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THE RADIO CONTROL CAR MAGAZINE

MAY 2001

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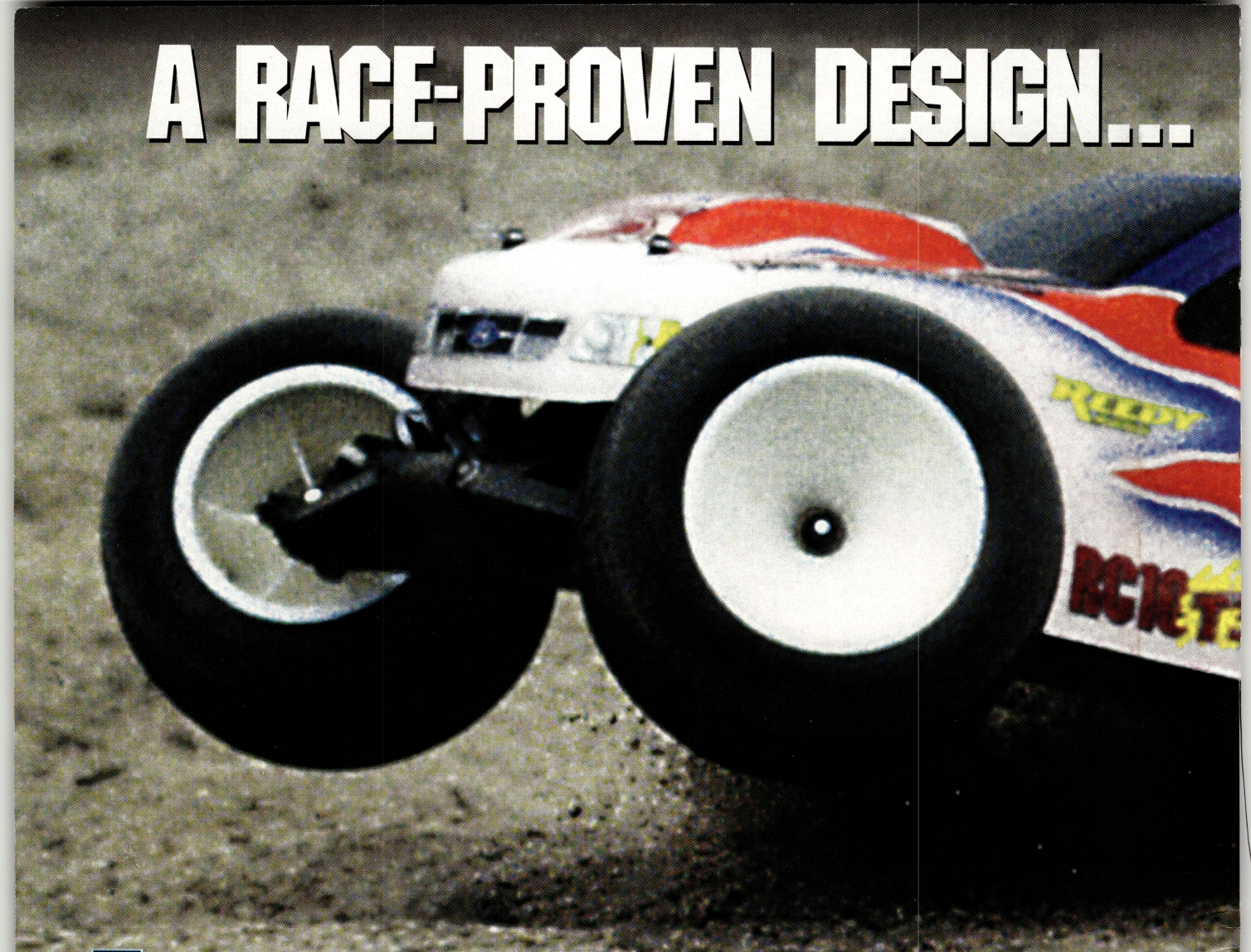

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RC CAR
THE RADIO CONTROL CAR MAGAZINE
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On the cover: Team Associated's new Factory Built T3 sets its sights on conquering the racing market in a whole new way (Photo by Frank "I finally got a cover shot after three years" Masi).

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THE RADIO CONTROL CAR MAGAZINE

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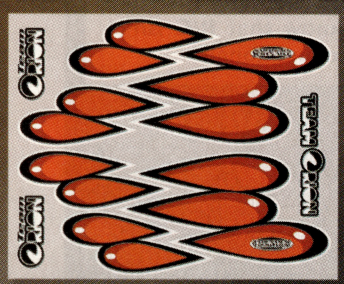







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[Drivers' Stand]

I've been in this hobby for nearly 16 years, and during this entire time I have never witnessed such change, or seen such diversity and innovation as has happened over the past six months.

BY FRANK MASI

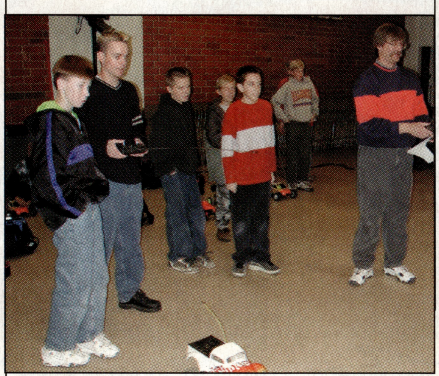
The hobby as you and I know it is due for drastic shifts, not the least of which is the impending demise of the kit. I'm not saying that kits will blink out of existence overnight, but over the next couple of years you can expect to see fewer and fewer of them. It's inevitable that kits become a relic of the past for no better reason than that if just one manufacturer creates a pre-built car, at an affordable price, and of the same quality as the un-built kits from its rival companies, then the majority of consumers are going to choose the pre-built simply because it's easy. If the other companies don't follow suit, well, that's just plain bad business.

What we are seeing is the evolution of the ready-to-run concept that has become the bread-and-butter of the lower end of the hobby. Ask any hobby shop owner and he'll tell you that RTRs make up the majority of sales to first-time customers. But what is also happening is that the quality and performance of RTRs has become such that they are now competing for sales with higher-end racing kits as a "second tier" purchase. In other words, in the past, once you had cut your teeth with a RTR, you moved up to the more sophisticated, higher performance race kit. Along with this, you unwittingly signed up for a pretty steep learning curve. Now, you can buy an RTR that straight from the box is capable of the performance and durability previously available only with a race kit.

For a glimpse at where all of this is headed, you need only read our cover story on Associated's new Team Built concept. These are the first products conceived to fill the void between the sport-level RTR and the top-of-the-line racing kit. The idea behind the Team Built is pretty straightforward: take the kit that most of your customers "step up" to once they've learned the ropes with an RTR, and build it for them. Throw in a pre-painted body and a retail price lower than the unassembled kit and you've made quite an attractive package. Since the Team Built is designed to be your second R/C vehicle, it doesn't need to come with radio gear and electronics, as you'll be able to pull them from your RTR. Only you, the customer, will ultimately decide if Associated's gamble will pay off. But if I were a betting man, I would stake the farm that not only will Team Built become a hit, but other manufacturers will soon follow the trend. ◆



I recently accompanied contributing author Jimmy Babcock to Arroyo Seco Junior High here in Valencia, CA. Jimmy had been invited to speak at a meeting of the school's R/C Club. Physical Science teacher John Olson is the faculty advisor for the club, which has between 15 and 20 members and meets after school on Fridays. The club even built its own off-road track on campus. Jimmy lectured on driving etiquette, chassis maintanance and basic tuning. Our kudos to Mr. Olson and his students; they know that R/C isn't only fun, it's educational!





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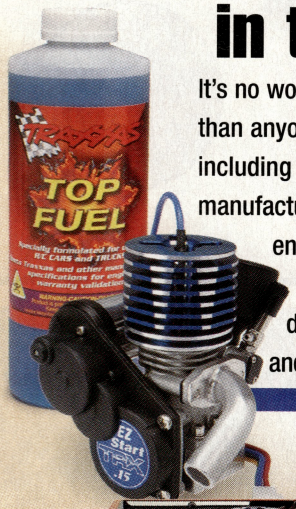

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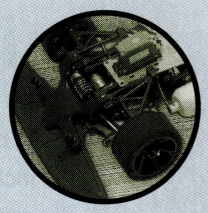

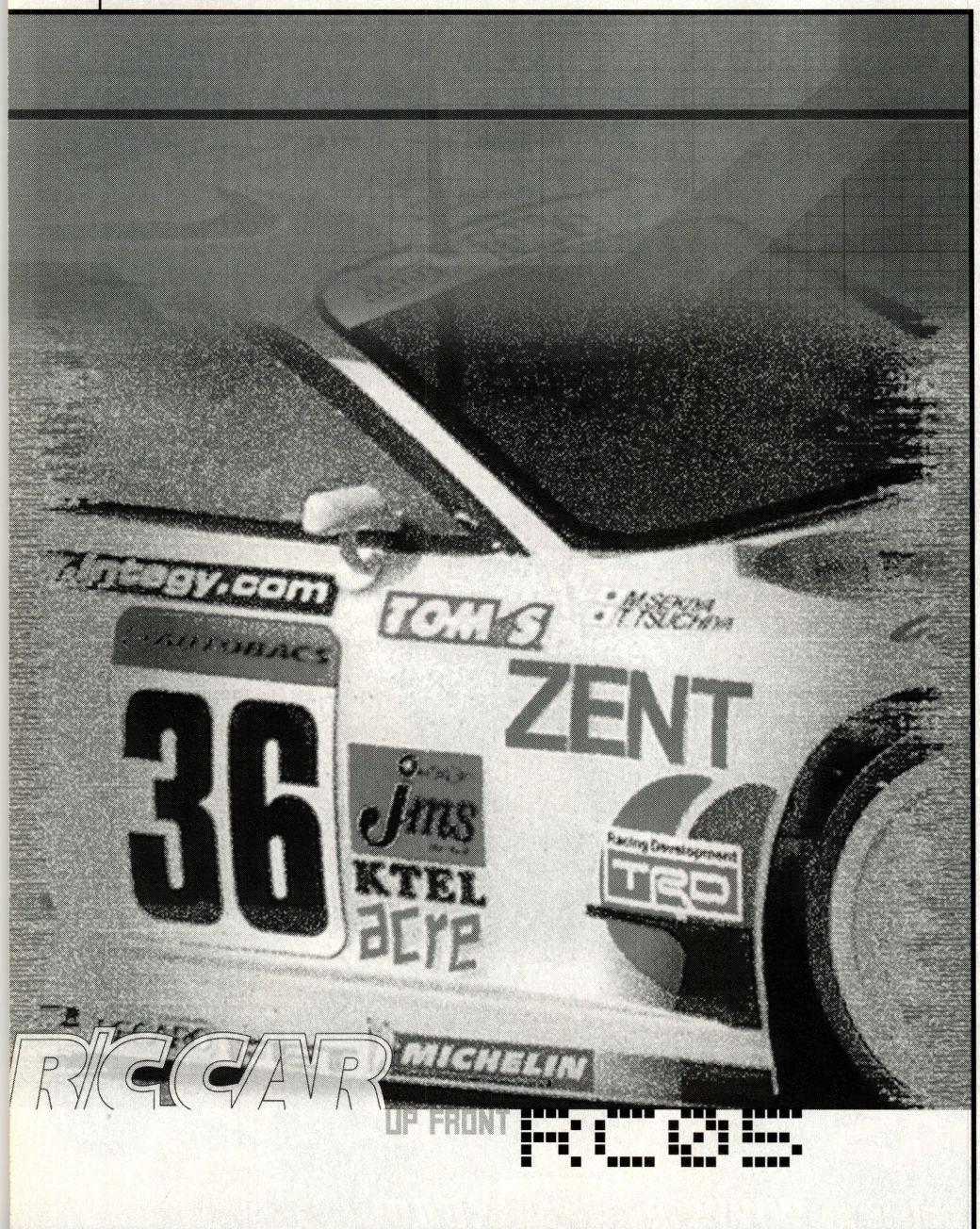

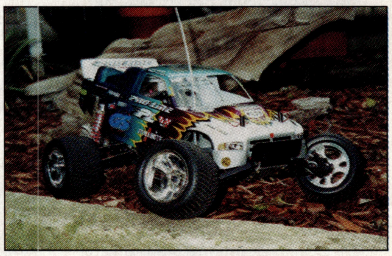

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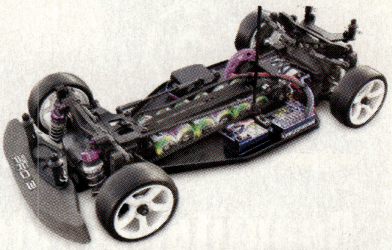

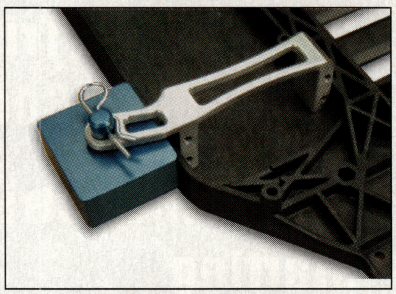

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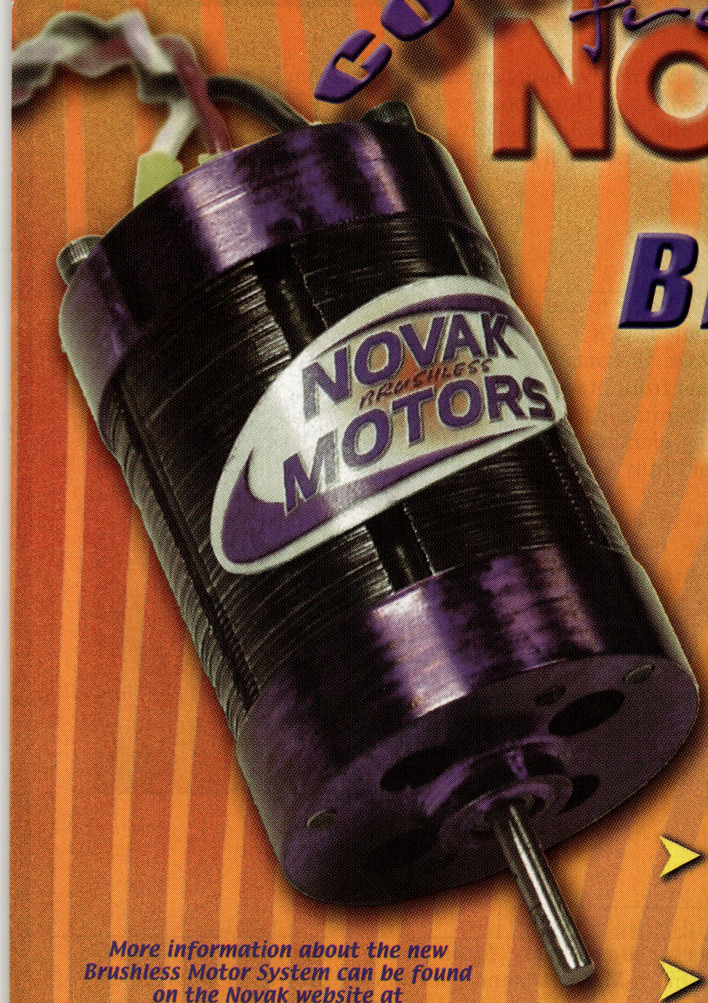

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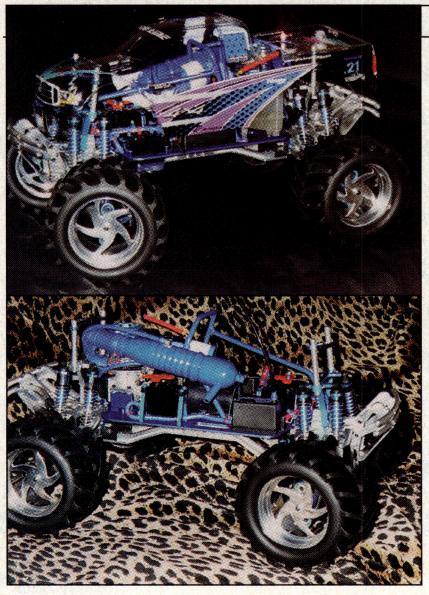
Welcome to the first installment of *R/C Car's* Readers' Projects. We receive many impressive "home-built" reader projects each month, so we decided to showcase some of them in each issue. How about you? Got a lot of pride in your ride? Snap some pics and send 'em to us here at *R/C Car* Readers' Rigs, 25233 Anza Drive, Valencia, CA 91355. 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!

Bad GT from Galveston



Stuart Snyder from Galveston, Texas, tells us that although he hates to see RTR vehicles featured in magazines, he has modified his Associated RTR GT enough to justify sending it to us. Stuart began by stripping down the entire chassis and sanding the blue-anodizing from the chassis, shocks and front brace-tubes. He then rebuilt the shocks with stiffer rear springs, unobtainium shafts and Trinity 35wt oil, and added Hammad Ghuman alloy spring clamps and retainers. He then added an MIP 360-degree Stinger pipe, a set of Shiny CVDs, Zero Maintenance steering kit, 4-in-1 clutch and Temp Gauge.

For added durability, Stuart also added a Robinson Racing 64/14 steel gear set, and to prevent a possible runaway, a fail-safe unit from Sonic Tronics. He then replaced the stock turnbuckles with lighter and stronger titanium ones from Lunsford Racing and installed a set of Losi ball cups (which are less likely to pop off). The stock fuel line was swapped for DuBro's black neoprene line, and a Great Planes in-line fuel filter ensures that no unwanted debris can enter the carb. For the finishing touches, Stuart added Dynamite ball bearings and red-anodized screws and hardware from GS Racing. Stuart's GT rides on RPM's chrome Clawz wheels shod with Pro-Line Road Rage tires. The body is also from Pro-Line (a Dodge Ram).



Mike's awesome big-block Maxx

This awesome T-Maxx comes from Mike Steele of Huntington Beach, California. Mike wanted his T-Maxx to stand out from the crowd, so he installed New Era's big-block .21 conversion kit and bolted in an OFNA/Picco .21 and New Era Sonic Ripple pipe and high-volume header. While he was at it, Mike went hog-wild and bolted on a New Era extended chassis for added stability, and added a host of blue-alloy New Era parts, including front and rear bumpers, lower chassis braces, body posts, suspension arms, shock towers, skid plates and bulkheads.

In addition, Mike installed Traxxas' lightweight aluminum pivot ball caps, aluminum servo mounts and hex hubs. He also reduced the truck's unsprung weight with a full set of Traxxas' hard-anodized aluminum pivot balls. Mike then beefed up the drivetrain with a set of MIP CVD drive shafts, a Robinson Racing steel spur gear and GPM's alloy gearboxes. Other more aesthetic add-ons include Aero Tech aluminum wheels, a set of lights from R/C Neon and a Pro-Line Ford F-350 body that Mike left mostly clear so that his handiwork could be more visible. Nice truck! ◆

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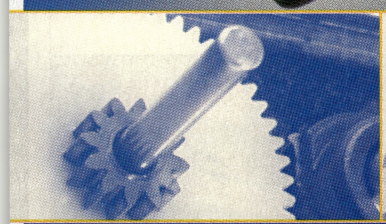

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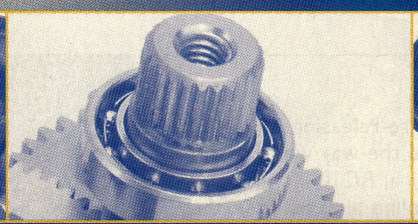

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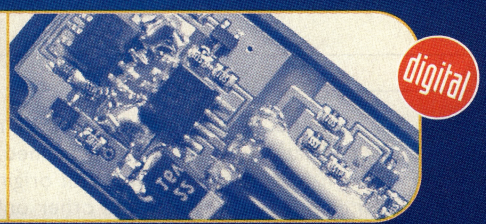

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HS-5625MG/HS-5645MG DUAL BALL BEARING | UNBREAKABLE METAL GEARS | DIGITAL PROGRAMMABLE

HS-5625MG	HIGH SPEED, DIGITAL	0.13	93OZ/IN	279IN/OZ	2.1OZ	1.6"X.08"X1.5"
HS-5645MG	HIGH TORQUE, DIGITAL	0.18	133OZ/IN	399IN/OZ	2.1OZ	1.6"X.08"X1.5"

HS-925MG/HS-945MG DUAL BALL BEARING | CORELESS MOTOR | UNBREAKABLE METAL GEARS

HS-925MG	HIGH SPEED, CORELESS MOTOR	0.08	103OZ/IN	—	2OZ	1.5"X0.8"X1.5"
HS-945MG	HIGH TORQUE, CORELESS MOTOR	0.12	153OZ/IN	—	2OZ	1.5"X0.8"X1.5"

HS-5925MG/HS-5945MG DUAL BALL BEARING | CORELESS MOTOR | UNBREAKABLE METAL GEARS | DIGITAL PROGRAMMABLE

HS-5925MG	HIGH SPEED, CORELESS MOTOR, DIGITAL	0.08	128OZ/IN	384IN/OZ	2OZ	1.5"X0.8"X1.5"
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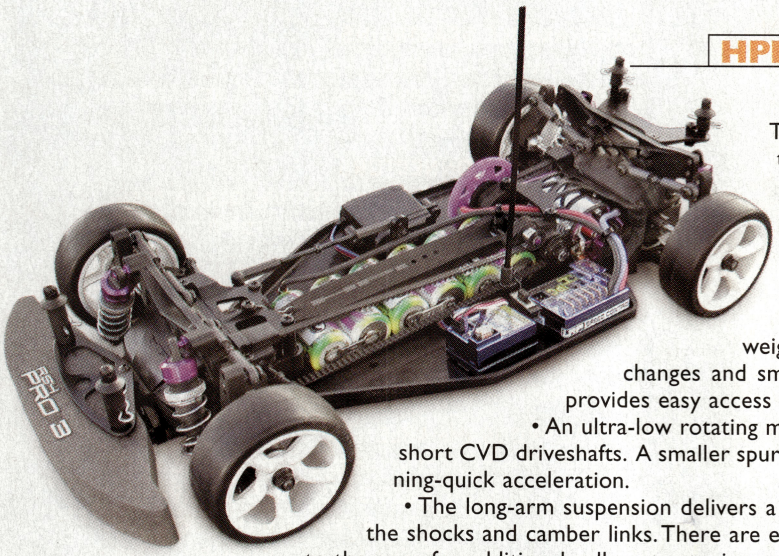
HPI set to release the new RS4 Pro 3



Things have been rather quiet at HPI lately. We suspected that they were working on something big, and we were right! HPI just announced the release of the all-new RS4 Pro 3 electric touring car and, in typical HPI fashion, it's loaded with innovation. Check out some of the Pro 3's outstanding features.

• A molded composite chassis that positions the battery pack straight down the middle for near-perfect weight distribution that's centered for faster directional changes and smoother on- and off-throttle transition. The chassis also provides easy access to the electronics and wiring.

• An ultra-low rotating mass drivetrain uses graphite-composite ball diffs and new short CVD driveshafts. A smaller spur gear optimizes the low weight of the drive train for lightning-quick acceleration.

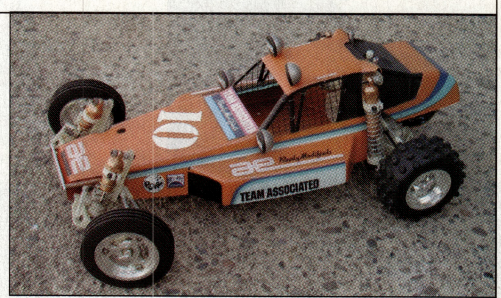
• The long-arm suspension delivers a myriad of tuning options, with many holes for mounting the shocks and camber links. There are even two lower hinge-pin holes for attaching the uprights to the arms for additional roll-center tuning.

• The Pro 3 will have HPI's new lightweight composite true-bore shocks, which have threaded cylinders for fast pre-load adjustment, HPI's VVS (Variable Volume System), which compensates for changes in oil volume during compression and rebound, and smooth Teflon pistons.

HPI expects the Pro 3 to be available in early April. For more information, call HPI at (949) 753-1099.

Nostalgia rules

Rumor has it that Associated is toying with the idea of re-releasing a limited number of original RC10 kits. That's right, the car that defined the way we race off-road, complete with its trademark gold-tub chassis. With original RC10 kits in good condition commanding premium prices on eBay and other online auction sites, the demand seems substantial enough for Associated to seriously consider the investment. If you would be interested in buying an "RC10 classic" kit, call Associated at (714) 850-9342 and tell 'em to make it!





Adam Drake dominates Hemet with his Losi Triple-X NT!

We just got back from the second annual "The Dirt" Nitro Challenge race at Hemet, where Team Losi/Team Trinity driver Adam Drake drove to the top of the field in the hour-long 1/10-scale gas truck A-main with his Losi Triple-X NT. In the 1/8-scale class, Team Kyosho driver Chad Bradley dominated the hour-long A-main to take first overall, winning by more than two laps! Check out our next issue where we'll feature both drivers' winning cars and their setups.

Goo be gone

Ask any racer and he'll tell you that the only bad part of nitro is the mess. Oily residue from fuel, when combined with dirt, forms a really, really stubborn crud that's impossible to remove with just a brush or compressed air. Fortunately, Trinity now offers its Nitro Blast "nitro neutralizer" cleaning spray. Just a few shots of Nitro Blast and your engine and chassis will be sparkling clean. And non-chlorinated Nitro Blast evaporates almost instantly, so it leaves no residue and won't harm electronics (although you shouldn't spray directly on any electronic device). Pick up a can or two at your local Trinity dealer or call (732) 635-1600 for more information.



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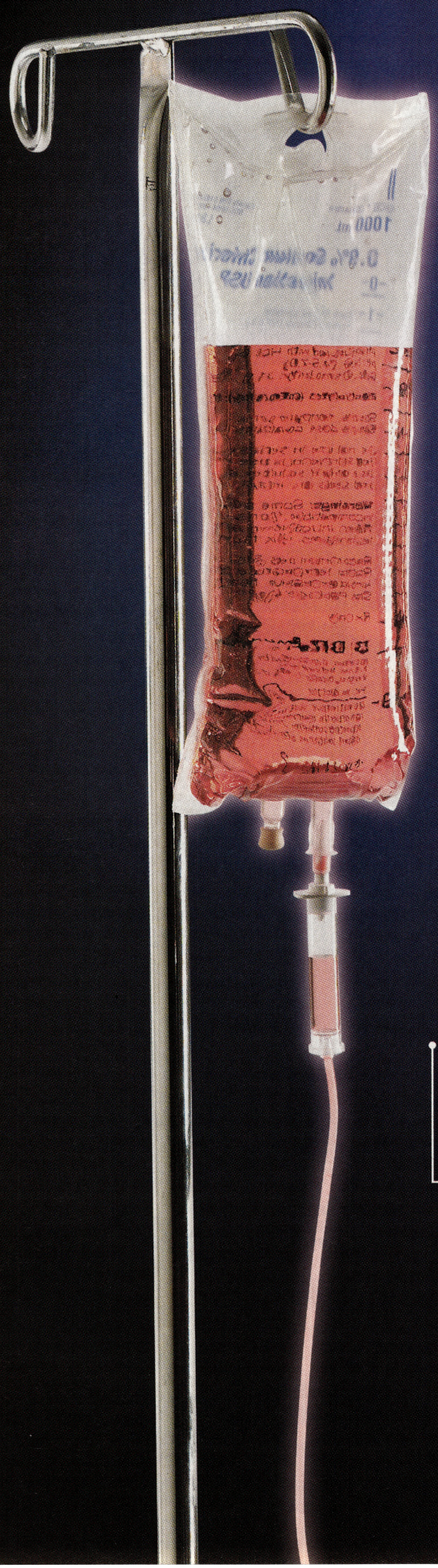

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Billy Easton:
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Mike Blackstock:
A-main finalist,
10th overall

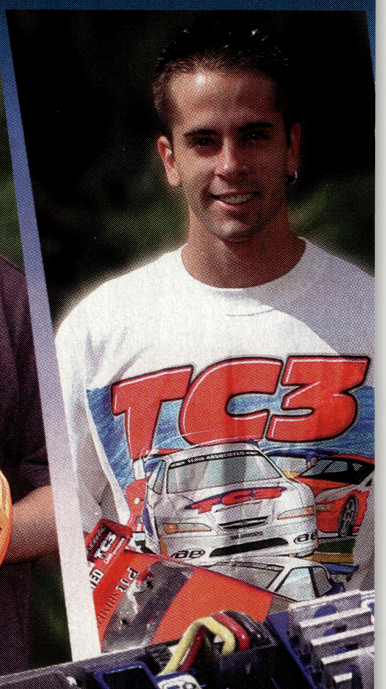
Mark Pavidis



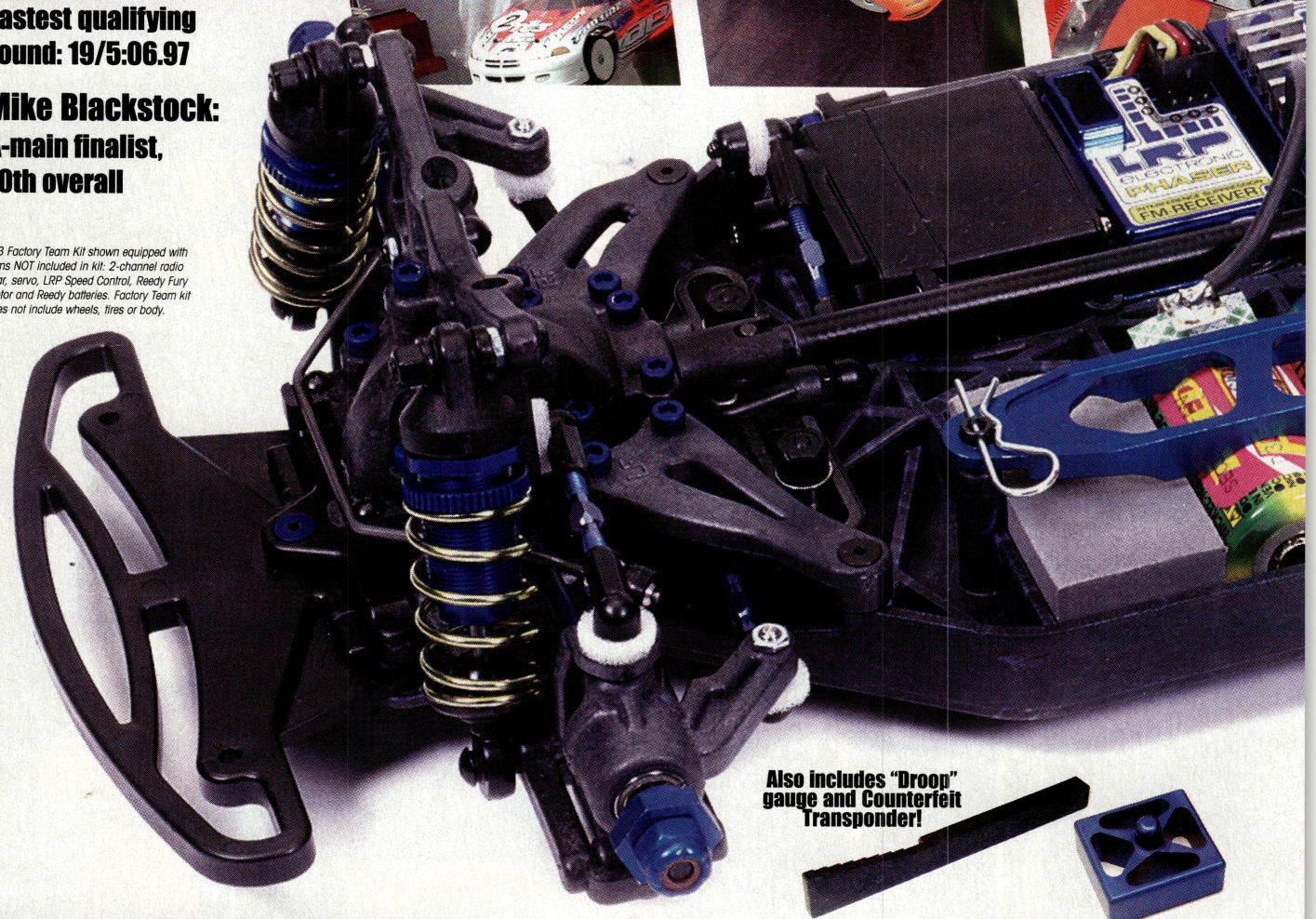
Craig Drescher



Billy Easton



TC3 Factory Team Kit shown equipped with items NOT included in kit: 2-channel radio gear, servo, LRP Speed Control, Reedy Fury motor and Reedy batteries. Factory Team kit does not include wheels, tires or body.



Also includes "Droop" gauge and Counterfeit Transponder!

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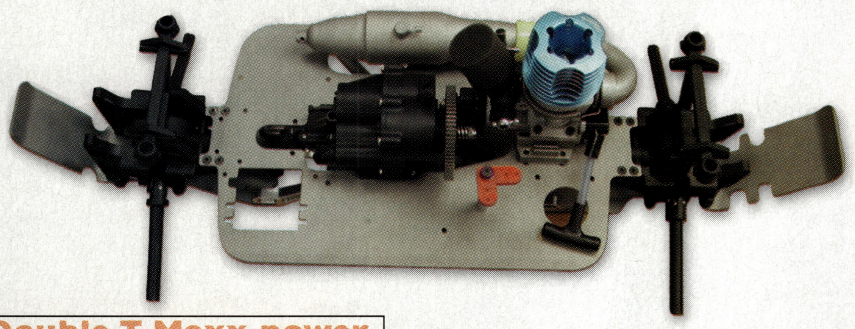
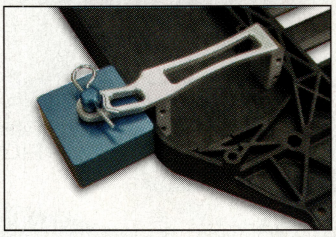


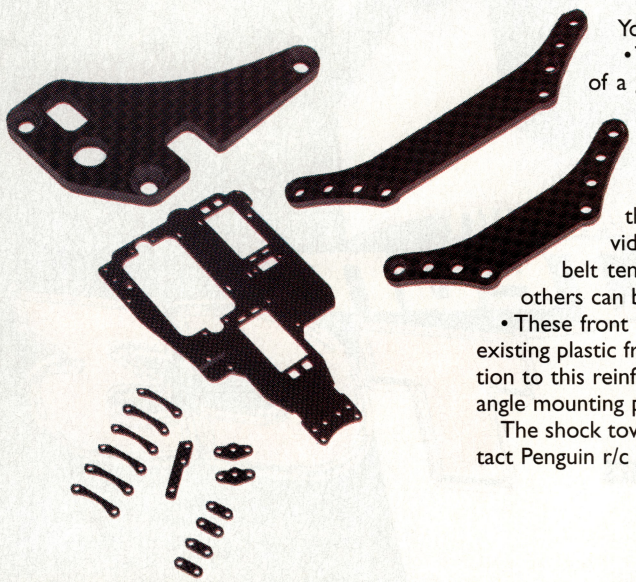


Double T-Maxx power

The guys at Hardcore Racing don't sleep, don't have fun (unless they're torture-testing a new product) and never go to lunch. You won't find another company that's more dedicated to producing the finest accessories and hop-ups for today's hottest vehicles. The latest project to leave Hardcore's drawing board is this big-block engine conversion for the Traxxas T-Maxx. The kit will include a titanium chassis that's been lengthened to provide room for the .21 engine swap, a new, longer rear skid plate and a 90-degree standoff to accommodate the engine's slide-valve carb. As an option, Hardcore will offer an accessory kit for the conversion that includes a special clutch-nut (which will allow you to use the T-Maxx's clutch bell on the new .21 engine) and engine mounts.

Also new from Hardcore is this nicely machined aluminum servo mount for the popular Associated TC3 touring car. The one-piece mount replaces the stock plastic mounts and includes an integrated transponder mount. As with all of Hardcore's aluminum and titanium parts, there are several colors and finishes available in addition to the polished aluminum finish shown here. Visit your hobby dealer or call Hardcore at (661) 294-5032 for more information.

Penquin stiffens up the Yoke GT4W



Penguin r/c recently released a whole slew of new parts for the Yokomo GT4 nitro touring car.

- The Rear Bulkhead Support Brace (P1711) not only adds the nice look of a graphite plate but it also strengthens the rear bulkhead by reducing flex. It is made of M3 plate graphite and it fits securely in the existing location with no modification necessary. The brace has a list price of $6.99.
- The P1712 Performance upper deck is a direct replacement for the stock molded plastic upper deck. The new graphite upper deck provides added stiffness. Included are provisions for the use of an add-on belt tensioner (designed around the Wolfpack universal tensioner; however, others can be used). The upper deck has a list price of $41.99.
- These front and rear shock tower braces (P1713 front/P1714 rear) reinforce the existing plastic front shock tower providing the GT4 with added predictability. In addition to this reinforcement, the new M3 graphite shock tower gives two further shock angle mounting positions to improve handling.

The shock tower braces each have a list price for $6.99. For more information, contact Penguin r/c at (714) 630-9015.

Budget power!



Looking for a good budget .21 powerplant? Well, then check this out! We just received this sample Rossi pull-start .21 engine from the guys over at Multiplex. We've been informed that the new engine (part #R1006) is designed to provide broad torque and horsepower bands while being easy to drive. We also received this new exhaust system (part # B2050) specifically designed for the new Rossi engine. According to preliminary tests, the engine not only provides strong power, it also provides good reliability. We'll let you know, after we've fired it up and tested it for a while, how it stacks up against the competition. For now, though, you can get more information from Multiplex by calling them at (818) 838-6467.

Charge up without charging an arm and a leg



New from Integy is this Eagle Racing 1507 AC Active Charger. The charger features 110-120V AC input, can charge six- or seven-cell NiCad or Ni-MH battery packs, has a user selectable 1A, 2A or 4A charging current, is very easy to use, comes with an internal cooling fan, and from our testing experience it provides very reliable charging (according to Integy, case color may vary). The charger has a retail price of $69.99. For more information, contact Integy Inc. at (909) 444-2766.

Smooth out your touring car

These new shocks are Integy's second generation shock set. They are very smooth, and can be filled two ways—from the top or the bottom. They have built-in O-rings that restrict spring adjusting collar movement, and fine pitch threaded shock bodies allows for very precise tension adjustment. The shock set (T3848) comes with Integy's C22 spring set, and they also use the Atlas precision spring set. The shocks fit most touring car like the Yokomo MR4TC, Associated TC3, HPI RS4, Nitro RS4, and Yokomo GT4. They are available in either blue or purple finish and retail for $28.99. For more information, contact Integy Inc. at (909) 444-2766.





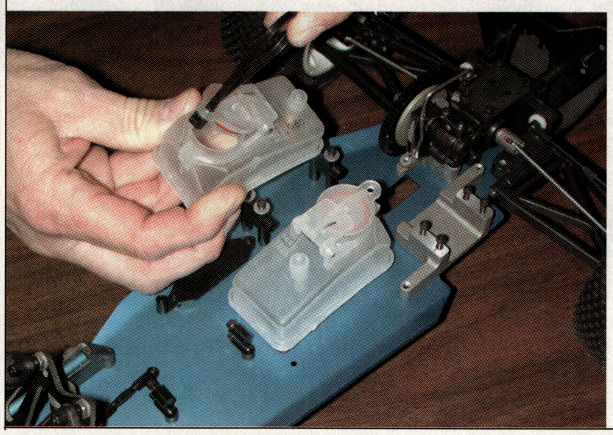


It's not how fast you are...



Pro-Line has expanded its line of aftermarket bodies with the release of this pair of hot-looking shells. First is the Humm-Vee for the Traxxas T-Maxx and E-Maxx. Let's face it, nothing causes a scene quite like a Hummer. Be it in the boonies or pulling up to a posh restaurant, Hummers make a statement. Pro-Line's body is available in two versions, the Urban (part no. 3104, $26), which duplicates the pickup style Hummer that's popular with the Beverly Hills crowd, and the Militia (3105, $28) version, which has the full-cover look of a military Hummer. Both bodies come with pre-cut window masks for easy painting, and a full set of color decals. Due to its tall roof-line, the Militia body comes with long rear body posts for added support.

Also new from Pro-Line is the Crowd Pleazer 7.5 body (3108-00, $26) for the world champion Kyosho MP-7.5 1/8-scale off-road buggy. The Crowd Pleazer was designed by Pro-Line's Mark Pavidis and features a low profile that fits the MP-7.5 like a glove. And because it's molded from thick 0.040 inch Lexan, the Crowd Pleazer is as durable as it is good-looking. Comes with window masks and Pro-Line logo decals. Visit your Pro-Line dealer or call (909) 849-9781.

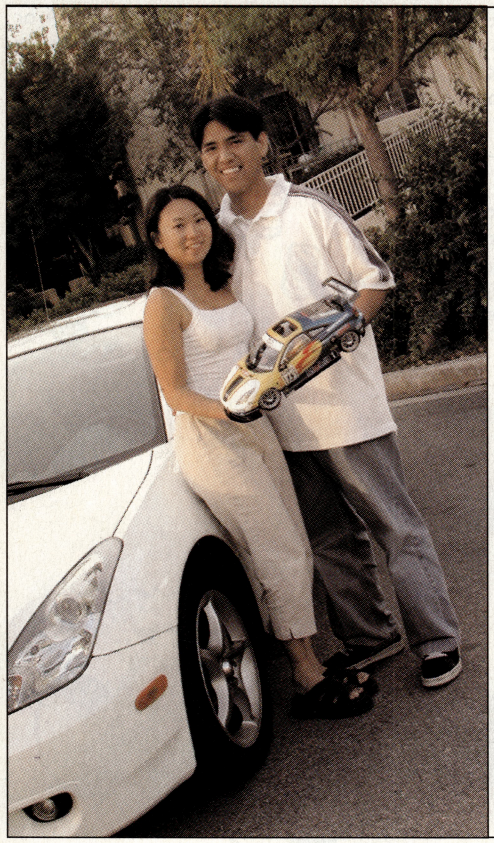


Flipped flip-top tank

Associated has finally listened to RC10GT owners and is producing a new fuel tank that's already flipped around. You see, for years, GT racers have been installing their trucks' fuel tanks backwards to make it easier and quicker to refuel during long races. Unfortunately, this process involves drilling new holes in your chassis. The new tank will bolt right to the existing holes, and will be available as an option; the old-style tank will remain as is and with the same part number and price. Call Associated at (714) 850-9342.

[The Detail Shop, Part I]

The fine art of Concourse detailing by Ian Aquino

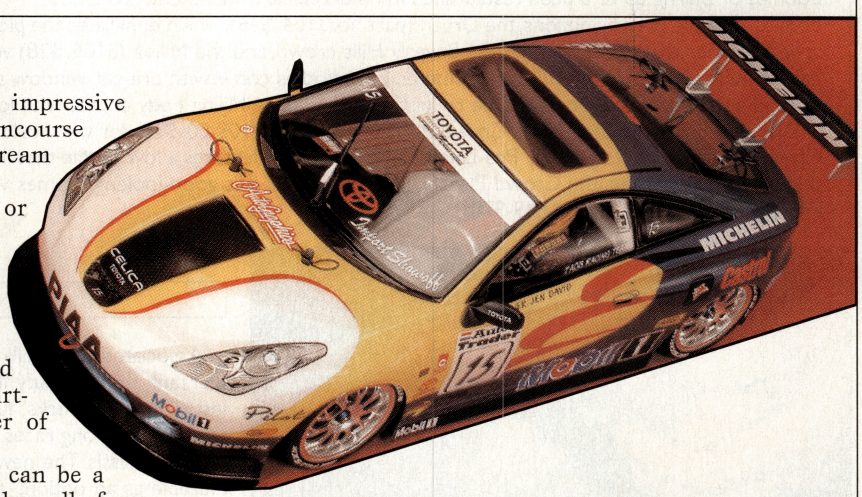


In the world of concourse competition, getting attention is the key to success. How one goes about achieving the coveted attention is probably the tale that a lot of us wonder about.

I'm fortunate enough to have been asked to start a new column for this magazine. For those who have seen my Concourse work in past issues, the subject of this new column should come as no surprise to anyone—detailing R/C car bodies. Like many of you, I happen to love R/C cars, and getting acquainted with a radio control car publication such as *R/C Car* more than complements my devotion to this hobby. I'd like to give credit to this magazine for bringing my Concourse cars into the limelight.

Before we get into any tips or tricks in the column, I'd like to give you just a brief background about myself. I have been involved in this miniature world of automobiles for roughly a decade, but three years ago I became attracted to the booming category of radio-controlled touring cars. There is just something about a 1/10-scale model bulleting past the straightaway at unimaginable speeds. Add to this the elegance and beauty of a vacuum-formed body shell, and you probably have the best seat in the house... just a few scales short of the real deal.

Having joined a handful of Concourse competitions recently, I was able to gather essential "know-how" from building the complete Concourse package to fulfilling that mysterious and sometimes eluding "what the judges look for" factor. I can assure you that achieving the right combination isn't all that impossible. As with any form of competition, effort plays a big role in succeeding, and with a little dash of luck, getting that perfect look for your sedan is just a detail away. I am hopeful that this column will give readers valuable insights in making impressive R/C bodies and maybe even encourage Concourse aspirants to put together their own dream machines.



Whether you are entering competition or not, we will do our best to aid you in distinguishing your car from the rest of the crowd. Look into our future issues for complete step-by-step guides and "how-to's" in this fascinating art of detailing. For now, let's get down to the basics and concentrate on an often ignored step in starting off a new R/C car body...the power of imagination.

For beginners, painting a Lexan body can be a daunting task. I still remember the time when all of my cars wore the same "all-white" paint scheme to simplify the painting process. Well, why not? After all, this was the easiest and the least time-consuming. I convinced myself then that I was "just being practical" and, as expected, I hit the track in no time with ease. Moreover, a simple paint job also took out the frustration resulting

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from a hard rub against the track walls. No guilt-tripping here! Imagine running your "10-hours-of-labor" Concourse project into an unforgiving barrier—wham! That will surely stab anyone's heart!

But for the detail-oriented racers in some of us who dare to be different among the fleet of monotone-colored sedans, achieving that exclusive look is the way of R/C life. Fulfillment is attained when one gets fellow racers asking questions on how the piece of moving art was created. Like some of you, I am often confronted with questions regarding the origins of my designs.



People often ask me how I come up with the cars I build for competitions. Well, there's really no definite answer.

One thing is for sure, though; none of the cars I conceptualized sprung overnight. I guarantee that none of them were born out of nothing. In a short account, all the cars came from a long list of do's and don'ts and most of the time, what is achievable and sometimes impractical. Getting the right idea from the start is where it all begins.

Practicing informative research is half of the battle. Believe it or not, it takes more time to think of an idea than to actually execute that same idea. Try not to limit yourself in your original concept; let your thoughts flow and eventually evolve. Remember that ingenuity is the key. You'll be amazed by how much detail you can put on a single project. At a glance, my Concourse cars may look complicated, but underneath all those details are simple foundations and themes that I try to follow. Many enthusiasts nowadays are into radio-controlled models not only because they are fun to play with, but also because they essentially mimic their real-life counterparts. And so some individuals get hooked on the technical and performance features, while others go for the realistic look the world of R/C cars offers. Whether you are painting a souped-up street-legal Honda Civic or detailing a full race-bred Acura NSX, nothing compares to the thrill of being able to build your own car from the ground up. No other hobby out there allows someone to design and essentially run his or her creation at a fraction of the cost of the real thing. Significantly, the more realistic details you put in your touring car, the better it will look in front of others. But keep in mind that what may look good in your opinion may be the opposite in someone else's views, so don't get discouraged if not everyone digs your car. The goal is to keep your imagination flowing so you'll always have something in store for everyone. Next time around we'll start you on the path towards creating a cool ride with some tips and tricks I've learned along the way.—Ian

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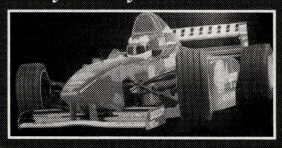



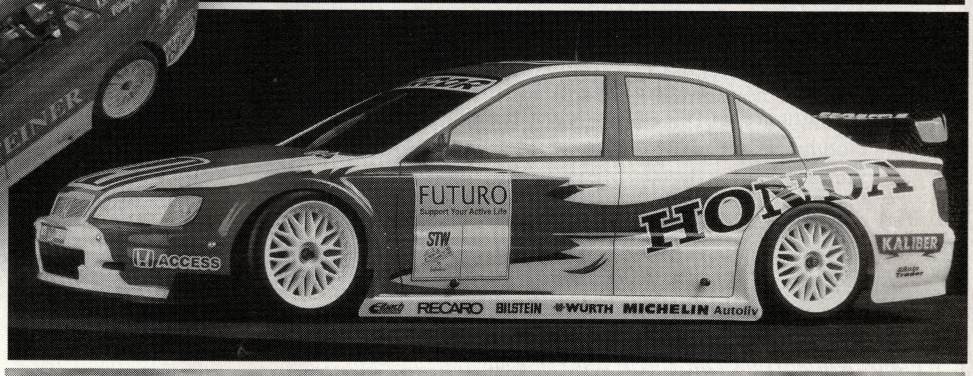

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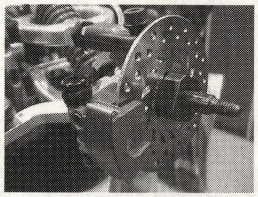

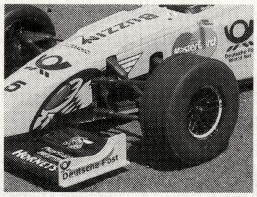



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Bad advice?

I have a Nitro RS4 and it was having some type of problem with either the servos, the receiver, or the controller. The guy at the R/C shop said that the receiver could be getting Rf interference from the motor, even when the motor is not running. Is this true, and if not should I consult a different hobbyist at the shop?

Goody
via *rc-car.com*

A motor can only cause interference when its receiving power from the battery. If your car is glitching when the throttle is in neutral, it's likely coming from another source. Do this: disconnect the motor from the speed control and turn the car on. If there is glitching, then you know for sure it's not from the motor. More than likely, the problem lies in the receiver. Try changing the crystals in your radio and receiver.

Crank yank

I got into R/C cars a while back and I go through those annoying pull cord starters about every other day. I was wondering if there was any better way to start the car? I tried a starter box–the kind you push the car down on—and all it did was scuff up the bottom of my car. It didn't start it or anything! If you have any recommendations I'd be overwhelmed to hear them.

Jason Ogle
via *rc-car.com*

Jason, there's really nothing wrong with pull-starters; just make sure that you only tug them no more than six or seven inches. It sounds as if you have been pulling the cord all the way out as if it were a lawn mower. This is bad for the starter and will cause it to fail. A starter box is a great way to go; however, it usually requires that your engine be equipped with a different flywheel and mount so that it can sit lower in the chassis. This enables the flywheel to be reached by the starter's rubber wheel. Check with your hobby dealer or even your instruction manual to see if there is a "non pull-start" flywheel or mount for your car. Good luck.

Is is dark colors first or last?

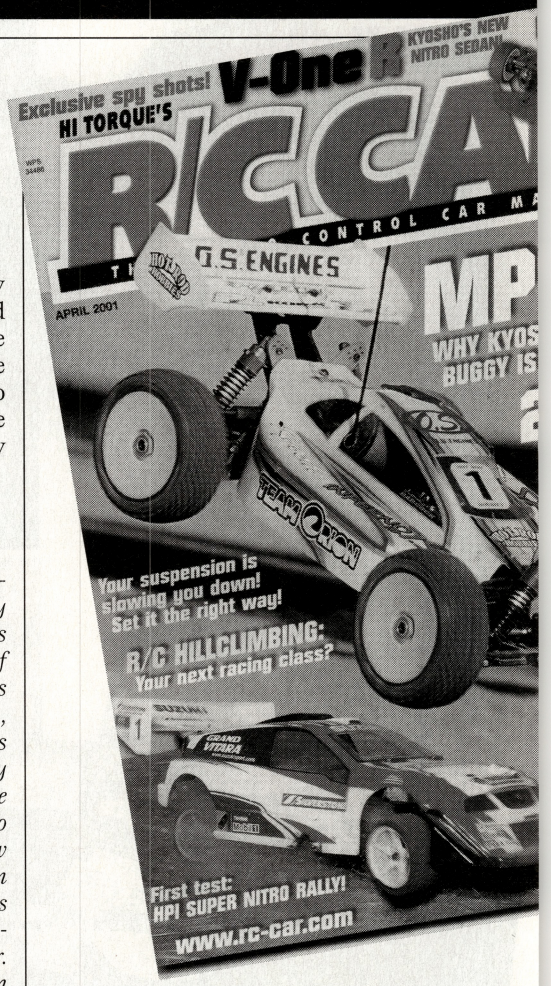
I actually have two questions, so here I go. I was wondering how to take good care of my motor's commutator? I also just purchased a new body for my Double-X 'CR' Kinwald Edition and I want o make a real nice paint job on it. I wanted to have purple flames over yellow flames (so that a few flames show under the purple) with a blue background. How would I go about doing that?

Joe Juran
via *rc-car.com*

The best way to care for your commutator is to clean it with motor spray after every two runs, replace the brushes as soon as they begin to show signs of wear or discoloration (which indicates that they have lost their lubrication), and to have it cut on a lathe when its surface is no longer a clean, coppery color. Usually, it's best to paint the darker colors before the lighter colors (so that the darker colors don't show through the lighter ones), but you can get away with painting the lighter colors first (as in your paint scheme) by backing them with white, followed by silver. This will prevent the darker purple from bleeding through the light yellow flames.

Pete answers his own question

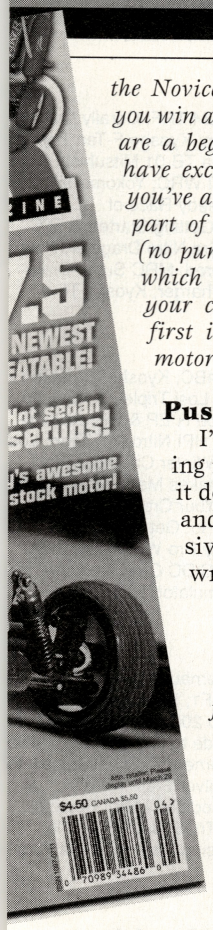
I am a 15-year-old boy from Danbury, Connecticut. I bought and built an RC10B3 Sport during this past summer. I am having trouble deciding what to do, though. The track I plan on racing at is R/C XTreme in New Milford, Connecticut (maybe you guys have heard of it). But my B3 doesn't have any real hop-ups at all. In fact, I don't even have a real race-quality radio or even an ESC that works properly. The motor is a dinky little Conquest that barely has enough oomph to push the car around. My dilemma lies therein: I'm not sure whether it would be a good idea to



start off in the novice class (as I've never raced before) or go right into "regular circulation," so to speak. The reason I am debating this topic is because I have been told that I have exceptional driving skills, but I'm sure that once I start racing, I'm gonna get my pale scrawny little butt wiped all the way from here to Calgary. I know this is a lot to be asking, and I think I know what you're gonna say. "Just go to the track and ask around." I just thought I might try to get some advice on what I should do.

Pete S.
via *rc-car.com*

Pete, don't despair. Our best advice is to heed your own inner voice. Start off in



the Novice class. No one will balk if you win a couple of times, as you truly are a beginning racer. If you really have exceptional driving skill, then you've already mastered the hardest part of racing. Your next conquest (no pun intended) will be to decide which items to upgrade based on your current budget. We'd invest first in bearings, then in a new motor and battery. Good luck.

Pushin' TR 15

I'm having problems steering my Kyosho Inferno TR 15. it doesn't turn quickly enough and the turning circle is massive. What have I done wrong?

Richard Midgley
via *rc-car.com*

First, check to see if the front wheels are turning to their fullest extent. Hold the front end off the ground the turn the radio's steering wheel all the way to the left and to the right. The front steering uprights should hit their travel stops. If not, adjust the radio's dual-rate steering function (most radios have this; check your instruction manual. If you don't have the manual, dual-rate is usually controlled by a dial located near the radio's hand grip). If you have full travel, then it's possible that your servo is just too weak to steer the car. You'll either have to learn to live with it, or invest in a more powerful servo. However, even the least expensive servo should be able to handle the TR 15. Our guess is that it's a travel problem.

Reality dose

I have a Tekin speed control. It doesn't have reverse, but I was wondering if you can tell me how to get reverse? I keep running into things, then I have to go get it. Thanks. Great mag.

Bryan
via rc-car.com

Bad news, Bryan, the only way to get reverse is to have a reversing speed control. And no, you can't convert a forward-only w/brakes ESC to a reversing ESC. Not only will the ESC need dedicated reverse FETs (transistors), but a new circuit board to switch to them. Your best bet would be to live with what you have or buy a new ESC.

Three-speed Maxx

In your February issue you mention that the builder of the Twin Maxx T-Maxx has plans to upgrade to a three speed transmission. Can you give us any details about this tranny?

Jeff Davis
via rc-car.com

Jeff, we were pondering this same question when the owner told us his plans. The idea is to install a normal two-speed tranny in place of the stock spur gear and clutch bell (or bells in this case). As the T-Maxx's gearbox has a two-speed already, adding a second one nets, in essence, a "third" gear. If you were able to have three distinct ratios, and could tune both shift mechanisms to work properly, it could be done. We haven't seen this setup in action yet, but it "could" work.

Nitro sedan selection

I am looking for a nitro touring car that is ROAR legal. I wanted to hear different opinions on what a good nitro touring car was and why. I plan on racing the car. Thanks

Thor Smith
via rc-car.com

Well Thor (great name, BTW), although we haven't done a specific "shootout" yet with nitro sedans, we would recommend that you give some consideration to the Yokomo GT-4w, the Mugen MTX-2 and the Serpent Impulse. All three are in the new "pillow ball" suspension category. Also be on the lookout for the new Kyosho V-One R, which looks promising. If you don't mind waiting until the Summer, Associated's Nitro TC3 will be tough to beat.

Under-age driver

How old do you have to be to own an R/C gas powered remote control car. A 1/10 scale?

Carlos
via rc-car.com

If you will be building and running the kit yourself, we recommend that you be at least 14 years or older. If you have an adult who will help you, then any age above nine or 10 is okay.

Mad for the Bison

What do you guys think of the Tamiya Mad Bison. I'm looking for my first nitro truck. I already have an electric, but nitro looks more fun. So, how did you like the Mad Bison? Was is durable, fun, and easy to maintain? Was it fast? What did you not like about the truck? Thanks for you time and consideration.

Aakash
via rc-car.com

We had a lot of fun when we tested the Mad Bison. It was durable and easy to maintain, and the Tamiya .15 engine ran very well. The truck's speed is respectable for its class, but don't mistake the Bison for a race truck. It's suspension is limited, so it's better for playing around than for serious performance.

Send your letters to: Feedback, P.O. Box 958, Valencia, CA 91380-9058

E-mail your letters direct to the editors! You can get ahold of Frank Masi at evaone@pacbell.net or Doogie at doog2@earthlink.net. 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.

R/C CAR BACK ISSUES



❑ **FEB. '99**
FSR V12 Nitro Bullet; MRC SP3; Kyosho Fiat 500; Team Losi NXT; Tamiya SVT F-150 Ford Lightning; R/C and Safety; Chicago Hobby Show; Dead Short Your Batteries?; Tamiya TCS national; Trinity's Paradox; Inside the TCS winning cars; Tamiya CVA Transparent Shocks; Hitec CG-335 Charger; Integy discharge tray; Roland Sticka STX-7; Team Losi Street Weapon; MRC nitro Thunder King.

❑ **MAR. '99**
MRC Q-Tee Coupe; Schumacher Nitro S.S.T.; HPI Super nitro RS4; Tamiya TG-10 Mk.1; Mercedes CLK-GTR; Savage Motorsports Headhunter HS-350; Team Associated RC12L3; How to break in your engine; Trinity D3.5 Modified motor; pro building tips; new Era models Clod Buster Kit; How to set screw your suspension; Trinity foam touring car stand; Team Kinwald blue drivers; GM Racing Commander Charger; Integy Indi Reactor 20 discharger; MPH Products Packrack; OFNA Racing Nitro Z-10.

❑ **APR. '99**
Duratrax maximum ST RTR; Team Losi I.W.C. Street Weapon; Kyosho Inferno MP-6; HPI RS4 pro 2; HPI Nitro RS4 RTR; Schumacher S.S.T. '99 Pro; Team Losi Double-X Tuning Guide; Super-Size Nitro Sedan Shootout; Deans Speed Jig; Dirt Bags Cargo Hauler; Multiplex programmable servos; HG Inc. Transparent Shocks; HPI RS4 Rally.

❑ **MAY '99**
Tamiya Toyota GT-One; Kyosho Landmax Volvo S-40; Team Assosicated RC10L3 Touring; Tamiya Baja Champ; Golden Horizon Colt 10-Formula 1; Integy parts cleaner; Team Losi NXT; '99 International Reedy Race of Champions; Team Associated Dual Sport Conversion; Motor Saver Filters; Inside the Reedy Race Winning Cars; Jamara 1/2-scale Go-Kart; RC10-GT Tuning Guide; Novak's new Millennium Charger.

❑ **JUNE '99**
Yokomo MR-4 Rally; Kyosho GP Spider Mk. II World Cup Edition; Tamiya M4 Sherman Tank; Tamiya TAO3R TRF; SVM Columbia Mk5 1/5th Scale; Novak Fusion; Robinson Racing RC10GT Spur Gear; Integy 16x2 Chargers; JR Racing XR3 FM Radio; FSR Nitro Bullet; '99 Team Losi Florida Winter Champs; Tamiya Juggernaut; Inside Winter Champs winning Cars.

❑ **JULY '99**
Hobby Tech HT1; BoLink/Racetech G-Force; Mugen Seiki MBX-4; Yokomo YR4-M2 pro; Tamiya Wild Dagger; Traxxas Nitro Wash; Pro-Line/Jaco pre-mounted sedan tires; FMA Direct Typhoon ESC; Golden Horizon Turbo Head; FMA Warlock FM Receiver; Hi-Tec Lynx FM 3D; Silver State Nitro Challenge; How to update your HPI Nitro RS4; '99 Florida Gas Winternats; Tamiya TG-10.

❑ **AUG. '99**
Tamiya Juggernaut; Kyosho Ford F-150 Desert Racer; Kyosho 4-Stroke SuperTen; Tamiya McLaren F1; PC Controller Shootout; '99 Reedy truck Race of Champions; .12 Engine Guide; Inside the Trinity/team Losi Merger; HPI Super Nitro RS4; Tamiya Porsche GT-One; Duratrax maximum ST; Take-Off Setup Board.

❑ **SEPT. '99**
CEN SP1; Kyosho QRC Ford Escort Rally; Yokomo MR-4TC; Kyosho TF-3 Type R '99; Rally Car Shootout; Inside Team Associated's TC3 touring car; FM racing receiver guide; How to make a pseudo sedan; International Reedy Race Touring Car Championship; FSR Bullet; Duratrax Piranha; Progressive Suspension piggy back reservoirs.

❑ **NOV. '99**
Tamiya 1/8 Mini Cooper; Neo Maximum Nitro pro; Team Losi Triple-X; How a two-speed tranny works; '99 IFMAR Off-Road World Championships; Hitec HS-925MG & HS-945MG Servos; Inside the IFMAR Winning Cars; Tamiya Monster Truck Alloy Shock Set; TamiyaMo3 Mini Cooper; Hobby Tech HT1.

❑ **DEC. '99**
HPI Nitro RS4 2; Kyosho Snake Bite; Serpent Impulse Streetspec; Tamiya M-O4L; HPI RS4MT Baja Bug; Golden Horizon Neo Type-M; Kawada SV-10 GT; '99 ROAR On-Road Nats; Racer of the Century; HPI Nitro RS4 Buyers' Guide; ROAR On-Road National Winning Cars; CEN Two-Speed; MIP tweak Station; Team Losi NXT; Academy SP3,

❑ **JAN. '00**
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❑ **FEB. '00**
Schumacher SST AXIS Pro; Tamiya Tao3R-S TRF; Team Associated TC3; Thunder Tiger EB-4; New for 2000; *R/C CAR* interviews Mike Reedy; Volvo Challenge II; Trinity Real Time 2 battery discharger tray; Sierra Radio Control Racers PC Game.

❑ **MAR. '00**
Kyosho TF-4 type R; Tamiya Toyota Celica; Team Losi XX-4 Worlds Edition; Duratrax Axis; HPI World Challenge; How to make a pass; Hot Rod hobbies & *R/C CAR* Shootout; What's the deal with 4WD?; Inside foam inserts; Team Losi Triple-XT; Hitec Spectra Module.

❑ **APR. '00**
Yokomo MR-4TC Pro; Team Associated RC10GT RTR; DuraTrax Nitro Quake; Tamiya Mad Bison; Getting Started in R/C from A-Z; Inside Ian Aquino's Concours Winning NSX; We race Matt Francis' Cars; Competition Radio Guide; ROAR 1/5-scale Nationals; DuraTrax Universal Starter Box; Serpent Impulse Streetspec.

❑ **MAY '00**
Tamiya F103LM TRF; Corally C4 Limited Edition; Kyosho F-Ten Toyota TS020; Tamiya TB-01 Mitsubishi Lancer Evo VI WRC; Yokomo MR-4MT; 2000 Reedy Race of Champions; Getting Started in R/C Part II; New Era Nitro Dragster; How to get sponsored; MRC Super Brain 819 AC/DC Charger; Kyosho TF-4 Type-R.

❑ **JUNE '00**
Yokomo MR-4BC; Kyosho SuperTen FWO4; Team Losi Triple-XT; Kyosho Ultima ST Type R EP & GP; SEI 1/6-Scale Buggy; HPI Nitro MT; Team Los 2000 Florida Winter Champs; Ten Common Mistakes Made at the Track; How To: Cut Your Crank; Corner the Experts; How to: Get a Job in the R/C Industry; Hudy Pro Wrenches; FMA Versapulse AC/DC Charger; DuraTrax RealRace Simulator; HG yank Eliminator.

❑ **JULY '00**
Tamiya Juggernaut 2; FG Modelsports 1/5 McLaren F1; Schumacher Cat 3000; Kyosho 2001 Fantom; Kawada Pit Gear; Guide to RPM Tools; T-Maxx Olympics; Corner the Experts; How to Glue Tires; Silver State Nitro Challenge; Modified Motor Buyer's Guide; Nitro Truck Buyer's Guide; Hardcore Racing Nitro RS4 Titanium Chassis Set.

❑ **AUG. '00**
HPI Nitro RS4 Racer 2; Team Associated Factory Team RC10B3; Kyosho Mini-Z Racer; Kyosho Ultima ST EP & GP Racing Sports; Quick Look; Improve your Nitro Know-How; Team Associated TC3 Accessory Guide; Team Kinwaldi Losi Off-Road Accessory Guide; First Look: Picco G1 Engines; Tamiya Juggernaut 2 Mods; Ten Questions about NiMh Batteries; Corner The Experts; Inside Saxton's Thunder Tiger EB4; Rally Racing at SoCal Raceway; Hudy Set-up Tool.

BACK UP!

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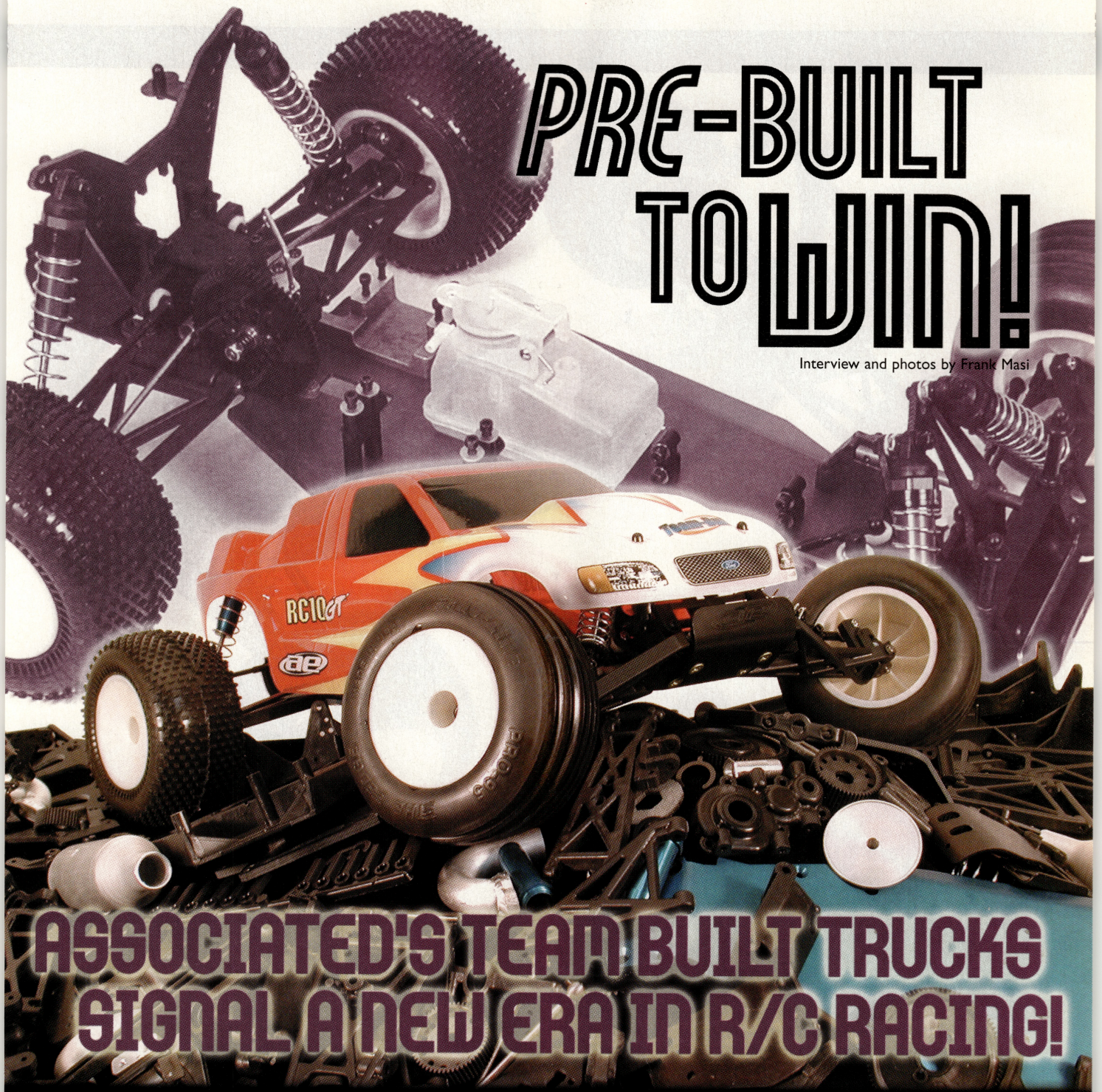
PRE-BUILT TO WIN!

Interview and photos by Frank Masi



ASSOCIATED'S TEAM BUILT TRUCKS SIGNAL A NEW ERA IN R/C RACING!

If you're an old-timer like me, you've probably never owned a ready-to-run vehicle, and you feel that no one could possibly build a kit better than you. But let's face it, we aren't in the majority. Most people, especially newcomers to the hobby, are either put off by the thought of four nights of assembly or simply don't have the time to build. And how about those people that turn around and leave the hobby store once they learn that most R/C vehicles come as unassembled kits? We may never see them again. Fortunately, the hobby industry has begun to address this concern in the form of RTR vehicles that are more sophisticated and better performing. And people are responding in droves. But what if you already own an RTR and are looking for something that is more race-worthy? The logical next step is to buy a racing kit and build it yourself, right? Not any more; Team Associated has filled the huge void between RTRs and high-end kits with its Team Built kits, which are the same high-quality kits racers have been buying for years, but now come pre-assembled and with pre-painted and trimmed bodies. All you need to do to go racing is to install your choice of electronics. Heck, the radio and speed control from your RTR would be perfect!

I had the opportunity to sit down with Associated's chief designer, Cliff Lett, and director of marketing, Mike Ogle, to discuss these exciting new products.



Men behind the machines: Cliff Lett (left) is Associated's chief designer, while Mike Ogle (right) handles the marketing and artistic chores.

If you can tell me, how did the idea for the Team Builts come about?

Cliff Lett: We've been making RTRs here, first made the RC10GT, and got our feet wet with that project and found out all the dos and don'ts and little bumps in the road that we weren't quite prepared for that some other companies out there found ways to resolve. As we got further and further into that we found that there's obviously a great demand for that type of product, however, our company, with its racing heritage and record in winning races, found that maybe there's a niche for a higher level of vehicle than the RTR, something that people can buy and put in their own radio gear, motors, whatever they might have left over from another vehicles, and build-up these pre-builts to a mid-level product.

As people get busier and busier we're finding that they have less time to actually build a kit, but they still have the equipment to put together one of these kits and actually be able to race. We wanted a race-level prebuilt kit for somebody who may not want to have an RTR vehicle and have the transmitter, speed control and any other equipment dictated in the kit, and kind of customize on their own.

Did the success of the RTR GT and T3 make this an easier project to get into?

Mike Ogle: I would say so.

CL: Yeah, it taught us a lot about some of the details that are overlooked in just manufacturing a kit, throwing a bunch of parts in a box with some good instructions and letting a customer put it together. You have to really be efficient and find streamlined ways of being able to assemble a kit, and beyond that, it makes you think a little bit more about the initial design of the product. Maybe you can design the original product in ways that make it easier to be assembled, or fewer parts in the kit, or better instructions to allow the assembled version of the kit to be made in a simpler way.

PRE-BUILT TO WIN!



Quick Facts

In answer to the question "what's the difference between the Team kits and the Team Built trucks," only the shock bodies (which are blue-anodized on the Team Builts rather than hard-anodized) and the drive axles (the Team Builts come with steel dogbones and axles instead of MIP CVDs) have been changed. The Team Built T3 will come with a Pro-Line body painted with Scott Hughes' signature "squirrel-swirl" scheme, while the GT will have Billy Easton's scheme. Both Pro-Line bodies are pre-painted and trimmed by Atomik Racing, and there will be two variations of each scheme (similar to the three variations available in the T3 RTR). Even the trucks' logos will be pre-painted. The best news is the pricing. Associated has officially set the list prices at $265.95 for the Team Built T3 (part no. 7009) and $329.95 for the GT (7050 for pull-start engines, 7051 for non-pull start). Both truck come sans electronics, and the GT does not include an engine.

What is different between the Team Built and the Team kits?

CL: All the things that are a pain are done for you. Number one, the bodies aren't just painted, they're painted great. It's a really awesome paint job, and you have your choice of different color schemes.

MO: The GT will have Billy Easton's paint scheme available in two different colors, red or blue. The T3 will have Scott Hughes' paint scheme in a couple of different basic colors.

So all of the Team Builts will not look alike?

MO: If you and your buddy want to get T3s, you won't look exactly alike, so no confusion when racing.

Has there been any talk about expanding the designs and color schemes in the future?

MO: Yes, but it gets into multiple part numbers, it gets into seeing someone say I want three of these, but I don't want any green ones.

You might have 500 green ones sitting at a distributor somewhere, yet you won't be able to get any red ones.

CL: Right, it also complicates the box design and will end up causing more confusion than it's worth.

MO: And if you'll notice, there's no separate part number for a blue one as opposed to a red one as opposed to a purple one. This simplifies thing for us and for dealers.

How is that sorted out on the retail level?

MO: We did a little research to figure out which colors are most popular. We'll try to break up the shipments to reflect this. We'll try to keep it balanced. Eventually, once we have been shipping for awhile, we'll have an even better idea of what's popular and what's not.

It's not like short-packed action figures? You might get the rare gold GT?

CL: We actually did surveys. We put a couple of paint schemes on our website and actually got surveys worldwide of what people kind of liked. And we learned from that. It's worked out well for us over the years to find out what people and dealers want.



Aside from the pre-assembly, what is different between the Team Built and the unbuilt Team kit?

MO: Very, very little. There are two things that come to mind. People really do like the blue shock bodies. We know the extreme high-end racing people prefer the hard-anodized shocks, which are standard issue in the Team kit. But we did go with the blue ones, it was a considerable cost savings, and we put the steel dog-bones in place of the MIP CVDs in the rear. Between those two items, it took a lot of money out of the kit and enabled us to offer these things at a price lower than the kits, assembled and painted.

So I will be able to buy one of these trucks at a hobby shop, put my radio gear in, and go down to the track and race. Everything is built to race-specs?

CL: As close as we could possibly get.

MO: Within the reasonable confines of manufacturing tolerances, yes.

In many cases, the pre-assembly done at your factory, is going to be better in 50-percent of the cases, than if the customer built it himself.

CL: There are cases where people tend to put things together and change out a lot of parts of the car before they ever give the actual standard setup a chance. And for the most part, standard setups are probably best for 99-percent of the people out there. And people will tend to tune things, sometimes they will actually tune themselves right out of a good setup. So we put a good all-around setup on the car, we put a little harder compound on the tires, that's another little difference from the Team kit, just so if the customer isn't a 'racing enthusiast' who's going to go down to SoCal or some racetrack and race on a weekly basis. If he is just some enthusiast who wants to go run out in front of the house and chase the neighbor's cat or whatever, and have a good performing truck, but not necessarily on a racetrack, he's going to be more concerned about the tires not wearing out after the first battery pack. So obviously that's a concern of ours. That's a good 80-percent of the market out there for even the Team-level kits—it's people who never see a racetrack.

MO: I want to touch back on something we talked about earlier, about why we decided to do this type of kit. It was too big a gap between the RTRs, which took everyone by surprise over the past few years, and our next-level kit, the Team kit. Too big a gap. So our decision was, how do we keep being Team Associated, doing what we do best, building race cars, without being drawn off our game, but still participate in the success of the pre-assembled vehicles. You draw a line between an RTR and our next-level kit, and you bring it right to the center, and this is what you have, the Team Built.

CL: That's a good way to put it.

Do you think that the hobby in general is heading in this direction, that this is just the beginning of things to come, not just from Team Associated but from other manufacturers.

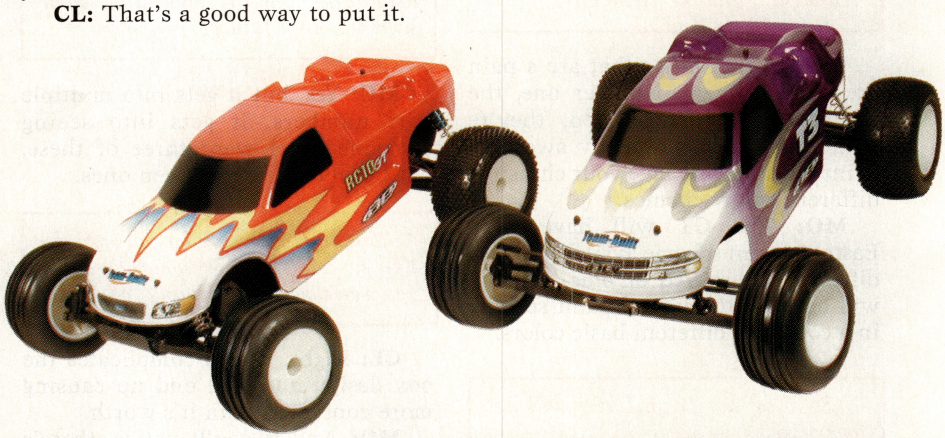
MO: I want to say yes, but Associated's position is unique. There are very few other manufacturers that are predominantly racing car companies, that had to be hauled to the idea of RTRs. I think we have established a new level of kit where no one else is, but I'd be shocked if no one followed us, because this does seem to address a new level. Where do you go after you have an RTR? Where do you go, another RTR?

The plunge into building a racing kit is substantial.

MO: Yes, the plunge is substantial. We feel this is a comfortable way to get people used to Associated technology, quality and how we do things. Then, maybe their next kit will be a Factory Team kit.

Or they can just buy parts and upgrade their Team Built.

MO: Which they do. We were absolutely shocked to see how many people come in with GT RTRs, which they didn't want to build, but they didn't mind taking them apart and customizing the stuffing out of them. You have $200 RTRs with $300 worth of parts on them.

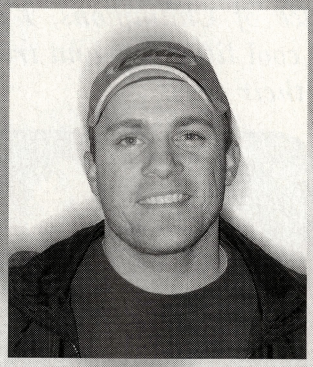


The Team Built GT (left) will be available with Billy Easton's paint scheme, while the T3 (right) will have Scott Hughes' scheme. The Pro-Line bodies will come pre-painted and trimmed.

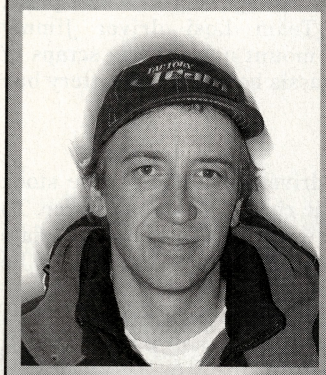
COUNTERPOINT

You already know how we feel about the Team Built trucks. But what do racers think? We polled some local off-road racers to find out if they would race a pre-built vehicle.

Jim Day
Palmdale CA
Attending his first race



"I think the Team Builts are a good idea, but I like building my own cars because I have fun building and I trust myself more than I trust somebody else. But for most people, I think it will be good, especially for people who aren't really good at mechanical-type stuff. It will take a lot of the guesswork out of things. Overall, beginners may be put off by the idea of building a kit, but I think experts like to build it their own way."



Charles Charron
Tujunga, CA
Racing for one year. Has worked in a hobby shop for six months

"I definitely would have bought one [a Team Built kit] back when I started. No matter what kind of truck you buy, it seems you're always adding hop-up parts, putting a few things on it besides what came in the box. So yes, I would definitely be interested in that type of product. Also, what it's going to do for the hobby. It's going to be like the advent of the RTR, which I think was just a test, and it's success was really good. I sell more of those cars and answer more questions on the RTRs than anything. So I think it's going to be beneficial in bringing new people into the hobby. Helping it to move forward as far as racing and new blood. It's new blood that keeps this hobby alive. Building a kit can be quite intimidating. To open up that box and see ten-plus bags of parts and screws, and this is your first kit. So it's nice to get something of quality that's been put together for you."

John Parisi
Palmdale, CA
Has been racing for two years.



"I think it's a good idea, especially for the person who just wants to get into racing instead of just for fun. The car's definitely built for racing more than for just play. If you wanted to come out and get into racing this would be the kit to get, and you could always hop it up with the Factory Team parts. If I were just getting into the sport, I would definitely buy one of these. It's going to bring a lot more people out to race, that's for sure. The car's pretty much done, the body's already cut, it's nicely painted. The car's ready to work, it works really well. They already have a good design, you can't beat that. Sometimes the kit is hard to build if you're not really a modeler. If you've never build a kit, it can be hard. If they bought one of these and read the instructions, they'll be fine. If they come out here for a couple of months, they'll pick up everything else they'll need to know. If I were in the market for one of these, the only thing I'd like to see would be the hard shock bodies and the CVDs."

PRE-BUILT TO WIN!

What are your plans for expanding this concept? Will there be a Team Built or RTR TC3?

MO: We sort of like how this has worked so far. The RTR will always have the greatest sheer numbers in the market, especially around holidays and things. The Team Built is by necessity a little further up the pyramid, so it's not as big a market. But we like how it's worked so far with the RTR, then the Team Built, then the Factory Team kit. We like this sequence. We will probably follow that on other models.

So we could see a RTR TC3?

CL: We're studying it right now, I think with the Team Builts, we're just getting started here. We want to really see how this pans out over the next few months, then make our decision. The TC3 is a little bit harder project to be considered for an RTR because it has a very precise drivetrain that requires a little higher-grade parts than what would be in your run-of-the-mill RTR. For example, the drive train would have to have bearings, things like that. It's going to require some deep studying before making a decision.

Will the Team Built GT come with an engine? I haven't read anything on this?

MO: No. Not from us. The other part of this concept, what we learned with the RTR, is that people have strong opinions on radios, motors, engines, things like this. This enables the individual dealers and distributors to pair up, to make very valuable packages out of whatever they have, whatever they happen to like or have good deals on. I will be very curious to see what these Team Builts will be paired with at the dealer level. Because you can walk in there and probably get a tremendous package. A package you can buy with minimal assembly, just basically the installation of the electronics, that is equivalent to cars that have won national championships in the past two or three years. Right out of the box.

Sounds exciting. I can't wait to see how this concept works. Good luck guys! ◆

OFF-ROAD RACING

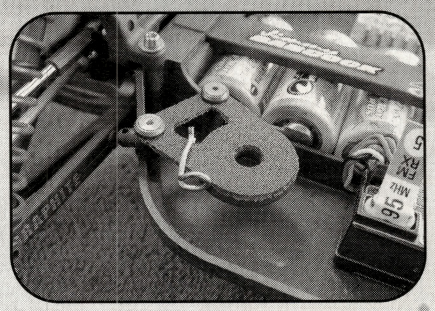
Get your off-road ride dialed-in with these factory speed secrets!

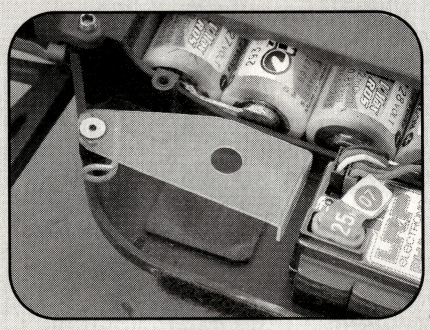
By John Howell

While at the Reedy Race of Champions, I started thinking about all the cool little tips and tricks the factory guys use on to their cars.

Usually at a big race we walk around and hand out things called "racer sheets"—a questionnaire given to A-main finalists that gives us all their car info, i.e. chassis type, steering servo, speed control, motors and batteries, tires, etc.. What I noticed was that you never really get any info on the little things that these guys do to their cars to help get them more dialed-in—I'm talking about the fine details they go into.

So I walked around the pits and talked to the individual racers and the team managers to see what was truly different from stock on their cars. It was actually pretty funny at first. Most of the time the racers stared at their cars, looking for something unique, and couldn't find anything. It wasn't until I started pointing out stuff that wasn't stock that they even began to notice that what they had done was something unique to their car—they have become so used to doing these little tricks to their cars and trucks that it almost becomes second nature for them to do it, and they don't see it as a mod anymore! Well, thanks to all the guys at the race, these are some of the hottest and some of the biggest "no-brainer" mods that can be found on the top guys buggies and trucks—enjoy!



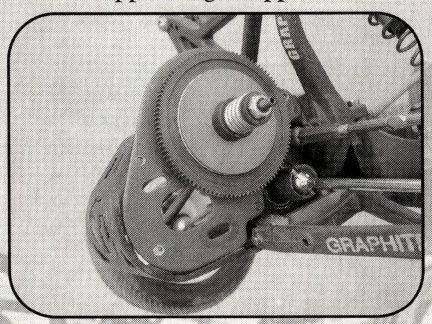


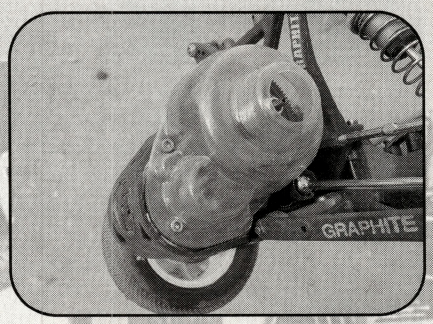
Transponder Mounts

Every racer needs a place to put his transponder. Some place them in the nook in the front shock tower while others drill a hole in their body and place them there. If you want to really secure your transponder in a safe place, do what Team Losi driver Jimmy Babcock and Jason Corl do—make a transponder mount out of extra scraps of Kydex or heavy-duty Lexan and secure it to the chassis between the battery box and rear body mount with aluminum screws.

Losi Lexan Gear cover Fix

According to some of the Team Losi factory drivers I talked to, the stock Lexan gear cover can be easily broken if hit just the right way during a race. To help secure the cover, Adam Drake has drilled an extra hole in his motor plate close to the rear to add extra support which keeps it from flexing a lot if he should happen to get tapped.





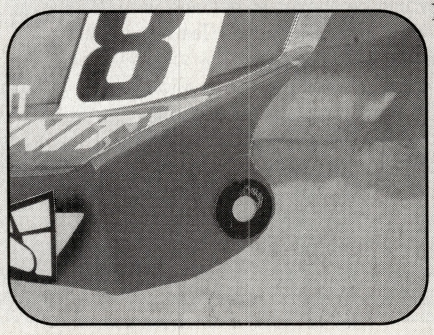


Velcro Your Losi Body

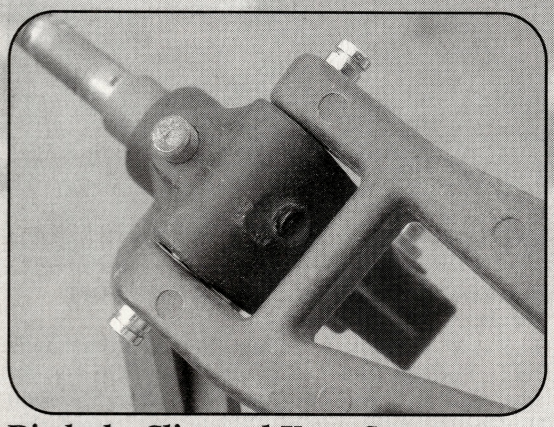
Matt Francis uses Velcro around the edges of his truck body to help keep it from moving around during a race. It also helps keep it in place if for some odd reason Matt flips (that never happens, right Matt?) or he gets T-boned by someone. Sure, this one's a no-brainer—you use Velcro on your truck body, right? That's what we thought...

Use Wing Mount Washers On Your Losi Buggy Body

Another one from Matt Francis is to use a set of rear wing washer mounts on your Losi Triple-X body. By using these washers around the mounting holes, it will help prevent them from cracking, which adds more life to the body.



TIPS & TRICKS

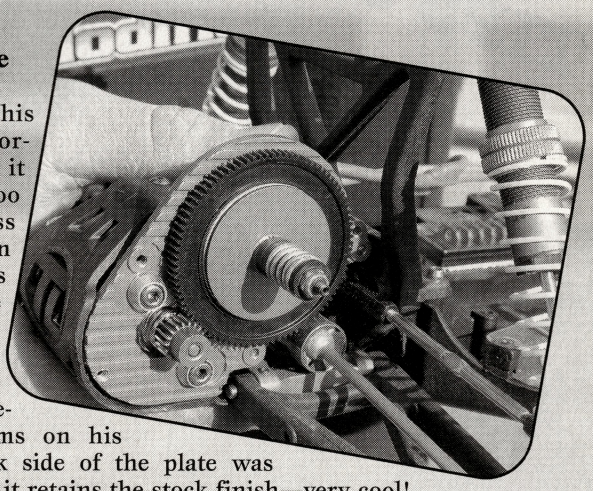


Ditch the Clips and Use a Setscrew

Brian Kinwald passed along this tip—to make sure he doesn't lose a front hingepin during a race, Brian drilled a small hole in his front hubs and placed a setscrew in to secure the hingepin. By doing this you no longer need any E-clips on the hingepin.

Anodize the Aluminum

While this isn't a performance tip, it was just too cool to pass over. Jason Corl took his slipper plate and had it anodized blue to match the other blue-anodized items on his car. The back side of the plate was masked off so it retains the stock finish—very cool!



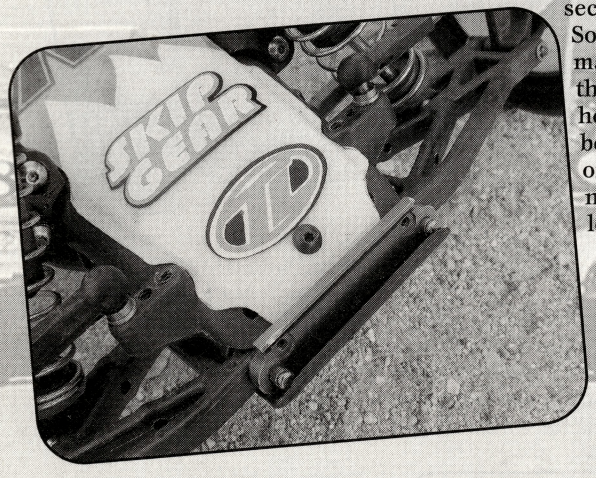
In-Line Shottky Diode

Brian Dunbar also showed us this tip—instead of running a Shottky diode on his motor, Brian soldered the diode in-line between the wires exiting his speed control.



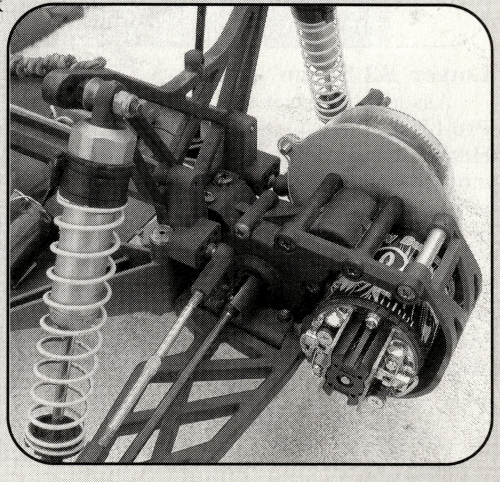
Extra-Secure Body Mount System

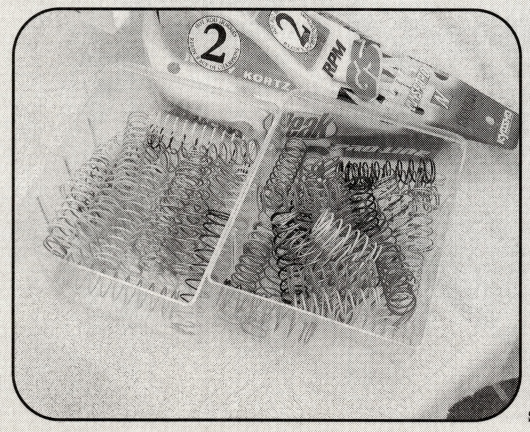
Brian Dunbar has a unique buggy body mounting setup. Brian shaved down the front body clip nub and drilled a hole in the front bulkhead and placed a 4-40 caphead screw in place to hold the body securely in place. Some of his teammates laughed at the tip, mentioning how hard it would be to get the body off quickly if you needed to...still, it looks cool.



Kyosho/Associated Diff Setup

Some of the Kyosho team drivers have been experimenting with running Team Associated diffs in their own buggies and trucks. According to Greg Degani, the Associated diff holds its setting longer over the stock Kyosho unit.

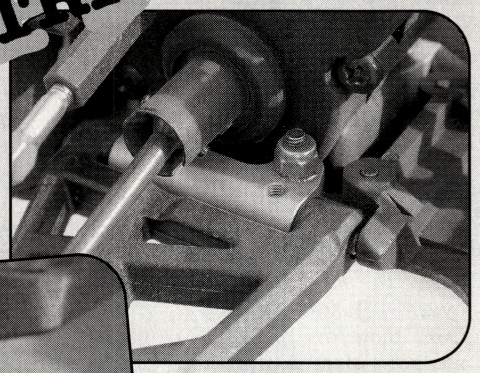


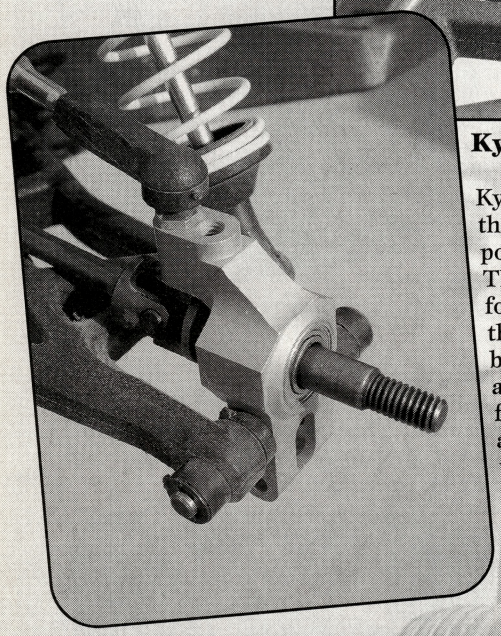


Kyosho's New Springs

While not exactly a big racing tip, Jeremy Kortz showed us that Kyosho has now released a whole slew of new springs for their Ultima buggies and trucks. So if you race a Kyosho, get to your local hobby shop and ask about these new springs!

TIPS & TRICKS





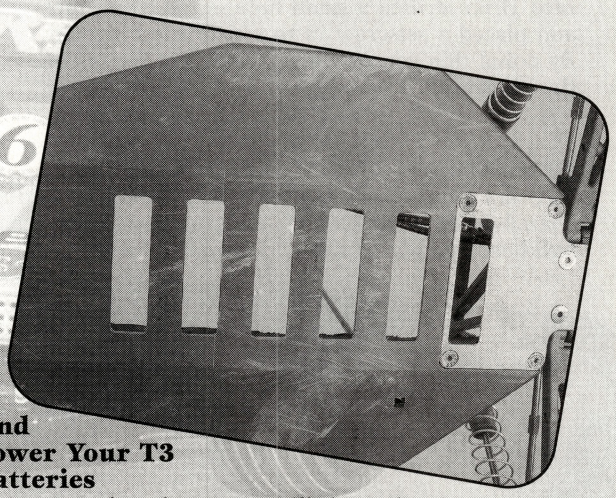
Kyosho Alloy Mods

Greg Degani outfitted his Kyosho truck and buggy with these Trinity alloy pivot supports and rear hub carriers. The pivot support has been found to be a weak spot, so the alloy piece adds quite a bit of durability, while the alloy rear hubs have been found to have tighter tolerances on the bearing holes which helps keep them from wobbling. Apparently, these are two "must have" mods for these Kyosho racers.



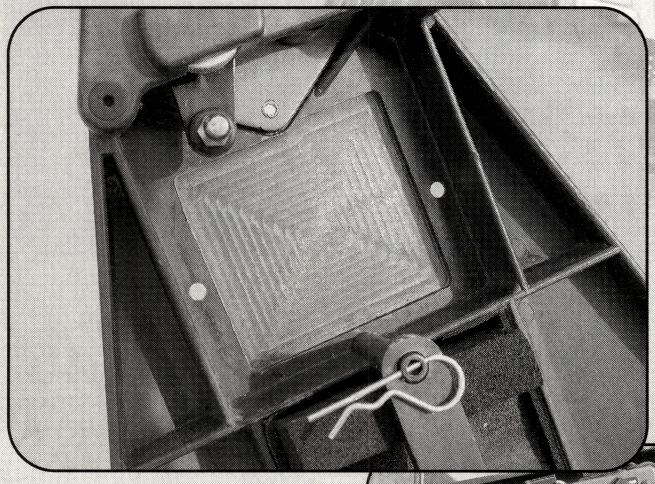
Schumacher's New Fireblade Upper Deck

While not many people race Schumacher's 2WD here in the U.S., wanna-be Schumacher pilot and R/C Car contributor Private Shannon Hudson brought out his 'Blade and tested this new one-piece fiberglass upper deck. The new piece is more rigid than stock.



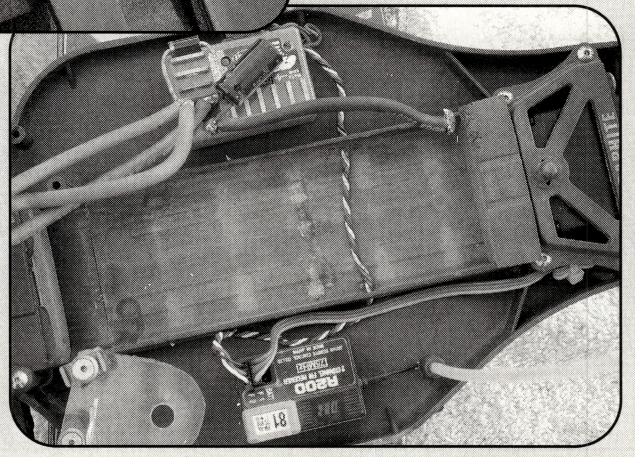
And Lower Your T3 Batteries

Scott Hughes also runs a milled out chassis on his T3 that allows him to run his batteries lower to help lower the truck's CG. Apparently, Mark Pavidis and Hughes have a program set up on one of the machines where they work at Pro-Line that easily routes out the chassis for them. It makes Team Associated's team manager Curtis Husting happy—he used to have to cut chassis like this for team drivers by hand!



Lower B3 Servo

Associated driver and Pro-Line rep Scott Hughes showed us this mod he did to his B3. By milling out the area under the steering servo he was able to mount it lower on the chassis which in turn slightly lowers the car's center of gravity.



Milled-Out Losi Battery Box

Losi's Scott Brown showed us this mod he's done to his Losi Triple-XT. He's milled out the bottom of the battery box by roughly .040-.050" which places his batteries lower in the chassis. A lower center of gravity is the result.

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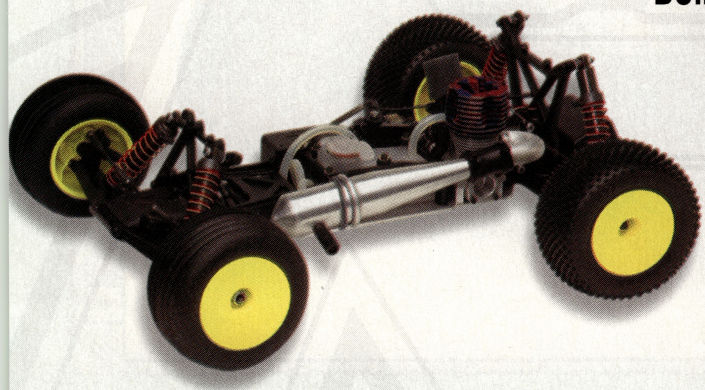

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GOT SPEED?

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YO JOEY,

Bro, at the next club race, get ready to see how it's done. I got the new "SPEED SERIES" body from DEANS. That's right they're finally here!!!

Here's the view I'll be seeing during the race. You'll see it in the pits. Sorry dude, I didn't get a shot of your view, you know THE BACK OF MY TRUCK!

Gotta charge bro – Gotta make room on the shelf for this weekend's trophy.

Later,
Cool Racer



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Trash

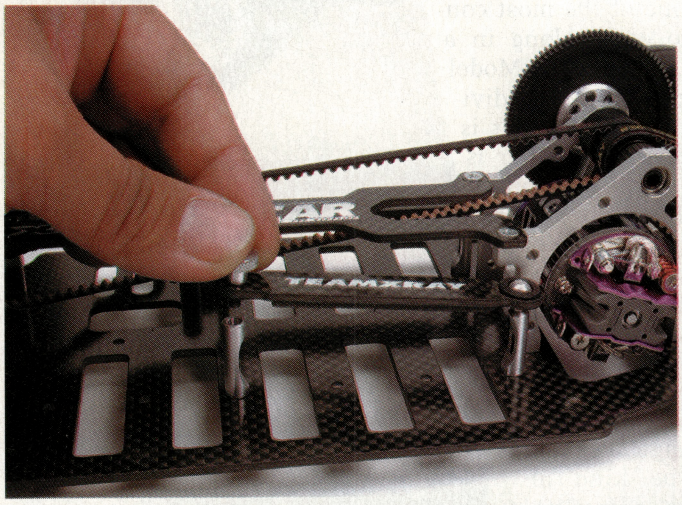
FIRST LOOK!

TEAM X-RAY T1

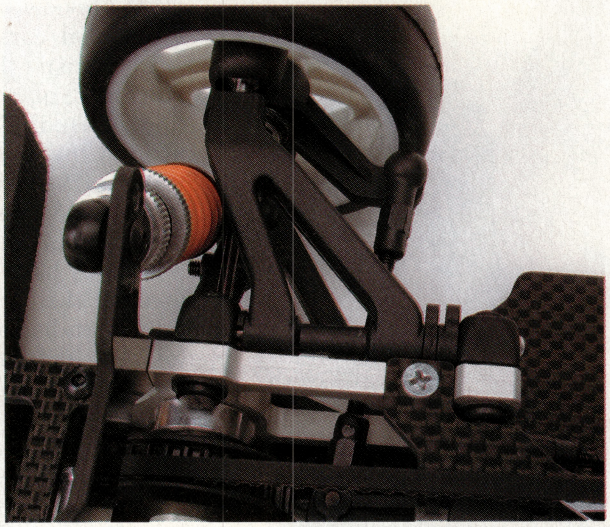
It's not every day that a new electric touring car comes out of Europe, and it definitely isn't every day that we get granted a special preview of one of the most controversial cars to come along in a while. It isn't the maker, XRay Model Racing Cars, a newly acquired division of Hudy Special Tools, that is pushing the "hype." And neither is Serpent USA, the car's distributor here in the States. It's not really the media, either, since we and the other publications have actually said very little about the car, other than a few sketchy details and some small photos. It's the racers, who upon first glance inevitably comment that it is a Corally knock-off. Well, other than a few parts and design cues that have turned out to be kind of common among touring cars that come from Europe, the XRay T1 is definitely a new car, with some unique features, and undoubtedly some of the highest quality we've ever seen in any R/C car.

TEAM X-RAY T1

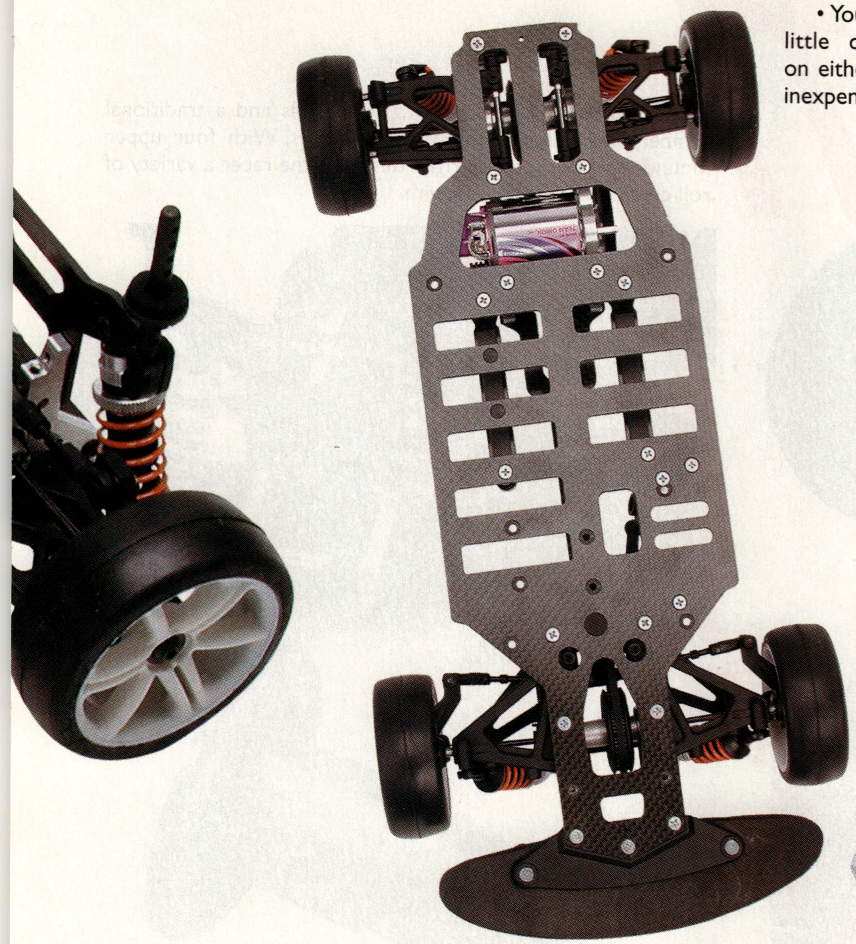
• The overall layout is similar to many other cars on the market: double-deck laminated graphite chassis, dual-belt drivetrain, saddle-pack battery layout, and mid-rear mounted motor. The difference, however, is in the details. For example, although only four screws secure the upper deck, the plate runs from the front to the rear bulkheads, and is precisely keyed on one end and butted at the other to cut down the likelihood of chassis tweak from the plates to almost nothing. The screw holes were purposely countersunk undersized so the screwhead will seat the upper deck to the bulkheads better. And the bulkheads aren't just machined aluminum, but made of hard-coated T6 Duralumin, a "brand name" alloy.



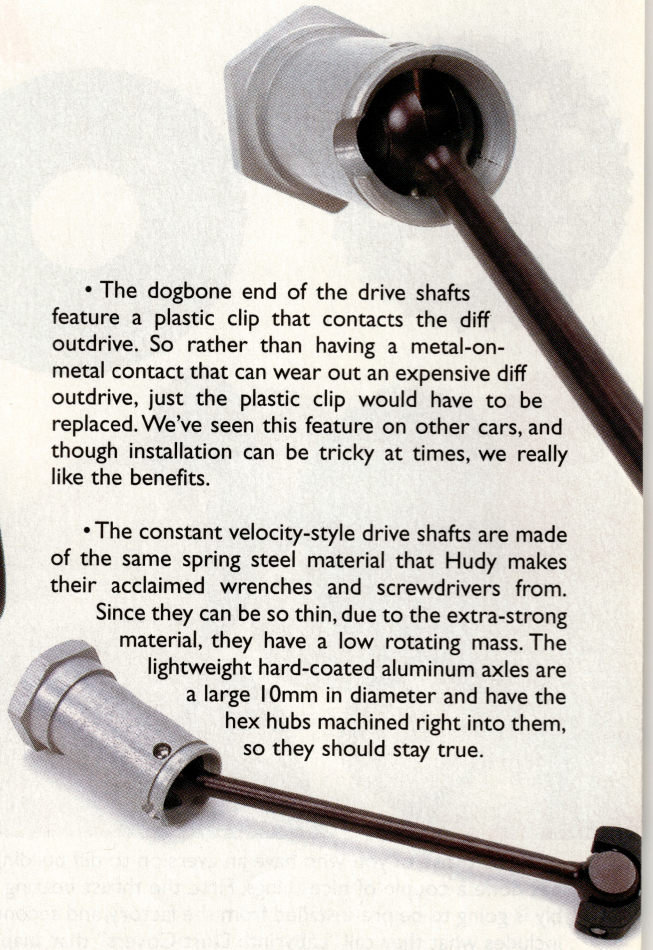
• The battery mounts are not only adjustable, but also incredibly "user-friendly". Although the three cells on the right side of the car remain static, the ones on the left side can move fore and aft in three positions. The thumbscrew on the battery strap is captured, so it is impossible to lose it, and the whole strap moves on a pivot post to swing out of the way during battery installation or removal.



• A pivot-ball design graces the front and rear suspension. If you've ever had any experience with a 1/8-scale car, you know that pivot- or pillow-balls are the only way to go if you want utmost adjustability. Camber, caster, and anti-dive (the angle of the lower front arms) can all be adjusted on the T1.

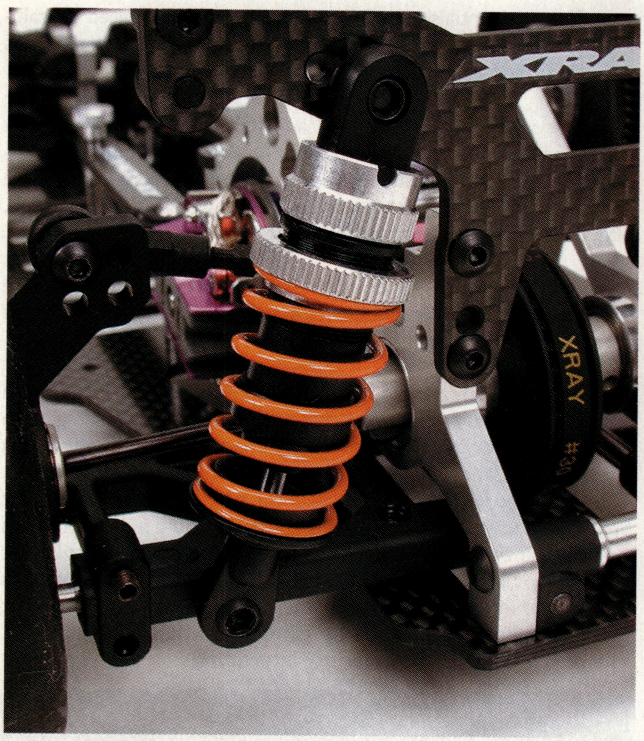


• You can't see them from these pictures, but there are two little dimples right along the centerline of the chassis on either end. These are for Hudy's Chassis Balancing Tool—an inexpensive and simple way to check the car's balance.

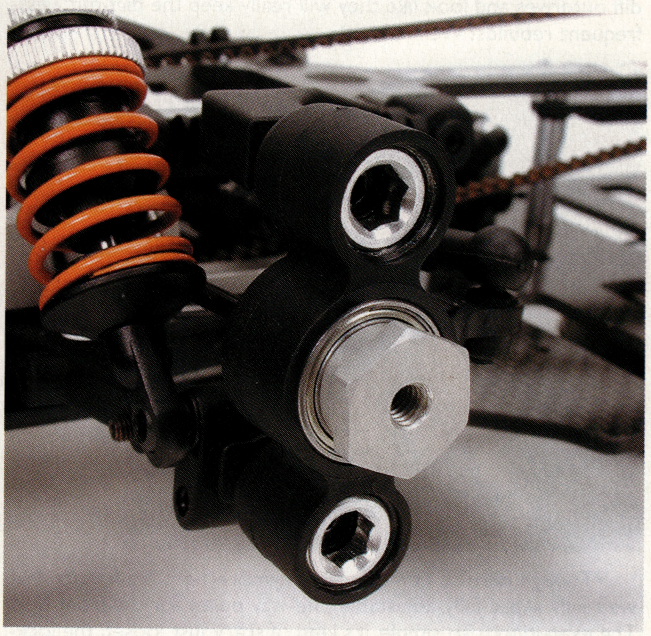


• The dogbone end of the drive shafts feature a plastic clip that contacts the diff outdrive. So rather than having a metal-on-metal contact that can wear out an expensive diff outdrive, just the plastic clip would have to be replaced. We've seen this feature on other cars, and though installation can be tricky at times, we really like the benefits.

• The constant velocity-style drive shafts are made of the same spring steel material that Hudy makes their acclaimed wrenches and screwdrivers from. Since they can be so thin, due to the extra-strong material, they have a low rotating mass. The lightweight hard-coated aluminum axles are a large 10mm in diameter and have the hex hubs machined right into them, so they should stay true.

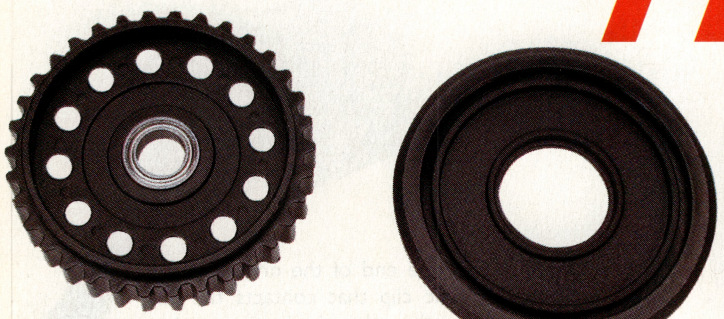


• The shocks may look familiar to many of you. They are the same four-step externally adjustable dampeners found on many Serpent cars. They're not just a novel idea; they actually work.



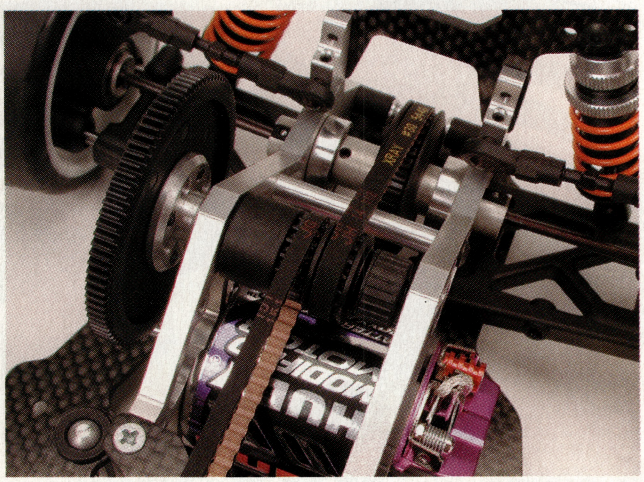
• Here you can see how the axle/hex hub assembly looks installed. The wheel fits on it like any standard 12mm hub, but a 4mm screw and cone washer hold the wheel in place from the outside.

TEAM X-RAY T1



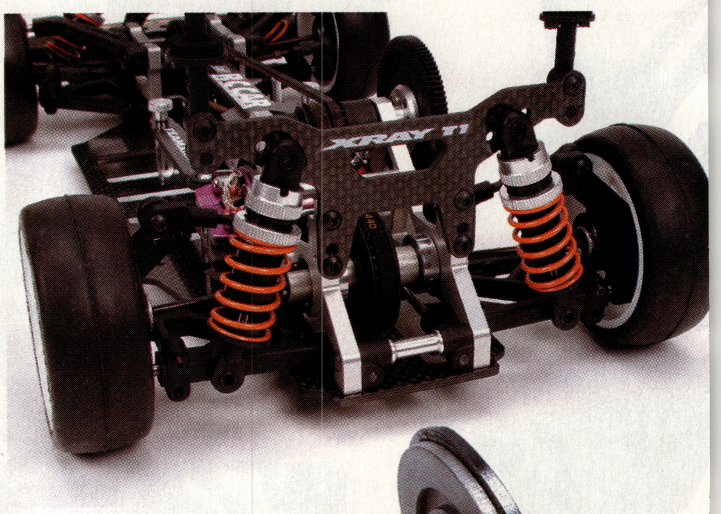


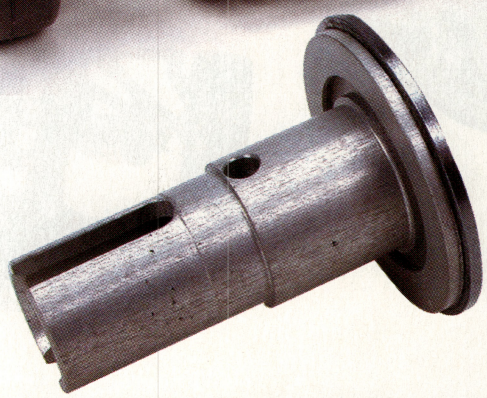
• For those of you who have an aversion to diff building, XRay has done a couple of nice things. First, the thrust bearing assembly is going to be pre-installed from the factory, and second, XRay includes what they call "Labyrinth Dust Covers" that snap on the diff outdrives and look like they will really keep the dirt out. Less-frequent rebuilds? We'll take it!



• Though it isn't a new concept anymore, here is a feature that we really like: a fully-adjustable one-way pulley for the front belt. The execution is so simple, it's kind of scary. Just loosen the locknut on the layshaft by the left bulkhead to let the front pulley freewheel. Tighten the locknut up to make the T1 full-time 4WD. Or set it somewhere in between to adjust the off-power oversteer/understeer balance.

• The rear uprights use two pivot balls and a traditional camber link rather than three pivot-balls. With four upper mounting holes on the upright, this gives the racer a variety of roll-center settings to play with.





• The differentials are also made out of hard-coated Duralumin for light weight and low rotating mass. Each of the diff rings are 1mm thick. Warped diff rings are not an option.

• The wheelbase is infinitely adjustable in a 9mm range by mounting the rear arms forward or back on the hinge pins. To help get even and repeatable settings from left to right, clips are used as a guide. And the rear hinge pin angle can be adjusted, effectively making it an anti-squat setting.

• We hope these gorgeous wheels make it in the final kit. We wouldn't mind the Elligi rubber, either, but we hear that XRay has something else up their sleeves.

• Although the car is fully race-prepped in stock form, there are a few nice tuning options that are going to be available, such as front and rear sway bars, a front one-way differential, aluminum shock bodies, and balancing weights that screw onto the chassis. The car we got is a final production car, but the packaging has not been finalized yet. Of course we'll be giving you a full report with a performance test in the coming months. Until then, we still can't give our opinion on how well the car will work, but so far, it looks like good things are in store for the T1. By the way, we hear that gas champ Ralph Burch will be competing with an electric car. The next World's could be pretty interesting...

Info: XRay T1, part #30 0000
Manufactured by: XRay Model Racing Cars
Distributed by: Serpent USA, 2830 NW 79th Ave., Miami, FL 33122 (305)639-9665

FACTORY Team

T3

Since its introduction in 1997, Team Associated's RC10T3 truck has been the dominant force in electric truck racing, winning three consecutive NORRCA World Cups, the 1998 ROAR National Championship, the 1999 Florida Winterchamps, and many other national titles. Now the Team introduces the RC10T3 "Factory Team" edition, the fully-optioned ultimate factory race truck kit, and the new, updated RC10T3 "Team" kit.

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RC10T3 Factory Team Kit shown with items not included in kit: LRP Speed Control, Reedy modified motor, Reedy Zappers batteries, 2-channel radio gear and servos.

Factory Team T3 #7048

FEATURES:

- Sealed Ball Bearings
- Factory Blue Titanium Turnbuckles
- Factory Blue Chassis Plate, Motor Mount and Front Kickup
- Full Graphite Chassis, Shock Towers, Suspension Arms, transmission brace, and more.
- Pro-Line Chevy Silverado Body

Also, New Updated...

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FEATURES:

- Sealed Ball bearings
- Composite Shock Towers
- Hard-Anodized, Teflon-coated Shock Bodies
- Pro-Line Tires, One-piece Wheels
- Pro-Line Chevy Silverado Body



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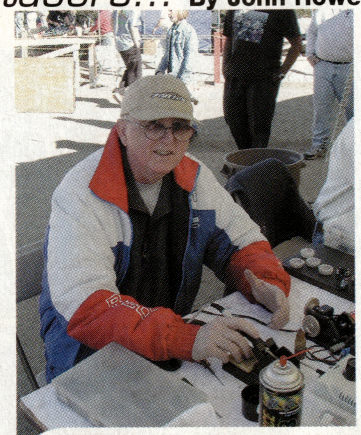
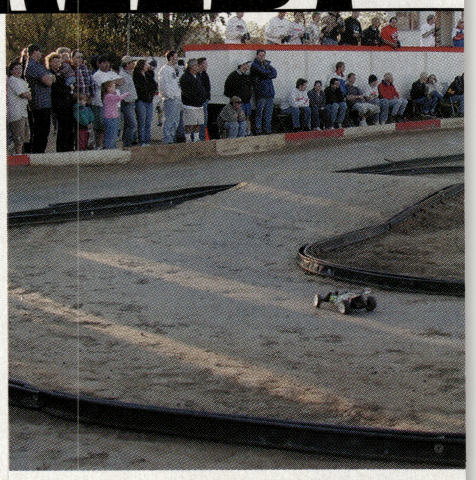
16th ANNUAL REEDY

Bringing the party outdoors... **By John Howell**



The man of the hour... actually, the man of the week-end. Happy Birthday Mike!



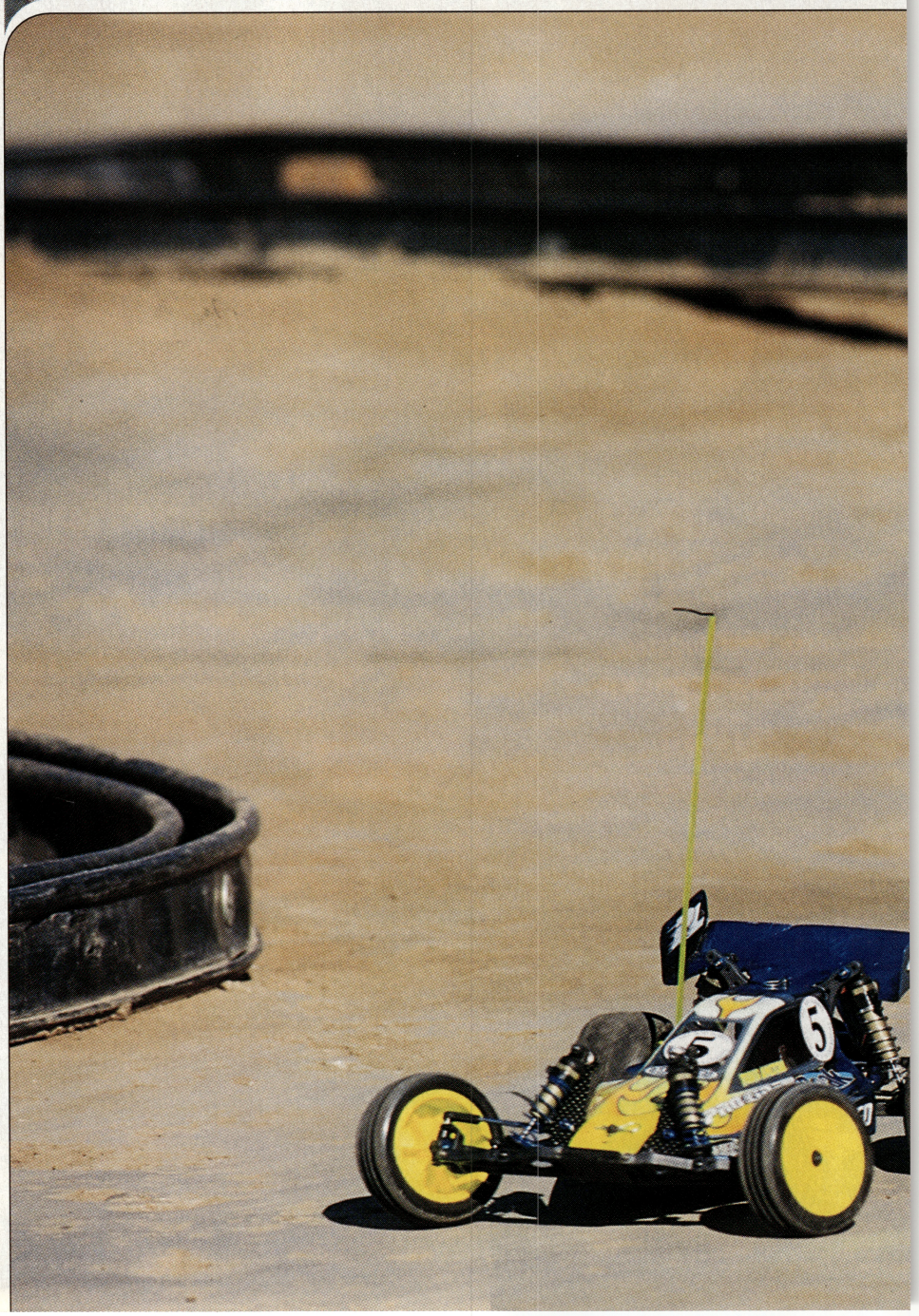
The place: Hot Rod Hobbies, Saugus, California
The race: The 16th Annual Reedy Race

Every year for his birthday, Mike Reedy gets together top factory racers to battle it out in a straight up, head-to-head race to see who is the fastest of the fast. Thirty racers are placed in the Invitational Class with two of those being the 2WD Open and 4WD Open winners from the previous year. In years past the Reedy Race was quite the international event, but lately it seems the momentum has shifted from off-road to on-road, and the international participants have been coming over for Reedy's touring car race instead, so this event has now taken on a "domestic" flavor so to speak. Also, the race previously consisted of 2WD on the first day followed up with 4WD racing on the second day after which an overall winner was picked Well, for the first time Reedy has done away with the 4WD part and has replaced it with a Truck class instead—the winner is still picked the same way. This was done to better suit the American-only based participants since we race more truck than 4-wheel.

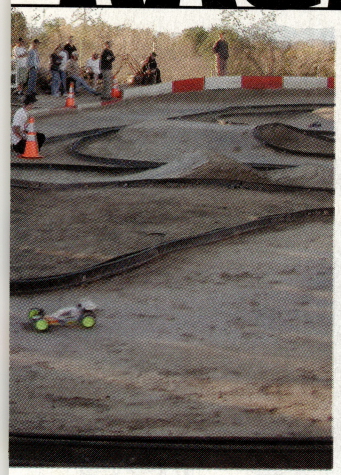
Actually, before we get into the race, I have to pass along an interesting side-story. Right before I headed out to the Reedy Race, I got a call from a buddy of mine who's really into R/C racing. I told him where I was headed and he asked, "So who do you think is going to win?" I thought about it for a second or two and confidently replied, "it's going to be either Kinwald, Matt Francis, or Billy Easton...but more than likely it will be Kinwald." I was feeling pretty sure of myself—each time the teams have come to Hot Rod's track, these three guys have been the dominant ones. What I was in store for caught me by surprise—the race wasn't a blowout in favor of any of the three guys that I thought would be the overall winner. While I was somewhat accurate in my prediction with each guy placing in the top spots, they weren't out ahead by much. In fact, this was the closest Reedy Race in years, with some new names up at the front of the pack.

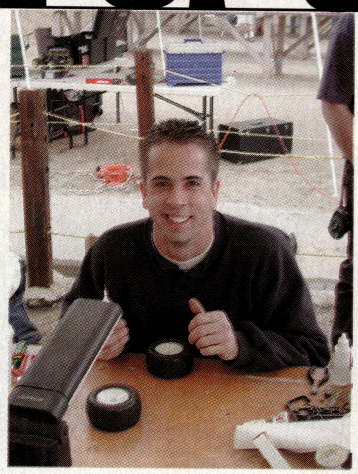
Invitational Class

Since there were six rounds (three mains per round) each day in the

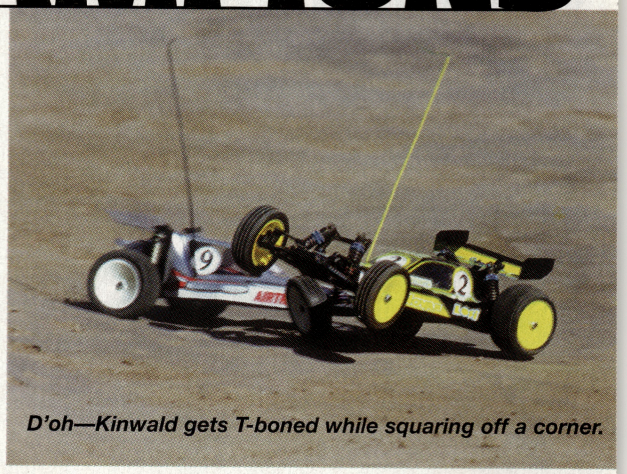


RACE OF CHAMPIONS





Associated's Billy Easton is stepping up to the plate as the team's current MVP. His showing at the Reedy Race has solidified Easton's place as one of the top racers today.



D'oh—Kinwald gets T-boned while squaring off a corner.



blow-by-blow race reports on any of the mains…that is, unless you had a few days to sit down and read such an article straight through. What I will do is give you my impressions of races and racers that stood out from the rest of the crowd during the two days, broken down between 2WD and the Truck class.

2WD

• In my mind, the most improved award goes to new Associated convert Travis Amezcua. Actually most everyone attending the race were left a little amazed at just how consistently fast Amezcua was throughout the weekend. If his performance at the Reedy Race was any indicator as to what we can expect from him in the future, he will be someone to reckon with.

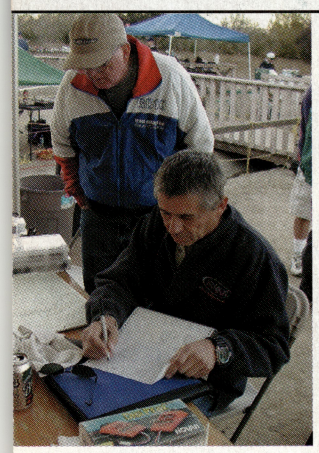
• Someone came up to me and said "can you believe the Losi guys are actually running positive camber on their Triple-X buggies?" I didn't believe it until I saw it. When I talked to team manager Richard Trujillo, he explained that they started dialing-out negative camber and were going faster and faster until they found that some of the guys were really hooked up running one degree or slightly more positive camber—unbelievable. Just when you think you know all you need to know about setting up your car for off-road racing…

• As I thought in the beginning, Kinwald, Francis, and Easton ended up being front-runners, but none of them pulled into the lead easily. This race saw more people battle for the lead than ever before in the history of the race. At one point in the day there was a three-way tie for first place—amazing!



RACE OF CHAMPIONS





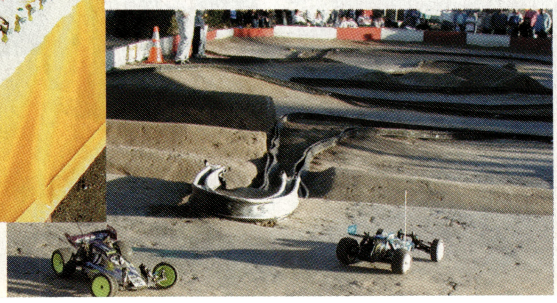
Mike Reedy looks over Bob Novak's shoulder as he tallies up the results during the 2WD portion of the event.



Richard Saxton...yes...Richard Saxton leads the pack through the first turn and pulls away momentarily.



A special cake was prepared for an impromptu birthday celebration for Mike after the first day of racing.



• The sight of Richard Saxton going into the bushes over the triples and asking the Squirrel to ask the marshal to get him out after he was in there for a lap was classic...one of those "you had to be there" moments.

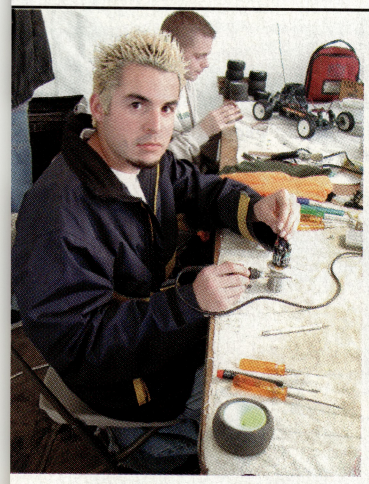
Truck

• Team Losi's Jimmy Babcock didn't have a great 2WD portion of the event, but when truck rolled around on Sunday, he was on fire. After seeing his 2WD races, people were expecting him to throw it away when he got into the lead with his truck, but he not only held it together, he flat out hauled.

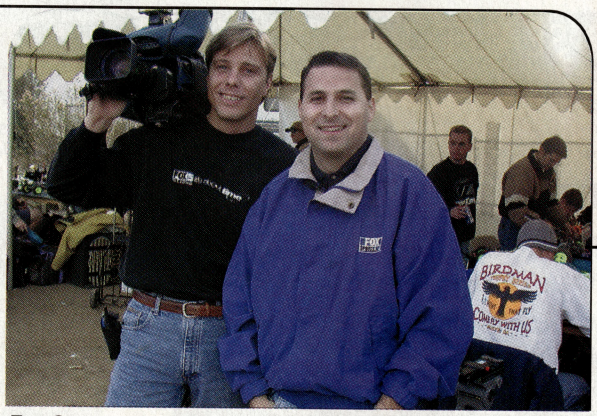
• Again, Travis Amezcua proved to everyone that his speed in 2WD was no fluke. He went fast enough to finish out with a combined overall that put him into fourth place! Watching him pull wheelies down the front straight was pretty impressive too!

• During one of his early mains, one of Kinwald's rear tires fell off his truck when entering the big sweeper at the end of the straightaway while at speed. Unfortunately for Kinwald, this DNF helped secure Easton's overall for the weekend. Throughout the rest of the event, Kinwald didn't let it affect him—he kept racing as hard as ever without letting it pressure him.





Most improved racer: Team Associated's newest factory driver Travis Amezcua was on fire at the Reedy Race! At one point, Travis was a contender for the overall win.



Fox Sports West came out to film a little of the racing action and even try their hand at racing R/C themselves! It was later produced into a segment that was broadcast on Fox Sports News that Sunday night after the race...very cool!



Losi's Jimmy Babcock cuts his way through traffic.



Trinity/Losi driver Matt Francis had hit and miss moments throughout the race, but had enough good races to put together a third place overall finish.

• For some reason, Matt Francis wasn't on his game at this event, and it really surprised me. He is always usually at the front and he makes it look easy, but it wasn't so this time. Still, a third overall isn't something to laugh at—27 other guys in the Invitational Class wouldn't mind having that spot...still, I think that if Matt were on his game, he probably would have placed two spots higher up...

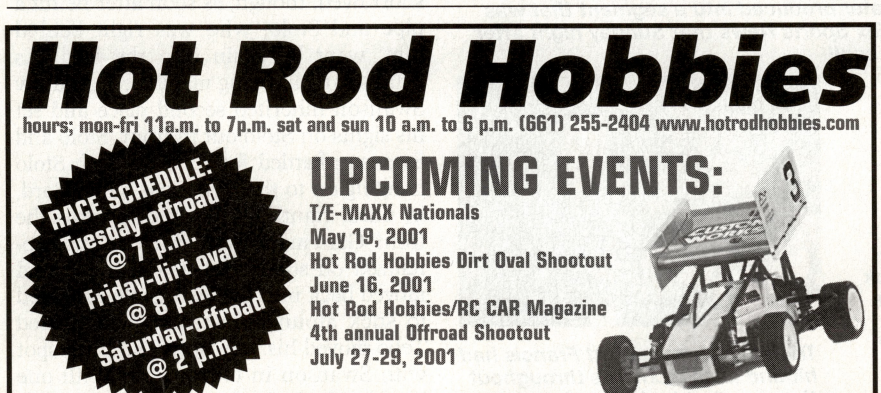
• As much as he made people laugh during 2WD, Richard Saxton put up a good fight in the truck class. No one really seemed to know why, but whenever he hit the track, he held his own...and he didn't finish last either. The three Kyosho factory drivers finished after him!

Finish	Name	Points
1	Billy Easton	16
2	Brian Kinwald	20
3	Matt Francis	21
4	Travis Amezcua	22
5	Brian Dunbar	26
6	Lloyd Dassonville	27
7	Mark Pavidis	28
8	Jason Corl	33
9	Scott Hughes	33
10	Scott Brown	38
11	Jimmy Babcock	39
12	Rob Schaffer	41
13	Billy Caley	41
14	Greg Hodapp	43
15	Adam Drake	44
16	Ryan Cavalari	45
17	Todd Hodge	46
18	Chad Bradley	52
19	Austin Dvorak	55
20	Mike Walker	57
21	Richard Saxton	58
22	Trevor Adamo	60
23	Greg Degani	65
24	Andy Smolnik	65
25	Gene Hickerson	71

2WD Open

Top qualifier Jim Gard grabbed the holeshot off the line and was followed by second qualifier Vince Stolo. Gard's lead quickly disappeared after the first turn as Stolo passed him, but he quickly grabbed it back within a few feet. His lead was short lived, though, as soon after he hit a pipe and Stolo, who was right behind him, went by again into the lead. As Gard's car was being marshaled, Andrew Swanson inherited second place and set his sights on Stolo out in front. Stolo and Swanson battled for the lead with Stolo hanging on to the front spot while Gard, in third, frantically worked towards the front. Gard managed to catch up and capitalized on some mistakes up front and moved back into the lead. Stolo managed to stick around in second, while Jared Tebo moved his way up to the third spot with Swanson in fourth now. With one lap to go both Gard and Stolo were right on top of each other going down the front straightaway. The two got together and







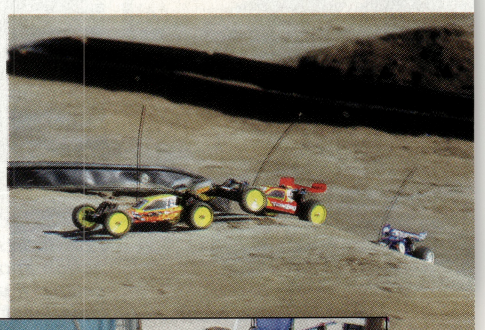
Is Brian Dunbar too hot for his own good...his tire thinks so.



Pro-Line's Scott Hughes looks to have a little groupie problem...



Matt Francis goes big over the mid-section triples.





Gas racer Richard Saxton showed up to the Reedy Race much to the enjoyment of his fellow racers. He got off to a little bit of a shaky start during 2WD, but when truck racing rolled around on Sunday, he had started getting back into the electric groove...

RACE OF CHAMPIONS



If you can't get around them, go over them.



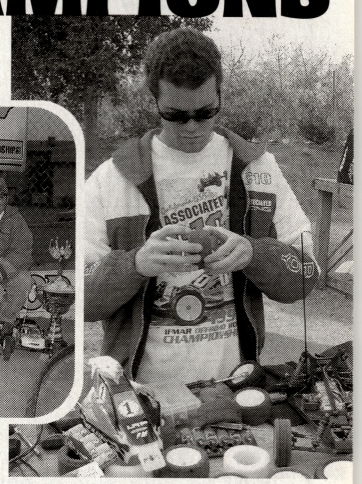
Open Truck winners—third place Phillip Atondo (left), first place Jim Gard, and second place Brent Thielke.



Open 2WD winners—third place Jim Gard, first place Vince Stolo, and second place finisher Jared Tebo.



Invitational class top three—third place Matt Francis, overall winner Billy Easton, and second place finisher Brian Kinwald.

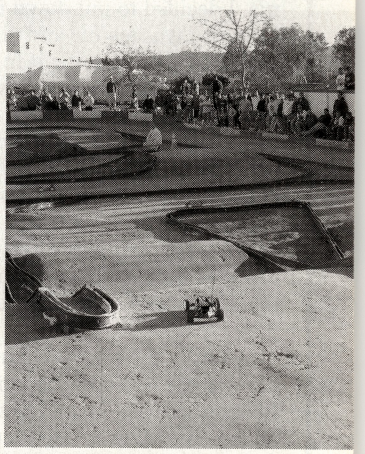


2WD and Truck Open TQ Jim Gard preps his tires before the start of the 2WD A-main.

Stolo grabbed the lead and stretched out a bit of a lead with only a few corners left to go. When the two tangled, Tebo capitalized and moved into second while Gard tried getting going again. At the finish, Stolo crossed the line first, followed by Tebo in second, with Gard in third.

Truck Open

Jim Gard also TQed the Truck Open class, and at the start of the race he grabbed a great start and was followed by Jared Tebo and Brent Thielke in third. The top three guys started distancing themselves early from the rest of the pack and were out in front by over a straightaway length. Tebo clipped a wall a little too tight which allowed Thielke out into second place. The two started battling back and forth for the second spot and over the back triples, the two collided with Tebo getting the worse of the exchange. As his truck landed, it fell awkwardly between the jumps and broke what appeared to be a rear suspension arm, and just like that he was out of the race. By this point, Gard had really stretched out his lead over Thielke (more than a straightaway) and it looked as if it would be fairly difficult to catch him. Vince Stolo and Phillip Atondo started battling for the third position with Atondo taking over the spot. With roughly a minute to go, Gard gave himself a scare as he piloted his truck off the back triples, into the nearby bushes. He had built up a decent enough lead, though, that it didn't really matter at that point. Thielke tried as best he could to catch up, but Gard's early work on getting way out in front just couldn't be beat. Atondo finished third ahead of Stolo. ◆



Reedy Race of Champions Winners Chart

2WD Open

Pos.	Qual.	Driver	Chassis	Motor	Battery	ESC	Radio	Receiver	Servo	Tires (F/R)	Body
1	2	Vince Stolo	B3	Banzai (11x3)	SMC	LRP V7.1	Air. 3Ps	Air.	Air. 357	Pro-Line	Pro-Line
2	3	Jared Tebo	B3	Reedy	Reedy	LRP V7.1	Air. M8	Air.	Air.	Pro-Line	Pro-Line
3	1	Jim Gard	B3	Reedy (10x4)	Pro-Match	LRP V7.1	Air. M8	Air.	Air.	Pro-Line	Pro-Line
4	5	Brent Thielke	B3	Race Prep (11x4)	Pro-Match	LRP V6	Air. M8	Air.	KO	Pro-Line	Protoform
5	9	Andrew Swanson	XXX	Trinity (13x3)	Trinity	Novak Cyc.	Air. M8	Air.	Losi/	Pro-Line	Losi
6	6	Greg Monise	XXX	Peak	Peak	Tekin G-10	Air. M8	Air.	Air.	Losi	Losi
7	10	Ryan Smith	B3	Reedy (10x4)	Reedy	LRP V7.1	Air. M8	Air.	152	Pro-Line	Pro-Line
8	4	Phillip Atondo	XXX	Trinity (12x2)	Trinity	Novak Cyc.	Air. M8	Novak XXL	Air.	Losi	Losi
9	8	Richard Lake	B3	Reedy	Reedy	LRP V7.1	Air. M8	Air.	Air.	Pro-Line	Pro-Line6p
10	7	Jeremy Kortz	Kyosho	Peak	Peak	Novak Cyc.	JR R1	Novak XXL	JR	Pro-Line	Kyosho

Truck Open

Pos.	Qual.	Driver	Chassis	Motor	Battery	ESC	Radio	Receiver	Servo	Tires (F/R)	Body
1	1	Jim Gard	T3	Reedy (10x2)	Pro-Match	LRP 7.1	Air. M8	Air	Air.	Pro-Line	Pro-Line
2	2	Brent Thielke	T3	Race Prep (10x2)	Pro-Match	LRP V6	Air. M8	Air.	Air.	Pro-Line	Protoform
3	4	Phillip Atondo	XXXT	Trinity (11x2)	Trinity	Novak Cyc.	Air. M8	Novak XXL	Losi	Losi	Losi
4	5	Vince Stolo	T3	Banzai (11x3)	SMC	LRP V7.1	Air. M8	Air	Air.	357 Pro-Line	Pro-Line
5	9	Mark Mendenhall	T3	Birdman (10x3)	Reedy	LRP V7.1	Air. M8	Air.	Air.	257 Pro-Line	Pro-Line
6	10	Scott Renolds	XXXT	Birdman	Birdman	Novak Cyc.	Air. M8	Air.	Air.	Losi/Pro-Line	Losi
7	8	Geoff Monise	XXXT	Peak	Peak	Tekin G-10	Air. M8	Tekin	JR	Losi	Losi
8	6	Jeremy Felles	XXXT	Banzai	n/a	Novak Cyc.	Air. M8	Air.	Air.	Losi/Pro-Line	Losi
9	7	Jeremy Kortz	Kyosho	Peak	Peak	Novak Cyc.	JR R1	Novak XXL	JR	Pro-Line	Kyosho
10	3	Jared Tebo	T3	Reedy	Reedy	LRP V7.1	Air. M8	Air.	Air	Pro-Line	Associated

PROJECT SCHUMACHER

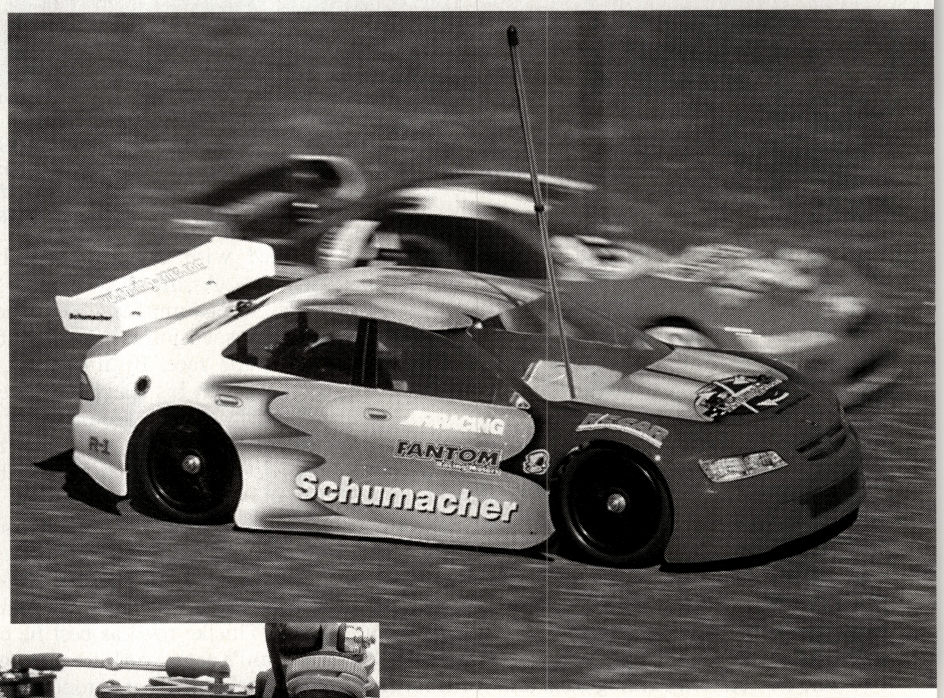
Track testing the NORRCA Nats Winning Car

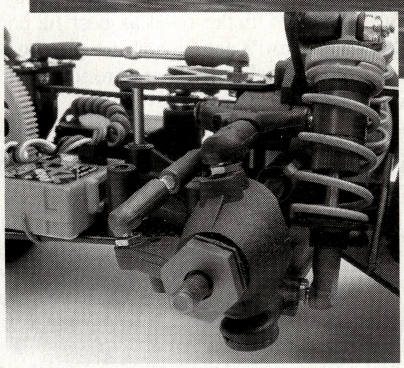
By John Howell

Schumacher's Axis 2 has been busy making a name for itself despite the lack of a big race team. No offense to team drivers Paul Lemieux, Paul Wynn, or Jared Scott—all are excellent racers—it's just a well-known fact that it's tough to compete against the larger teams that outnumber them by odds of close to three or four to one.

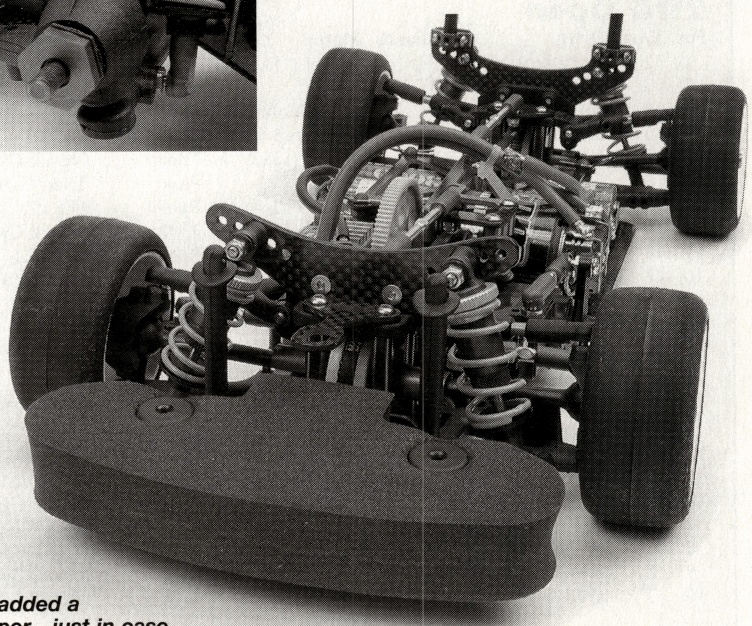
Regardless of team size, it's already been proven time and time again that the car has what it takes to be competitive on a pro-level. I reviewed the car a while ago and drove it in stock trim for quite some time. I found it to be a very precise handling car with a lot of potential. Once I heard that Lemieux won the NORRCA Nats with the car a little north of us at the Delta R/C Raceway in Antioch, California, I decided to put down the other touring cars I was testing and pick up my Axis 2 again. After running it in stock trim for so long, I wanted to try some of Schumacher's aftermarket accessories on the car to see how it changed its handling characteristics, if at all. Here's what I added to my car, and how each change affected the performance.

I'll start out with the most notable changes done to the car, and what I feel made the biggest difference.





These purple alloy hexes were a pain to install, but they'll probably last as long as the car does.



Up front I added a foam bumper...just in case...

• Easily the biggest change made to the car was the addition of a complete carbon-fiber chassis set, including shock towers. I added the Lower Bonded CF chassis (U2379), the three-piece CF Top Plate (U2380), CF Front Shock Tower (U2381), and CF Rear Shock Tower (U2382). The chassis set and shock towers noticeably stiffen the chassis package—way more rigid than the stock setup. From a purely aesthetic viewpoint, I really like the new CF battery X-plate (U2392). I also have a set of the standard narrow CF battery straps, but I plan on keeping the new X-style hold-down in place for now.

• Purple Threaded Alloy shock Bodies (U2297)—it seems that every manufacturer has adopted the threaded shock body as the true "race" setup. Why? Well, with threaded shock bodies it's easier to set your ride height in ultra-small increments, and it makes it easier to adjust chassis tweak if need be. I set up my shocks with 50wt oil all around with Blue springs. This combo works well at the track where I do the majority of my testing (Ventura Roadrunners in Camarillo, California), but will vary from track to track, so experiment with this as a base setting for your track and work from there.

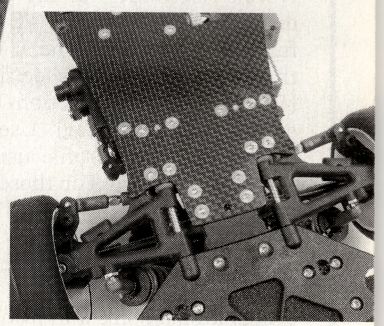
AXIS 2

• Stainless Steel screw kit (R003)—why do I have this listed as my third most important setup change? Well, there's no nice way to say this; the stock screws that come with the kit are plain junk. First off, you have to use a special Posi screwdriver to work on the car, and secondly, the stock screws are ultra-soft. Even when using the proper tool, I found myself stripping out screw head after screw head. The 2.0mm hex head Stainless Steel screws are way stronger, and help make working on this car easy—and fun again.

• One-piece Purple Alloy Motor Mount (U2236)—what's so important about this piece? Besides the additional cool factor it gives the car, it has two great attributes. One, it helps keep the motor cooler by helping draw heat away and dissipating it through the aluminum. And two, it holds the motor screws firmly in place, no matter how hot the piece gets.

• Purple Alloy Upper Housings—some Axis racers use both the Lower and Upper Alloy Housings, but I got a tip from team driver Paul Wynn to use only the top pieces. According to Paul, he likes running only the top ones since they, once firmly in place, hold the bearings tight in the housings without the need for the lower pieces. Apparently, Paul feels that the trade-off in weight isn't worth running the lower ones—the top ones do just fine in place by themselves.

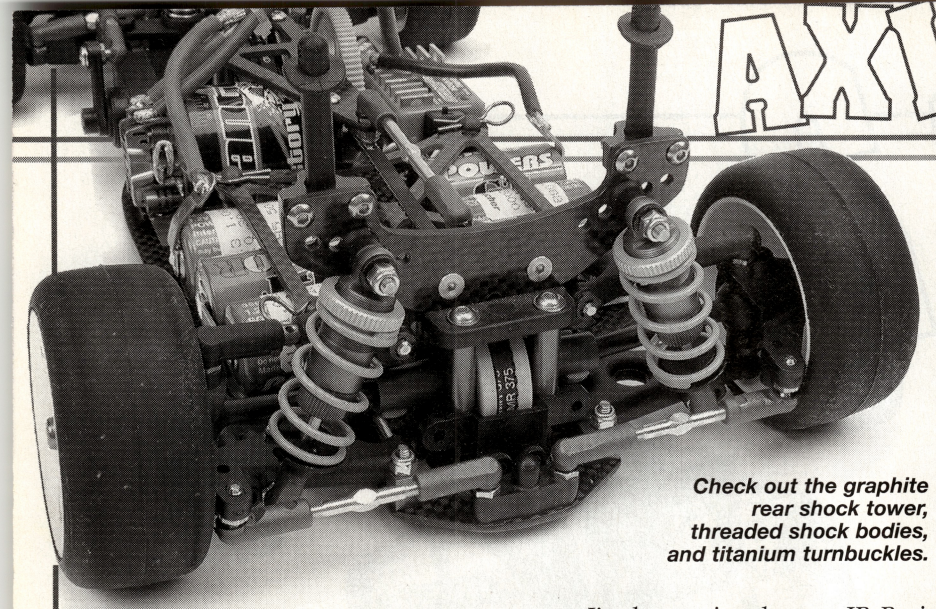
• Purple Alloy Hex Pin Drives—while these could be considered a "dress-up" item, I feel that they do have another significant feature...they last longer than plastic hexes. If you race touring cars hard (especially with today's hotter motors), you'll find that after a while most stock plastic hexes start developing a little slop and start rounding out. These alloy hexes slip on the axle and then the pin is pressed through them (sounds easier than it is...), which is then held in place by an O-ring.



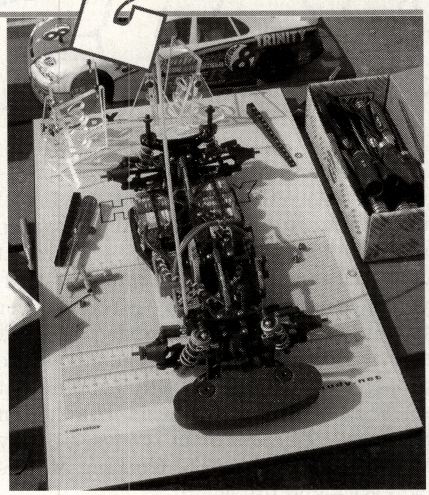
One of the best bolt-ons I added to the car was this complete set of stainless steel, hex-head screws. They are much stronger and less strip-resistant than the stock screws.

• The rest of the items are mostly cosmetic—purple alloy body post kits (U2165/U2166), purple alloy 1/8 inch pivot blocks (U2365), a set of purple Take-Off body clips are used to hold the X-plate in place, and finally I used a set of purple M4 nylon wheel nuts (U2135) to lock down the wheels. I had a hard time tracking down some of the cool, smaller purple nuts that most of the team guys use on their Axis (M3 nylon nuts/U2187), and unfortunately, Schumacher was out of stock. More than likely I'll add them when I can find 'em to help keep the purple theme going!

AXIS 2



Check out the graphite rear shock tower, threaded shock bodies, and titanium turnbuckles.



Electronics

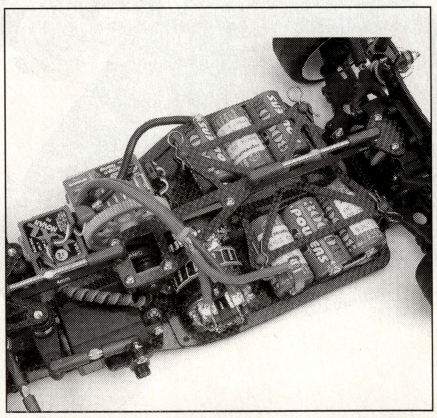
• Novak Cyclone TC—Like NORRCA winner Lemieux, I also chose Novak electronics for my car. The all-digital Novak Cyclone TC (#1767) is fully programmable, and it comes with three touring car-specific profiles (World Cup, High Traction-Touring Car or Stock Touring Car). Users can also create their own profile using Novak's Pit Wizard device. For those unfamiliar with this ESC, the Cyclone TC has many features—512 discrete steps for forward and brake which help provide the smoothest trigger response available;small size and low weight; the highest available motor control frequency, up to 23,400 Hertz; the quickest response to change in transmitter signal; adjustable minimum and drag brakes, zero to 75 percent; Novak's HYPERFET III transistors, which can handle 480 amps of rated current, and it has 160 amps of braking current. Novak's One-Touch Setup allows for quick and simple ESC adjustment to the transmitter. The unit also has low-resistance solder posts for quick and clean installation of power wires, and it comes with Radio Priority Circuitry which allows you to maintain control of your car even after the batteries have discharged.

• Novak XXL receiver—this receiver is one of the smallest two-channel receivers available (1.29x1.11x0.53"). The XXL (#2475-JR) features low-voltage operation for glitch-free reception and has an extra tight 10 KHz channel spacing (the narrower band helps to prevent any interference so you can maintain control of your car). The XXL has an internal Radio Frequency shield which helps ensures extra clean, glitch-free operation. In addition, this receiver is reverse voltage protected, and comes with an external battery slot and a DSC connection.

• I've been using the new JR Racing Z8550 digital servo with good success—this new digital servo has a whopping 188oz./in. of torque with a speed of .15 seconds/60-degrees, and uses composite alloy gears for durability. And it weighs a mere 1.92 ounces.

• I originally tested the Axis 2 using a Fantom Racing 12-turn double, but for this test I opted to go for something a little more powerful from them, so I put in a 10-turn. The motor is based on the EPIC can design, and it's been hand wound, diamond trued, and precision epoxy balanced at their shop in Vicksburg, Michigan.

• Powers 3000R GT batteries—these new 3000 NiMh cells from Powers Racing were provided to me through Schumacher USA. The cells number out at 30A discharge/413 seconds/1.089v/23IR/with a cutoff of .085v. They provide great run time, but didn't give a ton of snap. The higher IR (internal resistance) somewhat limits the car to mod racing (not enough snap for stock motors), but you can make up for it by motoring down a bit thanks to the extra run time to gain some speed back. ◆



All the graphite looks extra good on this car, and it's functional as well. The new battery X-brace is one of my favorite new items on the car.

Track Testing

● I raced the Axis 2 at the nearby Ventura Roadrunners track in Camarillo, California, with a modified base setup—blue springs on all four shocks; 55wt oil; #4 on the tower; outside hole on the arm; and one-degree anti-squat. The track had been treated with grape soda for additional traction, so on went a set of Green compound 24mm Pro-Line/Jaco pre-assembled touring car tires. After a few runs, the traction wasn't as "grippy" as I thought, so I changed back to softer Yellow compound tires instead.

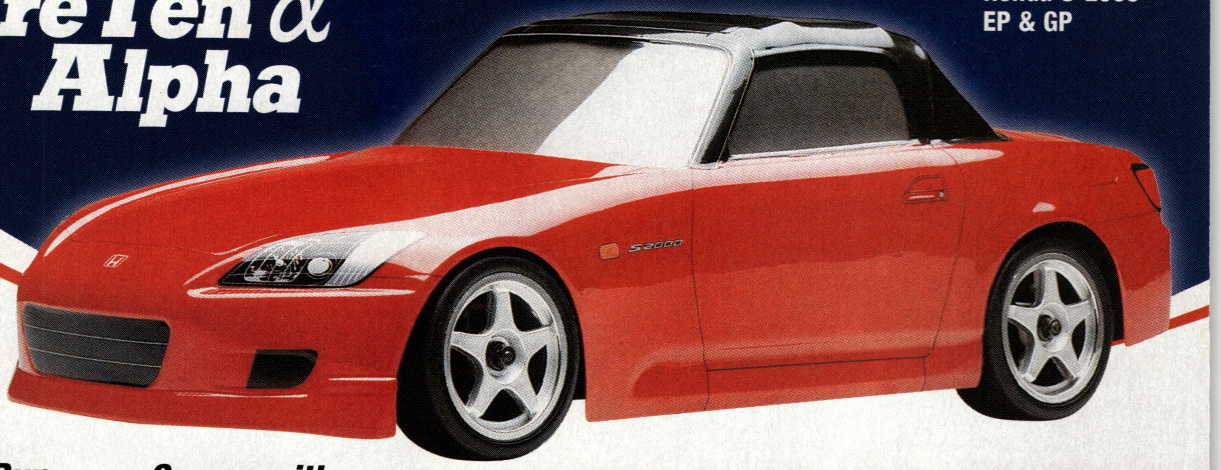
I found the base setup gave the car a small amount of front push—a setup that allows more novice drivers to drive the car fast. I wanted the car to have more steering, and since I didn't know if the rear end was too hooked up, or if there was just a lack of front traction, I experimented with taking out rear toe, then changed back to my initial setup and finally settled for setting up the car with stiffer front springs. Based on team driver Paul Wynn's advice, I ended up using red springs all around with 50wt oil and 7.5 degrees of caster. Once I took it back out on the track, the car was way more hooked up, and I found it was easier to drive faster lap times. Frank was testing his Kyosho V-One-R nitro touring car at the same time and while he would pull away from me on the straightaway, I would catch back up to him on the tight, technical sections on the track.

Overall I'm impressed with the changes I made to the car—the graphite package helps stiffen up the car, and the addition of the threaded shock bodies makes it very easy to set up the car's suspension quickly and accurately. ●

Factory-built and fully equipped for easy on-road action!

PureTen α Alpha

Honda S-2000
EP & GP



- **Ready-to-Run**
- **Factory Painted**
- **Comes with Electronic Speed Control installed**

You don't need unlimited time or "A+" building and painting abilities to race a super-sleek Honda S-2000 like the one shown here. In fact, you don't even have to shop for accessories! It's all right in the box and ready-to-run with Kyosho's 4WD Alpha Series...the first word in effortless R/C car action.

All Alpha Series on-road vehicles feature professionally painted bodies and high-performance, prebuilt chassis with radio equipment already installed. They get high marks for convenience — but not at the expense of all-out racing excitement. *That's* delivered to the "nth" degree by sophisticated double wishbone suspensions, road-gripping slick tires and much more.

Got a power preference? Take your pick. EP Alphas come equipped with a rear-mounted X-Speed 600 motor whose weight improves traction — and whose muscle makes your machine move out like a missile. The Honda S-2000 adds an electronic speed control for extra-smooth acceleration in forward and reverse, plus a 6-cell NiCd and AC charger to boot!

Nitro-powered GP Alpha Series racers ratchet up the realism with a recoil-started GX-12 engine, factory-installed. Like the EP versions, they're nearly 100% ready-to-run. Just finish detailing the bodies, add radio batteries, and head to the track!

Upgrade and replacement parts for Kyosho Alpha Series models are available now — ready to keep your vehicle running at its very best. For a free brochure and the location of the dealer nearest you, please call 1-800-682-8948 and mention code number 2939B.

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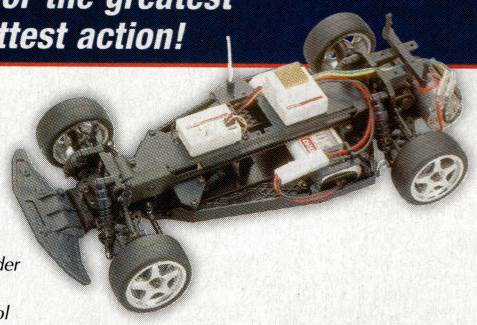
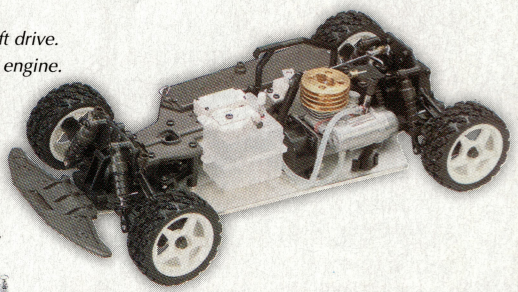


EP Alpha 4WD

- *4-wheel single belt drive, with rear-mounted X-Speed 600 motor.*
- *Tub-style chassis.*
- *One-touch battery holder for fast pack changes.*
- *Electronic speed control (Honda S-2000 only – also includes 6-cell NiCd battery and AC charger).*

GP Alpha 4WD



- *Reliable 4-wheel shaft drive.*
- *Recoil-started GX-12 engine.*
- *Strong, lightweight aluminum main chassis.*
- *Pre-installed and pre-adjusted linkages (on both EP & GP).*
- *Dust-proof radio box.*



Perfex™ 2-Channel Radio System Included

- *Digital proportional radio comes factory-installed and pre-set for racing.*
- *Features servo reversing, dual rate steering, steering and throttle trims, LED battery indicator and charge jack for charging optional NiCds.*

Also available from Kyosho's Alpha Series, in nitro and electric versions:



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These models come with standard rotary speed control.

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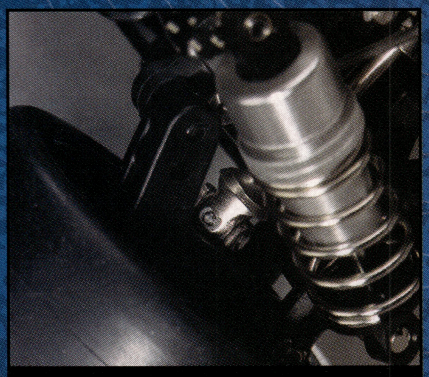
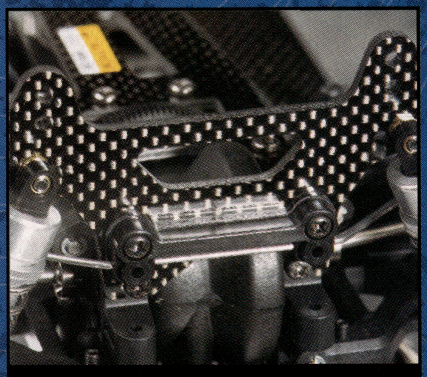
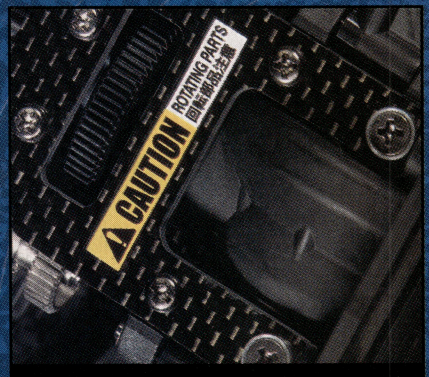


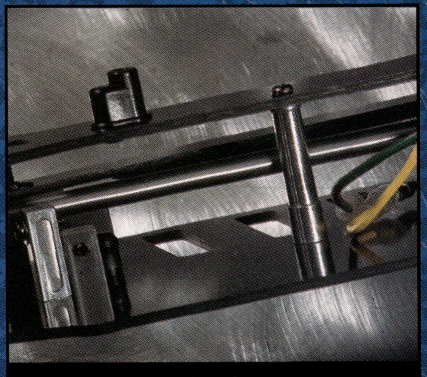
Threaded, aluminum shock bodies are fully adjustable, allowing complete control over your car's handling ability.



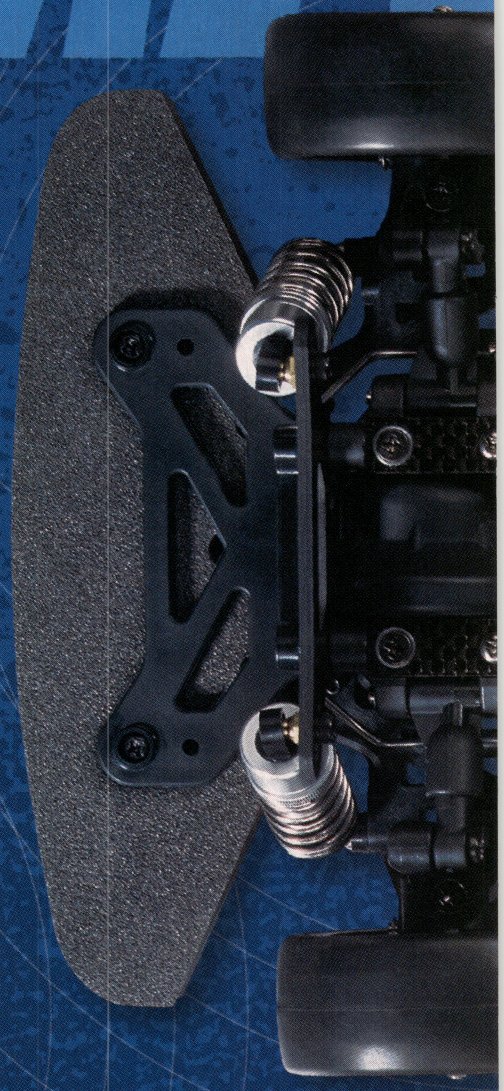
Carbon fiber shock towers are lighter and stiffer, providing better support for your car's suspension.

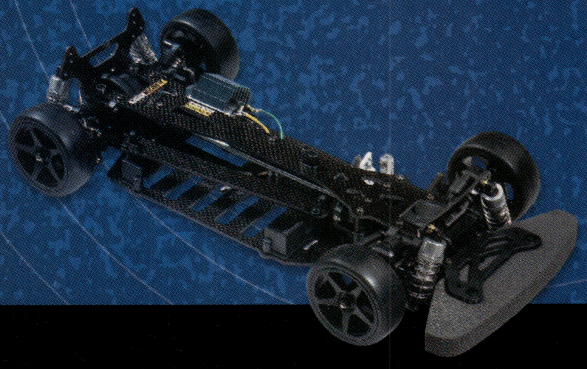


New compact differentials allow for a lower center of gravity for quicker response and razor sharp transitions.



An aluminum center drive shaft provides for lower rotational mass and harder acceleration.





1/10 RC TB EVOLUTION CHASSIS

TB Evolution chassis **kit number 58267**

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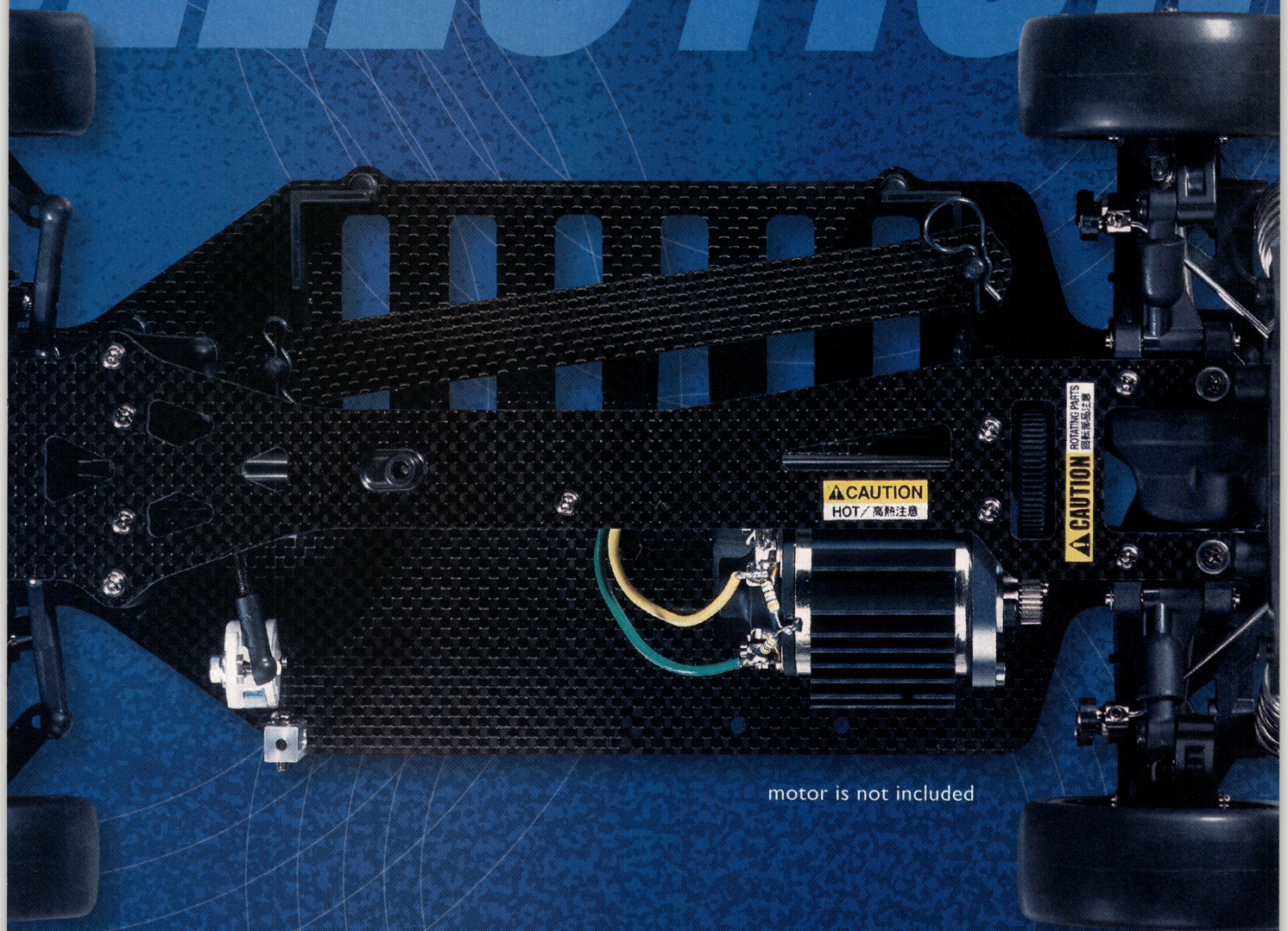

motor is not included

Get ready for the next step in evolution – the TB Evolution from Tamiya. This limited edition racing chassis has combined the best of the gas-powered racing scene with all that you want out of your electric. To start with, we've used the differentials from our TGR gas model – ball in the back, one-way up front – to improve power usage, ensuring more torque hits the ground. You can also tune your racing machine more precisely and more quickly with the threaded aluminum shock bodies. Aluminum drive shafts, motor mounts and heat sinks all make sure your car is as light and as responsive as possible. This baby also includes five different spur gears and A-type reinforced slick tires. We could go on and on about how superior your performance is going to be because of the carbon-fiber shock towers and the front and rear sway bars, but you probably want to go buy one already. So get up and get to your local hobby source today – found at www.tamiya.com – before they're all gone.

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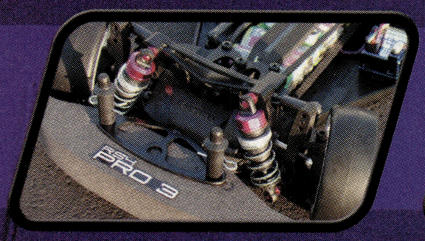
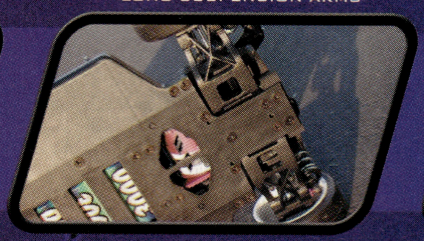
THREADED COMPOSITE SHOCKS



LONG SUSPENSION ARMS



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[Electronics & tires are not included in this kit.]

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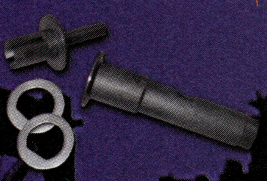

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PROJECT E-MAXX,

Full Factory Ride!

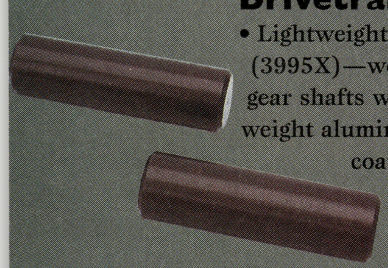


In what is sure to be an on-going project, we bring you the first in an installment series—Project E-Maxx, Part I.

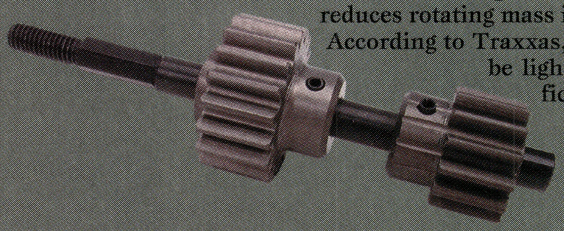
Why is it going to be one of many? Well, like the T-Maxx, there are too many manufacturers making parts for this beast to fit it into one article. So we figured the best thing to do would be to feature a new Project E-Maxx every month or two with all new hop-ups from different manufacturers. This month we're going to showcase parts from the people that started it all—Traxxas themselves. We've also added a few other minor mods here and there in addition. So without further delay, here's what we did with our E-Maxx, Part I.

Drivetrain Mods

• Lightweight Aluminum Idler Gear Shafts (3995X)—we replaced the stock steel idler gear shafts with these two new lightweight aluminum, hard-anodized, Teflon-coated shafts. The new aluminum shafts are extremely durable and don't sacrifice strength.

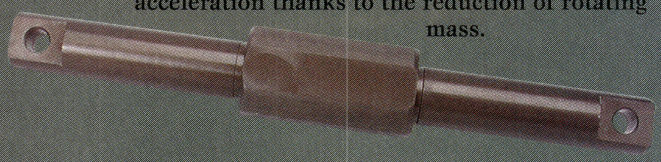


• Lightweight Input Shaft/Drive Gear Assembly (#3993X)—this new hard-anodized, Teflon-coated input shaft (18/13-tooth top gear) reduces rotating mass inside the E-Maxx tranny. According to Traxxas, the new input shaft may be lighter, but there is no sacrifice in overall durability.



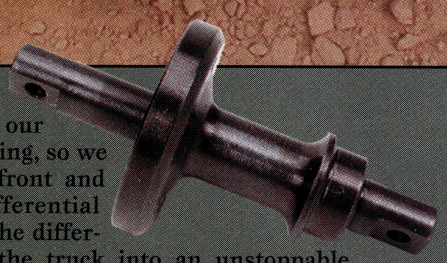
• Lightweight Output/Idler gear Shafts (3994X)—as with the lightweight idler gear shafts, these new lightweight output/idler gear shafts are made of aluminum, and are hard-anodized and Teflon-coated.

By combining this accessory with the other lightweight tranny pieces (3393X and 3995X) your truck will achieve a higher top speed and will have quicker acceleration thanks to the reduction of rotating mass.



PART 1

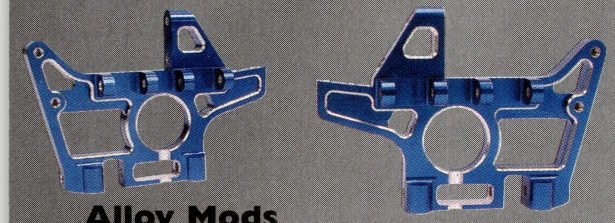
We added a set of Panther's Meat Grinder tires to our Project E-Maxx. They grip very well on most every surface, and throw a mean roost! Also, astute viewers will notice we swapped the ESC and receiver around to help shorten the wires—pretty cool, huh?



• Differential Spools (4981X)—we plan on using our E-Maxx for severe hill climbing, so we wanted to lock down the front and rear diffs with these differential spools. The spools replace the differential gears, which turns the truck into an unstoppable, hard-core climbing machine. The spool locks the axle, which in turn provides equal power to both wheels no matter what the truck drives over. Traxxas recommends using the spool in the rear if you plan on racing the truck—it will allow you to slide the rear of the truck through corners more easily.

• MIP front and rear CVDs—we wanted to complement our entire drivetrain with MIP CVDs, but the center units were still in the prototype stage when we started construction on our truck. We did place a set both front and rear, though. The CVDs are totally rebuildable, and the design holds too many World, National, and local championships to mention. The CVDs will help our truck gain more forward traction—something we wanted when climbing 45-degree-plus rocks.

PROJECT E-MAXX, PART 1



Alloy Mods

• Machined-Aluminum Bulkheads (4930X front/4929X rear)—these bulkheads have been CNC machined from 7075 T-6 aluminum and are anodized blue with machined edges which gives them a very clean look. Not only do they look good, they also increase the strength of your E-Maxx. They provide a super-strong foundation for the truck's suspension and also provide maximum protection against crash damage.



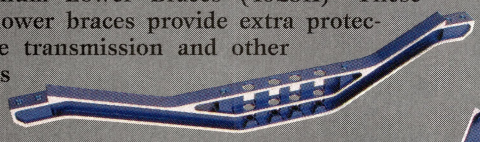
• Custom Machined Motor Plate (3990X)—This blue-anodized motor plate was made thicker than the stock aluminum motor plate with heavy horsepower applications in mind. Special cooling vanes are machined into the plate to help draw cool air up to the motors. This mod comes highly recommended if you plan on using modified motors in your E-Maxx.

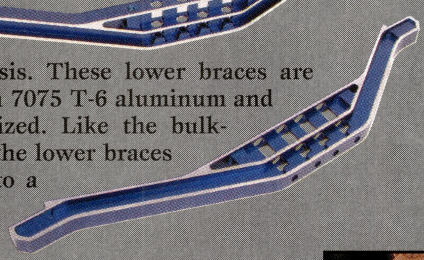


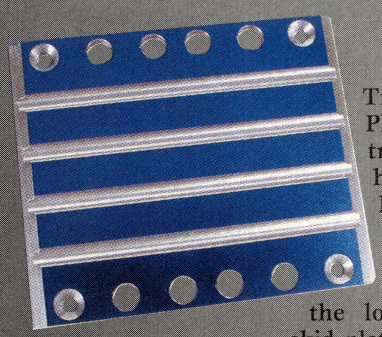
Suspension Mods

• Aluminum Big Bore Shock Kit (4962)—the first mod on our list was to replace the stock plastic shocks with a full set of Traxxas' aluminum Big Bore shocks. Not that there is anything wrong with the stock plastic shocks—we just like these better! The Big Bore shocks are packaged in convenient eight-packs just for the E-Maxx. The Big Bore shocks are hard anodized and Teflon coated for smooth operation, and they feature internal diaphragms that helps keep the air and oil separated for increased performance and longer life between rebuilds. The shocks come completely assembled and include Red, 2.5-rate shock springs, additional shock pistons and clip on pre-load spacers to make ride height and damping adjustments quick and easy.

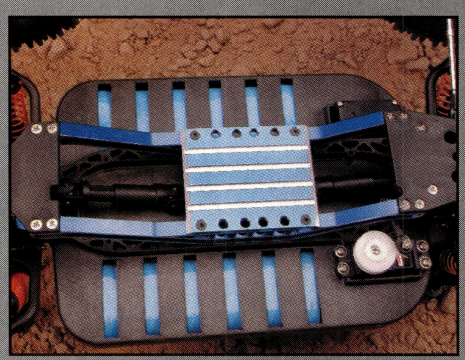
• Aluminum Lower Braces (4923X)—These aluminum lower braces provide extra protection for the transmission and other components that come through the bottom of the chassis. These lower braces are CNC machined from 7075 T-6 aluminum and are also blue anodized. Like the bulkheads, the edges of the lower braces are also machined to a bright finish for extra detail.







• Aluminum Transmission Skid Plate(4947X)—this tranny skid plate helps protect the E-Maxx's transmission case and additionally provides added support to the lower braces. The skid plate is machined from 7075 T-6 aluminum, and is also blue anodized with machined edges.





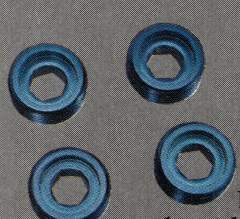
• Aluminum Bumper (4935X)—machined from 6061 T-6 aluminum, these super-tough front and rear bumpers have a brushed aluminum finish.



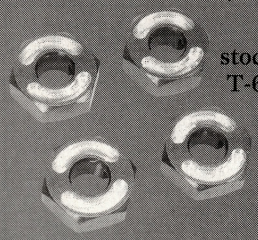
• Hard-Anodized-Aluminum Pivot Balls (4933X)—these hard-anodized 7075 T-6 aluminum pivot balls are much lighter than the stock steel pivot balls and they feature a special Teflon coating that reduces friction to make the suspension arms pivot as smoothly as possible. The hard-anodized pivot balls are sold in four-packs that include molded bushing caps to replace the stock pieces. Each package of four hard-anodized pivot balls will reduce the vehicle's weight by an amazing 19-grams! Two packages alone will remove over an ounce of unsprung weight!

• Blue-Anodized Aluminum Battery Hold Downs (3923X)—These blue-anodized aluminum battery hold downs are actually lighter than the stock molded pieces they replace! So not only do they look great, but they help you save weight at the same time! The battery hold-downs come with stick-on foam padding which helps protect your batteries.

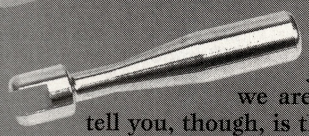




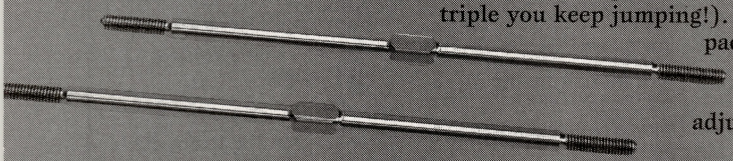
• Anodized-Aluminum Pivot Ball Caps (4934X)—while you're adding those new pivot balls, don't forget to add a set of these blue-anodized-aluminum pivot ball caps. The pivot ball caps are CNC machined from 7075 T-6 aluminum and are sold in four-packs that include four new nylon pivot ball bushings.



• Aluminum Hex Wheel Hub (4954X)—we replaced the stock molded hex wheel hubs with these ultra-strong 6061 T-6 aluminum hex hubs. The aluminum hex hubs are CNC machined for the utmost precision and feature machined slots for extra detail. The aluminum hex hubs will not develop play over time like plastic units will.



• Titanium Turnbuckles (2338X 94mm front/2339X 105mm rear)—everyone knows just how good titanium turnbuckles are, so we aren't telling you anything new. What we can tell you, though, is that the E-Maxx can benefit greatly by adding a set since the large tires and wheels can add more stress to the suspension under really rough driving conditions (like that 30-foot triple you keep jumping!). The turnbuckles are packaged in pairs and include a handy machined-aluminum adjustment wrench.



• Titanium Suspension Pin Sets (4939R)—to compliment the titanium turnbuckles, we also installed a set of titanium hingepins. These are designed to upgrade the stock hard chrome screw pins. By installing the titanium hingepins, we eliminated more than a half ounce from the vehicle's weight! A stainless steel kit is also available (4939).

Miscellaneous Mods

• Ball Bearing Steering (2728; two packages required)—we replace the plastic bushings inside the steering bellcranks with these stainless steel ball bearings (5x8x2.5mm) in an effort to get the smoothest steering action possible.

• Trinity Monster Maxx mod motors (RC9243-Pro version)—these new 17-turn single 550-size motors spin at almost 24,000 rpm! Trinity is releasing three stages of motors, the 21 turn "Mild" (RC9241), the 19 turn "Wild" (RC9242) and the ones we used, the super fast and punchy 17 turn "Pro" version. Being the speed freaks that we are, we just had to go with the Pro version. The Pro version features all of Trinity's latest technology including surface mounted capacitors (SMT), as well as Trinity-designed armatures for durability and consistent performance.



• Trinity Maxx Paxx—these new 1900 SCR battery packs have been performance selected for extended time for the E-Maxx when using hotter motors such as the Monster Maxx Mods we used. The 1900mAh cells give extended run time and give better performance over standard sport packs and are outdone only by the most expensive of matched packs.



• Pro-Line Ford Excursion Body (#3099)—this new Ford Excursion body set from Pro-Line Racing is sure to be the next "big" thing for the Traxxas T- and E-Maxx. It comes with all the necessary decals and window masks, as well as a new, taller body post set that reaches the tall roof line.

Performance

● We took our Project E-Maxx out up into the hills behind our office for a little hillclimbing action. We brought along our buddy Adam Booth (editor of our sister publication, *BMX Plus!*) to witness, and participate in the forthcoming carnage.

Initially we decided it would be best to shake down the truck on some flat, open ground to make sure everything was in working order after re-assembling it with all the new parts. We hit the switch on the ESC and let it rip—the truck took off at break-neck speed! We couldn't believe how ballistic the truck was. Everything appeared to be in working order, so it was time to hillclimb...

With the "locker diffs" in place, we found that not much stopped the truck once it hit the hill. It was a wild sight watching all four wheels dig in and shoot out a good three- to four-foot roost out the back as it clawed its way toward the top of the hill. Once we climbed to the top of this 100-foot long, near vertical hill a dozen times or more, the packs started going soft. We brought it in for a fresh set of batteries and this time handed the radio over to Adam, to give him some wheel time with the modified monster.

After Adam ran the truck up the hill a few times, the throttle really started to glitch and stutter. Once he backed off for a second, everything seemed fine. Then the truck slowed to a stop—we had fried the speed control. In our haste to get the truck up and running, we pulled a total rookie maneuver and forgot the most important setup change of all—when running hotter motors, don't forget to change your gearing! We were asking way too much of the stock speed control in this situation and should have dropped down a few teeth to compensate for the hotter Trinity mod motors.

Overall we were quite impressed with how well the truck worked and looked. Adding the locker diffs really helped the truck's climbing abilities, and straight-line acceleration was improved as well. The suspension felt smoother with the aluminum Big Bore shocks, and the Panther tires worked well on most every surface. Project E-Maxx, Part II—here we come! ●

SOURCES

Traxxas Corporation, 12150 Shiloh Road Dallas, TX 75228 • (972) 613-3300; (972) 613-3599 (fax)
Trinity Products Inc., 36 Meridian Rd., Edison, NJ 08820 • (732) 635-1600; (732) 635-1640 (fax)
Pro-Line Racing, P.O. Box 456, Beaumont, CA 92223 • (909) 849-9781; (909) 849-2968 (fax)
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10 NITRO TIPS

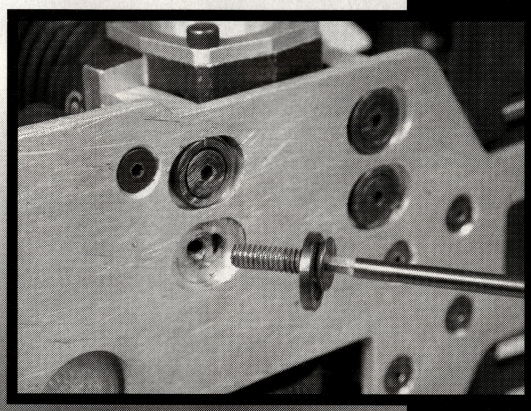
Life just got a little easier!

We receive hundreds of letters and e-mails each month, and many of them are from the owners of nitro-powered vehicles who have discovered some clever tips and tricks that make the nitro experience more pleasant.

We've picked a few (well, 10 to be exact) of the most useable tips and compiled them here. So if you're new to nitro, or even if you're an old hat, check out these tech tips!

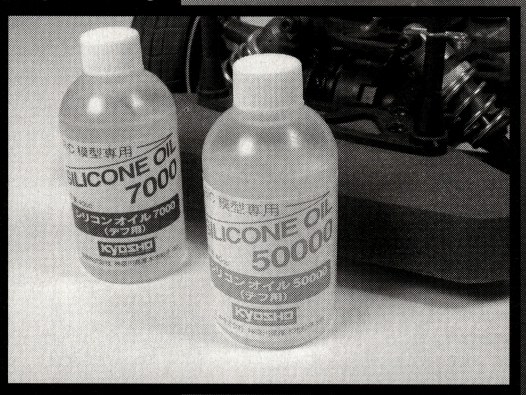
1.

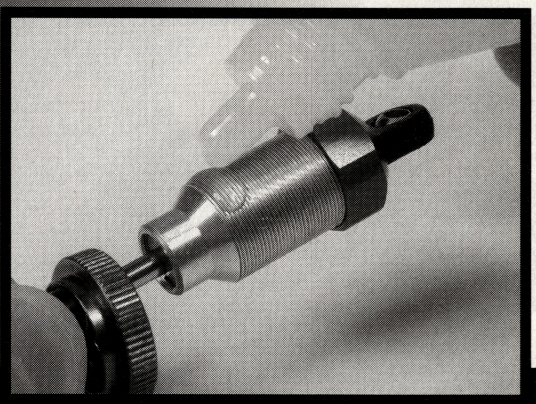
You know that, when building your nitro car, you should use thread-lock on all metal screws that thread into metal parts and metal nuts. But have you noticed that most of the thread lock ends up oozing from beneath the screw head after it's been tightened? Next time you place thread lock on a screw, allow it some time to set before you install the screw. This way, more of the thread-lock will remain on the threads and prevent your car from shaking apart.



2.

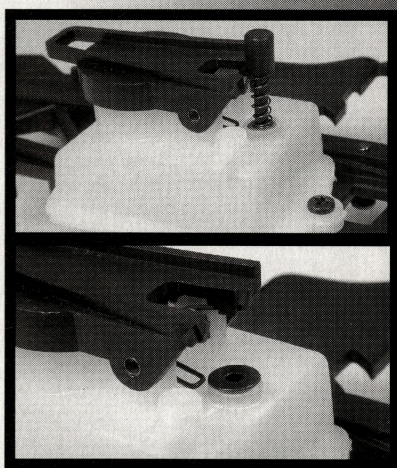
Many nitro cars now come with O-ring sealed differentials that are intended to be filled with thick silicone fluid. The fluid serves to stiffen the action of the diff and has become a serious tuning aid for racers. Although most instructions don't tell you exactly how much fluid to add, common sense would dictate that the diff be filled entirely, right? Wrong! You see, even though you've read many times on shock oil bottles that silicone isn't affected by temperature, it is. When the diff heats up, so does the silicone, and it will expand slightly. If the diff is completely filled with the stuff, you will have some pretty messy leaks. How do we know this? Experience. Always leave a little extra room inside the diff for the fluid to expand.





3.

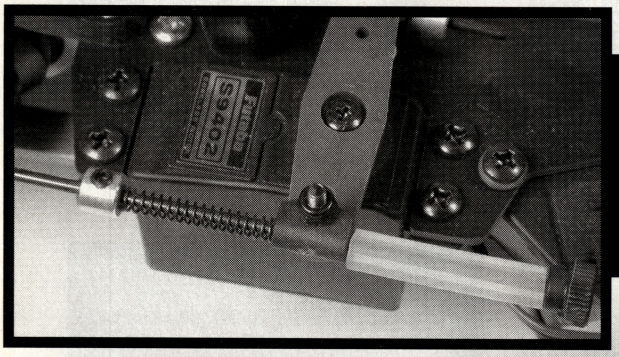
This goes for both nitro and electric cars that have threaded shock cylinders. A dab of shock oil on the threaded part of the cylinder makes it easier to thread on the pre-load adjustment nut (if it is equipped with an O-ring).



4.

Many nitro vehicles come with tiny plunger-primers on their fuel tanks. By pumping the plunger, the tank is pressurized and fuel is sent to the carb so that you can start the engine. If you look at most racing vehicles, you'll notice that their tanks don't have a plunger. This is because these vehicles have non-pull-start engines which are cranked by starter boxes that spin the engine continuously until it starts. The spinning engine pressurizes the tank almost instantly, sending fuel to the carb. We don't particularly care for plunger-primers because they are often the cause of air leaks in the fuel tank. These leaks reduce tank pressure and can make the engine run inconsistently. And you know what? You really don't need a plunger even if you have a pull-start engine, so get rid of it! Simply remove the plunger assembly and replace it and plug the hole with a screw. Use some RTV sealant on the screw for a good seal. When starting your engine, just place your finger over the exhaust pipe and tug the pull-starer a few times to prime the carb.

10 NITRO TIPS

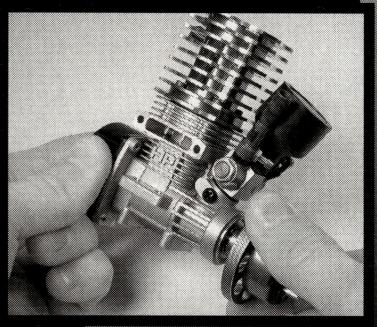


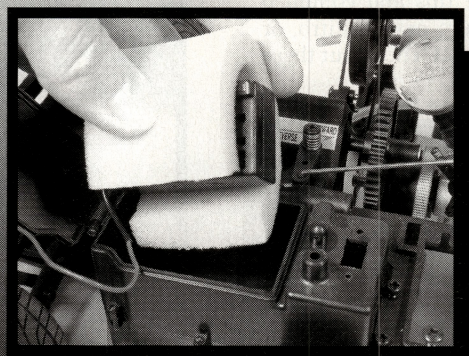
5.

To prevent your brakes from sticking, add a return spring to the other side of the linkage to push the brake lever to the neutral position when the throttle is applied. Just be careful that the spring doesn't re-engage the brake when full-throttle is applied. You'll be surprised at how much more freely your car will coast and how much longer your brakes will last.

6.

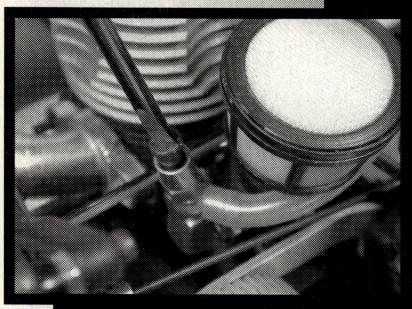
A good way to check the condition of your piston and sleeve is to remove the glow plug and turn the flywheel. If the piston and liner have a good seal you will be able to feel a slight increase in resistance as the piston reaches its highest position within the cylinder (with a new engine, the resistance is very high). If you can't feel any resistance within the entire piston cycle, chances are it's time for a new piston and sleeve.





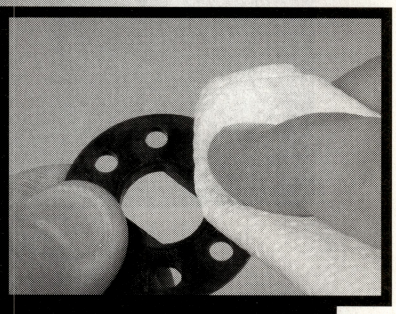
7.

If your nitro car or truck is equipped with a radio box, i.e., a molded enclosure designed to protect the receiver and battery from the elements, avoid the temptation to use double-sided tape to secure the receiver within the box. And although slightly less risky, avoid just letting the receiver bounce around inside the box. The best way to protect the receiver and prevent glitching caused by engine vibration is to wrap the receiver in foam rubber before placing it inside the box. If you still have the box from an ESC or other electronic component, the foam that protected it during shipping will work perfectly.



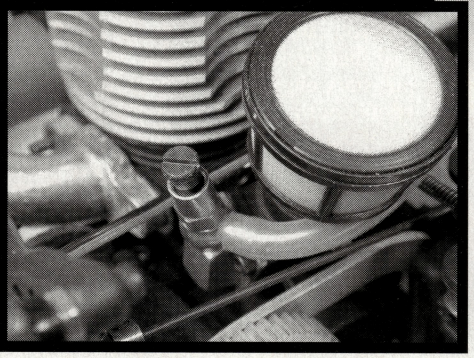
8.

Unfortunately for us nitro lovers, our engines require routine fiddling to achieve top performance. Unlike the "set it and forget it" electronic speed control of an electric car, you will need to make slight adjustments to your carb's settings to suit various conditions. For example, if your carb is set for 90-degree weather, you'll need to lean the high-speed needle slightly in cooler weather to make up for the reduced air density (warm air is more dense than cool air, therefore the fuel-to-air ratio will change; there will be less air and more fuel, i.e., a richer condition). If going from cool air to warm, you may need to richen the high-speed needle. Remember that when in doubt you should always err on the side of too rich rather than too lean when adjusting your carb.



9.

Another condition to be aware of is the cleanliness of your air filter. A dirty air filter can have the same effect as a cooler temperature, which is to say that less air is mixing with the fuel. Ever notice that your engine tends to richen up in extremely dusty conditions? This is because the filter is becoming clogged, and although the same amount of fuel is traveling from the tank to the carb, the amount of air is reduced. In essence, a dirty filter is similar to a richer high-speed needle setting. Check those filters often! Although you can compensate for a dirty filter by leaning the carb, there will be less fuel/air mixture overall and that means less power!



10.

Have you noticed a recent decrease in braking power? Before you re-adjust your brake linkage or fiddle with your radio settings, give your brake disc and pads an inspection. You might find that all that spilled fuel has managed to find its way to your brakes. And you know that your fuel contains a good portion of oil, right? Remove the brake disc and pads from the chassis and spray them with brake cleaner or electric motor spray to remove the oil. A light sanding with fine-grit paper will further increase the friction between the disc and pads. Now you should have better brakes without having to buy new parts or alter the linkage. Try to make a habit of cleaning your brakes after every few races. ◆

MAY 24-27

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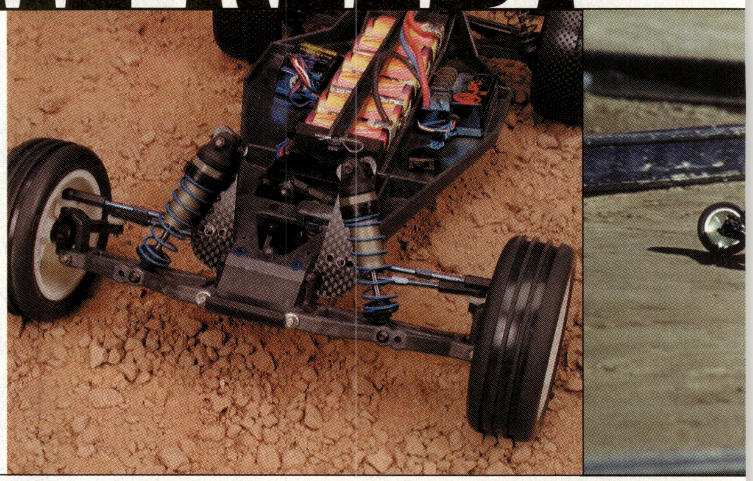
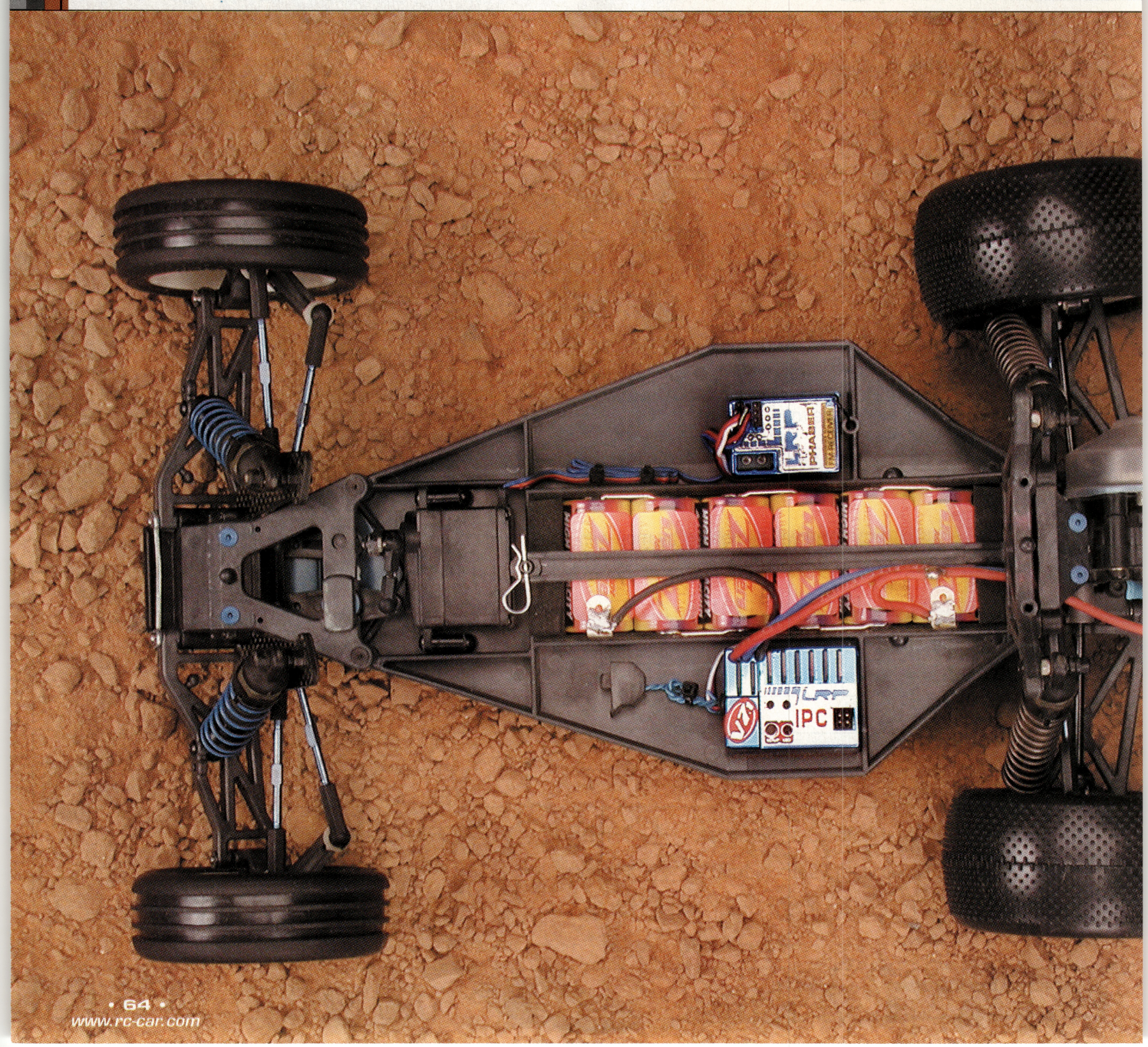
INSIDE THE REEDY

Speed secrets from the Pros

You're looking at the cars and trucks that belong to the fastest racers at the 2001 Reedy Race of Champions.

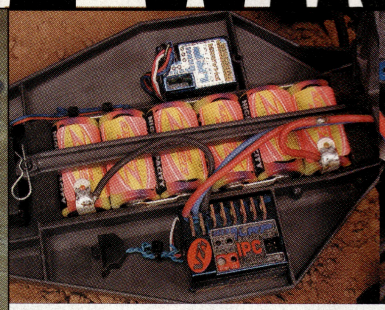
Even thought there were a ton of fast guys in the Invitational class, and the racing action was the closest it's ever been in the race's history, not many were as consistently fast as Associated factory pilot Billy Easton. Additionally, Jim Gard and Vince Stolo were the top two racers to watch in both Open classes—Gard was top qualifier in both classes and won the Open Truck A-main, while Stolo captured the overall in 2WD Open. Check out the vehicles that took them to the front of the pack in their respective classes.

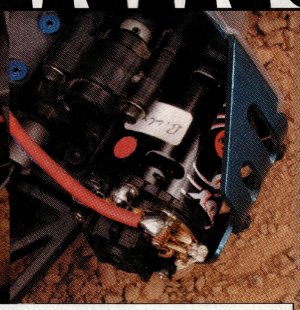




RACE WINNING CARS











Billy Easton's B3

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Caster—25°
Front ride-height—Arms level
Camber—1° negative
Anti-roll bar—None
Front toe—0
Bump steer spacers—0
Steering Ackerman—Standard

Front Shocks:
Body—Gray .89
Shaft—.71 Unobtanium
Limiters—2 inside/none outside
Piston—#2
Spring—Blue
Oil—Associated 35wt.

Shock mounting position—D on tower/G on arm
Camber link—A

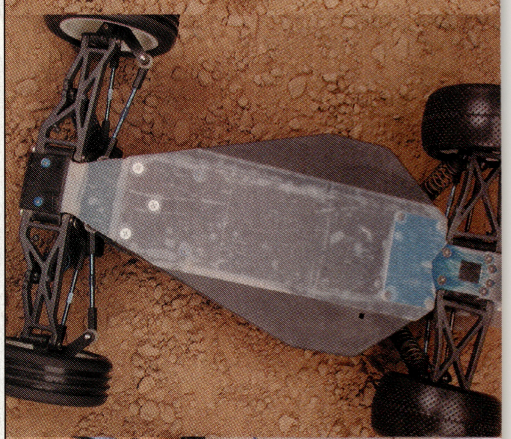
Rear Suspension:
Camber—1° negative
Rear ride-height—Bones level (MIP CVDs)
Toe-in/Anti-Squat—3-1.5

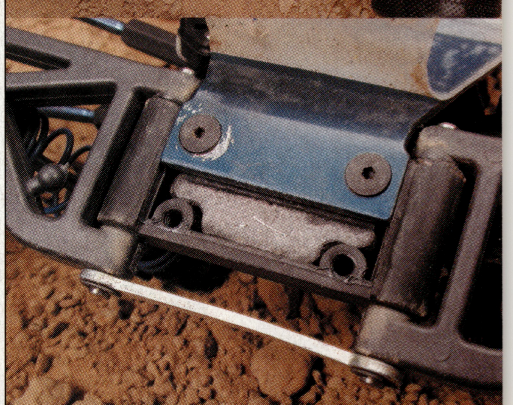
Rear Shocks:
Body—Gray 1.32
Shaft—1.02 Unobtanium
Limiters—1 inside/none outside
Piston—#1
Spring—Silver
Oil—Associated 30wt.

Shock mounting position—F on tower/C on arm
Camber link—B on tower/1 on arm

Electronics:
Motor type—Reedy X (10x4)
Brushes—Reedy 760
Motor springs—Stock
Batteries—Reedy 2400 Zappers
ESC—LRP V7.1
Radio—Airtronics M8
Servo—Airtronics

Miscellaneous
Battery placement—Middle
Gearing—19/81
Slipper—Associated
Weight in bulkhead—1 oz.
Body—ProtoForm B2 Blast
Front tires—Pro-Line 8176 (M3) w/white foam
Rear tires—Pro-Line 8089 (M3) w/white foam
Front wheels—1-piece wide
Rear Wheels—1-piece wide
Chassis—Graphite/standard



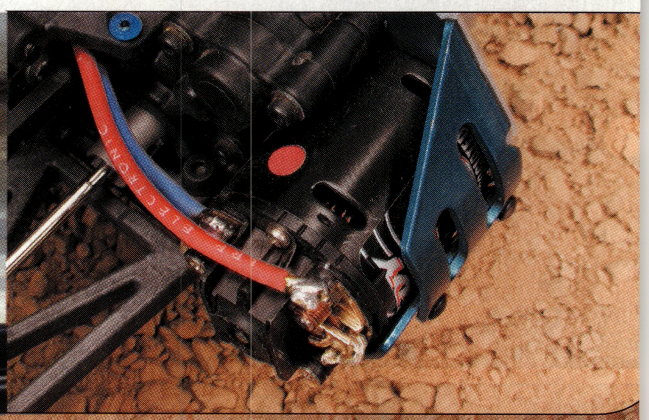


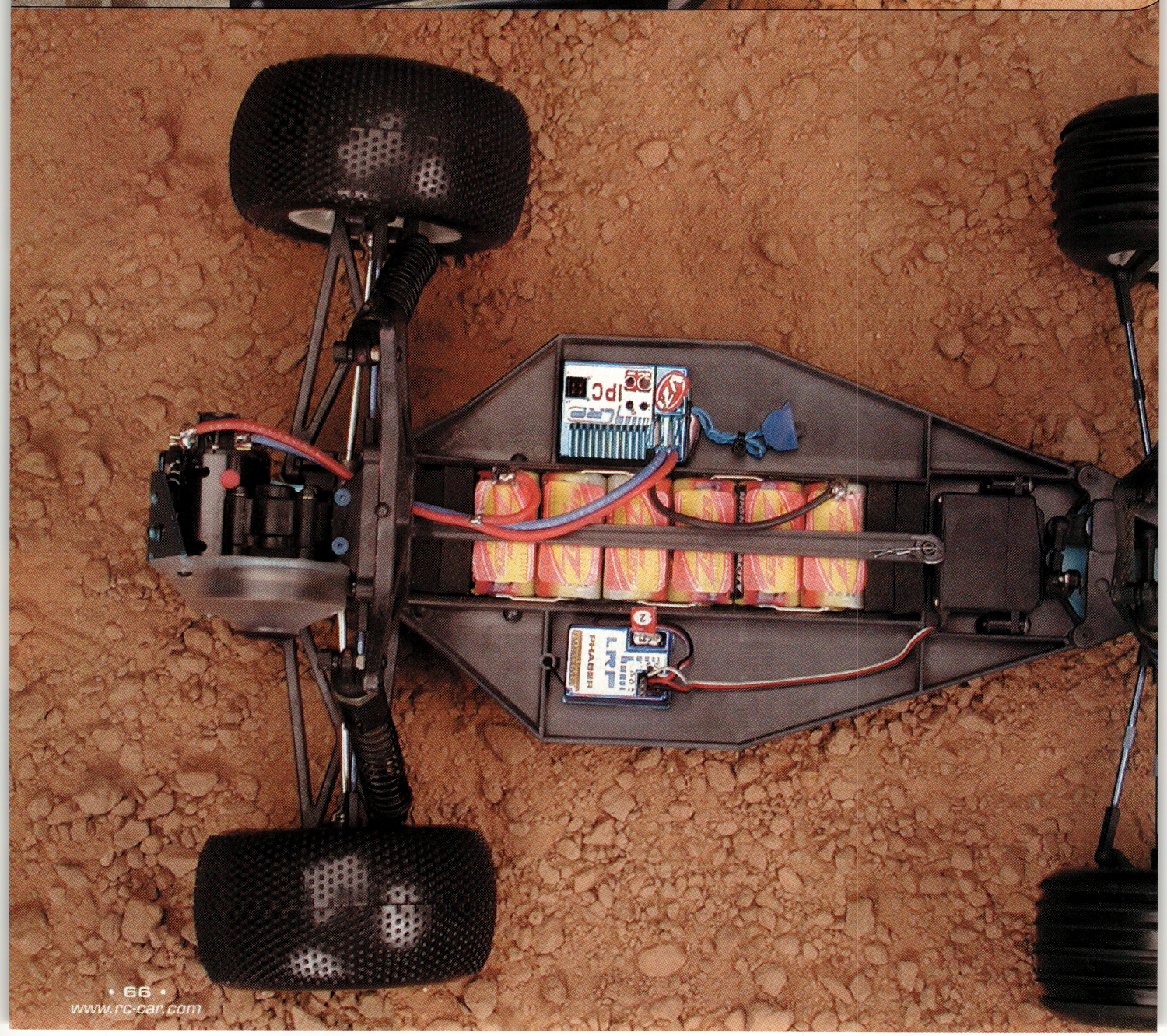


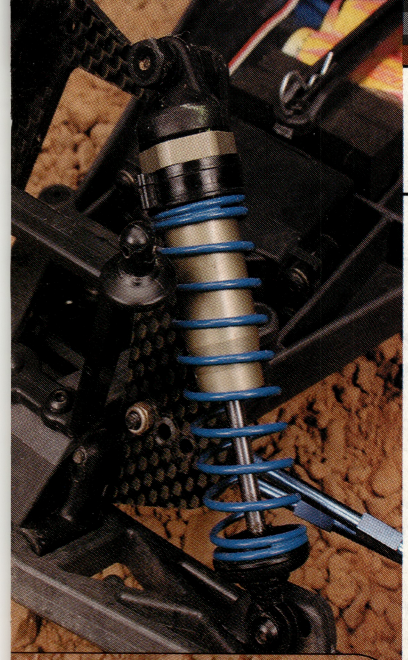
INSIDE THE REEDY RACE WINNING CARS

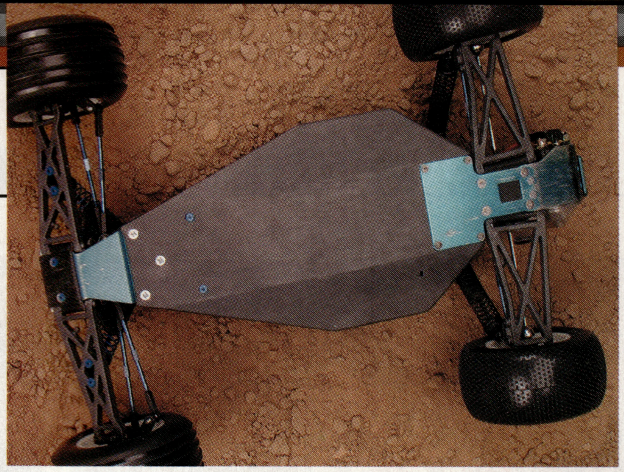












Billy Easton's T3

Front Suspension:
Caster—30°
Front ride-height—Arms level
Camber—1° negative
Anti-roll bar—None
Front toe—0
Bump steer spacers—0
Steering Ackerman—Standard

Front Shocks:
Body—Gray 1.02
Shaft—1.02 Unobtanium
Limiters—2 inside/none outside
Piston—#2
Spring—Blue
Oil—Associated 35wt.
Shock mounting position—D on tower/G on arm
Camber link—C

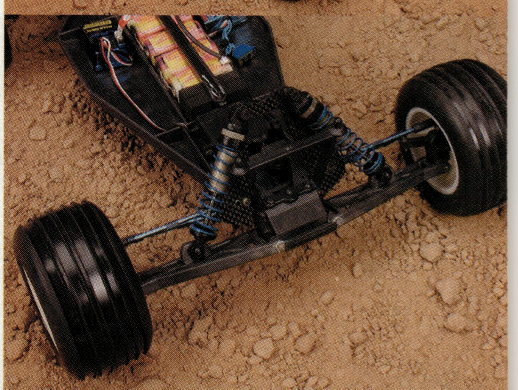
Rear Suspension:
Camber—1° negative
Rear ride-height—Bones level (MIP CVDs)
Toe-in/Anti-Squat—3-1.5

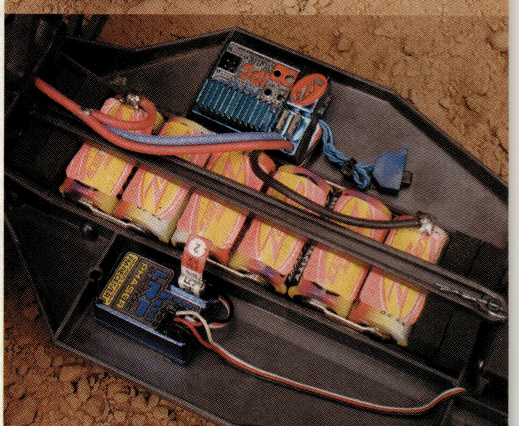
Rear Shocks:
Body—Gray 1.39
Shaft—1.32 Unobtanium
Limiters—1 inside/none outside
Piston—#1
Spring—Green
Oil—Associated 30wt.
Shock mounting position—E on tower/C on arm
Camber link—B on tower/G on arm

Electronics:
Motor type—Reedy ? (10x2)
Brushes—Reedy 760
Motor springs—Stock
Batteries—Reedy 2400 Zappers
ESC—LRP V7.1
Radio—Airtronics M8
Servo—Airtronics

Miscellaneous:
Front axle—Billy used the older 6220 GT front axle
Battery placement—Middle
Gearing—18/90
Slipper—Associated
Weight in bulkhead—1 oz.
Body—Associated T3
Front tires—Pro-Line Edge (M2) w/white foam
Rear tires—Pro-Line Holeshot (M3) w/white foam
Front wheels—1-piece
Rear Wheels—1-piece
Chassis—Graphite/long





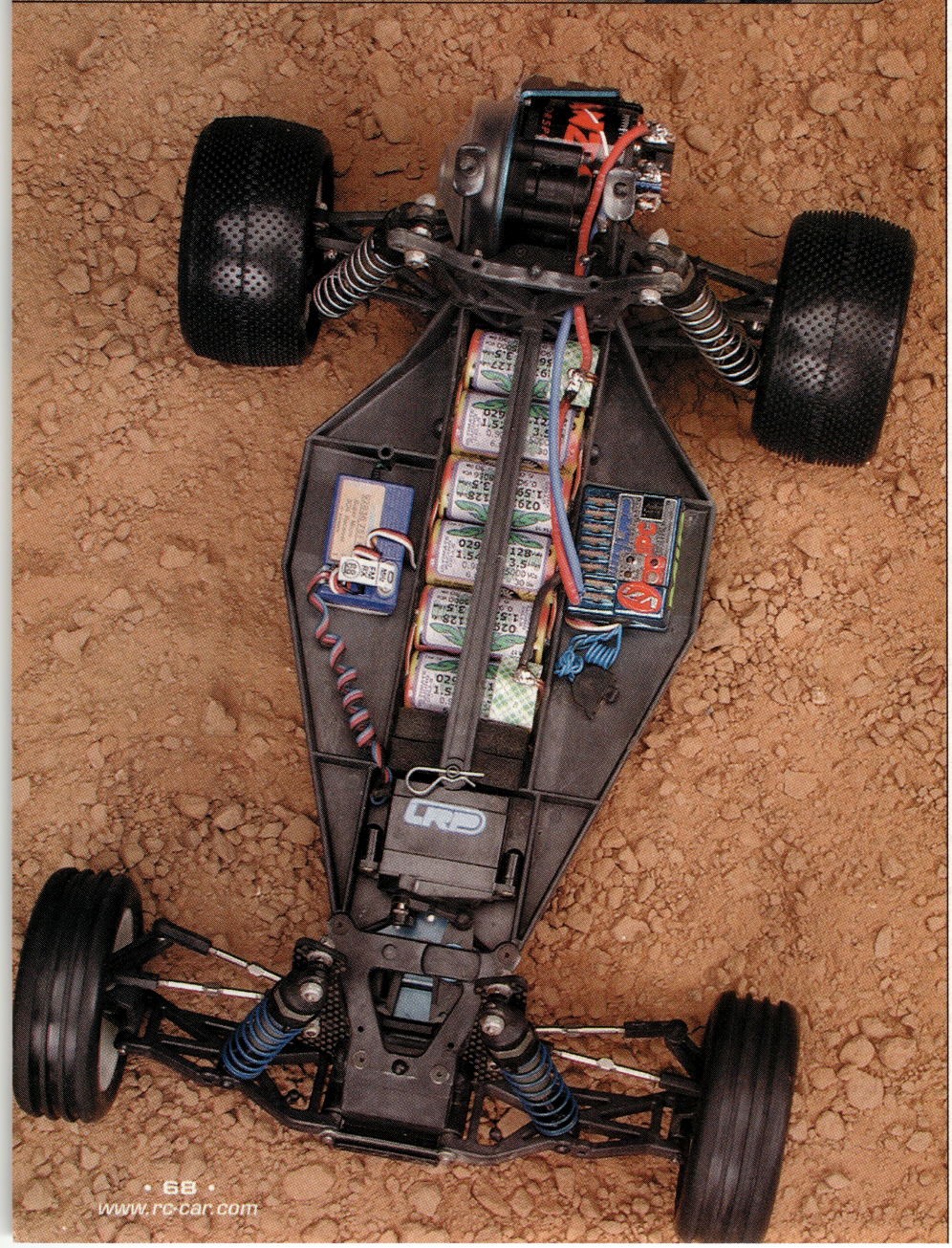




INSIDE THE REEDY RACE WINNING CARS







Vince Stolo's B3

Front Suspension:
Caster—25°
Front ride-height—Arms just below level
Camber—1° negative
Anti-roll bar—None
Front toe—0
Bump steer spacers—Yes-1 shim on bell-crank
Steering Ackerman—Standard

Front Shocks:
Body—Standard .89
Shaft—.71 MIP
Limiters—1 .030 inside/none outside
Piston—#2
Spring—Custom Blue
Oil—Associated 35wt.
Shock mounting position—D on tower/G on arm
Camber link—H

Rear Suspension:
Camber—3° negative
Rear ride-height—Bones level (MIP CVDs)
Toe-in/Anti-Squat—3-3

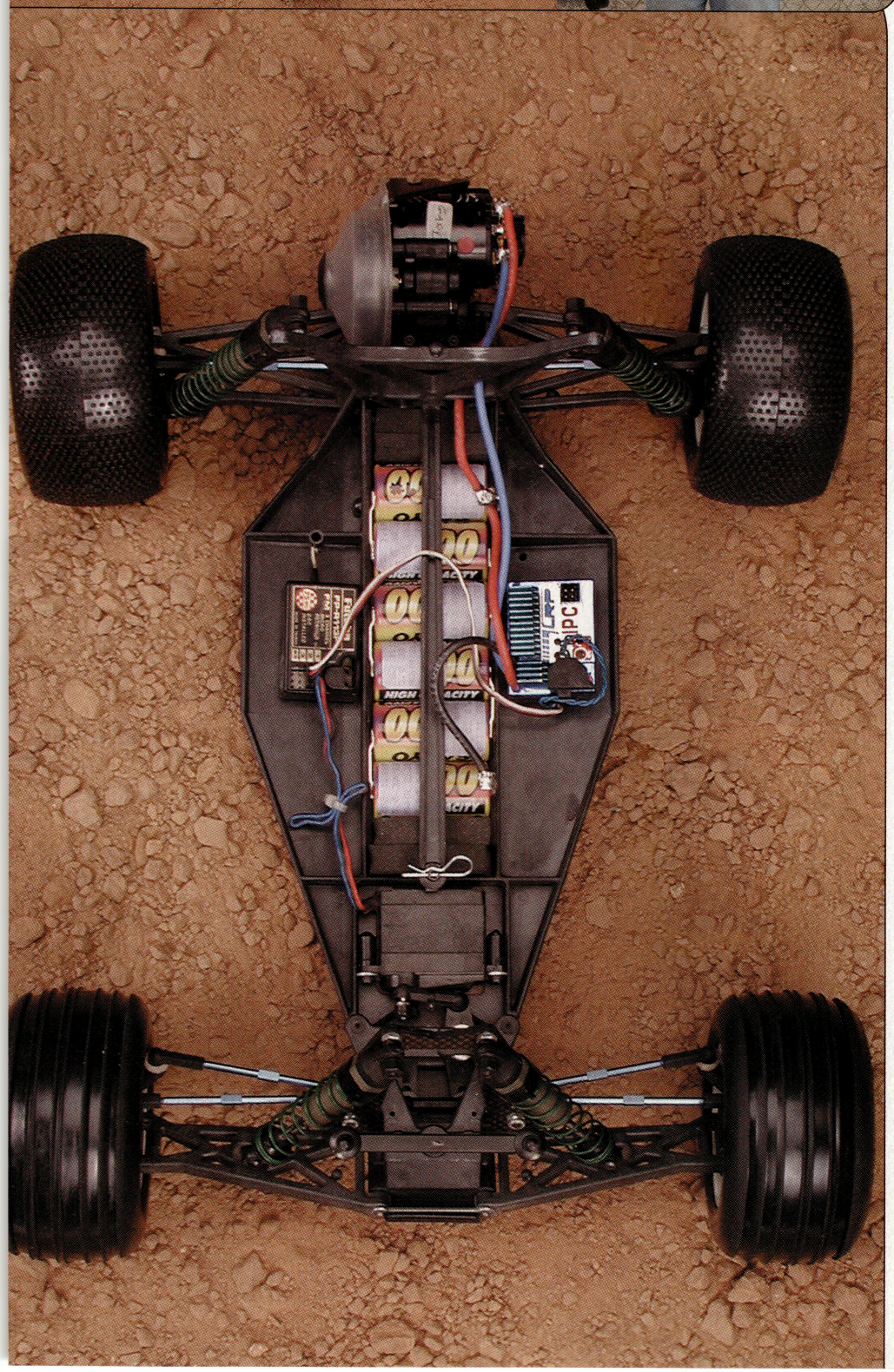
Rear Shocks:
Body—Standard 1.32
Shaft—1.02 MIP
Limiters—1 .030 inside/none outside
Piston—#1
Spring—Silver
Oil—Associated 30wt.
Shock mounting position—F on tower/C on arm
Camber link—B on tower/1 on arm

Electronics:
Motor type—Banzai (11x3)
Brushes—Race Prep
Motor springs—Stiff
Batteries—SMC 2400s
ESC—LRP V7.1
Radio—Airtronics 3Ps
Servo—Airtronics 357

Miscellaneous:
Battery placement—Middle
Gearing—19/81
Slipper—Associated
Weight in bulkhead—1 oz.
Body—ProtoForm B2 Blast
Front tires—Pro-Line 8176 (M3) w/white foam
Rear tires—Pro-Line 8089 (M3) w/white foam
Front wheels—1-piece wide
Rear Wheels—1-piece wide
Chassis—Graphite/standard







Jim Gard's T3

Front Suspension:
Caster—30°
Front ride-height—Arms level
Camber—1° negative
Anti-roll bar—None
Front toe—0
Bump steer spacers—.060"
Steering Ackerman—Standard

Front Shocks:
Body—Gray 1.02
Shaft—1.02 Unobtanium
Limiters—.030" inside/.030" outside
Piston—#2
Spring—Green
Oil—Associated 35wt.
Shock mounting position—D on tower/G on arm
Camber link—C

Rear Suspension:
Camber—1° negative
Rear ride-height—Bones level (MIP CVDs)
Toe-in/Anti-Squat—3-3

Rear Shocks:
Body—Gray 1.39
Shaft—1.32 Unobtanium
Limiters—.030" inside/.060" outside
Piston—#1
Spring—Green
Oil—Associated 30wt.
Shock mounting position—E on tower/
C on arm
Camber link—B on tower/G on arm

Electronics:
Motor type—Reedy ? (10x2)
Brushes—Reedy 760
Motor springs—Stock
Batteries—Pro-Match 2400
ESC—LRP V7.1
Radio—Airtronics M8
Servo—Airtronics 155

Miscellaneous:
Battery placement—Middle (lowered)
Gearing—18/87
Slipper—Associated
Weight in bulkhead—None
Body—Pro-Line Chevy
Front tires—Pro-Line Edge (M2) w/white foam
Rear tires—Pro-Line Holeshot (M3) w/white foam
Front wheels—Pro-Line 1-piece
Rear Wheels—Pro-Line 1-piece
Chassis—Standard long

Super Combo

TS4n SC SPORT

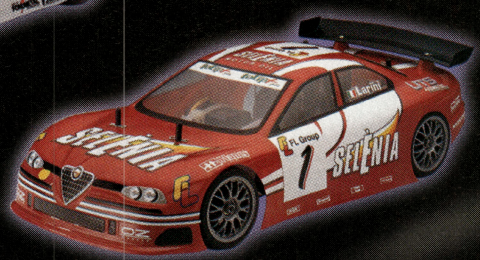
EB4 and TS4n:

1/10 Scale Nitro Powered 4WD Touring Car
Ready-to-Roar with Engine, Radio, and Painted Body



Dodge Viper

Mercedes Benz



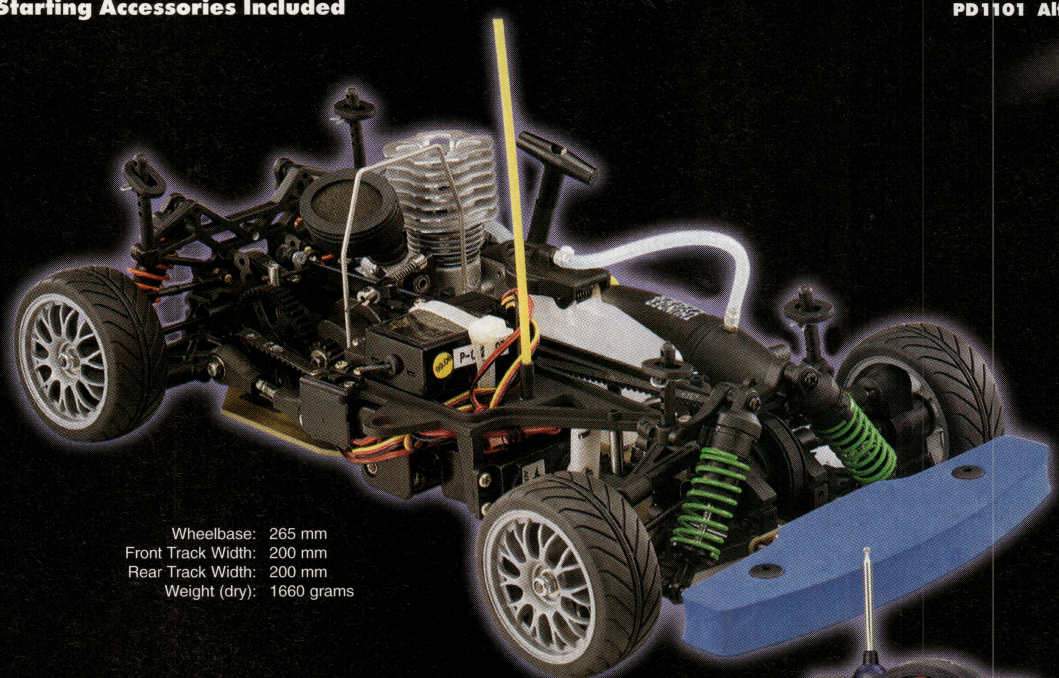
PD1101 Alfa Romeo

Body is Precut, Trimmed & Painted

Pistol Grip Radio is Included & Installed

Powerful PRO-15 Pull Start Engine Included & Installed

Starting Accessories Included



Wheelbase: 265 mm
Front Track Width: 200 mm
Rear Track Width: 200 mm
Weight (dry): 1660 grams



Radio Included and Installed

Starting Accessories Included

The TS4n Super Combo comes with either the Viper or Mercedes body. Seven other painted bodies are available separately.

TTR 6181-F TS4n Mercedes Super Combo
TTR 6186-F TS4n Viper Super Combo

For a retailer, visit http://acehobby.com/sources or call (660)584-7121
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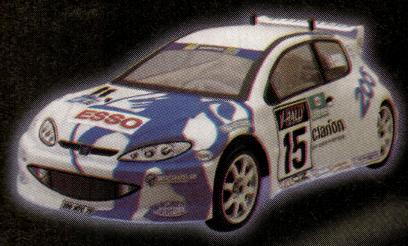
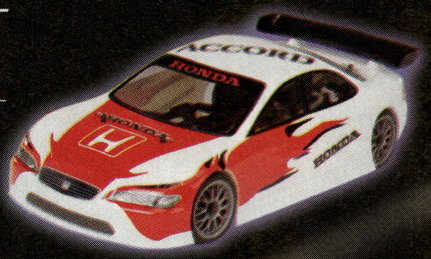
Ready to Roar!

Thunder Tiger TEAM INTERNATIONAL



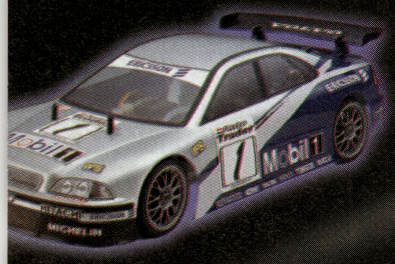
PD1071 Peugeot 206



PD1095 Honda Accord



PD1068 Subaru Impreza



PD1097 Volvo S-40



PD1091 Dodge Stratus

Body is Precut, Trimmed & Painted

Hitec Lynx Sport Radio is Included & Installed

High Torque Steering Servo HS-605 Installed

Powerful PRO-21 Pull Start Engine Included & Installed

Starting Accessories Included



PD1065 Ford Focus

Wheelbase:	Adj from 324 mm to 329 mm
Front Track Width:	Adj from 260 mm to 268 mm
Rear Track Width:	261 mm
Front Caster:	Adj from 18°-25°
Rear Toe-In:	3 Settings, 2°, 1.5° and 1°
Front Kick-Up:	5°
Rear Anti-Dive:	2°
Weight (dry):	3300 grams

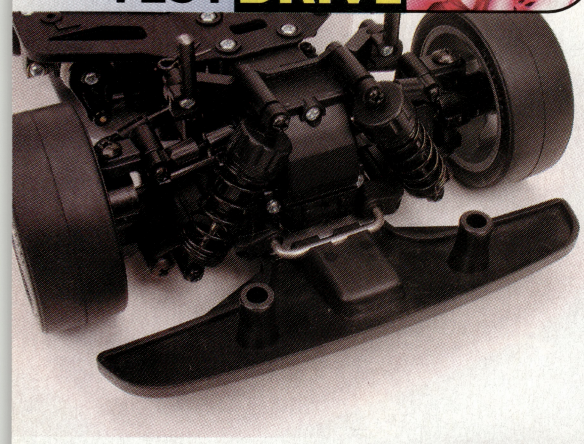
acehobby.com

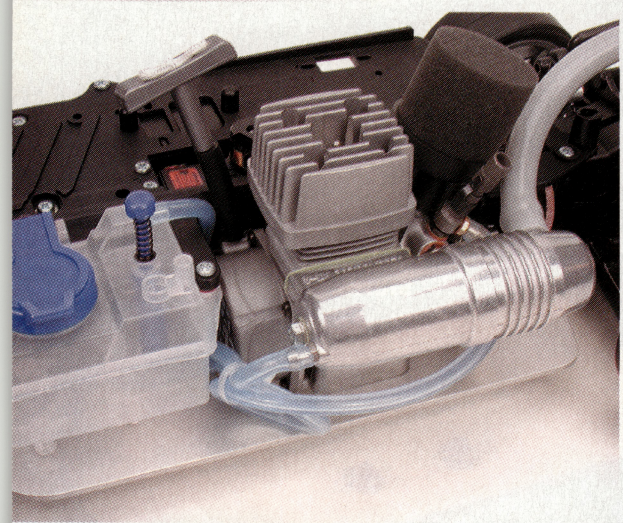
TTR 6201-F
EB4 Super Combo

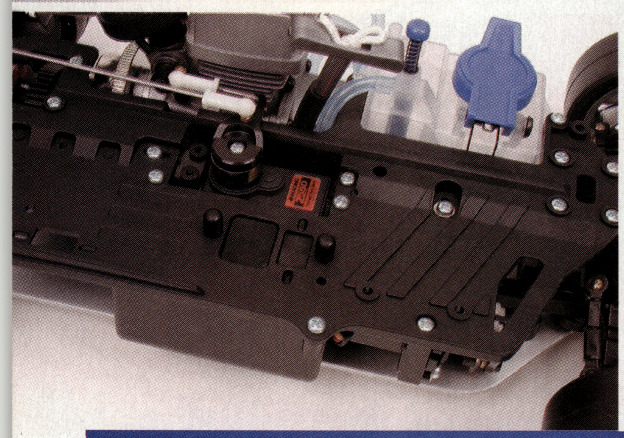
Super Combo EB4

1/8th Scale Nitro Powered 4WD Racing Buggy

Ready-to-Roar with Engine, Radio, and Painted Body

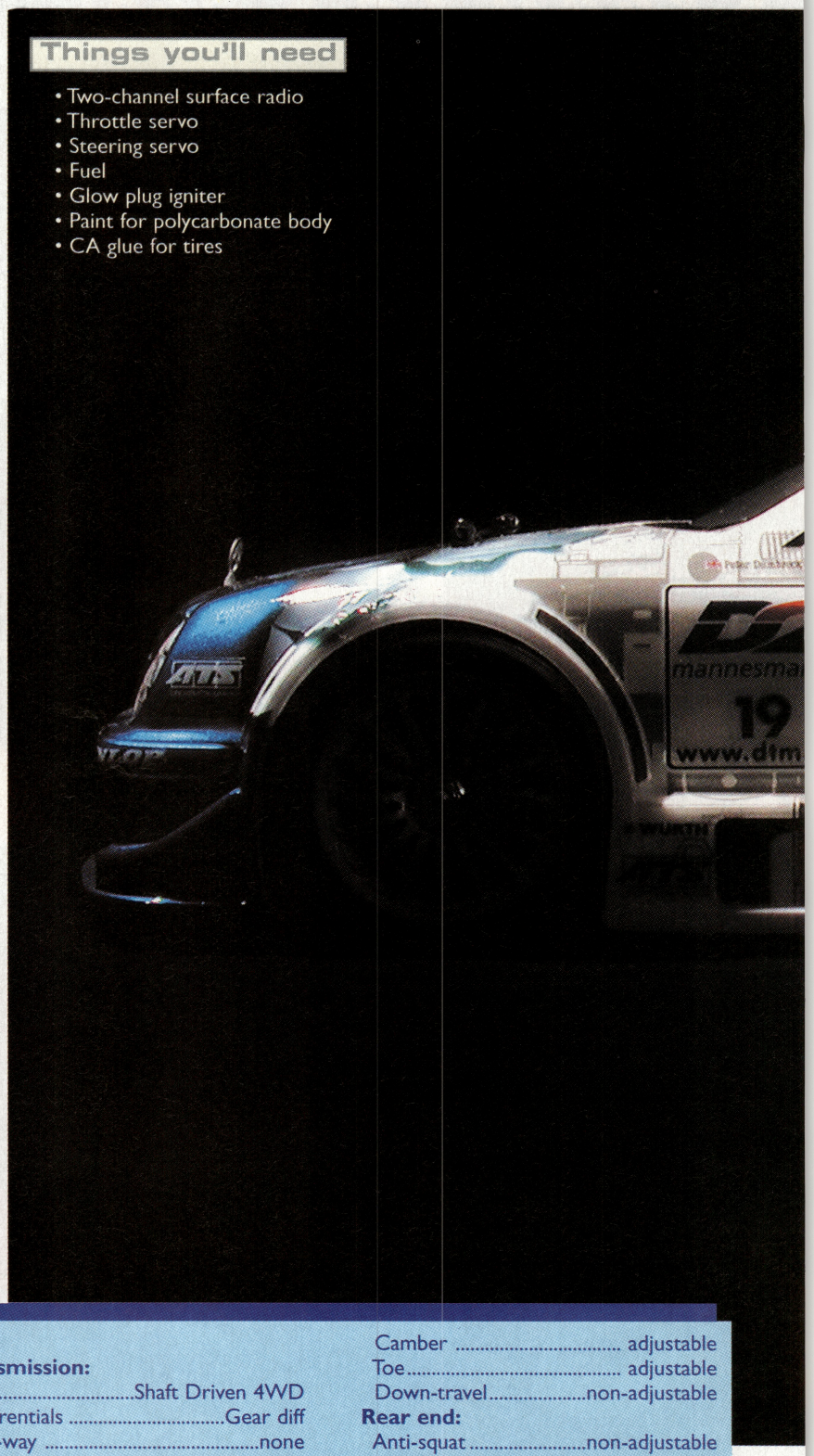






Things you'll need

- Two-channel surface radio
- Throttle servo
- Steering servo
- Fuel
- Glow plug igniter
- Paint for polycarbonate body
- CA glue for tires



SPECIFICATIONS

Type	4WD touring car
Scale	1/10
Retail price:	$385
Average street price:	$260-275
Length	449mm
Width	185mm
Wheelbase	257mm
Track	152mm(F)/146mm(R)
Weight (RTR)	3lbs., 11.3oz.
Weight w/o body	3lbs., 6.2oz.

Transmission:

Type	Shaft Driven 4WD
Differentials	Gear diff
One-way	none
Drive shafts	Dogbones
Bearings/bushings	Bushings

Suspension:

Type	independent lower A-arm
Material	molded composite plastic

Front end:

Caster	non-adjustable
Camber	adjustable
Toe	adjustable
Down-travel	non-adjustable

Rear end:

Anti-squat	non-adjustable
Camber	adjustable
Toe	non-adjustable
Down-travel	non-adjustable
Shocks	plastic bodies
Springs	Stock Black
Wheels	Stock
Tires/inserts	Stock
Body	Mercedes-Benz CLK DTM

Vee haff vays uf makink it fast!

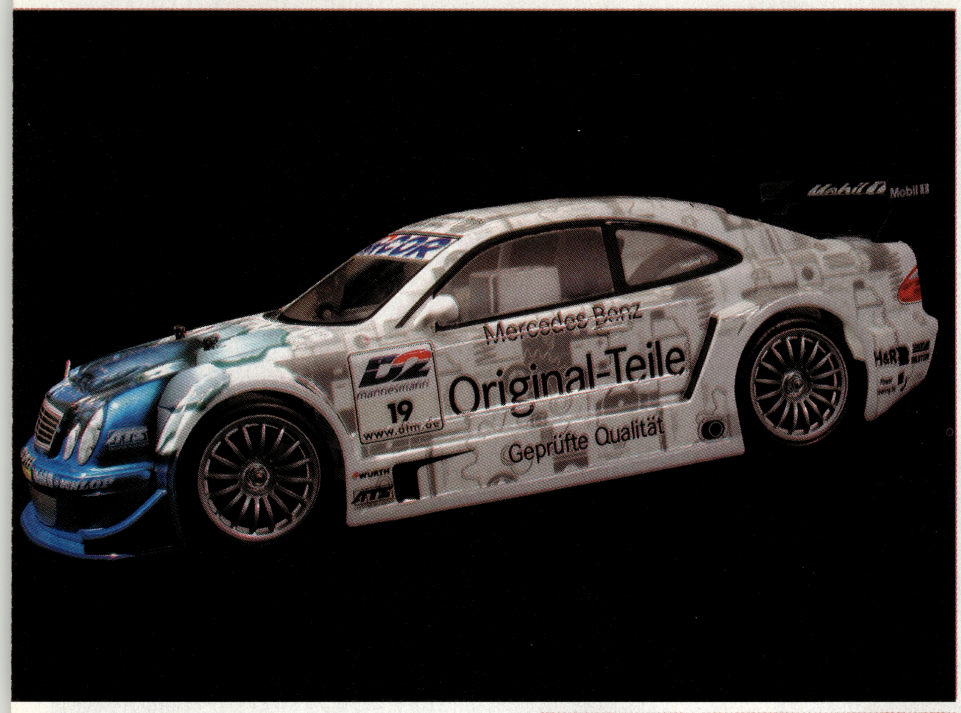


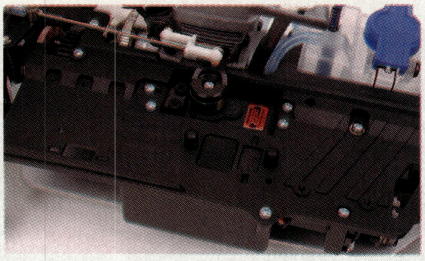
TAMIYA
TG-10 Mk.I Original Teile Mercedes-Benz CLK DTM

by Chad Geissler

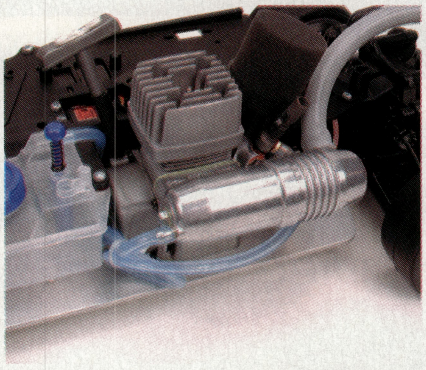
Are you looking for some of the closest, most exciting racing on the planet? Then you need look no further than the *Deutsche Tourenwagen Meisterschaft*! Huh? The German Touring Car Championship, the DTM, duh. After a five-year hiatus the DTM is back to thrill race fans all over the world. The New DTM has been reconstructed to emphasize cars that are more true to their road going brethren than those of the no-holds-barred series of the 1990s. Let's face it; you couldn't go to your local Opel dealer in the late '90s and roll out in a DTM-bodied Calibra. In fact you couldn't even go to your local Opel dealer because they weren't imported to the U.S. (oh, I forgot...we drive cars like the Taurus, the Monte Carlo, and the Lumina...true race machines).

Towards the end of the first DTM series, team budgets were rivaling those of Formula 1—in fact, some teams spent more racing in DTM. The current regulations are designed to keep spending in check and specify that teams must maintain the factory metal roof, side panels, and doors. Motors can be massaged but are restricted to 450 horsepower. In its first year back, driver Bernd Schneider won the championship in his factory-backed Original Teile CLK. You want real door to door racing that makes right turns, then check out the DTM series! And if this style of racing sounds right to you, then thank Tamiya. Why? Well, they've authentically recreated the championship-winning Mercedes driven by Schneider —and they based it on their cool nitro TG10 chassis!

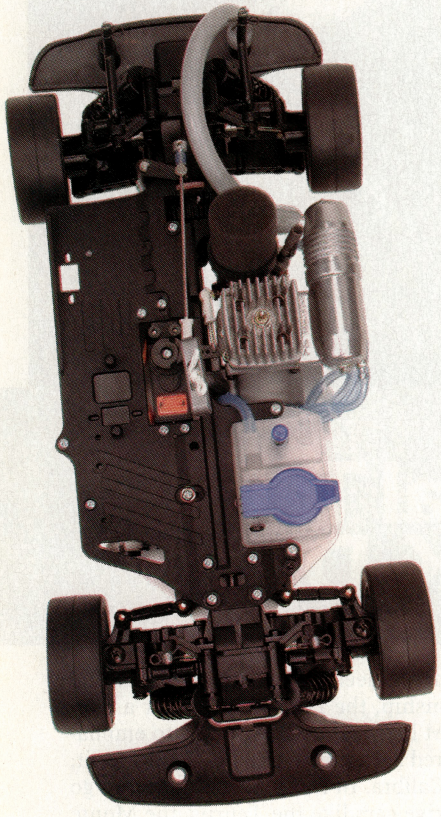


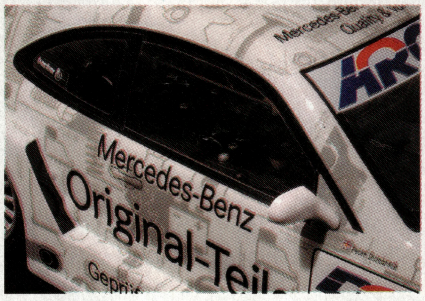


A molded radio tray houses the throttle and steering servo as well as the receiver batteries.



The TG-10 comes equipped with Tamiya's FS-12LT pull-start engine and standard airplane-style muffler.





The Original Teile Mercedes body set has over 1,000 decals—well, maybe not, but it does have a ton of 'em. The end result is worth the work though.



Check out the decal on the hood—we've decided that this body kit is the coolest Tamiya has ever produced.

LIKES

- Incredible body with more stickers than you can shake a stick at.
- Motor is included so it's easy for novice nitro drivers to get up and running quicker

DISLIKES

- Wish the car came with adjustable turnbuckles instead of threaded links.
- As with most Tamiya kits, we found that the TG10 has some play in the suspension and steering.
- All nitro cars should come with a full set of bearings.

CONCLUSION

Nothing sounds like a nitro car—and come to think of it, nothing smells like a nitro car either! If you have never experienced the thrill of racing nitro touring cars, then this is the perfect kit for you. With hop-ups it can be a competitive car on the track but in its kit state it's a perfect beginner car. ◆

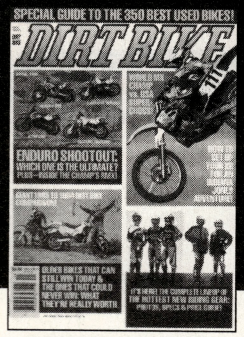
SOURCES

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

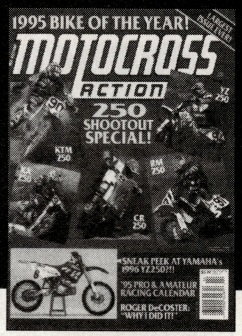
Multiplex, 560 Library St., San Fernando, CA 91340 • (818) 785-2401; (818) 785-3946 (fax)

TG10 Mk.1—CHASSIS AT A GLANCE

● Based on the TG10 Pro, the Mk.1's shaft driven 4WD system delivers power to the ground through gear differentials. Power is supplied by Tamiya's FS-12LT pull start engine that is included in the kit. The double deck chassis consists of a 2.5mm Duralumin lower deck and a fiberglass reinforced plastic upper deck providing ample rigidity. ●



THE SUPER 8 OFF-ROAD MAGAZINES!



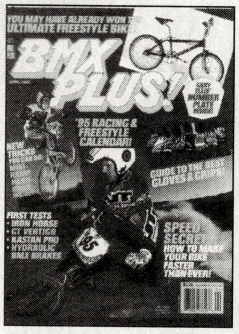


◄ DIRT BIKE

The original, the genuine, the leading authority on off-road motorcycling for almost 25 years. From racing to fun riding, ***Dirt Bike*** covers it all in an editorial style that's both informative and entertaining.

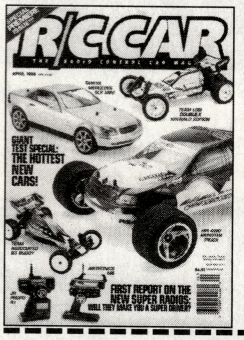
◄ DIRT WHEELS

For over ten years, ***Dirt Wheels*** has been the leader in all-terrain vehicle fun. Covering all aspects of riding from high-performance to family outings, ***Dirt Wheels*** is your perfect guide to off-road adventure.



◄ BMX PLUS!

A longtime favorite among the world's young cyclists, ***BMX Plus!*** thrives on fun and excitement. From the hot action of BMX racing to the radness of freestyle, this is ***the*** magazine that rules!



◄ R/C CAR

R/C car enthusiasts can count on this being the most complete magazine available. On- and off-road, backyard thrashing to serious club and international racing ◄this magazine covers it all!

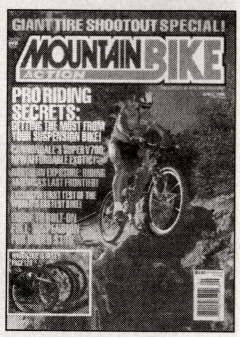
MOTOCROSS ACTION ►

Putting you up close and in the middle of the world's most exciting sport, ***Motocross Action*** receives worldwide acclaim as the official racer's handbook. If you're looking for action, this is it!



ATV 4-WHEEL ACTION ►

With an emphasis on high-performance action, this is the magazine that takes you to the victory circle in the exciting world of ATV racing. From cross-country to speedway, ***ATV 4-WHEEL Action*** is on the gas and likes it!



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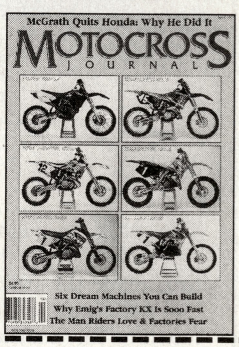

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PROJECT SCHUMACHER NITRO

Hopping up the fastest gas truck by Shannon Hudson

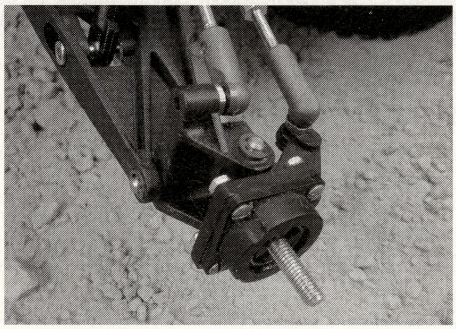
When I first reviewed the Schumacher Nitro Xtreme .21, I thought it was a blast to drive! It had insane horsepower, did long wheelies, and threw huge roosts.



The HPI Hummer body looks intense sitting on the Schumacher .21 Xtreme.

The only problem with the truck was that the included tires made the truck sit a little low—the ground clearance was too low for backyard bashing and the truck often got stuck on the smallest obstacles. Then the wheels start spinning (the ones in my head, that is, not on the ground) and I started thinking "hmmm, what can I do to this truck to make it better, stronger and faster"—kind of sounds like a Six Million Dollar Man episode.

First I thought about slapping on some Pro-Line paddle tires and making it into a sand dune machine. Then I thought to myself that I really don't go to the dunes that often and this thing is just too much fun to just leave sitting on the shelf that long in between runs. So I decided to give the truck a lift and go for some of the new Masher Pro-Line monster truck tires for 2.2 wheels. I noticed right away that by adding the new tires I would have to cut the Schumacher body out so much that it would make the truck look goofy. Luckily for me I started explaining this little project idea of mine to Doogie. Since he is such a monster truck fan, he



To help keep the hub from ripping off under stress, the author used 2.5mm bolts with locknuts to help keep it in place.



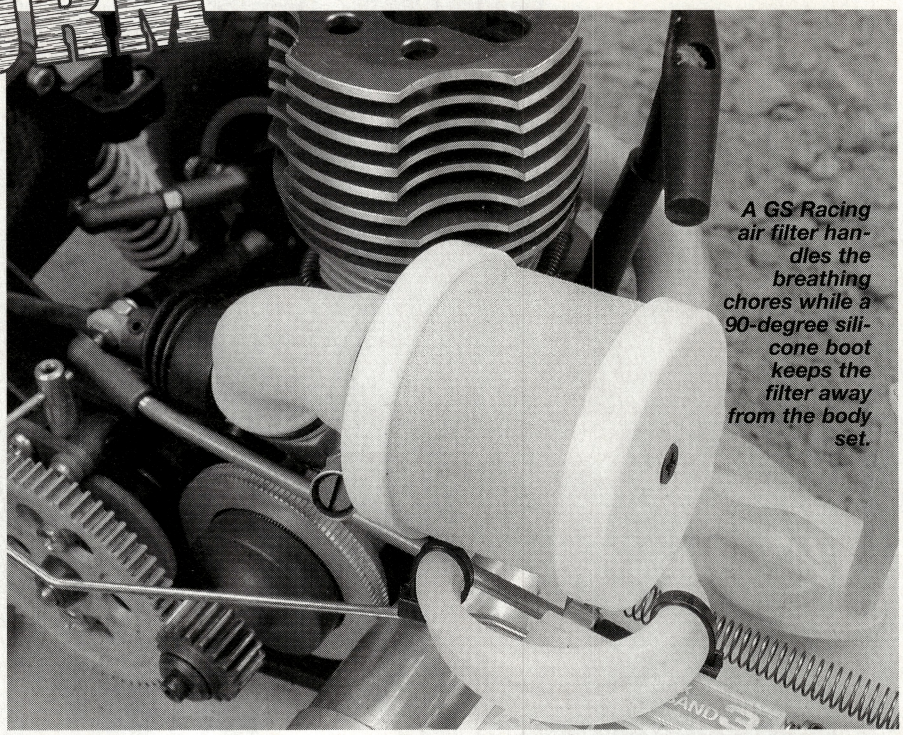
The Pro-Line Dirt Works tires compliment the scale-looking HPI Hummer body, but most importantly they add much needed ground clearance.

XTREME DESERT STORM



DESERT STORM

came up with a good idea—"Isn't that truck also called the Desert Storm?" he asked. "Yeah," I said, "it's called the Schumacher Nitro .21 Xtreme Desert Storm...why?" "Well," he replied, "I just got one of the new Hummer 1/10-scale truck bodies from HPI and I thought Desert Storm... Hummer... Schumacher..." "I get it. Cool, thanks Doogie, I'll come by and pick it up." I'm pretty sure that when he told me he had that body that he meant I could have it, right? Hope so... With the body in hand I started working on fixing up the truck for more rigorous off-road activity.



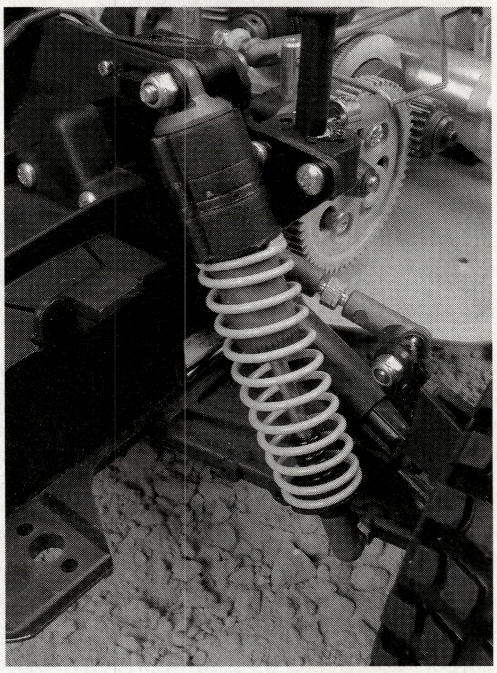
A GS Racing air filter handles the breathing chores while a 90-degree silicone boot keeps the filter away from the body set.

Here is a quick list of what I installed and what modifications I did.

- Pro-Line Dirt Works Tires for 2.2 wheels.
- Schumacher hard coated alloy shock bodies and spring kit (Part #U1358 rear/Part #U1356 front)
- HPI 1/10-scale Hummer body (Part #7161)
- GS Racing offset intake boot and air filter
- GS Racing fuel line

One tip I found that works well with the Nitro Xtreme is to beef-up the front end—especially with what I was doing! To help withstand the stresses of the bigger tires I installed small 2.5mm bolts in the front two-piece hub carrier assembly and secured them using lock-nuts instead of using the stock self tapping screws (which have a tendency to strip out). The only thing that needed to be done to finish off the project after that was to trim out the body a bit—it needed to be trimmed out around the exhaust header and the pipe, and some minor cutting also had to be done around the cylinder head. Serge over at GS Racing hooked me up with some of their high-quality fuel tubing and a necessary intake boot that relocated the air filter away from the body.

Whenever you install larger tires on an R/C car or truck you usually have to change the gearing of the vehicle to compensate for the higher rotating mass of the large tires. No gearing change was needed on the Schumacher, though, because of the horsepower of the Thunder Tiger .21 engine. The larger tires actually give the truck a greater top speed without sacrificing much bottom end. We will have to get out the radar gun and see if we can break into the 55 mph range. Rumor has it that Schumacher is coming out with a three-speed transmission intended for their 1/6-scale Lotus car, and I was told that it will bolt right onto the Nitro Xtreme! Maybe I can set a Guinness world record for the fastest 1/10-scale R/C monster truck. The Pro-Line tires really gave the Schumacher truck the much needed ground clearance to help it go where it never could have gone before. Although the plastic shocks work just fine since this isn't really a race truck, I opted for the hard anodized shock bodies and spring tuning kit. I installed these to add some flash and to satisfy the racer in me, and they do seem to be a lot smoother. Overall, the modifications I performed made this already fun truck even more fun. I guess it was just another one of those "you can't leave well enough alone" situations. Who knows, maybe Schumacher will come out with an all new Nitro Xtreme MT. After watching my truck go, I think they should... ◆



Schumacher's alloy shocks are more durable and are able to withstand more abuse than the stock plastic shocks.

SOURCES

HPI Racing, 15321 Barranca Pkwy., Irvine, CA 92618 • (949) 753-1099; (949) 753-1098 (fax)
GS Racing, 650 W. Duarte Rd., Suite 205, Arcadia, CA 91007 • (626) 445-6036; (626) 445-6084 (fax)
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Things you'll need

- .12 non-pull-start engine (side- or rear-exhaust)
- Manifold, pipe and coupler
- Two-channel surface radio
- Throttle servo
- Steering servo
- Five-cell battery pack for radio
- Battery charger
- 200mm sedan-style body
- Polycarbonate paint for body
- CA glue for tires
- Starter box or wheel

SPECIFICATIONS

Type.....4WD nitro-powered touring car
Scale.....1/10
Price.....$TBA—retail;

Length.....14.8in/377mm
Width.....7.9in/200mm
Wheelbase.....10.2in/260mm
Track (F/R).....6.8in/173mm
Weight w/o body.....1700 g.

Transmission
Type.....belt-driven full-time 4WD
Differentials.....four-gear bevel (F/R)
One-way.....no
Driveshafts.....steel dogbones/steel axles
Bearings.....metal-shielded ball bearings

Suspension
Type.....independent upper/lower A-arm
....(front), lower H-arm/adj. upper link (rear)
Material.....molded composite
Front end
Caster.....adjustable between 6-14 deg.
Camber.....adjustable
Toe.....adjustable
Down-travel.....adjustable (up-travel also)

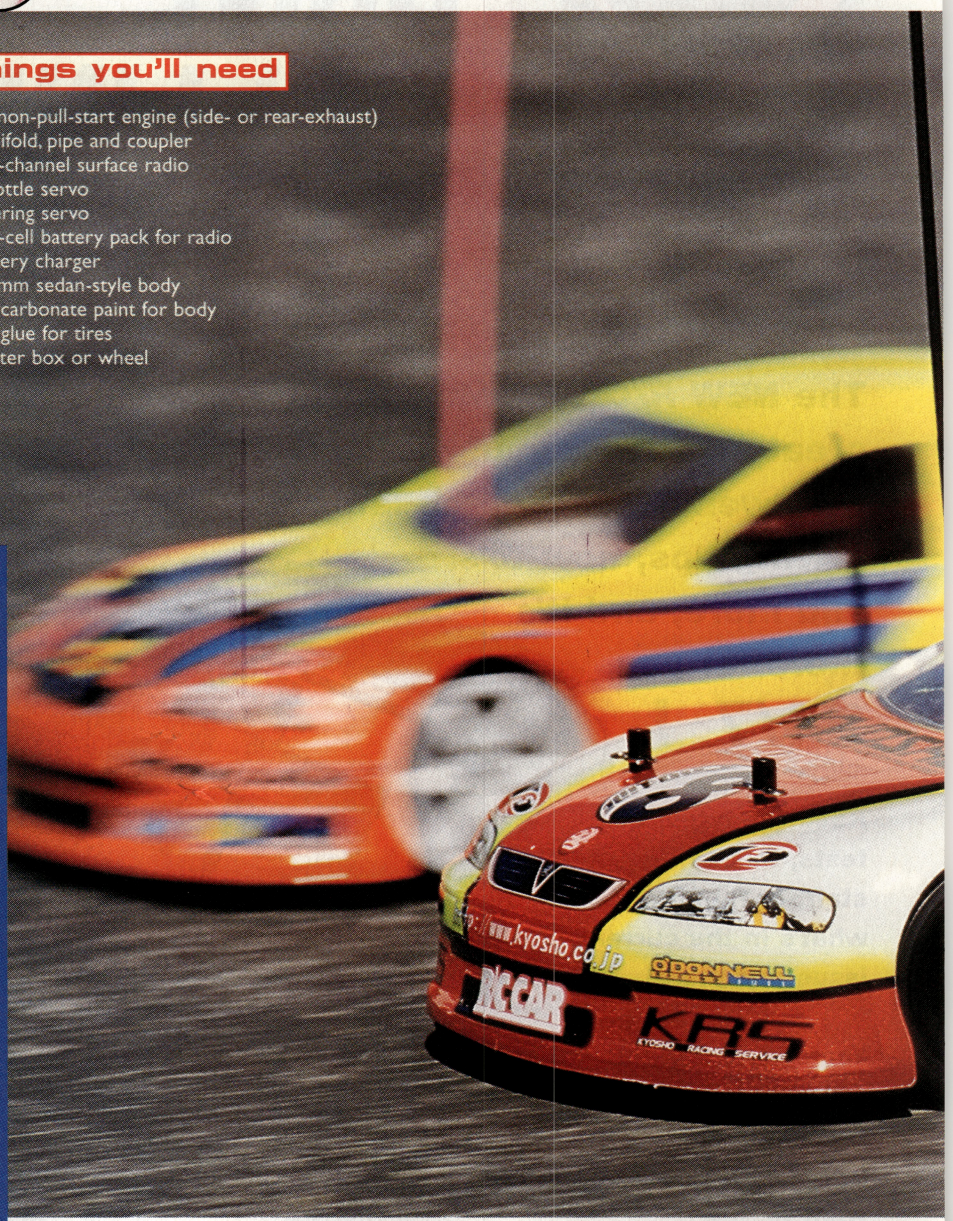
Rear end
Anti-squat.....non-adjustable
Camber.....adjustable
Toe.....adjustable
Down-travel.....adjustable (up-travel also)

Shocks....hard-anodized aluminum dampers
.....w/threaded bodies.
Springs.....Kyosho firm short black (front),
.....medium black (rear)

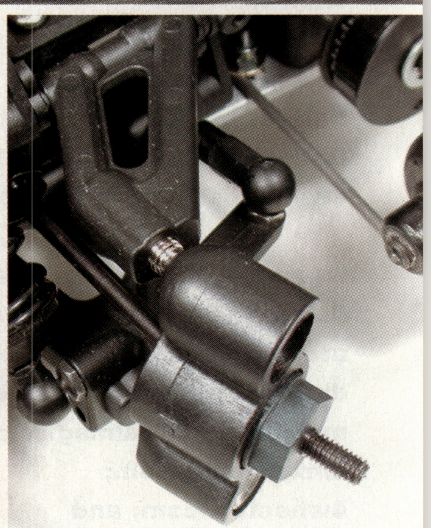
Wheels.....15-spoke black nylon "aero"
Tires.....Kyosho V-Slick M-35SN
Inserts.....open-cell foam donut (medium)

Body.....not included

Engine.....not included
Manifold.....not included
Pipe.....not included
Clutch.....two-shoe w/spring

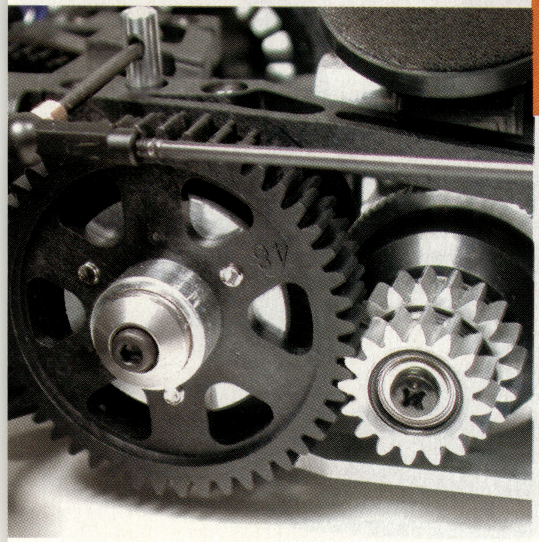






Straight from Japan to the winners' circle





KYOSHO V-ONE R

Kyosho is a company in the middle of a vast re-invention. With the release of the Ultima truck and buggy series, Kyosho has delivered on its promise to once again become a force to be reckoned with in 1/10-scale racing. With a solid off-road presence, a good electric touring car (the TF-4) and perpetual dominance in 1/8-scale (the MP-7.5), the only thing missing in the Kyosho lineup was a competitive nitro touring car.

Times have changed a lot since Kyosho introduced the first "narrow" nitro touring car, the Spider GP, in the early '90s. Although that car still soldiers on as the Spider Mk. II, it simply isn't in the same league as today's crop of serious race machines such as the Serpent Impulse, Mugen MTX-2 and Yokomo GT-4w. One look at the new V-One R, with its pillow-ball suspension and low CG, shows that Kyosho has been studying the competition. But being the last contender to enter the ring means that you've had time to study the strengths and weaknesses of your opponents, and in this case, Kyosho has taken the best features from existing designs and infused them with its own engineering cleverness to create a truly memorable machine.

KYOSHO **V-ONE R**

Features

■ Chassis—The V-One R has a 3mm-thick lower chassis plate made from 17S hardened Duralumin. All of the screw holes underneath the chassis are countersunk, and the engine-mount holes are recessed to prevent the screws from scraping the ground. The upper chassis deck is made from black FRP (fiberglass-reinforced plastic) and fits into recesses in the front bulkheads and rear standoffs. As it is keyed to these parts, only six screws are used to secure the deck in place, making it very easy to remove for maintenance. Yet when assembled, the entire chassis structure is very rigid, even when the left-rear brace is omitted (necessary when a rear-exhaust engine is used).

■ Weight distribution—This is what sets the V-One R apart from the competition. The steering servo, fuel tank and battery pack are lined up perfectly down the center of the chassis. Not only does this reduce rotational mass for faster cornering, but because the fuel tank is also centered, the car's balance from left to right remains unaffected by fuel level. The fuel tanks in the Yokomo and Mugen cars are offset, and although its fuel tank is centered, the Serpent's battery pack is mounted on the right side of the chassis.

■ Drive train—The V-One R 4WD system is standard specification for this class; three reinforced belts, a gear diff at each end and a layshaft placed just behind the engine. Where the Kyosho differs from the others—with the exception of the Serpent—is that it uses short belts at the front and rear, and a long center belt to connect them. Not having to provide clearance for a long front belt is how Kyosho was able to locate most of the car's weight along the center of the chassis.

Although the diffs appear rather standard, inside are heavy-duty metal bevel gears similar to those in the 1/8-scale Inferno series (so you know they're built to take it). What we liked was that it's possible to change the front diff pulley without having to open the diff. Kyosho may offer pulleys of different sizes to allow you to over- or under-drive the front wheels depending on track conditions. Both diffs are O-ring sealed and can be filled with thick silicone fluid. Kyosho includes a bottle of 50,000 wt. for the front. You mix this fluid with included 50 wt. shock oil 50/50 for the rear diff.

■ Two-speed—Most two-speeds have a steel lever that opens up as rpm increases, engaging the inside of the

Performance

Location: Ventura Roadrunners, Camarillo, California
Weather: Sunny and warm.
Track condition: Slightly dusty asphalt. ["Grape soda" traction additive.]

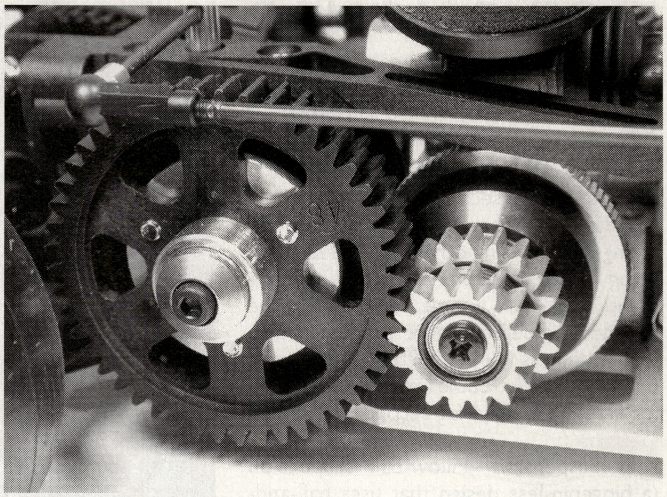
● Although we received our V-One R with less than three days before deadline, we were still able to spend a full day testing at our local road course. And if that weren't enough, two Kyosho team drivers were also at the track testing their V-One Rs. A great opportunity to compare notes and opinions.

■ **Traction**—We strive to test each car in its out-of-the-box form, and this includes tires, wheels and inserts (unless we are absolutely sure that the stock tire/insert combination will prohibit a fair performance evaluation). So we glued the Kyosho's belted slicks to the 24mm wheels, and used the kit's open-cell foam inserts. These tires surprised us with their phenomenal traction on regular pavement (during the photo shoot), and provided very good traction on the track. We tested several brands and styles of tire, but kept coming back to the kit tires. One of the Kyosho drivers told us that the V-One R's tires were the same as the Pit Shimizu tires that are very popular with sedan racers. Our preference would be the kit tires but with firmer inserts. The medium inserts had too much "give," and tended to reduce the car's rolling speed through the turns.

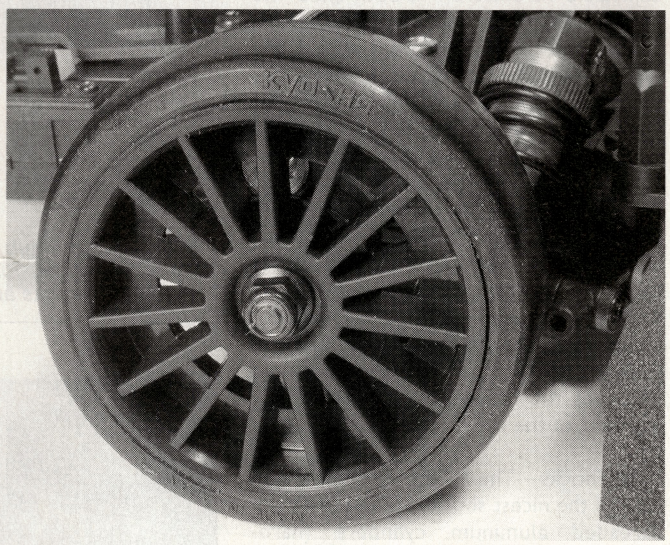
■ Steering—We are going on record as describing the V-One R as having the most responsive steering of any nitro sedan we've tested to date. The car has impeccable balance with lots of turn-in and very stable exit steering. Although we've only scratched the surface of the V-One R's tuning capability, we had enough track time to fine-tune the car. The rear tires were prone to breaking loose when exiting the tight turn which led to the main straightaway. With the horsepower of the rear-port Mugen/Novarossi engine, this was not a surprise. But by increasing the rear toe-in from one degree per side to two degrees, the car felt much more locked-in. We also played with the front camber, and found that leaning the tops of the front wheels inward to 1-1/2 degrees improved steering when entering fast turns, and further enhanced stability under acceleration.

■ **Braking**—The V-One R uses a thin steel brake disc that's clamped by a pair of fiber pads. In terms of overall stopping power, we felt that the Kyosho's brakes were good, but not as good as those of the Mugen MTX-2 we tested last month. Brute force aside, the V-One R's brakes are nearly fade-free and easy to modulate. The linkage setup also responds precisely to minute changes in the radio's brake-travel settings. The best feature of the Kyosho's brakes, and this is in combination with the excellent chassis balance, is its ability to steer under heavy braking. Our test track's main straight is long enough for the car to shift into second and reach speeds in the area of 50 mph. The straight ends with a tight right-hand sweeper. With most cars we've tested, you must brake hard before you begin to turn or else you'll push straight off the track. The V-One R allows you to brake hard all the way into the apex of the turn without lockup or understeer.

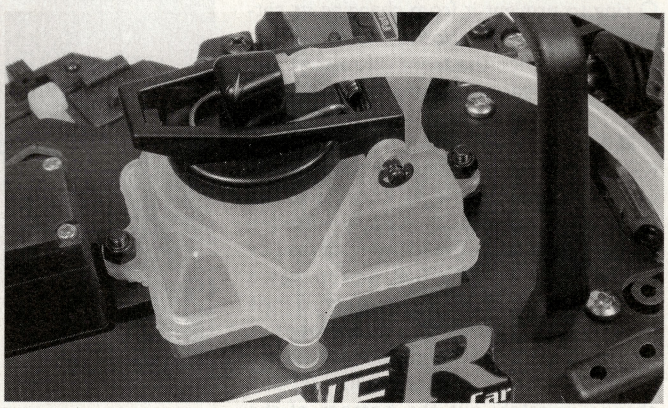
■ **Durability**—The best feature of today's pillow-ball style nitro sedans is that they are as tough as an NFL lineman. The V-One R is no exception. We tumbled upside-down at 40mph into an unforgiving track barrier, we slammed headlong into a 4x4 wooden track barrier and were hit from the rear by another nitro sedan, and emerged with nary a scratch. Modern nitro sedans must be built to withstand punishing hour-long main events, and the V-One R is as tough as they come. ●



The kit includes this two-speed transmission. Inside are a pair of semi-circular clutch shoes that provide smoother shifting and longer parts' life. The clutch-bell's pinions thread into place for easy gear changes.



Kyosho's new reinforced slick tires with medium foam inserts provided exceptional traction on our dusty asphalt test track. The 15-spoke black wheels look awesome, and still allow for access to the suspension for adjustments.



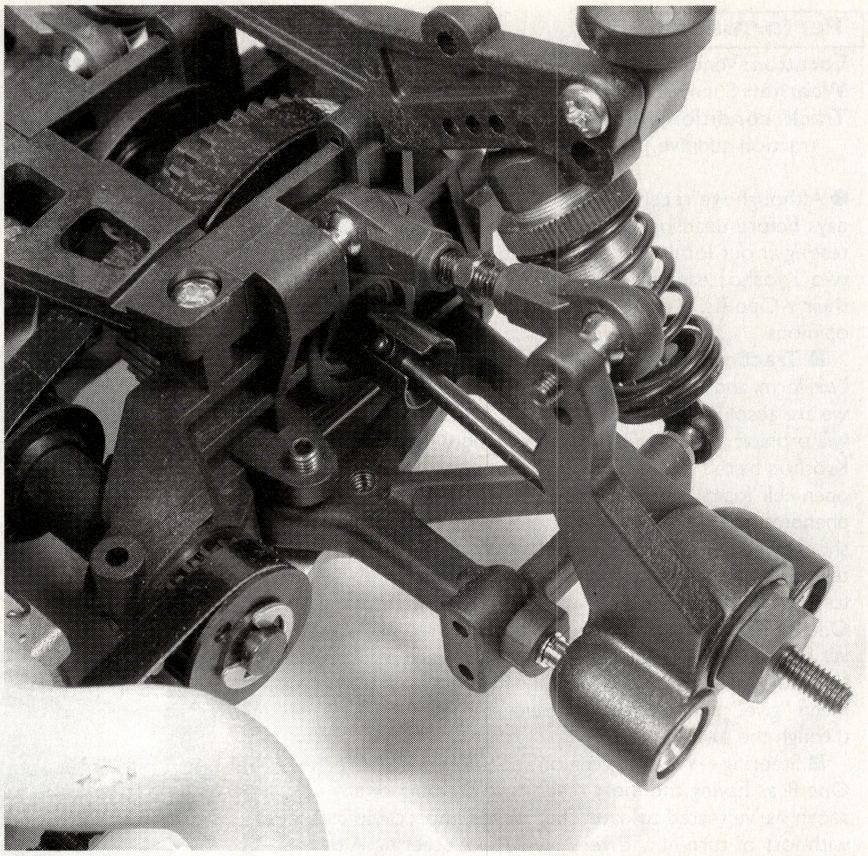
The V-One R's 75cc fuel tank features a series of internal "bulkheads," or baffles, which prevent the fuel from foaming due to engine vibration. A molded-in "gutter" sends spilled fuel out and away from the electronics.

smaller spur gear to change ratios. These systems have been around for years, and work well, but their shifting mechanisms are prone to wear. The V-One R's two-speed uses a pair of large, semi-circular clutch shoes to engage second. The shoes are held together by a pair of tiny capscrews and springs. As with any other two-speed, tightening spring tension delays the shifting point. With such a large surface area, the Kyosho unit delivers more precise shifting, less harshness during shifting and greater durability. The kit comes with a 16/48 ratio for first and a 20/44 for second.

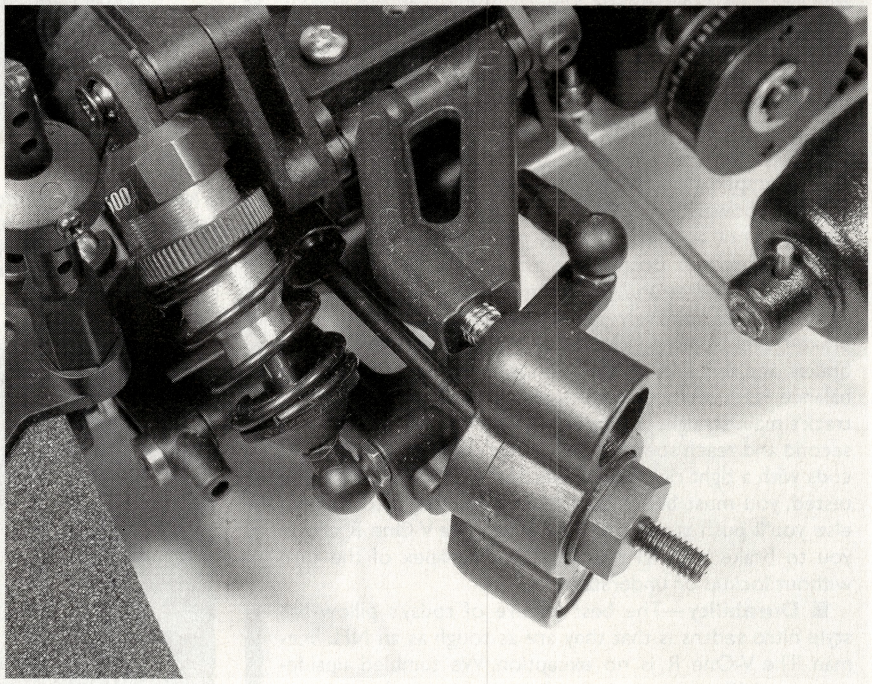
■ Suspension—Pillow-ball suspension (a hingepin-less design that uses ball-and-socket links) is the current rage in 1/10-scale nitro touring cars, and Kyosho's version has a few standout features. First, up and down travel of the lower wishbones is adjustable via setscrew at both ends—no need to fiddle with shock length. Up front, caster angle is adjustable between 6 and 14 degrees (in 2-degree increments). Depending upon the height of the body you choose (the V-One R doesn't come with one), you have a choice of front shock towers. The standard low-profile tower has but one mounting choice for the front shocks, but if there's enough "under-hood" clearance, an optional tower provides three holes. The rear hub carriers are extra tall and serve to raise the rear roll-center closer to the car's center of mass. This increases rear roll-resistance and improves the balance between the front and rear of the car.

■ Shocks—The V-One R comes with four of the nicest shocks we've seen. With threaded aluminum cylinders (hard-anodized for durability), smooth Teflon pistons and shaft guides, and rubber bladder seals (to keep the oil and air separate), these shocks are ultra-smooth and easy to adjust (the spring's pre-load nut uses an O-ring to prevent it from changing its setting during a run). Kyosho includes short black springs for the front (ultra-stiff) and longer black springs for the rear (stiff).

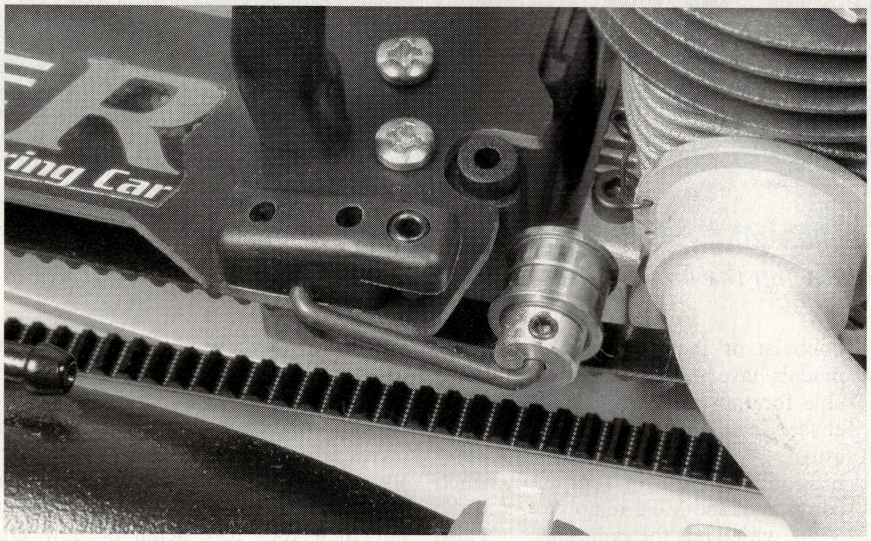
■ Fuel tank—This is a new design for Kyosho, and we're seeing it first on the V-One R. The ROAR-legal 75cc tank has innovative bulkheads actually molded inside it to reduce fuel foaming caused by engine vibration. The fuel pickup has a sintered-metal filter to prevent debris from finding its way to your expensive engine. Outside the tank, there's even a molded "gutter" to catch spilt fuel and channel it safely out the bottom of the chassis. And we must comment on the tank's flip-top lid, which has the strongest closing spring we've ever seen, so you'll be sure that the lid is sealed properly after those quick pit stops.



In the rear, the hub carrier is attached to a beefy lower H-arm via a pair of pillow balls. This allows for adjustment of rear wheel toe-in. Kyosho's new threaded aluminum shocks are, in a word, awesome.



Rugged upper and lower wishbones comprise the front suspension. In addition to camber and toe-in, you can also adjust caster from between eight and 12 degrees by varying the placement of the upper wishbones' spacers.



As the V-One R is intended to be a top-shelf race kit, all the "extras" are included, such as this adjustable tensioner for the long center belt.

Building Tips

Step 9: Be sure that you install the 19-tooth belt-pulley to the spur-gear shaft. There are two 19-tooth pulleys and one 18-tooth.

Step 10: Again, use a 19-tooth pulley on the end of the spur-gear shaft. The smaller 18-tooth pulley is used for the forward layshaft.

Step 14: When bolting the larger 48-tooth spur gear to the one-way bearing hub, be sure the the molded protrusions insert into the hub's screw-holes.

Step 16: The molded collar (no. 55) is located on the same parts tree as the chassis brace standoffs and the roll-bar.

Step 23: Use the shorter springs and the black spring retainer for the front shocks. The longer springs and the "blue" (they're not really blue, but "blue-ish") retainers for the rear shocks. These retainers can be found on the parts tree that has the battery holder.

Step 19: Use the provided 5x7x0.1mm shims to keep the clutch bell from rubbing against the flywheel. ◆

Test Equipment

• Mugen/Novarossi MT12 rear-exhaust engine. We had almost no time to build our early V-One R for this issue's deadline. What did we do for power? We pulled the engine setup right out of our Mugen MTX-2 (tested last issue) and bolted it into the Kyosho. Read last month's issue to find out how much we love this engine.

• Trinity Nitro Metal Hydride battery. This five-cell 1100MAh NiMh pack fits the V-One R's rather tight quarters perfectly. Capacity? Check this out: we ran for two straight days on a single charge and this battery still doesn't show signs of dumping.

• Airtronics M8 radio. We've had this pistol-style transmitter in our arsenal for over three years and it has never let us down. The choice of many top racers, the M8 has 10-model memory and is one of the easiest computer radios to use. The downside? It eats batteries.◆

SOURCES

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

Tech Tips #8

Perhaps the most overlooked tuning item on all Team Losi models is the slipper on the transmission. Every top team driver keeps a 1/4" nut-driver in hit pocket so he can make final adjustments before the start of a race. What makes this most attractive is that it only takes a second and it's free! We all know that as a race day goes on, the track surface dries out, gets hard, blue grooves, or slicks up well. Maximum performance and ease of driving can be easily improved by working with the slipper. This does not mean that you can overlook the obvious things such as shock damping or springs or similar necessities. Keeping the slipper adjusted will help you drive more comfortably through the ever-changing track conditions-it will not overcome a poorly set up chassis.

The dual disk type slipper, used on Team Losi vehicles, offers a great deal of adjustment. Don't be afraid to use this feature as you fine tune. Electric vehicles are considerably different from the nitro-powered trucks. The slipper is connected directly to the motor through the pinion and spur gear. Electric motors make maximum torque almost immediately; however, the torque diminishes as the motor gets hot and the batteries lose their charge. Electric races are also only 4 to 5 minutes long, while most Fuel powered events are 7 to 30 minutes long. Nitro trucks also have a centrifugal clutch between the engine and the slipper that can potentially absorb torque and impact. When initially adjusting the slipper for your particular model, follow the kit instructions. You should be able to safely go up to one turn in as well as one turn out from this setting. Make all your adjustments in 1/4 turn increments. The nitro trucks seem to be happy between 5-1/2 turns to 4-1/2 turns out.

Before you do any slipper adjusting, you should first check to make sure that the differential is NOT slipping. First follow the kit instructions for adjusting the diff. Use a Sharpie marker and put a line on the outer pressure plate extending from the inside hub to the outer edge. Now hold both rear tires or push the rear tires firmly to the ground and punch the throttle briefly. You should see the spur gear spin but the pressure plate should not move. This should be easy to observe by watching the line on the pressure plate. If you see the line spin, the diff is too loose and needs to be tightened. You may also need to loosen the slipper slightly, having approached the lock up point. Keep in mind that as you tighten the slipper you may start slipping the diff, which is bad. Always keep the diff adjusted to avoid slippage.

So now you know why and how to adjust the slipper. The "when" is the easy part. If the track is flat, smooth, and has good grip you will want to run the slipper a little tighter. If the track gets rutty, has big jumps, or becomes dusty or slick, you will want to try loosening it up a little. It all comes down to personal preference. Don't be misled into thinking that if you run the slipper a little loose you will give up acceleration. The opposite can be true if you run it too tight, as you will spin the rear tires and not have control. Finding the sweet spot where you are comfortable is the key. If you're not sure of which way to go, get out your 1/4" nut driver and try going a little looser. Typically you will find that it is easier to drive with the slipper a little on the loose side than if it were too tight. With practice and experience you will find that you will be able to find your comport zone with one or two adjustments.

ADVERTISEMENT

Raytek MT4 Te

Are you tired of getting dribble all over your chin? You can always tell when a "nitro newbie" is tuning his engine by the abnormal amount of dribble around his mouth.

Every couple of laps he brings it in, spits on it, counts a few seconds, fiddles with a needle or two, and takes off again, forgetting about personal appearance. The more seasoned nitrohead may have a contact thermometer attached to the cooling head of his engine—he's the one who has to put his eye up to the rear window to peek in the chassis to see what temperature he's running at. Do you fit either of these descriptions? Maybe it's time to look into a non-contact infrared thermometer, better known as a temp gun.

In the past, temp guns were high-ticket items costing hundreds of dollars, far out of the price range of the R/C hobbyist or racer, but recently a few models have become realistically affordable for the average Joe Racer to purchase. Raytek, a world leader in temperature sensing devices, recently introduced their MiniTemp line, which consists of the MT2 temp gun, and the MT4, which has the same specs but also has laser aiming. The R/C Racer's Choice (310-768-3200), a hobby shop in Carson, California, that specializes in nitro-powered R/C cars, kindly supplied us with an MT4 to review.

What you get

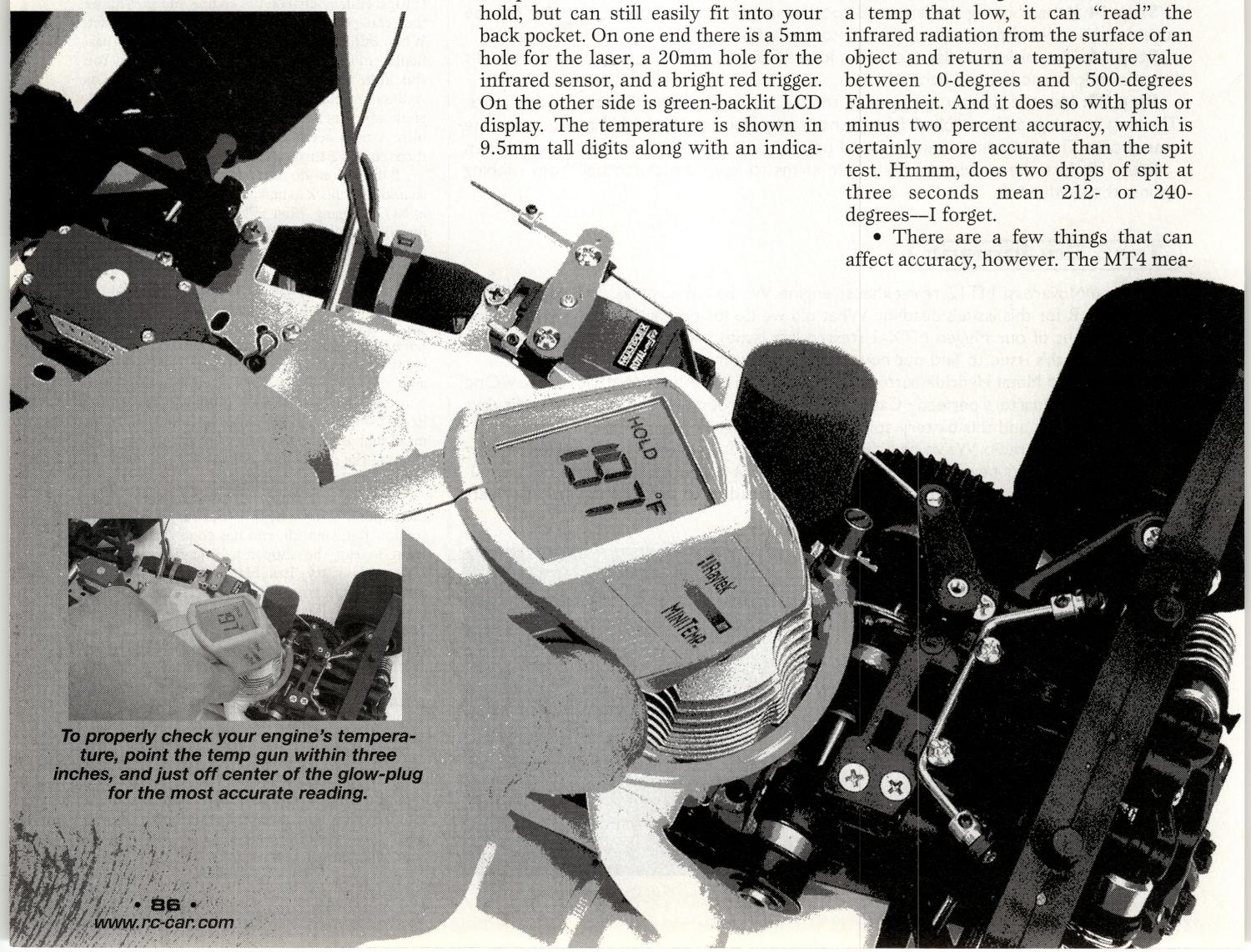
• The MT4, at 6 inches tall, 4 inches deep, and only 1.37 inches thick, is a compact unit that feels comfortable to hold, but can still easily fit into your back pocket. On one end there is a 5mm hole for the laser, a 20mm hole for the infrared sensor, and a bright red trigger. On the other side is green-backlit LCD display. The temperature is shown in 9.5mm tall digits along with an indicator for the temperature scale (switchable between Fahrenheit and Celsius).

• Other than the MT4 unit itself, the package contains a very thorough manual (written in seven languages) that covers the general stuff like warnings, layout diagrams, maintenance and troubleshooting, but then goes into detail of how and where to measure an object's temperature, and even goes into emissivity, which is an object's surface characteristic that affects temperature readings.

How does it work?

• Anything that has a temperature greater than minus 460 degrees Fahrenheit emits measurable infrared radiation. Although the MT4 can't read a temp that low, it can "read" the infrared radiation from the surface of an object and return a temperature value between 0-degrees and 500-degrees Fahrenheit. And it does so with plus or minus two percent accuracy, which is certainly more accurate than the spit test. Hmmm, does two drops of spit at three seconds mean 212- or 240-degrees—I forget.

• There are a few things that can affect accuracy, however. The MT4 mea-



To properly check your engine's temperature, point the temp gun within three inches, and just off center of the glow-plug for the most accurate reading.

mperature Gun

Say bye-bye to the spit test

sures the average temperature of a circular area that it is pointing to. Although the distance of the measured object doesn't affect accuracy, the farther away from the object you are, the larger the measured area is, kind of like a flashlight's beam pattern. Both MiniTemps have a Distance-to-Spot ratio of 6:1. For example, at a six-inch distance away from a surface, the value that the MiniTemp will return is an average of about a one-inch diameter area. So logically, at nine inches away, the spot size will be about one and a half inches. On the Raytek website there is a small Windows 95/98 program that tells you the estimated spot size for any given distance based on what Raytek model you are using.

• The other thing that can affect accuracy is something we mentioned earlier called emissivity. A piece of metal painted matte black reflects infrared radiation differently than polished aluminum does, even if they are the same temperature. That difference in radiation is called emissivity. An engine with a red anodized head shouldn't give a much different reading than if it had a black head. But if the surface of one head was bumpy or textured and the other one was smooth, then emissivity would play a role. Emissivity is affected by the finish of the surface. More expensive temp guns let the user program an emissivity value (based on a reference table of known surfaces), but the MiniTemps have a preset emissivity value of 0.95—not the ideal setting for a purple cooling head (more like for coal), but still more accurate than spittle.

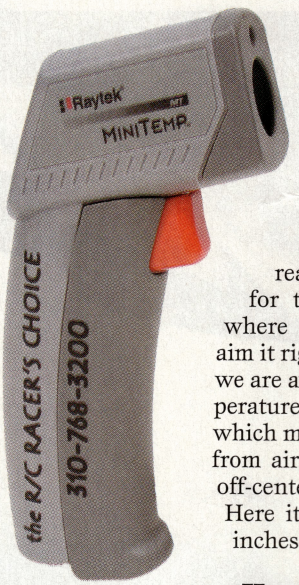
• So what does the laser do? Other than looking really cool, it can help you aim the MT4 in the proper direction. We've tried the models without laser aiming, and you'd be surprised how off you can be when trying to point a hunk of plastic at something accurately. Did somebody mention something about the side of a barn?

How do you use it?

• In a nutshell, pull the trigger, aim the red laser dot at the thing you want to measure (an engine, we assume), and read the display. When you let go of the trigger it holds the last temperature it read on the display for seven seconds.

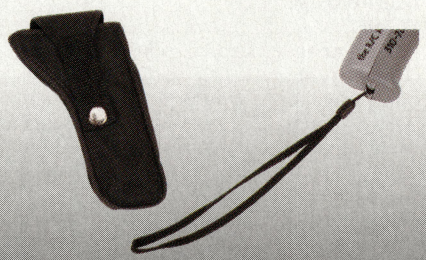
• Now how do you use it properly? Basically, we want to know how hot the combustion chamber is getting, and the best place we can measure this externally is right around the glow plug. So how far away should you measure from?

According to the software I mentioned above, if we measure at three inches away from the center of the cooling head, our spot size will be just over one inch in diameter. That close, or even closer, should be good. If we go to 6 inches our spot will be 1.5 inches—too large, we think. Remember, the reading is an average for the whole area. So where to point it? If we aim it right at the glow plug, we are averaging in the temperature of the whole plug, which may be getting cooled from airflow, so aim it just off-center of the glow plug. Here it is again: within 3 inches, and just off center.



How useful is it?

• There are many other good uses for a temp gun, even for electric racers. Knowing the track temperature can help you decide what tire compound to run. Is my new super duper chassis properly heat soaking? What kind of effect will gearing down two teeth have on my motor? Is there more friction in my left shock compared to the right one? Should the shop owner turn up the heat? I'm sure you could think up a few more uses.



This strap and carrying case are available as accessories to the MT4 (accessory kit 7302).

The Good

• Relatively inexpensive; can be found between $69 and $120

• Compact and very portable

• Nitro racers can use it as a pretty reliable and repeatable tuning tool

• The 9-volt battery in it seems to last forever (rated for 12 hours of use)

The Bad

• Fixed emissivity means that accuracy can vary from surface to surface

• The case and strap are an additional cost

The Verdict

We find a good temp gun to be invaluable on practice days, as well as race days. The Raytek MT4 fits the bill perfectly. It is cheap enough for most serious racers, and even non-serious racers, to afford, and accurate enough for any R/C application.

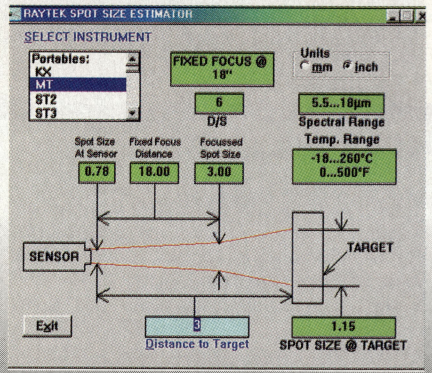
Rating: 5 wheels

Info: Part no: MT2 (without laser)/MT4 (with laser). Average street price: $79/$99

Manufacturer: Raytek Corporation, Santa Cruz, CA 95061 • 800-866-5478; 831-458-1110 (fax)

Recommended for: serious racers, especially nitro racers

Sources: The R/C Racer's Choice, 940 East Dominguez St. Carson, CA 90746 • 310-768-3200



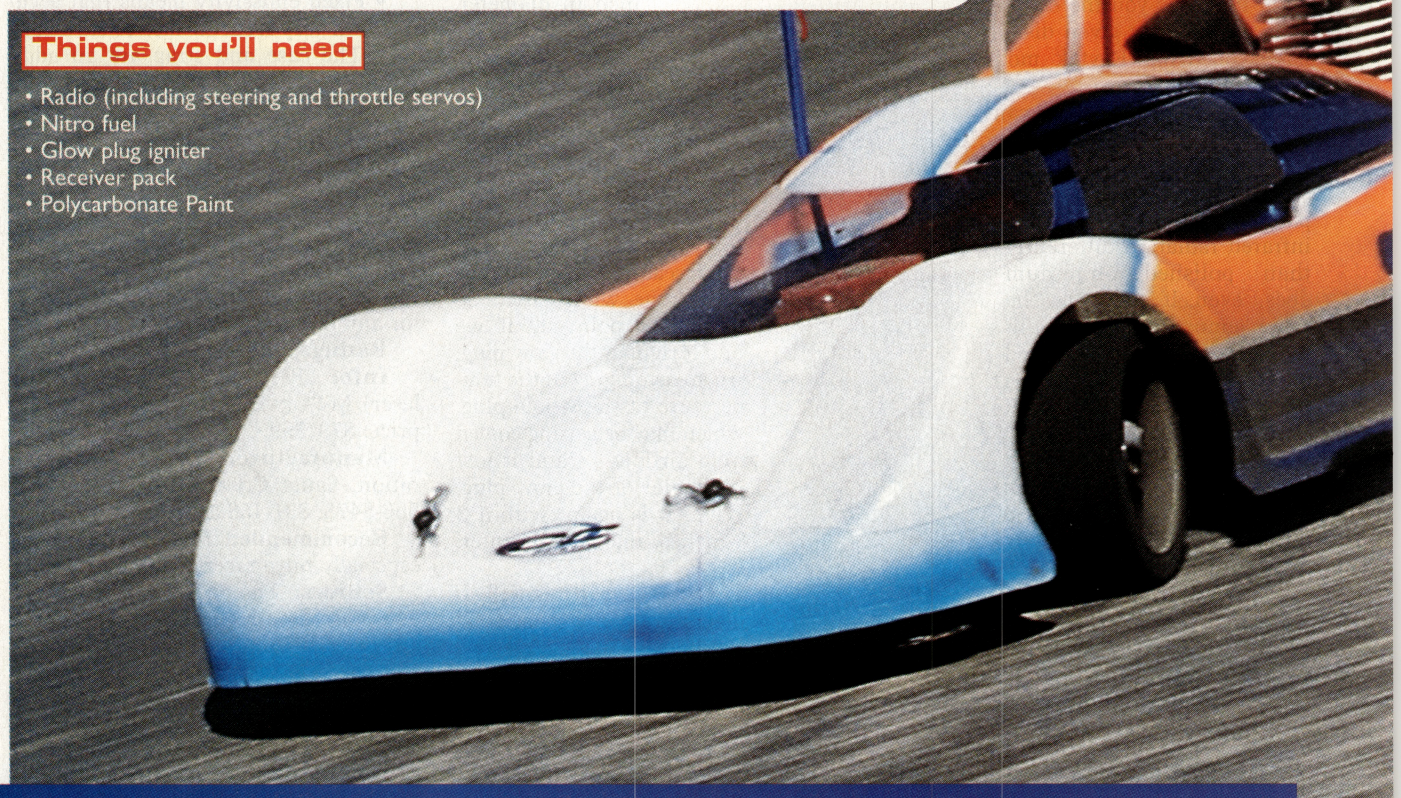
On Raytek's website there is a small Windows 95/98 program that gives you information regarding the estimated spot size for any given distance based on what Raytek model temp gun you are using.

GS RACING SONIC 4WD RTR

Recent years have proven that nothing gets newcomers into the hobby as quickly as an RTR (Ready-To-Run) car. It's often an easy sale for a hobby shop owner, too. Open up one of the kits as a demo, do minimal prep work, and run it out in the parking lot to show customers.

Okay, this method has worked really well for the tamer electric and nitro 1/10-scale cars and trucks, but is the industry ready for a 1/8-scale 4WD road car? After all, isn't this the breed that we always call the "F1 of R/C"? Don't cars like this hit 60 mph in about three seconds? Well, the answers to the above questions are, in order: GS Racing thinks so; yes; and sometimes.

Back to GS Racing. These are the guys who have brought us that great line of colorful accessories, starter boxes, and now whole cars. No doubt you've seen the preview shots of the 1/8-scale buggy and the monster truck they plan on releasing. Well, here is the first thing they are bringing to the RTR party; the Sonic, a car that has some unique design features. Open the box, throw some radio gear in it, paint the body, and you'll soon find that you have an instant R/C supercar on your hands.

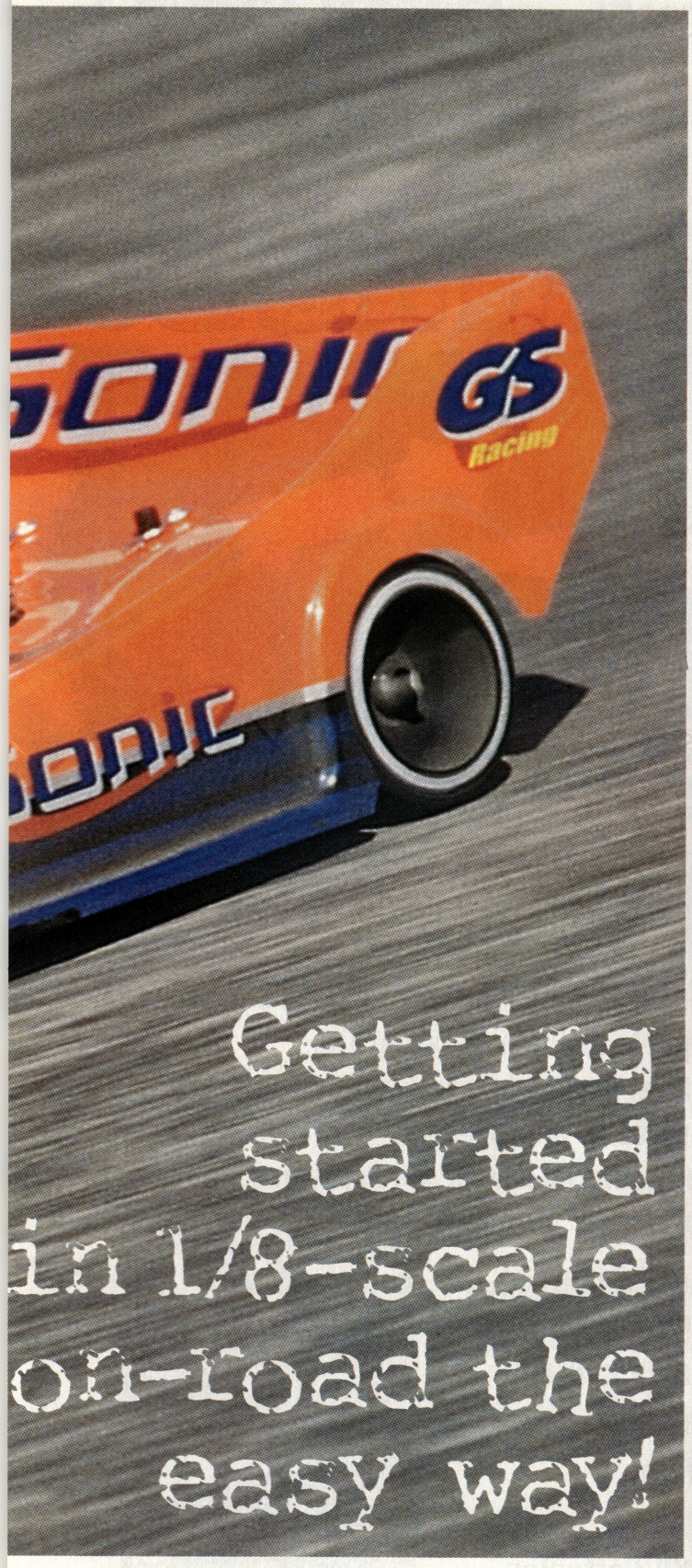


Things you'll need

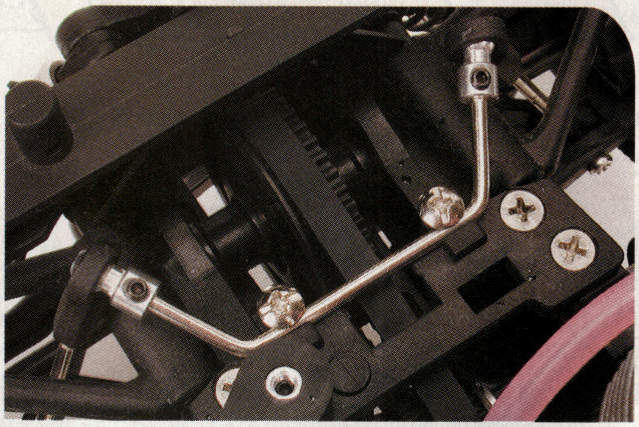
- Radio (including steering and throttle servos)
- Nitro fuel
- Glow plug igniter
- Receiver pack
- Polycarbonate Paint

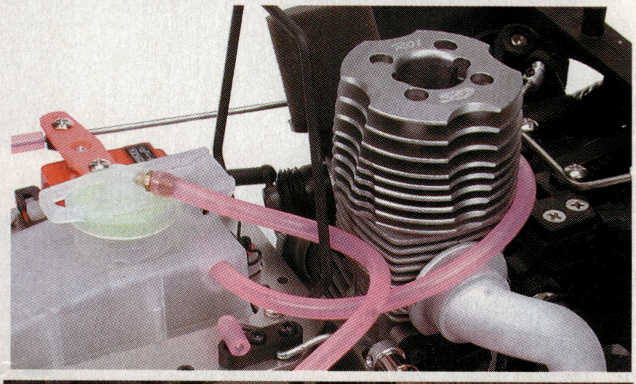
SPECIFICATIONS

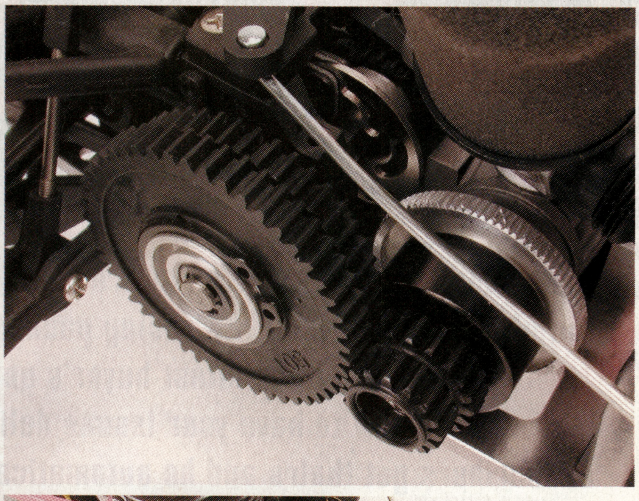
Type	4WD nitro car
Scale	1/8
Retail price:	$699
Average street price:	$549.99
Length	445mm
Width	248mm(F)/260mm(R)
Wheelbase	293mm
Track	210mm(F)/204mm(R)
Weight (RTR)	5lbs., 5oz.
Weight w/o body	4lbs., 14oz.
Transmission:	
Type	Three belt
Differential	Rear: solid axle
Differential	Front: one-way
One-way	One for each front wheel
Drive shafts	Steel dogbones
Bearings	Full ball bearings, except for belt tensioner
Suspension:	
Type	Oil-filled coil over
Material	Plastic
Front end:	
Caster	adjustable
Camber	adjustable
Toe	adjustable
Down-travel	non-adjustable
Rear end:	
Anti-squat	non-adjustable
Camber	adjustable
Toe	adjustable
Down-travel	non-adjustable
Shocks	Oil-filled coil over
Springs	Kit Silver
Wheels	GS
Tires	Kit
Insert	n/a
Body	GS Porsche 962

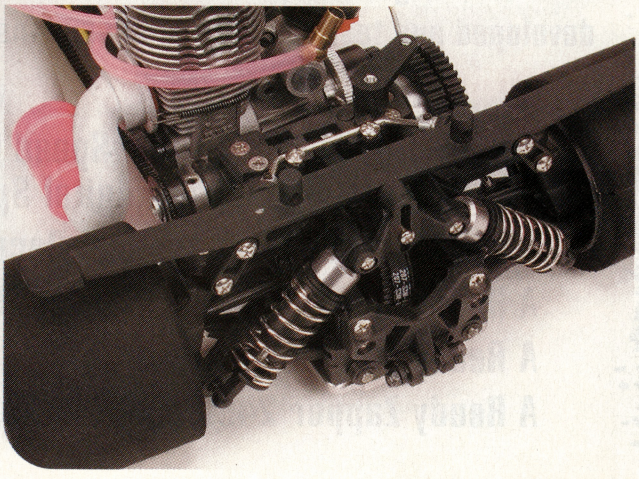


Getting started in 1/8-scale on-road the easy way!









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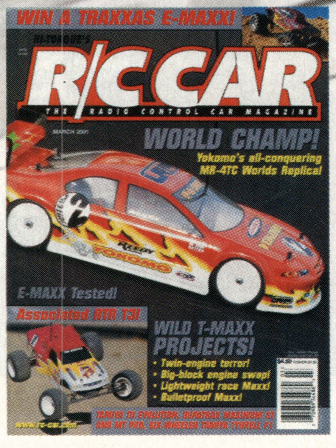

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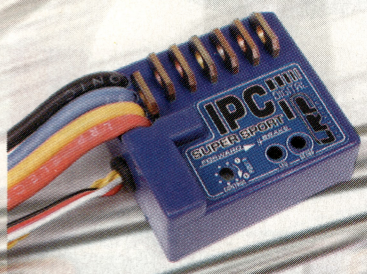

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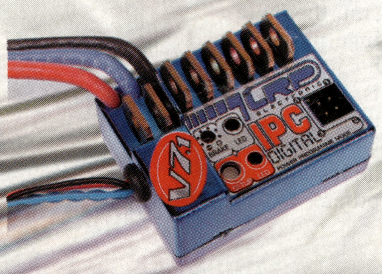
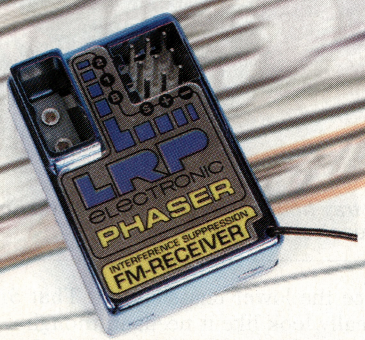


LRP IPC V7.1 electronic speed control



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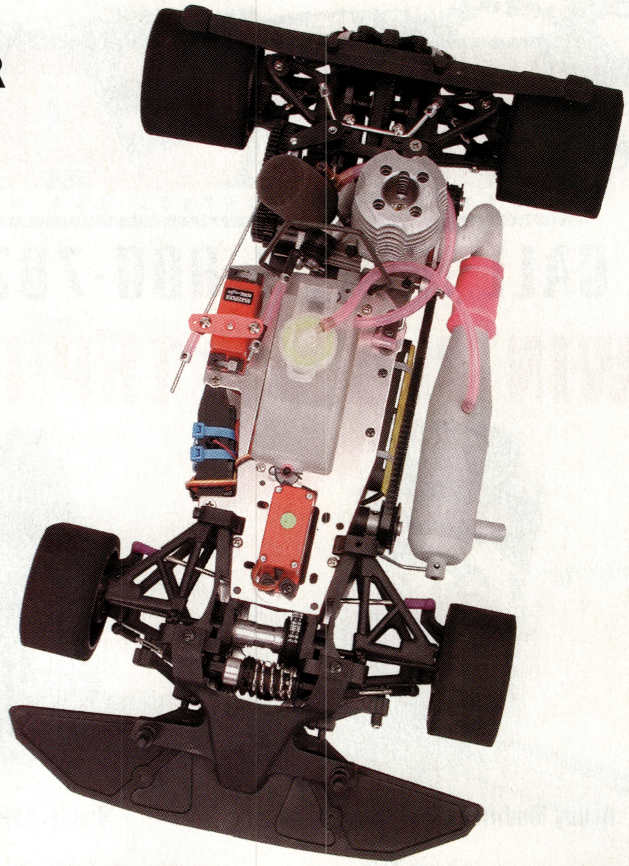
GS RACING **SONIC 4WD RTR**



Suspension

The front suspension has a laydown shock design. In fact, the two shocks are stacked on top of each other. They are mounted to a unique set of cantilevers that are designed to give both arms the same amount of leverage on the shocks. In fact, moving one arm compresses one shock while extending the other slightly. And the other arm does the same with equal motion. So for those of you that didn't think it was possible to make a stacked laydown shock design that worked equally on both sides, phooey to you (okay, so maybe we were skeptical at first also). The shocks themselves, though plastic bodies, work smoothly and are leak-free, due to dual silicone O-rings on the bottom and a silicone bladder on top. Of course, those are GS O-rings and bladders.

The double A-arm design of the front arms is kind of odd, though. The lower arms mount to inner pivot balls on the bulkhead and the front pivots are closer together than the rear ones. If they rode on a hinge pin, it would look like the hinge pins were toe'd in towards the front. The upper arms ride on traditional hinge pins, but they are "toe'd out". The net result is that when the front suspension is compressed, the wheels toe out a couple of degrees. Looking at the design, we expect significant bump steer, but only our track test will tell.

Like most .21-powered road cars, the steering blocks ride on pivot-balls for adjustability. Caster can also be changed by installing plastic shims in front of and behind the upper arms.

The rear suspension is more traditional. Again, there are dual A-arms, but both do their motions on hinge pins. GS Racing decided to forgo putting pivot-ball uprights in the rear and instead spec'ed hinge pin-mounted uprights. Rear toe is still adjustable, though, with a cool adjustment on the rear bulkhead that pivots the lower arms instead. They devised a fool-proof way of setting rear toe that makes it almost impossible to accidentally toe one side more that the other.

Drivetrain

Three thick belts get the power from the two-speed gearshaft to the front and rear ends. The rear end has a solid rear axle, while the front gets a differential with one-way bearings for each steering wheel. Thick dog bones rotate the four quick-release equipped axles. The brake assembly features a vented steel brake disk.

Powerplant

It wouldn't be an RTR without a powerplant, now would it? A GS Racing-designed .21 R01 engine comes preinstalled in the chassis. With its large finned cooling head, it certainly looks ready to race. The installed clutch assembly is a standard three-shoe design, rather than the more common Centax style.

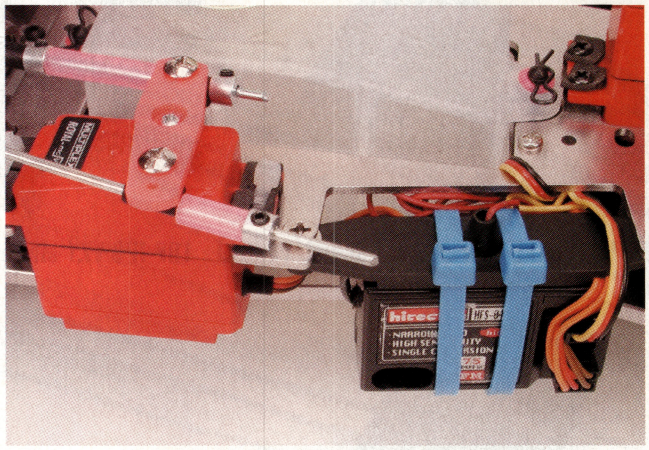
Tires and Wheels, and Body

The black six-spoke wheels come with foam tires already mounted and trued. A beautiful Porsche 962 body is also included with the Sonic. We let one of our premier airbrush artists, Craig Tasker, do the honors, and he definitely did not disappoint us.

Chassis

The chassis design is typical for a 1/8-scale car. A 5mm-thick lower chassis plate is the foundation of the platform. It appears to be laser-cut and has tapered sides for more ground clearance. All the screw holes underneath are countersunk for a smooth bottom.

On top of the chassis rests the radio tray, made of 2mm aluminum. It attaches to the front bulkhead and a center support, so it helps to brace the lower chassis a bit. That 5mm hunk of alloy doesn't really look like it needs it, though.



A side-mounted radio tray houses the throttle and steering servo, as well as the receiver and receiver pack.

Like on most cars of the same class, the radio tray houses the steering and throttle servos, five-cell side-by-side receiver pack, and the receiver, none of which is included with the Sonic RTR. The upper deck also holds the fuel tank, which is cleverly mounted with a pair of body clips for easy removal.

The mounting method diagramed in the manual for the throttle servo involves using zip-ties to secure it. It's not a very elegant way to do it, but we've done it that way before, and it works. And the receiver is suspended from the upper deck in what looks to be a vulnerable spot along the outside edge. And the receiver we used is even more susceptible to damage because the only one we had handy was a pretty big one, and we wanted to mount it in a way to get be able to get to the crystal. Although the studio photos don't show this, we ended up mounting the receiver holder on top of the chassis to give us a little more peace of mind.

Performance

Location: Northridge, California
Temperature: 65-degrees
Track Surface: Clean untreated asphalt. High traction, but very abrasive surface.

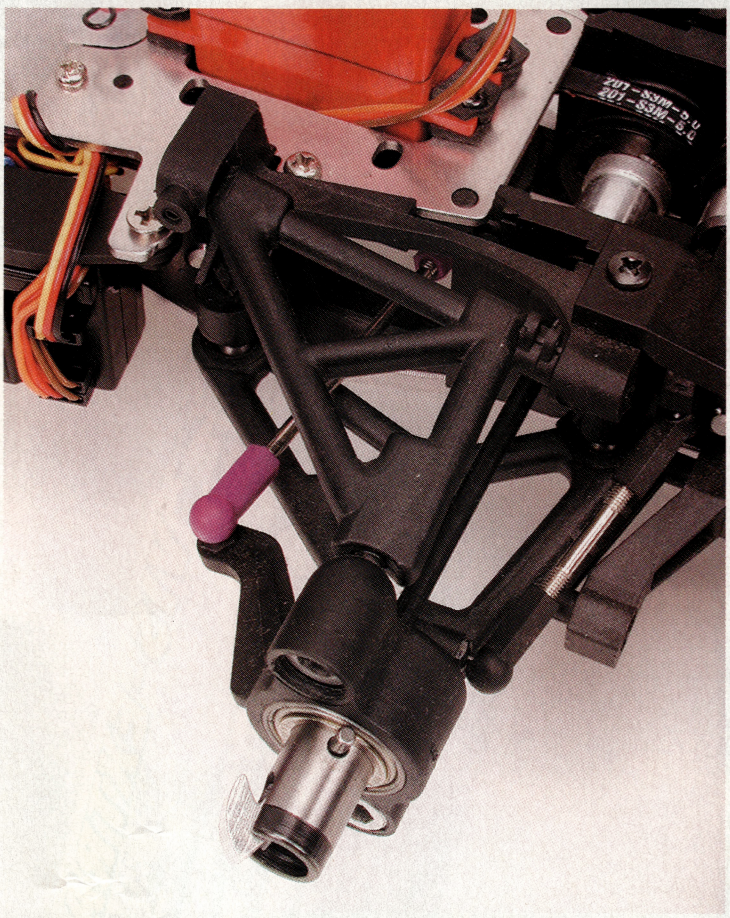
The temporary track that the Mid Valley R/C Club sets up is primarily for nitro sedan racing, but is just large enough to run 1/10- and 1/8-scale nitro cars. The track borders are made from forgiving two-inch PVC pipe with plow discs at every corner.

Test one: Steering—As I gingerly drove the Sonic RTR around on its first time on a track, I noticed that the stock setup felt like it was holding the turns nicely. As I felt more comfortable with the handling, I started pushing the car harder and harder, and well, it started pushing back—it wasn't steering as much as I would like around the corners. Then I realized that I needed to get back into "1/8 mode"—use the torque of the .21 to power around the turns and kick the rear end out if you have to! Once I started driving the Sonic like it was meant to be driven, it handled extremely well, especially considering its entry-level status. Oh, and that bump steer that we predicted due to the unconventional front arm design was there, but only noticeable on one part of the track coming out of a high speed sweeper; on the rest of the track it was unobtrusive.

Test two: Braking—I like to set up my cars with minimal brakes so they just slow the car enough to transfer the weight to the front tires to set up the chassis for a turn. But I tried dialing in more brakes just to see how much I could get out of it. Well, if you like your brakes strong enough to lock up the wheels, that isn't going to happen with the Sonic. That's actually a good thing, because if you do lock up the drivetrain, a solid rear axle coupled with front one-way wheels is a guarantee for a spin, which isn't always controllable. It's better to go around accidents anyway, or use steering to scrub off speed.

Test three: Acceleration—Frankly, the GS R01 .21 engine was a pleasant surprise. We really didn't expect such good performance from an RTR-spec engine. Granted, it wasn't as fast as the top-of-the-line .21 mills we've run in the past, but it certainly was no slouch. Once warmed up, the R01 propelled the Sonic well enough to let us weave our way around the pesky nitro sedan traffic that was in the way of our testing—until it came time to lap them again. There was enough torque to throttle steer, like we mentioned above, and top end was respectable, again, especially for an RTR.

Test four: Durability—Well, we didn't hit a thing at all during our test session—yeah, right. Okay, there were a couple of "hopped dots," a 10-foot slide on its lid, and there were a few run-ins with more of those annoying sedans. At the end of our test session, the only casualty was a broken front body mount, which wouldn't have prevented us from running it more if we had enough time. Throwing it on a Hudy Setup afterwards showed that the settings were still in spec. Heck, if it is strong enough to survive our heavy-handed driving with only minor damage, it's strong enough for any intermediate driver who wants to get his feet wet in 1/8-scale. ●



Pillow-ball style suspension technology originated on 1/8-scale cars—the GS Sonic incorporates the same setup, along with a dual laydown front shocks to handle the task of front damping.

LIKES

■ We like RTRs, especially ones that are put together well. This one is.

■ It has all the basic features of the top-line racer—swaybars, two-speed, pivot-ball front end.

■ Though light on text, the instruction manual has excellent line drawings of exploded views of every part of the car. And clear part numbers.

■ The R01 engine is perfect for someone new to 1/8-scale. Plenty of power, but not as fast as the big boys.

DISLIKES

■ The tires have a seam that runs across the tires instead of "radially", and they wear pretty quickly.

■ We could feel the bump steer due to the front end design.

CONCLUSION

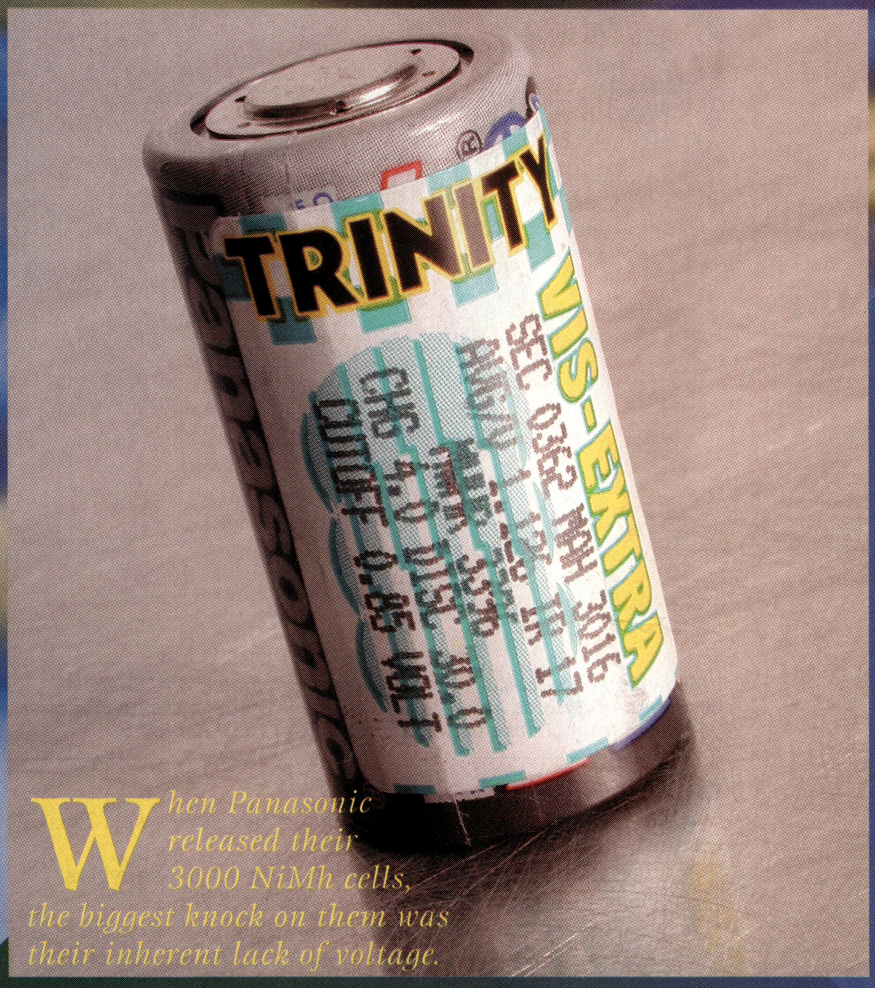
If you want to play around with a 1/8-scale supercar, but don't plan on racing it, the Sonic RTR is a great way to get into it. If you want to race it, though, some serious upgrades are going to be needed. But hey, at least it's a stepping stone to get more 1/8-scale racers out there. ◆

SOURCES

GS Racing, 650 W. Duarte Rd., Suite 205, Arcadia, CA 91007 • (626) 445-6036; (626) 445-6084 (fax)
Hitec RCD, 12115 Paine St., Poway, CA 92064 • (858) 748-6948; (858) 748-1767 (fax)
Multiplex, 560 Library St., San Fernando, CA 91340 • (818) 785-2401; (818) 785-3946 (fax)

TRINITY PANASONIC HEAVY METAL 2 3000s

These new NiMh cells pack a punch!



When Panasonic released their 3000 NiMh cells, the biggest knock on them was their inherent lack of voltage.

Racers found the new cells lacked the punch they found with their NiCad cells, but they did get a 30-percent increase in runtime—a factor always important in modified racing. "Just wait until Sanyo comes out with their version" was often heard in the pits whenever the talk of NiMh voltage was discussed. Well, when the Sanyos did reach the market, racers found a slight increase in voltage, but not exactly to the level that they were hoping for. Panasonic, not resting on their laurels, started working on addressing the voltage needs by developing a new cell—a project they started working on after attending the IFMAR On-Road Worlds in Japan.

What Panasonic wanted to accomplish with the new cell was to come up with a design that would provide the same runtime as a standard 3000 cell, lower the internal resistance (IR), give it more voltage for stock class racing and produce a more durable cell that could handle the abuse that R/C racers are well-known for dishing out. What was produced is the battery you see before you—the Stock Metal Hydride cell. We received some samples for testing from exclusive North American distributor Trinity Products Inc., and we contacted Jim Dieter, Trinity's race team manager and battery/motor guru, for more info on the cells—here's what he had to say.

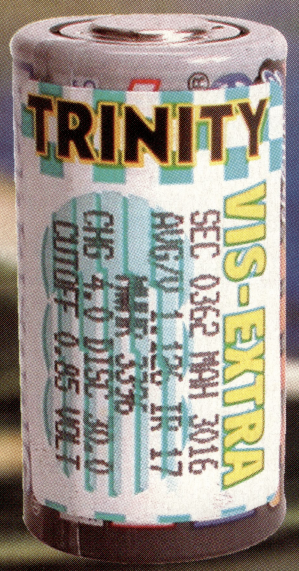
R/C Car: *We'll cut right to the chase—what do you think of these new cells?*

Jim Dieter: Well, I've been testing with them now for about six months and I think that they're the baddest thing ever! They are better in every way than the previous generation 3000s. I've been beating them to death and they seem fine. So far they definitely appear to be more durable and can handle more abuse.

R/C Car: *So you think Panasonic accomplished their goal?*

JD: I think so—these new cells have a lot more punch thanks to the lower internal resistance. And from what I've seen with the new design of the cell, it seems that they are constructed to be a little tougher too. Panasonic realizes that the market in the USA is driven by voltage because of the popularity of stock class racing. They went out to develop a NiMh cell that would be as good or better then NiCads for stock class racing and I feel they have done that.

R/C Car: *A few complaints we've heard about NiMh cells in general is that they don't last as long as a NiCad cell would under long-term race conditions. What have you found with your testing with the previous generation cells, and do you have any knowledge of how these new Stock Metal Hydrides will fare over long-term use?*



JD: We have one of the best test drivers in the world working for us—Brian Kinwald. He's been racing with 3000s for a while now, at least two or three times a week minimum. With his input we've found that the original Panasonic 3000s generally kept their voltage over the long-term, but lost a little runtime. On the flip-side, the Sanyo's lost some of their voltage but managed to keep most of their runtime. They did lose some, though. I don't feel the NiMh were actually much worse then the previous NiCads people were using, though. A lot of the problems in the beginning were due to racers trying to treat the NiMh cells the same as NiCads.

As for the new Stock Metal cells, my best guess is that they will be even better than the previous Panasonics only because they are constructed to withstand more of a beating. Panasonic really listens to Trinity's input when making a cell, so they know what they have to fix if something isn't exactly working right.

R/C Car: *For those who are unfamiliar with how significant having low internal resistance is, can you explain?*

JD: Sure—basically, the lower the internal resistance a cell has, the faster it can release more power/energy, which gives the cell more punch. Think of the battery like it's a garden hose. The larger the diameter of the hose (less IR), the more volume of water (energy) can pass through it in a much shorter time (discharge rate). So, the lower the IR in a cell, the easier it is to get the battery to discharge faster, and vice versa. Here's an example of why you want a battery with low IR—when we race touring cars, we'll pull a lot of amps when coming out of corners hard on the throttle, sometimes as much as 50-60 amps. If you have a cell with a high IR, it wouldn't allow that much of a discharge. It might only provide you with a 40-amp discharge. High IR cells are like running batteries with in-line resistors. There are some NiMh batteries being used out there right now, no names mentioned, that are not designed with R/C racing in mind—these Chinese-made cells were designed with industrial applications in mind and the battery importers are trying to make the cells do things they just weren't designed to do. When used in racing, the cells build up heat around the three-minute mark because of high internal resistance, which then makes the internal resistance go even higher. The cells then go flat, which puts the racer on what I like to call "cruise control" until the end of the race. For example, there were racers using these type cells at the carpet race in Florida and by the end of the weekend they had switched over to different batteries. It's very important to have a cell with a low IR that was designed with R/C racing in mind.

NIMH NOTES—Jim Dieter's Stock Metal Hydride Tips & Tricks



Trinity's Jim Dieter

● When Jim assembles a pack, he always use a hot (high wattage) soldering iron—"I use an Ungar 300 adjustable with the temp set at its highest point. I make sure that I don't have to spend a lot of time on each cell with the iron. You don't want to overheat the cell any more than you have to."

• Jim uses very thin solder—"either .030 or .060 60/40 rosin core solder. Don't ever use acid core solder! It will ruin your cells."

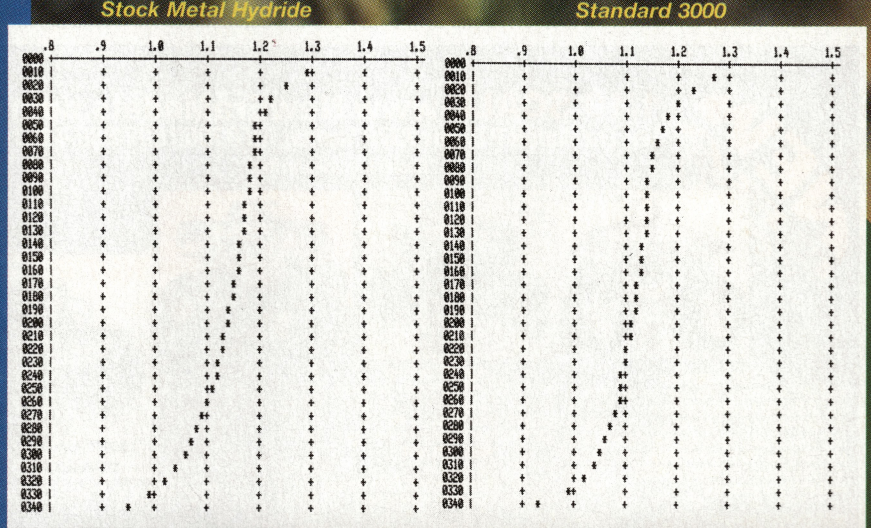
• Jim's preference when soldering the bars to the battery—"I place our battery bar (part #RC5106) directly on the cell without tinning the cell first. I then let the solder suck in and around the bar and cell. If you have a ton of solder gobbed around the bar and on the cell, the more resistance there is."

• When charging, Jim likes to charge them at five amps—" I know some racers charge them higher, but I've just become used to charging mine around five amps. I also don't peak them as hard as I would a NiCad cell, but you can get away with peak charging the new Stock Metal Hydride cells harder than you would the older Panasonic 3000s."

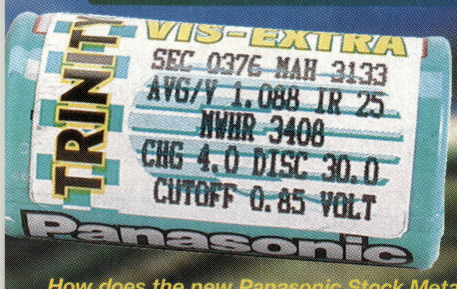
• Discharge like normal 3000s—"I still bring my pack voltage down to .9v per cell, even with the new Stock Metal Hydrides. You can bring it lower, but I found that .9v is best since most batteries naturally discharge a bit."

• Discharge trays—"You can use a discharge tray, but as soon as the light goes out, pull the pack off immediately or you'll damage it. Trinity makes a discharger unit, the Real Time 2 (part # RC5100), that discharges each cell individually so it can't bring one cell down too much."

• Dead shorting—"don't do it…ever."



Here's a side-by-side comparison of the new Panasonic Stock Metal Hydride 3000 cell (left) versus the older Panasonic 3000 (right). The two cells have the same runtime (349 @30 amps) and about the same internal resistance (19IR versus 20IR). The Stock Metal cell has very average voltage (1.125v) while the older cell is actually well above average (1.110v). You can see the voltage curve on the graph shows how much higher it really is throughout the run. Also notice that the new Panasonic Stock Metal cell's end discharge curve looks more like a NiCad than a NiMH. This is why the new cell feels like it has power to the end, not the "gone flat" feel the old cell had after the first minute or so into the run.



How does the new Panasonic Stock Metal Hydride cell stack up against the older Panasonic 3000s? Let's just say that one of them is lying down on the job…

R/C Car: *So then how would these new Stock Metal Hydride cells compare against a 2400 NiCad?*

JD: I've done some back-to-back testing and from what I've seen, there is little to no difference in punch between the two. The Stock Metal Hydride cells are really that good, with voltages as good or better. With the higher capacity, these can be used both in stock and modified, unlike 2400s, which do not have enough capacity for the really hot modifieds.

R/C Car: *We checked out the numbers on the Stock Metal Hydride pack that Trinity sent us and compared it to an older set of the previous generation Panasonic 3000s, and we were impressed with the difference in voltage and internal resistance.*

JD: Interestingly, the numbers you have on your new Stock Metal Hydride pack will probably get even better after you cycle them a few times. We found in our testing that when you cycle the cells, the numbers get better and better.

R/C Car: *So is there any particular application where these cells really excel?*

JD: Well, the best application we've found is using them for stock class racing. The benefit of the extended run time with the NiMh technology and now with the increased voltage…well, they just can't be beat! We've also run them in modified touring car racing and they are just the baddest thing ever. We just got back from the big Snowbird carpet race in Florida and Josh Cyrul used them in his cars and he blew everyone away—no other batteries were close. They'll work good in 4-cell, off-road…actually, there's no place where they won't work well. In the first two races ever using these cells, they won six modified classes!

R/C Car: *Excellent—thanks for the info Jim!*

Track testing with the new Stock Metal Hydride cells

● Sometimes a new product lays claim to being the "next best thing," or there is talk of how significant or revolutionary a product will be. Over the years, we've seen many products fall short of the hype surrounding them, but this time we were more than pleasantly surprised at the results we ascertained after testing the new Stock Metal Hydride cells.

We ran the new cells in our Factory Team TC3 first with the Reedy mod motor we used in the car test, then we swapped out the mod with a Trinity Paradox Pro rebuildable 24-degree stock motor. After a few laps it was very evident that the batteries provided the extra snap that Panasonic claims—the power delivery felt more like a NiCad cell rather than a NiMh cell. The difference was more noticeable when we switched over to the stock motor. The track we tested on had many tight right/left chicanes and this is where the new Stock Metal cells really excelled—the car had much more snap exiting the turns.

After we were done testing the Stock Metal cells, we ran a fresh pack of the older 3000 cells to see how they fared against the new cells...all we can say is, what a difference lower internal resistance makes!

The new Stock Metal Hydride cells are the future of R/C racing—especially for stock class racing. The added snap they provide eliminates any excuses stock class racers have for not using a NiMh cell. Mod racers will also appreciate the added snap these cells provide. All in all, the new Stock Metal Hydride battery is currently the best of the bunch.●

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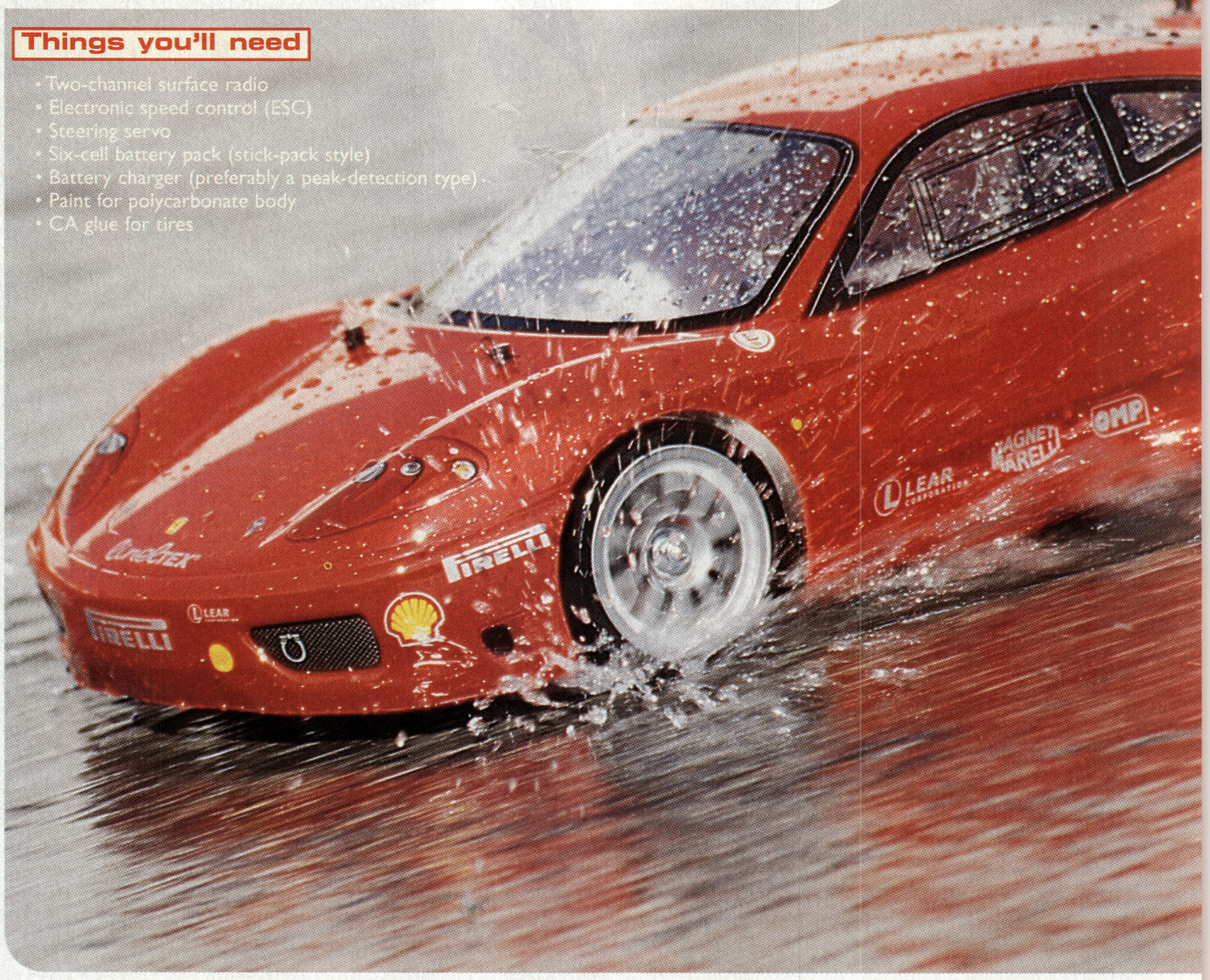
TAMIYA FERRARI 360 MODENA

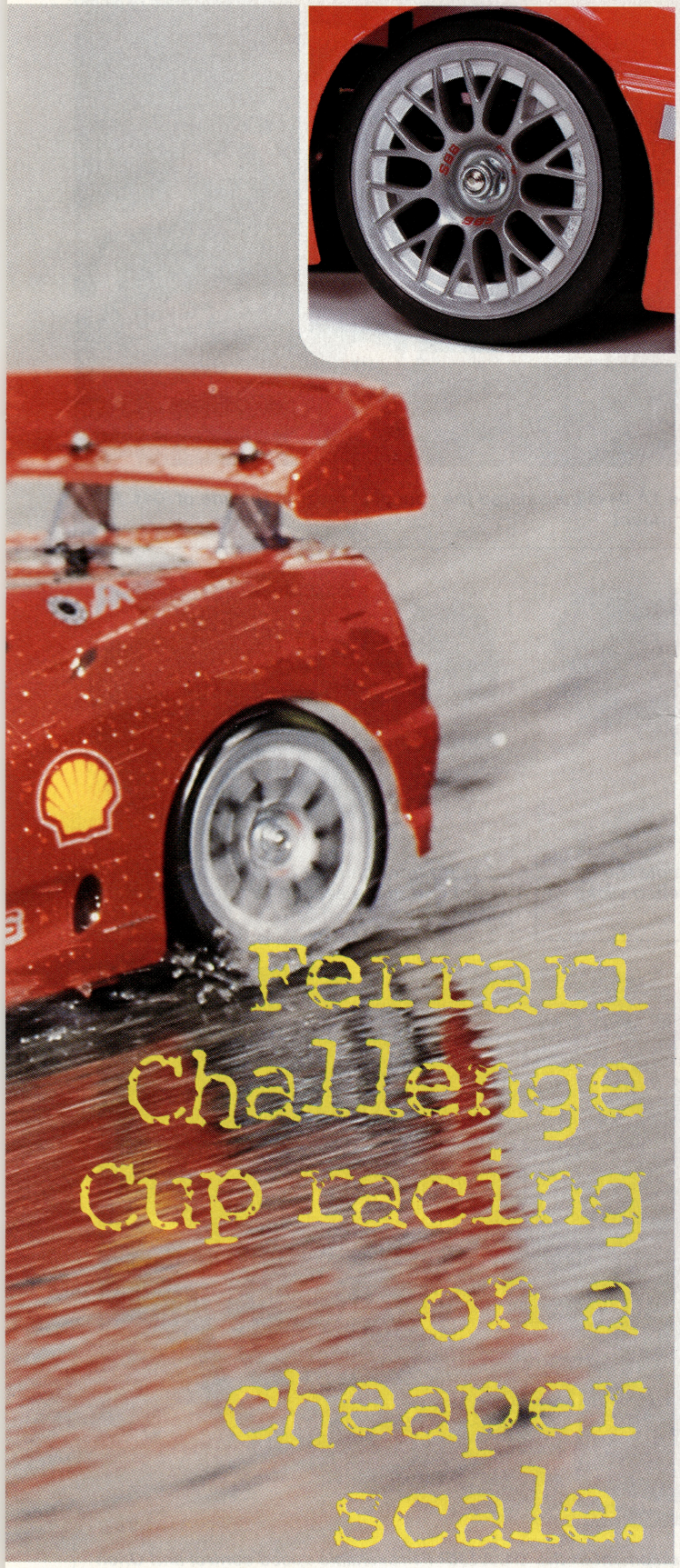
by Chad Geissler

Developed under the code name F131, the 360 Modena was designed to replaced the 355. At the end of its four year development, Ferrari chairman Luca di Montezemolo presented the new prancing horse to the mayor of the city of Modena, Mr. Giuliano Barbolini, in the spring of 1999. Due to the complexity of its design, the 360 had to be designed from scratch. The most impressive aspect of the Modena was that it is the only Ferrari road car that uses aluminum not only for the chassis, but for the body and many other components as well. Powered by a 90-degree V8 mounted in-line with the gearbox and differential directly behind the cabin, the 360 boasts 400 bhp at 8500 rpm (producing a whopping 112 bhp per liter). This is the most powerful normally aspirated V8 ever built by Ferrari. Want to get your hands on one? Get in line, because there is a two year waiting list. Why do I know so much about this car? Because I really want one. Unfortunately, the car is just shy of my price range so for now I'll have to settle for the next best thing—Tamiya's highly detailed 1/10-scale version!

Things you'll need

- Two-channel surface radio
- Electronic speed control (ESC)
- Steering servo
- Six-cell battery pack (stick-pack style)
- Battery charger (preferably a peak-detection type)
- Paint for polycarbonate body
- CA glue for tires

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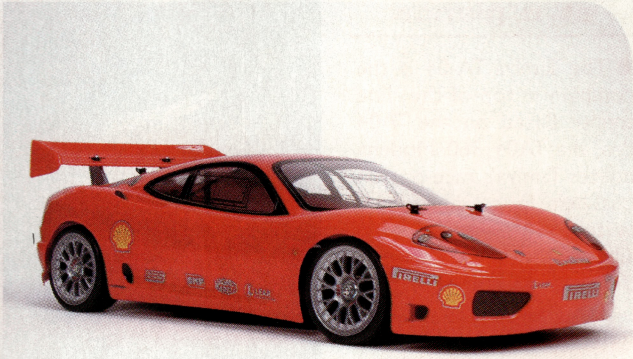

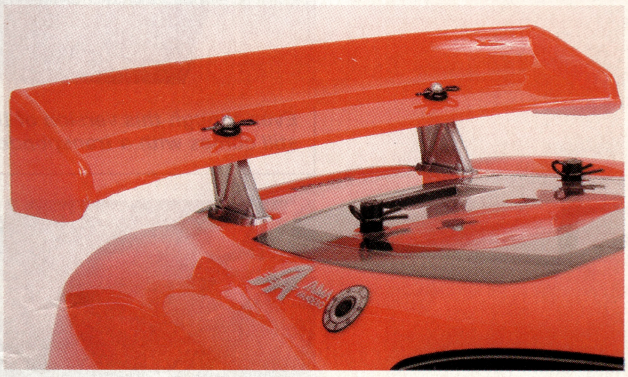


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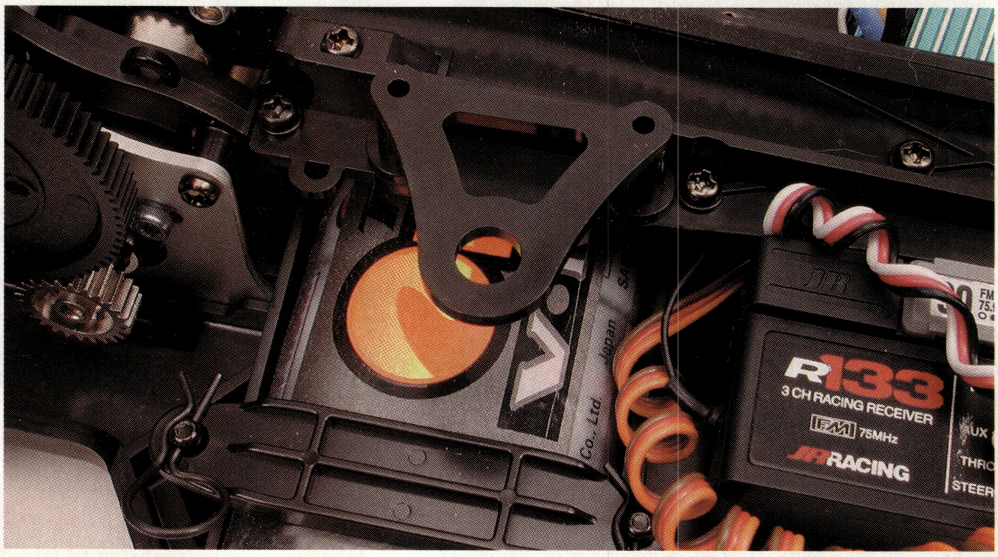
TAMIYA **FERRARI 360 MODENA**

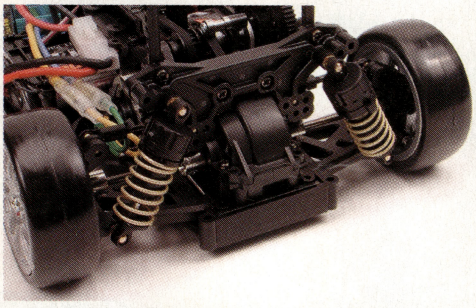
TA-04 Chassis at a glance

● The Tamiya TA-04 is the company's top-of-the line tourer. Based on the TA04 Pro, the TA04 360 Modena utilizes Tamiya's race-proven dual-belt four wheel drive system. Powered by the silver can 540 motor (included in the kit) this drive system efficiently transfers power to the front and rear gear differentials, which proved to be very durable on race day. Tamiya supplies bearings for the inboard drives and bushings for the outdrives but I recommend replacing the bushings with a good set of bearings during the build. It will increase the '04's already impressive performance and make for an even more efficient drivetrain. Instead of the dual-deck FRP chassis found on the '04 Pro, Tamiya has released this kit with a rigid ABS bathtub chassis that is further stiffened with an upper brace that mounts between the motor mount and the front gearbox. This extra brace makes it a surprisingly stiff chassis with very little lateral twist. Unlike most other Tamiya kits, the TA04 Modena comes with a set of medium narrow reinforced Type-A tires that mount on a set of BBS mesh wheels. The Type-A tires provide good traction in most temperatures and track conditions.

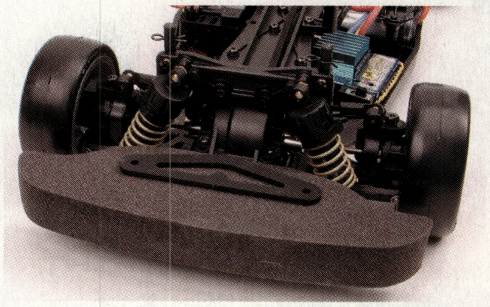
Since it is a Tamiya kit, the body is nothing short of impressive. Based on the race version of the 360 Modena, the body comes with a full set of beautifully detailed decals, window masks for easy painting and a rear wing that provides some very impressive down force. In fact Tamiya Factory Team driver Fred Medel feels that the 360 body is one of their best racing bodies—possibly even better than their Skyline. According to Fred, this is quickly being regarded as the hot choice for bodies in the TCS series. ●



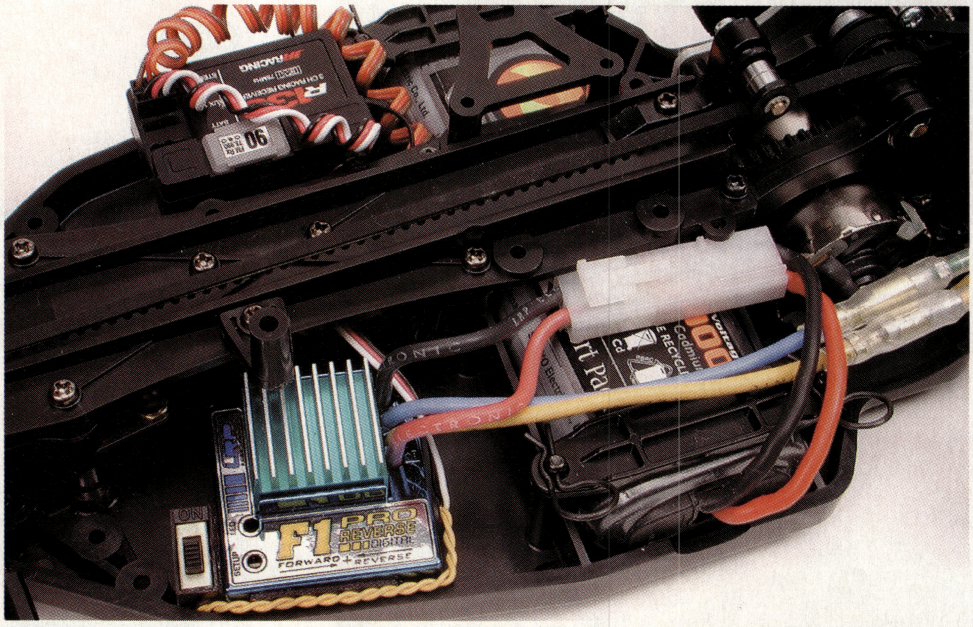
Even though this version of the TA-04 is considered the "budget" racer in the line of '04s, it still comes with a transponder mount.



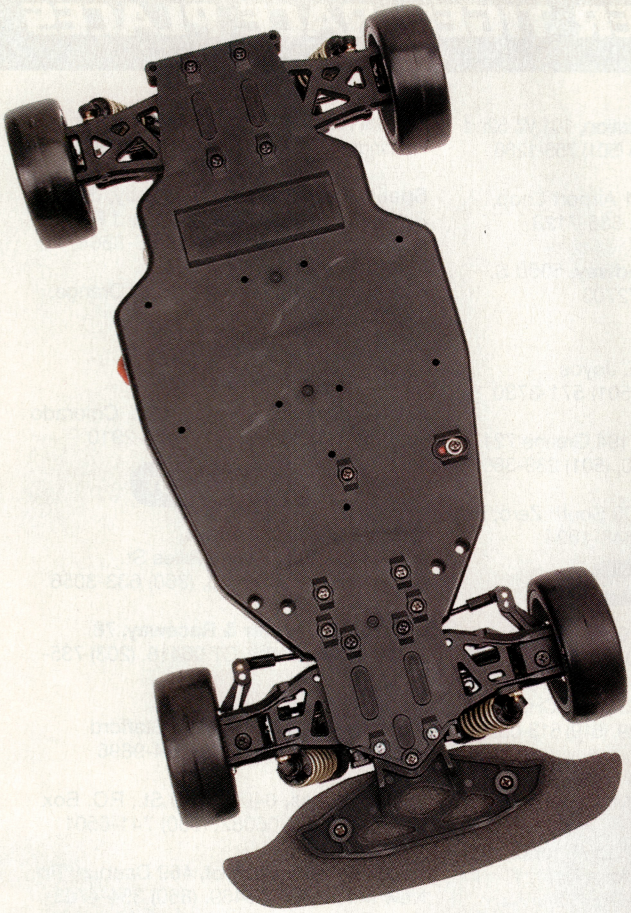
Oil-filled shocks in the rear handle the damping. Type-A compound belted slicks come standard.

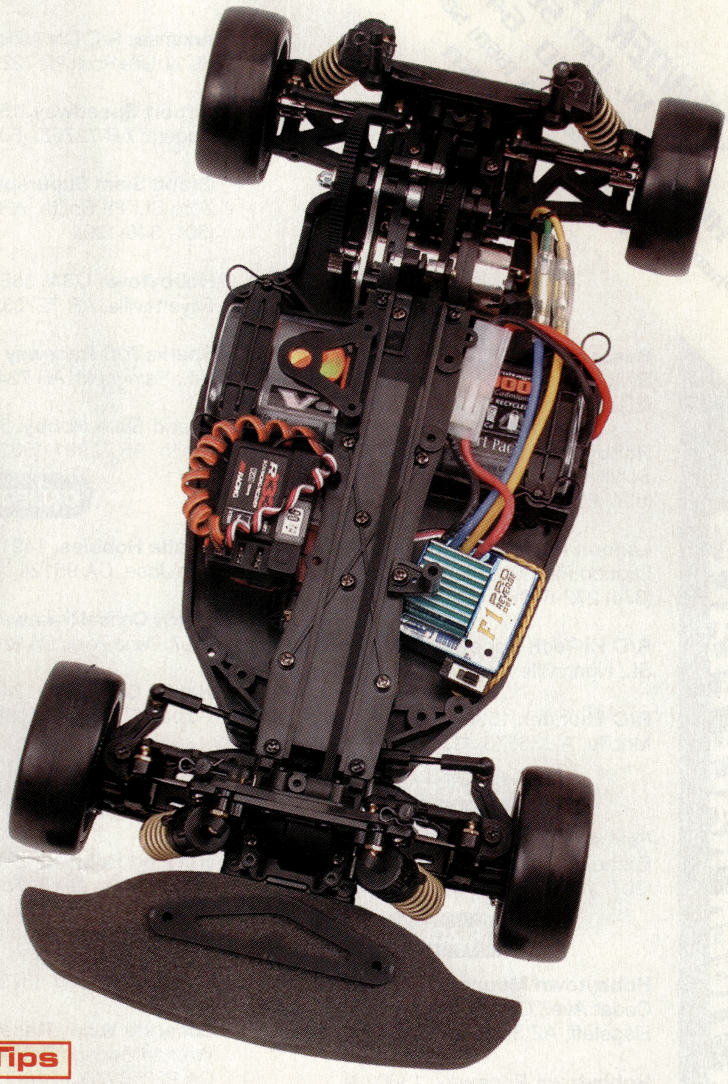


A foam front bumper helps protect the front end in the event of a run-in with a track board.



We used standard sport-level equipment in the '04. A LRP F1 reversible speed control and Orion stick pack provide the juice, and it's controlled by a JR XR3 FM radio.





SPECIFICATIONS

Type	4WD touring car
Scale	1/10
Retail price:	$334
Average street price:	$200-225
Length	433mm
Width	192mm
Wheelbase	255mm
Track	165mm(F)/160mm(R)
Weight (RTR)	3lbs., 8.7oz.
Weight w/o body	3lbs., 4.2oz.
Transmission:	
Type	Dual belt full time 4WD
Differentials	gear diff
One-way	none
Drive shafts	Dogbones
Bearings/ bushings	
Suspension:	
Type	independent lower A-arm
Material	molded composite plastic
Front end:	
Caster	non-adjustable
Camber	adjustable
Toe	adjustable
Down-travel	non-adjustable
Rear end:	
Anti-squat	non-adjustable
Camber	adjustable
Toe	non-adjustable
Down-travel	non-adjustable
Shocks	plastic bodies
Springs	Stock Gold
Wheels	Stock
Tires	Stock
Insert	Stock
Body	Ferrari 360 Modena

Building Tips

- As always, read through the directions first. Make sure you have all the tools necessary for the job.
- Replace all the bushings in the outdrives with a good set of bearings (if your budget allows for it).
- When building the shocks use a good quality synthetic shock oil.
- I recommend that you replace the mechanical speed controller in the kit with a good electronic unit—you'll get much more proportional throttle control.

LIKES

■ The included Modena shell is a beautifully detailed body.

■ Gotta like that dual-belt drive system.

DISLIKES

■ Wish it came with turnbuckles instead of threaded links.

■ Suspension and steering have a little bit of play.

■ Full bearings would have completed the kit.

CONCLUSION

If you're a Ferrari fan, then this kit should have you seeing red in no time—and we mean that in the nicest way! The 360 Modena is faithfully recreated—all the body lines are to scale, as are the slick-looking BBS wheels. TCS racers also may be interested to know that this body is quickly climbing up the ranks as one of the best-handling bodies that Tamiya produces. So, if you're a racer, or just a Ferrari enthusiast, you may want to check out this kit! ◆

SOURCES

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

Multiplex, 560 Library St., San Fernando, CA 91340 • (818) 785-2401; (818) 785-3946 (fax)

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Lagoon Park R/C Raceway, 2730 Lagoon Park Dr., Montgomery, AL 36109 (334) 272-6438

R/C Hi-Tech Raceway, 3303 Meridian St., Huntsville, AL 35811 (205) 539-1347

R/C Thunder, 1530 Schillinger Rd., Mobile, AL 36675, (334) 645-2787

ALASKA

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

ARIZONA

Hobbytown Mountain Raceway, 1500 E. Cedar Ave., Cedar Hills Shopping Center, Flagstaff, AZ 86004, (520) 214-9887

Hobbytown Raceway, 13802 N. Scottsdale Rd., Scottsdale, AZ 85250 (602) 948-3946

Hobbytown Raceway, 1915 East Baseline Rd., Gilbert, AZ 95234, (602) 892-0405

Hobbytown Raceway, 1102 E. 22nd St., Tucson, AZ 85704, (520) 882-8888

Hobbytown USA, 5030 E Ray Rd., Phoenix, AZ 85044, Linda McFarland, (602) 598-5282

Kiwanis Park R/C Track, 855 S. Magnolia Ave., Yuma AZ 85364, (520) 539-7148

Scottsdale R/C Raceway, 3023 N. Scottsdale, Scottsdale, AZ 85251 (602) 945-2186

Speedway Hobbies, 2710 N. Steve's Blvd., Ste. 8 Flagstaff, AZ 86004 (520) 714-1566

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

Airport Speedway, 1521 Airport Loop, Rogers, AR 72756, (501) 636-7123

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

Sparks R/C Raceway, 7194 Greene 721 Rd., Paragould, AR 72450, (501) 239-3606

Grand Slam Hobby, 5300 South Zero, Ft. Smith, AR 72901, (501) 648-1994

CALIFORNIA

Castle Hobbies, 14918 Camden Ave., San Jose, CA 95124, (408) 377-3771

Hobby Central Raceway, 34255 PCH, Unit #107, Dana Point, CA 92629, (619) 513-0373

Hobby Central II, 13461 Community Rd., Poway, CA 92064 (619) 513-0373

Hobbytown, Parktwon Plaza Shopping Center, 1350 S. Park Victoria Dr. #21, Milpitas, CA 95035 (408) 945-6524

Hot Rod Hobbies, 25845 San Fernando Rd., Saugus, CA 91350, (661) 255-2404

Jake's Performance Hobbies, 6650 Commerce Blvd., #21 Rohnert Park, CA 94928, (707) 586-3375

Lucerme Valley Raceway, 32800 Old Woman Springs Rd., #4, Lucerne Valley, CA 92356 (760) 248-7305

MnM Hobbies, 4225 Prado Rd., Ste. 103 Corona, CA 91720, (909) 272-3545

Nor-Cal Speedway, 519 Bush St., Woodland, CA 95695 (530) 668-5678

ProCar West, Sante Fe Springs, CA m2rcracing

Race Corner of Marin, 300 Entrada Dr., Novato, CA 94949, (415) 883-0388

Race Prep Raceway, 20115 Nordhoff Chatsworth, CA 91311, (818) 709-6800

Racer's Haven, 7401 White Ln. #12 Bakersfield, CA 93309, (805) 835-0441

Ripon R/C Speedway, 701 N. Acacia Ave., Ripon, CA 95366 (209) 599-5160

Sacramento R/C Racing, 6201 27th St., Sacramento, CA 95824, (916) 454-4044

Showtime Speedway, 3709 Abbot DR., Bakersfield, CA 93312, (805) 5890493

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

Ultimate Hobbies, 2378 North Orange, CA 92865, (714) 921-0424

COLORADO

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

CONNECTICUT

Central CT Auto Racers
Davis Hobbies II, 45A Welles St., Glastonbury, CT 06033, (860) 633-3056

JP's Hobby Center & Raceway, 78 Pershing Dr., Derby, CT 06418, (203) 735-5512

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

DELAWARE

Hobbystop Speedway, Rd. #4, Box 100, Rte. 13, Seaford, DE 19973, (302) 629-3944

FLORIDA

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

Cars, Trains and Planes, 1029-4 Phillips Hwy. Jacksonville, FL 32256 904-880-9500

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

Frontier Race Track, 15260 N.E. 244th Ave., Salt Springs, FL 32134, (352) 685-2881

Hobbyworld Raceway, 7273 103rd St., Jacksonville, FL 32210, (904) 722-9022

Kissimmee R/C Racing, Osceola Square Mall, 3831 West Vine St., Ste/ 60, Kissimmee, FL 34741, (407) 944-4913

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Monster Hobbies, 616 Southeast 10th St., Deerfield Beach, FL 23441, (954) 428-9118

NORRA, 3300 Santa Barbara Blvd., Naples, FL 34104, (941) 324-9021

Ocala R/C Car Club, 2610 SE 8th St., Ocala, FL 34470, (800) 324-8882

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

Port St. Lucia Racing, 3626 SW Rlvera St., Port St., Lucie, FL 34953 (561) 336-8711

Randy's RC Raceway, 7744 Glenwood St., Clermont, FL 34711, (352) 242-0557

River City R/C Club, 9711 Sharing Cros Dr., Jacksonville, FL 32257, (904) 268-1948

Sarasota RC Speedway, 8475 Cooper Creek Blvd., University Park, FL 34201, (941) 358-7047

Speedworld-RC, 600 S. Yonge St., Ste. 107, Ormond Beach, FL 32174, (904) 271-6240

Tampa Bay RC Club, PO Box 10224, St. Petersburg, FL 33733, (813) 526-0744

Tropical Racers, Tropical Park, Palmeto Expressway & SW 40 St., (Bird Road), Miami, FL

GEORGIA

Anthony's Victory Lane, 129 East Hwy. 80, Pooler, GA 31322, (912) 748-0847

Dalton Raceway, 3036 Parquet Rd., Dalton, GA 30720, (706) 226-6699

Emerald City R/C Speed, Hwy. 80 East, Dublin, GA 31027, (912) 272-3856

Hobbytown Raceway, 2301 Airport Thruway, Columbus, GA 31904, (706) 660-1793

Prime Time Hobby & Craft, 432 S. Wall St., Calhoun, GA 30701 706-625-9037

Racer's Edge, 1530 Hwy. 19 N., Thomaston, GA 30286

Sandy Cross Speedway, Rt. 1 Box 1071, Hwy. 51, Royston, GA 30662, (706) 245-9573

Stinger Speedway, 3769 Maysville Rd., Commerce, GA 30529, (706) 335-9044

Sugar Bowl Speedway, 5272 Nelson Brogdon Blvd., Sugar Hill, GA 30518, (770) 945-6709

HAWAII

Maui Racing Association, 230 Hana Hwy., #11, Kahului, HI 96731, (808) 873-0376

Team PRC Racing Club, 176 Mamo St., Hilo, HI 96720, (808) 935-3561

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Almosta Ranch R.C.'s, Idaho's largest outdoor track 1732 Eldridge Ave. Twin Falls, ID 83301 208-733-8219, or 208-733-1572

Dirt Stuff Plus, 5344 N. Yellowstone Hwy., Idaho Falls, ID 83401, (208) 522-7576

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Adams R/C Raceway, 7201 S. Adams, Bartonville, IL 61607, (309) 633-9300

AJ's, 10211 Keslinger Rd., DeKalb, IL 60115, (815) 756-2772

CIRCR/Precisoin RC Hobbies, 1917 2nd St. Pekin, IL 61554 1-309-347-0975

Depot Hobby Raceway, 180 S. Seminary St., Galesburg, IL 61401, (309) 342-9323

H&H Raceway, 9346 Virginia Rd., Lake in the Hills, IL 60102, (847) 458-1777

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

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

RMR Raceway, 19091 W. Casey Rd., Libertyville, IL 60048, Ray Rawald, (847) 549-6963

Shiloh Eagles Speedway, 308 N. Virginia AVe., Belleville, IL 62220, (618) 277-6030

SIRCAR Raceway, 1200 N. Marion, Carbondale, IL 62901, (618) 549-5885

Sport 'N' Hobby, 905 Bibbs, Jacksonville, IL 62650, (217) 254-1375

Stanton Hobby Shop, 4718 N. Milwaukee, Chicago, IL 60630, (773) 283-6446

Wep Raceway, RR #2, Box 44, Lawrenceville, IL 62439

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Bremen Racing, 308 N. Bowen, Bremen, IN 46506, (219) 546-3807

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

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

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Hobby Haven, 7672 Hickman Rd., Des Moines, IA 50322, (515) 276-8785

HobbyTown USA, 2737 16th Ave. SW, Cedar Rapids, IA 52404, (319) 364-3289

Manly R/C Club, Box 23, Manly, IA 50456 (515) 454-2025

Outback Speedway, 403 State St., Gutherie Center, IA 50115, (515) 747-3064

Radio Control Raceway Park, 2100 First Ave. N., Ft. Dodge, IA 50501, (515) 576-3780

Wild Bill's Raceway, 901 W. Jones, Knoxville, IA 50138, (515) 842-5973

KANSAS

Hobbytown USA, 2016 W. 23rd, Lawrence, KS 66046; Kevin Decembes, (785) 865-0883

R/C Superdome and T.Q. PRO Shop, 14 E. Avenue A., Hutchinson, KS 67501 (316) 665-6633

RC Hobbies, Franum Creek, Milford Lake, KS (785) 238-1877

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Trio Hobbies & RC, 216 Redmar Plaza, Radcliff, KY 40160, (502) 351-7547

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

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Pontchartrain Hobby Shop, 3755 Pontchartrain Dr., Slidell, LA 70458, (504) 649-1199

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Clay Bowl R/C Hobbies, P.O. Box 61, Greene, ME 04236, (207) 946-5003

R/C Speedway & Hobbies, 87 Main St., Fairfield, ME 04963, (207) 453-4588

MARYLAND

Countryside Raceway, 406 Pamela Rd., APt. C, Glen Burnie, MD 21061, (410) 761-6196

Doug's Raceway, 2935 C ain Hwy., Waldorf, MD 20601, (301) 843-6220

Hobby Town USA, 8223-11 Elliot Rd., Easton, MD 21601, (410) 820-9308

JR's Race Place, 2935 Crain Hwy., Waldorf, MD 20601, (410) 947-2766

The Track, 16806 Oakmont Ave., Gaithersburg, MD 20877, (301) 417-9630

MASSACHUSETTS

C&C Hobby & Raceway, 562 Russells Mills Rd., South Dartmouth, MA 02748, (508) 997-4131

Hi-Tech Hobbies, 1681 Broadway (Rt. 138) Raynham, MA 02767, (508) 880-5373

Megadrome Raceway, Rt. 8 Curran Hwy. North Adams, MA 01247, (413) 743-7223

MICHIGAN

Hobbytown USA, 2252 S. Main St., Ann Arbor, MI 48103, (734) 996-2444

House of Hobbies, 2863 West Shore Dr., Holland, MI 49424, (616) 786-3686

JT Superspeedway, Golden Ave., Battle Creek, MI 49015, (616) 965-0116

Larry's Performance R/C's, 43665 Utica Rd., Sterling Heights, MI 49221, (810) 997-4840

Lazer RC Speedway, 2858 N. Wilmoth Hwy., Adrian, MI 49221, (517) 263-2806

Motor City Speedway, 16025 23 Mile Rd. Macomb Twp., MI 48042 (810) 677-2311

N.M.R.C.C. Raceway, Hobby Toy, Main St., Gaylord, MI 49735, (517) 732-3963

Ovaitt's R/C Speedshop, Cherryland Mall, 1732 S. Garfield Ave., Traverse City, MI 49686, (616) 947-6670

R&L Hobbies & Racing, 9782 Portage Rd., Portage, MI 49002, (616) 323-3686

Rodgers R/C Raceway, 7463 Ridge Rd., Britton, MI 49223, (517) 451-8301

Village R/C Raceway, Praire Ronde St., Decateur, MI 49045, (616) 423-7878

Village Hobbies, 195 N. Elm St. Hesperia, MI 49421 231-854-1374

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Duey's Hobbies & R/C Raceway, 6600 Cahil Ave., Inver Grove Heights, MN 55076, (651) 450-1721

Fun City, 9100 Park Ave., Elk River, MN 55330, (612) 441-8365

Northwoods Hobby Raceway, 2638 Hwy. 25 North Brainerd, MN 56401, (218) 829-9257

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

MISSISSIPPI

Joe McFaden Hobbies, 5531 Fox Meadow Dr., Meridian, MS 39307 (601) 483-7000

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MISSOURI

B&L Hobbies & Raceway, 2800 Anchor Dr., Park Hills, MO 63061, (573) 431-9444

Greentree R/C Racepark, Marshal Road, Kirkwood, MO (314) 831-2194

Ozark's R/C Raceway, PO Box 460, Willard, MO 65781, (417) 742-4376, (417) 742-7223

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

OTWG Carpet Raceway, 55129 849th Rd., Norfolk NE 68701, (402) 644-7922

RC Motorsport Off-Road Raceway, 5600 Mass Rd., Omaha, NE 68164, (402) 593-6133

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Big Boys toys 1735 Juantabo N.E. Albq., NM 87112 505-298-1023 505-294-1543

Charlie's Hobby Shop, 225 E. Idaho, Ste. # 11Las Cruces, NM 88005, (505) 541-1097

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Rampage R/C, 782 Rt. 9G, Hyde Park, NY 11204

NEW JERSEY

Hobby Workshop, 510 West Kings Hwy. Mt Ephraim, NJ 08059 856-931-2400

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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, SX 29640; Craig Prahl, (864) 295-1209; *ww.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

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J&M R/C Hobbies, 5341 Dorchester Rd., Evanston Plaza, N. Charleston, SC 29418; Mike Smith (843) 552-9449

Midway Hobby and Raceway, 707 Sulphur Springs Rd., Greenville, SC 29611; Allen A. Dodson, (864) 246-6335

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

SOUTH DAKOTA

Boomerans Raceway, 105 N. Main, Hartford, SD 57033; Ed Smithback (605) 528-7345

TENNESSEE

Hobby Town USA, 2000 Mallory Ln., Franklin, TN 37067; Bobby Mills, (615) 771-7441

MSA R/C Racing, Rt. 12 Box 489 F, Crossville, TN 38555; D.R. Findley (931) 456-0027

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

Hobby Town USA, Commons II 8859 Town & Country Circle Knoxville, TN 37923 865-690-6423

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

Comanche Trail RC Park, City Park, Big Spring, TX 79720; Allen Nichols (915) 263-4241

Discount Hobbies, 1722A West Anderson Loop, Austin, TX 78757; Tony Bermudex, (512) 458-2324

Drycreek Raceway, 5903 Co. Rd. 2297, Quinlan, TX 75474; Micky Alphin (903) 883-4060

Hal's Hobby Raceway, 1440 Bessember, El Paso, TX 79936; Carlos (915) 591-2213

Hobbycraft Speedway, 819 N. Main St., Corsicana, TX 75110; Keith Hoffman (903) 872-6761

HobbyTown USA, 999 E. Basse Rd., Suite 177, 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

Issac's Race Track, 18177 Gulf Frwy., Webster, TX 77598; Issac Ben-Ezra, (281) 488-8697

MBRC Off-Road Raceway, 204 D & E Valley Ln., Kennedale, TX 76133 (817) 292-5055

Performance Raceway, 1106C Witte Rd., Houston, TX 77055; Jorge Tabush or Terry Schmid, (713) 464-4458

VIRGINIA

Debbie's R/C World, 2200 Commerce Parkway, Virginia Beach, VA 23454, (757) 340-6681

Hobby Hangers Speedway, 14014D Sullyfield Cir., Chantilly, VA 20151; Kwang or Billy, (703) 631-8820

Olde Towne Hobby Shoppe, 9105 Center St., Manassas, VA 22110; Arnie Levine, (703) 369-1197

Shamroc Raceway, 106 Cheviot Pl., Stephens City, VA 22655; Scott Janow, (540) 869-3551

Star/Car Raceway, Debbie's R/C World, 200 Commerce Parkway, Virginia Beach, VA 23454, (757) 340-6681

The Toteyard, 6494 Toteyard Dr., Dayton, VA 22821 (540) 828-3476 *toteyard.com.home*

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

Rain City Raceway, 3616 South Rd., Suite A3, Mukelteo, WA 98275, Debbie Cartwright (425) 438-2454 raincityraceway.com

Spokane Indoor Raceway, 6422 E. 2nd Ave., Spokane, WA 99212; Dave Mapston (509) 534-RACE

Tacoma R/C Raceway, 6305 6th Ave., Tacoma, WA 98406; Scott Brown (253) 565-1935

Ultimate R/C Raceway, 907 Cole St. #3, Enumclaw, WA 98022; Dan Dougherty, (509) 375-4995

West Coast Hobby & Raceway, 2239 Stevens Dr., Richland, WA 99352; Rick, (509) 375-4995

WEST VIRGINIA

Burr-Fab Raceway, 90 Davis St., West Union, WV 26456; Mark Travis, (304) 873-2487

Fulton's R/C Raceway, 2646 Chapline St., Wheeling, WV 26003; James Fulton (304) 233-5355

Left Turn Hobbies, 100 Saco Ln. Glen White, WV 25849; Stretch (304) 255-3930
Race Zone, Hopewell Rd., Rt. 8 Box 343A, Fairmont, WV 26554; Joe Clutter , (304) 368-1000

WVRCA R/C Club, 142 West Main, Bridgeport, WV 26330; D.W. Weed

WISCONSIN

ABC R/C Inc & Raceway, 244 W. Main St., Waukesha, WI 53186; Dick Mathiesen, (414) 542-1245

Gary's Hobby Center, 3701 Durand Ave., Racine, WI 53403; Bill Phalen, (414) 542-1245

Heart of the Valley R/C Club, 1330 Midway Rd., Menasha, WI 54952; Bill Morgan, (920) 954-1695

Hobbytown USA, 2061 South Koeller, Oshkosh, WI 54901 (920) 426-1840

Hobbytown USA-Revolution, Memorial Mall, 3347 Kohler Memorial Dr., #D2, Sheboygan, WI 53081; Kenny, (920) 452-0801

JJ's Dirt Heaven Hobby and Raceway, 6028 County Rd K, New Frankview, WI 54229; *dirtheaven@msn.com* Aaron Dufey (920) 866-9096

Mid-West Tri-Clone, 3745 Shuster, West Bend, WI 53095; Tom Holz, (414) 334-0429

Pro-Star Racing, 726 Pine St., Green Bay, WI 54301; Chuck, (920) 469-5566

RJ's/R.C., 4920 Hwy. 70W, Eagle River, WI 54521; Randy Stys, (715) 479-2541

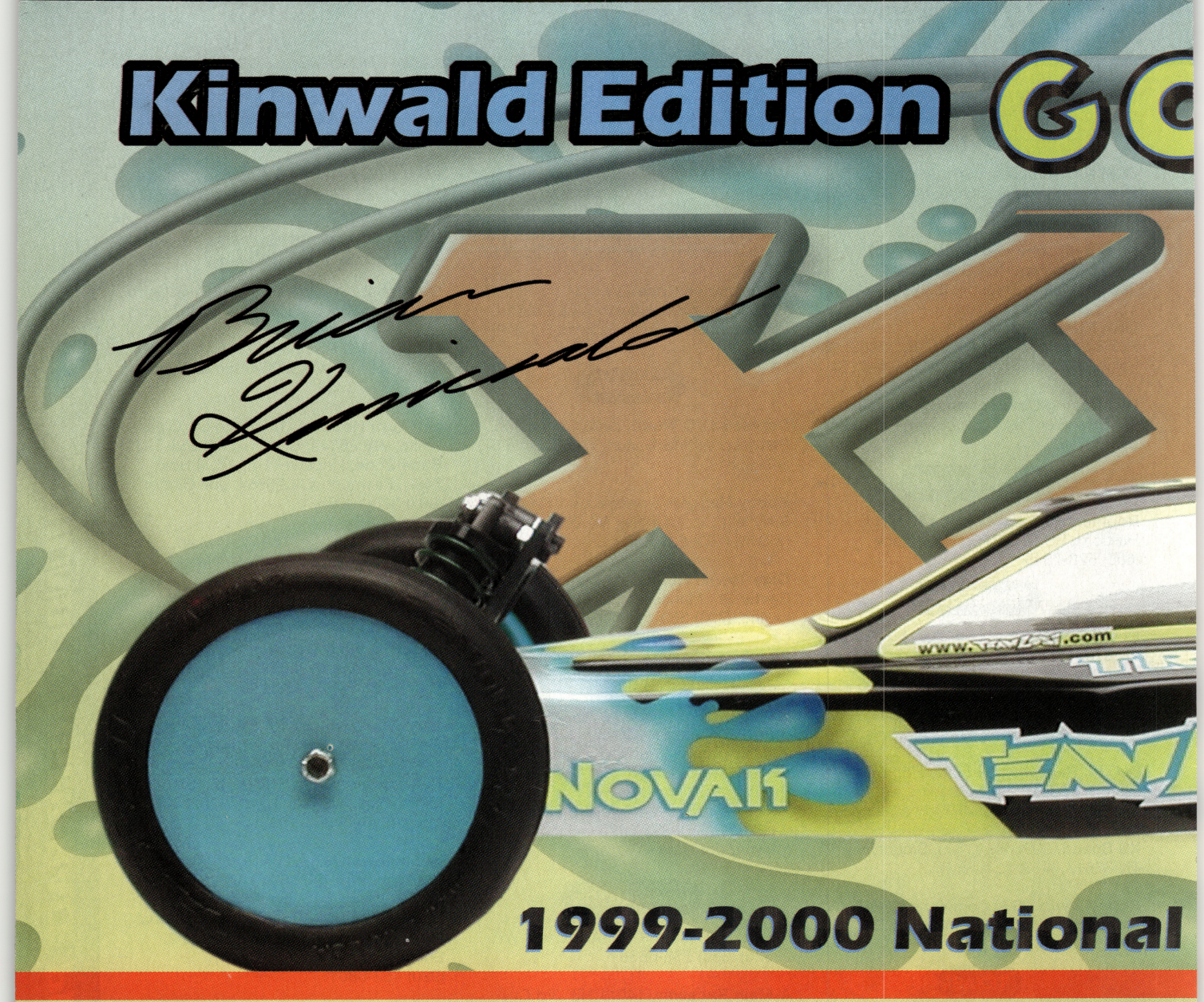
S&N's Trackside Hobbies and Raceway, 6405 N. Green Bay Ave., Milwaukee, WI 53209; Scott Ernst, (414) 351-1910

WYOMING

Wind River R/C Racing Association, 309 N. 4th West, Riverton, WY 8250; Shannon Watts, (307) 857-0418

Xtreme Hobbies Raceway, 2724 Powder Basin, Gillette, WY 82718; Frieg Balls, (307) 682-6077

Kinwald Edition



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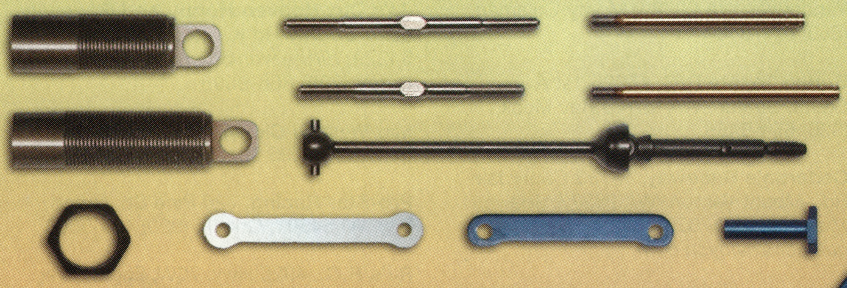

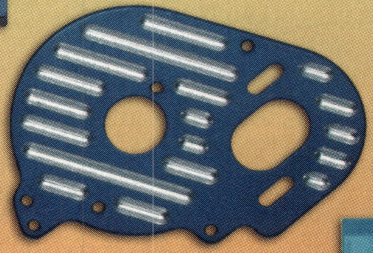

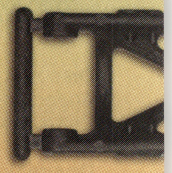

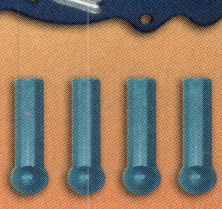

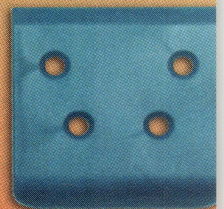

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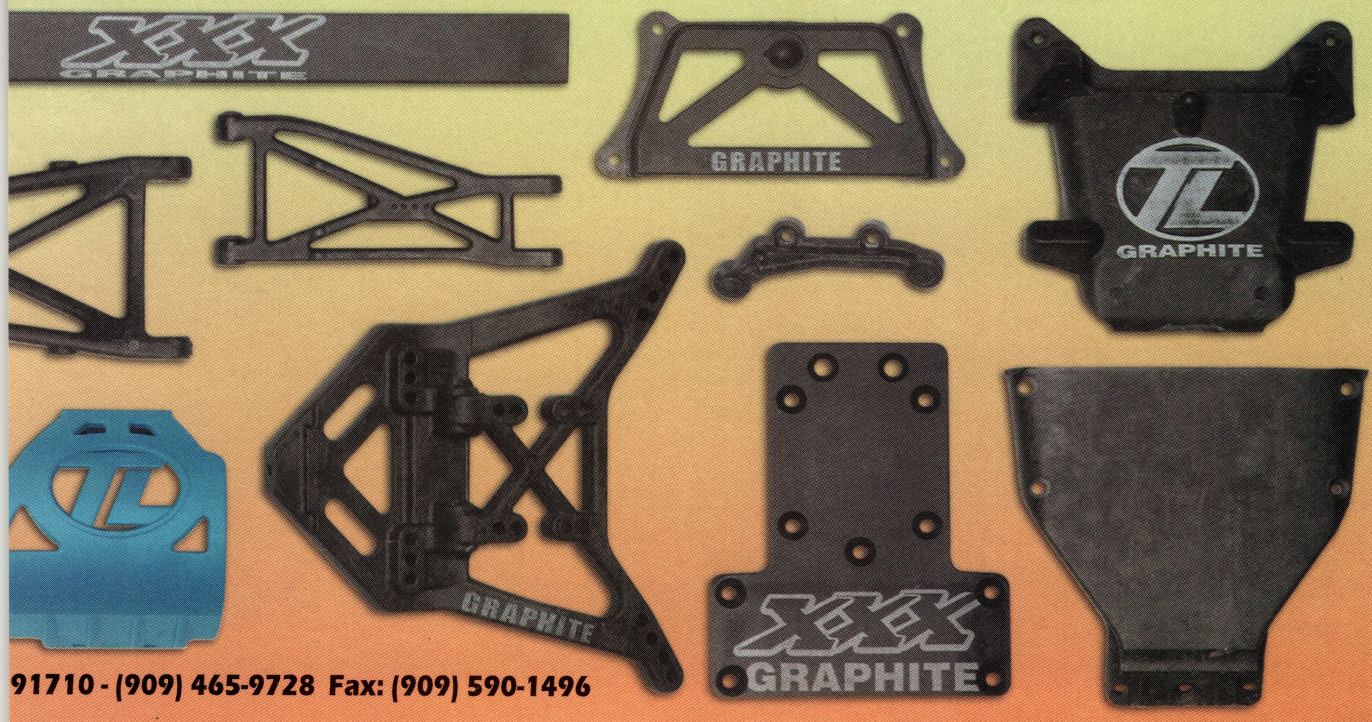

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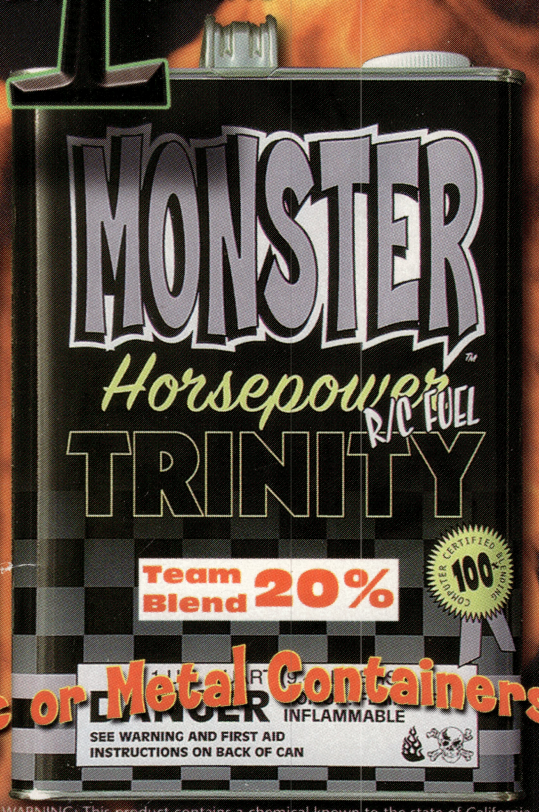

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