



# M8000 ALPHA ONE™ MODELS

2020 Arctic Cat® Technical Specifications

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# THREE-IN-ALPHA ONE



Hardcore 8000



Mountain Cat® 8000



M 8000



Riders looking to make a giant leap in backcountry performance will find their sweet spot in one of three M 8000 mountain snowmobile packages centered around the revolutionary Alpha One suspension system.

Alpha One consists of a lightweight and rigid single-beam rear suspension constructed from extruded aluminum and magnesium. It runs in the middle of a specially designed lightweight

Power Claw™ track featuring a single row of track windows, a deep snow-specific design with 3-in. paddles and a 3.5-in. pitch, plus unique internal-track construction.

The result is a track in either a 154- or 165-in. length that bends and conforms to the snow, whether the sled is on a side hill, flat surface or going straight up in powder. With maximum side flex, riders can maneuver the Alpha One to a degree not possible with conventional snowmobiles, carving circles well inside the kind of tight turns that conventional snowmobiles are incapable of. The suspension is light and stiff, allowing the new track to flex and conform to the snow and riding surface.

Alpha One sets a benchmark in lightweight mountain performance and maneuverability in three model choices, all featuring the narrow-profile bodywork and Ascender™ platform, plus the lightweight Arctic Mountain Suspension™ (AMS) with mountain-specific spindles, geometry and a 35.5-in. to 37.5-in. stance for better side hilling, reduced drag in the snow and optimal handling.

All three M 8000 models get their mojo from a new, Next-Gen C-TEC2™ 8000-Series engine delivering a new level of clean Arctic Cat 2-stroke engine performance and technology. The 794cc C-TEC2 twin features new cylinders, pistons, combustion chamber, flywheel and fuel rail, plus a new fuel calibration strategy that delivers a cleaner and more responsive performance, with improved fuel economy and power in the 165 HP class of engines. That

performance stays consistent with the quick acceleration and auto-adjusting design of the TEAM® Rapid Response™ II drive clutch, Rapid Reaction driven clutch and the entire Arctic Drive System.™

M 8000 models also feature a vertical steering post, 1-in. mountain-height windshield, 11.7-gal. fuel tank and a front-mounted heat exchanger that sets the standard for reduced ice buildup, and they include skid frame-mounted ice scratchers.

The M 8000 Alpha One is a new lightweight base entry into the Arctic Cat mountain category and features Arctic Cat's IFP 1.5 ski and track shocks and dual halogen headlight, and it's available in Charcoal/Green color.

Riders who want the maximum tree and backcountry performance can opt for the Mountain Cat package. It features the ultimate, adjustable FOX FLOAT® 3 QSL rear-track shock matched with FOX FLOAT QS3 ski and front track shocks, LED headlight and goggle holder. It's available with or without push-button electric start.

The M 8000 Hardcore is aimed at hillclimbers interested in competition and launching big air in the backcountry. It comes equipped with coil-over FOX® ZERO QS3 and QSL shocks for maximum adjustability, plus added tunnel reinforcement to withstand the rigors of big-air riding, an LED headlight and a goggle holder.





## Alpha One Rear-Suspension System

Alpha One is the revolutionary Arctic Cat rear-suspension system that uses the newest technology and innovation to deliver the industry's lightest rear suspension. Unlike traditional slide-rail suspension designs that have two parallel rails positioned on the outer portion of a track, Alpha One features one single aluminum beam positioned in the middle of the Power Claw track, allowing the track to flex significantly and conform to the snow.

The result is the lightest suspension in its category, and it offers an entirely new level of increased maneuverability with less required rider input, substantially easier side hilling, increased traction and deep snow performance. Best of all, Alpha One eases side hilling and maximizes maneuverability for beginning riders while offering a higher level of performance and capability for experienced riders.

The single rear beam doesn't trap snow within the skid frame like traditional designs, so it rides even lighter in real-world conditions.

Constructed from extruded aluminum with magnesium attachment points, the Alpha One suspension has a 15-in. wide Power Claw track in 154-in. and 165-in. lengths with 3-in. lugs. Its design and unique internal construction support the increased flexibility, while its 3.5-in. pitch design results in a 6.5-lb. weight reduction compared to traditional tracks. Large 10-in. rear idler wheels ensure maximum efficiency with minimal power loss.



## Ascender Platform

All 2020 M Series Alpha One models deliver the highest level of backcountry performance and handling via the Ascender Platform:

- The driveshaft is optimally positioned lower and rearward for increased clearance of the 3-in. lug track while also enabling the use of 8-tooth drive sprockets. This results in a flat track-to-snow approach angle for maximum floatability, quick climbing on top of the snow while accelerating and improved overall handling.
- Optimal shaping of the footrest, tunnel support and belly pan allows the rider's feet to move forward on the tunnel-edge roll for maximum ergonomic options for side hilling.
- Overall lightweight design.



## Ascender Bodywork

Ascender Mountain bodywork is narrow to provide easier side hilling and carving in deep snow conditions. It's also light and provides easy access to under-hood service components.



## Mountain Technology



### LED Headlights

An LED headlight on select 2020 M 8000 models delivers enhanced lighting performance. When the high beam is activated, the low beam also stays on to deliver a light pattern with great range and width.



### Arctic Mountain Suspension (AMS)

The AMS features mountain-specific geometry, spindles and A-arms for easy-to-manuever handling in deep snow. Its 27-degree spindle caster angle provides optimal ski camber for off-trail cornering and more predictable countersteering, especially when side hilling. The lightweight, forged-aluminum spindles have minimal surface area, reducing drag and improving performance in deep snow. Dual-phase, high-strength alloy-steel A-arms are lightweight and durable. AMS delivers 10 in. of travel and comes equipped with a standard sway bar for flatter, more predictable cornering on hardpack trails.



### Hand Controls

Arctic Cat snowmobiles feature handlebar-mounted controls that are easy to use while riding and that transmit visible information on the digital instrument gauge. A button on the handlebar controls helps toggle the display screen on the gauge. The push-to-start button (that doubles as the reverse button) allows the rider to keep both hands on the handlebars while starting models equipped with electric start. Momentary-style hand and thumb warmer switches provide multiple heat level settings and also prevent unintended setting changes.



### Ascender Chassis

Built ultra-rigid with a neutrally balanced rider position, the Ascender chassis incorporates stampings, forgings and castings to optimize the inherent strengths of each. Its design ties together the load-bearing chassis components, eliminating chassis flex and fatigue.

### Magnetic Tether Switch

Arctic Cat snowmobiles come equipped with a tether switch in addition to the ignition key. The tether uses magnetic connectivity (instead of a plunger) to enable the engine to run.





## 35.5-in. to 37.5-in. Ski Stance

To enhance side hilling performance and to ease laying, carving and countersteering in deep snow while allowing riders to calibrate their sleds for their own riding style, all Arctic Cat M models feature a narrow 35.5-in. to 37.5-in. adjustable ski stance.



## Alpha One Power Claw Track

This lightweight, single-ply track with a 3-in. pitch sets the standard for deep snow performance with stagger set, curved-forward paddle towers that won't fold over or take a set, and it's matched with Attack 20™ paddles for superior deep snow floatation. Featuring a 3.5-in. pitch in 154- and 165-in. lengths, the Power Claw design is the industry leader in deep snow traction and performance.



## Vertical Steering Post

All M sleds feature a vertical steering post which delivers a more natural handlebar turning arc for a standing rider who wants to countersteer on steep side hills, compared to the traditional "laydown" post.



## Push-Button Reverse

Arctic Cat snowmobiles are equipped with electronic push-button reverse systems for quick, easy activation. The 8000 engines utilize engine-reverse technology, also activated by a push button.



## G2 ProClimb-7 Skis

The G2 ProClimb-7 skis feature an optimal shape that delivers the best flotation with a slightly less aggressive keel shape for easier steering and more consistent performance in varying snow conditions. Molded foot traction on the top of the skis adds boot traction and increased usability in stuck conditions. The G2 skis work in concert with the AMS spindles to deliver a new level of deep snow performance and adjustability. They incorporate a tapered width, from 7 in. at the tip to 6.5 in. in the middle, which works with a unique rubber dampener to keep the ski tips up and floating on top of the snow while preventing diving or knifing. A wide ski saddle accommodates a full 2-in. lateral ski-stance adjustability.



## TEAM Drive and Driven Clutches

The Arctic Drive System features TEAM Rapid Response II drive and Rapid Reaction BOSS driven clutch combination for smooth shifting, optimal performance, maximum durability and reduced weight. The Rapid Response II drive clutch features a roller bearing on the shaft that enables an auto-adjusting belt tension design and delivers consistent performance without manual adjustments. It also features a 12.5% lower effective starting ratio (while maintaining the top ratio) for smoother engagement and reduced belt wear at drive-away speed, with more evenly distributed force for lower belt pressure. It's a design that's unique to Arctic Cat.

The Rapid Reaction BOSS driven clutch features the built-on shaft secondary design, in which the clutch is designed with machined sheaves that mount directly to the machined-matched driven shaft. Unique to Arctic Cat, BOSS eliminates the need for the steel clutch post in traditional designs, saving weight, reducing rotating mass, improving clutch balance and achieving tighter clutch/shaft mounting tolerance. In addition to the benefits of BOSS, the Rapid Reaction driven clutch features optimized cooling fin geometry that results in low clutch and belt temperatures for improved belt life and performance. The Rapid Reaction BOSS is also 0.25 lbs. lighter than previous designs, resulting in quicker acceleration.

## Stealth Lightweight Master Cylinder Brake System

The Stealth lightweight master cylinder brake system has a redesigned lever increasing braking power with less required force. The dual-piston caliper is positioned with the rotor so that any chassis flex won't knock back the pistons. Reduced knockback allows smaller caliper pistons and a shortened lever "throw" before the pads contact the rotor, which enables more powerful braking pressure. The master cylinder is more protected and is less likely to be damaged in extreme situations. The lever shape is ergonomically comfortable, and its composite construction feels warmer compared to aluminum levers.

## Push-Button Electric Start



The convenience of electric start or the weight savings on non-electric is an option on many 2020 M Series models. Non-electric start models feature a lighter weight seat that also offers rear storage space.

## Deluxe Digital Gauge

The Deluxe Digital gauge features two operator-configurable displays, with information available for speed, rpm, maximum rpm, clock, altimeter, odometer, hours, Trip 1, Trip 2, coolant temperature, exhaust temperature, intake air temperature, voltage and fuel level.

## Single Front Heat Exchanger

All M Series models incorporate the lightweight, single, front-mounted heat exchanger. The system is nearly 4 lbs. lighter than a full-length heat exchanger and results in the least amount of snow and slush retention during riding, helping the M Series maintain their real-world weight savings advantage. All M Series snowmobiles also come standard with ice scratchers.

## High-Power Halogen Headlight

The halogen headlight reflector optics extend the high beam pattern downward by 5 degrees for optimum light pattern aim and coverage.





### FOX FLOAT 3 QSL Rear Track Shock

The FOX FLOAT 3 QSL rear track shock was developed by Arctic Cat and FOX with easy adjustability for maximum deep-snow performance on the Mountain Cat Alpha One. The QSL features 1-2-L compression settings that correspond to light, medium and “locked” calibration. In deep snow conditions, the L position prevents too much rear-arm squat and exaggerated ski lift to provide greater control and performance. The L position is not fully locked: there’s a blow-off point in the valve to prevent damage to the shock during severe compression. A dial mounted on the remote reservoir can be turned easily and quickly to customize the compression calibration for riding conditions and intensity. It utilizes a remote reservoir for fade-free performance. It comes in a 1.5-in. diameter body.



### Arctic Cat IFP Gas Shocks

Arctic Cat snowmobiles utilize one or more of the Arctic Cat IFP gas shocks. Engineered with much of the same technology utilized on previous shock packages, the Arctic Cat IFP shocks feature a hard-anodized aluminum body, 0.5-in. shaft, aluminum internal floating piston, and high-quality seals and ice scrapers. A forged eyelet on the shaft-end is utilized instead of a welded eyelet. They come with a 1.5-in. diameter body.



### FOX FLOAT QS3 Shocks

The pioneering FOX QS3 shocks are available on the skis and front track of the Mountain Cat Alpha One, offering three compression settings that correspond to light, medium and firm shock calibration. A dial mounted on the remote reservoir can be turned easily and quickly to customize the compression calibration for riding conditions and intensity. They utilize a remote reservoir for fade-free performance and come in a 1.5-in. diameter body.

## C-TEC2 8000-Series Engine

New for 2020, the Next-Gen C-TEC2 8000-Series engine delivers a new level of clean Arctic Cat 2-stroke engine performance and technology. The 794cc C-TEC2 twin features new cylinders, pistons, combustion chamber, flywheel and fuel rail, plus a new fuel calibration strategy that delivers cleaner and more responsive performance, with improved fuel economy and power in the 165 HP class of engines. It features an Arctic Power Valve™ system with 3-stage control of the auxiliary exhaust ports via side valves, along with 3-stage control of the primary exhaust port. Its ECM-controlled electronic oil pump provides precision oil injection for ultra-clean performance. In addition, it features battery-less EFI, Exhaust Pipe Temperature Sensor™ (EPTS), knock sensor and engine-reverse technology. It's exceedingly robust and lightweight, and it's designed and built by Arctic Cat in St. Cloud, Minnesota.

