

GENERAL INFORMATION

MODEL INFORMATION 1.2

- MODEL IDENTIFICATION 1.2
- ENGINE DESIGNATION NUMBERS 1.2
- VIN IDENTIFICATION 1.2
- ENGINE SERIAL NUMBER LOCATION 1.2
- VEHICLE IDENTIFICATION NUMBER LOCATION 1.2

GENERAL SPECIFICATIONS 1.3

- MODEL: 2011 PREDATOR 50 1.3
- MODEL: 2011 OUTLAW 90 1.3
- MODEL: 2011 SPORTSMAN 90 1.3
- MODEL: 2011 PREDATOR 50 1.4
- MODEL: 2011 OUTLAW / SPORTSMAN 90 1.5

MISCELLANEOUS INFORMATION 1.6

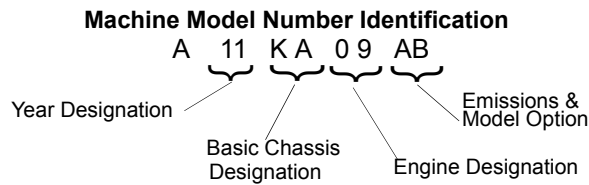
- PUBLICATION NUMBERS 1.6
- PAINT CODES 1.6
- REPLACEMENT KEYS 1.6
- SPECIAL TOOLS - WHERE USED 1.7
- STANDARD TORQUE SPECIFICATIONS 1.8
- CONVERSION TABLE 1.9
- SAE TAP DRILL SIZES 1.10
- METRIC TAP DRILL SIZES 1.10
- DECIMAL EQUIVALENTS 1.10
- GLOSSARY OF TERMS 1.11

GENERAL INFORMATION

MODEL INFORMATION

Model Identification

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

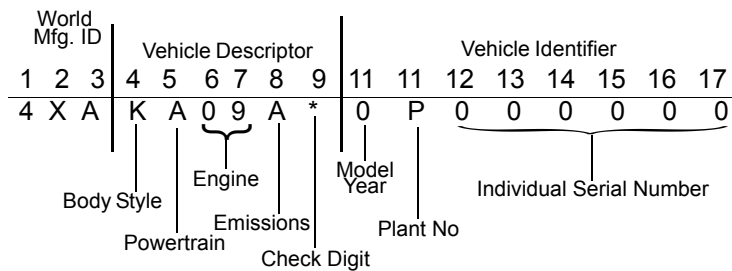


Engine Designation Numbers

50cc Model: M10A - Single Cylinder, Air Cooled, SOHC, 4-Stroke, Electric Start

90cc Model: H18S - Single Cylinder, Air Cooled, SOHC, 4-Stroke, Electric Start

VIN Identification



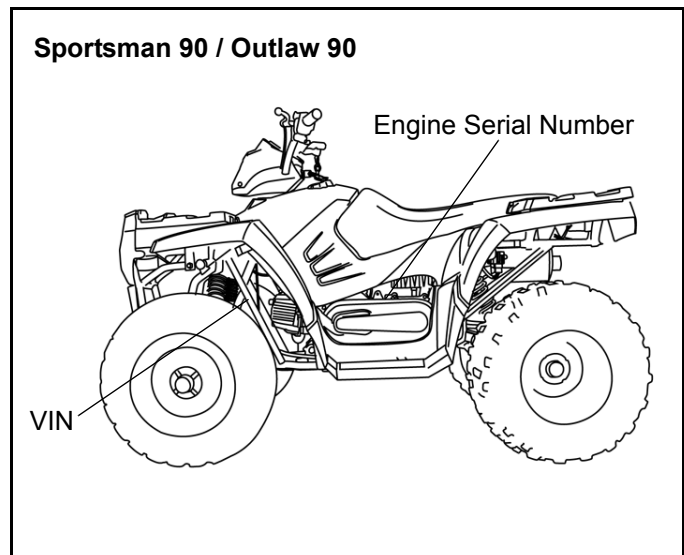
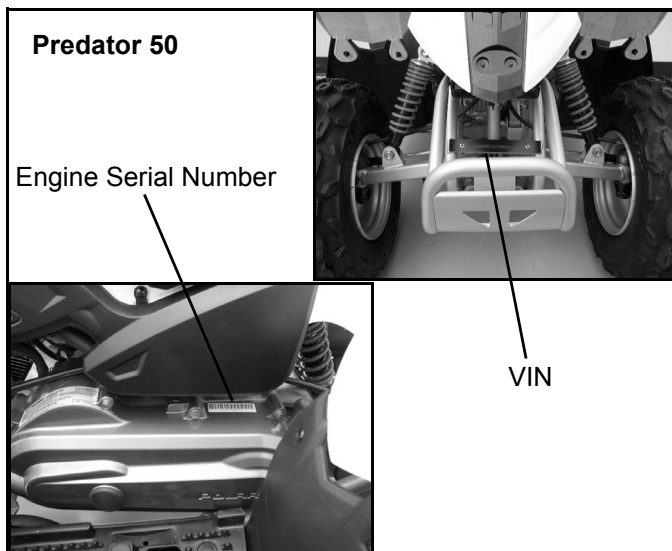
* This could be either a number or a letter

Engine Serial Number Location

Whenever corresponding about an engine, be sure to refer to the engine serial number. This information can be found stamped on the top LH side of the crankcase as shown below.

Vehicle Identification Number Location

The vehicle identification number (VIN) and engine serial number are important for identification purposes. See the illustrations below as a location reference.



GENERAL SPECIFICATIONS

MODEL.....2011 PREDATOR 50
MODEL NUMBER.....A11KA05AB, AD
ENGINE MODEL.....M10A

Category	Dimension
Length	48 in. / 122 cm
Width	31.5 in. / 80 cm
Height	28 in. / 71 cm
Wheel Base	33 in. / 84 cm
Ground Clearance	4 in. / 10 cm at Swing Arm
Rider Capacity / Max. Weight	1 rider / 90 lbs. / 41 kg
Dry Weight	185 lbs. / 84 kg
Oil Capacity	30 oz. / 900 ml
Fuel Capacity	1.2 gal / 4.5L



MODEL.....2011 OUTLAW 90
MODEL NUMBER.....A11KA09AB, AD
ENGINE MODEL.....H18S

Category	Dimension
Length	61.25 in. / 156 cm
Width	36.75 in. / 93 cm
Height	38.5 in. / 98 cm
Wheel Base	41.5 in. / 105 cm
Ground Clearance	4 in. / 10 cm at Swing Arm
Rider Capacity / Max. Weight	1 rider / 170 lbs. / 77 kg
Dry Weight	283 lbs. / 128 kg
Oil Capacity	30 oz. / 900 ml
Fuel Capacity	1.7 gal. / 6.4 L



MODEL.....2011 SPORTSMAN 90
MODEL NUMBER.....A11FA09AA
ENGINE MODEL.....H18S

Category	Dimension
Length	61.75 in. / 157 cm
Width	36.75 in. / 93 cm
Height	38.5 in. / 98 cm
Wheel Base	41.5 in. / 105 cm
Ground Clearance	4 in. / 10 cm at Swing Arm
Rider Capacity / Max. Weight	1 rider / 170 lbs. / 77 kg
Dry Weight	305 lbs. / 138 kg
Oil Capacity	30 oz. / 900 ml
Fuel Capacity	2 gal. / 7.7 L
Front Rack Capacity	15 lbs. / 6.8 kg
Rear Rack Capacity	30 lbs. / 13.6 kg



GENERAL INFORMATION

MODEL: 2011 PREDATOR 50

MODEL #: A11KA05AB, AD

ENGINE MODEL: M10A

Engine	
Platform	Aeon SOHC 4-Stroke
Engine Displacement	49.5cc
Number of Cylinders	1
Bore & Stroke (mm)	39 x 41.4 mm
Compression Ratio	9.2:1
Compression Pressure	115-155 psi
Engine Idle Speed	1500 ± 100 RPM
Cooling System	Air Cooled
Overheat Warning	n/a
Lubrication	Oil Pump Pressurized Wet Sump
Oil Requirements	Polaris SAE 40 (Above 32°F) Polaris 20W-40 (Below 32°F) 30 oz. (900 ml)
Exhaust System	USFS Approved
Carburetion	
Carburetor Model	Mikuni VM12H
Main Jet	62
Pilot Jet	12.5
Jet Needle	3X6-4
Needle Jet	n/a
Throttle Valve Cutaway	n/a
Inlet Valve Seat Size	1.2
Pilot / Air Screw	2.5 Turns Out (Initial setting, varies by ATV)
Float Height	Parallel To Float Bowl
Fuel Delivery	Gravity Feed System
Fuel Capacity	1.2 gal. (4.5 L)
Fuel Reserve Capacity	0.22 gal. (0.85 L)
Electrical	
Alternator Output	56 Watts @ 1700 RPM
Voltage Regulator	Single Phase / Full Wave
Daytime Running Lights	15 Watts
Brake Light	21 watts
Tail Light	5 watts
Ignition System	CDI Ignition
Ignition Timing	17.5° BTDC @ 1700 RPM
Spark plug / Gap	NGK CR6HSA .024 - .028 in./ .6-.7 mm
Battery / Model / Amp Hr	Low Maintenance / 12V / 5 AH
Fuses	(1) 7 Amp
Starting	Electric / Kick Start Backup
Indicator Panel	n/a

Drivetrain	
Transmission Type	Forward Gear Only
Transmission Lubricant Capacity	11.8 oz. (350 ml) or to bottom of fill hole threads
Drive Type	Chain
Clutch Type	Automatic CVT
Drive Belt	0453455
Steering / Suspension	
Front Suspension Style	Single Control Arm / Non-Adjust Shocks
Front Travel	3 in. / 7.6 cm
Rear Suspension Style	Mono Shock Swingarm / Cam Adjust Shock
Rear Travel	3 in. / 7.6 cm
Ground Clearance	4 in. / 10 cm
Shock Preload Adjustment	Rear - Cam Adjust
Toe Out	1/8 in. - 1/4 in / 3 - 6 mm
Wheels / Brakes	
Tire Size / Bolt Pattern - Front	16 x 6.5 - 7 / 4-110
Tire Size / Bolt Pattern - Rear	16 x 8 - 7 / 4-110
Air Pressure - F/R Tires	2 psi (13.8 KPa)
Brakes - Front / Rear	Drum
Parking Brake	Mechanical Lock

MODEL: 2011 OUTLAW / SPORTSMAN 90

OUTLAW MODEL #: A11KA09AB, AD

SPORTSMAN MODEL #: A11FA09AA

ENGINE MODEL: H18S

Engine	
Platform	Aeon SOHC 4-Stroke
Engine Displacement	89.9cc
Number of Cylinders	1
Bore & Stroke (mm)	47 x 51.8 mm
Compression Ratio	9.2:1
Compression Pressure	115-155 psi
Engine Idle Speed	1700 ± 100 Rpm
Cooling System	Air Cooled
Overheat Warning	n/a
Lubrication	Oil Pump Pressurized Wet Sump
Oil Requirements	Polaris SAE 40 (Above 32°F) Polaris 20W-40 (Below 32°F) 30 oz. (900 ml)
Exhaust System	USFS Approved
Carburetion	
Carburetor model	Keihin PTE16
Main Jet	82
Pilot Jet	40
Jet Needle	89Q - 3 clip
Needle Jet	11
Throttle Valve Cutaway	3.0 SA
Pilot / Air Screw	2.25 ± .5 Turns Out (Initial setting, varies by ATV)
Float Height	Parallel To Float Bowl
Fuel Delivery	Gravity Feed System
Fuel Capacity	1.7 gal. (6.4 L) - Outlaw 90 2 gal. (7.7 L) - Sportsman 90
Fuel Reserve Capacity	0.23 gal. (0.86 L) - Outlaw 90 0.22 gal. (0.85 L) - Sportsman 90
Electrical	
Alternator Output	56 Watts @ 1700 RPM
Voltage Regulator	Single Phase / Full Wave
Daytime Running Lights	15 Watts
Brake Light	21 watts
Tail Light	5 watts
Ignition System	CDI Ignition
Ignition Timing	17.5° BTDC @ 1700 RPM
Spark plug / Gap	NGK CR6HSA .024 - .028 in./ .6-.7 mm
Battery / Model / Amp Hr	Low Maintenance / 12V / 5 AH
Fuses	(1) 7 Amp
Starting	Electric / Kick Start Backup
Indicator Panel	Neutral / Reverse

Drivetrain	
Transmission Type	Integrated F/N/R
Transmission Lubricant Capacity	11.8 oz. (350 ml) or to bottom of fill hole threads
Drive Type	Chain
Clutch Type	Automatic CVT
Drive Belt	0453455
Steering / Suspension	
Front Suspension Style	Single A-arm / Cam Adjust Shocks
Front Travel	5 in. / 12.7 cm
Rear Suspension Style	Mono Shock Swingarm / Cam Adjust Shock
Rear Travel	6 in. / 15.2 cm
Ground Clearance	4 in. / 10 cm
Shock Preload Adjustment	Front - Cam Adjust Rear - Cam Adjust
Toe Out	1/8 in. - 1/4 in / 3 - 6 mm
Wheels / Brakes	
Tire Size / Bolt Pattern - Front	19 x 7 - 8 / 4-110
Tire Size / Bolt Pattern - Rear	18 x 9.5 - 8 / 4-110
Air Pressure - F/R Tires	3 psi (20.7 KPa)
Brakes - Front / Rear	Drum
Parking Brake	Mechanical Lock

GENERAL INFORMATION

MISCELLANEOUS INFORMATION

Publication Numbers

Year	Model	Model No.	Owner's Manual PN	Parts Manual PN
2011	Predator 50	A11KA05AB, AD	9921811	9921812
2011	Outlaw 90	A11KA09AB, AD	9921796	9921815
2011	Sportsman 90	A11FA09AA, AB	9921796	9921797

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

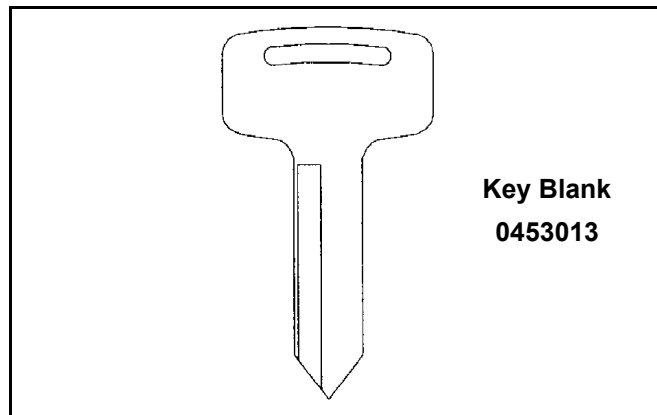
NOTE: Some manuals can be found at the Polaris website: www.polarisindustries.com or purchased from www.purepolaris.com.

Paint Codes

Painted Part	Color Description	Polaris Number
Frame / Swing Arm	Medium Gloss Black	P-067
Frame / Swing Arm	Cloud Silver	P-385

Replacement Keys

Replacement keys can be made from the original key. Polaris offers replacement key blanks (0453013) that can be cut to match the original. Should both keys become lost, ignition switch replacement is required.



Special Tools - Where Used

Special Tools may be required to service this ATV. Some of the tools listed are mandatory, while other tools may be substituted with a similar tool, if available. Polaris recommends the use of Polaris Special Tools when servicing any Polaris product.

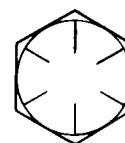
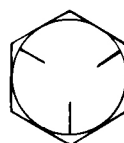
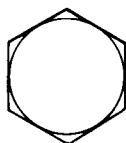
PART NUMBER	TOOL DESCRIPTION	CHAPTER TOOL USED IN
2870872	Shock Spanner Wrench	2, 5
PV-39951-A	Tachometer	2, 8
PV-35667-A	Cylinder Leakdown Tester	2, 3
2870390	Piston Support Block	3
PA-45153	Flywheel Puller	3
PA-46502	Valve Spring Compressor	3
PA-48701	Adaptor, Valve Spring Compressor	3
PV-26900-8	26 Blade Thickness Gauge (Feeler Gauge)	3
PA-47361	Carburetor Adjustment Screwdriver	4
2870975	Mity Vac™ Pressure Test Tool	4
2870623	Shock Absorber Spring Compression Tool	5
PV-63070	Christie Multi-Battery Charger	8
2870630	Timing Light	8
2870836	Battery Hydrometer	8
PV-43568	Fluke™73 Digital Multimeter	8
PV-39991	Peak Reading Adaptor	8

NOTE: Polaris dealers can order the tools listed above through the SPX Service Tools catalog or by calling SPX @ 1-800-328-6657.

GENERAL INFORMATION

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 .1382

*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)
$p(3.14) \times R^2 \times H$ (height)		= Cylinder Volume

$$^{\circ}\text{C to }^{\circ}\text{F: } \frac{9}{5} (^{\circ}\text{C} + 32) = ^{\circ}\text{F}$$

$$^{\circ}\text{F to }^{\circ}\text{C: } \frac{5}{9} (^{\circ}\text{F} - 32) = ^{\circ}\text{C}$$

GENERAL INFORMATION

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		

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	

Metric Tap Drill Sizes

Tap Size	Drill Size	Decimal Equivalent	Nearest Fraction
3x.50	#39	0.0995	3/32
3x.60	3/32	0.0937	3/32
4x.70	#30	0.1285	1/8
4x.75	1/8	0.125	1/8
5x.80	#19	0.166	11/64
5x.90	#20	0.161	5/32
6x1.00	#9	0.196	13/64
7x1.00	16/64	0.234	15/64
8x1.00	J	0.277	9/32
8x1.25	17/64	0.265	17/64
9x1.00	5/16	0.3125	5/16
9x1.25	5/16	0.3125	5/16
10x1.25	11/32	0.3437	11/32
10x1.50	R	0.339	11/32
11x1.50	3/8	0.375	3/8
12x1.50	13/32	0.406	13/32
12x1.75	13/32	0.406	13/32

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.

CI: Cubic inches.

Clutch Buttons: Plastic bushings which aid rotation of the movable sheave in the drive and driven clutch.

Clutch Offset: Drive and driven clutches are offset so that drive belt will stay nearly straight as it moves along the clutch face.

Clutch Weights: Three levers in the drive clutch which relative to their weight, profile and engine RPM cause the drive clutch to close and grip the drive belt.

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.

CVT: Centrifugal Variable Transmission (Drive Clutch System)

DCV: Direct current voltage.

Dial Bore Gauge: A cylinder measuring instrument which uses a dial indicator. Good for showing taper and out-of-round in the cylinder bore.

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/cm²: 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.

lbs/in²: Pounds per square inch.

Left or Right 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. 1 mm = 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.

Regulator: Voltage regulator. Regulates battery charging system output at approx. 14.5 DCV as engine RPM increases.

Reservoir Tank: The fill tank in the liquid cooling system.

Resistance: In the mechanical sense, friction or load. In the electrical sense, ohms, resulting in energy conversion to heat.

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.

