POLARIS
The Way Out.

2005 SPORTSMAN 700 EFI
2005 SPORTSMAN 800 EFI

SERVICE MANUAL

PN 9919820

2005 SPORTSMAN 700/800 EFI SERVICE MANUAL

Foreword

This manual is designed primarily for use by certified Polaris Master Service Dealer technicians in a properly equipped shop and should be kept available for reference. All references to left and right side of the vehicle are from the operator's perspective when seated in a normal riding position.

Some procedures outlined in this manual require a sound knowledge of mechanical theory, tool use, and shop procedures in order to perform the work safely and correctly. Technicians should read the text and be familiar with service procedures before starting the work. Certain procedures require the use of special tools. Use only the proper tools as specified.

This manual includes procedures for maintenance operations, component identification and unit repair, along with service specifications for Polaris Sportsman 700/800 EFI ATVs. Comments or suggestions about this manual may be directed to: Service Publications Dept. @ Polaris Sales Inc. 2100 Hwy 55 Medina Minnesota 55340.

Some Polaris factory manuals can be downloaded from **www.polarisindustries.com** or purchased from **www.purepolaris.com** or contact your nearest Polaris dealer.

2005 Sportsman 700/800 EFI ATV Service Manual (PN 9919820)

UNDERSTANDING SAFETY LABELS AND INSTRUCTIONS

Throughout these instructions, important information is brought to your attention by the following symbols:

The Safety Alert Symbol means ATTENTION! BECOME ALERT! YOUR SAFETY IS INVOLVED!

⚠ DANGER

Failure to follow DANGER instructions will result in severe injury or death to the operator, bystander or person inspecting or servicing the ATV.

⚠ WARNING

Failure to follow WARNING instructions could result in severe injury or death to the operator, bystander or person inspecting or servicing the ATV.

CAUTION:

A CAUTION indicates special precautions that must be taken to avoid personal injury, or ATV or property damage.

NOTE:

A NOTE provides key information to clarify instructions.

Trademarks

Polaris acknowledges the following products mentioned in this manual:

Loctite, Registered Trademark of the Loctite Corporation
STA-BIL, Registered Trademark of Gold Eagle
Nyogel, Trademark of Wm. F. Nye Co.
Fluke, Registered Trademark of John Fluke Mfg. Co.
Mity Vac, Registered Trademark of Neward Enterprises, Inc.
Ammco, Registered Trademark of Ammco Tools, Inc.
Torx, Registered Trademark of Textron
Hilliard, Trademark of the Hilliard Corporation
Warn, Trademark of the Warn Industries
HiPerWash™ and Liquid Buff™ are trademarks of HPC inc.

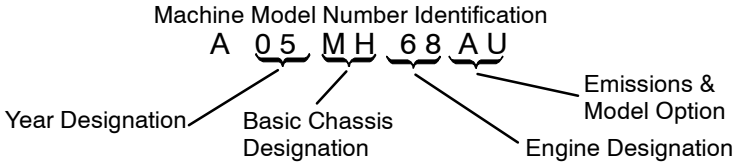
CHAPTER 1
GENERAL

Specs

1

MODEL IDENTIFICATION

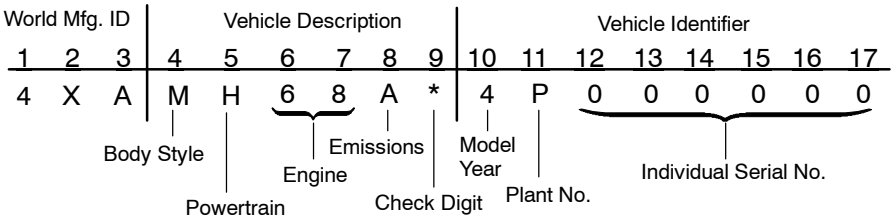
The machine model number must be used with any correspondence regarding warranty or service.



ENGINE DESIGNATION NUMBERS

EH068OLE . . . . . Twin cylinder, Liquid Cooled, 4 Stroke, Electric Start
EH076OLE . . . . . Twin cylinder, Liquid Cooled, 4 Stroke, Electric Start

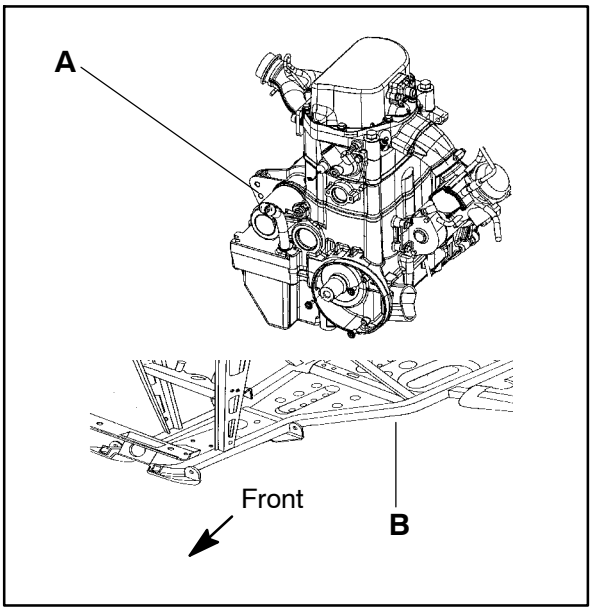
VIN IDENTIFICATION



* This could be either a number or a letter

ENGINE SERIAL NUMBER LOCATION

Be sure to refer to the engine model number and serial number whenever corresponding about an engine. This information can be found on the sticker applied to the top side of the crankcase (A). An additional number is stamped on the side of the crankcase beneath the cylinder coolant elbow.

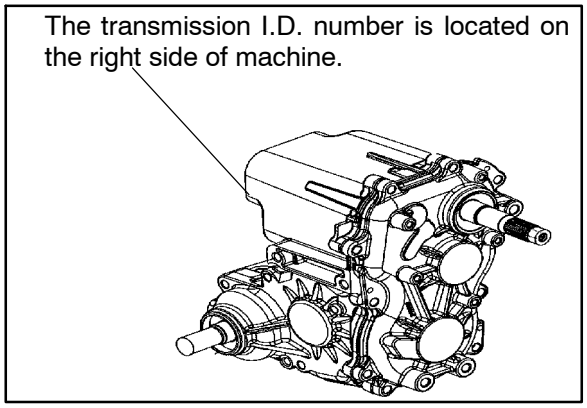


MACHINE MODEL NUMBER AND SERIAL NUMBER LOCATION

The machine model number and serial number are important for vehicle identification. The machine serial number is stamped on the lower left side of the frame tube.(B)

TRANSMISSION I.D. NUMBER LOCATION

The transmission I.D. number is located on the right side of machine.



MODEL: ..... 2005 SPORTSMAN 700 EFI

MODEL NUMBER: . A05MH68AU
ENGINE MODEL: . . EH068OLE22

Category	Dimension / Capacity
Length	**83 in./205.74 cm**
Width	**48 in./116.8 cm**
Height	**48 in./119.4 cm**
Seat Height	**34 in./86.4 cm**
Wheel Base	**50.75 in./128.9 cm**
Dry Weight	**770 lbs./326.6 kg**
Gross Vehicle Weight	**1220 lbs. / 553 kg**
Front Rack Capacity	**100 lbs./45.4 kg**
Rear Rack Capacity	**200 lbs./90.7 kg**
Towing Capacity	**1500 lbs./454 kg**
Hitch Tongue Capacity	**150 lbs./68 kg**
Body Style	**Spirit**

MODEL: ..... 2005 SPORTSMAN 800 EFI

MODEL NUMBER: . A05MH86AU
ENGINE MODEL: . . EH076OLE011

Category	Dimension / Capacity
Length	**83 in./205.74 cm**
Width	**48 in./116.8 cm**
Height	**48 in./119.4 cm**
Seat Height	**34 in./86.4 cm**
Wheel Base	**50.75 in./128.9 cm**
Dry Weight	**770 lbs./326.6 kg**
Gross Vehicle Weight	**1220 lbs. / 553 kg**
Front Rack Capacity	**100 lbs./45.4 kg**
Rear Rack Capacity	**200 lbs./90.7 kg**
Towing Capacity	**1500 lbs./454 kg**
Hitch Tongue Capacity	**150 lbs./68 kg**
Body Style	**Spirit**

MODEL: ..... 2005 SPORTSMAN 700 EFI
MODEL NUMBER: . A05MH68AU
ENGINE MODEL: .. EH068OLE

Engine	
Platform	Polaris Twin Cylinder
Engine Model Number	EH0680LE022
Engine Displacement	683cc
Number of Cylinders	2
Bore & Stroke (mm)	80 x 68 mm
Compression Ratio	9.78:1
Compression Pressure	150-170 psi
Engine Idle Speed	1150 ± 100 RPM
Engine Max Operating Rpm	6500 Rpm ± 200 Rpm
Cooling System / Capacity	Liquid - 3.2 qt / 3 ltr
Overheat Warning	HOT on Instrument Cluster
Lubrication	Pressurized Wet Sump
Oil Requirements / Capacity	Polaris 0W-40 2 qt. / 1.9 ltr
Exhaust System	Single Pipe
Fuel System	
Fuel System	Electronic Fuel Injection (EFI)
Fuel Pump (in tank assembly)	25L per hour at 39 PSI
Fuel Filter(s)	30 Micron in Tank (not replaceable) 10 Micron In Line (replaceable)
Fuel Injector(s)	Bosch
EFI Controller	Bosch MSE 1.1 ECU
Fuel Capacity / Requirement	4.13 gal US / 15.6 ltr 87 Octane (minimum) 89 Oxygenated
Electrical	
Alternator Output	500 w @ 6000 RPM
Lights : Pod	50 watts
Grill	Two x 27 watts
Brake	8.26 watts
Tail	26.9 watts
Ignition System	DC/CDI Ignition
Operating RPM	6000 RPM
Ignition Timing	13° BTDC @ 1200 RPM
Spark plug / Gap	RC7YC/ .035 in. / 0.9 mm
Battery / Model / Amp Hr	Lead Acid / 30 Amp Hr
Circuit Breakers	Fan 20 amp - Harness 20 amp Fuel pump/ECU 15 amp Instrument Cluster / Voltage Regulator 6 amp
Starting	Electric
Instrument Cluster	LCD

Drivetrain	
Transmission Type	Drumshift - H/L/N/Rev/Park
Transmission Capacity	15 oz. / 450m
Rear Gearcase Capacity	5 oz. / 150ml
Front Gearcase Capacity	5 oz. / 150ml
Gear Ratio : Low	7.49:1
Rev	5.11:1
High	2.70:1
Front Drive	3.82:1
Rear Drive	3.10:1
Clutch Type	PVT w/EBS
Belt	3211091
Steering / Suspension	
Front Suspension / Shock	A-arm / MacPherson Strut
Front Travel	8.2 in. / 21 cm
Rear Suspension / Shock	Progressive Rate Independent /Two x 2" Coil-over Shock
Rear Travel	9.5 in. / 24.13 cm
Ground Clearance	11.25 in. / 28.6 cm
Shock Preload Adjustment Front / Rear	Front -Non Adjustable. Rear - Ratchet Style- Std.
Turning Radius	76 in. / 193 cm unloaded
Toe Out	0 - 1/16 in / .0 - .159 mm
Wheels / Brakes	
Wheel Size / Pattern - Front	Steel 25x8-12 / 4-156 (205/80R-12)
Wheel Size / Pattern - Rear	Steel 25x11-12 / 4-156 (270/60R-12)
Front Tire Size	25x8-12
Rear Tire Size	25x11-12
Recommended Air Pressure F / R	5 psi Front 5 psi Rear
Brake - Front	Dual Hydraulic Disc
Brake - Rear	Dual Hydraulic Disc

CLUTCH CHART EBS Models have no helix/spring adjustment

Altitude		Shift Weight	Drive Spring	Driven Spring	Driven Helix
Meters (Feet)	0-1800 (0-6000)	20-56 (5631215)	Blu/Green (7041157)	White (3234199)	60-56-40 (3234208)
	1800-3700 (6000-12000)	20-54 (5631214)	Blu/Green (7041157)	White (3234199)	60-56-40 (3234208)

MODEL: ..... 2005 SPORTSMAN 800 EFI
MODEL NUMBER: . A05MH76AU/AW
ENGINE MODEL: .. EH076OLE

Engine	
Platform	Polaris Twin Cylinder
Engine Model Number	EH0760LE011
Engine Displacement	760cc
Number of Cylinders	2
Bore & Stroke (mm)	80 x 68 mm
Compression Ratio	10:1
Compression Pressure	150-200 psi
Engine Idle Speed	1150 ± 100 RPM
Engine Max Operating Rpm	6500 Rpm ± 200 Rpm
Cooling System / Capacity	Liquid - 3.2 qt / 3 ltr
Overheat Warning	HOT on Instrument Cluster
Lubrication	Pressurized Wet Sump
Oil Requirements / Capacity	Polaris 0W-40 2 qt. / 1.9 ltr
Exhaust System	Dual Pipe / Silencer
Fuel System	
Fuel System	Electronic Fuel Injection (EFI)
Fuel Pump (in tank assembly)	25L per hour at 39 PSI
Fuel Filter(s)	30 Micron in Tank (not replaceable) 10 Micron In Line (replaceable)
Fuel Injector(s)	Bosch
EFI Controller	Bosch MSE 1.1 ECU
Fuel Capacity / Requirement	4.13 gal US / 15.6 ltr 87 Octane (minimum) 89 Oxygenated
Electrical	
Alternator Output	500 w @ 6000 RPM
Lights : Pod	50 watts
Grill	Two x 27 watts
Brake	8.26 watts
Tail	26.9 watts
Ignition System	DC/CDI Ignition
Operating RPM	6000 RPM
Ignition Timing	13° BTDC @ 1200 RPM
Spark plug / Gap	RC7YC/ .035 in. / 0.9 mm
Battery / Model / Amp Hr	Lead Acid / 30 Amp Hr
Circuit Breakers	Fan 20 amp - Harness 20 amp Fuel pump/ECU 15 amp Instrument Cluster / Voltage Regulator 6 amp
Starting	Electric
Instrument Cluster	LCD

Drivetrain	
Transmission Type	Drumshift - H/L/N/Rev/Park
Transmission Capacity	15 oz. / 450m
Rear Gearcase Capacity	5 oz. / 150ml
Front Gearcase Capacity	5 oz. / 150ml
Gear Ratio : Low	7.49:1
Rev	5.11:1
High	2.70:1
Front Drive	3.82:1
Rear Drive	3.10:1
Clutch Type	PVT w/EBS
Belt	3211106
Steering / Suspension	
Front Suspension / Shock	A-arm / MacPherson Strut
Front Travel	6.7 in. / 17.02 cm
Rear Suspension / Shock	Progressive Rate Independent /Two x 2" Coil-over Shock
Rear Travel	9.5 in. / 24.13 cm
Ground Clearance	11.25 in. / 28.6 cm
Shock Preload Adjustment Front / Rear	Front -Non Adjustable. Rear - Ratchet Style- Std.
Turning Radius	76 in. / 193 cm unloaded
Toe Out	0 - 1/16 in / .0 - .159 mm
Wheels / Brakes	
Wheel Size / Pattern - Front	Cast Alum. 26x8-12 / 4-156 (205/80R-12)
Wheel Size / Pattern - Rear	Cast Alum. 26x11-12 / 4-156 (270/60R-12)
Front Tire Size	26x8-12
Rear Tire Size	26x11-12
Recommended Air Pressure F / R	5 psi Front 5 psi Rear
Brake - Front	Dual Hydraulic Disc
Brake - Rear	Dual Hydraulic Disc

CLUTCH CHART EBS Models have no helix/spring adjustment

Altitude		Shift Weight	Drive Spring	Driven Spring	Driven Helix
Meters (Feet)	0-1800 (0-6000)	20-60 (5631689)	Blu/Green (7041157)	3234233	3234234
	1800-3700 (6000-12000)	20-58 (5631216)	Blu/Green (7041157)	3234233	3234234

PUBLICATION NUMBERS

Year	Model	Model No.	Owner's Manual PN	Parts Manual PN	Parts Micro Fiche PN
2005	Sportsman 700 EFI	A05MH68AU	**9919426**	**9919427**	**9919428**
2005	Sportsman 800 EFI	A05MH76AU	**9917720**	**9917721**	**9917722**

*When ordering service parts be sure to use the correct parts manual.

NOTE: Some Polaris factory publications can be found at **www.polarisindustries.com** or purchased from **www.purepolaris.com**.

PAINT CODES

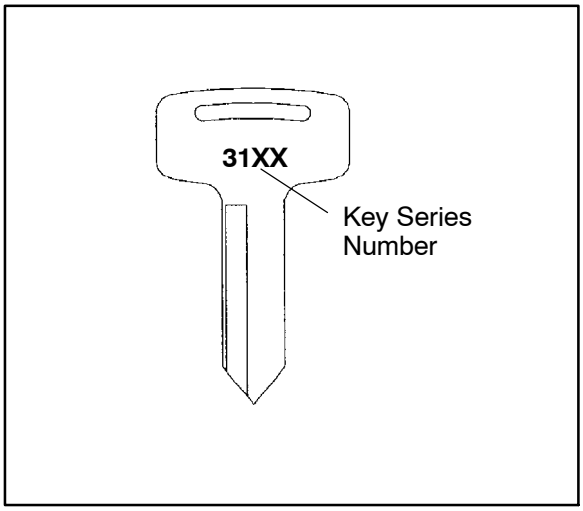
PAINTED PART	COLOR DESCRIPTION	DITZLER NUMBER	POLARIS NUMBER
Frame	Black	9440	P-067

FRAME COLOR - (All) P067 Medium Gloss Black 9440 / 8520147.

Order direct at www.polarisdealers.com (dealers only). Mix as directed.

REPLACEMENT KEYS

Replacement keys can be made from the original key. To identify which series the key is, take the first two digits on the original key and refer to the chart to the right for the proper part number. **Should both keys become lost, ignition switch replacement is required.**



Series #	Part Number
20	**4010278**
21	**4010278**
22	**4010321**
23	**4010321**
27	**4010321**
28	**4010321**
31	**4110141**
32	**4110148**
67	**4010278**
68	**4010278**

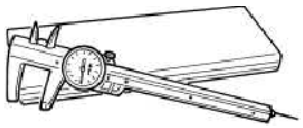
700 ENGINE COLD WEATHER FROST PLUG HEATER

Frost Plug Heater for Sportsman 700/800 – (**PN 2873069**)

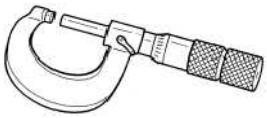
SPECIAL TOOLS

Special Tools maybe required while servicing your machine. Some of the tools listed are mandatory and other tools maybe substituted with a similar tool, if available. Polaris recommends the use of Polaris special tools when servicing any Polaris product.

Standard Tools and Engine Tools



PU-45432 - Caliper or
A Basic Caliper



Basic Micrometer

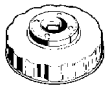
2871043 - Flywheel Puller

2870773 - C-Clip Install Tool

2870386 - Piston Pin Puller

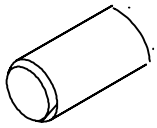
2871445 - Piston Pin Puller Adapter

Standard Tools and Engine Tools



PV-43527 Oil Filter Wrench

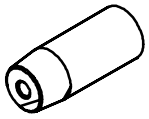
2870390 - Piston Support Block



PA-44995 - Water Pump Mechanical
Seal Install Tool

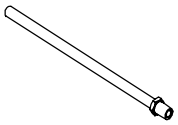
PU-45543 - Universal Driver Handle

PA-45483 - Main Seal Installer



PA-45658 - Main Crank Seal Saver

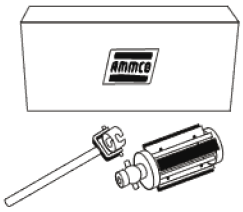
PA-45401 - Water Pump Seal Saver



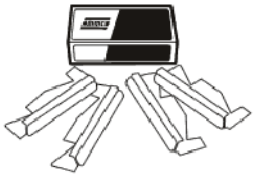
PU-45778 - Oil Pump Priming Tool

SPECIAL TOOLS

Standard Tools and Engine Tools



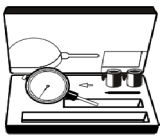
2870303 – Hone Kit



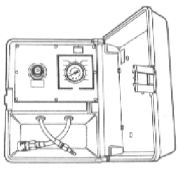
2870305 – Stone Replacement Kit

2870588 – Hone Oil (12 oz.)

2200634 – Valve Seat Reconditioning Kit

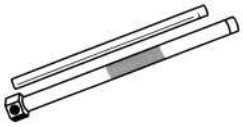


2870459 – Dial Indicator

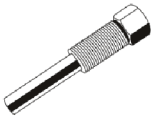


PV-35667-A – Cylinder Leak down Tester

Clutch (PVT) Tools

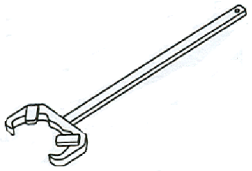


2870506 – Drive Clutch Puller

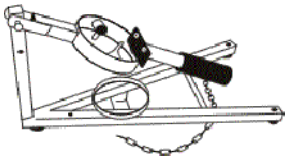


2870913 – Driven Clutch Puller

2872292 – EBS Clutch Align Tool

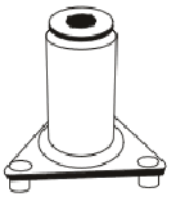


9914177-A – Drive Clutch Holding Tool



8700220 – Clutch Compression Tool

2871358 – Clutch Hold Fixture



2870341 – Drive Clutch Spider Removal Tool

Clutch (PVT) Tools

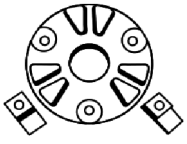
2871025 – Clutch Bushing Replace Tool Kit

2870910 – Roll Pin Tool

2871226 – Clutch Bushing Replacement Kit

2201379 – EBS Bushing Replacement Kit

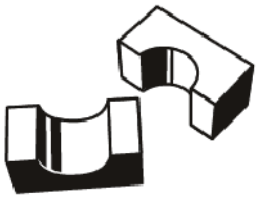
2870338 – Spider Nut Socket



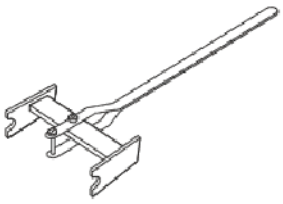
2871358 – Clutch Holding Fixture

Suspension Tools

2870871 – ATV Ball Joint Tool Kit

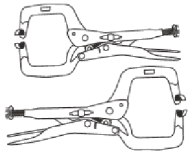


2871071 – Shock Body Holding Tool

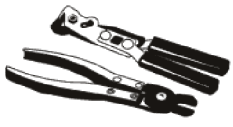


2870623 – Shock Spring Compressor

2871572 – Strut Rod Wrench



2871573 & 2871574 – Strut Spring Compressor



8700225 & 8700226 – CV Boot Clamp Pliers

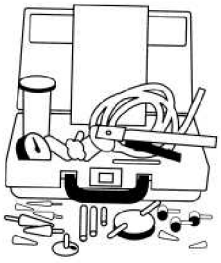
Suspension Tools

2870872 – Shock Spanner Wrench

2872608 – Roll Pin Removal Tool

2871351 – Shock IFP Depth Tool

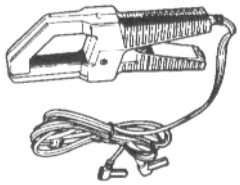
Fuel & Brake Systems



2870975 – Mity Vac

Electrical Tools

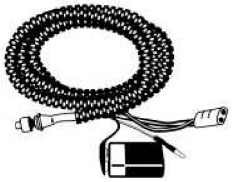
PV-43568 -Fluke 77 Multimeter



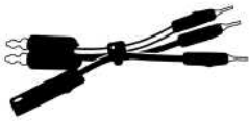
PV-39617 – Current Clamp

Electrical Tools

2870630 – Timing Light

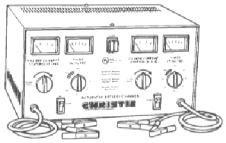


2871745 -Static Timing Light Harness

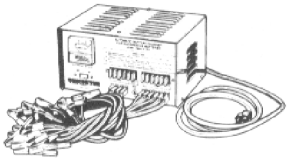


2460761 – Hall Sensor Probe Harness

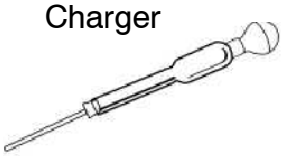
PV-39991 – Peak Reading Adapter



PV-37453 – Christie Se-Sulfating Multi-Battery Charger



PV-63070 – Christie Multi-Battery Charger



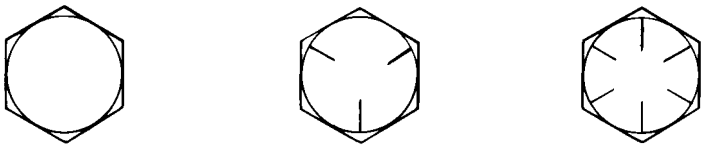
2870836 – Battery Hydrometer

8712500 – Tachometer

PV-39951-A – Tachometer

STANDARD TORQUE SPECIFICATIONS

The following torque specifications are to be used as a general guideline. There are exceptions in the steering, suspension, and engine areas. Always consult the exploded views in each manual section for torque values of fasteners before using standard torque.



Bolt Size	Threads/In	Grade 2	Grade 5	Grade 8
		Torque in. lbs. (Nm)		
#10 -	24	27 (3.1)	43 (5.0)	60 (6.9)
#10 -	32	31 (3.6)	49 (5.6)	68 (7.8)
		Torque ft. lbs. (Nm)*		
1/4 -	20	5 (7)	8 (11)	12 (16)
1/4 -	28	6 (8)	10 (14)	14 (19)
5/16 -	18	11 (15)	17 (23)	25 (35)
5/16 -	24	12 (16)	19 (26)	29 (40)
3/8 -	16	20 (27)	30 (40)	45 (62)
3/8 -	24	23 (32)	35 (48)	50 (69)
7/16 -	14	30 (40)	50 (69)	70 (97)
7/16 -	20	35 (48)	55 (76)	80 (110)
1/2 -	13	50 (69)	75 (104)	110 (152)
1/2 -	20	55 (76)	90 (124)	120 (166)

Metric

6 x 1.0	72-78 In. lbs.
8 x 1.25	14-18 ft. lbs.
10 x 1.25	26-30 ft. lbs.

***To convert ft. lbs. to Nm multiply foot pounds by .1.382**
***To convert Nm to ft. lbs. multiply Nm by .7376.**

SPECIFIC TORQUE VALUES OF FASTENERS
Refer to exploded views in the appropriate section.

CONVERSION TABLE

Unit of Measure	Multiplied by	Converts to
ft. lbs.	x 12	= in. lbs.
in. lbs.	x .0833	= ft. lbs.
ft. lbs.	x 1.356	= Nm
in. lbs.	x .0115	= kg-m
Nm	x .7376	= ft.lbs.
kg-m	x 7.233	= ft. lbs.
kg-m	x 86.796	= in. lbs.
kg-m	x 10	= Nm
in.	x 25.4	=mm
mm	x .03937	= in.
in.	x 2.54	= cm
mile (mi.)	x 1.6	= km
km	x .6214	= mile (mi.)
Ounces (oz)	x 28.35	= Grams (g)
Fluid Ounces (fl. oz.)	x 29.57	= Cubic Centimeters (cc)
Cubic Centimeters (cc)	x .03381	= Fluid Ounces (fl. oz.)
Grams (g)	x 0.035	= Ounces (oz)
lb.	x .454	= kg
kg	x 2.2046	= lb.
Cubic inches (cu in)	x 16.387	= Cubic centimeters (cc)
Cubic centimeters (cc)	x 0.061	= Cubic inches (cu in)
Imperial pints (Imp pt)	x 0.568	= Liters (l)
Liters (l)	x 1.76	= Imperial pints (Imp pt)
Imperial quarts (Imp qt)	x 1.137	= Liters (l)
Liters (l)	x 0.88	= Imperial quarts (Imp qt)
Imperial quarts (Imp qt)	x 1.201	= US quarts (US qt)
US quarts (US qt)	x 0.833	= Imperial quarts (Imp qt)
US quarts (US qt)	x 0.946	= Liters (l)
Liters (l)	x 1.057	= US quarts (US qt)
US gallons (US gal)	x 3.785	=Liters (l)
Liters (l)	x 0.264	= US gallons (US gal)
Pounds - force per square inch (psi)	x 6.895	= Kilopascals (kPa)
Kilopascals (kPa)	x 0.145	= Pounds - force per square inch (psi)
Kilopascals (kPa)	x 0.01	= Kilograms - force per square cm
Kilograms - force per square cm	x 98.1	= Kilopascals (kPa)
π (3.14) x R^2 x H (height)		= Cylinder Volume

°C to °F: 9 (°C + 40) ÷ 5 - 40 = °F
°F to °C: 5 (°F + 40) ÷ 9 - 40 = °C

SAE TAP DRILL SIZES

Thread Size	Drill Size	Thread Size	Drill Size
#0-80	3/64	1/2-13	27/64
#1-64	53	1/2-20	29/64
#1-72	53	9/16-12	31/64
#2-56	51	9/16-18	33/64
#2-64	50	5/8-11	17/32
#3-48	5/64	5/8-18	37/64
#3-56	45	3/4-10	21/32
#4-40	43	3/4-16	11/16
#4-48	42	7/8-9	49/64
#5-40	38	7/8-14	13/16
#5-44	37	1-8	7/8
#6-32	36	1-12	59/64
#6-40	33	1 1/8-7	63/64
#8-32	29	1 1/8-12	1 3/64
#8-36	29	1 1/4-7	1 7/64
#10-24	24	1 1/4-12	1 11/64
#10-32	21	1 1/2-6	1 11/32
#12-24	17	1 1/2-12	1 27/64
#12-28	4.6mm	1 3/4-5	1 9/16
1/4-20	7	1 3/4-12	1 43/64
1/4-28	3	2-4 1/2	1 25/32
5/16-18	F	2-12	1 59/64
5/16-24	I	2 1/4-4 1/2	2 1/32
3/8-16	O	2 1/2-4	2 1/4
3/8-24	Q	2 3/4-4	2 1/2
7/16-14	U	3-4	2 3/4
7/16-20	25/64		

METRIC TAP DRILL SIZES

Tap Size	Drill Size	Decimal Equivalent	Nearest Fraction
3 x .50	#39	0.0995	3/32
3 x .60	3/32	0.0937	3/32
4 x .70	#30	0.1285	1/8
4 x .75	1/8	0.125	1/8
5 x .80	#19	0.166	11/64
5 x .90	#20	0.161	5/32
6 x 1.00	#9	0.196	13/64
7 x 1.00	16/64	0.234	15/64
8 x 1.00	J	0.277	9/32
8 x 1.25	17/64	0.265	17/64
9 x 1.00	5/16	0.3125	5/16
9 x 1.25	5/16	0.3125	5/16
10 x 1.25	11/32	0.3437	11/32
10 x 1.50	R	0.339	11/32
11 x 1.50	3/8	0.375	3/8
12 x 1.50	13/32	0.406	13/32
12 x 1.75	13/32	0.406	13/32

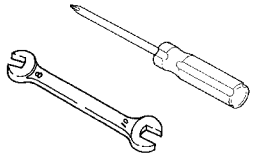
DECIMAL EQUIVALENTS

1/64 0156
1/32 . . . . . .0312 . . . 1 mm = .0394″
3/64 0469
1/16 0625
5/64 . . . . . .0781 . . . 2 mm = .0787″
3/32 0938
7/64 . . . . . .1094 . . . 3 mm = .1181″
1/8. 1250
9/64 1406
5/32 . . . . . .1563 . . . 4 mm = .1575″
11/64 1719
3/16 . . . . . .1875 . . . 5 mm = .1969″
13/64 2031
7/32 2188
15/64 . . . . . .2344 . . . 6 mm = .2362″
1/4 25
17/64 . . . . . .2656 . . . 7 mm = .2756″
9/32 2813
19/64 2969
5/16 . . . . . .3125 . . . 8 mm = .3150″
21/64 3281
11/32 . . . . . .3438 . . . 9 mm = .3543″
23/64 3594
3/8 375
25/64 . . . . . .3906 . . . 10 mm = .3937″
13/32 4063
27/64 . . . . . .4219 . . . 11 mm = .4331″
7/16 4375
29/64 4531
15/32 . . . . . .4688 . . . 12 mm = .4724″
31/64 4844
1/2 . . . . .5 . . . . . 13 mm = .5118
33/64 5156
17/32 5313
35/64 . . . . . .5469 . . . 14 mm = .5512″
9/16 5625
37/64 . . . . . .5781 . . . 15 mm = .5906″
19/32 5938
39/64 6094
5/8 . . . . .625 . . . . . 16 mm = .6299″
41/64 6406
21/32 . . . . . .6563 . . . 17 mm = .6693″
43/64 6719
11/16 6875
45/64 . . . . . .7031 . . . 18 mm = .7087″
23/32 7188
47/64 . . . . . .7344 . . . 19 mm = .7480″
3/4 75
49/64 7656
25/32 . . . . . .7813 . . . 20 mm = .7874″
51/64 7969
13/16 . . . . . .8125 . . . 21 mm = .8268″
53/64 8281
27/32 8438
55/64 . . . . . .8594 . . . 22 mm = .8661″
7/8 875
57/64 . . . . . .8906 . . . 23 mm = .9055″
29/32 9063
59/64 9219
15/16 . . . . . .9375 . . . 24 mm = .9449″
61/64 9531
31/32 . . . . . .9688 . . . 25 mm = .9843
63/64 9844
1 . . . . . 1.0

GLOSSARY OF TERMS

ABDC: After bottom dead center.
ACV: Alternating current voltage.
Alternator: Electrical generator producing voltage alternating current.
ATDC: After top dead center.
BBDC: Before bottom dead center.
BDC: Bottom dead center.
BTDC: Before top dead center.
CC: Cubic centimeters.
Center Distance: Distance between center of crankshaft and center of driven clutch shaft.
Chain Pitch: Distance between chain link pins (No. 35 = 3/8″ or 1 cm). Polaris measures chain length in number of pitches.
Crankshaft Run-Out: Run-out or "bend" of crankshaft measured with a dial indicator while crankshaft is supported between centers on V blocks or resting in crankcase. Measure at various points especially at PTO.
DCV: Direct current voltage.
Electrical Open: Open circuit. An electrical circuit which isn't complete.
Electrical Short: Short circuit. An electrical circuit which is completed before the current reaches the intended load. (i.e. a bare wire touching the chassis).
End Seals: Rubber seals at each end of the crankshaft.
Engagement RPM: Engine RPM at which the drive clutch engages to make contact with the drive belt.
ft.: Foot/feet.
Foot Pound: Ft. lb. A force of one pound at the end of a lever one foot in length, applied in a rotational direction.
g: Gram. Unit of weight in the metric system.
gal.: Gallon.
ID: Inside diameter.
in.: Inch/inches.
Inch Pound: In. lb. 12 in. lbs. = 1 ft. lb.
kg/cm^2 : Kilograms per square centimeter.
kg-m: Kilogram meters.
Kilogram/meter: A force of one kilogram at the end of a lever one meter in length, applied in a rotational direction.
l or ltr: Liter.
Left Side: Always referred to based on normal operating position of the driver.
m: Meter/meters.
Mag: Magneto.
Magnetic Induction: As a conductor (coil) is moved through a magnetic field, a voltage will be generated in the windings. Mechanical energy is converted to electrical energy in the stator.
mi.: Mile/miles.
mm: Millimeter. Unit of length in the metric system. 1mm = approximately .040″.
Nm: Newton meters.
OD: Outside diameter.
Ohm: The unit of electrical resistance opposing current flow.
oz.: Ounce/ounces.
Piston Clearance: Total distance between piston and cylinder wall.
psi.: Pounds per square inch.
PTO: Power take off.
qt.: Quart/quarts.
RPM: Revolutions per minute.
Regulator: Voltage regulator. Regulates battery charging system output at approx. 14.5 DCV as engine RPM increases.
Resistance: In the mechanical sense, friction or load. In the electrical sense, ohms. Both result in energy conversion to heat.
Right Side: Always referred to based on normal operating position of the driver.
RPM: Revolutions per minute.
Seized Piston: Galling of the sides of a piston. Usually there is a transfer of aluminum from the piston onto the cylinder wall. Possible causes: 1) improper lubrication; 2) excessive temperatures; 3) insufficient piston clearance; 4) stuck piston rings.
Stator Plate: The plate mounted under the flywheel supporting the battery charging coils.
TDC: Top dead center. Piston's most outward travel from crankshaft.
Volt: The unit of measure for electrical pressure of electromotive force. Measured by a voltmeter in parallel with the circuit.
Watt: Unit of electrical power. Watts = amperes x volts.
WOT: Wide open throttle.

CHAPTER 2
MAINTENANCE



2

PERIODIC MAINTENANCE CHART

Careful periodic maintenance will help keep your vehicle in the safest, most reliable condition. Inspection, adjustment and lubrication of important components are explained in the periodic maintenance chart.

Inspect, clean, lubricate, adjust and replace parts as necessary. When inspection reveals the need for replacement parts, use genuine Polaris parts available from your Polaris dealer.

NOTE: Service and adjustments are critical. If you're not familiar with safe service and adjustment procedures, have a qualified dealer perform these operations.

Maintenance intervals in the following chart are based upon average riding conditions and an average vehicle speed of approximately 10 miles per hour. Vehicles subjected to severe use must be inspected and serviced more frequently.

Severe Use Definition

- Frequent immersion in mud, water or sand
- Racing or race-style high RPM use
- Prolonged low speed, heavy load operation
- Extended idle
- Short trip cold weather operation

Pay special attention to the oil level. A rise in oil level during cold weather can indicate contaminants collecting in the oil sump or crankcase. Change oil immediately if the oil level begins to rise. Monitor the oil level, and if it continues to rise, discontinue use and determine the cause or see your dealer.

Maintenance Chart Key

The following symbols denote potential items to be aware of during maintenance:

■= **CAUTION: Due to the nature of these adjustments, it is recommended this service be performed by an authorized Polaris dealer.**

▶= **SEVERE USE ITEM --If vehicle is subjected to severe use, decrease interval by 50%**
(Severe Use is defined as frequent vehicle immersion in mud, water or sand, racing or race-style high rpm use, prolonged low speed - heavy load operation or extended idle. More preventative maintenance is required under these conditions. Fluid changes, cable, chain and chassis lubrication are required more frequently. For engine oil, short trip cold weather riding also constitutes severe use. Pay special attention to oil level. A rising oil level in cold weather can indicate contaminants collecting in the oil sump or crankcase. Change oil immediately and monitor level. If oil level begins to rise, discontinue use and determine cause.)

E= Emission Control System Service (California).

NOTE: Inspection may reveal the need for replacement parts. Always use genuine Polaris parts.

WARNING: Improperly performing the procedures marked with a ■ could result in component failure and lead to serious injury or death. Have an authorized Polaris dealer perform these services.

MAINTENANCE AND LUBRICATION

Periodic Maintenance Chart

Item		Maintenance Interval (whichever comes first)			Remarks
		Hours	Calendar	Miles (Km)	
■	Steering	-	Pre-Ride	-	Make adjustments as needed. See Pre-Ride Checklist on Page 1.7.
▶	Front suspension	-	Pre-Ride	-	
▶	Rear suspension	-	Pre-Ride	-	
	Tires	-	Pre-Ride	-	
▶	Brake fluid level	-	Pre-Ride	-	
▶	Brake lever travel	-	Pre-Ride	-	
	Brake systems	-	Pre-Ride	-	
	Wheels/fasteners	-	Pre-Ride	-	
	Frame fasteners	-	Pre-Ride	-	
▶ E	Engine oil level	-	Pre-Ride	-	
▶ E	Air filter, pre-filter	-	Daily	-	Inspect; clean often
▶ E	Air box sediment tube	-	Daily	-	Drain deposits when visible
	Coolant (if applicable)	-	Daily	-	Check level daily, change coolant every 2 years
	Headlamp/tail lamp	-	Daily	-	Check operation; apply dielectric grease if replacing
▶ E	Air filter, main element	-	Weekly	-	Inspect; replace as needed
	Recoil housing (if applicable)	-	Weekly	-	Drain water as needed, check often if operating in wet conditions
▶ ■	Brake pad wear	10 H	Monthly	60 (100)	Inspect periodically
	Battery	20 H	Monthly	125 (200)	Check terminals; clean; test
▶	Front gearcase oil (if equipped)	25 H	Monthly	155 (250)	Inspect level; change yearly
▶	Middle gearcase oil (if equipped)	25 H	Monthly	155 (250)	Inspect level; change yearly
▶	Rear gearcase oil (if equipped)	25 H	Monthly	155 (250)	Inspect level; change yearly
▶	Transmission oil	25 H	Monthly	155 (250)	Inspect level; change yearly

▶ Perform these procedures more often for vehicles subjected to severe use.
E Emission Control System Service (California)
■ Have an authorized Polaris dealer perform these services.

MAINTENANCE AND LUBRICATION

Periodic Maintenance Chart

Item		Maintenance Interval (whichever comes first)			Remarks
		Hours	Calendar	Miles (Km)	
▶ E	Engine breather filter (if equipped)	25 H	Monthly	155 (250)	Inspect; replace if necessary
▶ E	Engine oil change (break-in)	25 H	1 M	155 (250)	Perform a break-in oil change at one month
▶	General lubrication	50 H	3 M	310 (500)	Lubricate all fittings, pivots, cables, etc.
	Shift Linkage	50 H	6 M	310 (500)	Inspect, lubricate, adjust
■	Steering	50 H	6 M	310 (500)	Lubricate
▶	Front suspension	50 H	6 M	310 (500)	Lubricate
▶	Rear suspension	50 H	6 M	310 (500)	Lubricate
■ E	Throttle Cable/ ETC Switch	50 H	6 M	310 (500)	Inspect; adjust; lubricate; replace if necessary
E	Air intake ducts/ flange	50 H	6 M	310 (500)	Inspect ducts for proper sealing/air leaks
	Drive belt	50 H	6 M	310 (500)	Inspect; adjust; replace as needed
	Cooling system (if applicable)	50 H	6 M	310 (500)	Inspect coolant strength seasonally; pressure test system yearly
▶ E	Engine oil change	100 H	6 M	620 (1000)	Perform a break-in oil change at 25 hours/one month
▶ E	Oil filter change	100 H	6 M	620 (1000)	Replace with oil change
▶ E	Oil tank vent hose	100 H	12 M	620 (1000)	Inspect routing, condition
■ E	Valve clearance	100 H	12 M	620 (1000)	Inspect;

▶ Perform these procedures more often for vehicles subjected to severe use.
E Emission Control System Service (California)
■ Have an authorized Polaris dealer perform these services.

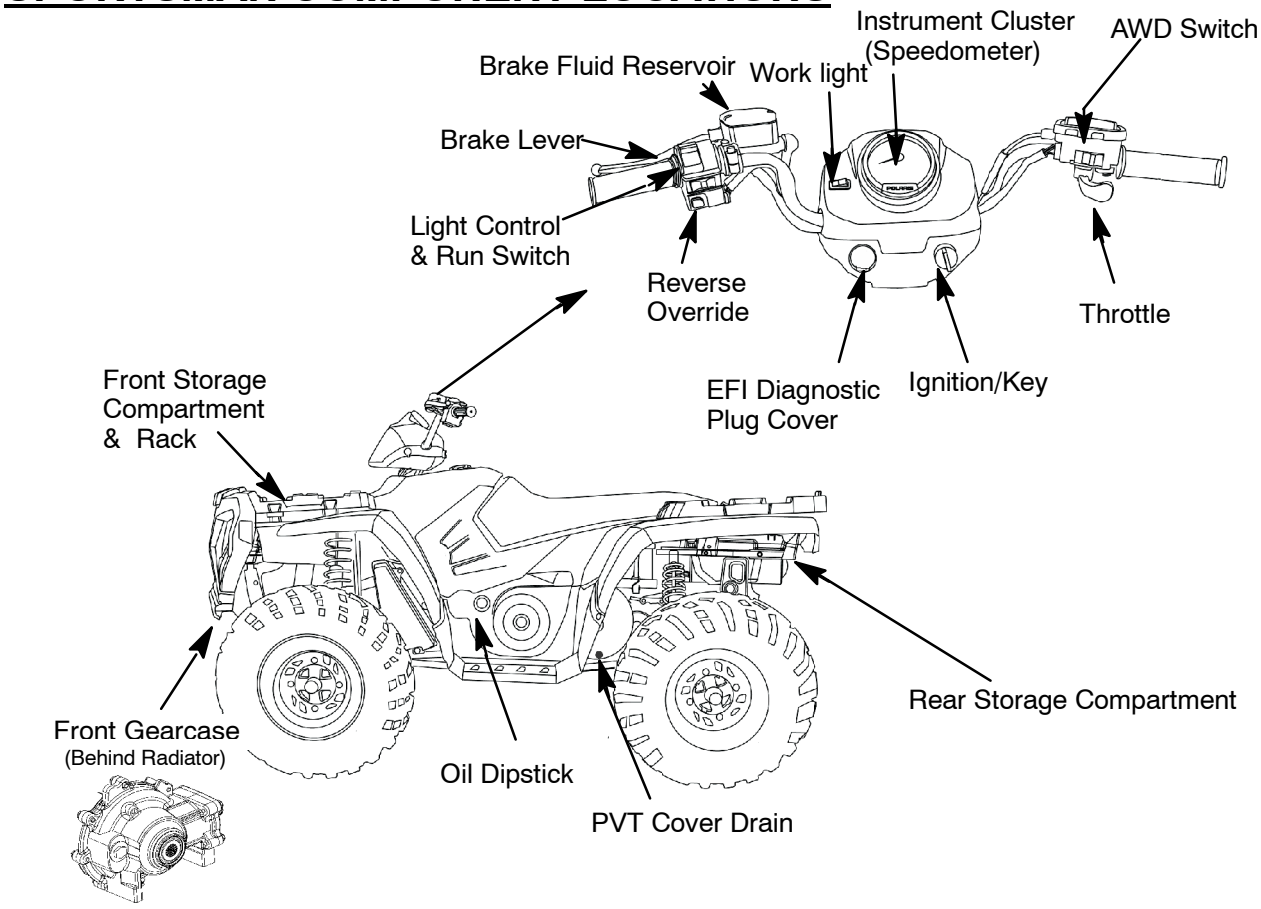
MAINTENANCE AND LUBRICATION

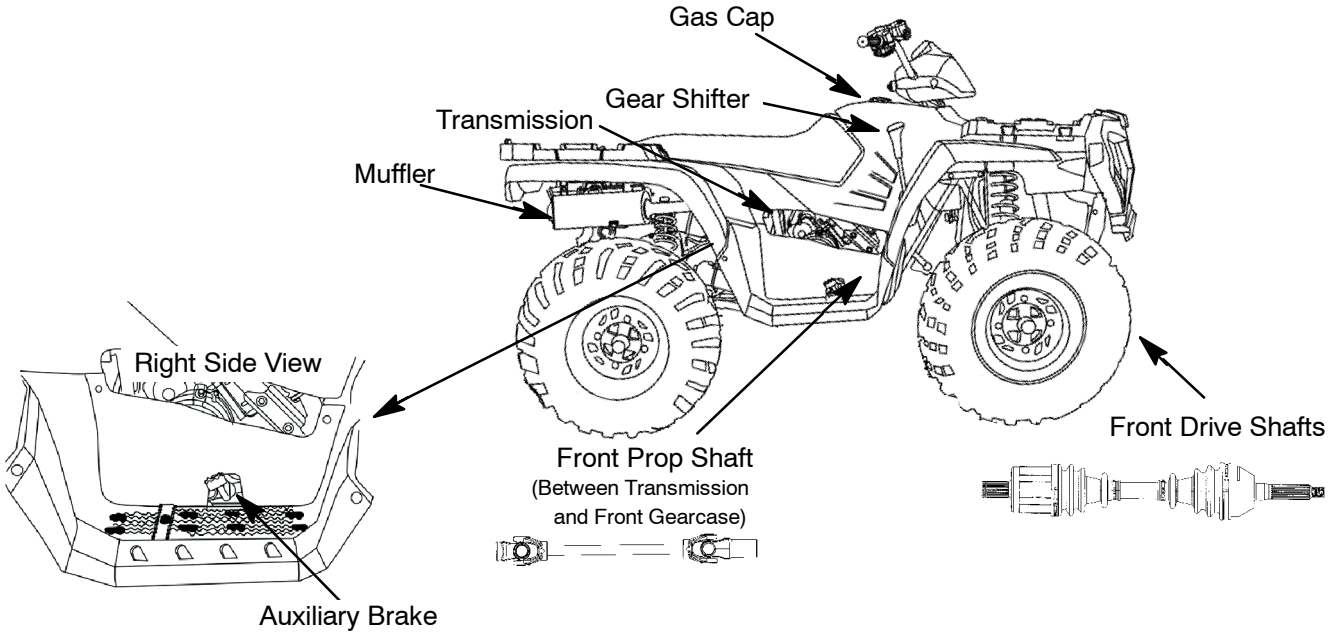
Periodic Maintenance Chart

	Item	Maintenance Interval (whichever comes first)			Remarks
		Hours	Calendar	Miles (Km)	
■ E	Fuel system	100 H	12 M	620 (1000)	Check for leaks at tank cap, lines, fuel pump, filter, pump, injectors; replace lines every two years
■ E	Fuel filter	100 H	12 M	620 (1000)	Replace yearly
▶	Radiator (if applicable)	100 H	12 M	620 (1000)	Inspect; clean external surfaces
▶	Cooling hoses (if applicable)	100 H	12 M	620 (1000)	Inspect for leaks
▶	Engine mounts	100 H	12 M	620 (1000)	Inspect
	Exhaust muffler/ pipe	100 H	12 M	620 (1000)	Inspect
■ E	Spark plug	100 H	12 M	620 (1000)	Inspect; replace as needed
■ E	Ignition Timing	100 H	12 M	620 (1000)	Inspect
▶	Wiring	100 H	12 M	620 (1000)	Inspect for wear, routing, security; apply dielectric grease to connectors subjected to water, mud, etc.
■	Clutches (drive and driven)	100 H	12 M	620 (1000)	Inspect; clean; replace worn parts
■	Front wheel bearings	100 H	12 M	1000 (1600)	Inspect; replace as needed
■	Brake fluid	200 H	24 M	1240 (2000)	Change every two years
	Spark arrestor	300 H	36 M	1860 (3000)	Clean out
E	Idle speed	-			Adjust as needed
■	Toe adjustment	-			Inspect periodically; adjust when parts are replaced
▶ ■	Auxiliary brake	-			Inspect daily; adjust as needed
	Headlight aim	-			Adjust as needed

▶ Perform these procedures more often for vehicles subjected to severe use.
E Emission Control System Service (California)
■ Have an authorized Polaris dealer perform these services.

SPORTSMAN COMPONENT LOCATIONS





POLARIS LUBRICANTS/FLUIDS FOR SPORTSMAN MODELS

Pure Polaris Lubricants and Maintenance Kits can be purchased at your local Polaris dealer.

Premium Fuel Stabilizer

- Significantly reduces gum and varnish formation
- Formulated for 2-cycle and 4-cycle Polaris engines

2870652 16 oz.
12 per case

2872280 2.5 gallon
2 per case

Premium Antifreeze

- Formulated specifically for Polaris ATV high-performance cooling systems
- Protects against corrosion, gel formation and hard water deposits

2871534 Quart

2871323 Gallon

Demand Drive Hub Fluid

- Ensures positive engagement, release and corrosion protection of Polaris ATV Demand Drive Hubs

2871654 8 oz. Bottle
12 per case

2872277 2.5 Gallon
2 per case

Premium-4 Synthetic 4 Cycle Oil (0W-40)

- Extremely shear-stable for extended lubricant life at high RPM
- Durable additives keep engine components clean and running efficiently
- Excellent high temperature operation protection
- Protects during cold temperature start-up

2871281 Quart 12 per case

2871844 Gallon 4 per case

2871567 16 Gallon

2871818 55 Gallon

ATV ANGLE DRIVE FLUID

- Extreme pressure, anti-wear, high-viscosity film lubrication for maximum protection of Polaris ATV gear drive

2871653 8 oz. Bottle
12 per case

2872276 2.5 Gallon
2 per case

Engine Storage Kit

- This kit includes everything you need for proper off-season storage of your ATV:
  - 12 oz. of Polaris Rust Preventative Fogging Oil (aerosol)
  - 12 oz. of Polaris Fuel Stabilizer
  - 12 oz. of Polaris Multi-Purpose Lubricant (aerosol)
  - 3 oz. of All Season Grease

2859064

2859066 – Sportsman 600/700 Maintenance Kit

- Oil Filter & 2 Qts. of 0W-40 oil
- Drive Belt
- PVT Cover Seal
- Spark Plug
- Instruction Sheet

2202166 – Sportsman 600/700 Oil Change Kit

- Oil Filter & 2 Qts. of 0W-40 oil
- Instruction Sheet

Carbon Clean Fuel Treatment

- Patented additive displaces moisture
- Excellent fuel stabilizer for storage
- Formulated for 2-cycle and 4-cycle Polaris engines
- 1 ounce treats 1 gallon of fuel

2871326 12 oz.
12 per case

Revival Detailing Kit

- Includes: Restore Swirl and Scuff Eliminator, Reflect Professional Final Finish Wax, Renew Vinyl and Rubber Protectant, foam applicator and buffing cloth
- Products also available separately

2872195 Revival/Detailing Kit

2872192 **Restore**
Swirl and Scuff Eliminator **12 oz.**

2872193 **Reflect**
Professional Final Wax System **12 oz.**

2872194 **Renew**
Vinyl and Rubber Protectant **12 oz.**

ATV Maintenance Kit

- This kit includes everything you need to change your drive train fluids and keep your fuel system clean:
  - Quart of AGL Oil
  - 12 oz. of Carbon Clean
  - 8 oz. of Angle Drive Fluid
  - 8 oz. of Demand Drive Hub Fluid
  - 3 oz. of All Season Grease

2859062

Grease Gun Kit

- All steel construction
- Custom hose and fittings
- Includes 3 oz. all-season grease cartridge
- Complete with standard zerk fitting, needle zerk fitting and flush nipple fitting adapters

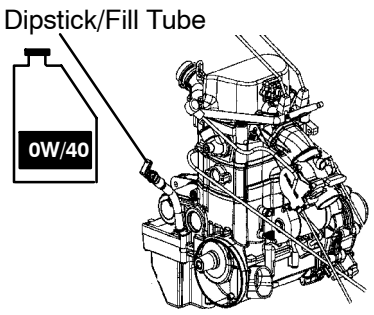
2871312 4 per case

SPECIAL TOOLS

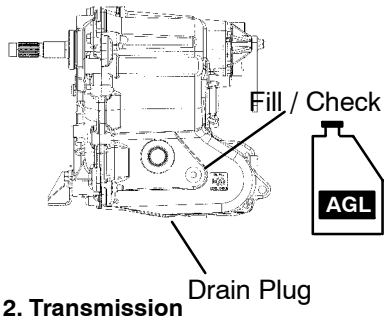
PART NUMBER	TOOL DESCRIPTION	CHAPTER TOOL USED IN
PV-43527	Oil Filter Wrench	2,3
2870872	Shock Spanner Wrench	2, 5
8712100 or 8712500	Tachometer	2,10
2200634	Valve Seat Reconditioning Kit	3
PU-45257	Valve Spring Compressor	3
PU-45652	Valve Pressure Hose	3
2871043	Flywheel Puller	3
2870390	Piston Support Block	3
PU-45497-2	Cam Gear Tooth Alignment Tool	3
PU-45497-1	Cam Gear Spring Installation Kit (3 Tapered Pins)	3
PU-45498	Cam Spanner Wrench	3
PU-45838	Gear Holder	3
PA-44995	Water Pump Mechanical Seal Installer	3
PU-45543	Universal Drive Handle	3
PU-45483	Main Seal Installer	3
PU-45658	Main Crankshaft Seal Saver	3
PA-45401	Water Pump Seal Saver	3
PU-45778	Oil System Priming Tool	3
2870975	Mity Vac™ Pressure Test Tool	3, 9
PU-43506	Fuel Pressure Test Kit	4
PU-47082	Throttle Position Sensor Tester	4
2870871	Ball Joint Replacement Tool	5
2870623	Shock Absorber Spring Compression Tool	5
2871572	Strut Rod Wrench	5
2871573	LH Strut Spring Compressor	5
2871574	RH Strut Spring Compressor	5
2870506	Clutch Puller	6
9314177	Clutch Holding Wrench	6
2871358	Clutch Holding Fixture	6
2870341	Drive Clutch Spider Removal and Install Tool	6
2870913	Driven Clutch Puller	6
2870910	Roller Pin Tool	6
2871226	Clutch Bushing Replacement Tool Kit	6
2870386	Piston Pin Puller	6
2872292	EBS Clutch Alignment Tool	6
PU-47086 and 8700220	Clutch Compression Tool	6
2871025	Clutch Bushing Replacement Tool Kit	6
2872608	Roller Pin Removal Tool	7
8700226	CV Boot Clamp Pliers	7
PV-43568	Fluke™ 77 Digital Multimeter	10
2870630	Timing Light	10
2870836	Battery Hydrometer	10

*Special Tools Can be ordered through SPX Corporation (www.polaris.spx.com)

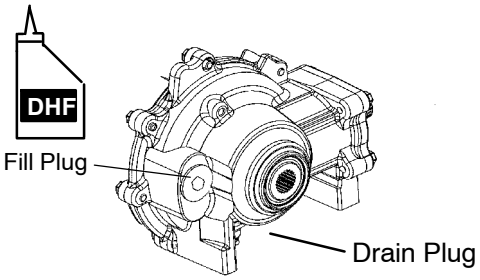
LUBRICATION



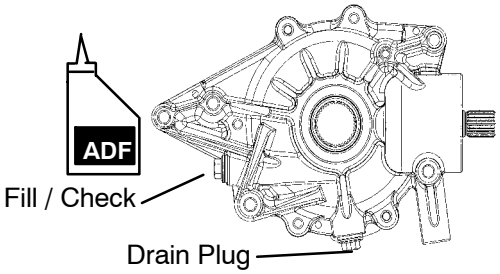
1. Engine Oil



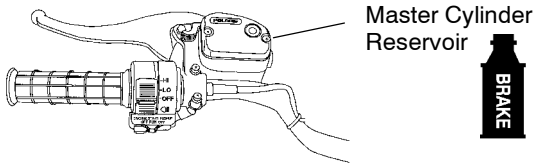
2. Transmission



3. Front Gear Case Fill Plug



4. Rear Gear Case Fill Plug



5. Brake Fluid (Left hand Master Cylinder)

* More often under severe use, such as operated in water or under severe loads.

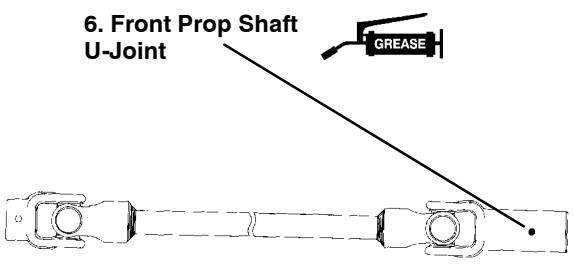
[1] Semi-annually or 50 hours of operation (refer to Maintenance Schedule for additional information) More often under severe conditions (operating in water or hauling heavy loads)

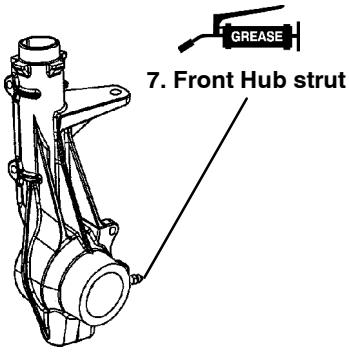
[2] Annually or 100 hours of operation (refer to Maintenance Schedule for additional information) More often under severe conditions (operating in water or hauling heavy loads)

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

Ill. #	Item	Lube Rec.	Method	Frequency*
1.	Engine Oil	Polaris 0W-40 Synthetic	Check dipstick and add 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 AGL Gearcase Lubricant	Add lube to bottom of fill hole.	Change annually [2]
3.	Front Gear Case	Premium Demand Drive Hub Fluid	Drain completely. Add lube to specified quantity.	Change annually [2]
4.	Rear Gear Case	ATV Angle Drive Fluid	Drain completely. Add lube to specified quantity.	Change annually [2]
5.	Brake Fluid	Polaris Dot 3 Brake Fluid	Fill master cylinder reservoir to indicated level inside reservoir.	As required. Change fluid every 2 years

LUBRICATION, CONT.





Front Hubstrut (All Models)

Ill. #	Item	Lube Rec.	Method	Frequency*
6.	Front Prop Shaft	Polaris U-Joint Grease [3]	Locate grease fitting and grease with grease gun.	Semi-annually [1]
7.	Front Hub strut	Polaris All Season Grease [3]	Locate fitting and grease	Semi-annually [1]

* More often under severe use, such as operated in water or under severe loads.

[1] Semi-annually or 50 hours of operation (refer to Maintenance Schedule for additional information)
More often under severe conditions (operating in water or hauling heavy loads)

[2] Annually or 100 hours of operation (refer to Maintenance Schedule for additional information)
More often under severe conditions (operating in water or hauling heavy loads)

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

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 and in PARK.
- Check vent hose to be sure it is routed properly and unobstructed.
- The correct front gearcase lubricant to use is Polaris Premium Demand Hub Fluid.

FRONT GEARCASE SPECIFICATIONS

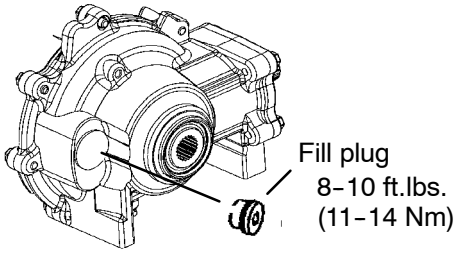
Specified Lubricant:
Premium Demand Drive Hub Fluid
(**PN 2871654**)
*Capacity: . . . . . .*5.0 Oz. (150 ml.)

Fill Plug Torque: 8-10 ft.lbs. (11-14 Nm)

Drain Plug Torque: 11 ft. lbs. (15 Nm)

FRONT GEARCASE

Make sure vent is unobstructed

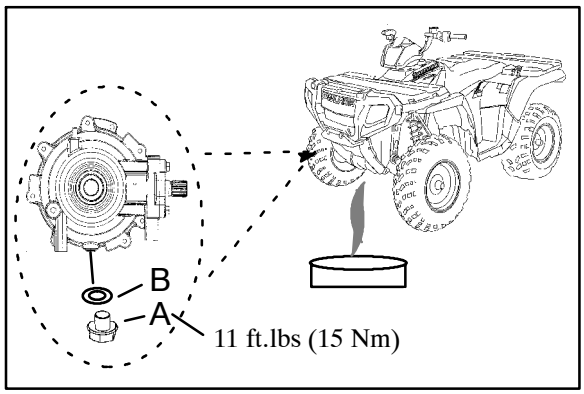


ILL. 1

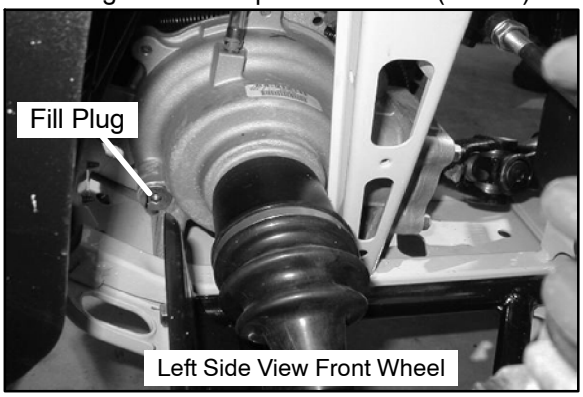
To check the lubricant level:

The front and rear gearcase lubricant level *cannot be checked* with a dipstick. The gearcase must be drained and re-filled with the proper amount of lubricant or be filled to the bottom of the fill plug hole threads. Refer to procedures.

To change gearcase lubricant:

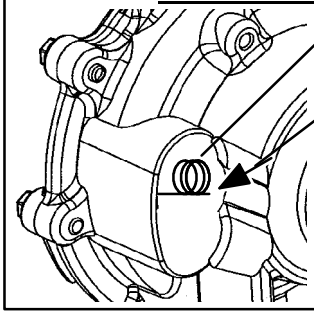


1. Remove gearcase drain plug (A) (11 mm) located on the bottom of the gearcase and drain oil. (The drain plug is accessible through the skid plate.) Catch and discard used oil properly.
2. Clean and reinstall drain plug (A) using a new sealing washer Toque to 11 ft.lbs. (15 Nm).



3. Remove fill plug (8 mm hex). Check the O-ring.
4. Fill with the recommended fluid amount (5 oz.) or to the bottom of the fill plug hole threads. (See ILL. 3).

Front Gearcase



ILL. 3

5. Install / torque fill plug and check for leaks.

REAR GEARCASE LUBRICATION

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

- Be sure vehicle is level and in Park before proceeding.
- Check vent hose to be sure it is routed properly and unobstructed.
- The correct rear gearcase lubricant to use is Polaris ATV Angle Drive Fluid.

REAR GEARCASE SPECIFICATIONS

Specified Lubricant:
ATV Angle Drive Fluid **(PN 2871653)**

Capacity: 5 Oz. (150 ml.)

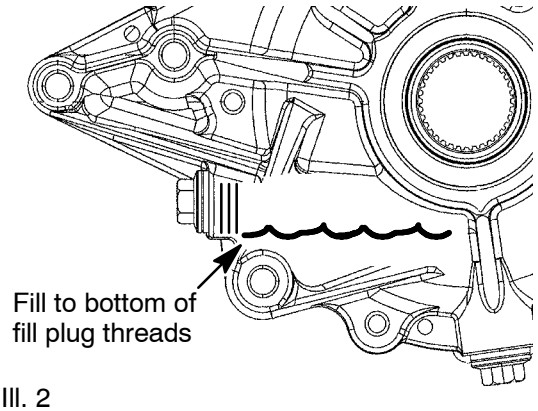
Drain Plug / Fill Plug Torque:

14 ft. lbs. (19.4 Nm)

To Check Lubricant Level:

Place the ATV on a level surface and in Park. The rear gearcase fluid level should be level with the bottom of the fill plug threads. Refer to the bottom illustration 2.

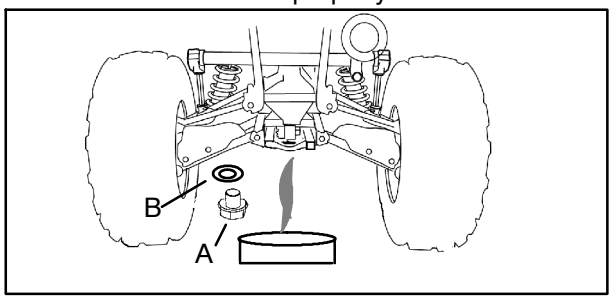
REAR GEARCASE



Ill. 2

To Change Lubricant:

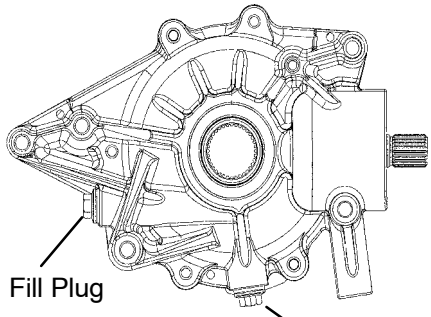
1. Remove gearcase drain plug located on the bottom of the gearcase and drain oil. (The drain plug is accessible through the skid plate.) Catch and discard used oil properly.



2. Clean and reinstall drain plug (A) using a new sealing washer (B).
3. Remove fill plug (C).
4. Fill with the recommended fluid amount or fill to the bottom of the fill plug hole threads.
5. Install fill plug and check for leaks.

REAR GEARCASE

Make sure vent is unobstructed



ILL. 1