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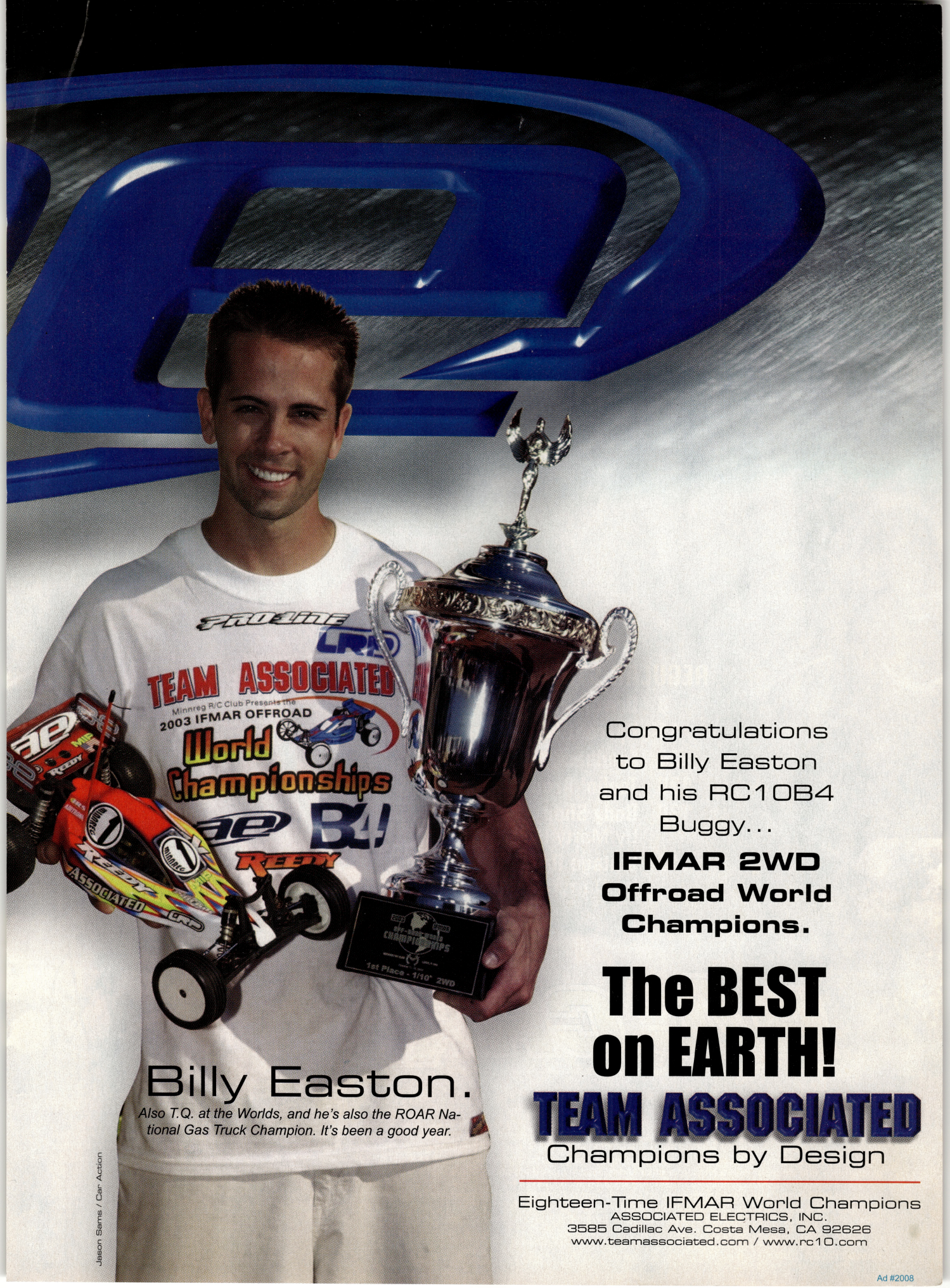

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R/C CAR

THE RADIO CONTROL CAR MAGAZINE

MAY 2004, VOLUME 7, NO. 5

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[Drivers' Stand]



BY FRANK MASI

I don't normally use my column to respond to letters, but I received a very thought-provoking correspondence from our friend Garen Hagobian, who works for GS Racing, on the subject of my March issue's column. In that column, I commented on the state of monster truck racing, and that I felt that, at the recent NORRCA nationals, the way in which the classes were broken up was unfair to big-block "Maxx-style" trucks such as the Savage and Monster GT. Here's what Mr. Hagobian had to say:

Dear R/C Car,

As you state, monster trucks have changed over the past 10 years. Nearly five years ago, when the T-Maxx first appeared, there was nothing like it. Since then, many companies have used similar designs to create their own monster trucks. However, to define a class of trucks by saying that it must be designed like a certain model is unfair. If this is how we should define classes of cars, then how would you define the electric touring car class? There are single belt cars, dual belt cars, and shaft drive cars, with various types of chassis and configurations. Should monster trucks all look the same? The answer is no.

Your statement, "it [NORRCA] broke the monster truck classes into categories strictly based on engine displacement" is not true. The so-called "big block" class was clearly called "Unlimited Monster Truck" as stated on the race flyer and results sheets.

The Unlimited Class has developed as a result of T-Maxx owners spending big bucks to upgrade and modify their trucks to fit larger engines, sit lower and wider, replace the transmission with spools or 1/8-scale buggy differentials, and numerous other changes. The result being a very expensive T-Maxx that looks nothing like the original, and more like a racing truck or buggy. To blame GS Racing, Kyosho, or OFNA for problems in monster truck racing is unfair. Consumers (racers, to be more exact) have taken the initiative and created this class, and now the manufacturers are simply responding to this demand.



Compared to most of the other trucks in the race, the cost of this truck [the GS SUT] is far less than what most "Unlimited" racers spend on their trucks. The point being; if cost concerns are included in the decisions for any rule creation or changes, I think we offer a very cost effective means to allow anyone to compete at all levels of racing. Do you think it is good for R/C racing to tell a newcomer with a just-purchased stock SUT RTR they can't race in the big block or Unlimited Monster Truck class because you feel a monster truck should have "a Maxx-like design?"

Garen Hagobian
Marketing Manager GS USA

Garen makes some good points, however, there are some discrepancies. First, the classes were made by displacement—if not stated directly, a Savage or Monster GT driver could not enter to compete against the small-block T-Maxxes. Big block trucks had to run in the unlimited class. Therefore, displacement was a deciding issue. Secondly, I am in no way "blaming" any manufacturer for these classification issues; it is the racing organizations and race directors who must figure out a fair and equal method of classification. As Garen also pointed out, when a T-Maxx is modified so heavily, e.g., with the adoption of a 1/8-scale drivetrain, it should be placed in the same class as the new "truggies." There is no reason, however, why a box-stock HPI Savage shouldn't be allowed to race against a small-block T-Maxx. In terms of power-to-weight ratio, the Traxxas truck is still one of the most potent machines on the track.

NEW TECH ARTICLES FOR RTR OWNERS

If you build your own kits, you're already familiar with the inner workings of your vehicle. On the other hand, most RTR owners have never seen the insides of their vehicles' transmissions, or have had their shocks and suspension apart. To help guide RTR owners through some of the most common repairs and most popular hop-ups for their specific vehicles, we have come up with a new feature entitled "RTR Tech." In each installment, we'll be tackling both major and minor repairs and modifications for some of today's most popular RTR vehicles. This month, we'll be installing a forward-only conversion kit into Associated's Monster GT (see page 66). If you have a specific article you'd like to see, drop us a line and let us know.



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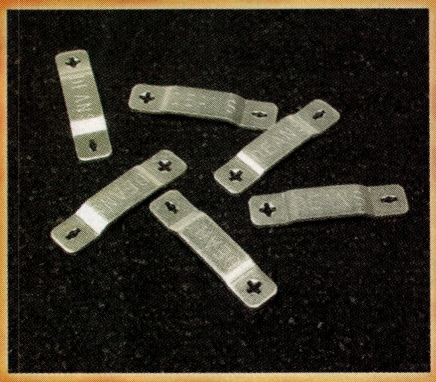

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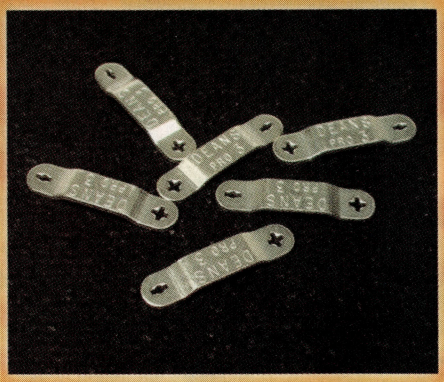

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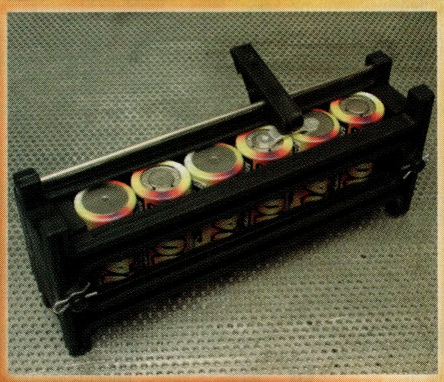

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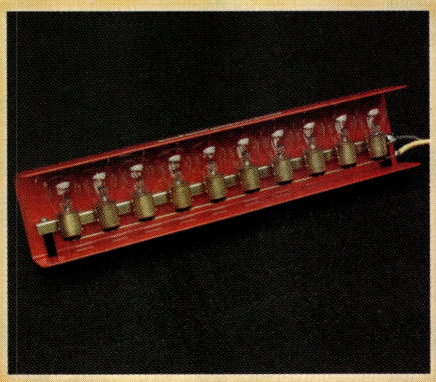

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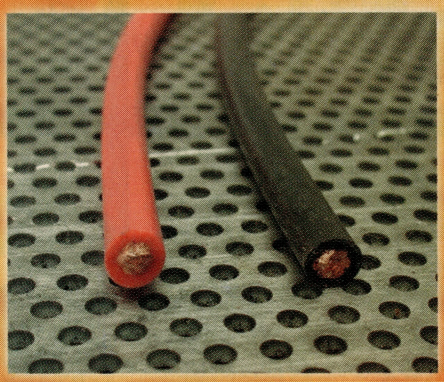

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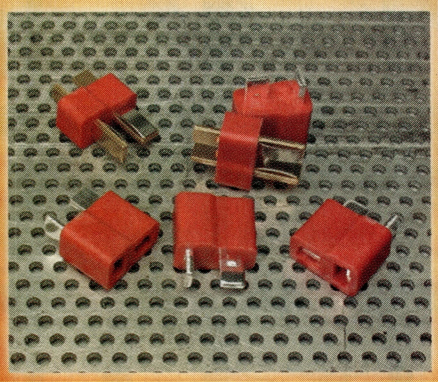

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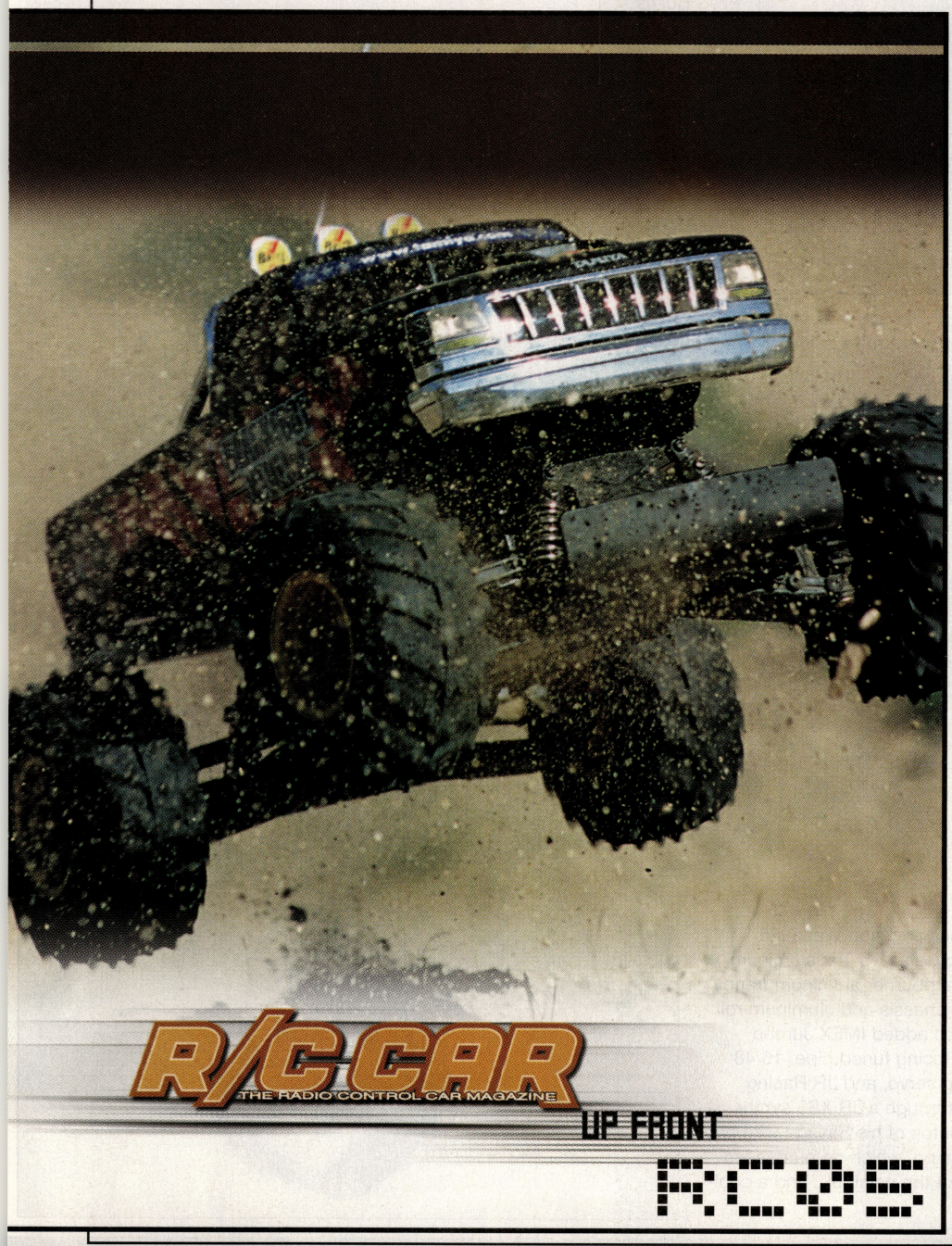

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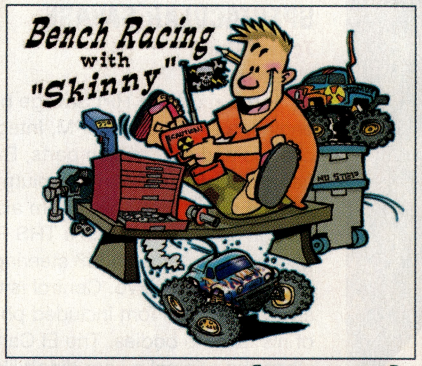


BENCH RACING [PAGE 20]

[Readers' Projects]

Welcome to *R/C Car's* Readers' Projects. We receive many impressive "home-built" reader projects each month, so we decided to showcase some of them in each issue. How about you? Got a lot of pride in your ride? Snap some pics and send 'em to us here at *R/C Car* Readers' Projects, 25233 Anza Drive, Valencia, CA 91355. Hi-res digital images can also be emailed to brians@hi-torque.com. Who knows, maybe you'll see your car or truck in an upcoming issue! And if we use yours, you'll receive a free one-year subscription!



MY FIRST T-MAXX

Fred Burgy
Ohio

Fred e-mailed us with some photos of his very first T-Maxx (c'mon, Fred, you're behind the times). Not only did Fred paint the HPI Bronco body himself, but he also added a whole slew of hop-ups. The suspension is tricked-out with RPM bulkhead braces and shock towers, XTM skid plates, an aluminum transmission shield, and swaybars for the front and rear. The stock Traxxas engine has been fitted with both a Frigid head and a tuned pipe from RD Logic. There is also a K&N air filter to keep the engine breathing right, along with a fuel filter to keep the crud out of the carb. Fred's Maxx is lowered, for racing on pavement, and rides on Pro-Line Velocity wheels with Maxx-Masher tires.





SPECTACULAR SAVAGE

Tom O'Cull
Northlake, IL

Tom's modified HPI Savage has an Orion Wasp .26 engine, a Nova head, GPM, Integy, and RC Trix aluminum chassis and suspension parts, Barnburner aluminum tranny cases, Hardcore Racing titanium chassis and aluminum roll bar. He didn't stop there: Tom also added IMEX Jumbo Dawgz tires and wheels, a THS Racing tuned pipe, 16/48 gearing, Airtronics 94358 steering servo, and JR Racing Z590M throttle servo. Control is through a JR XS3 synthesized FM radio. Tom included photos of his Savage with two of his favorite bodies. The El Camino, which he purchased when the original owner didn't like the paint job, and a cool-looking Audi A4 Avant (!).





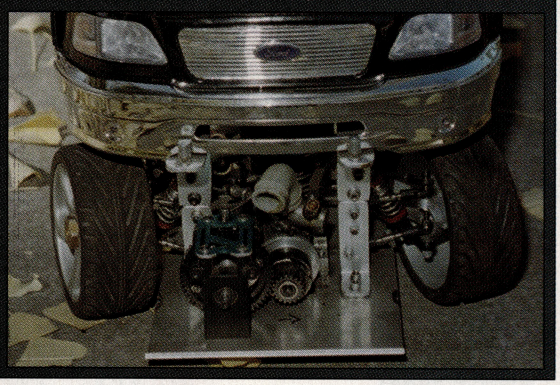
READERS' PROJECT OF THE MONTH

F-150 CRUISER

Jason Santander
Mountain View, California

Twenty-six-year-old Jason Santander tells us that his particular R/C passion is fabricating working models using realistic, hard-plastic bodies and details from other products—such as plastic models and toys. His latest creation is based on an injection-molded, hard-shell Ford F-150 body lifted from a toy truck. Jason created a working chassis for the Ford pick 'em-up using 1/8-inch-thick aluminum. He machine-bent the sides of the chassis to provide the necessary rigidity. Power comes from an OFNA Force .21 engine that Jason installed up front, right under the "hood" area—just like the real thing. The rear-wheel-drive transmission was taken from an OFNA 1/8-scale nitro buggy, with a single, long driveshaft running the length of the chassis to a rear-mounted gearbox. Suspension is a four-link setup, made from Traxxas T-Maxx turnbuckles. Jason tells us that the finished truck is slightly larger than 1/8-scale, and that the F-150 body—which has a complete interior—looks even more impressive in person. Great job, Jason!



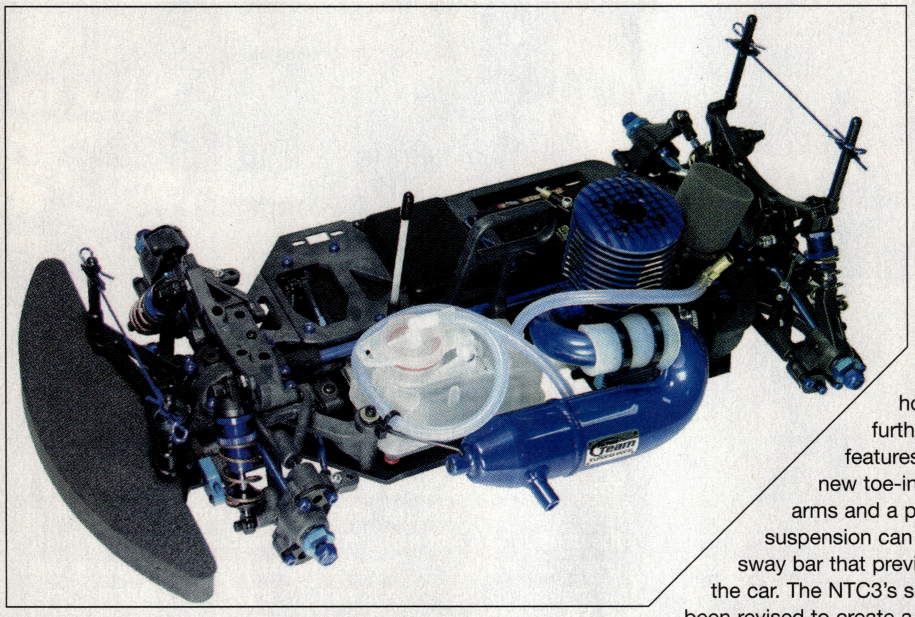




FACTORY TEAM FLIER

Brian Pulsipher
29 Palms, CA

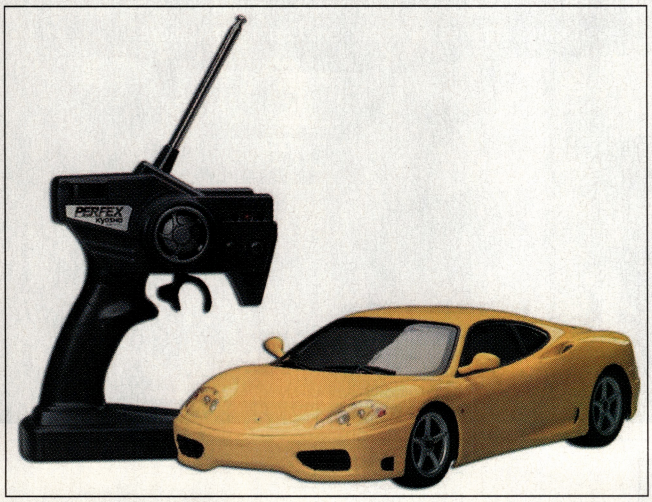
This hot GT definitely has the full race look. Brian's Associated nitro burner is fitted with a powerful Mugen MT-12 rear exhaust engine. Power goes through a MIP 4-in-1 clutch and Crescenzi three-bearing clutch bell and clutch nut setup. The potent mill breathes through a K&N air filter and Team Losi Adam Drake Edition exhaust. Stopping is through a Crescenzi brake system, while ball-bearing equipped steering provides crisp handling. Brian also installed RPM ball cups to the suspension, and uses an Airtronics M8 radio with an Airtronics receiver for control. The whole thing is topped with a Pro-Line Crowd Pleazer pickup body.



FACTORY FRESH

In keeping within a long history of tradition, Team Associated has announced the release of the new Factory Team Edition of its popular and hugely successful, World and National Champion Nitro TC3. The Factory Team treatment usually equates to the inclusion, at great savings, of many optional accessory items into one kit. With the FT NTC3, however, Associated has gone further than ever before. The new kit features a revised rear suspension, with new toe-in adjustment via redesigned arms and a pair of pillow balls. Also, the rear suspension can now accept the blade-style of sway bar that previously only fit the front end of the car. The NTC3's shoe-type two-speed has also been revised to create a finer range of adjustment. This new "Sure Shift" transmission also features new gear ratios, which have been developed by Associated's team drivers (first gear is now 6.43:1, and second is 4.44:1). In addition, the kit includes a Factory Team dual-chambered pipe, a hard-anodized, black aluminum chassis, blue titanium turnbuckles, threaded shocks, aluminum wheel hubs, and a full boatload of graphite-composite chassis and suspension components. They've even included a front one-way drive unit. All this for a suggested retail price of $599.99.

Contact Associated Electrics, Inc., 3585 Cadillac Ave., Costa Mesa, CA 92626 • phone (714) 850-9342; fax (714) 850-1744 for more information.



KYOSHO'S "MAXI-Z"

Kyosho introduces the @12 Sports—which is basically a larger, 1/12-scale version of the company's popular 1/24-scale Mini-Z Racers. The 11-inch-long @12 comes as a fully assembled, ready-to-run kit. Kyosho's two-channel Perfex pistol grip radio, a digital steering servo, and a proportional forward/brake/reverse ESC are pre-installed. Like the smaller Mini-Zs, the @12 comes with a hard-plastic body shell, enhanced with Kyosho's Gloss Coat shine-enhancing and protective finish. Features of the chassis include true rack-and-pinion steering, independent front suspension, T-bar-type rear suspension and a 370-size electric motor. The @12 comes in your choice of yellow or red Ferrari 360 Modena body styles.

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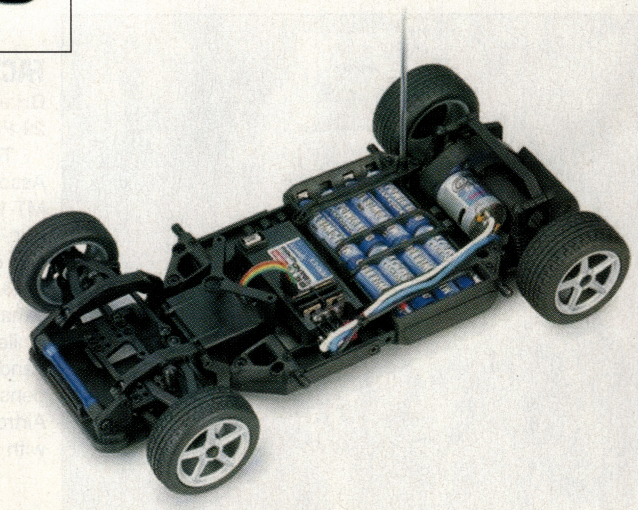

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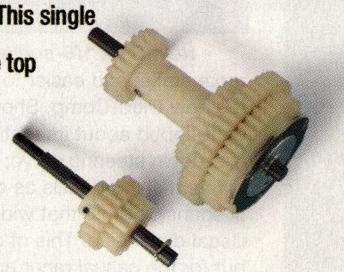

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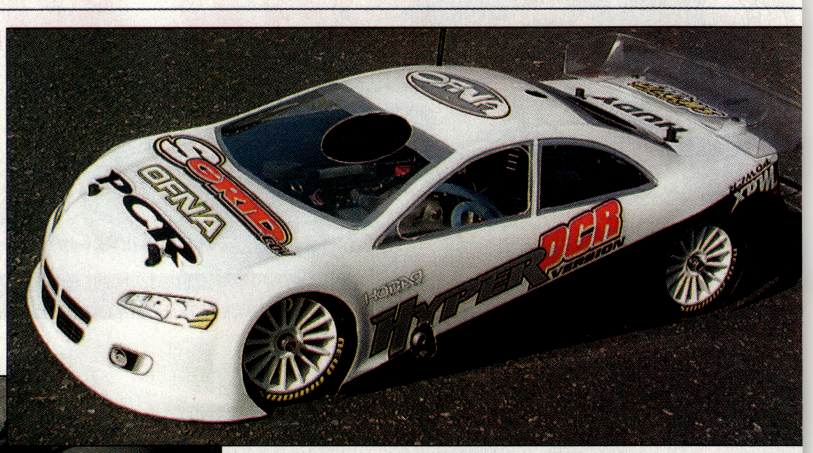
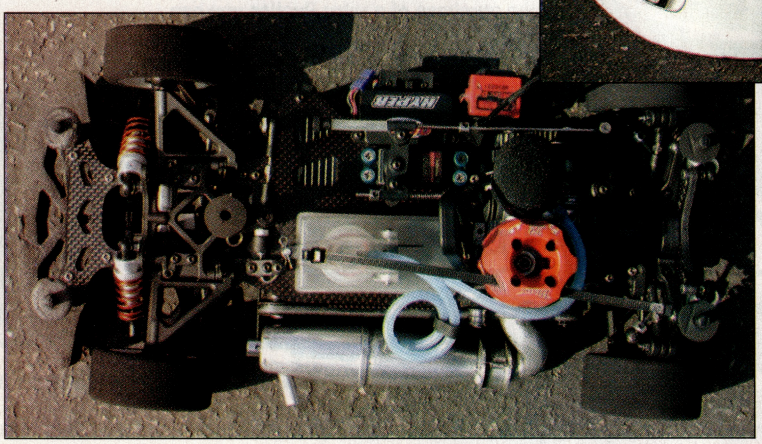
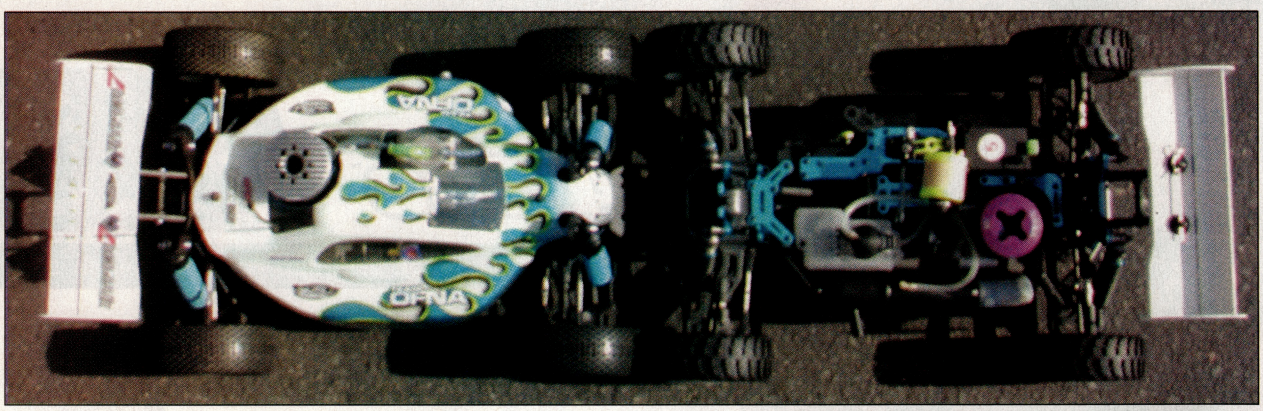
R/C NINJA INVADES OFNA

We recently had the pleasure of hanging out with team OFNA's Josh Wheeler. Josh was on his way home from visiting Taiwan, where he was doing some testing for some future OFNA products, and he stopped by So Cal to kill some time with Skinny (and go to The Dirt Nitro Challenge). Josh needed a ride down to OFNA's headquarters in Laguna Hills, so we brought our spy camera with us in anticipation of snatching some cool spy shots. We weren't disappointed: we caught Paul Coleman of OFNA with some very cool new stuff—check it out!



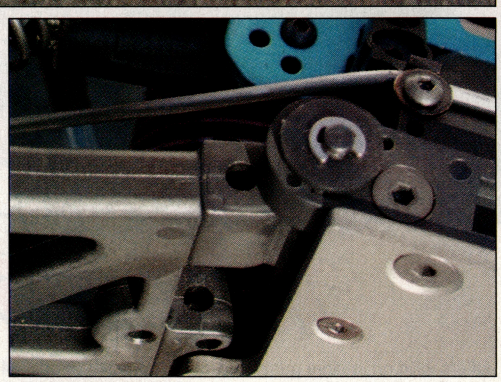


• **New nitro sedan**—Slated for release by the time you read this, OFNA's new Hyper GP4 nitro sedan will be available as a rolling chassis build-up kit, and it is stuffed to the gills with high-end features such as carbon-fiber chassis and suspension parts; a 4mm 7075 aluminum chassis; a Centax-style adjustable clutch; and machined-aluminum parts (the ones shown on this prototype were rumored to have been machined by Paul himself during a trip to Taiwan).



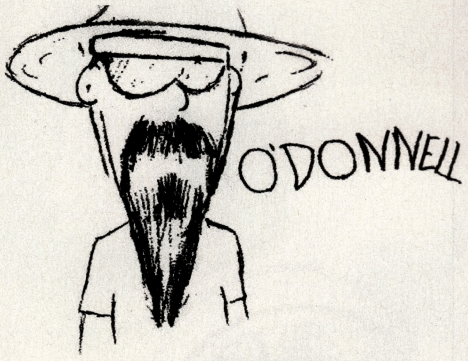
• **New RTR 1/8-scale buggy**—OFNA's goal is to design a buggy that is more stable and easier to wrench on—and they are banking on success with the new Ultra-Comp. Shown here is a prototype car, and OFNA is being tight-lipped about its features. What we do know is that the car will have a laid-down steering servo; 4mm-thick aluminum shock towers; a new style of differential (no details as of yet); and the most radical feature—a set of longer suspension arms that widen the car to that push the car's width out to an illegal dimension. This of course makes the car illegal to sanctioned racing, but for the casual racer and basher, the increased width makes the car more stable. If, however, you wish to conform to the rules, the car can be easily modified—at no cost—to make it of legal width. And the best news of all? OFNA is targeting a street price of $300.00 for this RTR buggy.

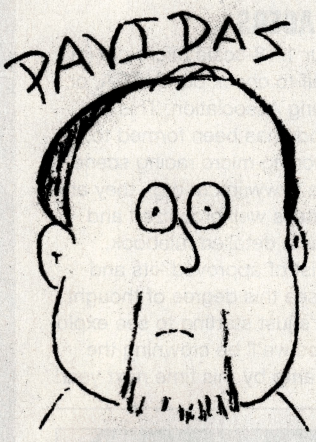
For more information on these or any other OFNA products, call them at (949) 586-2910.



CHAD'S OTHER JOB

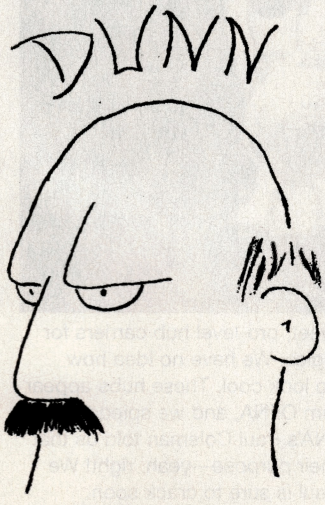
Our good buddy, and factory Mugen Seiki driver, Chad Bradley has more skills than he lets on. Not only is Chad a super-fast R/C driver, but he's also quite the artist, as can be seen from these caricatures, which are of several of the R/C industry's luminaries.

















WHEELS KEEP ON TURNIN'

Advantage Racing Products is a relatively new company to the R/C buggy market, but already they have some great product ideas. Basically, Advantage has your buggy wheel needs covered: they offer a new line of 1/8-scale buggy wheels; a new foam insert that is designed to reduce foam breakdown during running (which means that the foam retains its ability to support the tire, run after run); and a new CA glue formula that has been especially designed to bond to the wheel throughout those punishing hour-long A-mains. Each of Advantage's products are rigorously tested by their team drivers before being released to the public, and are priced surprisingly low: for example, an entire set of four wheels sells for just $15.00. Racing just became more affordable! Contact Advantage Racing Products, 8385 S. Allen St. #140, Sandy, UT 84070 • phone (801) 953-6985; fax (801) 565-0836.

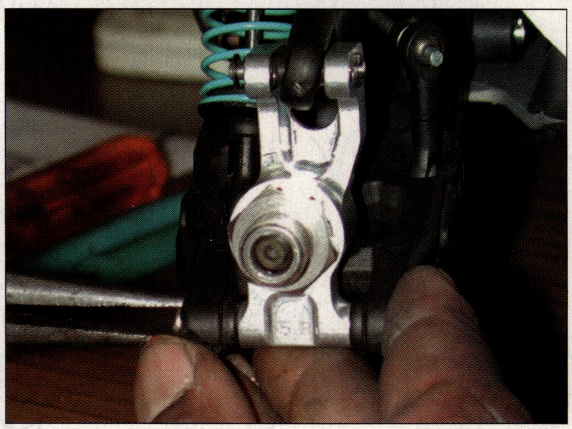
ATTENTION ALL MICRO RACERS

If you are looking to race your 1/18-scale micro car (or truck), then you owe it to yourself to check out IMCRA, or, the International Model Car Racing Association. This Wisconsin-based sanctioning body has been formed to organize and promote the burgeoning micro racing scene, and by the looks of their website (www.imcra.org), they are definitely on the gas. IMCRA's site is well organized and easy to navigate, and already has a detailed rulebook, track-building guidelines and a list of approved kits and accessories online. It's great to see this degree of thought and organization for a class that's just starting to see explosive growth. Who knows; perhaps we'll be crowning the first IMCRA national or world champ by this time next year!

OTHER FAST NEW ACCESSORIES

You'd be amazed at how much cool stuff we see when we pay a manufacturer a surprise visit. During a recent visit to OFNA, we came across this new on-road pit box. As you can see, it has built in drawers, with a built-in plastic divided compartment. The entire case is held together with Cordura nylon. There are wheels and a handle so that the case resembles a carry-on flight bag when traveling. The top compartment has a tool pouch, and a slim pouch on the back holds your pit board.





We also spied these sweet, pro-level hub carriers for the rear of their racing buggies. We have no idea how they work, but they sure do look cool. These hubs appear to be a brand-new item from OFNA, and we spied them during our recent visit. OFNA's Paul Coleman told us that even he wasn't aware of their purpose—yeah, right! We will keep you posted, as Paul is sure to crack soon.

For more information on these or any other OFNA products, call them at (949) 586-2910.

XXX-BK2

BRIAN KINWALD



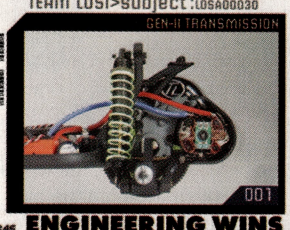
THE NEXT GENERATION

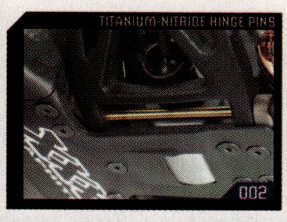
The new XXX BK2's advanced variable length suspension and Gen II Transmission allows it to accelerate quicker and take corners faster than any 2WD buggy you've driven before. Don't get left behind—let Team Losi's next generation racer keep you up front.

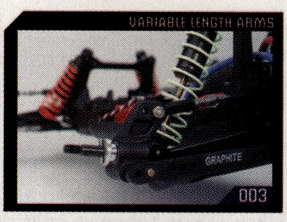
1/10 SCALE 2WD COMPETITION BUGGY

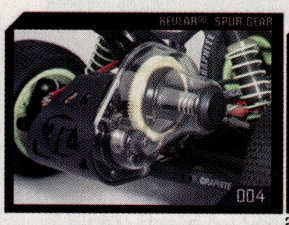
TEAM LOSI>subject:LOSA00030

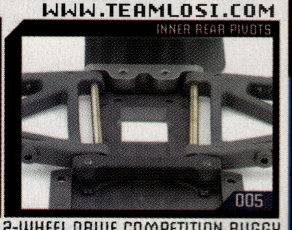
WWW.TEAMLOSI.COM











5246 **ENGINEERING WINS**

2-WHEEL DRIVE COMPETITION BUGGY

The Gen II Transmission moves the weight lower and further forward, closer to the center of gravity, for less polar movement and better forward traction.

Titanium nitride hinge pins are used throughout. The combination of hardness and lubricity reduces friction for super-smooth suspension operation without sacrificing strength. The increased surface hardness offers additional wear resistance and greater durability in the worst conditions.

The Variable Length Arms are a totally new concept in off-road suspension. The ability to switch between long and short positions allows you to change the handling characteristics for a much wider range of driving styles and track conditions.

The new Kevlar® spur gear, machined motor plate, revised differential, motor guard and the race-proven double disk slipper are capable of handling the hottest of motors.

New inner rear pivots feature shims to allow you to fine-tune the anti-squat. The machined aluminum rear pivot pin mount is extra sturdy to maintain proper geometry. The revised motor guard has molded tabs to hold the pins in place and allow for easy maintenance.

TEAM LOSI® RACING

HORIZON HOBBY

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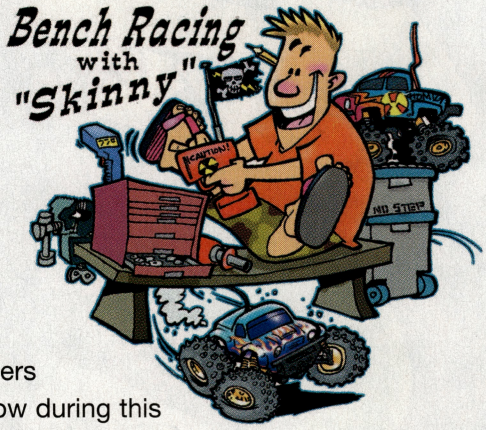
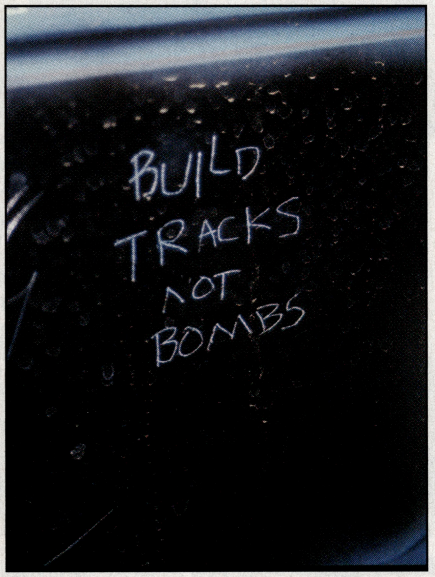
Brain Food



"Avoid the crowd. Do your own thinking independently. Be the chess player, not the chess piece"—Ralph Charell



I know that some of you readers are still under ten feet of snow during this time of the year, and that your nitro vehicles are probably so cold they won't even start (you E-Maxx guys are looking good, though), but out here in LA-LA land, we have prime roosting weather and I've been mowing through new products like the "Lawnmower Man" went through his neighbors. I'm not rubbing it in, mind you, but someone needs to test all this stuff—and it might as well be me.

With all the testing, bashing, and racing I have been doing, I have come to realize that monster trucks have become specialized. This epiphany occurred recently while I was trying to figure out which monster truck to take with me to an upcoming event. The fact is that there is no longer a single monster truck category; it has split into many subcategories. The choice used to be much easier. When it was time to go out and bash, you just picked up your T-Maxx and headed out.

For racing, we now have small-block trucks, big-block trucks, and now we also have truggies. If you want to go bashing, there are many more choices, such as the newer big-block monsters like the Savage and Monster GT. And just what the heck are you going to use for rock crawling? The TXT-1, X-Factor, or the Mad Force? Are you going to go nitro or electric?

I'm getting a headache just thinking about this (either that, or I've been in the garage too long, and all those nitro fumes are taking their toll). I'm not complaining; I think it's great to have so many types of trucks from which to choose. It's great to see that our segment of the hobby has grown so much and that we have these options. Now, if we could just get the racing community to give us a little respect, I would really be happy.

I believe this will be the year that this will all change. With the introduction of the buggy-based monster truck (the truggy), the serious racers are beginning to give the monster truck category more than a cursory glance. As I write this, the 2004 Nitro Challenge in Hemet, California, is just days away. For those of you unfamiliar with this event, the Nitro Challenge is the unofficial opener of the nitro racing season. The big buzz this year is who is racing in the monster truck class. Team GS Racing driver and current NORRCA national champion, Marty Korn, will be racing his GS SUT; nitro and minicycle legend Richard Saxton will be driving an Associated Monster GT; and Dean Sexton will be racing his special Kyosho/JT Racing Kanai II Kyosho truggy. All of a sudden, it's cool to race monster trucks.

I believe that with the advent of the truggy, monster truck racing will continue to gain in popularity. It may even wipe out the big-block monster truck class, causing the creation of two distinct classes for small-block trucks—.18 and under and the unlimited small-block class. This is just my prediction, and we'll see what develops later in the year.

As for me; I'll be racing against all the big boys. But I won't be using a truggy, or even a big block truck—I plan to race my Pro Hobby small-block T-Maxx (the same truck we featured in last month's issue). It has a small block, but it's a doozy—an O.S. .12 Turbo. I think the Pro Hobby Maxx may have an advantage over the larger trucks because the track is tight, and my truck is half the weight of the truggies and other big blocks. Just in case, however, I will bring my Dace/RC Solutions big block T-Maxx. Wish me luck!



BY BRIAN SKINNER

email:brians@hi-torque.com



MORE TIRES FROM HOT BODIES

We like Hot Bodies: every month we get a mysterious box from them, packed with all sorts of cool stuff. Last month, we received a 50-pound box of monster truck tires of all types and sizes. In particular, there was one set we liked a lot. They are called the Seven-Inch Mayhem tires, and they come pre-glued on Hot Bodies' chrome wheels. We witnessed these tires being used at the recent Monster Jam event (see coverage elsewhere in this issue), and came away mightily impressed.



Have a sacked-out ride? Write us, and maybe we'll perform an "ambush makeover" just as we did to Skinny's Storm Pro last month.

ATTENTION ALL READERS

Now is your chance to be famous and get a free makeover for your sacked-out R/C vehicle. If you may recall, I performed an "ambush makeover" on my GS Storm Pro in last month's issue. What I did was take the steaming pile of parts that was my Storm (after two seasons of racing) and transformed it into a pristine racing machine. Well, now we want to do the same for some of our lucky readers. You read that right: if we choose your submission, your clapped-out ride will receive a similar treatment. Here's how it works:

1) Send us *all* of your contact information—including your phone number. Submit photos of your beater R/C vehicle, and a brief letter explaining why you feel you deserve to have your ride made over.

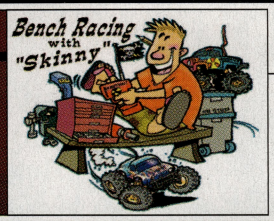
2) If we select your submission, we will call and help you arrange to have your vehicle sent to our office for its transformation. Of course, you must understand that we will have total authority over what work gets done, and you will have no say. Think of this as "Trading Spaces" using R/C vehicles. We promise, however, that we won't glue hay to your body, or paint roosters on your chassis.

3) Such a drastic makeover can be time-consuming. There are parts to be ordered and installed, and things that will need rebuilding. So don't call us every day to find out when you'll be getting your vehicle back. Once we have finished the project and have photographed the end result, we will send it back to you so you can roost your friends.

If you like this idea, e-mail me at *brians@hi-torque.com* or mail your submission to my attention at *R/C Car* magazine, 25233 Anza Dr. Valencia, CA 91355.

Here are some hints to improve your chances of being picked: the more worked over, the better; and it will be easier if the model is somewhat recent, as the issue of parts availability is important. So get to digging in the garage!

(Bench Racing)



SKINNY'S MAIL BAG



Also: forward Brian Skinner signed a one-year contract with the 76ers after playing for the Cleveland Cavaliers last year.

HOOP DREAMS?

Nick Vegas sent in this newspaper clipping to let us know that Brian Skinner, aka Skinny, is now playing basketball with the 76ers. To Nick I say, have you seen me lately? I think you have the wrong guy, but I do wish I had this other Mr. Skinner's salary. Nick, did you know that I also race in NASCAR?



FROM BAGHDAD WITH LOVE

Sgt. Tommy Mays from the good old US Army thought Frank and I needed some wallpaper for our office, so he sent us a couple of Iraqi dinars, on which is the image of our friend and yours, Saddam. Thanks for the money, Sgt. Mays, but I found it's not worth too much. I tried to buy a cup of coffee the other day, but the guy at the 7-Eleven gave me a strange look. Seriously, we love the dinars, and have them proudly displayed. Thanks to you and all the guys and gals overseas; we're all proud of you. By the way, I'm glad our mag keeps you guys from going crazy over there.

Keep the sand out of the air cleaner.

ON LOCK-DOWN

I'm currently in state prison, and my wife gave me a subscription to *R/C Car* magazine for Christmas, and man, let me tell you; I love it! The reason I am writing is to ask this question: why does the test on the Associated BFT (Jan '04) say it's 4WD, and then in the specs it says "2WD gear driven"? Plus, I can't wait to get out and send you a photo of my R/C room. I saw the photo from the Dec '03 issue in the "Readers' Projects" section, and mine blows his room away—it's not even close! But it is, respectfully, a nice room.

Nathan
Via *rc-car.com*

Nathan, I hope you take the time and sort out your life; we want you to be pulling trigger on the outside! In answer to your first question: yeah, we know; someone used an old gas truck spec sheet by accident, and we did not catch it in time. But the Monster GT (BFT) is 4WD, and you have a good eye. We also hope you get out soon, too, and if you do send in a photo of your massive R/C collection, and we use it, you will get a free subscription. Good luck, and stay out of trouble!

Dear Brian and Frank,

Subject: *RC Car* magazine condition and suggestions

Over the past year I've received several copies of *RC Car* mag in terrible condition. December 2002, July 2003, and another issue that a friend borrowed all came with only two staples (not three) holding them together. As you can imagine, these three issues have quickly fallen apart, starting with the infamous middle two pages tearing through the staples, and then it's all downhill from there! As additional strength, please ensure that they get all three staples and maybe make the center page four to six pages thicker than the rest of the mag to help prevent tear-out of pages.

I don't think that it's necessary to go with the glued binding which must be more expensive.

Yes, I still re-read the old issues and ooh—ahh the pics.

Dear Brian,

The plastic wrap seems to have solved the mangled in the mail magazine problem and the new glued *RC Car* magazine binding should solve the center pages tearing out.

Thank you!

BTW, is the glued binding cheaper than the thicker center pages (w/staples) idea? Also, I need a good roll bar for my new SportMaxx (upgraded with 4x4 and 2-Speed kits) and really like the HDD bar mentioned in the October 2003 *RC Car* mag (page 21, Skinny's truck column.) Unfortunately, this bar is never in stock.

(*www.hironimus.com*)

The New Era one feels kind of heavy and is not well designed according to roll cage construction.

I would rather drill new holes in my Maxx chassis, as mounting one leg under the gas tank isn't my idea of strong.

(*www.neweramodels.com*)

The full force one would be nice if it had a third mounting point; there's nothing to stop it from bending front to back. However, it is heavier due to the solid bar versus hollow mandrel tubing.

(*www.fullforcerc.com*)

I'm not interested in the full cage like RC Solutions, but their skid plates look very interesting and I might go with these instead of Hardcore titanium.

(*www.racinghardcore.com*)

Any recommendations on a good roll bar?

Do you still like your HDD bar?

Want to sell your HDD bar?

Had to ask anyways!

Thanks,

Nathan Cady, (subscriber)
Sacramento, CA

P.S. When's the Maxx-size and Up Monster Truck Shootout?

Nathan, you said a lot in those two e-mails! First, thanks for your input—Frank (that slave driver boss of mine), has heard a lot of this from all you out there in reader land. Apparently the saddle stitching (as they call it) was getting beat up in the U.S. Mail system and a lot of people reported that their mags were getting hammered by the postal guys—not to mention stories of the mail carriers reading their magazines before they were delivered, but even though Frank is a slave driving passionate editor type boss, he has heard all of your pleas, and for the 2004 year and beyond—R/C Car will come to you all out there in a bag and will be "perfect" bound as they say in the publication world (and yes, Nathan, it does cost more, but we want you all to be happy).

As for your "roll-cage issue" I feel your pain, it is hard to find things in stock sometimes, and I will call HDD for you and tell him your plight. I like the HDD roll-cage too, but I have tried them all and like each one of them, I think they all work well and depending on what you're doing with your truck, one of them will be the right one for you.

The RC Solutions skid plates are pretty cool, and I have them on our current project truck—they are hanging tough, and are pretty lightweight…although Hardcore Ti skid plates are the best in the world and I use them all the time. Nathan, you have some tough choices, my friend!

Skinny

P.S. Yes, I do like the HDD cage, and no, I do not want to sell mine! Also look for a major MT shootout soon!

It's ELECTRIC!

HYPER MONSTER TRUCK
TWIN FORCE



They claimed that it couldn't be done. They said it was madness to try. But Kyosho continued on alone, and accomplished the impossible: the Twin Force, a 4WD electric monster so powerful that a wheelie bar was not only included, but absolutely required.

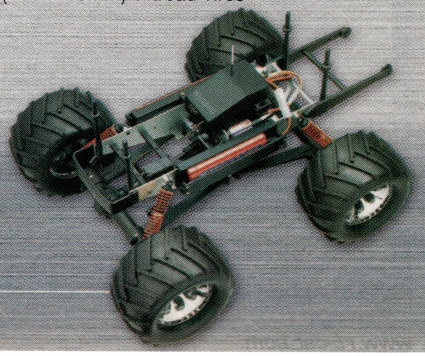
Imagine a world in which crackling electricity can be harnessed to harness the same raw power of a nitro engine — a world in which a monster truck with twin 550 motors uses two 6-cell battery packs simultaneously to produce an astounding 14.4V of power.

It's a sight that must be seen to be believed — and it's already been spotted in your area. If you need more information on this monstrous creation or the location of the hobby dealer nearest you, visit **www.kyosho.com** or call 1-800-682-8948 and mention code number 2957L.

And remember: ***It's ELECTRIC!***

Look for these tell-tale signs of the Monster!

- Twin 550 Motors
- 1/8" (3mm) Ladder-frame Aluminum Chassis
- Factory-assembled Solid Axles
- Chain-drive Transmission
- Adjustable Slipper Clutch
- Adjustable Gear Diff
- Full Bearings
- Axle-mounted Steering Servo
- Angled Plastic Oil Shocks
- 2 Sets of Wheel Hubs (for stock and after-market wheels)
- 6.5 x 4.3" (165x110mm) V-tread Tires



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KYOSHO®
THE FINEST RADIO CONTROL MODELS

KYOC0103
Length: 21.6 in (550mm) • **Width:** 16.5 in (420mm)
Height: 10 in (260mm) • **Wheelbase:** 12.4 in (315mm)
Front/Rear Track: 12 in (310mm) • **Weight:** 9.9 lb (4.5kg)
Includes: two 550 motors • **Requires:** 2-channel radio w/high-torque steering servo, ESC w/BEC (14.4V min) two 6-cell battery packs, charger

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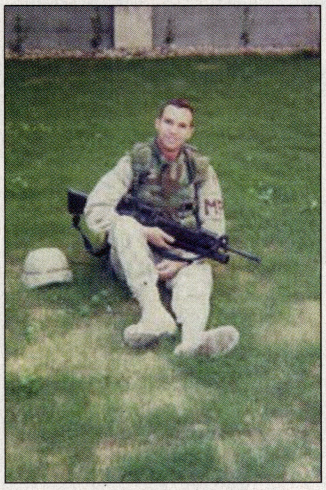
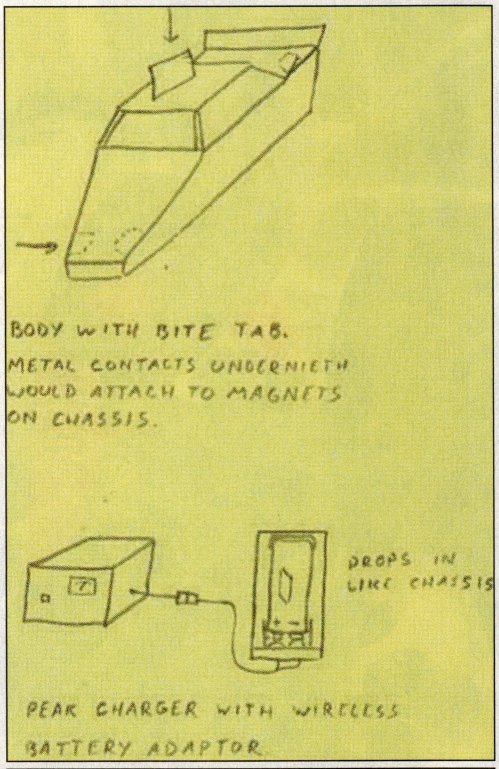


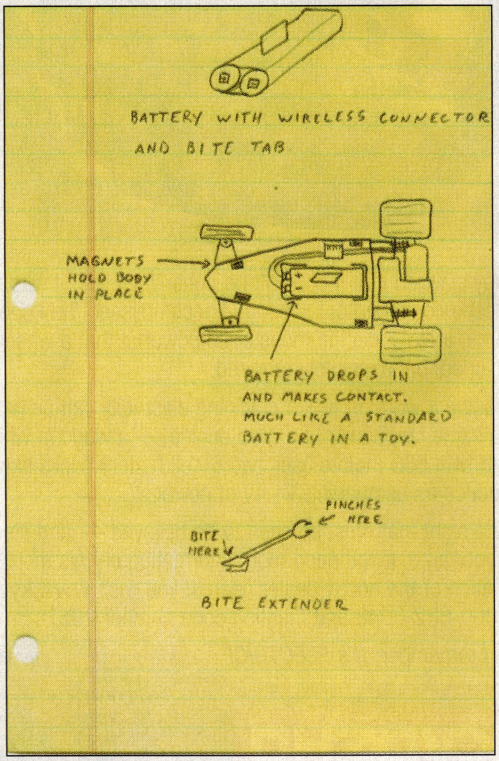
MORE DREAMS REALIZED

I was so impressed with Bob Heinle's letter, a quadriplegic who wanted to rig his control so he could drive his R/C with his chin. I just returned form Iraq about two weeks ago. While I was there, many people lost limbs, eyes, and their lives. I often thought, while I was there, that if anything were to happen to me, if I was to lose a limb, I hoped it would be my legs. The thought of losing one arm, or both, scared me; never to be able to hold my daughter and son, and to struggle with just the basics of life. It never occurred to me that I would be out of my favorite hobby as well. I was lucky. Thanks to my very tired guardian angel, I completed my one year tour without a scratch. Then I read Bob's letter, and I was so impressed with his spirit to go on, not just with the basics of life, but with his pastime as well. He is a true inspiration. I got to thinking of how he could enjoy not only driving his R/C, but setting it up as well. I drew and scanned some pictures that I thought might help.

I figured if you removed the wires from his batteries, you could modify his chassis with a battery tray and contacts. Using duct tape, you could create a bite tab that would allow him to insert the battery with his mouth, which would simply drop in place like a standard alkaline battery. A battery tray could also be built and hooked up to a peak charger as well. The body could be modified with a bite tab, as well as magnets and metal tabs that would serve as body mounts. Now because Bob is paralyzed from the shoulders down, I'm assuming his reach is limited. My mom uses one of those pistol-grip "reachers" (you squeeze the handle and a claw at the end gabs onto things) and I thought one could be made that would allow Bob to bite down on to pick things up, like moving the battery from the charger to his chassis. The length of the bite extender would have to be limited due to leverage. I don't want to rip the poor guy's teeth out. I hope my drawings and suggestions will be of some help. Sorry about the poor artwork. I guess that's why I joined the Army. If you or Bob have any questions, or if there is anything I can do to help, please feel free to contact me. On a lighter note; I'm 6 foot, 2 inches, and 135 pounds. How's that for "skinny."?

Kevin B. Duxbury
Acton, CA





PREDATOR TEST CORRECTION

In our February '04 issue's test of the Hobbycraft Predator RTR, we erroneously printed the incorrect contact information for this distributor. The correct information is Hobbycraft Canada, 140 Applewood Crescent, Concord, Ontario L4K 4E2, Canada • phone (905) 738-6556; fax (905) 738-6329. If you're interested in one of these sweet RTRs, give 'em a call.

E-mail your letters direct to the editors! You can get ahold of Frank Masi at *frankm@hi-torque.com*. If you're going the old-fashioned route, send along your letters to *R/C Car* at 25233 Anza Dr., Valencia, CA 91355. Check us out on the Web at www.rc-car.com

SKINNY'S SECRET TO WINNING

Hey, Skinny; I read your monologue in the February issue. I think what the guys that are winning all the time have on the rest of us is their state of mind. I've been racing for a few years, and found that when I have the pre-race jitters, I can't turn the wheel without crashing. Some deep breathing right before the race helps a lot. Sometimes, just climbing the drivers' stand can make me nervous, and a little meditation will get my brain straight. I know it may sound hokey, but it works for me. Racing it 90-percent mental, so get in the zone, dude. Oh, and by the way; your section in the mag is the first thing I read and the last thing I re-read. Keep up the great work.

Mike G
Twinfalls, ID

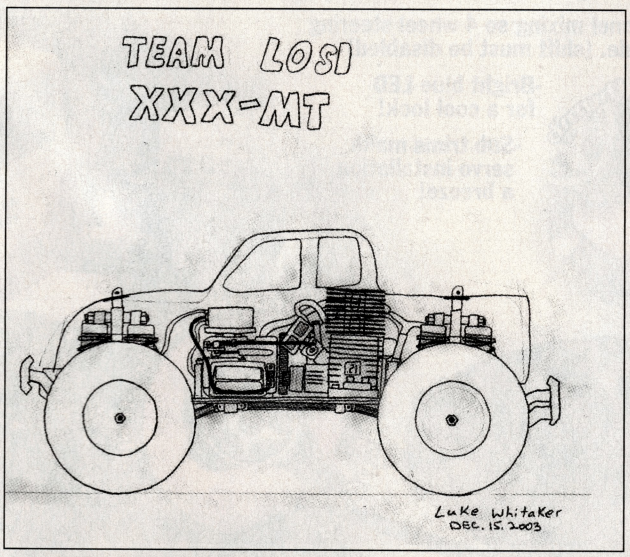


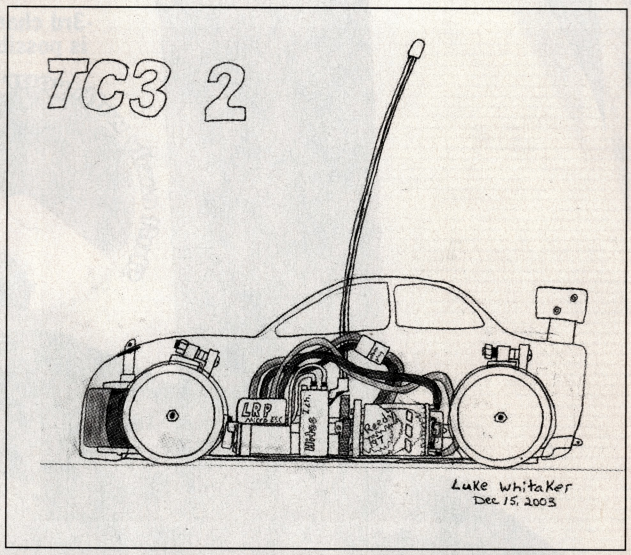


A PROUD MOM, AN ARTISTIC SON

Dear Brian Skinner; we spoke on December 1st, when I called to find out when the Savage Slam 2003 event would air on the Outdoor Channel (no luck yet). I mentioned to you about our son, Luke Whitaker, and the passion and love he has for R/C cars and racing. He's an honor roll student who spends every day reading, racing, or drawing R/C cars. Here's his photo and two of his drawings. He was thrilled you had returned our call. If you could ever talk to him or do a little article in your magazine, you would make this R/C fan very happy. Thank you for your time and effort.

Pat Whitaker
Bokeelia, FL






AGGRESSOR CRX
shift
Go ahead... pick it up! See how it fits perfectly in your hand? Now just lift your thumb up and push the shift button... Wow, you can do it without even thinking! That's right...everything is right where it should be, so you can concentrate on your driving, not your radio.
The Hitec Aggressor CRX and FM are unsurpassed by any other radios in their class. Just look at the features; then, look at the price. Are you kidding me? You get all this for how much? And a two year warranty to boot?
-20 model memory w/ 6 characters naming.
-Optional Spectra synthesized module. Dial in all 30 channels!
-Quick response 1024 step resolution for precise control.
-Progressive spring for throttle and steering for improved "Feel."
-High definition graphic display shows critical settings on one screen. Trims, D/R, ATL, battery power and model name are all on the main screen.
-Easy-to-use programming makes the manual unnecessary.
-Anti-lock Braking System (ABS) for superior stopping power, especially with larger heavier trucks.
-Exponential graph to see what's really going on...not just number.
-3rd channel mixing so 4 wheel steering is possible. (shift must be disabled)
-Bright blue LED for a cool look!
-Sub trims make servo installation a breeze!
Shift easily with your thumb
Progressive spring provides better feel
Club HITEC Have you joined yet?
sign up today at www.hitecrcd.com


AGGRESSOR FM
-Easily shift without looking.
-Features you need at a price you can afford
-Adjust on the fly dual rate steering for quick adjusting of your vehicles handling.
-Replaceable colored grip pads to fit hands big and small. One size does not fit all!
-Solid FM signal for reliable reception and extended range.
-End point adjustments (EPA) for throttle a steering for easy set, especially with nitro powered cars and trucks.
-Ergonomic design
-Only non computer 3 Channel FM radio available today.
-Easy to use, no programming to memorize!
-Customize your radio and make it your own with replaceable "tuning covers"available in crystal red and blue, or get one in clear and paint your own to match your car! Two other custom versions are also available in camo and CARBON FIBER!
Interchangeable colored grip pads
That's right...We've come a long way baby! The band wagon has plenty of room left. So shift to Hitec and see for yourself what the new Aggressor line of radios are all about!
HITEC
12115 Paine St.• Poway, CA 92064 • 858.748.6948 • www.hitecrcd.com

Operation Iraqi

Soldiers turn to R/C during deployment

By CW4 Mikkelson, BOHICA Task Force, Camp Udairi, Kuwait

In August, the Department of the Army announced that all soldiers currently in the Iraqi Theater of Operation would have to spend 365 days "boots on the ground" before they could go home. So what is a soldier to do when he learns that, instead of weeks, he now had seven months remaining in his tour? The answer was to pick up a hobby. And this is exactly what several soldiers of the BOHICA Task Force (a helicopter unit), as well as other units, stationed at Camp Udairi, did. What hobby did they pick? R/C nitro truck racing, that's what! Introducing nitro truck racing at Camp Udairi, however, wasn't without a few hurdles.





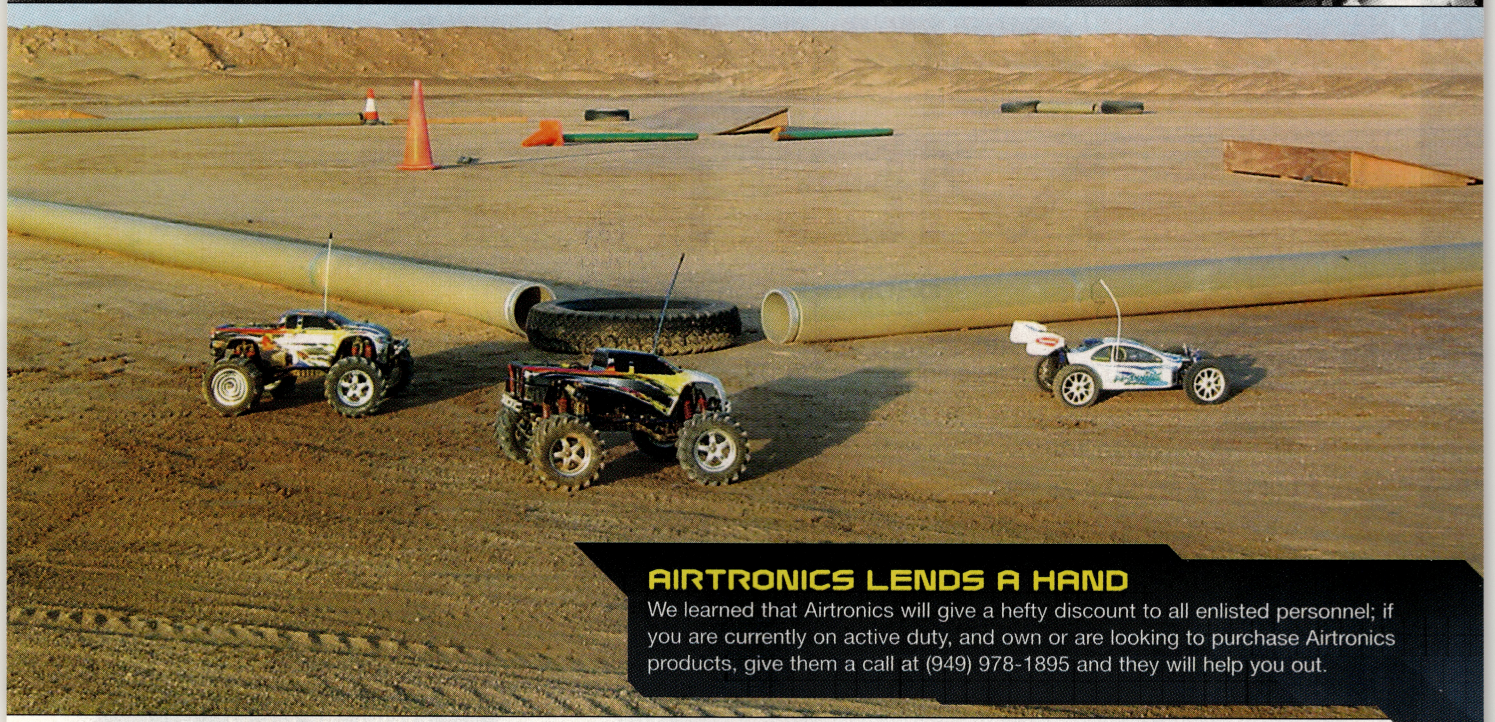
OBSTACLES

Obtaining fuel was the first hurdle. How could the soldiers get nitro fuel in the middle of the desert, since it can't be shipped? After speaking with a few of the civilian contractors that had been there for years, the soldiers learned that fuel could be purchased in Kuwait City. Upon arriving at the store, the soldiers learned that the going price was $50 for just a gallon. Still, they felt it would be worth the cost. The first few gallons that went through each vehicle was precious, but the soldiers finally caught a break when they learned of another store that was selling the fuel at just $20 per gallon—that's more like it.

The next hurdle was to obtain spare parts for repairs. Since most of the drivers were new to R/C, crashes and collisions were unavoidable. In the states, repairing a broken car is as easy as a trip to the local HobbyTown USA, or an on-line express order placed to Tower Hobbies. However, being stationed in the middle of a desert, repairs became a challenge, as mail can take upwards of three weeks to arrive. After a while, the drivers collectively assembled their own repair kits; purchasing double of what they needed to perform their repairs, and making the extra parts available to others. As nearly everyone owned a Traxxas T-Maxx, this parts sharing worked particularly well.

The final obstacle was the sand itself; it is extremely fine—similar to talcum powder—and it gets into everything. The stock air filters needed to be cleaned after every tank of fuel—and who knew what this sand was doing to the insides of the engines. With four or five vehicles running in the same area, it was difficult just for the drivers to see their vehicles. In addition, cleaning the R/C vehicles after running in this sand took a couple of hours. The solution was to lay out a track, and then have the engineers come in to water and compact the sand. When watered, certain types of sand packs down and holds like concrete. No more dust: time to race.

Freedom



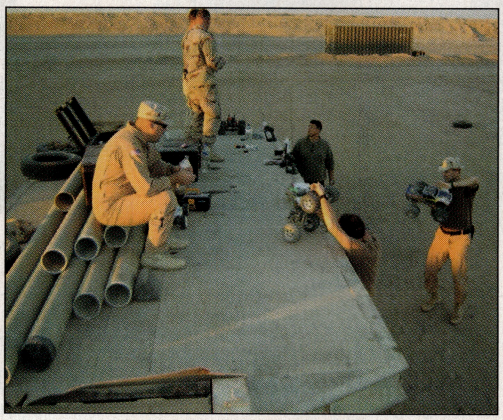
AIRTRONICS LENDS A HAND

We learned that Airtronics will give a hefty discount to all enlisted personnel; if you are currently on active duty, and own or are looking to purchase Airtronics products, give them a call at (949) 978-1895 and they will help you out.

THE RACES

With both a dirt oval and an off-road track completed, Saturday became race day. On any one day you can find several vehicles on the track at a time. And with all the beginners, the races are quite comical (as well as expensive, due to repairs). The most recent addition to the track is the annexation of a bermed area. Two to eight foot tall berms make for a great freestyle area.





Nitro R/C has been a great pastime for those that picked up the hobby. Some guys already own upwards of three vehicles. They are looking forward to getting back to the states, and, after a thorough rebuild of their vehicles, finding a local track at which to run.

The BOHICA Task Force would like to thank Rayovac, Neil's Liquor, HobbyTown USA and Tower Hobbies for the support they have provided. If you are being mobilized to Camp Udairi—bring your cars along; you will have plenty of time to run them. Write us at *udairispeedway@yahoo.com* for more info.

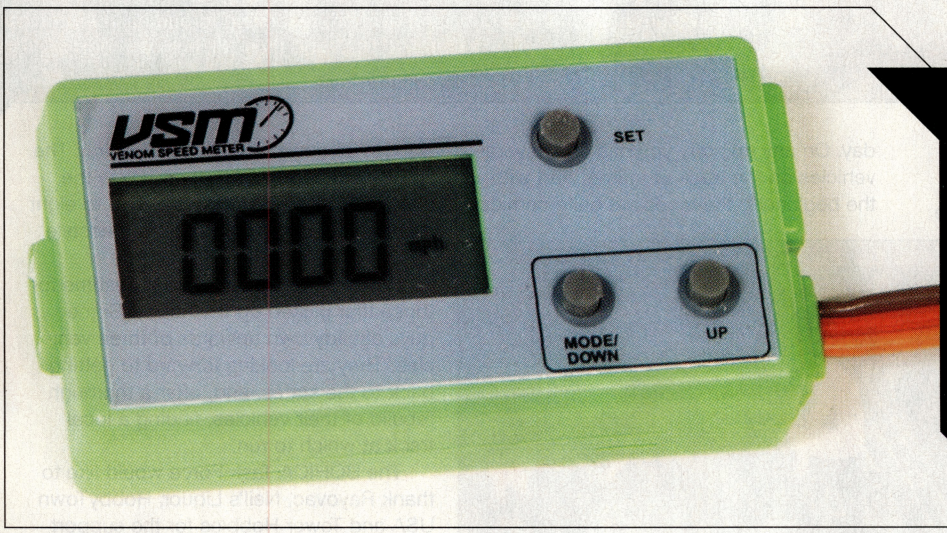




VENOM SPEED METER

Back up your bragging!

Aren't you tired of listening to your buddies bragging about how fast their cars can go? How many times has your buddy said that his 9-turn equipped Traxxas Stampede consistently hits 75 mph? Well, it's time to put up or shut up, as you no longer need own a $2500 radar gun to find your car's true top speed—Venom Racing's new VSM (Venom Speed Meter) will end the arguments once and for all, and for much, much less.



TWO SPEED CONSIDERATIONS

When installing the VSM to a vehicle that has a two speed, the magnet and sensor must be placed after the two speed in order to get an accurate reading. If you install the VSM to one spur gear or the other, you'll only get a reading for that gear ratio. On monster trucks such as the T-Maxx and Savage, which have two-speeds, you'll need to install the VSM on one of the transmission's outdrives.

WHAT IT DOES

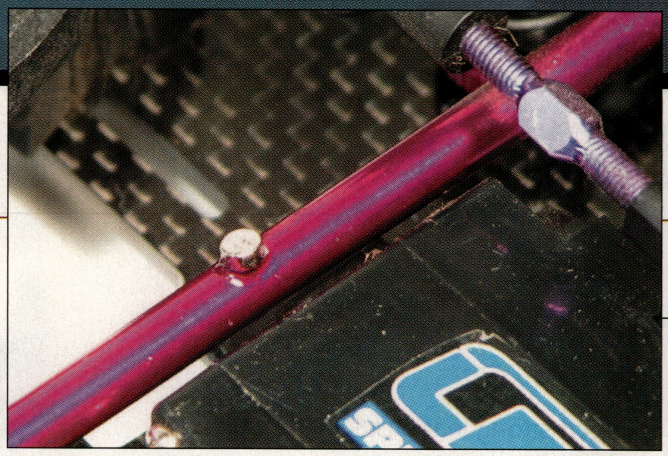
The VSM is a small and lightweight on-board device that is designed to calculate your vehicle's speed. Not only can the VSM remember your vehicle's maximum speed, it also contains two built-in odometer features. The first is a "lifetime" odometer, which will tell you how far your vehicle has traveled since installing the VSM. This cannot be reset for use in other vehicles. The second odometer tells you the distance traveled during each run; this odometer is reset each time the VSM is powered up. As an added bonus, the VSM also functions as a voltmeter. This is particularly useful for nitro racers, who can know at a glance if their on-board battery pack requires recharging.

HOW IT WORKS

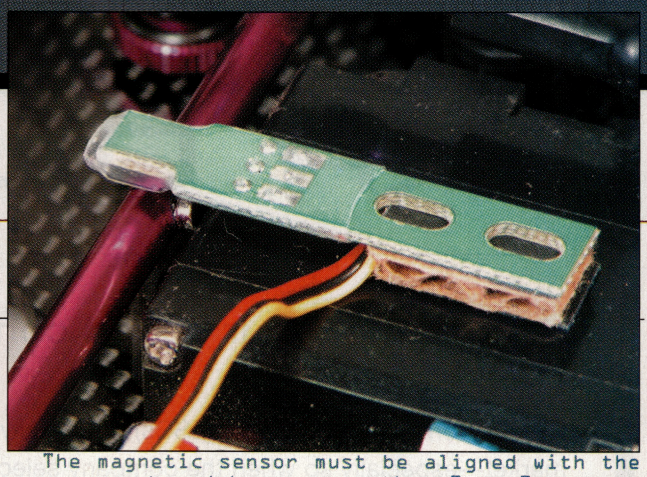
The VSM works just like a bicycle speedometer/odometer; a small magnet is attached to some moving part of the drivetrain, while a sensor device is mounted in such a fashion that it can pick up each rotation of the magnet. The VSM's internal software then calculates the distance traveled and speed (in mph or kph) of the vehicle.

INSTALLATION AND SETUP

The trickiest part of the installation is the positioning of the magnet and sensor. We decided to install the VSM in a HPI Pro 4 electric sedan. The standard mounting point for the magnet is usually the spur gear, however, in this case, there was very little room in which to fit the magnet and sensor. We attached the small magnet to the Pro 4's central driveshaft, as this was more convenient—and the mass of the magnet would be closer to the drivetrain's center of rotation. This is important



Using CA, we installed the magnet to the driveshaft of our HPI Pro 4. Once the CA has set, wrap the sensor with vinyl tape to prevent it from flinging off (trust us on this).



The magnetic sensor must be aligned with the magnet and be no more than 2 to 3mm away. Venom provides a selection of hardware with which to mount the sensor (we used double-sided adhesive tape here).

because the farther out you mount the magnet, the greater its effect on the balance of the drivetrain. You could also attach a weight of the same size as the magnet to the other side of the spur gear to provide equilibrium.

The VSM comes with an assortment of hardware with which to mount the sensor lead, however, we opted to use the old "Rube Goldberg" method—we spaced the sensor with a square of cardboard, and stuck the whole thing together with double-sided tape. This worked well for our test, however, if we were to install the VSM permanently, we would come up with something a bit more durable.

The VSM itself is very small and light, and unless you're planning on doing some serious racing with the VSM installed, don't sweat the weight penalty—it's virtually non-existent. The VSM is powered through the receiver, and if yours doesn't have a third channel, Venom has you covered: you can also plug the VSM in-line with a servo. Clever folks, these Venom people.

The key to an accurate speed reading is in the calibration process. To calibrate the VSM, you align the magnet with the sensor, then, mark the position of the bottom-dead center of a wheel. You roll the vehicle slowly forward until the magnet has made one full revolution and is again aligned with the sensor. You again mark the position of the wheel. The distance between the two marks is the distance the vehicle will travel for every one revolution of the magnet. Our HPI sedan traveled a total of 3.15 inches for every magnet revolution. We entered this into the VSM and went out to give it a try.

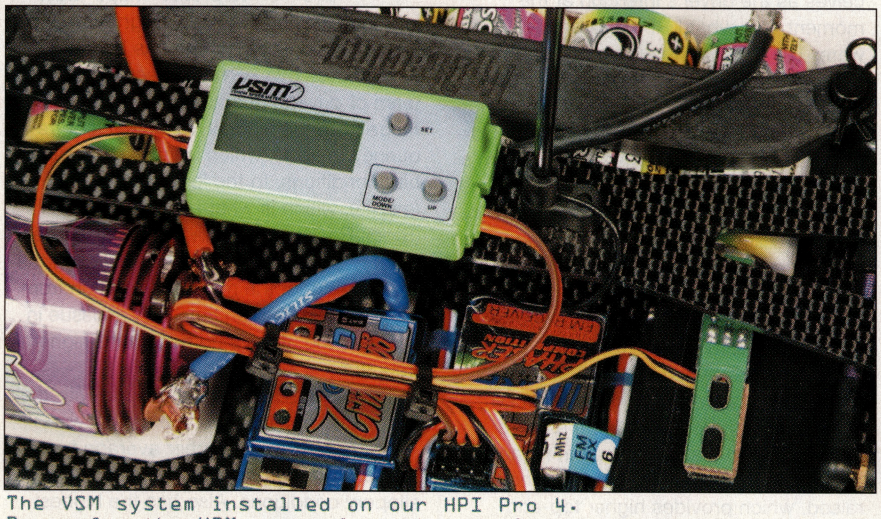
TESTING

During our first run, we discovered why Venom recommends wrapping the magnet with tape when it's installed on a driveshaft or drive cup. Our magnet flew off at a high rate when we gave the car some throttle to see if it was working! Thankfully, Venom supplies a backup magnet, and needless to say, we wrapped it with tape.

After a bonzai run down the street, we pulled our Pro 4 into the pits and checked the VSM—46.6 mph! We knew the Orion Revolution motor was fast, but we didn't even get it up to top speed (fear of pedestrians prevented this). With all of the claims of ludicrous speeds (by both manufacturers and the public), a 46 mph run might not seem fast, but trust us; a car traveling at that rate is almost ridiculously quick (and scary!). The VSM will provide the sober facts that will let you shut down the misinformed braggarts.

THE VERDICT

The VSM is one of the most useful electronic gadgets we've tested. Considering that the most common question asked about a new R/C car or truck is "how fast does it go?" the VSM provides invaluable data. Although the installation of the magnet and sensor, and the calibration process, can be a bit tricky, the VSM is still very easy to use. Just make sure that you take your time during calibration, as an incorrect measurement can have a profound affect on the overall speed reading (in either direction—too slow or too fast). Of course, you could use this to your advantage when your friend doesn't believe your Hornet really goes 90 mph!



The VSM system installed on our HPI Pro 4. Power for the VSM comes from the receiver.

Venom Speed Meter
Part no.: 0615
Price:.....$49.99 (varies with dealer)
Dimensions:.....25 x 45.8 x 10.5 mm
Speed: .....measured in mph/kph

SOURCES

Venom Racing, 600 W. Buckles Rd., Hayden, ID 83835 • phone (800) 705-0620; fax (208) 762-2520

LRP QUANTUM

Captain Nemo, your speed control is ready

LRP electronic speed controls (ESCs) have really come on strong in the U.S. market—especially so when the company selected Team Associated as its American distributor. Not only did LRP earn the reputation as "Associated's speed control company," but also it became able to work with Associated's team drivers and engineers—current and former world and national champions such as Cliff Lett, Billy Easton, and Mark Pavidis. One of the first fruits born from the tree of this partnership was the Quantum Competition (QC), the world's smallest and lightest high-performance, programmable ESC. The QC has won numerous national and world championships, but LRP wasn't satisfied to just remain with a winner; they instead have chosen to re-design and upgrade the QC into the revolutionary Quantum Competition 2—the world's first waterproof, high performance programmable ESC, and the only ESC to offer "reactive" software that changes to meet the demands of the driver.

SPECS

Case size: .....28.7 x 25.7 x 14.4mm
Weight:.....21.5 grams (w/o wires)
Voltage input:.....4-7 cells (4.8-8.4 volts)
Typical voltage drop @ 20amps: 0.013 volts
Rated current: .....150 amps
Motor limit:.....5-plus turns (recommended)
B.E.C.:.....5.8 volts
PWM frequency: .....reactive
Price:.....$180 (varies with dealer)

WATERPROOF, NOT WATER RESISTANT

This proclamation overshadows all of the QC2's other improvements. It's a bold statement, but LRP has really created a totally waterproof speed control with the QC2. We're not talking about a speed control that won't get fried if splashed with a bit of water; the QC2 can be fully submerged to a depth of up to five meters—and still function while underwater! A side benefit of its waterproof nature is that the QC2 is more resistant to shock damage. Now you can run your car in the rain without worry (about your speed control at least). The QC2 is the only high-performance racing ESC to offer this feature.

PUNCH CONTROL

This is where LRP's improved DEMS-2, or Digital Engine Mapping System 2, comes into play. DEMS-2 is a software feature that actually controls the frequency of the speed control based on what it perceives as the driver's intention at the moment. It is what LRP calls reactive software. The DEMS-2 feature reads such parameters as the current draw and the throttle input signal to alter the QC2's operating frequency to provide optimum performance. For example: when you exit from a tight turn, and grab a bunch of throttle, the QC2 will reduce its frequency to give you maximum acceleration; it reads the position of your throttle input and compares it to the current draw; a higher draw translates into a vehicle that is under hard acceleration, and therefore, the lower frequency is called for. Conversely, when the QC2 senses a full-throttle position, but with a reduced current draw, it deduces that the car is traveling down a straightaway at higher speeds. In this situation, the frequency is raised, which provides higher top-end speeds (due to more of the battery's power making it to the motor).

The degree to which the DEMS-2 alters the frequency is determined by which Engine Map you choose. There are five preset "maps" built into the QC2; each one is programmed for a specific application, and has been rigorously tested by LRP's engineering staff and team of drivers. In a nutshell, the maps range from the highest, most efficient frequency (map 1), which is intended for low-bite conditions, to the lowest frequency (map 5), which is what LRP calls its "SR" (Stock Racing) mode. In this map, the frequency average is the lowest, enabling the QC2 to extract the most acceleration from stock motors (as run time isn't an issue in stock racing, there's no need for a higher frequency; it's all about punch).

The preset Engine Maps, along with their suggested applications, are as follows:

1) For low-grip—higher average frequency for improved traction control in slippery conditions. Also has the highest efficiency and longest run times.

COMPETITION 2



2) For off-road—has a bit more punch than map number 1, but still has excellent throttle control.

3) For touring cars—better for higher traction on-road racing, where wheelspin is less of an issue; good punch for 4WD sedans.

4) "Super reactive" program—good for when traction is high; greatest variation in frequencies; super acceleration with good efficiency and high speeds.

5) SR (Stock Racing) program—maximum punch for stock or limited motors such as in a 19-turn spec class; for when run time is not an issue or when plenty of traction is available and you need to get out of the corners as quickly as possible.

INITIAL BRAKE MODE

This feature allows you to set the QC2's initial brake response from between a value of zero, which is totally linear, up to five, which is the most progressive brake action. In the 0 setting, the QC2 will have the most initial braking as the trigger is moved from the neutral position. When this is too much initial braking, and you'd like to have more precise control over wheel lockup, selecting the 1, 2, 3, 4, or 5 setting will provide braking that's more progressive.

AUTOMATIC BRAKE

This is the QC2's drag brake feature. If you're not familiar with the term, drag brake refers to the amount the car slows when the throttle is in the neutral position. Stock motors, for example, have a great amount of drag braking because of their advanced timing. Modified motors, which have less timing, have less drag brake. Some drivetrains also have more inherent drag braking; belt-drive sedans have more off-power drag than shaft-driven sedans. The QC2's Automatic Brake feature allows you to add drag braking to your car electronically. Setting the QC2's Automatic Brake function to 0 disables the drag brake function (although your motor and drivetrain's drag brake effect will remain the same). The amount of drag brake increases incrementally with the value of the Automatic Brake function; you can select a value from between zero (off), 1, 2, 3, 4, or 5 (the most drag brake effect).

DIGITAL ACTIVE-START AUTOMATIC

If it's a holeshot you seek, the QC2 has a neat feature called the Digital Active-Start Automatic, which essentially provides even quicker response and maximum punch at the beginning of a race. To activate this feature, you simply hold your trigger in the full brake position for five seconds before the start of your race. When the flag drops, every ounce of acceleration your motor can muster will be at your disposal until the trigger is returned to neutral.

FOUR-CELL READINESSS

Twelfth-scale racers rejoice! The QC2 is not only one of the lightest and smallest high-performance speedos you can buy, it's also ready to run on four cells without the need for a separate receiver battery

pack. As it takes up so little space on the chassis (and doesn't require a mandatory power capacitor—which can often be as large as the speedo itself), you'll have more "wiggle room" in mounting your electronics to achieve the best overall chassis balance.

TESTING

We were lucky enough to get our hands on a pair of QC2s, and installed one of them into our Losi XXX BK2 off-road buggy and the other into the new HPI Pro 4 sedan (tested elsewhere in this issue). We hoped this would provide greater insight into the QC2's new features.

The reactive software and punch control were most noticeable when the QC2 was hooked to a stock motor; the difference in punch between Engine Maps 1 and 5 is astounding. With map 1, the BK2 felt sluggish and had a more difficult time clearing jumps; with map 5, the stock racing mode (SR), the car felt as if we had bolted in a better motor; punch was vastly improved and we could get up and over those large triples and doubles without having to take the outside line approach.

The shaft-driven HPI Pro 4 gave us a better glimpse at the QC2's Automatic Brake feature. As the Pro 4 has so little off-power drag (it feels like none), it requires the driver to apply the brakes manually in order to make all but the widest, most sweeping turns. This isn't a big deal with a stock motor, which has more cogging, or inherent drag, but when a modified motor is used, this makes it harder to drive the car on tighter tracks. Added to this is the fact that the Pro 4 has a front one-way unit, which makes the sensitivity of the brakes a critical factor. Here, the QC2's Initial Brake feature was put to good use; we dialed the initial brake response down to its most progressive value (setting 5). By using the Automatic Brake feature, we were able to dial in just the right amount of coast brake to enable our Pro 4 to slow sufficiently for proper turn setup, without locking up the rear wheels and causing a spin (as is often the case when using the brakes manually).

WHAT WE REALLY THINK

We've used the original Quantum Competition, in many different types of vehicles, for over a year, and have come to love its silky-smooth response, excellent durability and Lilliputian stature. Our only gripe, which is the same one we've had for years in regard to LRP ESCs, is that the cases can, and often do, come apart when the ESCs are used in off-road. LRP recommends using a small band of tape to seal the halves, but we'd rather see a new case design. With that said, the QC2 has taken all that has enamored us to the original, and improved (vastly) upon it. The result is an ESC that is truly in a class of its own.

SOURCES

LRP, distributed by Associated Electrics, Inc., 3585 Cadillac Ave., Costa Mesa, CA 92626 • (714) 850-9342; fax (714) 850-1744



GS Racing THE TRUE POWER

















STORM
UNLIMITED TRUCK RTR



Marty TQs & Wins the 2003 NORRCA Unlimited Truck National Championship with the S.U.T. RTR.

We at GS Racing would like to congratulate Marty Korn for wheeling his GS SUT-RTR into the TQ position and driving it into the history books as the first ever Unlimited Truck National Champion. Get the entire story online at: www.gsracing.com





- 100% Factory Assembled RTR
- Aluminum Oil-Filled Shocks
- Full Precision Ball Bearings
- Front Universal Driveshafts
- Digital Proportional 3 Channel FM Radio System
- The First Factory 1/8th Scale Unlimited Race Truck
- Fully Compatible w/ T-Maxx Wheels, Tires & Bodies
- Pre-Painted Mounted, Trimmed & Finished S.U.T. Body
- Powerful .25 rear-port pull-start engine w/ tuned exhaust
- GS Road Ripper Tires Pre-Glued on GS Monster Star Wheels
- Based on the GS Storm w/ over 75% parts & options compatiblity

GS2005

Photos may vary from production models.

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GS Racing

TEAM ORION REVOLUTION V2

A shot in the arm for brushed motors

With all the hype surrounding brushless motors, the technological innovation seen in recent brushed motors has been overshadowed. Along with the advent of the quad-magnet motor cans from Reedy and Epic, Team Orion's new Revolution V2 modified motor series ranks among the most significant breakthroughs in motor design of the past decade—if not longer. Working within the current brushed motor guidelines as prescribed by national and international sanctioning bodies, Orion has developed an innovative new method of brush and commutator interface, one that may, as the motor's name implies, revolutionize the brushed racing motor.



IT'S ALL IN THE ENDBELL

Virtually every innovation in the Revolution motor is found in the endbell design. The Revolution's endbell is like an all-new intake system for a common automobile lower end; the benefit comes from the way in which the juice makes its way to the commutator.

• Angled brush orientation—Unlike all other brushed racing motors, the Revolution's brushes are angled, so they meet the commutator's surface in a V-shape, rather than straight-on. The benefit of this design is that because the brush is placed at an angle, it is not as easy for it to be pushed away from the commutator as the motor is spinning; the load is spread between the brush tube and the spring. With standard brush designs, it is the brush spring that is solely responsible for keeping the brush in contact with the comm. As a result, the Revolution brushes can use softer springs, which reduces friction, for increased rpm and efficiency, and reduces comm and brush wear.

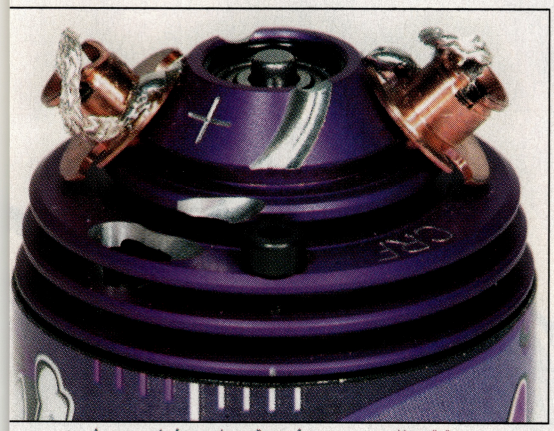
• Cylindrical brushes—Another innovation is the Revolution's round brushes. Orion touts this feature as creating a smoother brush overlap against the comm's segments, which results in less arcing between the brushes and comm. Less arcing translates into a lesser likelihood of noise-generating EMF, which can cause glitching in the radio system. The round brushes are also reported by Orion to reduce comm scarring and to last as many as 12 times longer than standard brush designs.

• Machined aluminum endbell—Most other motors use heat-resistant molded-composite for their endbells—the Revolution's endbell is precision CNC-machined from aluminum. As a conductor of heat, aluminum is superior to composites, so the Revolution's endbell will dissipate heat more effectively. Of course, heat is the enemy of the motor—it accelerates comm wear and reduces efficiency—so anything that pulls heat away from the brushes and comm is an advantage. The machined endbell will also provide a more precise fit to the can, brush tubes, and bearing flange. To further aid in cooling, the endbell has machined into its surface special cooling vent "channels," which are designed to pull air from the critical brush/commutator area.

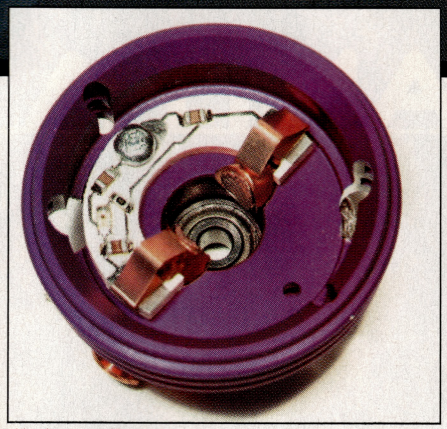
• Pure copper brush tubes—The Revolution's cylindrical brushes ride in pure copper brush tubes that offer several key features to improve performance. First, the tubes extend further down, closer to the comm's surface to provide better support to the brushes and to increase brush stability. Also, copper is an excellent conductor, and with the brushes' shunts and the ESC's positive and negative leads soldered directly to the tubes, the Revolution benefits from less power loss due to inefficient conductivity. The orientation of the copper brush tubes can, in some applications, make it a bit more difficult to solder the leads in place (and install a Schottky diode), so you may have to modify your power leads to use the Revolution motor if you have your ESC set up to fit standard brushed motors.

• Zero vibration ball bearing system—Orion has addressed the issue of bearing vibration by suspending the Revolution's endbell bearing between a pair of rubber O-rings. By reducing vibration in the bearing, Orion has further reduced the occurrence of power robbing brush bounce (where the brush "bounces" away from the comm's surface, causing loss of power and arcing, which damages the comm and brush).

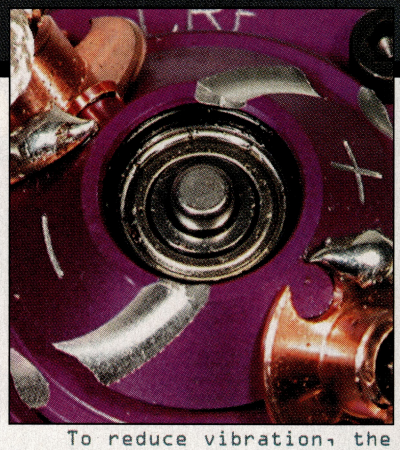
• Intelligent anti-vibration



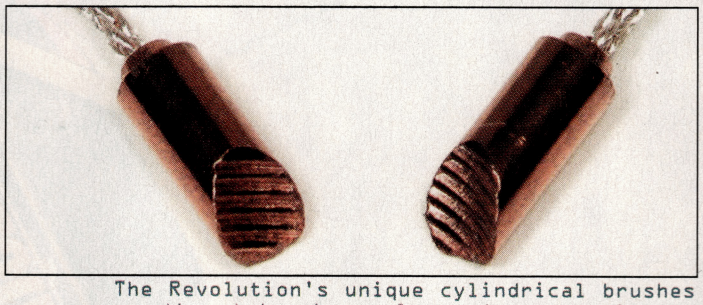
A machined aluminum endbell allows the Revolution to keep its cool under stress. The result is longer brush and comm life – and more time between rebuilds.



Unique Inox steel anti-vibration springs keep brush bounce to a minimum. A clever built-in LED shows motor rotation and proper capacitor function.



To reduce vibration, the Revolution's endbell bearing is installed between two rubber O-rings. Note the machined air channels for improved cooling.



The Revolution's unique cylindrical brushes smooth out brush overlap and are gentler on the delicate comm's surface.

spring system—In addition to the O-ring suspended bearing, Orion has further reduced brush vibration by creating a special brush-tube anti-vibration spring from Inox steel. Inox is very resistant to heat, so it is less likely to lose its tension when the motor becomes hot. The design of the Revolution's spring system calls for unequal-length coils, which reduces brush vibrations even further. Orion even offers a choice of four different spring tensions for fine-tuning.

• **Inboard capacitor system with status LED**—Each Revolution motor comes with pre-installed noise-suppression capacitors. Located beneath the endbell, where they are better shielded from the elements, the capacitors are paired with a very cool LED, which tells you if the motor is rotating in the proper directions (useful for when you forget to note the endbell's orientation during a rebuild), and if the capacitors are functioning properly. The LED also sheds light on the commutator, so you can better inspect its condition without disassembling the motor.

WHAT WE REALLY THINK

Our first experience with the Revolution came during this month's test of the new HPI Pro 4 touring car. Orion sent us a "sick" Atsushi Hara Edition 9-turn, double wind motor for this test. We at first thought that this type of horsepower would be too much for the confines of our local track (Hot Rod Hobbies Raceway in Saugus, California), however, we were more than pleased by the motor's smooth powerband. The Revolution was very accepting of a wider variety of gearing changes than with most modified motors we've tested. We were able to match the power of the motor to our track and driving style by gearing up by as many as three teeth—without causing the Revolution to have a meltdown. In fact, the motor never got too hot, and after four back-to-back runs, the commutator and brushes showed very little signs of wear—and absolutely no discoloration.

One of our local up-and-coming off-road drivers, Tanner Stumpf, has been running a Revolution in his Losi buggy for months, and his dad/mechanic Dennis swears by this motor. At a recent club race, Dennis told us that Tanner has been running the same brushes for over a month of solid racing, and that he gets many more runs out of the Revolution before its comm requires truing. If you saw how fast Tanner's buggy is on the track, you'd understand why this is a glowing endorsement (plus, Tanner's not sponsored—except by his dad's wallet).

Brushed motors are facing an immense challenge from the potential of brushless motors. Right now, brushed motors have several advantages: they are cheaper, and are race-legal. The disadvantage of brushed motors is the degradation of performance caused by heat and arcing, and their need for constant maintenance. When a brushed motor's durability and longevity can be increased, this is a huge boost for traditional electric racing. Team Orion has done this with the Revolution V2—it's a winner!

Team Orion Revolution V2 Modified Motors
Part no.:.....varies with wind
Price: $64.99
(varies with dealer)



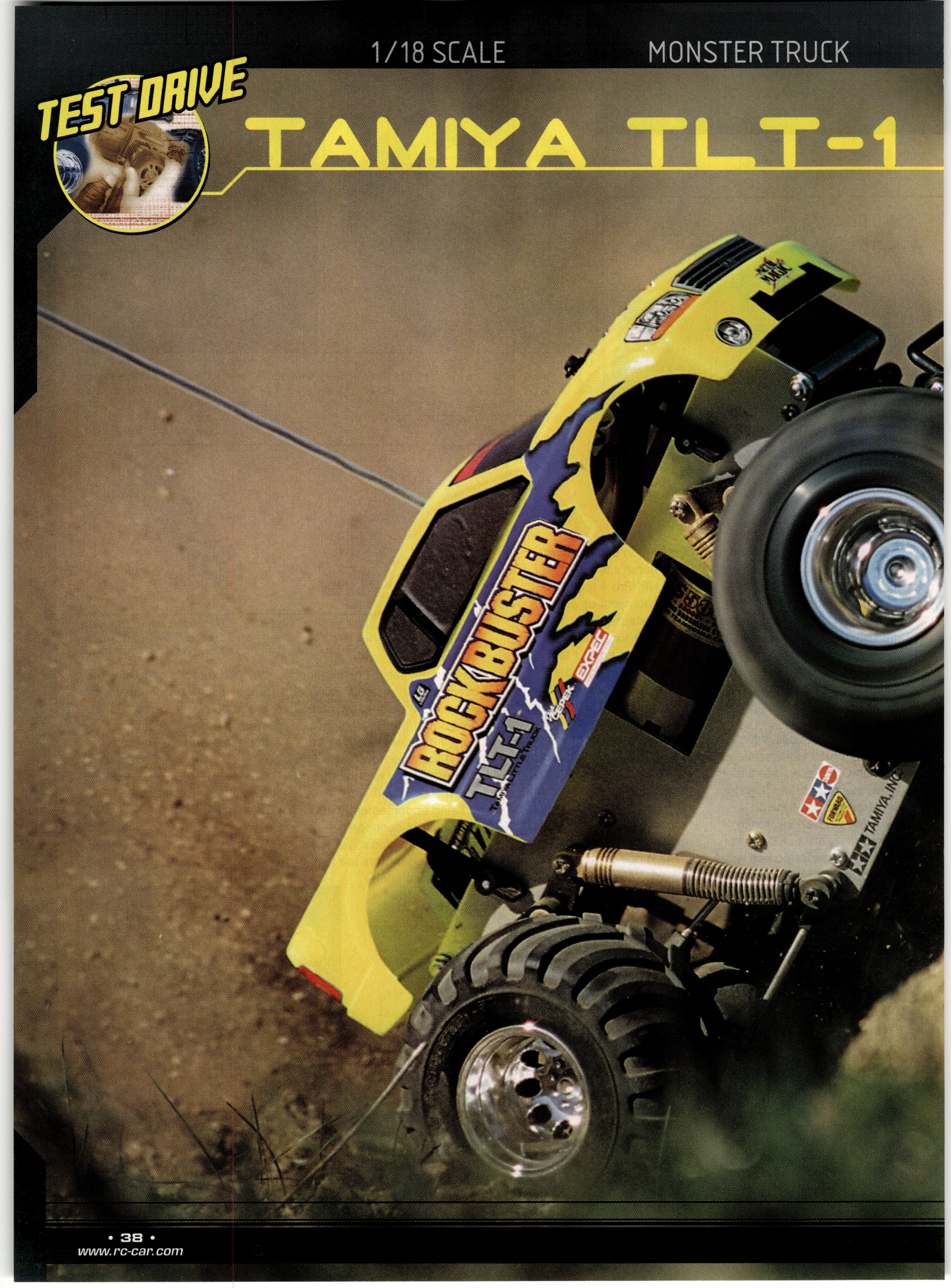
SOURCES

HPI Racing, 70 Icon Street, Foothill Ranch, CA 92610 • phone (949) 753-1099; fax (949) 753-1098

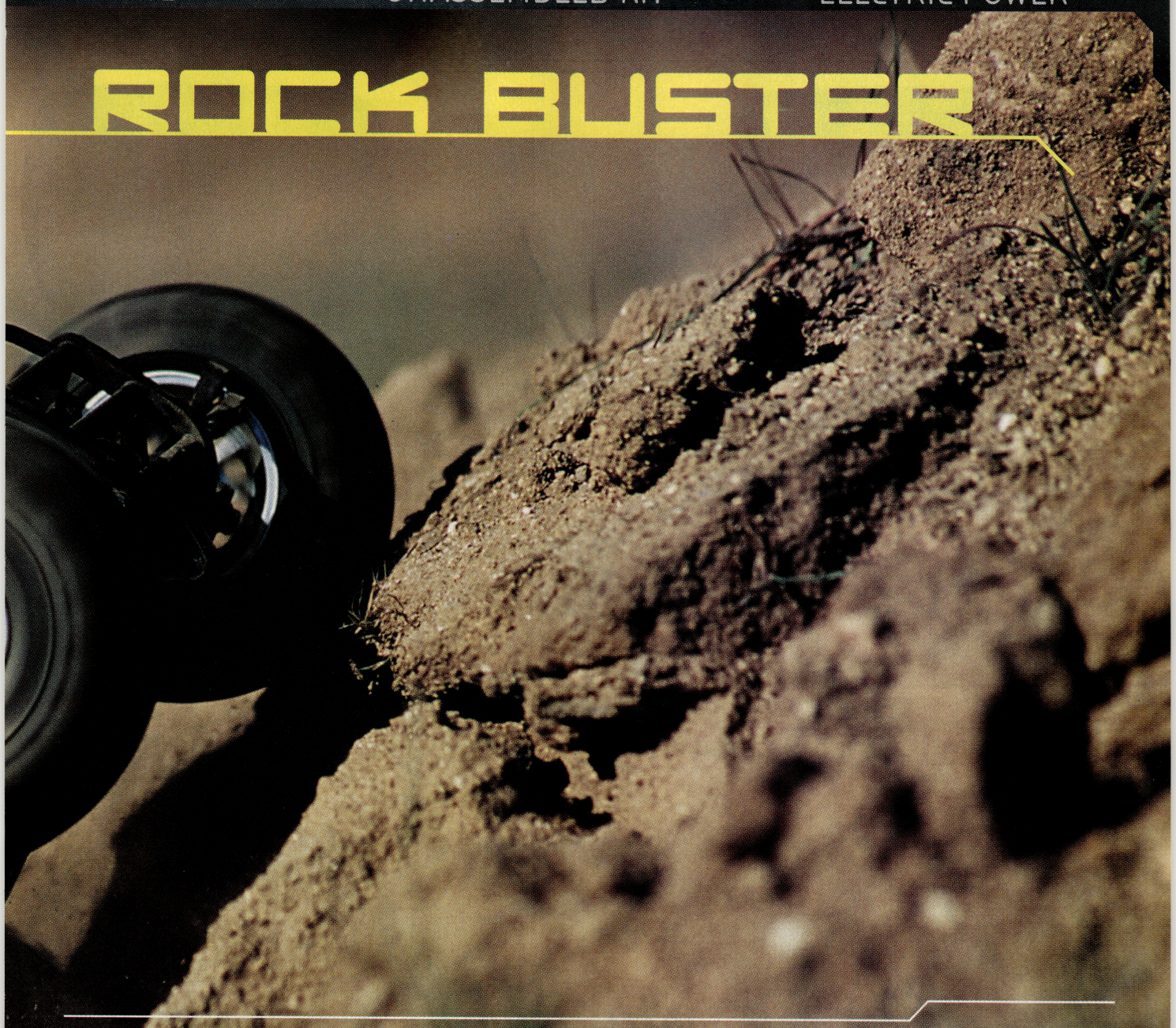
Team Orion, 22601 La Palma, Suite 103, Yorba Linda, CA 92887 • phone (714) 694-2812

TEST DRIVE

TAMIYA TLT-1

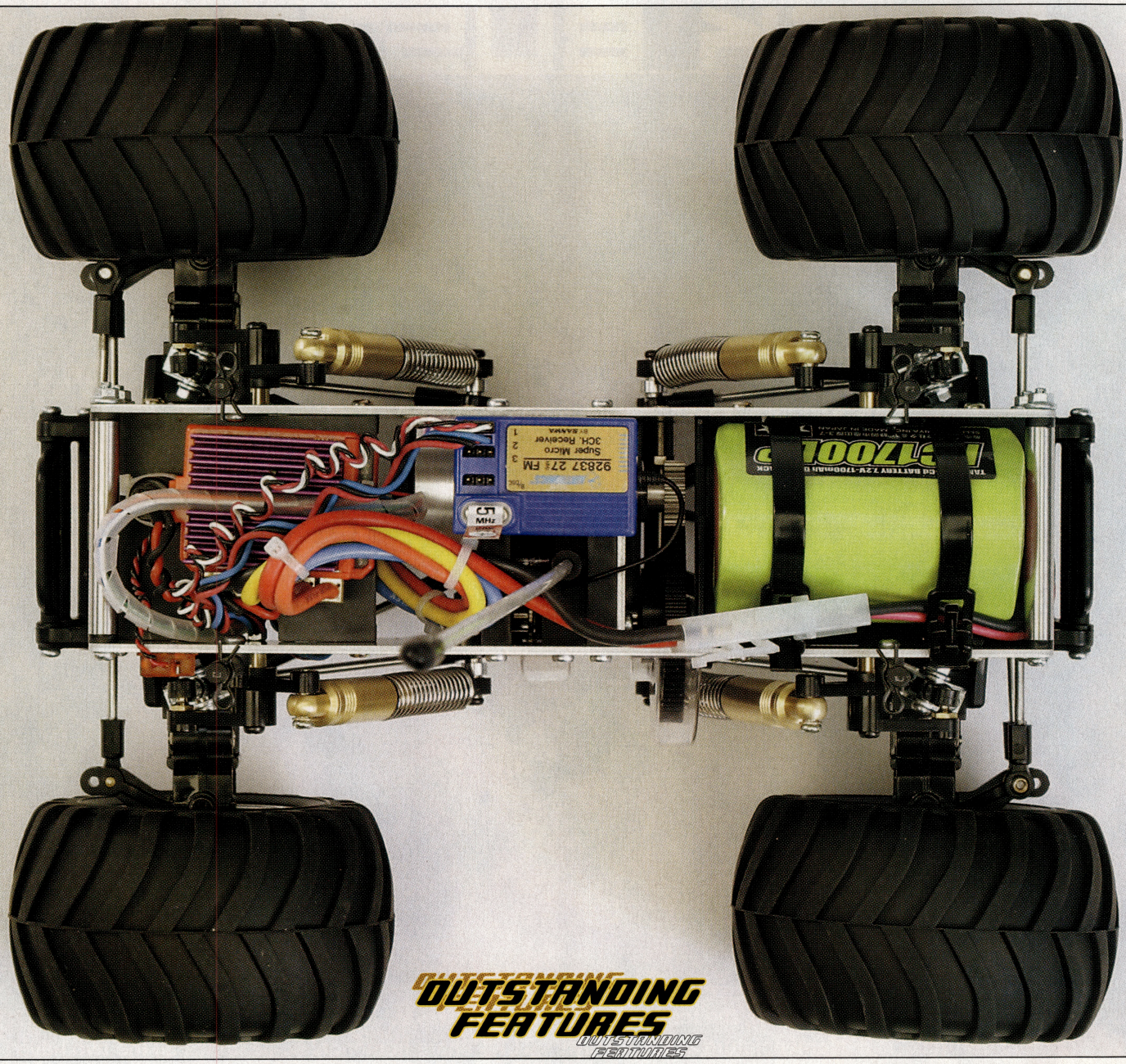


ROCK BUSTER



If ever there was an oxymoron, the term "mini-monster truck" is it. Nomenclature aside, Tamiya may very well be onto something very big with its littlest new offering—the TLT-1 Rock Buster: a scaled-down, 1/18-scale version of the company's 1/10-scale TXT-1 electric monster truck. Two thousand and four will forever be known as the year when micro off-road hit big. Team Losi's hugely successful Mini-T stadium truck, which is also 1/18-scale, will surely spur a plethora of competitors, however, although the Mini-T and the Tamiya TLT-1 share numerical scale, that's all the two have in common. The TLT-1 is substantially larger (it is a monster truck, after all), and it is set up to use standard-sized, 1/10-scale motors, batteries, and electronics. You read right: the TLT-1 is predisposed to being vastly overpowered—and we love it! When news of the tiny monster truck reached us, we right away demanded (in other words; we asked politely) a test sample from Tamiya America.

Tamiya Little Truck—no kidding!



OUTSTANDING FEATURES

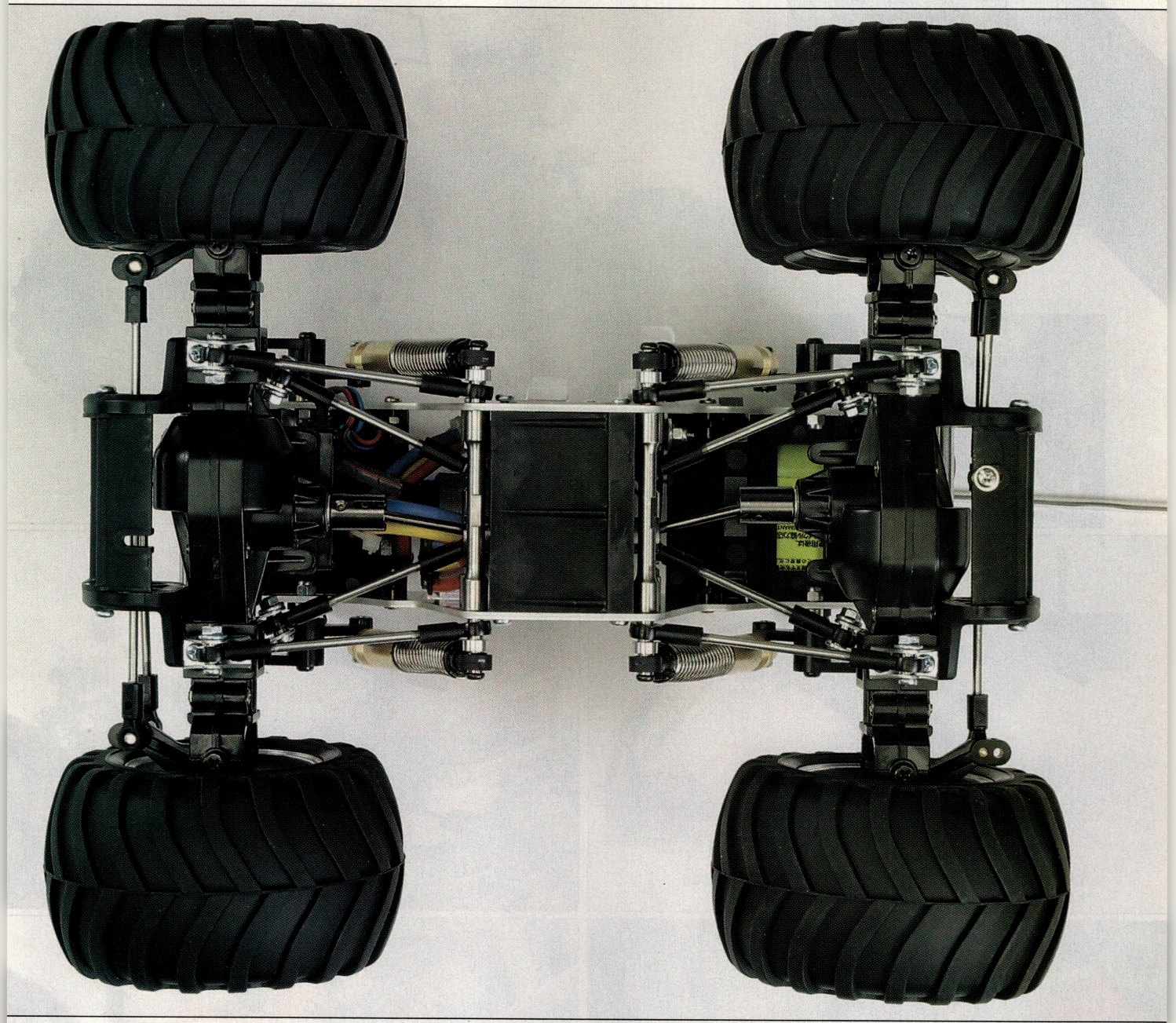
We were not disappointed when the kit arrived. Following the ensuing Ultimate Fighting match, the outcome of which determined who'd get to do the review (Skinny won; go figure), upon returning to three-dimensional status, the rest of us gathered excitedly around the kit. The first thing we noticed was that the box was extraordinarily heavy for its size. We soon learned why upon opening the box—it was filled with metal parts. We knew then that Tamiya was not messing around, and that they went all-out on this little rock crawler. Featuring full-time 4WD, a real world, four-link cantilever suspension, and the ability to have four-wheel steering, the TLT-1 has the potential to be an awesome performer. At less than 30 centimeters in length (just under a foot), the TLT-1 can be as much fun inside the house as it will inevitably be when run outdoors.

MIT CHASSIS DESIGN

The TLT-1's chassis is well thought out and is ultra stiff. Our one complaint (if you want to call it that) is that it looks as if a MIT engineering graduate designed it. With the body removed, the chassis looks as if it belongs in a laboratory robotics experiment. Other than that, it is totally functional and sturdy. Building the chassis was easy—all the parts fell into place—but we just wanted something that had a certain coolness factor. The main issue we had was that the center portion of the chassis its very, very low to the ground, with just about a half-inch of clearance.

DRIVING THAT TRAIN

The drivetrain is a simple affair from its motor to its output cups; it relies on just a belt and two pulleys to transfer power to the transmission's outdrives—simple and effective. From the outputs, power travels onward through a pair of strong, steel driveshafts, where it meets with a pair of burly looking solid axle assemblies. Within each axle is housed a rugged differential consisting of bevel gears. The diff assem-



blies are of cast aluminum, and look more than sturdy enough to handle the power from a 540-sized electric motor.

All the rotating parts spin on either metal or plastic bushings. The exception is the belt-drive system, which is supported by sealed ball bearings for increased efficiency and durability. Tamiya does have an optional bearing set to replace the remainder of the TLT-1's bushings.

THAT THING GOT A HEMI?

Unlike virtually all of Tamiya's electric kits, the TLT-1 doesn't come with a motor, so the choice was left up to us. As the TLT-1 can accommodate a 540-sized motor, we decided to see exactly what it could handle, and installed a Novak SS Brushless Motor System. Overkill? Perhaps; but we felt that the TLT-1 could handle the ponies.

The Novak system comes with a pre-wired brushless motor and specially designed electronic speed control. In terms of power, the SS system can be set either to match the output of competition, 27 turn stock motor, or, with its limiter disabled, it is approximately equivalent to a 19 turn modified motor. Besides performance, we also selected this setup because it is virtually maintenance free, and we sought the maximum amount of bashing time (the brushless system is more efficient, therefore it provides longer run times).

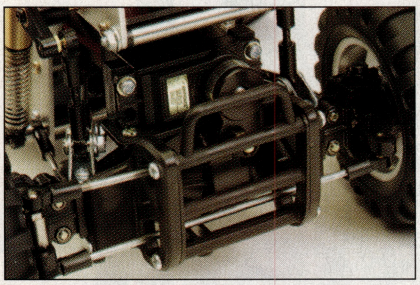
The TLT-1 is designed to be powered by a six cell, sub-C size battery pack. Due to space constraints within the chassis, the pack must configured in a triangular fashion of three pairs of cells. Tamiya offers a pre-built, 1700mAh NiCd pack for the TLT-1, but you could easily build your own with a little soldering expertise.

MINI-MONSTER ARTICULATION

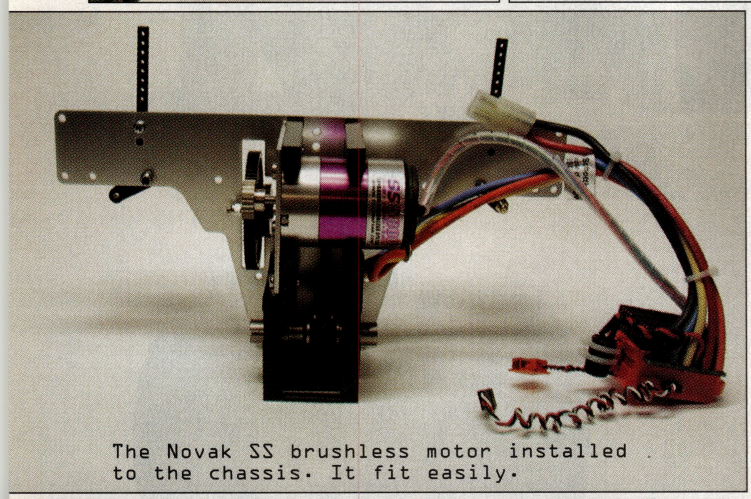
The TLT-1 has a four bar, link-type suspension system that is similar to that used in full-sized rock-crawling machines. For straight on suspension, there is only about

ASSEMBLY NOTES

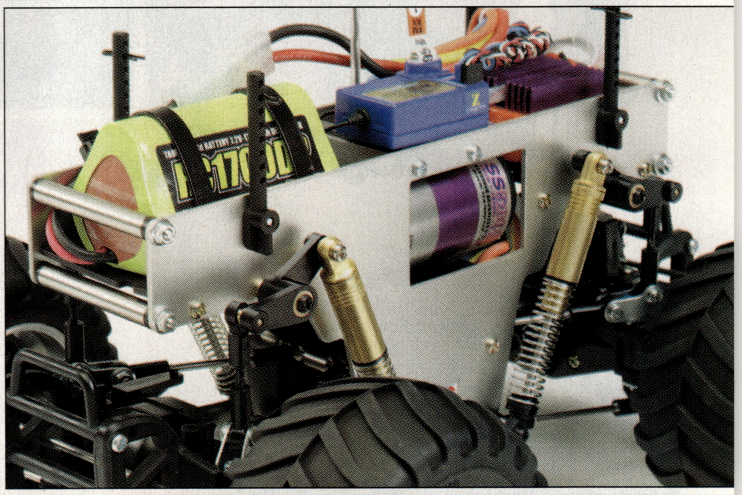
Tamiya has great instructions: the exploded views are awesome, and easy to understand—although we found the screws and odd parts to be out of sync with the manual's steps. We wound up just tossing all the hardware and special parts into a dish and pulling them out when needed. We suggest you do the same; just toss them in a dish and follow the drawings.

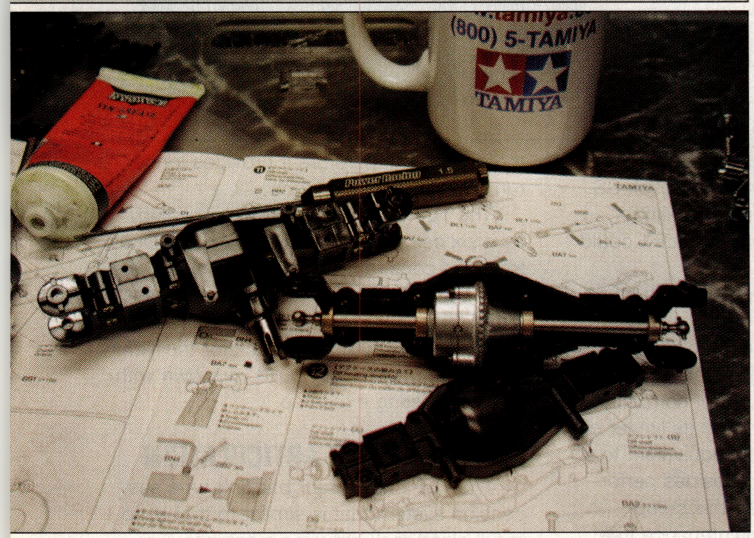


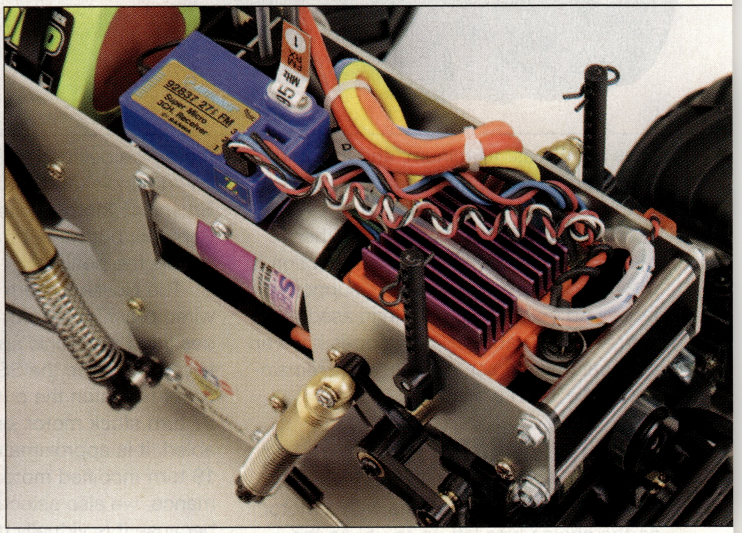




The Novak SS brushless motor installed to the chassis. It fit easily.







ROCK BUSTER

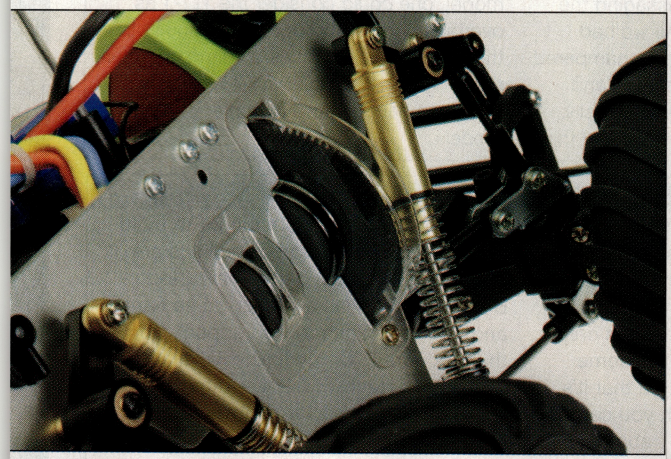


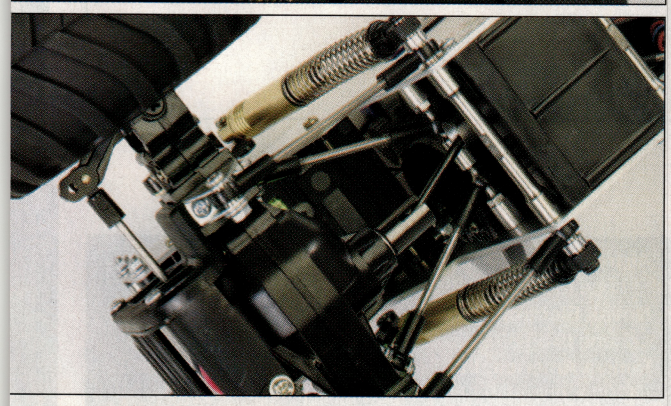


18 millimeters of travel, although the suspension has a total of 35 millimeters of axle articulation. The thought that went into the design of all the trusses and trailing arms is very nice. The suspension has a pair of solid axles, each tied to the chassis with a pair of trailing arms, set in a V-shape, to provide maximum articulation and axle stability. There are two upright suspension struts that transfer, via a set of rocker arms, the suspension motion into the sweet aluminum shocks (these are actually the optional aluminum shocks from the Juggernaut truck).

If you look at the rocker arms, you will see that they are offset: this is where suspension systems of this nature get their lever ratios. By moving the pivot and link mounting points, you can make the suspension travel softer or stiffer. In the TLT-1's case, Tamiya chose to give a lot of leverage over the shock, thus giving the truck its supple wheel travel. This system totally lends itself to extreme rock crawling.

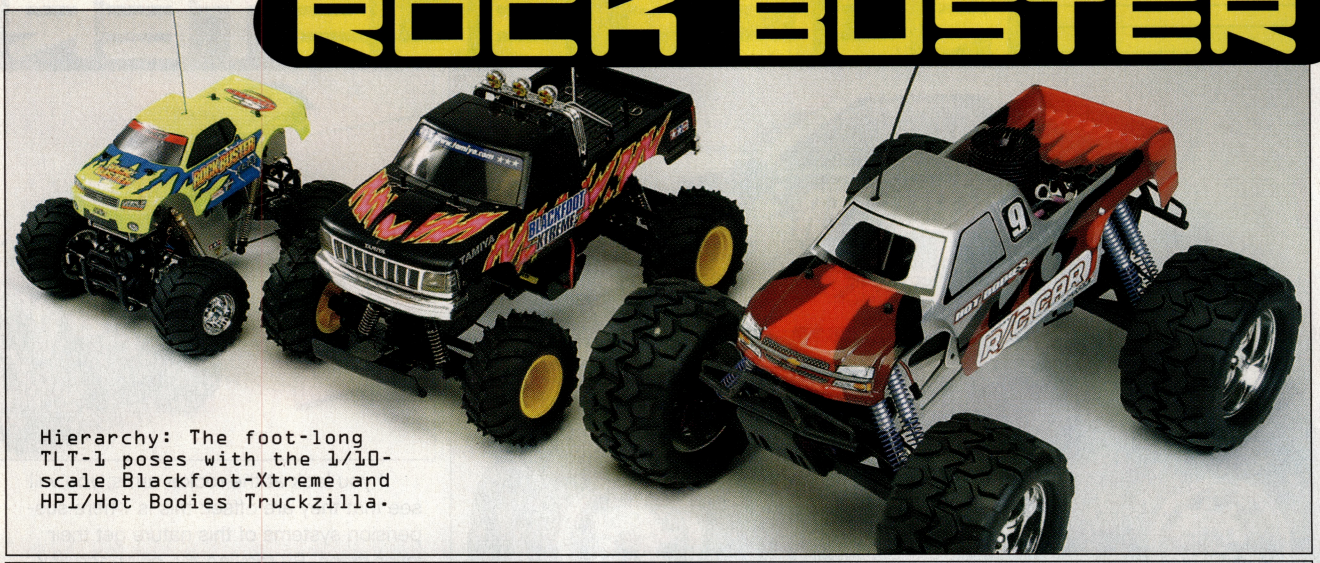
The TLT-1 appears to have serious rock crawling capabilities—well, sort of: the suspension and articulation is there, but the center ground clearance is very minimal. We are already looking into ways to remedy this; wheel and tire options may provide the fix; the Internet is already abuzz with hop-up ideas for this cool little truck.







ROCK BUSTER



Hierarchy: The foot-long TLT-1 poses with the 1/10-scale Blackfoot-Xtreme and HPI/Hot Bodies Truckzilla.

REPORT CARD

Test location: In the streets and hills of Saugus, California

Test conditions: Typical Sunny California winter weather. Both loose dirt and hard-packed dirt

Steering: A

The Steering was excellent, and surprisingly precise for such a small vehicle. In the house or in the street, it was perfect. The only drawback is in the design of the servo mounting area. It is too confined, and limits the steering throw so you can't attain full lock to the left. A little grinding with a Dremel tool solved this.

Acceleration and speed: A

With the Novak brushless system, our TLT-1 was quick off the line (stupid quick), and never seemed to top out. In fact, we became so scared at how fast it was going, we had to let off before the top speed could be attained. The truck was so fast that we were laughing at how crazy it was; the Novak motor could light up all four tires from a dead stop. Our little TLT-1 could probably spank a full-tilt electric sedan. This was probably way too much motor for a truck of this size, but it was fun!

Suspension: B

The suspension was good, but the four-bar link was not correct: it had room for greater articulation, but the links seemed to bind. Some time spent massaging the linkage would improve this. As we had anticipated, the very low chassis hampered the performance of the suspension and caused the TLT-1 to "high-center" easily. As we always write: that's why we call this a hobby—there's always room for improvement, and the TLT-1 is a great starting point. Otherwise, the suspension is so marshmallow-like that when you goose the throttle, the chassis tweaks sideways; when it was crawling through small rock sections, it articulated nicely over the obstacles. It handles well in all sorts of conditions for such a small truck.

Durability: A

Tamiya Always makes good products—we don't think it is in then to do anything else. Considering the intentions of this model, one could consider the TLT-1 as overbuilt. We had no durability issues other than some small pebbles entering and marring the belt-drive pulleys. All in all, this truck can handle more than many larger models.

FINAL SCORE

Highs: As the first release in Tamiya's Little Gear series, the TLT-1 is a homerun. We think this truck will build a cult following in no time. It has the perfect base for all kinds of aftermarket attention and garage engineering; we can't wait to see what all of our readers will do with this mini-monster.

Lows: The only complaint we had was that it was frustrating, at least at first, to follow the instructions. The main gripe, however is the minimal ground clearance at the chassis' center. We write this only because the TLT-1 has such awesome potential; you just get frustrated that it's so low, and there is not much you can do about it until someone comes out with kit to fix it.

The Verdict: This is a fun kit to build and drive. The hop-up possibilities are endless—this could be the new Clod Buster. Tamiya has a winner on its hands, and we think it has a wide appeal, from the hardcore R/C guy to the kid that wants to rock crawl all over mom's dishes. Thanks, Tamiya for another killer product.

SPECS

Price:	$144.99 (varies with dealer)
Length:	11in/280mm
Width:	9.9in/251mm
Wheelbase:	11in/280mm
Track (F/R):	9.5in/241mm
Weight:	4lbs
Chassis:	aluminum
Drivetrain:	belt driven 4WD
Bearings:	metal/plastic bushings/ball bearings
Drive shafts:	steel dogbones
Suspension:	four-link, push-rod cantilever
Shocks:	aluminum oil filled
Tires:	V-groove paddle
Wheels:	one-piece plastic
Body:	clear polycarbonate

SOURCES

Airtronics, 1185 Stanford Ct., Anaheim, CA92805 • phone (949) 978-1895; fax (949) 978-1540

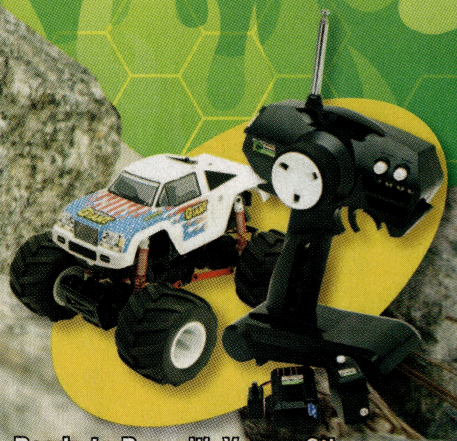
Novak Electronics, Inc., 18910 Teller Ave., Irvine, CA • phone (949) 833-8873; fax (949) 833-1631

Tamiya America, Inc., 2 Orion, Aliso Viejo, CA 92656-4200 • phone (949) 362-2240; fax (949) 362-2250

MINI GIANT™

FOUR-WHEEL DRIVE ELECTRIC 1/20-SCALE MONSTER TRUCK





Ready-to-Run with Venom Stinger Radio, Full Size Servo & ESC. Or use your own radio and electronics!

Cool things do come in small packages!

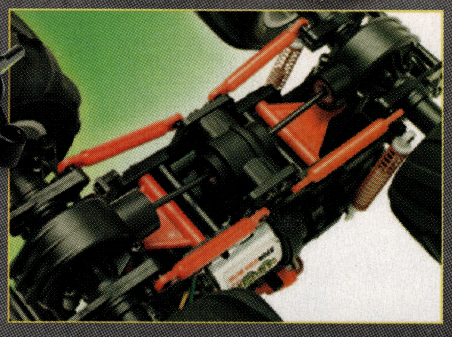
MINI GIANT FEATURES

- Long coil over shocks with solid axle 3-link suspension.
- Molded from durable nylon plastic.
- Durable, lightweight polycarbonate body.
- Scaled down performance just like a real monster truck.
- Powerful motor with four-wheel drive action.
- Excellent stability off-road with huge 70mm diameter air filled tires.
- Outstanding cornering with front and rear gear differentials.

Differential shown with optional bearing kit.

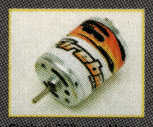




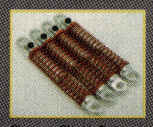




OPTIONAL HOP-UP PARTS


Fireball 370-size Motor


Bearing Set


Chrome Shock Set


Chrome Wheels


8.4v Hex-7 Battery


Wheelie Bar

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VENOM Products can be found at your local hobby shop or on-line at www.venom-racing.com. Dealer inquiries welcome.

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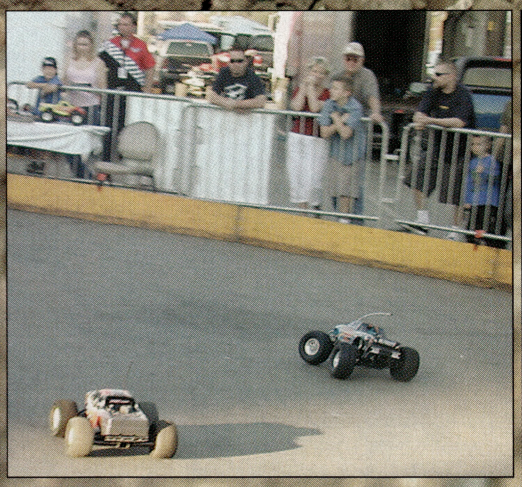
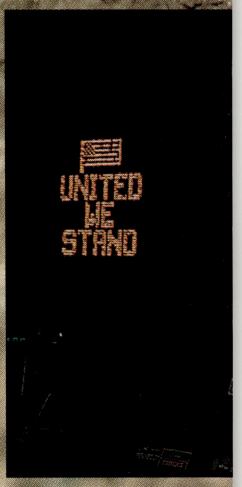
2004 MONSTER







JAM

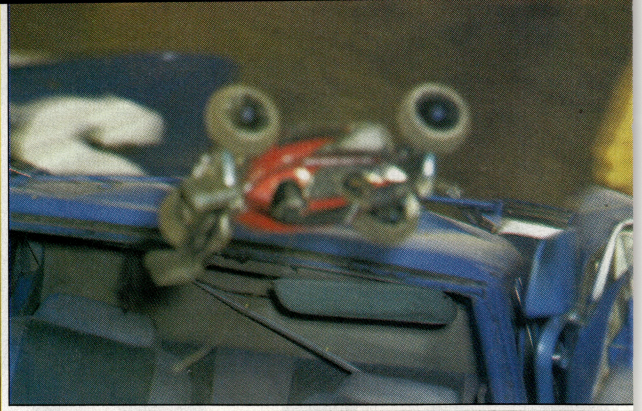


Fifty thousand dirt-fiends introduced to R/C

By Brian Skinner

Clear Channel's Monster Jam tour stops by Anaheim Stadium each year, making use of the dirt from the company's other spectacle—supercross—to thrill sellout audiences who come to see the world's most famous, loudest, and sometimes explosive monster machines. This year's event brought out the big iron, such as Grave Digger, Teenage Mutant Ninja Turtle and Karl Malone's Power Forward (where can we get our own monster truck?). Along with the big show, Clear Channel—no strangers to promotions—invites fans for a Party in the Pits, where they can meet their favorite drivers and see the big trucks up close. Clear Channel has also invited the R/C industry to its party, providing us with a huge area (40,000 square feet) in which to demonstrate R/C vehicles. As he had done at last year's Monster Jam, Ultimate Hobbies owner Cliff Murakami accepted the invitation and asked several of his friends to join in the fun (us included). Not only do we get to jump, crash and destroy our R/C trucks for the thousands of fans that line the demo area during the Party in the Pits, but we are also invited inside the stadium to perform our antics during lulls in the full-size truck action—for 50,000 rabid monster truck fans.









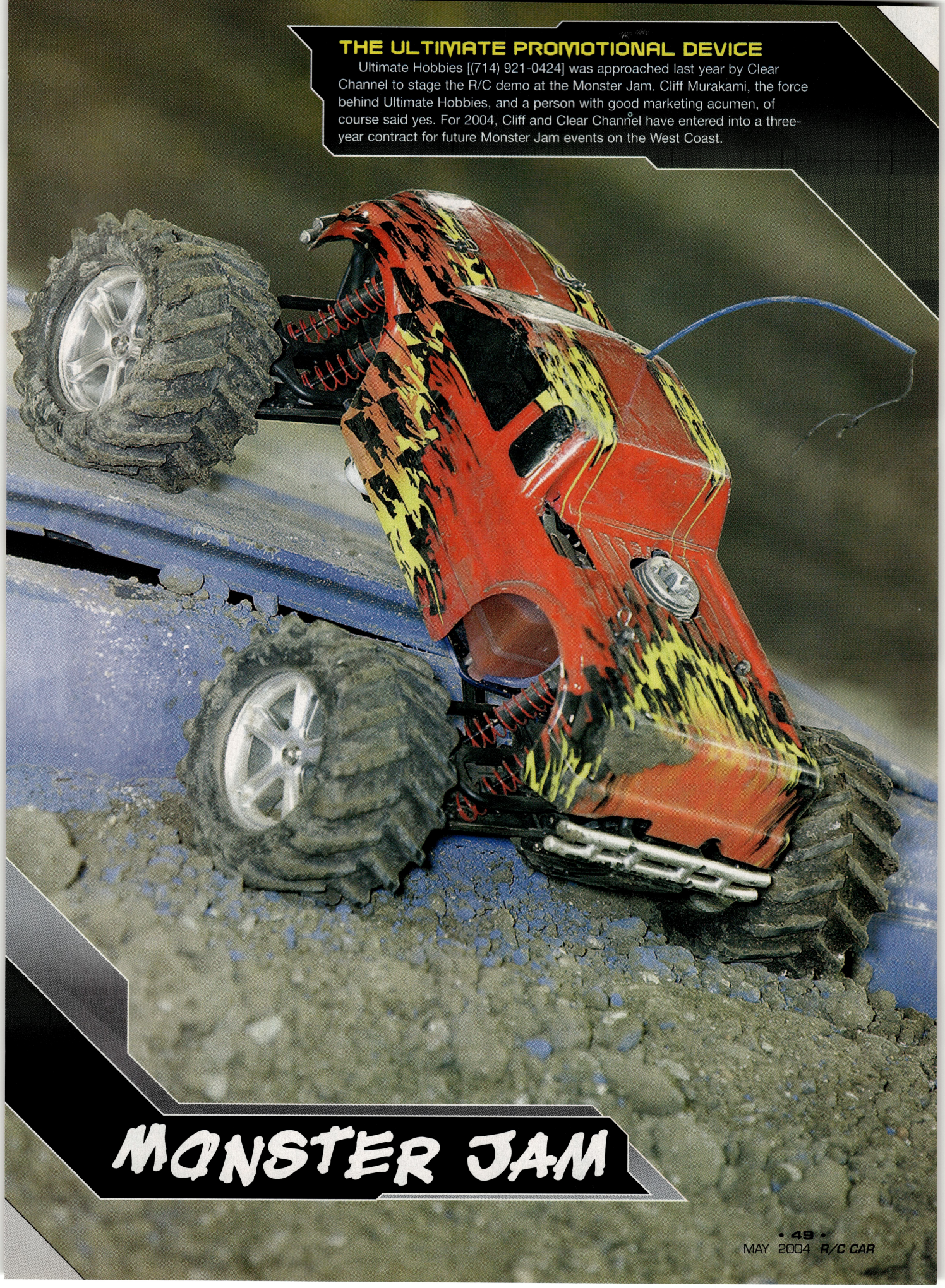
PARTYING IN THE PITS

For us, the Party in the Pits is an opportunity to introduce hundreds, if not thousands, of people to the R/C hobby. As our time to make an impression is limited, we must make the most of our exposure. With this in mind, we all go big! Really big. People want to see huge air and horrible crashes, and we're happy to oblige. It's not easy landing from twenty-feet up on unforgiving pavement, but it's certainly exciting.

Cliff Murakami and his Ultimate Hobbies team added more punch to this year's Monster Jam. Cliff invited additional participants from within the R/C industry: representatives from Team Associated came out with their Monster GTs, the HPI fellas brought some big Savage 25 trucks, and the CEN folks sent out some drivers and Fun Factor MT trucks. Cliff also improved our visibility by supplying matching T-Shirts and sweatshirts, and he also brought out a mobile ramp for faster setup and breakdown. I'd also like to thank Traxxas for supplying me with a new SportMaxx for this event. When going big, it's hard to beat the light and powerful SportMaxx, and with less weight, its chances of surviving the event go from nil to maybe.

As the crowd poured into the pits, we fired up our trucks and began hitting the big ramp and performing mock oval races around the perimeter of the demo area. I think the guys from Associated were getting the most air with their Monster GTs, and the crowd was digging it. The HPI guys and their Savages were also stylin' on the ramp; I believe I saw them pull off a few successful backflips. As the crowd around the demo area grew, I broke out the Gallimod's six-wheel-drive T-Maxx for some passes around the oval. The crowd loved this truck, and its spinner wheels. With each lap, I could hear the crow ooh and ah, as the six-wheeler would come to a stop while its spinners kept on going. It was an amazing experience, with spectators snapping photos and having a great time.

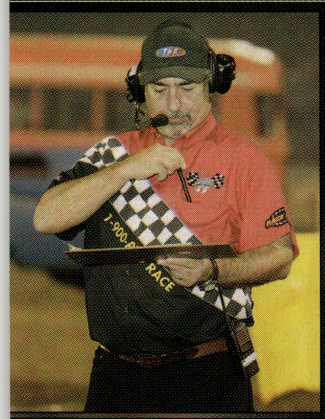
As had happened during all previous Monster Jams, the big-air jumping took its toll on the trucks; however, this year the damage was minimal. Either we're getting better at this or the manufacturers have improved their trucks without telling us. Aside from the minor and usual damage



THE ULTIMATE PROMOTIONAL DEVICE

Ultimate Hobbies [(714) 921-0424] was approached last year by Clear Channel to stage the R/C demo at the Monster Jam. Cliff Murakami, the force behind Ultimate Hobbies, and a person with good marketing acumen, of course said yes. For 2004, Cliff and Clear Channel have entered into a three-year contract for future Monster Jam events on the West Coast.

MONSTER JAM





The crew from Ultimate Hobbies, CEN, and Associated.

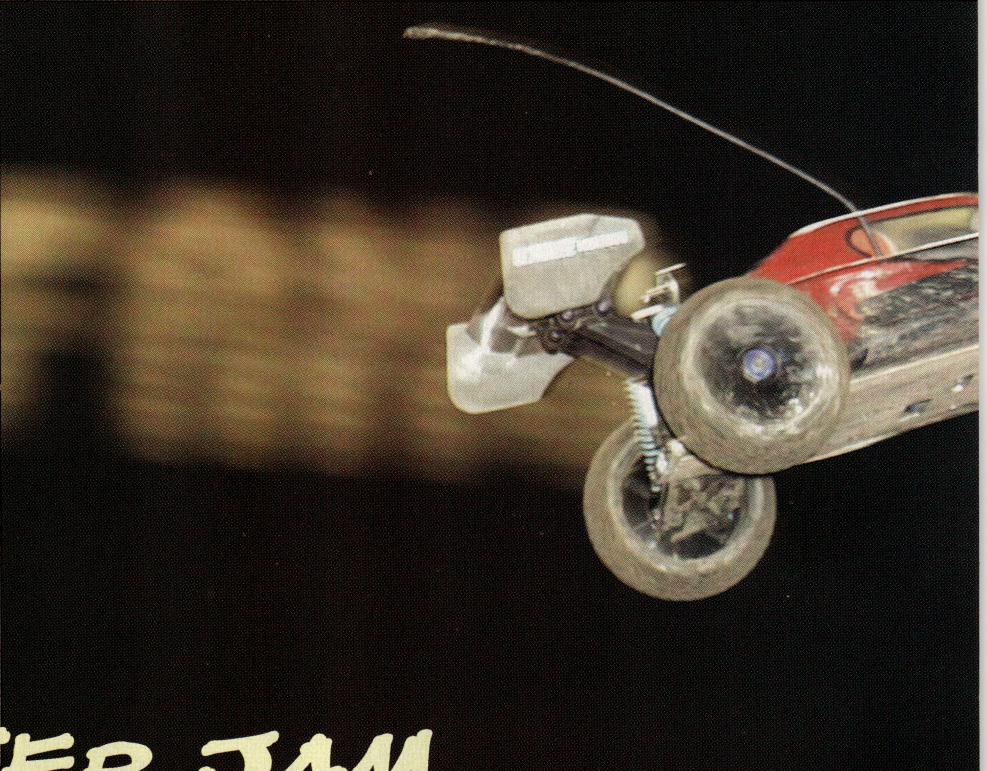


Andrew and Mike from CEN.









MONSTER JAM

that occurs whenever a ten-pound truck lands from twenty feet on unforgiving pavement—on its roof—there were no dead soldiers.

When the Party in the Pits demo was finished, we packed up and headed inside the stadium for the big show. Thanks to Cliff's new mobile ramp, this was much easier and quicker than it had been during past Monster Jams.

STADIUM SHOW

Fortunately for us, and for Clear Channel, the R/C demonstration people were on their toes and prepared. Our first show came much sooner than anticipated, thanks to a delay in the Monster Jam program. We rushed out right away and put on a fifteen-minute show for the packed stadium.

We were jumping a huge stack of "crusher" cars—something we had done during past shows—but this year, they threw us a curve ball: there was a bus in the middle of the cars. To say it was hard to clear that darned bus would be an understatement; to be successful, we had to catch at least fifteen feet of air or else the truck would smack into the side of the bus. One of the guys set the pace with his 1/8-scale nitro buggy, and when he cleared the bus for the first time, the crowd inside Anaheim stadium went nuts!

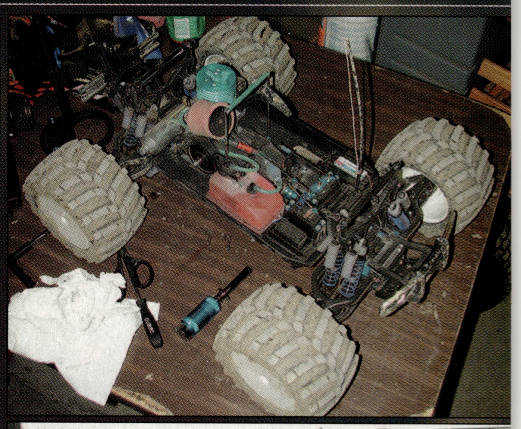
I was doing my best impression of rock crawling; driving slowly over the row of six cars that the monster trucks use as jumps. I actually made it all the way across. It felt like we were out there forever; in fact, I had run out of fuel and was helping flip the trucks over. We were finally called off, and it was time to go back and re-group for round two. As I was walking back to the tunnel, it was neat to see all the kids lined up against the fence to see our trucks, and wave at us, as we walked back trough the tunnel. A whole new generation of R/Cers had just been hooked!

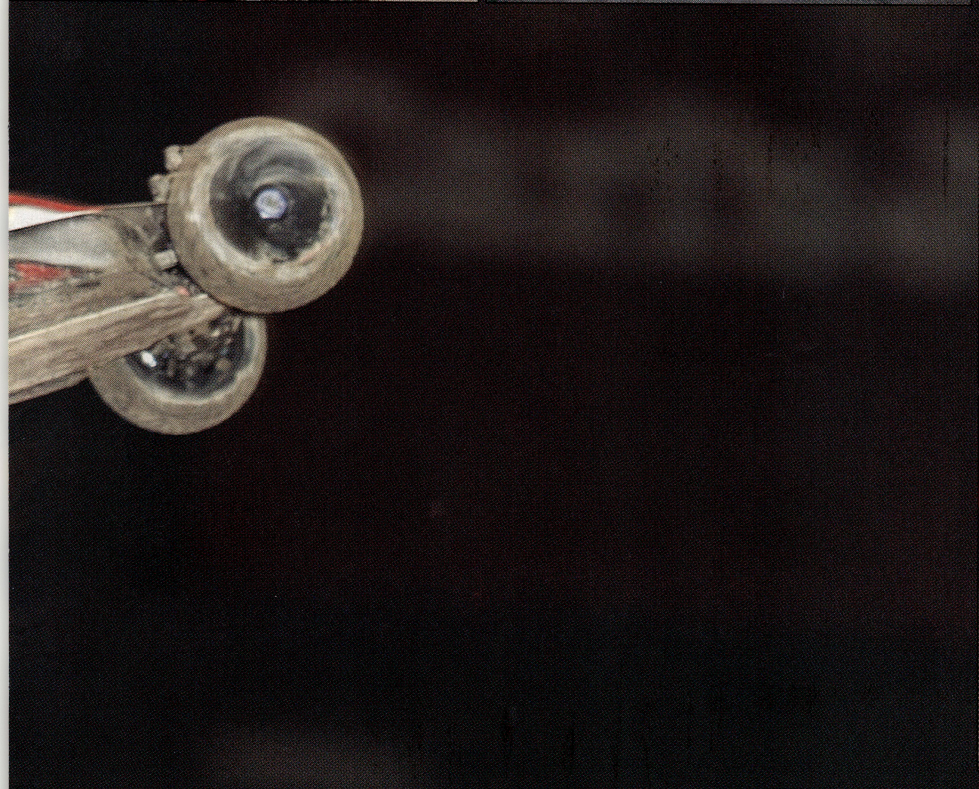
We got it all together again and were ready for action by the time we received the signal for our next show. We repeated our initial performance, but as this was our

Passing out Traxxas catalogues during the Party in the Pits.













final act, more than a few of us decided to really push the envelope and risk it all. While the other people went over to the big car pile to get some big air, a few of us spotted a really nice, and I must say, incredibly large, double jump—which we cleared very easily, as if we really knew what we were doing. Again, we were out there for what seemed an eternity—Clear Channel must really like the R/C show to allow us so much precious time on the field.

With our duties fulfilled, we were able to go out and watch the big trucks do their thing. To be able to watch these big machines do their stuff up close is a real treat. Unless you've been as close up as we were, you have no idea how large these machines are, or how much power they are putting to the ground. That they can pull the stunts they do, and make it look so easy, is a testimony to the engineering that goes into each truck, and the abilities of the drivers. I must admit that Grave Digger is the craziest truck on the circuit; it just seems to have so much power and it looks like it's easy to drive—yeah, right!

THE CURTAIN IS DRAWN

It was fascinating to me that our trucks survived this year's Monster Jam mostly intact. I attended four such events during the past year, and the breakage seemed much more frequent and severe. Admittedly, the demos are extremely harsh on the vehicles, and they'll age a truck faster than a whole year of racing, but in considering the success of this year's event, does this mean that R/C vehicles have become even more reliable? I think so.

Promotional events such as the Monster Jam will pay dividends for the R/C hobby, and it's great to see so many different—and competing—companies band together for the good of the hobby. I'd like to thank, of course, Cliff and the Ultimate Hobbies staff, as it requires a vast commitment of both time and resources to put on a successful event. I'd also like to thank Associated, HPI, and CEN for coming out and putting on a great show.



TEAM ASSOCIATED

Ready to run, and ready for

T4 RTR

Hardcore racers might believe the world is coming to an end, but the truth is that RTRs have infiltrated every form of R/C driving, from monster trucks to 1/10-scale touring cars. And the RTRs aren't giving up too much to their more expensive kitted counterparts. Case in point is the latest RTR from the good people at Team Associated—the T4 RTR stadium truck. This particular RTR is of special interest because its not manufactured or assembled overseas; its parts are the same ones you'll find in the T4 Team kit—the parts are shipped over the border for assembly in Mexico. In a nutshell, the T4 RTR (and its sibling, the B4 RTR buggy) is a full-race Team kit that's been built for you. Of course, having a pre-installed radio, a pre-painted and trimmed body, and a LRP electronic speed control help get you out to the track more quickly.

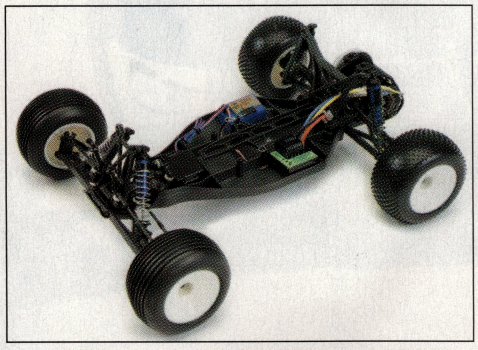


the competition

OUTSTANDING FEATURES







Associated's fourth-generation racing truck was a long time coming, but definitely worth the wait. Scant weeks after its release, team driver Mark Pavidis won the prestigious ROAR modified nationals with his T4. When you buy the RTR version, you are getting essentially the same truck that Mark used to win the title.

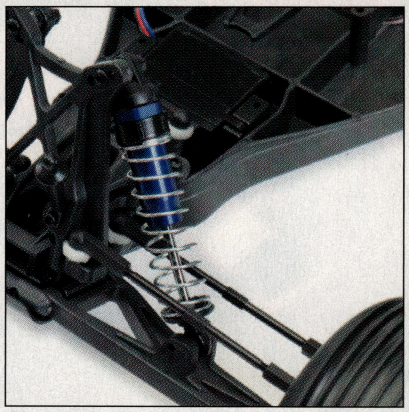
As stated, just about every part on the T4 RTR is shared with the T4 race kit. The only differences are as follows: the RTR comes with blue-anodized shocks instead of hard anodized ones; instead of the MIP CVD driveshafts of the Team kit, the RTR's transmission relies on steel dogbones and axles to send power to the wheels; the kit version comes with Pro-Line wheels and tires, while the RTR comes with no-name rubber tires on generic dish wheels. That's it, folks—aside from these differences, the two trucks are as close as Mary Kate and Ashley.

Now, here's what the RTR has that the Team kit lacks: of course the RTR truck arrives fully assembled, but it also has a full electronics package on board—kit owners must supply this stuff on their own. Sharing the box with the T4 RTR is a high-quality Airtronics Blazer Sport AM radio. This pistol-grip transmitter has a well-balanced feel and a dual-rate feature for the steering channel (this lets you tone down the steering travel to make the truck easier to drive). Mounted to the chassis is a "decent" Airtronics 94102 standard steering servo and two-channel AM receiver. Also included is a LRP Runner forward/reverse ESC. You'll only need to supply a six-cell NiCad or NiMH battery pack and charger—the rest is furnished by Associated.

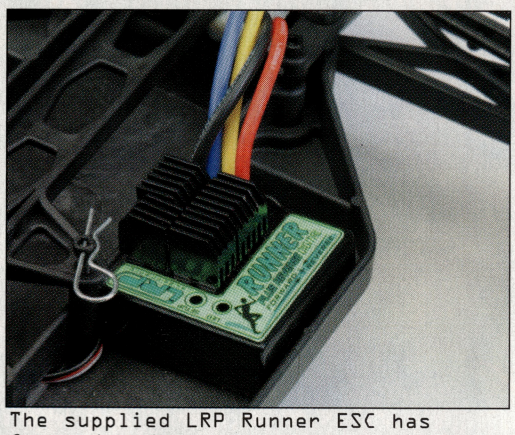
ASSOCIATED T4 RTR



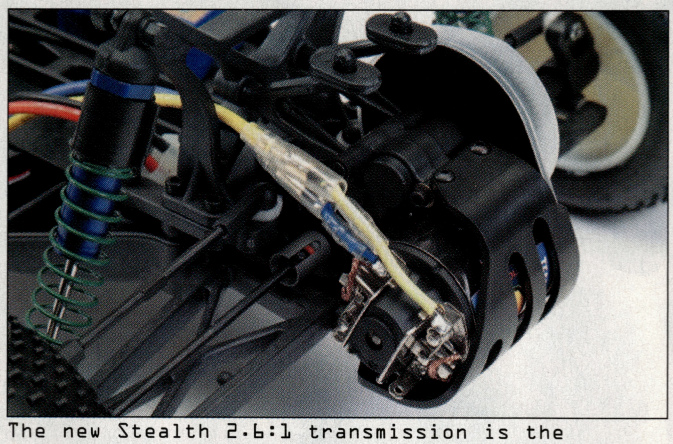
This is how the T4 RTR looks after you pull it from its box. It's 90-percent ready to go!



Blue shocks are all that differentiate the RTR's suspension from that of the T4 Team Kit.



The supplied LRP Runner ESC has forward and reverse, but no brakes. Look out for pedestrians!



The new Stealth 2.6:1 transmission is the same as that of the B4 and T4 race kits. It's an awesome gearbox.

BASHER AT THE TRACK

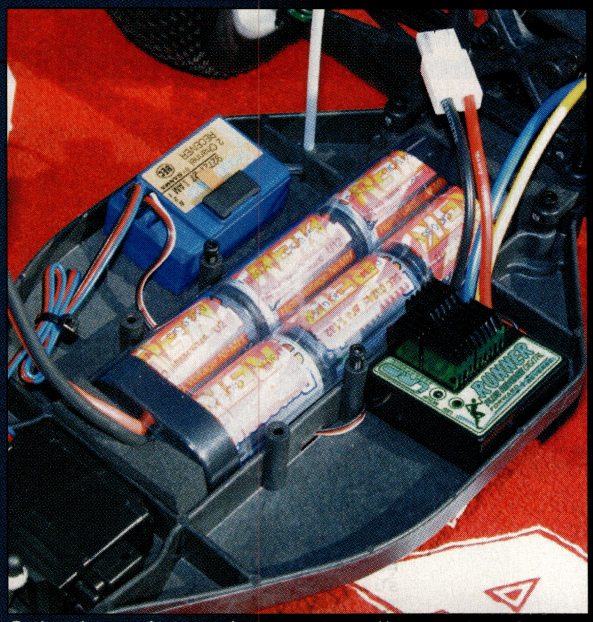
Our staff photographer, Mike Basher, has been tearing up the So Cal area with our long-term OFNA Hyper 7 PCR Edition 1/8-scale buggy. He's definitely hooked on R/C, and when the T4 RTR arrived at the office, we thought that we'd have Bash—whom we felt fit the mold of the potential T4 RTR buyer—come out to a Saturday afternoon off-road race at Hot Rod Hobbies and have his first taste of R/C racing.

Having mastered the basics of driving, such as the most difficult "right is right when driving away, right is left when driving towards you," Basher was ready for his first foray into the Novice class. Technically—and I'm making Dr. Evil quotation fingers while I write this—the Novice class is for those who have just starting driving R/C. Watch such a class, and you can tell that half the field fits the bill, while the other half is just on the verge of moving up to a more advanced class. Still, and this is what I told Basher, all it takes to win in Novice is to be the one that crashes the least—speed is secondary.

We wanted to try the T4 RTR exactly as it came from the box—at least initially; we would tune the suspension, swap tires, and make other changes as necessary. I drove the truck for its first run, while Basher shot action photos. I was at first leery of "cheating" by running the T4 RTR's stock 17-turn motor, but my fear abated instantly—the motor isn't as fast as a 27-turn, competition stock motor; in fact, Bash's competitors in the Novice class all had more motor. I decided to leave the 17-turn motor in the truck—certainly, no one would be filing a protest. I also felt that the tame power band would help Basher stay on course.



I was very impressed by the T4 RTR's handling. Its rear tires had plenty of bite on the damp track, and its ribbed front tires had just enough push to make the truck supremely easy to drive. The steering forced me to slow the truck in order to make the tight corners—which is how things are supposed to be. There was just enough speed to clear the double jumps and tabletops. I have driven so many RTRs that I've lost count, and this Associated truck is one of the very few that felt as if it could truly be raced out of the box. Of course I'd install more motor and probably change tires, but that's about all it needs. When the pack was depleted, I handed the truck to Basher and proclaimed it as being set up perfectly.



Sticking with stick packs: We used only stick batteries for our test. Fortunately, Reedy sent us a X-Cell matched NiMH pack.



Basher puts on his game face. "I'm tellin' you – that little girl was fast."



Since we arrived early, I had him run as many packs as he could (letting the motor cool between runs).

As we were preparing for the first qualifying run, Bash called me over to look at the truck. "Should the steering move this easily?" He asked. The front wheels turned to the left and right without resistance; the servo's gears were toast. "I think I hit the board really hard," said Bash. I removed the servo and checked the servo-saver—I suspected it was too tight—it wasn't. Sometimes, stuff is just going to break. Fortunately, Airtronics 94102 servos are common, and I was able to pick up a replacement in the hobby shop for just $12.00. We had the truck fixed in minutes, and Bash was ready for his first-ever qualifying race.

"This one guy asked me if this was really my first race." Basher told me after his heat race. "It was like he couldn't believe that a *real* beginner was in the Novice class. I guess I was in the wrong starting spot, so I just backed up to the right one. The same guy leaned over to me and whispered 'reverse is illegal'—like I knew that! It was a fair tradeoff, I thought, because I didn't have any brakes."

Basher did very well in his two qualifying heats, placing second in both (the "reverse" guy won both races handily). Still, Bash was always in contention, and had he not crashed as frequently, he might have even made a close race of it. I think my telling him that the little girl was catching him provided the necessary motivation to pick it up a notch.

The LRP Runner speed control was the primary issue with the T4, and with Basher. After his first run, he reported to me that all but one of the heatsinks had fallen off somewhere out on the track. He also complained that, without brakes, even a beginner such as he was at a disadvantage. When he did try to slow the truck for the turns, he found out quickly that the Runner goes right into reverse. Stunt driving anyone?

On a tuning note: as the track dried, the stock rear tires tended to skate around in the dust. We swapped them for an old set of Pro-Line Holeshots that I had brought, and Basher reported that these were night-and-day improvements for those conditions. We tried some Pro-Line Blade front tires (at Basher's insistence: he saw them in my bag and thought they looked really cool), but these tended to clog with wet dirt. We stayed with the stock ribbed fronts, which shed the dirt well and gave consistent steering.

Our photographer friend didn't fare as well in the main event, although he still managed a respectable third place finish. Basher claims that his result was caused by poor night vision (the mains were held under the nighttime lights), and we'll buy his excuse for now. As a follow up, Bash has been, well, bashing the T4 RTR at his backyard track, and he really loves the truck. He has broken another set of servo gears, so we are categorizing the servo as an official weak spot. Otherwise, the T4 RTR is everything that we expect from Associated—it handles very well, it's easy to drive, and aside from servo problems, it's been trouble-free.

ASSOCIATED T4 RTR



REPORT CARD

Test location: Hot Rod Hobbies Raceway, Santa Clarita, CA
Test conditions: large dirt off-road course; large jump sections; wet to semi-dry dirt

Assembly quality: A+

The people that screwed together this kit should take pride in their work; a pro could hardly do a better job. The transmission was perfect, with super-smooth diff action and a properly set slipper clutch. The suspension was also done right: the shocks were each bled to perfection; the ride height was just right; the wheel camber was equal at all corners. Even the glue job on the tires was great.

Radio and electronics: B-

Kudos for the Airtronics gear, but the steering servo was prone to gear breakage, and the ESC came up short when compared to those of several other electric RTRs. The LRP Runner lacks brakes, and this alone is enough to lower our opinion of it, but it also lacks a switch (the battery connector functions as the on/off switch, and it was a little tricky to reach under the body to disconnect it after a race—especially at night). Also, the heatsinks fell off during our truck's first run.

Acceleration and speed: B

"Mild" best describes the T4 RTR's acceleration and top speed. Being a 17-turn motor, we expected a bit more, but the truck does get around the track well, and has just enough punch to clear most smaller doubles and tabletops. We rate the top speed as being just below that of a 27-turn competition stocker, and this is as good as you'll get from the included motor, as it is already geared optimally.

Handling: A+

The T4 RTR's suspension is dialed-in from the factory. The truck soaks up everything a track can throw at it: small chop, large jumps, and everything in between. The steering is very crisp, surprisingly so when considering that the RTR comes with a very basic steering servo. The overall balance is excellent, and the kit tires worked well in damp dirt. The rear tires don't hook up all that well on dry, hard-packed dirt, so be forewarned to pick up a set of Holeshots or Fuzzies before heading to a blue-groove-style track.

Durability: A

Aside from a couple of sets of stripped servo gears, our test truck proved itself nearly invulnerable to damage. It was landed upside down many times, run into plywood track barriers, and survived a day of novice-class racing with nary a scratch.

FINAL SCORE

Highs: Great value: you get a complete ready to race package for less than $250. The quality of the T4 RTR is second to none; these are the same parts you'd find on any of Associated's factory team trucks at the nationals. The pre-painted body is nicely done. High quality Airtronics radio gear.

Lows: We encountered just one problem: the steering servo's gear train had trouble handling those big front wheels during off-roading. The result was two sets of damaged servo gears. The included 17-turn motor fell a little short of our initial expectations.

The Verdict: Nitro RTRs may be all the rage now, but it's very nice to know that companies such as Associated haven't forgotten the electric crowd. Even better, what they've given us is a truck that's truly ready to tackle everything from backyard bashing to a day at the races. Strap in a bit more power, add an ESC that has brakes, and this truck could be raced at the nationals without further modification. Now that's progress!

SPECS

Price:	$249.99 (varies with dealer)
Length:	16.1in/409mm
Width:	12.75in/324mm
Wheelbase:	11.375in/289mm
Front/rear track:	10.8in/274mm; 10.75in/273mm
Weight:	61.2oz
Chassis:	molded composite tub
Drivetrain:	gear driven RWD
Bearings:	ball bearings
Drive shafts:	steel dogbones/axles
Suspension:	ind. lower A-arm; adj. upper link
Shocks:	alum. oil-filled
Tires:	multi-ribbed front/low-profile bar rear
Wheels:	one-piece molded dish (white)
Body:	pre-painted T4 stadium truck

SOURCES

Airtronics, 1185 Stanford Ct., Anaheim, CA92805 • phone (949) 978-1895; fax (949) 978-1540
Associated Electrics, Inc., 3585 Cadillac Ave., Costa Mesa, CA 92626 • phone (714) 850-9342; fax (714) 850-1744

THE NOT SO LITTLE

LITTLE TRUCK



- Powered by a 540 size motor (not included)
- Specially designed wheels and tires
- Lightweight aluminum chassis
- 4-wheel drive with belt drive center transmission
- 4-wheel steering capabilities (2 servos required)
- Four link, push rod cantilever suspension with four aluminum dampers
- Overall length approximately 280mm (approx. 11")

TAMIYA

TAMIYA LITTLE TRUCK TLT-1

1/18 SCALE R/C
4X4 PICK-UP TRUCK

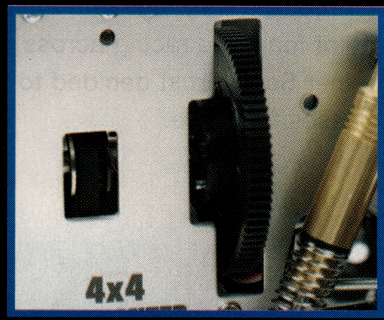
ROCK BUSTER

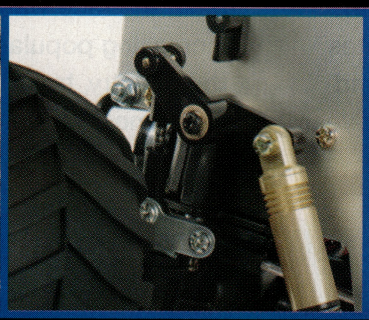
Item 47201

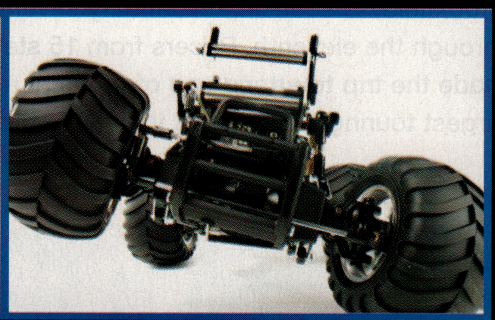


The Little Box comes with a handle and can be used as a simple carrying case even after assembly.

First of the new "Little Gear" series, Tamiya is proud to release the new 1/18 scale TLT-1 (Tamiya Little Truck) Rock Buster. Designed to use full-size R/C electronics, powered by a 540 motor, with 4-wheel drive, 4-wheel steering capability and multi-link cantilever suspension. The Rock Buster isn't your ordinary 1/18th scale vehicle. This monster is also equipped with four aluminum oil-filled dampers to handle any terrain, and an adjustable center differential for traction management and cornering similar to what's found on 1/8 nitro off-road buggies. The Rock Buster has more standard features than most 1/10 scale monster trucks. Being less than 30cm (1 foot) long, this truck can be as much fun in the house as it is outside. A lightweight durable polycarbonate body combined with loads of metal parts makes this little truck super tough. So get yours today at your local hobby source or visit www.tamiyausa.com for more information.



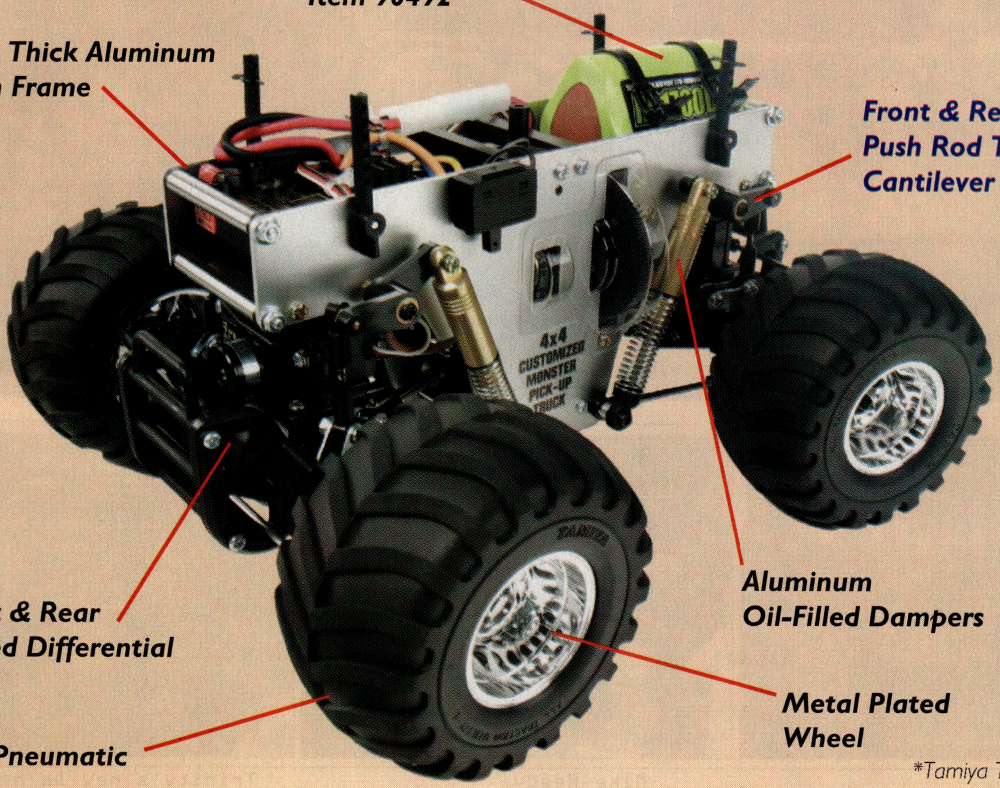




The belt driven center drive-train makes 540 size power transfer extremely smooth and the standard pattern spur gear hub gives the TLT-1 gearing flexibility to suit any 540 motor.

The TLT-1's cantilever suspension is designed specifically for the small confines of the 1/18 scale TLT-1 while providing long stroke suspension and maximum axle articulation.

Little Gear



TLT-1 Battery Pack
Item 90492

2mm Thick Aluminum
Main Frame

Front & Rear
Push Rod Type 4-Link
Cantilever Suspension

Front & Rear
Sealed Differential

Aluminum
Oil-Filled Dampers

Metal Plated
Wheel

Semi-Pneumatic
Tires

**Tamiya TLT-1 Battery Pack and electronics sold separately.*

2004 U.S. TOURING CAR

Ah, winter in Wisconsin!

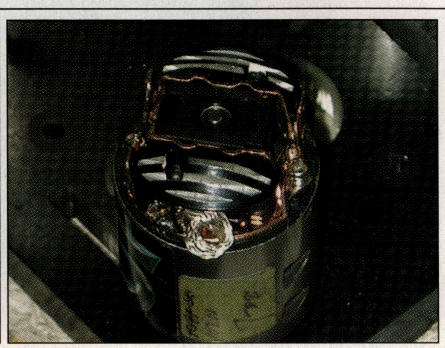
The 7th annual U.S. Touring Car Championships took place at S&N Trackside Raceway in blistering cold Brookfield, Wisconsin, on January seventh through the eleventh. Racers from 15 states made the trip to attend one of the best and largest touring car races of the year. This year was the biggest touring car event ever for Trackside, with over 260 entries—which made for 35 heats of intense touring car racing. In years past, the race was rubber tire only, but with the increasing popularity of foam tire racing across the country, track owner Scott Ernst decided to make most of the classes foam tire.







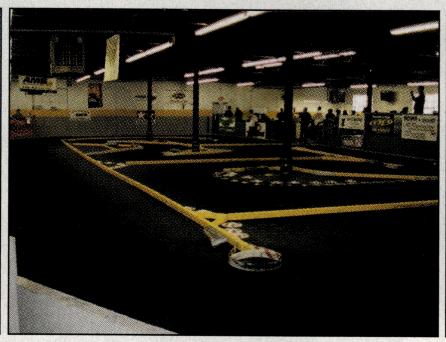
Mike Reedy

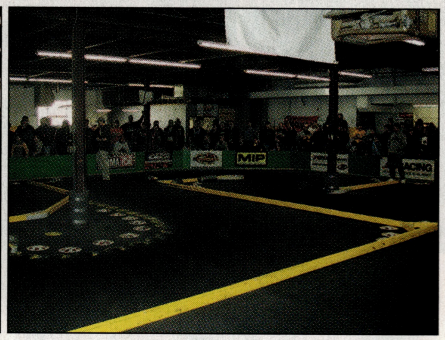


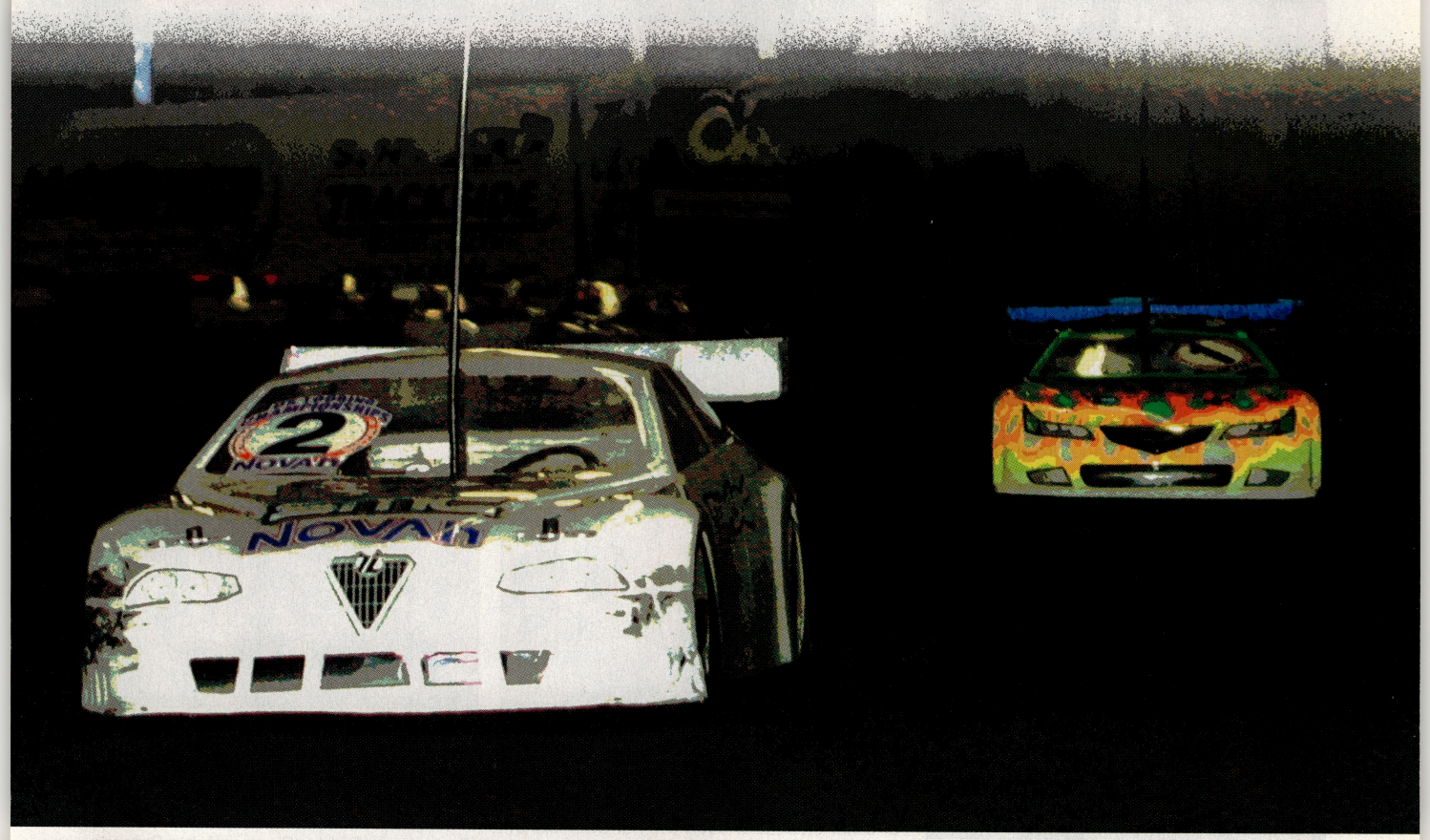
Trinity's new D4 heatsinks.

CHAMPIONSHIPS











Trinity's Jim Dieter.

CLASS ACTION

Another cool addition to this year's race was the Novak Super Sport Brushless class. This was a handout rubber tire class that had to run the Novak Brushless system. The class was offered handout Novak brushless systems for free for the race. The only catch is that you had to return the unit after the race (or you could buy it for $150). From what I heard, most of the racers already had the brushless systems in their cars before the race even started. The Brushless class had to run handout Takeoff CS-27 tires, and had to run six-minute qualifiers. This was awesome, as they were just as fast, if not faster, than the 19-turn foam-tire cars on the straightaway—and they had no problems making run time.

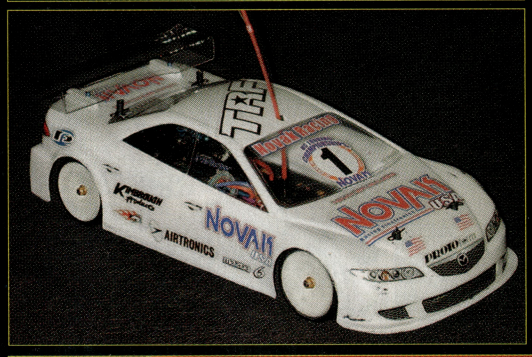
There were a total of seven classes this year, which included Mini (which used Tamiya M03 or M03L chassis and handout Mabuchi motors), Sportsman (novice), Novak Brushless Super Sport, Stock Rubber Sedan, Stock Foam Sedan, 19-turn Foam Sedan, and Modified Foam Sedan.

RACING ACTION

Novak Brushless Class—Novak's very own Charlie Suankga captured the top qualifying position with his Tamiya Evo III. In A-1, it was Suankga off to a good lead for the first two minutes, but then, after trying to pass some lapped traffic, he ended up getting the side of his body tucked in. This gave the lead to Ron Matteuci (also driving a Tamiya Evo III) and allowed Parma's Kelly Bean to move into second. A lot can happen in a six-minute race; Matteuci ended up traction rolling in the sweeper, giving the lead back to Suankga. In A-2, it was second qualifier Erik Wippler, with his Team Associated TC3, taking the win. Suankga finished second and and Matteuci in third. All of it came down to A-3. Suankga took a commanding lead and didn't look back. Great job, Charlie.

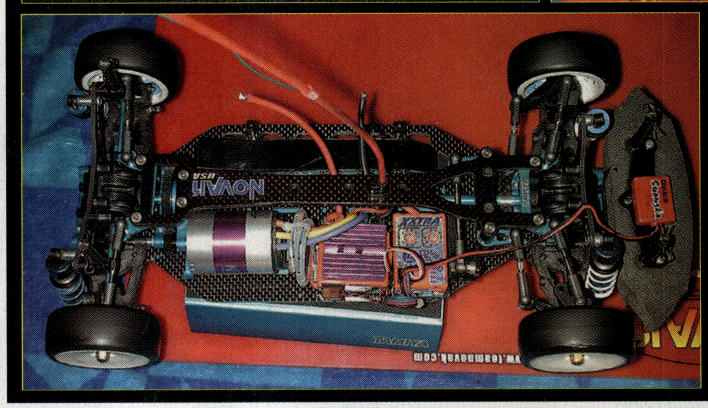








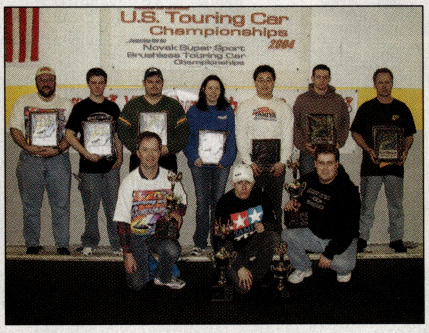
Mini Class—The Tamiya Mini class was one of the coolest at the event—although certainly not the easiest to drive on such a high-grip carpet track. With all of that rubber laid-down from the other classes, it took nearly all of the skills the Mini drivers could muster just to avoid traction rolling. In this class, it was Top Qualifier Erik Wippler taking home A-1 and A-2 by six seconds over second place driver David Weir. Gary Katzer brought home the third place podium finish.



Novak's Charlie Suanka and his Tamiya TB Evo III swept the brushless motor class.



Sportsman—Another great thing about the U.S. Touring Car Championships is that they have a class for everyone, from the novice racer to the pro racer. In the Sportsman class they used the handout CS-27 tires, which Scotty uses for his entire sportsman classes at his club level events. This year, it was Wes Wood putting his EPIC-powered Tamiya car on the pole. During the mains, Wes was able to clinch A-1 and A-2 to make it an early day. Dan Giacalone was in second with his TC3, and David Bartlett, with his Team Losi XXX-S, took third.

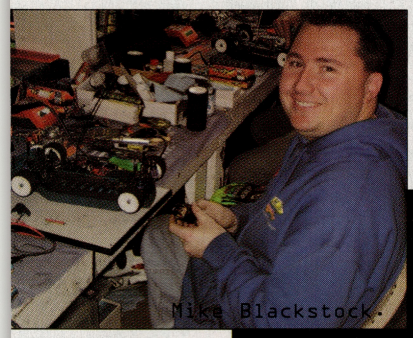


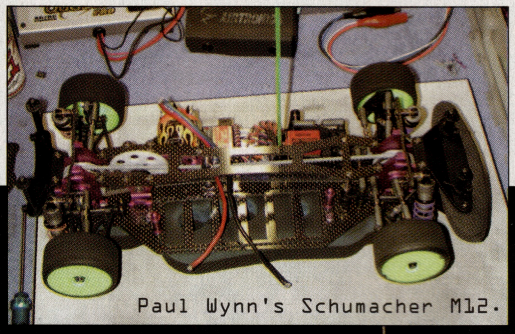
Stock Sedan (rubber tires)—This was another class that used the handout CS-27 tires. This was a field of 35 drivers, each battling for the top ten positions to race the triple A-mains on Sunday. Coming out on top during qualifying was Lee Passehl with his Team 1 powered Tamiya. Lee proved to be the true champ this weekend by taking A-1 by five seconds and A-2 by three seconds—in a convincing fashion—to win the championship. Rounding out the podium spots were James Newberg, with his Trinity-powered Yokomo, taking second, and David Weir bringing home the third place trophy with his Trinity/Fusion powered Tamiya. Awesome job, guys!

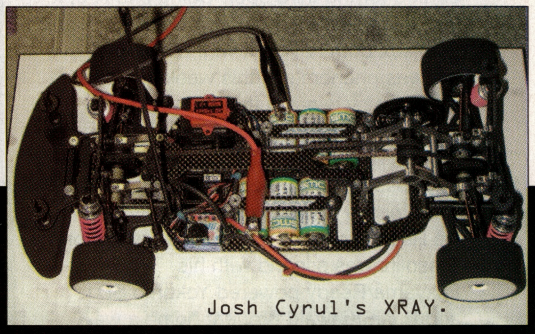


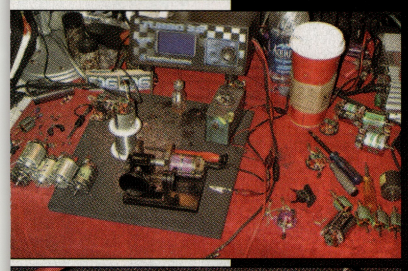
Stock Sedan (foam tires)—With close to 70 racers signed up to race this class, it was obviously one of the hardest classes in which to do well. After four intense qualifiers, it was Bobby Flack with his Putnam Propulsion/SMC powered Team Losi XXX-S GP on the pole. In second qualifying position, with a very fast Team Hurricane powered TC3, was Brad Johnson. Fifteen-year-old Kevin Mitchell was in third with his TC3. In A-1, Flack brought home the gold over a late-charging Mitchell, with Kyle Gannon coming in third. In A-2, Flack made a terrible mistake in the center chicane, and gave the lead to Mitchell. Kevin led for two minutes of the race before being passed by Ron Atomic. Unfortunately, Atomic made a mistake and gave the win to Mitchell, with Brad Johnson finish-

U.S. TOURING CAR CHAMPIONSHIPS

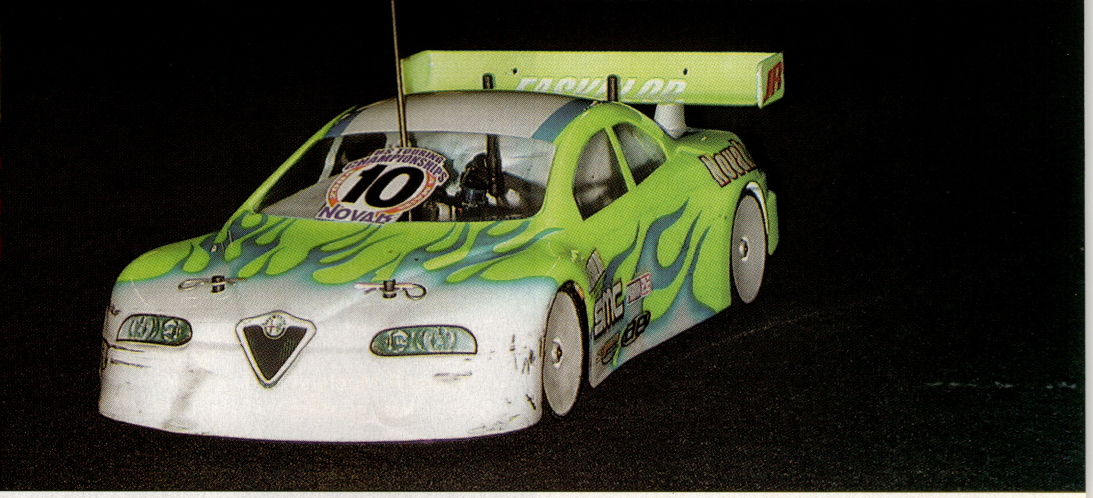

Mike Blackstock.


Paul Wynn's Schumacher M12.


Josh Cyrul's XRAY.




Chris Tossolini's Fukyama cells.



ing second. In the third and final A-main, the overall win was still up in the air. Flack and Mitchell both had chances to win. The start of A-3 went off in a perfect fashion. Flack took a commanding lead and never looked back. Flack won the last main by two seconds over Brad Johnson. After the triple mains, the podium order was Flack, Mitchell and Johnson.



19T Sedan (foam tires)—This was a new class added this year, and it proved to be ultra competitive, with over 50 drivers battling it out. A lot of the factory drivers decided to run the 19T class this year, as it would give them a few extra packs to dial in their cars for the coveted modified class.

Taking TQ honors was Team Losi/Trinity/Novak driver Paul Lemieux. To make things even more interesting, Paul had only two packs of practice on the track before qualifying began. In the second qualifying position was Team Associated driver Mike Blackstock, and in the third qualifying spot was Yokomo/Fukyama/Reedy driver Chris Tossolini. In A-1, Lemieux and Blackstock ended up tangling, which gave the Tossolini's Yokomo SD1 the lead. Lemieux ended up breaking his car while entering the sweeper. Blackstock caught Tossolini and made a killer pass when entering the chicane. Blackstock went on to take the victory, with Tossolini in second. After his mistake in A-1, Lemieux was not going to give up, and it showed in A-2. He took the advantage of his TQ position and led from start to finish, with Josh Cyrul finishing just two-tenths behind. In A-3, Lemieux proved he was the man in the 19T division, taking the lead and never looking back to win by two seconds over Blackstock, and another six seconds over Cyrul, who finished in third. In the end, Lemieux grabbed top honors on the podium with his Trinity powered Team Losi XXX-S, Mike Blackstock, with his Reedy powered TC3, and Josh Cyrul completed the podium in third with his Fantom/SMC powered X-RAY.



Modified Sedan (foam tires)—This was the class of who's who in R/C, and it proved to be very competitive. It was Yokomo's very own Chris Tossolini setting TQ in the first round of qualifying, with 27 laps in 5:00.91. This time would hold throughout the event. In second qualifying position, with a very close 27 5:00.99, was 2003 U.S. Indoor Championships winner Mike Blackstock—talk about close qualifying! The start of A-1 did not work well for the TQ; Tossolini ended up driving straight into the board on the first lap and breaking his car. Chris mentioned that his tires might not have been dry enough from the sauce, causing him to slide sideways into the board. This gave the lead to Blackstock, and he ran away with the main with

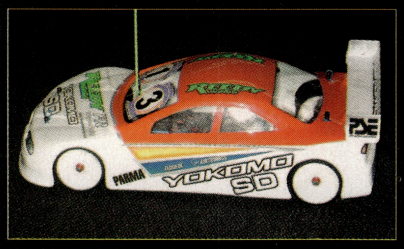
a three-second margin over second place driver, Team Trinity/Losi's Brian Kinwald. Brian ended up passing Associated's Eric Derosiers on the straightaway of the last lap as Eric's batteries started to fade. In A-2, it was Paul Lemiuex just edging out Tossolini for the win. Derosiers and Kinwald again battled for the third spot. Going into A-3, it was still anyone's race, with Blackstock and Lemieux both having a win. Blackstock's car was phenomenal this weekend, and he proved it by winning the final A-main to bring home the championship. Cyrul finished second (about three seconds back), and Tossolini rounded out the top three in A-3. For the podium, it was Blackstock with his Reedy powered TC3 taking top honors, Tossolini was second with his Fukyama/Reedy powered Yokomo SD1, and Brian Kinwald brought home a well-deserved third place finish with his Trinity powered XXX-S.

CONCLUSION

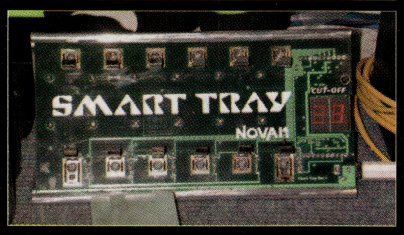
The race went off without a problem. One impressive thing that happened is when the race was over, the place was still packed with racers. Why? Because there were unbelievable trophies awarded to the Top 10 in each class and the winner of each class received a Novak Brushless system. It should be noted that Mike Blackstock and Paul Lemieux were kind enough to donate their brushless systems back into the door prize bin. Great job, guys—you are truly class acts. There were also gobs of door prizes that racers were waiting to hopefully win. These door prizes consisted of all kinds of R/C goods, including a Team Losi Mini-T, Novak electronics and apparel, various sedan bodies and many other cool prizes. Congratulations go out to Scotty Ernst and the whole Trackside crew for putting on such a great race.

NEWS IN THE PITS

Parma Alfa Romeo—Parma had their brand new Alfa on the track this weekend. Many A-Main drivers, such as Kelly Bean, Paul Ciccarello, and Chris Tossolini, used the new body. The Alfa is already available, its part number is 10089 and it retails for $25.99.



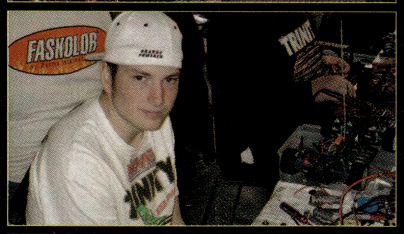
Novak Discharge Tray—Novak has developed a new discharge tray that is digitally programmable to discharge your cells from 0.1 to 0.9 volt per cell—and it is AC powered. The part number for the discharge tray is 4500, and its retail price has been set at $129.00.



Cool spool—Chris Tossolini was the only one to run a front diff spool throughout the weekend (and be successful). His Yokomo SD1 car had crazy rip off the turns!



Paul Lemieux—Paul is now attending Motorcycle Mechanics Institute in Phoenix, Arizona. With this being said, he was unable to make any of the practice sessions for the race. Paul had two packs of practice early on Friday morning, and then he went straight into qualifying. Not bad to TQ and win the 19-turn class, and place fifth in Modified Sedan.



Trinity P-Machine Body—Brian Kinwald was sporting the new Trinity P-Machine body. He said it had very good steering with a great balance of rear bite. This new electric touring car body is modeled after the successful Peugeot that ran in the BTCC (British Touring Car Championship) series. The P-Machine has great steering and is perfect for small indoor tracks and asphalt racing. Comes with window mask, headlight decal sheet, wing, and wing hardware.



U.S. TOURING CAR CHAMPIONSHIPS



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RTR TECH:
MAKE YOUR MONSTER GT FORWARD ONLY

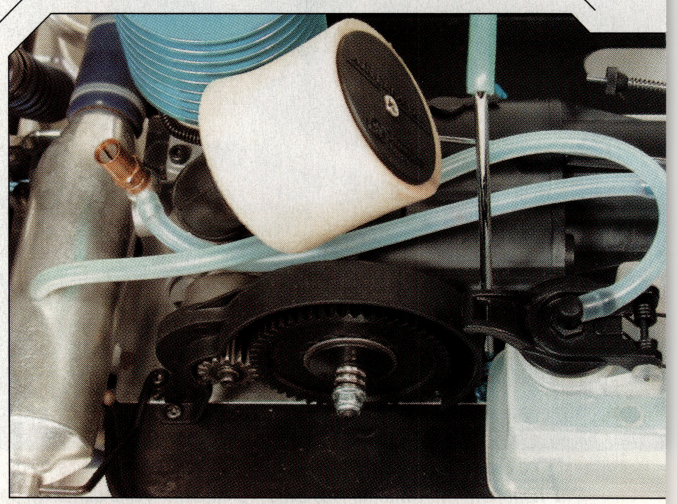
A cheap and easy way to get more snap from your Associated "BFT"

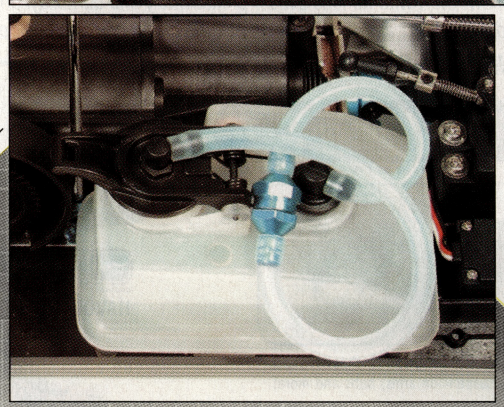
Welcome to the first installment of our new series of "RTR Tech" how-to articles. Working closely with manufacturers for their feedback, expertise, and ideas, our goal is to guide RTR owners through the most common repairs and modifications for specific RTR vehicles. This month, we'll be installing Associated's 25415 MGT Forward Only Kit for the Monster GT. By installing this kit, you'll be removing quite a bit of weight from within the transmission, and you'll also be able to remove the third, or "shift," servo from the radio box. This will lighten your truck by quite a bit, and will give you faster acceleration. On the downside, of course, you'll lose the ability to reverse your truck, but should you again desire reverse, you can always reinstall the parts you've removed.

REMOVING THE TRANSMISSION



Here's what comes in the forward-only conversion kit: a new bottom gearshaft, a trio of plastic spacers, and a rubber plug to cover the hole left by the old shift shaft.





Step 1

The first step to removing the transmission is to disconnect the fuel line and pressure line, as they run across the transmission case and can make it difficult to remove. Disconnect the pressure line, which runs from the exhaust pipe to the fuel tank lid. Next, remove the fuel line from the carburetor and temporarily install it to the nipple at the fuel tank lid (this keeps any residual fuel from spilling out of the tank).

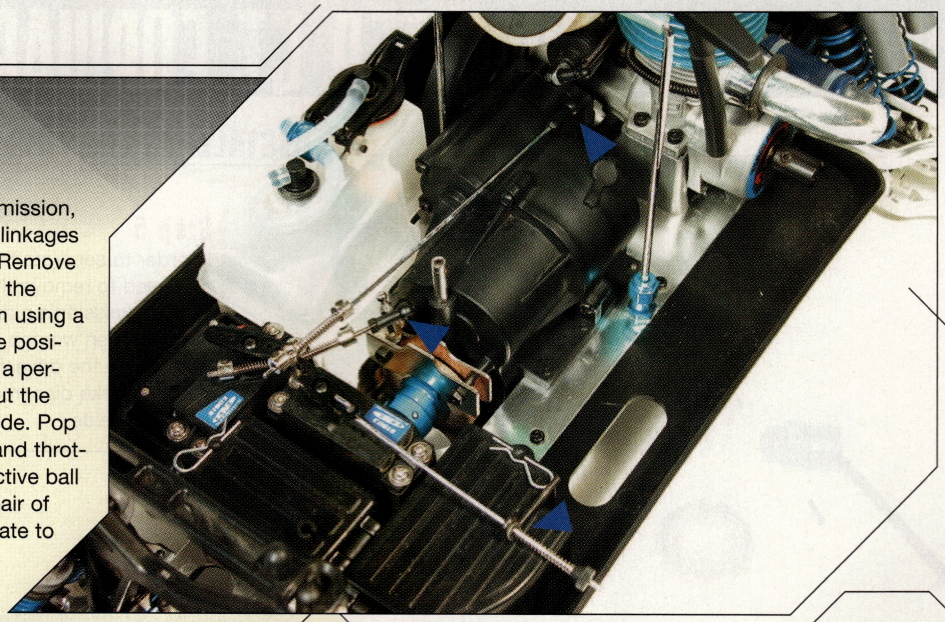
PROJECT FILE

Vehicle: .....Team Associated Monster GT
The job:.....Installing Associated's reverse-only kit
Cost: $15.99

Benefit:
- Reduced weight and rotating mass in the transmission;
- faster acceleration;
- fewer parts to wear

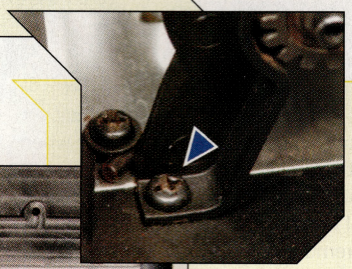
Drawback:
- No reverse

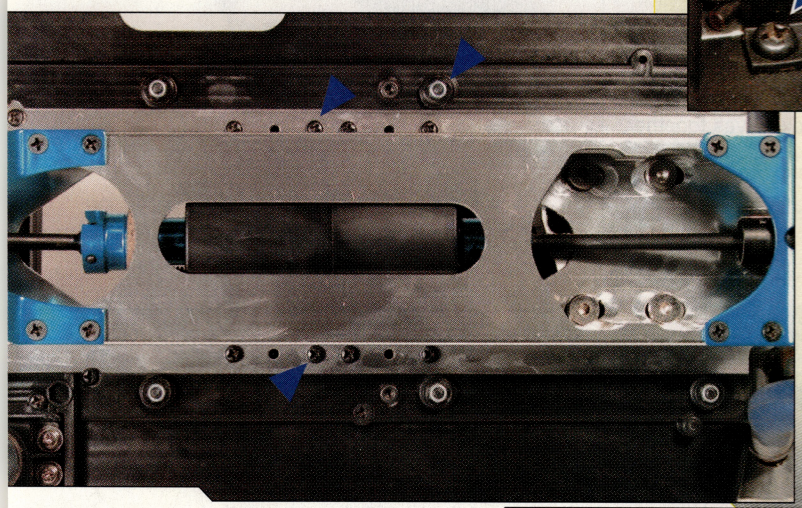
Tools required:
- Phillips head screwdriver;
- 3/32", 1/16", 1.5mm, 2.5mm, 3mm Allen wrenches; needlenose pliers



Step 2

In order to remove the transmission, the shift, brake, and throttle linkages must first be disconnected. Remove the brake lever by loosening the setscrew atop the brake cam using a 1/16" Allen wrench. Mark the position of the brake lever using a permanent marker, then slide out the lever and position it to the side. Pop the ball cups from the shift and throttle linkages from their respective ball ends. A gentle twist with a pair of needlenose is usually adequate to remove the ball cups.



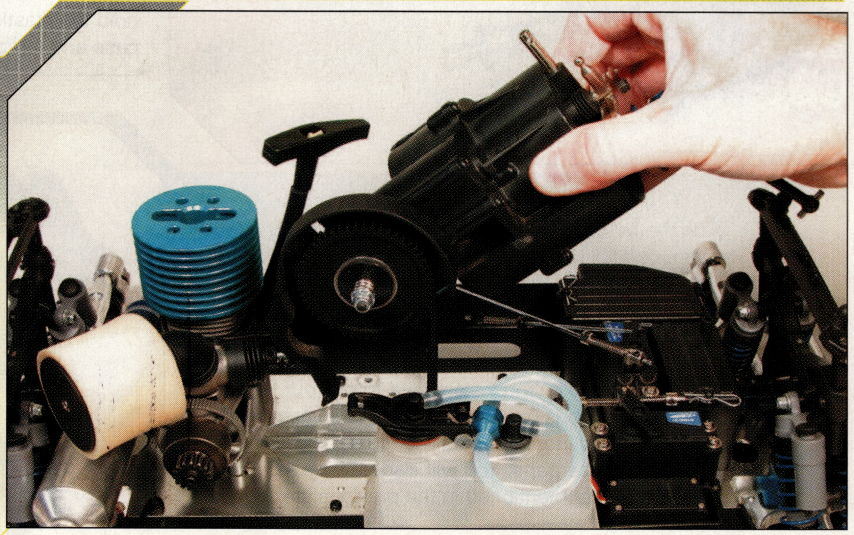


Step 3

Remove the roll bar by removing the two 3mm Allen-head screws from beneath the chassis (use the 2.5mm Allen wrench for this). You can take out the tranny without removing the roll bar, but it's easier with it gone. Next, from beneath the chassis, remove the eight Phillips head screws that secure the transmission to the chassis. While you're under the chassis, you'll also need to loosen the four 4mm engine-mount screws using a 3mm Allen wrench. Flip the chassis and remove the Phillips head screw that secures the clutch bell shroud to the chassis.

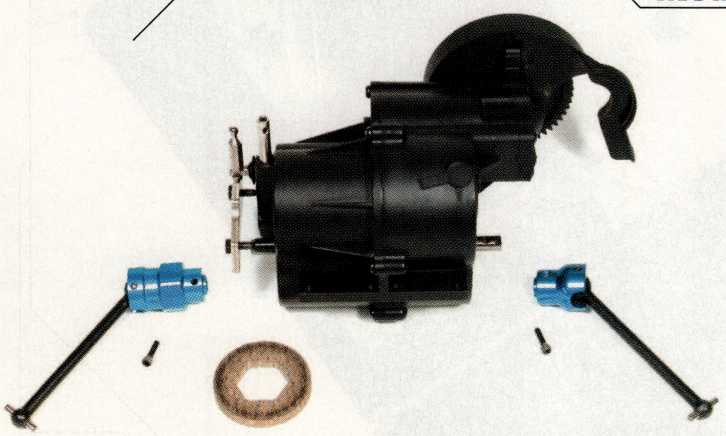
Step 4

Pull the transmission up through the opening in the top of the chassis. To make this easier, Associated made the opening in the chassis extra-large. The center driveshafts remain attached to the transmission, so they'll come out along with the main gearbox.



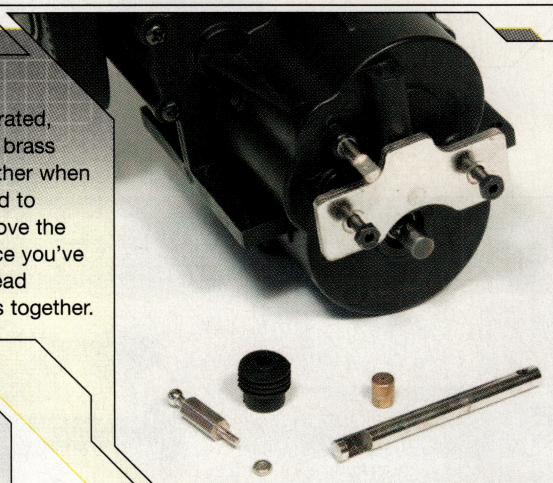
MAKE YOUR MONSTER GT FORWARD ONLY

INSTALLING THE FORWARD-ONLY KIT



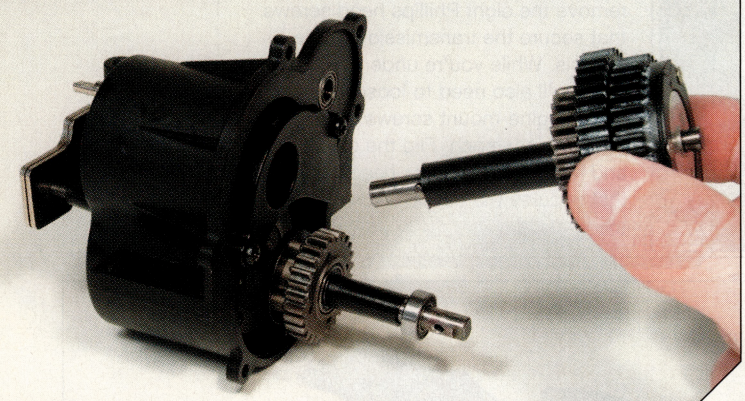
Step 5

In order to separate the gearbox halves, you'll first need to remove the center driveshafts from the transmission's output shafts. Using a 3/32" or 2mm Allen wrench, remove the retaining pins that secure the driveshafts. Pull the driveshafts and the brake disc from the transmission and set them aside.



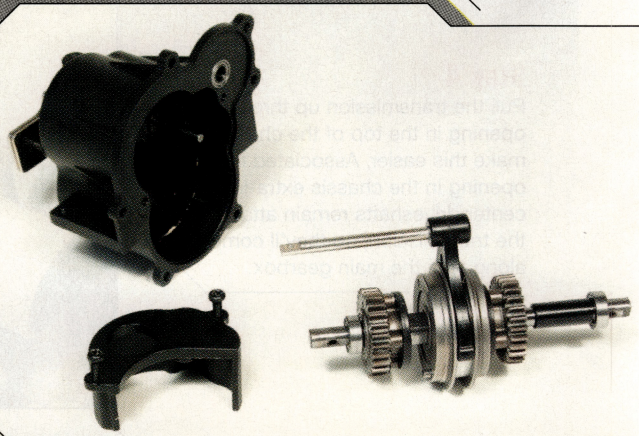
Step 6

Before the gearbox halves are separated, remove the brake cam and the little brass "button" that pushes the pads together when you apply the brake. You'll also need to unscrew the long ball stud and remove the rubber seal from the shift shaft. Once you've done this, remove the six Phillips head screws that hold the gearbox halves together.



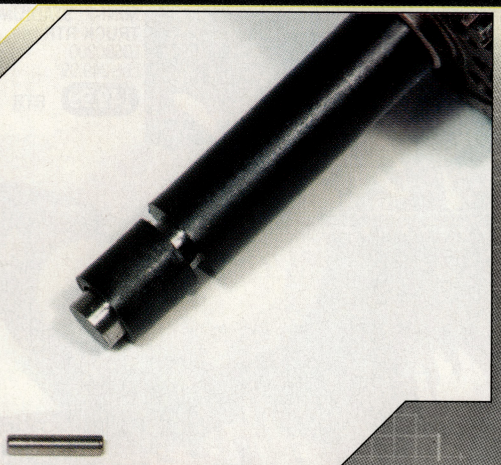
Step 7

With the cases now separated, pull the two-speed gear cluster shaft from the transmission and set it aside. There is a smaller metal gear that will remain in the gearbox—don't worry, you'll get it later. Next, take out the two Phillips screws that hold the plastic shift-shaft retainer to the gear case and remove the retainer.



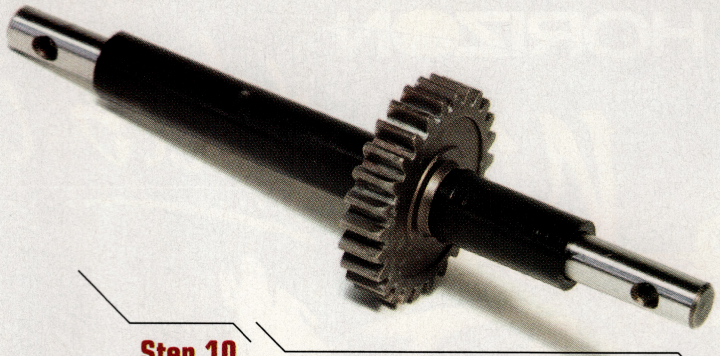
Step 8

Slide the bottom shaft, which contains the shifting mechanism, carefully from the gear case. The shift fork should also slide out with the lower shaft assembly. Aside from the rubber sealed bearings found at the ends of the shaft, you won't need any portion of this assembly, so bag it and keep it safe—you never know when you'll want to re-install it. You'll also need to pull out the plastic pin holder, which is used to position the reverse gears. This retainer will not be reinstalled, so set it aside with the other reverse parts. You will also now be able to retrieve the gear mentioned in the previous step.



Step 9

Now for a little mix and match. The new forward-only transmission setup appears blessedly simple compared to the reverse setup—and it is! The first thing you'll need to do is remove the small steel pin from the end of the two-speed gearshaft. This pin is installed in the new forward-only shaft, and it retains the same metal gear that used to hold at the end of the two-speed shaft. Got that? No? That's okay—this is why they say a picture is worth a thousand words.

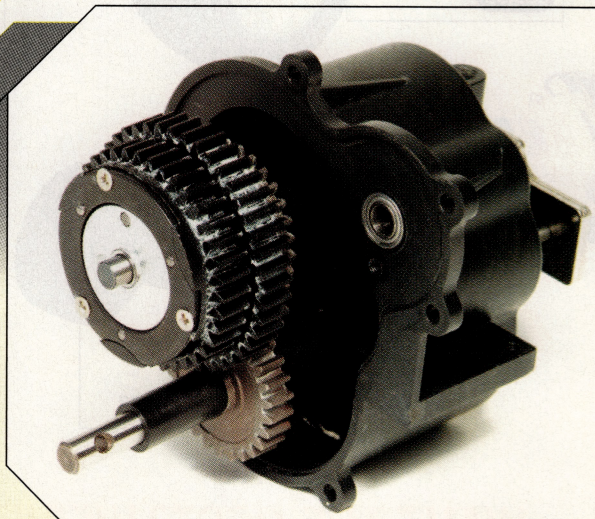


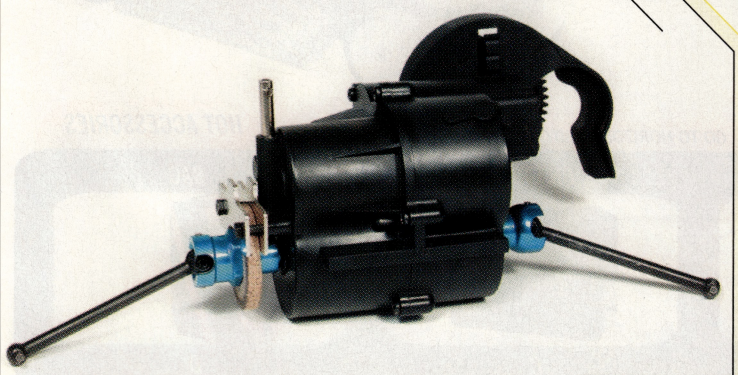
Step 10

The rest is simple: flip the metal gear and install it over the pin in the new bottom shaft. Take the smallest of the three plastic spacers and slide it over the end of the two-speed shaft (over the area from which the pin was taken). Slide the medium spacer over the new bottom shaft (over the shorter of the two sides), and the longest spacer over the longer part of the bottom shaft.

Step 11

Install the sealed bearings (from the old forward/reverse bottom shaft) to the new bottom shaft, then slide the new assembly into the gearbox halve (the half without the spur gear and slipper clutch), then reinstall the plastic retainer and tighten the two Phillips screws snugly. The two-speed top shaft is then slid through the retainer and into its ball bearing (which should still be inserted into the gearbox recess. Align the ends of the two gearshafts with the bearings in the other gear case half, and carefully push the halves together (making sure that everything is properly aligned with no binding). Reinstall the six Phillips screws that hold the gearbox halves together.



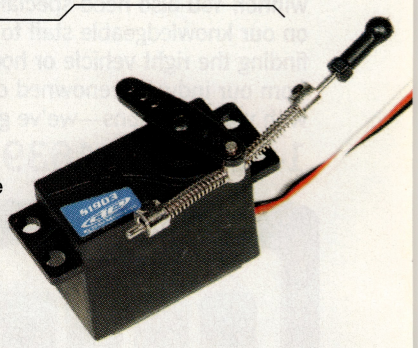


Step 12

Reinstall the brake mechanism and the center driveshafts, and your new, lightweight, forward-only transmission is ready to be reinstalled in your MGT. Follow the first four steps in reverse order to install the transmission.

Step 13

To save more weight, you can also remove the shifting servo from the MGT's radio tray. Simply remove the four Phillips screws, which hold the servo in place, and remove it from the tray. You'll need to unplug the servo from the receiver and snake the lead from under the receiver box.



CONCLUSION

Once you've successfully completed these steps, you should notice a marked improvement in your MGT's throttle response and overall acceleration. Not only does this modification remove a significant amount of rotating weight from within the gearbox, but you'll save even more by removing the unnecessary shifting servo. Happy racing with your improved MGT!

SOURCES

Associated Electrics, Inc., 3585 Cadillac Ave., Costa Mesa, CA 92626 • phone (714) 850-9342; fax (714) 850-1744

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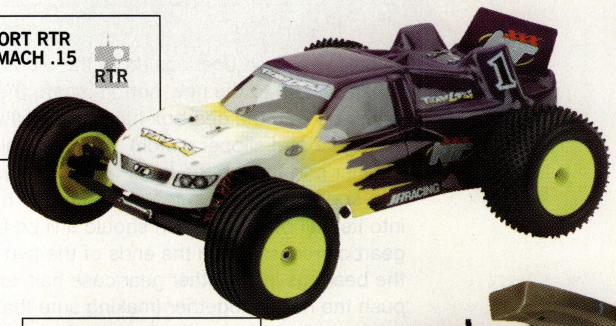

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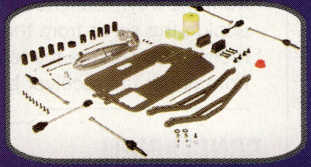

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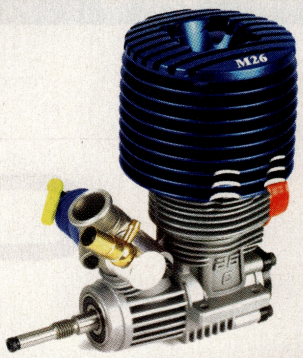

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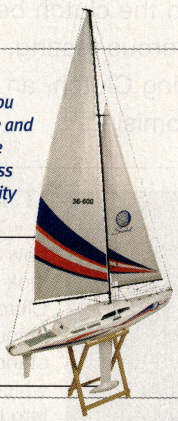

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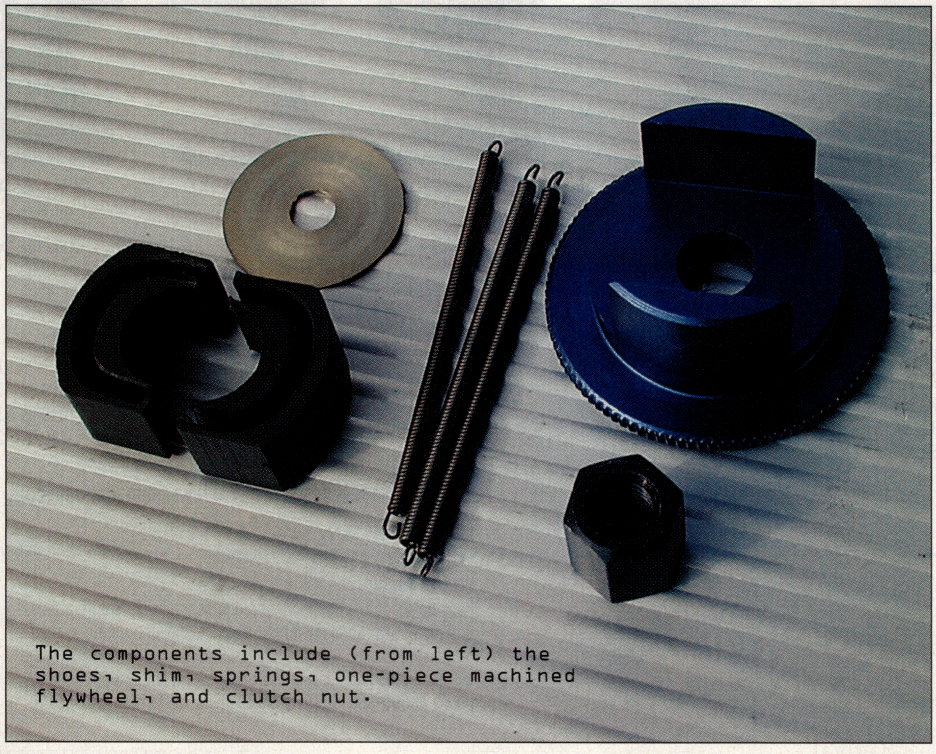
NEW CLUTCH TECH

Fioroni turbocharges its innovative sliding clutch

In the drivetrain of a nitro off-roader, the clutch is the most abused link in the chain. The clutch is critical in the power transfer equation; if the clutch is slipping, you'll have less power and sluggish acceleration; if the clutch engages too soon, your engine may bog; if the clutch engages too late, you'll have less of a powerband with which to work. The most commonly used clutch design is the three or four shoe "swinging" type. In this design, each shoe has its own coil-wire spring, which, combined with the material and weight of the shoe, determines the point of clutch engagement. This type of clutch works well and is very widely used, but when something different comes along, we are duty-bound to give it a try. Fioroni introduced its sliding clutch system scarcely two years ago. This design used a pair of large shoes that would, as their names implies, slide outward to engage the clutch bell. The idea is to increase the overall contact area between the shoes and the clutch bell. Now, following six months of rigorous testing, Fioroni has released its Turbo Sliding Clutch, an improved model that looks very promising.



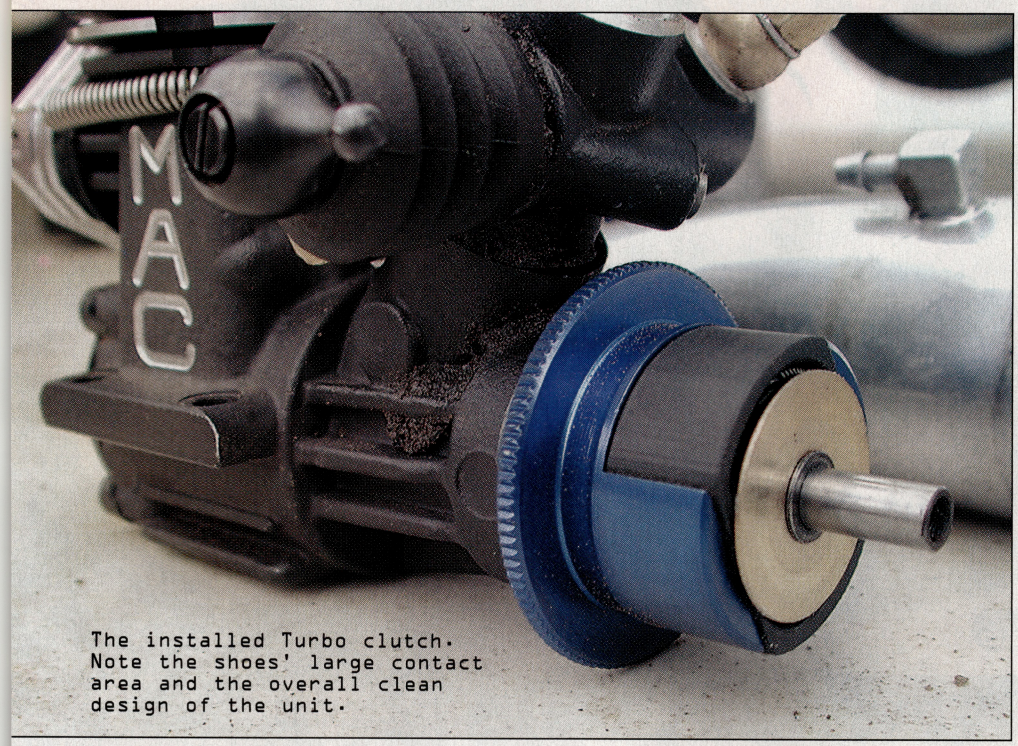
The components include (from left) the shoes, shim, springs, one-piece machined flywheel, and clutch nut.

IT HAS GUTS

• **The design**—To see what's new and different, let's take a closer look at the guts of the Fioroni Turbo Clutch. First and foremost is the unique design of the flywheel. In a standard flywheel, the pins on which the shoes pivot are pressed into holes in the flywheel. The Turbo clutch's flywheel is machined from 7075 aluminum, and its clutch-shoe retainers—the parts that hold the two large clutch shoes—are integrated into the flywheel. The whole shebang is machined from a solid hunk of aluminum.

The large, semi-circular clutch shoes are the key to the Turbo clutch's performance. With a much larger contact area than most designs, the Turbo clutch shoes are purported to engage more positively, and they're supposed to last much longer before needing replacement. There are two types of shoe available—an aggressive carbon shoe and a smoother Teflon shoe.

One of the most unique features of the Turbo clutch is its spring system; three types of spring are supplied, and they're inserted into a groove in the shoes' face. The springs can be mixed and matched to tailor the engagement of the clutch shoes.



The installed Turbo clutch. Note the shoes' large contact area and the overall clean design of the unit.

• **How it works**—Unlike other clutch designs, the Fioroni Turbo clutch relies on a pair of large (and we mean large) shoes to engage the clutch bell. As centrifugal force is increased with rpm, the shoes slide out and engage the inside of the clutch bell. The shoes have a very large contact area, so they provide maximum, and more importantly, consistent power delivery.

In addition to changing the material of the clutch shoes, the performance of the Turbo clutch can be further tuned to meet track conditions by varying the number of springs. As many as three springs can be installed in the clutch. The maximum number of springs results in the longest delay, i.e., the latest engagement at the highest rpm. Removing springs causes the clutch to engage more quickly. It's also very easy to install and remove the springs—certainly much more so than trying to get those little coil springs installed with a typical three-shoe setup. Once the springs are installed, the Turbo clutch's shoes can be attached to the flywheel as a one-piece unit.

TESTING 1-2-3

How did this "alternative lifestyle" clutch hold up to testing? We were impressed, to say the least. On the track, the Turbo clutch felt similar to most of the high-performance, three-shoe clutches we've tested—and this is a good thing, because the issue with traditional clutches isn't their performance, but their longevity. Once we set the Turbo clutch's engagement to our liking, we left it alone—for over three months of frequent practice and racing in our GS Storm Pro buggy. The performance at the end of the period was as good as when the clutch was new, with no discernable fading to report.

We eventually tore down the clutch to check its condition, and we were pleased (and shocked) to find that the shoes showed little sign of wear, and the springs were in place as we had left them. Bear in mind also that our testing included several major nitro off-road races and running our buggy in adverse conditions, including mud and hot So Cal weather. It looks as if a proper regimen of maintenance for this setup is to inspect and clean the shoes each time the clutch-bell bearings are replaced.

WHAT WE LIKED

The Fioroni Turbo Sliding Clutch performs like a well set up three-shoe racing clutch—it just lasts a lot longer. We also felt that its engagement was more consistent.

WHAT WE DIDN'T LIKE

It would be nice to have more spring options, such as different spring rates; however, we ended up using all three of the supplied springs for our test buggy.

WHAT WE REALLY THINK

It's hard to buck the establishment, and, like it or not, nitro racers are generally skeptical of the new and different. In the case of the Turbo clutch, however, we feel that more racers should give it a try. The complete Turbo clutch carries a retail price of $58, and this includes the flywheel, carbon shoes, three springs, clutch shims, and the clutch nut. There are currently two flywheels available: one that fits Mugen, Thunder Tiger, and Ho Bao (OFNA) buggies (part no. OTFR50), and another that fits the Kyosho MP-7.5 and Storm Pro (OT-FR51).

SOURCES

Fioroni, distributed by GS Racing, 14140 Live Oak Ave., Baldwin Park, CA 91706 • phone (626) 338-3815; fax (626) 338-3875

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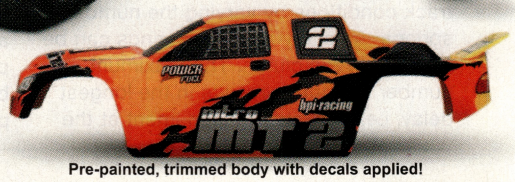

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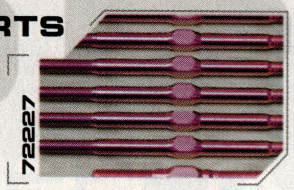
72227
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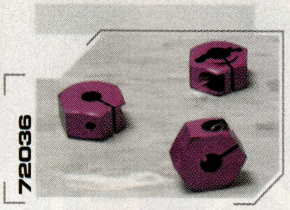
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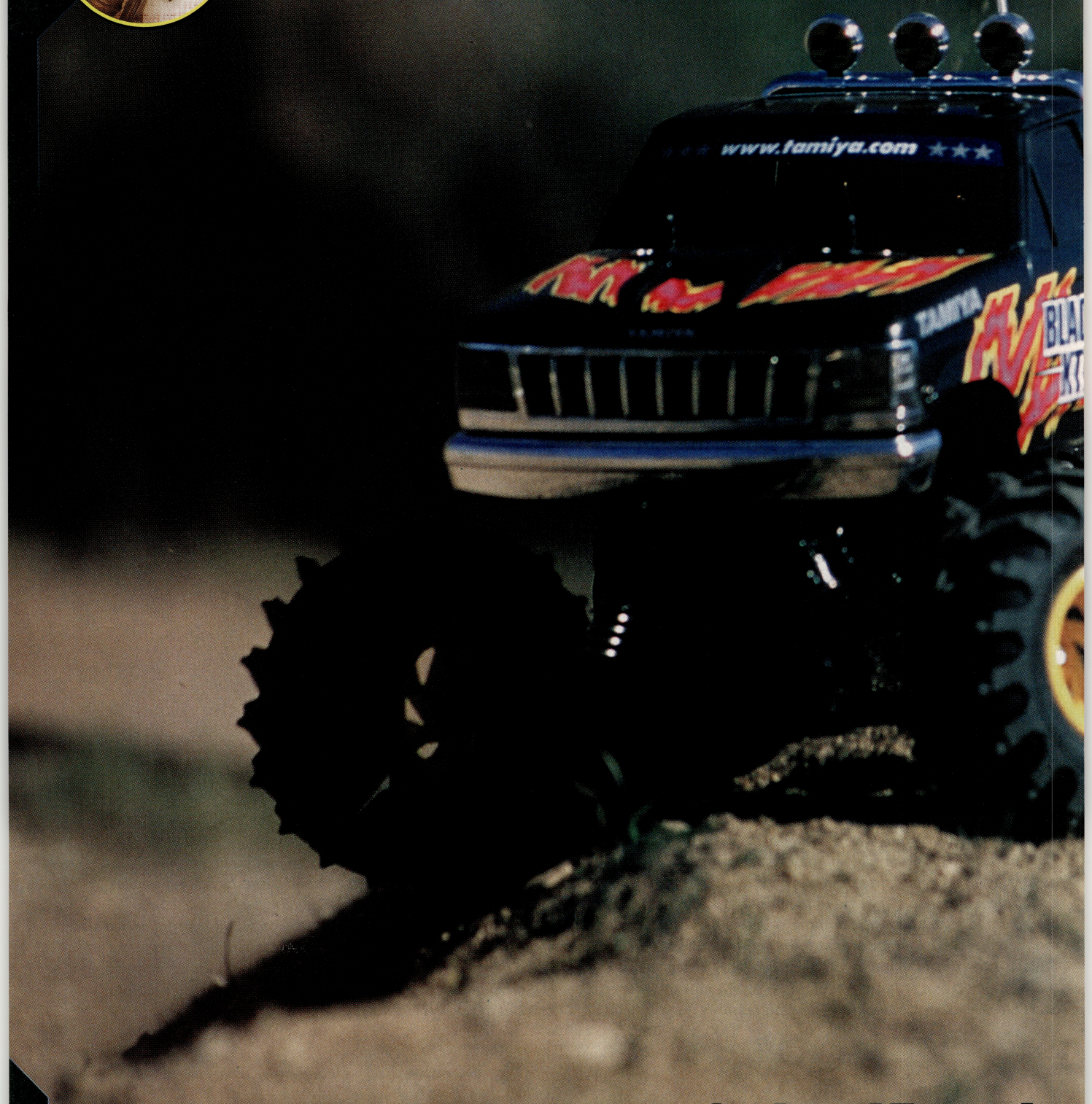
TAMIYA BLACKFOOT



The fourth coming of the 'Foot!

-XTREME

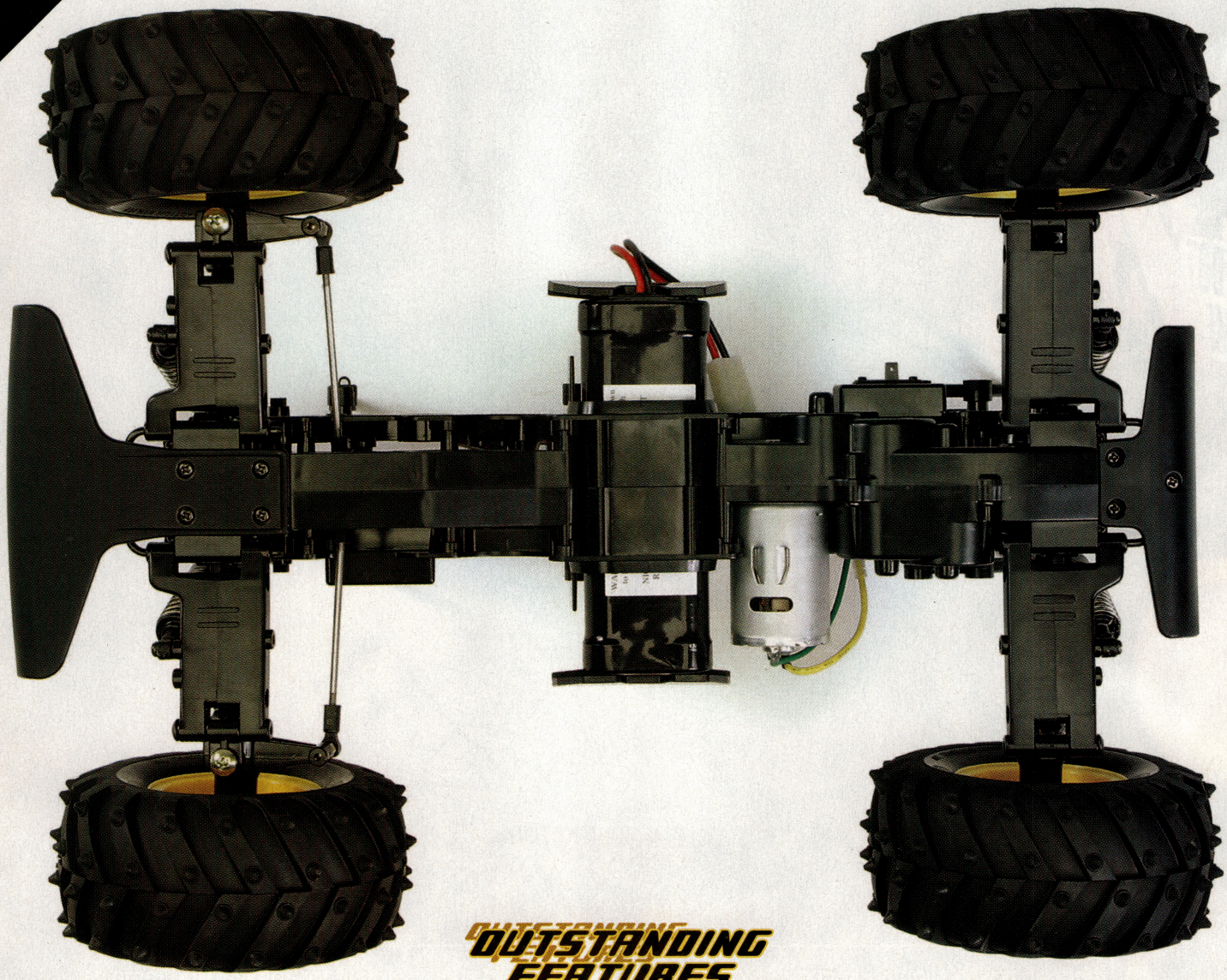


Although it was slightly preceded by the Marui Big Bear, the original Tamiya Blackfoot was the truck that sparked the R/C monster truck category. Based heavily on the popular Frog chassis, the Blackfoot was easy to get up and running for the novice, and because Tamiya kept its developmental costs low, its street price was below $100. Needless to say, the Blackfoot was an immensely popular and successful kit for Tamiya, and remains to this day one of the company's all-time bestselling models. Tamiya is hoping to recapture some of that magic with the release of the all-new Blackfoot-Xtreme—an evolution of the original formula: inexpensive rear-wheel-drive chassis, injection-molded hard-plastic pickup body, and low street price. Can Tamiya repeat its past glory? Read on to find out.

BLACKFOOTS THROUGH TIME

The Blackfoot was considered by many to be at the right place at the right time, with Tamiya capitalizing on the real monster truck craze that was taking off in North America during the mid eighties. The Blackfoot was an immediate sales success. Also during this time, aftermarket companies such as Thorpe, Hot Trick Stuff, and especially CRP, were already producing parts for the Frog, and as the Frog and Blackfoot were essentially the same vehicle, all it took was a bit of re-packaging for these companies to flood the market with hop-ups for the 'Foot.

The original Blackfoot (kit no. 58058) was introduced in October of 1986. The truck received an update in 1992, and was rechristened the Super Blackfoot (58110). In 1997, the Blackfoot again received an update, and was called the King Blackfoot (58192). Each of these iterations relied up some form of the Frog chassis. The latest model, the Blackfoot-Xtreme, is the first to break from its Frog heritage.



OUTSTANDING FEATURES

OLD BUT NEW

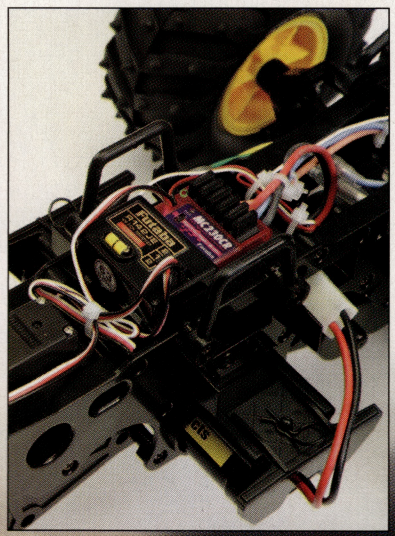
Tamiya stayed true to the theme of the original Blackfoot's theme in designing the Blackfoot-Xtreme's chassis; its modular design, made from super-rugged polycarbonate, is shared with the dual-motor Twin Detonator (yes, this means that you can convert your Blackfoot-Xtreme to a dual-motor setup with a little work and some optional parts). Under the Blackfoot-Xtreme, the chassis is a simple to build RWD platform in the flavor of the original. The monocoque design of the three-piece, modular chassis makes it incredibly stiff for such an apparently simple, and affordable, design. Tamiya makes the building process even more easy by including the rear chassis section—which houses the transmission and motor—as preassembled.

SUSPENSION

The A-arms are easy, two-piece, bolt-together setups that are quite stiff when complete, and should stand the test of a beginner's driving skill. The shocks are typical of a Tamiya kit; you get the pleasure of building them for yourself, and they are simple; the shocks use rubber tubing to provide damping—no oil is used. When the shocks are assembled, they work, but obviously not

BLACKFOOT-XTREME



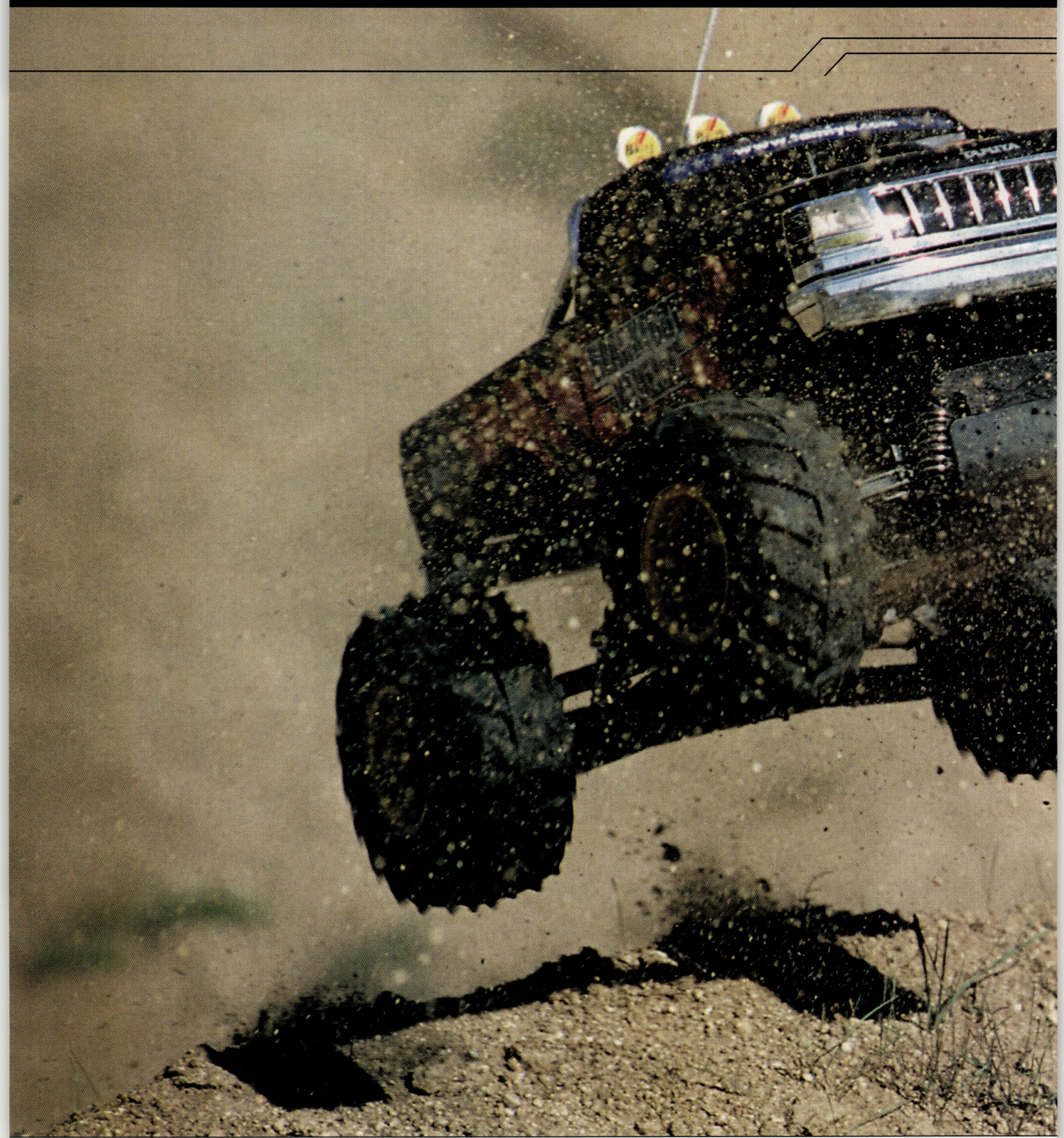




as well as oil-filled shocks; the stock "friction" dampers are make the suspension quite bouncy, although this effect is not without its charms; the shocks add to the realism of the truck when it is in motion. During our photo shoot, the Xtreme reminded us of how our real trucks looked on their way to the canyon where the secret test track is located.

TRANSMISSION AND MOTOR

As mentioned, the tranny and motor come preassembled, which is nice for the novice builder. It is a one-piece design that is simple to install. Basically, the internals are typical: you have your motor, then the transfer gears that hook up to a bevel-gear differential. It's a tried-and-true system that is perfect for a kit such as the Blackfoot Xtreme. The transmission's internals spin on oilite bronze bushings, while the wheel axles have plastic bushings. Investing in a set of ball bearings, at least for the transmission, will pay dividends in increased speed and reliability; it's the first upgrade we would make (followed by the addition of oil-filled shocks).



LOOKS DEPARTMENT

As always, Tamiya has gone to great lengths to make their kits look realistic; the Blackfoot-Xtreme's injection-molded shell is a work of art. It is made from ABS plastic to resemble a Ford F-150. Molded into the body are the types of details that are essentially impossible to recreate on a vacu-formed polycarbonate body. The Blackfoot-Xtreme's body comes with a chrome roll bar and bumpers, a full complement of fog lights, and tinted windows—the works. We also noticed that the lights were designed so that you can install an LED light system if you wish—that's detail. The completed truck looks completely real when seen from a distance.

TAKING TO THE TRACK

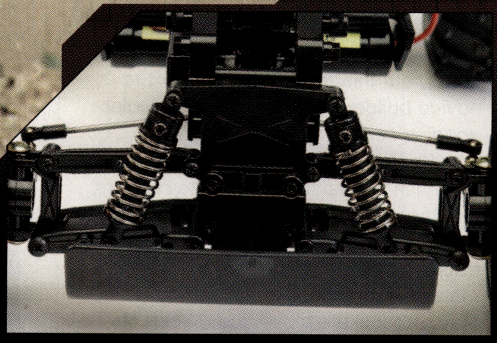
Driving the Blackfoot-Xtreme was a lot of fun; overall, it handles well, but would have been a lot better if Tamiya had included oil-filled shocks. The standard coil springs caused a lot of bouncing, and tended to toss the truck around quite a bit. But as this is more a model, and not a competition truck, or even an RTR, the

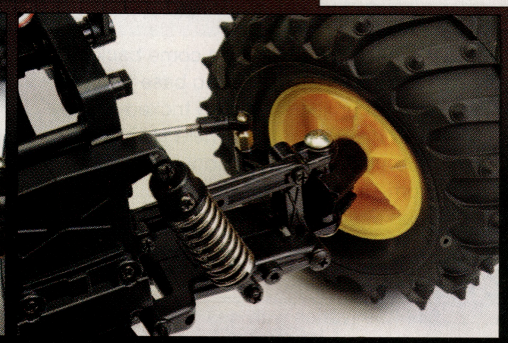
BLACKFOOT-XTREME

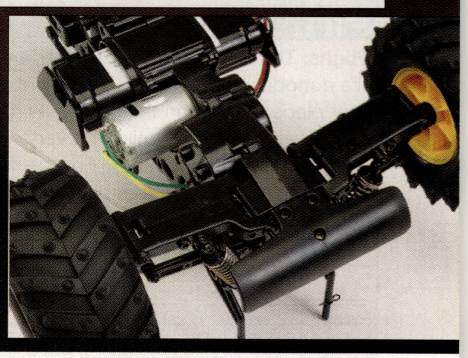


A Futaba 2PL computerized AM radio system was perfect for the Blackfoot-Xtreme. We also used Futaba's MC230CR ESC.











effect adds to the fun. On pavement, however, it was really neat to see the rear end hunch down, and the truck faired much better in the handling department. Just remember not to turn too sharply at speed; the high center of gravity, along with the lack of damping, will make for easy rollovers—and you don't want to scratch that sweet body.

Overall, we had a lot of fun driving the Blackfoot-Xtreme, and it brought us back to the days when we first got into R/C, and played with our Tamiyas out in the backyard until it was time for dinner.

BLACKFOOT-XTREME



REPORT CARD

Test location: The streets and hills of Saugus, California
Test conditions: Typical sunny California winter weather; both loose and hard-packed dirt surfaces

Editor's note: We took into consideration that this kit is intended for novice and beginning hobbyists; we rated its performance in this light.

Steering: A

The Blackfoot-Xtreme did what it was told to do. At very low speeds, in the dirt, it would push; it also did this at its maximum speed. Between minimum and maximum speeds, the Blackfoot-Xtreme steered perfectly. On pavement, the steering response was spot-on, although, owing to its high CG and lack of damping, the truck tended to be a bit tippy.

Acceleration: A

The truck was pretty quick off the line, but topped out quickly. As the Blackfoot-Xtreme is geared to the novice or younger driver, moderate speed is best for developing driving skills. The stock motor and gearing provided plenty of torque for playing around; it was really fun to drive up and down the hills and gullies.

Suspension: B

Again, as the Blackfoot-Xtreme is more of a model than a performance-oriented kit, we weren't expecting race-winning suspension action. In stock form, the truck is bouncy; oil-filled shocks would be a huge improvement, but as their omission from the kit is logically less one of cost and more a matter of ease of building is a model, we understand their absence.

Durability: A

Tamiya always makes good products; we don't think it is in them to do anything else. For the intentions of this kit, the Blackfoot-Xtreme is more than rugged enough to withstand multiple curb encounters, rollovers, and run-ins with the occasional parked car. We had no problems with the truck, and if we can remember way back to the eighties, we don't recall too many problems with the original, either. The Blackfoot series are a tried-and-true vehicles.

FINAL SCORE

Highs: The Blackfoot-Xtreme is a Tamiya; it's a model; and it's fun. This kit is a perfect place to begin in the hobby, as it's user friendly, easy to build and very durable (and good looking). For the more experienced modeler, the Blackfoot-Xtreme can serve multiple purposes: as a "beater," it'll take it and come back for more; it's also a fantastic base for any type of project; it can be tricked-out to your heart's content. There are still many hop-ups for the Blackfoot series, both from Tamiya as well as from other aftermarket sources.

Lows: Sure; it would be nice if Tamiya included oil filed shocks and a faster motor, but this truck is geared for the novice builder and driver—the speedier goodies can always come later.

The Verdict: This kit will be of immense appeal to both novice builders and those who may have began their R/C careers with one of the original Blackfoot trucks. With one of the best instruction manuals in the hobby, and with parts that fit together like a glove, the Blackfoot-Xtreme is as much fun to build and detail as it is to drive when completed.

SPECS

Price:	$444.99 (varies with dealer)
Length:	17.09in/434mm
Width:	15in/380mm
Wheelbase:	9.84in/250mm
Front & Rear track:	9.45in/240mm
Weight:	4.13lbs/1875g
Chassis:	polycarbonate space frame
Drivetrain:	gear driven RWD
Bearings:	metal/plastic bushings
Drive shafts:	Steel dogbones
Suspension:	four-wheel ind.
Shocks:	plastic friction dampers
Tires:	V-groove paddle
Wheels:	one-piece plastic
Body:	hard plastic Ford pickup

SOURCES

Futaba, distributed by Great Planes Model Distributors, 2904 Research Rd., Champaign, IL 61826-9021 • phone (217) 398-6300; fax (217) 398-0008

Power Racing Products, distributed by Happytime Hobby Distributor, 1099 Memorex Dr., Santa Clara, CA 95050 • phone (408) 988-1188

Tamiya America, Inc., 2 Orion, Aliso Viejo, CA 92656-4200 • phone (949) 362-2240; fax (949) 362-2250

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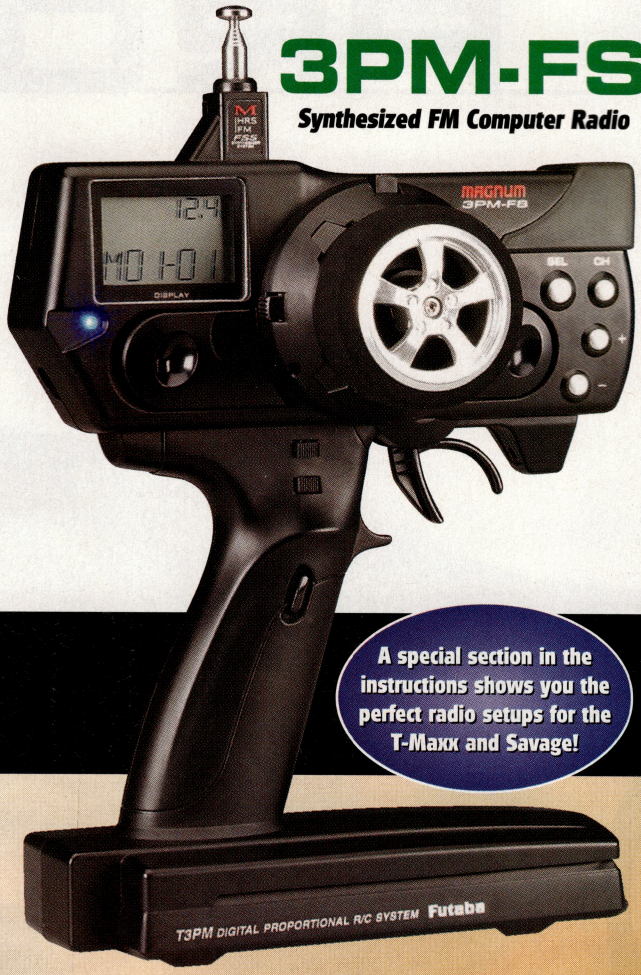
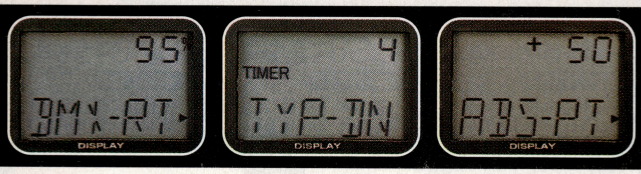
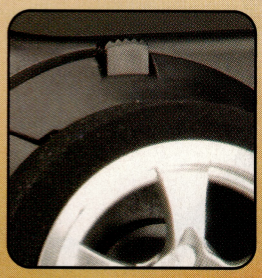


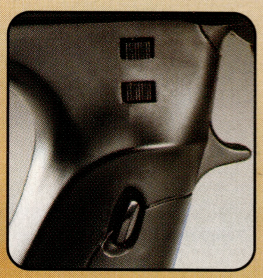
A special section in the instructions shows you the perfect radio setups for the T-Maxx and Savage!



Menus and functions are clearly displayed on the high-resolution LCD screen.



The digital trims are placed directly above the wheel for convenience while driving.



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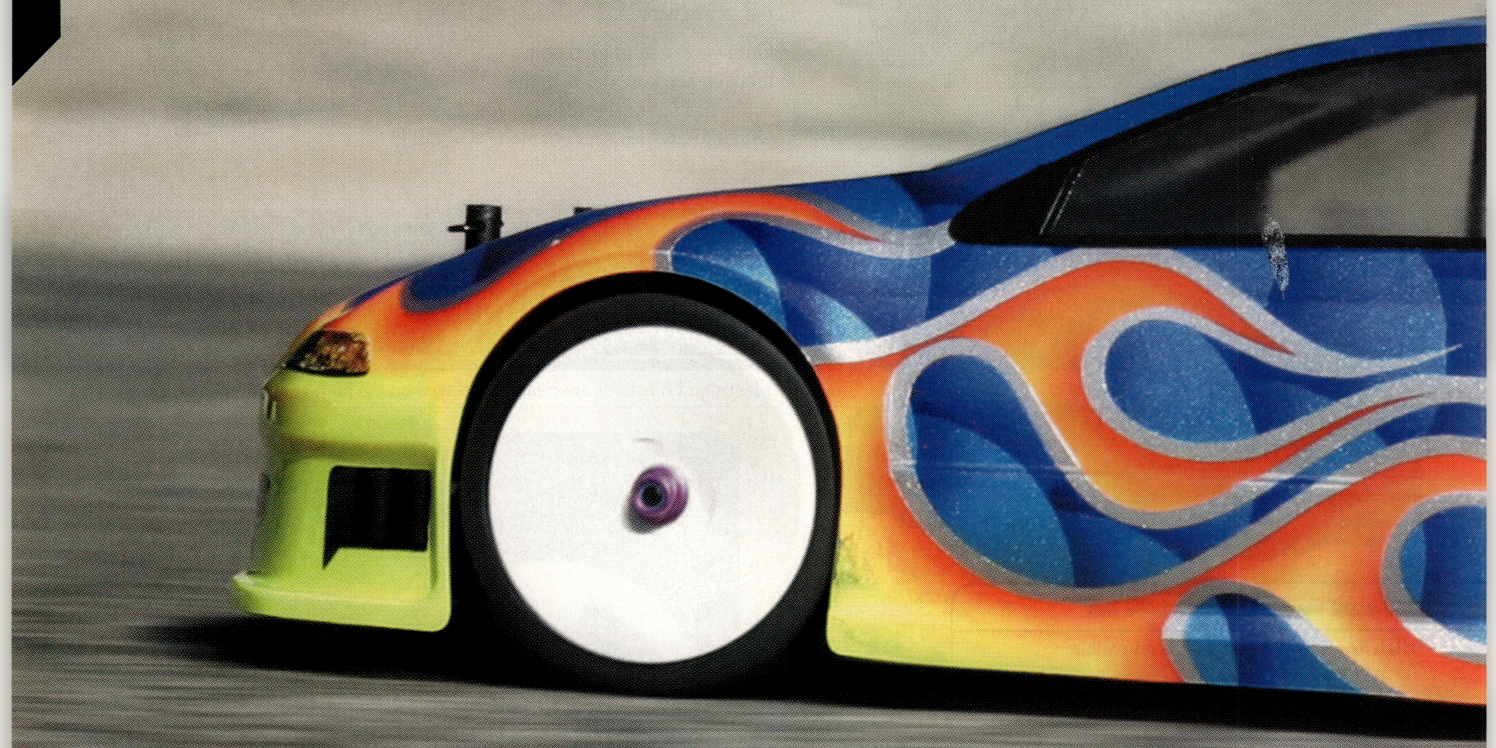
TEST DRIVE

HPI PRO



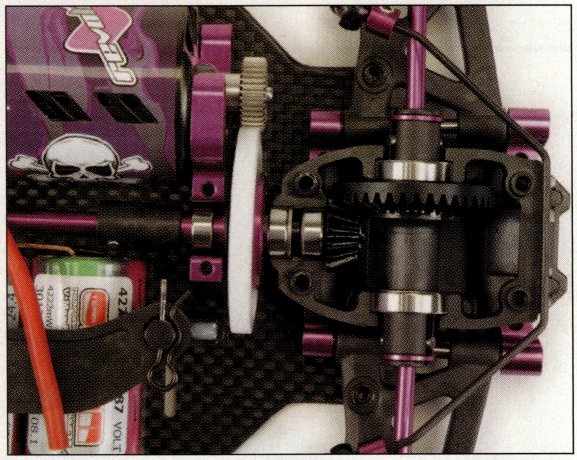
As the Pro 4 kit comes sans body, the choice is up to you. We selected HPI's new Stratus Aero 2 body. It has pre-made dimples for make the body-post cutouts (a big plus), comes with two types of rear wing, and gives the car tons of steering. Paint by Korn Designs.

Shafted at last!

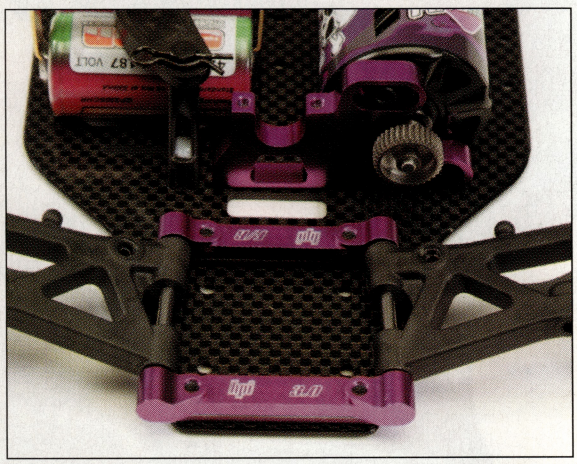
4



Some may argue that HPI has always made competition-ready electric touring cars. Others would insist that although HPI's popular RS4s handled well, they weren't up to the rigors of the highest levels of competition. Evidence suggests support for both cases. HPI itself has now become the deciding factor; it proclaims its all-new Pro 4 to be a "pro-level racer." By distinction, this statement supports the idea that the Pro 4 is the first HPI touring chassis intended for an all-out track assault. Judging by the prototype's impressive record (team driver and former world champion Atsushi Hara finished second at the JMRCA Japanese Nats and the U.S. Indoor Championships in Cleveland, Ohio), the Pro 4 is the most formidable electric touring chassis ever produced by HPI.

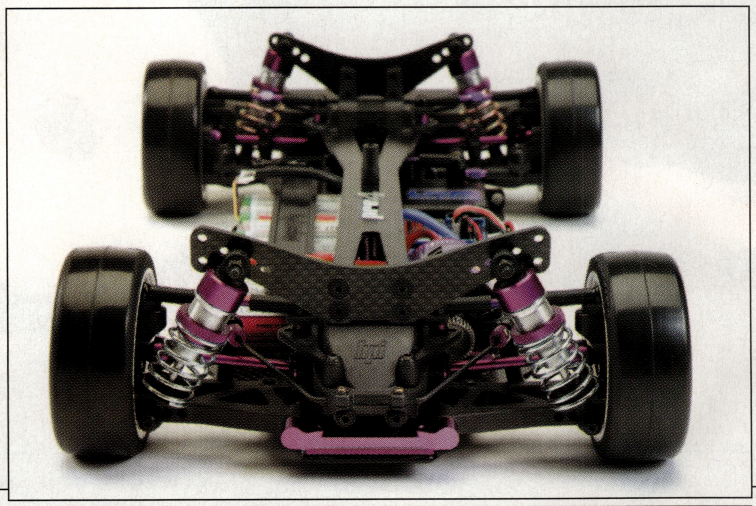


Inside the carbon-composite gearboxes are a lightweight ball diff (rear) and an aluminum one-way drive unit (front).



Front and rear suspension arms are held to the chassis by nicely machined, purple aluminum blocks. The hinge-pins pivot on ball-and-socket joints to eliminate binding.





OUTSTANDING FEATURES

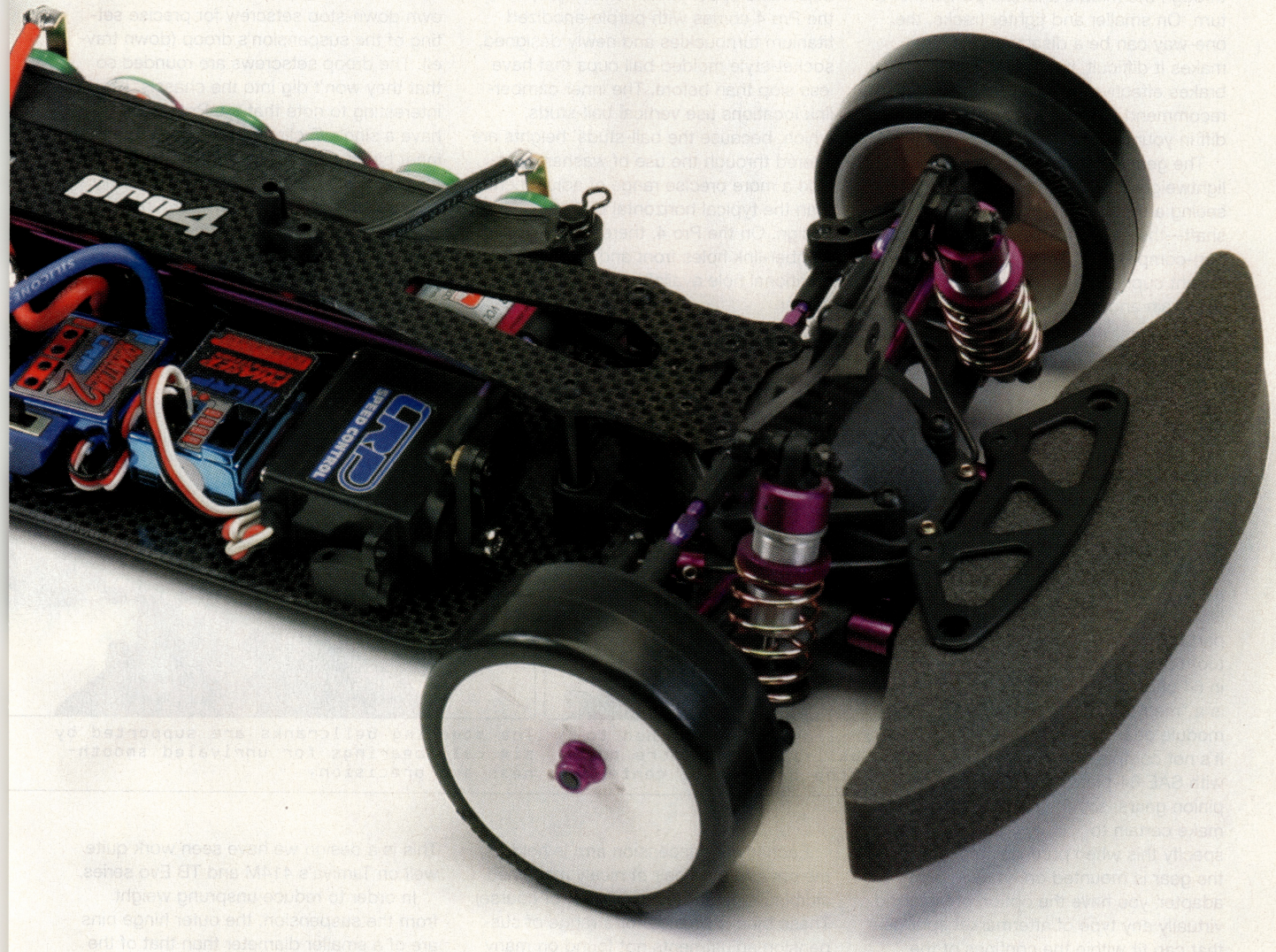
Upon opening the box and examining the parts, we came to the conclusion that HPI's intention with the Pro 4 was to create a kit that needs nothing to compete at the highest level—we're talking national and world competition. We can't think of anything that could be improved upon; the kit comes with all the parts that would normally be hop-up items—light weight aluminum CVDs, titanium turnbuckles, and a front one-way drive unit. We at first thought the Pro 4's price was a bit high, but with everything that HPI packs in the box, it's more of a bargain than one might expect.

CHASSIS

The Pro 4's chassis is a dual-deck structure made from woven-graphite plates. The 2.5mm-thick lower chassis places all six cells to the left of the car's central driveshaft, and to the right are the steering servo, ESC and motor. HPI took great pains to both centralize and lower the mass of the Pro 4; the major components are simply as low and as close to the center of the chassis as is possible. As a result, the Pro 4 has a very low CG and a narrow center of mass, both of which reduce the car's tendency to roll during cornering, making for faster turning with less scrubbing of speed.

In mounting the battery pack, HPI provides several options: you can use both stick and side-by-side packs (of no more than six cells), and you can secure either using the provided molded strap. To save weight, you also have the option of secur-

HPI PRO 4



ing your side-by-side packs using strapping tape. Other chassis features include a two-piece front bumper (with a large, impact-absorbing foam section) and the use of metric Allen-headed hardware throughout.

DRIVETRAIN

All of HPI's previous electric touring cars have relied on belts to send power to all four wheels. The Pro 4 is the first RS4 to eschew belts in favor of a shaft-driven 4WD system. After a year of prototype testing, HPI's team of drivers concluded that they preferred the instant response and low off-power drag of shaft drive. There's also the issue of durability; most belt-drive systems are exposed to the elements, where small rocks and other debris can foul the belts and pulleys. The Pro 4's drivetrain is virtually sealed, and its ring-and-pinion input gears are extremely durable.

Molded gearboxes, placed at either end of the car, enclose the drivetrain essentials. The gearboxes are molded from a lightweight and stiff carbon-composite material, and assemble in a "top-to-bottom" fashion that allows for improved mesh between the diffs' ring gears and the input shafts' pinion gears.

An adjustable ball diff is found in the rear gearbox; it is equipped with durable and precise carbon-steel diff balls, and has light weight carbon-composite outdrives for reduced rotating mass (for quicker acceleration). Purple-anodized aluminum rings are placed over the outdrives to prevent them from spreading during acceleration.

Inside the front gearbox is an aluminum one-way drive unit, which allows the front wheels to coast freely when off-power. This part is an option on most touring cars, and it's nice to see it included in the Pro 4 kit. The one-way will be most advantageous on larger tracks that have flowing turns, as it improves steering through the middle and exit portions of a turn. On smaller and tighter tracks, the one-way can be a disadvantage, as it makes it difficult, if not impossible, to use brakes effectively. For this situation, we recommend that you keep an extra ball diff in your toolbox.

The gearboxes are connected via a lightweight (and purple-anodized—are we seeing a theme here?) aluminum driveshaft—the ends of which insert into carbon-composite input cups (these lightweight cups shed rotating weight in the drivetrain and wear well against the aluminum driveshaft).

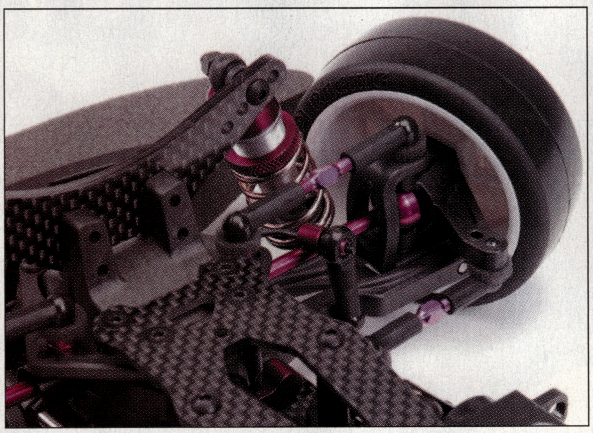
The 16-tooth input bevel gears and the 39-tooth ring gears provide the Pro 4 with an "internal" drive ratio of 2.4:1. The primary gear ratio is handled in part by a 98-tooth spur gear in 64 pitch. This is a "metric" 0.4 module gear, so it's not compatible with SAE 64-pitch pinion gears, so make certain to specify this when purchasing pinions. As the gear is mounted on an aluminum adapter, you have the option of installing virtually any type of aftermarket spur gear that can fit within the confines of the chassis.

As mentioned, there are a quite a number of included hop-up items in the Pro 4 kit: in the drivetrain department, these include a purple-anodized motor mount; full set of light weight, aluminum MIP CVD driveshafts (purple!); and purple-aluminum, clamping-style hex hubs with aluminum spacers with which to adjust the car's track width. Of course, everything that spins does so on a precise steel ball-bearing—what else would a racer expect?

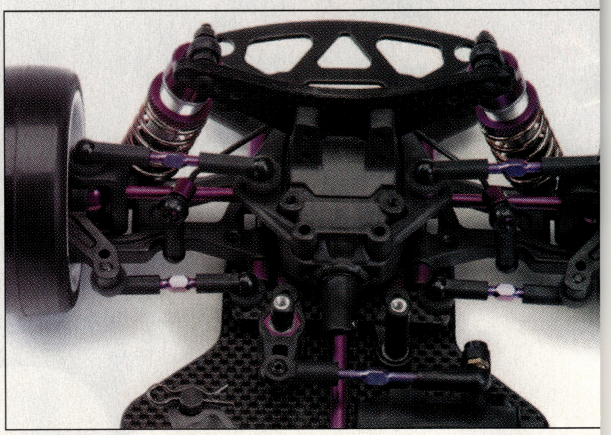
SUSPENSION

There's a lot of ground to cover in describing the Pro 4's suspension, so we decided to break the subject into sections, beginning with features common to both front and rear suspensions, followed by the individual highlights of the front and rear ends.

• Common suspension features—Both front and rear suspensions feature adjustable wheel camber via their adjustable upper links. For this purpose, the Pro 4 comes with purple-anodized titanium turnbuckles and newly designed, socket-style molded ball cups that have less slop than before. The inner camber-link locations use vertical ball-studs, which, because the ball-studs' heights are altered through the use of washers, provide a more precise range of adjustment than the typical horizontal ball-stud design. On the Pro 4, there are two inner camber-link holes front and rear, with an additional hole available in each rear hub carrier.



The upper camber-links are attached to vertical inner ball-studs for more precise setting of the car's roll centers.



The steering bellcranks are supported by six ball bearings for unrivaled smoothness and precision.

Each lower suspension arm is held to the chassis by a pair of nicely machined aluminum pivot-blocks (purple, of course). These blocks provide for a range of suspension adjustments not found on many other touring cars. First, the height of the blocks can be altered using a series of aluminum shims of various thicknesses (the kit comes with 0.5 and 2.0mm shims for the stock setup, but additional shims can be purchased separately). By varying the number and thicknesses of the shims, the car's front and rear roll-centers, front anti-dive/kick, and rear squat angles can be adjusted with ease. Another benefit of this design is that the rear arms' toe-in angle and front arms' sweep can be altered by switching the outermost pivot block. The kit comes with a 2.5-degree block for the front arms and a 3-degree block for the rear (these are used for the standard setup), but HPI offers optional blocks of zero, 1, 1.5, and 2 degrees for additional tuning options. In general, more rear toe-in provides more rear traction, and a greater degree of front arm sweep makes for more aggressive steering response.

All four suspension arms are molded from carbon composite, and each has its own down-stop setscrew for precise setting of the suspension's droop (down travel). The droop setscrews are rounded so that they won't dig into the chassis. It's interesting to note that the Pro 4 doesn't have a single E-clip on its suspension. The inner hinge-pins are captured between the aluminum pivot blocks. They are actually held by small steel balls inserted into the pivot-blocks. This enables the hinge-pins to accommodate—without binding the arms—the suspension's variable anti-squat, rake, toe-in, and sweep angles. This is a design we have seen work quite well on Tamiya's 414M and TB Evo series.

In order to reduce unsprung weight from the suspension, the outer hinge pins are of a smaller diameter than that of the inner hinge pins (2.5mm as opposed to the 3mm inner hinge pins), and are held by small setscrews threaded through the uprights and carriers.

All four corners of the car receive a threaded-aluminum oil-filled shock. Each shock has an internal bladder and a foam insert to prevent the bladder's airspace from compressing too much and too rapidly. The kit comes with HPI's gold springs for the front and silver springs for the back. HPI rates its springs by wire diameter and by the number of coils, which is a very interesting method. The shocks are exceptionally nice, and the threaded pre-load adjustment nuts, which

have internal O-rings to prevent them from moving during a run, are a welcome addition. Both ends also have 2mm thick graphite shock towers and black, 1.6mm-diameter anti-roll bars.

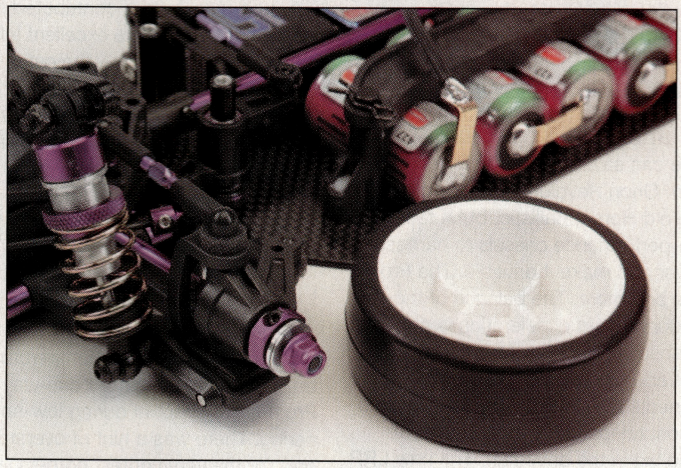
• Front suspension features—Four steering uprights are included in the kit. You can select uprights that provide 0, 2, 4, and 6 degrees of caster. There are also several options for mounting the shocks; there are three holes in the shock tower, and two holes in the lower suspension arm.

The steering setup consists of a pair of bellcranks joined by a woven graphite steering plate. There is a total of six ball bearings used for the steering—four in bellcranks and two for the steering plate. The steering plate has two holes in which to attach the steering tie-rods, but what's really neat is that the plate can be flipped to provide two additional positions. This gives the Pro 4 four choices in setting the car's steering Ackermann (the difference in angles between the inner and outer front wheels during cornering; greater Ackermann usually provides a more aggressive steering response). There is also a built-in servo-saver device in the bellcrank.

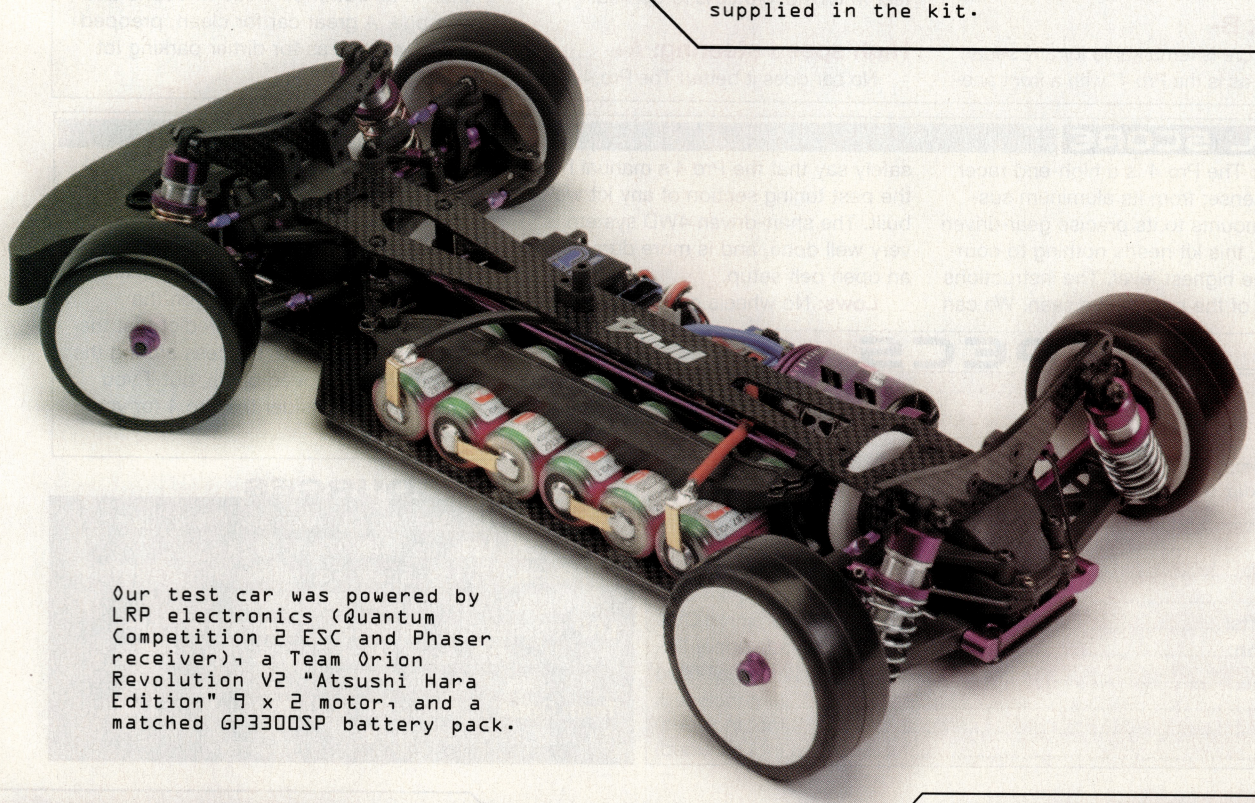
• Rear suspension features—There are four holes in the shock tower and three in the lower arm in which to attach the rear shocks. You can also alter the wheelbase by repositioning the spacers next to the rear hub carriers. As mentioned, rear toe-in, roll center and squat (anti- or pro-squat) can be altered by using shims beneath the lower arms' pivot blocks.



Carbon-composite is used for all of the main suspension pieces. The gearboxes are also made of this light and strong material.

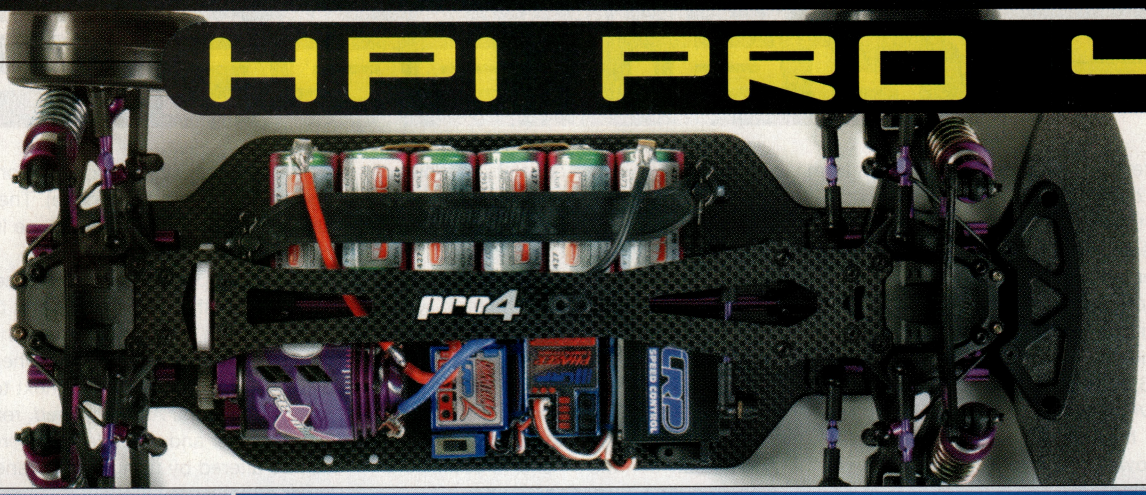


Clamping aluminum hubs are standard. Washers are used to adjust the car's width. We used HPI's optional 27R belted radial tires on their medium-narrow dished wheels (no wheels or tires are supplied in the kit.



Our test car was powered by LRP electronics (Quantum Competition 2 ESC and Phaser receiver), a Team Orion Revolution V2 "Atsushi Hara Edition" 9 x 2 motor, and a matched GP3300SP battery pack.

HPI PRO 4



REPORT CARD

Test location: Hot Rod Hobbies Raceway, Santa Clarita, CA

Test conditions: Asphalt roadcourse: semi-dusty, medium-grip conditions

Speed and acceleration: A+

All we can say is "Holy cow!" Yes, the 9-turn Team Orion Revolution V2 motor would make an old Hornet ballistic, but it takes a real high-performance chassis to harness all that power and make it drivable. The Pro 4 does this and more. The balance of the chassis during hard acceleration is perfect; there is absolutely no power-induced tweak whatsoever. The new shaft-drive 4WD system connects the driver to the car's wheels with almost telepathic response. There's simply no lag in the drivetrain. The new LRP Quantum Competition 2 ESC also contributed to the superb throttle response and control—its ability to read conditions via its new software is a huge bonus.

Braking: B-

This score is remarkable for any sedan equipped, as is the Pro 4, with a front one-way unit. Two factors contributed to this opinion: the first is the excellent left-right balance of the chassis—the car is less likely to pull to one side or the other during braking. The second is the LRP ESC, which, when set to have maximum progressive braking, allows a careful driver to benefit from the cornering ability of a one-way, and still be able to apply brakes (in a straight line only).

Low speed steering: A

The optional HPI CS-27R tires were perfect for the colder track temperature on our test day. Despite its front one-way unit, the Pro 4 is very neutral during low-speed cornering. There was a hint of oversteer, but only for the very tightest corners (and we were coming in pretty hot). The car carries its speed well through the middle and exit portions of the turn, and has a very planted feel when the throttle is re-applied.

High speed steering: A+

No car does it better! The Pro 4 is on rails at higher speeds. The stock setup is totally dialed for modified racing. The car hugs tight on sweepers and lets you remain on the throttle for longer. There is no high-speed push—none!

Transitional steering: B

During quick left/right cornering, the Pro 4 becomes a little unbalanced; the rear end tends to lift a little and unload the inner wheel. A stiffer front anti-roll bar and/or a slightly stiffer front spring would fix this. This was only manifested on very closely spaced turns.

Durability: A+

The Pro 4 is a pricey kit, but it's money well spent. Everything on this car is top-of-the-line—from the chassis to the ball bearings. The suspension is both stiff and rugged, and the sealed drivetrain is all but impervious to debris and damage. A great car for clean, prepped tracks as well as for dirtier parking lot courses.

FINAL SCORE

Highs: The Pro 4 is a high-end racer in every sense; from its aluminum suspension mounts to its precise gear-driven drivetrain, this kit needs nothing to compete at the highest level. The instructions are some of the best we've seen. We can safely say that the Pro 4's manual has the best tuning section of any kit we've built. The shaft-driven 4WD system is very well done, and is more durable than an open belt setup.

Lows: No wheels or tires are included. Some chassis preparation is required (this is a messy job, and you should wear breathing protection while filing/sanding the graphite).

The Verdict: HPI has entered the world of serious racing with a flourish! Their new R40 nitro sedan won the ROAR nationals, and we predict that the Pro 4 will find similar success among the electric ranks. Speed costs, but if you want to win, consider the Pro 4 for your stable.

SPECS

Price:	$444.99 (varies with dealer)
Length:	14.4in/365mm
Width:	7.48in/190mm
Wheelbase:	10in/256mm to 10.2in/259mm
Front & Rear track:	6.53in/166mm
Weight:	1430g
Chassis:	Dual-deck woven graphite
Drivetrain:	Shaft driven 4WD
Bearings:	Ball bearings (24 pcs)
Drive shafts:	MIP aluminum CVD
Suspension:	Ind. lower A-arm; adj. upper link
Shocks:	Threaded alum. oil-filled
Tires:	(not included)
Wheels:	(not included)
Body:	(not included)

SOURCES

Airtronics, 1185 Stanford Ct., Anaheim, CA 92805 • (949) 978-1895; fax (949) 978-1540

HPI Racing, 70 Icon Street, Foothill Ranch, CA 92610 • (949) 753-1099; fax (949) 753-1098

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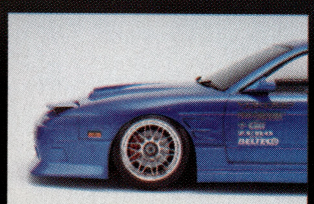

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PROJECT TRUCKZILLA

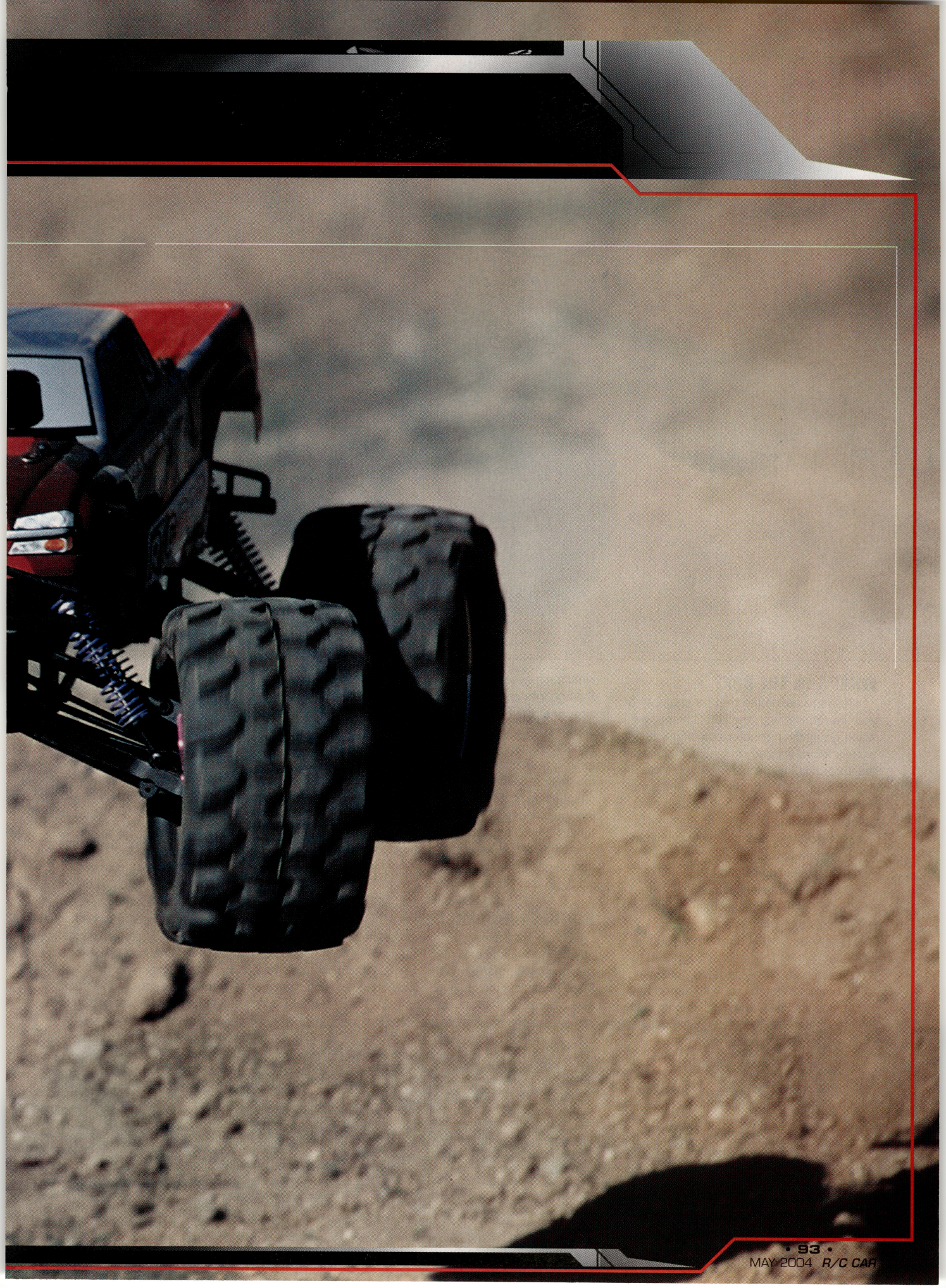
Oh, no! There goes Tokyo!

To paraphrase Tim "The Tool Man" Taylor, monster truckers are all about having more power—the bigger and badder, the better. Hot Bodies must also understand this philosophy—why else would they have released the completely over-the-top Truckzilla conversion kit for the HPI Savage. The conversion transforms any Savage—original, SS kit, and .25—into the largest, most powerful, and most downright frightening nitro-powered monster truck on the planet. Once completed, Truckzilla soundly dwarfs other monster trucks, and with its .46 engine, cranking out a claimed 4.6 horses, it should have the bite to back up its bark. We received an early Truckzilla kit for evaluation, and promptly set to installing it to our in-house Savage SS (as if that truck weren't large and powerful enough already).









PROJECT TRUCKZILLA



WHAT'S IN THE BOX?

As we're assuming that the majority of you are familiar with the HPI Savage, we won't go into too much detail of its design; we will focus instead on what's included in the Truckzilla kit. Here's what you'll get with the full 55201 conversion (a kit sans wheels and tires, no. 55300, is also available).

- Hot Bodies .46 engine with manifold and tuned pipe
- Adjustable engine mounts
- Elongated chassis plates
- Seven-inch diameter tires and chrome wheels (pre-glued)
- Heavy-duty steel dogbones (four)
- Lengthened rear-center dogbone (to compensate for elongated chassis)
- Complete clutch unit with clutch bell

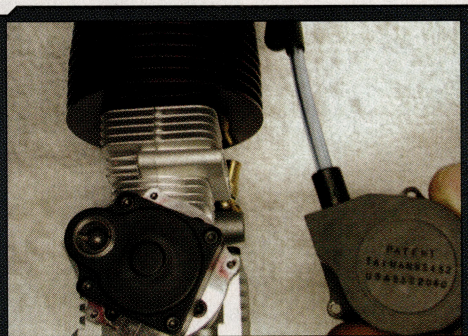
As you can see, Hot Bodies only added what's necessary to make the already large Savage into an immense beast. The real beauty of the Savage is that it is a great platform on which to perform such a conversion; it comes with a very beefy, metal-geared transmission, which can handle the much increased output of the .46 mill. The suspension is also up to the task of carrying the extra girth—although some minor tuning will be necessary. We also decided to include a few additional Hot Bodies accessories on our project truck, however, we'll get into those a bit later.

STATUESQUE SAVAGE

The stock Savage is an impressive steed; the truck is one of the best looking designs in the market, with its Twin Vertical Plate chassis, long-travel oil-filled shocks, and beautifully sculpted body shell. The completed Truckzilla is a super-sized version of the Savage, and it makes the stock truck appear puny by comparison. The new chassis plates increase the wheelbase by an inch and a half, and the towering seven-inch wheels and tires increase the truck's stature and are intended to provide some much needed stability when the .46 mill is opened up.

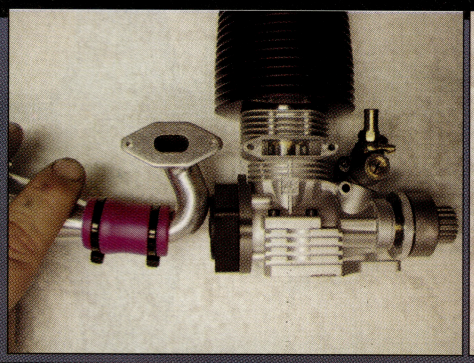
SCOTTY, WE NEED MORE POWER

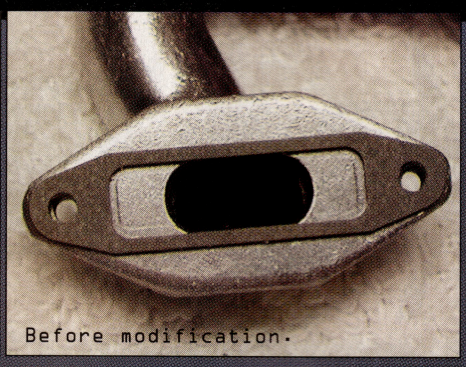
The latest trend in monster trucks is larger and more powerful engines. A big-block .21 is no longer considered overpowering, but rather adequate. If you run a fully decked-out monster truck, a larger engine is a good thing—there's no substitute for cubic inches, or centimeters, when it comes to easily moving a ten-pound truck. Hot Bodies has taken this philosophy to the



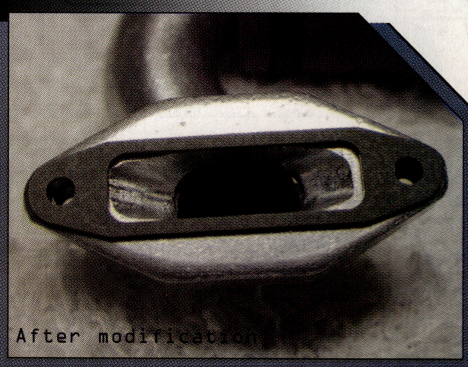
JUMP STARTING THE 'ZILLA

The Truckzilla kit comes with a pullstart .46 engine. Thankfully, the kit also includes the necessary backing plate for use with Hot Bodies Jump Start or HPI's Roto Start electric starting system. The prospect of pull-starting this beast didn't appeal to us, as the .46 has a lot of compression. The instructions recommend using the pull-starter at first, then, following break in, installing the Jump Start. We decided to go straight to the starter system (we're lazy), and found that it worked fine, as long as you first loosen the plug when the engine is cold; when the engine is warm, it will crank easily. Just make sure there is no hydro-locking (a buildup of unburned fuel mixture), or you might break the Jump Start's gearbox.





Before modification.

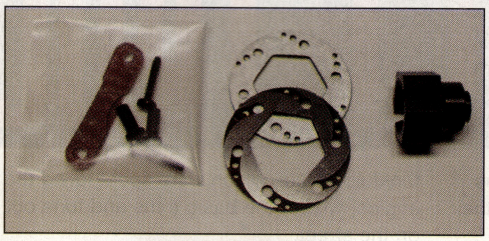


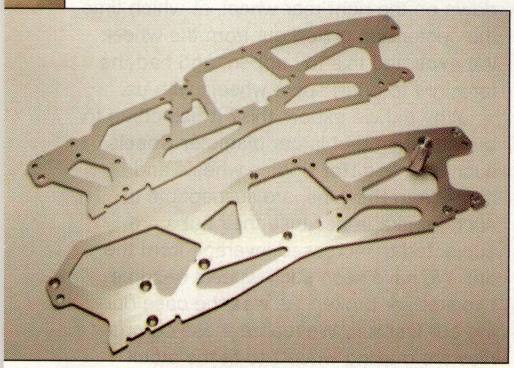
After modification.

PORTING POWER

The earliest Truckzilla kits came packaged with an incorrect exhaust manifold; the manifold's oval-shaped port is too small to match exhaust port's shape. As we received such a manifold in our early kit, we decided to fix the situation using our trusty Dremel tool. Using the manifold gasket as a template, we enlarged the manifold's opening to match that of the gasket. Just be careful not to make the opening larger than that of the gasket, as this can cause a leak. Although Hot Bodies has already fixed this problem with newer Truckzilla kits, we feel that our modified manifold still offers a smoother transition from the exhaust port; if you have an older manifold and perform this mod, consider yourself fortunate.

extreme with the Truckzilla; the included .46 engine just plain massive. Our test truck never missed a beat, and the large displacement engine works less to power the heavy Truckzilla, which allows the engine to run cooler and last longer. Power delivery is potent, but not radically so. The .46 has the instant response needed for on-track excursions; there's plenty of zip on tap to clear just about any obstacles—including those over which the original truck's .25 had struggled.





SUSPENSION SETUP

The Savage has great suspension, and is perfect for a huge hop-up like the Truckzilla kit. As the weight is increased considerably, we decided to install Hot Bodies' aluminum shocks for greater durability. We used HPI's purple springs, the ones from the Savage SS kit, as they are the stiffest and most capable of handling the additional mass. We went with 30-weight silicone shocks oil, which also improved the suspension's ability to control the movement of the chassis.

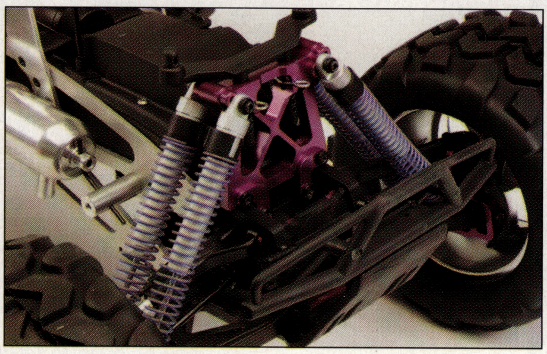
To increase both durability and stiffness, we also added a set of Hot Bodies' aluminum shock towers and hub carriers. This added to the truck's already considerable girth, but it also made the truck less susceptible to breakage—an important consideration when this much power is added.

GIVEYOURSELF A BRAKE

Truckzilla is huge, and it carries a lot of weight. We recommend swapping over to Hot Bodies vented steel brake disc conversion kit. Some people have said that the stock brakes are adequate, but fade rather quickly. The stock brake system also has a plastic hex hub, which gets replaced by a nice aluminum hub, which is significantly more durable. We were not disappointed upon completing this mod, as the brakes performed flawlessly, stopping the massive truck with authority, and without discernable fading.

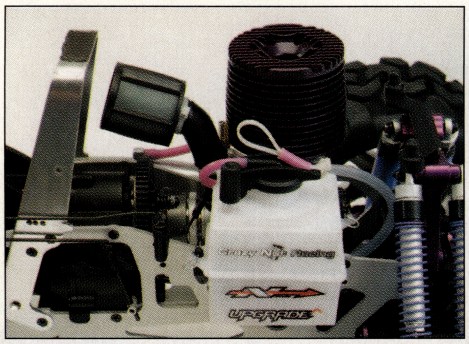
STRETCH ARMSTRONG

The 'Zilla chassis plates are not only longer than stock, but they are also made from thicker aluminum for increased rigidity. The extended wheelbase was added to increase the truck's stability with the more powerful engine (and to create space for this massive powerplant). Our testing revealed this to be an intelligent decision, as the truck was more stable and was better able to lay down the power from its new engine. Although we felt that the lengthened wheelbase had somewhat slowed the steering response, the overall handling was predictable, and confidence inspiring—we felt as if we could tackle any obstacle.

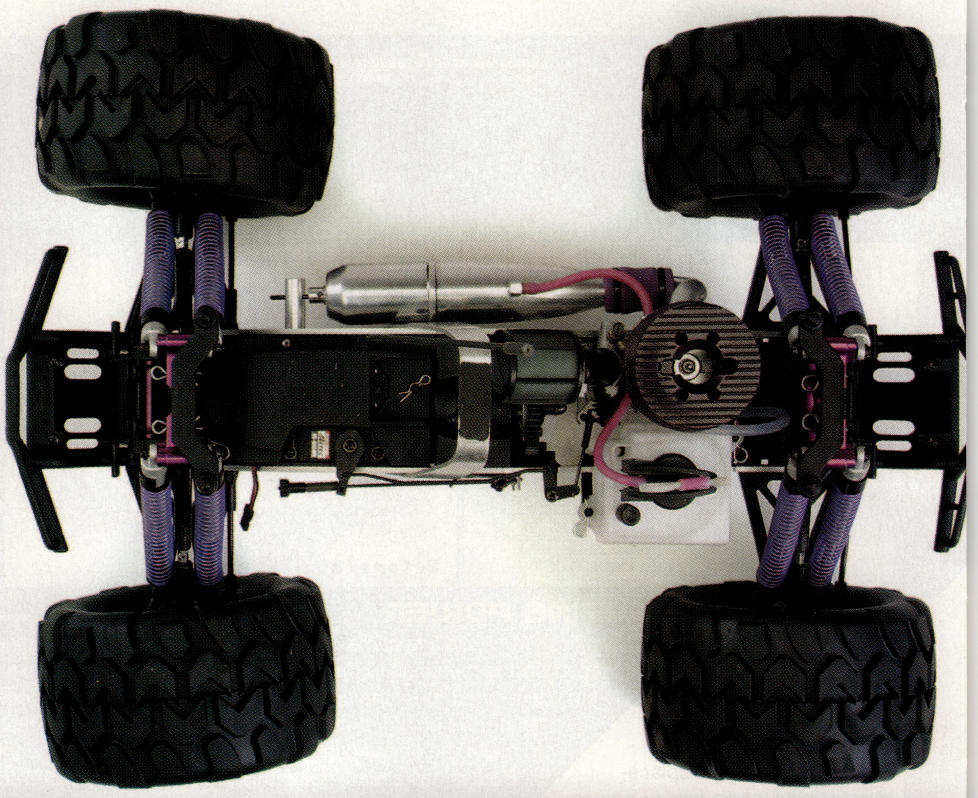


THE BUILDUP

It was a breeze to convert the Savage to the Truckzilla. If you already own a Savage (any model), you are nearly there. The kit is very complete, and the instructions make installation a breeze. The entire project—sans the extra modifications we added—should take the average person about six hours to complete. The only advice we can give, that is not covered in the instructions, is that you use plenty of Loctite on all metal-to-metal fasten-







PROJECT TRUCKZILLA

ers, and that you not rush—haste makes waste, and leaves screws and nuts on the ground, and your truck sidelined.

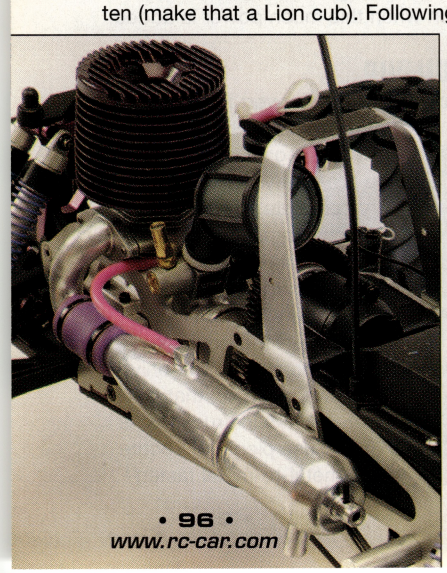
IT LIVES!

Once we got the Truckzilla together and fitted one of Hot Bodies pre-cut and pre-painted bodies, it was time to break in that behemoth of an engine. We were hesitant to start the huge .46—frightened is more like it! This is a huge mill, and we felt as if it could turn on us at any second. Our fears proved unfounded, as the engine sprang to life easily, and purred like a kitten (make that a Lion cub). Following two tankfuls of fuel, which were spent idling the engine, we set the basic trims and tune out on the street.

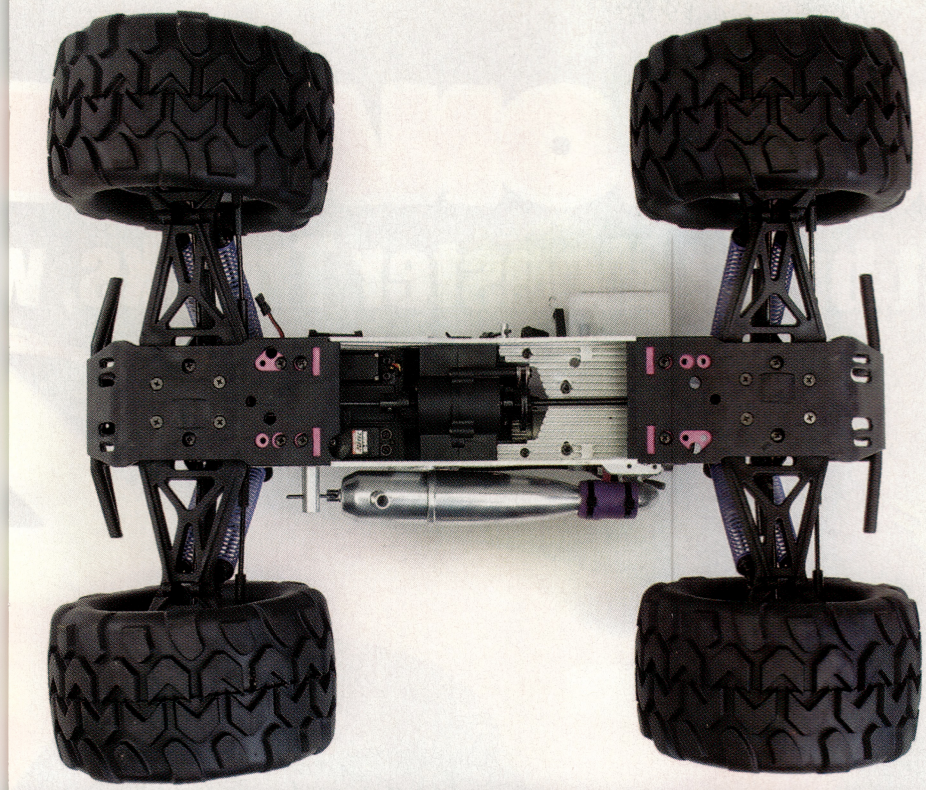
Our first impression was that the Truckzilla was very fast—at least as fast as the lighter and smaller .25 truck, but boy: did it have power! It accelerated with authority; we bumped it up to a curb and it powered over it like it wasn't there at all. The engine and clutch are well matched, and deliver the power smoothly.

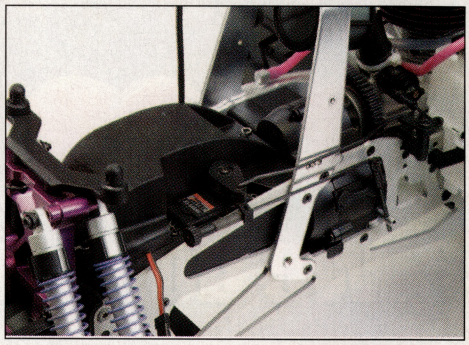
We arrived at the hills—one of our favorite bashing sites—and warmed up the 'Zilla for our photo shoot. Thirty seconds into the warm-up, and tragedy struck: we caught about eight inches of air, and came down on the right rear wheel, at which time the center hub pulled out from the wheel. We expected this to happen, and had the foresight to bring spare wheels with us.

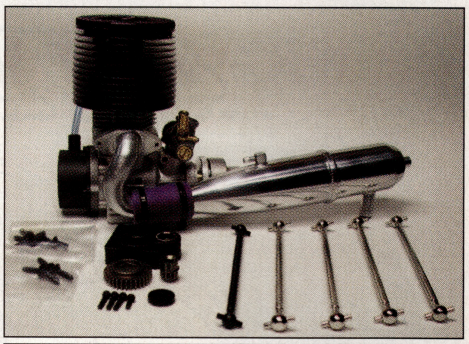
Why did we expect this? It has come to our attention that larger diameter wheels, such as these Hot Bodies wheels and those from Pro-Line, are susceptible to such breakage because their hubs are subjected to increased leverage from the tire. We have seen such wheels become tweaked, or broken, as was the case during our first run. We realize these companies are making wheels to fit the stock













hex-hub assemblies, and that their hands are tied in this respect, however, a change is probably needed to increase durability. When you pay up to $60.00 for a set of wheels and tires, and you blow it out within 30 seconds, something needs to be fixed.

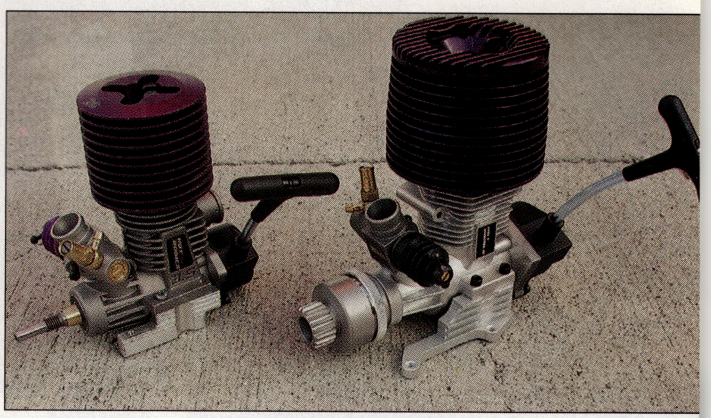
After a new wheel had been installed, it was back out for some bashing, and the 'Zilla was on fire; it was a rocket! It's hard to put it to words. You can plow through, or over, anything—the engine produces that much power and torque. The Truckzilla is by no means what we'd consider nimble, but what it can't be steered around it can simply drive over or blast through.

The truck also jumped very well, although really big air might end your driving session if you blow the landing; remember, this is a big beast, and there's a lot of weight crashing back down to earth. Overall, however, the Truckzilla just feels like a bigger, badder version of the Savage—it's truly a beast among beasts.

It makes one heck of beast out of the Savage, and we know a lot of you out there will have fun intimidating smaller trucks. As for a racer; we aren't sure of its potential—it needs some grooming to be competitive. Out in the wilds, however, this few trucks have been as fun to drive. It's incredible power and massive stature makes it formidable in any situation.

THE VERDICT

We love the Savage, and therefore we love the Truckzilla.



SHOPPING LIST

Truckzilla conversion kit
Part no.: 55300
Price: $349.00

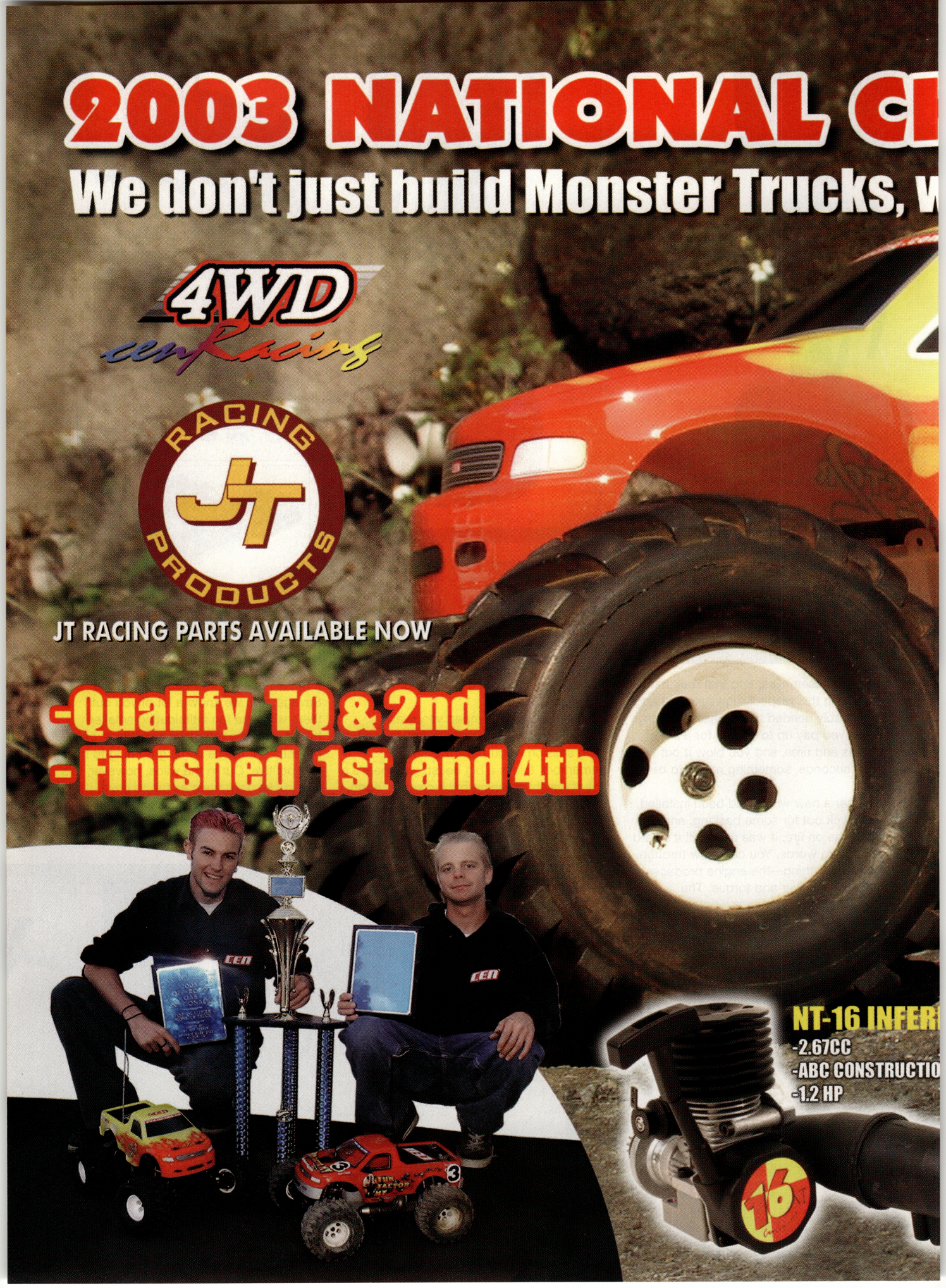
Vented metal brake rotors with pad
Part no.: 61156
Price: $35.50

Precision-machined aluminum shock set
Part no.: 61161
Price: $96.00

Super-Tec aluminum shock tower
Part no.: 61206
Price: $60.00

SOURCES

Hot Bodies, 27469 Colt Court, Temecula, CA 92590 • phone (909) 296-9340; fax (909) 296-9343
HPI Racing, 70 Icon Street, Foothill Ranch, CA 92610 • phone (949) 753-1099; fax (949) 753-1098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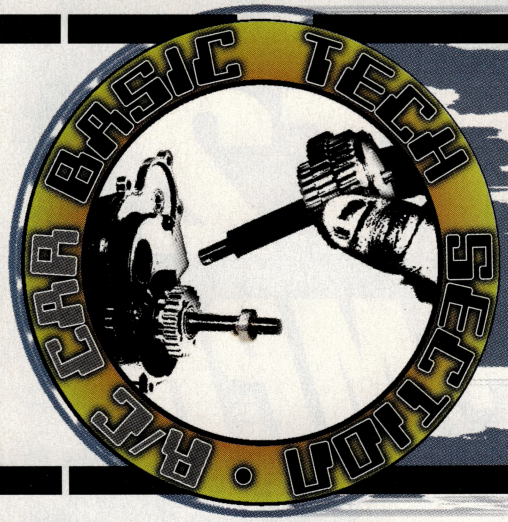


GET THE

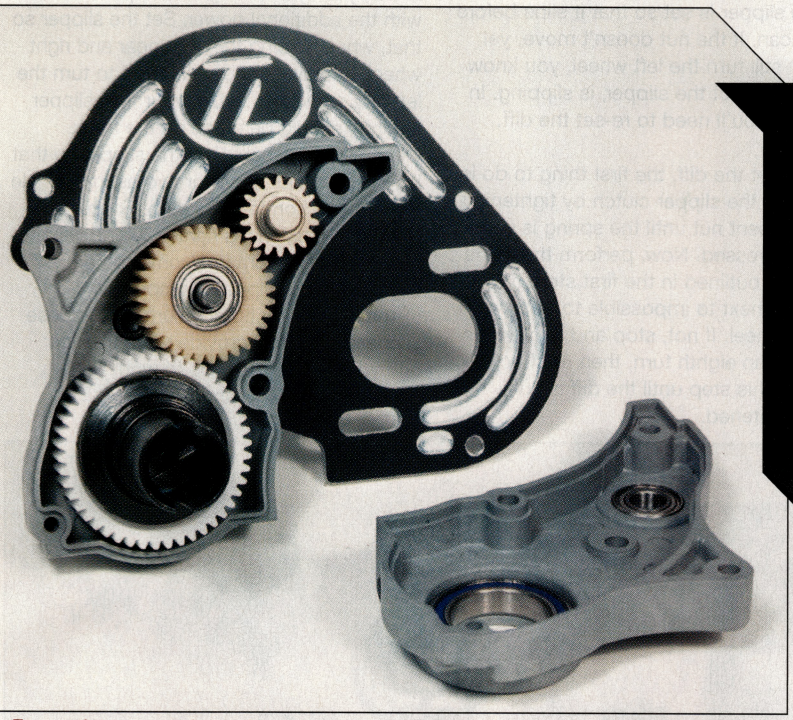
How to Set Your Diff and Slipper Clutch

Ever heard the term "Something's got to give"? It applies well to the transmission in your car or truck. When you have a power source at one end of the transmission (your electric motor or nitro engine) and high-traction tires at the other, the "stuff" in the middle ends up taking all the strain. In the earlier days of off-road, the ball differential was the go-to guy, slipping just enough to prevent damage to the rest of the gearbox caused by monster-horsepower motors and the shock of landing from large jumps. Problem was, all that slipping caused the ball diff to wear out quickly, or worse, melt! As the diff is the heart of the transmission—the thing that allows your car to hook up better in the turns and accelerate nice and straight—you can see where there would be a problem!



With all of the jumps, bumps, and varied traction encountered by a modern off-road machine, a properly set differential and slipper clutch may mean the difference between an A- and a B-main performance.

POWER TO THE GROUND!



The differential (bottom of the gearbox) is the heart of the transmission. It must operate smoothly and easily if the car or truck is to perform its best.

3 TIPS FOR HAPPY DIFFS

- Make it a habit to check your diff's setting after every two or three runs. If your diff does begin to loosen, you'll be able to catch it before any damage is done.
- For the best performance, you should rebuild your diff when its action becomes gritty. Usually, all that's needed is a good cleaning and re-lube. You may also need to replace the large and small diff washers. As long as the diff isn't allowed to slip, the balls should last through several rebuilds before needing to be replaced.
- Fight the urge to experiment with lubes. Use only lubes that have been developed for use in ball diffs. The silicone-type lubes have special friction qualities that allow the balls to grip the washers to reduce slippage.

Fortunately, along came the slipper clutch—a relatively simple device that inherited the slipping duties from the diff. Not only did the slipper clutch greatly increase the life span of the rest of the transmission, but it also allowed for precise control of wheelspin—just the thing for slippery tracks! But just when everything seemed its rosiest, a problem had developed: many people were unable to discern between the sound and feel of a diff slipping versus a slipper clutch. As a result, there were lots of locked-up slipper clutches and burned-out diffs! How can you tell which part of your tranny is slipping, and how do you set each component correctly? Well, that's what we're here for.

THE BASICS OF THE DIFF

The diff is a clever little device that takes up the difference in rotating speed between the left and right side driven wheels. Unless a four-wheeled vehicle is traveling perfectly straight, its left and right side wheels travel on different paths, and at different speeds. The diff compensates for this while providing drive force to propel the vehicle. Without a diff, one or both of the driven wheels would be dragged across the road surface, resulting in a loss of traction. Some on-road racecars actually have no rear diffs, which enables the driver to accurately slide the car through the turns. But these cars are raced on perfectly smooth surfaces. Whenever there are bumps, a diff is needed to keep the vehicle's driven wheels in good contact with the ground to improve traction, stability and acceleration.

A SLIPPING DIFF IS OH, SO BAD!

A typical ball diff has one large set of diff balls and washers and one small set. The larger balls and washers carry most of the load, while the smaller set primarily keeps the diff working smoothly. When the diff is allowed to slip, the large balls are dragged against their washers rather than rolled against them. The resulting friction not only causes grooves in the washers, but also creates immense heat. The grooves make the diff gritty and less efficient, while the heat can actually cause a plastic diff gear to melt!

POWER TO THE GROUND!

WHAT ABOUT 4WD CARS?

Four-wheel drive off-road buggies and touring sedans often have two ball diffs—one in back and one up front. You can check the tightness of their diffs just as you would for any ball diff. Generally, you can set the front diff a bit more loosely, as most of the drive force comes from the rear of the car. You can also use the tightness of the front diff as a tuning aid. To make the car easier to drive, run the front diff tighter. This will smooth out the steering and make the car pull out of the turns better. For more responsive steering, especially in tighter turns, try running the front diff looser.

IS MY SETTING RIGHT?

Even if you've built your diff and slipper perfectly, the only way to really set them correctly is to check them after the first few runs and make any necessary adjustments. When the diff is brand new, its setting will loosen—sometimes significantly—after one or two runs. This is because the diff's parts will become seated, or worn-in against each other, as the diff operates under load. To compensate for this, you can either set the diff very tightly for the initial run, or, as we prefer, you can check the diff after every few laps and make adjustments as needed. The same applies to the slipper clutch; it too will become looser as its pad or pads are worn-in against the slipper plates. Fortunately, the worse that can happen if your slipper is too loose is that your car won't go any where!

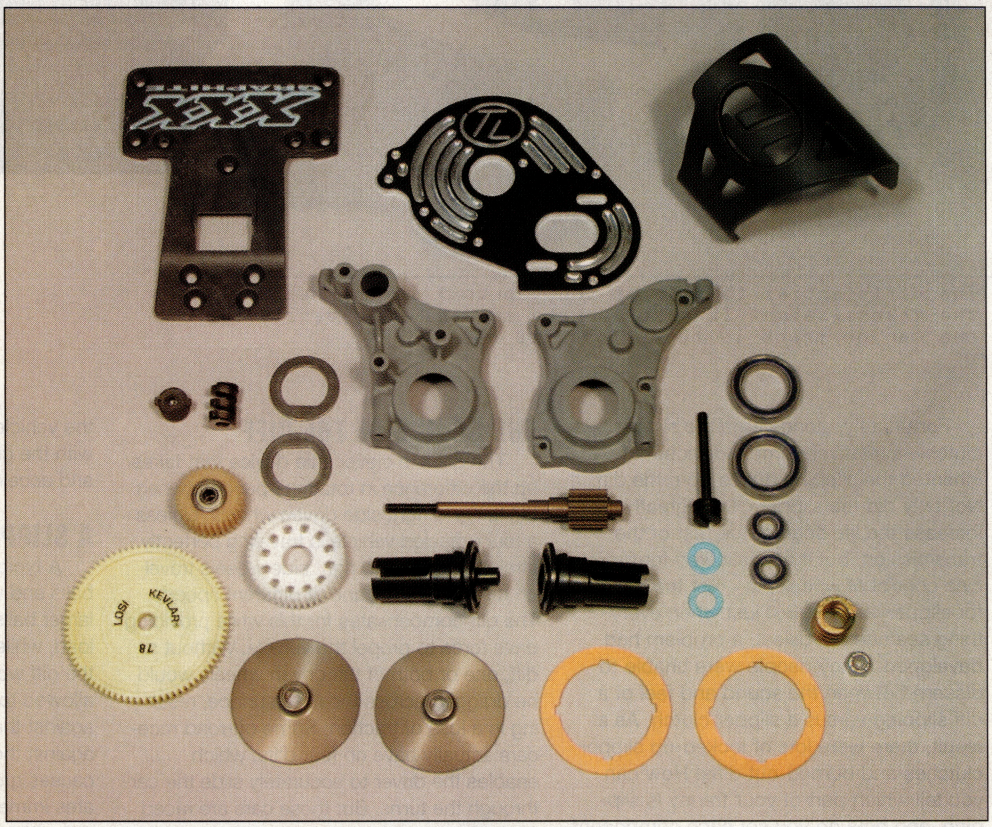
CHECKING THE SETTINGS

This is what you've been waiting for, right? So how can you tell whether it's the slipper or the diff that's slipping? There is one dead giveaway, and you'll need to use your ears. When a slipper clutch is slipping, it will make a very subtle whirring noise, but when the diff slips, you'll hear a pretty nasty sounding metallic shriek! That shriek should be your cue to stop running, or else something's going to detonate! But if your goal is to catch a loose diff before damage can occur, then all you need to do is follow these simple steps.

1) Remove your car or truck's gear cover. With the front of the vehicle pointing away from you, hold the spur gear and right rear wheel with your right hand. If you have a truck, you may require an assistant to hold the right wheel. Using your left hand, try to turn the left rear wheel. If everything is correct, only the slipper should be slipping. How can you tell? Look at the slipper adjustment nut; if it turns as you turn the left wheel, you know that the slipper is set so that it slips before the diff can. If the nut doesn't move, yet you can still turn the left wheel, you know that the diff, not the slipper, is slipping. In this case, you'll need to re-set the diff.

2) To set the diff, the first thing to do is lock-down the slipper clutch by tightening its adjustment nut until the spring is nearly fully compressed. Now, perform the same procedure outlined in the first step. It should be next to impossible to turn the left rear wheel. If not, stop and tighten the diff about an eighth turn, then re-check. Continue this step until the diff is sufficiently tightened.

3) Now that the diff is set, it's time to reset the slipper clutch. Begin by loosening the slipper nut a little at a time, checking its setting each time. If you run a stock motor, your slipper should be set more loosely. If you use a mod motor, you'll need a tighter slipper to deal with the additional power. Set the slipper so that, when holding the spur gear and right wheel, it takes a moderate effort to turn the left rear wheel. As a rule, your final slipper settings should be made on the track. Generally, you should set the slipper so that it slips for about a foot or two as the vehicle accelerates from a dead stop. For high-traction conditions, a tighter setting will provide better acceleration (some pro drivers even lock their slippers completely). For slippery and very bumpy surfaces, a loose slipper setting will provide more traction and will allow the vehicle to work better through the bumps and ruts.



The transmission is dependent on the slipper clutch at one end, and the ball diff's outdrives at the other, to get the power to the ground.

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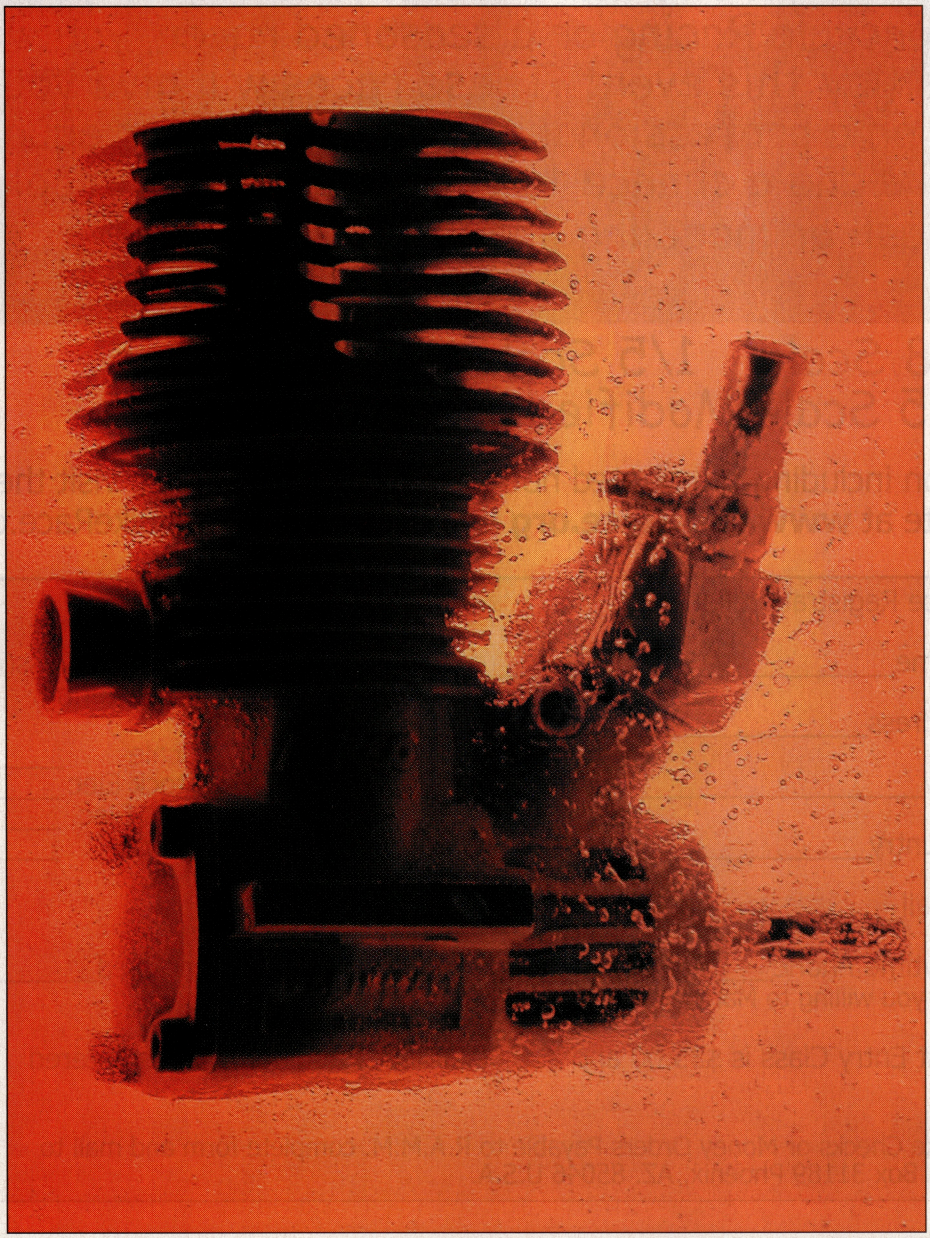

As most of you are already aware, a key factor in finishing races or getting more fun time with any fuel-powered vehicle is keeping the engine running. Fuel-powered cars and trucks are very durable these days. Ending a race or run due to a broken part is far less common than the dreaded flame-out. Engine temperature is very important in keeping the engine running for long periods of time. The ideal temperature range for .12- to .15-size engines is 220 to 260 degrees. Optimum temperature range for .21-size engines is a bit lower, around 210 to 250 degrees. If you find that your engine is running hotter than this, keep reading; some of the following pointers are sure to help you. If you don't have access to a temperature gauge, but keep suffering from engine flame-outs, these tips can still help you keep your engine running—and running cooler!



Always use the right fuel! Never use fuel blended for other applications, such as airplanes or boats. And remember; a higher nitro content leads to higher temperatures. Always buy only enough fuel that you can use up in a month; smaller containers are almost always better, as they allow the fuel to remain fresh (metal containers are best, as they don't allow moisture to seep into the fuel).

REDUCE THE WORKLOAD

Just as in electric powered vehicles, but for a bit of a different reason, the drivetrain of a nitro vehicle should be as free as possible. Blown bearings, rubbing axles, or any other drag in the drivetrain, will result in increased engine temperature, not to mention less top speed. The drivetrain should be maintained regularly. Any damaged or seized bearings should be repaired or replaced. Any moving parts rubbing on other components should be corrected right away. The smoother the drivetrain, the better. A free drivetrain can go quite a ways in reducing engine temperature.

USE THE RIGHT FUEL ALL THE TIME

It's very important to use only those fuels specifically formulated for use in R/C cars. Fuels for R/C airplanes just won't work. Due to the fact that car engines are nested in the center of the vehicle, allowing for very little airflow, different types and percentages of oils are required in the fuel to keep temperatures lower. A few common brands of fuels available are O'Donnell, SideWinder, Blue Thunder, and Byron Originals. All of the top fuels are very good.

For .12- to .15-size engines, 20-percent fuel works well. A higher nitro content could be used, but the end result would likely be too much horsepower and increased engine temperatures. For big block of .21 and larger displacement, 30 percent is the most common. Again, a higher nitro content could be used, but the engine will run a bit hotter. There is really no reason to run higher than 20-percent for .12- to .15-size and 30-percent on .21-size engines.

PATIENCE IS THE KEY

Probably the most common mistake made when tuning engines is not waiting until the engine is warmed up. If you attempt to tune an engine immediately after starting it, the engine will run very hot. The reason for this is that as the engine warms up, the tune will become leaner. Less fuel flow (leaner tune) can increase top speed a bit, but the engine will run much hotter as a result.

If racing, try to start your engine a few minutes before the start of your warm-up session. This will get the engine up to temperature and allow you to tune it during warm-up. If you are not racing, simply run your vehicle for three or four minutes before attempting to tune the engine. Adjusting the needle valves (both high- and low-speed needles) while the engine is up to temperature will produce a much more consistent tune and help keep the engine running cooler overall. You will notice that a properly tuned engine will run a bit rich before it warms up.

NEEDLE IN A HAYSTACK

The easiest way to adjust the needle valves is to start with the high speed needle. You will want the engine to "clean out" on the long straightaway. Once you have the engine running good at high speed, with little to no "gurgle," it's time to take a look at the low-speed needle.

The low-speed needle has the most impact on the overall engine temperature. As the vehicle slows down, and airflow is reduced, the only means the engine has to stay cool is the fuel flowing through it. This low-speed fuel flow is controlled by the low-speed needle. You should see a good deal of smoke coming from the pipe during acceleration. If

COOL POWER



Binding in your vehicle's drivetrain can also lead to engine overheating. Items such as ball bearings are critical to a smooth operating drivetrain. If your vehicle doesn't have bearings, get some. And if your bearings are in poor condition, consider replacing them.



KNOW THY TEMPERATURE

Following these pointers should help you keep the engine temperatures below that of "meltdown." It is really helpful to use a temperature gauge when tuning any engine.

There are a couple of good manufacturers of temperature gauges available. One manufacturer is Raytek. Raytek offers two models of temperature guns—one with a laser sight and one without. Another manufacturer is Exergen. The D-Series models from Exergen work great. There are also several lower-cost alternatives to these high-end guns. MIP makes an excellent on-board temperature gauge, and several manufacturers, such as OFNA, Atomik, and DuraTrax, are now offering budget-priced infrared temp guns.

If you don't happen to have a temperature gauge, it is recommended that you stop by a local track and see if you can get a hand from someone there. They should be able to either help you tune you engine or let you borrow their temperature gauge while you tune your engine.

there is little to no smoke, you should richen the low-speed needle setting by turning it counterclockwise. If the engine tends to run-on or rev up at the end of a straight after backing off of the throttle, the low-speed needle is too lean and needs to be richened up. As a final test, try letting the vehicle idle for 10 to 15 seconds, then grab full throttle. The vehicle should accelerate with little hesitation. If the engine starves for fuel, you need to richen the low-speed needle. If the engine chokes on too much fuel, or spits excessive fuel out of the pipe, you should lean out the low-speed needle a bit.

Once you are comfortable with the low-speed needle setting, run the vehicle for a minute or so. Check the temperature. If the temperature is a bit high, richen the low-speed needle. Run for another minute or so and check again. Remember those magic temperature ranges: 220 to 260 degrees for .12- to .15-size and 210 to 250 degrees for .21-size engines. Try to adjust the low-speed needle to allow your engine to fall within these ideal ranges.

POWER TRANSFER

A frequently overlooked area that can also increase engine temperature is the clutch. If the clutch is engaging too soon, the engine will bog and the temperature will rise. Another indication that the clutch is engaging too soon is a hesitation in acceleration. If the engine rpm rises and the vehicle starts to move, then hesitates before continuing on, the clutch is engaging too soon.

In order to force the clutch to engage later, you will need to lighten the clutch shoes. Techniques for this could span an entirely separate article. We'll cover the basic concept here. It is recommended that you check with your local hobby shop or stop by a nearby track for some guidance with this adjustment.

The gist of the idea is to remove a bit of clutch shoe material from the area of the clutch shoe not contacting the clutch bell. This will cause the clutch to engage later-once the engine reaches higher rpm. The end result of this adjustment is less engine bog and, as an added bonus, reduced engine temperatures. The vehicle may also benefit from quicker acceleration.

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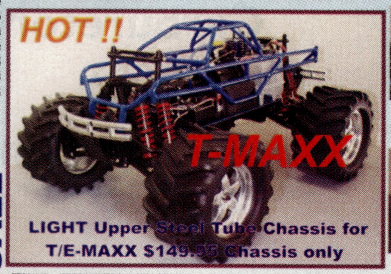

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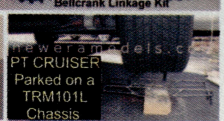

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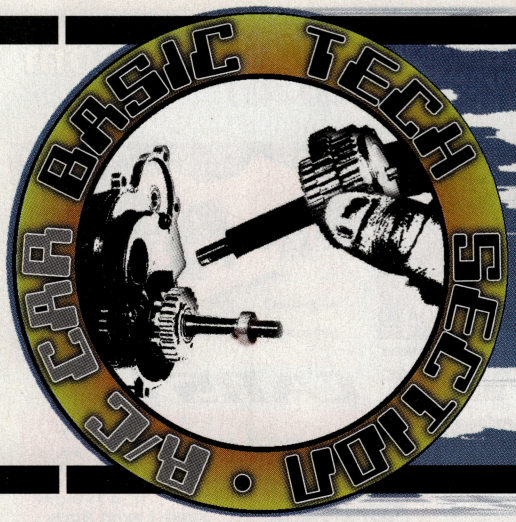
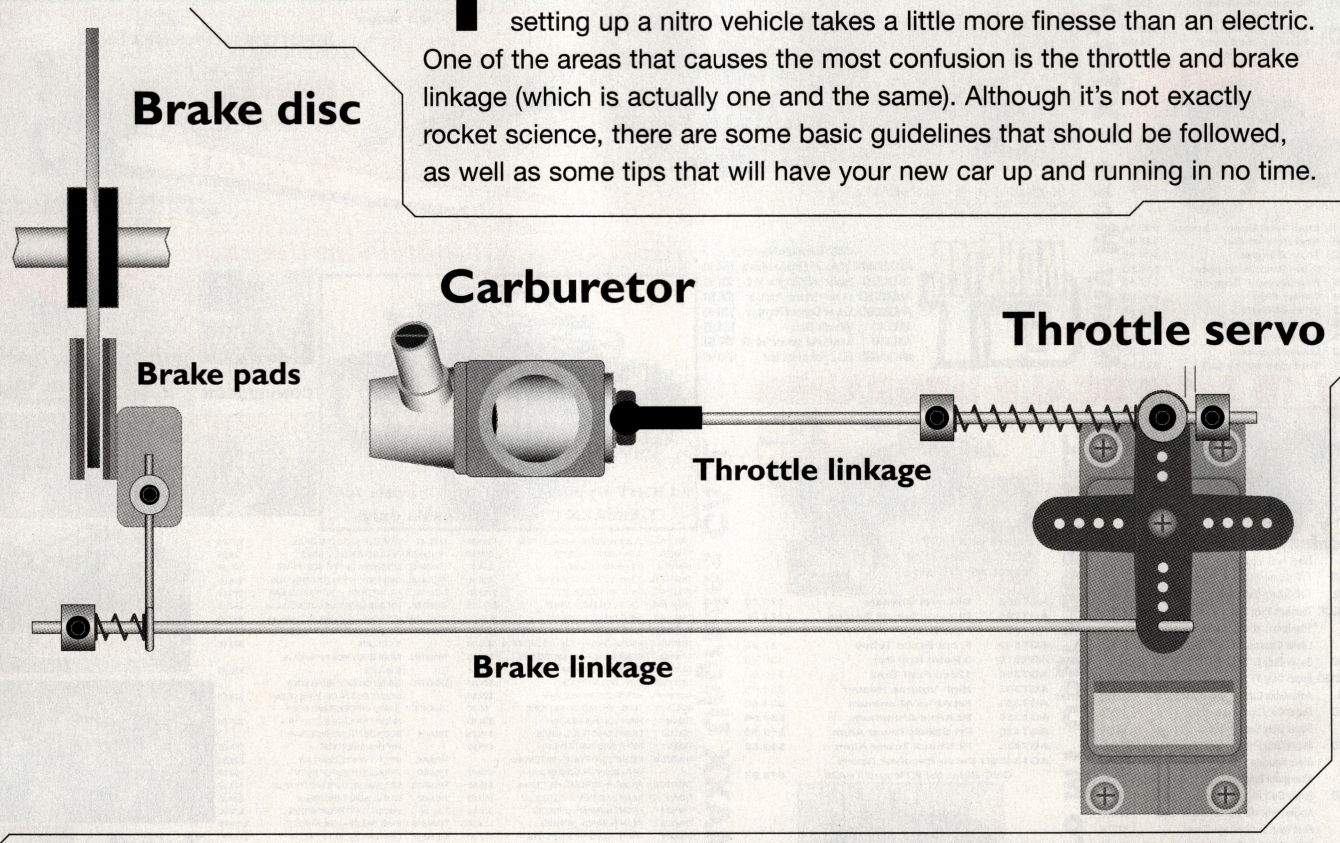


LINKAGE LAWS

How to set up your nitro vehicle's throttle/brake linkage

You've been racing electric cars for a while, and now you want to give nitro a try. When you decide to go gas, you should know that setting up a nitro vehicle takes a little more finesse than an electric. One of the areas that causes the most confusion is the throttle and brake linkage (which is actually one and the same). Although it's not exactly rocket science, there are some basic guidelines that should be followed, as well as some tips that will have your new car up and running in no time.



THE BASICS

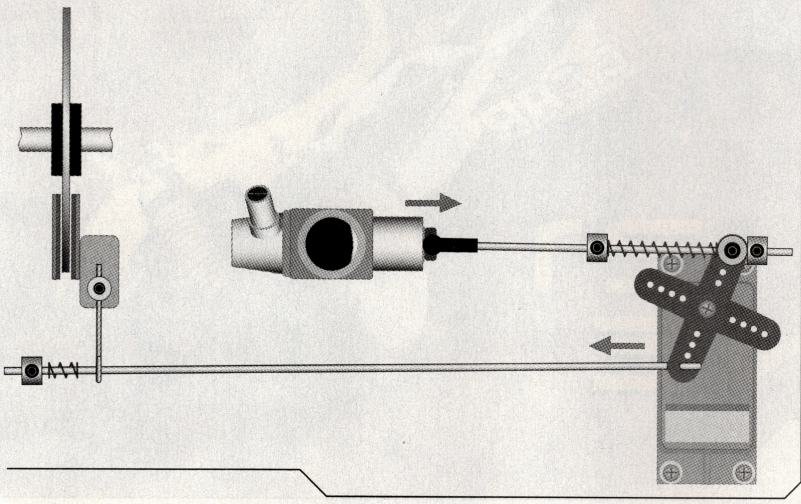
There are only three major components that concern us when we set our linkage, and they are the carb, the throttle servo and the brake or brakes (depending on the type of car). The illustration shows a typical linkage setup that's in the neutral position, i.e., the throttle barrel or slide is closed and no brake is being applied. Note the position of the servo; the servo horn's arms are aligned with the brake lever and the carb slide. Of course, this isn't always possible due to chassis layout, but you should always strive to "square up" the servo horn with the brake and carb.

Also note the gap between the furthest collar on the throttle linkage and the servo horn pivot. This provides a slight bit of play in the linkage when the carb is closed (when your transmitter is in neutral) and it will compensate not only for any slight changes in throttle trim, but for a heavy trigger finger. You will also notice that there is a gap between the brake pads and the brake disc. This prevents the brake from dragging, which slows the car and causes premature brake fade due to wear.

If you're wondering what the little springs are for, they perform different duties. The longer spring on the throttle linkage has two jobs: first, it allows the servo horn to rotate towards the carb when the brakes are used. It also serves to keep the carb slide or barrel closed when the servo is in the neutral position. The smaller spring on the brake linkage provides a bit of "give" to the linkage during braking. This not only helps prolong the servo's life, but can help give the brakes a more progressive feel. Some people may use a small piece of fuel tubing in place of the small spring, but both perform the same task.

THINGS TO KEEP IN MIND

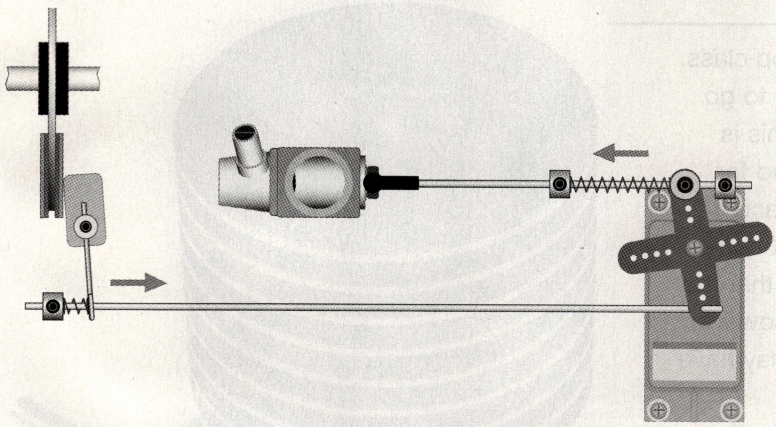
- Always strive to align the linkage rods with the carb and brake. If the linkage is angled toward the carb or brake lever at neutral, the angle is only going to increase during servo travel.
- Always leave a slight gap between the stopper collar and the servo horn to provide a slight delay in throttle movement.
- Avoid drag brakes. This only speeds up wear and will slow you down. If you need drag brakes, then you should pursue a change in your car's setup or your driving style.
- Use the EPA function to prevent servo strain. If your radio lacks this feature, consider a new radio a wise investment.
- Don't forget to use threadlock on all the little stopper-collar setscrews to prevent the collars from falling off.
- Avoid excessive brake travel. The longer it takes the brakes to engage, the longer it will take you to stop your car.



WIDE OPEN

The next illustration depicts what your linkage should look like when you pull full throttle. Note that the brake linkage does not engage the brake disc during throttle operation. This can happen if the brake linkage rod snags the brake lever and pushes it too far. The brake lever should always float on the linkage rod (unless your kit uses a different type of linkage setup).

To set your linkage for wide-open running (assuming that you've already established the correct neutral setting), all you need to do is use your radio's EPA (end point adjustment) feature to match the servo's travel to that of the carb's slide or barrel. You only want the servo to travel just enough to fully open the carb-any additional servo movement will just cause unwanted servo strain.



STOPPING ON A DIME

The final illustration shows what your linkage should look like when you apply the brakes. As you can see, there's a bit more going on here than when the throttle was applied. First, note that the servo horn has rotated toward the carb. See how the spring has been compressed to accommodate the movement? It's important that the spring have enough compression to allow sufficient brake movement, yet be taut enough to keep the carb closed at the neutral position. Also note that the brake linkage has pulled on the brake lever, and that the brake pads have now clamped down on the disc. This is your stopping power.

Adjusting the linkage for the correct amount of brakes for your track is a matter of trial and error. To do this will take a combination of mechanical adjustment (the linkage) and electronic adjustment (the transmitter's EPA function). Ideally, the brake lever should only move a small amount before the brakes are engaged. You can set this distance on most cars by tightening the screws that secure the brake pads. The less play between the pads and disc at neutral, the less the lever will need to move to engage brakes. Once this has been set, you will need to set the transmitter's throttle EPA, but this time on the brake side. The correct amount of travel depends on how strongly you wish the brakes to grab. Usually, it takes less force to stop an off-road car than an on-road car because there's less traction on dirt than pavement. You'll also need to make periodic EPA or linkage adjustments to compensate for pad wear.

CONCLUSION

Remember that not every car or truck uses the exact type of linkage shown here; however, all gas car linkages are just variations of this basic arrangement. Once you learn the logic behind a properly set up linkage, you'll find that your new gas car will go and stop much better.

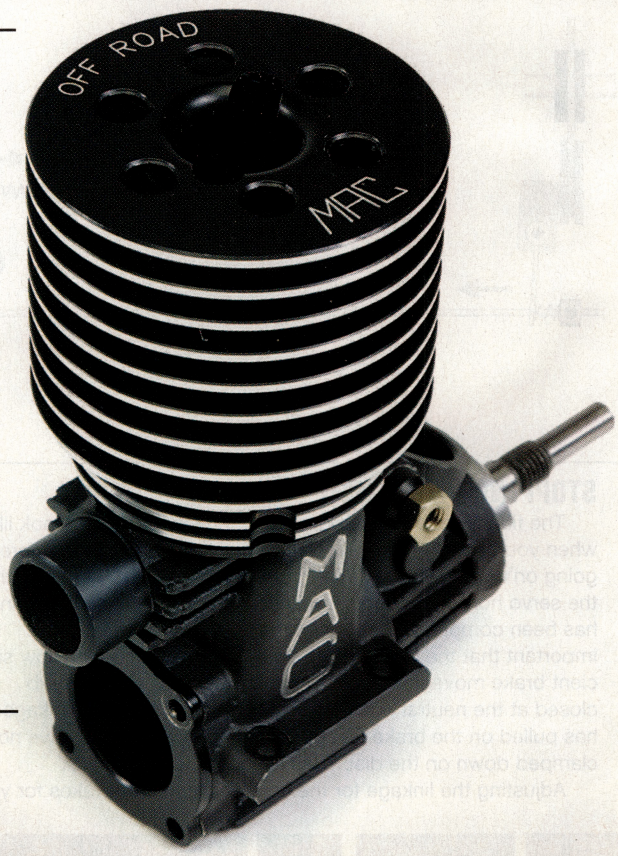


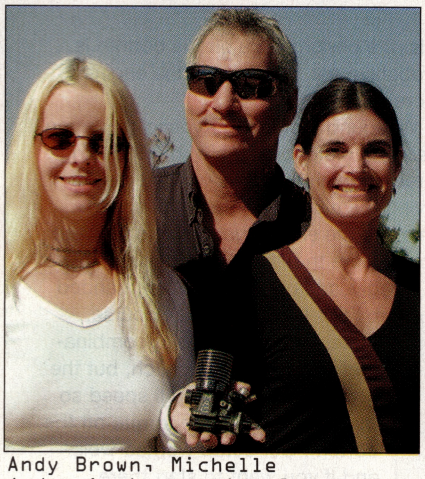
CMDI MAC .21 ENGINE

Nitro MAC-daddy!

In the off-road world, 1/8-scale nitro is the top class. If you're serious about racing, and you want to go fast, a 1/8-scale buggy is hard to beat. As this is such a demanding class, the products intended for 1/8-scale cars are usually made to a higher standard. This is especially true for engines. And when it comes to engines, there are only a handful of brands that the serious buggy racer will even consider. This, however, might be changing soon—the new MAC .21 may have the goods to join the ranks of the elite.

The MAC engine was first brought to our attention last year at the ROAR Off-Road Nats in Oklahoma. We were intrigued, enough so that we included the MAC engine in our test of the Bergonzoni Uruguay Edition (February '04). Since then, we have put a few gallons through the MAC, and decided it was time to give this impressive engine its own time in the limelight.





Andy Brown, Michelle (w/engine) and wife Donna.

MAC ENGINE HISTORY

The MAC engine is the brainchild of Andy Brown, the owner of CMDI (Competition Marine Designs, Inc.). Andy is the fastest R/C boat racer in the world—his record is 126mph—and he also makes the fastest marine engines in the world. Not happy with being the best in the water, Andy turned his attention to making a full race off-road engine.

CMDI has been in the competition marine market for quite a while, and works very closely with CMB of Italy to manufacture engines under the CMDI name. The MAC is basically an engine that's been designed in the U.S. by Andy, manufactured in Italy by CMB, and marketed through CMDI. Both companies work very closely together, feeding off each other's innovations. Despite this, the only common parts between the MAC and a CMB engine is the case; the rest of the MAC is of a proprietary design.

Most of the MAC engine's internals are Andy's concepts, and they're integrated from his racing program. This is what is unique about CMDI—it's a race company; buying a MAC engine from CMDI is an "experience," not just a simple trip to the hobby shop. It's like the world of automobile racing: race teams don't simply buy an engine; they go to the engine builder and have them made; they have a relationship with the builder. That's how CMDI does business: you go to them to get your engine and they work with you to set it up to your liking.

This is what is so unique about CMDI and Andy Brown. CMDI is more of a speed shop, and more attuned to its customers. Because of this attitude, their product has already spread from Florida (where CMDI is located), and is quickly moving west.

BIG MAC ATTACK

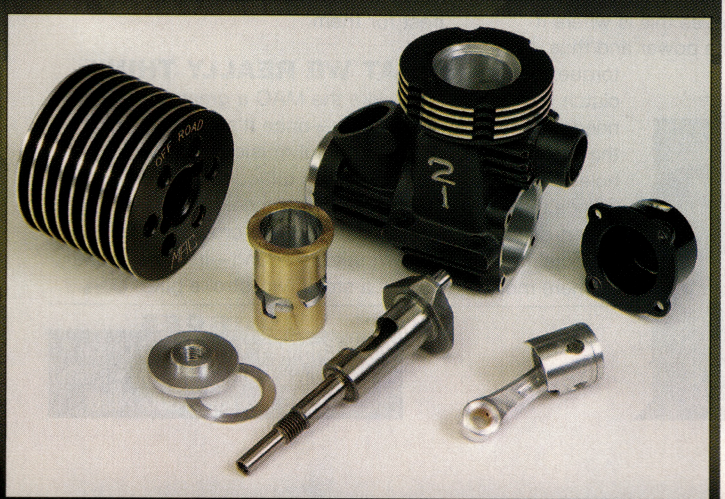
The MAC has a suggested retail price of $339. For that money, you get the engine with a 3-plus-2 port design, 8mm slide carb, and total support from CMDI. The power is consistent throughout the engine's rpm range, with the best power output arriving at 34,000 rpm (the MAC's maximum rpm is manufacturer-rated at 41,000). When this engine gets into its midrange, it feels like it hits a second gear—the mid-to-top end is unbelievable.

As with most high performance engines, the MAC's rated output is in the 2.5 horse range, but Andy feels that the engine's performance when installed in the vehicle is what matters most, and that all the numbers thrown around by manufacturers are just that—numbers.

The MAC engine case is black-anodized for better heat dissipation [*editor's note: many manufacturers make this claim, although it's largely thought of as unproven one way or the other*], and in fact, our test engine ran very cool while in our hands. This was surprising to us, as the MAC's cooling area—its case and cylinder head—is smaller in comparison to other .21 racing engines on the market. Most of these engines have huge cooling heads, and their cases are also adorned with rows of cooling fins. This difference does make the MAC a crowd standout. To our eyes, the MAC appears more like a water-cooled two-stroke motorcycle mill (which, of course, is fine by us).

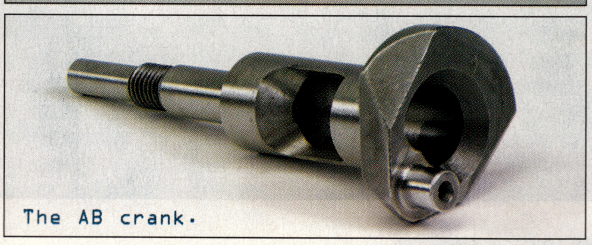
MAC ENGINE SPECS

Bore:	16.3mm
Stroke:	16.7mm
Piston & Sleeve:	aluminum/silicon piston w/ABC sleeve
Crankshaft:	AB Hyper-Flo
Connecting Rod:	MAC Double Bushing
Glow Plug:	Standard
Cooling Head:	50mm, black anodized
Displacement:	3.48cc
Porting:	Andy Brown 3+2 five-port design
Price:	$339.00

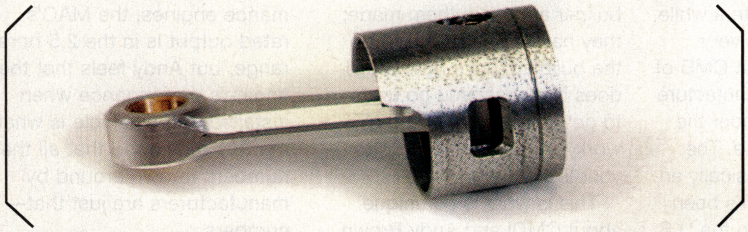


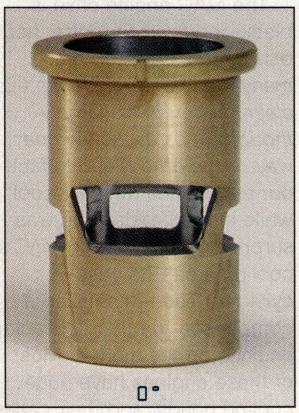


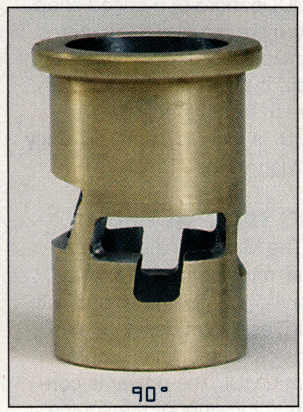
9mm carb with inserts.

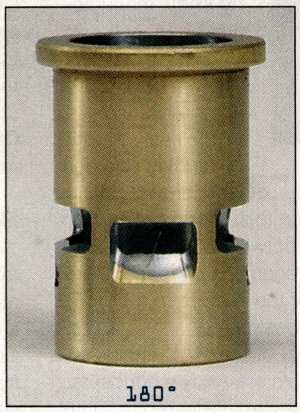


The AB crank.









MAC ON TRACK

• **Getting started**—We have run at least two gallons of fuel through our MAC engine, and have raced it five or six times (not counting practice). The MAC was very easy to break in (make that really, really easy), and it has always idled like a champ; you could fill the tank, start the engine, go have lunch, and it would still be idling by the time you returned. The MAC loves to run and it doesn't load up easily.

• **Engine temperature**—The MAC is designed to run between 220 and 260 degrees. Our engine ran around 225 for the duration of our test. Our engine was a little fat on top, but we wanted to get maximum life from it. Leaning it out slightly would provide a little more snap and provide better fuel economy.

• **Out on the track**—A buggy with a MAC engine is a blast to drive; the engine has smooth acceleration, but it moves very quickly through its broad powerband. When you hit the straightaway, watch out, because the top-end is simply ballistic.

The MAC loves to run, and so far it has been very dependable. It's also easy to tune. The low-end needle should be set about flush (just about anywhere in the nation), and the midrange should be set flush—and never touched again. The high-end needle should initially be set about 2-1/2 turns from closed, then fine-tuned to your liking. With these basic settings, the MAC will purr like a kitten and growl like a tiger.

There is one area that will require your undivided attention, and that's the clutch. The MAC performs best in its mid- to upper-rpm range, as this is where it makes most of its power and thus, its torque. Some clutch tuning is needed to get the "out of the hole" performance that an expert driver expects. For us mere mortals, the performance off the bottom is probably best, as it makes the engine more driveable.

We found that using Kyosho or Mugen Seiki 1.1 clutch springs with GS Racing three-shoe clutch pads worked well in giving the clutch a higher stall speed. This lets the engine get to its rpm sweet spot before the clutch is engaged. This gives the punch that's demanded by top-level racers. Of course, there are a multitude of combinations for tuning the clutch, but the goal is to raise the stall speed so the engine has more torque off the bottom. Our setup worked well, and if you want to start there, please help yourself.

WHAT WE LIKED

The MAC is like a one-off factory race engine that is available to the public. The fact that CMDI is more akin to a skunkworks speed shop than a faceless entity is a certain selling point; if you run into a problem or have questions, you can phone the fellow who designed and made your engine. We also liked the engine's on-track performance: it doesn't like to load up, and it's very reliable. And if you race on larger tracks, you will definitely appreciate the MAC's "mach 5" top-end speed.

WHAT WE DIDN'T LIKE

The only issue we had with the MAC was that it took us so darned long to find the proper clutch setup. We sought a certain bottom-end response, and this was time-consuming. Of course, we are now experts at clutch tuning. The stalling point of the clutch is extraordinarily important with the MAC engine, and many racers have found their own setup to create the power delivery that's best for them.

WHAT WE REALLY THINK

We like the MAC a great deal It's like a fine violin—once it's tuned, it will make beautiful music. In a world where it's sometimes difficult to tell one brand of engine from the next, the MAC really stands out from the crowd, and it has its own unique sound—its note is like that of a small two-stroke bike.

ADDITIONAL ENGINE OPTIONS

The MAC engine we tested was the stock version, but for those of you wishing for even more, Andy offers a modified (ported) version. We raced such an engine at the recent Maxy's Fuel Off-Road Challenge in Florida, and there was a noticeable difference between that engine and the stocker. Andy obviously knows what he's doing, and his modified version had the features we liked in the stock engine, e.g., great mid- and high-range and superb reliability, and not only improved upon them, but also added a dose of additional low-end response that we really liked. You can opt for Andy's porting service when ordering your new MAC from CMDI.

SOURCES

MAC Engines, CMDI, 103 Union Ave., Live Oak, FL 32064 • (386) 208-1036; fax (386) 330-2420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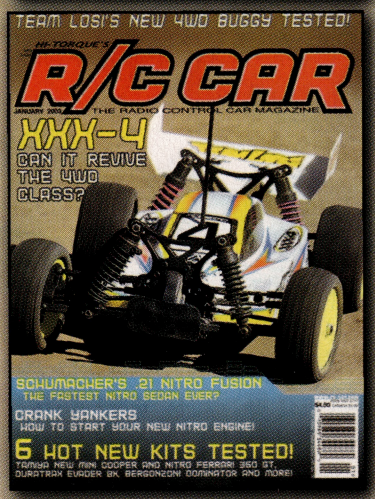
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MY FAVORITE PRODUCT:

ASSOCIATED ELECTRICS

The Team's Mike Ogle tells all

Associated is inarguably one of our hobby's staples; who hasn't heard of the RC10? The company has morphed over the years, from a cottage race company to one of the most successful kit and RTR manufacturers in the industry. We caught up with Associated's Director of Marketing, Mike Ogle, to learn more about the A-team.



MOST UNIQUE

"That would have to be our Monster GT. Well, it's unique for a racing-based company such as Team Associated. We have never really pursued the "basher" market before, so the Monster GT is probably our most unique product. At the time it was conceived, there was really only one strong player in that segment—Traxxas's T-Maxx. We knew we had to build a bigger, tougher truck, and we also saw the trend of people putting .21 and larger engines in these types of trucks, so the Monster GT's project name "BFT" was coined: Bigger, Faster, Tougher. Regardless of what you might have heard, this is what "BFT" really stands for—that's our story and we're sticking to it! Since then, there have been a lot of .21-size monster-style trucks released, some of which are larger, some of which may even have a little more top-end than the MGT. But we feel that with the combination of a super-tough extruded aluminum chassis, reliable .21-size engine, built-in reverse, and monster-style suspension that really works, the Monster GT offers the best, highest-quality overall package you can buy in a monster-style truck. And nobody comes close to Associated's widespread parts availability. Everybody carries Associated parts!



BEST VALUE

"Our new B4 Ready-to-Run is a tremendous value. This is not a B4 re-creation for the RTR market—this car is made from the exact same components as our IFMAR World-Champion Team Kit. We send these U.S.-made parts to Mexico to be assembled, and of course we add a painted (actually, screened) body, a high quality, name brand Airtronics Blazer radio system, LRP speed control and a few other goodies. The result is the only real competition-level electric buggy in a Ready-to-Run format. In fact, this may make the B4 RTR a candidate for "most unique" product. There's really nothing else that even comes close in the category. The big trucks may be the current rage, but if you want to get a taste of a purebred, dirt-carving, off-road race machine—without spending a lot of money—the B4 RTR is a great way to go.



BEST SELLING

"This would have to be our RC10GT. Who hasn't raced a GT at some point? Since its introduction in the early '90s, the GT has consistently been at the top of Associated's sales charts. It has also consistently been at the top of the race-wins charts; in fact, the GT has never lost a ROAR gas truck national championship. That's right: a 100-percent win record. When we introduced the GT Ready-to-Run, we saw a huge jump in sales in that category, partially because there's so much aftermarket support: bodies, tires, wheels, and aluminum and titanium dress-up parts. There's no limit to how much you can do to customize your truck. We see a lot of customers who don't want to build their trucks, but they sure don't mind accessorizing them. And of course, having a full line of Factory Team parts available, including a fully loaded Factory Team GT kit, also helps. After all these years, and all the different models and revisions, the GT is still at the top of the heap—sales-wise and race-wise."

SOURCES

Associated Electrics, Inc., 3585 Cadillac Ave., Costa Mesa, CA 92626 • (714) 850-9342; fax (714) 850-1744

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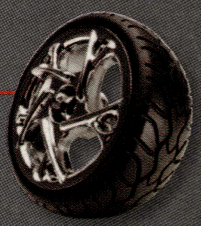

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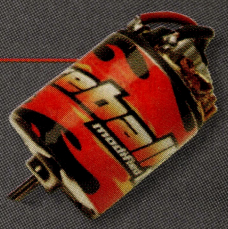

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PANTHER TIRES STUDS

The perfect "in between" truck tread

Panther tires have been around for longer than you might think. Although they've sold tires under the Panther name for just a short while, they have in fact for years been producing tires for some of the R/C industry's biggest players. They have been a "behind the scenes" company until recently. Panther is really coming on strong in the racing tire market this year, and we had the chance to test one of Panther's newest treads for 1/10-scale off-road trucks—the 2.2 Stud.

THE DESIGN

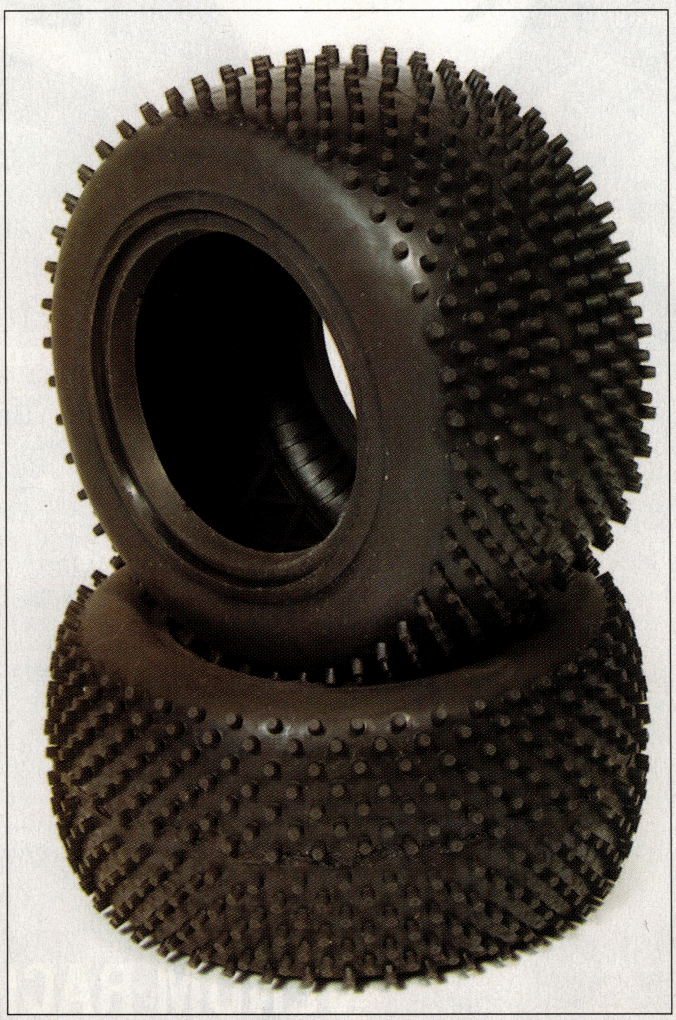
As its name implies, the Stud features staggered rows of closely spaced, round lugs. The lugs are short, and have a larger diameter at the base to reduce the chances bending under acceleration and during hard cornering. As for the carcass, i.e., the body shape of the tire, the Stud uses a thicker cross-section. This additional material not only reduces sidewall flex, but also helps the tire to maintain its shape—especially in the middle, where the tread is more likely to be distorted. The Studs come in two rubber compounds—soft and medium-soft.

WHERE IT WORKS

The Stud is the type of tire that we would select for when a very low-profile tread, such as a Fuzzie or Holeshot, is too shallow. The Stud will work well on hard-packed tracks that have a coating of loose dirt that prevents the typical blue-groove-type treads from getting bite. The Stud is also good for damp and/or softer dirt tracks, where you'll have a tire that won't cake-up with dirt.

TESTING

The perfect opportunity to test the Studs presented itself during a recent Saturday club race at Hot Rod Hobbies Raceway in Saugus, California. As this was the final race day for this particular layout, they decided to run the hard-packed dirt "wet," which meant that they'd be watering between rounds. When the track was wet, just about any tire seemed to work well—even the Fuzzie-type treads, which, although they packed with wet dirt, the dirt would be flung off under acceleration. The real challenge was finding a tire that would work in the later rounds as the dirt began to dry and become loose. Nothing seemed to work well until we tried the Studs.



The Studs were much better than the lower-profile treads on these conditions. The lugs are just long enough to penetrate the loose soil, yet not so long as to flex and bend when they touched the hard dirt. The Studs were also immune to packing up with the damp dirt. They worked equally well when entering the fast sweeper, where the rear tires tend to slide, and they had tremendous forward and side bite, which enabled us to really peg the throttle when the other drivers were feathering theirs.

WHAT WE REALLY THINK

In the R/C tire business, Panther is really making headway. Its designs are solid and are in most cases unique. The rubber compounds they are using are also very tacky and long lasting. The Studs fill an important gap in many current tire designs, and they'll always be in our tire box.

Part no.: T340
Price: .....$18.95 per pair

SOURCES

Panther Tires, 4253 E. Michigan St., Indianapolis, IN 46219 • phone (866) 700-8473

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Sportman Stock Car
1. David Burnell
2. Jim Cooper
3. Chris Elkins
4. Danny Greco
5. Robert Acala

Sportman Stock Truck
1. Chuckles
2. Danny Greco
3. David Burnell
4. Jason Peterson
5. David Anderson

Expert Stock Car
1. Joe Jacober
2. David Sheppard
3. Frankie Contreras
4. Jeremy Felles
5. Cody King

Expert Stock Truck
1. Jake Thome
2. Chris Higa
3. Frankie Contreras
4. Cody King
5. Steven Hartson

19T Car Reedy
1. Austin Bishop
2. Robert Page
3. Tanner Stumpf
4. Ryan Pursley
5. Jeff Pollard

19T Truck Reedy
1. Austin Bishop
2. Aaron Lane
3. Robert Page
4. Randy Marquez
5. Lizard

Modified Car
1. Ryan Cavalieri
2. Kyle Stallings
3. Aaron Waldron
4. Steven Hartson
5. Doug Scripture

Modified Truck
1. Kyle Stallings
2. Aaron Waldron
3. Wayne Ashmore
4. Jake Thome
5. Ryan Dunford

Modified 4WD
1. Mike Truhe
2. Bill Hagen
3. Anthony Pena
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5. Johnathan Cook

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Montclair, Ca. 91763
(909) 982-6507
www.pegasushobbies.com

Round 3 March 14th
Freedom Park RC Raceway
Freedom Park Dr.
Camarillo, Ca.
email Fran at: mcq16@aol.com
www.venturaroadrunners.com

Round 4 April 4th
So Cal RC Raceway
19118 Brookhurst St.
Huntington Beach, Ca. 92646
(714) 963-7484
www.socalrc.com

Round 5 May 2nd
Revelation Raceway
4871 West State St.
Ontario, Ca. 91762
(909) 628-9909
www.revrace.com

Round 6 June 20th
Hot Rod Hobbies
25845 San Fernando Rd. #21
Saugus, Ca. 91350
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INFO:

$20.00 1st entry, $10.00 2nd entry per round - Limit of 2 classes per driver - 24 degree stock motors only, no brushless motors - 19T Reedy Spec motors part #508 bushing, & #509 bearings are the ONLY legal 19T motors to be used. #508 motor will be available for sale at each race - Awards for top 3 at each event - Awards for top 10 at end of series - Must attend 4 of 6 events to be eligible for awards - 2 Qualifiers & single A Main at each event - 1 Bump up format - Best 4 races count / 2 throw outs - No Pre-entries - Sign up at the track - Practice 6 - 8am - Racing 9am - For points, results & photos visit: www.jimmybabcock.com

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Meet the press

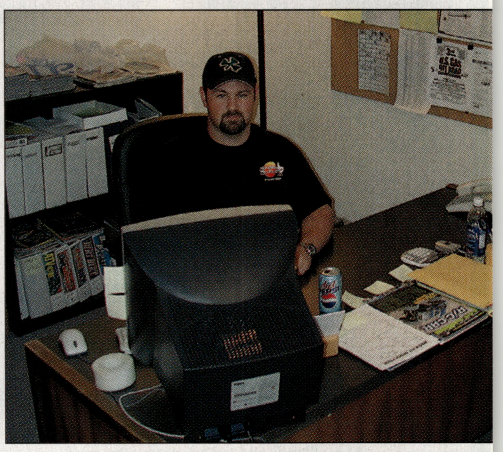
Don't blame us; you asked for it!

We receive, surprisingly, quite a number of inquiries regarding our staff, and the rest of the team here at Hi-Torque Publications, that puts *R/C Car* together each month. Some people—obviously disgruntled readers—even want to know what we look like ("Does Skinny really look like *Shrek*?"). First, thanks for caring; second, it's not too late to turn the page and move on.

Hi-Torque publishes seven "action sports" magazines: *Dirt Bike, Dirt Wheels, ATV Action, Mountain Bike Action, BMX Plus!, Motocross Action*, and, of course, *R/C Car*. Our main offices are located in warm and sunny southern California, in the heart of the R/C and motorsports industries. There's always something fun to do!



This is where it all takes place. This is our home—a sprawling two-story building at the end of a cul-de-sac, with several acres of vacant land for R/C testing (and the occasional lunchtime riding session). And with Six Flags Magic Mountain just minutes away, there are plenty of excuses for extended lunchtime "test sessions."

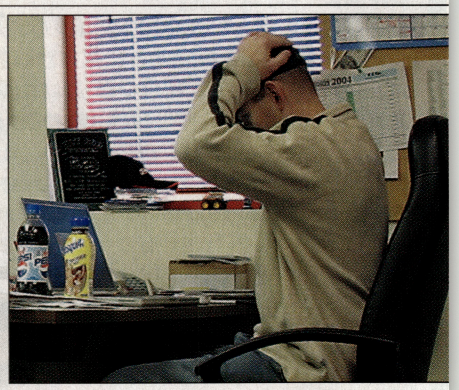


This is our sales guy—pro R/C racer and Bill "Ice Cream" Hagen. Bill also sits in on some of our tests, and for a sales guy, he is pretty useful—especially during photo shoots, when it's really, really important to hit the mark (are you reading this, Skinny?).





This is what Associate Editor Skinny looks like out of his Shrek outfit. Now that you're done laughing, we can tell you that Brian (his alias) gets to do all the fun stuff, such as travel to races, get Frank his Diet Pepsi, and clean the office. Skinny can usually be found deep within his secret lair, building and wrenching on his R/C cars; staring blankly at his computer screen; or typing smack on the Starting Grid online forum.



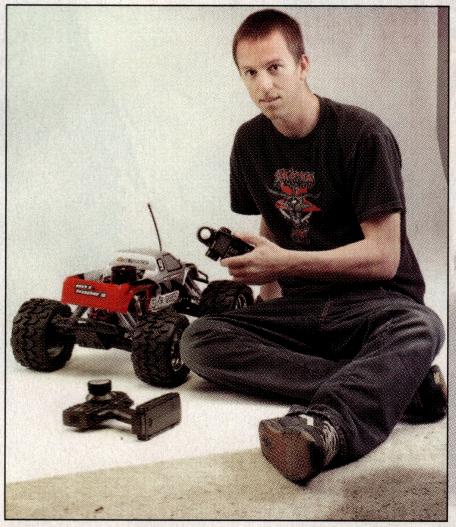
Once a year, Editor Frank Masi comes out of his cave and makes his way to the office. If he sees a lot of free swag, he will sit down at his desk and begin to type; if he sees only nasty Post-It notes and memos from upper management (about his failure to include a cover sheet on his TPS reports), he gets back into his truck and we don't see him for another year. Yes, as this photo shows, he does really exist.



Tim, or as he's sometimes called, "T-Bagz," heads *R/C Car*'s graphics and layout department. Tim is amazingly talented, works fast, and is very patient with our often very late stories. We've learned that a lot can be forgiven with just a new T-Maxx suspension arm. Tim is very possessive of *R/C Car*, and often won't let us change a layout, gathering them in his arms in a Gollum-like fashion, while muttering something about "My Precious."



Meet the photo department: this is Pat and Travis, and these guys make our photos look great, and have been known to manipulate images from time to time (Pat created the glorious *Shrek* image for Skinny's column).



Bash is our official "unofficial" staff photographer. We like Bash because he is often willing to work weekends—if he needs a new part for his R/C vehicle. He also shoots pics for some of our other mags, including many of those incredible Supercross and bike test shots that can be seen in any month of Motocross Action. According to Bash, it's easier to shoot the big stuff than to get a tiny, speeding R/C car in frame—but he's getting better every month.

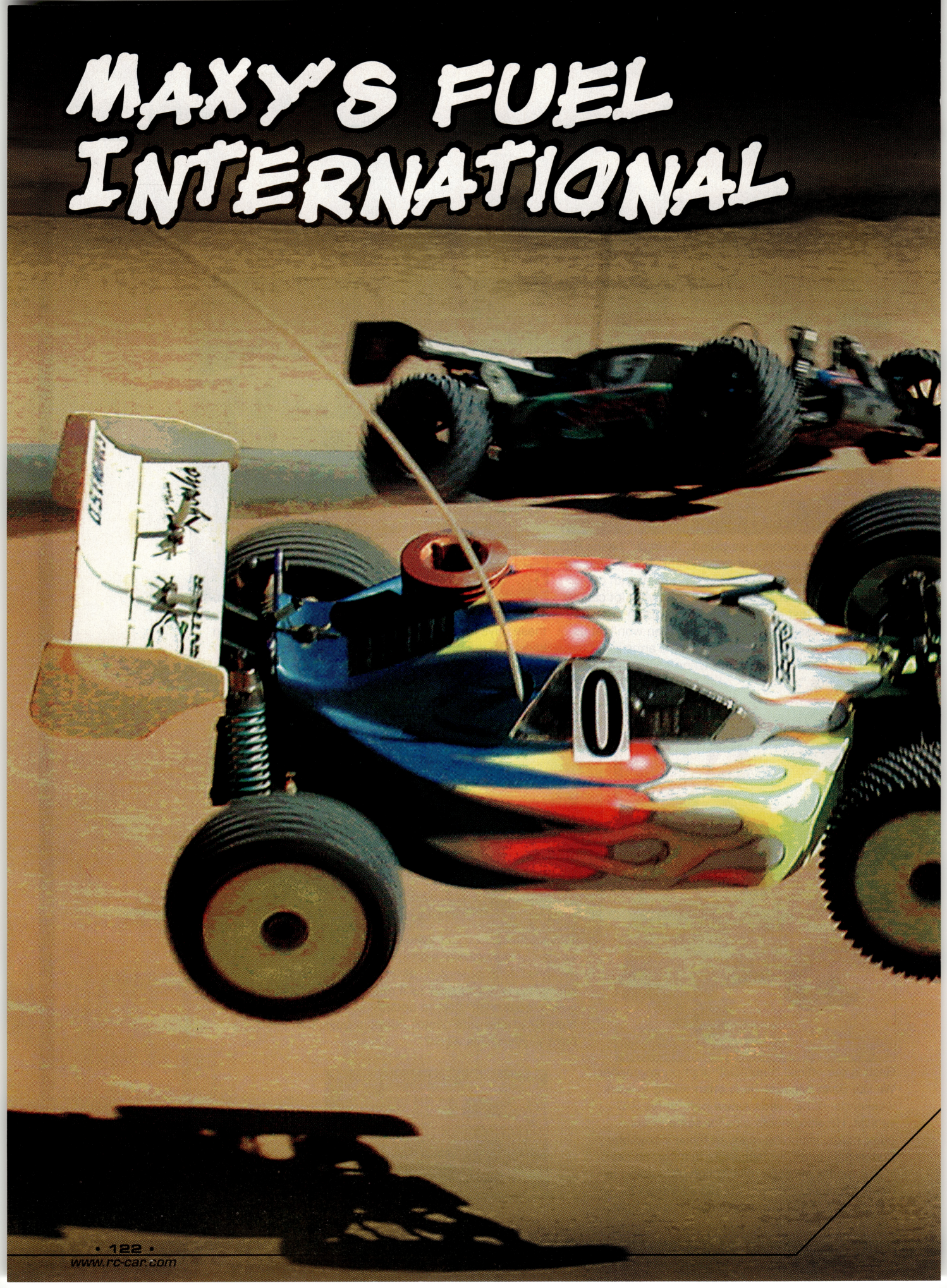


As part of our website editing team, Brad is the man responsible for posting all of the stories to the websites. This is not as easy as it might read, as Brad has seven magazines' sites to update—often at the same time. Brad's favorite quote? "C'mon, guys, don't you have anything this week?"



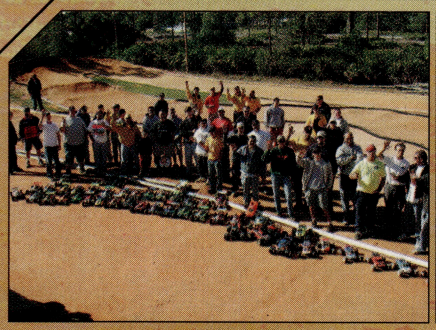
So there you have it; now you are part of the R/C Car family! You can send your holiday and birthday presents to us at the usual address.

MAXY'S FUEL INTERNATIONAL



NITRO CHALLENGE

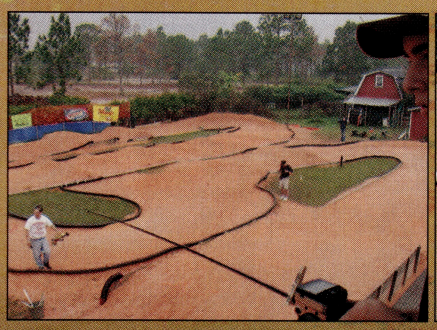
The last blast of the racing season







Held just before the New Year, the annual Maxy's Fuels International Nitro Challenge offers the gas off-road competitor the best of everything: Florida's fantastic Boggy Creek track; pristine weather; and a laid-back atmosphere that isn't found elsewhere during the racing season (this is, after all, the unofficial last hurrah of the nitro off-road season). The Boggy Creek track is one of the best in the nation, with an exciting and spacious layout, even if it is located in someone's backyard. The "international" aspect of this race, as suggested in the title, isn't for show; racers from both Puerto Rico and Costa Rica were in attendance; former World Champion Daniel Vega was scheduled to attend, however, family priorities prevented his making the trip to warm and sunny Florida. The American contingent was in force, with current World Champion, Kyosho's Greg Degani, and Jeremy Kortz. Other R/C celebrities in attendance included OFNA's Paul Coleman, along with his top drivers, the Wheelers. Andy Brown and his wife, Donna, came to support the MAC engine team. Of course, we can't forget to mention Kyosho's Regan LeBlanc.







LEARNING THE TRACK

Although for most, practice began on Friday, there were, as usual, the fortunate few for whom practice started on Wednesday. On this track, with its large, motocross-style layout, and now-famous high-speed tabletop (with a sixty-foot approaching straight), a lot of practice was essential. After you hit the aforementioned tabletop, the next obstacle was a tricky "double-quad" section that led into a tight hairpin turn. After that, there was an absolutely huge triple that few could clear. This led to a 170-foot straightaway, a large berm, and then a 75-foot whoop section that claimed more than a few cars.

The majority of the pro drivers appeared to have the course dialed-in straight away. Kortz had his MP-7.5 on rails, and looked the fastest. In the 1/10-scale nitro truck class, it was a toss-up between our own Bill "Ice Blue" Hagen, and OFNA's Josh Wheeler. In monster truck, OFNA's Paul Coleman was flying with his prototype Hyper 7 RT. The Blast MT of Eric Lutz, the American distributor for Bergonzoni, also looked fast, as did ProHobby's Danny Beers, who was driving his Faze 5 T-Maxx conversion.

Friday and Saturday were qualifying days. Friday saw great action for the gas trucks and monster trucks, as everybody tried their best to get into the top mains. In gas truck, Floridian Jason Ruona was the fastest guy of the day, taking the pole position. Jason looked incredibly smooth on the huge track. Bill Hagen suffered from some mechanical issues, however he appeared to have the speed to show the east coasters how it's done out west.

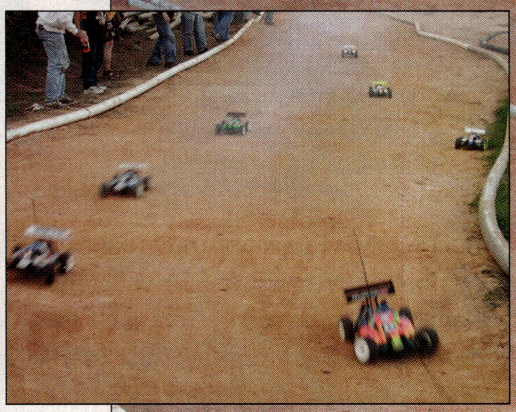
In monster truck, Ralph Rpmodifried (don't fault us; this is how it was spelled on the tech sheet) was the class of the field. Driving his Bergonzoni Blast MT, Ralph handily won the top qualifying spot ahead of Bobby Moore and the new GS Storm SUT of Bobby Horan. Ralph had the words "Bye-bye Bobby" pinned to the back of his Bergonzoni—talk about head games! Our own Brian Skinner qualified in sixth spot with his small-block ProHobby T-Maxx (which we tested last month).

Saturday was all about the big boys—the 1/8-scale nitro buggies. As the sun came up, the weather and the racing became hotter. The guys from So Cal were laying down the smack. The Kyoshos of Degani and Kortz set the pace, and the only non-west-coast drivers to keep pace were Josh Wheeler and local hero Travis Scrambling. These four looked super-fast, with Degani holding the TQ spot upon the completion of qualifying. Of the field, Raymond Norte, Hagen, and Josh's brother, Justin Wheeler, also looked competitive. The A-main would really be interesting.

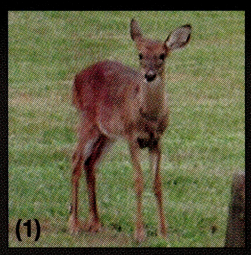
MAIN SUNDAY

The day of reckoning was upon us, and although this event had a casual atmosphere, when it came time for the A-mains, it was anything but casual.





NITRO CHALLENGE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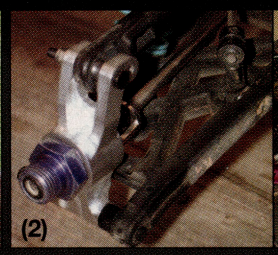
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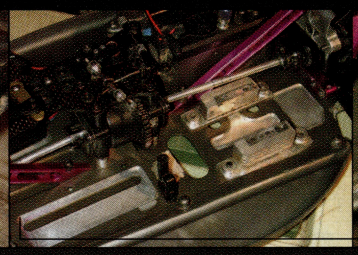

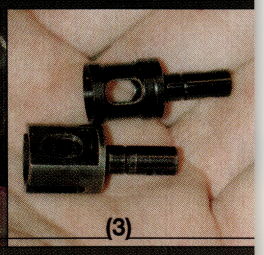
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FUN IN THE SUN AND OTHER NEAT STUFF

The Maxy's International Challenge is a lower-key "big" race, and as such, there's a more playful atmosphere in the pits, if not out on the track (where it's almost always all-business). Here's a brief look at the lighter-hearted side of racing, and a sneak peek at some new stuff we spied in the pits.

1.) Bambi lives: Boggy Creek is set on a huge, undeveloped area of land, and the wildlife was hanging out to see the racing. We're just happy that the alligators don't care much for R/C racing.

2.) Spotted on Degani's Kyosho Kanai buggy, this is the newest creation from Racers Edge. It is a sweetly machined aluminum hub carrier, and it comes in different degrees of toe-in. These parts were prototypes, so we aren't able to bring you additional information, such as pricing, as of yet.

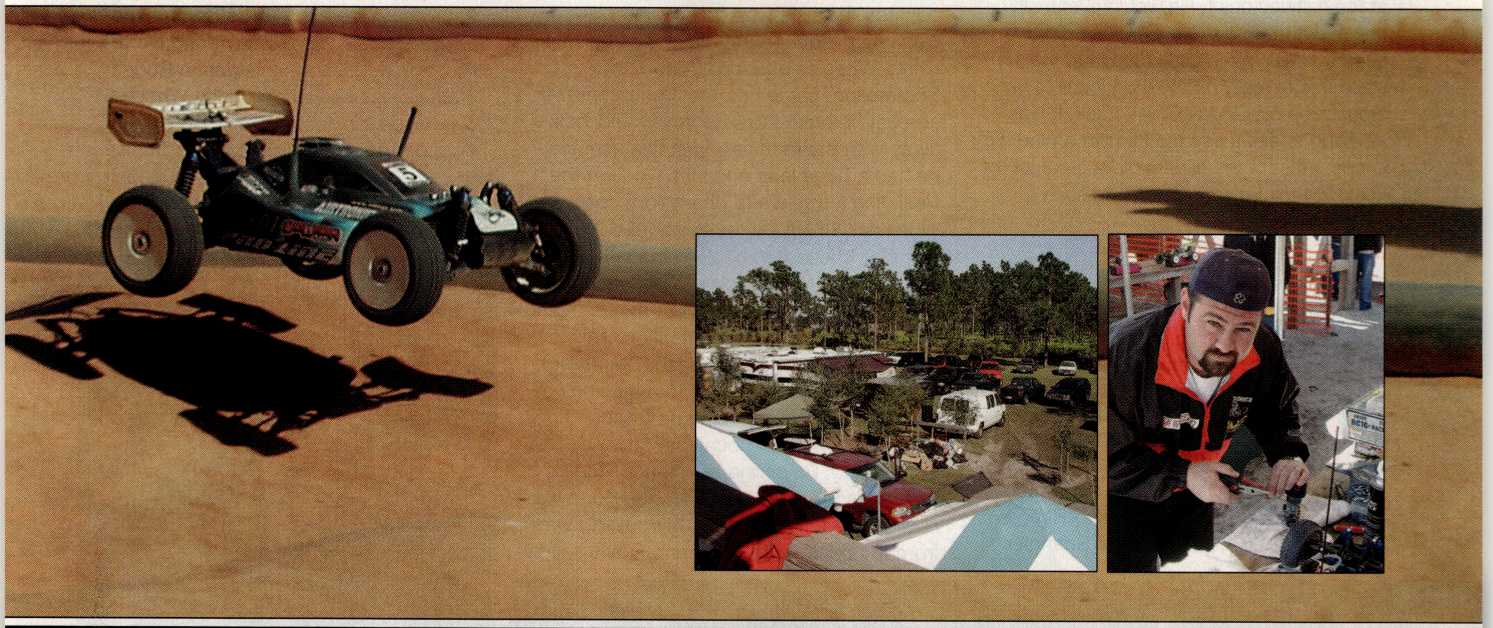
3.) We spotted this on the Wheeler brothers' OFNA cars. As you can see, this chassis has been heavily machined to reduce weight, yet it retains its strength. Also note the output cups, which have been drilled out to reduce rotating mass and increase acceleration. The spur and clutch bell gears follow along this theme, as they too have been lightened. And yes; that is a 7075-T6 driveshaft. This is what you get when you're fast enough to be sponsored.

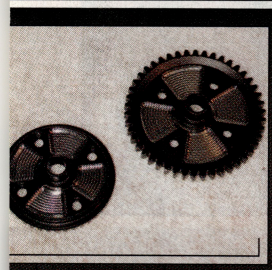


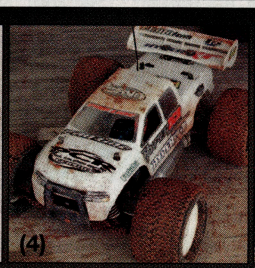
• **Monster Truck A-main**—As the flag dropped, our very own monster truck guru, Skinny, jumped out to a good lead with his small-block Faze-5 Maxx (did you read that? Small block!). A sour turn marshal did the unthinkable, and flamed out Skinny's engine (why was a marshal touching Skinny's truck? That's the mystery). Fortunately, Regan LeBlanc and Eric Lutz got our man back out on the track quickly enough so that he re-entered in third place. Meanwhile, Danny Beers and Ralph Rpmodifried were running a close one-two up front. Trying too hard to catch up, Skinny broke both of his front, right side shocks while attempting to clear the massive triple jump. As this was a 30-minute A-main, trouble plagued nearly everyone. Beers also flamed out, at which time Bobby Moore inherited the lead. He, too, suffered a mechanical, which gave John Camp then Danny Beers had flame out issues, Bobby Moore was front-runner, but then he to had problems and dropped back. John Camp was up in front at one point, but the brutal track also sidelined him. This left Scott Beiswinger and Modifried to battle it out for the win. Modifried did his best with his Bergonzoni MT, but finally, Beiswinger was able to put an eight second gap on him and was on cruise control for the win.

Position	Name
1	Scott Beiswinger
2	Ralph RPModifried
3	John Camp
4	Danny Beers
5	Brian Skinner
6	Eric Lawyer
7	Bobby Moore
8	Bobby Horan
9	Eric Lutz
10	Jeff Keeton

• **1/10-scale Gas Truck**—As the trucks lined up for the 45 minute A-main, it was a shock to see Hagen's Associated truck filling the last slot on the grid; Hagen had come to race only 1/8-scale, but at the last minute decided to enter his truck. With a Floridian field ahead of him, Hagen had his work cut out as the lone Californian. There were some fast locals out there, and this was their track. As the flag dropped, Jason Ruona jumped into the lead and set a good pace. JR Mitch was right behind him. Unfortunately, both of then had an early day; the track claimed their trucks just before the halfway mark. Ryan Eckert and Ryan Lopez didn't mind







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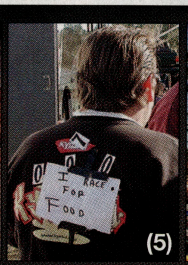

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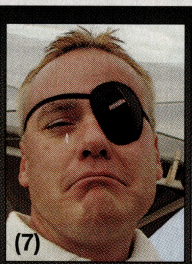

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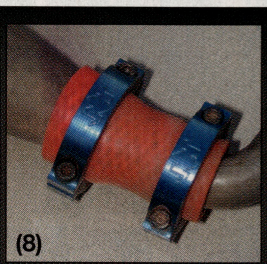

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4.) OFNA's Paul Coleman gets to play with all the cool stuff. This is the working prototype of the company's Hyper 7 buggy-based unlimited-class truck. Judging by its on-track performance, the prototype should see production soon; it flew around the track as if on rails.

5.) Even the World Champion gets no respect sometimes. By the way: this isn't true—Greg would race without food, too.

6.) The cast and crew: Kneeling in front are Adam, the owner of the Boggy Creek track, and Maxy from Maxy's Fuels. Thanks, guys, for putting on such a fantastic and fun race.

7.) Why is Regan LeBlanc frowning and why is he wearing an eye patch? This is all the result of an ill-timed tire fight between Regan and his roommate, Greg Degani. After scoring the winning blow with a 1/8-scale tire, Degani was ordered to procure the eye patch, else he's be without a pit crew for Sunday's event.

8.) For those still using rubber exhaust couplers—check out these new clamps, which replace the traditional zip-tie method of securing the coupler to both manifold and pipe. These clamps are of European decent, and as soon as we track them down, we'll supply you with more information.





the leaders' mishaps, because they took over the top spots. Hagen had other ideas, and with hard work found himself in the lead at the halfway point. He would eventually check out the win the main by a comfortable gap. This was a fantastic race, and the 1/10-scale trucks really had to work hard to get around the big Boggy Creek track. It was amazing to see these trucks take on the big jumps; most of the drivers did a great job of keeping their trucks together on such a rough track.

Position	Name
1	Bill Hagen
2	Ryan Eckert
3	Ryan Lopez
4	Shane Ogden
5	Lance Norick
6	Dave Bengston
7	Michael Cisneros
8	JR Mitch
9	Jason Ruona
10	Cliff Spangler

• **1/8-scale A-main**—The 1/8-scale cars lined up along the back straight just as the sun was setting. Degani had the pole position, with his teammate Kortz right behind. The race was on in a flash, and Degani pulled a great holeshot as he, Kortz, Wheeler, and local hero Travis Scrambling, came into the first corner four abreast. It looked like Degani would walk away with the race after just five minutes; he had a huge lead and was working the track like a true world champion. Josh Wheeler's OFNA buggy developed a problem that forced him back to the pits. Degani, who looked to have this race well in hand, flamed out at the ten-minute mark while entering the whoop section. This allowed Kortz to take the lead. Degani's pit crew had his car restarted, but his engine flamed out again. Running up front and only seconds apart, local fast guys Scrambling, Raymond Norte, and Ruona, were trying to gain on the leader. Kortz was having none of this; he slowly pulled away from the pack. With Kortz and Travis solidly in first and second, Scrambling and Norte could only watch as Kortz pulled away. By the end of the race, most of the pack was a few laps down from the leader—only Scrambling and Norte still had a crack at the number one position should Kortz bobble or flame out.

Our own Hagen suffered from a blown-out diff in his Crono early in the race. He decided to stick it out and struggle around the track with only two-wheel-drive (he still managed to work his up to sixth—way to go, Bill).

In the end, Kortz won, with Scrambling in second, and Norte in third. This was a great race to watch under the lights. Judging by the lap times, it looks as if the east is gaining on the west! We predict that next year's race will show even less of a disparity—perhaps and easterner will take the win.

Position	Name
1	Jeremy Kortz
2	Travis Scrambling
3	Raymond Norte
4	Jason Ruona
5	Justin Wheeler
6	Bill Hagen
7	Chris Daniel
8	Greg Degani
9	Josh Wheeler
10	Robin Nelson



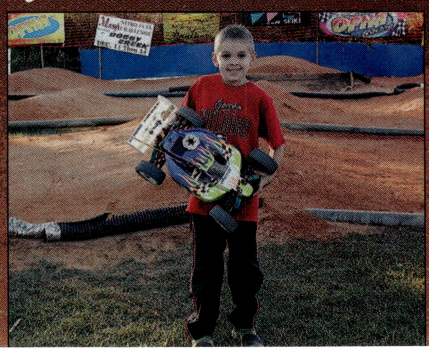






NITRO CHALLENGE





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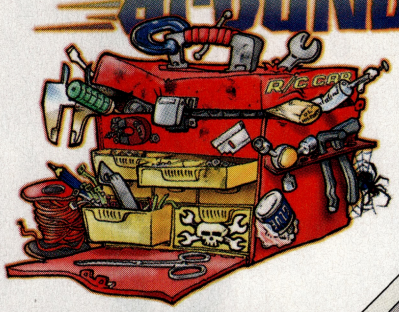

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THE BEST ON-THE-GO HAND CLEANER

Tamiya thinks of everything, and their latest item is out of the ballpark—it's not even a toy car. Tamiya has come out with a hand cleaner that requires no water, towels or anything else to thoroughly clean all that R/C goop from your hands. Have you ever been R/C bashing in some secluded area, miles from water, without soap or towels? Your hands all dirty from wrenching on your filthy nitro ride? Have you ever been at the races, and have had to rush to the drivers' stand with greasy hands? Well, Tamiya has come out with *the* solution to this age-old problem. This little can of foam is sheer genius, and it works as simply as rubbing your hands together.







Here is how it works:

Step 1—Your hands are dirty; what can you do? Just pick up the can, shake it, and spray a ping-pong ball-sized amount of foam in your hand.

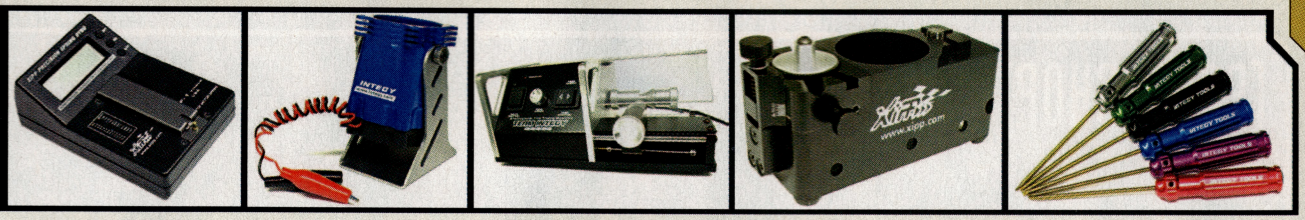




Step 2—Put your hands together and do your best impression of Ebenezer Scrooge, rubbing the foam into your hands until it dries up and begins to crumble.

Step 3—At this point, your hands will start to look clean and all the gunk will be balling up and falling off your hands. In about 30 seconds, your hands will be clean, and you should be brushing off the remainder of the crumbs.

Is this the cleverest idea ever? When we first got the samples, we were skeptical, but it truly works, and works well. Two words of caution: only use a small amount, because if you pile the foam up on your hand, it will leave a sticky residue. Also, rubbing the foam into your hands leaves a little pile of gummy crumbs on the ground. So don't use this stuff in the living room.



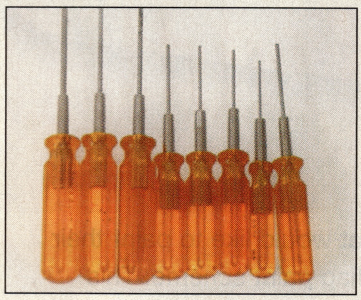
THE FIVE OLD FAITHFULS

By Unknown Tester

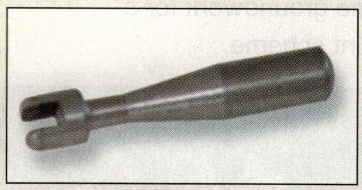
This month I have decided to try something a little different. Instead of showing you the next tools that will revolutionize the R/C world, I have instead decided to focus on the five workhorses of my R/C toolbox. I have been through many different tools and gadgets, but over the years these old favorites have remained in my box, and I think it's time they get their due respect.



1) Weller WCC 100 Soldiering iron—If you're serious about R/C, you'll eventually need a good quality soldering iron, and Weller delivers. Together we have performed some major operations on many different electronics, and the Weller has always performed flawlessly. Whether building a new battery pack, or repairing a severed receiver wire, I know I can always count on the WC 100.



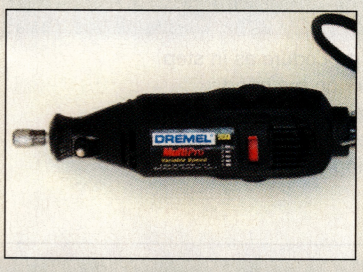
2) MIP Thorp drivers—These are often regarded as among the finest in the industry for their quality and durability. I have tried many different types of Allen drivers, but always seem to find my way back to these. The oversized handles make removing those stubborn screws a breeze. The best feature has to be the durability of the tips, which seem to never loose their shape. They come in both metric and SAE sizes, and the tips are replaceable.



3) Lunsford turnbuckle wrench—Though small in stature, this little guy gets a lot of work. Anyone who races 1/10-scale off-road definitely knows the value of this tool. I would have to say it is also the most borrowed tool in the pits. If only Lunsford would sell them in six packs, as I can never seem to find mine when I need it most.



4) Exergen D501 temp gun—Now I know there are some newer models available, but I have to say if it isn't broken, don't fix it. This Exergen has seen many different types of engines, and has always worked without a hitch. It has three different settings—scan, maximum, and minimum temperatures—and has a temperature range of between minus-50 to 550 degrees Fahrenheit. This is probably the second most borrowed tool in the pits.

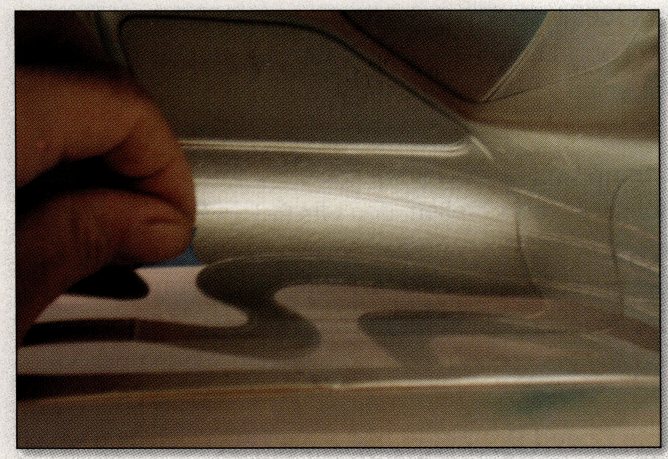


5) MultiPro Variable Speed Dremel—I had a hard time deciding which item would be the anchorman of my toolbox, but after some thought, it was a no brainer. No other tool even comes close to replacing the millions of tasks the Dremel can perform. From trimming bodies to polishing pillow balls, the Dremel does it all and keeps coming back for more.



Patriotic Paint!

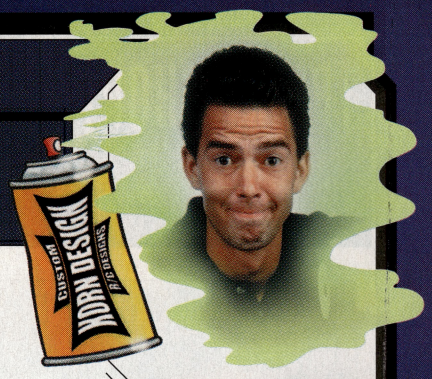
It seems more and more people these days are proudly flying their American flags—on everything from their porches to their bumpers. With this in mind, I figured that there had to be a large number of hobbyists that would like to paint their own custom American flag paint scheme. This month, I will lay down the groundwork for a "sick" American flag paint scheme.



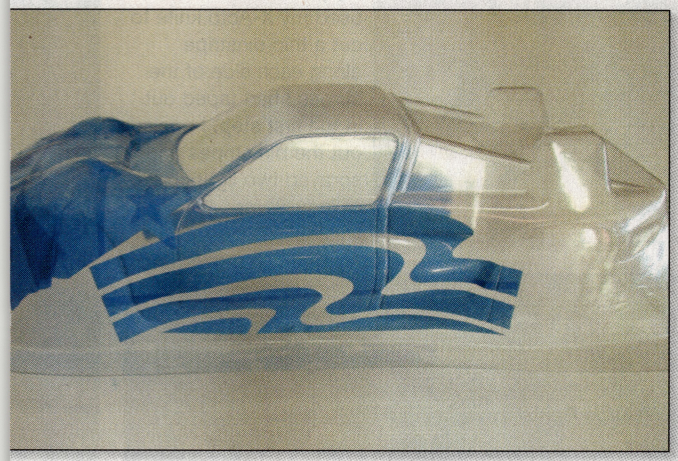
1. My first step was to draw out the stripes on the outside of the body's protective film. A black Sharpie works well for this. To create a look of movement (a "fluttering," if you will), I chose to draw the stripes with a bit of a wave to them. Once I had done this, I taped along the stripes on the inside of the body. I then cut out the design with my X-Acto knife, and peeled out the remaining tape (except the stripes themselves).



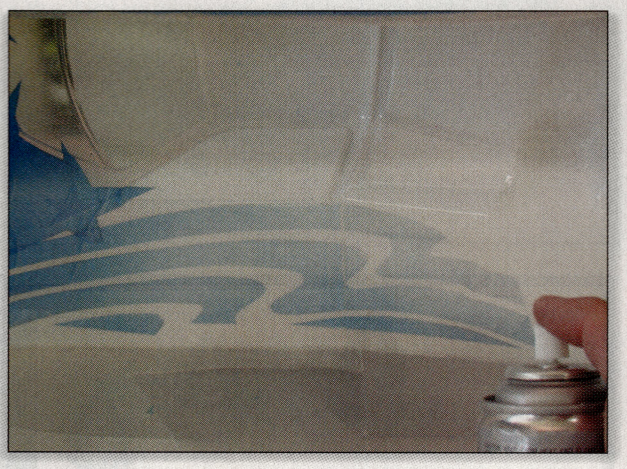
2. Using the same procedure as in step one, I drew some stars on the hood. Again, I taped over each star, and cut out each one and removed the excess tape. The only tape remaining was the stars.



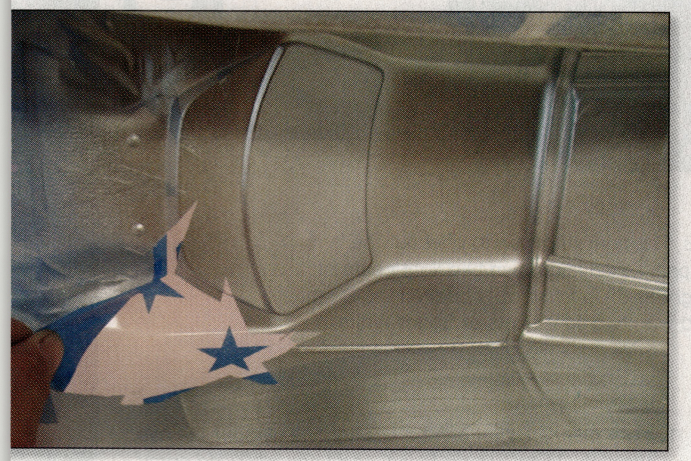
BY MARTY KORN



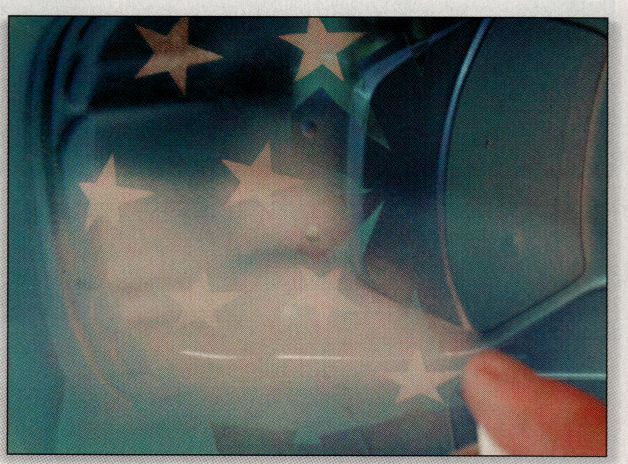
3. To separate the stars, which will be white, and the body, which will also be white, I needed to add blue to the background of the stars. To do this, I drew a 1/4-inch border around the stars. I laid down tape over the entire sketched-out border, then cut along that border and peeled out the remaining tape.



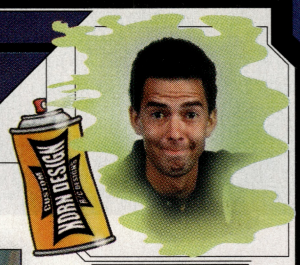
4. The main body color is Pactra's Sprint white, and this was the first color that I sprayed (remember, if at all possible, spray your darkest colors first). I laid down two light coats, straight from the can. Once the white had dried, I backed it with Indy silver. I did this because the next color is Candy Blue, and there was a chance that the blue would bleed through the white. Backing the white in silver ensures that any color that follows will not bleed through.



5. I peeled out the taped-off border around the stars. Be careful not to peel out the stars underneath. I then sprayed two light coats of Candy Blue.

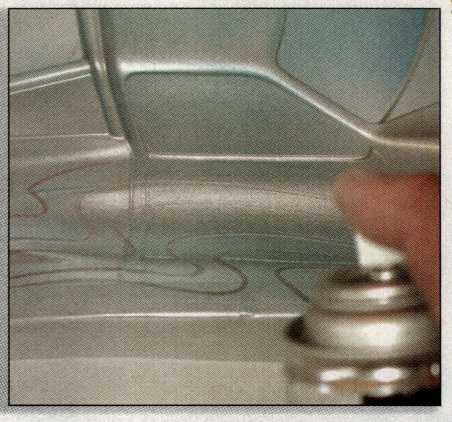


6. Once the Candy Blue had dried, I peeled out the stars and sprayed two light coats of Sprint White. This allowed me to paint the stars and back the Candy Blue—all in one shot.

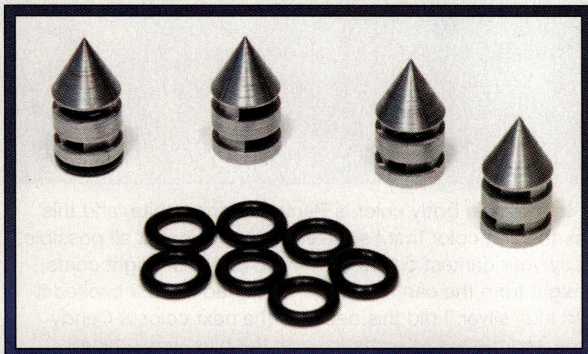


BY MARTY KORN





7. To add a finishing touch to the stripes in my patriotic theme, I used my X-Acto knife to cut a thin pinstripe along each side of the stripes I had taped out in the first step. I peeled out the pin stripes and sprayed two light coats of Indy Silver.



PAINT PRODUCTS: TRINITY NO-BRAINER BODY POST MARKERS

Part no.: TRI30003
Price: $9.99
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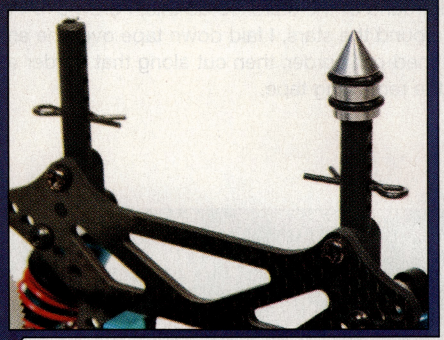

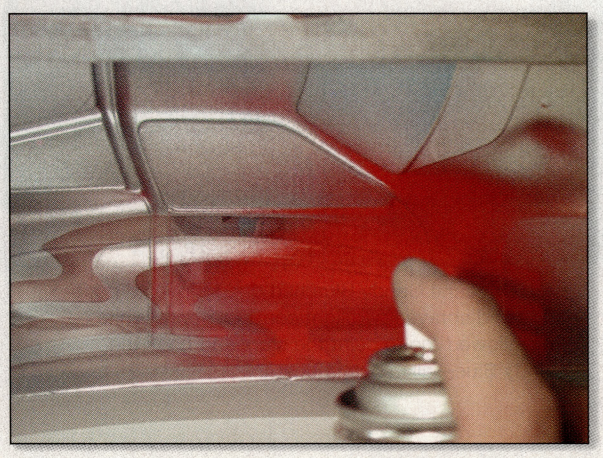

8. The final step was to peel out the stripes. I then laid down two light coats of Bright Red. To finish up, I backed the Bright Red with two light coats of Sprint White.

This is a paint job that can be easily done without the use of an airbrush. There are no fades, and I actually used spray cans heated to about 80 degrees to paint this entire American flag scheme. Remember; an airbrush is a valuable tool to painters, but is not necessary in all applications. Anyone with a few cans of paint and an imagination is capable of an awesome paint job.

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MARVINS HOBBIES & SPEEDWAY	8295 TUNJUNGA	Sun Valley	91352	818-771-1003
MARTY'S HOBBIES	1728 N. MOORPARK RD.	Thousand Oaks	91360	805-497-3664
MODESTO HOBBIES	401 BANGS AVE. H	Modesto	95356	209-529-7310
MONTEREY HOBBIES	915 PLAYA AVE. #D	Sand City	93955	831-393-1112
PALMDALE HOBBIES	2127 E. PALMDALE BLVD.	Palmdale	93550	661-273-6229
PIT STOP R/C HOBBIES	3554 STATE ST.	Santa Barbara	93105	805-898-3902
RACERS HAVEN	7401 WHITE LANE #12	Bakersfield	93309	805-835-0441
R/C COUNTRY HOBBIES	6011 FOLSOM BLVD.	Sacramento	95819	916-731-5868
R/C TECH	1618 SULLIVAN ST. #105	Daly City	94015	650-992-7600
RC UNLIMITED	14918 CAMDEN AVE.	San Jose	95124	408-377-3771
SACRAMENTO R/C RACING & HOBBIES	6201 27th ST. #C	Sacramento	95822	916-424-4001
SAVAGE MOTORSPORTS	948 MAIN ST.	Ramona	92065	760-788-7733
SHELDON'S HOBBIES	2135 OLD OAKLAND RD.	San Jose	95131	408-943-0220
SHOWTIME R/C SPEEDWAY	3824 CHESTER AVE.	Bakersfield	93311	661-328-1481
SO CAL R/C RACEWAY	19118 BROOKHURST ST.	Huntington Beach	92646	714-963-7484
SPEED WORLD RWY & HOBBY	1677 ROADRUNNER DR.	Roseville	95747	916-783-8864
SRS & HOBBIES	407 FRONT ST.	Salinas	93901	831-424-4044
THE HOBBY PLACE	10549 W. PICO BLVD.	Los Angeles	90064	310-441-0075
ULTIMATE HOBBIES	2378 N. ORANGE MALL	Orange	92865	714-921-0424

COLORADO

COLPAR HOBBIES	804 S. HAVANA ST	Aurora	80012	303-341-0414
HOBBYTOWN USA	4348 S. COLLEGE	Fort Collins	80525	970-226-3900
HOBBYTOWN USA	9120 WADSWORTH BLVD.	Westminster	80021	303-431-0482
HOBBYTOWN USA	800 SOUTH HOVER RD.	Longmont	80501	970-226-3900
MHOR R/C RACEWAY	12559 E. KENTUCKY AVE.	Aurora	80012	303-343-0151

CONNECTICUT

A & A PITSTOP LLC	266 D MAIN ST. RT 25	Monroe	06468	203-778-9249
ACES NITRO R/C	1125 NORTH AVE.	Bridgeport	06604	203-330-1788
TIME MACHINE HOBBY LLC	71 HILLIARD ST.	Manchester	06040	860-646-0610
RC MADNESS TRACK & HOBBY	640 ENFIELD	Enfield	06082	860-741-6501

DELAWARE

HOBBY STOP SPEEDWAY	22762 SUSSEX HWY.	Seaford	19973	302-629-3944

FLORIDA

ACE HOBBIES	2127 S. RIDGEWOOD AVE.	Daytona Beach	32119	904-761-9780
ARTS HOBBY SHOP	1475 ATLANTIC BLVD.	Neptune Beach	32266	904-246-0601
ATOMIC HOBBIES	13205 S.W. 137 AVE. #103	Miami	33186	305-235-3232
AURORA HOBBIES	2760 W 84TH ST. #2	Hialeah	33016	305-821-6668
BILLY BONES HOBBY	10602 S. FEDERAL HWY.	Port St. Lucie	34952	772-335-3715
BOB'S HOBBY CENTER	7333 LAKE UNDERHILL RD.	Orlando	32822	407-277-1248
COLONIAL PHOTO & HOBBY	634 N. MILLS AVE.	Orlando	32803	407-841-1485
COMPU HOBBIES	2653 N.W. 79TH AVE.	Miami	33122	786-845-8705
CRAFT HOUSE HOBBY SHOP	1379 N. MILITARY TRAIL	West Palm Beach	33409	561-683-0764
CROWN HOBBIES	7439 S.W. 24TH ST.	Miami	33155	305-264-3964
D & S HOBBY SHOP	750 W. HAMPSHIRE BLVD. #1 PINE SPRINGS PLAZA	Citrus Springs	34434	352-527-1500
ERNIES HOBBY SHOP	631 S. APOLLO BLVD.	Melboure	32901	321-724-5257
FELIX HOBBY	13394 W. DIXIE HWY.	North Miami	33161	305-895-5362
HARCO HOBBIES	11532 TAMIAMI TRAIL E.	Naples	34113	239-417-1099
G & C HOBBIES	1228 HYPOLUXO RD.	Lantana	33462	561-547-3812
HOBBY NUT INC.	12679 DIXIE HWY	South Miami	33156	305-235-9584
HOBBYTOWN USA	2464 W. BRANDON BLVD.	Brandon	33511	813-655-6366
JACKS HOBBIES	1759 N.E. JACKSONVILLE RD.	Ocala	34470	352-351-2224
LEMON BAY HOBBIES	2670 S. McCALL RD. #3	Englewood	34224	941-475-0083
MORRIS KOHL'S RACEWAY & HOBBY	1202 W. WATERS	Tampa	33604	813-931-1626
PHIL'S HOBBY SHOP	6050 PARK BLVD.	Pinellas Park	33781	727-545-1251
QUALITY AIRCRAFT R/C HOBBIES	6839 S US HIGHWAY 1	Port Saint Lucie	34952	772-460-2844
R.C. HOBBIES	6800 N. UNIVERSITY DR.	Tamarac	33321	954-721-5720
RACING HOBBIES	10722 WILES RD.	Coral Springs	33076	954-346-2226
SCOTT'S HOBBIES	26690 61ST RD.	Branford	32008	904-935-0758
SPACE COAST HOBBIES	2135 PALM BAY RD. NE #1	Palm Bay	32905	321-722-3696
SUPERIOR HOBBIES	1478 E. SEMORAN BLVD.	Casselberry	32707	407-834-9299
TAVERNIER BIKE & HOBBIES	91910 OVERSEAS HWY	Tavernier	33070	305-852-2859
WARRICK CUSTOM HOBBIES	7676 PETERS RD.	Plantation	33324	954-370-0708
EXTREME R/C HOBBIES	3491 NORTH HIATUS RD.	Sunrise	33351	954-748-7053

GEORGIA

HOBBY MART	6889 PEACHTREE INDUST. # H	Peachtree Corners	30092	770-840-8495
HOBBYTOWN USA	6770 VETERANS PKWY # 1	Columbus	31909	706-660-1793
HOBBYTOWN USA	800 E. BARRETT PKWY	Kennesaw	30144	770-426-8800
HOBBYTOWN USA	3360 SATELLITE BLVD. #14	Duluth	30096	770-418-0850
SUGAR BOWL SPEEDWAY	5272 NELSON BROGDON WY	Sugar Hill	30518	770-945-6709
R/C TOYS FOR BOYS	2220 COBB PARKWAY N.	Kennesaw	30152	678-797-0406
BIG BOY TOYS HOBBY SHOP	5035 MT. ZION PARKWAY	Stockbridge	30281	770-507-6288

HAWAII

ACE RADIO CONTROL	1005 LEHUA AVE.	Pearl City	96782	808-456-1279
THE HOBBY COMPANY	98-1005 MOANALUA RD.	Aiea	96701	808-487-2473

IOWA

AMERICAN HOBBY & SUPPLY	2186 E. KIMBERLY RD.	Davenport	52807	563-441-9996
FAGAN'S	2327 CENTRAL AVE.	Dubuque	52001	563-588-0846
HOBBY CHEST	209 E. MAIN	Ottumwa	52501	641-683-4436
HOBBY HAVEN	2575 86th ST.	Urbandale	50322	515-276-8785
HOBBY SHOP	1672 SYCAMORE ST.	Iowa City	52240	319-338-1788
HOBBYTOWN USA	901 E. KIMBERLY RD.	Davenport	52807	563-355-2071
HOBBYTOWN USA	2737 16TH AVE S.W.	Cedar Rapids	52404	319-364-3289
HOBBYTOWN USA	620 LINCOLN WAY #6	Ames	50010	515-232-9060
OUTBACK HOBBIES	2014 S. ST. AUBIN ST.	Sioux City	51106	712-276-7079
WILD BILLS R/C HOBBIES	901 W. JONES	Knoxville	50138	641-842-5973

IDAHO

DAPCO HOBBIES	2211 GARRETT WAY	Pocatello	83201	208-233-8163
HOBBYTOWN USA	1870 W. PULLMAN RD.	Moscow	83843	208-882-9369
HOBBYTOWN USA	3317 N. COLE RD.	Boise	83704	208-376-1942
MONSTER HOBBIES	267 W. HAYDEN AVE.	Hayden Lake	83835	208-772-0422
THE TOY SHOP	837 POLELINE RD.	Twin Falls	83301	208-734-2725

ILLINOIS

ALLEN'S R/C CARS	3115 LEACH RD.	Rochester	62563	217-498-7345
AL'S HOBBY SHOP INC.	121 ADDISON, BOX 449	Elmhurst	60126	630-832-4908
CORNER HOBBY	308 NORTH VIRGINIA AVE.	Swansea	62220	618-277-6030
DEPOT HOBBY SHOP	180 SOUTH SEMINARY ST.	Galesburg	61401	309-342-9323
HIS N HERS HOBBIES	1206 TOWANDA PLAZA #2	Bloomington	61701	309-827-0204
HOBBYLAND	616 N. MAIN	Bloomington	61701	309-828-1442
HOBBYTOWN USA	1000 LAKE ST.	Oak Park	60301	708-445-8056
HOBBYTOWN USA	3627 EAST MAIN ST.	St. Charles	60174	630-587-1256
HOBBYTOWN USA	8750 N. SECOND ST.	Machesney Park	61115	815-282-0727
HOBBYTOWN USA, Oak Mill Mall	7900 N. MILWAUKEE AVE.	Niles	60714	847-470-9577
JIMS HOBBIES	814 FRONT ST. #B	McHenry	60050	815-363-0333
LEISURE HOURS HOBBIES	2712 N. PLAINFIELD RD.	Joliet	60436	815-439-1477
OUTLAW RC HOBBY	1614 BROADWAY AVE.	Mattoon	61938	217-234-6229
PAT'S HOBBIES & CRAFTS INC.	5730 W. 95th ST	Oak Lawn	60453	708-424-6131
RSJ RACEWAYS INC.	19091 W. CASEY RD.	Libertyville	60048	847-549-6963
SPRINGIELD HAMMERS HOBBIES	2448 S 10th ST.	Springfield	62703	217-523-0265
STANTON HOBBY SHOP	4718 N. MILWAUKEE AVE.	Chicago	60630	773-283-6446
VENTURE HOBBIES	23 HUNTINGTON LANE	Wheeling	60090	847-537-8669

INDIANA

BE COMICS & KARDS & ROCKETS & HOBBIES	130 W.VAN BUREN ST.	Columbia City	46725	260-248-8020
BIG BOY HOBBIES	8893 PENDLETON PIKE	Indianapolis	46226	317-898-6284
B & R HOBBIES	9014 CRAWFORDSVILLE RD.	Indianapolis	46234	317-297-4257
BREMEN HOBBIES	308 N. BOWEN AVE.	Bremen	46506	574-546-3807
CUSTOM MADE HOBBIES	1600 MORNINGSTAR LN.	Decatur	46733	260-724-3040
DUNELAND HOBBIES	2556 PORTAGE MALL	Portage	46368	219-763-1610
GRANGER HOBBY STOP	12131 STATE RD. 23 UNIT L	Granger	46530	574-243-2390
HAPPY HOBBIES	1398 EASTERN BLVD.	Jeffersonville	47129	812-282-0060
HOBBY HANGER	189 PERRY ST.	Vernon	47282	812-346-6497
HOBBY LAND	416 W. COLISEUM BLVD.	Fort Wayne	46805	260-483-8186
HOBBYLAND INC.	2564 MIRACLE LANE	Mishawaka	46545	574-255-1722
HOBBYTOWN USA	6336 E. 82ND ST.	Indianapolis	46250	317-845-4106
HOBBYTOWN USA	1858 E. 80TH PLAZA	Merrillville	46410	219-736-0255
P & T HOBBIES AND RWY	2412 N. POORFARM RD.	Bedford	47421	812-849-6666
PHILS HOBBY SHOP	1722 LAKE AVE.	Ft. Wayne	46805	260-424-0065
PHIL'S HOBBY SHOP	3112 N. CLINTON	Ft. Wayne	46805	219-471-1340
R & D HOBBIES	4217 FRANKLIN ST.	Michigan City	46360	219-879-7563
RIDER'S FORT WAYNE	4724 COLDWATER RD.	Ft. Wayne	46825	219-496-8811

KANSAS

HOBBY HAVEN	10560 METCALF	Overland Park	66212	913-381-3111
HOBBYTOWN USA	8229 EAST KELLOGG	Wichita	67207	316-683-7222
HOBBYTOWN USA	9270 METCALF	Overland Park	66212	913-649-7979

KENTUCKY

BLUEGRASS HOBBIES	274 LAMPTON LN.	Columbia	42728	270-384-9131
HOBBYTOWN USA	12615 SHELBYVILLE RD.	Louisville	40243	502-254-5755
McDONALD'S MOTOR CYCLE REPAIR	40 STRONG BRANCH RD.	Liberty	42539	606-787-7560
RADIO CONTROL WHEELS OR WATER	1308 W. SHELBY ST. #2	Falmouth	41040	859-654-1700

LOUISIANA

HARES ART & HOBBY	4529 LEE STREET	Alexandria	71302	318-443-2755
HOBBY HUT	5029 VETERANS BLVD.	Metairie	70006	504-885-0804

MAINE

HOBBY FEVER	130 MIDDLESEX RD.	Tyngsboro	01879	978-649-2221
R/C SPEEDWAY & HOBBIES	87 MAIN ST.	Fairfield	04937	207-453-4588
MAXIMUS HOBBY SHOP	647 US ROUTE 1 YORK MEADOWBROOK PLAZA	York	03909	207-351-1520
OUT OF CONTROL RACING	859 W. BOYLSTON ST.	Worcester	01606	508-853-3363

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GPA HOBBIES	2431 CROFTON LANE # 6	Crofton	21114	301-858-0004
HOBBY CITY	15751 COLUMBIA PIKE	Burtonsville	20866	301-421-5977
HOBBYTOWN USA	1305 W. 7TH AVE #28	Frederick	21702	301-694-7395
HOBBYTOWN USA	6714-D GOVERNOR RITC	Glen Burnie	21061	410-590-4950
HUNT VALLEY HOBBIES	10824 YORK RD.	Cockeysville	21030	410-666-1098
STONELEIGH HOBBY INC.	6717 YORK RD.	Baltimore	21212	410-377-4447
S&J HOBBIES	10476 CAMPUS WAY S.	Largo	20774	301-324-6680
THE TRACK	16806 OAKMONT AVE.	Gaithersburg	20877	301-417-9630

MASSACHUSETTS

BARN SPEED HOBBIES	109 CENTER ST	Lee	01238	413-243-2651
BIG BOYS TOYS	2 GALLERIA MALL DR.	Taunton	02780	508-677-9400
BIG BOYS TOYS	33 FATHER DE VALLES BLVD.	Fall River	02721	508-677-0060
BIG BOYS TOYS	999 S. WASHINGTON ST.	N. Attleboro	02760	508-699-6609
DAVE'S HOBBIES	281 CABOT ST	Beverly	01915	978-921-1559
FLYING YANKEE HOBBY SHOP	1416 CENTER ST	Roslindale	02131	617-323-9702
HENRY'S HOBBY HOUSE INC.	67 W. BOYLSTON ST	West Boylston	01583	508-835-6165
HOBBY WORLD	171 GROVE ST.	Adams	01220	413-743-7223
HOG HEAVEN HOBBIES	494 MAIN ST.	Fiskdale	01518	508-347-9350
LAND SEA & AIR HOBBIES	1282 PARKER ST.	Springfield	01129	413-782-2115
MASTER HOBBIES	565 MAIN ST.	Cherry Valley	01611	508-892-1440
R/C EXCITEMENT INC.	10 PULLMAN ST.	Worcester	01606	508-853-3272

MICHIGAN

ACTION HOBBIES	211 EAST MAIN	Niles	49120	616-687-8550
ANYTHING GOES	5108 ROCHESTER RD.	Troy	48085	248-740-2277
DIRT BURNER RACING	3295 HAGGERTY RD.	Commerce	48390	248-926-1140
EAST BAY HOBBIES	364 W. HOUGHTON LAKE DR.	Prudenville	48651	989-366-5306
HOBBIES & TOYS	106 WEST MAIN ST	Gaylord	49735	989-732-3963
HOBBYTOWN USA	2222 S. MAIN ST.	Ann Arbor	48103	734-996-2446
HOBBYTOWN USA	12821 S. SAGINAW	Grand Blanc	48439	810-695-9088
JOE'S HOBBY CENTER	35151 GRAND RIVER RD.	Farmington	48335	248-477-6266
KECK HARDWARE & HOBBY	2132 WEST RD.	Trenton	48183	734-676-2282
LARRY'S PERFORMANCE R/C'S	42246 MOUND RD.	Sterling Heights	48314	586-997-4840
NANKIN HDWRE & HOBBY	35101 FORD RD.	Westland	48185	734-722-5700
P & D HOBBY SHOP	31280 GROESBECK HWY	Fraser	48026	586-296-6116
PASTIME HOBBIES	2700 PINE GROVE RD. #16	Port Huron	48060	810-982-2874
PROP SHOP HOBBIES, INC.	23326 VAN DYKE	Warren	48089	586-757-7160
R & L HOBBIES & RACING	9782 PORTAGE RD.	Portage	49002	616-323-3686
RIDER'S HOBBY	32115 JOHN "R" RD.	Madison Heights	48071	248-589-8111
RIDER'S HOBBY	42011 FORD RD.	Canton	48187	734-981-8700
RIDER'S HOBBY SHOP	22789 NORTHLINE RD.	Taylor	48180	734-287-7405
RIDER'S HOBBIES	2061 S. LINDEN RD.	Flint	48532	810-720-2500
RIDER'S HOBBY	4417 S. WESTNEDGE AVE.	Kalamazoo	49008	616-349-2666
RIDER'S HOBBY SHOP	2055 28TH ST S.E. UNIT 12	Grand Rapids	49508	616-247-9933
RIDER'S HOBBY SHOP	4035 CARPENTER RD.	Ypsilanti	48197	313-971-6116
RIDER'S HOBBY SHOP	6250 S. CEDAR ST #7	Lansing	48911	517-393-1500
RIDER'S HOBBY SHOP	30991 FIVE MILE RD.	Livonia	48154	734-425-9720
THE HOBBY HUB	526 FRANDOR AVE.	Lansing	48912	517-351-5843
TUCKEY MOTORSPORTS	706 E. CHICAGO RD.	Coldwater	49036	517-278-9689

MINNESOTA

HOBBY TOWN USA	7916 BROOKLYN BLVD.	Minneapolis	55445	612-424-6052
HOBBY WAREHOUSE	7120 CHICAGO AVE S.	Richfield	55423	612-861-5587
HUB HOBBY CENTER	82 MINNESOTA AVE.	Saint Paul	55117	651-490-1675
HUB HOBBY CENTER	6410 PENN AVE. S	Richfield	55423	612-866-9575
R.C. CAR KINGS	1307 EAST HWY 13	Burnsville	55337	952-895-9643
TWIN CITIES HOBBY & RWY	7577 BROOKLYN BLVD.	Brooklyn Park	55443	763-569-5069

MISSOURI

CHECKERED FLAG HOBBIES	4491 LeMAY FERRY RD.	St. Louis	63129	314-892-5353
HOBBYTOWN USA	524 N.W. ENGLEWOOD RD.	Kansas City	64118	816-459-9590
JOPLIN R/C HOBBIES	1900 S. RANGELINE #5	Joplin	64804	417-623-0011
MARK TWAIN HOBBY CTR	2793 WEST CLAY ST.	Saint Charles	63301	636-946-2816
MOVIE MANIA R/C HOBBIES	204 SOUTHWEST DR.	Kennett	63857	573-888-9223
REAL R/C	12019 EAST 47th	Raytown	64133	816-358-0238
SLEETH HOBBIES	1912 E. SUNSHINE ST.	Springfield	65804	417-883-1118

MISSISSIPPI

FUN 4 ALL HOBBIES	7915 HIGHWAY 51	South Haven	38671	662-393-9788

MONTANA

EXTREME HOBBIES	928 BROADWATER AVE.	Billings	59101	406-259-8505
NORTHLAND HOBBIES INC.	1325 HWY 2 WEST	Kalispell	59901	406-257-1808
PRAIRIE UNIQUE	114 S. LOGAN ST.	Terry	59349	406-635-5598
THE TREASURE CHEST	1612 BENTON AVE.	Missoula	59801	406-549-7992

NORTH CAROLINA

ACTION HOBBIES	8500 PINEVILLE MATHEWS RD.	Charlotte	28226	704-540-0311
HOBBY TOWN USA	8332 PINEVILLE MATHEWS RD.	Charlotte	28226	704-544-2303
HOBBYTOWN USA	3346 ROBINHOOD RD.	Winston Salem	27106	336-774-2324
INSIDE LINE PERFORMANCE	5678 US HWY 70 EAST	Goldsboro	27534	919-759-0095
K/C HOBBY INC	10948-G NORTH MAIN ST.	Archdale	27263	336-434-3482
KING R/C	614 S. MAIN ST.	King	27021	336-983-3969
Z N Z HOBBIES	972 TALBERT BLVD.	Lexington	27292	336-249-6127

NORTH DAKOTA

HOBBYTOWN USA	4501 15th AVE. S.W.	Fargo	58103	701-746-0708

NEBRASKA

FUN TIME HOBBY	2020 CENTRAL AVE.	Kearney	68847	308-234-1806
HOBBYTOWN UNLIMITED	220 NORTH 66th ST.	Lincoln	68505	402-434-5056
HOBBYTOWN USA	10020 SCOTT CIRCLE	Omaha	68122	402-498-8888
HOBBYTOWN USA	3537 WEST 13th ST. #104	Grand Island	68803	308-382-3451

NEW HAMPSHIRE

106 RACE PARK	743 CLOUGH MILL RD.	Pembroke	03275	603-224-7223
HOBBY ETC. INC.	90 WEST PEARL ST.	Nashua	03060	603-883-4919
LEISURE TIME HOBBIES	56-B MARLBORO ST.	Keene	03431	603-357-9975

NEW JERSEY

ALLIED HOBBIES	264 BURLINGTON CENTER	Burlington	08016	609-386-5044
CRUIZIN WITH RC'S INC.	53 EAST MAIN ST.	Ramsey	07446	201-825-4884
FISHKIN BROS.	285 MADISON AVE.	Perth Amboy	08861	732-826-0048
G&S HOBBIES	44 ANCHOR BLVD.	Old Bridge	08857	732-727-7871
HOBBY WORKSHOPS	510 WEST KINGS HWY	Mount Ephraim	08059	856-931-2400
JACKSON HOBBY SHOP	2275 W. COUNTY LINE RD.	Jackson	08527	732-364-3334
THE HOBBY SHOP	1077-C STATE HWY 34	Aberdeen	07747	732-583-4189
WIDE WORLD OF HOBBIES	974 TEANECK RD.	Teaneck	07766	201-862-9393
ZEPPELIN HOBBIES & RACEWAY	92 RT. 23 RIVERDALE SQUARE MALL	Riverdale	07457	973-831-7717

NEW MEXICO

ALBUQUERQUE HOBBY CO	2252 D WYOMING N.E.	Albuquerque	87112	505-275-1882
BIG BOYS TOYS	1735 JUAN TABO N.E.	Albuquerque	87112	505-298-1023
HOBBIE'S & STUFF	2801 EUBANK N.E. #P	Albuquerque	87112	505-293-1217

NEVADA

DANSEY'S INDOOR R/C HOBBIES	741 N. NELLIS BLVD.	Las Vegas	89110	702-453-7223
HOBBYTOWN USA	5085 W. SAHARA AVE. #134	Las Vegas	89146	702-889-9554

NEW YORK

ACTION HOBBIES	1070 MIDDLE COUNTRY RD.	Selden	11784	631-736-1574
BRUCKNER HOBBIES	3587 E. TREMONT AVE.	Bronx	10465	800-288-8185
BROWNIES PRO & SPORT HOBBIES	124 BENNETT ST.	Staten Island	10302	718-727-2194
COMPETITION HOBBY SUP	1006 LOUDON RD.	Cohoes	12047	518-786-3622
CRAFT WORLD & ACTION HOBBIES	509 W 3rd ST.	Jamestown	14701	718-484-1780
EAST COAST HOBBIES	2515 65TH ST.	Brooklyn	11204	718-627-3814
ELMSFORD HOBBIES	129 E MAIN ST.	Elmsford	10523	914-592-0600
FANTASIA HOBBIES	17169 46TH AVE.	Flushing	11358	718-460-5671
FORDHAM HOBBIES	2446 CRESTON AVE.	Bronx	10468	718-562-1906
GJ'S HOBBIES	38-40 WASHINGTON AVE.	Endicott	13760	607-754-3003
HOBBIES UNLIMITED	158-38 CROSS BAY BLVD.	Howard Beach	11414	718-845-4545
THE HOBBY HOUSE	2378 LYELL AVE.	Rochester	14606	585-429-6280
HOBBY WORLD	485 B BROADWAY	Monticello	12701	845-794-8770
HURRICANE HOBBIES	2425 MIDDLE COUNTRY RD.	Centereach	11720	631-737-3157
NAGENGAST HDWR & HOBBY	68-02 FRESH POND RD.	Flushing	11385	718-821-0958
PERFORMANCE HOBBIES	15 WEST MAIN ST.	Webster	14580	716-872-4990
RACING CITY HOBBIES	110 MAIN STREET	South Glens Falls	12803	518-792-7272
RAMPAGE R/C & HOBBIES	1164 RT 9G	Hyde Park	12538	845-229-1379
RMC HOBBIES	2485 ROCHESTER RD. BLDG. 1	Canandaigua	14424	585-394-1210
TONY'S HOBBY SHOP	220 HARRISON AVE.	Harrison	10528	914-835-4765
TRANS BORDER CUSTOMS	1320 RT 9	Champlain	12919	514-687-6214
UNIVERSAL ENTERTAINMENT	1611 PINE AVE.	Niagara Falls	14301	716-282-4840
WALT'S HOBBY	2 DWIGHT PARK DR.	Syracuse	13209	315-453-2291
WILLIS HOBBIES	300 WILLIS AVE.	Mineola	11501	516-746-3944

OHIO

CAPSTONE HOBBIES	562 W. SCHROCK RD.	Westerville	43081	614-899-6313
DIVE IN SCUBA CENTER	3182 WARREN SHARON RD.	Vienna	44473	330-856-6275
GRANDVIEW HOBBIES	1460 W. FIFTH AVE.	Columbus	43212	614-486-3532
HOBBY STOP WEST	4550 MONROE ST.	Toledo	43613	419-471-1108
HOBBYFORCE	1183 PARK AVENUE W	Mansfield	44906	419-884-0001
HOBBYTOWN USA	8000 PLAZA BLVD.STE 9	Mentor	44060	440-946-5588
HOBBYTOWN USA	14785 PEARL RD.	Strongsville	44136	440-846-1770
PHIL'S HOBBY SHOP	422 CLINTON ST.	DeFiance	43512	419-782-8020
RIDER'S HOBBY SHOP	5333 MONROE ST.	Toledo	43623	419-843-2931
STRONGSVILLE HOBBY SHOP	13325 PROSPECT RD.	Strongsville	44149	440-572-0430
THE DUSTY ATTIC	118 S. UNION	Bethel	45106	513-734-2255
THE HOBBY SHOP	153 N SPRINGBORO PIKE	Miamisburg	45449	937-436-6161
VICTORY CIRCLE R/C PRO.	4340 HEGNER AVE.	Cincinnati	45236	513-794-1963
WINGS WHEELS & WAVES	14 LINCOLN WAY E.	Massillon	44646	330-830-7755

OKLAHOMA

ACTION HOBBIES	4955 S. MEMORIAL DR.	Tulsa	74145	918-663-8998

OREGON

AERO SPORT & HOBBY	17941 N.E. GLISAN	Portland	97230	503-669-7665
EUGENE TOY & HOBBY	32 E. 11th AVE.	Eugene	97401	541-344-2117
LEISURE HOBBIES	982 LANCASTER DR. N.E.	Salem	97301	503-588-9884
R C ADDICTION	830 S. FRONT ST.	Central Point	97502	541-665-2700
R/C PLUS HOBBIES	1685 25th ST.	Salem	97302	503-364-9188
TAMMIES HOBBIES	12024 S.W. CANYON RD.	Beaverton	97005	503-644-4535
ULTIMATE HOBBIES	1210 JANTZEN BEACH CTR	Portland	97217	503-247-8194

PENNSYLVANIA

ACTION HOBBY	8616 NEW FALLS RD.	Levittown	19054	215-949-9750
ADAM & EVES PET & HOBBY	313 LATROBE 30 PLAZA	Latrobe	15650	412-539-7130
ALLIED HOBBIES	114 EXTON SQUARE MALL	Exton	19341	610-363-6988
CRANBERRY HOBBY DEPOT	20555 ROUTE 19 CRAN-MAR Plaza	Cranberry Twnshp	16066	724-776-3640
HOBBY EXPRESS INC.	1713 ROUTE 228 #L 1	Cranberry Twnshp	16066	724-779-2000
HOBBYTOWN USA	150 E. BALTIMORE PIKE	Springfield	19064	610-544-7007
J.C. R/C HOBBIES	13 YORK RD.	Warminster	18974	215-672-5200
J&K HOBBIES	1240 ALLEGHENY ST.	Jersey Shore	17740	570-398-8171
LITTLE PLUM R/C HOBBIES	333 LITTLE PLUM RUN RD.	Lock Haven	17745	570-769-1984
LOCO LOUIES MODEL TRAINS	2365 MAC DADE BLVD.	Holmes	19043	610-583-7711
MARSHALL'S HILLTOP HOBBIES	RR 4 BOX 4265 PA RTE 652	Honesdale	18431	570-729-7458
MODELLBAHN HOBBIES	1145 PHILADELPHIA AVE.	Gilbertsville	19525	610-367-5925
RC OUTFITTERS	519 BROADWAY	Hanover	17331	717-633-9490
THE R C CONNECTION INC.	1005 WEST FOURTH AVE.	Derry	15627	724-694-9170

RHODE ISLAND

INSANE TOYS	141 PARK AVE.	Cranston	02907	401-467-8878

SOUTH CAROLINA

BANDITS HOBBIES & MODELS	2037 S MAIN ST.	Darlington	29532	843-393-3333
D & S HOBBIES	1314 S. FOURTH ST.	Hartsville	29550	843-383-0017
ED'S HOBBY SHOP	702 MAIN STREET	Myrtle Beach	29577	843-448-8685
HOBBY CONNECTION	4148 CALHOUN MEMORIAL HWY.	Easley	29640	864-295-1209
HOBBY STOP	939 S. ANDERSON RD.	Rock Hill	29730	803-327-4121
HOBBY TOWN USA	1812 SAM RITTENBERG BLVD.	Charleston	29407	843-769-5808
HOBBYTOWN USA	101 VERDAE BLVD. #340	Greenville	29607	864-627-9633
HOBBYTOWN USA	134 STATION DR.	Anderson	29621	864-261-8479
THE GREAT ESCAPE	1426 LAURENS RD.	Greenville	29607	864-235-8320

SOUTH DAKOTA

HOBBYTOWN USA	1007 W. 41st ST.	Sioux Falls	57105	605-339-6613

TENNESSEE

AAA MODEL SUPPLY	5237 HWY 126	Blountville	37617	423-323-1513
ARF HOBBIES	305 SPARTA ST.	McMinnville	37110	931-474-7223
COOKEVILLE RACEWAY & HOBBIES	148 S. WILLOW AVE.	Cookeville	38501	931-520-6017
GADGET HOBBIES	204 TRENTON ST.	Harriman	37748	865-882-7528
HOBBYTOWN USA	206 B COOL SPRINGS BLVD. #205	Franklin	37067	615-771-7441
HOBBYTOWN USA	2884 WOLFCREEK PARKWAY	Memphis	38133	901-213-2682
HOBBYTOWN USA	634 NORTHGATE MALL	Chattanooga	37415	423-877-9885
HOBBYTOWN USA	8901 TOWN & COUNTRY CR.	Knoxville	37923	865-690-1099
HOBBYTOWN USA	1741 S. RUTHERFORD BLVD.	Murfreesboro	37130	615-890-6777

TEXAS

ACTION HOBBIES	2005 9TH ST.	Wichita Falls	76301	940-766-2667
AERO HOBBIES	2305 S HWY. 121 # 110	Lewisville	75067	972-315-1854
AL'S HOBBIES	7121 HWY. 90 W. # 150	San Antonio	78227	210-645-1050
BIG MIKE'S HOBBIES & TOYS	2157 GILMER RD.	Longview	75604	903-297-7814
DRYCREEK HOBBIES	25181 30 WEST	Greenville	75402	903-527-5381
FASTRAK R/C INC.	13318 WALLISVILLE RD.	Houston	77049	713-330-9500
GUADALUPE HOBBY CENTER	200 SIDNEY BAKER S.STE 5	Kerrville	78028	830-895-5654
HOBBY CENTER	18177 GULF FREEWAY	Webster	77598	281-488-8697
HOBBY TIME	201 WESTGATE PKWY. UNIT H	Amarillo	79121	806-352-9660
HOBBYTOWN USA	3033 W. PARKER RD. #120	Plano	75023	972-758-7875
HOBBYTOWN USA	4638 S. COOPER #190	Arlington	76017	817-557-2225
HOBBYTOWN USA	1201 AUSTIN HWY #102	San Antonio	78209	210-829-8697

SHOP LOCATOR

INDY RC WORLD	2020 SATURN RD.	Garland	75041	972-271-4844
M & M HOBBY CENTER	6703 CHIMNEY ROCK	Bellaire	77401	713-661-7137
MIKE'S HOBBY SHOP	1201 N. I 35 E.	Carrollton	75006	972-242-4930
ONEALL SPECIALTY HOBBIES	3321 W. EXPRESSWAY 83	McAllen	78503	956-686-6521
ROY'S HOBBY SHOP	1309 N. NORWOOD DR.	Hurst	76053	817-268-0210
SARATOGA HOBBIES	2030-A SARATOGA BLVD.	Corpus Christi	78417	361-851-5061
T & T R/C CARS	3420 AVE K	Plano	75074	972-633-2470
THE RC HOBBY SHOP	13835 S.W. FREEWAY	Sugar Land	77478	281-265-4844
WINGS & THINGS	5307 50th ST. #B	Lubbock	79414	806-793-7777
VICTORIA HOBBY SHOP	5211 JOHN STOCKBAUER DR.	Victoria	77904	361-575-4194
UTAH				
HT'S RC'S	166 S. FORT LANE	Layton	84041	801-546-6959
VERMONT				
MIKES HOBBIES	162 NORTH MAIN ST.	Rutland	05701	802-775-0059
VIRGINIA				
AWESOME RC & HOBBIES	261-106 GARRISONVILLE RD.	Stafford	22554	540-657-1314
BROWN BROTHERS HOBBIES	14300 SMOKETOWN RD.	Woodbridge	22192	703-492-7788
CROSSWORD HOBBIES	1104 W. MAIN ST.	Salem	24153	540-387-3414
DRCW RACEWAY	2200 COMMERCE PARKWAY	Virginia Beach	23454	757-340-6681
GRIFFINS HOBBY SHOP	1051 ISLAND RD.	Bristol	24201	276-466-0998
HOBBYTOWN USA	4000 VIRGINIA BEACH BLVD. #196	Virginia Beach	23452	757-464-4140
LINVILLE HOBBIES	7065 WENGERS MILL RD.	Linville	22834	540-833-2222
OLDE TOWNE HOBBY SHOP	9105 CENTER ST.	Manassa	20110	703-369-1197
RT MODEL & HOBBY SHOP	401 N MAIN ST.	Danville	24540	434-799-8536
STAMPY'S COOL STUFF	3550 SEMINOLE TRAIL	Charlottesville	22911	434-974-7920
STREAM HOBBY SHOP	10015 JEFFERSON AVE.	Newport News	23605	757-591-0720
TSG HOBBIES	251 W. LEE HWY #691	Warrenton	20186	540-347-6590
WASHINGTON				
ATOMIC HOBBY	1175 N.W. GILMAN BLVD. #B-3	Issaquah	98027	425-391-8890
BURIEN TOYOTA	15025 1ST AVE. SOUTH	Seattle	98148	206-243-0700
FANTASY WORLD HOBBIES	7901 S. HOSMER A-6	Tacoma	98408	253-473-6223
FOUR SEASONS R/C RACING	2941 SLEATER KINNEY RD N.E	Olympia	98506	360-491-2430
GALAXY HOBBY	19332 60th AVENUE W.	Lynnwood	98036	425-670-0454
HOBBYTOWN USA	18500 33rd AVE. WEST	Lynnwood	98037	425-774-0819
MITCHELL RC HOBBIES	N. 4715 CRESTLINE #B	Spokane	99207	509-482-6188
PERFORMANCE R/C	320 E. FAIRHAVEN AVE.	Burlington	98233	360-755-9464
RAIN CITY RACEWAY	2006 196th STREET S.W. #119	Lynnwood	98036	425-776-8241
TACOMA R/C RACEWAY	4802 S. ADAMS ST.	Tacoma	98409	253-565-1935
THE CLOVERLEAF	4110 MAIN ST.	Union Gap	98903	509-453-8959
ULTIMATE HOBBIES	131 E. MAIN ST.	Auburn	98002	253-939-2515
WISCONSIN				
ABC RC INC.	244 W. MAIN ST.	Waukesha	53186	262-542-1245
BRISTOL R/C HOBBIES	8671 198th AVE.	Bristol	53104	262-857-3400
DIRT HEAVEN HOBBY & RACEWAY	6028 COUNTY RD. K	New Franken	54229	920-866-9096
DOCKTER'S HOBBY WORLD	402 WESTGATE MALL	Madison	53711	608-274-0024
FOCUS INC.	75 S. MAIN ST.	Fond Du Lac	54935	920-922-5999
GREENFIELD NEWS & HOBBY	6815 W. LAYTON AVE.	Greenfield	53220	414-281-1800
HOBBY DEPOT	1524 E. SUMNER ST.	Hartford	53027	262-670-6242
HOBBY JUNCTION	1729 STEPHENSON ST.	Marinette	54143	715-732-6333
HOBBY TOWN USA	17115 BLUEMOUND RD. # C	Brookfield	53005	262-652-1561
HOBBY TOWN USA	2730 HERTIAGE DR.	Delafield	53018	262-646-5755
HOBBYTOWN USA	2075 S. KOELLER	Oshkosh	54901	920-426-1840
HOBBYTOWN USA	2767 S. ONEIDA ST.	Green Bay	54303	920-490-9996
JOHN'S HOBBIES	54 N. MAIN ST.	Hartford	53027	262-673-7454
KDM HOBBY	803 BUSINESS HWY. 29 EAST	Abbotsford	54405	715-223-4414
NORTHERN HOBBIES	14440 VELP AVE.	Suamico	54173	920-662-1530
PHIL'S HOBBY & CRAFTS	409 W. MAIN ST.	Wautoma	54982	920-787-7232
R/C PERFORMANCE & HOBBIES	4702 E. BROADWAY	Madison	53716	608-222-8846
S&N'S TRACKSIDE HOBBIES	3635 N 124th ST.	Brookfield	53005	262-783-4699
WEST VIRGINIA				
DW REED HOBBY STOP	142 W. MAIN ST	Bridgeport	26330	304-842-2742
FULTON'S HOBBY SHOP INC.	3301 CHAPLINE ST.	Wheeling	26003	304-233-5355
HOBBYTOWN USA	67 NITROMARKET PK.	Charleston	25313	304-776-7259
WEST VIRGINIA HOBBY & CRAFT	PUTNAM VILLAGE SHOP CTR.	Teays	25569	304-757-6474
WYOMING				
XTREME HOBBIES & RACEWAY	1300 BUTCHER	Gillette	82718	307-682-6077
PUERTO RICO				
ED's HOBBY SHOP	PINO ST #H-36	Caguas	00726	787-460-2677
HI SPEED C. RACEWAY	422 SAN CALUDIO AVE.	San Juan	00926	787-283-0198
ISLAND HOBBIES	DELFIN-OLMO 166	Arecibo	00612	787-871-1129
LA SORPRESA	1759 AVE. MILITAR #1	Isabela	00662	787-872-2396
RACER'S HOBBY	873 SAN PATRICIO AVE.	San Juan	00921	787-783-5910
CANADA				
HOBBY GUYS	#1, 222-16 AVE. N.E.	CALGARY	ALB	T2E 1J8 CANADA 403-230-8821
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Bryan's Hobby Shop, 900 Commons Dr. Suite 105, Dothan AL 36302 (334) 793-2439
Cullman RC Hobbies, 14 Country Rd. 1471 #B, Cullman AL 35055 (256) 775-2491
Dirt Road Rage, 208 3rd Ave. S.E. Cullman, AL 35055 877-435-9866 www.pyramidhobbies.com
Lagoon Park R/C Raceway, 2730 Lagoon Park Dr., Montgomery, AL 36109 (334) 272-6438

ALASKA

Fairbanks R/C Club, 510 Juneau Ave., Fairbanks, AK 99701, (907) 456-5494

ARIZONA

Hobby Action R/C Raceway & Hobby Store, 606 W. Southern Ave #1 Tempe, AZ 85282, (480)829-1226
Hobbytown Raceway, 1102 E. 22nd St., Tucson, AZ 85704, (520) 882-8888
Kingman off-road track, 5737 Hwy. 66 Mpost 63 Kingman, AZ 86401
Scottdale R/C Speedway, 3023 N. Scottsdale Rd., Scottsdale, AZ 85251 (480) 945-2186
Kiwanis Park R/C Track, 855 S. Magnolia Ave., Yuma AZ 85364, (520) 539-7148

ARKANSAS

Alison Offroad RC Raceway, 6320 Thibault Rd., Little Rock AR 72206 (501) 490-1227
Arkansas R/C Car Association, 101 W. 52nd St., N. Litle Rock AR 72218 (501) 753-1286
Arkansas R/C Racing, 900 Arch St., Little Rock AR 72202 (501) 454-0342, www.arkansasrc.com
Grand Slam Superspeedway, 5300 S. Zero St., Ft. Smith, AR 72703, (501) 648-1994
Hobbytown USA, 356 E. Joyce Fayetteville, AR 72703, (501) 571-3730
Lake Area R/C Raceway, 3109 HWY 25 B North Heber Springs AR 72543 (501) 362-5050
R/C Hobbie Indoor Racing, 6140 S. West Dr. Jonesboro, AR 72404, (870) 933-0479
Sparks R/C Raceway, 7194 Greene 721 Rd., Paragould, AR 72450, (501) 239-3606

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Hobby Central, 13461 Community Rd., Poway, CA 92064 (858) 513-0373 www.hobby101.com
Hobbytown Raceway, 3069 W. Bullard Ave., Fresno, CA 93711 (559) 435-3342
Hot Rod Hobbies
25845 San Fernando Rd. #21
Saugus, CA 91350, (661) 255-2404
Delta RC Raceway & Hobby Shop, 1201 W 10th St. Antioch, CA 94509 (925) 778-2965
Jake's Performance Hobbies, 6650 Commerce Blvd.,#21 Rohnert Park, CA 94928, (707) 586-3375
KZ Speedway, 8295 Tunjunga, Sun Valley, CA 91352 (818) 771-1003
Lucerme Valley Raceway, 32800 Old Woman Springs Rd., #4, Lucerne Valley, CA 92356 (760) 248-7305
Nor-Cal Speedway, 519 Bush St., Woodland, CA 95695 (530) 668-5678
Pegasus Hobbies, 5515 Moreano Blvd. Montclair, CA 91763 www.pegasushobbies.com (909) 982-6507
Race Corner of Marin, 300 Entrada Dr., Novato, CA 94949, (415) 883-0388
Racers Haven Hobbies, 7401 White Ln. # 12 Bakersfield, Ca. 93309,(661) 835-0441
The Ragged Edge R/C Raceway, 520 S. Richmond Rd.
Ridgecrest 93555 (760) 384-4556 rsread@ridgenet.net
Race Prep Raceway, 20115 Nordhoff Chatsworth, CA 91311, (818) 709-6800
Ryan & Amanda's R/C Park, 9494 Sunset Blvd. West Pleasant Grove, CA 95668, (916) 655-3590 www.RyanAndAmandasFishingHole.com
Sacramento R/C Racing, 6201 27th St. # C, Sacramento, CA 95822, (916) 424-4001
Showtime R/C Speedway, 3805 Chester Ave. Bakersfield, CA 93301 (661) 328-1481
Simi Valley Ground Pounders, 392-C - East Easy St., Simi Valley, CA 93065, (805) 584-8211
So. Cal Raceway, 19118 Brookhurst St., Huntington Beach, CA 92646, (714) 963-7484
Speedworld Raceway & Hobby, Billy Bowerdman 90 Corporation Yard Rd., Roseville, CA 95678, (916) 783-8864
Sun Valley Micro Raceway, 8295 Tujunga Ave., Sun Valley CA 94352, www.svmracing.com, (866) 793-6513 Toll Free,
Ultimate Hobbies, 2378 North Orange, CA 92865, (714) 921-0424
Ventura Road Runners, Freedom Park Camarillo, CA 93010 (805) 564-4144, www.venturaroadrunners.com

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S&T Raceway, 323 Auburn Dr., Colorado Springs, CO 80909, (719) 574-2910

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Davis Hobbies II, 45A Welles St., Glastonbury, CT 06033, (860) 633-3056
K&N Speedway, West St., Stafford Springs, CT 06076 (860) 684-9896
R/C Madness, 640 Enfield St., P.O. Box 64, Enfield, CT 06082, (860) 741-6501
Xtreme Radio Control, 469 Danbury Rd., New Miford, CT 06469, (860) 354-4703

FLORIDA

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Broward County R/C Race Club, Mills Pond Park, Ft. Lauderdale, FL (954) 525-3304
Burton's R/C Raceway, 4215 Mustand Rd., Lakeland, FL 33803, (941) 665-1322
Coral Springs Roadrunners, PO Box 9632 Coral Springs, FL 33075, (954) 925-8284
Farmer's Hobby & Raceway, 5006-3 E. Broadway, Tampa, FL 33619, (813) 248-3314
First Coast Speedway, 6410 Waltho Dr., Jacksonville, FL 32211, (904) 743-2161
Ft. Myers R/C Club, Lee Civic Center, Ft. Myers, FL (941) 936-1528
Kissimmee R/C Racing, Osceola Square Mall, 3831 West Vine St., Ste/ 60, Kissimmee, FL 34741, (407) 944-4913
Means R/C Raceway, 1550 Pondell Rd., North Ft. Myers, FL 33903, (941) 772-2251
Ocala R/C Club, 2612 N.E. 24th St., Ocala, FL 34478 (352) 369-1895, www.orccc.org
PBG Motor Park, 6351 Barbara St., Palm Beach Gardens, FL 33418, (561) 627-2608
Pro Hobbies Speedway, 715 N. Lake Pleasant Rd., Apopka, FL 33712, (407) 886-4615
Sarasota RC Speedway, 8475 Cooper Creek Blvd., University Park, FL 34201, (941) 358-7047
The Swamp Florida Sports Park, RT 951 Naples, FL 34113 (239) 417-1099, racetheswamp.com
Triple Nickle R/C Raceway,
1/3 Mile South of HWY 60, on CO rd 555
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Big Boy Toys Hobby Shop, 5035 MT. Zion Parkway, Stockbridge, GA 30281 (770) 507-6288 www.bigboytoyshobbyshop.com
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Kingston, GA 30145, (706) 290-0345
Stinger Speedway, 3769 Maysville Rd., Commerce, GA 30529, (706) 335-9044
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Pekin, IL 61554 (309) 347-0975
Depot Hobby Raceway, 180 S. Seminary St., Galesburg, IL 61401, (309) 342-9323
Hobbytown Niles Drag & Raceway, Oak Mill Mall, 7900 N. Milwaukee Ave. Niles, Il 60714; 847-470-577 WWW.HTUNILES@AOL.COM
Hobbytown Raceway, 2103 N. Veterans Pkwy., Bloomington, IL 61701, (309) 664-4451
Leisure Hours R/C Raceway, 24121 W. Theodore, Bldg. 1, Plainfield, IL 60544, (815) 439-1477
Mid America R/C Club, S. Maple-Schnieder Park Brighton, Il 62012
Monee R/C Raceway, 26049 Ridgeland Ave., Monee, IL 60449 (708) 799-5597
Outlaw R/C Speedway, 1614 Broadway, Mattoon, IL 61938, (217) 234-6229
Quad Cities Raceway, 541 1st Ave., North Silvis, IL 61282, (309) 751-9663
Rector's R/C Raceway, RR3, Box 104, Albion, IL 62806, (618) 842-9379, (618) 446-3282
RSJ Raceways Inc.,
19091 W. Casey Rd. Libertyville, Il 60048, (847) 549-6963
SIRCAR Raceway, 1200 N. Marion, Carbondale, IL 62901, (618) 549-5885
Stanton Hobby Shop, 4718 N. Milwaukee, Chicago, IL 60630, (773) 283-6446
Wep Raceway, RR #2, Box 44, Lawrenceville, IL 62439

INDIANA

Bremen Racing, 308 N. Bowen, Bremen, IN 46506, (574) 546-3807
Finish Line Pets & Hobbies, 1209 East St., Rd 2 LaPorte, IN 46350 (219) 326-0921
GM Raceway, 1651 W. Franklin St., Elkhart, IN 46516, (219) 293-1827
Hardesty Raceway, 11 East Plymouth St., Hamlet, IN 46530, (219) 867-8600
Hobby Barn Raceway, 1950 Springhill, Terre Haute, IN 47802 (812) 299-5773
Hobbytown USA, 5385 E. 82nd St., Indianapolis, IN 46250, (317) 845-4106
P&T Hobbies & Raceway, RR2 (Hwy. 60), Mitchell, IN 47446, (812) 849 6666
www.pnthobby@bigfoot.com,
www.pnthobby@safeshopper.com
R/C World of Indiana, 2246 West U.S. Hwy. 36, Lynn, IN 47355, (765) 874-2464
Summit Area Radio Cars, 7000 Red Haw Dr., Ft. Wayne, IN 46805, (219) 492-2271
Custom Made Raceway, 1600 Morningstar Ln. Decatur 46733 www.custommadehobbies.com 260-724-3040 Toll Free: 866-875-8840

IOWA

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Hobby Haven, 2575 86th St. Urbandale, IA 50322, (515) 276-8785
HobbyTown USA, 2737 16th Ave. SW, Cedar Rapids, IA 52404, (319) 364-3289
Outback Hobbies, 2014 South Saint Aubin St. Sioux City, IA 51106, (712) 276-7079 or (712) 253-0087
Radio Control Raceway Park, 2100 First Ave. N., Ft. Dodge, IA 50501, (515) 576-3780
Riverfront Speedway, adjacent to Sunkist Meadows Golf Course, FT. Dodge, IA (515) 576-3780
Wild Bill's Raceway, 901 W. Jones, Knoxville, IA 50138, (641) 842-5973

KANSAS

RC Hobbies, Franum Creek, Milford Lake, KS (785) 238-1877
Route 66 R/C Raceway, Galena, KS 66739; (620) 783-5751

KENTUCKY

Somerset Raceway, 188 Sycamore Dr., Bronston, KY 42518, (606) 561-4522
Halcomb@hyperaction.net
Coyete Hobbies, 218 N. Martin Luther King Blvd. Lexington, KY 40507,Danny Puchalsk: (859) 253-9330, www.coyetehobbies.com
Radio Control Wheels or Water, 1308 W. Shelby St. Suite 2 Falmouth KY 41040
www.rcwow.com (859) 654-1700
Trio Hobbies & RC, 216 Redmar Plaza, Radcliff, KY 40160, (502) 351-7547

LOUISIANA

Baton Rouge Velodrome, 7122 Perkins Rd., Baton Rouge, LA 70815, (504) 665-5616

MAINE

Clay Bowl R/C Hobbies, P.O. Box 61, Greene, ME 04236, (207) 946-5003
R/C Speedway & Hobbies, 87 Main St., Fairfield, ME 04937, (207) 453-4588

MARYLAND

Countryside Raceway, 406 Pamela Rd., APt. C, Glen Burnie, MD 21061, (410) 761-6196
The Track, 16806 Oakmont Ave., Gaithersburg, MD 20877, (301) 417-9630
Trifecta Hobbies, 101 Skipjack Rd., Prince Frederick, MD 20678, (410) 414-9000

MASSACHUSETTS

Hobbytown/RPM Raceway, 201 N. Quincy St.,Abington, MA, (781) 857-2300
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Beyond Extreme Racing, 36159 Plymouth Rd., Livonia, MI 48150 (734) 513-7641 www.beyondextremeracing.com
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R&L Hobbies & Racing, 9782 Portage Rd., Portage, MI 49002, (616) 323-3686
Sandhill off Road R/C, Wood St at Vincent St
Saginaw, MI 48602;
Village Hobbies, 195 N. Elm St. Hesperia, MI 4942, (231) 854-1374

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Elbow Creek R/C Racepark, 8892 Townline Rd, P.O.
Box 313, Forbes, MN 55738 (218) 744-5234
www.paintwerksracing.com
Ray's Raceway Park, 105 3rd Ave. NE., Glenwood, MN 56334, (320) 634-5246
R/C Racing World, 235 Main AVe., North, Harmony MN 55939, (507) 886-5931
Southside Speedway, 2241 Marion RD., SE Rochester, MN 55904, (507) 281-3233
Twin Cities Hobby & Raceway, 7577 Brooklyn Blvd.
Brooklyn Park 55443, (763) 569-5069



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Small Cars Unlimited, 820 Cooper Rd., Jackson, MS 398212, (601) 372-FAST

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Fastlane Raceways & Hobbies, 2850 F West 40 Highway, Blue Springs 64015 (816) 220-0100 www.fastlaneshobbies.com
Novelty R/C Raceways, 6th & Main Novelty, MO 63460 (660) 739-4530
St. Louis Dirt Burners, Marshal Road, Kirkwood, MO (314) 831-2194
Real Blue Vue Speedway, 12019 E. 47th St., Kansas City, MO 64133, (816) 358-0238
Real R/C Raceway, 24204 State Rte. 58, Pleasant Hill, MO 64080

NEBRASKA

Goodyear Speedway, 4021 North 56th, Lincoln, NE 68510, (402) 464- 5172
Hobbytown USA Raceway, 220 N 66th Lincoln, NE 68505 (402) 434-5056 www.eastparkracing.com
Hobbytown USA Raceway, 1st & Cornhusker Lincoln, NE 68505 (402) 434-5057 www.eastparkracing.com
OTWG Carpet Raceway, 55129 849th Rd., Norfolk NE 68701, (402) 644-7922

NEVADA

Dansey's Indoor R/C Hobbies, 741 N. Nellis Las Vegas, NV 89110, (702) 453-RACE
Outer Limits R/C Raceway, 2365 Iron Ave. Sandy Valley, NV 89019 (702) 723-5243

NEW MEXICO

Big Boys Toys, 1735 Juan Tabo N.E. Albq., NM 87112 (505) 298-1023

NEW YORK

American Hobbies, 913 Portion Rd. Lake Ronkonkoma, NY 11779 (631) 736-6606

Brownies Pro and Sport Hobbies, 124 Bennett St. Staten Island, NY 10302 (718) 727-2194
Racing City Hobbies R/C Raceway, Midtown Center- 110 Main St. South Glens Falls, NY 12803 (518) 792-7272 or (888) 728-7273 www.racingcity.com
Rampage R/C, 782 Rt. 9G, Hyde Park, NY 11204 (845) 229-1379
The Hobby Shop, 119 Mt. Vernon Ave Mt. Vernon 10550 (914) 668-3022

NEW JERSEY

Hobby Workshop, 510 West Kings Hwy. Mt Ephraim, NJ 08059 (856) 931-2400
Alpine Lounge, Blackhorse Pike Turnersville, NJ

NEW HAMPSHIRE

106 Race Park, 743 Clough Mill Rd. Pembroke 03275, (603) 224-7223 www.106racepark.com

NORTH CAROLINA

Carolina Outlaw R/C Racing, 411 Puritain Park Rd. Stony Point, NC 28678 (704) 585-2996
Inside Line Performance Raceway 5678 US HWY 70 East Goldsboro, NC 27534, (919) 759-0095

OKLAHOMA

Action RC Speedway, 3616 SE 59 Oklahoma City, OK 73135 (405) 670-7770 www.actionrc.com
Enid R/C Speedway, 1831 S. Van Buren, Enid, OK 73703; (580) 554-9400
R/C RacePlace, 3000 N. I-35 Service Rd., Oklahoma City, OK 73111 (405) 424-7777 www.rcraceplace.com

OHIO

Corcar-Low's, 1675 Georgesville Square Dr. (614) 870-7159, Columbus OH 43228 www.corecar.com Bill Stevenson
CRCRC, Franklin City Fairgrounds, 4100 Columbia St. Hilliard, 43026 www.crcrc.com (614) 262-4883

OREGON

RC Speedcenter, 2810 N. Pacific Hwy. Medford, OR 97501 (541) 779-8298 Betty Skelton www.rcaddiction.net

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R/C Outfitters Raceway, 519 Broadway, Hanover PA 17331 (717) 633-9490 www.rcohobbies.com
Little Plum RC Hobbies, 333 Little Plum Run Rd. Lock Haven, PA 17745 (570) 769-1984
Marshall's Hilltop Hobbies, RR4 Box 4265 PA Route 652 Honesdale 18431 (570) 729-7458
Moore Raceway, 810 Moore Rd. Washington, PA 15301 (724) 228-7291 www.mooreraceway@hotmail.com
Wiley's R/C Speedway & Hobby Shop, 560 East Camping Area Rd. Wellsville, PA 17365 (717) 292-5856 Hobby Shop, www.wileys-rc-speedway.4t.com, E-mail wiley_7@msn.com

RHODE ISLAND

Insane Toys, 141 Park Ave. Cranston, RI 02907 Jose Jimenez (401) 467-8878
Tri-State R/C Raceway, 205 Hallene Rd., Warwick, RI 02886, Lenny Sosa (401) 738-4908

SOUTH CAROLINA

Carolina R/C Speedway, 4148 Calhoun Memorial Hwy., Easley, SC 29640; Craig Prahl, (864) 295-1209; *www.carolinarc.com*
Myrtle Beach R/C Park, 5976 Grace Lane, Myrtle Beach, SC 29577 Brad Smith, (843) 234-0096
The Grove Racing Center, 939 S. Anderson Rd., Rockhill, SC 29730, Mike Durham or Don Faris, (803) 327-4121
ORA Atomic Racing, 373 Boyd Pond Rd., Aiken, SC 29803; Bill Felak, (706) 855-0846 or (803) 642-0314
R/C Racing Connection Speedway 4375 Juniper Bay Rd. Conway, SC 29527 (843) 397-0124

TENNESSEE

Cookeville Raceway & Hobbies, 148 S Willow Ave. Cookeville, TN 38501 (931) 520-6017
HobbyTown USA, 206 B Cool Springs Blvd. # 205, Franklin, TN 37067; Bobby Mills, (615) 771-7441
W.O.W. Raceway, 59 Luray Rd., Beech Bluff, TN 38313; Kelly Bean, (901) 427-7874; *windix60@pipeline.com*
XS Speed, 5237 Hwy. 126, Blountville, TN 37617, (423) 323-1513
HobbyTown USA, 8901 Town & Country Circle Knoxville, TN 37923 (865) 690-6423
Intense Raceway, 2143 Payne Ave. Alcoa, TN 37701 (865) 379-8600 www.intenseraceway.com
T N T Hobby, 3550 Hwy 75 Kingsport, TN 37663 (423) 279-7344

TEXAS

215 Speedway, 1814 County Rd. 215, Abilene, TX 79602; Clyde Gardner (915) 673-2351
Big Mike's R/C Raceway, 1405 W. Cotton St. Longview, TX 75604; (903) 297-7814
Discount Hobbies, 1722A West Anderson Loop, Austin, TX 78757; Tony Bermudex, (512) 458-2324
Drycreek Raceway, 2518 I 30-W Greenville, TX 75402Micky Alphin, 903-527-5381, web.pulse.net/drycreek email: dycreek@pulse.net
Fastrak Hobbies, 13318 Wallisville Rd. Houston, Tx 77049, (713) 330-9500
Hobbycraft Speedway, 819 N. Main St., Corsicana, TX 75110; Keith Hoffman (903) 872-6761
HobbyTown USA, 1201 Austin HWY. #102, San Antonio, TX 78209; Joe Sena, or Clark Baisdon, (210) 829-8697
Indy R/C World, 2020 Saturn Rd., Garland, TX 75041, (972) 271-4844

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Lunatic Hobbies, 1631 Hwy. 6 South Houston 77077 (281) 496-1200 www.lunatichobbies.com
Reflex R/C, 1106C Witte Rd., Houston, TX 77055; Jorge Tabush or Terry Schmid, (713) 464-4458
Rio Grande Valley Gears R/C Track, 400 Wichita, Harlingen, TX 78550 (956) 686-6521 www.oneallspecialtyhobbies.com
Texas Speedway, 6703 Chimney Rock Bellaire, TX 77401 (713) 661-7137 www.mmhobby.com
T-N-T R/C Cars, 3420 Ave. K Suite 154, Plano, TX 75074 (972) 633-2470 (972) 238-0965 Joe Sullivan
Al's Hobbies, 7121 HWY. 90 W. Suite San Antonio, TX 78222 (210) 645-1050

UTAH

Spooky's R/C Raceway, 362 South 671 West Pleasant Grove, 84062 (801) 796-0992

VIRGINIA

Star/Car Raceway, Debbie's R/C World, 2200 Commerce Parkway, Virginia Beach, VA 23454, (757) 340-6681
Dirtona, 515 Front Ave. Salem, VA 24153 Steve Cooper (540) 387-3044
Linville Hobbies Raceway, 7065 Wengers Mill Rd. Linville, VA 22834 (540) 833-2222 www.linvillehobbies.com
Roanoke Race Club 5080 Stable Rd. Roanoke, VA 24014 540-989-4529 www.roanokeraceclub.com
Shamroc Raceway, 106 Cheviot Pl., Stephens City, VA 22655; Scott Janow, (540) 869-3551

WASHINGTON

Alfie's, 108 South K St., Aberdeen, WA 98520; (360) 533-6638
A-Main Raceway, 14011 NE 3rd Ct., Vancouver, WA 98685; Monty Coleman, (360) 571-8404
Burien Toyota R/C, 15025 1st Ave. South, Seattle, WA 98148 Ray Meek, (800) 654-6456
Cedardale Raceway, 16733 Cedardale Rd., Mount Vernon, WA 98273; Joe Madonia, (360) 659-0072; *getchell@halcyon.com*
Four Season R/C Racing, 2941 Sleater Kinney Rd. NE Olympia, WA 98506; Gary Brown (360) 491-2430
HobbyTown USA Lynnwood, 18500 33rd Ave W Lynnwood, WA 98037 (425) 774-0819
Performance R/C, 320 East Fairhaven Ave., Burlington WA 98233 (360) 755-9464
Rain City Raceway, 2006 196th St. S.W #119, Lynnwood WA, 98036, Debbie Cartwright (425) 776-8241 www.raincityraceway.com
Redmond Hobbies, 16260 Redmond Way Redmond, WA 98052 (425) 885-3639 www.redmond-hobbies.com
Tacoma R/C Raceway, 4802 S. Adams St., Tacoma, WA 98409; Scott Brown (253) 565-1935

WEST VIRGINIA

Burr-Fab Raceway, 90 Davis St., West Union, WV 26456; Mark Travis, (304) 873-2487
Fulton's R/C Raceway, 3301 Chapline St., Wheeling, WV 26003; James Fulton (304) 233-5355
WVRCA R/C Club, 142 West Main, Bridgeport, WV 26330; D.W. Weed

WISCONSIN

Hobbytown USA, 2075 South Koeller, Oshkosh, WI 54901 (920) 426-1840
Johns Hobbies, 54 N. Main St., Hartford, WI 53027 (262) 673-7454 www.explorewisconsin.com
Pro-Star Racing, 726 Pine St., Green Bay, WI 54301; Chuck, (920) 494-1233
S&N's Trackside Hobbies and Raceway, 6405 N. Green Bay Ave., Milwaukee, WI 53209; Scott Ernst, (414) 351-1910
Road Rage Hobby Speedway, 1538 Western Aven., Green Bay, WI 54303; (920) 405-5282 e-mail: www.roadragehobbyspeedway.com

WYOMING

Wind River R/C Racing Association, 309 N. 4th West, Riverton, WY 8250; Shannon Watts, (307) 857-0418
Xtreme Hobbies Raceway, 1300 Butcher Ct., Gillette, WY 82716; Kreig Balls, (307) 682-6077 email: xtremeraceway@collinscom.net

CANADA

Mid-Canada R/C Auto Racing, Winnipeg, Manitoba Canada www.midcanada rcautoracing.com; email: midcanadarc@mts.net
Circuit Teleguide Off Rd. Granby, 450 De LaGrande Ligne St. Paul D' Abbotsford Quebec, Canada (450) 776-3730
Nitro Extreme R/C Park, Blackfoot MX PK Calgary, Alberta, www.nitroextreme.com, e-mail: information@nitroextreme.com
R/C Speedway Niagra, 253 East West Line, Niagra on the Lake, Ont, Canada Los 1JO

FOREIGN

Kuwait - Udairi Speedway, Camp Udairi, Kuwait, email: udairispeedway@yahoo.com

Australia - Bunbury On Road Radio Control Car Club, Hay Park, Bunbury Western Australia, Phone Norbert on 9725 8177 http://home.iprimus.com.au/cjlindroth/borrccc/mainpage.html

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Valencia, CA 91355

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Address:

Phone:

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Check The items which best describe your track:

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- ☐ PAVED OVAL
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- ☐ OFF ROAD
- ☐ ON ROAD
- ☐ INDOOR
- ☐ ELECTRIC TRACK ELECTRICITY
- ☐ WATER
- ☐ RESTROOMS
- ☐

HOBBYTOWN USA
Newark, CA



RESULTS

Touring GT1

First Place	Ling-Kang Tong
Second Place	Marc Mendoza
Third Place	Jim Bishop
Best of Show	Henry Cruz
Top Qualifier	Travis Lawrence

Formula-1

First Place	Steve Williams
Second Place	Neil Rabara
Third Place	R.J. Thoms
Best of Show	James Yen
Top Qualifier	R.J. Thoms

Touring GT2

First Place	Ling-Kang Tong
Second Place	Jaime Manzanilla
Third Place	James Arluck
Best of Show	James Yen
Top Qualifier	Ling-Kang Tong

Mini

First Place	John Hicks
Second Place	Jaime Manzanilla
Third Place	Patrick Silvero
Best of Show	Henry Cruz
Top Qualifier	Patrick Silvero

Touring GT3

First Place	Juan Aveytia
Second Place	James Arluck
Third Place	Mark Rebeck
Best of Show	James Andrew
Top Qualifier	James Arluck

TL-01 Spec

First Place	Stephen De Leon
Second Place	Nick Martinez
Third Place	David Edison
Best of Show	Victor De Leon
Top Qualifier	Stephen De Leon

Entries

Racers 64
Second Entry: 11
Total Entries: 75



RIGHT: Winners of the Newark TCS concours.
TOP: A great show of support at this HobbyTown USA's 2nd TCS event.

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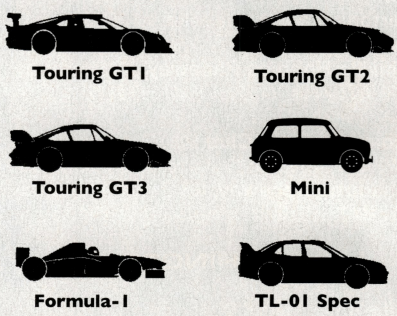

Frequencies *(minimum 2 frequencies required)*:

(1) _____ (2) _____ (3) _____

*by 5 p.m PST the Wed prior to the race date **optional

TO ENTER: Mail in attached form to: Tamiya America, Inc., Attn: Customer Service, 2 Orion, Aliso Viejo CA 92656-4200 **or Phone:** 800.TAMIYA.A or Fax: 949.362.6852 **or** register online at www.tamiyausa.com. Hurry! Registration closes at 5 p.m. PST Wednesday the week of the race.

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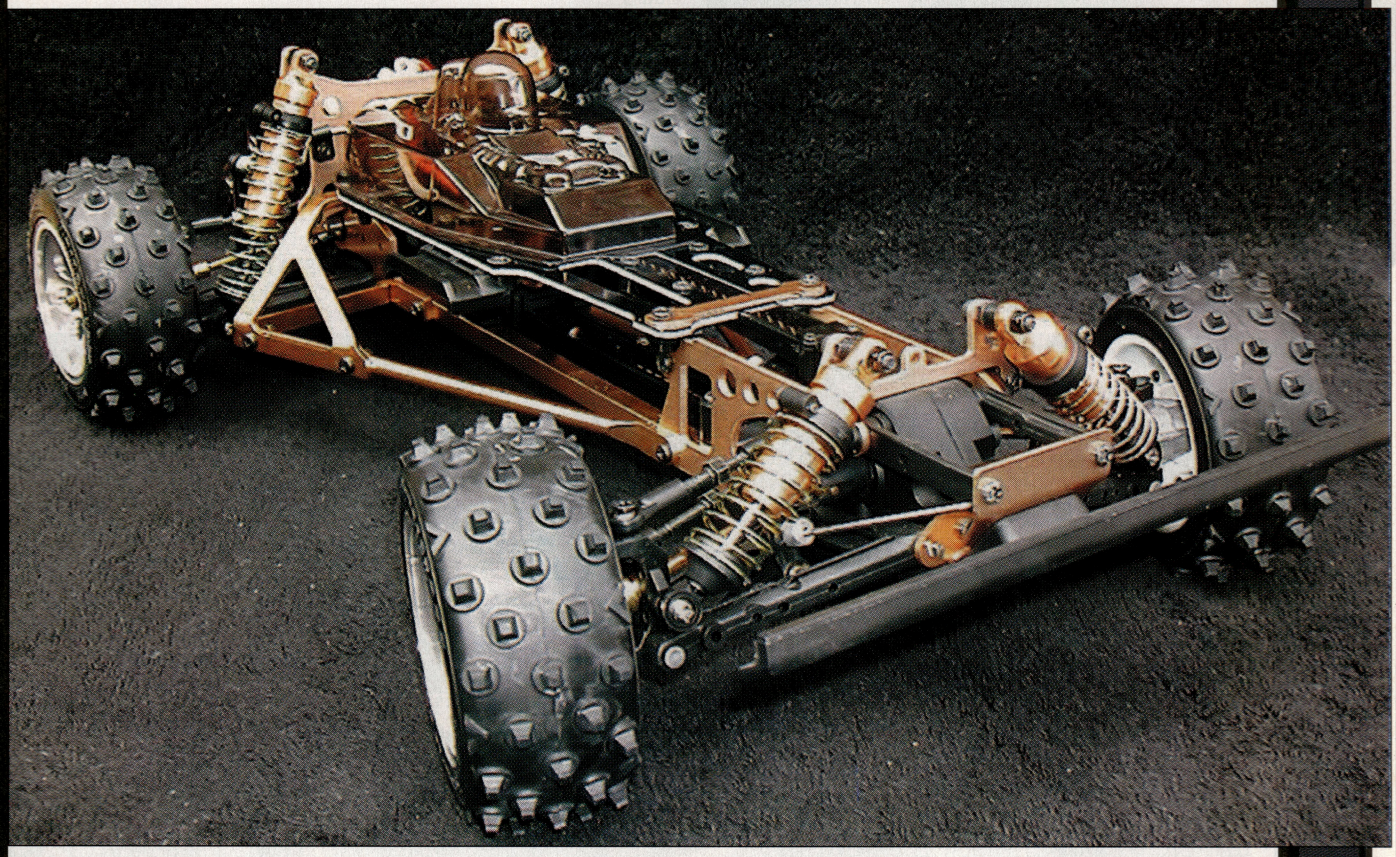
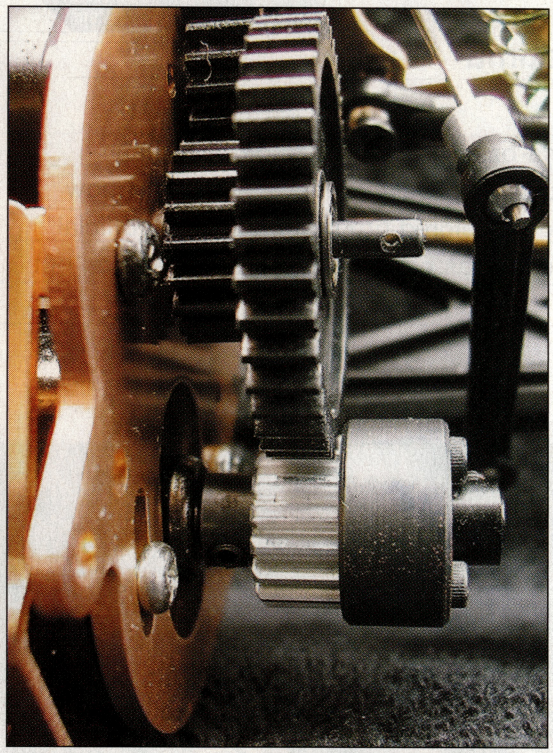
BY DARRYN JOHNSON
www.darrynsretrorc.rtox.com

All That Glitters: Kyosho's Gold Optima

Released to celebrate the sale of 100,000 Optima-based kits, Kyosho produced an *extremely* limited run of special "Commemoration Gold Celebration" Optima kits (now that's a mouthful). This kit was packaged in a gold colored box, with a special "official" gold decal placed on the front and side of the box. The kit was basically a standard Optima, but with most of the metal parts plated in gold.



This month's column will deviate slightly from my typical format; I have taken a lot of photos this month; and as they say, a picture is worth a thousand words. These photos are of my built Gold edition car (I have one built and one still NIB), to which I have added just about every single Option House part available (Option House was Kyosho's own "aftermarket" accessory wing). The main exception to my modifications is that I have not fitted the belt drive conversion. The reason for this is that I raced, and remember racing, the Optima as a chain drive buggy, and I wanted to reflect the history of the frame rail designed car in its true form. Despite popular myth, there was never a belt drive, frame rail chassis Optima kit produced. A belt drive conversion was released just before the introduction of the first Optima Mid, however, this is not a frame rail based car, so it just doesn't count!



GOLDEN CHILD

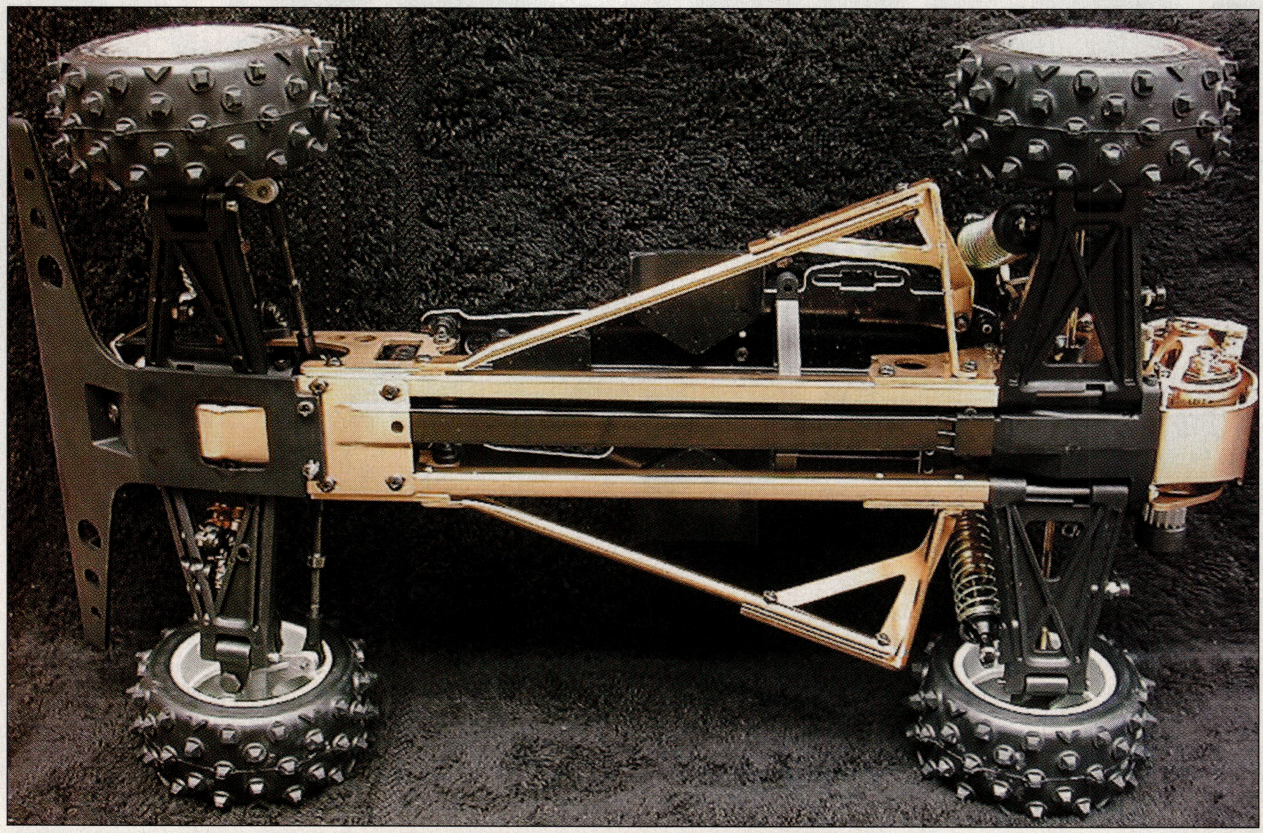
First, I want to make clear that the pics of the built car shown here are not of a standard Gold edition kit! I have added over 15 different *genuine* Option House parts on top of the original car. Just some of the parts are:

W5001 Rear Gold Shocks
W5002 Front Gold Shocks
W0102 Gold Nerf Bars
W0101 Gold Rear Motor Guard
W5032 Low Profile Tires
W5021 Low Profile wheels
W5062 Gold Universal Swing Shaft set
W5005 Special Adjustable Rod Set
W5046 16 Tooth Special Torque Limiting Clutch Pinion
OT65 Special Wing Stay Set
OT64 Special Wing (chrome finish)



Gold Celebration Chassis Set
2483 Le Mans PRO "High Torque" motor
Ball Differential Sets for front and rear
Sway Bar sets for front and rear
Hardened final drive pinion

I have purposely only used parts made by Kyosho, from its Option House factory hop-ups



COLLECTIBLE QUOTIENT

• **What to look for**—The good thing about building a Gold Edition Optima of your own is the fact that you can start with a standard car and add the gold parts listed previously in this article. The parts are by no means cheap at all; however they are coming up more often now, as the popularity of collecting true vintage R/C racecars increases.

If you start with a used car, remember to try and secure one with the plastic parts in as pristine a condition as possible. As it is, these parts need to look top notch if you are to have a "stunner" on the display shelf. That being said, many people actually ran the gold parts on their racecars; it is not unusual to pick one up with the parts already there.

All the usual rules apply: ask as many questions as possible; get as many pictures as possible. The Optima's were pretty much bulletproof, but keep an eye out for worn final pinion gears, sloppy bearings, and bent shock towers.

• **What it's worth**—To be honest, for such a special kit, the Gold Optima did not have much about which to become excited—not even those beautiful gold shocks were included. The celebration kit did not even include the gold nerf bars, gold motor guard or even full bearings; it was basically a standard Optima kit with the metal parts anodized gold. I have it on reliable authority that only 2500 of these kits were made; the kit is obviously truly rare (I have personally sold one on eBay, and have seen only two others auctioned). This kit is a must have for an Optima freak such as me.

On the private market, Gold Celebration kits have reached well over $1,000. On eBay, they have thus far fallen marginally short of that mark. This is more likely because Kyosho is still emerging as a collectible manufacturer, rather than an indication of true value.

To purchase a new, built car such as the one in the photos, would be rather expensive. I have seen just the chassis parts alone sell for over $180, and wheels and tires for $90. Items such as the gold swing shafts, which were also used on the Rocky, can reach over $80 for a set when they come up.

Buying a NIB kit, or new built car, will generally be cheaper than building a car from parts or restoring a well used kit. This is because there are a larger proportion of people out there who have a "project" car competing for the part on auction.

Because Kyosho kits have not yet come into "full swing" on the collector market, you will quite often find parts stashed away in the corner of your favorite old hobby store, so keep those eyes peeled!

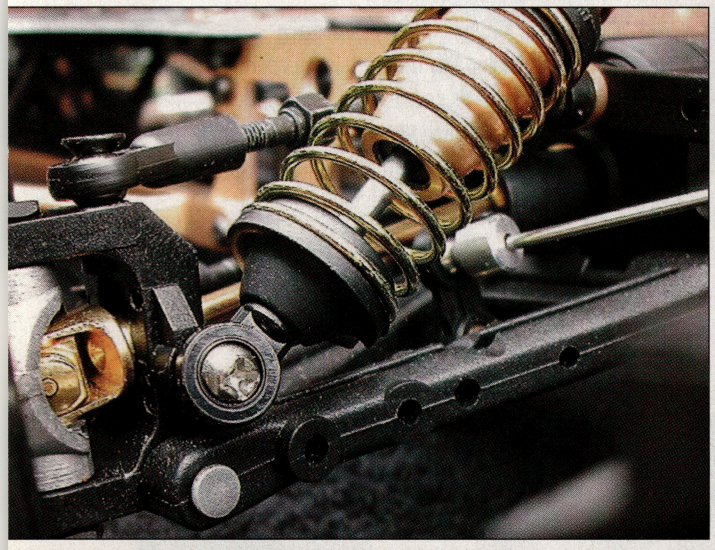
line. While some of these option parts are pretty much just "eye candy," (nothing has changed), parts like the ball differentials, adjustable sway bars, universal swing shafts, and those awesome gold shocks, were certainly products that helped the standard Optima series to be so competitive the world over.

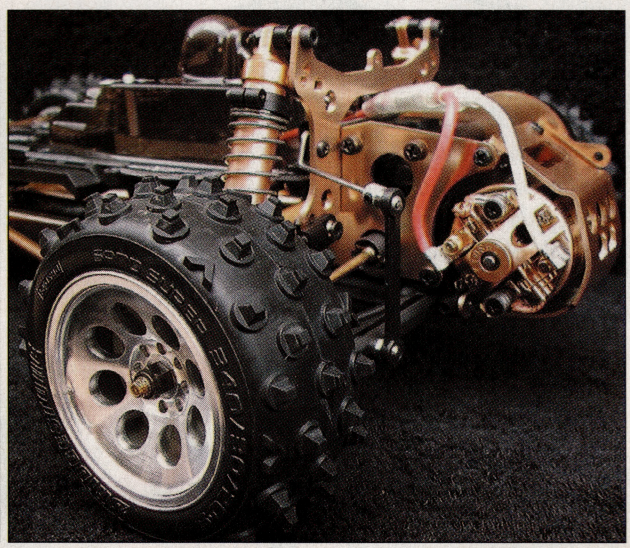
CONCLUSION

The Gold Celebration Edition Optima is the "holy grail" for the Optima enthusiast. Quite possibly, this kit is the holy grail of all Kyosho's. The only possible exception may be their very first car, the Dash, or the famous 1/8-scale nitro Vanning/Land Jump buggies. For the Kyosho electric fan, however, the Gold Optima is the cream of the crop.

As a built up car with all the options, the Gold Optima is quite simply *stunning* to look at. I have yet to decide on whether or not to put a Javelin or Optima body set on my chassis, as it is almost too nice looking to be covered with a body. I have photos of my chassis posted on *www.tamiyaclub.com*, and of all the cars in my "showroom," the Gold Optima has the most views. I'll yet convert more Tamiya loyalists to other brands!

If you are a fan of "old school" 4WD R/C cars, then the gold chassis Optima is truly a "top shelf" buggy to have in your collection.





PURE TEAM LOSI MINI-T PERFORMANCE



Only genuine Team Losi® Mini-T™ hop-ups deliver the kind of Mini-T performance boost that can truly satisfy you're need for speed, quickness and precise handling.



BATTERIES & CHARGERS

Enjoy longer runtimes and as much as 3 extra mph with these high-performance 1100mAh Ni-MH battery packs—available in 5- or 6-cell versions with or without an AC fast charger.



BALL BEARINGS

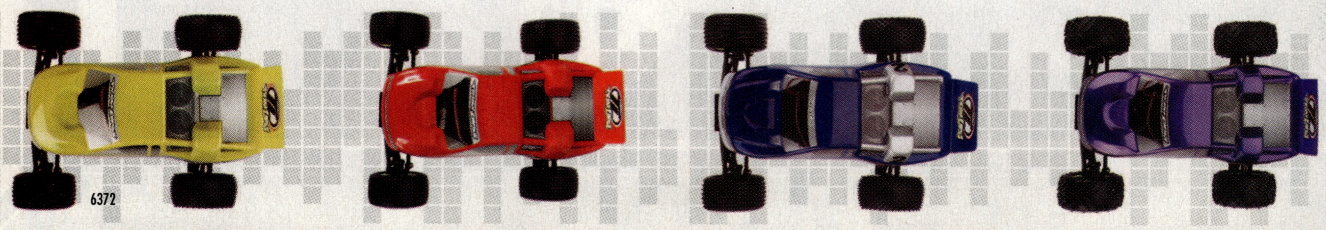
While the Mini-T comes with a ball bearing transmission, adding this friction-busting bearing set to the front wheels and rear hubs will improve handling and acceleration as well as increase top speed and runtime. Each bearing is dual shielded for reduced wear and longer life.



MIP CVD'S

No other driveshaft can match the performance, tight tolerances and quality fit of a MIP CVD. Team Losi offers these trick Mini-T performance parts in complete sets with hardware. Replacement hardware and set components sold separately.

www.TEAMLOSI.com



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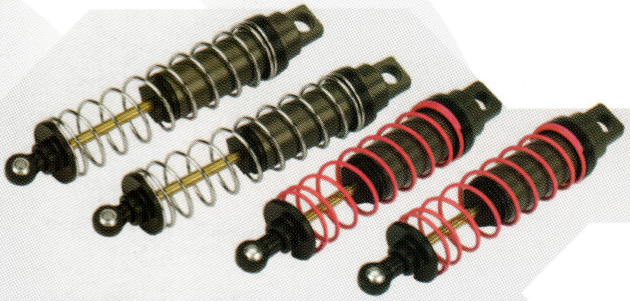




RACING SHOCK ABSORBERS

Improve off-road handling off jumps and over rough surfaces with these completely assembled racing shocks that feature super-tough titanium nitrided shafts. All the mounting hardware's included—just add oil. Optional front and rear spring sets—three rates per set—are also available to further fine-tune the suspension.

WHEELS & TIRES

The Mini-T was designed to run anywhere, so you need tires for all types of surfaces. Team Losi's got you covered with Mini "Step Pin" rear tires for dirt, foam tires for carpet racing, Mini "Smashers" for all-terrain driving and Mini "Street Meets" for paved surfaces. All tires include foam liners and are available with or without your choice of yellow or chrome rims.



H20



MINI-CK

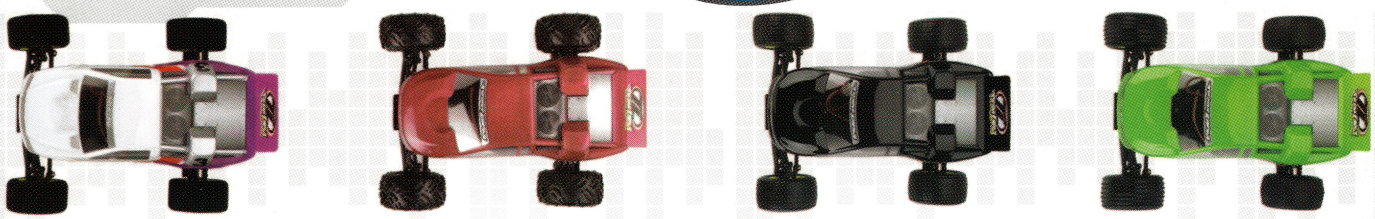


MINI-150

BODIES

Create your own look with one of several prepainted Mini-T replacement bodies or go with a great looking Mini-150, Mini-CK or H20 body you paint yourself. All unpainted bodies include window mask and stickers.

TEAM LOSI® SPORT



HORIZON HOBBY

One Hand, One Button

No Equal

EZ Start™

Electric Starting System



Only the Traxxas EZ-Start offers the pure convenience of true one-handed operation and complete, on-board, push-button electric starting. The Traxxas EZ-Start lights your glow plug and starts your engine quickly and smoothly at the push of a button.

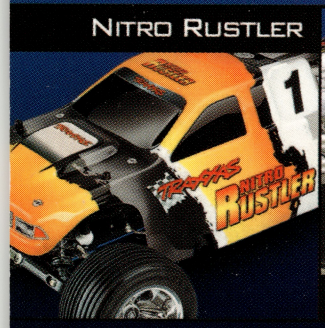
The EZ-Start imitators make you search for a drive hex on the engine; insert a long clumsy shaft; keep up with a separate rechargeable glow igniter; or even tote around a heavy cordless drill driver. Still others leave you hanging with an old-tech pull-starter.

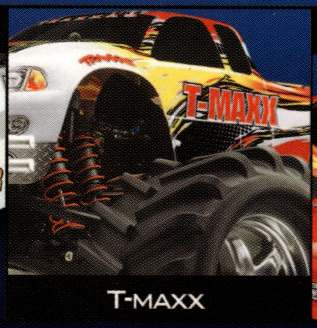
Only the EZ-Start has Smart Start™ circuitry that instantly diagnoses starting problems (such as a flooded engine or bad glow plug) and provides constant voltage to the glow plug while starting. EZ-Start's reliable drive system has been proven in thousands and thousands of engines. When it's time to get started in nitro...

the EZ-Start simply has no equal

EZ-Start featured on these powerful Traxxas vehicles:

NITRO RUSTLER





T-MAXX

NITRO 4-TEC





SPORTMAXX

NITRO SPORT SE*



TRAXXAS

© 2004 Traxxas. *Nitro Sport SE equipped with Pro .15 engine and original EZ-Start that does not have Smart Start™ technology.