## FOREWORD

This Arctic Cat Service Manual contains service, maintenance, and troubleshooting information for certain 2011 Arctic Cat ATV models (see cover). The complete manual is designed to aid service personnel in service-oriented applications.

Arctic Cat offers additional publications (when they become available) to aid in servicing other ATV models. To service models not included in this manual, please refer to the following publications:

- 2011 Y-12+ Service Manual
- 2011 T-14 Service Manual
- 2011 300 DVX/Utility Service Manual
- 2011 366 Service Manual
- 2011 700 Diesel Service Manual

This manual is divided into sections. Each section covers a specific ATV component or system and, in addition to the standard service procedures, includes disassembling, inspecting, and assembling instructions. When using this manual as a guide, the technician should use discretion as to how much disassembly is needed to correct any given condition.

The service technician should become familiar with the operation and construction of each component or system by carefully studying the complete manual. This manual will assist the service technician in becoming more aware of and efficient with servicing procedures. Such efficiency not only helps build consumer confidence but also saves time and labor.

All Arctic Cat ATV publications and decals display the words Warning, Caution, Note, and At This Point to emphasize important information. The symbol  $\triangle$  **WARNING** identifies personal safety-related information. Be sure to follow the directive because it deals with the possibility of severe personal injury or even death. A **CAUTION** identifies unsafe practices which may result in ATV-related damage. Follow the directive because it deals with the possibility of severe personal injury or even death. A **CAUTION** identifies unsafe practices which may result in ATV-related damage. Follow the directive because it deals with the possibility of damaging part or parts of the ATV. The symbol **■ NOTE:** identifies supplementary information worthy of particular attention. The symbol **∞ AT THIS POINT** directs the technician to certain and specific procedures to promote efficiency and to improve clarity.

At the time of publication, all information, photographs, and illustrations were technically correct. Some photographs used in this manual are used for clarity purposes only and are not designed to depict actual conditions. Because Arctic Cat Inc. constantly refines and improves its products, no retroactive obligation is incurred.

> Manual Table of Contents

All materials and specifications are subject to change without notice.

Keep this manual accessible in the shop area for reference.

Product Service and Warranty Department Arctic Cat Inc.

# SECTION 1 - GENERAL INFORMATION/ SPECIFICATIONS

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## **General Specifications**

0						
450 CHASSIS						
Hvdraulic w/Brake Lever Lock						
and Auxiliary Brake						
Front - 25 x 8-12 Rear - 25 x 10-12						
0.35 kg/cm² (5 psi)						
LANY						
21.6 L (5.7 U.S. gal.) - FIS 20.0 L (5.3 U.S. gal.) - TRV						
2.9 L (3.0 U.S. qt)						
250 ml (8.5 fl oz)*						
275 ml (9.3 fl oz)**						
2.85 L (3.0 U.S. qt) - Overhaul 2.50 L (2.6 U.S. qt) - Change						
87 Octane Regular Unleaded						
Arctic Cat ACX All Weather (Synthetic)						
SAE Approved 80W-90 Hypoid						
28.5 mm (1.12 in.)						
DOT 4						
12V/8W/27W						
12V/37W (2)						
Headlight 12V/37W (2) 550/650/700						
0/700						
SSIS						
SIS Hydraulic w/Brake Lever Lock and Auxiliary Brake Front - 25 x 8-12						
SIS Hydraulic w/Brake Lever Lock and Auxiliary Brake Front - 25 x 8-12 Rear - 25 x 10-12						
SIS Hydraulic w/Brake Lever Lock and Auxiliary Brake Front - 25 x 8-12 Rear - 25 x 10-12 Front - 28 x 9-14 Rear - 28 x 9-14						
SIS Hydraulic w/Brake Lever Lock and Auxiliary Brake Front - 25 x 8-12 Rear - 25 x 10-12 Front - 28 x 9-14 Rear - 28 x 9-14 Front - 28 x 9-14						
SIS Hydraulic w/Brake Lever Lock and Auxiliary Brake Front - 25 x 8-12 Rear - 25 x 10-12 Front - 28 x 9-14 Rear - 28 x 9-14 Front - 28 x 9-14 Rear - 28 x 11-14						
SIS Hydraulic w/Brake Lever Lock and Auxiliary Brake Front - 25 x 8-12 Rear - 25 x 10-12 Front - 28 x 9-14 Rear - 28 x 9-14 Front - 28 x 9-14 Rear - 28 x 9-14 Rear - 28 x 11-14 0.35 kg/cm <sup>2</sup> (5 psi)						
SIS Hydraulic w/Brake Lever Lock and Auxiliary Brake Front - 25 x 8-12 Rear - 25 x 10-12 Front - 28 x 9-14 Rear - 28 x 9-14 Front - 28 x 9-14 Rear - 28 x 11-14						
SIS         Hydraulic w/Brake Lever Lock and Auxiliary Brake         Front - 25 x 8-12         Rear - 25 x 10-12         Front - 28 x 9-14         Rear - 28 x 9-14         Front - 28 x 9-14         Rear - 28 x 11-14         0.35 kg/cm² (5 psi)         LANY         21.6 L (5.7 U.S. gal.) - FIS         21.9 L (5.8 U.S. gal.) - TBX         20.0 L (5.3 U.S. gal.) - TRV/						
SIS         Hydraulic w/Brake Lever Lock and Auxiliary Brake         Front - 25 x 8-12         Rear - 25 x 10-12         Front - 28 x 9-14         Rear - 28 x 9-14         Rear - 28 x 9-14         Rear - 28 x 11-14         0.35 kg/cm² (5 psi)         LANY         21.6 L (5.7 U.S. gal.) - FIS         21.9 L (5.8 U.S. gal.) - TBX         20.0 L (5.3 U.S. gal.) - TRV/         Cruiser						
SIS         Hydraulic w/Brake Lever Lock and Auxiliary Brake         Front - 25 x 8-12         Rear - 25 x 10-12         Front - 28 x 9-14         Rear - 28 x 9-14         Rear - 28 x 9-14         Rear - 28 x 11-14         0.35 kg/cm² (5 psi)         LANY         21.6 L (5.7 U.S. gal.) - FIS         21.9 L (5.8 U.S. gal.) - TBX         20.0 L (5.3 U.S. gal.) - TRV/         Cruiser         2.9 L (3.0 U.S. qt)         275 ml (9.3 fl oz)*         250 ml (8.5 fl oz)**						
SIS           Hydraulic w/Brake Lever Lock and Auxiliary Brake           Front - 25 x 8-12           Rear - 25 x 10-12           Front - 28 x 9-14           Rear - 28 x 11-14           0.35 kg/cm² (5 psi)           LANY           21.6 L (5.7 U.S. gal.) - FIS           21.9 L (5.8 U.S. gal.) - TBX           20.0 L (5.3 U.S. gal.) - TBX           20.0 L (5.3 U.S. gal.) - TRV/ Cruiser           2.9 L (3.0 U.S. qt)           275 ml (9.3 fl oz)*           250 ml (8.5 fl oz)**           2.5 L (2.6 U.S. qt) - Overhaul           1.9 L (2.0 U.S. qt) - Change						
SIS           Hydraulic w/Brake Lever Lock and Auxiliary Brake           Front - 25 x 8-12           Rear - 25 x 10-12           Front - 28 x 9-14           Rear - 28 x 11-14           0.35 kg/cm² (5 psi)           LANY           21.6 L (5.7 U.S. gal.) - FIS           21.9 L (5.8 U.S. gal.) - TBX           20.0 L (5.3 U.S. gal.) - TBX           20.0 L (5.3 U.S. gal.) - TRV/           Cruiser           2.9 L (3.0 U.S. qt)           275 ml (9.3 fl oz)*           250 ml (8.5 fl oz)*           2.5 L (2.6 U.S. qt) - Overhaul           1.9 L (2.0 U.S. qt) - Change           87 Octane Regular Unleaded						
SIS           Hydraulic w/Brake Lever Lock and Auxiliary Brake           Front - 25 x 8-12           Rear - 25 x 10-12           Front - 28 x 9-14           Rear - 28 x 11-14           0.35 kg/cm² (5 psi)           LANY           21.6 L (5.7 U.S. gal.) - FIS           21.9 L (5.8 U.S. gal.) - TBX           20.0 L (5.3 U.S. gal.) - TBX           20.0 L (5.3 U.S. gal.) - TRV/           Cruiser           2.9 L (3.0 U.S. qt)           275 ml (9.3 fl oz)*           250 ml (8.5 fl oz)**           25.5 L (2.6 U.S. qt) - Overhaul           1.9 L (2.0 U.S. qt) - Change           87 Octane Regular Unleaded           Arctic Cat ACX All Weather (Synthetic)						
SIS           Hydraulic w/Brake Lever Lock and Auxiliary Brake           Front - 25 x 8-12           Rear - 25 x 10-12           Front - 28 x 9-14           Rear - 28 x 9-14           Rear - 28 x 9-14           Rear - 28 x 11-14           0.35 kg/cm² (5 psi)           LANY           21.6 L (5.7 U.S. gal.) - FIS           21.9 L (5.8 U.S. gal.) - TBX           20.0 L (5.3 U.S. gal.) - TBX           20.0 L (5.3 U.S. gal.) - TRV/           Cruiser           2.9 L (3.0 U.S. qt)           275 ml (9.3 fl oz)*           250 ml (8.5 fl oz)*           2.5 L (2.6 U.S. qt) - Overhaul           1.9 L (2.0 U.S. qt) - Change           87 Octane Regular Unleaded           Arctic Cat ACX All Weather           (Synthetic)           SAE Approved 80W-90 Hypoid						
SIS           Hydraulic w/Brake Lever Lock and Auxiliary Brake           Front - 25 x 8-12           Rear - 25 x 10-12           Front - 28 x 9-14           Rear - 28 x 9-14           Rear - 28 x 9-14           Rear - 28 x 11-14           0.35 kg/cm² (5 psi)           LANY           21.6 L (5.7 U.S. gal.) - FIS           21.9 L (5.8 U.S. gal.) - TBX           20.0 L (5.3 U.S. gal.) - TBX           20.0 L (5.3 U.S. gal.) - TRV/           Cruiser           2.9 L (3.0 U.S. qt)           275 ml (9.3 fl oz)*           250 ml (8.5 fl oz)**           2.5 L (2.6 U.S. qt) - Overhaul           1.9 L (2.0 U.S. qt) - Change           87 Octane Regular Unleaded           Arctic Cat ACX All Weather (Synthetic)           SAE Approved 80W-90 Hypoid           35.6 mm (1.40 in.)						
SIS           Hydraulic w/Brake Lever Lock and Auxiliary Brake           Front - 25 x 8-12           Rear - 25 x 10-12           Front - 28 x 9-14           Rear - 28 x 9-14           Rear - 28 x 9-14           Rear - 28 x 11-14           0.35 kg/cm² (5 psi)           LANY           21.6 L (5.7 U.S. gal.) - FIS           21.9 L (5.8 U.S. gal.) - TBX           20.0 L (5.3 U.S. gal.) - TBX           20.0 L (5.3 U.S. gal.) - TRV/           Cruiser           2.9 L (3.0 U.S. qt)           275 ml (9.3 fl oz)*           250 ml (8.5 fl oz)*           2.5 L (2.6 U.S. qt) - Overhaul           1.9 L (2.0 U.S. qt) - Change           87 Octane Regular Unleaded           Arctic Cat ACX All Weather           (Synthetic)           SAE Approved 80W-90 Hypoid						
SIS           Hydraulic w/Brake Lever Lock and Auxiliary Brake           Front - 25 x 8-12           Rear - 25 x 10-12           Front - 28 x 9-14           Rear - 28 x 9-14           Rear - 28 x 9-14           Rear - 28 x 11-14           0.35 kg/cm² (5 psi)           LANY           21.6 L (5.7 U.S. gal.) - FIS           21.9 L (5.8 U.S. gal.) - TBX           20.0 L (5.3 U.S. gal.) - TBX           20.0 L (5.3 U.S. gal.) - TRV/           Cruiser           2.9 L (3.0 U.S. qt)           275 ml (9.3 fl oz)*           250 ml (8.5 fl oz)**           2.5 L (2.6 U.S. qt) - Overhaul           1.9 L (2.0 U.S. qt) - Change           87 Octane Regular Unleaded           Arctic Cat ACX All Weather (Synthetic)           SAE Approved 80W-90 Hypoid           35.6 mm (1.40 in.)						

1000				
CHASSIS				
Brake Type	Hydraulic w/Brake Lever Lock and Auxiliary Brake			
(Mud Pro) (Cruiser)	Front - 26 x 9-12 Rear - 26 x 11-12 Front - 28 x 9-14 Rear - 28 x 11-14 Front - 25 x 8-12 Rear - 25 x 10-12			
Tire Inflation Pressure	0.35 kg/cm² (5 psi)			
M	ISCELLANY			
Gas Tank Capacity	21.6 L (5.7 U.S. gal.) - FIS 20.0 L (5.3 U.S. gal.) - Cruiser/TRV			
Coolant Capacity	3.3 L (3.5 U.S. qt)			
Differential Capacity	275 ml (9.3 fl oz)*			
Rear Drive Capacity	250 ml (8.5 fl oz)**			
Engine Oil Capacity	2.6 L (2.75 U.S. qt) - Overhaul 2.1 L (2.25 U.S. qt) - Change			
Gasoline (recommended)	87 Octane Regular Unleaded			
Engine Oil (recommended)	Arctic Cat ACX All Weather (Synthetic)			
Front Differential/Rear Drive Lubricant	SAE Approved 80W-90 Hypoid			
Drive Belt Width (minimum)	35.6 mm (1.40 in.)			
Brake Fluid	DOT 4			
Taillight/Brakelight	12V/8W/27W			
Headlight	12V/27W (2)			

Specifications subject to change without notice.

\* One inch below plug threads.

\*\* At the plug threads.





## **Torque Specifications**

EXHAUST COMPONENTS					
Devi	Dout Dout Dout Dout Torque				
Part	Part Bolted To	ft-lb	N-m		
Exhaust Pipe	Engine	20	27		
Spark Arrester	Muffler	48 inlb	5.5		
ELECTRIC/	AL COMPONENTS	11110			
Engine/Harness Ground Cap	· · · · · · · · · · · · · · · · · · ·	8	11		
Screw	Clarikease	0			
Coil (650)*	Frame	12	16		
Coil (EFI)	Air Filter Housing	7	10		
	G COMPONENTS				
Steering Post Bearing Housing	Frame	20	27		
Steering Post Bearing Flange	Frame	20	27		
Lower Steering Bearing Washer Cap Screw***	Steering Post	40	54		
Tie Rod End	Knuckle/Steering Post	30	41		
BRAKE	COMPONENTS				
Brake Disc*	Hub	15	20		
Brake Hose	Caliper	20	27		
Brake Hose	Master Cylinder	20	27		
Brake Hose	Auxiliary Brake Cylinder	20	27		
Master Cylinder (Rear)	Frame	12	16		
Hydraulic Caliper	Knuckle (w/"Patch-Lock")	20	27		
Master Cylinder Clamp	Master Cylinder	6	8		
Brake Pedal	Brake Pedal Axle	25	34		
CHASSIS	COMPONENTS				
Footrest	Frame (8 mm)	20	27		
Footrest	Frame (10 mm)	40	54		
SUSPENSION (	COMPONENTS (Front)				
A-Arm	Frame	50	68		
Knuckle	Ball Joint	35	47		
Shock Absorber	Frame/Upper A-Arm	50	68		
Knuckle	A-Arm	50	68		
SUSPENSION	COMPONENTS (Rear)				
Shock Absorber (Upper)	Frame	50	68		
Shock Absorber (Lower)	Lower A-Arm	20	27		
A-Arm	Frame	50	68		
Knuckle	A-Arm	35	47		
Knuckle (H2)	A-Arm	50	68		

#### DRIVE TRAIN COMPONENTS (450) Torque Part Part Bolted To ft-lb N-m Engine Mounting Through-Bolt Frame 35 47 Frame/Differential Front Differential 38 52 Bracket Output Flange Rear Flange Output 20 27 Joint Pinion Housing Differential Housing 23 31 Differential Housing Cover\*\*\* Differential Housing 23 31 Drive Bevel Gear Nut\*\* Shaft 72 98 Lock Collar Differential Housing 125 169 Hub Nut 200 272 Shaft/Axle (max) Oil Drain Plug Front Differential/ Rear 45 5 Drive n.-lb Oil Fill Plug Front Differential/ Rear 22 16 Drive Oil Drain Plug Engine 22 16 Rear Drive Input Shaft/Housing Differential Housing 23 31 Wheel Hub 40 54 Rear Drive Gear Case Frame 38 52 Rear Gear Case Input Engine Output Shaft\*\* 20 27 Flange DRIVE TRAIN COMPONENTS (550/650/700) Engine Mounting Through-Bolt Frame 40 54 40 54 Engine (TRV) Engine Cradle Engine Cradle (TRV)\*\* Rubber Mount 25 34 Rubber Mount (TRV) Frame Bracket 35 47 Front Differential\* Frame/Differential 38 52 Bracket 27 Output Flange Rear Flange Output 20 Joint Pinion Housing Differential Housing 23 31 Differential Housing Cover\*\*\* Differential Housing 23 31 Drive Bevel Gear Nut\*\*\* Shaft 72 98 Differential Gear Case\*\*\* Hub 19 26 \_ock Collar Differential Housing 169 125 Hub Nut Shaft/Axle (max) 200 272 Oil Drain Plug Front Differential/ Rear 45 5 Drive n.-lb Oil Fill Plug Front Differential/ Rear 16 22 Drive Oil Drain Plug Engine 16 22 Rear Drive Input Shaft/Housing Differential Housing 23 31 Wheel Hub 40 54

Frame

Flange

Rear Gear Case Input

\* w/Blue Loctite #243

\*\* w/Red Loctite #271

Rear Drive Gear Case

Engine Output Shaft \*\*

\*\*\* w/Green Loctite #609





38

20

52

27

DRIVE TRAIN COMPONENTS					
(1000)					
Part Part Bolted To			que		
		ft-lb	N-m		
Engine Mount (Rear)	Frame	45	61		
Front Differential	Frame/Differential Bracket	38	52		
Rear Gear Case	Frame	38	52		
Pinion Housing	Differential Housing	23	31		
Differential Housing Cover***	Differential Housing	23	31		
Lock Collar	Differential Housing	125	169		
Hub Nut	Shaft/Axle (max)	200	272		
Oil Drain Plug	Front Differential/ Rear Drive	45 inlb	5		
Oil Fill Plug	Front Differential/ Rear Drive	16	22		
Oil Drain Plug	Engine	16	22		
Wheel	Hub	40	54		
Rear Drive Input Shaft/Housing	Differential Housing	23	31		
Rear Output Drive Flange	Rear Yoke Flange	20	27		
Shift Cam Stopper	Shift Stopper	8	11		
Shift Cam Plate	Shift Cam Shaft	8	11		
Shifter Housing	Crankcase	8	11		
Engine Output Shaft**	Rear Gear Case Input Flange	20	27		
ENGINE/TR	ANSMISSION				
	50)				
Clutch Shoe**	Crankshaft	147	199		
Clutch Cover/Housing Assembly	Crankcase	8	11		
Left-Side Cover	Crankcase	8	11		
Crankcase Half (6 mm)	Crankcase Half	10	13.5		
Crankcase Half (8 mm)	Crankcase Half	21	28		
Cylinder Nut	Crankcase Half	8	11		
Cylinder Head (Cap Screw)	Crankcase	28	38		
Cylinder Head Nut	Cylinder	20	27		
Valve Cover****	Cylinder Head	8	11		
Oil Pump Drive Gear**	Crankshaft	63	86		
Driven Pulley Nut**	Driveshaft	147	199		
Ground Cable	Engine	8	11		
Output Shaft Flange Nut	Output Shaft	59	80		
Magneto Rotor Nut	Crankshaft	107	146		
Cam Sprocket**	Camshaft	11	15		
Cam Chain Tensioner Guide	Cylinder	11	15		
Starter Motor	Crankcase	8	11		
V-Belt Cover	Crankcase	8	11		
Valve Adjuster Jam Nut	Valve Adjuster	7	9.5		
Oil Fitting	Engine	8	11		
Oil Pump**	Crankcase	8	11		
Tappet Cover	Valve Cover	8	11		
Cam Chain Tensioner	Cylinder	10	13.5		
Magneto Cover	Crankcase	8	11		
Rear Driveline	Output Drive Flange	20	27		
Movable Drive Face Nut**	Clutch Shaft	147	199		
Water Pump Cover/Housing	Magneto Cover	8	11		
Water Pump Drive Gear	Crankshaft	28	38		
* w/Blue Loctite #243					

\* w/Blue Loctite #243

\*\* w/Red Loctite #271

\*\*\* w/Green Loctite #609

\*\*\*\* w/Three Bond Sealant

ENGINE/TRANSMI	SSION (550/650/700)	)	
Devt	David Dalidad Ta	Tor	que
Part	Part Bolted To	ft-lb	N-m
Crankshaft Spacer	Crankshaft	25	34
Speed Sensor Housing	Crankcase	8	11
Clutch Shoe**	Crankshaft	221	300
Clutch Cover/Housing Assembly	Crankcase	8	11
Crankcase Half (6 mm)	Crankcase Half	8	11
Crankcase Half (8 mm)	Crankcase Half	20	27
Cylinder Head (Cap Screw)	Crankcase	40	54
Cylinder Head Nut (6 mm)	Cylinder	8	11
Cylinder Head Nut (8 mm)	Cylinder	18	24
Valve Cover****	Cylinder Head	8.5	11.5
Driven Pulley Nut	Driveshaft	80	108
Ground Wire	Engine	8	11
Magneto Cover	Crankcase	8	11
Oil Pump Drive Gear**	Crank Balancer Shaft	63	85
Output Shaft Nut	Output Shaft	59	80
Outer Magneto Cover	Left-Side Cover	6	8
Magneto Rotor Nut	Crankshaft	107	145
Cam Sprocket**	Camshaft	107	145
Starter Motor	Crankcase	8	13.5
V-Belt Cover	Clutch Cover	8	11
		-	
Drive Pulley Nut** Movable Drive Face Nut**	Clutch Shaft Clutch Shaft	165 165	224 224
Output Yoke Nut	Driven Output Shaft	74	100
Secondary Shaft Bearing Housing	Crankcase Half	28	38
ENGINE/TRAN	SMISSION (1000)		
Clutch Shoe**	Crankshaft	221	
Clutch Shoe** Clutch Cover/Housing Assembly	Crankshaft Crankcase	8	11
Clutch Shoe** Clutch Cover/Housing Assembly Crankcase Half	Crankshaft Crankcase Crankcase Half	8	11 11
Clutch Shoe** Clutch Cover/Housing Assembly Crankcase Half Crankcase Lower Cover (6 mm)	Crankshaft Crankcase Crankcase Half Crankcase	8	11 11 11
Clutch Shoe** Clutch Cover/Housing Assembly Crankcase Half Crankcase Lower Cover (6 mm) Crankcase Lower Cover (8 mm)	Crankshaft Crankcase Crankcase Half	8	11 11
Clutch Shoe** Clutch Cover/Housing Assembly Crankcase Half Crankcase Lower Cover (6 mm) Crankcase Lower Cover (8 mm) Cylinder Head (Cap Screw)	Crankshaft Crankcase Crankcase Half Crankcase Crankcase Crankcase	8 8 8	11 11 11
Clutch Shoe** Clutch Cover/Housing Assembly Crankcase Half Crankcase Lower Cover (6 mm) Crankcase Lower Cover (8 mm) Cylinder Head (Cap Screw)	Crankshaft Crankcase Crankcase Half Crankcase Crankcase	8 8 8 20	11 11 11 27
Clutch Shoe** Clutch Cover/Housing Assembly Crankcase Half Crankcase Lower Cover (6 mm) Crankcase Lower Cover (8 mm) Cylinder Head (Cap Screw) Cylinder Head (6 mm) Cylinder Head (8 mm)	Crankshaft Crankcase Crankcase Half Crankcase Crankcase Crankcase	8 8 8 20 37	11 11 11 27 50
Clutch Shoe** Clutch Cover/Housing Assembly Crankcase Half Crankcase Lower Cover (6 mm) Crankcase Lower Cover (8 mm) Cylinder Head (Cap Screw) Cylinder Head (6 mm) Cylinder Head (8 mm) Cylinder Head Cover	Crankshaft Crankcase Crankcase Half Crankcase Crankcase Crankcase Cylinder	8 8 20 37 8	11 11 11 27 50 11 24
Clutch Shoe** Clutch Cover/Housing Assembly Crankcase Half Crankcase Lower Cover (6 mm) Crankcase Lower Cover (8 mm) Cylinder Head (Cap Screw) Cylinder Head (6 mm) Cylinder Head (8 mm) Cylinder Head Cover	Crankshaft Crankcase Crankcase Half Crankcase Crankcase Crankcase Cylinder Cylinder	8 8 20 37 8 18	11 11 11 27 50 11 24
Clutch Shoe** Clutch Cover/Housing Assembly Crankcase Half Crankcase Lower Cover (6 mm) Crankcase Lower Cover (8 mm) Cylinder Head (Cap Screw) Cylinder Head (6 mm) Cylinder Head (8 mm) Cylinder Head Cover Driven Pulley Nut**	Crankshaft Crankcase Crankcase Half Crankcase Crankcase Crankcase Cylinder Cylinder Cylinder Head	8 8 20 37 8 18 8.5	11 11 11 27 50 11 24 11.5
Clutch Shoe** Clutch Cover/Housing Assembly Crankcase Half Crankcase Lower Cover (6 mm) Crankcase Lower Cover (8 mm) Cylinder Head (Cap Screw) Cylinder Head (6 mm) Cylinder Head (8 mm) Cylinder Head Cover Driven Pulley Nut** Ground Wire	Crankshaft Crankcase Crankcase Half Crankcase Crankcase Crankcase Cylinder Cylinder Cylinder Head Driveshaft	8 8 20 37 8 18 8.5 80	11 11 11 27 50 11 24 11.5 108
Clutch Shoe** Clutch Cover/Housing Assembly Crankcase Half Crankcase Lower Cover (6 mm) Crankcase Lower Cover (8 mm) Cylinder Head (Cap Screw) Cylinder Head (6 mm) Cylinder Head (6 mm) Cylinder Head (8 mm) Cylinder Head Cover Driven Pulley Nut** Ground Wire Magneto Cover	Crankshaft Crankcase Crankcase Half Crankcase Crankcase Crankcase Cylinder Cylinder Cylinder Cylinder Head Driveshaft Engine	8 8 20 37 8 18 8.5 80 8	11 11 11 27 50 11 24 11.5 108 11
Clutch Shoe** Clutch Cover/Housing Assembly Crankcase Half Crankcase Lower Cover (6 mm) Crankcase Lower Cover (8 mm) Cylinder Head (Cap Screw) Cylinder Head (6 mm) Cylinder Head (6 mm) Cylinder Head (8 mm) Cylinder Head Cover Driven Pulley Nut** Ground Wire Magneto Cover Oil Filler Cover	Crankshaft Crankcase Crankcase Half Crankcase Crankcase Crankcase Cylinder Cylinder Cylinder Cylinder Head Driveshaft Engine Crankcase	8 8 20 37 8 18 8.5 80 8 8 8	11 11 11 27 50 11 24 11.5 108 11 11
Clutch Shoe** Clutch Cover/Housing Assembly Crankcase Half Crankcase Lower Cover (6 mm) Crankcase Lower Cover (8 mm) Cylinder Head (Cap Screw) Cylinder Head (6 mm) Cylinder Head (6 mm) Cylinder Head Cover Driven Pulley Nut** Ground Wire Magneto Cover Oil Filler Cover Speed Sensor Housing	Crankshaft Crankcase Crankcase Half Crankcase Crankcase Crankcase Cylinder Cylinder Cylinder Cylinder Head Driveshaft Engine Crankcase Crankcase	8 8 8 20 37 8 18 8.5 80 8 8 8 8 8 8 8	11 11 11 27 50 11 24 11.5 108 11 11 11
Clutch Shoe** Clutch Cover/Housing Assembly Crankcase Half Crankcase Lower Cover (6 mm) Crankcase Lower Cover (8 mm) Cylinder Head (Cap Screw) Cylinder Head (6 mm) Cylinder Head (6 mm) Cylinder Head (8 mm) Cylinder Head Cover Driven Pulley Nut** Ground Wire Magneto Cover Oil Filler Cover Speed Sensor Housing Starter Motor	Crankshaft Crankcase Crankcase Half Crankcase Crankcase Crankcase Cylinder Cylinder Cylinder Head Driveshaft Engine Crankcase Crankcase Crankcase	8 8 20 37 8 18 8.5 80 8 8 8 8 8 8 8 8	11 11 11 27 50 11 24 11.5 108 11 11 11 11
Clutch Shoe** Clutch Cover/Housing Assembly Crankcase Half Crankcase Lower Cover (6 mm) Crankcase Lower Cover (8 mm) Cylinder Head (Cap Screw) Cylinder Head (6 mm) Cylinder Head (8 mm) Cylinder Head (8 mm) Cylinder Head Cover Driven Pulley Nut** Ground Wire Magneto Cover Oil Filler Cover Speed Sensor Housing Starter Motor V-Belt Housing	Crankshaft Crankcase Crankcase Half Crankcase Crankcase Crankcase Cylinder Cylinder Cylinder Head Driveshaft Engine Crankcase Crankcase Crankcase Crankcase Crankcase	8 8 8 20 37 8 18 8.5 80 8 8 8 8 8 8 8 8 8 8 8 8 8 8 8 8 8 8	111 11 11 27 50 11 24 11.5 108 11 11 11 11 11
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Output Yoke Nut Output Shaft
\* w/Blue Loctite #243 \*\* w/Red Loctite #271

Secondary Drive Gear Nut

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\*\*\* w/Green Loctite #609 \*\*\*\*w/Bond Sealant

Gear

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## Torque Conversions (ft-lb/N-m)

ft-lb	N-m	ft-lb	N-m	ft-lb	N-m	ft-lb	N-m
1	1.4	26	35.4	51	69.4	76	103.4
2	2.7	27	36.7	52	70.7	77	104.7
3	4.1	28	38.1	53	72.1	78	106.1
4	5.4	29	39.4	54	73.4	79	107.4
5	6.8	30	40.8	55	74.8	80	108.8
6	8.2	31	42.2	56	76.2	81	110.2
7	9.5	32	43.5	57	77.5	82	111.5
8	10.9	33	44.9	58	78.9	83	112.9
9	12.2	34	46.2	59	80.2	84	114.2
10	13.6	35	47.6	60	81.6	85	115.6
11	15	36	49	61	83	86	117
12	16.3	37	50.3	62	84.3	87	118.3
13	17.7	38	51.7	63	85.7	88	119.7
14	19	39	53	64	87	89	121
15	20.4	40	54.4	65	88.4	90	122.4
16	21.8	41	55.8	66	89.8	91	123.8
17	23.1	42	57.1	67	91.1	92	125.1
18	24.5	43	58.5	68	92.5	93	126.5
19	25.8	44	59.8	69	93.8	94	127.8
20	27.2	45	61.2	70	95.2	95	129.2
21	28.6	46	62.6	71	96.6	96	130.6
22	29.9	47	63.9	72	97.9	97	131.9
23	31.3	48	65.3	73	99.3	98	133.3
24	32.6	49	66.6	74	100.6	99	134.6
25	34	50	68	75	102	100	136

## Tightening Torque (General Bolts)

Type of Bolt	Thread Diameter A (mm)	Tightening Torque
(Conventional or 4 Marked Bolt)	5	12-36 inlb
	6	36-60 inlb
	8	7-11 ft-lb
	10	16-25 ft-lb
(7 Marked Bolt)	5	24-48 inlb
ananana (B)	6	6-8 ft-lb
	8	13-20 ft-lb
	10	29-43 ft-lb

## **Break-In Procedure**

A new ATV and an overhauled ATV engine require a "break-in" period. The first 10 hours (or 200 miles) are most critical to the life of this ATV. Proper operation during this break-in period will help assure maximum life and performance from the ATV.

During the first 10 hours (or 200 miles) of operation, always use less than 1/2 throttle. Varying the engine RPM during the break-in period allows the components to "load" (aiding the mating process) and then "unload" (allowing components to cool). Although it is essential to place some stress on the engine components during break-in, care should be taken not to overload the engine too often. Do not pull a trailer or carry heavy loads during the 10-hour break-in period.

When the engine starts, allow it to warm up properly. Idle the engine several minutes until the engine has reached normal operating temperature. Do not idle the engine for excessively long periods of time.

During the break-in period, a maximum of 1/2 throttle is recommended; however, brief full-throttle accelerations and variations in driving speeds contribute to good engine break-in.

After the completion of the break-in period, the engine oil and oil filter should be changed. Other maintenance after break-in should include checking of all prescribed adjustments and tightening of all fasteners (see Periodic Maintenance Chart in Section 1).

## **Gasoline - Oil - Lubricant**

#### **RECOMMENDED GASOLINE**

The recommended gasoline to use is 87 minimum octane regular unleaded. In many areas, oxygenates (either ethanol or MTBE) are added to the gasoline. Oxygenated gasolines containing up to 10% ethanol, 5% methane, or 5% MTBE are acceptable gasolines.

When using ethanol blended gasoline, it is not necessary to add a gasoline antifreeze since ethanol will prevent the accumulation of moisture in the fuel system.

#### CAUTION

Do not use white gas. Only Arctic Cat approved gasoline additives should be used.



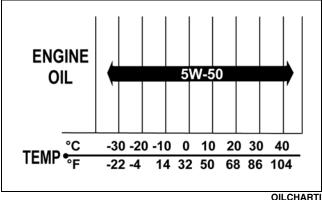


#### **RECOMMENDED ENGINE/** TRANSMISSION OIL

#### CAUTION

Any oil used in place of the recommended oil could cause serious engine damage. Do not use oils which contain graphite or molybdenum additives. These oils can adversely affect clutch operation. Also, not recommended are racing, vegetable, non-detergent, and castor-based oils.

The recommended oil to use is Arctic Cat ACX All Weather synthetic engine oil, which has been specifically formulated for use in this Arctic Cat engine. Although Arctic Cat ACX All Weather synthetic engine oil is the only oil recommended for use in this engine, use of any API certified SM 5W-50 oil is acceptable.



#### **RECOMMENDED FRONT DIFFERENTIAL/REAR DRIVE** LUBRICANT

The recommended lubricant is Arctic Cat Gear Lube or an equivalent gear lube which is SAE approved 80W-90 hypoid. This lubricant meets all of the lubrication requirements of the Arctic Cat ATV front differentials and rear drives.

#### CAUTION

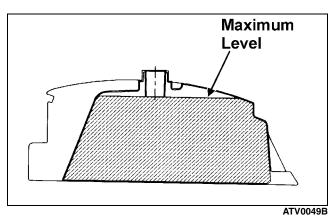
Any lubricant used in place of the recommended lubricant could cause serious front differential/rear drive damage.

#### **FILLING GAS TANK**

#### 

Always fill the gas tank in a well-ventilated area. Never add fuel to the ATV gas tank near any open flames or with the engine running. DO NOT SMOKE while filling the gas tank.

Since gasoline expands as its temperature rises, the gas tank must be filled to its rated capacity only. Expansion room must be maintained in the tank particularly if the tank is filled with cold gasoline and then moved to a warm area.



### 

Do not overflow gasoline when filling the gas tank. A fire hazard could materialize. Always allow the engine to cool before filling the gas tank.

#### 

#### Do not over-fill the gas tank.

Tighten the gas tank cap securely after filling the tank.

## **Genuine Parts**

When replacement of parts is necessary, use only genuine Arctic Cat ATV parts. They are precision-made to ensure high quality and correct fit. Refer to the appropriate Illustrated Parts Manual for the correct part number, quantity, and description.

## **Preparation For Storage**

#### CAUTION

Prior to storing the ATV, it must be properly serviced to prevent rusting and component deterioration.

Arctic Cat recommends the following procedure to prepare the ATV for storage.

- 1. Clean the seat cushion (cover and base) with a damp cloth and allow it to dry.
- 2. Clean the ATV thoroughly by washing dirt, oil, grass, and other foreign matter from the entire ATV. Allow the ATV to dry thoroughly. DO NOT get water into any part of the engine or air intake.
- 3. Either drain the gas tank or add Fuel Stabilizer to the gas in the gas tank. Remove the air filter housing cover and air filter. Start the engine and allow it to idle; then using Arctic Cat Engine Storage Preserver, rapidly inject the preserver into the air filter opening for a period of 10 to 20 seconds; then stop the engine. Install the air filter and housing cover.





#### CAUTION

If the interior of the air filter housing is dirty, clean the area before starting the engine.

- 4. On the 650 drain the carburetor float chamber.
- 5. Plug the exhaust hole in the exhaust system with a clean cloth.
- 6. Apply light oil to the upper steering post bushing and plungers of the shock absorbers.
- 7. Tighten all nuts, bolts, cap screws, and screws. Make sure rivets holding components together are tight. Replace all loose rivets. Care must be taken that all calibrated nuts, cap screws, and bolts are tightened to specifications.
- 8. Fill the cooling system to the bottom of the stand pipe in the radiator neck with properly mixed coolant.
- 9. Disconnect the battery cables; then remove the battery, clean the battery posts and cables, and store in a clean, dry area.
- 10. Store the ATV indoors in a level position.

#### CAUTION

Avoid storing outside in direct sunlight and avoid using a plastic cover as moisture will collect on the ATV causing rusting.

### Preparation After Storage

Taking the ATV out of storage and correctly preparing it will assure many miles and hours of trouble-free riding. Arctic Cat recommends the following procedure to prepare the ATV.

- 1. Clean the ATV thoroughly.
- 2. Clean the engine. Remove the cloth from the exhaust system.
- 3. Check all control wires and cables for signs of wear or fraying. Replace if necessary.
- 4. Change the engine/transmission oil and filter.
- 5. Check the coolant level and add properly mixed coolant as necessary.
- 6. Charge the battery; then install. Connect the battery cables.

#### CAUTION

The ignition switch must be in the OFF position prior to installing the battery or damage may occur to the ignition system.

#### CAUTION

Connect the positive battery cable first; then the negative.

- 7. Check the entire brake systems (fluid level, pads, etc.), all controls, headlights, taillight, brakelight, and headlight aim; adjust or replace as necessary.
- 8. Tighten all nuts, bolts, cap screws, and screws making sure all calibrated nuts, cap screws, and bolts are tightened to specifications.
- 9. Check tire pressure. Inflate to recommended pressure as necessary.
- 10. Make sure the steering moves freely and does not bind.
- 11. Check the spark plug(s). Clean or replace as necessary.





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## Periodic Maintenance Chart

A = Adjust	I = Inspect
C = Clean	L = Lubricate
D = Drain	R = Replace
	T = Tighten

ltem	Initial Service After Break-In (First Month or 100 Miles)	Every Day	Every Month or Every 100 Miles	Every 3 Months or Every 300 Miles	Every 6 Months or Every 500 Miles	Every Year or Every 1500 Miles	As Needed
Battery	I		I				С
Fuses				I			R
Air Filter/Drain Tube	I	I	C*				R
Valve/Tappet Clearance	I				I		A
Engine Compression						I	
Spark Plug(s)	I			I			R (4000 Mi or 18 Mo)
Muffler/Spark Arrester					С		R
Gas/Vent Hoses	I	I					R (2 Yrs)
Throttle Cable	I	I			C-L		A-R
Carburetor Float Chamber (650)				D*			
Engine Idle RPM (650)	I				I		A
Engine-Transmission Oil Level		I					A
Engine-Transmission Oil/Filter	R			R*/R**/R***			R
Oil Strainer	I				I		С
Front Differential/Rear Drive Lubricant	I		I				R (4 Yrs)
Tires/Air Pressure	I	I					R
Steering Components	I	I		I			R
V-Belt	I				I		R
Suspension (Ball joint boots, drive axle boots front and rear, tie rods, differential and rear drive bellows)	I	I					R
Nuts/Cap Screws/Screws	I		I				Т
Ignition Timing						I	
Headlight/Taillight-Brakelight	I	I					R
Switches	I	I					R
Shift Lever					I		A-L
Handlebar Grips		I					R
Handlebar	I	I					R
Gauges/Indicators	I	I					R
Frame/Welds/Racks	I				I		
Electrical Connections	I				I		С
Complete Brake System (Hydraulic & Auxiliary)	I	Ι		С			L-R
Brake Pads	I			l*			R
Brake Fluid	I			I			R (2 Yrs)
Brake Hoses	I			I			R (4 Yrs)
Coolant/Cooling System	l 1in						R (2 Yrs)

\* Service/Inspect more frequently when operating in adverse conditions.

\*\* When using an API certified SM 5W-50 oil.

\*\*\* When using Arctic Cat ACX All Weather synthetic oil, oil change interval and strainer inspection can be increased to every 1,000 miles or every year.





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