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## FOREWORD

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This Arctic Cat Service Manual Volume One contains service and maintenance information for the Model Year 2005 Arctic Cat Snowmobiles. The complete two-volume set is designed to aid service personnel in service-oriented applications.

This volume is divided into sections. The sections cover specific snowmobile components or systems and, in addition to the standard service procedures, includes assembling, disassembling, and inspecting 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 the components or systems by carefully studying the complete two-volume set. This 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 publications and snowmobile decals display the words Warning, Caution, and Note 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. The symbol  **CAUTION** identifies unsafe practices which may result in snowmobile-related damage. Follow the directive because it deals with the possibility of damaging part or parts of the snowmobile. The symbol  **NOTE:** identifies supplementary information worthy of particular attention.

At the time of publication, all information, photographs, and illustrations were technically correct. Some photographs and illustrations used in this volume 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.



# SECTION 1 — GENERAL INFORMATION

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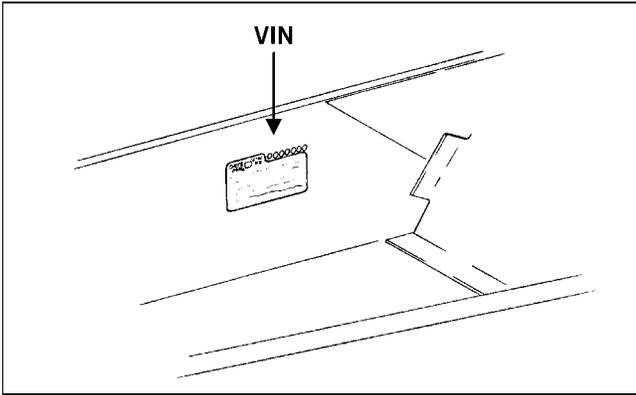
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## Snowmobile Identification

The Arctic Cat Snowmobile has two important identification numbers. The Vehicle Identification Number (VIN) is stamped into the tunnel near the right-side footrest. The Engine Serial Number (ESN) is stamped into the crankcase of the engine.



0726-383

These numbers are required to complete warranty claims properly. No warranty will be allowed by Arctic Cat Inc. if the engine serial number or VIN is removed or mutilated in any way.

## Recommended Gasoline and Oil

### RECOMMENDED GASOLINE (Carbureted Models)

The recommended gasoline to use in these snowmobiles 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 or up to 15% MTBE are acceptable gasolines; however, whenever using oxygenated gasolines, the carburetor main jet must be one size larger than the main jet required for regular unleaded gasoline. For example, if a 400 main jet is recommended for regular unleaded gasoline, a 410 main jet must be installed if using an oxygenated gasoline.

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 or gasolines containing methanol. Only Arctic Cat approved gasoline additives should be used.

### RECOMMENDED GASOLINE (EFI Models)

The recommended gasoline to use in these snowmobiles 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 or up to 15% MTBE are acceptable gasolines. Do not use gasolines containing methanol.

■ **NOTE:** When using the recommended gasoline, the Fuel Designation Connector (the gray wire at the ECU) must be connected.

■ **NOTE:** When using oxygenated gasolines, the Fuel Designation Connector (the gray wire at the ECU) must be disconnected.

**CAUTION**

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

**CAUTION**

If oxygenated gasoline is to be used, it is extremely important that the Fuel Designation Connector at the ECU is disconnected. If not, severe engine damage may occur.

■ **NOTE:** In order for the ECU to change modes, the engine must be OFF when connecting or disconnecting the Fuel Designation Connector.

### RECOMMENDED OIL

The recommended oil to use in the oil-injection system is Arctic Cat 50:1 Injection Oil (for standard models) or Arctic Cat Synthetic APV 2-Cycle Oil (for APV models). The oil is specially formulated to be used either as an injection oil or as a pre-mix oil (for carbureted model break-in) and meets all of the lubrication requirements of the Arctic Cat snowmobile engine.

## Break-In Procedure

The Arctic Cat 2-stroke engine (when new or rebuilt) requires a short break-in period before the engine is subjected to heavy load conditions. Arctic Cat requires that the first tankful of fuel be premixed at a 100:1 ratio in all oil-injection models.

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.

**⚠ CAUTION**

**DO NOT exceed the one (1) tankful limitation of a 100:1 gas/oil break-in mixture. Continuous use of a gas/oil mixture, unless consistently operating in extremely cold conditions (-26°C/-15°F or colder), could cause spark plug fouling and excessive carbon buildup. A 100:1 gas/oil mixture must be used in conjunction with the oil-injection system to ensure adequate engine lubrication in extremely cold conditions.**

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## Genuine Parts

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When replacement of parts is necessary, use only genuine Arctic Cat parts. They are precision-made to ensure high quality and correct fit.

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## High Altitude Operation

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Operating a snowmobile at varying altitudes requires changes in performance components. These changes affect drive train components (on all models) and carburetion components (on carbureted models).

High altitude information decal(s) are located beneath the hood of the snowmobile.

**⚠ CAUTION**

**On carbureted models, carefully follow the Main Jet Chart recommendations for proper main jet selection for altitude, temperature, and gasoline being used.**

King Cat and M-Series snowmobiles are initially set up at the factory for operation between 6000-9000 feet. Consult the appropriate specifications for this information.

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## Preparation For Storage

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Prior to storing the snowmobile, it must be properly serviced to prevent corrosion and component deterioration. An authorized Arctic Cat Snowmobile dealer should perform this service; however, the owner/operator can perform this service if desired. To prepare the snowmobile for storage, Arctic Cat recommends the following procedure:

1. Clean the seat cushion with a damp cloth and Arctic Cat Vinyl Protectant (p/n 0638-313).
2. Clean the snowmobile thoroughly by hosing dirt, oil, grass, and other foreign matter from the skid frame, tunnel, hood, and belly pan. Allow the snowmobile to dry thoroughly. DO NOT get water into any part of the engine.
3. Place the rear of the snowmobile up on a shielded safety stand.

■ **NOTE:** On M-Series and “Laydown” engine models, the air silencer boot can be pried forward to access the intake bores. Pry the boot forward; then proceed to step 7.

■ **NOTE:** On some standard models, the air-intake silencer is a one-piece unit, and the silencer boot(s) can be removed to access the intake bore(s). Remove the boots; then proceed to step 7.

■ **NOTE:** On some standard models, the air-intake silencer includes a cover/tool tray assembly and a baffle/resonator, and the silencer boot cannot be removed to access the intake bores. Proceed to step 4.

4. Open the air-intake silencer cover; then remove the three screws securing the cover/tool tray assembly to the silencer.
5. Close the cover; then tip the cover/tool tray assembly forward and out of its slots and remove the assembly.
6. Using a large flat-blade screwdriver, remove the baffle/resonator tabs from the air-intake silencer slots and remove the baffle/resonator to access the intake bores.

■ **NOTE:** The baffle/resonator can be removed more easily by removing the back tabs first.

7. Start the engine and allow to idle. With the engine idling, spray Arctic Cat Engine Storage Preserver (p/n 0636-177) into the intake(s) until the engine exhaust starts to smoke heavily or until the engine starts to drop in RPM. Turn engine off.

■ **NOTE:** On M-Series and “Laydown” engine models, secure the air silencer boots onto the intake bores.

■ **NOTE:** On some standard models, install the air-intake silencer boot(s); on some standard models, install the baffle/resonator and the cover/tool tray assembly.

8. Plug the exhaust system outlet with a clean cloth.
9. With the ignition switch in the OFF position:
  - A. Disconnect the high tension lead(s) from the spark plug(s); then remove the plug(s), connect

it/them to the lead(s), and ground it/them on the cylinder head(s).

**⚠ CAUTION**

**Never crank the engine over without grounding the spark plug(s). Damage to coils and/or CDI unit may result.**

- B. Pour 29.5 ml (1 fl oz) of SAE #30 petroleum-based oil into each spark plug hole and pull the recoil starter handle slowly about 10 times.
- C. Install the spark plug(s) and connect the high tension lead(s).
- 10. On carbureted models, drain the gas from each carburetor float chamber.
- 11. Fill the gas tank to its rated capacity; then add Arctic Cat Fuel Stabilizer (p/n 0638-165) to the gas tank following directions on the container for the stabilizer/gasoline ratio. Tighten the gas tank cap securely.
- 12. Drain the chain-case lubricant by removing the chain-case drain plug located on the backside of the chain-case assembly. Remove the chain-case cover and inspect chain, sprockets, chain tensioner, and rollers for wear and the chain for proper tension. Install the drain plug, chain-case cover, and seal; then pour Arctic Cat Transmission Lube (p/n 0636-817) into the filler hole according to appropriate specifications.
- 13. Drain the fluid from the gear case. Install the drain plug; then pour Arctic Cat ACT Drive Fluid (p/n 4639-027) into the gear case according to appropriate specifications.
- 14. Clean and inspect the drive clutch and driven pulley.
- 15. Remove the drive belt from the drive clutch/driven pulley. Lay the belt on a flat surface or slide it into a cardboard sleeve to prevent warping or distortion during storage; then clean and inspect the drive clutch and driven pulley.
- 16. Apply light oil to the upper steering post bushing, ski spindles and bolts, front and rear pivot bushings of the skid frame, and plungers of the shock absorbers.
- 17. Lubricate all grease fittings (front and rear suspension, spindles, speedometer drive adapter, and the driven shaft support bearing) with a low-temperature grease.
- 18. Tighten all nuts, bolts, and cap screws making sure all calibrated nuts, bolts, and cap screws are tightened to specifications. Make sure all rivets holding the components together are tight. Replace all loose rivets.

- 19. Clean and polish the hood, console, and chassis with Arctic Cat Hood and Windshield Cleaner/Polish (p/n 0636-174). **DO NOT USE SOLVENTS OR SPRAY CLEANERS. THE PRO-PELLENT WILL DAMAGE THE FINISH.**
- 20. On electric start models, disconnect the battery cables making sure to disconnect the negative cable first; then clean the battery posts and cables.
- 21. If possible, store the snowmobile indoors. Raise the track off the floor by blocking up the back end making sure the snowmobile is secure. Loosen the track adjusting bolts to reduce track tension. Cover the snowmobile with a machine cover or a heavy tarpaulin to protect it from dirt and dust.
- 22. If the snowmobile must be stored outdoors, position the snowmobile out of direct sunlight; then block the entire snowmobile off the ground making sure the snowmobile is secure. Loosen the track adjusting bolts to reduce track tension. Cover with a machine cover or a heavy tarpaulin to protect it from dirt, dust, and rain.

**⚠ CAUTION**

**Avoid storing in direct sunlight and using a plastic cover as moisture may collect on the snowmobile causing corrosion.**

## Preparation After Storage

Taking the snowmobile out of storage and correctly preparing it for another season will assure many miles and hours of trouble-free snowmobiling. Arctic Cat recommends the following procedure:

**⚠ CAUTION**

**On carbureted models if the gas in each carburetor float chamber was not drained prior to storage, the carburetor(s) must be cleaned before starting the engine.**

- 1. Clean the snowmobile thoroughly. Polish the exterior of the snowmobile.
- 2. Clean the engine. Remove the cloth from the exhaust system. Check exhaust system and air-intake silencer/air filter for obstructions.
- 3. Inspect all control wires and cables for signs of wear or fraying. Replace if necessary. Use cable ties or tape to route wires and cables away from hot or rotating parts.
- 4. Inspect the drive belt for cracks and tears. Check belt specifications. Replace if damaged or worn. Install the drive belt.

■ **NOTE:** If the old belt is worn but in reasonable condition, retain it with the snowmobile as a spare in case of emergency.

5. On carbureted models, inspect the in-line fuel filter and replace if necessary.
6. Inspect all fuel hoses and oil hoses for deterioration or cracks; replace if necessary. Make sure all connections are tight; then fill the oil-injection reservoir with the recommended injection oil.

■ **NOTE:** After prolonged storage, Arctic Cat recommends one tankful of 100:1 gas/oil mixture be used in conjunction with the oil-injection system to ensure proper lubrication.

7. Inspect the entire brake system, all controls, headlight, taillight, brakelight, ski wear bars, and headlight aim; adjust or replace as necessary.
8. Inspect each spark plug. Replace, gap, or clean as necessary.
9. Adjust the track to the proper tension and alignment. Lock the jam nuts.
10. Adjust the carburetor(s) and choke cable on carbureted models and throttle cable on all models.

**⚠ WARNING**

**On VM-style carburetors, be sure to tighten the swivel adapter jam nuts securely. If a jam nut isn't tightened, the adjuster can rotate out of the carburetor cap causing the piston valve not to return to the full-closed position.**

11. Tighten all nuts, bolts, and cap screws making sure all calibrated nuts, bolts, and cap screws are tightened to specifications.
12. Lubricate all grease fittings (rear suspension, spindles, speedometer drive adapter, and the driven shaft support bearing) with a low-temperature grease.
13. On liquid cooled models, check the coolant level and all coolant hoses and connections for deterioration or cracks. Add properly mixed coolant as necessary.
14. On fan cooled models, clean the engine cooling fins and all vents.
15. On electric start models, charge the battery; then connect the battery cables making sure to connect the positive cable first. Test the electric start system.

## After Break-In Checkup (100 Miles)

The 100 mile checkup offered by some dealerships reduces problems and warranty costs. A program of this kind should be offered by all dealerships. Many dealerships have added the price of the checkup into the selling price of the snowmobile, and others offer it as a bonus to the customers who purchase snowmobiles from their dealership.

There are three areas that require adjustment after the break-in period in order to obtain peak performance. These areas are the following.

**1**

- A. Carburetor jetting
- B. Drive belt deflection/Break-In
- C. Track tension and alignment

**CARBURETOR JETTING (Carbureted Models)**— Altitude, temperature, and the use of oxygenated gasoline affect the carburetion needed for optimum engine performance. The carburetor main jets must be changed in conjunction with changes in operating altitude, oxygenated gasoline usage, and temperature.

**DRIVE BELT DEFLECTION** — Drive belt deflection is very important to the snowmobile. Even if it is checked and is correct when the snowmobile is set up, it does change (more so during the break-in period). This is because the rubber engine mounts and the rubber snubber on the torque link will all take a “set” during the first 100 miles, which allows the distance between the drive clutch and driven pulley to shorten. When this happens, the snowmobile will appear to have a too long drive belt. To add to this, the drive belt itself wears and stretches somewhat. This all leads to a low-end performance problem and, if not corrected, causes premature drive belt wear.

After the break-in period, drive belt deflection should be checked according to the instructions given in this manual. To correct for too much deflection, washer(s) from between the driven pulley sheaves can be removed to “tighten the drive belt” and allow the belt to return to the proper ratio for drive clutch engagement.

**DRIVE BELT BREAK-IN** — It is critical for maximum drive belt life to allow the belt to break in before subjecting it to hard use such as wide-open-throttle operation or hill climbing.

The first 20 miles on the drive belt should be at 1/2 throttle or lower. This will allow the belt to gain its optimum flexibility and will extend belt life. Do not exceed 50 MPH during the first 20 miles.

If this procedure isn't followed, it is possible to destroy a new drive belt in less than 50 miles. This should be explained to customers at the time of drive belt sales.

To increase the life of a drive belt, it is very important that the belt be warmed up before subjecting it to any type of use. In cold temperature (0° or below), the engine should be allowed to idle for a period of 8 to 10 minutes. This will allow heat from the engine compartment to soften the drive belt. Not only will this procedure increase belt life but will also help prevent engine damage from cold seizure.

Each operator should be instructed to drive the snowmobile for several minutes at a low throttle setting to warm the belt up before using wide-open-throttle. This practice should be followed on all models for maximum belt life.

In addition to instructing each operator about these drive belt break-in procedures, Arctic Cat also recommends that the operators be informed that a drive belt (like brake pads, wear strips, etc.) is considered a normal wear item and is listed as an exclusion on the Arctic Cat Limited Warranty.

**TRACK TENSION AND ALIGNMENT** — There is a certain amount of stretch on all tracks during the first 500 miles. The track must be adjusted after the first 50 to 100 miles to the specifications given in the Setup and Pre-delivery Manual and periodically thereafter. If these adjustments aren't performed, the track may "derail" which leads to track and slide rail damage.

Along with these three major areas, there are also other areas that should be checked and adjusted during the "After Break-In Checkup." A checklist to assist you with this service follows. Not only will the customer be happier, but it also gets the customer back into your dealership, which in many cases will mean additional sales in accessories, belts, oil, etc.

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## After Break-In Checkup Checklist

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Below is a recommended list of items to check after the break-in period. By performing this inspection, warranty cost can be reduced and customer satisfaction can be increased.

The recommended mileage for this inspection is between 100 and 300 miles. Please encourage the customers to have this important checkup done.

- Jet carburetor(s) according to average temperature, type of gasoline being used, and altitude
- Adjust drive belt deflection
- Adjust track tension and alignment
- Adjust throttle cable tension
- Check oil-injection pump adjustment
- Check engine idle
- Check coolant level
- Check chain case lubricant level
- Check lights (high/low beam, brakelight)
- Check safety switch operation
- Check driveshaft area for any rubbing components
- Check steering hardware for tightness
- Check skid frame and A-arm mounting hardware for tightness
- Check brake lever travel and adjustment
- Grease all lubrication points

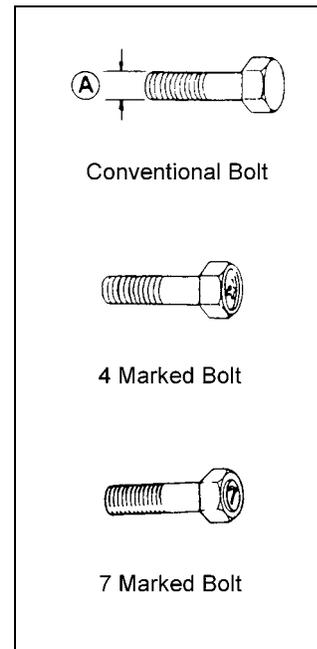
# Torque Conversions

ft-lb	kg-m								
1	0.1	21	2.9	41	5.7	61	8.4	81	11.2
2	0.3	22	3.0	42	5.8	62	8.6	82	11.3
3	0.4	23	3.2	43	5.8	63	8.7	83	11.5
4	0.6	24	3.3	44	6.1	64	8.9	84	11.6
5	0.7	25	3.5	45	6.2	65	9.0	85	11.8
6	0.8	26	3.6	46	6.4	66	9.1	86	11.9
7	1.0	27	3.7	47	6.5	67	9.3	87	12.0
8	1.1	28	3.9	48	6.6	68	9.4	88	12.2
9	1.2	29	4.0	49	6.8	69	9.5	89	12.3
10	1.4	30	4.2	50	6.9	70	9.7	90	12.5
11	1.5	31	4.3	51	7.1	71	9.8	91	12.6
12	1.7	32	4.4	52	7.2	72	10.0	92	12.8
13	1.8	33	4.6	53	7.3	73	10.1	93	12.9
14	1.9	34	4.7	54	7.5	74	10.2	94	13.0
15	2.1	35	4.8	55	7.6	75	10.4	95	13.1
16	2.2	36	5.0	56	7.7	76	10.5	96	13.3
17	2.4	37	5.1	57	7.9	77	10.7	97	13.4
18	2.5	38	5.3	58	8.0	78	10.8	98	13.6
19	2.6	39	5.4	59	8.2	79	10.9	99	13.7
20	2.8	40	5.5	60	8.3	80	11.1	100	13.8

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## Tightening Torque (General Bolts)

Type of Bolt	Thread Diameter A (mm)	Tightening Torque	
		kg-m	ft-lb
(Conventional or 4 Marked Bolt)	5	0.2-0.4	1.5-3.0
	6	0.4-0.7	3.0-5.0
	8	1.0-1.6	7.0-11.5
	10	2.2-3.5	16.0-25.5
(7 Marked Bolt)	5	0.3-0.6	2.0-4.5
	6	0.8-1.2	6.0-8.5
	8	1.8-2.8	13.0-20.0
	10	4.0-6.0	29.0-43.5



## Fraction/Decimal Conversion Chart

kg-m x 7.235 = ft-lb  
ft-lb x 0.1383 = kg-m

8ths	16ths	32nds	64ths	64ths (cont)
1/8 = .125	1/16 = .0625	1/32 = .03125	1/64 = .015625	33/64 = .515625
1/4 = .250	3/16 = .1875	3/32 = .09375	3/64 = .046875	35/64 = .546875
3/8 = .375	5/16 = .3125	5/32 = .15625	5/64 = .078125	37/64 = .578125
1/2 = .500	7/16 = .4375	7/32 = .21875	7/64 = .109375	39/64 = .609375
5/8 = .625	9/16 = .5625	9/32 = .28125	9/64 = .140625	41/64 = .640625
3/4 = .750	11/16 = .6875	11/32 = .34375	11/64 = .171875	43/64 = .671875
7/8 = .875	13/16 = .8125	13/32 = .40625	13/64 = .203125	45/64 = .703125
—	15/16 = .9375	15/32 = .46875	15/64 = .234375	47/64 = .734375
—	—	17/32 = .53125	17/64 = .265625	49/64 = .765625
—	—	19/32 = .59375	19/64 = .296875	51/64 = .796875
—	—	21/32 = .65625	21/64 = .328125	53/64 = .828125
—	—	23/32 = .71875	23/64 = .359375	55/64 = .859375
—	—	25/32 = .78125	25/64 = .390625	57/64 = .890625
—	—	27/32 = .84375	27/64 = .421875	59/64 = .921875
—	—	29/32 = .90625	29/64 = .453125	61/64 = .953125
—	—	31/32 = .96875	31/64 = .484375	63/64 = .984375

## Drill Bit Sizes (Number) Chart

No.	Size of Drill in Inches						
1	.2280	21	.1590	41	.0960	61	.0390
2	.2210	22	.1570	42	.0935	62	.0380
3	.2130	23	.1540	43	.0890	63	.0370
4	.2090	24	.1520	44	.0860	64	.0360
5	.2055	25	.1495	45	.0820	65	.0350
6	.2040	26	.1470	46	.0810	66	.0330
7	.2010	27	.1440	47	.0785	67	.0320
8	.1990	28	.1405	48	.0760	68	.0310
9	.1960	29	.1360	49	.0730	69	.0292
10	.1935	30	.1285	50	.0700	70	.0280
11	.1910	31	.1200	51	.0670	71	.0260
12	.1890	32	.1160	52	.0635	72	.0250
13	.1850	33	.1130	53	.0595	73	.0240
14	.1820	34	.1110	54	.0550	74	.0225
15	.1800	35	.1100	55	.0520	75	.0210
16	.1770	36	.1065	56	.0465	76	.0200
17	.1730	37	.1040	57	.0430	77	.0180
18	.1695	38	.1015	58	.0420	78	.0160
19	.1660	39	.0995	59	.0410	79	.0145
20	.1610	40	.0980	60	.0400	80	.0135

# MM/IN. Conversion Chart

mm	in.	mm	in.	mm	in.	mm	in.	mm	in.
.01	.00039	.41	.01614	.81	.03189	21	.82677	61	2.40157
.02	.00079	.42	.01654	.82	.03228	22	.86614	62	2.44094
.03	.00118	.43	.01693	.83	.03268	23	.90551	63	2.48031
.04	.00157	.44	.01732	.84	.03307	24	.94488	64	2.51968
.05	.00197	.45	.01772	.85	.03346	25	.98425	65	2.55905
.06	.00236	.46	.01811	.86	.03386	26	1.02362	66	2.59842
.07	.00276	.47	.01850	.87	.03425	27	1.06299	67	2.63779
.08	.00315	.48	.01890	.88	.03465	28	1.10236	68	2.67716
.09	.00354	.49	.01929	.89	.03504	29	1.14173	69	2.71653
.10	.00394	.50	.01969	.90	.03543	30	1.18110	70	2.75590
.11	.00433	.51	.02008	.91	.03583	31	1.22047	71	2.79527
.12	.00472	.52	.02047	.92	.03622	32	1.25984	72	2.83464
.13	.00512	.53	.02087	.93	.03661	33	1.29921	73	2.87401
.14	.00551	.54	.02126	.94	.03701	34	1.33858	74	2.91338
.15	.00591	.55	.02165	.95	.03740	35	1.37795	75	2.95275
.16	.00630	.56	.02205	.96	.03780	36	1.41732	76	2.99212
.17	.00669	.57	.02244	.97	.03819	37	1.45669	77	3.03149
.18	.00709	.58	.02283	.98	.03858	38	1.49606	78	3.07086
.19	.00748	.59	.02323	.99	.03898	39	1.53543	79	3.11023
.20	.00787	.60	.02362	1.0	.03937	40	1.57480	80	3.14960
.21	.00827	.61	.02402	1	.03937	41	1.61417	81	3.18897
.22	.00866	.62	.02441	2	.07874	42	1.65354	82	3.22834
.23	.00906	.63	.02480	3	.11811	43	1.69291	83	3.26771
.24	.00945	.64	.02520	4	.15748	44	1.73228	84	3.30708
.25	.00984	.65	.02559	5	.19685	45	1.77165	85	3.34645
.26	.01024	.66	.02598	6	.23622	46	1.81102	86	3.38582
.27	.01063	.67	.02638	7	.27559	47	1.85039	87	3.42519
.28	.01102	.68	.02677	8	.31496	48	1.88976	88	3.46456
.29	.01142	.69	.02717	9	.35433	49	1.92913	89	3.50393
.30	.01181	.70	.02756	10	.39370	50	1.96850	90	3.54330
.31	.01220	.71	.02795	11	.43307	51	2.00787	91	3.58267
.32	.01260	.72	.02835	12	.47244	52	2.04724	92	3.62204
.33	.01299	.73	.02874	13	.51181	53	2.08661	93	3.66141
.34	.01339	.74	.02913	14	.55118	54	2.12598	94	3.70078
.35	.01378	.75	.02953	15	.59055	55	2.16535	95	3.74015
.36	.01417	.76	.02992	16	.62992	56	2.20472	96	3.77952
.37	.01457	.77	.03032	17	.66929	57	2.24409	97	3.81889
.38	.01496	.78	.03071	18	.70866	58	2.28346	98	3.85826
.39	.01535	.79	.03110	19	.74803	59	2.32283	99	3.89763
.40	.01575	.80	.03150	20	.78740	60	2.36220	100	3.93700

1

# Servicing Symbols

Listed in the table below are symbols indicating special instructions and other important information necessary for proper servicing. Please note the definition for each symbol. These symbols are used throughout this two-volume set.

SYMBOL	DESCRIPTION
	Torque control required
	242 - apply blue Loctite #242 (p/n 1639-815) 243 - apply blue Loctite #243 (p/n 1639-413) 270 - apply green Loctite #270 (p/n 1639-817) 271 - apply red Loctite #271 (p/n 1639-820) 609 - apply green Loctite #609 (p/n 1639-821)
	Lubricate with Arctic Cat 50:1 Injection Oil (p/n 0636-286) Lubricate with Arctic Cat Extreme 50:1 Injection Oil (p/n 0639-112)
	Lubricate with Arctic Cat Low-Temp Grease (p/n 0636-593)
	3B - Three Bond Sealant (p/n 0636-070) HT - High-Temp Sealant (p/n 0636-069) AS - Anti-Seize Thread Compound (p/n 0678-146)

# SECTION 2 — ENGINE

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# Arctic Cat Engine Specifications

ITEM	370 cc	440 cc	500 cc w/o APV	500 cc w APV	550 cc	570 cc	600 cc STD	600 cc "Laydown" EFI	700 cc Carb	700 cc EFI	900 cc Carb	900 cc EFI	
Engine Model Number	AA37A7	AS44A8	AV50L4	AV50L4	ACB55L6	AA56A4	AD60L9	AJ60L2	AE70L3	AD70L3	AA86L4	AB86L4	
Displacement	367 — cc 26.3 — cu in.	431 26.3	499 30.4	499 30.4	550 33.56	565 34.5	599 36.54	599 36.54	698 42.59	698 42.59	862 52.6	862 52.6	
No. of Cylinders	2	2	2	2	2	2	2	2	2	2	2	2	
Bore	60 — mm 2.362 — in.	65 2.559	71 2.795	71 2.795	73.4 2.880	73.8 2.910	78 3.071	73.8 2.906	79.7 3.145	79.7 3.145	85 3.346	85 3.346	
Stroke	65 — mm 2.559 — in.	65 2.559	63 2.480	63 2.480	65 2.559	66 2.598	62.7 2.469	70 2.755	70 2.755	70 2.755	76 2.992	76 2.992	
Compression Ratio	6.3:1	6.5:1	6.30:1	6.30:1	6.6:1	6.4:1	6.26:1	6.46:1	6.48:1	6.48:1	6.41:1	6.41:1	
Cooling System	Fan Cooled	Fan Cooled	Liquid Cooled	Liquid Cooled	Liquid Cooled	Fan Cooled	Liquid Cooled	Liquid Cooled	Liquid Cooled	Liquid Cooled	Liquid Cooled	Liquid Cooled	
Gasoline Octane (min)	87	87	87	87	87	87	87	87	87	87	87	87	
Fuel Mixture	Oil Injection	Oil Injection	Oil Injection	Oil Injection	Oil Injection	Oil Injection	Oil Injection	Oil Injection	Oil Injection	Oil Injection	Oil Injection	Oil Injection	
Ignition Timing	18 <sup>⊕</sup> — degrees — mm — in.	18 <sup>⊕</sup> 2.012 0.079	30 <sup>⊕</sup> 3.692 0.207	30 <sup>⊕</sup> 3.692 0.207	33 <sup>⊕</sup> 6.556 0.258	18 <sup>⊕</sup> 3.300 0.081	24 <sup>⊕</sup> 6.096 0.241	15 <sup>⊕</sup> 3.937 0.155	12 <sup>⊕</sup> 3.150 0.124	12 <sup>⊕</sup> 3.150 0.124	12 <sup>⊕</sup> 3.150 0.124	17 <sup>⊕</sup> 4.331 0.171	23 <sup>⊕</sup> 5.907 0.233
Spark Plug (NGK)	BR9EYA	BR9EYA	BR9EYA	BR9EYA	BR9EYA	BR9EYA	BR9EYA	BR9EYA	BR9EYA	BR9EYA	BR9EYA	BR9EYA	
Spark Plug Gap	0.7-0.8 — mm 0.028-0.031 — in.	0.7-0.8 0.028-0.031											
Lighting Coil Output	12V/185W	12V/185W	12V/156W	12V/156W	12V/180W	12V/210W	12V/190W	12V/190W	12V/156W	12V/190W	12V/156W	12V/190W	
Ignition Type	CD/INOI	CD/INOI	CD/INOI	CD/INOI	CD/INOI	CD/INOI	CD/INOI	CD/INOI	CD/INOI	CD/INOI	CD/INOI	CD/INOI	
Piston Skirt/Cylinder Clearance Range	0.060-0.150 — mm 0.0024-0.0059 — in.	0.060-0.150 0.0024-0.0059	0.075-0.105 0.0029-0.0041	0.075-0.105 0.0029-0.0041	0.095-0.150 0.0037-0.0059	0.095-0.150 0.0037-0.0059	0.083-0.150 0.0033-0.0059	0.075-0.105 0.0029-0.0041	0.075-0.105 0.0029-0.0041	0.075-0.105 0.0029-0.0041	0.075-0.105 0.0029-0.0041	0.075-0.105 0.0029-0.0041	
Piston Ring End Gap Range	0.15-0.80 — mm 0.006-0.031 — in.	0.15-0.80 0.006-0.031	0.20-0.40 0.008-0.016	0.20-0.40 0.008-0.016	0.20-0.83 0.008-0.033	0.20-0.83 0.008-0.033	0.20-0.83 0.008-0.033	0.30-0.50 0.012-0.0196	0.30-0.50 0.012-0.0196	0.30-0.50 0.012-0.0196	0.30-0.50 0.012-0.020	0.30-0.50 0.012-0.020	
Cylinder Tueness Limit (max)	0.1 — mm 0.004 — in.	0.1 0.004											
Piston Pin Diameter Range	17.995-18.000 — mm 0.7085-0.7087	15.995-16.000 0.6297-0.6299	21.995-22.000 0.8659-0.8661	21.995-22.000 0.8659-0.8661	19.995-20.000 0.7872-0.7874	17.995-18.000 0.7085-0.7087	19.995-20.000 0.7872-0.7874	21.995-22.000 0.8659-0.8661	21.995-22.000 0.8659-0.8661	21.995-22.000 0.8659-0.8661	23.995-24.000 0.9447-0.9449	23.995-24.000 0.9447-0.9449	
Piston Pin Bore Diameter Range	17.998-18.006 — mm 0.7086-0.7089	15.996-16.004 0.6298-0.6301	22.002-22.010 0.8662-0.8665	22.002-22.010 0.8662-0.8665	20.002-20.010 0.7875-0.7878	17.998-18.006 0.7086-0.7089	20.002-20.010 0.7875-0.7878	22.002-22.010 0.8662-0.8665	22.002-22.010 0.8662-0.8665	22.002-22.010 0.8662-0.8665	24.002-24.010 0.9450-0.9453	24.002-24.010 0.9450-0.9453	
Connecting Rod Small End Bore Diameter Range	23.003-23.011 — mm 0.9056-0.9059	21.003-21.011 0.8289-0.8272	27.003-27.011 1.0631-1.0634	27.003-27.011 1.0631-1.0634	26.003-26.011 1.0237-1.0241	23.003-23.011 0.9056-0.9059	26.003-26.011 1.0237-1.0241	27.003-27.011 1.0631-1.0634	27.003-27.011 1.0631-1.0634	27.003-27.011 1.0631-1.0634	29.003-29.011 1.1410-1.1420	29.003-29.011 1.1410-1.1420	
Connecting Rod Radial Play Range	0.02-0.03 — mm 0.0008-0.0012 — in.	0.02-0.03 0.0008-0.0012	0.003-0.020 0.0001-0.0007	0.003-0.020 0.0001-0.0007	0.02-0.03 0.0008-0.0012	0.02-0.03 0.0008-0.0012	0.02-0.03 0.0008-0.0012	0.003-0.020 0.0001-0.0007	0.003-0.020 0.0001-0.0007	0.003-0.020 0.0001-0.0007	0.003-0.020 0.0001-0.0008	0.003-0.020 0.0001-0.0008	
Crankshaft Runout (l.r.)	0.05 — mm 0.002 — in.	0.05 0.002											
Crankshaft End Play Range	0.05-0.10 — mm 0.002-0.004 — in.	0.05-0.10 0.002-0.004											
Reed Stopper Height	N/A	N/A	8.0 0.315	8.0 0.315	N/A	6.0 0.236	9.4- 9.8 0.370- 0.385	11.0 0.433	11.0 0.433	11.0 0.433	11.0 0.433	11.0 0.433	

- ① @ 1400 RPM
- ② @ 1800 RPM
- ③ @ 2000 RPM
- ④ @ 2500 RPM
- ⑤ @ 3200 RPM
- ⑥ @ 3500 RPM
- ⑦ @ 4000 RPM
- ⑧ @ 4350 RPM

\*Engine Warm

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