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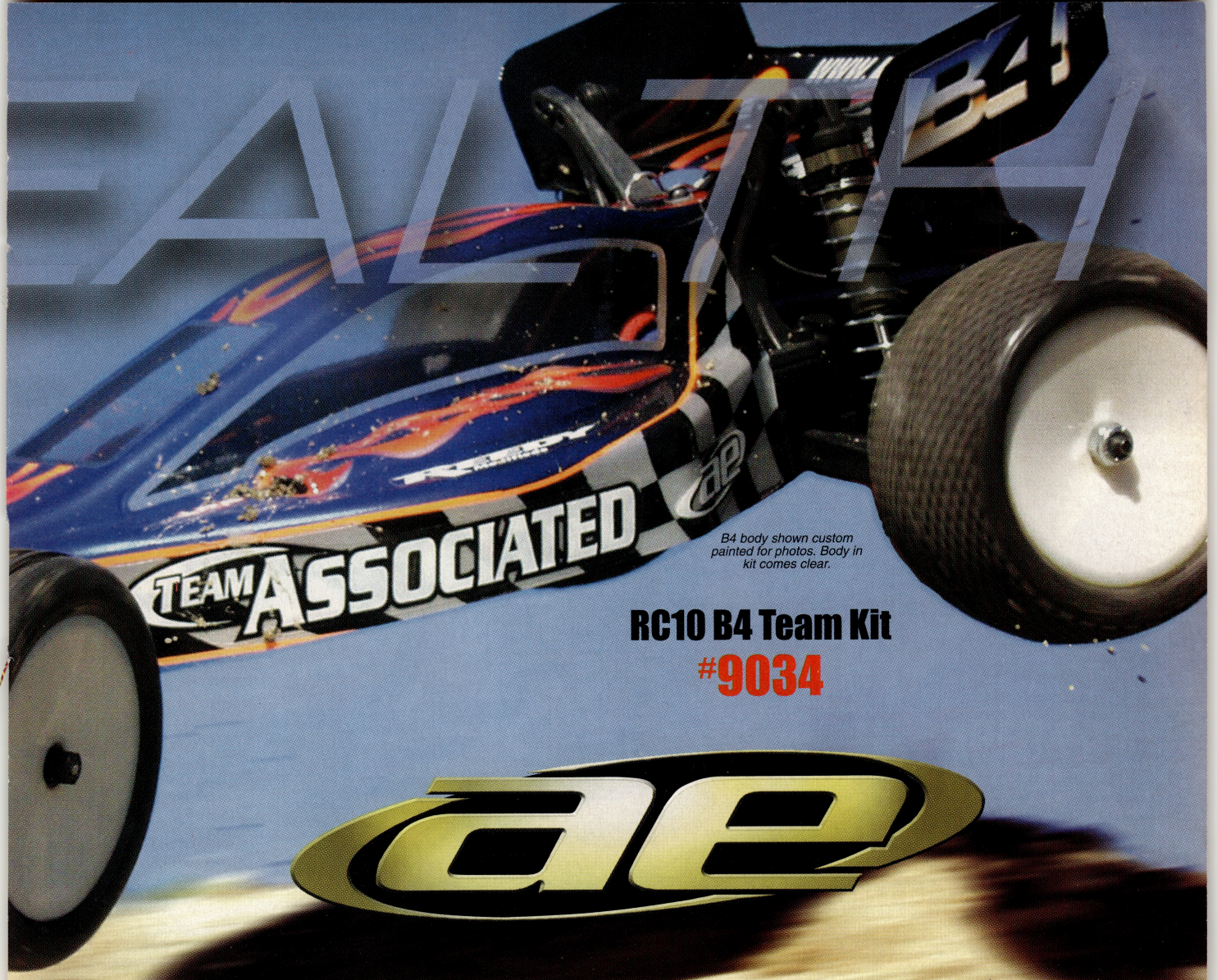
RC10 B4 STEALTH

As far back as 1989, there were grainy spy photos and a few sporadic sightings of a radical new buggy under development by Team Associated. Then at the '91 IFMAR World Offroad Championships in Detroit, the team unveiled their hand-built prototype "Stealth" cars, noted for their distinctive front suspensions and unusual shock mounting locations. Masami Hirosaka piloted the RC10 "Stealth" buggy to the World Championship win, and the prototypes were whisked back to Team Associated's California R&D department (Area 51) where they would not re-emerge for over a decade.

Now, Team Associated brings years of development and new technologies together by introducing the RC10B4 "Stealth" buggy... the most adjustable, tunable RC10 buggy ever produced.

Team Associated's B4 is the latest generation of the 5-time IFMAR World Championship winning heritage of RC10 buggies. After 12 years, the Stealth car is finally perfected.

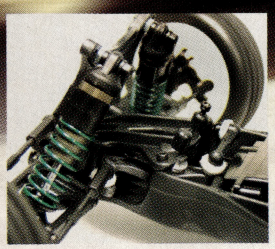




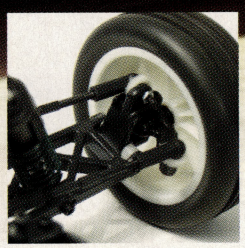
B4 body shown custom painted for photos. Body in kit comes clear.

RC10 B4 Team Kit

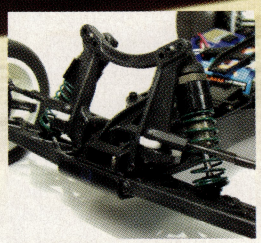
#9034



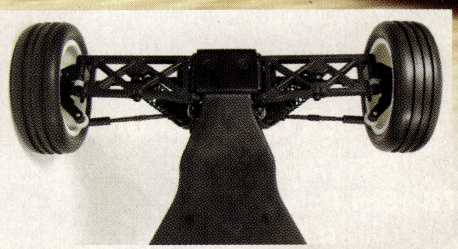
Angled bellcrank steering minimizes bump steer to maintain constant steering angles throughout the full range of suspension travel.



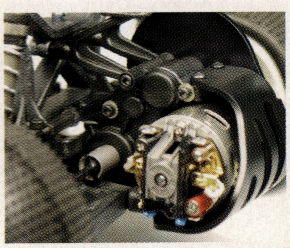
Wide-body front tires on new offset, stiffer front wheels. Trailing front axle or optional inline steering blocks can be used to tune steering response.



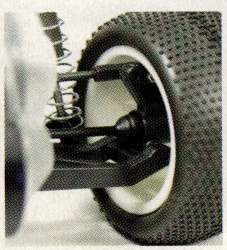
Front shocks are mounted behind the shock towers. All four suspension arms are the same length, and the "captured" hinge pin design uses no e-clips.



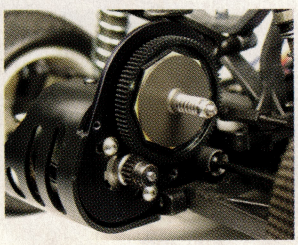
The "forward-swept" front end design provides maximum front end ground clearance. Chassis underside is contoured for maximum clearance when cornering, and minimal ground contact area on hard landings.



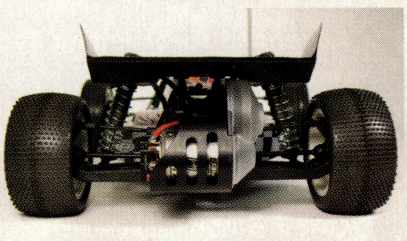
New 2.6:1 laydown Stealth transmission now uses the higher torque capacity differential from the RC10GT. Ultra-compact, efficient, low-CG design.



Longer CVD dog bones and axles have been designed into the rear suspension to push the B4 out to maximum legal width for more traction.



High torque capacity, double-sided slipper provides finer adjustment, easier assembly, and lower rotating mass than comparable double-sided slippers.



Impact-resistant rear motor guard and wing mounts. Lower motor, battery, body and wing mounting positions give the B4 a lower CG for higher cornering speeds and greater stability.

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104 Dynamite Tazer
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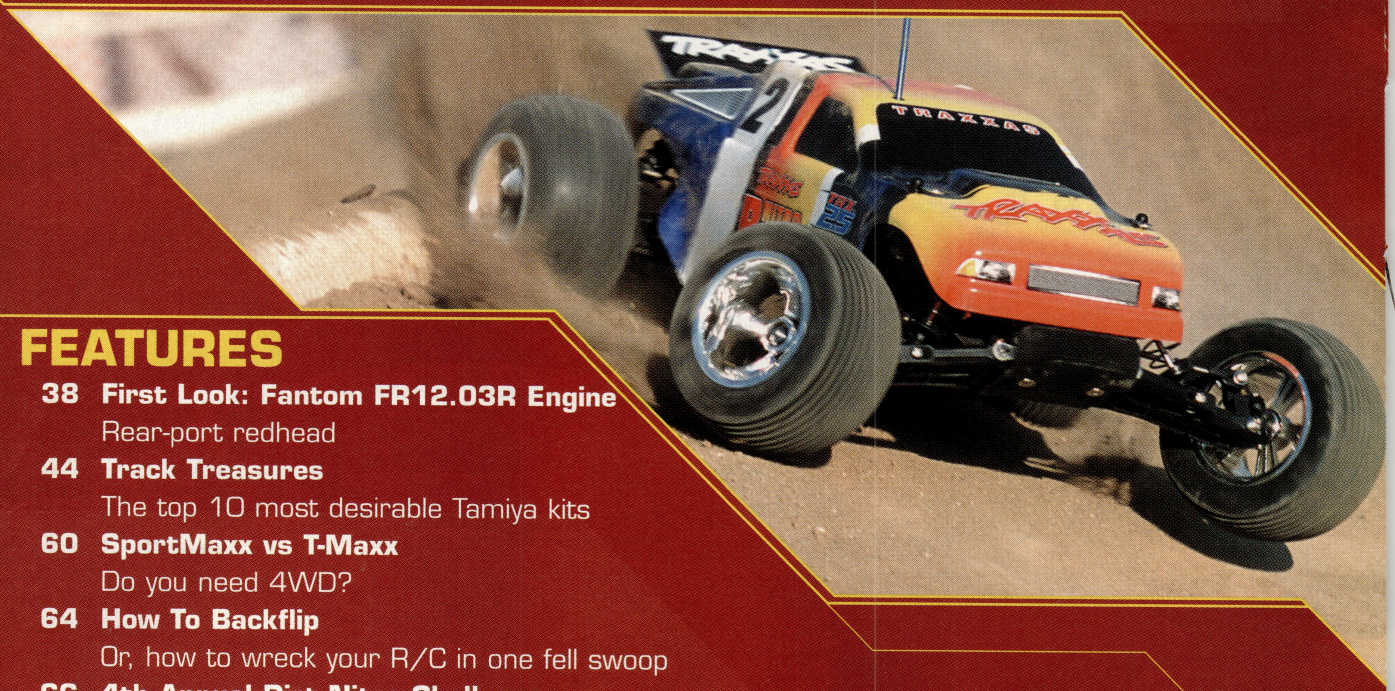

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THE RADIO CONTROL CAR MAGAZINE
MAY 2003, VOLUME 6, NO. 5



On the cover: Tamiya's Audi ABT TT DTM (photo by Adam Campbell)

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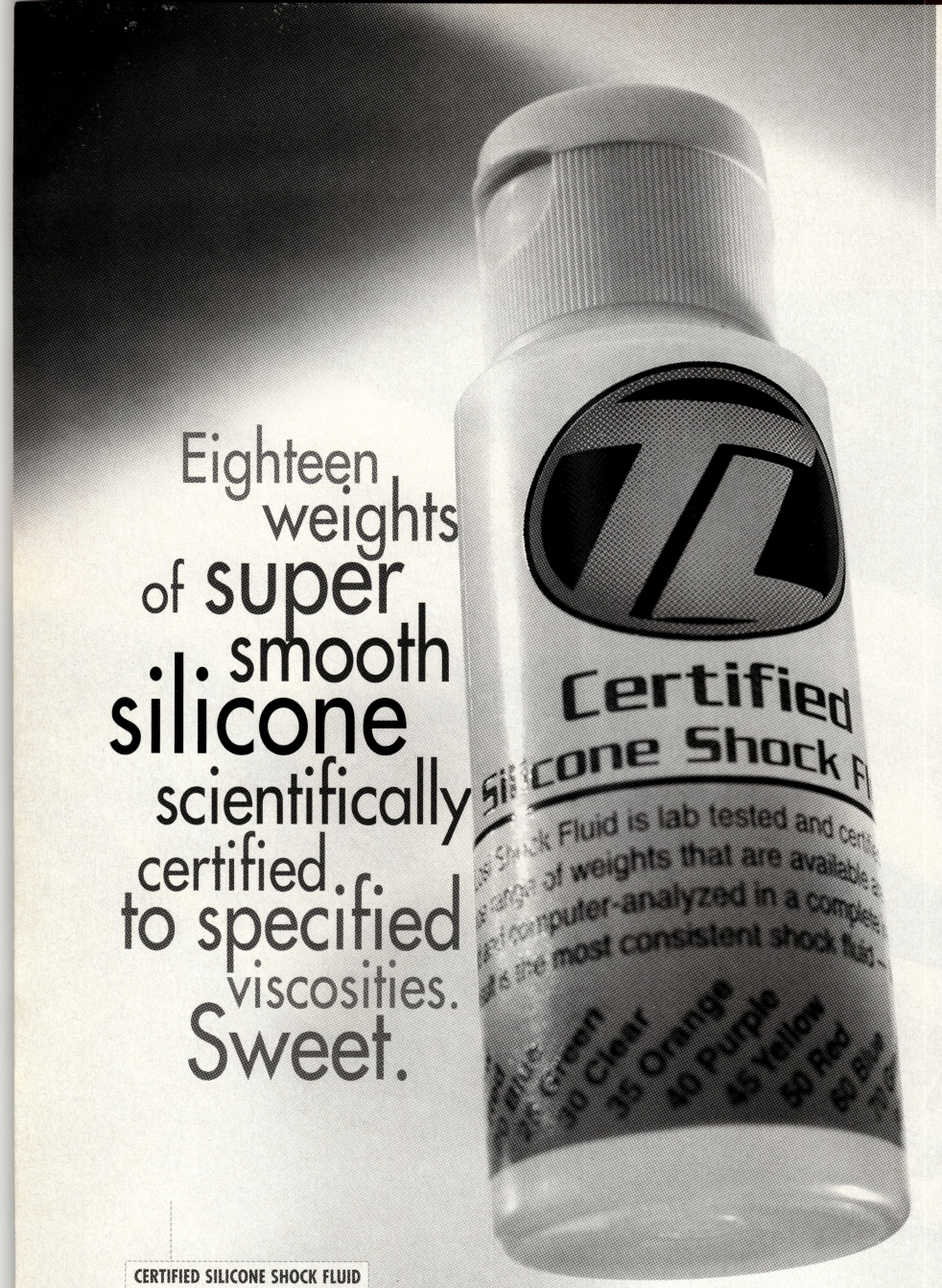

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EDITOR
FRANK MASI
ASSOICATE EDITOR
BRIAN SKINNER
CONTRIBUTING WRITERS
RICHARD TRUJILLO, TODD HODGE, RICK HOHWART, MASON SOLO
ONLINE EDITIORS
BRAD ROE
BradR@hi-torque.com
TOM HINZ
TomH@hi-torque.com
DESIGNER
TIM La PAGLIA
PHOTO ARTIST
PAT CARRIGAN
COPY EDITOR
JIM ALGAR
PRODUCTION COORDINATOR
KAY DEICKEN

ADVERTISING
EXECUTIVE ADVERTISING DIRECTOR
MARK THOMAS
ACCOUNT EXECUTIVE
DERRECK BERNARD
AD PRODUCTION MANAGER
PEGGY REID
ACCOUNT ADMINISTRATOR
ZAHAVA SEGAL
EXECUTIVE WEB ADVERTISING DIRECTOR
SEAN McCOY
smccoy@hi-torque.com

HI-TORQUE PUBLICATIONS
PRESIDENT & PUBLISHER
ROLAND HINZ
ASSOCIATE PUBLISHER
LILA HINZ
ASSISTANT TO PRESIDENT
CASSANDRA MITTELBERG
ASSISTANT TO PRESIDENT
KATHARINE McCOY
CIRCULATION DIRECTOR
CUYLER GIBBONS

SUBSCRIPTION AND PROMOTION MANAGER
RYAN CLEEK

ADVERTISING & GENERAL OFFICES
25233 ANZA DR.
VALENCIA, CALIFORNIA 91355
(661) 295-1910
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[Drivers' Stand]

BY FRANK MASI

WHAT MAKES A KIT COLLECTIBLE?

It's been over a year since the debut of Richard Trujillo's "Vintage R/C" column, and in that time, it has become one of the most popular sections in the entire magazine. In fact, we often receive letters from readers who tell us that they turn to Richard's page as soon as they get their new issue.



Obviously, there is a demand for collectible R/C kits, but what is it that makes one kit a valuable find while others from the same period aren't worth two pennies? I spent some time speaking to Richard and several other "vintage" authorities about just what makes some kits so valuable. Here's what I learned.

First, the most valuable kits tend to be those from the earlier period of R/C history. Specifically, those from the early "boom" days of the hobby tend to be worth the most. It also helps if the kit in question is of technical significance. For example, early Tamiya buggies are incredibly valuable because they usually contained what was at the time radical new thinking. Look at the die-cast aluminum trailing arms and external shock reservoirs on the Rough Rider and Super Champ for proof of those kits' innovative design.

Secondly, people who are willing to pay premium prices for vintage kits usually have some type of emotional bond to that particular kit. Just read Richard's column and you'll find that most of his new "finds" are usually kits that he used to own in his younger days. I read a great quote the other day, "I'm so glad to be having a happy childhood as an adult." I think it suits this subject very well.

For this month's issue, Richard and I decided to do a sort of top 10 list for collectible kits. But this list wouldn't be just for overall dollar worth, but it would combine this with sentimental value as well. Once he began working on the story, Richard soon realized that just about every "big buck" kit found on eBay and other online auction sites had something in common: they were made by Tamiya. So, his top 10 story soon turned into a "Top 10 Collectible Tamiya Kits" feature (see page 44). Richard also noted the difficulty in selecting just 10 kits - choosing from among his beloved Tamiya kits was obviously a painful experience!

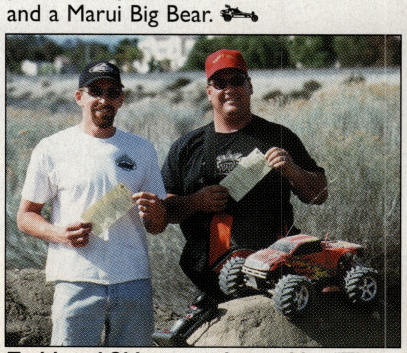
HOW 'BOUT SOME REISSUES?

With original Bruiser and HiLux kits selling for well over $2,000.00, the question many ask is why doesn't Tamiya reissue some of these vintage favorites? Tamiya has, on occasion, been known to reissue kits (the recent Dyna Storm buggy and the somewhat re-released Tyrell and Ferrari 312T F1 cars are good examples), so why not a Bruiser, Super Champ or Hot Shot?

The problem is likely the same as any manufacturer would face, from Ford to Nissan - it would probably cost more to re-tool and re-issue an old product than to design and manufacture a new one. Although it's possible that Tamiya has much of the tooling for its older kits, it's also very likely that some if not all of the expensive molds are in bad shape from both use as well as from the ravages of time. So if Tamiya did decide to re-release an original Blazin' Blazer or Sand Scorcher, the cost of the kit would probably be nearly as high as the premium prices commanded by the originals. I know that I certainly wouldn't send any test samples back!

OTHER MANUFACTURERS

Tamiya isn't the only company to have its products reach collectible status. In fact, I've asked Richard to do a follow-up article on sought-after kits from other companies as well. If I had to list a few non-Tamiya collectibles I'd like to see on my shelf, it would contain an original RC10 (the gold-tub kit), a nitro-powered Kyosho 1/8-scale Williams F1 and a Marui Big Bear.



Todd and Skinny get busted by "The Man" during a photo shoot.

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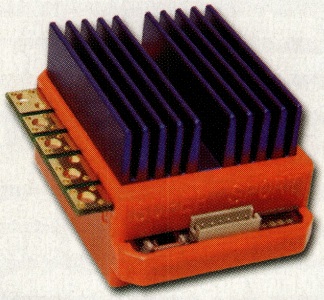



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UP FRONT





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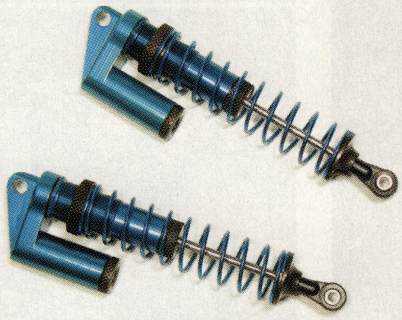
READERS' RIGS [PAGE 12]



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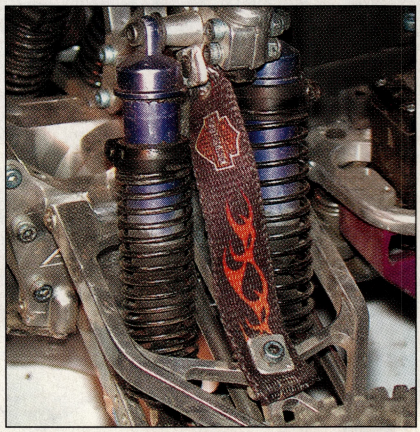


TRUCK COLUMN [PAGE 22]

[Readers' Projects]

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





DOC SAVAGE LIVES

D. Rumbold of Tualatin, Oregon, sent us these pics of his latest project—the first HPI Savage to grace our "Readers' Projects" pages! We're excited; you should be too. The inspiration for this project was D.'s own full-sized monster Blazer (also pictured). He began by replacing the Savage's stock .21 engine with a larger Force .25, to which he fitted a CVEC tuned pipe, OFNA high-flow air filter and, according to D., "just about every mod that is made by New Era." His HPI monster also sports Teamduze shock "bud-ezs" and custom-made alloy RCWD wheels wrapped with IMEX Jumbo Maxx Swamp Dawg tires. D. retained the stock HPI radio, but installed an Airtronics ultra-high-speed 200in./oz. servo along with a 600mAh NiCad pack to juice up the steering response. The third-generation Blazer body has been custom painted with blue pearl and candy blue, and features tinted windows. Additional mods include a frenched grill, HID lights, fog and brake lights as well as side mirrors.





WHAT TO DO IN THE WINTER

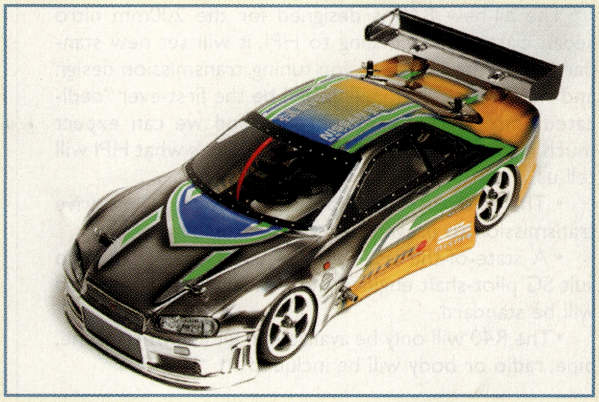
Steve Gearhart of Mattawan, Michigan, writes that it's hard to put away his R/Cs for the winter. So to keep his driving skills honed during the long Michigan winter, Steve picked up a ski kit from Performance CNC. Steve adds that his "Ski-Maxx" slices through the snow thanks to the traction of its Pro-Line paddle tires. And after having flipped his truck several times, he added the Performance CNC wheelie bar. Steve's unique snow machine also has aluminum shocks from Team Losi, a GS Racing exhaust deflector and covered air filter (essential for snow running) and an MIP On Board Temp Gauge.

HOT SHOTS

Keith Ehmke of Trumbull, Connecticut, asked, "Do you think any of these shots are hot enough?" Are you kidding, Keith? Want a job? The chassis beneath this trio of stunning sedan shells is a Yokomo GT-4, which, according to Keith, has "every hop-up I could find." Included among these mods is a carbon-fiber radio plate from Penguin r/c. And although Keith acknowledges that the stock Yokomo .18 screams, he is about to upgrade to a Trinity/Sirio .12 for all-out racing. The custom paint work was all done by Keith using Parma Faskolor. The hand-cut chrome logos were painted using Alclad II. Nice work, Keith!







THERE'S ONLY ONE—OKAY, TWO JEEPS

Mike Vaughn of Pittsburgh, Pennsylvania, sent us not one but two Readers' Projects this month—both of which show his obvious affinity for the Jeep CJ-series. The first is based on a DuraTrax Nitro Quake, which was a Christmas gift to Mike from his wife. Mike didn't like the truck body that came with his Quake, so he airbrushed a Bolink CJ8 body using a lot of metal-flake colors so that the paint changes seven different colors when hit by the sun. All of the decals are from Jackal. Mike also fitted his monster with "every DuraTrax hop-up I could find." He then installed a pair of 119in./oz. Futaba metal-gear servos, and to keep his investment safe, a Dynamite Race Guard fail-safe was installed.

Mike's second Jeep was created using a Tamiya Wild Willy 2 body atop a DuraTrax Maximum MT chassis. Mike tells us that he is completely satisfied with the speed of the stock DuraTrax Torq 16 engine; in fact, he says that his truck gets a lot of attention at the track not only for its unique look, but for its incredible speed. Like his Nitro Quake, Mike's Wild Willy is equipped with Futaba metal-gear servos and a Dynamite Race Guard.





BIG NEWS FOR HPI FANS!

In an official press release, HPI has announced the existence of two new high-end racing touring cars—one electric and one nitro. According to the press release, both the new R40 nitro tourer and the RS4 Pro 4 electric tourer will be the most "serious" race machines the company has ever produced.

R40
VIO NITRO PRO TOURING CAR

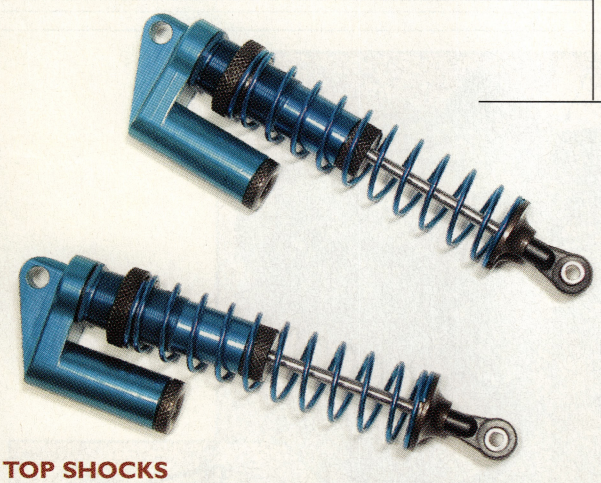
The all-new R40 is designed for the 200mm nitro sedan class, and according to HPI, it will set new standards in terms of suspension tuning, transmission design and weight distribution. This will be the first-ever "dedicated" nitro-racing car from HPI, and we can expect much higher levels of performance. Here's what HPI will tell us.

- The Nitro R40 will be built around a belt-drive transmission to prevent torque-steer issues.
- A state-of-the-art power (Centax-style) clutch to suit SG pilot-shaft engines and a racing-style two-speed will be standard.
- The R40 will only be available in kit form: no engine, pipe, radio or body will be included.

RS4 PRO 4
VIO PRO TOURING CAR

The RS4 Pro 4 is purported to be a radical departure from the current Pro 3, signifying a change in concept for HPI in both suspension geometry and transmission. No word on if the Pro 4 will look anything like the prototype shaft-drive cars raced by team drivers in'02 (see our November '02 issue for more), but here's what we do know.

- The Pro 4 will be shaft-driven, not belt-driven, as is the Pro 3. HPI is claiming that its own track testing has revealed the benefits of low maintenance and fast acceleration provided by this system.
- The car will also have completely new suspension and steering geometry, again reported to be vastly improved over the current car.
- The Pro 4 will only be available as a kit; there won't even be a body or tires included.



TOP SHOCKS

Looking for the ultimate shocks for your Maxx? Check out Integy's new Top RSR4 external reservoir shock set. Each set includes a full complement of eight shocks. Each shock features a blue-anodized aluminum body, smooth Teflon pistons (extra tuning pistons are included) and Integy's stiff blue springs. The best feature is the external oil reservoir, which allows for extra oil volume so that the oil displaced by the shaft (as the shock is compressed) has the room to get out of the way. A closed-cell foam insert in the reservoir prevents the air space from mingling with the oil. And the best news? All eight shocks sell for only 119.99.



MIDNIGHT COMMANDO

Tamiya had an all-black version of its forthcoming Wild Commando nitro truck. In this version, the Commando's military, Hummer-style body shell is dressed in all black for night operations. Beneath this intimidating shell is Tamiya's Terra Crusher nitro monster truck chassis, complete with .18 engine, on-board electric starter and two-speed transmission with reverse.

TRAXXAS® New MAXX™ Monsters!



2WD Nitro Monster Truck!

The Traxxas SportMaxx is a new 2-wheel drive Maxx monster that focuses on the essentials of performance that made the T-Maxx the best-selling hobby class model of all time. The SportMaxx is a lighter weight, more athletic Maxx machine that's motivated with unreal power from the TRX 2.5 Racing Engine and the stability of its race-bred WideMaxx™ suspension. 30+MPH speed is possible from the single speed transmission. Adding features is easy with complete upgrade modules to install 4-wheel drive, two-speed or reverse capability (sold separately).

SportMaxx Features!

- 1/10 Scale Nitro Monster Truck
- TRX 2.5 Racing Engine
- More power and less weight equals quicker acceleration!
- Exciting 2WD performance!
- Ready-To-Race® with a 3-channel radio system.
- Quick and agile.
- Less expensive than T-Maxx

SportMAXX™

UPGRADE OPTIONS

2-SPEED

2-Speed Module - #5192X
2-Speed! Send speeds to 40 MPH!

4WD

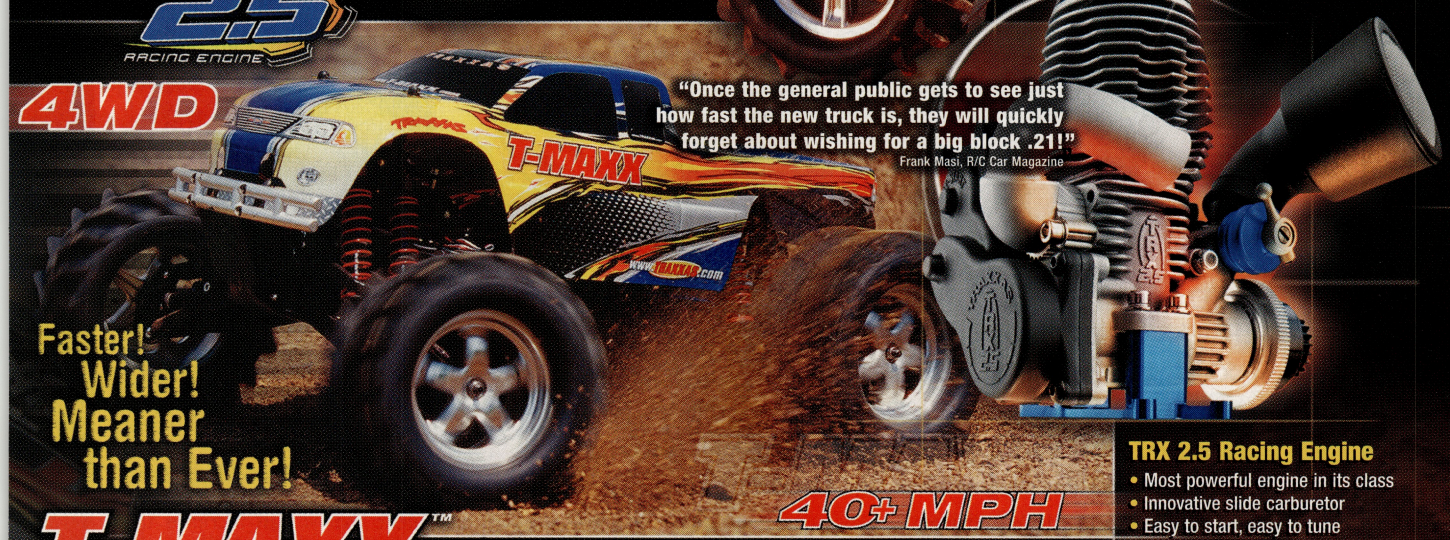
4WD Module - #5191X
4-Wheel Drive! Improves traction on any surface!

REVERSE

Reverse Module - #5194X
Reverse! Back out of trouble at the flick of a switch. Even the servo is included!



TRX 2.5 RACING ENGINE



"Once the general public gets to see just how fast the new truck is, they will quickly forget about wishing for a big block .21!"
Frank Masi, R/C Car Magazine

T-MAXX™



4WD Nitro Monster Truck!

1/10 Scale Nitro Monster Truck
40+ MPH! 4-Wheel Drive! Reverse!

Nitro with Reverse!

Only T-Maxx gives you two-speed forward/reverse nitro performance. Our patented design is the only one that delivers full proportional control of the throttle and brakes in both forward and reverse. Anything less is a compromise!

New wider suspension!

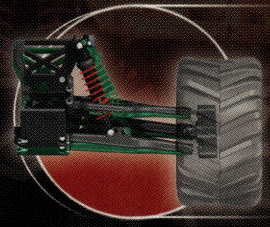
MAXXimum Adjustability! Tougher, wider suspension arms add over an inch of track width over the first generation T-Maxx for incredible stability. Multiple shock mounting positions (up to 10) on the arms and the new shock towers provide the widest range of adjustability. Set it for that famous, bottomless Maxx suspension travel and plush feel, or slam it low and firm for high-speed racing action!

Adjustable Caster

Only the T-Maxx features adjustable front caster for even more race-tuning precision.

TRX 2.5 Racing Engine

- Most powerful engine in its class
- Innovative slide carburetor
- Easy to start, easy to tune
- Push button electric starting with the all new EZ-Start™ system
- Engineered from the ground up for the most power and reliability possible
- Backed by the best service and support in the hobby industry



Traxxas Corp.1100 Klein Road Plano, TX 75074 Ph. 972-265-8000, Fax (972) 265-8011.
Traxxas U.K., P.O. Box 1128, Winterbourne, Bristol BS17-2SH, England. Ph. 44-117-956-1002 Fax 44-117-956-1121.
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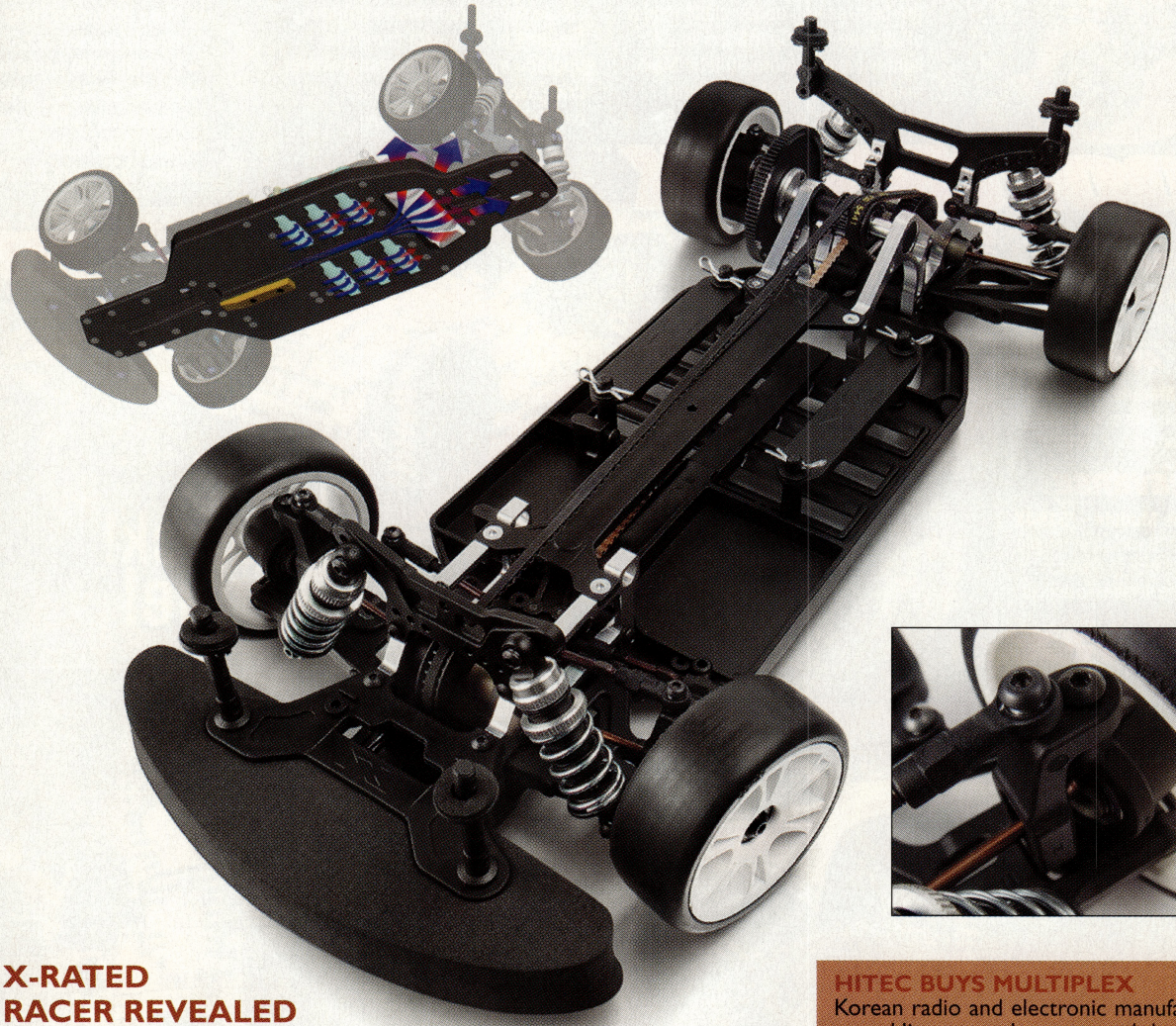
www.TRAXXAS.com

www.READYTORUN.org



X-RATED RACER REVEALED

Team XRAY recently introduced an all-new electric touring car at the '03 Nuremberg Toy Fair in Germany. Designed specifically to provide high-end performance at a price comparable to that of mid-level cars, the new T1R is based on XRay's highly successful EVO2 T1 design. Here are just a brief listing of the T1R's features.

- A new molded-composite chassis features XRay's new Inline Flow Cooling System, which directs airflow beneath the car to cool the battery and motor. The chassis is also the first to feature bottom-mounted chassis weights; if you're gonna add weights, this allows you to place them as low to the ground as possible.
- As it is based on the EVO2 T1, there will be a high degree of parts compatibility.
- The T1R will come with XRay's proven and simple C-hub front suspension.
- The car will have a two-belt 4WD system for smooth power delivery.
- As it is specifically targeted for mid-level racers, the T1R is simple to setup; no setup experience or special setup tools are needed to get the car dialed-in to the track.

HITEC BUYS MULTIPLEX

Korean radio and electronic manufacturer Hitec recently announced that it has acquired all assets of Multiplex Modelltechnik GmbH, one of Europe's leading producers of radio control radios and other various electronics. Although Multiplex radios have been sold in the U.S. for several years, Hitec is confident that it can increase the popularity of the brand here in the U.S. as it is throughout the rest of the world. Hitec will begin selling Multiplex products as of March '03, and will offer Multiplex radios alongside its current line of existing Hitec products such as the new Aggressor AM and FM models. Hitec is looking to incorporate Multiplex as a "high-end" racing line, and as it has traditionally targeted its Hitec radios toward the budget-conscious hobbyist, there should be little if any overlap.

NO COMPROMISE COMPETITION TRUCK FOR THE SERIOUS RACER

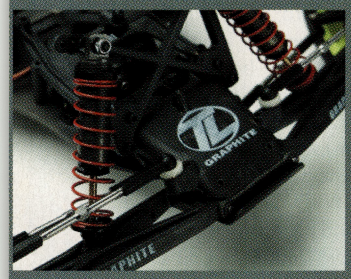
XXX GRAPHITE NT

Adam Drake

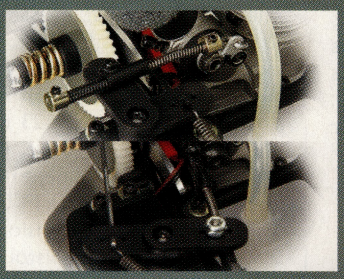


ENGINEERING WINS

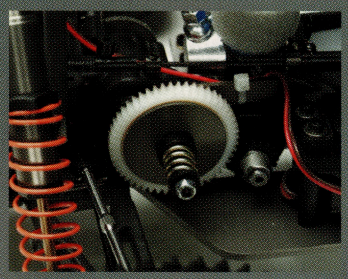
FEATURES OF THE ADAM DRAKE XXX-NT TRUCK KIT BY TEAM LOSI



Exclusive XXX-T Suspension The multi-adjustable suspension features graphite composite components that reduce overall chassis weight and increase structural rigidity for razor-sharp handling.



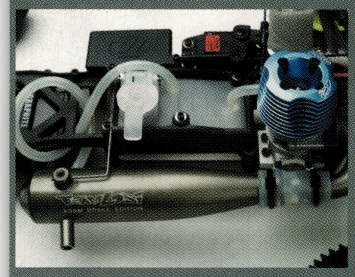
Versatile Throttle Linkage The deluxe linkage package allows for either rotary or slide type carburetors. The double-spring over-ride accommodates radio systems without end-point adjustments.



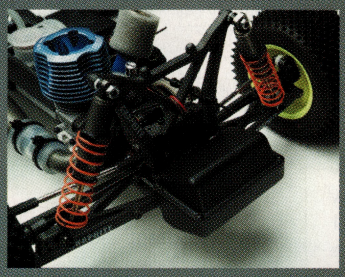
Stacked 4.11:1 Ratio Transmission This rugged race-proven design features an oversized carbide ball diff and low 4.11:1 ratio. The stacked design lowers the CG and moves the weight back for better handling and acceleration.



Hard-Anodized Aluminum Chassis Hard anodizing gives the machined T-6 alloy chassis superior strength and resistance to wear. Nothing protrudes to catch on barriers or fill with dirt.



Hard-Anodized Manifold & Laser-Etched Tuned Pipe The low-slung exhaust system lowers the center of gravity for better handling. The tunable design allows you to maximize output from all popular engines.



Hard-Anodized Adjustable Shocks The Adam Drake Edition's hard-anodized threaded shocks feature precision adjustment nuts and nitrided shafts that resist abrasion from dirt and debris, as well as provide smooth, consistent operation.

NO COMPROMISE. NO COMPETITION. NO KIDDING.

Adam Drake is a guy with a habit. Of winning races, that is. So don't be surprised we picked Adam's brain for our latest signature series release. Like all our special edition kits, the XXX-NT Drake Edition includes a full complement of precision-engineered performance parts and graphite chassis components. Another exclusive feature is the use of sophisticated hard anodizing on aluminum parts that offers wear and performance properties far superior to common color anodizing or hardened steel. Add those performance extras to the most race-winning nitro truck available, and there's just no competition. We figure it pretty much makes this the ultimate version of the ultimate nitro truck. In fact, we're so sure of it, we put our signature on it. And so did Adam.

TEAM LOSI ENGINEERING WINS

HORIZON HOBBY

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5765

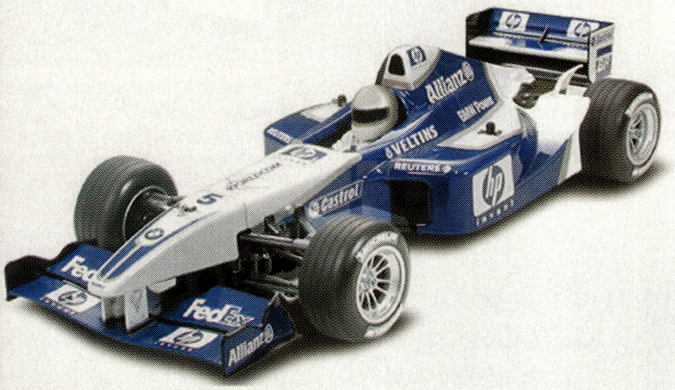
NEWS FROM NUREMBURG: NEW TAMIYA KITS ANNOUNCED

The Nuremburg Toy Fair is the largest of its kind in the world. Tamiya is always in force at this show, and usually saves its most significant new models just for this occasion. Click here to see what's new from Tamiya.



Knight Hauler

The latest in Tamiya's 1/14-scale Tractor Truck series is the Knight Hauler. Equipped with an original Tamiya-designed body, the KH is loaded with scale detail from its hood, interior clear orange lights to its large roof spoiler. The grille, fuel tank, exhaust and steps have been created from metal-plated parts for further realism. What's more, the body comes in an all-new metallic blue color straight from the mold.



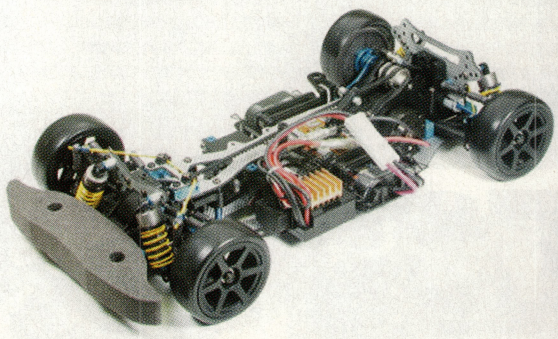
Williams F1 BMW FW24

F1 fanatics have been anxiously awaiting the release of a new F201 Formula 1 car, and Tamiya doesn't disappoint with the new Williams F1 BMW FW24. Based on the sophisticated 4WD F201 chassis, the FW24 is a 1/10-scale replica of the machine that tore up last year's F1 season—many believe Williams to be the team that will challenge Ferrari in '03. The R/C model replicates the form and personality of the Williams, including its unique front wing. F1 fans will appreciate the F201's realistic in-board suspension with pushrod-actuated oil dampers.



XB Series Nissan 350Z Race Car

If you've lusted after Nissan's incredible 350Z on the street, Tamiya now offers you the chance to drive one at a fraction of the cost—and without the stratospheric insurance costs. The 350Z race version is the newest addition to Tamiya's XB (Expert Built) RTR series of preassembled, ready-to-run 1/10-scale electric touring cars. This particular car is modeled after the works car that Nissan plans to enter into the 2002 GT World Championship season (with high hopes). The model's polycarbonate body comes already painted 1 read and silver, with all the stickers replicating the number 23 car already in place. Even the real car's aggressive rear wing and urethane bumper are in place. Beneath the swoopy shell you'll find a high-performance TT-01 4WD chassis complete with independent suspension and realistic wheels and tires. Tamiya's EXPEC pistol radio and all-in-one CPR module are also included.



TA04-TRF Special Chassis Kit

Tamiya's potent TA04 4WD touring chassis gets even more performance in this TRF Special Chassis kit, which adds an all-new front one-way in addition to the existing center one-way drive unit. The suspension has also been "souped up" with Tamiya's super-smooth fluorine-coated TRF oil shocks and new suspension blocks for improved roll-center adjustability.

CHOOSE YOUR WEAPONS

TEAM LOSI

RACING TIRES











At work or at play, Team Losi® tires consistently blow their competition away. After more than fifteen years of being #1 in the racing world, Losi now brings its engineering expertise to the realm of all-terrain and other off-road tires.

See the full line on our Web site at www.teamlosi.com.

Team Losi
ENGINEERING WINS

MINI TEST: LUG NUTS BITE

The wheels keep turning at Pro-Line! While we were attending The Dirt Nitro Challenge in Hemet (See story elsewhere in this issue), we found out that Pro-Line was sporting some new shoes for 1/10-scale stadium trucks. They were pre-production at the time, but by the time you read this, they should be out. The new tire is called the Lug Nut, and after some smooth talking, we walked off with a set to try out for the race. One problem: none of us were running trucks at this particular event. Fortunately, our good buddy Hippy "reluctantly" agreed to "test" the Lug Nuts for us on his Associated GT. What a guy! After literally sprinting back to his pit, he had them on his truck and ready to go in no time.

Now Hippy is a pretty fast guy, so we felt confident he would give us some good feedback. Well he did! He was pretty much stomping the competition in the open truck class, and we would have to say he was the fastest guy in that class that weekend. Hippy said that the Lug Nuts worked well in The Dirt's conditions (packed, a little wet and with loam on top). In fact, he went on to say that he really felt the Lug Nuts helped him go just a little faster! They seemed not to catch the ruts and had very good forward bite along with killer braking.

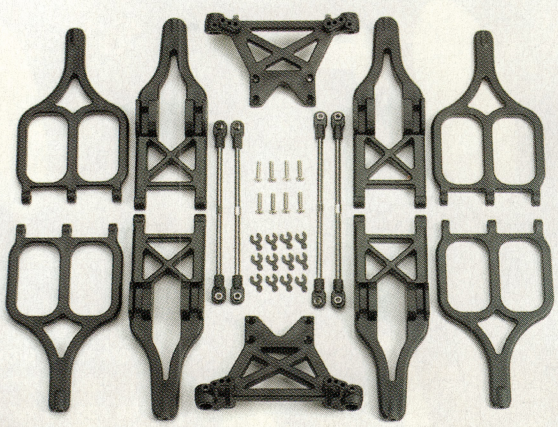


MAXXIMUM UPGRADES

Attention owners of older T-Maxxes: Traxxas has not forgotten you! Short of mailing everyone a new 2.5 engine, the boys in Dallas have done the next best thing by incorporating everything you'll need to bring your Maxx up to 2.5 specs with a pair of easy-to-install kits.



The first is the **Pro .15 to TRX 2.5 Upgrade Kit**. This includes everything you'll need to install the new 2.5 engine in your older Maxx (except the actual engine, of course). In the kit you'll find such items as a header and pipe, pipe hanger, coupler and a pre-adjusted linkage for the new engine's slide carb. Traxxas is also offering 2.5 Upgrade Kits for the Nitro Rustler, Nitro Sport, Nitro Stampede and Nitro 4-Tec. This is the easiest way to bolt-on at least 10mph more to your Traxxas ride.



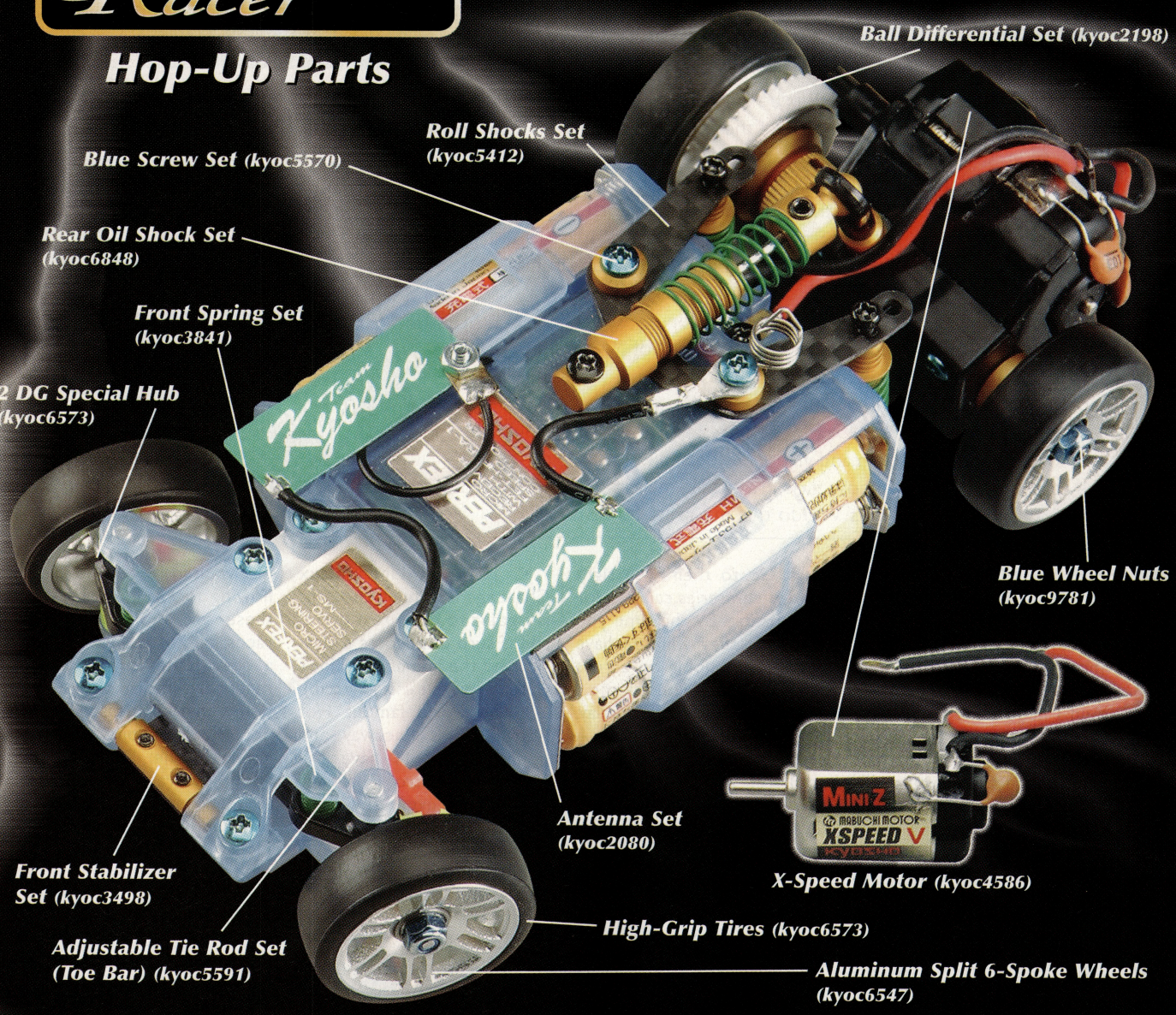
The next upgrade is the **WideMaxx Suspension Kit**, which allows you to install the newer 2.5-style suspension to an older T-Maxx or E-Maxx. With WideMaxx kit, you'll widen your truck's stance by over one inch, and gain stability and improved handling in the process. The kit includes upper and lower arms, shock towers, new turnbuckle tie-rods and all needed hardware.

RC MINIMIZED RACING CAR

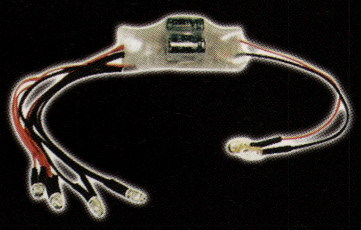
MINI-Z Racer™

Turn your Mini-Z into a mighty speed machine!

Hop-Up Parts



Give your Kyosho Mini-Z Racer more speed, more stability — and more style; equip it with option parts and accessories specially designed to convert your car from mild to wild. To tweak your Mini-Z Racer to the max, visit your nearest hobby dealer today!



Experience the thrill of driving at night when you install this LED Light Set. (kyoc4491)



The Tool Set includes essential accessories such as a small screwdriver, wheel nuts wrench and drill bits. (kyop8016)

For more info on the Mini-Z phenomenon, log onto www.kyosho.com, or call 1-800-682-8948 and mention code number 2951F.

www.kyosho.com

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THE FINEST RADIO CONTROL MODELS

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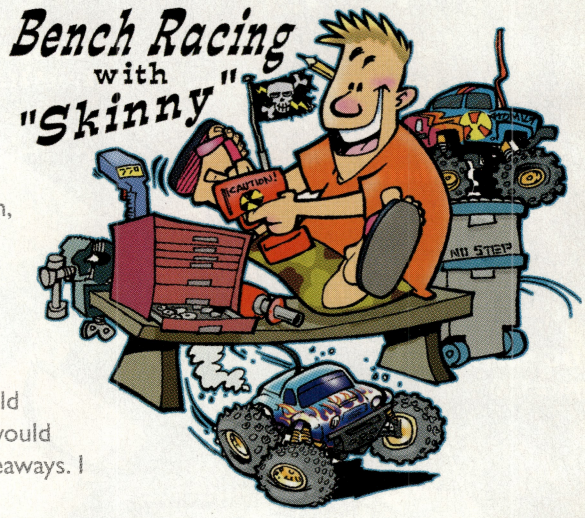
[Truck Column]



How's the monster truck tribe doing today? Hopefully, things are going well. I know there is a lot going on in the world today, but thankfully we have our hobby to have some fun with, and it's a great reason to hang together and talk smack to each other. Believe it or not, I have no rants this month. I think Frank "that editor guy" Masi is keeping me too busy to go off on anything... well, maybe on him, though.

I thought I would inform all of you that for my Christmas present Frank promoted me to the position of "Assistant Editor." Wow! Me, Skinny, "that assistant editor guy." I guess I can't fun with Frank anymore. Naaw... never happen.

Anyway, I will be doing a lot more things for *R/C Car* and would love for my peeps to kick in and give their ideas on what you all would like to see in the mag. I know, girls, trash talk, million-dollar giveaways. I want to hear from you guys. We do this magazine for you.

NEWS, NEWS & MORE NEWS

The race season is upon us, and there is a lot going on for monster trucks. Here is a list of races that I hope to attend. And I hope to see you there as well. If you MT people out there know of something cool, please share with us. I'll put it in this column so we all can enjoy it.

• The R/C Pro Series is going on now, and they have included a monster truck class. Go to their web sight (*www.r/cproseries.com*) for information. By the time you read this, they will still have eight events going on across the U.S. Cool if you ask me.

• In the first week of May, the RCX show will happen. A great chance to see all the cool stuff that's out now. It's in Anaheim, California near Disneyland, so come on out and have some fun. Check it out at *www.rcexpo.com*. See you there.

• The Pro-Line Maxx Challenge is coming too. This is a going to be a great event, and is sure to become a classic. Find the info at Pro-Line's website (*www.pro-lineracing.com*).

• The world famous Hot Rod Hobbies Raceway and hobby shop will have the Sidewinder Nitro Challenge and other events. Go to *www.hotrodhobbies.com* to get the schedule.

This is just a sample of what's out there for '03; I just wanted to get the juices flowing for you. By the way, these are more than just races; they're events offering a great time for all. These races are more about fun than anything else. Want proof? Ask anyone who has gone to one. Don't worry about the racing; leave that to the pros. Come out and play and hang with the Tribe. Meet the people you chat with on line.

TRAXXAS NEWS



Traxxas informed me the other day that they have some new goodies coming out, and I'm passing the news on to you guys. They will release a knobby-style Maxx tire that is direction specific, which means that the tires are made for either the left or the right side of the truck, much like the tires of the new Corvette. Interesting stuff. We will get info and photos as soon as they become available.

Next, Traxxas have some new graphics for their pre-painted truck bodies coming down the line. Look for the "Disrupter" coming to a LHS near you.

Finally (and about time), Traxxas will be offering a T-Maxx T-shirt. Wah-hoo! It's about time.



BY BRIAN SKINNER



THE HOUSE OF TAMIYA

Tamiya just sent these cool colored wheels to us and I thought you should know about them. The wheels will be out when you read this, so if your rig needs new shoes, check these puppies out. One nice thing about wheels of this color is the fact that you can see your truck better at a distance. That's great if you're blind like me. It really does help in judging what your wheels are doing in the corners and when you're close to objects that can take your truck out.

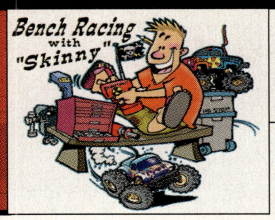




RUMOR MILL

General Silicones may be coming out with a monster truck. Now, you did not hear it from me, but I have seen a lot of activity at KZ Speedway, where some of the GS pro guys test "things" out. Hmm, I'll keep you posted.

[Truck Column]



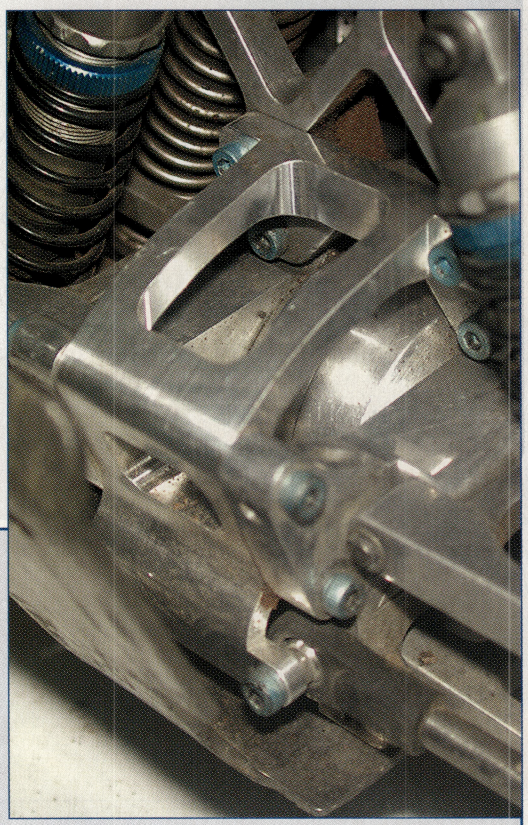
I SPY WITH MY LITTLE EYE

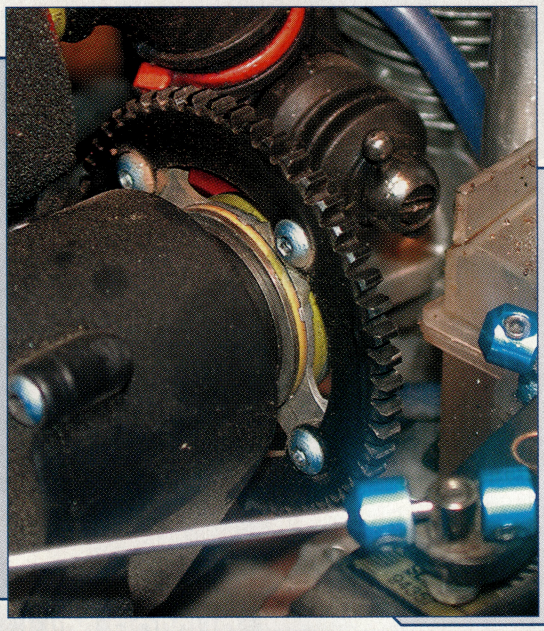
At the last monster truck demo I did in February, I saw some cool stuff lurking under some truck bodies. I decided to look closer, and I'm glad I did. Check this out.

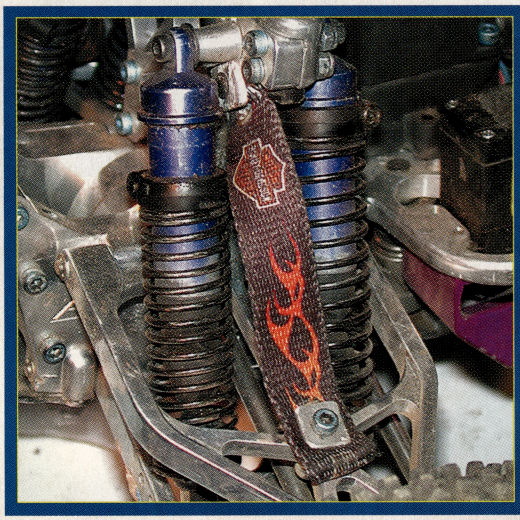
This is from Strobe RC. They are making some cool stuff for your trucks; namely a "slipper clutch spur gear" that has a "sprong" instead of a spring. It also comes in 1/8-scale pitch to handle the power of .21s and to increase drivetrain life.

Next up is a rear bulkhead brace for the T-Maxx that is sure to beef up the rear suspension area. It must work because the guys were getting huge air and their trucks were staying together.

Check out Strobe RC out at *www.strobe.com* and tell them Skinny sent you. We will try to get some samples so we can fill you in on how they work.







HOT TIP OF THE MONTH

I have seen this before, but mainly on full-scale desert trucks and stadium trucks. I've also seen it in the "black hole" of the R/C car universe—Durango.

This is a suspension strap, which keeps your suspension from overextending and softens the blow to the whole system. The photo is self-explanatory as far as how to make one for yourself. The key here is to find a cool strap with flames. I'll give you a hint: go to your local Harley shop and get a key-ring holder; it comes with a cool printed strap like you see in the photo. It's a good idea, and looks neato.

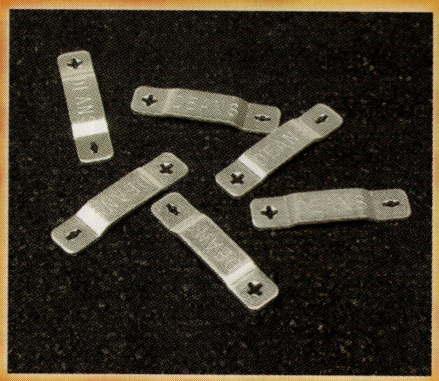
SPIDER-MAN'S WEB

Well, not really. But it is the website of the month. You guys have got to check out the "Starting Grid" (*www.rc-racing.com*). It's a cool place, and some interesting people come and visit there. You can find information on racing, engines, clubs, and great smack-talk. Kids, you might want to stay with "*Blues Clues.com*," but you older guys will get a kick out of the place.

EASYWIRING 101

All Deans products are designed and manufactured to exacting tolerances, to give you unmatched quality and performance. From the legendary Ultra Plug, to the innovative Speed Jig, and now the ProBar 3, each product was created with one goal in mind... TO BE THE BEST!

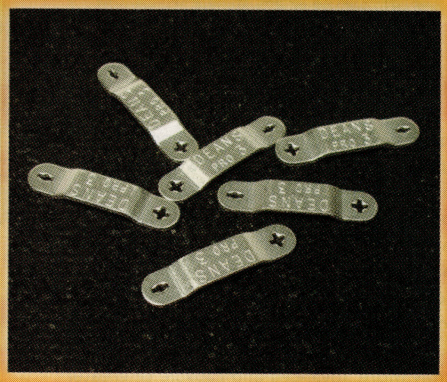
PROBAR 2™



Plated to military specs., the ProBar 2.0 is designed for RC1700, RC2000, RC2400 and similar cells.

#1600 .....6pcs
#1601 .....25pcs
#1602 .....100pcs

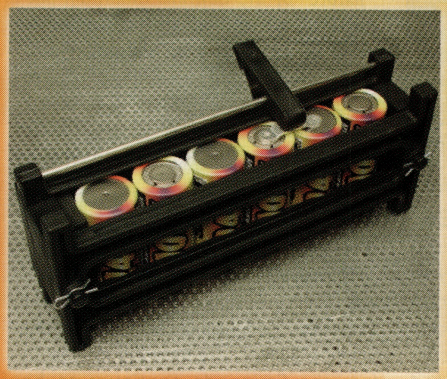
PROBAR 3™



Plated to military specifications. The ProBar 3.0 is designed for RC3000H cells.

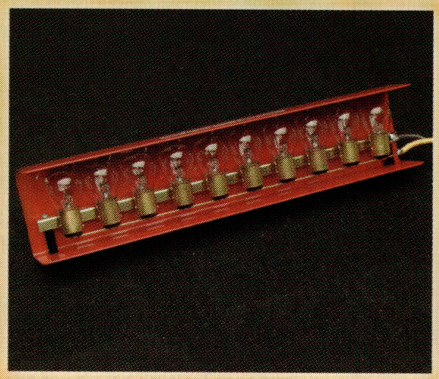
#1610 .....6pcs
#1611 .....25pcs
#1612 .....100pcs

SPEED JIG™



"Ten Must Have Tools" - R/C Car Action
"Rating: A+" -Xtreme R/C Cars
"The best building jig on the market" - R/C Car
#2040

DISCHARGER



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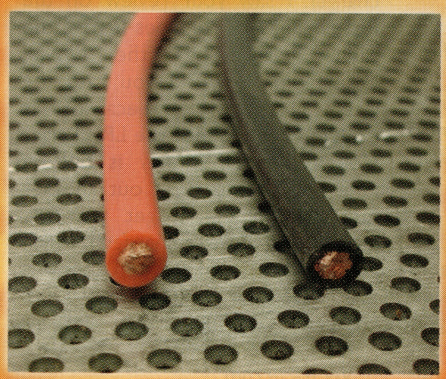

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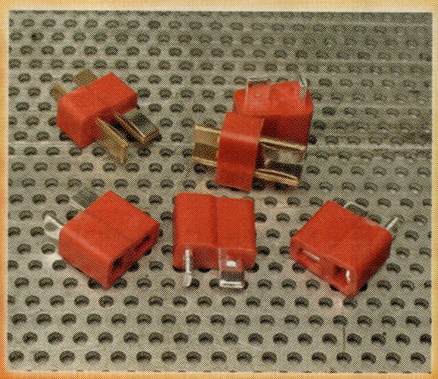

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TEAM LOSI TECH-TALK

Tech Tips # 15

This month we offer some tips and new parts for both the serious racer as well as the RTR enthusiast. The new Team Losi electric Ready-To-Run XXX-T truck and XXX-S sedan have been heralded for their unmatched quality and performance. One of the best-kept secrets of these models is the GM electronic speed control. Unlike many lesser models commonly found in RTR models, the GM unit is significantly more advanced and capable of greater performance and reliability. This all sounds good but what is the tip you ask? Well it seems that every time you turn on your radio the speed control automatically reads the signal from the transmitter and reprograms itself. This is really important as unlike most speed controls that require you to physically go through a programming process to insure top speed etc. you can count on this always being done for you. However…. (Here comes the tip) if you fail to turn on the transmitter first the speed control can easily obtain an errant signal and program itself incorrectly. So, make sure you always have good transmitter voltage and always turn it on before you turn on the car. If you feel there is a problem try turning the car off and waiting a few seconds before turning it back on again. I've seen this work time and again!

Serious racers will appreciate the new LOSA7879 tire glue applicator tubing. Sounds insignificant but everywhere we go we are constantly asked for it. The combination of the self-cleaning screw on cap and the handy applicator tubing really makes any kind of tire gluing a lot easier. When done gluing, tap the bottom of the glue bottle on the bench before removing the applicator tube and screwing on the cap. This usually forces any glue remaining in the tip or tube back into the bottle. XXX-4 racers should be on the look out for the new machined aluminum front and rear pivot pin mounts. These trick looking pieces feature Team Losi's trademark hard anodizing and are engraved for easy identification. The LOSA 9670 inner front mounts are used with either the 5° LOSA9671, 7.5° LOSA9672, or 10° LOSA9673 front main blocks. Similarly, the LOSA9676 rear inner mounts are used with the LOSA9677 1° or LOSA9678 –1°/+3° rear main blocks. The best part is that since each is sold separately, you can chose the only the ones that you find work best on your track. Sedan racers that run on carpet or real high traction surfaces should check out three new hi-rate springs developed by the team. These include the LOSA5112, which are a 30 LB rate and are powder coated white, LOSA5114 which are a 35 LB. rate powder coated orange, and LOSA5115 which are a 40 LB. rate and are powder coated pink. Until next month, have fun and good luck.

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[FEEDBACK]



ERRATA: WIDE E-MAXXES

In your "Feedback" section of the most recent issue (March), you responded to the question entitled "Forgotten E-Maxx." In your response you stated, "We're surprised that Traxxas hasn't yet adapted the wide suspension from the T-Maxx 2.5 for use on the E-Maxx..." I would just like to let you know that new E-Maxxes in fact feature the WideMaxx suspension, stock.

Steven A. Breikss

Steven, you're absolutely right. At the time, we were unaware of this modification to the E-Maxx. But thanks for the information; we're sure that potential E-Maxx buyers will also be happy to know that the electric Maxx will benefit from a wider stance.

NEW RACING FORMAT

What if I came up with a type of R/C off-road racing that was outside the norm; not just R/C cars going in wacky shaped circles, running on slicks, using swaybars and seeing the same guys win ALL THE TIME? Well, then I looked at the website for the Winter X Games, and it got me to thinking, "What if I came up with an R/C motocross-type event? A downhill R/C motocross event?" And so DHRCMX was born! Right now it is only a fledgling idea, but I really think that this could turn into something big. Do you think that there is some way you could help out with that? Thank you for your time and any help you could offer would be appreciated.

BJ Williams, President/Founder Downhill RC Motocross (DHRCMX)

Via e-mail

Sounds very interesting, BJ. Since we've taken Skinny on-board (he is a "fixture" of the downhill mountain biking biz), we've had several conversations in the nature of alternative R/C activities, including something similar to what you've mentioned. Get some action going and send us a write-up (with some cool photos, of course).

ERRATA II: MORE TRAXXAS

In our March issue's "Feedback," we erroneously reported that Traxxas had updated its Nitro Stampede with the new 2.5 engine. In fact, the Stampede continues to be sold with the original TRX 15 Pro engine.

HIGH-END CHARGER DILEMMA

I am in the market for a high-end charger. I saw your review on the Reedy Quasar Pro. Does it have the same features as the Novak Millennium Pro? Did you rate the Reedy charger higher because it is AC/DC? What about the LRP Pulsar Competition? If money is not an issue (I'll have to fork out another hundred dollars to get the A/C adapter for Novak's charger!), which one has features I need in the long run? I want to invest in only ONE charger. Please help!

Hafa

Via *rc-car.com*

The Novak Millennium Pro, the Reedy Quasar Pro and the LRP Pulsar Competition are all good chargers and will all perform essentially the same tasks, i.e., do a good job charging your cells—especially high-end NiMH cells. The differences between this trio is that each has its own little category of sub-features. For example, as you men-

tioned, the Quasar Pro is the only one that's AC/DC, so you won't need to buy a separate supply (something you'll need to use the LRP and Novak chargers when an automotive battery isn't available). But the LRP has the ability to run 12-volt accessories such as motor lathes and break-in devices. And the Reedy Charger can also discharge and cycle your packs for you. The Novak charger has Novak's proprietary NiMH2 charge software, which has been developed especially for the newer, high-capacity NiMH cells. We might also suggest that you consider the Integy Indi 16x5 V6 charger.

UNRULY RULES

First thing: your mag is great! The product reviews are very informative and helpful. I have a Yoke GT-4 RTR with the Mazda Veilside body and it handles very well on the track I run at, and everything is still stock. The only things not stock are the tires, and because of track rules, the engine was swapped for a Megatech M-16. I love my GT-4 and would not trade it for anything. Keep up the good work guys!

Clarence Gallaway
Via *rc-car.com*

Thanks for the kind words, Clarence. We're wondering why your track would not allow you to run the Yokomo .18 engine, yet will let you use the Megatech .16?

RICHARD RULES

Thanks for having the best mag out. I would like to take the time and really give a shout out and a big thumbs up to Richard Trujillo and his "Vintage R/C" column. Every month this guy just takes me back in time when all I could do is just sit and dream about R/C cars. Richard's column is the first page I read when I get my new issue. I start at the back of the mag just so I can see what cool flash from the past he's got for us readers. Yes, I am a little older, and I do have a couple of cars and I really like the hobby. If you would, please relay this message to him and let him know what a great job he's doing.

DepCrp
Via e-mail

Richard responds: "Cool! Someone DOES like it!"

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

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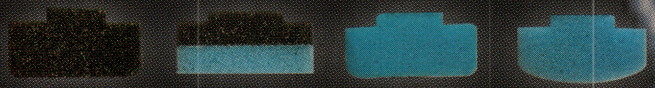

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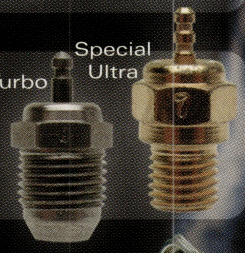

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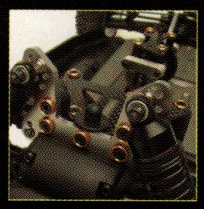
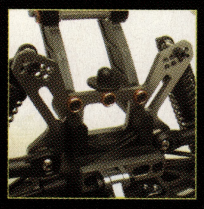
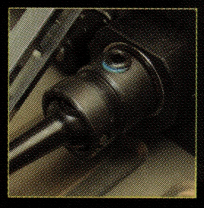
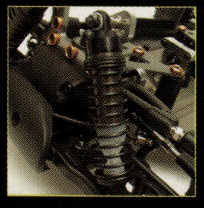
STORM PRO









FEATURES

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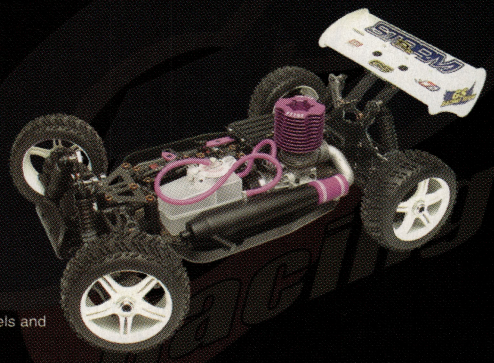
- FUEL TANK SPLASH GUARD
- BRAKE SPLASH GUARD
- DUAL DISK BRAKES

GS Racing



Radio, engine, exhaust, wheels and tires not included.

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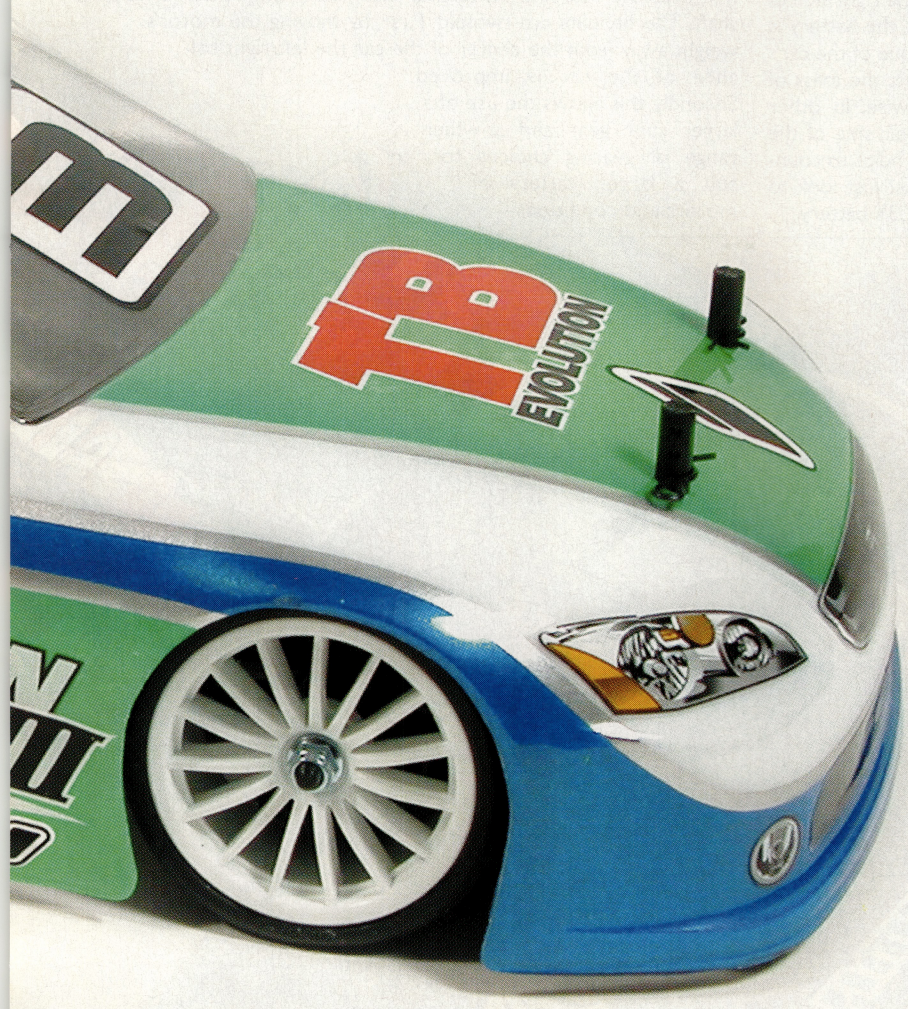
TAMIYA TB

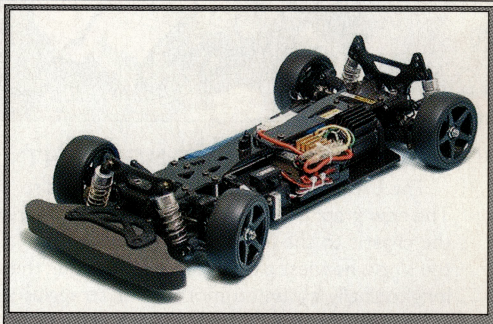


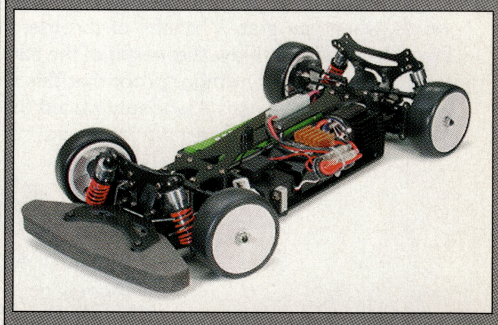
One of our favorite bits of trivia is that Tamiya beat Associated to market first with a shaft-driven electric touring car, the TB-01, and then with a shaft-driven nitro sedan, the TG-10. No one, us included, claims that the Tamiya cars had anything to do with Associated's designs; we're just intrigued by such historical factoids. Another fact is that Tamiya's central shaft, ring-and-pinion gear driveshaft was the first used in an R/C car. The model was '94's 1/8-scale TGX nitro tourer, and its front and rear ring-and-pinion diffs, central driveshaft and rear-mounted spur gear—an identical layout to that of the TC3/NTC3—were the first of their kind. Want more trivia? During the '01 Chicago Hobby Show, at which Associated unveiled the Nitro TC3, we dragged Associated's Mike Ogle over to the Tamiya booth to show him the shaft-driven TG-10R and how similar it was to the prototype NTC3. Mike was astounded; he had no idea of the Tamiya car's existence!

Third generation of

EVOLUTION III





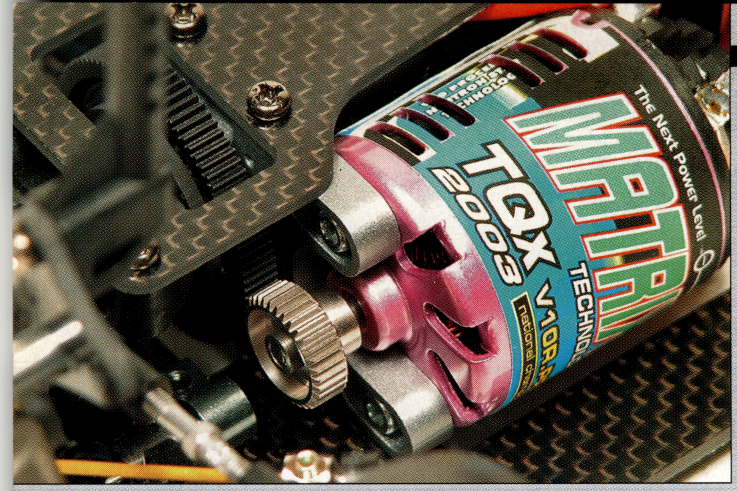


THE EVOLUTION OF THE TB-01

The TB-01 was, and remains, a sport-level touring chassis, but the introduction of the first TB Evolution changed all that; so much so that the Evo bore little resemblance to the TB-01. Virtually every part of the car was changed for performance's sake; the plastic chassis was swapped with a double-deck carbon chassis, the gear diffs were exchanged for a ball-diff front one-way combo, and the most significant change was that much of the drivetrain was taken from the 1/8-scale special edition TGR. Unfortunately, the diffs were large and heavy; necessary for the big 1/8-scale TGR, but overkill for the smaller, electric-powered Evo. Furthermore, the Evo's suspension used several parts—most noticeably the diff bulkheads and upper arms—from the larger TGR. Unfortunately, this suspension offered little in the way of the tuning adjustments needed for competitive electric racing.

The Evo II addressed most of the original Evo's shortcomings, as it featured lightweight diff components, aluminum suspension bulkheads, adjustable suspension blocks, and conventional upper camber-links for much-needed roll-center adjustability. As improved as the Evo II was, the new Evo III looks to be significantly further up on the "evolutionary" ladder. In fact, it is as much an improvement over the Evo II as the Evo II was over the original car.

Tamiya's shaft-drive racer



OUTSTANDING FEATURES

OUTSTANDING FEATURES

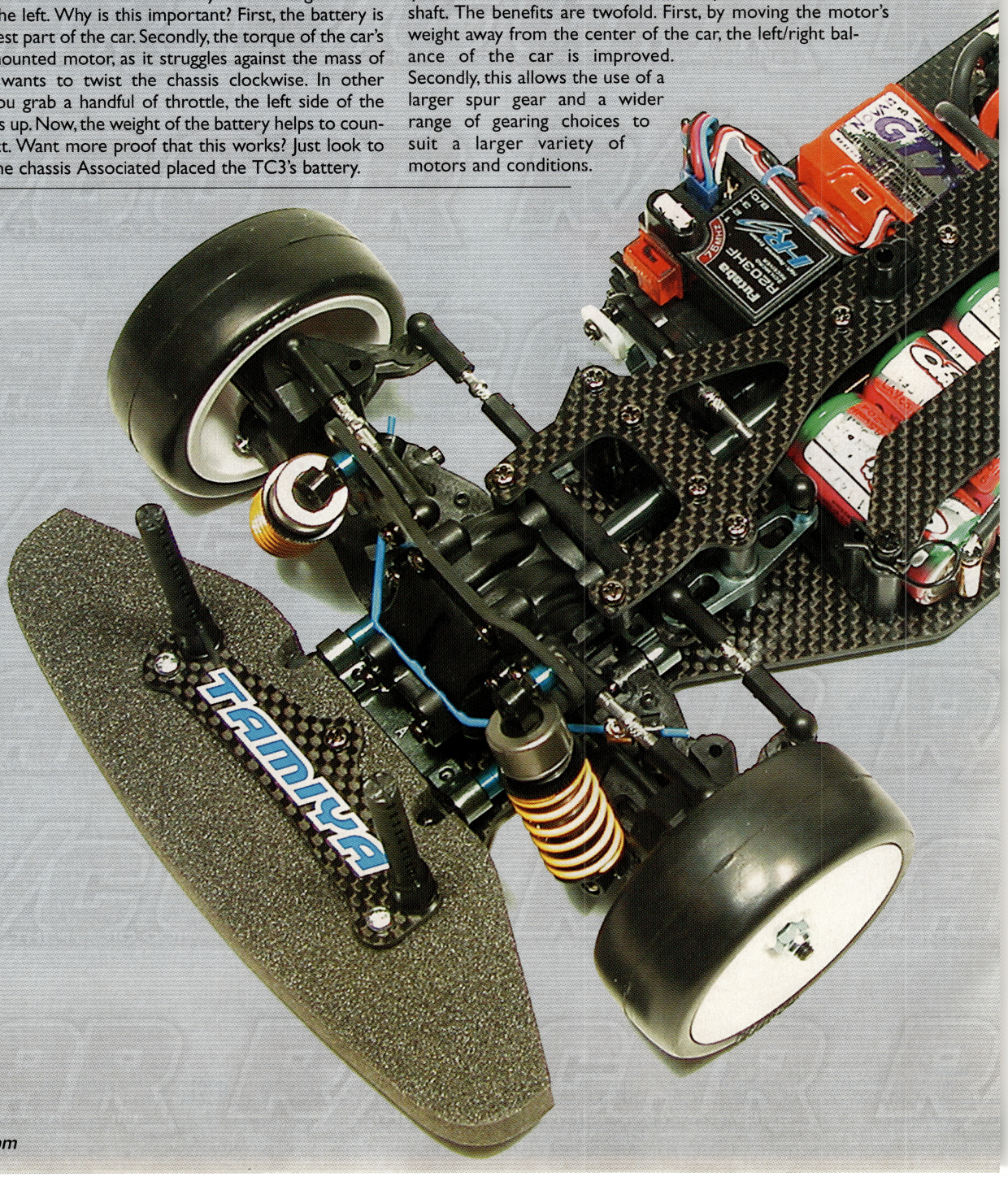
COMPLETE RE-ARRANGEMENT

The Evo III's most important feature is also the easiest to spot. The new graphite chassis moves the battery from the right side of the chassis to the left. Why is this important? First, the battery is the single heaviest part of the car. Secondly, the torque of the car's longitudinally mounted motor, as it struggles against the mass of the drivetrain, wants to twist the chassis clockwise. In other words, when you grab a handful of throttle, the left side of the Evo's chassis lifts up. Now, the weight of the battery helps to counteract this effect. Want more proof that this works? Just look to which side of the chassis Associated placed the TC3's battery.

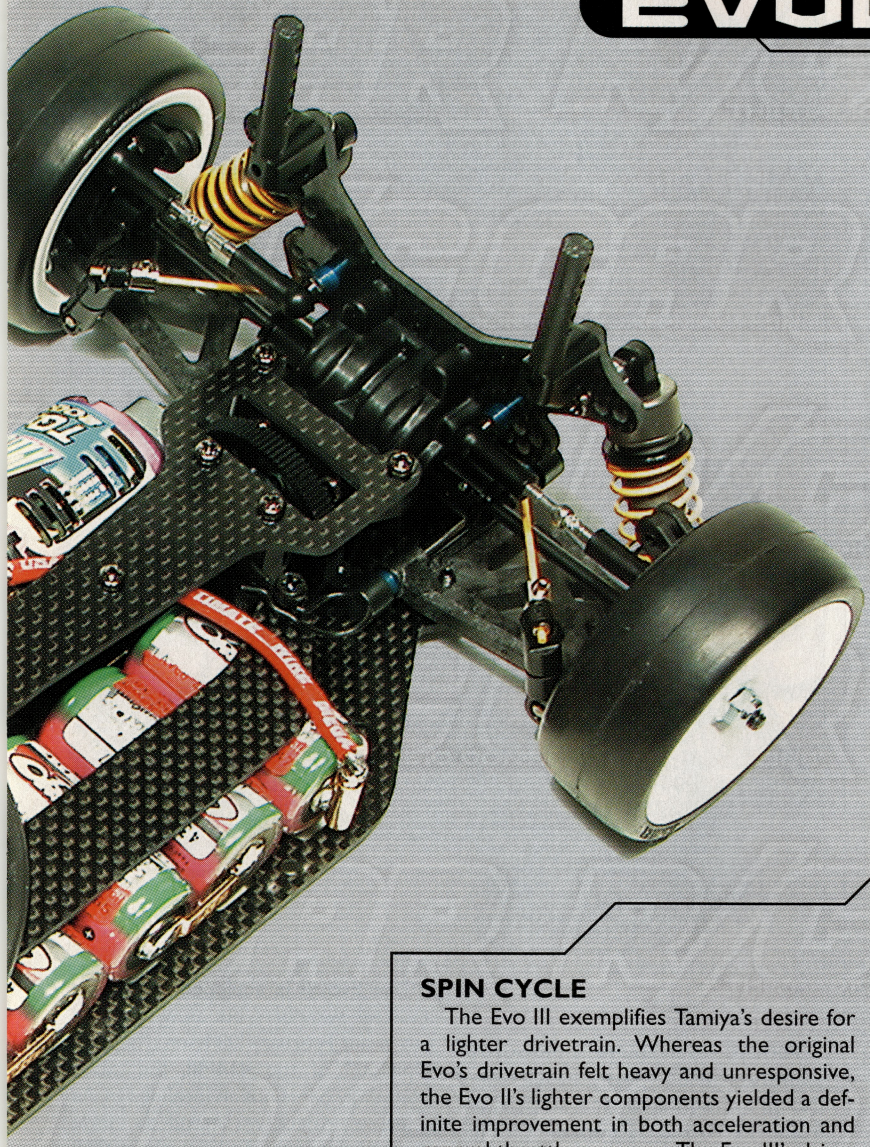
Aside from this, there are several less obvious changes to the Evo's chassis that serve to improve performance. One is the chassis' width, which has been narrowed by 5mm to bring the weight of the chassis components, e.g. the battery, closer to the middle of the car for improved corner transitioning.

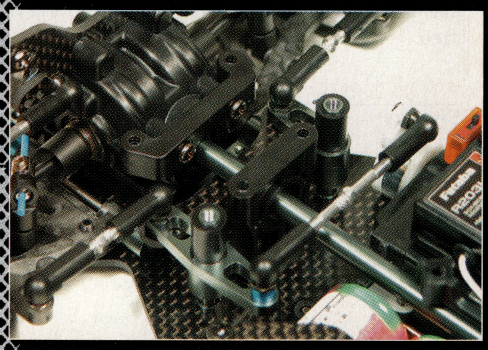
Other improvements include the centralization of the bulkhead that connects the upper chassis to the lower deck. Now that this has been placed directly on-center, the torsional stiffness of the Evo III's chassis is equal in both directions. The result: consistent handling. The bulkhead is reversible to allow the use of both side-by-side racing packs as well as pre-built stick packs.

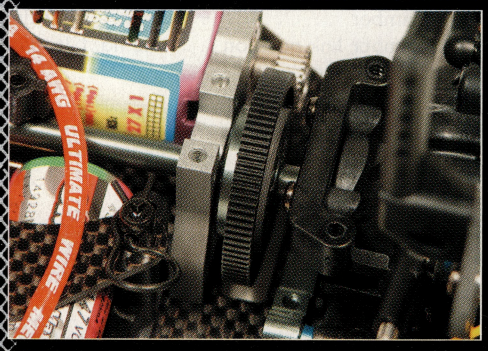
Also of note is the new, aluminum motor mount. This actually moves the motor a bit further away from the center driveshaft. The benefits are twofold. First, by moving the motor's weight away from the center of the car, the left/right balance of the car is improved. Secondly, this allows the use of a larger spur gear and a wider range of gearing choices to suit a larger variety of motors and conditions.

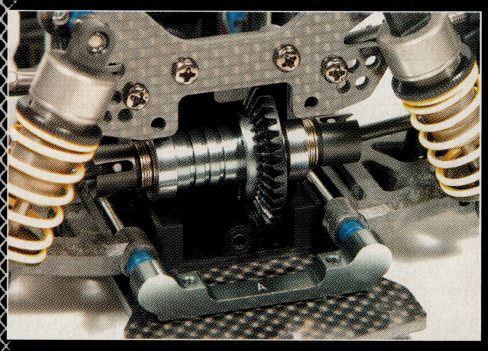


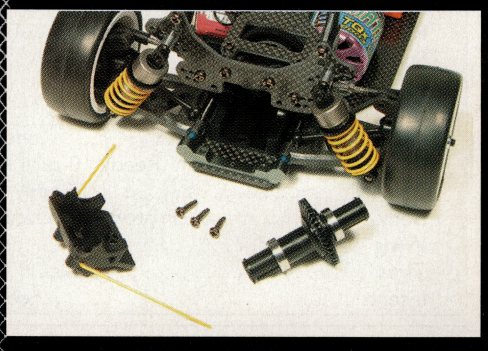
EVOLUTION III











SPIN CYCLE

The Evo III exemplifies Tamiya's desire for a lighter drivetrain. Whereas the original Evo's drivetrain felt heavy and unresponsive, the Evo II's lighter components yielded a definite improvement in both acceleration and general throttle response. The Evo III's drivetrain takes this further through the implementation of several weight-saving changes.

A new, lightweight aluminum center shaft is the highlight of this weight-reducing effort. It spins with far less rotating mass, which makes it much easier for the motor to accelerate the car. According to Tamiya, this shaft also reduces drivetrain vibrations by a significant margin. Along these lines is a set of new lightweight plastic diff outdrives, which are similar to those used in the world champion TRF414MII and the 4WD F201 chassis.

Another drivetrain enhancement is an aluminum spur-gear adapter, which not only allows you to use non-Tamiya, i.e., non metric, spur and pinion gears, but also helps to reduce drivetrain vibration (at least according to Tamiya). Tamiya also has given the Evo III a 414M-style front one-way that is lighter than the ones seen previously on the Evo and Evo II models.

DAVID JUN'S EVO III SETUP

■ In January of this year, Tamiya's David Jun attended the Novak Touring Car Championships at Trackside Hobbies in Wisconsin. David had decided to run his new TB Evo III instead of his 414MII, and proceeded to set the fastest single lap of the entire event! Here is David's carpet setup from the Novak race.

FRONT END

Shocks

Fluid	500wt
Piston	2 hole fluorine
Spring	Yellow
Bladder bumper	urethane
Shock tower hole	3 (outside)
Arm hole	2 (outside)

Geometry

Camber	-2 degrees
Camber link position	hole no. 1 (top/inside)
Front mount	A
Front mount spacer	0.7mm
Rear mount spacer	none
Ride height	5mm
Rebound Stroke	24.4mm
Stabilizer bar	medium

REAR END

Shocks

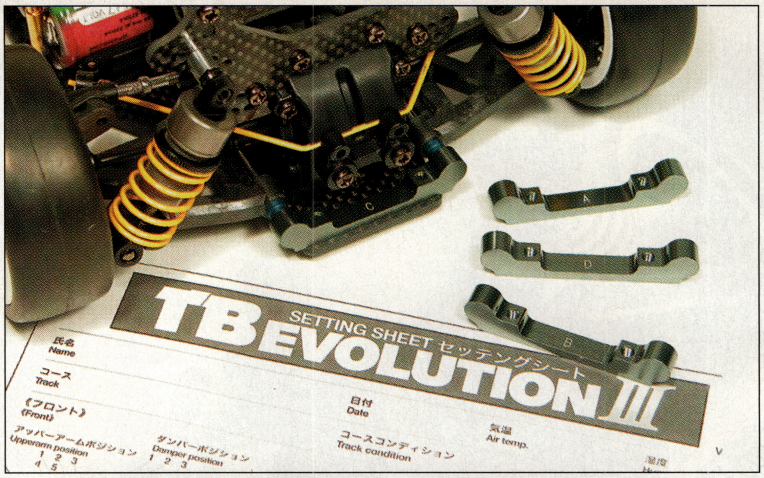
Fluid	400wt
Piston	2 hole fluorine
Spring	Red
Bladder bumper	urethane
Shock tower hole	5 (outside)
Arm hole	2 (outside)

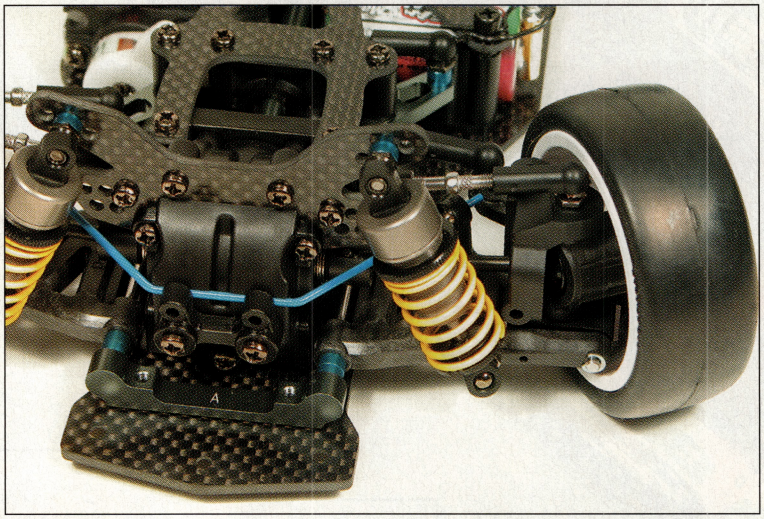
Geometry

Camber	-2 degrees
Inner camber link position	hole 1 (top/inside)
Outer camber link position	Hole B
Toe angle	C mount
Front mount spacer	1.5mm
Rear mount spacer	1.5mm
Ride height	5mm
Rebound stroke	24.4mm
Stabilizer bar	soft

MISCELLANEOUS

Front drive	one-way
Motor	Reedy 10-turn single
Battery	Reedy 3300
Body	ProtoForm Stratus 2.0
Wing	stock
Tires	TakeOff CS27
Inserts	control





WORLD CHAMPION SUSPENSION

Perhaps even more noteworthy than the revised chassis layout is the Evo III's adoption of the suspension from the world champion 414MII. The hard-composite suspension arms and the caster blocks and uprights are identical between the two cars (we installed Tamiya's new 53579 TA04 Hard Front Uprights in place of the stock plastic uprights). The difference is that the Evo III's aluminum arm-mounts aren't keyed to bulkheads as they are on the MII, which means that when you space them up from the chassis to stiffen the roll-center, they won't be as strong as those on the MII. Also, the upper camber links are shorter than those on the MII; rather than attaching vertically to bulkheads, as they do on the MII, the Evo III's camber links attach horizontally to the car's carbon shock towers. Tamiya includes three additional mounts with which to adjust the rear toe-in angle. The stock setup uses the "C" mount, which provides 3 degrees per side. The optional mounts include a 2.5 degree "B" mount as well as a 3.5 degree "D" mount.

The Evo III is equipped with front and rear sway bars, but as we pointed out in our February '03 issue's "Second Opinion" of the 414MII, the stock front sway bar is not an ideal design. As a future project, we intend to tackle the installation of Tamiya's 49258 World Champion Replica sway bar kit, which allows the use of the longer rear sway bars for the front end. As the Evo III already has the updated lower arms needed for this upgrade, the project should go smoothly.

Tamiya has also included a set of ball-bearing supported aluminum steering bellcranks, which operate smooth-as-silk and with little slop. Also in the kit, but not advertised, is a set of Tamiya's new fluorine-coated TRF dampers (see our review in last month's issue). These specially coated shocks (the bodies and the shafts are coated) are super-smooth and extremely durable. They also have three-hole fluorine pistons and threaded bodies for fast pre-load setting.

With the switch to a "bulkhead-less" suspension design, Tamiya was able to eliminate the Evo II's aluminum bulkheads for a total weight savings of 1.4 ounces (40 grams).

EVOLUTION III



REPORT CARD

Test location: SoCal Raceway, Huntington Beach, CA

Test conditions: Medium-sized indoor permanent asphalt roadcourse

Speed and acceleration: A+

The new, lightweight diff parts and the lighter driveshaft transform the Evo into a world-class car. The response is very TC3-like; the car lurches with every movement of the trigger. Most belt cars aren't this responsive. On the small SoCal layout, our stock-motor equipped Evo was able to pull a slightly taller ratio than possible with our 414MII.

Braking: D

Forget about using the brakes unless you're racing on an incredibly high-bite surface; the front one way and longitudinal motor placement conspire to spin out the Evo under nearly all braking conditions. For tight or low-bite tracks where braking is needed, install a front ball diff (just order the parts used for the rear diff). On the high-traction SoCal track, we were able to brake with good results.

Low-speed cornering: A

Fred Medel at Tamiya America (a former TCS national champion) told us the Evo III's stock setup was good, and he was right! SoCal's tight turns were no problem for the Tamiya sedan; unless we blew a line or came in too hot, there was no need for braking. Just turn the wheel and the Evo carves into the turns. The stock roll-centers and spring/roll-bar rates work very well together, providing just enough roll to maintain corner speed without scrubbing or excessive "wallowing."

High-speed steering: A-

The one-way equipped Evo deftly holds the inside line on sweeper and corner exits. At full throttle, there is a slight push to the outside at the very end of the turn, however a slight stiffening of the rear suspension or roll-center, plus a tighter rear diff, would fix this. Otherwise, the car is locked-in.

Transitions: B

The stock setup provides just enough body roll to make certain quick transition sections a little slower. On wider, flowing tracks, the Evo would be dialed, however, there was one tight "left-right" section at SoCal in which we wished for a slightly stiffer setup. Again, this is a very high-grip track; in looser conditions, the car would be freed up a bit.

SPECS

Price:	$438.99
Length:	14.5 in./366mm
Width:	7.4 in./189mm
Wheelbase:	10.1 in./257mm
Track (f/r):	6.4 in./163mm
Weight:	1440g
Chassis:	dual-deck carbon
Bearings:	steel ball bearings
Suspension:	ind. lower A-arm w/adj. upper link
Drivetrain:	shaft-driven full-time 4WD
Diffs (f/r):	front one-way, rear ball diff
Damping:	aluminum oil-filled shocks
Tires:	Tamiya belted B2 rubber slicks/molded foam inserts (hard)
Wheels:	solid 24mm plastic dish (zero offset)

Final Score

HIGHS: The adoption of the world champion MII's suspension and a lighter drivetrain make the Evo III a truly world-class chassis. The first Evo we tested felt sluggish; the new car is transformed. The "limited edition" status of the Evo III provides a degree of exclusivity. The parts' quality is fantastic.

LOWS: "Limited edition" also means premium price; this is an expensive car. The battery hold-down plate requires shims to firmly hold side-by-side packs in place. We would have liked to have seen an additional ball diff included for low-bite tracks.

THE VERDICT: We have been racing our MII for nearly eight months, and we've grown to love it. Now that we have the Evo III, our MII may see less action; the suspensions are identical – which is a great thing. The new shaft-drive transmission has many of the characteristics – snappy acceleration and great durability – that we love in Associated's TC3. Serious racers in search of something different should look at the Evo III.

SOURCES

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

Fantom Racing Motors, 50201 Silver St., Vicksburg, MI 49097 • (616) 649-9583; (616) 649-9584

Novak Electronics, Inc., 18910 Teller Ave., Irvine, CA 92612 • (949) 833-8873; fax (949) 833-1631

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

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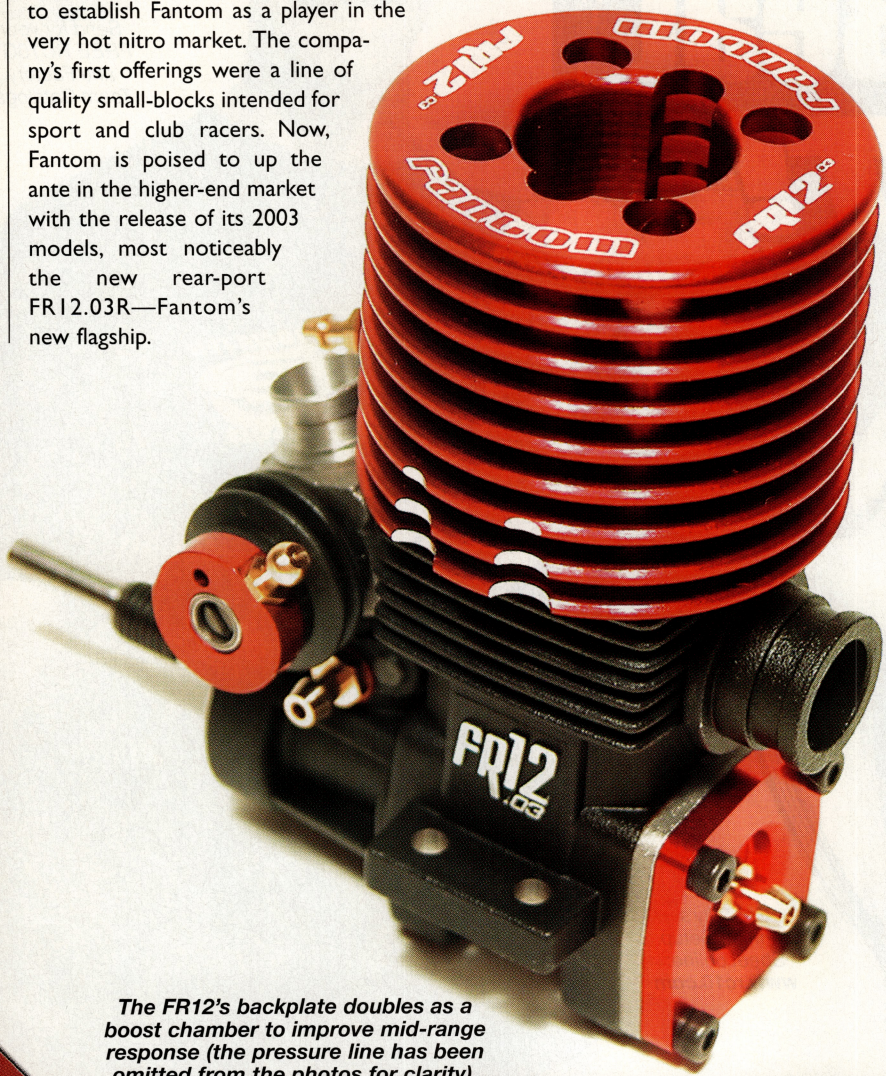
First Look

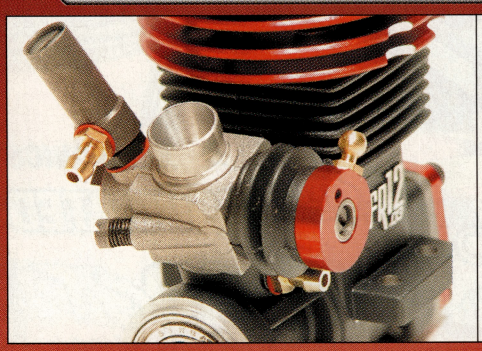
FANTOM FR12.03R ENGINE

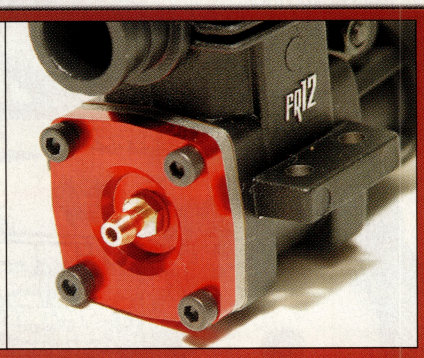
Rear-port redhead

Fantom is a name most synonymous with electric racing, but lately, the Michigan-based company owned by the Schroeder brothers—Jeff and Troy—has been making a big push to establish Fantom as a player in the very hot nitro market. The company's first offerings were a line of quality small-blocks intended for sport and club racers. Now, Fantom is poised to up the ante in the higher-end market with the release of its 2003 models, most noticeably the new rear-port FR12.03R—Fantom's new flagship.



The FR12's backplate doubles as a boost chamber to improve mid-range response (the pressure line has been omitted from the photos for clarity).





FR12.03R MANUFACTURER'S SPECIFICATIONS

Horsepower:	1.3
Max. rpm:	43,000
Bore:	13.8mm
Stroke:	14mm
Price:	$135.00-209.00 (varies with dealer)

ENGINE UPGRADES

The new FR12.03R benefits from a host of upgrades that can be found in all of Fantom's '03 engines.

- The engines get a turbo-style crank for improved fuel mixture flow and increased crankcase efficiency.
- With models equipped with rotary carbs, the location of the idle-speed screw has been moved to provide better clearance for the air-filter boot.
- The connecting rods are now knife-edged so that they can move through the crankcase gases with greater efficiency and higher speeds for improved economy and rpm.
- Each engine comes with a large, red-anodized aluminum heatsink head, which has been modified to provide easier access to the mounting screws.
- Fantom has updated the engine case to have an alignment pin for the cylinder sleeve. This is definitely a welcome addition to all those who installed their new sleeves backwards!
- A new piston design features a raised skirt near the intake ports for improved breathing and cooler running.
- All of the engine's aluminum parts are now anodized in what Fantom calls "racing red." The overall look of the engines is stunning.

REAR-PORT RACER

The FR12.03R lives at the top of the pyramid in Fantom's engine line. It is available in two versions. There will be one model that has a threaded Associated-style crank, and it will be offered with Fantom's improved rotary carb. The second model will be available with a slide carb and a SG-style crank suitable for most on-road applications. What's more, both engines will likely be offered in pull-start variations, which is a feature unique to the Fantom line.

SOURCES

Fantom Racing Motors, 50201 Silver St., Vicksburg, MI 49097 • (616) 649-9583; (616) 649-9584

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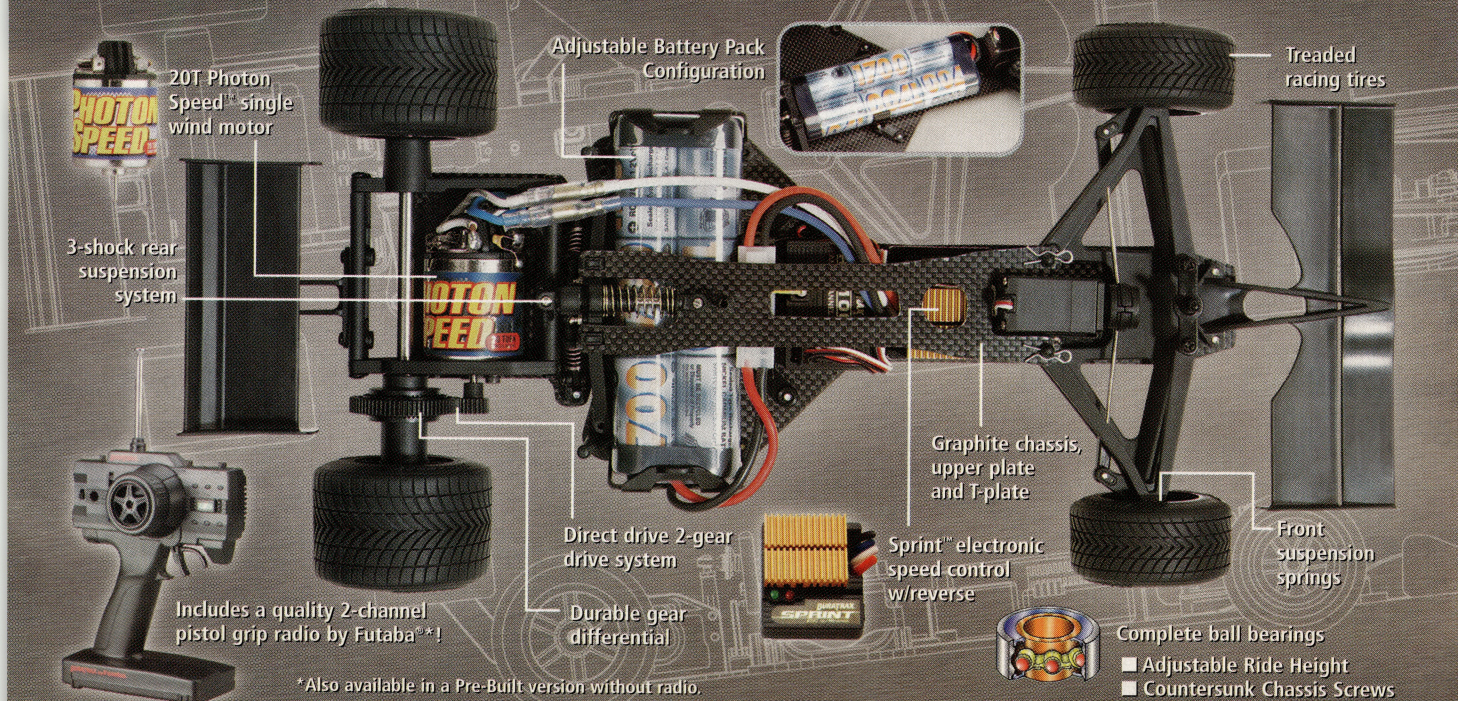

*Also available in a Pre-Built version without radio.

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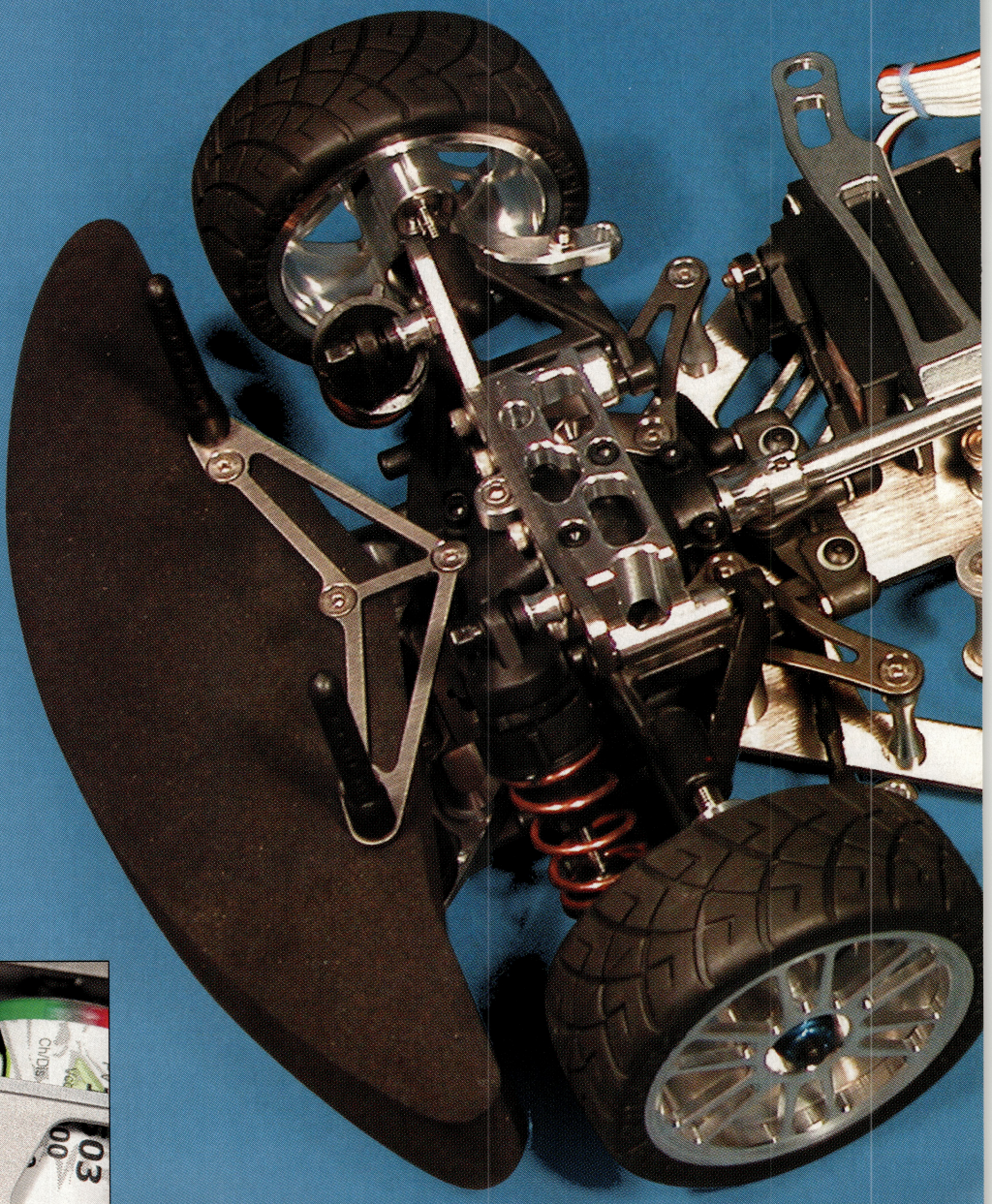
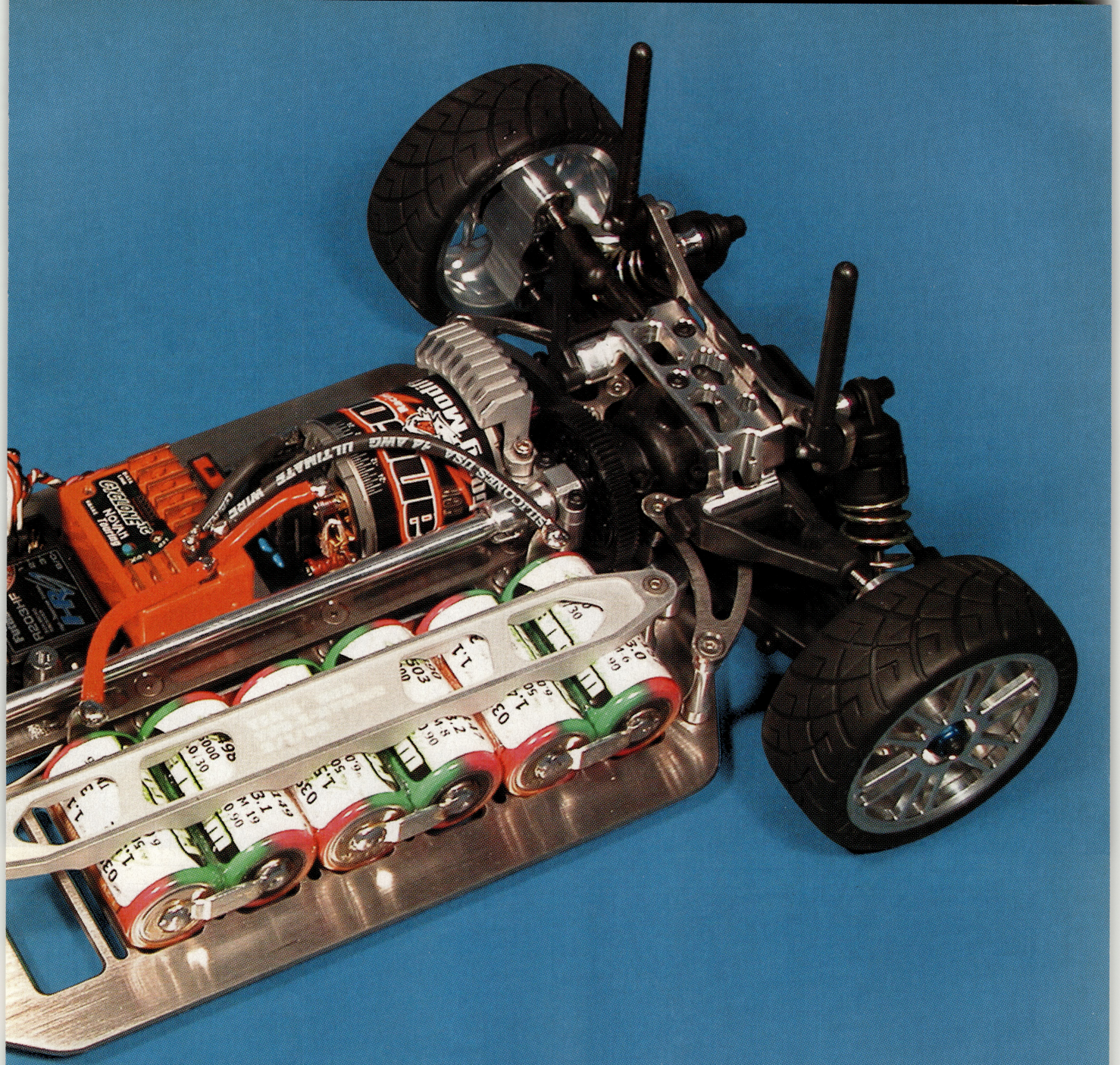
HARDCORE RACING TC3-E HYBRID

200mm electric racer!

What does width mean to a racecar, really? Common sense dictates that a wider car will corner better, and this is usually true. One exception to this is of course in F1, where the rule makers have continually called for narrower cars, yet the engineers have been able to overcome this handicap year after year and the lap times continue to go down. But in the world in which most of us live, wider means better, especially for on-road cars.







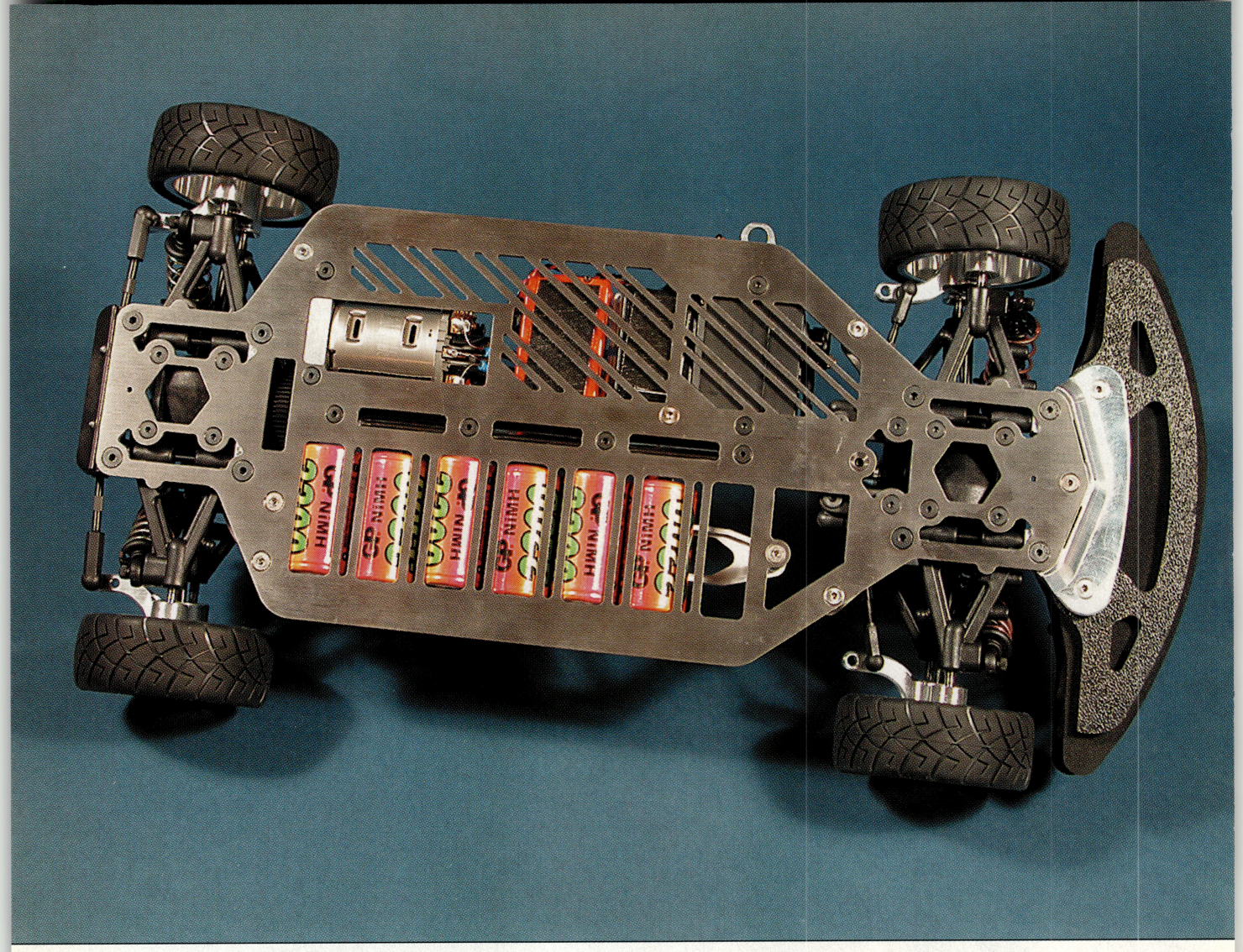
Disclaimer: The car you see here is a prototype! Some of the parts shown are different from the finished parts as they will look in production. In other words, don't call the manufacturer and complain if the part you order varies slightly from what you see in these photos!

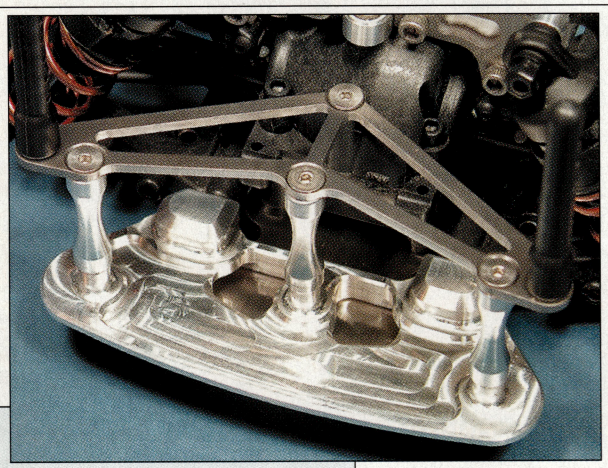
Touring cars come in two widths - narrow (190mm) and wide (200mm). In almost all cases, electric cars are narrow and nitro cars are wide. Why is this? Nitro cars are traditionally faster, and they need all the stability they can get when traveling over 60mph! But why then should electric cars be narrow? When we thought about this, we could only come up with one reason: scale appearance. When Tamiya first started the 4WD touring car class with its TA01 Skyline, the width of the full-sized car scaled down to 190mm. Typical of Tamiya, scale realism came first.

Hardcore Racing has no such reservations about scale; they care about one thing: performance. Seeing no good reason why the electric Associated TC3 should not be allowed to benefit from the wider stance of the Nitro TC3, Hardcore set about constructing this prototype TC3-E Hybrid racer - a merging of the electric TC3's drivetrain with the wide, pillow-ball suspension of the Nitro TC3.

CHASSIS CONVERSION

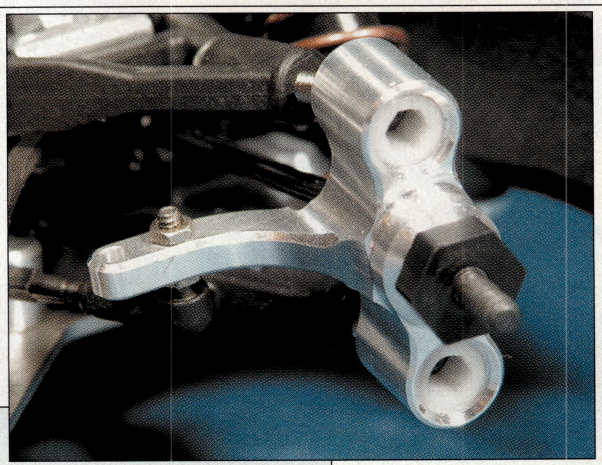
The main item necessary for the conversion is the chassis. Hardcore created this prototype chassis from 6AL4V titanium plate. What it does is conform to the size and space requirements of the NTC3 so that the pillow-ball suspension can be adapted to the electric car's drivetrain. Hardcore removed generous amounts of material to make the Hybrid light enough for electric racing, and six battery slots allow the pack to sit low. The plans for this chassis originally called for the sides to be bent upward for additional strength, however, this proved to be an impossibility with this particular design, as all of the various lightening slots caused distortion when the chassis was bent. A new design, one which uses an additional top brace to increase longitudinal stiffness, is already in prototype form.





FRONT BUMPER BRACE

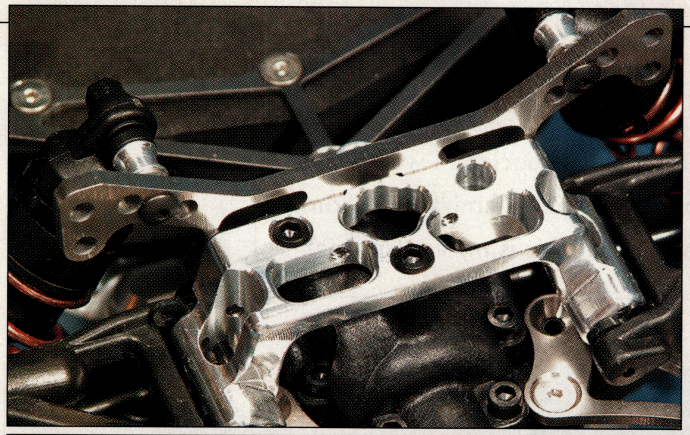
The Hybrid is equipped with Hardcore's new 6061 T-6 aluminum front bumper/hinge-pin block. This replaces the stock plastic piece and is much stronger. It also uses all of the stock screw holes for easy installation, and sells for $63.00. Also shown is Hardcore's titanium front bumper brace ($38.00), which when combined with the lower bumper vastly improves the strength and rigidity of the bumper/body-mount area.

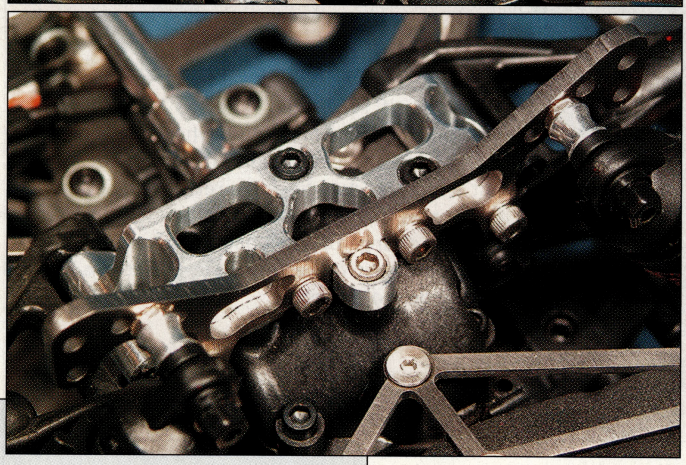


KNUCKLE SANDWICH

Hardcore just released aluminum replacement steering knuckles for the NTC3. Not only are these stronger than the stock plastic knuckles, but they replace the one-piece ball caps with threaded-nylon caps. This allows you to precisely set the gap between the ball and the cap to eliminate slop and provide the smoothest possible suspension movement. Hardcore sells the knuckles as pairs for $59.00, and you can get them in silver, purple, green or blue anodizing.

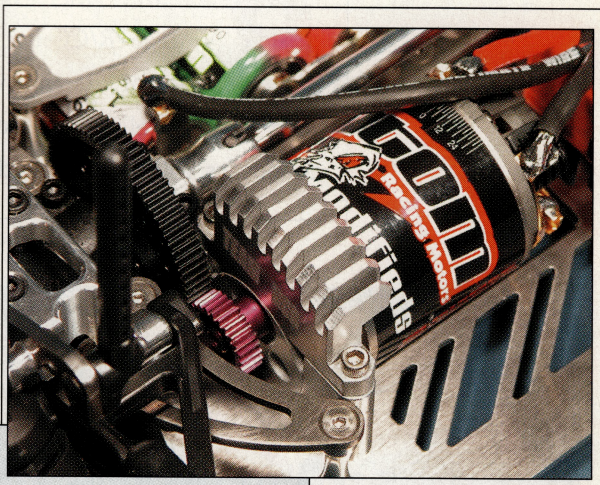
HARDCORE RACING TC3-E HYBRID





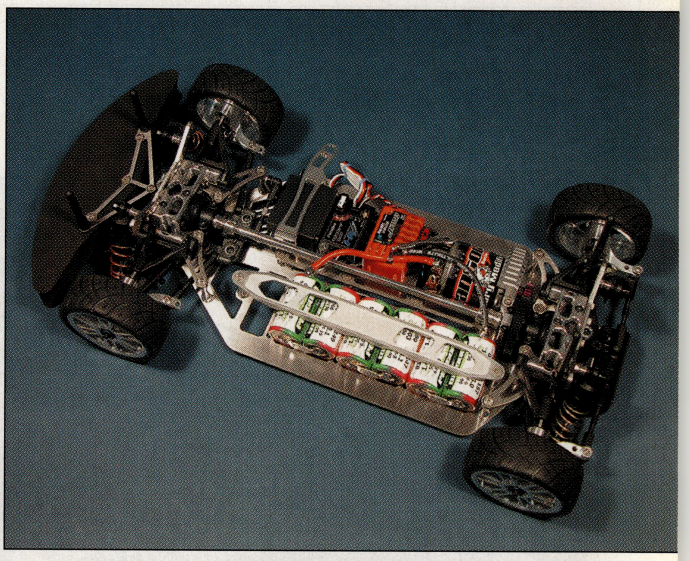
SHOCK TOWER STRENGTH

The Nitro TC3's weak spot is in the shock tower/gearbox area. The Hybrid is fitted with Hardcore's new titanium shock towers, which have machined aluminum mounts that attach to the tops of the gearboxes using the stock holes plus the additional, previously unused hole. The gearbox holes can still be stripped, however this is now a less likely occurrence.



NITRO SPEED

Fantom Racing wound custom 7-turn motors just for the Hardcore Hybrid. The goal was to propel the electric Hybrid to nitro speeds, and according to Hardcore's test drivers - who ran this pre-pro - the car was clocked well into the 55mph range during closed-course testing. Fantom also furnished several high-end GP3300 packs.





SOURCES

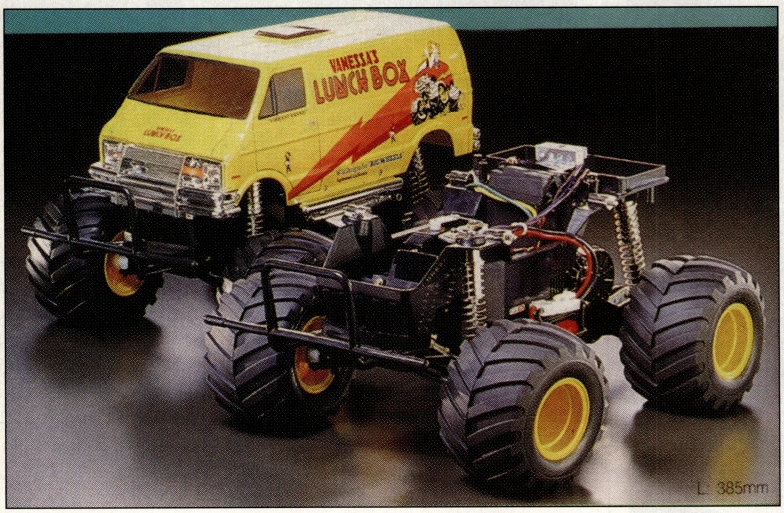
Fantom Racing Motors, 50201 Silver St., Vicksburg, MI 49097 • (616) 649-9583; (616) 649-9584
Hardcore Racing, 24895 Avenue Rockefeller, Valencia, CA 91355 • phone (661) 294-5032; fax (661) 294-0770

Track Treasures

The top 10 most desirable Tamiya kits

By Richard Trujillo

Recently, I was asked to come up with a "Top 10 of Vintage R/C" list. Since there are so many different types of kits and manufacturers, I decided I would start with what I feel are the top ten collectible Tamiya cars. Some collectors will disagree with my list, but this is *my* list (smiling).



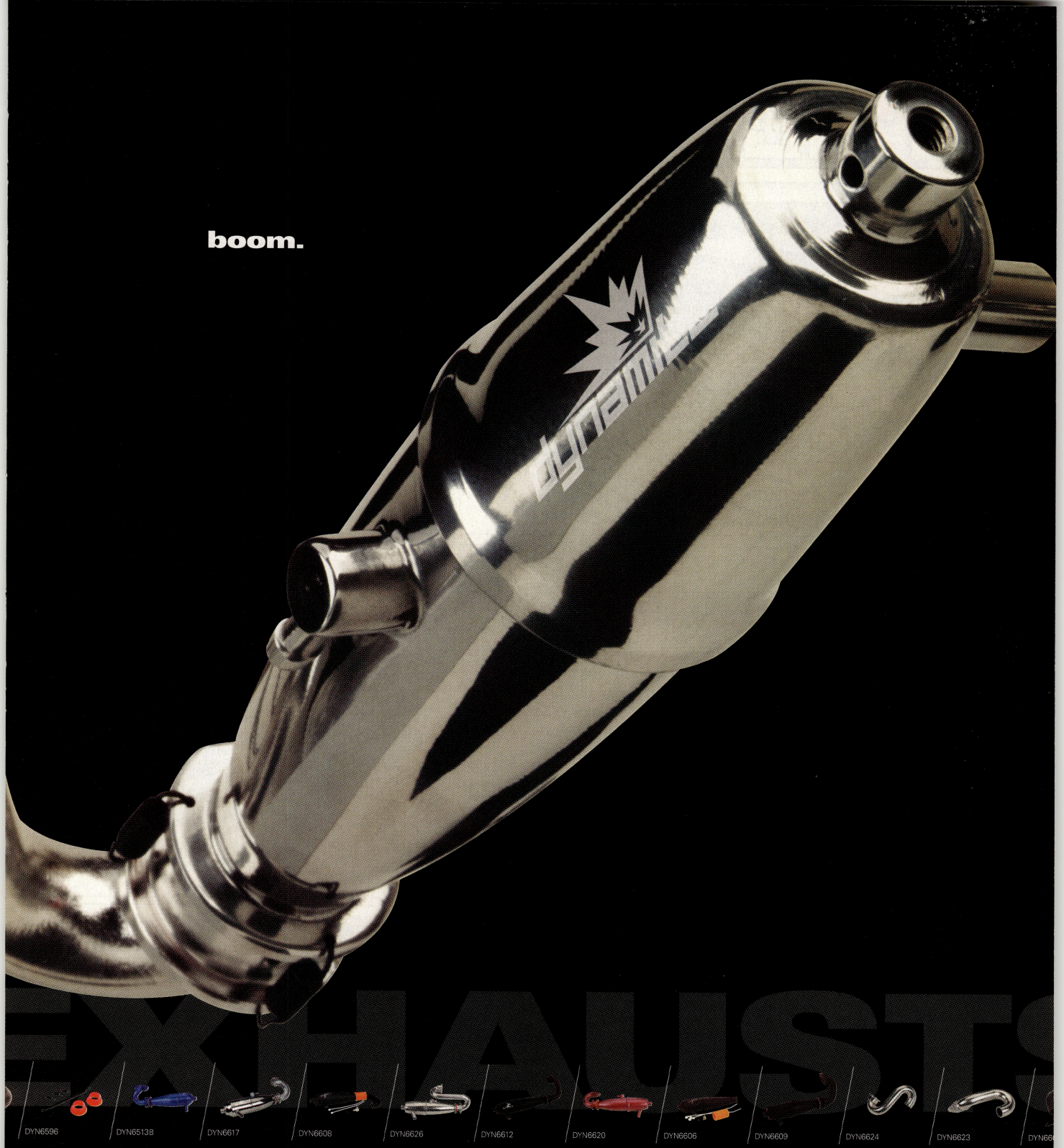
NUMBER 10: Tamiya Lunch Box, No. 58063

In June of 1987, the "Vanessa's Lunch Box" was introduced. This 2WD wheelie machine was a huge success. It didn't handle for beans, but it could ride wheelies pretty well. Several companies made optional parts for it. NIB kits sell in the range of $250, but finding a nice one is so difficult it makes me believe that this kit should be worth more.



NUMBER 9: Porsche 959 Paris-Dakar Rally Win, No. 58059

In October of 1986, Tamiya released this high tech 1/12-scale 4WD rally car. It featured a detailed polycarbonate body with interior. This car was very fragile, but with its all-wheel-drive layout and standard Technigold motor, it was a rocket ship. Parts are not too difficult to find, but expect to pay at least $175 for a NIB body and upwards of $500 or more for a NIB kit.



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Track Treasures

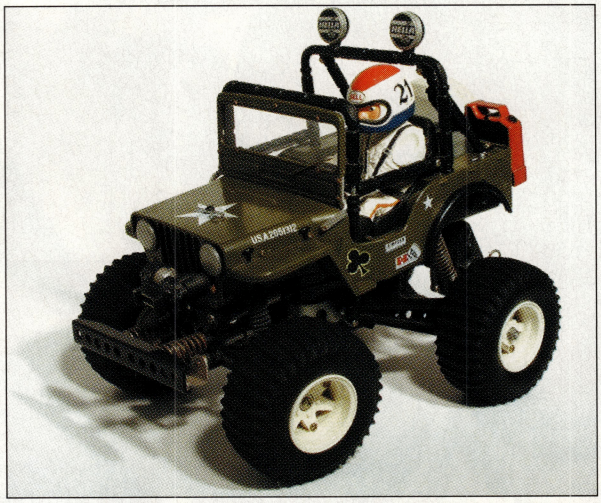


NUMBER 8:
FORD F-150 Blackfoot, No. 58058

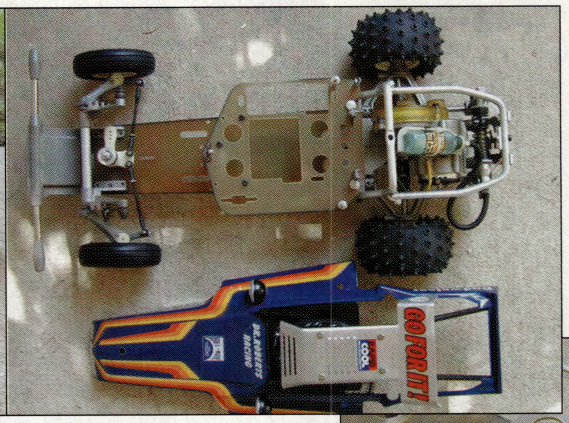
Also released in October of 1986, the Blackfoot can pretty much take credit for the monster truck craze in the U.S. This truck was based on the Frog chassis with a Ford Ranger XLT body on top. A ton of aftermarket parts were available, and at one point it seemed everyone who raced was racing a Blackfoot. Parts and used versions are relatively cheap and easy to find, but a NIB kit will run in excess of $300 or more.

NUMBER 7:
Wild Willy, No. 58032

Released in November of 1982, the cartoonish look of the Wild Willy attracted every type of buyer. From the first timer to the veteran racer, how could you not like the Wild Willy? This truck was designed with one thing in mind—riding wheelies! Tamiya released the Wild Willy 2 a few years back and it is almost as popular as the original. Parts are more scarce for the original kit and you can expect to pay upwards of $400 or more for a NIB kit.

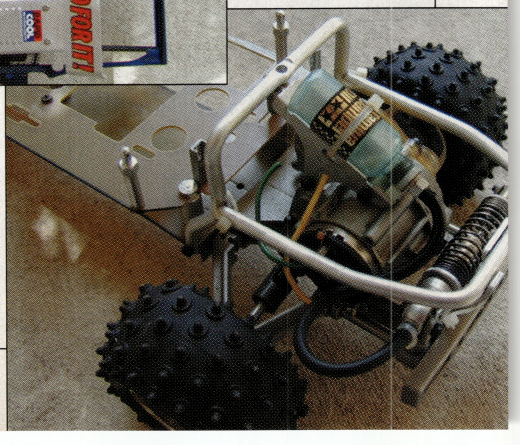




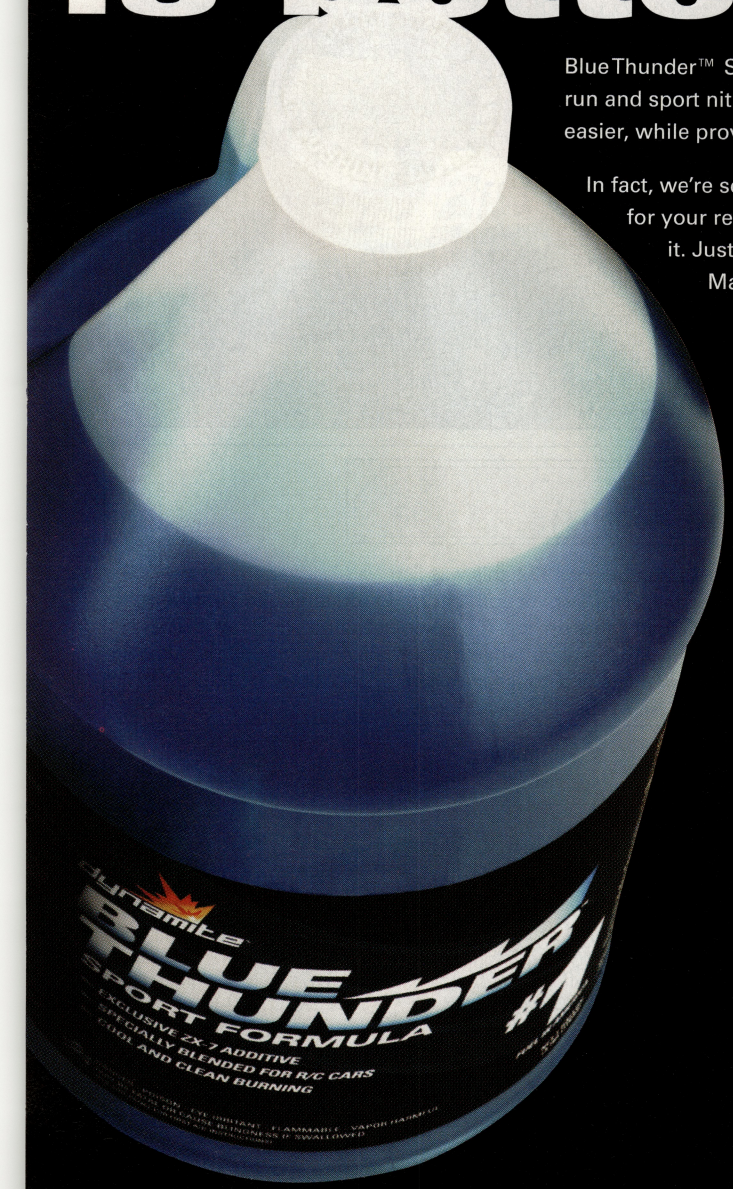


NUMBER 6:
Super Champ, No. 58034

Tamiya released their first purpose-built race buggy just in time for Christmas of 1982. They did away with the sealed radio box and added an upper deck radio tray. They also added a mono-shock system with a reservoir for the rear. This modification alone bumped the Super Champ to the modified class. Parts are sill out there for this kit, but a NIB body will set you back at least $200. NIB kits are about $450 or more.



5 bucks says BLUE THUNDER is better.



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P.O. Box 7777-H250
Mt. Prospect, IL 60056-7777

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5618

Track Treasures

NUMBER 5:
Racing Buggy Rough Rider, No. 58016

Released in November of 1979, the Rough Rider was one of the first buggies to be raced off road. The cast metal suspension parts resembled those of a real off-road buggy. The sealed radio box protected the servos and batteries from the elements and could easily be run through the water. R/C off-road racing started with this buggy and it will always be a favorite among all the "old school" racers. Parts are tough to find and expect to pay $300 or more for a NIB body alone.

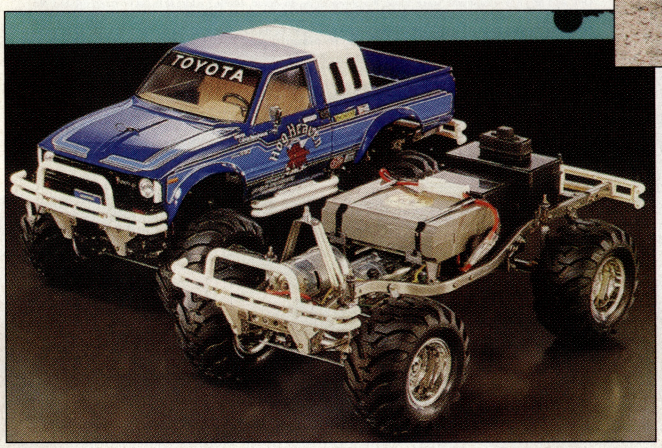




NUMBER 4:
Mountaineer, No. 58111

Released in September of 1992, this was Tamiya's last version of the 4x4 Toyota pickup truck. This last version featured a double-tube chrome roll bar with five off-road lights on top. One-piece chrome plastic wheels also replaced the original three-piece wheels. The scale realism of this truck will make it highly collectible and tougher to find in the future. A NIB kit will set you back at least $1200.





NUMBER 3:
Bruiser 4x4, No. 58048

Released in August of 1985, The Bruiser was the reincarnated version of the Toyota Hilux 4x4. This time Tamiya followed the real 4x4 trends of the time and installed a huge lift kit. A lift would not be complete without big tractor-style tires. They also bumped up the horsepower by including a larger 750 motor. At the time, this kit sold new for $300 and was more of a scale model than a racer. The average kit at the time sold for a little over $100, thus the high price of the Bruiser kept the overall sales numbers down. It seems like every part for this truck is tough to get and demands high dollars. This kit NIB will sell on the low side for about $1200, but I've seen them go for as much as $2200!



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JRP2342 XR2i | JRP3342 XR3i | JRP317275 XS3 | JRP3340 R-1 Pro

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DYN5610	Ready-Start Universal Starter Box	109.95	74.95
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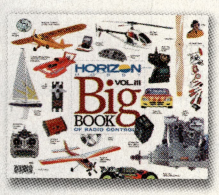
JRP3342**	XR3i FM Pistol w/1-Z590M & 1-Z270	229.99	169.99
JRP2342**	XR2i AM Pistol w/1-Z590M & 1-Z270	129.99	99.99
JRP3172**	XS3 Synthesized 3-channel FM Pistol	329.99	239.99

**Specify 27 or 75MHz when ordering



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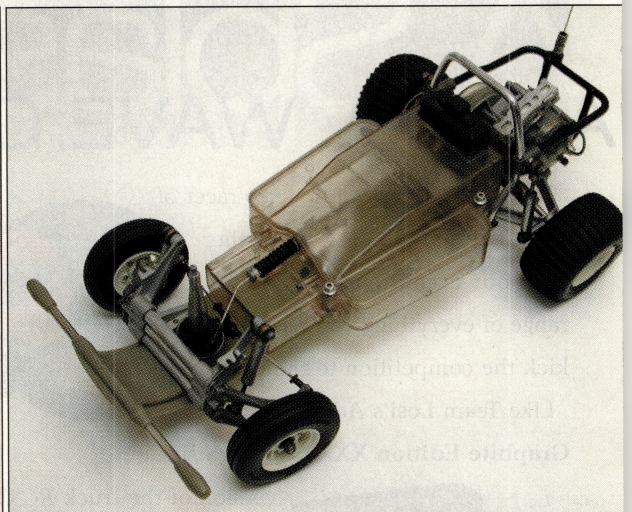
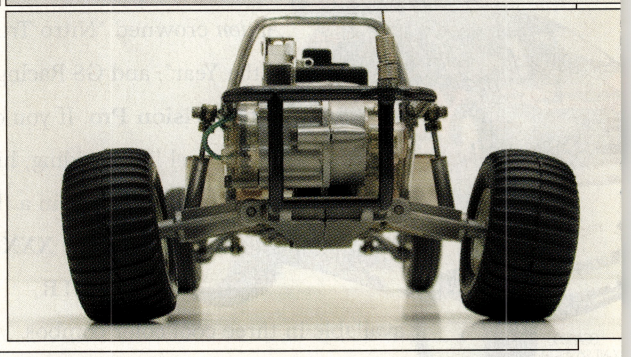
Track Treasures







NUMBER 2:
Sand Scorcher, No. 58016

December 1979 saw the release of what some consider the holy grail of Tamiya R/C cars. The Sand Scorcher VW Baja Bug was an instant success for Tamiya. The detail of the body and suspension set it apart from anything available and caused many modelers to buy it. Detail parts seem almost impossible to find and demand big bucks. The stinger exhaust alone will fetch $100! A NIB kit will easily set you back $1500 or more and I have seen one go for $2200!

NUMBER 1:
Toyota Hilux 4x4, No. 58028 & Blazing Blazer 4x4, No. 58029



It was too tough to call an outright number one choice between these two. The Toyota was released in November of 1981 and was Tamiya's first version of a scale 4x4 truck. This was as close to being a real truck as you could get. The complete driveline was copied from the real truck, which included real leaf spring suspension, external locking hubs and shift on the fly three-speed transmission. All the electronics were protected in a water-tight radio box, which allowed you to run through water and mud. For a promotion, Tamiya tied 12 of these trucks together and, with all of them in low gear, they pulled a full size Toyota 4x4 pickup truck! In June of 1982 the Blazing Blazer was released. Bigger sand tires and a Chevy racing body were the only differences between these two trucks. Both these trucks command very high prices. I have heard of NIB versions of these kits selling for $2700!

CONCLUSION

This was a tough list to come up with and I probably could have done a top 25, but I feel that these are probably the best known and most wanted of the Tamiya line. Sure, there are others that command high dollars, but I think almost all of us R/C fanatics have had or wanted one of these at one time or another.

SIDEWINDER



team 03 : jimmy babcock greg degani jeremy kortz travis amezcua

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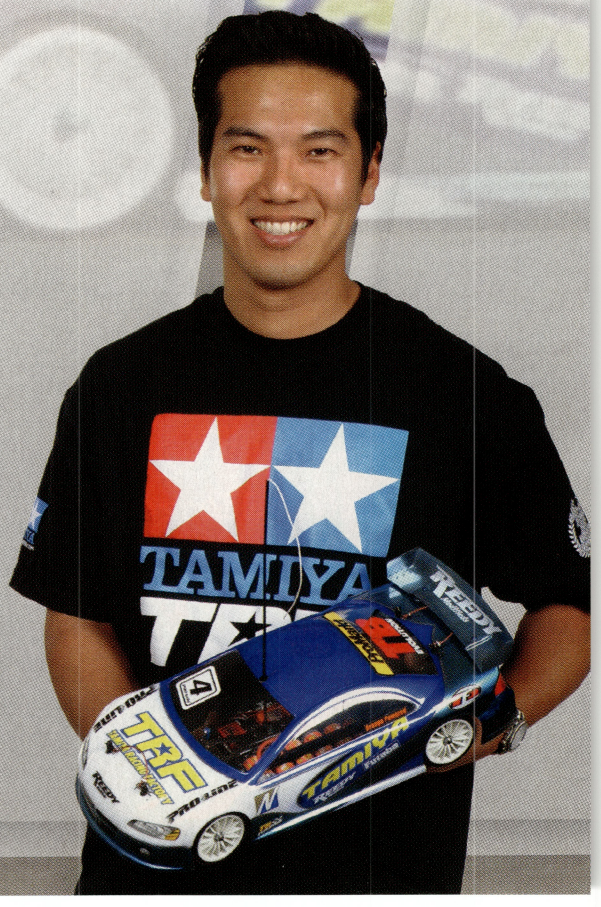
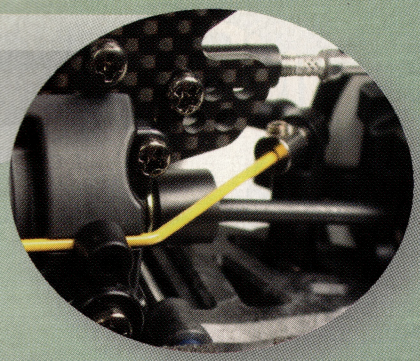
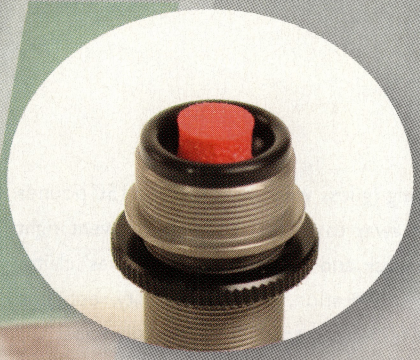
TRF Team Driver

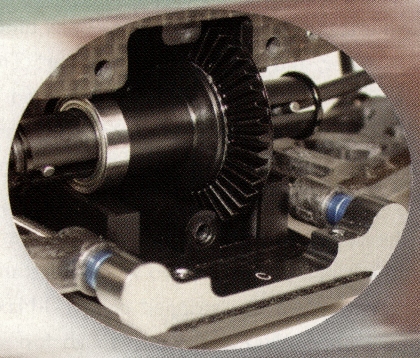




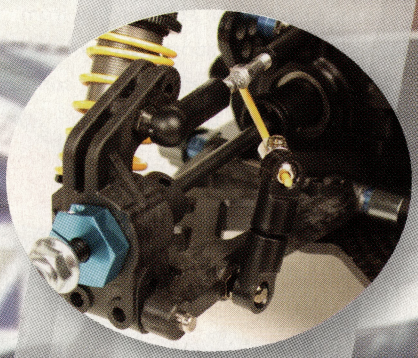
TUNABILITY Soft, Medium and Hard stabilizer bars are included for both front and rear suspension. Four aluminum toe-in suspension blocks are also standard.



ULTIMATE DAMPERS The TRF Dampers were developed to maintain consistency though any condition while maximizing tunability. Urethane o-rings can be added or removed to set "pack" allowing desired compression and rebound settings. Fluorine coated bodies and shafts, combined with Teflon pistons achieve ultra smooth action.



DIRECT ACCESS Front and rear differentials can be accessed quickly and easily for general maintenance.



WORLD CHAMPIONSHIP SUSPENSION Based on the 414M World Championship winning suspension, the TB Evolution III incorporates additional geometry improvements. Anti-squat, anti-dive, and high or low roll-center adjustments can be made quickly.



LIGHT WEIGHT DIFFERENTIAL Lightweight nylon out-drives reduce rotating mass while reducing wear and providing vibration free acceleration.

TB EVOLUTION III

TAMIYA

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Tamiya's TB Evolution III, the latest variant of the TB series chassis, features improvements throughout. First off, you'll notice that the TB Evolution III is now equipped with the motor on the right-hand side and the batteries on the left. This positioning significantly reduces torque steer from the motor and promotes stable throttle response. Also, the new Evo III design eliminated the bulkheads and saved 40g or 1.4 ounces. These changes and lots of other new features make the TB Evolution III a competitive chassis for 1/10th stock or modified sedan racing. So hurry and check with your dealer today, because this high tech chassis from Tamiya is a limited edition!

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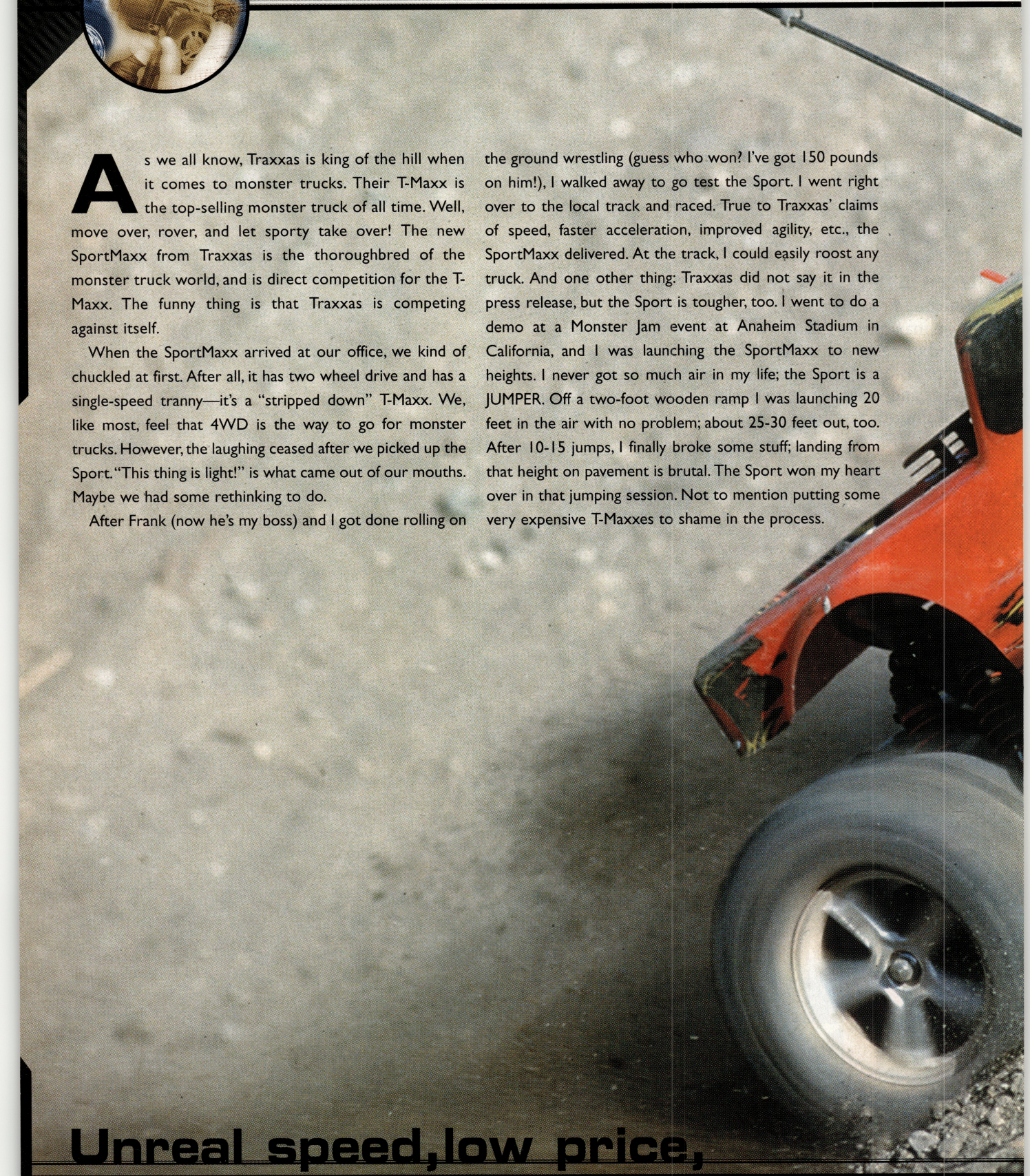
TRAXXAS



As we all know, Traxxas is king of the hill when it comes to monster trucks. Their T-Maxx is the top-selling monster truck of all time. Well, move over, rover, and let sporty take over! The new SportMaxx from Traxxas is the thoroughbred of the monster truck world, and is direct competition for the T-Maxx. The funny thing is that Traxxas is competing against itself.

When the SportMaxx arrived at our office, we kind of chuckled at first. After all, it has two wheel drive and has a single-speed tranny—it's a "stripped down" T-Maxx. We, like most, feel that 4WD is the way to go for monster trucks. However, the laughing ceased after we picked up the Sport. "This thing is light!" is what came out of our mouths. Maybe we had some rethinking to do.

After Frank (now he's my boss) and I got done rolling on the ground wrestling (guess who won? I've got 150 pounds on him!), I walked away to go test the Sport. I went right over to the local track and raced. True to Traxxas' claims of speed, faster acceleration, improved agility, etc., the SportMaxx delivered. At the track, I could easily roost any truck. And one other thing: Traxxas did not say it in the press release, but the Sport is tougher, too. I went to do a demo at a Monster Jam event at Anaheim Stadium in California, and I was launching the SportMaxx to new heights. I never got so much air in my life; the Sport is a JUMPER. Off a two-foot wooden ramp I was launching 20 feet in the air with no problem; about 25-30 feet out, too. After 10-15 jumps, I finally broke some stuff; landing from that height on pavement is brutal. The Sport won my heart over in that jumping session. Not to mention putting some very expensive T-Maxxes to shame in the process.

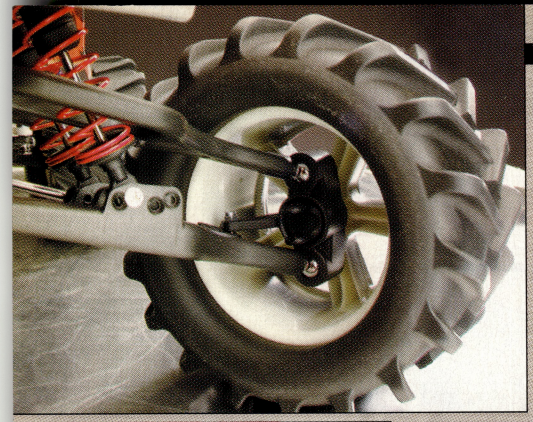
Unreal speed, low price,

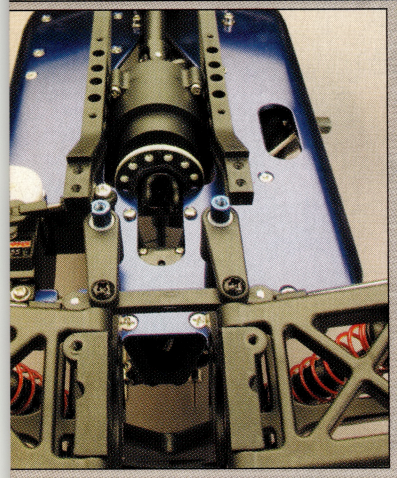
2WD READY-TO-RUN NITRO POWER

SPORTMAXX



superb track manners





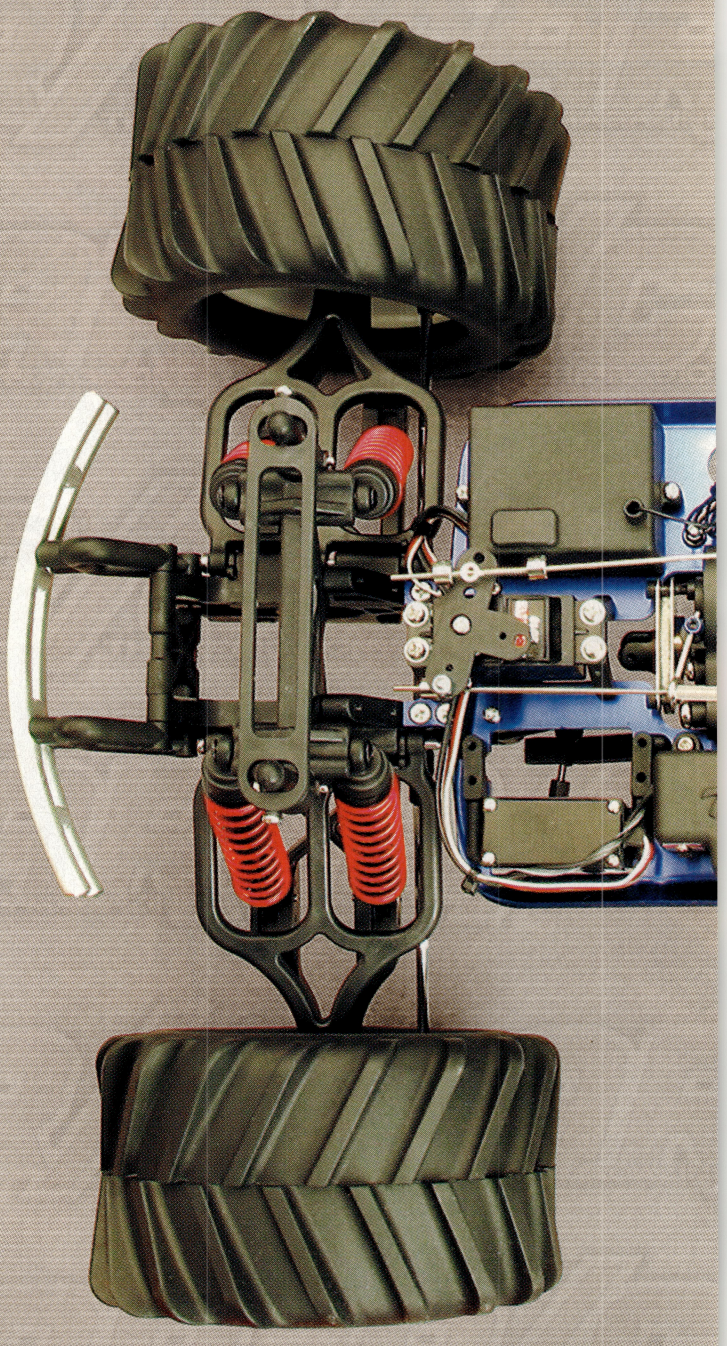
everyone else is building up. Hmm? Traxxas' idea was to build a lightweight race-ready truck that has violent power, and the Sport delivers that and more. The cool thing about the Sport is that it was designed to be upgraded easily with a "modular" systems approach.

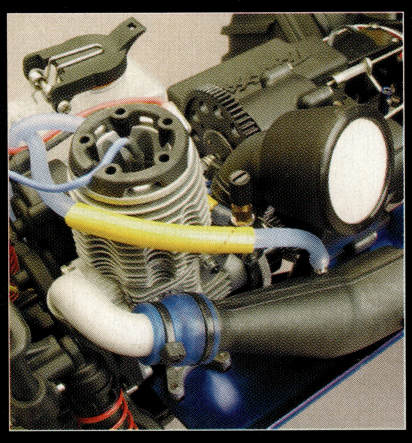
Order the two-speed tranny conversion and "bam!" You have 2WD with unreal acceleration and speed. Want to go 4WD? "Bam!" Order the front diff conversion kit and you have additional crawling prowess. But wait, there's more. Did you say you want reverse? Traxxas has that kit, too. This is a great idea; you can customize your truck to whatever configuration you want and know that Traxxas has you covered.

At the time of testing, the SportMaxx had not been released to the general public, and Traxxas did not have the upgrade kits yet, so no photos of the hop-ups were available. We plan on doing a follow-up story later, so stay tuned!

WHAT'S MISSING?

When looking at the photos it is hard to tell the Sport is not a T-Maxx. When you look a little closer, though, you will see some missing parts. It's funny when you think about it, but the SportMaxx is building down, while





ENGINES GONE MAD!

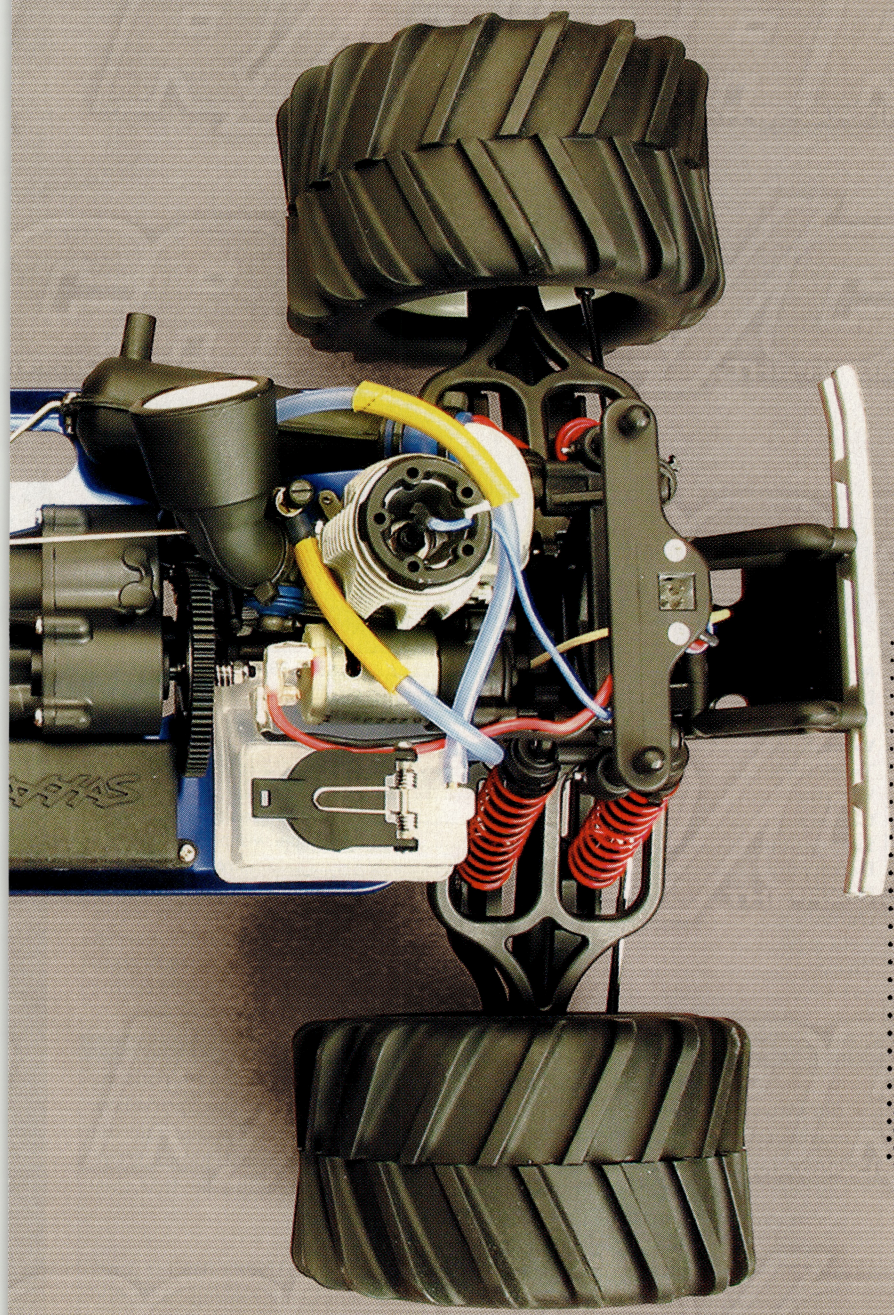
Traxxas has put a lot of work into the new 2.5 engine. I don't know what they were thinking, but this engine is the most violent thing we have ever seen. The 2.5 is the same engine that comes in the T-Maxx, so we are already familiar with this crazy-fast creation Traxxas dreamed up. But people, we tell you right now; this is one of the most impressive engines to come down the pike in a while. You will love this insane engine.

As with all of the Traxxas vehicles that come with this impressive engine, it worked flawlessly and started every time we went to run. Word-up here; take your time breaking the 2.5 in. The more time you spend breaking it in, the better it performs! The SportMaxx has motor.

IT'S A ONE-SPEED

Yup, the SportMaxx comes with a one-speed, and this is kind of interesting. You can easily convert the Sport into a two-speed; if you look at the tranny, it is set up for all the things the T-Maxx has (reverse and two speeds), but does it need it?

The SportMaxx has a different internal gear ratio than its big brother the T-Maxx. It is geared in between the ratios of the first and second gear of the T-Maxx's two speed tranny, so it has plenty of punch and a good top end (around 30 mph). But if you were to add the two-speed kit, Traxxas claims the Sport could get up to 40 mph. It will have to be your call, as the SportMaxx is pretty darned fast in stock trim. We would have to say that if you plan on racing on





BODY & WHEELS

Although the SportMaxx gets its own body design, the overall dimensions are the same as those for the T-Maxx. This means that anything that will fit the T-Maxx will also fit the Sport. The graphics on the Sport are also different. Wheels are a different story, too. Cosmetically, if you ask us, the Sport's wheels look better. They are very stylish, and the best thing about them is that they are lighter. In fact, we forgot to mention this earlier, but the acceleration on the Sport is unreal, and the lighter wheels, and the lighter drivetrain, are chiefly responsible for this. You will need to learn to use throttle control on this baby; in the dirt, if you bury the trigger, it takes off like an F-16. The only problem is that in two feet, you will be doing 360s. We found that out the hard way.

We went out to race the Sport with no time on it at all, and on the start we just dumped the trigger like you do on any typical monster truck. Of course we jumped right into first spot, but three feet into the race the thing started swapping side-to-side from all the wheelspin, doing some 360s and taking out half the pack (they just love us at KZ Speedway).

By the way: that whole throttle control thing? We forgot to tell you that the same is true for wheelies, too. Come out of a corner just right and on your lid you will go.

large tracks, or if you are a speed freak in general, go with the two-speed. On small tracks, or smaller play areas, the gearing it has is plenty.

SUSPENSION & HANDLING

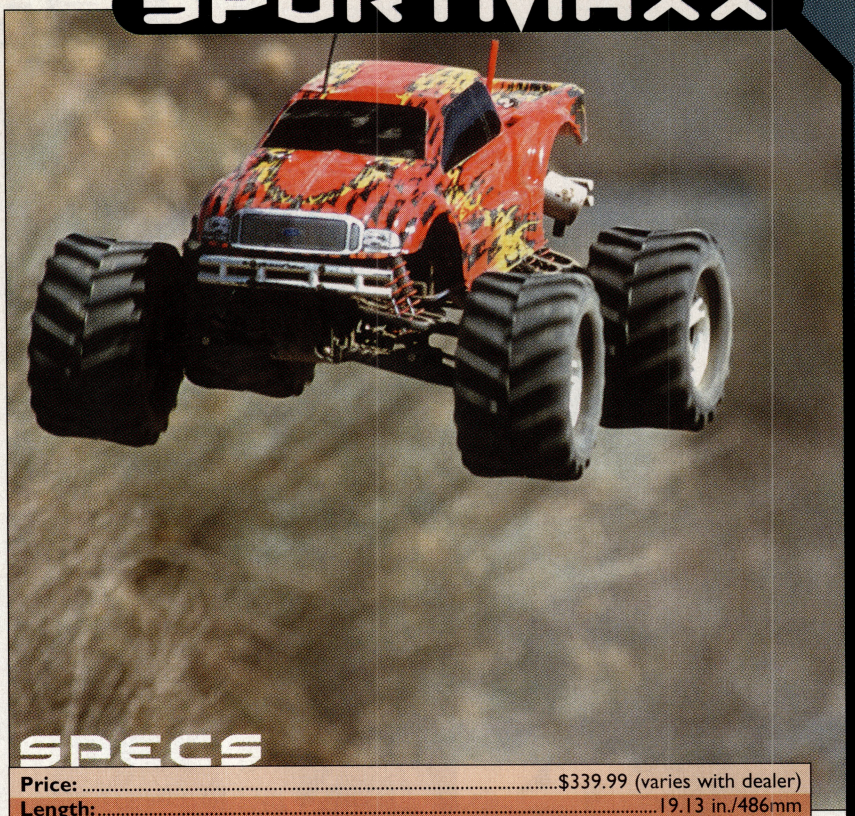
Again, the overall layout of the SportMaxx is the same as its brother the T-Maxx, so you would think it is the same when it comes to how it handles. *Au contrare, mon-ami!* The Sport rocks right out of the box. Because it is lighter, the suspension works much better. In fact, remember at the start of the story I was telling you of the "big air" we got at the demo? Much of this success can be attributed to the lighter weight.

T-Maxx shocks are known to blow apart after huge launches and hard landings, but with the weight difference between the T-Maxx and the Sport, the stock shocks work stellar. We were totally happy with the stock setup and felt confident of the suspension duties this truck was performing.

The wider, WideMaxx A-arms are the same as those of the T-Maxx, so of course we have no complaint there. In fact, we felt the SportMaxx turned better in the corners than the T-Maxx. We have to look into this more, because in theory a 4WD should handle better, but the Sport was spot on. In fact, if you were not paying attention, it would turn too well; you would find yourself having to over-correct your corner if you spaced-out for a second. Like we said, this thing is a thoroughbred!



SPORTMAXX



REPORT CARD

Test location: KZ Speedway, Sun Valley, California

Conditions: Freshly watered hard-packed racetrack; typical SoCal conditions.

Engine: A+

The new 2.5 engine from Traxxas is the most awesome thing we have seen in a while. We would just like to figure out what class of engine it fits into? Small block .15? Big block .15? Big block .21? Hmm. Naw!

Acceleration and speed: A

Same as above. The midrange gearing that Traxxas has chosen is great. For racing-type stuff, the gearing is almost perfect. On larger tracks like KZ, it needed more speed for that looong straightaway, and we will try out the two-speed for this track. But for the most part, the gearing is fine for most tracks. The Sport is a rocketship. Acceleration is so good we can't see it getting any quicker.

Suspension: A

Out of the box and for being an RTR, the SportMaxx has got some suspension. Yes, it is the same as the T-Maxx, but the SportMaxx is much lighter. This puts the suspension package in a whole new light. The stock Traxxas T-Maxx suspension is perfectly matched to the weight and dimensions of the SportMaxx. The only reason to change out the stock suspension would be for durability issues, e.g., upgrading to aluminum shocks for longer life and tighter specs. Other than this, it's a great matchup.

Steering & Handling: A

Steering in the corners is—I can't even come up with a word to describe it—so good. You can square a corner without trying. It's very good. Handling is excellent, and since the Sport is much lighter, it tracks much better than most trucks. The suspension is not overtaxed like its beefier cousins. We might be backing ourselves into a corner here, but the whole idea of a 2WD, lightweight monster truck may be an area to be further explored. I can't believe I just wrote that, but darn it, the Sport is an awesome truck.

SPECS

Price:	$339.99 (varies with dealer)
Length:	19.13 in./486mm
Width:	14.8 in./375mm
Wheelbase:	12 in./305mm
Track (f/r):	16.25 in./414mm
Weight:	7lbs, 3oz
Chassis:	blue-anodized aluminum plate
Suspension:	ind. double wishbone/pillow-ball
Drivetrain:	rear-wheel drive
Diff(s):	steel planetary gear
Damping:	eight molded oil-filled shocks
Bearings:	Steel ball-bearings
Tires:	paddle tread
Wheels:	one-piece spoked

Final Score

HIGHS: You will be on a high all right: high with the fun you will have roosting the heavier 4WD trucks. We hate to gush over a truck, but the SportMaxx really performed so well it is hard not to lavish praise. When Traxxas said the SportMaxx is more athletic, they weren't kidding. It's light, fast, jumps great, corners well and costs less than the T-Maxx. With a combination like that, they just might put themselves out of business.

LOWS: When you stop playing with it! Overall the SportMaxx has no lows. Traxxas might have changed some problematic issues, like making parts and bolts more accessible by changing the layout a little. These are personal peeves we have, and to change design would be a huge cost for Traxxas, so it is understandable not to change. Plus since people are familiar with the Maxx line as it is, we will cut them some slack!

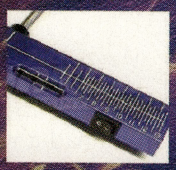
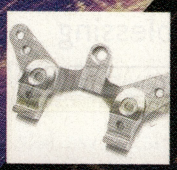
THE VERDICT: Can you guess what we are going to say? Yes! Walk over to, no, RUN over to your LHS and pick one up today. If you want to go racing or just have great fun (we vote for racing, though), the SportMaxx is a killer deal. In fact, Frank (that boss guy) will have to pry the SportMaxx from my cold dead hands before he gets this baby back!

SOURCES

Sidewinder Performance Racing Fuel, produced by Morgan Fuels, P.O. Box 311201, Enterprise, AL 36331 • phone (334) 347-3525

Traxxas, 12150 Shiloh Rd., Dallas, TX 75228 • phone (972) 613-3300; fax (972) 613-3599

[www.integy.com]











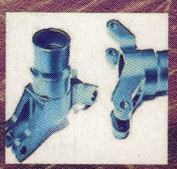












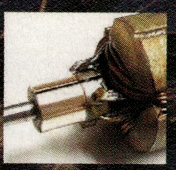
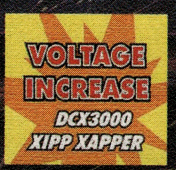


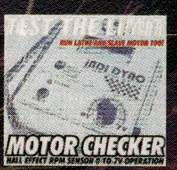


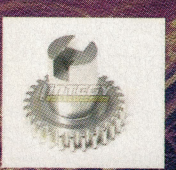












TEAM INTEGY
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SPORTMAXX VS.

Less weight can be a blessing

Before we even fired up the new Traxxas SportMaxx, we felt that we had a good idea of how it would stack up against its more feature-laden brother, the T-Maxx. By no means would we call the SportMaxx a "stripper," but it is a T-Maxx with fewer options. What did we expect? Good speed (the two trucks use the awesome TRX 2.5 engine) and decent handling, but certainly, the SportMaxx would be no match for its more expensive kin. We were wrong.

The SportMaxx surprised us with its refined on-track mannerisms, its superb flying ability and its overall toughness. We decided to pit the SportMaxx against T-Maxx - brother against brother - to document each truck's particular strengths and weaknesses. Here's how it went, and is prepared to be a little shocked, as were we.



T-MAXX



CATEGORY ONE: ACCELERATION

The SportMaxx is lighter, has fewer parts in its drivetrain and has lighter wheels. From zero to mid-range, the SportMaxx pulls the T-Maxx. Once the T-Maxx shifts gears, however, it pulls the SportMaxx handily. All of this, of course, depends on the type of surface on which you're running. On anything less than high-bite, the SportMaxx may likely find itself spinning its rear wheels or even lifting its front wheels off the line. When the grip is reduced, the T-Maxx's 4WD becomes less a weight liability and more of an advantage.

Winner: As long as there's bite, the SportMaxx will pull the T-Maxx off the line. When accelerating from higher speeds, or when the grip is low, the T-Maxx is the king.

CATEGORY TWO: TOP SPEED

Out of the box, the T-Maxx has the upper hand in the area of top speed. Why? Because it has a two-speed transmission, and its second gear is taller than the single gear ratio of the SportMaxx. You can increase the size of the SportMaxx's clutch bell/pinion assembly to compensate, to even surpass the T-Maxx's top speed, however this will also reduce the SportMaxx's acceleration and may even increase the engine's running temperature.

Winner: T-Maxx, thanks to its two-speed transmission.

CATEGORY THREE: CORNERING

We've logged many hours on both the SportMaxx and T-Maxx, and one thing has become clear: the SportMaxx just seems to turn quicker and sharper. Why is this? One thing is weight; the SportMaxx is significantly lighter than the T-Maxx, so it has less weight to change direction. The nature of the SportMaxx's 2WD system also must play a role in its cornering prowess. Like a free-wheeling front one-way in a touring car, the SportMaxx's unburdened front wheels are more responsive to steering inputs and aren't dragged by a 4WD drivetrain. In certain conditions, such as extremely rough or slippery surfaces, the T-Maxx's extra weight and its 4WD system could provide an advantage.

Winner: SportMaxx

CATEGORY FOUR: AERIAL TACTICS

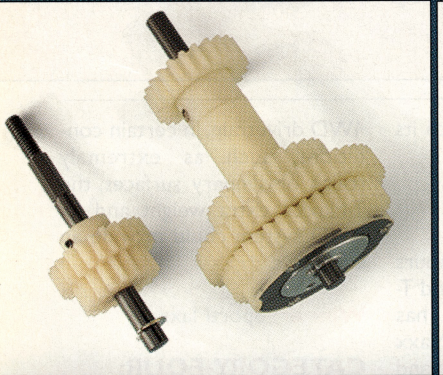
In the immortal words of Skinny, "I've never been able to launch a 2.5 T-Maxx like I could with the SportMaxx." Plus, he adds that the gearing on the SportMaxx lends itself better to low- to mid-range punch, giving the SportMaxx better acceleration up the ramp. We also found the SportMaxx to be easier to manage while airborne, more than likely due to

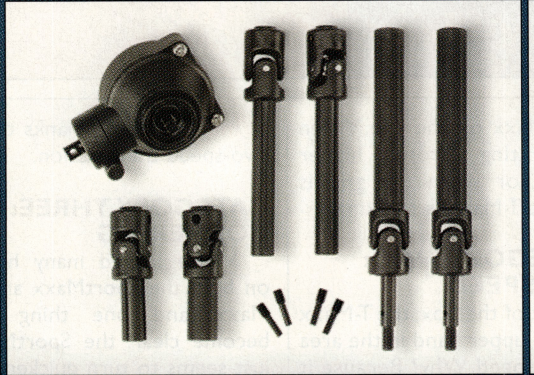
SPORTMAXX vs. T-MAXX



FROM SPORT TO T-MAXX IN 3 STEPS

Traxxas designed the SportMaxx so that owners can upgrade to full T-Maxx status without having to buy a new truck. Clever! The upgrades are available as three "modules," and you can install whichever you like, in whichever order you like, depending on your needs and budget.







TWO-SPEED MODULE

Add over 10mph to the top speed of the SportMaxx with just one kit. The 2-Speed module contains all the parts necessary to install an autoshifting 2-speed into the SportMaxx transmission case. All major components are assembled to make installation as easy as possible. The kit includes detailed instructions.

Part no.: 5192X
Suggested retail price: $35.00

FOUR WHEEL DRIVE MODULE

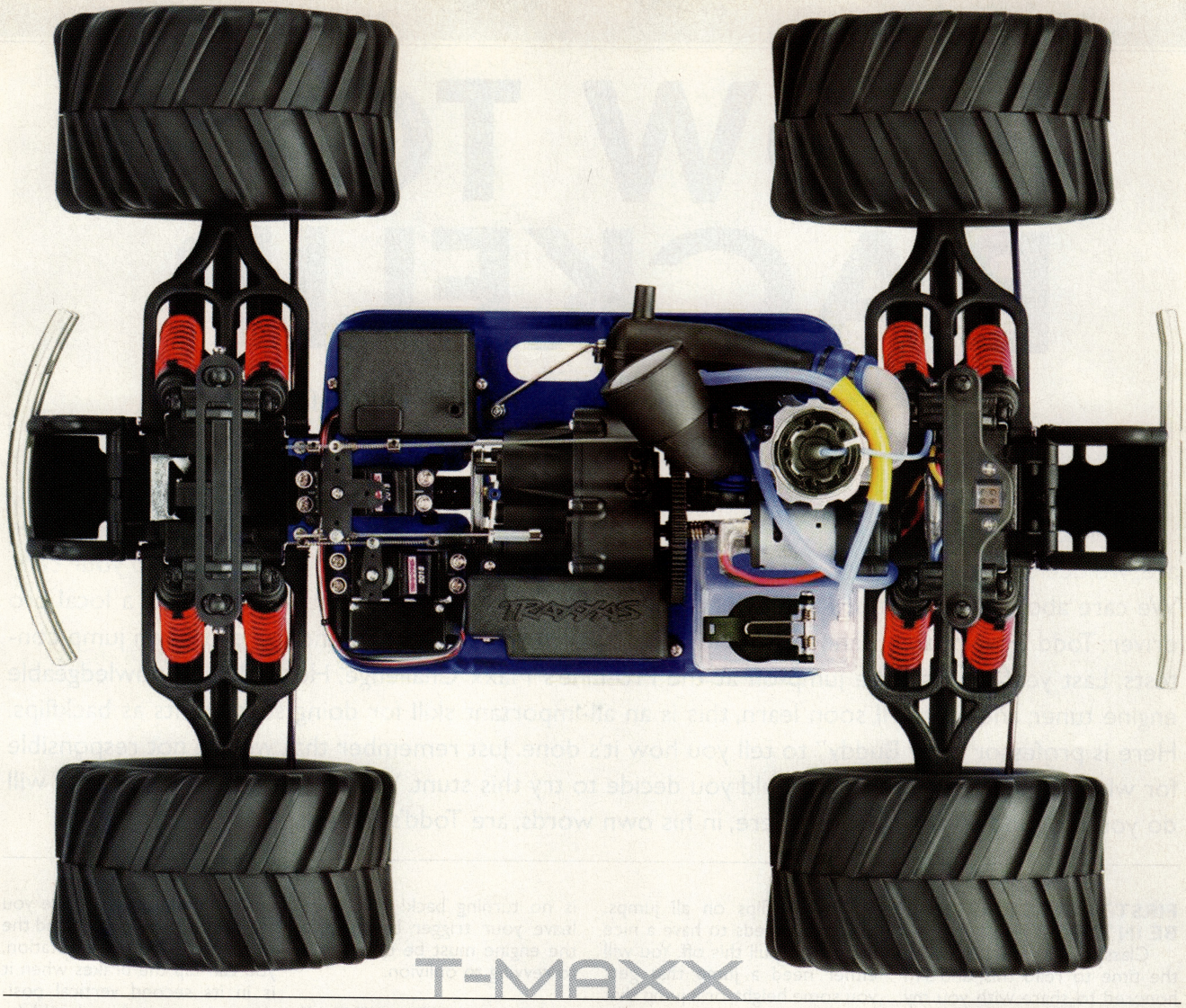
Convert any SportMaxx to the superior climbing traction of full-time 4-wheel drive. All major components are assembled to make installation as easy as possible. Includes front differential, all driveshafts and detailed installation instructions.

Part no: 5191X
Suggested retail price: $50.00

REVERSE MODULE

The T-Maxx has a patented transmission design that allows full proportional control of the throttle and brakes while in reverse. The Traxxas Reverse Module makes it easy to install the same sophisticated reverse capability into the SportMaxx. The package contains all the necessary parts and hardware, including the extra servo. The SportMaxx already has the required 3-channel radio system. All major components are assembled to make installation as easy as possible. Kit includes detailed instructions.

Part no.: 5194X
Suggested retail price: $65.00



its light weight and the reduced inertial influence of its wheels (only its rear wheels are driven and braked). On landings, the SportMaxx's lighter weight is less harsh on the suspension.

Winner: SportMaxx (unless you're doing backflips, in which case the T-Maxx's extra driven wheels are a big help)

CATEGORY FIVE: HILLCLIMBING AND CRAWLING

Now we're back in T-Maxx country! When it comes to tackling steep hills and getting up and over obstacles, the T-Maxx's full-time 4WD and additional weight give it a distinct advantage over the lighter, rear-wheel-drive SportMaxx. The T-Maxx gains traction even at extremely slow speed, and is less likely to lift its front wheels and tumble back down the hill. The SportMaxx - especially with the power of the TRX 2.5 engine - tends to spin its wheels easily. It also likes to loop-out on hills.

Winner: T-Maxx

CATEGORY SIX: BRAKING

Do the math: four wheels braking versus two wheels braking. Which wins? You guess it; the T-Maxx stops both shorter and straighter than the SportMaxx. Of course, when you tap the T-Maxx's brakes while in the air, the extra force makes it much easier to endo and land on your lid if you're not careful.

Winner: T-Maxx

CATEGORY SEVEN: SUSPENSION

Both trucks have the same exact suspension, so this category should be a draw, right? Wrong. The T-Maxx's suspension is a little stressed out; the additional weight of the T-Maxx can sometimes overpower the oil and spring rates - especially at high speeds and when landing from big jumps. But the same suspension on the SportMaxx is perfect. As a result of its light weight, the SportMaxx is more capable of hitting large obstacles at speed and soaking up huge landings without blowing out its shocks' seals.

Winner: SportMaxx

CATEGORY EIGHT: DURABILITY

Both trucks are durable. If the T-Maxx weren't rugged, there's no way it would have ever become as popular as it has. But against the SportMaxx, which is essentially its clone (missing a few internal organs of course), fewer parts mean there are fewer things to break. It's simple mathematics. First, the SportMaxx's transmission and drivetrain have fewer moving parts - less wear, less failure. Secondly, the SportMaxx is lighter, so when it hits an object or lands from a great height, there is less force acting on its chassis and suspension. Less force to cause damage.

Winner: SportMaxx

SOURCES

Traxxas, 1100 Klein Rd., Plano, TX 75074 • phone (972) 265-8000; fax (972) 265-8011

HOW TO BACKFLIP

Or, how to wreck your R/C in one fell swoop

It had to happen sooner or later. Motorcycles do it, bicycles do it. Heck, we have even seen scooters do it. Yes, we are talking about backflips. Extreme stunts are the rage these days, so it was just a matter of time before R/Cs started doing backflips, too. Being the concerned people that we are, we decided to give you the 411 on how to do this stuff before you all go out and wad your cars. We care about our readers! For this backflip primer, we decided to enlist the talents of a local pro driver: Todd "Hey buddy" Tanner. Todd has been driving for a long time, and has even won jump contests. Last year he won the jump-off at the Pro-Line's Maxx Challenge. He is also a knowledgeable engine tuner, and as you'll soon learn, this is an all-important skill for doing such stunts as backflips. Here is professor "Hey Buddy" to tell you how it's done. Just remember that we are not responsible for what happens to your R/C should you decide to try this stunt. We are all broke anyway so it will do you no good to try anything. Here, in his own words, are Todd's flip-tips.

FIRST THINGS FIRST: BE IN TUNE!

Class, thank you for taking the time to read this, and I'm honored to share with you my years of wisdom to you, hopefully you can bust a nice flip and walk away after we are done with this session. Now before you even go out to try this, it is important that you have your engine tuned correctly and your car is in shape. If the engine is not in a good tune it could sputter and may not rev high enough to spin your R/C around while it is in the air. You want your engine to be snappy on the revs. You want it to be in the same tune as you would use when you are racing.

INERTIAL FORCE

Remember that wheel acceleration, when the car is in the air, is key. When the car is in the air it is the engine's high revs that give the wheels the constant velocity needed to carry the car through the loop. Got that?

PERFORMING THE FLIP

STEP ONE: CHOOSE THE RIGHT RAMP—You cannot do flips on all jumps. The jump needs to have a nice lip to it to pull this off. You will either need a jump that gets you some height, or a jump that can put your car in a vertical position, much like the one in the photos.

STEP TWO: SPEED—Get a good run at the jump! You want to be lined up with the jump and be carrying good speed as you approach the jump.

STEP THREE: THROTTLE CONTROL—As you hit the transition, depending on what your car is doing at the moment, you can either let off the gas for a moment, then pin it up the face, or, if things are all lined up and the car is feeling "right" at this point in your jump, just keep the trigger pinned! This will just be a matter of experience on what to do. After a few times doing this you will know what to do as you go up the ramp.

STEP FOUR: GO FOR IT!—At this point you will be up the ramp, and the car will be lifting off at any moment. No matter what, at this point, there is no turning back! You must leave your trigger buried and the engine must be on its way to revving to oblivion.

STEP FIVE: WFO—If you're doing things right, your car will begin to rotate—this is good. Keep the throttle WFO (wide full open)!

STEP SIX: BRING IT HOME—Prepare for reentry! At this point your car will be in full rotation mode. Depending what the car is doing, you may need to do a few things: If the car is sluggish in finishing the rotation, you may need to keep the revs up to finish the flip. The car ideally should be at its peak of rotation and carrying nice momentum to finish its loop. If this is the case, you can throttle-down when the car is approaching its original horizontal plane, and just let it touch down. Now you can just wait for the crowd to cheer!

STEP SEVEN: PANIC CONTROL—There is the possibility of over-rotating or running out of room. If this is happening at the end of the flip, you can tap (I said TAP!) the brakes to bring the flip to and end sooner. If it looks like you are rotating too quickly, and the car is going for more rotation, you can tap the brakes when it is in its second vertical position—the one that should be returning your car to its safe and upright position. By tapping the brakes at this point, you will stop whatever your car is doing and drop it from the sky like a lead balloon! The same is true if you are running out of room—vertically or horizontally; just tap, tap, tapper-roo, and it will drop from the sky like a rock!

FINAL ADVICE:

Performing a backflip is not as hard as it seems. It is just the consistency part that is difficult. And that's the problem! If you do not pull it off, you wind up landing on your lid, and run the possibility of breaking parts. I would suggest you be pretty good at handling your car before you try this, and if at all possible use a thrasher car to practice the stunt with. After all, that is what is needed to do anything—practice, practice, practice! Class you are dismissed, and be prepared for a test the next time I see you out at the track! Mahwah-ha-ha!



4TH Annual Dirt Nitro

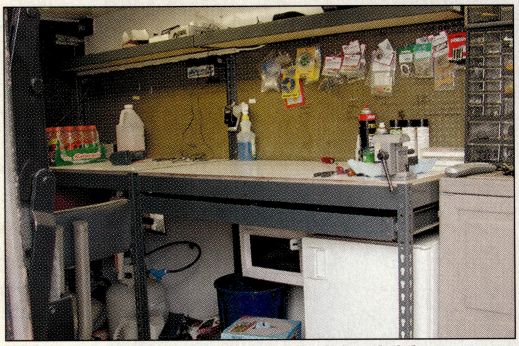
More than 300 racers kick off the off-road season

By Brian Skinner

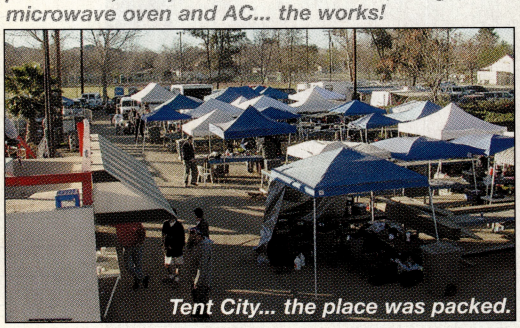
Have you ever heard of an event that just sounds epic? The annual "The Dirt Nitro Challenge" is like that. For the last year, people have been telling me how great it is; I was even reading about it on the "Staring Grid" website for the last month before *R/C Car* sent me out to cover it. Well, I insisted actually. After hearing so much about it, I practically begged Frank to let me go.



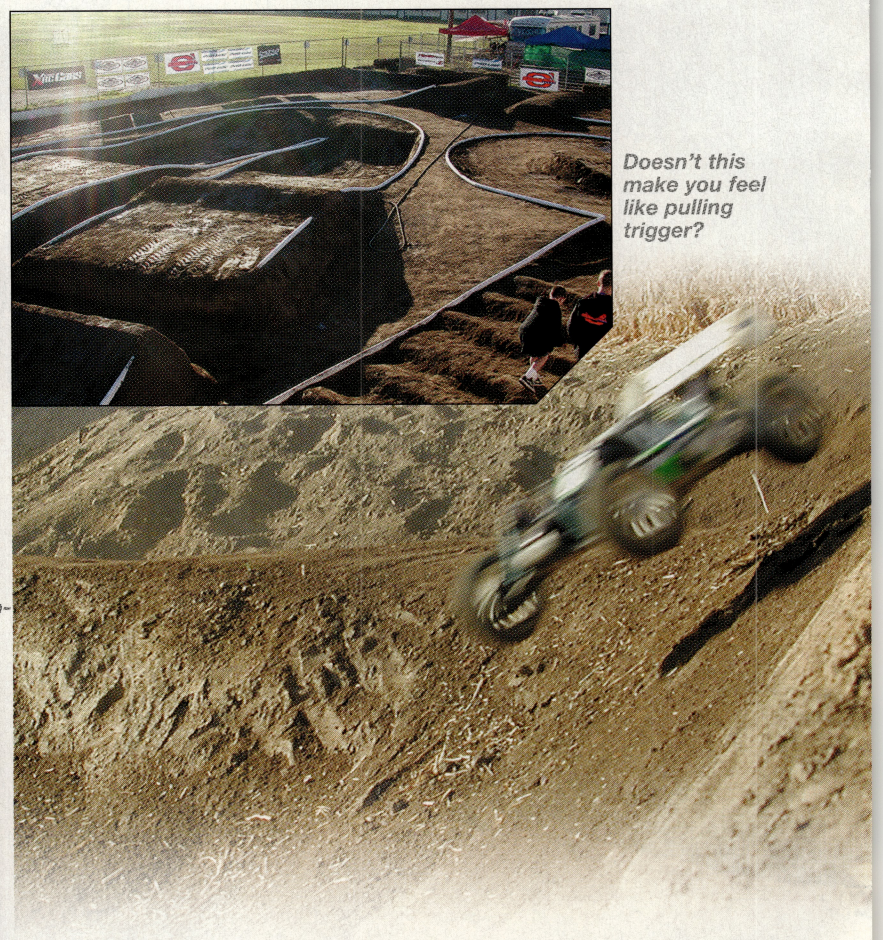
Mark Pavidis, Greg Degani and Chad Bradley discuss race strategy before the racing starts.



Greg Degani has the right idea! A mini factory support trailer, complete with satellite TV, fridge, microwave oven and AC... the works!



Tent City... the place was packed.



Doesn't this make you feel like pulling trigger?

Yes my fellow R/C nuts, when I arrived in the little quirky town of Hemet, California, Pops Racer (my dad) and I were not disappointed.

First off, when you cruise through Hemet you realize you just entered another world; it's an interesting place. If you have ever seen "Push Nevada" (a television series on ABC), you'll know what I'm talking about.

As this was the first major event of the year, we decided to go down early on Thursday to get a good spot and get in some practice. Unfortunately, when we turned the corner to enter the track, wall-to-wall cars and motor homes greeted us.

THE TRACK

Upon arriving, the first thing I did was to check out the track. It was totally prepped, watered and loamy; it was like showing up to a major motocross national. Just look at the photos: there were huge jumps, whoops and even a corkscrew turn complete with a bridge. Major props to Joey and his crew for a great track design. The Dirt [(909) 925-7592] is open for weekly races, and is also the home to several larger events such as this one.

WHO'S WHO IN NITRO OFF-ROAD

Joey had more than 300 people come out for the Challenge. This event is kind of the precursor to the race season, and everybody came to Hemet to "pull trigger." All the major talent was there: current 1/8-scale

Challenge



Pro-Line's sweet pit/promo area.



The politics of dancing. Joey coaches the gang on what's right and wrong. Do you think they will listen? Not!



The "new" world famous corkscrew!



YOU WANT E-COLI WITH THAT?

Rumor had it that the world famous Steve's burger place at the corner of the track was dishing out some food poisoning along with burger and fries. Apparently, a few of the boys were feeling pretty badly; Adam Drake reportedly was so sick Sunday that he almost did not race the main. However, he wound up third in truck. Maybe I should try Steve's before my next main event? One other person who was a victim of Steve's, who will remain anonymous (he is a major pro and his initials start are TA), was not feeling too well either. During his main he became a little sick on the stand, if you know what I mean.

world champ Greg Degani, Jeremy Kortz, Adam Drake, Chad Bradley, Billy Easton and Hippy. The only people that did not attend were Richard Saxton (he was in Germany for the Nuremburg trade show) and Brian Kinwald.

The factory honchos were out, too. Steve O' Donnell, Regan LeBlanc from Kyosho, the Pro-Line boys, Paul Coleman with his new "top guns" for the new OFNA race team, even my new good friend Dave, the owner of OFNA, was there.

16-HOUR RACE DAYS

That is correct; 16-hour days were common during Friday, Saturday and Sunday. Remember, there were 300-plus people racing in five classes: 1/8-scale Open and Pro, 1/10-scale Open and Pro truck and the Monster Truck Unlimited class.

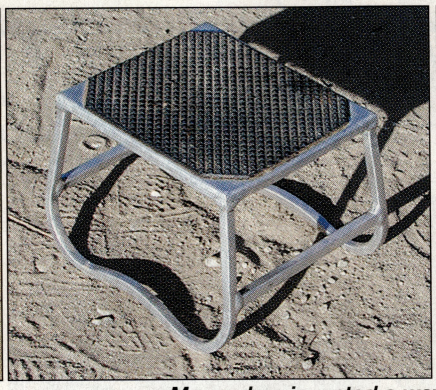
The weekend's schedule was set up like this:

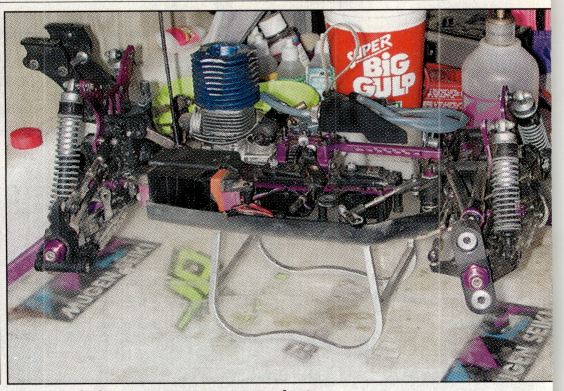
- **Thursday:** practice for all. 9am to 9pm.
- **Friday:** four rounds of seven-minute qualifiers for 1/10-scale trucks and monster trucks.
- **Saturday:** three rounds of seven-minute 1/8-scale qualifiers for both Pro and Open classes.
- **Sunday:** All the mains. The lower mains raced for seven minutes, B mains were 30 minutes and A-mains were 45 minutes long. Each main would have two bump-up spots so racers could potentially erase their poor qualifying performances.

4TH Annual Dirt Nitro Challenge



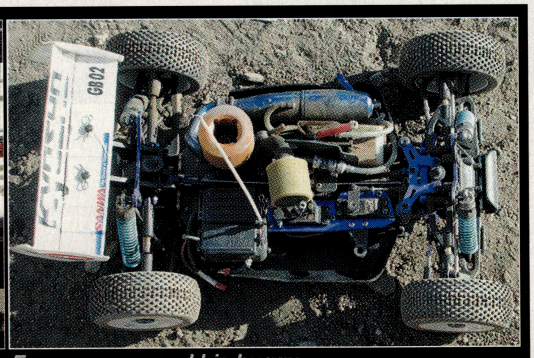
Joey, The Dirt's race promoter starts the first wave of the new hovercraft class.





Mugen has invented a way to shrink motocross stands to 1/8-scale size, for their buggies. These are cool!

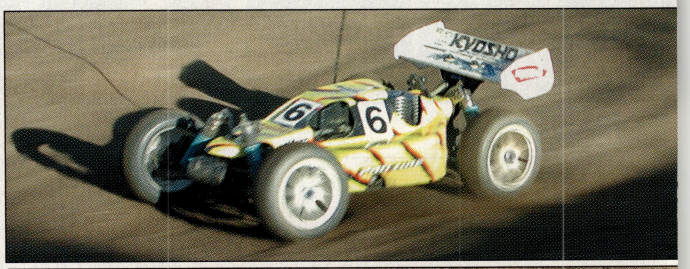




Far away guy and his buggy.

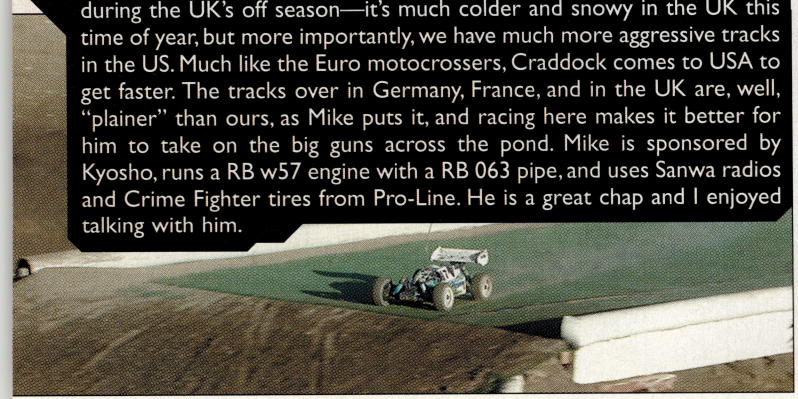
ACROSS THE POND TO HEMET

Britain's Mike Craddock is actually the second farthest person from the Hemet event; the other guy came from Sweden, but I couldn't find him for an interview, so Mike gets the honors. Last year, Mike finished 41st at the 1/8-scale worlds, and has been coming to "The Dirt" for ten years now. He races pro and finds coming to the USA a great way to get faster during the UK's off season—it's much colder and snowy in the UK this time of year, but more importantly, we have much more aggressive tracks in the US. Much like the Euro motocrossers, Craddock comes to USA to get faster. The tracks over in Germany, France, and in the UK are, well, "plainer" than ours, as Mike puts it, and racing here makes it better for him to take on the big guns across the pond. Mike is sponsored by Kyosho, runs a RB w57 engine with a RB 063 pipe, and uses Sanwa radios and Crime Fighter tires from Pro-Line. He is a great chap and I enjoyed talking with him.









THURSDAY: GIMME SOME TIME!

Open practice day was a zoo! It was like pulling teeth to get a frequency clip. The lines to get on the stand were so long, it made me think I was at Magic Mountain waiting for the Superman rollercoaster. It was great to see so many people out racing, but guys, put the darned clips back when you're done. I would sure like to get some laps in too, you know.

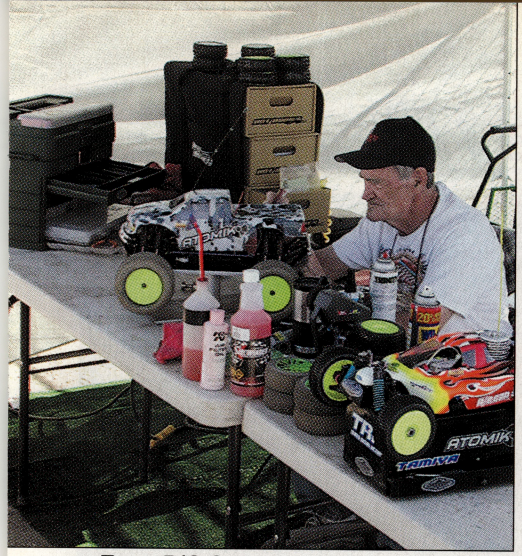
Thursday was quite the exciting day see who was fast, and it was cool having Degani next to me as I battled my SportMaxx next to his 7.5 Kanai Edition. Yeah, I diced with him for all of about 15 seconds as we hit the downside of the double and dropped me like a bad habit.

FRIDAY: QUALIFYING

Pro Truck—This class was hot and heavy, and the racing was very tight. At the end of the day it looked like Jared Tebo and Kortz would be the fastest racers of the day, but it was Losi's Ryan Cavalieri who would get the coveted TQ. Adam Drake, Billy Easton, Chad Bradley, and Marty Korn also looked to be in the hunt. As a matter of fact, the whole pro class looked good.

Open Truck—One name stood out in my head: Hippy. I like that guy. Hippy (Charles Charron) was looking fast, and the last I checked, he had the TQ. I later learned later that Jim Pierce had beaten him out.

Monster Truck Unlimited—There were 28 MTs racing this weekend, and all were fast. The main person in this class



Team R/C Car's sweet pit area. That's "Pops Racer," i.e., Shrek's dad in action.



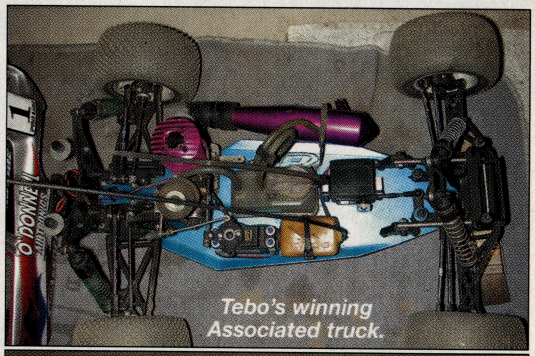
Our working class hero and mentor, The Hippy.

EVEN MORE VAGUE RUMORS

R/C racers can be like hens at a sewing circle. Here are just a few of the more "interesting" rumors overheard in the pits.

- Associated is working on a 1/8-scale buggy.
- Chad Bradley wants to race in the 1/5-scale worlds when it comes out to KZ Speedway; and he just might have a sponsor.
- Steve O'Donnell was totally into slot cars back in the day.
- General Silicones is folding its car division (Ha!).
- GS Racing is rumored to be working on a "race" monster truck.
- Skinny is getting faster and plans on going to the worlds in '04.
- Saxton will race for Thunder Tiger this year.





Tebo's winning Associated truck.



Kortz's winning Kyosho MP-7.5.



1/8-scales sure can make some crazy mid-air corrections.

was Holli Bechard from Pegasus Hobbies—she dominated qualifying, winning all four of her heats (see our interview with Holli elsewhere in this issue). Smoker looked good too, but he kept having mechanicals. I was doing pretty well, racing a box-stock Traxxas SportMaxx, especially considering I was up against many big-block, $2,000 full-blown race-Maxxes. I wound up getting 4-3-2-DNF in the heats. The DNF was a result of the turn marshal standing on my antenna wire and yanking it out from the receiver box.

SATURDAY: THE BIG BUGGIES

All of the 1/8-scale drivers were good, in both the Pro and Open classes. This had to been the best group of drivers to gather in one place in a long time.

1/8-scale Pro—Since all the fast guys were there it was anybody's race. Degani, Kortz, Bradley, Mark Pavidis, Josh Wheeler, Kris Moore, Korn and Jimmy Babcock. They all were on pace. Degani got the TQ, but during the races, the packs were really tight. It could have been anyone's race. You should have been there. In my mind Degani and Kortz look to be the quickest, but everybody else was also flying.

1/8-scale Open—Mike Kalis, Jason Shere, Bailey, Theo Captanis (Hippy's rival) stood out in the qualifiers. As for me, this was my first big event with 1/8 scale, and I was a little nervous. I did fairly well in my heats (going 4-2-3), and was just trying not to crash

The end of the day saw a big toll taken on the track. It looked like a grenade had hit. It was destroyed.

4TH Annual Dirt Nitro Challenge

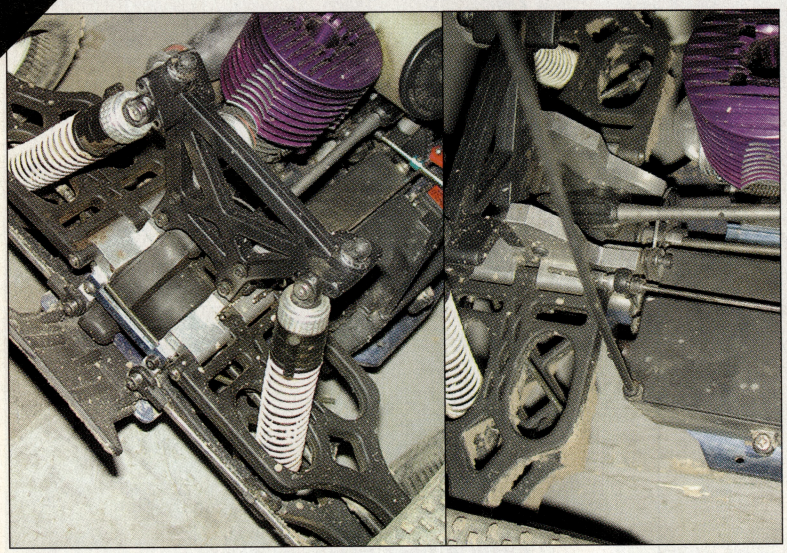
THE DIRT AT THE DIRT

This was a big race, and things "happened." We might not see them, and most of the people might not hear about them, but some wild stuff went on at Hemet this year, and I just have to spill the beans. I'm somewhat hesitant to write about these first three incidents because they're not too good for the sport. However if it is in print, perhaps racers and their sponsors will wake up and control their actions better.

Rumor 1: It's kind of fishy, but a certain sponsored pro used his buddy's truck—a truck from another manufacturer other than his sponsor—to bump up from the lower mains. Then in the A-main, he raced HIS sponsor's truck. What's up with that? There is no reason for that, and I'm not even going to put in my two cents.

Rumor 2: Sand Bagging in the monster truck class? Come on guys, monster truck is supposed to be fun. Can't you even race your own truck? I don't know the whole story on this one, but supposedly, a certain pro driver, who had finished in the top half at the 1/8-scale worlds, drove his friend's T-Maxx so that the friend could bump up into the A-main. Fortunately, they were exposed and subsequently disqualified. This is the story I heard, and I caught the last part of it when I was at the announcing tower. If it's true, I'm really bummed out.

Rumor 3: This is the worst of them all. I don't know the whole truth behind this story, but it did happen. Regardless of the story behind this one, it should not have happened at the track. Families are there checking out the event. These types of actions could instantly turn off new people that are stoked about this sport. I can understand if you're upset, fine. But do what you have to do back at the hotel, or at least somewhere away from the track. What am I talking about? It seems that some "stuff" went on out on the track during a race, and someone took offense to it. When the race was over, the really ticked-off person stepped into pit lane, grabbed the other guy's truck, started smashing it on the brick wall, and broke the truck into pieces. I may feel like doing this myself sometimes, but self-control is called for.





Holli's custom T-Maxx-style bulkhead setup for her very sweet OFNA Pirate.

SUNDAY, SUNDAY, SUNDAY

This was where the rubber met the road. The weather was perfect (as it had been the entire weekend), and Joey and his crew had done a stellar job of fixing the track for the mains. Remarkably, the track stayed in great shape throughout the main events.

Monster Truck Unlimited A-main—Two words: Holli Bechard. She flat-out smoked the boys. The start was one of the cleanest I've seen, and hardly any tangles happened the whole race. That's amazing with these trucks. The wheels are so big they just suck up anything and get you tangled with your fellow racers quicker than you can say "T-Maxx." Holli jumped right into the lead from the start and never looked back. By halfway through the 30 minute main, Holli was two laps up on everyone and it was pretty much over. On the last lap, Ray Norte tried to unlap himself and put an ugly move on Holli on the back straight. He spun out right in front of Holli, and at this point they were easily doing 30 mph. Holli just kept it pinned to carry her through the crash and clipped Ray's rear wheel and it broke, ending Ray's race. Good for you Holli. No way should he have been trying that move on you.

Finish order

Name	Laps
1. Holli Bechard	26
2. Ray Norte	24
3. Jason Scheerer	22
4. Kenneth Guiterrez	14
5. Bob Tillman	13

Open Truck A-main—The start was relatively clean with only a few crashes off the first double. On the first lap, coming by pit lane, it looked like a freight train with Hippy (Charles Charron) leading the way. By the time the pack had hit the straight, Hippy was at the other end. The order stayed this way for almost the whole race with some little battles going on here and there. Then disaster struck for Hippy. In the waning minutes, his truck's front suspension broke and it slowed him to third place. This let James Cope and Jim Pierce get by and Cope finally won out, while Pierce settled for second.

Finish order

Name	Laps
1. James Cope	51
2. Jim Pierce	51
3. Hippy	51
4. Theo Captanis	50
5. Doug Nelson	50

Pro Truck A-main—The start was tight, but after about five minutes things settled in to a nice fast pace, with Travis

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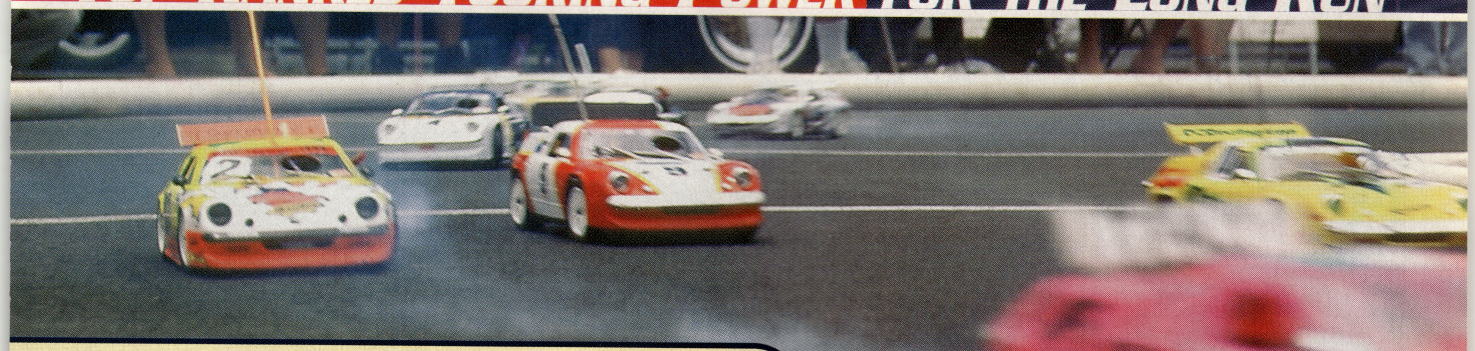

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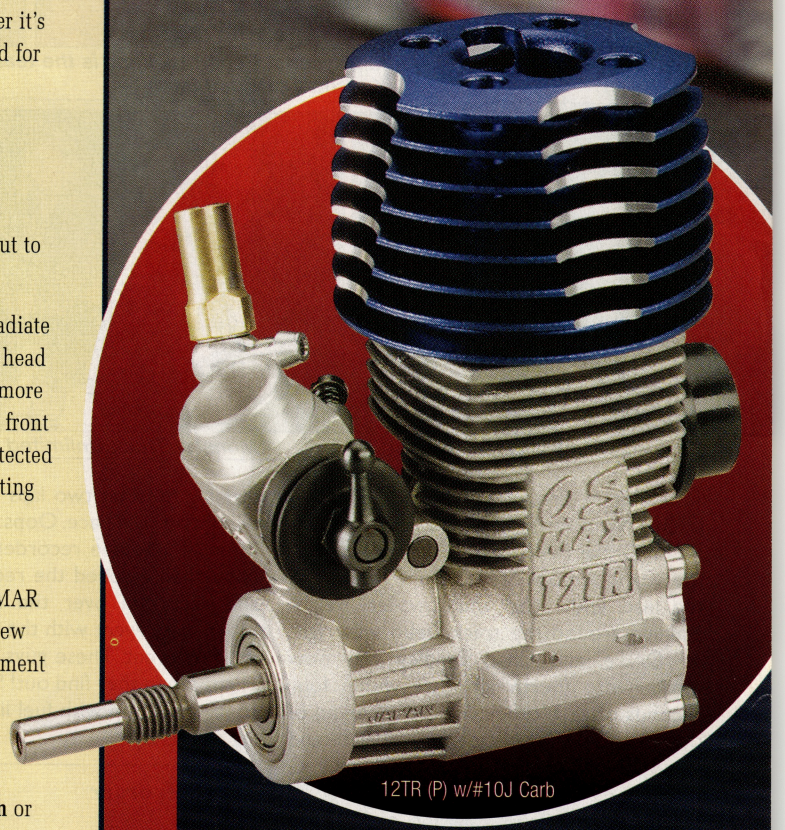
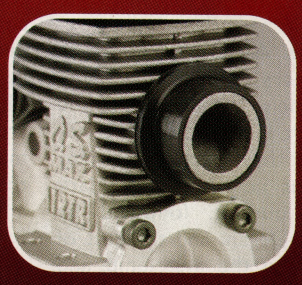


12TR (P) w/#10J Carb

OSMG2001 12TR w/#10M Rotary Carb
OSMG2002 12TR w/#10J Slide Valve Carb
OSMG2003 12TR (P) w/#10M Rotary Carb
OSMG2004 12TR (S) w/#10J Slide Valve Carb



12TRs for 1/10 scale touring include a model with a #10J slide valve carb and built-in pilot shaft, and one with a #10M rotary carb for short-shaft applications.



The straight line between front intake and rear exhaust let air pass through naturally. The round rear exhaust port is ready for a performance-boosting manifold and tuned pipe.

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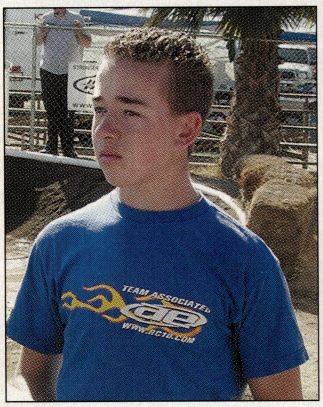
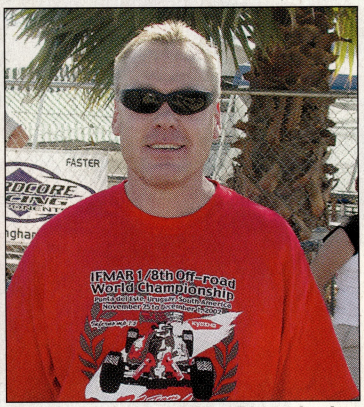
4th Annual Dirt Nitro Challenge



Jered Tebo in race mode.



Mr. Kyosho. Regan LeBlanc is the team manager for Kyosho's off-road team.





Truck Pro winners.



Monster Truck Unlimited winners.



1/8 Scale Pro winners.

Amezcua in first, then Jared Tebo, then Jeremy Kortz in third. At the halfway point, Adam Drake (who was sick from eating at the world famous Steve's Burgers) was in the lead, with Tebo and Cavalieri freight training around the track. Tebo was right on Drake, and Chad Bradley was now moving into fourth; all were within four seconds of each other. Towards the end of the race, Tebo had moved into first and Chad jumped in right behind him for second. There were some good battles going on with Chad, Tebo, Cavalieri and Drake, but Tebo just seemed fastest. After a brief dice with Cavalieri, Tebo finished easily a full straight on the rest of the field. To Tebo's credit, he seemed very smooth and more tempered than his regular ballistic style of racing, and I think it paid off for him. Good Job.

Finish order

Name	Laps
1. Jared Tebo	85
2. Ryan Cavalieri	85
3. Adam Drake	84
4. Chad Bradley	82
5. Phillip Atondo	82

Open 1/8-scale A-main—The pack started off on its 45-minute main in chaos. The first car into the double crashed, then half the pack behind became tangled in the mess. Everyone was pretty much freight training the first two laps as the race settled into a nice pace. Oops: as I sit here and listen to my tape recorder, I find out that Hippy had grabbed the recorder from me and recorded over the last half of the Open class event with the blow by blow of the Pro event. These guys are going to kill Hippy when they find out! Sorry guys; don't string Hippy up with fuel line; he was helping me out.

Finish order

Name	Lap
1. Bailey	54
2. Mike Kalis	54
3. Casey Peck	53
4. Jason Scheerer	53
5. Mike Green	53

Pro 1/8-scale A-main—The track was quiet, the racers stared at their buggies intensely. Their pit guys held the buggy for the start. In a flash, Joey sounded the tone and they were off. Jeremy Kortz got a great holeshot, with Mark Pavidis in hot pursuit, followed by Cavalieri in third. Degani and the rest of the pack tangled on the first jump, and Degani got pooched and was second to last. By the end of the second lap, Kortz has checked out with an amazing 10-second lead over the pack, and he would retain that almost the entire race. Meanwhile, halfway into the event, Degani and Bradley were steamrolling through the pack. Degani worked up to second with Chad behind him. Then Chad broke his left front suspension, and it was then obvious that he would not stay in third for very long. He dropped back to seventh while Pavidis worked his way into third. Kris Moore moved into fourth and Tebo, who had just won the truck class, was having a not too good 1/8-scale race and was working hard to make up time. He finally worked into sixth position and stayed there for the duration of the race. The last part of the main was fast paced and there were little "mini battles" going on all around the track. Degani really tried to make up time on Kortz, but Kortz had such a good start that I don't think anyone could have caught him. It was one of the best races I have seen. It was like watching a supercross event in small scale. These guys flat-out flung their buggies around the track and did it with style—major roost in every corner. Kortz had the race done at the halfway point and ran a flawless race. Great job Jeremy.

Finish order

Name	Laps
1. Jeremy Kortz	87
2. Greg Degani	87
3. Mark Pavidis	87
4. Kris Moore	86
5. Josh Wheeler	86

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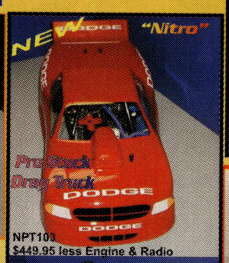

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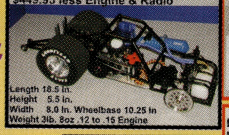



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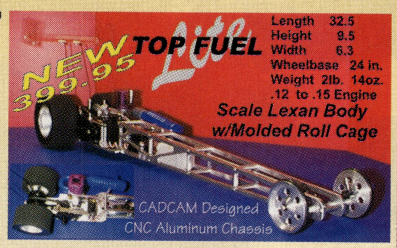

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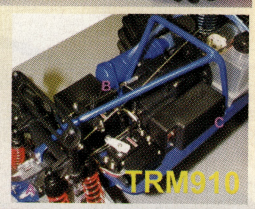



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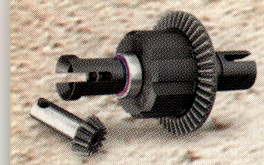


Front and rear hardened metal differential gears



Complete set of rubber sealed ball bearings

Large 160cc fuel tank with primer

Adjustable 2 speed transmission

Enclosed radio box for protection of electronics

8 long stroke oil-filled coilover shock absorbers

Composite tuned pipe and aluminum rear exhaust header

Rigid aluminum TVP chassis (Twin Vertical Plates)

Front and rear skidplate bumpers

The Savage 21 optional Reverse Module bolts right into the gearbox. Just add a third servo and you're good to go . . . reverse!

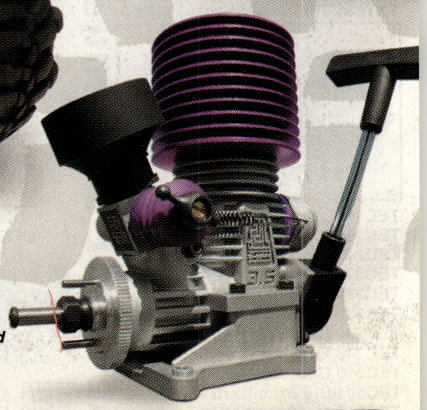
NEW #87032 Reverse Module



Wide-track suspension (nearly 17 inches wide!)

Chrome 5 spoke wheels and all-terrain tires (with inner foam)

The powerful .21 rear exhaust big block engine features ABC chrome sleeve construction, a dual needle 7mm slide carburetor, an aluminum heatsink head, and a convenient pullstarter.



21 POWERED



#831 RTR Savage 21 Truck with Nitro GT-1 Truck Body

NEW OPTION BODIES

NEW #7177 Chevrolet El Camino SS Body (Savage 21 / T-Maxx)

NEW #7176 Nitro GT-1 Truck Body (Savage 21 / T-Maxx)

NEW #7178 2002 Dodge Ram Truck Body (Savage 21 / T-Maxx)

Our biggest truck ever, the powerful 1/8th scale Savage 21, is now available! Designed to take the giant nitro truck class to a new level of performance, the Savage 21 is a completely new design. The Savage 21 is not just a small truck with a "big block conversion," it was designed from the outset to be able to handle the massive horsepower generated by the Nitro Star 21BB engine. A high performance exhaust is included, using a high flow aluminum tube exhaust header and a large composite tuned pipe. A durable shaft drive system powers all four wheels for long tire life and maximum traction on any surface. The engine is mated to a two speed transmission that shifts from low to high gear automatically. An adjustable slipper clutch and fiberglass disk brake are standard equipment. The longest shock absorbers and suspension movement in its class allows the Savage 21 to soak up rough terrain with ease. The suspension arms are HUGE, and the dogbones and hinge pins are nearly twice as thick as the ones found on our Rush truck. A rigid aluminum TVP chassis (Twin Vertical Plates) gives the Savage 21 a strong and stable platform for extreme performance and realistic monster truck looks! The Savage 21 is factory assembled and ready for unbelievably high performance right out of the box. See your local hobby dealer, the all-new HPI Savage 21 trucks are now available!



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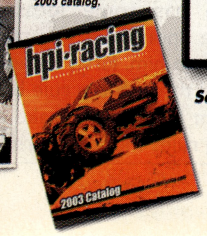
Send $2.00 for our new 48 page full-color 2003 catalog.



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What's up with ROAR?

Meet the man who vows to improve your racing

By Brian Skinner

ROAR, which stands for Radio Operated Auto Racing, is one of the oldest and most influential race-sanctioning organizations for the R/C car world, and it has much to do with how we race our cars. And even if you've never belonged or have been to a sanctioned race, you've experienced ROAR, as most clubs use its rules to govern their own activities. Like it or not, ROAR tells us what to do and we get to hear all the scuttlebutt about all the rumors, who did what within the organization and so on (it's like a soap-opera). Since we've been hearing quite a few ROAR rumors ourselves, we decided to go right to the source and talk to the newly elected president, Rick Wilson, to get an idea of what is in store for ROAR, and get to know our new leader!



To tell you the truth, I really planned on doing a hard-hitting question and answer interview with Rick, mainly because I have been a member for two years, and I still don't know what ROAR does for me—other than supply insurance for me at the races (the funny thing is, I have my own insurance and carry my own event liability insurance). Plus, when I get Rev-Up (the ROAR monthly newsletter), it hardly covers off-road, but seems to cover a lot of on-road; an abomination in my book (I mainly race off-road).

A phone call to Rick changed all that. Upon speaking with Rick, I found out that our new president is one of us. He is a regular Joe. He loves racing. Rick has concerns the same as most of the people we talk to at the races, and he loves sushi and mountain bikes. How, then, could we not like the guy? I made plans to meet Rick at Katsu-Ya sushi bar in Sherman Oaks, California, (a halfway point for us).

When we met at the restaurant, I got right to work and we talked about ROAR and Rick himself. Needless to say, Rick and I hit it off right away, which made the interview very comfortable.

Let me tell you a little about Rick. First, he is a great person to talk to, and is very forthcoming with information—except his age; he was shy about that one. He has been into R/C since '84, he likes both on-road and off-road, he is basically a racer at heart, he lives in Malibu and works as a marketing and promotions honcho for some high powered accounts such as IBM, Hyundai and various European and Korean companies. Before being elected as president, Rick was a ROAR regional director. At the time of this interview, Rick had only been in office for 22 days.

Yes, my friends, Rick Wilson is a good guy, and seems more than capable of doing a good job for us at ROAR. But what are his plans for his new position? Well, Rick has a few; he even has a motto for ROAR: "Fun and Fair." Sounds good to us, but there's more. Rick is still getting a feel for what is going on and what's needed for his new position. This is what Rick was thinking as we munched on some raw tuna.

Rick believes that ROAR is in pretty good shape as it stands, but he has some ideas to improve upon what was handed over to him. First, he wants to weed through the rule book and trim it down to make the existing rules more universal in their interpretation so that there is less controversy about what the letter of intent is.

Next and probably foremost in Rick's mind is to make himself and ROAR more accessible to its members (a great idea, if you ask me). Rick has already started this by creating an online forum at "The Starting Grid" (*www.rc-racing.com*). This is a growing website that is quickly becoming *the* place to come to for information and help. We have often seen major pro racers coming in and chatting, helping people out and talking smack. And if you visit, don't forget to say hi to Rick at the "Talk to the ROAR president" forum. Rick wants our feedback.

And in this area, Rick also wants to address the way in which the "usual channels" are used. Right now, issues such as rule changes and product

approvals get channeled from the membership to other groups of committee people before it gets to the president. Rick told me he wants to bounce these issues back to the members and in doing so he hopes to get more feedback as to what the ROAR body wants. In turn, this theory will help ROAR leadership make better decisions regarding peoples' concerns. It's a good idea, and we all should voice are thoughts—if this idea comes to fruition.

Another area in which Mr. Wilson wants to move forward is the area of the promotion and marketing of ROAR and R/C cars in general. We think Rick might be good at this, considering he is in marketing, and we're behind the idea of spreading the word to other people about R/Cs.

Rick suggested an idea he has for getting the word out (in a big way): he is working on doing a major media promotion at the Long Beach Grand Prix. He is thinking of using 1/5-scale Formula 1 cars to create a celebrity race, using media people or stars to race them in a demo event. Jeepers! Think of the TV coverage that would get.

With ideas like this, ROAR may actually bring itself into the limelight and hopefully bring more attention and organization to the world of R/C cars.

Time will tell, and we will give Rick Wilson a call back in eight months to do a progress report on the state of ROAR. We are not too worried, though; we think Rick will do a fine job. It's just that all of us need to communicate better with ROAR more, and REV-UP for that matter! It's our governing body, and it's there for us. Let's not mess it up like we have with the real government



PLATFORM POLITICS

Before our lunch had finished, Rick handed me the campaign outline that he sent in to ROAR when he was running for office. It pretty much says it all! So read it over, and we think you will agree with Rick's statements.

1) Qualifications—Career and Racing

a) My occupation is Marketing/market research professional for the automotive, fast food, telecommunications, and high-tech and advertising industry. I feel I can make fair and unbiased decisions, because I am not employed in the RC industry. I am a true hobbyist who enjoys the fun of RC racing.

b) I have been an active RC racer since 1986. I have raced with both ROAR and NORRCA.

c) I have raced in the following classes: electric off-road, electric pan cars, 1/12 electric, electric sedans, gas sedans, and gas 1/10 and 1/8th open cars. I race mostly in Southern California and have also have traveled to attend races all over the U.S.

d) ROAR Experience: I am currently the ROAR Regional Director for Region 12, which includes California, Nevada, and Arizona. During my involvement as the Region 12 Director our membership has grown to over 1500 members and is the largest in the country. This growth is due to the active support of our clubs and tracks in the region.

e) I have a positive attitude and am very good at motivating teams and individuals.

My objectives and goals as ROAR President are as follows:

2) We must focus on FUN and GROWTH.

a) I would like to help to build membership in ROAR and move ROAR into a family friendly environment.

b) I want to help make ROAR events FUN, FAIR, and SAFE.

c) I want to make ROAR more pro-active, rather than re-active. ROAR needs to be driven by positive energy rather than just responding to complaints of a few.

3) We must modify our rules so that they better reflect what the racers are looking for in the hobby.

a) Rules need to be written in an understandable way so each person does not interpret them differently.

b) The rules also need some stability and consistency. We should not change rules just for the sake of doing so.

4) We must get General members more involved in ROAR:

a) The more involved the racers and hobbyists the more ROAR will reflect the membership.

b) The more ROAR offers, the more the members will want to be involved.

c) ROAR is much more than insurance and big races. ROAR is exactly what we are willing to make of it.

d) The more I can motivate racers to volunteer and be involved, the better we become. Racers should be rewarded for their help and efforts, feel appreciated and feel that they do make a positive difference.

5) We must work better with the Clubs and Tracks.

a) Without the clubs and tracks there are no races.

b) Club and track owners need to be able to hold level 3 and 4 races and not lose money. There needs to be some direction from ROAR on being able to achieve this.

6) We must expand The Class Committees.

a) These committees drive the rules for each class. The committee members need to be active in the class they represent and need to be in touch with the racers of these classes.

b) Committee members should be spread throughout the U.S. so the committees do not become regional in their decision-making.

c) The committees need to be motivated to be on top of the thoughts and feelings of racers in the classes they represent.

7) We must communicate better with our Region Directors.

a) Speaking from experience there is a lot of work being done by the Region Directors; they need to be involved in ROAR decisions and represent the country and the opinions of the racers in their areas.

b) Region directors can step in as the ROAR Official at many more events and be a great help to ROAR on a national level in many ways.

8) We must communicate better with the Executive Committee. These guys are the heart and soul of ROAR and put in many hours of their time and effort to benefit all ROAR members. There seems to be little appreciation given to this group but they sure get to hear every complaint.

a) The Executive Committee has the final say so on rule changes and the overall direction of ROAR. I want to make it easier for Members to communicate with the ExCom and have their opinions heard before rule changes happen. To do this we need to establish a better pipeline of communication between the ExCom and general members.

b) Any call regarding a problem or complaint to the ExCom or President needs to include a realistic solution in order to be considered. If this happens we have positive conversations with the intention of helping ROAR.

I love to race R/C cars and am running for the office of ROAR President to help our hobby grow. We all need to remember that the vast majority of ROAR members are racers and people who just like to run cars. It may be a hobby, but it has to be fair, and it has to be fun!

—Rick Wilson

GIRL POWER

Holli Bechard: R/C's fastest woman!

Holli Bechard has been racing R/C for many years, and is truly considered not only to be the fastest woman driver in the US, but one of the fastest local drivers regardless of gender. At the recent "The Dirt" Nitro Challenge (covered elsewhere in this issue), Holli once again laid into the guys and put an old-fashioned whuppin' on them in the unlimited monster truck class. We caught Holli in between conquests for a quick chat.



R/C Car: *Holli, is it tough being a woman in the "man's" world of R/C?*

Holli: Back when I first started, the attitude was different. I was totally on the outside, the guys would never help me, I was shunned. If I won a race the guys would rib me and say it was (because of) the parts or the car. If I lost, they would rib me and say it's because I was a girl. It was tough. Now after eight years, I am one of the gang. I think cooking for them and bringing food helped though (laughs). Now it's pretty cool, although I think it's hard on (husband) Ron sometimes when I beat him at a big event (it's a guy thing, you know?). But overall, especially lately, it's good for me.
Ron is the biggest help for me and we are a team. We are both sponsored racers, and I have some good people backing me: Pegasus Hobbies, JR Racing, O'Donnell, Pro-Line, Associated, OFNA, Titan Tech and of course My Husband Ron. I love him.

RCC: *What do think about how the sport has progressed (or regressed, depending on your vantage point)? How is it for women now?*

Holli: Well I think it is becoming a family event even more so these days. I think in this day and age it is getting harder for families to do things together, and when they find out about R/Cs, they see it as fun for the whole family. Look at us: Ron, myself and our kids. Just look at Skylar (Holli's daughter), she loves looking at the cars; well, touching them anyway. And couples too. I see way more girlfriends coming to the tracks to be with their boyfriend than ever before. And I see them getting into it too. It is getting better for us girls, I'm glad to see it.

RCC: *Us too! Thanks Holli, and congratulations on your win at The Dirt!*

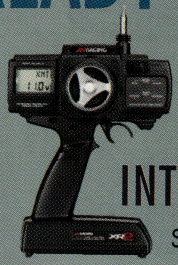
A FAMILY AFFAIR

Holli Bechard is all about R/C, and she has been around it for 18 years. She used to fly planes, but back in '91, after meeting her husband Ron at Pegasus Hobbies, she was hooked on off-road racing. Holli in fact met Ron at the hobby shop and the two of them kind of feel in love, got married and had kids (who says you can't find all you need in a hobby shop?). Yes, they got married and have been racing together ever since.



IT'S NOT JUST READY TO RUN... IT'S READY TO RULE.

INTRODUCING THE XXX-NT SPORT. ATTITUDE IN A BOX.



JRRACING
XR2 COMPUTER RADIO

JR's XR2 AM computer radio system gives you the premium features you want and precise control you need to win.

Stop playing around. Now you can have Team Losi's race-proven engineering in a ready-to-run, ready-to-kick-butt truck. Based on the championship-winning XXX-NT, the NEW Sport RTR gives you the latest Team Losi competition design and performance features– like ball bearings throughout– in an awesome yet affordable package. The complete package also includes a big Mach .15 engine, for smokin' power and performance. A pre-programmed JR™ XR2 digital radio system with pro features like dual rates, servo travel adjustments, and unique Direct Access Digital Trims.™ Plus, a trimmed and mounted body that's custom painted, not printed, in three cool color combos.



Based on the championship-winning XXX-NT, the NEW Sport RTR puts the latest Team Losi competition design and performance features in an incredible ready-to-run package.

Let those other guys tinker with their toys. The XXX-NT Sport takes Ready-to-Run to a whole new level.

Three cool custom painted schemes: Grape, Aqua or Graphite.



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HORIZON HOBBY

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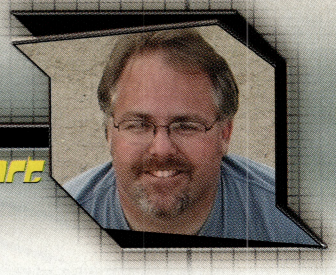


rick hohlbart

Get the Most from your 3300 Cells

Caring for high-capacity batteries



It's hard to believe battery technology has advanced as fast as it has in such a relatively short period of time. Capacities (i.e., run times) have nearly doubled in the past decade or so, no doubt due to continual advances in nickel metal-hydride (NiMH) technology. Longtime industry leader Sanyo and upstart Gold Peak (GP) are now producing high quality cells with a whopping 3300mAh capacity. Now that Sanyo RC-3300HV and GP3300 cells are readily available, ways to exploit these incredible batteries are emerging.

PREPARATION

Proper battery charging, discharging, and storage techniques will improve performance on the track and extend a battery pack's useful life. However, packs assembled with poor solder joints and/or high resistance plugs will negate any potential performance gains. Be sure to consult experts regarding the best way to achieve low resistance connections. Representatives of battery matching companies are more than willing to help point you in the right direction.

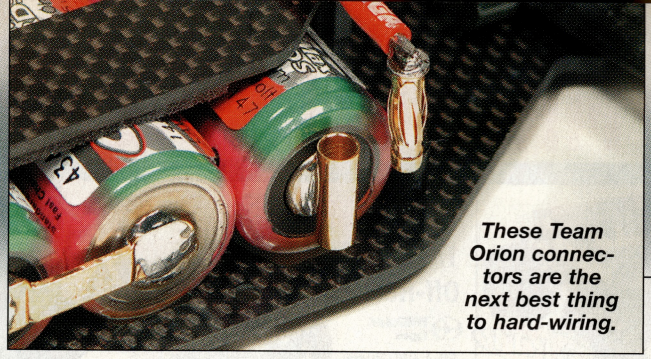
Last but not least, don't forget motor maintenance. A motor in need of an overhaul or replacement will negate any benefits of proper battery care. Think of batteries as your fuel tank. The tank may be large and filled with high-octane fuel, but you won't be winning any races if your engine is only firing on seven of its eight cylinders.

CHARGING

Battery charging procedure plays the biggest role in on-track performance. Changes in either charge rate (amps) or delta peak voltage (known also as voltage threshold) alter power output and run time. A linear charge rate of five amps is recom-



High-quality battery bars and a deft soldering hand are valuable assets when building a pack. Inefficient connections waste the batttery power you've just spent so much money in obtaining.



These Team Orion connectors are the next best thing to hard-wiring.



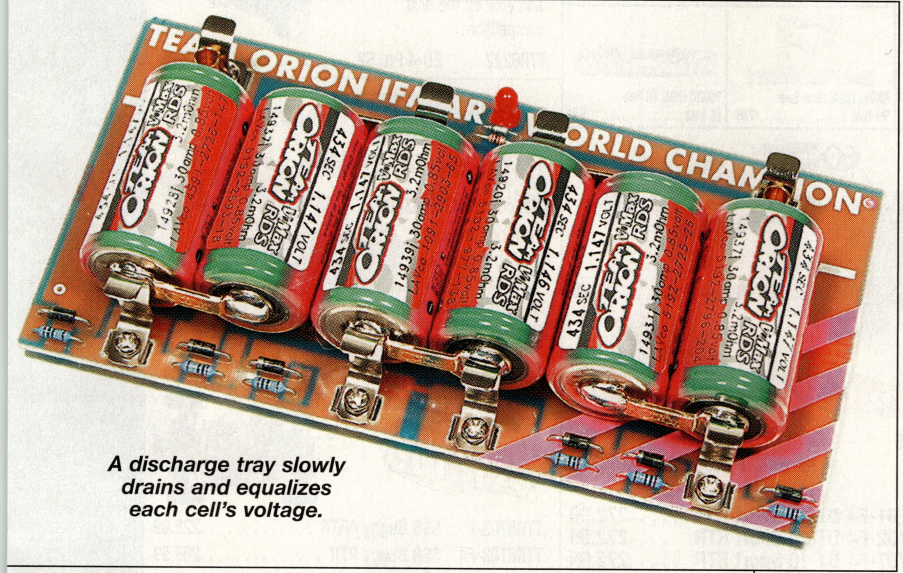
Save those boxes! They make great battery storage.

mended for the best combination of power versus run time and is likely to provide consistent performance charge after charge.

• **Choosing a rate**—As you increase the charge rate the battery will produce more power at the expense of run time. For instance, in off-road racing applications, which are not run-time dependent, it may be beneficial to increase the charge rate to unleash more power (voltage). Try charging at up to, but not more than, eight amps. Touring car, 1/12-scale and oval racing require maximum capacity. Therefore a charge rate of less than five amps, but not less than three amps, may produce more desirable results by extending run times. The slight loss of power is hardly noticeable.

Once a charge rate has been determined, it is time to set the delta peak or voltage threshold. Some chargers have NiMH or NiCad settings while others are completely adjustable. In the case of predetermined settings it is wise to check the instructions or consult the manufacturer so these values are known. With this information the correct setting can be used for the desired results.

• **Choosing a voltage threshold**—A voltage threshold of between eight and ten millivolts per cell produces maximum power. Lower settings will produce less heat and can extend battery life, but with lower voltage threshold settings comes the common and annoying possibility of false peaks early in a NiMH battery's charging cycle.



A discharge tray slowly drains and equalizes each cell's voltage.

• **Timing your charging**—Determining when to charge your battery is critical. Maximum performance is attained when the battery finishes charging at the time it is ready to be used. Knowing how long your batteries take to charge and keeping track of the racing schedule will allow you take advantage of this fact. If this is not possible because of time constraints, re-peak the battery just before use. Remember, the longer the period of time between the battery's peak and the time it is used, the lower the voltage output.

DISCHARGING & STORAGE

After a practice session or race, the battery will likely have plenty of charge remaining. Remove the battery from the car and discharge it, at a 30-amp rate, down to 4.8 volts (around 0.8 volts per cell in a typical six-cell pack). The best way to accomplish this is with a constant current discharger such as the Team Orion Digital Discharger. A bulb-type discharger will work well also, as long as it will discharge at 30 amps and has a built in voltage cut-off. Taking the pack to zero volts is not recommended and can lead to cell reversal and permanent damage!

The next step is determined by the desire of the user. If the battery is to be used again the same day, it should be allowed to cool to room temperature. At this time the pack can be charged again using the favored charging technique. Be warned that the battery will produce more power in this second cycle but will lose a small amount of run time. The lifespan of the battery may also be affected. By "life span" I am referring to the number of times the cell can be charged and discharged before a substantial reduction in its performance occurs. Using multiple battery packs, each once per day, is the best solution.

If the battery will be used again within seven days it should be removed from the discharger after reaching 4.8 volts, then placed in a discharge tray designed to discharge each cell individually. Team Orion's Active Discharge device is recommended because it discharges to .5 volts per cell and its low discharge rate prevents cell damage. Once discharge is complete the battery can be removed, then stored until it's ready to be charged.

If the battery won't be used again within seven days, it should be discharged to 4.8 volts and stored at this state of discharge until it is charged again. Caution must be used when storing partially charged batteries. A short circuit can permanently damage the battery, and even worse, cause a fire. Most matched batteries come in boxes that make safe storage containers for assembled battery packs. Keep the boxes and use them for this purpose.

CONCLUSION

With battery improvements come new ways to maximize performance and longevity. Sanyo and Gold Peak have done their homework and produced the highest capacity sub-C cells the R/C market has ever seen. Take advantage of this fact by using these recommended procedures and fine-tuning them to suit your particular application.

SOURCES

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EK4-S2 ARTR

Thunder Tiger

1/8 Scale Off-Road Monster Truck 4WD

The EK4 has stacked up an unprecedented reputation for rock throwing brute power coupled with excellent handling for a truck of this size.

Now with new goodies driven by your input such as a completely new Pro-70BX Nitro engine, a new head design, and new carburetor design for easy tuning. We didn't stop there; we redesigned the differential cases to handle even more torque along with the new engine back starting plate. Top that package off with your choice of three fully painted and detailed truck bodies. Install your favorite two-channel radio, batteries, fuel, and attach the included starter probe and head for the dirt.



No. 6216-A1 Purple 571.99



No. 6216-A2 Blue 571.99



No. 6216-A3 Red 571.99

New!

No. 9447
Thunder Tiger
Pro-70BX Engine 214.99



EK4-S2 Optional Parts



PD0560 Rear Shock Set ...19.99



PD0610 Steering Slider w/bb ..14.99



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PD0751 1/8 RR Spring, 1.4mm Wht. A.99
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PD0770 Carbon Servo Tray 18.99



PD0762 ERGAL FR Plate FR Trans 7.99



PD0611 Self Cooling Brake Disk 11.99



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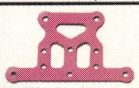
PD0758 ERGAL FR Upper Arm .14.99



PD0772 ERGAL Servo Saver Top Plate 17.99



PD0763 ERGAL RR Plate FR Trans 9.99

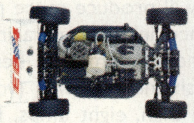
EB-4

1/8 Scale 4WD Nitro Off-Road Buggy

Thunder Tiger

EB-4 4WD Buggy is offered in Ready to Run (RTR) or kit form. The RTR version comes with Pro-.21 engine, Radio, Glow starter, Four way Wrench and a Fuel Primer. Add batteries and your favorite fuel and hit the dunes.





TTR6215-F4 EB-4 Sport RTR 571.99
TTR6221 EB-4 S2 Kit 428.99

EB-4

Thunder Tiger

S2 PRO 1/8 Scale 4WD Nitro Off-Road Buggy

EB-4 PRO 4WD Buggy is offered in kit form only. This is a professional level competition buggy right out of the box. Required for final assembly, 2 channel radio, EVO-.21 L7 or Pro-.21 engine and your off the next competition.



TTR6222 EB-4 Pro S2 .....642.99

DT-10

ALMOST READY TO RUN ARTR

Thunder Tiger

1/10 Scale Off-Road 2WD Stadium Truck

Thunder Tiger's 1/10th Scale Off Road Stadium Truck and Buggy are offered in Almost Ready to Run or RTR. The (ARTR) version comes 90% assembled including the Pro15BX pull start engine. The RTR is 100% assembled, all you need is fuel and batteries for the radio. The glow driver, fuel bottle and plug wrench are included as well.





No. 6707 Buggy Model ...199.99

READY TO RUN RTR



No. 6701 F-150 Model 199.99

No. 6702 F-150 Model 199.99

TTR6701-F4 DT-10 Sport RTR 272.99
TTR6702-F4 DT-10 Sport RTR 272.99
TTR6707-F4 DT-10 Sport RTR 272.99

SSB

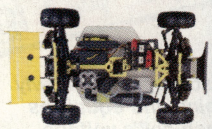
Thunder Tiger

1/10 Scale 4WD Nitro Off-Road Buggy

Thunder Tiger's 1/10th Scale SSB Off-Road Buggy offered in Almost Ready to Run or RTR. The RTR is 100% assembled, all you need is fuel and batteries for the radio.



READY TO RUN RTR



ALMOST READY TO RUN ARTR

TTR6703-F SSB Buggy ARTR 228.99
TTR6703-F4 SSB Buggy RTR 285.99

SSR

READY TO RUN RTR

ALMOST READY TO RUN ARTR

Thunder Tiger

1/10 SSR Rally Car 4WD

Thunder Tiger's 1/10th Scale SSR Rally Car offered in Almost Ready to Run or RTR. The (ARTR) version comes 90% assembled including the Pro15BX pull start engine. The RTR is 100% assembled, all you need is fuel and batteries for the radio. The glow driver, fuel bottle and plug wrench are included as well.





No. 6704 Subaru Impreza



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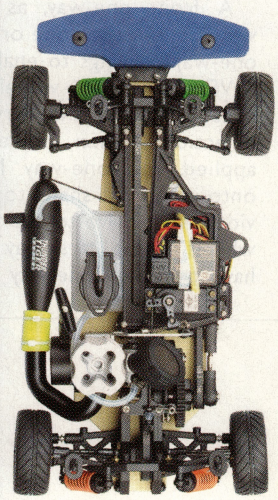

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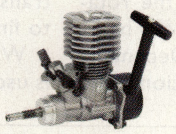

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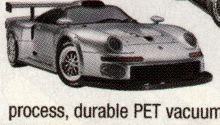

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ALL ABOUT ONE-

The secrets of an unsung performance aid

Welcome to the first of our new "All About" series. The goal of these articles is to provide some explanation of some of the less understood and unsung technologies used in R/C cars. This month, we'll take a look at the inner workings of one-way bearings, whose existence is usually well hidden, but whose operation is imperative to good performance.

WHERE THEY'RE FOUND

One-way bearings are typically found in three locations: they are used in two-speed transmissions such as those used in nitro touring cars; they are used within nitro engine pull-starters and electric starter systems such as that of the T-Maxx; finally, one-way bearings are used for one-way drive units such as the front one-ways that are popular in electric touring cars.

WHAT THEY DO

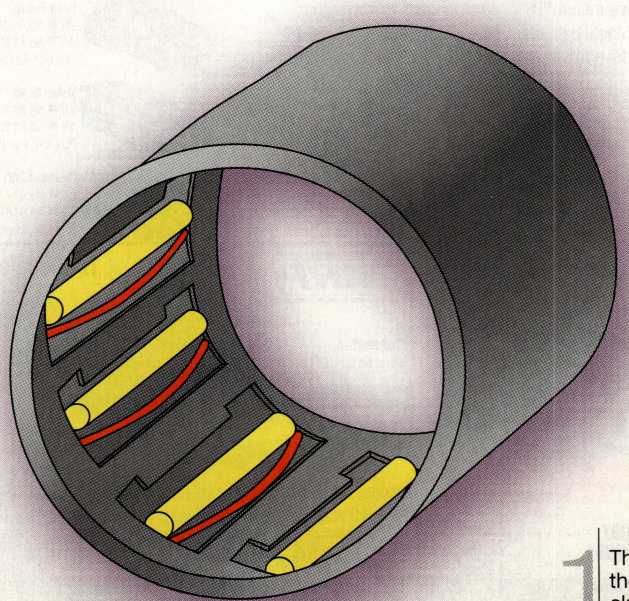
A one-way bearing's job is a simple one: to allow the rotation of a shaft in one direction only, while gripping the shaft tightly in the other direction. In addition to being called one-way bearings, these are also called "clutch bearings" by some manufacturers.

To function properly, a one-way bearing must perform the seemingly impossible task of allowing the shaft that it supports to spin freely and with as little friction as possible in the desired direction, yet grip the shaft firmly enough to prevent slippage when the rotation of the shaft (or the bearing) is reversed. Depending upon the application, the duties of the one-way bearing can be varied, but their basic operation remains the same.

When installed in a two-speed transmission, a one-way bearing is installed in the large, first-gear spur gear. When the rpm of the engine increases and the second gear's clutch engages, the one-way bearing allows the larger spur gear to be disengaged until rpm diminishes sufficiently to close the second gear clutch, at which point the transmission downshifts back to first gear.

When the one-way bearing is used in a starter mechanism such as a pull-starter or electric starter, its job is to allow the starter to grip the engine's crankshaft and spin it to fire the engine. Once the engine is running, the crankshaft can then rotate freely within the one-way bearing.

A front one-way, as you would guess, uses one or two one-way bearings to enable a 4WD car's front wheels to coast freely in the forward direction. When power is applied, the one-way locks onto its output shafts to provide direct drive to the front wheels. Some cars may also have a center one-way unit,



1 This shows the primary parts of the one-way bearing, or "roller clutch."

WAY BEARINGS

SHOULD ONE-WAYS BE LUBRICATED?

Knowing the way in which one-way bearings work, it's easy to believe that any type of lubricant would prevent the rollers from gripping the shaft. But this is not the case. A one-way bearing requires lubricant so that the rollers can move freely within the cage. The trick is to choose a lubricant that's thin enough so that the rollers can move freely, yet not so thin that it will leak out. Generally, a good bushing lubricant, which is slightly thicker than typical ball-bearing lube, works best.

which can be used with or without a front one-way. A center one-way is used to allow the front belt to rotate freely when off-power, yet it provides 4WD when throttle is applied.

INSIDE A ONE-WAY BEARING

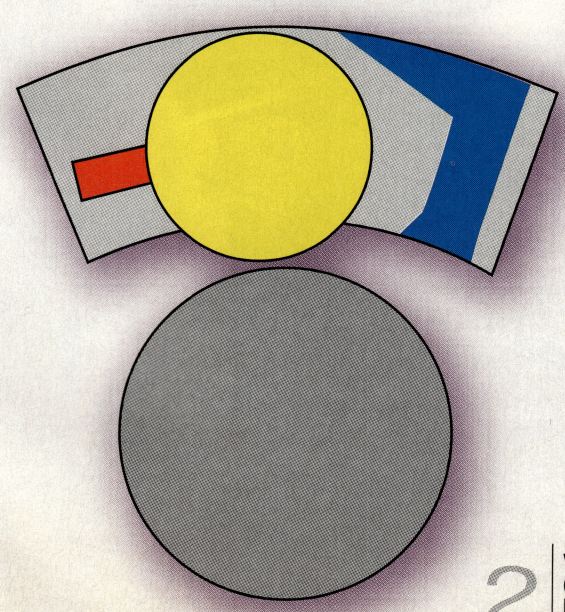
One-way bearings contain just four parts:

- The casing is the outer shell of the one-way bearing, and it forms the O.D., or "outside diameter" of the bearing.
- The cage is the inner portion of the bearing, and is usually made from a hard plastic material. The ends of the casing are usually pressed inward to hold the cage in place. The cage serves to retain the rollers that provide the free and locking functions of the bearing.
- The needle rollers are made from hardened steel, and they roll against the shaft that is supported by the one-way bearing.
- The spring is a strip of heat-treated spring steel, and its function is to control the position of the needle rollers within the cage.

HOW ONE-WAYS WORK

The "magic" of the one-way bearing is created by the design of the cage and its ability to control the position of the rollers. When the one-way bearing operates in its "free" position, the cage allows the needle rollers to move sideways, slightly away from the surface of the shaft. During this time, the rollers are able to overcome the slight pressure of the springs. When the shaft's rotation is reversed, the springs have just enough tension to push the rollers back into their locked position, where they can grip the shaft firmly.

The reason why one-way bearings can operate with very little drag—much the same as a standard ball bearing—is that the roller springs place only a very light load against the rollers, so when the one-way is free, the contact area between the rollers and the shaft is just enough to prevent unwanted play.



2 When locked, the spring (red) pushes the roller (yellow) against the side of the bearing cage.



3 Each roller is held to the cage side by a light spring (shown in red).

1/8 SCALE MONSTER TRUCK

XTM



The X-Factor is the newest creation to come from the fertile minds at XTM, and they have really pushed the envelope of monster trucks with this beast. When it arrived at our office, we pulled it out of the box and our minds immediately started to envision being up in the hills, crawling the X-Factor over ruts, rocks, generally pretending that we were four-wheeling on some far-off mountain. How could you not think about what type of obstacles you can crawl over with this monster? Soon our fantasy came true and we were up in the hills like kids, seeing what hill or rock area we could conquer. The photo shoot day was a trip back in time to when we played with Tonka trucks (Frank still does).

X-FACTOR



A rock crawling beast!

OUT OF THE BOX

For starters, the X-Factor is the "truest" form of R/C monster truck you can own. The X-factor is really the only nitro truck that closely resembles a full-sized monster truck. The Kyosho Mad Force is very close too, but the X-factor has a little more monkey motion than the others. We would have to classify the XF as a rock crawler/backyard basher. The first second we saw it we thought of the gnarly dirt areas in which we could test this thing. With that said, this truck is great for fooling around and seeing what you can do with it.

Out of the box, the XF was ready to go; it needed no help to get running and out onto the dirt pile. Setup was excellent from the factory, and the decals were precut and took all of five minutes to put on. Also, the engine started right up for us without any additional tuning.

SCOTTY, I NEED WARP SPEED OR WE'RE ALL DEAD!

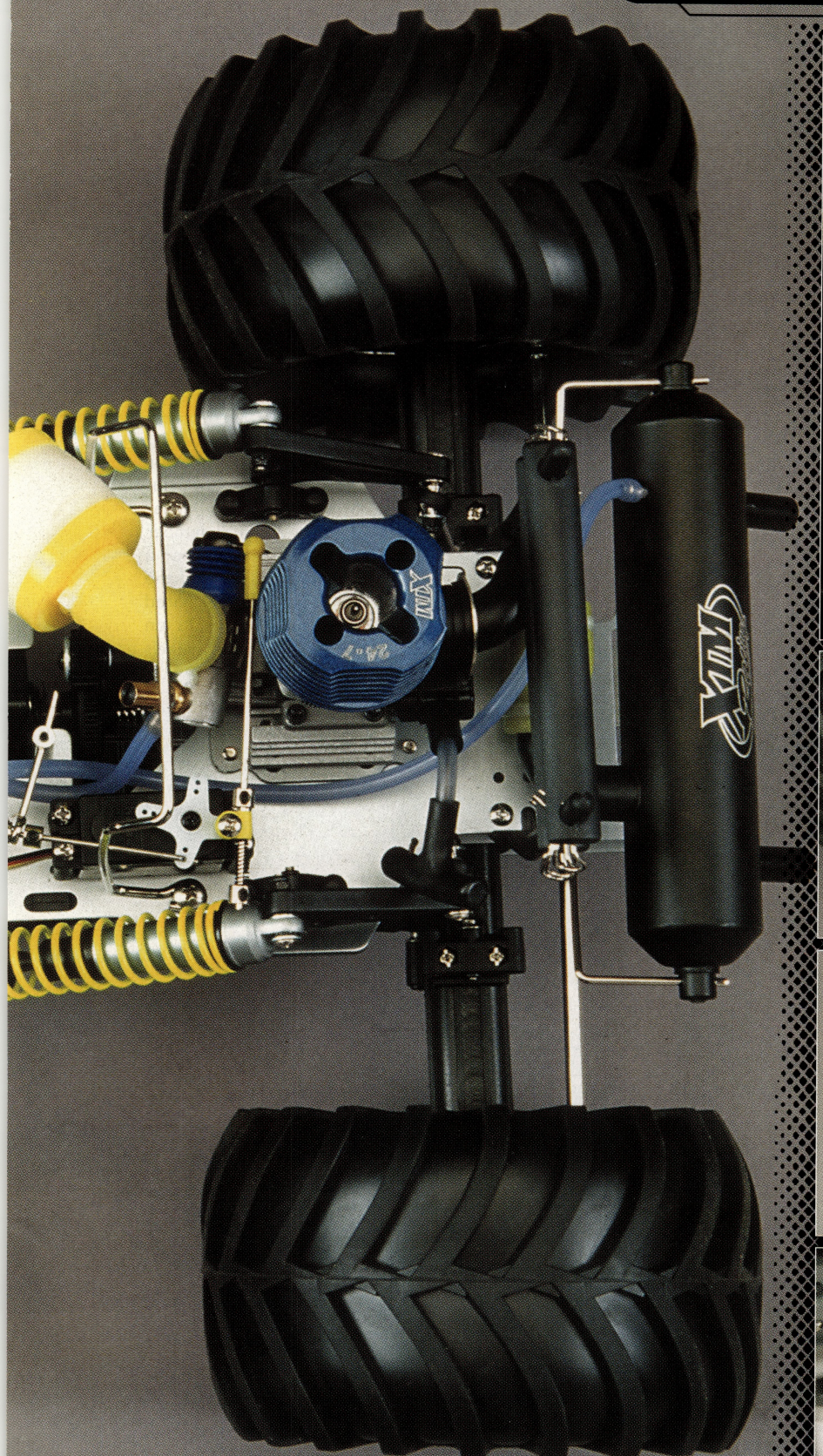
The XTM 24.7 Engine is a brute! It has a lot of low end and way more top end than even the XF can handle. Starting this engine was easy, but the model in our test truck gave us some fits. The carb was a little sticky and it was running a little hot for our liking. We have had plenty of time on the 24.7 engine with other test vehicles and projects, but none of those had any problems. In fact, we like the 24.7 so much we chose it for an upcoming hop-up article for next month (shh!). It could have been one of those "five-O-clock specials" you hear about, so we won't fault the engine's design. We just have to mention this because it's something that happened during our test. After we rid it of the bugs, our engine did run well.

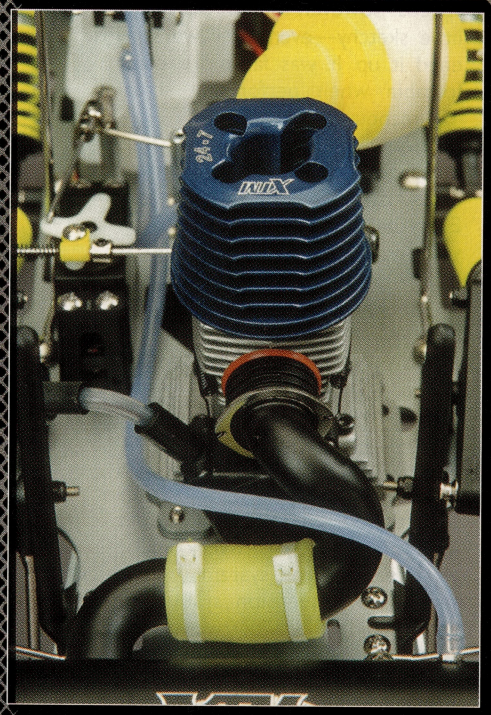
The exhaust system on the XF is also interesting. It is a rear-mounted system and it's about time someone did it as nicely as this. The exhaust snakes out the rear port of the engine and into a dual-exit pipe. It has a great sound to it, and with two exits on the pipe we are sure it breathes better than most.

ARTICULATE IN PUBLIC

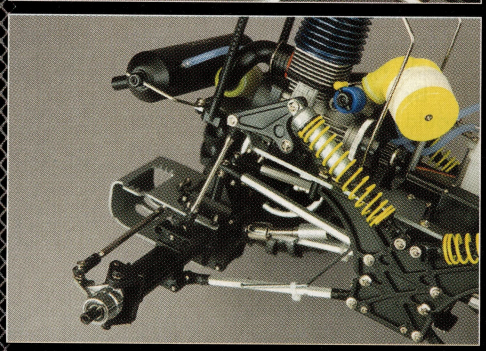
The XF has serious rock crawling abilities! The suspension is so "marshmallowy" (but in a good way) that when you goose the throttle, the chassis tweaks sideways—just like a full-sized monster truck. When you

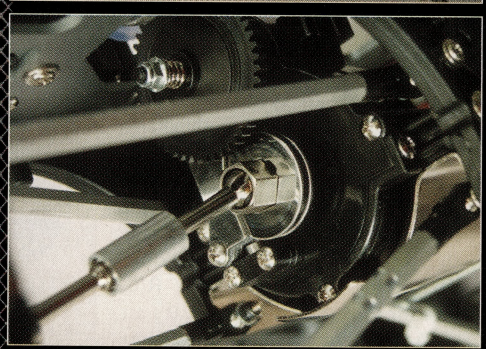
X-FACTOR











hit a bump or crawl over something, the truck just drapes itself over what you're tackling. At higher speeds, however, the XF became a little sketchy—even after we stiffened it up. It was far more comfortable when performing actual 4x4 maneuvers.

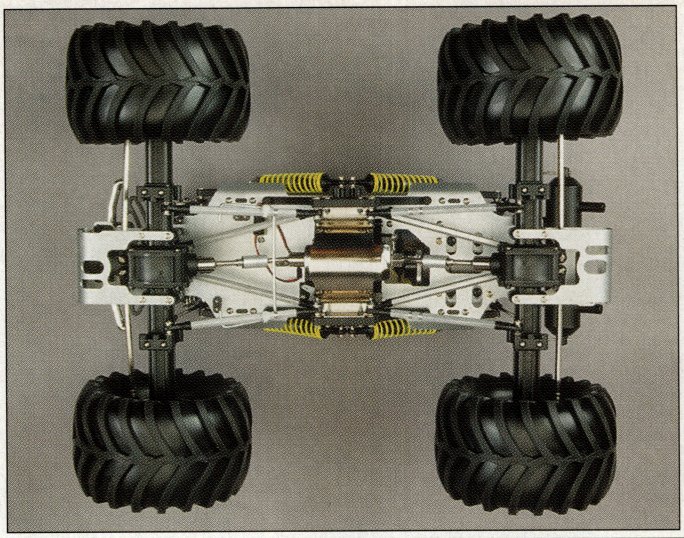
Plenty of thought went into building all the trusses and trailing arms of the XF's suspension. Everything looks so cool sitting on your bench. Another great idea is how they moved the shocks up and out of the way to allow for large amounts of wheel travel. With this style of suspension, you have wheel travel in two planes: straight-on travel provides about 1 1/2 inches of actual up and down travel, yet in articulation, suspension travel is more than double that.

Let's look at this suspension a little more closely. It is very similar to a four-bar link system used in real 4WD suspension systems. It has a solid axle with two trailing arms set in a V-shape to give maximum articulation. The arms keep the axle from wallowing around. Two upright suspension struts transfer the suspension motion through rockers arms and into the sweet 1/8-scale shocks. If you look at the rocker arms, you will see that they are offset in their linkage settings. This is where suspension systems of this nature get their lever ratios—by altering the shock's leverage depending on where it is in its travel. In the XTM's case, they chose to give the suspension a great deal of leverage over the shocks, thus giving the X-Factor its supple wheel travel.

By using larger shocks, XTM could utilize higher suspension leverage and not have to use two shocks on each side—a good idea that saves weight and keeps this already tall truck less top-heavy. This system totally lends itself to extreme rock crawling and excellent four-wheel driving.

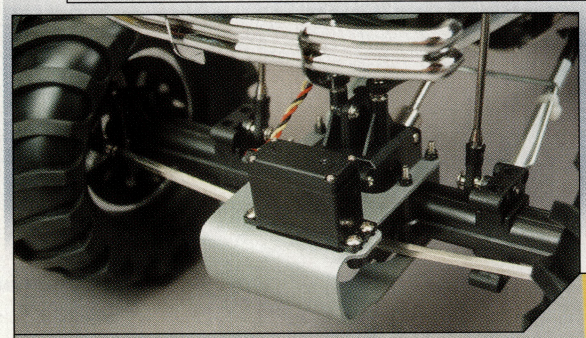
GRANNY TRANNY

The tranny is a pretty cool, too! It is very compact; one of the most compact we have seen. The gearing is low and perfect for climbing any mountain. We had no problems with low-end grunt! This baby will pull any hill as long as its tires can get bite. The coolest thing about the tranny is XTM's new R-Box. This thing should get the R/C invention of the year award. It's an electronic switch which, when you hold your brake on for a given time (you set the delay), switches the tranny into reverse. The best thing about it is you can put it on anything that has reverse! Way Cool! Two thumbs up!



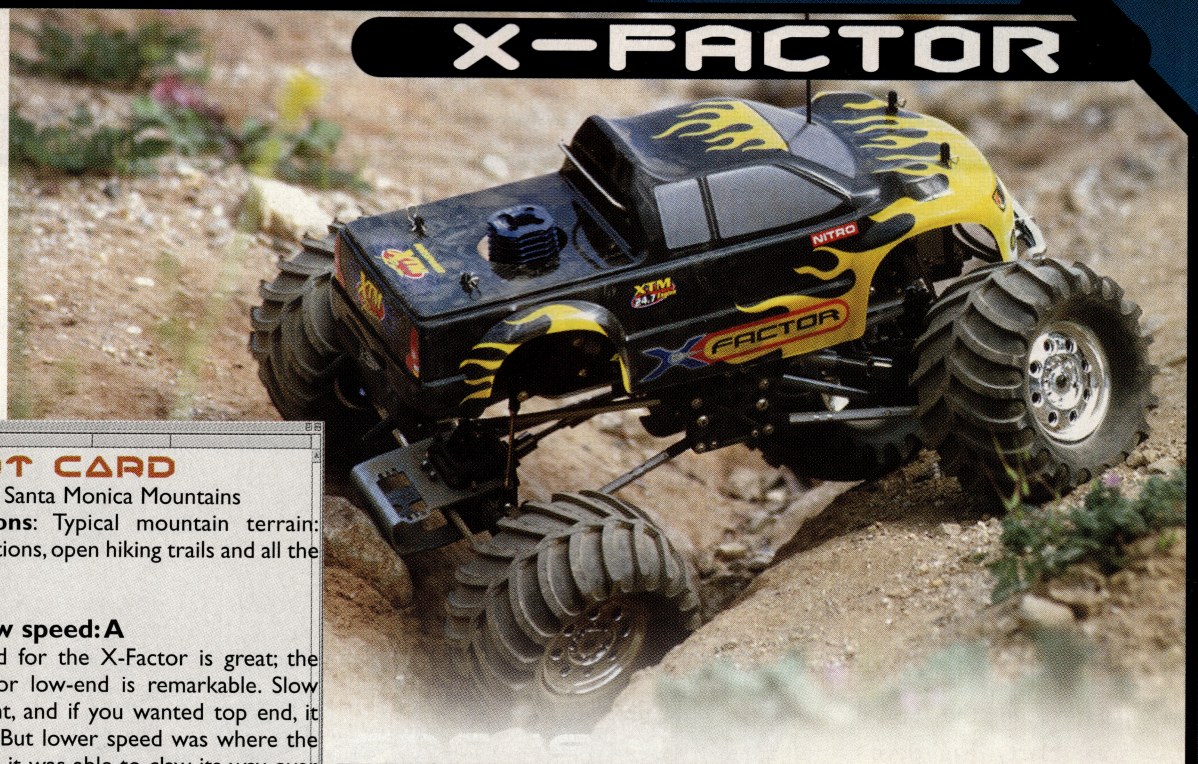
BODY AND WHEELS

The body comes precut and painted; all you have to do is add the nicely precut stickers and you're ready to go. The profile of the body is cool looking, and it fit right in up in the hills. The Tires are good for bashing and four-wheeling, but they're a little bouncy for higher speeds. This is okay if you remember that this is a monster truck, not a racing truck. Some people liked the wheels, and some people hated them. With all the neat details on the X-Factor, we think the wheels could have been better styled.





X-FACTOR



REPORT CARD

Test location: Santa Monica Mountains
Test conditions: Typical mountain terrain: gnarly rock sections, open hiking trails and all the snotty stuff!

High and low speed: A

The powerband for the X-Factor is great; the power curve for low-end is remarkable. Slow speed had grunt, and if you wanted top end, it was there too. But lower speed was where the truck shined, as it was able to claw its way over and through anything. At speed, it was fast, but a little unstable. Remember that in the real world of four-wheeling; it's all done between 2-5 mph.

Suspension - articulation: A+; straight suspension: C+

For crawling around and using the articulation when four wheeling, the XF was the best. If you were blasting down the fire road and hit a dip or rock, its limited "straight-on" travel would blow through and bottom easily.

Steering: A+

For a monster truck of this size, we usually encounter slow steering when it is sitting still. Not the X-Factor! The stock servo overpowered the big wheels like it was a sedan car. Wonderful.

Jumping: C

We would not suggest jumping this beast too much. Out of the box it is not setup to go big. Anything over one foot in the air and we think you will be in trouble. If the aftermarket guys get hold of the XF, it will be different. For now, keep it low.

Climbing: A++

The XF has so much power there is nothing it won't climb! It will go until gravity takes over and pulls it back down. If you weighted the front end, or if they made a longer wheelbase, this thing could climb Mount Everest.

Overall use: C

Remember: this truck has a real monster truck design. The intended suspension setup makes it perfect for rock crawling, four wheeling and general durability. For fast-paced racing action, forget it. This thing screams to be challenged out in the wild, so go for it!

Price:	$449.99
Length:	19 in./483mm
Width:	16.75 in./425mm
Wheelbase:	13 in./330mm
Track (f/r):	12.75 in./324mm
Weight:	11 lbs, 8 oz
Chassis:	aluminum plate
Bearings:	steel ball bearings
Suspension:	rigid axle, cantilever arms
Drivetrain:	shaft-driven full-time 4WD
Diffs (f/r):	planetary gear diffs
Damping:	aluminum oil-filled shocks
Tires:	paddle tread
Wheels:	one-piece chrome dish (plastic)

Final Score

HIGHS: The X-Factor is a very cool-looking truck and invokes the inner child. Its suspension is so realistic that you'll find yourself marveling at its operation. It is also very well set up; it is well made and was ready to go out of the box. The inclusion of the R-Box was a nice feature. The instructions are first rate and easy to understand.

LOWS: The X-Factor is limited in its scope of use. As long as the first-time buyer is aware that it is not a racer, then things will be fine. We also thought the on-off switch was in a hard to get to place: in the instructions, it shows the switch in another place on the other side of the battery box. This was the place we think it should have been. On a personnel note: we think the X-Factor - considering its design and purpose - would have been much better set up as a solid axle truck, or at least having its diffs setup with less slipping action. It would have made the XF a killer rock climber.

THE VERDICT: This new class of nitro monster truck has a place in the world. We believe it hits the heart of the person that wants a challenge, much like the guys in the real rock crawlers; they want to see what they can climb, they want to, for lack of a better word, "articulate" through stuff that a normal person wouldn't even consider. This is a fun truck! Go out and play.

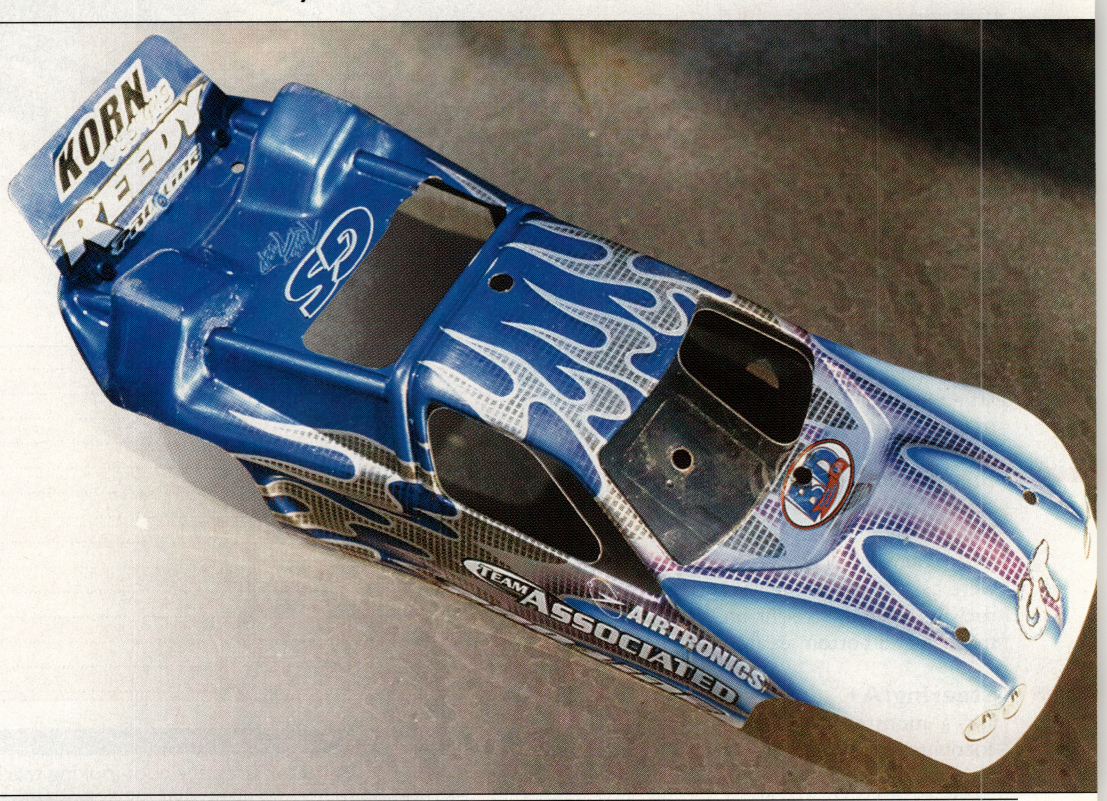
SOURCES

Sidewinder Performance Racing Fuel, produced by Morgan Fuels, P.O. Box 311201, Enterprise, AL 36331 • phone (334) 347-3525
XTM, distributed by Global Hobby Distributors, 18480 Bandilier Circle, Fountain Valley, CA 92708 • phone (800) 854-8471

Advanced Airbrushing Techniques

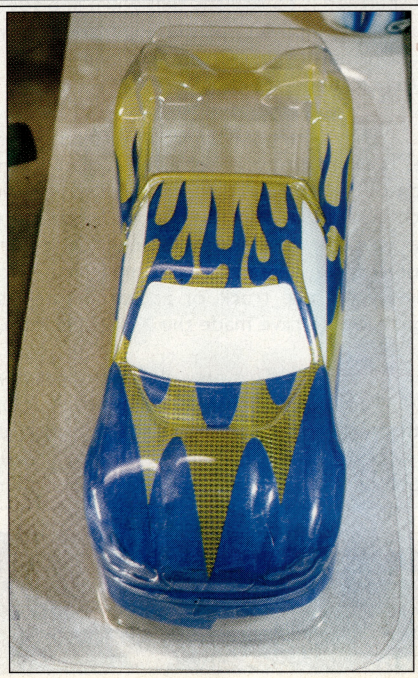
One artist's vision becomes reality

Marty Korn is the mastermind behind Korn Designs and one of the most popular and respected R/C body painters in the SoCal area. Marty has developed several interesting airbrush techniques during his many years of painting. And one in particular, his "grid fog," has struck us as truly unique (and simple to do). Fortunately, Marty only lives a few blocks from us, and he was very willing to share his secrets.



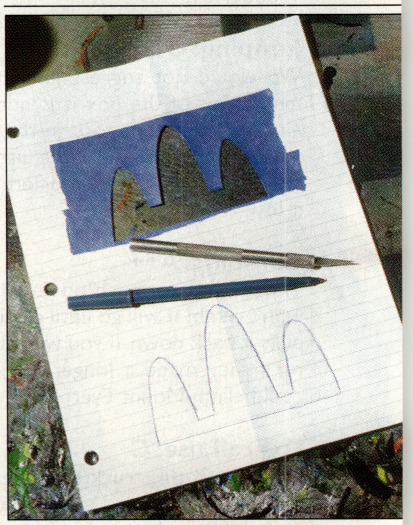
ACHIEVING THE MESH LOOK

Here are the steps and the photos to get an idea of how to achieve this paint scheme.



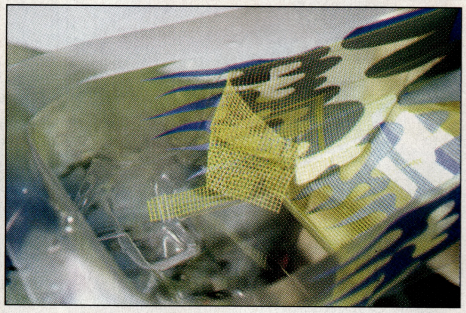
STEP 1: To remove any residue leftover from the molding process, the body needs to be thoroughly washed with warm water and mild dishwashing detergent. This will allow the paint to adhere better with less chance of flaking. Before the next step, make sure the body is completely dry.

STEP 2: Mask the window areas first. Hopefully, your body came with precut window masks, which makes the job much easier.



STEP 3: Make up your design or template using "blue" masking tape (you can find this at your local home center or hardware store). Lay in your design and make sure to rub down, or burnish, the edges of the tape. This is an *extremely* important step! Most people fail to do this adequately and this is the number one reason for bleed-through.





STEP 4: To achieve the grid effect, Marty uses self-adhesive mesh drywall seam tape (you can get this at any building supply or hardware store). Lay the mesh tape over the entire design area, making sure that you overlap the design sufficiently to cover the entire area that will be fogged or "faded."





STEP 5: Lay down your fades (Marty used purple paint for this particular body), and be sure to wipe out the paint dust after each fade using a clean, soft cloth (on this day, Marty used the T-shirt he was wearing - hard core!). Then use an air compressor to blow out anything else that remains. It's very important to remove any excess paint from the fade; if not, the fade color will show up in the main color as splotches.

MEET THE KORNS



Marty and his brother Marc (who was responsible for getting Marty into R/C to begin with - see? Little brothers are good for something) have been racing for about 10 years. As both are only in their early 20s, you could say they started young. Marty and Marc have been painting bodies for four years. They began by painting bodies for friends, then for some of the local pros such as Jimmy Babcock. Their business began taking off after their bodies began appearing in national R/C magazines. Now, Korn Designs is nearly a full-time job for the brothers. You can find both Korns racing on just about any Saturday of the year, both locally and at the bigger races. Big brother Marty is the faster of the two (sorry Marc!), and has an impressive list of sponsors including GS Racing, Associated, Airtronics and Pro-Line. If you're interested in having Marty paint a body for you, you can reach him at (818) 340-8163. Oh, and if you plan to send Marty a body, don't trim it! Marty says that it's always easier to paint an untrimmed body.



STEP 6: After the fade has been completed, remove the mesh tape. Usually, the mesh tape will leave some adhesive residue, and this must be carefully removed before the next step. Marty has found that he can remove this residual glue by using the blue masking tape, which picks up the excess adhesive without ruining the paint. He also recommends heating up the body either by laying it out in the sun or by using a *mild* heat gun or blow dryer. This softens the adhesive while helping the paint to dry faster.



STEP 7: The next step is to spray in the silver behind the body's "swoops." During this step, much of the clear body will be exposed, so use very low air pressure when spraying the silver to prevent the silver from spreading out and covering too much area. Mary recommends using between 15 to 20 psi.



STEP 8: Next, spray candy blue on the rear parts of the body using three light coats (and Mary emphasizes light!). Remember to allow each coat to dry completely before applying the successive coat. You can speed up drying by leaving the body out in the sun, or by using a blow dryer set on low heat.



STEP 9: After the paint has dried, use a sharp "fresh" X-Acto knife and cut out the pinstriping around the entire body, swoops and all. For this paint scheme, Marty did the rear of the body in silver first, then he filled in the pinstripes using two coats.







STEP 10: Peel out the swoops in the front, then fade in the candy blue. After it dries, wipe out the overspray using a soft, clean towel, and then blow out the area with a compressor. Lay down the white paint next, and allow it to dry. Peel out the flames, than lay some mesh tape down in that area. Spray this area with black paint at 40 psi from about one foot away to achieve a thin fog of black to get that cool spray look.

HOT TIP

Whenever possible, Marty uses small spay cans from the hobby store. The reason? They come pre mixed and always have the right consistency. Even after years of painting, you cannot get the consistency that the factory can. Marty just cuts a little hole in the cap and spays the can into the cap so it will drain into his airbrush vial. Pretty smart.

STEP 11: Once this is dry, remove the mesh - making sure to remove any residual glue from the tape. Take your silver and lay down a good layer of in several passes. Let the silver dry thoroughly before applying the next coat. Now you're done!



If you've followed Marty's steps to the letter, you should now have a completely awesome painted body. If not, keep practicing until you get it. As for us, we think that we'll just let Marty do the work for us! We're just too impatient to too untalented.

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The new HS-5245MG high speed, high torque digital servo is the mightiest mini of them all. Digital technology offers the tightest dead band and resolution for perfect centering and ultra precise control; the ultimate choice for your 1/12th or 1/10th pan car.

Speed	Torque	Holding Power	Size	Weight
0.12	76oz/in	228oz/in	1.27"x6"x1.2"	1.09oz





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Top-notch performance without the high cost, these digital programmable servos really deliver. Featuring unbreakable metal gears, these servos offer the awesome reliability, accuracy, and holding power that are synonymous with all Hitec digital products.

Model	Speed	Torque	Holding Power	Size	Weight
5625MG	0.14	130oz/in	390oz/in	1.6"x0.8"x1.5"	2.1oz
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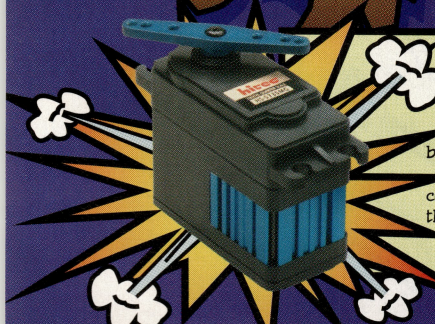
Model	Speed	Torque	Holding Power	Size	Weight
5925MG	0.08	127oz/in	381oz/in	1.55"x0.8"x1.5"	2oz
5945MG	0.13	180oz/in	540oz/in	1.55"x0.8"x1.5"	2oz





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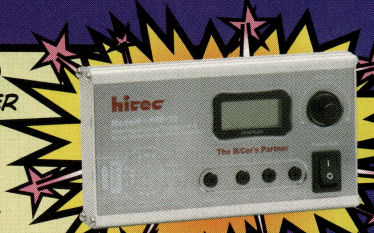

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Losi XXX-S Asphalt Setup Guide

Put the power to the pavement

By Todd Hodge

As I write these articles I hope you can use them as an encyclopedia of how to tune your many Team Losi R/C vehicles. This month I am going to cover the Team Losi XXX-S GP (Graphite Plus) touring car. There are many different types of surfaces that you can run your TC on, and this article will mainly stay focused on rubber tires on asphalt and concrete. Both surfaces have similarities; at times having not much grip and other times having more grip than a carpet track. I will also include some of the new tricks that the Team Losi factory pilots are using on their TCs.





BODY CHOICE

A lot of racers are discovering the new Team Losi Alfa Romeo. This is the body I start with everywhere. It has the most overall rear traction and steering of any body that I have tried. You can tune with one body quite a bit by simply moving it forward or backward on your car. I start with the dimple holes that come on the body. If I want more steering, I will then have another body with it moved forward about .200 inch. This basically puts more pressure on the front tires and will make the car generate a lot more steering.

STEERING TIP

When using a high quality servo and the Team Losi servo saver, find an extra gold spring and place it over the existing gold spring. Now you will have four springs on your servo saver. This helps the servo saver from wandering and keeps the steering centered on high bite tracks.



SWAY BARS

Most of the tracks I race on tend to be medium to high bite, so I like to run a front sway bar. A front sway bar will help the car stay flat and not want to dump over the front and get grabby when the bite comes up. A front sway bar will also let the car transition through chicanes easier. For asphalt racing I will start with a .060-inch bar and go from there. If the car needs more steering in the middle of the turn, then a thinner sway bar will go on the front.

One thing to do with your sway bars is to check them and make sure they are flat. This is done by simply putting the bar on a piece of glass and pushing on one end and seeing if the other end comes up. Then vice versa. You want your bar to be perfectly flat on the glass. If it is tweaked, then carefully work the bar in your hand until you get it flat as possible.

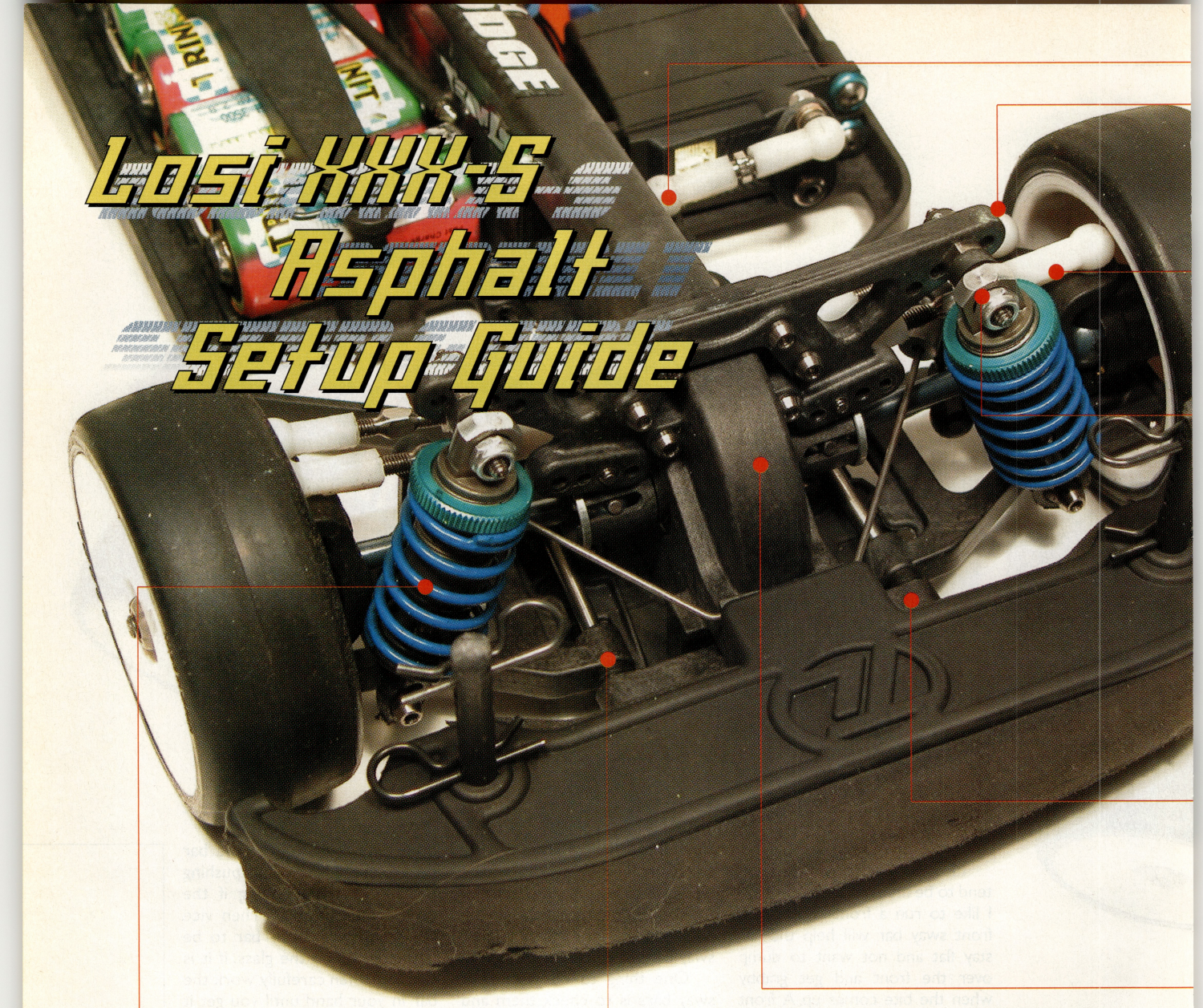
BASIC STATIC ADJUSTMENTS

• **Toe angle**—To start off let's talk about the basics of the setup: front toe in and toe-out. Generally I start with 0 degrees of toe. This is always a great starting point to get a feel for the first run on the track. As I get oriented with the track I will evaluate what I need. If I need more steering but do not want to go off and change the setup I will add a one-degree of front toe in. This will make the car track straighter on the straights and give more overall steering. However if I want less steering I will run 1 degree of toe out. This will make the car initiate the turn better and be smoother throughout the turn, basically because you will have less steering.

• **Ride height**—Another thing that is overlooked is ride height. You can really change how the car drives by adjusting your ride height. I always start my car out at 5mm of ride height on the front and the rear. If I need more steering I will lower the front ride height by 0.5mm. This will help the front of the car take a "set" into the turn when you let off the throttle, which gives the car more front traction. Another thing to keep in mind about ride height is that when the traction comes up, your ride height should go down. I will lower my front and rear down to 4mm. This will drop the CG (center of gravity) and will give the car more corner speed. For the front camber I will start out at -1 degree and it usually stays there.

• **Caster and kickup**—On my TC, caster is always at 4 degrees. Less caster will make the car initiate the turn quicker give the car more on power steering, but less caster also tends to make the car a bit twitchy. More caster will have more steering through the center of the turn, less on-power steering and make the car smoother to drive. You can adjust the kickup on the XXX-S GP as well. I almost always stick with 0 degrees of kick since it seems to work well everywhere. However if you do get on a bumpy parking lot track, more kickup will help the car be stable through the bumps and give a feeling of more rear traction. There also have been times that I have run anti-dive ("kick down") in the front of my car. This works really well when you need to slightly bump the brakes when using a one-way. Anti dive helps keep the car from unloading the rear weight to the front and keeps the front of the car flat. This is actually how we were able to use brakes at the end of the straightaway at the 2001 ROAR on-road nationals at Speedworld Raceway.

Losi XXX-S Asphalt Setup Guide



FRONT SHOCKS

This is something that you need to pay attention to. You can really dial in your car by simply increasing and decreasing the viscosity of your shock oil. I currently run anywhere from 30 to 60 wt shock oil in my front shocks depending on what I want my car to do. This also depends on temperature. Usually, during the winter months, it tends to get cold and you will want to lighten your shock oil. You can make your car have a lot more traction and responsiveness by running lighter shock oil. However be careful because if you go to light, the car can get hard to drive.

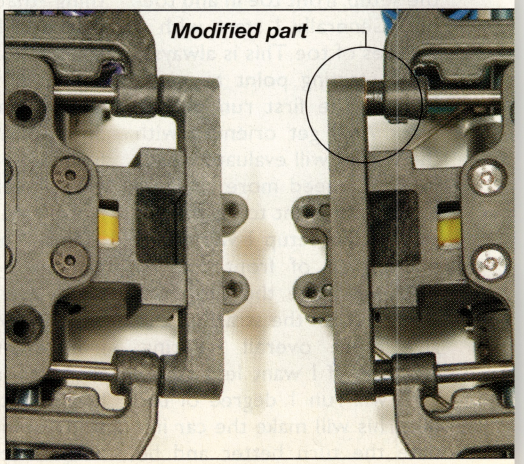
As the weather gets warmer during the summer months, you can thicken the oil to make the car more predictable and easier to drive.

For shock pistons, I like to run no. 56 pistons. This has the best balance. If I want my car to react quicker, I will then go to a no. 57 piston and drop 10 wt on the shock oil, so I have close to the same static feel.

For the spring, I usually start with a Team Losi blue spring, which is 14.6lb. If want the car to react faster and have more steering, I will then start increasing the front spring rate.

ARM SPACING (AND WHEELBASE)

This is something that I have spent much time testing. Ninety percent of the time I like to have my suspension arms spaced all the way forward. This gives the car a smoother steering feel and makes the car drive very consistently. I have actually been running the front arms another 0.050-inch further forward from stock and in my opinion this has yielded the best results on carpet and asphalt tracks. This is done by shaving 0.050-inch from the front pivot support, then adding a 0.050-inch shim behind the arm.



As you space the arms rearward, you start to increase the front dogbone angle which makes the car steer a lot more aggressively. Doing this makes the handling less consistent.

BUMP STEER

This is another very important tuning aid. I generally don't use bump-steer washers to start with. If I want my car to turn in really hard, I will add washers to the spindle ball-stud, which will make the front tires bump out under suspension compression. This can make the car hard to drive and inconsistent depending on how many washers you use. At the Indoor Champs and the ROAR On-road Nationals, I have had my car become very darty and hard to drive as the traction came up. I have fixed this problem by adding washers—one or two gold washers (.030 inch per washer)—to the bellcrank ball-stud, which makes the front tires bump in under suspension compression.

FRONT CAMBER LINK

I always start with the no. 2 link and tend to stay there since I like the balance it gives the car. If you are looking for a smoother feel and more on-power steering, try the no. 3 link, which is shorter. As for the camber-link ball-stud, it is always the Team Losi chrome short-neck ball stud.

FRONT SHOCK POSITION

I normally run the no. 3 position on the shock tower, which makes the car react quickly and gives great on-power steering. If you want the car to react slower and have less steering, you can move the shocks in on the tower.

FRONT ROLL CENTER

The XXX-S GP comes with both high and low front roll-center options. I want to clarify something for everyone on this: the new low front roll-center is actually a mid roll-center, which means that is .075-inch down from the top position, not .150 inch lower as was the original "low" roll-center. Trinity offers Matt Francis roll center mounts, which give you the high roll center and the full (.150 inch) low roll-center. A lot of the team setup sheets show us running with the MF low roll center blocks and then raising them .075. This is the same thing as the new Team Losi low (mid) roll-center mounts.

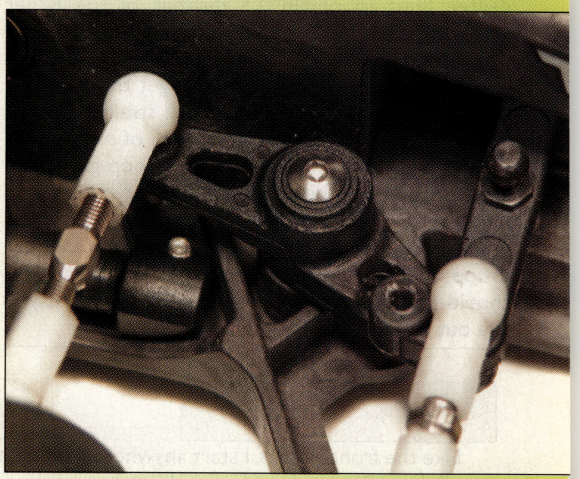
On asphalt, I always run the Losi low roll-center mounts with the 2F block, which gives you 0 degrees of kick. As you go to a full low front roll-center, the front of the car will want to dump more over the front tires, giving you more steering. As you run the high roll-center, the car will stay flatter, have less steering and react quicker when transitioning right to left.

FRONT DRIVE STYLE

I have a lot of people ask me if a one-way is the way to go in TC. This really depends on how much experience you have. If you are just starting out I would recommend a front diff since it makes the car easier to drive and you are able to use the brakes. Another option is a spool, which makes the car easier to drive, and gives you the forward acceleration advantage that a one-way gives. The only immediate disadvantage of the spool is that it will make the car push badly off-power, so some setup change will be necessary. For most parking lot tracks I would say a diff is the best since the bite never really comes up. However if you do race on a medium to high bite track, then a one-way may be the ticket. Just remember, if you have never tried a one-way, make sure you go and practice a little to get use to the way it drives.

Another tuning option on your XXX-S GP is the pulley size. You can run overdrive and under-drive. You can run overdrive by using the small 41-tooth pulley in the front. This will increase your off-power and on-power steering tremendously and will work well with a spool. Running the 41 tooth in the rear of the car will under drive the car and make it push.

Now that I have my arms moved even further forward, I needed to correct the steering Ackerman. This was done by moving the front steering mounts to the forward holes and flipping them so that the small-hole side of the bellcrank was pointing forward.

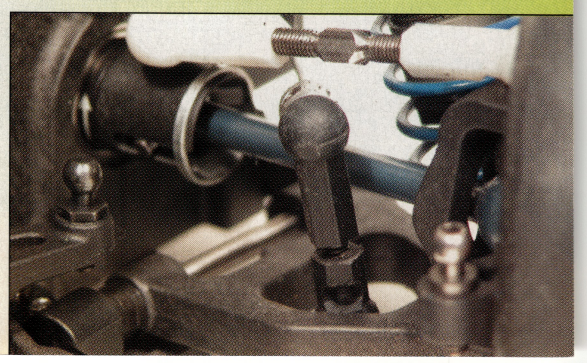


DROOP

Droop usually sits around 3mm to 4mm. Less droop will make the car react faster and give you more off power steering. The more droop you run will make the car react slower and give you more on power steering. I always measure the droop off of the setscrew boss on the caster block. Another tip for setting your droop is to get rid of the droop screws and just limit your shocks. I have .060" limiter in my front shocks and just unscrew the shock end to get the appropriate droop setting. I personally feel setting the droop this way improves the handling of the car since you are no having the droop screws flex the bumper causing your droop to change during a run.

SWAY BAR TRICK

Another tip to do is make your own sway bar link out of two short ball cups and a 7/16-inch droop screw. The reason for this is to be able to adjust one link so you can make your car tweak perfectly flat. Before the front bar gets attached to both sides of your car, make sure your car is flat on the tweak station. With a standard one-piece Losi sway-bar link attached at one end of the bar, attach one end of the new link to the arm, and check to see if the other end aligns with the sway-bar ball stud. If your adjustable link does not line up with the ball stud, simply readjust it until it does line up. Once it lines up pop it on and re check your tweak. If you've got it right the bubble on your tweak station should have not moved a bit.



REAR SUSPENSION

• **Rear toe-in**—For mod TC, I start with the standard 2 degrees of rear toe-in. If I am on a loose surface, such as a parking lot track, I will then run 2.5 degree hubs to obtain 2.5 degrees of toe-in per wheel. In stock TC it is vice versa; I will run the 1/2 degree hubs backwards to obtain 1.5 degrees of toe in. This helps with stock racing to get the car freer through the turns and faster on the straightaway.

• **Droop**—I start my car at 5mm of rear droop. This is measured with a Team Losi droop gauge and is measured from the center of the rear hub. To gain more rear traction, I will increase rear droop to 4mm. If I want less rear traction, I will decrease rear droop to 6mm. Again, this is something that you should test on your own to get a feel for what you like out of your car.

REAR SHOCK SETUP

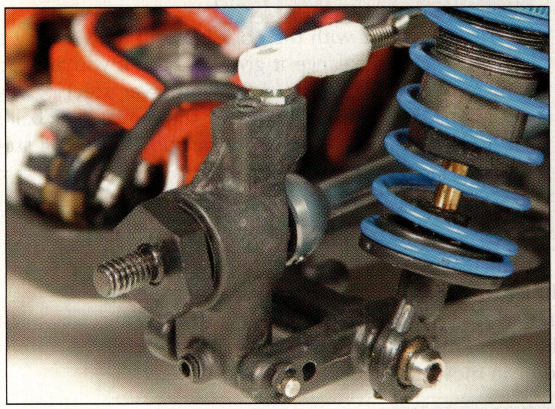
Like the front shocks, I start anywhere from 30 to 60 wt oil depending on how I want the car to work and the temperature. During colder months, I will run 30 to 35 wt in the rear shocks to get my car to have more traction. However, as the weather starts to heat up, I will thicken the oil to keep my car from being erratic and hard to drive.

For pistons, I run no. 56 and usually stick with them. I can, however, tune the pistons to change the way my car handles. By running a no. 55 piston I can make the car roll more into the turn and carry a bit more speed. However, doing this does take away some stability. Generally, if I do us a larger hole piston I will change the oil as well to have the same static feel of the shock. For example, if I am running 40 wt oil with 56 pistons, and I want to go to a no. 55 piston, I will run 50wt oil.

REAR CAMBER LINK

For the rear camber-link position, I generally start with the "2/A" position since it has great steering and decent stability. If I am lacking rear stability and rear traction, I will use the same length rear link, but just move it to "3/B." If I want to increase my rear stability even more I will move the link inward on the rear tower to hole no. 2. This will make the car remain flatter in the rear and have more forward grip.

Another option for your rear camber link is the height of the hubs' ball stud. You can use the kit's short-neck ball stud, or use a standard black ball stud, which is .030-inch higher. The short-neck ball stud helps the car react faster and helps the car initiate the turn better. The long-neck ball stud helps the car rotate more and will also increase on-power steering. This is something I always play with at the track to fine tune my ride.



REAR SHOCK POSITION

For most tracks, I will start with hole no. 2 on the rear tower and the outside hole on the arm for my shock position. If I want my car to have more forward traction and be more stable, I will then stand up my rear shocks to hole no. 3. This will make the car react faster through chicanes, but will hurt steering on the exit of some turns. I always run the outside hole on the arm.

REAR ROLL CENTER

Rear roll center is all about low roll center. I have tested this back and forth and I am sold on low rear roll-center. The only time I will run a high roll center in the rear is when track conditions are super loose. However, if this is the case, I will try my best to find a solution to the low grip conditions without resorting to a high roll-center position.

MISCELLANEOUS TUNING TIPS

• Always run the battery in the forward position. Moving it back just helps the car get into the turn, but hurts on power steering tremendously.

• I run only 64 pitch gears since they are the most efficient and have the most power. For mod and stock racing, here are some gear ratios that I use. Remember that track size does matter, so if you are on a smaller track, use the lower gear and vice versa.

Motor	Pinion/Spur
7 turn	26-27/128
8 turn	27-28/128
9 turn	28-29/128
10 turn	29-30/128
Monster Stock	33-34/128

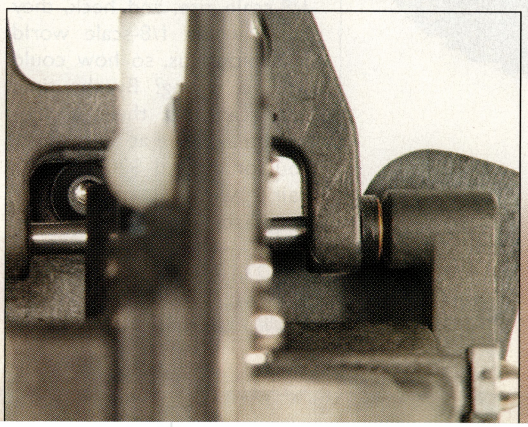
LOSI'S NEW OFFSET REAR END

The XXX-S GP comes with the new Offset rear end. This rear end uses a shorter arm and then balances the offset by using a wider hub. I recommend this rear end on high bite tracks where you need your car to steer. For most tracks, however, I like the standard rear end because it has a lot of stability and makes the car a lot more fluid. This also depends on your driving style on what you may rear end you may like.

Losi XXX-S Asphalt Setup Guide

REAR ARM SPACING

This is another great traction aid. You can add rear traction by running your rear arms in the forward position. I like to start with my rear arms in the middle position and go from there. Another thing some of the team likes to do is shim the rear arm spacing by .030 inch instead of using the .060-inch spacers provided in the kit. Team Losi sells a shock spacer kit that has .030, .060, .090 and .120 inch spacers. You can fine tune your car by using the .030-inch spacers and moving the arm in .030-inch increments.



REAR PIVOT BLOCKS

I start with the "OR" block, since it is a good starting point and it is where I usually end up after I complete my setup. I can increase forward traction and side bite by simply putting on the "2R" block, which gives the car 2 degrees of anti-squat. By using low roll-center you can also get "pro-squat" (the opposite of anti-squat) on your car by running the "4R" block in the high roll center holes on the diff cover. This helps the car steer a lot and can be advantageous on high bite tracks.

CONCLUSION

Hopefully this article will help you dial in your XXX-S the next time you hit the track! Until next time.... good luck and thanks for coming!

PRO-LINE KNUCKLES

World champion treads for your nitro buggy

Last month we tested Pro-Line's new Mug Shot tires for 1/8-scale nitro buggies. At that time, we promised to test Pro-Line's newest tire, the Knuckle, the following month. Never ones to intentionally disappoint, here are the new Knuckles in all their glory, as promised.

DEGANI'S TREADS

As we all know by now (you should, anyway), the new Knuckle tire is a world champ. That's correct; Kyosho's Greg Degani won the 1/8-scale off-road world championships using a prototype version of the Knuckle. True to Pro-Line's marketing hype, Greg's buggy still had over half of its tread remaining after finishing the grueling one-hour A-main event. That is a true testimony to Pro-Line's commitment to come out with truly unique tread designs and compounds.

UNIQUE AMONG THE PINS

The Knuckle tread looks more like an automobile tire design than anything you've seen on a buggy tire. This is a nice departure from what we are used to seeing in the R/C market. The Knuckle is designed to have a lot of rubber on the ground for blue-groove track conditions, or for any hard-packed-style track. This is achieved through using a large block tread shape with a closely staggered pattern on the tread design. You've got to have lots of edges to bite into the hard dirt.

We have been lucky enough to get some real track time on these babies, and they work very well. And in addition, our investigative reporter had the opportunity to ask some of the local pro-type guys what they thought of the Knuckles, and learned out that they agree with our findings that the Knuckle is a darn good tire for a fairly wide range of dry and packed track conditions.



TESTING

We tested the Knuckles in conditions ranging from hard packed with water to dry and dusty, and found that they hooked up well. The best way we could put this would be that if you live in arid climates, and you race at the kind of track that gets really hard—like blue groove—or hard packed with a little loose dirt on top, then this is the tire for you!

The Knuckles really worked well on a freshly watered hard-packed track and stuck like glue. Come to think of it... it did the same on the blue groove conditions. We highly recommend this tire, and our testers give it two thumbs up. The price is the same as any 1/8-scale tire, and heck, they did win the 1/8-scale world championships, so how could you go wrong? By the time you read this, the Knuckles will be available at a LHS near you for around $20-30 for a pair with foams. Lasts long/tastes great!

SOURCES

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Putting it all on the line in Electronic Speed Controls



If you're in it to win it, you don't hold back. You put it all on the line right from the start. That's how you get where you want to be — and that's how the MC400CR w/Reverse and MC800C Pro were designed.

They were designed for different applications, but held to the same uncompromising expectations: all-out performance, all the time. They put it all on the line, so you leave nothing behind on the track...

...except dust.

Futaba® 1 Year Warranty

MC400CR ESC w/Reverse



shown actual size

Start fast!

For 4-7 cells, stock motors and modifieds with as few as 10 turns.

- *Reverse for sport driving — reverse lock-out for ROAR-legal racing.*
- *Automatically reverses after a full stop — automatically switches to neutral after 8 seconds of reverse.*
- *Fully proportional braking for better control*
- *Easy, push-button set-up*
- *High-frequency 2.5kHz operation for smoother, cooler operation*
- *Software-protected against short circuits, heat and current overloads*
- *Hefty, high-efficiency 14-gauge wire*
- *All connectors factory-installed for fast, easy hook-up*
- *5V BEC to eliminate need for a separate receiver pack*
- *Ultra-compact "footprint": just 1" x 1" x 0.62"*
- *Weight without wires: 0.62 oz.*

MC800C ESC Pro



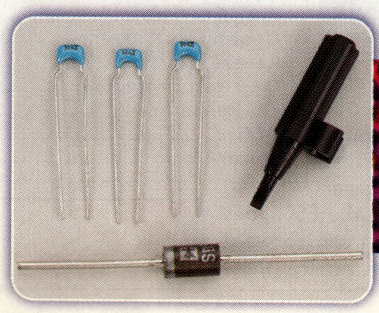
shown actual size

Finish strong!

Programmable performance for the pro racer

- *For 4-7 cells, top-level racing and modified motors with 5 turns or more*
- *Program for performance with push-button ease*
- *Sets up for instant, full-power starts with Power Start*
- *Digitally masters acceleration and traction with Power Control*
- *Adjusts braking action to track surface with Hyper Brake — provides independent settings for minimum and maximum*
- *Releasing throttle "taps" brakes — great for split-second slowdowns before cornering.*
- *Advanced SMD MOSFETS reduce weight to just 0.62 oz.*
- *Ultra-high, 3.1kHz switching rate eliminates need for a heavy heat sink*
- *External solder points for high-efficiency hardwiring (motor and battery)*
- *Brute, 12-gauge leads*
- *Includes heavy-duty 5.8V BEC and Futaba J receiver connector*
- *Fits on virtually any chassis — measures 1" x 1" x 0.61"*

If you're ready to put it all on the line, go with the Electronic Speed Controls designed to do the same. For more information on the MC400CR, MC800C or the location of the dealer nearest you, visit www.futaba-rc.com, or call 1-800-682-8948 and mention code number 2948C.



Both controls include an on/off switch, mini screwdriver, 3 capacitors, Schottky diode, double-sided tape, zip straps and instructions.

Futaba®

www.futaba-rc.com

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DYNAMITE TAZER

Shocking speed control

The first widely available ESCs (electronic speed controls) were large, expensive and nowhere near as feature-laden and efficient as today's models. During those early years, only well-heeled racers could afford ESCs; the rest of the crowd had to settle for cumbersome and inefficient mechanical speed controls. Today, ESCs are more affordable than ever, and even the lowest priced models offer performance that in many cases exceeds that of the early racing models. Dynamite is staking its claim on the sport-level ESC market with its Tazer, which promises efficient, high-performance control, with reverse, at an almost unbelievable price.

FEATURES

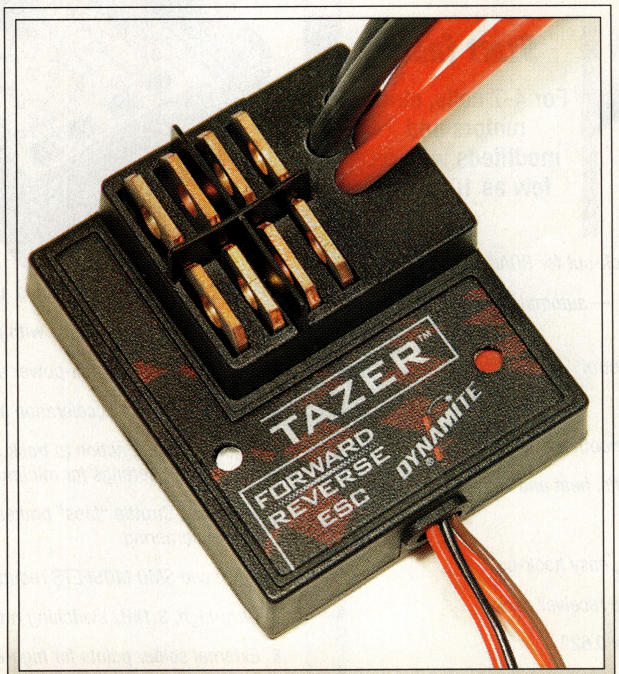
The Tazer contains high-power FET (field-effect transistors) to efficiently route battery power to the motor and provide precise speed control. It also operates at a high frequency (7.8KHz) to further improve efficiency and to provide smoother throttle control.

Although the Tazer is efficient, it is not intended to be used with motors with fewer than 15 turns. This is of course a safety margin, and it's likely that if properly installed with plenty of cooling air (and the use of the included aluminum FET heatsinks), the Tazer could handle slightly hotter motors, but this would void your warranty. Hotter motors might also overheat the Tazer's built-in battery and motor connectors. However, in the event that the Tazer does become overloaded, its built-in thermal shutdown feature will kick in to protect against permanent damage. Once the ESC reaches a safe temperature, it will automatically return to operation.

TWO PROGRAMMING OPTIONS

The Tazer offers versatile operation through the use of two programmable modes. When mode "A" is selected, the Tazer operates as a forward ESC that offers brakes for a period of no longer than one second, after which the ESC goes into reverse. This delay between forward and reverse serves to prevent the transmission damage that can occur should the vehicle be slammed from forward to reverse. Mode "B" provides proportional forward and reverse without any brakes or delay. If you want to play "Duke boy" and perform wild slides and other stunts without regard for your tranny's welfare, this is the mode for you.

If you're not exactly electronic-savvy, you'll find that the Tazer is extremely easy to use. Its single button programming and dual-color LED are all you'll need to master to set the Tazer to your transmitter (it automatically "reads" your radio and sets itself accordingly) and to choose between the two operational modes.



SPECIFICATIONS

Price:	$54.99 (varies with dealer)
Operation:	Proportional Forward/Reverse
Size:	1.59 x 1.83 x 0.72 inches
Weight:	2.48 oz
Frequency:	7.8 KHz
Input Voltage:	6 or 7 cells
Peak Current:	440 amps
Continuous Current:	110 Amps
Reverse Delay:	one second or off
Overload Protection:	Thermal
On-Resistance:	0.019 ohms
BEC:	6V/1A
Motor Limit:	15 turns and above

WHAT WE REALLY THINK

For less than $60, the Tazer offers a great package. It's "footprint" is about the size of most other reversing ESCs, but it has a low-profile case that should fit most chassis. For virtually every hobbyist save the serious racer or low-turn speed freak (you know who you are), the Tazer will handle everything from stock to mild-mod motors with ease. Plug and play installation also means you won't have to learn how to solder to use the Tazer.

SOURCES

Dynamite, distributed by Horizon Hobby Distributors, Inc., 4105 Fieldstone Rd., Champaign, IL 61821 • phone (217) 355-9511

Now this is what we call going off road. WAY OFF.



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NOVAK BLACK BOX & SWITCH

The latest in orange (and black)

Novak Electronics introduced more new goodies at last year's Chicago hobby show than at any other period in its history. But as is usually the case with tradeshow introductions, we in the media often don't get to test production samples for months or even a year or more later. Although we did get the chance to test Novak's "beta" version of its Super Sport brushless motor (see the March '03 issue), that product is still unavailable as a production model. Fortunately, Novak has sent us two products that are ready: the new Black Box 12-volt power supply and the Switch synthesized RF module for the Airtronics M8.

BLACK BOX: POWER IN YOUR PALM

The Black Box is designed to convert 110-volt AC household current and transform it to the 12-volt DC current that most R/C chargers, including by no coincidence those made by Novak, need to operate. The Black Box is a switching supply, which means that it converts the incoming AC power (60Hz) to a much higher frequency, which allows the Black Box to have a small, lightweight transformer rather than the bulky transformers and huge capacitors of non-switching supplies.

• The upside: The Black Box is very compact (4.8 x 2.3 x 1.2 inches) and light (only nine ounces), which means that it will take up very little space in your pit box. It's also very inexpensive at a "street" price of just under $40. And if you own a Novak charger, the Black Box will plug right into the charger's input lead.

• The downside: the Black Box can only muster 4.5 amps of charging power. This is fine for almost all applications; however, should you wish to charge your race packs at a higher rate to increase their voltage, you can't.

• The verdict: There are very few power supplies on the market, and many of them are either large, expensive, heavy or not of good quality. The Black Box most definitely fills a void in the marketplace; it's cheap, reliable and compact in both dimension and weight. During our test, the Black Box remained relatively cool, and we noticed no significant drop in charge rate due to repeated use. Despite its limited amperage, we feel that this won't be an issue with 90 percent of users.

The Black Box is available separately (part no. 4905) or packaged with Novak's Millennium Pro charger (4491).



TIME TO MAKE THE SWITCH

Synthesized (crystal-less) radio equipment isn't new to our hobby. Hitec was the first to offer a synthesized transmitter RF module (the Spectra) for its Lynx 3D transmitter, but it wasn't until Novak introduced its XXtra synthesized FM receiver that an R/C driver could truly go without crystals. With this synthesized technology, we are now able to select any available channel on a particular band without having to own additional, and expensive, sets of transmitter (Tx) and receiver (Rx) crystals.

Not content to be just a piece of the synthesized puzzle, Novak has created its own synthesized transmitter module, the Switch (part no. 2680). Right now, the Switch is available only for the Airtronics M8 (arguably the most popular radio among racers) and only on 75mHz (oddly enough, Novak offers its XXtra in both 75 and 27 band). The Switch simply replaces the M8's RF module, and couldn't be easier to install and use. Once the



Switch is in place, you can choose from any of the 30 available 75-band channels (that is, provided you own an XXtra or 30 receiver crystals).

• The upside: No more crystals, and you can still use your M8. The Switch performed flawlessly during our initial testing, and the dual potentiometers have noticeable detents to ensure that each is in the correct position.

• The downside: The Switch is expensive, with a list price of $189.00 and a street price of just under $100. But if you factor in the money you'll save by not having to purchase additional crystals, the price becomes easier to swallow.

• The verdict: Novak is really onto something with the Switch (and the XXtra receiver). We also think it was clever of them to target (initially?) the most popular radio in the racing world (at least according to every winners' chart we've ever read), the M8. Now, you can head to the track without fear of not having the right channel. You'll actually be able to run your car even when all the T-Maxx people are monopolizing all the 27-band channels. Now that's good news.

SOURCES

Novak Electronics, Inc., 18910 Teller Ave., Irvine, CA 92612 • (949) 833-8873; fax (949) 833-1631

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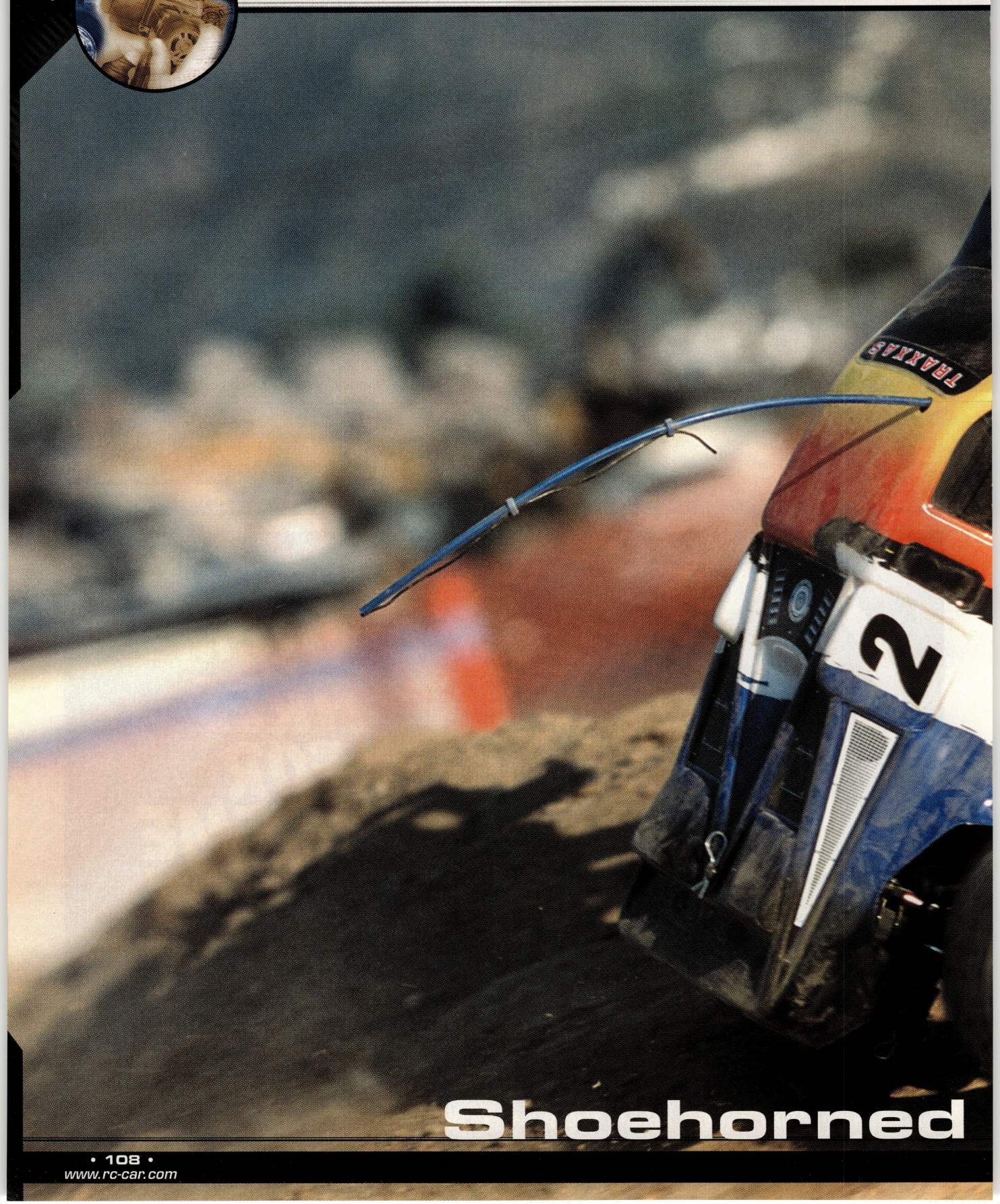
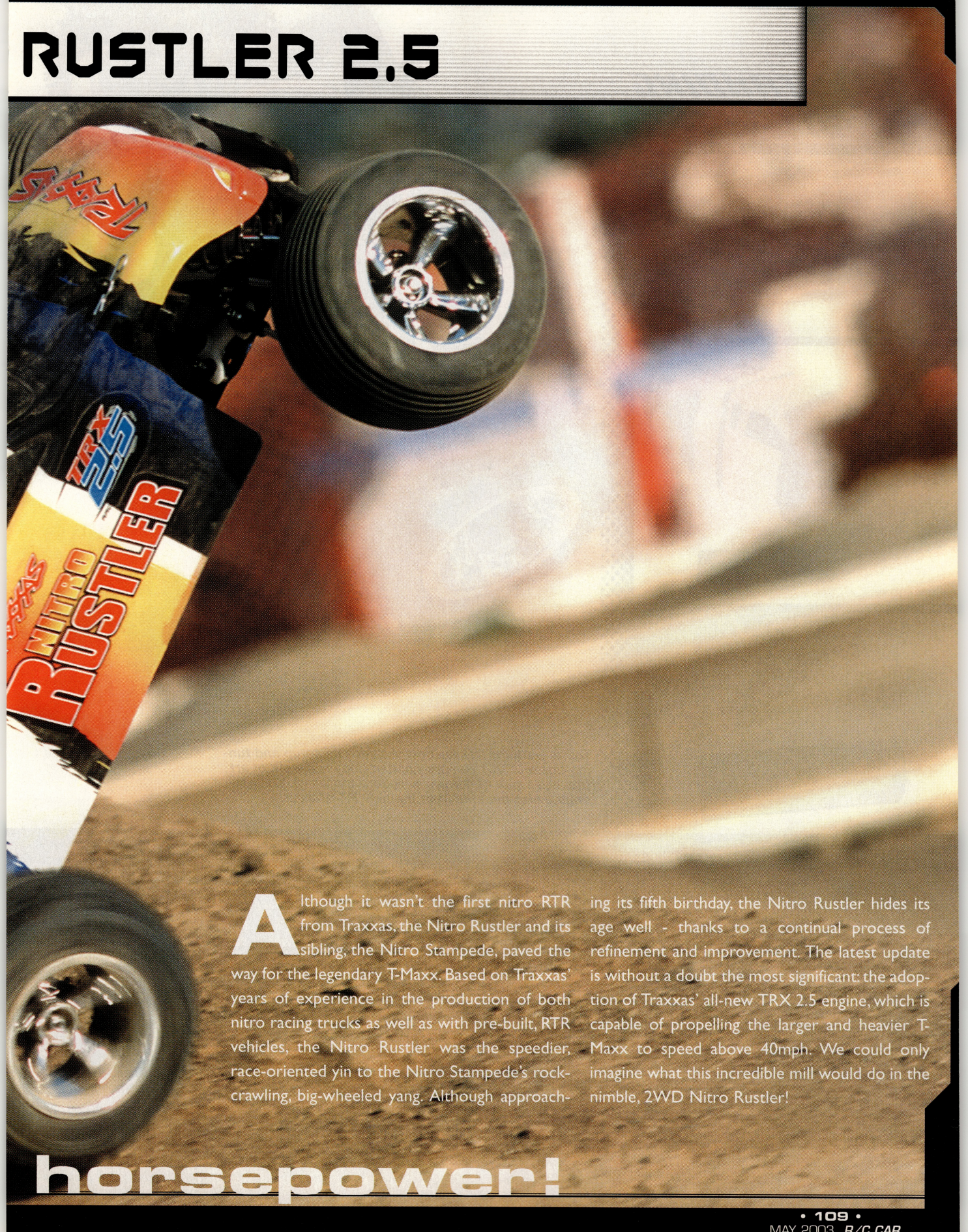
TRAXXAS NITRO



Shoehorned

RUSTLER 2.5

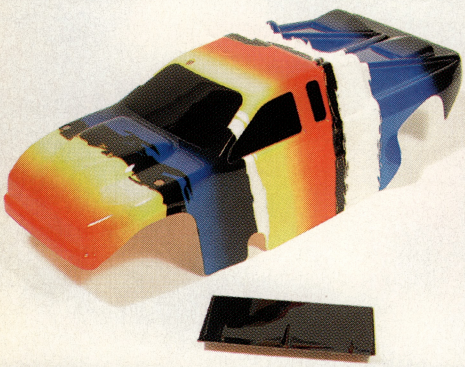


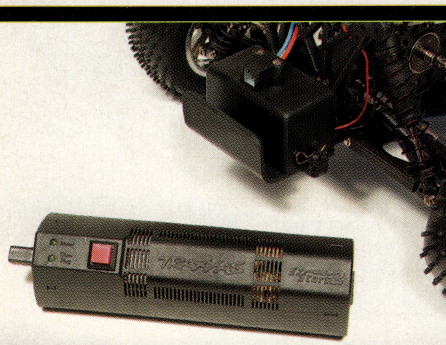
Although it wasn't the first nitro RTR from Traxxas, the Nitro Rustler and its sibling, the Nitro Stampede, paved the way for the legendary T-Maxx. Based on Traxxas' years of experience in the production of both nitro racing trucks as well as with pre-built, RTR vehicles, the Nitro Rustler was the speedier, race-oriented yin to the Nitro Stampede's rock-crawling, big-wheeled yang. Although approaching its fifth birthday, the Nitro Rustler hides its age well - thanks to a continual process of refinement and improvement. The latest update is without a doubt the most significant: the adoption of Traxxas' all-new TRX 2.5 engine, which is capable of propelling the larger and heavier T-Maxx to speed above 40mph. We could only imagine what this incredible mill would do in the nimble, 2WD Nitro Rustler!

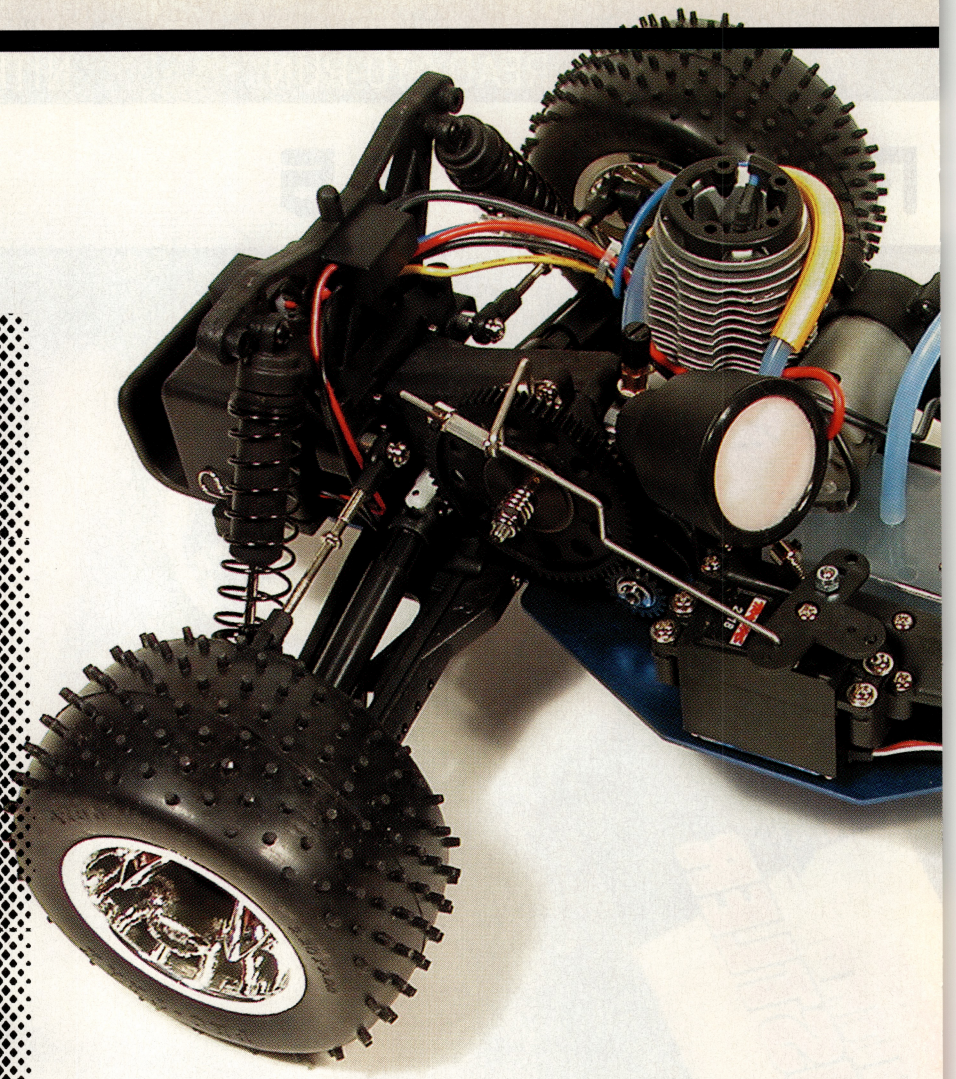
horsepower!

OUTSTANDING FEATURES









Top to bottom: Traxxas now includes its setup and tuning tips on DVD! The pre-painted body is a work of art (tip: use a pair of screws to secure the wing). The new engine also benefits from the new EZ-Start 2.

MONSTER HORSEPOWER

Yes, the TRX 2.5 is a monster, putting out - according to Traxxas - 60-percent greater power than the engine (of the same displacement) it replaces. The TRX 2.5 is the result of two years of design and testing, and it is a truly world-class engine. This important increase in output is the result of a culmination of features such as the engine's IPS one-piece crankshaft, which reduces power-robbing vibration, and its knife-edged connecting rod, offset wrist-pin and straight-through exhaust flow. Among the more significant features of this amazing powerplant is its LCP (Liquid Crystal Polymer), two-needle carb, which features a very clever molded-in spray bar, whose complex shape improves torque and efficiency throughout the engine's entire powerband. The carb is also double O-ring sealed to the engine case to prevent unwanted airleaks.

Traxxas was also able to maximize the performance potential of this engine by equipping the new NR 2.5 with a blue-anodized tubular header and a new molded-composite tuned exhaust pipe. Both items combine to give the truck crisp low-end response and an absolutely shrieking top-end pull.

BLUE BY YOU

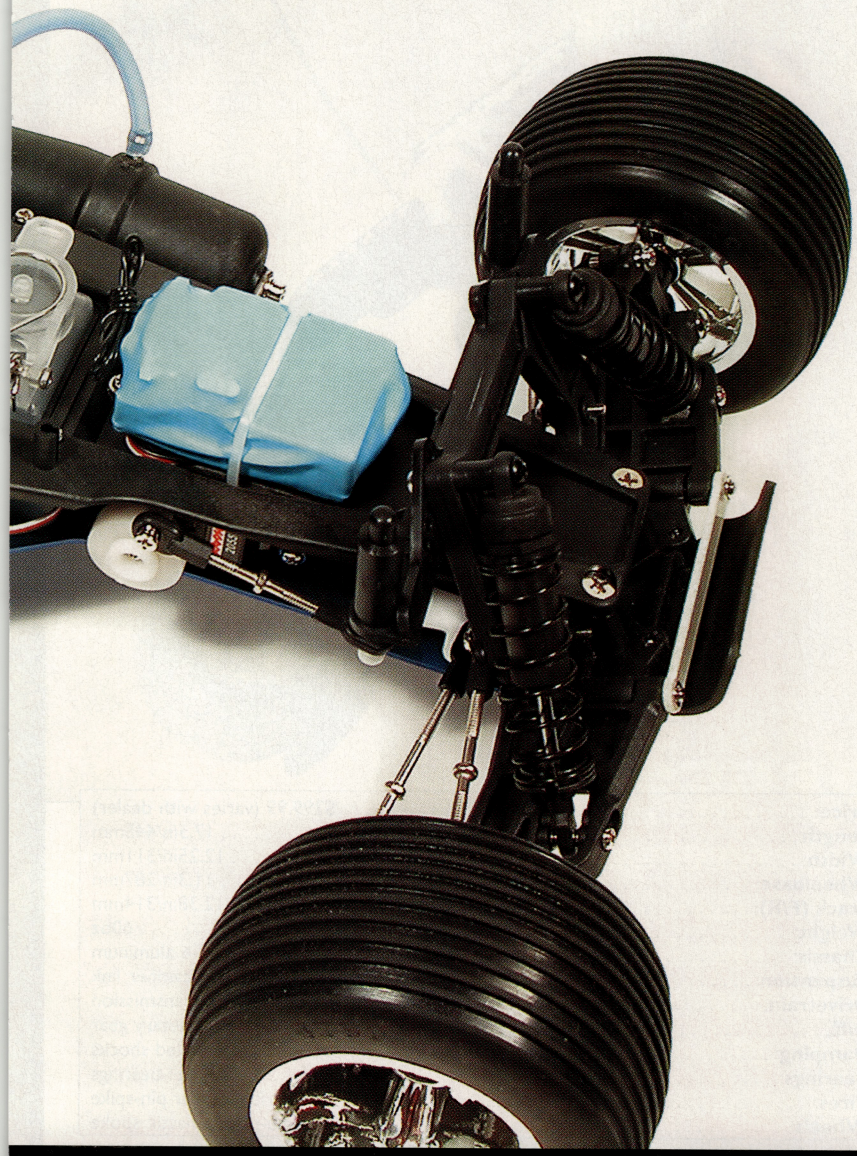
The ground shaking power of the TRX 2.5 engine is harnesses within a blue-anodized chassis made from 6061 T-6 aluminum, which provides a rigid backbone and a method of pulling unwanted heat from the engine (aluminum acts as a heat-sink). Further stiffness is furnished by a molded-composite upper chassis, which also serves as a mount for the servos, receiver and the fuel tank.

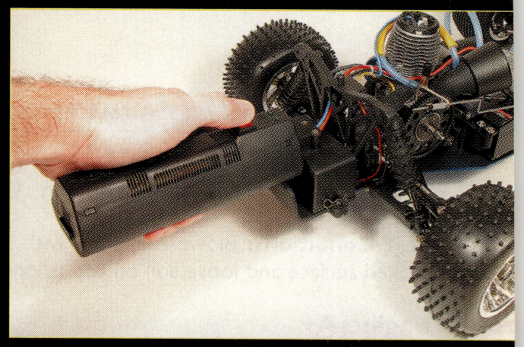
Speaking of the tank; the NR 2.5 gets a 75cc flip-top fuel tank that does away with the traditional primer pump (used to pressurize the tank and begin the flow of fuel to the carb). As the primer is an infamous source of air leaks within the tank, we certainly don't miss it.

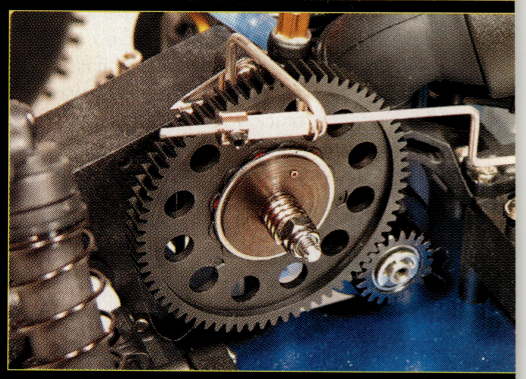
BEEFED-UP 'BOX

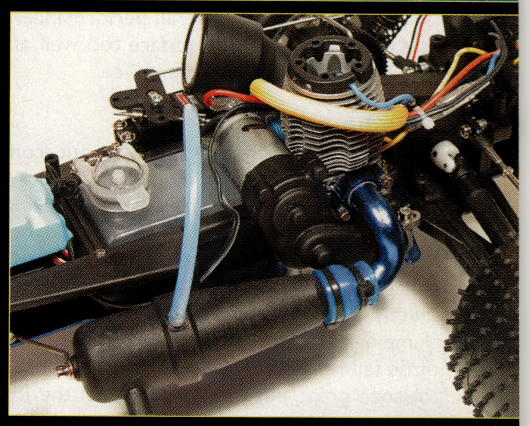
The NR 2.5 comes with Traxxas' 281 (2.8:1) Nitro Magnum gearbox, which comes equipped with a full set of steel ball-bearings to withstand the punishment of off-road as well as the newfound power of the TRX 2.5 engine. Inside are heavy-duty gears

NITRO RUSTLER 2.5









and a stout, hardened-steel gear differential to improve cornering and traction. Outside you'll find an adjustable slipper clutch that will protect the tranny from harsh shock and help gain grip on slippery surfaces. The spur-gear mounted slipper is in close proximity to the powerful disc brake system that not only brings the NR to a halt, but makes for some fantastic lock-up slides when conditions are right.

Power reaches the rear wheels through a pair of telescoping, U-joint "slider" shafts, which are very effective at their job - especially in long-travel suspension such as that of the NR. Traxxas has also beefed-up the diff output yokes, which are not only stronger, but are attached to the diff shafts with new cross-shaft fasteners for additional security.

KEPT IN SUSPENSE

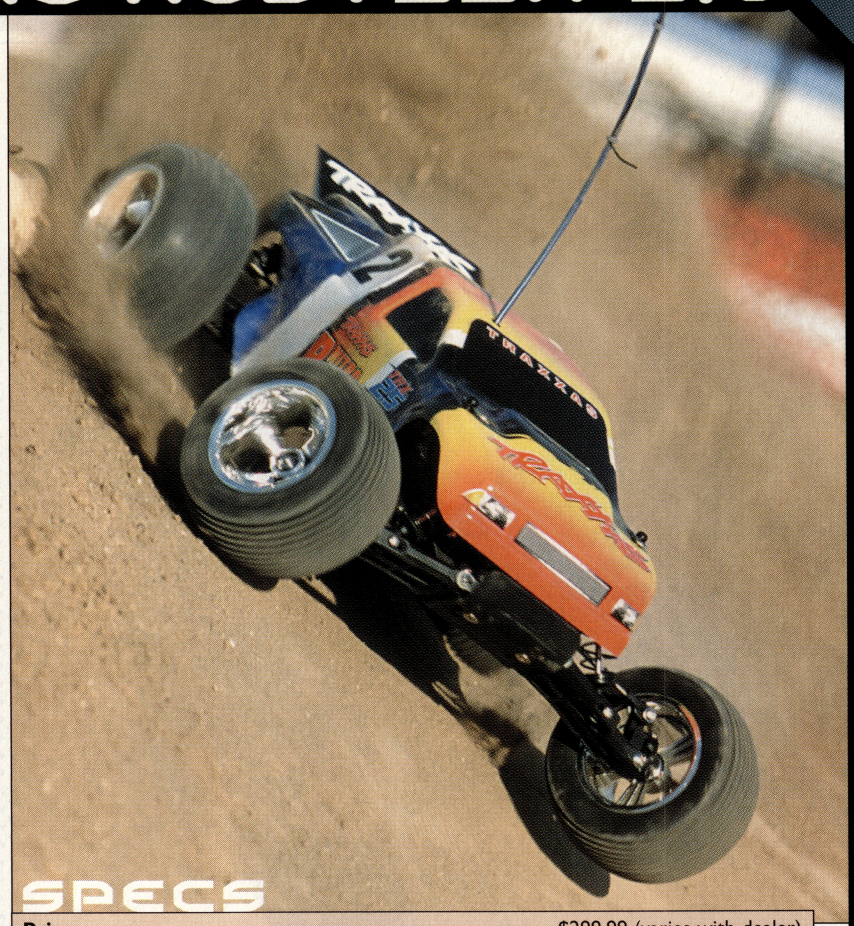
Traxxas' X-tra long suspension arms adorn each corner of the NR 2.5's chassis. Molded from rugged, fiber-filled composite, the arms - and the rest of the truck's suspension pieces - are a perfect blending of stiffness with durability. There is enough rigidity to keep the truck's suspension geometry within acceptable boundaries, yet there is enough give in them to minimize the chances of damage during crashes.

Along with the X-tra long suspension, the NR 2.5 also gets a set of X-tra long Ultra oil-filled shocks. These molded dampers hold plenty of oil, so heating won't be too much of an issue as it can be with smaller shocks, and this should provide hours of driving pleasure without the constant need to replace dirty oil. Also, Traxxas has done what few other RTR companies have done: they ship the NR 2.5 with adequate oil and springs; not the too-soft, too-bouncy setups that have become commonplace.

EASIER STARTING

Paired with the new 2.5 engine is Traxxas improved EZ-Start 2 on-board electric starting system. Among its list of improvements, the EZ-Start 2 features a more durable gear train, a built-in glow-plug checker, built-in overload protection and the ability to monitor the status of the battery's charge and its ability to fire the engine. Also, the EZ-Start 2 features one-handed operation thanks to its new molded case (the battery - a standard six-cell stick pack - fits inside).

NITRO RUSTLER 2.5



REPORT CARD

Test Location: KZ Speedway Sun Valley, California

Test Conditions: Blown out track with hard-packed surface and loose soil on top (slippery)

Engine: A+

If you don't know by now, we love the TRX 2.5 engine. When the NR arrived at the office and we saw the 2.5 sitting in the chassis, we were thinking of how much crazy fun it was going to be to test a truck with this kind of power! We were not disappointed, the Stampede flat out hauls you know what! It has so much snap off the bottom you need to be careful not to spin-out. For an entry-level truck like this, the first-time hobbyist will have plenty of power on tap. Just be careful, and learn to roll the throttle on.

Braking: B

Although the brakes were good, the less than stellar tires hindered overall performance. They did not like to grab the surface too well, and let the truck slide as if it were on ice.

Handling: B

Granted, the track was blown-out from the previous Saturday's racing, but the stock tires should have done a better job of sticking the truck to the ground. The NR proved quite a handful on the hard track, and we were mostly relegated to a moderate pace. The tires are definitely better suited to loamy dirt or grass. Jumping performance was fair; the NR seemed a little tail-heavy. It took some time to adjust to its balance point, but you could launch the Rustler if you wanted to—the power was there. The suspension was adequate, and like most RTR's you'll need to fiddle around with the shock oil and spring rate to suit your needs. Out of the box though, handling was pretty neutral for all types of conditions.

Radio and Servos: B

The Traxxas radio has been around for a while, and for good reason: it is durable and it works well. The servos used are the ones that come in the bigger trucks like the T-Maxx and E-Maxx. The steering servo works great in the Rustler.

Durability: A

Traxxas has the durability thing down. We had no problems during our test. Overall the Stampede is a very tough truck. After our photo shoot we usually cut loose with our test vehicles to see how they hang, and the Stampede took all our thrashing in style! Not one problem.

SPECS

Price:	$299.99 (varies with dealer)
Length:	17.5in/445mm
Width:	12.25in/311mm
Wheelbase:	11.3in/287mm
Track (F/R):	12.5in/318mm; 12.38in/314mm
Weight:	60oz
Chassis:	6061 T-6 aluminum
Suspension:	ind. lower arm w/adj. upper camber link
Drivetrain:	three-gear, sealed transmission
Diff:	hardened-steel planetary gear
Damping:	composite oil-filled shocks
Bearings:	steel ball-bearings
Tires:	front ribbed, rear pin-spike
Wheels:	chrome-plated plastic spoke

Final Score

HIGHS: Supreme durability and now, with the addition of the TRX 2.5 engine, the NR has supreme speed. Traxxas knows how to build RTRs that are truly ready to go out of the box. They also know how to build 'em tough. Again, the engine makes this truck; it's world-class.

LOWS: The stock tires are limited to loose dirt or grass. The body needs to be modified (or better yet, how about a new one, Traxxas?) to fit the new pipe; the pipe pushes the body outward.

THE VERDICT: Thousands have found out that the Nitro Rustler is one of the best RTR nitro trucks on the market. It is a perfect match for the needs of most beginners and novices. And now, with the new T-Maxx engine, it's very likely the fastest RTR truck on the market.

SOURCES

Sidewinder Performance Racing Fuel, produced by Morgan Fuels, P.O. Box 311201, Enterprise, AL 36331 • phone (334) 347-3525

Traxxas, 12150 Shiloh Rd., Dallas, TX 75228 • phone (972) 613-3300; fax (972) 613-3599

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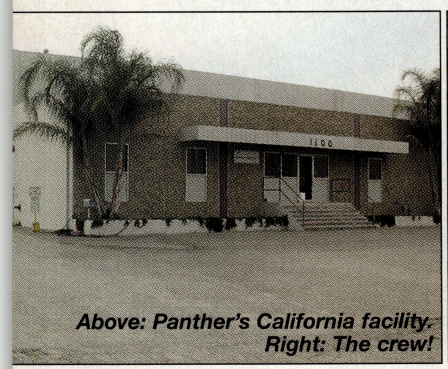
HOW TIRES

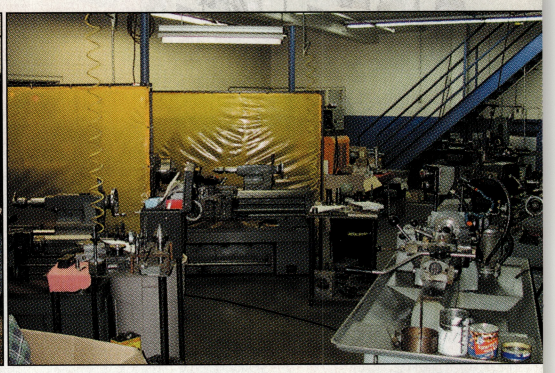
Good rubber takes smart engineering and expert manufacturing

Tires are a huge part of the performance equation in nearly all forms of motorsports, including R/C. And to many, the way in which tires work—what makes one tire "good" for one surface while another, similar tire can't get bite—is a mystery equal to that of the Great Pyramids of Egypt. But the answer to that question may lie as much in the "seen," the shape and tread type of the tire, as in the manufacture of the tire—the "unseen" quotient.

In an effort to better understand the tire mystery, we searched around to find a local company that was willing to work with us on this story. Some of the companies we spoke with felt that they might give up some proprietary secrets if they allowed us to detail their production processes—and we can't say we blame them. Fortunately, we came to Panther tires; actually they kind of sparked the idea when I met up with one of the guys from Panther at the Monster Jam event in Anaheim. Panther thought it would be a great story for our readers.







Above: Panther's California facility. Right: The crew!

THE PANTHER TIRE STORY

Since Panther was kind enough to open their doors to us, we felt it was only right to give you some background about the company itself. As it turned out, Panther has been around for a long time, and has an interesting background.

It all started back in the '70s, when John Mortan, the vice-president of Panther and the owner of Mortan Industries, was into rubber. Fast forward a little, and John's machine shop has grown into a molding house. Mortan Industries now had full capabilities to make molds, plastic products, rubber products and everything in between. They perform work in other major industries way bigger than the R/C industry, such as the medical, auto and aerospace fields. In fact, the next time you're on a flight to some race on a McDonnell-Douglas aircraft, know that the gasket that holds the windows in place is of a rubber very close in compound to the tires on your R/C vehicle.

Moving on to '84; a company called Losi (ever hear of it?) called up Mortan Industries to have some tires made. Not only did Mortan make tires, but broke the mold on how tires are made. Back in the day, all tires were done by TPR, which is a normal industrial manufacturing process we won't get into here, but Mortan changed all that by performing a vulcanizing process much like the process used to make automobile tires.

This opened the door to a whole new level in performance for R/C tires. Different compounds could now be used, and the tires could incorporate better tread and sidewall designs to further enhance performance.

Several years later (circa '99), after Losi and Mortan went their separate ways, three people—Larry McDonald, Alan Brittian and John Mortan—joined up to take the Panther division (which had nothing to do with tires at that time) and began fooling around with tires again. And with Larry leading the way, Panther released its first R/C tire, the Meat Grinder for the T-Maxx. This tire made a huge impact and was responsible for putting Panther on the map.

Just so everybody knows; Larry McDonald is the president. He does sales, marketing and gets customer feedback. John Mortan is VP of Panther, and does the R&D, playing with "formula recipes" and other cool tire-related issues. Alan Brittian handles the production duties and is manager of operations. He also helps out with testing. All three are partners, and HRP is their main distributor.

THE MAKING OF A TIRE

Making a tire is complex, but simple at the same time. I'm not even going to try to explain that one. A lot goes into making a tire but for the sake of this story—and of my sanity in trying to explain this in a couple of pages—I plan on keeping it simple and cover only the basics. I'm saying this now because I know you tech-weenies out their will hang me if I don't get everything right. That's my story and I'm sticking with it.

ARE MADE

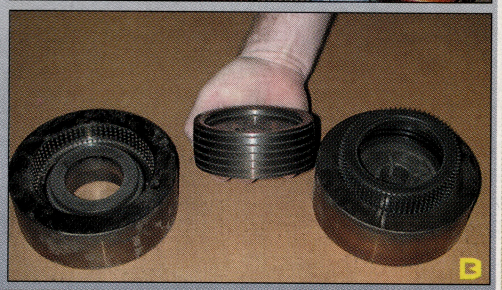
STEP 2

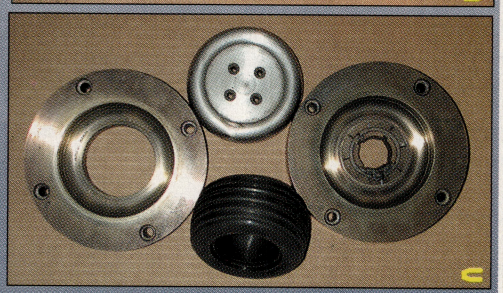




STEP 1







THE PLANNING STAGE

First you have to figure out what type of tire you want to make and what compounds to use. Both of these factors control the performance of the tire and the types of surfaces on which it will work best. In the photos you can see a mold that has been made already, and the Formula Recipe, i.e., the blend of the materials that will be injected into the mold, has been completed. Along with this is an approved data sheet that gives the boys the results of long nights figuring out which rubber compositions yield the best results. There is much more to the beginning stages than this, but this is the condensed version of a long process.

PREPPING THE MATERIAL FOR MOLDING

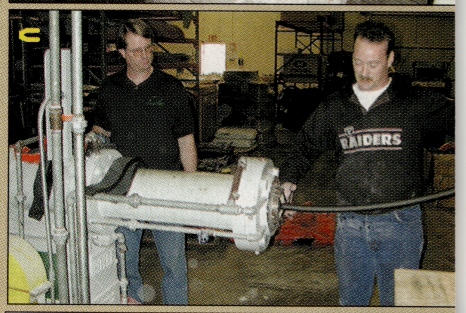
Of course, before going into production, there will be sample tires made and tested. Then, if need be, minor modifications to the mold will be made along with changes to the Formula Recipe if needed. But the making of the tire is still the same.

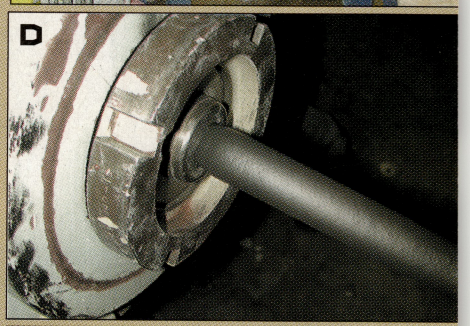
Assuming all is well, there will be a stack of raw tire compound sitting in the rubber processing area, much like the photo you see here. This material here is ready to go and has been prepped for consumption by the foundry that makes the recipes that a tire company requests.

The raw compound is then fed into a machine called an extruder, which really looks like a giant meat grinder (or Play-Doh press). As the compound is fed into the machine, it is mixed together and excited so that it becomes pliable and soft. This makes it easier for the material to be extruded into a cylindrical shape that will be taken to the next phase.

As the material comes out of the other end of the extruder, it has been excited through the mixing process and has become very warm. It is then quickly dipped into a cooling tank that also has a layer of powder called zinc stearate floating on top. As the long cylinders are pulled out of the water they are covered with the zinc stearate to keep the rubber from sticking to the other pieces. If left alone, untreated, sitting on top of one another, the strands would become one big blob again were it not for the powder.

After a quantity has been prepped, the extruded material is put into a freezer to increase the viscosity of the rubber at the time of molding. Doing this helps push air out of the mold, thus eliminating bubbles in the tires.



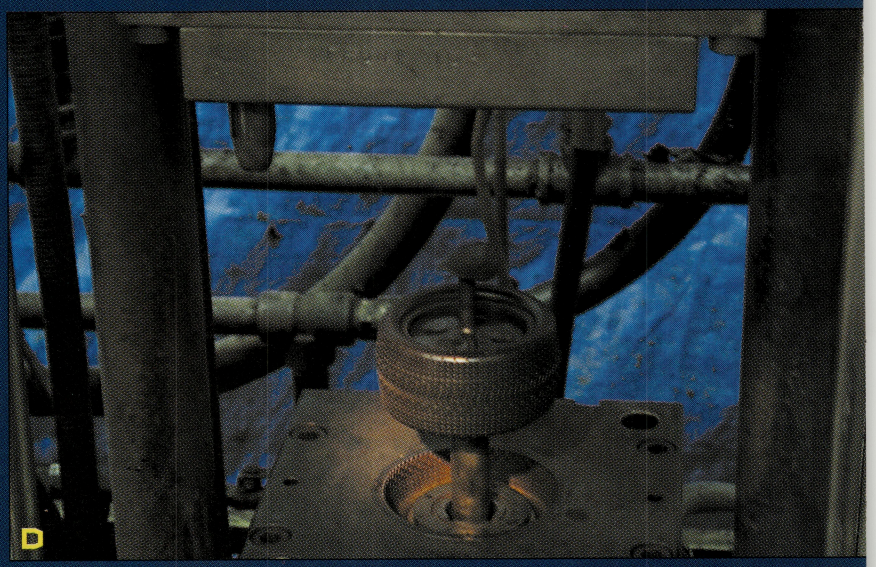






HOW TIRES ARE MADE


A


D


B



C

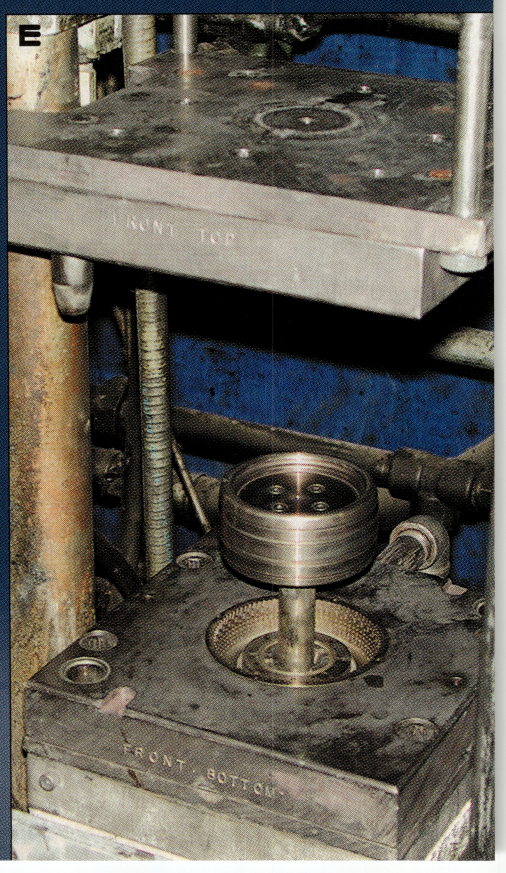
STEP 3

WE HAVE TIRES

The next stop for the raw material is the molding machines. As you can see, they are rather large. This is because it takes a lot of energy and heat to take the little rubber pellet and inject it in to the mold. The machines you see are much smaller than the machines that make bicycle, motorcycle and car tires, but the general idea is the same.

The rubber must first be weighed to determine how much will be used for a particular tire. This is because each tire uses a certain amount of rubber. In this photo, Jane is setting up the rubber to be run through the mold. Jane makes your tires, so if you win while using them, just yell out "Thanks, Jane!" On this day, I was lucky to see Jane running some prototype rubber compounds for 1/8-scale and 1/10-scale racing tires. However, the Panther guys wouldn't give up the info.

Next, Jane puts the rubber "pellet" into the machine for injection into the mold. Panther's word for this process is "transfer." It only takes a few minutes for the tire to be done. When the rubber is "transferred," the mold is heated to around 300 degrees. After a set time, the machine pops open and the mold is now exposed, allowing Jane to tenderly and lovingly remove the tire and move it to the next step. After this is done, the mold is cleaned with compressed air and prepped for the next tire. Just like Mom baking cookies for you.



E

STEP 4

FINAL PREPARATION

After the tires cool, they are moved to the de-flashing room. You see, after the tire comes out of the mold, there is a sold disc covering one side of the tire. This disc is there because it is where the gate—where the rubber is transferred into the mold cavity—resides. The injection molding is done this way to get an even flow, or transfer consistency, throughout the tire mold. The disc is cut out, then the tire is inspected and packaged for sale. In the photo you can see Cecilia cutting out the flashing and then packaging your tire oh so carefully so it will look beautiful when you pick it out at the store.

The final step before the tire reaches you is quality control. Lola is Panther's QC manager, and she makes sure Cecilia is giving great love to your future tire, so you will be happy when you use it at the races.

So there it is. That is how a tire is made. What we went through here is just skimming over the top of the entire process, but it's the nuts and bolts of the process. We hope you enjoyed our trip through Panther's factory, and the history of the company. And we hope this cleared things up for you on the whole tire process. I want to thank Panther and the guys and girls who helped me on this story.


A


B


C

SOURCES

Panther, 4253 East Michigan St. Indiaanpolis, In 46219 Phone1-866-700-TIRE

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TAMIYA ABT

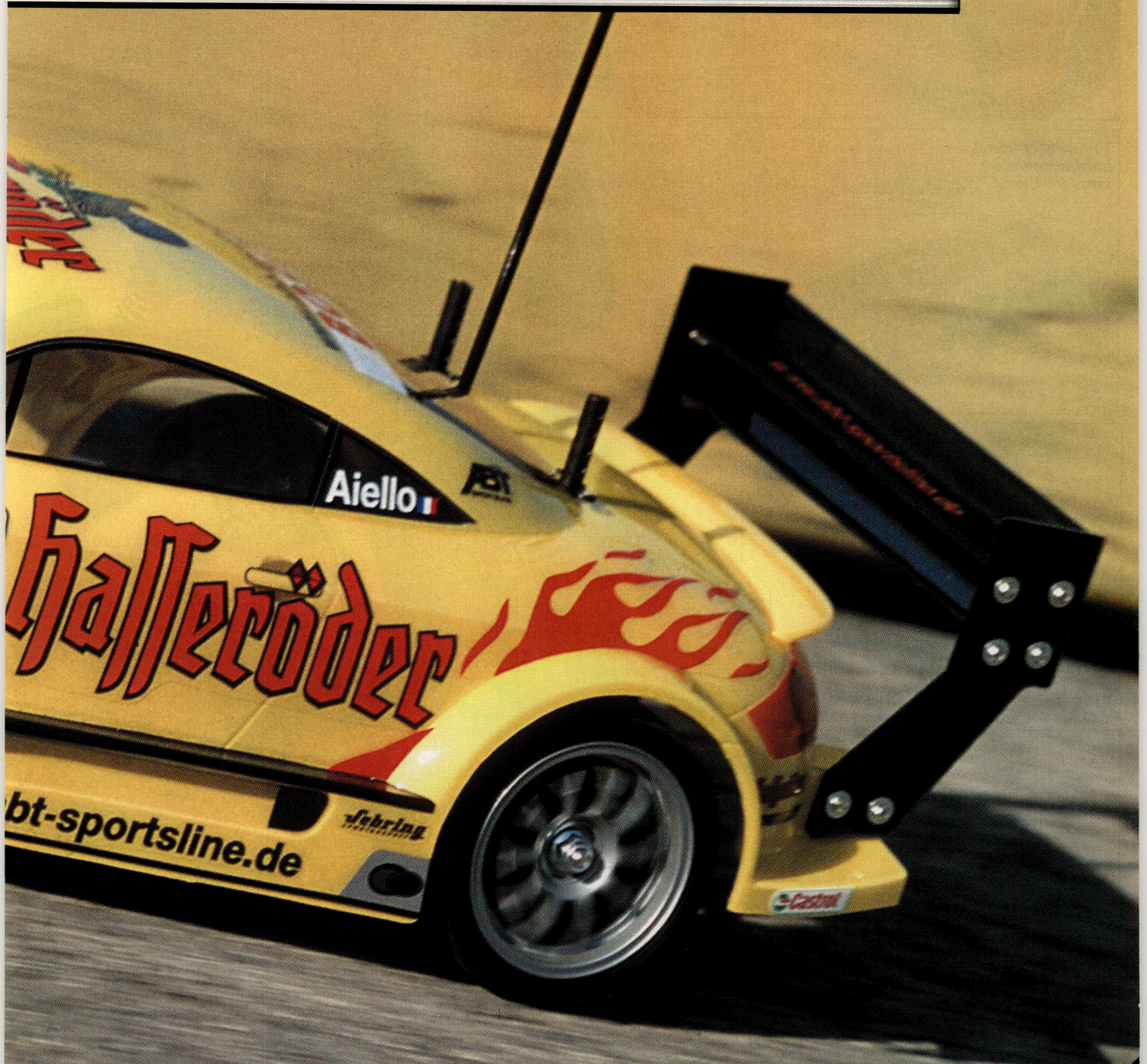


The DTM, or German Touring Car Masters, is the pinnacle of touring car racing. The original DTM, which ran from 1984 to 1996, became a breeding ground of many high tech innovations, and at its height, employed as much (if not more) technology as Formula 1. Costs, however, spiraled out of control and eventually the series stopped.

In 2000 the series was revived with new cars, teams and regulations designed to keep costs down while making the racing as close as possible. At the moment just three manufacturers compete: Mercedes-Benz with the CLK Coupe, Audi with their TT Coupe and Opel with the Astra Coupe. All of these types are powered by 4.5 liter V8 engines that are producing about 500 horsepower. Two engines are sealed for each car at the start of the season. The two identical powerplants are used alternately during the ten race weekends. Valve covers, cylinder heads as well as engine blocks and oil pans have to be attached to each

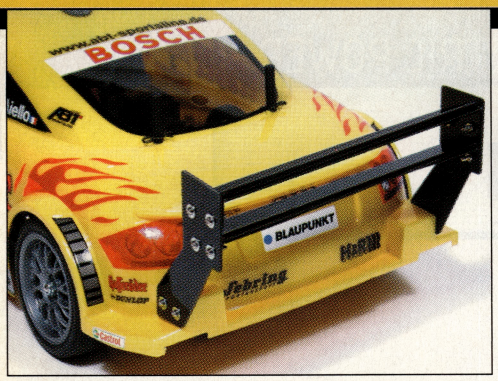
2002 DTM champion

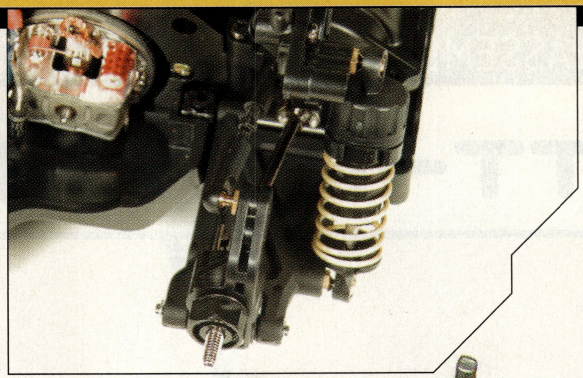
AUDI TT-R DTM



other. This is to prevent access to all moving parts within the engine block. Work can be done only on the oil and the water pump. The backlash of the valves can be checked twice during the season, but only in the presence of a DTM tech—and you thought NASCAR was strict! No driver aids such as ABS or Traction Control are allowed either.

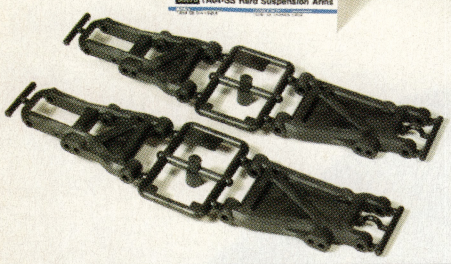
Lauren Aiello won the 2002 DTM series for Audi, and Tamiya has reproduced this winning car on the TA-04 SS chassis. This is the same chassis that is provided in the Toyota MR-S kit which we featured in the Oct '02 issue. Tamiya includes two bodies for this kit. Unlike the Toyota kit that came with an additional carbon fiber body, this time Tamiya has included a pair of clear polycarbonate bodies—one of which is a lightweight racing body. We painted the standard body since it would be heavier anyway with all the detail stickers.





Tamiya's optional hard suspension arms for the SS.







The TA04 SS is a short-wheelbase model. The reduced length is owed to the redesigned rear arms.

AUDI ABT TT



TEST EQUIPMENT

Radio: ..... JR Propo XS3
Servo: ..... JR Propo Z4750
Speed Controller: ..... Novak Dually
Battery: ..... Orion Rocket Pack 3300 NIMH
Motor: ..... Orion Core Stock

SPECS

Price:	$193.99 (varies with dealer)
Length:	17.40 inches (442mm)
Width:	7.44 inches (189mm)
Wheelbase:	9.72 inches (247mm)
Track (f/r):	6.38 inches (162mm)
Weight:	3.59 lb. (1630g)
Chassis:	ABS Tub with molded upper deck
Suspension:	front and Rear Double Wishbone
Drivetrain:	belt driven midship full-time 4wd
Steering Tie Rods:	divided in three segments
Dampers (f/r):	CVA Mini II dampers
Ball Bearings:	full ball bearings (24 in all)
Tires:	rubber slicks
Wheels:	one-piece gray mesh

REPORT CARD

Test location: KZ Speedway, Sun Valley, CA
Test conditions: Large-sized outdoor asphalt roadcourse

Speed and acceleration: B+

Like all TA04s, the SS (short wheelbase) version has a silky-smooth belt-driven 4WD system that is very effective at power transfer. Whispery-quiet, the Audi accelerated briskly and had very good stock-class top speed (thanks to the Orion Core RS competition stocker we installed in place of the kit's RS540 motor).

Braking: A-

Thanks to its full-time 4WD, the Audi stops on a dime. The open-style gear diffs tend to cause a bit of wiggle under hard braking, but only when you're really grabbing a handful. Otherwise, the car remains on course.

Cornering: B-

The TA04 SS is a very capable car, but in the case of the Audi, it is somewhat limited by kit-issued slick tires. The tires don't afford much grip, and their tallish sidewalls compound the problem. The car turns in well, but this usually turns into a drift, then transitions to oversteer at the corner's exit. Better tires and ball diffs (or a front one-way) would be great improvements. Otherwise, the chassis is very competent.

Durability: A

Tamiya knows how to build tough cars, and the Audi is no exception. Its plastic is designed to absorb impact yet still minimize flexing. This makes the Audi quite durable within reason. The drivetrain is subject to infiltration by small debris, but this is the case with all belt-driven cars (save the Losi XXX-S).

Final Score

HIGHS: After driving this car, it reminded us of why we liked the MR-S version so much. The fit and finish is typical Tamiya. The kit goes together so easily that a first time builder will have no problems. Full ball bearings and two complete bodies, one to bash, one to show.

LOWS: The kit tires still are not up to par for this car, and it's still scary having to run the antenna wire so close to the moving parts of the drivetrain.

THE VERDICT: Tamiya has produced another realistic model. But don't let the model looks deceive you. Besides being a great car to get into the hobby with, if you decide to race the GT3 class in the Tamiya TCS series, on a tight course, this might be the chassis of choice. Don't forget all the awesome hop-ups available for the TA-04 chassis series.

SOURCES

Tamiya America, Inc., 2 Orion, Aliso Viejo, CA 92656-4200 • (949) 362-2240; fax (949) 362-2250
JR Propo Distributed by Horizon Hobby, 4105 Fieldstone Rd, Champaign IL, 618221 • (217)355-9511; fax (217) 352-0355
Novak Electronics, 18910 Teller Ave. Irvine, CA 92618 • (949) 833-8873; fax (949) 833-1631
Team Orion 22601 La Palma Ave. Suite 103, Yorba Linda, CA 92887 • (714) 694-2812; fax (714) 694-2815

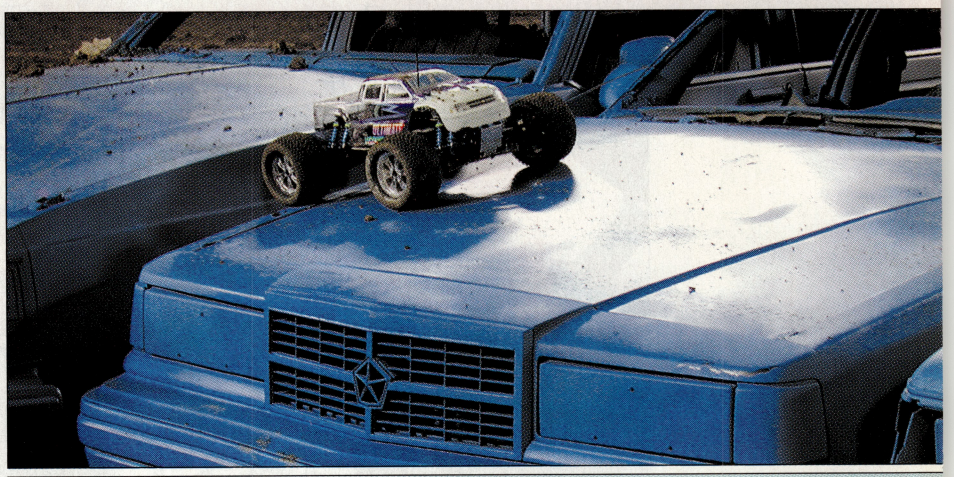


ULTIMATE

R/C demo at Anaheim Stadium

By Brian Skinner

Ultimate Hobbies is the ultimate store for R/C stuff. They are a big place, stuffed to the gills with all the things you could ever want for hobbies. They love R/C cars, and when they were approached by Clear Channel to do an R/C demo promotion at the Monster Jam in Anaheim, of course they said yes. Cliff Murakami is the owner of Ultimate Hobbies, and when I called him he was more than kind, and let me join in on the fun.







PARTY IN THE PITS

If you remember, last year I did a few of these events and they are such a blast. The general public really eats this stuff up. As with all the Monster Jams I have done, the format is the same. You have the "party in the pits" where the general public comes in before the main event starts. They can view the huge trucks that get busy during the main event. There are some other cool things to participate in while the big trucks get ready to rumble. And we R/C people have an area in there too; it's set up in a 200 by 200 foot area and we have jumps set up and we get crazy and go for huge air for the crowd. By the end of the demo, there will be over 600 people watching us hit jumps, hit cars, and smash into each other. It's very entertaining, and when I talked to the event coordinator, he told me how the R/C demo was the biggest attraction for them. Now we are talking.

Usually the louder the crowd gets (and they do get loud), the more air we get. This year there was a perfect jump brought out for the big air. I myself put my T-Maxx at least 25-plus feet into the air

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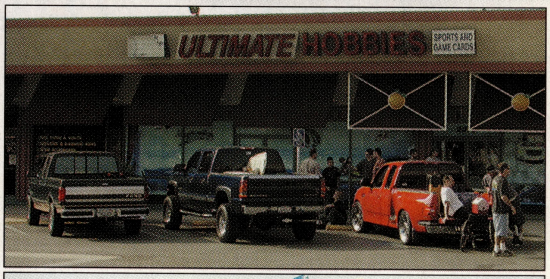
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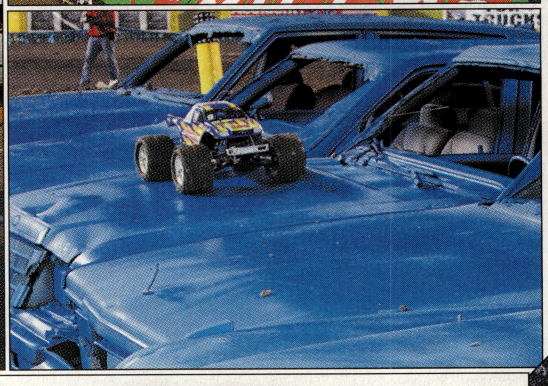
ULTIMATE MONSTER JAM

Skinny goes beyond big with our SportMaxx during the parking-lot demo.







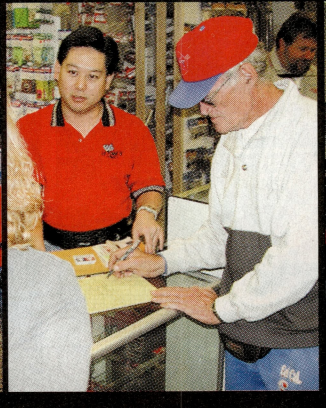




The crew in front of Grave Digger.

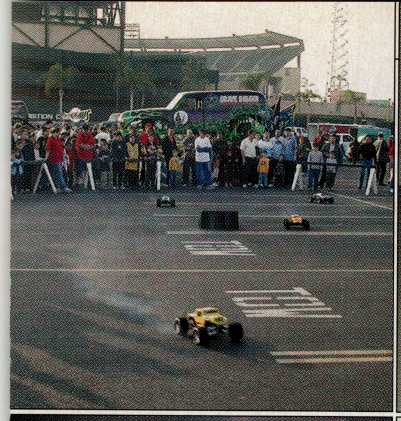


Skinny looks for his lost lunch.



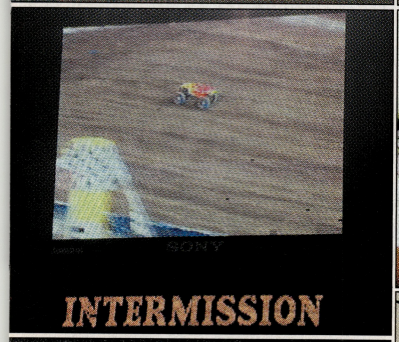


Cliff Murakami gives last minute instructions.





Team Tamiya.

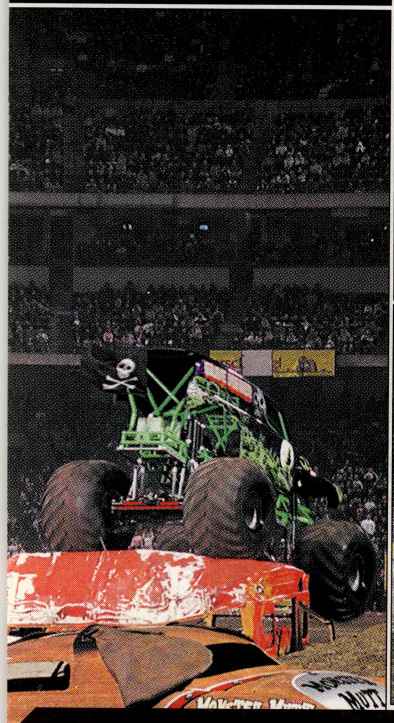


INTERMISSION



R/C girls gone wild!







THE EFFECTS OF PROMOTION

It is interesting that during last two Monster Jam events I have done, the trucks that were used by all the drivers incurred minimal damage. Last year I did four events and people were franticly trying to get the trucks going again for the next show. Admittedly, the demos are extremely harsh on the trucks, and will age a chassis faster than a whole year of racing. Does this mean R/C cars are getting more reliable? Can they handle more punishment than last year? I think there is some truth to that.

At the Ultimate Hobbies event, the crowd was more aware of the R/C hobby and definitely knew more about them. Last year, most people only knew of the Radio Shack style of R/C. A lot of people also said they had bought a hobby-grade R/C after they saw this demo at last year's Jam. To back this up, Ultimate Hobbies said they had seen a sales spike right after the Monster Jam. Apparently, quite a few people came in just because they had seen the event.

Doing promotions like this will definitely pay off for the R/C crowd. And I thank Cliff and Ultimate Hobbies one more time for stepping up to the plate and putting on a great show; not only for us drivers, but to the crowds that came to see monster trucks—they just didn't know they would be so small.

this time around, and the crowd loved it. I think it was Dave who had the backflips down this year, and was doing major flips and pulling it off beautifully. Also my pals from Tamiya came down and broke out their Terra Crushers to show the world what a TC could do. I didn't even know a TC could do those things. The boys from Tamiya were doing some insane front flips, nice back flips, and getting some big air.

WELL, IT'S THE BIG SHOW

After the demo was over, it was time to move to our staging area for the main show on the stadium floor. We set up, and did the much needed maintenance to our trucks (landing from 25 feet up onto a flat concrete floor has a tendency to cause some damage to a truck). Once we were ready to go big again, it was time for the show. And it sure can get hectic doing these shows.

When we were finally ready to go out to do the show, we found that the course for the big trucks was pretty cool for us as well. The first time out we were jumping over the six rows of cars that the big guys smash (flat!) as they make their run. I was crawling over them while the other guys jumped them and did backflips. It must have looked cool because you could hear the crowd roar as we did our thing. Unfortunately, our run was over in what seemed like an instant. It was then time to go back and regroup for round two.

As I walked back to the tunnel, the event coordinator came running up and told us we had to go back out again in two minutes. Seems they had a program problem and need more filler time. I told Cliff about this, and he just broke out in a smile. I could see the wheels turning in his head with the thought, "Oh goody, my show time." We got it all together just in time to go out again and repeat what we did the first time around.

After round two we actually got a breather before the next run, and we all got to see the big trucks go out and do their thing. To be able to watch these big machines up close is a real treat. This gave us a true idea of how big these things are and the tons of power they put out, not to mention the stunts they can perform.

Our third time came around and we all ran onto the field to do our thing. While the other R/C drivers went over to the big car pile to get some big air, several of us had spotted a really nice double jump that was as tall as me. We did a couple of jumps and were clearing it pretty easily. I went for another jump and landed on the backside, but this time, I lost sight of my Terra Crusher! I guessed that my truck had flipped over at the base of the jump, so I walked over to the top of the jump, looked down *and my truck was not there!* I was starting to freak out a little at this point. Did aliens snatch up my Terra

ULTIMATE MONSTER JAM



Crusher when I was not looking? Here I am wandering around the stadium floor in front of 45,000 people looking for my truck! None of the other drivers had seen my truck, so I looked under the stacked cars, believing that my truck could have become stuck beneath them. I'm thinking, great, my TC would be flat as a pancake after Grave Digger gets done smashing all the cars. Then, from across the field, one of the staff people came carrying my truck. How my truck had gotten way over there is beyond me, but it was darn funny in retrospect.





CONCLUSION

Ultimate Hobbies shelled out a large chunk of change to do these events (two in Anaheim). I'm glad to see that a hobby shop took the initiative to promote the hobby in this way. I only hope that manufactures and other businesses will take this type of initiative.

I'd also like to thank the other sponsors. Tamiya, HPI, Hardcore Racing and Atomik R/C all contributed to the Monster Jam promotion. And a special gratitude goes to Cliff and his group. These guys did a great job with the promotion. Give Ultimate Hobbies a call [(714) 921-0424] and thank them for helping to promote R/Cs. Heck, go there and buy some stuff, too.

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NEW TCS SITE

HobbyTown USA in Newark, CA Has Big Turnout for Their First Event

RESULTS

Formula-1

First Place	Steve Perez
Second Place	Kellen Yamamoto
Third Place	Steve Tsuruda
Best of Show	Randy Ordonez
Top Qualifier	Steve Tsuruda

Touring GT1

First Place	Michael Li
Second Place	Ling-Kang Tong
Third Place	EJ Evans
Best of Show	Victor De Leon
Top Qualifier	EJ Evans

Touring GT2

First Place	Ling-Kang Tong
Second Place	Steve Williams
Third Place	Terrance Seto
Best of Show	Mike Llaneta
Top Qualifier	Ling-Kang Tong

Touring GT3

First Place	Manuel Laguatan
Second Place	Juan Aveytia
Third Place	Julio Reyes
Top Qualifier	Romel Labrador

Mini

First Place	John Balatico
Second Place	Victor De Leon
Third Place	Aron Camp
Best of Show	Victor De Leon
Top Qualifier	John Chin

TL-01 Spec Exhibition

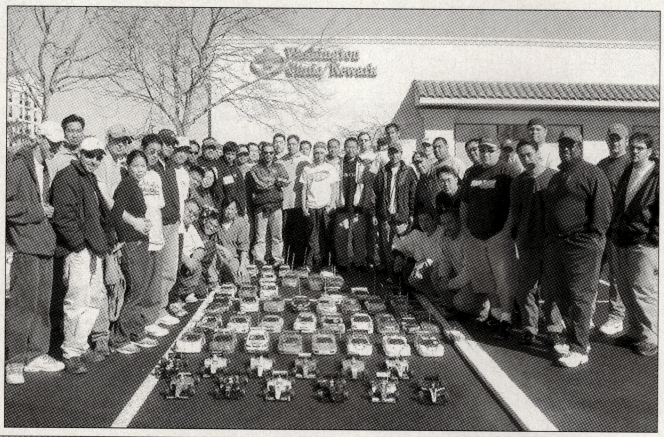
First Place	Stephen Hui
Second Place	Henry Pun
Third Place	Victor De Leon
Best of Show	David Eiduson
Top Qualifier	Stephen Hui

Tarmac Rally Exhibition

First Place	Eric Aguon
Second Place	Jaime Manzanilla
Third Place	Julio Reyes
Top Qualifier	Jaime Manzanilla

Entries

Racers	**59**
Second Entry:	**25**
Total Entries:	**84**



Above: A great turnout in their first TCS event at HobbyTown USA in Newark, CA.





Above: Event winners pose with their prizes.
Right: HobbyTown USA in Newark, CA has a well constructed race site including driver's stand.

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Hurry! Registration closes at 5 p.m. PST Wednesday the week of the race.

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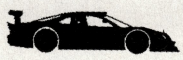
Touring GT1


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Formula-1


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TL-01 Spec Exhibition

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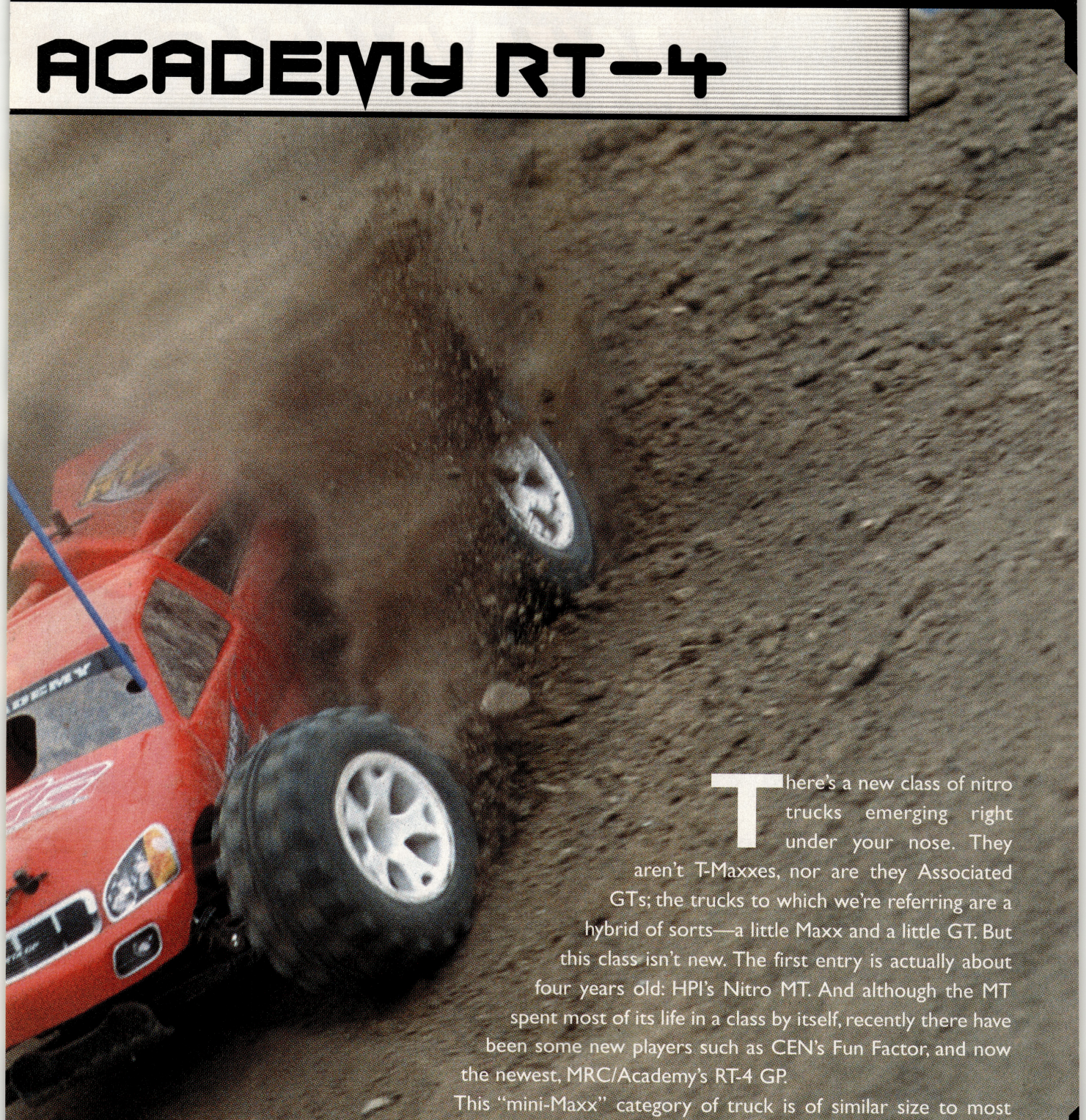
Stadium size, monster

ACADEMY RT-4



There's a new class of nitro trucks emerging right under your nose. They aren't T-Maxxes, nor are they Associated GTs; the trucks to which we're referring are a hybrid of sorts—a little Maxx and a little GT. But this class isn't new. The first entry is actually about four years old: HPI's Nitro MT. And although the MT spent most of its life in a class by itself, recently there have been some new players such as CEN's Fun Factor, and now the newest, MRC/Academy's RT-4 GP.

This "mini-Maxx" category of truck is of similar size to most 2WD stadium race trucks such as the Losi NT and aforementioned Associated GT. However, trucks such as the RT-4 differ in that they offer the benefits of full-time 4WD, which makes them easier to drive in nearly all conditions, and affords improved climbing and crawling abilities for which the Maxx-style trucks are renowned.

4WD traction

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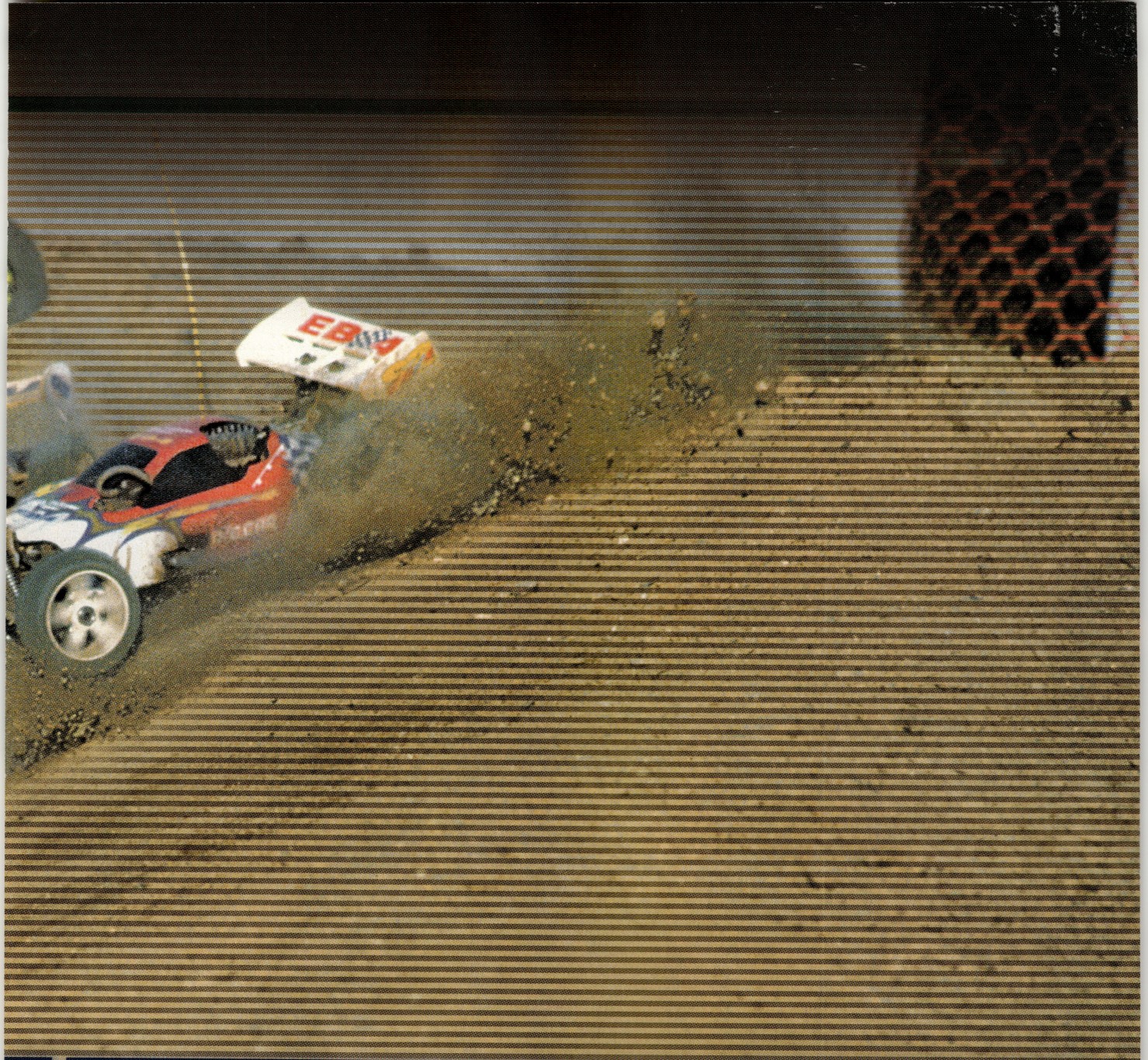





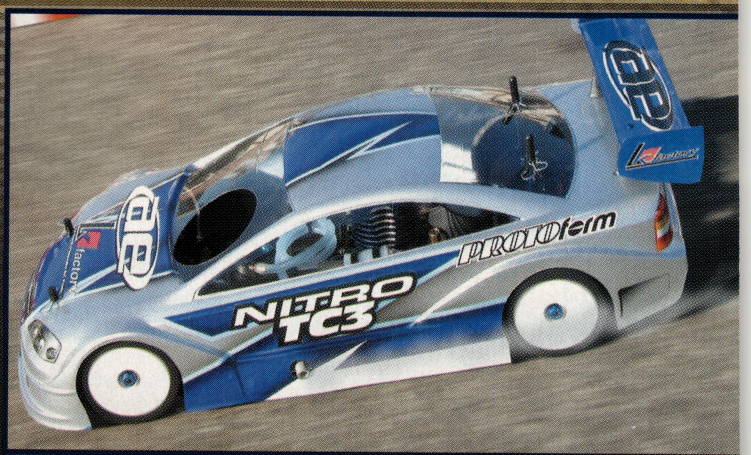

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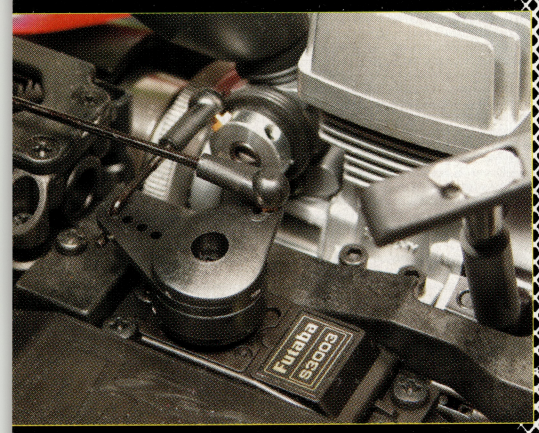
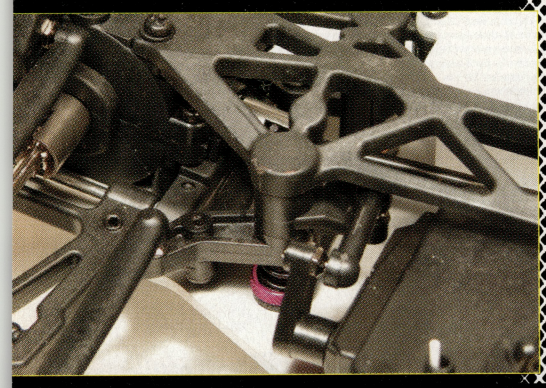
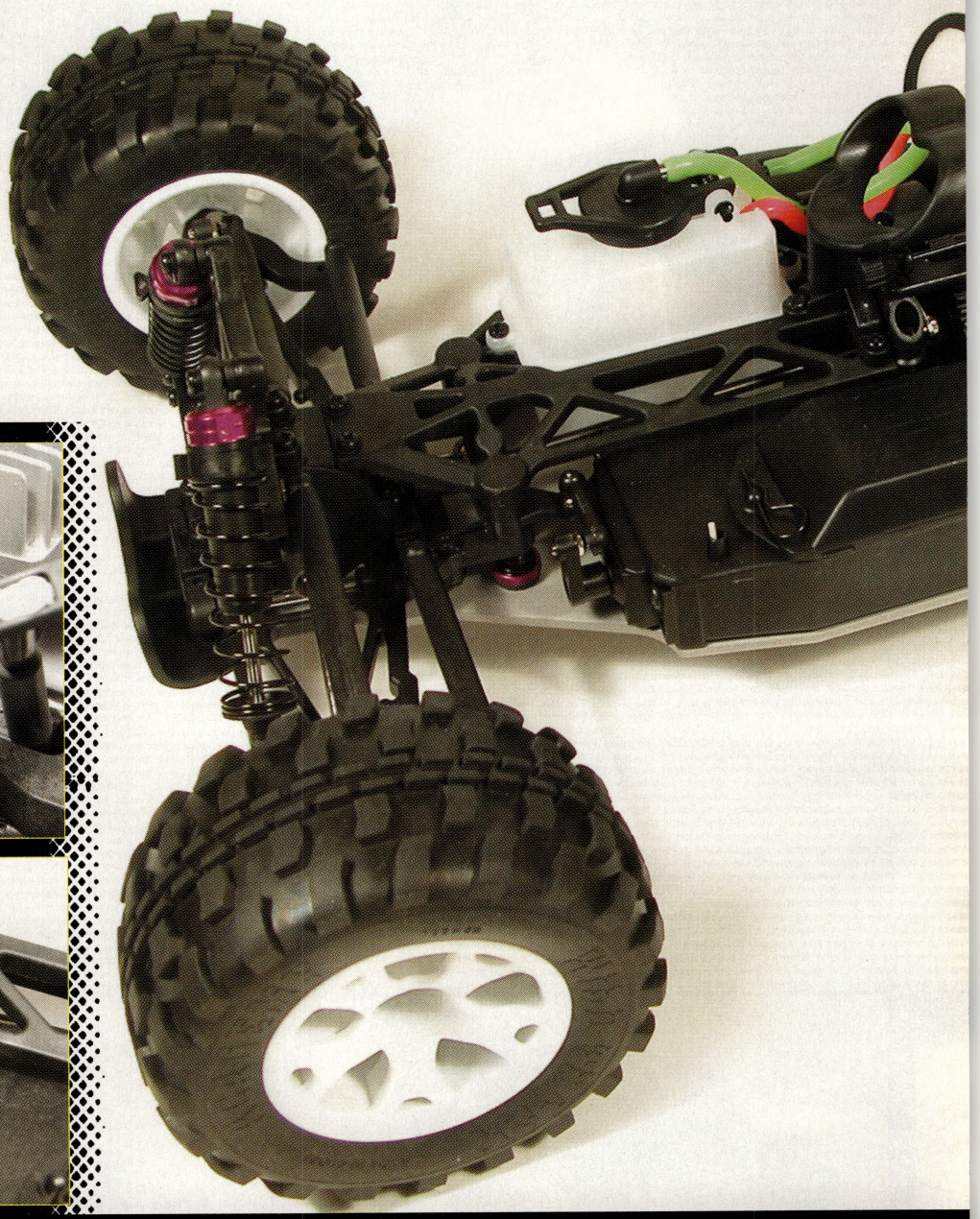






BUILDING TAKES TOO MUCH TIME

The RT-4 comes packaged inside a large, colorful box with artwork that will get you stoked to drive before you even see the real chassis inside. Once you open the box, you'll find that the RT-4 has been completely factory assembled and that its pickup truck body has been pre-painted (in solid red or blue; no points for creativity here, but at least the windows are clear). MRC includes a high-quality Futaba Magnum Sport AM radio system—a very nice addition—and a pair of good Futaba S3003 servos have already been installed within the RT-4's chassis. To get the RT-4 out the door and on the track, all you have to supply are 12 AA batteries for the radio system, fuel (no more than 20-percent nitro), tire cement and a glow-plug igniter. Oh, you can take the time to jazz up the plain red body using the supplied decals, but this is the most time-consuming part of getting the RT-4 ready to run.

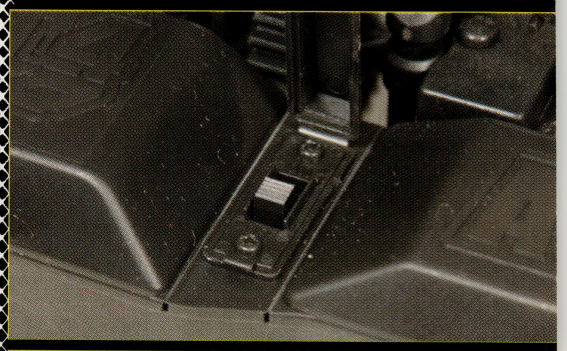
CHASSIS MUSCLE

MRC/Academy didn't skimp on the RT-4's beefy 3mm aluminum chassis, which provides plenty of strength to resist flex and keep the suspension as effective as possible. The nose of the chassis has been bent upward to provide about ten degrees of kickup, which rakes the front suspension arms rearward to allow them to handle bumps better and to resist crash damage with greater tenacity. The kickup also prevents the nose of the chassis from digging-in when landing from jumps.

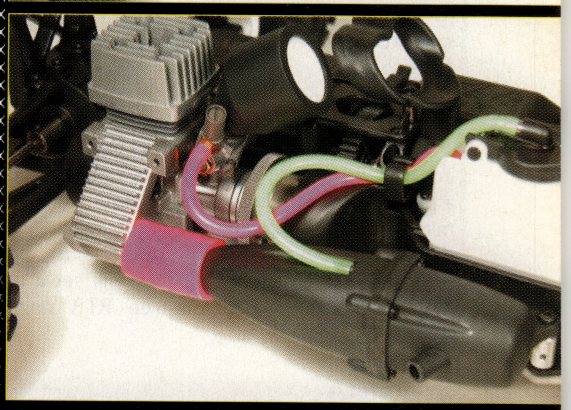
Atop the lower chassis, a

MRC/ACADEMY RT-4









series of molded braces provides additional security against unwanted flex, making the RT-4 one of the stiffest trucks in its class (it's especially rigid from front to back). The other good news is the RT-4's all-encompassing radio box. Held in with just six screws, this spacious molded box provides separate, sealed compartments for both the receiver and battery pack (each compartment can be easily accessed by the removal of a single body clip). And because the tray also holds the steering and throttle servos, you can remove all of the electronics in a matter of minutes when it's time to de-crud the chassis. We especially liked the little plastic cover that prevents the on-off switch from being accidentally moved; if you like the little details, you'll like the RT-4.

HORSEPOWER WAR

The RT-4 has the goods when it comes to power. Its included pull-start RT15-S engine rests near the top of the sport RTR food chain with its ABC piston and cylinder construction. The term "ABC" stands for a lightweight aluminum piston with a chrome-plated brass cylinder sleeve. The chrome plating creates a longer-lasting close fit between the piston and sleeve, which lets the engine make top power for longer. Of course, ABC engines require a longer break-in period, but the added longevity is worth it.

Intake is handled by a cast-aluminum slide-valve carb. You heard right: a slide carb. And to allow the RT15-S a broader powerband, the carb has both high and low-speed needles, which allow you to set the low rpm mixture as well as the engine's top speed. The spent gases exit the combustion chamber through a dual-chambered composite pipe. And to prolong your enjoyment, the RT-4 is equipped with a larger-than-usual 100cc flip-top fuel tank.

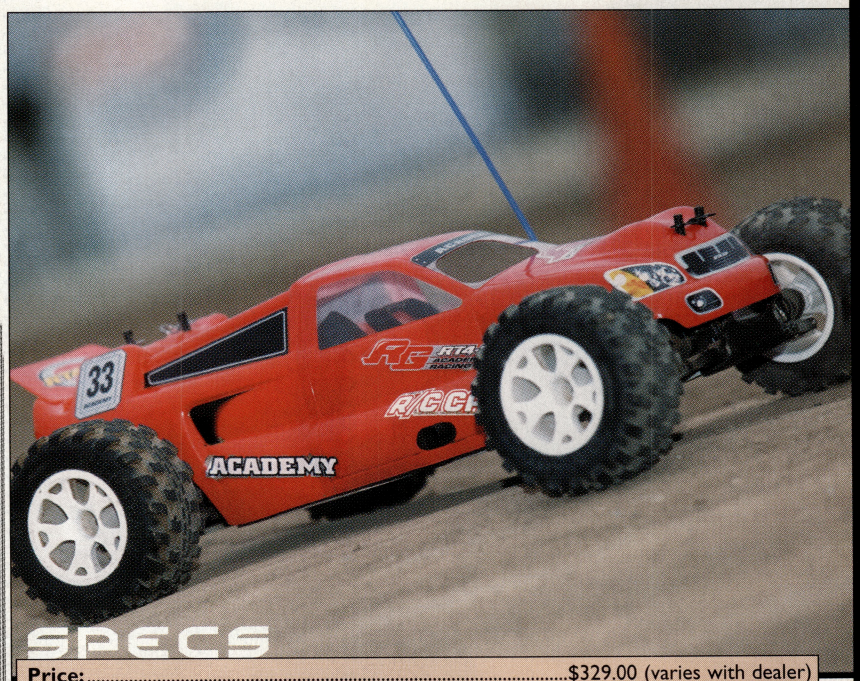
SUSPENSION & STEERING

To handle rough terrain, the RT-4 has long-travel, four-wheel independent suspension with ultra-long molded A-arms, which are secured to the chassis with sedan-style blocks. The heights of the blocks can be altered to produce different roll-centers and arm rake. Through these blocks, front caster angle can be set to 12, 14.5 or 17 degrees. Rear toe-in can also be changed by using a different block. Damping is handled with composite-bodied, long-travel oil-filled shocks, which have good looking purple-aluminum caps. The upper links are one-piece and are molded from the same nylon blend as the arms, which means that you can't set camber. However, optional turnbuckle tie-rods are available.

MRC/ACADEMY RT-4

DRIVEN TO DIRT

A shaft-driven full-time 4WD system enables the RT-4 to gain sure-footed traction on all but the most slippery of surfaces. A centrally located spur gear sends power through a pair of steel driveshafts to both ends of the chassis, where you'll find a sealed gearbox. Inside the gearbox is a differential with metal bevel gears for extra ruggedness. Stopping is handled by a plastic disc brake that's clamped by a pair of steel pads. And lastly, the entire drivetrain spins on steel ball-bearings, which create less drag for better acceleration, speed and durability.



REPORT CARD

Test Location: KZ Speedway, Sun Valley, California

Test Conditions: Hammered! Dry and rough with a loose topping of dirt

Speed and acceleration: B

For its intended customer, the RT-4 is a good truck to start out with. It handles well, gets up to speed quickly and has more than enough power to play or to race. We did a couple of high speed runs on KZ's super long straight and found the RT-4 to just be topping out by the end of the straight. Very, very fast for a truck in this price range.

Engine: A

It's not a full race engine, but we were impressed with its ease of starting - less than half a pull! It also ran consistently for our entire 40-minute test. The engine required no additional tuning whatsoever. Power is good for just about everything, including racing. This mill set a new benchmark for a problem-free RTR engine. Great fuel economy also.

Braking: A

Out of the box, the brakes were spot on; no adjustment was needed. The combination of the slotted-disc brake and the large-lugged tires made for excellent stopping. The tires locked up when you wanted them to, yet had a nice linear response when you just wanted to scrub speed.

Handling: B

Overall handling is good. At lower speeds, the RT-4 would push in the loose soil, and its 4WD really helps make the truck work pretty well in most conditions. Again, the new person coming into the sport will have no problems learning to drive off-road. Jumping was very stable and predictable.

Durability: C

The molded tie-rods are fragile; one was broken during shipping, while another broke during testing. Then we were doing mild jump shots for the camera, and one of the diffs locked up. We must also say that many of the screws were at least a 1/2-turn of a turn loose! All this is kind of a shame, because the RT-4 is really a nice truck.

SPECS

Price:	$329.00 (varies with dealer)
Length:	17.3in/440mm
Width:	12.75in/324mm
Wheelbase:	11.8in/300mm
Track (f/r):	10.2in/258mm; 10.4in/264mm
Weight (RTR):	2100g
Chassis:	aluminum plate
Suspension:	independent lower arms w/fixed upper links
Drivetrain:	shaft-driven 4WD
Diff(s):	bevel gear diffs (f/r)
Damping:	plastic oil-filled shocks
Bearings:	steel ball-bearings
Wheels:	one-piece five-spoke
Tires:	block pattern w/foam inserts

Final Score

HIGHS: Great price for what you get. The engine is fantastic; one of the best sport .15s we've tested (we especially liked the slide carb). Full-time 4WD provides road-gripping traction that novice drivers will appreciate (and experienced drivers will exploit!).

LOWS: Brittle tie-rods break all-to-easily. The shaft-driven 4WD might not be up to rigorous off-road use - we locked up a diff after a few jumps of average size. There were also many screws that were loosened after the first run; you'll need to go through the truck with a screwdriver.

THE VERDICT: Despite its shortcomings, we would still recommend the RT-4. We think it's a heck of a bargain. What we would recommend is to go through all the screws and check them, and then invest in some aftermarket tie-rods. This would solve most of the durability problems.

SOURCES

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THE RADIO CONTROL CAR MAGAZINE

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RC HI TECH RACEWAY	3303 MERIDIAN ST	Huntsville	35811	256-539-1347

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ALASKA HOBBIES & COLLECTIBLES	303 BAWDEN St. # B	Ketchikan	99901	907-225-4022

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K & S HOBBY SHOP	809 N. 62-65 HWY	Harrison	72601	870-365-0597
MARKS HOBBY SHOP	3408 S UNIVERSITY AVE.	Little Rock	72204	501-562-8230
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HOBBYTOWN USA	5030 E. RAY RD #11	Phoenix	85044	480-598-5282
HOBBYTOWN USA	102 E. 22ND ST	Tucson	85713	520-882-8888
HOBBYTOWN USA	4500 N. ORACLE RD, #202	Tucson	85705	520-888-9777
SCOTTSDALE R/C RACEWAY	3023 N. SCOTTSDALE RD	Scottsdale	85051	480-945-2186

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DOLLHOUSE TRAINS & MORE	300 ENTRADA DR	Novato	94949	414-883-0388
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HOBBY SHACK	18480 BANDILIER CIR	Fountain Valley	92728	714-964-0827
HOBBY WORLD	6148 BOLLINGER RD	San Jose	95129	408-873-2109
HOBBYTOWN	727 CENTER DR #106	San Marcos	92069	760-739-0672
HOBBYTOWN USA	2500 E.IMPERIAL HWY #130	Brea	92821	714-990-9652
HOBBYTOWN USA	4420-A TREAT BLVD	Concord	94521	925-685-3802
HOBBYTOWN USA	3069 WEST BULLARD AVE	Fresno	93711	559-435-3342
HOBBY TOWN USA	6347 JARVIS AVE.	Newark	94560	540-796-2744
HOBBYTOWN USA	27031 McBEAN PKWY.	Valencia	91355	661-253-4999
HOT ROD HOBBIES	25845 SAN FERNANDO RD	Santa Clarita	91350	805-255-2404
JAKES PERFORMANCE HOBBY	6650 COMMERCE BLVD #21	Cotati	94928	707-586-3375
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HOBBYTOWN USA	6815 WEST 88TH AVE	Westminster	80021	303-431-0482
HOBBYTOWN USA	800 SOUTH HOVER RD	Longmont	80501	970-226-3900
MHOR R/C RACEWAY	15540 E. BATAVIA DR.	Aurora	80011	303-343-0151

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CENTRAL FLORIDA HOBBIES	5600 W. COLONIAL DR #310	Orlando	32808	407-295-9256
COLONIAL PHOTO & HOBBY	634 N. MILLS AVE	Orlando	32803	407-841-1485
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GO RACING INT'L HOBBY SHOP	3784 W. OAKLAND PARK BLVD.	Lauderdale Lakes	33311	954-731-7223
HOBBIE WAREHOUSE INC.	1237 AIRPORT RD S.	Naples	34104	941-262-2701
HOBBY CENTRAL	UNIVERSITY MALL	Pensacola	32504	850-471-9800
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HOBBYTOWN USA	1000 LAKE ST	Oak Park	60301	708-445-8056
HOBBYTOWN USA	1772 S. RANDALL STSTE 200	Geneva	60134	630-208-9062
HOBBYTOWN USA	4338 E. NEW YORK	Naperville	60540	630-778-8707
HOBBYTOWN USA	MACHESNEY PARK MALL	Machesney Park	61115	815-282-0727
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LEISURE HOURS HOBBIES	2712 N. PLAINFIELD RD	Joliet	60436	815-439-1477
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PHILS HOBBY SHOP	3112 N. CLINTON	Ft.Wayne	46805	219-471-1340
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R & D HOBBIES	4217 FRANKLIN ST	Michigan City	46360	219-879-7563
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HOBBYTOWN USA	8229 EAST KELLOGG	Wichita	67207	316-683-7222
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R/C SUPERDOME & T.Q. SHOP	14 E.AVE A	Hutchinson	67501	316-665-6633

KENTUCKY

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SCALE REPRODUCTION	3073 BRECKINRIDGE LANE	Louisville	40220	502-459-5849
STRICK 9 & HOBBIES	615 S. 12th STREET #H	Murray	42071	270-753-5444

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MARYLAND

DOUG'S HOBBY	24404 THREE NOTCH RD.	Hollywood	20636	301-373-6674
GPA HOBBIES	2431 CROFTON LANE STE 6	Crofton	21114	301-858-0004
HOBBY CITY	15751 COLUMBIA PIKE	Burtonsville	20866	301-421-5977
HOBBYTOWN USA	1305 W. 7TH AVE #28	Frederick	21702	301-694-7395
HOBBYTOWN USA	CHESAPEAKE SQR SHP CTR	Glen Burnie	21061	410-590-4950
HOBBY WORKS	354 DOMER AVE.	Laurel	20707	301-725-0383
HOBBY WORKS	12274 G ROCKVILLE PIKE	Rockville	20852	301-468-6330
HUNT VALLEY HOBBIES	10824 YORK RD	Hunt Valley	21030	410-666-1098
STONELEIGH HOBBY INC.	6717 YORK RD	Baltimore	21212	410-377-4447
S&J HOBBIES	10476 CAMPUS WAYS	Largo	20774	301-324-6680
THE TRACK	16806 OAKMONT AVE	Gaithersburg	20877	301-417-9630

MASSACHUSETTS

BARN SPEED HOBBIES	109 CENTER ST	Lee	01238	413-243-2651
BIG BOYS TOYS	33 FATHER DE VALLES BLVD	Fall River	02723	508-677-9400
DAVE'S HOBBIES	281 CABOT ST	Beverly	01915	978-921-1559
FLYING YANKEE HOBBY SHOP	1416 CENTER ST.	Roslindale	02131	617-323-9702
HENRY'S HOBBY HOUSE INC.	67 W. BOYLSTON ST	West Boylston	01583	508-835-6165
HOBBY WORLD	171 GROVE ST	Adams	01220	413-743-7223
HOG HEAVEN HOBBIES	3 ARNOLD RD"P.O. BOX 416	Fiskdale	01518	508-347-9350
LAND SEA & AIR HOBBIES	1282 PARKER ST.	Springfield	01129	413-782-2115
MASTER HOBBIES	565 MAIN ST.	Cherry Valley	01611	508-892-1440

MICHIGAN

ACTION HOBBIES	211 EAST MAIN	Niles	49120	616-687-8550
ANYTHING GOES	5108 ROCHESTER RD	Troy	48085	248-740-2277
CAPITOL CITIES HOBBIES INC.	15357 HALL RD	Macomb	48044	810-532-0050
DIRT BURNER RACING	3295 HAGGERTY RD	Commerce	48390	248-926-1140
EAST BAY HOBBIES	364 W. HOUGHTON LAKE DR.	Prudenville	48651	989-366-5306
HOBBIES & TOYS	106 WEST MAIN ST	Gaylord	49735	989-732-3963
HOBBYTOWN USA	2252 S. MAIN ST	Ann Arbor	48103	734-996-2444
HOBBYTOWN USA	12821 S. SAGINAW	Grand Blanc	48439	810-695-9088
HOUSE OF HOBBIES	2763 N. 120TH AVE	Holland	49424	616-355-2064
HYPER R/C	12005 N. SAGINAW ST.	Mt. Morris	48458	810-686-3991
JOE'S HOBBY CENTER	35151 GRAND RIVER RD	Farmington	48335	248-477-6266
KECK HARDWARE & HOBBY	2132 WEST RD	Trenton	48183	734-676-2282
LARRY'S PERFORMANCE R/C'S	43665 UTICA RD	Sterling Heights	48314	810-997-4840
NANKIN HDWRE & HOBBY	35101 FORD RD	Westland	48185	734-722-5700
P & D HOBBY SHOP	31280 GROESBECK HWY	Fraser	48026	810-296-6116
PASTIME HOBBIES	2700 PINE GROVE RD #16	Port Huron	48060	810-982-2874
PROP SHOP HOBBIES, INC.	23326 VAN DYKE	Warren	48089	810-757-7160
R & L HOBBIES & RACING	9782 PORTAGE RD	Portage	49002	616-323-3686
R/C NITRO ZONE	213 WEST MAIN STSTE #9	Brighton	48116	810-225-9586
RIDER'S HOBBY	32115 JOHN "R" RD	Madison Heights	48071	248-589-8111
RIDER'S HOBBY	42011 FORD RD	Canton	48187	734-981-8700
RIDER'S HOBBY SHOP	22789 NORTHLINE RD	Taylor	48180	734-287-7405
RIDER'S HOBBIES	2061 S. LINDEN RD	Flint	48532	810-720-2500
RIDER'S HOBBY	4417 S. WESTNEDGE AVE	Kalamazoo	49008	616-349-2666
RIDER'S HOBBY SHOP	2055 28TH ST S.E."UNIT 12	Grand Rapids	49508	616-247-9933
RIDER'S HOBBY SHOP	4035 CARPENTER RD	Ypsilanti	48197	313-971-6116
RIDER'S HOBBY SHOP	1609 E. MICHIGAN AVE	Lansing	48912	517-485-0700
RIDER'S HOBBY SHOP	30991 FIVE MILE RD	Livonia	48154	734-425-9720
ROBBY'S HOBBY	1106 COLUMBUS AVE	Bay City	48708	517-893-2712
THE HOBBY HUB	526 FRANDOR AVE	Lansing	48912	517-351-5843
TUCKEY MOTORSPORTS	706 E. CHICAGO RD.	Coldwater	49036	517-278-9689
YESTERDAY'S COLLECTION	5899 JACKSON RD	Ann Arbor	48103	734-668-6304

MINNESOTA

CHRISTOPHER'S HOBBIES	116 WEST BRDWAY ST	Owatonna	55060	507-451-2825
HOBBY TOWN USA	7916 BROOKLYN BLVD.	Minneapolis	55445	612-424-6052
HOBBY WAREHOUSE	7120 CHICAGO AVE S.	Richfield	55423	612-861-5587
HUB HOBBY CENTER	82 MINNESOTA AVE	Saint Paul	55117	612-490-1675
NORTHWOODS HOBBY	614 FRONT ST	Brainerd	56401	218-829-9257
R.C. CAR KINGS	1913 W. BURNSVILLE PKWY	Burnsville	55337	952-895-9643
TWIN CITIES HOBBY & RWY	7577 BROOKLYN BLVD.	Brooklyn Park	55443	763-569-5069

MISSOURI

C&C HOBBIES	5740 HWY 54 SUITE 1003	Osage Beach	65065	573-348-2298
CHECKERED FLAG HOBBIES	4491 LeMAY FERRY ROAD	St. Louis	63129	314-892-5353
HOBBY HAVEN	14100 A EAST 42ND ST	Independence	64055	816-478-3233
HOBBY TOWN USA	3906 PEACHTREE DR.	Columbia	65203	573-817-0698
HOBBYTOWN USA	524 N.W. ENGLEWOOD RD	Kansas City	64118	816-459-9590
HOBBYTOWN USA	533 S.E. MELODY LANE	Lees Summit	64063	816-525-6885
JOPLIN R/C HOBBIES	1900 S. RANGELINESTE 9	Joplin	64804	417-623-0011
MARK TWAIN HOBBY CTR	2793 WEST CLAY ST	Saint Charles	63301	636-946-2816
MOVIE MANIA R/C HOBBIES	204 SOUTHWEST DR.	Kennett	63857	573-888-9223
REAL R/C	12019 EAST 47TH	Raytown	64133	816-358-0238
SCHAEFER'S R/C SHOP	4206 VIRGINIA AVE	Saint Louis	63111	314-352-3750
SLEETH HOBBIES	1912 E. SUNSHINE ST.	Springfield	65804	417-883-1118

MISSISSIPPI

HOBBYTOWN USA	4378 MALL DR	Tupelo	38804	662-690-6030
HOBBYTOWN USA	6380-D RIDGEWOOD COURT	Jackson	39211	601-957-9900

MONTANA

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

NORTH CAROLINA

ACTION HOBBIES	8500 PINEVILLE MATHEWS RD	Charlotte	28226	704-540-0311
HOBBY TOWN USA	8332 PINEVILLE MATHEWS RD	Charlotte	28226	704-544-2303
HOBBYTOWN USA	SHERWOOD PLAZA SHP CTR.	Winston Salem	27106	336-774-2324
K/C HOBBY INC	10948-G NORTH MAIN ST.	Archdale	27263	336-434-3482
KING R/C	614 S. MAIN ST	King	27021	336-983-3969
Z N Z HOBBIES	972 TALBERT BLVD	Lexington	27292	336-249-6127

NORTH DAKOTA

HOBBYTOWN USA	2500 S. COLUMBIA RDSTE D	Grand Forks	58201	701-746-0708

NEBRASKA

FUN TIME HOBBY	2020 CENTRAL AVE	Kearney	68847	308-234-1806
HOBBYTOWN UNLIMITED	EAST PARK PLAZA	Lincoln	68505	402-434-5056
HOBBYTOWN USA	13110 BIRCH DR	Omaha	68164	402-498-8888
HOBBYTOWN USA	3537 WEST 13TH ST	Grand Island	68803	308-382-3451

NEW HAMPSHIRE

HOBBY ETC. INC.	90 WEST PEARL ST	Nashua	03060	603-883-4919
LEISURE TIME HOBBIES	56-B MARLBORO ST.	Keene	03431	603-357-9975

NEW JERSEY

ALLIED HOBBIES	CHERRY HILL MALL	Cherry Hill	08002	856-665-7888
ALLIED HOBBIES	207 ECHELON MALL	Voorhees	08043	856-772-1268
ALLIED HOBBIES	264 BURLINGTON CENTER	Burlington	08016	609-386-5044
CRUIZIN WITH RC'S INC.	53 EAST MAIN ST	Ramsey	07446	201-825-4884
DNL HOBBIES	1604 A UNION VALLEY RD.	West Milford	07480	973-728-8003
FISHKIN BROS.	285 MADISON AVE	Perth Amboy	08861	732-826-0048
G&S HOBBIES	44 ANCHOR BLVD.	Old Bridge	08857	732-727-7871
HOBBIES ETC.	240 S. BRD ST	Woodbury	08096	856-384-7740
HOBBY WORKSHOPS	510 WEST KINGS HWY	Mount Ephraim	08059	856-931-2400
JACKSON HOBBY SHOP	2275 W. COUNTY LINE RD.	Jackson	08527	732-364-3334
JERRY'S HOBBY CENTER	336 RT 22 W	Greenbrook	08812	908-752-6030
THE HOBBY SHOP	ABERDEEN TOWNSQUARE	Aberdeen	07747	732-583-4189
WACKY RC'S HOBBY SHOP	409 EAST 2ND ST	Roselle	07203	908-241-6700
WIDE WORLD OF HOBBIES	974 TEANECK RD.	Teaneck	07766	201-862-9393
ZEPPELIN HOBBIES & RACEWAY	92 ROUTE 23 RIVERDALE SQUARE MALL	Riverdale	07457	973-831-7717

NEW MEXICO

ALBUQUERQUE HOBBY CO	1431 EUBANK BLVD N.E.	Albuquerque	87112	505-275-1882
BIG BOYS TOYS	1735 JUAN TABO N.E.	Albuquerque	87112	505-298-1023
CHARLIES HOBBY SHOP	1230 N. SOLANO DR	Las Cruces	88001	505-541-1097
HOBBIE'S & STUFF	9577-L OSUNA RD N.E.	Albuquerque	87111	505-293-1217
HOBBYTOWN USA	636 W. BRDWAY	Farmington	87401	505-325-5156

NEVADA

DANSEY'S INDOOR R/C HOBBIES	741 N. NELLIS BLVD.	Las Vegas	89110	702-453-7223
HOBBYTOWN USA	5085 W. SAHARA AVE #134	Las Vegas	89146	702-889-9554
HOBBYTOWN USA	3789 S. CARSON ST	Washoe Valley	89701	775-883-5475

NEW YORK

ACTION HOBBIES	1070 MIDDLE COUNTRY RD	Selden	11784	516-736-1574
BROOKLYN HOBBIES	3842 FLATLANDS AVE	Brooklyn	11234	718-951-2500
BRUCKNER HOBBIES	3587 E. TREMONT AVE	Bronx	10465	800-288-8185
BROWNIES PRO & SPORT HOBBIES	124 BENNETT ST.	Staten Island	10302	718-727-2194
COMPETITION HOBBY SUP	1006 LOUDON RD	Cohoes	12047	518-786-3622
CRAFT WORLD & ACTION HOBBIES	509 W 3rd ST.	Jamestown	14701	716-484-1780
EAST COAST HOBBIES	2515 65TH ST	Brooklyn	11204	718-627-3814
ELMSFORD HOBBIES	129 E MAIN ST.	Elmsford	10523	914-592-0600
FANTASIA HOBBIES	17169 46TH AVE	Flushing	11358	718-460-5671
FORDHAM HOBBIES	2446 CRESTON AVE.	Bronx	10468	718-562-1906
GJs HOBBIES	38-40 WASHINGTON AVE.	Endicott	13760	607-754-3003
HOBBIES UNLIMITED	158-38 CROSS BAY BLVD	Queens	11414	718-845-4545
HOBBY HOUSE	2366 LYELL AVE	Rochester	14606	716-429-6280
HOBBY WORLD	311 BROADWAY	Monticello	12701	914-794-8770
HOMETOWN HOBBIES	14 FEDERAL PLAZA	Monroe	10950	914-782-2401
LARRY'S HOBBY SUPPLIES	3006 JERICHO TPKE	East Northport	11731	631-499-7166
NAGENGAST HDWR & HOBBY	68-02 FRESH POND RD	Flushing	11385	718-821-0958
PERFORMANCE HOBBIES	15 WEST MAIN ST	Webster	14580	716-872-4990
RACING CITY HOBBIES	MIDTOWN SHOPPING CTR	South Glens Falls	12803	518-792-7272
RAMPAGE R/C AND HOBBIES	782 RT 9G ROCKLEDGE PLAZA	Hyde Park	12538	914-229-1379
RMC HOBBIES	2485 ROCHESTER RD. BLDG. 1	Canandaigua	14424	585-394-1210
THE HOBBY STORE	119 MT. VERNON AVE	Mt. Vernon	10550	914-668-3022
TONY'S HOBBY SHOP	229 HARRISON AVE	Harrison	10528	914-835-4765
TRANS BORDER CUSTOMS	C/O MODELER DISTRIBUTION	Champlain	12919	514-687-6214
UNIVERSAL ENTERTAINMENT	1611 PINE AVE	Niagara Falls	14301	716-282-4840
WALT'S HOBBY	2 DWIGHT PARK DR	Syracuse	13209	315-453-2291
WILLIS HOBBIES	300 WILLIS AVE	Mineola	11501	516-746-3944

OHIO

CAPSTONE HOBBIES	562 W. SCHROCK RD	Westerville	43081	614-899-6313
DIVE IN SCUBA CENTER	3182 WARREN SHARON RD	Vienna	44473	330-856-6275
GRANDVIEW HOBBIES	1460 W. FIFTH AVE	Columbus	43212	614-486-3532
HOBBY STOP WEST	4550 MONROE ST	Toledo	43613	419-471-1108
HOBBYTOWN USA	8000 PLAZA BLVDSTE 9	Mentor	44060	440-946-5588
HOBBYTOWN USA	14785 PEARL RD.	Strongsville	44136	440-846-1770
PHILS HOBBY SHOP	422 CLINTON STREET	Defiance	43512	419-782-8020
RIDER'S HOBBY SHOP	5333 MONROE ST	Toledo	43623	419-843-2931
PIT ROW	7796 MONTGOMERY RD	Cincinnati	45236	513-891-7487
THE HOBBY SHOP	153 N SPRINGBORO PIKE	Miamisburg	45449	937-436-6161
VICTORY CIRCLE R/C PRO.	4340 HEGNER AVE.	Cincinnati	45236	513-794-1963
WINGS WHEELS & WAVES	14 LINCOLN WAY E.	Massillon	44646	330-830-7755

OKLAHOMA

ACTION HOBBIES	4955 S. MEMORIAL DR	Tulsa	74145	918-663-8998
BAJA R/C	1111 1st N.W.	Ardmore	73401	580-223-0400
WINGS N' THINGS INC.	5241 S. PEORIA AVE	Tulsa	74105	918-745-0007

OREGON

AERO SPORT & HOBBY	17941 N.E. GLISAN	Portland	97230	503-669-7665
EUGENE TOY & HOBBY	32 E. 11TH AVE	Eugene	97401	541-344-2117
HOBBY CENTER	1125 DALE ST S.E.	Albany	97321	541-928-5255
LEISURE HOBBIES	982 LANCASTER DR N.E.	Salem	97301	503-588-9884
R C ADDICTION	2810 N. PACIFIC HWY	Medford	97501	541-779-8298
R/C PLUS HOBBIES	1685 25TH ST	Salem	97302	503-364-9188
TAMMIES HOBBIES	12024 S.W. CANYON RD	Beaverton	97005	503-644-4535
ULTIMATE HOBBIES	1210 JANTZEN BEACH CTR	Portland	97217	503-247-8194
WAYNES WORLD OF HOBBY	10910 N.E. HALSEY ST	Portland	97220	503-261-8598

PENNSYLVANIA

ADAM & EVES PET & HOBBY	313 LATROBE 30 PLAZA	Latrobe	15650	412-539-7130
ALLIED HOBBIES	204 OXFORD VALLEY MALL	Langhorne	19047	215-757-8086
CRANBERRY HOBBY DEPOT	20327 PERRY HWY.GARDENS PLAZA	Cranberry Twnshp	16066	724-776-3640
GLENNS ALLIED HOBBIES	6607 RISING SUN AVE	Philadelphia	19111	215-745-5777
HOBBY EXPRESS INC.	309 MARS-VALENCIA RD	Mars	16046	724-625-1550
J.C. R/C HOBBIES	13 YORK RD	Warminster	18974	215-672-5200
J&K HOBBIES	1240 ALLEGHENY ST.	Jersey Shore	17740	570-398-8171
LITTLE PLUM R/C HOBBIES	333 LITTLE PLUM RUN RD.	Lock Haven	17745	570-769-1984
LOCO LOUIES MODEL TRAINS	2365 MAC DADE BLVD.	Holmes	19043	610-583-7711
LORESKI'S INC.	MIRACLE MILE SHOPPING CTR	Monroeville	15146	412-372-5155
MARSHALL'S HILLTOP HOBBIES	RR 4 BOX 4265 PA ROUTE 652	Honesdale	18431	570-729-7458
MODELLBAHN HOBBIES	1145 PHILADELPHIA AVE.	Gilbertsville	19525	610-367-5925
R C OUTFITTERS	519 BROADWAY	Hanover	17331	717-633-9490

RHODE ISLAND

NSANE TOYS	267 POCASSET AVE	Providence	02909	401-943-2629
NANCY'S CO-OP	350 MAIN ST	Warren	02885	401-247-0288

SOUTH CAROLINA

BANDITS HOBBIES & MODELS	2037 S MAIN ST.	Darlington	29532	843-393-3333
GOLDEN STRIP HOBBIES	315 FAIRVIEW RDSTE G	Simpsonville	29681	864-963-7149
HOBBY CONNECTION	4148 CALHOUN MEMORIAL HWY.	Easley	29640	864-295-1209
HOBBY STOP	939 S. ANDERSON RD	Rock Hill	29730	803-327-4121
HOBBYTOWN USA	BELVEDERE PLAZA	Anderson	29621	864-627-9633
HOBBY TOWN USA	1812 SAM RITTENBERG BLVD.	Charleston	29407	843-769-5808
HOBBYTOWN USA	VERDAE MARKET FAIR/ 340	Greenville	29607	864-627-9633

SOUTH DAKOTA

HOBBYTOWN USA	DAKOTA PLAZA	Sioux Falls	57105	605-339-6613

TENNESSEE

AAA MODEL SUPPLY	5237 HWY 126	Blountville	37617	423-323-1513
ARF HOBBIES	305 SPARTA ST.	McMinnville	37110	931-474-7223
COOKEVILLE RACEWAY & HOBBIES	148 S. WILLOW AVE.	Cookeville	38501	931-520-6017
GADGET HOBBIES	204 TRENTON ST.	Harriman	37748	865-882-7528
HOBBYLAND TENN INC.	5985 STAGE RDSTE 1	Bartlett	38134	901-937-0636
HOBBYTOWN USA	2000 MALLORY LANESTE 610	Franklin	37067	615-771-7441
HOBBYTOWN USA	2884 WOLFCREEK PARKWAY	Memphis	38133	901-213-2682
HOBBYTOWN USA	634 NORTHGATE MALL	Red Bank	37415	423-877-9885
HOBBYTOWN USA	COMMONS II	Knoxville	37923	865-690-6423
HOBBYTOWN USA	KINSINGTON PLACE SHOP CTR	Murfreesboro	37130	615-890-6777

SHOP LOCATOR

TENNESSEE MODEL HOBBIES	8903 OAK RIDGE HWY	Knoxville	37931	423-927-2900
THE GREAT ESCAPE	1426 LAURENS RD	Greenville	29607	864-235-8320
TEXAS				
ABC RADIO CONTROL HOBBIES LAREDO	1600 WATER ST. # D-18	Laredo	78040	956-722-2845
ACTION HOBBIES	2005 9TH ST	Wichita Falls	76301	940-766-2667
AERO HOBBIES	2305 S HWY. 121 # 110	Lewisville	75067	972-315-1854
AL'S HOBBIES	7121 HWY. 90 W. # 150	San Antonio	78227	210-645-1050
BIG MIKE'S HOBBIES & TOYS	2157 GILMER RD	Longview	75604	903-297-7814
DRYCREEK HOBBIES	2518 I 30 WEST	Greenville	75402	903-527-5381
GUADALUPE HOBBY CENTER	200 SIDNEY BAKER S.STE 5	Kerrville	78028	830-895-5654
HOBBY CENTER	18177 GULF FREEWAY	Webster	77598	281-488-8697
HOBBY TIME	201 WESTGATE PKWY. UNIT H	Amarillo	79121	806-352-9660
HOBBYTOWN USA	3033 W. PARKER RD #120	Plano	75023	972-758-7875
HOBBYTOWN USA	4638 S. COOPERSTE 190	Arlington	76017	817-557-2225
HOBBYTOWN USA	5276 S. HULEN ST	Fort Worth	76132	817-263-1196
HOBBYTOWN USA	999 E. BASSE RD 135	San Antonio	78209	210-829-8697
INDY RC WORLD	2020 SATURN RD	Garland	75041	972-2714844
JUST HOBBIES	202 SAWDUST RDSTE 115	The Woodlands	77380	281-292-5878
M & M HOBBY CENTER	6703 CHIMNEY ROCK	Bellaire	77401	713-668-8866
MIKE'S HOBBY SHOP	1605 CRESCENT CIRSTE 300	Carrollton	75006	972-242-4930
ONEALL SPECIALTY HOBBIES	3321 W. EXPRESSWAY 83	McAllen	78503	956-686-6521
ROY'S HOBBY SHOP	1309 N. NORWOOD DR	Hurst	76053	817-268-0210
T & T R/C CARS	3420 AVE K	Plano	75074	972-633-2470
THE HOBBY CENTER RCEWY	4104 STAN SCHLUETER/STE 1	Killeen	76543	254-690-7311
THE RC HOBBY SHOP	13835 S.W. FREEWAY	Sugar Land	77478	281-265-4844
WINGS & THINGS	5307 50th ST. #B	Lubbock	79414	806-793-777
VICTORIA HOBBY SHOP	5211 JOHN STOCKBAUER DR.	Victoria	77904	361-575-4194
UTAH				
HOBBIE STOP	1150 W. RIVERDALE RD/STE D	Riverdale	84405	801-773-7849
HOBBYTOWN USA	FAMILY CTR. MIDVALLEY/STE A	Salt Lake City	84123	801-964-8242
HT'S RC'S	166 S. FORT LANE	Layton	84041	801-546-6959
VERMONT				
MIKE'S HOBBIES&RACEWAY	162 N. MAIN ST, RTE 7	Rutland	05701	802-775-0059
VIRGINIA				
BROWN BROTHERS HOBBIES	924 N. MAIN ST	Montclair	22026	703-221-5746
CROSSWORD HOBBIES	1104 W. MAIN ST	Salem	24153	540-387-3414
DRCW RACEWAY	2200 COMMERCE PARKWAY	Virginia Beach	23454	757-340-6681
GRAYMIA LLC	9105 CENTER ST	Manassas	20110	703-369-1197
GRIFFINS HOBBY SHOP	1051 ISLAND RD.	Bristol	24201	276-466-0998
HOBBY HANGERS SPEEDWAY	14014 D SULLYFIELD CIR	Chantilly	22022	703-631-8820
HOBBYTOWN USA	1067 INDEPENDENCE BLVD.	Virginia Beach	23455	757-464-4140
HOBBYWORKS	9650-42 MAIN ST.	Fairfax	22031	703-426-8600
LINVILLE HOBBIES	7065 WENGERS MILL RD	Linville	22834	540-833-2222
RT MODEL & HOBBY SHOP	401 N MAIN ST.	Danville	24540	434-799-8536
STREAM HOBBY SHOP	10015 JEFFERSON AVE	Newport News	23605	757-591-0720
TSG HOBBIES	251 W. LEE HWY #691	Warrenton	20186	540-347-9212
WASHINGTON				
B & B	6422 EAST 2ND	Spokane	99212	509-534-7223
BURIEN TOYOTA	15025 1ST AVE SOUTH	Seattle	98148	206-243-0700
FANTASY WORLD HOBBIES	7901 S. HOSMEN A-6	Tacoma	98408	253-473-6223
FAST LANE RACING	1309 8th ST.	Marysville	98270	425-346-0737
FOUR SEASONS R/C RACING	2941 SLEATER KINNEY RD N.E	Olympia	98506	360-491-2430
HOBBYTOWN USA	18500 33rd AVE WEST	Lynnwood	98037	425-774-0819
HOBBYTOWN USA	16421 A CLEVELAND ST	Redmond	98052	425-558-0312
MITCHELL RC HOBBIES	N. 4715 CRESTLINESTE B	Spokane	99207	509-482-6188
PERFORMANCE R/C	320 E. SUIRHAVEN AVE #100	Burlington	98233	360-691-4922
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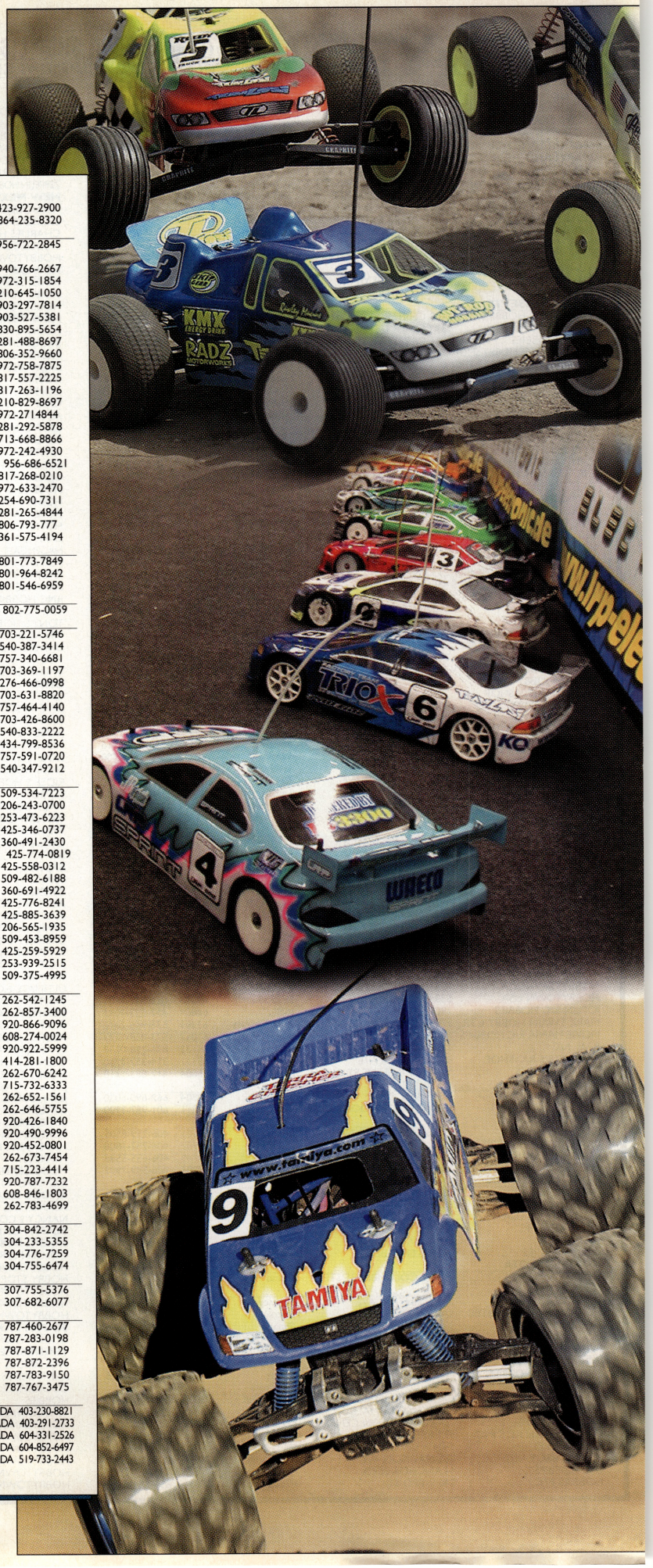

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❑ **JAN. '01**
Test Drives: Team Atlas YM-34; Kyosho Inferno TR15; Schumacher Nitro Big Bore Chassis Features: Battleboards: Edge!; How To: Prep Graphite Parts; 2001 New Product Guide; 1/1 Invades America; IFMAR 1/8 Scale Off-Road World Championships: What It Takes To Make A Concourse Winner; 2000 Tamiya TCS Nationals.

❑ **FEB. '01**
Product Test: Trinity Shock Dyno Features: 2000 Reedy Truck Race Of Champions; Inside The Reedy Winning Trucks; The "On" E-Max; How To Build A Rear Discharger; Model Industry Show Coverage; IFMAR 1/8 Scale Off-Road Worlds; Kyosi's Kyosho SB3; Paris Can-Am Challenge; Trinity Green Machine; Tamiya 1/16 Scale Tiger 1 Tank Test Drives: Schumacher Axis 2; HPI Nitro MT Racer; Tamiya XR311; Schumacher Nitro 21XT-R Desert Storm; Tamiya EB Mitsubishi Pajero.

❑ **MAR. '01**
Product Test: Tamiya Tractor Truck Sound Effects Set Features: Fight Way to Build Bullet-Proof Race Car; Tuned by the Pro's: Gil LaMay Aquino's HPI Concourse-Winning Cars; Tamiya TA04 Pro Up Guide; Truck Wheel Buyer's Guide; HPI World Championship; Traxxas T-Maxx Power Guide Test Drives: Tamiya TB-01 Evolution; Team Associated T3RTR; Traxxas E-Maxx; Yokomo MR-4TC; DuraTrax Maximum ST And MT Pro; Tamiya Tyrrell P34.

❑ **APR.'01**
Features: Driving The R/C Rubicon Trail; Race Report From Europe: Kyosho V-ONE-R; Set Pillow Ball Suspension; Cover; Your Race Engine To The Max; Tamiya TA04-Z; Multi-Stage Tire Inserts; Top Touring Car Setups; Reedy MVP Stock Motor; Test Drives: Kyosho Fazer MP-7.5; Team Associated RC10T Factory Team; Team Losi Triple-X and Triple-X Dirt Spec; Mugen Seiki MTX-2; HPI Super Nitro Rally; Kyosho FW-04 SuperTen 4-Stroke.

❑ **MAY '01**
Features: Never Build Again; 15 Off-Road Racing Tips And Tricks; First Look: Team XRay T1 Touring Car; 16th Annual Reedy Race Of Champions; Project Challenger Revisited; Project Traxxas E-Maxx: Part 1; 10 Nitro Tips; Inside Tamiya Race Winning Cars; Project Another Nitro Xtreme .21; Rayte's Mini Temperature Gun; Trinity Panasonic Heavy Metal 2 3000's Test Drives:Tamiya Mercedes CLK DTM TG10; Kyosho V-One-R; GS Racing Sonic; Tamiya Ferrari 360 Modena.

❑ **JUNE '01**
Features: Basic Motor Maintenance; 2001 Team Losi Florida Winterchamps; T-Maxx/E-Maxx Wheel and Tire Buyer's Guide; Test Drive: HPI's New Pro 3 Touring Car; Redesigned Enlarged Maxx; Body Painting Basics ; New Engine Prep; Lake Speed The Just Second Annual Tamiya Challenge Test Drives: Tamiya Tyrrell P34 R/C: Mugen Seiki MBX-4XR Works; Team Losi Triple-X Kinwald Edition; Thunder Tiger TS-4n Sport Product Test ESP; Juggular Chassis Upgrade Kit.

❑ **JULY '01**
Test Drives: Tamiya Mammoth Dump Truck; Kyosho Pure Ten Honda S2000; Kyosho V-One S McLaren GT1; Cen GX-Rally Features: Kyosho Off-Road Series; Tamiya New Cyclones; Project Another Nitro Xtreme R/C; Project E-Maxx: Your RTR Really Ready?; Tamiya Clodbuster; Team Losi XXX-S; Get A Grip: Spotshow Product Test: Stormer Racing Maximizer T-Maxx Wheels; Hudy Excellent Tire Truing Machine; Hardcore Racing .21 T-Maxx Conversion; Airtronics ALB Booster

❑ **AUG. '01**
LRP Quantum ESCs; AC/DC Charger Buyer's Guide; Project SR-Maxx; Project Another TT-2; Project E-Maxx/E-Maxx Rebuilder Guide; Easy Breaking; Test Drives: Gas Off-Road Gas Nationals Test Drives: HPI Pro 3; Bergonzoni Racing Bandit; CEN Racing Ecto MT; Kyosho Ultima RB Racing Sports.

❑ **SEPT. '01**
Reedy Touring Car Race Of Champions, How-To: Set Your Diff And Slipper Clutch, Inside Mark Pavidi's Reedy Race Winning TC3, Kyosho Mini-Z Buyer's Guide, Top TC3 Tuners, How-To: Keep your Engine Running Cool, How-To: Dye Your Own Tires, Tamiya TRF R/C Inventions, 10 Steps To Preventing And Resolving Receiver Problems, Super Motor Test: Two Stroke vs. Four Stroke, Product Test: JAM Aero Engineering On-Board Glow Driver, Traxxas EVX Speed Control, Competition Electronics Pit Bull Charger Test Drives: Nuova Faor SF501 Motorcycle, GS Racing Storm 1/8-Scale Buggy, Tamiya Mad Bull, Tamiya Subaru Impreza WRC '99 XB.

❑ **OCT. '01**
Schumacher Fireblade EVO, Team Associated TC3 RTR, Kyosho KX-One, MRC/Academy STR-4 Pro, Traxxas Slash Sport and Kit Features: Tamiya Clodbuster Racing Truck Shootout, Pro Racers, 2001 ROAR Off-Road Stock Nationals, Tamiya's Star Semaphore, 2001 ROAR Off-Road Modified Nationals, Project 4-Stroke T-Maxx Product Test ESP MaddMaxx Clodbuster Wheel Adapters.

❑ **NOV. '01**
Team Losi XXX-S, Tamiya TAO4-R HKS Racing Altezza, Team Associated Team Built RC10GT, Tamiya Lancia 037 Rally Features: How One-Ways Work, Pre-Painted Bodies Test: Tamiya Subaru Impreza Sponsorized Rally Car Test: Kyosho Molded Chassis vs. Graphite Plate; Hopping Up the Tyco Jeep; McGrath X-Treme Two-to-five; Scott Hughes, David Reynolds ROAR On-Road Nationals; First Test HPI Micro RS4, R/C Car/Hot Rod Hobbies Off-Road Shootout, Jason Jaeckel's Racer Maxx

❑ **DEC. '01**
Kyosho Landmax 2 Peugoeot 206 WRC, Tamiya TG10R, XRay T1, Yokomo MR-4TC Features: New For 2002, The First Touring Car, Pro-File: Matt Franks, Best Truck of 2001, Tamiya TCS 2001 North American Finals, Pro-File: Tatsuro Watanabe, Best Car of 2001 Product Tests: CS Electronics Space Charger Pro, Multiplex Profi 301, MRC Super Brain 959, Integy INDI 16x5 Computerized Battery Charger.

❑ **JAN. '02**
HPI Micro RS4, Tamiya TXT-1, Team Losi Matt Francis Edition Triple XT, Kyosho MP7.5 Sports Features: Pro-File: Gil Losi Junior, Tamiya 414M: The "Secret" Tamiya Sedan, Just Like Driving A Car SuperTuner Special Kawahara/Mugen MTX-2, Hardcore Racing/Team Associated TC-3, Integy/TopCAD Kyosho Mini-Z Product Tests: Novak Millennium Pro, Trinity Brush Warehouse.

❑ **FEB. '02**
GS Racing Storm Pro, Tecnokit TKT99E, Tamiya TA04S Corvette C5R, Duratrax Evader ST, Bolink Nitro Legend Special Pro-Tips Section: Understanding Roll Center, Pick The Right Off-Road Tire, Diff Tips and Tricks, TRX-15 Power Tips, Match Touring Car Tires And Inserts, Get Sponsored, How To Pass Features: The Science Of Jumping, 12 Tips For Gas Trucks, 10 Things To Do To Improve Lap Times, Sun Valley Microspeedway, How To Gear Your Car For Racing, NORRCA Road Course Nationals Product Tests: Team Orion Pro LCS, Keyence Zero V Extreme.

❑ **MAR. '02**
Kyosho Mega Force, BoLink Little Red Wagon, Kyosho FW-04 Loctite Mugen NSX, Tamiya Dyna Storm, Kyosho Baja Beetle QRC Features: Maxxed Out!, Rear Port Myths, Pro Paint Tricks, Reedy Truck Race Of Champions, Project Outlaw V-One R Pro Tips Section: Scott Hughes On Shocks, Jack Johnson On Servo Tape, Mark Pavidis On One-Ways, Brian Dunbar On Jumping Product Tests Dynamite Vision Peak Plus And Mega Dual-E Chargers, Hardcore RAcing T/E Maxx Bulkheads, Parma Fasglitter, Tamiya TA04 Hop-Ups

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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

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

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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

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

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

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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

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Twin Cities Hobby & Raceway, 7577 Brooklyn Blvd. Brooklyn Park 55443, (763) 569-5069

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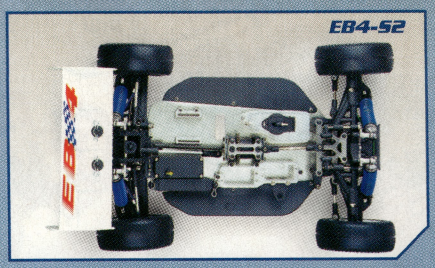



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XS Speed, 5237 Hwy. 126, Blountville, TN 37617, (423) 323-1513

Speedzone Raceway & R/C Hobbies 121 Co. Rd. 308 Sweetwater,TN 37874 423-351-0055, 423-351-0056 speedzone@usit.net; www.speedzoneraceway.com

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

Linville Hobbies Raceway, www.linvillehobbies.com

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

Roanoke Race Club 5080 Stable Rd. Roanoke, VA 24014 540-989-4529 www.roanokeraceclub.com

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

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*

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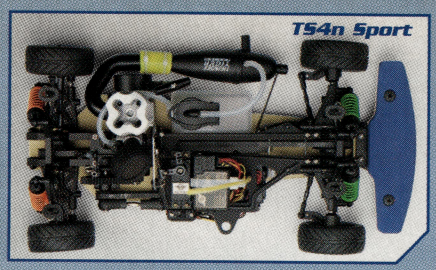





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Alfie's, 108 South K St., Aberdeen, WA 98520; (360) 533-6638

A-Main Raceway, 14011 NE 3rd Ct., Vancouver, WA 98685; Monty Coleman, (360) 571-8404

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Four Season R/C Racing, 2941 Sleater Kinney Rd. NE Olympia, WA 98506; Gary Brown (360) 491-2430

HobbyTown USA Lynnwood, 18500 33rd Ave W Lynnwood, WA 98037 (425) 774-0819, Fax (425) 774-7391

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

Redmond Hobbies, 16260 Redmond Way Redmond, WA 98052 (425) 885-3639 www.redmondhobbies.com

B & B Indoor Raceway, 6422 E. 2nd Ave., Spokane, WA 99212; Brain Batch (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

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

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Race Zone, Hopewell Rd., Rt. 8 Box 343A, Fairmont, WV 26554; Joe Clutter , (304) 368-1000

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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

Johns Hobbies, 54 N. Main St., Hartford, WI 53027 (262) 673-7454 www.explorewisconsin.com

Pro-Star Racing, 726 Pine St., Green Bay, WI 54301; Chuck, (920) 494-1233

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

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Mid-Canada R/C Auto Racing, Hwy. 1 East Winnipeg, Manitoba Canada R2J 4E6 (204) 231-3324 www.geocities.com/midcanadarcautoracing

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Circuit Teleguide Off Rd. Granby, 450 De LaGrande Ligne St. Paul D' Abbotsford Quebec, Canada (450) 776-3730

Nitro Extreme R/C Park, Blackfoot MX PK Calgary, Alberta, www.nitroextreme.com, e-mail: information@nitroextreme.com

One Stop Hobbies Raceway, 33228 S. Fraiser Way, Abbostford, B.C. Canada V252B3 (604) 852-6497 Dave Palmer

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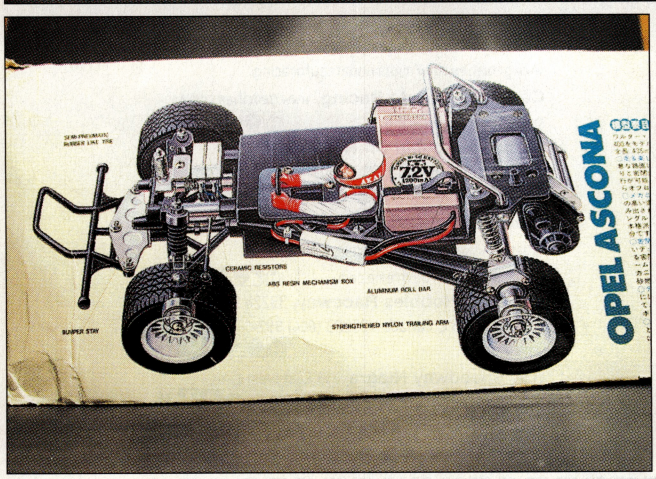
Tamiya Opel Ascona 400 Rally

Now this was a cool find. Well, actually, I can't take credit for this. A couple of friends of mine gave it to me. I would love to thank them by name, but for fear that others will find my "connections," I'll just say thanks, you know who you are. The Opel Ascona 400 Rally car, Model number 58037, was released in November of 1983. This car was Tamiya's second version of a rally car. The first was the Audi Quattro (58036).







Both cars were based on the Wild Willy Chassis, which had been released a year earlier. The kit I received has been partially assembled, but is missing some stuff to complete. The coolest part, and probably the toughest to find, is the body. My kit's body and sticker sheet have never been touched.

I usually like to have some personal history with the vintage cars that I write about. Although I never owned an Opel Ascona 400 until now, the second R/C kit I ever built, or I should say helped build, was the Audi Quattro. My neighbor and very good friend Mario purchased the Audi just after we finished getting my Subaru Brat put together. I remember the Audi as being a pain to put together; however, it was only the second R/C kit we had ever built. It was a blast to drive, however. The radio gear was sealed in a plastic-type tub, which meant we could run it through water. Okay, we probably shouldn't have, but come on, we were 13, and besides, didn't the real rally cars run through water? All the electronics stayed fairly dry but the monstrous skateboard size wheel bearings just froze up!

I mentioned previously that the Opel was based on the original Wild Willy Chassis. The suspension consisted of a front swingarm with rear trailing

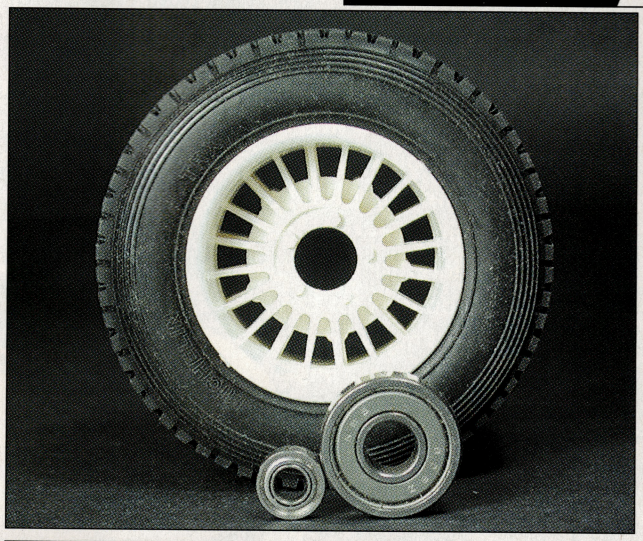


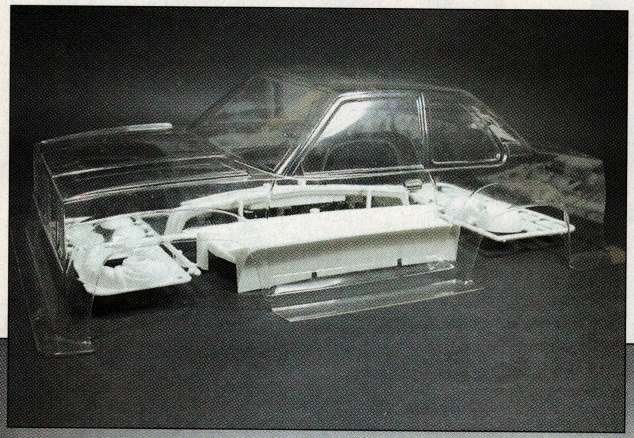
BY RICHARD TRUJILLO

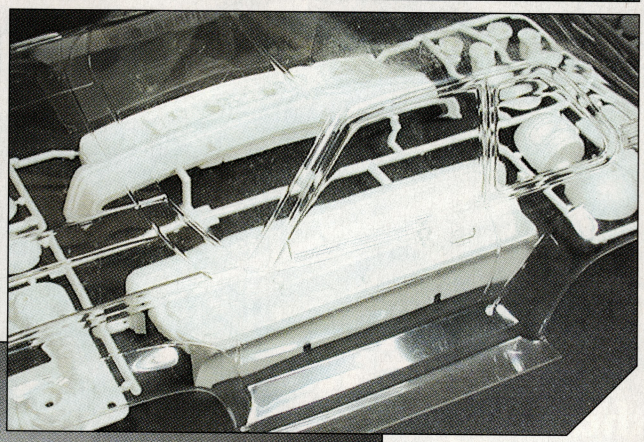
arms and coil springs. Tamiya moved the battery from the back (its position on the Wild Willy) to just in front of the rear tires on top of the radio box. This, with the combination of non-damped shocks, made this car flip on its lid in almost every turn.

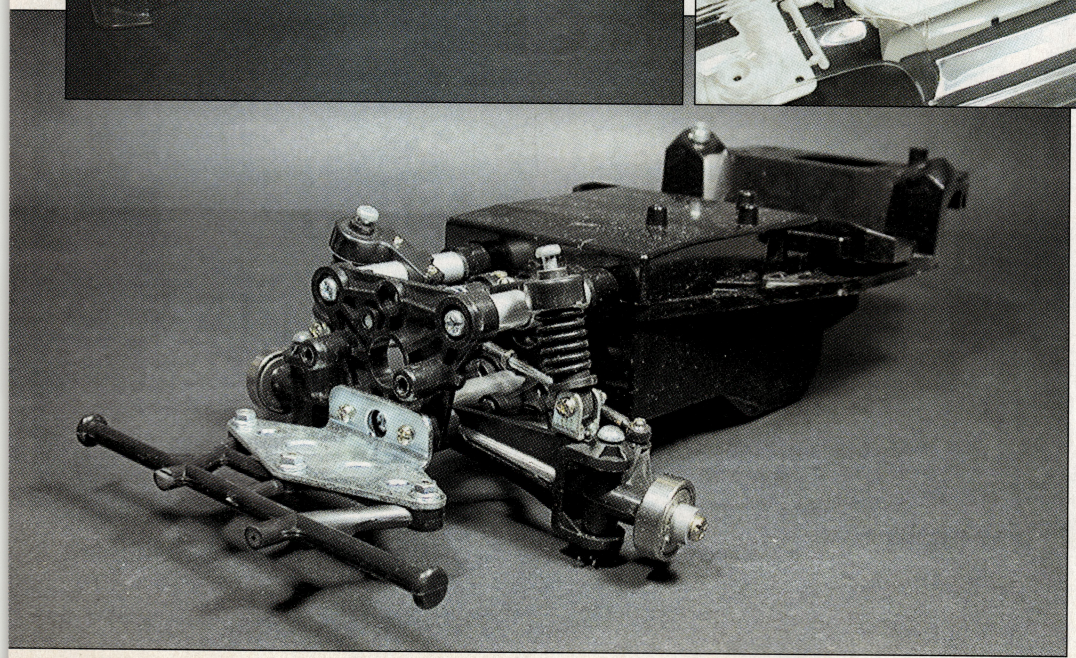
One of the weirdest features has to be the body. Both the Opel and the Audi came with polycarbonate bodies, but here's the weird part; to keep the detail high, Tamiya included an injection molded front grille and rear-end sections. You would paint the polycarbonate body from the inside and then paint the plastic parts on the outside. You would then bolt them to the polycarbonate body.

The Audi and Opel are pretty high up on the collector's wish list. Expect to pay big bucks for a NIB (new in box) kit, and a couple hundred on some "decent" runner-type kits. I'll start hitting eBay and *Tamiyaclub.com* for some parts to complete my kit. This is going to be a lot of fun building a kit that, twenty years ago, took Mario and myself a week to build.









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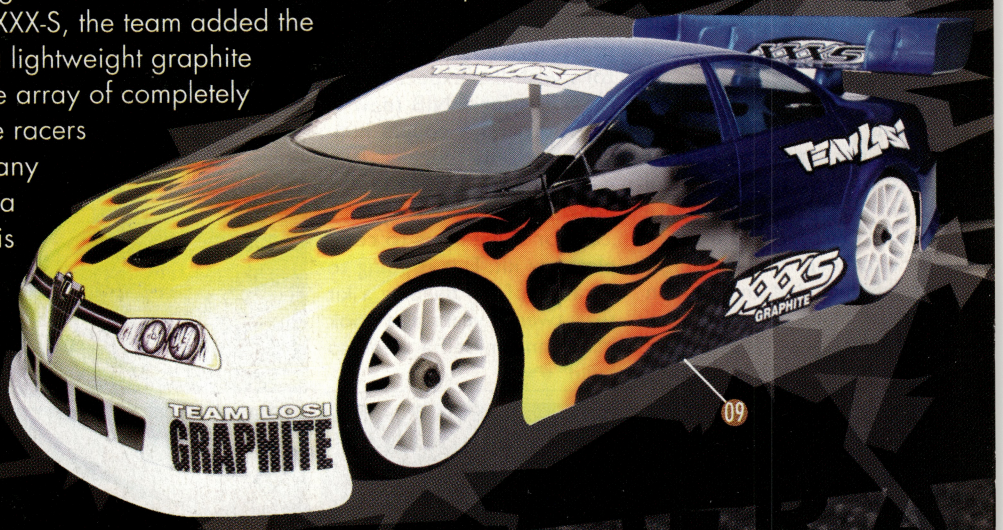

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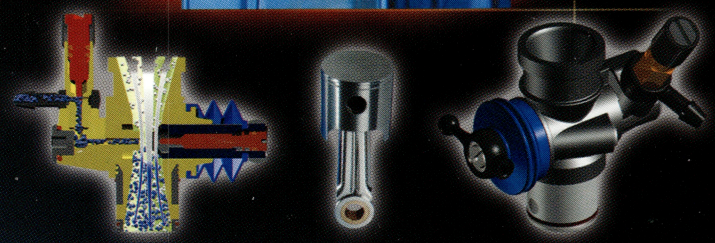

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