

RACE

RAPTOR 700R

Suspension By The Numbers

Story And Photos By Lance Schwartz • Test Rider: Traci Cecco



The Yamaha Raptor 700R and factory Yamaha GNCC champion Traci Cecco are legends to those of us who worship the ATV and off-road community. When Cecco bursted the racing scene back in 1999, she was the catalyst that helped woods racing women all over the country focus their attention on the GNCC series. Cecco's accomplishments and friendly trackside manner have made her an immediate icon and ambassador for the sport, and she's won eight championships throughout her incredibly successful career. When the Raptor 700 first hit these shores back in 2006, it left a similar impression on the fans of open-class big-bore sport ATVs. Growing up together in the Anthracite Coal Region of Central Pennsylvania, I've known Traci and her family for years. So when a fresh, new Yamaha Raptor 700R became the canvas for our *ATV Rider Magazine* build project, it was a no-brainer to set Traci up on a hot date with the finished product to test it out! As it turned out, Traci enjoyed thrashing our Raptor almost as much as I enjoyed shooting photos of her bludgeoning it. Besides, Traci's personality, beauty and mad riding skills were no match for the heinous, odorous, objectionable test riders we typically attract.



THE BUILD

The start of any quality build begins with a solid foundation. The compact, CAD-designed stock frame on the Raptor 700R houses big power within a small package. Because of the Raptor's torquey stock powerplant, tearing into the engine to extract more power wasn't necessary. Instead, we focused on utilizing bolt-ons to uncork the inner demon lurking within. Keeping the motor stock also retains the reliability inherently engineered into the engine's original design. To help the 700R exhale more efficiently, a Duncan Fat Boy 4 exhaust and a Vortex EFI Interceptor fuel controller round out the performance enhancements.

The first time I ever rode a stock Raptor 700, I was amazed at how smooth and compliant the stock suspension was. With that said, there is always room for improvement. With the thought of building the perfect Raptor in mind, our goal was to not only widen it slightly, but also install a suspension system that would allow us to adjust both caster and camber settings. Houser A-arms were chosen for our project due to their solid reputation, durability and ease of adjustment. Bolted to the Houser arms are a set of Fox Float XL Evols up front and a Podium X rear. Both have high- and low-speed compression adjustment as well as adjustable rebound. On the back end, we added a Tusk Off-Road adjustable-width axle paired with its three-piece locking axle nut.

DIALING IN A FOX FLOAT X EVOL

The front wheels *must* be off the ground when making *any* air pressure adjustments! Since a Fox Float has no coil spring and spring tensioner like a typical shock, the "preload"/ride height is set by adjusting the air pressure in the main chamber. After pressurizing the main chamber, the ride height must be measured with the rider on the machine. If your machine is too low after the initial measurement, raise the pressure. If it's too high, lower the pressure. It's that simple! The Evol chamber, on the other hand, controls the bottoming resistance. If the shock bottoms out easily, the air pressure in the Evol chamber is too low. If the shock never bottoms out, the air pressure is too high. Again, this is an experiment to find the sweet spot and will take some time. Next, begin dialing in the high/low-speed compression and rebound adjustments. By keeping track of the changes to the shock settings, the process of getting the shocks tuned perfectly will be much quicker and easier.



DO I NEED AFTERMARKET SHOCKS?

If you're not into experimenting, testing and tracking the results, take our advice and don't waste your money. We speak to enthusiasts all the time who invest big bucks into an aftermarket shock, then end up dissatisfied with their performance. After some further investigation into which settings were changed to dial in the performance, the conversation generally takes a detour with a stupid comment like, "Umm, none. We gave Company X our weight and thought they set them up for us at the factory." An adjustable aftermarket shock is a highly tunable engineering masterpiece. However, if you're too lazy or afraid to experiment with the ride height, high/low-speed compression and rebound settings to get the best ride possible, take our advice and save your money!



DEFINING HIGH/LOW-SPEED COMPRESSION AND REBOUND

Compression and rebound damping on a shock is the measure of how quickly the shock is allowed to compress or rebound, under load. This is done by limiting the flow of oil through a piston and flexible shim stack within the shock. Slow the oil down, the shock compresses/rebounds slowly. Let the oil flow through the shock quicker, the shock compresses/rebounds quicker. High-speed compression controls shock compression during quick, rapid hits when the shock shaft moves quickly. Low-speed compression controls the compression when the shaft moves at slower speeds. Rebound adjustment controls the speed at which the shock is allowed to expand. A slower rebound keeps the rear from kicking up. However, slow the compression down too much and the shock "packs," eventually running out of travel because it can't rebound quickly enough.

To keep the Fasst Company Flexx bars on the Raptor at bay in harsh terrain at terminal velocity, we opted for a Pro Moto Billet Fastway System 3 steering stabilizer to handle that task. Flexx handlebars have been around for years, and their ability to absorb energy by flexing is undisputed. Their performance is badass, and we all know it. Houser Racing took that concept of energy absorption one step further and applied it to its Pro Bounce nerf bars with flexible footpegs. Since our A-arms are MX width, longer brake lines were in order. Galfer hooked us up with a killer custom blue front and rear set of stainless steel lines, which we plumbed into the stock Yamaha calipers that grab Galfer Wave rotors with Galfer pads. Since we removed the parking brake to save weight, a billet-aluminum parking brake cover from XCBob's handles the chore. To protect the salty rear rotor and sprocket, we utilized Blingstar

dual sprocket and rotor guards.

To get all of the power to the ground, we wrapped DWT Alumilite Rok Out front wheels and Rok'n Lock rear beadlocks with Maxxis' killer new six-ply front and rear Razr XC tire. To wrap things up, we tailored the look of our Raptor with a complete set of white carbon-fiber Maier replacement plastic. Finally, the icing on the cake is a QuadTech Hump seat, a minimalistic and sharp-looking Duncan chrome front bumper, Pro Moto Billet hand guards and a custom graphics kit made by G4 Graphics.

THE RIDE

Circling the *ATV Rider* Raptor 700R like my chocolate Lab Louie implementing a plan to devour my daughter's socks, I couldn't help but admire just how damn handsome this monster is. The combination of white carbon-fiber Maier plastic, blue/black QuadTech seat, the flashy G4

custom graphics kit and the contrast between the black stock frame and bright blue Houser accessories make this Raptor finer looking than a new set of snow tires! If it's truly possible to fall in love with an ATV, you may want to keep your distance from this one Bubba.

With my gimpy leg thrown over the QuadTech Hump seat, I flicked the starter and lit the raging Raptor to life with a roar reminiscent of a prehistoric dinosaur! The Duncan Fat Boy is loud, so if your neighbors don't hate you yet, it won't be long! Although exceptionally loud, the Fat Boy makes nice, linear power throughout the rev range. As I pulled in the clutch, clicked it down into first and proceeded to row through the gears, I was amazed at just how well the machine fit me. At 6-foot-2 and 190 pounds, I sometimes feel a little cramped on a sport quad. With the addition of the Houser #1 stem and the Flexx bars, though, I fit perfectly. If

this were Traci Cecco's permanent ride, on the other hand, we'd have to certainly make some changes to suit her tiny frame.

I'll go on record stating that the stock Raptor shocks are certainly one of the most comfy stock units on the planet. However, simply put, the Fox Float X Evol fronts and Podium X rear are utterly amazing. With tunable high- and low-speed compression and rebound and ride-height adjustment, it is relatively simple to dial the machine into a level unattainable with stock suspension. The biggest asset of owning Fox shocks is their innate ability to endure abuse for a much longer duration than a stock shock. They do this by more effectively dissipating the heat that normally causes shock fade and ultimately leads to shock failure. The Houser long-travel front end worked great, and it gave us the confidence that we could nail the perfect setup in just a few test runs.

RAGIN' RAPTOR 700R

Speaking of a comfortable ride, when riding in the standing position, the Houser Pro Bounce nerf bars certainly help take the harshness out of hard hits and landings. I've had both knees reconstructed, and unfortunately, the knees I'm stuck with feel every violent hit. The Houser Pro Bounce nerfs are phenomenal and are especially worth consideration for a pilot with wadded-up knees! Additionally, often missed in the evaluation of suspension is how front wheel travel translates into unwanted feedback felt through the handlebar. If you're going to ride hard, a good steering stabilizer is a great investment. Our Pro Moto Billet Fastway System 3 stabilizer did a remarkable job of eliminating unwanted twitchiness at high speeds while also providing effective damping to keep roots, ruts, rocks and tree stumps from ripping the bar out of the pilot's hands.

A friend of mine who owns a Raptor 700R that's been ridden hard for several thousand miles sought my guidance to find a suitable replacement. His wish list was for a machine large enough to accommodate his frame but small enough to conquer the tight trails in the coal region of Central PA. He wanted a torquey engine that would allow him to lug it through the woods in a higher gear, keeping the revs and wheelspin down. He also wished for a machine with an adjustable suspension that is both sporty and comfortable. Finally, he requested a quad with a reputation for reliability, durability and just plain fun. In my heart of hearts, I believe he was looking for a change and wanted my encouragement to spend the money burning a hole in his pocket on a new toy that would be superior to his trusty steed. At the end of the day, my advice was that the Raptor 700R was the perfect machine for him. I gave him the same advice my father has given me many, many times over the years: "If it ain't broke, don't fix it!" He still happily owns that same Raptor to this day.

For most riders, a stock Raptor 700R is all the sport ATV they'll ever need. Whether you need an ATV for the tight woods, one for the open desert, a dune blaster, an all-around weekend warrior or you find yourself in search of the perfect specimen to modify and create your ultimate dream machine, the Yamaha Raptor 700R should certainly be in the center of your crosshairs. *ATVR*



BUILD SHEET: RAGIN' RAPTOR 700R

Duncan Racing: www.duncanracing.com
Fat Boy 4 stainless steel exhaust: \$650; chrome front bumper: \$179

Vortex: www.vortexcdi.com
EFI Interceptor: \$399.95

Maier: www.maier-mfg.com
White carbon-fiber front fender: \$270.95; white carbon-fiber hood: \$85.50; white carbon-fiber rear fender: \$223.04; white carbon-fiber gas tank cover: \$58.02; white carbon-fiber tail section: \$102.91

DWT Racing: www.dwttracing.com
Front Rok-Out 10x5 wheels: \$80.99; rear Rok'n Lock beadlock 9x8 wheels: \$156.99

Tusk Off-Road: www.tuskoffroad
Adjustable-width axle: \$199.99; axle nut: \$44.99

Maxxis: www.maxxis.com; see your local Maxxis dealer
Razr XC front 21x7-10; rear 20x11-9

Fasst Company: www.fasstco.com
Flexx bars: \$349.99

Galfer: www.galferusa.com
Front rotors: \$139 ea.; front pad: \$35.83; rear rotors: \$139; rear pads: \$35.83; custom blue front brake lines: \$125; custom rear brake lines: \$54.81

Houser Racing: www.houser-racing.com
+2.25-in. long-travel front A-arms: \$925; Pro Bounce nerf bars: \$475; stem: \$239; bar mount: \$89

Blingstar: www.blingstar.com
Rotor guard: \$149.95; dual sprocket guard: \$139.95

Pro Moto Billet: www.promotobillet.com
Fastway System 3 steering stabilizer: \$497.27; Version III F.I.T. System hand guards: \$124.95

QuadTech: www.quadtech-atv.com
Hump seat kit: \$195

Fox Racing Shox: www.foxracingshox.com
Front Float X Evol: \$1,495; rear Podium X: \$995

G4 Graphics: www.g4-graphics.com
Custom ATV Rider graphics package: \$109

XCBob's: www.xcbob.com
Parking brake block-off plate: \$20