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# DUNCAN RACING

## RAPTOR 250

NEXT-QUAD PERFORMANCE FROM YOUR 250

**W**hen it comes to 250-class sport quads, Yamaha's Raptor 250 is as good as they get. It's just what a serious smaller sport quad should be. The snappy, responsive engine and agile, balanced handling deliver big performance in a smaller package. If you like the Raptor 250, though, you're probably an aggressive rider and a fast learner. In time, you'll be looking for the next step. ATV UTV Action's Duncan Racing International (DRI) project Raptor 250 proves that you don't need an expensive new quad to enjoy the next level of performance.



Duncan Racing's National kit for the 250 keeps the bore stock, eliminating the need for expensive machine work.



The Raptor 250 has loads of potential. Duncan Racing's modifications bring big-quad performance to this small sport machine.



The Roll Design Lobo II front suspension kit adds race-quality shocks and wider A-arms to the Raptor, dramatically increasing stability and bottoming resistance.

### BRINGING THE SUSPENSION UP TO SPEED

Yamaha set up the Raptor 250 with the best stock suspension you'll find on a 250-class trail quad, but fast riders can overwork the basic, non-gas shocks, even with the stock motor. As the non-rebuildable shocks wear, they lose damping and compromise the machine's handling. Unfortunately, Yamaha discontinued the Raptor 250R that came with adjustable, rebuildable, piggyback-reservoir gas shocks.

Duncan Racing has earned national championships because they know that handling is just as important as speed. They strongly suggest making the suspension work well before building a fast motor. DRI offers race-level components for the Raptor 250 that can be tuned for any purpose and any skill level. High-quality, rebuildable, tunable shocks are a great starting point for getting high-performance handling from machines with basic, non-rebuildable shocks.

For our project bike, we chose DRI's Lobo II front suspension kit, which includes Roll Design A-arms and rebuildable, adjustable Elka shocks. We

also chose a fully adjustable Elka Stage 5 shock for the rear. Nonadjustable, rebuildable Elka shocks are available for around \$600. We went with a Dominator II rear axle for its extra strength and to match the front end's increased width, and we added a GPR Low Boy steering stabilizer to minimize jolts sent to the steering stem in rough terrain.

### ADDING ENGINE AGGRESSION

Right from the dealer, the Raptor 250 engine is great for trail riders and even beginners, but as a rider's skill increases, so will his or her hunger for more power. Fortunately, the Yamaha's motor is mildly tuned with lots of room for more performance. Duncan Racing has a whole catalog of mods to make the Raptor faster, but for this project, we settled on one of DRI's more affordable engine packages that provides a significant power boost without the hard-hitting power delivery or extra maintenance requirements of a full-race engine.

Duncan Racing's National engine kit keeps the displacement at 250cc, so no

cylinder boring or crankshaft modifications are necessary. A high-compression piston, larger intake valve, high-performance cam and head porting are the heart of the power package. Three compression levels—10:1, 12:1 and 13.5:1—are available with the kit. We went with 12:1 to get plenty of punch from the standard-bore motor. This compression level requires 110-octane race gas, but not the more expensive, super-high-octane stuff. Pump gas is fine for the 10:1 compression piston.

The \$1499 kit also includes the Fat Boy 4 stainless full-exhaust system, DRI's jet kit and the freer-flowing Pro Design Pro Flow kit for the stock carburetor to ensure the modified engine gets the fuel and air it needs for maximum power.

The beauty of the National engine kit is that you can build on it if you want even more performance. DRI has big-bore options, more radical cams and higher-compression pistons for riders who want the fastest Raptor 250 possible.





■ An adjustable, rebuildable Elka rear shock replaces the basic, non-rebuildable stock shock.

### LETTING THE RAPTOR RIP

We love riding Raptor 250s, but we knew we were in for a new experience as soon as we hopped on the DRI Yamaha. Seeing the Roll Design A-arms reaching outward and hearing the raspy, high-compression engine rev when we blipped the throttle got us thinking "race quad." Easing the clutch out and rolling on the power proved that the Raptor pulls seriously hard for a small machine. There's a noticeable hit as the engine comes on the cam, which is fun to feel, but the motor pulls well down low and through the midrange, too, so it's tractable and controllable for tight trails.

The suspension package changes the machine's feel as much as the engine. Greater stability, better ride quality and massively increased bottoming resistance allowed us to push the Yamaha like a race quad—and it's completely predictable.

Duncan Racing's modifications for the Raptor 250 bring big-quad performance to this small sport machine. If you have a Raptor 250 and are ready for the next level in power and handling, the best "next" quad for you could be the machine you're already riding. □



The Raptor 250's light feel and effortless, accurate handling, enhanced with more power and better suspension, make it a worthy alternative to a bigger, heavier sport quad.

### DUNCAN RACING INTERNATIONAL'S YAMAHA RAPTOR 250

Builder.....Duncan Racing International  
Sponsors.....ROLL DESIGN/DWT/Elka  
Suspension/Vortex Ignitions/  
GPR Stabilizer/Fat Boy 4 Exhausts/  
Pro Design/Works Connection/  
Maxima/RK

#### MACHINE

Quad.....2012 Yamaha Raptor 250

#### MOTOR

DRI National 250cc kit..... \$1499  
Motor mods .....Fat Boy 4 Complete  
Stainless Exhaust System; DRI head  
port; SERDI valve seat machining;  
JE piston, cam, oversize intake S/S  
valve, heavy-duty valve springs w/  
titanium retainers, and shortened  
valve guides

Piston..... DRI 250cc 12:1 by JE Pistons,  
\$225 (included in National kit)  
Compression options .....10-1, 12-1,  
13.5-1

Spark plug.....NGK IFR9H11  
Cylinder head mods ..... DRI HP4 kit  
(includes DRI porting and Serdi valve  
seat cut, camshaft, HD valve springs,  
shortened guides and big valve), \$799  
(included in National kit)

Ignition ..... Vortex X10 programmable  
CDI, \$499

Crankshaft..... Stock  
Carburetor & mods..... Stock with DRI  
Jet kit

Airbox/filter/oil..... Stock air box/Pro  
Design Pro Flow Kit, \$169

Pipe/silencer (muffler) ..... Fat Boy 4  
complete stainless exhaust  
(brushed muffler), \$499 (included in  
National kit Fat Boy 4)

Color option upgrade for blue..... \$124.99  
(red and black also available)

Fuel ..... Sunoco STD  
4-stroke oil .... Maxima Premium 4 10w30

#### DRIVE SYSTEM

Clutch basket/plates/spring  
Stock basket with DRI clutch ..... \$149  
Chain/lube... RK chain/Maxima chain wax  
Sprockets..... Sunstar  
Gearing: t/r..... 14/36 (need 15T C/S on  
hard terrain)

#### FRONT END

A-arms/width.....Roll Design MX Lobo II  
Spindles ..... OEM  
Front shocks/wheel travel.....Elka Stage 5  
Steering stem.....Roll Design, \$349  
Steering stabilizer ..... GPR "Low Boy",  
\$449  
Front suspension..... DRI LOBO II, \$2999  
(includes Roll A-arms, Elka Sport  
shocks, Crown Front Brakeline kit)  
Optional Stage 5 shock upgrade..... \$400  
(machine was tested with Elka  
shocks equipped with Stage 5  
upgrade). Add \$150 for chrome  
upper arms

#### REAR END

Swingarm/length ..... Stock  
Rear axle/width/carrier..... Dominator II  
axle, \$449  
Rear shock..... Elka Stage 5, \$1195

#### TIRES/WHEELS/HUBS

Tires: f/r.....Skat Trak F. Mohawk/  
six-paddle Glider  
Tire sizes: f/r..... 20x7x10/18x8x8  
Tire pressure: f/r ..... 8 psi/6 psi  
Wheels: f/r.....DWT Ultimate Solid Center  
Beadlocks: f/r.....DWT  
Hubs: f/r ..... OEM

#### BRAKES

Calipers: f/r..... OEM  
Brake lines..... Crown Series steel-braided  
front, \$109.95/\$39.95  
Brake fluid ..... Maxima 550

#### HANDLEBARS/CONTROLS

Handlebars..... Flexx Bars, \$349.95  
Throttle..... Motion Pro Vortex, \$32.95  
Clutch lever ..... Works Connection,  
\$129.95  
Cables..... Motion Pro, \$30.95  
Grips ..... TAG, \$12.95  
Tether kill switch..... Pro Design, \$34.95

#### MISCELLANEOUS

Nerf bars ..... Pro Peg, \$289  
Front bumper/grab bar..... DR Chrome  
front bumper, \$179  
Seat ..... Stock w/ Quad Tech seat  
cover, \$110  
Tank ..... OEM  
Body plastic ..... OEM  
Footpegs/location..... Stock

#### OTHER SPECIAL SETUPS

DRI Graphics kit ..... \$79.95  
DR Parking Brake Block Off ..... \$14.95  
Alum Pro nerf/peg/heel  
guard system ..... \$289

#### OPTIONAL PARTS

Keihin FCR 33mm carb kit ..... \$499  
280cc National kit ..... \$1849  
280cc big-bore kit ..... \$575 (includes  
280cc piston [10-1, 12-1, 13.5-1],  
head gasket, cylinder strip-bore  
replate). Customer must send stock  
cylinder to DRI for modification  
upgrade.)  
X2 camshaft ..... \$179 (stock core  
must be sent in for modification)