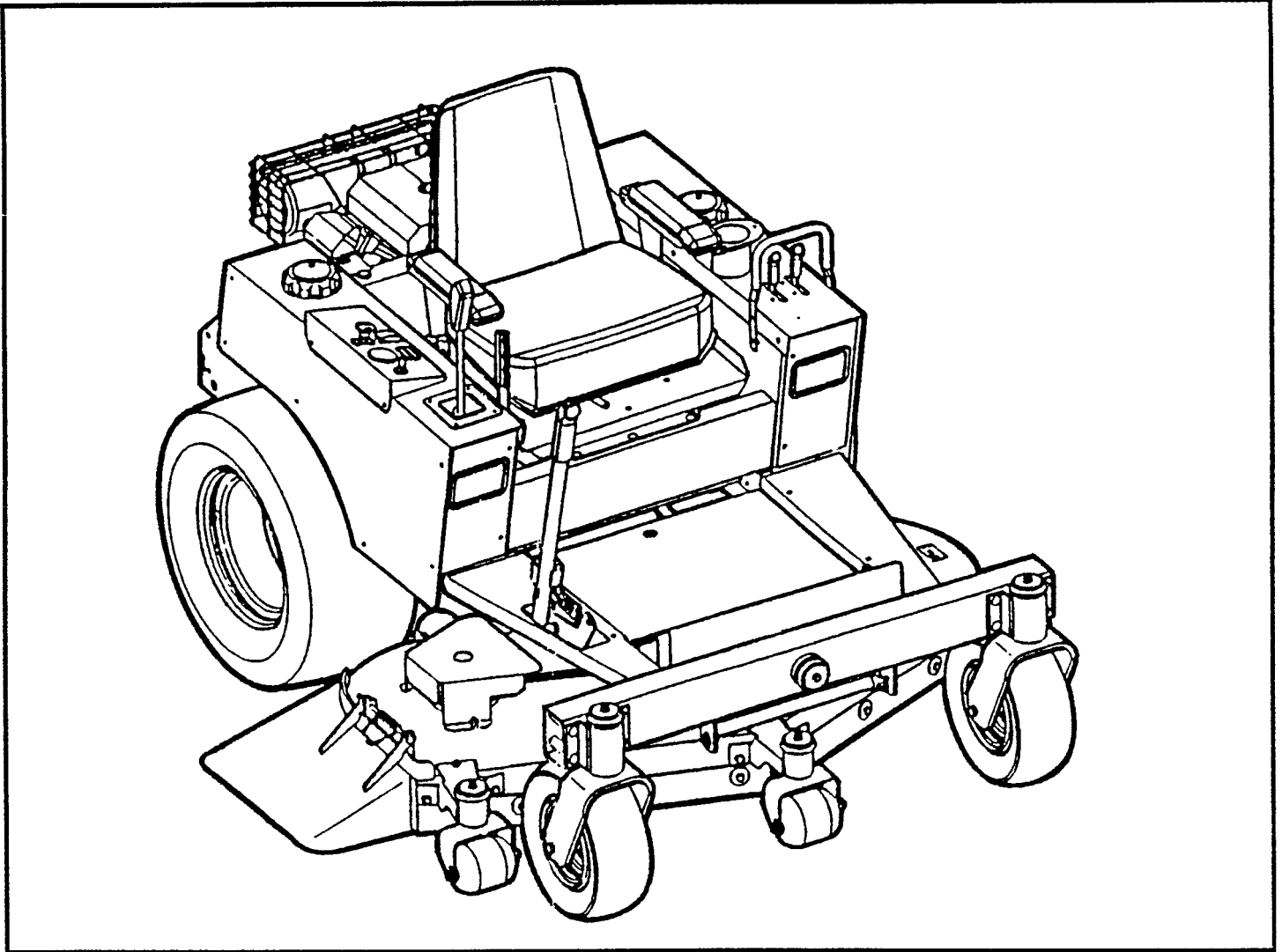


SNAPPER[®]

MID MOUNT Z-RIDER



SERVICE MANUAL

SNAPPER[®] McDonough, GA., 30253 U.S.A.

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SERVICE - MID MOUNT Z-RIDER

MANUAL No. 07224 (I.R. 1/00)

SERVICE MANUAL

for SNAPPER MID MOUNT Z-RIDERS

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Section I GENERAL INFORMATION

CONTENTS

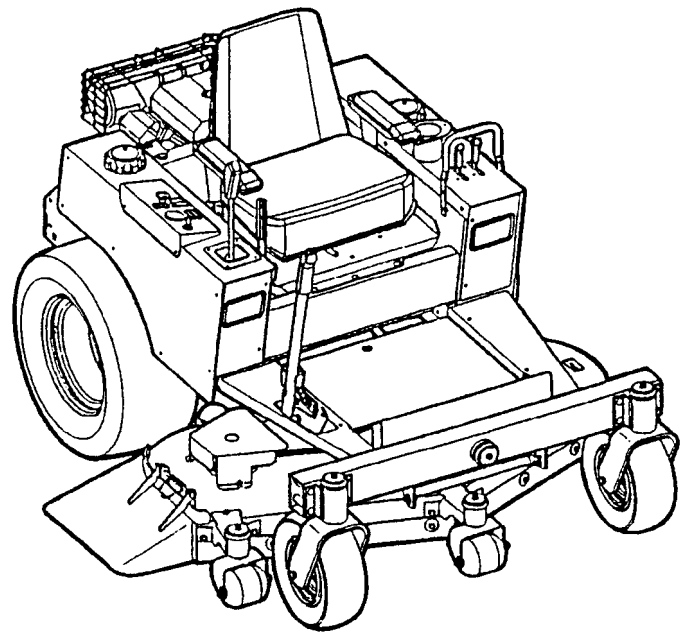
<u>ITEM</u>	<u>PAGE No.</u>
Master Profiles	1.2
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How to Use This Manual	1.4 - 1.5

Section I - GENERAL INFORMATION

1.1 MASTER PROFILES FOR MODELS BUILT FROM 1996 THRU 1999

MID MOUNT Z-RIDER - '96

POWER UNITS	MOWER DECKS
ZM2200K - 82473	ZM5200M (52" Deck) - 82474 ZM6100M (61" Deck) - 82475
Literature Pack - 5-4550 Operator Manual - 4-4869 Dealer Set-Up - 4-4868 Parts Manual - 06110	



MID MOUNT Z-RIDER - '97

POWER UNITS	MOWER DECKS
1) ZM2200K - 82473 2) ZM2500KH - 82518	ZM5200M (52" Deck) - 82474 ZM6100M (61" Deck) - 82475
1) Literature Pack - 5-7725 Operator Manual - 4-6481 Dealer Set-Up - 4-4868 Parts Manual - 06110 2) Literature Pack - 5-7725 Operator Manual - 4-6481 Dealer Set-Up - 4-4868 Parts Manual - 06110	

NOTE
Model Number explanations are graphically shown on Page 1.3. Please learn this identification system. It will help in many ways.

MID MOUNT Z-RIDER '98

POWER UNITS		MOWER DECKS
1) ZM2500KH - 84346 2) MZM2200KH - 84304	3) ZMT2500KH - 84326 4) ZM2200K - 82473	ZM5200M (52" Deck) - 84347 ZM6100M (61" Deck) - 84348
1) Literature Pack - 5-7725 Operator Manual - 4-6481 Dealer Set-Up - 4-4868 Parts Manual - 06110 2) Literature Pack - 5-7725 Operator Manual - 4-6481 Parts Manual - 06110	3) Literature Pack - 5-8392 Operator Manual - 7-2451 Dealer Set-Up - 4-4868 Parts Manual - 06110 4) Literature Pack - 5-7725 Operator Manual - 4-6481 Parts Manual - 06110	

MID MOUNT Z-RIDER - '99

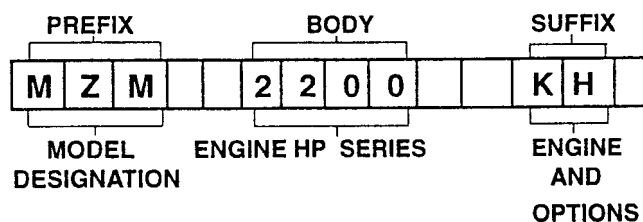
POWER UNITS		MOWER DECKS
1) MZM2200KH - 84412 2) ZM2501KH - 84413	3) ZMT2500KH - 84414	ZM5200M (52" Deck) - 84439 ZM6100M (61" Deck) - 84440
1) Literature Pack - 5-7725 Operator Manual - 4-6481 Dealer Set-Up - 4-4868 Parts Manual - 06110 2) Literature Pack - 5-8616 Operator Manual - 7-2902 Dealer Set-Up - 4-4868 Parts Manual - 06110	3) Literature Pack - 5-8392 Operator Manual - 7-2451 Dealer Set-Up - 4-4868 Parts Manual - 06110	

Section I - GENERAL INFORMATION

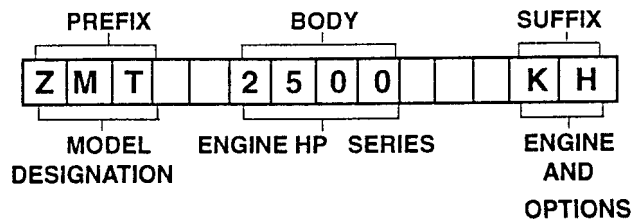
1.2 MODEL NUMBER EXPLANATIONS

POWER UNITS

EXAMPLE 1



EXAMPLE 2

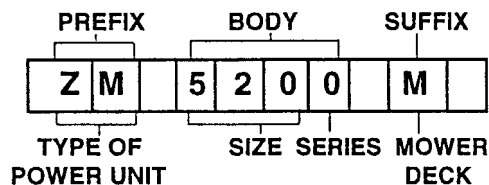


EXPLANATION

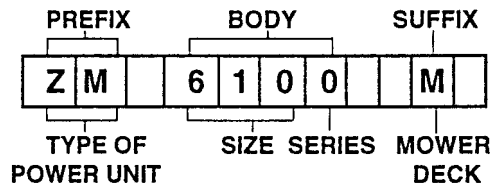
PREFIX	BODY	SUFFIX
* M - Mid Market Level Z - Zero Turning - Hydro Drive ** M - Mid Mount Mower *** T - Twin Control Levers	22 - 22 HP 25 - 25 HP <hr/> 00 - Series Designation	K - Kohler Engine KH - Kohler Engine

MOWER UNITS

EXAMPLE 1



EXAMPLE 2



EXPLANATION

PREFIX	BODY	SUFFIX
Z - Zero Turning - Hydro Drive M - Mid Mount Mower	52 - 52" Mower Cutting Width 61 - 61" Mower Cutting Width <hr/> 00 - Series Designation	M - Mower Deck

- * When used, it is always First Letter of Model Number
- ** Appears After First or Second Letter of Model Number
- *** The absence of T indicates Joystick Control(s)

Section I - GENERAL INFORMATION

INTRODUCTION

1.3 HOW TO USE THIS MANUAL

This manual contains the Service and Maintenance information required to properly inspect, service and repair the **MID MOUNT Z-RIDER** Power units and their compatible Mower Units (ZM5200M & ZM6100M).

The manual is divided into sections for quick, easy reference. Carefully read all procedures described for servicing a particular component **BEFORE** repairs are started, to avoid needless disassembly.

NOTE

References to the RIGHT and LEFT sides are determined by facing forward while sitting in the Operator's Seat.

1.4 WARNINGS & CAUTIONS

Details of standard workshop safety procedures are not included in this manual. **WARNINGS & CAUTIONS** occur where procedures, if improperly performed, could cause personal injury, and/or damage to the unit or its components. These **WARNINGS & CAUTIONS** do not cover all conceivable ways hazardous consequences could be created by improperly following the instructions or by the incorrect use of service tools.

1.5 SERIAL NUMBER LOCATION

The unit serial number is located on the inside of the rear of the right hand fender.

1.6 TOOL REQUIREMENTS

The normal complement of U.S. Standard tools found in most repair shops are all that will normally be needed to repair **SNAPPER MID MOUNT Z-RIDERS**. Special tools and meters are mentioned where needed in the manual. Refer to the specified Parts Manual for special tools available through **SNAPPER** Dealers.

NOTE

Throughout the following sections of this manual you may find the abbreviations **ZM, MZM, or ZMT** being used in lieu of **MID MOUNT Z-RIDER**. These are Acronyms of common usage to describe various models of the machine.

1.7 SPECIFICATIONS - GENERAL

A. ENGINE SPECIFICATIONS

Refer to the Engine Manufacturer's Manuals.

B. HYDRO TRANSAXLE SPECIFICATIONS

The Power Units covered in this manual will have the following Hydro Transaxle Combination:

Eaton 771A (R.H.), 771B (L.H.)

Refer to the Hydro Transaxle Manufacturer's Shop Manuals for repair procedures.





C. TIRE SPECIFICATIONS

The Power Units covered in this manual are furnished with tires having four (4) different parts num-

bers. Maintain Traction Tire Pressure at 12 PSI and Caster Tire Pressure at 25 PSI.

1.8 SPECIFICATIONS - TORQUE VALUES

Standard Torque Specifications and Capscrew Markings Chart. The values given here are based on the use of clean and dry threads. Reduce torque by 10 percent when threads are lubricated with engine oil and by 20 percent if new plated capscrews are used.

CAPSCREW HEAD MARKINGS				
Manufacturer's Marks may vary. Three-line markings on heads shown below - for example, indicate SAE Grade 5.				
				
SAE 1 or 2	SAE 5	SAE 6 or 7	SAE 8	
CAPSCREW BODY SIZE Inches - Thread	SAE 1 or 2 Torque Ft - Lb	SAE 5 Torque Ft - Lb	SAE 6 or 7 Torque Ft - Lb	SAE 8 Torque Ft - Lb
1/4 - 20	5	8	10	12
- 28	6	10		14
5/16 - 18	11	17	19	24
- 24	13	19		27
3/8 - 16	18	31	34	44
- 24	20	35		49
7/16 - 14	28	49	55	70
- 20	30	55		78
1/2 - 13	39	75	85	105
- 20	41	85		120
9/16 - 12	51	110	120	155
- 18	55	120		170
5/8 - 11	83	150	167	210
- 18	95	170		240
3/4 - 10	105	270	280	375
- 16	115	295		420

1.9 WORKSHOP SAFETY HINTS

- DO NOT run engine in an enclosed area - exhaust fumes are hazardous to your health.
- DO NOT smoke, light a fire or create any sparks near gasoline - it is extremely flammable.
- DO NOT use gasoline as a solvent. Fumes are dangerous. Always use non-flammable solvents.
- DO NOT store gasoline in an area where sparks or flames are present such as near water heaters or furnaces - gasoline fumes are extremely explosive.
- ALWAYS disconnect the spark plug wire and secure the end away from the plug **BEFORE** inspecting, servicing or repairing the unit or attachments. Precautions prevent accidents such as unintentional start-ups!

Section I - GENERAL INFORMATION

- F. ALWAYS make adjustments and do repairs in a well-lit and well-ventilated area.
- G. ALWAYS wear protective safety goggles when using pressurized air to clean the machine or parts.
- H. DO NOT use a jack to support the **MID MOUNT Z-RIDER** in a raised position. Use a chain hoist, "jack stands" or other stable supports that will hold up BOTH sides of the frame at the same time. This approach is especially important when raising and supporting the rear end of the unit. When lifting, the front end of the caster wheels will pivot - therefore, both sides of the rear frame **MUST** be securely supported. Be sure to chock (block) the front caster wheels.

NOTE

Read the Operator's & Engine Owner's Manuals and instructions BEFORE operating equipment.



WARNING



- If welding repairs are to be made on the **MID MOUNT Z-RIDER**, observe the following precautionary steps before welding:
- A. ALWAYS disconnect or remove the battery.
 - B. ALWAYS attach grounding lead a minimum of 2 FEET (24") from area to be welded.
 - C. ALWAYS shut-off fuel supply valves.
 - D. ALWAYS make sure that fuel tank caps are tightened securely.
 - E. ALWAYS drape fuel tanks with wet towels.
 - F. ALWAYS keep a fire extinguisher and other fire fighting apparatus close by.
 - G. ALWAYS practice SAFETY when welding!

Section II

TROUBLESHOOTING

CONTENTS

<u>ITEM</u>	<u>PAGE No.</u>
Engine	2.2
Hydro Transaxle (Traction Drive)	2.2
Mower Unit	2.3
Battery	2.3
Maintenance Parts Chart	2.3
Service & Lubrication Chart	2.4
Service Schedule	2.5
Service NOTES Page	2.6

Section II - TROUBLESHOOTING

ENGINE

PROBLEM	PROBABLE CAUSE	CORRECTIVE ACTION
Starter Will Not Crank Engine	Battery dead. Blown Fuse. Electrical connections loose or corroded. Defective Ignition Switch. Broken or frayed wire in Ignition Wiring. Worn or defective Starter Gear.	Service Battery. Replace Fuse. (Fuse Panel under instrument panel). Clean and check connections for good contact. Replace Ignition Switch. Inspect wiring. Repair any wiring problem. Replace Starter Gear.
Engine Will Not Start.	Blade engagement switch in the "ON" position. Park Brake not set. Fuel Tank empty. Engine needs choking. Spark Plug Wire disconnected. Battery weak or dead. Faulty Parking Brake, Blade or Ignition Switch.	Move Blade Engagement Switch to "OFF". Set Park Brake. Fill Fuel Tank with fresh fuel. Move Choke Control to "CHOKE" position. Place Spark Plug Wire onto Spark Plug. Service Battery. Repair or replace faulty component.
Engine Stalls After Running.	Operator not in Seat. Choke Control in the "CHOKE" position. Fuel Tank empty. Engine Air Pre-cleaner and/ Air Cleaner dirty. Spark Plug defective or gap set improperly. Fuel Filter stopped up. Water, debris or stale fuel in Fuel System.	Sit in Operator's Seat. Move Choke Control to "OFF" position. Fill with fuel to proper level. Clean free of all debris. Service Spark Plug. Replace Fuel Filter. (See MAINTENANCE PARTS, Pg. 2.3). Drain and clean Fuel System.
Engine Loses Power.	Excessive load on engine. Engine Air Pre-cleaner or Air Cleaner dirty. Engine oil level low. Engine Cooling Fins & Air Intake Screen excessively dirty. Spark Plug faulty. Water, debris or stale fuel in Fuel System.	Lessen load. Clean or replace Filters. Fill with engine oil to proper level. Clean Cooling Fins, Air Intake Screen of all debris. Service Spark Plug. Drain and clean Fuel System.
Engine Backfires When Turned to "STOP".	Throttle Control set to "FAST" position.	Set Throttle Control to "SLOW" and allow engine to idle. Then, turn Key to "OFF".
Excessive Vibration.	Damaged or bent Mower Blade(s). Loose Blade components. Loose or missing Air Lift (if equipped). Frayed or damaged Belts. Loose or damaged Pulleys.	Service Mower Blade(s). Service and tighten loose parts. Replace Air Lifts. Tighten to proper torque. Replace Belts. Inspect and tighten/replace.

HYDRO TRANSAXLE (Traction Drive)

PROBLEM	PROBABLE CAUSE	CORRECTIVE ACTION
Tractor Will Not Move.	Motion Control Levers in the Neutral "N" position. Roll Release Lever is in "ROLL" position. Low Transmission hydraulic oil level. Parking Brake engaged.	Move Control Levers to desired speed. Move Roll Release Lever to the engaged position. Bring hydraulic oil to proper level. Move Parking Brake to disengaged position.
Loss of Traction.	Traction Drive Belt requires replacement.	Replace Traction Drive Belt. (See MAINTENANCE PARTS, Pg. 2.3).

Section II - TROUBLESHOOTING

MOWER UNIT

PROBLEM	PROBABLE CAUSE	CORRECTIVE ACTION
Blade(s) Not Cutting. <div style="border: 1px solid black; padding: 5px; width: fit-content;"> <p>NOTE See Section VIII for Detailed "Corrective Action" in solving cutting problems.</p> </div>	Blade Engagement Switch in the "OFF" position. Clutch Belt slipping.	Move Blade Switch to the "ON" position. Replace Clutch Belt. (See MAINTENANCE PARTS below). Replace Mower Belt. Adjust or replace Electric Clutch. Repair or replace Gearbox. Connect Power Transfer Shaft or repair damage.
	Mower Belt slipping. Electric Clutch not functioning. Check Gearbox for damage. Power Transfer Shaft disconnected or damaged.	
Cutting Grass Improperly. (See Section VIII)	Uneven Tire Pressure. Cutting Height too low or high. Engine speed too slow. Forward speed too fast. Terraced cut, side to side. Excessive deck pitch, front to rear. Cutting Blade(s) dull or damaged. Blade Belt slipping. Check Electric Clutch. Check Clutch Belt. Check Gearbox for damage	Bring to proper Pressure. Adjusting Cutting Height. Move Throttle Control to "FAST" position. Move Motion Control Levers to a slower speed. Adjust side to side level. Adjust front to rear level. Sharpen cutting edges or replace Blade(s). Replace Blade Belt. (See MAINTENANCE PARTS below). Adjust to proper specifications. Replace Clutch Belt. (See MAINTENANCE PARTS below). Repair or replace Gearbox.
Poor Grass Discharge. (See Section VIII).	Engine speed too slow. Forward speed too fast. Grass is wet. Excessively worn or damaged Blade(s). Buildup of grass clippings and debris under deck. Improper Blade(s) installed on deck. Blade(s) installed improperly on deck.	Move Throttle Control to "FAST" position. Move Motion Control Levers to a slower speed. Mow when grass is dry. Service Mower Blade(s). Clean deck. Install proper SNAPPER Blade(s). Install Blade(s) properly.

BATTERY

Battery Will Not Charge.	Poor Cable connections. Bad Battery Cell(s). Faulty Alternator. Blown Fuse.	Clean Cables and Battery Terminals. Replace with new Battery. Repair or replace Alternator. Replace Fuse.
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MAINTENANCE PARTS

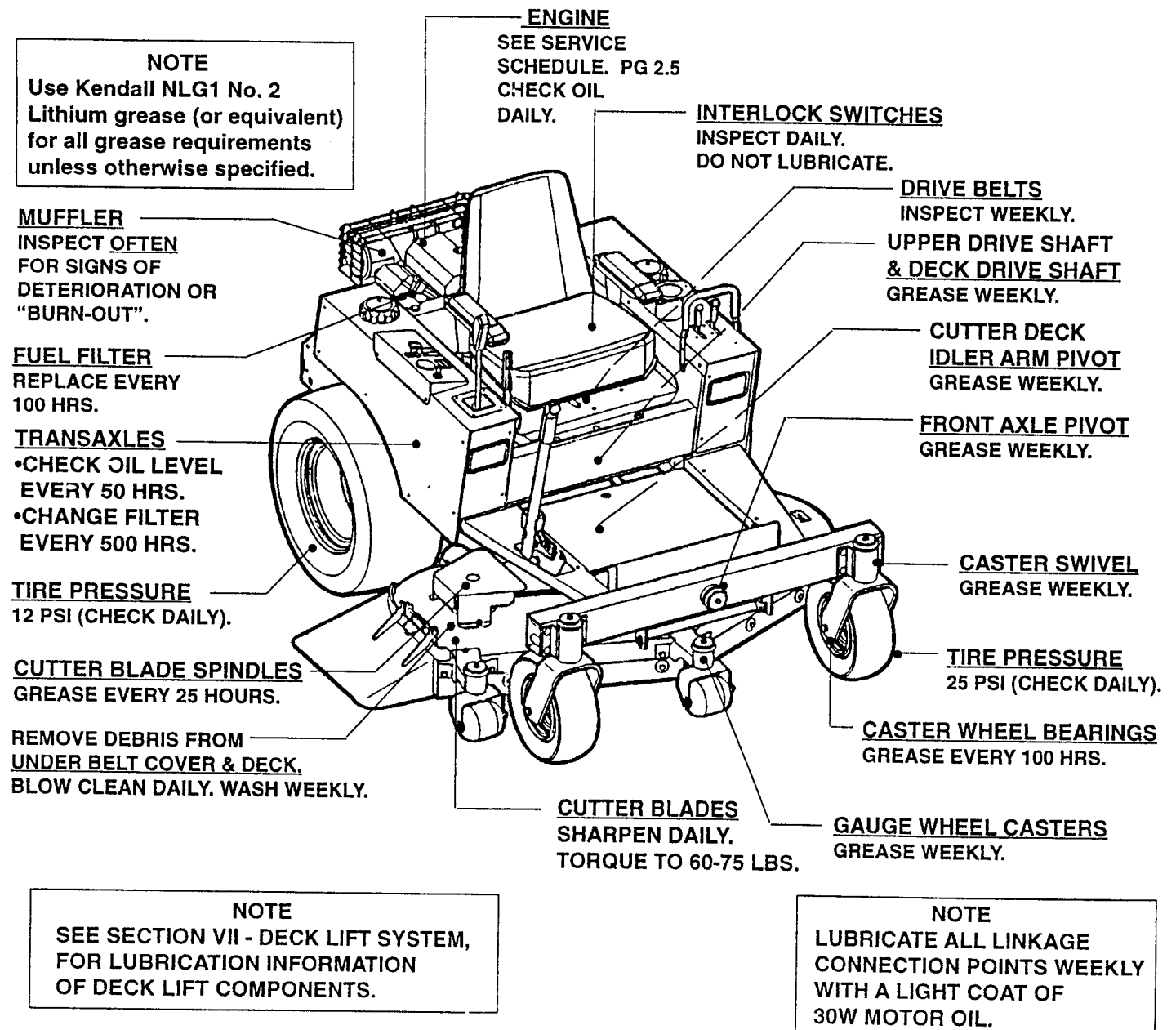
REPLACEMENT PARTS		POWER UNITS						MOWER UNITS	
ITEM	PART No.	ZM2200K	ZM2500K	ZM2500KH	MZM2200KH	ZMT2500KH	ZM2501KH	ZM5200M	ZM6100M
Battery	3-5610	•	•	•	•	•	•		
Oil Filter, Hydro	4-5184	•	•	•	•	•	•		
Fuel Filter	4-4777	(Order From KOHLER)							
Mower Blades	2-9246							• (3)	
	2-9251								• (3)
Belt, Mower Deck	4-2776							•	
	3-5542								•
Belt, Upper Drive Shaft to Hydro Pump	4-5254	• (2)	• (2)	• (2)	• (2)	• (2)	• (2)		
Belt, Deck Drive Shaft to Electric Clutch	3-5543	• (2)	• (2)	• (2)	• (2)	• (2)	• (2)		

Section II - TROUBLESHOOTING

SERVICE & LUBRICATION CHART

NOTE:

The Power Unit illustrated below is indicative of all models of the SNAPPER MID MOUNT Z-RIDER. It is shown with a representative 52" or 61" Mower Unit attached and is intended to give a general overview of the various components. Use common sense when servicing - if a sliding surface shows sign of wear, it needs lubrication. If a component is equipped with a grease fitting, it requires grease, etc.



Section II - TROUBLESHOOTING

SERVICE SCHEDULE

ITEM	SERVICE PERFORMED	EACH USE	5 HRS	25 HRS	50 HRS	100 HRS	EACH SEASON	
Engine Oil	Check Oil Level.	•						
	Initial Oil Change		•					
	Periodic Oil Change				• **			
Air Pre-Cleaner	Clean Sponge Element			• **				
Air Cleaner	Clean or Replace			• **				
Spark Plug	Replace					•		
Fuel Filter	Replace					•		
Engine Cooling System	Clean Shroud & Fins					• **		
Battery	Check Electrolyte			•			•	
	Charge Battery						•	
	Testing Battery						•	
Tires	Check Pressures	•			•		•	
Drive Belts	Check For Wear And Tension			•	•		•	
Mower Blades	Check For Wear, Damage & Replacement	•						
Mower Deck	Clean Debris Accumulation	•						
Lubrication Points	Grease or Oil		•				•	
Hydrostatic Trans. Oil	Check Oil Level			•			•	
Hydrostatic Trans. Filter	Replace Filter		First Change at 200 Hours. Thereafter, Every 500 Hours.					

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

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

Section III

ELECTRICAL

CONTENTS

<u>ITEM</u>	<u>PAGE No.</u>
Introduction	3.2
Starting Circuit	3.2
Wiring Schematics	3.2 - 3.3
Wiring Harnesses	3.3
Cable & Plug Connection Chart	3.4
Battery	3.4 - 3.6
• Battery Removal	3.4
• Battery Installation	3.4
• Battery Service	3.4 - 3.5
• Battery Testing	3.5
• New Battery Preparation	3.5 - 3.6
Interlock System Analysis	3.6 - 3.7
• Key Switch Test	3.6
• PTO Switch Test	3.7
• Park Brake Switch Test	3.7
Electric Clutch Tests	3.8

Section III - ELECTRICAL SYSTEM

INTRODUCTION

The Electrical Systems of the MID MOUNT Z-RIDERS consist of three circuits which are the Ignition, Charging and Starting Circuits. This section covers the Starting Circuit only. Refer to the Engine Manuals for information concerning the Ignition and Charging Circuits - these are Internal Engine Circuits.

3.1 STARTING CIRCUIT (Principle of Operation)

The Safety Interlock System is an electrical loop containing three Interlock Switches; Seat, Park Brake and PTO Control Switch. Activation of the Park Brake will manually lock the Steering Control(s). The three Interlock Switches MUST be closed at the same time before the engine can be started. If any of the three are open, the circuit will not be grounded and the Starting Solenoid cannot be activated.

After the engine has been started, the PTO Switch can be closed and the Park Brake released to free the Steering Control(s). The Key Switch must remain open (in RUN position) and the operator must remain in the seat to keep the Seat Switch closed. The Interlock System will "kill" the engine if the operator vacates the seat UNLESS the PTO Switch (Mower Blade) has been turned OFF, the Steering Controls placed in NEUTRAL and the Parking Brake set.

3.2 WIRING SCHEMATICS

The Wiring Schematic for all models of the MMZ (except for MZM2200K) is shown below as Figure 3.1. Figure 3.2, on Page 3.3, shows the Wiring Schematic for Model MZM2200K. Figure 3.3, also on Page 3.3, shows the common Battery Cables and Wiring Harnesses. The "Cable & Plug Connection Chart" is shown on Page 3.4.

WIRING SCHEMATIC (For All Models Except Model MZM2200K)

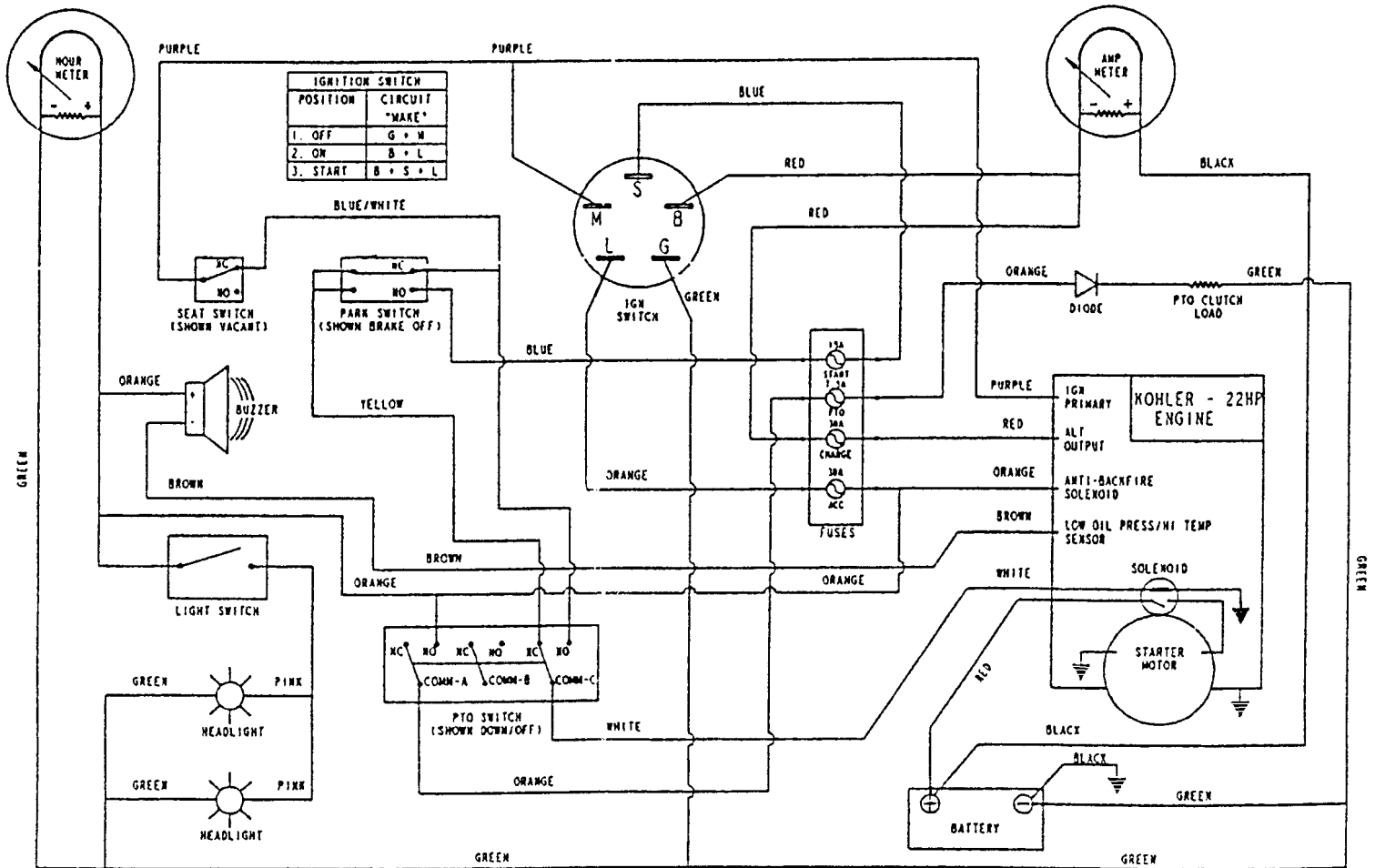


FIGURE 3.1

Section III - ELECTRICAL SYSTEM

WIRING SCHEMATIC (Model MZM2200K)

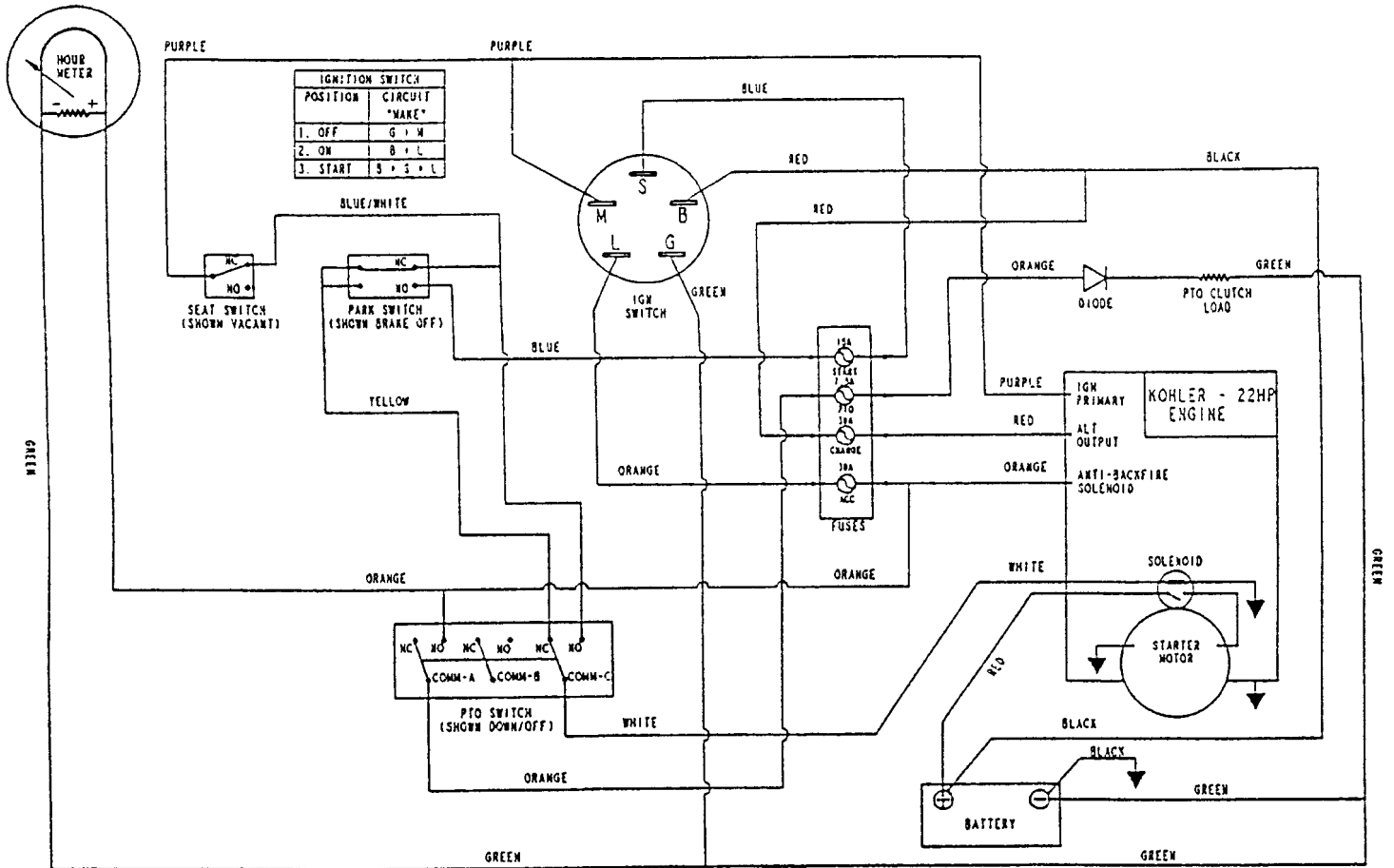


FIGURE 3.2

3.3 WIRING HARNESS

Shown in Figure 3.3 are the Battery Cables and Wiring Harnesses for the MID MOUNT Z-RIDER. These apply to all models. See "Cable & Plug Connection" Chart on Page 3.4.

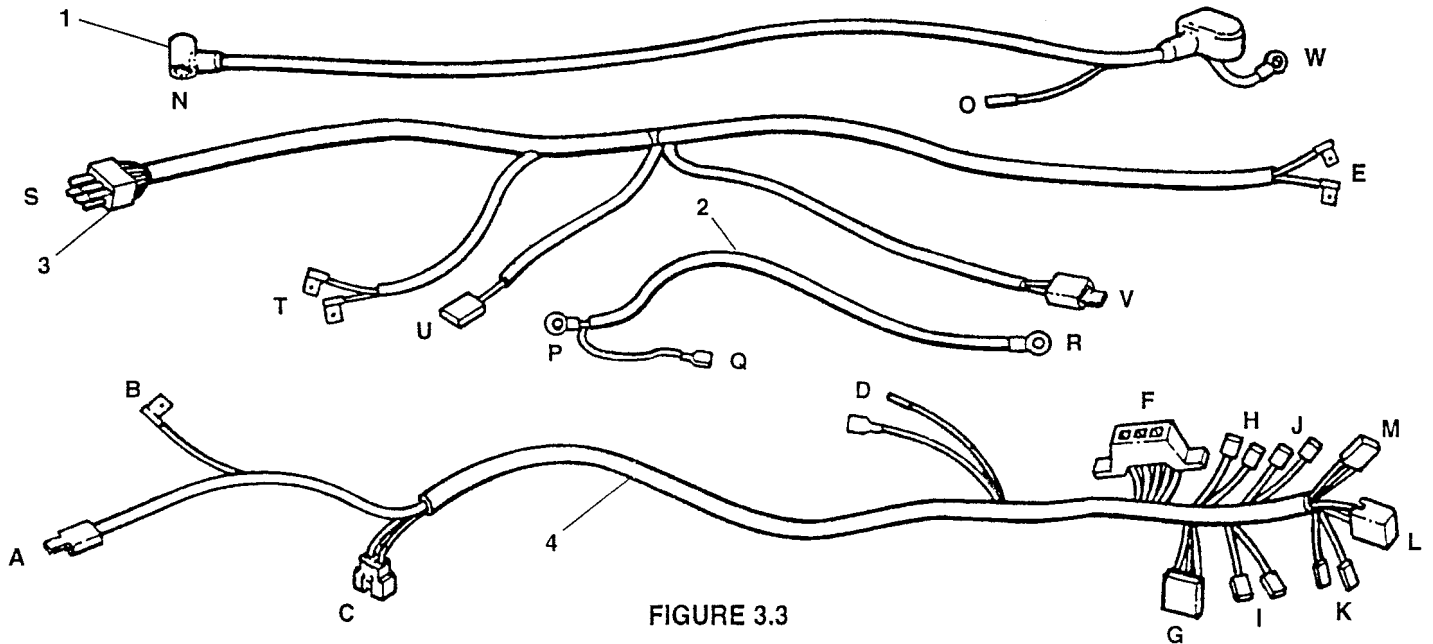


FIGURE 3.3

Section III - ELECTRICAL SYSTEM

CABLE & PLUG CONNECTION CHART

ITEM		PART No.	DESCRIPTION
1		3-5607	CABLE, Battery - Positive
2		4-6222	CABLE, Battery - Negative
3		4-4918	HARNESS, Front
--		4-6422	HARNESS, Front (MZM and ZMT Models Only)
4		4-4912	HARNESS, Control Panel
--		4-6423	HARNESS, Control Panel (Model MZM2200KH Only)

PLUG	CONNECTS TO:	PLUG	CONNECTS TO:
A.	Electric Clutch	M.	Ignition Switch
B.	Starter Solenoid	N.	Starter Solenoid
C.	Engine	O.	Control Panel Harness (Black Wire)
D.	Battery	P.	Battery Terminal (Neg.)
E.	Left Head Light	Q.	Control Panel Harness (Green Wire)
F.	Fuse Box (Mounted Under Instrument Panel, Item 4-4820 or 4-6863)	R.	Ground (Engine Base)
G.	PTO Switch	S.	Control Panel Harness
H.	Light Switch	T.	Right Head Light
I.	Amp Meter	U.	Park Brake Switch (2-3355)
J.	Hour Meter	V.	Seat Switch (1-7590)
K.	Buzzer	W.	Battery Terminal (Positive)
L.	Front Harness		

3.4 BATTERY

A. BATTERY REMOVAL

1. Remove Battery Retainer.
2. Slide Terminal Cover away from Positive Terminal.
3. Observe and note Cable positions on Battery. See Figure 3.4.
4. Disconnect Cables from Battery Terminals disconnecting BLACK (Negative) Cable first, then disconnect RED (Positive) last. Retain Mounting Bolts and Nuts.

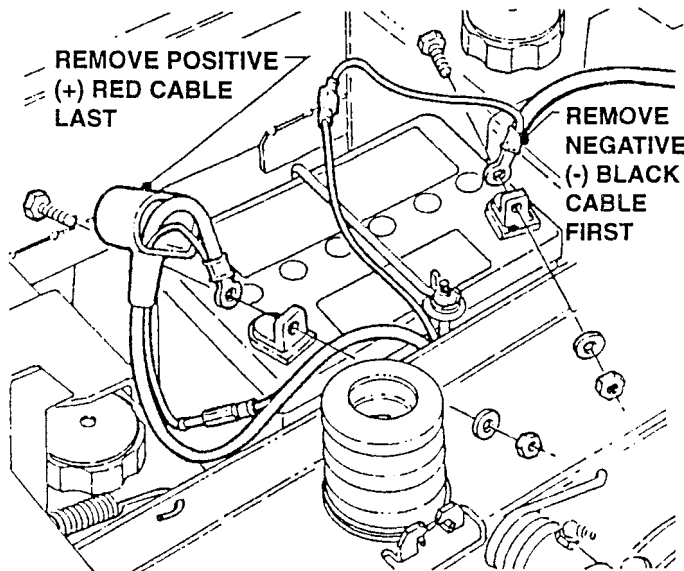


FIGURE 3.4

B. BATTERY INSTALLATION

1. Position Battery into Battery Compartment.
2. Connect Cables to Battery Terminals. Connect RED (Positive) Cable first. Connect BLACK (Negative) Cable last.
3. Reinstall Battery Retainer and Positive Terminal Cover. Refer to Figure 3.4.

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.

C. BATTERY SERVICE

1. Remove Battery.
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 (+) Terminals and BLACK to Negative (-) Terminal. See Figure 3.5 on Page 3.5.

(Continued on Following Page)

Section III - ELECTRICAL SYSTEM

(Continued from Previous Page)

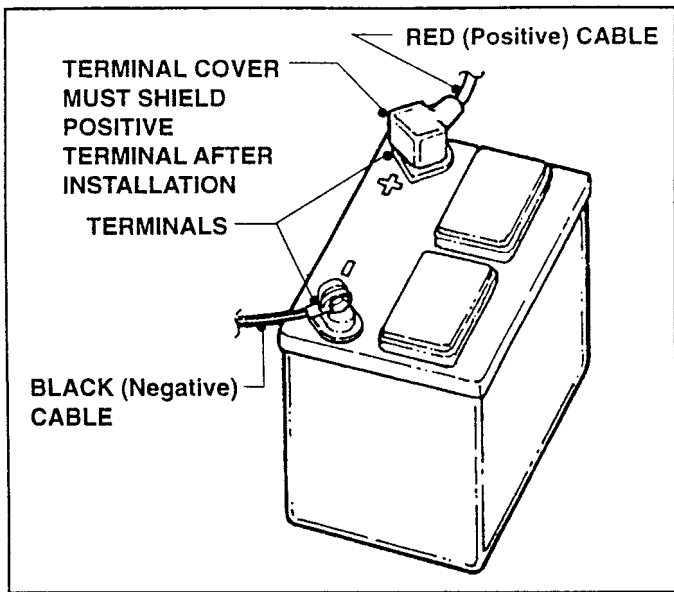


FIGURE 3.5

5. Slow charge Battery at 1 amp for 10 hours. An alternative fast charge should be no more than 2.5 amps for four hours.
6. If Battery will not accept charge, or is partially charged after 10 hours of charging at 1 amp, replace with new Battery. See "Battery Condition Chart" below.

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.

D. 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 chart at the bottom of this page shows the charge level as measured by syringe float hydrometer, digital voltmeter and five ball hydrometer.

E. 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 to proper level. Fill to 3/16" above Cell Plates. Filling Battery with electrolyte will bring the Battery to 80% charged state.

IMPORTANT!

3/16" above Cell Plates is the recommended level. However, do not try to measure this dimension. Never place anything in Battery other than specified electrolyte.

WARNING
DO NOT OVERFILL!

4. With Cell Caps removed, connect Battery Charger to Battery Terminals; RED to Positive (+) and BLACK to Negative (-) Terminal.

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

Section III - ELECTRICAL SYSTEM

(Continued from Previous Page)

⚠ WARNING ⚠

Never attempt to service or charge the Battery while it is installed in the machine. Never used "BOOST" chargers on the Battery.

5. Slow charge the Battery at 1 amp for 2 hours to bring the Battery to full charge.
6. After charging, check level of electrolyte and add as needed to bring level to 3/16" above Cell Plates.
7. Reinstall Cell Caps.
8. 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. 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.

⚠ 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.

3.5 INTERLOCK SYSTEM ANALYSIS

A. KEY SWITCH TEST

1. Disconnect Wires from the Switch Terminals. See Figure 3.6.
2. Place the Switch in the OFF position. Connect Continuity Light to "M" and "G" Terminals only - there should be contact.
3. Place the Switch in ON position and connect the Light to the "B" and "L" Terminals only - there should be contact.
4. Hold the Switch in the START position after connecting the Light to Terminals "B" and "S" - there should be contact.
5. Reconnect Harness Wires to Switch Terminals after completing test.

IGNITION SWITCH	
POSITION	CIRCUIT "MAKE"
1. OFF	G - M
2. ON	B - L
3. START	B - S - L

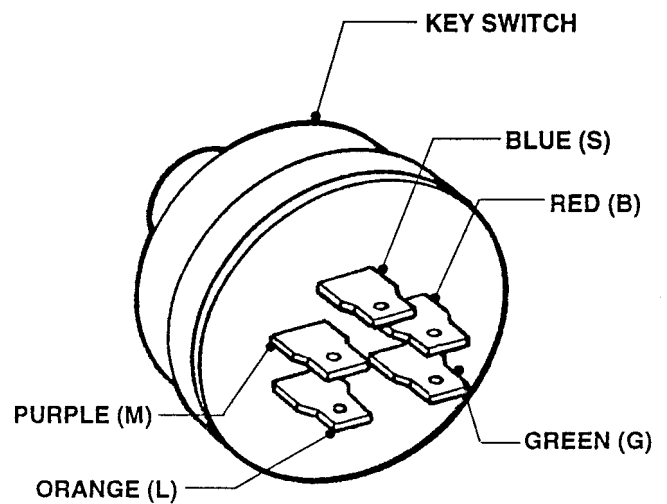


FIGURE 3.6

Section III - ELECTRICAL SYSTEM

B. PTO SWITCH TEST

1. Disconnect Wire Connectors from the Switch Terminals. See Figure 3.7.
2. Push Knob down to OFF position and connect Tester Leads to the Switch Terminals as follows:
 - a) #3 and #7
 - b) #6 and #7
 - c) #1 and #4the Light should NOT come on.
3. Pull Knob up to ON position and connect Tester Leads to the Switch Terminals as follows:
 - a) #1 and #4
 - b) #2 and #5
 - c) #3 and #6the Light SHOULD come on.

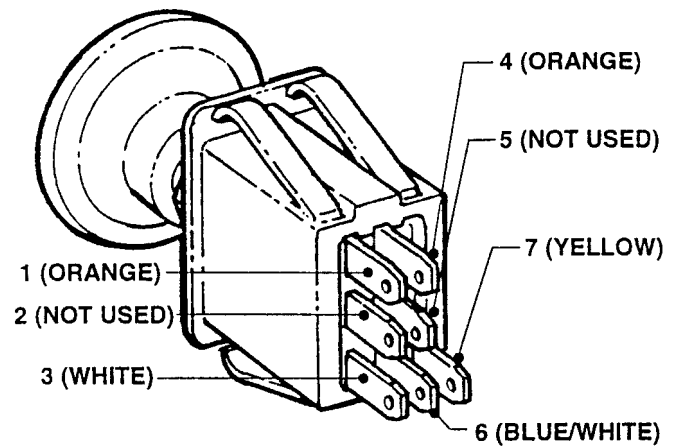


FIGURE 3.7

C. SEAT SWITCH TEST

1. Disconnect Seat Switch Plug from Seat Switch. See Figure 3.8.
2. Attach Continuity Light Wires to the Terminals.
3. Have a helper to depress the Seat Switch by pushing in on the Seat area directly above the Switch. When the Switch is depressed (making the circuit), the Light should come on.
4. Reconnect Wires to the proper Terminals.

IMPORTANT!

The Seat Switch Plug is equipped with a Grounding Plunger which will ground the Magneto unless fully depressed. Make certain you have a firm connection when attaching Plug to Seat Switch.

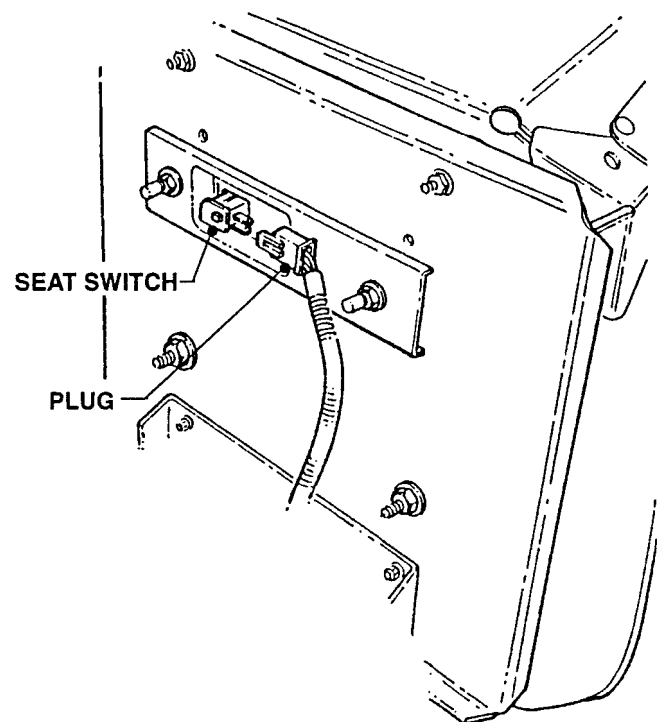


FIGURE 3.8

D. PARK BRAKE SWITCH TEST

1. Disconnect the Wires from the four Switch Terminals. See Figure 3.9.
2. Attach a Continuity Light to the two Terminals marked NC. Turn the Light Switch on - the bulb should light. Depress the Switch Button and the bulb should go out.
3. Next, attach the Light to the two UNMARKED Terminals. Turn the Light Switch ON and depress the Switch Button - the bulb should light ONLY when the Button is depressed.

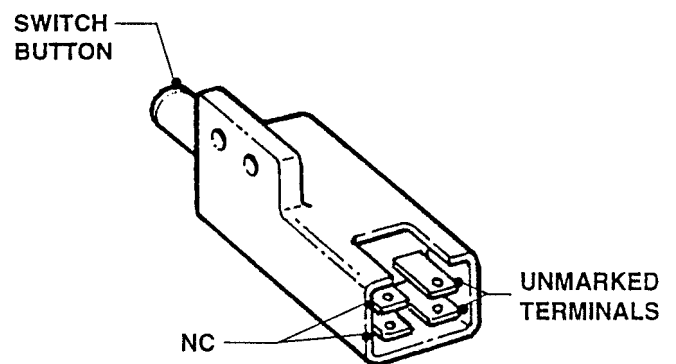


FIGURE 3.9

Section III - ELECTRICAL SYSTEM

3.6 ELECTRIC CLUTCH TESTS

Only Model MZM2200K (Mid-Market Unit) has an adjustable Electric Clutch. This Clutch is generally black in color and is tested as follows:

A. MEASURE CLUTCH FIELD COIL RESISTANCE

1. Turn Clutch Switch and Engine Switch OFF.
2. Disconnect Clutch Wire connections. See Figure 3.10.

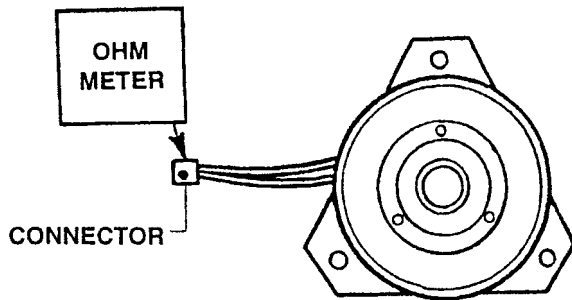


FIGURE 3.10
(CLUTCH FIELD COIL RESISTANCE)

3. Connect OHM Meter leads to the two wires in the Clutch Connector. Refer to Figure 3.10.
4. If the Meter reading is BELOW 2.40 OHMs or ABOVE 3.40 OHMs resistance, the Clutch has failed and must be replaced.
5. If the Meter reads 2.40 and 3.40 OHMs resistance, proceed with the CLUTCH CURRENT DRAW test.

B. MEASURE CLUTCH CURRENT DRAW

1. With the Engine Switch and Clutch Switch OFF, disconnect the Clutch Wire Connector. See Figure 3.11.

(CLUTCH CURRENT DRAW)

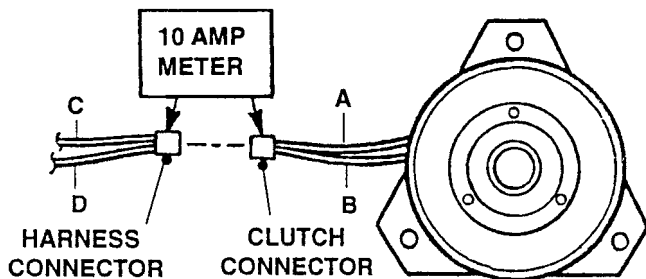


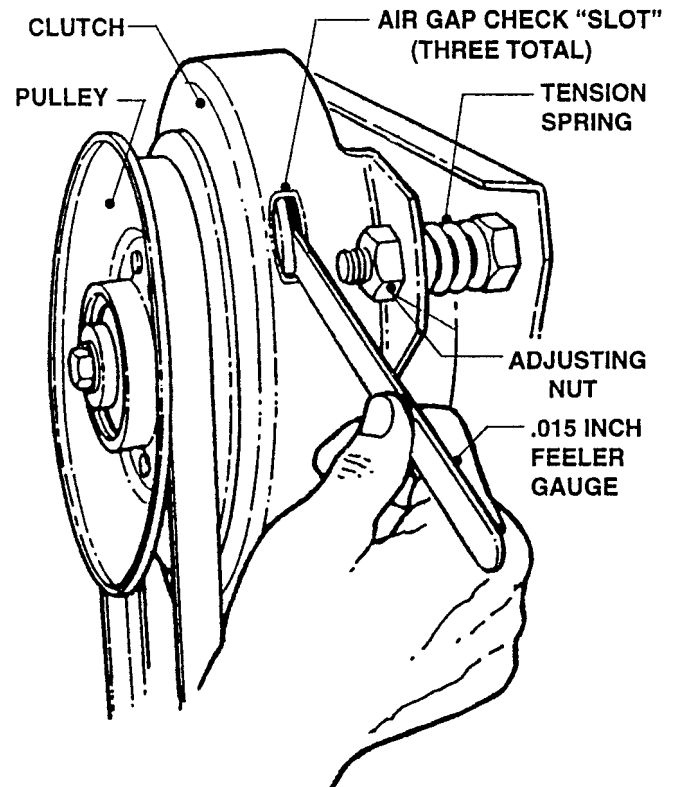
FIGURE 3.11

2. Use an AMP Meter with a 10 AMP Scale. Connect one Meter Lead to Clutch Connector Wire "A" and connect the other Meter Lead to Wire "C" in the Harness Connector.
3. Connect a short jumper wire to the Wire "B" in the Clutch Connector and to Wire "D" in the Harness Connector.

4. Turn Clutch Switch ON.
5. If the Meter reads BELOW 3.5 AMPs, the electrical system has a problem (battery, relay, switches, etc.). Check the electrical system.
6. If the Meter reads 3.5 AMPs to 4.5 AMPs, proceed to the AIR GAP SETTING instructions.

C. CHECK AIR GAP SETTING

1. With the Engine Switch and Clutch Switch OFF, locate the three Air Gap Check "Slots" as shown. See Figure 3.12.



(USING FEELER GAUGE)

FIGURE 3.12

2. Insert a .015 Feeler Gauge into each of the 3 slots.
3. If the gaps do not fall between .010 and .025, reset the spring-loaded adjustment nuts until the gaps are measured at .015 on the Feeler Gauge.

THEREFORE IF...

1. The resistance falls between 2.40 and 3.40 OHMs...
2. The amperage draw is 3.50 AMPs to 4.5 AMPs...
3. The Air Gaps are between .010" and .025" (or have been set to .015"), the Electric Clutch is within factory specifications and is not the source of a problem - check the remainder of the electrical system.

Section IV

ENGINE & FUEL SYSTEM

CONTENTS

<u>ITEM</u>	<u>PAGE No.</u>
Introduction	4.2
Engine Maintenance	4.2 - 4.3
Engine Removal	4.3 - 4.4
Engine Part Numbers	4.4
Engine Installation	4.4 - 4.5
Flexible Disc Removal	4.5
Flexible Disc Replacement	4.5 - 4.6
Fuel System	4.7
Main Fuel Tank Replacement	4.7
Auxiliary Fuel Tank Replacement	4.7
Notes	4.8

Section IV - ENGINE & FUEL SYSTEM

3. Make certain that the replacement filter is correctly installed with the gas flow going to the engine.
4. Check other Fuel System Components frequently and replace any parts that are leaking or showing worn spots or cracks (refer to Figure 4.10 on Page 4.5).

4.2 ENGINE REMOVAL

A. Disconnect the battery. Remove NEGATIVE (-) BLACK Cable first and POSITIVE (+) RED Cable last. Secure cables away from the battery. See Figure 4.2.

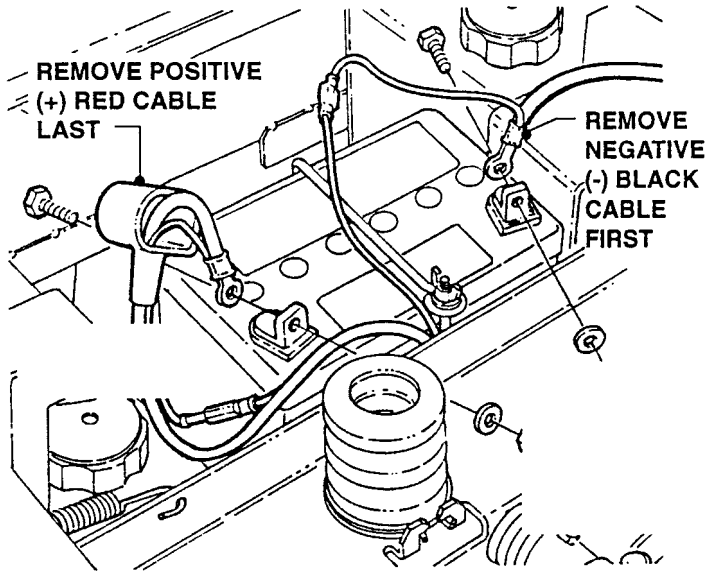


FIGURE 4.2

B. Disconnect engine pigtail from wiring harness. See Figure 4.3.

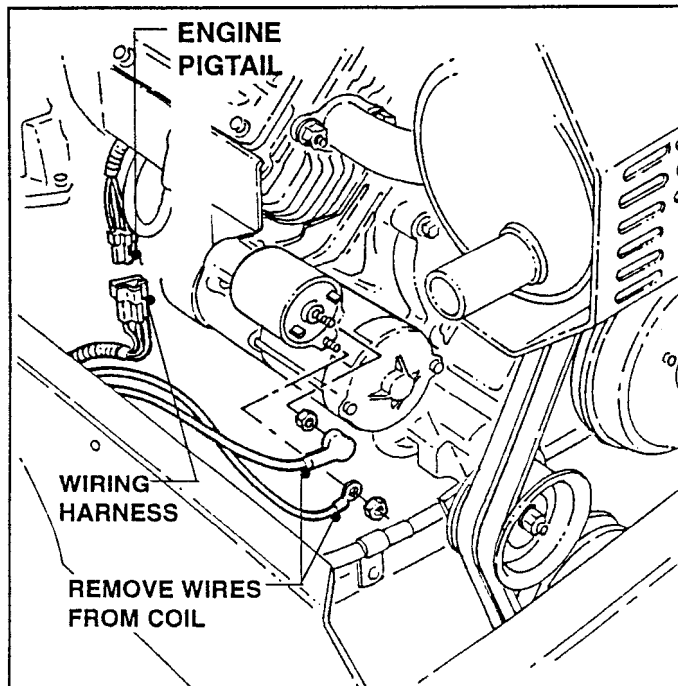


FIGURE 4.3

C. Remove wires from coil. Refer to Figure 4.3.

D. Disconnect electric clutch pigtail from wiring harness and remove fasteners from cable clamps. See Figures 4.4.

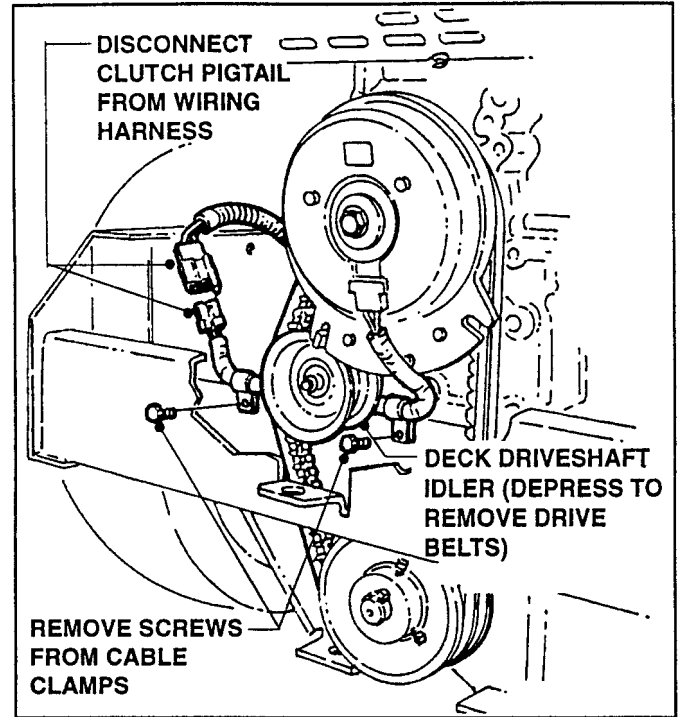


FIGURE 4.4

E. Depress deck driveshaft idler and remove drive belts. Refer to Figure 4.4.

F. Squeeze fuel line clamp and remove fuel line from engine. Plug open end of line. See Figure 4.5.

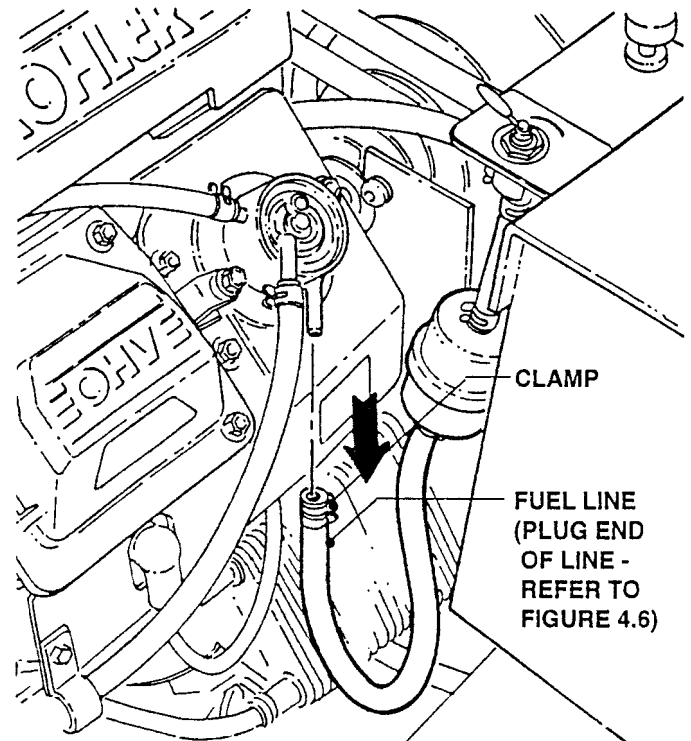


FIGURE 4.5

Section IV - ENGINE & FUEL SYSTEM

G. Separate Left Main Fuel Line from front of engine by bending hose clamps away from line. See Figure 4.6.

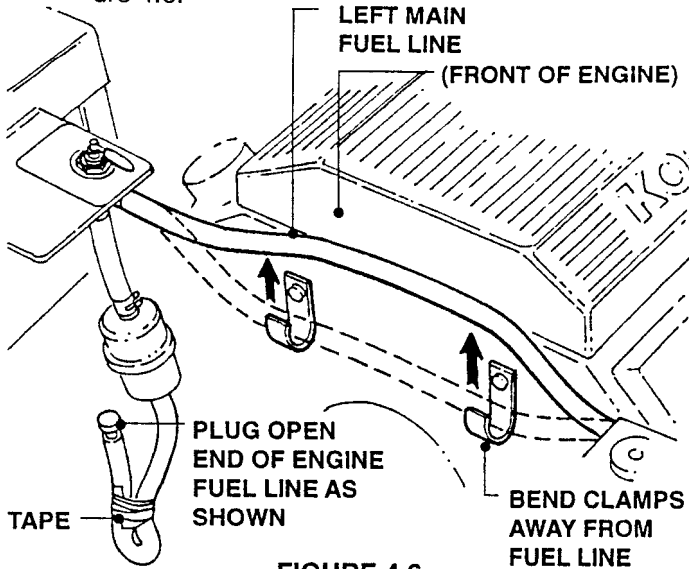


FIGURE 4.6

H. Disconnect Choke and Throttle Cables from engine. Store both cables out of the way.

J. Separate Upper Drive Shaft from engine as follows:
1. Loosen the two (2) Sq. Hd. Set Screws. See Figure 4.7.

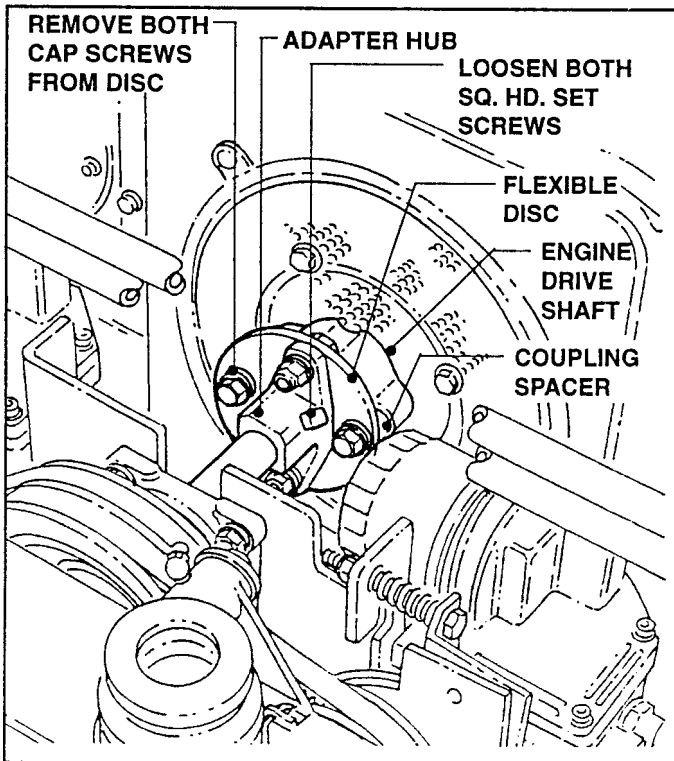


FIGURE 4.7

2. Remove the two (2) Hex Hd. Cap Screws, Lock Washers and Flat Washers which secure the Flexible Disc to the engine driveshaft.

3. Slide Adapter Hub/Flexible Disc Assembly away from engine. Place Coupling Spacers and Washers aside for reassembly. Refer to Figure 4.7.

NOTE

At this point of disassembly, check Flexible Disc for damage. If replacement is required, see Step 4.5 "FLEXIBLE DISC REMOVAL".

K. Remove the four (4) engine mounting nuts and Hex Hd. Capscrews. Store ground wire out of the way. See Figure 4.8.

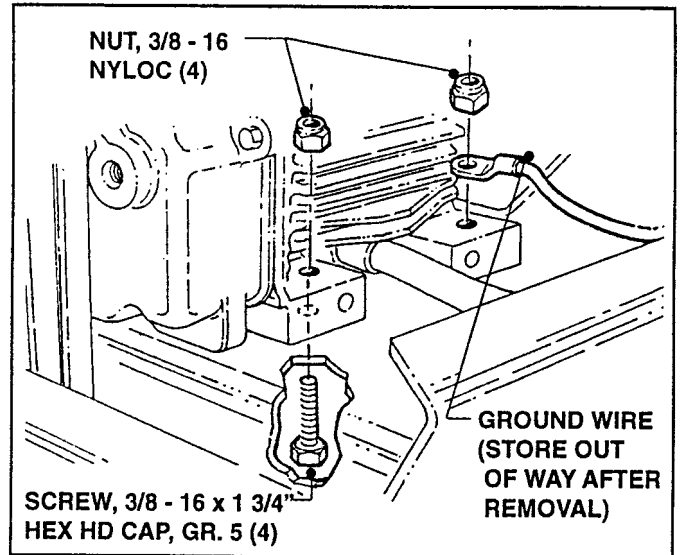


FIGURE 4.8

L. Attach suitable lifting device to lift ears on engine. Remove engine from frame.

NOTE

In order to accommodate certain lifting devices, it may be necessary to remove Air Filter before attaching lift to engine.

4.3 ENGINE PART NUMBERS

- A. Engine, 22 HP (Kohler No. CH 22S PS-66536)
- B. Engine, 25 HP (Kohler No. CH25S PS-68577) (Refer to SNAPPER Parts Manual No. 06110 (I.R. 1/97) & (REV. 2, 2/19/99) for Parts Numbers of engine components).

4.4 ENGINE INSTALLATION

- A. If installing a new or replacement engine, the engine should be fitted with all usable components taken from the one removed.
- B. Install a new Fuel Filter (KOHLER Part No. 4-4777) and inspect fuel lines for damage. Replace as required.

(Continued on following page)

Section IV - ENGINE & FUEL SYSTEM

- C. Install a new filter element in the Air Cleaner.
- D. Install new oil filter.
- E. Reinstall engine to frame in reverse order of removal.

4.5 FLEXIBLE DISC REMOVAL

- A. Loosen both set screws on the Adapter Hub. See Figure 4.9.

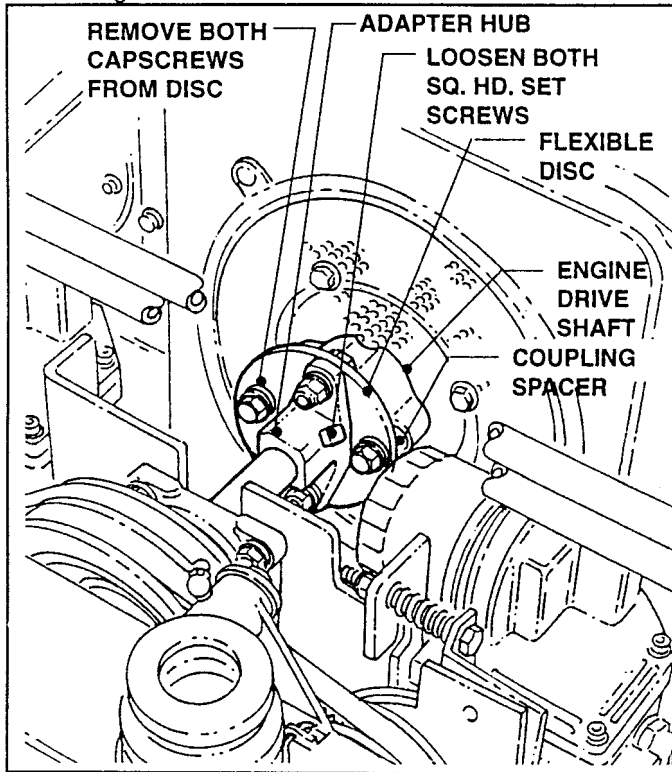


FIGURE 4.9

- B. Remove the two (2) Hex Hd. Cap Screws, Lock Washers and Flat Washers which secure the Flexible Disc to the Engine Driveshaft.
- C. Slide Adapter Hub/Flexible Disc Assembly away from Engine. Place Coupling Spacers and Washers aside for reassembly. Refer to Figure 4.10.

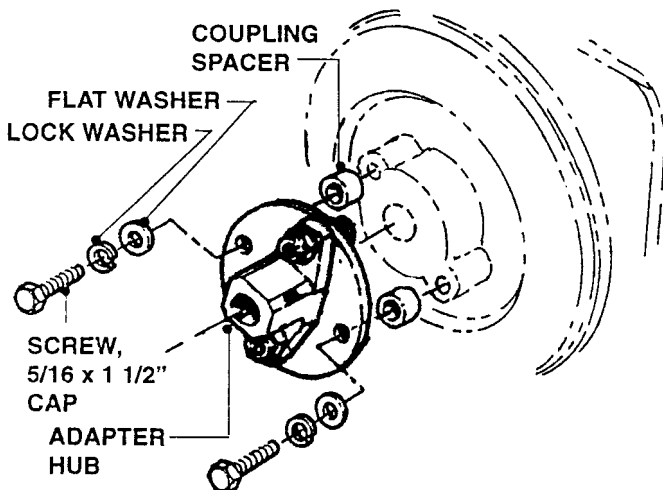


FIGURE 4.10

MANUAL No. 07224 (I.R. 1/00)

NOTE

At this point of disassembly, check Flexible Disc for damage. If replacement is required, see Step 4.6 "FLEXIBLE DISC REPLACEMENT".

4.6 FLEXIBLE DISC REPLACEMENT

- A. Loosely attach NEW Flexible Disc to Engine Drive Shaft with two (2) Coupling Spacers, 5/16 x 1 1/2" Hex Hd. Cap Screws, Lock Washers and Flat Washers. Refer to Figures 4.9 & 4.10.
- B. Remove Adapter Hub from the old Flexible Disc and loosely attach it to the NEW Disc as shown in Figure 4.11.

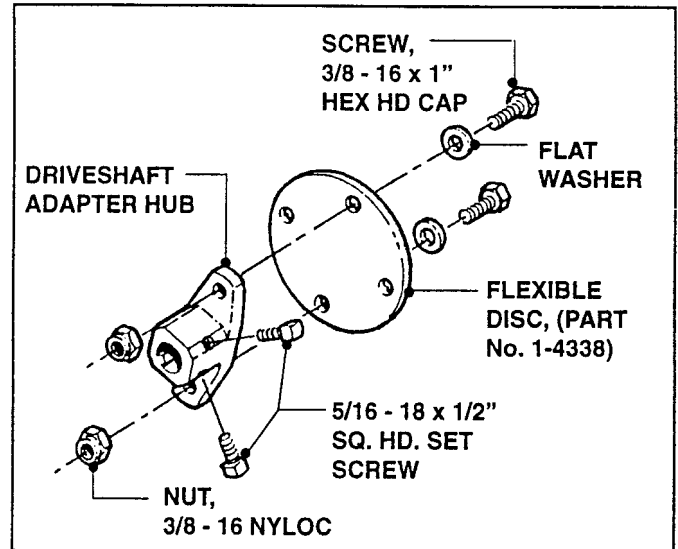


FIGURE 4.11

NOTE

At this point - for Drive Belt Alignment Purposes - perform the following steps.

1. Loosen Set Screws on Flange Bearing Lock Collar. See Figure 4.12, Pg. 4.6.
2. Loosen the three (3) 5/16 - 18 Hex Nyloc Flange Bearing Mounting Nuts until Bearing will move freely.
3. Loosen the two (2) 5/16 - 18 x 5/8" Skt. Hd. Set Screws on the Dual V Drive Pulley.

- C. Slide Upper Drive Shaft into Adapter Hub. Secure loosely with the two (2) Sq. Hd. Set Screws found on the Hub.
- D. Align Dual V-Pulley with both Transaxle Fan (Input) Pulleys.
- E. Install both V-Belts. Make any necessary alignment adjustments at this time.
- F. Tighten Flexible Disc to Engine Drive Shaft.
- G. Tighten Adapter Hub to Flexible Disc.

(Continued on Following Page)

Section IV - ENGINE & FUEL SYSTEM

- H. Tighten the two (2) Sq. Hd. Set Screws on the Adapter Hub. (This will secure the Upper Drive Shaft to its Drive Axis).
- J. Tighten the Flange Bearing Mounting Nuts.
- K. Tighten the two (2) Skt. Hd. Set Screws on the Dual V Drive Pulley.

NOTE
Check Belt Alignment again. If necessary, make required adjustments until both Belts run true in the Pulleys.

IMPORTANT!
Early production units of the MMZ used Socket Head Set Screws to secure the Driven and Drive Pulleys. These should be replaced with Square Head Set Screws (consult Parts Man. No. 06110).
Also, the one piece Flange Bearing shown below, Part No. 5-4655, should be replaced with the 4-piece Flange Bearing. See "Detail" below.

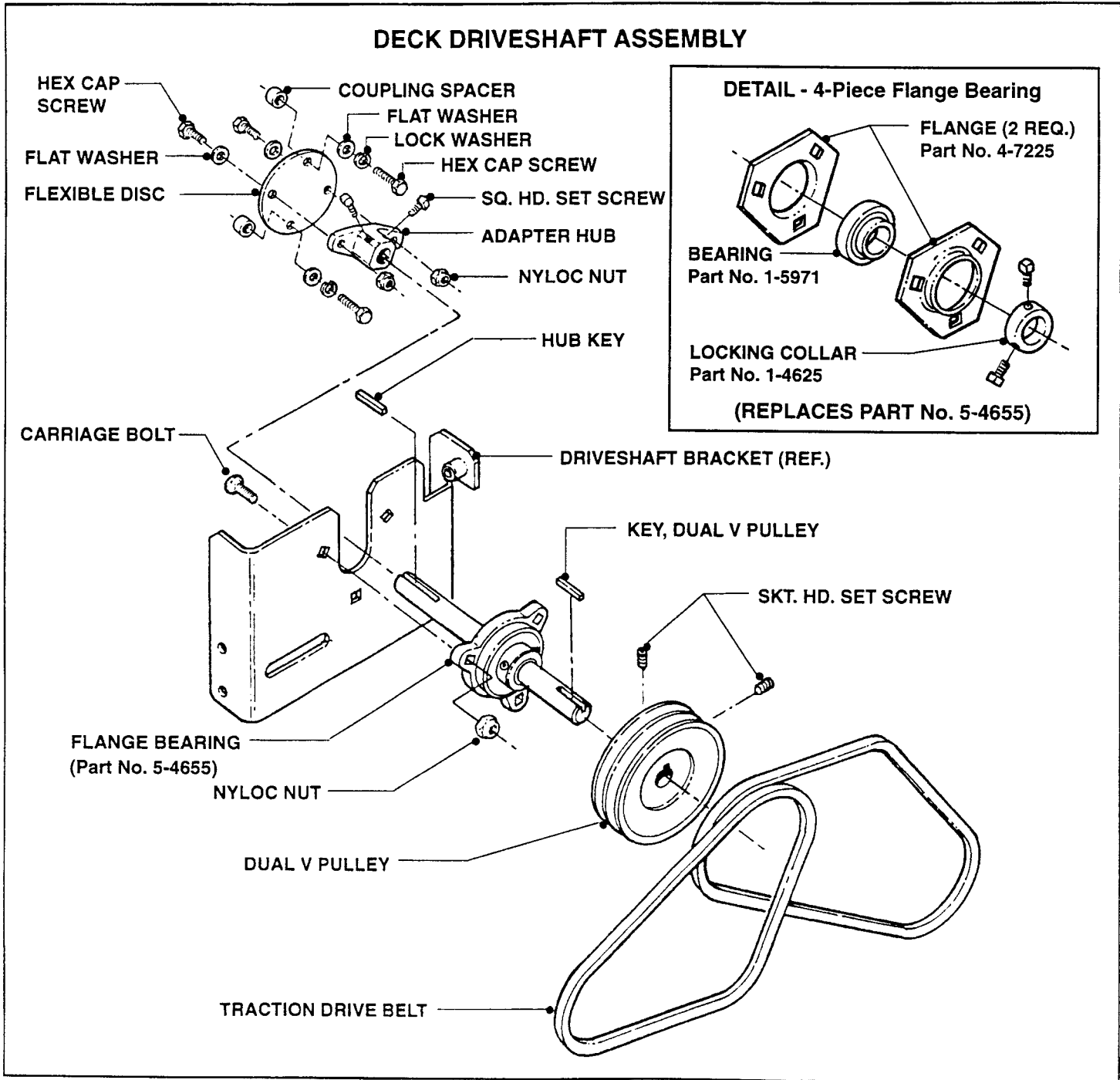


FIGURE 4.12

Section IV - ENGINE & FUEL SYSTEM

4.7 FUEL SYSTEM

The Fuel System of the SNAPPER MID MOUNT Z-RIDERS consists of a Main Fuel Tank, Auxiliary Fuel Tank, 3-Way Valve, Fuel Filter, Hoses, Clamps and Mounting Brackets - all of which mount to the Upper Chassis. Components of the Fuel System are shown in Figure 4.13.

IMPORTANT

The Fuel System should be inspected at each service period. Check for cracks or leaks in the Tank(s); Valve leakage and Fuel Hose integrity. Replace any item that appears worn or is damaged. Replace Fuel Filter on a regular basis.

A. MAIN FUEL TANK REPLACEMENT

1. Remove L.H. Fender as an assembly (Refer to Section VI, "L.H. FENDER REMOVAL").
2. Remove the Hose Clamp and Fuel Hose from the Tank Fuel Outlet.
3. Lift and remove Tank from the Tank Support Bracket.
4. Install new Tank in reverse order of removal.

PART NO.'s - MAIN FUEL TANK

- 5-7705 - MZM2200KH (Only)
- 5-4430 - ZM2200K
ZM2500K
ZMT2500KH

B. AUXILIARY FUEL TANK REPLACEMENT (Not Used on Model MZM2200KH)

1. Remove R.H. Fender as an assembly (Refer to Section VI, "R.H. FENDER REMOVAL").
2. Remove the Hose Clamp and Fuel Hose from the Tank Fuel Outlet.
3. Lift and remove Tank from the Tank Mounting Bracket.
4. Install new Tank in reverse order of removal.

PART No.'s - AUXILIARY FUEL TANK

- 5-4528 - ZM2200K
ZM2500K
ZMT2500KH

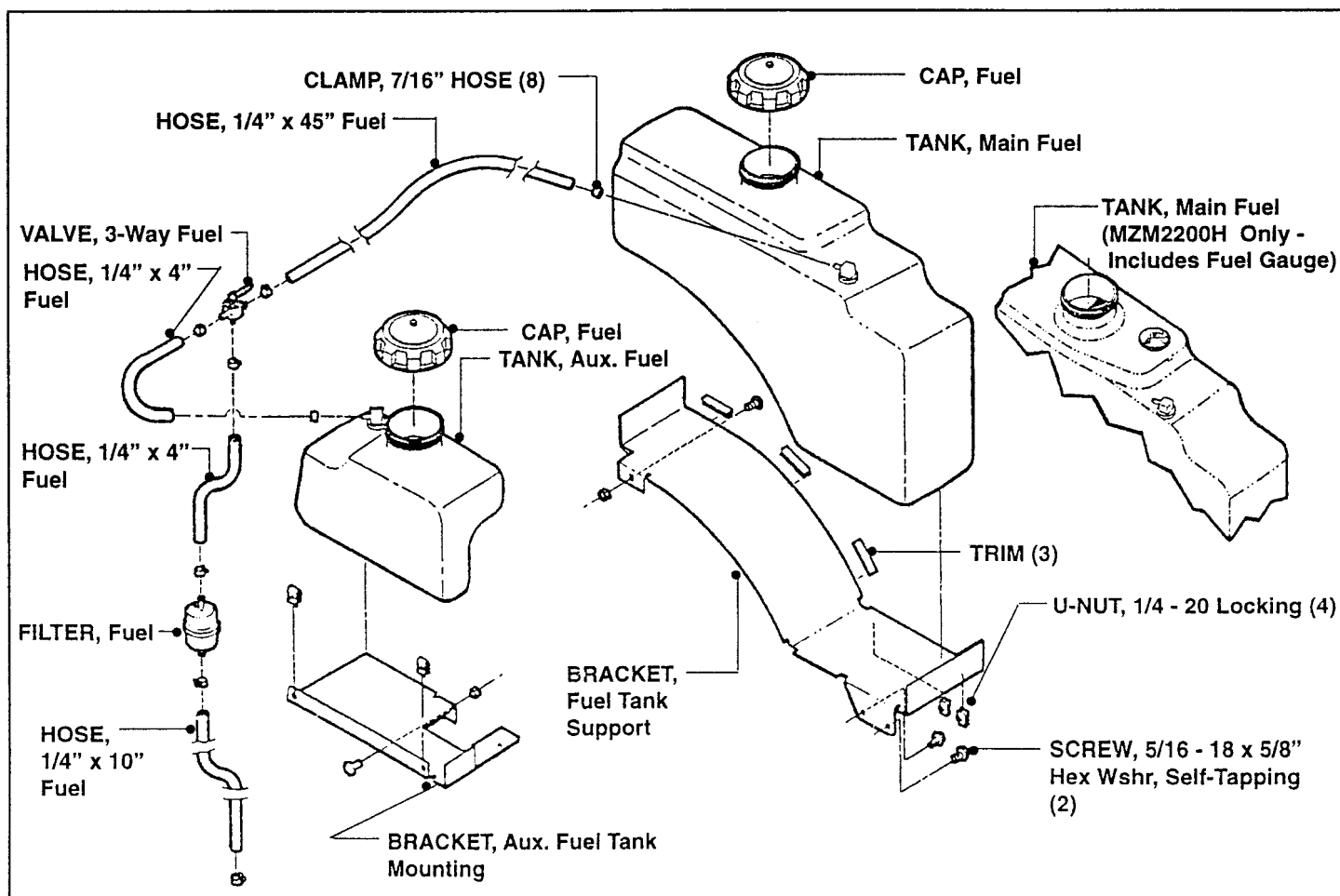


FIGURE 4.13

Section V

TANDEM HYDRO DRIVE SYSTEM

CONTENTS

<u>ITEM</u>	<u>PAGE No.</u>
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Troubleshooting - Hydro Transaxle	5.2 - 5.5
Controls - Joystick & Twin Stick Models	5.2 - 5.3
Neutral Position Adjustments	5.2 - 5.3
Control Lever(s) Adjustment (Twin Stick Controls)	5.3
Parking Brake Adjustment	5.4
Individual Drive Wheel/Brake Adjustment	5.4
Hydraulic Reservoir(s) & Hoses	5.4
Hydraulic Fluid	5.4
Conclusion (Troubleshooting - Hydro Transaxle)	5.5
Removal - Hydro Transaxle Assembly	5.5 - 5.6
Replacement - Hydro Transaxle Assembly	5.7 - 5.8

Section V - TANDEM HYDRO DRIVE SYSTEM

INTRODUCTION

The 700 Series Hydro Transaxle Assemblies used on the SNAPPER MID MOUNT Z-RIDERS are designed for rugged use and maximum endurance. If properly maintained, cleaned and cared for, these units should normally last for the working life of the Power Unit. However, due to accidents and sometimes operator's negligence, the repair shop will have to replace one or both Transaxle Units.

The following information covers basic troubleshooting, removal and replacement of the Hydro Transaxle Assemblies.

5.1 TROUBLESHOOTING - HYDRO TRANSAXLE

If either of the Hydro Transaxles are operating erratically or not at all, SNAPPER recommends that the following Troubleshooting checks be made before replacing the Unit(s).

A. CONTROLS - JOYSTICK & TWIN STICK MODELS

1. Check position of Roll-Release Levers. Make certain they are in "Operating Position". See Figure 5.1.

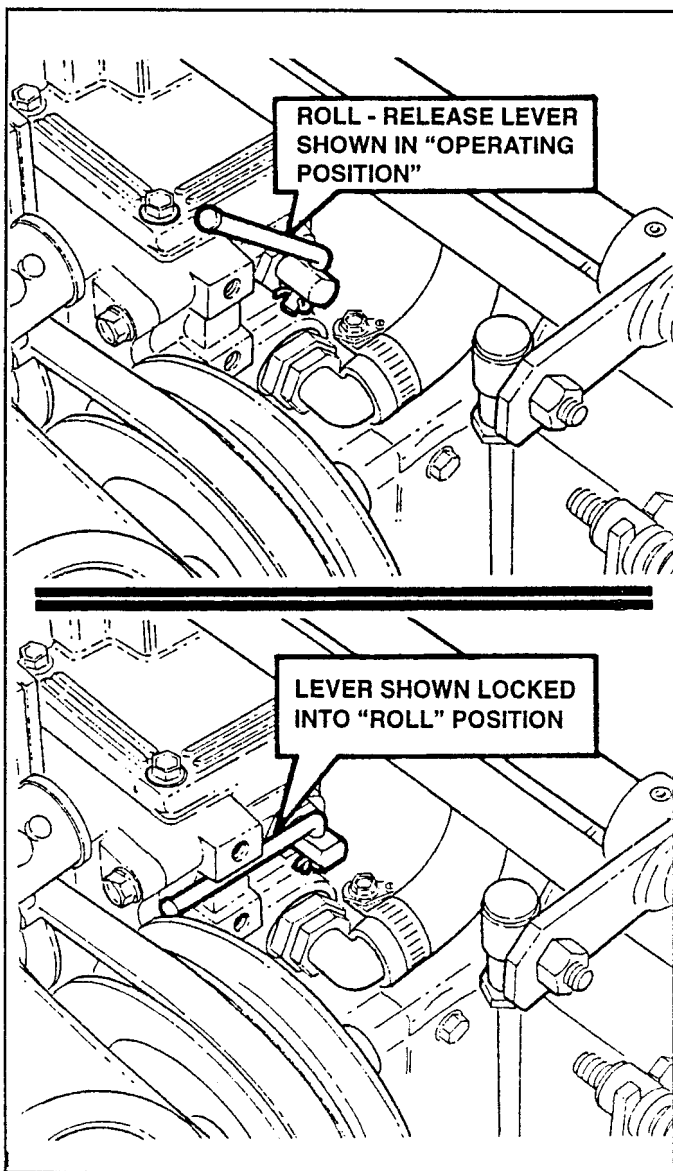


FIGURE 5.1

2. Check the Neutral Position adjustment as follows:
 - a) Start Engine and release Parking Brake.
 - b) Move Controls forward to begin movement of Unit.
 - c) Move Controls to center or neutral position to stop machine. If machine does not come to a complete stop, or has any movement when Controls have been moved to neutral position, adjustments are required.
3. NEUTRAL POSITION ADJUSTMENTS
 - a) Stop Engine.
 - b) Raise Rear Wheels off ground high enough to rotate freely.
 - c) Disconnect Brake Rod from Parking Brake. See Figure 5.2.

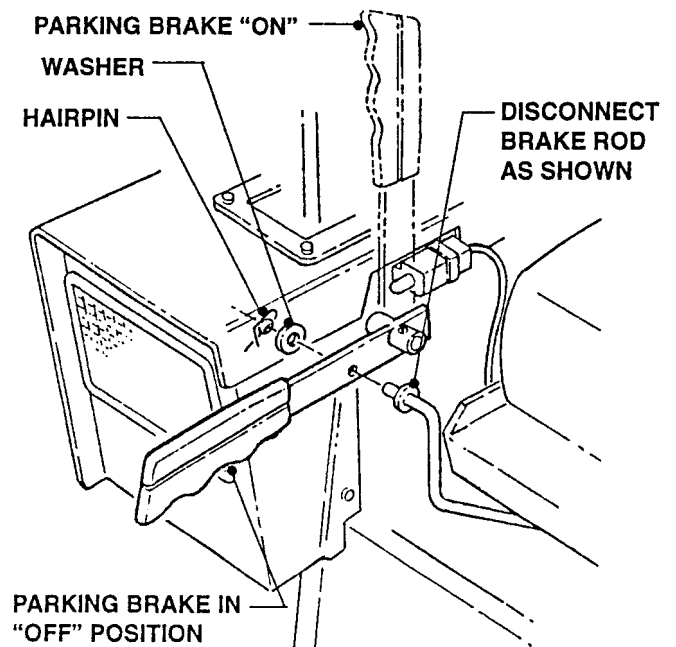


FIGURE 5.2

- d) Pull Parking Brake Lever up to "ON" position.

IMPORTANT

Engaging Parking Brake while Brake Rod is disconnected, locks both Control Levers in Neutral position. See Figure 5.3.

Section V - TANDEM HYDRO DRIVE SYSTEM

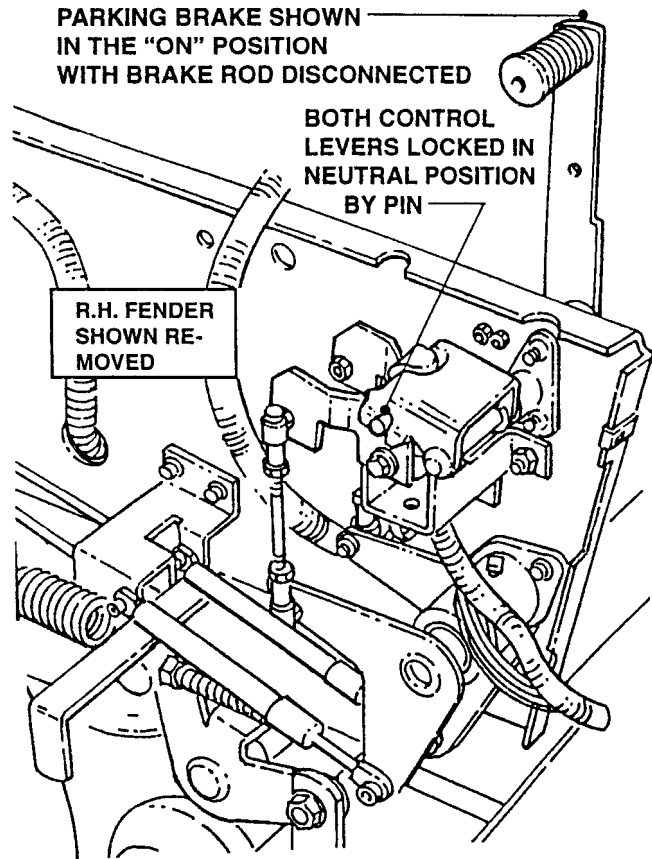


FIGURE 5.3

- e) Start Engine. Neither wheel should rotate or have any movement.
- f) If wheel(s) are rotating, disconnect Transmission Control Rods from Cross Shaft and turn Adjusting Bolts, located on Pump(s), clockwise, or counterclockwise, until rotation stops. See Figure 5.4.

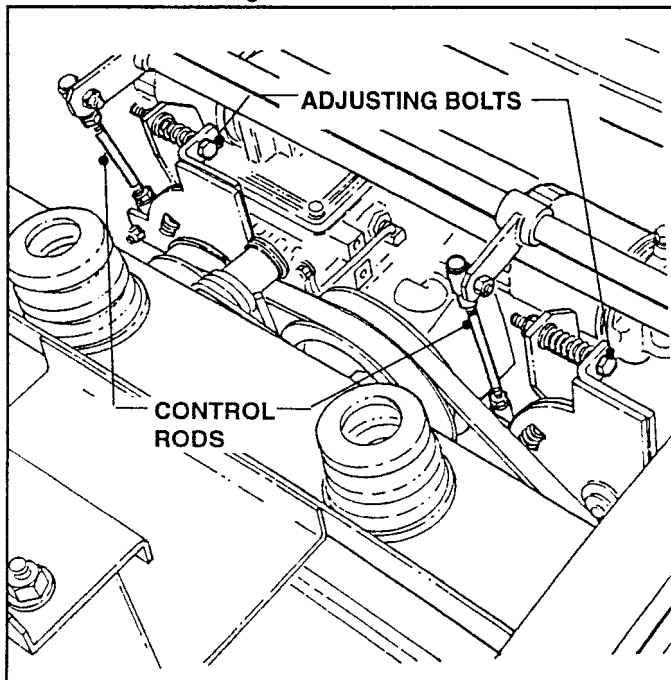


FIGURE 5.4

- g) With wheels in neutral, and rotating, stop Engine and adjust Control Rods until they fit into the Cross Shaft Arms with no wheel creep.
- h) Reconnect Park Brake Rod.

4. CONTROL LEVER(S) ADJUSTMENT (Twin Stick Controls - Model ZMT2500KH)

On the Twin Stick Models, the Motion Control Levers are mounted to slotted arms on the Control Weldments. The fore/aft position of each lever is adjustable as follows:

- a) If one Control is farther forward than the other, loosen its mounting hardware and align the Control Lever with the other. See Figure 5.5.

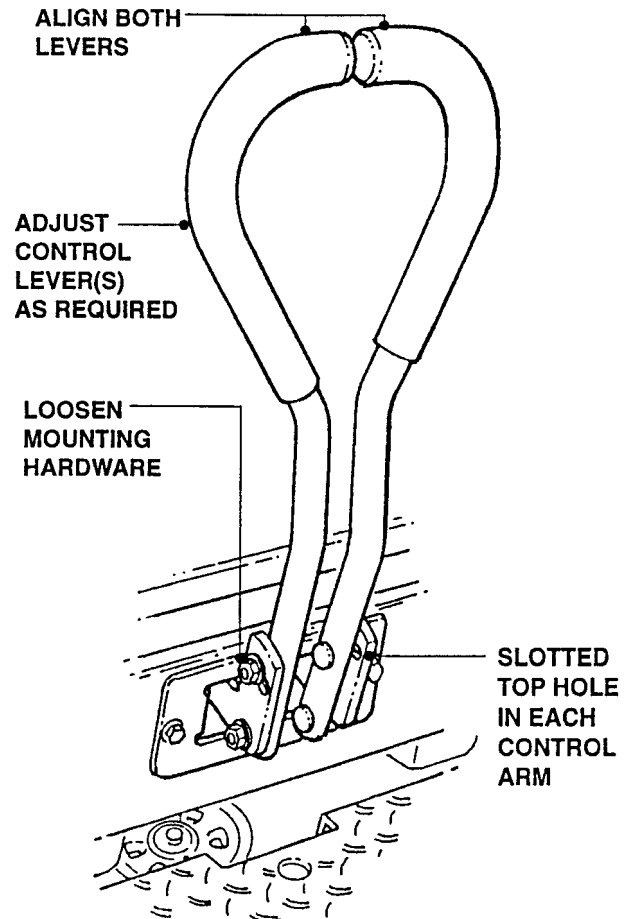


FIGURE 5.5

- b) Retighten mounting hardware.
- c) Test adjustment by starting Engine, releasing Park Brake and pushing both Control Levers forward to begin forward motion.
- d) Release both Control Levers simultaneously. Machine will stop.
- e) Check alignment of Control Levers. Readjust as required.

NOTE

Other than the Ball Joint Link Assemblies, the Joystick Control has no adjustments.

Section V - TANDEM HYDRO DRIVE SYSTEM

5. PARKING BRAKE ADJUSTMENT (Both Drive Wheels/Brakes Jointly)

- Disconnect Parking Brake Rod from Park Brake Lever. See Figure 5.6.
- Rotate Rod clockwise one (1) turn to tighten Brake or counterclockwise to loosen Brake tension.

NOTE

DO NOT OVERTIGHTEN BRAKE ROD! Damage to Parking Brake components could result.

6. TESTING PARKING BRAKE ADJUSTMENT

- Engage Parking Brake.
- Try to roll each Drive Wheel to insure there is no movement (Parking Brake should hold both Drive Wheels in place).
- If one Wheel can be moved, then adjustment can be performed on the individual Drive Wheels. See 7. INDIVIDUAL DRIVE WHEEL/BRAKE ADJUSTMENT.

7. INDIVIDUAL DRIVE WHEEL/BRAKE ADJUSTMENT

- Rotate nut 1/2 turn clockwise to tighten Brake. (See "Inset", Figure 5.6).
- Recheck Drive Wheel for movement. If Wheel does not move, adjustment is complete.

NOTE

DO NOT OVERTIGHTEN HYDROSTATIC BRAKE RODS! Damage to Parking Brake components could result.

B. HYDRAULIC RESERVOIR(S) & HOSES

- Check for leaks at connections.
- Check Hoses for kinks, cracks or deterioration.

C. HYDRAULIC FLUID

- Check for proper fluid level (1 1/2" to 2") below top of filler neck.
- Check fluid type (SAE 20W-20, SAE 30 or SAE 40 Motor Oil).
- Check Oil Filter (Part No. 4-5184, Oil Filter, Eaton).

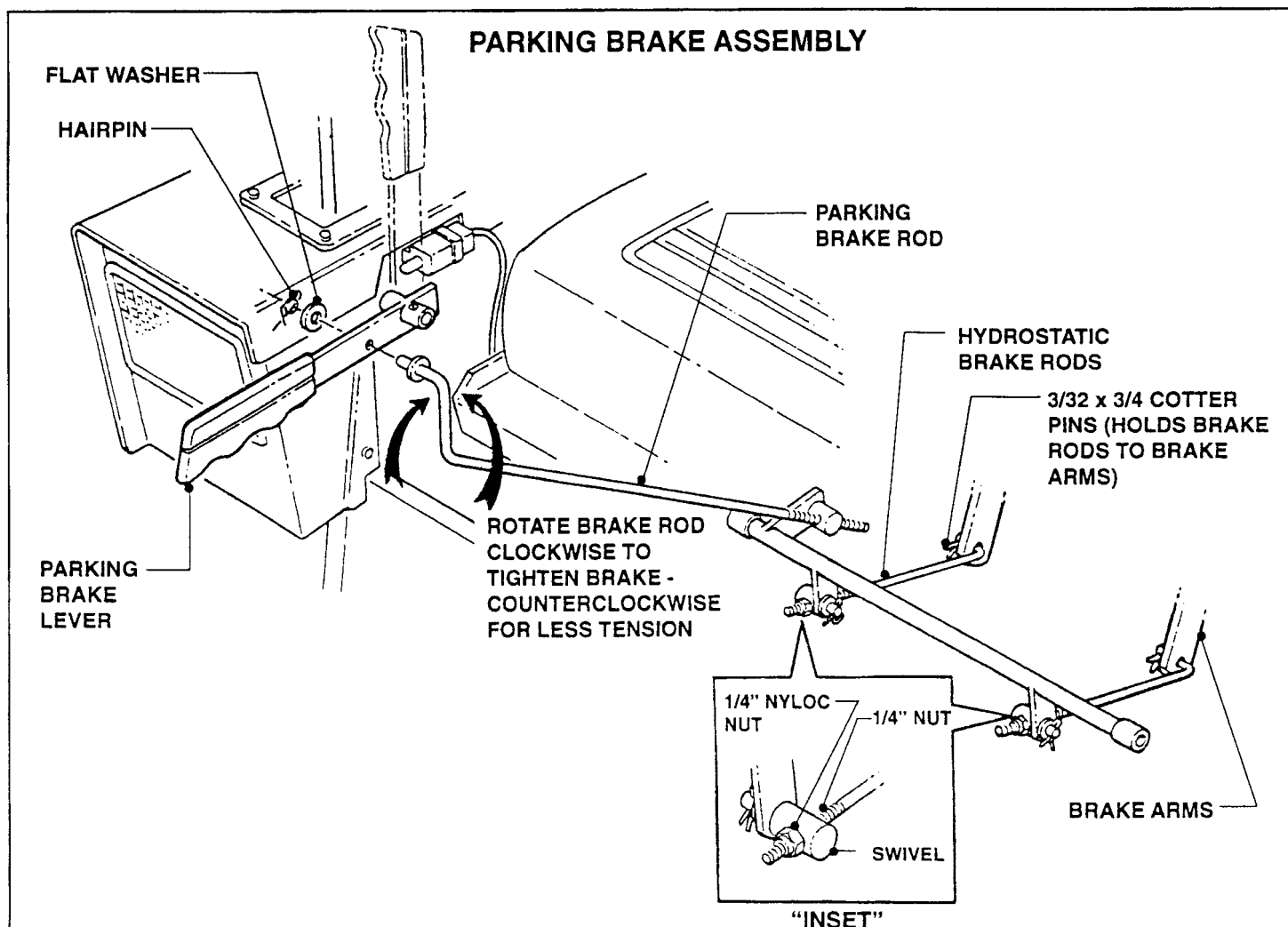


FIGURE 5.6

Section V - TANDEM HYDRO DRIVE SYSTEM

5.2 CONCLUSION (TROUBLESHOOTING - HYDRO TRANSAXLE)

Having made the checks, tests and adjustments found on the previous three (3) pages and finding no remedy for a malfunctioning unit, remove the R.H. Fender and check the adjustments of the Ball Joint Link Assemblies as follows:

- Remove the R.H. Fender (Refer to Section VI, Page 6.10).
- Check the dimensions of the Ball Joint Links as shown in Figure 5.7.

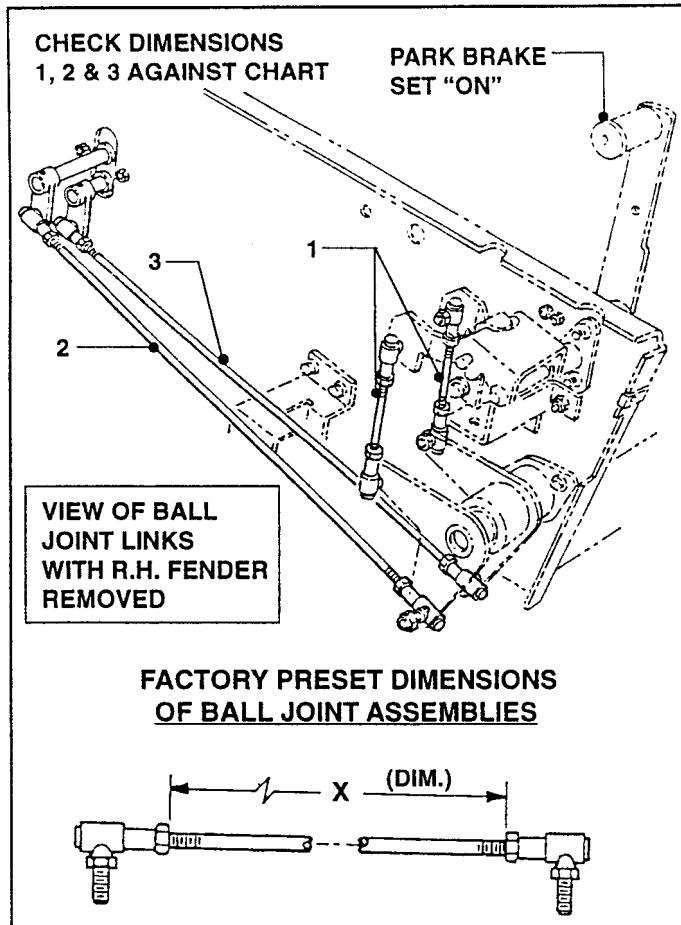


FIGURE 5.7

ITEM	PART No.	PRESET DIMENSIONS	QTY.
1	5-8115	5.12 Inches	2
2	5-8116	20.4 Inches	1
3	5-8117	20.56 Inches	1

- If dimensions of Ball Joint Links are not the same as those shown on the above chart, set the Parking Brake, disconnect the affected Link and adjust to the correct dimension(s). Reconnect Link(s).
- If the Ball Joint Links are not the cause of the Hydro Transaxles erratic operation, or, it is not operating at all, then proceed with the removal/replacement of the faulty Transaxle as follows:

5.3 REMOVAL - HYDRO TRANSAXLE ASSEMBLY

- Disconnect the Battery. Remove NEGATIVE (-) BLACK Cable first and POSITIVE (+) RED Cable last. Secure Cables away from the Battery. See Figure 5.8.

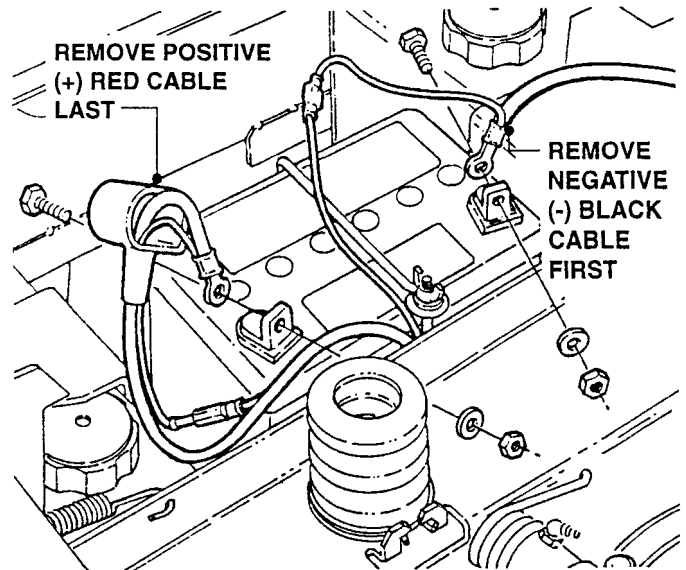


FIGURE 5.8

- Remove the 1/4 - 28 Nyloc Nut from the Control Rod on the Neutral Return Cam. Disconnect Rod from Cam. See Figure 5.9.

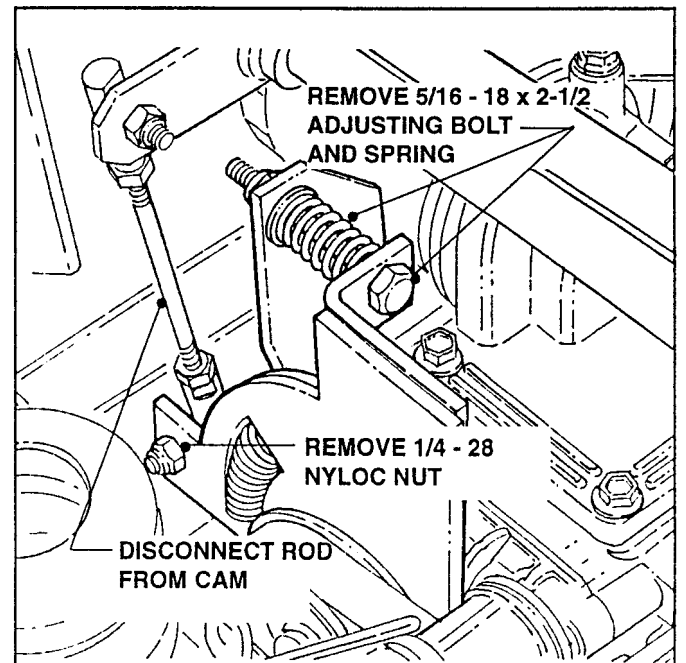


FIGURE 5.9

- Remove the 5/16 - 18 x 2 1/2" Neutral Return Adjusting Bolt and Spring. See Figure 5.9.
- Depress Idler Pulley and remove Traction Belt from Input Pulley. See Figure 5.10, Pg. 5.6.
- Disconnect the Hydrostatic Brake Rod by removing the 3/32 x 3/4" Cotter Pin from the 1/4" Swivel. Refer to Figure 5.6, Pg. 5.4.

Section V - TANDEM HYDRO DRIVE SYSTEM

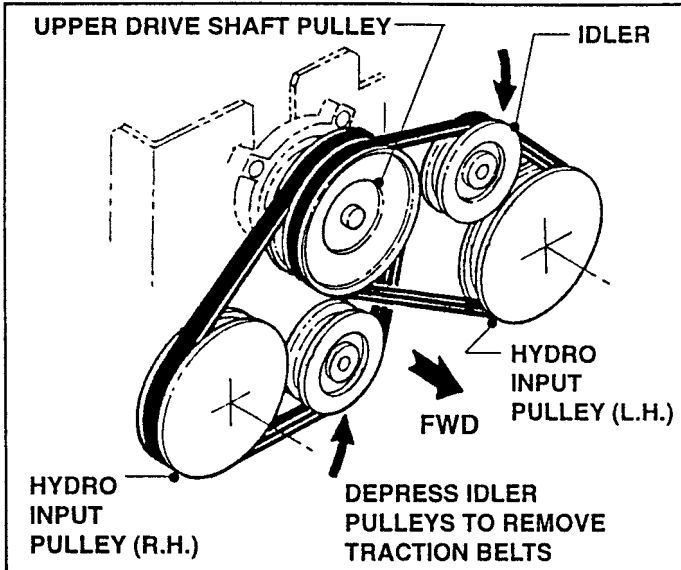


FIGURE 5.10

- E. Place rear of Unit up on jackstands. Chock front Wheels.
- F. Remove Rear Wheel from Transaxle to be removed.
- G. Disconnect the Hydrostatic Brake Rod by removing the 3/32 x 3/4 Cotter Pin from the Brake Arm. Refer to Figure 5.6.

NOTE

For additional working space, disconnect the Deck Driveshaft and move it out of the way. See Figure 5.11.

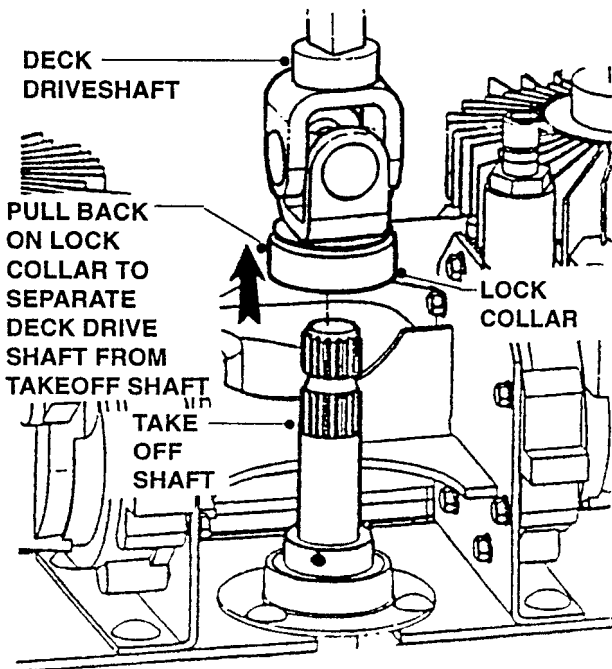


FIGURE 5.11

- H. Place a five (5) gallon container beneath Hydraulic Hose connection of Transaxle being removed. Using cutters or a sharp utility knife, cut Hose located

at bottom of Transaxle.

1. Allow oil to drain from system.
2. Cut Upper Hose.
3. Remove the 13/16" Hose Clamps from the Hose Stubs.
4. Split the Hose Stubs with a sharp knife and remove.
5. Remove the sections of cut Hose from the Hydraulic Reservoir in a like manner. Save Clamps to install new Hoses.

- J. Remove the eight (8) 1/4 - 20 x 5/8 Hex Flange Lock Screws from inside the Bearing Mount Weldment. See Figure 5.12.

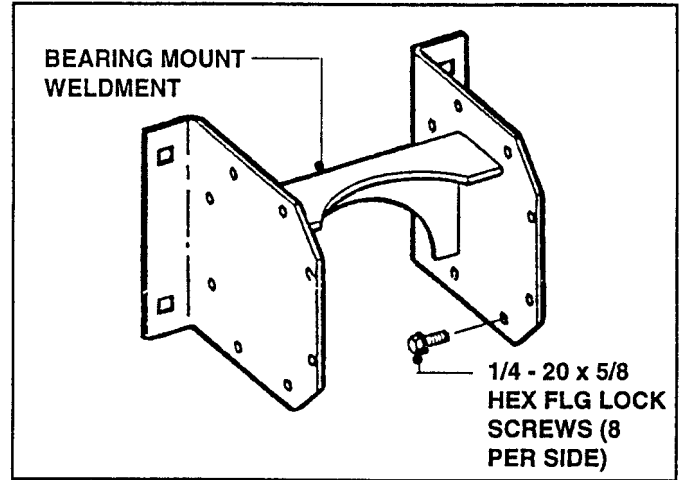


FIGURE 5.12

- K. While supporting the Transaxle Assembly in a safe manner, separate it from the Unit by removing the 3/8 - 16 Hex Locknuts, Flat Washers and 3/8 - 16 x 4 3/4" Bolts and Transaxle Spacers. See Figure 5.13. Transaxle Assembly is now ready for repair or replacement.

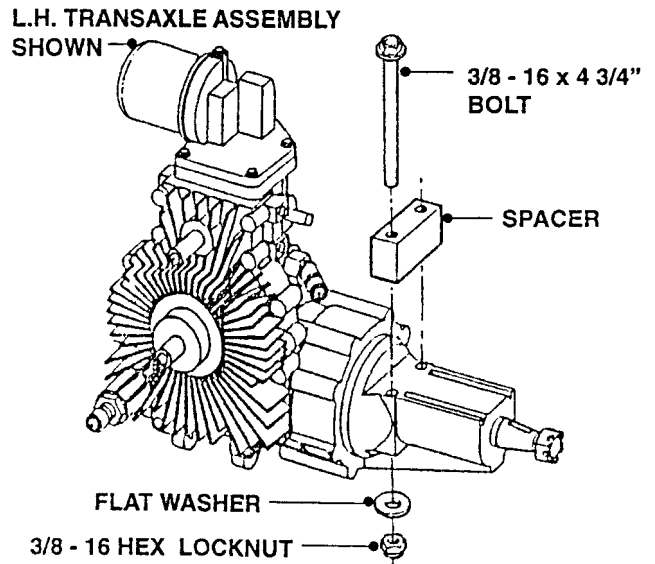


FIGURE 5.13

Section V - TANDEM HYDRO DRIVE SYSTEM

5.4 REPLACEMENT - HYDRO TRANSAXLE ASSEMBLY

A. Remove the following parts from the Hydro Transaxle Assembly which is to be replaced. See Figure 5.14

1. Transmission Pulley

- Loosen the two (2) 5/16 - 18 x 5/16 Sq. Hd. Set Screws.
- Remove the Transmission Pulley and Cooling Fan as an assembly.
- Remove the #605 Woodruff Key.

NOTE

The R.H. & L.H. Transmission Pulleys are different. The Mounting Face of the R.H. Pulley has an extended Boss to compensate for the Offset Drive Belt configuration of the Upper Drive Shaft Pulley.

2. Neutral Return Cam & Neutral Adjustment Plate

- Remove the 1/4 - 20 x 1 1/4 Hex Hd. Cap Screw, 1/4 Lock Washer & 1/4 I.D. x 1" O.D. Flat Washer.
- Remove the Neutral Return Cam and #404 Woodruff Key.
- Remove the Neutral Adjustment Plate and the 1" External Retaining Ring.

3. Roll Release Rod

- Remove 1/16 x 1/2 Cotter Pin.
- Remove Roll Release Rod.

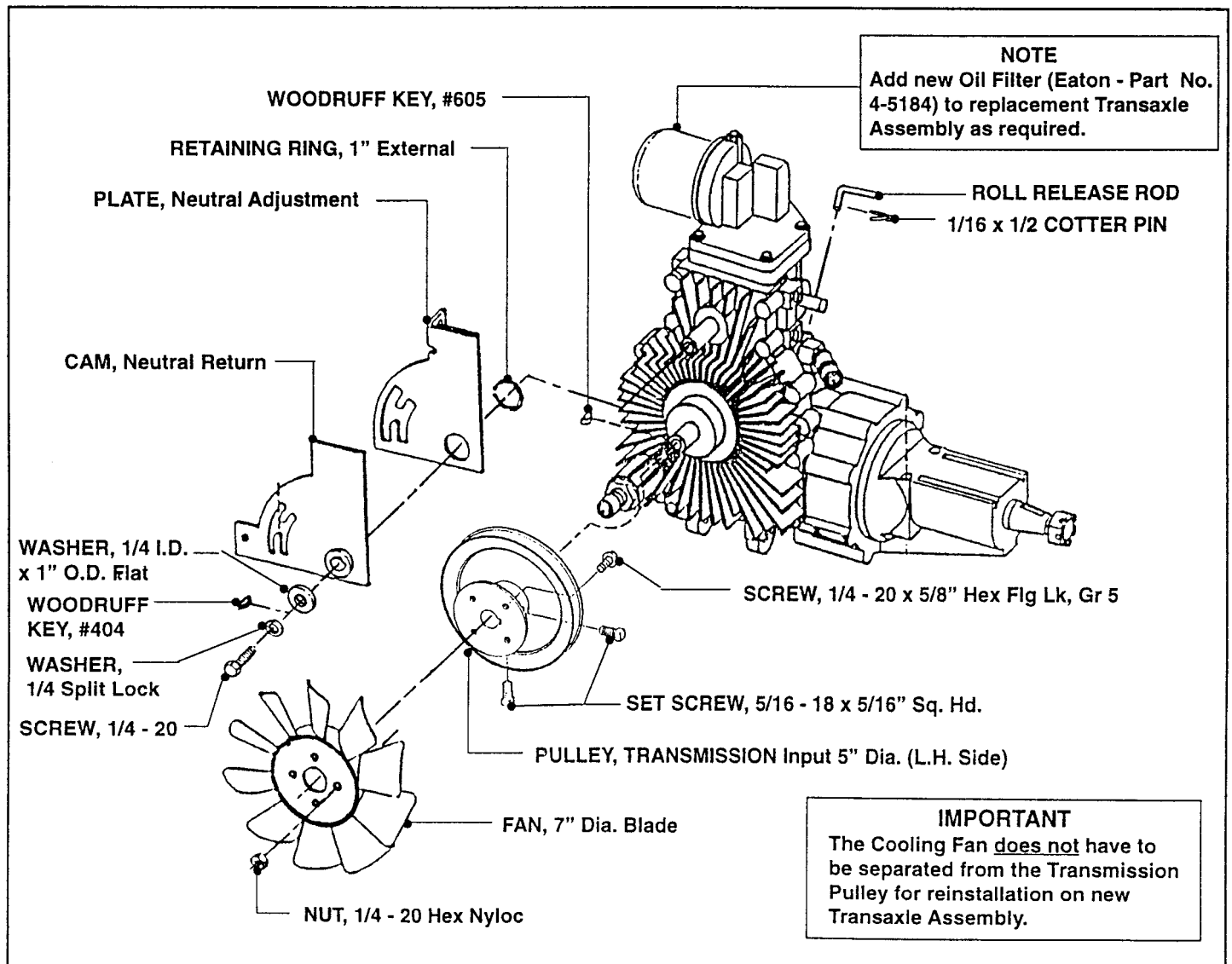
4. Hydraulic Fittings (Removal)

- Loosen Inner Nut of Upper Fitting (45°).
- Remove Fitting from Pump.

NOTE

Upper Fitting (45°) - Note angle of installed position **BEFORE REMOVING!** Fitting must be installed at **SAME ANGLE** in new Transaxle.

- Remove Lower Fitting (Straight).



NOTE

Add new Oil Filter (Eaton - Part No. 4-5184) to replacement Transaxle Assembly as required.

IMPORTANT

The Cooling Fan does not have to be separated from the Transmission Pulley for reinstallation on new Transaxle Assembly.

FIGURE 5.14

Section V - TANDEM HYDRO DRIVE SYSTEM

(Continued from previous page)

- B. Install new and removed parts to replacement Hydro Transaxle Assembly before installation.
 - 1. New Oil Filter (Eaton - Part No. 4-5184). Refer to Figure 5.14, Page 5.7.
 - 2. Upper & Lower Hydraulic Fittings.
 - a) Lubricate NEW O-Ring with Petroleum Jelly. Place O-Ring on Lower (Straight) Fitting and install. Do not overtighten.
 - b) Place a NEW lubricated O-Ring on Upper Fitting and install at same angle of position as it was when removed. Tighten until snug.
 - c) Tighten Inner Nut to seal O-Ring.
 - 3. Insert Roll Release Rod into Shaft and secure with Cotter Pin.
 - 4. Install Neutral Adjustment Plate and secure with 1" External Retaining Ring.
 - 5. Install Neutral Return Cam and #404 Woodruff Key. Secure with Flat Washer, Lockwasher and Screw.
 - 6. Install Transmission Pulley/Cooling Fan Assembly and loosely tighten the two (2) Set Screws (Pulley will have its final tightening when Traction Belt(s) are aligned).
- C. While supporting the new Hydro Transaxle Assembly, align Mounting Holes with their mating holes in the Power Unit Frame.
 - 1. Place the Spacer between the Hydro Transaxle and mounting surface of Frame. Insert the two (2) 3/8 - 16 x 4 3/4" Bolts thru the holes in top of the Frame, Spacer and Transaxle. Secure Bolts with Flat Washers and Locknuts. Torque to 31 Ft. Lbs. (42.16 N•m).
 - 2. Secure the Hydro Transaxle to the Bearing Mount Weldment with the eight (8) 1/4 - 20 x 5/8 Hex Flange Lock Screws. Torque to 8 Ft. Lbs. (10.88 N•m).
- D. Attach new Hydraulic Hoses to Transaxle.
- E. Reattach Power Transfer Shaft to PTO.
- F. Depress Idler Pulley and place Traction Belt(s) over Input Pulley. Move the Input Pulley on its Shaft until the Belt is aligned with Traction Pulley. Tighten the two (2) 5/16 - 18 x 5/16 Sq. Hd. Set Screws.
- G. Install the 5/16 - 18 x 2 1/2 Neutral Return Adjusting Bolt and Spring into the Neutral Adjusting Plate and Driveshaft Bracket.
- H. Reconnect the Hydrostatic Brake Rod to the Brake Arm.
- J. Reconnect Control Rod to Neutral Cam.
- K. Reinstall Rear Wheel.
- L. Fill Hydraulic Reservoir(s).
- M. Reconnect Battery (Refer to Figure 5.8).

Section VI

CASTER WHEEL/FRONT AXLE CHASSIS & BODY COMPONENTS

CONTENTS

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Section VI - CASTER WHEEL/FRONT AXLE, CHASSIS & BODY COMPONENTS

INTRODUCTION

Besides those instructions which detail the removal and installation of parts, this section also gives information about partial disassembly in order to more easily access the Z-RIDER's internal mechanisms. Take a moment to review this section. It will save you time when making adjustments or repairs.

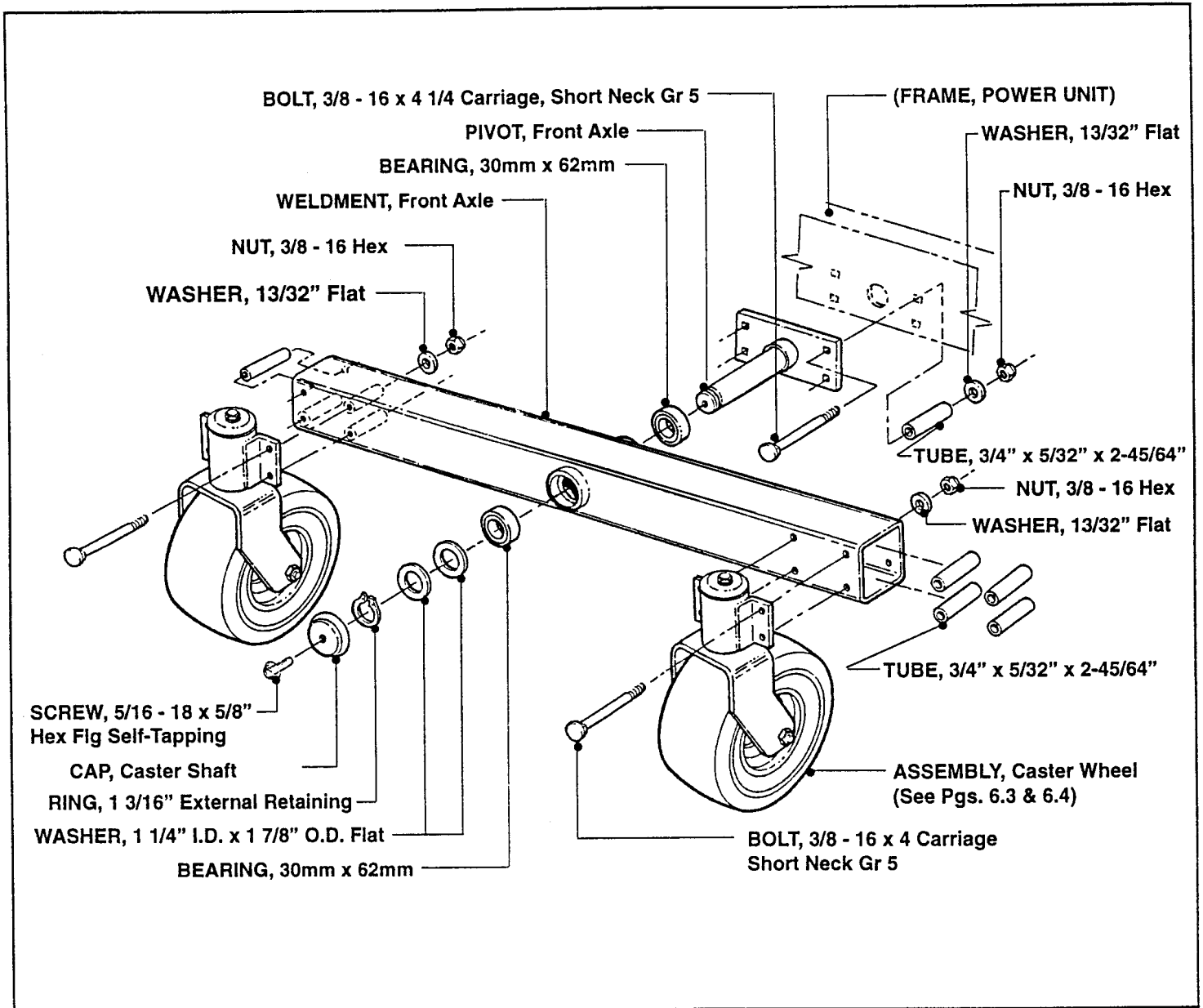


FIGURE 6.1

6.1 CASTER WHEEL/FRONT AXLE

Components of the Caster Wheel/Front Axle Assembly are shown in Figure 6.1 above.

A. REMOVAL: CASTER WHEEL/AXLE ASSEMBLY

1. Raise and support front of unit.
2. Remove 5/16 - 18 x 5/8" Hex Flg Screw from Pivot end.
3. Remove Caster Shaft Cap. Refer to Figure 6.1.
4. Remove 1-3/16 External Retaining Ring.
5. Remove two (2) 1-1/4" I.D. x 1-7/8" O.D. Flat Washers.
6. Using an assistant, remove the Assembly by pulling it forward and off the Front Axle Pivot. (See CAUTION on Page 6.3!)

Section VI - CASTER WHEEL/Front AXLE, CHASSIS & BODY COMPONENTS



CAUTION



When the Caster Wheel/Axle Assembly is free of the Pivot, it will tend to roll over. Be careful when removing!

- Reverse above steps to install Caster Wheel/Axle Assembly.

B. REPLACEMENT OF AXLE PIVOT BEARINGS

Before attempting to remove/replace Axle Pivot Bearings, either remove both Caster Wheel Assemblies (or) secure the Front Axle Weldment - with Casters attached - in a vise to prevent movement while servicing.

- Remove existing Bearings by driving them to the outside with a Drift Pin. (The Bearing bosses have a machined seating surface. Bearings cannot be removed by driving them inward). Refer to Figure 6.1.
- Inspect insides of both Bearing boss surfaces for any dirt or damage. Use emery cloth to eliminate any burrs. Clean insides thoroughly with an approved solvent, wipe dry, then lubricate lightly with GP grease.
- Press new Bearings (Part No. 3-5602) into bosses until they bottom-out.
- Lubricate Pivot Shaft and reinstall Axle Assembly.

C. REPLACEMENT OF FRONT AXLE PIVOT

- Remove Caster Wheel/Axle Assembly (refer to A., Steps 1 thru 6).
- Remove the four (4) 3/8 - 16 Hex Nuts, 13/32" Flat Washers and 3/8 - 16 x 4" Carriage Bolts from the Axle Pivot and Power Unit Frame. Refer to Figure 6.1.

NOTE

When removing the Nuts, Washers and Carriage Bolts from the Front Axle Pivot, the Spacer Tubes may remain in place. This is O.K. - their removal is not necessary in order to replace the Axle Pivot. Refer to Figure 6.1.

- Install new/repared Front Axle Pivot to lower Frame by installing the two (2) Top Carriage Bolts first. (If the Spacer Tubes did fall out during disassembly, install the Lower Tubes, Bolts, Washers and Nuts first. This makes the Upper Tubes easier to install).
- Reinstall Caster Wheel/Axle Assembly.

6.2 CASTER WHEEL ASSEMBLY

Components of the Caster Wheel Assembly are shown in Figure 6.2.

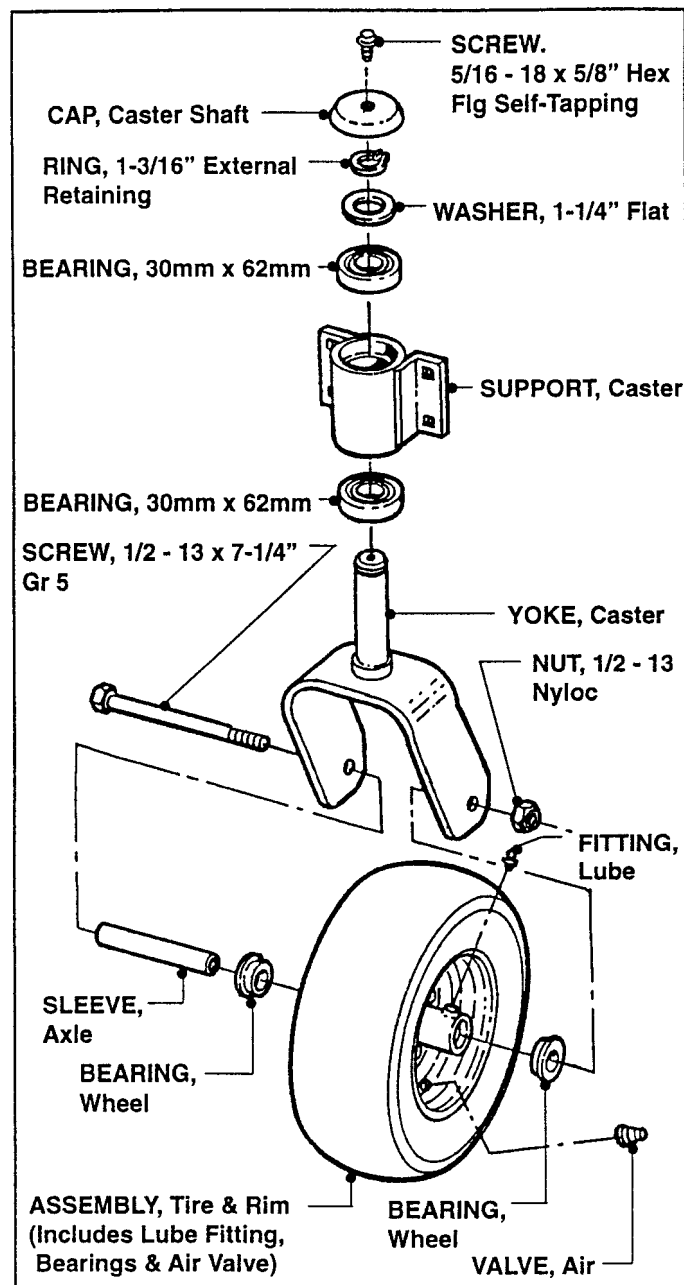


FIGURE 6.2

A. REPLACEMENT OF CASTER SUPPORT BEARINGS

- Raise and support Front Axle.
- Remove 5/16 - 18 x 5/8" Hex Fig Screw.
- Remove Caster Shaft Cap.
- While supporting Wheel Assembly from underneath, remove the 1-3/16" External Retaining Ring from top of Caster Yoke.
- Remove 1-1/4" Flat Washer.
- Lower the assembled Caster Yoke and Wheel out of the Caster Support.

(Continued on following page)

Section VI - CASTER WHEEL/FRONT AXLE, CHASSIS & BODY COMPONENTS

7. Drive old Bearings out with a Drift Pin.
8. Inspect Bearing surfaces in Caster Support. Remove any burrs or nicks with emery cloth. Clean insides thoroughly with an approved solvent, then wipe dry. Lubricate lightly with GP grease.
9. Lightly grease new Bearings, then press into Caster Support until they bottom-out.
10. Reinstall Caster Wheel in reverse order of removal.

B. REPLACEMENT OF CASTER WHEEL BEARINGS

1. Remove 1/2 - 13 x 7-1/4" Screw and 1/2 - 13 Nyloc Nut from Caster Wheel. Refer to Figure 6.2.
2. Remove Caster Wheel.
3. Remove Axle Sleeve and Wheel Bearings.

4. Clean, inspect and perform any required maintenance on Bearing surfaces of Wheel.
5. Lightly grease, then install new Bearings.
6. Reinstall Axle Sleeve.
7. Reinstall Caster Wheel to Yoke.
8. Lubricate Caster Wheel with Kendall NLGI No. 2 Lithium Grease or equivalent.
9. Check tire pressure - it should be 12 psi.

C. REPLACEMENT OF OTHER COMPONENTS

Items such as the Tire & Rim Assembly, Caster Yoke, Spacer Tubes and Retaining Hardware may be replaced with new parts during any reassembly sequence. Consult the Parts Manual for replacement numbers. Refer to Figure 6.2.

6.3 SEAT & SEAT SUPPORT ASSEMBLIES

Shown below in Figure 6.3 are the Seat Assembly Components for all models of the Mid Mount Z-Rider except Model MZM2200K. (They are shown in Figure 6.4 on Page 6.5).

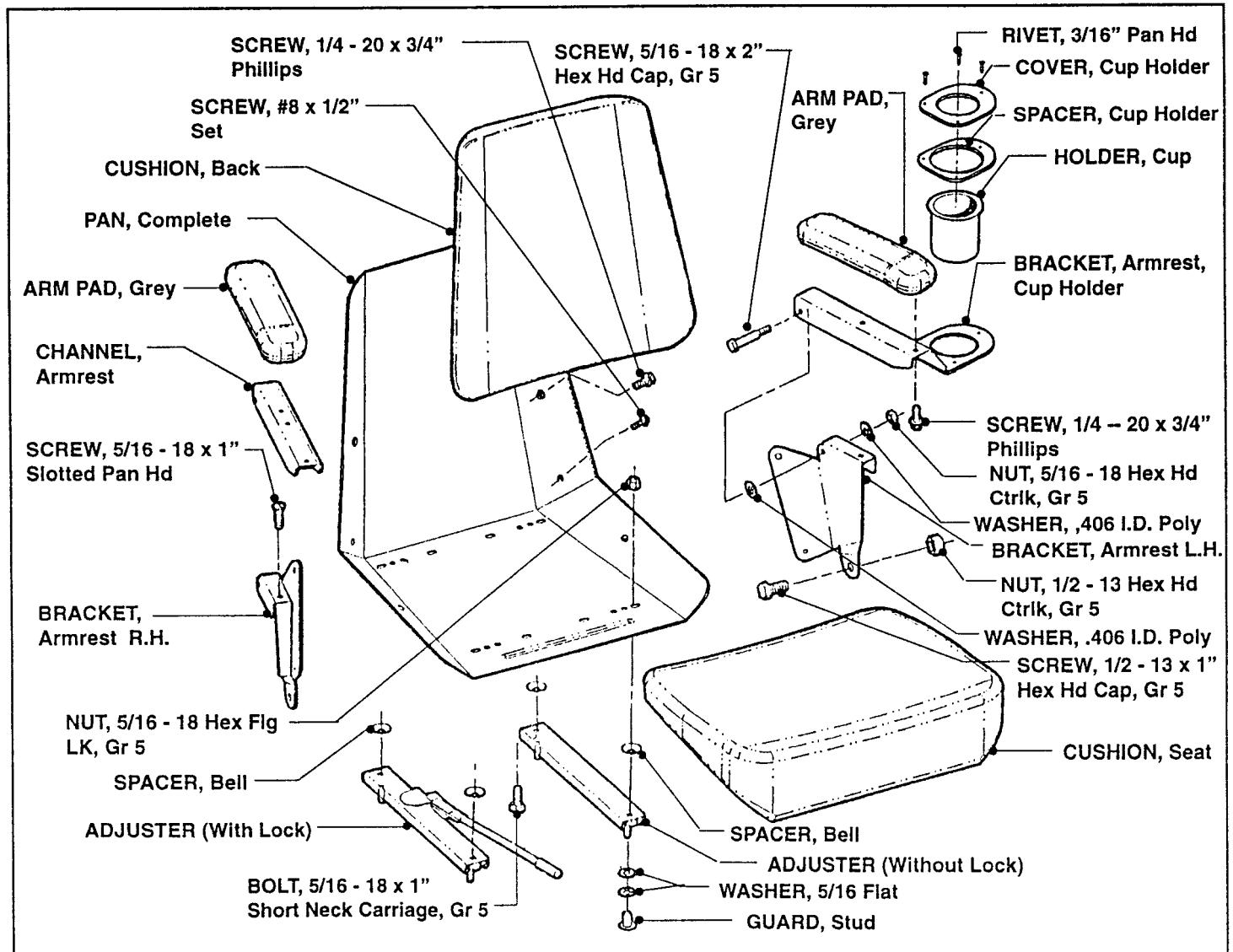


FIGURE 6.3

Section VI - CASTER WHEEL/Front AXLE, CHASSIS & BODY COMPONENTS

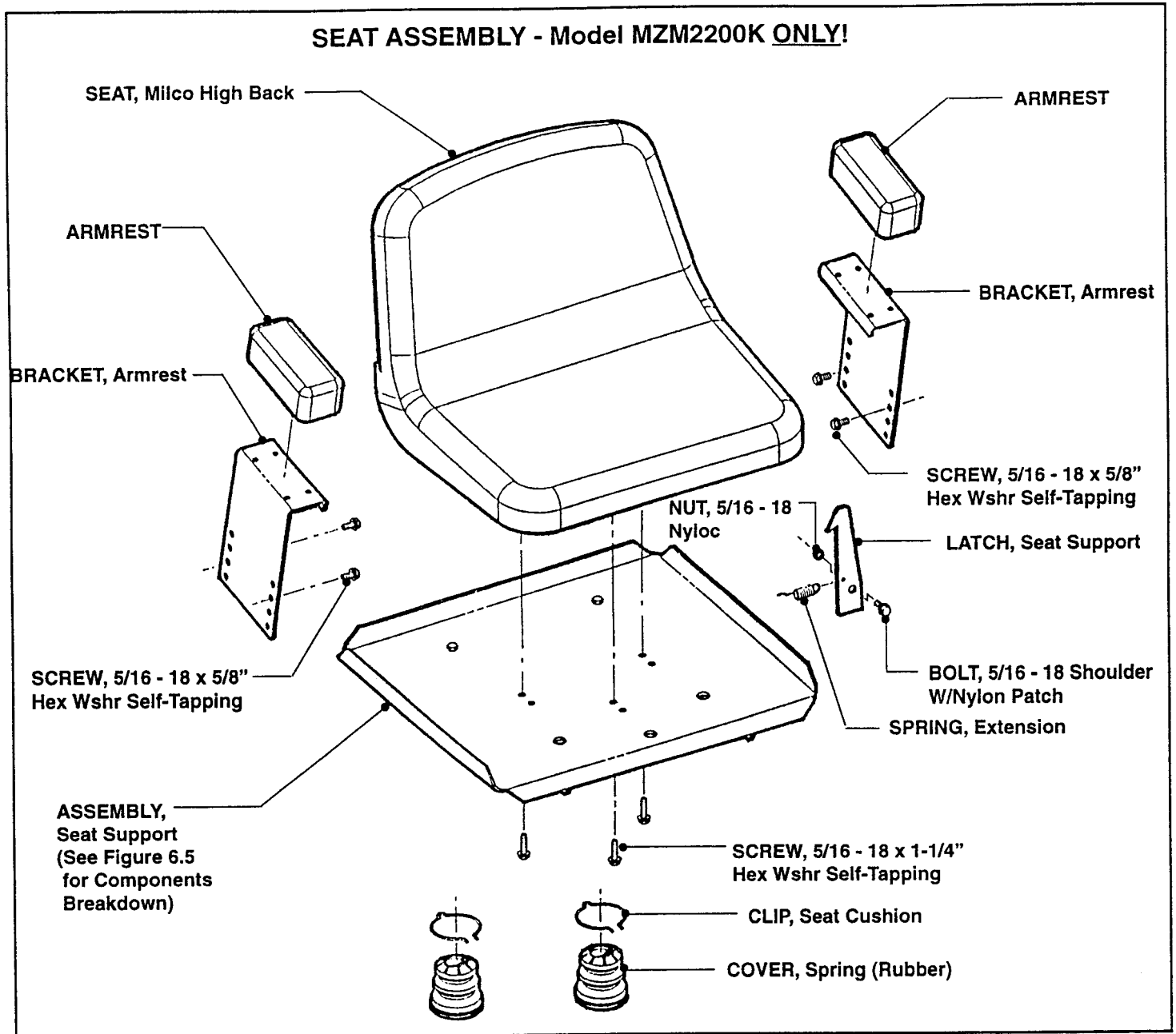


FIGURE 6.4

A. REMOVING SEAT & SEAT SUPPORT ASSEMBLIES

1. Tilt Seat Assembly forward, then disconnect Wiring Harness from Switch. See Figure 6.6 on Page 6.7.
2. Remove 5/16 - 18 Flanged Lock Nut and Wiring Harness Clamp.
3. Remove Hairpin from Seat Pivot Rod, then remove Rod.
4. Remove the assembled Seat and Seat Support from Unit (refer to Figures 6.3, 6.4 & 6.5).

B. SEPARATING SEAT & SEAT SUPPORT

(Assemblies do not have to be removed from Unit in order to separate them).

1. Disconnect Wiring Harness from Switch. Refer to Figure 6.6 on Page 6.7.
2. Remove Flanged Lock Nut and Wiring Harness Clamp.
3. Remove the two (2) front 5/16 - 18 Hex Nyloc Nuts first.
4. Next, while holding Seat Assembly, remove the two (2) 5/16 - 18 Hex Nyloc Nuts from the rear of the Support Plate.

(Continued on Page 6.7).

Section VI - CASTER WHEEL/FRONT AXLE, CHASSIS & BODY COMPONENTS

SEAT SUPPORT ASSEMBLIES

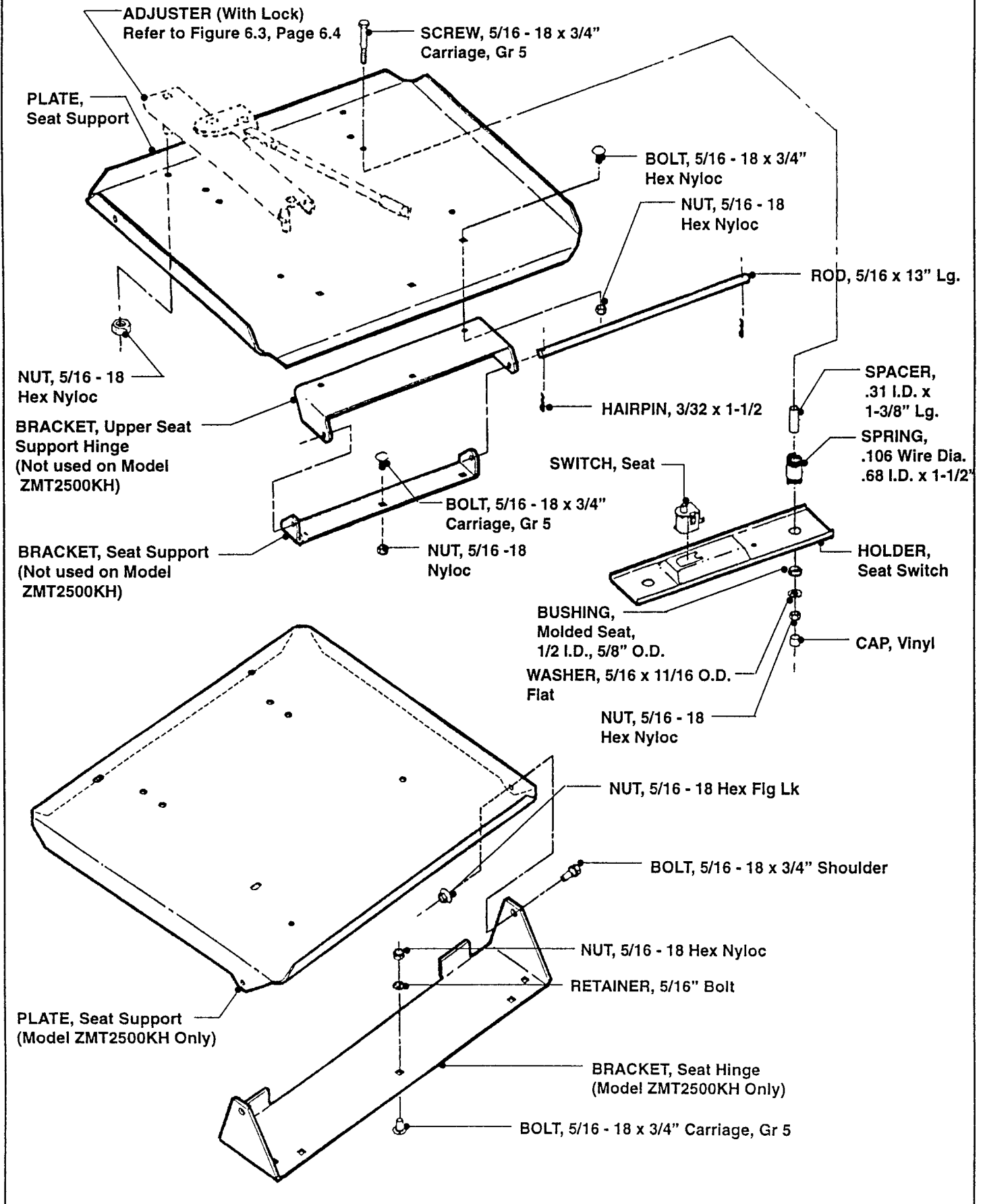


FIGURE 6.5

Section VI - CASTER WHEEL/FRONT AXLE, CHASSIS & BODY COMPONENTS

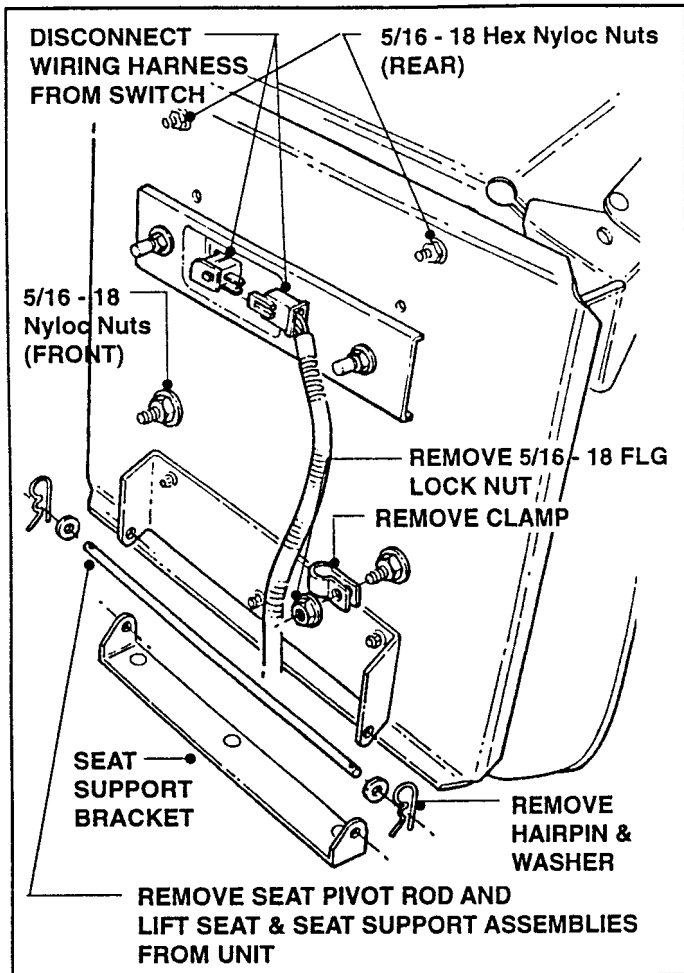


FIGURE 6.6

NOTE

Some Models will have a Nut & bolt on both sides of the Seat Support Bracket, rather than a Seat Pivot Rod.

(Continued from Page 6.5, B. SEPARATING SEAT & SEAT SUPPORT)

5. Remove Seat Assembly from Seat Support. If Seat Pan requires replacement, it must be ordered as Part No. 5-4117, SEAT ASSEMBLY. See SNAPPER PARTS MANUAL No. 06110, Pgs. 46 & 47.

C. SEAT SWITCH REPLACEMENT

(Seat Assembly must be separated from Seat Support before Switch can be replaced. See "B. SEPARATING SEAT & SEAT SUPPORT").

1. Remove Vinyl Caps from ends of screws.
2. Remove the two (2) 5/16 - 18 Hex Nyloc Nuts.
3. Remove the two (2) 5/16 x 11/16" O.D. Flat Washers.
4. Remove Seat Switch Holder from Studs. Refer to Figures 6.5 and 6.6.

NOTE

Make sure not to misplace the Spacers, Springs or Molded Seat Bushings when removing/installing the Seat Switch Holder.

5. Remove Seat Switch.
6. Install new Seat Switch (Part No. 1-7590).
7. Reinstall components in reverse order.

D. REPLACING COMPONENTS OF THE SEAT & SEAT SUPPORT ASSEMBLIES

Figures 6.3, 6.4 & 6.5 show all components of the Seat & Seat Support Assemblies. Replacement of any parts is a straightforward Removal/Installation operation. Consult the Parts Manual for required part numbers.

6.4 CHASSIS & BODY COMPONENTS

A. FOOTREST ASSEMBLY REMOVAL/REPLACEMENT

Components of the Footrest Assembly are shown in Figure 6.7 on Page 6.8.

1. Remove the Floor Pan by lifting it at the rear and pulling it up and away from the Footrest Bracket.
2. Other Footrest components are attached to the Frame with various fasteners and may be removed and replaced as shown in Figure 6.7.
3. To remove and replace a worn or damaged Friction Pad (Non-skid Foot Pad) proceed as follows:
 - a) Using a stiff putty knife, begin lifting the Pad at one end.
 - b) If necessary, use a plastic squirt bottle, filled with mineral spirits, to help loosen the adhesive between the Pad and Metal Bracket.
 - c) Continue to lift the Pad by working the putty knife back and forth across the width of the Pad. Use the mineral spirits as required.
 - d) Remove the worn Pad from the Footrest Bracket and scrape off any residual adhesive.
 - e) Use a shop cloth and alcohol to clean the remaining adhesive from the Pad mounting area.
 - f) With its protective backing still in place, lay the new Friction Pad in place on the cleaned surface.
 - g) Mark two (2) location points at the end of the Pad.
 - h) Peel back the protective covering on the Pad on one side only. Align the Pad ends with the location marks and press down on the Pad to secure in place.

(Continued on following page)

Section VI - CASTER WHEEL/FRONT AXLE, CHASSIS & BODY COMPONENTS

- j) Slowly pull out the protective backing while pressing the Pad into place.
- k) After the Pad has been applied, press it down firmly with a flat, metal object.

NOTE

As shown below in Figure 6.7, there are three (3) different Floor Pans for the Mid Mount Z-Riders. Consult the appropriate Parts Manual when ordering a replacement Floor Pan.

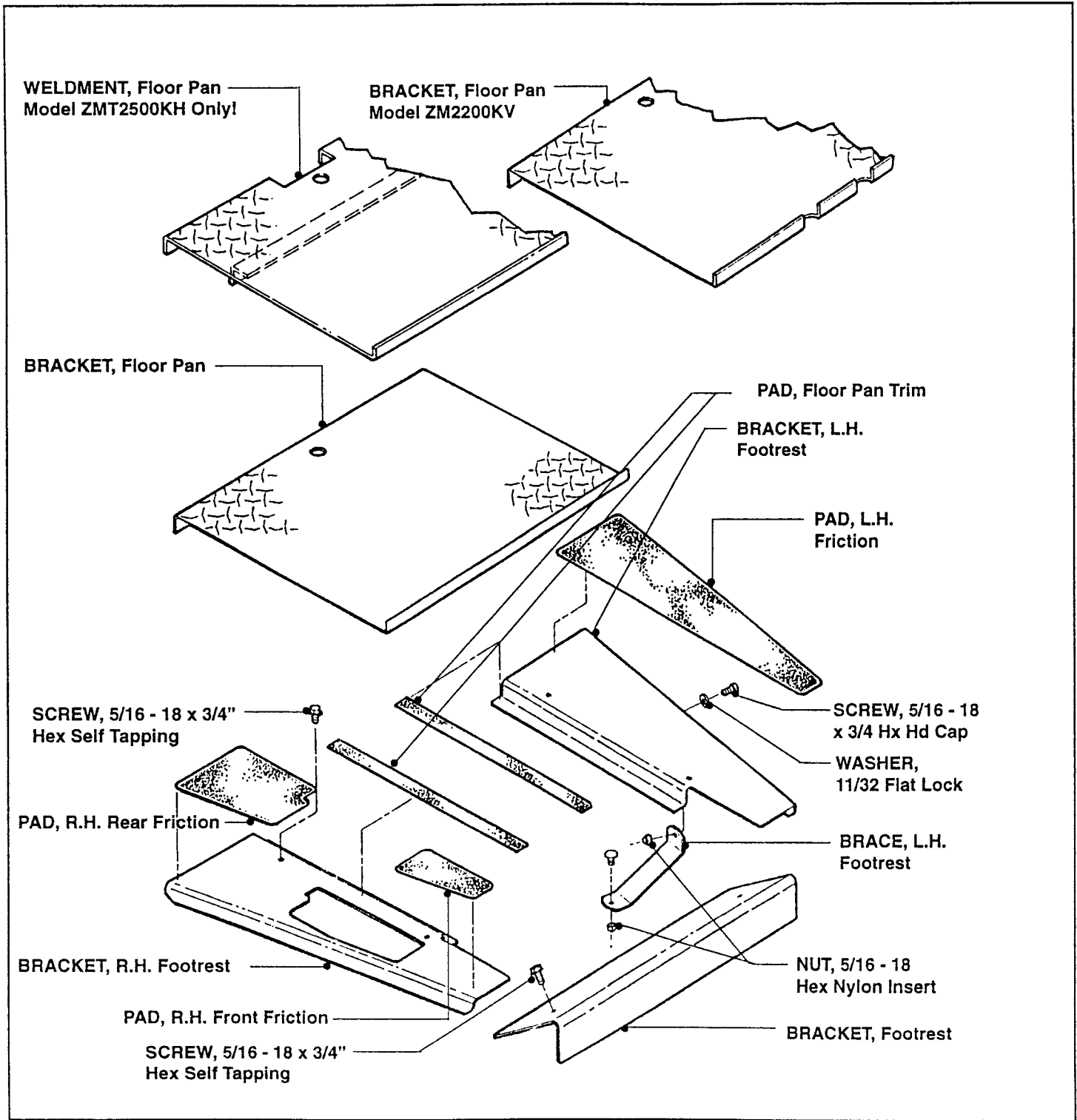


FIGURE 6.7

Section VI - CASTER WHEEL/FRONT AXLE, CHASSIS & BODY COMPONENTS

(Continued from previous page - CHASSIS & BODY COMPONENTS)

B. UPPER CHASSIS & SEAT LATCH ASSEMBLY

Other than the Drivetrain Screen Guard and perhaps the Seat Support Latch, the components of the Upper Chassis are not likely to require replacement. See Figure 6.8 for component locations

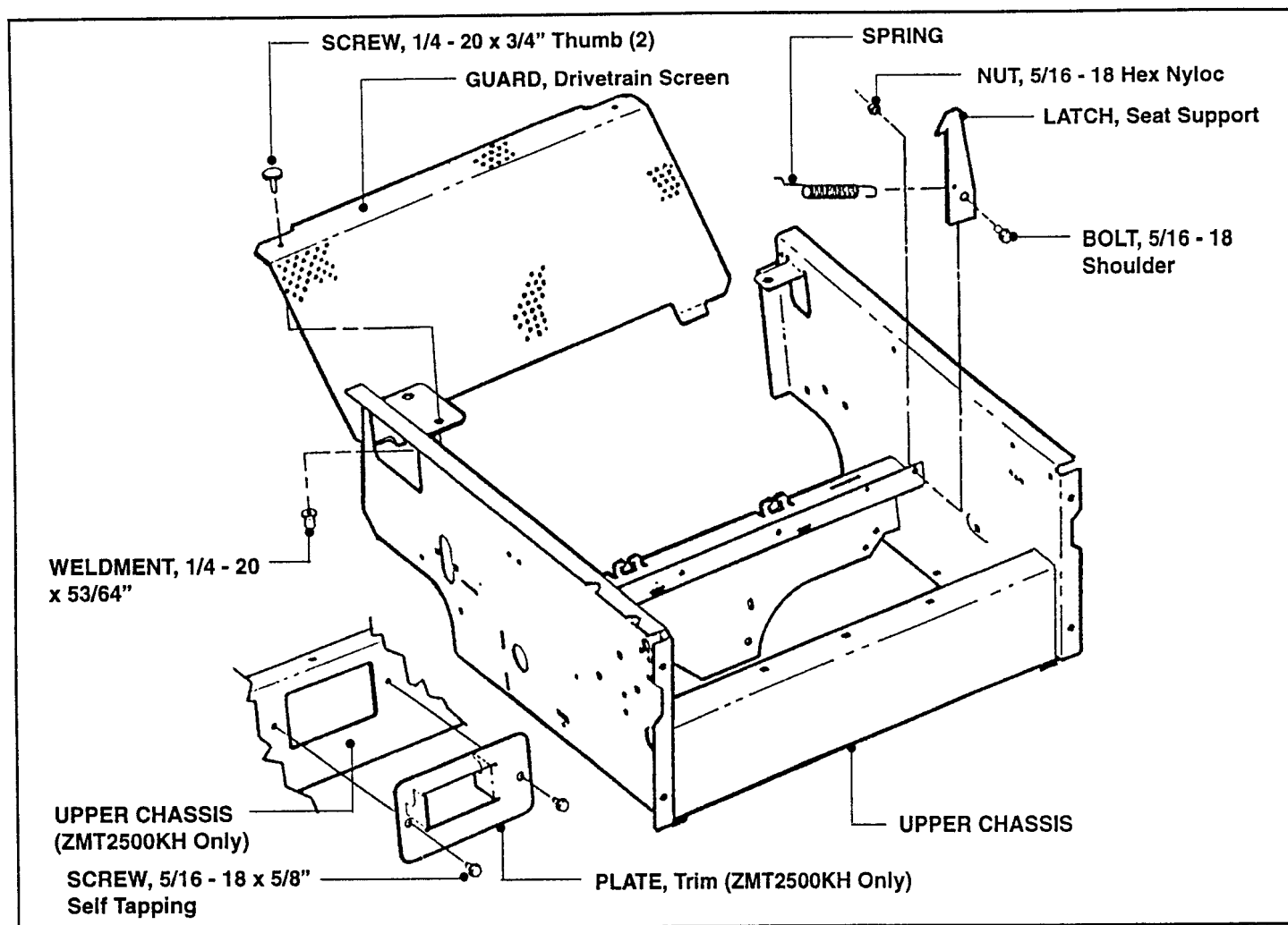


FIGURE 6.8

C. LOWER CHASSIS (FRAME)

The different models of the MID MOUNT Z-RIDER will be equipped with one of the following three (3) frames:

POWER UNIT MODEL No.	FRAME PART No.	REFERENCE
ZM2200K	4-2792	SNAPPER PARTS MANUAL
ZM2500K	"	
ZM2500KH	"	
ZMT2500KH	5-8330	No. 06110
MZM2200KH	4-7029	Page 20

Section VI - CASTER WHEEL/FRONT AXLE, CHASSIS & BODY COMPONENTS

D. R.H. FENDER REMOVAL (Fender Remains Assembled)

This removal is for access to the following items:

1. Park Brake Lock
2. Dampener Cylinders (2)
3. Ball Joint Link Assemblies
4. Deck Timing Rod (Lift System)
5. Auxiliary Fuel Tank

1. Disconnect the Battery. Remove NEGATIVE (-) BLACK Cable first and POSITIVE (+) RED Cable last. Secure Cables away from the Battery. See Figure 6.9.

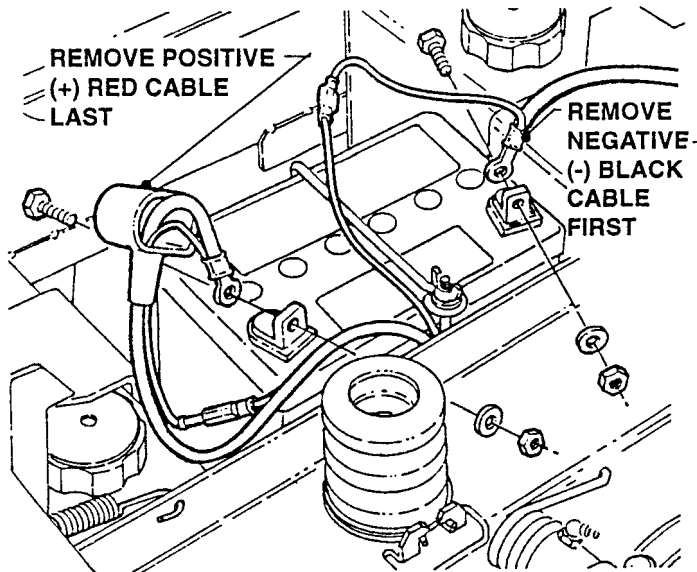


FIGURE 6.9

2. Remove the two (2) screws from the Control Panel.
3. Lift up on outer side of Panel and disengage the Fender Panel.
4. Lower Panel into opening. See Figure 6.10.

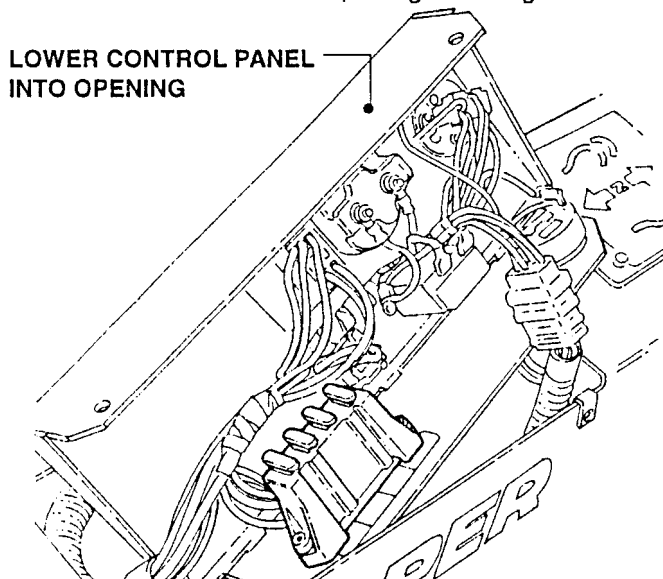


FIGURE 6.10



CAUTION



If Battery has not been disconnected, Control Panel wires will be "HOT".
AVOID GROUNDING!

5. Remove Screws from Fender at locations shown in Figure 6.11.

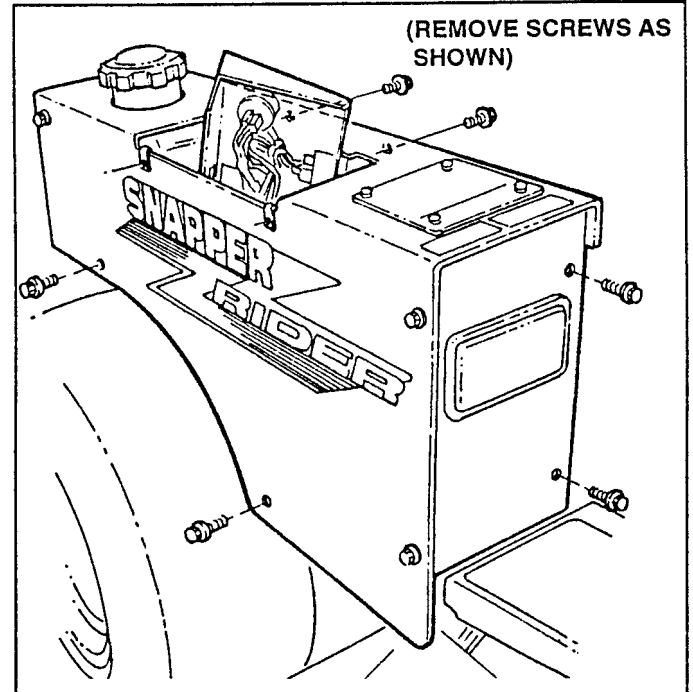


FIGURE 6.11

6. Gently tap inward on Headlight Lens to free Assembly from Bezel.
7. Push Headlight inside Fender. Lay Lens and Bezel aside for later reassembly.
8. Remove Fuel Cap (Models with Auxiliary Fuel Tank).



WARNING!



Place a clean piece of cloth over Filler Spout of Fuel Tank until Fender has been removed, then replace Fuel Cap.

9. Remove assembled Fender by lifting it up and slightly forward.
10. Replace Fuel Cap.

(Continued of following page)

Section VI - CASTER WHEEL/FRONT AXLE, CHASSIS & BODY COMPONENTS

E. L.H. FENDER REMOVAL (Fender Remains Assembled)

This removal is for access to the following items:

1. Left Main Fuel Tank.
2. Throttle Control Assembly.
3. Choke Control Assembly.

1. Remove Handle. See Figure 6.12.

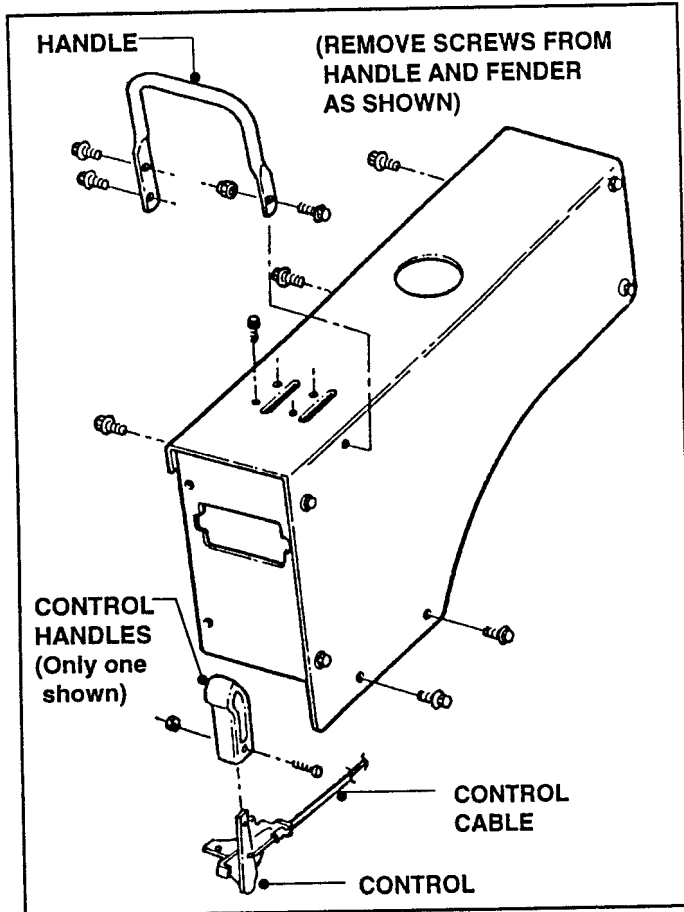


FIGURE 6.12

2. Remove Screws from Fender at locations shown above in Figure 6.12.
3. Gently tap inward on Headlight to free Assembly from Bezel.
4. Push Headlight inside Fender. Lay Lens and Bezel aside for later reassembly.
5. Disconnect Choke and Throttle Cables from Engine, OR remove Choke and Throttle Control Assemblies per Steps 6 thru 8.
6. Remove the Handles from the Choke and Throttle Controls.
7. Remove the four (4) Screws which secure the Choke and Throttle Controls to the Fender.
8. Lower Control Assemblies into Fender Well.
9. Remove Fuel Cap.



WARNING!



Place a clean piece of cloth over Filler Spout of Fuel Tank until Fender has been removed, then replace Fuel Cap.

10. Remove assembled Fender by lifting it up and slightly forward.
11. Replace Fuel Cap.

Section VII

DECK LIFT SYSTEM

CONTENTS

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Introduction	7.3
Lubrication	7.3
Maintenance	7.3
Adjustments	7.3
Parts Drawing	7.4
Parts List	7.5
NOTES	7.6

Section VII - DECK LIFT SYSTEM

INTRODUCTION

The SNAPPER MID MOUNT Z-RIDER features a near-vertical mounted Mower Deck. Since the Deck hangs vertically, the Deck Lift System needs only a short range of motion to accomplish its design purpose of adjusting the mowers cutting height.

As a result, the Deck Lift System is very rugged and not subject to damage. It requires only periodic adjustment and maintenance. The following information in this section will cover the lubrication, maintenance and adjustments for the Deck Lift System. Also included are procedures for the removal and replacement of any damaged components.

7.1 LUBRICATION

- A. When servicing, clean, then lubricate all Pivot points and sliding surfaces with a light coat of GP grease. See Figure 7.1 for an example.

- B. For those bearing surfaces that cannot be greased, lubricate with 30 wt. oil.
- C. Spray all Clevis Pin connections and both Assist Lift Springs with a rust inhibitor. See Figure 7.2.

7.2 MAINTENANCE

- A. Check all connections for wear or looseness.
- B. Check for any loose or broken parts.
- C. Check level of Deck (if leveling is required, refer to Section VIII, Mower Deck Assemblies).

7.3 ADJUSTMENTS

Adjustments to the Deck Lift System are primarily those made when adjusting Mower Deck level and cutting height. Refer to Section VIII, Mower Deck Assemblies, for this information.

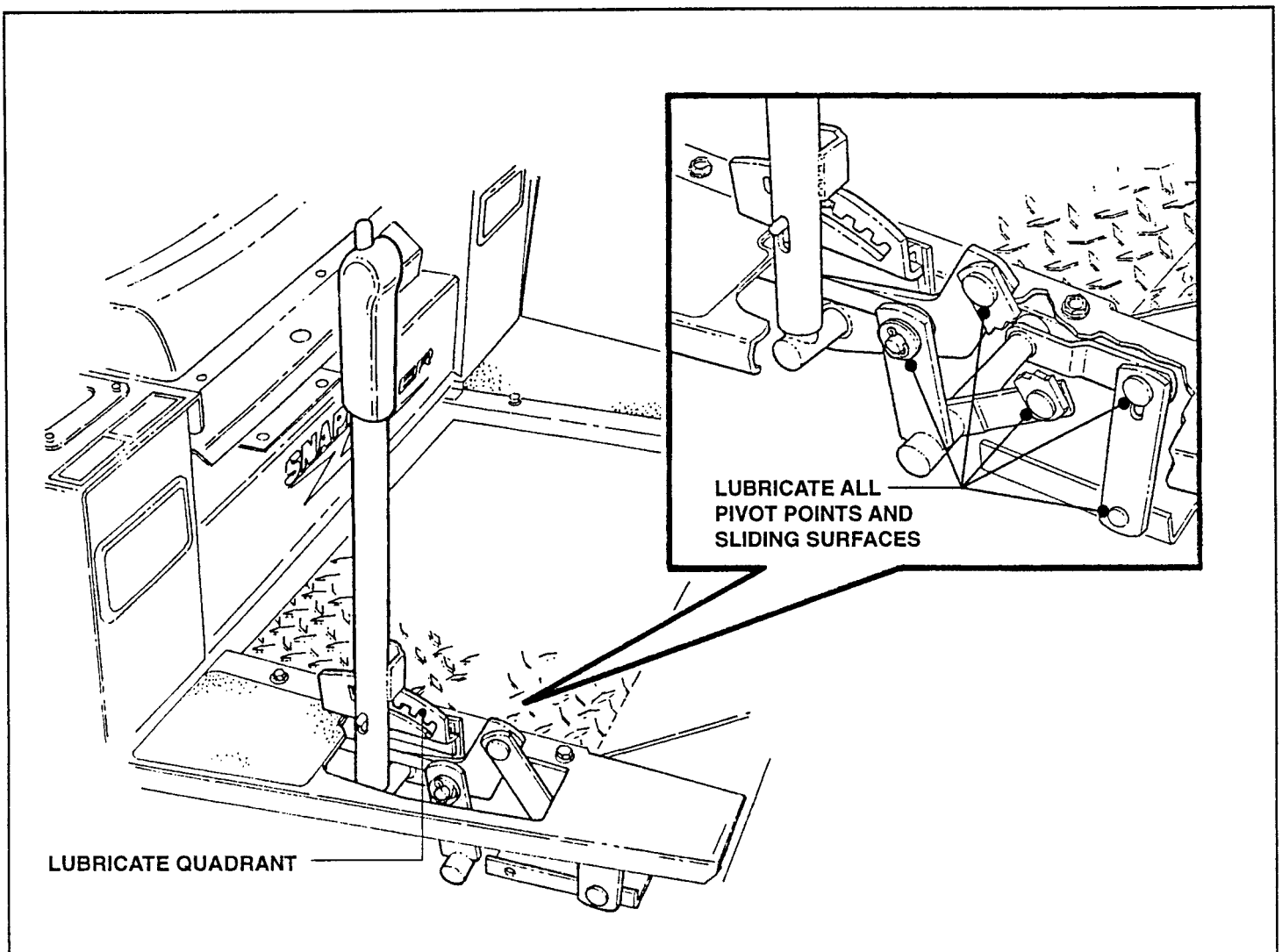


FIGURE 7.1

Section VII - DECK LIFT SYSTEM

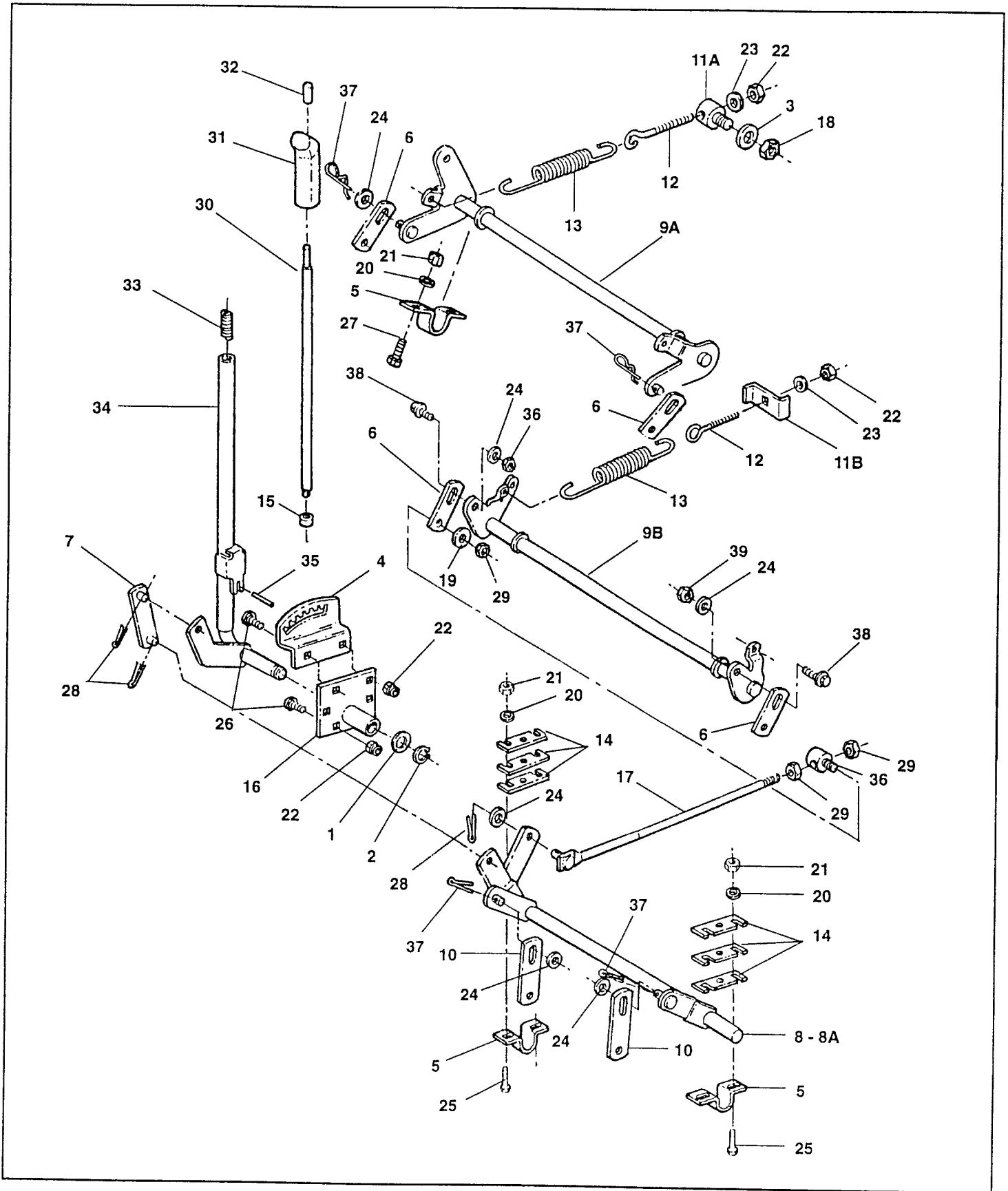


FIGURE 7.2

Section VII - DECK LIFT SYSTEM

ITEM	PART NO.	DESCRIPTION
1	1-4354	WASHER, 29/32" I.D. x 1-1/4" O.D.
2	1-5020	RING, 7/8" External Retaining
3	3-4453	WASHER, 25/32" - 1-1/2" (2)
4	4-3801	BRACKET, Deck Height Quadrant
5	4-3803	BRACKET, Deck Support (4)
6	4-3819	PLATE, Rear Link (4.95" Long) (2) (ZM Series 0 Models Only)
--	7-2422	PLATE, Rear Link (4.33" Long) (2) (ZMT, MZM & ZM Series1 Models)
7	4-3823	LINK, Lift Handle
8	4-3827	LIFT, Front Deck(ZM Series 0 Models Only)
8A	5-8741	LIFT, Front Deck (ZMT, MZM & ZM Series 1 Models)
9A	4-6404	WELDMENT, Shaft Deck Lift (ZM Series 0 Models Only)
9B	5-8225	WELDMENT, Shaft Deck Lift (ZMT, MZM & ZM Series 1 Models Only)
10	7-3196	PLATE, Front Link (5.45" Long) (2) (ZM and ZMT Models Only)
--	7-3197	PLATE, Front Link (5.20" Long) (2) (MZM Model Only)
11A	4-4859	SWIVEL, Spring Anchor (ZM Models Only) (2)
11B	4-6412	BRACKET, Spring Adjustment (2) (ZMT, MZM & ZM Series 1 Models)
12	4-4860	EYEBOLT, 5/16 - 18 x 3" (2)
13	7-2225	SPRING, Extension Lift Assist (2)
14	4-4870	PLATE, Shim (6)
15	1-5019	PLUG, Rod
16	5-4543	PLATE, Pivot (Includes 4-3804 Weldment, 1-3864 Lube Fitting and two 1-8289 Sleeve Bearings)
17	4-4857	ROD, Timing
18	9-0820	NUT, 3/4 - 16 Hex Jam Lock (2)
19	9-1194	WASHER, 17/32" x 1-1/2"
20	9-1296	WASHER, 11/32" x 11/16" (8)
21	9-1298	NUT, 5/16 - 18 Hex Nylon Insert (8)
22	9-1299	NUT, 3/8 - 16 Hex (7)
23	9-1514	WASHER, 13/32" x 13/16" (2)
24	9-1587	WASHER, 17/32" x 1-1/16" (8)
25	9-1612	BOLT, 5/16 - 18 x 1-1/2" Carriage Grade 5 (4)
26	9-1640	BOLT, 3/8 - 16 x 1" Carriage (5)
27	9-1714	BOLT, 5/16 - 18 x 1-1/2" Carriage Grade (4)
28	9-1809	PIN, 1/8" x 1-1/4" Cotter (3)
29	9-1894	NUT, 1/2 - 13 Hex Center Lock Grade 5 (3)
30	4-4833	ROD, Lift Lever
31	1-9363	GRIP, Lift Lever Handle
32	1-4361	CAP, Lift Rod
33	1-4432	SPRING
34	4-3833	LEVER, Deck Lift
35	1-4437	PIN, 1/4" x 2-1/4" Groove
36	4-4858	SWIVEL, Timing Rod
37	9-1947	PIN, 1/8 x 1/2" Hair (4)
38	9-2017	BOLT, 1/2 - 20 Shoulder (ZMT & ZM Series 1 Models) (4)
39	9-0559	NUT, 1/2 - 20 Hex Jam (ZMT & ZM Series 1 Models) (2)
40	9-1508	BOLT, 5/16 - 18 x 3/4" Short Neck Carriage, Grade 5 (ZMT & ZM Series 1 Models) (6)

Section VIII

52" & 61" MOWER DECK

ASSEMBLIES

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Section VIII - 52" & 61" MOWER DECK ASSEMBLIES

INTRODUCTION

This Section will begin by repeating that portion of TROUBLESHOOTING (Sect. II, Pg. 2.3) which deals with mowing problems. In doing so, it will elaborate on the "corrective action" measures taken to solve those problems by giving step-by-step instructions for the adjustment, disassembly, repair or replacement of those components causing the problems.

8.1 PROBLEM - BLADE(S) NOT CUTTING

Move unit to a level, well-ventilated area.

Check the obvious first!

Check Blades. Visually inspect the Deck Drive Belts and Mower Drive Belt for any sign of wear or other damage. Also, check the Power Transfer Shaft for damage and proper connection.

With Engine "OFF" and Spark Plug Wires disconnected, have an assistant to disengage the spring-loaded Deck Idler Pulley while you turn each Spindle Pulley by hand. Blades should turn freely as you turn the individual pulleys. If not, there is a problem within the Cutter Housing Assembly. (Refer to Sect. IX, CUTTER HOUSING/BLADE ASSEMBLY).

After having made the visual check and finding no apparent problems, release the Deck Idler Pulley, attach the Spark Plug Wires, set the Park Brake and start the Engine.

After Engine has warmed-up, pull the Blade Switch Knob out into the "ON" position to engage mower blades. If mower blades *DO ENGAGE*, proceed to Step 8.2 PROBLEM - CUTTING GRASS IMPROPERLY.

If Mower Blades *DO NOT ENGAGE*, continue as follows, one-step-at-a-time, until problem is solved.

A. FUSE CHECK

1. Turn Engine "OFF".
2. Remove screws from Control Panel, located on top of R.H. Fender.
3. Lift Control Panel upward to expose Fuse Panel underneath.



CAUTION



Avoid accidental grounding of wires! Without the Battery being disconnected, the Wiring System will be "HOT"!

4. Check the 7.5 Amp PTO Fuse. Replace as required. See Figure 8.1.

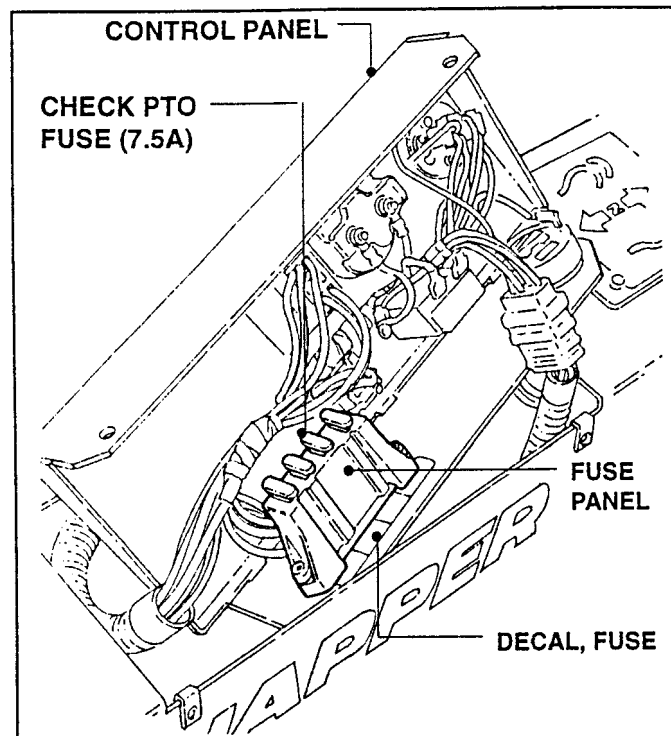


FIGURE 8.1

B. PTO SWITCH TEST (See Section III - ELECTRICAL)

C. DECK DRIVE BELTS (ADJUSTMENT)

If the Deck Drive Belts are slipping, adjust Belt tension as follows:

1. Using a suitable pry bar, disengage the Torsion Spring from the Idler Arm Weldment. See Figure 8.2.

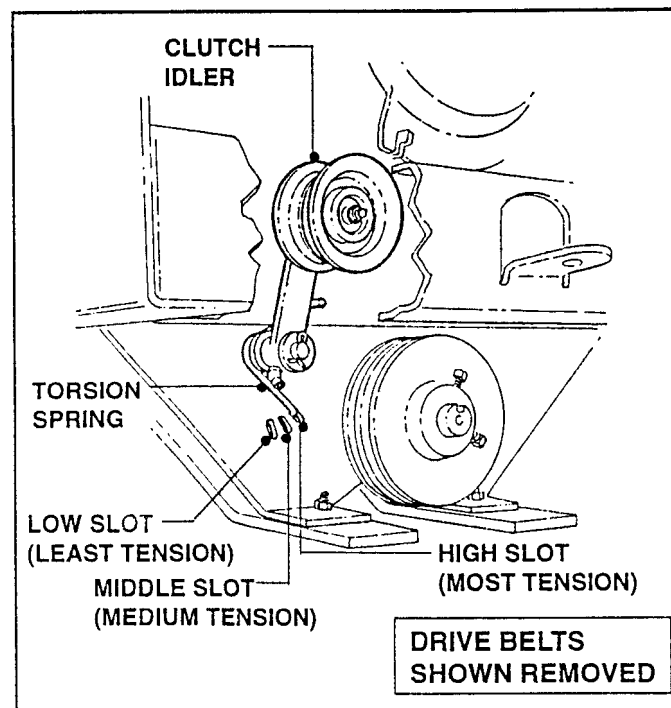


FIGURE 8.2

(Continued on Following Page)

Section VIII - 52" & 61" MOWER DECK ASSEMBLIES

2. Remove lower end of Torsion Spring from its slot location and place in a higher slot to increase belt tension (a lower slot will decrease belt tension).
3. Reattach Torsion Spring to Idler Arm Weldment. Refer to Figure 8.2.

D. DECK DRIVE BELTS (REPLACEMENT)

If the Deck Drive Belts which drive the Power Transfer Shaft require replacement, proceed as follows:

1. Disconnect Wiring Pigtail between Clutch and Main Wiring Harness. See Figure 8.3.

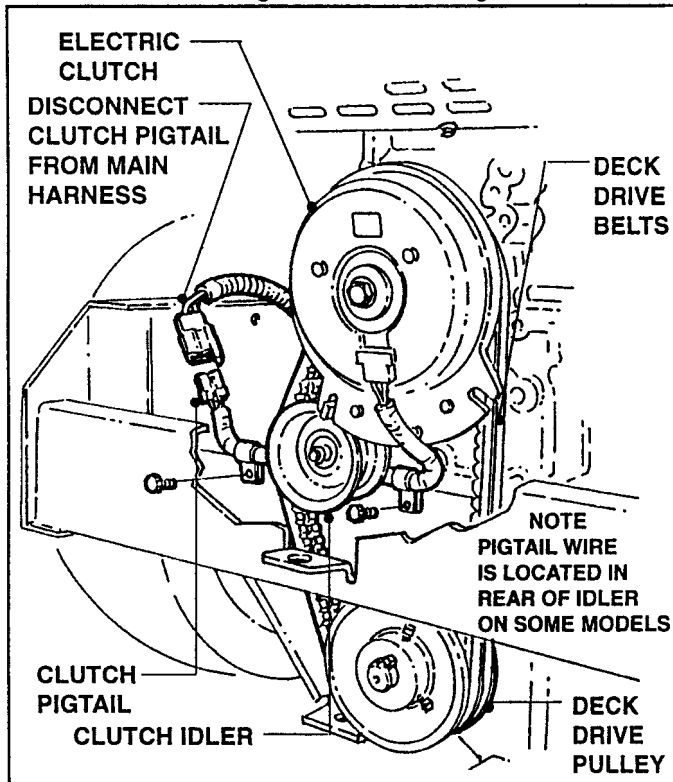


FIGURE 8.3

NOTE

Some models of the MZM do not require disconnection of Wiring Harness for Belt removal/replacement.

2. Depress Clutch Idler and remove both Deck Drive Belts.
3. Replace with new Belts and reconnect Pigtail to Wiring Harness.

E. PART No.s - DECK DRIVE BELTS

- 3-5543 Belt, Deck Drive (HA 36.5 Effective Lgth.)
- 7-2293 Belt, Deck Drive (AX 38.5 Effective Lgth. - Model ZMT2500KH Only)

F. MOWER DRIVE BELT

Replace Mower Drive Belt as follows:

1. Lower Deck to lowest setting.
2. Remove Floor Pan to gain access to Mower Belt.

See Figure 8.4.

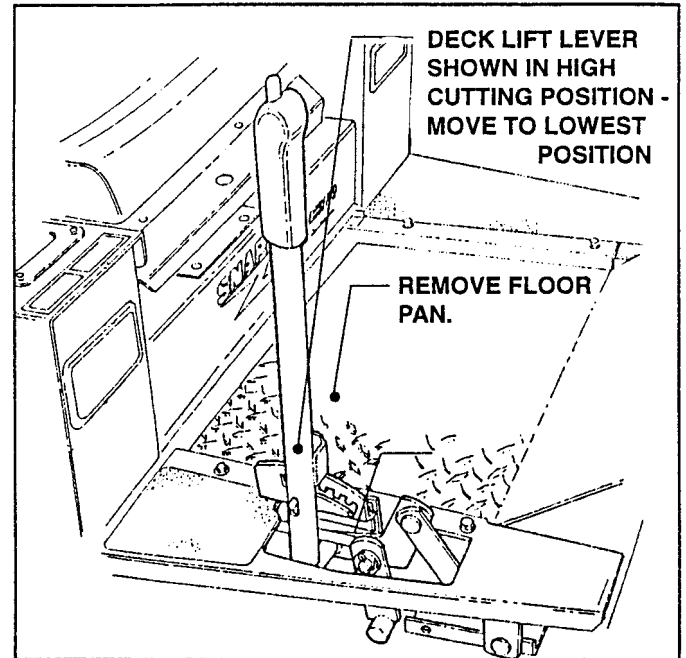


FIGURE 8.4

3. Remove old Belt.
4. Route new Belt around Blade Pulleys and Idler Pulley in the same position as old Belt was removed. It may be necessary to use a pry bar to pull Idler Pulley back to install Belt. See Figure 8.5.
5. Reinstall Spindle Covers and Floor Pan.

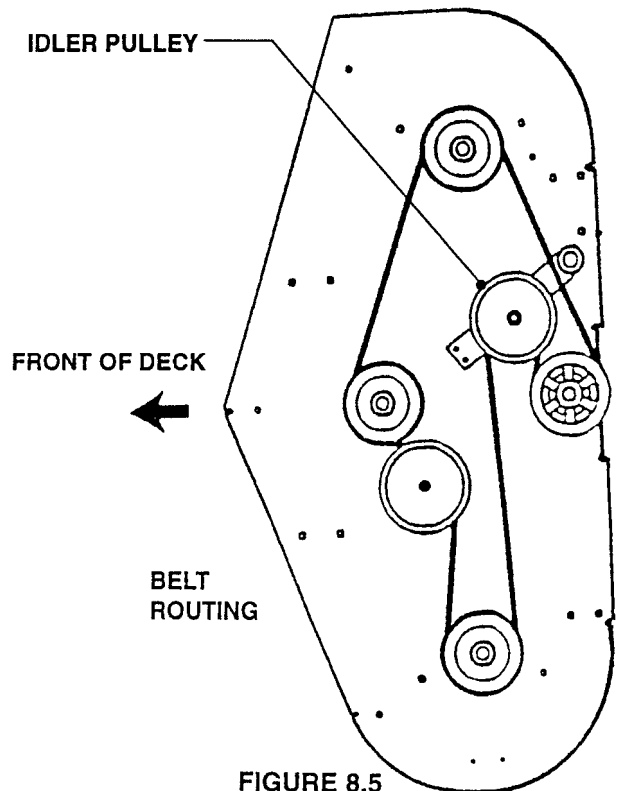


FIGURE 8.5

G. PART No.s MOWER DRIVE BELT

- 4-2776 BELT, 52" HB (122")
- 3-5542 BELT, 61" HB (134 1/2")

Section VIII - 52" & 61" MOWER DECK ASSEMBLIES

H. ELECTRIC CLUTCH TEST

(See Section III , ELECTRICAL)

J. GEARBOX

Check Right Angle Gearbox for damage as follows:

1. Check for any severe oil leaks around PTO Input Shaft and Deck Belt Drive Shaft (See "IMPORTANT NOTE").
2. If leaks are found, they are probably due to a ruptured oil seal.
3. Replace ruptured seal(s) per Step K., "GEAR BOX SEAL REPLACEMENT".

K. GEARBOX SEAL REPLACEMENT

Earlier Models of the ZM5200M & ZM6100M Mower Units used a different casting for the Right Angle Gearbox Housing than the later models which were introduced in 1999. Both Housings are interchangeable.

IMPORTANT NOTE!

Customers and Operators should be advised that when cutting long grasses (fescue, etc.), they should frequently stop the Unit and clean any debris away from the Power Transfer Shaft and the Right Angle Gearbox Input Shaft. Failure to do so could result in excessive oil leakage due to the oil seal being knocked loose from the Gearbox.

1. **PART No.s** **RIGHT ANGLE GEARBOXES**
5-8342 Right Angle Gearbox ('99)
2. Remove Gearbox from Mower Deck.
3. Remove Deck Drive Pulley and Spacer.
4. Remove damaged seal(s) and replace as illustrated in Figure 8.6.

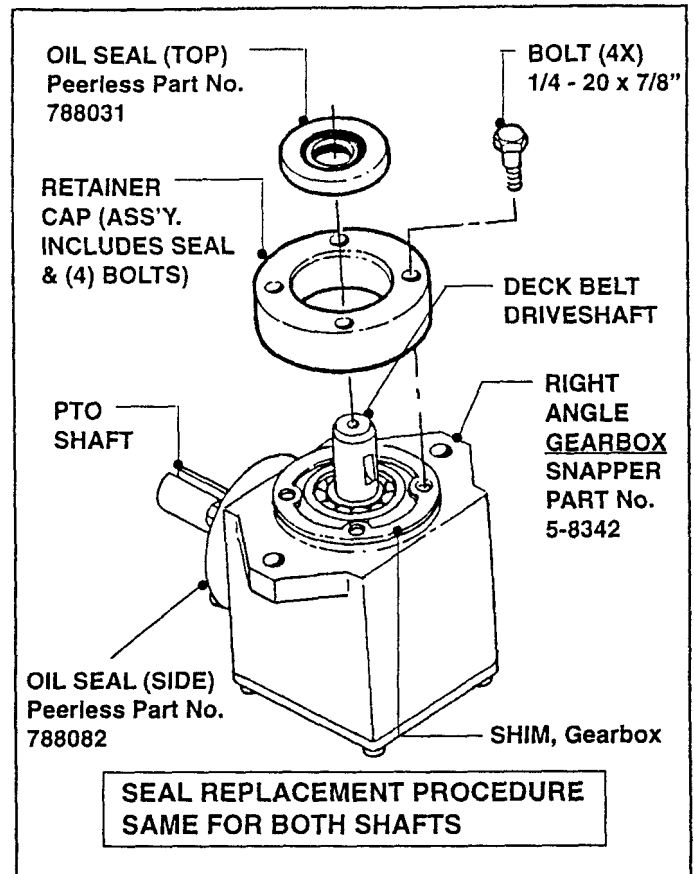


FIGURE 8.6

5. If Gearbox requires additional oil, see "L. GEARBOX LUBRICATION".

L. GEARBOX LUBRICATION

(Gearbox must be removed from Mower Deck for lubrication).

1. Place Gearbox upside-down from its normally-installed position with the Flanges resting on blocks.
2. Remove the four (4) #10 - 24 x 1/2" Screws and the Cover. See Figure 8.7.

NOTE

At this point, the Gearbox may be thoroughly inspected for internal wear or damage. To do so, turn Gearbox back over (onto a container) and allow any oil to drain completely. Inspect and make any repairs. Place Gearbox back onto the blocks.

3. Inspect Gasket. Replace as required.
4. Use 80W90 GEAR OIL (6 oz.) to bring a drained Gearbox to proper "FULL" level.

Section VIII - 52" & 61" MOWER DECK ASSEMBLIES

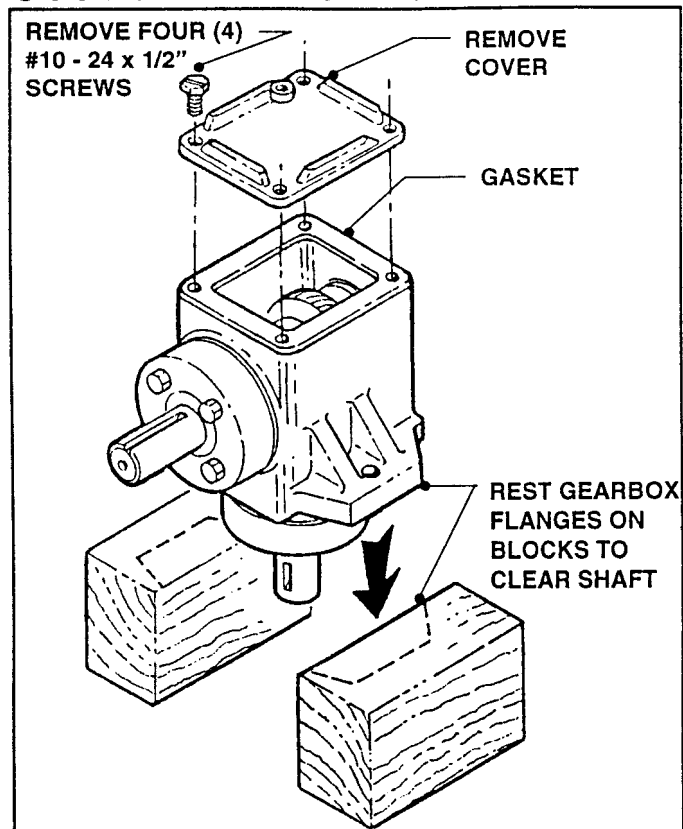


FIGURE 8.7

5. Attach Cover, turn Gearbox over to its operating position and check for any leakage.

8.2 PROBLEM - CUTTING GRASS IMPROPERLY

As previously stated earlier in this section, you should "Check the obvious first"! In this case, visually inspect the tires for obvious pressure differences. Check the number of spacers above and below each Cutter Spindle to see if each corresponds with the selected cutting height.

Start Engine and allow it to warm. Move Throttle Control to "FAST" position and ascertain if there are any engine problems (engine skip; misfire; choking down; etc.) which could cause improper cutting. Measure side to side level of deck and also, front to rear pitch.

A. MOWER DECK ADJUSTMENT (LEVELNESS) SIDE to SIDE and FRONT to REAR

Before making deck leveling adjustments, 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.

If tires are properly inflated and mowing is still uneven, adjust deck levelness as follows:

1. SIDE to SIDE LEVEL

- a) Place machine on level surface.
- b) Check Blade Tips by rotating blades until tips are pointing to the sides of the deck. Check measurement of Outside Blade Tips to the ground on both blades. Measurement of each should be within 1/8" of each other. If measurement of blade tips are not within 1/8", adjustment should be made to the "High" side of deck to lower it within the correct measurement.
- c) Move Deck Lift Lever and set Mower Deck to highest cutting position.
- d) Place a wooden block under front and rear edge of mower deck.
- e) Lower Deck Lift Lever until Mower Deck rests on wooden blocks.
- f) Loosen hardware securing the Front and Rear Deck Support Brackets on "High" side of deck. See Figure 8.8 on Page 8.6.
- g) Located above each Support Bracket, on top of the Frame, are three (3) Shim Plates. Refer to Figure 8.8.
- h) Remove one (1) Shim Plate from above each of the "High" side Front and Rear Support Brackets.
- i) Position the Shim Plates between the underside of the Frame and each Support Bracket on the "High" side. (Refer to INSET in Figure 8.8).
- k) This procedure will lower the "High" side of the deck.
- l) Retighten Support Bracket hardware to 20 to 30 ft. lbs. (28 to 41 N•m).
- m) Move Deck Lift Lever and set Mower Deck to highest cutting position. Recheck side to side Blade Tip dimensions. If both Blade Tips are within 1/8" of each other, then levelness is correct. If Blade Tips are still unlevel, repeat Steps c) through j) and add another Shim Plate until Deck is level.

Section VIII - 52" & 61" MOWER DECK ASSEMBLIES

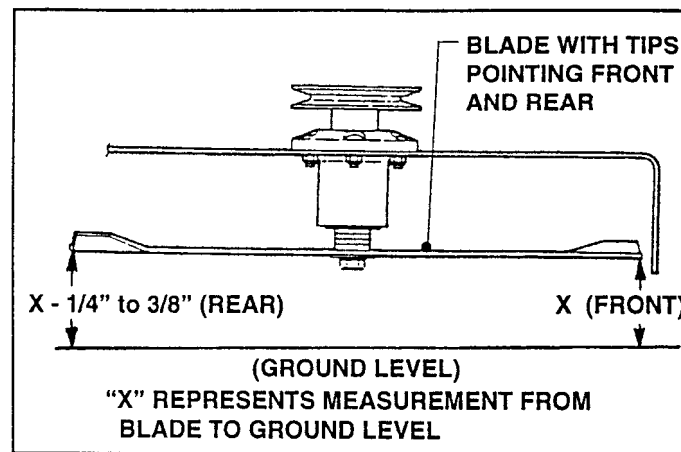
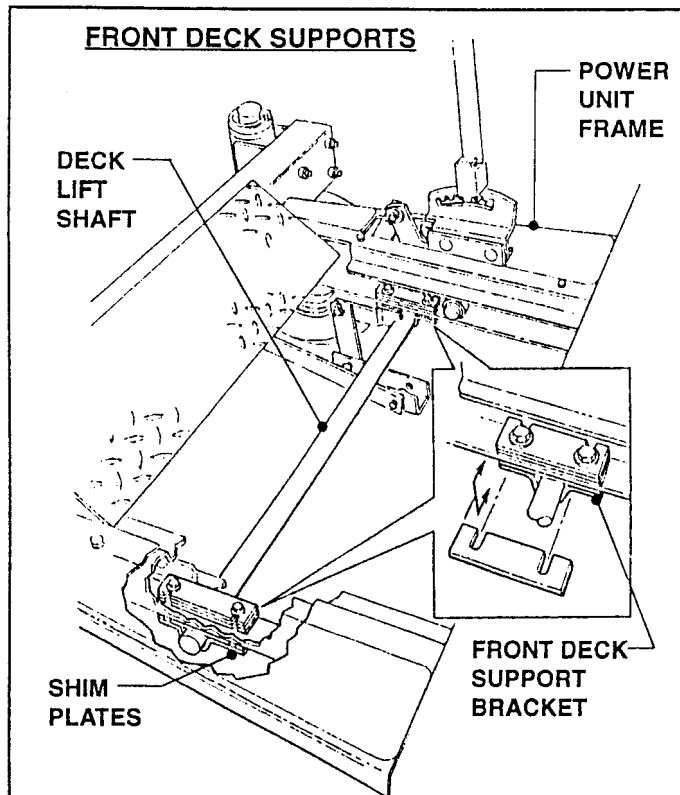


FIGURE 8.9

- c) If measurement of Blade Tips are not within the above mentioned measurement, adjustment should be made.
- d) Move Deck Lift Lever and set Mower Deck to highest cutting position.
- e) Place a wooden block under front and rear edge of Mower Deck.
- f) Lower Deck Lift Lever until Mower Deck rests on wooden blocks.

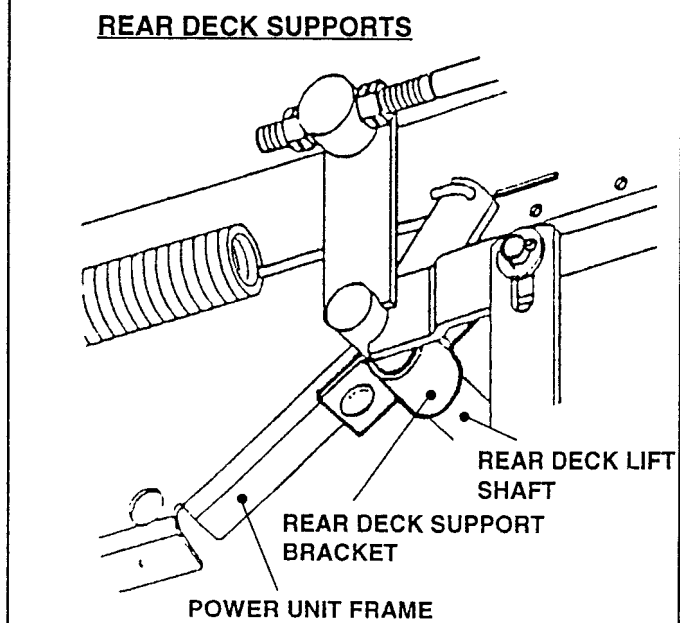


FIGURE 8.8

2. FRONT to REAR LEVEL

- a) Place machine on level surface.
- b) Check Blade Tips by rotating outside blades until tips are pointing to front and rear of deck. Check measurement of Blade Tips to ground on both Blades. Front to rear measurement should be 1/4" to 3/8" higher in the rear. See Figure 8.9.

NOTE

The Timing Rod connects the Front and Rear Lift Arms and maintains the Deck in the same attitude through all heights of cut. See Figure 8.10. Adjust Deck by loosening and rotating the Timing Rod Adjusting Nuts as follows:

1. TO LOWER REAR OF DECK - Rotate both Adjusting Nuts "Forward".
 2. TO RAISE REAR OF DECK - Rotate both Adjusting Nuts "Rearward".
- After adjustment, tighten both Nuts securely.

ROTATE NUTS THIS DIRECTION TO RAISE REAR OF MOWER DECK (FORWARD)

ROTATE NUTS THIS DIRECTION TO LOWER REAR OF MOWER DECK (REARWARD)

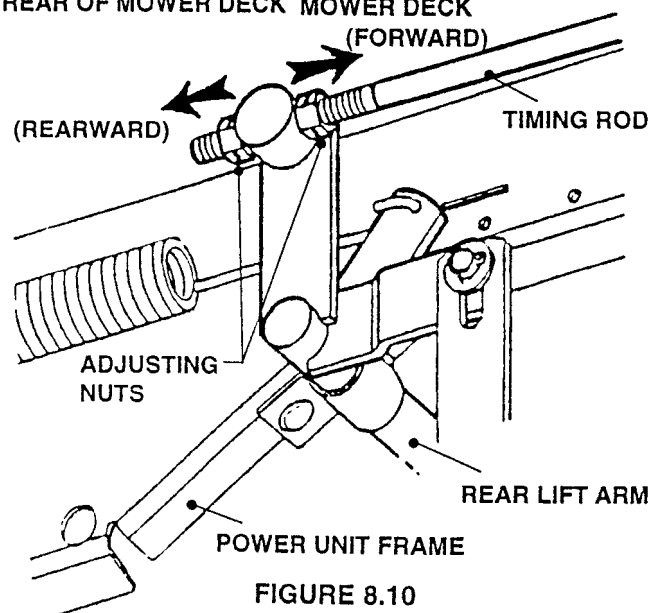


FIGURE 8.10

Section VIII - 52" & 61" MOWER DECK ASSEMBLIES

- g) Raise Deck to highest cutting position. Check Blade measurements. If Blade Tips are not within correct measurement range, repeat Step a) thru f) (Including "NOTE") until Deck is level.

COMMENT

Step g) above, concludes the adjustment instructions given for the "Corrective Action" measures found in "TROUBLESHOOTING" (Section II, Pg. 2.3). Refer to the INTRODUCTION at the beginning of this section for reference.

8.3 CUTTING HEIGHT ADJUSTMENTS

The term "Cutting Height" should be determined from the lowest possible settings of the Blades and Deck. In other words, with the Deck Lift Lever set in the lowest cutting position (all the way forward) and with all the Blade Spacers, located beneath the Spindle Housing (on top of Blade), the position of the Blade(s) at this point will be the lowest possible cutting height. This is generally considered to be a one inch (1") height of cut. (The highest cutting height at this adjustment point is five inches (5").

1. The above cutting range (1" to 5") is the factory setting.
2. Should the customer require a different cutting range, refer to Section VII, Deck Lift System, and Section IX, Cutter Assemblies, for adjustment procedures.

8.4 DECK REMOVAL



WARNING



Before attempting any adjustments, maintenance, service, or repairs, stop Engine and Blade. Always remove Key from ignition switch, remove Spark Plug Wire(s) and secure Wire(s) away from Spark Plug(s).

IMPORTANT: Mower Deck is extremely heavy. Be very careful when removing Deck from Power Unit.

Move Power Unit/Mower Deck to the area where 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). Engage Parking Brake.

- A. Move Deck Lift Lever and set Mower Deck to highest cutting position. See Figure 8.11.

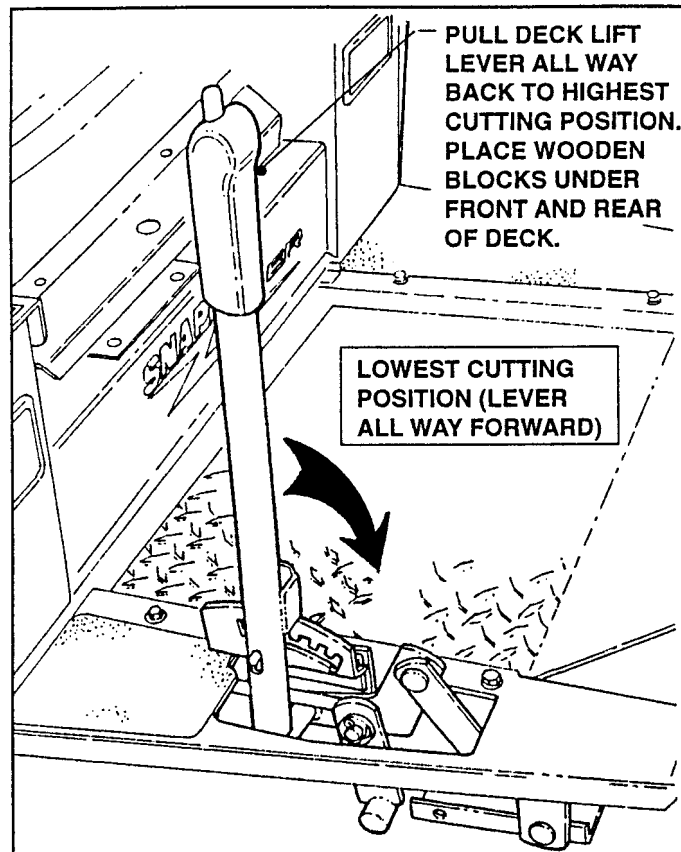


FIGURE 8.11

- B. Place a wooden block under the front and rear edge of Mower Deck.
- C. Move Deck Lift Lever and set Mower Deck to a lower cutting position until Deck rests on wooden blocks. Refer to Figure 8.11.
- D. Remove Cotter Pins and Washers from both Link Plates on sides of Front Lift Arm. See Figure 8.12.

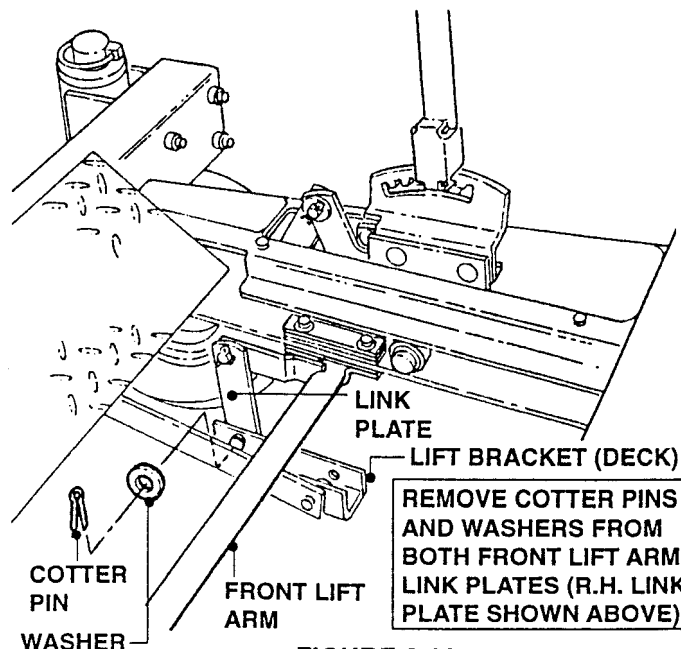


FIGURE 8.12

SERVICE - MID MOUNT Z-RIDER

Section VIII - 52" & 61" MOWER DECK ASSEMBLIES

E. Remove Cotter Pins and Washers from Link Plates on Rear Lift Arm. See Figure 8.13.

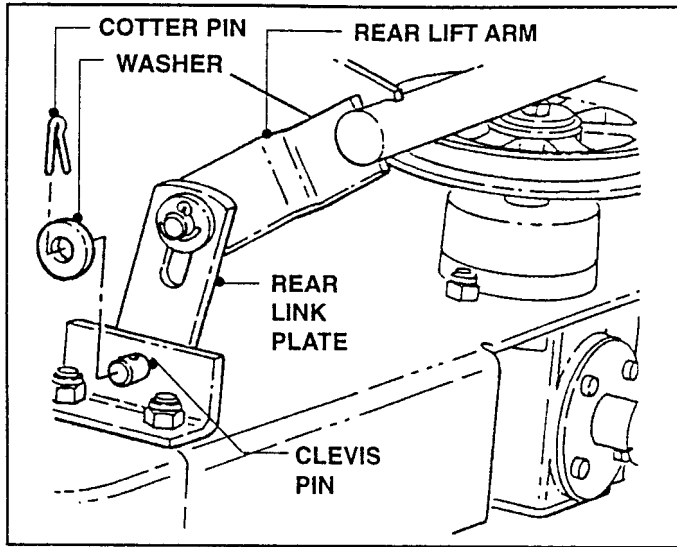


FIGURE 8.13

F. Disconnect Pull Bar from Front Axle by removing Clevis Pins and Cotter Pins. See Figure 8.14.

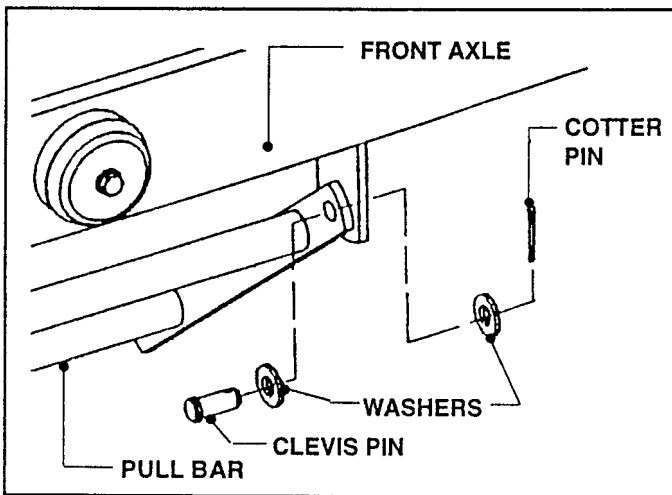


FIGURE 8.14

G. Pull Lock Collar back and slide Power Transfer Shaft away from Power Take Off Shaft (located on Power Unit below Hydro Pumps). See Figure 8.15.

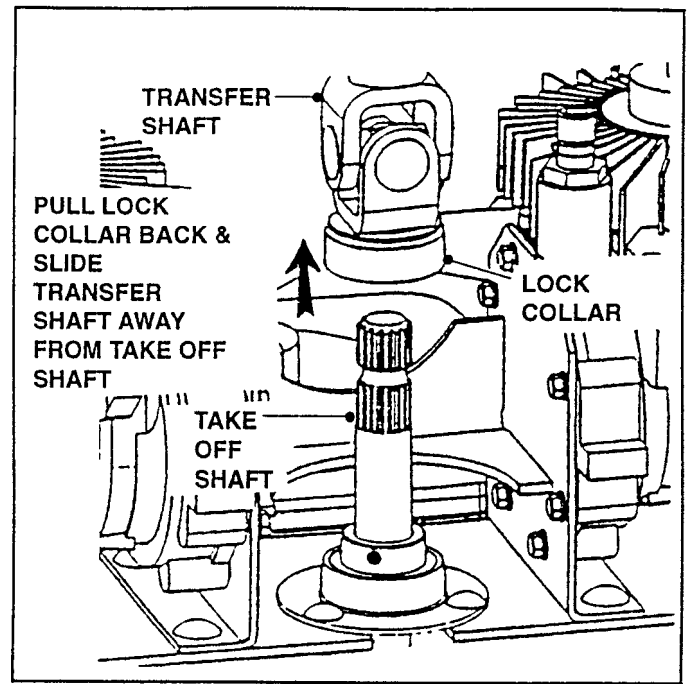


FIGURE 8.15

H. Remove wooden blocks from underneath Deck and roll/slide Deck from underneath Power Unit.

8.5 DECK COMPONENTS REPAIR (52" & 61" DECKS)

The 52" & 61" Decks found on the SNAPPER MID MOUNT Z-RIDERS have interchangeable components with the following exceptions (see Chart below):

PART No.s DECK MODEL DESCRIPTION

4-4784	ZM5200M	DECK, 52"
4-3847	ZM6100M	DECK, 61"
4-2976	ZM5200M	PIVOT, Idler, 52" Deck
4-1205	ZM6100M	PIVOT, Idler, 61" Deck
4-2776	ZM5200M	BELT, 52" HB (122")
3-5542	ZM6100M	BELT, 61" HB (134 1/2")

NOTE

The geometry of the Belting arrangement found on the 52" & 61" Decks is such that the Mower Belt maintains 80 lbs. detent pressure at all times. Improper lubrication, neglect of apparent problems and constant abuse will result in the Mower Deck being sent to your repair shop with one or more of the following problems:

A. PROBLEM - EXCESSIVE BELT WEAR

1. Remove Mower Belt.
2. Check Idler Pulley for correct operation:
 - a) Does it spin freely when turned by hand?
 - b) Does it "wobble" when turned?
 - c) Is it difficult to turn?
3. If the Idler Pulley spins freely, it is O.K. If it wobbles, or is difficult to turn, it must be replaced. See Figure 8.16.

IMPORTANT

Mower Deck is extremely heavy. Be very careful when removing Deck from Power Unit.

Section VIII - 52" & 61" MOWER DECK ASSEMBLIES

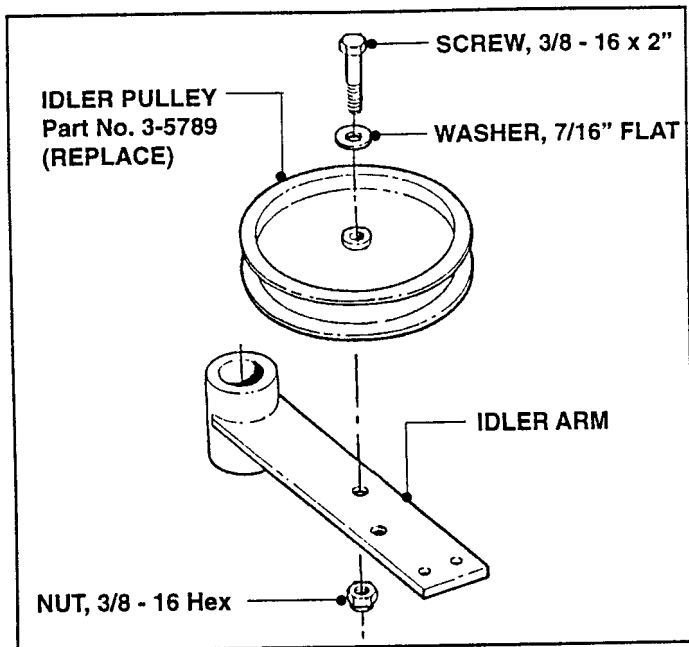


FIGURE 8.16

4. Check Idler Arm to make certain that it pivots easily.
5. If it does not, lubricate Pivot area through grease fitting, located at rear of Idler Arm. See Figure 8.17.

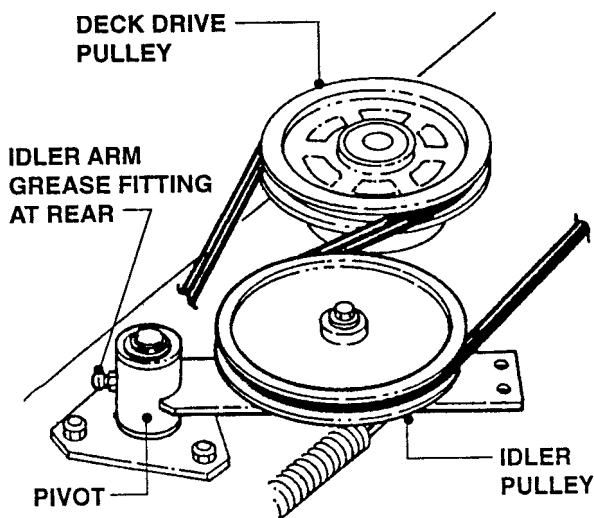


FIGURE 8.17

6. If the Idler Arm is still difficult to pivot, remove it from the Pivot and check the Bushings and Pivot Shaft for damage. See Figure 8.18. Replace parts as required.

NOTE

The Idler Arm may "Freeze-Up" on the Pivot Shaft due to lack of lubrication.

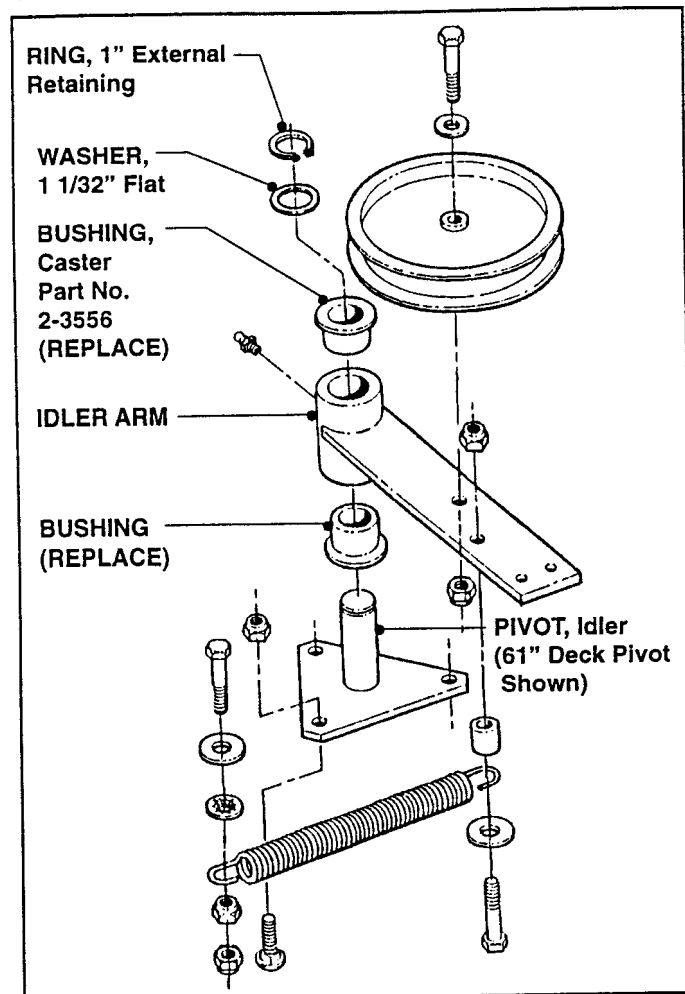


FIGURE 8.18

NOTE

See PARTS DRAWING & PARTS LIST on Pages 8.12 & 8.13 for further reference.

7. Check the front Idler Pulley for "free-turning" also. Replace parts as required. See Figure 8.19.

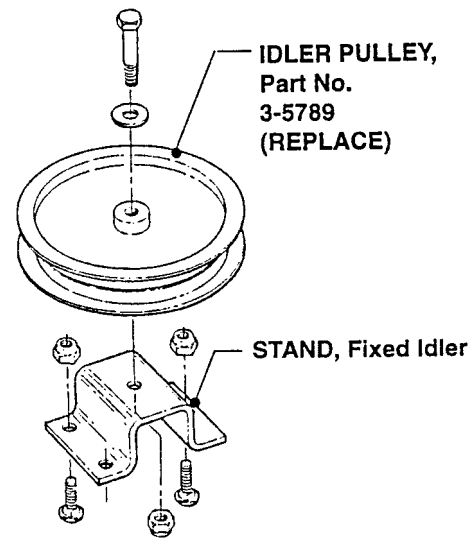


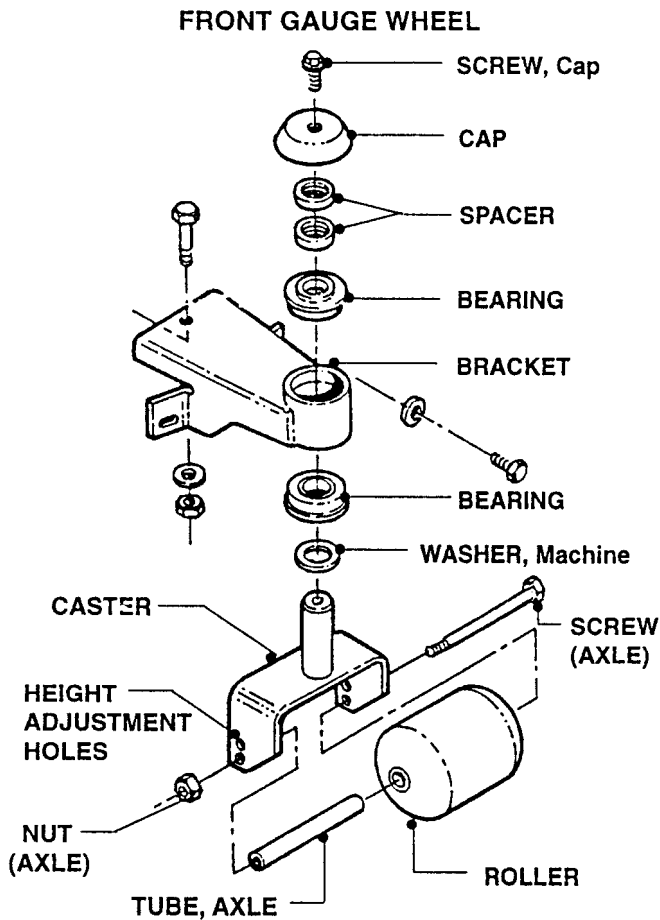
FIGURE 8.19

Section VIII - 52" & 61" MOWER DECK ASSEMBLIES

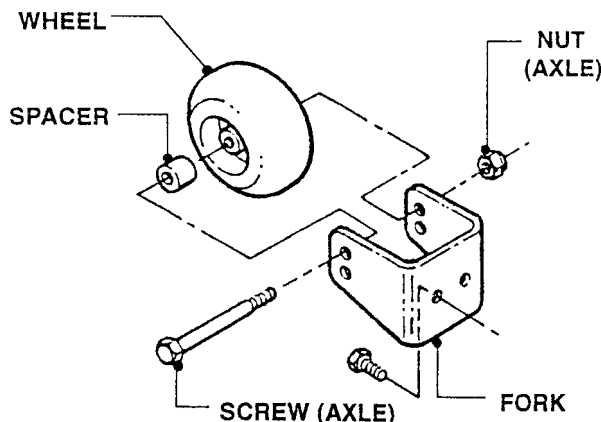
8. Check the Cutter Housing Assemblies. If they turn freely when spun by hand, they are O.K. If not, see Section IX, CUTTER HOUSING ASSEMBLIES, for repair information.

B. GAUGE WHEEL REPLACEMENT

The Gauge Wheel Assemblies found on the front and rear of the 52" & 61" Decks are simple to replace or repair. See Figure 8.20.



FRONT GAUGE WHEEL



REAR GAUGE WHEEL

FIGURE 8.20

NOTE

If replacing the Bracket or Caster on front (or) the Fork on the rear, make sure to install the Wheels or Rollers at the same height as the others.

C. PART No.s FRONT/REAR GAUGE WHEELS

- 4-4892 BEARING, Radial 1 x 2 Flanged (Front)
- 4-4646 CASTER, Gauge Wheel (Front)
- 7-9868 ROLLER, 3 3/4" x 4 13/16" Nylon (Front)
- 3-6457 FORK, Gauge Wheel (Rear)
- 2-9264 WHEEL, Gauge (Rear)

See PARTS DRAWING & PARTS LIST on Pages 8.12 & 8.13 for further reference.

D. FRONT BAFFLE (52" & 61" Decks)

The Front Baffle may be used as a LIP BAFFLE or DUST BAFFLE by simply reversing its position on the Deck.

1. LIP BAFFLE (Lip Turned Outward)

Best position of Baffle for use in lush grass during summer of fall. See Figure 8.21.

2. DUST BAFFLE (Lip Turned Inward)

When in this position, the Baffle helps prevent dusting conditions during arid times or year. Also, it helps pull dust into Mower Deck and out Discharge Chute.

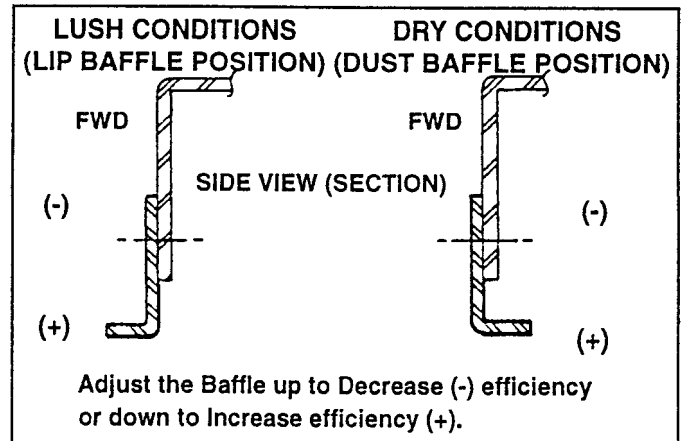


FIGURE 8.21

8.6 DECK WELDMENT REPAIR (52" & 61" DECKS)

If a Deck develops a broken weld or is punctured due to an accident while mowing or during transport, repair Deck as follows:

A. WELDING DECKS

When making welding repairs, the use of an Electric Stick Welder is recommended. Although the welding job is easier when using either 6010 or 6013 welding rods, the job can be completed faster by using the larger 7018 rods. In either case, always set the welder "Heat" at the appropriate number for each rod.

Section VIII - 52" & 61" MOWER DECK ASSEMBLIES

1. Thoroughly clean area to be welded. Use a grinder to dress parts to be joined.
2. Making sure that the parts are properly aligned, clamp or otherwise secure them in position.
3. Tack-weld the area as required to prevent warping. Check alignment frequently.
4. Weld area closed.
5. Grind and sand welded area.
6. Prime and paint.

NOTE

When welding Deck components fabricated from thinner metals, the use of a Wire Welder is recommended. Use .035 Wire for most jobs.

NOTE

To avoid repainting after straightening a Deck, the paint can *sometimes* be preserved by coating the affected area with GP grease before beginning the straightening process. Wipe off excess grease after completing job.

B. STRAIGHTENING BENT DECKS

If a Deck becomes bent during operation or transport, it can usually be restored to near-original condition by a mechanic who is familiar with metalworking. Observe the following when straightening Decks.

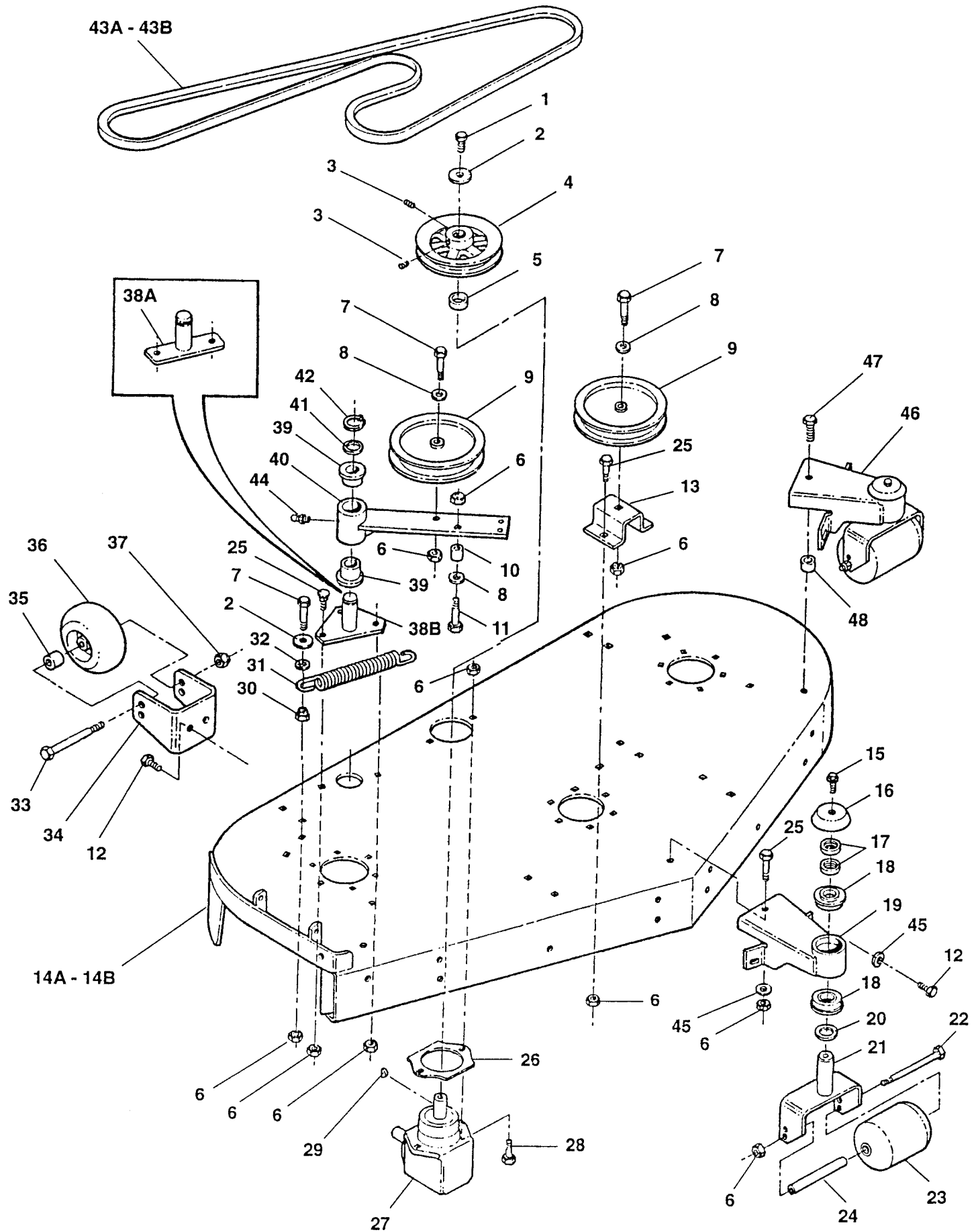
1. Avoid using a torch to "relieve" the damaged area for straightening. This will cause the heated area to lose temper.

NOTE

Because of the strength and thickness (#7 GA) of the steel used in making the 52" & 61" Deck Weldments, most damage is generally confined to the Blade Baffles on the underside of the Deck or the Discharge Chute.

2. If straightening a bent Blade Baffle, it is best to remove all Deck components and lay the Deck Weldment upside-down on a firm, level surface.
 - a) Using shop hammers of varying weights with appropriately-sized dollies, "work-out" the bent areas of the Blade Baffle until its inner circumference matches that of an undamaged Baffle.
 - b) The circumference may be checked with a cardboard pattern taken from an undamaged Baffle.
 - c) Any welding of the Blade Baffles or Discharge Chute should be done with the Wire Welder.
 - d) After work has been completed on the Deck, turn it back over - right side up - and check to make sure that all of the Deck Skirt is in contact with the level work surface.
3. If the Deck Skirt is not level with a proven level surface, straighten the Deck Weldment until the Skirt is in full contact with surface.

Section VIII - 52" & 61" MOWER DECK, IDLERS & ROLLERS



Section VIII - 52" & 61" MOWER DECK, IDLERS & ROLLERS

ITEM	PART No.	DESCRIPTION
1	9-1899	SCREW, 3/8 - 24 x 1" Hex Cap Grade 5
2	9-1331	WASHER, 13/32" Flat (2)
3	9-1802	SET-SCREW, 5/16" x 5/8" Socket Head (2)
4	4-2867	PULLEY, 5.75 Cast
5	3-5668	SPACER
6	9-1299	NUT, 3/8 - 16 Hex (17)
7	9-1305	SCREW, 3/8 - 16 x 2" (3)
8	9-1300	WASHER, 7/16" Flat
9	3-5789	PULLEY, 5.50 Idler (2)
10	3-5858	SPACER, 3/4" Outside Diameter
11	9-1553	SCREW, 3/8 - 16 x 1-3/4"
12	9-1304	SCREW, 3/8 - 16 x 1" Hex Head Cap, Grade 5 (13)
13	3-6449	STAND, Fixed Idler
14A	4-4784	DECK, 52"
14B	4-3847	DECK, 61"
15	9-1541	SCREW, 5/16 - 18 x 3/4" Hex Washer Self Tap (3)
16	4-4839	CAP, Caster Shaft (3)
17	2-1960	SPACER, 1" PM (6)
18	4-4892	BEARING, Radial 1 x 2 Flanged (6)
19	4-4643	BRACKET, Gauge Wheel
20	2-3747	BUSHING, 1" Machine (3)
21	4-4646	CASTER, Gauge Wheel (3)
22	9-1617	SCREW, 3/8 - 16 x 6" (3)
23	7-9868	ROLLER, 3-3/4" x 4-13/16" Nylon (3)
24	7-9882	TUBE, Axle (3)
25	9-1640	BOLT, 3/8 - 16 x 1" Carriage, Grade 5 (5)
26	3-6455	GEARBOX, Shim
27	5-8342	GEARBOX, Right Angle (Peerless Series 1000-52)
28	9-1328	SCREW, 3/8 - 16 x 1-1/4" Grade 5 (2)
29	1-0008	KEY, Woodruff
30	9-1619	NUT, 5/8 - 18 Hex Flange
31	3-5667	SPRING, Extension
32	1-3847	RETAINER, 3/8" Bolt
33	9-1822	SCREW, 1/2 - 13 x 5" Hex Cap (2)
34	3-6457	FORK, Gauge Wheel (2)
35	3-6456	SPACER, Gauge Wheel (2)
36	2-9264	WHEEL, Gauge (2)
37	9-1325	NUT, 1/2 - 13 Hex Nylock (2)
38A	4-2976	PIVOT, Idler, 52" Deck
38B	4-1295	PIVOT, Idler, 61" Deck
39	2-3556	BUSHING, Caster (2)
40	4-2619	ARM, Idler
41	3-2031	WASHER, 1-1/32" Flat
42	1-2709	RING, 1" External Retaining
43A	4-2776	BELT, 52" HB (122")
43B	3-5542	BELT, 61" HB (134-1/2")
44	7-6998	ZERK, 1/4 - 28 Self Tapping
45	9-1300	WASHER, .44 I.D. Flat (9)
46	4-1821	WELDMENT, Gauge Wheel (2)
47	9-1553	SCREW, 3/8 - 16 x 1-3/4" Hex Head Cap, Grade 5 (2)
48	4-4752	SPACER, 3/8" Inside Diameter (2)

<p style="text-align: center;">LUBRICATION NOTE</p> <p style="text-align: center;">Use Kendall NLGI No. 2 Lithium Grease or equivalent to lubricate Spindle Assemblies</p>

Section IX

CUTTER ASSEMBLIES

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Section IX - CUTTER HOUSING ASSEMBLIES

INTRODUCTION

Whenever a unit is brought in for service, the Mower Blade and Cutter Housing Assemblies should be checked for wear or damage. If the blades require attention, they must be removed from the Spindle for repair/replacement. On the other hand, it is not necessary to remove the Cutter Housing from the Mower Deck in order to overhaul the Deck Spindle Assembly.

9.1 CUTTING BLADE SERVICE

A. When performing service on a mower unit, be sure to check the Cutting Blades for damage or signs of excessive wear. See Figure 9.1 for blade wear limits.

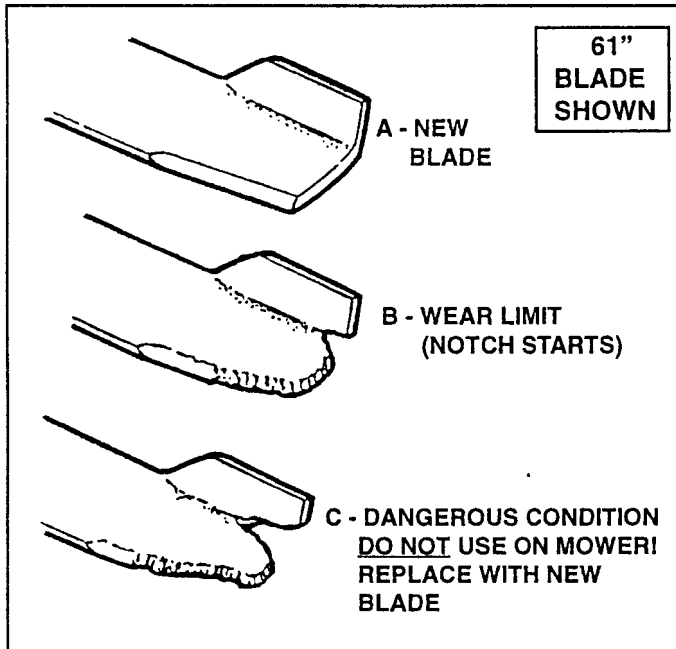


FIGURE 9.1

B. PART No.'s - CUTTING BLADES

2-9246	BLADE, 18" (52" DECK)
1-7081	BLADE, 21" (61" DECK)

3. Remove Spindle Covers (if required).
4. Remove Mower Drive Belt.

⚠
CAUTION
⚠

Avoid cutting yourself on a sharp Blade!
Wear gloves to protect your hands while handling the Blade.

- B. Remove Blade.
- C. Clean and inspect each Blade for excessive wear and damage. Refer to Figure 9.1.
- D. Should Blades be in acceptable condition, sharpen at 25 to 30 degrees. DO NOT sharpen beyond existing cutting edge. See Figure 9.2.

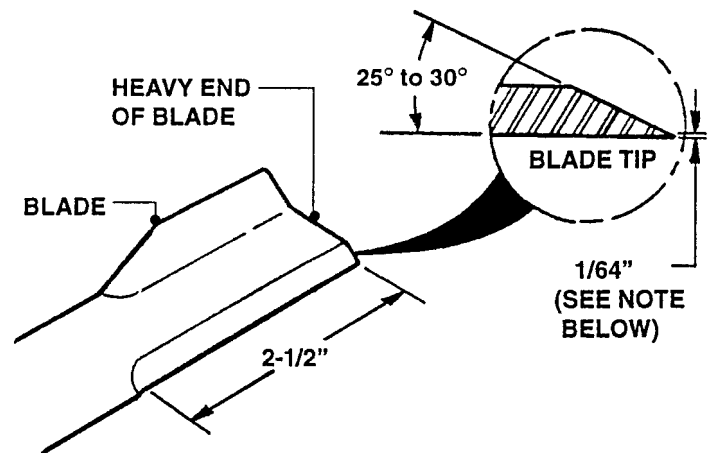


FIGURE 9.2

NOTE

When sharpening Blades, leave 1/64" untouched. Razor sharp Blades dull quicker and damage easier. Commercial balancers are available and should be used in accordance with manufacturer's instructions.

- E. Balance each Blade after sharpening by grinding metal from the heavy end of the Blade.

⚠
WARNING
⚠

The use of aftermarket or "Universal" Blades may adversely affect mower performance and/or safety.

⚠
WARNING
⚠

Never allow a customer to take a mower out of your repair shop with a Cutting Blade worn to the extent shown in illustration "C" of Figure 9.1, without warning that customer of the danger that a tip could fly off and cause either personal injury or property damage.

9.2 BLADE REMOVAL AND SHARPENING

- A. With engine OFF, remove key and disconnect Spark Plug wires from Spark Plugs. Secure wires away from plugs.
 1. Remove Floor Pan (If deck is left attached) when removing Center Blade.
 2. Either remove Mower Deck or elevate front of unit high enough to allow for blade removal underneath deck.

9.3 BLADE INSTALLATION

- A. Insert Blade Mounting Bolt through Bevel Washer and into Blade. Place Blade Spacers over Bolt. Make certain each Blade is installed with the same amount of Spacers as removed. See Figure 9.3.
- B. Install Blade Mounting Bolt with Spacers and Blade into Spindle.
- C. Install an equal amount of Blade Spacers on top of each Blade Mounting Bolt.

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Section IX - CUTTER HOUSING ASSEMBLIES

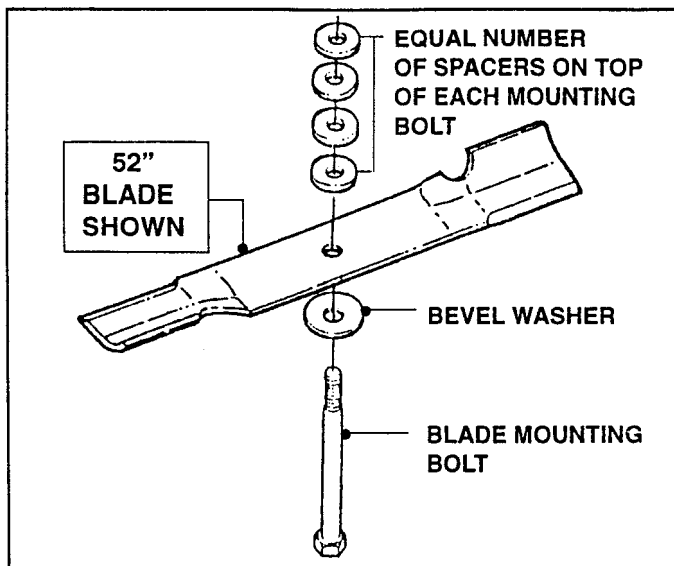


FIGURE 9.3

- D. Install Spindle Washer and Nut on Blade Mounting Bolt.
- E. Torque each Blade Mounting Bolt and Nut to 70 to 80 ft. lbs. of torque (95 to 109 N•m).

9.4 CUTTER HOUSING ASSEMBLY - 52" & 61" DECKS

The Cutter Housing Assembly can be replaced as an assembly or rebuilt using individual replacement parts. The following procedures are outlined separately and can be performed with the Mower Unit attached to the Power Unit.

9.5 CUTTER HOUSING ASSEMBLY REPLACEMENT

- A. Either move Mower Deck or elevate front of unit high enough to allow for blade removal from underneath deck.
- B. Remove Mower Drive Belt.
- C. Remove Spindle Nut, any Spacers and Spindle Washer from top of Spindle. See Figure 9.4.
- D. Remove Blade Bolt, Beveled Washer, Blade and any Blade Spacers. Refer to Figure 9.3.
- E. Remove the six (6) 3/8 - 16 Hex Flange Lock Nuts securing the Cutter Housing to the Deck and remove Cutter Assembly.
- F. Reverse above steps to install replacement Cutter Assembly.

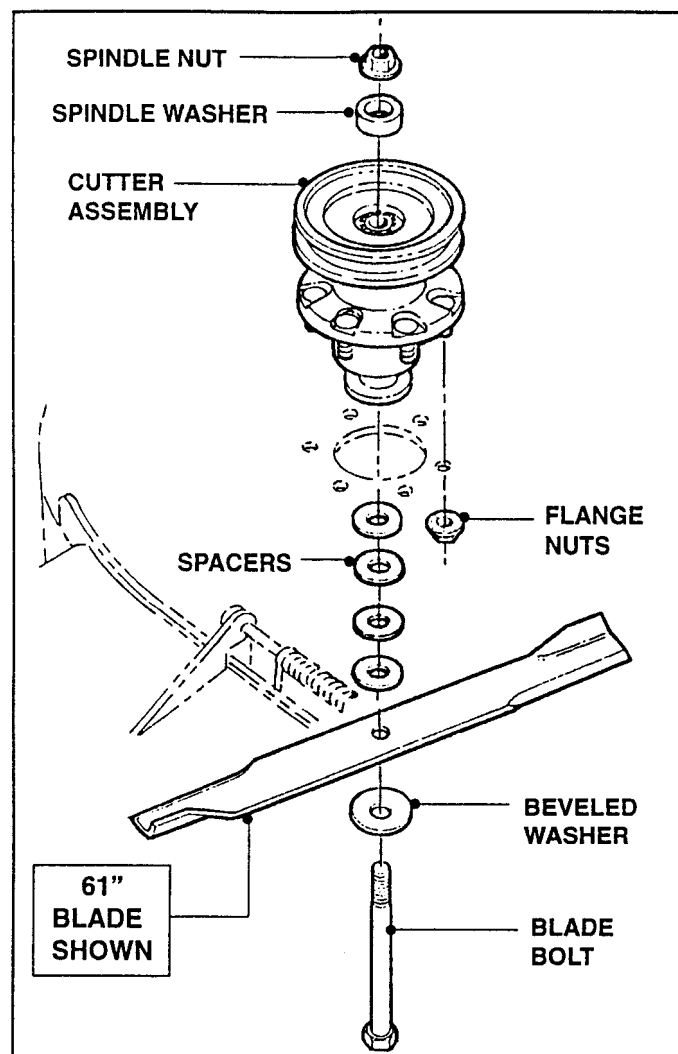


FIGURE 9.4

9.6 CUTTER HOUSING ASSEMBLY REBUILD/ OVERHAUL

- A. Remove Cutter Housing Assembly as described in "Cutter Housing Assembly Replacement".

NOTE

Cutter Housing Assembly may be overhauled without removal from Mower Deck. Remove Blade (see 9.2 BLADE REMOVAL, etc.), then proceed with Item B as follows:

- B. Remove Spindle Washer. See Figure 9.5 on Pg. 9.4.
- C. Remove Pulley and Snap Ring.
- D. Using a soft-faced mallet, tap the top of the Spindle downward until the Spindle, Lower Bearing and Spacer are free of the Cutter Housing.
- E. Remove Upper Bearing.
- F. Clean and inspect all components for damage or wear. Replace components as required.
- G. Install components in reverse order.
- H. Torque blade bolt and spindle nut to 70 to 80 ft. lbs. of torque (95 to 109 N•m).
- J. Fill Cutter Housing Assembly with grease.

Section IX - CUTTER HOUSING ASSEMBLIES

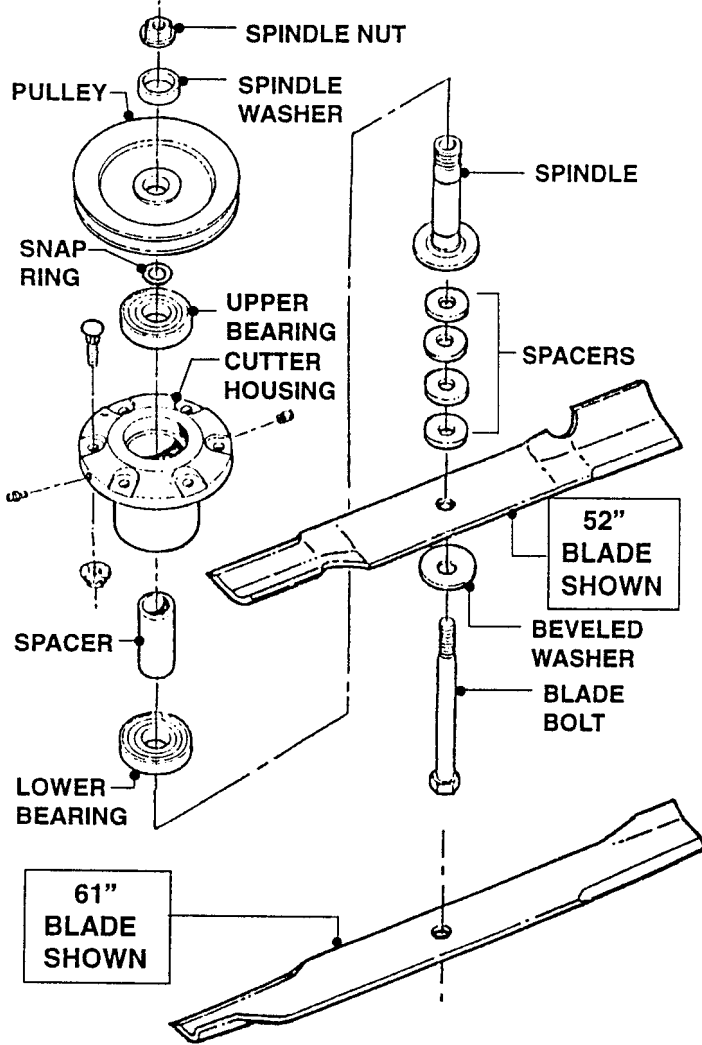


FIGURE 9.5

9.7 SPECIAL RECYCLING BLADE (NINJA) WEAR LIMIT

- A. The special recycling blade (NINJA) is used on those Mowers set up for mulching. This blade **MUST** be inspected for wear and damage each time one of these mowers is brought in for repair.
- B. Consult the Blade Drawings shown in Figure 9.6 to determine if a blade can be sharpened and safely reused, or if it must be replaced with a new part. Consult the SNAPPER "ACCESSORIES" Manual for Part No.
- C. If the blade is badly chipped, bent, out of balance, or as soon as a notch begins to wear in the tip between the flat blade and upturned blade, as depicted in Illustration "B" of Figure 9.6, then the blade **MUST** be replaced.
- D. Refer to 9.8, BLADE REMOVAL AND SHARPENING (NINJA).

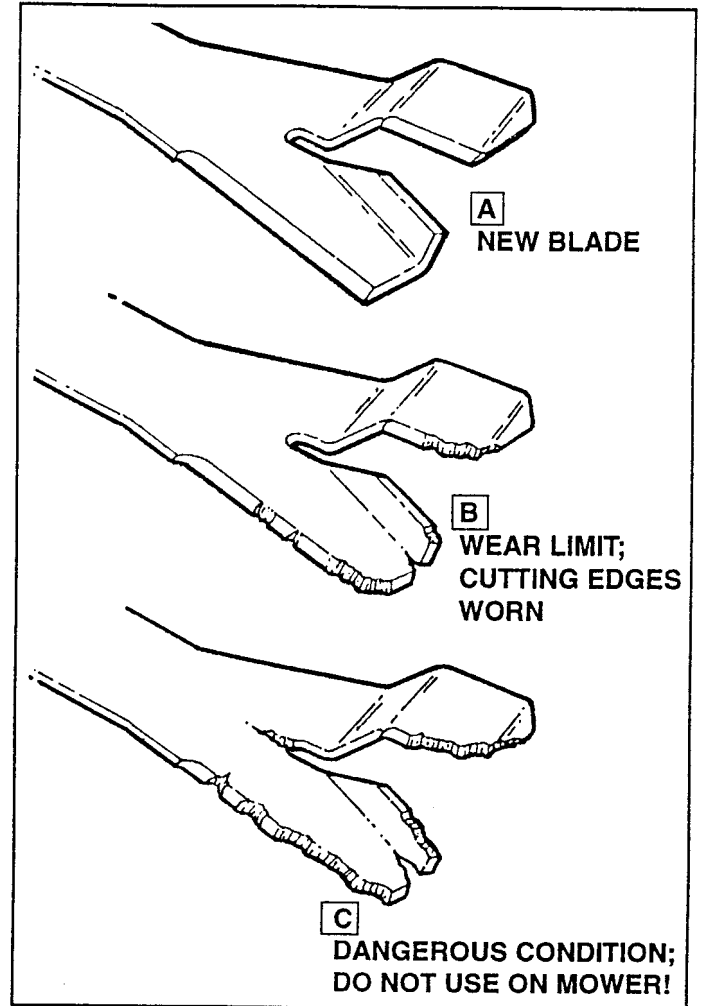


FIGURE 9.6

9.8 BLADE REMOVAL AND SHARPENING (NINJA)

- A. Remove blade(s).

CAUTION

Wear heavy gloves to avoid cutting yourself when handling blades!

- B. Clean and inspect blades for excessive wear or damage. Refer to Figure 9.6.
- C. Sharpen both cutting edges on each end of the blade at an angle of 22 to 28 degrees. The cutting surface should extend inward about 4 1/2" from the tip of the lower cutting edge and as far as practical from the tip of the upper cutting edge. See Figure 9.7 on Page 9.5.

NOTE

Regardless of the location of the Blade Spacers **when the blade is removed, all** spacers should be placed at the bottom of the spindle when replacing the blade. This arrangement will provide a "low-as-possible" cut.

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Section IX - CUTTER HOUSING ASSEMBLIES

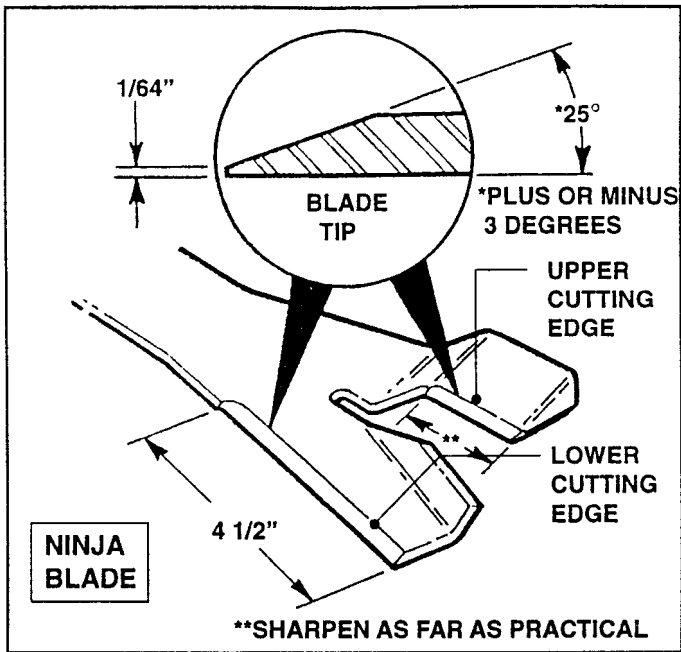


FIGURE 9.7

9.9 BLADE INSTALLATION (NINJA)

- Place the Blade Mounting Bolt through Bevel Washer and Blade.
- Install all Spacers on top of Blade. See Figure 9.8.
- Install Blade Mounting Bolt with Blade and Spacers into Spindle.
- Install the Blade Mounting Nut on each Blade Mounting Bolt.
- Torque each Blade Mounting Bolt and Nut to 60 to 75 ft. lbs. of torque (81 to 102 N•m).

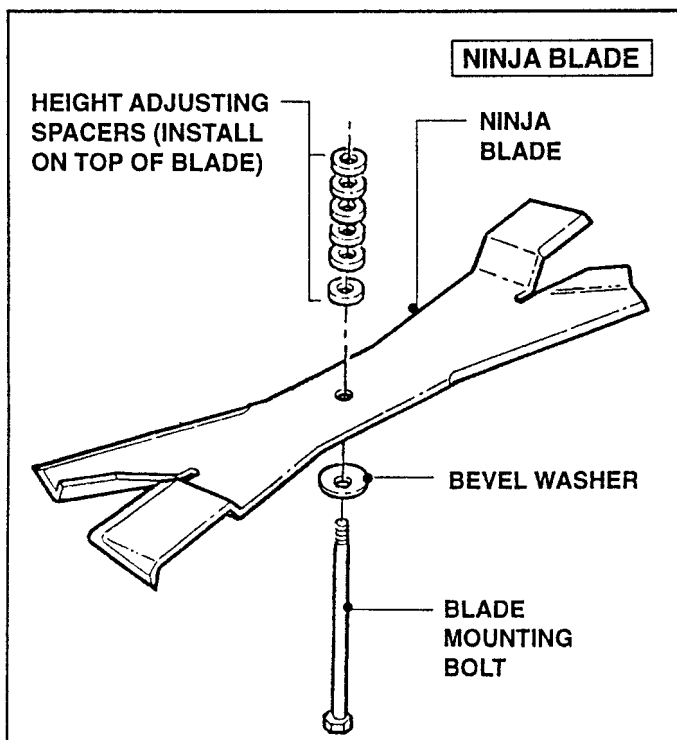


FIGURE 9.8

NOTE

Make certain that all Spacers are installed on top of Blade and under the Spindle.

9.10 MOWER DRIVE BELT REPLACEMENT

Inspect Mower Drive Belt. Replace Belt if it shows signs of excessive wear, damage and/or is broken.

A. BELT REMOVAL

- Remove Power Unit Foot Rest.
- Remove old Belt.

B. PART No.'s - MOWER DRIVE BELT

4-2776	BELT, 52" HB DRIVE (122")
3-5542	BELT, 61" HB DRIVE (134 1/2")

C. BELT REPLACEMENT

- Route Belt around Blade Pulleys and Idler Pulley in same direction as old Belt was removed. It may be necessary to use a pry bar to pull Idler Pulley back to install Belt. See Figure 9.9.

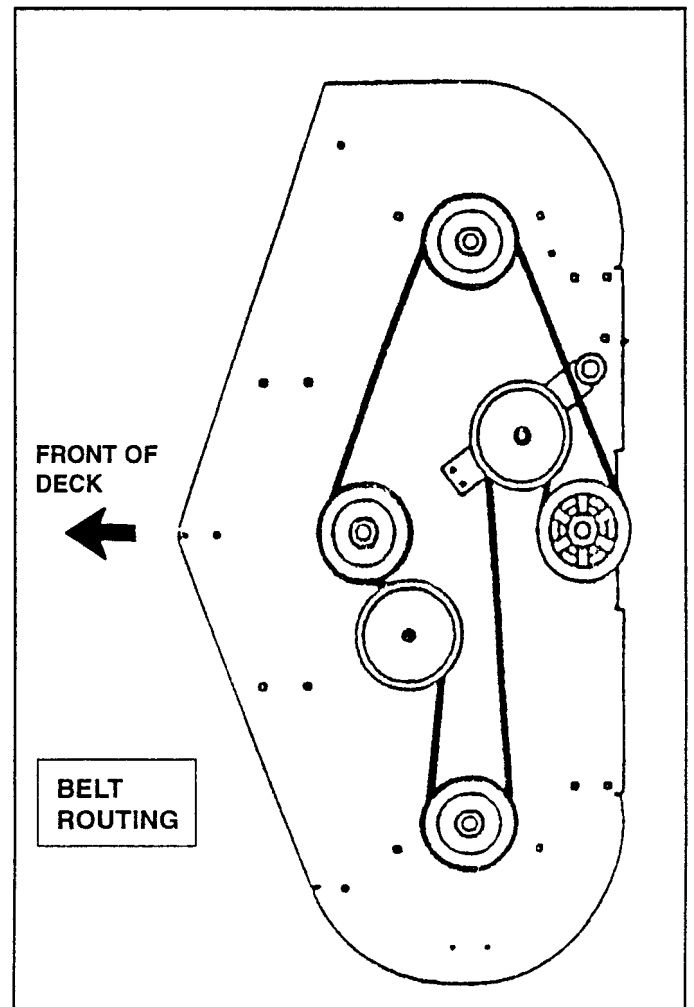
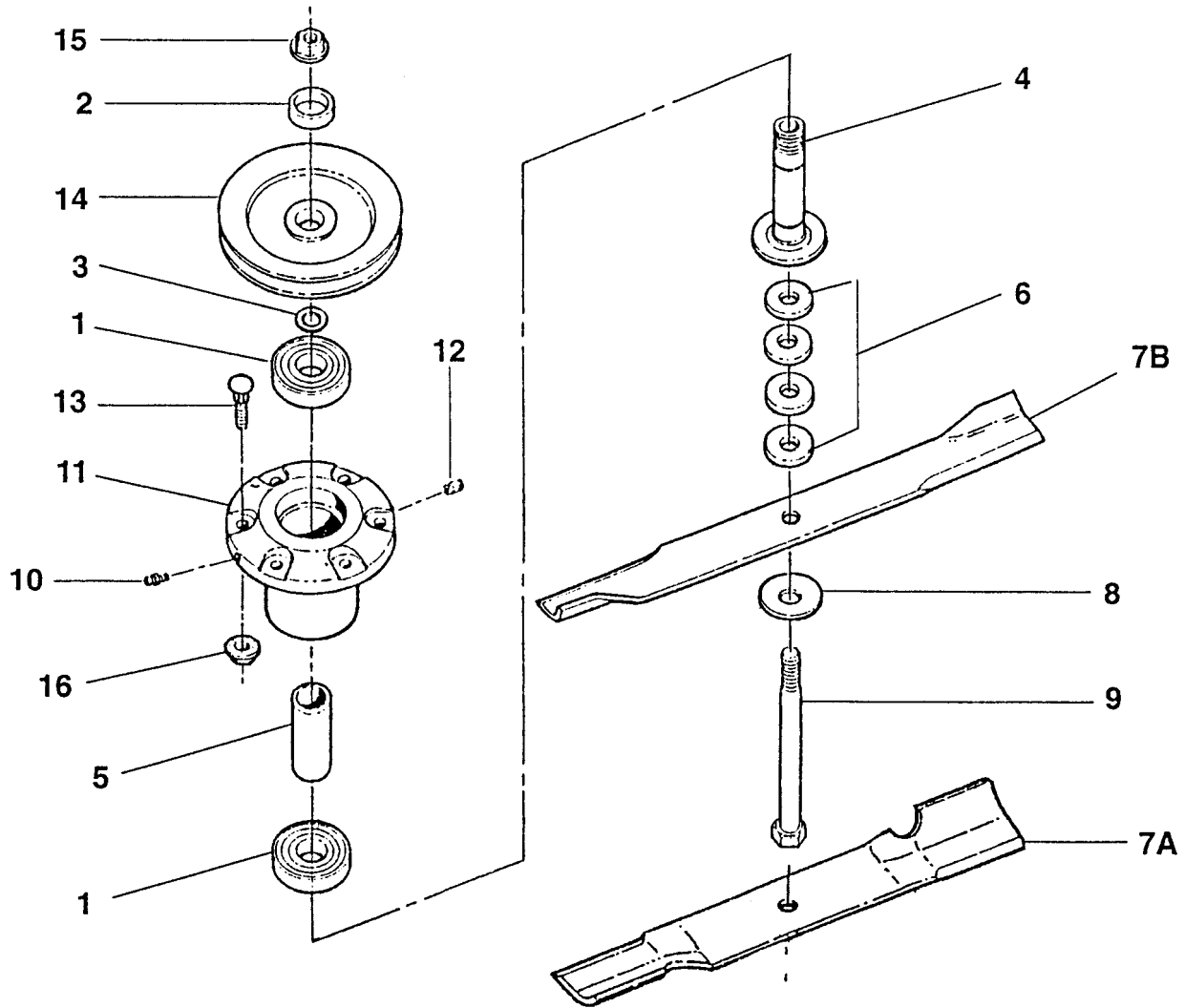


FIGURE 9.9

Section IX - CUTTER HOUSING ASSEMBLIES

PARTS SHEET (CUTTER HOUSING ASSEMBLY - 52" & 61" DECKS)



ITEM	PART NO.	DESCRIPTION
1	2-9422	BEARING, Sealed (2)
2	2-9270	WASHER, Spindle
3	2-9274	SNAP-RING, Spindle Shaft
4	2-9253	SHAFT, Spindle
5	2-9254	SPACER, Bearing
6	2-9271	SPACER, Blade (4)
7A	2-9246	BLADE, 18" (52" Deck)
7B	1-7081	BLADE, 21" (61" Deck)
8	1-6440	WASHER, Beveled
9	2-9256	BOLT, 5/8 - 18 x 7-1/2" Hex Head Cap, Grade 5
10	2-9275	FITTING, Lube
11	2-9252 R/B 5-8237	HOUSING, Cutter
12	2-9384	VENT, Spindle
13	2-9302	BOLT, 3/8 - 16 x 1-1/4" Rib Necked (6)
14	2-9249	PULLEY, 5-3/4" O.D. (52" Deck)
15	9-1736	NUT, 5/8 - 18 Hex Flange, Grade 5
16	9-1299	NUT, 3/8 - 16 Hex Nyloc (6)

Service Manual for

SNAPPER®

MID MOUNT Z-RIDER



WARNING:

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

SNAPPER® McDonough, GA., 30253 U.S.A.

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