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This is what you expect when you buy a 700cc sport quad—wheelies forever and loads of sand spraying into the air. This 2020 Yamaha Raptor 700 is a winner.

DUNCAN YAMAHA RAPTOR 700 BUILD

New and better beauty

By the staff of Dirt Wheels

□ We see many impressive quad builds from Duncan Racing. A good number of those are classic vintage machines being brought up to current standards for modern fun. A build like that requires stripping a decades-old frame down for gusseting and refurbishing. Duncan gets massive power out of those vintage engines, and they need great suspension to corral that power. Much of

the suspension is replaced. The list of mods is always a long one.

This 2020 Yamaha Raptor 700 build is quite a change. It came to Duncan as a nearly new machine. The owner wanted a myriad of improvements to make the Raptor a dune weapon, but he wanted to make sure that his new quad remained dead reliable and trustworthy as ever.



Having wider A-arms and a wider rear axle help the Raptor feel planted and stable in corners. The width also helps the Raptor stay happy on cambers.

WHERE IT STARTED

Yamaha's Raptor 700 is the best-selling solid-axle sport quad currently available, and for good reason. We have no doubt it would remain a best seller if there was a host of competitive machines from other brands. Raptors work well just about anywhere. They are the quad of choice for endurance racing like the Dakar Rally, but they are also a staple for sand drags and all sorts of dune fun. They are popular for general off-road riding as well.

We'd rate the outright engine performance very close to the full-race Yamaha YFZ450R. The difference is that the dual-overhead-cam 450

spins higher and faster while building revs quickly. While the single-overhead-cam Raptor 700 engine is a modern design, it doesn't have an ultra-short stroke, short-skirted piston or radical cam-lobe ramps. It has a chuggy, long-stroke feel to the power delivery with highly usable bottom torque and a monster mid-range surge that gobbles up trails or dunes. With proper maintenance and reasonable care, the engine should last for many years of dune or trail trips.

For a 700cc sport engine, the Raptor is massively strong for all sorts of off-road riding. In the sand and big dunes, the stock engine does

feel a bit sleepy at high rpm. It revs, but spinning the engine hard feels somewhat pointless. You are better off shifting and getting the engine back in that midrange. Fortunately, the engine responds to tuning. Duncan opened the exhaust with a Fat Boy 4 complete system. On the other side of the engine is an intake from Fuel Customs. It does include an oiled gauze air filter, but also a complete intake boot and an airbox. The only other engine performance mod is the Vortex X10 ECU. X10 means that there are 10 selectable ignition programs loaded. One is the stock program.

Those are conservative modifica-

ATV PROJECT



tions, but the owner was committed to reliability and trouble-free operation. Honestly, we were shocked at how much power was on tap with just bolt-on changes. No dune should stop this locomotive of a quad. For Raptor owners who can't get enough, there are endless performance options available, including turbocharging and nitrous!

WHAT IT TOOK

To continue the YFZ450R to Raptor 700 comparison, a YFZ450 has a compact riding position to allow the rider to get weight low in turns and to have maximum freedom of movement on the quad for jumps and whoop sections.



Top: Leaping into the sky with a vapor trail of sand is a piece of cake for a rider like Josh Row. He makes it look easy and has a ball riding powerful machines in the dunes or the desert.

Bottom: A Roll Design stem and Fasst Flexx handlebar add a lot to the control and suspension feel of this Raptor. The handlebar has elastomers to insulate the rider's hand from shock hits.

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When you slam the Duncan Raptor hard enough, it does dig a little sand, but there are no real clearance issues. We like the SuperPegs being a little lower than standard pegs.



Left: Yamaha's Raptor 700 engine has nice power stock, and Duncan was able to make astonishing improvements with bolt-on tuning. There is more power hiding in there for those looking.

Right: Duncan's Fat Boy 4 exhaust helps the breathing and has a deeper tone. It is a large part of the performance increase for this machine.



With its taller and heavier engine, the Raptor feels taller and a little narrower. It isn't quite as friendly on cambers, but has enormous stability at speed. There isn't much you can do to change the large feel, but most feel that is a bonus for the all-day rides that many Raptors see.

Widening the stance, increasing the front travel and vastly improving shock performance was a one-call deal to Roll Design. Duncan installed Roll long-travel A-arms and tie-rods to get the front width to around 50 inches. Roll-tuned Elka Stage 5 front shocks are fully adjustable and up to the loads the wider arms produce. Starting with a current, modern and

fresh machine meant that there was no need for different hubs or fancy calipers. The wider arms did require longer Crown Series stainless brake hoses.

Finishing up the front end included fitting a Roll Design stem with a Fasst Flex handlebar and a GPR Low Boy steering stabilizer.

In the rear the story is similar. No need to replace that beefy new stock swingarm. It did get a wider RPM rear axle, a fully adjustable Stage 5 Elka rear shock and a Crown Series rear brake line.

At both ends of the Raptor the owner selected ITP SS Sport cast-aluminum wheels. They look something

like a cool mag wheel for a muscle car in miniature 10-inch sizes. The fronts have machined highlights in black, but the rears are solid black. Skat-Trak USA sand tires complete the rolling stock with Mohawk 21x7-10 front tires and seven-paddle Hauler 20x10-10 rear tires. Skat-Trak sand tires have a great reputation, and the tires on the Raptor hooked up like crazy!

MIDDLE GROUND

In the middle of the bike are some important modifications. The owner had a problem with the stock foot-pegs, and he insisted that area get stronger and safer. That is easy to ask for, but not as easy to make

All the modifications serve a genuine purpose—increasing performance, handling, comfort or reliability. They match nicely with the stock yellow/black/silver styling and color palette.



happen. Roll Design makes some great footpegs for many race quads, but not for the Raptor 700. Duncan located SuperPeg drag racing pegs from JDS Customs (www.jdscustoms.com) and modified them to work. The pegs are a little lower to improve the Raptor riding position for tall folks. Duncan had an equally hard time finding nerfs and heel guards that were up to DR standards. Nerfs and heel guards for other machines were sourced, and Duncan custom-fitted them to the Raptor and to the SuperPegs. The result is strong, looks good and feels safe for riding in the rough.

Duncan always builds a machine that it is proud to have the Duncan Racing name on. A DR chrome front bumper, graphics and a seat cover polish and perfect the look of this Raptor. It has other nice detailing like a billet-aluminum shifter lever and an emergency-brake block-off kit.

SAND TIME

In the sand this Raptor truly stands out. It looks clean and it rips up the sand. Acceleration is stunning for an internally stock engine. Pro photo model Josh Row would rip turns on steep dune walls, but had to fight a wheelie all the way down the face! It

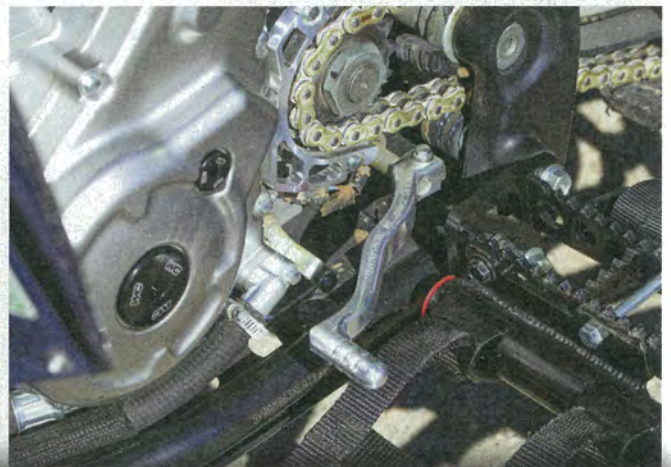
is never a problem getting the front wheel up. At the same time the delivery is calm enough for Row to ride massively long stand-up wheelies in perfect control.

The combination of Roll and Elka suspension with the widened stance truly lets the rider relax and get the most out of the engine. When it comes time to line up at the local hero hill, this Raptor has plenty of boost to keep your reputation intact.

By buying new wheels for the sand tires, the owner still has a complete wheelset ready for desert or trail use. That makes this a sport quad that is ready for anything. □



Left: What we have here is a cool bumper and quality A-arms and tie-rods with high-performance, fully adjustable Elka shocks. Much of the handling improvement is found here.



Right: Billet DR shifter and custom-fitted SuperPegs, heel guards and nerf bars. It is easier to push in the rough knowing that your feet are kept safe in the peg area.



PARTS LIST

DUNCAN RACIN INTERNATIONAL:

(619) 258-6306,
www.duncanracing.com
 Fat Boy 4 exhaust system: \$749
 Vortex X10 ECU (engine control unit):
 \$799
 Vortex 5B handlebar switch: \$75
 Stage 5 rear shock: \$1395
 Triple-plated chrome front bumper:
 \$249
 S/S axle nut: \$125
 Crown Series steel braided front
 brake lines: \$139.97
 Crown Series steel braided rear brake
 line: \$49.95
 SuperPeg footpegs: \$190
 Custom heel guards: \$199
 Custom nerf bars: \$299
 Billet aluminum shift lever: \$89.95
 Custom team graphic front fender:
 \$119
 Pro Top seat cover: \$199
 Chain guard: \$29.95
 Block-off plate: \$15.95

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www.shop.fuelcustoms.com
 Intake with air cleaner and air box:
 \$325

MAXIMA RACING OILS: (800) 345-
 8761, www.maximausa.com

Maxima Premium 4 10W40
ROLL DESIGN: (760) 731-5920,
www.rolldesign.com
 Long-travel A-arms & tie-rods: \$1595
 Elka Stage 5 front shocks: \$2189
 Steering stem: \$399
 Clamp kit for O/S bar: \$99.95

FASST COMPANY: (877) 306-1801,
www.fasstco.com
 Flex handlebars: \$399

GPR Stabilizer: (619) 661-0101,
www.gprstabilizer.com
 Low Boy steering stabilizer: \$525

RPM: (928) 771-9363,

www.team-rpm.com

Rear axle: \$449

RK EXCEL: (760) 732-3161, www.rk-excelamerica.com
 Chain: \$99.95

ITP TIRES: (800) 827-1001, www.itp-tires.com

SS Sport 10x5 wheels: \$98.99
 SS Sport 10x8 wheels: \$98.99
 Skat-Trak USA: (909) 795-2505,
www.skat-trak.com
 Mohawk 21x7-10 front tires: \$172.88
 7-paddle Hauler 20x11-9 rear tires:
 \$213.88

WORKS CONNECTION: (530) 642-
 9488, www.worksconnection.com
 Pro adjustable perch: \$149.95
 Timing plug covers: \$79.95

ODI GRIPS: www.odigrrips.com
 Grips: \$15.95