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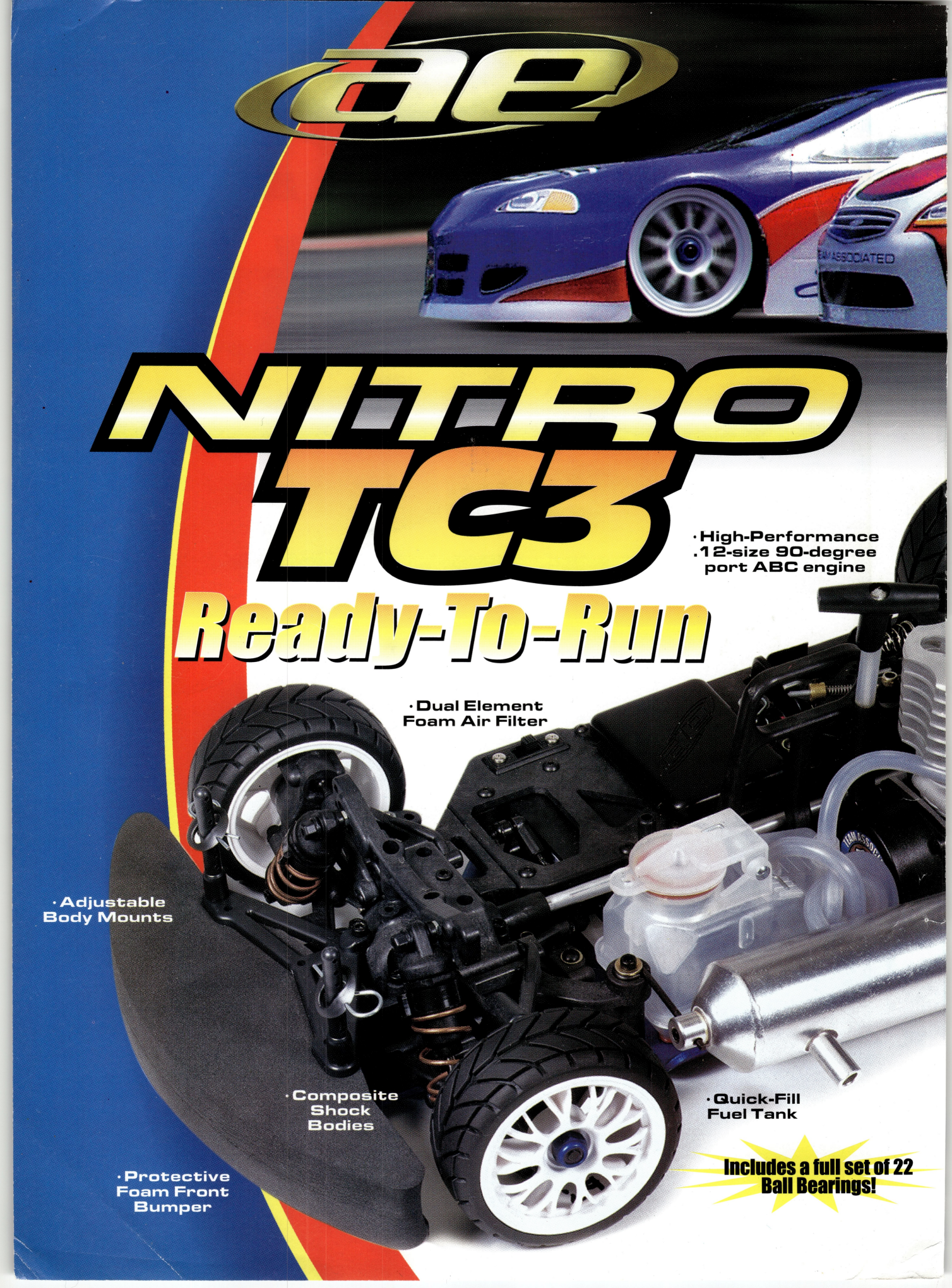
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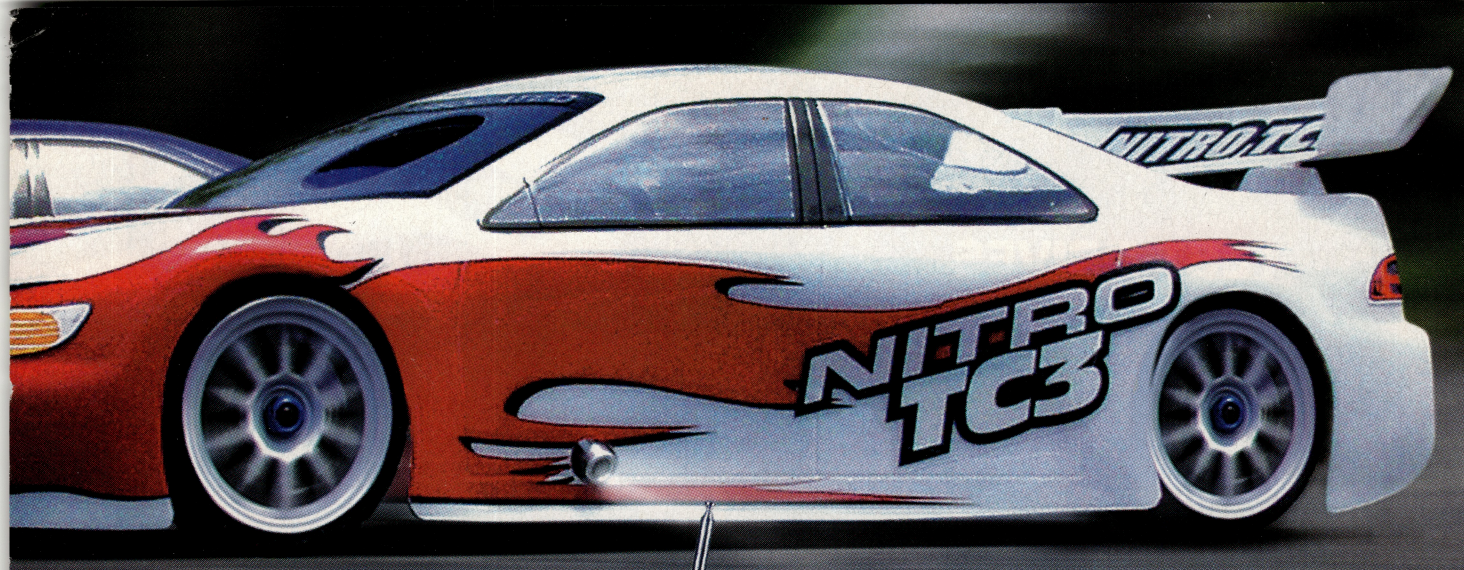

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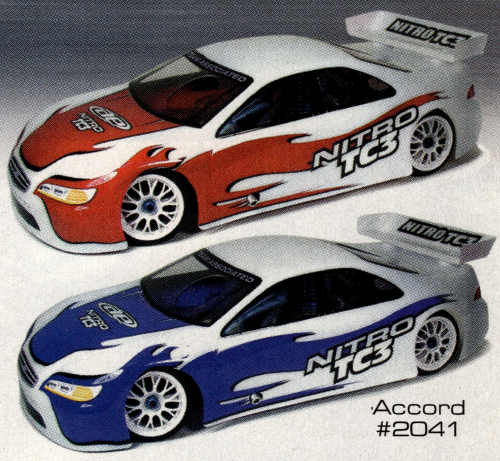
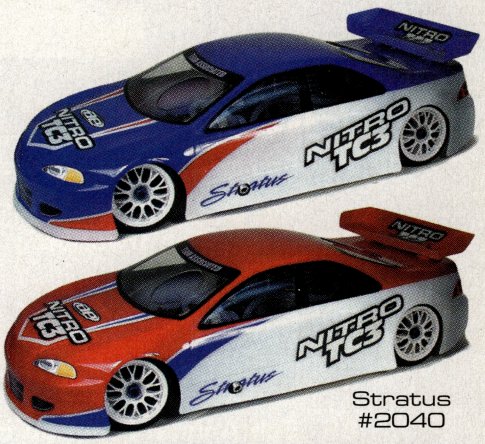


Accord
#2041



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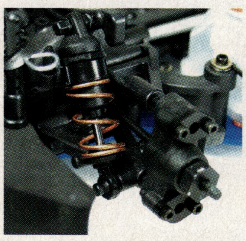
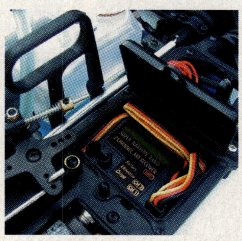
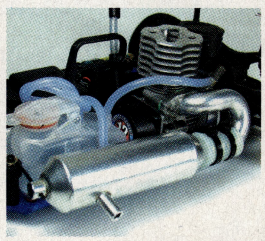
Team Associated's shaft-drive Nitro TC3 changed the face of nitro touring car racing forever. Now the Team introduces the Nitro TC3 Ready-to-Run, the same state-of-the-art 4WD nitro-powered touring car in a factory-assembled package, with a powerful .12 engine and high-quality 2-channel radio gear installed. After all, nobody knows touring cars... or NITRO... like the Team!



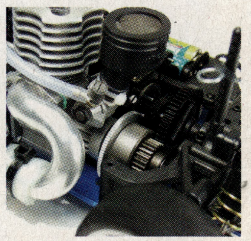
Pivot-ball type suspension with easily adjustable caster, camber, and toe-in. Interchangeable front and rear hub carriers.



Enclosed receiver compartment for protection from fuel and dirt. Easily removeable radio tray detaches with just six screws.



Side-exhaust manifold and pipe. Reverse-fill fuel tank and convenient carrying handle included.



Shoe-type, spring loaded clutch with single-speed transmission (Optional two-speed assembly available separately)

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28 Associated RTR GT Plus
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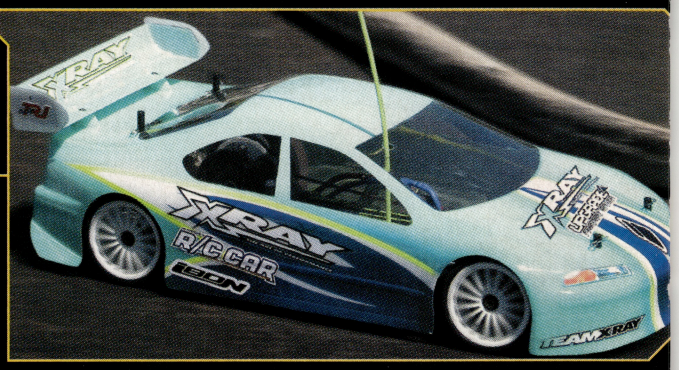

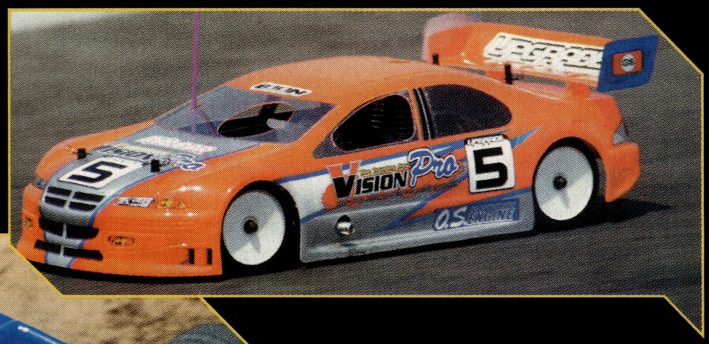



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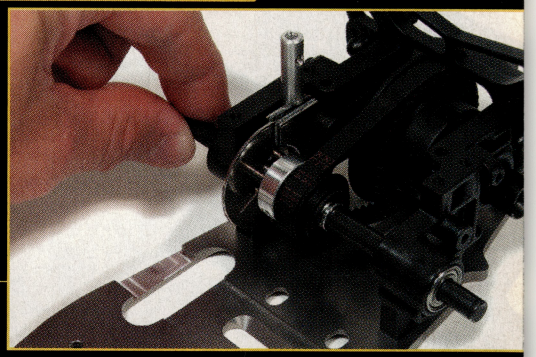

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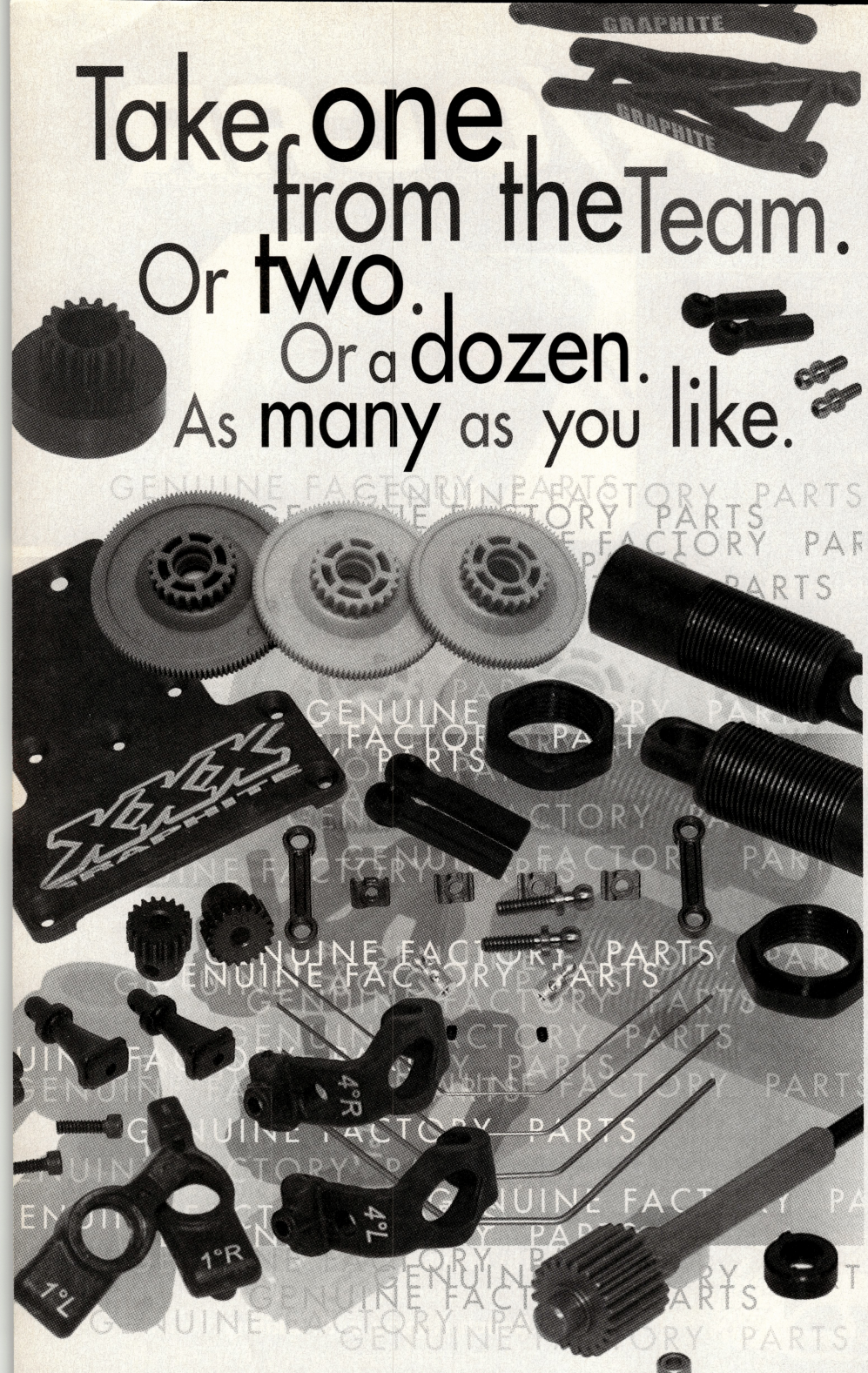
Take one from the Team. Or two. Or a dozen. As many as you like.



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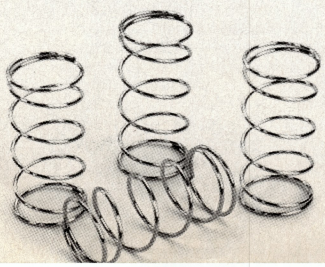

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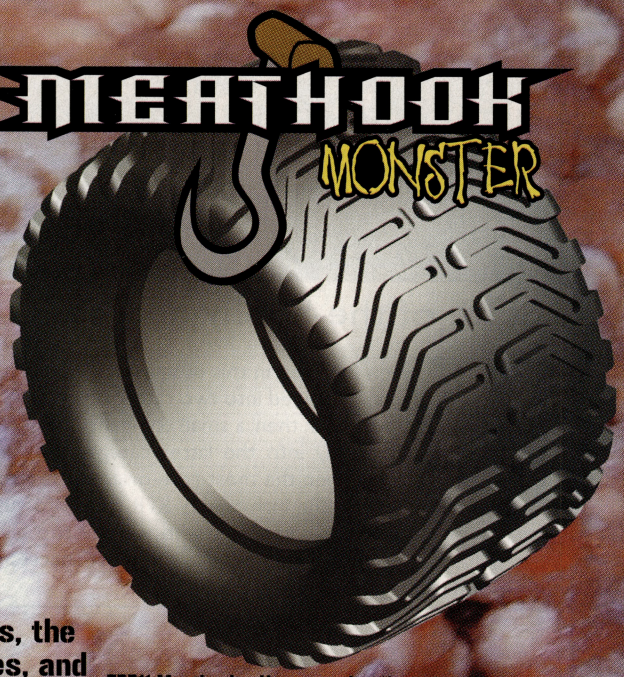

75511 Meathook - Unmounted w/foam insert
76511 Meathook - Mounted/Standard offset
76521 Meathook - Mounted/.5" offset

STREET SWEEPER MONSTER



75510 Street Sweeper - Unmounted w/foam insert
76510 Street Sweeper - Mounted/Standard offset
76520 Street Sweeper - Mounted/.5" offset

REDNECK MONSTER



75512 Redneck - Unmounted w/foam insert
76512 Redneck - Mounted/Standard offset
76522 Redneck - Mounted/.5" offset

DOMINATOR MONSTER



75513 Dominator - Unmounted w/foam insert
76513 Dominator - Mounted/Standard offset/
76523 Dominator - Mounted/.5" offset



STREET SWEEPER 1:10

75401 Unmounted
76402 M/P/AE/F
76403 M/P/AE/R
76404 M/L/AE/F
76405 M/L/AE/R
76452 M/P/TL/F
76453 M/P/TL/R
76454 M/L/TL/F
76455 M/L/TL/R

MILITIA 1:10

75402 Unmounted
76407 M/P/AE/R
76409 M/L/AE/R
76457 M/P/TL/R
76459 M/L/TL/R

HOOK-UP 1:10

75403 Unmounted
76410 M/P/AE/R
76411 M/L/AE/R
76460 M/P/TL/R
76461 M/L/TL/R

PROJECTS 1:10

75404 Unmounted
76412 M/P/AE/R
76413 M/L/AE/R
76462 M/P/TL/R
76463 M/L/TL/R

STRAIGHT RAIL 1:10

75400 Unmounted
76400 M/P/AE/F
76401 M/L/AE/F
76450 M/P/TL/F
76451 M/L/TL/F

MEATHOOK 1:10

75405 Unmounted
76415 M/P/AE/R
76417 M/L/AE/R
76465 M/P/TL/R
76467 M/L/TL/R

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L = Long Life Compound
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[Drivers' Stand]

BY FRANK MASI

State of the hobby address

When I started in this business 12 years ago, the R/C industry was primarily divided into two categories: racing, and the very low-end entry level. Back then, a small company out of Texas by the name of Traxxas fit neatly into the latter category. A decade later, and most every other manufacturer, even the most race-oriented, is chasing after the category that Traxxas has created—the high-quality RTR (ready-to-run) market. This month I pay tribute to some of the companies who weren't too big to realize that the market has shifted, and those who have been the most successful at adapting to the changing mood of the R/C hobbyist.



Team Associated: When I think of R/C racing, I think of "The Team." In fact, Associated is one of the pioneers of the race-only kit. How ironic is it that the majority of Associated's sales are RTRs? Specifically, the RTR GT gas truck and, to a lesser extent, the RTR T3 electric truck account for a huge percentage of the company's overall sales. I remember speaking with some of the Associated bigwigs prior to the release of the GT RTR, and boy, were they nervous that people would think the RTRs would hurt overall sales! I also expect that the forthcoming Nitro TC3 RTR will top their sales charts.

Yokomo: This company is synonymous with racing, Masami Hirosaka, and world championships. Yet a recent phone conversation with Yokomo's U.S. branch revealed that the company's top-seller is the RTR version of its GT-4 nitro sedan. What else can we expect? Logic would dictate that a RTR version of Yokomo's popular MR-4TC electric sedan would make a worthy addition, and although Yokomo has pretty much retired from off-road, it has a sport-level electric 4WD buggy that remains popular in other parts of the world.

Team Losi: Pops Losi might have been the most adamant about his company's vision to produce only the best R/C racing cars, but even he must bow to the way in which the market has changed. Losi's new Triple-X NT Sport gas truck will likely outsell the race kit version, which may prompt Losi to expand its product line to include RTR versions of its popular Triple-XT electric truck and XXX-S electric touring sedan. I really don't envision Losi entering monster-truck territory, although you know if they did, it would be full of innovations.

HPI: Although they maintain a racing team, HPI was one of the first companies to realize the changing times in the R/C industry by concentrating its product line on meeting the needs of the casual enthusiast. To that end, it has created several RTR packages based on its top selling kits, specifically the Nitro RS4 series and the Micro RS4. Rumor has it that HPI is working on a new nitro monster truck in the T-Maxx and Terra Crusher vein, and there's little doubt that this will arrive as a RTR.

PREDICTIONS OF A PRE-BUILT FUTURE

What does the future of R/C hold? We'll surely see some RTR versions of several companies' existing products—and it's likely that we'll see RTRs from some of the least expected sources. Here are some of my predictions.

Serpent: This company only does on-road, and of all its existing products, the 1/10-scale Impulse nitro sedan is the most likely candidate to receive the RTR treatment. Serpent has the manufacturing and engine connections, and I can think of several electronics firms that would probably jump at the chance to be the radio supplier.

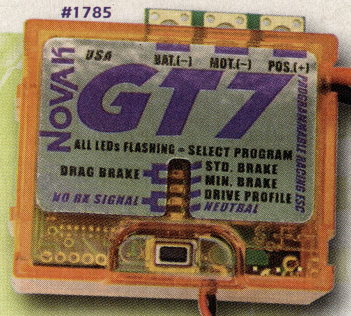
Tamiya: Having a RTR winner on its hands in the form of the massive Terra Crusher monster truck, Tamiya should be looking at the rest of its product line for the next RTR candidate. They do have an extensive line of electric RTRs (under the XB banner), but if you look at the RTR market, there is a definite preference for nitro. My choice would be the TG-10 sport-level nitro sedan. However, not many people are aware that Tamiya also has a higher-performance shaft-driven nitro touring car chassis in its stable, called the TG10R. Spec this car "down" a bit and sell it built with any one of Tamiya's awesome bodies (a Ferrari 360 Modena or Nissan Skyline would be my choice), and you'd have a worthy adversary to combat the soon-to-be-released Nitro TC3 RTR.

Kyosho: This company knows the RTR score, but the failure to release its most impressive nitro monster truck (the Mad Force) as an RTR will hurt its sales. I expect that Kyosho will remedy this by offering the Mad Force as an RTR. I also predict that we could possibly see a RTR version of the incredible MP-7.5 1/8-scale buggy. Even if it was "sported-down" a little, how awesome would it be to buy one of these buggies as an RTR?

#1785

1 SMOOTH SPEED CONTROL

7 THROTTLE PROGRAMS



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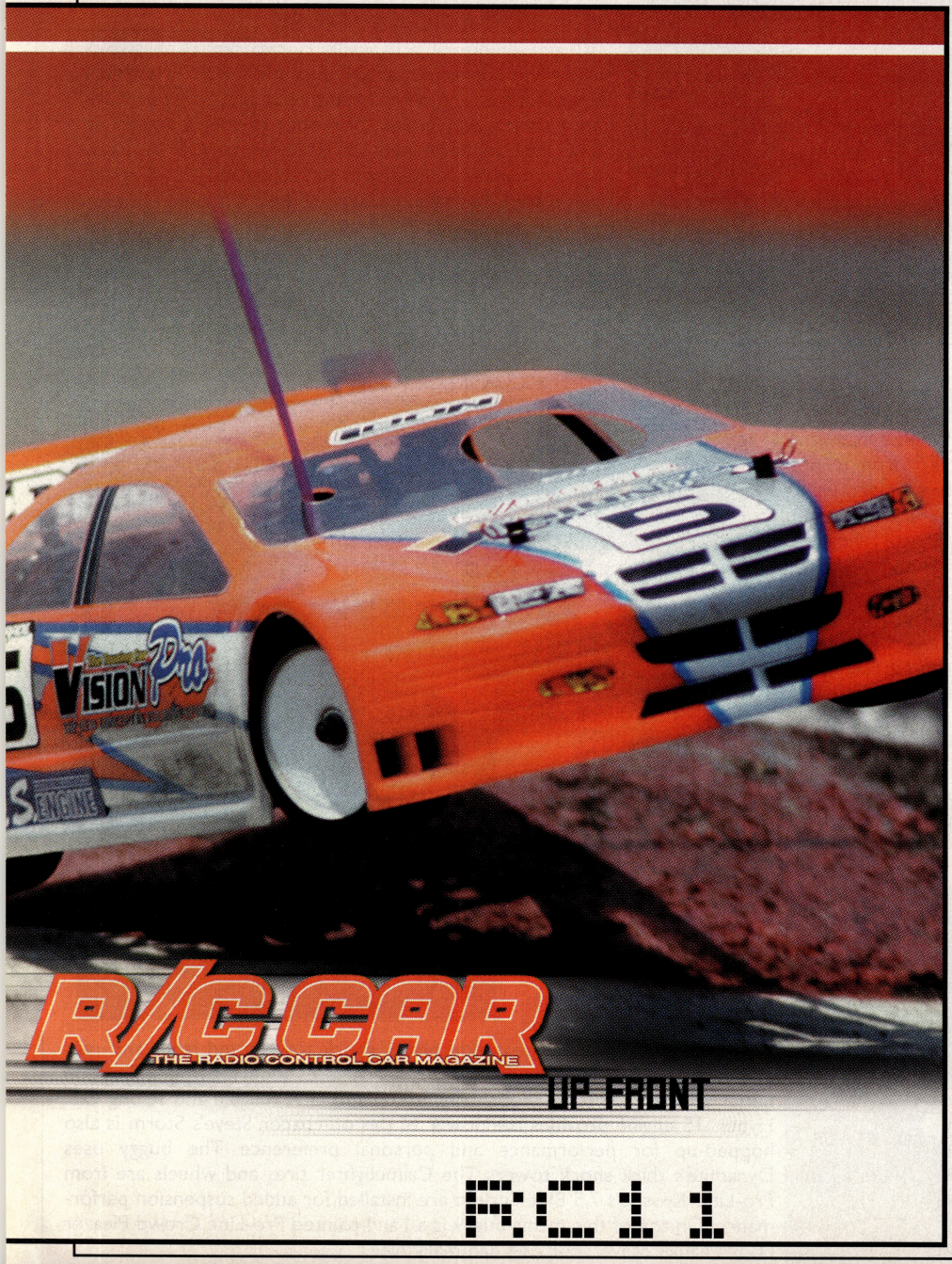



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NEWS (PAGE 14)



TRUCK COLUMN (PAGE 18)

[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!



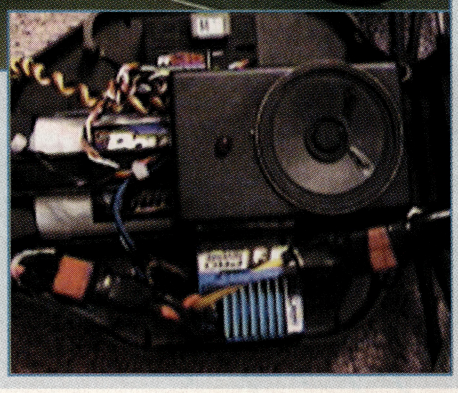
NEW LOOK HOT RODDER

Chris Chmelar of Jacksonville, Florida, sent us these pictures of his converted OFNA Ultra MBX R2. Chris's MBX R2 was formerly an off-road buggy but with hours of work and a substantial amount of money is now a screaming street machine. The new car features an OFNA Picco engine for added horsepower and top speed. A two-speed transmission has been installed to help the unique street rodder reach speeds of over 60 mph! The steering responsibilities have been given to a high-torque Hitec servo making steering response fast and precise. The large radial street tires give this car an original look that sets it apart from any other hot rod we have ever seen.

AN R/C OF THE LAW

This truck, which resembles a CHP vehicle, has been a fun project for a father and son team from Castaic, California. John Smith wrote that he and his son wanted their Losi XXXT Matt Francis Edition truck to resemble a CHP car because John is a Highway Patrol officer himself. The custom made decals seen on the body were ordered from a company in Canada and were specially sized to fit their one-of-a-kind truck. The license plate number is John's badge number, pretty neat, huh. The light bar actually works with a siren that can be activated by channel three of their JR XR3 radio. Could you imagine how much fun this truck would be with an active dog? You could also have hours of fun playing with the siren. Well, since the extra weight of the speaker and siren are not optimal for racing, John says they are easily removed for a racing fix. We would probably run the truck as is to see what type of a reaction we'd get. Great project, John; it was a delight to see.





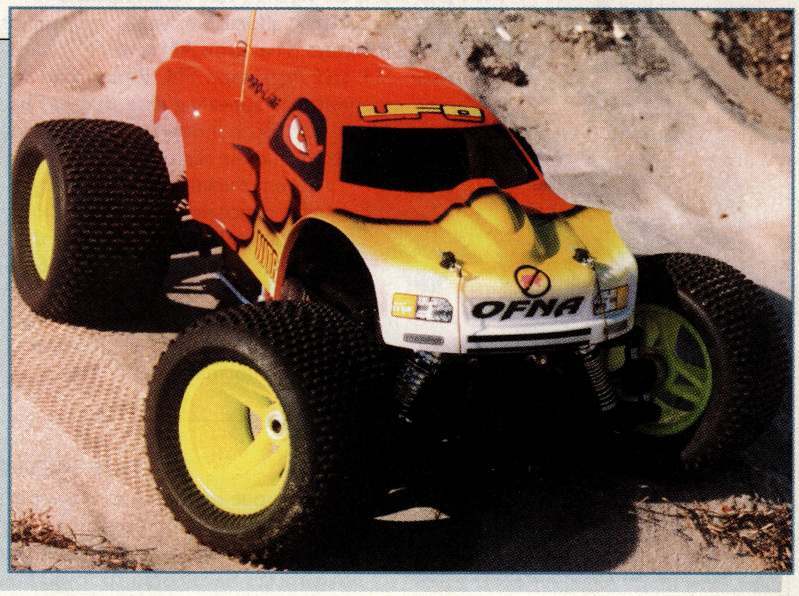


A PAIR OF DIRT BURNERS

Steve Hughes of Gallatin, Tennessee, is proud to show off his Traxxas T-Maxx and GS Racing Storm. Steve's T-Maxx is outfitted with aluminum front and rear skid plates, shock towers and front and rear bumpers. RPM provided the durable bulkhead braces and trick wheels. Traction duties are given to some meaty tires from Panther. A reliable and strong O.S. Hyper .15 engine provides the power of this off-roader. Steve's Storm is also hopped-up for performance and personal preference. The buggy uses Dynamite's thick shock towers. The Crimefighter tires and wheels are from Pro-Line. Kyosho's 7.5 Blue Springs are installed for added suspension performance. On top of this racing buggy is a hand-painted Pro-Line Crowd Pleazer body. Thanks, Steve; your cars are really nice.

DOMINATOR-IZED OFNA MONSTER PIRATE

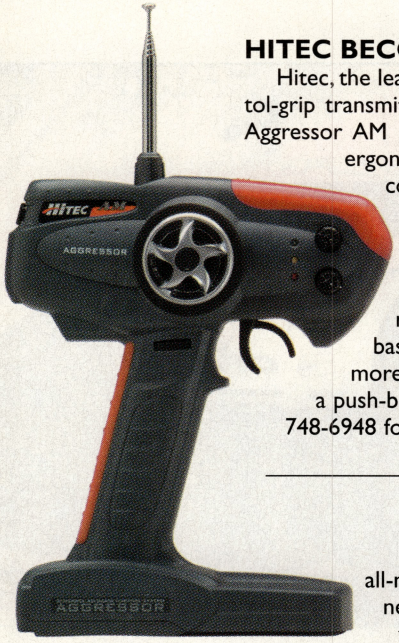
Jim Marcum of La Mesa, California, shows off his OFNA Monster Pirate with these pictures of it in the sand at a nearby beach. Jimbo's Pirate is loaded with hop-ups that start with the XTM Racing Baja Blade body. Under the Pactra painted body you will find an OFNA Hyper .21 engine with rear MIP CVDs. The steering and throttle servos are both high-torque ball bearing servos from Cirrus. R/C Concepts' alloy front bulkhead and suspension arms beef up the front end making this truck much more indestructible. Suspension duties have been given to MBX R2 aluminum shocks for a much smoother ride over some of the toughest terrain. A Panasonic NiMH 1600 battery pack and Novak XXL receiver work together to give this truck very long range and hours of playtime. The large wheels are OFNA's own Dominators outfitted with Pro-Line Bowties for great traction no matter what type of surface the truck is driven on. The truck's controls are given to the ever-popular Airtronics M8 radio.





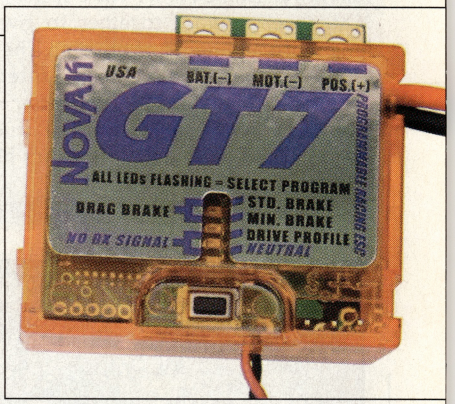
TEXAS T-MAXX

This awesome Maxx comes from Glen Payne of Houston, Texas. Glen's truck is battled-scarred and run a lot, but who cares; trailer trophies are for guys who are afraid to get 'em dirty. Rush Pitts, a good friend of Glen's, painted the unique Parma Grave Digger body. The other goodies mounted to the truck include a Dynamite low-temperature cooling head and tuned pipe combo. The duo increases the engine's efficiency and power. Pro-Line's suspension kit has replaced the stock setup for even better handling. RPM's Monster Clawz are mounted with Panther's Meat Grinder tires to provide good traction and an original look. Traxxas' own aluminum chassis braces and bulkheads replace the stockers, making this truck very durable. RPM skid plates protect the front and rear of the Maxx from nose and tail heavy landings. All in all a nice truck that gets driven a lot.



HITEC BECOMES THE AGGRESSOR

Hitec, the leader in affordable, high-quality radios and accessories, has revamped its line of sport-level pistol-grip transmitters. The Lynx AM and FM radios are gone, history, see-ya. In their place are the all-new Aggressor AM and Aggressor FM. Redesigned from the ground-up, the Aggressors feature a sleek and ergonomically appealing case that has been computer-designed to fit virtually any sized hand with comfort. Both models also feature interchangeable rubber "palm pads" that allow users to customize their radios (through the use of different colored pads), and Hitec will offer pads of different thicknesses to suit larger or smaller hands. The molded cover atop the radio's case, which conceals all of the radio's adjustments save the steering and throttle trims, is also interchangeable with the optional trim kits that will be offered. Currently, Hitec plans to release trim kits in different colors and patterns such as wood grain and carbon fiber. The AM base-model is a two-channel system with dual-rate and a three-LED power meter, while the more expensive FM Aggressor has three channels, steering and throttle end-point adjustments and a push-button third-channel switch perfect for use with Traxxas Maxx trucks. Contact Hitec at (858) 748-6948 for more information.



THE NEWEST NOVAK

From out of the blue, Novak has announced an all-new high-end addition to its popular ESC series. The new ESC is called the GT-7, and it features everything that racers have come to love about the Cyclones, yet in a package that is 30-percent smaller. In addition to its translucent-orange case, the GT-7 has several interesting new features. Like the Cyclones, the GT-7 is fully programmable, but you won't need any external devices to access its many features - it can all be done through the GT-7's buttons and four LED status lights. And if you don't want to mess with success, the GT-7 includes seven factory preset profiles, which means that no matter which type of vehicle you own, the GT-7 will have a Novak factory profile to fit your needs. In the innovation category, the GT-7 features a case-mounted on/off switch that you can reposition, a bracket to hold the external power capacitor, and a Transmitter Check Mode, which automatically tells you if your radio has the correct amount of throttle and brake throws to optimize the GT-7's capabilities. Contact Novak for more information at (949) 833-8873.

TOUGH TOOLS FROM TEAM LOSI

Gil Losi Jr. is a highly respected individual who has made his name developing some of the winningest R/C cars of our time. So, it's no surprise that his latest product, the Team Losi Race Wrenches, are of the highest quality. Team Losi's new wrenches are not simply color anodized like many others. The handles have received a hard-anodizing process that is used on full-scale race machines and multi-million dollar aircraft. The durable handles are easily identified with color coded end caps that have been etched with the wrench's size. The resilient steel bits are treated with a titanium nitride coating that makes stripping these wrenches difficult for even a NASCAR crew. The tough bits are secured in place to a chrome steel bit holder that will withstand many years of use. The wrenches come in two sets; four metric wrenches in 1.5mm, 2.0mm, 2.5mm and 3.0mm and a standard set with sizes of .050 inches, 1/16 inches, 5/64 inches and 3/32 inches.

For information contact Team Losi at:
Team Losi
13848 Magnolia Ave.
Chino, Ca. 91710
(909) 465-9400

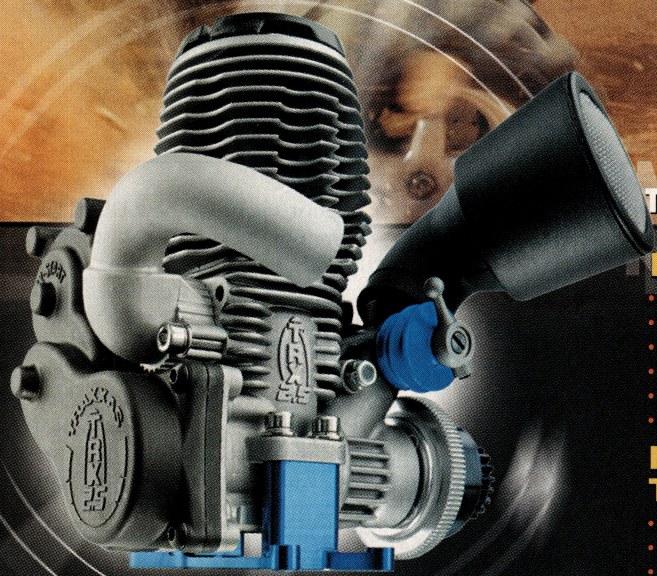


SOME CALL US CRAZY TO PUT THIS MUCH POWER IN A READY-TO-RUN.

WE CALL IT LISTENING TO OUR CUSTOMERS!



THE NEW T-MAXX. Faster, Wider, Meaner Than Ever.



New Engine

- All-New Rear Exhaust Racing Engine
- All-New Composite Slide Carburetor
- All-New EZ-Start 2 Push-Button Starting
- Most Powerful Engine in its Class
- Blows Away .15 – .18 Size Engines
- 60% More Power Than Original T-Maxx

TRX 2.5 RACING ENGINE

New Upgrades To Handle The Extra Horsepower!

- Wider Stance for Superior High-Speed Stability
- Larger Diameter, Heavy-Duty Driveshafts
- 50% More Rigid, 3.0mm Aluminum Chassis
- Larger 3.5mm Turnbuckles

40+ MPH

NEW GRAPHICS



The new T-Maxx is a rolling work of original art with its Incredible new 6-color graphics that would be nearly impossible for even a master painter to duplicate. The body is fully painted and trimmed with new die-cut decals for easy final detailing. 4 color choices are available including new Sinister Black!

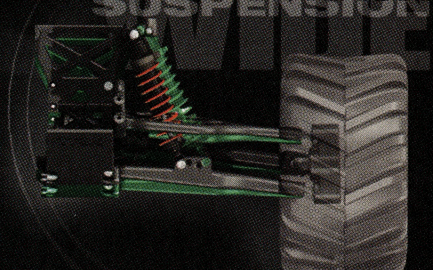
FORWARD/REVERSE



Patent # 6,367,345

Only T-Maxx has the patented forward/reverse transmission with an autoshifting 2-speed that works in both forward and reverse. It's the only one that allows familiar, fully-proportional trigger control of the throttle and powerful 4-wheel disc braking in both forward AND reverse gears. Anything less is a compromise!

NEW WIDE TRACK



The T-Maxx has superior stability thanks to new wider arms and an increase of over 1 inch in track width. New multiple shock mounting positions (up to 10) 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!

TRAXXAS

**Blue motor mount for display purposes only.*

Traxxas Corp. 1100 Klein, Plano Tx. 75074 Ph. 972-265-8000. Traxxas U.K., P.O. Box 1128, Winterbourne, Bristol BS17-2SH, England. Ph. 44-117-956-1002. Fax 44-117-956-1121. © Copyright Traxxas Corp. 2002. Call, write, or fax for your nearest hobby shop and for our latest catalog. Specifications subject to change. Optional blue anodized engine mount shown.

Questions? Call the Traxxas' technical support department at 1-888-TRAXXAS (872-9927). Customers outside U.S.A call (972) 265-8000. Or E-mail us at support@traxxas.com.

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www.TRAXXAS.com



A RADIO WITH MEMORY FOR 22 MODELS

Ko Propo has plans to release its new EX-1 Mars-R radio system sometime late this summer. The all new radio is very similar to Ko Propo's proven Mars radio but comes with many upgrades that make it much more advanced. The EX-1 comes with the capability of storing information for 22 models. The new radio also comes with a super micro receiver in either 27Mhz or 75Mhz FM. The frequency response of the new system is 40 percent faster than the previous Ko Propo model. There are also plenty of tuning possibilities with this radio's steering funtions that include travel, balance, speed (1-2 way), curve, center trim, sub trim and servo reversing. The throttle of the EX-1 lends itself to changing high point, throttle curve, brake, throttle speed (1-3 way), punch control, automatic start, sub trim and trim rates. Look for our product test of this featured-packed radio in next month's issue of *R/C Car*.

For information contact Ko Propo at:
Ko Propo USA
16012 S. Western Ave. Suite #300
Gardena, Ca. 90247
(310) 532-9355

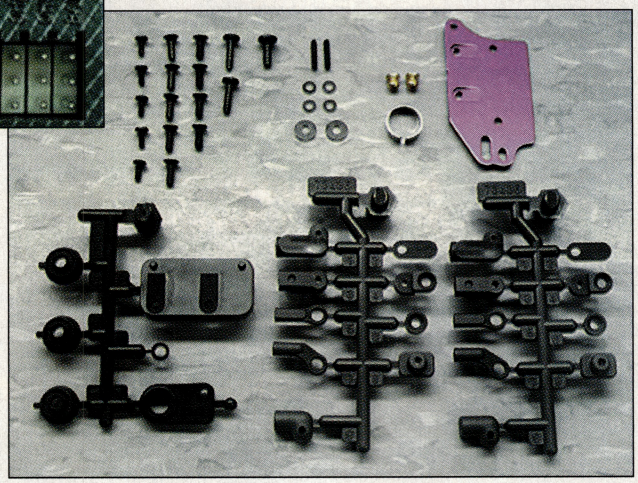


IMPROVING MICRO STEERING

HPI's latest hop-up for their popular micro is a new Dual Link Tie Rod Set. The new system will smooth out the micro's steering by getting rid of bump steer, giving micro racers more precise control. Racers and micro nuts alike will appreciate the new unit's adjustability which allows changes to the front wheel's toe-in. The set includes a very durable servo saver that protects the gears of mini servos in high impact crashes. Since anodizing is in, the set comes with an aluminum mounting plate anodized HPI's signiture purple.

#72490 Dual Link Tie Rod Set for Mini Servos (Micro RS4) $13.00

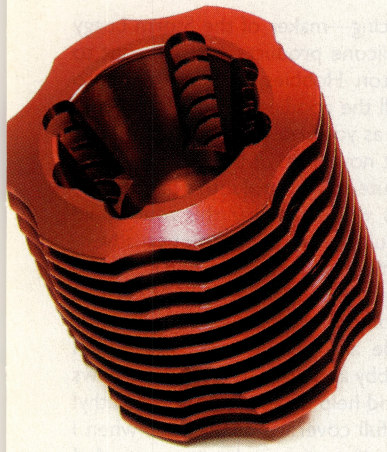
For information contact HPI at:
HPI
15321 Barranca Pky.
Irvine, Ca. 92618
(949) 753-1099



BIG PLANS FOR TEAM ORION

Team Orion's international headquarters in Geneva, Switzerland, will be moving to a new 25,000-plus square foot building in the begining of 2003. The company's success and growth has forced the move to the much larger building. According to Team Orion the new facility will be large enough for future growth and be built with the latest technological advances. The Swiss headquarters will also distribute such major brands as HPI, Multiplex, O.S., Proline and many other big guns of R/C. Team Orion USA is also doing very well and has plans to move in 2003 to a building that is, get this, double the size of their current place of business. This news is, of course, exciting for Team Orion, but growth of any R/C company is good news for our industry.







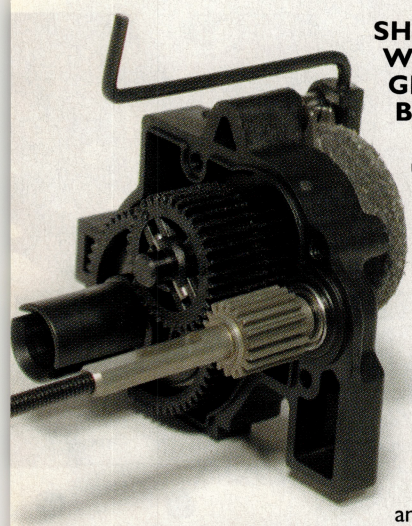
CRUSHING MODS

Now that Tamiya has sold out its entire first run of Terra Crusher trucks, it has turned its attention to providing TC owners with hop-ups worthy of their nitro monsters. The newest additions to the TC goodies are this red-anodized, large sized aluminum heat-sink head for the TC's .18 engine. As you may know, stock TC's run a bit on the hot side, so this new head should help keep things cool and allow the engine to make the most power. Also from Tamiya is this set of pre-mounted and glued TC replacement tires. Unlike the stock truck's paddle-treads, these new meats have been designed to work best on the street or on hard-packed dirt. The new chrome-plated wheels are also very trick. Contact Tamiya at (800) TAMIYA-A for more information.



MEGA METAL

With all of the hullabaloo surrounding the new Mad Force truck, some might think that Kyosho's other monster truck, the Mega Force, would be forgotten. Not so. The metal-masters at Ballistic Stupidity have just released an awesome titanium front skid plate for the Mega. This indestructible plate replaces the rather fragile stock skid, which is made from plastic. If you recall in our March issue's test of the Mega Force, we broke the stock skid right off the bat - so we'll be bolting-on this titanium sucker just as soon as we can! For more information, contact Ballistic Stupidity at (604) 209-7710.



SHED SOME WEIGHT AND GIVE YOUR NT A BOOST

The latest hop-up for the Team Losi Triple-X NT nitro truck is this light-weight, one-piece slipper/gear shaft that replaces the stock steel shaft and separate gear assembly. The new shaft and gear are machined on the latest CNC machinery to ensure the closest tolerances and the best fit. The shaft is then hard-anodized that endows it with an exceptionally long-lasting finish that also reduces friction inside the tranny. For $13.95, this is a must-have for all Losi NT owners. Check it out at your shop or call Losi at (909) 465-9728.

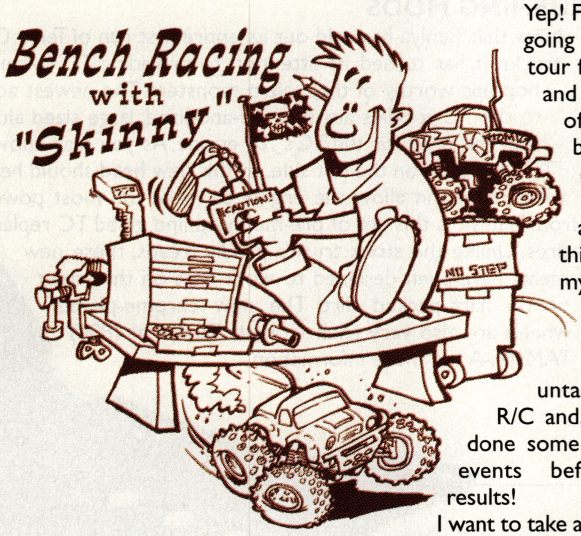


NOVAK "SWITCHES" CHANNELS

In addition to the release of an all-new high-end speed control (the GT-7 Competition) and the forthcoming brushless motor system, Novak has apparently been very, very busy. At a recent race out in Southern California, we spied Novak team driver Brian Kinwald using this Novak "Switch" module in his Airtronics M8 radio. The module appears to be the mate to Novak's successful Xxtra synthesized receiver, which means that with both the Switch and the Xxtra, you'll no longer need crystals to change frequencies within your band (27mHz or 75mHz). No word yet on which radios, besides the M8, will work with the module, or how much it will cost. However, the unit used by Kinwald appeared to work flawlessly. Contact Novak at (949) 833-8873 for additional information.

[Truck Column]

By the time you read this, I'll be gone! Parting is such sweet sorrow. I'll be far away from *R/C Car* and embarking on a new adventure. No, I'm not leaving the mag; I'm going on tour!



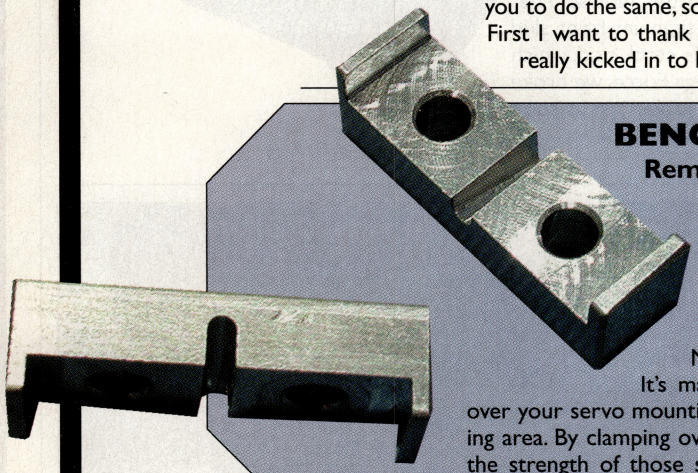
Yep! For three weeks I'm going on a promotional tour for mountain bikes, and I'll be hitting three of the industry's biggest events (about 30,000 people in total). Why am I telling you this? Well, I'm taking my R/C monsters and buggies along to do demos at the events. It's an untapped market for R/C and, as you know, I've done some of these types of events before with great results!

I want to take a moment and thank some people for helping me out (and I want you to do the same, so e-mail them for me!). First I want to thank Hardcore Racing; they really kicked in to help make this happen. Also GS Racing—maker of the Storm buggy and great silicone products. Lastly, I want to thank Horizon Hobbies; they distribute to the shops all the goodies that you and I buy. And Tamiya: as you know, they have the Terra Crusher out now. Both of them jumped in at the last minute to help make this happen.

If all goes well, next year this tour could turn into a full-blown R/C promotion adventure for companies to expose our hobby to a much larger group of consumers such as mountain bikers, motocrossers, monster truck people and who knows who else! I love this hobby and want to spread the news to others and help make our hobby healthy!

I will do full coverage of the tour when I get back. So if you see a large orange 4x4 van roll into your town, pull it over and say, "let's go race!" Who knows, maybe your mug will wind up in the mag—after all, this is your column; I just write it!

As always, send your feedback to me at: *BigHorseVan@msn.com* or snail it to *R/C Car*, 25233 Anza Dr., Valencia, CA 91355.



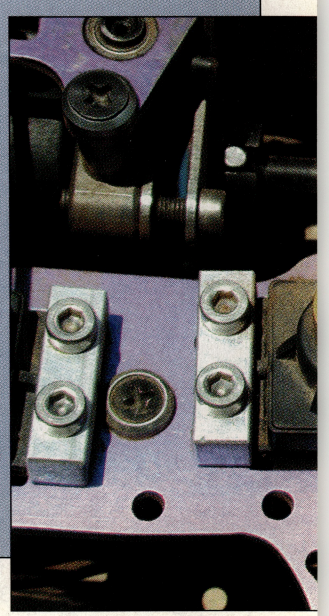
BENCH TESTING

Remember Jed Clampett?

Well, this not about him, but another Clampett. Sometimes things are so simple you don't even think of them. This is one of them. This idea to me is a no-brainer. When I saw it, I slapped my head and thought, "Why didn't I think of that?" New from JHT is this sweet servo clamp. It's machined from aluminum stock and bolts over your servo mounting tabs to give you a very sturdy mounting area. By clamping over the whole bracket like this, it doubles the strength of those stupid plastic tabs we all have problems with.

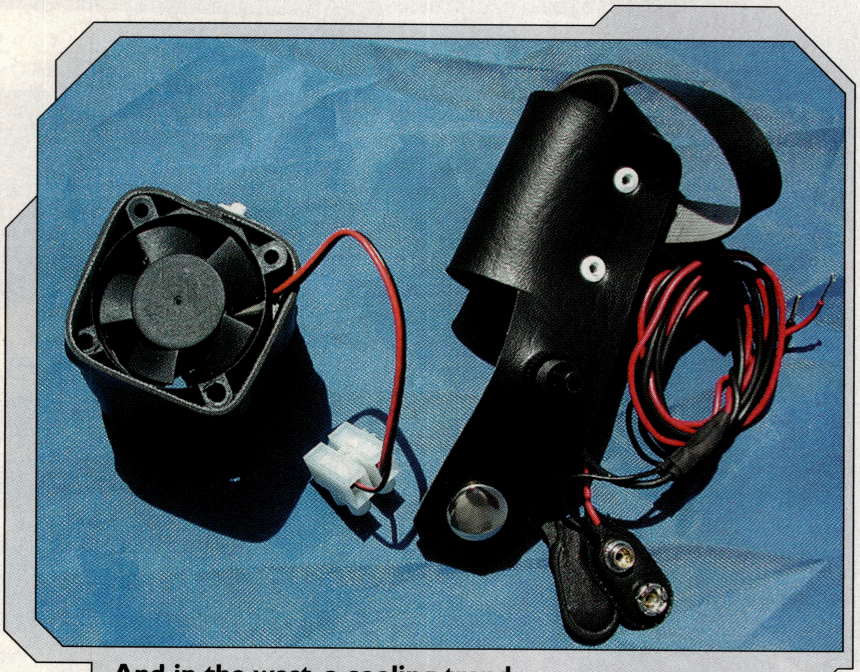
I don't know about you, but I have a garage full of old servos that have broken tabs that are useless, so this could bring new life to them for cheap! I got a set of JHT clamps the other day and put them to work on my Storm Pro, and noticed right off that the clamps totally fasten the servo to whatever you mount it to. They are solid—no flex. You can see by the photo how they work.

I'll end here by saying two thumbs up for this idea and you can get them from JHT for $10 a pair. Contact them at *jhtparts@yahoo.com* (tell them Skinny sent you).





BY BRIAN SKINNER



And in the west, a cooling trend

From Starr [(805) 686-8867] comes another cool product (get it? Cool?). First a roll cage, now a cooling fan.

Hmmm? This is a tough one: how do you explain what this does? This is a cooling unit that you install behind the head of your engine. The computer fan runs off of two 9-volt batteries that you strap to your front shock brace. It has an on-off switch you mount where you can get to it, and the fan unit's flexible cowling straps to the rear body post, or thereabouts. The whole idea is that when the fan is on, it helps to suck the hot air generated by the head out the back of your truck, thus drawing heat from the engine and keeping it cool while it does its thing. Got that? It's a neat-o idea and when I put some time on it, I'll give you the results.



A fellow racer writes...

Hey, Skinny. Just my two cents about the class debate. At my local track, we only have two classes: stock, in which you must use the stock TRX-15 engine, and open truck, which is anything-goes as long as it's nitro and 4WD. I believe that with all the Maxx-copy trucks coming out, and hybrids too, there should be at least three classes: box-stock, in which all kit parts must be used; a modified or outlaw class, with any engine except .21s (this class would allow Pro-Line suspension, and the normal mods). These first two classes must be ladder-bar style trucks e.g., T-Maxx, the new Kyoshos and the Terra Crusher. The open class should be just that: OFNA Dominators, big-block Maxxes, buggy hybrids, whatever. This way, everybody has a class to run in: from new kids with stock trucks to the vets with the "barely truck" trucks. This would be better than where I race. The kid with the replacement Megatech engine does not have to race against my truck with a .21 Picco just because he does not use a stock Traxxas engine.

Chris Dodson

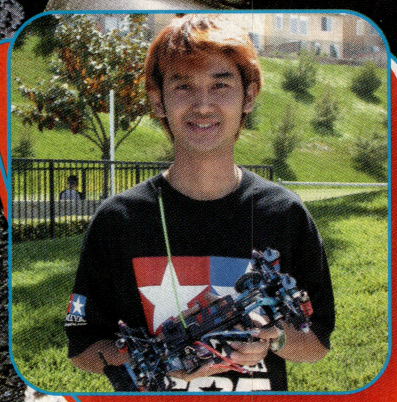
Chris, thanks for your feedback. I agree that the powers that be need to change some things. I have been thinking about racing, and what could be done to make it more fun for the spectator and the new racer. I came up with this idea after finding out that some of the events I wanted to attend were pro class-only—no sportsman people unless you wanted to race with the "big boys."

In motocross and in mountain biking, they will run an amateur event along with the "big ticket" pro event. This works out great because the regular racer gets to see the pros race, and gets ideas on how to go faster. And it brings more people to an event than just the pros and the "inner circle" of people who go to the event.

There's more to this idea, but that's the nutshell. I want to write up a whole idea list later this year, so I don't want to spill the beans just yet. What would be great is if a select group of racers and manufacturers would get together at the Chicago Trade show and discuss a plan and format to increase racing and public awareness of our hobby. Is anybody listening out there?

IFMAR WORL

WIN AT ANY COST...



WINNER 2002
IFMAR ISTC WORLD
CHAMPIONSHIPS
DRIVING THE 414M II
SURIKARN
CHAIDAJSURIYA

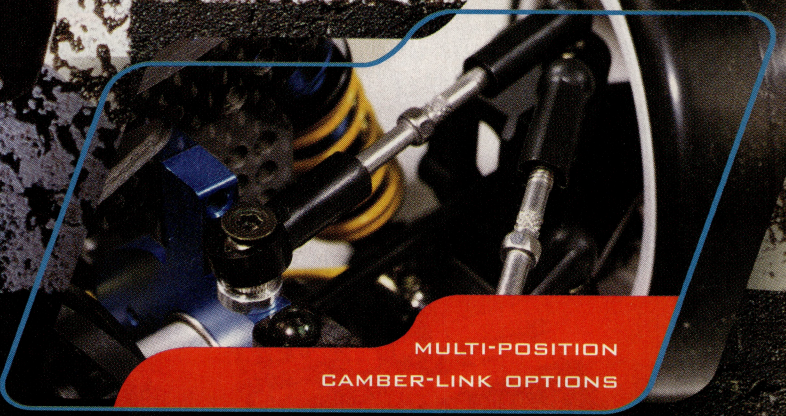
The legend goes like this, a certain manufacturer asked a few key drivers what they wanted and *needed* to win under no uncertain terms. They told that manufacturer and ... it was done! So suddenly a select group of speed freaks were running around with this trick chassis that was engineered to win at any cost. The legend *is* fact and Tamiya was the one that delivered. Now you too can prosper from this winning endeavor. Tamiya's new TRF 414M II is available and comes fully loaded, race-ready and highly competitive, all at a great price. Equipped with adjustable roll center for anti-dive and anti-squat performance and tons of anodized parts among other features, this machine is ready to take its place among the heavy hitters. So get to your hobby shop or for more info try WWW.TAMIYAUSA.COM and enjoy the fruits of victory knowing that winning at any cost did not cost you a bundle.

D CHAMPION

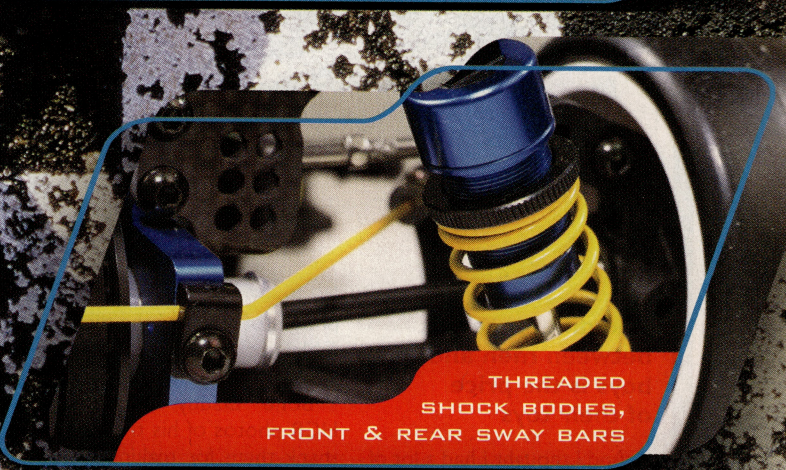
STILL NOT NECESSARY.



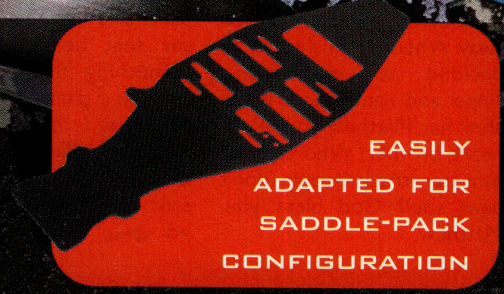
ADJUSTABLE
WHEEL BASE &
ANTI-DIVE / ANTI-SQUAT SUSPENSION



MULTI-POSITION
CAMBER-LINK OPTIONS



THREADED
SHOCK BODIES,
FRONT & REAR SWAY BARS



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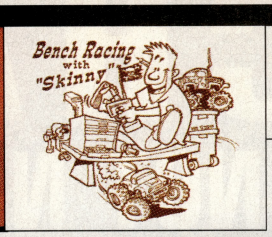
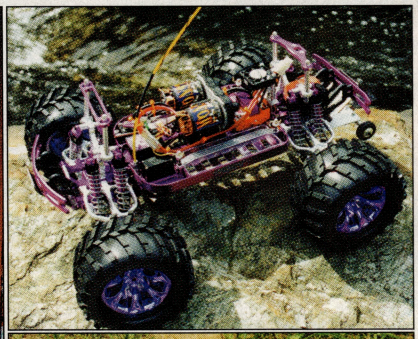
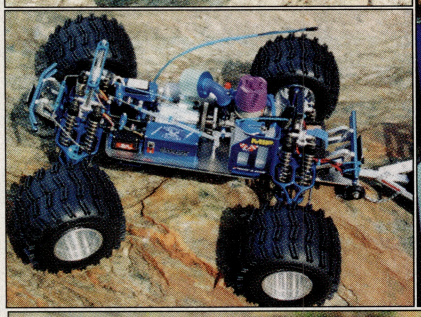
[Truck Column]















The difference between men and boys is the price of their toys

And I thought I had a lot of toys! As the saying goes, "The person with the most toys, wins"! Well then, Mathew "Bone Daddy" Thacker has to be running in first.

Last week I was over at Hardcore, and Mike, the lovable sales manager there, showed me these beautiful photos of some of the nicest T-Maxxes I have seen in a while—and so many!

Bone Daddy had sent HCR photos of his trucks to thank them for making such beautiful products, and he is very proud of his work—rightly so! All the trucks you see are wonderful, and I would hate to run them and get them dirty.

Of special interest is the purple E-Maxx: there is a bittersweet story behind this particular truck. You see, Bone Daddy had an old hound dog named Angel, who was ailing when Bone started to build the truck. When he was near completion of the E-Maxx, the old dog passed away. When he finished it, he decided to memorialize Angel and name the E-Maxx after her. Matthew, you've got heart, brother! Who says we monster truck people don't have soul? God bless you, Matthew.

I would give you guys a list of parts Matthew used to build his collection, but his list was four pages long. I know he used a lot of Hardcore and Dynamite parts and I think it is safe to say that he probably has something from everyone on his pack of trucks. Matthew, I hope you don't mine me talking about you, but your trucks and your story were too good to let go.

An instant upgrade for the T-Maxx®.

.15 CV-RX (S) w/10E-R Rotary Carb

The 10E-R rotary carburetor delivers super hole-shot performance, especially for off-road vehicles.



O.S. TWO YEAR WARRANTY

Displacement: 0.152 cu in (2.49cc)
Bore: 0.598 in (15.2mm)
Stroke: 0.539 in (13.7mm)
Practical rpm range: 4,000-36,000
Output: 1.2 ps @ 31,000 rpm
Weight (w/pull start): 9.0 oz (253g)
Weight w/o pull start): 7.0 oz (193g)

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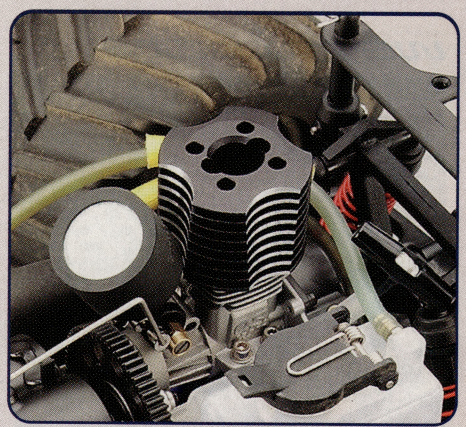

Get more info by visiting your local hobby shop, or logging on to www.osengines.com. You can also receive a brochure by calling 1-800-682-8948 and mentioning code number 2947Y.



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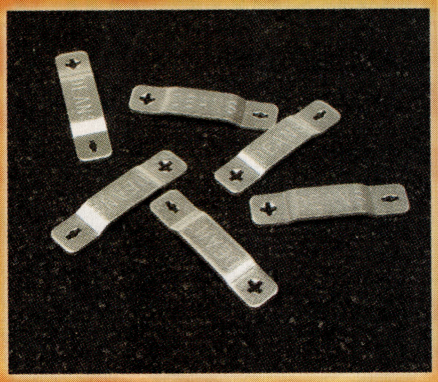
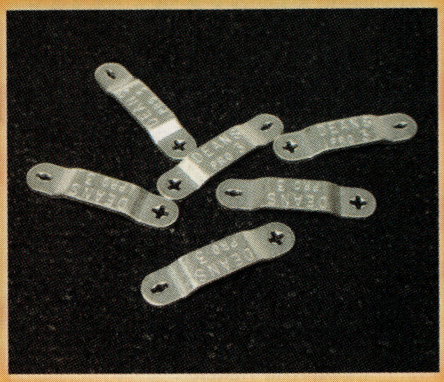


Plated to military specs., the ProBar 2.0 is designed for RC1700, RC2000, RC2400 and similar cells.

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

PROBAR 3™



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#1612 .....100pcs

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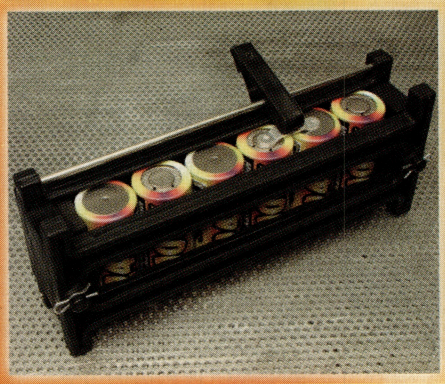

"Ten Must Have Tools" - R/C Car Action
"Rating: A+" -Xtreme R/C Cars
"The best building jig on the market" - R/C Car
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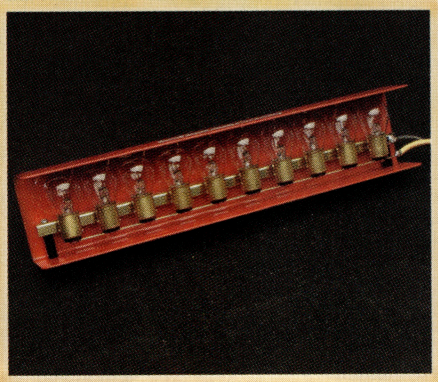
DISCHARGER



Car stand and discharger in one

#2030 .....kit
#2031 .....assembled

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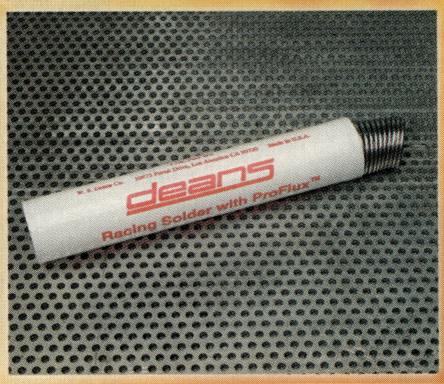

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#2020 .....1oz

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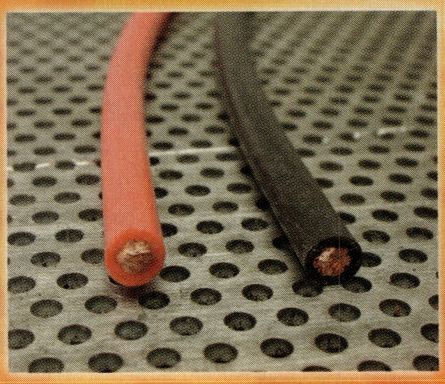

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#1410 .....2ft ea. red/blk
#1430 .....25ft Red
#1431 .....25ft Blk
#1432 .....25ft Blue

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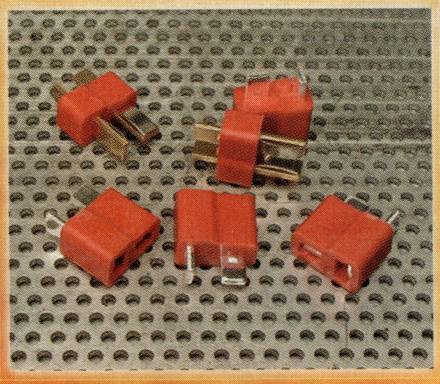

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JUST THE "FACTS"

In your last *R/C Car* magazine (August 2002) you had two product tests. On page 116, you tested the Integy Team Brush Serrator, and on page 114, you tested Team Orion's Core RS Stock Motor. In both tests you used a dyno. I am interested to know which dyno you used to test these products (type of dyno and software).

Tapani Torkkola
Via e-mail

Tapani, we use the Facts Machine dyno from Fantom Racing. We prefer this machine because it is a flywheel-style dyno and we feel this is one of the most accurate—and useful—dynos on the market (as a testimony to its capabilities, Trinity has recently switched from the Robitronics dyno to the Facts Machine). We are using the older version of the Fantom software (mainly because we haven't been able to get Troy from Fantom to send us the newer software).

EAGLE-EYED READER RUBS IT IN

In your September 2002 issue, on pages 88 and 89 of the HPI Nitro RS4 3 Type SS article, I noticed that the right rear tire is mounted backwards—or should be placed on the left side of the car. Did the tires come pre-glued or do pros like you make this amateur mistake? If so, would you consider hiring me as your official tire gluer? By the way, your coverage of the 2002 IFMAR 1/10-Scale Off-Road and On-Road World Championships was excellent.

Stuart Leiby
Via e-mail

Hey, Stuart! I'll bet that if I came to your house, I could find something to nitpik about, such as a bad soldering job or something. All right, you caught me; I screwed up on the gluing job when I mounted the Type SS's tires. Normally, I'm pretty good at such things (Doogie's the worst, however, as he is the king of mounting T-Maxx paddle tires in the wrong direction), but it was late—you know how that goes. But in my defense, HPI's X-pattern tires don't care which way they're mounted, so there was no adverse performance; just my embarrassment!—Frank

SKINNY'S ONE FAN

Hey, Skinny! First off, your mag is so cool. Thanks to your latest cover, (the Sidewinder race featuring the 1/8-scale Infernos) I bought that issue. I noticed on your Storm Pro you are using the Hardcore Racing cooling head made specifically for the OS RZ engines. Tell me, how good does it work? My friend at Fairview in Costa Mesa (it has cool dirt dunes where 1/8-scale buggies go big—really big) was going to sell me a silver one for my OS RZR for $40. Does it really cool your engine better than the stock head? I also love your shock setup: hard in the front, medium in the rear. I bet you're running 40 wt. in the front and 30wt. in the back. Sweet!

Adrian Luna
(Inferno MP-7.5, O.S. RZ-R, CVEC tuned pipe)
Via e-mail

Adrian, thanks for the great e-mail! Yes, we do have a great mag! Yes, I can say that the Hardcore head works great and really does keep your engine cooler than most heads out there. I would recommend that you to get one... not only that, but it looks cool too! Call Hardcore at (888) 928-7223. Tell them Skinny sent you and maybe they will throw some stickers in the order for you. Keep on reading our mag, and look for more 1/8-scale adventures from my Storm and me!—Skinny

CHANGE THE CHANNEL

What are the crystals for on an R/C car? I'm about to get an R/C that has removable crystals, but I don't know what that is.

Bryan
Via *rc-car.com*

Crystals are used to control the frequency that the radio operates on within its given band (in the U.S., this can be either 75 band or 27 band). Within each band are an allotted

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[FEEDBACK]

number of frequencies, or channels. If someone else is on your channel, you can switch to another by changing the crystals. There is a crystal in your transmitter, and its mate is installed in your receiver. Crystals are also designated for the transmitter and receiver (usually denoted by a "Tx" on the transmitter crystal and an "Rx" on the receiver crystal).

TOSS THE T-MAXX ENGINE?

I took my T-Maxx into the shop because it wouldn't fire, and they said that I needed a new piston, sleeve and a one-way bearing for the EZ-Starter. They said that I would be better off buying a new engine. I asked them what kind of O.S. engine they would recommend, and they told me the .15 CV-X was great. The question is what kind of increase in performance will I see in the O.S. max .15 CV-X compared to the stock TRX-15? Will the O.S. have more top-end and bottom-end than stock engine?

Avijit
Via rc-car.com

If you were happy with the performance of your truck's stock TRX-Pro engine, why replace it? The O.S. Engine's .15 is a more powerful engine, and our opinion is that it has a better carb, but it also costs significantly more money. We checked, and a replacement piston and sleeve for the TRX Pro costs only $33.99, and the one-way bearing for the EZ-Start (part no. 4011) is just $15.00. If your stock engine has a lot of miles on it, then we could see replacing it; however, if it just needs a rebuild, you can get away for less dough by installing a couple of replacement parts.

MORE ON THE UNLIMITED T-MAXX CLASS

Hey, Frank! I don't think the aftermarket has gone too far; everyone has an imagination. I want to know where I can get that JT conversion kit for the T-Maxx that Travis Amezcua had at Sidewinder Nitro Challenge.

SGT Christopher Fisher
Germany

Thus far, the consensus has been split: half of the people who have responded to the August issue's editorial "Has the aftermarket gone too far" express concern that such "hybrid" trucks are spoiling the nature of the T-Maxx class, while the other half feel that any modifications that improve performance and speed are fine as long as a separate class for stock-style trucks is maintained. You can find out more about JT's mad-monster conversion by logging on to jrracingproducts.com.

FOAM COOKING

My friend and I read about the On-Road Worlds in September's issue of *R/C Car*. We saw something about microwaving tire inserts, so we gave it a shot and had bad results. Could you give us some insight on how it works? We want to know how long we should microwave the inserts and if it should be done with the tires mounted to the wheels? Please help us before we burn something down?

Thanks,
Tater & Cooter
Spaztik Racing
via rc-car.com

Tater and Cooter, all of the drivers at the IFMAR On-Road Worlds had to use the same spec inserts and tires. The IFMAR officials at the On-Road Worlds in South Africa cut tires open to make sure that no one was cheating. Rumor had it that microwaving inserts produces a ballooning affect on certain types of foam rubber. Many drivers rumored that microwaving Team Orion's handout inserts would increase the foam's size and push against the inside walls of the tires. The increase in size would increase the tire's contact patch, resulting in an affect much like increasing tire pressure in full-size tires. This altering of inserts would have been against IFMAR regulations and result in a driver's immediate disqualification. Fortunately for the race's integrity, no one cheated only speculation about microwaving inserts was all that happened. Unfortunately at R/C Car, we have never experimented with microwaving foam inserts. If we need more traction we will experiment with different types of inserts and tire compounds to suit various surfaces and track temperatures. If you have old inserts or wish to experiment with tires that have been retired then you should know that not all foam inserts will balloon under the heat of a microwave. Inserts made from closed-cell foam rubber should slightly rise inside the tire if they are microwaved but experiment with old tires and inserts before you ruin expensive race tires. Be careful, and thanks for your questions.

MX-3

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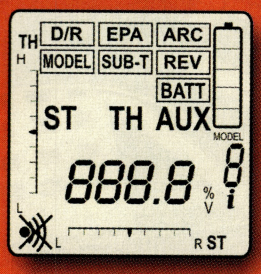
3 FM Channel



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Team Associated



The world is changing, and Associated knows this, because its best-selling products are no longer its race kits, but rather its ready-to-run trucks. In particular, its RC10GT RTR has been at the top of the Costa Mesa, California, company's sales charts since it was introduced in '98. But as with all good things, even the success of the RTR GT must come to an end at some point. Or does it? To gauge how well the GT RTR has held up over the years, we pitted it against its most formidable competition ever, the new Team Losi Triple-X NT Sport (see our shootout in the June '02 issue). And when the dust had settled, we concluded that the GT was beginning to show its age in the face of this newer, more feature-laden foe.

Although the GT RTR held its own in many of the shootout categories, there were several key areas in which the Associated truck clearly fell short. And it should be noted that the rest of the GT lineup does not suffer these detriments, as for the sake of competition, those trucks have received consistent updating. Shortly after our shootout was published, word of an improved version of the GT RTR reached our offices. On paper, it would appear that Associated has addressed virtually all of our concerns, but how does the new RTR GT Plus hold up in the real world? We were compelled to find out.

A BEST SELLER GETS A

RC10GT RTR Plus



MUCH-NEEDED MAKEOVER

OUTSTANDING FEATURES

OUTSTANDING FEATURES



DRIVETRAIN IMPROVEMENTS

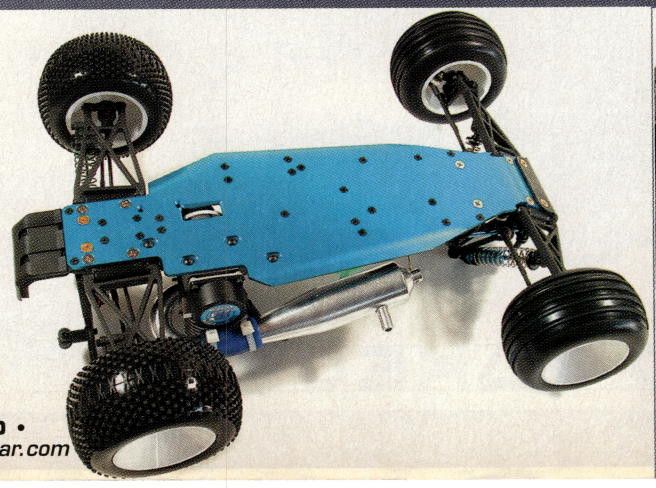
We also criticized the original GT RTR for its lack of ball bearings. When it was first introduced, the GT RTR set the standard, but as its competition grew—most of which had full ball bearings—the GT's less-efficient bronze bushings began to be the truck's Achilles' heel. So we're extremely happy to report that every part of the GT Plus' drivetrain spins on efficient ball bearings. In addition, all four wheels ride on ball bearings.

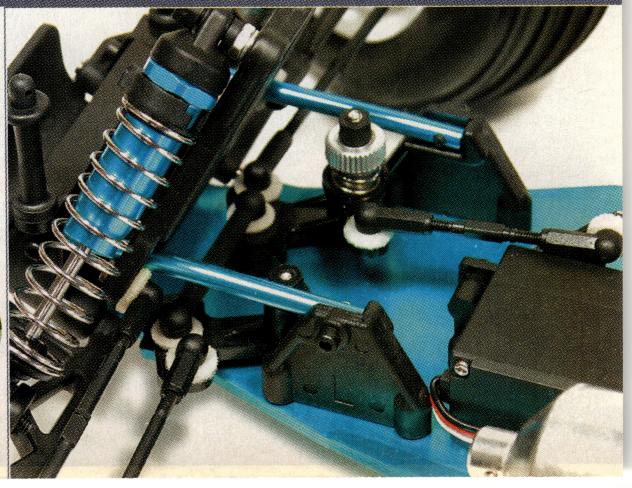
The original GT RTR was also saddled with the larger, 3/8-inch rear axles that date all the way back to the very first GT kit (over ten years ago). The problem is that Associated had switched to smaller, 3/16-inch axles on its race trucks years ago, and as a result, just about every wheel designed to fit the GT will not fit the older, larger axles. If you wanted to use the latest aftermarket wheels on your GT RTR, you had to spend money for new axles and new bearings to support them. Not any more: the GT Plus is fitted with new 3/16-inch rear axles that will fit all of the trick wheels available for the GT.

STRETCHED CHASSIS

What made the Losi NT Sport fare so well in our shootout was that it more closely resembled its full-race siblings than did the Associated truck. The original GT RTR rode on a shorter wheelbase than the Team and Factory Team GTs, which made it less stable on extremely rough and bumpy surfaces. The new GT Plus gets the benefit of a stretched chassis (by approximately 1/2 inch) that brings it into line with the rest of the GT lineup. So not only is the GT Plus better able to handle extreme terrain, but it also will fit many of today's most popular aftermarket truck bodies, which have been designed to fit the longer wheelbase trucks.

The GT Plus also gets the molded-composite nose-brace standoffs from the Team and Factory Team editions. These replace the aluminum standoffs used on the first RTR, but they are actually both lighter and stronger because they have a wider "footprint" on the chassis.





RC10GT RTR Plus

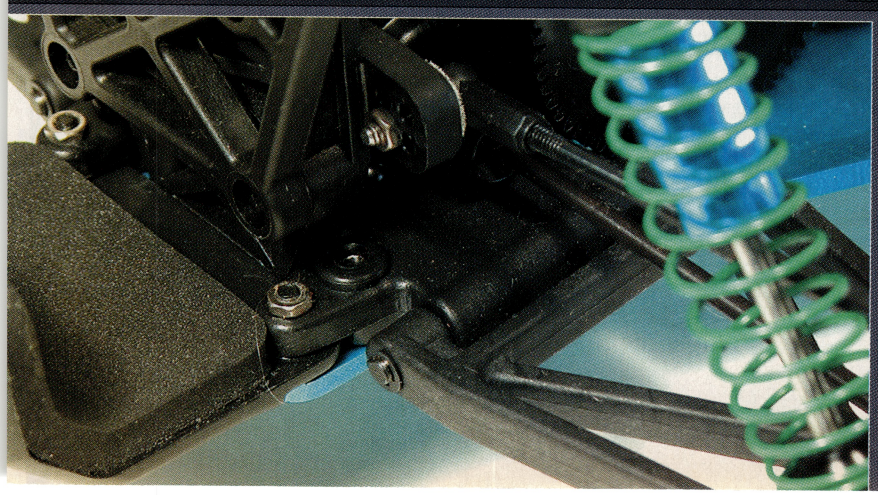
EXTRA ATTENTION

As if all of the improvements made to the GT Plus aren't enough, Associated has seen fit to include a squeeze-type fuel bottle and a rechargeable NiCad glow igniter (not the cheaper alkaline cell type). So, the only things you'll need to run your GT Plus are fuel and 12 AA batteries for the radio system.

PRO-LINE TO THE RESCUE

Looks are an important reason why people buy trucks, and the original GT RTR's "retro" pickup body was, well, a little too nostalgic for us, especially in comparison to the Losi truck's low-slung and curvaceous shell. To address this, Associated turned to the style gurus at Pro-Line to develop a new body that comes pre-screened in a choice of two color schemes. The shell itself is one of the best-looking truck bodies we've seen, and the pre-screen scheme, with its checkered-flag motif, is very tasteful. We also applaud Associated for the improved quality of the included decals (some of which have been pre-applied to save you even more work), which are vast improvements over those of the original GT RTR that peeled up even before the truck was run.



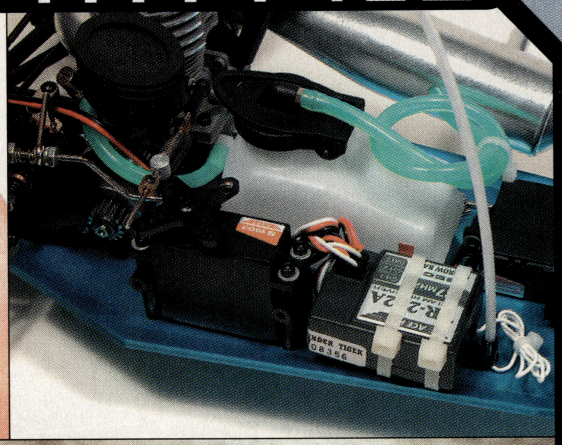


BEEFED-UP SUSPENSION

The weakest link of the original GT RTR was its rear arm mounts. During our June issue's shootout, we experienced failure in both rear arm mounts in the form of stripped screws that would allow the mounts to wiggle and enlarge the chassis' screw holes. Associated has also addressed this issue with a pair of new rear mounts that, like the aftermarket mounts from RPM, extend rearward to encapsulate the battery-tray screws. This should not only prevent the mounts from being stripped so easily, but the mounts will also provide additional strength to the battery tray. Bravo, Associated! We'll see later if the new mounts do the trick.

RC10GT RTR Plus

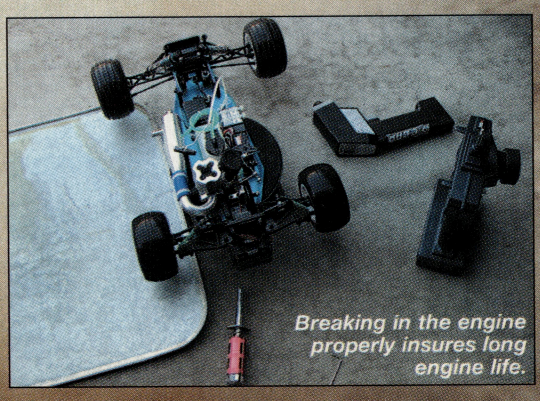






SIMPLE PROGRAMMING

The GT Plus is the first RTR to come with Ace R/C's all-new Jaguar AM radio system. Although this is definitely an entry-level radio, it has quite a few features that make it an excellent system for the first-timer, and for use with gas models. The transmitter's case angles the steering wheel at ten degrees to improve ergonomics and make it more comfortable to hold. In addition, there are four trim knobs on the main panel to allow for the setting of the steering and throttle trims as well as the high and low throttle ATV function. This latter adjustment permits the individual control of the servo's throw for both the throttle and brake movements—an essential setting for nitro engines. The Jaguar also has a grip-mounted dial for the steering dual-rate function (which allows you to set the steering's throw equally for both left and right). Finally, the radio has the customary reverse switches for both channels, and a bank of three LEDs that indicate the level of the batteries.



Breaking in the engine properly insures long engine life.

Are You Ruining Your Batteries?

If you're charging your Ni-MH batteries using a Peak Detection mode, that's exactly what you're doing: RUINING YOUR BATTERIES!

While Peak Detection is ideal for charging Ni-CD batteries, it's a nightmare for your Ni-MH batteries. Don't find out the hard way that

ALL CHARGERS ARE NOT CREATED EQUAL

PROBLEM

Peak Detection charging overheats Ni-MH batteries because it waits too long to terminate the charge. This causes heat build-up in your Ni-MH battery packs, which significantly reduces performance and cycle life of your batteries. Before you know it, your batteries are ruined.

SOLUTION

Ni-MH batteries require special care in order to obtain the best performance. Charging them using a charge mode designed specifically for Ni-MH batteries will ensure you get the most life out of your battery pack. **In fact, the major battery manufacturers recommend using charging devices that use slope detection for charge termination.** So what's the best way to charge your batteries? Use a Novak **Millennium Pro** or **Ionic charger**, which incorporates slope detection in the Ni-MH2 mode — the ideal way to charge Ni-MH batteries. Remember:

ALL CHARGERS ARE NOT CREATED EQUAL!

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RC10GT RTR Plus



REPORT CARD

Test location: KZ Raceway, Sun Valley, CA, Hot Rod Hobbies Raceway, Saugus, CA, and various dirt locations

Test conditions: hard-packed off-road tracks, loamy dirt lots

Engine: A

The last two Associated/Thunder Tiger .15 engines we have tested, this one included, have performed flawlessly. The GT Plus' engine fired up on the second or third pull and idled contently through its first tank without requiring a single adjustment to its pre-set carb. After the second tankful of fuel had been used, the GT Plus felt powerful and responsive. The funnel-shaped carb restrictor, which looks like it might hurt the engine's overall horsepower, actually provides throttle response that feels similar to the powerband of an electric car— smooth and progressive.

Radio: A

Associated says that computerized, multi-model radios are too confusing for most RTR customers. Team Losi doesn't feel that way and includes one with their Triple-X NT Sport RTR. In our June issue's shootout between the two trucks, we picked Losi's radio over the Hitec Lynx of the original GT RTR. Now, we have the new Ace Jaguar in the GT Plus, and it's a new ball game. The Jaguar is a simple AM pistol radio, but it's the best of its breed; the ergos are great (we liked the angled wheel) and it has such gas-car essentials as dual-rate and throttle end-point adjustments.

Steering: B-

Before you Associated fanatics get up in arms, hear us out: what separates the GT Plus from an "A" in this category is its steering servo — the rest of the truck is dialed. This isn't to say that the metal-gear (thank you) Ace servo is bad, it's just rather lazy and not all that powerful. As a result, the GT Plus is less nimble than it could be, but it's also easy to drive. And if you're just starting out, this is a desirable condition.

Suspension: B+

The GT RTR has always had good suspension — and it should, as it's nearly identical to that of the national champion Factory Team GT — but with the new, longer wheelbase, the GT Plus is more stable over bumpy terrain, and has much more steering when exiting turns under full throttle.

Durability: B+

We had several odd reliability issues with the last GT RTR we tested, and most of these had to do with loose and missing hardware. With the GT Plus, Associated has apparently fixed the glitch, as all of the new truck's nuts and bolts held fast throughout our test. Kudos also to the new rear arm-mounts, which took a pounding without a whimper. What did we break? Only a pull-starter cord.

SPECS

Price:	$289.99
Length:	16in
Width:	12.3in
Wheelbase:	11.3in
Track (f/r):	6.8 in./172mm
Weight:	3.75 lb./1,700g
Chassis:	Stamped aluminum plate
Suspension:	Ind. lower arms w/adj. upper links
Drivetrain:	Sealed gearbox, 2.6:1 ratio
Final drive:	7.55:1 (first), 5.82:1 (second)
Diff(s):	Adjustable ball diff
Damping:	Aluminum oil-filled shocks
Bearings:	16 ball bearings
Wheels:	One-piece white nylon dish
Tires:	X-pattern rear, multi-rib fronts

Accessories included:

Ace R/C Jaguar pistol radio system, Associated .15 pull-start engine, pre-painted truck body, fuel bottle, rechargeable glow-plug igniter

Accessories you'll need:

Fuel (between 10 to 20 percent), 12 AA batteries

Final Score

Highs: Where to begin? For just a few bucks more than the cost of the old GT RTR, we get full ball-bearings, a longer chassis, a much cooler-looking body, better decals, a better radio, new axles (so we can use off-the-shelf wheels) and improved rear-arm mounts.

Lows: We broke a pull-start cord. Also, the stock X-pattern rear tires work well, but ours had what felt like half of its foam insert missing — there was just air space.

The verdict: The GT RTR has been a sales' success for Team Associated since its introduction, and it continued to be one of the best-selling RTR trucks even up to the point when Associated cancelled production in favor of the new model. With the GT Plus, Associated has updated its winning formula without a radical redesigning of the truck that so many have come to love. It's more of the same, just better.

SOURCES

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

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

UNSTOPPABLE MONSTER TRUCKIN' FUN - MEGA FORCE STYLE!

: megaforce :

RTR



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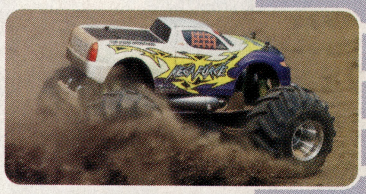




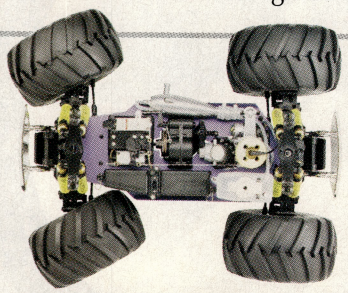
MEGAFORCE™

If you're new to nitro, Kyosho's Mega Force monster truck is the vehicle for you! The factory-built Mega Force is exceptionally durable and easy to operate, plus it comes totally equipped. It also has extras not found on other models — such as the super-reliable, beefed-up mega **Quick Reverse Clutch** (QRC) that delivers maximum forward/reverse action, and the ease of the **Touch Starter** ignition system. So, if you want to feel the relentless "force" of cool, car-crushing monster truckin', break into it the right way...do it with the Mega Force Ready-To-Run monster truck from Kyosho!

For more information, and the location of the dealer near you, visit our website at www.kyosho.com or call 1-800-682-8948 and mention code number 2946D.



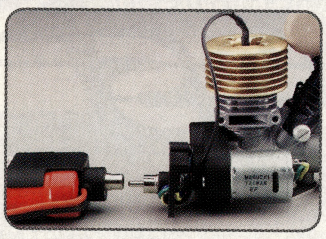
The included Perfex™ 2-channel radio system delivers precise forward/reverse or forward/brake operation, and all radio linkages are preinstalled.



Among many other performance features, the subframe structure has been strengthened to provide maximum durability.



The Mega Force rides tall on large, low-pressure tires with foam inserts that are already glued to the rugged rims.



You won't need a glow starter or recoil starter with the Mega Force! A standard 6-cell battery pack provides instant ignition without a push button, and without having to remove the body.

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THE FINEST RADIO CONTROL MODELS

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SERPENT IMPACT / VECTOR GS SONIC, SMP SLIDE CARS

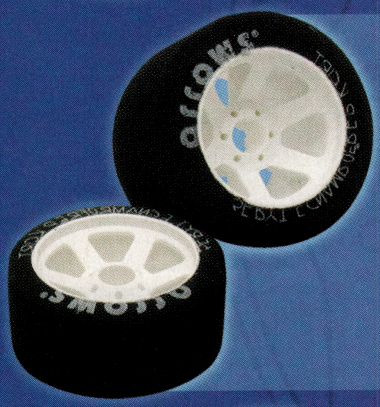
Used by top drivers from around the world, Arrows are the fastest tires for your 1/8-scale GS Sonic, Serpent Vector/Veteq, SMP Slide, and for your 1/10-Scale Serpent Impact. Arrows tires use only the highest quality foam rubber and come pre-mounted and pre-trued on attractive yellow BBS-style wheels. There are three compounds to choose from to fit your exact needs – "Racing Compound" is Arrows' top-of-the-line tire, "Multiring Compound" offers greater side-to-side stiffness, and "NRG Compound" offers similar performance as the "Racing Compound" at a reduced price for the budget minded racer. Racing and Multiring Compound tires are available in 25-45 shores, while NRG's are available in 30-40 shores.



PICCO 1/8, 1/10 INTEGRA

Increase the performance of your high-performance Picco Integra 1/10-scale and 1/8-scale cars with Arrows tires. Pre-mounted on original white multi-spoke Picco wheels, the Arrows tires are a direct replacement for your Integra. With three high-performance tire compounds and a large variety of shores to choose from, you are sure to make the right choice for your car. The winner's circle will be closer than ever.

MULTIRING SYSTEM uses multiple strips of rubber glued across the entire width of the wheel to produce a tire with superior side to side grip and longer wear.



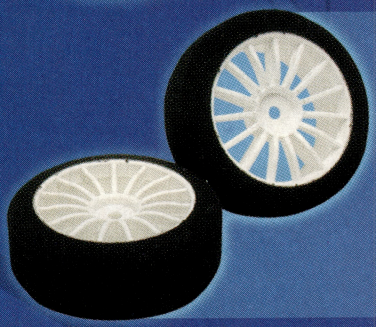
MUGEN MRX 3 / K2 X

Run the fastest tires in the world on the fastest cars in the world! The compounds used in Arrows tires are a perfect match for your 1/8-scale Mugen MRX-3 and 1/10-scale K2-X Avance cars. Arrows Mugen tires come pre-mounted and pre-trued on original white 6-spoke wheels, and are ready to hit the track. All compounds and shores are available to help put your Mugen car in the winner's circle.



TOURING FOAM

Introducing Arrows Touring Foam tires. Using the same Racing Rubber compound found on original Arrows tires. Arrows Touring Foam tires offer the best grip and longest wear at a competitive price. These tires come pre-mounted on high-quality white multi-spoke wheels, and include axle spacers to change the offset. Arrows Touring Foam tires are 26mm wide and will fit virtually any electric or nitro touring cars.



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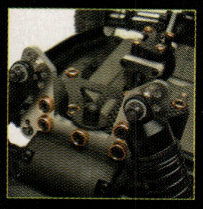
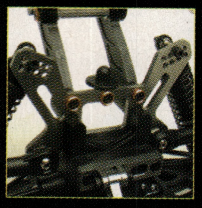
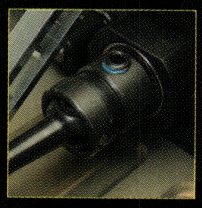
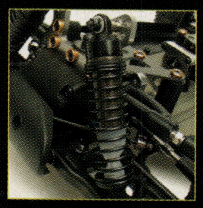
STORM PRO





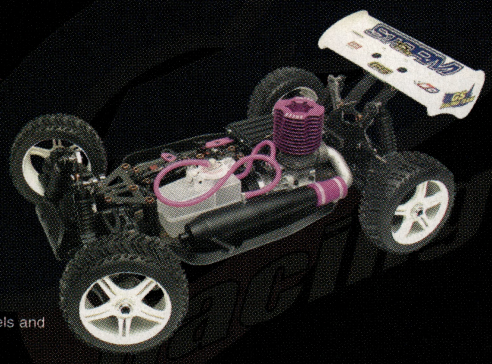




FEATURES

- 7075 T6 MAIN CHASSIS
- 7075 T6 FRONT/REAR SHOCK TOWER
- 7075 T6 FRONT UPPER SUSPENSION HINGE PIN HOLDER
- 7075 T6 3° LOWER SUSPENTION HINGE PIN HOLDER SETS
- ADJUSTABLE SERVO SAVER PIPE SET
- 7075 T6 FRONT/REAR CHASSIS BRACE
- UNIVERSIAL FRONT/REAR AND CENTER DRIVE SHAFTS
- HARD ANODIZED WHEEL HUB SET (4)
- ALUMINUM RADIO TRAY POST
- ALUMINUM WING JOINT
- HEAT-SINK ENGINE MOUNTS
- HIGH PERFORMANCE FRONT/REAR SHOCKS
- GRAPHITE RADIO TRAY, FRONT SUPPORT PLATE AND BRAKE PLATE
- FUEL TANK SPLASH GUARD
- BRAKE SPLASH GUARD
- DUAL DISK BRAKES

GS Racing



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

GS RACING

STORM PRO | 1/8 SCALE BUGGY



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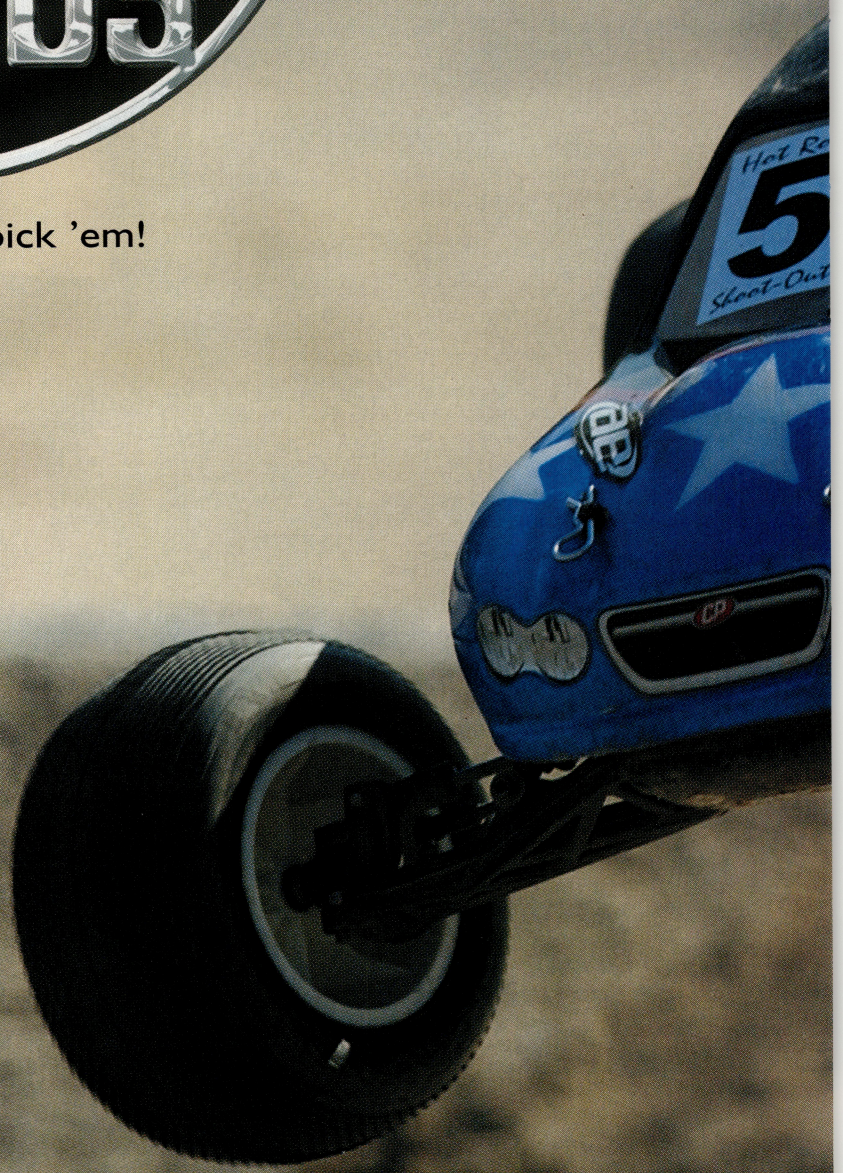
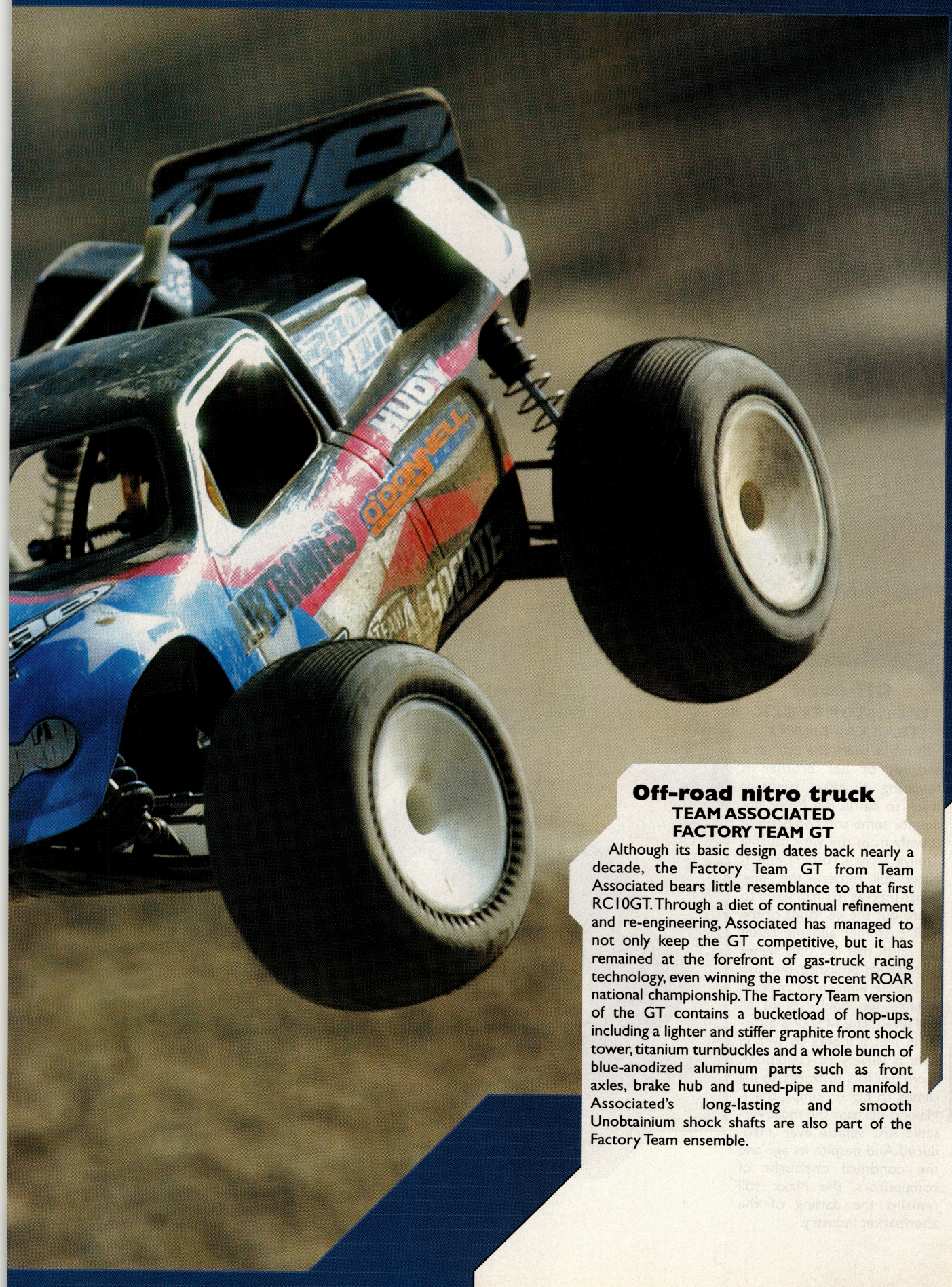
R/C CAR Editor's Choice Awards 2002

Which is the best? We pick 'em!

Of the hundreds of phone calls, letters and e-mails we receive each month here at the *R/C Car* office, the most commonly asked questions all involve our opinions regarding "which is best." While some magazines prefer to poll their readership in lieu of making their own choices, we like to think that you buy this magazine to find out what we think about the literally thousands of products on the market—after all, we do get the chance to play with a wider variety of cool stuff than most of you. So with this in mind, we thought that you would like to know our picks for the best in the following categories. So without further delay, here are the 2002 *R/C Car* Editor's Choice Awards!





Off-road nitro truck

TEAM ASSOCIATED FACTORY TEAM GT

Although its basic design dates back nearly a decade, the Factory Team GT from Team Associated bears little resemblance to that first RC10GT. Through a diet of continual refinement and re-engineering, Associated has managed to not only keep the GT competitive, but it has remained at the forefront of gas-truck racing technology, even winning the most recent ROAR national championship. The Factory Team version of the GT contains a bucketload of hop-ups, including a lighter and stiffer graphite front shock tower, titanium turnbuckles and a whole bunch of blue-anodized aluminum parts such as front axles, brake hub and tuned-pipe and manifold. Associated's long-lasting and smooth Unobtainium shock shafts are also part of the Factory Team ensemble.

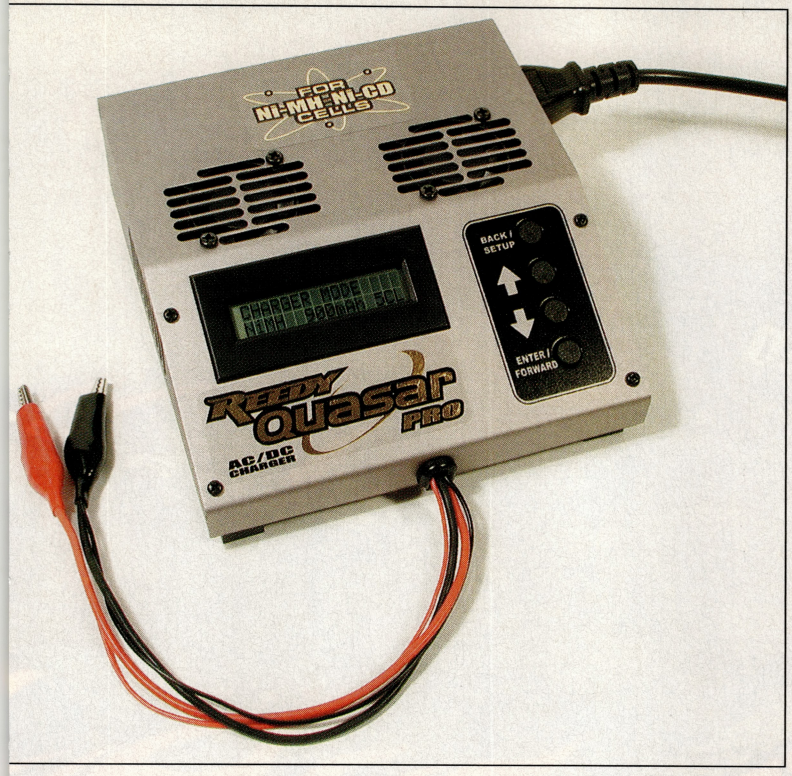


Off-road monster truck

TRAXXAS T-MAXX

It might seem like everyone and his or her brother is releasing a nitro monster truck to battle the Maxx, but despite some stiff competition (mainly from the very capable Tamiya Terra Crusher), the T-Maxx still remains the king. Why? Traxxas has had years to figure out the demands of the RTR customer, and the result is a truck that not only shines with design brilliance, but also is durable enough to make it suitable for hobbyists of all skill levels. The T-Maxx is a rarity in that it works so well in such a variety of conditions. From dirt lots to tracks, to hill climbs to big-air jumps, the T-Maxx is perhaps the most versatile R/C vehicle ever introduced. And despite its age and the continual onslaught of competitors, the Maxx still remains the darling of the aftermarket industry.





High-end charger

REEDY QUASAR PRO

If you're an electric racer looking for one device to service your batteries and to squeeze the maximum performance from them, then look no further than the Quasar Pro from Reedy. Not only can the Pro charge both NiCad and NiMH cells of all sizes and configurations, but it also serves as a discharger (of up to 20 amps—consistently) as well as a battery conditioner (through the use of a cycling function that automatically charges then discharges the cells). Through months of track testing and abuse, the Quasar Pro has held up to all that we could have thrown at it. Its titanium-hued aluminum case is virtually impervious to anything you'll find at the track (including motor spray and tire sauce), and its controls are simple and intuitive. Aside from a buzzer chirp that sounds like a constipated condor, the Quasar Pro has earned the title of Editor's Choice.



Off-Road Electric Buggy

TEAM LOSI TRIPLE-X KINWALD EDITION

It's the current IFMAR World Champion, it's the current ROAR national champion, but to us, the most outstanding features of the Losi Triple-X Kinwald Edition are its unbelievably forgiving handling and the incredible value it represents. For just a little more money than the standard "plastic" Triple-X kit, the KE includes virtually every factory hop-up item in Losi's catalogue. Graphite composite, lightweight aluminum drivetrain parts and titanium turnbuckles; the KE is identical to the car driven by the factory hotshots. In our test of the KE in the June 2001 issue, we praised the car for its superb balance of steering, traction and stability. Out of the box, no other 2WD buggy can claim to be as easy to drive quickly.



Nitro touring car

TEAM ASSOCIATED NITRO TC3

When Associated applied the TC3's revolutionary shaft-driven 4WD layout to a nitro platform, it created what we feel to be the best handling, easiest to tune nitro touring car we've ever tested. Virtually impervious to the dirt, dust and other debris that often litters pavement, the Nitro TC3's sealed gearboxes contain ball diffs that have been redesigned to meet the rigors of nitro racing. After the car made its debut two years ago at the Chicago RCHTA show, Associated delayed its release to allow for the development of a new pillow-ball suspension that would hold up better to the higher speeds and nastier crashes associated with gas power. With a newly designed exhaust system, a low-CG radio tray and typical Associated attention to detail, the Nitro TC3 is the class of its field.

editor's choice awards





Stock motor

TEAM ORION CORE STOCK RS

We do a lot of stock racing here at *R/C Car*. It's not that we don't like modified racing, it's just that the stock class seems to be the most popular wherever we race. Be that as it may, we get the chance to test just about every stock motor available, and the one we have found to have the best combination of power and speed is the Core from Team Orion. Thanks to its can design and its G12 wet magnets, the Core benefits from an extremely powerful magnetic field, which gives it superb acceleration without sacrificing its ability to rev (thanks to its rpm-biased armature design). For the ultimate in bolt-in horsepower, get yourself the Speed Tuned Core, which has been tweaked and dyno-tested at the factory.

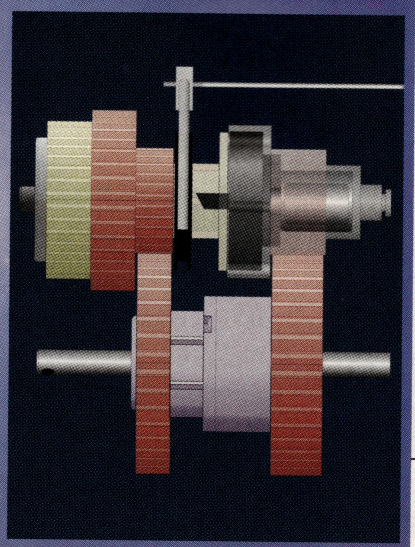
INNOVATION AWARD

TAMIYA'S FRAT TRANSMISSION

The decision to award the Traxxas T-Maxx the "best monster truck" was not an easy one. In our minds, there was one truck that might have been capable of dethroning the mighty Maxx as king, and that truck was the Tamiya Terra Crusher.

One of the features that make the Tamiya truck standout as a real threat is its incredibly innovative transmission. Called the FRAT (Forward and Reverse Automatic Transmission), this clever gearbox provides the same type of drive arrangement as the T-Maxx - forward and reverse, plus a two-speed transmission - but requires only a two-channel radio to do so. The Traxxas truck needs three channels.

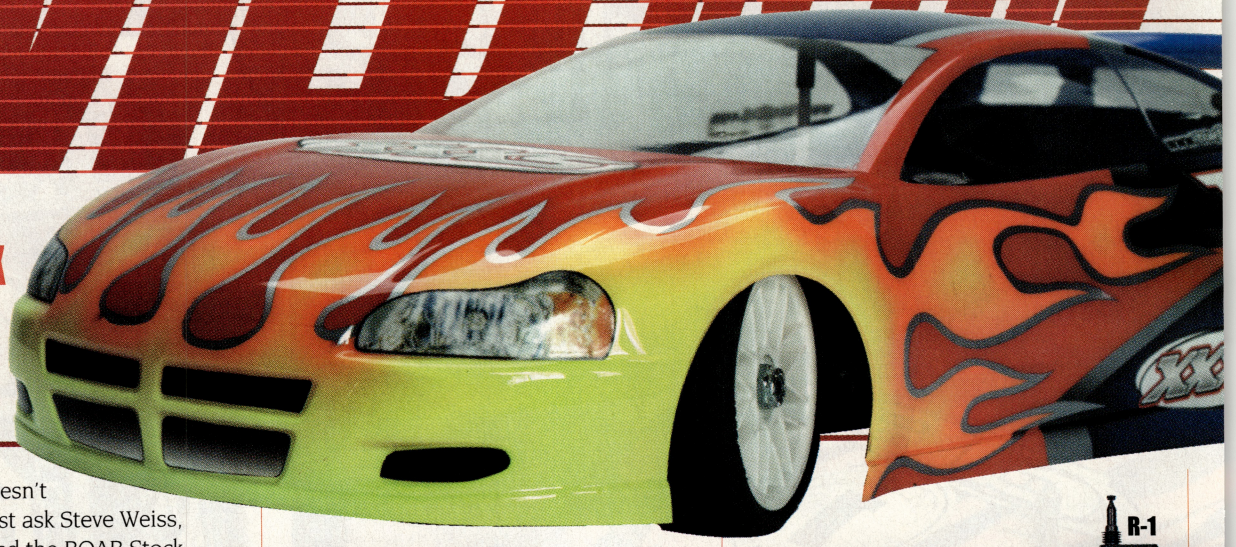
Although Tamiya has had to endure some teething pains with the FRAT (primarily in the reversing mechanism's clutch), there is no doubt as to the Terra Crusher's potential. Who knows: maybe next year will be the year of the Crusher.



WILD IN THE

2002 ROAR Stock Nationals Champion

Team Losi® XXX-S



And if it still doesn't add up for you, just ask Steve Weiss, who won and TQ'ed the ROAR Stock Nationals with Team Losi's **XXX-S** sedan. Or Brian Kinwald, who finished 2nd in the Modified division. The XXX-S is designed from the ground up to optimize the handling dynamics and performance characteristics unique to sedans. Its startlingly innovative single-belt drivetrain offers minimum friction, maximum durability and greater efficiency. And don't forget those hot XXX-S hop-ups—shocks, spur gears, sway bars and groovy graphite parts. Find Losi's complete line at our Web site or your friendly neighborhood hobby shop.

		List	Our Price
LOSA0250	XXX-S Touring Sedan	369.99	219.99
LOSA9650	Graphite Conversion Kit	119.99	107.99
Speed Controls			
GMM2846	V12XC World Champs Edition	249.99	159.99
NOV1770	Atom Mini Programmable ESC	209.00	124.99
Motors			
ASC380	Ti Modified 10T Dbl. (modified)	95.00	59.99
TRID4HVQ10	D4 10T Quad Wind Hi-Variance (modified)	95.00	59.99

The Car from H.A.R.M.

If you want to dwarf your competition, there's no better way than with these gigantic **H.A.R.M. 1/5-scale RTRs**. Completely prebuilt with a JR XR3 radio system and 23cc Solo gas engine already installed, these big daddies weigh nearly 20 pounds, stretch 35 inches in length, and can roar at speeds of at least 40 mph. Each one boasts a tough billet aluminum chassis; durable, fully adjustable suspension; coil-over, oil-filled shocks that provide exceptionally crisp corner handling and more. Plus, they're available in three painted bodies that faithfully ape the streets' hottest racers. These babies are a must for any "boy" who likes big toys.

		List	Our Price
HRE15310151H	1/5 RTR w/23cc & XR3: CLK DTM	1999.99	1499.99
HRE15310201H	1/5 RTR w/23cc & XR3: Outlaw Truck	1949.99	1449.99
HRE15310301H	1/5 RTR w/23cc & XR3: Astra DTM	1999.99	1499.99

Stylin' Systems



JR computer systems mean precise, unparalleled control. With the **XR2 AM**, you get a large, easy-to-read LCD screen, dual rates, servo travel adjustments, JR's unique Direct Access Trims™ that make digital control extra easy, 2-model memory and more at a great price. If you're looking for a competition-ready radio, step up to the 3-channel, 3-model memory **XR3 FM** radio, or go all out with the top-of-the-line 3-channel, 10-model memory **R-1 FM/PCM** selectable radio. Speaking of control, don't forget that JR offers a complete line of servos and receivers too.

H.A.R.M. 1/5 Outlaw Truck RTR

H.A.R.M. 1/5 Astra DTM RTR

H.A.R.M. 1/5 CLK DTM RTR



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STREETS



It won the 2002 ROAR Stock Nationals. It swept the Snowbird Nationals. And it rumbled its way to race wins at the Trinity Touring Car Challenge.

You do the math.



JR RADIO SYSTEMS

		List	Our Price
JRP212127	XR2 AM, 2-Z270 Servos, 27 MHz	129.95	99.95
JRP212175	XR2 AM, 2-Z270 Servos, 75 MHz	129.95	99.95
JRP314127	XR3 FM, 2-Z270 Servos, 27 MHz	229.95	169.95
JRP314175	XR3 FM, 2-Z270 Servos, 75 MHz	229.95	169.95
JRP3140**	R-1 FM Tx & Rx Only w/Module	559.95	399.95
JRP3160**	R-1 PCM Tx & Rx Only w/Module	599.95	439.95

Replace ** with channel number when ordering

Vision Quest



GS Racing Vision Pro Nitro Kit

GS Racing's **Vision Pro** ranks alongside today's best racing chassis. Its strong, virtually flex-free 4mm T6 aluminum chassis plate will let you accurately tune the suspension without having the settings distorted by chassis flex. You'll also love the three-belt 4WD drivetrain, fully adjustable two-speed transmission and Teflon-coated, hard-anodized, adjustable shocks that give you plenty of tuning options.

GS RACING VISION PRO

		List	Our Price
GSC411	Vision Pro Nitro Kit	479.99	309.99

ACCESSORIES FOR VISION PRO:

OMAP493	Omega XT .12 Rear Exhaust On-Road	219.99	159.99
DYN1415	5-Cell 1000mAh Ni-MH RX Flat	44.95	35.95
DYN2370	Blue Thunder™ Race Formula 20%, Quart	11.95	10.95
DYN2508	McCoy MC59 Power Plugs (2)	10.95	10.95

3...2...1...Ignition!

Blast off with Dynamite's 1/24-scale **Rocket Racer RTR** and turn your pool table or patio into a racetrack. It fits right in the palm of your hand and comes completely ready to race from the box, including a painted fiberglass chassis, pistol-grip radio, body clips and more. You can also adjust the car's handling ability using the radio's steering rate dial, so you can get quicker turning response on tight S-turns, while not overcranking on big sweeping oval courses. For sheer racing thrills, the Rocket Racer is more than a pocketful of fun.

Dynamite® 1/24 scale Rocket Racers Ready-to-Run Fun

DYNAMITE 1/24-SCALE ROCKET RACER READY-TO-RUN

		List	Our Price
DYN8101	Rocket Racer: SX-GT1	199.99	139.99
DYN8102	Rocket Racer: P-GT1	199.99	139.99
DYN8103	Rocket Racer: MCF1	199.99	139.99
DYN8104	Rocket Racer: C-DTM	199.99	139.99

Customize your Dynamite Rocket Racer with authentic race sponsor decals (sold separately).

RULE THE POOL

NEW

Dash, slash, and run circles around practically everything else on the water with the ultimate in pool-sized ready-to-run fun—the HobbyZone® **Zig Zag Racer**™. Its compact size, slingshot acceleration and turn-on-a-dime agility are unlike any other RTR boat. The Zig Zag Racer comes completely assembled in green or yellow with a rechargeable battery, wall charger and decorative stickers included.



HobbyZone Zig Zag Racers

		List	Our Price
HBZ3305	Zig Zag Racer RTR: Yellow	99.99	79.99
HBZ3310	Zig Zag Racer RTR: Green	99.99	79.99

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Tork it up! Cool car products, fascinating features... get *Tork* now at your hobby shop, by phone at 800-338-4639 or online at horizonhobby.com. (And if you're also into flying, ask for our air *Quarterly* too.)

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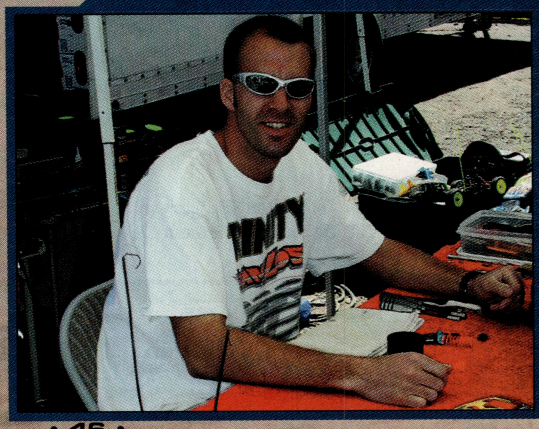
HORIZON HOBBY

editor's choice awards

Off-Road Electric Truck

TEAM LOSI TRIPLE-XT MATT FRANCIS EDITION

Following in the tradition of the Kinwald Edition Triple-X buggy, Team Losi introduced the Matt Francis Edition of its Triple-XT truck early in '02, and the winning streak began immediately. In addition to a host of graphite, aluminum and titanium accessories, the Francis truck benefits from a setup developed by Matt himself—a setup that we have found to work so well that, after nearly eight months of racing, we haven't changed it. The truck literally floats over the roughest track conditions, yet doesn't exhibit the excessive body roll usually associated with such compliant suspension, which means that its cornering speed is unsurpassed. And with its signature red wheels, tie-rod ends, bumper and rear motor guard, as well as its ultra-hot looking Fury body, the Francis truck stands out in the crowd—just make certain to have your hobby dealer stock up on replacement red wheels!



Driver

MATT FRANCIS

Matt earned this spot in our Editor's Choice Awards not only because he is a two-time IFMAR World Champion ('95 and '02) and a multiple ROAR national champion, but because he has also proven his versatility as a driver by finishing a close second to Barry Baker at the recent Reedy Touring Car Race of Champions. Besides all of his on-track accomplishments, Matt also earns kudos for his demeanor off the track, where he is accessible and friendly—truly a great ambassador for his sponsors and for the hobby in general. Matt's goals are to continue racing for as many years as he is competitive, and, in addition to receiving his own namesake Team Losi off-road truck, has recently spearheaded his own line of Matt Francis Racing Products through Trinity.

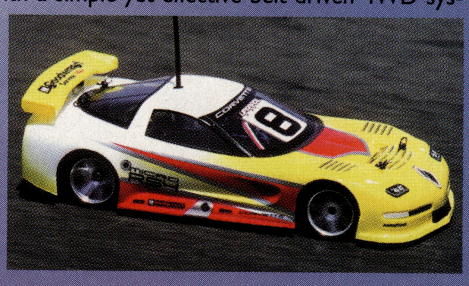
INNOVATION AWARD

HPI MICRO RS4

It's kind of difficult to give an award to a product that's basically in a class by itself. But rest assured, in the field of "sub 1/10-scale" cars, nothing has come close to the impact created by HPI's Micro RS4.

HPI chose to make a micro-sized racer that was just small enough to be driven indoors, yet not so diminutive that the great outdoors would swallow it up. The result is a car that can relieve boredom on a rainy day, yet can also be raced on the tracks where the big cars race.

The decision to endow the Micro RS4 with a simple-yet-effective belt-driven 4WD system was also a stroke of genius. Traction is in abundance at all times, making this the perfect learning tool for the absolute beginner, and a four-wheel drifting monster for the more experienced.



The Micro RS4 is a winner in anyone's book, and judging by its legions of loyal fans, and by the support it has received from the aftermarket, we'll be spouting the Micro RS4's virtues for years to come.

editor's choice awards



Electric touring car

TEAM LOSI XXX-S

As far as we're concerned, the XXX-S and its single belt 4WD system are as cutting-edge as the Associated TC3 was when it was introduced. State-of-the-art doesn't begin to describe the engineering that went into this car. The revolutionary single-belt drivetrain reduces drag by minimizing the amount the belt must be bent, and the easy access to both diffs, as well as to the spur gear, makes this one of the easiest cars to maintain. Although a new design, the XXX-S has already made a name for itself at the highest level of racing, with its most notable title being that of the 2001 ROAR National Champion. The bottom line is that when we look at the XXX-S, it's so evident that someone behind the design mouse paid extra attention to the details.

Off-road nitro buggy
KYOSHO INFERNO MP-7.5 KANAI EDITION

Kyosho nitro buggies have won five consecutive IFMAR world championships, and the newest design—the MP-7.5—has claimed the past two. No matter what the competition musters, Kyosho always seems to have the answer come crunch time. The latest addition to the lineup, the Kanai Edition, commemorates 2001 IFMAR World Champion Yuichi Kanai's thrilling victory in Las Vegas. Ironically, Kanai is also the man responsible for the design of the MP-7.5! With its small diameter diffs (that have a clever hydraulic limited-slip feature), turnbuckle tie-rods, universal-joint driveshafts and special chassis stiffeners, the Kanai Edition takes an already potent package and makes it nearly unbeatable.

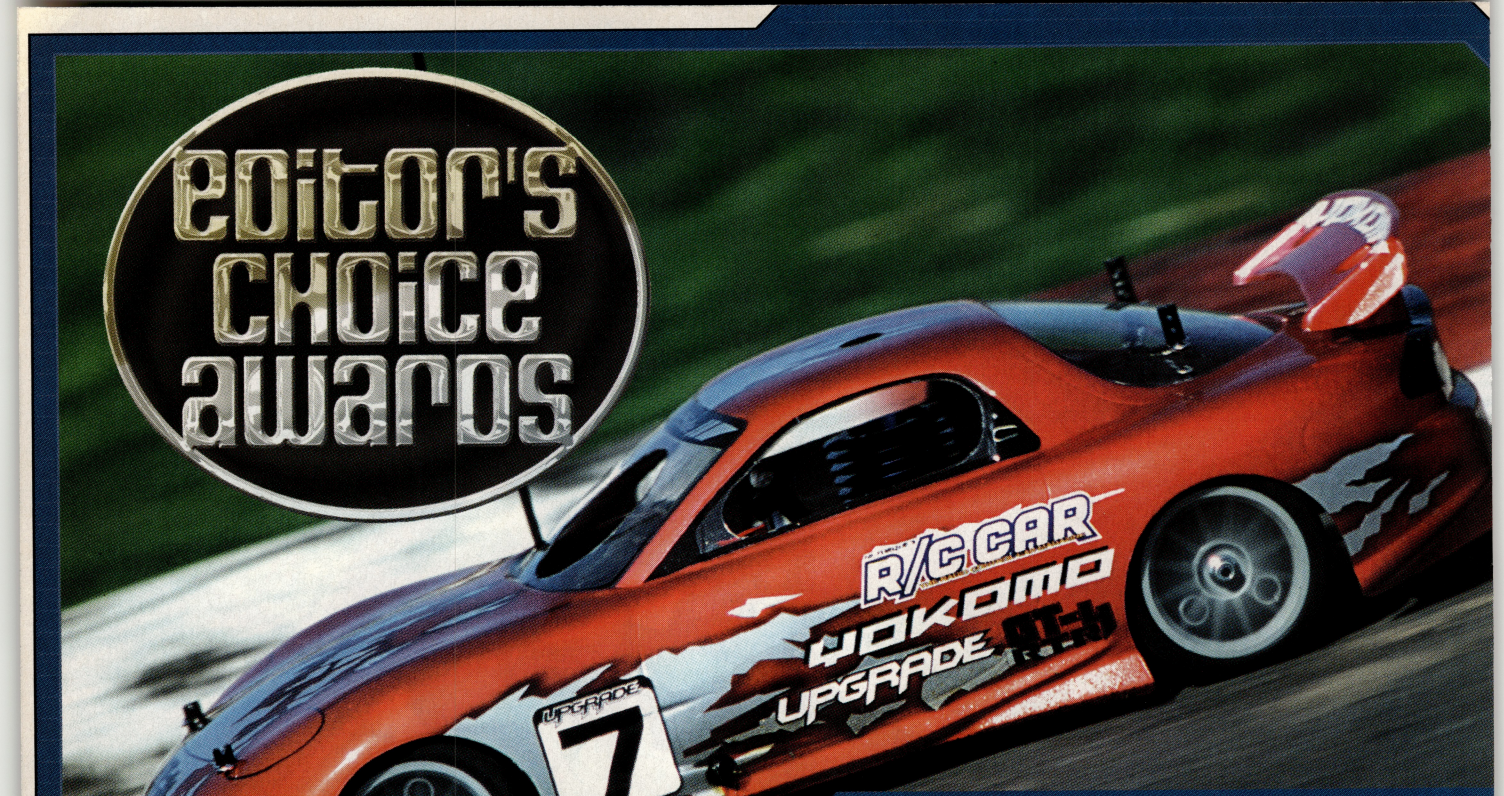




High-end radio
AIRTRONICS M8

Read any winners chart from any race, and you'll find the radio category dominated by Airtronics' M8. Has Airtronics the largest racing team on the planet? Do they offer monetary compensation for racers who use the M8? Uh, no. Racers have known for five years that the M8 has the ultimate blending of superb ergonomics, rock-solid reliability and the easiest computer interface ever bestowed on a high-performance FM radio system. There are no menus to scroll through, nor are there any complicated access tricks needed to activate some of the more sophisticated features. In fact, our experience with the M8 has taught us that we didn't even need to refer to the manual to set up and race with the M8. It's no wonder that we agree with the racing community!

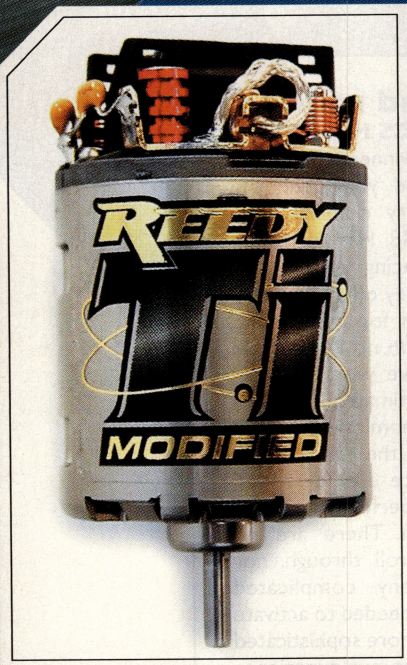
editor's choice awards



RTR Nitro Touring Car

YOKOMO GT-4 RTR

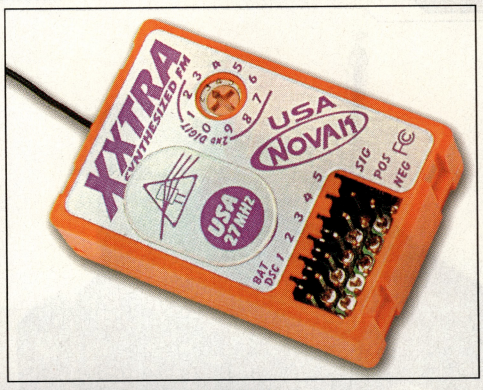
It's not the cheapest (its "street" price hovers just under $400), but it's very likely the fastest RTR nitro sedan ever offered. What's more, Yokomo's RTR is not merely based on its high-end racing sedan—the multiple national champion GT-4W—it is the same car. The only difference between the RTR and its race-bred siblings is a rather interesting drivetrain configuration (the RTR uses a solid front axle) and the inclusion of an Airtronics AM radio system and a pull-start .18 engine. It is in fact this monstrous engine, in combination with the standard two-speed transmission, that gives the GT-4 RTR its notoriety as the world's fastest RTR nitro sedan.



Modified motor

REEDY TI "TITANIUM"

Mike Reedy's modified motors have won more IFMAR world championships than every other manufacturer's motors combined. Mike's latest, the Ti, has already picked up two more world championships this year with the 1/12-scale and 1/10-scale touring car titles. The Ti has been specially developed to work with today's higher-voltage 3000mAh NiMH cells. Each Ti motor features color-coded brush hoods (for correct polarity), an all-new open-design endbell and new can for improved ventilation, high-strength C4 magnets and a new high-torque armature design that combine to create a more intense magnetic field for faster acceleration.



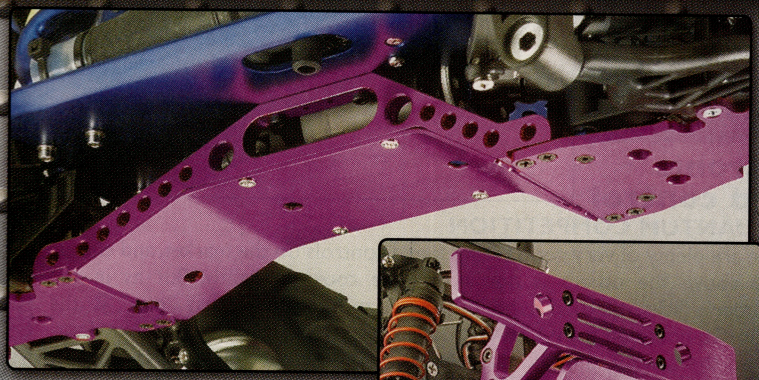
Aftermarket receiver

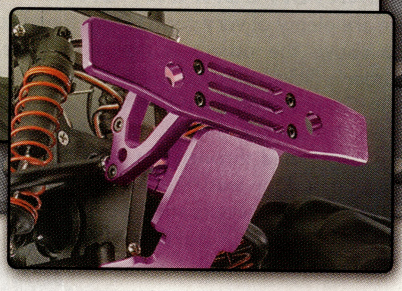
NOVAK Xxtra

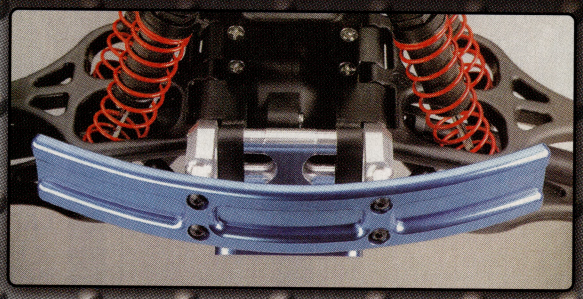
A scant four years ago, the thought of heading to the track without at least three sets of radio crystals was preposterous—especially if you wanted to actually run your car or truck! Then, Hitec introduced its Spectra module for its Lynx FM transmitter. But part of the equation was missing; we still needed to use a conventional receiver and crystal. Along came Novak Electronics and its Xxtra Synthesized receiver—the logical counterpart to the Spectra module. With the Xxtra, changing channels within your given band (27 or 75mHz) is a simple matter of turning one or two potentiometers. We've found that the Xxtra is convenient even without a synthesized transmitter module; however, Novak will soon be releasing its own synthesized module, called the Switch, which will work with radios such as the Airtronics M8.

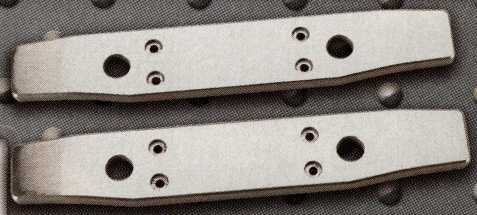
STRONG STUFF

for a hotter, meaner Maxx!









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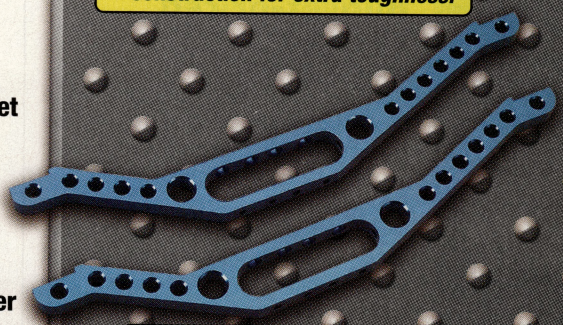

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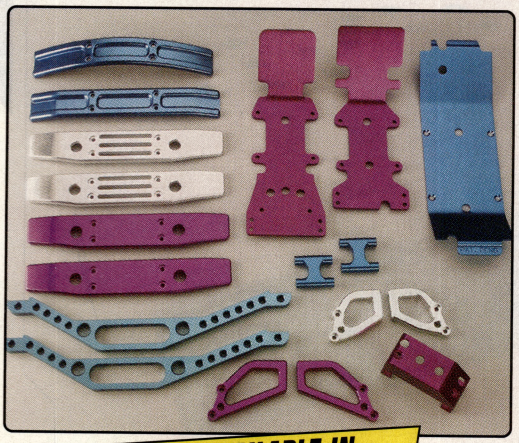

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editor's choice awards



Electronic speed control

LRP QUANTUM COMPETITION

There are plenty of very good racing speed controls on the market, and choosing one above the others is not a task we took on lightly. But as in the "Highlander" flicks, there can be only one, and this year, that "one" is the Quantum Competition from LRP. With one of the smallest case sizes and "footprints" on the market, the QC features LRP's 100-percent digital circuitry that can be programmed through just a pair of buttons and a pair of LEDs. In addition, the Competition features LRP's Digital Engine Mapping System, which allows you to set the ESC's acceleration, power and efficiency to your desired level. And with Punch Control, LRP makes it simple to adjust the response and efficiency of the QC to match the track conditions.



Budget-priced radio

JR XR2

In the category we define as "budget radio" (any radio with a sub-$100 price), we chose JR's innovative XR2 for several reasons, not the least of which because it is the only computerized, multi-model memory AM system available. Aside from the XR2, you won't find any computer radio near this price. Aside from the obvious advantage of having memory for two models, the XR2 also features digital trim settings (which can't be monkeyed with when the radio is switched off), and the XR2 has the features that most racers and hobbyists like, such as end-point adjustments for both channels and dual-rate for the steering. If you want a radio that looks (and feels) like the more expensive radios that the "big boys" use, then look no further than the XR2—it's bound to make you computer-literate.

Budget-priced charger

NOVAK IONIC

Why did we chose the Ionic as the best budget-priced charger on the market? We felt that no other charger in this category could match the Ionic's ability to charge such a wide variety of cell types and pack configurations with as much reliability and performance. The Ionic benefits from the same charge software that Novak developed for the more expensive Millennium Pro, so you'll know that your packs will be receiving the best care when you hook them to the Ionic and press the start button. A simple user interface also solidifies the Ionic as a smart choice for the beginning hobbyist. You can choose the less expensive DC-only model if you plan to charge from your automobile's battery, or the AC/DC model, which has its own high-quality, built-in 12-volt power supply.





WE'D LIKE TO THANK THESE **DRIVERS** FOR PUTTING US **IN** OUR **PLACE.**

First. Lots of times second as well. And often TQ-ing and filling practically all the top ten places. You name it– electric or nitro, on-road or off, stock or modified. These are just a few of the guys driving Team Losi cars who've won just about every event, trophy and honor in national and international RC racing last year. Of course that's nothing new– drivers have been putting us in the winner's circle for years. And that's the best place to be.

XX-4 Race Wins 2001

Jukka Steenari TQ – **EuroChamps**
ROAR Off-Road National Championships
Matt Francis – Modified, Jonathon Noon – Stock
Brian Kinwald – **Hot Rod Hobbies Shoot Out**
Jukka Steenari – **Winter Championships – Modified**
Brian Dunbar – **Midwest Off-Road Winter Championships – Modified**
Matt Francis – **Cactus Classic – Modified**
Mike Larsen – **Rumble in the Rockies – Modified**

XXX-S Race Wins 2001

David Spashett TQ/1st – **U.S. Indoor Championships**
David Spashett TQ/1st – **Trinity Touring Car Challenge – Modified**
David Spashett – **Orion/HPI Touring Car Classic**
Craig Xavier TQ/1st – **Trinity Touring Car Challenge – Stock**
ROAR National Championships
Paul Lemieux – Modified, Ryan Cavalieri – TQ Stock
David Spashett – **European Touring Car Championships**
Jason Corl TQ/1st – **Reedy Race of Champions**
Hitec Sedan Challenge
Brian Kinwald – Factory Modified, Mark Garvey – Expert Modified, Albert Guardado – Expert Stock

XXX Race Wins 2001

ROAR Off-Road National Championships
Brian Kinwald – Modified, Jason LaDow – Stock
Jukka Steenari – **EuroChamps**
Hot Rod Hobbies Shoot Out
Brian Kinwald – Modified, Dustin Evans – Expert Stock, Ryan Dunford – Stock
Brian Kinwald – **Winter Championships – Modified**
Midwest Off-Road Winter Championships
Matt Francis – Modified, Jason LaDow – Stock
Brian Kinwald – **Cactus Classic– Modified**
Rumble in the Rockies
Matt Francis – Modified, Brian Westerman – Stock

XXX-NT Race Wins 2001

Adam Drake – **Golden State Championships**
Adam Drake – Expert – **So-Cal Nitro Championships**
Davis Moran – Sportsman – **So-Cal Nitro Championships**
NORRCA Off-Road National Championships
Matt Francis – TQ, Adam Drake – Expert, Theo Capitanis – Sportsman
Adam Drake – **NORRCA Truck World Cup**
Brian Kinwald – **Silver State Nitro Challenge**
Hot Rod Hobbies Shoot Out
Travis Amezcua – Expert, Theo Captanis – Sportsman
Adam Drake – **Nitro Challenge**
Jesse Robbers – **Midwest Winter Gas Championships**

XXX-T Race Wins 2001

Reedy Invitational
Steve Chamberlan – Stock, Doug Scripture – Open Modified
Matt Francis – Factory Modified
ROAR Off-Road National Championships
Matt Francis – Modified, Eric Clark – Stock
NORRCA World Cup
Adam Drake – Modified, Travis Amezcua – Stock
Hot Rod Hobbies Shoot Out
Matt Francis – Modified, Doug Scripture – Stock
Midwest Off-Road Winter Championships
Brian Dunbar – Modified, Rob Schaffer – Stock
Winter Championships
Jukka Steenari – Modified, John Walters – Stock
Cactus Classic
Brian Kinwald – Modified, Brian Westerman – Expert Stock
Rumble in the Rockies
Jimmy Babcock – Modified, Randy Brockman – Stock

engineering wins

ENGINEERING WINS

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- 2002 Silver State Winner

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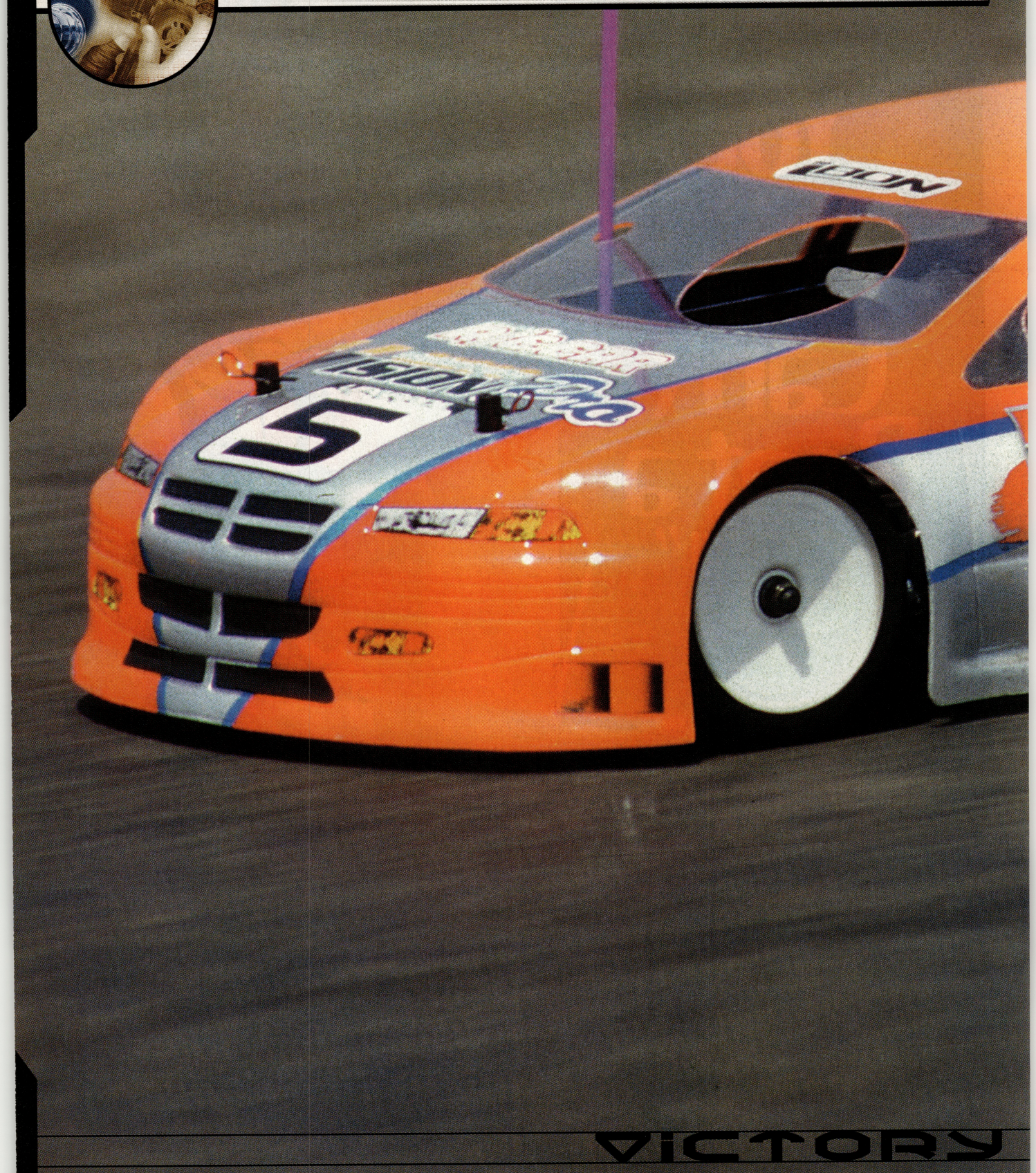
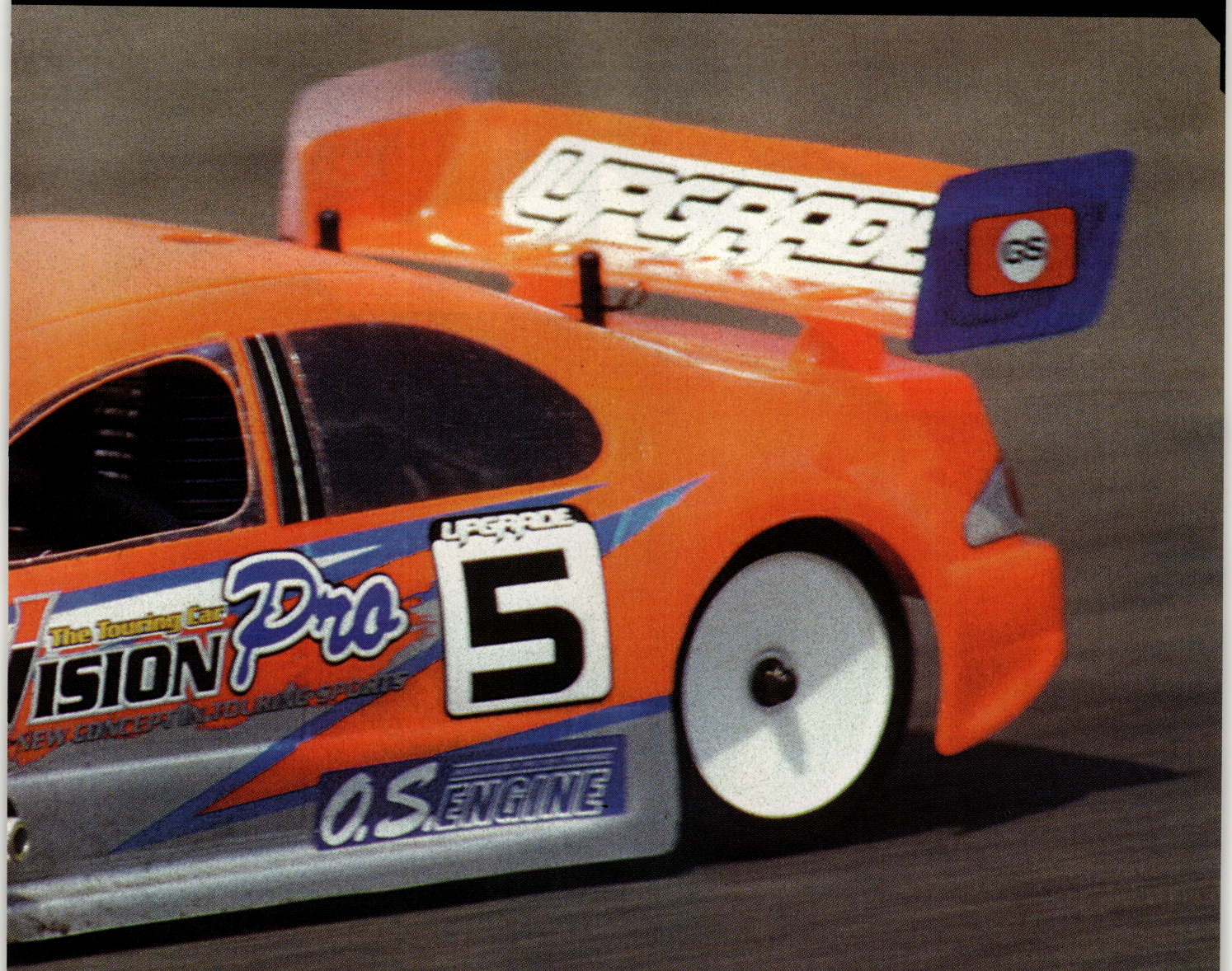
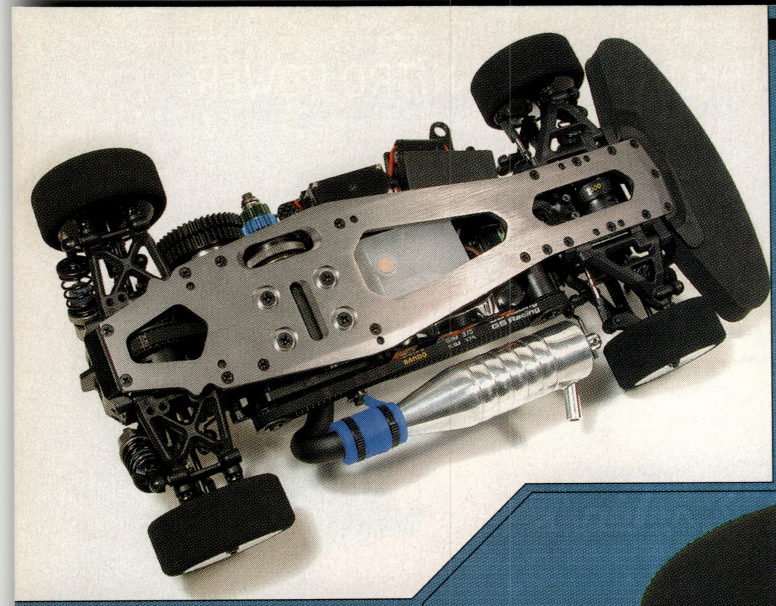
GS Racing Vision Pro

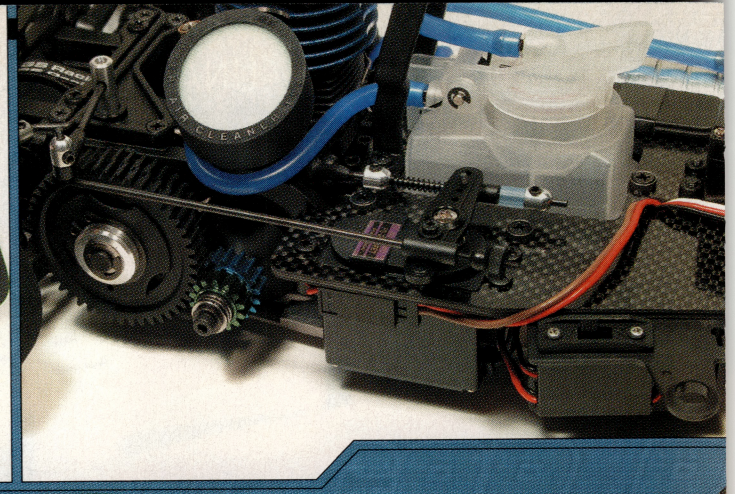


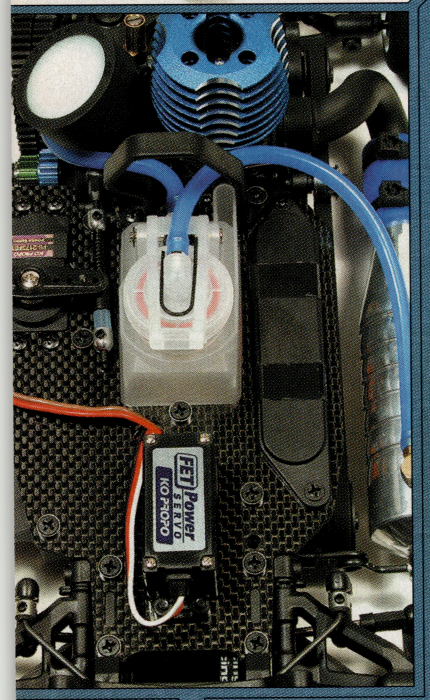


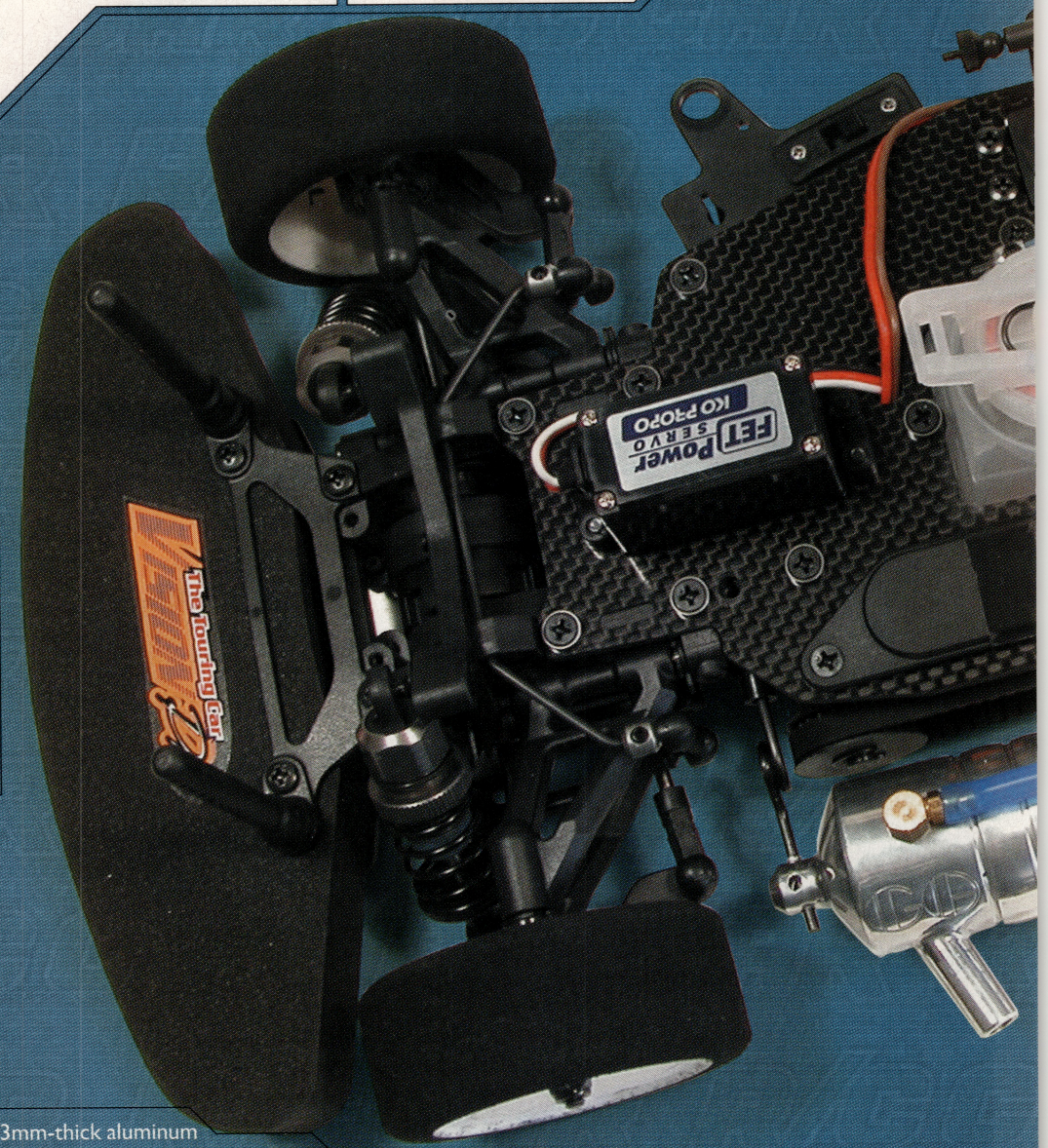
Over the past three years, GS Racing, a division of General Silicones, has shed its image as an accessory-only manufacturer and has emerged as one of the forerunners of nitro racing technology. Anyone who has thought about getting into 1/8-scale nitro—off-road or on-road—has likely considered one of GS Racing's Sonic or Storm kits. Now, GS has officially entered the hot 1/10-scale nitro touring car market with its Vision series, which is available in two models: the top-of-the-line Pro and the novice-level Sport. We received a sample of the Vision Pro for review, and we couldn't wait to find out if its quality and performance could rival that of the most recent GS kit we tested, the Storm Pro.

IS IN SIGHT









BULLETPROOF BACKBONE

Some nitro sedans come with 3mm-thick aluminum chassis that get the job done, but you may have noticed that the same manufacturers often offer "special" upgrade replacement chassis. With the Vision Pro, you won't need to spend any more money as the stock chassis is what some other companies might sell you as an option. Made from 4mm-thick T6 aluminum, the Vision's chassis is strong enough to virtually eliminate flex even before the top structure is installed. And to prevent scraping, the sides of the chassis are beveled and the screw holes and engine-mount screws are well countersunk.

The upper structure consists of molded bulkheads fore and aft, with a 2.5mm graphite upper deck providing support to the center of the car. GS has also gone to great lengths to provide the Vision with a superb balance of the major components. The upper deck allows the fuel tank to sit right on the center-line of the chassis, so handling will be largely unaffected by fuel level. To the left of the tank is a molded plate, which is designed to hold a standard five-cell receiver battery (we used a Team Orion 1100 mAh NiMH pack), and to the right is the throttle servo, which is installed below the upper deck to lower the car's CG.

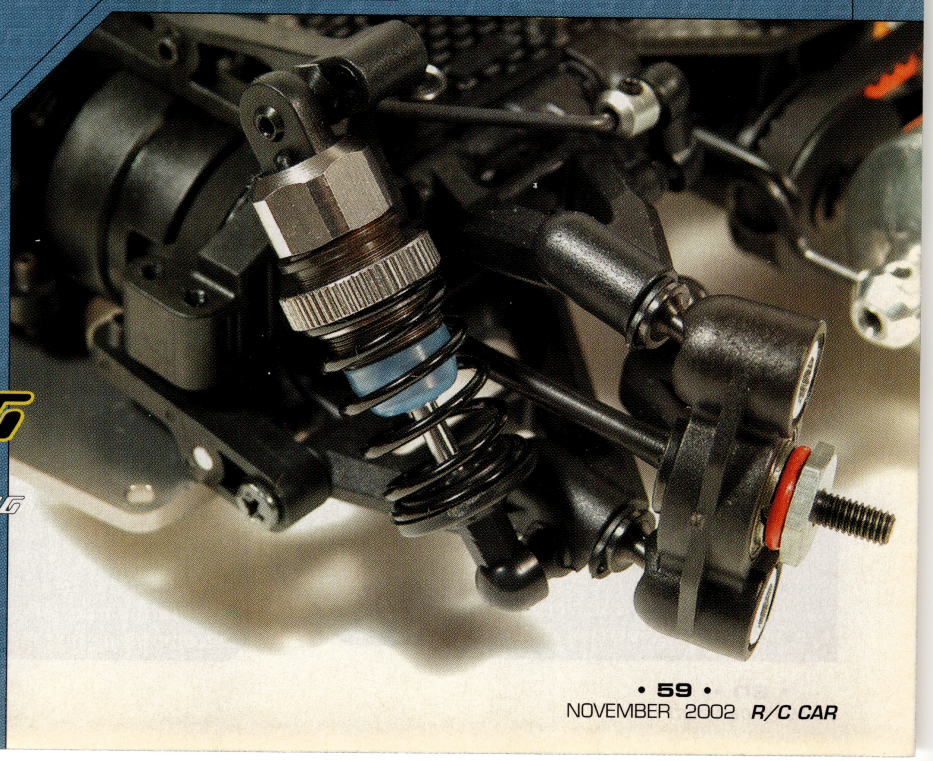
GS Racing Vision Pro

MAKING A WISH(BONE)

To cope with the increased speeds (and harsher crashes that result) and longer races of nitro competition, most manufacturers have found that pillow-ball-style suspension is the way to go (after all, it has served 1/8-scale on-road racers well for years). Up front, the Vision uses a true upper and lower wishbone setup, while the rear uses a lower H-arm with a conventional upper camber rod. This design allows the racer to tune the car's front width, camber, toe and caster. In back, the camber, width and toe-in can be easily adjusted.

To make it easier to assemble and set the pillow-balls, GS provides C-clips in varying widths which, when installed, provide perfect width and camber settings for the front, and perfect toe-in for the rear wheels. To tune the suspension, a novice racer could simply replace the shims with ones that are thicker or thinner.

The Vision's shocks are very trick. They have hard-anodized and coated cylinders, which are threaded to allow for quick and easy setting of the spring pre-load. Inside are ingenious two-piece pistons that can be set without the need to disassemble the shocks. The pistons key to the top of the shock, and you simply turn the shock shaft the desired number of "clicks." GS doesn't provide any shock oil (boo!), but their recommendation is that the shocks be filled with 3000wt. diff fluid! That's what we used, and the shocks felt just right, so go figure. Outside of the shocks are neat silicone rubber "wipers" that should prevent dirt from passing through the shocks' O-ring seals.

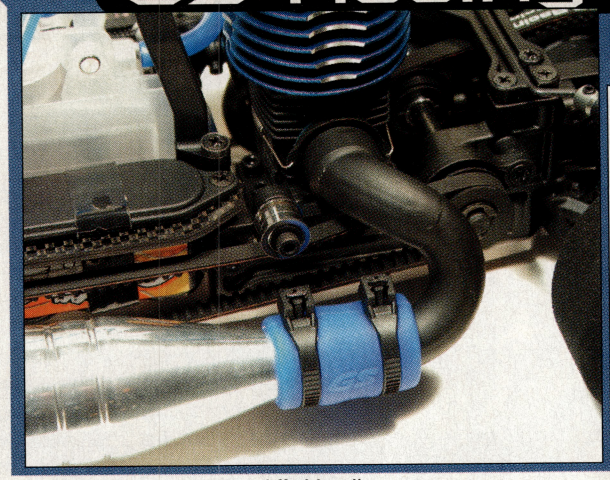


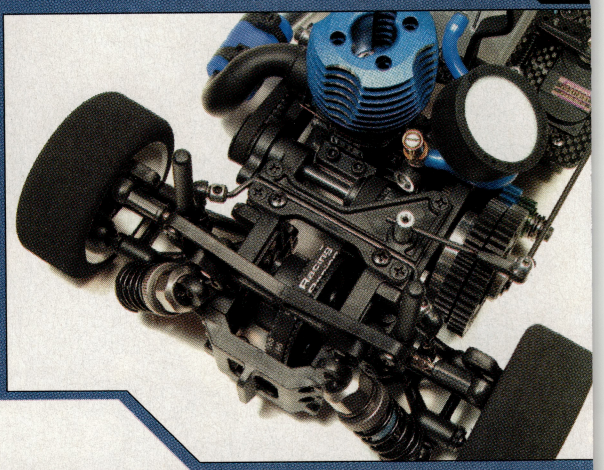
OUTSTANDING FEATURES

OUTSTANDING FEATURES

GS Racing Vision Pro

A VISIONARY DRIVETRAIN



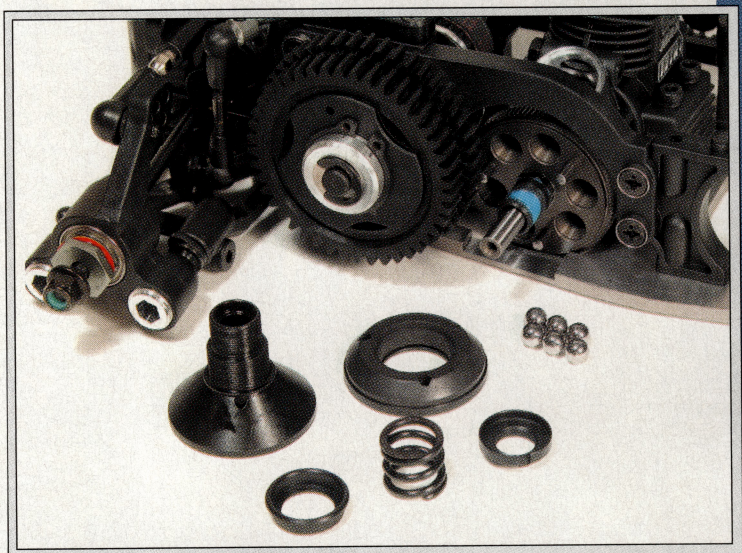


The main reason GS was able to place the fuel tank and other heavy components close to the center of the Vision's chassis is because of the layout of the car's full-time 4WD drivetrain. Like the Kyosho V-One R, the Vision uses a long center drive belt to connect the two shorter belts that go to the front and rear diffs. Usually the tank and servos must be placed around a long front belt.

Both the front and rear ends share similar bevel-gear differentials that have high-quality metal internal gears and O-ring seals so that they may be filled with a thick silicone fluid to alter the stiffness of the diffs' action. GS doesn't supply any fluid for this purpose, but we filled each diff with GS Racing's 7000wt. silicone (the recommended starting point).

All of the Vision's rotating parts are supported by metal-shielded ball bearings, and this includes an adjustable tensioner for the long center belt. The tensioner is incorporated into the chassis' left-side middle brace, and can be adjusted easily using a 2.5mm Allen driver (although the "captured" locknut on the other side of the brace spins in the plastic).

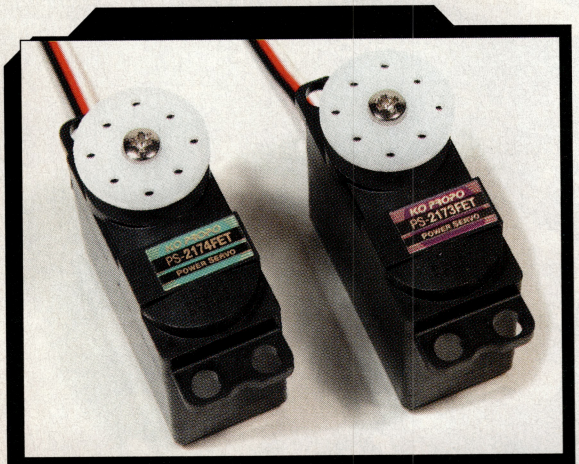
To stop this smooth drivetrain in its tracks, the Vision is equipped with a stainless steel brake disc that is clamped by fiber-lined pads. The disc is supported by an aluminum hub that has four steel pins (which pass through the disc and allow it to float). The pins on our test car were misaligned, which caused the brake disc to bind. We fixed the problem by "tweaking" each pin with a flat-bladed screwdriver



PLAYING POWER-BALL

The Vision's primary drivetrain is made up of an adjustable ball-style clutch mated to an adjustable two-speed transmission. The clutch works on the principle of centrifugal force; the force of the engine's rotation thrusts six steel balls—installed in holes in the flywheel—outward. The balls push against a circular clutch shoe, which, in turn, pushes against the clutch bell housing, causing it to rotate with the engine. The point at which the clutch engages is adjustable via a spring that forces the clutch shoe away from the bell housing. The tension of the spring is externally adjustable, so you can tune the clutch simply by inserting an Allen wrench through the bell housing and turning the engine.

The Vision's two-speed is the finger-style, which in our opinion is less adjustable and less reliable than the clutch-based two-speeds found in some other cars.



TEST EQUIPMENT

- Airtronics M8 transmitter
- KO Propo PS-2173FET throttle servo
- KO Propo PS-2174FET steering servo
- Novak Xxtra Synthesized receiver
- Team Orion 1100 mAh NiMH receiver battery
- O.S. Engines 12TR (T) five-port turbo engine
- Golden Horizons small-block "ringed" pipe
- Sidewinder 20-percent race fuel

BUILDING TIPS

Sand the top and bottom of the glued brake pads; the idea is to trim away any excess liner material that can cause the brake shaft to stick.

- Pre-thread the shock-shaft ends with a 3mm screw; it's much easier than trying to thread the shafts into the ends, which tend to strip.
- GS provides locking washers for the engine-mount screws and for the clutch screw. These aren't mentioned in the instructions, but now you know what to do with them.
- Install the steering servo on the upper deck with its output gear toward the front of the car. The illustration doesn't show this, and the accompanying text makes no mention of the servo's direction.

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





HS-5625MG AND HS-5645MG BARGAIN BUSTERS

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.

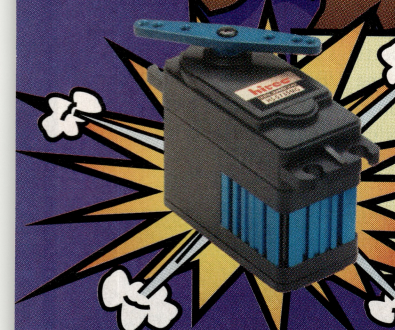
Model	Speed	Torque	Holding Power	Size	Weight
5625MG	0.14	130oz/in	390oz/in	1.6"x0.8"x1.5"	2.1oz
5645MG	0.18	168oz/in	504oz/in	1.6"x0.8"x1.5"	2.1oz

HS-5925MG & HS-5945MG THE SUPER HEROES

A high-grade coreless motor, programmable features, unbreakable metal gears, and seven O-rings on the case add up to Hitec's best "Super Servos!" Combine that with unmatched precision, centering, and holding power; these are simply the best servos that money can buy.

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





HS-5735MG THE ENFORCER

With 264 in/oz of control rod bending power, the HS-5735MG digital programmable servo is the undisputed heavy weight champ. With its cool blue motor heat sink for improved heat dissipation, unbreakable metal gears, incredible resolution, centering, and holding power, this "Super Servo" is the ultimate choice for your 1/5th scale cars.

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All Specifications Listed at 6 volt

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HITEC

GS Racing Vision Pro



REPORT CARD

Test location: Hot Rod Hobbies, Saugus, CA
Test conditions: un-prepped high-bite asphalt roadcourse

Speed and acceleration: A

Once you get the brake ironed out (to ensure that it doesn't bind when in neutral), the Vision Pro's drivetrain is one of the most free-spinning belt systems we've tested. Out of the turns, the Vision's adjustable clutch provides excellent hook-up (once you have figured out that you need to install the lighter of the two clutch springs!), and the car tracks arrow-straight. Our tester was fitted with the new O.S. turbo five-port .12 (look for a full test of this engine next month), and to say that our Vision was ballistic would be an understatement.

Low-speed cornering: B

The stock setup as recommended in the Vision's instructions provides a very nice blending of low- and high-speed cornering ability; it's a great overall setup for most tracks. On very tight turns, the Vision felt a little numb — but very controllable. We have driven many nitro sedans that turned with hyperactive responsiveness, but in almost all conditions, we prefer a car that handles in a neutral manner, and that is the Vision. If you can drive with brakes, you'll have no trouble holding tight lines with the Vision.

High-speed cornering: B-

The Vision, in stock form, tends to understeer when entering fast turns that follow straightaways. Once the weight settles back over both front wheels, the car can be steered with the throttle. On fast sweepers that lead onto straights, the Vision can easily hug the inside line on-power, allowing the car to enter the straight at a higher speed.

Braking: B+

Although it takes a bit of fiddling to get the Vision's disk brakes to work properly (we enlarged the liners' holes and ground the tops and bottoms even with the steel pads), once they're right, the car stops straight as an arrow (and on a dime!). With diffs at both ends, you'll easily out-brake any one-way equipped competitor and steal the inside line.

Adjustment: B+

The Vision gets high marks for its wide range of chassis adjustment. All of the standard variables are accounted for: camber, toe (at both ends), caster and track width. With the inclusion of GS's externally adjustable shocks, tuning becomes even finer.

SPECS

Price:	$309.99
Length:	15 in./380mm
Width:	7.8 in./200mm
Wheelbase:	10.2 in./260mm
Track (f/r):	6.8 in./172mm
Weight:	3.75 lb./1,700g
Chassis:	4mm T6 aluminum/2.5mm graphite upper deck
Suspension:	ind. upper/lower wishbones; pillow-ball carriers
Drivetrain:	triple-belt 4WD; two-speed
Final drive:	7.55:1 (first), 5.82:1 (second)
Diff(s):	O-ring sealed bevel gear
Damping:	aluminum oil-filled shocks; adj. pistons
Bearings:	metal-shielded ball bearings
Wheels:	white-nylon one-piece dish
Tires:	GRP pre-mounted foam donuts

Accessories included:

Pre-mounted foam tires, Stratus clear body shell, aluminum header for rear-port .12 engine, servo-saver for steering, servo arm for throttle

Accessories you'll need

Two-channel surface radio, two servos, .12 or .15 glow engine (non pull-start), tuned pipe, five-cell battery pack, starter box or handheld 12-volt starter, paint for body, shock oil and silicone diff fluid

Final Score

Highs: The Vision Pro has everything that a serious nitro racer could want. It's adjustable for any track condition, it comes with great pre-mounted foam tires (which are actually Arrows) and it comes standard with an adjustable, centrifugal ball-clutch. We also rate the quality and finish of the parts as very high. And the included Stratus body comes pre-dimpled to fit the car — no tedious hole-finding.

Lows: Although the Vision's finger-style two-speed worked well throughout our test, we would prefer it if the kit came with the more category-standard clutch-based two-speed, such as the type that comes with the Associated Nitro TC3 and Kyosho V-One R. The finger-style two-speeds tend to shift less smoothly, and they have a tendency to lose their settings more quickly.

The verdict: GS has made serious inroads into the 1/8-scale buggy and 1/8-scale on-road markets, and now it has done the same with 1/10-scale nitro touring. The Vision Pro lacks nothing that a serious racer will need, and it's highly tunable. Before you buy, give the Vision a serious look.

SOURCES

Airtronics, 1185 Stanford Ct., Anaheim, CA 92805 • phone (949) 978-1895; fax (949) 978-1540
General Silicones Co. USA Inc., 650 W. Duarte Rd., Suite 205, Arcadia, CA 91007 • (626) 445-5036; fax (626) 445-6084
KO Propo USA, Inc., 1602 S. Western Ave, Suite 308, Gardena, CA 90247 • (310) 532-9355; fax (310) 532-9354
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O.S. Engines, distributed in the U.S. by Great Planes Model Distributors, 2904 Research Rd., Champaign, IL 61826-9021 • phone (217) 398-6300; fax (217) 398-0008
Sidewinder Performance Racing Fuel, produced by Morgan Fuels, P.O. Box 311201, Enterprise, AL 36331 • phone (334) 347-3525
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Data Recall	All Battery Vital Information
Boosting Charge	Torpedo Type Built-in
Partial Charge	Adjustable 10 to 50%
Fuzzy Logic Charge	Linear VESC
Trickle Charge	On/Off
Trickle Rate	Automatic
Ring Tones	6 User Selectable
Auto Repeak	On/Off
Repeak Delay Time	1 to 60minutes
Voltage Display	Triple Decimal Digit
AC Input	Optional Power 14A Supply
DC Input	12 to 15V
Output	1 to 10cells
Battery Type	Ni-Cd & Ni-MH
Battery Capacity	50 to 6000mAh
Charge Rate	0.1 to 7.0A
Discharge Rate	0.1 to 20.0A
Voltage Threshold	0.003 to 0.020V/cell
Delay After Charge	1 to 60minutes
Delay After Discharge	1 to 60minutes
Number of Cycles	1 to 9
Charge Capacity mAh	Yes
Discharge Capacity mAh	Yes
Current Display	Two Decimal Digit
Discharge Ave. Voltage	Yes
Input Cord	AC USA Type & DC Alligator Clips
Output Cord	4 Wires Alligator Clips
Voltage Protection	Yes
Instruction	Yes

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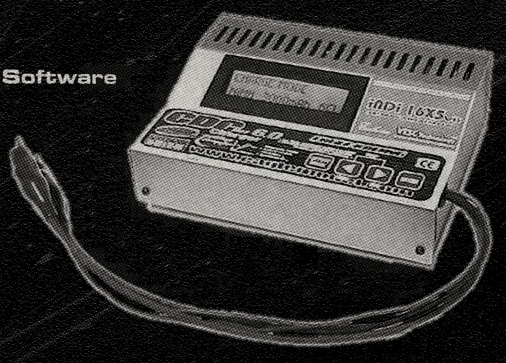

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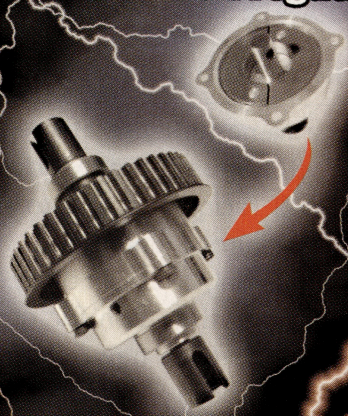

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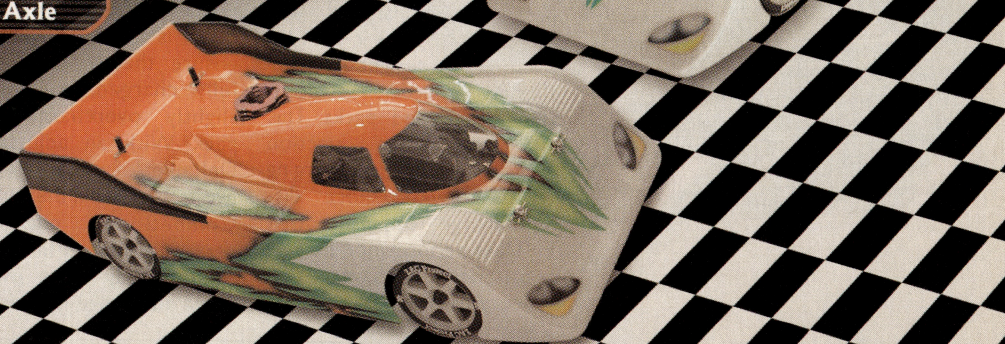
- VoneR K-415 Mid BB Block
- VoneR, MTX2 A-011 Side Belt Tensioner
- VoneR K-417 Wide Hex Hub
- VoneR, MTX2 K-809 Body Mount Short
- VoneR K-431 MTX2 K-802 Front One Way
- VoneR, MTX2 K-710 Vented Brake Rotor
- VoneR K-419 Brake Top Plate
- VoneR K-435 MTX2 K-805 Solid Rear Axle
- VoneR K-426 Carbon Shock Tower
- MTX2 K-717 Mid BB Block
- VoneR K-428 MTX2 K-723 1st Gear Housing
- MTX2 K-731 Positive Lock Two Speed
- MTX2 K-716 Alloy Brake Top Plate



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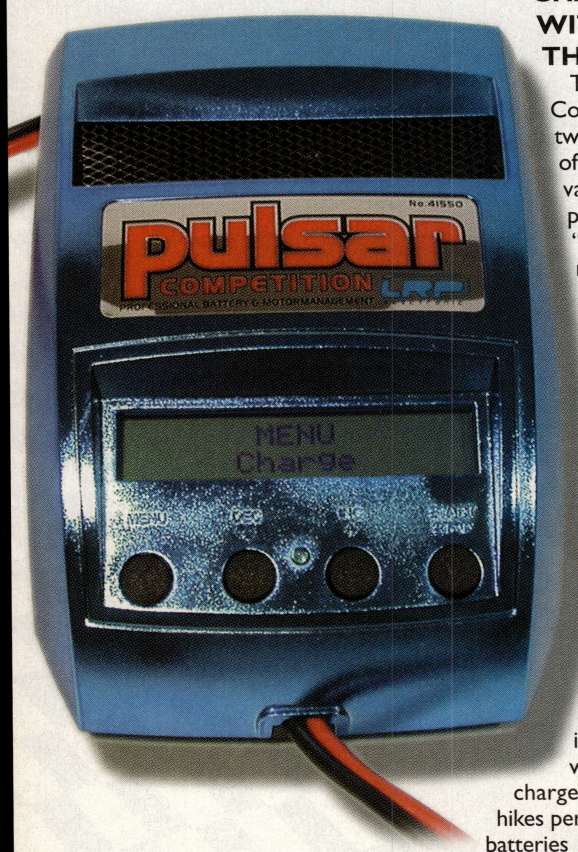
LRP Pulsar Competition Charger

Digital revolution in a charger

LRP of Germany has made quite a name for itself by developing some of the most dynamic products available for R/C racing. With many years of great success racing in Europe and several top quality products later, it was only a matter of time before LRP starting tapping into the growing R/C market here in the United States. LRP's distributor, Associated Electrics, has been instrumental in the growth and awareness of their products here in the U.S. Many top factory drivers use LRP equipment (including current IFMAR off-road world champ Matt Francis and the Associated factory team) and have won several national championships using the highly sought-after German technology. With a winning tradition and a reputation for quality, LRP and Associated bring to us a new high-end digital charger—the Pulsar Competition. And if it is at all like the rest of the LRP line, the new Pulsar is bound for immediate success as soon as it hits the hobby stores.



CHARGING WITH THE PULSAR

The Pulsar Competition offers two different modes of charging to suit various battery packs. First is the "Linear Charge" mode, which is designed to charge at a constant current. This function should be primarily used for newer competition packs and for racing purposes. The second mode, "Flex Charging," was specially designed for older, seldom-used packs. This unique function interrupts charging with short discharge impulses that hikes performance in older batteries that have a tendency to false peak.

To accommodate different driver preferences, both charging modes can be adjusted from between 0.1 to 8.0 amps. For NiCad cells, a trickle charge current is also adjustable from 0.0 to 0.4 amps to ensure the highest possible capacity before the battery pack is used. The trickle charge mode should be turned off for NiMH packs to prevent overheating, which can damage the cells and possibly cause serious injury.

The Pulsar Competition also allows users to set the Delta peak (Delta is the voltage drop at the end of the charging process. The size of the drop is Delta peak). To ensure that a battery is fully charged, you must slightly overcharge the pack. With an adjustable Delta Peak from 5mV (millivolts) to 80mV, the Pulsar Competition charger's versatility comes in handy on race day when every extra advantage is needed.

IT'S A DISCHARGER, TOO!

Most R/C racers use homemade dischargers constructed from 12-volt, 1.2-amp automotive light bulbs. And some hobbyists use inexpensive dischargers that get excessively hot and demand the racer's attention because there is no automatic shut off. Well, with LRP's new charger, discharging has never been easier. The discharge settings give racers a range from between 0.1 to 10 amps for discharging, and, this is a neat feature, an adjustable end-point voltage cutoff from between 3.6 volts to 6.0 volts. The discharge function also records how much time it took to drain the battery, the capacity of the battery and the pack's average voltage during the discharge process. Not only is this a great separate function, but the discharging software is also used when the charger's "Matching Mode" is in use.

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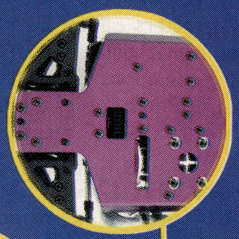





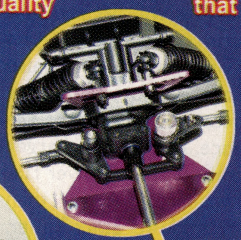

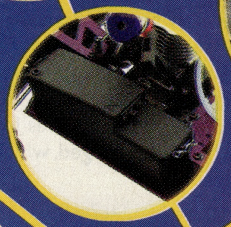



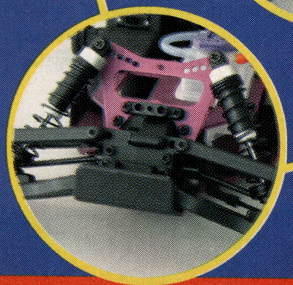

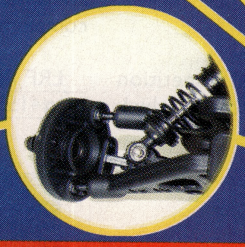

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IT CAN BREAK-IN A MOTOR

That's right, the Pulsar Competition has an adjustable output voltage from two volts to 7.2 volts for breaking in motors, running comm lathes (or our current performance widget, a brush serrator). The versatile function will also power 7.2-volt soldering irons. The adjustable voltage is perfect for breaking in motors because the current puts very little load on the motor. This excellent feature eliminates the use of four or six-cell packs that are normally used for breaking in motors and running comm lathes.

NEED A BATTERY MATCHER?

Normally, you would think that a charger is just that, a battery charger. That's not the case with LRP's Pulsar Competition. It's more of a multi tasking digital workstation. The unit is capable of matching battery packs by first discharging the pack, recharging it, then discharging it again. Once the process is completed, the battery's capacity, and average discharge voltage are displayed. This amazing little unit stores the battery's values in the "Settings" function of the charger.

AND THERE'S MORE

Like many of today's high-end chargers, the Pulsar Competition is capable of charging NiMH cells without any unwanted false peaks. The unit's Peak Capacity System detects the wide variety of charging curves in NiMH cells, and continues the charging process when many other chargers may terminate the charge due to false readings.

One of the neatest functions of the Pulsar is that it has an Auto Restart System that continues the unit's functions when a power failure occurs. If a battery is in the middle of the charging process, it will continue as soon as the power failure is over. Many top-dollar chargers will tell you that the charging process is complete when power resumes, giving the racer a false sense of security. Racers who travel know that at many big races, power outages are a common occurrence. This handy charger also displays the duration of the power failure if the length of failure is longer than three minutes. With an Auto Start Timer, the charger can be left alone to start the charging process from zero to 99 minutes. When there is more than enough time to charge packs between rounds, this feature prevents competition batteries from sitting too long while fully charged, which reduces their voltage.

OUR ONLY GRIPES

Although LRP's Pulsar Competition Charger is full of useful programs, we think it should be also available as an AC/DC model, as is Reedy's Quasar. Those of us who do not own expensive and often bulky power supplies must purchase one if we plan on using the Pulsar. While the blue backlit display looks nice, the contrast of the characters cannot be adjusted, making it somewhat difficult to read in certain lighting conditions. Other than a few minor gripes, LRP has one of the nicest products available to the R/C racer.

FINAL THOUGHTS

LRP's new Pulsar Competition charger is at the top of the class in the high-end category. There is no other charger that can quite match the Pulsar's versatility. Whether you need to charge, discharge, break-in motors or find out which of your packs are best suited for racing, this unit has you covered. The charger rates very high on cool factor because, well, blue is "in." The Pulsar's compact shiny blue case is as nice looking as any charger currently available. The blue backlit display screen complements the case very well.

LRP Pulsar Competition Charger
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SOURCES

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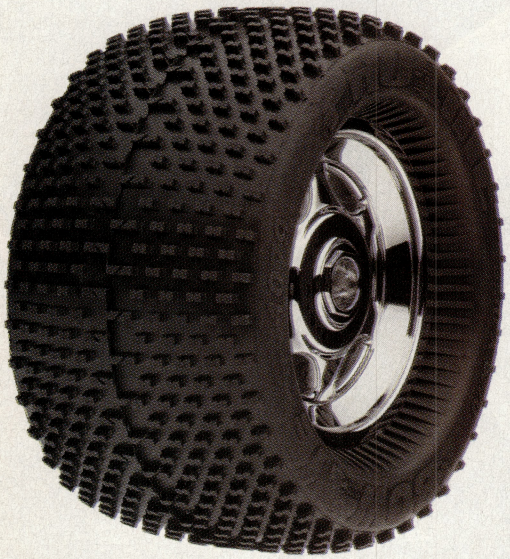
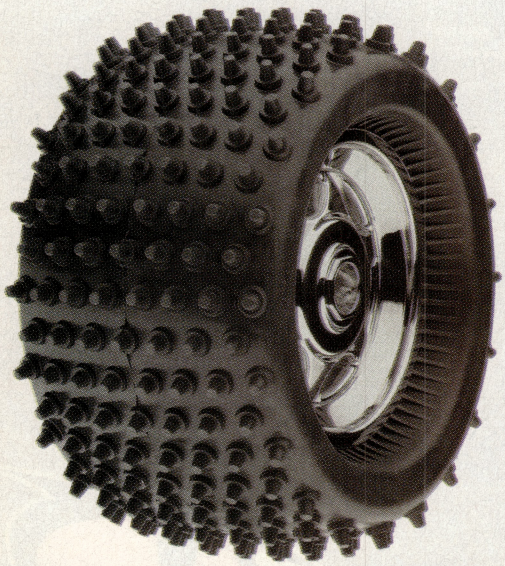
THE MYSTERIES OF

Off-road tires and grip

Last month we looked at the rubber tire puzzle for on-road touring cars. This month we break down the factors that come into play for off-road tires, specifically 1/10 buggies and trucks. Even if you think you already know it all, there's always something to learn. So grab a ham sandwich, kick up your feet, and let's dig in.



This Bow-Tie tread from Pro-Line is for tracks that have a thin layer of dirt atop a hard-packed surface. The tread is deep enough to get past the top layer, yet not so tall that it folds over when it reaches the hard stuff.



When the dirt is soft and deep, a tire that has taller spikes will be able to dig down for good bite.

RUBBER COMPOUNDS

Like their on-road brethren, off-road tires come in different compounds, but thankfully, there are far fewer of them. Off-road tires aren't as sensitive to heat as on-road ones are (the track temperature isn't the biggest factor in off-road), but there are plenty of other things to be concerned about. Typically, there are soft compounds and hard compounds, and maybe something in between. In general, tires that have larger (or longer) knobs or spikes are made from harder compounds, because a stiffer material is required to keep the knobs from folding over instead of sticking out like they are supposed to. On the opposite end of the spectrum, tires with lots of little knobs can be made from softer compounds. The harder compounds are good for wet or very soft tracks, while softer compounds tend to work better on hard-packed tracks. On the harder surfaces, the soft compounds let the tire have a larger contact patch, witch increases traction.

Where to start: These days, manufacturers are only making tires in the compounds that work with the tire's knob design, so that takes some of the guesswork out of it. For the most part, the softer compounds, like Losi's Red or Pro-line's M3 compounds, will have more traction, but will wear out more quickly. But today's tires wear so well that we'd go for the softest available compound every time.

REAR TIRES

The one characteristic of a tire that has the greatest effect on traction is the surface design. That means the knobs, spikes, pins, paddles, etc., that come in contact with the track surface.

Cars that run on softer tracks (loose dirt or sand) and wet tracks can benefit from tires with longer spikes or knobs. These protrusions (usually made from harder compounds) will dig into the surface and grab more dirt to get traction. And the more dense the spikes or knobs are, the more traction the car will have. That is, until the tires become caked up with dirt, which can happen if the track is wet. If that is the case, then a more open pattern would be better.

Where to start: Step pin-style or IFMAR Studs are a good choice to get traction in loose dirt.

The other side of the coin is the hard-packed track, with the extreme, though much more common these days, version being the "blue-groove" condition. Hard-pack tracks are very dry, and when they are at the point where it is almost like running on cement, a "blue groove" gets worn into the track where tire rubber is left on the driving line. In this case, a soft compound tire with lots of very small knobs is your best bet. First off, the soft compound will provide more friction against the dry hard surface, then the little knobs provide lots of surface area for the contact patch, and also tend to act like lots of little fingers to grab and scrape at the surface.

Where to start: Losi X-2000s or Pro-Line Fuzzies are an excellent choice for hard or blue-groove tracks.

Somewhere in between the two extremes are tracks that maybe are kind of clumpy, sometimes have loose dirt in the tight corners, but

TRACTION, PART 2

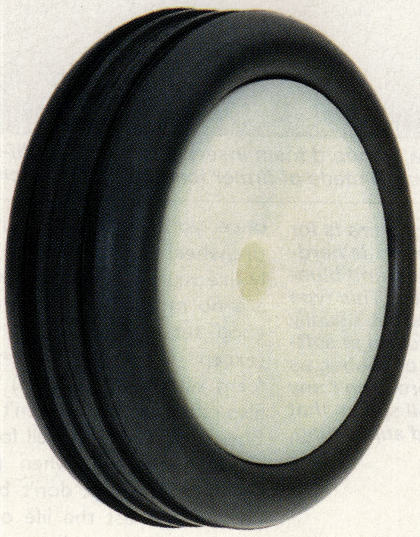


the jumps are all hard and smooth, and is sometimes watered and sometimes isn't. This is where most tracks fit in, and if you run on this kind, then some sort of intermediate tire with medium-size knobs or a combination of knobs and pins will work best.

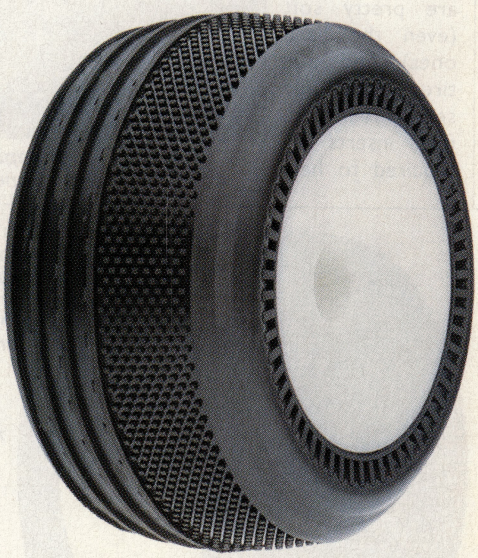
Where to start: Bow Ties, T-Bones, or an IFMAR Pin-style are the way to go for medium, slightly unpredictable tracks.

FRONT TIRES

All front tires have ribs, or a narrow raised surface around the circumference of the tire. And often, the ribs are cut at about a 45-degree angle to give them a sharp edge. The ribs and channels around the tire dig into the dirt to give traction, much the same way the blades on a pair of ice skates works. When a sharply angled edge is combined, it acts like a hockey blade, digging even deeper into the



For front traction, it's hard to beat a good old ribbed tire. This front buggy tire has ribs that are more spaced out to get better bite on hard-packed dirt.



This front tire is a combination of a standard rib with a mini-spike tread. Although not a great all-around tire, we've seen these hook-up fantastically under the right circumstances – namely hard-packed, blue-grooved dirt.

THE MYSTERIES OF TRACTION, PART 2

surface and letting the tire transition from side to side more quickly. There are also a couple of tires on the market that combine ribs with studs, but they are for very specific conditions, such as blue-groove tracks.

Where to start: Ribs are a given, and if angled ones are available, those are what most people prefer. Now the question is, at least for buggy drivers, wide or standard. Wides have the advantage on hard-packed tracks where cornering forces are higher. Narrow can bite into the surface harder on loose or wet tracks. Even though we primarily use wide ones, we also keep a pair of narrows handy for all conditions.

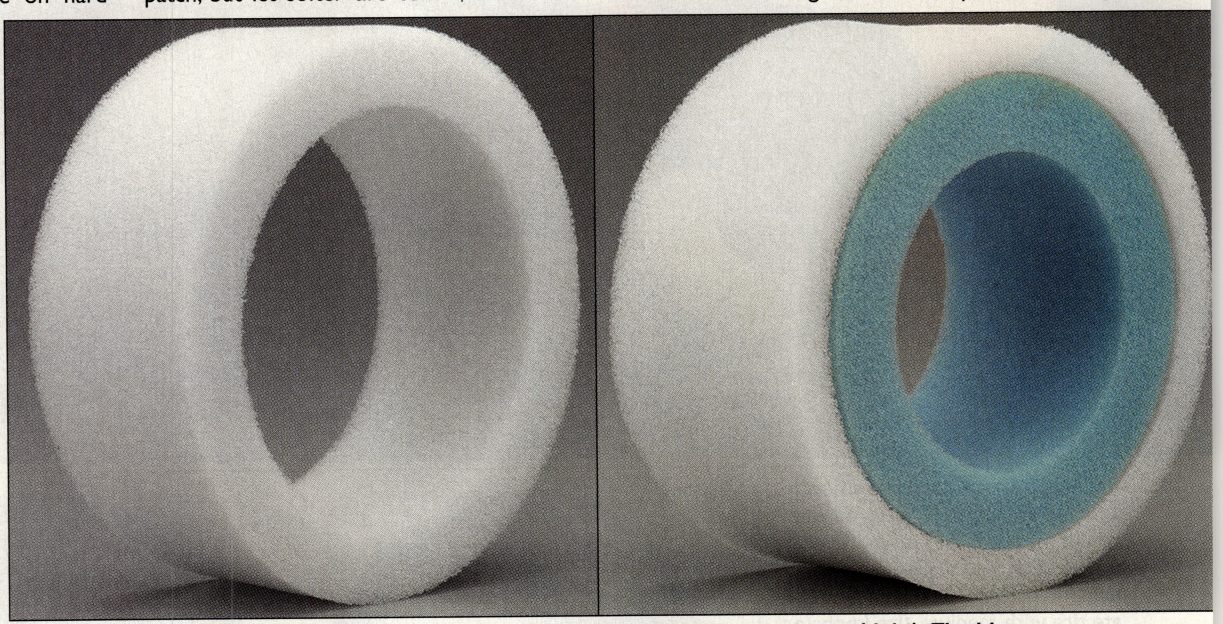
INSERTS

Since today's tire compounds are pretty soft (even the hard ones), and our tires are only semi-pneumatic, foam inserts are required to help the tire maintain its shape. Without them, we would all be running around with flat tires—flipping over in the corners, going slow down the front straight, and breaking a lot of rims.

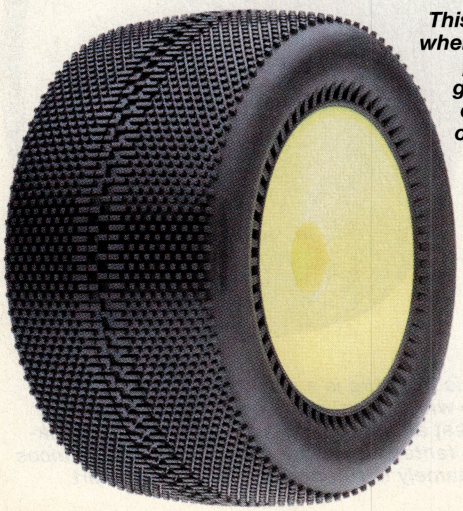
As in on-road, insert tuning has become much more of an art than a science. First, there are the standard foam inserts, of which there are hard and soft ones. The soft ones let the tires have a larger contact patch, but let softer tire compounds deform so much that the tires lose their stability in corners with so much sidewall flexing. The harder ones fill the tire better (like running more air), and are much more responsive on high-traction and blue-groove tracks.

New to the game are what have been deemed "multi-stage" inserts. This new breed of foam insert comes in multiple concentric rings, each made from a different density of foam. With the softest compounds on the outside rings, and the hardest inside, the net effect is that of a "progressive" insert. You get the benefit of a soft insert, where the contact patch is larger for more bite, but the firmer inners keep the sidewall from compressing too much, which cuts down on traction rolling and squirming.

Where to start: The inserts that come with the tires work best probably 80 percent of the time. They are always a good reference point for tuning once you start buying more tire/wheel combos. But we really like multi-stage foams, which are no more expensive than a good set of aftermarket ones (except for those three-stage foam setups—expensive!) Well, also except that they aren't free. But they do handle well for all-around use, and, when glued together properly, don't bunch up and will last the life of the tire (and then some!).



Compare a standard foam insert (left) with a multi-stage insert (right). The blue inner ring is made of firmer foam to provide increased support to the tire.



This Fuzzie tire is for when the dirt is hard-packed and blue-grooved. This type of tread is usually only found in softer rubber, as there aren't any tall spikes that need supporting.

TRACTION ADDITIVES

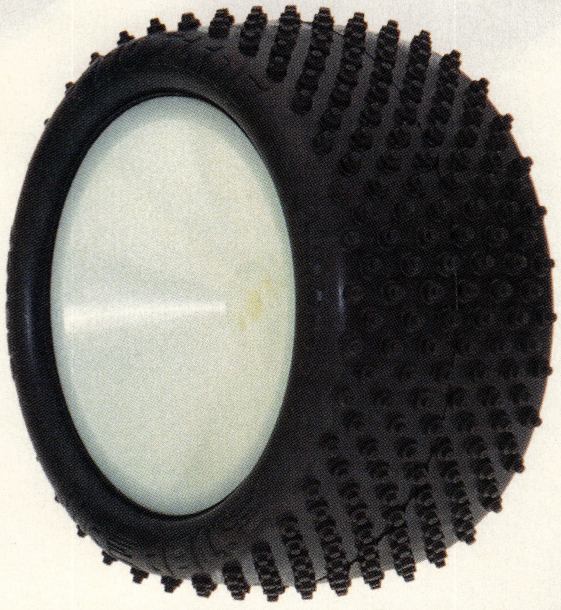
There have been many secret and not-so-secret traction concoctions over the years. WD-40, nitro fuel, citrus oils, banana oils, cooking spray, and many very flammable liquids we won't mention—so many things have been tried over the years with varying degrees of success. But no matter what you end up using as traction compound, give your sauce a clean base to work on. Before applying sauce to your tires, clean them off with a solution of 2:1 Simple Green and water. Keep it in a spray bottle, and use an old toothbrush to get the dirt out from between the studs. Not only will this leave the rubber in proper condition to accept traction compound, it will also make





WHAT ARE PRE-SCRUBBED TIRES?

Team Losi is now offering pre-scrubbed front tires for 2WD buggies. Developed by national and world champion Brian Kinwald, these new tires are based on a variation of Losi's standard Wide Body ribbed tires, but with a generous radius on the outer ribs that provides a larger contact area with less squirm and greater control. Unlike typical ribbed tires, which must often become worn-in before they work well on some surfaces, the pre-scrubbed tires are already set to give consistent traction. There are two types of pre-scrubbed tires available: a two-rib and a three-rib, and each is available in either Losi's Silver or super-soft Red compounds. Contact Team Losi at (909) 465-9728 for more information.

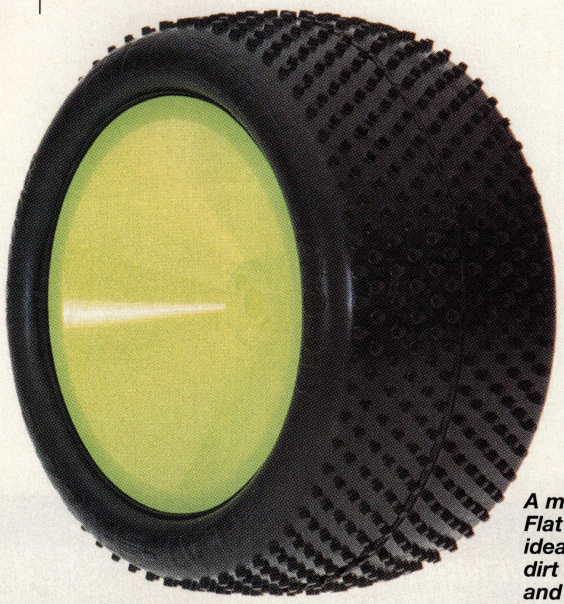


A good all-around tire is this step-pin design. Like the Bow-Tie, the step pin is able to dig through a thin layer of dirt to get to the hard-packed surface beneath. Step pins are also very good in damp conditions, as they are less likely to become clogged.

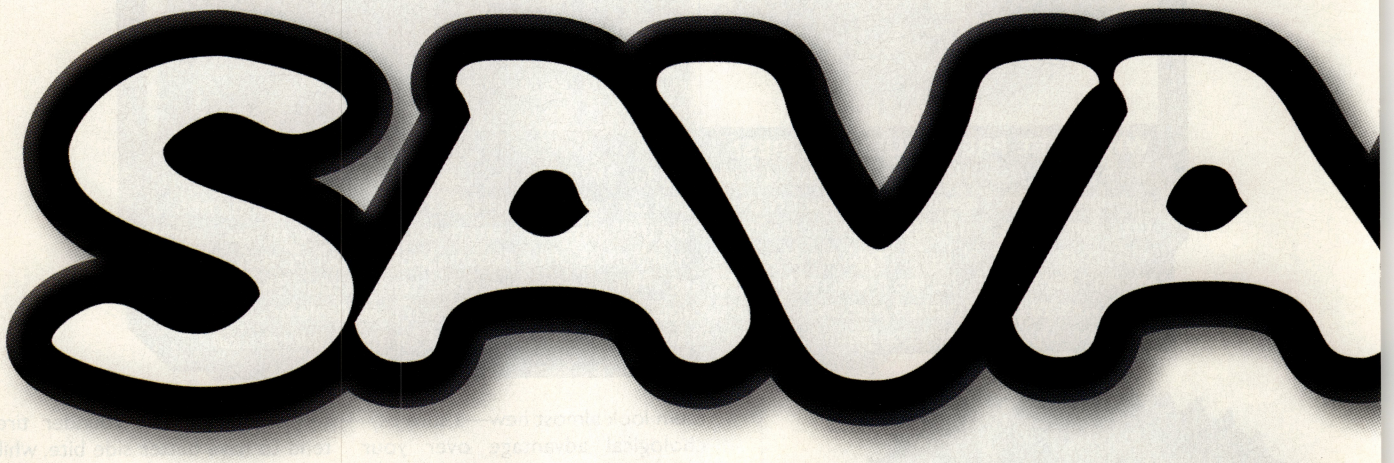
them look almost new—a sure psychological advantage over your competitor (that is, unless he is using new tires every run). If you decide to use some of the commercially available additives, heed the advice on the label and only apply it in a well-ventilated area away from any ignition source.

CARCASS SHAPE

Some tires are designed with a round shape while others are flatter, or square. The rounder tires tend to have better side bite, while the square ones are great for straight-line acceleration and punch. But if your square tires tend to dig in too much in the corners, try the old trick of trimming off the outer row of pins from the tires. This will keep them from grabbing too much, which could make the sidewall fold or even traction roll. The result will be smoother turning for those square tires.



A mini-pin tire such as this Flat Fuzzie from Pro-Line is ideal for when softer, loamy dirt becomes hard-packed and slick in some areas.



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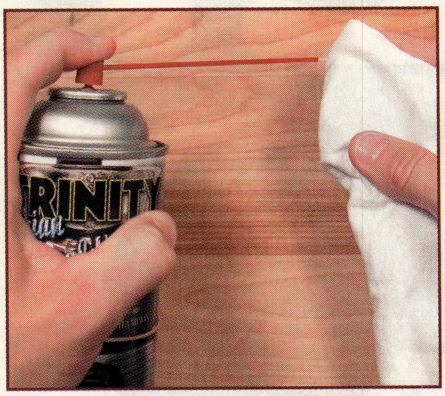
Stopping Power

Installing brake pads and liners the right way

Thanks to constant improvement in the design and making of engines, nitro cars and trucks are becoming faster and faster. But along with increased speed comes the need for even better braking. Modern kits have simple yet effective disc brake systems that do very well when it comes to scrubbing speed. But to make the most of the braking force of your kit, and to prevent such performance detriments as unwanted drag braking (when the brakes are engaged when you don't want them to be), it's important that you assemble the pads correctly. Here is how we install our brake liners to their pads.





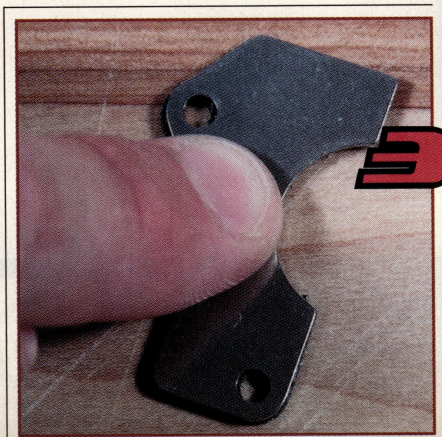
1

Before gluing the liners to the pads, it's a good idea to clean any residual oil left over from the manufacturing process from the pads. A rag and some solvent (such as motor cleaning spray) will do the job nicely. It's also a good idea to scuff the surface of the pad (and liner) with fine-grit sandpaper or Scotch Brite pad, as doing this will help the adhesive to hold more strongly.



2

Most manufacturers recommend the use of rubber cement to glue the liners to the pads. While this will work, we prefer the added holding power and quick drying of CA cement. To apply the CA, place several small drops onto the liner's surface, then use a cotton swab to distribute it over the entire liner in a thin, even coat (thicker, slower drying CA works best and will provide adequate time to shift the liner if needed).



3

With the liner resting on a smooth, flat surface, align it with the steel pad and press down firmly on the pad. Place even pressure on the pad for about 30 seconds or until you're confident that the glue has set. Set the pad/liner assembly aside to allow the glue to fully cure.

BRAKE LINKAGE TIPS

In addition to the proper installation of the disc and its pads, the way in which the brake linkage—the assembly that connects the brake system to the throttle servo—is set up, can have a profound affect on the performance of your nitro vehicle's stopping ability. Here are a few tips to consider.

- Always set up the linkage so that no drag braking occurs. This means that when the throttle servo is in its neutral position, the brake disc spins freely. If you desire drag brakes, you can add them either by using the radio's throttle-trim function or by adjusting the linkage.
- A small spring or a length of fuel tubing placed in the linkage will provide a more progressive feel to the brakes. The additional "give" in the linkage will prevent the brakes from feeling too sensitive.
- Don't overdo it! Set the linkage so that your vehicle has just enough brakes to slow it adequately on the surface on which you'll be running. Off-road vehicles typically are run on lower-grip surfaces, so they'll require less braking force. On-road vehicles will likely need stronger brakes. If your radio has an end-point adjustment, you can use it to set the brake's strength while "on the fly."

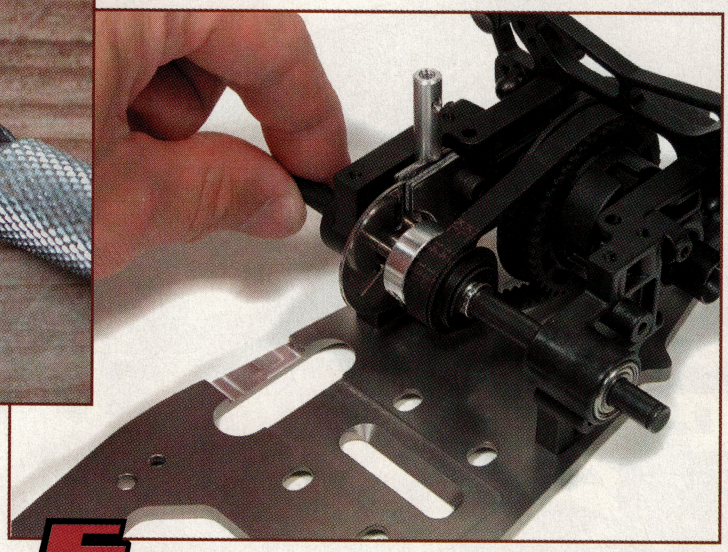
DON'T GET STUCK WITH TWO LEFT SHOES!

Most brake pads aren't symmetrical, which means that when you're done gluing the liners to the pads, you should end up with one left-side and one right-side pad/liner assembly. And although this doesn't sound all that confusing, take it from some people who have screwed up this seemingly simple task on more than one occasion. The trick to getting this right lies in test fitting; we lay out the pads and liners and pair them off. And, when you've glued one liner to its pad, test fit the second pair before you glue them to double-check that you'll be gluing the liner to the correct side of the pad.





4 The next step is to use an X-Acto knife to enlarge the holes in the liner so that they are just slightly larger than the holes in the pad. This is crucial because if the holes in the liner are even slightly misaligned with the pad, the pads will bind and cause excessive drag braking.



5 Finally, test fit the entire brake assembly to ensure that the disc will rotate freely without binding against the pads. If any binding is present, remove the pads, enlarge the liners' holes slightly and reassemble.



WHICH BRAKE MATERIAL IS BEST?

There are several types and combinations of materials used to make brake discs and pads. There are plastic discs that are clamped by steel pads, there are fiber discs clamped by steel pads, and there are steel discs clamped with fiber-lined steel pads. Which is the best type? Plastic discs generally don't hold up all that well to the conditions of nitro racing, namely the high heat and the possibility of spilled fuel making its way onto the brake assembly. Fiber discs fare better, but they still lose their effectiveness when exposed to the oils contained in fuel. Many of the steel disc setups have pad liners made from the same material used for the pads of full-sized racing cars. This material is designed to maintain its effectiveness during the harshest conditions, and it is very resistant to heat and chemicals.

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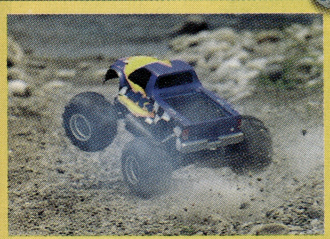





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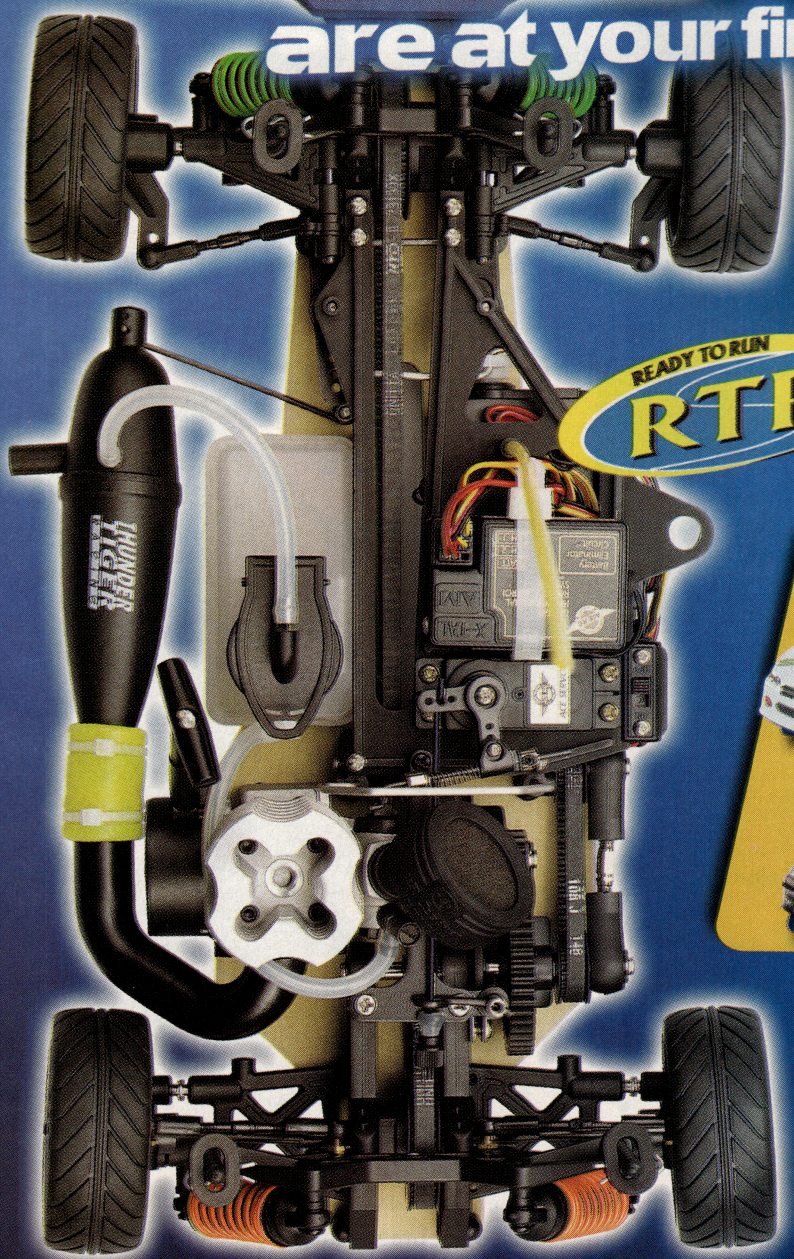

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HAS THE



With all due respect to the many fine motor designers and manufacturers, electric motor technology is at a standstill—and has been for years. Yes, there are subtle advances in such things as brush material and design, magnet composition and can venting, and of course, armature configuration and winding (multiple strands, pattern winding, etc.). But for all intents and purposes, the basic formula remains the same: to go faster, you make the copper wire shorter, or you "remove turns," as those in the know would say.

And we've all heard about brushless motors and how they are going to change everything that is bad about conventional brushed motors; namely, there are fewer parts to wear out, and the efficiency of the brushless motor is supposed to be significantly better. But will brushless motors really be all that revolutionary? Until now, we had nothing on which to base an opinion other than the claims made by a small contingent of companies that have or are planning to develop such motors.

BRUSHLESS MOTOR REVOLUTION BEGUN?

First test: Team Orion Vortex motor system



ENTER THE VORTEX —IF YOU DARE!

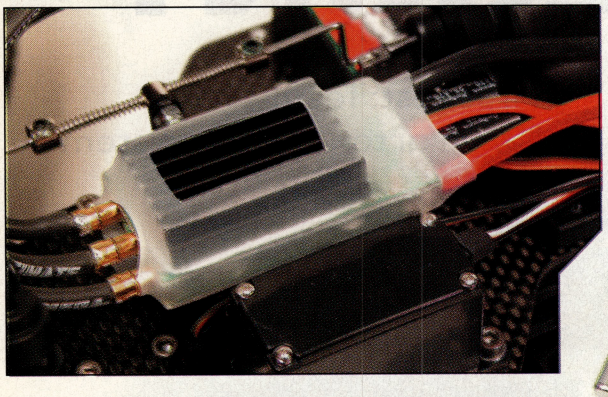
There have been brushless motors for R/C use for many years—some of them have even been used in cars and trucks—but Orion's new Vortex brushless motor system is the first that has been targeted specifically for four-wheeled vehicles, and the trick is more in the speed control than in the motor itself.

HOW BRUSHLESS MOTORS WORK

The best way to describe the inner workings of a brushless motor is to think of it as a standard brushed motor that has been turned inside out. Brushed motors consist of a pair of fixed magnets (one 'north,' the other 'south') with a rotating electromagnet between them (an electromagnet carries a non-permanent magnetic field that is generated by the application of electricity; in this case, current passing through copper wire creates the field). Electricity is passed to this rotating electromagnet (the armature) through a pair of brushes, which rub against a commutator (the commutator is made up of segments: one for each pole on the armature). In order to interact with the permanent magnets that surround it, the electromagnet must have two poles if it is to rotate, although almost all motors have at least three. If the armature only had one pole, it couldn't "flip" and spin all the way around.

The problem most associated with brushed motors is that the brushes and commutator wear against one another, causing damage as well as mechanical friction, which takes away







power and rpm. And because there is a bit of overlap between the commutator segments and the brushes, there is a brief period during which the motor short circuits the battery and wastes its power.

A brushless motor changes the order in which the major components are arranged within the motor's can, or shell. Instead of having its permanent magnets placed around the armature, a brushless motor places its permanent magnets on what would be the armature in a brushed motor. And where did the electromagnets go? They are placed on the walls of the motor's can, where you would find the permanent magnets in a brushed motor.

As electricity is passed through each of the brushless motor's windings (there are three windings within the Vortex), the permanent magnets on the central shaft are either repelled or attracted (depending on their position), causing the shaft to spin. The largest obstacle to mass-produced, affordable speed controls for brushless motors is that a much larger amount of processing power is needed to control the "timing" of the windings.

THE BENEFITS OF BRUSHLESS

• The rpm of a brushed motor is limited by the fixed position of its timing and by the mechanical friction of the brushes against the comm. The faster the motor spins, the stiffer the brush springs must be in order to maintain contact between the brushes and comm. A brushless motor lacks these hindrances, so its rpm is nearly unlimited.

• Brushless motors are more efficient because they lack the drag of brushes against a commutator, there is less rotational mass (the windings are on the "outside" of the motor can), and there is no brush-to-comm





overlap, which cause the battery to short.

• There is less cogging with brushless motors. Cogging occurs when one of the segments of a brushed motors' commutator goes uncharged, and it creates a drag-brake effect within the motor. Brushless motors spin more freely off-power.

• With less weight to spin, the brushless motor's central shaft can "spool" more quickly and accelerate the vehicle faster.

• A brushed motor has fixed timing, but a brushless motor's timing can be altered to produce the most power and rpm under any given motor load.

VORTEX FEATURES

As stated, the key to getting a brushless motor to work for R/C car and truck applications lies within the speed control, and Orion's Vortex is packed with processing power.

• The Vortex will work with all sensorless, three-phase ferrite and neodymium brushless motors. A six-position switch allows the Vortex to work with other brands of brushless motors.

• The unit's IPSU intelligent programming system automatically matches the settings of the speed control to the radio. There's nothing for you to program; the Vortex does it for you.

• Integral motor connectors allow the Vortex to be unplugged from the motor for easy maintenance without soldering.

• A built-in temperature monitor protects the Vortex from excessive heating. When the unit becomes too hot—either from excessive load or damage—it will throttle-down the motor. After this, if the temperature rises further, the motor will be shut down until the speed control has cooled. This can be defeated by using the auto-arm feature, which is activated by holding the brake for about two seconds.

• A voltage monitor feature throttles the motor back when the battery voltage drops below five volts. If the vehicle continues to run, the Vortex will eventually switch the motor off, yet it will always provide enough power to the radio system.

• A maximum speed monitor ensures that the Vortex motor remains within a safe rpm range.

• If the motor should draw excessive current, such as when it becomes stalled, the Vortex will shut down before becoming damaged.

• If the Vortex detects a loss of the radio signal, it will go into a "hold" mode for one and half seconds. If the signal loss persists, the Vortex will disable the motor.

FINDING THE RIGHT TEST-BED

We thought long and hard about how to best test the Vortex brushless system. First, we considered the racing implications of using brushless technology. Should we pop the Vortex into a touring car or off-road buggy and go racing? No. The racing world isn't quite ready for brushless motors, although now that the Vortex is here, and Novak's system is on its way, sanctioning bodies such as ROAR will be forced to address brushless technology. Perhaps as a separate class.

We then tried to imagine who would most likely be the brushless motor's best customer. It probably won't be racers—not for several years anyway—it will

be the truckers. Specifically those who don't want to get into nitro, but who are a little fed up with rather short life of current brushed motors and the expense and time involved with keeping them in tip-top running order.

And although any electric vehicle can benefit from the Vortex system, we felt that it would be a little excessive to install a near $300 brushless motor system into a Traxxas Stampede that cost about half that amount (although that possibility is certainly interesting!). Our solution was to use a Traxxas E-Maxx as a test bed: it is certainly worthy of the investment, and the idea of one brushless motor being powerful enough to replace two conventional motors was more than a little intriguing.

INSTALLING THE VORTEX

In diameter, the Vortex is the same as any 540 or 05-sized motor, and although it looks longer, in reality it isn't; it's just that the Vortex's can is about as long as a standard motor's can and endbell, but its shape might cause some clearance problems in some chassis. For our E-Maxx, it was a simple matter to remove the stock 550 motors and bolt the Vortex in place using the stock screws. To counteract the rotational force of the drivetrain, we installed the Vortex to the right side of the chassis.

The Vortex speed control should be mounted as close as possible to the motor, and with its heat sink facing upward. Orion recommends installing the speed control using Velcro® to allow it to be easily transferred from one vehicle to another. We stuck ours to the top of the shift servo.

The Vortex has three wires leading from its endbell—and according to Orion, it doesn't matter how they're installed to the controller as long as the motor spins in the right direction. If the motor spins backwards, all you have to do is swap the positions of the two outer wires.

There are three bullet-style connectors located on the side of the speed control, and these are to be connected to the motor's trio of input wires. Orion recommends that the motor lead wires be kept as short as possible to avoid interference and to ensure good efficiency. However, the motor leads only protrude about one and a half inches from the endbell, so we had to extend them slightly with 14-gauge wire from General Silicones. The overall length of the leads ended up to be about five inches—a little longer than the four inches suggested in the Vortex's instructions, but well within reason for our application.

HOOKING UP 12 CELLS

Before we installed anything on our E-Maxx, we had to find out if it could handle twin six-cell packs. According to Orion, the Vortex can work with six to 12 cells, so we were in business. Rather than connect the cells in series, which would create a 12-cell pack with double the voltage of a standard six-cell (14.4 versus 7.2 volts), we elected to connect our pair of Orion Sanyo 3000mAh matched packs in parallel, which leaves the voltage going into the speed control at 7.2 volts, but practically doubles the capacity, or run time, of just a single six-cell pack.

Why didn't we want twice the voltage? There are several reasons: first is that our Vortex motor is the equivalent of an eight-turn brushed motor, and pumping 14 volts into it would make it scream, but it would overheat and probably shut itself off after a few minutes. The stock Traxxas motors are designed to run on 14 volts—they are special high-turn motors—and they need the voltage to work correctly. We also wanted to experience the benefits of the brushless motor's efficiency, which should translate into extended run times with less heating (and less of a cool-down period between packs).

To hook two separate packs to the Vortex, we fabricated a Y-harness using Deans Ultra connectors (connectors are vital with the Vortex, as there is no on/off switch to speak of). We simply used "creative" soldering to branch the Vortex's input leads to the two battery packs. If we wanted to run the packs in series, as described above, we would have connected the positive wire from the speed control to the positive tab of one pack, ran a jumper wire from that pack's negative tab to the positive tab of the second pack. Then we would have simply connected the second pack's negative tab to the negative wire from the speed control.

TRACK TESTING

With great anticipation, we ran the first packs right out on the street in front of the *R/C Car* workshop. With a stopwatch in hand (to time the duration of the run), we plopped the E-Maxx down and grabbed a handful of the Airtronics MX-3's throttle. The

truck easily pulled both of its front tires off the ground, and its speed in first gear was a match for that of a stock E-Maxx in second gear—and remember that this is with one motor instead of two. When we shifted to second, we could see that the stock gearing was too tall, as the Vortex struggled to push the heavy E-Maxx to its rpm limit. The truck never "topped out."

After about 6-1/2 minutes of running, we noticed that the truck had begun to slow—not because it was running out of juice, but because the Vortex had gotten hot enough to trigger its temperature monitor function, which prevents overheating. We pulled the truck into the pits and hit the motor with an infrared temp probe, which read 206 degrees! Obviously, we had over-geared the Vortex and needed a smaller pinion.

Before we made the gear swap, we allowed the motor to cool down to see how much juice was left in the Orion batteries. There was



plenty; the truck was still more than capable of lifting its front end with ease. If it had this much torque with such a tall ratio, we could only imagine what it would be like with a smaller pinion!

Our next stop was to Hot Rod Hobbies, where we purchased a 15-tooth pinion to replace the stock 18-tooth gear. After installing the new pinion, we headed out back to the off-road track to put the "B" Maxx through its paces.

Again, the immense torque of the Vortex easily pulled both front wheels off the ground. In first gear, the truck was super-responsive to throttle input, but its gearing wasn't making the most of the motor's rpm potential. Shifting to second (via the MX-3's third-channel lever) not only provided the needed boost in top speed, but smoothed out the feel of the truck throughout the entire course. We pretty much left the truck in second gear, as the Vortex still had plenty of torque to clear the jumps, even in the tighter sections of the track.

The best news was that the Vortex was able to last for the entire battery charge without overheating has it had done the previous day (when we used the stock gearing). And on a closed-course track, our truck easily ran for over nine minutes before we had noticed a decrease in performance. Of course, Orion had sent us a pair of some of their best 3000mAh packs, but even if you use basic matched cells, you should be able to expect at least seven or more minutes of full-throttle running. And remember this is with a brushless motor that is the equivalent to an eight-turn modified.

IS BRUSHLESS BETTER?

Brushless motors are definitely the future of electric R/C. But the question on everyone's mind is whether or not this first release from Orion is indicative of what we'll see in a year or so as other manufacturers release their own brushless systems, and if the cost of the motor and its designated speed control is worth it.

Brushless technology has been with us for years—Aveox motors, in particular, come to mind—however, the issue has always been that these early motors, and more importantly, their speed controls, all came from the model-airplane industry. And although top speed and torque were there, the type of throttle control needed for car use was not.

Orion's Vortex speed control provides 250 increments of forward drive—an amount that rivals or exceeds that of most conventional racing ESCs. The result is the type of power that had made previous brushless motors the favorite of everyone from drag racers and extreme monster truckers to insane-speed competitors, yet without the jerkiness typical of those earlier "on/off" style speed controls.

Our early testing revealed that the Vortex comes through on its promise to be more efficient (as evidenced by the longer run times we experienced) and as powerful as any "fresh" hand-wound modified. And because it doesn't have any brushes to wear out or a commutator that needs to be cut, the Vortex motor should last for as long as its magnets remain strong (which should be at least a year or more under normal use). Brushless motors are the future, and we'll surely be seeing more of them before this year is over. The question is, do you want to make the investment now by buying the Vortex, or bide your time until the Novak motor is released? We can't say which motor will be superior, but for now, we are duly impressed with the Vortex's combination of speed, power and efficiency—not to mention its virtually maintenance-free operation. Let the revolution begin.





This Associated buggy landed short over one of the doubles because traffic was in the way.

5TH ANNUAL HOT ROD HOBBIES & R/C CAR SHOOTOUT

Hot action from So Cal's. largest off-road race

By Jason Sams



The Hot Rod Hobbies Off-Road Shootout has become one of the largest races of the year. With well over 400 entries at this year's shootout, every class was extremely deep with tremendously stiff competition. Quite a few top factory drivers represented their sponsors while many fast privateers tried to make names for themselves. The nicely designed track provided great traction but was also very challenging. Drivers had to negotiate a difficult short chute with deep craters that sent many cars off course. There was also an exaggerated S-section that sucked in many of the world's best off-road racers. The race was well run and with its enormous attendance suggests that our hobby is moving in the right direction.

NOVICE

Qualifying

Chris Elkins won two of the four qualifying rounds, giving him a perfect score and the top qualifying honors. Edward Velarde qualified second with a TQ round added with a third place round. Rounding out the top three was Joe Shanley, who also TQ'd a round of qualifying which was added to his next best round, a fourth.

A-main #1

Scotti Lane shocked the rest of the novice field as he won A-main number 1 from fifth on the grid. Dustin Boyko was able to move up quite a few spots from seventh on the grid to finishing a respectable second in the first of the three A-mains. Top qualifier Chris Elkins had some early troubles but was able to hang on to the third spot to keep his buggy in contention for the overall.

A-main #2

Chris Elkins was able to jump out to an early lead while Matt McCarty and Joe Shanley battled for second. Halfway through the race McCarty was able to free himself from Shanley and concentrate on leader Elkins. At the end of the race McCarty's truck was able to get by Elkins buggy to grab first. Elkins finished second and Shanley came in third.

A-main #3

Chris Elkins once again jumped out to an early lead but crashed halfway through the first lap. Edward Velarde was happy to take over the lead and run up front. Elkins was able to put his buggy back on track and focus on the leader. By the halfway point of the race Velarde was still out front with a fast approaching Elkins in second and Scotti Lane in third. With a couple a laps remaining, Elkins made a move to pass Velarde and never looked back. When the buzzer sounded at the end of the race, Elkins won, which also gave him the overall win. Second place went to Edward Velarde and third went to local Hot Rod racer Scotti Lane.

40+ STOCK TRUCK

The 40+ class was a great addition to this year's Off-Road Shootout. Many of the older gentlemen racing might not have come out had this class not been available. With fun a primary concern for any big race, a class specially designed for older racers is a good idea. We know that many of the men and, yes, women who competed had a lot of fun and will be racing next year.

Qualifying

Jeff Haynes smoked the competition during the four rounds of qualifying. He not only won every round but was the only 40+ driver to complete 11 laps, which he did in each of his qualifying rounds. J. Scott qualified second while Birdman of Birdman Racing Motors qualified in the third spot. These racers were every bit as competitive as the highly contested expert class and the close results during qualifying proved that (aside from Jeff Haynes' domination).

A-main #1

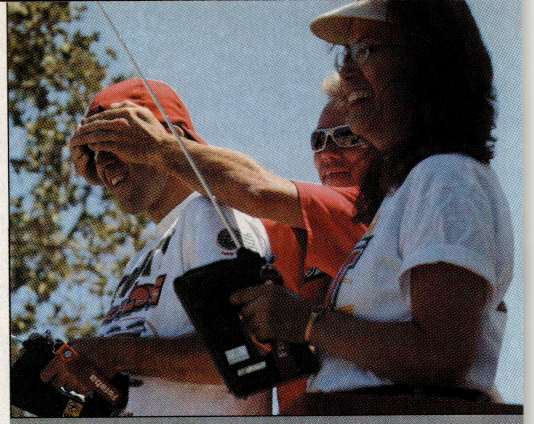
Jeff Haynes ran up front for the entire race but J. Scott saved his best driving for the main events. He too posted an 11-lap run that kept Haynes honest the entire race. When the race was over, Haynes of course won, with Scott taking second and Birdman snatching the third spot.

A-main #2

With a win Jeff Haynes could wrap up the overall. From the sound of the buzzer he was in control and just faster than everybody else. Although Haynes' driving was impressive, R.J. McKenzie and Birdman stole the show. These two drivers swapped spots and battled hard for about four minutes of the five-minute race. As the race came to an end McKenzie snuck by Birdman for second and, well, Haynes won in dominating fashion and took the home the overall victory.

A-main #3

R.J. McKenzie, who qualified fifth, jumped out to grab the first turn hole shot. J. Scott and Birdman were close behind. The three drivers followed each other taking turns leading the race. With about a minute left in the race, McKenzie made a mistake which let both Scott and Birdman by. Scott and Birdman raced to the finish but Scott took the win with Birdman second and McKenzie third.

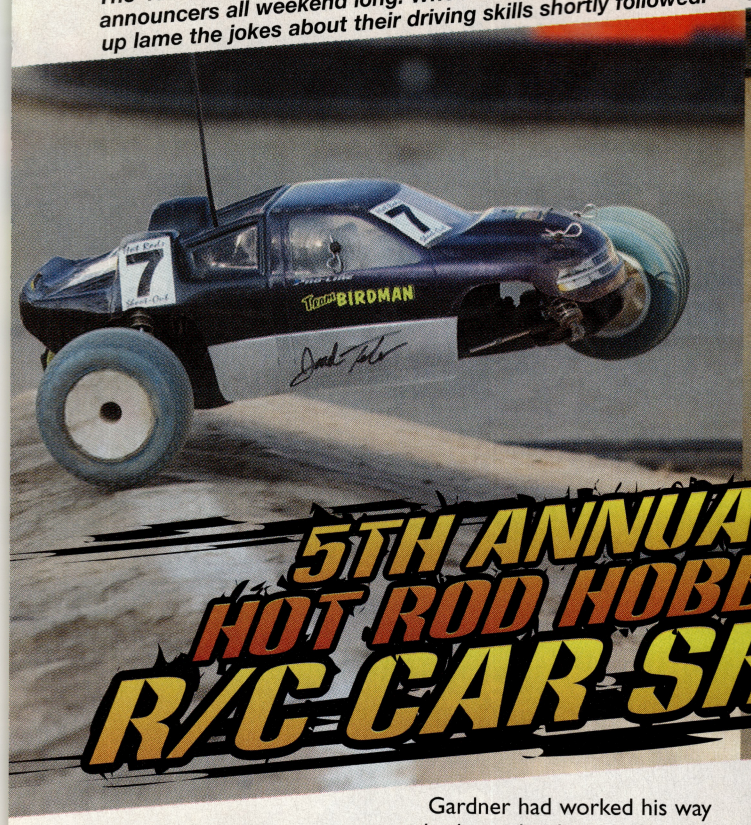


We know how fast Matt is, so to make things fair, his friend's hands were in his face as a simple but effective handicap.

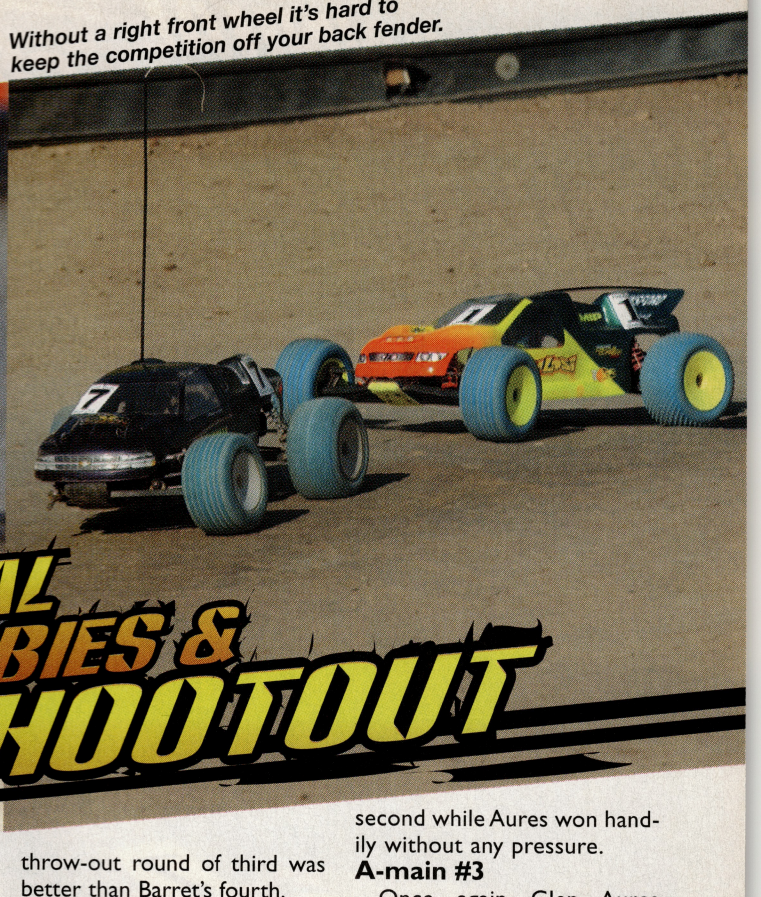


A carousel style jump into the first turn of the track made the beginning of every main event interesting.

Charles Charron, aka "Hippy," hanging out in Hardcore Racing's special events trailer. Wrenching in the trailer was a whole lot better than out in the heat.



The 40+ Stock Truck drivers were teased by announcers all weekend long. When this truck came up lame the jokes about their driving skills shortly followed.



Without a right front wheel it's hard to keep the competition off your back fender.

5TH ANNUAL HOT ROD HOBBIES & R/C CAR SHOOTOUT

SPORTSMAN STOCK BUGGY

Qualifying

Ronnie Gardner was able to win two of the four rounds of qualifying giving him the overall TQ. Jeff Haynes, who won the 40+ Stock Truck class, qualified second with a TQ round added with a second place round. Third on the grid was Omar Espinoza who had a TQ round and a third place round as his tallied qualifying points.

A-main #1

For the first part of the race Ronnie Gardner and Rusty Charpentier battled for the lead. Radcliff Brill and Tom Kistler were in a fight themselves for third place. When time ran out TQ Gardner finished first with Charpentier two seconds back in second. Third went to Brill who managed to pull away from Kistler, the fourth place finisher.

A-main #2

Ronnie Gardner put his buggy out front early but ran into trouble when he crashed a few laps into the race. Rusty Charpentier and Tom Kistler capitalized on Gardner's mistake and found themselves out front leading the pack. By the halfway point of the race Gardner had worked his way back to a battle with Kistler for second. A late mistake by Kistler allowed Gardner to get by. Gardner's late run fell short as he finished second with Charpentier first and Kistler fifth because of late mistakes.

A-main #3

Once again the TQ Ronnie Gardner benefited from a great start. This time Jeff Haynes and Omar Espinoza were on his heels giving him all kinds of pressure. At the midway point of the race Gardner crashed to allow Haynes and company by. Gardner's crash put him deep in the pack with just a couple of minutes remaining in the five-minute race. Haynes and Espinoza would battle for a short time but Haynes eventually got away and won the third and final main event. Espinoza finished second with Tom Kistler grabbing the third spot just a few seconds in front of overall winner Ronnie Gardner.

SPORTSMAN STOCK TRUCK Qualifying

Glenn Aures sat atop the competitive Sportsman Stock Truck class with two TQ rounds. Behind Aures on the grid was Jeff Barret who also had two TQ rounds, but Aures throw-out round of third was better than Barret's fourth. Third on the grid was Omar Espinoza who made three Sportsman A-main events. The top ten in this class were pretty fast considering there were over 45 entries signed up.

A-main #1

Jeff Barrett was able to grab the first turn hole shot while Glen Aures and Jeff Haynes followed in hot pursuit. A few laps into the race Barrett's truck rolled over allowing Haynes and Aures to get by. At the halfway point Barrett had moved up to the front of the pack to make a very exciting three-way battle for the lead. Late in the race an Aures crash allowed Barret to resume the lead with Haynes close behind in second. Aures regrouped to finish third with Barrett and Haynes finishing one and two.

A-main #2

Glenn Aures took advantage of being first on the grid and grabbed the lead as soon as the buzzer sounded starting the race. Jeff Barrett and Sean Cahill Jr. were in second and third for the better half of the race. Jeff Barrett had trouble crashing as he dropped back several positions to finish eighth. Cahill capitalized on the Barrett crashes and finished in second while Aures won handily without any pressure.

A-main #3

Once again Glen Aures jumped out to an early lead but this time he crashed on the first lap, which put him towards the back of the pack. Jeff Barrett took over first with Ronnie Gardner and Tom Kistler in second and third. For a few minutes Barrett and Gardner took turns leading but a late Barrett crash made way for Gardner's truck. Gardner ran out front for the last minute or so while Sean Cahill Jr. and Omar Espinoza fought for second. Gardner wrapped up the third main win while Haynes sneaked in to grab second with Espinoza third and Cahill Jr. in fourth.

EXPERT STOCK BUGGY

Qualifying

Mike Truhe was unbelievably fast TQing the first three qualifying rounds. He opted to sit out the fourth round because his previous runs put him first on the grid of a very deep class of 47 drivers. Local racer Doug Scripture qualified second when his TQ round was added to a second place round. Jeremy Felles rounded out the top three when his second and third place finishes were tallied together.

5TH ANNUAL HOT ROD HOBBIES & R/C CAR SHOOTOUT



The Modified Truck A-main drivers, all of them sporting their sponsorship threads.

A-main #1

Top qualifier Mike Truhe was unable to utilize his starting position and found himself racing with the lower half of the pack. Doug Scripture was running out front for almost the entire race relatively unchallenged. The real battle was for second as Billy Fischer fought off a hard-charging Josh Numan. Fischer was able to take second but by only .4 of a second over Numan's fast approaching buggy, which finished third.

A-main #2

For the first two minutes of the race Mike Truhe lead a train that had Doug Scripture in second with Jeremy Felles playing the role of the caboose in third. The three racers were putting on quite a show with some of the best racing witnessed all weekend long. About two minutes into the race Scripture rolled his car over, so naturally Felles took over second and Scripture regrouped to remain in third. With about a minute and a half left, Truhe made a mistake which allowed both Felles and Scripture by. Fortunately for Truhe, his bobble was not that bad, so he remained out front with the leaders in third. Once Truhe regrouped, he was able to put all kinds of pressure on Scripture who would eventually crack when his car spun out, making room for Truhe's buggy. Truhe drove his car very hard the last couple of laps and got within a half second of leader Felles's buggy. Unfortunately, the late run was fun to watch but not enough for the win. Scripture's buggy finished third but several seconds behind Truhe who finished second just behind Felles's winning car.

A-main #3

Three drivers could wrap up the overall. Mike Truhe needed a win but had to have Jeremy Felles and Doug Scripture finish outside the top two. Doug Scripture and Jeremy Felles could both take home the overall if either driver won the third and final race. The race started similarly to that of the second A-main. Truhe was out front with both Felles and Scripture very close behind. The three leaders were running a faster pace which put some distance between them and the rest of the pack. On the fourth lap tragedy struck on Truhe's buggy when his car broke and was unable to finish. Scripture had moved in front of Felles and took over the lead when Truhe's car was pulled from the



Matt Francis and others getting ready to set down the Expert Gas B-main drivers.

track. Felles had some late crashes and fell back to fifth while Scripture took off and ran in the lead about a half a lap in front of everybody else. With the last race win Doug Scripture won the overall. Second place in the race went to Brent Thielke who finished third overall. Third place went to Billy Fischer who took second in the overall standings.

EXPERT STOCK TRUCK

Qualifying

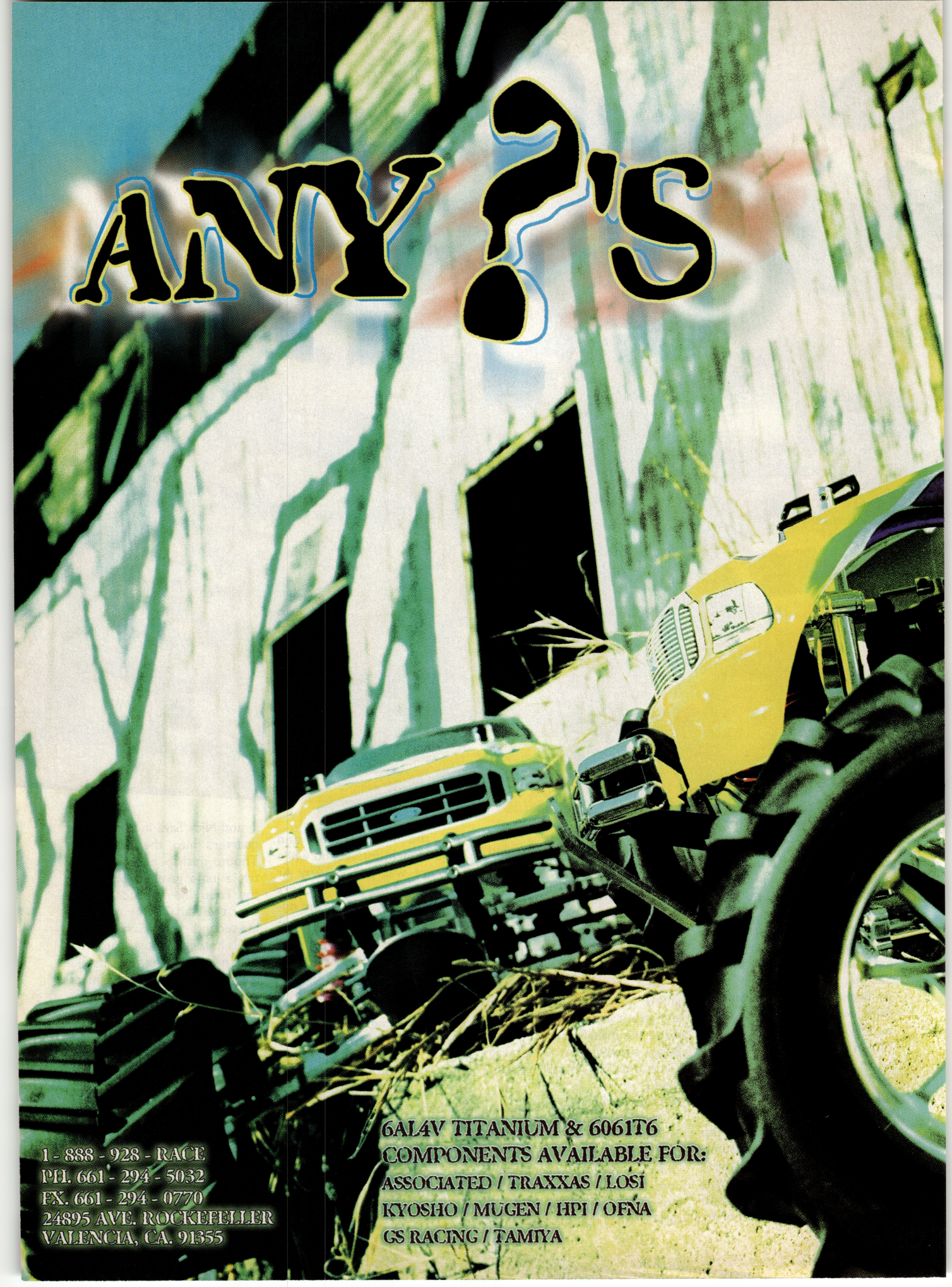
Jake Thome was able to top qualify two of the four rounds which enabled him to sit first on the starting grid. Doug Scripture won a round and took second during another to be seeded just behind Thome. Third qualifier was Jeremy Felles who also had a strong showing in Expert Stock Buggy. Nick Sava and Scott Renolds qualified fourth and fifth respectively. Renolds hasn't raced in over a year and was begged by race promoter Jimmy Babcock to come out and give it a shot. Renolds also made the main in Expert Stock Buggy, showing that after quite some time off he still has the speed.

A-main #1

A slight bobble by Jake Thome let Doug Scripture by on the first turn of the race. With Thome in second, Team Losi Manager Richard Trujillo moved to third by dodging early crashes that plagued most of the field. Thome and Trujillo fought for second while Scripture was pulling away. At the two-minute mark Thome's truck was sucked in by the difficult S-section. The mistake put Trujillo in second with Thome in third and Scott Renolds charging hard in fourth. Renolds and Thome would exchange paint but not positions for the next several laps. With a minute left in the race Trujillo crashed and moved back to fifth while Thome, Renolds and Paul Sinclair grabbed second, third and fourth to end the race as Scripture won fairly easily.

A-main #2

Jake Thome rocketed to the first turn to grab the holeshot. Doug Scripture was in second and Nick Sava in third. Three quarters into the first lap a Thome mishap over the large triple jump gave Scripture just the room he needed to take over the lead. Thome remained in second with Sava on his heels in third. Unfortunately for Thome, another mistake halfway through the race made way for a few drivers as Thome dropped backed to fifth. Sava was in second while Scott Renolds moved up to third. Thome would regroup and make his way back with the leaders. Once again he found himself swapping paint with Renolds' Losi truck for third. Renolds was able to hold off the Thome pressure for awhile but crashed late which dropped him back to fifth. Much like the first race, Scripture checked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Matt Francis' buggy pictured in a crash that took him out of the race.







The always friendly and helpful Matt Francis wrenching on one of his cars.



out and won without any trouble. Second was taken by Sava and third went to Thome.

A-main #3

Doug Scripture sat out the final main because the overall victory was already his. The rest of the field was left to sort out the remaining positions. As the chime sounded to signify the start of the race Scott Renolds put his truck out front passing several drivers as they got caught in a first turn pileup. Richard Trujillo also struck fortune nabbing the second spot with Shawn Blackwell in third. Renolds checked out uncontested as many drivers crashed early on. Trujillo would hang onto second for the entire race while Jeremy Felles worked hard to get his truck up to third at the race's end.

EXPERT MODIFIED BUGGY

Qualifying

A young Losi driver by the name of Ryan Cavalieri captured the top spot. He had a very impressive weekend. Qualifying second was Dave Montgomery from Pennsylvania, who we believe traveled the furthest to attend this race. The most famous name in off-road qualified third as Brian Kinwald put in some consistent runs with his signature buggy.

A-main #1

As they came by for the first lap Ryan Cavalieri led his Losi teammates Brian Kinwald and Dave Montgomery who were in second and third. For the first several laps Kinwald and Montgomery were mixing things up as Cavalieri stretched out his lead. Montgomery crashed at around two minutes into the race which dropped him back to fourth allowing Associated driver Travis "Peanut" Amezcua by. Amezcua followed Kinwald for the next few laps and took advantage of a Kinwald mistake that put Amezcua second and Montgomery up to third. Kinwald hung on to fourth as they finished Cavalieri first, Amezcua second and Montgomery fourth.

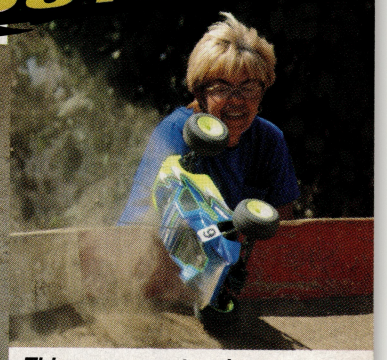
A-main #2

Ryan Cavalieri once again jumped out to an early lead with Travis Amezcua and Dave Montgomery right behind. Kinwald was in fourth and putting the pressure on teammate Montgomery as his car broke over the enormous triple jump. At the one minute mark Amezcua's buggy landed short on the same triple jump allowing Montgomery's buggy to move up to second. Cavalieri, Montgomery and Amezcua would stay very tight

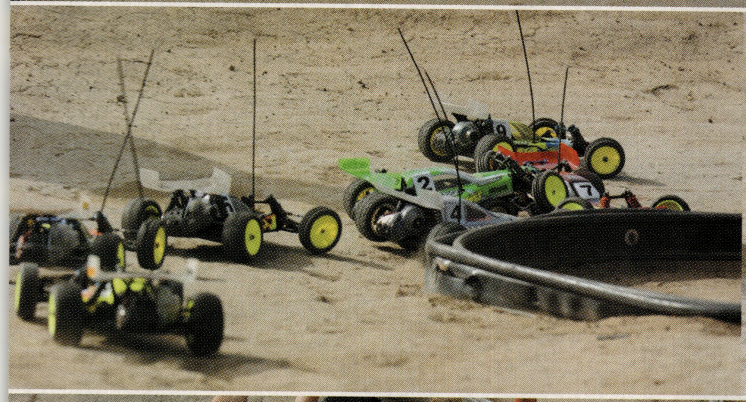
5TH ANNUAL HOT ROD HOBBIES & R/C CAR SHOOTOUT

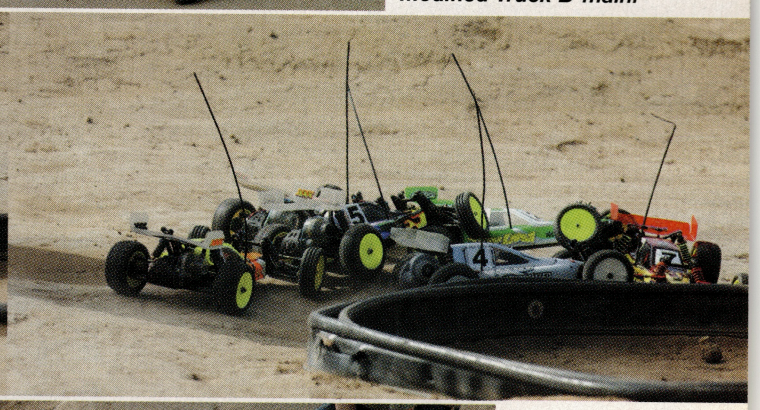






This woman got a close-up of a gnarly crash in the Modified Truck B-main.









for the remainder of the race but would not swap spots, and finish one, two and three.

A-main #3

Ryan Cavalieri did not need to race the final main because his two previous wins secured the overall victory. The rest of the racers would battle it out for the final positions. As the race started Dave Montgomery jumped out in front to grab the holeshot. Brian Kinwald and Phillip Atondo were in second and third. Kinwald was able to focus on leader Montgomery while Atondo was trying fight off a pack of racers that included Brian Dunbar, Matt Francis and Lloyd Dassonville. The Lionel train continued for several minutes until Atondo crashed allowing Dassonville and Travis Amezcua to move to third and fourth. At this time Kinwald the "Dirtinator" gave young teammate Montgomery a lesson in passing as he took over the lead. With a minute left Amezcua put a smooth pass on his Associated teammate Dassonville to take over third, but Amezcua was not through. The Associated driver finished in second after he brilliantly passed Montgomery on the last lap entering the difficult S-section. Amezcua's buggy slightly rubbed the inside of Montgomery's car causing it to move a few inches out the way allowing both Amezcua and Dassonville to grab second and third.

EXPERT MODIFIED TRUCK

Qualifying

Ryan Cavalieri was probably the fastest driver all weekend long. The young Losi driver TQ'd this class as well as Modified Buggy and 4WD. He also qualified second in Expert Gas. Look for this youngster in the future, because he is definitely going to win big races. Second qualifier Matt Francis needs no introduction because he has become one of the most dominant off-road racers in recent years. The Losi driver is a fan favorite and is always in the mix for the overall. Third on the grid was Brian "Dirtinator" Kinwald who had a great weekend of racing and proved that his nickname is absolutely appropriate.

A-main #1

Brian Kinwald and Dave Montgomery stole the show as the two pro drivers swapped spots several times the last half of the race. Kinwald would pass Montgomery than a few turns later Montgomery would dive to the inside taking back the lead. It was a great exhibit of some very intense racing. On

the last lap Kinwald rolled it over which gave Montgomery a comfortable lead and the victory. Kinwald remained in second while Brian Dunbar finished third after a great charge from tenth on the starting grid.

A-main #2

Top qualifier Ryan Cavalieri took the early lead with Brian Kinwald and Travis Amezcua in second and third. At two minutes into the race Amezcua's truck clipped a pipe to put Dave Montgomery's truck up to third. Kinwald's truck seemed to have a lot more straightaway speed than the rest of the field which enabled him to get close to leader Cavalieri. A last lap Kinwald charge fell short because of a bobble but it made the final minutes very interesting. Cavalieri took first with Kinwald and Montgomery in second and third.

A-main #3

When they came around for the first lap Ryan Cavalieri was leading with Jason Corl and Brian Kinwald in second and third. Matt Francis and the rest of the field were caught in a pileup in the extremely tough crater section of the course. The leaders were quite some distance out front because of the large crash. Corl was in second when his truck crashed with about two minutes remaining giving Kinwald a chance to get close to leader Cavalieri. Cavalieri was not able to keep his truck on all fours thus giving the lead and win to Kinwald. Cavalieri finished second and third went to Jason Corl.

4WD Qualifying

Ryan Cavalieri sat on top of yet another very fast group of racers. The kid was on fire all weekend long. Brian Kinwald qualified second with two TQ rounds. Cavalieri edged him out when their throw-out rounds were combined. Qualifying third was Jason Corl who made three main events despite missing Saturday's two rounds of qualifying.

A-main #1

In the beginning of the race Ryan Cavalieri, Brian Kinwald and Jason Corl were all out front in a tight race for the lead. On the third lap Cavalieri's car broke, putting Corl out front with Adam Drake moving to third just behind Kinwald. On the fourth lap Kinwald rolled it over allowing Matt Francis to move to third and Drake up to second. Corl, Drake and Francis remained close for several laps, making it easy for Kinwald to



Cookie Martinez needed someone to race against in the 40+ B main event. So naturally, the 2WD World Champ Matt Francis volunteered.

The owner of this gas truck is the ridiculously fast up and comer Ryan Cavalieri of Team Losi. Ryan was consistent all weekend.

get back in the race. With about a minute remaining Kinwald passed Francis while Drake snuck inside Corl to take over the lead. Kinwald made quick work of his teammate Corl and passed him to move up to second. With two laps left to go Drake's Losi XXX-4 Prototype jumped the large triple too much inside, landing on the wrong side of the track. This gave Kinwald the lead and the first main win. Drake had presence of mind and drove the car back over the pipe to finish in second with Corl coming fast in third.

A-main #2

Brian Kinwald grabbed the lead after a first-turn crash moved Ryan Cavalieri back in the pack. Jason Corl was in second while trying to fight off Matt Francis who occupied third. Corl held off Francis for awhile but was passed on the inside of the triple double rhythm section halfway through the race. Kinwald had checked out, so everyone's attention was on second place Francis who was now being challenged by Corl whom he passed just a few laps previously. With a couple of laps remaining Francis' buggy crashed over the triple giving way for Corl and Cavalieri who had battled back to grab third. They finished Kinwald first, Corl second, Cavalieri third and Francis fourth.

A-main #3

Brian Kinwald had the overall win so he opted to watch the final race from the sidelines. Top qualifier Ryan Cavalieri jumped out to an early lead with Adam Drake and Matt Francis following with great anticipation. Francis moved past Drake fairly early in the race and then moved Cavalieri right out of his way to take over the lead. From a spectator's point of view it looked like nothing was going to get between Francis' buggy and the finish line. Other than swapping spots with Drake who appeared just as determined, Francis won with Drake four seconds behind in second and Joe Pillars snatching third from Cavalieri.

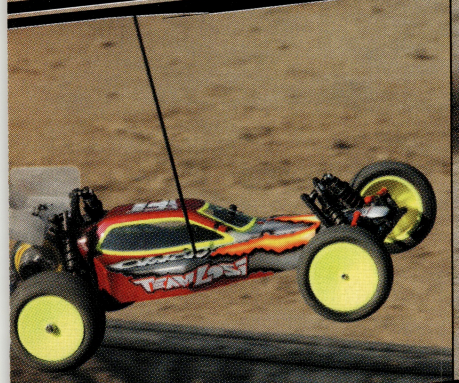
SPORTSMAN GAS TRUCK

Qualifying

Hot Rod Hobbies local Adam Shephard qualified first with two TQ rounds. The easy-going teenager looked pretty impressive and had quite a cheering section during the main events. Second qualifier was Glenn Aures who also made both the Sportsman Stock buggy and truck main





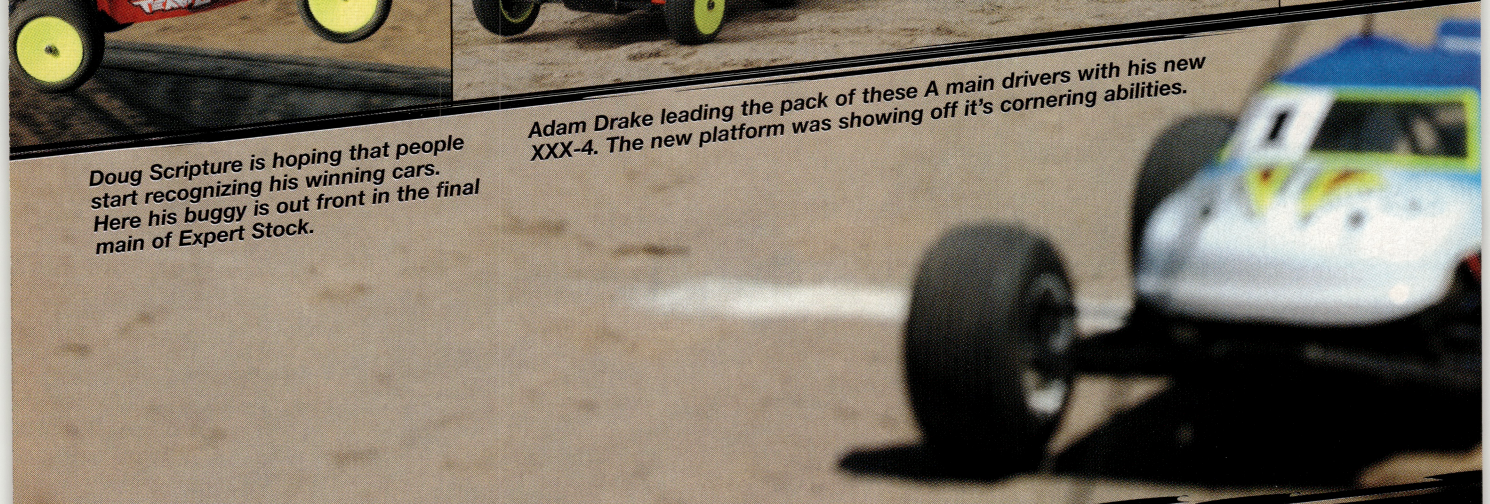


Doug Scripture is hoping that people start recognizing his winning cars. Here his buggy is out front in the final main of Expert Stock.



Adam Drake leading the pack of these A main drivers with his new XXX-4. The new platform was showing off it's cornering abilities.





events. Third qualifier was Robert Ibon who paints most of the bodies you see in *R/C Car* and designs some of the most sophisticated motocross gear.

Main

Adam Shephard took off from the start of the race and never looked back. The local racer was on a much faster pace than the rest of the field and did not make any mistakes for the first few minutes of the race. He had a sizeable lead over second place Glenn Aures and was lapping third place Bryan Nguyen when his truck tragically broke down. Twelve minutes into the twenty-minute race Shephard's truck had to be pulled off the track because of rear suspension problems. Glen Aures took over the lead while Nguyen took over second and Michael Palazzola moved into third. Truck problems plagued most of the drivers as their vehicles had to be fixed or in some cases just restarted.

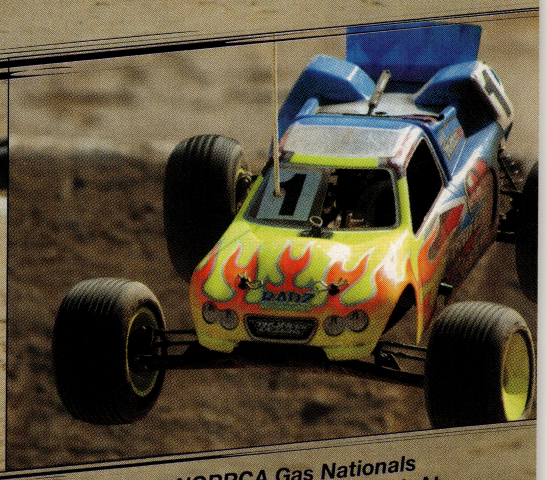




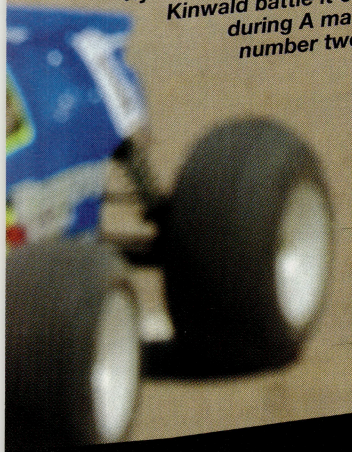
Ryan Cavalieri and Brian Kinwald battle it out during A main number two.



Adam Drake is vying to become the 1/10 scale off-road gas king. He is always a threat at every major event. At this year's Shootout the "Drake" was on with his signature gas truck.



Peanut won the NORRCA Gas Nationals just after switching to team Associated. At the Off-Road Shootout, Peanut's GT was also fast and consistent.



5TH ANNUAL HOT ROD HOBBIES & R/C CAR SHOOTOUT

Michael Palazzola took control of first late and won by half a lap over Daugherty in second and Aures who finished third.

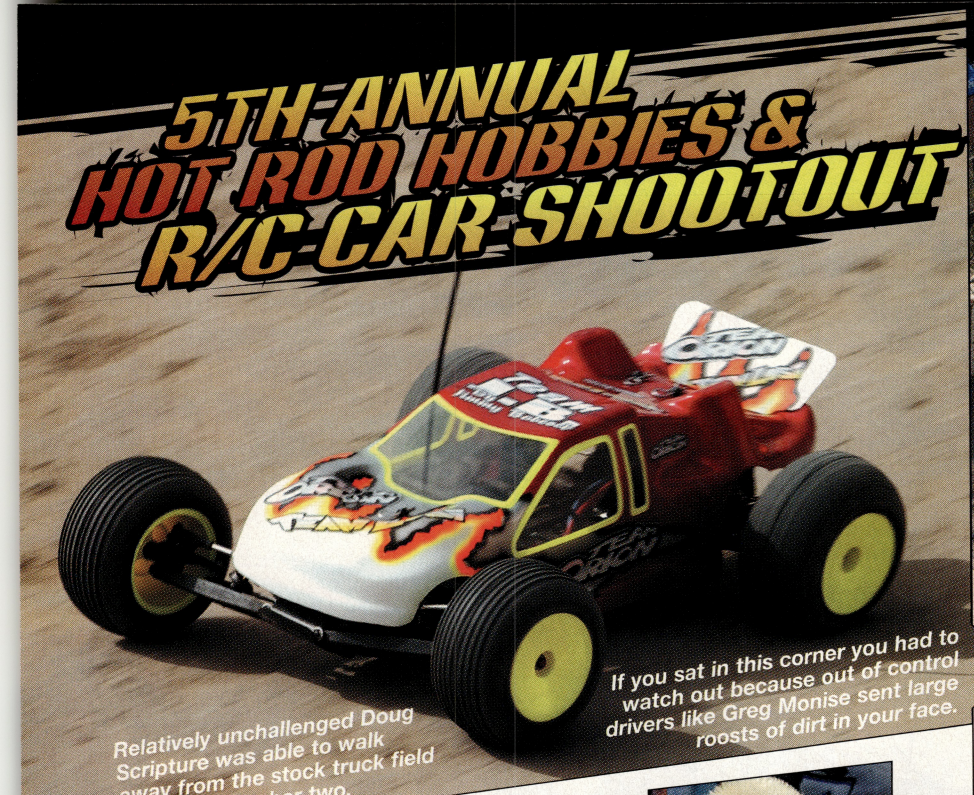
EXPERT GAS TRUCK Qualifying

Adam Drake simply did what he does best, and that's drive a gas truck better than everybody else. With three TQ rounds the Losi driver was sitting first on the grid of a very deep field of 61 drivers. Second qualifier was Lloyd Dassonville of Team Associated who was consistent all weekend long. Losi's Phillip Atondo qualified third with a pair of third place rounds.

Main Event

Adam Drake took the first turn holeshot with teammate Ryan Cavalieri in second and Lloyd Dassonville in third. Travis Amezcua moved up to fourth early from his eighth qualifying position. Amezcua looked extremely fast picking off Dassonville and then going to work on Cavalieri. By the three-minute mark Amezcua was in second and gaining ground on leader Drake's Losi truck. At about four minutes into the race Drake crashed over the triple giving Amezcua the lead. One minute later Drake puts his truck back out in front when he capitalized on Amezcua's crash into one of the tracks perimeter pipes. Drake would not make another mistake for the remaining 25 minutes of the race. He was dominant and oh so fast. Amezcua and Cavalieri mixed things up awhile passing one another. Cavalieri eventually lost the battle with Amezcua and took third with Amezcua earning second. Of course Drake finished first, a half a lap ahead of his former teammate Amezcua.

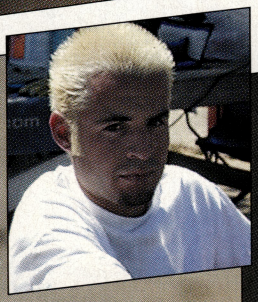
5TH ANNUAL HOT ROD HOBBIES & R/C CAR SHOOTOUT



Relatively unchallenged Doug Scripture was able to walk away from the stock truck field in A main number two.



If you sat in this corner you had to watch out because out of control drivers like Greg Monise sent large roosts of dirt in your face.



Travis "Peanut" Amezcua sporting his new ride, an Associated B3-X. Travis has not had much time racing the Associated cars but was still able to put in a solid weekend of racing.

INTERVIEW WITH TRAVIS AMEZCUA

R/C Car: *What prompted the switch from Team Losi to Team Associated?*

T. A.: "Someone, who I'm not going to mention, said I should give the Associated camp a call. I called and found out that they wanted me to race for them as well as work in R&D at their facility. I had previously raced for Associated before my run with Losi, and left on pretty good terms. So naturally I was interested in what they had to offer."

R/C Car: *Why did you make the switch?*

T.A.: "For a couple of reasons, actually. First, because of the extra compensation; Associated agreed to pay me more than what I was making over at Team Orion. Secondly, I feel that working at Associated was a great career choice. I believe that I can work my way through the company and eventually be a major part of the company's success. I want to do more than just race. Lastly, I have always liked the Associated cars. Once I get accustomed to the cars, I feel that I will be more competitive than I was. The Associated GT has always been a great gas truck that works really well on rough tracks. I was able to win the NORRCA Gas Nationals the first time I raced the GT which speaks volumes about how comfortable I feel driving the truck."

R/C Car: *What are some of your responsibilities at Team Associated?*

T.A.: "I spend a lot of my time with Mike Reedy learning the ropes of motor building and tuning. He has been very instrumental in my first couple of months at Associated. I also help develop and test the new cars. Since it's no secret, we are currently working on a new buggy that is going to be very successful. I have given R&D another point of view which will hopefully help them finish the new buggy."

R/C Car: *Is the new B4 a copy of the prototype you have been racing?*

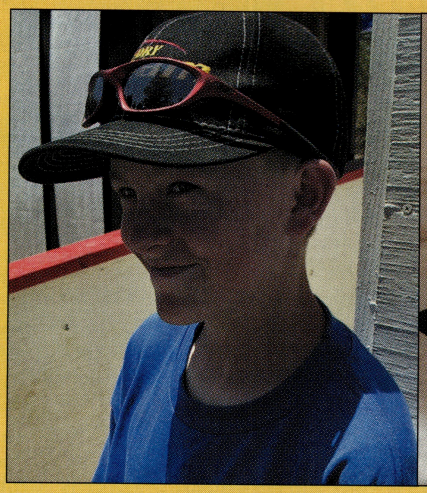
T.A.: "No, but it is similar. The new B4 has some slight changes that set it apart from the B3-X prototype I have been racing. It's going to be a great car that suits my aggressive driving style. Consumers are definitely going to want to purchase this new buggy."

R/C Car: *Well, Travis, we wish you success with your future endeavors with Team Associated. We know your talent will be put to good use.*

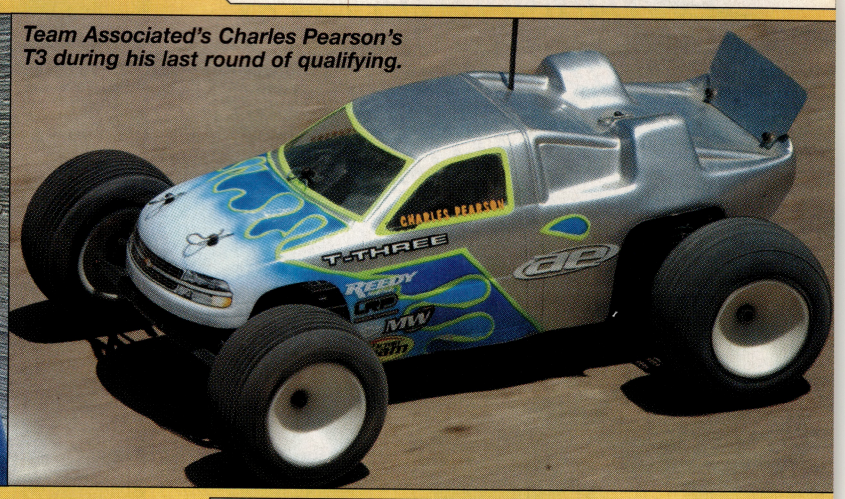
T.A.: "Thanks, I hope to see you out at more races and good luck with a great magazine."



Brian Kinwald's new Losi XXX-4 just a spilt second before takeoff.



Team Associated's Charles Pearson's T3 during his last round of qualifying.

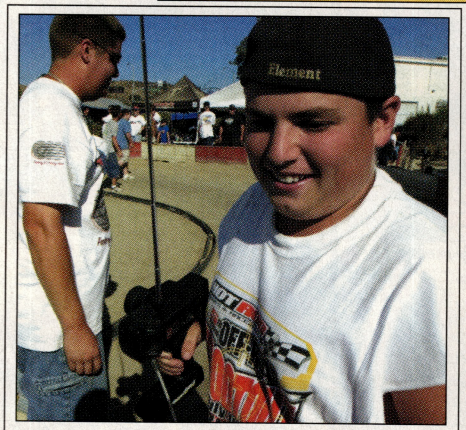


HOW OLD ARE YOU?

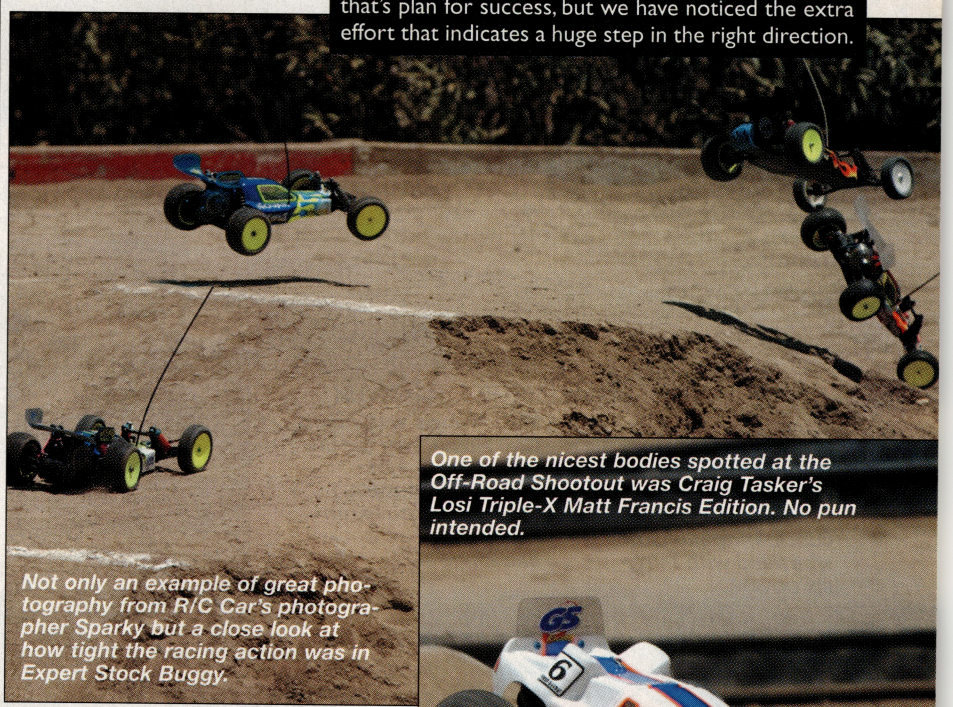
Team Associated sponsored driver Charles Pearson of Huntington Beach, California, is only 13 years old. The youngster is believed to be the youngest factory sponsored driver here in the states. His local track is So Cal Raceway, where many top factory drivers race regularly. Unfortunately the youngster had trouble during qualifying at the Hot Rod Hobbies Off-Road Shootout but managed to make the respectable B-main in Expert Stock Buggy. After all, there were over forty of fifty racers deep in each of his electric classes. Look for this kid in the future; he will only get faster with time.

A BRIGHT FUTURE FOR ASSOCIATED

Associated seems to be making solid choices for a successful future. They acquired a great racer in Travis Amezcua who immediately helped their racing program by winning the NORRCA Gas Nationals. Sponsored youngsters Jared Tebo and Charles Pearson indicate that their racing team will only get stronger with time as these two mature into their potential. A new B4 buggy is expected soon and from what we hear is going to be a real gem. Associated may only be doing what they have always done, and that's plan for success, but we have noticed the extra effort that indicates a huge step in the right direction.

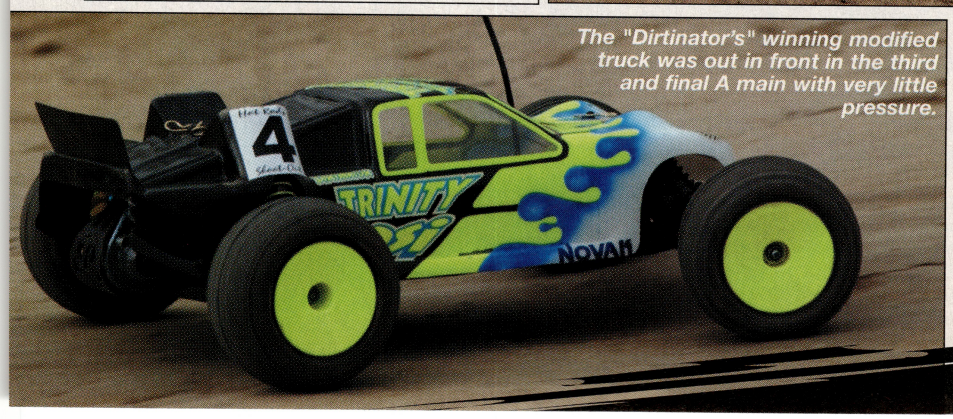


This year's Hot Rod Hobbies Shootout was the first that introduced a new Pro/Am class which paired a novice driver with a top factory driver. The drivers' finishes were tallied together for a chance at winning $100. Young novice drivers had the help of their favorite pros and on many occasions the pro drivers made it out to the track to root for their younger teammates. Pictured here is Chris Elkins and Adam Drake, who won this year's Pro/Am. It was all smiles when the two drivers knew victory was theirs and so was the 100 bucks.

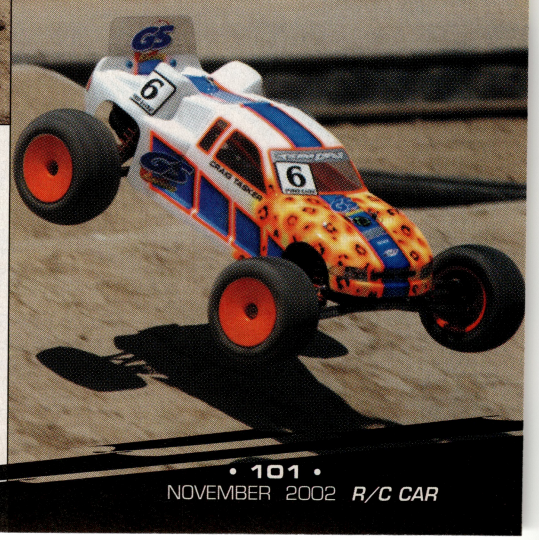


Not only an example of great photography from R/C Car's photographer Sparky but a close look at how tight the racing action was in Expert Stock Buggy.

One of the nicest bodies spotted at the Off-Road Shootout was Craig Tasker's Losi Triple-X Matt Francis Edition. No pun intended.



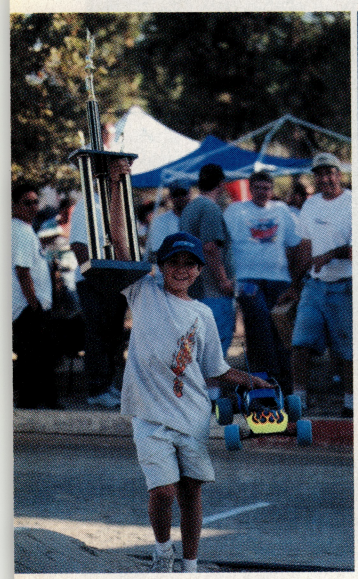
The "Dirtinator's" winning modified truck was out in front in the third and final A main with very little pressure.



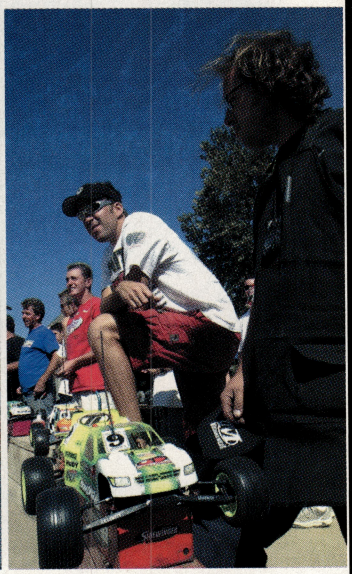
5TH ANNUAL HOT ROD HOBBIES & R/C CAR SHOOTOUT



You're Safe! The driver who crashed, that is. His truck lost minimal time as this turn marshal dove to help out.



Young Michael Palazzola with a great smile after he won the Sportsman Gas A main event. Not bad considering the class was filled with thirty-six drivers.



Matt Francis was Adam Drake's pit man for the long thirty-minute Expert Gas A-main. Francis was busy running around all weekend long.

WINNERS



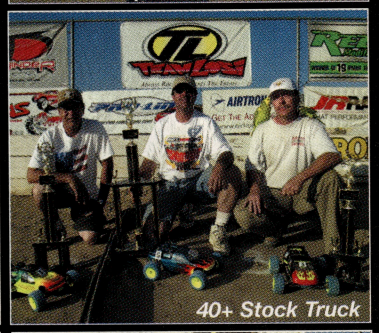
Sportsman Stock Buggy



Sportsman Stock Truck



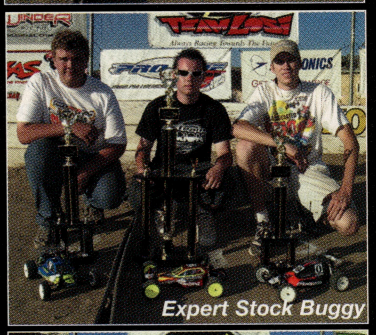
Novice Truck & Buggy



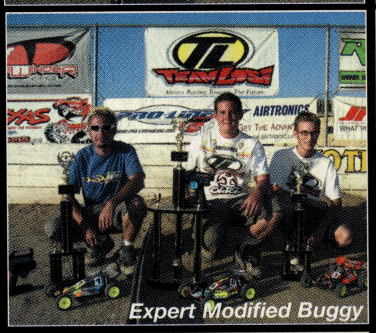
40+ Stock Truck



Expert Stock Truck



Expert Stock Buggy



Expert Modified Buggy



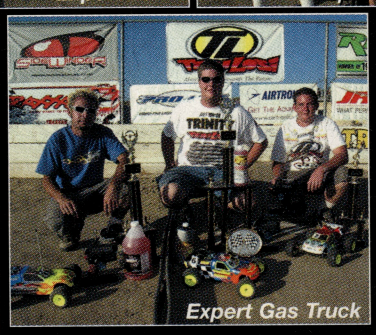
Expert Modified Truck



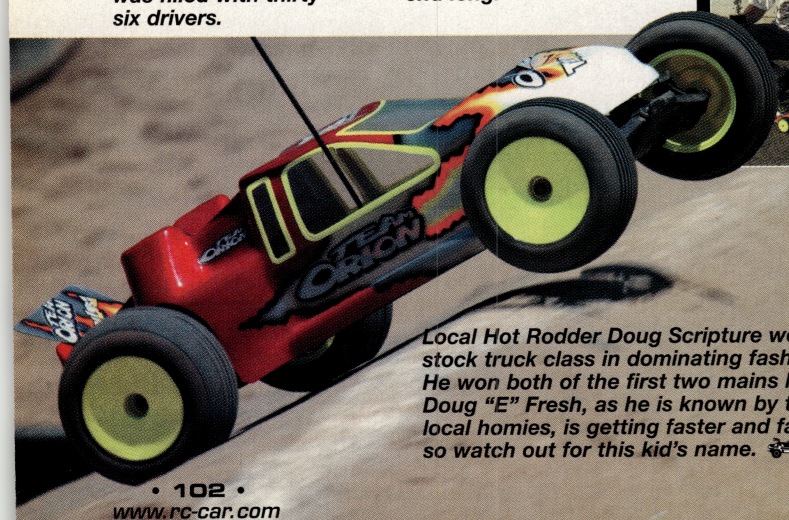
Expert 4WD



Sportsman Gas Truck



Expert Gas Truck



Local Hot Rodder Doug Scripture won the stock truck class in dominating fashion. He won both of the first two mains handily. Doug "E" Fresh, as he is known by the local homies, is getting faster and faster, so watch out for this kid's name.

DRAGON R/C
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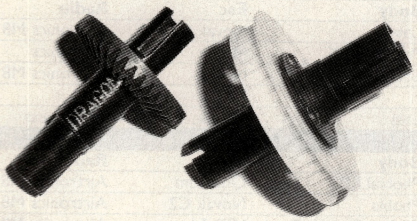
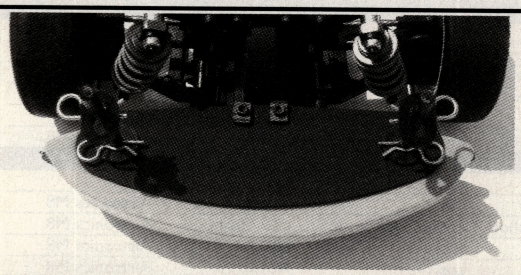
Sunday, July 28, 2002 Vol 1.1

DRAGON R/C'S SOLID DIFF'S DOMINATE



Dragon R/C's "NEW" SOLID DIFFERENTIALS for the Associated TC3 & Losi XXX-S win 2 out of 3 Touring Car classes at the ROAR 2002 Electric Paved On-Road Nationals held at MHOR R/C Raceway in Aurora, Colorado on July, 26-28, 2002. These diff help you pull the front end through the corners but help maintain control when breaking.

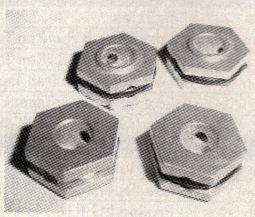
DR-260 **Solid Diff Losi XXX-S** $ TBA - Available Late Sept.
DR-360 **Solid Diff for Assoc. TC-3** $ TBA - Available Late Sept.



NEW XXX-S FRONT BUMPER

Increases strength and durability of XXX-S's front end. Special Kydex pieces sandwich the foam bumper for increased strength and support of the front body mounts.

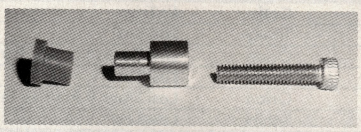
DR-255 Front Bumper Brace $ 19.99



T & E-MAXX DRIVE HUBS w/O-RINGS - BACK IN STOCK

Tired of digging drive hubs out of rims? Tired of looking for the drive pins that falls out of the axle? These Drive Hubs w/ O-Rings eliminate the problem of lost axle pins & hubs stuck in rims. The O-Ring captures the drive pin to keep them where they belong and keep the drive hub on the axle.

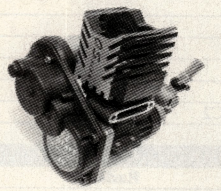
DR-130 T & E-MAXX O-Ring Drive Hubs - Blue $25.99



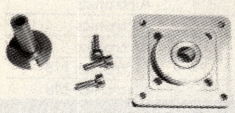
NEW SHOCK BUSHINGS

Tired of sloppy shock bushings? These newly designed bushings eliminate the unnecessary play for the upper shock mount.

DR-250 LOSI Shock Bushings (All XXX) $ 19.99
(Set 4 - Available in Red, Blue or Black)
DR-350 ASSOC. Shock Bushings (B3 & T3) $ 19.99
(Set of 4 - Available in Red, Blue or Black)
DR-351 ASSOC Shock Bushings (TC3 & NTC3) $ 19.99
(Set of 4 - Available in Red, Blue or Black)
DR-151 TRAX. Shock Bushings (T or E MAXX) $ 12.99
(Set of 8 - Available in Red, Blue or Black) (not pictured)



EZ-START CONVERSION FOR O.S .12 & .15 CV ENGINES

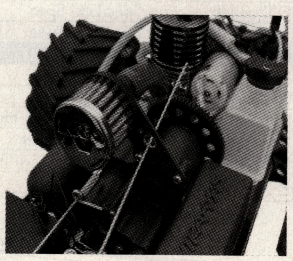


Tired of pulling again and again to start your engine? With the E/Z Start conversion you are ready to go with the push of the button. All you need with this kit is an E/Z Start unit with One-Way Bearing and an O.S .12 or .15 CV Style Engine.

DR-165 E/Z Start Conversion $ 67.99

25% MORE AIRFLOW FOR T-MAXX ENGINES

Increase the air intake for T-Maxx's by 25% over standard paper or foam air filter. K&N Air Filters allows more air to get to the engine while keeping the dirt out. The Dragon R/C Air Filter system moves the filter away from the engine to allow it to capture cooler air and reduce vapor lock. Knowing the demands of the average T-Maxx owner Dragon R/C has firmly mounted the filter so that it can survive the worst crashes. Dragon R/C's K&N Air Filters are available for the stock T-Maxx with a .12 or .15 engines, and is also available for most Big Block .21 conversions.



DR-170 K&N Air Filter Kit

DR-170 K&N Air Filter w/Mnt. $39.99
DR-172 Big Block .21 K&N w/Mnt. $49.99
DR-171 K&N Air Filter Recharge Kit $ 7.99

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NOVICE BUGGY AND TRUCK

Qual.		Driver	Chassis	Handout Motor	Cells	Handout f/rTries	Body	Esc	Radio
1	1	Chris Elkins	Losi	Reedy	Peak	Losi Spec/Losi Spec	Losi	Novak Cyclone	JR Racing XR3
2	5	Scotti Lane	Associated T3	Reedy	Trinity	Losi Spec/Losi Spec	Proline F-150	Novak	Hi-Tec
3	2	Edward Velarde	Losi	Reedy	Trinity	Losi Spec/Losi Spec	Proline GMC	Novak	JR Racing XR3
4	6	Dustin Boyko	Losi	Reedy	Trinity	Losi Spec/Losi Spec	Proline	Novak	Airtronics M8
5	4	Matt McCarty	Losi	Reedy	Orion	Losi Spec/Losi Spec	Losi	Novak C2	JR Racing XR3

SPORTSMAN STOCK BUGGY

Qual.		Driver	Chassis	Handout Motor	Cells	Handout f/rTries	Body	Esc	Radio
1	1	Ronnie Gardner	Losi XXX	Reedy	Reedy	Losi Spec/Losi Spec	Losi	Novak	Airtronics
2	7	Rusty Charpentier	Losi XXX	Reedy	Trinity	Losi Spec/Losi Spec	Phobia	Novak	AirtronicsM8
3	2	Jeff Haynes	Associated B3	Reedy	Orion	Losi Spec/Losi Spec	Proline	Novak	Airtronics
4	6	Tom Kistler	Losi XXX BK Edition	Reedy	Panasonic	Losi Spec/Losi Spec	Proline	LRP 7.1	Airtronics M8
5	5	Radcliff Brill	Losi XXX BK Edition	Reedy	Trinity	Losi Spec/Losi Spec	Phobia	Novak C2	Futaba 3PJS

SPORTSMAN STOCK TRUCK

Qual.		Driver	Chassis	Handout Motor	Cells	Handout f/rTries	Body	Esc	Radio
1	1	Glenn Aures	Losi XXX-T	Reedy	Orion	Losi Spec/Losi Spec	Losi	Novak C2	Airtronics M8
2	4	Jeff Haynes	Associated T3	Reedy	Orion	Losi Spec/Losi Spec	Proline GMC	Novak	Airtronics
3	5	Ronnie Gardner	Losi XXX-T	Reedy	Reedy	Losi Spec/Losi Spec	Losi	Novak	Airtronics M8
4	7	Sean Cahill Jr.	*	Reedy	*	Losi Spec/Losi Spec	*	*	*
5	8	Brian Daugherty	Losi XXX-T	Reedy	Trinity	Losi Spec/Losi Spec	Losi	Novak	Airtronicss

EXPERT STOCK BUGGY

Qual.		Driver	Chassis	Motor	Cells	f/rTries	Body	Esc	Radio
1	2	Doug Scripture	Losi	Orion	Orion	Losi Silver 8/RibLosi Tapers	PhobiaLRP	Quantum	Airtronics M8
2	8	Billy Fischer	Losi	Birdman	Ballistic	Losi Wide Body/Losi BK Bars	Phobia	Novak C2	Airtronics M8
3	10	Brent Thielke	Associated Proto.	Orion	Orion	Proline M2 8176/Evil Twins	Proline Deja Vu Tu	LRP 7.1	Airtronics M8
4	3	Jeremy Felles	*	*	*	*	*	*	*
5	4	Josh Numan	Losi XXX	Trinity P2K	Trinity	Losi/Losi BK Bars	Losi	Novak C2	Airtronics M8

EXPERT STOCK TRUCK

Qual.		Driver	Chassis	Motor	Cells	f/rTries	Body	Esc	Radio
1	2	Doug Scripture	Losi	Orion	Orion	Losi Silver 8 Rib/Red Tapers	Phobia	LRP 7.1	Airtronics M8
2	5	Scott Renolds	Losi	Birdman	Birdman	Losi Silver 8 Rib/Red Tapers	Korn	LRP	Airtronics M8
3	1	Jake Thome	Losi	Peak	Orion	Losi 8 Rib/Losi Red Tapers	Losi	Novak Cyclone	Airtronics M8
4	7	Richard Trujillo	Losi XXX-T MF Edit.	Peak	Peak	Losi Sprint/Losi Tapers	Losi Fury	Novak C2	JR Racing R-1
5	9	Paul Sinclair	Losi XXX-T	Banzai	Peak	Panther Micro Ribs/Stingers	Losi	Novak	Airtronics M8

EXPERT MODIFIED BUGGY

Qual.		Driver	Chassis	Motor	Cells	f/rTries	Body	Esc	Radio
1	1	Ryan Cavalieri	Losi XXX	Orion	Orion	Losi Tapers/Losi BK Bars	Losi	Novak	Airtronics M8
2	2	Travis Amezcua	Associated Proto. B4	Reedy	Reedy	Proline M3 R10/M3 Holeshot	Proline Deja vu Tu	LRP Quantum	Airtronics M8
3	3	Dave Montgomery	Losi XXX BK Edition	Orion	Orion	Losi/Losi	Losi	LRP 7.1	Airtronics M8
4	6	Brian Kinwald	Losi XXX BK Edition	Trinity	Trinity	Losi/Losi	Losi	Novak	Airtronics M8
5	7	Lloyd Dassonville	Associated B3-X	Reedy	Reedy	Losi/Losi	Associated	LRP	Airtronics

EXPERT MODIFIED TRUCK

Qual.		Driver	Chassis	Motor	Cells	f/rTries	Body	Esc	Radio
1	3	Brian Kinwald	Losi	Trinity	Trinity	Losi/Losi	Losi	Novak	Airtronics
2	1	Ryan Cavalieri	Losi	Orion	Orion	Losi Tapers/Losi BK Bars	Losi	Novak	Airtronics
3	6	Dave Montgomery	Losi XXX MF Edition	Orion	Orion	Losi/Losi	Losi	LRP 7.1	Airtronics
4	10	Brian Dunbar	Losi	Orion	Orion	Losi Silver 8 Rib/Red Tapers	Losi Fury	LRP	Airtronics
5	2	Matt Francis	Losi XXX MF Edition	Trinity	Trinity	Losi/Losi	Losi	LRP	Airtronics

40+ STOCK TRUCK

Qual.		Driver	Chassis	Handout Motor	Cells	Handout f/rTries	Body	Esc	Radio
1	1	Jeff Haynes	Associated T3	Reedy	Orion	Losi Spec/Losi Spec	Proline GMC	Novak	Airtronics
2	2	J. Scott	Losi	Reedy	Pro-Match	Losi Spec/Losi Spec	Proline Crowd Pleazr	Novak	Airtronics
3	3	BIRDMAN	Losi	Reedy	Birdman	Losi Spec/Losi Spec	Losi	Novak	Futaba 3PJ
4	5	R.J. McKenzie	Losi	Reedy	Pro-Match	Losi Spec/Losi Spec	Losi Fury	Novak C2	Airtronics M8
5	6	Bob James	Losi	Reedy	Trinity	Losi Spec/Losi Spec	Losi	Novak	Airtronics

EXPERT MODIFIED 4WD

Qual.		Driver	Chassis	Motor	Cells	f/rTries	Body	Esc	Radio
1	2	Brian Kinwald	Losi XXX-4 Proto.	Trinity	Trinity	Losi/Losi	Losi	Novak	Airtronics
2	4	Adam Drake	Losi XXX-4 Proto.	Trinity P94	Trinity	Losi/Losi	Losi	Novak	Airtronics
3	6	Matt Francis	Losi XXX-4 Proto.	Trinity	Trinity	Losi/Losi	Losi	LRP	Airtronics
4	3	Jason Corl	Losi XX-4	Orion	Orion	Losi Tapers/Losi Tapers	Losi	LRP 7.1	Airtronics M8
5	1	Ryan Cavalieri	Losi XXX-4 Proto.	Orion	Orion	Losi Blockhds/Losi BK Bars	Losi	Novak	Airtronics M8

SPORTSMAN GAS TRUCK

Qual.		Driver	Chassis	Engine	Fuel	f/rTries	Radio
1	9	Michael Palazzola	*	*	*	Losi Spec/Losi Spec	*
2	8	Brian Daugherty	Losi	Novarossi	Sidewinder	Losi Spec/Losi Spec	Airtronics
3	2	Glen Aures	Losi XXX-NT	RBTrinity	-	Losi Spec/Losi Spec	Airtronics M8
4	7	Bryan Nguyen	Losi XXX-NT Drake Ed.	O.S. CV	O'Donnell	Losi Spec/Losi Spec	Airtronics M8
5	4	Sean Cahill	*	*	*	Losi Spec/Losi Spec	*

EXPERT GAS TRUCK

Qual.		Driver	Chassis	Engine	Fuel	f/rTries	Radio
1	1	Adam Drake	Losi XXX-NT Drake Ed.	Pico Trinity	Platinum 20%	Losi/Losi	Airtronics
2	8	Travis Amezcua	Associated Team GT	Mugen MT 12	Sidewinder	Proline M3 Edge/M3 Holeshot	Airtronics M8
3	2	Ryan Cavalieri	Losi XXX-NT	Orion Wasp	Orion	Losi 8 Rib/Losi Taper	Airtronics M8
4	7	Jared Tebo	Associated Team GT	O'Donnell/ RB	O'Donnell	Proline Evil Twins/Evil Twins	Airtronics M8
5	3	Lloyd Dassonville	Associated Team GT	Mugen	Sidewinder	Losi/Losi	Airtronics

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XRay T1 EVO2

Just because the market is pretty saturated with electric touring cars doesn't mean that players involved get to take a break. In fact, because there are so many cars vying for your hobby dollar, the opposite is the norm. Witness companies such as Tamiya and HPI (current IFMAR first and third place winners, respectively) who test (and release) new designs constantly. So when joining this competitive marketplace, XRay knew (and "warned" their customers) that development doesn't stop when they release a kit—it's a constant process, spurred by feedback from their team drivers and customers. In fact, Mario Hudy, son of XRay designer Juraj Hudy, is a constant presence on the myTSN

EVOLUTION MORE



website, which covers support for XRay and Serpent cars. He personally answers the dozens of posts and e-mails he receives daily, and eagerly accepts suggestions and complaints (the few that there are) on how to further improve their car design. Which brings us to XRay's new car, the T1 EVO2. XRay is hailing this as an evolution of the T1, taking a large amount of input from the public, as well as their own team drivers, of course. And so as not to abandon their customer base of original T1 drivers, the older car can be upgraded to EVO2 status. Although a full upgrade isn't offered as an inclusive kit, a driver can update just the pieces deemed necessary.

THAN REVOLUTION

OUTSTANDING FEATURES

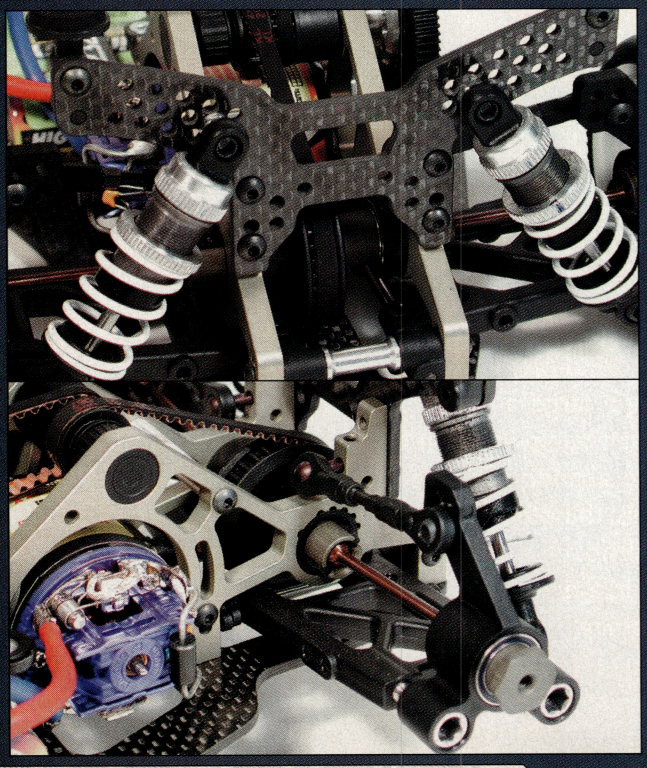
OUTSTANDING FEATURES

CHASSIS

One of the biggest pieces of news about the EVO2 is the chassis. XRay wanted to give their drivers the option of running all six cells on one side of the chassis, which is now possible with new cell cutouts, and opens up battery placement with even more possibilities. The new chassis will accept six cells on either side of the car (though the servo placement will need to be reconfigured if the cells are on the right side), saddle packs balanced in the rear or front, or saddle packs staggered in any combination front to rear. With so many battery and radio gear options available, a racer is bound to find one that works best for the situation.

Also new is the upper deck, which is really more of a stiffening brace to tie the two bulkheads together. The new piece is more flexible than the old one, due to a slit running lengthwise down the center. Fore-aft rigidity remains, but the chassis is allowed to twist, which gives the EVO2 more overall traction on bumpy tracks—a welcome addition for racers who frequent less-than-perfect parking lots.

Fortunately, all of the pre-drilled and countersunk locations for adding the screw-on chassis weights remain. Since the car is typically under the minimum weight limit for sanctioned racing, the optional brass ballasts let you choose where you want to add more weight, and in an elegant manner.



SUSPENSION

The rear suspension components are almost all new. Take a look at the rear shock tower—where there were three upper shock mounting positions on each side of the original car, now there are fifteen (on each side!). And on the new lower arms there are now three mounting positions. On the front end, the tower retains three shock locations, while the lower arm retains two mounting points but in different locations.

One complaint that T1 owners (and magazine editors, as well) had was the lack of a belt tensioner. Although an add-on tensioner was released that bolted onto the rear bulkhead, a more integrated solution was in the works. Using a design similar to what HPI uses in their line of RS4 belt cars, a plastic outdrive bearing holder keys into each side of the front and rear bulkheads. By using one of five different key positions, this eccentric bearing holder moves the diff for ward or backward in the bulkhead, effectively changing the front or rear belt tension with the distance from the center layshaft. The bearing holders fit very precisely into the hard-anodized alloy bulkheads, and a special tool is included to aid in removing the holder without damaging it. The anti-dive and anti-squat settings are still adjustable from the bulkheads, and there is also an new mounting location for the rear end of the lower arms to change the roll center of the rear.

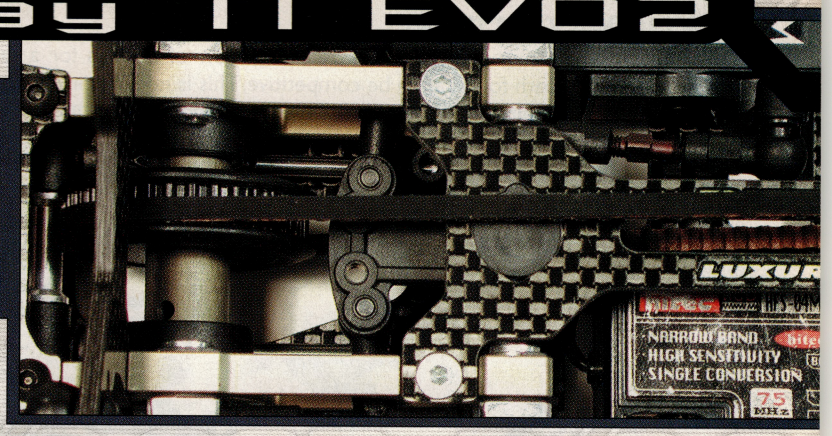
The rear pivot ball uprights remain the same, but the front pivot ball steering blocks (the Achilles heel of any car) have been redesigned slightly to be a bit stronger.

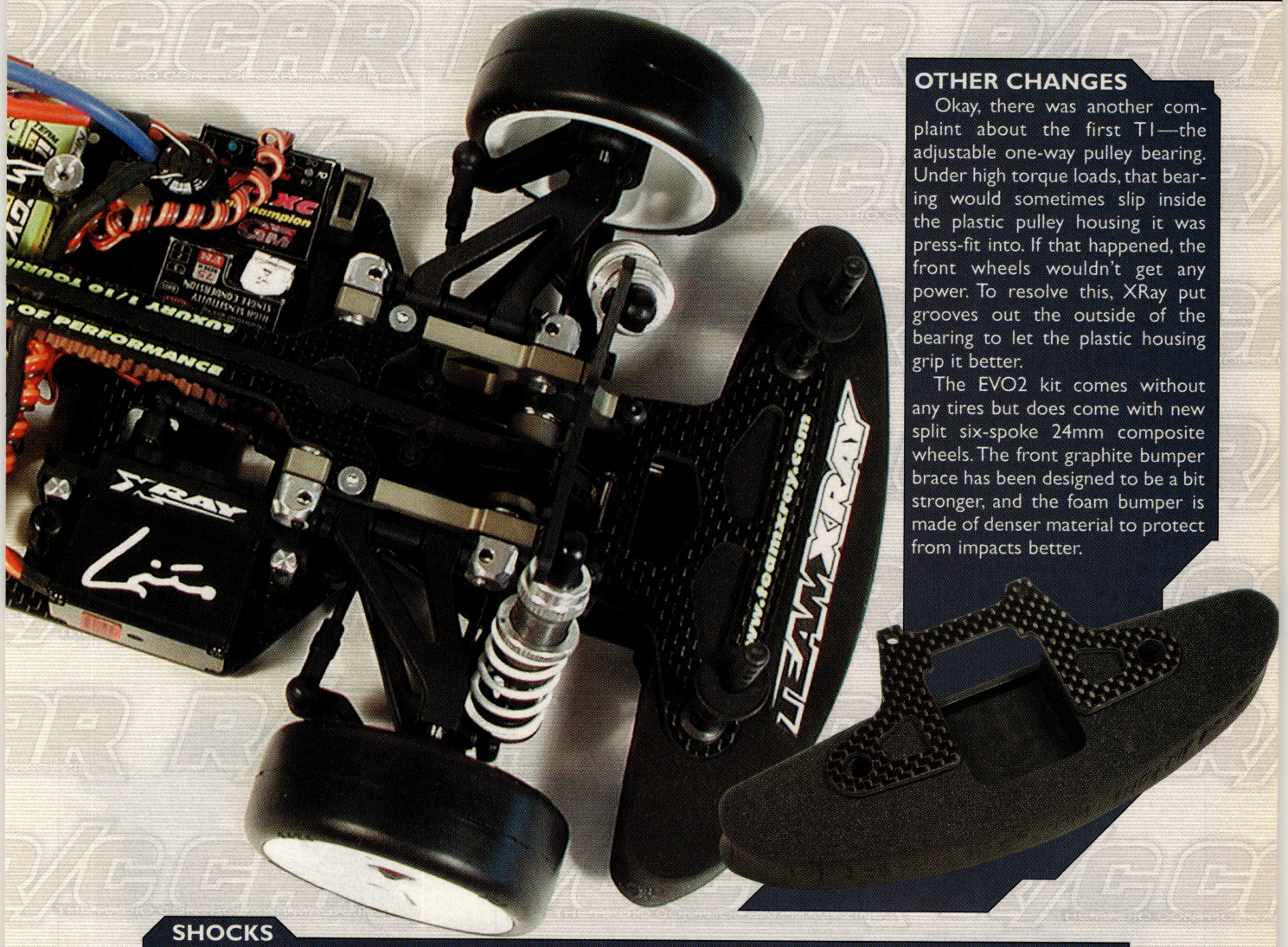
Also worth noting here is that the new center steering crank has two Ackerman adjustment points, rather than one. The new outer position gives the inside wheel a slightly shallower angle, which smooths out the steering.

XRay T1 EVO2

DRIVETRAIN

Other than the front and rear bulkheads, which we already mentioned, the drivetrain design is pretty much the same as it was on the original. However, XRay now includes their low-friction ball bearings throughout the car (the grease has been removed and they are lightly oiled), and their high-performance Kevlar belts, which have been shaved down by 0.2mm. The bearings and the belts contribute to a freer drivetrain, with less prep work.





OTHER CHANGES

Okay, there was another complaint about the first T1—the adjustable one-way pulley bearing. Under high torque loads, that bearing would sometimes slip inside the plastic pulley housing it was press-fit into. If that happened, the front wheels wouldn't get any power. To resolve this, XRay put grooves out the outside of the bearing to let the plastic housing grip it better.

The EVO2 kit comes without any tires but does come with new split six-spoke 24mm composite wheels. The front graphite bumper brace has been designed to be a bit stronger, and the foam bumper is made of denser material to protect from impacts better.

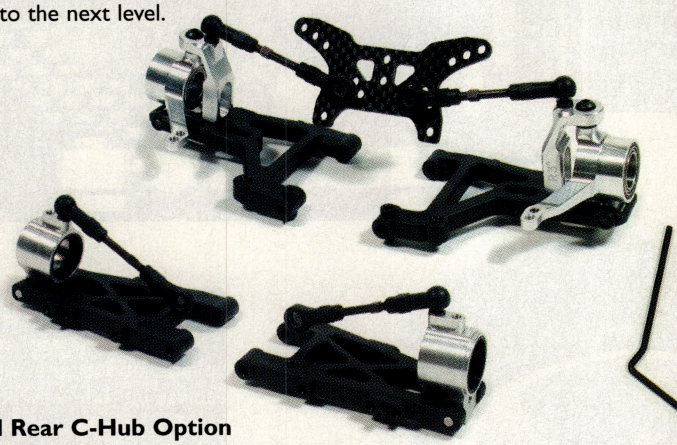
SHOCKS

In the original T1, the shocks came from Serpent, and were the same externally adjustable ones used on the popular Serpent Impulse nitro sedan. They work very well when assembled properly, but even after building dozens of those shocks in Serpent and XRay cars, we would still have occasional problems with them. So XRay designed all new shocks, but retaining the external adjustability. First off, all four shocks are now the same size, shafts included. That means that a shop (and racer) will have to stock fewer replacement parts. Also, the same springs can now be used front and rear, which can further save a racer some money. And here's the big thing: anyone who has built a Serpent adjustable shock is familiar with the their threaded pistons, and hoping they don't strip. XRay solved that problem by keying the moveable portion of the piston to the shaft with a flat spot, rather then by relying on threads. This makes them many times more reliable and easier to build. On top of that, the kit also comes with an assortment of non-adjustable pistons for those people who just don't trust adjustables any more. Again, more options for the racer! You'll see in the photos that we only put two options on our test car, one of them being XRay's threaded aluminum shock bodies. The stock plastic ones are threaded also, and are actually lighter than the optional ones we used.

OPTIONS GALORE!

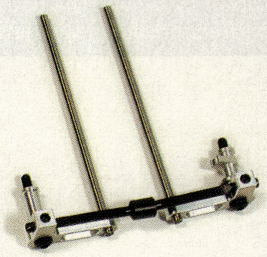
A lot of times a car manufacturer will release a slew of options for a car as a required upgrade path for a car to be competitive. This is not the case with XRay, since their cars are already equipped above and beyond their competition's cars right out of the box. But what they do release as options are additional or replacement parts that help fine-tune an already excellent car. So none of these hop-ups we would deem as critical, but truly optional for those who want to take their tuning skills to the next level.

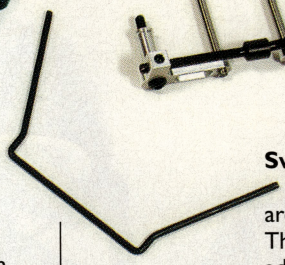
Test Equipment:
Airtronics M8 transmitter
GM V12xc ESC
Hitec HFS-04M1+ FM Receiver
JR Racing DZ8450 Digital Servo
Matrix TQXv9.5 Pro MVP-based Stock Motor
Integy VESC RC2400 440s+ Matched Cells
Take Off CS-27GL Pre-mounted Tires/Wheels
Hot Bodies Dodge Stratus (190mm)



Front and Rear C-Hub Option (the Carpet Killer):

These parts eliminate the pivot ball suspension and replace it with an "old-school" hinge pin suspension. But why? The XRay team drivers say that this setup provides more precise steering on ultra-high traction, ultra-smooth environments like carpet tracks. The front and rear sets are sold separately, and individual parts are also available. The front set even includes new hubs, driveshafts, and a shock tower, while the rear version uses the existing tower (the holes are already there) and stock axles and driveshafts.



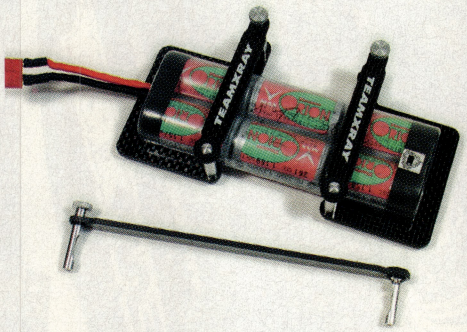


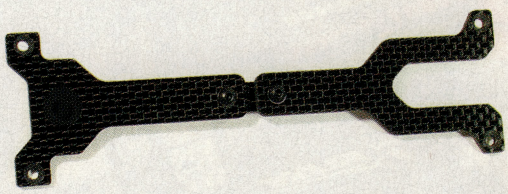
Swaybars

The front and rear swaybars are sold as separate options. The front blade-style is fully adjustable and is made from spring steel and aluminum alloy. Three different thickness rear bars are available for fine tuning the rear bite.

Battery Holders

To mount a six-cell side-by-side pack on the EVO2, the six-cell battery strap is required. It bolts right on with no fuss. And now you can even use stick packs on your XRay. They distribute the weight across the chassis, but at least now it can be legal in some clubs that have battery restrictions.





Upper Decks

There are two optional upper decks, the stiff one that came with the first T1, and the Ultra Flexible one which is designed to pivot in the center, allowing the chassis to twist more, but not allowing any front to rear flexing.



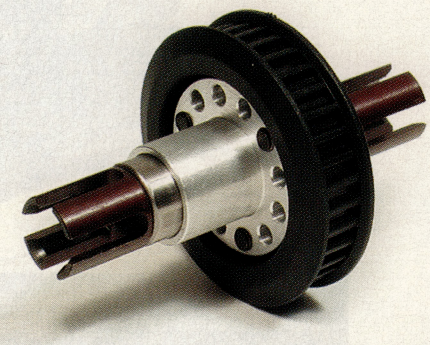


Aluminum Rear Arms

The hard-coated Duraluminum rear arms are much stiffer than the stock arms, though slightly heavier. They feature the new shock mounting holes found on the EVO2 stock arms and are a good option for carpet tracks if you want to stick with a pivot ball suspension.

Rear Roll Center Bridge

This aluminum piece adds two additional upper link locations for the rear end, giving you more options for fine-tuning the roll center.



Front One-Way Diff and Spring Steel Diff

The front one-way gives more off-power steering and more on-power control than just the stock center one-way pulley. The outdrives are made from spring steel for durability. The Spring Steel diff has the same design as the stock diff, but with nearly indestructible outdrives replacing the stock Duraluminum ones. Unfortunately, this one doesn't come with the thrust assembly pre-built for you.

XRay T1 EVO2

REPORT CARD

Test Location: Freedom Park Racetrack, Camarillo, California

Test Conditions: permanent asphalt road course. Warm and cool, slightly dusty conditions

Acceleration and speed: A–

We know what a different prepped bearings make, and the thinner belts also make a difference in getting this car up to speed. It gets there like a rocket, just shy of the acceleration of the AE TC3, but faster than the former belt-driven acceleration test standard bearer, the Yokomo YR-4 M2. Basically, just gear it the way the motor wants, and the car will get you to maximum velocity without any harping.

Low-speed turns: B+

With the box-stock setup and a good set of sticky tires, the car felt very neutral and easy to drive. An experienced racer knows that "easy to drive" is not going to be the fastest setup. The EVO2 tended to push in tight corners. Loosening the adjustable one-way helped getting around the corners with more speed, but it wasn't until we started playing with the front caster that everything started to fall into place. We eventually increased the angle until we were satisfied with the compromise of balance between steering entering, in the middle of, and exiting the turns. We're sure that a front one-way will help us with our tuning even further, but that is an option for another article.

High-speed turns: B+

Here we're sure that the front one-way could help us again. Although the car stays pretty flat (even without swaybars) on a medium traction track, we could feel the power slipping away from the inner front wheel in high-speed turns. Keeping a tight line at high speed, we felt the speed scrubbing as the front wheels fought each other. On the other hand, not all tracks can benefit from a front one-way, so it's better to play it safe and not use one in questionable situations. And to be honest, had the track been any more slippery, we would have been perfectly happy with what we had.

Transitions: A

Like the original T1, when using saddle packs, this is a very well-balanced car. And XRay does everything possible help you make sure it stays balanced—from screw-on chassis ballasts center, front, and rear, to the pre-drilled centerline balancing points on the chassis. As we tested it with saddle packs, side-to-side weight transfer happened without drama; turn the wheel the way you want to go and it happened without the car violently rolling to the outside — smoothness all around. Once we put all the batteries on the left side of the chassis, things changed a bit. We threw it on the Hudy balancing tools and had to add front and rear ballasts to get it to stay level. Once on the track, it felt like a much heavier car. Instead of darting its way though chicanes, it felt more like it was lumbering through them (in comparison to the other setup). But since the six-cell strap is not a standard item, we're giving the mark based on the stock setup.

Durability: A

The T1 is known to be one of the more "bullet-proof" electric sedans out there. The parts that seemed to break most often (as tracked by XRay's parts ordering system) were the steering arms, and they have been "beefed up" to resolve that issue. We did get into a couple of scuffles during our test sessions (no, not with our fists), but suffered no damage. Call it a testament to good design, or maybe just pure luck, but neither the EVO2 nor our T1s have suffered any damage from the ham-fisted buddies we've lent the car to.



SPECS

Price:	$329.00 (street)
Length:	14.5 in./368mm
Width:	/184-190mm
Wheelbase:	/252-261mm
Track (f/r):	/160-166mm
Weight:	1440g (with electronics and body)
Chassis:	dual-plate graphite
Suspension:	Four-wheel ind. pivot ball style
Drivetrain:	dual-belt 4WD, 2.125:1 reduction ratio
Diff(s):	adjustable ball diffs with adjustable center one-way pulley
Damping:	externally adjustable composite threaded shocks/ med. white springs
Bearings:	Polyamide (nylon fiber) shielded ball bearings
Wheels:	split six-spoke composite 24mm wheels
Tires:	split six-spoke composite 24mm wheels

Final Score

Highs: Like we've said before, the fit and finish on this car is second to none. Every piece fits like a Swiss watch—there has got to be a more descriptive term for this quality than "precision". The T1 EVO2 is a very balanced, neutral car out of the box, which can be deceptive, because it can be tuned to be ready to carve tight lines just by mental telepathy. And XRay has taken "adjustability" to a new level. And of course the durable and low maintenance XRay diffs and driveshafts are a high, as well.

Lows: We don't like to leave this section empty, but we'll just say here that there are really no low marks to give.

The verdict: The EVO2 truly is an evolution of the T1—a car that we still fell is better equipped and has more potential than most on the market. Most of the changes were made for the sake of adjustability and durability. There is nothing missing from the car that should be in a car in its class; in fact it is better equipped than most any other car out there. And although benign out of the box, the handling can easily be set up to be very dangerous to the other guys at the track (in a good way!). Add to that the excellent support provided by the factory, as well as the continued development of the platform, and it's easy to declare the T1 EVO2 an excellent deal, a great performer, and a car very worthy of your attention.

SOURCES

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

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

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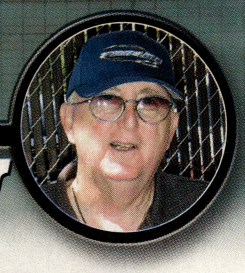
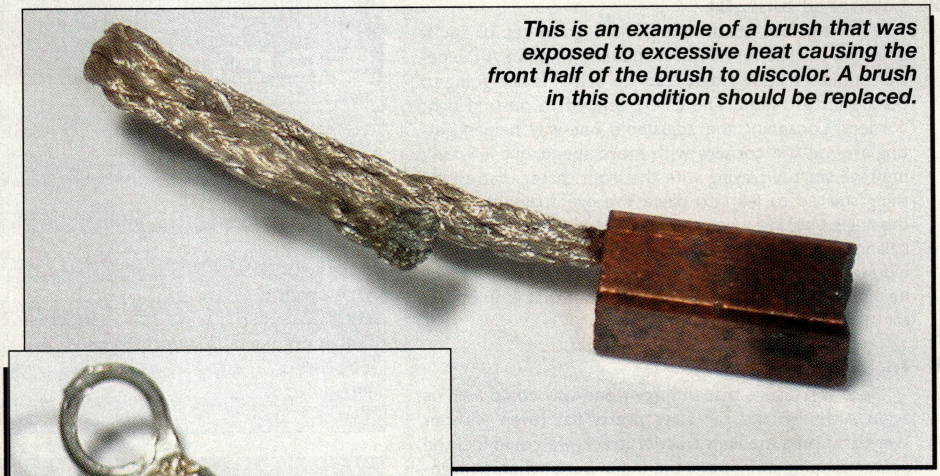


mike reedy

Caring for your Electric Motor

Tips straight from the top!

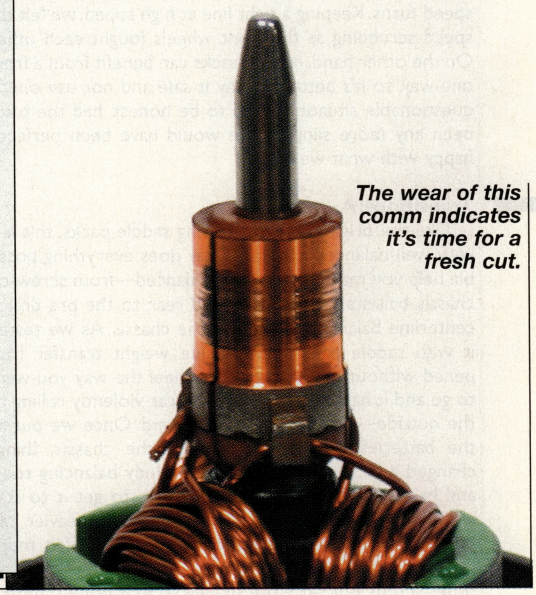
In the field of electric racing, no single name carries as much clout as that of Mike Reedy. Reedy's motors have won an unprecedented 23 IFMAR World Championship titles—that's more than every other motor manufacturer combined. So when we wanted to know how to obtain the best performance and the longest life from our electric motors, we went straight to Mike.



This is an example of a brush that was exposed to excessive heat causing the front half of the brush to discolor. A brush in this condition should be replaced.



A worn and pitted brush.



The wear of this comm indicates it's time for a fresh cut.

EXTENDING THE LIFE OF THE COMMUTATOR

Most club racers complain about their car's speed; they claim that they need new batteries or that the motor they bought last week is slow. The moans and groans are usually heard on the drivers' stand when you pass them on the straightaway. Preventative maintenance will not only give you more horsepower, but it will increase the life of your motor. With helpful tips from a knowledgeable motor tuner like Reedy, whining at the local track will only be heard from guys who don't read *R/C Car* magazine.

"First make sure your motor is always clean," says Reedy, "since dirt causes friction and will wear down brushes and commutators faster. Replace brushes that are bluish or gold in color. The color indicates excessive wear and using these brushes will cause your motor to arc, which cuts down efficiency and rpm. Don't wait too long before you decide to cut a commutator. It is best to cut a commutator every few runs if you wish to have an efficient, powerful motor. Allowing a commutator to get out of round (a comm that has a rough surface because of excessive time between cuts) will require a much deeper cut. When you have to make a deep cut, the motor will not last as long. Skimming the surface of a comm every couple of runs will ensure longer life and better efficiency."

A freshly cut commutator.



OFF-ROAD & ON-ROAD APPLICATIONS

Off-road and on-road are very different forms of racing, so motor maintenance differs as well. "Modified motors provide more than enough power for off-road," says Reedy, "so you can go between cuts a little longer than if you were running on-road. For club races, I will usually cut a motor used for off-road every three to five runs. Of course, at big races, I cut the same motors much more often. Most top on-road racers use very low-turn modified motors, such as seven, eight and nine turn winds; these motors run at extremely high rpm and draw a lot of power. I will usually cut an on-road motor every one or two runs. On-road racers look for as much speed as possible, so motor maintenance is a little more crucial."



This Team Orion copper serrated brush works good for all stock racing applications.

STOCK vs. MODIFIED

For stock racing—especially when driver talent is equal among the competitors—the power of the motor can make all the difference in the world. While batteries and gearing usually bear much of the blame when your car seems slow, many times the culprit is a poorly maintained motor. According to Reedy, "Stock motors should be cut often. At least once every time out to the track. This ensures that your motor is running at its full potential."

Eliminating the motor as a problem will help you find out what other factors may be slowing you down. "Using brushes with the highest amount of copper will increase power of stock motors. Using aggressive brushes with serrations is also a tuning tool that can help obtain maximum power" states Reedy. "Modified motors offer a lot of power with very little effort, but the life of mod motors is often short lived. Harder brushes that are darker in color will last longer and minimize the amount of commutator scuff. It is just as important to use modified brushes that have a high amount of lubricant" says Reedy. "If you are having trouble finding these types of brushes, a knowledgeable hobby shop should be able to help you out."

MOTOR CONSIDERATIONS

An aggressive driver that uses a lot of brakes will need to cut his or her motor more often than a driver who does not use brakes. Braking causes arching which is extremely rough on a motor's life.

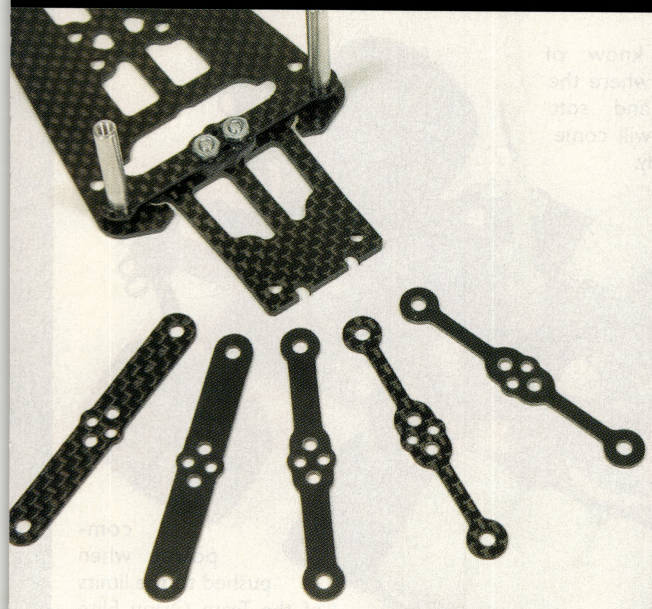
- Using a softer spring on the negative side will increase comm life without sacrificing any sort of performance loss.
- Darker brushes usually have a high amount of lubricant that modified motors require.
- Before you buy new batteries or a new motor, spend time not money on your motor and consider purchasing much less expensive brushes.
- Rebuilding a motor often will put you closer to the top and save you lots of money.

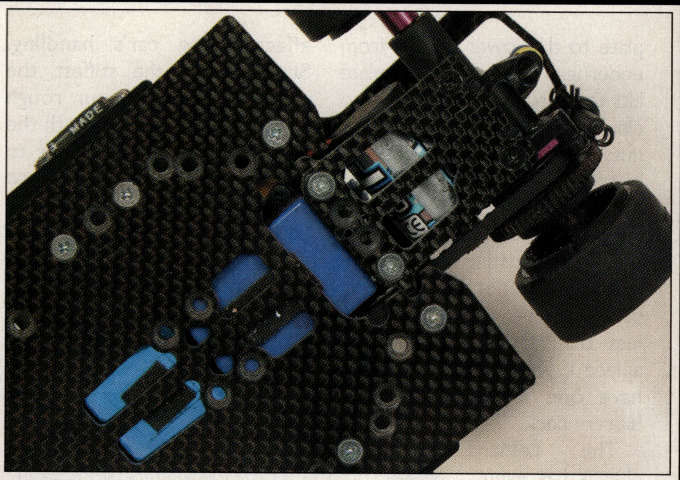
Penguin r/c High-Performance Micro RS4 Chassis Kits

Late, but worth the wait!

Now that just about everyone in the world has a hopped-up Micro RS4, racers (and even hobbyists who just run theirs in the driveway) are searching high and low for the latest performance goodies that will give them the edge over their neighbor's Micro. As with the T-Maxx "revolution," many new companies have sprung up to offer their take on what the best chassis is for the Micro driver. We've seen replacement chassis from all over; some pan car style, some narrow to mimic the original design, and some with extra goodies such as cooling fans. But few have put as much effort and consideration for adjustability and performance into their design as has Penguin r/c. Penguin has been making graphite replacement and hop-up parts for HPI cars longer than most companies, and owner Brion Sohn's designs come from a background in automotive engineering. His goal was to make a replacement chassis that not only was lighter than stock, but also was very tuneable—all while keeping a low price. Not an easy task, to be sure.







TWO CHASSIS CHOICES

Brion came up with two designs—a narrow chassis (P3500), much like the stock one, and a pan car-style "LeMans" chassis (P3500LM), which is designed to mount all the electronics close to the ground to lower the CG. Both cars center around the same feature—user-replaceable roll plates that approximate the effects of different T-bars on a 1/10-scale pan car. Roll plates of different widths and materials tie to the separate rear pod to allow more or less flexing and twisting to let the user control how much traction the rear end gets.

It might appear that Penguin is coming to the table late in the game. Brion responds to that observation by reminding people that creating a good design takes time, testing, feedback, more testing, more feedback, and so on. Primarily through the message forums on HPI's website, Brion polled Micro drivers on what features they would be most interested in, then presented pictures of development prototypes, then culled more feedback, and actually incorporated most of the suggestions that were given to him. The result is a chassis kit that should please most racers, and accommodates just about every hop-up imaginable.

ROLLING AROUND

The separate rear pod mounts to one of twelve available roll plates (each kit contains three), which is mounted to the two sets of standoffs that tie the front lower chassis to the upper/rear deck assembly. The rear pod and roll plate can be positioned in either a 140mm or 150mm wheelbase position. To get the rear pod to align perfectly with the front of the chassis, a pair of roll pins act as key guides to help the two screws and nuts secure the pod to the roll plate. Sandwiched in between the two is another mounting plate that ensures even pod and front chassis height. Once everything is tightened down, the connection is very solid and feels as it were a one-piece design. The narrow kit comes with a set of three high-roll graphite plates, while the LeMans set, which is designed for high-bite tracks, comes with the stiffer low-roll graphite plates.

BREAK APART THOSE CELLS

HPI's standard battery mounting system can't be used with the kit (unless you use Penguin's optional Standard Upper Deck in the 150mm setting), but with each kit Penguin has included a new quick-release center mounting battery kit. Essentially, you secure your batteries to a plate, and screw that

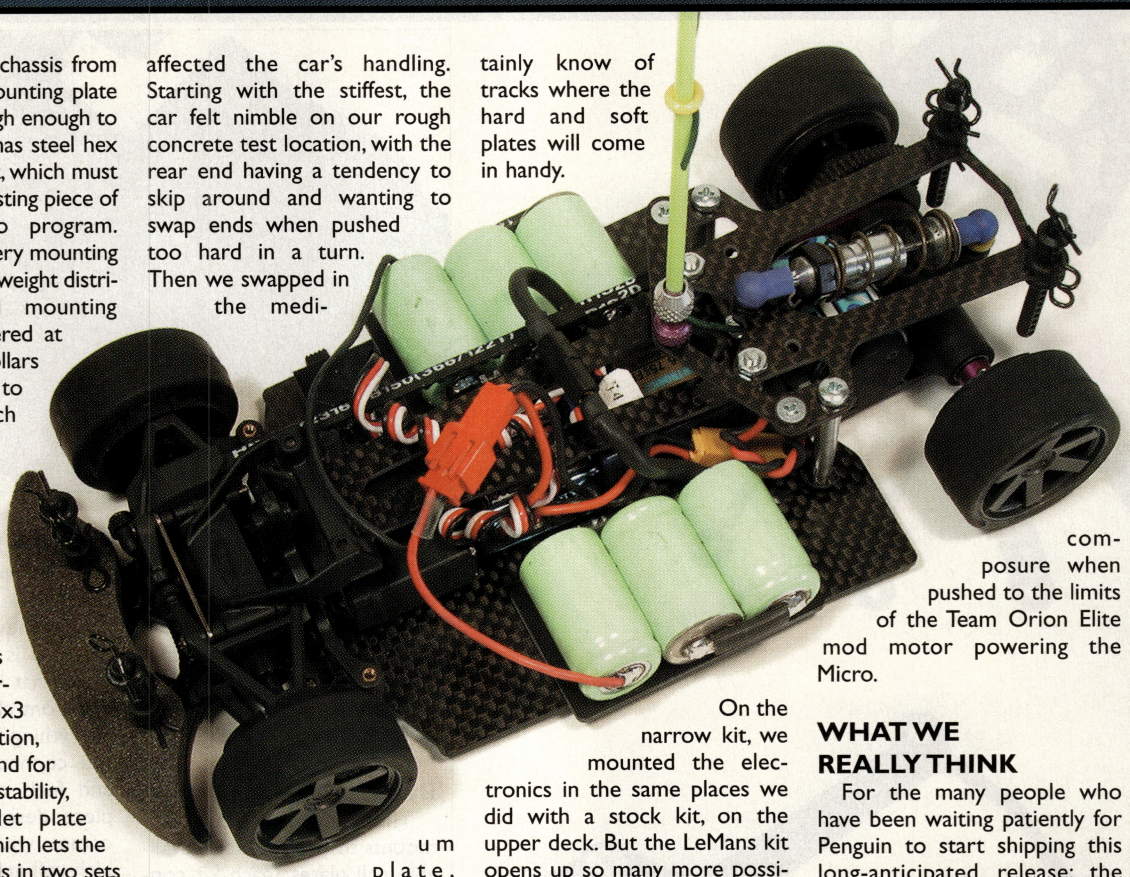
plate to the lower chassis from underneath. The mounting plate lifts the batteries high enough to clear the belt, and has steel hex nuts embedded in it, which must have been an interesting piece of machine work to program. There are two battery mounting points for adjusting weight distribution. Additional mounting plates can be ordered at less than four dollars apiece if you want to have one for each battery pack.

The LeMans chassis has even more battery mounting options. A set of saddle-pack quick-release plates (P3509a) lets users mount their batteries in a balanced 3x3 (or 2x2) configuration, like on a pan car. And for the ultimate in adjustability, there is the Bullet plate option (P3509b), which lets the user mount the cells in two sets of three-cell packs (cells placed end-to-end like in a stick-pack shotgun tube) and then fine tune the weight distribution by sliding the plates forward or backward on the lower chassis.

In addition to all this is a servo mounting-plate option, which allows the user to pre-mount the servo to the plate, then secure it to the chassis using the as of yet unused mounting holes on the chassis (this can even be used with the stock fiberglass chassis). Also, the rear deck was designed to accommodate an Associated VCS Micro shock for further control of damping. And last, but not least, the lower chassis is actually lowered 0.5mm in relation to the stock pieces to reduce drivetrain friction caused by the belt rubbing on the chassis. Yes, Brion really did his best to think of everything.

THROUGH THE PACES

We went through each roll plate to see how it affected the car's handling. Starting with the stiffest, the car felt nimble on our rough concrete test location, with the rear end having a tendency to skip around and wanting to swap ends when pushed too hard in a turn. Then we swapped in the medium plate, which took all of just a couple of minutes. After putting a couple of spacers and two screws in place, it was back on the track. This felt much better, with a nice balance between front and rear traction—a definite difference from the hard plate. And last, we threw in the soft plate. Now the Micro pushed much more than we liked and we had to compensate for rear drooping with more pre-load on the VCS micro shock. For the surface we were running on, the medium plate felt best, but we certainly know of tracks where the hard and soft plates will come in handy.



composure when pushed to the limits of the Team Orion Elite mod motor powering the Micro.

On the narrow kit, we mounted the electronics in the same places we did with a stock kit, on the upper deck. But the LeMans kit opens up so many more possibilities. With more than enough room to put everything on the lower chassis, balance became even more of an issue. The configuration we felt was the easiest to deal with was the saddle-pack setup. On one side went our LRP Quantum Micro Reverse and on the other side went a Hitec receiver of roughly the same weight. We could have used an even smaller receiver, but we wanted to get the best balance possible. Once we found the right roll-plate, on a prepped track this car flew through the corners like it was on rails, and didn't lose any

WHAT WE REALLY THINK

For the many people who have been waiting patiently for Penguin to start shipping this long-anticipated release: the wait was worth it. We've seen every Micro chassis available, and this is one of, if not the best Micro chassis designs to date. We almost have to recommend using a VCS or some other adjustable shock with this pair of kits, because if you don't, then you are missing out on gaining even more tuning control. For what comes in the narrow kit, the price is excellent and well worth it. And even though LeMans kit is eight dollars more, the battery mounting possibilities and greater high-bite performance is well worth it.

PARTS LIST

P3500 Narrow Micro RS4 Performance Chassis (Retail Price: $54.99)
P3500LM LeMans Micro RS4 Performance Chassis ($62.99)
P3505 Replacement Center Battery Plate ($3.99)
P3509a Saddle Pack Mount Kit ($8.99)
P3509b Bullet Pack Mount Kit ($8.99)
P3508 Micro Servo Mount ($3.99)
P3506a G10 High Roll Plate Set—3 pieces ($8.99)
P3506b G10 Low Roll Plate Set—3 pieces ($8.99)
P3507a Graphite High Roll Plate Set—3 pieces ($8.99)
P3507b Graphite Low Roll Plate Set—3 pieces ($8.99)

SOURCES

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

Penguin r/c, 1230-P N. Jefferson St., Anaheim, CA 92807 • phone (714) 630-9015; fax (714) 630-6250

Team Orion, 22601 LaPalma Ave., Suite 103, Yorba Linda, CA 92887 • (714) 694-2812; fax (714) 694-2815

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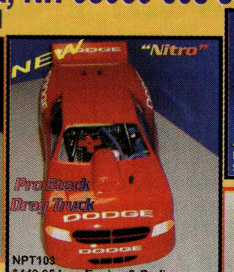













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MCT301	Front Bumper	$39.95
MCT401R	Shocks w / Reservoir	(SALE)$65.00
MCT402	Bearing Kit 20 piece	(SALE) $34.50
MCT403	Right Angle Body Mounts (pr.)	$ 3.95

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MCT423	New Era Masher Tires (pr.)	$26.95

HOT HOT HOT

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JUGGERNAUT UPGRADES

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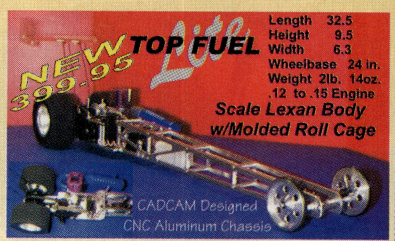
MJT601	Standard Four Link	$54.95

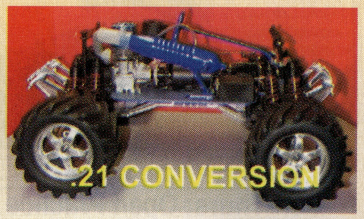
DRAG CARS





T/E-MAXX CNC Aluminum Upgrades Silver or Blue





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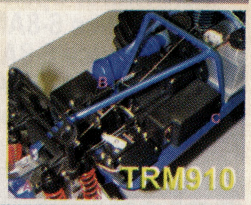





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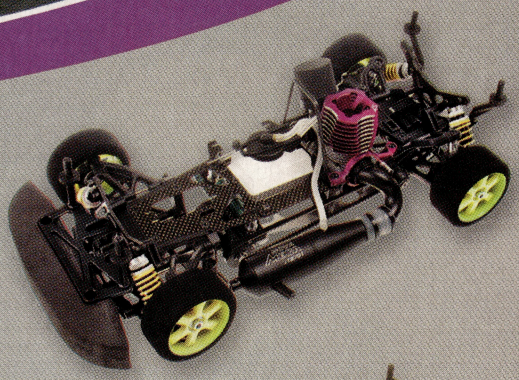

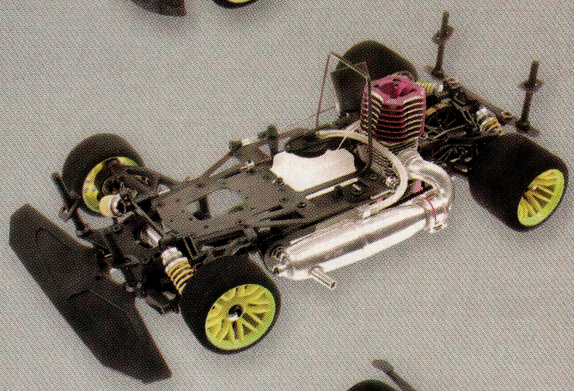

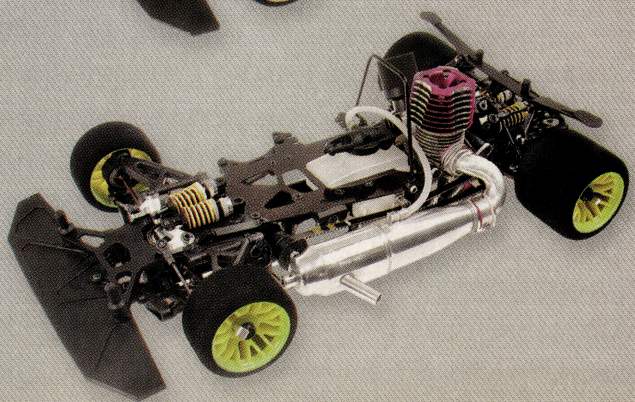

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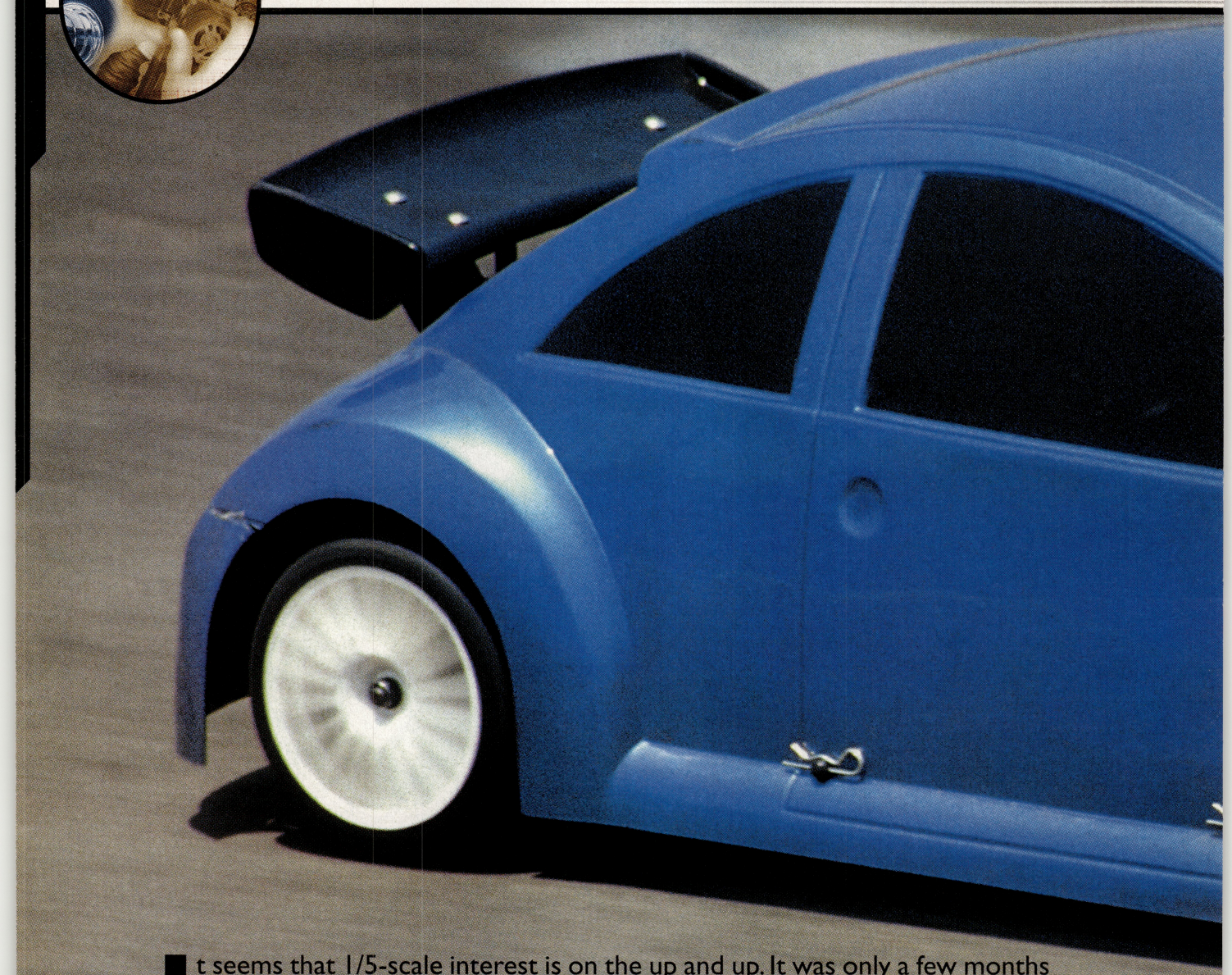
FG 1/5-Scale



It seems that 1/5-scale interest is on the up and up. It was only a few months ago when we thought that 1/5-scale racing was popular in Europe but not quite a hit here in the states. Since then, we have tested a few 1/5-scale cars and have found that their popularity here in the U.S. continues to grow. The number of inquiries we get monthly indicates that people are interested in these high tech machines. This test of FG's new Sport level Beetle takes a look at an entry level 1/5-scale that is both affordable and competitive right out of the box. The car comes with a race-worthy engine and is 95% built for the hobbyist who can't wait to get the car up and running. Since the large pull-start engine takes 87 octane unleaded gas, running the car is really cheap. Read further and find out what are likes and dislikes were of the new FG Beetle.

BIG, FAST

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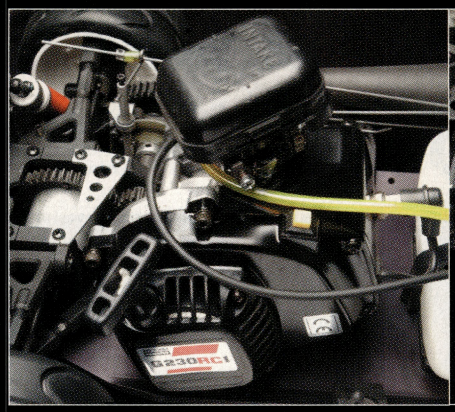
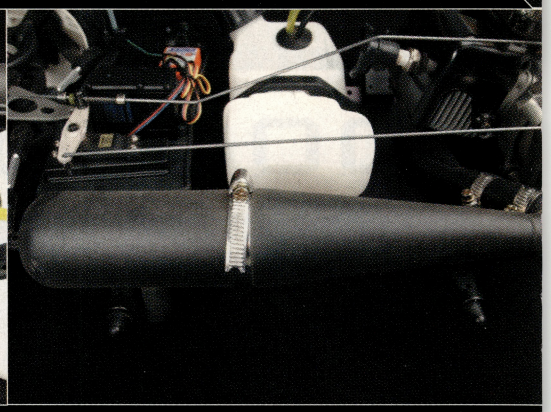
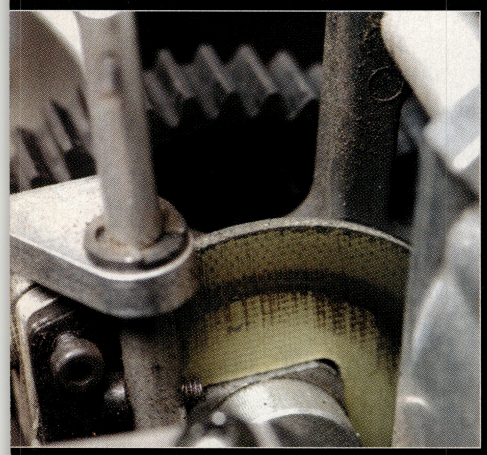
AND AFFORDABLE

Engine

FG did some homework and decided to give the Beetle a strong and reliable power plant. The engine found in FG's Beetle is used in many top-of-the-line racing 1/5-scales. So what engine does FG provide with its popular Beetle? The car comes with the reputable Zenoah G230 RC engine, of course. The powerful engine and stock pipe work together to produce over three horsepower. An impressive 16,000 rpm is reached at top speed and should be appreciated by engine nuts. The stock pipe is not too restrictive and comes powder coated black. More power can be achieved with an aftermarket pipe, but the stock one performs pretty darn well. The engine and pipe combo complement one another nicely, providing hours of fast reliable fun.

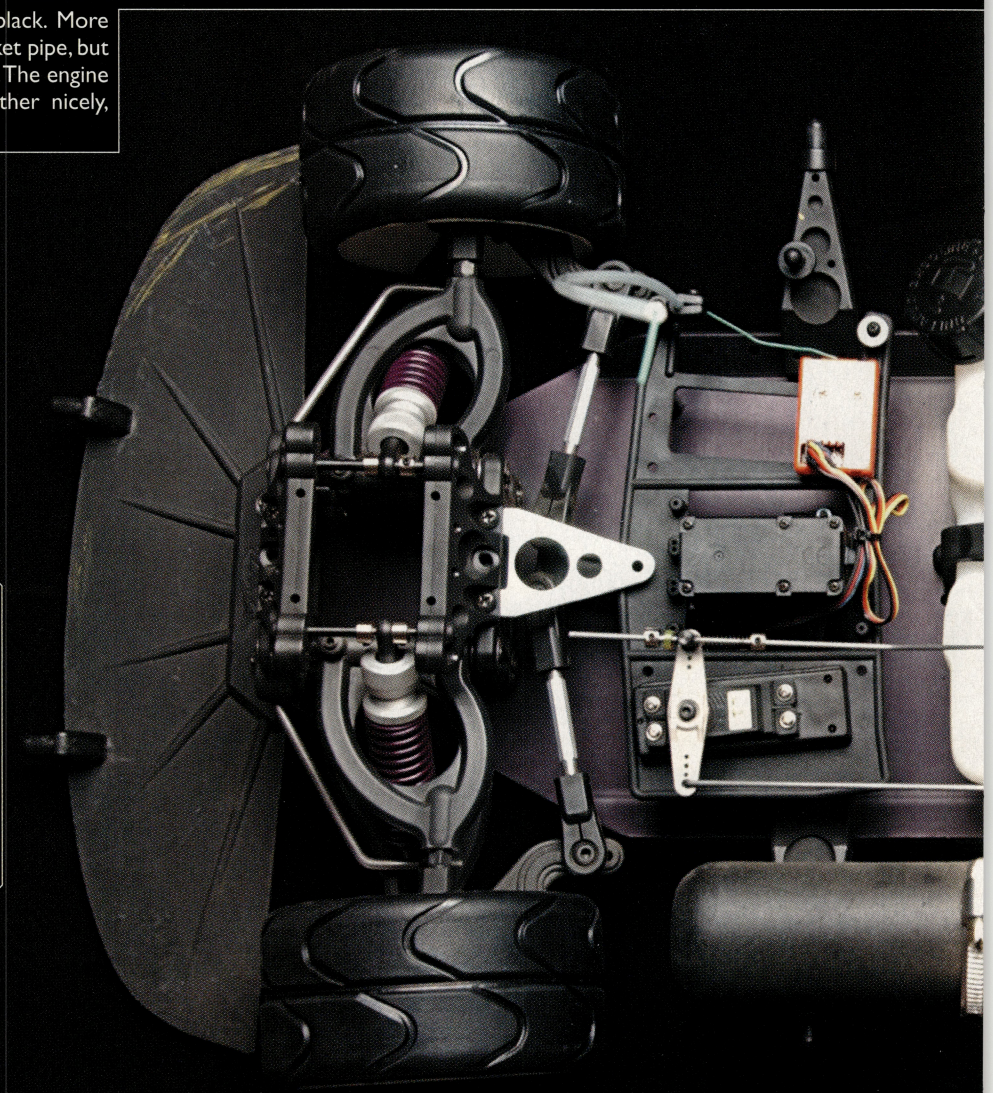


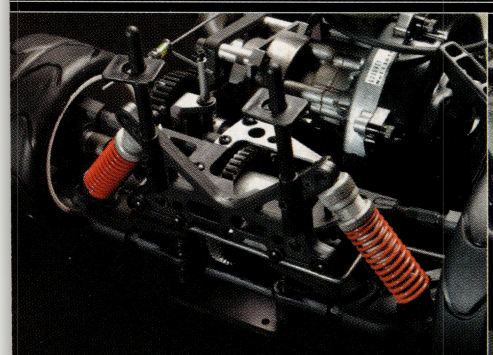


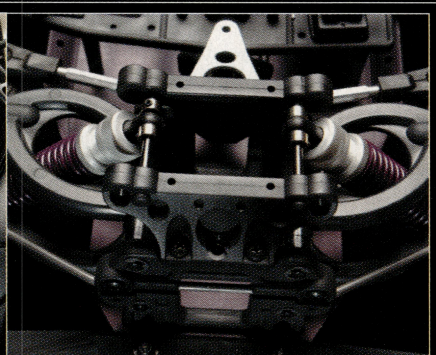


Brakes

This 22-pound monster must be stopped if one plans to have a safe outing at the local track or huge parking lot. Since the engine's compression only slows the car slightly, an oversized fiber disc on the layshaft is used for braking. The fiber disc-style brakes are commonly seen on smaller 1/10-scale nitro cars, but work fine on this larger 1/5-scaler. This setup is a cost-effective way of safely slowing down the large FG Beetle without raising the overall price. More expensive steel disc brakes can be purchased for the car, if added stopping force is desired, but expect to shell out some additional cash.







Suspension

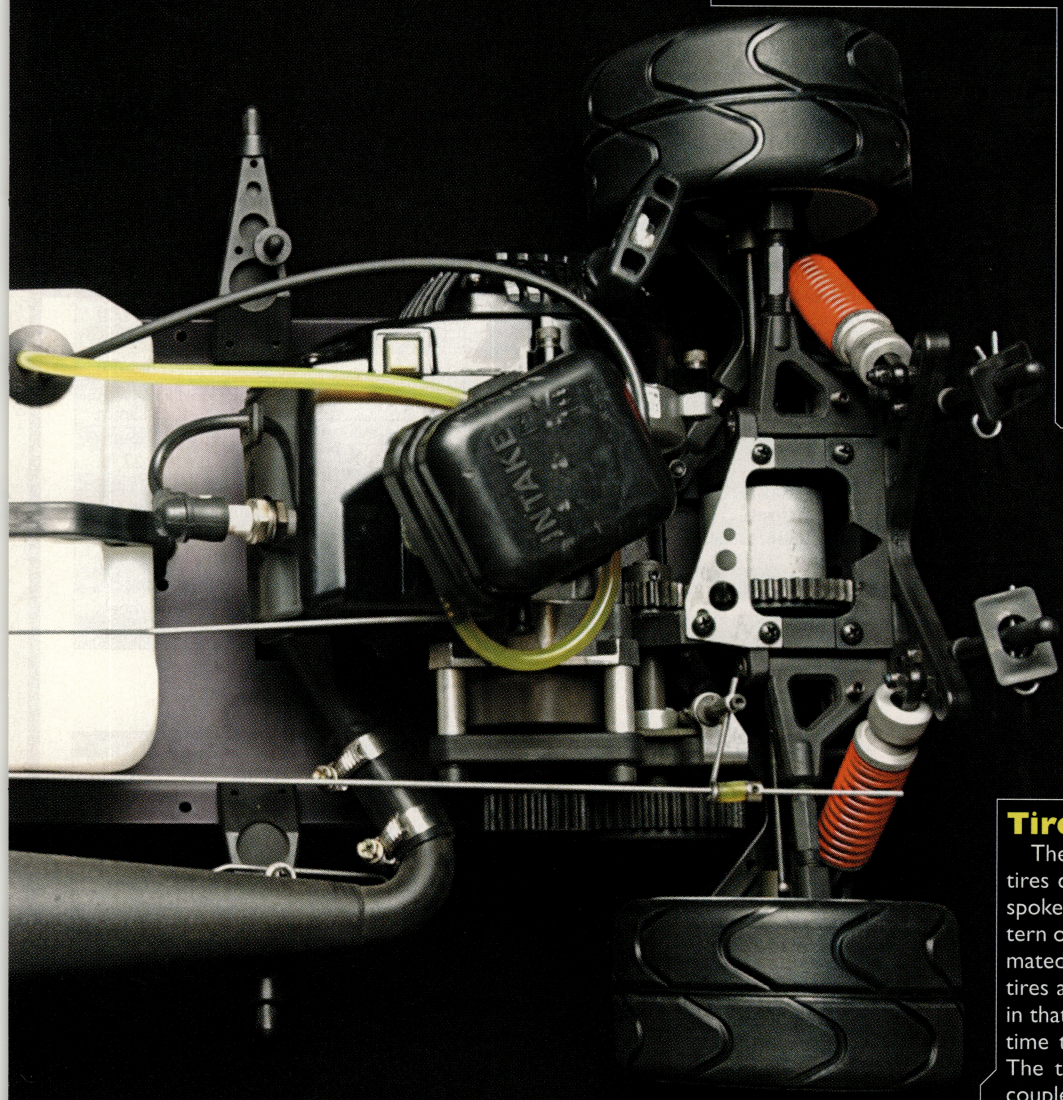
FG's Beetle comes with alloy threaded shock bodies. The shocks have 4mm shafts with dual O-ring seals and bladders in the top of each cap. The shocks' pistons have machined grooves around the edges instead of punched holes to allow oil transfer. This adds stability and helps the shaft move straight up and down during suspension movement. The threaded bodies' adjustment collars have an O-ring inside to make it lock in position once the car's ride height and desired damping are set. FG also offers aftermarket shocks that let you adjust damping by turning the shock's shaft.

OUTSTANDING FEATURES



Stock Gearing

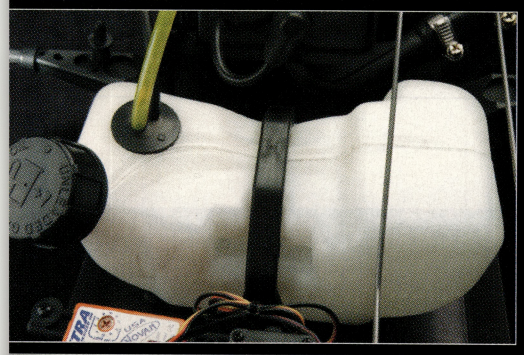
The stock gearing on the Sport Beetle is 24/40 and the final drive gearing is 16/48. The provided gearing is a happy medium for the Zenoah engine's broad power band. During our tests the car accelerated well and had more than enough top speed. For those who like to change gearing for various racing applications, the engine is easily moved to accommodate different sized pinions and spur gears that FG carries.



Tires

The kit-provided D-compound radial tires came pre-mounted to popular 20-spoke wheels. The horizontal tread pattern of the tires is deeply cut for an estimated eight to ten hours of use. These tires are much like full sized racing tires in that they need a significant amount of time to heat up to give good traction. The tires must be rotated after every couple of runs to make sure there is no one tire with excessive wear.

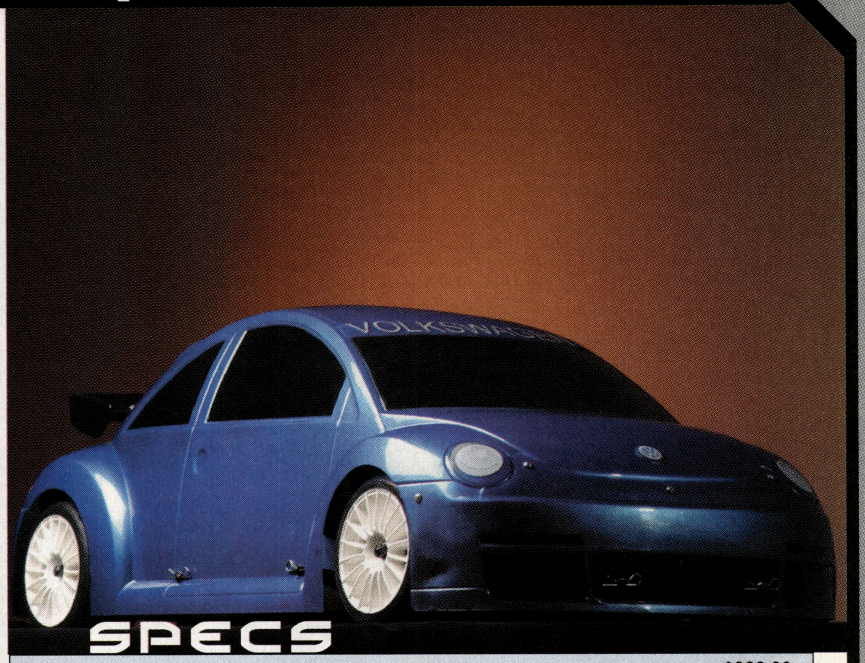




Fuel Tank

The oversized fuel tank is mounted to the chassis and centrally located to ensure a low center of gravity. The large tank holds 700ml of gas which will give the car about 45 minutes to an hour of run time. The large cap is easily removed for fast pit stops which make refueling painless. The sturdy tank is constructed of high quality plastic that will endure moderate abuse.

FG Sport Beetle



REPORT CARD

Test Location: KZ Raceway, Sun Valley, California
Track: long 400 feet. Backstraight with technical infield
Track Surfaces: medium to high traction

Completeness: A

FG's Sport level Beetle comes 95 percent assembled. You will need to paint the large body, install radio gear, mount the tires and of course add gas. Since it took very little time to get the Sport Beetle up and running, we have no complaints about its completeness. If you want the car completely finished without any prep work, FG will be happy to sell you a Ready-To-Run with all of the radio equipment installed. Just add $500 to the price of our Sport model.

Durability: B+

The FG Sport Beetle's thick chassis and reinforced suspension arms are tough. During our testing we were pretty hard on the car and nothing broke, although, after testing we fooled around with power braking and accidentally smacked into the wall, which broke the rear camber linkage. It was our fault and something was bound to break at speed.

Speed: A–

The Beetle was surprisingly fast. The Zenoah engine pulled hard and gave enough power for impressive top speeds we estimate around 45mph. The long back straightaway at our test track was fun to drive since the Beetle was more than capable of keeping up with more expensive cars. At a standstill the car will squeal the tires from a brisk trigger pull.

Brakes: C+

The single fiber-disc brake was adequate, just not impressive. When the car hit top speed the brakes took too long to shut the car down before we made a turn. We tried to dial in more brake with the radio but the Beetle's fiber disc was only capable of so much force. The plus side is that the brakes never faded and worked fairly well our entire test. FG also offers more expensive steel disc brakes at the wheels that come either mechanical or hydraulic as replacements for the Sports braking system.

Adjustability: B

FG's Beetle is quite adjustable. The gearing and differentials can be adjusted to suit various track lengths and acceleration preferences. Camber, toe, ride height, suspension damping and location can all be changed in a matter of minutes. The threaded shocks are a nice feature for quick last-second changes. The single disc brake's sensitivity can be adjusted for more or less drag depending on driver preference.

Engine: A

The kit-provided Zenoah is very strong. We have tested Zenoah engines before and found that they provide more than enough power and are very reliable. The car started the very first time we pulled the pull-starter. Kudos for FG and their decision to install a Zenoah in our Sport Beetle test car.

Tires: C

The D-compound radials that came with our kit were very loose. We initially thought the car needed several minutes before the tires would warm up, but we only noticed a slight gain in traction. Although the tires did not provide enough traction for racing, they will be fine for just having fun. During our hour-long test, the tires showed very minimal wear, indicating they would last a long time.

SPECS

Price:	$999.00
Length:	810mm
Width:	384mm
Height:	290mm
Wheelbase:	515mm
Track (f/r):	/160-166mm
Weight:	22 lb.
Chassis:	4mm thick anodized alloy
Suspension:	Independent lower A-arms w/adjustable camber and toe
Drivetrain:	dual-belt 4WD, 2.125:1 reduction ratio
Diff(s):	adjustable ball diffs with adjustable center one-way pulley
Damping:	Oil filled threaded shocks
Wheels:	split six-spoke composite 24mm wheels
Tires:	D compound, long run radials

Final Score

Highs: FG's Sport Beetle is great for someone looking to get into 1/5-scale. At $999, it is relatively cheap compared to its more expensive competitors. The ability to drive this car for nearly an hour on one tank of gas should attract anyone looking for lots of play time. The adjustability of the Sport should be able to carry anyone through club level racing. Since it is 95% complete a novice hobbyist will have no problem getting the car up and running.

Lows: It would be nice if the FG Sport Beetle came with more effective steel disc brakes. Other than brakes maybe some softer race tires for better traction. We know FG has a Competition and Competition Evolution Beetle for more advanced drivers but some of the features on those cars would benefit the Sport-level Beetle.

The verdict: FG's Beetle is perfect for the 1/5-scale market. It is rather inexpensive when compared to normal 1/5-scale prices. The car is 95% built and is fully adjustable. The powerful Zenoah engine is fast and reliable. Hour long run times are obtainable with the oversized 700ml fuel tank. The impressive speed of the car and an affordable price make this a great purchase for someone interested in big scale fun.

SOURCES

FG America (323) 221-5537
Novak Electronics, Inc., 18910 Teller Ave., Irvine, CA 92612 • (949) 833-8873; fax (949) 833-1631

TCS GOES TO LAUREL, MD

RESULTS

Formula-1

First Place	Bruce Hickman
Second Place	Sanford Bradby
Third Place	Steve Hickman
Best of Show	Julian Campbell
Top Qualifier	Bruce Hickman

Super Touring GT1

First Place	Mike Dunnigan
Second Place	Alan Mok
Third Place	Ed Ratliff
Best of Show	Fernando Requejo
Top Qualifier	Mike Dunnigan

Touring GT2

First Place	Mike Dunnigan
Second Place	Ryan Sprenkle
Third Place	John Brown
Best of Show	Frank Vacek
Top Qualifier	Mike Dunnigan
Top Rookie	Zach Jarret

Mini

First Place	Casey Young
Second Place	Willy Wong
Third Place	Alan Mok
Best of Show	Mike Masters
Top Qualifier	Casey Young
Top Rookie	Steven Vacek

TL-01 Spec Exhibition

First Place	Alex Kikel
Second Place	Michael Masters
Third Place	Brett Russ
Best of Show	Mike Masters
Top Qualifier	Brett Russ
Top Rookie	Andrew Earle

Tarmac Rally Exhibition

First Place	Casey Young
Second Place	Matt Jarrett
Third Place	Frank Vacek
Best of Show	Sean McDevitt
Top Qualifier	Matt Jarrett

F201 Exhibition

First Place	Austin Keech
Second Place	Wilmott Earle
Third Place	Ron Keech
Best of Show	Austin Keech
Top Qualifier	Wilmott Earle



Above: 70 racers competed with 105 entries on July 28, 2002 in Laurel, MD.
Below: Winners of the concourse pose with their winning vehicles

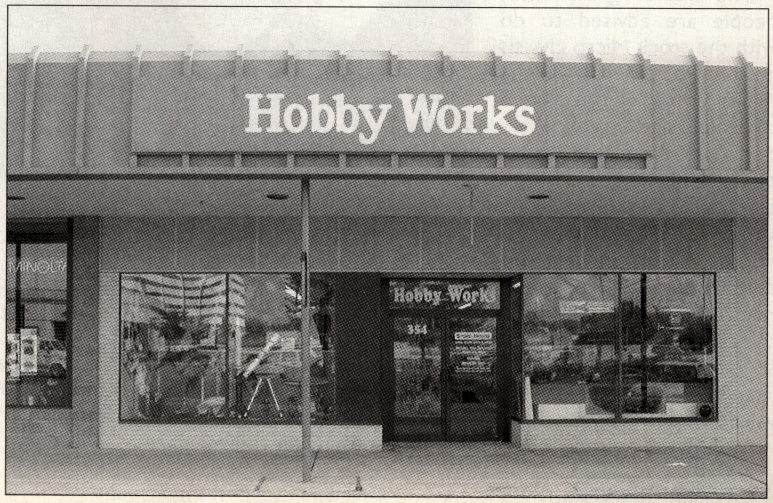




Above: Top Rookie in the Mini event, Steven Vacek, also took home first place in the B Main of Touring GT2.
Below: Hobby Works, Laurel MD, put on an excellent event. The weather was hot and muggy, but that didn't affect attendance with 70 racers showing up for the TCS event.

Entries

Racers	**70**
Second Entry:	**35**
Total Entries:	**105**



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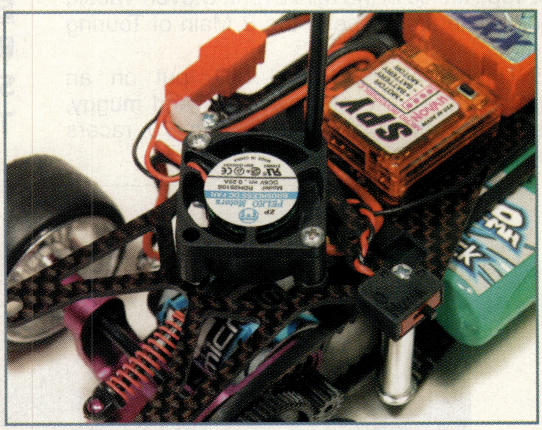
Team Orion CRF Ultimate Chassis Kit

Graphite thermostat for the Micro RS4

When it comes to motors and batteries, few names are as trusted as Team Orion. Philippe Neidhart, Oscar Jansen and crew have built a world-class reputation for themselves based on good products, honest numbers, and outstanding customer service. So what would prompt them to start a line of Micro RS4 hop-ups? Well, first and foremost, these guys are racers, and second, they love to experiment. Now that Philippe has decided to expand Team Orion's horizons, the Micro market seems like a fair bet. And knowing these guys, they don't do anything half-baked.

The first release in Orion's new line of Micro RS4 full upgrade chassis is their CRF Power Ultra Chassis Conversion Kit. Packaged into a transparent tube is everything you'll need to convert your stock Micro into a hot-looking and hot-performing graphite super car. But enough about the packaging—it's what's inside that counts. Inside the pretty clear case comes a lower chassis, upper deck, and rear deck—all made from laminated 1.5mm carbon graphite and assembled together with threaded aluminum tubes. So this kit effectively replaces the three largest pieces on the Micro chassis.





The first thing that most people are advised to do with the stock Micro chassis is to make some cuts in the rear area to let the chassis twist for better rear traction. One of the main points of the Ultimate chassis was to create a chassis that already flexed enough in the rear, but out of a more durable material. So instead of having a very wide taper at the rear like the stock fiberglass piece, the CRF chassis is patterned to separate the rear motor axle area from the rest of the chassis with a narrow strip that is 10.3mm wide by about 30mm long. That area is narrow enough to let the rear end twist and gain valuable traction, while the graphite material is durable enough to withstand the twisting motions without breaking down like fiberglass could.

Something else obviously different about the chassis kit is the inclusion of a 23mm DC electric fan. This cooling fan was designed to be mounted on top of the rear deck with two 17x2mm screws and nuts. It blows right down onto the motor area through specially shaped cutouts in rear deck. It seems these guys think of everything.

PUTTING IT ALL TOGETHER

Even though the CRF kit came assembled, it all has to come apart to add it to a Micro. If fact, we ended up taking it apart multiple times (it really is easy to do) throughout the installation process. It's easiest to first remove all the bottom screws from the stock car, and take off the servo with the steering arms, which leaves a dangling motor pod, with everything else attached to the upper deck. Then take the upper/rear deck assembly and replace the stock upper/rear with the new one. Then install the lower deck and everything is great! Well, almost: first off, the holes used for the front lower guide pins were just too small, and had to be enlarged with an X-Acto or

reamer before the front end would fit. And the same with the pins that are used the for motor pod.

Okay, everything is together. But what about the antenna mount? Oh, the instructions say to use the front hole on the fan. But the fan doesn't fit over the 2x5mm binder head screw for the front of the rear shock, so I had to pirate a 2x5mm flat head screw from my ABC DTM car in order to mount the rear shock in the countersunk hole in the rear deck (that was assembled upside down from the factory).

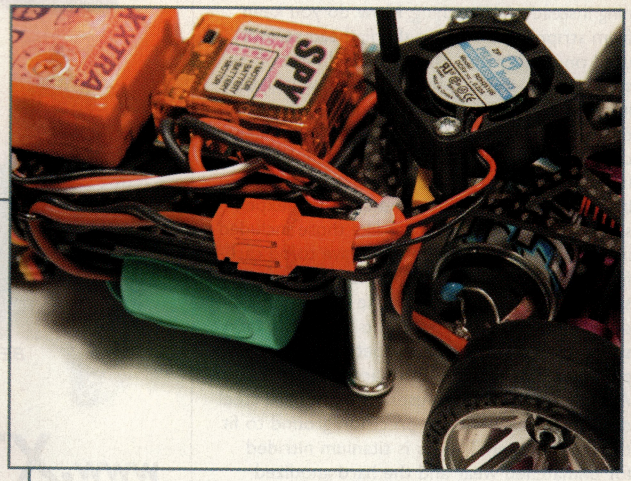


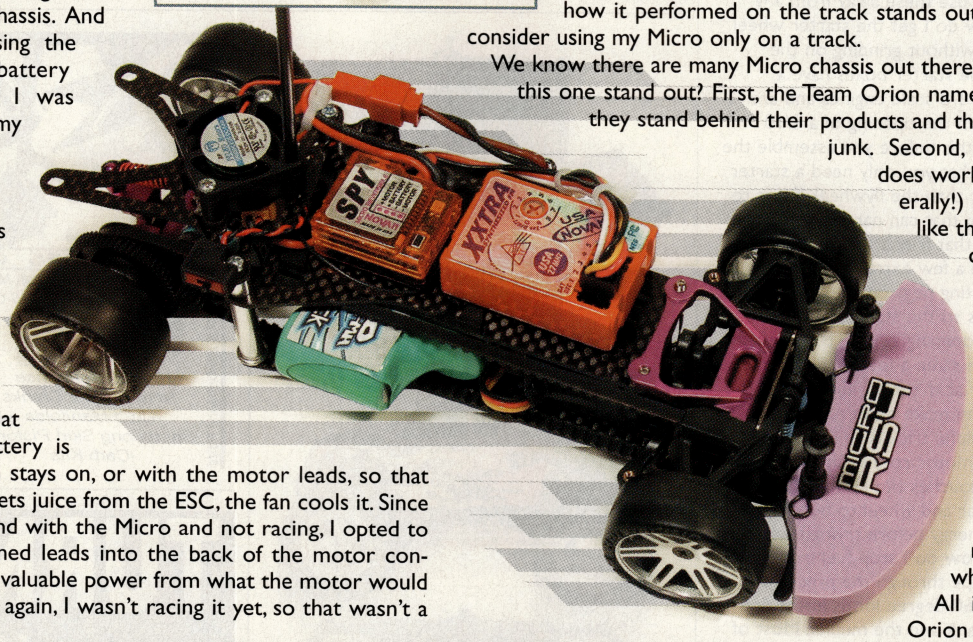
PUTTING IT ON THE ROAD

After giving up on trying to get the stock four-cell battery holder to fit on the chassis in 140mm mode with a Team Orion Elite Mod motor installed, I opted to mount a Team Orion 7.2V NiMH pack on the car. First I found some 3mm-thick plastic material to raise the battery pack off the chassis and belt, then servo-taped the whole thing to the bottom of the chassis. And since I wasn't using the upper deck battery mount locations, I was free to install my Team Orion Flash ESC right in the center, along with my Airtronics receiver.

Now the fan can be connected in one of two ways: attached to the battery connector, so that whenever the battery is plugged in, the fan stays on, or with the motor leads, so that when the motor gets juice from the ESC, the fan cools it. Since I was playing around with the Micro and not racing, I opted to just shove the tinned leads into the back of the motor connector. This draws valuable power from what the motor would otherwise get, but again, I wasn't racing it yet, so that wasn't a concern.

The last thing to do was to install the body mounts into the rear deck. Team Orion thoughtfully provides O-rings to place between the body clips and the deck above and below to secure the mounts in place.





stock tires. The car handled much more like a 1/10-scale sedan than a tiny car, and the chassis was able to better handle the speed and forces of the high-torque coreless motor installed in the rear.

Once I took it to a bumpy parking lot, things weren't as pleasant. With the stock rear damper, the more flexible rear end bounced around all over the place. Fortunately, Team Orion and others have spring and oil sets to help with handling problems such as this. But the memory of how it performed on the track stands out and makes me consider using my Micro only on a track.

We know there are many Micro chassis out there, so what makes this one stand out? First, the Team Orion name; we know that they stand behind their products and they don't release junk. Second, the fan really does work, and a hot (literally!) modified motor like the Elite mod can certainly benefit from it (the fan is about the same weight as an aluminum heat sink setup, but is much "cooler"). And the price is pretty reasonable for what is included. All in all, the Team Orion CRF Ultra Chassis is a solid performer that we can recommend for track use, but might not use on a rough parking lot.

WHAT WE REALLY THINK

The first thing I noticed before putting the car on the ground was just how flexible the rear pod now was; it felt more like a pan car than a one-piece chassis plate. Once I ran it, that Micro felt like a completely different car. On the clean Ventura Road Runners test track, the rear end stayed planted, even with the

SOURCES

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

Team Orion, 22601 LaPalma Ave., Suite 103, Yorba Linda, CA 92887 • (714) 694-2812; fax (714) 694-2815

TEAM LOSI TECH-TALK

Tech Tips #13

This month were going to tackle a few frequently asked questions to help keep you running instead of wrenching. **How** do you keep from stripping the hex in the flathead screws used on the bottom of the chassis? First off be sure you use the thread cutting screw included in every Team Losi kit to thread all of the plastic parts. This is no ordinary plastic and unlike common materials used by most manufactures it will hold a tight thread. The second thing to be aware of is that when you use the inexpensive "L" type Allen wrenches like those included in about every R/C car kit you have to be careful to not let it strip or turn in the hex of a screw. If it does you have to file or grind the end or you will surely strip the hex in the next screws you try to tighten. A better solution is pick-up a quality Team Losi Race Wrench. The A-99101 1/16" wrench uses an extra hard steel drill blank that has been precision ground to fit the hex precisely. The tip is titanium nitrided for unmatched wear and the hard anodized machined aluminum handle fits comfortably in you hand. And yes there are other inch and metric sizes available. Lastly, be sure you clean any dirt from inside the hex before you try to remove it. If the wrench does not get seated al the way into the hex you increase the chance of stripping it. **How** do I get over spray or tire marks off of my body? Try using a little fuel on a clean rag or denatured alcohol available at your local hardware store. Use common sense and make sure you use these away from any kind on flame. **How** do I get the starter wheel to hit my flywheel without grinding on the chassis? Some of the starter boxes have a wheel designed for 1/8 scale engines and are simply to big to fit in the opening of a 1/10 scale truck. Check this before you assemble the box. Keep in mind that you only need a starter wheel a little wider than the flywheel. If it is to big find a local shop that can narrow it for you or if you lucky ask that friend that just did his own. Secondly, take a few extra minutes to make sure the locating pegs on the box top position the chassis so the starter wheel is directly under the opening. A little to far forward or back is the same a lot. Filing or grinding a slight chamfer at the front and rear of the flywheel opening can make extra room for the starter wheel. A helpful trick is to adjust the switch so that the motor comes on well before the starter wheel touches the flywheel. This will allow the motor and wheel to build up some speed and energy before trying to turn over the engine. **How** do I stop fuel from going into the exhaust pipe through the pressure line? Put two full 360-degree loops in the line between the fuel tank and the muffler. Most of the racers tuck this into the center brace just behind the steering servo. Which body works better, the XXX-T or the "Fury"? Same for the XXX-NT and Fury-NT? Both of these body styles work equally well. It really comes down to the "look" you prefer. The development team at Team Losi always tries to produce off-road bodies that are as neutral as possible. That's it for this month. Don't forget to check out www.teamlosi.com for more tech tips and set-ups by our team of World Champion drivers. ❑

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Venom Battery Discharger

Drain with the snake

Venom Racing is making a full assault on the R/C hobby market. Its catalogue of handy electronic devices, which ranges from a great nitro engine temperature gauge to a plug-in failsafe device, is steadily growing. The newest addition is this battery discharger, which is designed to bring partially discharged battery packs of all types down to a safe "drained" state.



HOW IT WORKS

The Venom Battery Discharger, or VBD, is a compact, lightweight module that is designed to plug directly to a typical battery pack via its Tamiya-style male plug lead. The electronics inside the VBD then "read" the state of the battery and initiate a mild discharge current (which ranges from between 0.75 to 0.25 amps depending on how much current is left in the pack). After this, the VBD drains the pack down to an average of just under one volt per cell (for a typical six-cell pack, the VBD ceases discharging at 4.9 volts).

TESTING THE VBD

Dischargers work by converting the battery's stored energy into heat—by either ceramic resistors or 12-volt lightbulbs. The more energy remaining in the battery, the more heat is generated. This was our primary concern with the VBD, as it really has no effective way to dissipate the excessive heat that would result should a fully charged pack be connected to it. A quick call to Venom Racing confirmed that the VBD is not intended to discharge a fully charged pack. As a measure of safety (to prevent the VBD from being damaged), never use the VBD with any battery that hasn't had a full run on it. We were able to safely discharge packs that were 50-percent drained, but the VBD did get very hot.

Although the VBD is primarily designed for use with most six-cell NiCad and NiMH sub-C packs, it can also be used with other types of rechargeable cells such as those used for receiver packs in gas cars. The Tamiya-style connector makes the VBD a simple plug-and-play device for the most popular type of pack on the market; however, it's an easy matter to create an adapter to allow the VBD to work with other types of connectors and pack styles.

THE VERDICT

Batteries aren't cheap, and they are one of the most important parts of any electric car's performance equation. Treating them properly means discharging them safely. The Venom Battery Discharger is one of the easiest—and safest—methods to do this. For the novice, the VBD easily plugs into most stick packs and will automatically bring them down to the correct voltage and make them ready for the next full charge. For the more experienced, the VBD is the perfect complement to a high-amp discharger such as those made by Integy and Deans. The bottom line is that the VBD is a very inexpensive way to ensure that your expensive batteries provide the best performance for the longest time.

Retail price: $29.95

SOURCES
Venom Racing, (949) 642-4363



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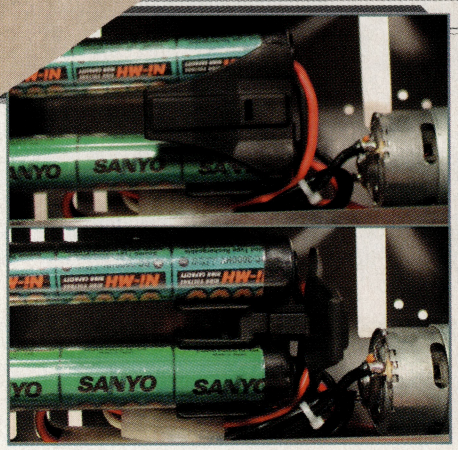
Associated Factory Team Starter Box

Gentlemen start your engines.

Team Associated formed its Factory Team division not only to provide its customers with high-quality aftermarket accessories, but to get in on the action; the aftermarket has been doing quite well by supporting Associated's line of cars and trucks, so why not the company that designed the kits? As the RC10GT gas truck and the newer Nitro TC3 gas touring car account for the majority of Associated's kit sales, a logical addition to the Factory Team lineup would be a starter box. We received a sample of the new starter, and as expected, it is chock-full of the types of innovations and the quality we have come to expect from Associated. Here's the skinny.



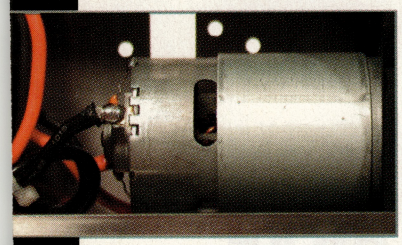
Associated's starter box has a polished finish that not only looks nice but will endure many seasons of use.



Battery changes are simple and fast with the ingenious clasp that holds standard sport packs.

START-LING FEATURES

The Associated starter box is one of the nicest we have ever seen. The box comes ready to use straight from the factory—all you have to do is provide the battery power. You will only need two 7.2 volt battery packs or a 12-volt gel cell to get your box up and running. Rather than using a pair of 540 or 550 sized electric motors, as do most of today's more popular starters, Associated instead opted to rely on a single, powerful 775-sized electric motor, which should be more than strong enough to crank everything from a high-performance racing .12 all the way up to a big-block .21 screamer. And what's even better is that the motor/starter-wheel assembly can be positioned to allow the box to work with in-line (Nitro TC3) or opposed (RC10GT) engine configurations.



The large 775 sized motor is powerful enough to start meaty .21 size engines and with little effort starts .12 size racing engines.

We particularly liked the Associated starter's brushed stainless steel case, which is way more durable than that of the typical painted or coated boxes, which become scratched as soon as you start the first engine. Even fuel spills and other assorted grime were easily cleaned from the starter's case with a damp rag. Also of note is the Associated starter's nice, large molded carrying handle.

USING THE STARTER

The AE starter, although designed to fit the Nitro TC3 and RC10GT, will easily work with most other brands and types of nitro vehicles. A set of adjustable molded-nylon posts help align the chassis with the starter's durable rubber starting wheel.

We chose to use a pair of six-cell sub-C battery packs to power our starter, and we loved the way in which they are secured to the underside of the box; rather than having to disassemble a series of straps, Associated designed a cool cam-style molded clamp—no tools are needed and pack changes take less than 30 seconds to complete!

THE VERDICT

The Factory Team starter box from Associated is full of clever little details, and it's as durable and as powerful as any box we've tested. We especially liked the finish of the case, which should hold up well to years of abuse, and the quick-change battery holder. Add to this the versatility of dual configuration (in-line or opposed engines) and the option to use a 12-volt gel cell, this is without a doubt the "Mercedes" of starter boxes.

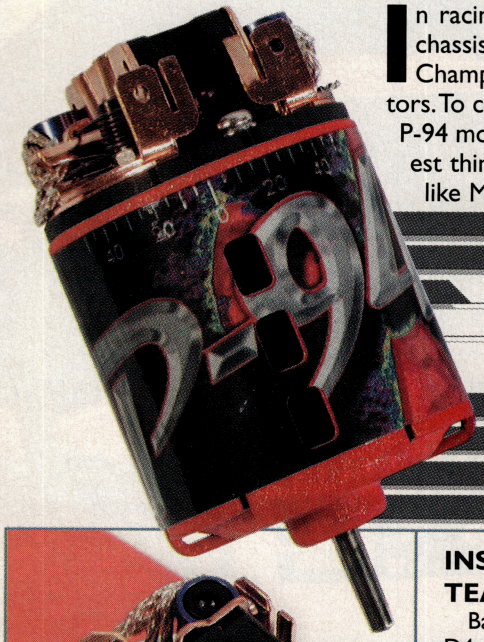
Part no.: 1750
Price: $99.99

SOURCES

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

Trinity P-94 Matt Francis Worlds Wind

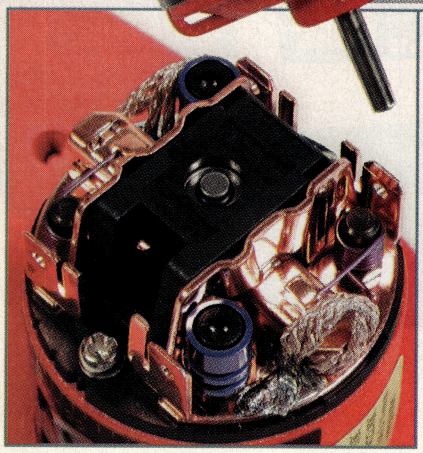
Make the other buggies see red!



In racing, there are three components to any winning combination: the driver, the chassis and the horsepower. When Matt Francis won the IFMAR Off-Road World Championship in South Africa, he had the best combination among all the competitors. To commemorate Matt's win, Trinity has released a special "Worlds" edition of its P-94 modified motor; it's an 11-turn double wind just like Matt used, and it's the closest thing you'll get to a full factory motor, short of becoming a sponsored hot-shot like Matt!

TRINITY SEES RED!

Trinity's motor guru, Jim Dieter, came up with what he believed to be the ideal wind that would provide Matt's Team Losi Triple-X buggy with the best overall combination of speed, acceleration and, most important on the slick South African track, control. Jim arrived at an 11-turn double armature based on Trinity's latest motor, the P-94.

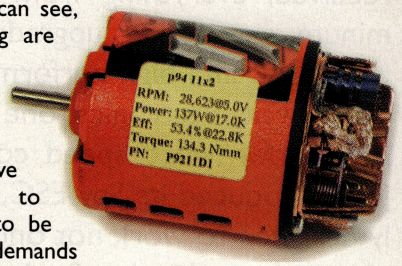


INSIDE THE P-94 TEARDOWN

Based on the Trinity D4 modified motor, the P-94 varies the most in its endbell and brush design. Using computer modeling, Trinity has arrived at what it believes to be an optimum brush face that will create peak torque throughout all phases of the brush-to-commutator cycle.

The P-94 is Trinity's ultimate compromise between the "cogging" effect caused by brushes that are too narrow, and the shorting that occurs with brushes that are too wide. The term cogging refers to the dead spots in the commutating cycle that occur when one of the three comm segments, or armature poles, isn't charged with electricity at all. When all three segments are charged for too long a period, as when very wide or lay-down brushes are used, the short-circuiting that results can cause efficiency problems and heating in the motor—neither of which are of great consequence with stock motors, but are less than ideal conditions for mod motors.

The P-94 solves these problems by utilizing brushes that are wide enough to prevent cogging, yet not so wide as to cause excessive shorting of the armature poles. While most common "standup" brushes energize all three comm segments for 85-percent of the cycle (one revolution of the motor), the P-94 brush energizes the segments for 97 percent of the cycle—and when the comm is cut, this increases to 99.8 percent. As you can see, the effects of cogging are greatly reduced, leaving less of a "gap" in each revolution of the motor. The height of the P-94 brushes have also been increased to allow more current to be carried to meet the demands of today's hotter winds.



Another feature that makes the P-94 stand out from the D4 is its magnets, which are the newest TDK FB9 ferrite magnets, which are stronger than any previous TDK magnet. New venting in the motor's can also increase rpm, and of course, the Matt Francis edition sports a limited edition red can (perfect for use in your Francis Edition Triple-XT truck!).



Part no.: P211D1 (complete motor); PA211D1 (armature only)
Prices: $95.00 (complete motor); $55.00 (armature only)

SOURCES

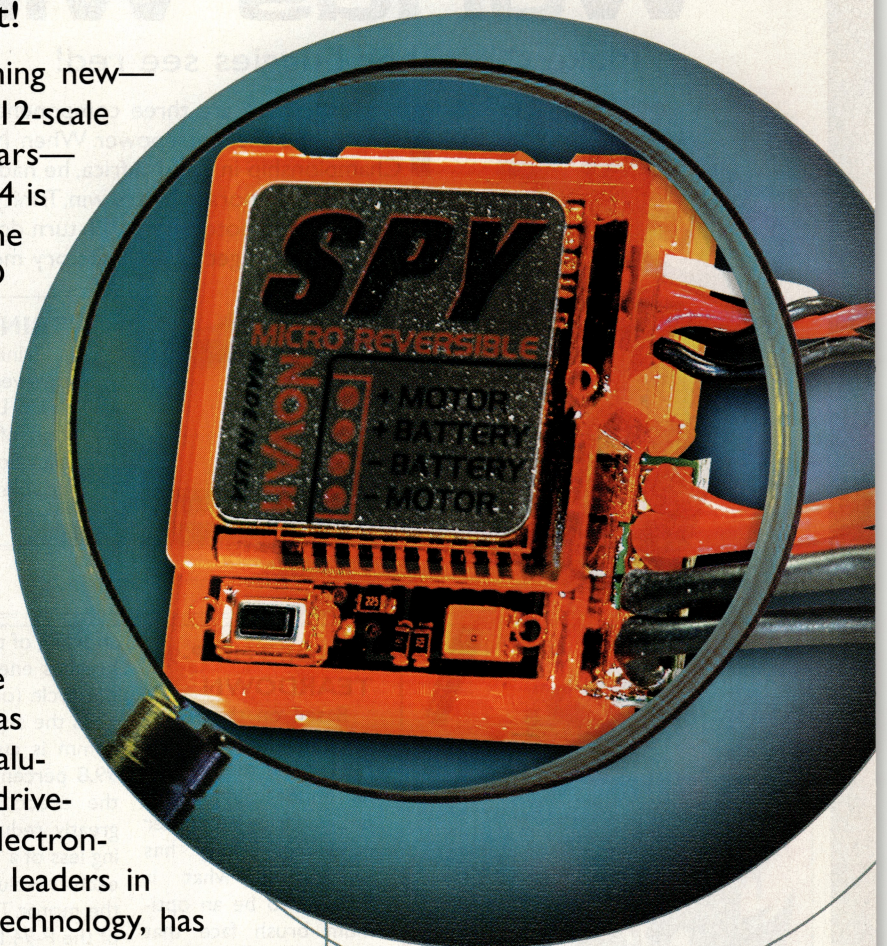
Trinity Products, Inc., 36 Meridian Rd., Edison, NJ 08820 • (732) 635-1600; fax (732) 635-1640

Novak Spy Reversible ESC

Top-secret micro agent!

Micro-sized R/C isn't anything new—there have been sub-1/12-scale models around for years—however, HPI's 1/18-scale Micro RS4 is unlike anything that came before. The Micro's simple yet effective 4WD system provides traction and handling that previous micro-cars could only have dreamed of. This, combined with HPI's flair for creating realistic bodies and cool hop-up accessories, make the Micro RS4 a phenomenon rather than merely a new kit release.

One testimony to the popularity of the Micro RS4 is the huge amount of aftermarket support it has received; everything from billet aluminum suspension upgrades to drivetrain hops and high-performance electronics. Novak Electronics, one of the leaders in high-performance speed control technology, has just introduced its Spy ESC, which has been specifically designed to work not only with the HPI Micro RS4, but also with any kit that fits into the "micro" category.



EYEING THE SPY

The most amazing aspect of the Spy is that it has to be the smallest ESC we have ever seen. With a case size of only 1.12 inches by 0.95 inch, and a height of less than a half inch, we have to wonder how Novak crammed so much technology into the Spy's translucent orange plastic case.

The Spy also comes pre-wired for the Micro RS4; to install it into the car, all you have to do is stick it in place using the supplied double-sided adhesive tape, and plug its leads into the motor and battery connectors that came with your Micro kit. Novak has also provided a receiver lead that is long enough to reach your receiver from the rear deck of the chassis (required installation when using some HPI body kits), yet not so long that you'll have to deal with bundles of excess wiring that could get tangled in the car's drive belt.

SPY SETUP

The Spy is intended to work with just about any type of motor that can be installed in the Micro chassis. It is not, however, designed to work with 380 or larger motors that you'd find in 1/10-scale cars, so don't think that you can save a whole bunch of weight in your off-road truck by using the Spy! It won't work.

To reduce the possibility of interference from electronic noise, Novak also insists that you install the three supplied 0.1-microfarad capacitors with every motor you use. And because the Spy is a reversible ESC, don't even think about using a Schottky diode, as it will be nuked the first time you apply reverse!

With that out of the way, the Spy is then set to match the settings of your radio through the use of Novak's One-Touch Set-Up button. For the best performance, it's advisable to make sure that your radio's throttle and brake travel is set to maximum before programming the ESC.

STEALTHY SURPRISES

Despite its Lilliputian stature, the Spy retains many of the features found in Novak's much larger racing ESCs. Here's what the Spy has:

• Novak's exclusive Polar Drive Technology for smooth, efficient throttle control with reduced ESC heating.

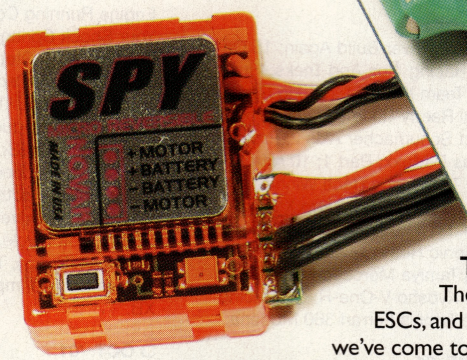
• Reverse Disable Circuitry allows you to run the Spy as a forward-only with brakes ESC. And on the subject of braking, the Spy has Novak's Smart Braking, which provides improved control against wheel lockup.

• Thermal Protection provides a safeguard against damaging the ESC due to overheating. When things get too hot, the Spy will shut itself down until a safe temperature is reached.

• Radio Priority Circuitry ensures that no matter how drained the battery becomes, the Spy will provide the receiver with enough power to maintain control (so the car will never become a runaway).







SPY GAMES

We installed the Spy in our modified Micro RS4 (the Corvette C-5R featured in the August issue's "4 Hot Micros"), which has a Team Orion Elite modified and an OFNA five-cell "brick" NiMH battery pack. The Spy is rated to handle any 280-sized motor and any four to seven cell micro-style battery pack, so this application was well within the Novak's limits.

Because it's so small, the Spy actually makes the 1/18-scale Micro RS4 chassis appear... almost big. Mounting it proved no challenge, and there was plenty of room between the Spy and the inside of the body to allow plenty of cooling air.

Programming the Spy was also simple. After setting our Airtronics M8 so that its throttle travels were maximized, we followed the well-written instructions to use the One-Touch Set-Up button to match the Spy to our transmitter (you don't even need a tool to depress the button!).

With a fully charged pack, we set out to our local on-road track to put our Spy-equipped Micro through its paces. The throttle control is excellent; the Spy felt as responsive as its big brothers, the Cyclone series. The Spy also has excellent low-end punch, which allowed us to take full advantage of the Micro's 4WD traction and the impressive power of the Elite motor. The brakes were also powerful and fade-free throughout the 25-minute run time. We also played with the reverse-lockout feature. Although there aren't any rules governing the use of reverse with Micro racing (not yet, anyway), there's really no need to disable reverse for normal running. However, we felt that the brakes were more controllable with the reverse locked out. So if you're seriously racing your Micro, consider disabling reverse.

THE VERDICT

The Spy is one of a handful of micro-only ESCs, and it's one of the best. It has all the cool stuff we've come to expect in Novak ESCs (plus a really neat translucent orange case!), yet with a retail price of under $100 (which means that you'll be able to pick one up at a hobby store for substantially less dough), the Spy has a price as small as the cars it's intended for. We would have liked to have seen some type of protection against reverse-voltage (as when you accidentally plug the battery in backwards), as is the case with Novak's other ESCs, but aside from this one grievance, we found the Spy to be reliable, tough and an excellent performer.

Part no.: 1870
Retail price: $99.00

SPECIFICATIONS

Case size: 1.12 x 0.95 x 0.48 inches (28.45 x 24.13 x 12mm)
Weight: 0.51 ounce/14.4 grams (with wires/connectors)
Input voltage: 4 to 7 cell operation
BEC: 5 volts/0.5 amps
On-resistance: 0.019 ohms
Connectors: Pre-wired for HPI motor/batter connectors

SOURCES

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

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

OFNA Racing, 22600 Lambert St., Ste. D-1009, Lake Forest, CA 92630 • (949) 586-2910

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❑ **FEB. '01**
Product Test: Trinity Shock Dyno Features: 2000 Reedy Truck Race Of Champions; Inside The Reedy Winning Trucks; The "Original" E-Maxx; How To Build A Battery Discharger; Chicago Hobby Show Coverage; IFMAR 1/8 Scale Off-Road Worlds; Inside Losi's New SB3; Paris Can-Am Challenge; Trinity Green Machine 3; 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: Eight Ways To Moisture-Proof Your Car; Tuned Pipe Buyer's Guide; Ian Aquino's HPI Concourse-Winning Cars; Tamiya TA04 Hop-Up Guide; Truck Wheel Buyer's Guide; HPI World Challenge; 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; Convert Your Race Engine To The Traxxas EZ-Start; Multi-Stage Tire Inserts; Top Touring Car Setups; Reedy MVP Stock Motor Test Drives: Kyosho Inferno MP-7.5; Team Associated Factory Team TC3; 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 Schumacher Axis 2; Project Traxxas E-Maxx; Part 1; 10 Nitro Tips; Inside The Reedy Race Winning Cars; Project Schumacher Nitro Xtreme .21; Raytek MT4 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.

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Features: Basic Motor Maintenance; 2001 Team Losi Florida Winterchamps; T-Maxx/E-Maxx Wheel and Tire Buyer's Guide; First Look: HPI's New Pro 3 Touring Car; Project Full Metal Maxx; Body Painting Basics ; New Engine Prep; Let Loose The Juice; Second Annual "The Dirt" Challenge Test Drives: Thunder Tiger EB4 RTR; 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-1 Rally Cars Features: Nitro Off-Road Tips; Novak's New Cyclones; Project Yokomo GT-4W; Extreme R/C; Project E-Maxx; Is Your RTR Really Ready; First Look: Team Losi XXX-S; Get A Grip; Splashdown 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 Mugen MTX-2; T-Maxx/E-Maxx Body Buyer's Guide; Easy Breathing; 2001 ROAR Off-Road Gas Nationals Test Drives: HPI Pro 3; Bergonzoni/Dreier Racing Bandit; CEN Fun Factor 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 Shock Springs, Top R/C Inventions, 10 Steps To Preventing And Resolving Receiver Problems, Super Ten Battle: Two Stroke vs. Four Stroke Product Test: JHM 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 Street Sport and Spirit Features: R/C Car/Hardcore Racing/Traxxas Maxx Shootout, Pro Racers, 2001 ROAR Off-Road Stock Nationals, Drivers Stand 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, Novak XXTra Synthesized Receiver, Plastic Fantastic: Molded Chassis vs. Graphite Plate, Hopping Up the Tyco Jeremy McGrath X-Treme Cycle, Pro-file: Scott Hughes, David Katz, 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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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
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

MARYLAND

DOUGS HOBBY	2935 CRAIN HWY	Waldorf	20601	301-843-7774
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
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

MAINE

R/C SPEEDWAY & HOBBIES	87 MAIN ST	Fairfield	04937	207-453-4588
VICTORY LANE HOBBIES	306 ROUTE 236	Eliot	03903	207-439-3278

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
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	616-786-3686
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
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

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MISSOURI				
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
HOBBYTOWN USA	524 N.W. ENGLEWOOD RD	Kansas City	64118	816-459-9590
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MARK TWAIN HOBBY CTR	2793 WEST CLAY ST	Saint Charles	63301	636-946-2816
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
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HOBBYTOWN USA	6380-D RIDGEWOOD COURT	Jackson	39211	601-957-9900
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NORTHLAND HOBBIES INC.	1325 HWY 2 WEST	Kalispell	59901	406-257-1808
PRAIRIE UNIQUE	114 S. LOGAN ST	Terry	59349	406-635-5598
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HOBBY TOWN USA	8332 PINEVILLE MATHEWS RD	Charlotte	28226	704-544-2303
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K/C HOBBY INC.	10948-G NORTH MAIN ST	High Point	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
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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
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FISHKIN BROS.	285 MADISON AVE	Perth Amboy	08861	732-826-0048
HOBBIES ETC.	240 S. BRD ST	Woodbury	08096	856-384-7740
HOBBY WORKSHOPS	510 WEST KINGS HWY	Mount Ephraim	08059	856-931-2400
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THE HOBBY SHOP	ABERDEEN TOWNSQUARE	Aberdeen	07747	732-583-4189
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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
MACH 1 HOBBIES	249 W. 29TH ST #1	New York	10001	212-947-0157
NAGENGAST HDWR & HOBBY	68-02 FRESH POND RD	Flushing	11385	718-821-0958
PERFORMANCE HOBBIES	15 WEST MAIN ST	Webster	14580	716-872-4990
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TONY'S HOBBY SHOP	229 HARRISON AVE	Harrison	10528	914-835-4765
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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
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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
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GLENNS ALLIED HOBBIES	6607 RISING SUN AVE	Philadelphia	19111	215-745-5777
HOBBY EXPRESS INC.	309 MARS-VALENCIA RD	Mars	16046	724-625-1550
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GOLDEN STRIP HOBBIES	315 FAIRVIEW RDSTE G	Simpsonville	29681	864-963-7149
HOBBY STOP	939 S. ANDERSON RD	Rock Hill	29730	803-327-4121
HOBBYTOWN USA	BELVEDERE PLAZA	Anderson	29621	864-627-9633
HOBBYTOWN USA	VERDAE MARKET FAIR/ 340	Greenville	29607	864-627-9633
SOUTH DAKOTA				
HOBBYTOWN USA	DAKOTA PLAZA	Sioux Falls	57105	605-339-6613
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AAA MODEL SUPPLY	5237 HWY 126	Blountville	37617	423-323-1513
HOBBYLAND TENN INC.	5985 STAGE RDSTE 1	Bartlett	38134	901-937-0636
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ACTION HOBBIES	2005 9TH ST	Wichita Falls	76301	940-766-2667
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DRYCREEK HOBBIES	25181 30 WEST	Greenville	75402	903-527-5381
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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
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
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
HOBBY HANGERS SPEEDWAY	14014 D SULLYFIELD CIR	Chantilly	22022	703-631-8820
HOBBYTOWN USA	1067 INDEPENDENCE BLVD.	Virginia Beach	23455	757-464-4140
LINVILLE HOBBIES	7065 WENGERS MILL RD	Linville	22834	540-833-2222
STREAM HOBBY SHOP	10015 JEFFERSON AVE	Newport News	23605	757-591-0720
TSG HOBBIES	251 W. LEE HWY #691	Warrenton	20186	540-347-9212
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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
RAIN CITY RACEWAY	3616 SOUTH RDSTE #A-3	Mukilteo	98275	425-438-2454
REDMOND HOBBIES	1629 REDMOND	Redmond	98052	425-885-3639
TACOMA R/C RACEWAY	6305 6TH AVE	Tacoma	98406	206-565-1935
THE CLOVERLEAF	4110 MAIN ST	Union Gap	98903	509-453-8959
TIM'S HOBBY	2405 BROADWAY	Everett	98201	425-259-5929
ULTIMATE HOBBIES	131 E. MAIN ST	Auburn	98002	253-939-2515
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WISCONSIN				
ABC RC INC.	244 W. MAIN ST	Waukesha	53186	262-542-1245
DOCKTER'S HOBBY WORLD	402 WESTGATE MALL	Madison	53711	608-274-0024
FOCUS INC.	75 S. MAIN ST	Fond Du Lac	54935	920-922-5999
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HOBBY JUNCTION	1729 STEPHENSON ST	Marinette	54143	715-732-6333
HOBBYTOWN USA	2075 S. KOELLER	Oshkosh	54901	920-426-1840
HOBBYTOWN USA	2767 S. ONEIDA ST	Green Bay	54304	920-490-9996
HOBBYTOWN USA	3347 KOHLER MEMORIAL DR/D2	Sheboygan	53081	920-452-0801
JOHN'S HOBBIES	54 N. MAIN ST	Hartford	53027	262-673-7454
KDM HOBBY	711 E. SPRUCE ST	Abbotsford	54405	715-223-4414
PHIL'S HOBBY & CRAFTS	409 W. MAIN ST	Wautoma	54982	920-787-7232
S&N'S TRACKSIDE HOBBIES	3635 N 124th ST	Brookfield	53005	262-783-4699
WEST VIRGINIA				
DW REED HOBBY STOP	142 W. MAIN ST	Bridgeport	26330	304-842-2742
FULTON'S HOBBY SHOP INC.	3301 CHAPLINE ST	Wheeling	26003	304-233-5355
HOBBYTOWN USA	220 NITRO MARKET PLACE	Charleston	25313	304-776-7259
WEST VIRGINIA HOBBY&CRFT	PUTNAM VILLAGE SHOP CTR	Teays	25569	304-755-6474
WYOMING				
LARAMIE HOBBY CENTER	158 N. 2ND ST	Laramie	82072	307-755-5376
XTREME HOBBIES	2810 DOGWOOD AVESTE B	Gillette	82718	307-682-6077
PUERTO RICO				
D'S HOBBY SHOP	VILLA TURABO	Caguas	00726	787-460-2677
HI SPEED C. RACEWAY	422 SAN CALUDIO AVE	San Juan	00926	787-648-0016
ISLAND HOBBIES	DELFIN-OLMO 166	Arecibo	00612	787-871-1129
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GOLDEN HORIZON	2132-3779 SEXSMITH RD	RICHMOND	BC	V6X 3Z9	CANADA	604-331-2526
ONE STOP HOBBY	33228 S. FRASER WAY	ABBOTSFORD	BC	V2S 2B3	CANADA	604-852-6497
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Hobbytown Raceway, 1102 E. 22nd St., Tucson, AZ 85704, (520) 882-8888

Kingman off-road track, 5737 Hwy. 66 Mpost 63 Kingman, AZ 86401

Scottdale R/C Speedway, 3023 N. Scottsdale Rd., Scottsdale, AZ 85251 (480) 945-2186

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

ARKANSAS

Alison Offroad RC Raceway, 6320 Thibault Rd., Little Rock AR 72206 (501) 490-1227

Arkansas R/C Car Association, 101 W. 52nd St., N. Little Rock AR 72218 (501) 753-1286

Grand Slam Superspeedway, 5300 S. Zero St., Ft. Smith, AR 72703, (501) 648-1994

Hobbytown USA, 356 E. Joyce Fayetteville, AR 72703, (501) 571-3730

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

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

CALIFORNIA

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

Crystal Park Raceway, 123 Artesia, Compton, CA 90202, James Reese, 310 631-0307

The Dirt Race Park, 164 S. Santa Fe Ave. Hemet, CA 92543 (909) 925-7592

Hobby Central, 13461 Community Rd., Poway, CA 92064 (858) 513-0373 www.hobby101.com

Hobbytown Raceway, 3069 W. Bullard Ave., Fresno, CA 93711 (559) 435-3342

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

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

LPRP, 800 Lake Paris Dr., Lake Paris, CA 92551 Dean Jones (909) 488-9021 lprcrp@cumpuserve.com

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

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

Pegasus Hobbies, 5515 Moreano Blvd. Mont Claire, CA 91763 www.pegasushobbies.com (909) 982-6507

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

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

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

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

Showtime R/C Speedway, 3805 Chester Ave. Bakersfield, CA 93301

Simi Valley Ground Pounders, 392-C - East Easy St., Simi Valley, CA 93065, (805) 584-8211

So. Cal Raceway, 19118 Brookhurst St., Huntington Beach, CA 92646, (714) 963-7484

Speedworld Raceway & Hobby, Billy Bowerdman 90 Corporation Yard Rd., Roseville, CA 95678, (916) 783-8864

Sun Valley Micro Raceway, 8295 Tujunga Ave., Sun Valley CA 94352, www.svmracing.com, (866) 793-6513 Toll Free,

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

Ventura Road Runners, Freedom Park Camarillo, CA 93010 (805) 564-4144, www.venturaroadrunners.com

COLORADO

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

CONNECTICUT

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

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

K&N Speedway, West St., Stafford Springs, CT 06076 (860) 684-9896

R/C Madness, 640 Enfield St., P.O. Box 64, Enfield, CT 06082, (860) 741-6501

Xtreme Radio Control, 469 Danbury Rd., New Miford, CT 06469, (860) 354-4703

DELAWARE

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

FLORIDA

Broward County R/C Race Club, Mills Pond Park, Ft. Lauderdale, FL (954) 525-3304

Burton's R/C Raceway, 4215 Mustand Rd., Lakeland, FL 33803, (941) 665-1322

Coral Springs Roadrunners, PO Box 9632 Coral Springs, FL 33075, (954) 925-8284

Farmer's Hobby & Raceway, 5006-3 E. Broadway, Tampa, FL 33619, (813) 248-3314

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

First Coast Speedway, 6410 Waltho Dr., Jacksonville, FL 32211, (904) 743-2161

Ft. Myers R/C Club, Lee Civic Center, Ft. Myers, FL (941) 936-1528

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

Means R/C Raceway, 1550 Pondell Rd., North Ft. Myers, FL 33903, (941) 772-2251

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

PBG Motor Park, 6351 Barbara St., Palm Beach Gardens, FL 33418, (561) 627-2608

Pro Hobbies Speedway, 715 N. Lake Pleasant Rd., Apopka, FL 33712, (407) 886-4615

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

GEORGIA

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

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

Hobbytown Raceway, 2301 Airport Thruway, Columbus, GA 31904, (706) 660-1763

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

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

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

HAWAII

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

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

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

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









ILLINOIS

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

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

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

H&H Raceway, 35-12 Berkshire SDr. Crystal Lake, IL 60014 815-444-1777 http://drive.to/h_hhobbies

Hobbytown Raceway, 2103 N. Veterans Pkwy., Bloomington, IL 61701, (309) 664-4451

Leisure Hours R/C Raceway, 24121 W. Theodore, Bldg. 1, Plainfield, IL 60544, (815) 439-1477

Monee R/C Raceway, 26049 Ridgeland Ave., Monee, IL 60449 (708) 799-5597

Outlaw R/C Speedway, 1614 Broadway, Mattoon, IL 61938, (217) 234-6229

Quad Cities Raceway, 541 1st Ave., North Silvis, IL 61282, (309) 751-9663

Radio Active Raceways, 751 N. Bolingbrook Dr., #15 Bolingbrook, Il 60440 (630) 759-7557

Rector's R/C Raceway, RR3, Box 104, Albion, IL 62806, (618) 842-9379, (618) 446-3282

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

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

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

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

INDIANA

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

Finish Line Pets & Hobbies, 1209 East St., Rd 2 LaPorte, IN 46350 (219) 326-0921

GM Raceway, 1651 W. Franklin St., Elkhart, IN 46516, (219) 293-1827

Hardesty Raceway, 11 East Plymouth St., Hamlet, IN 46530, (219) 867-8600

Hobby Barn Raceway, 1950 Springhill, Terre Haute, IN 47802 (812) 299-5773

Hobbytown USA, 5385 E. 82nd St., Indianapolis, IN 46250, (317) 845-4106

P&T Hobbies & Raceway, RR2 (Hwy. 60), Mitchell, IN 47446, (812) 849 6666 www.pnthobby@bigfoot.com, www.pnthobby@safeshopper.com

R/C World of Indiana, 2246 West U.S. Hwy. 36, Lynn, IN 47355, (765) 874-2464

Summit Area Radio Cars, 7000 Red Haw Dr., Ft. Wayne, IN 46805, (219) 492-2271

IOWA

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

R/C Excitement Inc. Hobbies & Raceway, 36 Harlon St., Worcester, MA 01605 Mike Gordan (508) 753-8676 (508) 854-0915 www.rcexcitement.com

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

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

Riverfront Speedway, adjacent to Sunkist Meadows Golf Course, FT. Dodge, IA (515) 576-3780

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

KANSAS

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

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

KENTUCKY

Somerset Raceway, 188 Sycamore Dr., Bronston, KY 42518, (606) 561-4522 Halcomb@hyperaction.net

Coyete Hobbies, 218 N. Martin Luther King Blvd. Lexington, KY 40507,Danny Puchalsk: (859) 253-9330 www.coyetehobbies.com

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

LOUISIANA

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

MAINE

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

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

MARYLAND

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

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

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

MASSACHUSETTS

Big Boys Toys, 33 Father DeValles Blvd., Fall River, MA 02723

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

Hobbytown/RPM Raceway, 201 N. Quincy St.,Abington, MA, (781) 857-2300

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

MICHIGAN

Beyond Extreme Racing, 36159 Plymouth Rd., Livonia, MI 48150 (734) 513-7641 www.beyondextremeracing.com

Down River Radio Controlled Racers (D.R. R/C), 22789 Nortline Rd, Taylor, MI 48180 (734) 287-7405 (Bobby or Fred) www.downriverracing.8k.com

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

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

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

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

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

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

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

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

MINNESOTA

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

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

Ray's Raceway Park, 105 3rd Ave. NE., Glenwood, MN 56334, (320) 634-5246

R/C Racing World, 235 Main AVe., North, Harmony MN 55939, (507) 886-5931

Southside Speedway, 2241 Marion RD., SE Rochester, MN 55904, (507) 281-3233

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

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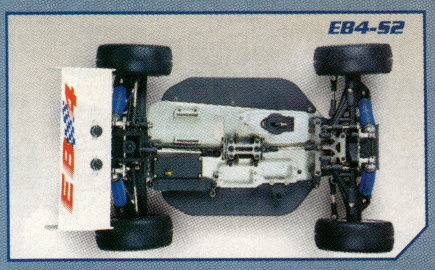



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St. Louis Dirt Burners, Marshal Road, Kirkwood, MO (314) 831-2194

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

Real Blue Vue Speedway, 12019 E. 47th St., Kansas City, MO 64133, (816) 358-0238

Real R/C Raceway, 24204 State Rte. 58, Pleasant Hill, MO 64080

NEBRASKA

Goodyear Speedway, 4021 North 56th, Lincoln, NE 68510, (402) 464- 5172

Hobbytown USA Raceway, 220 N 66th Lincoln, NE 68505 (402) 434-5056 www.eastparkracing.com

Hobbytown USA Raceway, 1st & Cornhusker Lincoln, NE 68505 (402) 434-5057 www.eastparkracing.com

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

NEVADA

Danwsey's Indoor R/C Hobbies, 741 N. Nellis Las Vegas, NV 89110, (702) 453-RACE

NEW MEXICO

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

Charlie's Hobby Shop, 1230 Solano Las Cruces, NM 88005, (505) 541-1097

NEW YORK

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

The Hobby Shop, 119 Mt. Vernon Ave Mt. Vernon 10550 (914) 668-3022

NEW JERSEY

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

Alpine Lounge, Blackhorse Pike Turnersville, NJ

NEW HAMPSHIRE

106 Race Park, 743 Clough Mill Rd. Pembroke 03275, (603) 225-9787 www.106racepark.com

NORTH CAROLINA

Carolina Outlaw R/C Racing, 411 Ruritain Park Rd. Stony Point, NC 28678 (704) 585-2996

OKLAHOMA

Action RC Speedway, 3616 SE 59 Oklahoma City, OK 73135 (405) 670-7770 www.actionrc.com

OHIO

Corcar-Low's, 1675 Georgesville Square Dr. (614) 870-7159, Columbus OH 43228 www.corecar.com Bill Stevenson

OREGON

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

PENNSLYVANIA

R/C Outfitters Raceway, 519 Broadway, Hanover PA 17331 (717) 633-9490 www.rcohobbies.com

RHODE ISLAND

Insane Toys, 122 Manton Ave. Providence, RI 02909 Jose Jimenez (401) 421-8878

Tri-State R/C Raceway, 205 Hallene Rd., Warwick, RI 02886, Lenny Sosa (401) 738-4908

SOUTH CAROLINA

Carolina R/C Speedway, 4148 Calhoun Memorial Hwy., Easley, SX 29640; Craig Prahl, (864) 295-1209; *www.carolinarc.com*

Myrtle Beach R/C Park, 5976 Grace Lane, Myrtle Beach, SC 29577 Brad Smith, (843) 234-0096

The Grove Racing Center, 939 S. Anderson Rd., Rockhill, SC 29730, Mike Durham or Don Faris, (803) 327-4121

ORA Atomic Racing, 373 Boyd Pond Rd., Aiken, SC 29803; Bill Felak, (706) 855-0846 or (803) 642-0314

R/C Racing Connection Speedway 4375 Juniper Bay Rd. Conway, SC 29527 (843) 397-0124

SOUTH DAKOTA

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

TENNESSEE

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

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

W.O.W. Raceway, 59 Luray Rd., Beech Bluff, TN 38313; Kelly Bean, (901) 427-7874; *windix60@pipeline.com*

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

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

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

TEXAS

215 Speedway, 1814 County Rd. 215, Abilene, TX 79602; Clyde Gardner (915) 673-2351

Big Mike's R/C Raceway, 1405 W. Cotton St. Longview, TX 75604; (903) 297-7814

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

Drycreek Raceway, 2518 I 30-W Greenville, TX 75402 Micky Alphin, 903-527-5381, web.pulse.net/drycreek email: dycreek@pulse.net

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

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

HobbyTown USA, 999 E. Basse Rd., Suite 177, San Antonio, TX 78209; Joe Sena, or Clark Baisdon, (210) 829-8697

Indy R/C World, 2020 Saturn Rd., Garland, TX 75041, (972) 271-4844

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

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

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

Texas Speedway, 6703 Chimney Rock Bellaire, TX 77401 (713) 661-7137 www.mmhobby.com

T-N-T R/C Cars, 3420 Ave. K Suite 154, Plano, TX 75074 (972) 633-2470 (972) 238-0965 Joe Sullivan

Al's Hobbies, 7121 HWY. 90 W. Suite San Antonio, TX 78222 (210) 645-1050

VIRGINIA

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

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

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

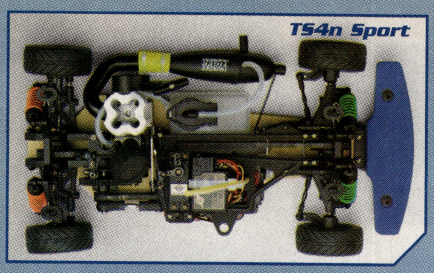
Shamroc Raceway, 106 Cheviot Pl., Stephens City, VA 22655; Scott Janow, (540) 869-3551

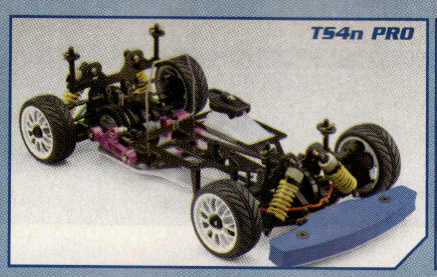
Star/Car Raceway, Debbie's R/C World, 200 Commerce Parkway, Virginia Beach, VA 23454, (757) 340-6681

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

Dirtona, 515 Front Ave. Salem, VA 24153 Steve Cooper (540) 387-3044









WASHINGTON

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

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

Burien Toyota R/C, 15025 1st Ave. South, Seattle, WA 98148 Ray Meek, (800) 654-6456

Cedardale Raceway, 16733 Cedardale Rd., Mount Vernon, WA 98273; Joe Madonia, (360) 659-0072; *getchell@halcyon.com*

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

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

WEST VIRGINIA

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

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

Left Turn Hobbies, 100 Saco Ln. Glen White, WV 25849; Stretch (304) 255-3930

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

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

WISCONSIN

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

CANADA

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

Canada R/C Auto Racing, www.geocities.com/midcanadarcautoracing

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

R/C Speedway Niagra, 253 East West Line, Niagra on the Lake, Ont, Canada Los 1J0

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The Brat Pack!



BY RICHARD TRUJILLO

Released in July of 1983, the Subaru Brat from Tamiya was my first true R/C kit. I had saved my money for several months, and when my dad finally took me to the hobby shop at the mall, I was beaming with excitement. The kit sold for $79.99, and it wasn't even assembled! I didn't have enough money for the rest of the gear that I would need to run it, but I would build it anyway. I remember being simply amazed at all the parts and the detail in the kit. It actually took me three days to complete construction. And when I had finished, I was taken back by the amount of travel that the friction shocks provided.

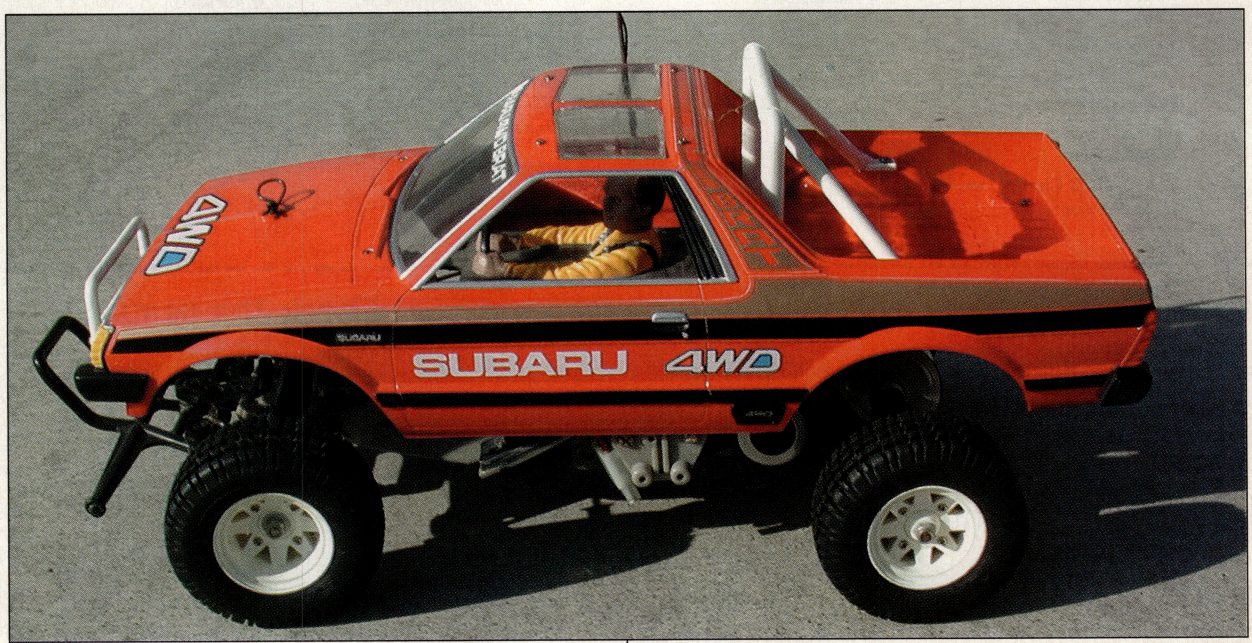
The Brat was one of the first cars that Tamiya released with a new molded chassis. It was completely different from the original Sand Scorcher off-road chassis. It featured a fully independent suspension with trailing arms in the rear. The gearbox came with a "spool" type transmission, which made it tougher to steer but was great for forward traction. The Frog, which was based on the Brat Chassis, eventually came with a gear diff. The major downfall for the Brat was the use of hex-type dogbones. I must have replaced those a hundred times!

The Brat pictured here was actually given to me by my best friend, Albert Guardado. After surviving a garage fire, it somehow ended up in Albert's hands. I think this car was destined for me. When I received it from Albert, it was in original condition, and the body had in fact not been painted. The previous owner had simply stuck the stickers on it and run it. After stripping the body of the stickers, I painted it to match the original kit box. I purchased a new set of stickers off of eBay, and performed some additional detail work. When I was painting the body, I accidentally cracked the windshield, I have a new one, but I've just been too lazy to refinish it.

I have seen several Subaru Brats come up on eBay, and you can expect to pay about $300 for a nicely restored kit. A NIB (new-in-box) kit will easily top that. When looking to add a Brat to your collection, be sure that the body is in good condition. This will probably be the most expensive part to find.

Although I have had many "throw-away" R/C cars before the Brat, it was the Subaru Brat that brought me to the Ranch Pit Shop R/C Raceway in Pomona, California. Gil Losi owned the "Ranch," and eleven years later, Team Losi would become my employer. If it wasn't for the Brat, I probably wouldn't be working and writing about my favorite things—R/C Cars.





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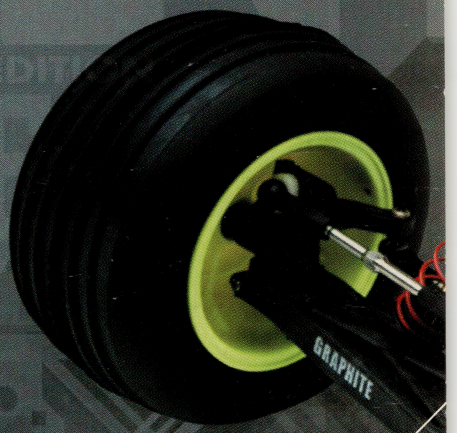
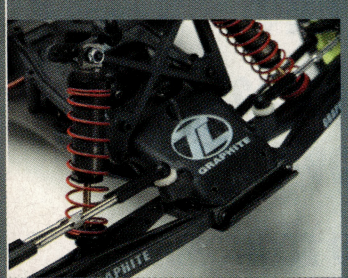


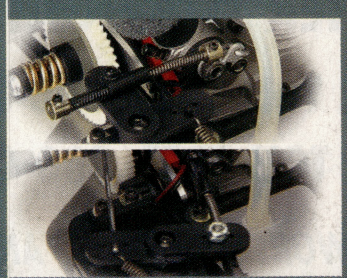
NO COMPROMISE. NO COMPETITION. NO KIDDING.

Adam Drake. The guy has a habit of winning races (with a XXX-NT, of course). So it shouldn't be a surprise that we picked Adam's brain for our newest signature series release. Like all our special edition kits, the XXX-NT Drake Edition includes a full compliment of precision-engineered performance parts and graphite chassis components. Another exclusive feature is the use of hard anodizing on aluminum parts like that used on the most sophisticated full-size racing machines, which 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, 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.

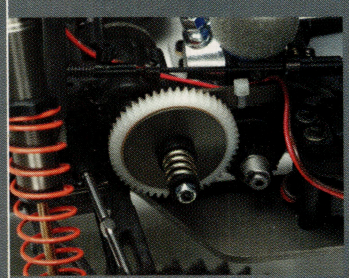
ENGINEERING WINS



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 override accommodates radio systems without end point adjustments.



Stacked 4.11:1 Ratio Transmission This rugged race proven design features an oversize 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.

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HORIZON HOBBY

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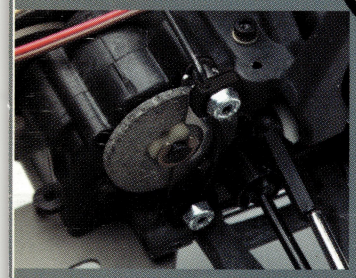
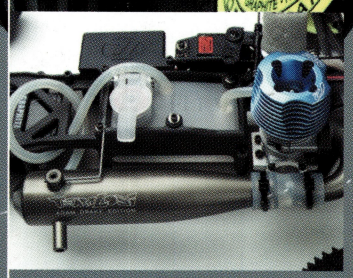
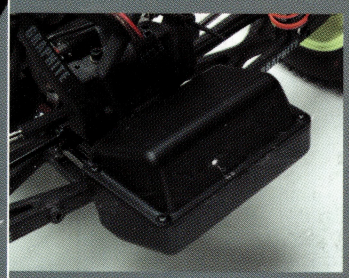
Team Losi
ENGINEERING WINS



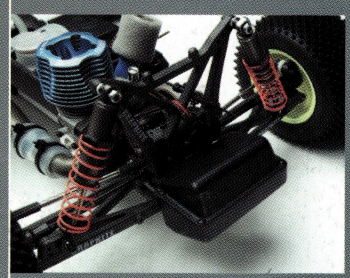
Competition Braking System The heavy-duty disk brake features a thick fiber rotor and alloy steel pads. Precision components and hard-anodized hardware provide smooth operation and consistent stopping power.



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

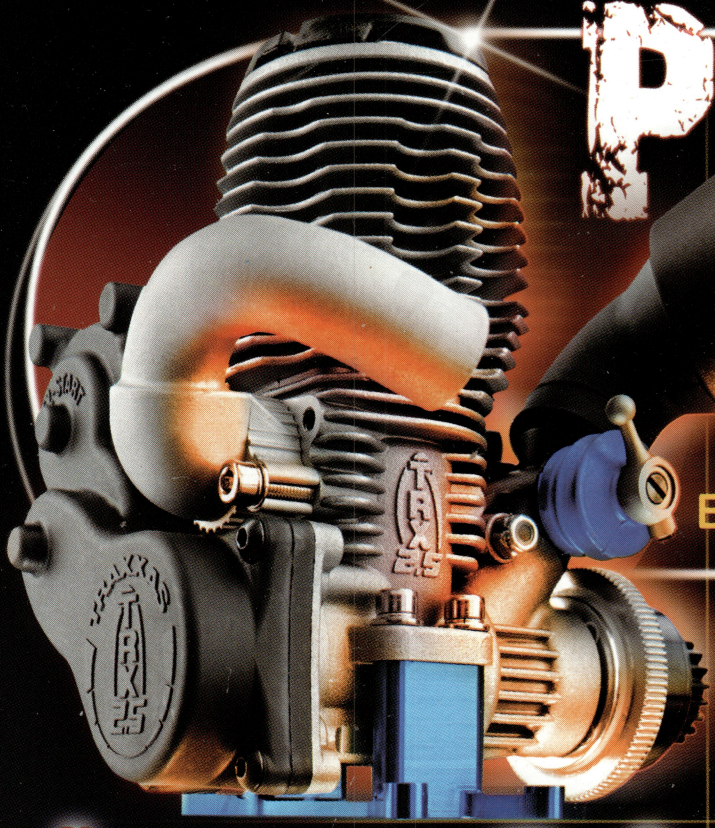


Radio Protection The receiver battery and rear of the chassis are protected by a rugged molded bumper/battery box. A molded cover protects the receiver from dirt, fuel, and race damage.



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.

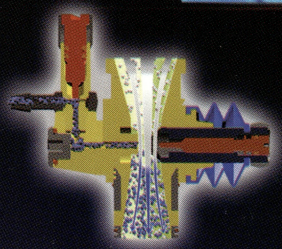
The POWER of TRX 2.5



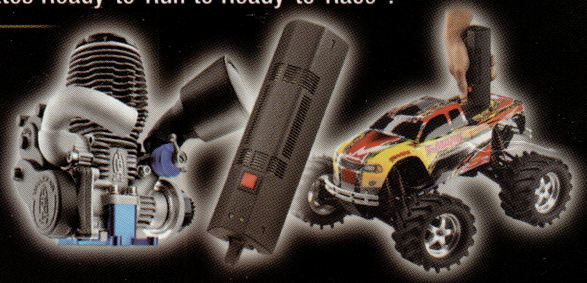
Elevating Ready-to-Run to Ready-to-Race®

All New Design

Traxxas TRX 2.5 engine is all new from the ground up! It's the result of over 2 years of engineering and testing. The TRX 2.5 delivers the power and technology of the world's finest high-performance racing engines, and truly elevates Ready-to-Run to Ready-to-Race®!

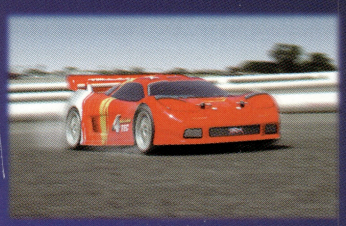






Slide Carburetor Provides Superior Fuel Atomization

The TRX 2.5 is equipped with the all-new TRX Composite Slide Carburetor. The slide carburetor is desired by performance enthusiasts because it provides less restrictive, straight through airflow for more power and better throttle response than typical barrel carburetors. It's an expensive option on some models, and not even available on others!



Advanced Design Features

- Precision molding provides a smoother, better-flowing inlet tract than cast or machined carburetors
- The carburetor, air-filter, and crankcase are integrated to provide smooth continuous airflow with minimal turbulence. It flows more air faster and more efficiently than conventional carburetors
- The low-speed needle has a positive stop to prevent damage to the spray bar from over-tightening
- The dust boot seals out harmful dirt and covers the built-in throttle return spring
- Molded LCP (Liquid Crystal Polymer) body is lighter and greatly reduces power-robbing heat transfer to the carburetor body

Easy, Reliable, Push-Button Engine Starting

The Traxxas EZ-Start™ system for the TRX 2.5 racing engine. Simply plug it in, push the button, and the EZ-Start System automatically heats the glow plug spins the engine.

- Regulated output supplies constant voltage to heat the glow plug, regardless of battery condition or starter motor load.
- Glow plug status indicator signals failed glow plugs.
- Elastomer cush drive output protects critical starter gears.
- Compact, planetary gear reduction.
- Indicator light shows the status of the starter drive circuitry.
- Efficient, thermal-sensing MOSFET circuitry provides greater starting power and longer battery life.
- Fully-enclosed battery. (Battery not included)
- Integrated vehicle connector for one-handed operation.

TRAXXAS

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