

Crossfire New 500cc "Rubicon" Quad Review

Author: Nick Corbett, Chief Engineer

We just got the first shipment of our new 500cc ATV in, and to say the least, they are impressive. These fully-loaded "utility" quads are more than enough for 95% of users, offering incredible power, great stability and handling, and all the bells and whistles you would look for in a premium ATV. These easily match up with Yamaha and Honda's similar models and in many ways offer improvement at a lower price. If you're looking for a quad that can do everything and never let you down, look no further.

Not convinced? Lets go over the features of this ATV in detail to see what makes it superior.



Price

They say imitation is the best form of flattery. Some of the best ATVs available are made by Yamaha, and our new "Rubicon" is largely based off a Yamaha 450cc Grizzly (formerly in the US and currently in Canada the "Kodiak"). However, our 500cc model offers many improvements over Yamaha's design, including a more powerful engine and more durable alloy wheels, all at a lower price!

You should expect to pay about \$10,000 CAD MSRP (Manufacturer's Suggested Retail Price) for a 450cc and above model ATV. A quick look at any of the big manufacturer's websites (Honda, Yamaha, Suzuki, Polaris) shows that a utility/work-type quad with 450cc, 600cc, or larger engine will run you at least \$10,000.

[2008 Yamaha Kodiak \(Grizzly\) 450](#)
[Gio Rubicon 500](#)

Crossfire 500cc "Rubicon" can be had for \$5,999 CAD MSRP, and possibly even cheaper if you can find a good auction to jump on! You are getting more power and the same quality ATV for a significantly lower price.

Engine

The most important quality of this ATV is its engine. A 500cc engine is a significantly noticeable improvement over a smaller, sport-type ATV engine (usually in the 150cc - 300cc range). For a

single rider, even with a significant cargo load, a 500cc engine is enough to get over any piece of terrain. You will notice the ATV *accelerating* up hills instead of slowing down at full throttle. The Rubicon uses a liquid-cooled, 4-stroke, SOHC (Single Overhead Camshaft), forward-inclined single cylinder engine with 498.6 cc displacement.

What does this 250/300/500cc specification mean anyway? cc is a measure of displacement or volume, and stands for cubic centimetre and corresponds to a millilitre (1 cc = 1 mL). In engines, it is a measure of cylinder size, which is the area of the engine where combustion of a mixture of air and gasoline occurs. This mixture is ignited with a spark plug and essentially explodes, forcing gas pressure outward. Since it is confined, the gas pressure pushes the only way it can, against the piston, which moves up and down through the cylinder. This movement of the piston is translated into rotational movement, which is transferred to the wheels. For more on how an engine works, [go here](#). 500 cc refers to each cylinder's size. In most bikes and ATVs, only one cylinder is used, such as in the Rubicon.

So having a 500cc sized cylinder is going to allow more gas and air to enter, resulting in more energy being released every combustion, leading to more horsepower, torque and power for your wheels.



Compared to the similar Yamaha model, Crossfire 500 cc has more "displacement" (cylinder size) and therefore more power...at a lower price. You'll find the same quality engine construction in our ATVs as you would in a Honda or Yamaha model, leading to long engine life and incredible reliability.

Reliability is definitely an important quality of this engine. Many users will be using this ATV in very harsh, remote terrain and for long trips where engine reliability is crucial. Users can rely on this engine to perform through water, mud, snow and other environmental factors that put stress on inferior engines. The Rubicon features aluminum cylinders with ceramic composite plating for improved durability. It also features a forged piston and carburized chrome-moly (alloy metal) connecting rod to add durability.

Tires

The Rubicon has great tires that allow it to perform safely and superbly on any terrain. The front tires are AT25x8-12 size (25 inch diameter, 8 inch tire width, 12 inch rim diameter) and the rear tires are AT25x10-12 size - more than enough to get over large obstacles. They are tubeless in design - what is tubeless design? Tubeless refers to tires that do not require an inner tube to be

inflated. Tube tires are more likely to fail for a number of reasons. Tubeless technology increases safety - if there is a puncture it will slowly drain and not potentially explode like a tube tire.

As well, these tires offer a great tread design with aggressive lugs, perfect for dealing with any type of terrain - rocks, mud, gravel, branches, underbrush or any type of debris.

Wheels

The Rubicon's wheels are a beautiful design made out of incredibly strong aluminum alloy. Compared to the similar Yamaha model, you'll notice these wheels are a lot more pleasing to the eye and give the ATV a great flash. The silver color really shines side-by-side with the Yamaha. These wheels are easy to maintain and clean, meaning your ATV will stay looking great well into its life.

On top of looks, these wheels are solidly built and promise long-lasting life. The aluminum-alloy used offers amazing breaking-strength but is incredibly light-weight. This adds power to your ride by improving the power-weight ratio of the vehicle.



Frame and rear drive-shaft

Frame

The solid frame of this ATV is of steel tube design. This strong design saves weight by using hollow tubes but does not sacrifice strength, using high-quality steel. The frames were computer-designed to increase performance and reliability by calculating optimal frame angles to resist damage and breakage, by distributing impacts and loads evenly across the frame.

Suspension

The suspension system of this ATV is one of the best I've seen on this type of ATV. It has double wishbone independent suspension arms on all 4 wheels, making for a silky smooth ride. Most ATVs offer independent front suspension, but only so many offer independent rear suspension as well. This really improves ride quality. For example, if you ride over a large rock with your left front wheel, the left front suspension absorbs the impact. But then on a non-independent rear suspension system, the same rock hits your rear left wheel, and you feel a large BUMP. Why? Because the impact has to be absorbed by the entire back end and rear axle. This leads to a bumpy ride.



Back-end showing independent rear suspension.

In an independent rear suspension system, the same thing that happened to the front wheel happens to the back - it quietly absorbs the impact using its shock absorber, and you barely feel a thing. So for bumpy, uneven terrain, you definitely want a fully 4-wheel independent suspension system.

The double wishbone design is standard on all high-end ATVs and is optimally suited for this ATV. All shock absorbers in this system are high-end design, using an adjustable coil spring and oil damping with nitrogen gas. Shock absorber damping can be adjusted easily on the coil spring using a simple click and lock 6-position system. This allows you to stiffen them up for track and flatter riding, and let them get loose for bumpy riding.

After riding this ATV around, I got a great feel for what an impressive system this really is. The handling of this ATV is top notch and very responsive. I have a lot of experience riding ATVs in very rough terrain at high speeds, so I put this ATV through its paces at a high performance level in a tough environment. It performed superbly, especially the stability, turn-radius and handling. You can always get out of a tight spot, and ripping down rough trails at 80+ km/h isn't going to worry you (provided you have the right skills and experience to do this). If you hit a bump at high speed you won't lose control or feel it across the entire ATV. It handles great over all types of terrain and you really feel like you are a part of the ATV and not just along for the ride.

Drive Train / 4WD

Another one of the huge features on the Rubicon ATV is the Four Wheel Drive (4WD) capability. For any true hardcore off-roader this is a must.

4WD indicates just what it says - all four wheels "drive" the ATV, or propel it forward. The Rubicon offers three modes of drive - 2WD, 4WD, and 4WD-LOCK. 2WD is standard on all ATVs and is the fastest and most stable mode for paved or graded trails. The front wheels are used to steer the ATV while the rear axle is driven and powers the rear wheels at the same rotational speed. Transferring all the power to the rear wheels works well on flat trails.

In 4WD mode, all four wheels receive power from the engine and transmission. The Rubicon features three separate differentials for transferring power to the wheels, coupled by a sturdy and protected drive shaft. 4WD is an essential feature for extreme terrain, since it is quite possible that not all your wheels will be touching the ground at the same time. In 2WD, if you

have only one rear wheel touching the ground, you will have a lot of problems with traction. 4WD fixes this problem by powering every wheel touching the ground. This is going to get you across tough terrain much more easily and give you much better traction and control. As well, pressing any of the brake controls will engage both front and rear brakes simultaneously.

4WD is adequate for most terrain, but for the most extreme stuff, this ATV features 4WD-LOCK. On top of four wheel drive, this mode adds differential locking. Differential locking refers to the operation of each differential, both front and rear. Locking a differential ensures that both wheels attached to that differential rotate at the exact same speed and are essentially "locked" to each other. What difference does this make? This will prevent spinning and slipping of one wheel. In mud, snow, or other slippery conditions, this LOCK mode can be essential for getting through tough terrain. You won't find your wheels slipping and spinning - your ATV will be able to get over terrain inferior ATVs cannot. LOCK mode is not preferred except in extreme conditions however - it can make turning more difficult and less safe since all wheels move together in unison, making the ATV resist turning. Use it only in low speed, tough terrain conditions.

The drive train of this ATV is top-notch, featuring steel alloy construction and highly durable components. The critical components are protected from impact and damage by shielding. Axle boots prevent mud, dirt and grime from getting in critical rotating and sliding components. You can feel comfortable in the worst muck with this ATV.



Handle bars and driver control area showing (4WD control on right).

Transmission

This ATV features an automatic transmission with Low and High modes for ease of use. Many high-end ATVs still feature manual transmissions which can be a hassle and difficult to get a hang of. The Rubicon's transmission is built into a hardened case and is meant to be abused. Through testing I was very impressed at its ease of use and performance. This ATV uses a sealed variable v-belt type transmission, a type of continuously variable transmission (CVT).

CVTs change steplessly through an infinite number of effective gear ratios, instead of being constrained to a limited number of distinct gear ratios. This flexibility allows the ATV's engine to perform at its optimal RPM for a number of different output velocities. What this means is better fuel efficiency, exhaust emissions and less engine wear.

As well, CVTs operate very smoothly, meaning there will be no jerks when changing gears. This is very important in ATVs, as sudden jerks when switching gears can lead to an ATV flipping or rolling, especially when descending hills. The added safety of a CVT is definitely a great aspect of this ATV.

Brakes

The Rubicon features high-end hydraulic disk brakes for maximum performance. Each front wheel features an extra-large sized front brake rotor for added stopping power. The back axle features one large size hydraulic disk brake. The calipers are oil-bathed to reduce heat buildup. As well the entire system is sealed to prevent debris entering and clogging up brake operation. These are truly some of the best brakes I've seen on an ATV and offer excellent safety and performance. Adjustable hand controls allow riders to customize the control of their ATV.

Electronics

The Rubicon features a top-of-the-line Digital Information Centre LCD display that features information display and on-Command control. The LCD display is large, bright, and centrally-mounted on the handle bars. It features:

- Digital speedometer
- Left/right turn light indicators
- Digital tachometer
- Digital clock
- Total mileage
- Subtotal (trip) mileage
- Gear indicator lights (4 - L, H, N, R)
- 4WD-LOCK indicator light
- Digital fuel meter
- 4WD indicator light
- Light position indicator
- High beam light indicator

These features make riding your ATV that much easier, letting you know exactly what's going on and letting you know how to plan your trip.



The digital information centre LCD display.

Electrical

In addition to great electronics, the Rubicon features a robust electrical system. A large capacity (20Ah) lead-acid battery is securely stored in the front and powers the 12 VDC system. The electrical connectors are high-quality and resistant to water and debris ingress. Quality wiring is present throughout, with proper practices to ensure long-lasting connections. You shouldn't run into any problems with this ATV's electrical system - I should know, having been trained originally as electrical engineer.

As well, this ATV offers convenient 12 VDC output ports for connecting things like a GPS, air pump, or external light, or recharging equipment on trips.

Cooling

The Rubicon features a comprehensive and well-built liquid cooling system. A large, fan-cooled radiator ensures that the coolant stays at performance temperature. Many other ATVs feature cooling systems that are susceptible to overheating, mainly due to inadequate cooling features. A large radiator ensures heat can easily dissipate. Fan-cooling keeps the radiator frame cool, as opposed to most ATV which rely on free-flowing air to cool the radiator. As well, this cooling system allows easy access to the radiator cap, in case you need to release pressure or top-up coolant.

Carburetor

The carb on this ATV is very high-quality. It is manufactured by Keihin, which has an entire division dedicated to after-market carburetors. Keihin is a leading manufacturer of engine control products and makes some of the highest quality products out there. A carburetor is not something you want to take for granted or skimp on, and Gio didn't here. In case you didn't know, a carburetor mixes the fuel and air for combustion in an engine, which is probably the most delicate process in a vehicle. High quality components are essential for this process to be completely properly. As well, the carb and air filter/intake on the Rubicon are located in a high position, to ensure that ground debris and water does not enter and contaminate operation. This is important when fording rivers and operating your ATV in wet conditions.

Lights

The Rubicon features big, bright lights to ensure safe operation and enable low-light riding. The two headlights are quite large at 35 Watts each. They offer two different positions, one for illuminating the ground and one for illuminating further ahead. In addition they offer high beam mode to provide additional illumination. Riding ATVs at night is not recommended and can be dangerous, but sometimes it is unavoidable. In addition to great headlights, this ATV also features very bright brake lights (15 Watts each) to ensure safety for you and riders behind you.

Winch

A 2500-lb capacity winch comes standard with the Rubicon and can be used for many purposes. With most similar model ATVs, the winch will be an extra accessory - here it is included in the base price. This winch is controlled by a switch on the handle bars. Having ATVed in some pretty rough terrain, I repeat enough how essential a winch is for an ATV this size. Any time you or another ATV gets stuck, a winch will be an absolute necessity for getting out. Mud, swamps, thick brush are all easy to get ATVs stuck in, and almost impossible to get them out of by hand. There's no need to worry though, since this winch is included and easy to use. Besides safety and recovery, a winch can be used to pull out stumps and for other landscaping purposes. Be careful with your winch, as overloading it can lead to cable breakage which is VERY dangerous.



The large capacity winch, mounted underneath the front grill.

Auxiliary Starter

The Rubicon features an auxiliary pull starter to give you great peace of mind. If the primary electronic ignition fails, you can always rely on the pull starter to get your engine going.

Towing Hitch

It also features a standard trailer hitch for towing. This can add a lot of capacity to your setup. With a 500cc engine, this ATV has a lot of towing capacity which truly makes it a utility ATV. With a small cart or trailer you can tow everything from wood and extra fuel to camping supplies or even an animal you've freshly hunted.

Passengers

You can also take a passenger with you. The Rubicon has a large seat that can comfortably fit two riders. It also features foot rests for the passenger and padded hand-holds for stability and comfort...great for going on a leisurely cruise with your family or friends.



The foot rests and handles for a passenger.

Conclusion

It's tough to find a better ATV for your money. Even with a significantly reduced ticket price, the Rubicon doesn't sacrifice quality and performance compared to other ATVs in its class. Why spend more on a Honda or a Yamaha when you can get the same and more for a better price?

The Rubicon features top-of-the-line components and quality in every category of its construction, from engine, transmission, and electrical, to brakes, frame, and suspension. It features unparalleled safety features and all the features you would look for in an ATV this size - winch, 4WD with Locking Differential, digital electronics, towing capacity, and passenger capability.

This ATV is meant for all conditions and temperatures and has been tested in everything from freezing winter conditions to blistering desert heat. You can't go wrong with the ATV and the price is right.

