

Raptor 250 MX PROJECT

The Most Fun You'll Ever Build!

When Yamaha introduced the Raptor 250 earlier this year, you may remember just how much fun we had ripping around the purpose-built track in front of the Queen Mary in Long Beach, California. We had such a blast flicking that little Raptor around, slamming bars with staffers from other magazines and having a great time. We left that introduction thinking just how cool the Raptor was and how much better it could be if we could get our hands on it to do some tweaking. So that's what we've been up to as of late.

One major problem with any new model when it first hits the market is its lack of trick parts.

Fortunately for us, we were able to work with a handful of top industry component builders by loaning them our test unit while they fabricated the parts to fit our Raptor 250. The downside—it just seemed to take forever, which makes this day even that much sweeter for us. We'd been dreaming up this quad since its introduction many months back, and with a lot of patience and even a bit of anxiety, our dream quad has finally come to fruition.

Thanks to the great folks at Racetown 395 in Adelanto, California, we were able to spend our Fourth of July weekend testing and dialing in our new Raptor. The facility is phenomenal as it offers four unique tracks to ride on, and as you can imagine, we were like kids in a candy store as we spent the holiday weekend ripping around the place on our modded 250. One of the reasons I enjoy testing at Racetown is because it's a quad-friendly facility with actual quad practice days. Be sure to check them out at www.racetown395.com.

For our testing, we grabbed Yamaha support racer and Noleen-sponsored rider Justin Noss. Justin recently won the last round of the ITP QuadCross series aboard his own Raptor 250, so you could say that this guy brings a bit of experience to the table. For the second portion of our

test, ATVR's very own Adam Campbell put down his camera for a day so that he could wring out some hard laps along with L.A. Sleeve boss Nick Metchkoff Jr. And to top it off, CT Racing's Allen Knowles and Noleen's Clark Jones were on hand to help us make the necessary adjustments for dialing in our new Raptor 250.

BUILDING THE MOTOR

In stock trim the Raptor produces 16 rear wheel horsepower. Our goal was to bump-up the horsepower without sacrificing reliability. CT Racing developed this package with recreational racing/riding in mind. The only real sacrifice was with the 12:1 JE piston 100-octane fuel is required. CT can build the 250 as an 11:1 motor for pump gas, but you'll be losing some of the bottom-end punch. The Raptor comes with a nikasil cylinder, which helps it stay cool, so no boring can be done, unless it's bored and then replated or resleeved. CT ported the head and then replaced the guides with shorter ones. The guides are super long, hindering flow as they block the port passageway.

The Kibblewhite short guides that were installed are the same length as are used in Raptor 660s, so we're not talking unreliably short. The short guides along with the reshaping of the ports that the CT techs have developed do significantly boost the flow numbers. Then CT does

a five-angle-radius valve job, blending to the port work, which creates another significant boost in flow. CT uses a Newen CNC valve machine that allows it to do things with the valve work that is just not attained with other methods. Web Cam produced several cam grinds for us to test and use for our little hot rod, and as of now we're using the 40d grind. It's a great overall grind, producing a very wide power curve and allowing to stay with stock valve springs. The bottom line is this thing now produces over 26 rear-wheel horsepower while utilizing the stock carburetor. This was a significant boost from the 16 horsepower on the stock machine. Keep in mind that this horsepower is developed over a very wide power curve. CT would kick up the horsepower for a pro racer developing more horsepower over a narrow power curve, utilizing a larger carburetor and a higher rev cam, but that wasn't what we were looking for with this project.

While using the stock carburetor, CT Racing has developed a titanium needle that produces a crisp, snappy throttle response. We also retained the stock airbox and simply removed the lid. CT's Sonic Series pipe was installed to help move away the burned leftovers from the motor at a brisk pace. CT is, as of this article, testing several carburetor options that should help pick up the peak horsepower and offer even

Although we maintained the factory look, there's nothing stock about this new Raptor.

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more top-end horsepower. We will report back soon with the findings. For now, we found that the stock carburetor is very user-friendly. Being a CV-type carburetor, you can just mash the throttle and it doesn't hesitate. The downside to this carburetor is that the slide can bounce shut on G-outs, causing the motor to hesitate when you don't want it to.

IMPROVING HANDLING

The stock chassis has good geometry, but for our short course aspirations, we wanted more travel and a wider footprint. We were extremely impressed with the suspension from Noleen that we had installed on our YFZ build (February 2008 issue), so we went back to Noleen for its expertise. One thing you may want to do when building a performance quad is to talk to your shock builder and figure out what A-arms it prefers or vice versa. This way, you'll end up with a better overall setup as it has spent more time on particular setups. In this case, you'll find Noleen's Justin Noss using Laeger long-travel A-arms, so we stuck with that formula so that we had a matched setup that our shock tuner was happy and familiar with. We also installed a +1 Laeger steering stem along with a Renthal bar to give the driver's compartment the proper ergonomics for the bigger kids. For the rear of our machine, Noleen built us one of its J6 rear shocks to soak up any mistakes we're so likely to make. And finally, we slid a Dura Blue Eliminator 2+2 axle into the back end to give us the stability as well as durability that we needed.

Because of the new power now output by our 250, we decided to drop the rear two teeth to help us stretch out the power for our corner railing ripper. We used a Renthal gearing kit with its anodized aluminum rear 36-tooth sprocket, 14-tooth countershaft sprocket and gold O-ring chain. To get the power to the ground, we went with one of the very first sets of ITP's new Quad MX tire in 18x8-8 sizing mounted up on ITP beadlock wheels. This new setup is one of the lightest tire and wheel combinations, and that's important when you're not running big 450-style horsepower. These size tires are a much better choice over the 18x9.50-8s Justin had clamped onto his 250 race machine. For the front, we ran a matching set of ITP Quad MX 20x6-10 tires on rolled-edge ITP fronts wheels. Overall, the new meats are arguably the best tire and wheel combination currently available for the Raptor 250.



Thanks to companies like CT Racing, Noleen Suspension, Laeger and ITP, this modded 250 easily exceeded our expectations in the performance department.

A FEW COOL NECESSITIES

Outfitting our new Raptor with a necessary set of nerf bars and a front bumper was made easy as X-Factor was on top of this task. We know that we can trust the quality of X-Factor as the company has been manufacturing great products for aftermarket companies for many years. We also installed Streamline brake lines and brake pads on the little tyke, as we needed longer lines to fit the longer A-arms and the stainless lines offer better quality. We used ASV C5 clutch levers and perches. The C5s are a bit on the pricey side, but they are all but impossible to break as they are made from billet aluminum. Lastly, Billy Pointer at Carbon Tech helped keep our rear end right where we planted it by tacking on a Carbon Tech seat cover for us.

FINALLY, LET THE FUN BEGIN

You know you've done something right when people are willing to pay you for laps aboard your new build. Over our three days of pure testing, we sent out rider after rider to huck out some hard laps aboard our newly modified Yamaha Raptor 250. After taking a handful of laps, we quizzed each rider to see what changes they felt were necessary. Oddly enough, the only complaint we received was a shifter adjustment from one rider with a size 14 boot. Each and every rider who put in laps came back with huge smiles on their faces. In fact, pretty much everyone just wanted more laps.

Meeting and even exceeding our expectations, this little Raptor runs extremely well. Obviously, it's not 450 fast, and we think that's what makes it so much fun to ride. This mini beast will clear massive jumps as it's light, nimble and offers up extremely great suspension. Our tester Justin was able to easily clear an 80-foot tabletop as well as huck it up and over an extremely large step-up double. We found that building momentum in the corners and holding that momentum throughout the track is how fast laps are obtained. You don't ride this little hot rod the way you would a 450. But to be honest, we felt that this little 250 would be great for teaching 450 riders to ride smoother and faster.

As long as you keep the corner speed up, you can do amazing things on this Raptor 250. It carves better lines than a 450 if needed, as the excellent grip offered by the ITP tires and



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The ASV C5 levers might be pricey, but they are all but impossible to break.



the light weight of the 250 make it go where you want it to with great precision. But that doesn't mean you can just pinch the inside of a corner and gas it like a 450, as this motor works better with built-up momentum rather than on-demand grunt. We were also amazed at how this machine performs in the air. It's so light and flickable that you can really whip it around and have it respond easily to your body English. Amazingly, you can practically screw up an air correction, land it sideways and still ride out of it as if it never even happened.

FINAL THOUGHTS

CT Racing did an incredible job of increasing the power of our motor by 10 horses, but the Raptor 250 will never be a monster in the motor department: that's just not what this machine was designed for. But we think those 10 extra ponies paired with its superb handling characteristics allows miracles to be performed with this modded Raptor 250. It's lightweight, accurate, fun to ride and can fly under the radar to beat out all of your buddies' 450s. They'll never see it coming! **ATVR**

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🌟 Be sure to check out our Raptor 250 build video at atvrideronline.com.

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CT Racing: 562/945-2453; www.ctracing.com	Sonic pipe: \$TK; head porting: \$TK; radius valve job: \$TK
Web Cams: 951/369-5144; www.webcamshafts.com	40b grind cam: \$TK
Kibblewhite Precision Machining: 650/359-4704; www.blackdiamondvalves.com	Short valve guides: \$TK
Noleen J6 Suspension: 760/948-1677; www.noleenj6.com	Front and rear shocks: \$TK
JE Pistons: www.jepistons.com	Piston kit: \$TK
Cometic Gasket: 800/752-9850; www.cometic.com	Top end gasket set: \$TK
X-Factor Motorsports: 951/471-0017; www.x-factormotorsports.com	Nerf bars: \$TK; bumper: \$TK
ITP Tires: 909/390-1905; www.itptires.com	MX tires and wheels: \$TK
Dura Blue: 949/770-5533; www.durablue.com	Axle: \$TK
Renthal: 877/736-8425; www.renthal.com	Bar: \$TK; sprockets: \$TK; chain: \$TK
Laeger Racing: 951/698-4177; www.laegerracing.com	A-arms: \$TK; steering stem: \$TK
Streamline: 800/310-5519; www.streamlinebrakes.com	Stainless brake lines: \$TK; [add brake pads?]
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