

#### WORDS LITO REYES PHOTOS GEORGE M. GONZALEZ

If you haven't seen an RC motorcycle run, you don't know what you're missing! After getting my first one, I was hooked, and like all the other guys here at *RC Car Action*, I just couldn't leave well enough alone. My goals for the Project were more speed, more durability, more traction, better handling and, yes, even more speed—I want it all! Because of its generous size, the ½-scale Thunder Tiger FM-1e platform I started with can handle "regular" RC gear, so the electronics upgrades could be easily obtained from the local hobby shop. But some of the cooler hop-ups had to be ordered from smaller manufacturers around the country. Let's see what it takes to take this two-wheel beast to a new level.

#### **MORE POWER & SPEED**

The FM-1e chassis comes RTR with a Ducati 999R body and almost RTR with a Yamaha R-1 body. We tested the FM-1e with a stock motor to a top speed of 21mph. My goal was to double that. I started with low-turn brushed modified motors and then found out that the hardcore RC bike guys are all about brushless. So I settled on an LRP Sphere speed control and a Reedy Neo One 3-Star motor combo. One of the reasons I went with a sensored brushless system was because it features smooth power delivery at low speeds, which is critical in getting a bike to work well.

I also decided to do something about the stock gearing. Instead of changing the primary gearing (pinion or spur), I focused on the rear sprocket. The stock rear sprocket is a solid 26-tooth disc made of steel. I came across a lightweight 24-tooth aluminum sprocket from Crazy Nut Racing that would bring my final drive ratio down from 14.25:1 to 13.16:1. Certain that this setup would give me lots of top-end speed while still providing punch out of the corners (and maybe some wheelie action), I went to the trouble of removing a link from the chain to get the small sprocket to work properly.

To get the most power out of the brushless setup, you need batteries that can deliver the amps. Because weight is needed down low on the chassis, I eschewed Li-poly in favor of more traditional NiMH cells. Reedy RealTime2 team cells made with matched GP3300s provided the juice I needed. The stock battery holder was designed for stick packs and doesn't fit side-by-sides as snugly, so I used the battery holder from an Italian Nuova Faor ½scale bike. To secure the batteries, I picked up a pair of cinching Velcro cable straps from the local electronics store.

#### **INCREASED TRACTION**

The stock tires are great for playing around in a parking lot, but the triangular-cross-section front tire doesn't give enough bite in the corners, even on a prepared track. Fortunately, GS Racing is a distributor of GRP motorcycle tires. Their 45-shore tires are perfect for prepared and unprepared surfaces (even in rain, as the European guys can attest to) because of their sticky compound and grooved tread. With a round carcass just like a full-size bike tire, they grip the surface at even the deepest lean angles. I mounted them with Shoe-Goo on beautiful Brazimoto Y-spoke aluminum rims to get around the turns in style.

#### BULLETPROOFING

Anyone who has an RC motorcycle can tell you what a beating the chassis takes. A front-end wobble can easily turn into a "wall slammer." Imagine plowing the bike into the concrete, side to side, about half a dozen times at double-digit speeds, and you'll get an idea of the abuse I'm talking about. The stock, 2mm, aluminum chassis plates are pretty robust, but I wanted something stronger and with a bit more style than bare aluminum. Mike Dulian of Dulian Racing Products stepped up to the plate with a heavy-duty racing chassis made of 3mm carbon-fiber stock. And because black or





Right: the lightweight aluminum rear sprocket with a higher ratio from Crazy Nut Racing gives more top end and more punch. The treaded GRP tires on Brazimoto wheels give plenty of bite on most surfaces. Far right: the stock fuel-tubing steering setup was replaced by an oil-damped unit from Thunder Tiger's nitro bike, and it helps keep the bike stable at low and high speeds. Also note the trick,

red, aluminum triples—also from Thunder Tiger.

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The suspension was updated with hardened shafts that are smoother than stock and less likely to bend. "Helper springs" from Associated VCS shocks work alongside the internal fork springs to stiffen things up.

Dulian Racing Products made this beautiful chassis for me out of 3mm stock. Not only does it look great, but it also has survived all the abuse I've subjected it to, such as endo-ing at 40mph.

silver graphite plate is already everywhere, he did it up for me in red graphite. The stock chassis has plastic standoffs between the plates, but the Dulian kit replaces these with strong aluminum units with stainless-steel fasteners and anodized-

# THE PARTS

# CHASSIS

Dulian Racing Products 3mm carbon-fiber chassis kit—custom, no item number; \$135 Nuova Faor battery holder—X91; \$12

# DRIVETRAIN

Crazy Nut Racing 24-tooth rear sprocket—CNR9024; \$25

# ELECTRONICS

LRP Sphere speed control—LRP80500; \$180 Reedy Neo One 3-Star brushless motor—111; \$70 Reedy RealTime 2 NiMH GP3300 cells—667; \$70

# SUSPENSION

Associated Electrics Soft VCS shock spring—4475; \$2 Kyosho 5000WT diff oil—SIL5000; \$6 Thunder Tiger Aluminum Triple Upper—PD6316; \$17 Thunder Tiger Aluminum Triple Lower—PD-6317; \$16 Thunder Tiger Reinforced Shock Shafts—PD6321; \$8 Thunder Tiger Shock Bodies—PD6276; \$13 Thunder Tiger Steering Damper—PD6535; \$6

## BODY

Crazy Nut Racing aluminum body posts—CNR9069; \$25 Motoproto Lexan rider—RIDER; \$35 Thunder Tiger Ducati Lexan body (unpainted)—PD6300; \$27

# WHEELS/TIRES

Brazimoto Wheels—WHEEL SET; \$75 GRP front tire w/insert (45-shore)—GRP02A; \$16 GRP rear tire w/insert (45-shore)—GRP22A; \$16 aluminum washers. Overall, even using the heavier aluminum standoffs and thicker chassis material, I ended up shaving ½ pound off the bike's running weight.

Next up was the front suspension. On a stock bike, the first pieces to break in a head-on crash are the plastic triples that hold the forks. I went with Thunder Tiger's red-anodized aluminum replacements; they not only look better, but they also prevent the forks from twisting, which can greatly affect high-speed stability. To beef up the front end even further, I added Thunder Tiger's hardened-steel fork shafts, which are smoother and stronger than the stock ones. Because I had the older FM-1e forks, I also had to upgrade to the newer shock bodies that use two nylon guides for straight compression without any "slop." And to help the forks rebound from compression more consistently, I added a set of soft Associated VCS shock springs to the shafts between the fork bodies and the lower triple.

### **IMPROVED HANDLING**

Although the tires yielded the biggest handling improvement, I had to address a few more details to get the bike to the performance level I was looking for. First was the steering linkage. Out of the box, the steering link from the servo to the upper triple comprises a pair of rods punched through pieces of fuel tubing that are pressed onto opposing ends of a servo horn. Although it works well for a stock setup, the tubing setup does not prevent the front wheel from wobbling back and forth at high speeds; plus, the fuel tubing weakens and eventually breaks. The nitro version of the Thunder Tiger bike has a much better solution, which I transplanted to the electric bike. Basically, it is a plastic shock with internal and external springs that allow the forks to move slightly without servo input (needed to get the bike to bal-



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The trickiest part about setting up an RC bike is getting the steering damping just right. Forget about using the old fueltubing method; it just doesn't work well. In my opinion, the one-piece spring/oil-damped shock setup that Thunder Tiger uses is the way to go. Basically, the "shock" end of the damper is attached to the servo horn with internal and external springs that allow the fork to move left and right without changing the servo-horn position; this allows the bike to naturally upright itself when the servo is centered and there is enough speed. If there is too little damping from the shock, the bike will be very stable at slow speeds, but higher speeds will cause the wheel to wobble. The opposite is true with too much damping: no stability at low speeds (the bike will fall over too easily) but lots at high speed. The trick is to find the balance. Fortunately, the Thunder Tiger steering damper has an externally adjustable spring; set the retaining collar so that it just touches the spring. As your driving gets better, you can set it so that the spring is compressed by a couple of millimeters. Next comes finding the right oil for your bike. For my bike's setup, I found that Associated 50 to 60WT silicone oil gave me the best balance between low-speed and high-speed handling. Thunder Tiger recommends starting at 40WT and working your way up or down from there.

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Left: a Nuova Faor battery tray and Velcro straps hold the Reedy GP3300 cells much more securely than rubber bands do.

Right: the LRP Sphere/Reedy Neo brushless-motor setup provides smooth power for this 2-wheel rocket. Speeds of over 40mph were a piece of cake.



# PERFORMANCE

Just as in real life, driving a bike is much different from driving an RC car, so much so that I have to get into bike mode every time I hit the track. After a few slow laps to dial in the steering, I started pushing it. The most noticeable difference was the power available from the LRP/Reedy brushless setup. Talk about ponies! This thing had thoroughbreds between the chassis plates. Punching the throttle out of a corner (not always good idea on a less-than-perfect surface) got the bike to right itself up from its lean immediately as the tires scrubbed in for traction and produced some unexpected wheelies at times. And top speed-how does 43.15mph sound? In 3 seconds flat! On two wheels, no less! With my mods to the front suspension and steering setup, I'm sure it would be able to take more speed. As far as handling goes, the weight transfer getting the bike into a lean was much quicker. It was also easier to keep it balanced low in a turn without scraping on the crash bars. With the heavy vinyl rider, it was like waiting for molasses to flow compared with the snappy response with the Motoproto rider. Just how did the little rider fare in durability? Well, "Little Valentino" may have had a headache from his high-speed tumbles on the front straight, but all he shows for it are a few scratches on his helmet-nothing cracked or broken. The same goes for the thick, 3mm stock chassis; it shrugged off all the abuse I gave it. The same isn't true of the stock and my homemade crash bars; I'll be making a few sets to keep with the bike at all times. And now that the bike sports tires capable of taking on any hard surface (save ice), I'll get a lot more wheel (uh, handlebar?) time with the bike.

ance upright), while oil damping keeps it stable at high speeds. The best part is that the steering sensitivity can be adjusted just by moving a single collar on the outside spring. There is also an aluminum version that is less prone to leakage than the plastic one I used; I'll probably upgrade to it eventually.

On the rear end, all I really wanted to do was give the shock more damping. Filling it with Kyosho 5000WT silicone differential oil did the trick. Despite its light weight, the mounting location of the shock on the swing arm and chassis puts a whole lot of leverage on the shock, so really strong springs and thick oil are needed.

The next thing I adjusted was the lean angle, which is controlled by the wire crash bars mounted on the sides of the bike. The stock crash bars prevent the bike from falling completely over but need to be adjusted to allow the bike to lean more for tighter turns. After going through a few sets of stock crash bars, I ended up making my own out of 3/32-inch piano wire from the hobby shop. This stuff is hard to work with, but three sets of bars using 6 inches of wire each cost less than two bucks.

#### **KILLER LOOKS**

The stock vinyl rider isn't the most anatomically correct model out there; he is too small for the scale of the bike, and his arms are way too short to look human. Fortunately, Motoproto makes a rider out of GE Lexan that is not only much lighter but also much better-looking. These riders proved their durability during last year's RC Motorcycle Nationals, so I wasn't concerned that their two-piece, screwed-together construction wouldn't hold up to my driving skills. I sent the new rider along with a fresh Ducati 999R body and fairing off to Wade Brown of Wasted Paint to do the paint work. At my request, he came up with an eye-catching paint job in a sort of tribute to legendary racer Masami Hirosaka, using colors and patterns that imitate his on-road paint scheme. Even with the concours-quality looks, this won't be a shelf queen. I don't believe in them; this bike will get worked hard! And for mounting the body, I used Crazy Nut Racing's aluminum body posts; they are almost impossible to break.

#### **OTHER RUNNING GEAR**

Because my kit didn't come with electronics, I had my choice of gear to put in from the start. For steering, I started out with a high-speed servo but soon found out that it was overkill and way too fast to smoothly transition the bike into a turning motion. So I ended up using a Hitec HS-311 standard servo, which was perfect-not too fast, not too slow. Coupled with my trusty Multiplex ProfiCar 707 and a Novak XXtra synthesized receiver, I was prepared to hit the tarmµac.

Brazimoto brazimoto.com Crazy Nut Racing crazynutracing.com Dulian Racing Products drpbikes.com

**GS Racing** gsracing.com **LRP**, distributed by Team Associated; teamassociated.com **Motoproto** (781) 721-4967; alleven@mindspring.net Nuova Faor, distributed by Internet-RC; internet-rc.com Reedy, a division of Team Associated; teamassociated.com

Team Associated teamassociated.com Thunder Tiger/Ace Hobby Distributors acehobby.com Wasted Paint darkidentity.com

Motoproto makes the twopiece Lexan rider that is much lighter than the stock vinyl doll. Both the rider and Ducati body pieces were painted in a "Masami" theme by Wade Brown of Wasted Paint.

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