ULTIMATE DUNCAN

What our test riders ride

If you're a long time reader of *ATV Action*, you might be familiar with the Duva family. Chris and his sons Justin and Brian have been test riders for *ATV Action* for ten years, doing everything from testing four-bys and minis to stadium and GP racing. A longtime dune and racing fanatic, Chris is a die-hard Yamaha Banshee 350 fan and has long dreamed of building himself the ultimate Banshee that can satisfy all his riding needs.

It's taken him a couple of years to finish it—and a lot of "almost ready" calls to us along the way—but his Triple-Threat Banshee is finally a reality. We talked to Chris about his head-turning machine.

ATV Action: *How long have you been riding Banshees?*

Chris Duva: Eleven years. I bought this 1989 Banshee in '91. I've done other mods in the past—it had Roll D-arms to replace the J-arms—but nothing like this. I knew I wanted to change the caster. That required A-arms instead of J-arms. If I was going to go to A-arms, then I needed a new frame. If I'm going to get a new frame then I should probably... you get the picture. I decided to redo everything and start from scratch on this one. This current project started in Easter 2000 when I completely disassembled it.

ATV Action: *What makes is a Triple-Threat?*

Chris: It's not just a duner. The objective was to play with it in the sand, but also to make it work for GPs and MX.

ATV Action: *How could your Banshee meet those goals?*

Chris: I had two things in mind when I started. One, I didn't want the bars to be ripped out of my hands during acceleration. Two, I wanted to change the front suspension geometry. I took out some of the caster so the bars feel better in my hands during turning. These bars do not push back, but you have to ride accurately. It went from nine degrees of caster to six degrees. Plus, it's a zero toe bike. It's twitchier at high speeds, but it turns right when you want it to. I did go with wider A-arms and a wider axle to retain some of the high speed stability. There isn't a lot of woods riding in Southern California, so I could afford to go wider.

ATV Action: *What did you do with the motor?*

Chris: The motor is a Duncan Midrange National kit. It's set up for MX rather than wild peak horsepower. It has a lot of linear, midrange power and is very manageable. It still has standard displacement. I wanted a powerful, reliable, gas-and-go motor.

ATV Action: *The frame looks very clean. What did you do to it?*

Chris: Roll Design's people went over the frame to clean up the robot weld slag, and wrap the welds around the gussets for more strength. They also rewelded the stock welds they didn't like. The frame still has the stock geometry. We didn't cut or move anything; we just reinforced it at a variety of places.

ATV Action: *The frame looks spectacular. How'd you get that appearance?*

Chris: In terms of the overall look, I asked myself the question, "If the factory was going to campaign something, what would they do?" The paint is from Yamaha's R1 sport bike. Under the paint is zinc-rich powdercoat primer. Over the paint is a catalyzed clear-coat that's claimed to be harder than powder. We'll see! It's not the same as the YZs and the Raptor. It's a bit different, with a little purple in it.

ATV Action: *What are the trickest parts on the machine?*

Chris: Appearance-wise, it's the stator cover. It's a Trinity racing cover, but instead of the Trinity design, it was left blank. I took an EPS file (digital computer image) of the tuning fork logo I got from Yamaha and converted it to a file format a CNC machine could read. It was cut by Trinity Racing on one of their Haas CNC machining centers, and this was the first try; it's the only one in the world. Performance-wise, it's the steering stabilizer mount Doug Roll created. It's a Scott's stabilizer, but the stock unit mounts on the bars and doesn't have a pad. We mounted the stabilizer at the bottom of the steering stem. It's was going to be a one-off design, but Roll may be offering it as a mod.

RIDER/BUILDER	
Rider	Chris Duva
Builder	Chris Duva, Duncan Racing, Roll Design, Trinity Racing, IMS, Beach Yamaha
Approximate value	$25,000-$30,000
Hours invested	Approximately 300
MACHINE	
Quad	Yamaha Banshee
Frame	Roll-prepared 2001 Banshee
MOTOR	
Motor	1989 Banshee
Bore and stroke	Stock
Cranking pressure	175 lb.
Porting	Duncan Mid-range National
Head	Duncan PowerHead. Lettering by George Deregó
Piston	Pro-X
Rods	IMS Hot Rods
Crank	Stock, welded and trued
Ignition/timing	Stock rewound by Safari/ Duncan adjustable
Kickstarter	Duncan Racing
Reed cage/reeds	Duncan Racing Pyramid
Carburetors	Keihin PJ 34mm Superflow w/ Duncan Racing mods
Airbox/filter/oil	Yamaha/K&N/K&N
Pipe/silencer	Paul Turner National midrange
Fuel	VP C-12
2-stroke oil/ratio	Maxima 927/32:1
Horsepower	60% over stock
DRIVE SYSTEM	
Clutch	Hinson 8-plate, straight-cut gear system
Clutch basket/plates/springs	Hinson/ Yamaha/Hinson
Transmission/mods/oil	6-speed/2-6 new, 5th & 6th gear from RD350 street bike
Chain/lube	Sidewinder / Maxima
Sprockets f/r	Sidewinder
Gearing f/r	15/41
FRONT END	
A-arms	Roll Design Lobo/+2.5 wide / +1.5 forward
Spindles	Roll Design-prepared Yamaha
Front shocks/wheel travel	Custom Axis (rebound adjusters were removed for an extra inch of wheel travel) / 11"
Ball joints	Yamaha Warrior
Steering Stem	Roll Design, +2°
Camber	-2 degrees
Caster	+6 degrees
Toe	Zero toe at ride height
REAR END	
Swingarm/length	Roll Design/18.5
Rear axle/width/carrier	RPM Dominator/ +4/RPM Millennium

TRIPLE-THREAT BANSHEE

Take a look at that one-off engine cover! It was created with a Yamaha computer graphic file and CNC machining. The motor received a full-on Duncan National Midrange treatment. Those IMS pegs make for a stable platform.

Rear shock/wheel travel .....Custom Axis (rebound adjuster was removed for an extra inch of wheel travel)/12"

TIRES/WHEELS/HUBS

Sand Wheels f/r .....Custom Douglas wheels w/ Quad Tech rings. Polished and clear-coated
Sand Tires f/r .....Cheng Shin/Sand Tires Unlimited Mini Desert Tracks
Sand Tire sizes f/r.....22x8-10/22x14-10
Dirt Tires f/r .....ITP Holeshot MX
Dirt Tire sizes f/r.....20x6-10/20x11-10
Hubs f/r.....Nac's Billet / Yamaha

BRAKES

Master cylinders f&r.....Yamaha (completely rebuilt)
Calipers f&r.....Yamaha (completely rebuilt)
Pads f&r.....Yamaha
Discs f&r.....Braking
Brake lines.....Custom Duncan Racing
Brake fluid.....Motul 600

HANDLEBARS/CONTROLS

Handlebars.....Pro-Taper CR High
Clutch lever.....Yamaha GYT-R
Brake lever.....Quad Factory
Cables..... Motion Pro
Grips.....FMF

MISCELLANEOUS

Front bumper/grab bar.....Duncan / Yamaha
Fuel tank.....Yamaha with custom IMS dry-break
Seat.....Yamaha
Body plastic.....Trimmed stock Team Yamaha Blue
Footpegs.....Roll Design/IMS
Stator rewind/Output.....Safari/125 watts

OTHER SPECIAL SETUPS

•**Frame, brake caliper, and rear hubs color**—Spray-painted with Yamaha Deep Purple Blue Emulsion. Paint is the same color as an R-1 street bike. Paint manufacturer is Color-Rite (Yamahas color supplier). Painted by George Derego.

•**Front brake lines**—A Honda brake proportioning valve was mounted to a special frame mount to allow a single brake line from the front master cylinder to reach a point parallel to the A-arms

•**All fasteners and pivots**—Replaced with new Yamaha OE

•**Charging system**—A battery charged by a Yamaha Warrior regulator-rectifier is used to support the lights at low rpm and when you kill the motor. Wiring harness modifications by Chris Duva. Battery box fabrication by Roll Design

•**Steering stabilizer**—Scott's Performance mounted to the bottom of the steering stem by a Roll Design fabricated mount

•**Tuning fork stator cover**—Machining by Trinity Racing. CNC machine design software-converted from Yamaha Dealer Ad kit. Paint by George Derego

•**Standardized nut size**—All 14mm nuts on 10mm bolts replaced with 17mm nuts

CHROME—

Brandon McKenzie at South Bay Chrome

POLISHING & CLEARCOATING—

Larry at Speedway Metal Finishing

POWDERCOATED—

Frame, swingarm, lower front A-arms, Rear hubs—Powdercoated with a zinc-rich primer prior to painting. Powdercoat hand-sanded by Justin Duva prior to paint

OTHER PRODUCTS—

•Bullet Billet—Rear brake fluid reservoir, remote ignition switch mount
•IMS Products—Dry-break for Yamaha tank, dump can and stand
•Duncan Shifter
•Hinson Brake Pedal
•Hinson Clutch Cover—Lettering by George Derego
•Graphics kit—Duncan Racing/One Industries

ATV Action: *What are your other favorite parts?*

Chris: The dry break fuel tank is pretty trick. Chuck Wheat at IMS made it happen. A motorcycle dry break was machined down to fit on the stock Banshee tank. The tank was filled with hot water to soften it and make the top of the tank perfectly flat. Then we fit the dry break to the tank. It makes it quicker to fill and I'll spill less VP Racing premix. I have a four-gallon dump can which is perfect for the 3.6 gallon tank.

I also like the front brake line setup. We mounted a Honda 250R brake-proportioning valve on a custom mounting plate low on the front of the frame. It's much better than the standard high-mounted Banshee setup. We are still using the 1989 spindles, but only after Doug Roll had them magnafluxed to be sure that they were sound.

We also moved the coolant overflow tank from behind the airbox to a handy cavity next to the fuel tank. This eliminates six to eight feet of hose and replaces it with just a few inches. Now, behind the airbox is the rear shock remote reservoir instead of the tank.

Also, the tranny has fifth and sixth gear from an RD350 street bike. It closes up the gap between fifth and six by raising fifth. This gives it a bit more top end. Top speed, depending on tire size, is 100 to 110 mph. It'll go even faster with higher gearing.

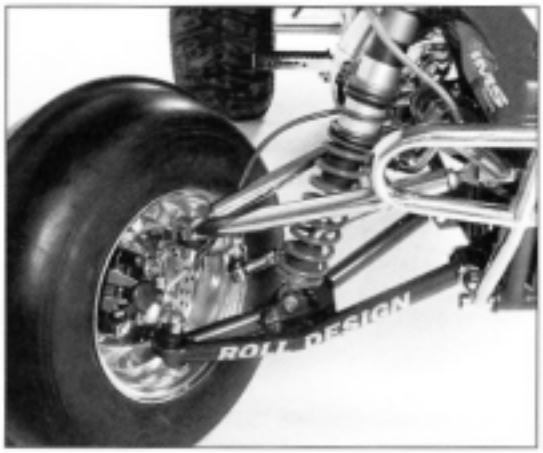
I'm really looking forward to riding this suspension setup. My son, Justin, has the Custom Axis shocks and Roll Lobo suspension on his Duncan Honda TRX330. I took it to Glamis one trip, and it handled beautifully.

ATV Action: *Is there anything left to do?*

Chris: I couldn't convince Roll to mount Dzus fasteners to the frame to make it easier to get the plastic on and off. Doug drew the line at that!

It's hard for me to believe that it's ready to ride. I am just amazed at how well everything turned out, considering the number of one-of-a-kind tricks that we played. Loren Duncan told me that he has eight pages of notes in his file from the assembly process. Loren, Lenny Duncan and I spent two hours going over the finished machine before they would even let me have it!

This machine could not have been built without the talent, flexibility, and cooperation of the builders and painters. They are to be congratulated. Next stop, Glamis! ❑



Wider Roll Design A-arms, Custom Axis shocks, Braking discs, Duncan brake lines, Nac's hubs, Roll spindles and completely rebuilt calipers make for an impressive front end. For maximum agility, the toe out is zero on the Triple-Threat Banshee, and the caster has been reduced to six degrees.

The stock tank was filled with hot water and carefully molded to accept a custom dry brake system. That cosmetics bottle at the front of the fuel tank is the radiator overflow tank, which is at the back of the Banshee on the stocker.

The 18.5-inch Roll swingarm retains full linkage. An RPM +4-inch Dominator axle is used for increased stability in the dunes and on the track. Wheel travel with the Custom Axis shock is a full foot!

Here's one of the trickest goodies on the Banshee. Instead of mounting the Scotts steering stabilizer on the top of the steering stem, where it can get in an argument with your face, Roll Design moved the stabilizer to the bottom of the stem. This is a custom setup, but Roll may offer it to other Banshee owners in the future.

The extra power of the Duncan National motor required Hinson Racing's eight-plate, straight-cut gear clutch system. The Keihin carbs regulate the flow of VP Racing C-12 race gas mixed 32:1 with Maxima 927 organic two-stroke oil through the Duncan Racing Pyramid reed cage.