## Safety Instructions & Operator's Manual for



MODEL NUMBER EXPLANATION									
N	Z	MJ	23	52		1	K	Η	]
MODEL DESIGNATION DRIVE SYSTEM TYPE MOWER ORIENTATION ENGINE HP									ENGINE TYPE SERIES DESIGNATION MOWER DECK SIZE
POWER UNIT									
N – Model Designation	23 – Engine Horse Power		1 -	1 – Series Designation			n	KH – Kohler Engine	
Z – Zero Turning – Hydro Drive	25 – Engine Horse Power								
M – Mid Mount Mower	52 – 52" Mower Width								
J – Joystick Control	61 – 61" I	Mower Wid	dth						

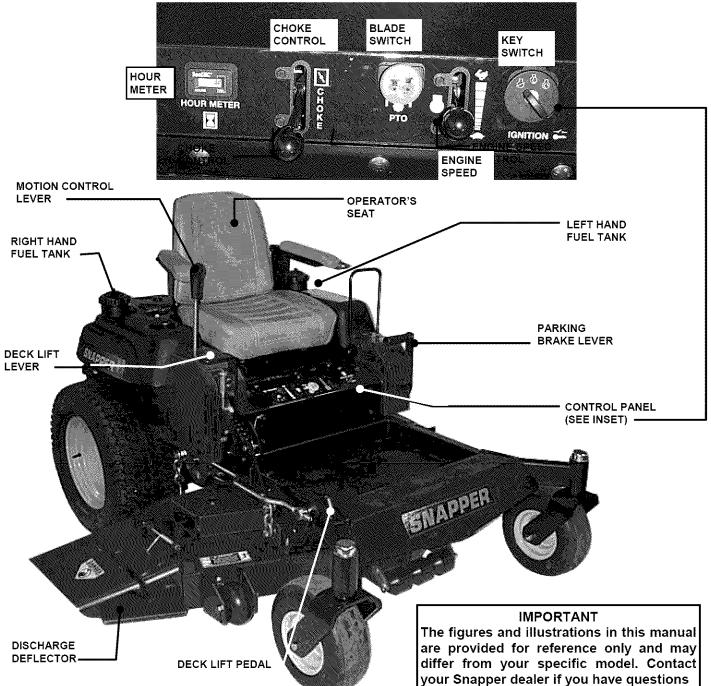
Thank you for buying a SNAPPER Product! Before operating your machine, read this manual carefully and pay particular attention to the "IMPORTANT SAFETY INSTRUCTIONS" on Pages 2 - 4. Remember that all power equipment can be dangerous if used improperly. Also keep in mind that SAFETY requires careful use in accordance with the operating instructions and common sense!



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MANUAL No. 7-5593 (Rev 1, 8/5/03)

## Section 1 - FAMILIARIZATION



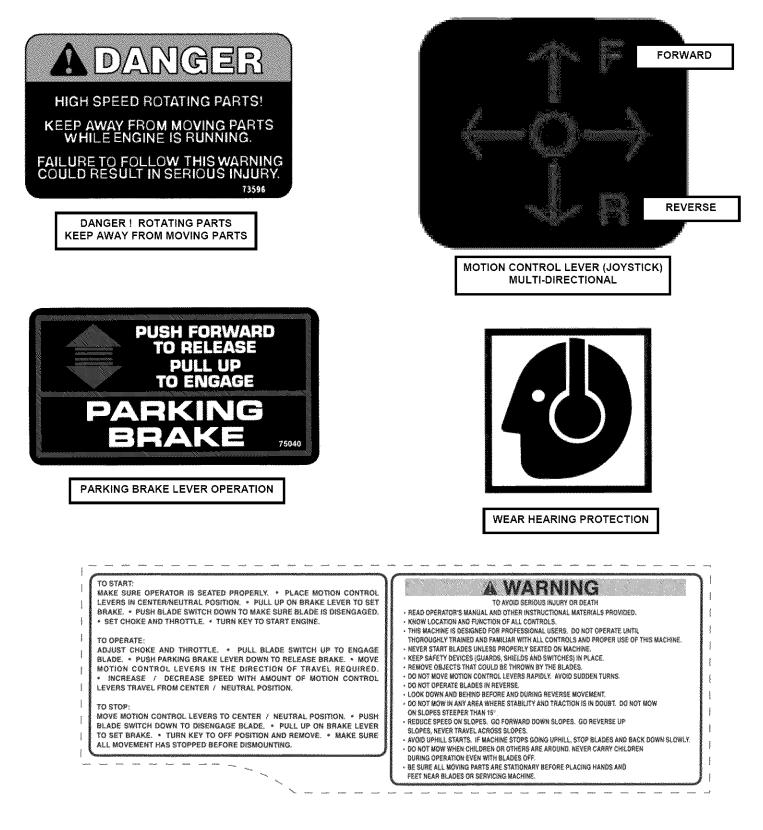
#### **1.1 INTRODUCTION**

This manual has been prepared for the operator's of the SNAPPER MID MOUNT Z-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 thru 4 of this manual and All SAFETY messages on the MID MOUNT Z-RIDER and its attachments before operating. SNAPPER recommends returning the MID MOUNT Z-RIDER to an authorized SNAPPER dealer annually for inspection and addition of any new devices which might upgrade the safety of the mower.

#### 1.2 NOMENCLATURE

The nomenclature information above shows the essential parts of the SNAPPER MID MOUNT Z-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. 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.

### Section 2 – SAFETY MESSAGES AND SYMBOLS



WARNING ! AVOID SERIOUS INJURY OR DEATH STARTING, OPERATION & STOPPING OF MACHINE

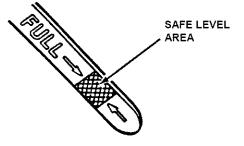
#### 3.1 PRE-START CHECK LIST

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

**3.1.1.** Check tires and add or release air as needed to bring pressure to 12 psi in drive tires. Pressure in front caster wheels should be 25 psi.

**3.1.2.** Check guards, deflectors and covers to make sure all are in place and securely tightened.

**3.1.3.** 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 3.1.



**FIGURE 3.1** 

**3.1.4.** Check Blade Switch to insure it works freely.**1.** Pull the Blade Switch up to the "ON" position to engage or turn "ON" the mower blades.

**2.** Push Blade Switch down to the "OFF" position to disengage or turn "OFF" the blades.



#### FIGURE 3.2

**3.1.5.** Clean exterior surfaces of cutting deck, engine and pumps of any accumulation of dirt, grass, oil, etc. Keep engine and pump air intake screens and cooling fins clear at all times.

**3.1.6.** Add fuel to both tanks of the machine outside where fumes can safely dissipate. Make sure both fuel filler caps are tight. Note the fuel tank selector valve. Refer to engine owner's manual for fuel specifications.

**3.1.7.** Adjust position of operator's seat. The seat is mounted on slides. Locate latch lever beneath the seat. Move lever towards the left and slide seat to the desired position. Release latch.

**3.1.8.** Place mower in desired cutting height setting. Grasp deck lift lever and depress release latch located underneath the lever. Move lever to desired cutting height setting and release latch. Insert stop pin to desired cutting height.

**IMPORTANT:** There is a foot assist pedal located to the right front side of the footrest. Always use this assist pedal to raise or lower the deck to the desired cutting height. See Figure 3.3.

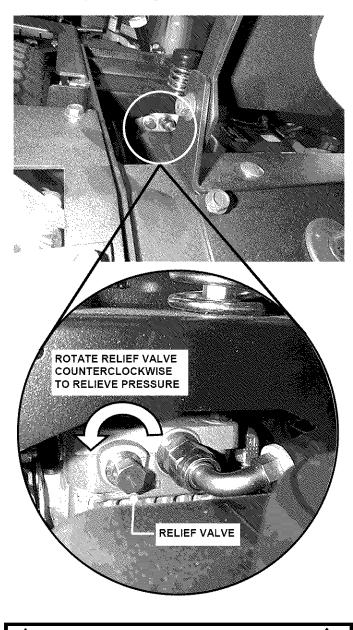


#### **FIGURE 3.3**

IMPORTANT: This machine is equipped with hydrostatic drive. The direction of motion and the speed of motion are controlled by the motion control lever (joystick). A small movement of this control can cause the machine to move instantly. DO NOT attempt to operate the machine until you read this manual and become familiar with its operation. Practice with the blades "OFF" disengaged, engine speed at a slow setting and in an open area away from obstacles.



ROLL RELEASE: To roll the machine without the engine running, pressure within the hydraulic pumps must be released. There is a hydraulic pressure relief valve on the upper side of each pump that is used to release the pressure. Use a wrench to rotate both relief valves counter clockwise two full turns to open. After rolling machine, both relief valves must be rotated clockwise to close valves and tighten securely before operating machine. Machine will not move if relief valves are open. See Figure 3.3.



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

#### 3.2 STARTING & STOPPING – ENGINE, BLADES, PARKING BRAKE

This machine is equipped with dual hydraulic pumps and wheel drive motors. Each pump is controlled by a single motion control lever or joystick. This single control lever (joystick) controls the direction of motion, Forward and Reverse, and the speed of motion. Move the joystick forward to propel the machine forward. Move the control rearward to propel the machine in reverse. The speed of motion is continuously variable from neutral (zero) to maximum. Moving the joystick farther from the neutral position will cause the speed of motion to increase. To turn, move the joystick towards the side you want to turn to. DO NOT make sudden changes in speed or direction. Always slow machine motion before turning. To stop the motion of the machine, bring the joystick back to the neutral position. Engage parking brake.

#### 3.2.1. STARTING ENGINE

When the ignition key is turned the engine will not start or turn over unless, the blade switch is pushed in to the "OFF" position, the motion control lever is in the neutral position with the parking brake engaged.

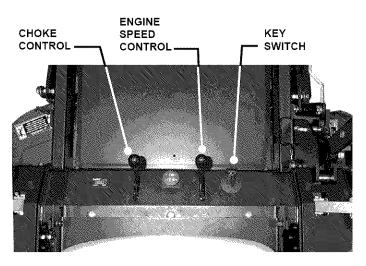
- 1. Complete pre-start checklist.
- 2. Sit in operator's seat.

**3.** Push blade switch in to "OFF", blades disengaged position and engage parking brake. See Figures 3.2 and 3.7.

**4.** Move choke control forward to choke position to start a cold engine. See Figure 3.5.

**5.** Move engine speed control to the Rabbit "FAST" position. See Figure 3.5.

**6.** Turn key to the start position until engine starts. See Figure 3.6.



SHOWN FROM OPERATOR'S VIEW POINT

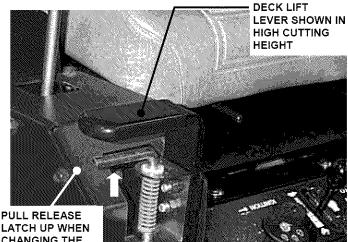
#### **FIGURE 3.5**

#### 3.3 CUTTING HEIGHT ADJUSTMENT

1. Adjust cutting height, as desired, to any position, using deck lift lever. The release latch should be pulled up when lowering the deck. When raising the deck, the release latch does not have to be pulled up. IMPORTANT: There is a foot assist pedal located to the right front side of the footrest. Always use this assist pedal to raise or lower the deck to the desired cutting height. See Figure 3.9 & 3.10.

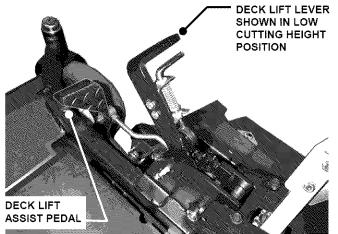
2. If a specific deck height is desired each time the machine is used, insert the stop pin to desired cutting height. See Figure 3.11.

NOTE: The engine does not have to be running to adjust cutting height.



LATCH UP WHEN CHANGING THE DECK HEIGHT

**FIGURE 3.9** 



**FIGURE 3.10** 

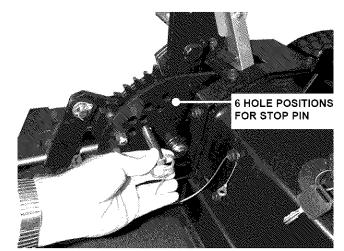


FIGURE 3.11

#### **3.4 OPERATION- MOTION CONTROLS** 3.4.1. DRIVING MACHINE

- 1. Start engine. Release parking brake.
- 2. Move motion control lever gently and with caution in desired direction.
- FORWARD Move control lever forward.
- **REVERSE Move control lever rearward.**
- LEFT TURN Move control towards left.
- **RIGHT TURN** Move control towards right.

**ZERO RADIUS TURN** - Move control diagonally from neutral in desired direction.

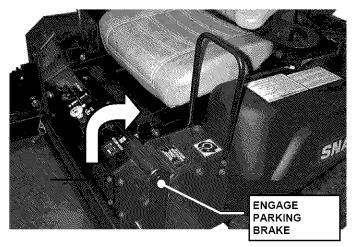
### WARNING

DO NOT make turns at high speed. Slow machine motion. Move motion control lever gently and with caution. DO NOT make sudden changes in speed or direction.

#### 3.4.2. STOPPING MACHINE

1. Return motion control lever to the center neutral position.

**IMPORTANT:** Operator must use hand assistance to bring the motion control lever to the neutral position



#### **FIGURE 3.12**

- 2. Engage parking brake.
- 3. Push Blade Switch down to the "OFF" position to disengage or turn "OFF" the blades.
- 4. Stop engine. Move engine speed control to turtle "SLOW" position. Turn key to stop position.
- 5. Remove key.

### WARNING



DO NOT park the machine on slopes. DO NOT leave machine with engine running. Stop engine. Stop blades. Engage parking brake. Remove key.

#### 3.5 SAFETY INTERLOCK SYSTEM CHECKS

This machine is equipped with an electrical safety interlock system that is provided for the safety of the operator and others. All safety devices must be in place and functioning properly before operating the machine. Perform the following interlock system checks periodically during the operating season. Contact your authorized Snapper dealer if you have questions.

## WARNING



M DO NOT operate machine if any safety interlock or safety device is not in place and functioning properly. DO NOT attempt to defeat, modify or remove any safety device.

#### **ENGINE MUST NOT START IF:**

- 1. Parking Brake disengaged OR,
- 2. Blade Switch in the "ON" blades engaged position.

#### ENGINE SHOULD START IF:

- 1. Blade Switch in the "OFF" blades disengaged position AND.
- 2. Motion Control Lever in neutral position AND,
- 3. Parking Brake engaged.

#### NOTE: The operator should be properly seated before attempting to start engine.

#### **ENGINE MUST BEGIN TO STOP IF:**

- 1. Operator rises off of seat with Blade Switch in "ON" blades engaged position OR,
- 2. Operator rises off of seat with Parking Brake disengaged.

**IMPORTANT:** Engine and blades will continue to run if Operator becomes reseated prior to engine coming to a complete stop. After coming to a complete stop, the blade switch must be moved to the "OFF" position and the parking brake engaged before engine can be restarted. Engine and blades must come to a complete stop within 7 seconds after the operator rises off the seat or the blade switch is moved to the "OFF" position.

## Section 4 - MAINTENANCE

#### 4.2.3. CHECK MOWER DRIVE BELT

- 1. Lower deck to lowest setting.
- 2. Remove footrest. See Figure 4.3.

3. Removal of footrest will allow access to deck belt.

**4.** Check the belt tension. The idler pulleys and springs provide proper belt tension and require no adjustments. If belt is frayed, slit, severed or belt strands exposed, replace belt before operating mower.



LIFT FOOT REST UP AND OFF POWER UNIT FRAME TO GAIN ACCESS TO MOWER BELT

#### **FIGURE 4.3**

#### 4.3 AFTER EVERY 25 OPERATING HOURS 4.3.1. ENGINE

#### 1. Engine Oil

Change engine oil. Refer to Section "CHANGE ENGINE OIL". Refer to engine owner's manual for oil specifications.

#### 2. Air Filter

Refer to engine owner's manual for service instructions.

#### 4.3.2. MOWER COMPONENTS

#### 1. Mower Drive Belt

No adjustment required. Replace belt as needed.

#### 2. Mower Blade

Check blade for sharpness, wear, damage, and torque. Refer to Section "MOWER BLADE REPLACEMENT".

#### 3. Mower Deck Levelness

Check mower deck for proper levelness. Adjust as required. Refer to Section "MOWER DECK ADJUSTMENT – LEVELNESS".

#### 4. Clean Mower Deck

**a.** Remove key from ignition switch.

**b.** Remove spark plug wire(s) and secure away from spark plug(s).

**c.** Raise mower deck to its highest setting. It may be necessary to raise mower deck higher using a hydraulic floor jack. Secure machine with safety blocks.

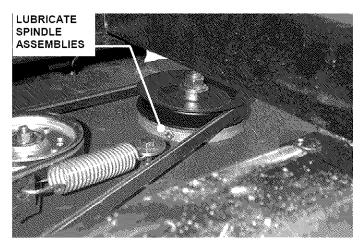
**d.** Clean underside of mower deck, removing all accumulation of grass clippings and debris.

**e.** Clean top of deck, removing all grass clippings and debris.

#### 5. Mower Blade Spindle - Lubrication

#### a. Remove footrest.

**b.** Lubricate with Kendall NLGI No. 2 lithium grease or equivalent, from a grease gun until grease purges from vent located on spindle housing underneath deck. See Figure 4.4.



#### **FIGURE 4.4**

#### 6. Mower Deck Linkage - Lubrication

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



### WARNING



DO NOT attempt any maintenance, adjustments or service with engine running. STOP engine. STOP blades. Set brake. Remove key. Remove spark plug wires and secure away from spark plugs. Engine and components are HOT. Avoid serious burns, allow sufficient time for all parts to cool.

## Section 4 - MAINTENANCE

### WARNING

Allow engine to cool for at least ten minutes before performing service or maintenance. DO NOT smoke near fuel components when performing service or maintenance. DO NOT perform service and maintenance near an open flame. Wipe off any spilled fuel before starting engine. DO NOT run engine indoors.

#### 4.5 ANNUALLY (END OF EACH SEASON) (Continued from previous Page) 4.5.2. FUEL FILTER

Service fuel filter as instructed below. Turn key to "OFF" position. Engine MUST be stopped and MUST be cold before removing filter. Clamp fuel line to prevent fuel spillage or perform filter change when fuel tank and fuel line are empty.

- 1. Remove fuel line clamps from fuel filter.
- 2. Remove fuel lines from filter. Discard filter.

**3.** Install new fuel filter. IMPORTANT: Some fuel filters are fuel flow directional. Check for arrow that shows fuel flow direction. Reinstall fuel line clamps. See Figure 4.8.

LEFT SIDE OF MACHINE CLAMP FUEL LINE TO PREVENT SPILLAGE · REMOVE FUEL FILTER . CLAMP FUEL LINE TO **REMOVE LINE** PREVENT CLAMPS SPILLAGE

FIGURE 4.8

#### 4.6 DECK REMOVAL

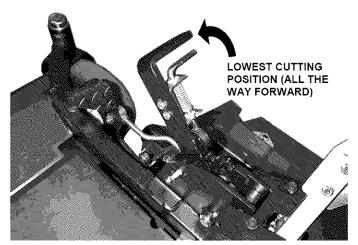
Move power unit/mower deck to an area where the mower deck is to be disconnected. Turn engine "OFF" and remove key from switch. Remove spark plug wire(s) and secure away from spark plug(s). Move motion control lever to the neutral position. Engage parking brake.

**1.** Move deck lift lever and set the mower deck to the highest cutting position. See Figure 4.9.

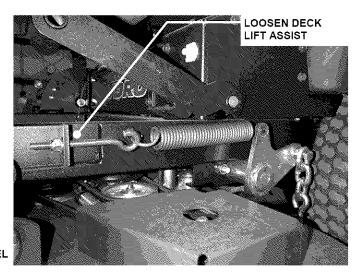
2. **IMPORTANT – STORED ENERGY.** Relieve tension on deck lift assist spring by backing off nut on eyebolt. Failure to relive tension could result in personal injury. See Figure 4.9.

**3.** Place a wooden block under the front and rear edge of the mower deck.

**4.** Move deck lift lever and set the mower deck to a lower cutting position until deck rests on wooden blocks. Position the deck to where there is no tension on the deck hanger chains. See Figure 4.9.



POSITION DECK LIFT LEVER IN HIGHEST CUTTING POSITION. PLACE WOODEN BLOCKS UNDER FRONT AND REAR OF DECK. LOWER DECK ONTO BLOCKS



**FIGURE 4.9** 

(Continued On Next Page)

### Section 5 - ADJUSTMENTS & REPAIR

### DANGER



Exercise EXTREME CAUTION when making this adjustment, due to close proximity of moving parts.

#### 5.1 NEUTRAL POSITION ADJUSTMENTS

The motion control lever controls the movement and stopping of the machine. Move the control lever to the center or neutral position to stop machine. Engage the parking brake to lock the control in the neutral position. The machine should have no movement.

#### IMPORTANT: The machine must not creep when the motion control is in the neutral position and the parking brake is engaged.

**1.** Turn key to "OFF" position.

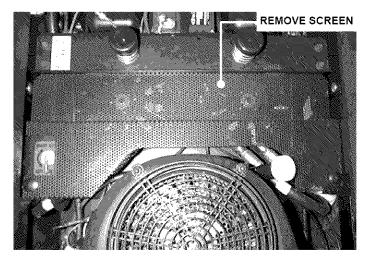
**2.** Move motion control lever to the neutral position and engage parking brake. Refer to Figure 3.7.

**3.** Raise both rear wheels off the ground. Secure machine with safety blocks.

**4.** Remove cover screen to expose top of hydro pumps and linkages. See Figure 5.1.

5. Remove both fans from top of hydro pumps.

**6.** Disconnect motion lever connecting rods from hydro pump activation assembly. See Figure 5.2.



**FIGURE 5.1** 

**7.** Turn key to start position and start machine. Move engine speed control to the Rabbit "FAST" position

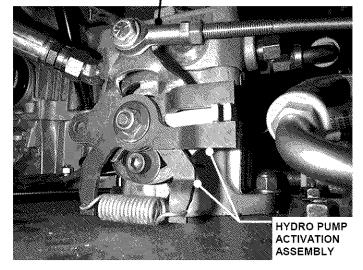
**8.** With operator properly seated, disengage parking brake.

**9.** Both wheels should not have any movement, not rotating.

**10.** If wheel(s) are rotating, loosen the hydro pump activation assembly retaining screw. Move activation assembly forward or rearward to stop rotation of wheel. Retighten retaining screw. Repeat this step for other hydro pump. See Figure 5.3.

**11.** Stop engine.

REMOVE MOTION CONTROL LEVER CONNECTING ROD



**FIGURE 5.2** 

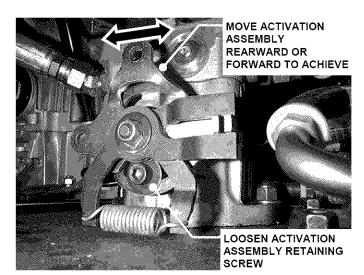


FIGURE 5.3

(Continued On Next Page)

## Section 5 - ADJUSTMENTS & REPAIR

Battery Condition Chart								
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					

#### 5.9.4. 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 before testing. The Battery Condition Chart shows the charge level as measured by syringe float hydrometer, digital voltmeter and five-ball hydrometer.

#### 5.9.5. 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. 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:** DO NOT place anything in battery other than specified electrolyte.



### WARNING

**DO** NOT attempt to service or charge the battery while it is installed in the machine. DO NOT use "BOOST" chargers on the battery.

**5.** Slow charge the battery at 1 amp for 10 hours to bring the battery to full charge.

**6.** After charging, check level of electrolyte and add as needed to bring to proper level

- 7. Reinstall cell caps.
- 8. Install battery into power unit.

**9.** 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.

**10.** Install battery retainer and positive terminal cover.

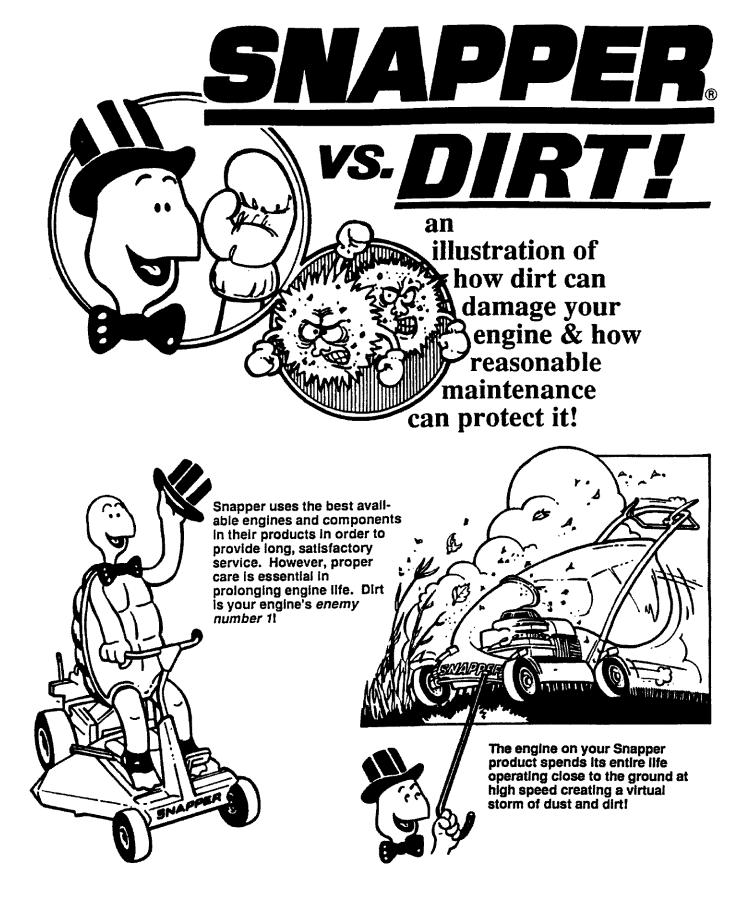


### WARNING



Shield the positive terminal with terminal cover located on battery harness. This prevents metal from touching the positive terminal, which could cause sparks. Cables must be connected to battery terminals in the proper position. RED (Positive) cable must go to the (+) terminal. BLACK (Negative) cable must go to the (-) terminal.

### PRIMARY MAINTENANCE



Safety Instructions & Operator's Manual for



### 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).



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.



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