CHAPTER 2
MAINTENANCE

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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 mph. 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.

▶Vehicles subjected to severe use (operation in wet or dusty areas, low speed heavy load operation, prolonged idle) should be inspected and serviced more frequently. 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. Change oil immediately if oil level begins to rise.

E Emission Control System Service (California).

PERIODIC MAINTENANCE - ENGINE					
		Frequency (Whichever comes first)			
	Item	Hours	Calendar	Miles (Km)	Remarks
E▶	Engine Oil - Level/Change	100 hrs	6 months	1000 (1600)	Check Level Daily; Break In service at 1 month
E	Oil Filter (4-strokes)	100 hrs	6 months	1000 (1600)	Replace with oil change
	Oil Filter (2-strokes)	100 hrs	12 months	1000 (1600)	Replace
	Oil Pump Cable (2-strokes)	50 hrs	6 months	500 (800)	Inspect, Adjust, Lubricate, Replace if Required
E▶	Air Filter - Foam Pre-Cleaner	Daily	Daily		Inspect-Clean & oil more often in dirty conditions.
E▶	Air Filter - Main Element	Weekly	Weekly		Inspect - Replace if necessary
▶	Air Box Sediment Tube	-	Daily		Drain deposits whenever visible
▶	Engine Breather Filter	20 hrs	Monthly	200 (320)	Inspect and replace if necessary
▶	Oil Tank Vent Hose	100 hrs	12 months	1000 (1600)	Inspect hose routing /hose condition
E■	Valve Clearance (4-strokes)	100 hrs	12 months	1000 (1600)	Inspect/Adjust
▶	Counter Balancer Fluid (400s)	100 hrs	12 months	1000 (1600)	Check Monthly / Change Annually
E	Idle Speed	As required	As required		Adjust
■	Throttle Cable / ETC Switch	50 hrs	6 months	500 (800)	Inspect -Adjust, Lubricate, Replace if necessary
	Choke (Enricher) Cable	50 hrs	6 months	500 (800)	Inspect -Adjust, Lubricate, Replace if necessary
	Carburetor Float Bowl	50 hrs	6 months	500 (800)	Drain bowl periodically and prior to storage
	Carburetor Air Intake Ducts/Flange	50 hrs	6 months	500 (800)	Inspect all ducts for proper sealing/air leaks
E■	Fuel System	100 hrs	12 months	1000 (1600)	Check for leaks at tank cap, lines, fuel valve, filter, pump & carburetor. Replace lines every 2 years.
E■	Fuel Filter	100 hrs	12 months	1000 (1600)	Replace filter annually
	Coolant/Level Inspection	Daily	Daily		Replace engine coolant every 2 years
	Coolant Strength / Pressure Test System	100 hrs	6 months	1000 (1600)	Inspect strength seasonally; Pressure test system annually
	Radiator	100 hrs	12 months	1000 (1600)	Inspect / Clean external surface
	Cooling System Hoses	100 hrs	12 months	1000 (1600)	Inspect
	Engine Mounts	100 hrs	12 months	1000 (1600)	Inspect
	Drain Recoil Housing	Weekly	Weekly		More often if operating in wet environment
	Exhaust Muffler / Pipe	100 hrs	12 months	1000 (1600)	
ELECTRICAL					
E	Spark Plug	100 hrs	12 months	1000 (1600)	Inspect - Replace if necessary
	Ignition Timing	100 hrs	12 months	1000 (1600)	Inspect
	Battery	20 hrs	Monthly	200 (320)	Check terminals; Clean; Check fluid level
	Headlight Aim	As required	As required		Adjust if Necessary
	Headlamp Inspection	Daily	Daily		Check operation daily; Apply Polaris Dielectric Grease to connector when lamp is replaced
	Tail Lamp Inspection	Daily	Daily		Check Operation Daily; Apply Polaris Dielectric Grease to socket when lamp is replaced

MAINTENANCE
Periodic Maintenance Chart, Cont.

CHASSIS					
		Frequency (Whichever comes first)			
	Item	Hours	Calendar	Miles (Km)	Remarks
▶	General Lubrication	50 hrs	3 months	500 (800)	Lubricate All Fittings, Pivots, Cables, Etc.
▶	Front Hubs/Fluid Check	50 hrs	6 months	500 (800)	Check monthly
▶	Front Hubs/Fluid Change	100 hrs	12 months	1000 (1600)	Check monthly
■	Front Wheel Bearings (2x4)	Annually	12 months		Inspect and replace if necessary
■	Front Hub Spindle Nut Torque (AWD Models)	Annually	12 months		Inspect Torque and Locking Fastener and replace if necessary
	Drive Belt	50 hrs	6 months	500 (800)	Inspect - Adjust, Replace if Necessary
	Clutches (Drive And Driven)	100 hrs	12 months	1000 (1600)	Inspect, Clean
▶	Transmission Oil Level	25 hrs	Monthly	250 (400)	Inspect Monthly; Change Annually
	Shift Linkage	50 hrs	6 months	500 (800)	Inspect,Lubricate, Adjust
	Shift Selector Box	200 hrs	24 months	2000 (3200)	Change Lubricant Every Two Years
■	Steering	50 hrs	6 months	500 (800)	Inspect Daily, Lubricate
■	Toe Adjustment	As required	As required		Periodic Inspection, Adjust When Parts are Replaced
▶	Rear Axle	50 hrs	6 months	500 (800)	Inspect Bearings, Grease Fitting
▶	Front Suspension	50 hrs	6 months	500 (800)	Inspect - Lubricate
▶	Rear Suspension	50 hrs	6 months	500 (800)	Inspect - Lubricate
	Drive Chain	50 hrs	6 months	500 (800)	Inspect Daily, Adjust and Lubricate if Needed
	Tires	Pre-ride	Pre-ride		Inspect Daily, Pre-Ride Inspection Item
■	Brake Fluid	200 hrs	24 months	2000 (3200)	Change Every Two Years
▶	Brake Fluid Level	Pre-ride	Pre-ride		Inspect Daily, Pre-Ride Inspection Item
▶	Brake Lever Travel	Pre-ride	Pre-ride		Inspect Daily, Pre-Ride Inspection Item
■	Brake Pad Wear	10 hrs	Monthly	100 (160)	Inspect Periodically
	Auxiliary Brake Adjustment	As required	As required		Inspect Deflection Daily; Adjust
	Output Shaft Bearing	Monthly	Monthly		Grease Monthly
	Brake System	Pre-ride	Pre-ride		Pre-Ride Inspection Item
	Wheels	Pre-ride	Pre-ride		Pre-Ride Inspection Item
	Frame Nuts, Bolts, Fasteners	Pre-ride	Pre-ride		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. Refer to Specifications Chapter 1 for capacity information.

Item	Type	Notes	See Chapter
Engine Oil 4-Strokes	Polaris Premium 4 Synthetic, 0W/40	Add to proper level on dipstick.	2
Engine Injector Oil (2-Strokes)	Polaris Premium TC-W3 2-Stroke oil	Add to top of oil reservoir as required.	2
Counter Balancer Oil (400L Engines)	SAE 10W30 Motor Oil (SG/SH Rated)	Add to proper level on dipstick.	2
Transmission	Polaris Synthetic Gear Case Lubricant	Refer to procedures outlined later in this chapter.	2
Front Gear Case (Shaft Drive)	Premium Front Gearcase Fluid or GL5 80-90 Gear Lube	Refer to procedures outlined later in this chapter.	2
Gear Shift Selector Box	Polaris 0W/40 Synthetic Engine Lubricant or 10W Motor Oil	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
Coolant Level	Polaris Premium 60/40 Pre-mixed Antifreeze/ Coolant or a 50/50 mixture high quality antifreeze/ coolant and distilled water	Fill reservoir tank to full line. Add if necessary. If reservoir was empty or extremely low, allow engine and cooling system to cool completely and check level in radiator. Fill to top of filler neck.	2
Front Hubs (AWD Models)	Premium Demand Drive Hub Fluid	Fill hub at 4:00 or 8:00 position until fluid trickles out. Do not force fluid into hub.	2
Brake Fluid	Polaris DOT 3 Brake Fluid	-Fill between “Min” & “Max” indicators on plastic reservoir.	2

Cold Weather Kits for 4 Cycle ATVs and 6x6

Oil Tank Cover – PN 287187

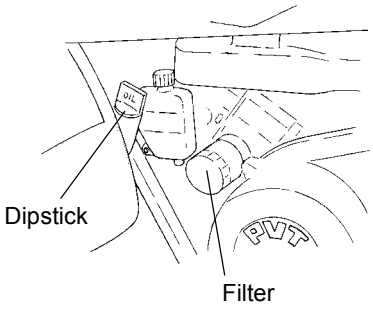
Engine Heater – PN 2871507

Oil Tank Heater – PN 2871873

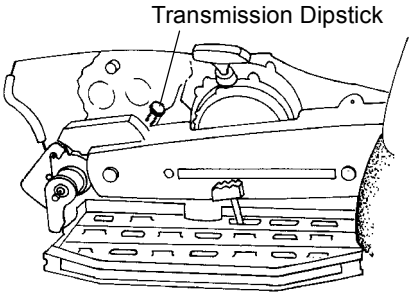
MAINTENANCE
Maintenance Products
Polaris Premium Lubricant and Maintenance Product Part Numbers

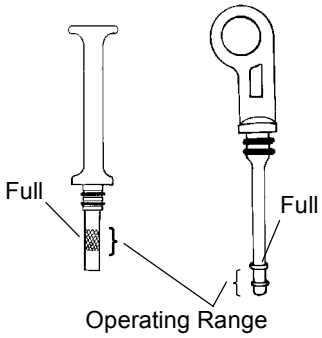
Part No.	Description
	Engine Lubricant
2870791	Fogging Oil
2871281	Engine Oil (Quart) Premium 4 Synthetic 0-W40 (4-Cycle)
2871567	Engine Oil (16 Gallon) Premium 4 Synthetic 0-W40 (4-Cycle)
2871098	Premium 2 Cycle Engine Oil (Quart)
2871097	Premium 2 Cycle Engine Oil (Gallon)
2871240	Premium 2 Cycle Engine 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
	Gearcase / Transmission Lubricants
2871477	Premium Synthetic Gearcase Lubricant (1 Gal.)
2871478	Premium Synthetic Gearcase Lubricant (12 oz.. bottle)
2870465	Oil Pump for Gearcase Oil
2871653	Premium Front Gearcase Fluid (12 oz..)
	Grease / Specialized Lubricants
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..)
2871312	Grease Gun Kit
1350046	CV Joint Grease Pack (30g)
1350047	CV Joint Grease Pack 50g
2871329	Dielectric Grease (Nyogel t)
2871654	Premium Demand Drive Hub Fluid (12 oz..)
	Coolant
2871323	60/40 Coolant Gallon
2871534	60/40 Coolant Quart
	Additives / Sealants / Thread Locking Agents / Misc.
2870585	Loctite t Primer N, Aerosol, 25g
2871949	Loctite t Threadlock 242 (50ml.)
2871950	Loctite t Threadlock 242 (6ml.)
2871951	Loctite t Threadlock 262 (50ml.)
2871952	Loctite t Threadlock 262 (6ml.)
2871953	Loctite t Threadlock 271 (6ml.)
2871954	Loctite t Threadlock 271 (36ml.)
2870584	Loctite t RC 680-Retaining Compound (10ml.)
2870587	Loctite t 518 Gasket Eliminator / Flange Sealant (50ml.)
2871326	Premium Carbon Clean 12 oz..
2870652	Fuel Stabilizer 16 oz..
2871957	Black RTV Silicone Sealer (3 oz.. tube)
2871958	Black RTV Silicone Sealer (11 oz.. cartridge)
8560054	Marine Grade Silicone Sealer (14 oz.. cartridge)
2870990	DOT3 Brake Fluid
2872113	Disc Brake Quiet, Aerosol, (9 oz..)
2871557	Crankcase Sealant, 3-Bond 1215

Ill. #	Item	Lube Rec.	Method	Frequency*
1	Engine Oil (4 Strokes)	Polaris 0W/40 Synthetic	Add oil to proper level.	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. NOTE: See page 2.10 for models without a dipstick.	Change annually ©
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 2.57 .	As required. Change fluid every 2 years.
4	Drive Chain	Polaris Chain Lube or O-Ring chain lube	Apply to chain link plates and rollers.	As required*
5	Middle Chain			
6	Front Chain			

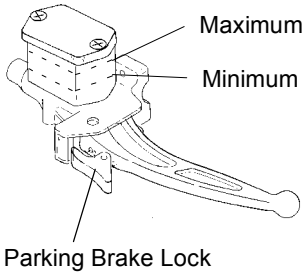


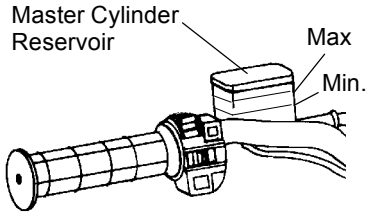
1. Engine Oil and Filter (4 Cycle)



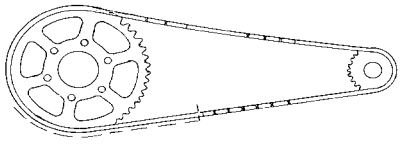


2. Transmission (Models Equipped With A Dipstick)

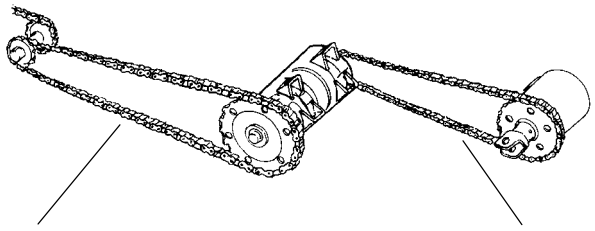




3. Brake Fluid (Left hand Master Cylinder)

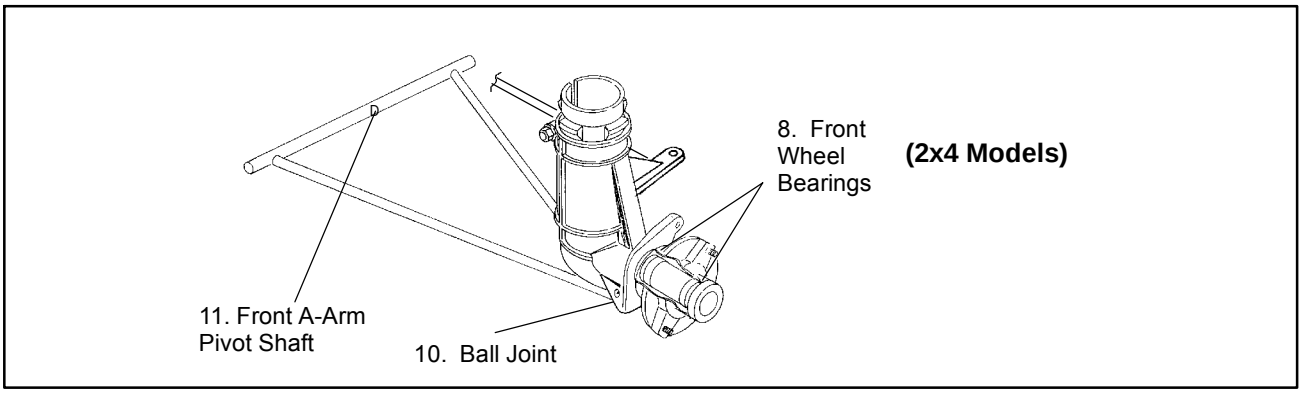


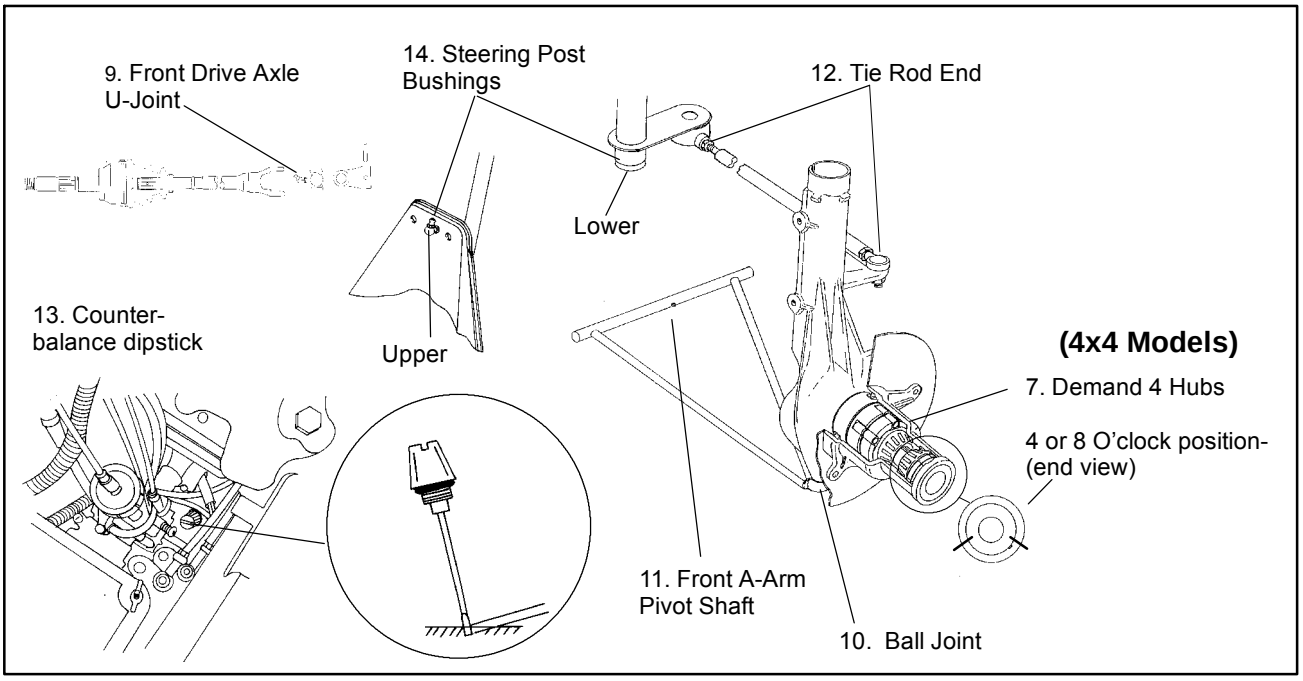
4. Rear Drive Chain



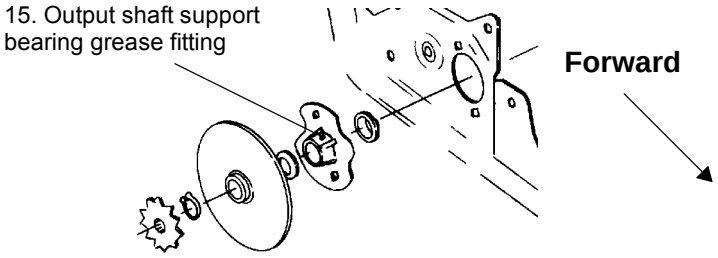
5. Middle Drive Chain

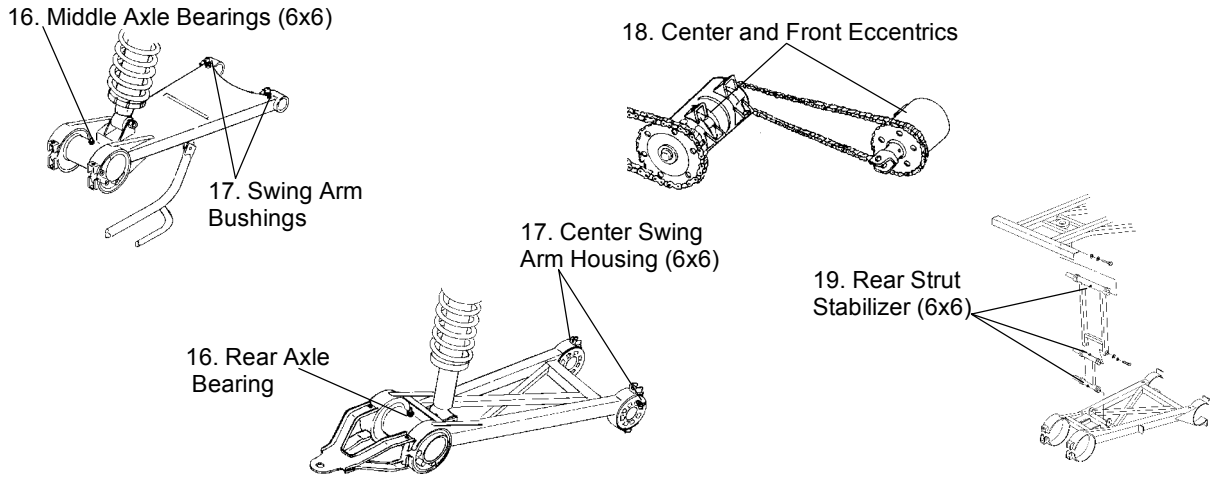
6. Front Drive Chain





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. Reinstall screw.	Semi-annually ¡
8	Front Wheel Bear-ings - Non - driving front wheels	Sealed; Replace	Inspect and replace bearings if necessary	Annually ©
9	Front Drive Axle "U" Joints	Polaris U-Joint Grease ¢	Locate grease fitting and grease with grease gun.	Semi-annually ¡
10	Ball Joint	Polaris All Season Grease ¢	Locate grease fitting on back side of struts and grease with grease gun.	Semi-annually ¡
11	Front A-Arm Pivot Shaft	Polaris All Season Grease ¢	Locate grease fitting on pivot shaft and grease with grease gun.	Semi-annually ¡
12	Tie Rod Ends	Polaris All Season Grease ¢	Lift boot. Clean away dirt and grease. Apply fresh grease by hand and reassemble.	Semi-annually ¡
13	Counter Balance Housing (400L)	10W30 Motor Oil	Check level on dipstick and add oil as necessary. Change annually. To change oil see page 2.16.	Change Annually ©
14	Steering Post Bush-ings	All Season Grease ¢	Locate fittings on upper and lower steering post and grease with grease gun.	Semi-annually ¡





Ill. #	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 ¡
16	Rear and Middle Axle Bearings (6x6)	Polaris All Season Grease ¢	Locate grease fitting on eccentric and grease with grease gun.	Semi-annually ¡
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 ¡
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 ¡
19	Rear Strut (6x6)	Polaris All Season Grease ¢	Locate fitting on rear strut and grease with grease gun.	Semi-annually ¡

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

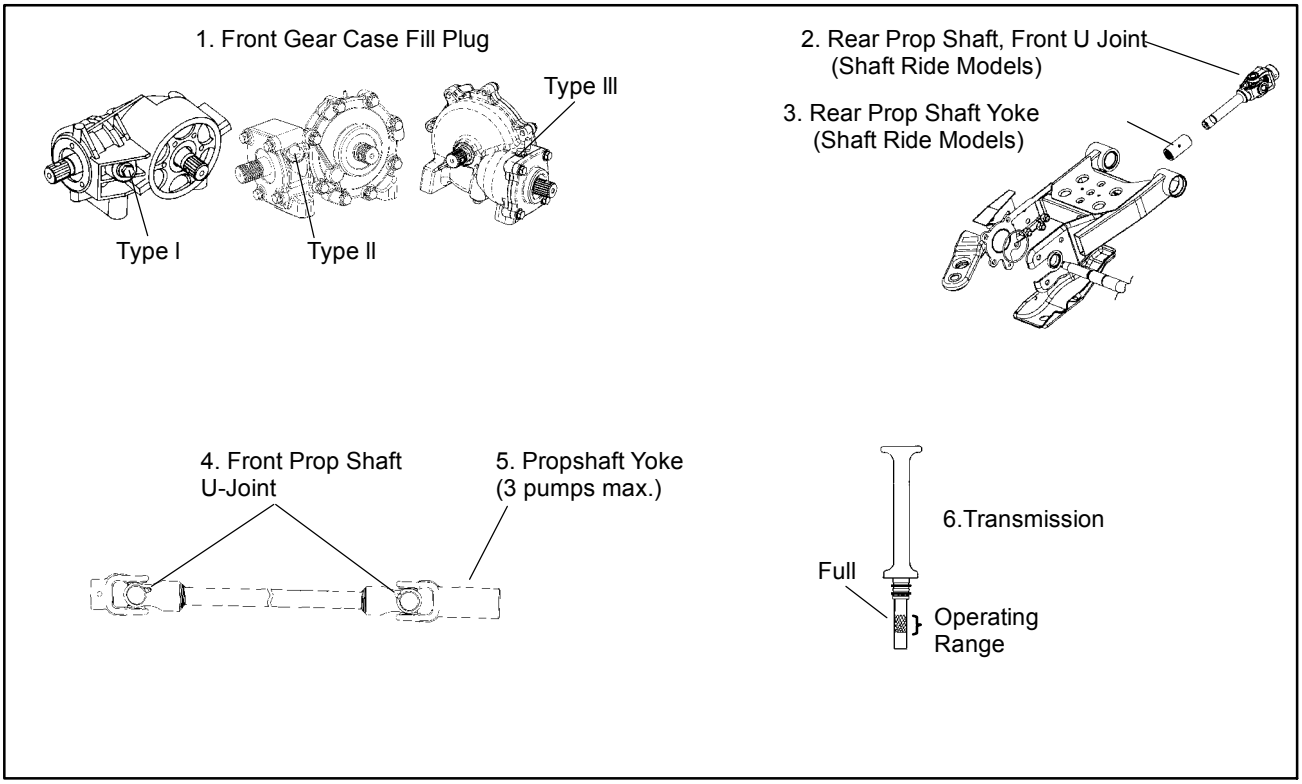
¡ Semi-annually or 50 hours of operation (refer to Maintenance Schedule for additional information)

© Annually or 100 hours of operation (refer to Maintenance Schedule for additional information)

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

MAINTENANCE
Lubrication - Shaft Drive Models

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 NO TAG	Change annually ©
2	U-Joint - Rear Prop Shaft, Front (Shaft Ride Models)	Premium U-Joint Grease	Locate Fittings and Grease	Semi-annually ¡
3	Yoke - Rear Prop Shaft (Shaft Ride Models)	Premium U-Joint Grease	Locate Fittings and Grease	Semi-annually ¡
4	U-Joints - Front Prop Shaft	Premium U-Joint Grease	Locate Fittings and Grease	Semi-annually ¡
5	Propshaft Yoke	Premium U-Joint Grease	Locate fittings and grease - 3 pumps maximum	Annually ©
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 ©

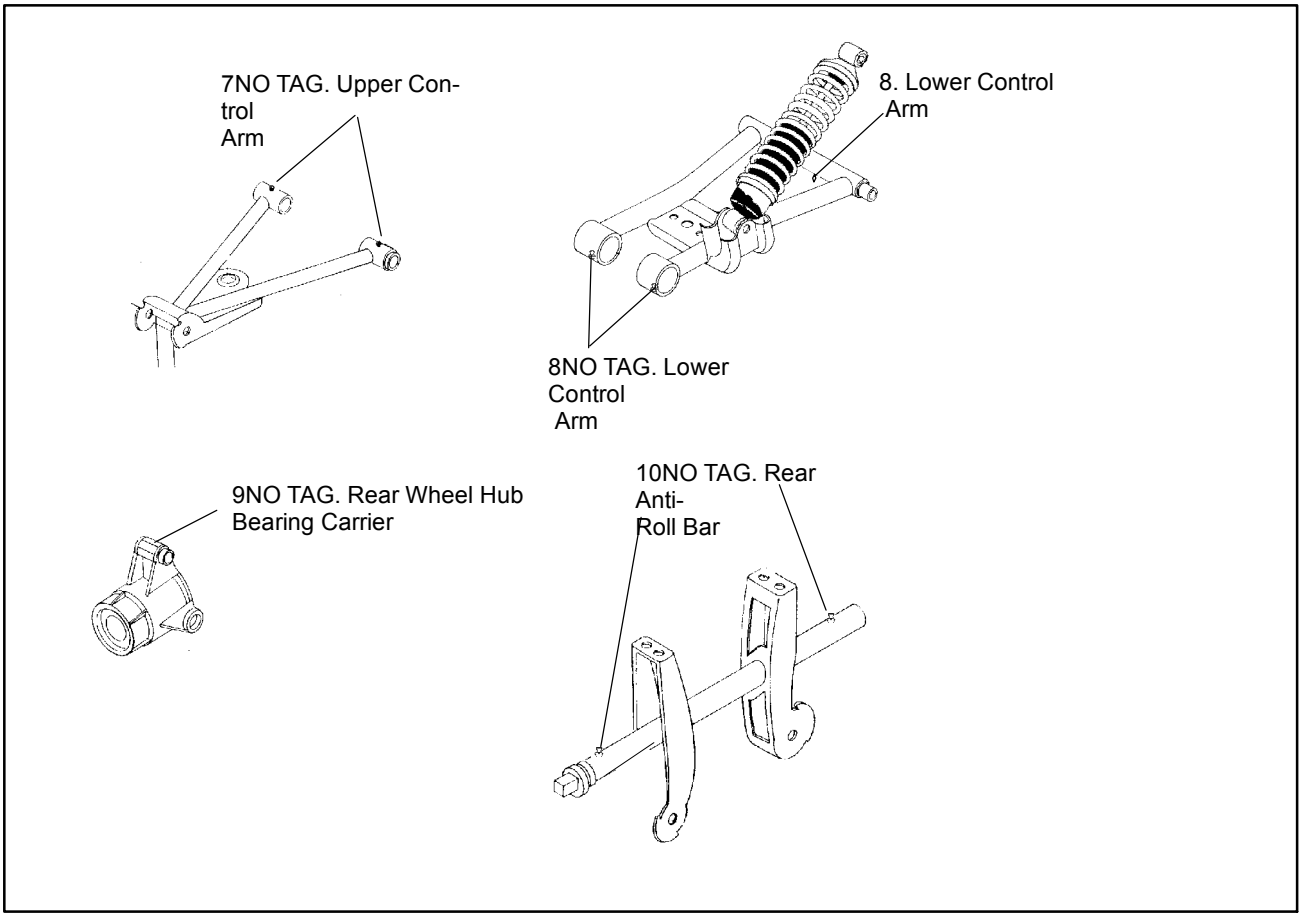
* More often under severe use, such as wet or dusty conditions

¡ Semi-annually or 50 hours of operation (refer to Maintenance Schedule for additional information)

© Annually or 100 hours of operation (refer to Maintenance Schedule for additional information)

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

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



Ill. #	Item	Lube Rec.	Method	Frequency*
7	Upper Control Arms	Polaris All Season Grease ¢	Locate fittings and grease	Semi-annually ¡
8	Lower Control Arms	Polaris All Season Grease ¢	Locate fittings and grease	Semi-annually ¡
9	Rear Wheel Hub Bearing Carrier	Polaris All Season Grease ¢	Locate fittings and grease	Semi-annually ¡
10	Rear Anti-Roll Bar	Polaris All Season Grease ¢	Locate fittings and grease	Semi-annually ¡

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

¡ Semi-annually or 50 hours of operation (refer to Maintenance Schedule for additional information)

© Annually or 100 hours of operation (refer to Maintenance Schedule for additional information)

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

MAINTENANCE
Gearcase Lubrication - Quick Reference

Refer to the following chart and the illustrations on the following pages for gearcase capacity and maintenance procedures.

1999 MODEL (Except where noted)	MODEL #	GEAR - CASE	TYPE	OIL QUANTITY (fl.oz.. / ml..)	OIL TYPE*	CHECK METHOD
Trail Boss 250	A99AA25CA	Trans.		16.5 oz. / 489 ml.	PPS	Dipstick
Trail Blazer	A99BA25CA	Trans.		11.3 oz.. / 335 ml.	PPS	Dipstick
Xplorer 300	A99CC28CA	Trans.		20 oz.. / 592 ml.	PPS	Dipstick
Xpress 300	A99CA28CA	Trans.		20 oz.. / 592 ml.	PPS	Dipstick
Sportsman 335	A99CH33CA	Trans.		32 oz.. / 984 ml. ¡	PPS	Dipstick
		Front (Early)	Type I Front	4 oz.. / 118 ml.	80-90 GL-5	Bottom of fill plug threads
		Front (Late)	Type II Front	4 oz.. / 118 ml.	80-90 GL-5	Drain/Refill w/ proper amount
Scrambler 400	A99BG38CA	Trans.		32 oz.. / 948 ml.	PPS	Bottom of fill hole
		Front	Type II Front	4 oz. / 118 ml.	80-90 GL-5	Drain/Refill w/ proper amount
Xplorer 400	A99CG38CA	Trans.		32 oz.. / 948 ml.	PPS	Bottom of fill hole
		Front	Type II Front	4 oz.. / 118 ml.	80-90 GL-5	Drain/Refill w/ proper amount
Sport 400	A99BA38CA	Trans.		11.3 oz.. / 335 ml.	PPS	Dipstick
Scrambler 500	A99BG50AA	Trans.		32 oz.. / 948 ml.	PPS	Bottom of fill hole
		Front	Type II Front	4 oz.. / 118 ml.	80-90 GL-5	Drain/Refill w/ proper amount
Magnum 500	A99CD50AA	Trans.		13.5 oz.. / 400 ml.	PPS	Bottom of fill hole
		Front	Type III Front	5 oz.. / 150 ml.	80-90 GL-5	Drain/Refill w/ proper amount
		Rear		10 oz.. / 300 ml.	80-90 GL-5	Bottom of fill hole
Sportsman 500	A99CH50AA	Trans.		32 oz.. / 948 ml. ¡	PPS	Dipstick
		Front (Early)	Type I Front	4 oz.. / 118 ml.	80-90 GL-5	Bottom of fill plug threads
		Front (Late)	Type II Front	4 oz.. / 118 ml.	80-90 GL-5	Drain/Refill w/ proper amount
Big Boss 6x6	A99AE50AA	Trans.		20 oz.. / 592 ml.	PPS	Dipstick
		Front (Early)	Type I Front	4 oz.. / 118 ml.	80-90 GL-5	Bottom of fill plug threads
		Front (Late)	Type II Front	4 oz.. / 118 ml.	80-90 GL-5	Drain/Refill w/ proper amount

Approximately 30 ml. (30 cc) = 1 fluid oz..

***(PPS =)Polaris Premium Synthetic Gearcase Lubricant**

¡ Capacity when disassembled completely. Capacity at change (after draining) is approximately 20 fl. oz.. (592 ml.)

© Middle Angle Drive (Complete Assembly) is P/N 1341239

¢ Rear Angle Drive (Complete Assembly) is P/N 1341246

Front Gearcase Lubrication

The gearcase lubricant level should be checked and changed in accordance with the maintenance schedule.

- Be sure vehicle is level before proceeding.
- Check vent hose to be sure it is routed properly and unobstructed.
- Current gearcases in use are shown by illustration. Refer to illustrations to determine type, and follow instructions to check / change gearcase lubricant.
- The correct gearcase lubricant to use is Polaris Premium GL5 80-90 Gear Lube, or an equivalent lubricant with a GL5 rating.

FRONT GEARCASE SPECIFICATIONS
(Type I, II, and III)

Specified Lubricant:
Polaris Front Gearcase Lube PN 2871653
...Or API GL5 80-90 Gearlube

Capacity: Type I & II . . 4.0 Oz. (120ml.)
Type III . . . . . 5.0 Oz. (150ml.)
Drain Plug / Fill Plug Torque:

14 ft. lbs. (19.4 Nm)

TYPE I

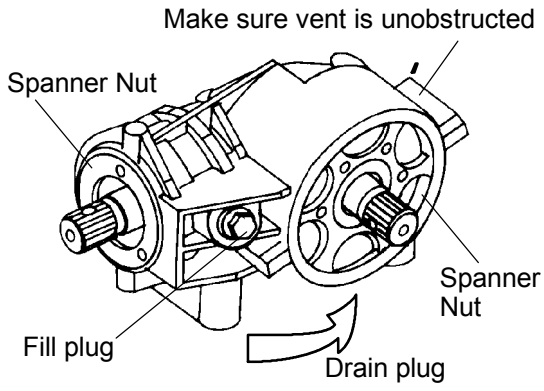
To check the level:

1. Remove fill / check plug.
2. Add proper lubricant if necessary until level with bottom of fill hole threads.
3. Install fill / check plug.

To change lubricant:

1. Remove gearcase drain plug located on the bottom and drain oil. Catch and discard used oil properly.
2. Clean and reinstall drain plug using a new sealing washer.
3. Remove fill plug.
4. Add proper lubricant to bottom of fill hole threads. Refer to page 2.10.
5. Install fill plug.
6. Check for leaks.

TYPE I



Front Gearcase Lubrication, Cont.

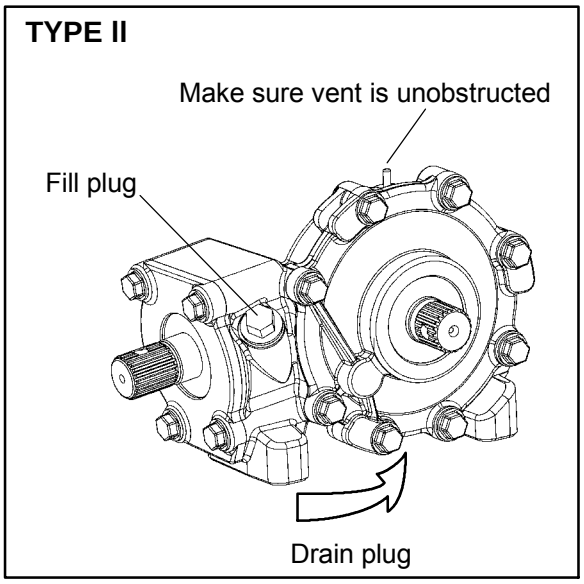
TYPE II

To check the level:

1. The Type II front gearcase lubricant level *cannot be checked* with a dipstick or by visual reference. The gearcase must be drained and re-filled with the proper amount of lubricant. Refer to procedure below.

To change lubricant:

1. Remove gearcase drain plug located on the bottom and drain oil. Catch and discard used oil properly.
2. Clean and reinstall drain plug using a new sealing washer.
3. Remove fill plug.
4. Add proper amount of lubricant. Refer to page 2.10.
5. Install fill plug.
6. Check for leaks.



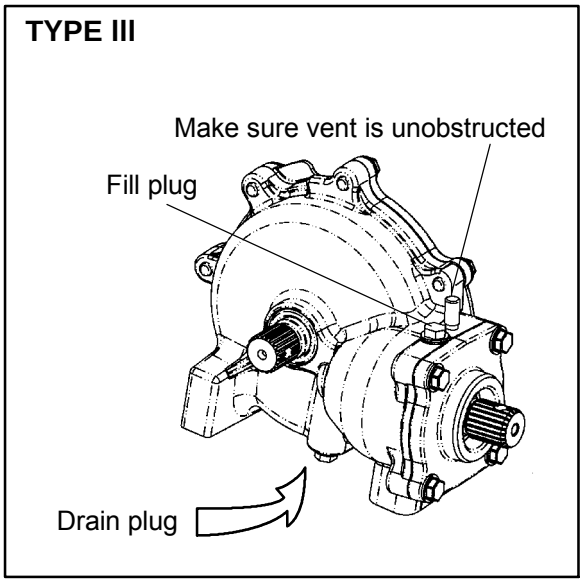
TYPE III

To check the level:

1. The Type III front gearcase lubricant level *cannot be checked* with a dipstick or by visual reference. The gearcase must be drained and re-filled with the proper amount of lubricant. Refer to procedure below.

To change lubricant:

1. Remove gearcase drain plug located on the bottom and drain oil. Catch and discard used oil properly.
2. Clean and reinstall drain plug using a new sealing washer.
3. Remove fill plug.
4. Add proper amount of lubricant. Refer to page 2.10.
5. Install fill plug.
6. Check for leaks.



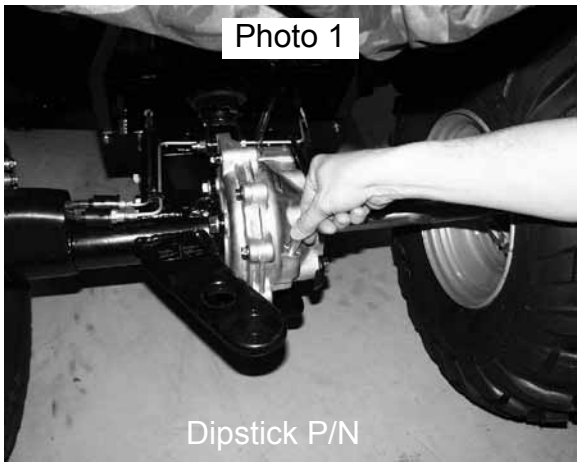
Rear Gearcase Lubrication

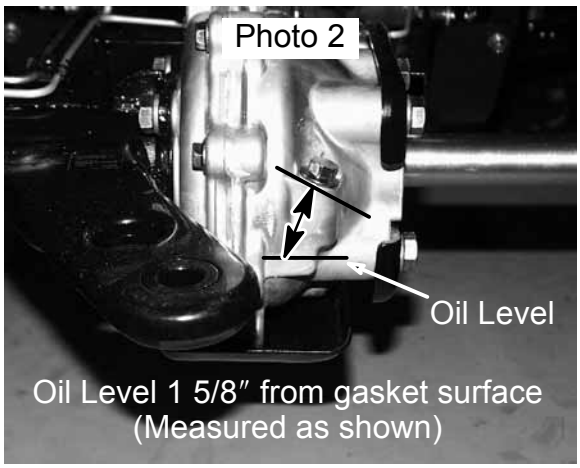
To check the level:

1. With machine on level ground, remove fill plug from rear gearcase.
2. Insert dipstick until it stops squarely against the fill plug gasket surface, and then remove it (Photo 1). Lubricant level is acceptable if it is within the knurled area on the stick. The level can be checked without a dipstick. Refer to Photo 2 (below right).
3. If level is low, add the proper lubricant until level correct on the dipstick, or until it is even with the center of the machined drill point inside the gearcase when viewed through the fill plug. Hypoid or non-hypoid gearlube can be used, provided it is API GL5 rated.

NOTE: Do not add lubricant to the bottom of the fill plug threads. Tighten securely (14 ft. lbs/1.93 kgm).

4. Reinstall fill plug.
5. Check for leaks.





To change the lubricant:

1. Remove gearcase drain plug located on the bottom and drain the oil. Catch and discard used oil properly.
2. Clean and reinstall the drain plug with a new sealing washer and tighten securely (14 ft. lbs/1.93 kgm).
3. Remove fill plug.
4. Add 300 ml. of GL5 80-90 Weight Gear Lube and inspect level. Oil level should be even with the center of the machined drill point inside the gearcase, viewed through the fill plug. Hypoid or non-hypoid gearlube can be used, provided it is API GL5 rated.
5. Reinstall fill plug. Tighten securely (14 ft. lbs/1.93 kgm).
6. Check for leaks.

REAR GEARCASE SPECIFICATIONS

Specified Lubricant:
Polaris Front Gearcase Lube PN 2871653

...Or API GL5 80-90 Gearlube

Capacity: . . . . 10.0 Oz. (300ml.)

Drain Plug / Fill Plug Torque:

14 ft. lbs. (19.4 Nm)

Transmission Lubrication

The transmission lubricant level should be checked and changed in accordance with the maintenance schedule.

- Be sure vehicle is level before proceeding.
- Check vent hose to be sure it is routed properly and unobstructed.
- Current gearcases in use are shown by illustration. Refer to illustrations and Quick Reference Chart on page 2.10 to determine type. Follow instructions on following pages to check / change transmission lubricant.

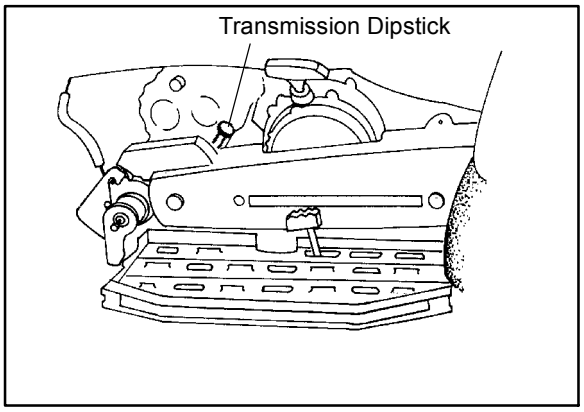
TRANSMISSION SPECIFICATIONS

Specified Lubricant:
Polaris Premium Synthetic Gearcase Lubricant
PN 2871477 (Gallon) PN 2871478 (12 oz..)

Capacity: . . . . Refer to Quick Reference Chart page 2.10

Drain Plug / Fill Plug Torque:

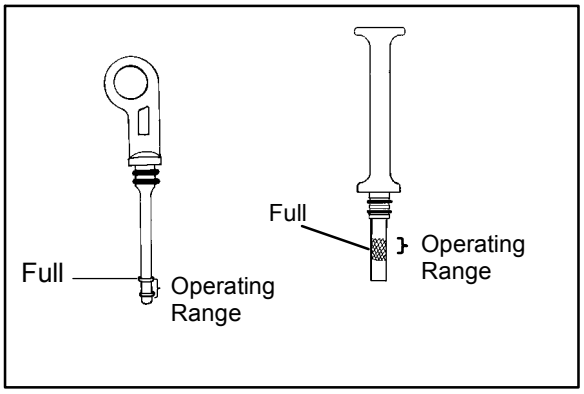
14 ft. lbs. (19.4 Nm)



Dipstick Models

To check the level:

1. Remove fill plug/dipstick and wipe clean.
2. Reinstall dipstick completely, remove and check the level. Add the proper lubricant as required to bring level into operating range as shown in Ill. 1 and Ill. 2.



To change lubricant:

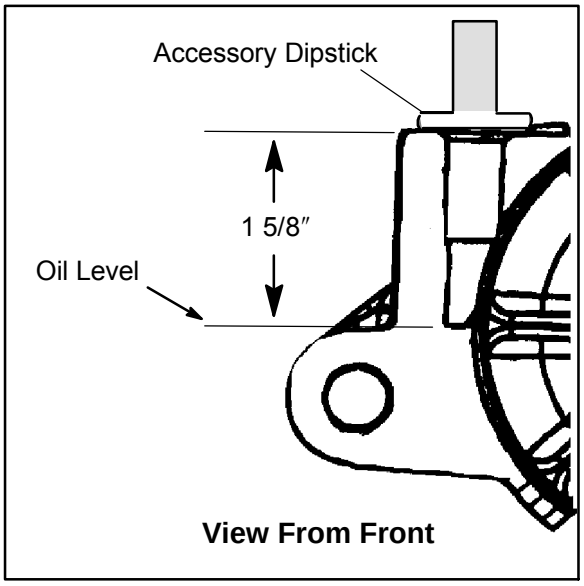
1. Remove skid plate (if necessary).
2. Place a drain pan beneath the transmission oil drain plug area.
3. Remove the drain plug and wipe the magnetic end clean to remove accumulated metallic filings.
4. After the oil has drained completely, install a new sealing washer and install the drain plug. Torque to 14 ft. lbs. (1.93 kg-m).
5. Add the proper lubricant through the dipstick hole until the oil level is between the upper and lower limits. Do not overfill.
6. Check for leaks.
7. Reinstall skid plate if removed in step 1.

Transmission Lubrication, cont.

Shaft / Chain Models Without Dipstick

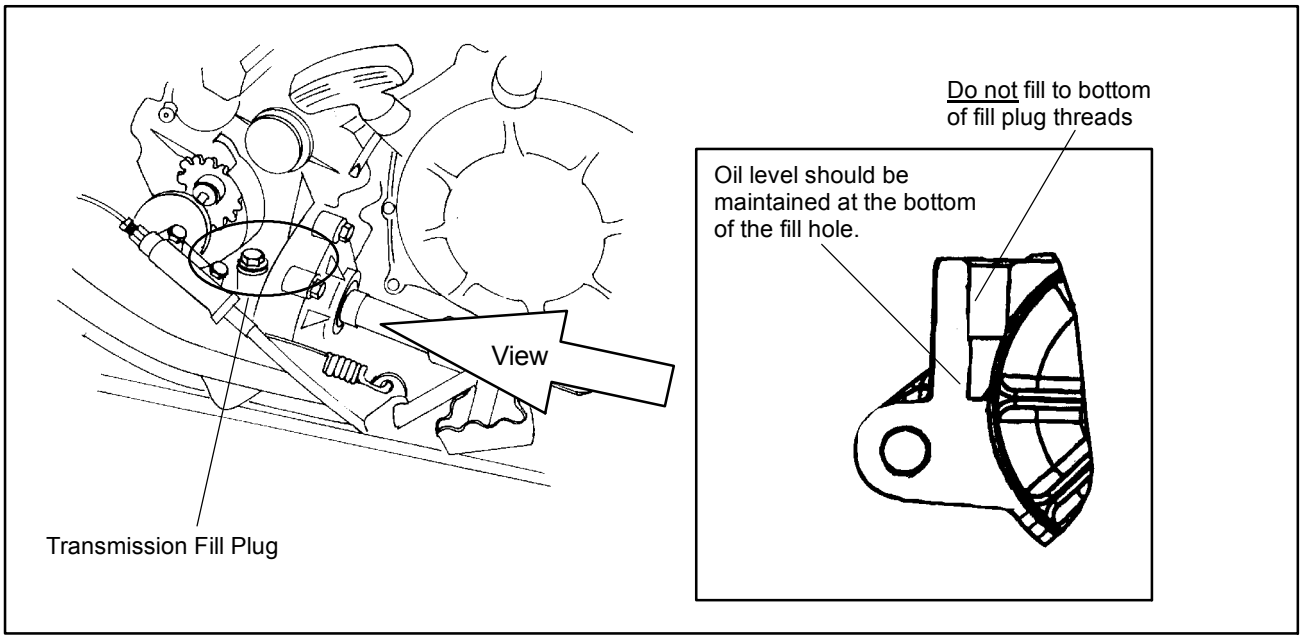
To check the level:

1. Remove propshaft shield from the right side of the vehicle.
2. Remove fill plug and visually inspect the oil level. Level is correct when it reaches the bottom of the fill hole as shown at right.



To change lubricant:

1. Remove propshaft shield from the right side of the vehicle.
2. Remove transmission drain plug drain the oil. Catch and discard used oil properly.
3. Clean and reinstall the drain plug with a new sealing washer. Torque to specification.
4. Remove fill plug.
5. Add Polaris Premium Synthetic Gearcase Lubricant to proper level as described above.
6. Check for leaks.
7. Reinstall propshaft shield.



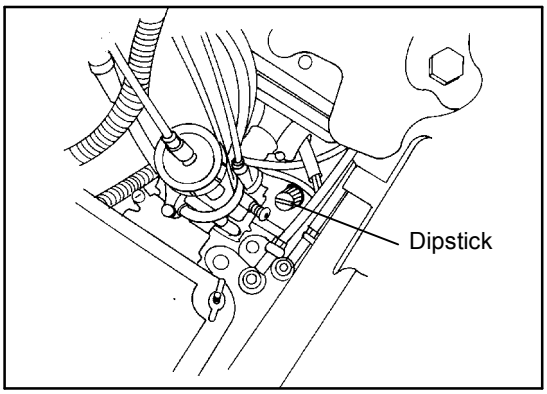
Counter Balancer Lubrication (400cc Engines)

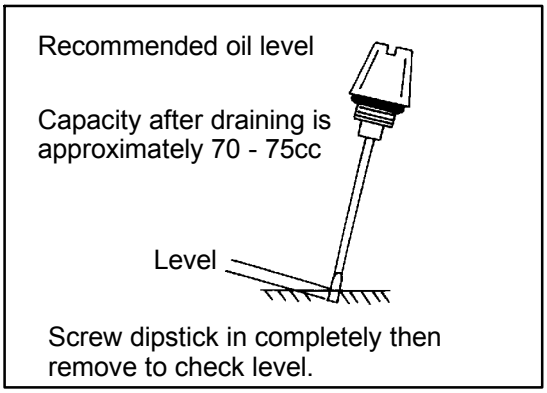
The counter balance oil should be checked semi-annually, especially before off season storage. If the machine is used in wet conditions the oil should be checked more frequently. If the oil has a milky white or gray appearance it should be changed as soon as possible. Failure to properly maintain this 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)

NOTE: Check with engine at room temperature. Do not overfill. If overfilled, excess oil will be expelled through the vent hose.

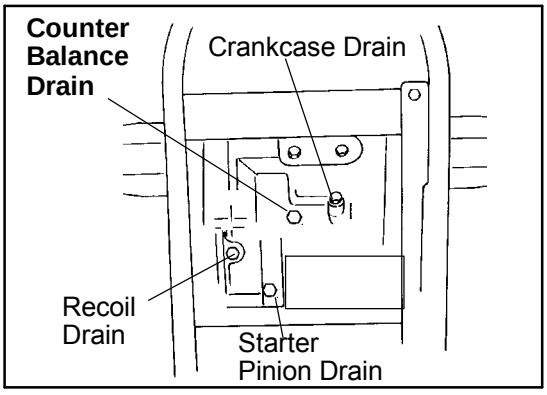
1. Remove seat and locate dipstick. Remove by loosening with a long handled screwdriver.
2. Remove dipstick and wipe clean.
3. Screw dipstick in fully and remove to check.
4. Read level shown on stick.
5. Add SAE 10W30 oil with a transmission fluid funnel. The recommended oil level is indicated by the knurled area on the dipstick.
6. Reinstall dipstick with new sealing o-ring. Do not over tighten.
7. Inspect counter balancer vent line for kinks or obstructions.





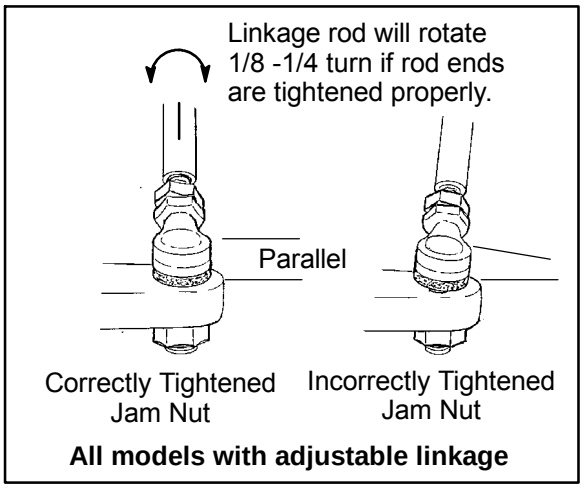
Counter Balance Oil Changing Procedure

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.



Transmission Gearshift Linkage Adjustment, Preliminary Inspection

- If shifting problems are encountered, the transmission linkage can be adjusted on some chain drive models.
- Refer to the procedures and illustrations on the following pages to identify the type.
- Tighten shift linkage rod end jam nuts properly after adjustment. You should be able to rotate the linkage rod between 1/8 and 1/4 turn after both jam nuts are tight.
- The transmission shift linkage should be periodically inspected for wear and parts replaced as required to remove excess play from shift linkage.
- Perform torque stop adjustment (on models so equipped) before adjusting shift linkage.
- Refer to Transmission chapter for more information.



All models with adjustable linkage

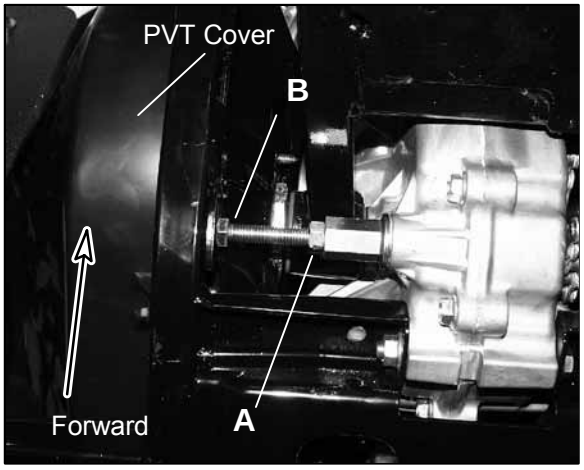
Torque Stop Adjustment

Adjust the torque stop:

- Prior to shift linkage adjustment;
- When shifting difficulties are encountered;
- If transmission has been removed from the frame.

NOTE: The torque stop is located on the bottom left hand side of the transmission (where applicable).

1. Loosen jam nut (A).
2. Turn adjuster bolt (B) out until it touches the frame, and then an additional 1/2 turn.
3. Tighten the jam nut securely while holding the adjuster bolt.



Shift Linkage Adjustment -High/Low/Reverse Transmissions

Linkage rod adjustment is necessary when symptoms include:

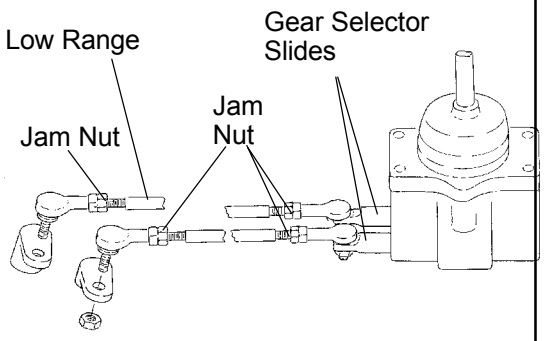
- No All Wheel Drive light
- Noise on deceleration
- Inability to engage a gear
- Excessive gear clash (noise)
- Shift selectors moving out of desired range

NOTE: When adjusting linkage, always adjust both linkage rods (where applicable). The adjustment of one rod can prevent proper adjustment of the other rod. Remove necessary components to gain access to shift linkage rod ends (i.e. exhaust heat shield, exhaust pipe, etc.).

1. If model is equipped with a transmission torque stop, adjust it as outlined previously.
2. Inspect shift linkage tie rod ends, clevis pins, and pivot bushings and replace if worn or damaged. Lubricate the tie rod ends with a light aerosol lubricant or grease.
3. Loosen all rod end adjuster jam nuts see Ill. 1.
4. Note orientation of tie rod end studs with stud up or down. Remove both rod end studs from transmission bell cranks.
5. Be sure idle speed is adjusted properly.

NOTE: It is important to disconnect *both* rod ends from the transmission bell cranks. If one linkage rod is incorrectly adjusted, it can affect the adjustment of the other rod. (Disconnect Low range linkage rod end from pivot arm on Sportsman 500 style linkage).

6. Place gear selector in neutral. Make sure the transmission bell cranks are engaged in the neutral position detents.

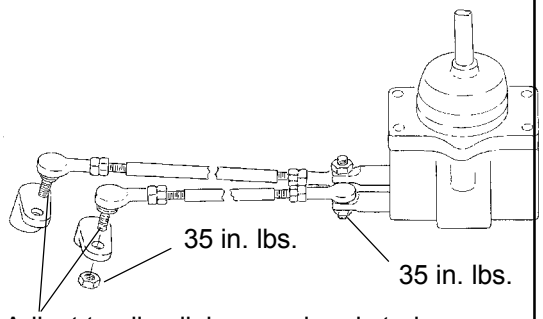


NOTE: Rod end orientation (up or down) varies by model. Note before disassembly.

Ill. 1

Shift Linkage Adjustment - High/Low/Reverse, Cont.

7. Be sure the shift linkage rod ends are firmly attached to the gear selector slides. Adjust the low range (inside) rod so the rod end is centered on the transmission bell crank (or centered on the pivot arm on Sportsman 500 style). Install the lock nut to the rod end and torque to 35 in. lbs.



Ill. 2

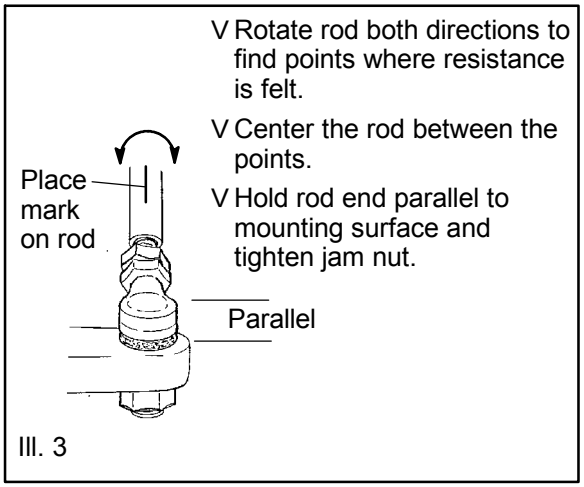
8. Rotate the linkage rod clockwise until resistance is felt. Mark the rod so revolutions can be easily counted. See Ill. 3 at right.

9. Rotate the linkage rod counterclockwise until the same resistance is felt, counting the revolutions as the rod is turned.

10. Turn the rod clockwise again one half of the revolutions counted in Step 9.

11. Tighten the rod end jam nuts securely while holding the rod end. The jam nuts must be tightened with both front and rear rod ends parallel to each other. If jam nuts are properly tightened, the rod should rotate freely 1/4 turn without binding.

12. Repeat steps 7-10 for the High/Reverse rod.



Ill. 3

Shift Linkage Adjustment (High/Reverse Transmissions)

1. If model is equipped with a transmission torque stop, adjust as outlined previously in Torque Stop Adjustment.

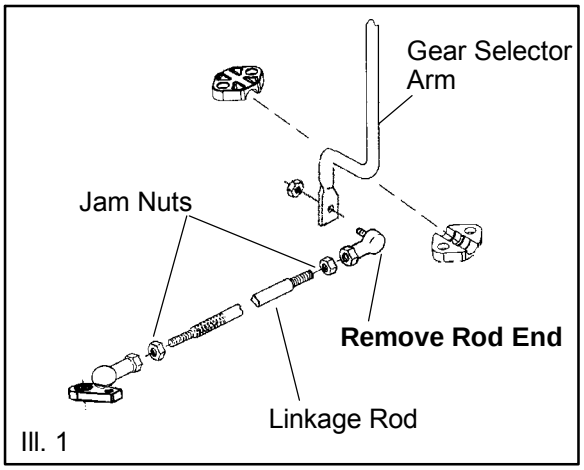
2. Inspect shift linkage tie rod ends, clevis pins, and pivot bushings and replace if worn or damaged. Lubricate the tie rod ends with a light aerosol lubricant or grease.

3. Place gear selector in neutral.

4. Loosen rod end adjuster jam nuts (A) on both ends of linkage rod.

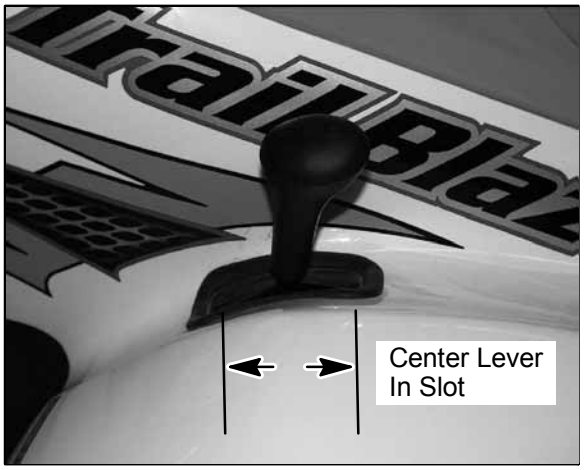
5. Note orientation of tie rod end studs (which way the stud goes through the transmission bell crank and gear selector arm).

6. Remove rod end from gear selector arm (Ill. 1).



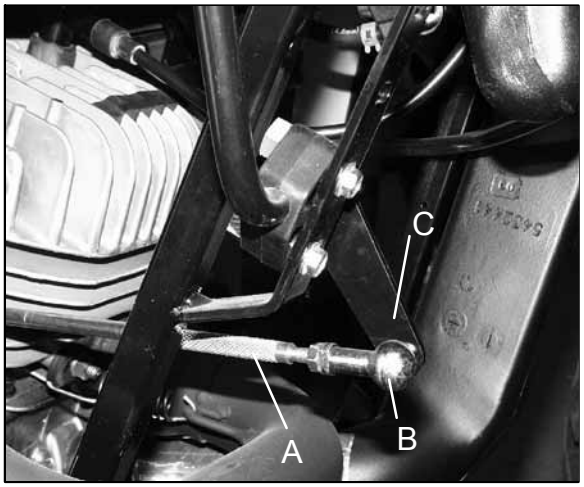
Ill. 1

7. Place gear selector lever in center of travel range as shown at right. Be sure the lever does not move from this position.



8. Turn linkage rod (A) to shorten or lengthen rod until end stud (B) is centered on hole in gear selector arm (C).

9. Hold rod end parallel to mounting surface and tighten jam nuts securely.



Carburetor Adjustments

Throttle Operation - All Models

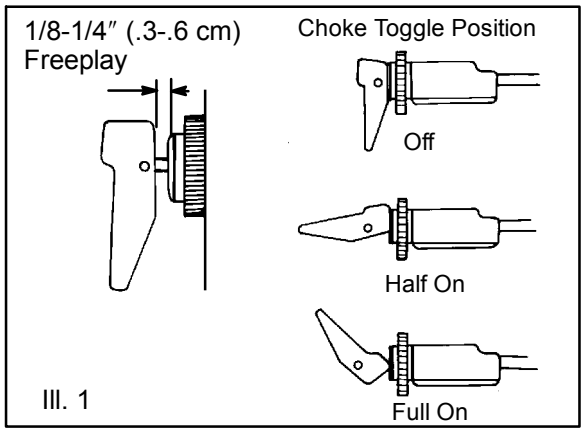
Check for smooth throttle opening and closing in all handlebar positions. Throttle lever operation should be smooth and lever must return freely without binding.

1. Place the gear selector in neutral.
2. Set parking brake.
3. Start the engine and let it idle.
4. Turn handlebars from full right to full left. If idle speed increases at any point in the turning range, inspect throttle cable routing and condition.
5. Replace the throttle cable if worn, kinked, or damaged.

Choke (Enricher) Adjustment

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 fuel passage way inside the carburetor (not enough cable freeplay), the engine will flood or run too rich, causing plug fouling and poor performance. (Ill 1.)

If cable slack is excessive, the choke fuel passage will not open far enough, which may cause cold starting difficulty. Also, the half-choke position used for intermittent applications will not function properly.

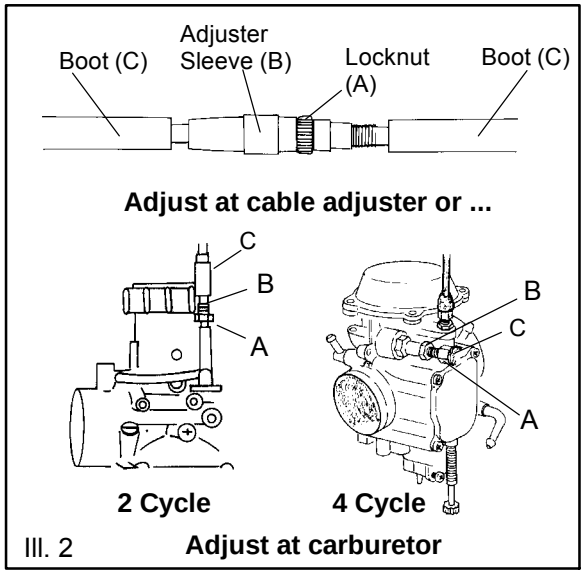


Ill. 1

1. Flip choke toggle to full off position.
2. Slide boots (C) off choke cable adjuster and lock nut. (Ill. 2)
3. Loosen adjustment locknut (A) on cable sleeve (in-line adjusters) or on carburetor.
4. Turn cable sleeve adjusting nut (B) clockwise on carburetor until 1/4″ (6 mm) or more choke toggle free play is evident.
5. Turn cable sleeve adjusting nut counterclockwise until toggle has zero free play, then rotate it clockwise until 1/8″-1/4″ (3-6 mm) toggle free play is evident.
6. Tighten locknut (A).
7. Slide boots back over cable adjuster sleeve until they touch at the middle point of the sleeve (in-line adjusters) or until seated fully over adjuster.

Choke Lever Freeplay -

1/8 - 1/4″ (.3 - .6 cm)



Ill. 2

Carburetor Adjustments

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

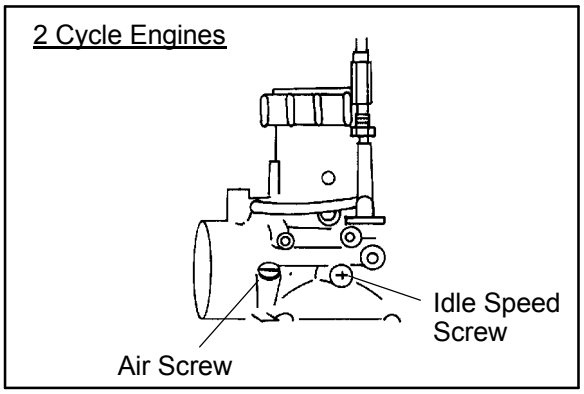
2. Warm up the engine to operating temperature (about 10 minutes).

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.

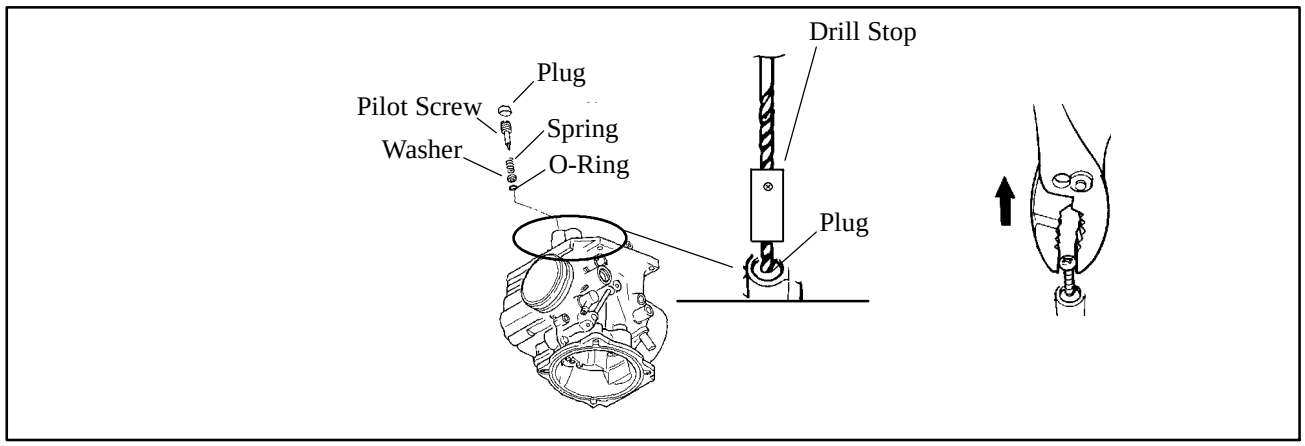
5. Re-adjust idle speed if necessary.



Pilot Screw Anti-Tamper Plug Removal

NOTE: The pilot screw is pre-set at the factory. The following adjustment procedure should be used after carburetor 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. Some models have an anti-tamper plug covering the pilot screw. If pilot screw adjustment is required, remove it following the procedure outlined below.

1. Remove the carburetor.
2. Drain the carburetor bowl and cover all openings to prevent metal shavings from entering.
3. Invert the carburetor and carefully drill out the center of the plug with a 1/8″ or 5/32″ (3 or 4mm) drill bit. Before drilling, set a drill stop on the shank of the drill bit to prevent drilling beyond 3/16″. CAUTION: Be careful not to drill into the pilot screw!
4. Drill the plug at slow drill speeds. Use a self-tapping metal screw and a pliers to remove the plug if it does not rotate out with the drill bit.
5. Turn the screw in until lightly seated. Back out the specified number of turns. This is the pilot screw base setting. Do not tighten the pilot screw forcefully against the seat or the screw and/or seat will be permanently damaged.
6. Refer to pilot screw adjustment procedure.



Carburetor Adjustments

Pilot Screw (Idle Mixture) Adjustment Notes

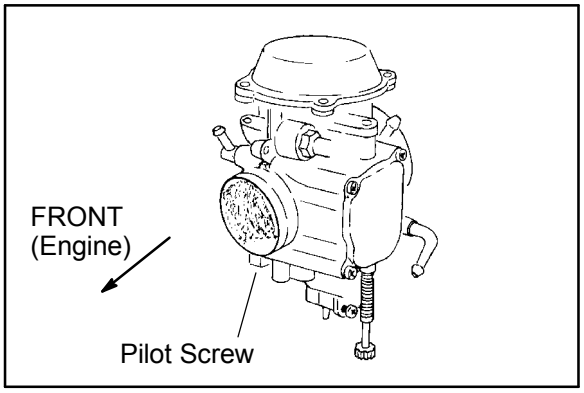
Do not tighten the pilot screw forcefully against the seat or the screw and/or seat will be permanently damaged. Start engine and warm it up to operating temperature (about 10 minutes). This is a very important step.

Pilot Screw Adjustment - 425 / 500 4-Stroke Models

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

Pilot Screw Adjustment
Refer to Specifications

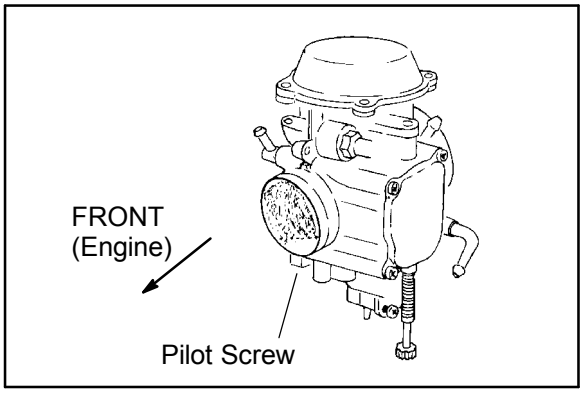
2. Connect an accurate tachometer that will read in increments of + or – 50 RPM such as the PET 2100DX (P/N 8712100DX) or the PET 2500 (P/N 8712500).
3. Set idle speed to 1200 RPM. Always check throttle cable freeplay after adjusting idle speed and adjust if necessary.
4. Slowly turn mixture screw clockwise using the pilot screw wrench until RPM begins to decrease by 50 RPM or greater.
5. Slowly turn mixture screw counterclockwise until idle speed increases to maximum RPM. Continue turning counterclockwise until idle RPM begins to drop.
6. Center the pilot screw between the points in step 5 and 6.
7. Re adjust idle speed if not within specification.



Pilot Screw Adjustment - 335 4-Stroke Models

IMPORTANT NOTE: Idle speed is specified with the lights OFF. On the idle speed will drop between 100-150 RPM when the lights are turned on.

1. Remove anti-tamper plug and connect an accurate tachometer such as the PET 2100DX (P/N 8712100DX) or the PET 2500 (P/N 8712500).
2. Adjust idle speed using the idle speed screw to about 1600 RPM.
3. Turn the pilot screw (mixture screw) in or out *slowly* using the pilot screw wrench to obtain the highest idle RPM.
4. Re-adjust idle speed to specified RPM (1300 +100).
5. Again turn the pilot screw in or out *slowly* to obtain the highest idle RPM.
6. Turn the pilot screw out (counterclockwise) 1/8 to 1/4 turn.
7. Re-adjust idle speed to specified RPM (1300 +100).



Idle Speed Adjustment

1. Start engine and warm it up thoroughly.

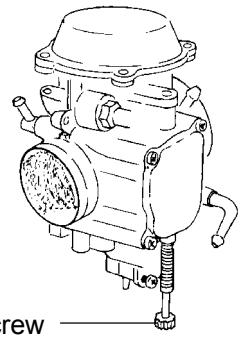
2. Adjust idle speed by turning the idle adjustment screw in (clockwise) to increase or out (counterclockwise) to decrease RPM. (Refer to Ill. at right).

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.

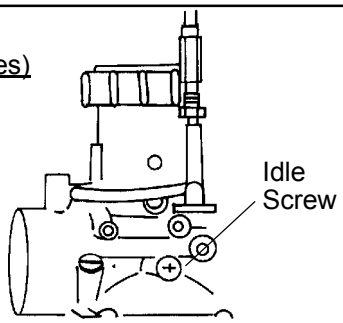
Idle Speed:

Refer to Specifications

CV Carburetor
(4 Cycle Engines)



VM Carburetor
(2 Cycle Engines)



Throttle Cable / Electronic Throttle Control (ETC Switch) Adjustment

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

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

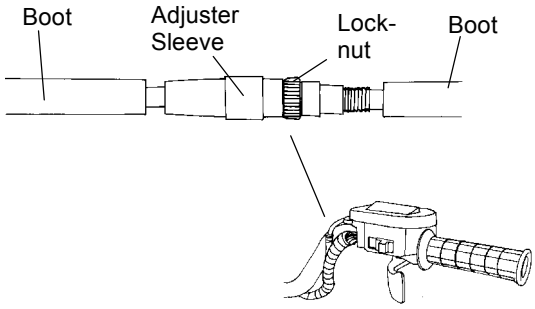
4. Loosen lock nut on in-line cable adjuster (Ill. 1).
5. Turn cable adjuster out until engine RPM begins to increase.
6. Turn cable adjuster back in until throttle lever has 1/16″ (.16 cm) of travel before engine RPM increases (Ill. 2).

NOTE: On models with aluminum throttle block (cover is held on by 3 screws – see Ill. 4) be sure ETC switch plunger is held inward by throttle cable tension.

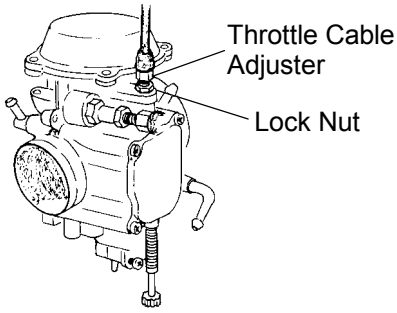
7. Tighten lock nut securely and slide boot completely in place to ensure a water-tight seal.

NOTE: On 2 stroke models, whenever throttle cable adjustments are made, always check oil pump adjustment and re-adjust if necessary.

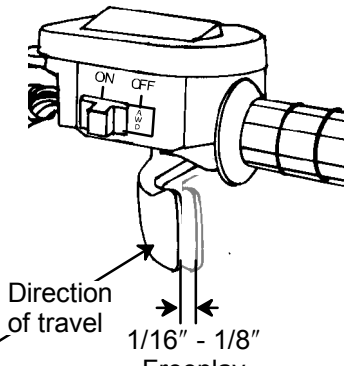
8. Turn handlebars from left to right through the entire turning range. If idle speed increases, check for proper cable routing. If cable is routed properly and in good condition, repeat adjustment procedure.



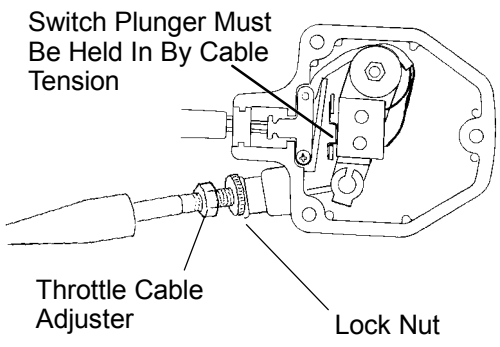
Ill. 1



Ill. 2



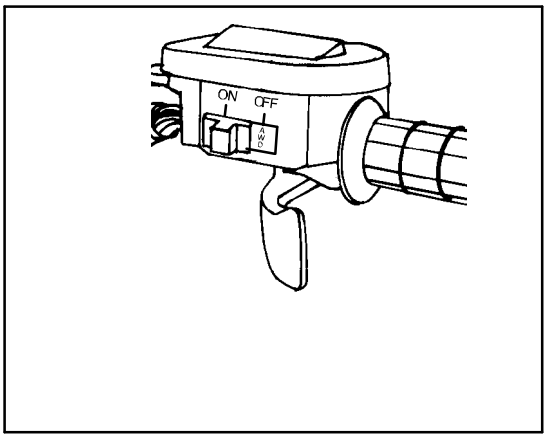
Ill. 3



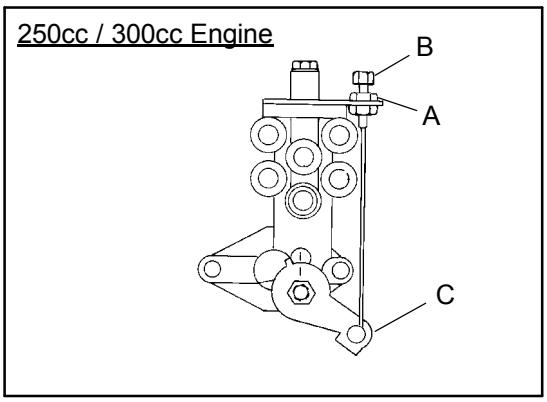
Ill. 4

Oil Pump Adjustment Procedure

250cc / 300cc Engines



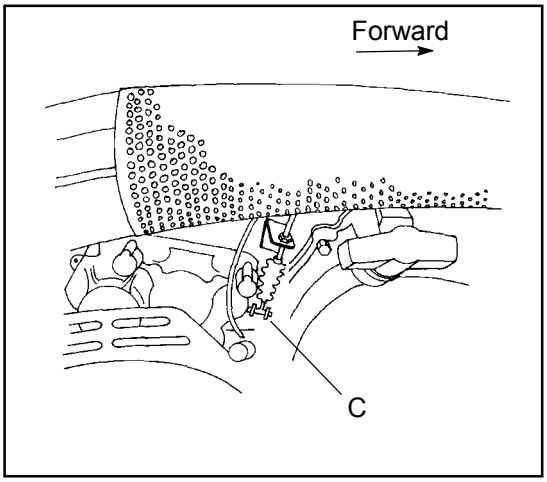
1. Before adjusting the oil pump, check engine idle RPM and set to specification. Adjust if necessary.
2. Check and adjust throttle lever free play (ETC switch).
3. Place gear selector in neutral and apply parking brake.
4. Start the engine and let it idle.
5. Place very slight pressure on the throttle lever until all freeplay is removed from throttle cable to carburetor (to the point where the carb slide is just starting to rise and engine RPM begins to increase).



6. Loosen locknut (A).
7. Turn adjuster (B) in or out until all freeplay is removed from oil pump cable (the point where the oil pump arm (C) is just starting to move off of its stop).

NOTE: The pump stop keeps the pump arm from rotating any farther down than the idle position so no visual alignment of marks is necessary.

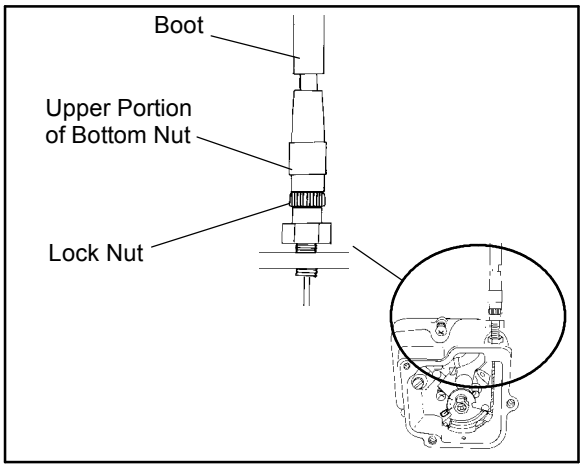
8. Tighten the locknut.



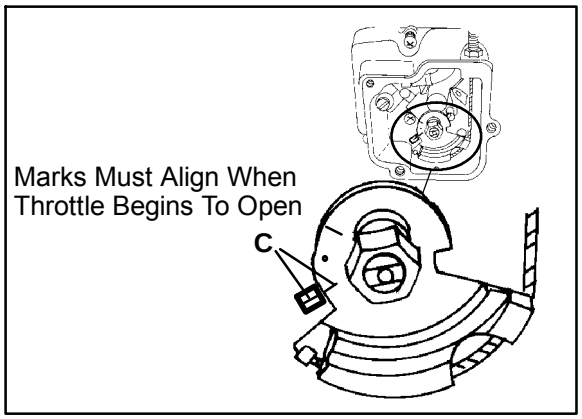
Oil Pump Adjustment (2 Cycle Engines)

Oil Pump Adjustment Procedure (400cc Engines)

1. Before adjusting the oil pump, check engine idle and adjust to specification if necessary.
2. Check and adjust throttle lever free play (ETC switch) if necessary.
3. Place gear selector in neutral and apply parking brake.
4. Start the engine and let it idle.
5. Lift boot (A) up off adjuster sleeve on cable. Remove the oil pump cover. Loosen the cable adjuster locknut (B). Adjust oil pump cable until marks align (C) when the throttle slide just begins to raise.

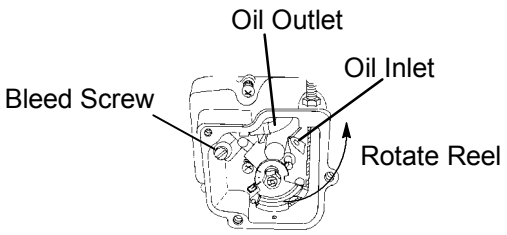


6. Adjust oil pump cable until marks align when throttle slide just begins to raise and engine speed just begins to increase.
7. Tighten jam nuts.
8. Reinstall the ETC cover removed in step 1. , making sure cover gasket is properly seated. If not, moisture can enter the ETC and damage the switch.

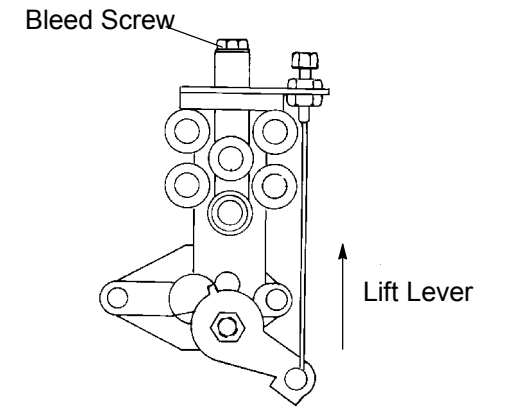


Oil Pump Bleeding Procedure

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



250/300 Oil Pump Bleeding

Oil Pump Troubleshooting Procedure

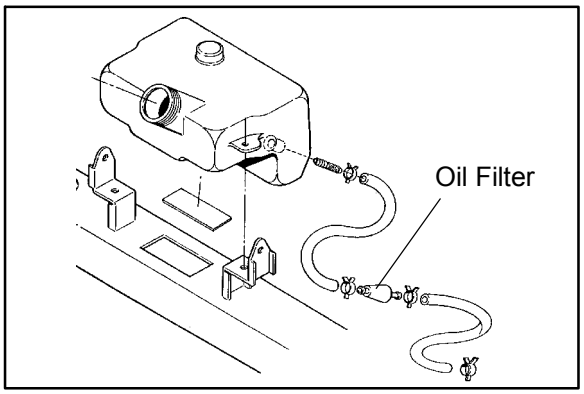
To verify oil delivery to engine, proceed as follows:

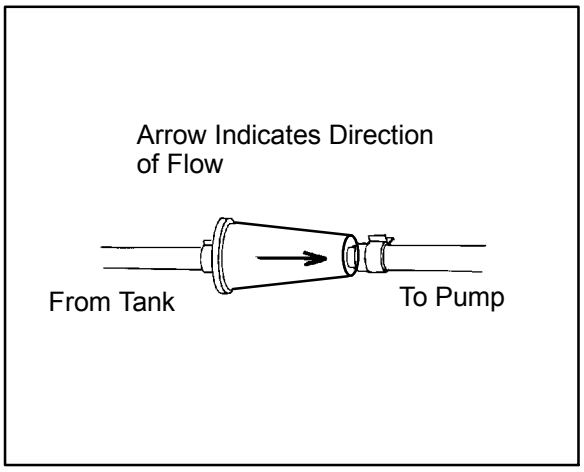
1. Premix fuel in tank at a 40:1 fuel/oil ratio.
2. With the oil reservoir full and the pump bled, remove the oil delivery line from the intake manifold.
3. Test the oil delivery check valve with a low pressure pump and gauge. (See Page 3.22).
4. Start engine and lift oil pump lever to full open position.
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
   - B. Oil tank vent line restricted
   - C. Oil lines leaking or blocked
   - D. Faulty oil pump or drive mechanism

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 in accordance with the Maintenance Schedule 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.





⚠ 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.

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.

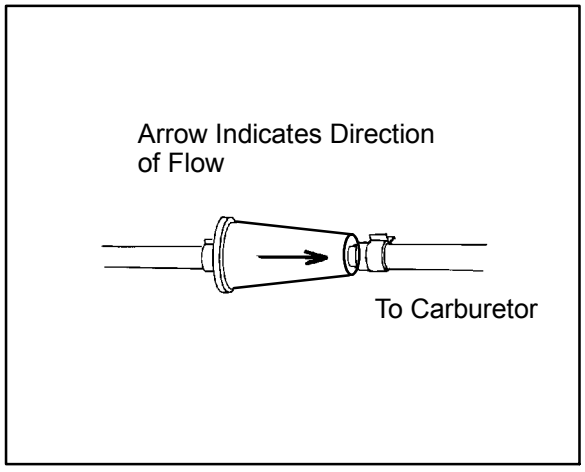
Vent Lines

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 in accordance with the Periodic Maintenance Chart 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. Turn fuel valve ON.
7. Start engine and inspect for leaks.
8. Reinstall fuel tank.



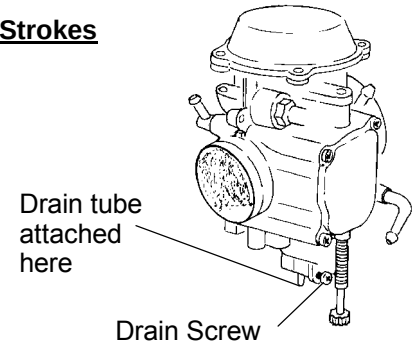
Carburetor Draining

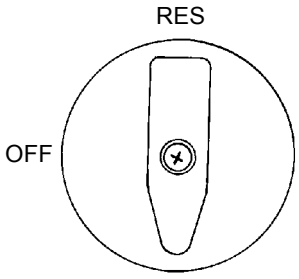
The carburetor float bowl should be drained periodically to remove moisture or sediment from the bowl, or before extended periods of storage.

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. Place a clean container beneath the bowl drain spigot or bowl drain hose.
3. 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.
4. Inspect the drained fuel for water or sediment.
5. Tighten drain screw.
6. Turn fuel valve to “on”.
7. Start machine and check for leaks.

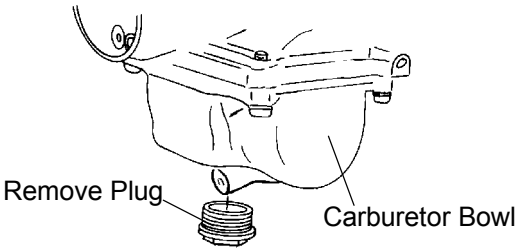
4-Strokes





Fuel Valve

2-Strokes (400cc)



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**

Cylinder Compression (4-Stroke)	
Standard (See Note Below)	**50-90 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 crankshaft seals may dislodge and leak).

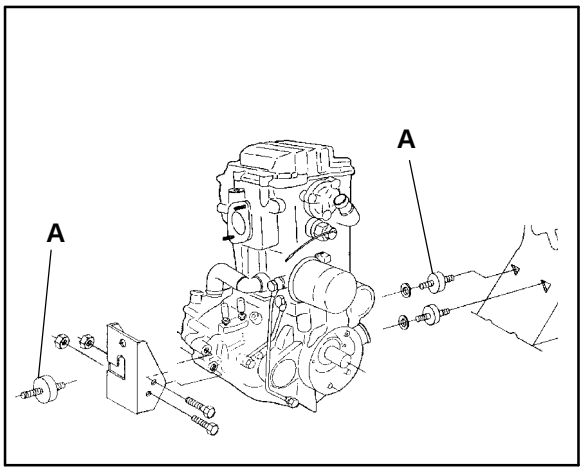
Cylinder Leakage	
Service Limit (4-Stroke)	**10 %**
(Inspect for cause if leakage exceeds 10%)	

Engine Mounts

Inspect rubber engine mounts (A) for cracks or damage.

Fastener Torque - Engine

Check engine fasteners and ensure they are tight.



⚠ 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.

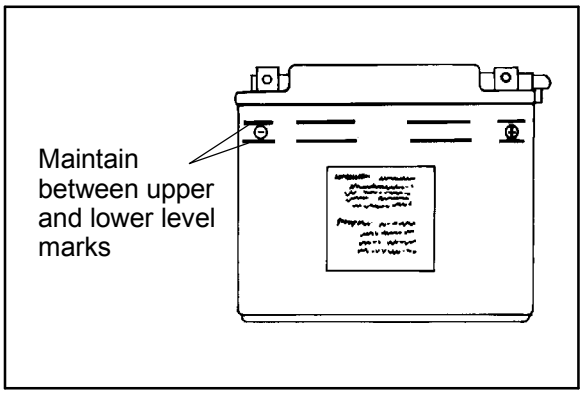
Internal: Drink large quantities of water or milk. Follow with milk of magnesia, beaten egg, or vegetable oil. Call physician immediately.

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 well 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 properly routed and not kinked or pinched.
10. Coat terminals and bolt threads with Polaris dielectric grease.
11. Reinstall battery cover and holder strap.

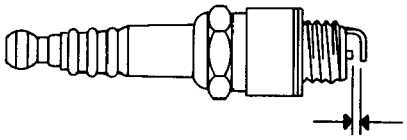
Spark Plug

1. Remove spark plug high tension lead. Clean plug area so no dirt and debris can fall into engine when plug is removed.
2. Remove spark plug.
3. Inspect electrodes for wear and carbon buildup. Look for a sharp outer edge with no rounding or erosion of the electrodes.
4. Clean with electrical contact cleaner or a glass bead spark plug cleaner only. **CAUTION:** A wire brush or coated abrasive should not be used.
5. Measure gap with a wire gauge. Refer to specifications for proper spark plug type and gap. Adjust gap if necessary by bending the side electrode carefully.
6. If necessary, replace spark plug with proper type. **CAUTION:** Severe engine damage may occur if the incorrect spark plug is used.
7. Apply a small amount of anti-seize compound to the spark plug threads.
8. Install spark plug and torque to 14 ft. lbs.

Recommended Spark Plug:

Refer to Specifications

Spark Plug Torque: **14 Ft. Lbs. (19 Nm)**



Spark Plug Gap

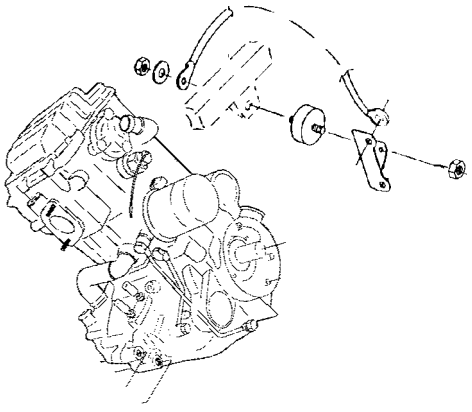
.024 - .028″ (.6 - .7 mm)

Ignition Timing

Refer to Electrical chapter for ignition timing procedure.

Engine-To-Frame Ground

Inspect engine-to-frame ground cable connection. Be sure it is clean and tight.



Liquid Cooling System Overview

The engine coolant level is controlled or maintained by the recovery system. The recovery system components are the recovery bottle, radiator filler neck, radiator pressure cap and connecting hose.

As coolant operating temperature increases, the expanding (heated) excess coolant is forced out of the radiator past the pressure cap and into the recovery bottle. As engine coolant temperature decreases the contracting (cooled) coolant is drawn back up from the tank past the pressure cap and into the radiator.

- Some coolant level drop on new machines is normal as the system is purging itself of trapped air. Observe coolant levels often during the break-in period.
- Polaris Premium 60/40 is already premixed and ready to use. Do not dilute with water.

Coolant Strength / Type

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 may cause the system to freeze, corrode, or overheat.

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.

CAUTION: Do not over-tighten hose clamps at radiator, or radiator fitting may distort, causing a restriction to coolant flow. Radiator hose clamp torque is 36 inch lbs.

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.

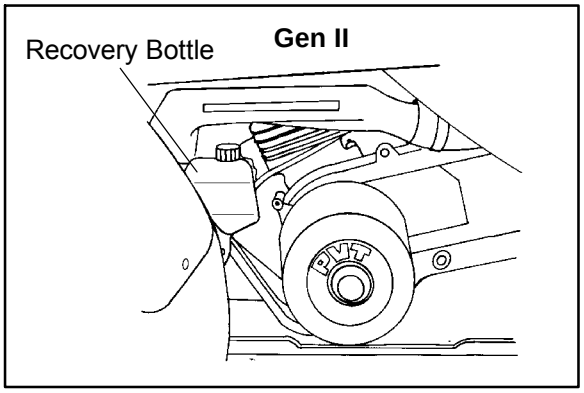
Coolant Level Inspection

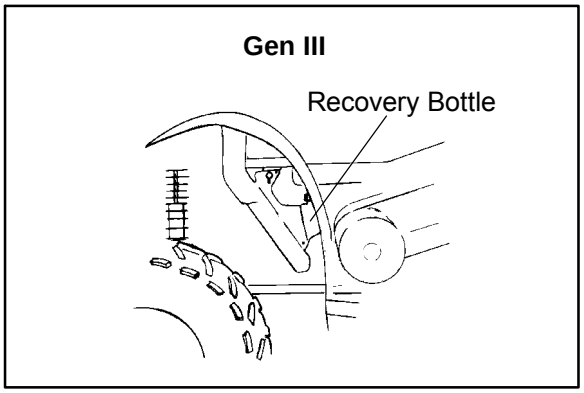
The recovery bottle, located on the left side of the machine, must be maintained between the minimum and maximum levels indicated on the recovery bottle.

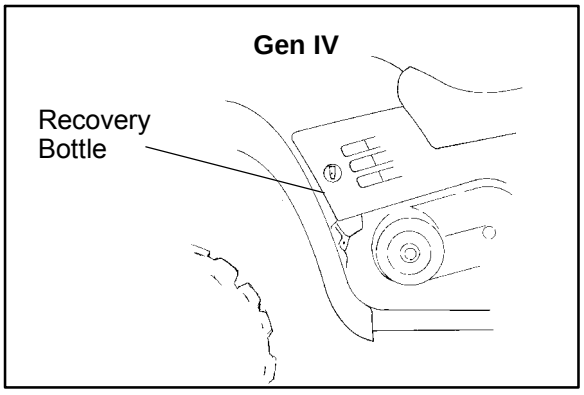
With the engine at operating temperature, the coolant level should be between the upper and lower marks on the coolant reservoir. If not:

1. Remove reservoir cap. Inner splash cap vent hole must be clear and open.
2. Fill reservoir to upper mark with Polaris Premium 60/40 Anti Freeze / Coolant or 50/50 or 60/40 mixture of antifreeze and distilled water as required for freeze protection in your area.
3. Reinstall cap.

NOTE: If overheating is evident, allow system to cool completely and check coolant level in the radiator.







MAINTENANCE
Cooling System
Engine Cooling System

Radiator Coolant Level Inspection

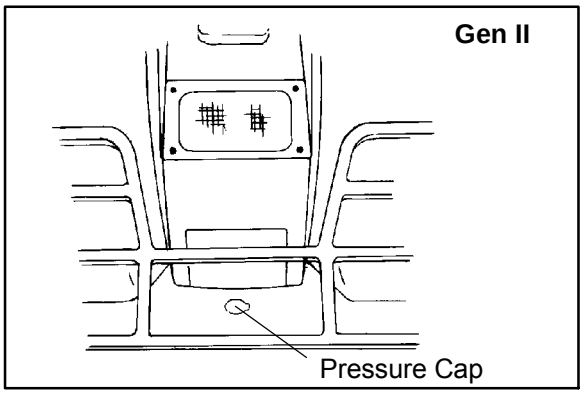
NOTE: This procedure is only required if the cooling system has been drained for maintenance and/or repair. However, if the recovery bottle has run dry, or if overheating is evident, the level in the radiator should be inspected and coolant added if necessary.

⚠ **WARNING** Never remove the pressure cap when the engine is warm or hot. Escaping steam can cause severe burns. The engine must be cool before removing the pressure cap.

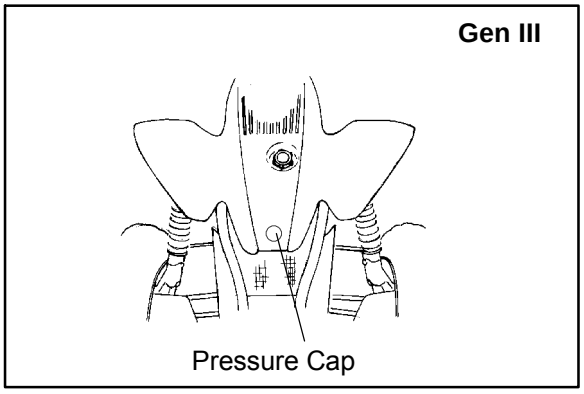
NOTE: Use of a non-standard pressure cap will not allow the recovery system to function properly.

To access the radiator pressure cap:

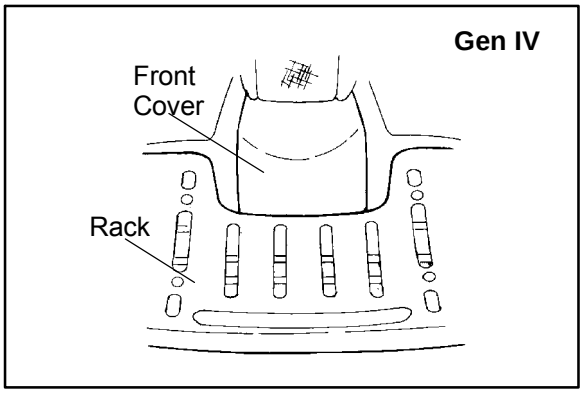
Gen II - To access the pressure cap, remove the access cover on the front of the ATV just below the oil cap. Using a flat, stubby screwdriver loosen the screw 1/4 turn and pull the cover forward and up to remove.



Gen III - To access the pressure cap, clean the area around the oil cap and remove the oil cap (2-cycle models). Remove front cover by placing your fingers under the front of the cover and pulling upward. Reinstall oil cap.

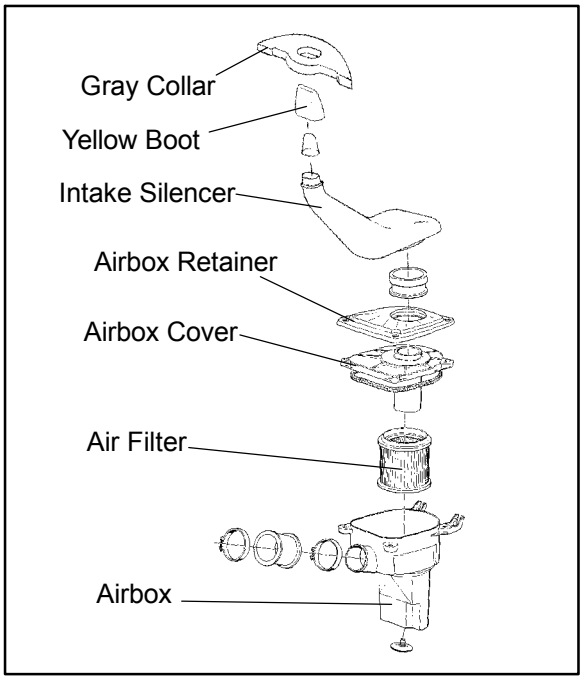


Gen IV - Remove the four screws securing front rack. Remove front cover by placing your fingers under the front of the cover and pulling upward.

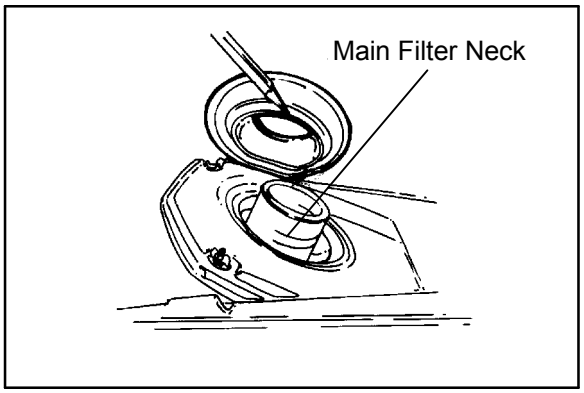


Air Filter Service (Trail Blazer Style)

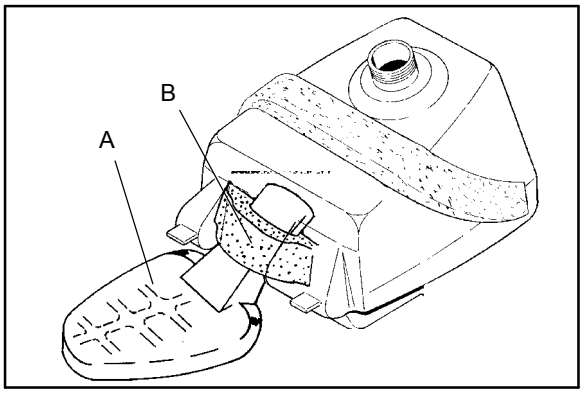
1. Release seat latch and lift up on the rear of the seat.
2. Pull the seat back and free of the tabs.
3. Remove the primary air filter box.
4. Remove the yellow pre-cleaner foam boot, held in place by a gray collar, from the air box. Do not remove the collar.
5. Carefully wash the yellow foam boot in 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.



Dual Stage Air Cleaner - 300 Style

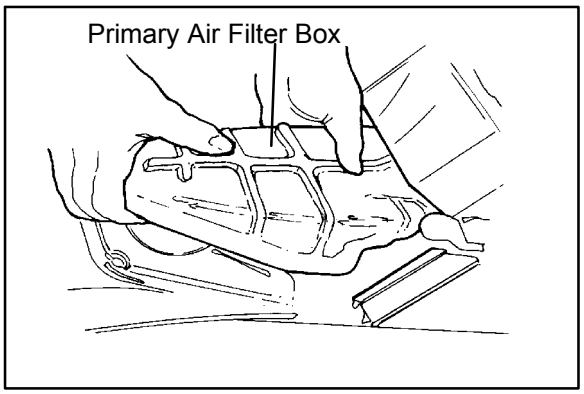
The primary pre-cleaner foam boot is designed to remove the majority of dust particles before they reach the secondary dry filter element.

Primary Pre-cleaner Foam Boot

Inspect the primary air cleaner boot in accordance with the maintenance schedule.

1. Remove the seat.

2. Remove the primary air filter box.

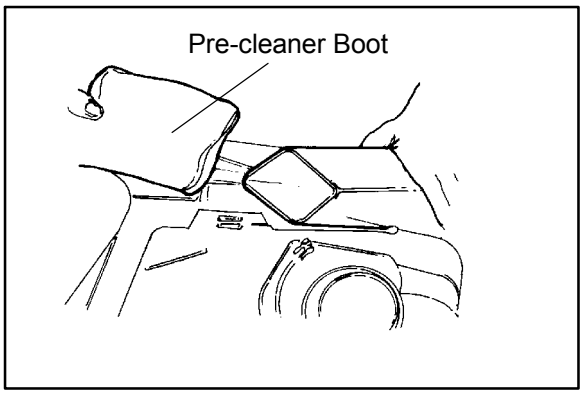


3. Remove the yellow pre-cleaner foam boot, held in place by a gray collar, from the air box. Do not remove the collar.

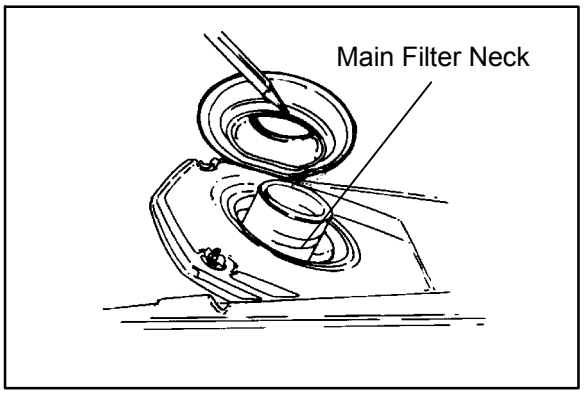
4. Carefully wash the foam boot in soapy water and dry it thoroughly. Replace the pre-filter if the element is torn or damaged.

5. Apply 1 to 2 teaspoons 2 cycle injection oil to the foam pre-filter. Squeeze filter gently to distribute oil evenly over entire filter. Squeeze out the excess into an absorbant cloth.

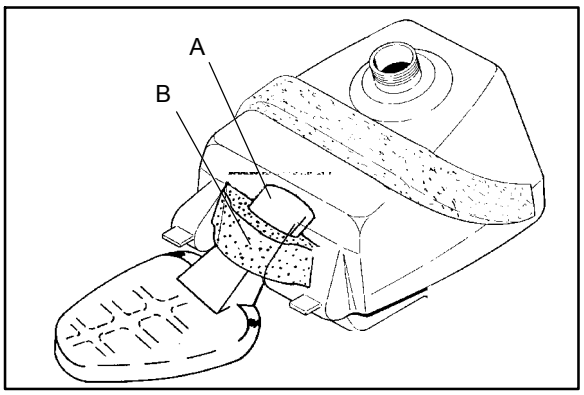
6. Reinstall the foam boot onto the air filter box.



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 air intake opening of the air box intake duct (A). Improper installation will restrict airflow to the engine possibly resulting in a rich mixture and poor running.



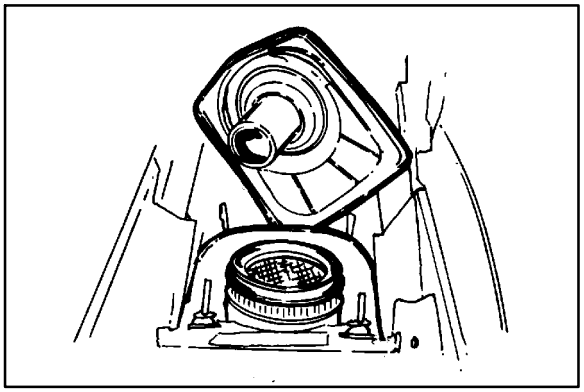
Air Cleaner Maintenance - 300 Style, Cont.

Secondary (Main) Filter

Inspect the secondary filter in accordance with the maintenance schedule.

Secondary filter removal and installation:

1. Remove 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. Inspect air ducts and clamps for proper sealing.
8. Install filter into airbox. Be sure filter element seats securely.
9. Check cover gasket and replace if required. Be sure cover is seated properly and wing nuts are finger tightened securely.
10. Reinstall primary air filter box as per instructions found on previous page.
11. Reinstall seat.



Cleaning the Main Filter

Important:

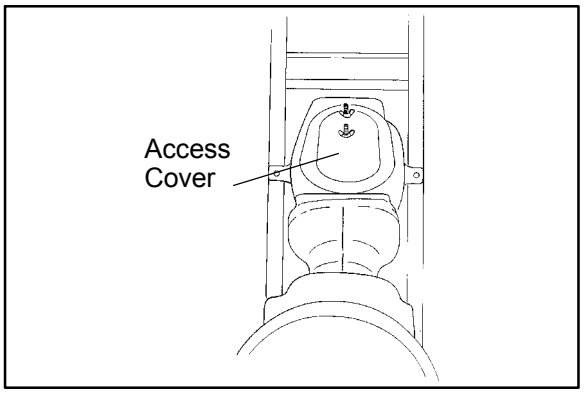
It is advisable to replace the filter when it is dirty. However, in a new filter is not immediately available, it is permissible to clean the main filter if you observe the following practices.

1. **Never** immerse the filter in water since dirt can be transferred to the clean air side of the filter. In addition, the filtering ability of the treated paper element will be significantly reduced.
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.

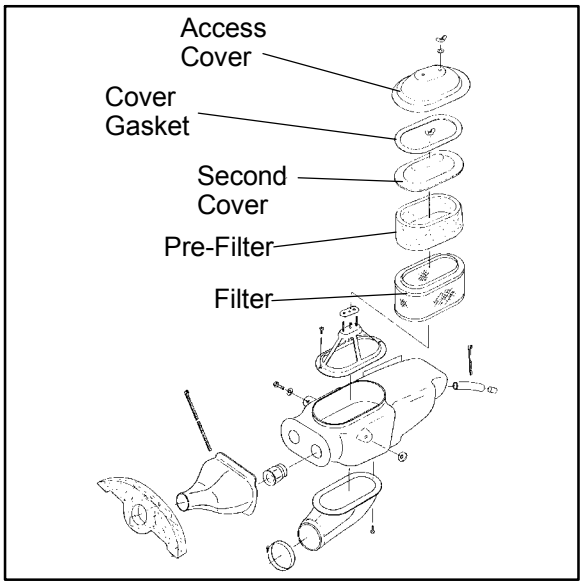
MAINTENANCE
Air Cleaner, 2 Cycle

Main Air Filter Service, 400 Style

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 thoroughly. Replace the pre-filter if the element is torn or damaged.
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.



Cleaning the Main Filter

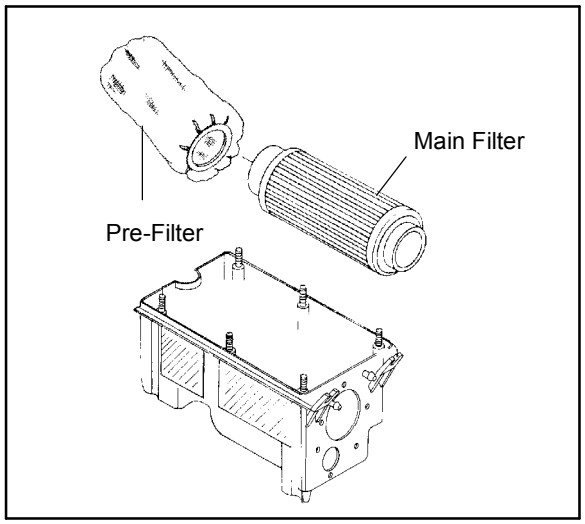
Important:

It is advisable to replace the filter when it is dirty. However, in a new filter is not immediately available, 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. In addition, the filtering ability of the treated paper element will be significantly reduced.
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 inside to the outside.

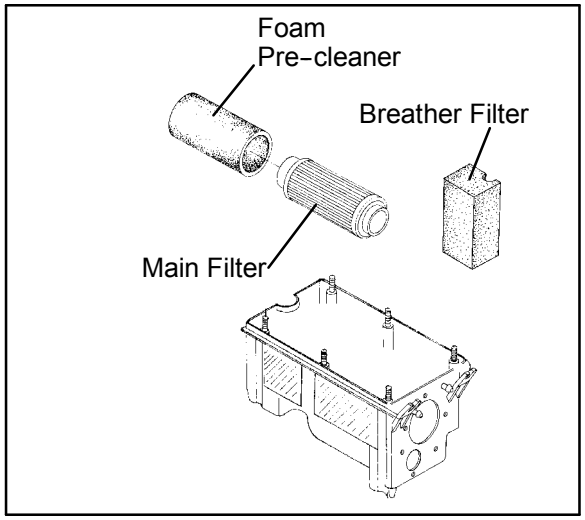
Air Filter Service
Scrambler 500 Style

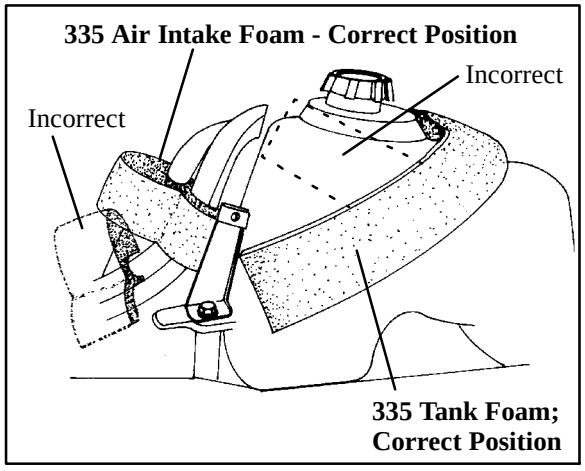
1. Remove seat.
2. Release clips and remove air box cover.
3. Loosen clamp and remove filter assembly.
4. Remove fabric pre-filter from main filter.
5. Carefully wash the pre-filter in soapy water and dry it thoroughly. Replace the pre-filter if the element is torn or damaged.
6. Replace main filter if dirty.
7. Install dry pre-filter over new main filter and install.
8. Reinstall pre-filter in main filter. Replace main filter as required.



Air Filter Service
Sportsman 335, 500 / Magnum 500 Style

1. Remove seat.
2. Remove spring clamps 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. Carefully wash the pre-filter in soapy water and dry it thoroughly. Replace the pre-filter if the element is torn or damaged.
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 (Sportsman 500). Make certain foam is flush with front edge of airbox so air cannot enter engine breather fitting hole without first passing through the foam.



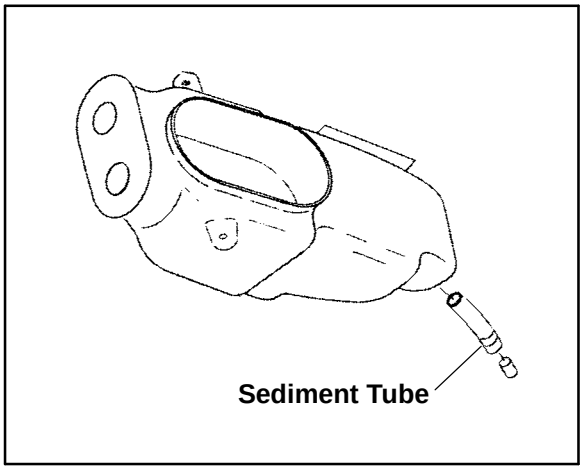


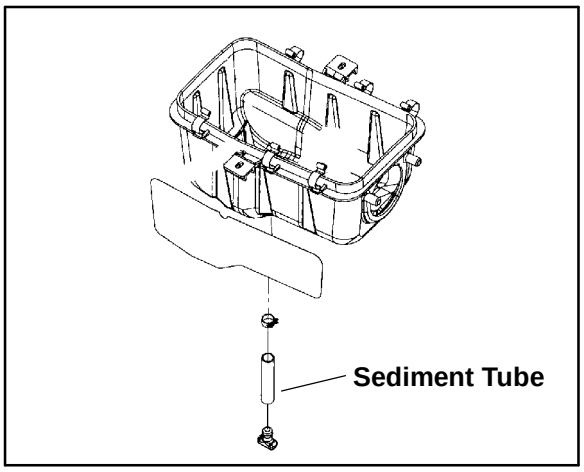
Air Box Sediment Tube

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.





Breather Filter Inspection

Four cycle ATV engines are equipped with a breather filter. The in-line filter is similar in appearance to a fuel filter, and is visible on the left side (Location A) or right side (location B) of the vehicle. Some models have a foam breather filter in the air box (location C). Some models are equipped with both in-line and foam breather filters.

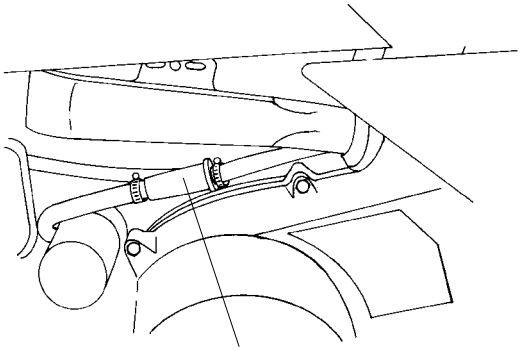
1. Inspect the breather filter(s) for obstruction. Replace if necessary. In-line breather filters should be installed with the arrow pointing toward the engine (away from the air box).

NOTE: In-line breather filter service life is extended when the foam air box pre-filter is in place and maintained properly. Never operate the engine without the pre-filter(s).

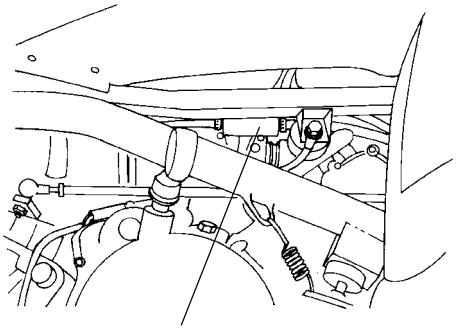
Breather Hose

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

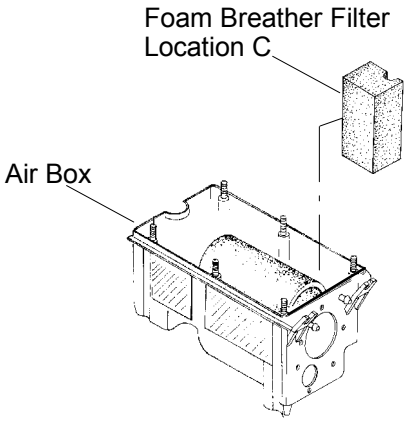
Typical Breather Filter Location



In-Line Breather Filter
Location A



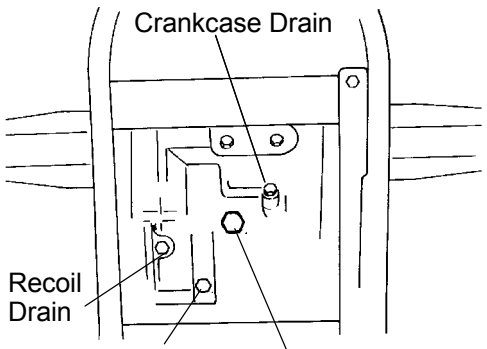
In-Line Breather Filter
Location B



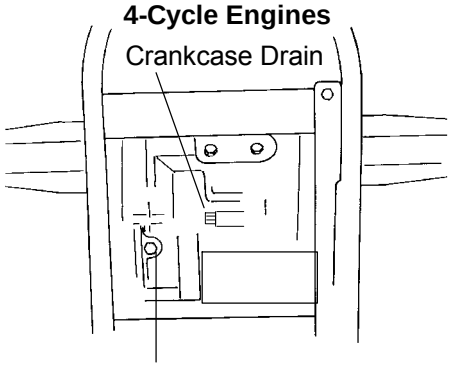
Recoil Housing

- Drain the housing periodically to remove moisture.
- Drain the recoil housing after operating the ATV in very wet conditions. This should also be done before storing the ATV. The drain screw is located at the bottom of the recoil housing. Remove the screw with a 10mm wrench. Reinstall screw once housing has been drained.
- **CAUTION:** Make sure the manual start handle is fully seated on the recoil housing, especially when travelling in wet areas. If it is not sealed properly, water may enter the recoil housing and damage components.
- Water will enter the recoil housing if the starter handle is disengaged from the rope guide when under water.
- After travelling in wet areas the recoil housing and starter should always be drained completely by removing the recoil.
- Do not open the crankcase drain unless the engine has ingested water. On 4-cycle engines, some engine oil will be lost if crankcase drain is opened.
- On the Trail Blazer, the recoil handle **must be behind the heat shield** for it to seal properly. If it is not sealed properly, water may enter the recoil housing and damage components.

250/300 and 400 Engines



4-Cycle Engines

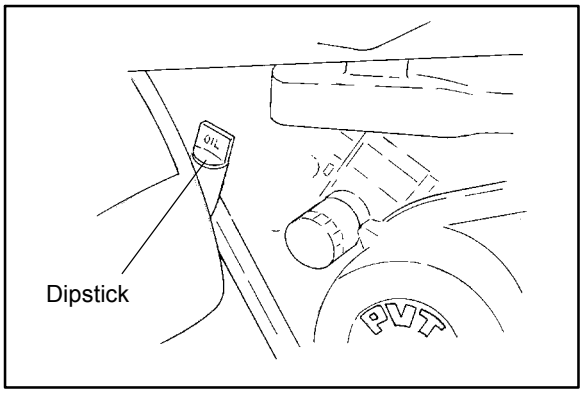


Engine Oil Level (4 Stroke)

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

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 ensure accurate measurement.



5. Remove dipstick and check to see that the oil level is in the normal range. Add oil as indicated by the level on the dipstick. Do not overfill.

NOTE: Rising oil level between checks in cool weather driving, can indicate moisture collecting in the oil reservoir. If the oil level is over the full mark, change the oil.

Maintain Oil Level In Normal Range

Screw in completely to check

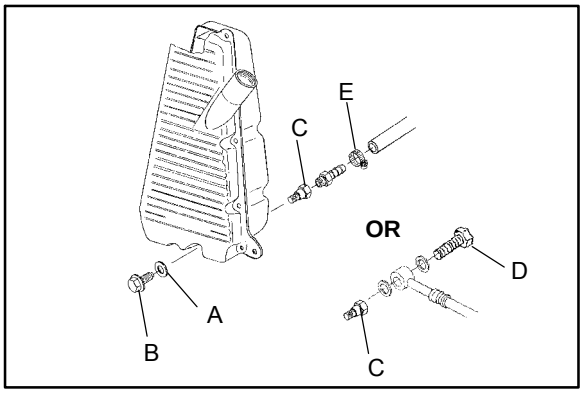
Oil and Filter Change (4 Stroke)

Recommended Engine Oil:

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

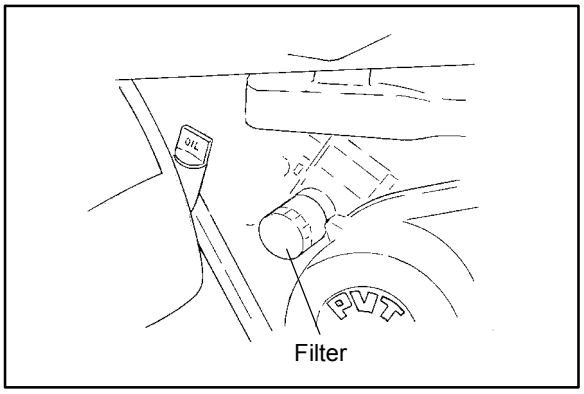
Ambient Temperature Range: -40° F to 120° F

1. Place vehicle on a level surface.
2. Run engine two to three minutes until warm. Stop engine.
3. Clean area around drain plug (B) at bottom of oil tank.
4. Place a drain pan beneath oil tank and remove 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 (A) on drain plug. **NOTE:** The sealing surfaces on drain plug and 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).
8. Loosen clamp (E) or bolt (D).
9. Remove oil hose from screen fitting (C) on bottom of oil tank.
10. Remove screen fitting (C).
11. Clean screen thoroughly.
12. Apply Loctite t PST 505 or an equivalent pipe thread sealant or PTFE sealant tape to clean, oil free threads of fitting.
13. Install fitting and torque to 14-17 ft./lbs..
14. Install oil hose on fitting and tighten clamp to 25 inch/lbs.



Oil and Filter Change, Cont. (4 Stroke)

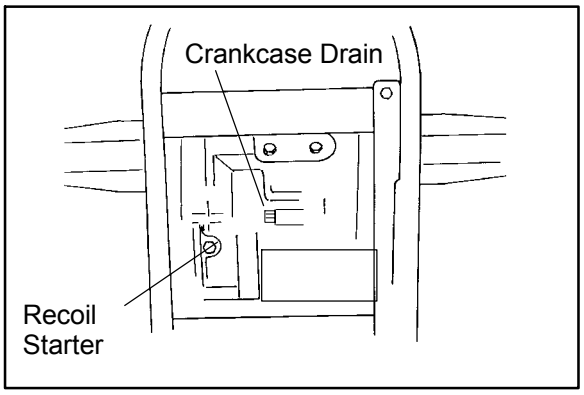
15. Place shop towels beneath oil filter. Using an oil filter wrench, turn filter counterclockwise to remove.
16. Using a clean dry cloth, clean filter sealing surface on crankcase.
17. Lubricate O-ring on new filter with a film of engine oil. Check to make sure the O-ring is in good condition.
18. Install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



19. 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.

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



Engine Sump Drain Plug - Bottom View

Oil Tank Drain Plug Torque:
14 ft. lbs. (19 Nm)

Crankcase Drain Plug Torque:
14 ft. lbs. (19 Nm)

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

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

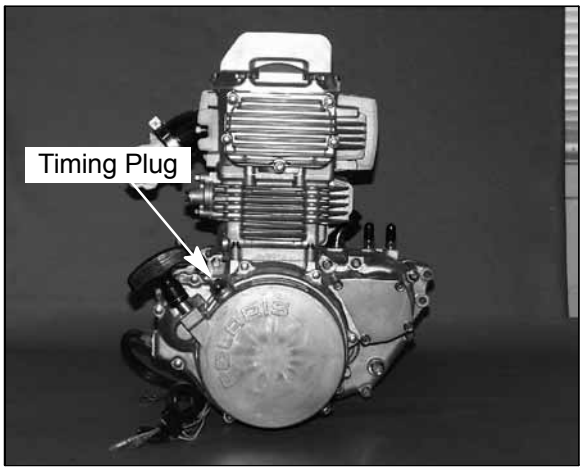
Oil Tank Screen Fitting Torque:
14-17 ft. lbs. (19 Nm)

Valve Clearance - 335, 425, 500cc Engines

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

1. Remove the seat.
2. Remove body panels and fuel tank as necessary to gain access to valve cover.
3. 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.
4. Remove rocker cover bolts, cover and gasket.

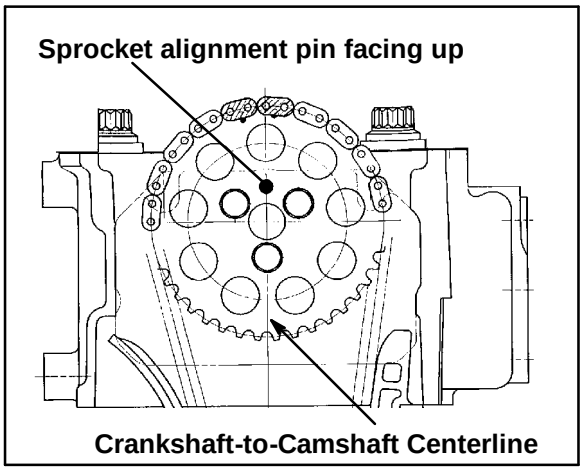
   NOTE: It may be necessary to tap cover lightly with a soft-faced hammer to loosen it from the cylinder head.
5. Remove timing inspection plug from recoil housing.



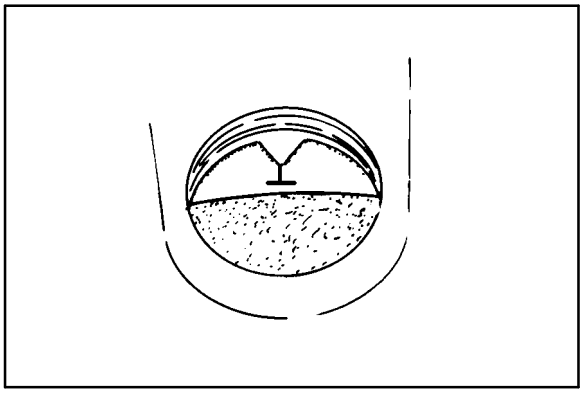
CAUTION: Failure to position the crankshaft at TDC on compression stroke will result in improper valve adjustment.

6. Rotate engine slowly with recoil rope, watching the intake valve(s) open and close.

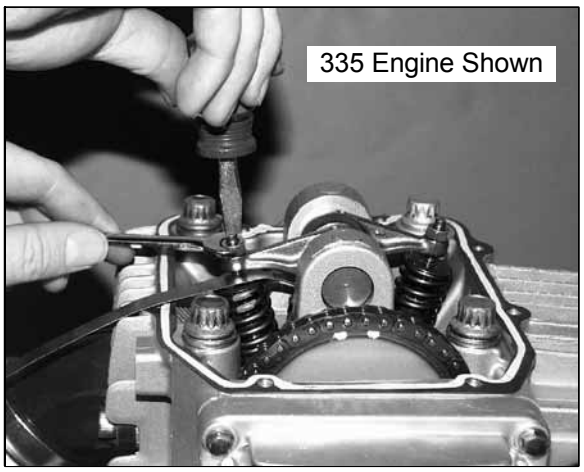
NOTE: At this point watch the camshaft sprocket locating pin and slowly rotate engine until locating pin is facing upward, directly in line with the crankshaft to camshaft center line as shown. The camshaft lobes should be pointing downward.



7. Verify accurate TDC positioning by observing the “T” mark aligned with the pointer in the timing inspection hole. In this position there should be clearance on all valves.



Intake Valve Clearance Adjustment

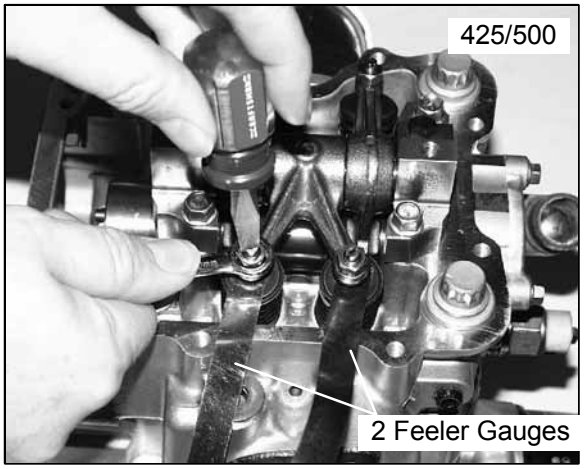


1. Insert a .006″ (.15mm) feeler gauge between end of intake valve stem and clearance adjuster screw.
2. Using a 10 mm wrench and a screwdriver, loosen adjuster lock nut and turn adjusting screw until there is a slight drag on the feeler gauge.
3. Hold adjuster screw and tighten adjuster lock nut securely.
4. Re-check the valve clearance.
5. Repeat adjustment procedure if necessary until clearance is correct with locknut secured.
6. Repeat this step for the other intake valve on 4 valve models.

INTAKE VALVE CLEARANCE
335 / 425 / 500 Engines
.006″ (.15 mm)

Exhaust Valve Clearance Adjustment

NOTE: The exhaust valves on 425 and 500cc share a common rocker arm, and must be adjusted using two feeler gauges.



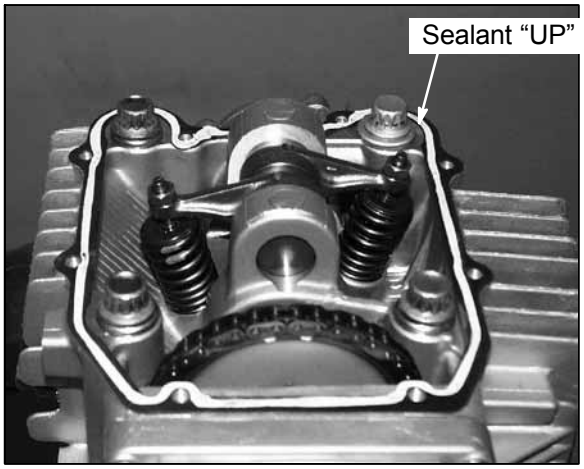
1. Insert .006 feeler gauge(s) between end of exhaust valve stem and adjuster screw(s).
2. Loosen locknut(s) and turn adjuster screw(s) until there is a slight drag on feeler gauge(s). **NOTE:** Both feeler gauges should remain inserted during adjustment of each valve on 4 valve models.

EXHAUST VALVE CLEARANCE
335 / 425 / 500 Engines
.006″ (.15 mm)

3. When clearance is correct, hold adjuster screw and tighten locknut securely
4. Re-check the valve clearance.
5. Repeat adjustment procedure if necessary until clearance is correct with locknut secured.

Exhaust Valve Clearance Adjustment Cont.

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.
7. Reinstall the cover using a new gasket.
8. Torque cover bolts to 78 in. lbs.
9. Remove the shop towel from the spark plug cavity.
10. Reinstall the spark plug. Torque to 14 ft. lbs. (19 Nm).
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:	**14 ft. lbs.**

Steering & Toe Alignment Inspection

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. Use only genuine Polaris parts.

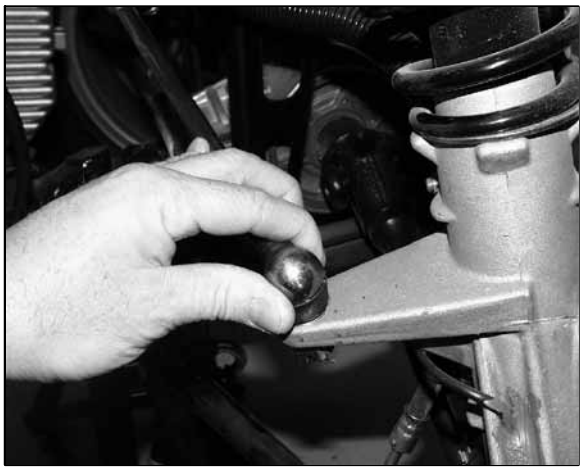
⚠ WARNING

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. Only a qualified technician should replace worn or damaged steering parts. Use only genuine Polaris replacement parts.

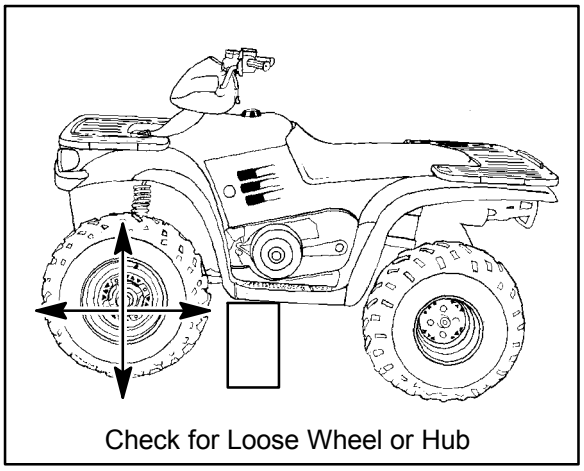
One of two methods can be used to measure toe alignment. The string method and the chalk method. If adjustment is required, refer to following pages for procedure.

Tie Rod End / Steering Inspection

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



- Elevate front end of machine so front wheels are off the ground. Check for any looseness in front hub / wheel assembly by grasping the tire firmly at top and bottom first, and then at front and rear. Try to move the wheel and hub by pushing inward and pulling outward.
- If abnormal movement is detected, inspect the hub and wheel assembly to determine the cause (loose wheel nuts, loose front hub nut (4x4) or spindle nut (2x4).
- Refer to the Body/Steering or Final Drive chapter for more information.



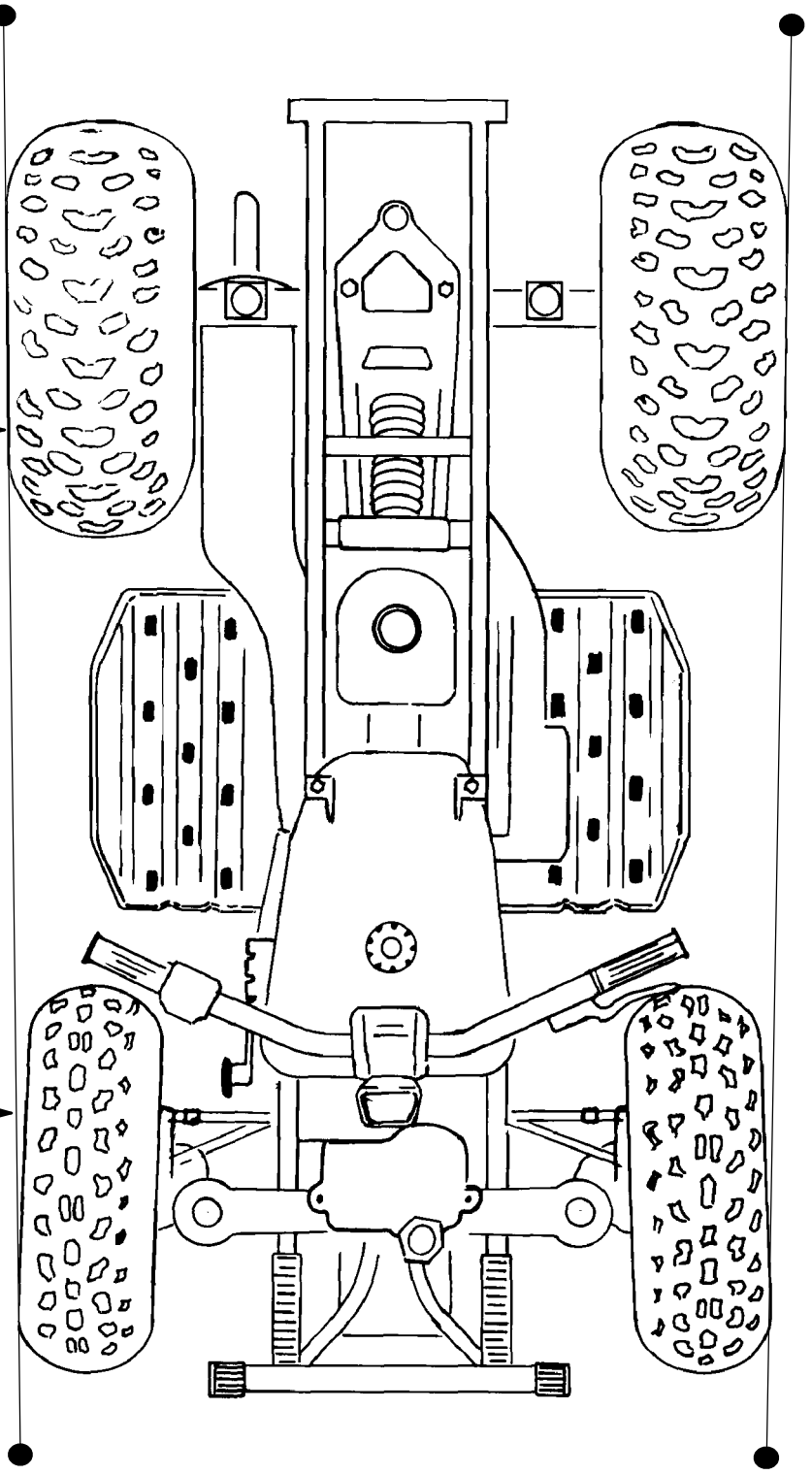
Check for Loose Wheel or Hub

Camber and Caster

The camber and caster are non-adjustable.

Method 1: Straightedge or String

Be sure to keep handlebars centered. See note below.

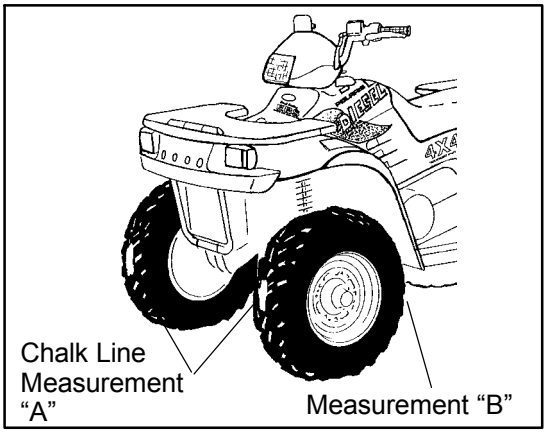


NOTE: The steering post arm (frog) can be used as an indicator of whether the handlebars are straight. The frog should always point straight back from the steering post.

Toe Alignment - Method 2

Method 2 Chalk

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 hub/axle center line 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 the measurement. Call this measurement “A”.



5. Rotate the tires 180° by moving vehicle forward or backward. Position chalk marks facing rearward, even with the hub/axle centerline.
6. Again measure the distance between the marks and record. Call this measurement “B”. Subtract measurement “B” from measurement “A”. The difference between measurements “A” and “B” is the vehicle toe alignment. The recommended vehicle toe tolerance is 1/8″ to 1/4″ (.3 to .6 cm) 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).

Toe Alignment Adjustment

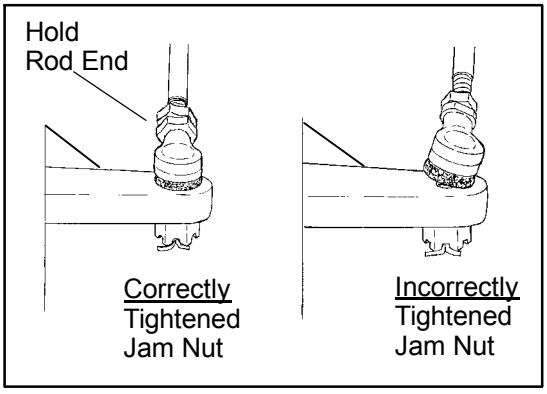
7. If toe alignment is incorrect, measure the distance between vehicle center and each wheel. This will tell you which tie rod needs adjusting. **NOTE:** Be sure handlebars are straight ahead before determining which tie rod(s) need adjustment.

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.

<u>To adjust toe alignment:</u>

- Hold tie rod end to keep it from rotating.
- Loosen jam nuts at both end of the tie rod.
- Shorten or lengthen the tie rod until alignment is as required to achieve the proper toe setting as specified in Method 1 (1/16″ to 1/8″) or Method 2 (1/8″ to 1/4″).
- 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, to prevent rod end damage.

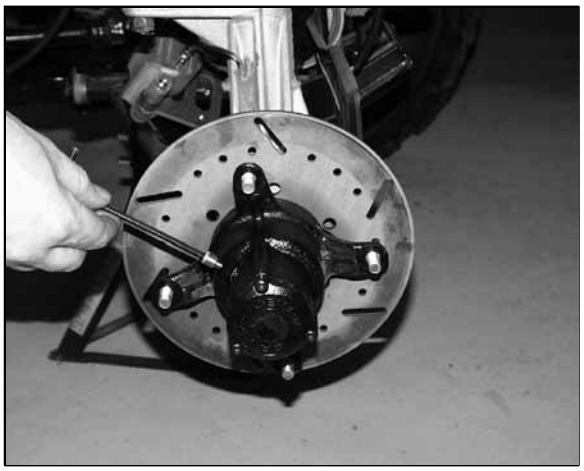
8. After alignment is complete, torque jam nuts to 12-14 ft. lbs. (1.66-1.93 kg-m).



Front Hub Fluid Level Inspection (AWD Models)

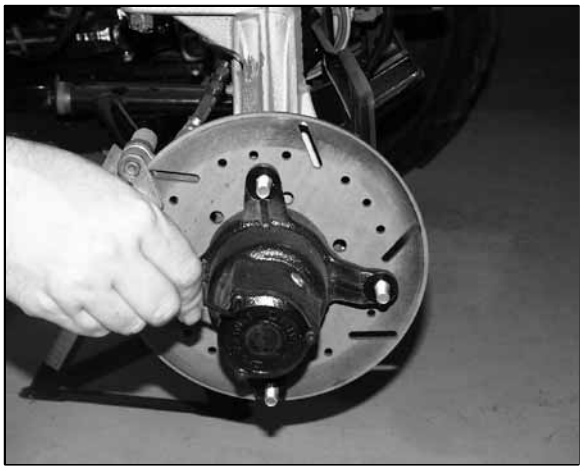
To check front hub fluid:

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 Demand Drive Hub 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.



Front Hub Fluid Change (AWD Models)

1. Place a drain pan beneath the hub.
2. Remove (3) screws and hub cap. Pry equally in notches provided until cap is removed.
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 Polaris Demand Drive Hub Fluid until fluid trickles out. **NOTE:** Do not force the fluid into the hub under pressure or seal damage may occur.

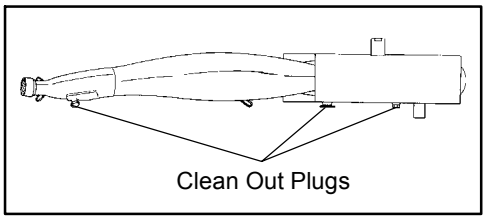


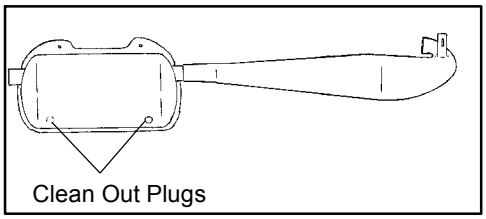
Polaris Demand Drive Hub Fluid:
PN 2871654 - 8 oz..
PN 2872277 - 2.5 gallon

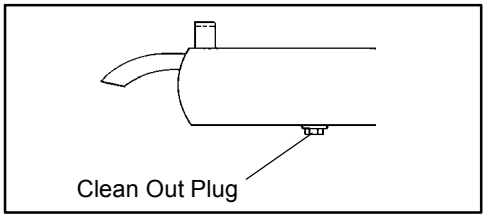
Exhaust Pipe

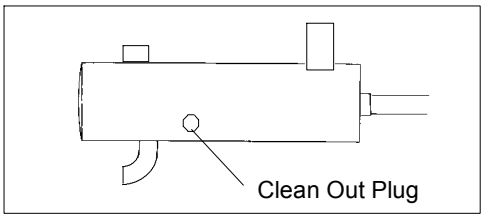
The exhaust pipe must be periodically purged of accumulated carbon as follows:

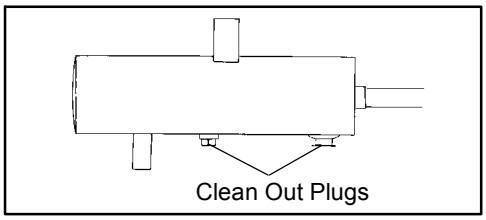
1. Remove the clean out plugs located on the bottom of the muffler as shown at right.
2. Place the transmission in neutral and start the engine. Purge accumulated carbon from the system by momentarily revving the engine several times.
3. If some carbon is expelled, cover the exhaust outlet and rap on 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

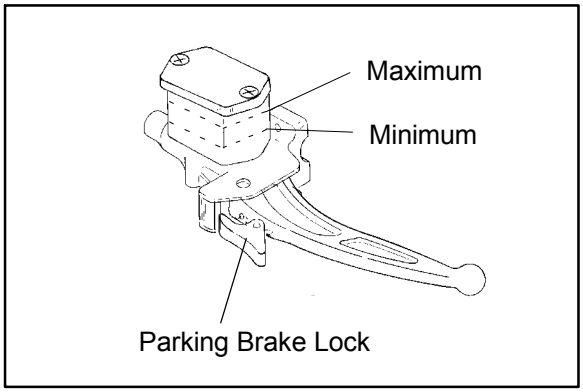
- Do not perform this operation immediately after the engine has been run because the exhaust system becomes very hot.
- Because of the increased fire hazard, make sure that there are no combustible materials in the area when purging the spark arrestor.
- Wear eye protection.
- Do not stand behind or 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.

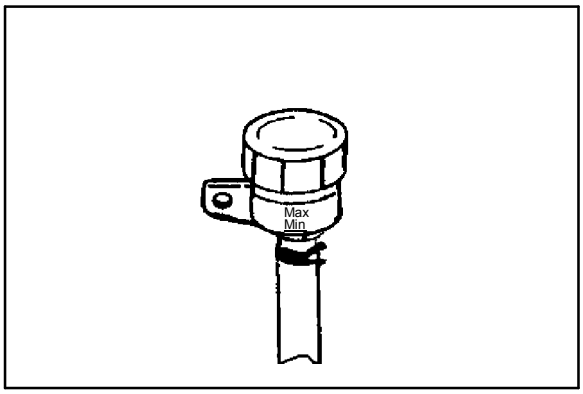
Failure to heed these warnings could result in serious personal injury or death.

Brake System Inspection

The following checks are recommended to keep the brake system in good operating condition. Service life of brake system components depends on operating conditions. Inspect brakes in accordance with the maintenance schedule and before each ride.

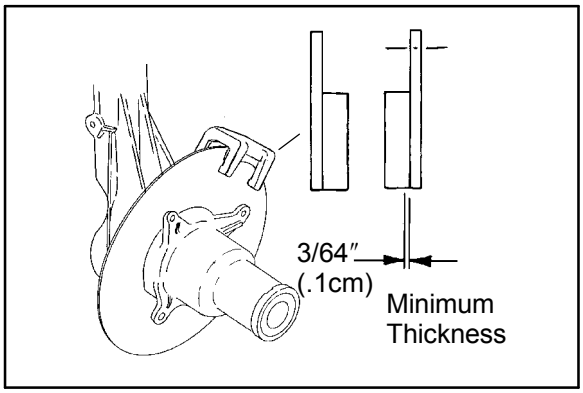
- Keep fluid level in the master cylinder reservoir between “Min” & “Max” lines at all times.
- Use Polaris DOT 3 brake fluid (PN 2870990).
- Check brake system for fluid leaks.
- Check brake for excessive travel or spongy feel.
- Check friction pads for wear, damage and looseness.
- Check surface condition of the disc.
- Inspect thickness of brake pad friction material.





Brake Pad Inspection

- Pads should be changed when friction material is worn to 3/64″ (.1 cm), or about the thickness of a dime.



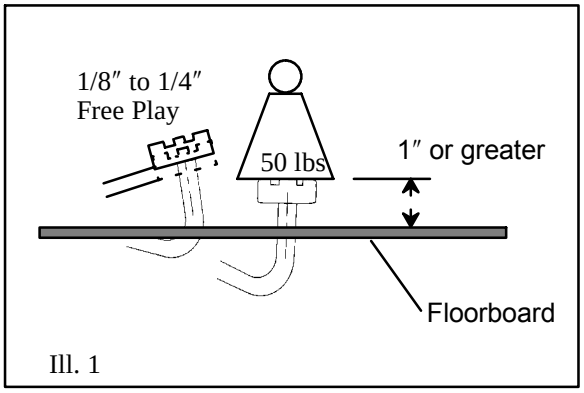
Hose/Fitting Inspection

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

Auxiliary Brake Adjustment (Hydraulic)

Use the following procedure to inspect the hydraulic auxiliary (foot) brake system and adjust or bleed if necessary.

1. First check foot brake effectiveness by applying a 50 lb. (approx.) downward force on the pedal. The top of the pedal should be at least 1, (25.4mm) above the surface of the footrest (**see Ill. 1**).



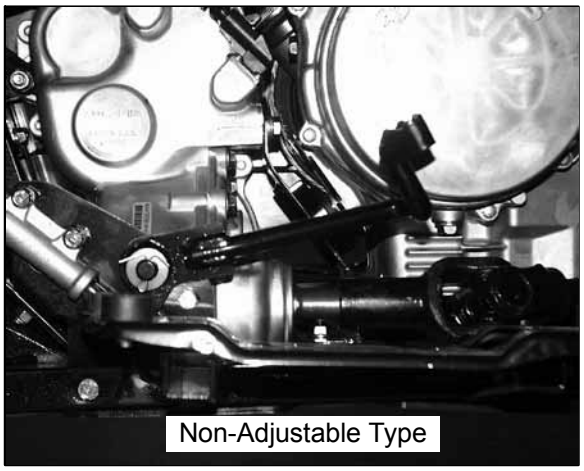
Ill. 1

If less than one inch, two things must be examined:

Free Play:

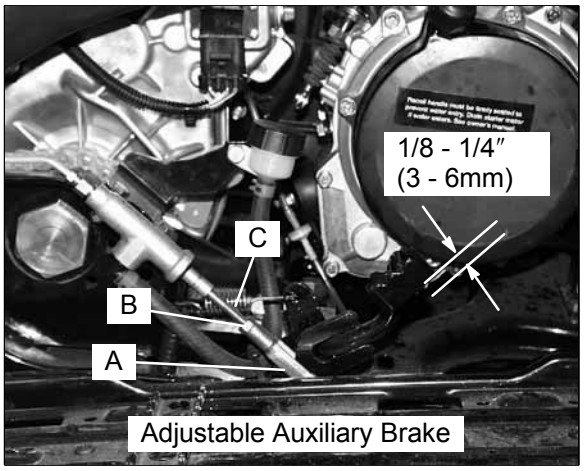
Free play of the brake pedal should be 1/8 - 1/4 inch (3.2 - 6.35 mm).

Free play can be adjusted on some models by altering the length of the pushrod, which is connected to the brake pedal by a clevis. Other models are non-adjustable type (right). If free play is excessive on a non-adjustable brake, inspect pedal, linkage, and master cylinder for wear or damage and replace any worn parts.


Non-Adjustable Type

To adjust the linkage:

- Remove right hand drive cover to gain access to brake pushrod.
- Hold clevis (A) and loosen clevis adjuster lock nut (B).
- To **increase** free play, shorten the pushrod (C).
- To **decrease** free play, lengthen the pushrod (C).
- Hold clevis and tighten lock nut (B) securely.
- Reinstall drive cover.



Adjustable Auxiliary Brake

Bleeding:

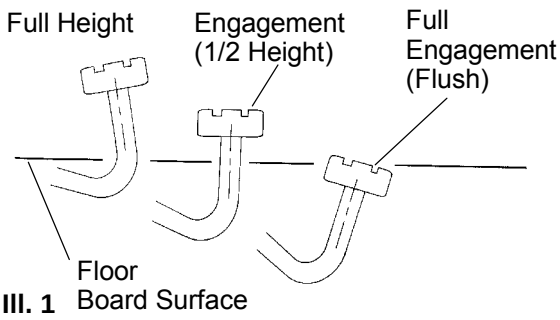
If free play is correct and brake pedal travel is still excessive, air may be trapped somewhere in the system. Bleed the hydraulic auxiliary brake system in a conventional manner, following the procedure outlined in the Brake chapter.

Auxiliary Mechanical Brake 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.

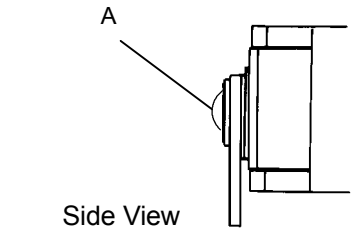


Ill. 1

Auxiliary Brake Adjustment - Mechanical

The mechanical 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. Place 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 and 2).

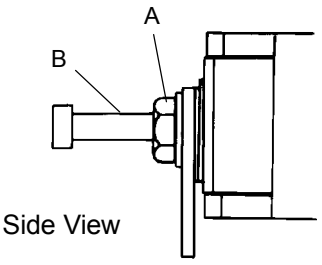


Auxiliary Brake Adjustment - Type I

Ill. 2

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 1 and 3).

3. Check brakes to be sure they are not dragging. Readjust pedal deflection if necessary.



Auxiliary Brake Adjustment - Type II

Ill. 3

Drive Chain and Sprocket Inspection

Polaris ATV drive chains are equipped with O-ring sealed permanently greased pins and rollers. The sprockets and outer rollers require periodic lubrication. Lubricate the chain with Polaris O-Ring Chain Lubricant (PN 2871079).

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.

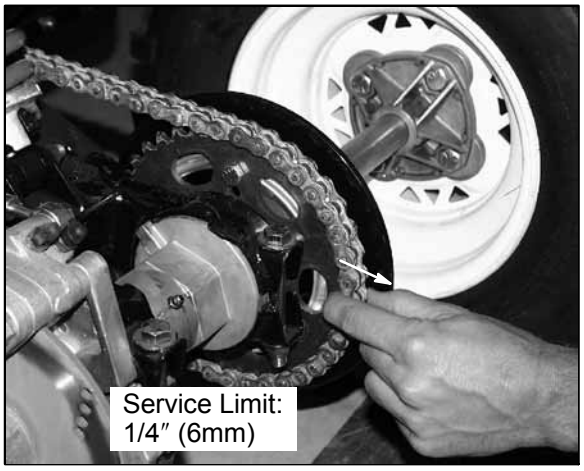
Sprocket Inspection

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 Lubricant:

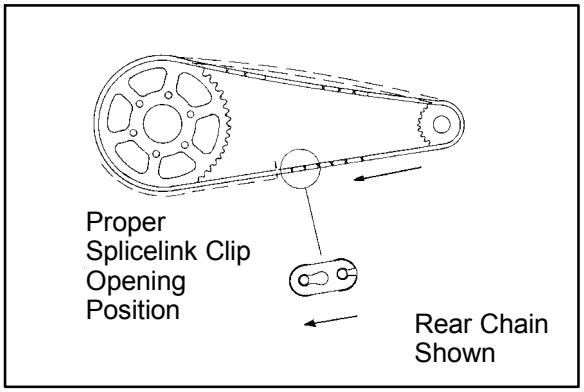
Polaris O-Ring Chain Lubricant
PN 2871079



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 Tension Inspection - Standard Swingarm

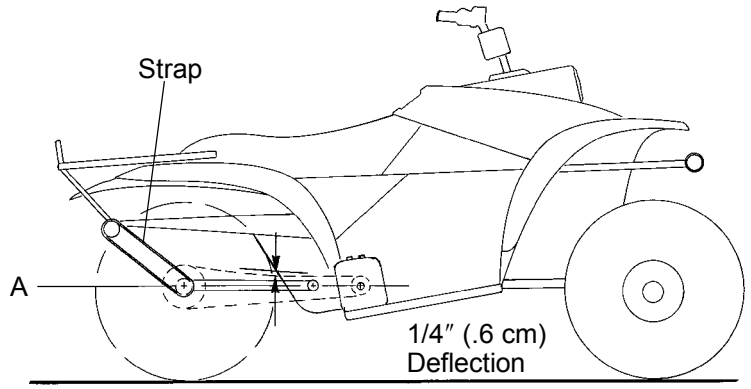
Rear drive chain tension must be measured with the swingarm in the position shown below in Ill.1. to ensure accurate measurement.

NOTE: On models with concentric swingarm (all rear chain drive *except* Xplorer and Xpress 300), chain tension can be measured at any point in the swingarm arc. It is not necessary to compress the suspension on concentric models. Refer to following page for drive chain adjustment on models with 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.
- 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.

Standard Swingarm Drive Chain Adjustment



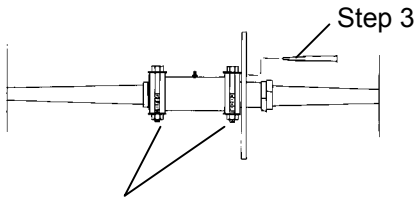
IMPORTANT: On models with standard swingarm (non-concentric) suspension must be compressed as shown to check drive chain tension.

Ill. 1

Rear Drive Chain Tension Adjustment - Standard Swingarm

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 nut side of eccentric pinch bolts to **60 ft. lbs. (83 Nm)** while holding the bolt with a wrench. Verify proper chain deflection measurement after pinch bolts are tight, and readjust if necessary.
6. Reinstall chain guard (where applicable).
7. Adjust stone guard to allow 1/8″ clearance between sprocket and guide.

Rear Drive Chain Adjustment

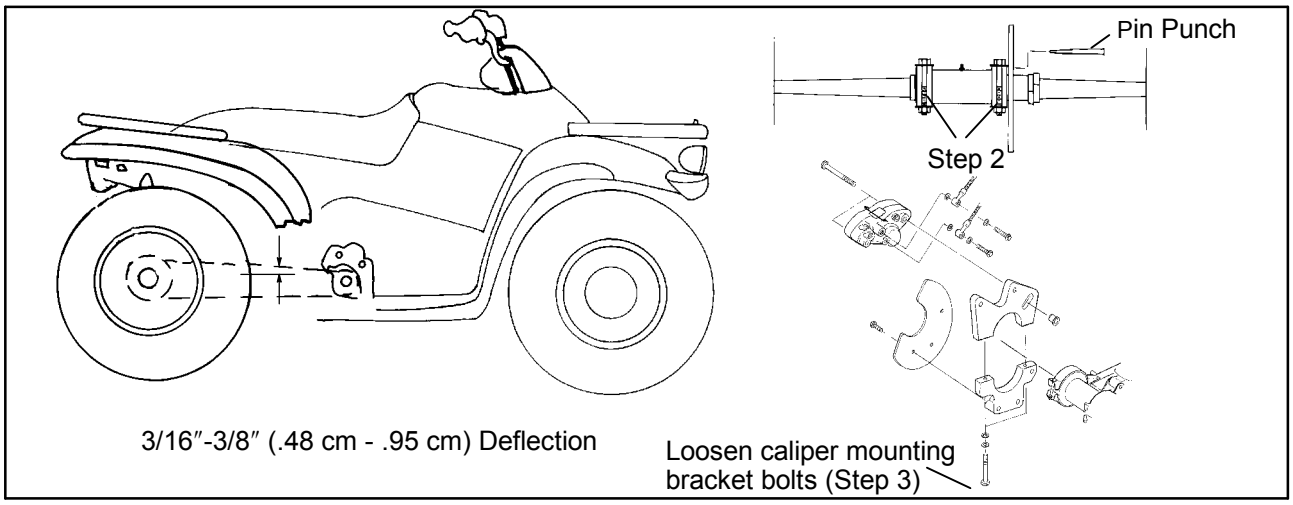


Step 2 - Loosen
Step 5 - Torque nut side of pinch bolts.

Drive Chain Adjustment, Concentric Swingarm

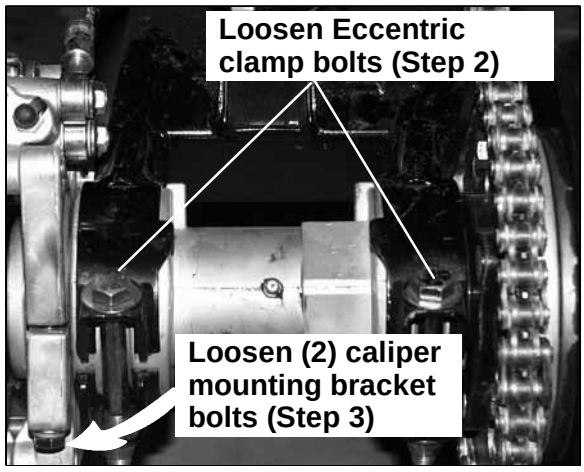
⚠ **CAUTION:** Never adjust or operate the vehicle with the rear drive chain too loose or too tight as severe damage to the transmission and drive components can result.

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″ (5-10 mm) deflection. If the chain needs adjustment, use the following procedure.



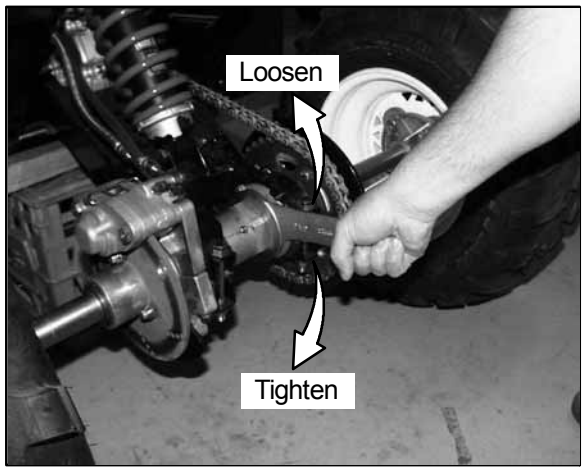
Adjustment Procedure - Concentric Swingarm Rear Axles (Tapered Roller Bearings)

1. Loosen chain guard.
2. Loosen two eccentric clamp bolts.
3. Loosen caliper mounting bracket bolts.



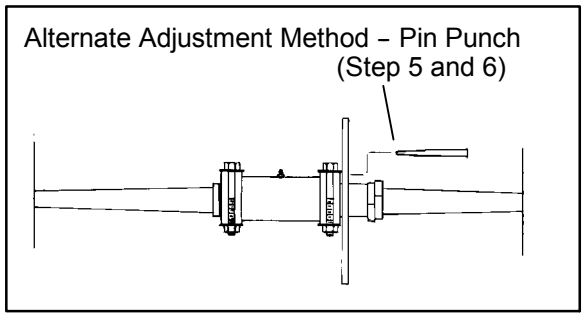
Adjustment Procedure - Concentric Swingarm Rear Axles (Tapered Roller Bearings), Cont.

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 for alternate method if 2 1/2″ wrench is not available.



5. Insert a pin punch through the sprocket hub and into the eccentric axle housing.

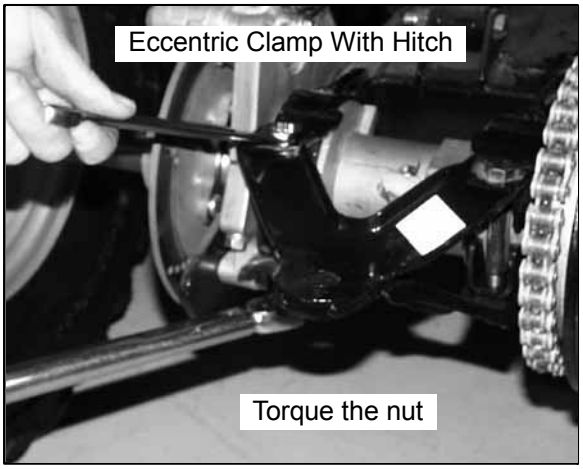
6. Roll the vehicle ahead or back to adjust chain slack to the proper dimension.



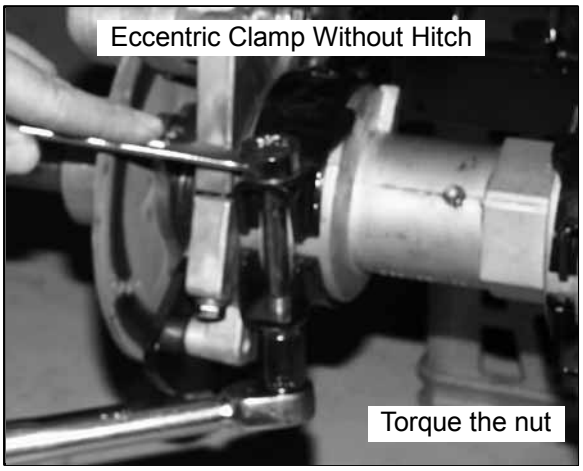
7. Tighten the eccentric clamp bolts to specification.

WITH TRAILER HITCH - 40 ft. lbs. (55 Nm)

CAUTION:DO NOT OVER-TIGHTEN ECCENTRIC CLAMP BOLTS. PRE-MATURE BEARING FAILURE MAY RESULT.

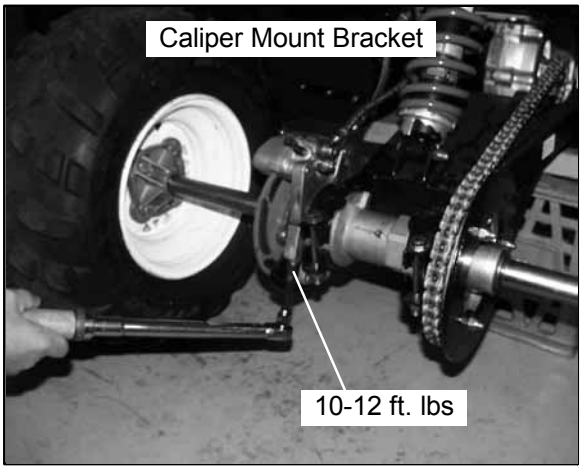


WITHOUT TRAILER HITCH - 30 ft. lbs. (41 Nm)



8. Verify chain adjustment is correct after tightening eccentric clamp bolts to specification.
9. Tighten caliper mounting bracket bolts 10-12 ft. lbs. (14 - 17 Nm)
10. Reinstall chain guard (where applicable).

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



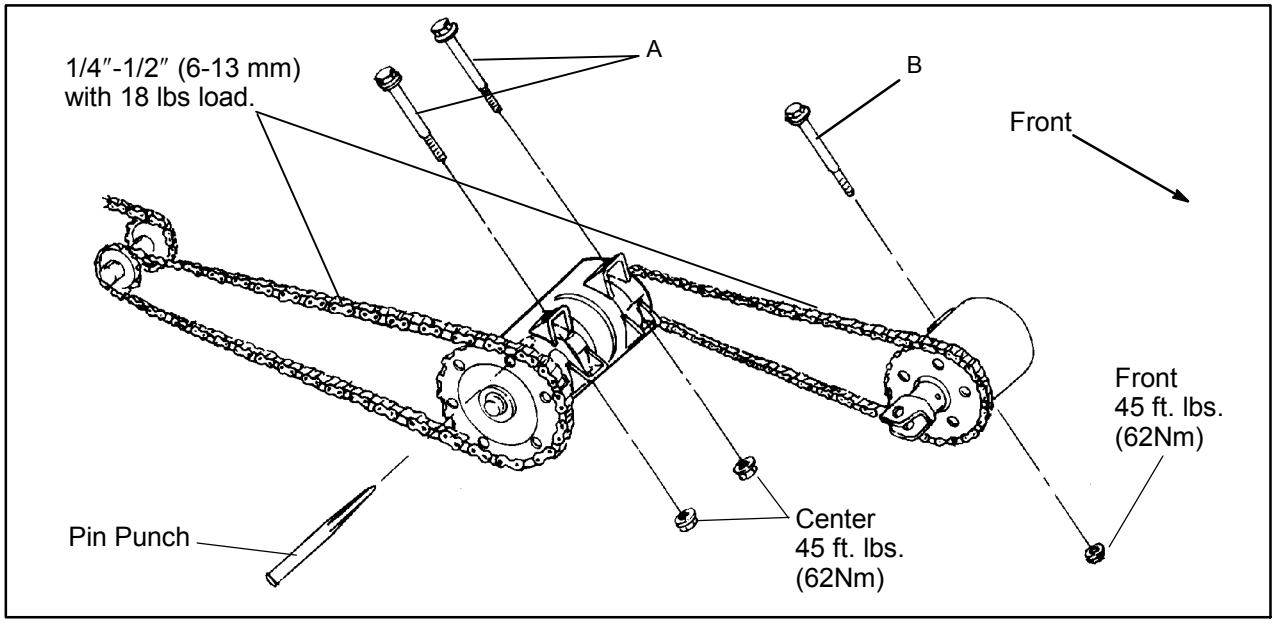
Center/Front Drive Chain Slack Adjustment

The center chain should be adjusted before the front chain. This adjustment affects the front chain slack.

Center/Front Drive Chain Inspection/Adjustment

1. Remove center chain guard attaching hardware. Press brake pedal downward and remove guard.
2. Remove forward chain guard attaching bolts and guard.
3. Loosen center chain eccentric clamp bolts (A).
4. Rotate vehicle forward or rearward until one of sprocket holes aligns with hole provided in eccentric.
5. 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″ (6-13 mm) with 18 lbs. (8.18 kg) of force at center of chain.
6. Tighten eccentric clamp bolts to 45 ft. lbs. (62 Nm). **NOTE:** This does not include nut rolling torque. Check chain tension.
7. Loosen forward chain eccentric clamp bolt (B). Install punch as was done previously and adjust chain to 1/4-1/2″ (6-13 mm) with 18 lbs. (8.18 kg) force at center of chain.
8. Tighten forward eccentric clamp bolt to 45 ft. lbs. (62 Nm). **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.

Center and Front Drive Chain Adjustment:
1/4-1/2″ (6-13 mm) with 18 lbs. load (8.18 kg)



Drive Chain - 6x6

Drive Chain Inspection/Adjustment - 6x6

CAUTION:

Never adjust or operate the vehicle with the rear drive chain slack out of the specified range, as severe damage to the transmission and drive components can result.

6x6 Chain Inspection

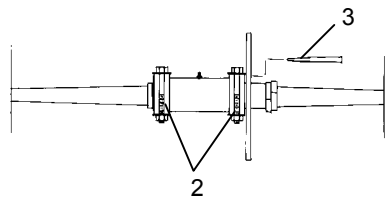
Check the amount of chain slack by moving the vehicle slightly forward to gain slack at the top side of the chain. Then pull up and down on the chain. Total slack should be as specified below. If slack is not within specification, adjust the chain.

6x6 Middle Axle Chain Adjustment

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″ (30-38 mm) 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.

Drive Chain Adjustment



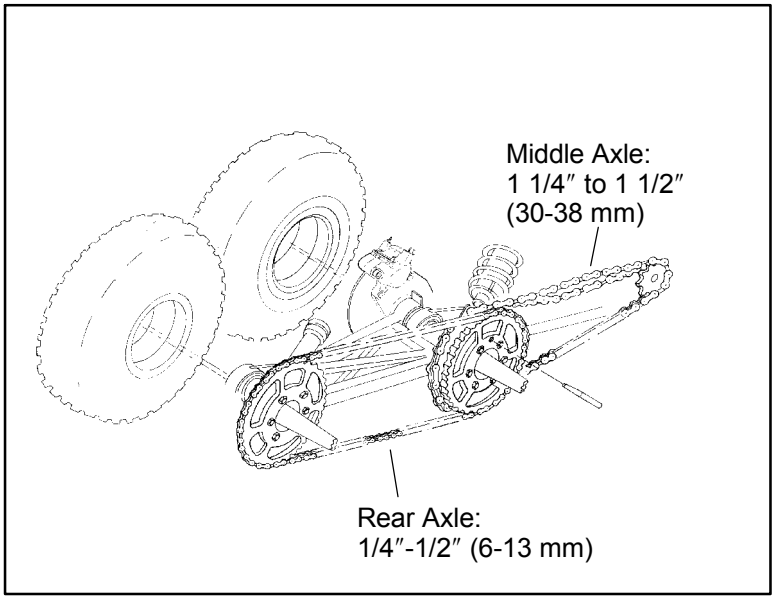
6x6 Rear Axle Drive Chain Adjustment

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″ (6-13 mm).

6x6 Chain Deflection

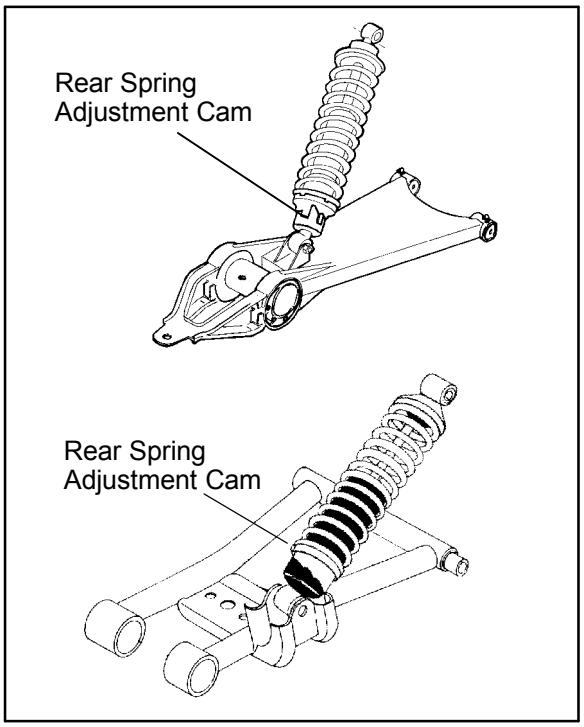
Middle Axle:
1 1/4- 1 1/2″(30- 38 mm)

Rear Axle:
1/4-1/2″(6-13 mm)



Suspension Spring Preload Adjustment

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



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.

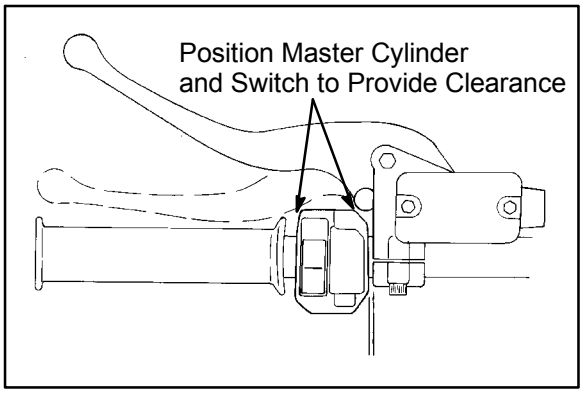
Shock Spanner Wrench

PN 2870872

Controls

Check controls for proper operation, positioning and adjustment.

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



Wheels

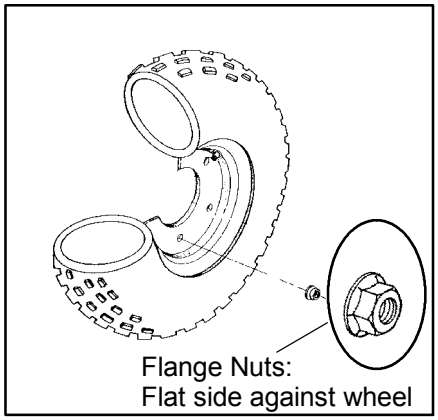
Inspect all wheels for runout or damage. Check wheel nuts and ensure they are tight. Do not over tighten the wheel nuts.

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 and Magnum 500	Front Wheel Nuts	15 Ft. Lbs.
	Rear Wheel Nuts	50 Ft. Lbs.
	Front Spindle Nut	Refer to procedure listed in Chapter 7
	Rear Hub Retaining Nut	80 Ft. Lbs.
4 x 4 Shaft Drive (All except Magnum 500)	Front Wheel Nuts	15 Ft. Lbs.
	Rear Wheel Nuts	15 Ft. Lbs.
	Front Spindle Nut	Refer to procedure listed in Chapter 7
	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.

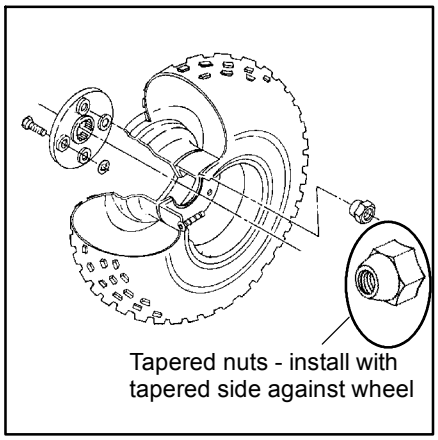


Wheel Installation

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 tapered end of nut goes into taper on wheel.



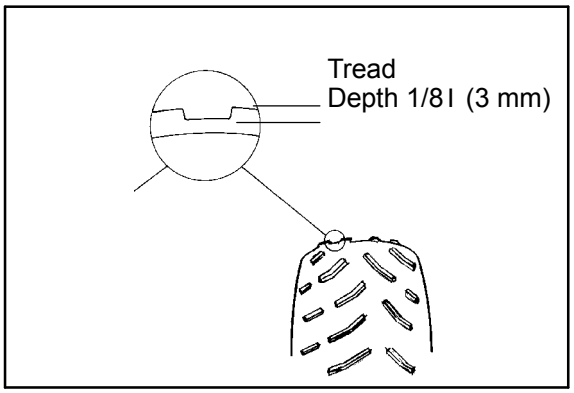
Tire Pressure

Tire Pressure Inspection (PSI - Cold)			
1999 Model	**Front**	**Center**	**Rear**
All Models Except Listed Below	4	–	3
Sportsman Models (Independent Rear Suspension)	5	–	5
6x6	5	5	5

Tire Inspection

CAUTION:

- Maintain proper tire pressure. Refer to the warning tire pressure decal applied to the vehicle.
- Improper tire inflation may affect ATV maneuverability.
- When replacing a tire always use original equipment size and type.
- 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 mm) 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.

NOTES