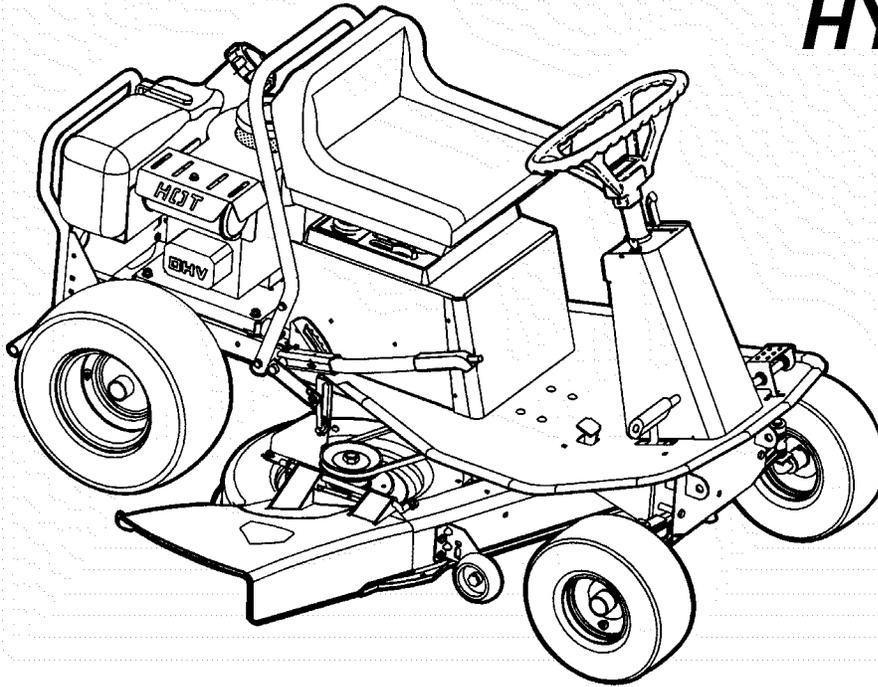


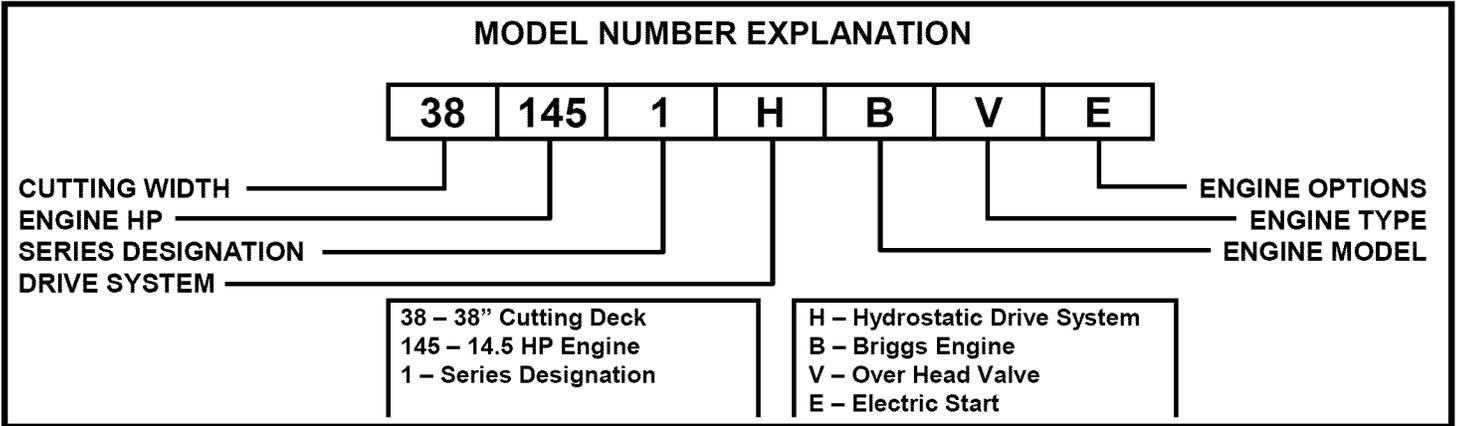
Safety Instructions & Operator's Manual for

# SNAPPER®

REAR ENGINE RIDING MOWER  
HYDRO DRIVE  
SERIES 1



<b>MODEL</b>
<b>381451HBVE</b>



Thank you for buying a SNAPPER Product! Before operating your machine, read this manual carefully and pay particular attention to the "IMPORTANT SAFETY INSTRUCTIONS" on Pages 2 & 3. 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!

**SNAPPER**® McDonough, GA., 30253 U.S.A.



# 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 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: (1-800-935-2967).

## PROTECTION FOR CHILDREN

Tragic accidents can occur if the operator is not alert to the presence of children. Children are often attracted to the machine and the mowing activity. Never assume that children will remain where you last saw them.

1. KEEP children out of the mowing area and under the watchful care of a responsible adult.
2. DO NOT allow children in yard when machine is operated (even with the blade OFF).
3. DO NOT allow children or others to ride on machine or on attachments (even with the blades OFF). They may fall and be seriously injured.
4. DO NOT allow pre-teenage children to operate machine.
5. ALLOW only responsible adults & teenagers with mature judgment under close adult supervision to operate machine.
6. DO NOT operate blades in reverse. STOP BLADES. LOOK and SEE behind and down for children, pets and hazards before and while backing.
7. USE EXTRA CARE when approaching blind corners, shrubs, trees, or other objects that may obscure vision.

## PROTECTION AGAINST TIPOVERS

Slopes are a major factor related to loss-of-control and tip-over accidents, which can result in severe injury or death. All slopes require extra CAUTION. If you cannot back up the slope or if you feel uneasy on the slope, DO NOT mow it. Use extra care with grass catchers or other attachments; these affect the handling and the stability of the machine.

1. DO NOT operate machine on slopes exceeding 15 degrees (27% grade).
2. Exercise EXTREME CAUTION on slopes above 10 degrees (18% grade). Turn blades OFF when traveling uphill. Use a slow speed and avoid sudden or sharp turns.
3. DO NOT operate machine back and forth across face of slopes. Operate up and down. Practice on slopes with blades off.
4. AVOID uphill starts. If machine stops going uphill or tires lose traction, turn blades OFF and back slowly down the slope.

## PROTECTION AGAINST TIPOVERS

(Continued From Previous Column)

5. STAY ALERT for holes and other hidden hazards. Tall grass can hide obstacles. Keep away from ditches, washouts, culverts, fences and protruding objects.
6. KEEP A SAFE DISTANCE (at least 3 feet) away from edge of ditches and other drop offs. The machine could turn over if an edge caves in.
7. Always begin forward motion slowly and with caution.
8. Use weights or a weighted load carrier in accordance with instructions supplied with a grass catcher. DO NOT operate machine on slopes exceeding 10 degrees (18% grade) when equipped with grass catcher.
9. DO NOT put your foot on the ground to try to stabilize the machine.
10. DO NOT operate machine on wet grass. Reduced traction could cause sliding.
11. DO NOT operate machine under any condition where traction, steering or stability is doubtful.

## PREPARATION

1. Read, understand, and follow instructions and warnings in this manual and on the machine, engine and attachments. Know the controls and the proper use of the machine before starting.
2. Only mature, responsible persons shall operate the machine and only after proper instruction.
3. Data indicates that operators age 60 and above, are involved in a large percentage of mower-related injuries. These operators should evaluate their ability to operate the mower safely enough to protect themselves and others from serious injury.
4. Handle fuel with extra care. Fuels are flammable and vapors are explosive. Use only an approved fuel container. DO NOT remove fuel cap or add fuel with engine running. Add fuel outdoors only with engine stopped and cool. Clean spilled fuel from machine. DO NOT smoke.
5. Practice operation of machine with BLADES OFF to learn controls and develop skills.
6. Check the area to be mowed and remove all objects such as toys, wire, rocks, limbs and other objects that could cause injury if thrown by blade or interfere with mowing.



# IMPORTANT SAFETY INSTRUCTIONS



## PREPARATION

(Continued From Previous Page)

7. Keep people and pets out of mowing area. Immediately STOP blades, STOP engine, and STOP machine if anyone enters the area.
8. Check shields, deflectors, switches, blade controls and other safety devices frequently for proper operation and location.
9. Make sure all safety decals are clearly legible. Replace if damaged.
10. Protect yourself when mowing and wear safety glasses, long pants and substantial footwear.
11. Know how to STOP blades and engine quickly in preparation for emergencies.
12. Use extra care when loading or unloading the machine into a trailer or truck.
13. 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.

## OPERATION

1. Mount and dismount machine from left side.
2. Start engine from operator's seat, if possible. Make sure blades are OFF and parking brake is set.
3. DO NOT leave machine with engine running. STOP engine, STOP blades, SET brake, and Remove key before leaving operators position of any reason.
4. DO NOT operate machine unless properly seated with feet on feet rests or pedal(s).
5. STOP BLADES and ENGINE and make sure blades have stopped before removing grass catcher or unclogging mower to prevent loss of fingers or hand.
6. Blades must be OFF except when cutting grass. Set blades in highest position when mowing over rough ground.
7. Keep hands and feet away from rotating blades underneath deck. DO NOT place foot on ground while BLADES are ON or machine is in motion.
8. DO NOT operate machine without entire grass catcher or guards in place. DO NOT point discharge at people, passing cars, windows or doors.
9. Slow down before turning.
10. Watch out for traffic when near or crossing roadways.
11. STOP engine immediately after striking an obstruction. Inspect machine and repair damage before resuming operation.
12. Operate machine only in daylight or with good artificial light.
13. Move joystick (if equipped) SLOWLY to maintain control during speed and directional changes.

## OPERATION

(Continued From Previous Column)

14. 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.
15. DO NOT operate engine in enclosed areas. Engine exhaust gases contain carbon monoxide, a deadly poison.

## MAINTENANCE

1. DO NOT store machine or fuel container inside where fumes may reach an open flame, spark or pilot light such as in a water heater, furnace, clothes dryer or other gas appliance. Allow engine to cool before storing machine in an enclosure. Store fuel container out of the reach of children in a well ventilated, unoccupied building.
2. Keep engine free of grass, leaves or excess grease to reduce fire hazard and engine overheating.
3. When draining fuel tank, drain fuel into an approved container outdoors and away from open flame.
4. Check brakes frequently; adjust, repair or replace as needed.
5. Keep all bolts, nuts and screws properly tight. Check that all cotter pins are in proper position.
6. Always provide adequate ventilation when running engine. Exhaust gases contain carbon monoxide, an odorless and deadly poison.
7. Disconnect negative (black) cable from battery before performing maintenance or service. Cranking engine could cause injury.
8. DO NOT work under machine without safety blocks.
9. Service engine and make adjustments only when engine is stopped. Remove spark plug wire(s) from spark plug(s) and secure wire(s) away from spark plug(s).
10. DO NOT change engine governor speed settings or overspeed engine.
11. Lubricate machine at intervals specified in manual to prevent controls from binding.
12. Mower blades are sharp and can cut. Wrap the blades or wear heavy leather gloves and use CAUTION when handling them.
13. DO NOT test for spark by grounding spark plug next to spark plug hole; spark plug could ignite gas exiting engine.
14. Have machine serviced by an authorized SNAPPER dealer at least once a year and have the dealer install any new safety devices.
15. Use only genuine SNAPPER replacement parts to assure that original standards are maintained.
16. If battery is removed, DO NOT operate engine without insulating Positive + battery cable terminal with electrical tape, or sparking from battery cables can result.

# TABLE OF CONTENTS

IMPORTANT SAFETY INSTRUCTIONS .....	2-3
TABLE OF CONTENTS .....	4
SECTION 1 - FAMILIARIZATION.....	5
SECTION 2 - OPERATING INSTRUCTIONS.....	6-11
Pre-start Checklist .....	6
Operators Seat Adjustment .....	6
Starting & Stopping Engine, Blade & Wheel Drive.....	7-11
Starting & Stopping Mower Blades.....	9-10
Starting & Stopping Wheel Drive .....	9-10
Parking Brake.....	11
Cutting Height Adjustment .....	11
SECTION 3 - MAINTENANCE INSTRUCTIONS .....	12-16
Service - After First 5 Hours .....	12-15
Change Engine Oil.....	12
Service Engine Air Cleaner.....	12
Check Mower Blade .....	13
Check Blade Drive Belt .....	13
Check Engine To Deck Belt.....	13
Check Deck Belt .....	13
Check Blade Brake .....	14
Check Transmission .....	14
Check Service Brake / Park Brake .....	14
Check Interlock System.....	14
Lubrication - Grease Fittings .....	14-15
Service - Every 25 Operating Hours.....	16
Service - Annually.....	16
Storage - Out Of Season .....	16
SECTION 4- ADJUSTMENTS AND REPAIR.....	17-24
Engine Adjustments & Repair .....	17
Mower Blade Replacement.....	17
Blade Sharpening .....	17
Mower Blade Drive Belt Adjustment & Replacement.....	17-18
Engine To Deck Belt Adjustment .....	17-19
Engine To Deck Belt Replacement.....	19
Deck Belt Replacement .....	19-20
Mower Blade Brake Adjustment.....	20
Transmission Drive Belt Replacement .....	20
Mower Deck Level Adjustment.....	21
Service Brake / Park Brake Adjustment.....	21
Battery Removal, Replacement, Service .....	22-23
Battery Storage .....	23
Battery Testing.....	23-24
TROUBLESHOOTING .....	25-26
MAINTENANCE SCHEDULE .....	27
MAINTENANCE/REPLACEMENT PARTS .....	27
WARRANTY .....	28
PRIMARY MAINTENANCE .....	29-32

# Section 1 - FAMILIARIZATION

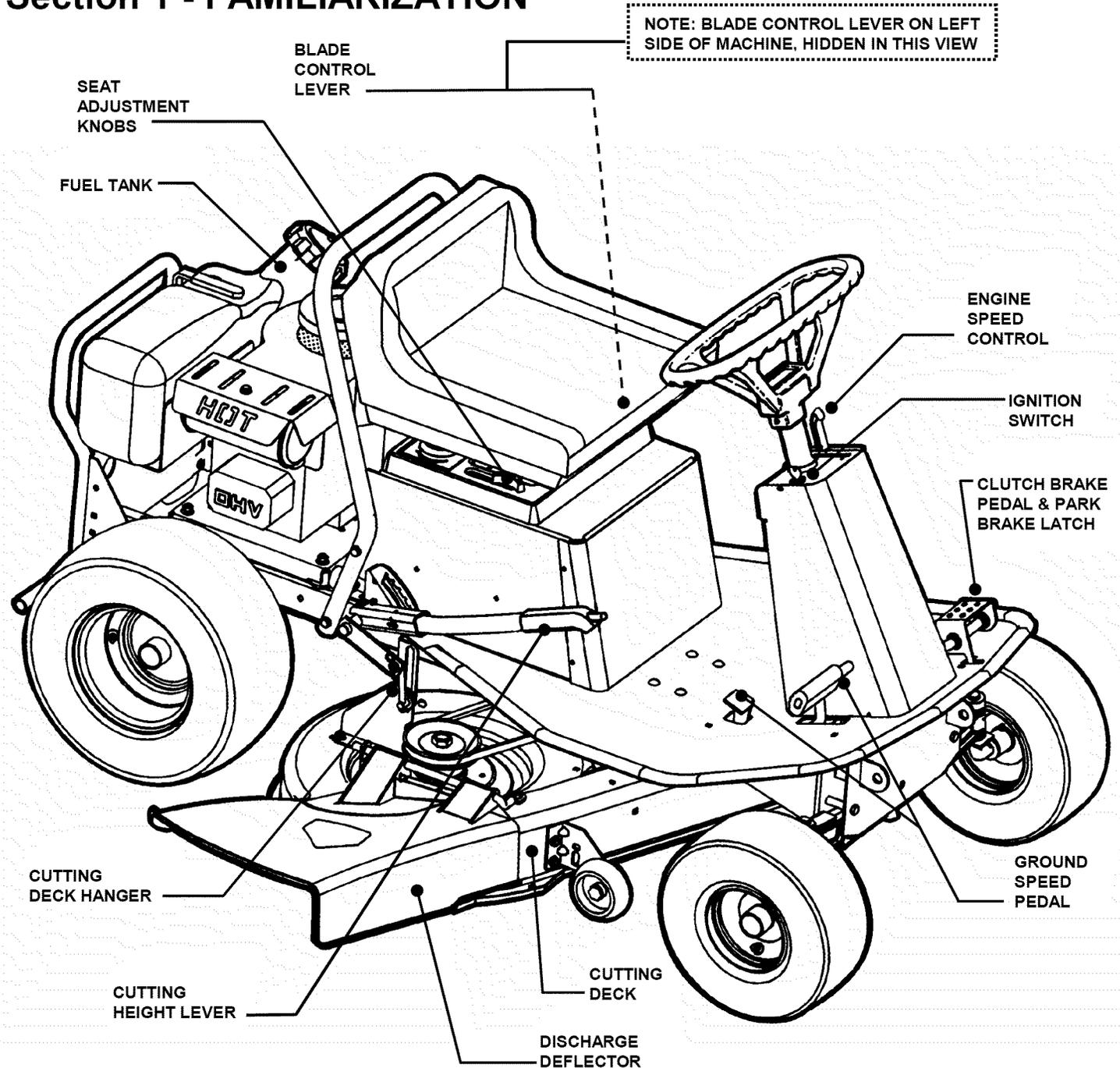


FIGURE 1.1

## 1.1 INTRODUCTION

This manual has been prepared for the operator's of the SNAPPER Hydro 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 Pages 2 & 3 of this manual and **All** SAFETY messages on the Rear Engine Rider and its attachments before operating.

## 1.2 NOMENCLATURE

The nomenclature information above shows the essential parts of the SNAPPER Hydro Rear Engine Rider. It is recommended that all operators 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. The hydro transmission on this machine is equipped with a roll release lever. The control can be used to disengage the transmission. Moving the lever to the "Release" roll position disengages the transmission allowing the machine to be moved without starting the engine. The roll release lever is located at the rear of the machine. The transmission will not propel the machine when the lever is in the "Release" roll position.

2.1.5. Check blade engagement lever to insure it works freely.

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 machine outside where fumes can dissipate. Make sure fuel filler cap is tight after refueling. Refer to engine owner's manual for fuel specifications. See Figure 2.2.

**WARNING**

**DO NOT disengage the hydro transmission and coast down slopes. DO NOT use the Roll Release Control to disengage the hydro transmission unless machine motion can be controlled and engine is off.**



2.1.1. Check tires and add or release air as needed to bring pressure to 12 PSI in front and 12 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.

2.1.4. Adjust seat as needed to most comfortable position. Refer to Section "Operators Seat Adjustment" for instructions.

## 2.2 OPERATOR'S SEAT ADJUSTMENT

### 2.2.1. FRONT TO REAR ADJUSTMENT

1. With the engine stopped, loosen the two adjusting knobs located beneath the seat and move seat to desired position. After adjustment, tighten knobs securely. See Figure 2.3.

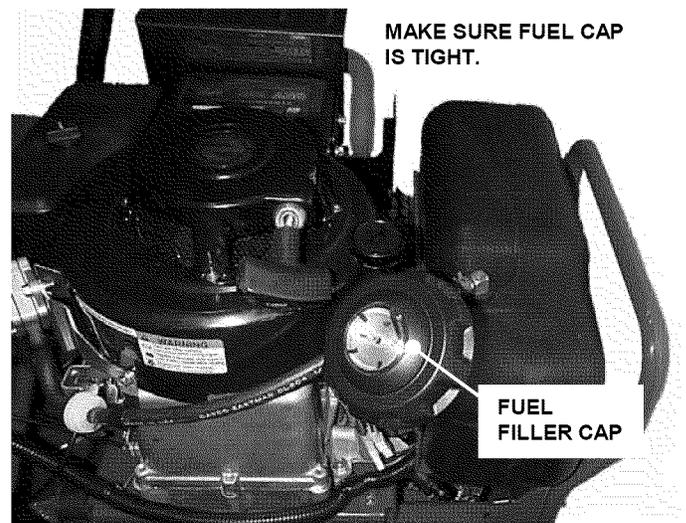


FIGURE 2.2



FIGURE 2.1

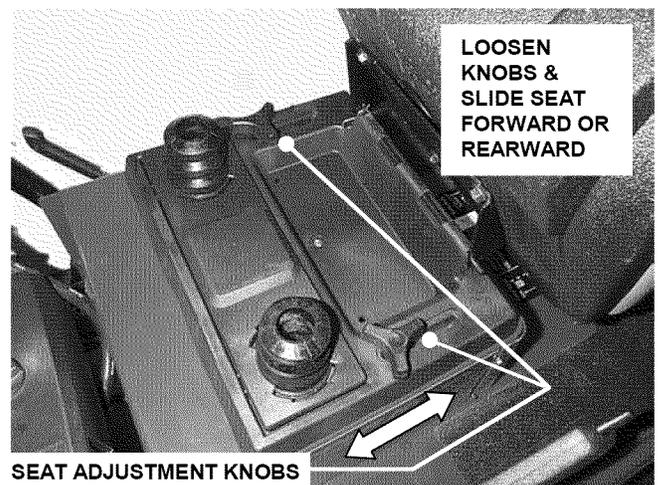


FIGURE 2.3

## Section 2 - OPERATING INSTRUCTIONS

**IMPORTANT:** This machine is equipped with hydrostatic drive. The forward and rearward movement and the speed of movement of the machine is controlled by the ground speed control pedal. A small movement of the ground speed pedal can cause the machine to move instantly. Depress the ground speed pedal very carefully and slowly. Avoid fast starts and sudden changes in direction.

### 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 control pedal is pressed all the way down and the blade control lever is in the "Off" position. Start engine as follows:

1. Complete pre-start checklist.
2. Sit in operator's seat.
3. Engage parking brake. Depress clutch/brake control pedal fully and pivot foot forward to lock brake. Park brake is now engaged. See Figure 2.4.

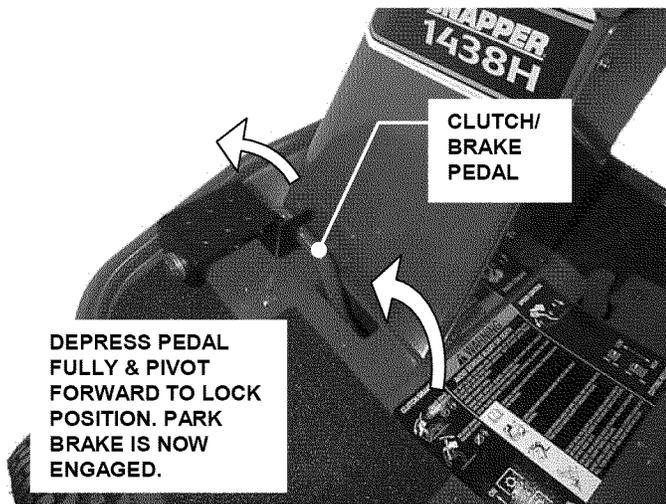


FIGURE 2.4

4. Move blade control lever back to the "OFF" blade disengaged position. See Figure 2.5.
5. Move engine speed control to the choke position to start a cold engine. See Figure 2.6B.
6. Turn key to the "START" position until engine starts. See Figure 2.6A. **NOTE:** If after 5 seconds of cranking, the engine does not start, release the key. Make sure the clutch/brake pedal is fully depressed and pivoted in the locked position. Try starting engine again after waiting for approximately 20 seconds.
7. After engine starts, move engine speed control to the "FAST" position and allow a brief warm-up until engine runs smooth.

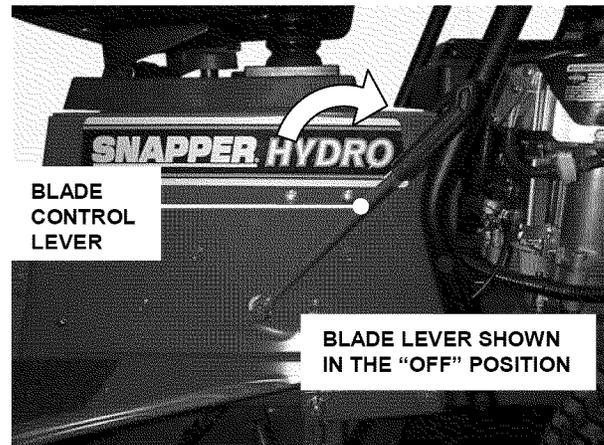


FIGURE 2.5

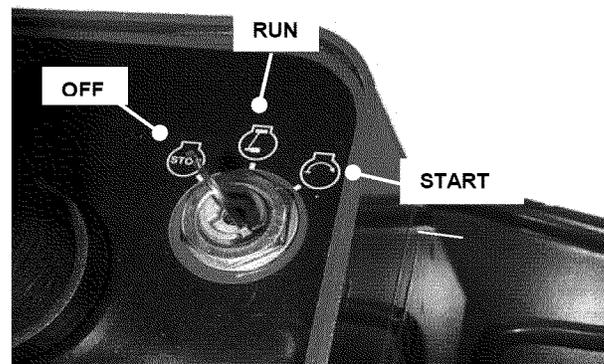


FIGURE 2.6A

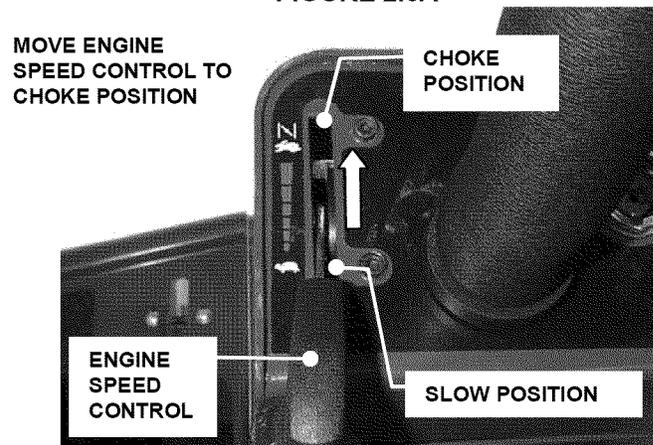


FIGURE 2.6B

**WARNING**  
DO NOT leave machine with engine running. STOP engine. STOP blades. Engage park brake. Remove key. DO NOT park machine on slopes.

(Continued on Next Page)

## Section 2 - OPERATING INSTRUCTIONS

### 2.3 STARTING & OPERATION

#### 2.3.1. ENGINE (ELECTRIC START) (Continued)

8. Should the battery be too weak to start the engine, Refer to Section "ENGINE (MANUAL START)" to manually start the electric start 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 and pivoted forward to the locked position and the blade lever is in the "OFF" position. Start engine as follows:

1. Complete pre-start checklist.
2. Engage parking brake. See Figure 2.4.
3. Move blade control lever back to the "OFF" blade disengaged position. See Figure 2.5.
4. Move engine speed control to the choke position to start a cold engine. See Figure 2.7.

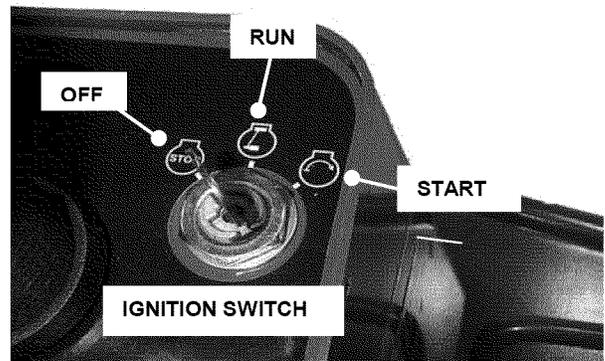


FIGURE 2.8

5. Turn key to "RUN" position. See Figure 2.8.
6. 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.
7. Allow a brief warm-up until engine runs smooth.

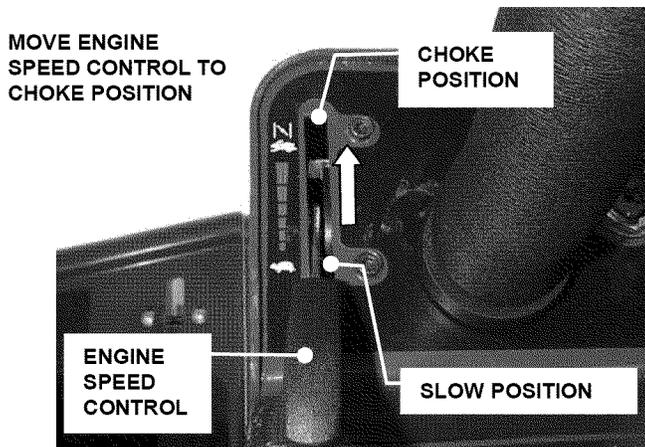


FIGURE 2.7

# Section 2 - OPERATING INSTRUCTIONS

## 2.3 STARTING & OPERATION

### 2.3.3. MOWER BLADE

1. With engine running, move engine speed control to the "FAST" position.
2. Move blade control lever forward to the "ON" blade engaged position. See Figure 2.9.
3. Stop blades by moving blade control lever back to the "OFF" disengaged position.

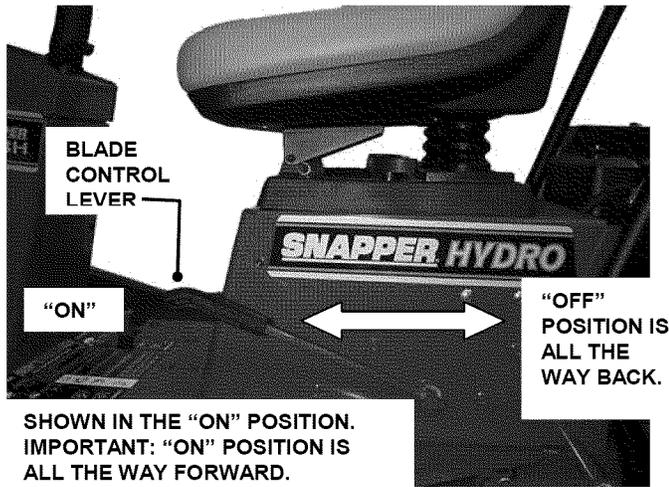


FIGURE 2.9

### 2.3.4. WHEEL DRIVE

1. With engine running, adjust engine speed control to "FAST" position.
2. Depress clutch/brake pedal, pivot pedal rearward to unlock brake and release pedal. Releasing pedal releases brake and engages clutch. See Figure 2.10A & C.

**NOTE:** For best cutting results, drive machine at a slow forward ground speed with the engine speed control set to "FAST" position. This combination will allow the mower blades to lift the grass while cutting smoothly and evenly.

DEPRESS CLUTCH/BRAKE PEDAL. PIVOT PEDAL REARWARD TO UNLOCK.

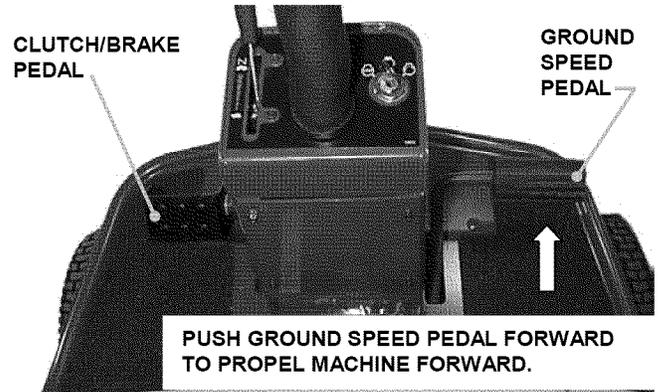


FIGURE 2.10A

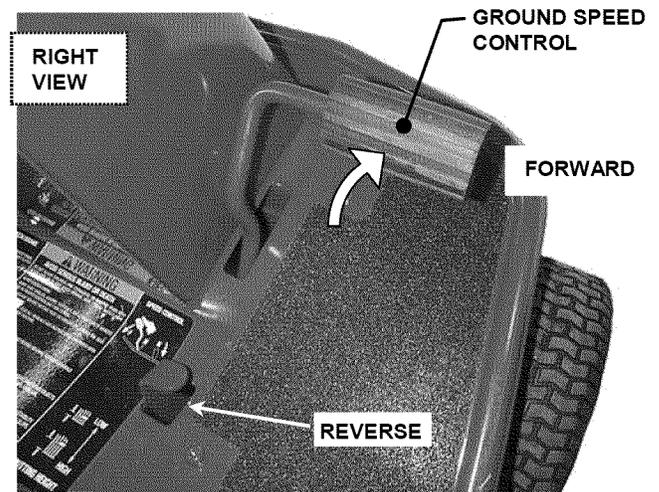


FIGURE 2.10B



FIGURE 2.10C

**WARNING**

DO NOT operate blades in reverse. STOP BLADES. LOOK and SEE behind and down for children, pets and hazards before and while backing.

3. Depress the ground speed pedal slowly to propel machine in the desired forward or reverse direction. See Figure 2.10B. Pressing the ground speed pedal forward will cause the machine to move forward. Pressing down on the rear of the pedal will cause the machine to move rearward. Removing foot from ground speed pedal allows the control to return to neutral, stopping movement of the machine. Neutral is not a parking brake setting. The machines brake is controlled with the clutch/brake pedal. Refer to Section "STOPPING WHEEL DRIVE". Forward and reverse ground speed is controlled by the amount the ground speed control pedal is depressed. See Figure 2.10B. Move pedal slowly. DO NOT make sudden speed or direction changes.

## Section 2 - OPERATING INSTRUCTIONS

**WARNING**  
DO NOT leave the machine with the engine running  
Stop Blade. Stop engine. Engage parking brake.  
Remove key.

### 2.4 STOPPING - ENGINE, WHEEL DRIVE, BLADE

#### 2.4.1. ENGINE

1. Stop engine by turning key off to the "STOP" position. Move engine speed control to slow. Turn key to "STOP". See Figure 2.11.



FIGURE 2.11

**WARNING**  
DO NOT park machine on slopes.

#### 2.4.2. WHEEL DRIVE

1. Stop motion of machine by allowing ground speed control pedal to return to neutral. Depress clutch/brake control pedal fully to apply brake. Engage parking brake. See Figure 2.12.

**WARNING**  
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 must be adjusted. Refer to Section "BLADE BRAKE ADJUSTMENT" for adjustment procedures or return the machine to an authorized Snapper dealer for adjustment. DO NOT continue to operate mower until blade brake is adjusted and functioning properly.

#### 2.4.3. MOWER BLADE

Stop mower blade by moving blade lever back to the "OFF" position. See Figure 2.13.

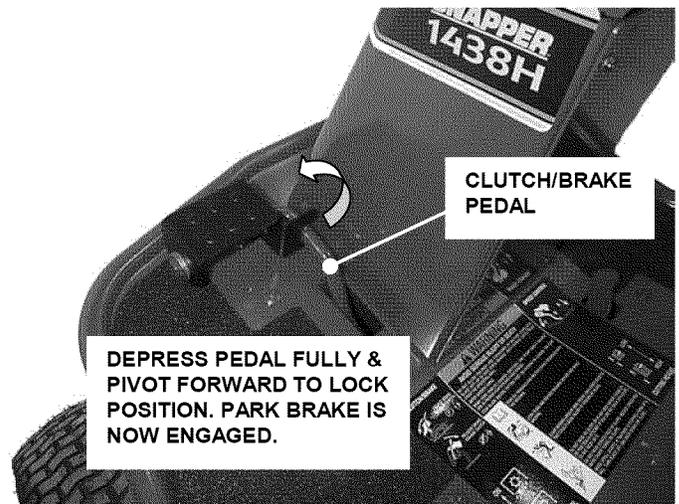


FIGURE 2.12

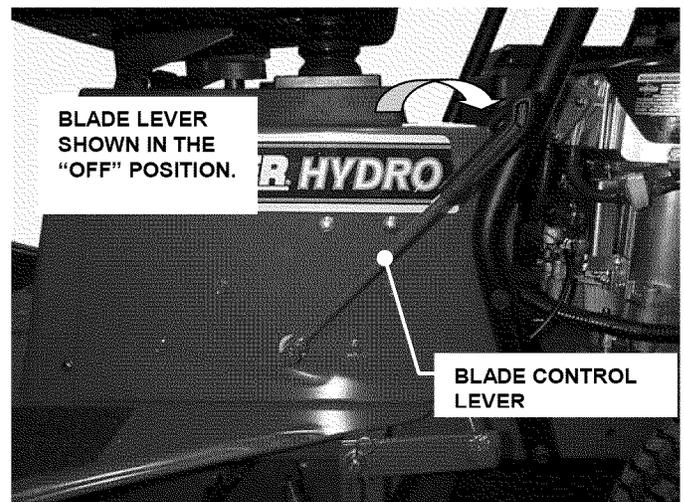


FIGURE 2.13

**WARNING**  
DO NOT operate blades in reverse. STOP BLADES. LOOK and SEE behind and down for children, pets and hazards before and while backing.

(Continued on Next Page)

## Section 2 - OPERATING INSTRUCTIONS

### 2.4 STOPPING - ENGINE, WHEEL DRIVE, BLADE

#### 2.4.4. PARK BRAKE

1. Engage park brake by depressing clutch/brake control pedal fully and pivot pedal forward to the locked position. Do not park machine on slopes. See Figure 2.14.

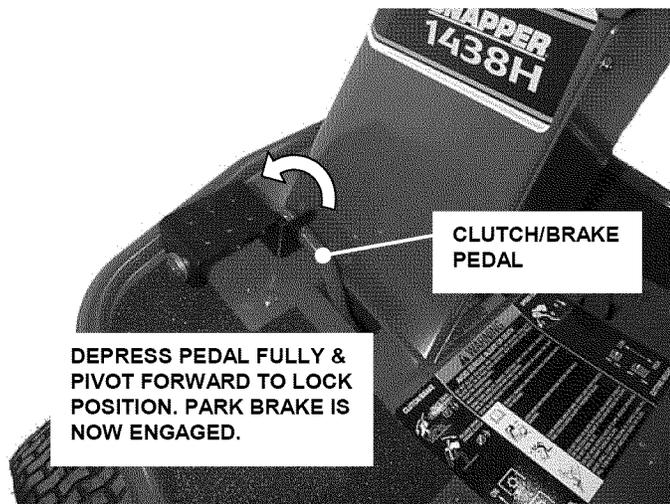


FIGURE 2.14

2. Release park brake by pushing down on the clutch/brake pedal and rotate pedal rearward to the unlock position and release the pedal. See Figure 2.15.

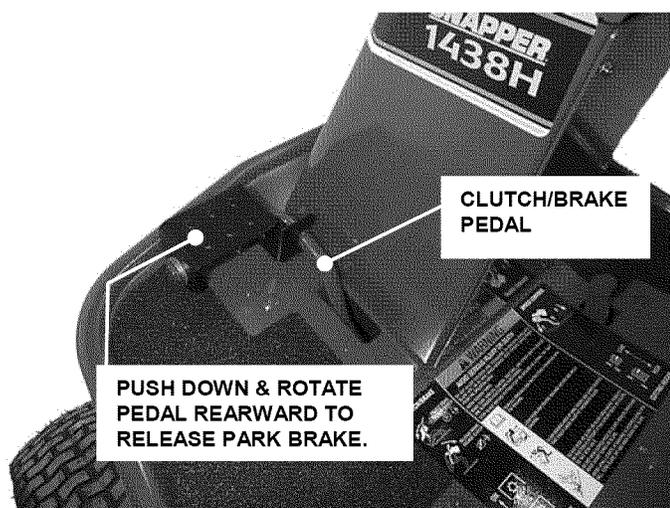


FIGURE 2.15

### 2.5. CUTTING HEIGHT ADJUSTMENT

1. Adjust cutting height using cutting height adjustment lever. Depress latch release button located at the tip of the cutting height lever and move lever to desired cutting height. Release latch button. Try to move cutting height lever to ensure latch is fully engaged. See Figure 2.16.

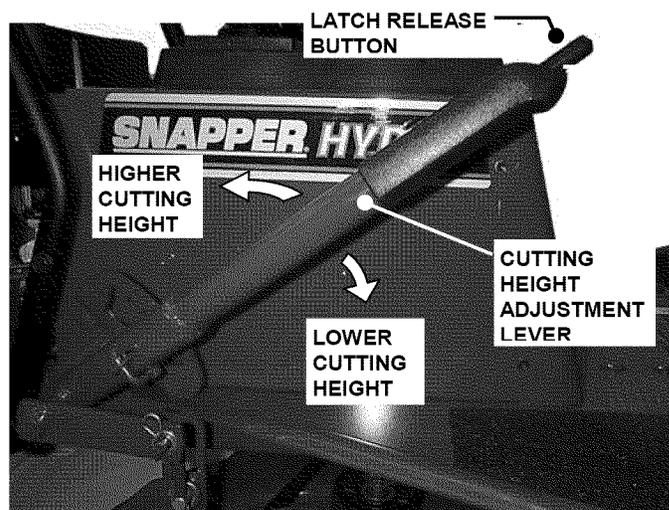


FIGURE 2.16

## Section 3 – MAINTENANCE

**WARNING**

**DO NOT** attempt any adjustments, maintenance, service or repairs with the engine running. **STOP** engine. **STOP** blade. Engage parking brake. Remove key. Remove spark plug wire from spark plug and secure away from plug. Engine and components are **HOT**. Avoid serious burns, allow all parts to cool before working on machine.

### 3.1 INTRODUCTION

To retain the quality of the Hydro 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 Hydro Rear Engine Riding Mower, always mention the model and serial number. SNAPPER recommends returning the Hydro Rear Engine Rider to an authorized SNAPPER dealer annually for inspection and addition of any new devices, which might upgrade the safety of the Hydro 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

Routine maintenance is important to the performance and life of your Hydro Rear Engine Rider. Service performed properly and at the recommended interval is essential. Refer to Section "MAINTENANCE SCHEDULE" in this manual and in the Engine Owner's Manual. Carefully complete all of the recommended service procedures.

#### 3.2.1. Change Engine Oil

The Hydro Rear Engine Rider is equipped with a drain valve that allows the engine oil to be drained without the need for tools.

1. Locate oil drain on engine. Attach hose (supplied with machine) to fitting. See Figure 3.1.
2. Place a 2 quart minimum capacity container under the drain valve and route hose into container.
3. Loosen or remove oil fill cap on engine.
4. Turn drain valve counter-clockwise and pull out. Allow sufficient time for oil to drain completely.
5. Close the oil drain valve. Push valve in and turn clockwise. Remove hose from fitting.
6. Fill engine crankcase to proper level with new oil. Refer to the Engine Owner's Manual for crankcase capacity and oil specifications.

**IMPORTANT:** Any oil spilled during draining or filling must be cleaned off of the machine before operating. Dispose of drain oil properly.

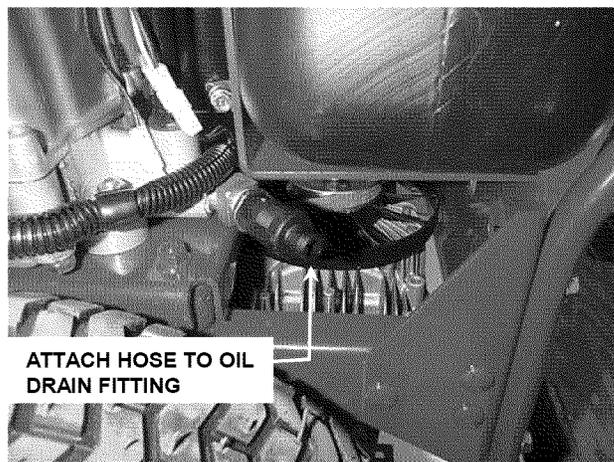


FIGURE 3.1

#### 3.2.2. Service Engine Air Cleaner

The engine is equipped with a dual element air cleaner. Both the foam pre-cleaner and cartridge require service.

1. Locate engine air cleaner. Loosen cover knob and remove cover. See Figure 3.2.

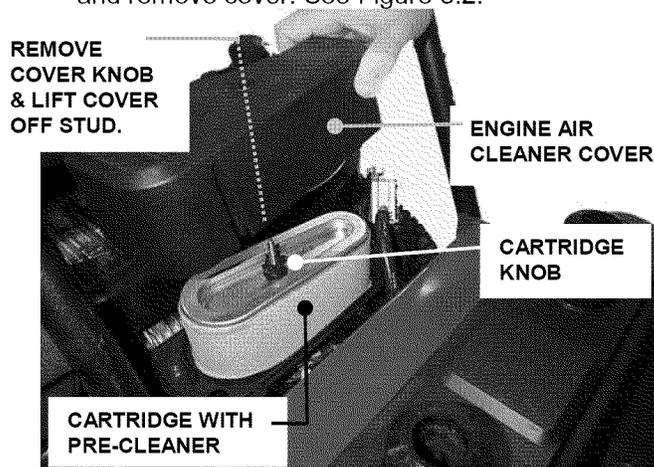


FIGURE 3.2

2. Remove cartridge knob.
3. Carefully lift the pre-cleaner and cartridge up off of base and stud.
4. Clean base very carefully - DO NOT allow debris to enter carburetor.
5. Service pre-cleaner. Wash in soap and water. Dry thoroughly in a clean rag. Apply oil, saturating foam. Remove excess oil by squeezing foam in a clean absorbent rag.
6. Service cartridge. Clean by tapping gently on firm surface. Tapping will remove loose debris only. If cartridge is damaged or dirty, REPLACE IT. DO NOT oil cartridge or use pressurized air.
7. After removing excess oil from foam pre-cleaner, install onto cartridge and place assembly down stud onto base.
8. Secure cartridge. Tighten cartridge knob securely.
9. Install cover and tighten cover knob securely.

## Section 3 - MAINTENANCE

**WARNING**

DO NOT attempt any adjustments, maintenance, service or repairs with the engine running. STOP engine. STOP blade. Engage parking brake. Remove key. Remove spark plug wire from spark plug and secure away from plug. Engine and components are HOT. Avoid serious burns, allow all parts to cool before working on machine.

**WARNING**

Blades are extremely sharp and can cause severe injuries. Wear heavy gloves when working on or handling blades. DO NOT use blades that show signs of wear or damage.

### 3.2.3. Check Mower Blade

1. Stop engine, stop blades. Engage parking brake. Remove key.

2. Carefully stand machine on rear bumper.

**IMPORTANT:** If the machine will be on its rear bumper for longer than two hours, remove the battery. Refer to Section "BATTERY REMOVAL".

3. Check torque of blade mounting nut. Torque nut to 60 to 90 ft. lbs. See Figure 3.3.

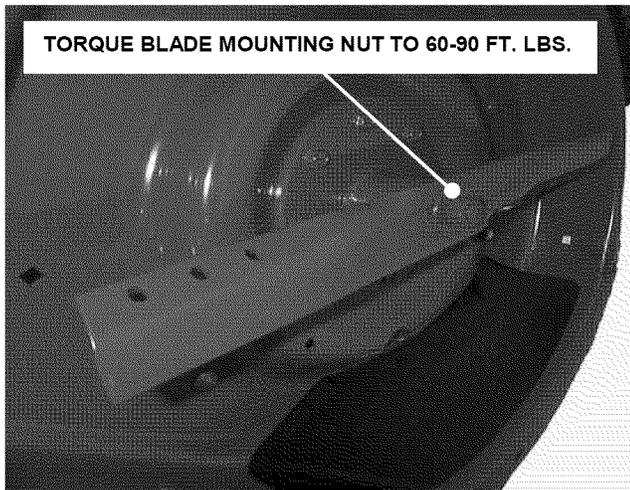


FIGURE 3.3

4. Inspect blades carefully for wear or damage. Refer to Section "BLADE WEAR LIMITS". Replace worn or damaged blades.

### 3.2.4. BLADE DRIVE & ENGINE TO DECK BELTS

#### A) Check Blade Drive Belt

The blade drive consists of two belts. The engine to deck belt will require inspection and periodic adjustment. The deck belt requires inspection only.

#### B) Engine To Deck Belt

1. Stop engine. Stop blades. Engage parking brake. Remove key.

2. Remove cover to gain access to belt by removing four screws. See Figure 3.4.



FIGURE 3.4

3. Visually inspect condition of belt. If worn or damaged, replace. Refer to Section "ENGINE TO DECK BELT REPLACEMENT".

4. Check belt tension. Place cutting height control lever in mid setting. With engine "OFF", engage blade control lever. See Figure 3.5. The length of the control cable spring should extend a minimum of 1/4". If extension is less than 1/4", belt tension should be adjusted. Refer to Section "ENGINE TO DECK BELT ADJUSTMENT".

5. Install cover. Tighten screws securely. DO NOT operate with cover removed.

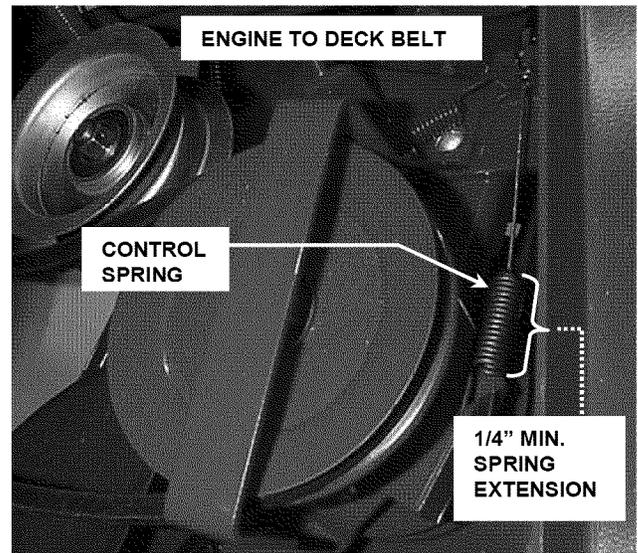


FIGURE 3.5

#### C) Deck Belt

1. No tension adjustment is required.

2. Visually inspect belt for signs of deterioration. Replace belt if worn or damaged. Refer to Section "DECK BELT REPLACEMENT". See Figure 3.6.

## Section 3 – MAINTENANCE

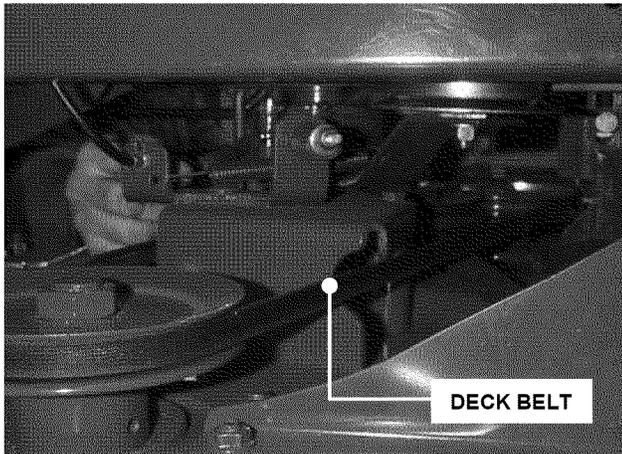


FIGURE 3.6

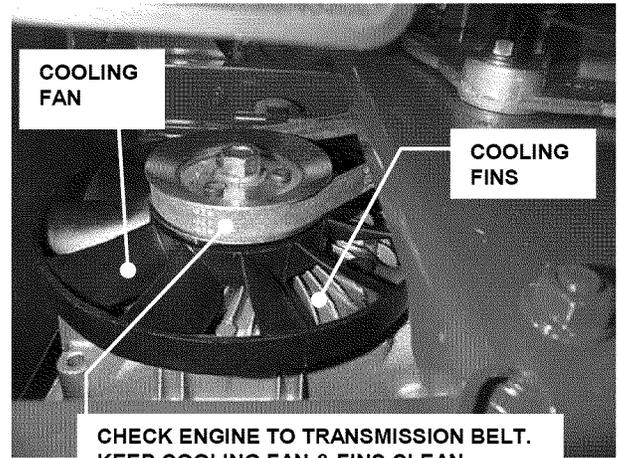


FIGURE 3.7

**WARNING**  
The following procedure requires the engine and blades to be operated. Exercise extreme caution. Clear area of loose parts & tools first. Only operate blades when seated in the operator's seat.

### 3.2.5. Blade Brake

1. Check blade brake for proper function. Blades should stop rotating in 3 seconds or less after moving the blade control lever back to the "OFF" position.

**WARNING**  
Blades must stop rotating in 3 seconds or less after blades have been turned off. DO NOT operate machine until blade brake has been adjusted and functioning properly.

2. If blades continue to rotate longer than 3 seconds do not operate machine. Refer to Section "BLADE BRAKE ADJUSTMENT" or contact your SNAPPER dealer for assistance.

### 3.2.6. Transmission

1. Transmission belt does not require tension adjustment. Visually check for signs of deterioration. Replace if worn or damaged. Refer to Section "TRANSMISSION BELT REPLACEMENT". See Figure 3.7.
2. Transmission belt idler pivot grease fitting requires lube. Apply 1-3 shots of general purpose grease from a grease gun. Refer to Section "LUBRICATION – GREASE FITTINGS".
3. Transmission requires no fluid level check or fluid change. Check transmission cooling fan and cooling fins. Keep these items clean and free of debris build up. See Figure 3.7.

### 3.2.7. Service Brake / Park Brake

1. Check machine brake for proper function. Engage park brake. Push machine. Rear tires should skid. Drive machine forward and apply brake. Machine should come to a complete stop in less than 5 ft.
2. If brakes are not functioning properly brake adjustment must be completed before operating machine. Refer to Section "SERVICE BRAKE – PARK BRAKE ADJUSTMENT".

### 3.2.8. Interlock System

Check interlock controls for proper function:

**The engine MUST NOT start if:**

1. Blade Control is "ON" and/or clutch / brake pedal is released.

**The engine and blades MUST STOP if:**

2. The operator leaves the operator position with Blade Control "ON" and/or clutch / brake pedal is released.

**WARNING**  
DO NOT operate machine if interlock system is not functioning properly. Contact your SNAPPER Dealer immediately for assistance.

### 3.2.9. Lubrication - Grease Fittings

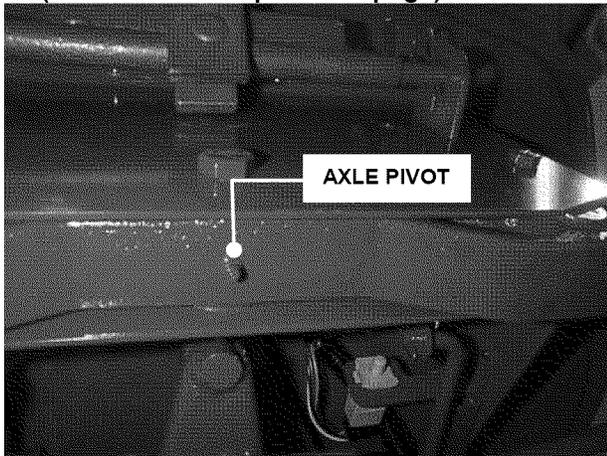
The following components on the Hydro Rider are equipped with grease fittings and require periodic lubrication. Apply General Purpose grease with a grease gun. To locate fittings, See Figures 3.8, 3.9, 3.10, 3.11 and 3.12.

1. Front axle pivot, 2-3 shots. See Figure 3.8.

(Continued on next page)

## Section 3 – MAINTENANCE

### 3.2.9. Lubrication - Grease Fittings (Continued from previous page)



**FIGURE 3.8**

2. Front axle kingpins, 2-3 shots. See Figure 3.9.



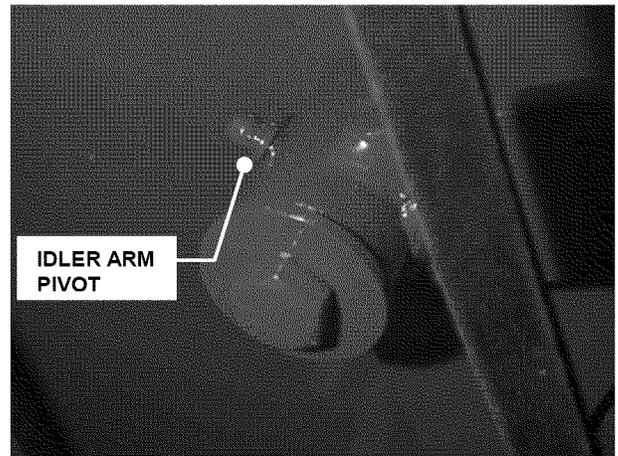
**FIGURE 3.9**

3. Front wheel bearings, 3-5 shots. See Figure 3.10.



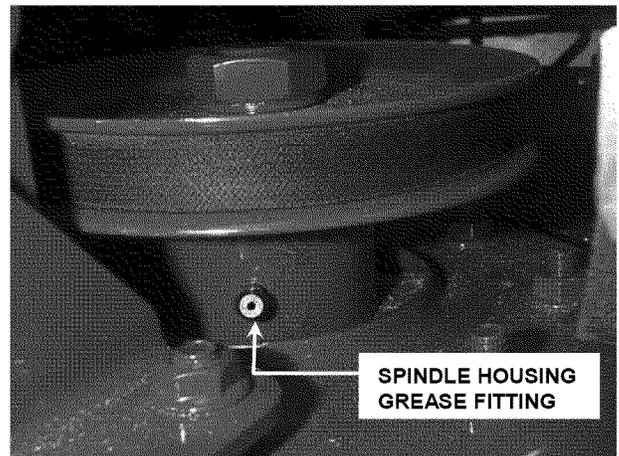
**FIGURE 3.10**

4. Transmission belt idler arm pivot, 1-3 shots. See Figure 3.11.



**FIGURE 3.11**

5. Deck spindle housings, 1-3 shots. See Figure 3.12.



**FIGURE 3.12**

## Section 3 – MAINTENANCE

### 3.3 SERVICE - EVERY 25 OPERATING HOURS

**3.3.1.** Perform all service required after the first 5 hours of operation – Refer to Section “SERVICE – AFTER FIRST 5 HOURS”.

**3.3.2.** Check battery electrolyte level. Battery is located under seat.

**1.** Remove seat knobs and carefully tilt forward to expose battery.

**2.** Using large blade screwdriver (or allen wrench) remove battery caps. Check fluid level.

**3.** Add water only to bring liquid to proper level - approximately 3/16” above plates. **DO NOT OVER FILL.**

**3.3.3.** Check Maintenance Schedule Section of the “Engine Owner’s Manual” for additional engine service.

### 3.4 SERVICE - ANNUALLY

**3.4.1.** Perform all maintenance as specified in “Maintenance Schedule” section of this manual and the Engine Owner’s Manual.

**3.4.2.** Fuel Filter - Service fuel filter as instructed below on Cold Engine Only.

**5.** Elevate end of hose to prevent fuel from draining from tank.

**6.** Slip hose over fittings on new filter.

**7.** Move hose clamps back to original position.

**8.** Place hose back into support clamp and secure.

**9.** Check for leaks.

### 3.5 STORAGE (OUT OF SEASON)

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

**1.** Thoroughly clean the machine by removing all grass clippings and debris.

**2.** Perform maintenance and lubrication as required.

**3.** Drain fuel from fuel tank.

**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.

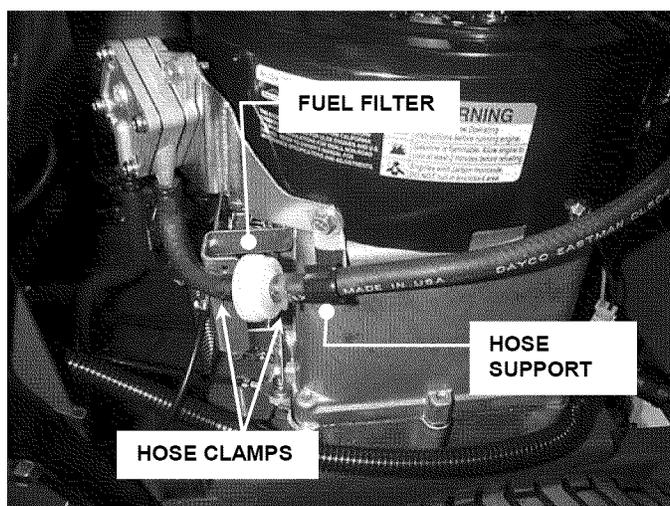
**5.** Remove battery. Refer to Section “BATTERY STORAGE”.

**6.** Carefully stand machine on rear bumper in desired location for storage.



**1.** Remove hose clamps from fuel filter.

**2.** Pull hose out of hose support clamp. See Figure 3.13.



**FIGURE 3.13**

**3.** Squeeze tabs on hose clamps using pliers and slip clamps away from filter body.

**4.** Pull hose off of filter. Discard old filter.

## Section 4 - ADJUSTMENTS & REPAIR

**WARNING**

DO NOT attempt any adjustments, maintenance, service or repairs with the engine running. STOP engine. STOP blade. Engage parking brake. Remove key. Remove spark plug wire from spark plug and secure away from plug. Engine and components are HOT. Avoid serious burns, allow all parts to cool before working on machine.

### 4.1 ENGINE ADJUSTMENTS & REPAIR

Refer to the Engine owner's Manual for the adjustments/repairs that can be made by the owner.

### 4.2 MOWER BLADE REPLACEMENT

#### 4.2.1. Blade Wear Limits

Blades are subject to wear during normal usage and require frequent inspections. Blades that have reached the wear limit (see Figure 4.1) or have been damaged must be replaced.

**WARNING**

DO NOT operate machine with a blade that shows signs of excessive wear or damage.

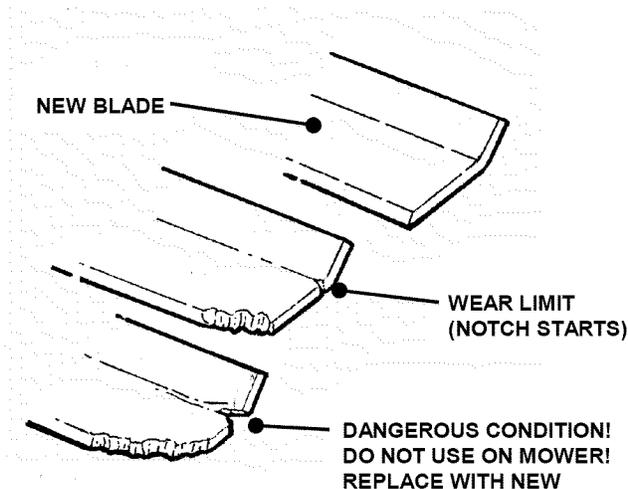


FIGURE 4.1

#### 4.2.2. Blade Sharpening

Inspect blades carefully. Blades that have not reached the wear limit and have not been damaged may have the cutting edge resharpened. DO NOT attempt to sharpen a blade that shows signs of excessive wear or damage. DO NOT sharpen beyond existing cutting edge.

**WARNING**

Blades are extremely sharp and can cause severe injury. Wear heavy gloves when handling or working around blades.

1. Stop engine. Stop blades. Engage parking brake. Remove key.

2. Carefully stand machine on rear bumper.
3. Remove blades. See Figure 4.2.

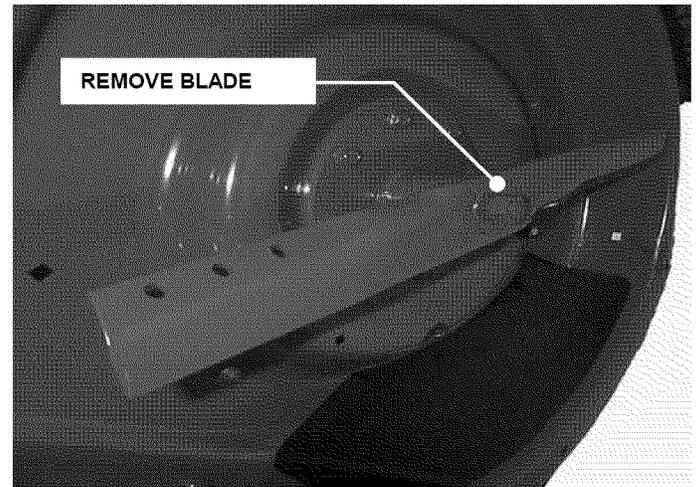


FIGURE 4.2

4. Inspect condition of blades. See Figure 4.1.
5. If a blade is in good condition, sharpen cutting edge at an angle of 22 to 28 degrees. DO NOT sharpen beyond existing cutting edge. Replace blades not in good condition.
6. Check blade balance after sharpening. Correct blade balance by grinding on the tip of the heavy end of the blade.
7. Reinstall blades. Carefully align center hole in blade onto blade retainer and slide on spindle shaft. Install cone washer and nut. Torque nut to 60 to 90 ft. lbs. See Figure 4.2.
8. Carefully lower machine off of bumper.

#### 4.2.3. Blade Replacement

1. Stop engine. Stop blades. Engage parking brake. Remove key.
2. Carefully stand machine on rear bumper
3. Loosen blade nut and remove.
4. Install new blade with airlift side up. Carefully align center hole in blade onto blade retainer. Install cone washer and nut. Torque nut to 60 to 90 ft. lbs.
5. Carefully lower machine off of bumper.

### 4.3 MOWER BLADE DRIVE BELTS – ADJUSTMENT / REPLACEMENT

#### 4.3.1. Engine to Deck Belt Adjustment

The engine to deck belt will require periodic tension adjustment to maintain peak blade drive performance.

1. Stop engine. Stop blades. Engage parking brake. Remove key.

(Continued on next page)

## Section 4 - ADJUSTMENTS & REPAIR

**WARNING**

DO NOT attempt any adjustments, maintenance, service or repairs with the engine running. STOP engine. STOP blades. Engage parking brake. Remove key. Remove spark plug wire from spark plug and secure away from plug. Engine and components are hot. Avoid serious burns by allowing all parts to cool before working on machine.

### 4.3 MOWER BLADE DRIVE BELTS – ADJUSTMENT / REPLACEMENT (continued from previous page)

2. Remove cover to gain access to the belt, idler and control cable area. The cover is retained to the seat pedestal with four screws. See Figure 3.4.
3. Visually inspect condition of belt. If worn or damaged, replace. Refer to Section “ENGINE TO DECK BELT REPLACEMENT” for instructions.
4. With engine stopped, move blade control lever to the ON position. The control cable spring should extend between  $3/8"$  &  $1/2"$ . See Figure 3.5. If spring extension is less than  $1/4"$ , adjustment is required.

**CONTROL CABLE SPRING EXTENSION RANGE  $3/8"$  &  $1/2"$**

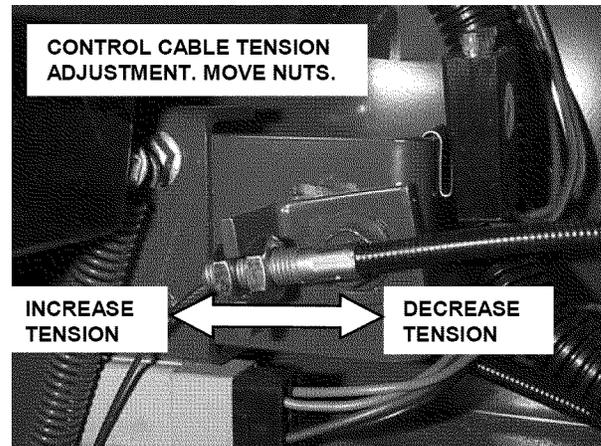


**NOTE: POSITION BELT GUIDES  $1/8"$  FROM BELT WITH BLADE CONTROL ON (ENGINE OFF).**

**FIGURE 4.3**

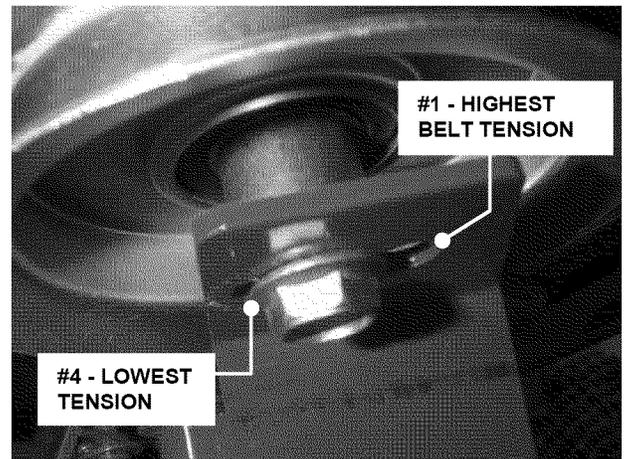
5. The threaded fitting on the end of the control cable provides fine tension adjustments. See Figure 4.4. Loosen jam nuts and turn nuts until spring extension falls in the range of  $3/8"$  to  $1/2"$ . Tighten nuts securely. Move blade control lever to the OFF position. Install cover (refer to note below) and tighten screws securely.

**NOTE:** If the threaded fitting adjustment did not produce proper spring extension, leave cover off and proceed to next step.



**FIGURE 4.4**

6. If step 5 did not produce the correct spring extension, the idler pulley will require repositioning. The idler arm has a series of 4 holes. See Figure 4.5. The #1 position produces the highest belt tension, #4 the lowest. Remove the idler pulley – noting the mounting hole location prior to removing bolt.



**FIGURE 4.5**

7. Reposition the idler pulley one hole at a time in the desired direction (higher tension or lower tension). Install bolt and nut. Tighten securely.

**IMPORTANT:** DO NOT over tension belt. Excessive tension will adversely affect belt drive function and can cause damage.

8. Check belt tension. Repeat step 4. Use threaded fitting on cable for fine adjustment (refer to step 5). DO NOT exceed  $1/2"$  spring extension.

**NOTE:** The rear deck brackets are slotted where they attach to the deck. This provides adjustment to accommodate variations in belt length. Loosen nuts (4) and slide deck forward to increase engine to deck belt tension.

## Section 4 - ADJUSTMENTS & REPAIR

### 4.3 MOWER BLADE DRIVE BELTS – ADJUSTMENT / REPLACEMENT (continued from previous page)

**WARNING**  
The following procedure requires the engine and blades to be operated. Exercise extreme caution. Clear area of loose parts & tools first. Only operate blades when seated in the operator's seat.

9. Check blade drive for proper function. Start engine. Engage blades. Blades should engage smoothly. Disengage blades. Blades should stop rotating in 3 seconds or less. If blade drive does not function properly recheck adjustments or contact your SNAPPER dealer for assistance.
10. Install cover to seat pedestal. Tighten screws securely.

#### 4.3.2. Engine To Deck Belt Replacement

Replace belt if worn, damaged or if belt adjustment does not restore proper function.

1. Stop engine. Stop blades. Engage parking brake. Remove key.
2. Remove cover to gain access to belt area. The cover is retained to the seat pedestal with four screws. See Figure 3.4.
3. Remove belt guide at deck jackshaft pulley. See Figure 4.6.

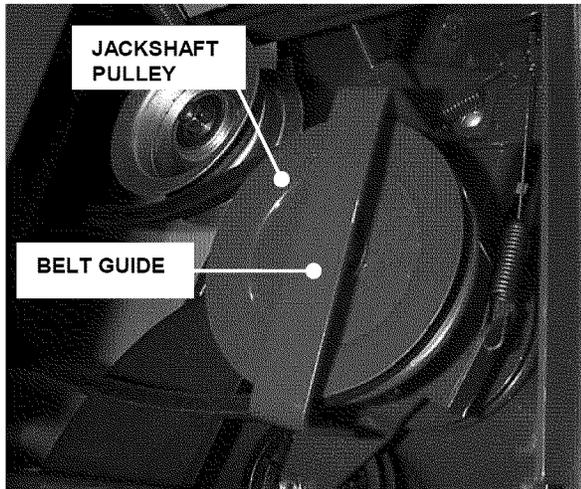


FIGURE 4.6

4. Make sure blade control lever is "OFF". Route belt off of jackshaft pulley and idler pulley.
5. Place deck in low cut.
6. Route belt down off of engine pulley and between belt guides. See Figure 4.3.
7. Reverse procedure to install new belt.
8. Check belt tension and adjust as required. Refer to Section "ENGINE TO DECK BELT ADJUSTMENT".
9. Install cover to seat pedestal. Tighten screws securely.

#### 4.3.3. Deck Belt Replacement

The deck belt requires no adjustments. Replace belt if it becomes worn or damaged.

1. Stop engine. Stop blades. Engage parking brake. Remove key.
2. Remove cover to gain access to belt area. The cover is retained to the seat pedestal with four screws.
3. Remove engine to deck belt from jackshaft pulley. Refer to Section "ENGINE TO DECK BELT REPLACEMENT".
4. Remove blade control cable from cable anchor bracket and unhook control cable spring from the idler arm. See Figure 4.7.

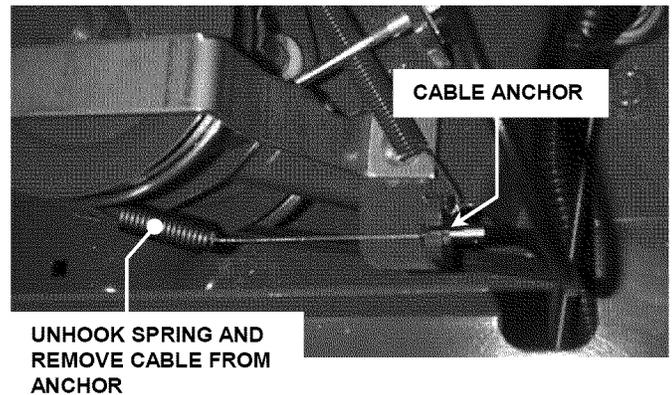


FIGURE 4.7

**WARNING**  
Deck belt is under spring tension. Use caution when removing.

5. Wrap heavy rag around belt behind left spindle pulley as shown in Figure 4.8.



FIGURE 4.8

(Continued on next page)

## Section 4 - ADJUSTMENTS & REPAIR

### 4.3.3. Deck Belt Replacement (continued from previous page)

6. Grip rag firmly while pulling up on belt and rotating pulley. Belt will roll off of spindle pulley.
7. Very carefully relax tension on belt.
8. Route belt off of jackshaft pulley, idler pulley and right spindle pulley. Remove deck belt spring. Remove belt. See Figure 4.8.
9. Reverse procedure to install new belt.
10. Attach blade control cable spring to idler arm and blade control cable to anchor bracket. Tighten nut securely.
11. Install engine to deck belt and belt guide at jackshaft pulley.
12. Install cover to seat pedestal. Tighten screws securely.

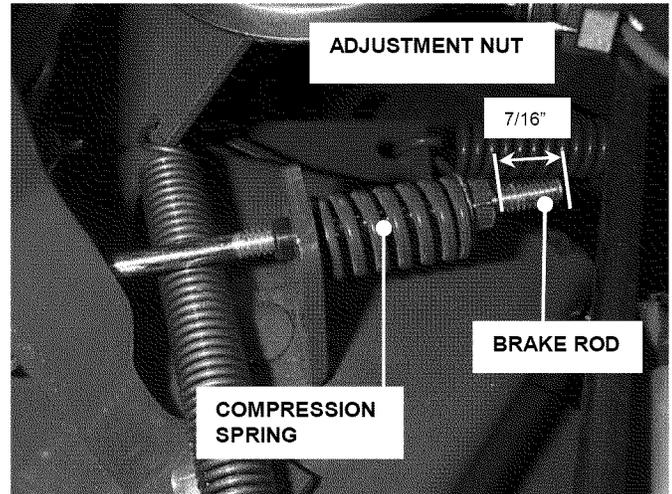


FIGURE 4.9

**WARNING**

Blades must stop rotating in 3 seconds or less after blades have been turned off. DO NOT operate machine until blade brake has been adjusted and functioning properly. Contact your SNAPPER dealer for assistance.

### 4.4 MOWER BLADE BRAKE ADJUSTMENT

**WARNING**

The following procedure requires the engine and blades to be operated. Exercise extreme caution. Clear area of loose parts & tools first. Only operate blades when seated in the operator's seat.

The blade brake when properly adjusted will stop blade rotation in 3 seconds or less when the blade control lever is moved to the "OFF" position. Blade brake adjustment is made by turning the adjustment nut on the threaded brake rod. The brake is initially set with 7/16" of thread exposed beyond the nut. See Figure 4.9. Verify this setting before attempting any adjustments. To tighten the brake (stop blade rotation quicker) turn the adjustment nut clockwise - ONE TURN ONLY.

**IMPORTANT:** DO NOT over-tighten blade brake. Tighten one turn and check function of brake. If blade stop time remains over 3 seconds, turn adjustment nut one more turn clockwise. If blade stop time remains over 3 seconds DO NOT OPERATE machine. Contact your local SNAPPER Dealer for assistance.

**WARNING**

DO NOT operate machine until blade brake is adjusted and functioning properly. If blade stop time can not be achieved with the adjustment procedure described above, take machine immediately to an authorized SNAPPER dealer.

### 4.5 TRANSMISSION DRIVE BELT REPLACEMENT

The transmission and the transmission drive belt require no adjustments. If the transmission belt becomes worn or damaged, replace it.

1. Stop engine. Stop blades. Engage parking brake. Remove key.

**NOTE:** Park brake must be engaged to release tension from the transmission belt allowing it to be removed.

2. Remove engine to deck belt. Refer to Section "ENGINE TO DECK BELT REPLACEMENT".
3. Roll transmission belt off of transmission pulley. See Figure 4.10.
4. Route belt down off of engine pulley and between belt guide.
5. Install new belt reversing above procedure.

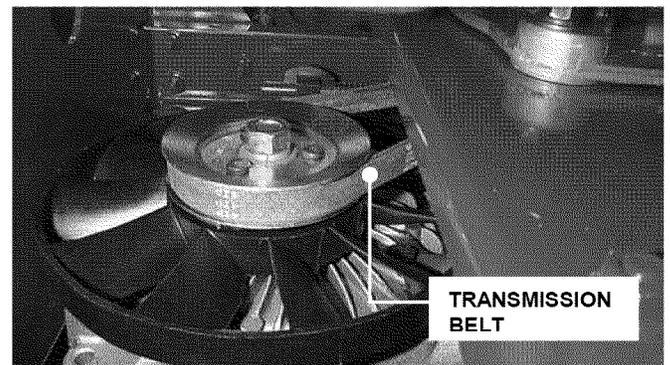


FIGURE 4.10

## Section 4 - ADJUSTMENTS & REPAIR

**WARNING**

**DO NOT attempt any adjustments, maintenance, service or repairs with the engine running. STOP engine. STOP blade. Engage parking brake. Remove key. Remove spark plug wire from spark plug and secure away from plug. Engine and components are HOT. Avoid serious burns, allow all parts to cool before working on machine.**

### 4.6 MOWER DECK LEVEL ADJUSTMENT

If you are experiencing an uneven cut refer to "TROUBLESHOOTING" section in this manual. Before attempting any deck adjustments ADJUST TIRE PRESSURE - 12 PSI FRONT & 12 PSI REAR. The mower blades should be level side to side within 1/8" or less. Check level and adjust as follows:

1. Park machine on flat surface. Stop engine. Stop blades. Engage parking brake. Remove key.
2. Wearing heavy gloves, carefully grasp blades and rotate until both are perpendicular to the machine frame.
3. Check side to side level. Measure distance from the blade tip to the ground. Record this for both blades.
4. The two distances should not differ more than 1/8". If difference is greater than 1/8", adjustment will be required.
5. Locate the threaded deck hanger rod on the side of the deck that was measured to be low.
6. Remove hairpin from hanger rod. Rotate CLOCKWISE one to two turns.
7. Recheck side to side level. If 1/8" or less adjustment is complete. If still greater than 1/8" adjust hanger rod as needed.
8. Reinstall hairpin into hanger rod.

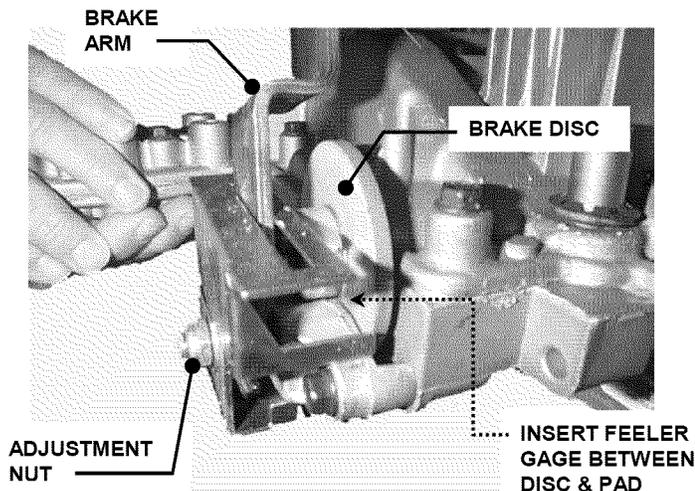


FIGURE 4.11

### 4.7 SERVICE BRAKE / PARK BRAKE ADJUSTMENT

1. Park machine on flat surface. Stop engine. Stop blades. Remove key.

**NOTE:** DO NOT engage parking brake.

2. Locate disc brake on left side of transmission. Move brake arm fully forward in slot. See Figure 4.11.
3. Use a .020" thick feeler gage to adjust the clearance between the brake pad and disc.
4. Insert the .020" feeler gage vertically up at the bottom of the disc and between the disc and pad.
5. Tighten the brake adjustment nut until a light drag is felt on feeler gage. Remove feeler gage.
6. Check disc. With brake released the disc should be free to move.
7. Engage parking brake. Pedal effort should not be excessive. Check brake rod spring. With brake engaged there should be clearance between the coils. See Figure 4.12.
8. Check brake function. Refer to Section "CHECKING SERVICE BRAKE/PARK BRAKE".

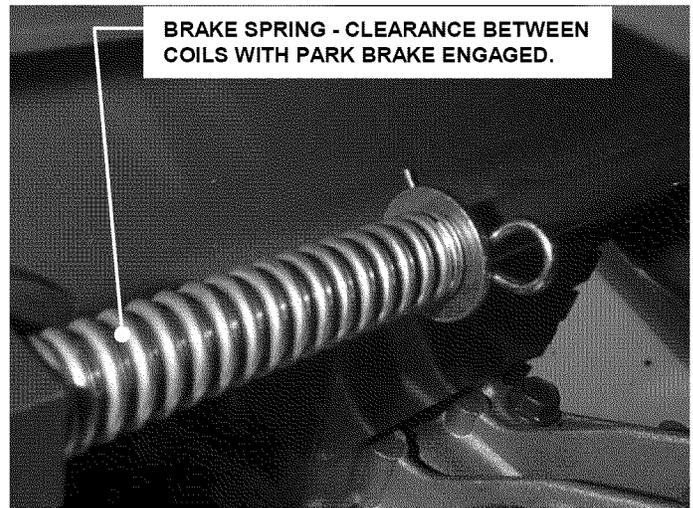


FIGURE 4.12

## Section 4 - ADJUSTMENTS & REPAIR

**WARNING**

DO NOT attempt any adjustments, maintenance, service or repairs with the engine running. STOP engine. STOP blade. Engage parking brake. Remove key. Remove spark plug wire from spark plug and secure away from plug. Engine and components are HOT. Avoid serious burns, allow all parts to cool before working on machine.

### 4.8 BATTERY

#### 4.8.1. Battery Removal

1. The battery is located under seat. Remove seat knobs and carefully tilt forward to expose battery. See Figure 4.13.

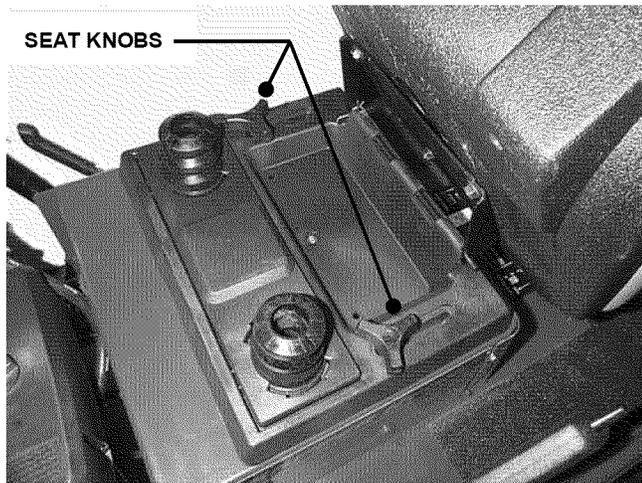


FIGURE 4.13

2. Observe and note cable positions on battery. See Figure 4.14.
3. Disconnect cables from battery terminals, disconnecting BLACK (Negative) cable first. Retain mounting bolts and nuts.
4. Carefully lift battery out of battery tray.

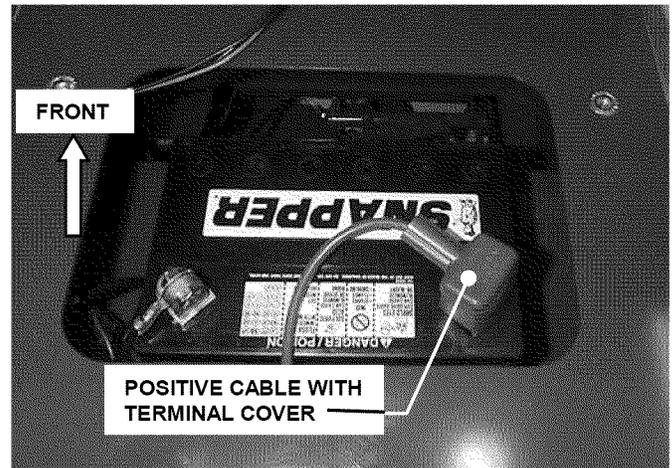


FIGURE 4.14

**WARNING**

Cables must be connected to battery terminals in the proper position as show in Figure 4.14. DO NOT attempt to charge battery while installed on the Machine. DO NOT use "BOOST" chargers on the battery.

#### 4.8.2. Battery Installation

**IMPORTANT:** Your Hydro Rear Engine Rider is equipped with a specially designed battery that allows the machine to be placed on the rear bumper for up to 2 hours with no acid leakage. Failure to use a genuine Snapper battery or installing the Snapper battery incorrectly will result in damage to your machine. The Snapper battery must be installed with the battery caps towards the front of the machine and the terminals towards the rear. See Figure 4.14.

1. Carefully place battery into battery tray.
2. Connect positive (+) cable (red) first, from wiring harness to the positive terminal (+) on battery using bolt and nut. See Figures 4.15

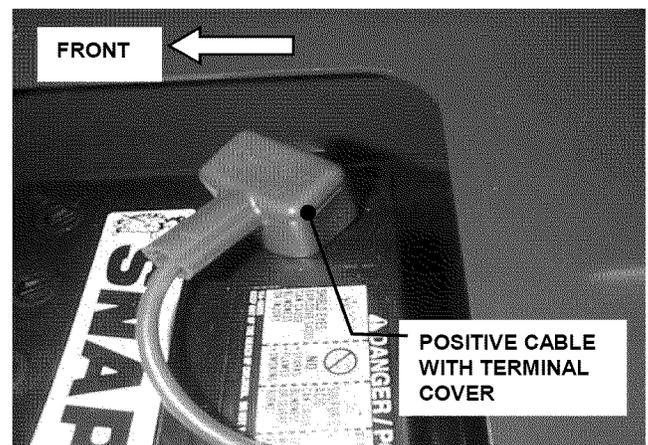


FIGURE 4.15

**WARNING**

If battery is removed, DO NOT operate engine without insulating the Positive + battery cable terminal with electrical tape, or sparking from the battery cables can result.

## Section 4 - ADJUSTMENTS & REPAIR

### 4.8.2. Battery Installation (Continued)

3. 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. See Figure 4.16.

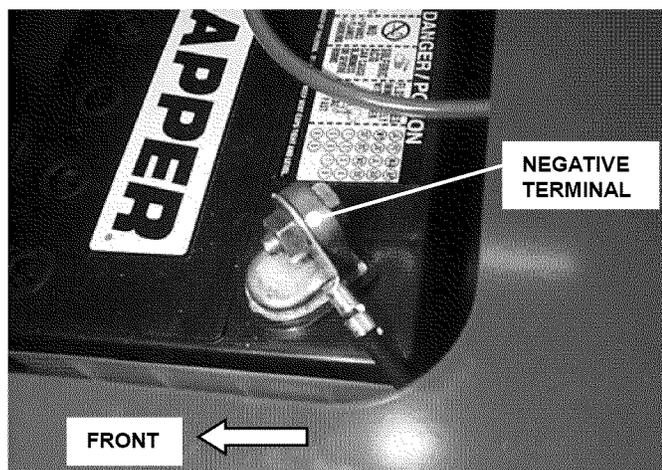


FIGURE 4.16

4. Reinstall positive terminal insulator.
5. Install seat/pedestal. Tighten seat knobs securely.

### 4.8.3. Battery Service

1. Remove battery. Refer to Section "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.
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.

### 4.8.4. Battery Storage

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

1. Remove battery. Refer to Section "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.

### 4.8.5. 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. Measure the battery voltage and compare to the voltages listed in the "BATTERY CONDITION CHART" in this manual to determine condition of battery.
2. A hydrometer measures the specific gravity of the electrolytes in 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 "Battery Condition Chart" included in this manual shows the charge level as measured by syringe float hydrometer, digital voltmeter and five ball hydrometer.

**WARNING**

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

**WARNING**

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.

**WARNING**

DO NOT attempt to charge battery while installed on the Riding Mower. DO NOT use "BOOST" chargers on the battery. DO NOT OVERFILL!

## Section 4 - ADJUSTMENTS & REPAIR

### 4.8.6. Battery Testing

<b>Battery Condition Chart</b>			
<b>State of Charge</b>	<b>Syringe Hydrometer</b>	<b>Digital Voltmeter</b>	<b>Five Ball Hydrometer</b>
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

# TROUBLESHOOTING

PROBLEM	PROBABLE CAUSE	CORRECTIVE ACTION
<b>Engine Will Not Start Using Recoil Starter</b>	1. Fuel tank empty.	1. Fill fuel tank with fresh fuel to proper level.
	2. Engine needs choking.	2. Move engine speed control to "CHOKE" position.
	3. Spark plug wire disconnected.	3. Place spark plug wire onto spark plug.
	4. Faulty parking brake, blade or ignition switch.	4. Contact authorized <b>SNAPPER</b> dealer.
	5. Park brake not engaged.	5. Engage park brake.
	6. Ignition is in the OFF position.	6. Turn ignition switch to the RUN position.
<b>Engine Will Not Start Using Electric Starter</b>	1. Fuel tank empty.	1. Fill fuel tank with fresh fuel to proper level.
	2. Engine needs choking.	2. Move engine speed control to "CHOKE" position.
	3. Spark plug wire disconnected.	3. Place spark plug wire onto spark plug.
	4. Faulty parking brake, blade or ignition switch.	4. Contact authorized <b>SNAPPER</b> dealer.
	5. Park brake not engaged.	5. Engage park brake.
	6. Blown Fuse.	6. Replace with new 20 AMP fuse.
	7. Faulty interlock module.	7. Contact authorized <b>SNAPPER</b> dealer.
	8. Ignition is in the OFF position.	8. Turn ignition switch to the START position.
	9. Battery is weak or dead.	9. Charge or replace with new battery.
	10. Battery cables loose, broken disconnected or corroded.	10. Clean and connect battery cables. If broken, replace with new battery cables.
	11. Faulty electric starter or starter solenoid.	11. Contact authorized <b>SNAPPER</b> dealer.
	12. Starter cable loose, broken or disconnected.	12. Connect starter cable. If broken, replace with new starter cable.
	13. Electrical wiring harness disconnected or broken.	13. Connect or replace with new wiring harness.
<b>Engine Stalls After Running</b>	1. Operator not in seat.	1. Sit in operator's seat.
	2. Choke control in the "CHOKE" position.	2. Move choke control to "OFF" position.
	3. Fuel tank empty.	3. Fill fuel tank with fresh fuel to proper level.
	4. Engine air pre-cleaner and or air cleaner dirty.	4. Clean free of all debris.
	5. Spark plug defective or gap set improperly.	5. Service spark plug.
	6. Fuel filter restricted.	6. Replace fuel filter.
	7. Water, debris or stale fuel in fuel system.	7. Drain and clean fuel system.
<b>Engine Loses Power</b>	1. Excessive load on engine.	1. Lessen load.
	2. Engine air pre-cleaner or air cleaner dirty.	2. Clean or replace filters.
	3. Spark plug faulty.	3. Service spark plug.
	4. Water, debris or stale fuel in fuel system.	4. Drain and clean fuel system. Replace filter.
	5. Debris build up on engine cooling screen.	5. Clean all debris from engine cooling screen.
<b>Engine Backfires When Turned To "STOP"</b>	1. Engine speed control set too "FAST".	1. Set engine speed control to "SLOW" and allow engine to idle. Then, turn key to "OFF".
<b>Excessive Vibration</b>	1. Damaged, out of balance or bent mower blades.	1. Service mower blade(s).
	2. Loose blade components.	2. Service and tighten loose parts.
	3. Loose or missing air lift (if equipped).	3. Replace air lifts. Tighten to proper torque.
	4. Lumpy or frayed belt.	4. Replace belt.
	5. Bent Idler, stationary or spindle pulley.	5. Replace pulley.

(Trouble Shooting Continued on Next Page)

# TROUBLESHOOTING

(Continued on Previous Page)

PROBLEM	PROBABLE CAUSE	CORRECTIVE ACTION
<b>Rider Will Not Move Loss Of Traction</b>	1. Transmission damaged.	1. Contact authorized <b>SNAPPER</b> dealer.
	2. Engine to transmission belt damaged.	2. Install new engine to transmission belt.
	3. Roll release engaged.	3. Move control to DRIVE position.
	4. Parking brake engaged.	4. Release parking brake.
<b>Blade(s) Not Cutting</b>	1. Blade engagement lever in the "OFF" position.	1. Move lever to the "ON" position.
	2. Mower belt slipping.	2. Adjust or replace mower belt.
	3. Cutting blade is dull, worn or damaged.	3. Sharpen or replace cutting blade.
<b>Cutting Grass Improperly</b>	1. Uneven tire pressure.	1. Bring to proper pressure. 12 PSI front tire & 12 PSI rear tire.
	2. Cutting height too low or high.	2. Adjust cutting height.
	3. Engine speed too slow.	3. Move throttle control to "FAST" position.
	4. Forward speed too fast.	4. Move ground speed pedal to a slower speed.
	5. Terraced cut, side to side.	5. Adjust side to side level.
	6. Excessive deck pitch, front to rear.	6. Adjust front to rear pitch.
	7. Cutting blade(s) dull or damaged.	7. Sharpen cutting edges or replace blade(s).
	8. Mower belt slipping.	8. Adjust tension or replace mower belt.
<b>Poor Grass Discharge</b>	1. Engine speed too slow.	1. Move throttle control to "FAST" position.
	2. Forward speed too fast.	2. Move ground speed pedal to a slower speed.
	3. Grass is wet.	3. Mow when grass is dry.
	4. Excessively dull, worn or damaged blade(s).	4. Service mower blade.
	5. Build up of grass clippings and debris under deck.	5. Clean the underside of deck.
	6. Improper blade installed on deck.	6. Install proper <b>SNAPPER</b> blades.
<b>Oil Leaking</b>	1. Leaking transmission.	1. Contact authorized <b>SNAPPER</b> dealer.
	2. Leaking engine block.	2. Contact authorized <b>SNAPPER</b> dealer.

## 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 6	X					
Engine	Initial Oil Change	Page 12		X				
Engine	Periodic Oil Change	Page 16				X*		X
Air Pre-Cleaner	Service Sponge Pre-Cleaner Element	Engine Manual			X**			X
Air Cleaner	Replace Element	Engine Manual.			X**			X
Spark Plug	Replace Plugs	Engine Manual.					X	
Fuel Filter	Replace Filter	Page 16					X	X
Engine Cooling System	Clean Shrouds & Fins	Engine Manual					X**	X
Transmission Cooling System	Clean fan & fins.	Page 14			X			
Battery	Check Electrolyte	Page 23			X			X
Battery	Charge Battery	Page 23						X
Tires	Check Pressures	Page 6	X					
Drive Belts	Check For Wear, Tension, Replacement	Pages 13, 19, 20			X			X
Mower Blades	Check For Wear And Damage	Pages 13, 17	X		X			
Mower Deck	Clean Debris Accumulation	Page 16	X		X			X
Lubrication Points	Grease or Oil	Pages 14 & 15			X			X
Blade Brake Stopping Time	Check blade stopping for proper operation	Pages 10 & 19	X					X
Clutch/Brake System	Check Clutch/Brake for proper operation	Page 7-11 & 21	X					X

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

\*\*Clean more often under dusty conditions or when airborne debris is present.

## MAINTENANCE/REPLACEMENT PARTS

MAINTENANCE PARTS	
Engine Speed Control (Briggs Engine)	4-6956
Blade Engagement Cable	5-8196
38" Cutter Blade (Requires 2 Blades)	4-2998
Parts Manual for Rear Engine Rider Hydro Drive Series 0 & 1	06123
Engine to Hydro Pump Belt	4-7117
Engine to Deck Belt	5-8231
Deck Spindle to Spindle Belt	7-1991

# SNAPPER®

## 3 YEAR LIMITED WARRANTY

For three (3) years from purchase date for the original purchaser's residential, non-commercial use, **SNAPPER**, through any authorized **SNAPPER** dealer will replace, free of charge (except for taxes where applicable), any part or parts found upon examination by the factory at McDonough, Georgia, to be defective in material or workmanship or both.

For ninety (90) days from purchase date for the original purchaser's commercial, rental, or other non-residential use, **SNAPPER**, through any authorized **SNAPPER** dealer will replace, free of charge, any part or parts found upon examination by the factory at McDonough, Georgia, to be defective in material or workmanship or both.

All transportation costs incurred by the purchaser in submitting material to an authorized **SNAPPER** dealer for replacement under this warranty must be paid by the purchaser.

This warranty does not apply to engines and their components, and batteries, as these items are warranted separately. This warranty does not apply to parts that have been damaged by accident, alteration, abuse, improper lubrication, normal wear, or other cause beyond the control of **SNAPPER**. This warranty does not cover any machine or component part that has been altered or modified changing safety, performance, or durability.

Batteries have a one (1) year prorated warranty period with free replacement if required during the first ninety (90) days from the original purchase date. **SNAPPER** will not be responsible for any installation cost incurred. The battery warranty only covers original equipment batteries and does not cover damage to the battery or machine caused by neglect or abuse, destruction by fire, explosion, freezing, overcharging, improper maintenance, or use of improper electrolyte.

There is no other express warranty.

### DISCLAIMER OF WARRANTY

Implied warranties, including those of merchantability and fitness for a particular purpose, are limited to three (3) years from purchase date for the original purchaser's residential or other non-commercial use, and ninety (90) days from purchase 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.

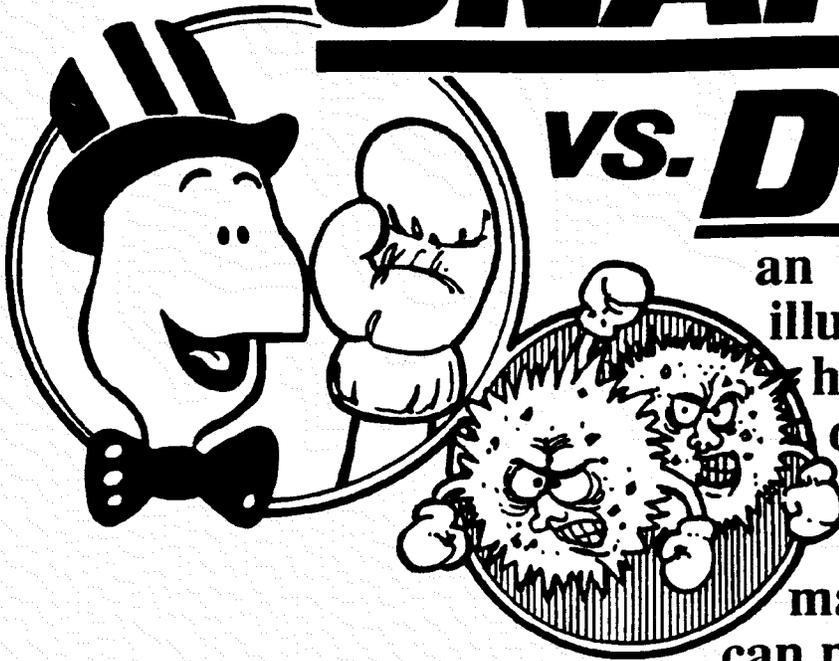
This warranty gives you specific legal rights, and you may also have other rights which vary from state to state.

**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.**

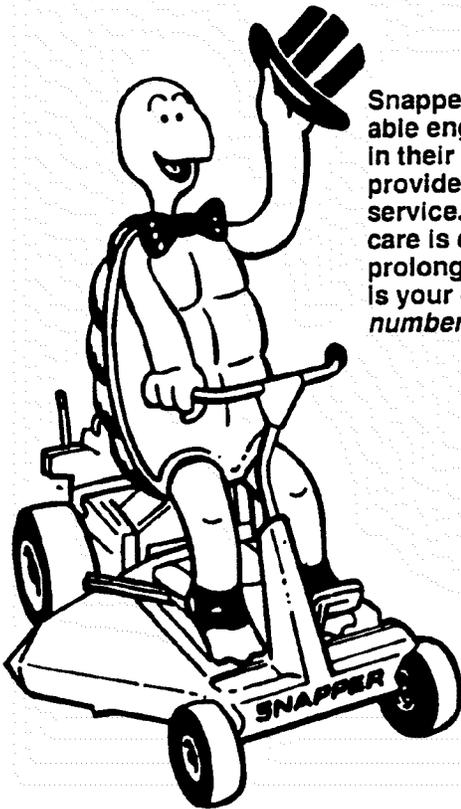
**IMPORTANT:** Please fill out the attached **SNAPPER** Product Registration Card immediately and mail to:  
**Snapper's Product Registration Center, P.O. Box 1379, McDonough, Georgia 30253**

# SNAPPER®

## VS. DIRT!



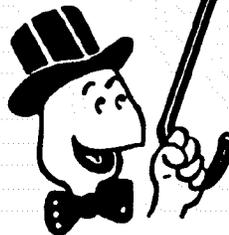
an illustration of how dirt can damage your engine & how reasonable maintenance can protect it!



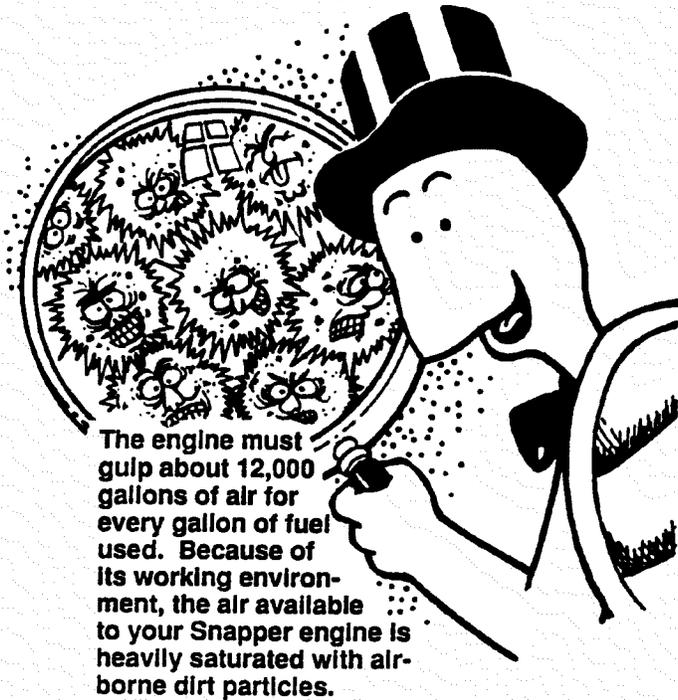
Snapper uses the best available engines and components in their products in order to provide long, satisfactory service. However, proper care is essential in prolonging engine life. Dirt is your engine's *enemy number 1!*



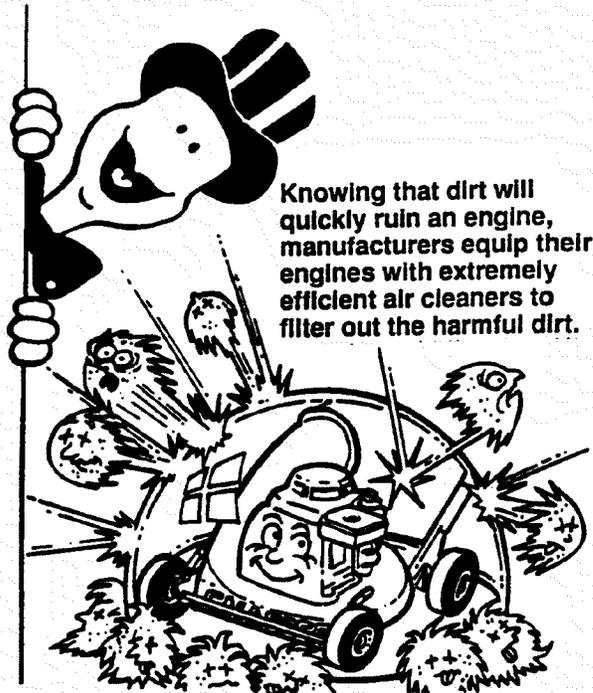
The engine on your Snapper product spends its entire life operating close to the ground at high speed creating a virtual storm of dust and dirt!



# PRIMARY MAINTENANCE



The engine must gulp about 12,000 gallons of air for every gallon of fuel used. Because of its working environment, the air available to your Snapper engine is heavily saturated with airborne dirt particles.

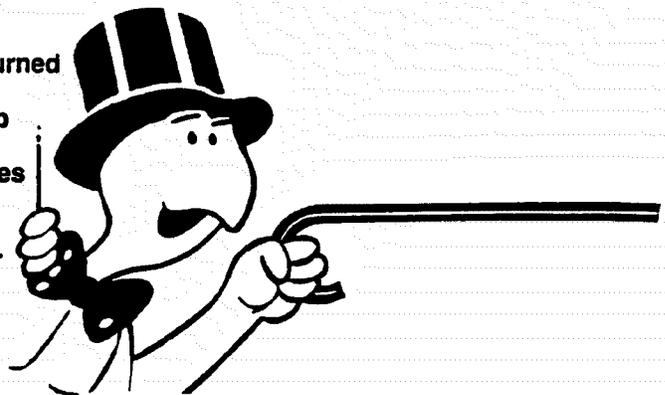
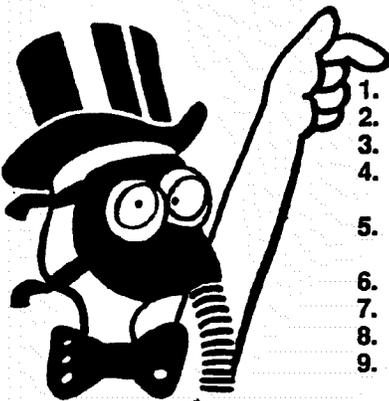


Knowing that dirt will quickly ruin an engine, manufacturers equip their engines with extremely efficient air cleaners to filter out the harmful dirt.

As the dirt particles are stopped, they build up and begin to clog the outside of the filter. This reduces the amount of air available to the engine and causes an over-rich fuel mixture which results in the following adverse effects:

An improperly serviced, dirt clogged air cleaner will:

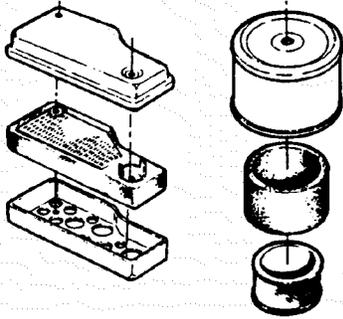
1. Increase fuel consumption
2. cause power loss
3. result in hard starting
4. create smoke from unburned fuel
5. produce carbon build-up internally
6. foul spark plug electrodes
7. score cylinder walls
8. burn valves
9. wear out the engine prematurely
10. COST YOU MONEY!



Damage caused by a poorly serviced air cleaner is not covered under the engine warranties. So, save yourself unnecessary expenses and undue aggravation by keeping the air cleaner properly serviced at the intervals specified in the engine owner's manual.

It doesn't take long to service an air cleaner. Follow the specific instructions in the engine owner's manual for the type filter used. Prevent dirt from falling into the carburetor intake when servicing your air cleaner. Make sure components are installed in correct sequence after servicing to prevent unfiltered air from entering the engine. Some servicing hints on several common types are:

# PRIMARY MAINTENANCE



Generally, wash foam-type filters in a dishwashing detergent and water solution. Rinse and wring dry, then saturate with oil and squeeze out excess. *Failure to re-oil this type filter will ruin the engine.*

Clean paper elements by tapping lightly. Blowing with air will rupture paper elements.

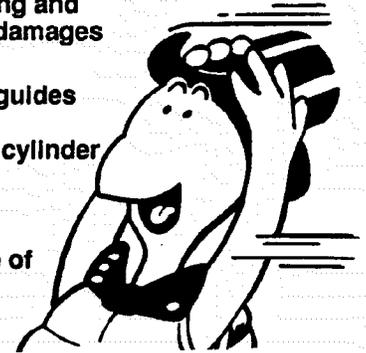
Use a flashlight to detect clogged or torn paper elements - replace if damaged in any way.



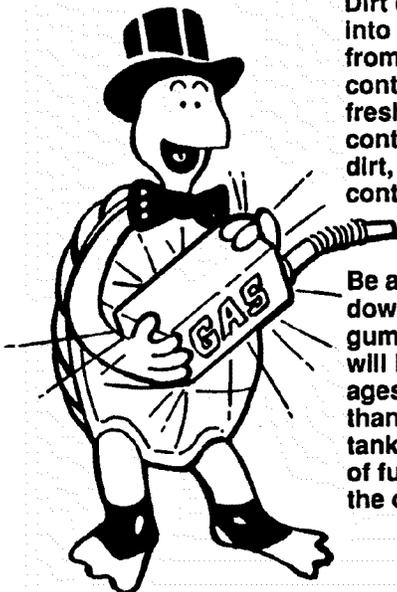
Air is also needed to keep your engine cool. Dirt, dust & debris build up to restrict and clog cooling air intake screens and fins. Clean screens and fins at frequent intervals. The engine blower housing and shrouds should be removed at least once each season or more often under dry, dusty conditions for a thorough cleaning of fins.

Failure to keep external surfaces clean not only presents fire hazards, but causes overheating and resulting engine damages such as:

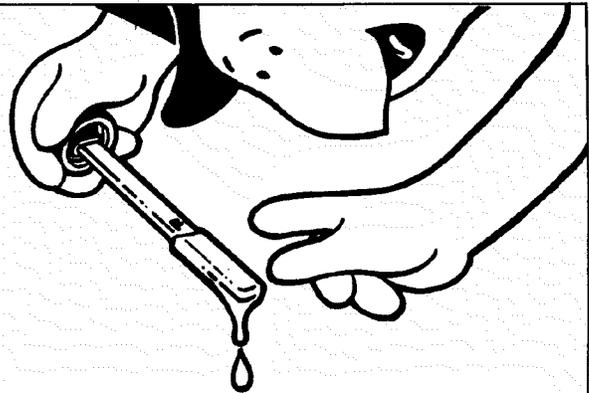
1. distorted valve guides
2. sticking valves
3. scuffed, scored cylinder walls
4. overspeeding
5. loss of power
6. complete failure of engine.



Dirt can also be introduced into an engine in dirty fuel from a contaminated container. Always use clean fresh fuel from a clean container to guard against dirt, sludge and water contamination.



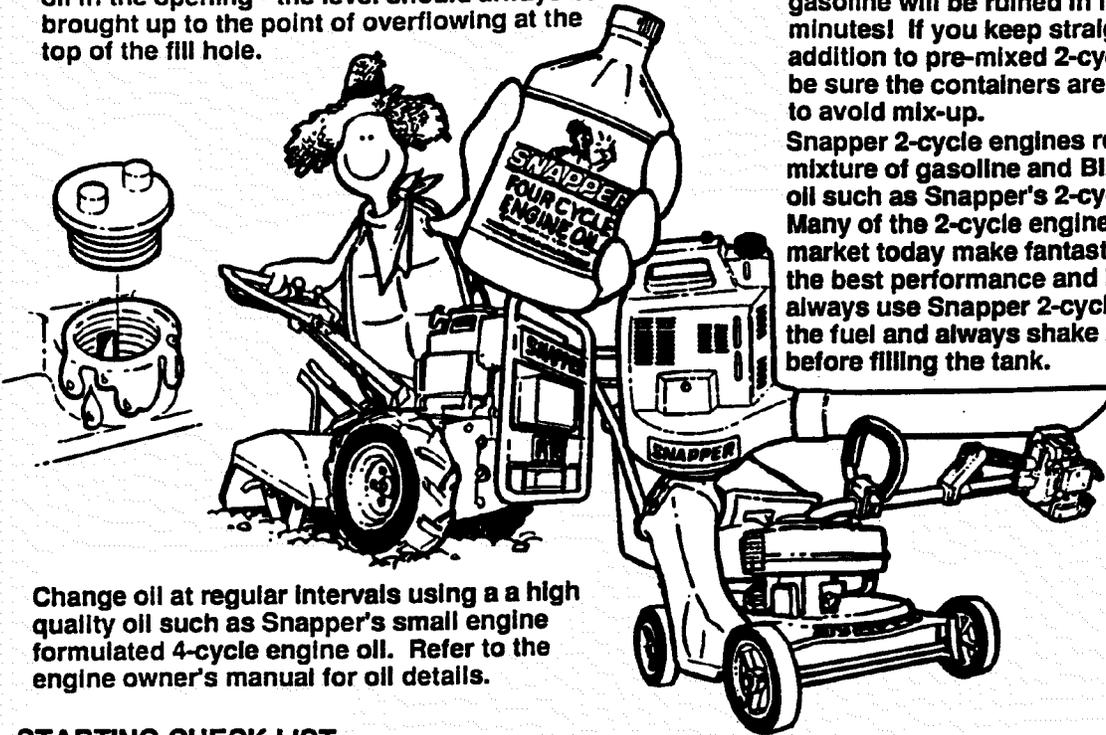
Be aware that fuel breaks down in storage and forms gummy compounds which will block carburetor passages. Never use fuel more than 3 months old. Drain tank then run the engine out of fuel before storing during the off-season.



An engine must also have proper lubrication. All engines use some oil. On 4-cycle engines, **CHECK OIL LEVEL BEFORE EACH START-UP.** Wipe area clean around the oil check plug or dipstick opening to keep dirt from falling into the engine when checking the oil. Always check with the machine on a level surface. On engines with dipstick, keep the level up to, but not over, the **FULL** mark. When adding oil, allow time for all of the oil to flow down the fill tube to prevent a false reading when the level could actually be low and result in engine damage.

# PRIMARY MAINTENANCE

On 4-cycle engines with an oil level plug, don't be fooled into thinking the engine has sufficient lubricating oil if you can see "some" oil in the opening - the level should always be brought up to the point of overflowing at the top of the fill hole.



On 2-cycle engines, lubrication must be provided by an exact mixture of gasoline and 2-cycle air-cooled engine oil. A 2-cycle engine that is mistakenly run on straight gasoline will be ruined in less than 5 minutes! If you keep straight gasoline in addition to pre-mixed 2-cycle engine fuel, be sure the containers are clearly marked to avoid mix-up.

Snapper 2-cycle engines require a 32 to 1 mixture of gasoline and BIA certified TC-W oil such as Snapper's 2-cycle engine oil. Many of the 2-cycle engine oils on the market today make fantastic claims, but for the best performance and long engine life, always use Snapper 2-cycle oil. Pre-mix the fuel and always shake the container before filling the tank.

Change oil at regular intervals using a high quality oil such as Snapper's small engine formulated 4-cycle engine oil. Refer to the engine owner's manual for oil details.

## STARTING CHECK LIST

- |                              |                                                                                                                                      |
|------------------------------|--------------------------------------------------------------------------------------------------------------------------------------|
| 1. Engine Oil                | <ul style="list-style-type: none"> <li>• To full level (4-cycle)</li> <li>• Properly mixed with gas (2 cycle)</li> </ul>             |
| 2. Air Cleaner               | <ul style="list-style-type: none"> <li>• Clean and properly serviced</li> <li>• Full fresh clean gasoline</li> </ul>                 |
| 3. Fuel Tank                 | <ul style="list-style-type: none"> <li>• Fuel valve open</li> <li>• Cap vent open</li> <li>• Inline filter clean</li> </ul>          |
| 4. Choke                     | <ul style="list-style-type: none"> <li>• Operating properly</li> </ul>                                                               |
| 5. Primer (on some engines)  | <ul style="list-style-type: none"> <li>• Used properly</li> </ul>                                                                    |
| 6. Safety Interlock Switches | <ul style="list-style-type: none"> <li>• In proper position</li> <li>• All wires properly connected</li> </ul>                       |
| 7. Switch & Blade Control    | <ul style="list-style-type: none"> <li>• Switch On</li> <li>• Blade control properly positioned on walk mower</li> </ul>             |
| 8. Spark plug                | <ul style="list-style-type: none"> <li>• Wire connected</li> <li>• Good connection</li> </ul>                                        |
| 9. Throttle control          | <ul style="list-style-type: none"> <li>• Start position</li> </ul>                                                                   |
| 10. Blade                    | <ul style="list-style-type: none"> <li>• Properly installed and torqued</li> <li>• Sharpened</li> </ul>                              |
| 11. Muffler                  | <ul style="list-style-type: none"> <li>• Good condition</li> <li>• Not clogged</li> <li>• Grass &amp; leaves cleaned away</li> </ul> |

Read and follow all safety instructions in safety booklets and manuals.

Keep in mind that dirt is your engine's *enemy* #1 both internally and externally! Internally, dirt will quickly ruin an engine and externally it will cause overheating and resulting internal damages. Damage caused by improper lubrication, poor air cleaner service or overheating due to dirt cannot be covered under warranty.

It only takes a few moments to service the engine (and equipment) on a routine basis but the rewards will be a quick starting, responsive engine that will provide long satisfactory service with minimum maintenance cost. The prestart checklist in the next column and instructions in your Snapper Operator's Manual are designated to help you keep your Snapper in top operating condition with minimum effort!



## Safety Instructions & Operator's Manual for

# SNAPPER®

## REAR ENGINE RIDING MOWER HYDRO DRIVE SERIES 1

### IMPORTANT

Snapper products are built using engines that meet or exceed all applicable emissions requirements on the date manufactured. The labels on those engines contain very important emissions information and critical safety warnings. Read, Understand, and Follow all warnings and instructions in this manual, the engine manual, and on the machine, engine and attachments. If you have any questions about your Snapper product, contact your local authorized Snapper dealer or contact Snapper Customer Service at Snapper, McDonough, GA. 30253. Phone: (1-800-935-2967).



### WARNING

BATTERY POSTS, TERMINALS AND RELATED ACCESSORIES CONTAIN LEAD AND LEAD COMPOUNDS, CHEMICALS KNOWN TO THE STATE OF CALIFORNIA TO CAUSE CANCER AND BIRTH DEFECTS OR OTHER REPRODUCTIVE HARM. WASH HANDS AFTER HANDLING.



### WARNING

ENGINE EXHAUST, SOME OF ITS CONSTITUENTS, AND CERTAIN VEHICLE COMPONENTS CONTAIN OR EMIT CHEMICALS KNOWN TO THE STATE OF CALIFORNIA TO CAUSE CANCER OR OTHER REPRODUCTIVE HARM.

**SNAPPER**® McDonough, GA., 30253 U.S.A.