# CHAPTER 2
# MAINTENANCE


Periodic Maintenance Chart ..... 2.1-2.2
Pre-Ride Inspection ..... 2.2
Recommended Lubricants and Capacities ..... 2.3
Lubricant and Maintenance Product Numbers .... 2.4
Lubrication Chart ..... 2.5-2.9
Front Gearcase Lubrication ..... 2.10
Carburetor Adjustments ..... 2.11-2.12b
Carburetor Draining ..... 2.13-2.14
Breather System Maintenance ..... 2.14a-2.14b
Compression Test ..... 2.15
Battery Maintenance ..... 2.16
General Maintenance ..... 2.17
Coolant System Maintenance ..... 2.18
2 Stroke Engine Maintenance ..... 2.19-2.22d
4 Stroke Engine Maintenance ..... 2.22e-2.29
Toe Alignment Inspection ..... 2.30
Chassis Maintenance ..... 2.31-2.45
Drive Chain Inspection/Adjustment ..... 2.36-2.39
Drive Chain Adjustment, Concentric Swingarm ... 2.37a

Inspection, adjustment and lubrication intervals of important components is listed in the following chart. Maintenance intervals are based upon average riding conditions and a vehicle speed of approximately 10 miles per hour.

Inspect, clean, lubricate, adjust or replace parts as necessary. **NOTE:** Inspection may reveal the need for replacement parts. Always use genuine Polaris parts.

■**CAUTION:** Due to the nature of these adjustments, it is recommended that service be performed by an authorized Polaris dealer. For engine oil, short trip cold weather riding also constitutes severe use. Pay special attention to oil level. A rise in oil level in cold weather can indicate moisture collecting in the oil tank.

▶Vehicles subjected to severe use, such as operation in wet or dusty areas, should be inspected and serviced more frequently.

**E** Emission Control System Service (California). For 4-cycle models built after January 1, 1997.

| ENGINE | | | | | |
|---|---|---|---|---|---|
| | **Item** | **Hours** | **Frequency** | **See Page** | **Remarks** |
| E▶ | Engine Oil - Level/Change | 100 hrs | 6 months | 2.23 | Check Level Daily; Break In service at 1 month |
| E | Oil Filter (4-strokes) | 100 hrs | 6 months | 2.23 | Replace with oil change |
| | Oil Filter (2-strokes) | 100 hrs | 12 months | 2.22 | Replace |
| | Oil Pump Cable (2-strokes) | 50 hrs | 6 months | 2.19 | Inspect, Adjust, Lubricate, Replace if Required |
| E▶ | Air Filter - Foam Pre-Cleaner | Daily | Daily | 2.22 / 2.25 | Inspect - Clean & oil more often in dirty cond. |
| E▶ | Air Filter - Main Element | Weekly | Weekly | 2.22 / 2.25 | Inspect - Replace if necessary |
| ▶ | Air Box Sediment Tube | - | Daily | 2.26 | Drain deposits whenever visible |
| ▶ | Engine Breather Filter | 20 hrs | Monthly | | Inspect and replace if necessary |
| ▶ | Oil Tank Vent Hose | 100 hrs | 12 months | | Inspect hose routing /hose condition |
| E■ | Valve Clearance (4-strokes) | 100 hrs | 12 months | 2.27 | Inspect/Adjust |
| ▶ | Counter Balancer Fluid (400s) | 100 hrs | 12 months | 2.21 | Check Monthly / Change Annually |
| E | Idle Speed | As required | As required | 2.11 | Adjust |
| ■ | Throttle Cable / ETC Switch | 50 hrs | 6 months | 2.11 | Inspect -Adjust, Lubricate, Replace if necessary |
| | Choke (Enricher) Cable | 50 hrs | 6 months | 2.12 | Inspect -Adjust, Lubricate, Replace if necessary |
| | Carburetor Float Bowl | 50 hrs | 6 months | 2.13 | Drain bowl periodically and prior to storage |
| | Carburetor Air Intake Ducts/Flange | 50 hrs | 6 months | - | Inspect all ducts for proper sealing/air leaks |
| E■ | Fuel System | 100 hrs | 12 months | 2.13 | Check for leaks at tank cap, lines, fuel valve, filter, pump & carburetor. Replace lines every 2 years. |
| E■ | Fuel Filter | 100 hrs | 12 months | 2.13 | Replace filter annually |
| | Coolant/Level Inspection | Daily | Daily | 2.18 | Replace engine coolant every 2 years |
| | Coolant Strength / Pressure Test System | 100 hrs | 6 months | 2.18 | Inspect strength seasonally; Pressure test system annually |
| | Radiator | 100 hrs | 12 months | 2.18 | Inspect / Clean external surface |
| | Cooling System Hoses | 100 hrs | 12 months | 2.18 | Inspect |
| | Engine Mounts | 100 hrs | 12 months | 2.17 | Inspect |
| | Drain Recoil Housing | Weekly | Weekly | 2.21 | More often if operating in wet environment |
| | Exhaust Muffler / Pipe | 100 hrs | 12 months | | |
| **ELECTRICAL** | | | | | |
| E | Spark Plug | 100 hrs | 12 months | 2.17 | Inspect - Replace if necessary |
| | Ignition Timing | 100 hrs | 12 months | 10.10 | Inspect |
| | Battery | 20 hrs | Monthly | 2.16 | Check terminals; Clean; Check fluid level |
| | Headlight Aim | As required | As required | 10.4 | Adjust if Necessary |
| | Headlamp Inspection | Daily | Daily | 10.4 | Check operation daily; Apply Polaris Dielectric Grease to connector when lamp is replaced |
| | Tail Lamp Inspection | Daily | Daily | 10.9 | Check Operation Daily; Apply Polaris Dielectric Grease to socket when lamp is replaced |

## Periodic Maintenance Chart, Cont.

| CHASSIS | | | | | |
|---|---|---|---|---|---|
| ■ ▶ | Item | Hours or Odometer | Frequency | See Page | Remarks |
| ▶ | General Lubrication | 50 hrs | 3 months | 2.5 - 2.9 | Lubricate All Fittings, Pivots, Cables, Etc. |
| ▶ | Front Hubs/Fluid Check | 50 hrs | 6 months | 2.32 | Check monthly |
| ▶ | Front Hubs/Fluid Change | 100 hrs | 12 months | 2.32 | Check monthly |
| ■ | Front Wheel Bearings (2x4) | Annually | Annually | 7.21 | Inspect and replace if necessary |
| ■ | Front Hub Spindle Nut Torque (AWD Models) | Annually | Annually | 7.21 | Inspect Torque and Locking Fastenerand replace if necessary |
| | Drive Belt | 50 hrs | 6 months | 6.12 | Inspect - Adjust, Replace if Necessary |
| | Clutches (Drive And Driven) | 100 hrs | 12 months | 6.7 | Inspect, Clean |
| ▶ | Transmission Oil Level | 25 hrs | Monthly | 2.41 | Inspect Monthly; Change Annually |
| | Shift Linkage | 50 hrs | 6 months | 2.41 | Inspect,Lubricate, Adjust |
| | Shift Selector Box | 200 hrs | 24 months | 8.9 | Change Lubricant Every Two Years |
| ■ | Steering | 50 hrs | 6 months | 2.31 | Inspect Daily, Lubricate |
| ■ | Toe Adjustment | As required | As required | 2.31 | Periodic Inspection, Adjust When Parts are Replaced |
| ▶ | Rear Axle | 50 hrs | 6 months | 7.24 | Inspect Bearings, Grease Fitting |
| ▶ | Front Suspension | 50 hrs | 6 months | 2.40 | Inspect - Lubricate |
| ▶ | Rear Suspension | 50 hrs | 6 months | 2.40 | Inspect - Lubricate |
| | Drive Chain | 50 hrs | 6 months | 2.37 | Inspect Daily, Adjust and Lubricate if Needed |
| | Tires | Pre-ride | Pre-ride | 2.43 | Inspect Daily, Pre-Ride Inspection Item |
| ■ | Brake Fluid | 200 hrs | 24 months | 2.34 | Change Every Two Years |
| ▶ | Brake Fluid Level | Pre-ride | Pre-ride | 2.34 | Inspect Daily, Pre-Ride Inspection Item |
| ▶ | Brake Lever Travel | Pre-ride | Pre-ride | 2.34 | Inspect Daily, Pre-Ride Inspection Item |
| ■ | Brake Pad Wear | 10 hrs/100 miles | Monthly | 2.34 | Inspect Periodically |
| | Auxiliary Brake Adjustment | As required | As required | 2.35 | Inspect Deflection Daily; Adjust |
| | Output Shaft Bearing | Monthly | Monthly | 2.7 | Grease Monthly |
| | Brake System | Pre-ride | Pre-ride | 2.34 | Pre-Ride Inspection Item |
| | Wheels | Pre-ride | Pre-ride | 2.42 | Pre-Ride Inspection Item |
| | Frame Nuts, Bolts, Fasteners | Pre-ride | Pre-ride | 2.43 | Pre-Ride Inspection Item |

### Pre-Ride / Daily Inspection

Perform the following pre-ride inspection daily, and when servicing the vehicle at each scheduled maintenance.

- Tires - check condition and pressures
- Fuel and oil tanks - fill both tanks to their proper level; Do not overfill 4-stroke oil tank
- All brakes - check operation and adjustment (includes auxiliary brake)
- Throttle - check for free operation and closing
- Headlight/Taillight/Brakelight - check operation of all indicator lights and switches
- Engine stop switch - check for proper function
- Wheels - check for tightness of wheel nuts and axle nuts; check to be sure axle nuts are secured by cotter pins
- Drive chain - condition and slack; refer to drive chain adjustment
- Air cleaner element - check for dirt; clean or replace
- Steering - check for free operation noting any unusual looseness in any area
- Loose parts - visually inspect vehicle for any damaged or loose nuts, bolts or fasteners
- Engine coolant - check for proper level at the recovery bottle

## Recommended Lubricants - Quick Reference

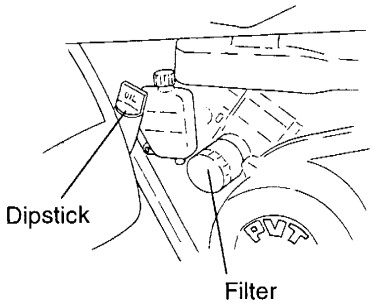
Lubricants and maintenance product part numbers are listed on page 2.4.

| Item | Type | Capacity | Notes | See Page |
|---|---|---|---|---|
| Engine Oil<br>4-Strokes | Polaris Premium 4 Synthetic, 0W/40 | 2 Quarts | Add to proper level on dipstick. See oil change. | 2.23 |
| Engine Injector Oil (2-Strokes) | Polaris Premium TC-W3 2-Stroke oil | 2 Quarts | Add to top of oil reservoir as required. | 2.22 |
| Counter Balancer Oil (400L Engines) | SAE 10W30 Motor Oil (SG/SH Rated) | 3.2 oz. | Add to proper level on dipstick. | 2.21 |
| Transmission (Gearcase)<br>Type III HLR<br>Type III HR<br>Type IV | Polaris Synthetic Gear Case Oil | <br>20 oz.<br>16 oz.<br>32 oz. | Add to proper level on dipstick. See transmission oil change.<br><br>Capacity after draining is approx. 20 ounces | 2.41 |
| Front Gear Case (Shaft Drive) | Premium Front Gearcase Fluid or GL5 80-90 Gear Lube | 3.25 oz. (100 cc) | Add to bottom of fill plug threads. | 2.10 |
| Shift Selector Box | Polaris 0W/40 Synthetic Engine Lubricant or 10W Motor Oil | 1 oz.<br>30cc | Oil in selector box should be at the center line of the shift selector plungers. Do not overfill or the selector may hydro-lock. | 8.9 |
| Coolant Level | Polaris Premium 60/40 pre-mixed Antifreeze/Coolant or 50/50 mixture antifreeze/coolant and distilled water | Approx. 2 Quarts | Fill reservoir tank to full line. Check after short period of operation when system is cold. Add if necessary. Refer to 2.18 for more information. | 2.18 |
| Front Hubs (AWD Models) | Premium Demand Drive Hub Fluid | 2.5 oz. (75cc) | Fill hub at 4:00 or 8:00 position until fluid trickles out. Do not force fluid into hub. | 2.32 |
| Brake Fluid | Polaris DOT 3 Brake Fluid | - | -Fill reservoir to 1/4" (6.4 mm) below cover gasket surface for aluminum reservoir.<br>-Fill between "Min" & "Max" indicators on plastic reservoir. | 2.34 |

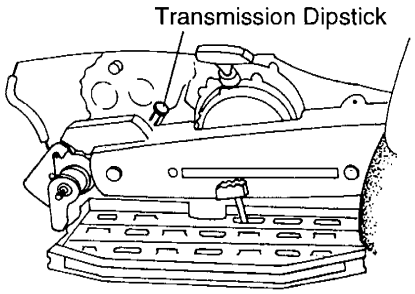
## Polaris Premium Lubricant and Maintenance Product Part Numbers

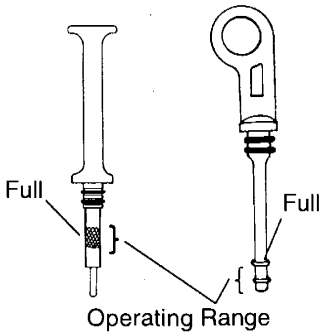
| Part No. | Description |
|---|---|
| 2871281 | Premium 4 Synthetic 0-W40 (4-Cycle) Engine Oil (Quart) |
| 2871567 | Premium 4 Synthetic 0-W40 (4-Cycle) Engine Oil (16 Gallon) |
| 2871098 | Premium 2 Cycle Engine Oil (Quart) |
| 2871097 | Premium 2 Cycle Engine Oil (Gallon) |
| 2871240 | Premium 2 Cycle Engine Oil (2.5 Gallon) |
| 2871566 | Premium 2 Cycle Engine Oil (16 Gallon) |
| 2871385 | Premium 2 Cycle Engine Oil (30 Gallon) |
| 2871240 | Premium 2 Cycle Engine Oil (55 Gallon) |
| 2871721 | Premium Gold 2 Cycle Synthetic Lubricant |
| 2871477 | Premium Synthetic Gearcase Lubricant (1 Gal.) |
| 2871478 | Premium Synthetic Gearcase Lubricant (12 oz. bottle) |
| 2870465 | Oil Pump for Gearcase Oil |
| 2871654 | Premium Demand Drive Hub Fluid (12 oz.) |
| 2871653 | Premium Front Gearcase Fluid (12 oz.) |
| 2870510 | Cable Lube |
| 2870584 | Loctite RC 680-10cc Retaining Compound |
| 2870587 | 518 Gasket Eliminator |
| 2870601 | Loctite Chisel Gasket Remover |
| 2870661 | RTV Silicone Sealer |
| 8560054 | Marine Grade Silicone Sealer (14 oz. cartridge) |
| 2870791 | Fogging Oil |
| 2870990 | DOT3 Brake Fluid |
| 2871027 | Anti-Corrosive Dielectric Grease |
| 2871322 | Premium All Season Grease (3 oz. cartridge) |
| 2871423 | Premium All Season Grease (14 oz. cartridge) |
| 2871460 | Starter Drive Grease |
| 2871515 | Premium U-Joint Lube (3 oz.) |
| 2871551 | Premium U-Joint Lube (14 oz.) |
| 2871323 | 60/40 Coolant Gallon |
| 2871534 | 60/40 Coolant Quart |
| 2871312 | Grease Gun Kit |
| 2871326 | Premium Carbon Clean 12 oz. |
| 2870652 | Fuel Stabilizer 16 oz. |

| Ill. # | Item | Lube Rec. | Method | Frequency* |
|---|---|---|---|---|
| 1 | Engine Oil (4 Strokes) | Polaris 0W/40 Synthetic | Add oil to proper level. See page 2.23. | Change after 1st month, 6 months or 100 hours thereafter; Change more often (25-50 hours) in extremely dirty conditions, or short trip cold weather operation. |
| 2 | Transmission | Polaris Synthetic Gear Case Lubricant | Add lube to FULL level on dipstick. See pages 2.41. | Change annually [2] |
| 3 | Brake Fluid | Polaris DOT 3 Brake Fluid | Fill master cylinder reservoir to 1/4" (6.4mm) from top, or between indicated lines. See page 2.34. | As required. Change fluid every 2 years. |
| 4 | Throttle Cable | Polaris Cable Lube | See page 2.11. | Semi-annually [1] |
| 5 | Speedometer Cable | Polaris Cable Lube | Disconnect cable on back of speedometer and lubricate inner cable. | Semi-annually [1] |
| 6 | Drive Chain | Polaris Chain Lube or O-Ring chain lube | Apply to chain link plates and rollers. | As required* |

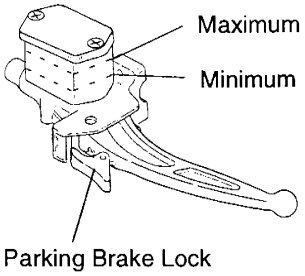


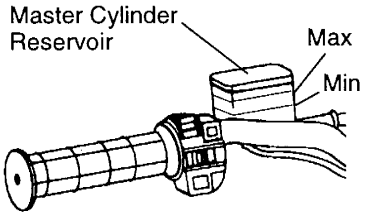

**1. Engine Oil and Filter (4 Cycle)**



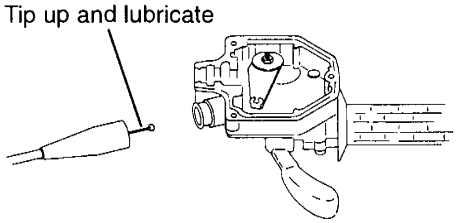




**2. Transmission Dipstick**

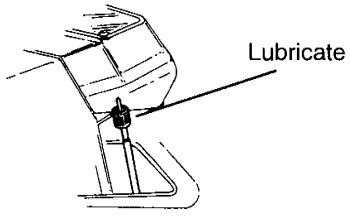


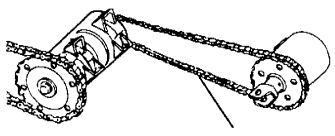

**3. Brake Fluid (Left hand Master Cylinder)**




**4. Throttle Cable**

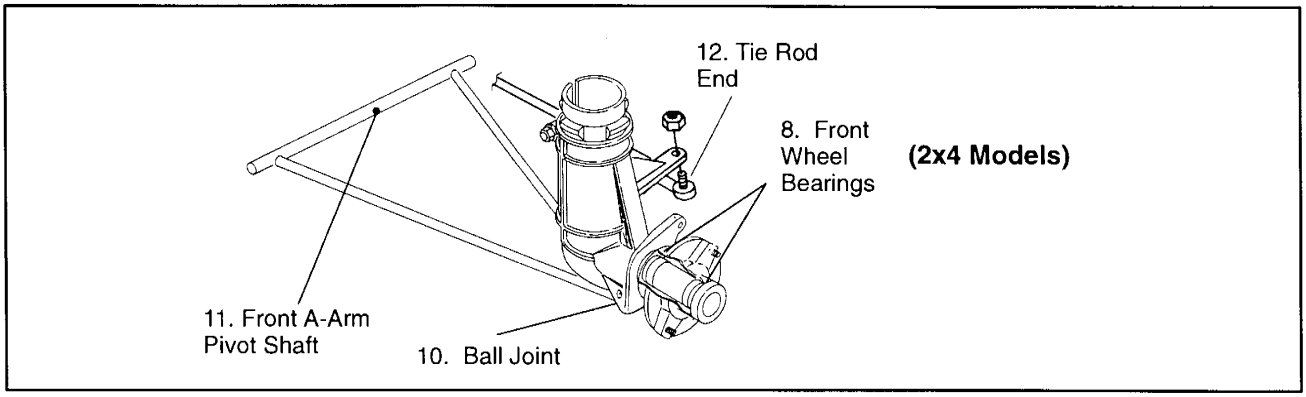


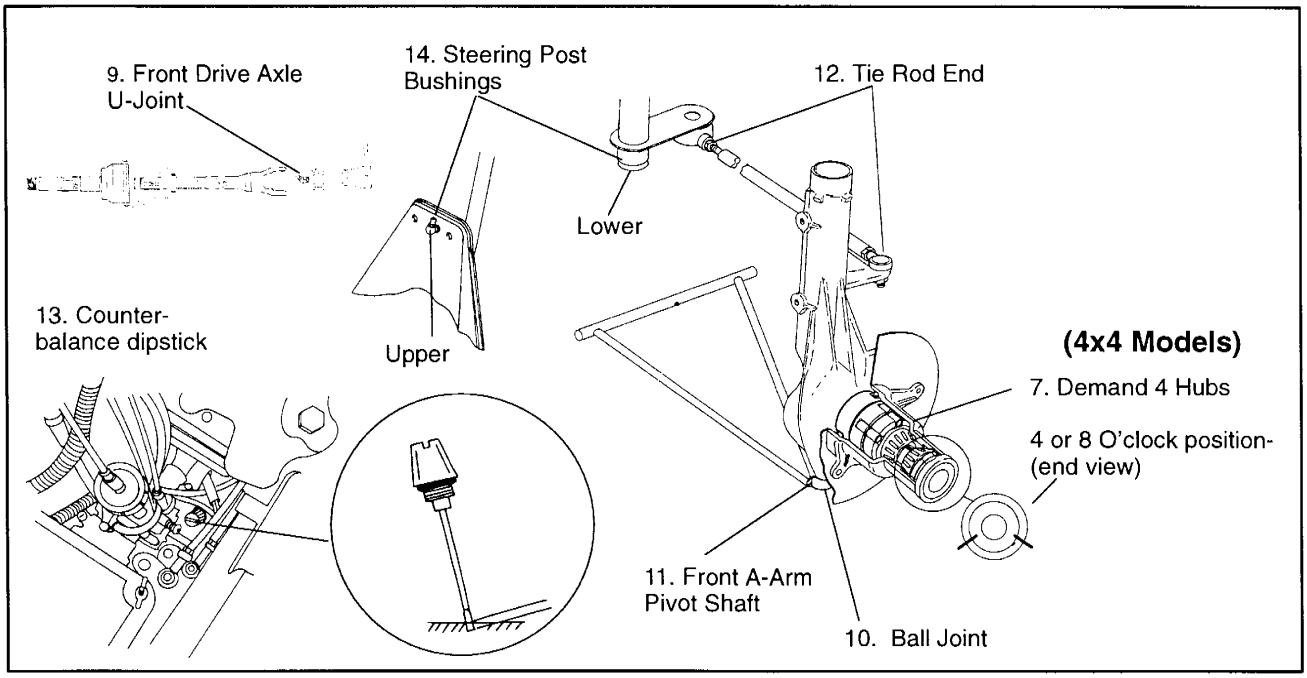

**5. Speedometer Cable**



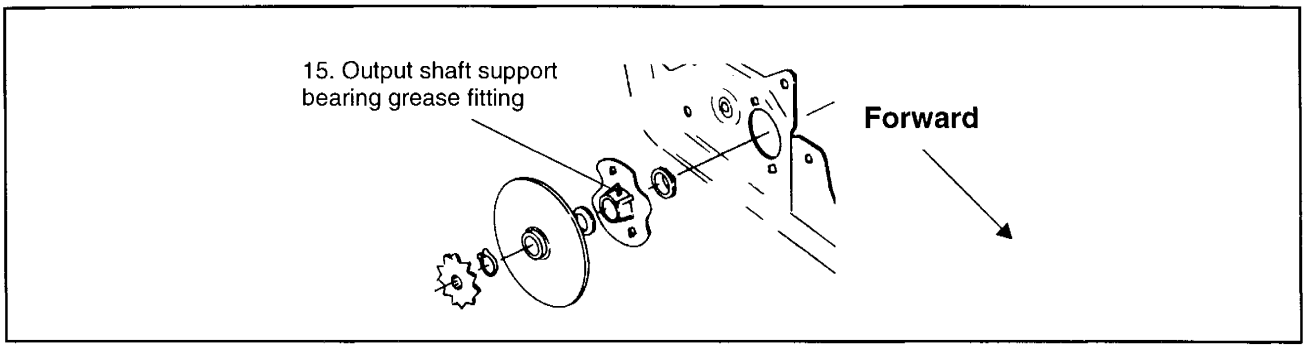
**6. Drive Chain(s)**

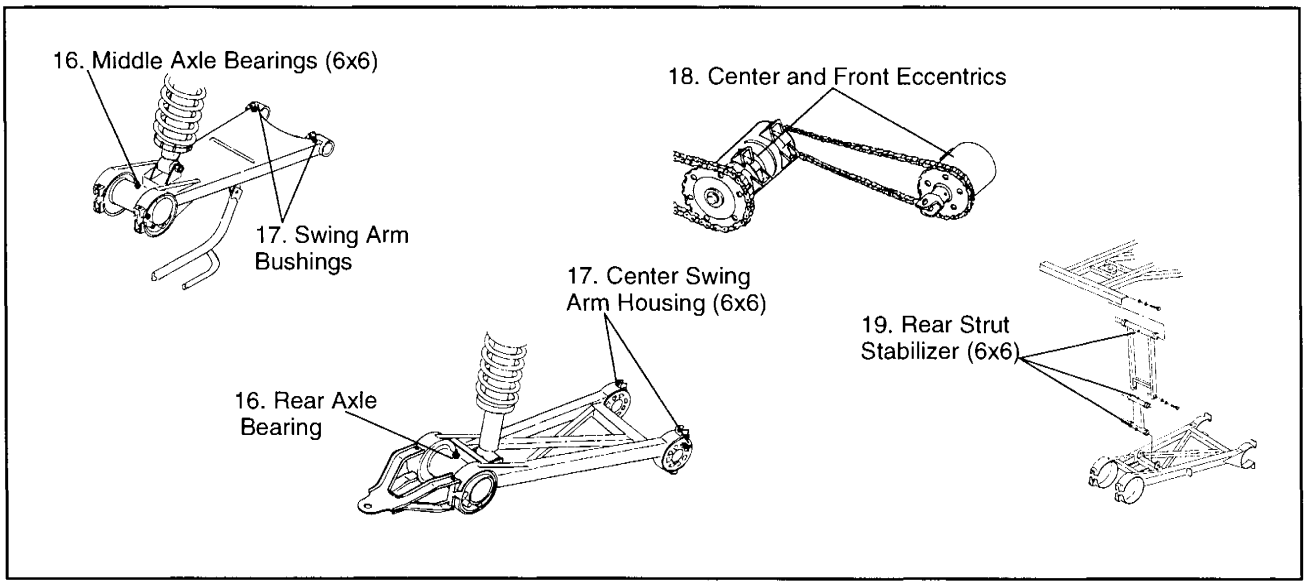
## Lubrication Chart




| Ill. # | Item | Lube Rec. | Method | Frequency* |
|---|---|---|---|---|
| 7 | Demand 4 Hubs - All Wheel Drive ATVs | Polaris Demand Drive Hub Fluid or ATF Type F | Remove filler hole screw in hubs. Rotate wheels to 4 or 8 O'clock position. If lubricant is not visible add until it flows from filler hole screw. Reinstall screw. | Semi-annually [1] |
| 8 | Front Wheel Bearings - Non - driving front wheels | Sealed; Replace | Inspect and replace bearings if necessary | Annually [2] |
| 9 | Front Drive Axle "U" Joints | Polaris U-Joint Grease** | Locate grease fitting and grease with grease gun. | Semi-annually [1] |
| 10 | Ball Joint | Polaris All Season Grease** | Locate grease fitting on back side of struts and grease with grease gun. | Semi-annually [1] |
| 11 | Front A-Arm Pivot Shaft | Polaris All Season Grease** | Locate grease fitting on pivot shaft and grease with grease gun. | Semi-annually [1] |
| 12 | Tie Rod Ends | Polaris All Season Grease** | Locate grease fitting and grease with grease gun (where applicable. On others: Lift boot. Clean away dirt and grease. Apply fresh grease by hand and reassemble. | Semi-annually [1] |
| 13 | Counter Balance Housing (400L) | 10W30 Motor Oil | Check level on dipstick and add oil as necessary. Change annually. To change oil see page 2.21. | Change Annually [2] |
| 14 | Steering Post Bushings | All Season Grease** | Locate fittings on upper and lower steering post and grease with grease gun. | Semi-annually [1] |




| III. # | Item | Lube Rec. | Method | Frequency* |
|---|---|---|---|---|
| 15 | Transmission Output Shaft | Polaris All Season Grease** | Locate grease fitting on transmission output shaft and grease with grease gun. | Semi-annually [1] |
| 15 a | Rear Strut Assy | Polaris All Season Grease** | | |
| 16 | Rear and Middle Axle Bearings (6x6) | Polaris All Season Grease** | Locate grease fitting on eccentric and grease with grease gun. | Semi-annually [1] |
| 17 | Swing Arm Bushings and Center Swing Arm Housing (6x6) | Polaris All Season Grease** | Locate grease fitting on swing arm and grease with grease gun. | Semi-annually [1] |
| 18 | Chain Adjusters (Center and Front Eccentrics) | Polaris All Season Grease** | Locate grease fitting on center eccentric and grease. Locate grease fitting on front eccentric (side opposite chain) and grease. | Semi-annually [1] |
| 19 | Rear Strut (6x6) | Polaris All Season Grease** | Locate fitting on rear strut and grease with grease gun. | Semi-annually [1] |

* More often under severe use, such as wet or dusty conditions

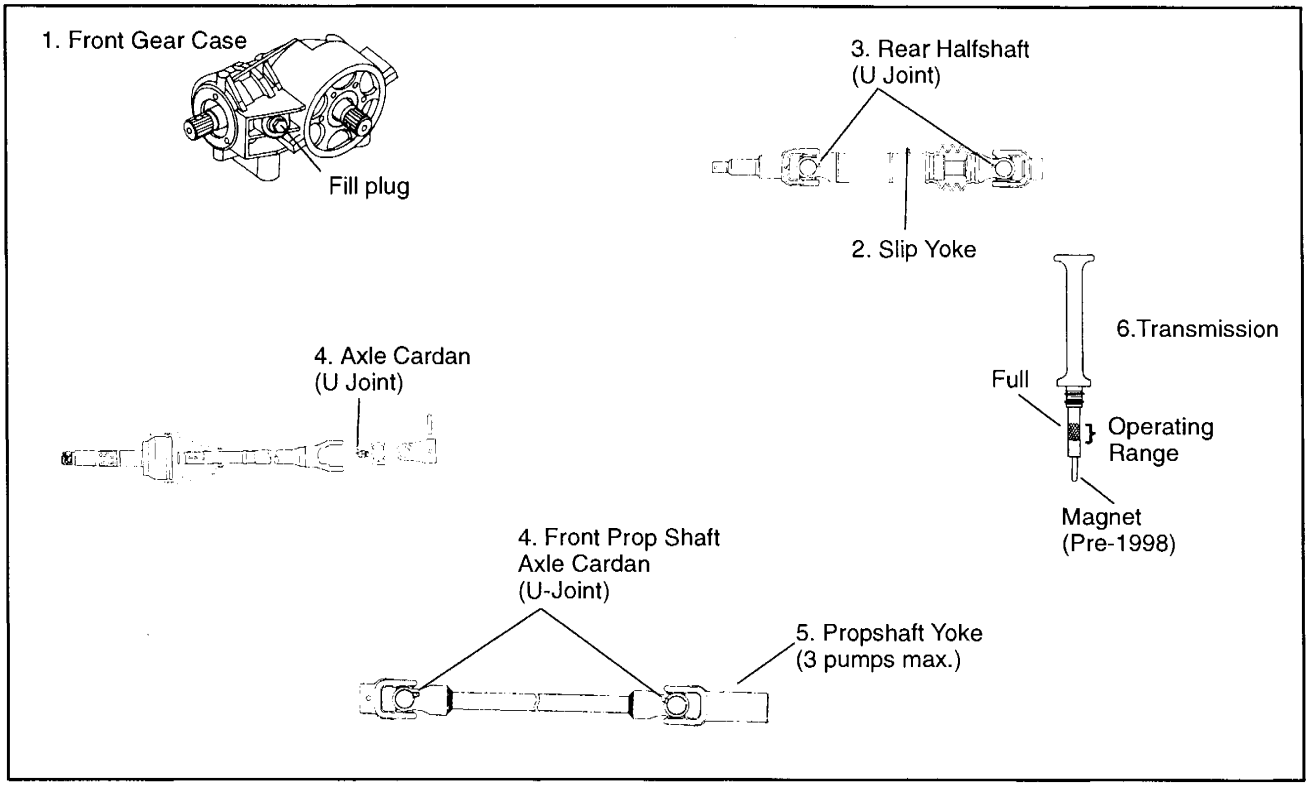
**Grease conforming to NLGI No. 2, such as Polaris Premium All Season Grease, Conoco Superlube M or Mobilegrease Special

[1] Semi-annually or 50 hours of operation

[2] Annually or 100 hours of operation

**NOTE:** Hours are based on 10 mph average.

## MAINTENANCE
## Lubrication Chart - Type IV Transmission (Shaft Drive)




**NOTE:** On Shaft Drive models, lubricate these areas in addition to applicable general lubrication items.

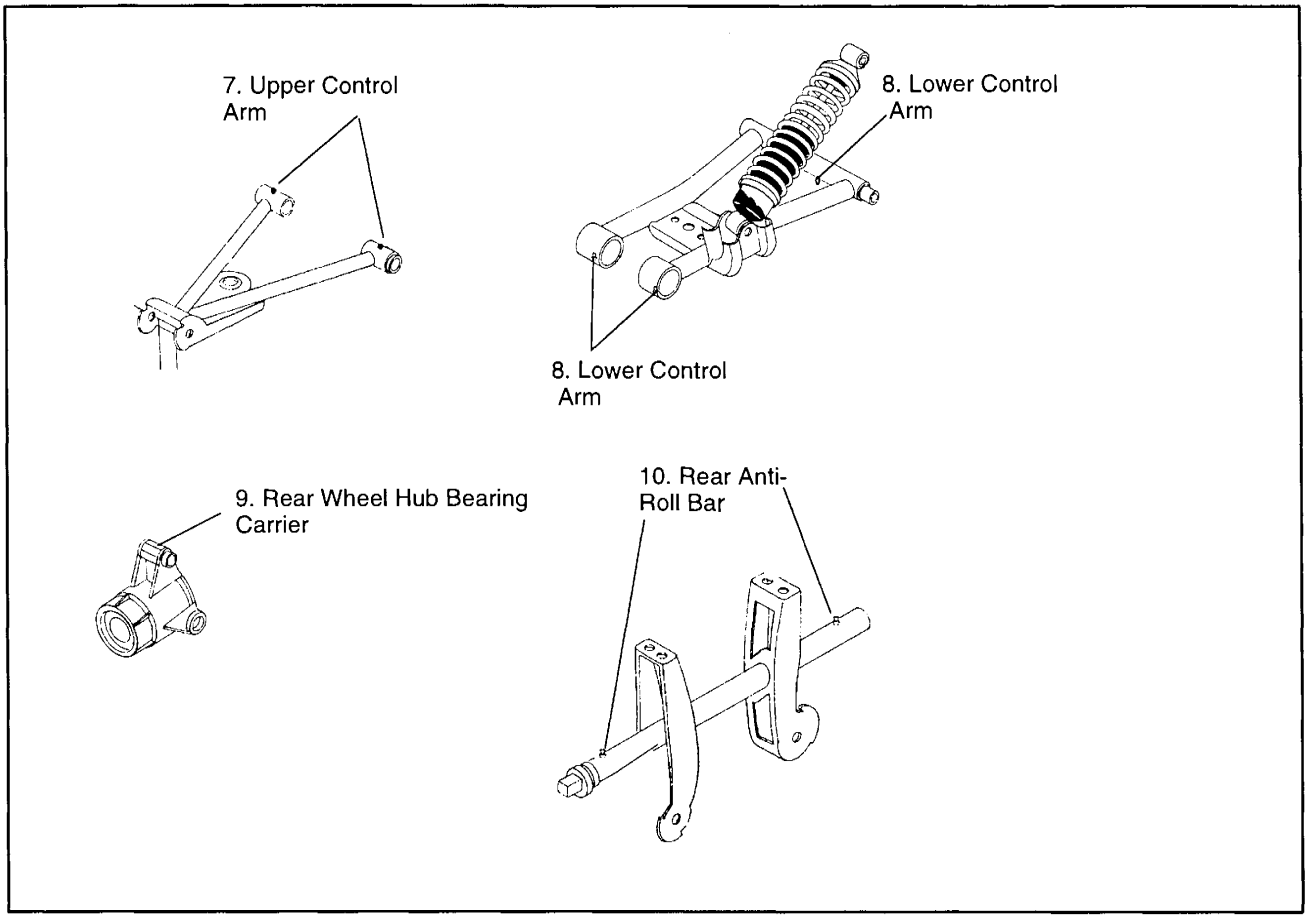
| Ill. # | Item | Lube Rec. | Method | Frequency* |
|---|---|---|---|---|
| 1 | Front Gearcase Oil | GL5 80-90 Weight Gear Lube | Add to bottom of fill plug threads. See page 2.10 | Change annually [2] |
| 2 | Slip Yoke (No grease fitting on late models) | Premium U-Joint Grease | Locate fittings and grease - 3 pumps maximum | Semi-annually [1] |
| 3 | Rear Halfshafts | Premium U-Joint Grease | Locate Fittings and Grease | Semi-annually [1] |
| 4 | Axle Cardan (U-Joint) Front Drive Shaft / Prop Shaft | Premium U-Joint Grease | Locate Fittings and Grease | Semi-annually [1] |
| 5 | Propshaft Yoke | Premium U-Joint Grease | Locate fittings and grease - 3 pumps maximum | Annually [2] |
| 6 | Transmission | Synthetic Transmission Lubricant | Add to proper level on dipstick. Approx. 20 oz. at change; Approx 32 oz. initial fill after disassembly. | Inspect Monthly; Change annually [2] |

* More often under severe use, such as wet or dusty conditions

[1] Semi-annually or 50 hours of operation

[2] Annually or 100 hours of operation

**NOTE:** Hours are based on 10 mph average.




| Ill. # | Item | Lube Rec. | Method | Frequency* |
|---|---|---|---|---|
| 7 | Upper Control Arms | Grease** | Locate fittings and grease | Semi-annually [1] |
| 8 | Lower Control Arms | Grease** | Locate fittings and grease | Semi-annually [1] |
| 9 | Rear Wheel Hub Bearing Carrier | Grease** | Locate fittings and grease | Semi-annually [1] |
| 10 | Rear Anti-Roll Bar | Grease** | Locate fittings and grease | Semi-annually [1] |

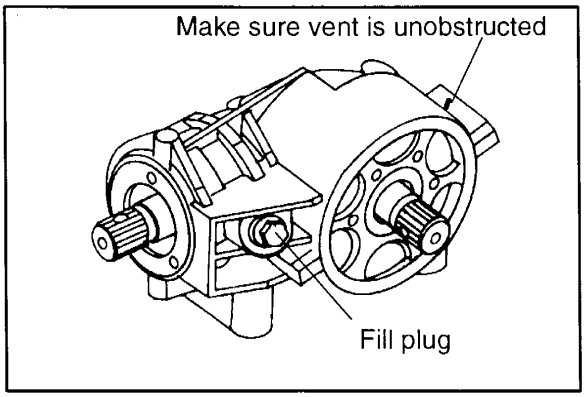
* More often under severe use, such as wet or dusty conditions
**Grease conforming to NLGI No. 2, such as Polaris Premium All Season Grease, Conoco Superlube M or Mobilegrease Special
[1] Semi-annually or 50 hours of operation
[2] Annually or 100 hours of operation
**NOTE:** Hours are based on 10 mph average.

# MAINTENANCE
## Front Gearcase Lubrication - Type IV Transmission (Shaft Drive)

### Front Gearcase Lubrication

The front gearcase fill plug is located on the right side of the machine.

The gearcase lubricant level should be checked every six months or 1000 miles (1600 km), whichever comes first. Change front gearcase lubricant annually or at 100 hour intervals, whichever comes first. With the ATV on a level surface, remove fill plug and check the lubricant level. Lubricant should be kept at the bottom of the fill hole threads. The correct gearcase lubricant to use is GL5 80-90 Gear Lube.




**Front Gearcase Lubricant**
**PN 2871653**
Or GL5 80-90 Gearlube

### Gearcase Lubricant Change

1. Remove fill plug.
2. Remove gearcase drain plug located on the bottom right hand side and drain the oil. Catch and discard used oil properly.
3. Clean and reinstall the drain plug using a new sealing washer.
4. Add GL5 80-90W Gear Lube to bottom of fill hole threads.
5. Install fill plug.
6. Check for leaks.
7. Make sure vent hose is clear and free of kinks.

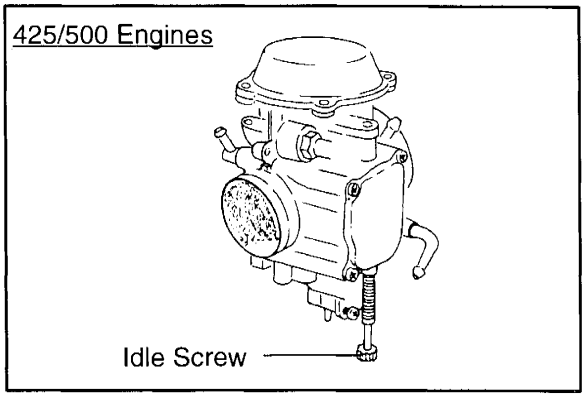
## Carburetor Adjustments

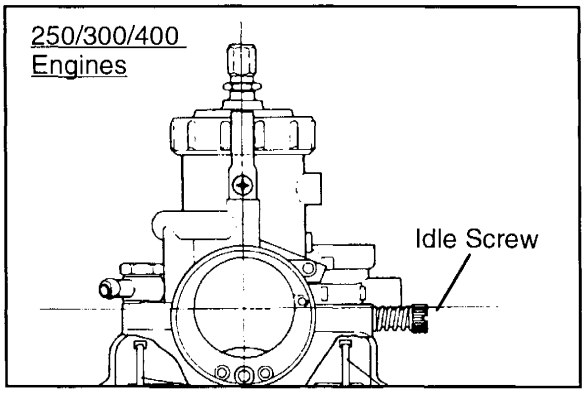
### Idle Speed Adjustment

1. Start engine and warm it up thoroughly.
2. Adjust idle speed by turning the idle adjustment screw. See illustrations at right.

**NOTE:** Adjusting the idle speed affects throttle cable freeplay and electronic throttle control (ETC) adjustment. Always check throttle cable freeplay after adjusting idle speed and adjust if necessary.

| Idle Speed: (+- 100 RPM) | |
|---|---|
| 425/500 Engine | 1200 |
| 250/300/400 Engines | 700 |




### Throttle Cable / Electronic Throttle Control (ETC Switch) Adjustment

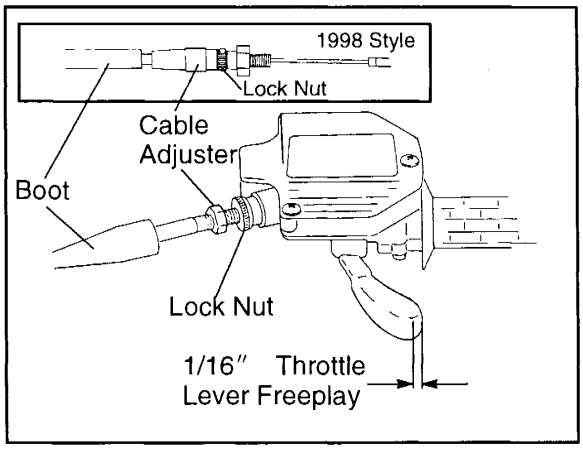
1. Slide boot off throttle cable adjuster and jam nut at throttle block.
2. Place shift selector in neutral and set parking brake.
3. Start engine and set idle to.

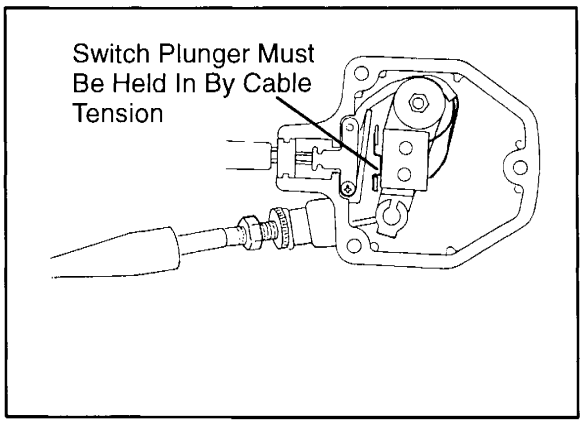
**NOTE:** Be sure the engine is at operating temperature. See Idle Speed Adjustment.

4. Loosen lock nut.
5. Turn cable adjuster out until engine RPM starts to increase.
6. Turn cable adjuster back in until throttle lever has 1/16″ (.16 cm) of travel before engine RPM increases. Be sure ETC switch plunger is held inward by throttle cable tension.
7. Tighten lock nut securely and slide boot completely in place to ensure a water-tight seal.

**NOTE:** On 2 stroke models, whenever throttle cable adjustments are made, always check oil pump adjustment. Refer to pages 2.19 - 2.20 for adjustment procedure.

8. Turn handlebars from left to right through the entire turning range. If idle speed increases, the throttle cable freeplay must be increased, or check for proper cable routing.




### Throttle Operation

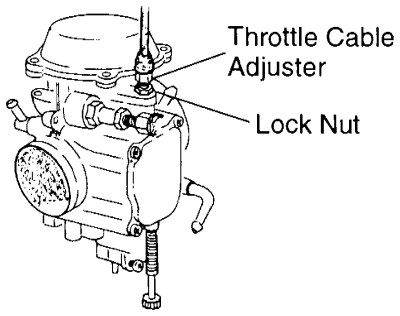
Check for smooth throttle opening and closing in all handlebar positions. Throttle lever operation should be smooth and lever must return freely without binding. Replace the throttle cable if worn, kinked, or damaged.

# MAINTENANCE
## Carburetor Adjustments

### Throttle Cable Adjustment

**NOTE:** If the proper freeplay cannot be obtained with the throttle block adjuster, adjust the cable at the carburetor using the following procedure. See Ill. 1 and 3.

1. Remove fuel tank.
2. Slide boot off throttle cable adjuster and jam nut.
3. Loosen lock nut and turn adjuster until proper throttle lever freeplay is obtained.
4. Tighten locknut and slide boot back over adjuster.
5. Reinstall fuel tank.
6. Check for proper throttle operation and correct freeplay in all handlebar positions.



Ill. 1 4-Stroke CV Carburetor

### Choke Adjustments

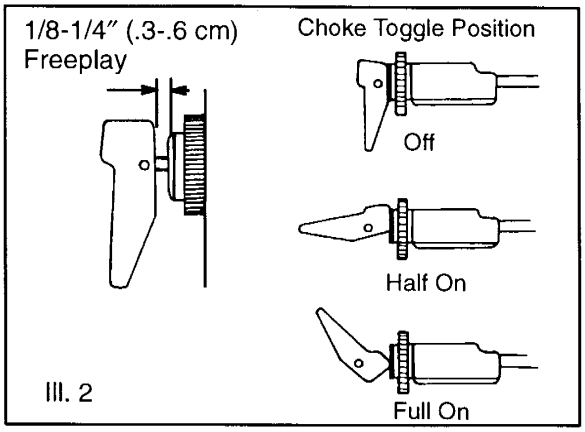
With the choke control toggle flipped to the full off position, the choke plunger must be seated on the fuel passage way in the carburetor. If the plunger is not seated on the passage way, the engine will flood or run too rich, causing plug fouling and very poor engine performance.

If cable slack is too great there will be excessive toggle free play resulting in hard cold starting. Also, the half on position used for intermittent applications will not function.

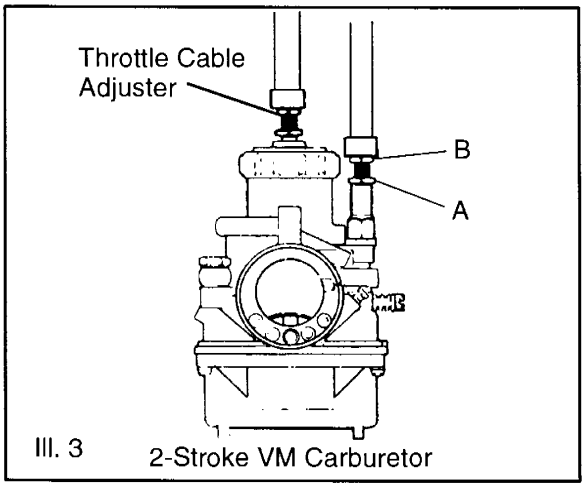
1. Flip choke toggle to full off position.
2. Loosen adjustment locknut (A) on carburetor.
3. Turn cable sleeve adjusting nut (B) clockwise on carburetor until 1/4″ (6 mm) or more choke toggle free play is evident.
4. Turn cable sleeve adjusting nut counterclockwise on carburetor until toggle has zero free play, then rotate it clockwise until 1/8″-1/4″ (3-6 mm) toggle free play is evident.
5. Tighten adjustment locknut (A).

**Choke Lever Freeplay -**

**1/8 - 1/4″ (.3 - .6 cm)**



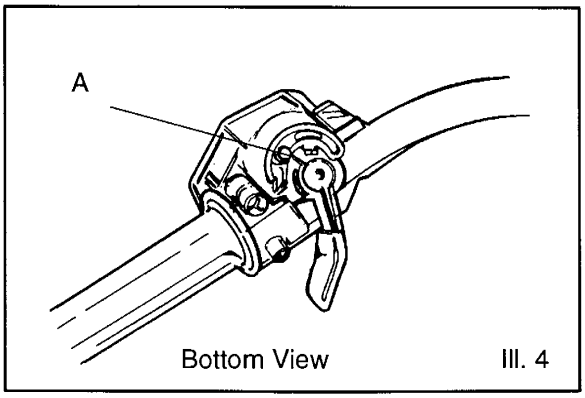
Ill. 2



Ill. 3 2-Stroke VM Carburetor

### Throttle Control Lever Stop Adjustment

The throttle control lever incorporates an adjustable stop. This can be adjusted to limit the amount of throttle opening by loosening the screw (A) and sliding the stop to a desired setting. Then tighten screw. See Ill. 4.



Bottom View Ill. 4

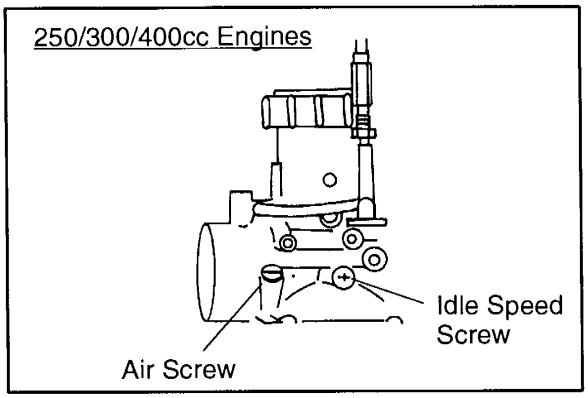
## Air Screw Adjustment

### 2–Stroke Models

1. Turn carburetor air screw in until lightly seated. Back screw out the specified number of turns.

**Air Screw Adjustment (2-Stroke engines)**

**Refer to Specifications (Chapter 4)**




2. Warm up the engine to operating temperature.
3. Set idle speed to 600-800 RPM.

**NOTE:** Adjusting the air screw may affect idle speed. Always check throttle cable freeplay after adjusting idle speed and adjust if necessary.

4. Turn the screw in (to richen) or out (to lean) the mixture. Adjust air screw for best throttle response and smooth idle.
5. Re-adjust idle if necessary.

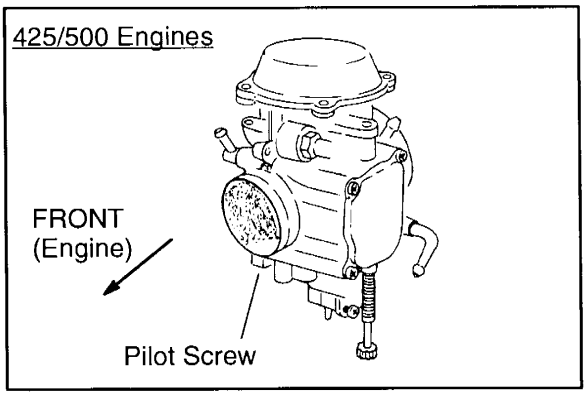
## Pilot Screw (Idle Mixture) Adjustment

### 4–Stroke Models

**NOTE:** The pilot screw is pre-set at the factory. The following adjustment procedure should be used after disassembly and cleaning or if the pilot screw is replaced. Be sure all engine maintenance items have been performed and are within specifications before adjusting pilot screw.

1. Turn pilot screw in (clockwise) until *lightly* seated. Turn screw out the specified number of turns.

**Pilot Screw Adjustment**
**(4-Stroke Engines)**
**Refer to Specifications (Chapter 4)**



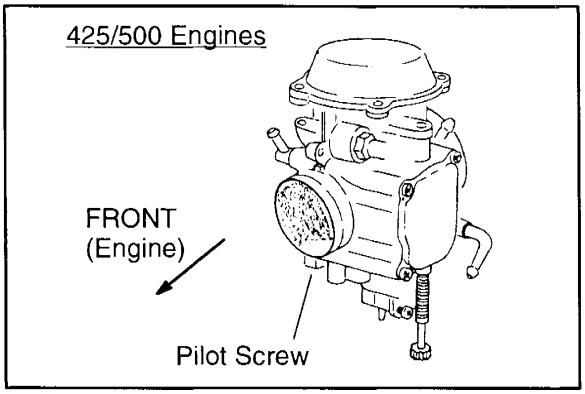

2. Start engine and warm it up to operating temperature (about 10 minutes).
3. Connect an accurate tachometer that will read in increments of + or – 50 RPM.
4. Set idle speed to 1200 RPM. Always check throttle cable freeplay after adjusting idle speed and adjust if necessary.
5. Slowly turn mixture screw clockwise until RPM begins to decrease by 50 RPM or greater.

### Pilot Screw (Idle Mixture) Adjustment, Cont.

### 4–Stroke Models

**NOTE:** If tamper proof plug is installed refer to removal procedure below.

6. Slowly turn mixture screw counterclockwise until idle speed increases to maximum RPM. Continue turning counterclockwise until idle RPM begins to drop.
7. Center the pilot screw between the points in step 5 and 6.
8. Re adjust idle speed if not within specification.



## Fuel Lines

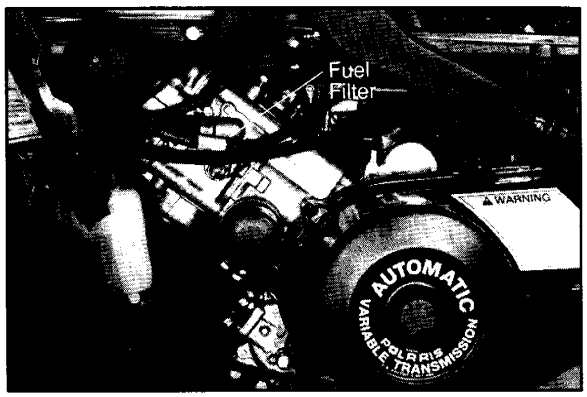
1. Check fuel lines for signs of wear, deterioration, damage or leakage. Replace if necessary.
2. Be sure fuel lines are routed properly and secured with cable ties. **CAUTION:** Make sure lines are not kinked or pinched.
3. Replace all fuel lines every two years.

## Vent Lines

1. Check fuel tank, oil tank, carburetor, battery and transmission vent lines for signs of wear, deterioration, damage or leakage. Replace every two years.
2. Be sure vent lines are routed properly and secured with cable ties. **CAUTION:** Make sure lines are not kinked or pinched.

## Fuel Filter

The fuel filter should be replaced periodically or whenever sediment is visible in the filter.




1. Shut off fuel supply at fuel valve.
2. Remove line clamps at both ends of the filter.
3. Remove fuel lines from filter.
4. Install new filter and clamps onto fuel lines with arrow pointed in direction of fuel flow.
5. Install clamps on fuel line.
6. Start engine and inspect for leaks.
7. Reinstall fuel tank.

## Carburetor Float Bowl Draining

**⚠ WARNING**

*Gasoline is extremely flammable and explosive under certain conditions.*

⚠ Always stop the engine and refuel outdoors or in a well ventilated area.

⚠ Do not smoke or allow open flames or sparks in or near the area where refueling is performed or where gasoline is stored.

⚠ Do not overfill the tank. Do not fill the tank neck.

⚠ If you get gasoline in your eyes or if you swallow gasoline, see your doctor immediately.

⚠ If you spill gasoline on your skin or clothing, immediately wash it off with soap and water and change clothing.

⚠ Never start the engine or let it run in an enclosed area. Gasoline powered engine exhaust fumes are poisonous and can cause loss of consciousness and death in a short time.

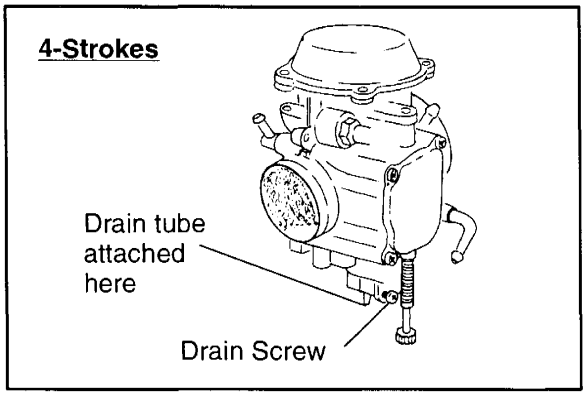
⚠ Never drain the float bowl when the engine is hot. Severe burns may result.

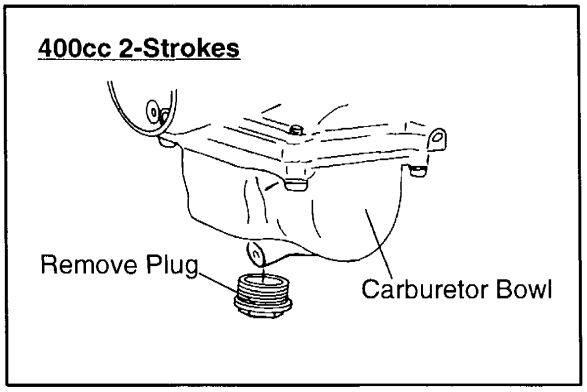
## Carburetor Draining

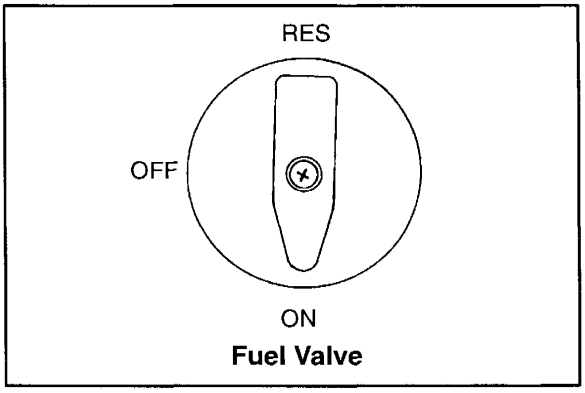
The carburetor float bowl should be drained periodically to remove moisture or sediment from the bowl, or before extended periods of storage.

**NOTE:** The bowl drain screw is located on the bottom left side of the float bowl on 4-stroke models. A drain plug (which also acts as a water/sediment trap) is located on the bottom of the float bowl on 400cc 2-stroke models.

1. Turn fuel valve to the off position.
2. Remove left side body panel. See Body Panel Removal, Chapter 5.
3. Place a clean container beneath the bowl drain spigot or bowl drain hose.
4. Turn drain screw out two turns (remove drain plug for 2-Strokes) and allow fuel in the float bowl and fuel line to drain completely.
5. Inspect the drained fuel for water or sediment.
6. Tighten drain screw.
7. Turn fuel valve to "on".
8. Start machine and check for leaks.



**Fuel Valve**

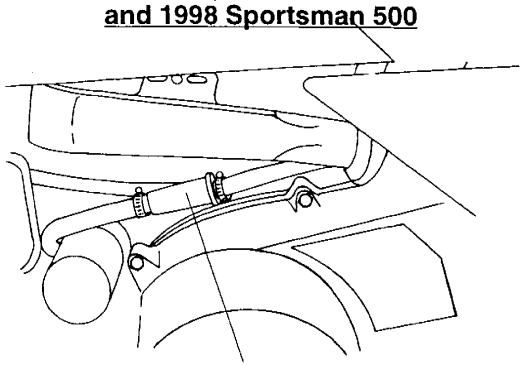
## Breather Filter Inspection

1. Inspect the breather filter(s) for obstruction. Replace if necessary. Breather filter service life is extended when the air box pre-filter is in place and maintained properly. Never operate the engine without the pre-filter.

## Breather Hose

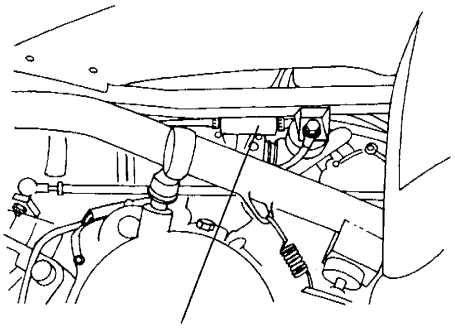
1. Be sure breather line is routed properly and secured in place. **CAUTION:** Make sure lines are not kinked or pinched.

**1997 Magnums, 500 6x6, and 1998 Sportsman 500**

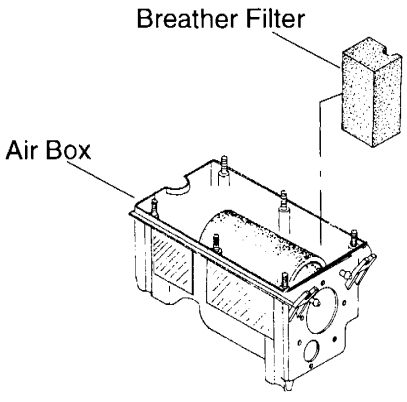


Breather Filter (In-Line)

**Scrambler 500**



Breather Filter (In-Line)



### Compression Test - 2 Stroke

1. Remove spark plug and install compression tester.
2. Connect high tension lead to a good ground on engine.
3. Open throttle and crank engine until maximum reading is obtained (approximately 3-5 revolutions).

| Cylinder Compression (2-Stroke) | |
|---|---|
| **Service Limit** | **115 PSI** |

### Compression Test - 4 Stroke

**NOTE:** 4-Stroke engines are equipped with an automatic decompressor. Compression readings will vary in proportion to cranking speed during the test. Average compression (measured) is about 50-90 psi during a compression test.

Smooth idle generally indicates good compression. Low engine compression is rarely a factor in running condition problems above idle speed. Abnormally high compression can be caused by a decompressor malfunction, or worn or damaged exhaust cam lobes. Inspect camshaft and automatic decompression mechanism if compression is abnormally high.

A cylinder leakage test is the best indication of engine condition on models with automatic decompression. Follow manufacturer's instructions to perform a cylinder leakage test. (Never use high pressure leakage tester as crank seals may dislodge and leak).

| Cylinder Leakage | |
|---|---|
| **Service Limit (4-Stroke)** | **10 %** |
| **(Inspect for cause if leakage exceeds 10%)** | |

## ⚠ WARNING

Battery electrolyte is poisonous. It contains sulfuric acid. Serious burns can result from contact with skin, eyes or clothing. Antidote:

**External:** Flush with water.

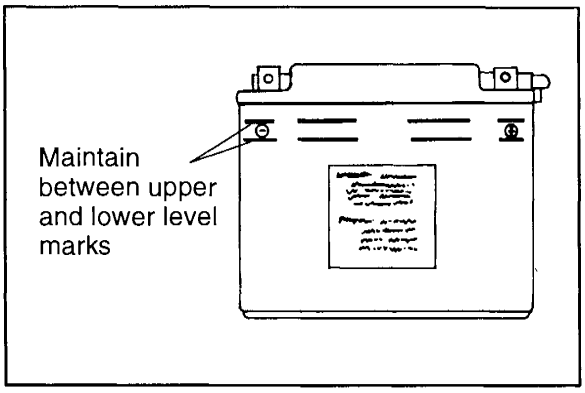
**Internal:** Drink large quantities of water or milk. Follow with milk of magnesia, beaten egg, or vegetable oil. Call physician immediately.

**Eyes:** Flush with water for 15 minutes and get prompt medical attention.

Batteries produce explosive gases. Keep sparks, flame, cigarettes, etc. away. Ventilate when charging or using in an enclosed space. Always shield eyes when working near batteries. KEEP OUT OF REACH OF CHILDREN.

The battery is located under the left rear fender.

Inspect the battery fluid level. When the battery fluid nears the lower level, the battery should be removed and distilled water should be added to the upper level line. To remove the battery:




1. Disconnect holder strap and remove cover.
2. Disconnect battery negative (-) (black) cable first, followed by the positive (+) (red) cable.

### ⚠ CAUTION

Whenever removing or reinstalling the battery, disconnect the negative (black) cable first and reinstall the negative cable last!

3. Disconnect the vent hose.
4. Remove the battery.
5. Remove the filler caps and add *distilled water only* as needed to bring each cell to the proper level. Do not overfill the battery.

⚠ To refill use only distilled water. Tap water contains minerals which are harmful to a battery.

⚠ Do not allow cleaning solution or tap water to enter the battery. It will shorten the life of the battery.

6. Reinstall the battery caps.
7. Clean battery cables and terminals with a stiff wire brush. Corrosion can be removed using a solution of one cup water and one tablespoon baking soda. Rinse will with clean water and dry thoroughly.
8. Reinstall battery, attaching positive (+) (red) cable first and then the negative (-) (black) cable.
9. Reattach vent hose making sure it is not kinked or pinched.
10. Coat terminals and bolt threads with Polaris dielectric grease PN 2871027.
11. Reinstall battery cover and holder strap.

⚠ Do not start the engine with the battery disconnected. Vehicle lamps will burn out if battery is disconnected or has a specific gravity lower than 1.14 during vehicle operation. Also, the reverse speed limiter can be damaged.

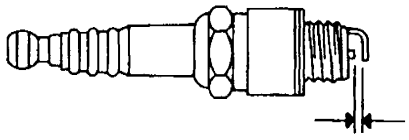
## Spark Plug

1. Remove right body panel. See Body Panel Removal, Chapter 2 (4 strokes). On two stroke models, access spark plug through the right front footwell.
2. Remove spark plug high tension lead. Clean plug area so no dirt and debris can fall into engine when plug is removed.
3. Insert spark plug wrench provided in tool kit. Remove spark plug.
4. Inspect electrodes for wear and carbon buildup. Look for a sharp outer edge with no rounding or erosion of the electrodes.
5. Clean with electrical contact cleaner or a glass bead spark plug cleaner only. **CAUTION:** A wire brush or coated abrasive should not be used.
6. Measure gap with a wire gauge. Recommended spark plug gap is shown in chart at right. Adjust if necessary by bending the side electrode carefully.
7. If necessary, replace spark plug with proper type. **CAUTION:** Severe engine damage may occur if the incorrect spark plug is used.
8. Coat spark plug threads with a small amount of anti-seize compound.
9. Install spark plug and torque to 14 ft. lbs.

**Recommended Spark Plug:**

| | |
|---|---|
| **4-Stroke** | **NGK BKR5ES**<br>**Spark Plug Gap:**<br>**.025″ (.6 mm)** |
| **2-Stroke** | **NGK BR8ES**<br>**Spark Plug Gap:**<br>**.028″ (.7mm)** |

**Spark Plug Torque:**
**14 Ft. Lbs.**



**Spark Plug Gap**
.024 - .028″ (.6 - .7 mm)

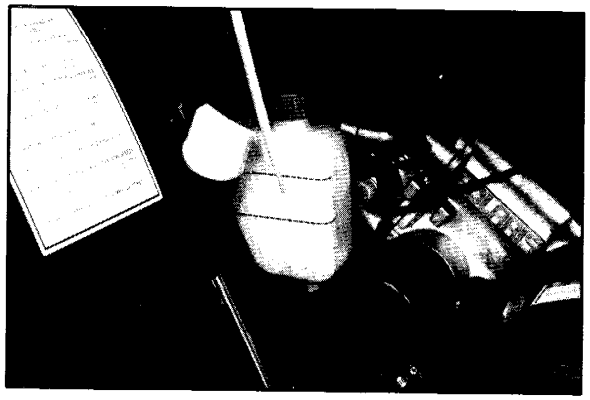
## Ignition Timing

Refer to the electrical section for ignition timing procedure.

### Engine Mounts

Inspect rubber engine mounts for cracks or damage. Check fasteners and ensure they are tight.

## Coolant Level Inspection



With the engine at operating temperature, the coolant level should be between the upper and lower marks on the recovery bottle. If not:

1. Remove recovery bottle cap. Inner splash cap vent hole must be clear and open.
2. Fill recovery bottle to upper mark with Polaris Premium 60/40 Anti Freeze / Coolant or 50/50 or 60/40 mixture of antifreeze and distilled water.
3. Reinstall cap.

**NOTE:** If coolant is excessively low in the radiator, coolant will not circulate or be drawn in from the recovery bottle.

## Coolant Strength

Test the strength of the coolant using an antifreeze hydrometer. A 50/50 or 60/40 mixture of antifreeze and distilled water will provide the optimum cooling, corrosion protection, and antifreeze protection. Do not use tap water, straight antifreeze, or straight water in the system. Tap water contains minerals and impurities which build up in the system. Straight water or antifreeze will cause the system to freeze.

Antifreeze Hydrometer

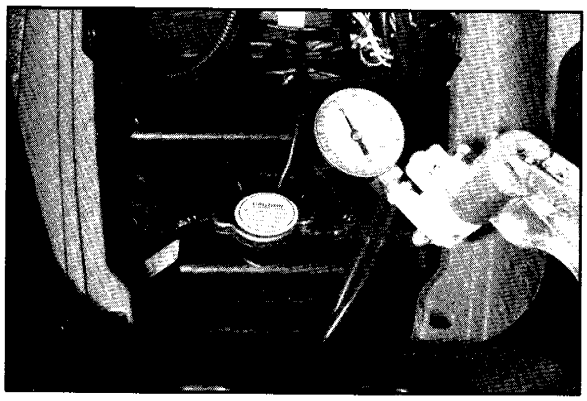
**Polaris 60/40 Anti-Freeze / Coolant**

**PN 2871323**

## Cooling System Hoses

1. Inspect all hoses for cracks, deterioration, abrasion or leaks. Replace if necessary.
2. Check tightness of all hose clamps.

## Radiator



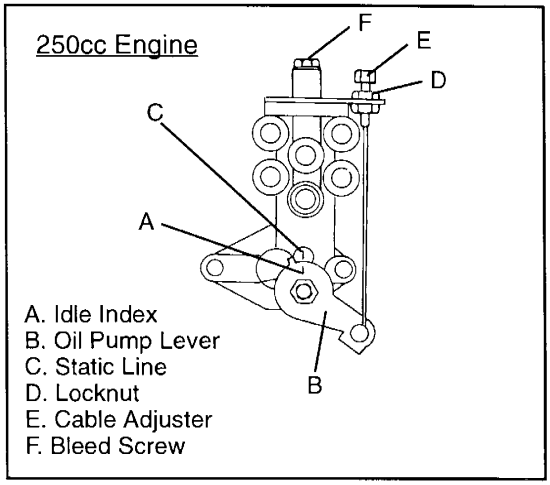
1. Check radiator air passages for restrictions or damage.
2. Carefully straighten any bent radiator fins.
3. Remove any obstructions with compressed air or low pressure water.

## Cooling System Pressure Test

Refer to page 3.6 for pressure test procedure.

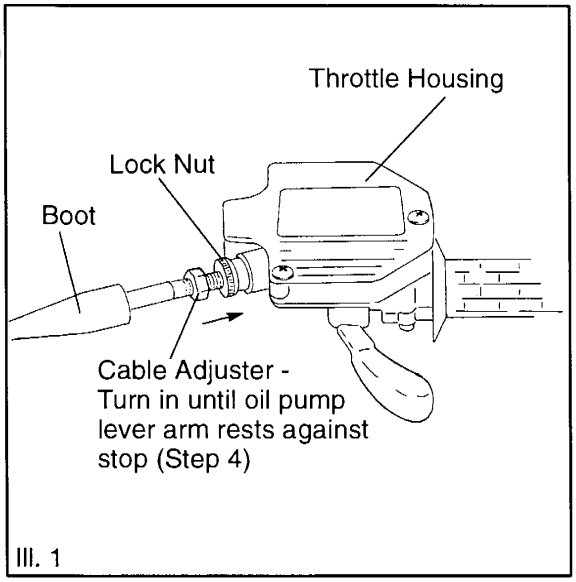
## Oil Pump Adjustment Procedure (1996 250cc Engines)

1. Before adjusting the oil pump, check engine idle RPM. Recommended RPM is 700. Adjust if necessary. Check and adjust throttle lever free play (ETC switch). See page 2.12.
2. Start the engine and let it idle. Place very slight pressure on the throttle lever until all freeplay is removed from throttle cable to carburetor.
3. Loosen locknut (D) and align marks (A) and (C) by turning adjuster (E) up or down as needed.
4. When the marks are aligned, tighten locknut (D).
5. Check throttle lever freeplay/ETC switch adjustment and readjust at throttle block if necessary.



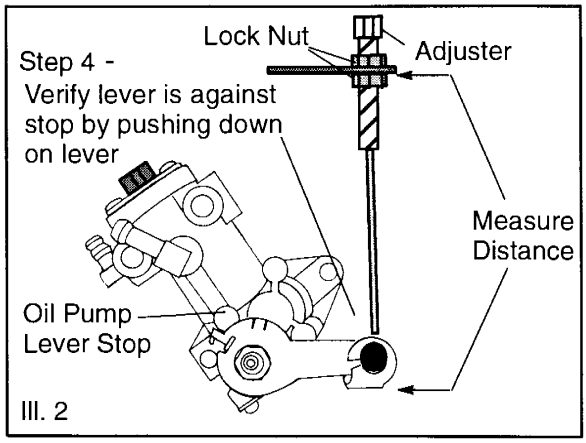

## Oil Pump Adjustment Procedure (300cc Engines and 1997 to current 250 cc Engines)

1. Adjust engine idle speed to 600-800 RPM.
2. Remove seat, air box cover, and air filter to gain access to carburetor slide.
3. Pull boot back from throttle cable adjuster located on throttle housing. Loosen lock nut. See. Ill. 1.



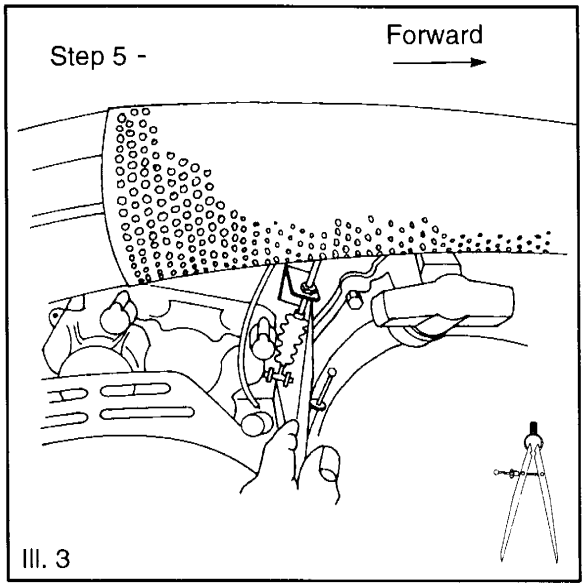

4. Turn adjuster into throttle housing until the oil pump lever arm rests firmly against its stop on the oil pump body. Verify this by pushing downward on lever arm and checking for movement. See Ill. 2.

**NOTE:** If lever arm cannot rest against stop even with throttle cable adjuster screwed all the way in, loosen oil pump cable adjuster nuts and adjust cable down until lever arm is firmly against stop.



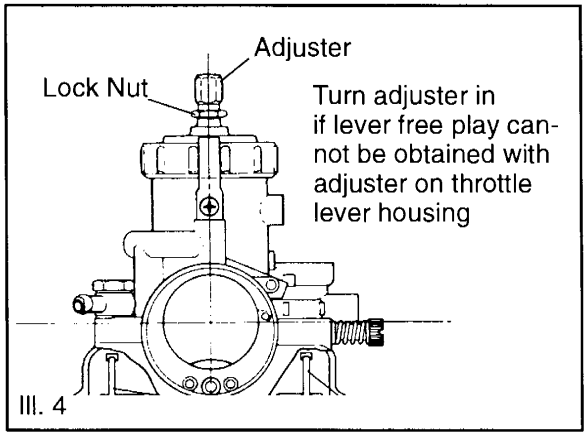
## Oil Pump Adjustment Procedure (300cc Engines and 1997 to current 250 cc Engines), cont.

5. Using machinist's dividers or a drafting compass, gauge the distance from the bottom of the cable bracket to the bottom of the lever arm tip as shown in Ill. 3. Note the exact position of the divider on the bracket and lever arm. The divider must be in the same position on these parts when you perform the oil pump cable measurements in Step 8. It may be helpful to scribe or mark a line on the end of the lever arm to use as a reference. See Ill. 2 and 3.
6. Measure the width of the divider on a metric ruler to the nearest 1/2 millimeter. Record this measurement.



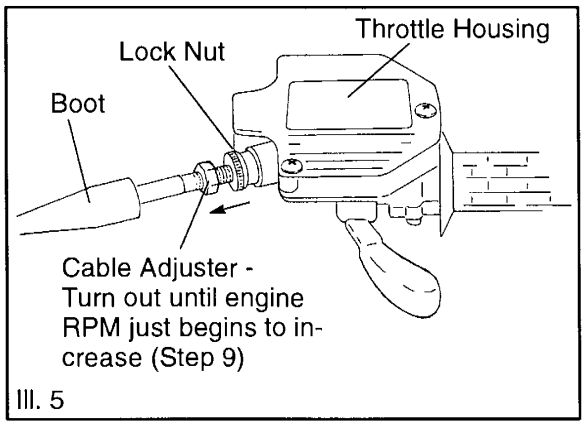
Ill. 3

Note: The carburetor slide must be resting against the idle stop screw and the throttle lever must have free play before proceeding with Step 7. If you cannot obtain free play at the carburetor even with the throttle housing adjuster screwed completely into the throttle housing, loosen the lock nut on top of carburetor, turn the throttle cable adjuster in until free play is obtained, tighten the lock nut, and then proceed with Step 7.



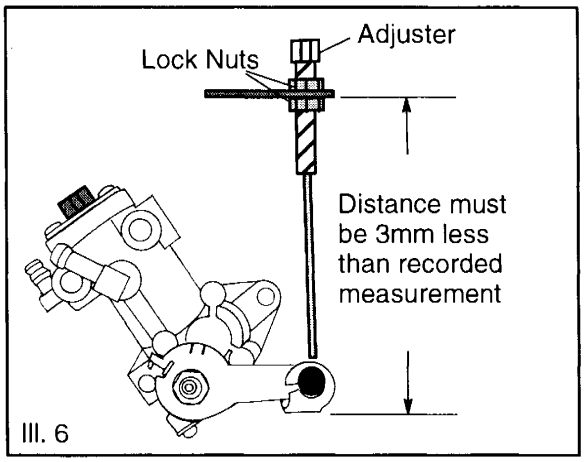
Ill. 4

7. Place gear selector in neutral and set parking brake.
8. Start engine.
9. Turn the adjuster on the throttle lever housing out until the engine RPM just begins to rise. Repeat this step to make sure you have the throttle cable set to the exact point where the slide (engine RPM) just begins to rise.
10. Stop engine.



Ill. 5

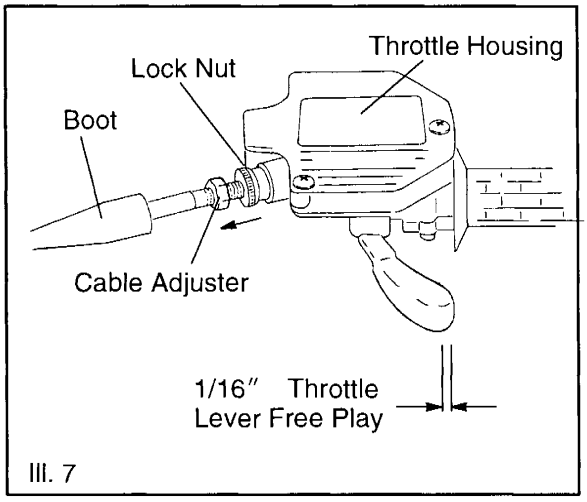
11. Adjust the dividers to a distance 3mm less than the measurement recorded in Step 6. Set the distance from the bracket to the lever arm tip (or mark made in Step 5) by placing the divider points in exactly the same location as in step 5. Loosen lock nuts and adjust oil pump cable to new divider dimension. Tighten lock nuts. Note: Adjustment may change when oil pump cable adjuster lock nuts are tightened. Verify the distance is 3mm less than the recorded measurement.



Ill. 6

12. Reinstall air filter, air box cover, and seat.

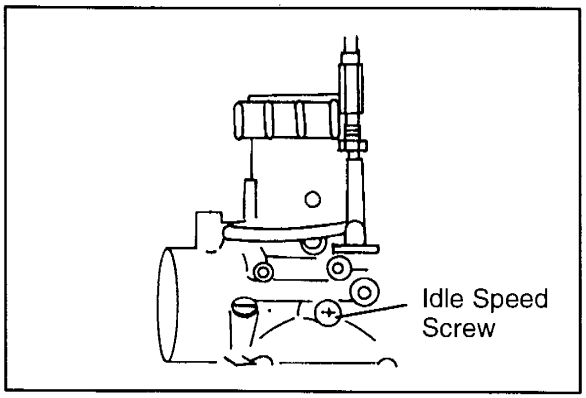
13. Turn throttle cable adjuster in (at throttle housing) approximately 1 turn. Place transmission in neutral, set parking brake, start engine and let it idle.
14. Turn throttle cable adjuster out until engine RPM starts to increase.
15. Turn adjuster in until there is 1/16″ of throttle lever movement before engine RPM begins to increase. Tighten lock nut and slide boot over adjuster.
16. Turn handlebars from left to right through the entire turning range. If engine RPM increases, readjust throttle cable free play and check for proper cable routing.



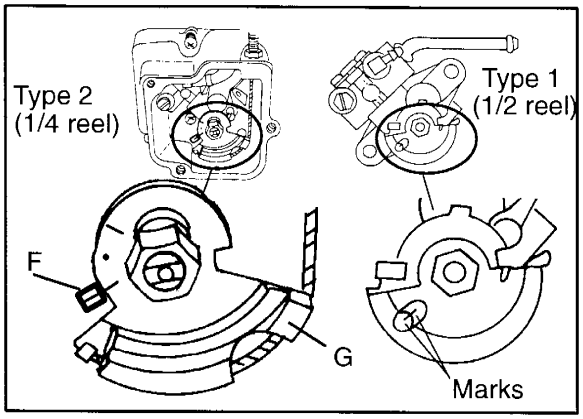
Ill. 7

## Oil Pump Adjustment Procedure (400L Engines)

1. Before adjusting the oil pump, check engine idle RPM. Recommended RPM is 700. Adjust if necessary. Check and adjust throttle lever free play (ETC switch). See page 2.11.

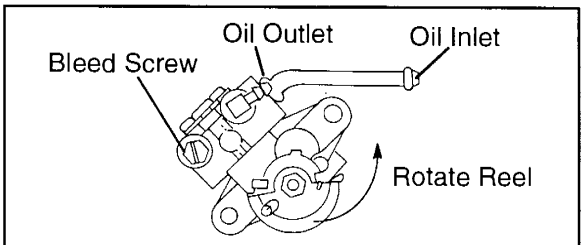



2. Adjust oil pump cable until marks (F) align when throttle slide just begins to raise and engine speed just begins to increase.
3. Tighten jam nuts.
4. Reinstall the ETC cover removed in step 1. , making sure cover gasket is properly seated. If not, moisture can enter the ETC and damage the switch.




## Oil Pump Bleeding Procedure

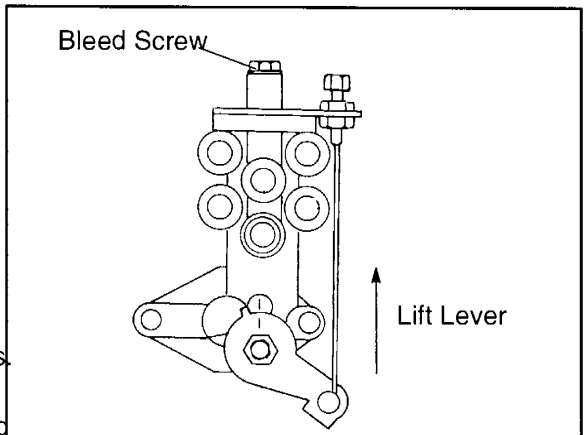
1. Fill the oil reservoir with Polaris injector oil.
2. Loosen the pump bleed screw one full turn. Allow oil to flow from the bleed screw for five to ten seconds. Tighten bleed screw. **CAUTION:** Never run the engine with the bleed screw loose. Loss of oil will cause serious engine damage.
3. Start the engine and lift the oil pump lever or reel to its full up (open) position. Allow engine to idle with the lever or wheel in this position for ten to twenty seconds to make sure all air is out of the system.



400 Oil Pump Bleeding

<u>If oil starvation is suspected, proceed as follows:</u>

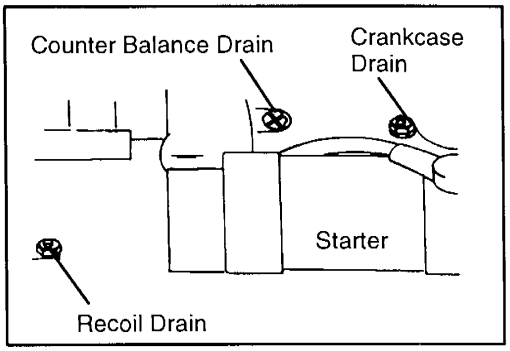
1. Premix fuel in tank at a 40:1 fuel/oil ratio.
2. With the oil reservoir full and the pump bled, remove the oil delivery line from the intake manifold.
3. Test the oil delivery check valve with a low pressure pump and gauge. (See Page 3.21).
4. Start engine and lift oil pump lever to full open position.
5. Oil should pulse from the delivery line every few seconds. If it does not, suspect one of the following:
   A. Oil line or filter plugged/Oil tank vent line restricted
   B. Oil lines leaking or blocked
   C. Faulty oil pump or drive mechanism



250/300 Oil Pump Bleeding

## Recoil Housing

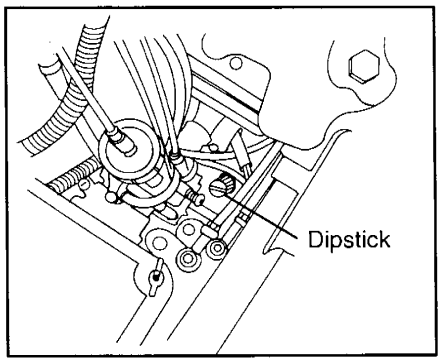
Drain the housing periodically to remove moisture.




## Counter Balancer Lubrication (400)

The counter balance oil should be checked semi-annually, especially before off season storage. If the machine is used in wet conditions the oil should be checked more frequently. If the oil has a milky white or gray appearance it should be changed as soon as possible. Failure to properly maintain this important area can result in premature wear or possible failure of the counter balancer components. Always use SAE 10W30 oil.

## Procedure for Adding Oil (400)

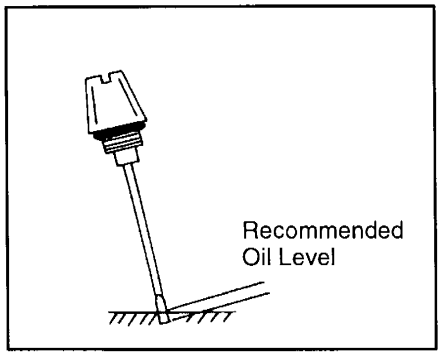



1. Remove seat and locate dipstick. Remove by loosening with a long handled screwdriver.
2. Remove dipstick. Oil level is shown on dipstick.
3. Add SAE 10W30 oil with a transmission fluid funnel. The recommended oil level is indicated by the knurled area on the dipstick.

**NOTE:** Screw dipstick in fully and remove to check. Check with engine at room temperature. Do not overfill. If overfilled, excess oil will be expelled through the vent hose.

4. Reinstall dipstick. Do not over tighten.
5. Inspect vent line for kinks or obstructions.

## Counter Balance Oil Changing Procedure




1. Remove seat. Locate and remove dipstick.
2. Remove drain plug and drain oil. Catch and discard used oil properly.
3. Clean and reinstall drain plug.
4. Add SAE 10W30 oil using a transmission fluid funnel. The recommended oil level is indicated by the knurled area on the dipstick. The dipstick should be screwed in fully to check. Do not overfill. If overfilled, excess oil will be expelled through the vent hose.
5. Reinstall dipstick.
6. Check for leaks.

## Air Cleaner
## Trail Boss, Xpress 300, Xplorer 300, Xplorer 400

### Dual Stage Air Cleaner

The Polaris ATV is equipped with a dual stage engine air filtration system. The primary pre-cleaner foam boot is designed to remove the majority of dust particles before they reach the secondary dry filter element.

### Primary Pre-cleaner Foam Boot

Inspect the primary air cleaner boot daily or on a regular basis depending on running conditions and dust.

1. Remove the ATV seat.

2. Remove the primary air filter box.

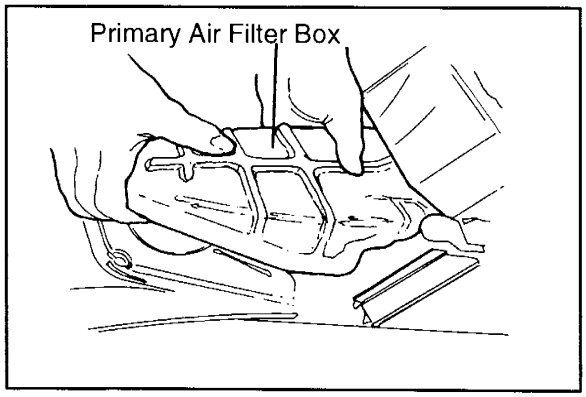
3. Remove the yellow pre-cleaner foam boot, held in place by a gray collar, from the air box. Do not remove the collar.

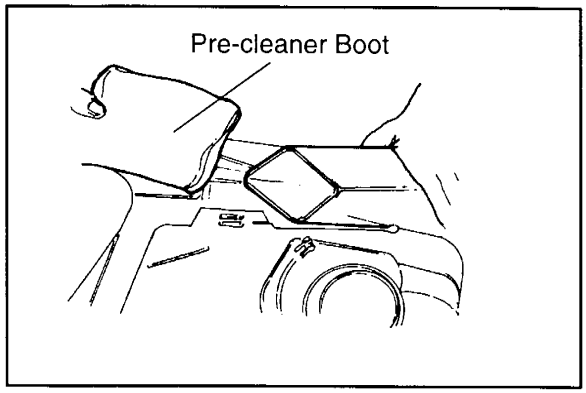
4. Carefully wash the yellow foam boot in soapy water and dry it.

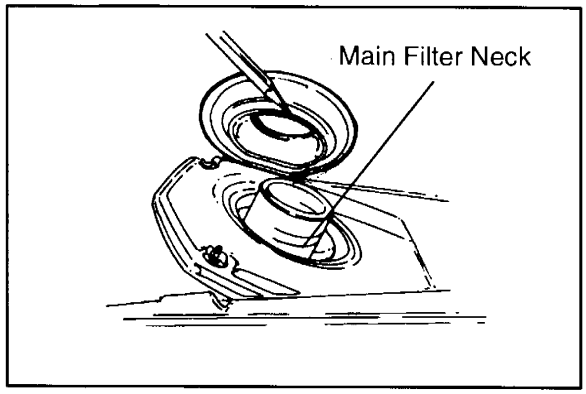
5. Oil the foam boot with engine injection oil (1 to 2 teaspoons). Squeeze out the excess into an absorbant cloth.

6. Reinstall the yellow foam boot onto the air filter box.

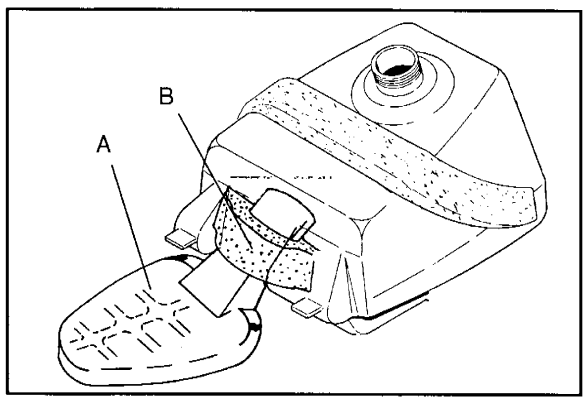
7. Reinstall the primary air filter box removed in step 2. **NOTE:** There will be some resistance. Be sure the black rubber sealing ring is securely positioned over the main filter neck.




**CAUTION:** When installing the primary air filter box be sure the gray foam collar (B) is below the intake opening of the air box intake (A). Improper installation will restrict airflow to the engine possibly resulting in engine damage.



## Air Cleaner
## Trail Blazer, Trail Boss, Xpress 300, Xplorer 300, Xplorer 400

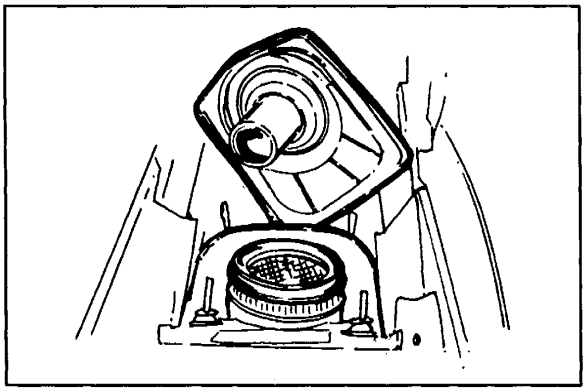
### Secondary (Main) Filter

Inspect the secondary filter weekly or after every 50 hours of operation.

**CAUTION:** Never operate the ATV with the filter element removed. Dirt will enter the engine causing serious rapid wear and damage to the engine.

### Secondary filter removal and installation procedure:

1. Remove ATV seat.
2. Remove primary air filter box.
3. Remove four wing nuts holding cover assembly to secondary air filter housing.
4. Remove filter element.
5. Inspect gaskets on both sides of filter. Replace if required.
6. Coat top and bottom gaskets of filter with a generous amount of grease.
7. Check condition of air box and replace if necessary. Install filter into airbox. Be sure filter element seats securely.
8. Check cover gasket and replace if required. Be sure cover is seated properly and wing nuts are finger tightened securely.
9. Reinstall primary air filter box as per instructions found on page 2.22.
10. Reinstall ATV seat.



### Cleaning the Main Filter

**Important:**

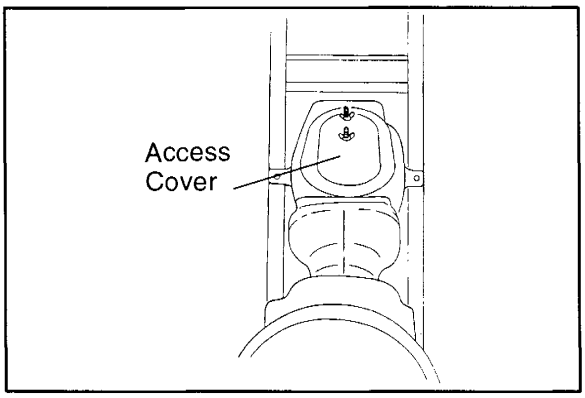
It is advisable to replace the filter when it is dirty. However, in an emergency it is permissible to clean the main filter if you observe the following practices.

1. **Never** immerse the filter in water since dirt can be transferred to the clean air side of the filter.
2. If compressed air is used **never** exceed a pressure of 40 PSI. Always use a dispersion type nozzle to prevent filter damage and clean from the outside to the inside.

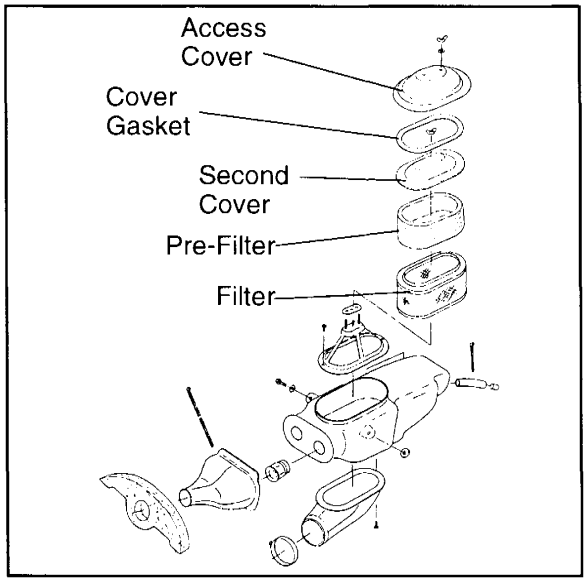
**NOTE:** Replace the air filter every 50 hours, and possibly more often in very dirty conditions.

## Air Filter Service
## Sport, Scrambler 400

1. Release seat latch and lift up on the rear of the seat.
2. Pull the seat back and free the tab from front cab.
3. Remove the two wing nuts and washers securing the air filter access cover.
4. Remove the cover. Inspect the gasket. It should adhere tightly to the cover and seal all the way around.

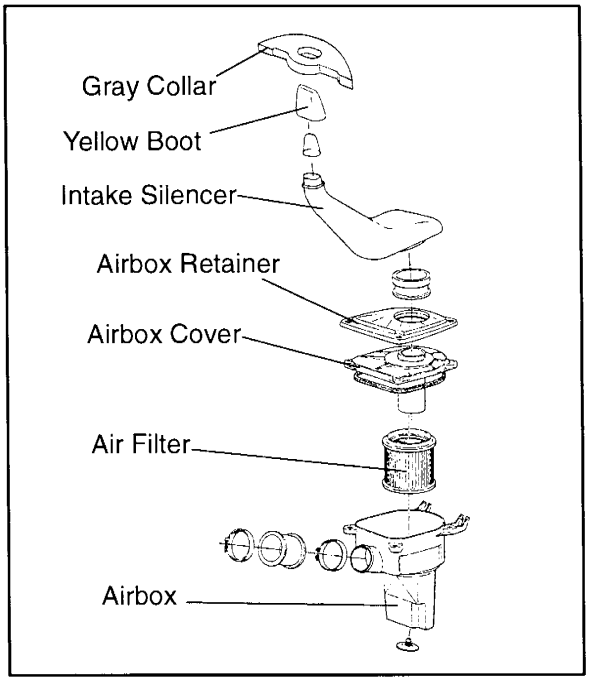


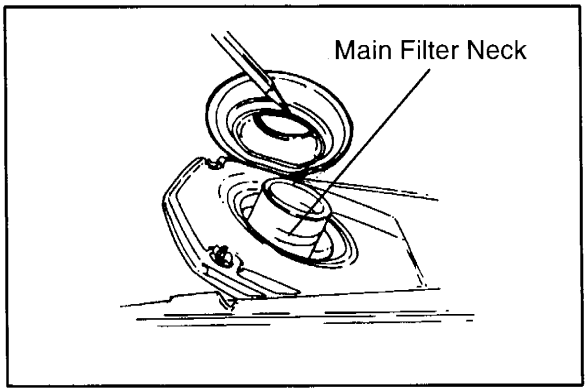

5. Remove the wing nut and washer securing the second cover. The cover should be straight and not distorted.
6. Remove pre filter from main filter and discard the main air filter.
7. Carefully wash the pre-filter in soapy water and dry it.
8. Install dry pre-filter over new main filter and install. **NOTE:** Apply a small amount of general purpose grease to the sealing edges of the filter before installing.



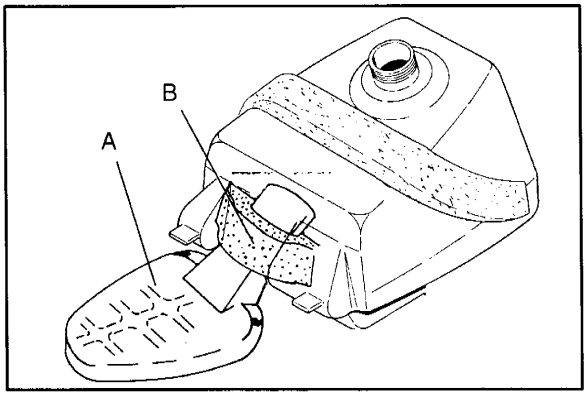
## Air Filter Service
## Trail Blazer

1. Release seat latch and lift up on the rear of the seat.
2. Pull the seat back and free of the tabs.
3. Remove the primary air filter box.
4. Remove the yellow pre-cleaner foam boot, held in place by a gray collar, from the air box. Do not remove the collar.
5. Carefully wash the yellow foam boot in soapy water and dry it.
6. Oil the foam boot with engine injection oil (1 to 2 teaspoons). Squeeze out the excess into an absorbant cloth.
7. Reinstall the yellow foam boot onto the air filter box.
8. Reinstall the primary air filter box removed in step 2. **NOTE:** There will be some resistance. Be sure the black rubber sealing ring is securely positioned over the main filter neck.



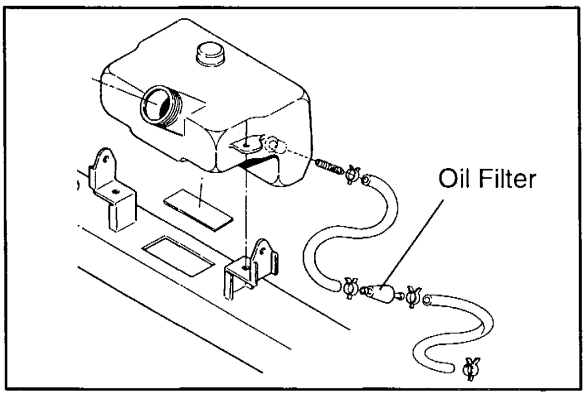

**CAUTION:** When installing the primary air filter box be sure the gray foam collar (B) is below the intake opening of the air box intake (A). Improper installation will restrict airflow to the engine possibly resulting in engine damage.



## Oil Filter (2 Strokes)

The oil filter is located in-line between the oil tank and the oil pump on all 2-stroke models. The in-line oil filter is a special type and must not be substituted. Replace the oil filter annually or whenever water or debris has entered the oil tank. Do not attempt to clean this filter.

1. Remove clamps, securing lines to filter.
2. Remove lines and replace filter with arrow pointing in direction of oil flow (towards pump).
3. Reinstall clamps on each line and check for leaks.




## Oil Filter Change (2-Strokes)

Replace oil filter every 100 hours of operation.

# 4 Stroke Engine Maintenance

## NOTES

## Air Filter - 4 Stroke Engines

It is recommended the air filter be replaced yearly. When riding in extremely dusty conditions replacement will be required more often.

The pre filter should be cleaned before each ride, using the following procedure.

### Pre-Filter Service

1. Lift up on the rear of the seat.
2. Pull the seat back and free of the tabs. **NOTE:** When reinstalling seat, make sure the slots in the seat engage the tabs in the fuel tank.

Magnum

3. Remove splash guard foam securing pre-filter. Remove pre-filter element. Note position of duct support wire. It must be properly positioned before reinstalling pre-filter.

Gen IV 500s

Remove wing nuts (6) from air box cover and remove cover. Slip the pre-filter element off of main element.

Cleaning

4. Clean the element with high flash point solvent, followed by hot soapy water.
5. Rinse and dry thoroughly.
6. Inspect element for tears or damage.
7. Apply a 1-2 oz of 2-stroke oil (or foam filter oil) to the pre-filter. Thoroughly work oil completely into foam. Squeeze out excess oil.

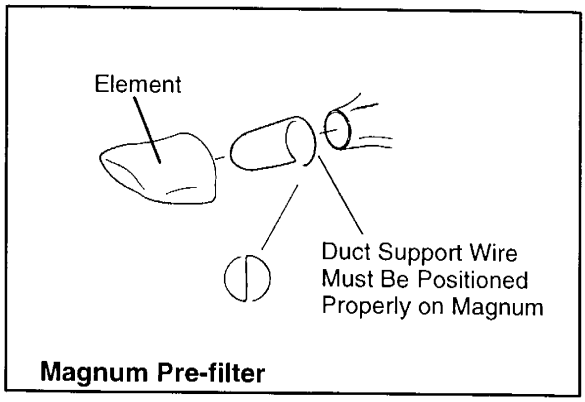
Installation

Magnum

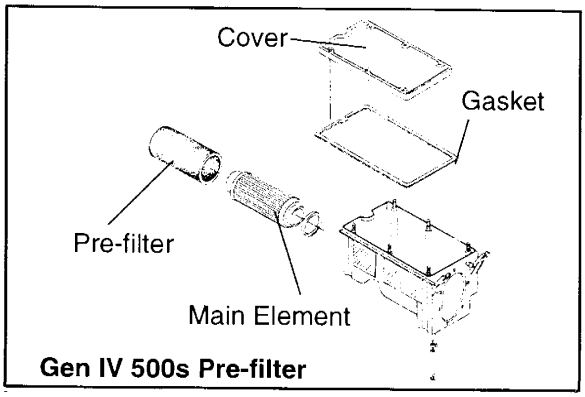
8. Reinstall pre-filter element making sure duct support wire is in proper position. Secure splash guard foam removed in step 3. Do not allow splash guard foam to restrict air intake. Do not tuck the element under the noise baffle foam.

Gen IV 500s

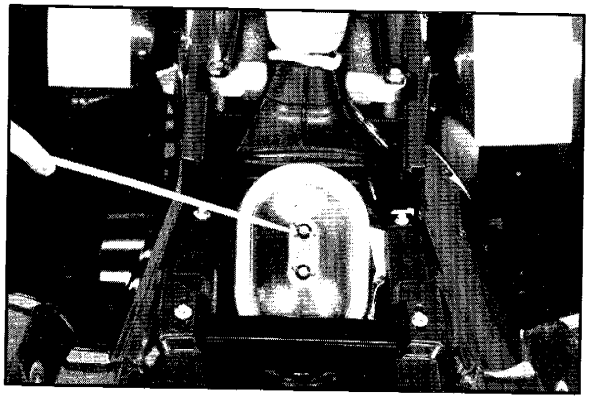
Reinstall element over main filter. Be sure the element covers entire surface of main filter without folds or creases.

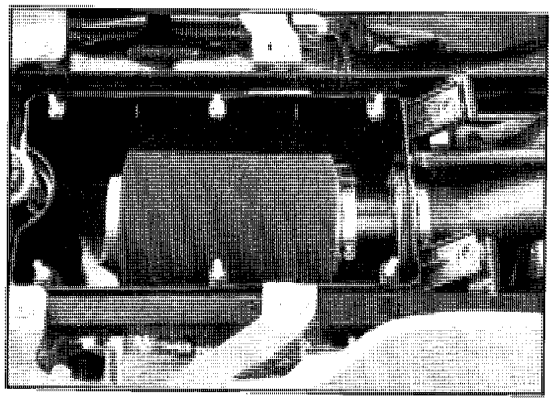



**Magnum Pre-filter**




**Gen IV 500s Pre-filter**



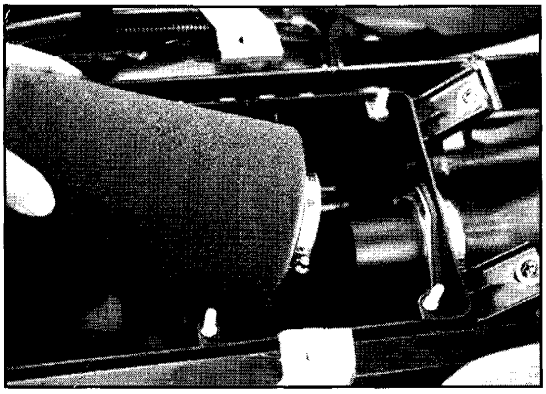


### Air Filter Main Element

1. Remove the two wing nuts and washers securing the air filter access cover (6 on Gen IV 500s).
2. Remove the cover. Inspect the gasket. It should adhere tightly to the cover and seal all the way around.

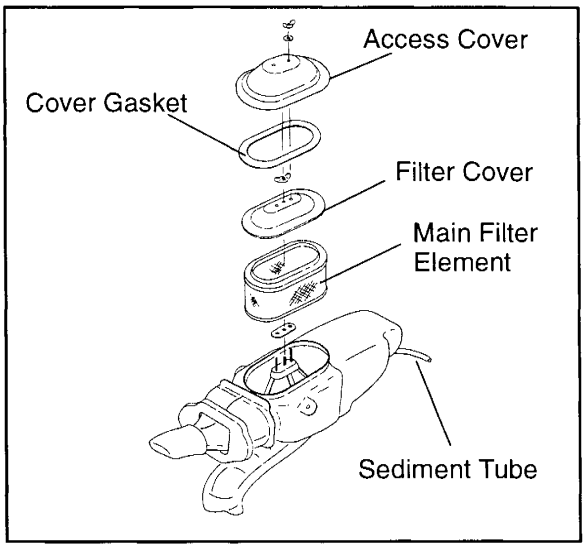
### Air Filter Main Element, Cont.

3. Remove the wing nut and washer securing the filter cover. The cover should be straight and not distorted (Loosen clamp on Gen IV 500s).



4. Remove the air filter. Inspect and replace if necessary. If the filter has been soaked with water, fuel or oil it must be replaced.

**NOTE:** Apply a small amount of general purpose grease to the sealing edges of the filter before reinstalling.



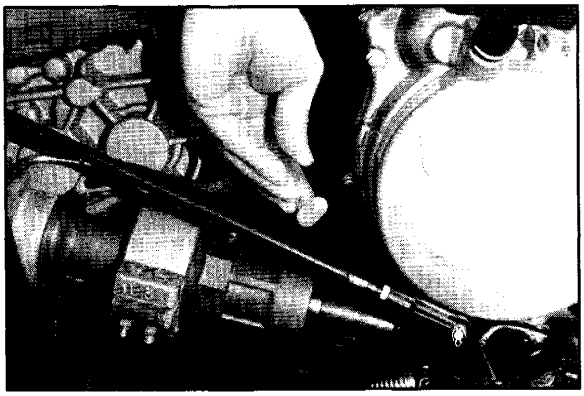

### Air Box Sediment Tube

Periodically check the air box drain tube located toward the rear of the machine. Drain whenever deposits are visible in the clear tube.

**NOTE:** The sediment tube will require more frequent service if the vehicle is operated in wet conditions or at high throttle openings for extended periods.

1. Remove drain plug from end of sediment tube.
2. Drain tube.
3. Reinstall drain plug.

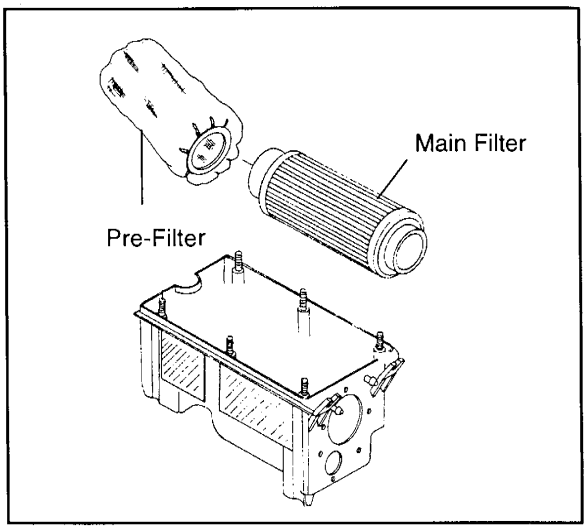
**Magnum Style**



**Sportsman Style**

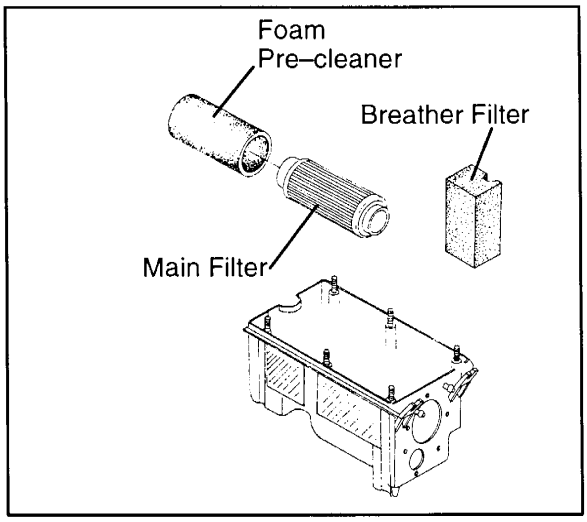
## Air Filter Service
## Scrambler 500

1. Remove seat.
2. Release clips and remove cover.
3. Loosen clamp and remove filter
4. Remove fabric type pre-filter from main filter. Wash pre-filter in soapy water and dry it.
5. Reinstall pre-filter in main filter. Replace main filter as required.




## Air Filter Service
## Sportsman 500, Xplorer 500

1. Remove seat.
2. Remove wingnuts securing the airbox lid and remove lid.
3. Pull foam breather filter out.
4. Loosen clamp and remove filter.
5. Remove foam pre-cleaner from main filter.
6. Wash the pre-filter in soapy water and dry it.
7. Install dry pre-filter over new main filter and reinstall.
8. Push foam breather filter straight down into airbox until flush with upper edge of box. Make certain foam is flush with front edge of airbox so air cannot enter engine breather fitting hole without first passing through the foam.



## NOTES

## Check Engine Oil (4 Stroke)

The oil tank is located on the left side of the vehicle. To check the oil:

1. Set machine on a level surface.
2. Start and run engine for 20-30 seconds. This will return oil to its true level in the oil tank. About a cup of oil will remain in the crankcase.
3. Stop engine, remove dipstick and wipe dry with a clean cloth.
4. Reinstall dipstick, screwing into place.

**NOTE:** The dipstick must be screwed completely in to keep the angle and depth of stick consistent.


5. Remove dipstick and check to see that the oil level is between the safe and add marks. Add oil as indicated by the level on the dipstick. Do not overfill.

**NOTE:** Rising oil level between checks in cold weather driving, can indicate moisture collecting in the oil reservoir.


Maintain Oil Level In Normal Range

Screw in completely to check

## Oil and Filter Change (4 Stroke)

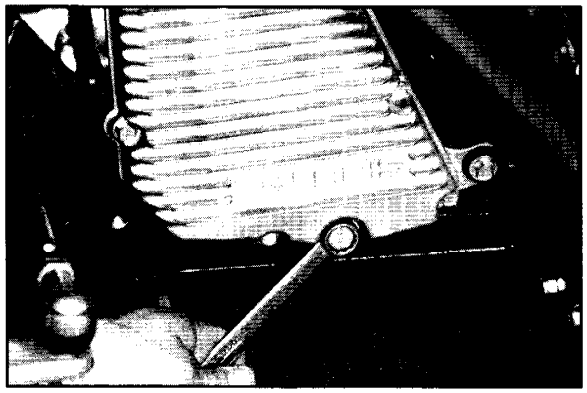
The recommended oil change interval is 100 hours, 1000 miles, or every six months, whichever comes first. Suggested break in oil change is at 20 hours, 500 miles, or one month, whichever comes first. Severe use, such as continuous duty in dirt, dust, water, short trip winter driving, or any driving below -10° F. (-23°C) requires more frequent service. Be sure to change the oil filter whenever changing oil.

**Recommended Engine Oil:**

**Polaris Premium 4 All Season Synthetic, 0W/40, PN 2871281**

**Ambient Temperature Range: -40° F to 120° F**

1. Place vehicle on a level surface.
2. Run engine for two to three minutes until warm. Shut engine off.
3. Clean area around drain plug at the bottom of the oil tank.
4. Place a drain pan beneath the oil tank and remove the drain plug. **CAUTION:** Oil may be hot. Do not allow hot oil to come into contact with skin as serious burns may result.
5. Allow oil to drain completely.
6. Replace sealing washer on oil drain plug. **NOTE:** The sealing surfaces on the drain plug and the oil tank should be clean and free of burrs, nicks or scratches.
7. Reinstall drain plug and torque to 14 ft. lbs. (1.9 kgm).



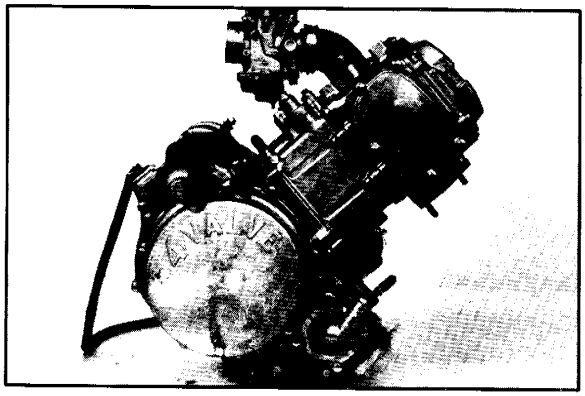
## Oil and Filter Change, Cont. (4 Stroke)

8. Place shop towels beneath oil filter. Using an oil filter wrench, turn filter counterclockwise to remove.
9. Using a clean dry cloth, clean filter sealing surface on crankcase.
10. Lubricate O-ring on new filter with a film of engine oil. Check to make sure the O-ring is in good condition.
11. Install new filter and turn by hand until filter gasket contacts the sealing surface, then turn and additional 1/2 turn.

12. Approximately 1 cup of engine oil will remain in the crankcase. To drain, remove drain plug found on lower right side of crankcase.

**NOTE:** The sealing surfaces on the drain plug and crankcase should be clean and free of burrs, nicks or scratches.

13. Reinstall drain plug.
14. Remove dipstick and fill tank with 2 quarts (1.9 l) of Polaris Premium 4 synthetic oil.
15. Place gear selector in neutral and set parking brake.
16. Start the engine and let it idle for one to two minutes. Stop the engine and inspect for leaks.
17. Re-check the oil level on the dipstick and add oil as necessary to bring the level to the upper mark on the dipstick.
18. Dispose of used filter and oil properly.



**Engine Sump Drain Plug**

**Oil Tank Drain Plug Torque:**
**14 ft. lbs. (1.93 kgm)**

**Crankcase Drain Plug Torque:**
**14 ft. lbs. (1.93 kgm)**

**Oil Filter Torque:**
**Turn by hand until filter gasket contacts sealing surface, then turn an additional 1/2 turn**

**Oil Filter Wrench:**
**Snap On PN YA997 or 2 1/2 inch**

## NOTES

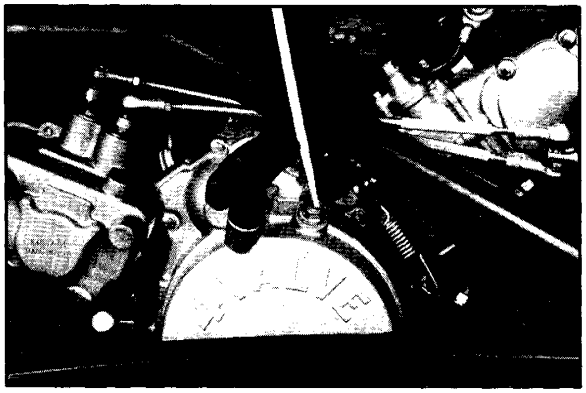
## NOTES

## Valve Clearance

Inspect and adjust valve clearance while the engine is cold and the piston positioned at Top Dead Center (TDC) on compression stroke.

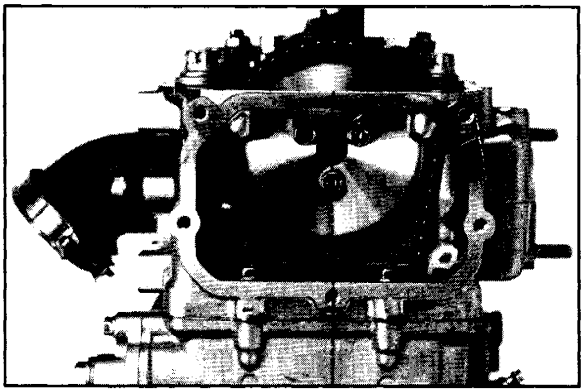
1. Lift up on the rear of the seat.
2. Pull the seat back and free of the tabs. **NOTE:** When reinstalling seat, make sure the slots in the seat engage the tabs in the fuel tank.
3. Remove the left and right side body panels and fuel tank cover. See Body Panel Removal, Chapter 2.
4. Remove the fuel tank.
5. Remove the spark plug high tension lead and remove the spark plug. **CAUTION:** Place a clean shop towel into the spark plug cavity to prevent dirt from entering.
6. Remove the eight 6 x 20 mm bolts securing the rocker cover. Remove the cover and gasket. **NOTE:** It may be necessary to tap the cover lightly with a plastic hammer to loosen it from the cylinder head.
7. Remove the timing inspection plug from the recoil housing.

**CAUTION:** Failure to position the crankshaft exactly as shown (TDC on compression stroke) will result in improper valve adjustment.

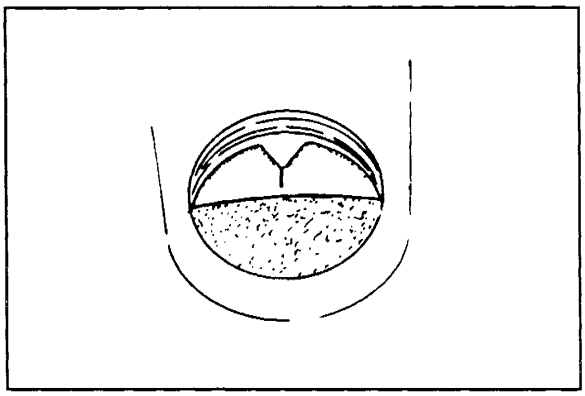


8. Rotate the engine slowly with the recoil rope, watching the intake valves open and close.

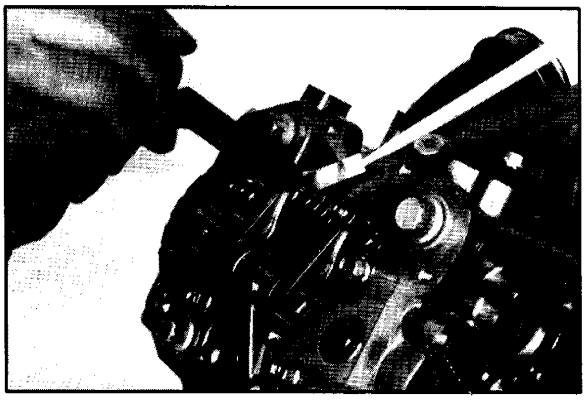
**NOTE:** At this point watch the camshaft sprocket marks and slowly rotate engine until marks are parallel to rocker cover gasket surface. The cam sprocket locating pin will be facing upward directly in line with the crankshaft to camshaft center line as shown. See photo at right.



9. Verify accurate TDC positioning by observing the mark aligned with the line in the timing inspection hole. In this position there should be clearance on all valves.



## Intake Valve Clearance Adjustment



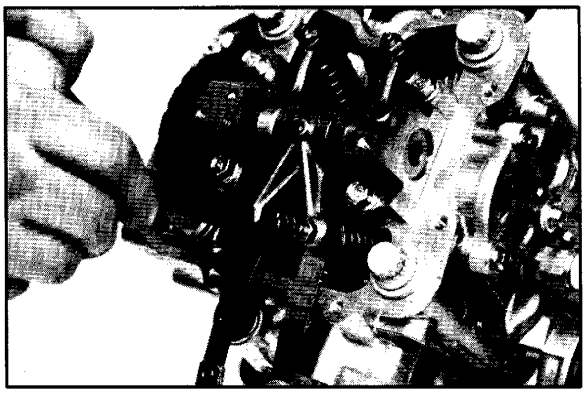
1. Insert a .006″ (.15 mm) feeler gauge between the end of the intake valve stem and the clearance adjuster screw as shown.
2. Using a 10 mm wrench and a screwdriver, loosen the adjuster lock nut and turn the adjusting screw until there is a slight drag on the feeler gauge.
3. Hold the adjuster screw and tighten the adjuster lock nut to a torque of 5.8 to 7.2 ft. lbs., using the 10mm flank drive torque adapter at a 90° angle to the torque wrench as shown. **NOTE:** The flank drive must be positioned at a 90° angle to the torque wrench to prevent over torquing.
4. Re-check the valve clearance.
5. Repeat adjustment procedure if necessary until clearance is correct.
6. Repeat this step for the other intake valve.

**INTAKE VALVES**
**Valve Clearance - Engine Cold and Positioned at TDC on Compression Stroke:**

**.006″ (.15 mm)**

## Exhaust Valve Clearance Adjustment

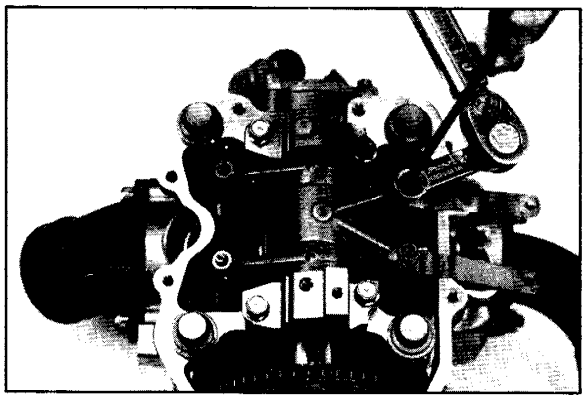
**NOTE:** The exhaust valves share a common rocker arm, and must be adjusted using two feeler gauges.



1. Insert a .006″ (.15 mm) feeler gauge between each of the exhaust valves and adjuster screws.
2. If adjustment is needed, loosen the locknuts and turn the adjuster screws until there is a slight drag on both feeler gauges. **NOTE:** Both feeler gauges should remain inserted during adjustment.

**EXHAUST VALVES**
**Valve Clearance - Engine Cold and Positioned at TDC on Compression Stroke:**

**.006″ (.15 mm)**



Use torque adaptor for all valve adjuster locknuts.

3. When the clearance is correct, hold the adjuster screw and tighten the locknut to 5.8 to 7.2 ft. lbs., using the 10mm flank drive torque adapter at a 90° angle to the torque wrench as shown. **NOTE:** The flank drive must be positioned at a 90° angle to the torque wrench to prevent over torquing.
4. Re-check the valve clearance.
5. Repeat adjustment procedure if necessary until clearance is correct.
6. Scrape gasket surfaces to remove all traces of the old gasket. **CAUTION:** Use care not to damage the sealing surface of the cover or cylinder head.

### Exhaust Valve Clearance Adjustment Cont.

7. Reinstall the cover using a new gasket.
8. Torque cover bolts to 72 in. lbs.
9. Remove the shop towel from the spark plug cavity.
10. Reinstall the spark plug. Torque to 11 ft. lbs. (new), 18 ft. lbs. (used).
11. Reinstall the spark plug high tension lead.
12. Reinstall the fuel tank.
13. Reinstall the fuel tank shroud.
14. Reinstall the left and right body panels.

| | |
|---|---|
| **Cover Bolt Torque:** | **72 in. lbs.** |
| **Spark Plug Torque:** | **11 ft. lbs. new**<br>**18 ft. lbs. used** |

### Throttle Cable Lubrication

Lubricate throttle cable from the throttle block end.

1. Turn engine off.
2. Remove three throttle block cover screws.
3. Slide boot off throttle cable adjuster and jam nut.
4. Loosen cable adjuster jam nut.
5. Turn adjuster in to obtain maximum cable freeplay.
6. Open throttle and hold cable.
7. Carefully disconnect throttle cable from throttle lever. Do not kink or bend throttle cable.
8. Unscrew adjuster and remove cable.
9. Hold throttle cable up and lubricate with Polaris Cable Lube.

| |
|---|
| **Polaris Cable Lube**<br>**PN 2870510** |

10. Turn adjuster in to obtain maximum cable freeplay.
11. Reinstall cable onto throttle lever.
12. Perform throttle cable adjustment.

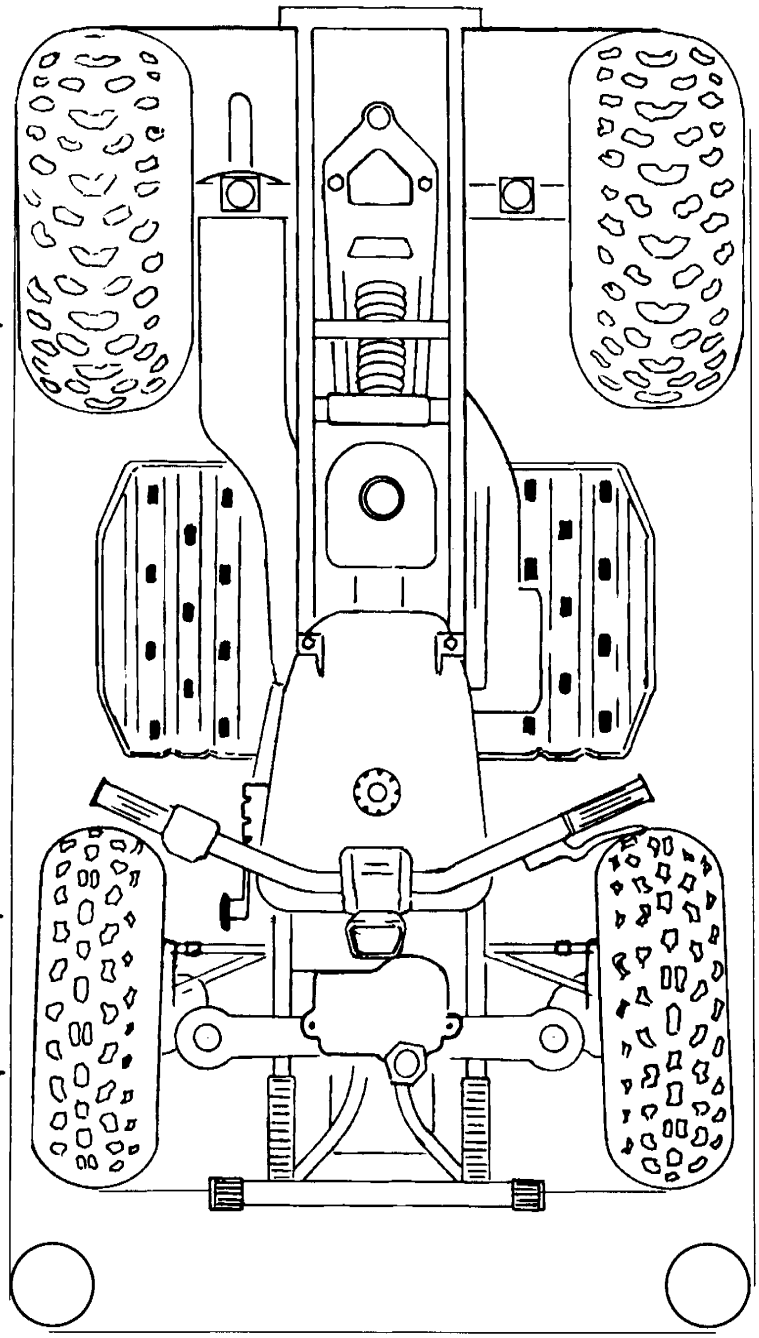
## MAINTENANCE

### Toe Alignment Inspection

**CAUTION:** Due to the critical nature of the procedures outlined in this chapter, Polaris recommends steering component repair and adjustment be performed by an authorized Polaris Dealer. One of two methods can be used to measure toe alignment. The string method is shown below and the chalk method on page 2.31. If adjustment is required, refer to page 2.31 for procedure.

### Method 1

Be sure to keep handlebars centered. See note below.




**NOTE:** The steering post arm can be used as an indicator of whether the handlebars are straight. The arm should always point straight back from the steering post.

## Steering

The steering components should be checked periodically for loose fasteners, worn tie rod ends, and damage. Also check to make sure all cotter pins are in place. If cotter pins are removed, they must not be re-used. Always use new cotter pins.

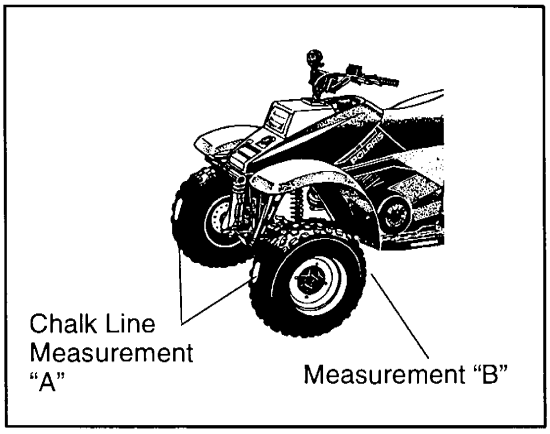
Replace any worn or damaged steering components. Steering should move freely through entire range of travel without binding. Check routing of all cables, hoses, and wiring to be sure the steering mechanism is not restricted or limited. **NOTE:** Whenever steering components are replaced, check front end alignment. See page 5.9 for an optional alignment procedure. Polaris recommends steering component repair and adjustment be performed by an authorized Polaris dealer.

### Camber and Caster

The camber and caster are non-adjustable.

## Toe Alignment Inspection

1. Place machine on a smooth level surface.
2. Set handlebars in a straight ahead position and secure handlebars in this position. **NOTE:** The steering frog can be used as an indicator of whether the handlebars are straight. The frog should always point straight back from the steering post.
3. Place a chalk mark on the face of the front tires approximately 10″ (25.4 cm) from the floor as close to the horizontal center line of the hub as possible. **NOTE:** It is important that both marks be equally positioned from the ground in order to get an accurate measurement.
4. Measure the distance between the marks and record. Call this measurement "A".

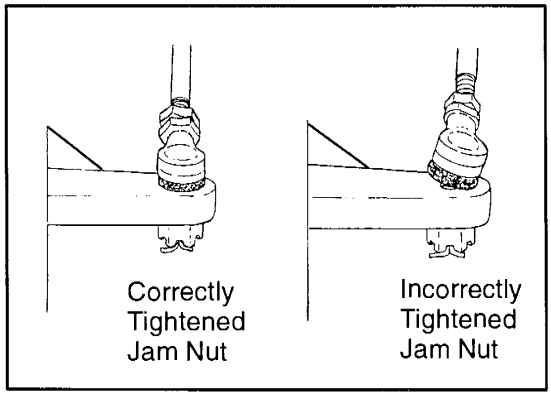



5. Rotate the tires 180° by moving vehicle forward or backward. Position chalk marks approximately 10″ (25.4 cm) from the floor. Measure the distance between the marks and record. Call this measurement "B".
6. Subtract measurement "B" from measurement "A". The difference between measurements "A" and "B" is called vehicle toe alignment. The recommended vehicle toe tolerance is 1/8″ to 1/4″ (.3 to .6 cm) total toe out. This means the measurement at the front of the tire (A) is 1/8″ to 1/4″ (.3 to .6 cm) wider than the measurement at the rear (B).
7. If this measurement needs to be adjusted, measure the distance between vehicle center and each wheel. This will tell you which tie rod needs adjusting. **NOTE:** Be sure handlebars are straight ahead before determining which tie rod(s) need adjustment.The steering post arm can be used as an indicator of whether the handlebars are straight.

**CAUTION:** During tie rod adjustment it is very important that the following precautions be taken when tightening tie rod end jam nuts. If the rod end is positioned incorrectly it will not pivot, and may break.

- To adjust toe alignment, the jam nuts must be loosened and the tie rod either shortened or lengthened for proper toe setting.
- When the tie rod end jam nuts are tightened, be sure to hold tie rod ends so they are parallel with the steering arm or the steering frog, respectively.

8. After alignment is complete, torque jam nuts to 12-14 ft. lbs. (1.66-1.93 kg-m).

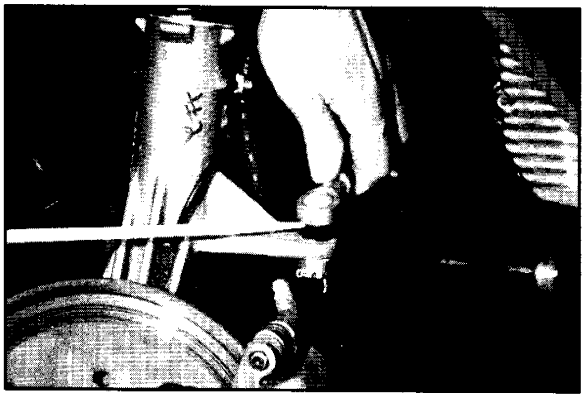


## Tie Rod End Inspection

**⚠ WARNING**

Only a qualified technician should replace worn or damaged steering parts.

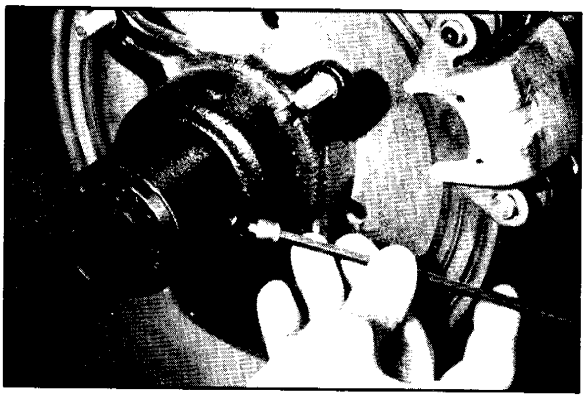
To check for play in the tie rod end, grasp the steering tie rod, pull in all directions feeling for movement. Replace any worn steering components. Steering should move freely through entire range of travel without binding.



## Front Hubs (4x4 AWD Model)

To check front hub fluid:

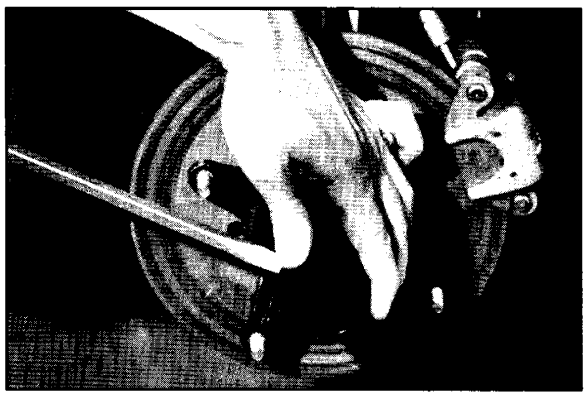
1. Place vehicle on a level surface.
2. Turn wheel until front hub fill/check plug is in either the 4:00 or 8:00 position.



3. Remove fill/check plug.
4. Add Polaris Premium Demand Drive Hub Fluid or Type F Automatic Transmission Fluid if necessary until fluid trickles out. **NOTE:** Do not force the fluid into the hub under pressure or seal damage may occur.
5. Reinstall plug.
6. Repeat procedure for other hub.

## Changing Front Hub Fluid

1. Place a drain pan beneath the hub.
2. Remove the hub cap by carefully prying with a screwdriver in the notches provided. Pry equally until cap is removed. **NOTE:** Mid 1996 to current AWD model ATVs are equipped with three Torx™ head screws to secure the hub cap.
3. Allow fluid to drain completely.
4. Inspect hub cap O-rings for nicks, cuts or abrasions. Replace if necessary.
5. Remove check/fill plug.
6. Reinstall the hub cap. **NOTE:** The check/fill plug must be removed before reinstalling the hub cap.
7. Turn wheel until front hub fill/check plug is in either the 4:00 or 8:00 position.
8. Add fluid until it trickles out. **NOTE:** Do not force the fluid into the hub under pressure or seal damage may occur.



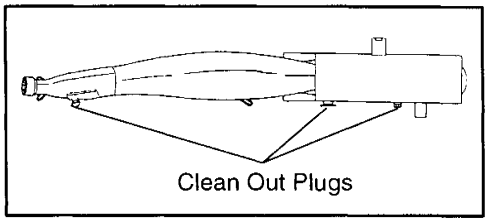
**Recommended Front Hub Fluid:**

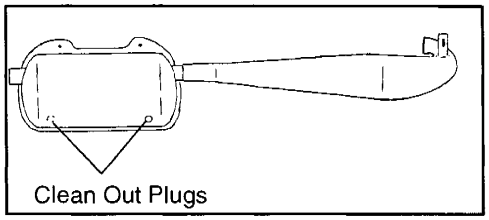
**Polaris Demand Drive Hub Fluid**
**PN 2871654 12 oz.**

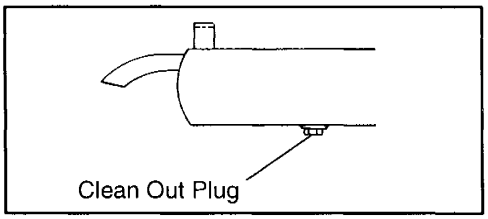
## Exhaust Pipe

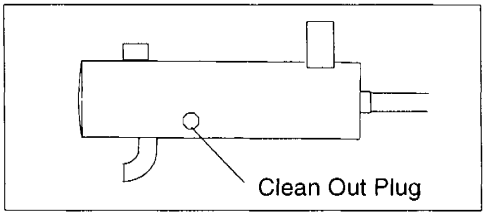
The exhaust pipe must be periodically purged of accumulated carbon as follows:

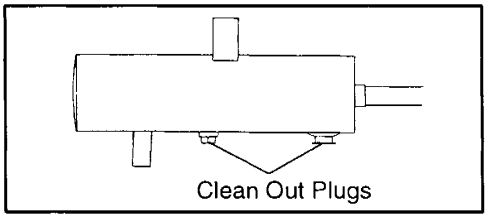
1. Remove the clean out plugs located on the bottom of the muffler as shown above.
2. Place the transmission in neutral and start the engine. Purge accumulated carbon from the system by momentarily revving the engine several times.
3. If some carbon is expelled, cover the exhaust outlet and rap on the pipe around the clean out plugs while revving the engine several more times.
4. If particles are still suspected to be in the muffler, back the machine onto an incline so the rear of the machine is one foot higher than the front. Set the parking brake and block the wheels. Make sure the machine is in neutral and repeat steps 2 and 3. **WARNING:** SEE BELOW.
5. If particles are still suspected to be in the muffler, drive the machine onto the incline so the front of the machine is one foot higher than the rear. Set the parking brake and block the wheels. Make sure the machine is in neutral and repeat steps 2 and 3. **WARNING:** SEE BELOW.
6. Repeat steps 2 through 5 until no more particles are expelled when the engine is revved.
7. Stop the engine and allow the arrestor to cool.
8. Reinstall the clean out plugs.




## ⚠ WARNING

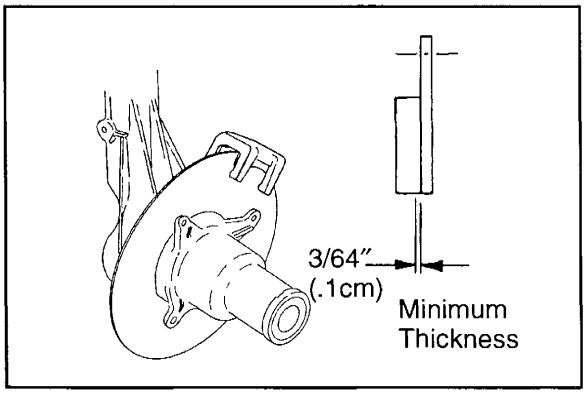
- Do not perform this operation immediately after the engine has been run because the exhaust system becomes very hot.
- Because of the increased fire hazard, make sure that there are no combustible materials in the area when purging the spark arrestor.
- Wear eye protection.
- Do not stand behind or in front of the vehicle while purging the carbon from the spark arrestor.
- Never run the engine in an enclosed area. The exhaust contains poisonous carbon monoxide gas.
- Do not go under the machine while it is inclined.

Failure to heed these warnings could result in serious personal injury or death.

## Brake System Inspection

The following checks are recommended to keep the brake system in good operating condition. How often they need checking depends upon the type of driving that has been done.

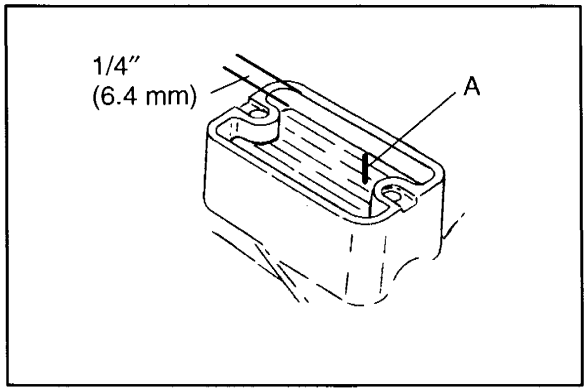
- Keep fluid level in the master cylinder reservoir 1/4″ (6.4 mm) from the top (between "Min" & "Max" lines on plastic reservoirs) at all times. Normal functioning of the diaphragm is to extend into the reservoir as fluid level drops. If the fluid level is low and the diaphragm is not extended, a leak is indicated and the diaphragm should be replaced. Always fill the reservoir to within 1/4″ (6.4 mm) of the top (between "Min" & "Max" lines on plastic reservoirs) whenever the cover is loosened or removed to insure proper diaphragm operation. Use Polaris DOT 3 brake fluid (PN 2870990).
- Check brake system for fluid leaks.
- Check brake for excessive travel or spongy feel.
- Check friction pads for wear, damage and looseness.
- Check surface condition of the disc.
- Pads should be changed when worn to 3/64″ (.1 cm), or about the thickness of a dime.




## Brake Fluid Level Inspection

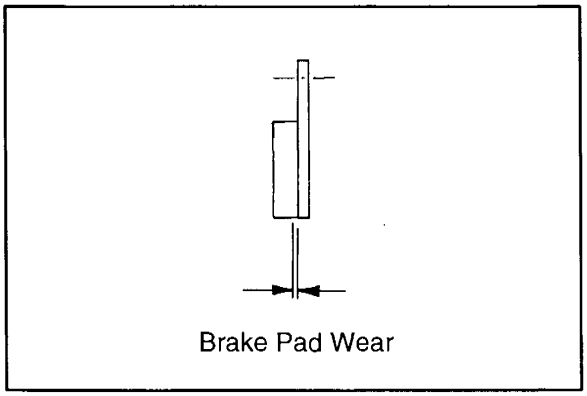
The master cylinder is located on the left handlebar. Remove the cover and check the brake fluid level often. The correct fluid level is 1/4″ (6.4 mm) from the top "A" (between "Min" & "Max" lines on plastic reservoirs). If the fluid level is low add DOT 3 brake fluid PN 2870990 only. Fill to 1/4″ (6.4 mm) from the top (between "Min" & "Max" lines on plastic reservoirs).

When reservoir cover is removed *do not* squeeze brake lever. Fluid may squirt out the compensating port if lever is pulled.




### Wear Line

- Pads should be changed when worn to the indicator lines (A), as shown. See page 9.1 for pad wear specifications.
- Inspect the brake disc spline and pad wear surface for excessive wear.



## Auxiliary Mechanical Brake System

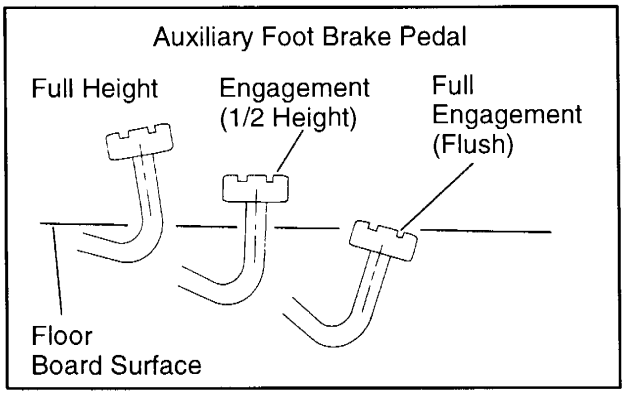
The auxiliary brake system is intended to be used as a backup for the hydraulic system. Should the hydraulic system fail, the rear brake can be activated by depressing the foot pedal on the inside of the right floorboard.

**NOTE:** Since this is a rear brake only, it will not be as effective as the all wheel system.

## Auxiliary Brake Testing

The auxiliary brake should be checked for proper adjustment.

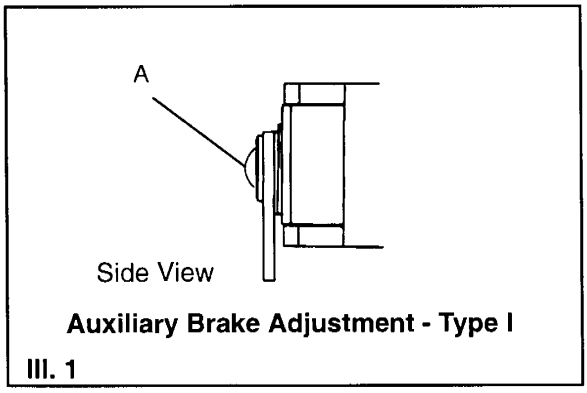
1. Support the rear wheels off the ground.
2. While turning the rear wheels by hand, apply the auxiliary foot brake. This brake should not stop the wheels from turning until the lever is half way between its rest position and bottoming on the footrest.




## Auxiliary Brake Adjustment

The auxiliary brake should be adjusted if the brake pedal deflection is under 1/2″ (1.3 cm) or exceeds 3/4″ (1.9 cm) prior to brake activation.

1. Put the machine in neutral. Stop engine.
2. **Type I:** If adjustment is necessary turn adjuster bolt (A) clockwise until disc rotation becomes difficult. Turn adjuster bolt counterclockwise until brake engagement starts at approximately 1/2 of the total pedal travel (See Illustration 1).

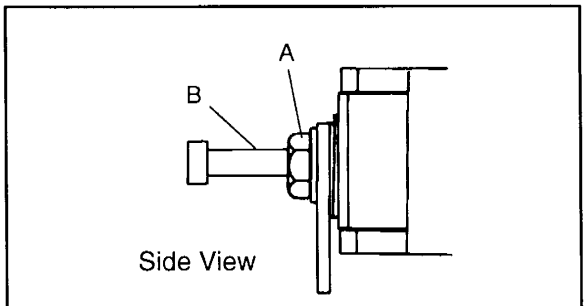



**Auxiliary Brake Adjustment - Type I**

**Ill. 1**

**Type II**:If adjustment is necessary, loosen jam nut (A) and turn adjuster bolt (B) clockwise until disc rotation becomes difficult. Turn adjuster bolt counterclockwise until brake engagement starts at approximately 1/2 of the total pedal travel (See Illustration). Tighten the lock nut securely. (See Illustration 2).

3. Check brakes to be sure they are not dragging. Readjust pedal deflection if necessary.
4. **Type III (Hydraulic):** Refer to Inspection Procedure/ Linkake adjustment on page 9.30b.




**Auxiliary Brake Adjustment - Type II**

**Ill. 2**

## Hose/Fitting Inspection

Check brake system hoses and fittings for cracks, deterioration, abrasion, and leaks. Tighten any loose fittings and replace any worn or damaged parts.

## Drive Chain and Sprocket Inspection

Inspect the drive chain for missing or damaged O-Rings, link plates, or rollers. Do not wash the chain with a high pressure washer, gasoline or solvents; do not use a wire brush to clean the chain as damage to the O-Rings may occur. Clean chain with hot soapy water and a soft bristled nylon brush.

Never allow battery acid to contact the drive chain. Periodically lubricate the chain with Polaris O-Ring Chain Lubricant (PN 2871079).

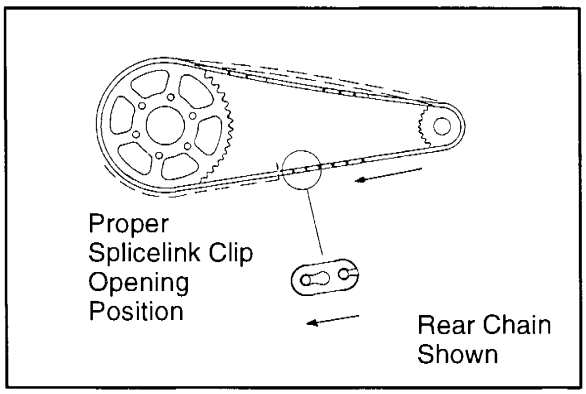
**Drive Chain Lubricant:**

**Polaris O-Ring Chain Lubricant**
**PN 2871079**

## Drive Chain Inspection

The chain must be replaced when it reaches 3% elongation.

1. Stretch the chain tightly in a straight line.
2. Measure a length of twenty pitches (pins) from pin center to pin center, and compare to the specification. Replace the chain if the length exceeds the wear limit.
3. When replacing or reinstalling drive chain, install the closed end of the splice link clip as shown, with the closed end leading in forward operation.




**Drive Chain Wear Limit, 20 Pitch Length:**

**Std: 12.5″ (32 cm)**
**Wear Limit: 12.875″ (32.7 cm)**

## Rear Drive Chain Note (All Except Models With Concentric Swingarm):

The rear chain will change tension as the swingarm moves through the range of travel. Adjusting the chain at the tightest point (swingarm pivot, output shaft sprocket, and rear axle are aligned in a straight line) will ensure proper adjustment and prevent damage to the chain, sprockets, axle bearings and transmission bearings.

## Drive Chain Inspection

Polaris ATV drive chains are equipped with O-ring sealed permanently greased pins and rollers. The sprockets and outer rollers require periodic lubrication.

**Always** inspect the drive chain prior to operating the vehicle, checking for damaged or missing O-rings, rollers and correct slack adjustment. Maintain the stone guard to rear sprocket clearance at 1/8″ (.3 cm).

Regularly lubricate the drive chain with Polaris O-Ring Chain Lube or an approved O-ring chain spray lube.

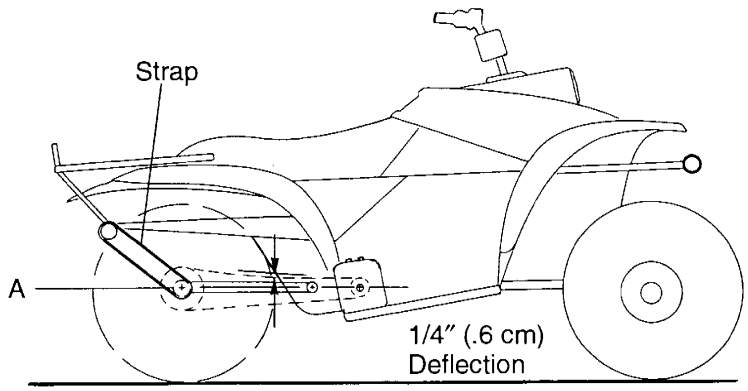
## Rear Drive Chain Tension Adjustment

**NOTE: On models with concentric swingarm (such as 1998 Scramblers), chain tension can be measured at any point in the swingarm arc. It is not necessary to compress the suspension on concentric models (as shown below). Refer to page 2.37a for drive chain adjustment procedure on concentric swingarm models.**

**CAUTION:**

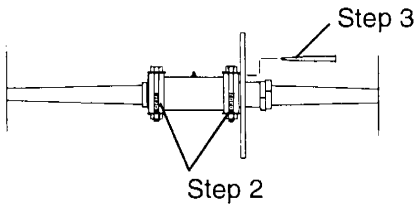
Never adjust or operate the vehicle with the rear drive chain too loose or too tight as severe damage to the transmission and drive components can result.

Check the amount of chain slack by moving the vehicle slightly forward to gain slack at the top side of the rear chain. Collapse the suspension by using an adjustable (buckle type) trailer tie down. Fasten the strap around the axle and rear bumper tube. Tighten until a straight line (A) can be drawn from the axle to the transmission output shaft intersecting the swing arm pivot. If the chain needs adjustment, use the following procedure.




IMPORTANT: Suspension must be compressed as shown to check drive chain tension (except concentric swingarm models).

1. Loosen chain guard.
2. Loosen two eccentric locking bolts.
3. Insert a pin punch through the sprocket hub and into the eccentric axle housing.
4. Roll the vehicle ahead or back to adjust chain slack to 1/4 inch (6mm) in the center of the chain as shown above.
5. Tighten the eccentric locking bolts to 60 ft. lbs. (8.3 kg-m). Re-check chain deflection measurement.
6. Reinstall chain guard.
7. Adjust stone guard to allow 1/8" clearance between sprocket and guide.

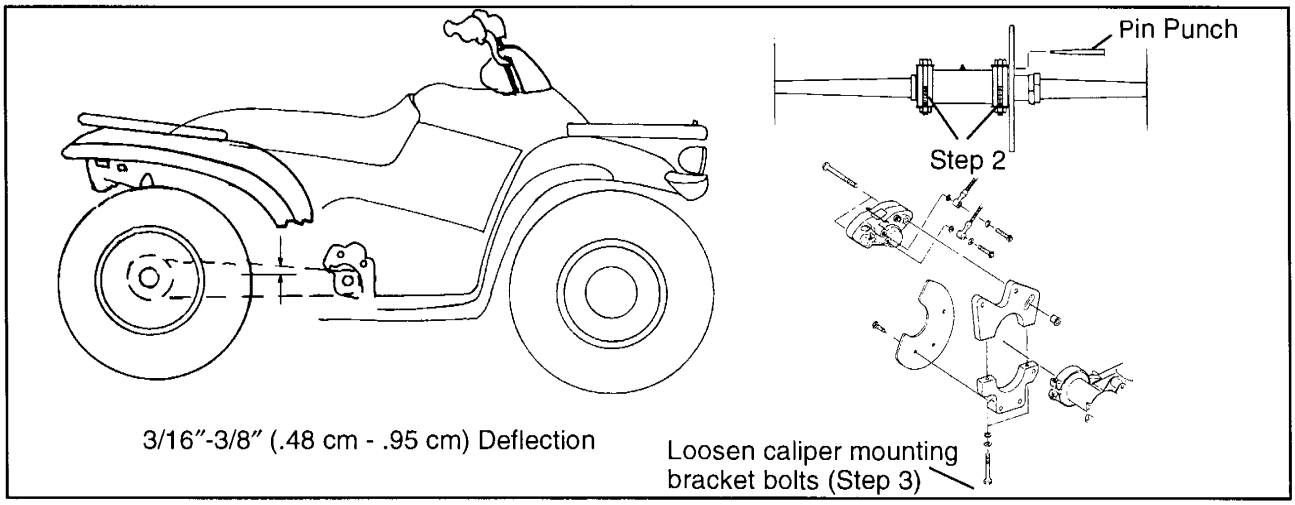



Rear Drive Chain Adjustment

### Drive Chain Adjustment, Concentric Swingarm

⚠ **CAUTION:** Never adjust or operate the vehicle with the rear drive chain too loose or too tight as severe damage to the transmission and drive components can result.

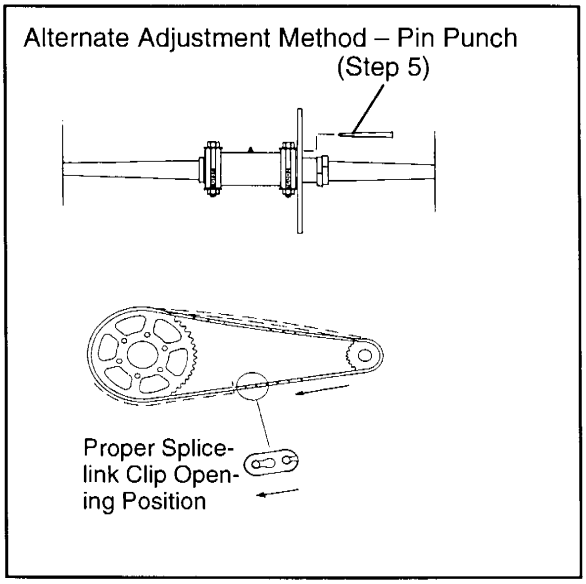
Check the amount of chain slack by moving the vehicle slightly forward to gain slack at the top side of the rear chain. At this point the chain should have 3/16″-3/8″ (.48 cm - .95 cm) deflection. If the chain needs adjustment, use the following procedure.




### Adjustment Procedure

1. Loosen chain guard.
2. Loosen two eccentric locking bolts.
3. Loosen caliper mount bolts.
4. Using a 2 1/2″ wrench, rotate the housing to adjust chain slack to the proper dimension, and then proceed to Step 7;
   or... follow Steps 5 and 6.
5. Insert a pin punch through the sprocket hub and into the eccentric axle housing.
6. Roll the vehicle ahead or back to adjust chain slack to the proper dimension.
7. Tighten caliper mount bolts 10-12 ft. lbs. (1.4 - 1.7 kg/m)
8. Tighten the eccentric locking bolts to 60 ft. lbs. (8.3 kg/m).
9. Reinstall chain guard.

**NOTE:** Reposition chain guide to allow 1/8″ (.3 cm) clearance between sprocket and guide.



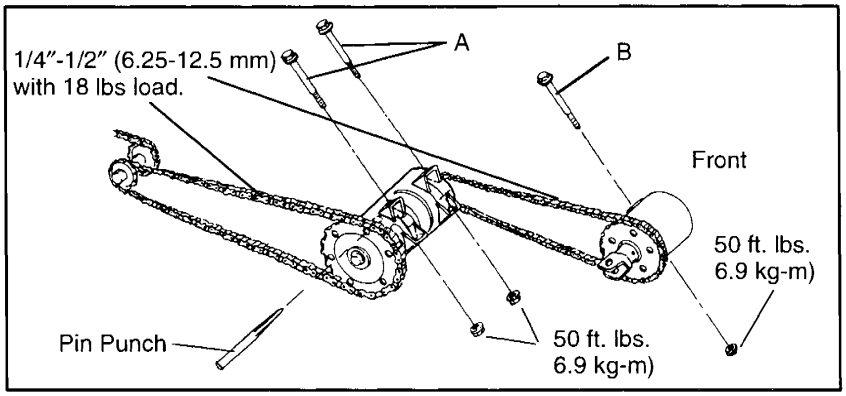
## NOTES

## Center/Front Drive Chain Slack Adjustment

Periodically remove the chain guards to check chain quality and adjustment.

**The center chain should be adjusted before the front chain. This adjustment affects the front chain slack.** After the recommended center chain adjustment is made, proceed to the front chain. **NOTE:** This procedure should be performed while the vehicle is empty (i.e. no one sitting on the machine).

## Center/Front Drive Chain Inspection/Adjustment

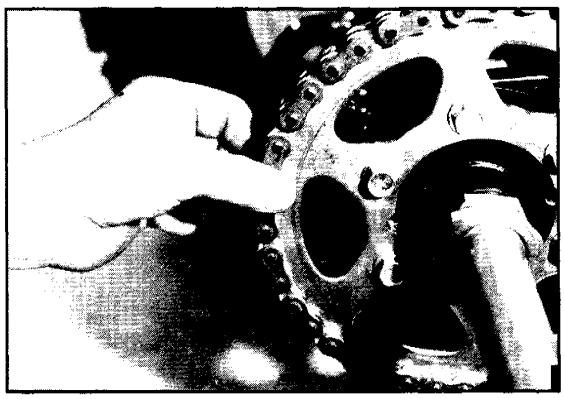



1. Remove cotter pin and washer connecting brake pedal linkage to caliper actuating arm. Remove linkage from arm.
2. Remove right front fender mud flap foot rest attaching hardware.
3. Remove center chain guard attaching hardware. Press brake pedal downward and remove guard.
4. Remove forward chain guard attaching bolts and guard.
5. Loosen center chain eccentric clamp bolts (A).
6. Rotate vehicle forward or rearward until one of sprocket holes aligns with hole provided in eccentric.
7. Insert a large punch or screwdriver through sprocket and into eccentric hole. Rotate vehicle rearward to tighten chain. Chain deflection should be 1/4-1/2" (.6 -1.2 cm) with 18 lbs. (8.18 kg) of force at center of chain.
8. Tighten eccentric clamp bolts to 45 ft. lbs. (6.21 kg-m). **NOTE:** This does not include nut rolling torque. Check chain tension.
9. Loosen forward chain eccentric clamp bolt (B). Install punch as was done previously and adjust chain to 1/4-1/2" (.6 -1.2 cm) with 18 lbs. (8.18 kg) force at center of chain.
10. Tighten forward eccentric clamp bolt to 45 ft. lbs. (6.21 kg-m). **NOTE:** This does not include nut rolling torque. When this bolt is tightened the chain deflection may change. Check deflection and adjust again if needed.

## Sprocket Inspection

Inspect the sprocket for worn, broken or bent teeth.

To check for wear, pull outward on the chain as shown. Replace sprocket if chain movement exceeds 1/4" (.6 cm).

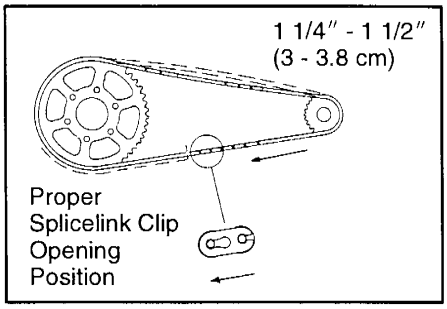


## Drive Chain Inspection/Adjustment

**CAUTION:**

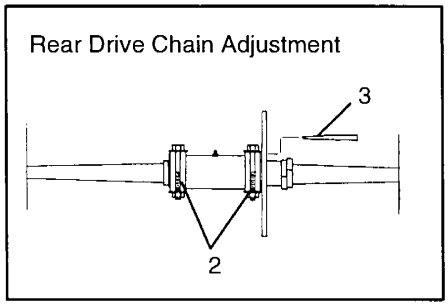
Never adjust or operate the vehicle with the rear drive chain slack out of the 1 1/4″ to 1 1/2″ (3 to 3.8 cm) specification as severe damage to the transmission and drive components can result.

Check the amount of chain slack by moving the vehicle slightly forward to gain slack at the top side of the rear chain. Then pull up and down on the chain. Total slack should be 1 1/4″ to 1 1/2″ (3 to 3.8 cm). If slack is not within specification, it must be adjusted.




### Rear Axle (6x6 Middle Axle) Adjustment Procedure

1. Loosen chain guard.
2. Loosen two eccentric locking bolts.
3. Insert a pin punch through the sprocket hub and into the eccentric axle housing.
4. Roll the vehicle ahead or back to adjust chain slack to the proper dimension. Correct chain slack adjustment is 1 1/4″ to 1 1/2″ (3 to 3.8 cm) total at the midpoint.
5. Tighten the eccentric locking bolts to 60 ft. lbs.
6. Reinstall chain guard.




**NOTE:** Reposition chain guide to allow 1/8″ (.3 cm) clearance between sprocket and guide.

### Final Drive Chain

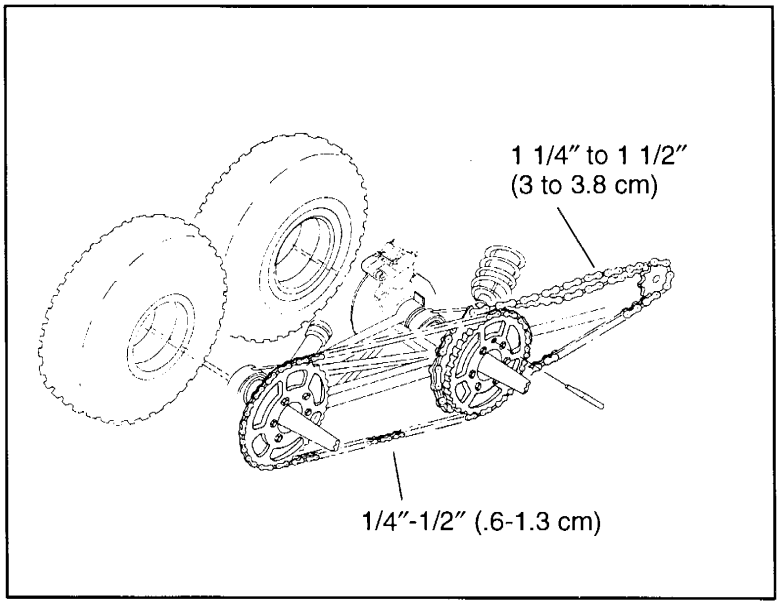
**CAUTION:** Never adjust or operate the vehicle with the drive chain slack out of the 1 1/4″ to 1 1/2″ (3 to 3.8 cm) specification. Severe damage to the transmission and drive components can result.

### 6x6 Rear Axle Drive Chain Adjustment

To adjust the rear axle drive chain on 6x6 models, loosen the rear most eccentric and rotate using the same method as outlined for the middle axle chain. Total slack, however, should be adjusted to 1/4″-1/2″ (.6-1.3 cm). Check to be sure all cotter pins, cable ties, hose clamps, etc., are in place and in good condition.

**Chain Deflection**

**1/4-1/2″(3 - 3.8 cm)**



## Front Suspension

Compress and release front suspension. Damping should be smooth throughout the range of travel.

Check all front suspension components for wear or damage.

Inspect front strut cartridges for leakage.

## Rear Suspension

Compress and release rear suspension. Damping should be smooth throughout the range of travel.

Check all rear suspension components for wear or damage.

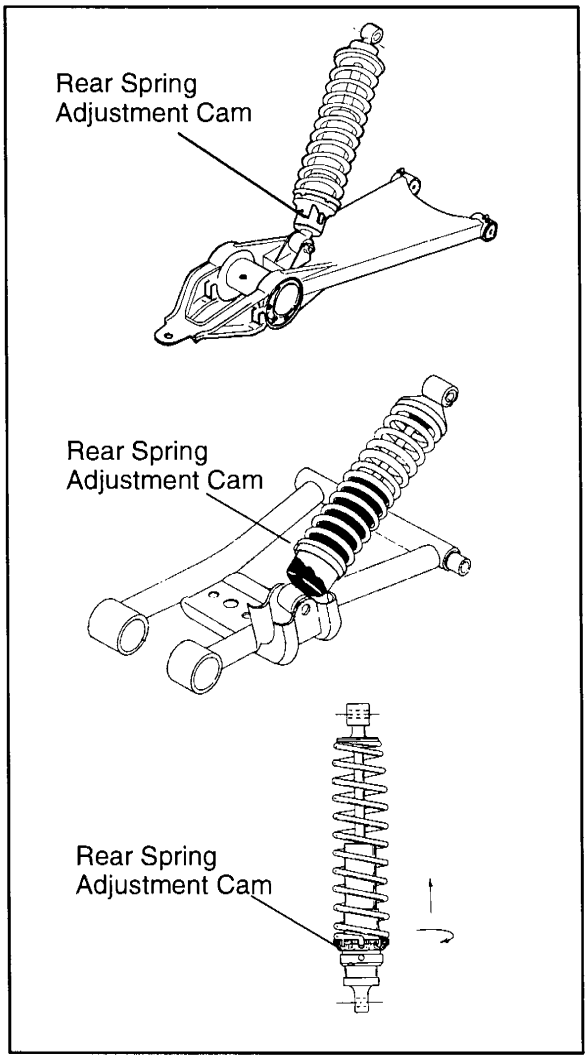
Inspect shock for leakage.

Shock spring preload can be adjusted using the shock spanner wrench.

**Shock Spanner Wrench**

**PN 2870872**

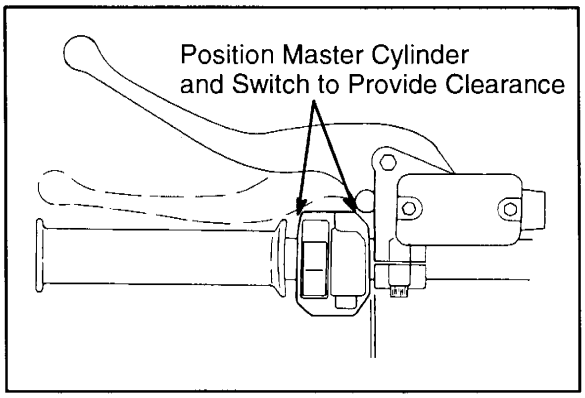
Operator weight and loading affect spring preload requirements. Adjust as necessary.




## Controls

Check controls for proper operation, positioning and adjustment. Brake lever and switches must be positioned to allow adequate clearance for the movement of the lever.

The brake control and switch must be positioned to allow the brake lever to travel throughout the entire range without contacting the switch body.



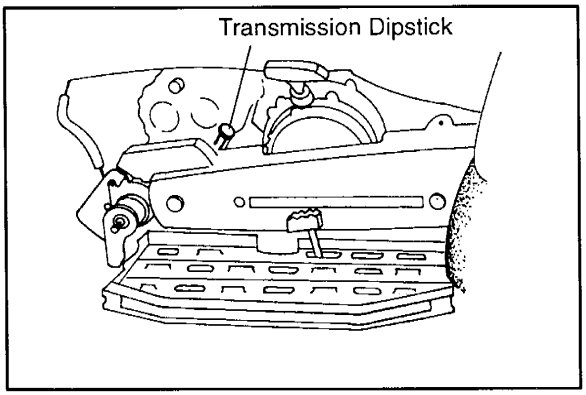
### Transmission Lubrication

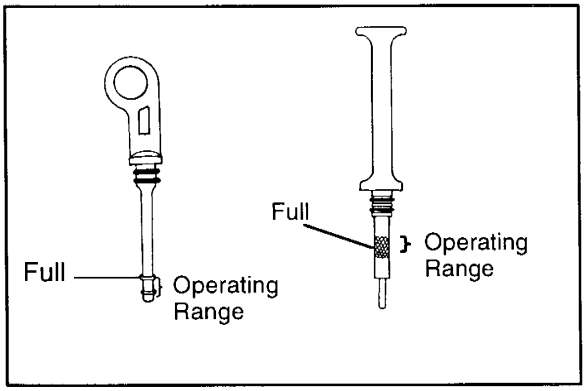
The transmission dipstick is located on the right side of the machine.

The transmission lubricant level should be checked monthly or 1000 miles (1600 km), whichever comes first. Transmission oil should be changed annually. With the ATV on a level surface, remove fill plug dipstick and check the lubricant level. Lubricant should be kept at the full mark on the dipstick. The correct transmission lubricant to use is Polaris Premium Synthetic Gearcase Lubricant (PN 2871478).

### Transmission Oil Changing Procedure

1. Remove skid plate.
2. Remove fill plug/dipstick.
3. Remove transmission drain plug located on the bottom right hand side and drain the oil. Catch and discard used oil properly.
4. Clean and reinstall the drain plug.
5. Add Polaris Premium Synthetic Gearcase Lubricant (PN 2871478 - 12 oz. bottle) to full mark on the fill plug/dipstick.
6. Check for leaks.
7. Reinstall skid plate removed in step 1.




### Transmission Oil Change - Dipstick Models

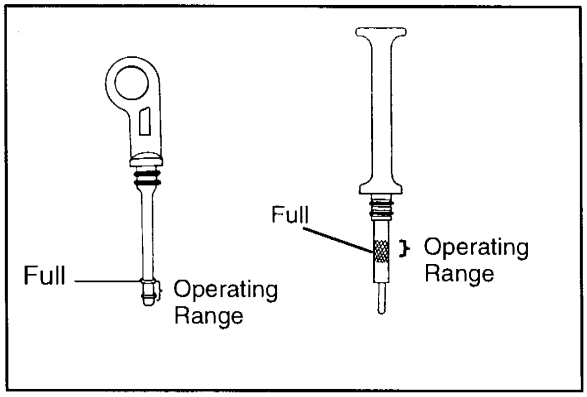
1. Place a drain pan beneath the transmission oil drain plug area.
2. Remove the drain plug and wipe the magnetic end clean to remove accumulated metallic filings.
3. After the oil has drained completely, install a new sealing washer and install the drain plug. Torque to 14 ft. lbs. (1.93 kg-m).
4. Remove dipstick and clean accumulated metallic filings from the magnetic end.

**NOTE:** On some models the magnet is located on the drain plug.

5. Add Polaris Chaincase Oil through the dipstick hole. Insert the dipstick all the way, remove, and check the level on the stick. Add oil if necessary until the oil level is between the upper and lower limits of the knurled portion. Do not overfill.

**Recommended Transmission Oil**
**Polaris Synthetic gear case oil,**
**PN 2871478 12 oz. / PN 2871477 Gallon**
**High / Low/Rev Transmission - 20 oz.**
**High / Reverse Transmission - 16 oz.**

**Shaft Drive Transmission -**
**Approx 20-22 oz. (at change)**
**32 oz. (when completely disassembled)**



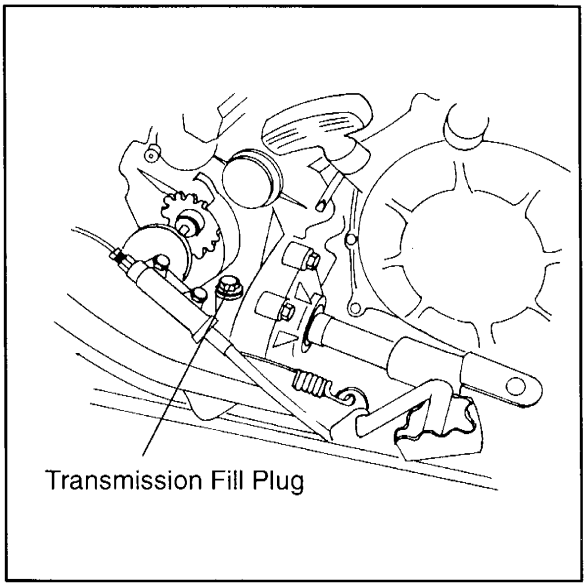

## Transmission Lubrication - Type V Shaft/Chain

The transmission fill plug is located on the right side of the machine behind the propshaft shield.

The transmission lubricant level should be checked every six months or 1000 miles (1600 km), whichever comes first. Transmission oil should be changed annually. With the ATV on a level surface, remove fill plug and check the lubricant level. Lubricant level is correct when it reaches the bottom thread of filler hole. Use Polaris Premium Synthetic Gearcase Lubricant (PN 2871478).

## Transmission Oil Change Procedure

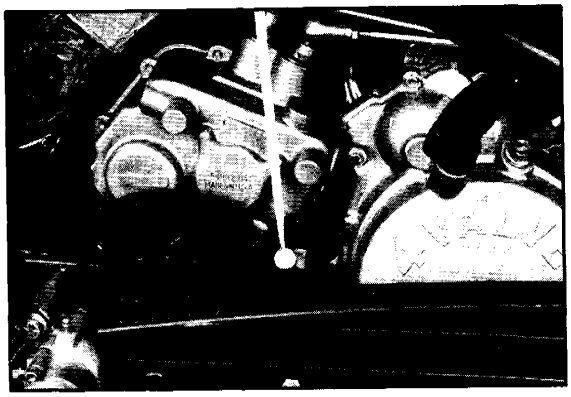
1. Remove propshaft shield from the right side of the vehicle.
2. Remove fill plug.
3. Remove transmission drain plug located on the bottom left hand side and drain the oil. Catch and discard used oil properly.
4. Clean and reinstall the drain plug.
5. Add Polaris Premium Synthetic Gearcase Lubricant (PN 2871478 - 12 oz. bottle) until oil reaches the bottom thread of the filler hole.
6. Check for leaks.
7. Reinstall propshaft shield removed in step 1.



## Transmission Vent Line Routing

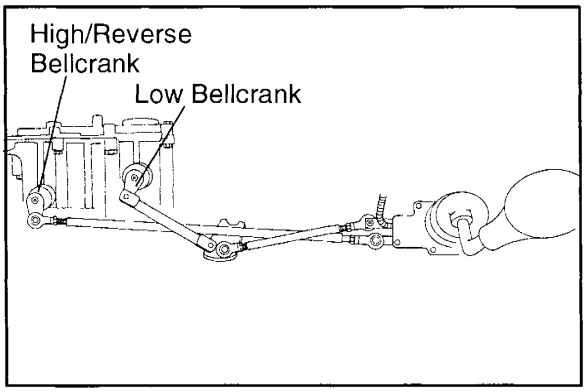
1. Check the transmission vent line for proper routing, cracks or damage. Be sure the vent line is not kinked or pinched.

**NOTE:** Vent line location varies by model.



## Transmission Linkage Adjustment

The transmission shift linkage should be periodically inspected for wear and proper adjustment. Refer to Transmission, Chapter 8 for more information.




**Sportsman 500**

## Wheels

Inspect all wheels for runout or damage. Check wheel nuts and ensure they are tight. Do not over tighten the wheel nuts.

## Wheel, Hub, and Spindle Torque Table

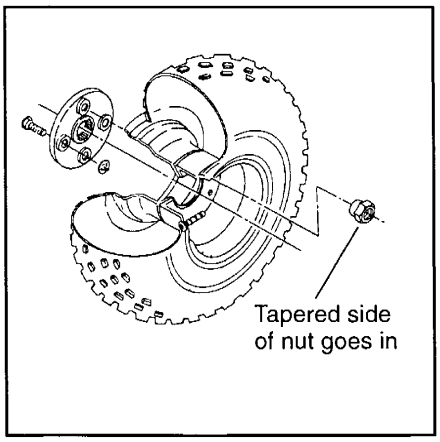
| Model | Item | Specification |
|---|---|---|
| 2x4 | Front Wheel Nuts | 15 Ft. Lbs. |
| | Rear Wheel Nuts | 50 Ft. Lbs. |
| | Front Spindle Nut | 40 Ft. Lbs. |
| | Rear Hub Retaining Nut | 80 Ft. Lbs. |
| 4x4 Chain Drive and Chain/Shaft Models | Front Wheel Nuts | 15 Ft. Lbs. |
| | Rear Wheel Nuts | 50 Ft. Lbs. |
| | Front Spindle Nut | Refer to procedures listed on following pages |
| | Rear Hub Retaining Nut | 80 Ft. Lbs. |
| 4 x 4 Shaft Drive | Front Wheel Nuts | 15 Ft. Lbs. |
| | Rear Wheel Nuts | 15 Ft. Lbs. |
| | Front Spindle Nut | Refer to procedures listed on following pages |
| | Rear Hub Retaining Nut | 100 Ft. Lbs. |

## Wheel Removal Front or Rear

1. Stop the engine, place the transmission in gear and lock the parking brake.
2. Loosen the wheel nuts slightly.
3. Elevate the side of the vehicle by placing a suitable stand under the footrest frame.
4. Remove the wheel nuts and remove the wheel.

## Wheel Installation

1. With the transmission in gear and the parking brake locked, place the wheel in the correct position on the wheel hub. Be sure the valve stem is toward the outside and rotation arrows on the tire point toward forward rotation.
2. Attach the wheel nuts and finger tighten them.
3. Lower the vehicle to the ground.
4. Securely tighten the wheel nuts to the proper torque listed in the table above.




**CAUTION:**

If wheels are improperly installed it could affect vehicle handling and tire wear. On vehicles with tapered rear wheel nuts, make sure the tapered end of the nut goes into the taper on the wheel.

## Tire Pressure

| Tire Pressure Inspection (PSI - Cold) | | | |
|---|---|---|---|
| **Model** | **Front** | **Center** | **Rear** |
| (1996-Current) All Except Models Listed Below | 4 | – | 3 |
| (1996-Current) 6x6 | 5 | 5 | 5 |
| Sportsman/Xplorer 500 (1996-Current) | 5 | – | 5 |

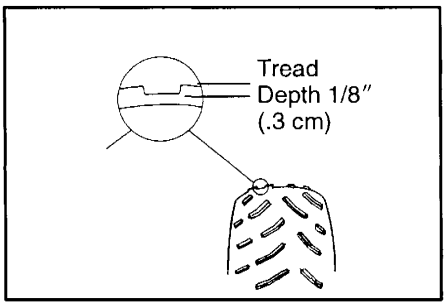
## Tire Inspection

**CAUTION:**

Maintain proper tire pressure. Improper tire inflation may affect ATV maneuverability. When replacing a tire always use original equipment size and type.

**CAUTION:**

The use of non-standard size or type tires may affect ATV handling.




### Tire Tread Depth

Always replace tires when tread depth is worn to 1/8" (.3 cm) or less.

**⚠ WARNING**

Operating an ATV with worn tires will increase the possibility of the vehicle skidding easily with possible loss of control.

Worn tires can cause an accident.

Always replace tires when the tread depth measures 1/8" (.3 cm) or less.

## Frame, Nuts, Bolts, Fasteners

Periodically inspect the tightness of all fasteners in accordance with the maintenance schedule. Check that all cotter pins are in place. Refer to specific fastener torques listed in each chapter.