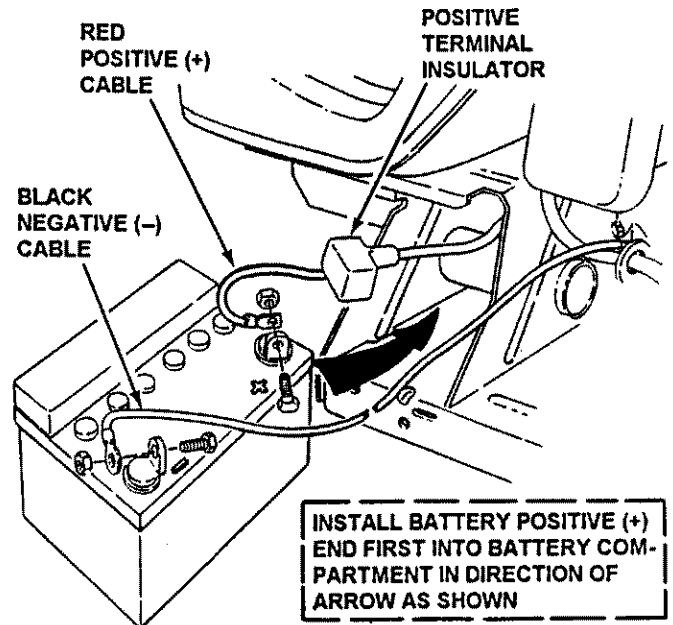


FIGURE 4.27

4. Observe and note cable positions on battery. See Figure 4.27.

5. Disconnect cables from battery terminals, disconnecting BLACK (Negative) cable first. Retain mounting bolts and nuts.

CAUTION
Cables must be connected to battery terminals in the proper position as show in Figure 4.27. Never attempt to charge battery while installed on the Rear Engine Rider. Never use "BOOST" chargers on the battery.

4.6.2. BATTERY INSTALLATION

1. Slide battery partially into battery housing.
2. Connect positive (+) cable (red) first, from wiring harness to the positive terminal (+) on battery using bolt and nut provided in hardware bag. Connect negative (-) cable (black) last, to negative terminal (-) on battery using bolt and nut. Apply a small amount of grease over terminals to prevent corrosion.
3. Insert battery completely into battery housing.
4. Reinstall battery cover. Refer to Figure 4.26.
5. Reinstall swivel and hair pin for deck support.

(Continue to next page for battery service)

Section 4 - ADJUSTMENTS & REPAIR



CAUTION



The electrolyte (acid) produces a highly explosive gas. Keep all sparks, flame and fire away from area when charging battery or when handling electrolyte or battery. Electrolyte (acid) is a highly corrosive liquid. Wear eye protection. Wash affected areas immediately after having eye or skin contact with electrolyte (acid). Battery acid is corrosive. Rinse empty acid containers with water and mutilate before discarding. If acid is spilled on battery, bench, or clothing, etc., Flush with clear water and neutralize with baking soda. Never attempt to charge battery while installed on the RIDER. Never use "BOOST" chargers on the battery.

4.6.3. BATTERY SERVICE

1. Remove battery. See Section on Battery Removal
2. Place battery in a well ventilated area on a level surface.
3. Using distilled water, refill cells as required to cover cell plates of which can also be visualized through the plastic battery case.
4. With cell caps removed, connect battery charger to battery terminals. Red to positive (+) terminal and black to negative (-) terminal.
5. Slow charge battery at 1 amp for 10 hours.
6. If battery will not accept charge or is partially charged after 10 hours of charging at 1 amp, replace with new battery.

4.6.4. BATTERY STORAGE

If mower is to be stored out of season on its rear bumper, it is recommended the battery be removed, charged and stored.

1. Remove battery. (See Section on Battery Removal)
2. Perform battery service.
3. Bring battery to full charge, if required.
4. Store battery in an area away from the RIDER on a wood surface. DO NOT STORE BATTERY ON A CONCRETE SURFACE.

4.6.5. BATTERY TESTING

There are two types of battery tests: Unloaded and Loaded. The unloaded test is the procedure that will be discussed. It's the simplest and most commonly used. An unloaded test is made on a battery without discharging current. To perform unloaded testing, check charge condition using either a hydrometer or voltmeter.

1. Using a voltmeter, voltage readings appear instantly to show the state of charge. Remember to hook the positive lead to the battery's positive terminal, and the negative lead to the negative terminal.

2. A hydrometer measures the specific gravity of each cell. The specific gravity tells the degree of charge; generally, a specific gravity of about 1.265 to 1.280 indicates full charge. A reading of 1.230 to 1.260 indicates the battery should be charged. The chart on the next page shows the charge level as measured by syringe float hydrometer, digital voltmeter and five ball hydrometer.

4.6.5. NEW BATTERY PREPARATION

1. Remove battery from carton.
2. Place battery in a well ventilated area on a level non-concrete surface.
3. Remove battery cell caps. Fill cells as required with electrolyte (purchased separately) to proper level. Fill to 3/16" above cell plates. Filling battery with electrolyte will bring the battery to 80% charged state.
4. With cell caps removed, connect battery charger to battery terminals; RED to positive (+) and BLACK to negative (-) terminal.

IMPORTANT: 3/16" above cell plates is the recommended level. However do not try to measure this dimension. Never place anything in battery other than specified electrolyte.



CAUTION



Never attempt to charge battery while installed on the Riding Mower. Never use "BOOST" chargers on the battery. DO NOT OVERFILL!

5. Slow charge the battery at 1 amp for 2 hours to bring the battery to full charge.
6. After charging, check level of electrolyte and add as needed to bring level to 3/16" above cell plates.
7. Reinstall cell caps.
8. Remove the hair pin and swivel from the deck support to allow clearance for battery installation.
9. Slide battery partially into battery housing.
10. Connect positive (+) cable (red) first, from wiring harness to the positive terminal (+) on battery using bolt and nut provided in hardware bag. Connect negative (-) cable (black) last, to negative terminal (-) on battery using bolt and nut. Apply a small amount of grease over terminals to prevent corrosion.
11. Insert battery completely into battery housing.
12. Reinstall battery cover. Refer to Figure 4.26.
13. Reinstall swivel and hair pin for deck support.



CAUTION



Shield the positive terminal with terminal cover located on battery harness. This prevents metal from touching the positive terminal which could cause sparks.

(Battery Testing Chart on Next Page)

Section 4 - ADJUSTMENTS & REPAIR

4.6.5. BATTERY TESTING

Methods of Checking Battery Condition			
State of Charge	Syringe Hydrometer	Digital Voltmeter	Five Ball Hydrometer
100% Charged w/ Sulfate Stop	1.280	12.80v	Five Balls Floating
100% Charged	1.265	12.60v	Four Balls Floating
75% Charged	1.210	12.40v	Three Balls Floating
50% Charged	1.160	12.10v	Two Balls Floating
25% Charged	1.120	11.90v	One Ball Floating
0% Charged	Less than 1.100	Less than 11.80v	Zero Balls Floating

ACCESSORIES

PART NUMBER	DESCRIPTION
6-0197	Load Carrier Kit
6-0441	Commercial Axle Bearing Kit
6-0517	Wheel Weight
6-0697	Dump Cart
6-0737	Gauge Wheel Kit
6-0941	Single Bag Catcher (25" Models)
6-0943	Single Bag Catcher (28" & 33' Models)
6-0942	Single Bag Catcher (30" Models)
6-0946	Twin Bag Catcher (28" & 33' Models)
6-0947	Bag-N-Wagon (28" & 33' Models)
6-0984	Wagon Cover Kit
6-1049	Recycling Kit (25" Model)
6-1253	Ninja Kit (28" Models)
6-1254	Ninja Kit (30" Models)
6-1255	Ninja Kit (33" Models)
6-1190	Weight Kit
6-0948	Thatcherizer

MAINTENANCE SCHEDULE

SUBJECT	SERVICE TO BE PERFORMED	REFERENCE PAGES	EACH USE	5 HOURS	25 HOURS	50 HOURS	100 HOURS	EACH SEASON
Engine	Check Oil Level	Page 4	X					
Engine	Initial Oil Change	Page 8		X				
Engine	Periodic Oil Change	Page 15				X*		
Air Pre-Cleaner	Service Sponge Pre-Cleaner Element	Engine Manual			X**			
Air Cleaner	Replace Element	Engine Manual.			X**			
Spark Plug	Replace Plugs	Engine Manual.					X	
Fuel Filter	Replace Filter	Page 11					X	
Engine Cooling System	Clean Shrouds & Fins	Engine Manual					X**	
Battery	Check Electrolyte	Page 22			X			X
Battery	Charge Battery	Page 22						X
Tires	Check Pressures	Page 4	X					
Drive Belts	Check For Wear And Tension	Pages 9, 13, 19			X			X
Mower Blades	Check For Wear And Damage	Pages 8, 14, 18			X			
Mower Deck	Clean Debris Accumulation	Page 9	X		X			X
Lubrication Points	Grease or Oil	Pages 10 & 11			X			X
Lubricate Chain Case & Transmission	Check Grease Level	Pages 10 & 11					X	X
Blade Stop Time	Check blade stopping for proper operation	Pages 7 & 14	X					X
Clutch/Brake System	Check Clutch/Brake for proper operation	Page 5 & 14	X					X

*Change oil every 25 hours when operating under heavy load or high temperatures.

**Clean more often under dusty conditions or when air debris is present

SNAPPER®

5 - 2 YEAR LIMITED WARRANTY

COMPONENT PARTS - 5 YEARS

For five (5) years from purchase date for original purchaser's residential non-commercial* use, **Snapper**, through any **Snapper** dealer will replace free of charge any part or parts found upon examination by the factory to be defective in material or workmanship or both.

ENGINE - 2 YEARS

The engine on this product is warranted by the engine manufacturer for two (2) years for the original purchaser's non-commercial* use. (See engine manufacturer's warranty statement for details.)

BATTERIES

Batteries are warranted separately and have one (1) year prorated warranty with a ninety (90) day free replacement period.

DISCLAIMER OF WARRANTIES

Implied warranties including those of merchantability and fitness for a particular purpose, are limited to five (5) years from purchase date for the original purchaser's residential, non-commercial use, for ninety (90) days from purchase date for the original purchaser's commercial, rental, or other non-residential use, and to the extent permitted by law, any and all implied warranties are excluded. This is the exclusive remedy. Liabilities for consequential damages, under any and all warranties are excluded.

Some states do not allow limitations on how long an implied warranty lasts, or do not allow the exclusion or limitation of incidental or consequential damages, so the above limitation or exclusion may not apply to you.

All transportation cost incurred by the purchaser in submitting material to a **Snapper** dealer for replacement under this warranty must be paid by the purchaser.

This warranty does not apply to parts that have been damaged by accident, alteration, abuse, improper lubrication, normal wear (things such as belts, blades, driven disc or any other normal wear item). This warranty does not cover tune-ups or other adjustments required in the normal use of the product.

There is no other express warranty.

This warranty gives you specific legal rights, and you may also have other rights which vary from state to state.

*Any use other than on the purchaser's residential lawn constitutes commercial use.

WARNING: THE USE OF REPLACEMENT PARTS OTHER THAN GENUINE SNAPPER PARTS MAY IMPAIR THE SAFETY OF SNAPPER PRODUCTS AND WILL VOID ANY LIABILITY AND WARRANTY BY SNAPPER ASSOCIATED WITH THE USE OF SUCH PARTS.

IMPORTANT: Please fill out the attached **SNAPPER** Product Registration Card immediately and mail to: **SNAPPER**, 535 Macon Rd., McDonough, Ga. 30253

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 2. **Background**
 3. **Methodology**
 4. **Results**
 5. **Discussion**
 6. **Conclusion**
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 217. **Figure 209**

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Safety Instructions & Operator's Manual for

SNAPPER®

**REAR ENGINE RIDING MOWER
SERIES 16**

⚠ WARNING: The engine exhaust from this product contains chemicals known to the State of California to cause cancer, birth defects or other reproductive harm.

SNAPPER® McDonough, GA., 30253 U.S.A.

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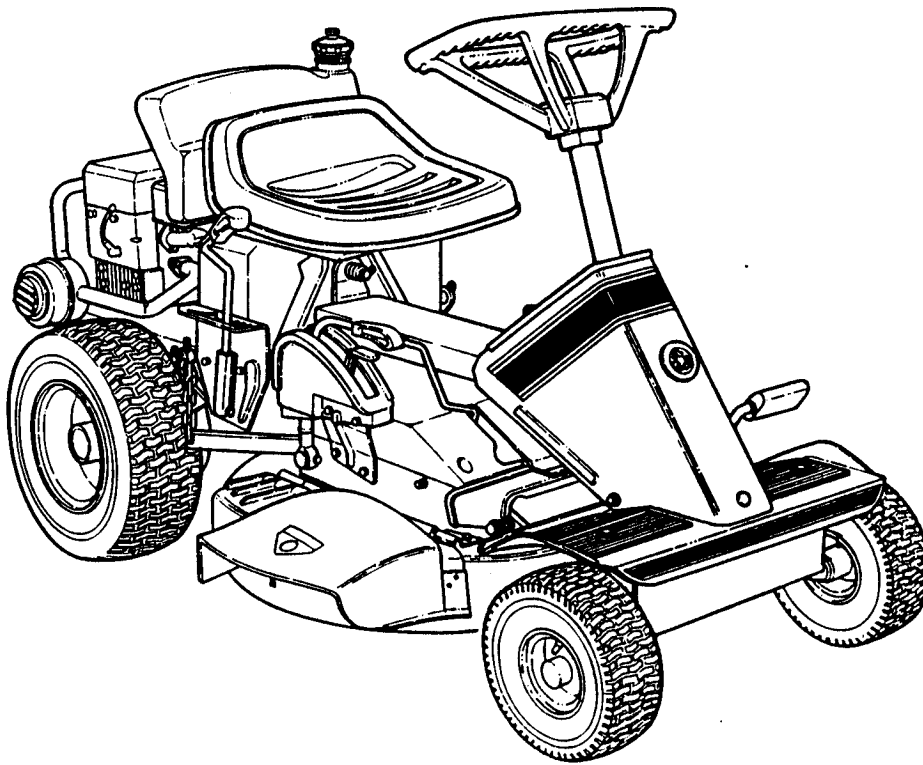
MANUAL No. 3-5620 (REV. 1, 9/97)

Printed in U.S.A.

Safety Instructions & Operator's Manual for

SNAPPER®

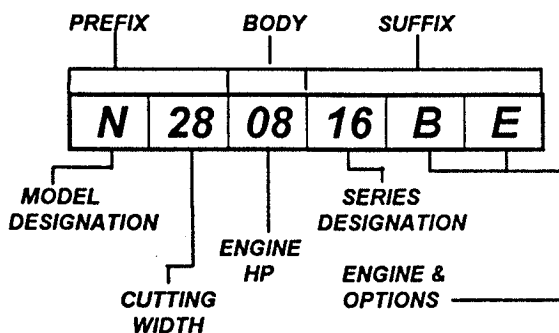
REAR ENGINE RIDING MOWER SERIES 16



MODELS

250816B
N250816B
250816BE
N250816BE
281016BE
N281016BE
301016BE
301216BE
331416BVE
331416KVE

MODEL NUMBER EXPLANATION



PREFIX EXPLANATION

N - California Model	25 - 25" Cutting Width 28 - 28" Cutting Width 30 - 30" Cutting Width 33 - 33" Cutting Width
----------------------	--

BODY EXPLANATION

08 - 8.0 HP Engine 10 - 10.0 HP Engine	12 - 12.0 HP Engine 14 - 14.0 HP Engine
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SUFFIX EXPLANATION

16 - Series Designation	B - Briggs Engine V - Overhead Valve E - Electric Start
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Thank you for buying a SNAPPER Product! Before operating your REAR ENGINE RIDER, read this manual carefully and pay particular attention to the "IMPORTANT SAFETY INSTRUCTIONS" on Page 2. Remember that all power equipment can be dangerous if used improperly. Also keep in mind that SAFETY requires careful use in accordance with the operating instructions and common sense!

IMPORTANT SAFETY INSTRUCTIONS

WARNING: This powerful cutting machine is capable of amputating hands and feet and can throw objects that can cause injury and damage! Failure to comply with the following **SAFETY** instructions could result in serious injury or death to the operator or other persons. The owner of the machine must understand these instructions and, furthermore, must allow only persons who understand these instructions to operate machine. Each person operating the machine must be of sound mind and body and must not be under the influence of any substance which might impair vision, dexterity, or judgment. If you have any questions pertaining to your machine which your dealer cannot answer to your satisfaction, call or write the Customer Service Department at SNAPPER, McDonough, Georgia 30253. Phone: (770) 954-2500.

PROTECTION FOR CHILDREN

1. **DO NOT** allow children in yard when machine is operated (even with the blade OFF).
2. **DO NOT** allow children to ride on machine or on attachments (even with the blade OFF).
3. **DO NOT** allow pre-teenage children to operate machine.
4. Only responsible teenagers or adults with mature judgement shall be allowed to operate machine and only under close supervision.

PROTECTION AGAINST TIPOVERS

1. **DO NOT** operate machine on slopes exceeding 15 degrees (27% grade).
2. On slopes above 10 degrees (18% grade), exercise extreme **CAUTION**. Turn blade OFF when traveling uphill, also reduce speed and avoid sharp turns.
3. Avoid uphill starts. If machine is stopped going uphill, turn blade OFF and back slowly down the slope.
4. **DO NOT** mow under any condition where traction or stability is doubtful without first test driving over the terrain with blade OFF.
5. Stay alert for holes and other hidden hazards. Keep away from ditches, washouts, culverts, fences and protruding objects.
6. **DO NOT** mow back and forth across face of slopes.
7. **KEEP A SAFE DISTANCE** (at least three feet) away from edge of ditches and other drop offs.

PREPARATION

1. Read this manual, get to know where all controls are located and practice how to use them before starting for the first time, and at the beginning of each season. Pay attention to Warning and Instructional Decals on engine and machine. Read and follow operator's manuals and instructions furnished with attachments.
2. Handle fuel with care! Never remove fuel cap while engine is running. Fill fuel tank outdoors only with engine STOPPED and cool. Clean spilled fuel from machine. Store fuel in approved container, out of the reach of children, in well ventilated, unoccupied building.
3. Only mature, responsible persons shall operate the machine.
4. Mount and dismount the machine from left side.
5. Wear appropriate protective clothing when mowing, such as, long pants and substantial footwear, not barefoot or with open sandals.
6. Practice operation of machine with blade OFF to learn controls and develop skill.
7. Persons under the influence of alcohol or drugs must **NOT** operate machine.

8. Check the area to be mowed and remove all objects such as doormats, sticks, toys, wire, rocks, and other objects that could cause injury if thrown by blade.
9. Know how to **STOP** blade and engine quickly in preparation for emergencies.
10. Keep people and pets a safe distance from machine.
11. Shields, deflectors, switches, blade controls and other safety devices must be in proper position and functional.

OPERATIONAL PRECAUTIONS

1. **STOP** blade, **STOP** engine and remove key when leaving machine.
2. **DO NOT** operate machine unless properly seated with feet on foot rests or pedal.
3. Keep hands and feet away from rotating blade underneath deck. Never place foot on ground while blade is ON or when machine is in motion.
4. Turn blade OFF, **STOP** engine and wait for blade to **STOP** before attempting to unclog grass or leaves to prevent loss of fingers or hand.
5. Blade must be switched OFF except when cutting grass. Set cutter in highest position when mowing over rough ground.
6. Deflector or grass catcher must be in position. Never point discharge at people, passing cars, windows or doors. Watch out for traffic when crossing or near roadways.
7. Operate in reverse only with careful observation of entire area behind the machine. **DO NOT** mow in reverse unless absolutely necessary.
8. Service machine and make adjustments only when engine is stopped.
9. Have machine serviced by an authorized SNAPPER dealer at least once a year and have the dealer install any new safety devices.
10. Use only genuine SNAPPER replacement parts to assure that original standards are maintained.
11. Tighten all nuts, bolts and screws frequently, then check, adjust, repair or replace brakes as needed.
12. Lubricate machine at intervals specified in manual to prevent controls from binding.
13. Mow only in daylight or with good artificial light.
14. **DO NOT** change engine governor speed settings or overspeed engine.
15. Check grass catcher components frequently for signs of wear or deterioration and replace as needed to prevent injury from thrown objects going through weak or worn spots.
16. Exercise **CAUTION** when pulling loads. Limit loads to those you can safely control and attach loads to hitch plate as specified with SNAPPER attachment instructions.

Section 1 - FAMILIARIZATION

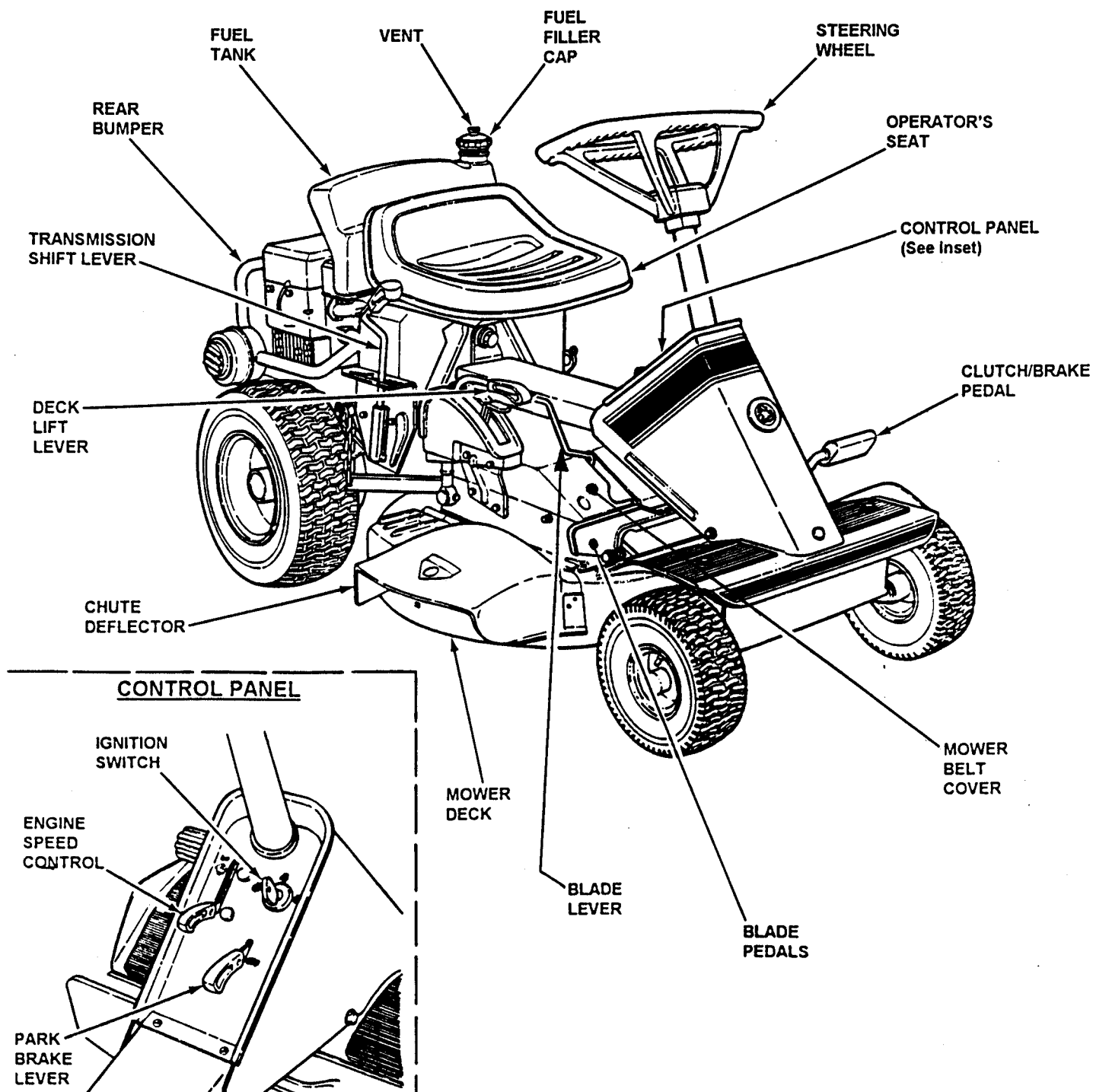


FIGURE 1.1

1.1 INTRODUCTION

This manual has been prepared for the operator's of the SNAPPER Rear Engine Rider. Its purpose, aside from recommending standard operating procedures and routine service requirements, is to promote **SAFETY** through the use of accepted operating practices. Read, **Understand and Follow** the **IMPORTANT SAFETY INSTRUCTIONS** on Page 2 of this manual and **All SAFETY** messages on the Rear Engine Rider and its attachments before operating.

1.2 NOMENCLATURE

The nomenclature drawing above, Figure 1.1, shows the essential parts of the SNAPPER Rear Engine Rider. It is recommended that all operator's of this equipment become thoroughly familiar with the controls, components, and operation of this machine before operating. Specific details involving the engine are found in the separate engine owner's manual. Study these manuals before operating and keep both handy for future reference.

Section 2 - OPERATING INSTRUCTIONS

2.1 PRE-START CHECK LIST

Make the following checks and perform the service required before each start-up.

- 2.1.1. Check tires and add or release air as needed to bring pressure to 15 psi in front and 10 psi in rear tires.
- 2.1.2. Check guards, deflectors and covers to make sure all are in place and securely tightened.
- 2.1.3. Check engine oil and add oil as needed to bring level up to the FULL mark. Refer to engine owner's manual for oil specifications. See Figure 2.1.

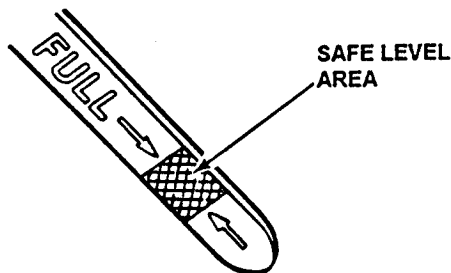


FIGURE 2.1

- 2.1.4. Adjust seat as needed to most comfortable position. See Figure 2.3.
- 2.1.5. Check blade control to insure it works freely. If blade pedals are depressed, blade lever can be moved manually from "ON" to "OFF" to stop blade.

CAUTION
The blade control lever must snap from "ON" to "OFF" when blade pedals are released. If blade control lever does NOT snap back, check mower belt tension. See 4.2.1. MOWER DRIVE BELT ADJUSTMENT on Page 13.

- 2.1.6. Clean exterior surfaces of cutting deck and engine of any accumulation of dirt, grass, oil, etc. Keep engine air intake screen and cooling fins clear at all times.
- 2.1.7. Add fuel to tank after pushing the Rear Engine Rider outside where fumes can dissipate. Make sure fuel filler cap is tight and vent is open after refueling. Refer to engine owner's manual. See Figure 2.2.

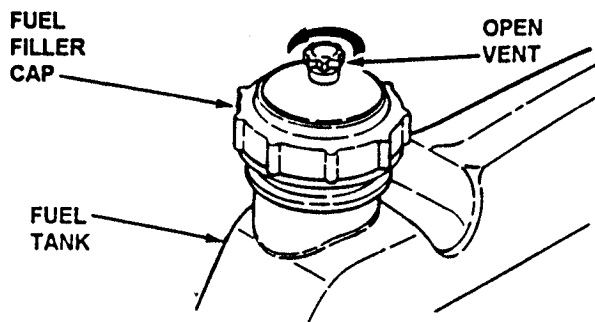


FIGURE 2.2

2.2 OPERATOR'S SEAT ADJUSTMENT

2.2.1. FRONT TO REAR ADJUSTMENT

- 1. With the engine stopped, loosen the two adjusting knobs and move seat to desired position. After adjustment, tighten knobs securely. If seat does not move after loosening knobs, it may be necessary to loosen the 5/16" patch lock screws located at the rear of the seat using a 1/2 inch wrench. On 12 and 14HP models, the operator's seat has a tilt-up design. The adjusting knobs need to be positioned as shown so as not to interfere with seat mounting plate when returned to sitting position. See Figure 2.3.

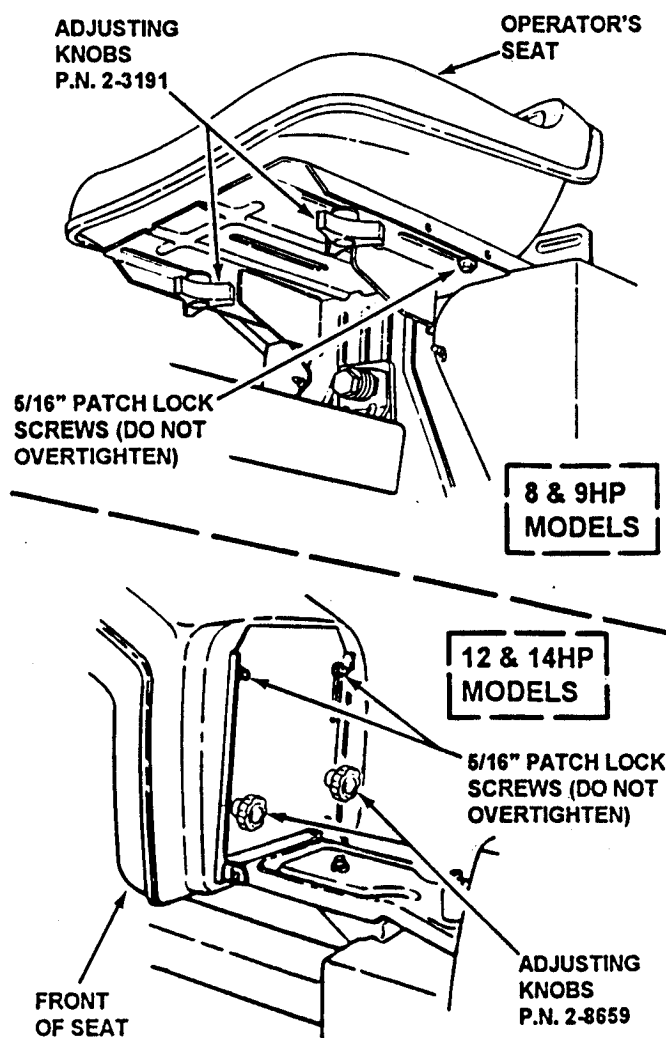


FIGURE 2.3

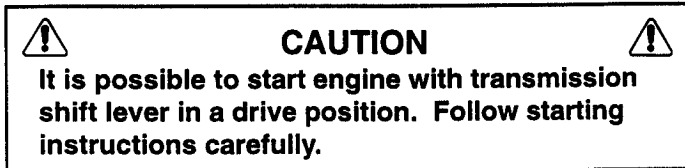
Section 2 - OPERATING INSTRUCTIONS

2.3 STARTING & OPERATION

2.3.1 ENGINE (ELECTRIC START)

IMPORTANT: When the ignition key is turned to "START", the engine will turn over, but will not start unless the Clutch/Brake pedal is pressed all the way down, the Blade Lever is in the "OFF" position (See Figure 2.5). The operator should be in the seat. Start engine as follows:

1. Move transmission shift lever to (N) Neutral position. **DO NOT** start engine with transmission shift lever in a drive position.



2. Make certain the Blade Lever is in the "OFF" position. See Figure 2.4.

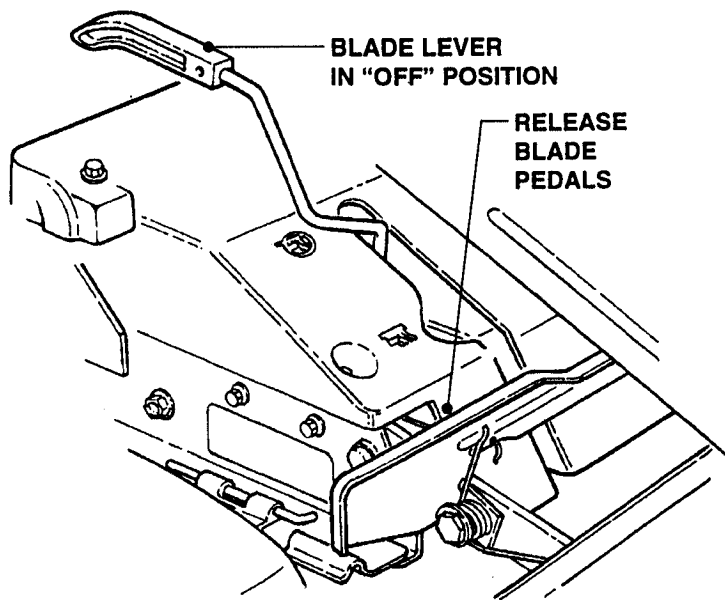


FIGURE 2.4

3. Press Clutch/Brake Pedal all the way down and hold while starting engine. See Figure 2.5.

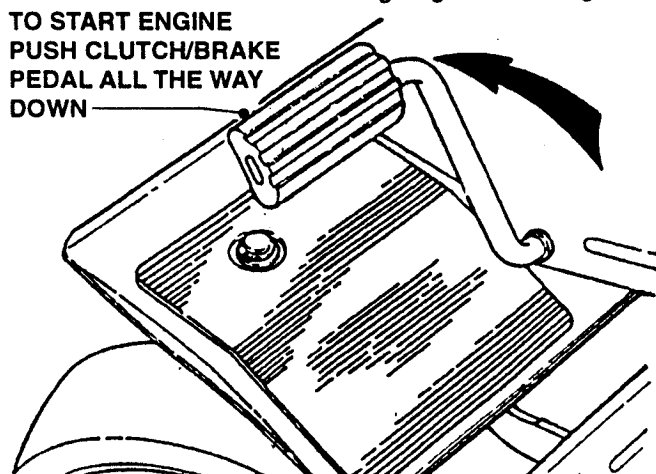


FIGURE 2.5

4. Open vent on fuel filler cap by turning counterclockwise. **IMPORTANT:** Failure to open vent on the fuel filler cap can cause engine to stall. See Figure 2.6.

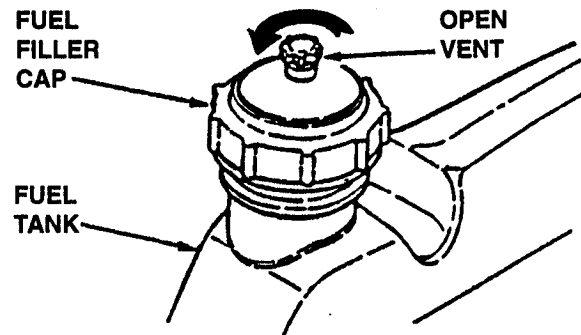


FIGURE 2.6

5. Move engine speed control to the choke position to start engine. See Figure 2.7.

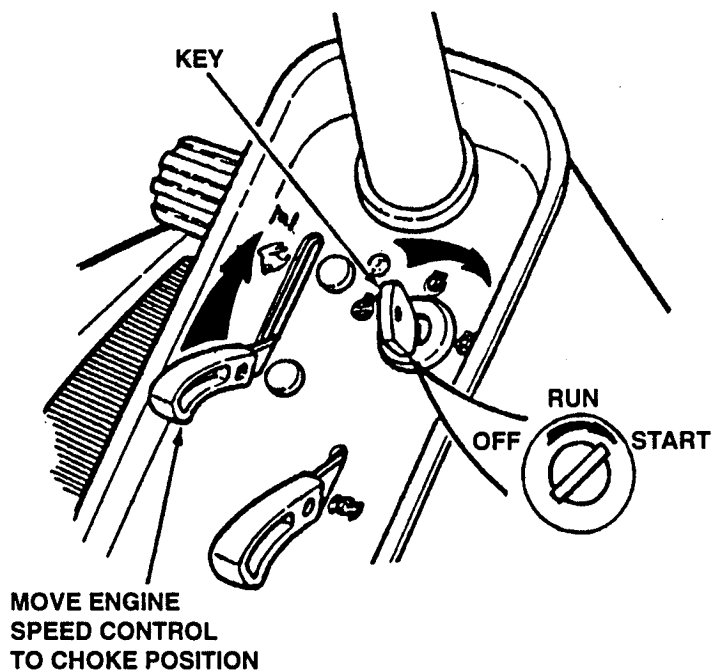


FIGURE 2.7

6. Turn key to the "START" position until engine starts. See Figure 2.7. **NOTE:** If after 5 seconds of cranking the engine and it does not start, release the key, make sure the Clutch/Brake Pedal is fully depressed and attempt starting again after waiting for approximately 20 seconds.
7. After engine starts, move engine speed control to the "FAST" position, allow a brief warm-up until engine runs smooth.

Section 2 - OPERATING INSTRUCTIONS

2.3.1 ENGINE (ELECTRIC START) (Continued)

8. Should the battery be too weak to start the engine, use the instructions shown below, 2.3.2., ENGINE (MANUAL START) to manually start the electric start engines.

9. On Model 331416BVE, the engine is equipped with a fuel shut-off solenoid. If the battery is dead, the engine can be started with the recoil back-up starter if the throttle control is in the choke position (HOT engine or COLD engine).

2.3.2. ENGINE (MANUAL START)

IMPORTANT: When the ignition key is turned to "RUN", and the recoil handle is pulled, the engine will turn over, but will not start unless the Clutch/Brake Pedal is pressed all the way down with Parking Brake engaged (See Figure 2.8) and the Blade Lever is in the "OFF" position (Refer to Figure 2.4). Start engine as follows:

1. Move transmission shift lever to (N) Neutral position. **DO NOT** start engine with transmission shift lever in a drive position.



CAUTION



It is possible to start engine with transmission shift lever in a drive position. Follow starting instructions carefully.

2. Make certain the Blade Lever is in the "OFF" position. Refer to Figure 2.4.

3. Press Clutch/Brake Pedal all the way down, lift Parking Brake Lever and release the Clutch/Brake Pedal to set Parking Brake. See Figure 2.8.

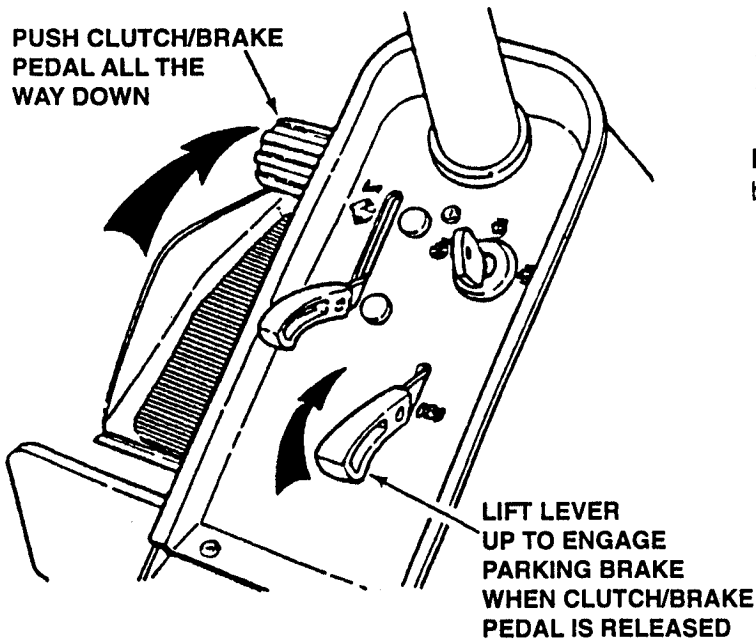


FIGURE 2.8

4. Open vent on fuel filler cap by turning counterclockwise. NOTE: Failure to open vent on the fuel filler cap can cause engine to stall. See Figure 2.6.

5. Move engine speed control to the choke position to start a cold engine. Refer to Figure 2.7.

6. Turn key to "RUN" position. See Figure 2.9.

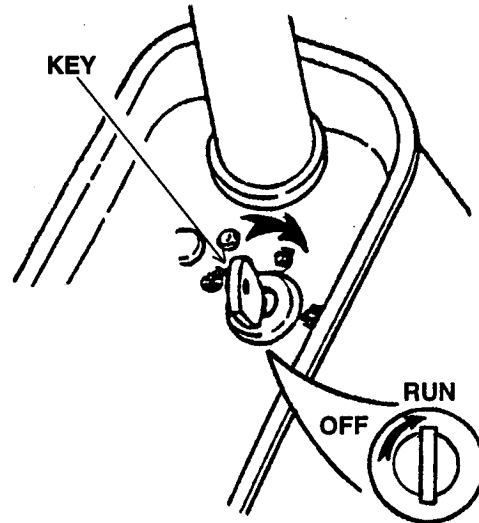


FIGURE 2.9

7. Pull starter rope with a smooth, even motion until engine starts. Always guide the starter rope back into the recoil housing. Never allow rope to snap back. After Engine starts, move engine speed control to the "FAST" position.

8. Allow a brief warm-up until engine runs smooth.

2.3.3. MOWER BLADE

1. With engine running, move engine speed control to the "FAST" position.

2. Move blade lever forward to the "ON" position, then depress blade pedals to hold blade lever in the "ON" position. See Figure 2.10.

IMPORTANT: You cannot engage the blade lever if the blade pedal is depressed first.

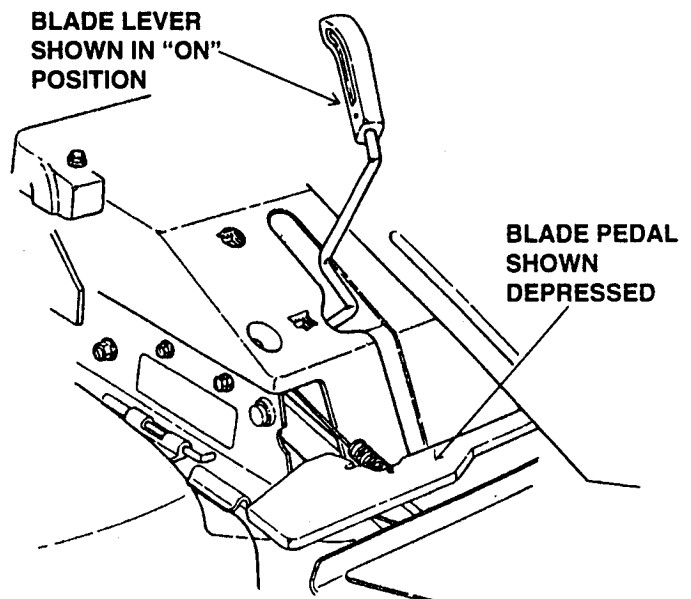


FIGURE 2.10

Section 2 - OPERATING INSTRUCTIONS



CAUTION



Before leaving the Rear Engine Rider with the engine running, **STOP** the blade, shift to neutral and engage the park brake.

2.4 STOPPING

2.4.1. ENGINE

1. Stop engine by turning key to the "OFF" position. See Figure 2.11.

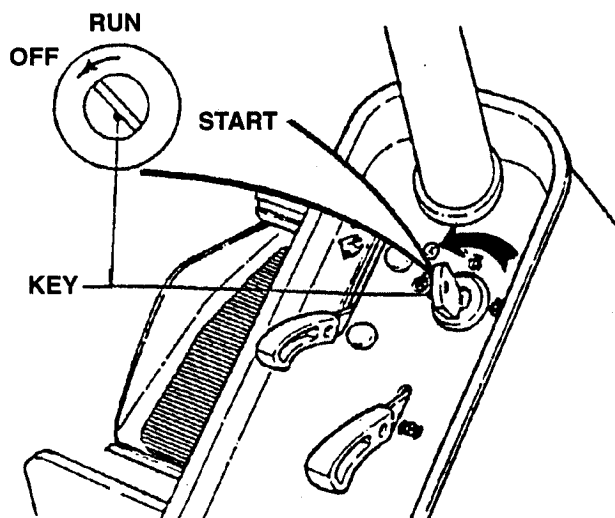


FIGURE 2.11

2.4.2. WHEEL DRIVE

1. Stop motion of Rear Engine Rider by pushing Clutch/Brake Pedal all the way "DOWN" to apply brake. See Figure 2.12.

IMPORTANT: Depressing the Clutch/Brake Pedal half way down activates the clutch to allow transmission shifting.

TO APPLY BRAKES,
PUSH CLUTCH/BRAKE
PEDAL ALL THE
WAY DOWN

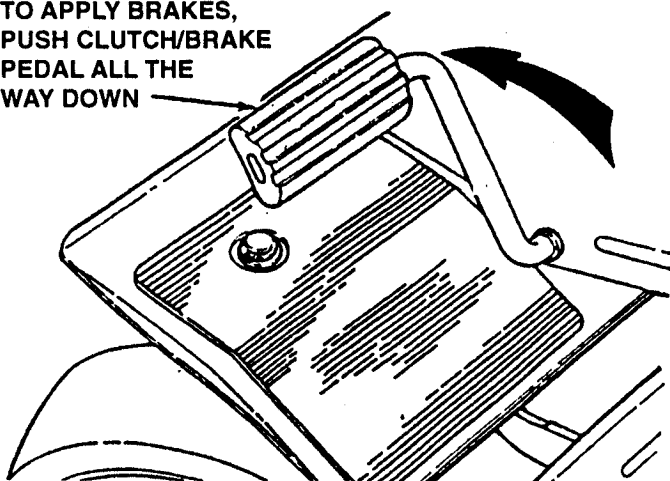


FIGURE 2.12

2.4.3. MOWER BLADE

Stop mower blade by removing feet from blade pedals or moving blade lever rearward to the "OFF" position. See Figure 2.12.

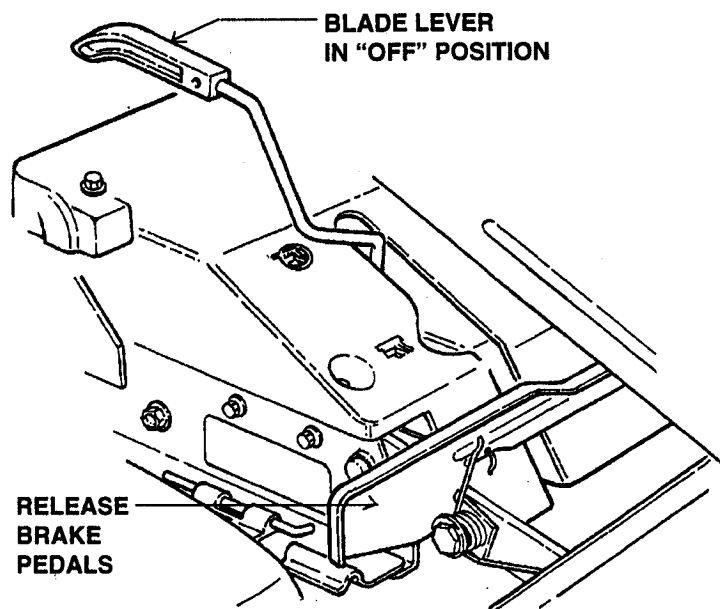


FIGURE 2.13



CAUTION

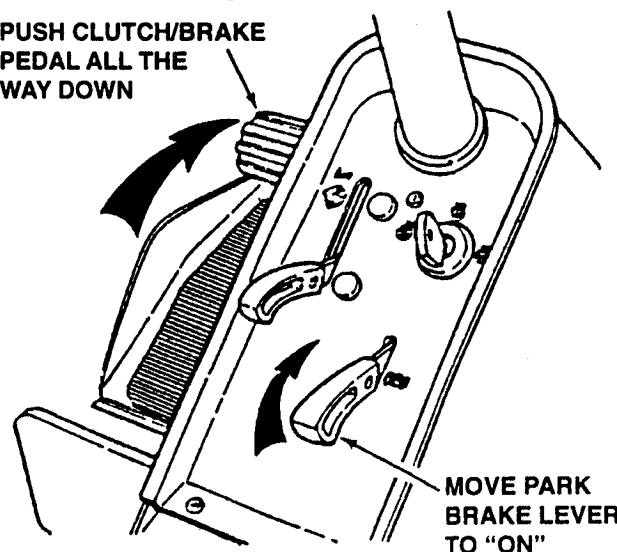


Once blade is disengaged, it should come to a complete stop in 3 seconds or less. If the blade continues to rotate after 3 seconds, the blade brake should be adjusted. See 4.2.2., **BLADE BRAKE ADJUSTMENT** on Page 14 for adjustment procedures or return machine to dealer for adjustment. **DO NOT CONTINUE** to operate mower until blade brake is properly adjusted.

2.4.4. PARK BRAKE

1. Engage park brake by pushing Clutch/Brake Pedal "DOWN" and moving the park brake lever to the "ON" POSITION. While holding the park brake lever "ON", release Clutch/Brake Pedal to set park brake. See Figure 2.14.

PUSH CLUTCH/BRAKE
PEDAL ALL THE
WAY DOWN



MOVE PARK
BRAKE LEVER
TO "ON"

FIGURE 2.14

Section 2 - OPERATING INSTRUCTIONS

2.4.4. PARK BRAKE (Continued)

2. Release park brake by pushing down on the Clutch/Brake Pedal to release park brake lever. See Figure 2.15.

PUSH CLUTCH/BRAKE
PEDAL ALL THE
WAY DOWN

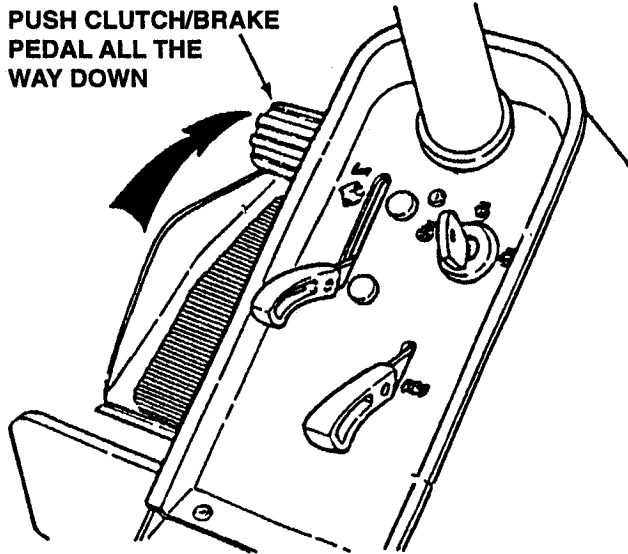


FIGURE 2.15

2.4.5. CUTTING HEIGHT ADJUSTMENT

1. Adjust cutting height as desired to any one of six positions using deck lift lever. When in desired height of cut, release latch, then try to move deck lift lever to ensure lift lever latch is fully engaged. See Figure 2.16.

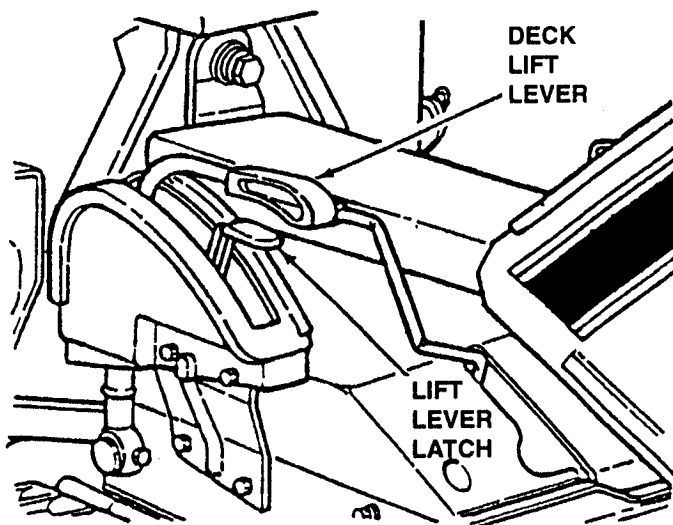


FIGURE 2.16

2.4.6. WHEEL DRIVE

1. With engine running, adjust engine speed control to "FAST" position.
2. Depress Clutch/Brake Pedal.
3. Place transmission shift lever in the notch for the desired speed.
4. Release Clutch/Brake Pedal to start desired direction.
5. During forward motion, the transmission shift lever may be placed in any desired forward speed without depressing the Clutch/Brake Pedal.

NOTE: For best cutting results, move the transmission shift lever into a slow forward speed and the engine speed control to a fast position. This combination will allow the mower blades to lift the grass while cutting smoothly and evenly.



WARNING



Never park the Rear Engine Rider on an incline or embankment.

Section 3 - MAINTENANCE

3.1 INTRODUCTION

To retain the quality of the Rear Engine Rider, use genuine SNAPPER replacement parts only. Contact a local SNAPPER dealer for parts and service assistance. For the correct part or information for a particular Rear Engine Riding Mower, always mention the model and serial number. SNAPPER recommends returning the Rear Engine Rider to an authorized SNAPPER dealer annually for inspection and addition of any new devices which might upgrade the safety of the Rear Engine Rider. For the nearest SNAPPER dealer in your area, 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.

3.2 SERVICE - AFTER FIRST 5 HOURS

CAUTION
Before performing any service or maintenance procedures, always remove key from ignition switch, remove spark plug wire from spark plug and secure spark plug wire away from spark plug.

3.2.1. CHANGE ENGINE OIL

1. Change engine oil as follows:
 - a. Place bricks or wooden blocks under the front wheels to lower rear of engine.
 - b. Loosen or remove oil fill cap on engine.
 - c. Loosen oil drain plug.
 - d. Place a 2 quart minimum capacity container under the end of the oil drain. Open oil drain. See Figure 3.1 for oil drains used on the Rear Engine Riders.

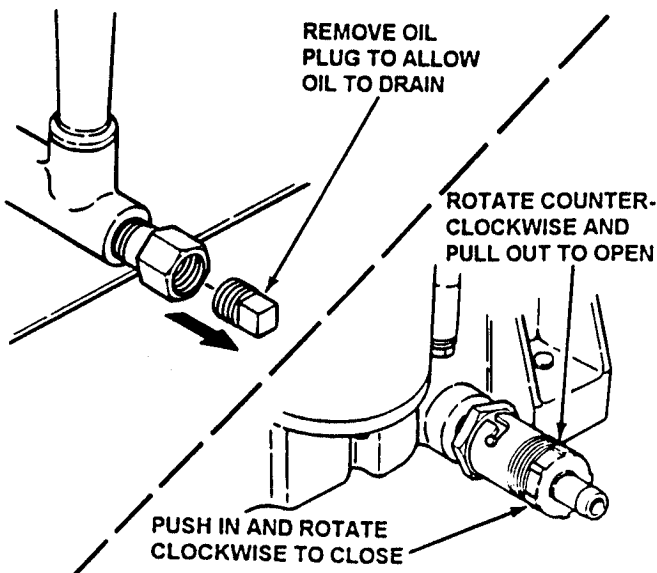


FIGURE 3.1

- e. After all the oil has drained, close the drain and wipe up any oil that may have spilled. See Figure 3.1.

- f. Fill engine crankcase with new oil. Refer to your engine owner's manual for oil specifications.
- g. Change oil filter on 14HP engines at every oil change. Refer to your engine owner's manual for service instructions.

3.2.2. CHECK MOWER BLADE

1. Check fuel level in tank. If over 3/4 full, remove tank (See Page 12 for gas tank removal). If 3/4 or less, proceed to next step.
2. Close vent on fuel filler cap.
3. Apply park brake.
4. Carefully stand Rear Engine Rider on rear bumper. It may be necessary to have help.

CAUTION
Remove the battery if the Rear Engine Rider will be left standing on the rear bumper for longer than 2 hours. See 4.6.1., BATTERY REMOVAL on Page 20. Never use a cutting blade that shows signs of excessive wear or damage on the Rear Engine Rider. Refer to 4.4, MOWER BLADE REPAIR/REPLACEMENT on Page 18 for proper blade inspection and service procedures.

5. Check torque of blade mounting bolts. As necessary, torque to 30 to 40 ft. lbs. See Figure 3.2.
6. Check blade for sharpness, wear and damage. See 4.4.1., BLADE WEAR LIMITS on Page 18.

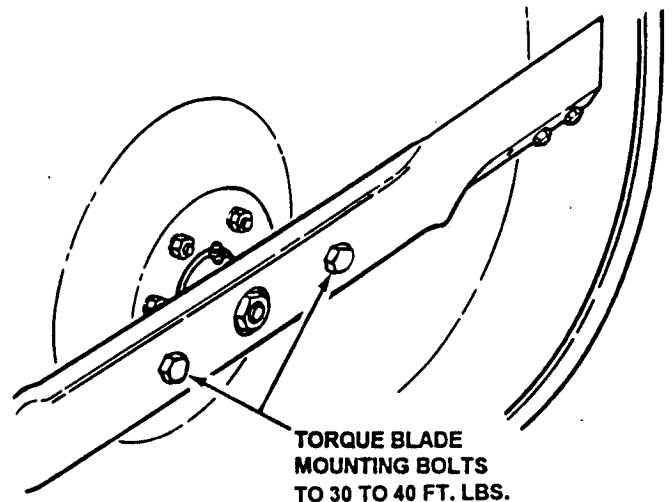


FIGURE 3.2

7. Check blade for straightness. Refer to 4.2.3., ADJUSTING MOWER BLADE on Page 14.

Section 3 - MAINTENANCE

3.2.3. CHECK MOWER DRIVE BELT

1. Drive Belt Cover Removal

- Lower deck to lowest setting.
- Remove four self-tapping screws, two on each side of mower drive belt cover. See Figure 3.3.
- Slide cover back and rotate out on left side of mower deck.

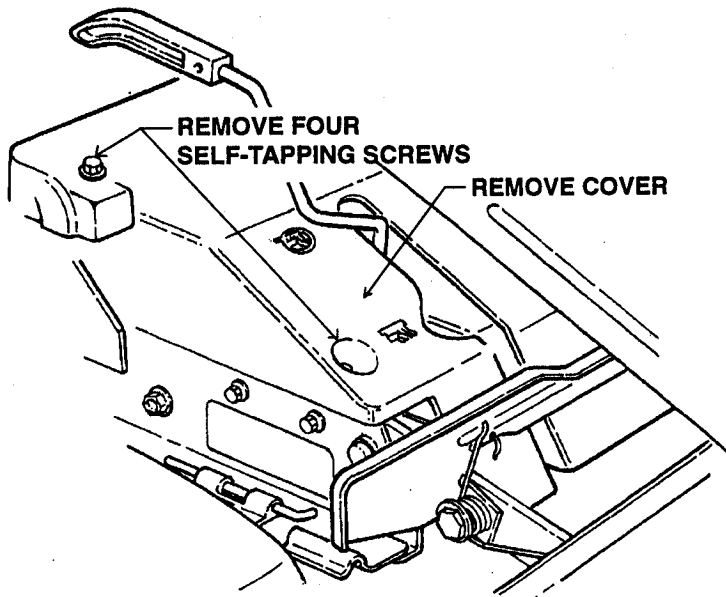


FIGURE 3.3

2A. Checking Belt Tension

- On 25" models, with engine "OFF" and deck in 3rd height of cut position, move blade lever back to the "ON" position and depress blade pedals.
- Measure the belt spacing at idler pulley. See Figure 3.4. The belt spacing should be 1 1/4" but no less than 1".

25" MODELS

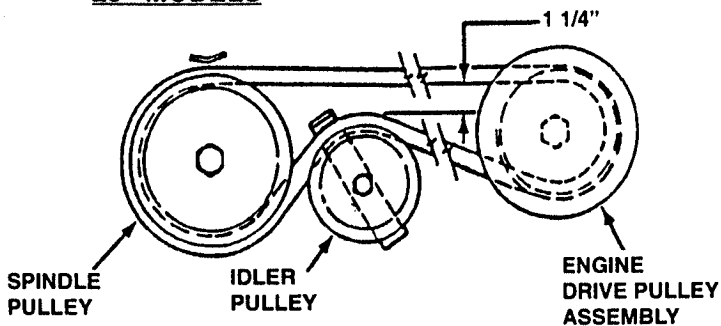


FIGURE 3.4

- If the measurement is less than 1", the belt tension should be adjusted. See 4.2.1., MOWER DRIVE BELT ADJUSTMENT on Page 13.

2B. Checking Belt Tension

- On 28", 30", and 33" Models, check belt for excessive wear or damage and replace if necessary; there are no adjustments on these models. See Figure 3.5.

28", 30", & 33" MODELS (Dual Idler System)

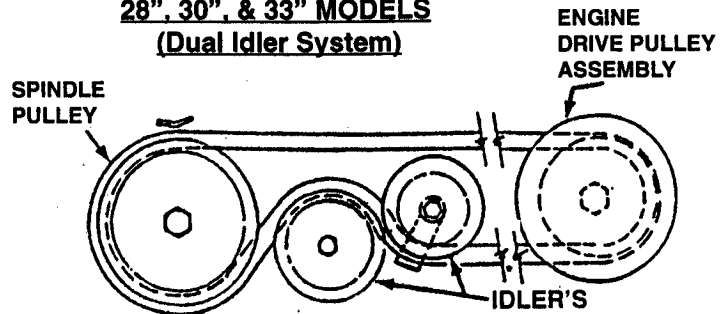


FIGURE 3.5

3.3 AFTER EVERY 25 OPERATING HOURS

3.3.1. ENGINE

1. Engine Oil

Change engine oil. Refer to 3.2.1., CHANGE ENGINE OIL on Page 8. Refer to Engine Owner's Manual for oil specifications.

2. Air Filter

Refer to Engine Owner's Manual for service instructions.

3.3.2. MOWER COMPONENTS

1. Mower Drive Belt

Check belt for proper tension. Refer to 3.2.3., CHECK MOWER DRIVE BELT.

2. Mower Blade

Check blade for sharpness, wear, damage, and torque. See 4.4, MOWER BLADE REPAIR/REPLACEMENT on Page 18.

3. Mower Deck Levelness

Check mower deck for proper levelness. Adjust as required. See 4.2.4., MOWER DECK ADJUSTMENT - LEVELNESS on Page 15.

4. Cleaning Mower Deck

- Remove key from ignition switch.
- Remove spark plug wire and secure away from spark plug.
- Check fuel level in tank. If over 3/4 full, remove tank (See Page 12 for gas tank removal). If 3/4 or less, proceed to next step.

(Continued on Next Page)

Section 3 - MAINTENANCE

3.3.2. MOWER COMPONENTS (Continued)

- d. Close vent on fuel filler cap.
- e. Carefully stand Rear Engine Rider on rear bumper.
- f. Clean underside of mower deck, removing all accumulation of grass clippings and debris.
- g. Lower Rear Engine Rider to ground and clean top of deck, removing all grass clippings and debris.

5. Mower Blade Spindle - Lubrication

With Rear Engine Rider standing on rear bumper, lubricate spindle with one shot of general purpose grease from grease gun.

IMPORTANT: If the Rear Engine Rider will be on its rear bumper for longer than two hours, remove the battery. See 4.6.1., BATTERY REMOVAL on Page 20.

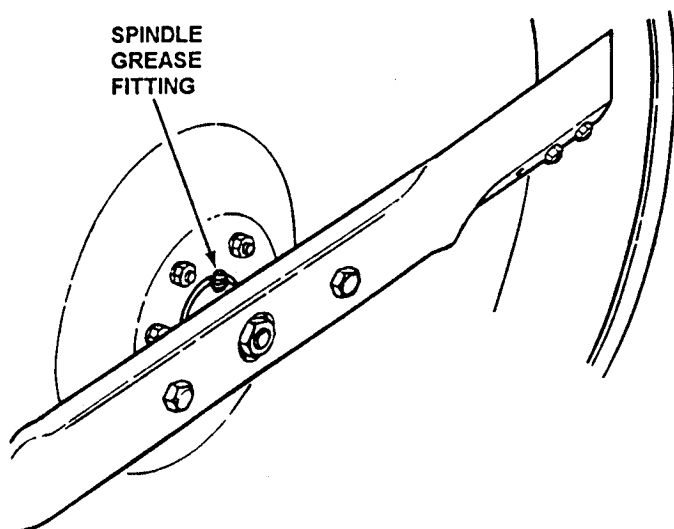


FIGURE 3.6

6. Mower Deck Linkage - Lubrication

Lubricate all mower deck linkage pivot points with a light coat of motor oil.

3.3.3. REAR ENGINE RIDER - LUBRICATION

1. Front Wheel Bearings

Lubricate front wheel bearings with five shots of general purpose grease, from grease gun. See Figure 3.7.

2. Left Rear Axle Bearing

On Rear Engine Riders powered by 14HP engines, the left rear axle does not require lubrication. However, those powered by 8HP, 9HP, or 12HP engines, the left rear axle bearing requires 3 shots of SNAPPER "00" general purpose grease from grease gun. See Figure 3.8.

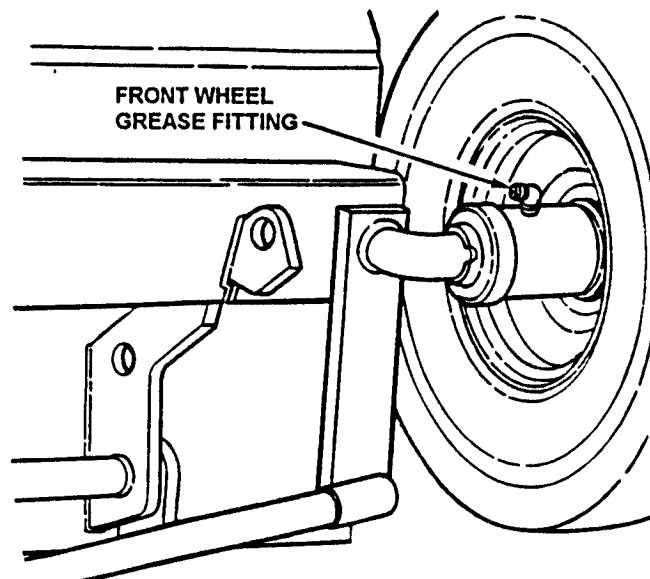


FIGURE 3.7

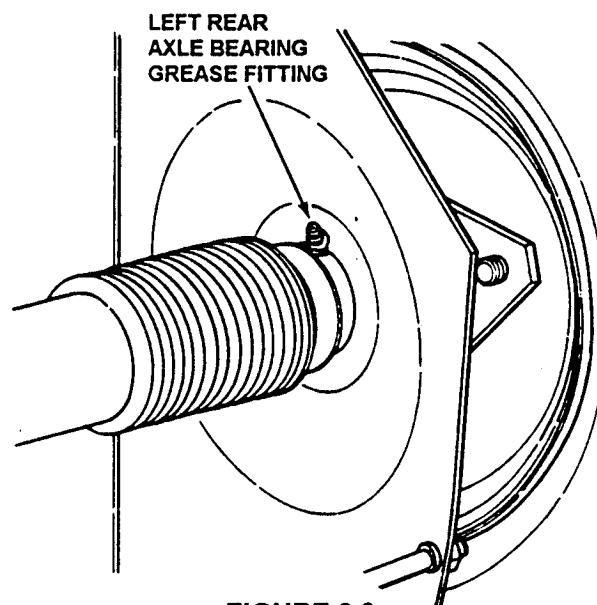


FIGURE 3.8

3. Right Rear Axle Bearing

The right rear axle bearing is lubricated by the differential lubricant.

4. Differential

- a. Stand rear engine rider on its rear bumper and check the fill/level plug, for cracks and wear. Replace fill/level plug if signs of wear are visible.
- b. To check lubricant, remove fill/level plug and visually inspect for lubricant on the internal parts of the differential. If no lubricant is visible on the internal parts of the differential, add "00" grease as needed. See Figure 3.9.

IMPORTANT: Overfilling of the differential with lubricant will cause lubricant to leak onto drive components of the Rear Engine Rider.

Section 3 - MAINTENANCE

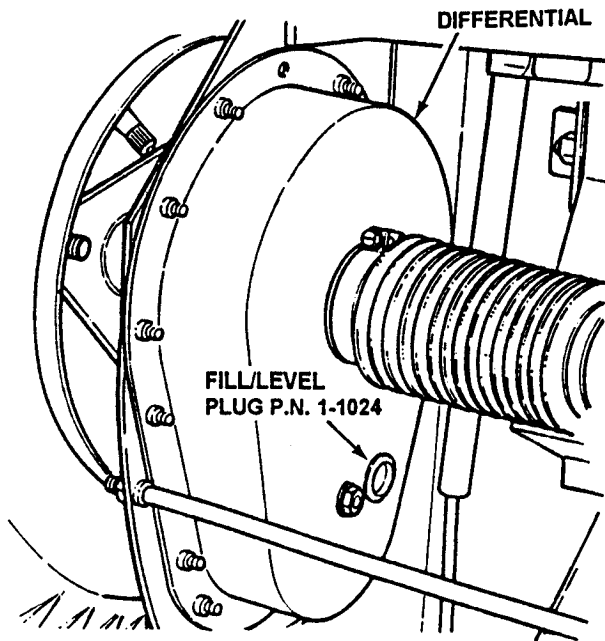


FIGURE 3.9

5. Chain Case

- Check fill/level plug for damage. If signs of wear or cracks are visible, replace plug with new plug. See Figure 3.10.
- To check lubricant in chain case, remove fill/level plug and look for lubricant on the internal components of the chain case. If no lubricant is visible, add SNAPPER "00" grease as needed. See Figure 3.10.

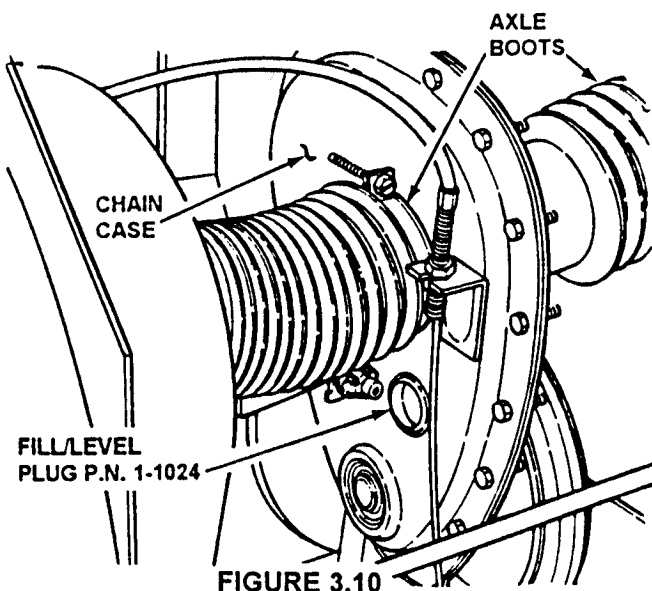


FIGURE 3.10

6. Axle Boots

Check axle boots for signs of wear or cracks. If cracks or wear are visible, contact a SNAPPER dealer for service. Refer to Figure 3.10.

3.4 ANNUALLY (END OF EACH SEASON)

Perform all maintenance as described in on Page 9.
NOTE: For complete maintenance schedule, see Page 22.

3.4.1. ENGINE

- Service engine according to engine owner's manual.

3.4.2. FUEL FILTER

Service fuel filter as instructed below, on **COLD ENGINE ONLY!**

IMPORTANT: To stop flow of fuel, tank may be removed from bracket and set on the floor so the fuel level will be below the filter. See Page 12 for gas tank removal.

- Remove hose clamps from fuel filter.
- Remove fuel lines from filter. Discard filter.
- Install new fuel filter. See Figure 3.11.
- Reinstall fuel tank into bracket.

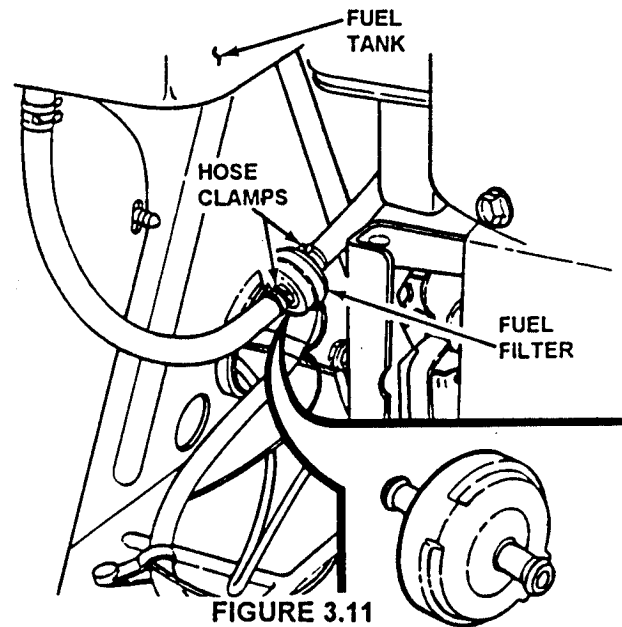


FIGURE 3.11

3.4.3. MOWER DECK

- Clean all grass clippings and debris from deck.
- Perform maintenance and lubrication as described in 3.3 on Page 9.

3.5 EVERY TWO YEARS

In addition to regular maintenance, the following components of the Rear Engine Rider should be carefully inspected every two years for wear or damage. Replace worn or damaged parts with genuine SNAPPER replacement parts available from an authorized SNAPPER dealer.

3.5.1. All bushings and pivot areas.

3.5.2. Check both front wheel king pins.

(Continued on Next Page)

Section 3 - MAINTENANCE

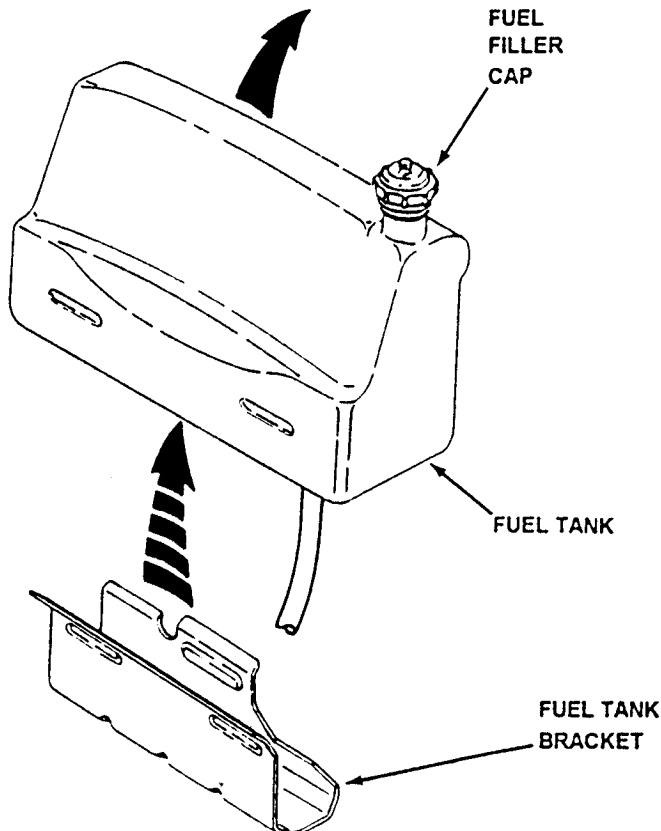
3.5 EVERY TWO YEARS

- 3.5.3. Transmission shift lever and detent.
- 3.5.4. Clutch disc.
- 3.5.5. Clutch Yoke (See Figure 4.18 on Page 18).
- 3.5.6. Mower deck linkage and pivot areas.

3.6 STORAGE (OUT OF SEASON)

If desired, the Rear Engine Rider can be stored on the rear bumper. Perform the following procedures to insure the Rear Engine Rider will operate properly when taken out of storage.

- 3.6.1. Thoroughly clean the Rear Engine Rider by removing all grass clippings and debris.
- 3.6.2. Perform maintenance and lubrication as described in 3.3 on Page 9.
- 3.6.3. Drain fuel from fuel tank.
- 3.6.4. Start engine and allow it to run until engine runs out of fuel. This allows the carburetor and fuel system to remain clean during storage.
- 3.6.5. Remove battery. See 4.6.5., BATTERY STORAGE on Page 21.
- 3.6.6. Close vent on fuel filler cap.
- 3.6.7. Carefully stand Rear Engine Rider on rear bumper in desired location for storage.



REMOVING FUEL TANK FROM REAR ENGINE RIDER

CAUTION
Before performing any service or maintenance procedures, always remove key from ignition switch, remove spark plug wire from spark plug and secure spark plug wire away from spark plug.

Before removing fuel tank from rear engine rider, move rider outdoors where fumes can be easily dissipated. Removal of the tank is most easily accomplished from the left side of the rear engine rider by pulling the tank straight up and away from the fuel tank bracket. After holding the fuel tank in your hands, carefully remove the fuel filler cap and pour remaining fuel in an approved container.

Section 4 - ADJUSTMENTS & REPAIR



CAUTION



Before performing any service or maintenance procedures, always remove key from ignition switch, remove spark plug wire from spark plug and secure spark plug wire away from spark plug.

4.1 ENGINE ADJUSTMENTS & REPAIR

Refer to the engine owner's manual for those adjustments and/or repairs that can be made by the owner.

4.2 MOWER DECK & COMPONENT ADJUSTMENTS

The following mower deck and component adjustments and repairs can be made by the owner. However, if there is difficulty in achieving these adjustments and repairs, it is recommended that these repairs be made by an authorized SNAPPER dealer.

4.2.1. MOWER DRIVE BELT ADJUSTMENT (FOR 25" MODELS)

1. Remove mower drive belt cover. Refer to 3.2.3., CHECK MOWER DRIVE BELT on Page 9.
2. Move blade lever up and over to the "ON" position.
3. Place deck cutting height in the 3rd position. Measure the belt spacing at idler pulley. The distance should measure 1-1/4" but no less than 1". See Figure 4.1.

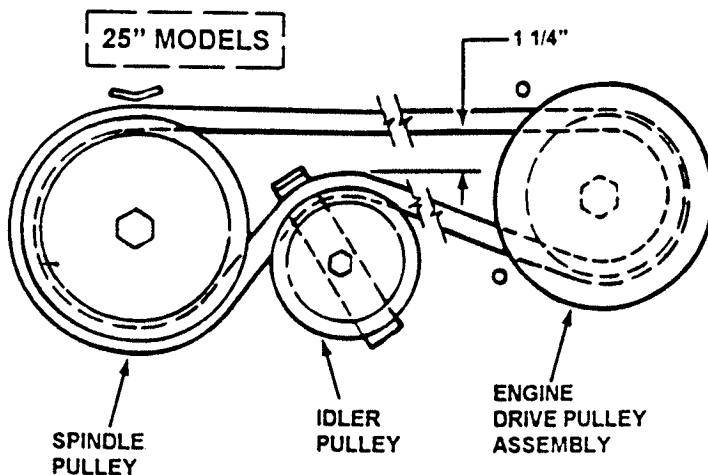


FIGURE 4.1

4. If the distance is less than 1", adjust belt tension as follows:

- a. Remove hairpin and flat washers from pivot stud. See Figure 4.2.
- b. Pull front frame forward until distance between belt, with blade lever "ON", measures 1-1/4".

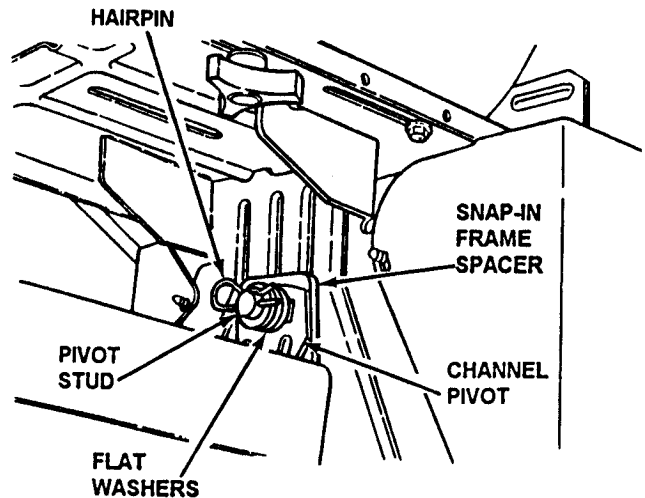


FIGURE 4.2

- c. Install required number of snap-in frame spacers behind channel pivot until the 1-1/4" distance between belt is maintained. See Figure 4.3.

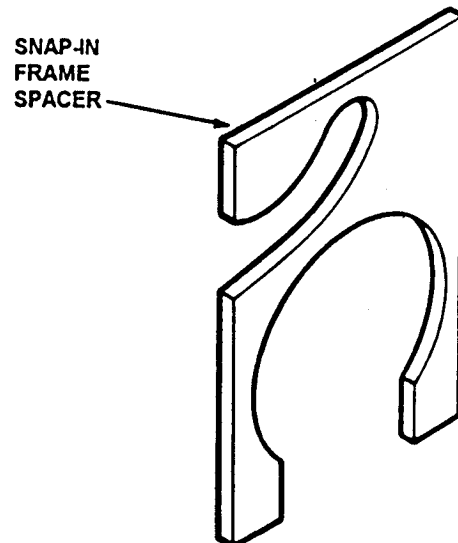


FIGURE 4.3

- d. Reinstall the required amount of flat washers removed in step "a." and install hairpin. Refer to Figure 4.2. Retain any remaining spacers for readjustment when a new belt is installed.
5. On 28", 30", and 33" models, the mower drive belt DOES NOT require adjustment. If the belt does not drive blade properly, replace belt.

IMPORTANT: The SNAPPER Rear Engine Rider 25" Model is shipped with additional spacers specifically designed for the Rear Engine Rider. Should additional spacers be required, contact an authorized SNAPPER dealer.

Section 4 - ADJUSTMENTS & REPAIR



CAUTION



Before performing any service or maintenance procedures, always remove key from ignition switch, remove spark plug wire from spark plug and secure spark plug wire away from spark plug.

4.2.2. BLADE BRAKE ADJUSTMENT

1. Remove Belt Cover; See Section 3, 3.2.3, on Page 9.
2. Pull blade engagement lever to the engaged position. The idler should move at least 1/2 inch from disengaged to engaged position. If this measurement is adequate but blade stop time is more than 3 seconds increase blade brake tension as follows.
3. Remove cotter pin from clevis pin and washer that secures anchor plate to blade brake. The factory positions the clevis pin in the middle hole. The rear hole increases tension on blade brake. The front hole decreases tension on blade brake.

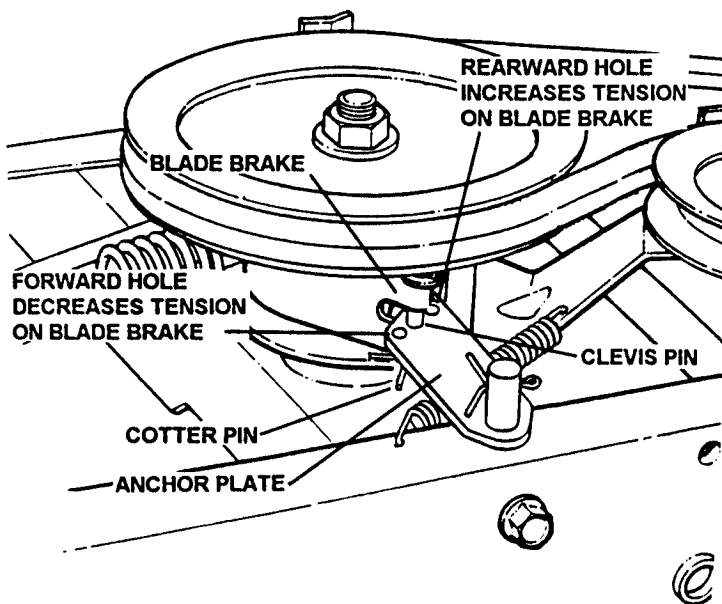


FIGURE 4.6

4. Reinstall clevis pin, washer and a new cotter pin.

IMPORTANT: The idler arm engagement spring should extend to at least 3/4" when blade engagement lever is in the engaged position. If measurement is less than 3/4" the blade belt will have to be replaced. See Section on blade belt replacement. The idler arm spring and cable should have looseness when the blade engagement lever is in the disengaged position.

4.2.3. ADJUSTING MOWER BLADE

Follow procedures for standing Rear Engine Rider on rear bumper.

IMPORTANT: If the Rear Engine Rider will be on its rear bumper for longer than two hours, remove the battery. See 4.6.1., BATTERY REMOVAL on Page 20.

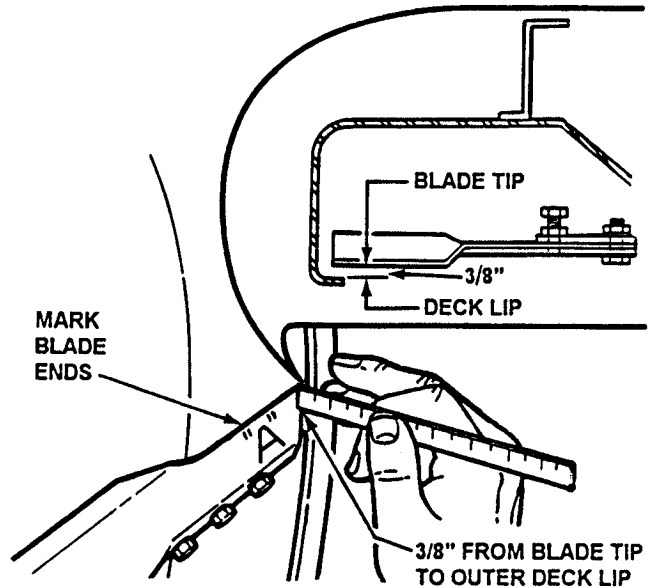


FIGURE 4.8

1. Select a point on the deck and mark for reference.
2. Mark blade tips as "A" and "B".
3. Rotate blade until blade tip "A" is at deck reference mark.
4. Measure the distance between deck lip and blade tip. Note the measurement. See Figure 4.8.

NOTE: On 25", 28", and 33" decks, the measurement between the blade tip and deck lip should be 5/16". On 30" decks, the measurement between the blade tip and deck lip should be 1/8" to 1/4" in front and 3/8" in rear.

5. Repeat steps 2 and 3 with blade tip "B".
6. If measurement between blade tips and deck are different and there is more than 1/16" difference between blade tip measurements, adjust blade as follows:
 - a. Loosen jam-nuts on blade bar.
 - b. Adjust jack screws "IN" or "OUT" until blade tip measurements are within 1/16" of each other and blade tips are 3/8" away from deck lip. See Figure 4.9.
 - c. Tighten jam-nuts.

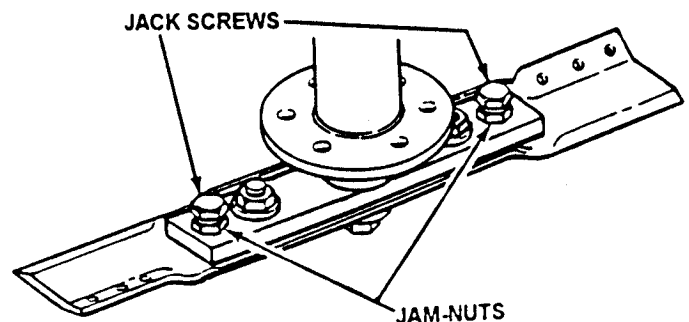


FIGURE 4.9

Section 4 - ADJUSTMENTS & REPAIR

4.2.4. MOWER DECK ADJUSTMENT (LEVELNESS)

1. Side-To-Side

Before making deck leveling adjustments, check the tire pressure. Front tires 15 psi, rear tires 10 psi. If tires are properly inflated and mowing is still uneven, adjust side-to-side deck levelness as follows:

- Place Rider on a smooth level surface.
- Turn engine off and remove key, remove spark plug wire from spark plug and secure wire away from plug.
- Place a piece of angle iron, pipe, or similar object under center of deck at the rear.
- Remove rear hanger chains and allow center, rear of deck to rest on angle iron.
- Measure the distance from blade tips to floor. If the measurement is within $1/8"$ from side-to-side, the deck attitude is satisfactory. If difference from side-to-side is greater than $1/8"$, continue with adjustment.
- Loosen the shoulder bolt retaining the left side of blade pedals.

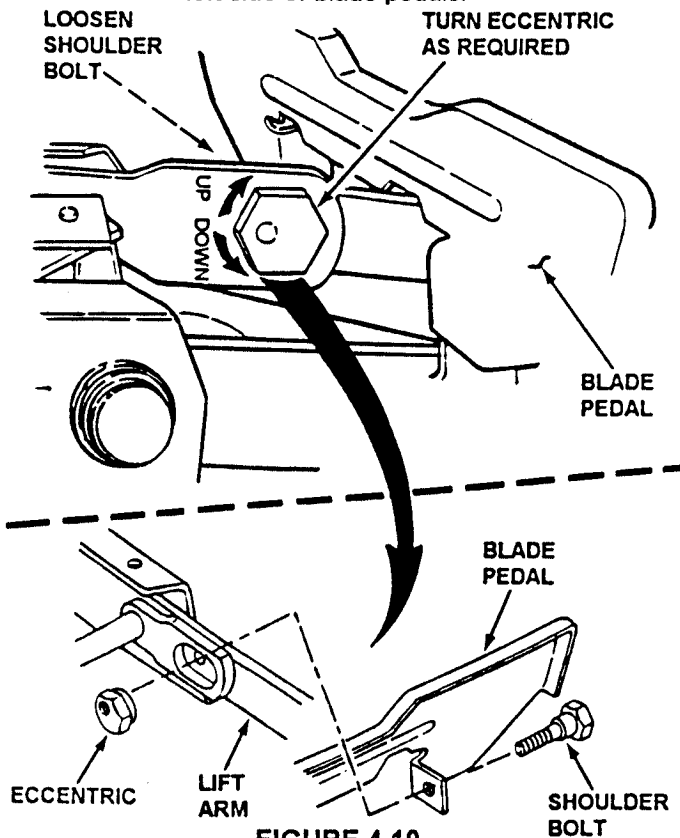


FIGURE 4.10

- Turn eccentric "UP" or "DOWN" as required until blade tips are within $1/8"$ of each other. See Figure 4.10.
- Tighten shoulder bolt loosened in step "f".
- Readjust rear hanger chain pivots to align with holes in support brackets. Refer to Figure 4.11.
- Remove angle iron, pipe, or similar object and proceed to check front to rear levelness.

2. Front to Rear Levelness

(25", 28", & 33" Decks)

With the Rear Engine Rider on a smooth, level surface, rotate blade until blade tips are at front and rear of deck. Measure the distance from blade tips to floor. The distance should be the same, or the rear $1/8"$ lower than the front. If the rear blade tip is higher or is more than $1/8"$ lower than the front, proceed with adjustment.

- Remove rear hanger chains.
- Turn each hanger pivot the same number of rotations on the eye-bolt to raise or lower the rear of the deck. See Figure 4.11.

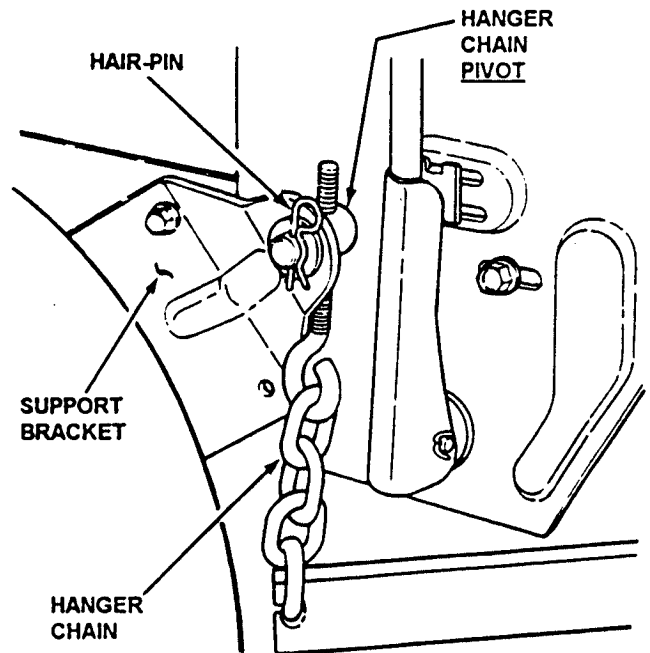
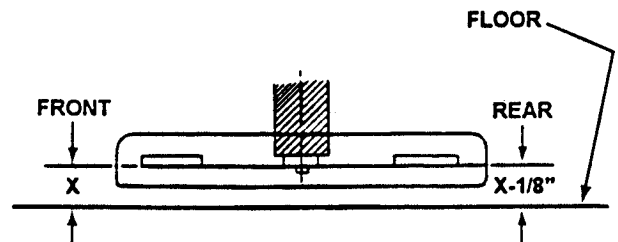


FIGURE 4.11

- Reinstall rear hanger chains and measure blade tips again.
- Repeat steps "a" through "c" until proper levelness is obtained.

NOTE: For 30" cutting decks, repeat section 2., Front to Rear Levelness, except, rear of blade should be the same or $1/8"$ higher than the front.

Section 4 - ADJUSTMENTS & REPAIR

4.2.5. MOWER DECK TIMING ROD ADJUSTMENT

The mower deck timing rod is pre-adjusted at the factory. It is set to maintain the deck in the same attitude through all heights of cut. If suspecting the timing rod requires adjustment, contact an authorized SNAPPER dealer for service. See Figure 4.12.

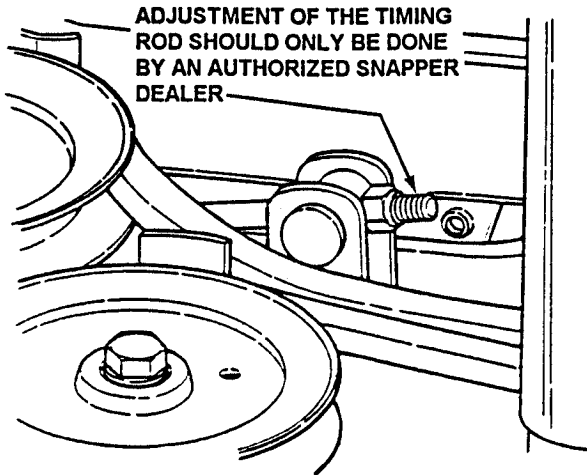


FIGURE 4.12

4.2.6. CUTTING HEIGHT ADJUSTMENT

The deck cutting height range may be adjusted to alter the maximum and minimum cutting deck lift lever.

CAUTION

Before attempting any adjustments or repairs, turn engine "OFF", remove key, remove spark plug wire from spark plug and secure wire away from plug.

1. Place the Rear Engine Rider on a smooth, level surface.
2. Move deck lift lever to the lowest cutting position.
3. Loosen the two lift quadrant mounting bolts and eccentric bolt. See Figure 4.13.

SHOWN WITH COVER REMOVED

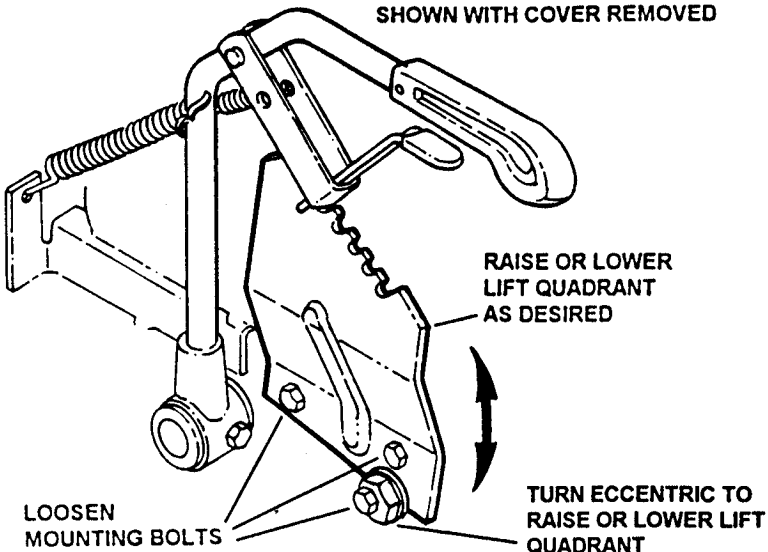


FIGURE 4.13

4. Rotate eccentric bolt to raise or lower desired cutting height range.

5. Tighten lift quadrant mounting bolts and eccentric bolt.

NOTE: Lift quadrant in lowest position gives 1" to 3 1/2" cutting height range. Lift quadrant in highest position gives 1-1/2" to 4" cutting height range.

4.3 REAR ENGINE RIDER DRIVE COMPONENTS

The following drive components may be adjusted by the owner. However, it is recommended that all adjustments to the Rear Engine Rider be made by an authorized SNAPPER dealer.

4.3.1. CLUTCH - STARTING MOTION ADJUSTMENT

If the Rear Engine Rider clutch is too positive or slips excessively when the clutch/brake pedal is released, adjust as follows:

1. Remove key from ignition switch.
2. Remove spark plug wire from spark plug and secure wire away from plug.
3. Close vent on fuel filler cap.
4. Carefully stand Rear Engine Rider on rear bumper.
5. Locate yoke arm between chain case and differential.
6. Move spring to first hole (for positive clutch action) to 4th hole (to increase clutch slippage). See Figure 4.14.

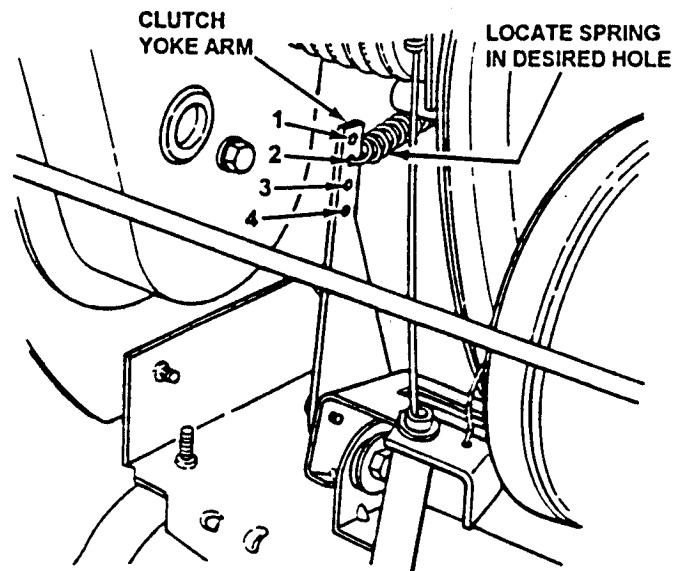


FIGURE 4.14

4.3.2. CLUTCH - SHIFTING ADJUSTMENT

With engine running, depress clutch/brake pedal and move transmission shift lever into a forward speed. If shifting is difficult or will not shift, adjust the clearance between clutch disc and drive disc as follows:

Section 4 - ADJUSTMENTS & REPAIR



CAUTION



Before attempting any adjustments or repairs, stop the engine, remove the key, remove the spark plug wire from the spark plug, and secure spark plug wire away from spark plug.

1. Follow procedures for standing Rear Engine Rider on rear bumper. Refer to Section 3.2.2.
2. Depress clutch/brake pedal all the way down. Move and hold the park brake lever in the "ON" position, then release clutch/brake pedal to lock the park brake. See Figure 4.17.
3. Move the transmission shift lever to reverse.
4. Visually inspect to make certain there is clearance between clutch disc and drive disc. See Figure 4.15.

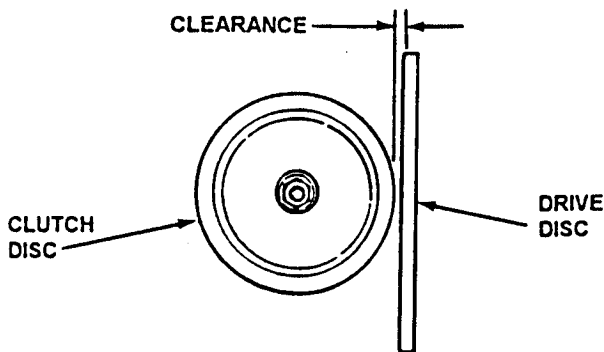


FIGURE 4.15

5. If no clearance is visible, release park brake by depressing clutch/brake pedal to release park brake lever.
6. Pull clutch/brake pedal towards operator's seat and slide one additional ferrule toward end of cable through the eye in the clutch/brake pedal arm. See Figure 4.16.

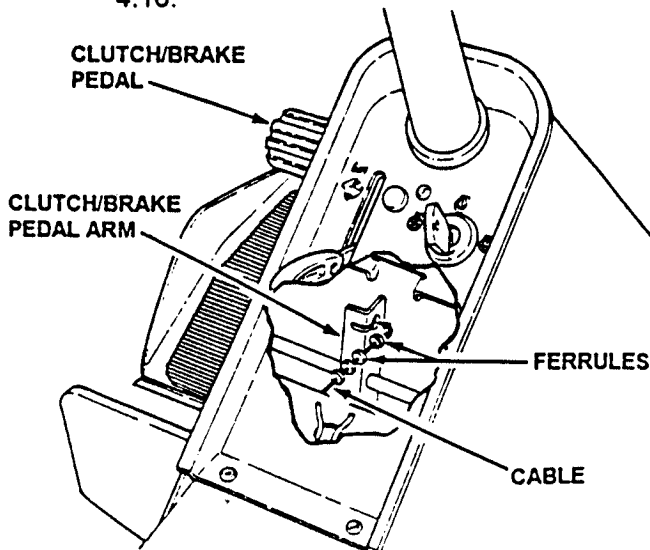


FIGURE 4.16

7. Engage park brake as described in Step 2.
8. Check for clearance between clutch disc and driven disc. If no clearance is visible, repeat steps 5 and 6 until clearance is visible. Refer to Figures 4.15 and 4.16.

NOTE: If adjustment cannot be completed or made because all ferrules have been used, contact an authorized SNAPPER dealer for service.

4.3.3. WHEEL BRAKE ADJUSTMENT

Test the wheel brake on a dry concrete surface. When properly adjusted, the Rear Engine Rider will stop within 3 feet from fastest speed. If stopping distance is more than 3 feet, the wheel brake should be adjusted as follows:

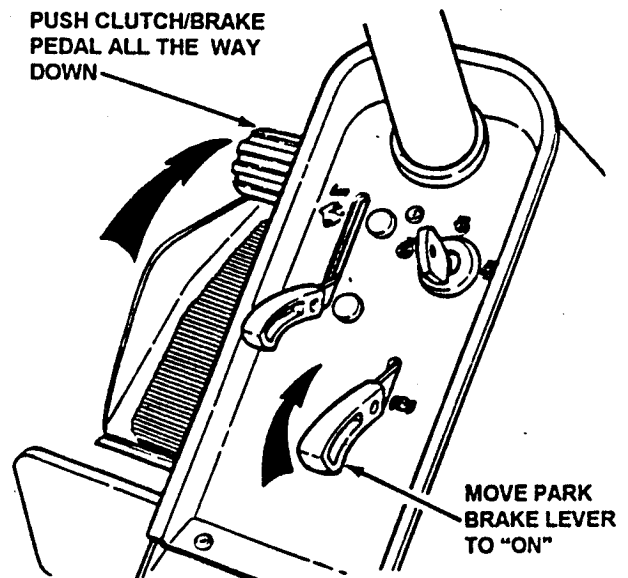


FIGURE 4.17

1. Follow procedures for standing Rear Engine Rider on rear bumper. Refer to Section 3.2.2.
2. Depress clutch/brake pedal all the way down. Move and hold the park brake lever in the "ON" position and release the clutch/brake pedal to lock the park brake. See Figure 4.17.

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3. Measure the distance between end of clutch/brake cable and bottom of housing. Measurement should be no less than 1/2" and no greater than 3/4". See inset, Figure 4.18.

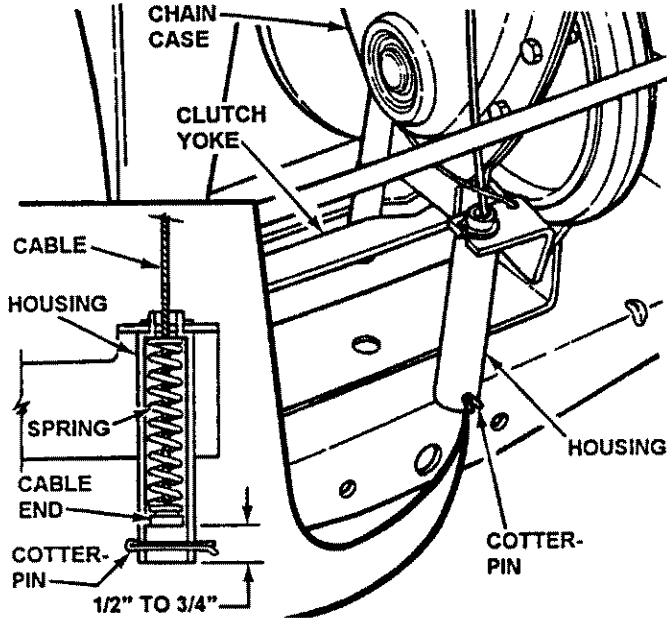


FIGURE 4.18

4. If measurement is less than 1/2" or greater than 3/4", loosen the two jam-nuts (shown in Figure 4.19) holding the clutch/brake cable to the chain case bracket.

5. Adjust cable up or down using the jam-nuts to obtain a distance of 1/2" to 3/4" between end of clutch/brake cable (adjustment shown in inset, Figure 4.18) and bottom of housing. Refer to Figure 4.18.

6. After adjustment is complete, securely tighten cable jam-nuts.

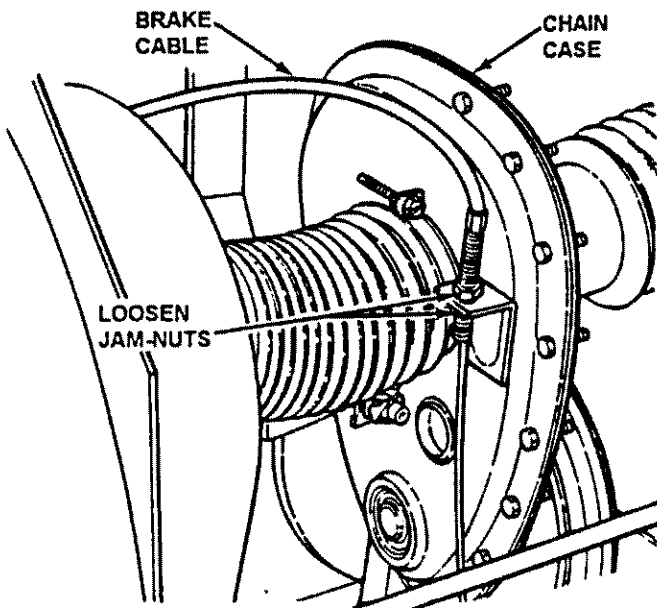


FIGURE 4.19

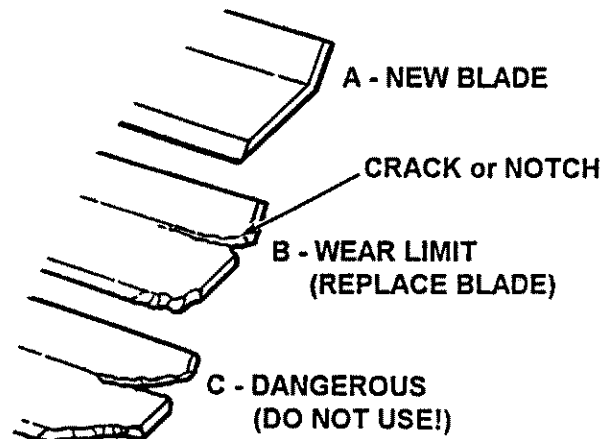


FIGURE 4.20

4.4 MOWER BLADE REPAIR/REPLACEMENT

4.4.1. BLADE WEAR LIMITS

1. Inspect blade frequently for signs of excessive wear or damage. See Figure 4.20.

CAUTION

Before performing any service to blade, turn engine OFF, remove key, remove spark plug wire from spark plug, and secure spark plug wire away from spark plug. Never use a cutting blade that shows signs of excessive wear or damage on the Rear Engine Rider. Refer to Figure 4.20.

4.4.2. BLADE SHARPENING

1. Follow procedures for standing Rear Engine Rider on rear bumper. Refer to Section 3.2.2.
2. Remove blade. See Figure 4.21.

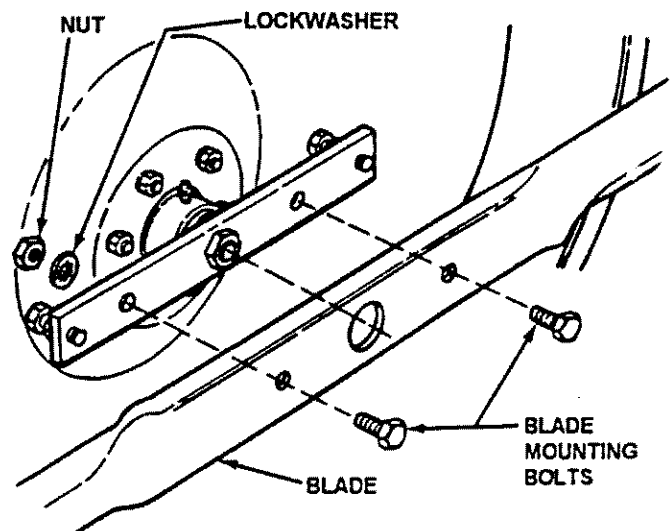


FIGURE 4.21

Section 4 - ADJUSTMENTS & REPAIR

3. Inspect condition of blade. Refer to Figure 4.20.

4. If blade is in good condition, sharpen at 22 to 28 degrees. DO NOT sharpen beyond existing cutting edge. See Figure 4.22.

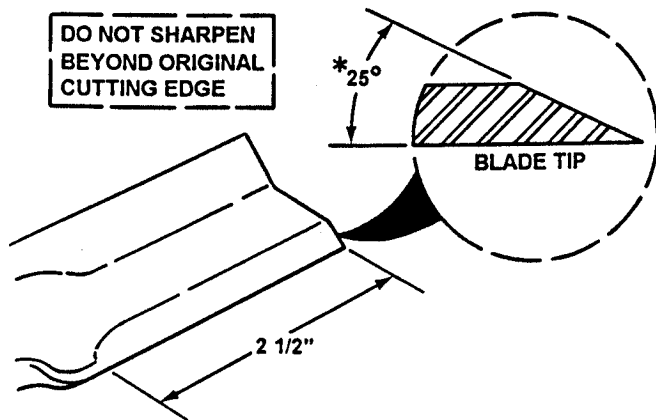


FIGURE 4.22

5. Check blade balance after sharpening. If necessary, correct blade balance by grinding the heavy end of blade.

6. Reinstall blade. Refer to Figure 4.21. Torque blade mounting bolts to recommended range of 30 to 40 ft. lbs.

CAUTION

Before attempting any adjustments or repairs, STOP the engine, remove the key, remove the spark plug wire from the spark plug and secure wire away from plug. On Rear Engine Riders equipped with a grass catcher attachment, the air lifts should be replaced when the blade is replaced.

4.5 MOWER DRIVE BELT REPLACEMENT

Inspect mower drive belt as described in 3.2.3., CHECK MOWER DRIVE BELT on Page 9. Replace belt if signs of excessive wear and/or damage are present.

4.5.1. BELT REMOVAL

1. Remove mower drive belt cover. Refer to Section 3.2.3.
2. Remove old belt.

4.5.2. BELT REPLACEMENT

1. Remove idler. See Figure 4.23.
2. Move transmission shift lever to the neutral (N) position.
3. Follow procedures for standing the Rear Engine Rider on rear bumper. Refer to Section 4.2.3.
4. Route new belt through engine belt guide (engine belt guide shown in Figure 4.24) to engine pulley. Route belt as shown for the individual models shown in Figure 4.23.

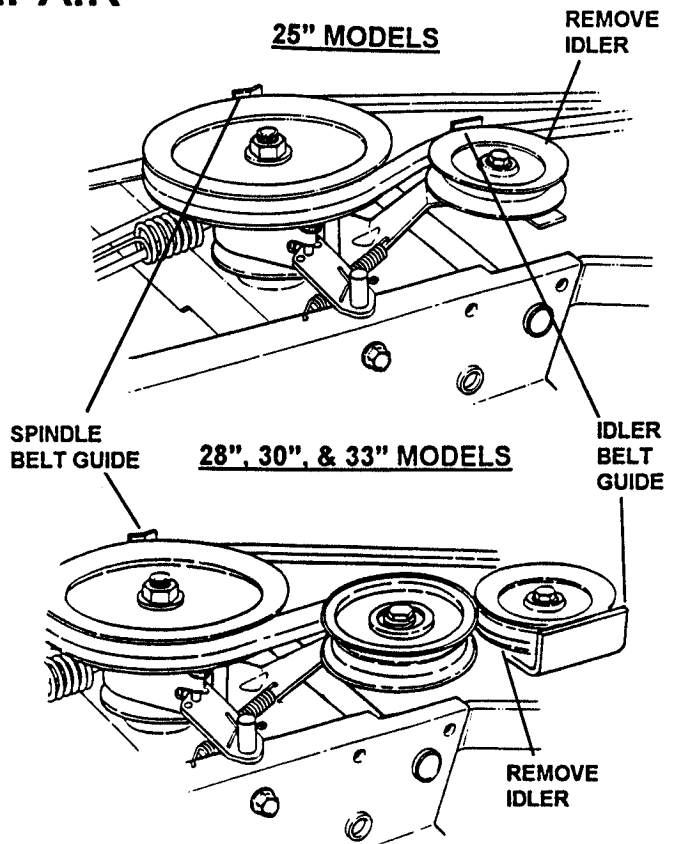


FIGURE 4.24

5. Rotate clutch yoke (clutch yoke shown in Figure 4.18) out with your hand and work belt between drive and driven discs.

6. Move transmission shift lever to the #5 position and place belt over drive disc and into drive pulley belt groove. See Figure 4.24.

7. Route belt onto spindle pulley. Make sure belt is inside spindle belt guide and idler belt guide.

8. Reinstall idler removed in Step 1. The idler belt guide will self locate on tab. Tighten bolt securely.

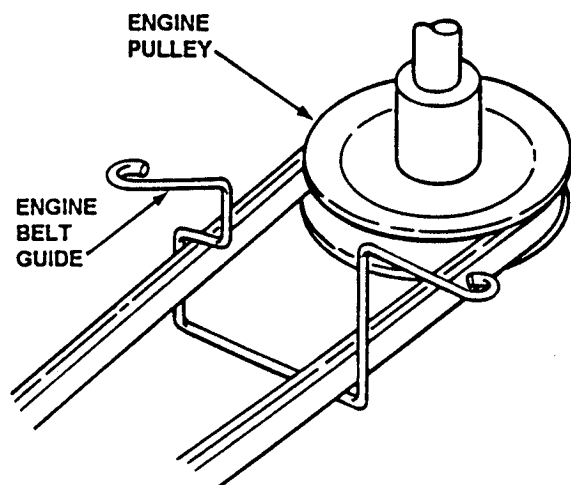


FIGURE 4.24

Section 4 - ADJUSTMENTS & REPAIR

4.5.2. BELT REPLACEMENT (Continued)

9. Adjust belt guide. See Figure 4.25 for proper belt-to-belt guide clearances.

10. Check mower drive belt tension and adjust if necessary. Refer to 4.2.1., MOWER DRIVE BELT ADJUSTMENT on Page 13.

11. Reinstall mower drive belt cover.

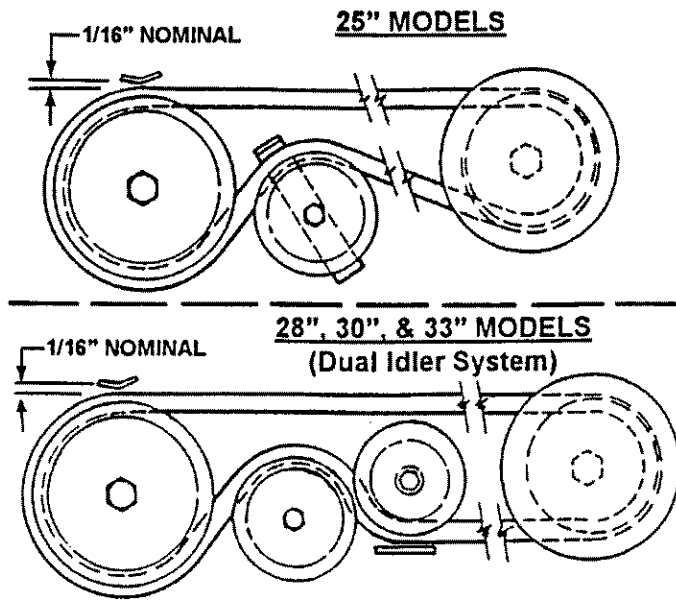


FIGURE 4.25

CAUTION
Never attempt to service or charge the battery while it is installed on the Rear Engine Rider.

4.6 BATTERY

4.6.1. BATTERY REMOVAL

1. Carefully pull each side of battery cover away from ratchet fasteners and remove cover. See Figure 4.26.

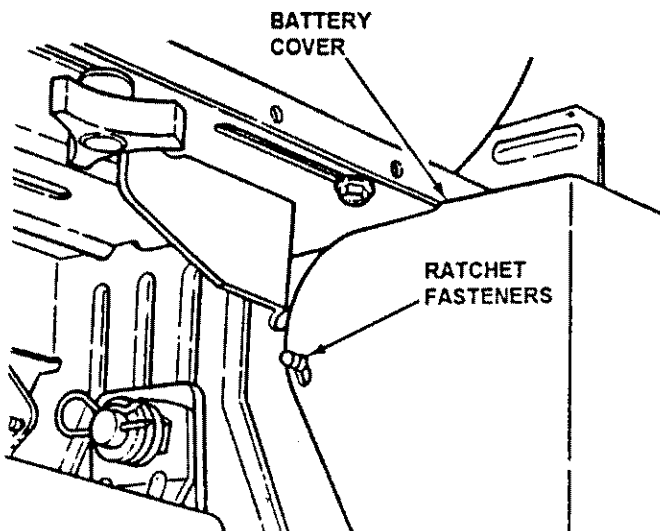


FIGURE 4.26

2. Remove the hair pin and swivel from the deck support to allow clearance for battery removal.

3. Slide battery from battery box to gain access to terminal cables.

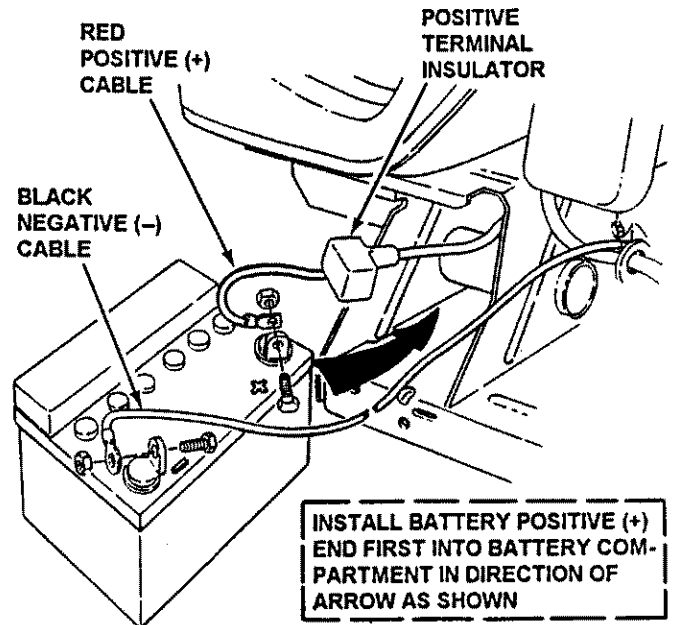


FIGURE 4.27

4. Observe and note cable positions on battery. See Figure 4.27.

5. Disconnect cables from battery terminals, disconnecting BLACK (Negative) cable first. Retain mounting bolts and nuts.

CAUTION
Cables must be connected to battery terminals in the proper position as show in Figure 4.27. Never attempt to charge battery while installed on the Rear Engine Rider. Never use "BOOST" chargers on the battery.

4.6.2. BATTERY INSTALLATION

1. Slide battery partially into battery housing.
2. Connect positive (+) cable (red) first, from wiring harness to the positive terminal (+) on battery using bolt and nut provided in hardware bag. Connect negative (-) cable (black) last, to negative terminal (-) on battery using bolt and nut. Apply a small amount of grease over terminals to prevent corrosion.
3. Insert battery completely into battery housing.
4. Reinstall battery cover. Refer to Figure 4.26.
5. Reinstall swivel and hair pin for deck support.

(Continue to next page for battery service)

Section 4 - ADJUSTMENTS & REPAIR



CAUTION



The electrolyte (acid) produces a highly explosive gas. Keep all sparks, flame and fire away from area when charging battery or when handling electrolyte or battery. Electrolyte (acid) is a highly corrosive liquid. Wear eye protection. Wash affected areas immediately after having eye or skin contact with electrolyte (acid). Battery acid is corrosive. Rinse empty acid containers with water and mutilate before discarding. If acid is spilled on battery, bench, or clothing, etc., Flush with clear water and neutralize with baking soda. Never attempt to charge battery while installed on the RIDER. Never use "BOOST" chargers on the battery.

4.6.3. BATTERY SERVICE

1. Remove battery. See Section on Battery Removal
2. Place battery in a well ventilated area on a level surface.
3. Using distilled water, refill cells as required to cover cell plates of which can also be visualized through the plastic battery case.
4. With cell caps removed, connect battery charger to battery terminals. Red to positive (+) terminal and black to negative (-) terminal.
5. Slow charge battery at 1 amp for 10 hours.
6. If battery will not accept charge or is partially charged after 10 hours of charging at 1 amp, replace with new battery.

4.6.4. BATTERY STORAGE

If mower is to be stored out of season on its rear bumper, it is recommended the battery be removed, charged and stored.

1. Remove battery. (See Section on Battery Removal)
2. Perform battery service.
3. Bring battery to full charge, if required.
4. Store battery in an area away from the RIDER on a wood surface. DO NOT STORE BATTERY ON A CONCRETE SURFACE.

4.6.5. BATTERY TESTING

There are two types of battery tests: Unloaded and Loaded. The unloaded test is the procedure that will be discussed. It's the simplest and most commonly used. An unloaded test is made on a battery without discharging current. To perform unloaded testing, check charge condition using either a hydrometer or voltmeter.

1. Using a voltmeter, voltage readings appear instantly to show the state of charge. Remember to hook the positive lead to the battery's positive terminal, and the negative lead to the negative terminal.

2. A hydrometer measures the specific gravity of each cell. The specific gravity tells the degree of charge; generally, a specific gravity of about 1.265 to 1.280 indicates full charge. A reading of 1.230 to 1.260 indicates the battery should be charged. The chart on the next page shows the charge level as measured by syringe float hydrometer, digital voltmeter and five ball hydrometer.

4.6.5. NEW BATTERY PREPARATION

1. Remove battery from carton.
2. Place battery in a well ventilated area on a level non-concrete surface.
3. Remove battery cell caps. Fill cells as required with electrolyte (purchased separately) to proper level. Fill to 3/16" above cell plates. Filling battery with electrolyte will bring the battery to 80% charged state.
4. With cell caps removed, connect battery charger to battery terminals; RED to positive (+) and BLACK to negative (-) terminal.

IMPORTANT: 3/16" above cell plates is the recommended level. However do not try to measure this dimension. Never place anything in battery other than specified electrolyte.



CAUTION



Never attempt to charge battery while installed on the Riding Mower. Never use "BOOST" chargers on the battery. DO NOT OVERFILL!

5. Slow charge the battery at 1 amp for 2 hours to bring the battery to full charge.
6. After charging, check level of electrolyte and add as needed to bring level to 3/16" above cell plates.
7. Reinstall cell caps.
8. Remove the hair pin and swivel from the deck support to allow clearance for battery installation.
9. Slide battery partially into battery housing.
10. Connect positive (+) cable (red) first, from wiring harness to the positive terminal (+) on battery using bolt and nut provided in hardware bag. Connect negative (-) cable (black) last, to negative terminal (-) on battery using bolt and nut. Apply a small amount of grease over terminals to prevent corrosion.
11. Insert battery completely into battery housing.
12. Reinstall battery cover. Refer to Figure 4.26.
13. Reinstall swivel and hair pin for deck support.



CAUTION



Shield the positive terminal with terminal cover located on battery harness. This prevents metal from touching the positive terminal which could cause sparks.

(Battery Testing Chart on Next Page)

Section 4 - ADJUSTMENTS & REPAIR

4.6.5. BATTERY TESTING

Methods of Checking Battery Condition			
State of Charge	Syringe Hydrometer	Digital Voltmeter	Five Ball Hydrometer
100% Charged w/ Sulfate Stop	1.280	12.80v	Five Balls Floating
100% Charged	1.265	12.60v	Four Balls Floating
75% Charged	1.210	12.40v	Three Balls Floating
50% Charged	1.160	12.10v	Two Balls Floating
25% Charged	1.120	11.90v	One Ball Floating
0% Charged	Less than 1.100	Less than 11.80v	Zero Balls Floating

ACCESSORIES

PART NUMBER	DESCRIPTION
6-0197	Load Carrier Kit
6-0441	Commercial Axle Bearing Kit
6-0517	Wheel Weight
6-0697	Dump Cart
6-0737	Gauge Wheel Kit
6-0941	Single Bag Catcher (25" Models)
6-0943	Single Bag Catcher (28" & 33' Models)
6-0942	Single Bag Catcher (30" Models)
6-0946	Twin Bag Catcher (28" & 33' Models)
6-0947	Bag-N-Wagon (28" & 33' Models)
6-0984	Wagon Cover Kit
6-1049	Recycling Kit (25" Model)
6-1253	Ninja Kit (28" Models)
6-1254	Ninja Kit (30" Models)
6-1255	Ninja Kit (33" Models)
6-1190	Weight Kit
6-0948	Thatcherizer

MAINTENANCE SCHEDULE

SUBJECT	SERVICE TO BE PERFORMED	REFERENCE PAGES	EACH USE	5 HOURS	25 HOURS	50 HOURS	100 HOURS	EACH SEASON
Engine	Check Oil Level	Page 4	X					
Engine	Initial Oil Change	Page 8		X				
Engine	Periodic Oil Change	Page 15				X*		
Air Pre-Cleaner	Service Sponge Pre-Cleaner Element	Engine Manual			X**			
Air Cleaner	Replace Element	Engine Manual.			X**			
Spark Plug	Replace Plugs	Engine Manual.					X	
Fuel Filter	Replace Filter	Page 11					X	
Engine Cooling System	Clean Shrouds & Fins	Engine Manual					X**	
Battery	Check Electrolyte	Page 22			X			X
Battery	Charge Battery	Page 22						X
Tires	Check Pressures	Page 4	X					
Drive Belts	Check For Wear And Tension	Pages 9, 13, 19			X			X
Mower Blades	Check For Wear And Damage	Pages 8, 14, 18			X			
Mower Deck	Clean Debris Accumulation	Page 9	X		X			X
Lubrication Points	Grease or Oil	Pages 10 & 11			X			X
Lubricate Chain Case & Transmission	Check Grease Level	Pages 10 & 11					X	X
Blade Stop Time	Check blade stopping for proper operation	Pages 7 & 14	X					X
Clutch/Brake System	Check Clutch/Brake for proper operation	Page 5 & 14	X					X

*Change oil every 25 hours when operating under heavy load or high temperatures.

**Clean more often under dusty conditions or when air debris is present

SNAPPER®

5 - 2 YEAR LIMITED WARRANTY

COMPONENT PARTS - 5 YEARS

For five (5) years from purchase date for original purchaser's residential non-commercial* use, **Snapper**, through any **Snapper** dealer will replace free of charge any part or parts found upon examination by the factory to be defective in material or workmanship or both.

ENGINE - 2 YEARS

The engine on this product is warranted by the engine manufacturer for two (2) years for the original purchaser's non-commercial* use. (See engine manufacturer's warranty statement for details.)

BATTERIES

Batteries are warranted separately and have one (1) year prorated warranty with a ninety (90) day free replacement period.

DISCLAIMER OF WARRANTIES

Implied warranties including those of merchantability and fitness for a particular purpose, are limited to five (5) years from purchase date for the original purchaser's residential, non-commercial use, for ninety (90) days from purchase date for the original purchaser's commercial, rental, or other non-residential use, and to the extent permitted by law, any and all implied warranties are excluded. This is the exclusive remedy. Liabilities for consequential damages, under any and all warranties are excluded.

Some states do not allow limitations on how long an implied warranty lasts, or do not allow the exclusion or limitation of incidental or consequential damages, so the above limitation or exclusion may not apply to you.

All transportation cost incurred by the purchaser in submitting material to a **Snapper** dealer for replacement under this warranty must be paid by the purchaser.

This warranty does not apply to parts that have been damaged by accident, alteration, abuse, improper lubrication, normal wear (things such as belts, blades, driven disc or any other normal wear item). This warranty does not cover tune-ups or other adjustments required in the normal use of the product.

There is no other express warranty.

This warranty gives you specific legal rights, and you may also have other rights which vary from state to state.

*Any use other than on the purchaser's residential lawn constitutes commercial use.

WARNING: THE USE OF REPLACEMENT PARTS OTHER THAN GENUINE SNAPPER PARTS MAY IMPAIR THE SAFETY OF SNAPPER PRODUCTS AND WILL VOID ANY LIABILITY AND WARRANTY BY SNAPPER ASSOCIATED WITH THE USE OF SUCH PARTS.

IMPORTANT: Please fill out the attached **SNAPPER** Product Registration Card immediately and mail to: **SNAPPER**, 535 Macon Rd., McDonough, Ga. 30253

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 6. **Conclusion**
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SERIES 16**

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