



FOREWORD

This Arctic Cat Service Manual contains service, maintenance, and troubleshooting information for the 2010 Arctic Cat 700 Diesel SD ATV. The complete manual is designed to aid service personnel in service-oriented applications.

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 specific symbols to emphasize important information. The symbol  **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 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.

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.**

TABLE OF CONTENTS

Click on blue text to go.

Foreword

- 1. General Information/Specifications** **1**
- 2. Periodic Maintenance/Tune-Up** **2**
- 3. Engine/Transmission** **3**
- 4. Fuel/Lubrication/Cooling** **4**
- 5. Electrical System** **5**
- 6. Drive System** **6**
- 7. Suspension** **7**
- 8. Steering/Frame** **8**
- 9. Controls/Indicators** **9**

700 Diesel S

ATV Service Manual



SECTION 1 - GENERAL INFORMATION/ SPECIFICATIONS

1

TABLE OF CONTENTS

General Specifications	1-2
Torque Specifications	1-2
Tightening Torque (General Bolts)	1-3
Torque Conversions (ft-lb/N-m)	1-3
Break-In Procedure	1-4
Fuel - Oil - Lubricant.....	1-4
Genuine Parts	1-5
Preparation For Storage	1-5
Preparation After Storage.....	1-5

General Specifications*

FUEL INJECTION	
Type	Lombardini Unit Injectors
Idle RPM (engine warm)	800-900
Throttle Cable Free-Play (at lever)	1/4 in.
ELECTRICAL	
Glow Plug Type	Lombardini
Alternator	Denso 12V/40 Amp
CHASSIS	
Brake Type	Hydraulic w/Brake Lever Lock and Auxiliary Brake
Tire Size	Front - 25 x 8-12 Rear - 25 x 10-12
Tire Inflation Pressure	0.35 kg/cm ² (5 psi)
MISCELLANY	
Fuel Tank Capacity	20.81 L (5.5 U.S. gal.)
Coolant Capacity	5.6 L (5.9 U.S. qt)
Front Differential Capacity	275 ml (9.3 fl oz)**
Rear Drive Capacity	250 ml (8.5 fl oz)**
Engine Oil Capacity (with filter)	2.0 L (2.1 U.S. qt)
Engine Oil Capacity (without filter)	1.9 L (2.0 U.S. qt)
Transmission Capacity	600 ml (20.3 fl oz)
Fuel (recommended)	Biodiesel Blend up to 20% (B20)/42-50 Cetane Diesel - #1 or #2/JP 5 or JP 8 Turbine
Engine Oil (recommended)	SAE 10W-40
Differential/Rear Drive Lubricant	SAE Approved 80W-90 Hypoid
Transmission Lubricant	SAE Approved 80W-90 Hypoid
Drive Belt Width (minimum)	31.25 mm (1.23 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.

Torque Specifications

DRIVE TRAIN COMPONENTS			
Part	Part Bolted To	Torque	
		ft-lb	N-m
Front Mounting Bracket	Engine	20	27
Engine Mount (Upper)**	Frame	35	48
Engine Mount (Front/Rear)	Frame	20	27
Front Differential***	Frame/Differential Bracket	38	52
Rear Drive Gear Case	Frame	38	52
Input Housing	Gear Case Housing	23	31
Output Drive Yoke Nut	Output Shaft	72	98
Differential Housing Cover**	Differential Housing	23	31
Drive Bevel Gear Retaining Nut**	Secondary Output Shaft	87	118
Secondary Drive/Bevel Gear Shaft	Transmission Case	80	108
Pinion Housing	Gear Case	25	34
Gear Case Cover	Gear Case	23	31
Lock Collar	Differential Housing	125	170
Hub Nut	Shaft/Axle (min)	200	272
Drain Plug	Front Differential/Rear Drive	42 in.-lb	5
Fill Plug	Front Differential/Rear Drive	16	22
Oil Drain Plug	Engine	18	24
Wheel	Hub	45	61
EXHAUST COMPONENTS			
Exhaust Pipe	Exhaust Manifold	14	19
Spark Arrester	Muffler	48 in.-lb	5
ELECTRICAL COMPONENTS			
Ground Wire	Transmission	8	11
STEERING COMPONENTS			
Handlebar Cap	Steering Post	20	27
Steering Post Bearing Housing	Frame	20	27
Steering Post Bearing Flange	Frame	20	27
Tie Rod End	Knuckle/Steering Post	30	41
BRAKE COMPONENTS			
Brake Disc***	Hub	15	19
Brake Hose	Caliper	20	27
Brake Hose	Master Cylinder	20	27
Brake Hose	Auxiliary Brake Cylinder	20	27
Auxiliary Brake Pedal	Lever Axle	25	34
Auxiliary/Hydraulic Caliper****	Knuckle	20	27

** w/Green Loctite #609

*** w/Blue Loctite #243



**** "Patch-Lock"

ENGINE/TRANSMISSION			
Part	Part Bolted To	Torque	
		ft-lb	N-m
Transmission Mounting Plate	Crankcase/Transmission	35	48
Connecting Rod Cap	Connecting Rod (4 Steps)	29	40
Main Bearing Cap	Engine Block (6 Steps)	44	60
Rocker Arm Support	Cylinder Head	29	40
Cylinder Head	Cylinder (7 Steps)	35	48
Valve Cover	Cylinder Head	6.5	9
Driven Pulley Nut	Fixed Face	125	170
Drive Clutch	Flywheel/PTO Shaft	40	54
Movable Drive Face*	Fixed Drive Hub	85	116
Oil Pump	Engine Block	22	30
Output Shaft*	Output Shaft Coupler	20	27
Output Shaft Nut*	Output Shaft	80	108
Starter	V-Belt Housing	35	48
Flywheel/PTO Shaft	Crankshaft	40	54
Crankshaft Pulley	Timing Belt Drive Pulley	9	12
Chamber Ring Nut	Chamber (Step 1) (Step 2)	72 130	98 177
Glow Plug	Cylinder Head	18	24
Crankshaft Pulley***	Crankshaft	260	354
Timing Belt Idler Nut	Engine Block	29	39
V-Belt Cover	V-Belt Housing	9	12
V-Belt Housing	Crankcase/Transmission	25	34
Fuel Rail	Unit Injectors	36 in.-lb	4
Gear Case (Left)	Gear Case (Right)	8	11
Oil Pan	Crankcase	7	10
Oil Pan Cover	Oil Pan	7	10
Crankshaft Seal/Flange	Engine Block	9	12
Camshaft Support Housing	Cylinder Head	7	10
Fuel Injector Control Rack	Unit Injector	11 in.-lb	1.2
Unit Injector Retainer Nut	Cylinder Head (5 Steps)	15	20
Camshaft Drive Pulley	Camshaft	59	80
Lift Pump Eccentric	Camshaft	59	80
Water Pump	Engine Block	22	30
CHASSIS COMPONENTS			
Shift Lever***	Shift Axle	8	11
SUSPENSION COMPONENTS (Front)			
A-Arm	Frame	50	68
Ball Joint Cap Screw	Knuckle	35	48
Shock Absorber	Frame	50	68
Shock Absorber	Upper A-Arm	50	68
SUSPENSION COMPONENTS (Rear)			
A-Arm	Frame	50	68
Shock Absorber (Upper)	Frame	50	68
Shock Absorber (Lower)	Lower A-Arm	20	27
Knuckle	A-Arm	50	68

* w/Red Loctite #271

*** w/Blue Loctite #243

Tightening Torque (General Bolts)

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

1

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

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.

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.

Fuel - Oil - Lubricant

■NOTE: Arctic Cat recommends the use of genuine Arctic Cat lubricants.

RECOMMENDED FUEL

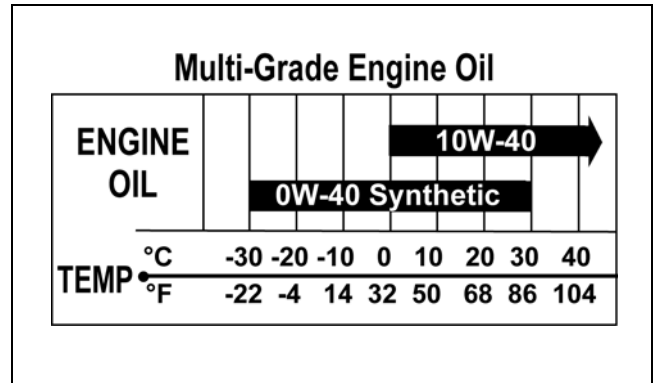
The recommended fuel to use is biodiesel blend up to 20% (B20), #1 or #2 diesel fuel (42-50 cetane), or JP 5 or JP 8 turbine fuel. At temperatures above -10° C (14° F), use #2 diesel fuel or a biodiesel blend up to 20%. At temperatures at or below -10° C (14° F), use #1 diesel fuel. Diesel fuel with a minimum cetane number below 42 should not be used.

CAUTION

Never use biodiesel blends at temperatures at or below -10° C (14° F).

RECOMMENDED ENGINE OIL

The recommended oil to use is an oil which is rated SJ/CF under API service classification. These oils meet all of the lubrication requirements of the Arctic Cat engine. The recommended engine oil viscosity is SAE 10W-40. Ambient temperature should determine the correct weight of oil. See the viscosity chart or an authorized Arctic Cat ATV dealer for details.



OILCHART

CAUTION

Any oil used in place of the recommended oil could cause serious engine damage.

RECOMMENDED TRANSMISSION LUBRICANT

The recommended transmission lubricant is SAE approved 80W-90 hypoid. This lubricant meets all of the lubrication requirements of the ATV transmission.

CAUTION

Any lubricant used in place of the recommended lubricant could cause serious transmission damage.

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.

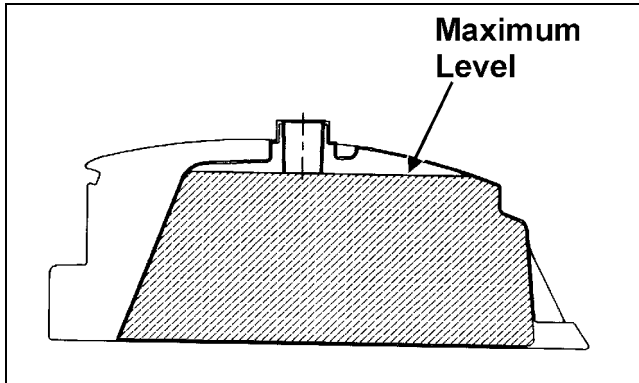
CAUTION

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

FILLING FUEL TANK

⚠ WARNING

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



ATV0049B

Since fuel expands as its temperature rises, the fuel 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 fuel and then moved to a warm area.

⚠ WARNING

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

Tighten the fuel tank cap securely after filling the tank.

⚠ WARNING

Do not over-fill the fuel 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.

www.mymowerparts.com

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. Fill the fuel tank with fresh #1 or #2 diesel fuel (according to ambient temperatures); then add a quality anti-microbial additive. Run the engine in a well-ventilated area for several minutes to make sure fresh, treated fuel is circulated throughout the entire injection system.

CAUTION

DO NOT store the ATV with biodiesel (B20) in the fuel system. Severe damage to the fuel system may occur.

4. Plug the exhaust hole in the muffler with a clean cloth.
5. Apply light oil to the upper steering post bushing and plungers of the shock absorbers.
6. 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.
7. Fill the cooling system to the bottom of the stand pipe in the filler neck with properly mixed coolant.
8. Disconnect the battery cables; then remove the battery, clean the battery posts and cables, and store in a clean, dry area.
9. 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 muffler.
3. Check all control wires and cables for signs of wear or fraying. Replace if necessary.

4. Change the engine 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.
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.

CAUTION

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

CAUTION

Connect the positive battery cable first; then the negative.

SECTION 2 - PERIODIC MAINTENANCE/TUNE-UP

2

TABLE OF CONTENTS

Periodic Maintenance Chart.....	2-2
Periodic Maintenance/Tune-Up	2-3
Lubrication Points.....	2-3
Battery.....	2-3
Fuses	2-4
Air Filter.....	2-4
Valve Clearance	2-5
Muffler/Spark Arrester	2-6
Fuel/Vent Hoses	2-6
Adjusting Throttle Cable	2-6
Engine RPM (Idle).....	2-6
Engine Oil - Filter.....	2-6
Transmission Lubricant.....	2-8
Front Differential/Rear Drive Lubricant.....	2-8
Tires	2-9
Steering Components	2-9
Driveshaft/Coupling.....	2-9
Suspension/Shock Absorbers/Bushings	2-9
Nuts/Cap Screws/Screws/Bolts.....	2-9
Injector Timing.....	2-9
Headlight/Taillight-Brakelight.....	2-10
Switches.....	2-11
Shift Lever	2-11
Frame/Welds/Racks	2-11
Electrical Connections.....	2-12
Hydraulic Brake Systems	2-12
Burnishing Brake Pads.....	2-13
Coolant.....	2-13
Checking/Replacing V-Belt.....	2-14
Fuel Filter	2-16

Periodic Maintenance Chart

A = Adjust L = Lubricate
 C = Clean R = Replace
 I = Inspect

Item	Initial Service After Break-In (First Month or 100 Miles)	Every Month or Every 100 Miles	Every 3 Months or Every 300 Miles	Every 6 Months or Every 500 Miles	Every Year or Every 1250 Miles	Every 2 Years or Every 5000 Miles	As Needed	
Battery	I	I					C	
Fuses/Relays/PDM	I		I				R	
Air Filter	I				R		R	
Valve Clearance						I	A	
Muffler/Spark Arrester				C			R	
Fuel/Vent Hoses	I					R		
Fuel Injectors						I	A	
Throttle Cable	I			C-L			A-R	
Engine Oil Level							A	
Engine Oil/Filter	Replace after initial 300 miles.				R		R	
Front Differential/Rear Drive Lubricant	I						R (4 Yrs)	
Transmission Lubricant	I		I				R (4 Yrs)	
Tires/Air Pressure	I						R	
Steering Components	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/Bolts	I			I			A	
Injector Timing					I		A	
Headlight/Taillight-Brakelight	I						R	
Switches	I						R	
Shift Lever				I			A-L	
Handlebar Grips							R	
Handlebars	I						R	
Gauges/Indicators	I						R	
Frame/Welds/Racks	I	I		I				
Electrical Connections				I			C	
Complete Brake System (Hydraulic & Auxiliary)	I		C				L-R	
Brake Pads	I						R	
Brake Fluid	I					R		
Brake Hoses	I		I				R (4 Yrs)	
Coolant/Cooling System	I	Replace coolant every 2 years.						
Timing Belt						R		
Alternator Belt	I				I			

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