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R/C CAR

THE RADIO CONTROL CAR MAGAZINE

FEBRUARY 2002

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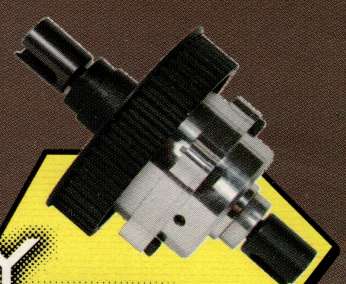
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see page 14

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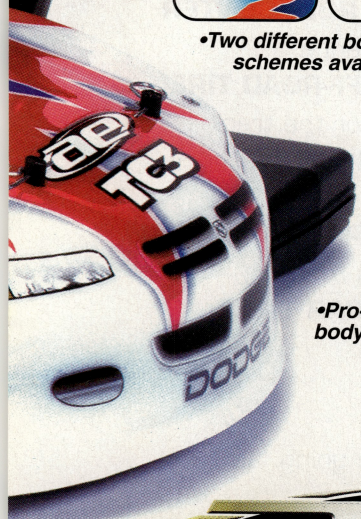
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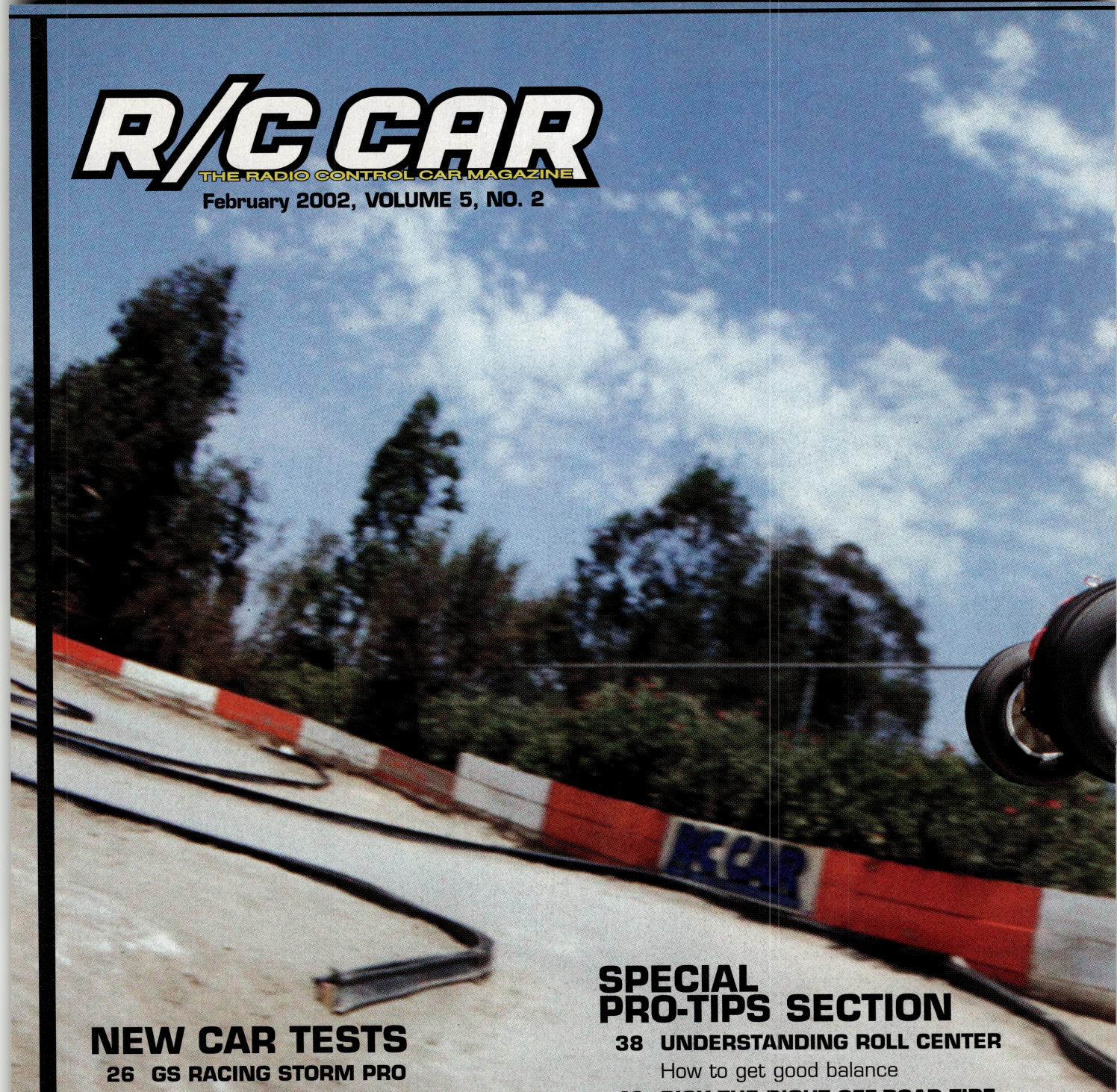
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R/C CAR
THE RADIO CONTROL CAR MAGAZINE
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On the cover: GS Storm Pro—photo by John Howell.
On this page: Associated's Factory Team T3—photo by John Howell.

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EDITOR
FRANK MASI
ASSOCIATE EDITOR
JOHN "DOOGIE" HOWELL
CONTRIBUTING EDITOR
LITO REYES
ONLINE EDITIORS
BRAD ROE
BradR@hi-torque.com
TOM HINZ
TomH@hi-torque.com
DESIGNER
TIM La PAGLIA
ASSISTANT DESIGNERS
BETH BOWMAN RIDGWAY
JACKIE CLEVELAND
ALMA MARTÍNEZ de DICSÖ

PHOTO ARTIST
PAT CARRIGAN
COPY EDITOR
JIM ALGAR
PRODUCTION COORDINATOR
KAY DEICKEN

ADVERTISING

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

HI-TORQUE PUBLICATIONS

PRESIDENT & PUBLISHER
ROLAND HINZ
ASSOCIATE PUBLISHER
LILA HINZ
ASSISTANT TO PRESIDENT
CASSANDRA MITTELBERG
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SUBSCRIPTION AND PROMOTION MANAGER
RYAN CLEEK

ADVERTISING & GENERAL OFFICES
25233 ANZA DR.
VALENCIA, CALIFORNIA 91355
(661) 295-1910
FAX: (661) 295-1278

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- **REVERSIBLE SYSTEM (#3010):**
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[Drivers'Stand]

BY FRANK MASI

What does it take to be competitive?

About once every four or five months, I go into a "serious" race phase. Usually, this happens when I'm testing a kit that I really like, as in "I can actually have a shot at winning a race!" Which brings me to this month's subject: what does it actually take to win nowadays?

When I started racing many, many years ago, winning came easily. Early on, I used to win all the time because I was the only person to have an RC10; my car was simply much better than everyone else's—all I had to do was remember to give it throttle when they said "go," and keep it on the track.

Later on, as other people bought RC10s, winning became a little more difficult, but generally, I could still win even if I crashed a few times or if my tires were six months old. That's the thing—the car's setup and equipment seemed less important back then. Heck, many of us used to make our own parts using nothing more than a Dremel, a drill and some sandpaper. And this had nothing to do with speed—if anything, these cobbed-together pieces hurt performance—but rather, it was the intention to set your car apart from the pack, to have your friends "ooh" and "ahh" at your handiwork.

Right around the time people began using tire inserts—I would estimate this as being '91—things became more serious. We began to obsess about our setups. We started blending our own shock oil by mixing 10wt and 20wt to make 15wt (who knows what the actual viscosity was), we drilled shock pistons (again, not really being sure why), and trimmed the knobs on our tires. We bought the first computer radios such as the JR R-756 and the Airtronics Caliber and began talking about such things as exponential and brake travel. We bought dynos and battery matchers. In essence, we spent a lot of money. Racing was still fun, but you couldn't expect to just show up at a new track and dominate, nor could you expect to win if you hadn't raced in a few months.

This brings us to the state of racing today. In between my bouts of serious racing, I'm amazed at how much my fellow competitors have progressed. It always seems like the people who were just starting out a few months earlier have now become the fast guys. People I used to be able to lap are now putting the moves on me! I look at their cars and I see how much they've learned from just hanging out at the track and, of course, reading magazines (had to get that one in).

So to answer the first question, it takes me at least a month of steady racing just to get my driving back into shape. Oh, I can always get around the track smoothly and do all the jumps, etc., but it takes time to regain the edge, to be able to go from brakes to throttle with less hesitation, to keep up the level of concentration needed to battle with another car for five minutes without having time to blink. Car setup is also part of the equation. To win, you not only must have a well-built kit, but it also has to be set up to your particular track. It's still a matter of small details such as how many washers are under the front ball-studs, or one hole in your rear shock pistons being drilled from a no. 57 to a 56. Do I miss the days of plunking my RC10 down and lapping all the Frogs and Foxes without breaking a sweat? A little. But would I miss the level of competition and the sophistication that exists today to go back? Not on your life. At the very least, we have much more to write about! ◆



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Team Orion leads the way in developing new and innovative products for what is set to be one of the most popular cars ever released - the HPI Micro RS4. These new and innovative products are the result of over 15 years of experience in the electric motor, battery and electronics fields. Team Orion continues to make good things better!

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Team Orion Micro Graphics are Thunder Designs Internal Graphic Sets that have been re-sized to fit 1/18 - 1/24 scale models plus they look great on 1/10 scale off-road buggy and 1/12 scale bodies. Cool bodies have never been easier than with Thunder Designs Internal Graphic Sets.


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59203	Lightspeed orange	$6.99	59207	Speed Streaks red	$6.99



ELITE micro modified

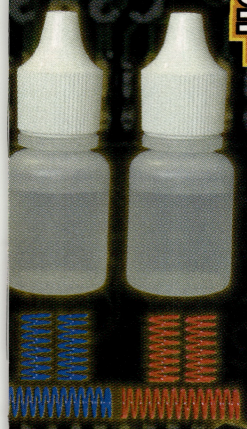
For serious racers or those that just have the need for speed; the Elite Modified is the most powerful motor you will be able to put in a Micro car! Because of its coreless design it will deliver 2 to 3 times the power of the original motor! Precision made in Switzerland, this high-tech power plant will give you unexpected power from its compact design.

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ntil now, there has been no simple way to test the most important aspect of any R/C r - the driver.

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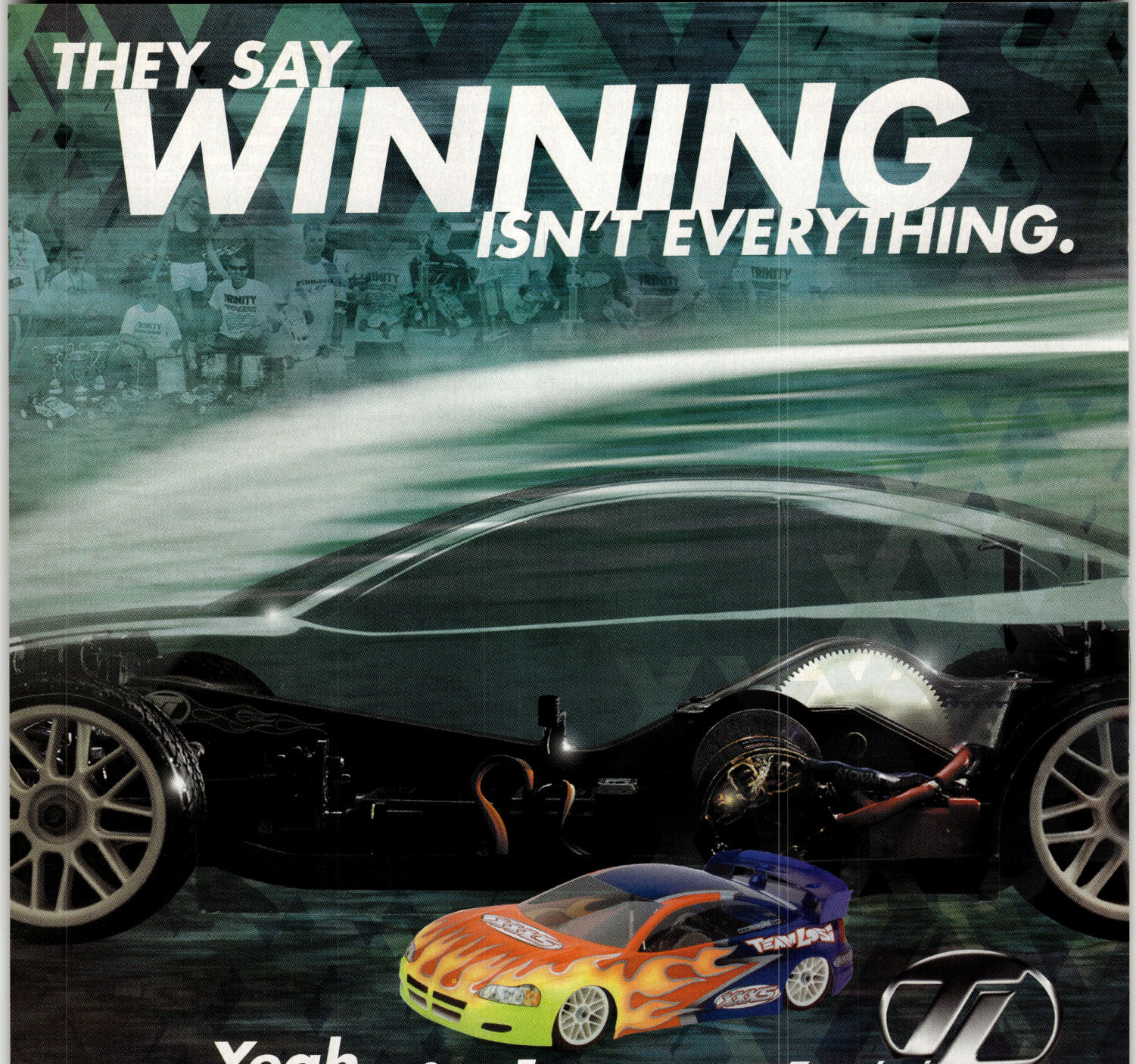
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But, let's face it, they like being number one. And so do we.

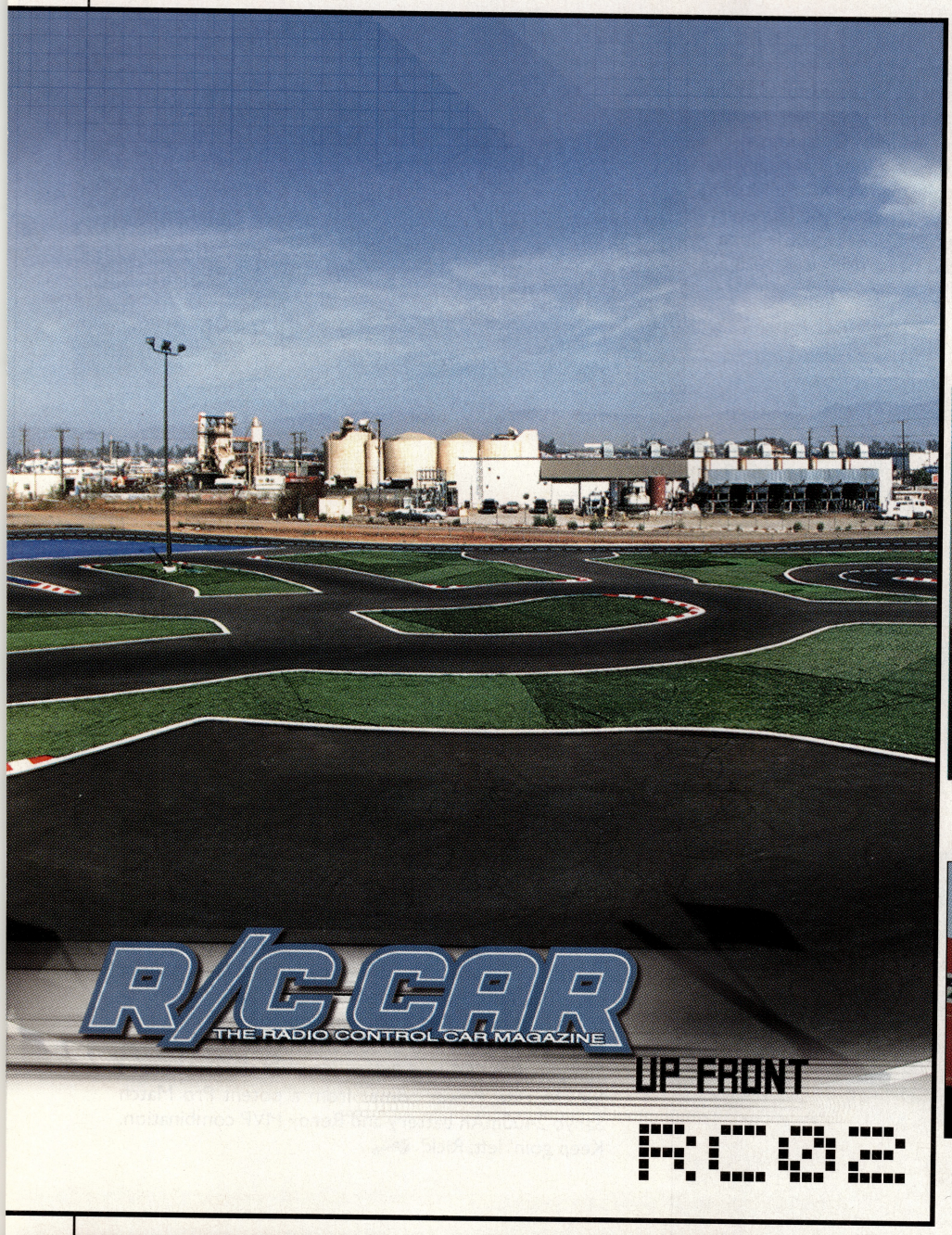
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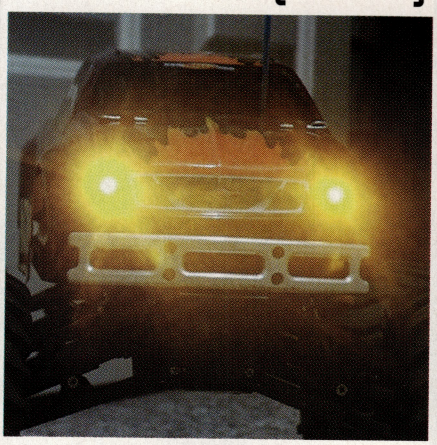
UP FRONT







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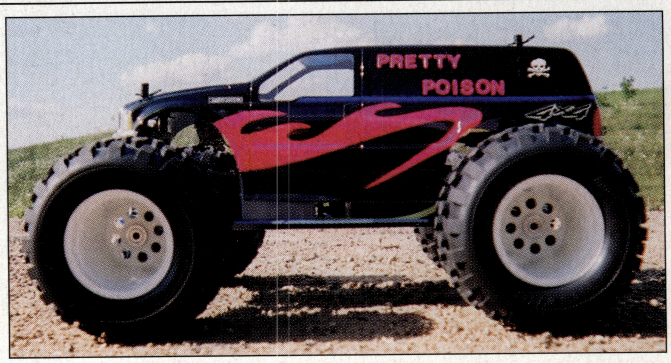


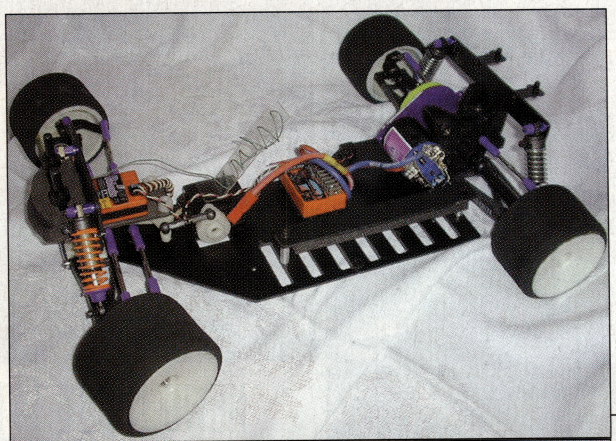
TRUCK COLUMN [PAGE 20]

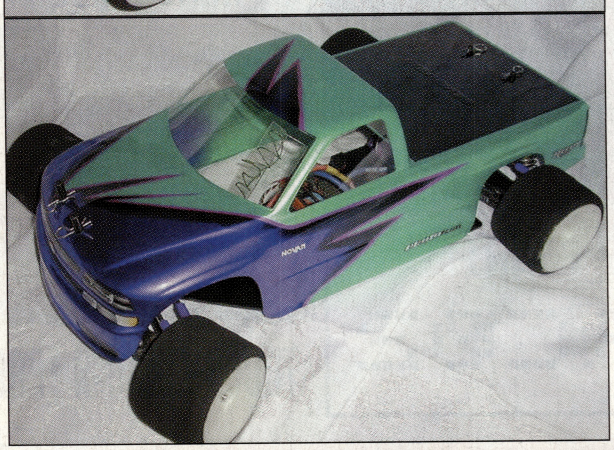
Welcome to *R/C Car's* Readers' Projects. We receive many impressive "home-built" reader projects each month, so we decided to showcase some of them in each issue. How about you? Got a lot of pride in your ride? Snap some pics and send 'em to us here at *R/C Car* Readers' Projects, 25233 Anza Drive,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

POISON PIRATE FROM ANGOLA

Paul O'Mealey of Angola, Indiana, sent us these pictures of his OFNA Monster Pirate. Paul beefed up the horsepower department by installing an O.S. .21 engine, then added a Dynamite in-line fuel filter to ensure that his new engine lives a long and happy life. A Pro-Line Ford Excursion body (originally made to fit the T-Maxx) was fitted to the OFNA chassis, and a custom paint job lets everyone know this truck is something special. Other mods include a set of RPM spring clips. Paul controls this beast using a JR XR3 FM computer radio system. Nice job, Paul!







LEFT-TURN TRUCK

Rick Morgan sent us these pix of his home-built oval truck. Based on a Team Losi Double-XT off-road truck, Rick's ride features a modified chassis that allows the transmission to be installed backwards (placing more weight ahead of the rear axles). The chassis also places the battery pack on the left side of the truck for better cornering during those "left-turn-only" oval races. Rick's truck is controlled by a Futaba Magnum Jr. radio and S9304 steering servo. A Novak Tempest Pro ESC and Polaris receiver are also aboard for the ride. Power comes from a potent Pro Match Sanyo 2400mAh battery and Reedy MVP combination. Keep goin' left, Rick!

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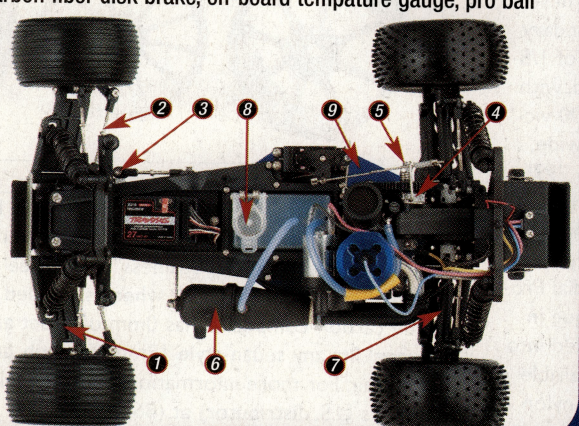
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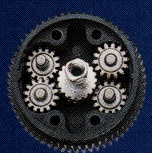


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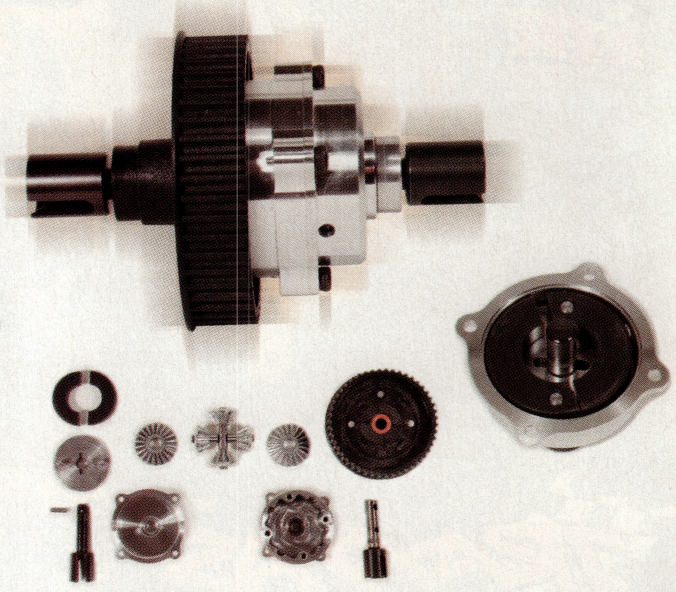
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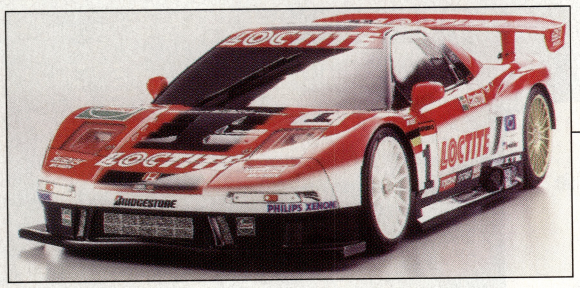
Traxxas Corp.12150 Shiloh Rd. Dallas, TX 75228 Ph. 972-613-3300. Traxxas U.K., P.O. Box 1128, Winterbourne, Bristol BS17-2SH, England. Ph. 44-117-956-1002 Fax 44-117-956-1121. © Copyright Traxxas Corp. 2001. Call, write, or fax for your nearest hobby shop and for our latest catalog. Specifications subject to change.

THE NEGATIVE DIFF

Kawahara's new Negative Diff for the Kyosho V-One R and Mugen MTX-2 eliminates a common problem with gear diffs—unloading or "spooling." The Negative Diff uses the same type of internal bevel gears as does the stock diff, but it has a two-shoe, centrifugal-type clutch that kicks-in whenever the diff's operating speed becomes too high, as when a wheel is unloaded. Normally, forward drive is lost when this happens, but with the Negative Diff's clutch, very little power is lost. In essence, this new diff allows the car to work like a diff-equipped car when off-power, yet when power is applied, it functions like a solid-axle setup. The kit comes with a machined-aluminum housing (which also contains a ball-bearing for the diff outdrive) that uses the stock cars' internals. The Kyosho diff uses the stock pulley, while the Mugen diff comes with a Delrin pulley.

Retail prices for the V-One R diff (part no. Z-1720) is $89.99, and the Mugen diff (Z-1730) is $99.99. Contact RC Imports at (408) 377-2361 for more information.





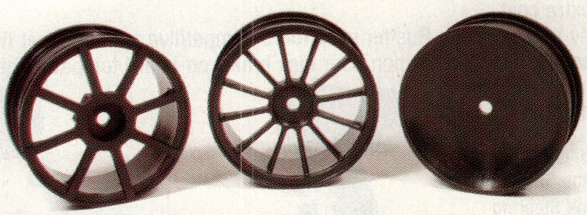
A SUPER-ER SUPERTEN?

We already love Kyosho's super-size FW04 SuperTen, but with the release of the Loctite Mugen NSX, there's more to love. Based on the most current FW-04 chassis, the Loctite Mugen NSX kit is also a Special Option model, which includes a two-speed transmission (in our opinion, a must-have item), universal driveshafts for all four wheels, a special 100cc flip-top fuel tank, and a black-anodized aluminum chassis and top deck. The top deck lowers the car's CG and moves the components closer to the middle of the chassis for improved weight distribution. The kit also includes full bearings and a Kyosho .15 pull-start engine. Expect a street price of just over $400. Call 800 682-8948 for more information.

ME-DIAL-ED



General Silicones is now the exclusive U.S. importer of the popular and successful Medial Pro line of tires and accessories. These tires are legendary in the world of 1/8-scale off-road, with more than 500 victories worldwide, including the world championship from '96 through '99! There are 10 tire styles available in four rubber compounds, and there are inner foams also available in four stiffnesses. Each tire is also available "ready to use" pre-glued to a Medial Pro wheel (yellow or white). Medial Pro also offers its Touring IAS tires, which are very unique in that they don't require an inner support—it's molded into the tire. Like the buggy tires, the IAS donuts are available separately or pre-glued to an attractive mesh-style nylon wheel. Contact GS Racing at (626) 338-3815.

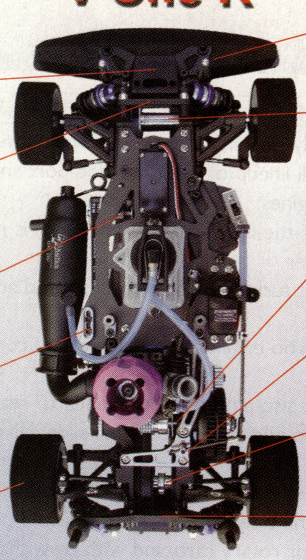


HIGH-TECH HOOPS FOR YOUR SEDAN

Check out these ultra-trick carbon wheels for your 1/10-scale sedan (nitro or electric). RC1 Racing currently offers three types of wheel, from the "all business" dish wheel to the beautiful 8- and 12-spoke designs. Each wheel is molded from lightweight and stiff carbon-composite, has 0mm of offset and is 24mm wide. Each wheel fits any sedan-style 12mm hex-hub, and retails for just $8.99 per pair. For more information, contact Welker R/C Products (RC1's U.S. distributor) at (865) 909-0999.

Kawahara Racing

V-One-R



K-440 Front Sway Bar

K-425 Carbon Shock Tower

K-415 Mid BB Block

A-011 Side Belt Tensioner

K-417 Wide Hex Hub

K-809 Body Mount Short

K-431, K-802 Front One-Way

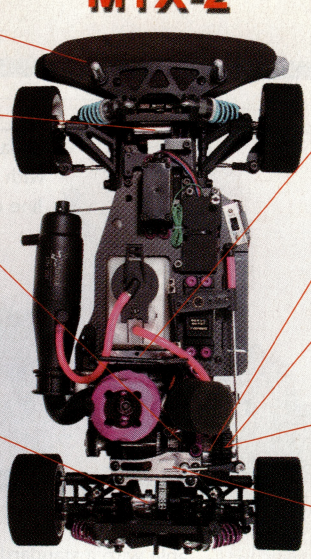
K-710 Vented Brake Rotor

K-419 Brake Top Plate

K-435, K-805 Solid Rear Axle

K-426 Carbon Shock Tower

MTX-2



K-717 Mid BB Block

K-714 24T Alum Pulley

K-723 LTWT 1st Gear Housing

K-731 Two Speed

K-716 Alloy Brake Top Plate

K-418 Narrow Hex Hub, V1R
K-421 Pro Chassis, V1R
K-424 Graphite Radio Tray, V1R
K-427 Wide Bumper, V1R
K-431 Front One-Way, V1R
K-718 Graphite Radio Tray, MTX2
K-719 Chassis, MTX2
K-720 70-75 Pivot Balls MTX2



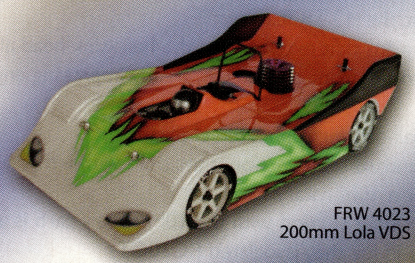
NEW!!!
Limited Slip Differential

K-727 Delrin Front Right Upright, MTX2
K-728 Delrin Front Left Upright, MTX2
K-802 Front One-Way, MTX2
K-803 Outdrive (One-Way), MTX2, V1R
K-804 34T Overdrive Pulley, MTX2
K-807 Wire Roll Cage Mount Alloy MTX2
K-811 Front Belt Tensioner, MTX2
All Pulleys Including Overdrive Available

V-One-R Z-1720
MTX-2 Z-1730



FRW 4028
200mm Porche 962



FRW 4023
200mm Lola VDS

Racing Equipment Products
ZAC Project

26mm Front & Rear Compounds, Ultra-Wide 32mm Rears!!!
The Finest Japanese Foam Tires!!!

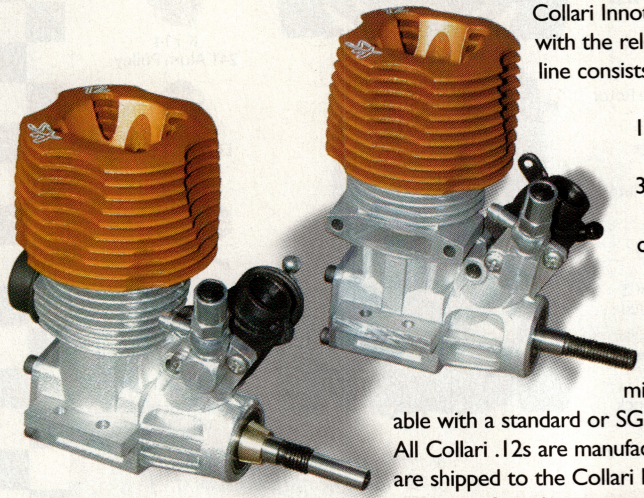




Available in a wide range of hardnesses including 30, 32, 35, 37, 40, 42, 45

Exclusive U.S. Importers: RC Imports, San Jose, CA. 95125, 408-377-2361, www.rcimports.net

ITALIAN ENGINES THAT DON'T BEGIN WITH A "N"

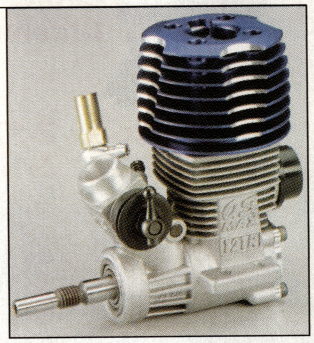


Collari Innotech is already claiming to have the world's most powerful .12 engines with the release of its full lineup of rear- and side-port small-blocks. The rear-port line consists of three engines:

- a top-of-the-line 5-port Turbo, which is rated at a mind-boggling 1.4 horsepower
- a 3-port turbo version, which is rated at 1.39 horsepower at 36,200 rpm
- both Turbo engines have knife-edged connecting rods and turbo cranks
- there is also a non-Turbo "standard" rear-port .12 in the mix.

The Turbo engines come with a slide-valve carb and an SG-style crank, while the non-Turbos are available with either a standard or SG crank and your choice of slide or rotary carbs. For the sport-minded racer, the side-exhaust .12s are also 3-port engines, and are available with a standard or SG crank, slide or rotary carb, and with or without a handy pull-starter. All Collari .12s are manufactured by Picco to Collari's exacting specs and design, then the parts are shipped to the Collari Innotech factory, where each engine is hand-assembled. Street prices will range from between a bit over $100 for the side-exhaust to just over $200 for the 5-port Turbo. Contact RC Imports for more information at (408) 377-2361.

REAR-PORT SNORT



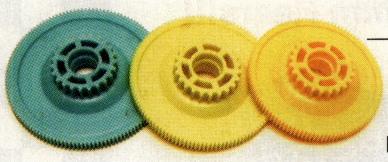
O.S. Engines is the latest company to offer a rear-port version of its popular .12 size engine. In addition to its new porting arrangement, the .12 TR features:

- Cooling fins that extend from the heat-sink head all the way down to the front of the carb, greatly improving engine cooling
- Dual ball-bearing supported crankshaft
- The standard-shaft version is available with either a 10J slide carb or a 10M rotary carb
- A short-shaft version with the 10M rotary carb is available (a drop-in for the Associated RC10GT)
- A pilot-shaft version with the 10J slide carb is also available
- A manufacturer's rating of 1.1 horsepower at 36,000 rpm

The TR engines include a no. 8 O.S. glowplug and require a tuned-pipe and header. Street prices vary from between $179.99-199.99. Contact O.S. Engines at (800) 682-8948.

TRACK NEWS

Hot Rod Hobbies Raceway here in Southern California will soon have a world-class permanent on-road track to go with its already famous off-road race-course. Although it was a sad day for the contingent of local dirt-oval racers (the dirt oval was torn down to make way for the pavement), local sedan racers were heard cheering, as there had previously been very few places for them to run their cars. Although the track is still under construction as of this writing, we have been told that it will take up an area of around 50 feet by 200 feet, and that a new drivers' stand and timing tower will also be built.



WHAT'S THE PITCH?

When it comes to smooth running, nothing beats a set of 64-pitch gears. The stock Team Losi XXX-S comes with a one-piece molded 48-pitch gear/pulley, which is fine for most people, but if you wanted the extra gearing range and smoother operation of a 64-pitch gear, you had to purchase a heavier aluminum gear adapter, then bolt a separate gear to it. Not any more: Losi now offers a choice of three 64-pitch gears specifically designed for the XXX-S in 108, 118 and 128 teeth. Each gear is color-coded for easy identification, and is made from a specially formulated engineering grade plastic. Retail price is $5 per gear. Contact Team Losi at (909) 465-9728.

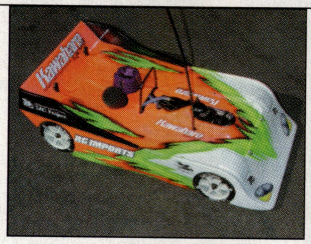


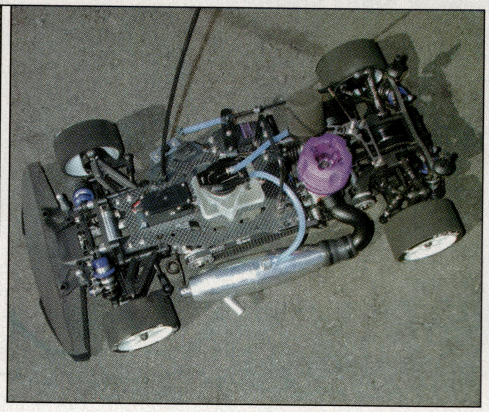
R/C ON THE TUBE

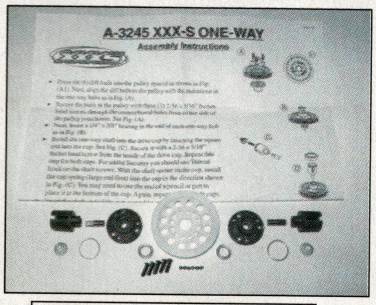
Whether you're a hobby shop owner looking to show your customers some R/C vehicles in action, or an R/C nut for whom a day at the track simply doesn't supply an adequate R/C fix, this new video from Freestyle RC will get your blood pumping. Freestyle RC is an hour-long mix of off-road, on-road and everything in between. Featuring most of today's popular models racing, jumping, sliding and crashing, the video is an hour-long commercial for the R/C hobby, and it's suitable for viewers of all ages. Contact Freestyle RC at *support@freestylerc.com* for more information.

OUTLAW KYOSHO SEDAN

Remember that awesome Kawahara Mugen nitro sedan we showed you in last month's "Tuner Car Special"? Well, the Kawahara people have produced a similar line of hop-ups for Kyosho's already smokin' V-One R nitro sedan. We recently had the chance to drive a fully Kawahara-ized Kyosho at the awesome SVM raceway in Sun Valley, California, and we're convinced that this was the fastest, best-handling nitro sedan we had ever driven. The car was equipped with a host of Kawahara parts, including chassis, solid rear axle, front one-way unit, aluminum "overdrive" pulleys and top-deck, as well as a new engine-mount/flywheel mod that significantly lowers the engine. The car also had a set of ZAC Project multi-ring foam tires (we ran 40s up front and 37s out back). The body shown here is a Frewer 200mm Lola VDS. All of these parts are available from RC Imports (408) 377-2361.

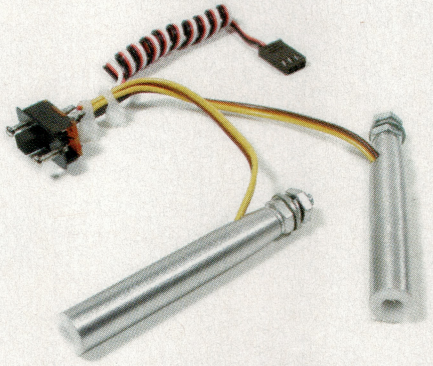






ONE-WAY LOSI

On high-bite tracks or tracks with large, flowing layouts, nothing makes your sedan faster than the addition of a front one-way. Team Losi has finally introduced a one-way setup for its popular XXX-S sedan, and the set includes a precision-molded pulley, one-way hubs with factory installed bearings, outdrive cups, ball-bearings and all the hardware needed for installation. If you race your XXX-S, you should have one of these as well as a standard diff to tune your car to the track. The retail price is $60. Contact Team Losi at (909) 465-9728 for more information.





"THEN I SAW THIS WHITE LIGHT..."

Maxx-Light introduces its line of high-intensity lighting systems for R/C cars and trucks. Available in amber, blue, white or red, the Maxx-Lights come pre-wired, and all you have to do is attach them securely to the body or chassis, and plug the harness into the receiver's battery slot, or, if you have a nitro vehicle, into any open channel. Maxx-Light also offers a set of brackets for installation in a T-Maxx or E-Maxx. Using the optional switch harness, you can also set the lights so that they turn-on when braking or when your Maxx truck shifts. Contact Maxx-Light at *maxx_light@hotmail.com* or fax them at (406) 549-4432.



TOP TOOLS FOR TOP DRIVERS

The next time you're at a race, take a look around and you'll find that more and more of the world's top drivers are stocking their pit-boxes with Hudy tools. They know that when it comes to quality, innovation and design, few, if any tools can match the reputation that Hudy has made for itself in just a short time. Who's using Hudy tools? How about these guys: Pavidis, Hirosaka, Hara, Steenari, Kanai, Saxton, Burch, Salven, Team Serpent, Associated, Losi, HPI, Kyosho, Yokomo, XRAY, Orion and many more. Hudy tools are available at your dealer, or phone (305) 639-9665 for more information.

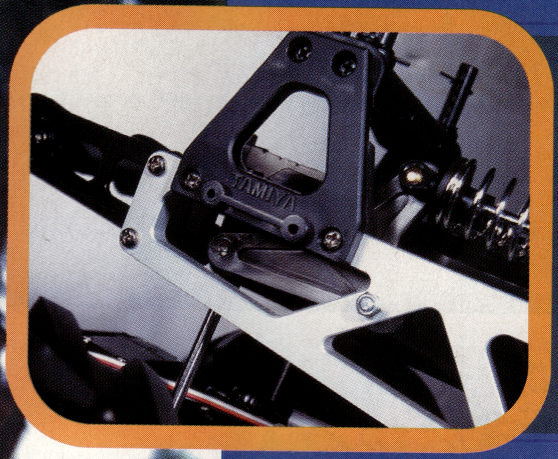


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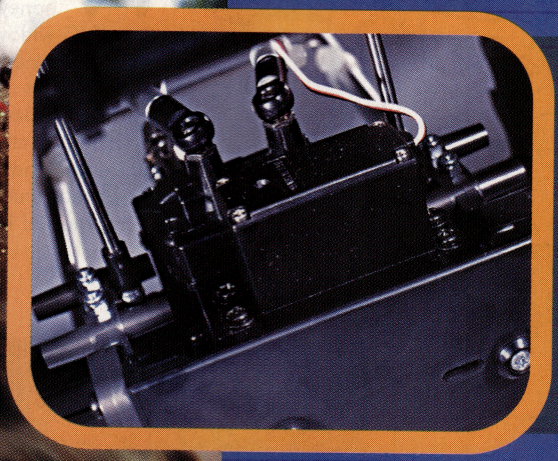


TXT-1 TAMIYA XTREME TRUCK
with Aluminum Ladder Frame **Kit Number 58280**

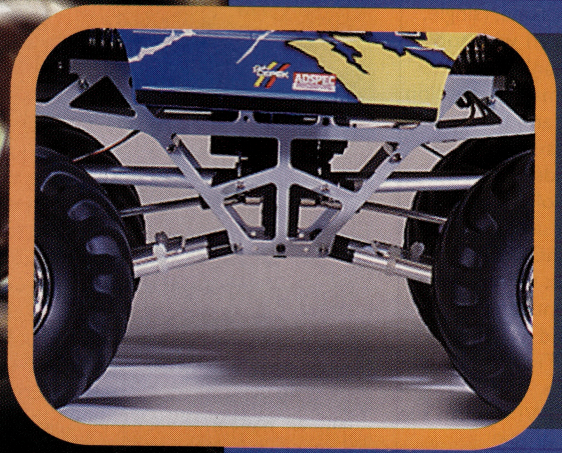




Multi-link solid axle cantilever suspension: Maximum articulation is made possible with the solid axle configuration borrowed from proven full-size monster trucks.



Includes hardware for either two-wheel or four-wheel steering with servo locations by the axles for the best possible steering response and precision.



Realistic aluminum ladder frame chassis: Provides not only a true-to-life monster truck appearance but it also adds unmatched durability and rigidity.

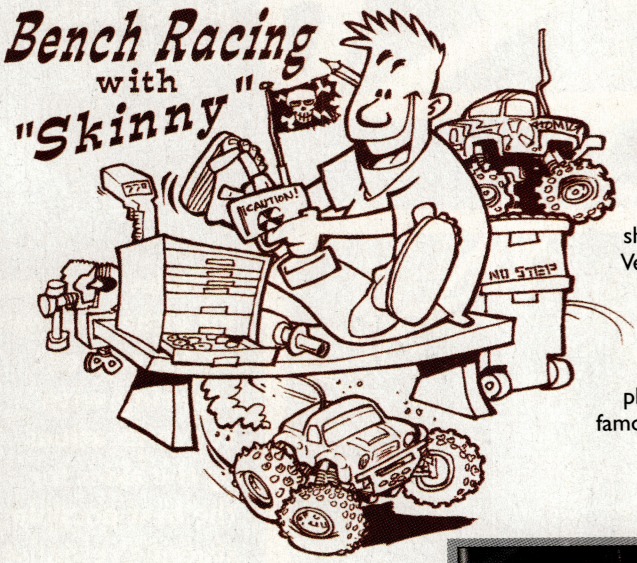
THE BOX

One hundred percent rock crushing, dirt eating Monster Truck. You asked for it and Tamiya delivered. Hey, we heard you! We understand your need to own the biggest, baddest truck on the block, true to its own Monster Truck heritage. We can empathize, so we built a truck that rocks from the box, everything you need to humiliate the souls that didn't do their homework. We even included a pre-painted as well as a clear polycarbonate body if you want your personal flair represented. And if you want to make a "whole different Monster", your TXT-1 is ready for a full arsenal of aftermarket parts geared to help you dominate. The TXT-1 is ready to do your dirty work, get to the Tamiya web site WWW.TAMIYA.COM and do your homework. All that's left is to demand it from your local hobby retailer. Then, and only then, you are ready to unleash the monster.

TAMIYA

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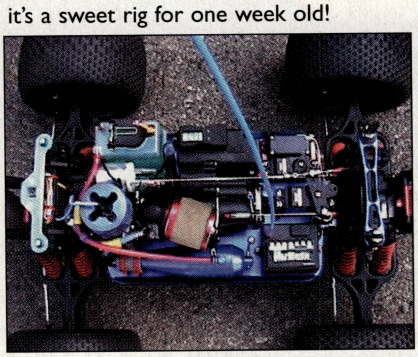
Well, my fellow R/C nuts, I'm back this month! Sorry about last month, but the "new wife" insisted I go on a honeymoon! You see, I got married Sept 22 and already she is an R/C widow! God bless her, she even let me go Maxxin' in Vegas on our honeymoon! Now that's a women!

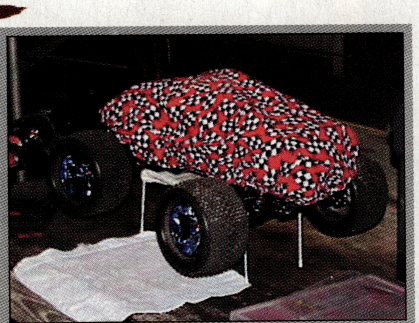
Moving right along. This month we have our first "truck of the month" from David Weinstock and his "pit-man" Paul Shapiro. Also this month, we check out some Interesting new products and some neat Skinny Mods. So read on and enjoy! Don't for get to send in photos of your trucks and ideas; remember, YOU too can be rich and famous for a month! Keep the rubber side down!—Skinny

READER'S TRUCK OF THE MONTH

Our first truck of the month! (Fans yelling in the background). It comes from David Weinstock, 39, of Van Nuys fame, (single, for you R/C babes out there!) with too much input from his "pit-man" Paul Shapiro. David works as a major television and movie sound engineer, and the only thing that is tricker than his T-Maxx are the full-race Go-Peds he rides and sells. Oh yeah, his BMW is kind of cool, too!

The picture speaks for itself, so I will only add that his Maxx is one week old and the parts list goes like this: OFNA .21 air filter, Dynamite servo mounts and steering saver, steering link set and all aluminum underside. David then put Ti skids and aluminum bumpers on there, and a *lot* of attention to detail and WOW! You can see it's a sweet rig for one week old!





SHOULD I COVER THIS?

New from Panther is this car cover for your R/C car body! I showed up at the race track with this cover on my Maxx (brave soul that I am), only to get pelted with questions of "OK, Skinny, what you got under there?" So I guess if you need the "stealth factor" in doing that private testing for brand X, and just can't afford letting the cat out of the bag, or want to play mind games with your fellow racers—this is for you! Of course if you live in a area that has frequent sandstorms, lets say planet Zeron where Jaba-Da-Hutt lives, and don't want to get your body sand-pitted, that's cool too! Kidding aside, it is kind of cool and does what it is supposed to do, and for the price, why not!

RUBBER BABY BUGGY BUMPERS

Say that three times fast! Another new product from Panther is these rubber bumpers that plug into your double rail bumper on your Maxx (such as those expensive bumpers from Hardcore)! They give you a little more shock absorption and take some of the impact stress off of your bumper mounts, which is good.

I raced them a whole night and they stayed on! (I'm surprised!). I ran them on the back, because on the front, with the curved bumper, they stuck out at an angle and to me did not look like they would help. On the back it went! After the races were over you could see they got a workout! The boys I race with are ruthless! If you worry about stuff like this or are running minimum protection for bumpers, then this is for you.







AND NOW FOR SOMETHING COMPLETLEY DIFFERENT

Ever been out with the guys and said "Man, I wish I had a portable dyno stand to fix my truck's motor. And Dude, if I could just carry my truck with it also!" Ever say that? Well then "Tune N Tote" is your ball of wax! I tell you, show up at your running place with this and the boys will think you got a big raise at work! This is truly over the top for chi-chi factor.

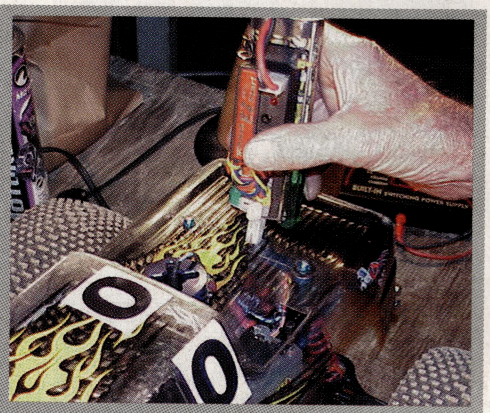
Actually, the people over at Xtreme Engineering, (218-847-5813), have got something here. Especially with the T-Maxx. It is hard to tune your Maxx without a load, and after using this stand I'm sold. Of course, all the comments about me getting a big raise at work didn't hurt either! Adjusting carburetors, idle, shift points, brakes and much more are now a snap with the TNT. Just put the included bungee on your A-arms and you're ready to tune!

The drawer is big and roomy and carries most of what you need to work on your R/C. It definitely gives your pit area that factory look when you walk up!

I did find a couple of flaws with an otherwise way-cool item. One: if you run, lets say, the RPM offset rims on your Maxx (like I do on my thumper), the truck gets a little wider than the rollers' width. Thus the tires rub on the ends of the box where the rollers attach! Two: When carrying the box to your destination, you must be careful not to tilt the box or the drawer will slide out! Putting a latch on to lock it would be a great help to stop this.

If you are so far into R/C cars that you have to tweak everything and just have to have the coolest thing, then you need one of these! Personally I really like it and it will be a permanent part of my pit setup. In fact, check this out; I might mount a light to it to make it the "total" work area! Hmmm?

IS THAT AN EZ-START IN YOUR FRIES?



Although not a Skinvention, it definitely belongs here! Mr. Weinstock, being the total "Tweak Freak" that he is, wanted more out of his EZ-Start! He wanted something totally compact that would fit in his pocket, start the truck easily and have the stuff you need to make the truck run when it was out on the back forty!

As you can see in the photo, the plug is attached to the battery, making it into a stinger setup. This makes it more like a tool where you just stick it in, push the button and go (Check out the photo). Much better than having to plug it in and hassle the loose wires and all. This is much more efficient than a stock setup!

Also, if you look around on the pack, it has a screwdriver Velcro®'d on so you can do on-the-spot tuning. In the back it has extra body clips to replace on the spot! This is a way-cool idea to make the EZ-Start into a tool like this. You can carry it in your pocket, and when Maxx conks out a half mile from your car or pit you won't need to bring it back! You can start it there and do your fixes and be off for more fun! Let's give Dave two Cranties up for that idea!

I'M ON A QUEST AND NEED YOUR HELP!

My fellow truckers, I have decided to go on a quest. "The search for the Holy T-Maxx Race Track." I want to go to a place where T-Maxx's race in abundance and the race track is total nirvana. E-mail me at *bighorsevan@msn.com* or over to *R/C Car* at *doogie@hi-torque.com*. Please help a fellow Maxxer, and heck, I'll even do a story!

NEXT MONTH IN BENCHING

I have in my hot little hands that HB.18 that people have been talking about. We will test it out in a Maxx and see how she runs; stay tuned!

[FEEDBACK]

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



DEAD IN THE WATER

I have an original Associated RC10 and I can't get the car to work. I got a brand new battery and all the wires are connected but it just won't work. Do you know why?

Chris Moretti
via *rc-car.com*

Although there are many places to start looking, we suggest that you concentrate first on the car's speed control (whether it's the original mechanical unit, or an electronic speed control). Regardless of which type of speed control you have, it must be plugged into the correct channel on the receiver. If it's an ESC, it should be plugged into channel 2. If it's a mechanical unit, it may have a separate two-wire plug that should go to the receiver's "B," or battery, slot. If the mechanical speed control has a three-wire plug, it also should be plugged into the channel 2 slot. After this, we would recommend that you check that the radio and receiver have the correct crystals installed (the transmitter crystal should have "Tx" on it and the receiver crystal should have "Rx". Both must be on the same channel). If this doesn't fix the problem, then you should have the radio control system checked by a hobby shop.

OVERCOMING SPEED LIMITS

I want to get a lot of speed out of my OFNA Z-10. My friend has an HPI RS4 Rally with stock gears and a 17-turn motor, and it kills me. I can't seem to find gears that will fit due to my car's motor mount. What do you guys recommend?

Mike
via *rc-car.com*

First off, if your friend is running a hotter motor than yours, it's virtually impossible to make your car go as fast as his. If you have similar motors, and you feel that the problem is simply gearing, you have a solution. If your car's motor mount prohibits you from using a certain-size pinion gear, then you have to use a different spur gear, one that will mesh with the pinion. Changing the spur gear has a less dramatic effect on the overall gearing (as the spur is much larger than the pinion, a one-tooth change on the spur has very little effect, while a one-tooth change on a pinion can have a drastic impact). Most any aftermarket spur gear should fit your car (Kimbrough, Robinson, HPI, etc.). Good luck.

TWEAKED TOURING CAR

Hello, I recently bought an Associated TC3 RTR. Actually, it's my first real R/C car, and I'm having some troubles because the car seems to be tweaked. Sometimes it turns more to left than to the right. I would like to know how I can solve the problem and also what are the best hop-ups to get first. Thank you.

Dário Janeiro
via *rc-car.com*

We also found during our test of the TC3 RTR that the car was slightly tweaked. Tweak can be corrected by changing the spring pre-load of the shocks. A simple way to gauge tweak is to find the exact center of the front and rear ends, make a mark (either by scribing a small line with an X-Acto blade or by using a thin permanent marker), then lift one end of the car from a flat, level surface using the blade of an X-Acto knife. As you lower the car back down, note how each wheel touches the ground. Does the left wheel touch before, after, or at the same time as the right? Ideally, both wheels should touch simultaneously. If not, the car is tweaked. If the left wheel touches first, increase the pre-load of the left shock at the opposite end of the car. Vice-versa for the right wheel. Only slight adjustments should be needed to un-tweak the car. The TC3 RTR really doesn't need hop-ups, although a motor heat-sink will keep the car running cooler.

CRANKY ENGINE

I have an HPI super nitro rally. My problem is that it's hard to pull the starter cord. The engine doesn't look like it's flooded because I don't have any fuel in the tank and the fuel line and I un-flooded the engine (nothing came out, though) to make sure this problem is not caused by flooding. I read from the HPI web page that I should be able to pull the starter cord without lifting the car from the ground. Is this normal or does my engine have some problem? Thank you.

Alex
via *rc-car.com*

Sometimes, engines that are new or relatively new can be difficult to turn over. This is due to the close fit between the piston and the cylinder sleeve. The term "broken in" means that these two parts have worn-in to each other. When the engine is broken in, it is easier to turn. This may be the case with your engine, as we have found that HPI's 15FE (the engine that came with your kit) is very easy to start after break-in. As you have already ruled-out excess fuel in the combustion chamber (flooding), this is the likely cause of the problem.

QUIET THAT BUGGY!

I have a Team Losi Triple-X buggy, and I think it has always been kind of noisy. What do you think is the best way of cleaning the transmission? And what kind of products should I use, that aren't too expensive?.

Aaron Hedensten
via *rc-car.com*

More often than not, the cause of a noisy car is a worn-out spur and/or pinion gear. Although it's a good idea to routinely clean and rebuild your transmission, we recommend that you install new pinion and spur gears first. If this doesn't quiet things down, then look inside the gearbox. Signs of a worn-out gearbox do include noise; however, the best indication that your gearbox needs a rebuild is a visual inspection of the gears themselves: worn or pointy gear teeth mean it's time to replace the gears. Rebuild your diff when its action becomes gritty.

BIG-BLOCK CONVERSION

I own a Traxxas T-Maxx. While surfing on eBay I found this guy selling a .21 OFNA Picco engine with 2.10 horses and 29,000

rpm. He was also selling a .21 Rossi engine with similar specs. So when I found that great deal (or so I think) I just had to know which one was better for the truck. They are both set at a price of $139.99. Which one is worth the money? My third question is which one can I get replacement parts for if something breaks. The seller also said that if you bid on this object you will need a .21 kit for it. So I went to view other auctions and he had a conversion kit (I don't know which brand). He was selling that for $129.99. Is that a good price for that or is there a bett er one that is more affordable?

Albert
via *rc-car.com*

We know some people who have had great success with the OFNA Picco engines, but in our experience, we have found that the carbs on these engines don't like to hold settings. The Rossi engine would probably be a better bet, although this depends on the age and condition of each engine. The money he is asking isn't out of the question, although we would pass on the deal if the engines had a lot of miles on them (more than two or three gallons of fuel, unless they've been rebuilt recently). The best .21 kit on the market right now is by Hardcore Racing, although the kit from New Era is also pretty good.

IS 40 MPH TOO SLOW?

I have a Tamiya TB Evolution, LRP Quantum Competition ESC and a Trinity D4 7-turn mod motor and high-voltage 3000mAh pack. What I want to know is why it only goes around 40 mph? Many people say that it should go faster. Right now the pinion gear is 47 and the spur gear is 72.

Gerry
via rc-car.com

Gerry, when it comes to the "how fast is your car" issue, most people tend to exaggerate much in the way they'll tell you about the size of the fish that "got away." In our experience, an R/C car that goes 40 mph is nothing to sneeze at. Although some of the "insane speed run" people have gotten their cars to top 100 mph, they can only do so with special motors and a huge number of cells. If you plan to use your car for anything other than sheer top-speed, this would be impractical.

PARTIAL TRUTHS

I was looking at buying a Novak Rooster ESC and a Trinity Green Machine 3 Pro stock motor, but the guy at the local hobby shop said no because you can't have a timed motor with a reversible ESC. I don't understand this?

Dominic
via *rc-car.com*

Well, the hobby shop guy is only partially correct. Motors with anything other than 0-degrees of brush timing work best when they are spinning in the direction in which they were intended to spin. You can operate them in reverse, but they'll be much slower. You also wouldn't want to operate them backwards for any extended period, as they'll overheat and wear more quickly. So the answer to your question is actually yes, there's nothing wrong with using the ESC and motor combination you described—just don't drive in reverse for too long at a time. What the guy is referring to is when a motor is run permanently in reverse, such as some dual-motor applications like the Tamiya Juggernaut or Clod Buster. Here, you would need either a specially wound reverse-rotation motor, or a mod motor whose timing can be adjusted to 0-degrees.

STALE FUEL RUINS RUN

If I don't run my car for a long time (like two months), and I didn't take the gas out of the tank, would my engine get slower? I did this and it seems like it did. Should I get a new engine because of this?

Mike
via *rc-car.com*

It's always a bad idea to leave any fuel in the tank after you're done running. Fuel is hygroscopic, which means that it can pull in moisture from the air. Mix moisture with the metal parts of your engine and you have a problem. More than likely, if there's any damage to the inside of your engine, it's in the crank and bearings. Disassemble the engine and inspect its parts for corrosion. In the future, we recommend that you always run your engine until it's out of fuel, and if you're going to be storing the car or truck for more than a couple of weeks, we recommend that you place a few drops of after-run oil in the carb, then crank the engine a couple of times to distribute the oil to the engine's parts.

BY THE NUMBERS

I've purchased a motor that was dyno'd. I have the numbers from the dyno and wonder how I can read the numbers. Any ideas?

Chuck Collins
via *rc-car.com*

Dyno numbers are by themselves not that useful unless you have another motor to compare them to. In general, you want a motor that has the highest power number (in watts) and the best efficiency (the highest percentage). By itself, rpm isn't all that critical; you can have a motor that spins to the stratosphere, but if the motor doesn't have to torque to bring the car along for the ride, it's a useless figure. With stock motors, efficiency is less an issue because of the capacity of today's batteries. For mod, especially low-turn motors, a motor that is more efficient, yet still makes good power, is preferable over a motor that might make slightly more power, yet is less efficient.

HYDRA DRIVE MIA

I've been out of racing for a while now, and when time permits I'm going to get back into electric trucks. As it's been about five or more years since I was racing, a lot has changed, most of which seems to make sense. Just one thing that doesn't, however, is the lack of a Hydra Drive in the latest Losi trucks, such as the Triple-XT Matt Francis Edition, or so it sounds from what I've read. When I was racing, they were the latest and hottest thing to have, what happened to them?

Richard
via *rc-car.com*

Good question, Richard. The answer might surprise you, but it's not the trucks, but the tracks that have stopped people from using the Hydra Drive. Tracks have become blue-grooved and relatively smooth, so the added rotating mass of the Hydra Drive isn't worth the tradeoff. According to Gil Losi Jr., he would still use a Hydra Drive if he were racing on an "old school" actual bumpy off-road track, as the Hydra would definitely provide an edge.

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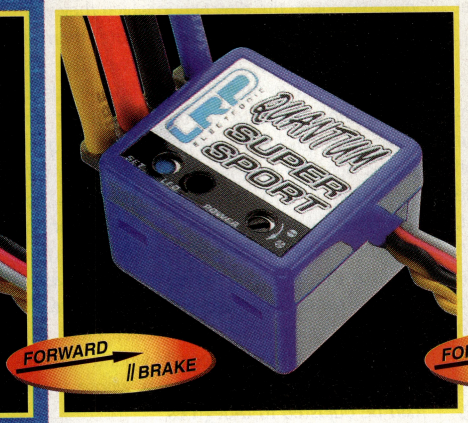
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- For 12-36 Turn Motors
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#LRP8460 Quantum Pro Sport



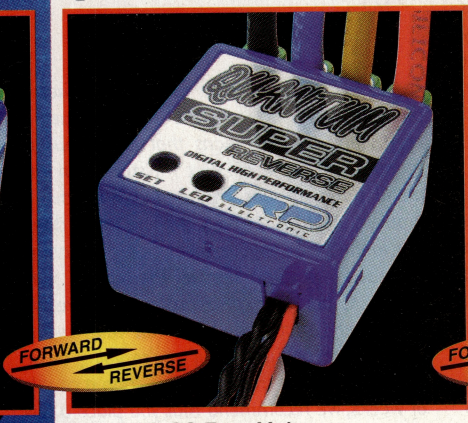
- Over 7 Turn Motors
- 155 amps continuous
- 0.00073 Ohms, 2500 Hz
- Less than 1" by 1" footprint

#LRP8410 Quantum Reverse



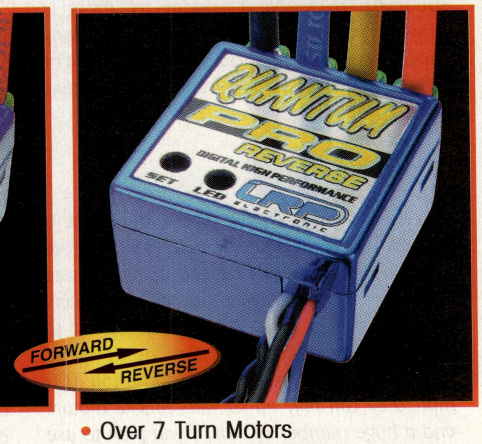
- For 16-36 Turn Motors
- 70 amps continuous
- 0.0038 Ohms, 2100 Hz
- Approx. 1" by 1" footprint

#LRP8420 Quantum Super Reverse



- For 13-36 Turn Motors
- 90 amps continuous
- 0.0023 Ohms, 2300 Hz
- Approx. 1" by 1" footprint

#LRP8430 Quantum Pro Reverse



- Over 7 Turn Motors
- 120 amps continuous
- 0.00175 Ohms, 2500 Hz
- Approx. 1" by 1" footprint

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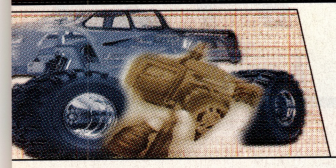
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GS Racing Storm Pro



GS Racing is coming on strong! We hadn't even heard of this company until a couple of years ago, when the extent of their product line was silicone exhaust couplers and servo-savers. Now, GS has become a full-fledged car manufacturer, with its Sonic 1/8-scale on-road racer, and more recently its Storm off-road buggy. The Storm has met both sales and critical success, thanks to its solid design and excellent price-to-feature ratio. In the past, if you wanted a Storm, you had a choice between the fully assembled almost-ready-to-run model, or the complete RTR—both of which were considered to be sport-level cars.

What you may not know is that GS originally developed the Storm as a full-fledged racing buggy. It just happened that the sport-level models made it to the hobby stores first. Now, GS has unleashed the Storm Pro to the racing market, and we say it's about time! Designed to go head-to-head with the world's best—including the world champ Kyosho MP-7.5 (a car on which the Storm, and many other cars, are loosely based)—the Pro's feature list reads like an aftermarket catalogue. With everything a racer needs in one box (and this is the only Storm model that you actually build yourself), the Pro looks to be one of the most promising new launches in off-road nitro. But the question we ask is this: features aside, can the Storm Pro really compete? We will soon find out!

A World Series car at

BUILDING TIPS

First and foremost, there is a supplement sheet to the instructions. Find it and read it!

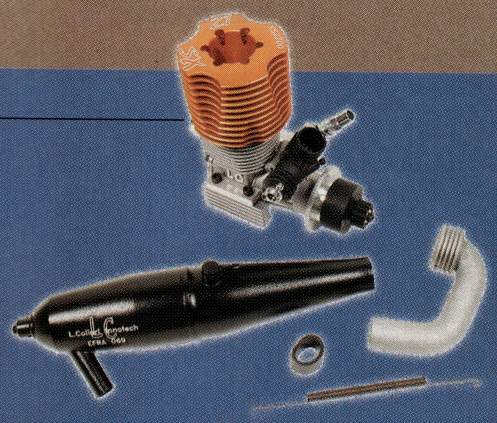
Steps 11 and 12: The front and rear driveshafts are not interchangeable. This isn't mentioned in the text, however. If you study the diagrams, you'll figure out that the pair of driveshafts with the longer axles go in front.

Step 14: If you want to figure out how to install the rear hubs' toe-in inserts, you'll have to turn to the setup sheet located at the back of the manual.

Step 27: The holes in the engine mounts are offset. Make sure you install them so that they are offset to the rear of the car.

Steps 29 and 30: The holes in the servo arms must be reamed slightly to accomodate the 3mm machine screws.

Step 39: We aren't told which hole in the rear arms to install the shocks. Mounting the bottoms of the shocks to the outside of the arm will stiffen the shock, while moving the shock inward will decrease damping.

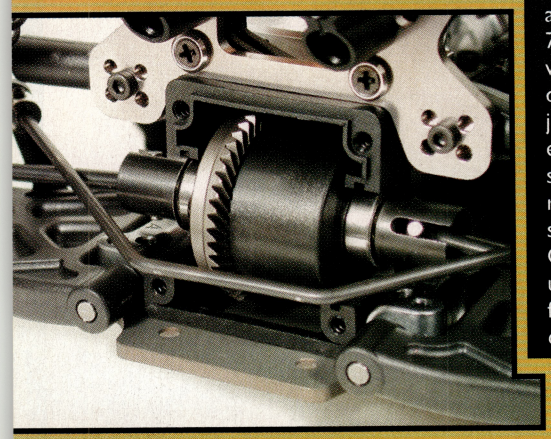


TEST EQUIPMENT

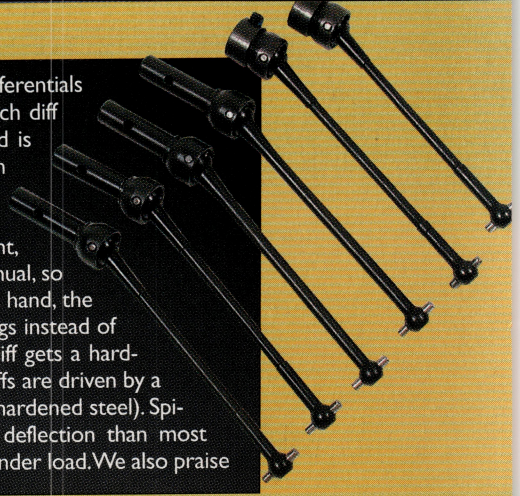
- L. Collari Innotech Xs Super Competition Off-Road engine, manifold and tuned-pipe.
- A pair of Futaba S94150 digital servos
- Airtronics Caliber M8 transmitter
- Novak Xxtra synthesized FM receiver
- O'Donnell race fuel (30-percent nitro)
- Medial Pro Woops pre-mounted tires and wheels

a Little League price

GS Racing Storm Pro



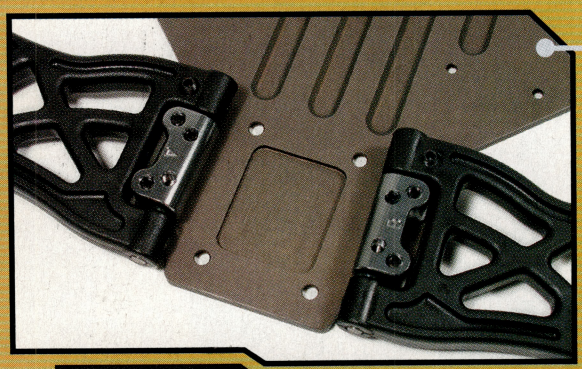
Three "industry standard" bevel-gear differentials form the basis for the Pro's drivetrain. Each diff has metal internal gears for durability, and is O-ring sealed so that it can be filled with silicone fluid. Shame on GS (and any other manufacturer) for not including any fluid with the kit. A base setup of 3000 front, 7000 center and 1000 rear is given in the manual, so why not include this in the kit? On the other hand, the diff outdrives are supported by bronze bushings instead of just the plastic diff housings, and the center diff gets a hardened-steel spur gear, and the front and rear diffs are driven by a set of spiral-cut ring and pinion gears (also of hardened steel). Spiral-cut gears are able to operate with less deflection than most straight-cut bevel gears for greater efficiency under load. We also praise GS for including a full set of CVD-style universal driveshafts not only for the front and rear wheels, but for the two center driveshafts as well.



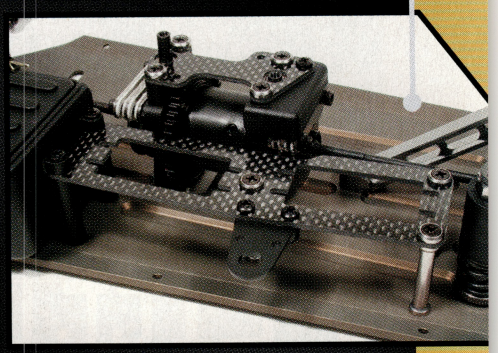
The Pro also gets beefed up in the upper regions of the suspension with a pair of extra-thick 3.5mm aluminum shock towers and an aluminum bracket for the front upper hinge-pins. We particularly liked the overall ruggedness of the Pro's suspension, especially the liberal use of setscrews instead of E-clips to secure the hinge-pins. The shocks are also new to the Pro kit, and are hard-anodized and Teflon-coated aluminum for smooth action and greater durability. Silicone "boots" are provided to keep dirt from penetrating the shock seals and contaminating the oil.

The rear hubs are also of brilliant design, featuring small plastic inserts that allow you to adjust the car's rear toe-in angle from between 0.5, 2 or 3.5 degrees, depending upon the orientation of the inserts. All of this without having to buy a single hop-up part.



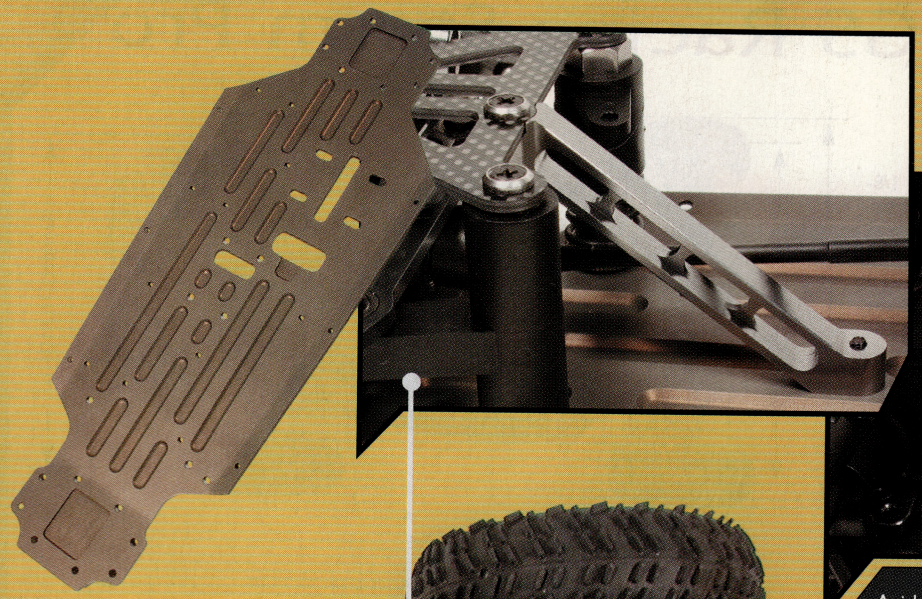


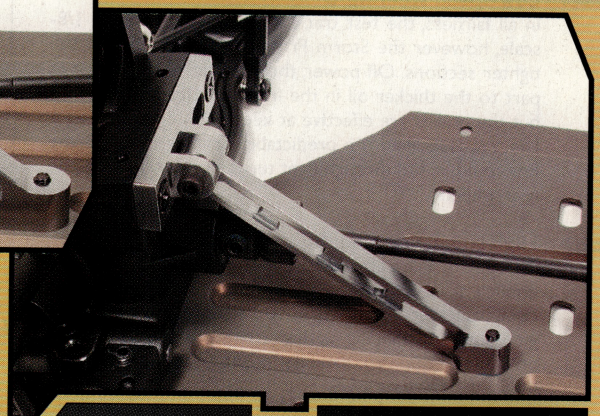
The one weak area on the regular Storm is its arm mounts—especially the rears, which are, in our opinion, simply not up to the task. This has been fixed on the Pro, thanks to its machined aluminum arm-mounts for both the front and rear suspensions. These can be reversed to alter the amount of front kickup and rear anti-squat. Installing the front mounts right-side up yields a total of 6 degrees of kickup, while installing them upside-down provides 10 degrees. In back, you have a choice of either 1 or 2 degrees of anti-squat, depending on how the mounts are installed. The best part about this design is that unlike most other nitro buggies, the Pro's arm mounts and gearboxes are separate pieces. This divides the vertical forces of the suspension from the twisting forces of the gearboxes, and now that the mounts are strong enough, the chances of stripping or breaking one is slim to none.



A molded radio box provides safe haven for your valuable and delicate receiver. We found the box to be little on the cramped side for our five-cell "hump" pack and medium-sized Novak Xxtra receiver. They both fit, but with very little room for shock-absorbing foam. The radio tray that attaches to the box is made of graphite, and is perched on a trio of aluminum posts—no flexible plastic posts here!

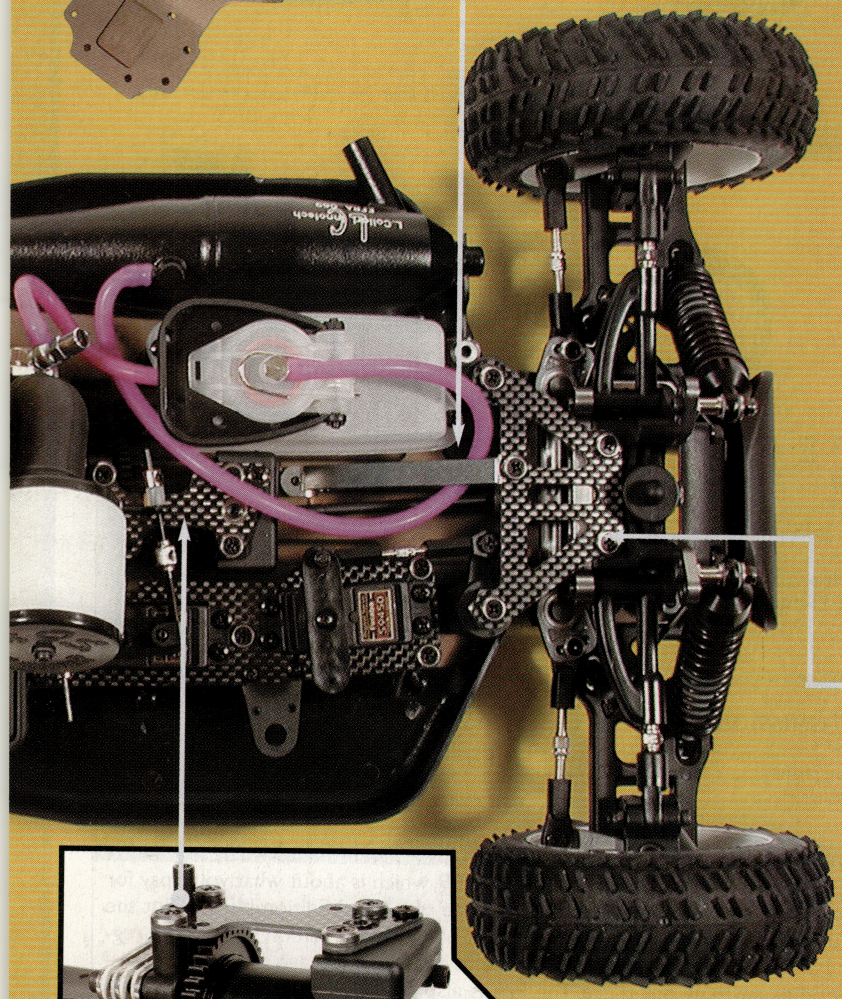
OUTSTANDING FEATURES

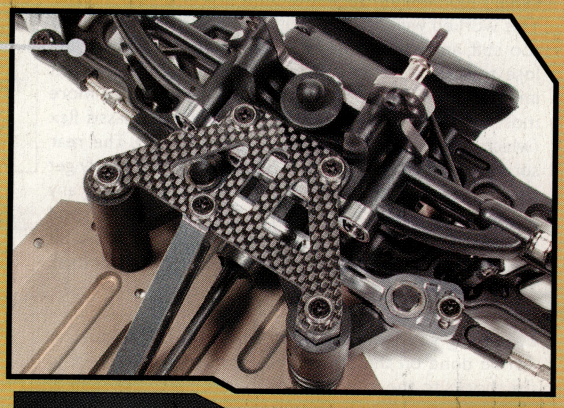




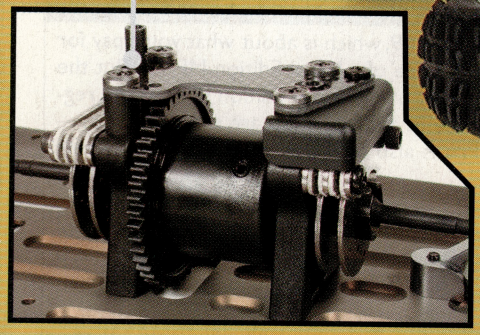
Aside from the bags of parts, the first thing we noticed when we opened the Pro's box is its beautiful new chassis. Machined from hard-anodized and Teflon-coated 7075 T-6 aluminum, the Pro chassis has been lengthened to increase the Storm's wheelbase, improving its handling and stability on demanding "supercross" style tracks. Where possible, the 3mm chassis has been end-milled to remove unecessary material and reduce its weight. It will be shame to run this chassis and get it all scratched-up! Just a reminder: remember to compensate for the longer chassis when drilling the body's mounting holes.

We always liked that the standard Storms came with tie-rod-style chassis braces (optional items on some other kits), but the Pro kit goes one better by providing a pair of one-piece 7075 T-6 braces. These bolt firmly to the lower deck and tie to the front and rear gearboxes to improve the fore/aft rigidity of the finished chassis.





Included in the Pro kit are the nicest set of steering bellcranks we've seen in a nitro buggy kit. Not only do the bellcranks themselves ride on smooth ball-bearings, but the steering plate also gets bearings. Without the servo connected, the bellcranks pivot without the slightest hint of binding. The steering plate is also new in the Pro kit. It's machined from aluminum, and offers a choice of three positions for the steering tie-rods as opposed to the two of the regular car. The bellcranks have the obligitory built-in servo-saver, and are braced against the front gearbox by a graphite plate.



The responsibility of stopping the Pro is the concern of a dual-disc brake setup. Each end of the center diff is adorned with not one but two steel discs, each clamped by steel pads with fiber linings. The sheer braking force is impressive, and the discs can be run with very little play, which makes them even more responsive to the brake trigger. Both brake cams pivot on ball-bearings, and GS has also added a molded plastic splash guard to protect the front discs from getting showered by spilled fuel, which will ruin brake performance. Although the center-diff supports are molded pieces, they are capped with a graphite plate to help stiffen things up a bit.

GS Racing Storm Pro

REPORT CARD
Test location: Hot Rod Hobbies, Santa Clarita, CA
Track type: hard-packed stadium-style with large double and triple jumps.

Low-speed steering: B
In all fairness, the test track was a little tight for a 1/8-scale, however the Storm Pro worked well through the tighter sections. Off-power, there's a bit of push (due in part to the thicker oil in the front diff than in the rear), but the brakes are effective at keeping the car on a tight line. We also liked the predictable manner in which the Pro could be slid through tight turns and steered with the rear wheels.

High-speed steering: B
The Storm Pro rails through high-speed sweepers well enough that you'll barely need to lift the throttle. The compliant suspension works to keep the car from snagging ruts and flipping at high speeds. If you keep the power up, the Pro exhibits a good deal of throttle-induced oversteer when exiting faster turns, but this is easy to control using by adding even more power and allowing the front wheels to pull the car straight.

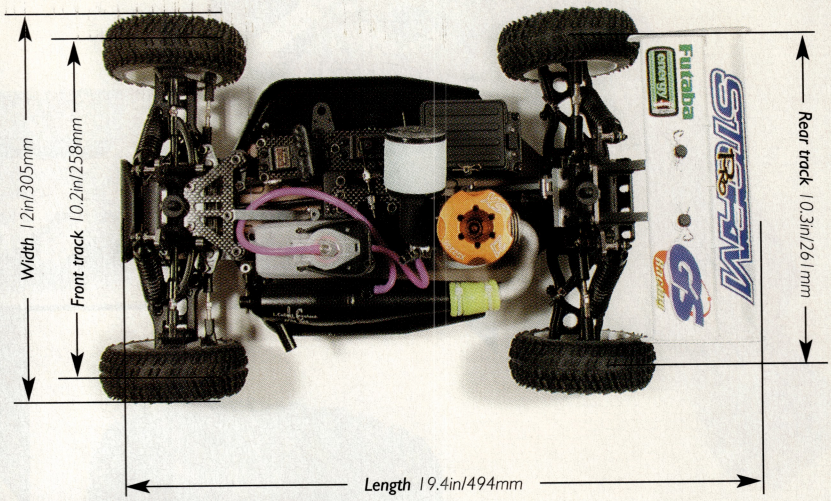
Acceleration: A
The supplied three-shoe racing clutch works awesome and delivers power efficiently. On dirt, we could spin all four wheels from a standstill. The clutch was up to the task of handling all the power the Collari Innotech .21 could muster, although the clutch shoes exhibited a good deal of wear after only a few runs.

Braking: A
Phenomenal. The Pro's dual disc brake system, with its steel discs and fiber-lined pads, brings the nearly eight-pound, 45mph car to a screeching halt with ease. We liked the built-in splash guard, and the linkage made it easy to apportion braking power to the front or rear wheels. Throughout the test, we noticed very little wearing or fading. These should easily last a season.

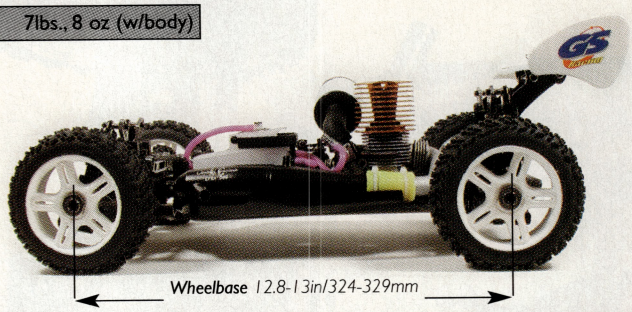
Suspension: B
Our problem with the Pro's suspension lies not so much in the design, but with the factory settings. The stock setup recommends the use of 35 wt. oil in all four shocks. This worked well up front, but the rear shocks were way too stiff, and caused the back of the car to bounce and lose traction. A drastic change to 20 wt. caused a vast improvement. The springs are also a bit too stiff more most bumpy tracks, and this accentuates the chassis flex (which happens at the middle of the chassis). The rear springs especially are a little too long (we could barely get the rear of the car low enough, even without using any pre-load spacers). Overall, the suspension does a good job of soaking up bumps and large jumps, but felt a bit choppy in the smaller stuff (a better setup should fix this).

Adjustability: A
Everything you would need to adjust on a 1/8-scale car can be done on the Storm Pro. From the rear toe-in to the shocks to the camber links, the Pro should be able to work on any type of surface.

Durability: B-
All-in-all, we give the Pro high marks for ruggedness. There were just a few complaints: the rear wing is attached with either body-clips or E-clips. We learned the hard way that the E-clips are included for a reason. We also found that after a hard shock, the lid to the radio box had a tendency to pop off. The worse problem, which really isn't related to durability, is that the supplied engine mounts allow the flywheel to protrude too far into the chassis. The flywheel is actually flush with the bottom of the chassis. Guess what happens when the car bottoms-out its suspension? Right, the engine stalls! A smaller flywheel slot, or a slightly taller engine mount would remedy this.



WEIGHT 7lbs., 8 oz (w/body)



SPECS

TYPE	1/8-scale nitro buggy
PRICE	$429.99
CHASSIS	
Type	machined aluminum
Material	hard-anodized Teflon-coated 7075 alloy
SUSPENSION	
Type	independent lower A-arms w/adjustable upper links
Damping	hard-anodized aluminum, oil-filled shocks
TRANSMISSION	
Type	shaft-driven 4WD, triple gear-diffs
Drive shafts	universals
Bearings	metal-shielded ball bearings

Final Score

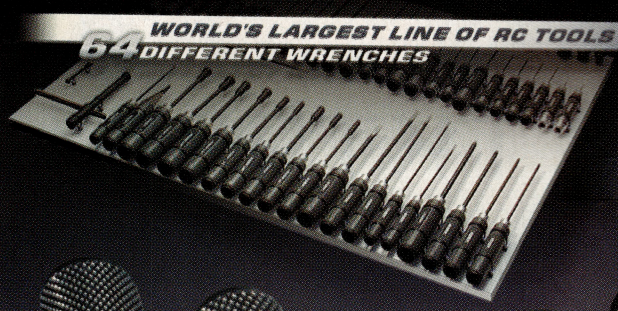
Highs: You can buy a Storm Pro for $429.99, which is about what you'd pay for a MP-7.5, and about $300 less than the price of a Kanai Edition MP-7.5. But the Pro's equipment list is much closer to that of the Kanai Edition than to the regular MP-7.5. The quality of the parts, the fit and the finish are simply flawless—as good as anything out there. The Pro is also beefier than the regular Storms we've tested.

Lows: The instructions are good, but don't do a great job of explaining some of the different parts used on the Pro version. The flywheel protrudes too much through the chassis slot. No shock oil or diff fluid is included—when will manufacturers learn!

The verdict: GS has hit a home run with the Storm Pro. The only car that might top it is the MP-7.5, but that's it. It's that simple.

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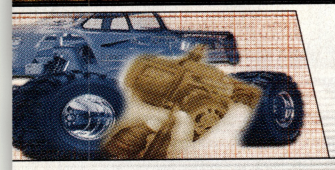
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Technokit TKT99E



Even if you've been into R/C for years, chances are that you've never seen a 1/5-scale car up close (or, for that matter, far away). Immensely popular in European countries, these large (nearly four feet in length) machines have never really caught on here in the U.S. We can tell you why. First, the initial cost of getting into 1/5-scale is higher than with other scales. Second, because of their size and speed, these giants require a lot of room to stretch their legs. Finally, we believe that most people associate modern 1/5-scale cars with the primitive 1/4-scale that enjoyed moderate popularity during late '80s through the early '90s. Let's address each point separately.

Yes, 1/5-scale is more expensive at first. But, once the intitial capital is plunked down, the cost of running the car is comparatively less expensive than with most other scales. These cars run on pump gas, which is much cheaper than nitro fuel (or battery packs), and most of the cars are designed with inexpensive molded "breakaway" parts that give during collisions.

There's no way of getting around the size issue. If you're going to spend over a grand on a 1/5-scale car, we only recommend you do so if you have a suitable place to run it. In Europe, there are many permanent tracks for 1/5-scale racing. Here, we are relegated



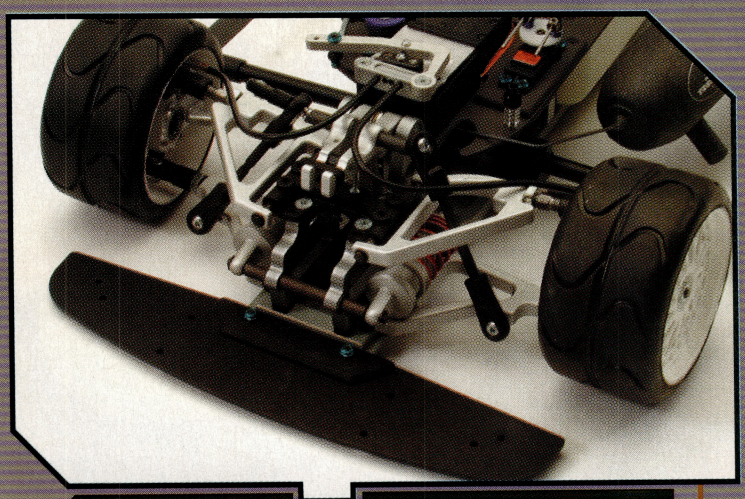


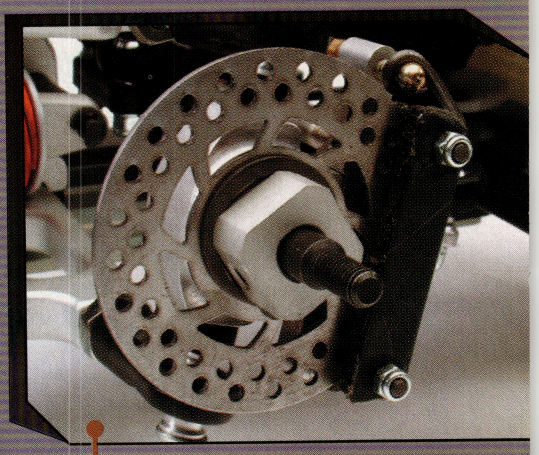
The "E" stands for evolution

to vacant parking lots. There are pockets of large-scale R/C clubs throughout the U.S., and they do hold organized events on makeshift tracks. Fortunately for SoCal residents, a permanent large-sized racing facility just opened up in Sun Valley, California. We have already seen a surge in the popularity of 1/5-scale because of this. If you build it, they will come.

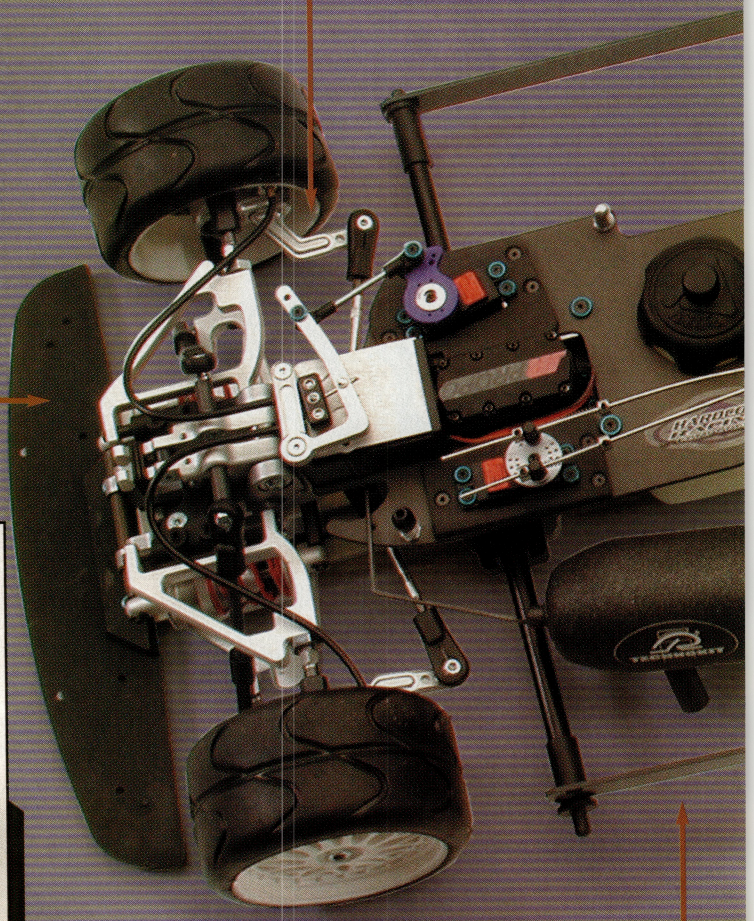
Lastly, we can tell you that any modern 1/5-scale car is as sophisticated as any R/C kit of any scale. Some of the more elaborate cars feature fully adjustable suspensions, trick adjustable diffs and four-wheel disc-brake systems that mimic those found on full-sized cars (some cars even have hydraulic brakes!).

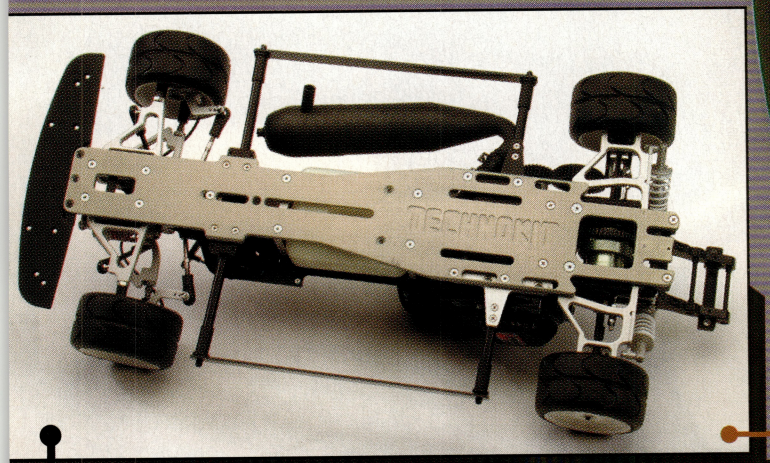
Technokit is an Italian company that makes one of the nicest 1/5-scale chassis we've seen. We saw the company's newest car, the TKT99E, at the '01 Chicago Hobby Show, and couldn't wait to get our hands on one for evaluation. And with the new Sun Valley facility, this very well may be the first time a U.S. R/C magazine has ever tested a 1/5-scale on a purpose-built track. The TKT99E comes fully assembled from the factory in Italy. An engine is included, but you must purchase and install the servos and receiver.

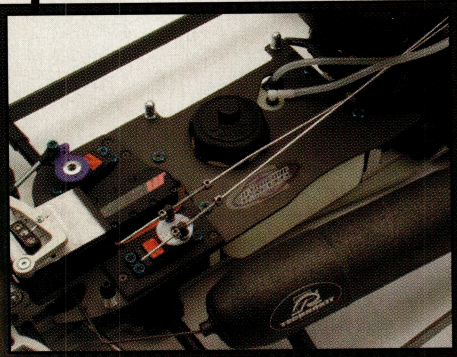




Up front, the TKT99E has double-wishbone suspension made mostly from nicely machined aluminum parts. The steering spindles have a unique two-piece design that allows the actual steering arm to be changed in the event of future updates (or replaced less expensively if damaged). The front oil-filled shocks are placed inboard in Formula 1-style, and are actuated by pushrods. The pushrods connect to a pair of aluminum rockers, which are linked together by rubber O-rings. This assembly acts as a front sway-bar, and its stiffness is determined by the number of O-rings installed.







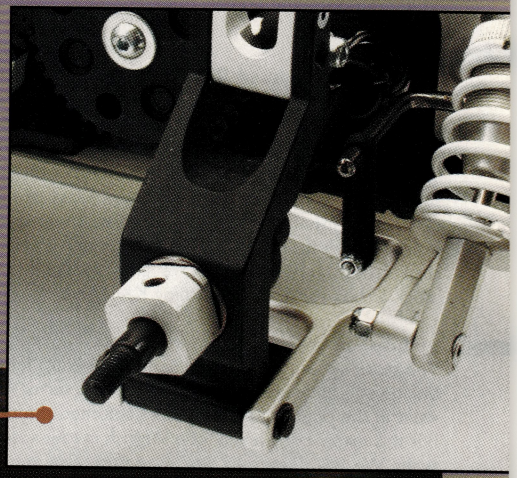
OUTSTANDING FEATURES

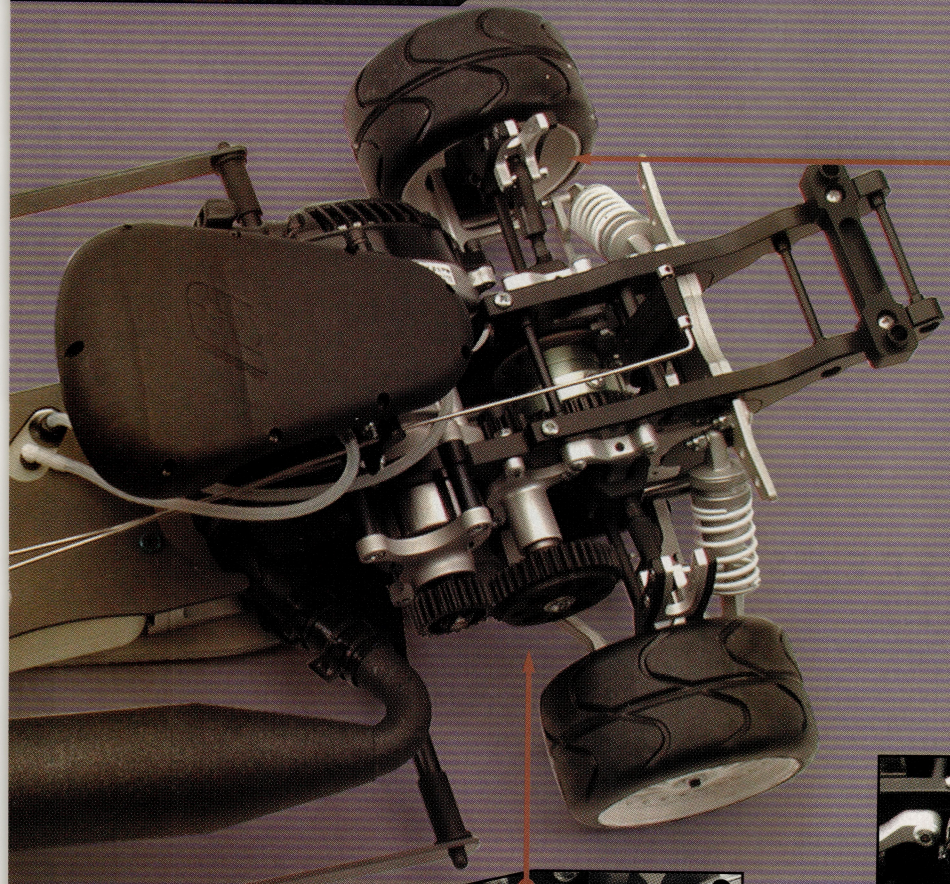
As with most 1/5-scale cars, the majority of the TKT99E's strength comes from its lower chassis plate. Technokit provides a 8mm-thick ergal chassis that has been given a hard-oxidation treatment that gives it greater resistance to torsional forces (in plain English, this means that the chassis is harder to twist). Wherever possible, the chassis has been CNC-milled to reduce its weight without sacrificing stiffness. The TKT99E is actually an evolution of Technokit's TKT99 car. Part of the update includes not only a longer wheelbase, but the new chassis places the engine further rearward and closer to the ground to improve balance and create a car that's easier to drive.

The upper chassis is made from aluminum, and serves as a mount for the radio gear and 700ml fuel tank. The tank is made from a special plastic that is resistant to moisture and swelling. The stock kit comes ready to accept Multiplex servos (which are very popular with European 1/5-scalers), but you can purchase optional plates with which to install most other types and brands of servo.

Technokit TKT99E

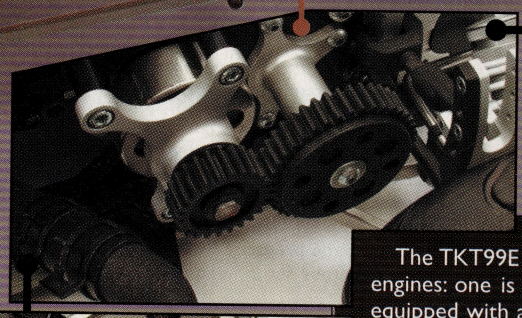
Stopping all this mass and momemtum rests on the (fortunately broad) shoulders of a four-wheel disc-brake system. Up front, a pair of cable-actuated discs, located at the front axles, bring things to a halt. Technokit has developed a special lever-linkage that allows for an equal brake pull from left to right. We found that the system was very easy to adjust, and the car stopped nice and straight. In back, each diff outdrive is fitted with a carbon brake disc, which gets clamped by an aluminum pad. The rear brakes are actuated by the throttle servo, while the front brakes get their own dedicated servo. The reason, and benefit, of this is that if your radio has third-channel mixing, you can then set the brake bias from front-to-rear "on the fly" during a race, without affecting the position of the throttle servo.



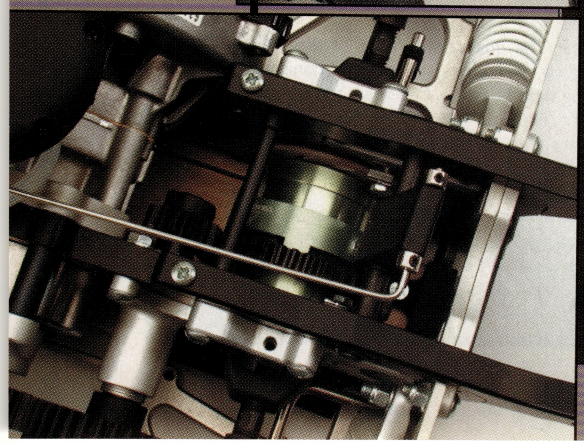


The rear suspension has aluminum lower wishbones with a traditional upper tie-rod to adjust camber. The neat thing about the rear suspension is the hubs, which provide four holes for the tie-rod that are placed on a curve which matches the arc of the tie-rod's movement. In essence, the tie-rod's position, and hence, the rear roll-center, can be altered without a change in the wheel's static camber.

The lower wishbones are held to a unique rear toe-in adjustment assembly. The rear of the wishbone mount is connected to the chassis by a steel turnbuckle, so when you want to alter toe-in, you simply turn the linkage. The rear shocks are mounted in a traditional vertical fashion.





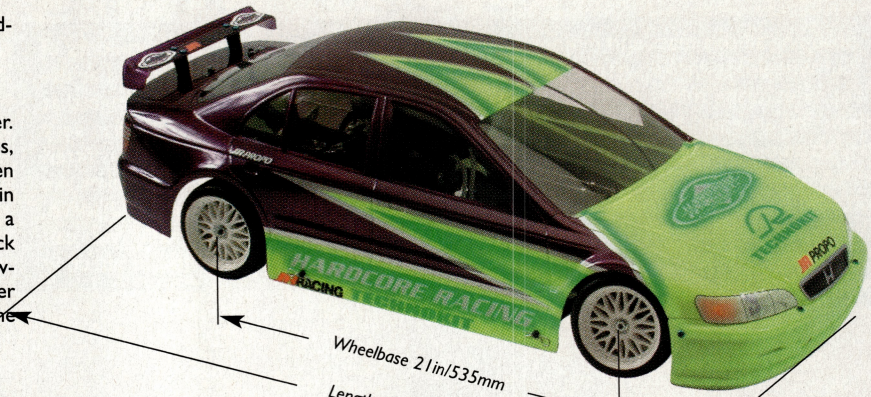


The TKT99E is available with three choices of engine. There are two Solo Tuning engines: one is a sport model and the other a full race model. Our test car came equipped with a 22.5cc Zenoah pull-start engine that is comparable to the high-end Solo Tuning powerplant. The Zenoah drinks a mix of unleaded gasoline and synthetic two-stroke oil (four percent) through a Walbro HDA carb. The spark is provided by a CDI ignition system (no glow-igniters needed). The manufacturer rates this engine at 2.8 horsepower at a lofty 18,500 rpm, and from our experience, this is one of the faster engines available in a 1/5-scale car. We also liked the response of the triple-chamber aluminum Technokit pipe.

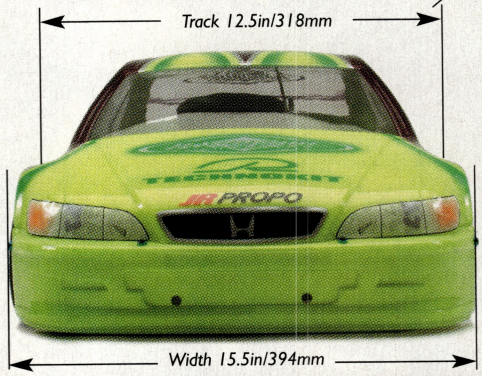
All that power is transmitted to the wheels through a familiar-looking arrangement consisting of a centrifugal clutch that drives a pinion and spur gears. We found that the stock clutch engaged a bit too early for our taste, and as a result, it bogged the engine. We switched to the optional three-shoe adjustable clutch, and set it to engage at a higher rpm. The spur gear then drives a large, adjustable planetary differential, which is encased in an aluminum housing.

Technokit TKT99E

REPORT CARD
Test location: Sun Valley Microspeedway, Sun Valley, CA
Track type: Large (huge!) permanent asphalt road-course. Smooth and grippy



WEIGHT 23lbs (w/body)



Engine: A
The Technokit-supplied Zenoah is a fire-breather. During a 10-minute race against six other 1/5-scales, our car was faster than three, and about dead-even with the others. We had to shut-down on the main straight on a few occasions to avoid rear-ending a slower car! Once we got rid of the lousy stock clutch and installed the optional three-shoe, low-speed acceleration felt like that of a much smaller than lighter 1/10-scale car. We also swapped the stock airbox for a easy breathing K&N unit.

Low-speed steering: B-
The stock setup (the TKT99E comes pre-built) felt a bit too stiff, and made the car jittery in the turns. We went in the opposite direction and softened the car, but this made it feel just a little sluggish in low-speed turns. We will eventually find a compromise setup, but at least our car is easy to drive. Ideally, we want to carry more corner speed on the tight twisties.

High-speed steering. B+
The TKT99E has a preference for oversteer when entering high-speed turns, but this is easily controllable by the throttle. The car felt excellent during the middle and exit portions of high-speed turns. The SVM layout has a challenging S-section leading on to the monster straight, and after a bit of practice, we could take it nearly flat-out with the TKT99E and still hold the inside line entering the straight.

Braking: B
The only thing holding us back from awarding an "A" here is that we would like a bit more braking force. This is just out preference, and may be related to the car's overall setup more than to a particular braking component. Overall, the brakes were easy to set up, and the car stopped straight each and every time.

Straight-line tracking: A+
Once we got the radio settings and trim figured out, the TKT99E drove arrow-straight at all times. The SWM's immense back straight can be challenging to drive (depth perception), but the 99E made it easy to hold course and avoid getting tangled, at high speed, in the infield's astroturf.

Stock tires: C
Okay, they're not bad. But they're not good, either. Like with any other scale, 1/5-scale requires that you have the right tires. One local 1/5-scaler summed it up this way: "these cars are like 70-percent tires, 30-percent chassis." He wasn't kidding. Initially, the stock treads worked really well, but after a few minutes of hard racing, they quickly overheated and lost traction. These things aren't cheap, either: some of the better tires can go upwards of $40 per pair!

Durability: B+
We didn't think that these things could barrel-roll. Guess what? They can if they are driven into a track curb at 35 mph! At first, we broke a couple of plastic rear hubs and even an arm-mount. We replaced the arm mount with an optional aluminum piece from Technokit, but we chalked up the broken hubs to a bigger picture—when you hit something with an object this large and fast, something has to give. If not the hub, then a more expensive alloy piece. Overall, this car is made better than most full-sized autos!

SPECS

TYPE	1/5-scale RWD touring sedan
PRICE	$1,899.00
CHASSIS	
Type	Channeled flat
Material	Aluminum (8mm)
SUSPENSION	
Type	Independent lower A-arms w/adjustable upper links
Damping	Anodized aluminum, oil-filled shocks
TRANSMISSION	
Type	gear drive w/limited-slip diff
Drive shafts	dogbones
Bearings	metal-shielded ball bearings

Final Score

Highs: The TKT99E is one of the finest machines in its class. Each and every part is finely machined or molded, and the fit and finish is superb. The cable-actuated standard front disc brakes are easy to set and adjust, and we like that they get their own servo. Finally, a body that's thick enough for a 1/5-scale car! The factory Zenoah engine rips!

Lows: Stock tires will get you going, but be prepared to drop more coin for the "good" ones if you want to be competitive. Factory setup needs some tweaking. The stock air intake is rather restrictive.

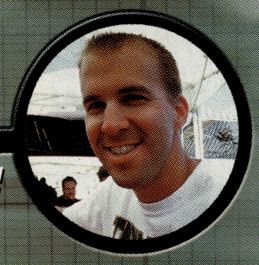
The verdict: This is an exotic Italian car. The quality and finish of the parts are simply amazing, and Technokit is all about racing, so the factory support and continual R&D mean that the car will remain current for a long time to come. Minor setup gripes aside, the 99E is well-suited for novice big-scale drivers (like us) as well as experts (at our local track, most of them drive Technokits). With cars such as the 99E, big-scale R/C could become, pardon the pun, big!

SOURCES

JR Racing, distributed by Horizon Hobby Distributors, Inc., 4105 Fieldstone Rd., Champaign, IL 61821—phone (217) 355-9511
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PRO TIPS SECTION



Matt Francis

Understanding roll center

How to get good balance

When it comes to roll center, most people cringe at the idea of explaining how it works, and how to achieve proper roll center balance. We talked with Team Losi's Matt Francis about the importance of proper roll center tuning, and here's what we got.

TUNING ROLL CENTER

"As with any type of tuning situation, the most critical thing to achieve when tuning your vehicle's roll center is to get proper chassis balance," says Matt. "Roll center adjustment is just as it sounds—you are determining the point at which the chassis rolls when weight is transferred from side to side. There are a few ways to alter roll center: turnbuckle position; overall turnbuckle length; and, depending on the vehicle, hub mounting position to the suspension arm. The most common way to alter roll center is through your turnbuckles. "While discussing this topic, more than any other tuning-related subject, it would be easy to write an entire book on the topic. In fact, I would be surprised if it hadn't been done. In an effort to keep this article confined to the space allotted, we will break the discussion down to a few main categories."

WHAT IS ROLL CENTER?

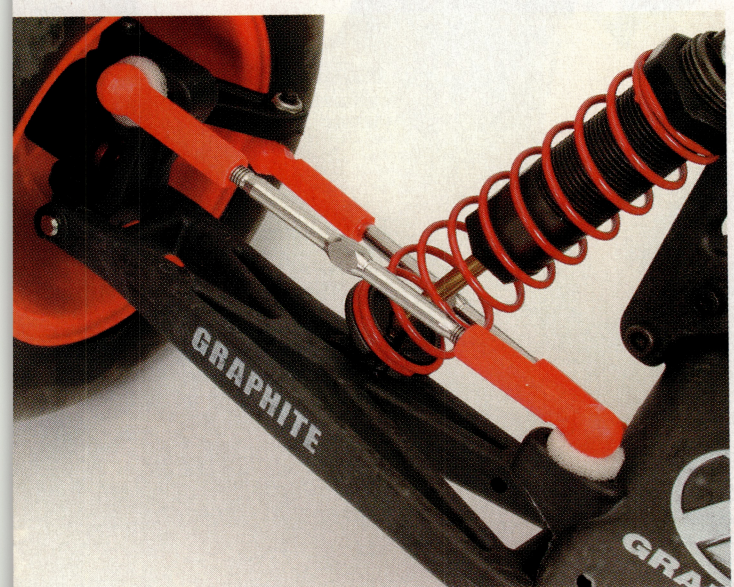
"Before we begin talking about adjusting roll center, let's talk a bit about what exactly roll center is. Roll center is the geometrical axis point at which the chassis will roll from side to side. This point will be different in the front and rear of the car. The roll center is determined by plotting out the geometry of the front or rear suspension. Front and rear roll centers must be calculated separately. Some of the factors used to calculate roll centers are: suspension arm length and mounting positions; camber link length and mounting positions; tire diameter; camber; and the angle of the camber link in relation to the suspension arm.

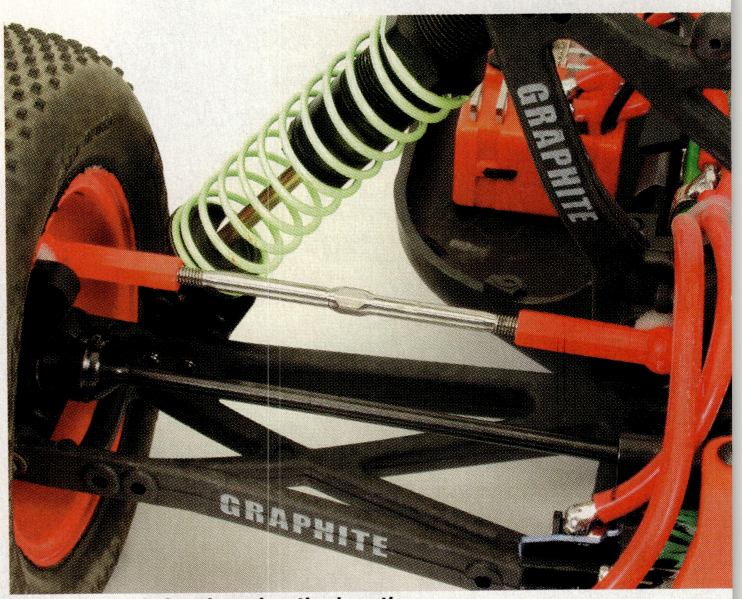
"For sake of not thoroughly confusing you, we won't go into details of how to measure roll center. Instead, we will cover some basics later in the article. Trust me, this is much less confusing.

"There is one more term used while discussing roll center. This is roll slope. Roll slope is the line drawn from the side of the vehicle between the front roll center and the rear roll center. The roll slope is important when it comes to cornering. A downward slope (front roll center lower than rear) will result in more low-speed steering. This is caused by increased weight transfer under deceleration. An upward slope (higher front roll center in comparison to rear) will typically result in an increase in high-speed steering. This is due to the fact that more weight will transfer across the rear of the car. Too much upward slope can cause the vehicle to feel very loose, or feel like it has oversteer. This is a result of the weight repeatedly transferring from side-to-side across the rear of the chassis.

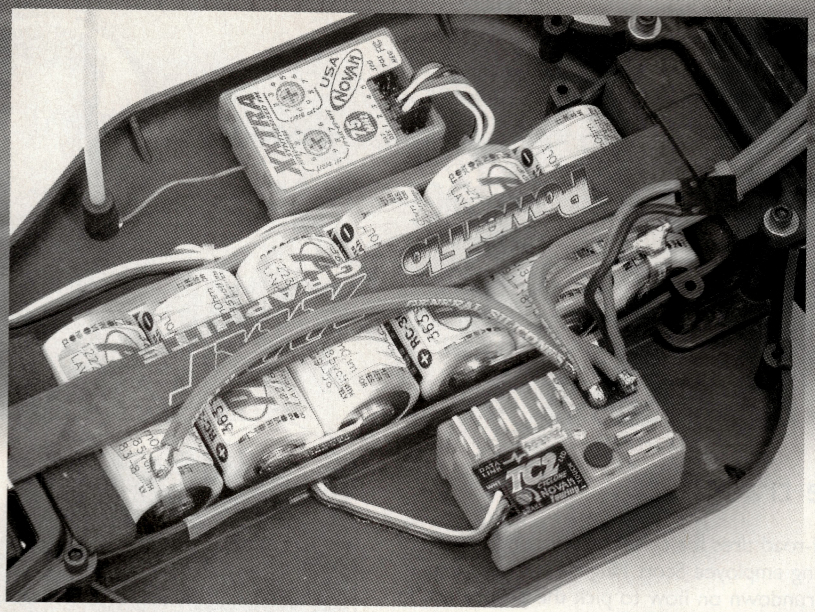
LONGER VS. SHORTER CAMBER LINKS

"Generally speaking, longer camber links result in a lower roll center than a shorter link. The vehicle will not physically react as fast with a longer camber link, but when it does, it will react more. With the





The most common way to adjust roll-center is by changing the length and/or the location of the upper camber-links. It is also possible to change roll-center, by adjusting wheel camber or by raising or lowering the hub or spindle in relation to the suspension arm.



There is an imaginary line that spans the chassis and connects the front and rear roll-centers. This line is called the roll-center slope, and its angle determines the overall balance of the chassis.

Losi car and truck, you can adjust front roll center with the kingpin ball-stud. As you raise the ball-stud, you raise the front roll center. When you raise the roll center, you get more on-power steering and it takes away off-power steering. Once again, though, I have to go back to my original point of talking about chassis balance. As you raise the roll center up front, in essence, you're providing the rear end with a lower roll center via the roll slope. This may create an unbalanced effect. If you raise the roll center in the front, and don't adjust the rear, it's going to make the rear end softer. Then, when going into a turn, the chassis is going to want to transfer the weight to the rear more, potentially providing an unbalanced feel.

"When you lower the roll center in the front, you're going to get more low-speed steering/less high-speed steering. I've found that a low roll-center setup has a lot of camber change in the tire as the suspension moves through its full range of travel. This is typically better in bumps because there is less scrub in the tires."

GENERAL NOTES ON ROLL CENTER

Here's Matt's general setup rules when it comes to setting up his roll center.

- "On a low-speed track, I'll go with a lower roll center (front and rear) to get more roll out of the chassis (e.g. side-to-side weight transfer).
- "On a high-speed track, I'll go with a higher roll center to help keep the car more flat in the turns (less side-to-side weight transfer).
- "On a high-bite track, I'll go to a roll-center adjustment to get the car to roll more into the turn instead of out of the turn. What I mean by this is that I will set the chassis to have a lower front roll center and a higher rear roll center. This will lower the roll center slope to the front and cause more low-speed weight transfer. See the comments on roll-center slope above."



PRO TIPS SECTION



scott hughes

How to pick the right off-road tires

Get the right tread for the track!

When it comes to picking the right off-road tires for certain track conditions, Team Associated driver and Pro-Line Racing employee Scott Hughes knows a thing or two. We asked Scott to give us the rundown on how to pick the proper tire for maximum traction, and here's what he came up with!



For hard-packed dirt, you'll want a front tire that has a lot of surface area, such as these Pro-Line Blades.

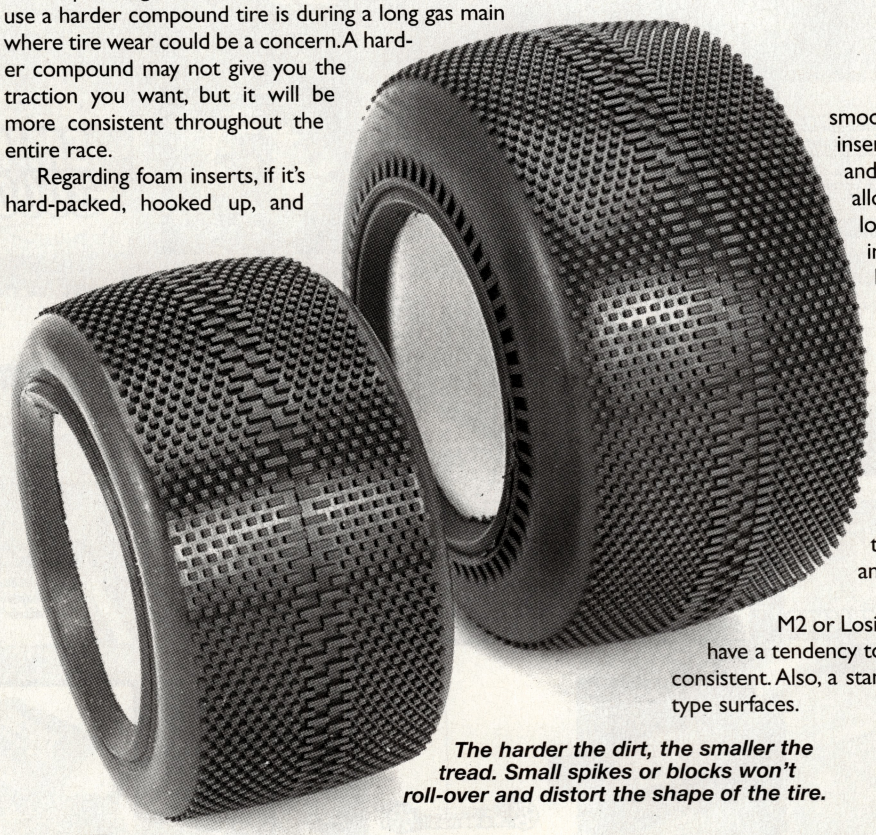
TYPES OF TRACKS

For the most part, we're going to deal with the four most popular types of track conditions; hard-packed clay tracks, medium-packed/moist surfaces, blue-groove tracks, and loamy tracks.

Hard-packed clay tracks—Generally you're going to stay with a smaller-pin type for your rear tire. Something that doesn't flex as much, therefore giving you more consistent traction. You don't want something with a larger pin because it will fold over and you'll end up losing traction and your vehicle will skate all over the track. Up front you want to run a multi-surface/dual tread tire like the Pro-Line Blade. You'll want a tire that has a lot of surface area. They provide more steering than the average rib tire.

As for compounds, you want to stick with a softer compound versus a harder one. A softer compound gets better bite on a high-traction surface. The only time you would want to use a harder compound tire is during a long gas main where tire wear could be a concern. A harder compound may not give you the traction you want, but it will be more consistent throughout the entire race.

Regarding foam inserts, if it's hard-packed, hooked up, and smooth, you want to go with an ultra-firm foam insert front and rear. If you use too soft an insert and the track is hooked up, the soft insert will allow the tire to fold over and you actually end up losing traction and your car or truck will be very inconsistent through corners. If the track is a bumpy, you would want to use a standard firm insert.



The harder the dirt, the smaller the tread. Small spikes or blocks won't roll-over and distort the shape of the tire.

Medium-packed/moist surface tracks—Again, you would still want to pick a smaller pin tire. Depending on the moisture amount, you may want to pick a medium-pin type tire like a Step-Pin if it's really damp and tacky. For a front tire you'd want to go with a bigger rib front tire—not a multi tread tire. You want something that can dig in to any fluff or loose top layer.

A slightly harder compound, something like our M2 or Losi's Silver, is probably the hot setup. The tire won't have a tendency to fold over on itself. A harder tire may be more consistent. Also, a standard firm insert works well on most medium type surfaces.

Blue-groove track—Obviously the less tread, the better. You want to get as much surface area on the ground as possible. And whatever you do, don't throw out your tires after the tread has been worn in. Most racers will tell you that on a blue-groove track, tires just keep getting better and better as they wear in.

As for compounds and inserts, it's an easy choice. We always run the softest possible compound with the firmest possible insert to get the best traction on a blue-groove track. The only time we'll use a harder compound tire is if temperatures are excessively hot. Once it gets really hot out and track temperatures get high, a very soft compound tire can roll over on itself more easily than a slightly harder compound tire.

Loamy—When you're on loose dirt you want a more aggressive tire that will help provide more forward bite. A large-pin type tire like a Step-Pin, or a Bow-Tie, will work really well. We've found that the Bow-Ties also work really well for gas truck racing on loose, loamy tracks. In addition, you're going to want the most aggressive rib front tire that you can find, one that will help dig into the loose dirt.

Since it's really loose and you're not going to get a ton of traction, I'd recommend something in a soft compound with a standard firm insert. Nowadays, we've found through research that soft foams are adequate, but not the best for racing applications. Stick with firm foam on loamy tracks.

CUTTING KNOBS

The only time I recommend cutting the very edges of the knobs off a rear tire would be on very bumpy, rutted-out tracks. If you're using something like a step pin, I would cut down to the step part, but not the entire nub.



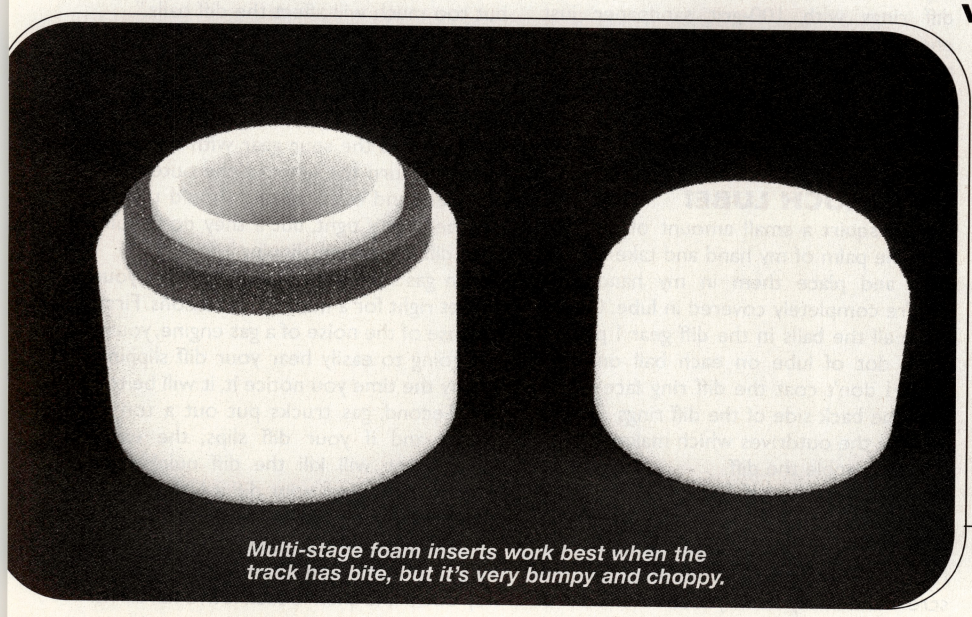
A larger tread, such as a step-pin (right), is for use on soft, loamy dirt or when the track is damp.

SAUCING

I really don't think that it's a good idea to sauce your tires. The only time racers really ever need to run a tire sauce is when they're running slicks on a blue-groove track.

DUAL-STAGE FOAM

Regarding dual-stage foam, I've found that they work best on a bumpy, yet really hooked-up track. At least that's when I try them—other than that, it's either firm or extra firm foam. The dual stage obviously helps if you run on a high-bite track and you need the support, yet the outer layer of softer foam helps give a little bit. It's kind of like a progressive foam.



Multi-stage foam inserts work best when the track has bite, but it's very bumpy and choppy.

VENTING

Proper ventilation is crucial! I run two 3/16 to 1/8 holes on opposite ends of the tire. You always want to put the holes in the tire, not the rim. This allows any trapped dirt in the tire to escape through the hole. Obviously if you put the holes in the rim and dirt gets inside, the dirt will become trapped in the tire. Venting your tires makes the vehicle handle more consistently as well.

CLEANING TIPS

Don't submerge your tires in water! Doing so will ruin the foam fast. For some reason we've found that soaking foam makes it degrade faster. When you clean your tires, spray them with Simple Green or soap and water and carefully rinse them off so you don't get water in the foam.

PRO TIPS SECTION

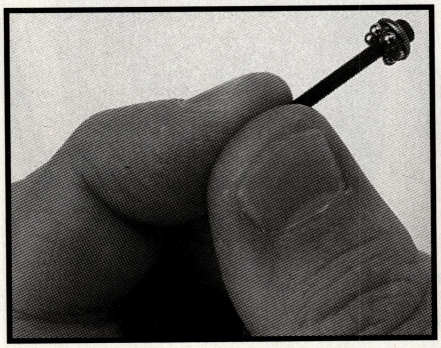


adam drake

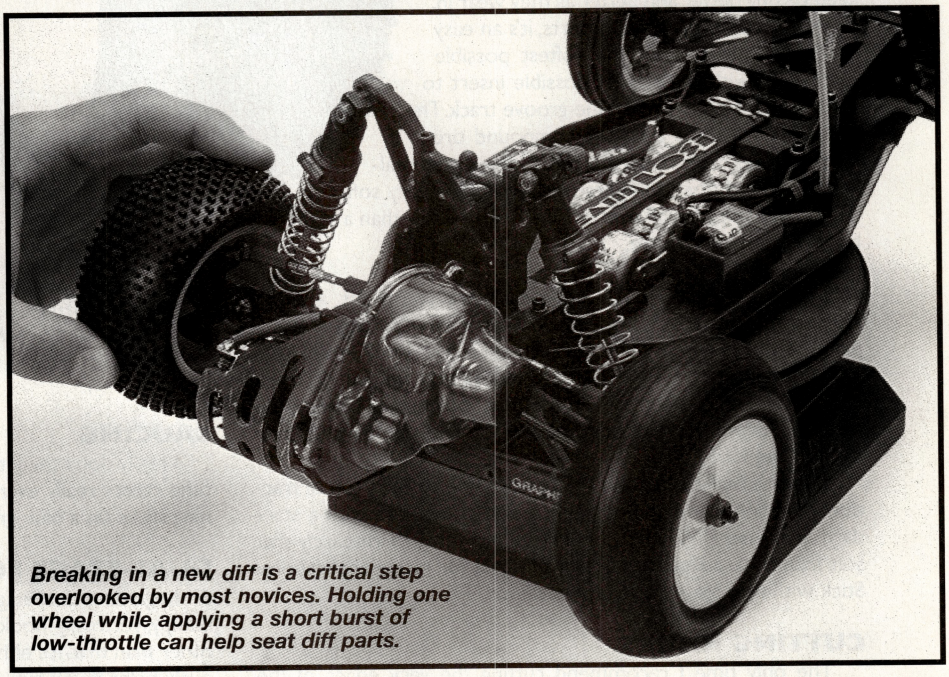
Diff tips and tricks

Keep it smooth!

To help you get the most out of your car or truck's differential, we turned to Team Losi's Adam Drake for his tips on how to keep it running smooth. Here's what Adam had to say.



Don't be afraid to use plenty of grease on the thrust-bearing assembly.



Breaking in a new diff is a critical step overlooked by most novices. Holding one wheel while applying a short burst of low-throttle can help seat diff parts.

THE DIFF RULE!

"The most important thing when running a new diff for the first time is to make sure that you break it in so all the parts seat properly," says Adam. "In addition, you always want to be sure that your slipper is looser than your diff. You don't want to go out there on your first run and "bark" your diff. It's always better to have your slipper set a little looser than to burn up your diff. It's cheaper to replace slipper pads if you burn them up than it is to replace the entire diff assembly."

PREPPING YOUR NEW PARTS

Adam checks out all the diff parts before building them, but doesn't go to any extremes like cleaning the rings off with alcohol like some diff nuts do. "I'll check the rings for any oil, and if there is any, I'll just wipe them off with a paper towel," adds Adam.

THRUST BEARINGS

"The only thing that I do that's a little bit different is I run a bevel washer on the thrust side. I put the little foam dust seal on, then the thrust washer, then one of the little bevel washers, and finally the bearing on the thrust side. I feel it allows the thrust assembly to float a little bit so it's not pressed against that bearing. It's something that I've done for years and it seems to make the diff last longer."

DIFF RING PREP

"I don't really do this trick too much anymore, but in the past I've sanded the diff rings with 100-grit sandpaper just enough to scuff the rings so that lube adheres to the surface better. It doesn't make the ring surface rough, it just dulls the surface and the lube sticks to it better."

HOW MUCH LUBE?

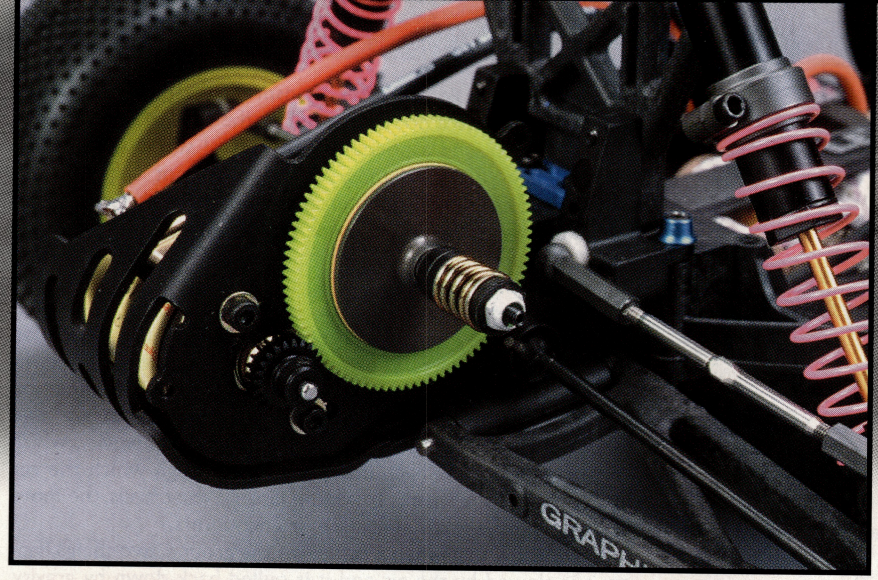
"I'll squirt a small amount of diff lube into the palm of my hand and take the diff balls and place them in my hand until they're completely covered in lube. Once I place all the balls in the diff gear I place a small dot of lube on each ball on both sides. I don't coat the diff ring face—I do lube the back side of the diff rings so they stick to the outdrives which makes it easier to assemble the diff.

"For the thrust bearing, I'll put on the first washer, then I'll apply a pretty heavy coat of thrust lube around the diff screw. Next I'll place the thrust balls on the screw and finally I add yet another coat of lube. I let any excess squirt out—too much lube won't hurt the thrust bearing, but too much will affect the diff balls."

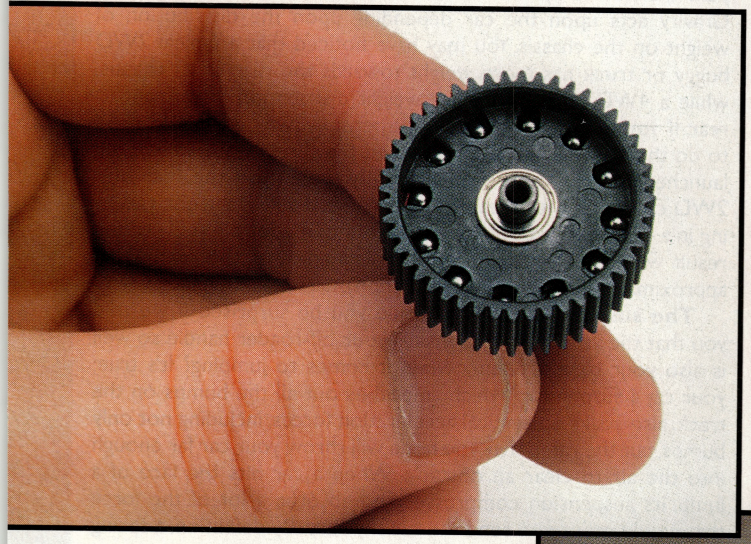
DIFF SETTINGS

"To check to see if your diff is properly set, grab your truck or car by the right tire and hold the spur gear with the same hand and turn the left tire; the outer slipper plate and outer spring should turn. It may be pretty tight, but if they don't spin, your diff is the one slipping.

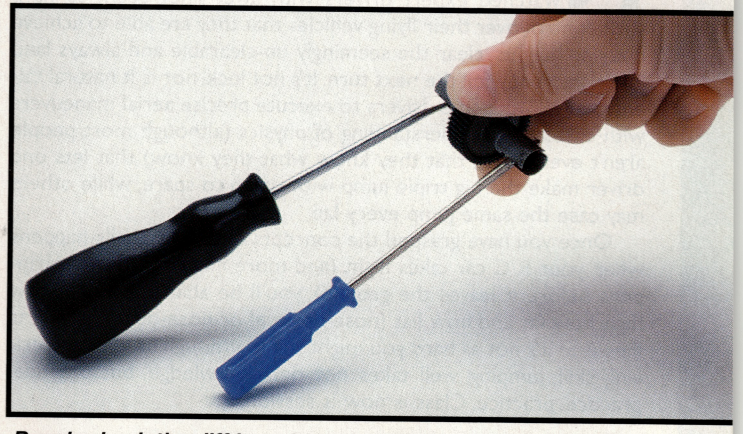
"In gas racing it's crucial to have your diff set right for a number of reasons. First, because of the noise of a gas engine, you're not going to easily hear your diff slipping, and by the time you notice it, it will be too late. Second, gas trucks put out a ton of power, and if your diff slips, the extra horsepower will kill the diff quickly. It's always best to run your diff a little tighter than you would on an electric truck and run the slipper a little looser. A good starting point is to tighten the slipper all the way down and then loosen it five full turns.







Use less grease on the main diff balls, and make sure you use only the appropriate grease as recommended by the manufacturer.



Bench-check the diff by using a pair of screwdrivers to hold the outdrives as you try to turn the diff gear. It should be next-to-impossible.

"Running your diff too tight on your electric car will make the car "lock-in" too much in the middle of a turn. It won't want to rotate as freely and it will feel like the front-end is pushing. Generally, with a tighter diff the car will have more forward bite, but it won't corner as well."

WHEN SHOULD YOU REBUILD?

"Once your diff starts to feel gritty, it's usually coming from the thrust assembly. To save you some money, clean the thrust bearing out thoroughly, flip the rings over, and relube everything. It may not be quite as smooth as a brand new thrust assembly, but it will be improved. In addition, you can also flip your diff rings over too once they begin to get grooved."

HOW LONG WILL YOUR DIFF LAST?

"That's too tough a question to answer. It all depends on how tight you have your slipper set, the track conditions where you race, how tight your diff is set... Someone actually asked this question on Losi's Tech Talk site and I kept track of how long it took for me to go in between diff rebuilds. I ran my gas truck at least once or twice a week for at least a month before I rebuilt it. With Losi's dual-disc slipper, you can run it a little looser and it will engage as if it were really tight. The rule of thumb is that you have to let your slipper slip before the diff does. If the diff slips once, the damage is done. I'll run my slipper so that my truck will still wheelie down a straight, but once I land off a jump it will still give a little. In the end, this is going to take a load off the diff, and at the same time lets the idler gear, diff gear, and dogbones last longer."



The Science of Jumping

Clearing big obstacles is a case of mind over matter

Negotiating modern off-road tracks demands that we have at least some understanding of physics. Have you watched expert drivers with awe? They seem to have such control over their flying vehicles that they are able to achieve dizzying heights, clear the seemingly un-clearable and always land just right, ready for the next turn. It's not luck, nor is it natural talent, that allows some drivers to execute precise aerial maneuvers with ease. It's an understanding of physics (although most people aren't even aware that they know what they know) that lets one driver make the big triple jump with room to spare, while others may case the same jump every lap.

Once you have grasped the concepts of what actually happens when your R/C car takes flight (and more importantly, what happens before it leaves the ground), you'll be able to control how high, how far and how flat (nose-up, level or nose-down) your car flies. And it's not as hard you might think, although as with any driving skill, jumping well takes not only knowledge, but practice, practice, practice. Class is now is session.

WHEN ONE OBJECT BECOMES TWO

When it comes to jumping, the most important thing for you to know is that when your car leaves the ground, there are actually two objects flying: the car and the unsprung weight of its suspension parts. A basic definition of unsprung weight is any part of the suspension that is not supported by the springs. This includes the wheels, tires, and a portion of the actual suspension assemblies. So when your car jumps, you must deal not only with the weight of the car, but with the unsprung weight of the suspension and the energy stored in the suspension's springs.

Let's take a closer look at the role each of these parts plays in the art of high-flying.

The car: According to the laws of physics, an object in motion will continue on a straight path unless acted upon by an outside force. If you could jump your car in an airless, zero-gravity environment, it would hit the ramp, launch upwards and continue on forever in exactly the same trajectory. Here on Earth, we have several factors that prevent this from happening: gravity, which wants to pull the car back down, and air, through which the car must punch a hole. Thanks to air, the faster a car travels, the more resistance (in the form of friction) it encounters.

So we know that when a car leaves the ground, two things happen: it is slowed by the air, and it is pulled back down by gravity. Gravity acts upon the car depending upon the distribution of weight on the chassis. You may have noticed that a typical 2WD buggy or truck has more weight towards the rear of its chassis, while a 4WD buggy has equal weight distribution from front to rear. If you eliminated the car's suspension (why we would need to do this is explained below), locked the throttle at midway, and launched the car from a ramp, gravity would pull the rear of a 2WD car down with greater force than it would the front, resulting in a nose-high attitude. If you did the same for a 4WD car, the result would be a level attitude (presuming that the car had an approximate 50/50 weight distribution).

The suspension parts: Would you be surprised if we told you that the very thing that makes your off-roader handle so well is also your biggest enemy when it comes to jumping? It's true: your car's suspension, which smoothes out all the bumps on the track, also soaks up vertical acceleration forces, including not only bumps, but the ramp that you hope will throw your car far enough into the air to clear an obstacle. When a car hits the face of a jump, its suspension compresses and absorbs a lot of the force that would otherwise send the car skyward. By definition, a spring





is a store for kinetic energy. But as you know, springs also must release their stored energy by extending themselves after they are compressed. Usually, this energy is released once the force that originally compressed the spring has subsided. In this case, energy release occurs as the suspended wheels leave the ramp. When the car's front wheels leave the ground, very little happens as the front springs extend and push the wheels harmlessly into space. However, when the rear wheels leave the ground, the rapid extension of the rear springs rotates the front of the car downward. Fortunately, we are not helpless to prevent this nose-diving front end from causing a disaster.

WHY A MOTORCYCLE HAS THE EDGE

When compared to a motocross bike, an R/C car is at a substantial disadvantage when it comes to jumping. Why? Because there's no rider! By shifting his weight rearward, a rider is able to counteract the force of the rear suspension's extension as it leaves the ramp. When his bike hits the ramp, the rider can also use his body to aid the suspension as it absorbs vertical acceleration forces by relaxing his arms and legs, allowing he and his bike to hit the ramp at a greater speed without jumping too high or too far. Another thing a rider can do is use his body to further compress the suspension by locking his limbs and adding more of his weight to that of the sprung weight of the bike. Doing this allows the rider and bike to get maximum altitude as the additional stored energy in the springs propels the bike upward.

THE THROTTLE: A JUMPER'S BEST FRIEND

Even without the benefit of a rider, we can exert a great deal of control over the altitude and attitude our cars exhibit in flight, and that's by using the throttle. Much in the same way a rider shifts his weight over the front and rear of his bike, we can use the throttle to control the way our suspension is compressed. This is what's called throttle-controlled suspension, and this is the secret to successful jumping.

As explained earlier, the way your car jumps is mostly a matter of how its suspension is loaded. And how do we load the suspension? By applying the right amount of throttle at the right time. This is the main reason why your friend can clear everything while you can't, even though you have identical motors.

There are three ways to hit any jump, and they all are dependent on throttle usage. You can either go for maximum height, maximum distance or try to stay as low as possible. The method you choose will depend mainly on the location of the jump on the track. Here's how it's done.

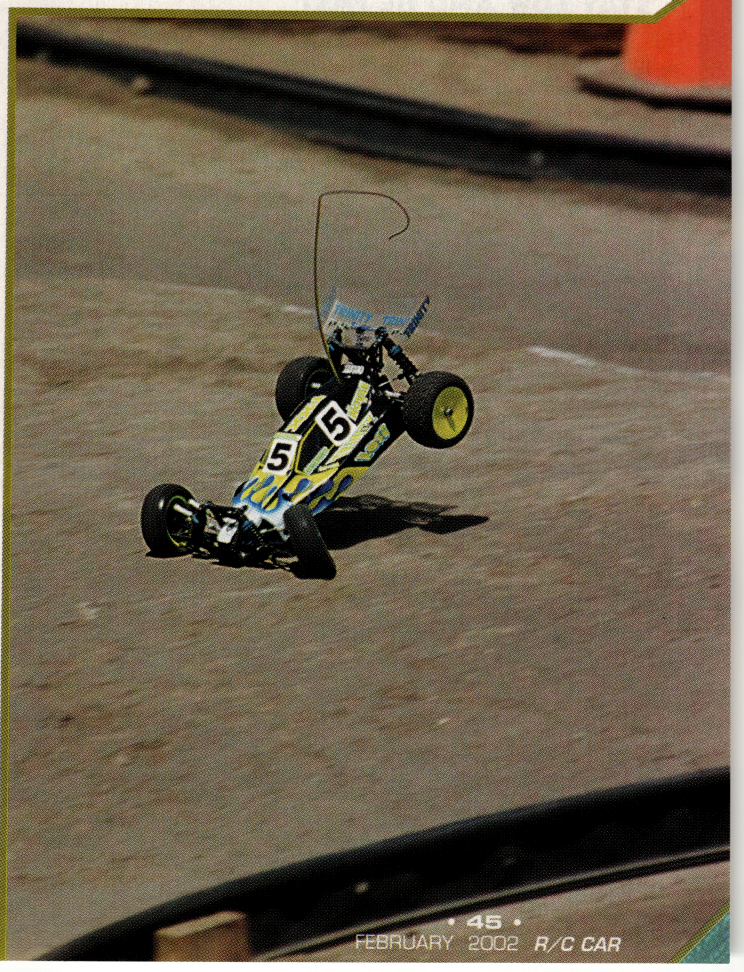
GO FOR THE SLAM DUNK

To launch your car as high as possible to clear large obstacles when there's not a lot of room to build speed, you will need to fully load its suspension while accelerating up the face of the jump. This type of technique is best suited for technical jumps such as doubles and triples. It also works well for steep jumps that immediately follow turns. Here are the steps.

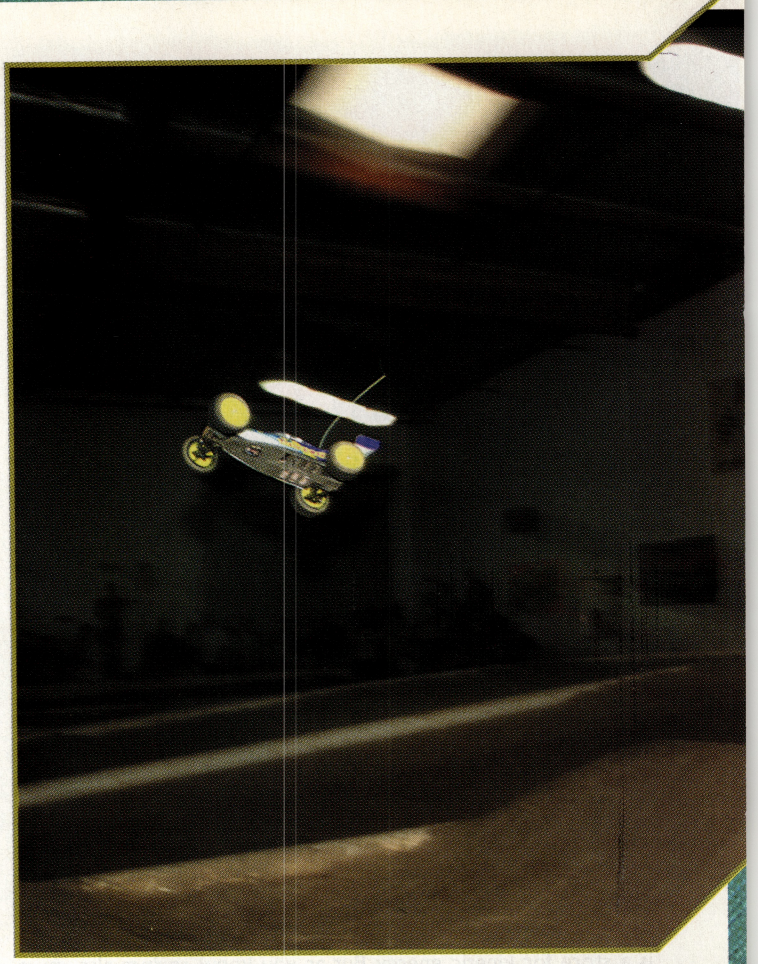
(1) The key is to have the car accelerate up the face of the ramp, so in order to do this, you must let off the throttle before hitting the ramp. Experience will tell you exactly when to let off, but in general, two to three feet before the ramp is a good distance.

(2) As soon as the car's front wheels hit the ramp, pin the throttle. This helps slam the car into the face of the jump and will compress the suspension. Continue accelerating all the way up the ramp. As a side benefit, the extra load on the suspension will help "square-up" the car and reduce the chances of it getting sideways once airborne.

(3) When the car leaves the ground, you have two choices: you can either chop the throttle to pivot the front end downward and make the car level, or you can wait until mid-flight and tap the brakes. Doing this will remove the inertia of the spinning wheels and drop the nose of the car. If your goal is to downside the landing ramp, then you will need to either chop the throttle or brake immediately after the car launches in order to drop the nose of the car lower than the rear end.



The Science of Jumping



LONG DISTANCE SPECIALIST

When it comes to monster jumps, you'll need to maintain as much forward momentum as possible in order to travel the greatest distance. If the car travels in too great an arc, it will lose air speed and you'll come up short. Remember, the longer the car is in the air, the slower its speed. The idea is to jump only as high as is needed to carry you to the landing ramp. Here's how to go the distance.

(1) Speed is the key. The goal is to hit the ramp with as much speed as possible, and unlike in the first example, you should accelerate smoothly from the straightaway all the way up the ramp. You don't want any sudden bursts of speed as when you were aiming for height. But you do want as much speed as possible given the length of the straightaway which precedes the jump. Sometimes it may be necessary to alter your line when entering the straight. You might have to go wide to carry enough speed to clear the jump.

(2) Hitting the face of the jump while accelerating will completely compress the car's suspension, bottoming out the shocks' travel and absorbing more of the jump's vertical force without sacrificing much forward momentum. This also effectively lowers the angle of the ramp commensurate with the amount of suspension travel.

(3) Keep the throttle on as the car leaves the jump's face and takes to the air. Because you're carrying a lot of speed, any reduction in throttle at this point will send the car into a nose-dive. You may even have to keep the throttle pinned so that the tire's rotating mass can help maintain level flight.

STAY LOW AND BE FAST

Although rarer than the first two examples, you may encounter jumps that have been built at the end of a straightaway. Often, jumps such as these are immediately followed by a turn. What can you do in this situation? You certainly don't want to slow too much (for fear of being rear-ended by another car), nor do you want to maintain full speed, as doing so will cause the car to fly too far, and you could miss the turn completely. The proper technique for this type of jump is called deceleration jumping. To pull this off properly requires advanced driving skills, as it's very easy to make a mistake and send the car into an endo.



(1) The obvious goal here is to maintain top speed for as long as possible, slowing or braking for the jump at the last possible second. You'll need to know exactly how much to slow down while neither over- nor underjumping the obstacle.

(2) Unlike normal jumping techniques, here, the car will be decelerating up the face of the ramp rather than accelerating. Slowing the car in such a manner will also serve to compress its suspension as it hits the ramp, but unlike in the previous examples, the car will continue to slow as it travels up the ramp, and its suspension will begin to extend before the car leaves the ground.

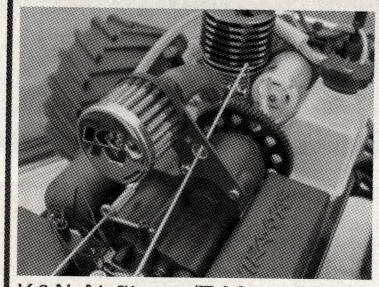
(3) This is the most important step. If the car continues to decelerate as it leaves the ground, the rear suspension's extension will send the car onto its roof. For this reason, you must blip the throttle just as the rear wheels are about the leave the ground. This will help keep the car's nose up without causing the car to fly too high or too far. Performing this technique requires a lot of practice, but when done correctly, you'll find that you'll be able to approach these types of jumps with greater speed than your competitor, much in the same manner as late-braking to pass someone while entering a turn.

A JUMP CONCLUSION

Go to your local off-road track and watch a practice. You'll see that jumps can be both the most difficult section (for those who don't know how to take them) as well as the most fun (for the knowledgeable). During a race, the drivers who have mastered the art of jumping hold a huge advantage over those who simply "pin it and hope." With the information in this article and a lot of practice, you should be able to hang with the best of them.

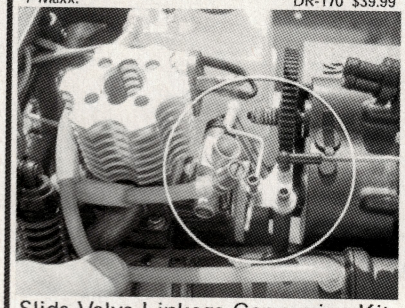
DRAGON R/C

SMOKE THE COMPETITION



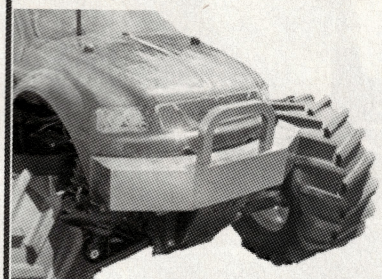
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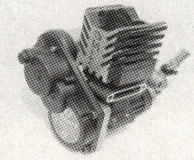
Slide Valve Linkage Conversion Kit

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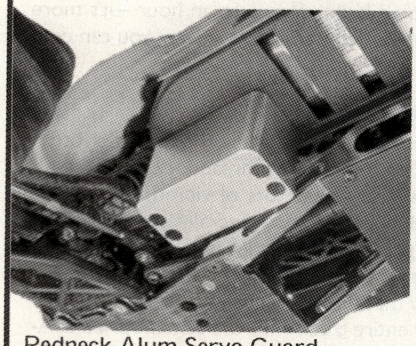
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O.S. - E/Z Start Conversion

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DR-111 Redneck Rear Bumper	$58.99
DR-130 Hex Drive w/ O-Rings	$44.99
DR-140 Redneck Servo Guard	$49.99
DR-150 Steering Drag Link	$11.99
DR-175 Spinner Alum. Rims	$223.99

T-Maxx

DR-160 Slide Valve Linkage Kit	$42.99
DR-165 E/Z Start Conv. - O.S.	$67.99
DR-170 K&N Airfilter w/Adaptor	$39.99
DR-171 K&N Re-Charge Kit	$7.99

LOSI

DR-200 Alum Front Bulkhead (XXX)	$24.99
DR-205 Rear Body Mount (XXX)	$13.99
DR-210 Rear Wing Mount (XXX, XX4)	$33.99
DR-230 Rear Lower Shock Mt (XXXT)	$13.99
DR-241 Rear Susp. Mt 0/4 (XXX-S)	$22.99
DR-242 Rear Susp. Mt 1/3 (XXX-S)	$22.99
DR-243 Rear Susp. Mt 2 (XXX-S)	$22.99
DR-244 Rear Inner Pivot Blk (XXX-S)	$25.99
DR-246 Front Susp. Mt 0/4 (XXX-S)	$22.99
DR-247 Front Susp. Mt 1/3 (XXX-S)	$22.99
DR-248 Front Susp. Mt 2 (XXX-S)	$22.99
DR-250 Front Bumper Brace (XXX-S)	$19.99

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DR-300 Alum Front Bulkhead (B3, T3)	$38.99
DR-310 Front Pin Brace (B3, T3)	$11.99
DR-315 Rear Susp. Pin Brace (B3, T3)	$12.99
DR-320 Front Top Plate (B2, B3, T3)	$44.99
DR-330 Rear Lower Shock Mt (T3)	$13.99

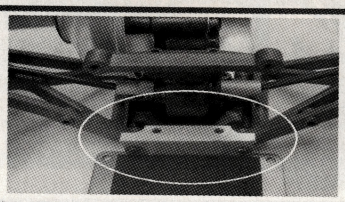
MISCELLANEOUS

DR-500 Brush Cutter/Serrator	$75.99
DR-501 Brush Cutter/Serrator (W/Motor)	$99.99
DR-700 Wheel Align. Square (Touring)	$44.99
DR-710 M8 Wheel Adaptor (Touring Rim)	$17.99
DR-715 M8 Alum. Steering Wheel	$42.99
DR-720 Conterfeit Cell Spacer	$9.99

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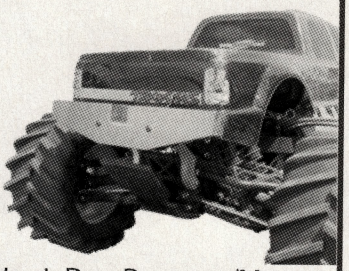
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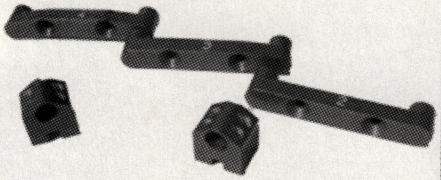
B3, T3 Rear Suspension Pin Brace

Bullet Proof Associated Rear Suspension Mounts With an Aluminum Rear Brace. DR-315 $16.99



Redneck Rear Bumper w/Mounts

Sturdy Aluminum Rear Bumper w/ Heavy Duty Mounts for T & E Maxx DR-111 $58.99



XXX-S Alum Front/Rear Suspension Mounts w/ Delron Pivots

Front Mounts Available in 0/4, 1/3, & 2 Deg Anti Dive $22.99 Ea.
Rear Mounts Available in 0/4, 1/3, & 2 Deg. Anti Squat $22.99 Ea.
Rear Inner Pivot Block -$25.99



Brush Cutter/ Serrator

Adjustable cutter for different cutting patterns. Also serrate brushes for faster break-in. Works on both stand-up and lay-down brush types

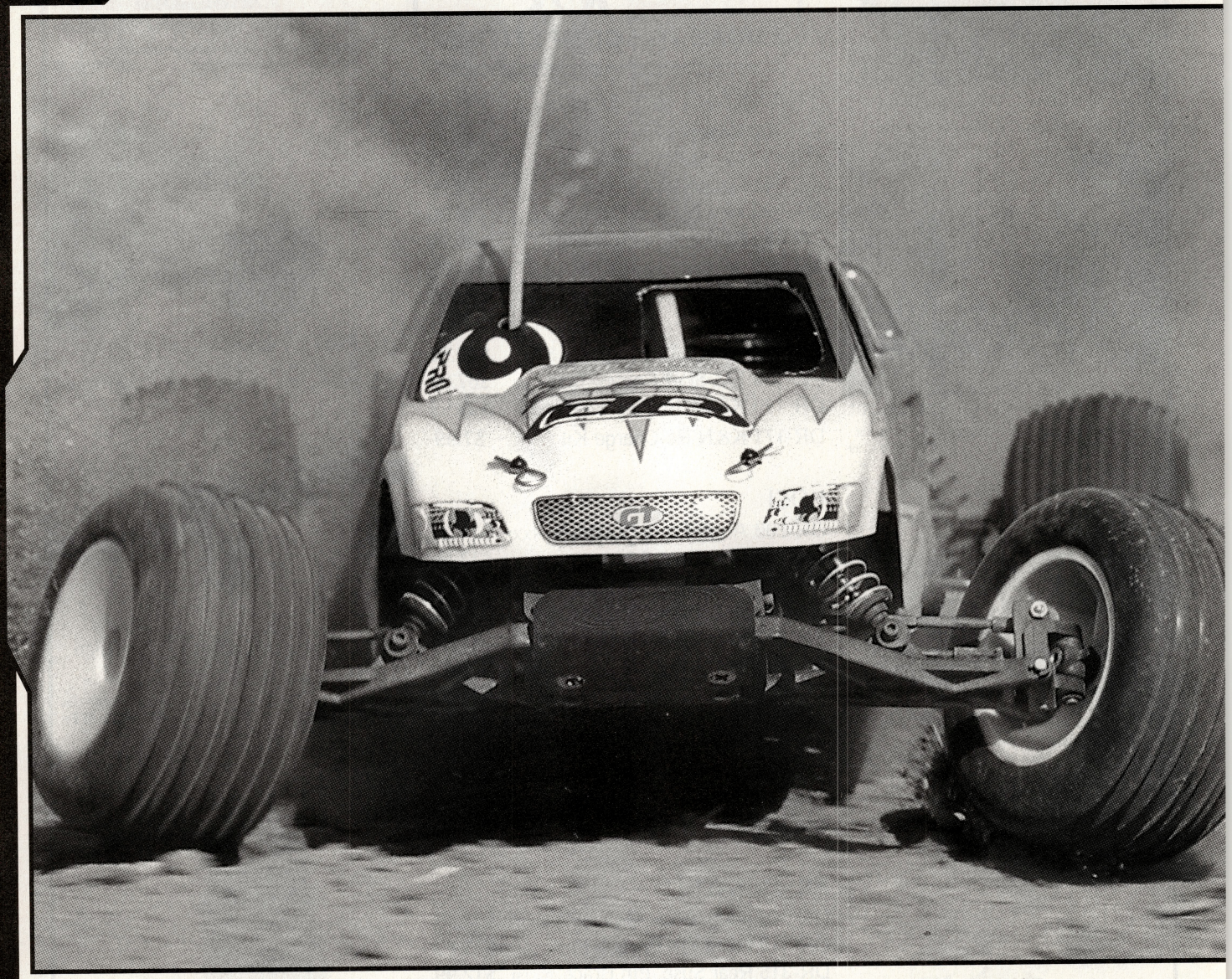
DR-500 $75.99
W/ Motor DR-501 $99.99

BELIEVE

Our thoughts & prayers are with the victims and their family caught in the terrible tragedy.
We would also like to thank all of the volunteers who have given their time and helped in the recovery effort.

Dragon R/C and MHOR R/C Raceway have created a vinyl sticker that can be purchased for $3.00.
Proceeds will be donated to the
American Red Cross
Disaster Relief Fund

12 TIPS FOR GAS TRUCKS!



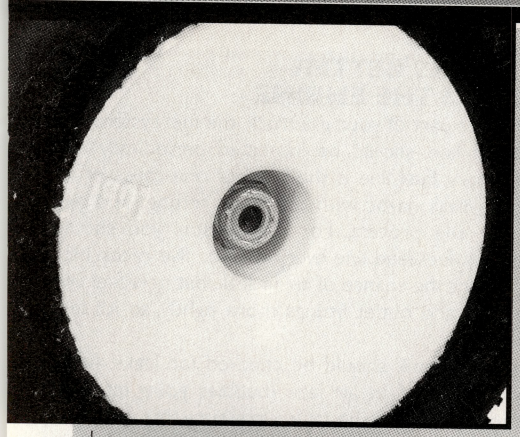
Coping with the shakes, rattles and rolls of nitro off-road!

Who doesn't love gas trucks? The sound and smell alone are enough to cause thousands of Americans to part with a weeks' salary just to ante up. However, we're pretty sure that the hobby shop employee or mail-order salesperson who eagerly took your money neglected to tell you one important fact: gas trucks require constant maintenance if they are to perform their best—more so than an electric truck, that's for sure. And with the popularity of long A-main events—some lasting for up to an hour—it's more important than ever to remember that old adage "to finish first, one must first finish." With this in mind, here are 12 easy ways you can contribute to your gas racing trophy shelf.



1. USE THREAD-LOCK!

By far the most important, and coincidentally, the most forgotten step during the building process is the use of thread-lock on all metal-to-metal connections. Gas engines cause lots of vibrations, and this can make an otherwise well-built gas truck literally shake itself to pieces. It might not happen right away, but it will happen, and we assure you that you won't be a happy camper! Use blue Loctite or its equivalent on every nut and screw that threads on or into metal. Some pro drivers actually go over their entire truck with CA cement prior to A-Main events! We don't suggest that you follow their lead, unless you never intend to disassemble your truck ever again!

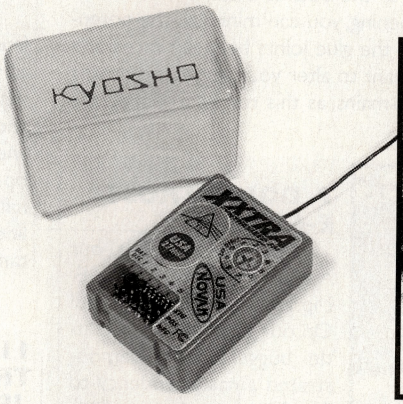


2. DOUBLE-UP

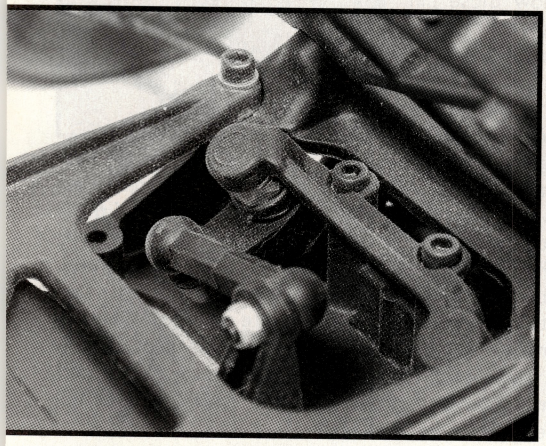
Aluminum wheel nuts have nylon inserts that help them hold on to the axles. If the nuts are relatively new, and you haven't over-tightened and stripped them, they shouldn't come loose, right? Don't count on it! If you plan to participate in a long A-Main, think about doubling up at least the rear wheel nuts. The second nut serves to lock against the first nut to prevent it from loosening up from vibration and the forces of acceleration.

3. USE PROTECTION

We don't care if you've heard it a million times, but fuel and electronics get along about as well as Bill Clinton and Kenneth Starr. If we had a dime for every time an overanxious pitman spilled fuel all over our receivers during pit stops, we'd have almost enough money to replace one damaged receiver! Fortunately, most newer gas truck come with protective covers or boxes for the delicate receiver. If your truck doesn't, invest a couple of bucks in a rubber receiver cover.







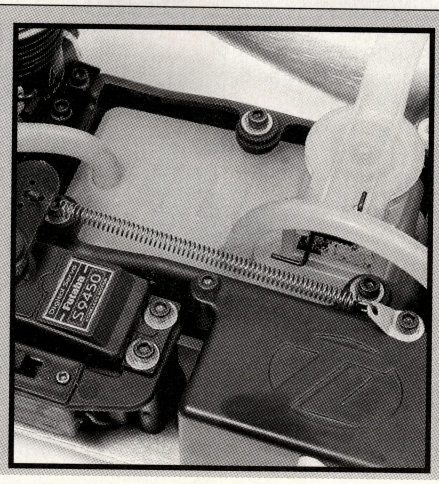


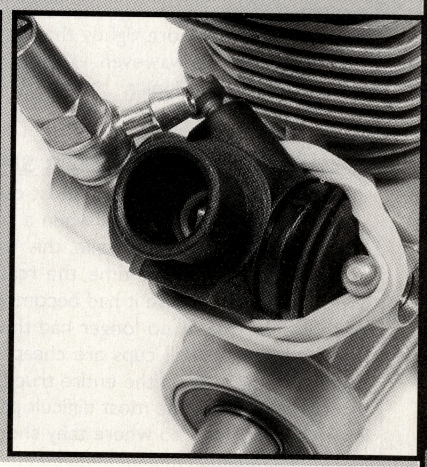
4. SAVE YOUR SERVO

The guy who designed your gas truck included a built-in servo-saver for a reason. Big truck tires, lots of bumps and crashes, and your servo's measly gears don't mix well. After time, the stresses of off-roading will take their toll on your servo's gears. But you can stave-off these effects by making sure that your servo-saver is set correctly. This means that it's not so tight that it doesn't do its job, yet it isn't so loose that the truck's steering becomes sloppy. Some people actually use a second servo-saver (such as those made by Kimbrough and GS Racing) to add extra protection.

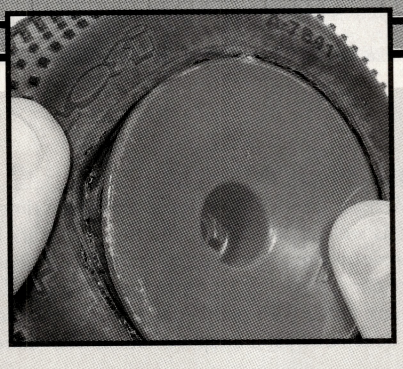
5. RETURN TO SENDER

Runaways are more common to nitro off-road than to any other form of R/C. Why is this? Because dirt, vibration and long races conspire to destroy your truck's radio equipment. What's the worst thing about a runaway truck? How about the fact that the throttle often gets stuck in the "wide open" position! Who cares what the steering servo chooses to do? But have you ever tried to catch a 40mph gas truck? Now you get the picture. This is why you should never run your gas truck without a throttle-return spring. This can be made of a steel coil spring that's been stretched from the car's barrel or slide back to a suitable chassis or engine component. We've seen some racers who have simply wrapped a couple of small rubber bands around the carb. Whatever you use, just make sure that it's not so stiff that the throttle servo will be strained, and that it pulls the throttle back to idle if the radio signal gets lost.



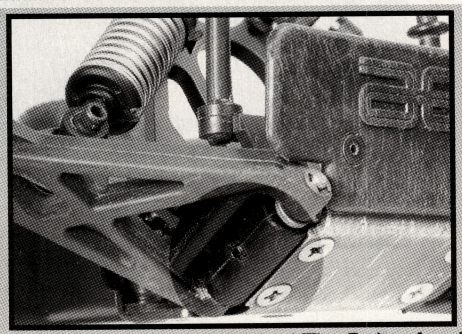


12 TIPS



6. LOCK THOSE BEADS

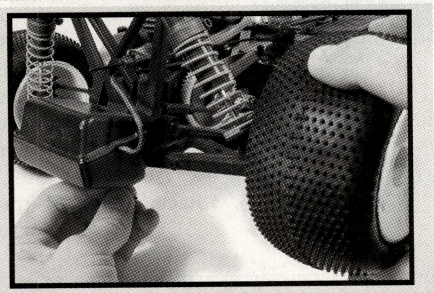
No matter how well we glue our new tires to the wheels, it seems that we always manage to loosen at least one bead during a race. It's really not that we didn't do a good job initially, it's just that truck tires have tall sidewalls, and under hard cornering, the sidewalls can tuck under the wheel and break the glue joint (this usually happens to the outside bead). While there's no surefire way to prevent this from happening, you can minimize the potential disaster of an unglued tire by checking the glue joints between races, and re-gluing them if needed. Also, you might want to alter your aggressive driving style slightly during really long gas truck A-mains, as this can help reduce the chances of the tires working loose.



7. DON'T TRUST E-CLIPS

We wouldn't trust our A-main hopes to a tiny E-clip, and neither should you! On our gas trucks, these little buggers have demonstrated a nasty tendency to fly off at the worst possible moments—like during the last lap of a 30-minute A-main, when we were leading! The E-clips for the inside front hinge-pins are especially notorious for vacating their posts. Even if you can't completely prevent your E-clips from falling out, you can prevent the hinge-pins from working loose by drilling the appropriate-sized holes in the suspension mounts or hubs, and installing small setscrews against the pins. You can also keep your E-clips in place by covering them with a dab of Shoe-Goo.

8. COMPENSATE FOR WEAR



Why don't 1/8-scale buggies use ball diffs? For one reason; ball diffs can wear enough during a long race that they loosen to the point of slipping. And once a ball diff begins to slip, it can quickly overheat and become toasted. Smart gas truck racers compensate for diff wear by setting their ball-diffs more tightly than usual prior to the start of the main event. This way, even if the diff wears, it will still be tight enough to prevent slipping.

9. CUPS: NOT JUST FOR SPORTS



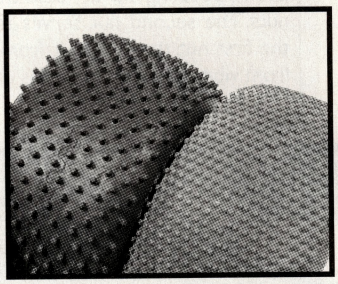
Aside from lost E-clips, the most common cause of a DNF in gas truck racing is when a suspension ball-cup pops-off. Make no mistake, this is not a random occurrence. Most of the time, the reason the ball-cup popped off was because it had become worn, and was loose enough that it no longer had the gripping power it had when new. Ball cups are cheap to replace (just a couple of bucks to do the entire truck), and they aren't that hard to install. The most difficult part of the job is setting the truck's toe-in and camber back to where they should be. We'd much rather finish a race!

10. FUEL WORKS BETTER IF IT REACHES THE ENGINE

Like every other part of your gas truck, the fuel system, e.g. the tank and fuel line, should be inspected periodically and replaced if necessary. Fuel line is the number one cause of air leaks, which can wreak havoc with the carb's settings and give you migraines in the process. For this reason, you should replace at least the fuel-feed line every four or five races. Not only will this prevent the chance of an air leak, but new fuel line also grips the inlet and outlet fittings more tightly, so it's less likely to fall off.

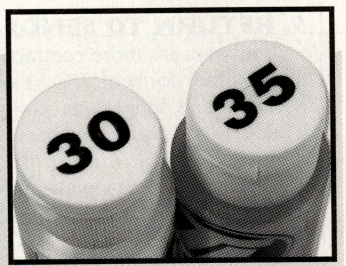
Likewise, the fuel tank should be checked for leaks. Aside from the obvious sign of an air leak (bubbles going into the carb), it's a good idea to give the tank a pressure test once in a while. To do this, simply disconnect the fuel line from the carb, and the pressure line from the pipe. Wipe off the end of the fuel line, pinch off the end of the pressure line and blow through the open fuel line. Once the tank is pressurized, you should feel significant resistance while blowing. If not, the tank and/or the fuel line is leaking. To be extra certain, remove the tank from the tank and submerge it underwater while performing the test.

11. CONSISTENT TRACTION IS BEST



You know those pin-spike tires that allowed you to take the pole-position during qualifying? Guess what? They are probably only good for about 10 minutes of full traction. After that, they'll make your truck slip around like a vintage muscle car on a frozen pond. Most tires that have taller spikes rely on the height of those spikes for traction. Once the spikes wear to a certain point, grip goes out the window. This is why you'll often see many pro drivers switch to short spikes or "fuzzy" type treads for the long main events. These types of tires rely more on the stickiness of the rubber for traction, and because of this, they provide fairly consistent traction from the beginning of the race until the end. They might not have the grip of the hot "qualifying" tires, but they will see you to the finish line.

12. YES, SILICONE DOES THIN OUT



Contrary to what the manufacturers tell you, silicone shock oil does become thinner as it heats up. But to be fair, some of this thinning is the result of contaminant's working their way past the shock seal and into the oil chamber. However, as a result, you'll often find that 10 minutes into your 30-minute main, your perfectly damped suspension will feel as if it's lost all its shock oil! To compensate for this, many pro drivers will thicken their truck's shock oil by as much as 10wt, depending on the duration of the race and the ambient temperature. Although the truck will feel stiffer initially, it will soon be back to "normal" as the oil heats up.

It's a smaller Inferno.... but still sure-fire.



KYOSHO
THE FINEST RADIO CONTROL MODELS

INFERNO™ TR15

Any R/C driver worth his bearings knows about the 1:8 scale Inferno "MP" buggies from Kyosho. Four consecutive IFMAR World Championships tend to make you a household name with off-roaders everywhere. Ever wonder what it would be like to put yourself at the controls of a machine this technologically advanced?

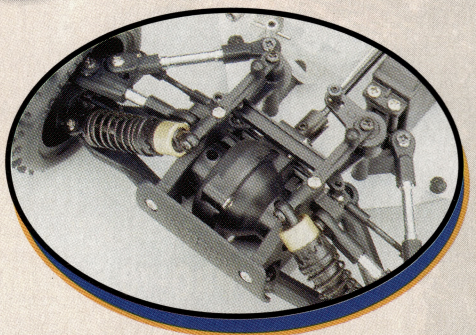
Wonder no more. The Inferno TR-15 is here. It has all of the same superior racing engineering of the Inferno MP...in a .15-size buggy that's designed for slightly smaller tracks (and budgets). An aluminum main chassis with countersunk screws provides a stable and durable base, and the center shaft 4-wheel drive system is mounted low for better handling. Gear diffs front and rear deliver smooth, efficient power to the wheels, which are adorned with high-grip, pin-tread tires. A dust-proof radio box and large rear wing are just two more performance perks that the TR-15 shares with its big brother.

So if you have a burning desire to hook up with a truly hopped-up buggy, go with the awesome off-roader that everyone will recognize: the Inferno TR-15 from Kyosho. Hey, it's an Inferno — so you know it's hot.



Much of the Inferno TR-15's chassis comes already factory-built, so you'll be out tearin' up the terrain in just a few hours.

The included Kyosho GS15R engine is incredibly powerful, and starts easily with its built-in recoil starter. The realistic racing sound of the included tuned muffler adds even more excitement.



The oil-filled shocks and ball linked double wishbone suspension offer exceptional stability; the front suspension arms are adjustable to adapt to varying track conditions.

KYOC0434
Length: 15.4 in (390mm) • **Width:** 9.5 in (245mm) • **Height:** 5.9 in (150mm)
Wheelbase: 10.8 in (275mm) • **Front Track:** 7.9 in (201mm) • **Rear Track:** 8 in (203mm) • **Gear Ratio:** 9.37:1 • **Approx. Weight:** 3.7 lb (1700g) • **Engine:** Kyosho GS15R w/recoil starter (included)
Requires: 2-channel radio w/2 servos, fuel, starting equipment

For more information and the location of the dealer nearest you, see our web site at: **www.kyosho.com**
or call 1-800-682-8948 and mention code number 2936V.

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BAD TO THE BONE!!

SIMPLY THE

BIGGEST

MEANEST

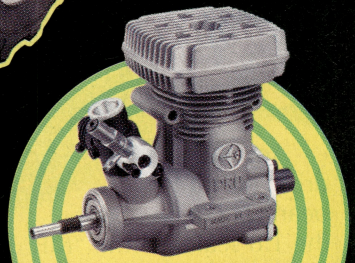
BADDEST

RC TRUCK TO EVER ROLL OFF THE PRODUCTION LINE, THE

FIRE BREATHING

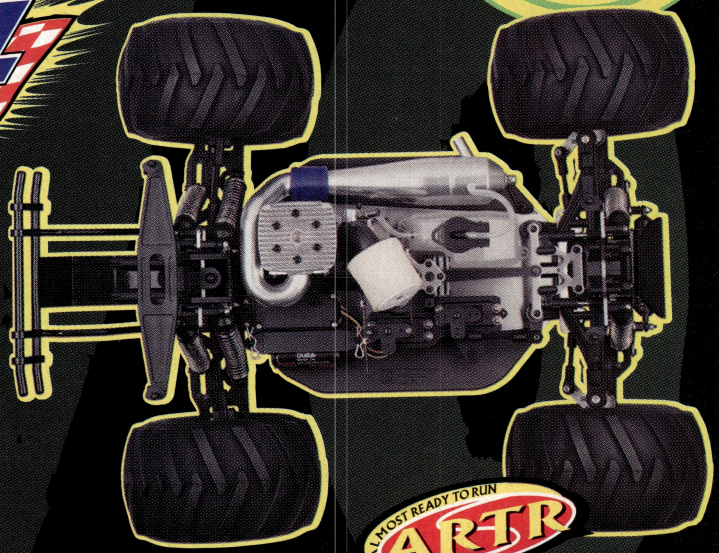
TERRAIN STOMPING





PRO-70BX(R) ENGINE INCLUDED

EK4 SPORT



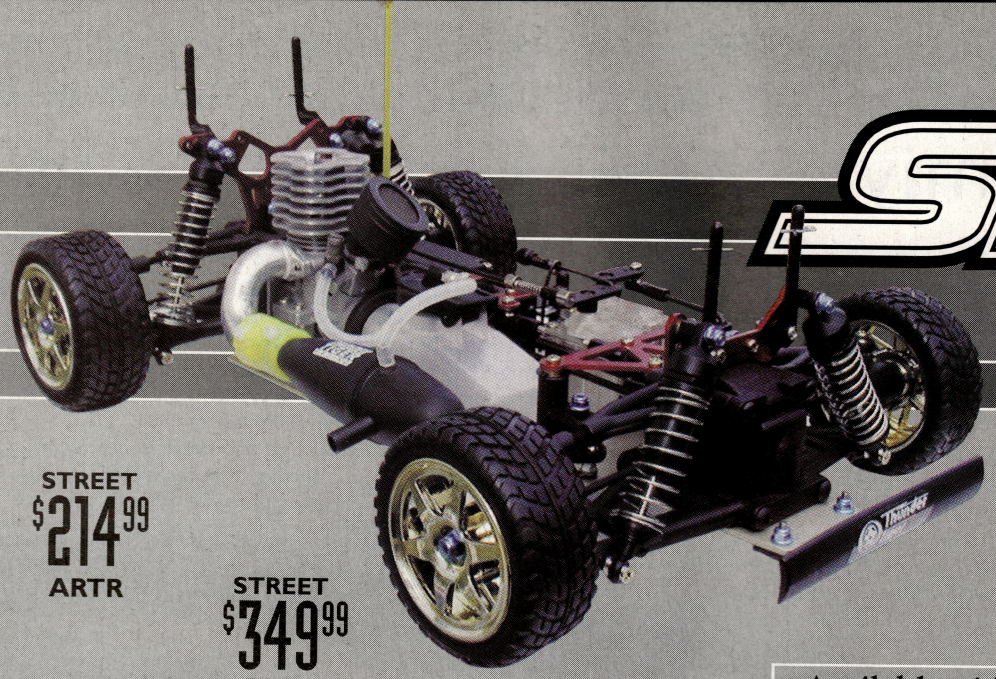
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Available either Almost-Ready-to-Roar (90% Assembled with Engine) or Ready-to-Roar (100% Assembled with Engine and Radio)

THE THUNDER TIGER SSR

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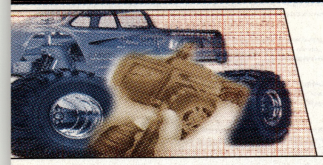
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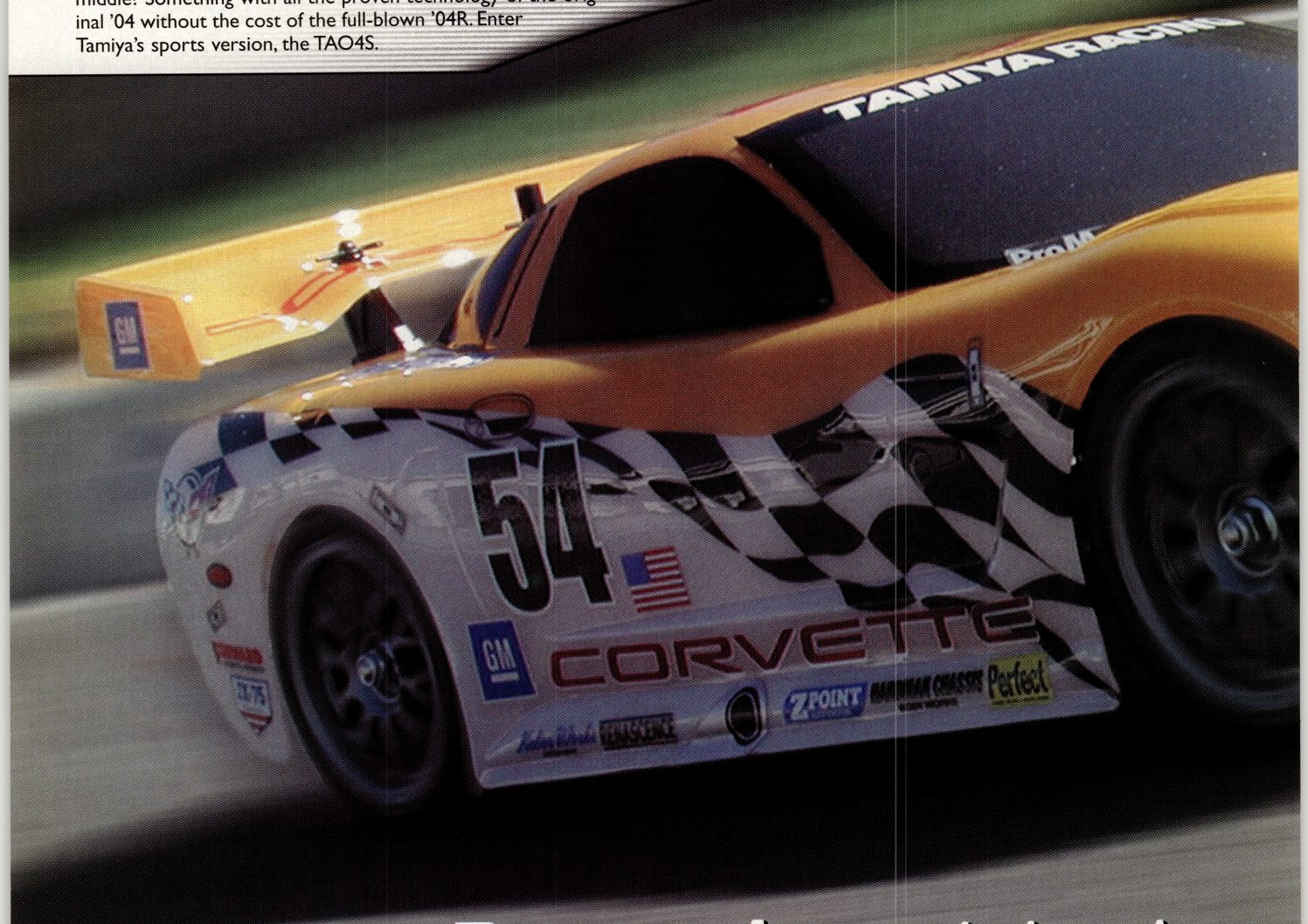


Tamiya TAO4S Corvette C5R

Tamiya designs chassis that have the ability to endure the onslaught of the Johnny-come-lately technologies. They have proven it with the longevity of the TL01 and TAO3 lines and all the variations that have sprouted from the two. So what do you do if you've created a very stable, competitive chassis originally based on the limited edition 414 platform? For one thing, you don't set out to reinvent the wheel. At least not yet. You set out to do what you do best. Refine your wheel. In previous tests we looked at the TAO4 Pro, basically a production version of the no-holds-barred 414 series (see our feature on the 414M last month).

Next we looked at the original TAO4. It was a very competent chassis with plenty of room to grow and be modified into a competitive chassis. From there, Tamiya upped the ante and gave us the '04R. A fully modified, race-bred chassis that included a carbon-reinforced lower deck and a carbon upper deck to increase rigidity and cut weight. Along with the R came aluminum TRF dampers, an aluminum heat sink, racing hub carriers, universal shafts and a complete set of bearings.

So what's next for the '04 line, you ask? How about something in the middle? Something with all the proven technology of the original '04 without the cost of the full-blown '04R. Enter Tamiya's sports version, the TAO4S.

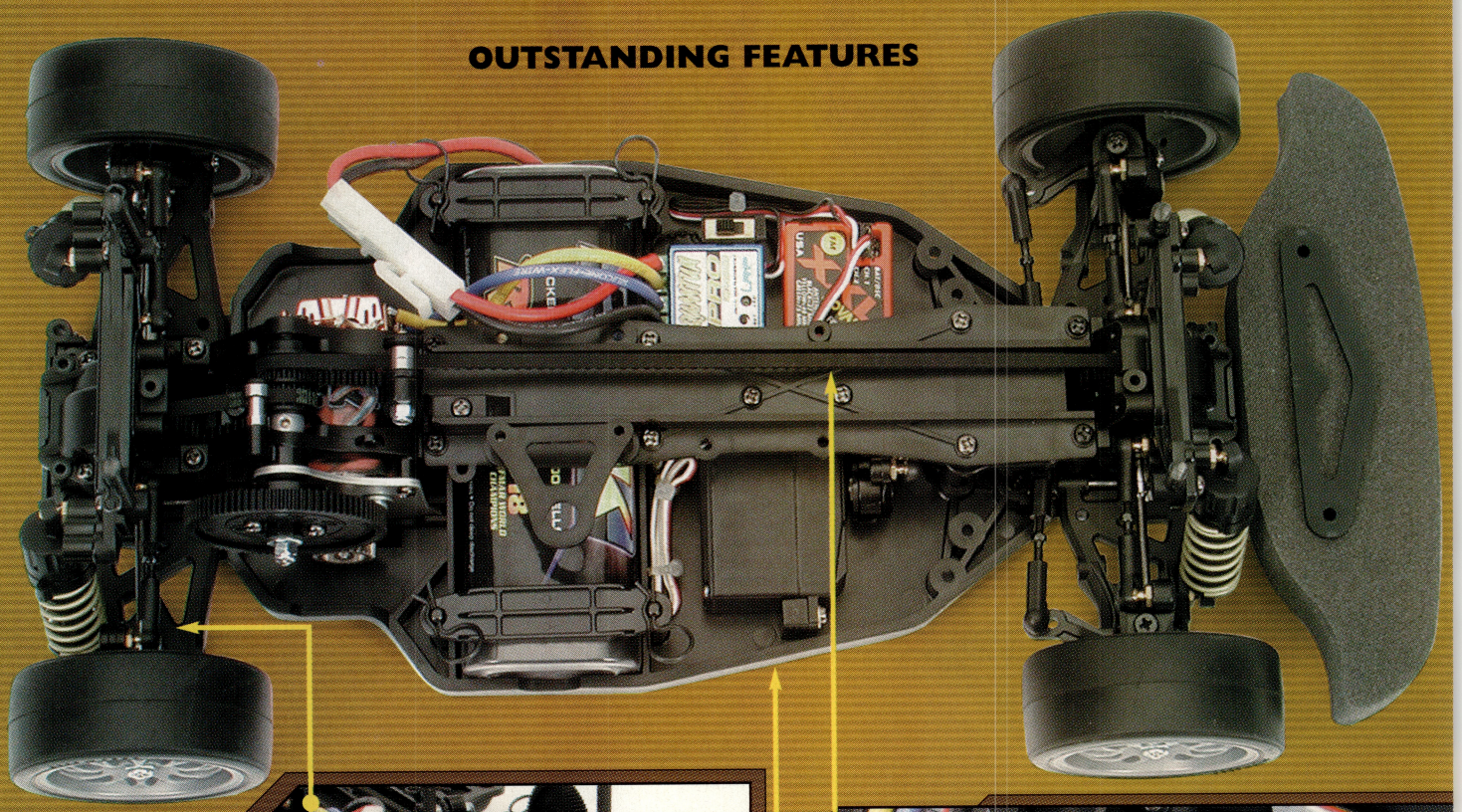


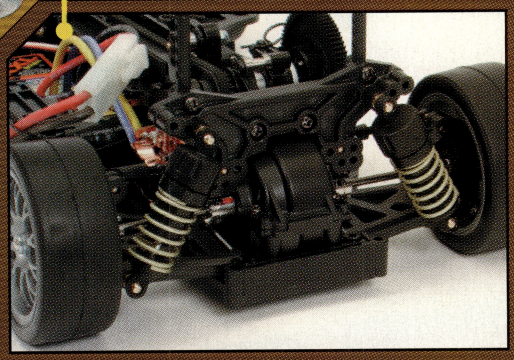
Pre-painted body- What more could



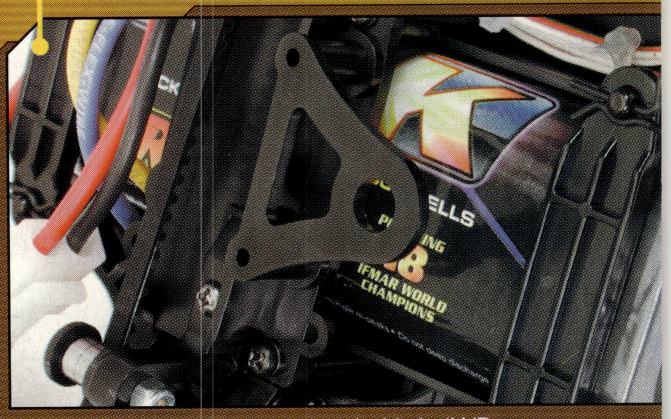
turnbuckles and bearings. a sport-sedan need?

OUTSTANDING FEATURES

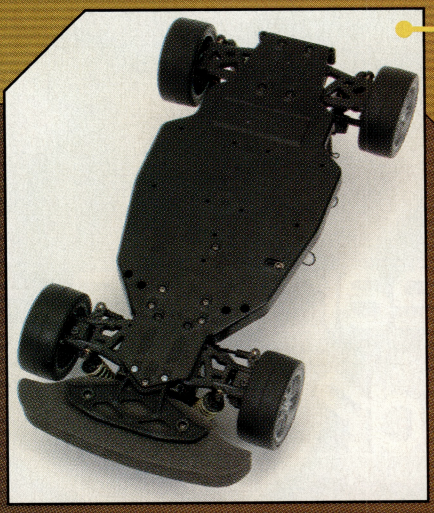




Designed with the novice racer in mind, the '04S has revised the suspension of its original counterpart. Instead of threaded links to adjust the camber and toe, the S comes with a full set of turnbuckles that allow for easy adjustments without the aggravation of major suspension disassembly. While the TAO4R came with a set of aluminum TRF dampers, the S retains the plastic shock bodies of the original '04. To some, this may be disappointing, because an aluminum shock body will be more consistent in its damping abilities. In my opinion, a novice driver will not be able to notice the loss and until they are able to, they can save the extra money to pay for their practice sessions at the track.



The '04S uses the race-proven dual-belt 4WD system that powered the original 414 and TAO4 chassis. We also get a full set of ball bearings to help create a very efficient drivetrain. One of the only downsides to the '04S is that there is no motor in the kit. I understand the reasoning; it gives the racer unlimited options for motor choices. But most novice racers will probably race in the stock class in which case the tried and true silver can would have been nice to see.



When have you ever seen a Tamiya kit that didn't come with a spot-on Lexan replication of its full sized counterpart. The S is no exception. I would like to tell you that I spent countless hours masking off and painting the beautifully detailed Corvette C5R body, but the truth is, concourse gurus like Ian Aquino are in danger of being put out of business. The body in the photos is straight out of the box. Tamiya used the increasingly popular technique of vacuum-forming pre screened Lexan. For diehard racers and painters, it curbs the creativity of designing your own paint scheme (although the Vette body can be purchased unpainted). For the beginner, however, it's the best thing to come along since indoor plumbing and Ovaltine. The only thing left to do, as Tamiya's web site put it, "is to enjoy putting on the stickers." Thank goodness they started prescreening their amazing Original Teile CLK DTM body as well, because let me tell you, after the first "enjoyable" hour and a half of sticker application, it became excruciating. However, the end product was absolutely worth it, though.

Tamiya TAO4S Corvette C5R

REPORT CARD
Test location: Ventura Roadrunners, Camarillo, CA
Track type: Smooth asphalt roadcourse. No traction additive

Speed and acceleration: B
The Vette doesn't come with a motor, so its speed is dictated by what type you install. We chose a Trinity P2K 2 Pro stock motor. The twin-belt 4WD of the '04S is quite familiar to us, and so is its smooth, lightweight feel. The car accelerated as briskly as any belt car, and top speed with the stock motor was excellent, thanks in particular to the full set of bearings that Tamiya has included.

Low-speed steering: B-
Virtually any shortcomings in the '04S' handling could be traced to its relatively tame slick tires, which provided only moderate traction at best. On the tight sections of the track, the car had a tendency towards understeer (push) when entering turns. We felt that the car had to be slowed too much to overcome this.

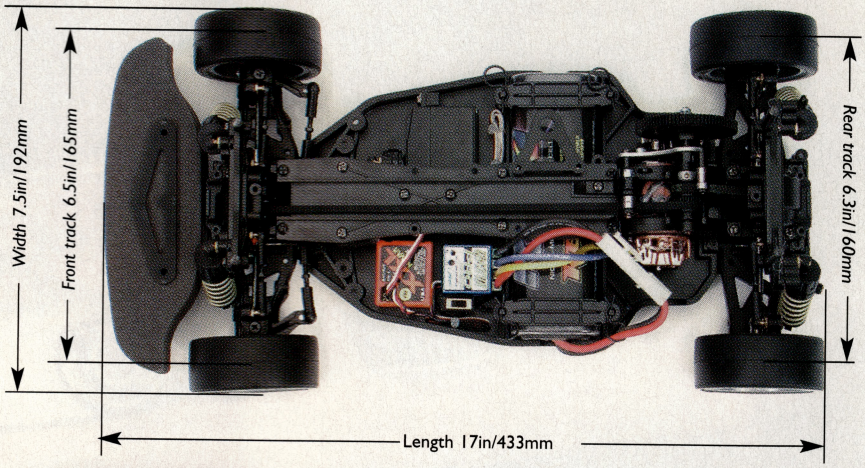
High-speed steering: B-
The less-than-grippy stock tires were again at fault at higher speeds. The car had a habit of oversteer when entering fast turns (exactly the opposite trait as experienced in slow turns), which made it trick to keep from spinning out. On-power through sweepers, the Vette body proved to have a good amount of rear down-force, and kept the rear end more in line.

Straight-line tracking: B
Tamiya has improved the design of its steering bellcranks with the '04 series, and the '04S is no exception. The car was adept at holding a straight course, and came out of the turns with stability. If you've owned previous Tamiya sedans, you'll be shocked at how much tighter the new cars' steering has become.

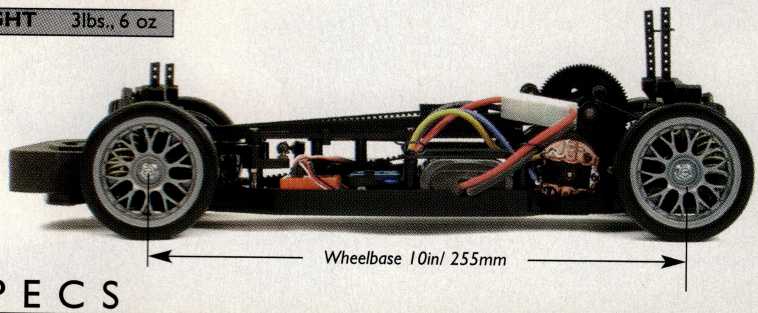
Braking: A-
With full-time 4WD, the '04S stops with authority. Our test car was fitted with an LRP Quantum Pro Reverse ESC, which, despite its small size (it's the world's smallest ESC), provided plenty of fade-free braking. We've noticed that all of the tub-chassis '04s we've tested have had a slight chassis tweak, and this could be felt on occasion in the form of a pull to one side under heavy braking. A slight change to the shocks' pre-load and the addition of stickier tires would remedy this.

Adjustability: B
The '04S enables the racer to change quite a few suspension settings, including camber, front and rear roll-centers, shock angle and front toe-in. The lower arms also have down-travel setscrews for additional tuning, and the steering spindles provide two Ackermann positions for the tie-rod.

Durability: A
Tamiya have proven to be the masters at producing plastic chassis and suspension parts that have the perfect blend of stiffness and flexibility. What this means is that the suspension is stiff enough to hold its geometry well for improved handling, yet isn't so stiff that it is brittle enough to snap during a moderate collision. This trait makes the '04S a very durable car for novice racers.



WEIGHT 3lbs., 6 oz



SPECS

TYPE	1/10-scale 4 Wheel Drive belt driven sedan
PRICE	$170.00 (Estimated street price)
CHASSIS	
Type	Tub
Material	ABS Plastic
SUSPENSION	
Type	Lower A arm with adjustable upper links
Damping	Plastic oil-filled shocks
TRANSMISSION	
Type	Dual belt driven 4 wheel drive
Drive shafts	Steel dogbones front and rear
Bearings	Metal-shielded ball bearings

Final Score

Highs: The legendary dual-belt drive system makes its way into the TAO4S. Turnbuckles, turnbuckles, turnbuckles! Uncompromising attention to detail in the recreation of the Corvette C5R body. The chassis comes with a full set of bearings.

Lows: Although the C5R Vette body is beautifully finished, some people would prefer to paint their own body. The kit doesn't come with a motor. While it's nice to have a choice in motors, it still would have been nice to see the friendly gleam of a silver can motor packaged in the box.

The Verdict: If you're looking to get into the sport of R/C and you want to be competitive, but you're not ready to throw down the cash for the all-singing, all-dancing, super touring chassis, then a sport kit is right up your alley, Combining many of the competitive features of the high end chassis but still maintaining the affordability of the beginner cars, sports chassis are a no-brainer choice for competitive beginner cars. With so many different kits available to the consumer, it's really hard to go wrong with Tamiya's TAO4S, and that pre-painted Vette body is simply fantastic!

SOURCES

Tamiya America, Inc., 2 Orion, Aliso Viejo, CA 92656-4200 ï phone (949) 362-2240; fax (949) 362-2250
LRP, distributed by Associated Electrics, Inc., 3585 Cadillac Ave., Costa Mesa, CA 92626 • phone (714) 850-9342; fax (714) 850-1744
Trinity Products, Inc., 36 Meridian Rd., Edison, NJ 08820 • (732) 635-1600; fax (732) 635-1640

MICRO RS4

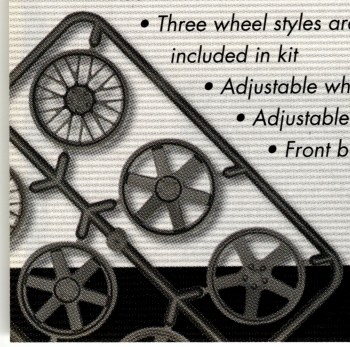
SPECS

SPECIFICATIONS



- *Full-time 4WD*
- *Complete set of ball bearings*
- *Front and rear gear differentials*
- *Uses standard size electronics*
- *AA or AAA batteries*
- *15 to 40 minutes run time*
- *Three wheel styles are included in kit*
- *Adjustable wheelbase*
- *Adjustable width*
- *Front bumper*

FOUR WHEEL DRIVE
4WD
MAXIMUM TRACTION ON ANY SURFACE



ADJUSTABLE WIDTH



COMPLETE SET OF BALL BEARINGS INCLUDED





#603 Micro RS4 Kit with Nissan Skyline GT-R Body
(150mm W.B.)

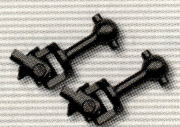
#601 Micro RS4 Kit with Dodge Viper GTS-R Body
(140mm W.B.)

#602 Micro RS4 Kit with BMW M3 Body
(150mm W.B.)

OPTION PARTS



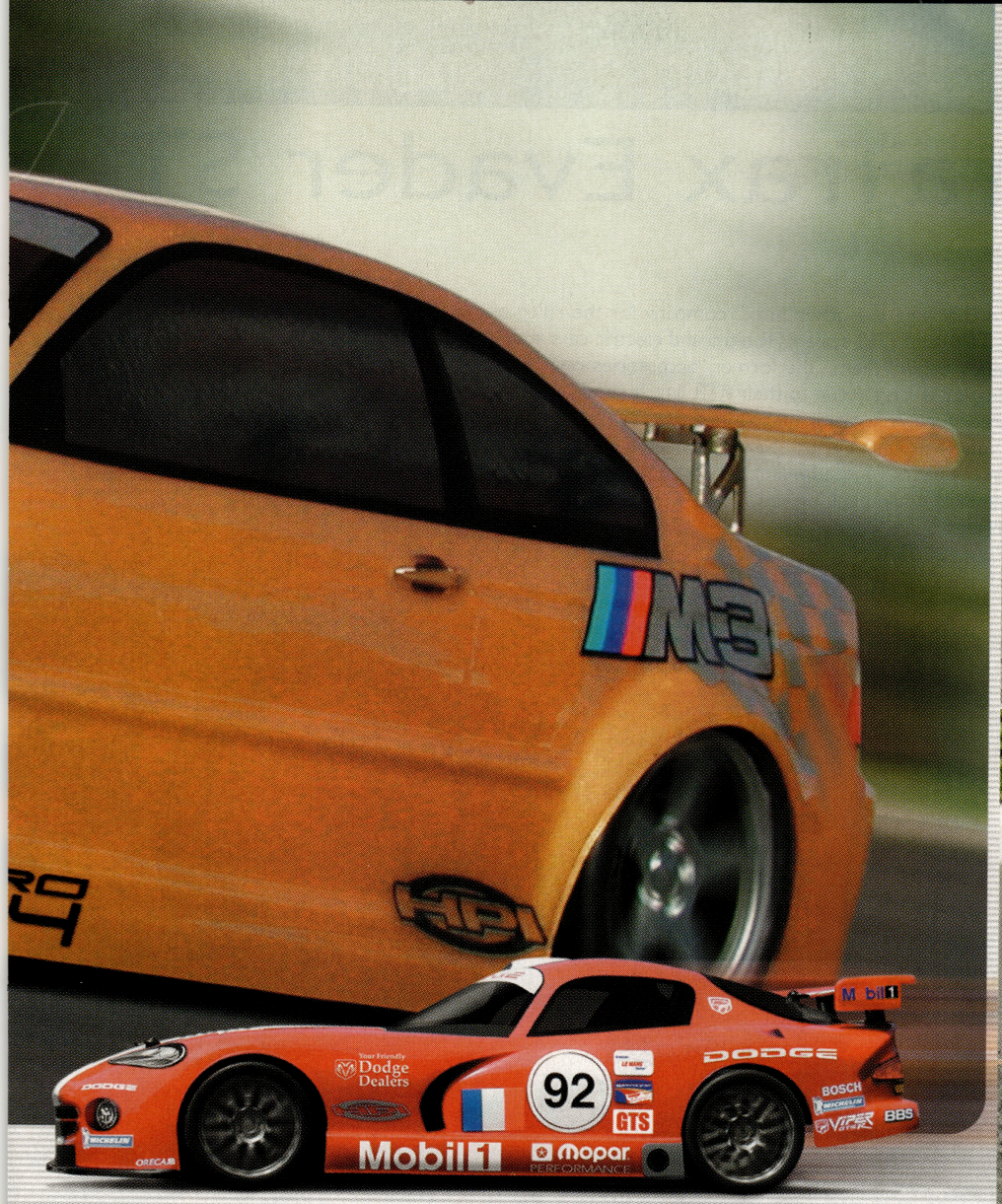
#1065 Micro Modified Motor (45T)



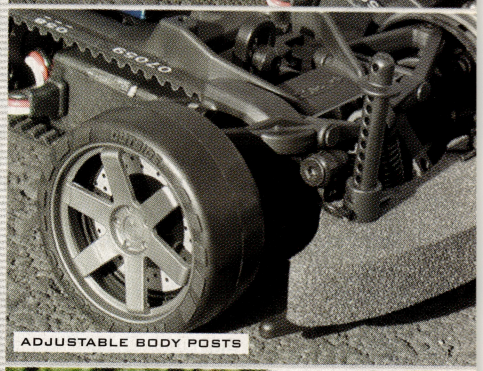
#72456 Front Universal Dogbones



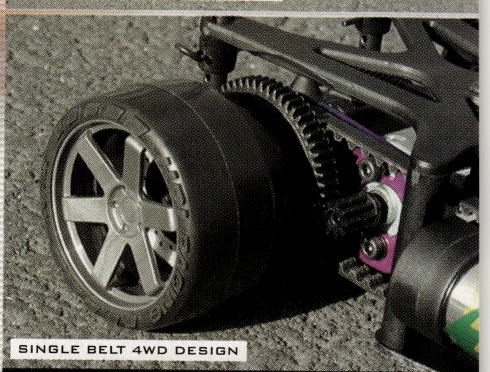
#72455 Front One-Way Diff





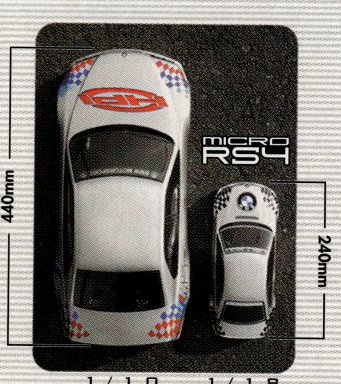






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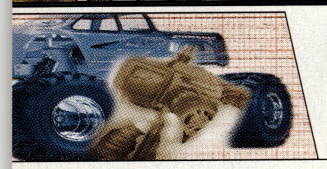


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DuraTrax Evader ST

by Lito Reyes

So, it looks like DuraTrax is poised to challenge the other "trax" company for the ruler of the RTR (Ready-To-Run) market. In fact, DuraTrax currently has a lineup of 11 1/8- and 1/10-scale RTR nitro and electric cars and trucks. With the support of the largest R/C distributor in the country, Great Planes, behind them, the former "accessories only" company clearly has its sights set on current market leader Traxxas, whose rise to domination is largely due to their RTR line. It seems like DuraTrax is putting out a new car every time we turn around. They now have a car or truck for every major off-road market segment, and a couple of on-road ones.

Their newest off-road truck, and currently their only electric-powered offering, is the Evader ST stadium-style truck. With design cues taken from the past couple of generations of American race-specific trucks, and with an extensive "standard-equipment" list, this truck is marketed towards the RTR purchaser who wants more than just a bare-bones truck. DuraTrax's goal was to make a feature-rich RTR that provides their customers with excellent value. And did we mention that there is a one-year breakage guarantee on most suspension parts?

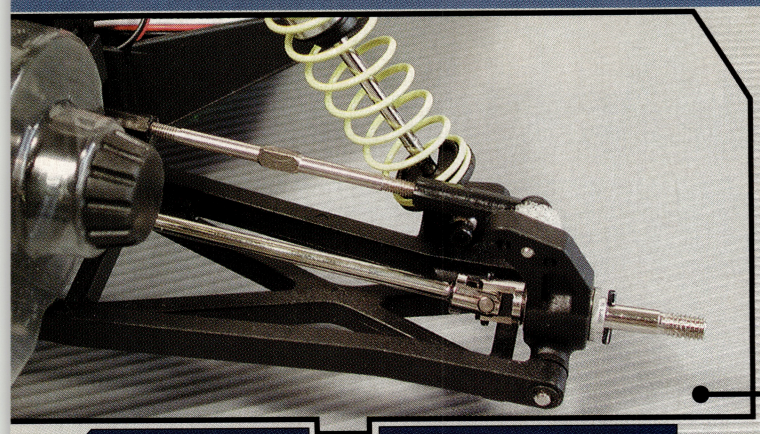


More features than most racing trucks at

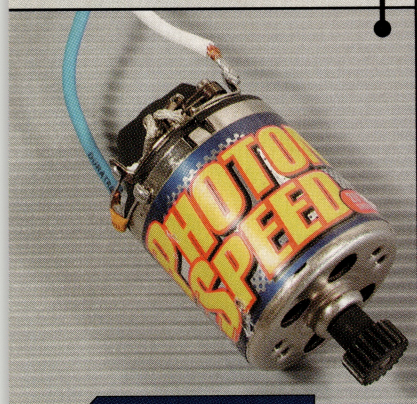


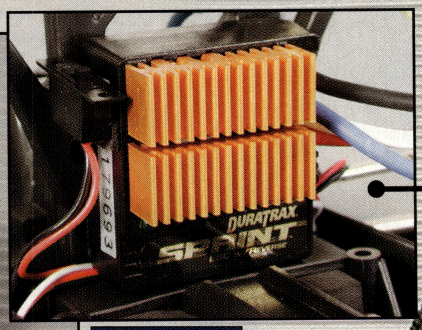
The Evader comes as a RTR with a radio already installed. It's also available pre-built without the radio (but with the ESC).

a beginner-friendly price

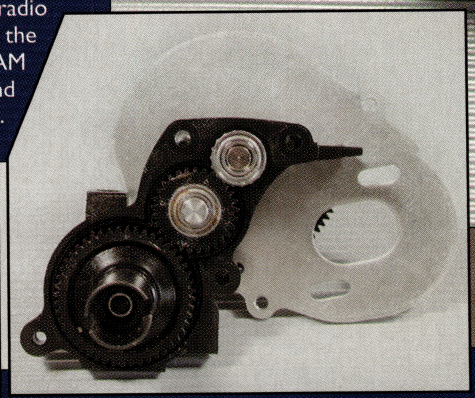


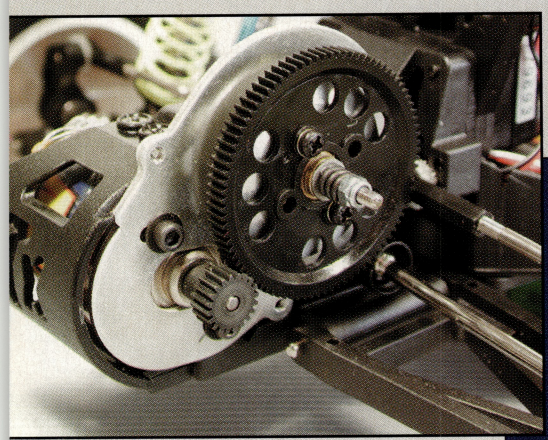
All four suspension arms are made of a very tough, but pretty flexible plastic material. The flexible nature of the material used makes DuraTrax's "Stress-Tech" guarantee possible; in most crashes, the arms with flex then spring right back into place rather than shattering or shearing. Not the best thing for consistent performance, but what we're looking at here is value, and nothing says value better than a one-year breakage guarantee.





For "faster than your average RTR" speeds, a 20-turn modified motor comes standard, and of course, pre-installed. And it's not a cheap fixed-endbell model, but a fully-rebuildable motor. A reversing ESC with brakes and "no-touch" setup is installed on the rear shock tower where it will get plenty of airflow. The radio gear is made for DuraTrax by Futaba, including the steering servo, receiver, and transmitter. The AM transmitter has servo reversing, throttle and steering trims, and dual rate adjustment. Alkaline batteries are even included for the transmitter.





The drivetrain contains a standard three-gear laydown transmission with an adjustable ball differential. An adjustable slipper clutch is also present to provide some traction control and to save the tranny gears from the shock of landings. The steel outdrives of the ball diff turn steel universals that get the power to the rear wheels. Also, the Evader is fully equipped with ball bearings for extra-smooth drivetrain action.

DuraTrax Evader ST

OUTSTANDING FEATURES

As we mentioned in the intro, the design is similar to previous generations of Losi and Associated vehicles. The composite tub chassis has a lowered centerline to put the battery pack low enough to bring down the center of gravity of the truck. The front end of the Evader is hinged to the main chassis tub and is strengthened by a top brace that goes over the steering servo. The rear bulkhead also detaches from the main chassis. This modular design makes it easy to maintain and cuts down on parts costs in the long run.





It's almost a given that RTR models come with bottom-of-the-barrel tires—frequently without inserts. Not so here. The rear pins are a soft and sticky compound and the fronts have a traditional ribbed design and are also pretty sticky. All the tires are pre-glued to white dish racing wheels and have foam inserts already installed.

Most lesser RTR models would have plastic shocks. In fact, many more "race-ready" designs have plastic shocks. But the Evader has natural-finish Losi-style bottom-fill threaded aluminum shocks on all four corners. Many racers feel that aluminum shocks are more consistent than molded ones. These are pre-assembled with 20wt oil and feel quite smooth.

DuraTrax Evader ST

REPORT CARD
Test location: Hot Rod Hobbies, Santa Clarita, CA
Track type: Hard-packed off-road with lots of big jumps.

Getting running: A+

Unless a company figures out a way to package an employee with each kit, we can't think of any way to make it easier to get the Evader up and running. Heck, they even give us eight AA batteries for the transmitter! The radio trims were set correctly (although we did have to throw the servo-reverse switch for the throttle channel), and the ESC was set up right.

Traction: ?

We left this grade blank because frankly, we have no idea where the majority of people will choose to run their Evaders, e.g., grass, asphalt, etc. If this were a race truck, and was only going to be used on a track, we would give its stock setup and tires a "C" grade, as we felt that any additional power would have made the truck very hard to drive on our hard-packed test track. However, with the supplied motor, the Evader could be driven around the track fairly easily. The ESC felt smooth and efficient (we achieved consistent run times in excess of seven minutes using a sport pack).

Suspension: B-

We know this is a sport truck but we still felt that the suspension was a bit too flexible for our tastes, and that the stock shock oil was, as is the case with almost all RTRs, too thin. This caused the Evader to slap hard when landing from jumps, and made the truck less controllable than it could have been with more damping. We also felt that there is no excuse for this amount of chassis flex! The Evader's chassis flexes so much that it must comprise at least 20 percent of the total suspension action! You won't notice the flex while driving, but the suspension will be wondering what exactly it's attached to.

Steering: B-

The Evader has good suspension and steering geometry, so it is pretty good at carvin' up turns. On most surfaces, the tires will provide ample traction, but if the ground is hard-packed, expect a degree oversteer both entering and while exiting turns.

Jumping: B

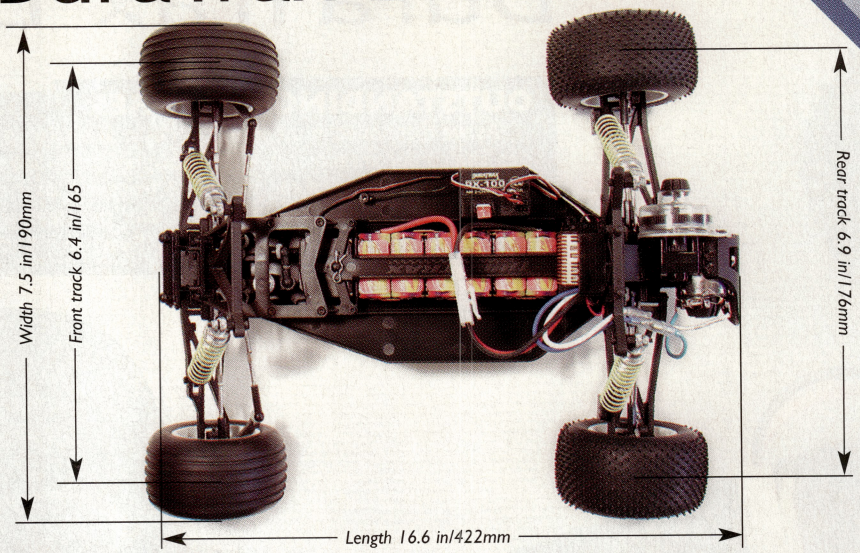
We were a little shocked at how well this inexpensive, sport RTR truck handled the big jumps on our test track. Essentially, we could clear just about everything that could be cleared by a stock-class race truck. The Evader exhibited good flight control, and tapping the brakes allowed us to downside most doubles.

Speed: B-

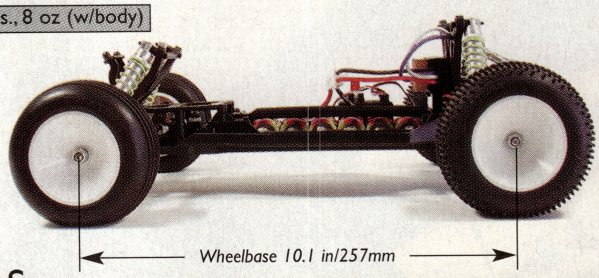
Okay, the Evader doesn't have one of those weak, sealed-endbell motors that come with most RTRs; it has a rebuildable 20-turn "mod" motor instead. Don't get too excited about this—honestly, the truck feels like it has a slow 27-turn competition stocker installed. This isn't too bad, as this makes the Evader one of the quicker RTR electric trucks on the market!

Durability: A

With this much flexibility in the suspension and chassis, the Evader is tougher than the T-1000 "mimetic polyalloy" nemesis from "T2" The only way you'll ever break this truck is if you really are determined to do so. And besides, DuraTrax offers a one-year warranty against breakage, so do your worst.



WEIGHT 4lbs., 8 oz (w/body)



SPECS

TYPE	1/10-scale RTR electric off-road truck
PRICE	$169.99 RTR, $109.99 pre-built w/ESC
CHASSIS	
Type	Molded tub
Material	plastic composite
SUSPENSION	
Type	independent lower A-arms w/adjustable upper links
Damping	anodized aluminum, oil-filled shocks
TRANSMISSION	
Type	three-gear with ball-diff and slipper clutch
Drive shafts	universals
Bearings	metal-shielded ball bearings

Final Score

Highs: For just $169.99, you get a competent, durable and well-performing truck that's based on the race trucks of yore. The Evader is a very complete package, and its supplied Futaba-built radio is one of the better RTR pistols we've seen. We also can't believe that this truck has such features as a ball diff, slipper, threaded alloy shocks and turnbuckles for this price. Included ESC works really well, and the 20-turn motor is decent.

Lows: Chassis flex and wiggly suspension make for less than consistent handling (if you're after a precision driving experience).

The verdict: The Evader is a great starter truck, and will make its owner proud thanks to its impressive list of standard features. We also feel confident that the Evader is good enough to compete in a true beginners' class (if such a thing exists), and can get around the track well enough to help a novice become an expert driver.

SOURCES

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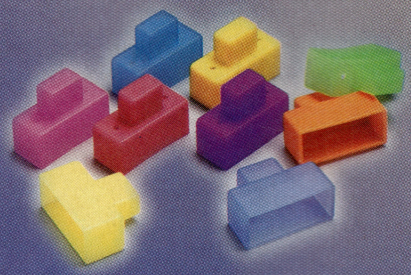
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*Sky Blue



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- Part No./Size: GSCW14--14 AWG; GSCW12--12 AWG

*Sky Blue



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*Solid Blue **Green



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  GSC2452T (50'); GSC2452S (50'); GSC24523T (3'); GSC24523S (3')
  GSC3260T (50'); GSC3260S (50'); GSC32603T (3'); GSC32603S (3')

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PRO TIPS SECTION



steve slayden

TRX-15 Power Tips

More power for less money





Traxxas' blue tuned-pipe was designed to get the most from the TRX-15 engine. Playing with the gap between the header and pipe will change the characteristics of the engine's performance.

When it came time to talk about coaxing more power out of your Traxxas TRX-15 engine, the first person we thought of was Steve Slayden. Steve works for Traxxas, and regularly races a T-Maxx and a Nitro 4-Tec Pro touring car. If there's a way to get more power out of the stock TRX-15 engine, Steve would have the answers.

OUT OF THE BOX

I have a process that I do when I take a new car or truck out of the box," says Steve. "And these tips apply to not only new engines, but older engines as well that may need re-adjusting. For starters, I always go through the carb to make sure the needle settings are correct. From the factory, we set the needles to be a little on the rich side to aid in the break-in process. It's always a good idea to set the needles to the base setting which are two and a half turns out from fully closed on the high-speed needle, and one and three-fourths on the low-speed needle. Remember, these are base settings, and there are many variables such as ambient temperature, humidity, and the nitro content of your fuel that can affect how the engine performs.

"If it's a new engine, I'll start first by checking out the high-speed needle. I'll take it out completely to make sure that it's in good shape, and not bent or broken. I've seen people actually screw it in too tight and have the needle get pinched and they break off the tip. Once you've determined that the needle is in good shape and you still have it out of the carb body, it's a good idea to blow out the high-speed needle housing with compressed air, or spray it out with contact cleaner. When you're done, put the needle back in until it's just barely snug and then back it out two and a half turns.

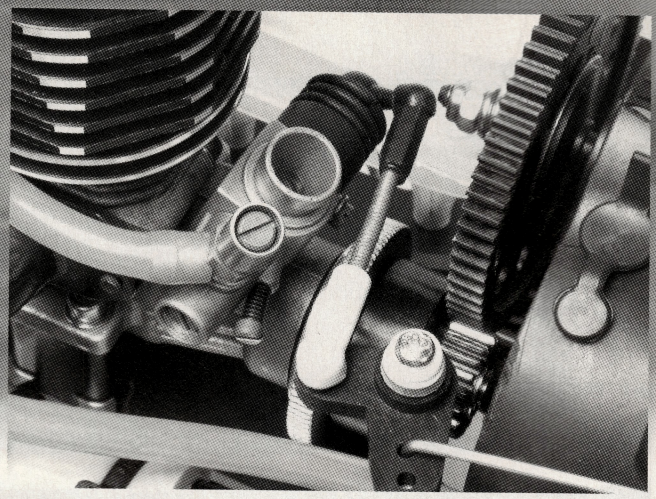
Next examine the low-speed needle. Pull the needle out and check to see if the O-rings are in good shape—this applies more to an engine that has already been run. Sometimes, when people run fuel that has a lot of castor oil in it, the oil can build up on the O-rings which makes the barrel of the carb and the O-rings gummy. If you notice that your throttle servo doesn't move the barrel of the carb like it used to, disconnect the throttle linkage and move the barrel by hand. It should move freely. If it doesn't, it may be gummed up. Disassemble the carb; back off the idle stop screw, then pull the barrel out, and spray the entire assembly out with contact cleaner to free it up.

RUNNING HOT

Don't be overly concerned by the fact that the TRX-15 runs a little hotter than other .15s. It runs about 30–40 degrees hotter than other engines in its class. We recommend that you use our Traxxas fuel because it was engineered to run in our engine. We regulate what goes into our fuel, and it works great with our engine. We use a little extra oil in our engine. If you feel you need to run another fuel, here are some recommendations: use a castor-blend oil, no straight-synthetic fuel. and make sure that the fuel has at least 12-percent oil content



Although Traxxas' EZ-Start system makes starting easier, it does add weight. Performance-minded racers may wish to replace the EZ-Start with a lighter pull-starter.



Slide carbs can offer an advantage in the form of improved throttle response. However, routing the throttle linkage can be troublesome.

minimum. We prefer to use fuel with 14-percent oil content though.

As for nitro content, I prefer 20-percent nitro fuel. It seems to work best. If you run a higher nitro content, you will get more performance, but your tuning window decreases, and it's easier to cook your engine if you're not careful. I don't recommend anything over 30 percent, and Traxxas doesn't recommend using anything over 20 percent.

ENGINE MODS

As a Traxxas rep, I can't really talk about going into the engine because it voids your warranty. What I can tell you is to check out *www.nitrorc.com*. This web site has all the detailed info on how to get the most power out of your engine through modifying it. Our guys at work have followed their porting and polishing techniques, as well as other mods, and they've really worked well. There are warnings all over the website that remind people that opening up the engine and modifying it will absolutely void your warranty, so just remember that.

DONT FORGET GEARING

One of the most important things to remember is to gear down low to maximize low-end punch. You want to make sure that you keep your vehicle in the meat of the powerband. If you pull hard out of the corners, but are getting passed on the straights, you may have to compromise and gear up a tooth or two. In addition, make sure your clutch is in good shape. If your clutch is in bad shape, you won't be able to put the power to the ground.

SLIDE CARB

Slide carbs provide more low-end punch, and they are more linear off idle when getting on the throttle. Typically, a slide carb flows air and fuel better than a rotary style carb. With a rotary style carb, as it rotates open, the fuel/air mixture has to flow around the barrel and it has to go around many corners before it gets to the crankcase opening.

With a slide carb, nothing gets in the way of the fuel/air flow. The slide carb opens up directly and the fuel/air mixture goes directly into the crankcase past the needle.

PIPE AND HEADER

Traxxas' blue tuned pipe works very well—it was designed around the engine. When you set up your pipe and header gap, here are a few general rules. Moving the pipe closer to the header will give your engine less bottom-end power and more top-end. Vice-versa, if you pull the pipe away from the header you get more bottom-end power and less top-end power. I've found that moving the pipe away from the header gives the engine good power down low without sacrificing any top-end. A good starting point is a quarter-inch gap between the pipe and the header. We've found that moving the pipe closer to the header is a good way to smooth out the engine's powerband if there's a ton of traction where you're running.

GLOW PLUGS

The stock engine comes with a no. 3230 glow plug and it works very well. I personally run the Traxxas 3231 black plugs. The 3231 has a thicker element (colder plug), and you can run a higher nitro content in your fuel. Generally, the 3231 black plugs last longer than the 3230 but the tradeoff is that the starting and tuning of the motor is a little more difficult. The 3230 hotter plug will burn hotter and burn the fuel off faster. It will start faster, idle better, and be easier to tune. If you're a newcomer, stick with the 3230. More experienced engine guys will find that the 3231 will last longer.

DITCH THE EZ-START

By pulling off the EZ-Start system, you can help eliminate some weight from your car. You're pulling off a 380 motor, the gearcase with the motor's drivetrain, a one-way bearing, a starter shaft, and a heavy backplate. You're replacing it with either a lighter pull-start, or an aluminum backplate. If you're running a Nitro 4-Tec, and you equip your engine with the aluminum backplate, you lose the parasitic drag of a one-way bearing.

TEAM LOSI TECH-TALK

Tech Tips #10

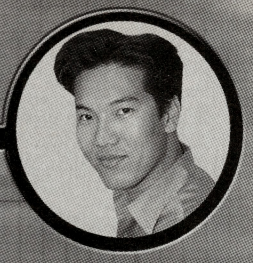
When at the track we are regularly asked "what's the best gear ratio for my XXX-S with a stock motor? Or, "how should I gear my XXX-NT with a Picco engine?" Team Losi prints a recommended gear ratio chart in the front of their kits but this information is only a guideline since motor technology is always changing. Usually the best answer for the particular track you are at is really another question! Look around and watch the racers running the same car or truck as you and note their performance. When they get done running take a moment to introduce yourself and ask them what type of motor and gear ratio they are running. Most racers are really very nice and appreciate your position having been there themselves at one time or another. To be safe, ask more than one racer and then "average" the answers. As an example, if the first response is 22/88, the second 21/86 and the third 23/90 you need only do the math (a cheap calculator helps) to learns that these fellows are running a 4.00:1, 3.90:1, and 3.91:1 primary ratios. Can you see where you want to start yet? You got it, some where between 3.90 and 4.00 to 1. The only thing you need to beware of is the occasional misinformation. It's easy to get confused and think your running 22/84 when in reality your geared 24/82. That's the difference between 3.81:1 and 3.41:1 which makes a big impact on performance and motor life. Without a doubt, the best way of optimizing the gear ratio after you have established a starting point is to try different ratios on the track for a simulated four or five minute run. Always start with a little lower (like 4.1 as opposed to 3.8 to 1) ratio for the first run. After the run check the motor to be sure it did not over heat. If everything looks good try gearing up to say 3.9 to 1 for another run. You will find that at some point the performance will drop of before the end of the run. This is usually due to the motor getting hot and losing power. At that point you need to stop running let the motor cool and change back to the previous ratio that performed well. It is also very important to note that you should not run the model until the batteries dump unless the motor is not getting overly hot. Most of the better stock drivers will only run 4minutes and thirty seconds to five minutes at a time in practice to keep from overheating the motor and potentially diminishing the power of the magnets.

Nitro racing is a lot easier since we have a clutch to work with and can make carburetor adjustments on the fly to compensate for temperature. Unless you are running on a real big track you will want to stick with a 17, 18 or 19 tooth clutch bell. Again use the same method of establishing a starting point but try going up and down one tooth to get a feel for the difference it makes. If the track has jumps right after a tight turn you may find running the 17 instead of the 18 better. This lower ratio will give you better acceleration for clearing the jump although the straightaway speed will be a little less. It still comes down to how fast and consistently you make a lap not just get down the straight. Another consideration is the engine you are running. There is a noticeable difference in the power between some of the lower priced engines and the more expensive Italian engines. You may need to run a smaller clutch bell keep the engine in an rpm range where it's happy and makes good power. One last tip you may wish to try on a slippery track is to go up one tooth on the clutch bell. This is like starting off in high gear in your real car. This tends to slow down the acceleration until the truck has gained speed and helps keep the rear wheels from breaking loose. It also means you may not be able to clear a set of doubles but that the trade of for not spinning the tires and loosing traction.

Next time we look at some XXX-S tuning tips for all you touring car racers.

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PRO TIPS SECTION

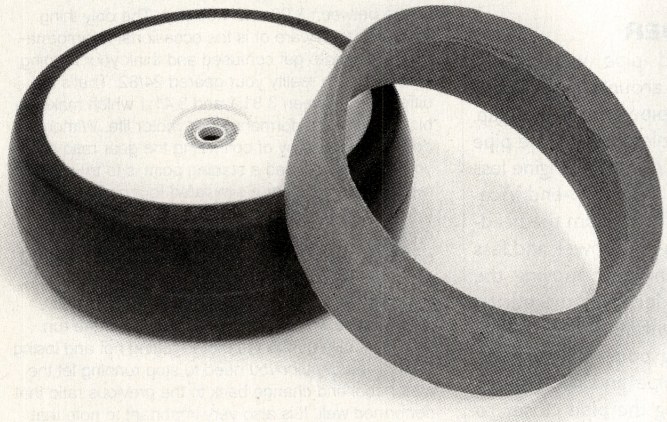


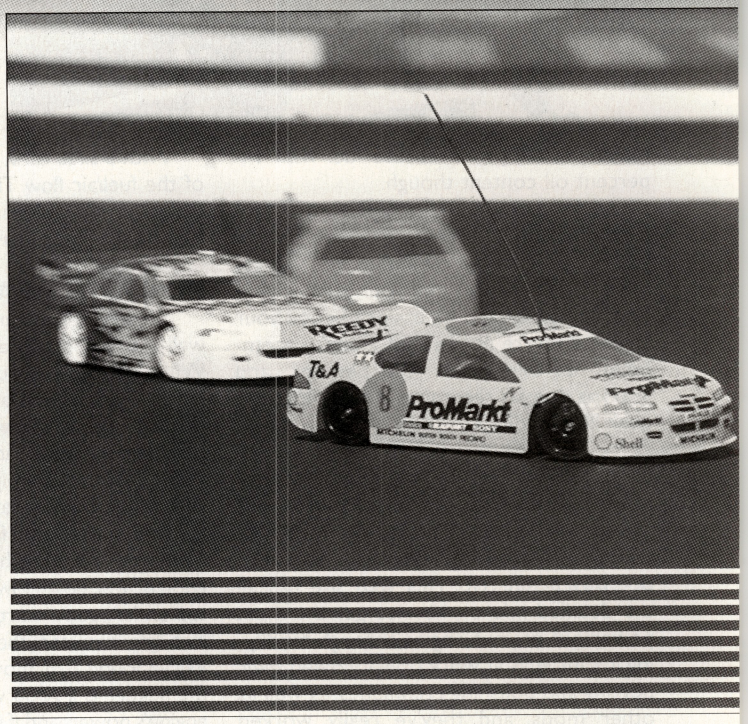
david jun

How to match touring car tires & inserts

Pick the right slick

Picking the right touring car tires and the proper inserts sometimes seems like a difficult decision. Other times, it can be made easier by looking at who is running what combo at your local track. We spoke with top touring car ace David Jun and he gave us his input on how to picks the right tire and insert.





PICKING THE RIGHT TIRE

Generally, you want to look at what the local guys are running first, but you don't want that to be your ultimate deciding factor. Looking at what the fast guys are running will put you in the ballpark regarding what compounds and inserts are working well. Keep your mind open to testing other types of tires, though—sometimes what the locals are running isn't always the hot setup. There are times when a racer may pick a tire that they can make work for them, but it's not the best performing tire. After that, there's a "follow the leader" effect, and soon everyone has settled into the idea that what they have chosen is the best tire out there, period! Don't be afraid to try something new. But where do you start?

A good rule of thumb is to start out with a tire that best suits your track conditions and track temperature. If the track you race at is an actual course designed for racing, more often than not, a slick is in order. Today, most popular slicks come standard belted. For those of you unfamiliar with a belted slick, basically, a belted slick has been belted with a type of cloth or glass fiber to reinforce the tire. If you're out parking lot racing, and the surface isn't treated, a street-type treaded tire might be a better choice.

As for compound choice, most tire manufacturers have adopted the soft, medium, or hard labels for their tires, or have some sort of alphanumeric code, eg., Type-1A, Type-2B. Generally speaking, different tire compounds excel in different temperatures. Cooler track temperatures usually dictate the need for a softer compound, while hotter track temperatures call for harder compounds. In addition, track conditions, particularly surface type, also are a factor in what compound to use. A rough, abrasive surface can heat a tire due to friction. In this case, even if the track temperature is cool, a medium-hard compound may be called for. Choosing the proper compound is the most difficult aspect when trying to pick the right tire. A fair amount of experimentation is sometimes needed.

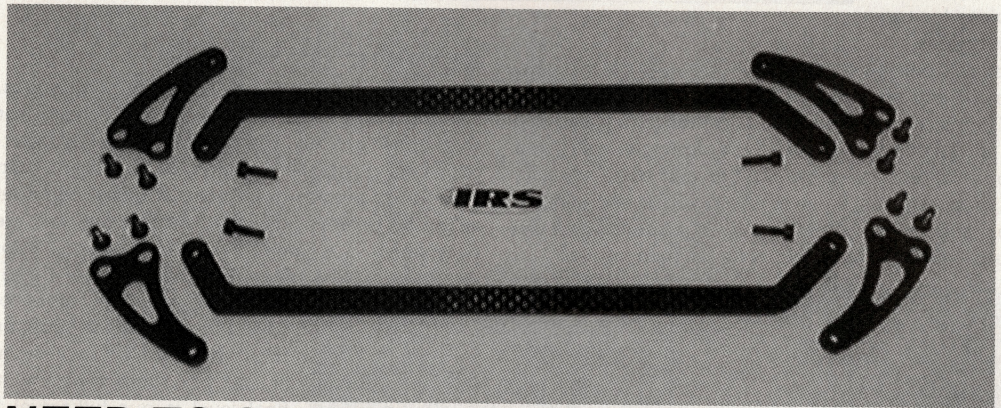
PICKING THE RIGHT INSERT

Basically, choosing the right insert is as important as picking the right tire and compound. The choice of insert is crucial to how the tire will ultimately perform. Pick the wrong one and it can distort the tire shape, which will throw off your handling.

For starters, inserts, like tires, are available in a variety of firmness. Again, soft, medium, and hard is industry standard. The key thing to remember when picking the proper insert is to evaluate track conditions, and to determine how much grip the tires will receive. If the track is a "high-bite" track, and the tire will have a lot of grip, a soft insert is out of the question. Why? Well, the softer insert will not be able to properly support the tire in a high-grip situation, and the tire could collapse, causing a loss of contact patch. As soon as that happens, you risk the tire losing grip, and the end result is a loss of traction. In this instance, a harder insert is the choice to go with.

Generally speaking, the more grip a tire has, the harder the insert needs to be and vice-versa. If track conditions are loose, or slightly bumpy, try experimenting with a softer insert. As with tire compound choice, the same also applies to inserts—the cooler the track, the softer the insert, and the hotter the track, the harder the insert. For more info, visit www.tamiyausa.com.

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PRO TIPS SECTION



Richard Trujillo

How to get sponsored

It about more than going fast!

Team Losi Team Manager Richard Trujillo has seen more than his fair share of driver resumes come across his desk. We asked Richard what he looks for in potential drivers.



A CLEAN RESUME

"Obviously we're looking for resumes that state the racer's name, address, how old they are, what region they race in, how long they've been racing, etc.," replies Richard. "We also like to know how many tracks are in their area, and what classes they race in. If they are a new racer that's just starting out in novice or a sportsman class it's obviously going to be harder for them to get sponsored. We are looking for people that have some experience. You don't have to go out and win the Nationals to get sponsored, but don't send us a driver's resume listing only a few months driving experience. We're basically looking for top-five drivers in their regions.

"Actually, we had this one guy that we sponsored who would have barely broken into the top 40 at the nationals, but he drove pretty well in his region. The reason we sponsored him, though, was because he promoted our product really well, and a lot of people really liked him. If you're a good representative, we look at that too. It doesn't matter how many races you win; if you're a jerk, you're not going to get sponsored, plain and simple. Sometimes it's not about being the fastest guy out there—although we are looking for them as well!"

GETTING STARTED

"Every driver that we start out with starts at a 50-percent-off parts level. Now there are certain instances where that doesn't really apply. If Mark Pavidis wanted to switch teams, he obviously wouldn't be starting at that level. After a person has proven themselves and has been performing well at the 50-percent level, we move to the next step up to level two, which is a "limited budget for parts" sponsorship. The next level is our level three sponsorship, which is free parts. This is for racers who have a motor-builder sponsor that handles their travel, or for racers who are regional and pay their own way to races. The final level is our full-travel factory team. These drivers get their airfare, transportation, and certain expenses.



DON'TS

"Here's an example of what doesn't work: don't send a resume stating, 'Hi I'm so-and-so and I'm 12 years old and I've been racing for six months and I have an Associated T3 and I want to switch to your company so send me free stuff.' We, and I'm sure Associated, aren't looking to

sponsor guys who just want to get free stuff and think that because they currently run another company's product that we'll jump at the chance to get our kit in their hands.

"In addition, we're not here to keep you motivated to race either. I get sponsorship requests from people stating 'I just need to switch', or 'I'm at my limit now and I'm bored and if I got sponsored I think I'd still want to race...' Yeah, we really want to go out of our way to sponsor these guys!"

DO'S

"Presentation is key. If I open up a letter, and it's on nice letterhead, and the writing is clear and the spelling is perfect, I'll be more impressed than if you sent me a hand-written letter done in crayon. And the spelling is key—everyone has spell-check nowadays on computer. If you're too lazy to go push the spell check button, how are we to expect you'll be on the gas enough to properly promote our product for us!

"Also, it doesn't hurt to throw in a few letters of recommendation from your local hobby shop, track owner, club president, etc."

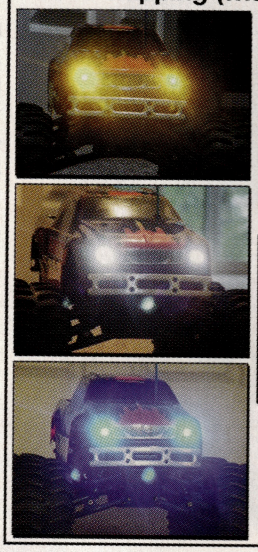
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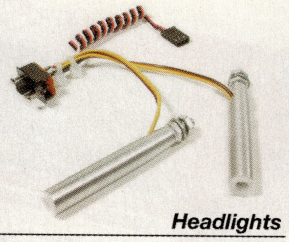
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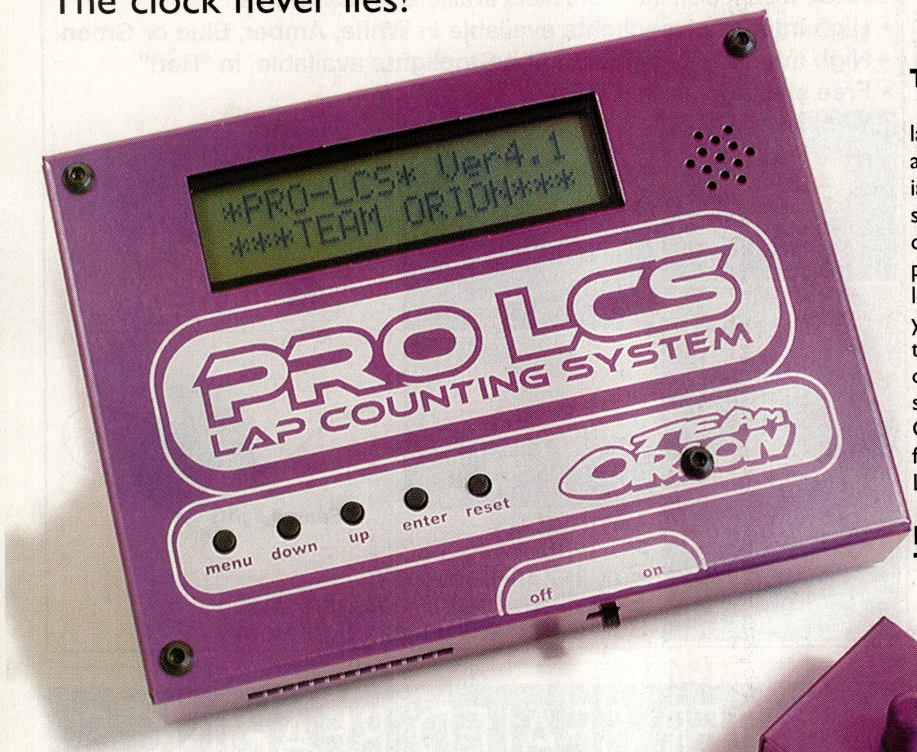
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MINIATURE BEARINGS FOR HOBBY & INDUSTRY

Team Orion Pro LCS

The clock never lies!



There's an old saying in racing that goes something like this: you can talk about top speed, you can talk about cornering speed, but the only thing that matters in the end is your lap time. When it comes to judging whether or not a change in our cars' setup has any effect, most of us simply go by feel. If it feels easier to drive, or it feels like it's going faster through a particular section, then your car is going faster, right? Not necessarily! The only way to really know if you're going faster is to time each lap. After all, qualifying is about lap times, and if your laps are faster than your opponents', then you'll win the race.

BEAT THE CLOCK

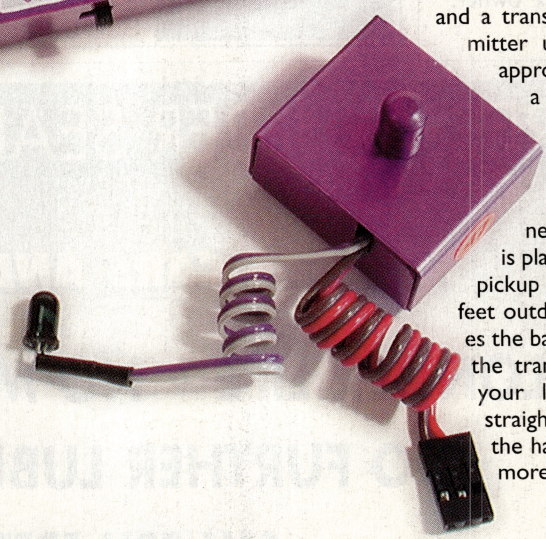
There are several ways to time your laps. A stopwatch will give you a good idea of how fast you are, but you'll need someone to operate it trackside. Some transmitters have built-in timer functions, but you have to press the button yourself, while driving. But since racing can often be a matter of fractions of a second, this method is, at best, an estimate, because in order to time each lap accurately, the button must be pressed in exactly the same spot each time, which is next to impossible when you're driving.

THE ONLY WAY TO SCORE?

The only real accurate way to time your laps is to compete at an event where an autoscore system is in use. If you're not familiar with this system, it uses transponders (a small transmitter unit that mounts inside your car), a sensing "loop," and a PC with the appropriate software. Each time your car passes the loop, the transponder's signal is recognized as yours, and the PC's scoring software counts the lap time. But unless you own a track, the only time you'll have access to an autoscore system is during a race. That is, until Team Orion worked a deal with Alex Racing of Japan for the worldwide marketing rights to the Pro Lap Counting System.

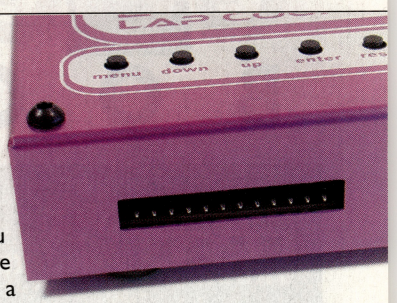
PERSONAL AUTOSCORE SYSTEM

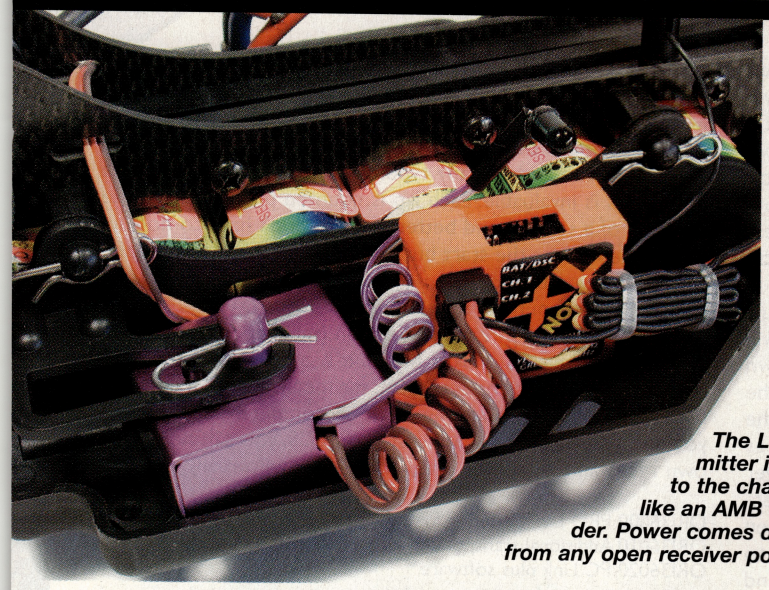
The Pro LCS consists of a small base unit and a transponder-shaped infra-red transmitter unit. The transmitter, which is approximately the size and shape of a typical AMB transponder, fits inside the car and must be connected to the receiver's battery slot for power (if installed in a nitro car, a Y-harness must be used). The base unit is placed near trackside (the effective pickup range is 32 feet indoors and 16 feet outdoors). Each time your car passes the base unit, the infra-red signal from the transmitter unit is picked up, and your lap time is recorded. Pretty straightforward, but you haven't heard the half of it; the Pro LCS does much more. How much? Read on!



STORE YOUR BEST RUNS ON PC

Through Orion's optional PC Link software, you can also upload data from the LCS to your PC for further analysis. You can also store the data from each run for further reference (for example, you can recall the data for each track you may visit to get a benchmark time). The software automatically generates a graph for each run, and allows you to compare the graphs from two runs to see where an improvement in times occured. As a bonus feature, the LCS software includes a generic setup sheet to allow you to record and store your car's setup data from each timed session.





The LCS transmitter is installed to the chassis just like an AMB transponder. Power comes directly from any open receiver port.

THE SETUP

The purple-anodized aluminum transmitter unit is designed to fit where you would install a regular transponder. As most racing cars nowadays come with some type of mount, installing the transmitter is a breeze. In some cases, you might find that the transmitter's power lead is too short to reach your receiver; therefore, it may be necessary to relocate the transmitter mount. Also attached to the transmitter is a short lead that ends in an LED. This LED must be mounted so that it aims approximately at the location of the base unit, as this is what sends the infra-red signal that will be picked up. The base unit should be placed horizontally near the track, so that its infra-red sensor faces the section of the track where the car will pass.

MORE THAN JUST A STOPWATCH

Slide the unit's power switch to the "on" position, and the large backlit LCD display comes to life. The initial screen shows which software is installed (the Team Orion LCS comes with the newest v4.1 software). Your attention is then directed to the five pushbuttons on the unit's face. Pressing the menu button allows you to scroll through the unit's nine sub-menus, which we'll explain here.

• "Lap" menu. This window is essentially a "start" button that tells the LCS that you're ready to begin practice. Press the "enter" button, and the unit asks if you're really ready (answer by pressing the "up" button). If you've chosen the "stagger" start option, the unit will begin timing as soon as the transmitter's infra-red signal is received. If you've chosen the countdown option, the unit will beep to indicate the time until you should start.

• "Display" menu. This is where you can view all the data that's been collected after your last run. This information includes the time for each lap, your fastest lap and the number of laps that fell under your target lap-time. There is also a function that allows you to hide your lap times so your competition won't know how much faster you are! The LCS can count and display up to 60 laps.

• "ID" menu. The Pro LCS can be set to work with 100 separate transmitter units. Here, you set the base unit to correspond with the number of the transmitter unit you wish to use. Although there are 100 possible transmitters, the base unit can only work with one at a time.

• "Min Lap" menu. Just like the PC software used with typical transponder timing systems, the Pro LCS allows you to set a minimum lap interval. Why is this important? Because this eliminates the chances of the LCS accidentally picking up the infra-red signal when your car is somewhere else on the track in proximity to the base unit. For example: if you run consistent 21-second laps, you would set the minimum lap time for, say 19 seconds. This way, you are virtually guaranteed that the scoring will be accurate, thus useful. If you race on a small oval track, you'll be happy to know that you can set the minimum lap time as low as three seconds (and up to 30 seconds).

• "Set Lap" menu. If you know your previous lap record, you can enter it here (from between 3 and 30 seconds, in intervals of 1/10 of a second). During a run, the LCS will beep whenever you turn a faster lap than the set time. After the run, you can check each time in the "Display" menu.



One-hundred LCS transmitter units are available. Each base unit can be set to read any one of them at a time.

• "Time" menu. The LCS will time practice sessions of between one and 10 minutes in length. In addition, the "Display" menu will show the exact time of your run. For example, if you want to time a five-minute run, the LCS will beep when the five minutes have elapsed, and will display the total run time, including the time it took you to get to the "finish line" after the time had elapsed. If you know the race times for the track, you can check your run against the best qualifying and main times from a previous race to see where you stack up.

• "Mode" menu. Here, you can select the type of start mode you'd like to use. Choose between the "stagger" start, where the LCS will begin timing when the car makes its first pass, or the countdown mode, in which the LCS tells you when to start. In essence, use the stagger mode when you want to make a running start, and use the countdown mode when you want to start from a dead stop, such as when you are simulating an actual race. When using the stagger mode, you can set the LCS to count down from 30, 20 or 10 seconds, during which time the unit will beep once per second. When the timer gets down to three seconds, the beeps become louder to let you know that it's time to get ready. The final beep is louder and longer than the previous ones, emulating a starting tone.

• "Calibra" menu. This allows the LCS's internal clock to be calibrated.

• "PC Link" menu. Using the optional PC interface cable and software, this feature allows you to upload data from the LCS to your PC to unlock even more features (see sidebar for more information).

THE VERDICT

The Orion LCS is a completely unique product, and for what it does, it's relatively inexpensive. The LCS is very easy to use, a statement bolstered by the fact that our initial testing was completed without any type of instructions, and the data it provides is invaluable. Each lap is counted precisely, accurate to 1/100 of a second, and better yet, you don't have to do anything except press the start button and drive. We also liked the audible beeping that occurs with each completed lap, and the different tones sounded for the other various features, such as when the pre-set lap record is broken (talk about incentive to drive well!). The LCS is truly the next best thing to a full AMB transponder/PC scoring setup, and it's much, much more effective than the timer functions found in computerized radios. If you and your friends each invest in an LCS, you can hold your own races and will never again argue over who really won!

ORI36000 PRO Lap Counting System
ORI36010 Additional transponder
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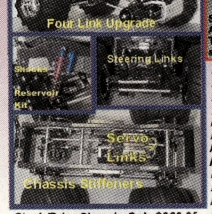
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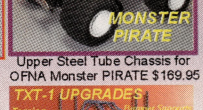


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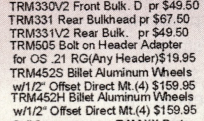
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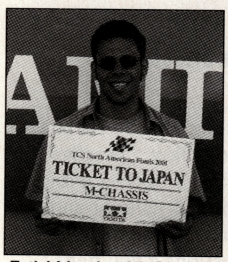
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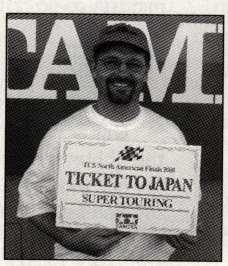
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10 things to do to improve lap times

...and some are free

Whether you're just getting into racing or you've been doing it for years, the one thing every racer wants (other than acquire Joel Johnson's driving and tuning skills) is to lower their lap times. A racer can easily spend thousands of dollars on magic "go fast" goodies, some of which may hurt more than help—believe us, we've been there. But of course, there are cheaper—dare we say free, or nearly so—ways to bring those lap times down and maybe even turn them into wins. There's no magic involved in what we're going to share with you, but a few things you may not have learned or have forgotten about. There are things you can do before you even put your car on the track, and things you can do on the track, so you'll have plenty of homework to do. So sit back, relax, and get in the mindset to go fast.

Things to do before the race...

1. Work on your tuning skills.

This is almost a given, but may racers, especially newcomers to the hobby, are averse to changing the stock setup. Take a practice day just to learn how the different settings affect your car. Play with the camber, tweak the caster, even mess with roll centers and damping—just get out and see each change in action, then log it and TAKE NOTES! Spread it our over a few sessions if you must.

The prepared racer will have a logbook of settings for each car; this will help you immensely in the long run. Plus, you may even save money by not having to carry every tire and insert combo "just in case."

2. Keep your car clean.

Here is another seemingly simple piece of advice frequently overlooked. If you want to go fast, you can't be lazy. Clean those bearings, get the pebbles out of your belts, rebuild your diffs. A smooth drivetrain will give you more speed and gain you more time from your batteries or fuel tank, and a free suspension will make the tuning the car more predictable. How often do you see a neglected car take the win?

3. Keep your powerplant in good condition.

Electric guys will have to spend a few bucks here; brushes and springs, as well as motor spray, are expendable items that need to be replaced regularly. We won't go into the details of motor maintenance here, but keep in mind that dropping a ten-spot on brushes and a comm cut can make a world of difference. And nitro guys, don't forget that gummy deposits or a worn clutch can slow you down, as well.

4. Learn the track.

Not a simple as it sounds, and there are many things involved. On top of getting your car out there and running laps, watch the fast guys and follow their driving line. Note how they approach the jumps, attack the whoop-de-doos, and negotiate the technical sections. You should also talk to other racers to find a good starting point for gearing. And it might also be a good idea to call the track ahead of time to find out what kind of tires work well so you can acquire them if you need to. It also might help to get on the driver's stand and take a couple of minutes to visualize your car going through each turn before your run. Then go out and practice, practice, practice!

Things to do just before and during the race...

5. Find a good spot on the driver's stand.

If there are some parts of the track you have trouble negotiating, it might help not to have to crane your neck just to see your car. This isn't always possible, but the more comfortable you are up there, the better you'll drive.

6. Don't get caught up in the first turn collisions, and keep an eye on traffic ahead.

Everyone on the driver's stand is anxious to get the holeshot, but nine times out of ten there is a first turn pileup. Take it easy off the line and let the other guys get hung up while you go around. And learn to scan the track ahead of your car a few feet. You never know if there might be a car stalled right on your driving line.



7. Slow down before the turns.

When you're running neck and neck with another racer, it's easy to approach a turn too hot and overshoot it. Instead, brake or at least let off the throttle far enough ahead of the turn to stay on the driving line and be able to accelerate out of the turn. And most overtaking happens on the inside of a turn, so you want to try to protect it anyway.

8. Take it easy on the throttle.

This may not seem like a way to go faster, but learning to ease on the throttle out of the turns will preserve battery power and make the car less likely to spin out. It's a hard habit to learn because it is a natural instinct to want to just grab full throttle as you pass the apex of a turn to get to the next corner before the other guy, but doing that can break traction on the rear tires or upset the balance of the car. Get on the throttle gradually, and you'll keep more control and carry more overall speed.

9. Let the faster cars go by.

Unless you are fighting for the same position, it's probably better to let a faster car go by. Even if you have to go off the driving line, it's better to lose a second or two than to crash and lose even more time. Keeping a good attitude can earn respect, and other racers will be more likely to return the favor to you in the future.

10. Keep your focus and keep your cool.

Remember that the whole reason we got into this hobby is because it's fun. But it's kind of hard to have fun when you're all wound up, nervous, and excited. So just take a deep breath before the buzzer sounds and remember that any racing is good racing, and that even if you don't win, at least it's still better than being at work.



Simple things: clean your motor regularly and you will have power to spare.

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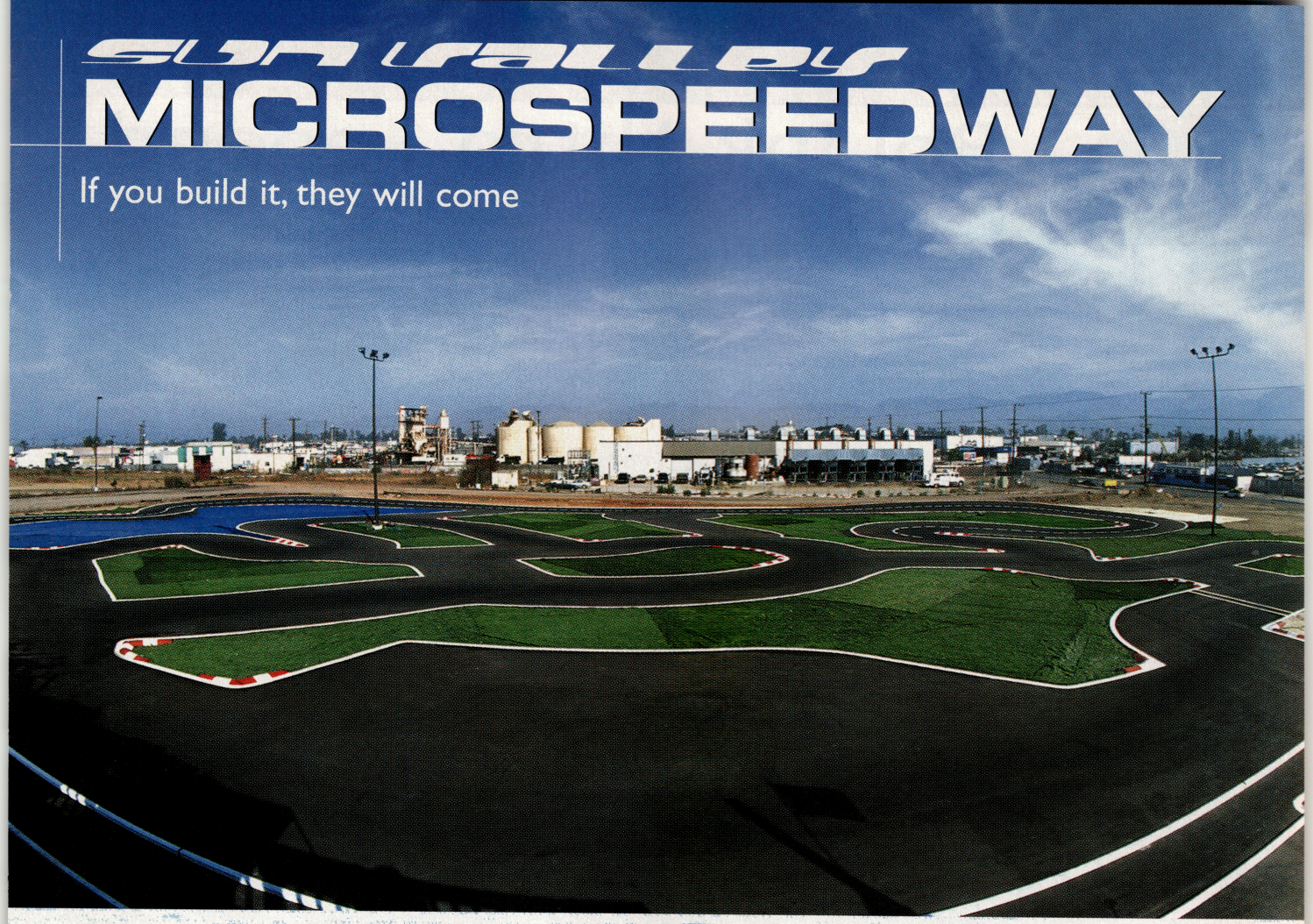
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SUN VALLEY MICROSPEEDWAY

If you build it, they will come



Sun Valley Microspeedway is a racer's field of dreams! With the sheer number of R/C car and truck owners in this country, you'd think that there would be more places to race! This is especially true if you live in Southern California, the acknowledged epicenter of R/C racing and manufacturing in the U.S., if not the world. But would you believe that despite this fact, there exists only one permanent outdoor on-road track in all of SoCal (Crystal Park Casino Raceway)? And that track is basically a parking-lot road course defined by some rather unforgiving boards.

Early in 2001, when Karlton Spindle of Multiplex USA told us that he was going to spearhead the construction of a truly world-class R/C race facility, years of similar promises and pipe dreams from various sources caused us to be skeptical. However, just this last October, Karlton's dream became a reality in the form of Sun Valley Microspeedway, which is by far the largest permanent road course we have ever seen, and the biggest facility in the U.S.



THE COURSE

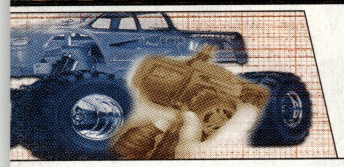
Built on a former landfill area, the SVM track boasts an impressive 28,000 square feet of paved area. Unlike most on-road parking-lot tracks, the SVM track winds through the countryside like a true European road course. The asphalt is ultra-smooth and the abrasiveness is kept to a minimum to prolong tire life. Permanent curbing lines the infield to keep everyone on track without causing too many hang-ups. All of the infield area is covered in astroturf, which keeps dirt off the track surface while providing a professional appearance to the facility. The track's back straight measures well over 250 feet, with subtly banked turns at each end.

WHAT THE FUTURE HOLDS

Although the current facility consists of only the road course, construction will soon begin on a separate world-class off-road track. Unlike most other outdoor dirt tracks, the SVM course will be tailored for the larger and faster 1/8-scale off-road buggies (although, like the paved track, it can also be configured for 1/10-scale racing).

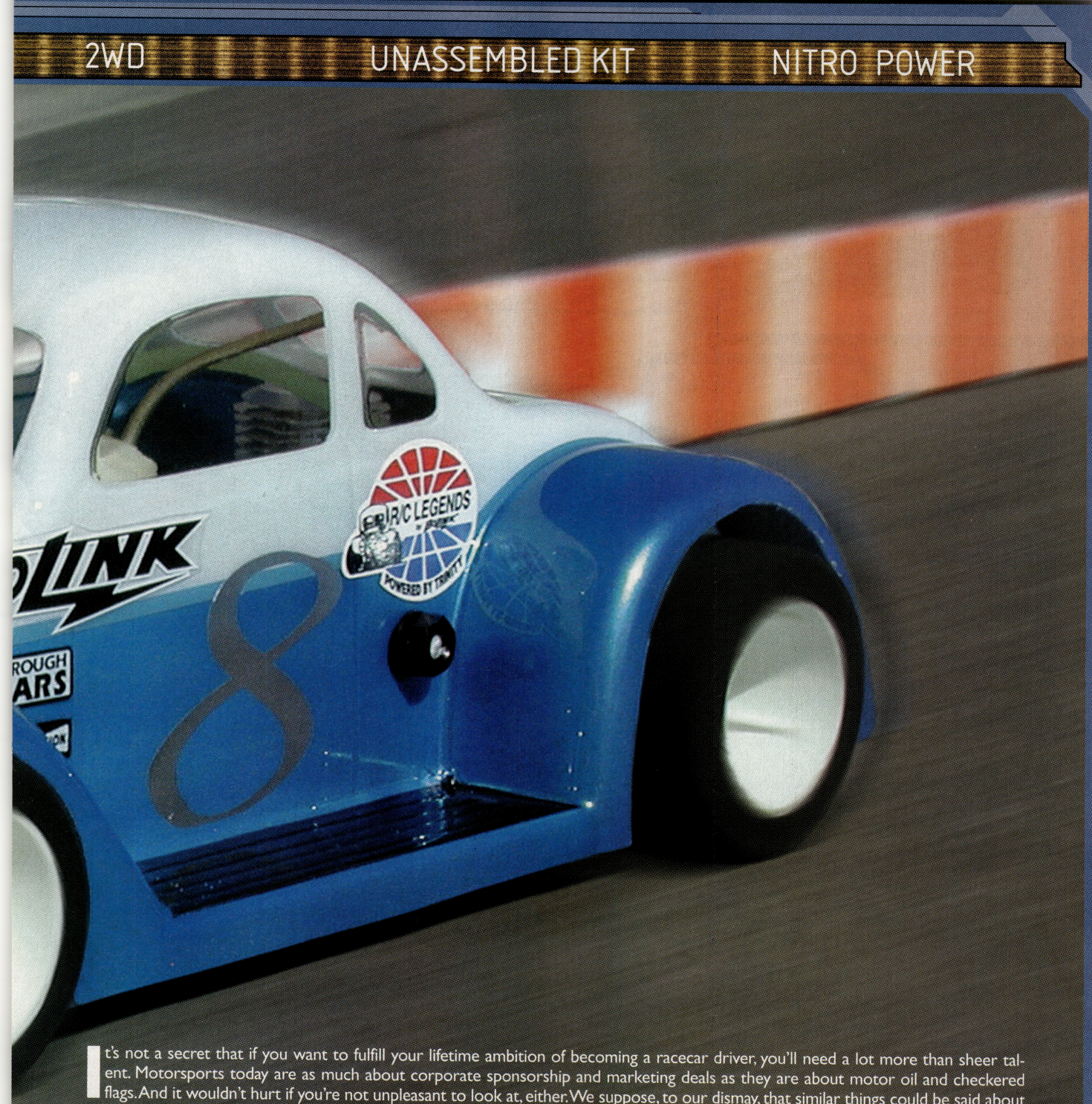
SCHEDULE

The SVM track is open for practice seven days a week, except for major holidays. The gate opens at 11:00 on weekdays and 9:00 on weekends. Check SVM's website at *www.SVMSPEEDWAY.com* or call the hotline number at (866) 793-6513 for more information, directions, or to find out when races are scheduled.



BoLink Nitro Legend

Grass-roots racing has never

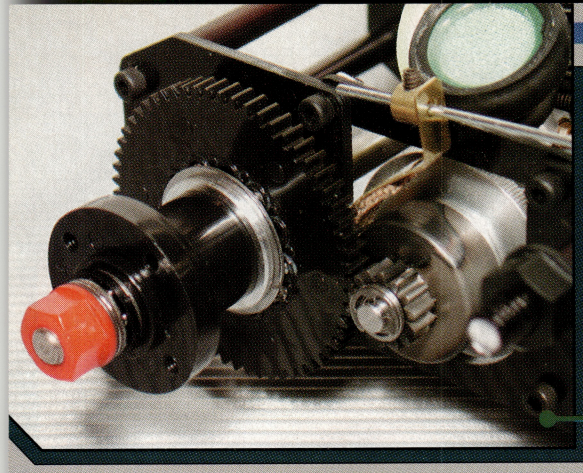


It's not a secret that if you want to fulfill your lifetime ambition of becoming a racecar driver, you'll need a lot more than sheer talent. Motorsports today are as much about corporate sponsorship and marketing deals as they are about motor oil and checkered flags. And it wouldn't hurt if you're not unpleasant to look at, either. We suppose, to our dismay, that similar things could be said about the sport of R/C car racing. It takes factory support to compete at the highest level, and with today's crop of sponsored and paid drivers, the parallel between scale racing and the real thing becomes clearer.

But not all is bleak. One of the fastest growing forms of motorsports in the U.S. is Legends racing. If you've never seen or heard about them, Legends are 5/8-scale replicas of '37- '40 NASCAR racecars. Powered by reliable and inexpensive engines, carbs and ignitions from Yamaha FJ1200 motorcycles, Legends provide an inexpensive yet competitive class for the grass-roots racer.

Such is the theme of BoLink's R/C Legends kits. In a world where carbon-fiber, milled aluminum and titanium rule, BoLink's original electric Legends kit was a throwback to the early days of R/C, where anyone could afford to compete. That original Legends kit has now been joined by a nitro-powered version that follows the same formula. It's a no-nonsense chassis that's simple to build, easy to maintain, and is virtually impossible to modify, making it very, very unlikely that you'll ever run across a Legends car with an unfair advantage!

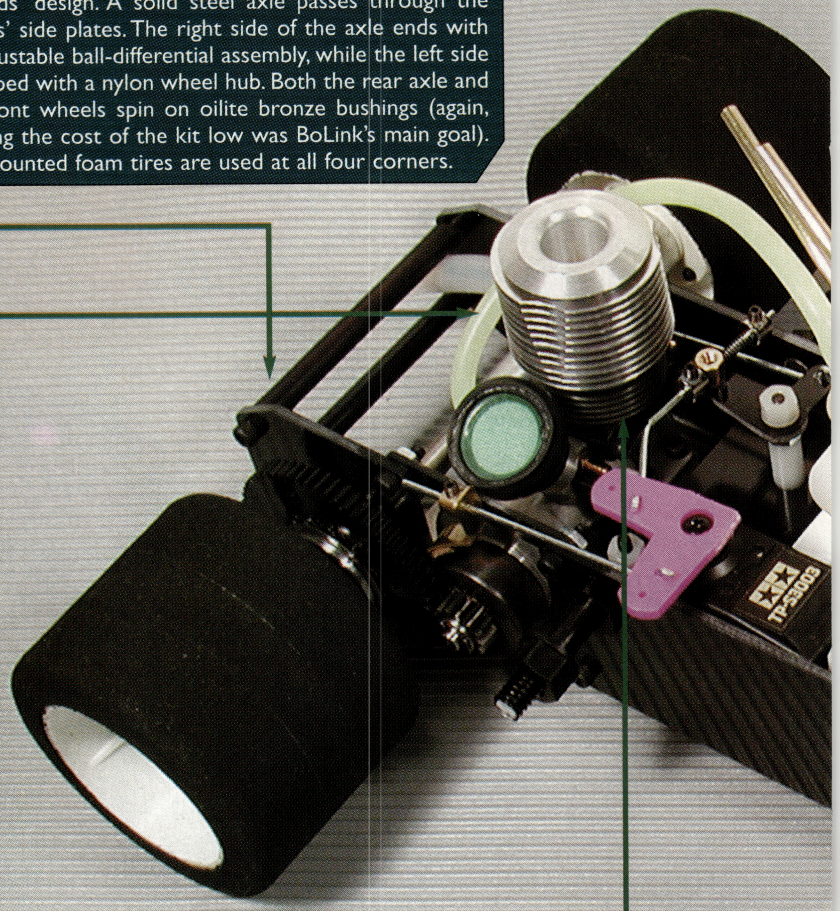
been so much fun!

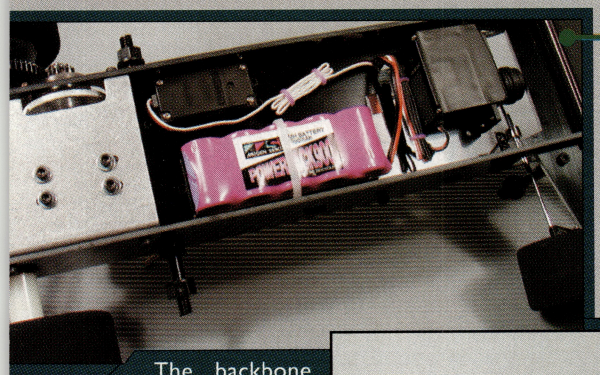


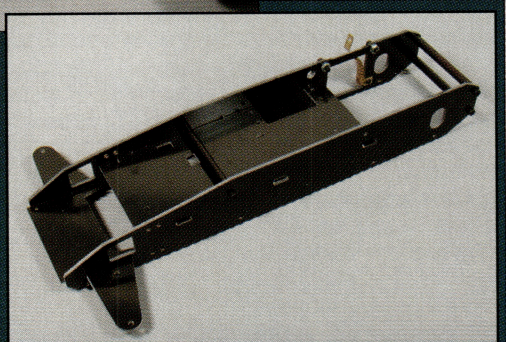
Compared to the rear suspension, the front suspension might as well be the inboard shocks and pushrods of an F1 car—because there is no rear suspension! Again, the rule of simplicity and low-cost governs the Nitro Legends' design. A solid steel axle passes through the chassis' side plates. The right side of the axle ends with an adjustable ball-differential assembly, while the left side is capped with a nylon wheel hub. Both the rear axle and the front wheels spin on oilite bronze bushings (again, keeping the cost of the kit low was BoLink's main goal). Pre-mounted foam tires are used at all four corners.



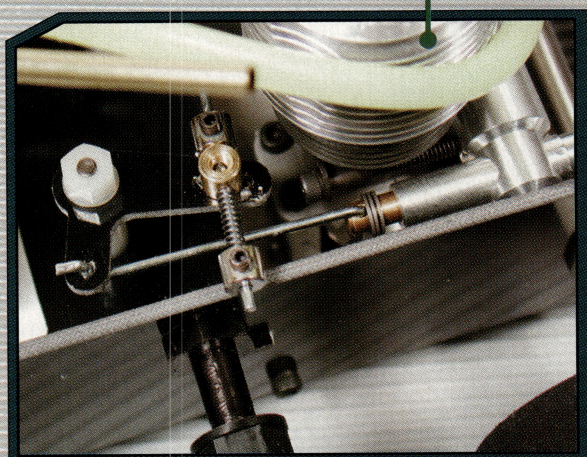
Surprisingly, BoLink was able to make the switch from electric to nitro with very little modifications to the basic Legends design. The included Norvel (a name familiar to model-airplane fliers) .061 cubic-inch engine simply bolts to the aluminum rear chassis section, and because the Legends kit uses a direct-drive rear axle, mating the engine's clutch bell to the spur gear was a piece of cake. Equally simple-yet-effective is the Nitro Legends' brake, which is essentially a cork-lined metal band that clamps against the clutch-bell.







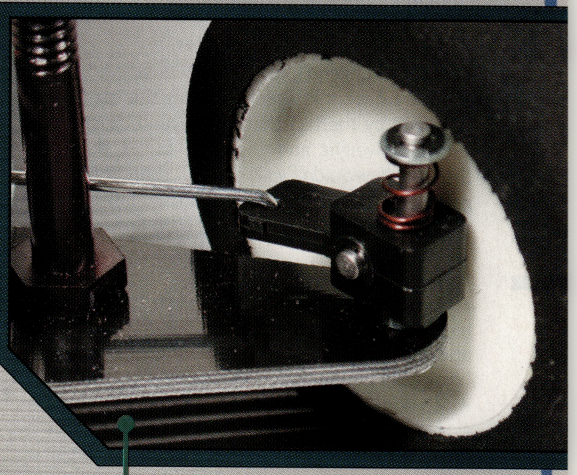
The backbone of the Nitro Legends is a similar assembly of fiberglass plates as that of the original electric kit. A pair of large side panels provides fore/aft rigidity, while a flat horizontal plate keeps the chassis stiff in torsion while providing space for the electrical components. The main difference is that the nitro version uses an aluminum rear chassis section which serves as a mount for the glow engine (aluminum is much more effective as a heat sink).



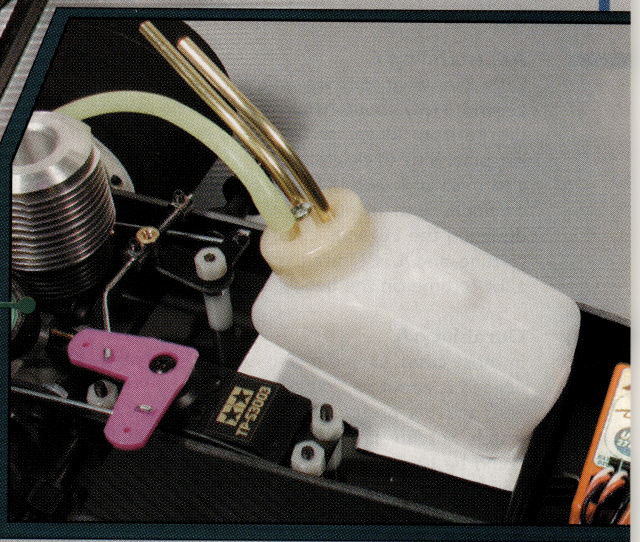
Your eyes aren't deceiving you: the tiny Norvel engine doesn't use a carburetor. Instead, the engine's speed is controlled by a valve in the muffler that regulates back-pressure to control the incoming fuel/air mixture. Opening the valve decreases pressure to allow more mixture into the combustion chamber. The result? Higher rpm. The idle speed is set by the placement of shims on the muffler valve. The actual mixture control, however, is located in a familiar spot—at the base of the engine's air/fuel inlet.

BoLink Nitro Legend

Did we mention that the Legends cars are basic? Suspension has never been simpler than with these cars. Up front, a fiberglass plate spans between the left and right wheels to serve as the basis for a rudimentary sliding-spindle suspension. Nylon steering spindles slide upon steel kingpins which rise from the ends of the plate. Damping is provided simply by a spring that presses against the top of the spindle. Different spring rates and thick fluids and greases are used to tune the front end—that's it.







A tiny engine deserves a tiny fuel tank. Don't let its size fool you; the Nitro Legends kit runs for a long time on just a splash of fuel. This airplane-style tank must be filled through a section of small tubing. If you plan on running on a road course (in other words, if you plan to go fast and turn left and right), BoLink suggests that you install a "clunk" in the tank to improve fuel pickup. If oval is your game, then the tank is good-to-go as is.

BoLink Nitro Legend

REPORT CARD
Test location: Valencia, CA
Track type: Various parking lots and driveways. Untreated asphalt

Speed and acceleration: C+
The Nitro Legend's tiny Norvel engine actually does a decent job of motivating the car (this is helped by the fact that the Legend chassis is very lightweight and that the car is direct-drive). We wouldn't call the car snappy, but it gets going at a brisk pace and is certainly faster than the standard four-cell electric Legend.

Low-speed steering: C+
As the Nitro Legend is fitted with foam tires, its traction is limited in most parking-lot situations. If there's a lot of dust, the tires won't hook-up. Fortunately, the rear donuts are much wider than the fronts and therefore have a much larger contact patch. This translates into a moderate push, even in the dust. The ball diff is very smooth and works well in the turns.

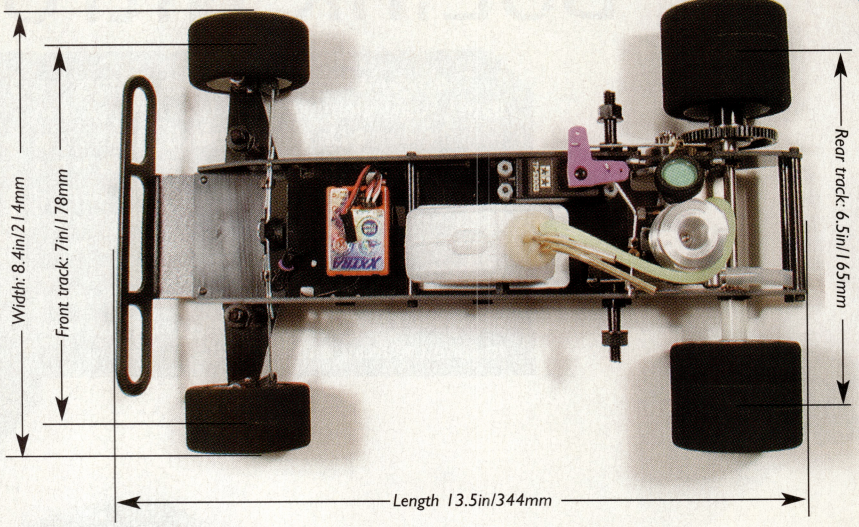
High-speed steering: B-
The Nitro Legend pushes considerably on dusty asphalt, however it does hold a pretty decent line at less than full-speed. As there's no rear suspension to roll during cornering, the Nitro Legend stays flat and transitions quickly. If the surface is bumpy, however, expect a lot of rear-end dartiness.

Straight-line tracking: B-
The Nitro Legend's steering is hooked directly to the servo, so you'd expect this car to track as if on rails. This is mostly true, unless there are bumps, which tend to throw the car off track and require constant correction with the steering wheel.

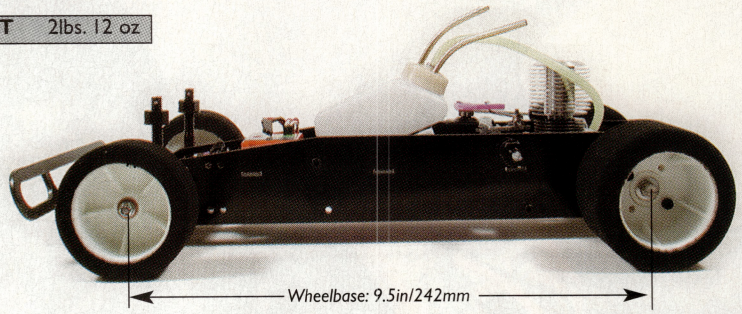
Braking: A-
That crazy little brake-band really does its job well. It has a cork pad right where it rubs against the clutch bell, and provides strong stopping with a fair amount of control. The brakes come on nice and gradual, but when you need them, they can bring the Nitro Legend to a quick halt. Again, the lack of rear suspension means that the car is prone to getting kicked sideways during braking if it hits moderate-sized bumps.

Adjustability: C
Let's see, what can we adjust on the Nitro Legend? How about installing a different spring on the front kingpins? Or we could coat the kingpins with thick grease? Oh yes, we could also raise or lower the height of the rear axle or fiddle with front toe-in. That's it! BoLink designed the Legends chassis to be very easy to tune, and it is. Don't expect to be spending a lot of time on the bench.

Durability: A
In most cases, simple means tough. The Nitro Legend is about as simple an R/C car as you'll find, and it's pretty darned rugged. Areas to watch out for are the front kingpins, which could be torn out of the fiberglass front suspension plate. Otherwise, you'd be hard-pressed to break anything on this car.



WEIGHT 2lbs. 12 oz



SPECS

TYPE	1/10-scale 2WD nitro car
PRICE	$189.99 (Estimated street price)
CHASSIS	
Type	assembled ladder
Material	fiberglass
SUSPENSION	
Type	sliding kingpin (F); none (R)
Damping	coil-spring (F)
TRANSMISSION	
Type	direct-drive
Drive shafts	solid rear-axle
Bearings	bronze Oilite bushings

Final Score

Highs: Rugged, proven Legends chassis is easy to build and tune (because there's not much to tune). Most people thought that the Legends body looked really cool in a retro sort of way. Tiny Norvel engine is well-made and has a neat screw-on cooling head.

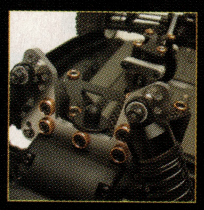
Lows: The instructions are great until you come to the nitro engine part. We found the instructions on how to install, set and start the engine to be lacking. BoLink needs to rethink this section of the manual. In particular, setting up the fuel tank was difficult. At an "available at" price of $189.99, we can't help but feel that we'd be paying too much for a tiny engine—you could almost get a decent .15 for that price.

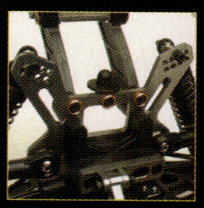
The verdict: If you're searching for a simple, rugged and fun racing class, then the Nitro Legend could be for you. The chassis is a bit on the crude side, but it goes together well and is easy to tune. The addition of the nitro engine to the venerable Legends chassis breathes new life into this type of class, and if you have a smooth, clean surface on which to run them, the Nitro Legends could be a very fun and competitive racing class.

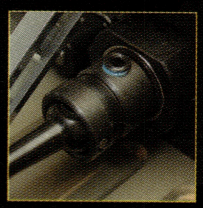
SOURCES

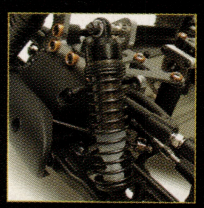
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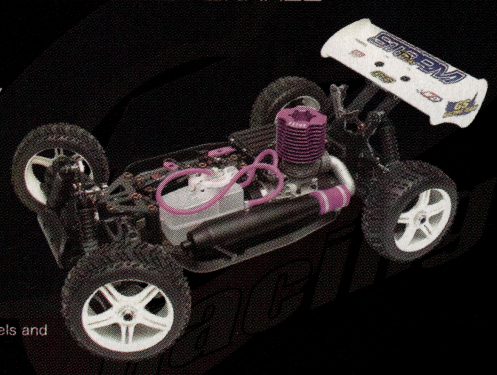




FEATURES

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- 7075 T6 FRONT UPPER SUSPENSION HINGE PIN HOLDER
- 7075 T6 3° LOWER SUSPENTION HINGE PIN HOLDER SETS
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How to Gear your



Car for Racing

Give me a large enough lever and I can move the world

Often overlooked by novices and experts alike, a car's primary gear ratio, that is to say, the relation between the sizes of the pinion and spur gears, is one of the most critical factors in determining speed, acceleration and yes, the life of the motor. At any given moment, the power of your car or truck is constant and finite. When you pull full-throttle on the straightaway, the battery is giving all the juice it can, and the motor is spinning as hard and as fast as possible. So why is your competition blowing past you? Chances are, it's because he has selected a gear ratio that is better suited to the track's surface and its length. But don't despair, because with a little gearing know-how, you'll soon be pulling up on his rear bumper!

GEARING: A MATTER OF LEVERAGE

A simple definition of a lever would be something that provides a mechanical advantage over an object. A crow-bar is a good example of a lever. Imagine trying to use just your hands to pry apart two boards that had been nailed together. The crow-bar provides the leverage that amplifies your muscles and increases the prying force, allowing you to separate the boards with ease. In your car, the motor always spins much faster than the wheels (thanks to the transmission). If your car had no gear reduction whatsoever, that is to say that its wheels turned the same speed as the motor, it would travel at 100mph, but it would take forever to reach that speed. Actually, it would never reach that speed unless it was running in outer space, as the motor wouldn't be able to overcome the friction of the air and the pull of gravity!

This is where leverage comes into play. The transmission in your car serves to reduce the ratio between the motor and the wheels. By doing this, the transmission acts as a lever for the motor, just as the crow-bar helped us earlier. The size, or to be more specific, the length of the lever determines how much force the motor can exert over the weight of the car and the friction of the tires. A "higher" gear ratio, i.e., one that is closer to 1:1, is a shorter lever that provides greater top speed. A "lower" ratio is one that is farther from 1:1, and will help the motor accelerate the car faster—a longer lever. Although this is typical gearing nomenclature, you are correct in thinking that it's backwards! One would think that a "higher" ratio would mean that the gearing is further away from 1:1, but whomever thought these terms up didn't agree with us!

APPLYING THE THEORY

How does this all relate to your car? Easy: although the ratio of the gearbox itself is fixed, manufacturers have thoughtfully provided us a way to adjust the reduction ratio by designing primary (pinion and spur) gears that are easy to change. It's as simple as this: if you want more top speed, choose a combination of a smaller spur gear with a larger pinion gear. If you want your car to accelerate faster, choose a larger spur gear with a smaller pinion. And if you want to impress your racing buddies the next time they ask you what gearing you're using, divide the number of teeth of the spur gear by the number of teeth of the pinion gear, then give them the answer in "ratio." For example, if you are using an 86-tooth spur gear with a 21-tooth pinion, the primary drive ratio would be approximately 4-to-1, or 4:1.

WHAT DOES FINAL DRIVE MEAN?

You've probably heard the term "final drive" thrown about at the track, or perhaps you've seen it on setup sheets or instruction manuals. What this describes is actually the most important number in gearing: the total difference between how fast the motor is spinning and how fast the tires are spinning. In other words, the final drive ratio is the total length of the lever! And a higher number equals a longer lever. But how does one go about finding the final drive ratio? There's actually a simple mathematical formula for doing just that, but in order to do so, you must first know the reduction ratio of your car's transmission. Some manufacturers specify this ratio either on the transmission itself or in the instruction manual. If not, don't fret—you can find this ratio yourself.

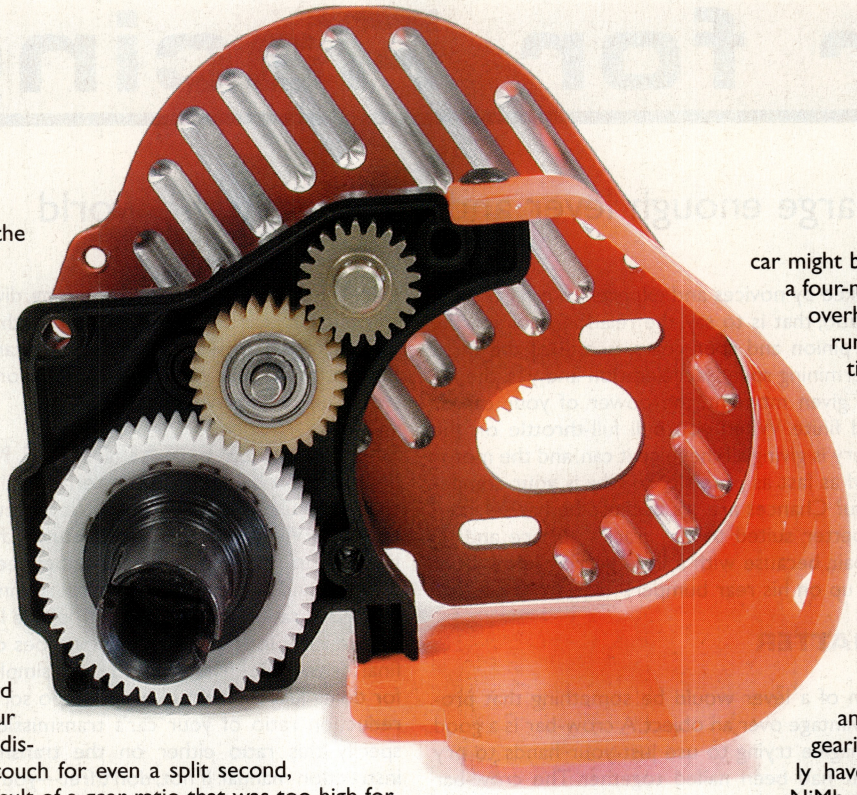
For typical three-gear trannies (such as those used in off-road cars and trucks), all you have to do is divide the number of teeth on the large diff gear by the number of teeth on the small top-shaft gear (the middle, or counter-gear, has nothing to do with the overall ratio). For belt-drive cars such as electric sedans, divide the number of teeth on the large diff pulleys by the number of teeth on the small center pulley or pulleys. As a rule of thumb, you always divide the gears or pulleys closest to the wheels by the ones closest to the motor. The resulting number is the fixed ratio of the transmission.

Once you have the ratio of the transmission, you can apply it to the following formula to determine the overall final drive ratio: spur/pinion x transmission ratio = final drive. Here's an example: using the spur/pinion ratio from the earlier example, and knowing that our off-road buggy's transmission has a ratio of 2.18:1, we can determine using the formula that this particular setup provides a final drive ratio of 8.7:1.

$$\frac{86}{21} \times 2.18 = 8.7$$

I JUST WANT TO GO FAST!

Umm.. no, you don't. Not if you want to turn quick lap times, or if you want your expensive motor to last for more than one run. You see, for the motor to make the car go really, really fast, it must be geared so that the rpm of the motor and the wheels are as close as possible. That means—you guessed it—a lower final-drive ratio. However, what you haven't considered is that a low ratio provides the motor with less leverage with which to get the car up and moving. When you give your car full-throttle, the speed control sends all of the energy output from the battery straight to the motor. Unfortunately, the motor must overcome



the weight of the car, the friction of the tires and yes, the friction of the air, to get the car moving. In fact, it may take several seconds for the motor to get up to top speed. During this time, can you guess where all that unused energy is going? It turns into heat, and heat is the enemy of the motor—the destroyer of magnets, the cooker of brushes!

If you've ever checked the temperature of your motor after a run, and discovered it too hot to touch for even a split second, you've witnessed the result of a gear ratio that was too high for the combination of your car, the type of motor and battery used, and—this is also important—the duration of the run.

OKAY, SO HOW DO I GEAR MY CAR?

The answer to this question involves no math, we promise! The best way to determine the correct ratio for your car relies on several key factors.

(1) The length of the longest straightaway on the track. Ideally, your car should be accelerating during all but the final few feet of the track's longest straight. Listen to the motor's rpm to determine where it tops out. If the car makes it up to top speed just halfway down the straight, the ratio is too low and you should go up a tooth on the pinion gear or go down several teeth on the spur. If the car pulls all the way down the straight (it never stops accelerating), the ratio is too high, and you should remove a tooth from the pinion (or add a few teeth on the spur). National champion Matt Francis likes his cars to stop accelerating 10 feet before they reach the end of the straight, because he feels that the transition from hard acceleration to slowing for a corner can upset the balance of the car's traction.

(2) The number of infield turns and obstacles. If your track is mostly made up of tight turns, yet has one long straightaway, you might be better off gearing the car with a bias towards acceleration. This means that although top speed will be reduced, your overall lap times will be faster because your car will have more "snap" in the tight twisty stuff. Also, if your track has some difficult jumps that don't allow for much of a run, you'll have a better chance of clearing them consistently if your car is geared towards acceleration.

(3) The duration of the run. Remember that bit about loading the motor, and the heat that this generates? Well, the longer you run your car, the hotter the motor will become. So although your car might be perfectly geared for a four-minute race, it may still overheat if you decide to run the car for a longer time. If you routinely run your car until the battery dumps, you will likely need to gear the motor down a few teeth to reduce load and, as a result, keep the motor cooler.

(4) The type of cells you are using. Yes, the type of battery you use will have an effect on the car's gearing. NiCad cells typically have higher voltage than NiMh cells, so you will need to consider this when choosing a gear ratio. Since higher voltage means more punch, you may be able to take advantage of this by adding a tooth to the pinion gear to gain top speed. Conversely, NiMh cells typically have less voltage, and as a result, less punch. You can increase the acceleration of the motor by using a slightly smaller pinion gear when using these cells. Also, remember that your best race packs will provide more power than your old, worn-out practice packs, so you may need to adjust the ratio depending on which pack you're using.

SPECIAL TIPS FOR STOCK MOTORS

Believe it or not, it's more critical to gear a stock motor correctly than it is for a mod motor. Mod motors often have so much power that, with the exception of the longest straightaways, they are mostly driven at partial-throttle. On the other hand, a stock motor is driven at full throttle most of the time. As mentioned before, a full-throttle motor is usually under higher loads and is subject to overheating. We've seen many people burn out brand-new stock motors after just one run because of over-gearing (using a ratio that's too high). When gearing your stock motor, always start conservatively (a low ratio) and work your way up. You'd be surprised to learn that you'll probably be faster with a smaller pinion, and your motor will last much longer!

CONCLUSION

Choosing the right gear ratio for your car may sound like rocket science, but it's really a simple matter if you pay attention to the way your car accelerates, how fast it travels, and most importantly, how hot the motor (and battery) become after a run. Remember, it's always best to err on the side of conservative gearing (a lower ratio) and work up, than it is to replace burned-out motors (and it's a lot cheaper, too!).

.15 CV-R ABC

The mounting size of a .12... the racing muscle of a .15!

GIVE YOUR 1/10 scale buggy a *double* dose of O.S. adrenaline: the proven punch of CV-R engine technology, PLUS 25% greater displacement for even hotter horsepower. Just drop in the .15 CV-R...the newest member of off-road racing's most formidable engine family!

Like O.S. .12 CV-R engines, the bored-out .15 features three intake ports instead of two, with 40-45% more air-carrying capacity. It can draw significantly more air and fuel — and that equals ((underline))more power((end UL)). Port #3 points directly at the exhaust port, to improve scavenging efficiency for excellent fuel economy.

All CV-R racing engines feature a 10mm crankshaft for larger crank port feed and smoother mixture flow. Thickened bearings feature upsized balls to carry racing loads with ease. The tightened fit between the crankshaft and bearing increases crankcase vacuum pressure and reduces oil discharge from the front bearing.

With all that performance potential at your command, the temptation to push the envelope might be...irresistible.

So to withstand over-revving, each CV-R has a strengthened con rod of machined aluminum, with enlarged ends and bronze bushings...a hard-chromed piston sleeve with slightly reduced outer diameter, for extra thermal efficiency...and a cylinder head with generous cooling fin area.

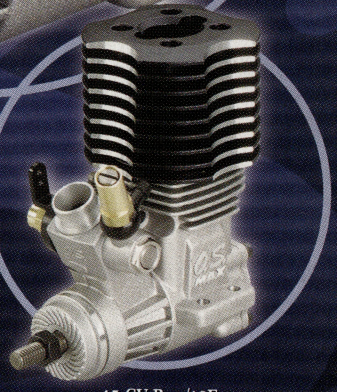
Choose your .15 or .12 CV-R with rotary or slide valve carburetor, to match your car's layout and your driving habits. There's also a short-shaft version for use in Associated and Kyosho racing trucks — with no modifications! For a free brochure and the location of the O.S. dealer nearest you, please call 1-800-682-8948 and mention code number 2943N.

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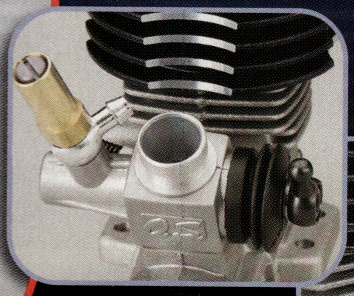


15 CV-R w/10A Slide Valve Carb

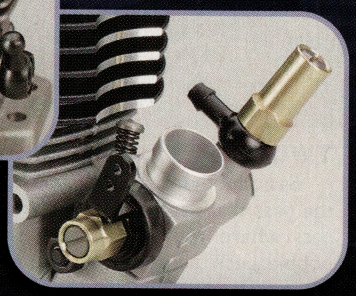
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The 10E-R rotary carb delivers super hole-shot performance, especially for off-road vehicles.

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OSMG2052 .15 CV-R w/10A Slide Valve Carb
OSMG2053 .15 CV-R (P) w/Pilot Shaft & 10A Slide Valve Carb
OSMG2054 .15 CV-R (S) w/Short Shaft & 10E Rotary Carb

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 bhp @ 31,000 rpm
Weight: 6.8 oz (192.8g)

OSMG2045 .12 CV-R w/10E Rotary Carb
OSMG2046 .12 CV-R w/10A Slide Valve Carb
OSMG2047 .12 CV-R (S) w/Short Shaft & 10E Rotary Carb
OSMG2048 .12 CV-RX w/Recoil Start & 10E Rotary Carb
OSMG2049 .12 CV-RX w/Recoil Start & 10A Slide Valve Carb
OSMG2050 .12 CV-RX (S) w/Short Shaft, Recoil Start & 10E Rotary Carb

Displacement: 0.129 cu in (2.1cc)
Bore: 0.551 in (14mm)
Stroke: 0.539 in (13.7mm)
Practical rpm range: 4000-36,000
Output: 1.0 bhp @ 31,000 rpm
Weight: 7.05 oz (320g)

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PRO TIPS SECTION

Matt Francis



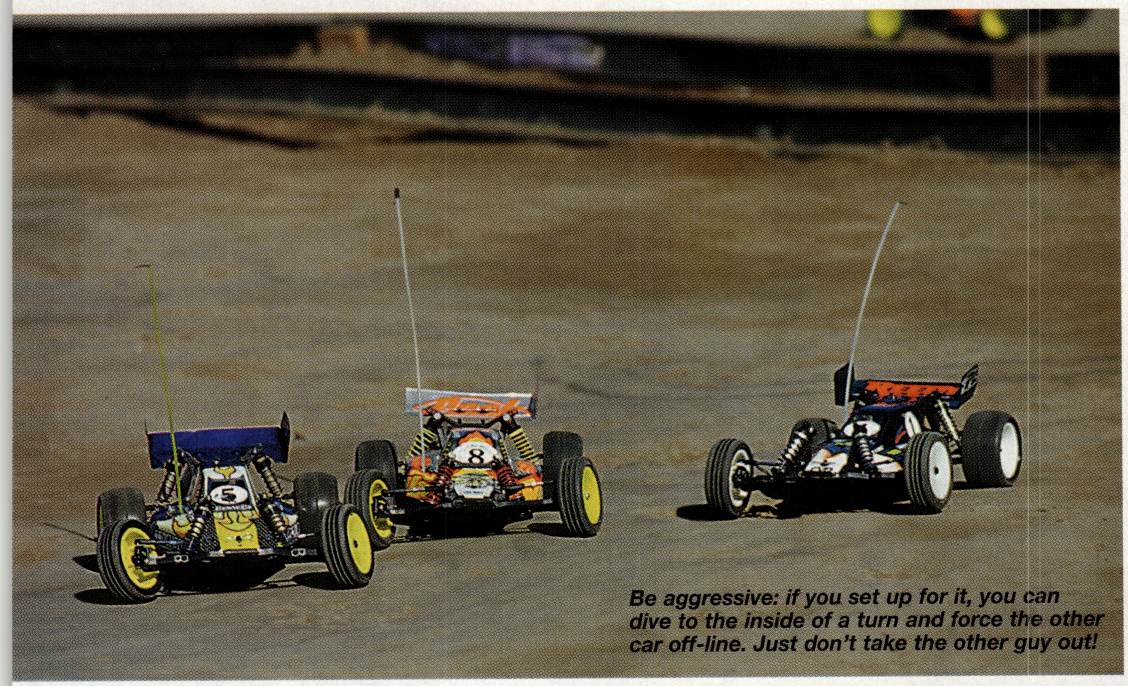
How to Pass

Try to get past clean!

When racing, one of the hardest things to do right every time is pass someone. There are many variables to passing—are you trying to get past lapped traffic, or make a banzai attempt to get to the front of the pack from second place? We talked with one of the smoothest in the business, Matt Francis, to get his tips on how to make your way towards the front.

The other kind of passing happens when someone makes a mistake or they bobble due to lapped traffic. The person in front of you could catch a rut, or mis-time a set of doubles and land badly. You have to be close enough to capitalize on the situation. Regardless of what has slowed down the person in front of you, be prepared to take the first chance you can to get past. Sometimes this can be a safe pass as the person ahead of you might get held up by someone and you can get past cleanly, while other times, they may make a mistake and correct it by the time you are trying your pass and you could collide. It's just one of those things that will force you into trying an aggressive pass. Often enough you may have to force a little bit of room for your pass.

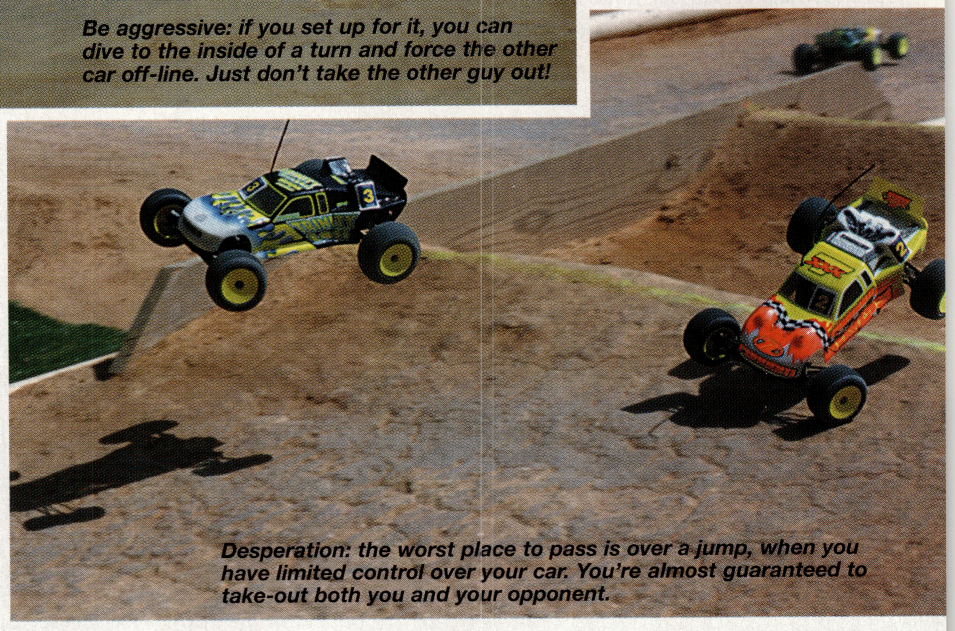
If you follow someone leading a race long enough, at one point they'll make a mistake. Often you can force someone off their racing line through pressure. This is one of the best ways to force a pass—it's safe for you because it will minimize the chance of coming together during a close pass. Drive aggressively enough so that you don't hit them, but you force them off-line. When someone is driving defensively, they're bound to make a mistake eventually, and once they're off their line it's much easier to get by them.



Be aggressive: if you set up for it, you can dive to the inside of a turn and force the other car off-line. Just don't take the other guy out!

TWO TYPES OF PASSES

Basically, there are two types of passes: the pass that's set up, and then there's the pass where you capitalize on someone's bobble. Let's talk about the one where you set up the pass first. When you try to set up a pass, you may be working on it for five or six laps in advance. I'll follow a racer around a track awhile to see if I can spot any weaknesses—areas where I feel my setup works better, or a section that I can hit faster. Sometimes there may be only one area on the track where you can set them up for a pass. Say, for instance, they go wide on a turn and you think you can get past inside. You have to stay on them and try and set up the previous section a little wider so you can build speed and try and go tight into the turn around them.



Desperation: the worst place to pass is over a jump, when you have limited control over your car. You're almost guaranteed to take-out both you and your opponent.

BEST & WORST PLACES TO PASS

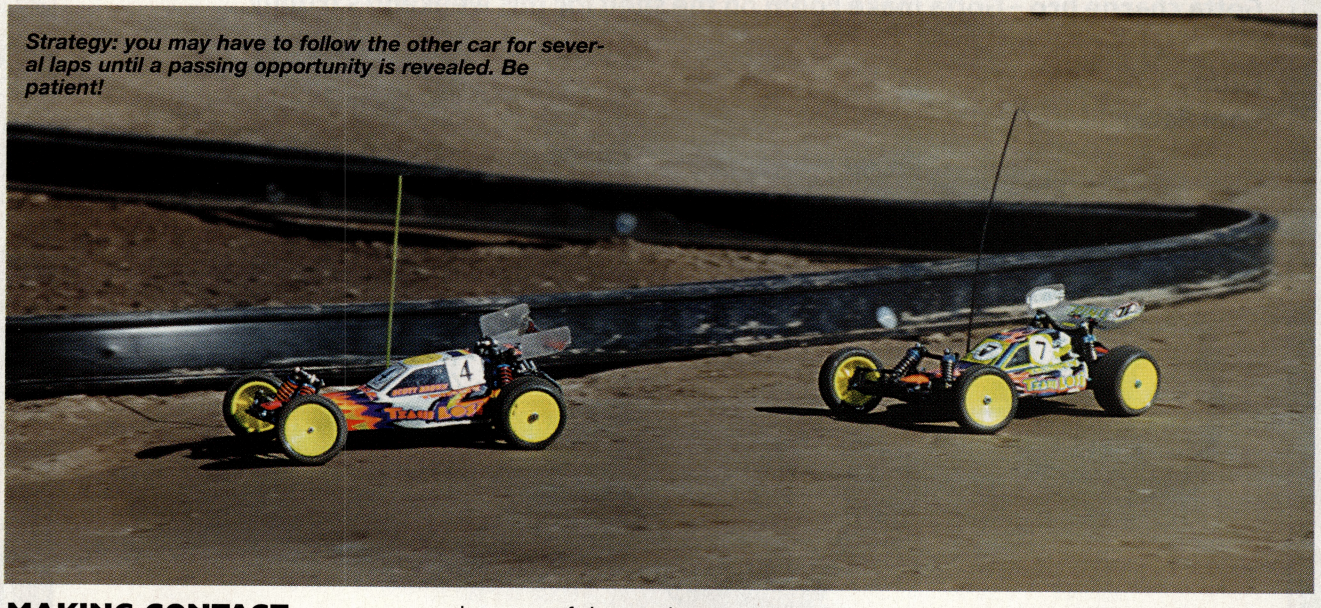
[Matt likes to pass on 180-degree turns, or on larger sweepers.—editor]

The tighter the track, the better it is for me. I've always raced tight tracks, and over the years, I've set my cars up to be more aggressive handling-wise. Even on wide-open, sweeping tracks I still drive an aggressive car. It may not be the easiest car to drive but it allows me to put it anywhere on the track and set up passes that people aren't prepared for. Another great place to pass in is through traffic. You always have to get by cars that are going slower than you. That's why when there's a lot of cars out during practice, I'll go out there at the same time. You want to learn how to get past not only people who are faster than you, but people who are going to hold you up as well. The worst thing that can happen during a race is you being stuck behind someone slower while a fast guy is right on your tail!

As for places not to pass, the absolute worst place to try and pass is alongside someone over a jump. Passing over jumps is really sketchy—you have limited control over where your car is going. When it's in the air, it's in the air. It's too easy to bump someone, and then guess what—the guy who was behind the two of you, he's going past into the lead now.



Stuck in the middle: the worst place to be is behind a slower car while a faster car is right on your tail. You may have to make an aggressive move in order to prevent from being passed.



Strategy: you may have to follow the other car for several laps until a passing opportunity is revealed. Be patient!

MAKING CONTACT

At some point, every racer is going to make contact with another person out on the track—it's inevitable. It's impossible not to make a little bit of contact with someone no matter how clean a driver you are. Most people accept this, though. You have to accept this as a driver doing the passing, and as someone who will also be passed at one time or another. The big difference is in how the contact is made. If you go slamming into the back of someone you've been trying to pass lap after lap, just to bump them out of the way because you're frustrated, expect it to be paid back to you. If you go into a turn too hot on purpose to move someone out of your path, again, expect it to be paid back to you. Most racers expect a little wheel bumping here and there...but not being punted off the track. Unfortunately, there are a lot of racers out there who just don't work hard enough to try for a clean pass. If you're out there getting hacked by the same guy lap after lap, how is that going to make you want to race clean against this person? Try to avoid making contact as you pass—your reputation for being a clean passer will only help you in the future when trying to go through lapped traffic. How many times have we heard in the pits, "that guy is such a hack!" Don't be one of them.

One of the most important things is to know when to try and pass and when not too. Unless it's the last turn before the finish line, there will always be a time to try for another pass. Racing is all about patience—learning when and when not to pass is key.

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Hard Drive

Race Secrets

COOL RACER, FRIDAY, GOT SPEED?

GOT SPEED?

From: COOL RACER (fastguy@gotspeed.com)
To: JOE RACER (joeyr@racenut.com)

YO JOEY,

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

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

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

Later,
Cool Racer



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Trash

KEYENCE ZERO V EXTREME

The Pentium Chip for R/C Cars

by Ian Aquino



When I first saw the initial line-up of Keyence ESCs about a year ago, I was amazed at how fast technology had evolved. These things are just getting better each time, packing a lot more "horsepower" into such tiny packages. And don't forget the endless list of features that would probably cause your high-end entertainment system to be green with envy. Following the success of the A-01 ESC series, Keyence has introduced the innovative Zero series. This latest batch of "Hyper Tech" ESCs boasts "full-digital" circuitry with some models having built-in digital displays and virtually unlimited adjustability. With street prices ranging from $150 and up, the Keyence Zero series caters primarily to the competition-oriented crowd. Normally, I would stay away from ESCs at this price range, but when a close friend bought one and repeatedly referred to it as "the Pentium of R/C cars," I knew I had to get one. And sooner than anticipated; I now own two Zero V Extremes, which are installed in my electric sedans!

INSTALLATION

From the packaging alone, it was obvious there were no stones left unturned in producing the Keyence Zero V Extreme. I usually have an inkling that anything wrapped in fancy Japanese writing has got to be good in quality. I'm glad the Extreme didn't disappoint! Everything was just, well, flawless. The only complaint I have to mention are the pre-installed wires and plugs. With brightly colored 16-gauge wires (pink, green and orange) and Tamiya-style connectors, it isn't exactly my taste in a competition-oriented ESC. So I immediately replaced them with much more suitable 12-gauge silicone wires. The user's manual warns about damage caused by rewiring, but it all worked perfectly when I re-soldered my preferred wires. After installing the Zero on my chassis, which doesn't take much thinking due to its small size, the only task left was to set it up.



SETUP

The honest truth about the user's manual is that it was a bit overwhelming even for an experienced racer. But who could blame Keyence? Due to the extensive list of features packed in such a minuscule ESC, this is definitely not for everyone. Although in my opinion, credit should be given to whomever translated the manual from Japanese to English, as this is one of the best I have read (and actually followed through!). While a significant amount of R/C technical know-how is needed to get this beast going, once running, all glory is yours to appreciate. And you'll soon be thankful upon realizing that you have acquired and installed one of the most technically advanced ESCs on the market today!

KEY FEATURES

One of the unique features of this ESC is noticed when you first switch the power on. The user is greeted with a welcoming "HELLO" scrolling across the digital display. Though this is not exactly doing anything, it's still a treat to have your R/C vehicle behave out of the norm. Come to think of it, what (or who) else in the R/C world greets you time after time whether you win or lose? Yet, the best feature the Zero series has going for it revolves around the idea of integration. Nowadays, competition speed controls have the ability to be programmed according to a racer's style of driving. Without this important facet, an ESC is simply ranked in the "sport" category. Call it an unfair advantage, but Keyence managed to merge computer programmability and ESC function in one small profile. Before this, almost all programmable speed controls had to rely on an external device.

The Zero's interface is straightforward, but needs a little getting used to due to its many features. Press the scroll buttons left or right and a moving led highlights a specific ESC function; push both arrows to engage the set mode and presto—you can pull or push the transmitter's trigger to precisely adjust the numerical setting through the display. And when we say precise, that's 1-100 percent of a particular ESC characteristic! All digital; you just have to love it. Imagine changing drive, brake and drag frequencies with a push of a button! What about checking for ESC temperature, battery voltage and run-time from the onset? The possibilities are endless. As Keyence states, "the user essentially obtains 200 kinds of ESCs." So this leads us to the question: is the Zero Extreme worth the high markup price? With all this tuning options—definitely yes!

MORE THAN AN ESC, IT'S A FRIEND

Keyence claims the Zero V Extreme as having the lowest on-resistance in the world. This translates to more power out of the hole and much longer run times! I have found the Measuring Time, Battery Voltage and Internal Temperature displays to be helpful tools in fine-tuning a car's gear ratio, therefore maximizing efficiency in any race condition. This means less guesswork in choosing gears and an accurate idea of total run time. It will be very

easy to find out if the motor is working too hard when there is a rise in temperature and/or decrease in runtime. Stock class drivers will surely love this added benefit, as it will allow them to run close to 100-percent efficiency throughout the race.

SETTING LIMITS

Besides having the ability to change the driving "feel" through adjustment in frequency, another function the Zero offers is the Power Limit, which is commonly known as the torque-control setting. Lower the Power Limit to get more grip on slippery surface or raise it to accelerate quickly on high-bite tracks. A Dash Power mode is also a first for Keyence. It raises the Power Limit setting from the first trigger action, which helps to launch the car swiftly at the start of the race; sort of like hitting the Nitrous Oxide switch in full size dragsters.

FASTER OUT OF THE GATE

Yet another feature the Zero Series possess is a new technology called Advanced Gate Control System, or AGCS. I have yet to figure out what this means but quoting from the manual, AGCS is a "system that dramatically reduces losses during pulse drive by dynamically controlling FET gates." Okay, you don't need to scratch your head figuring that one out. The only thing you might want to know is that Schottky Diodes are no longer necessary, and voltage loss during pulse drive is reduced to a low one percent. Crazy, but that's future technology at your fingertips!

CONCLUSION

The Zero series has three levels of trimmings depending on your budget. Unfortunately, the suggested retail price for even the lowest model isn't catered for "sport" minded enthusiasts but rather for intermediate to expert racers. But in spite of the hefty price tag, you get reliability and clean-cut performance. Going in to purchase one, I was more concerned about how it would perform in actual racing conditions. I'm glad to say this ESC made me a true believer. Keyence surprisingly stepped up the ladder in this digital age, even endorsing the Zero series as "dream ESCs." So what else lies ahead in electronic speed control technology? The only feature missing is the ability to program this thing to actually drive the car! This idea might be a stretch, but if it does ever come around, I'll definitely have mine with a built in Hirosaka or Kinwald, please!



SOURCES

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SPECIFICATIONS

	ZERO	ZERO V	ZERO V Extreme
Power Supply	6 cells(7.2v)	6 cells(7.2v)	6 cells(7.2v)
ON Resistance (FET Standard)	0.41 m W	0.41 m W	0.34 m W
Motor Limit	None	None	None
Dimension/Size (mm): 37.4 (W) x 27.5 (D) x 18.0 (H) (Terminals Excluded)			
Amplifier Weight	29.6g	29.6g	29.6g
Receiver/Regulator for Servo	6 V 3 A output	6 V 3 A output	6 V 3 A output
AGCS Installation	Yes	Yes	Yes
Range of Drive Frequency	1000-15000Hz	100-20000Hz	100-20000Hz
Number of Changes	Flexible	200 Steps	200 Steps
Width of Brake Frequency	4 Kinds	4 Kinds	4 Kinds
Neutral Brake Changeable Width	Only On/Off	Yes	Yes
FET Temperature Display	No	Yes	Yes
Torque Control	With Trimmer	No	Displayed with %
Battery Voltage Display	No	Yes	Yes
Run Time Display	No	No	Yes
Number of User Programs Allowed	1	1	4
Estimated Street Price (USD)	$150	$160-$180	$180-$200

You're looking at one of the most-raced radios on the planet.

Why? Simply because it's got what racers need.

For starters, the XR3's FM modulation and sensitive, highly selective receiver put you in control and keep you there. And once you've experienced using its digital trims, you'll never consider settling for anything less.

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Finally, just to sweeten the deal, you can now get your XR3 in a new, race-oriented configuration—with a single, high torque, high-precision steering servo. All for around 170 bucks.*

So speed on down to your local shop or racetrack today and see what you've been missing!

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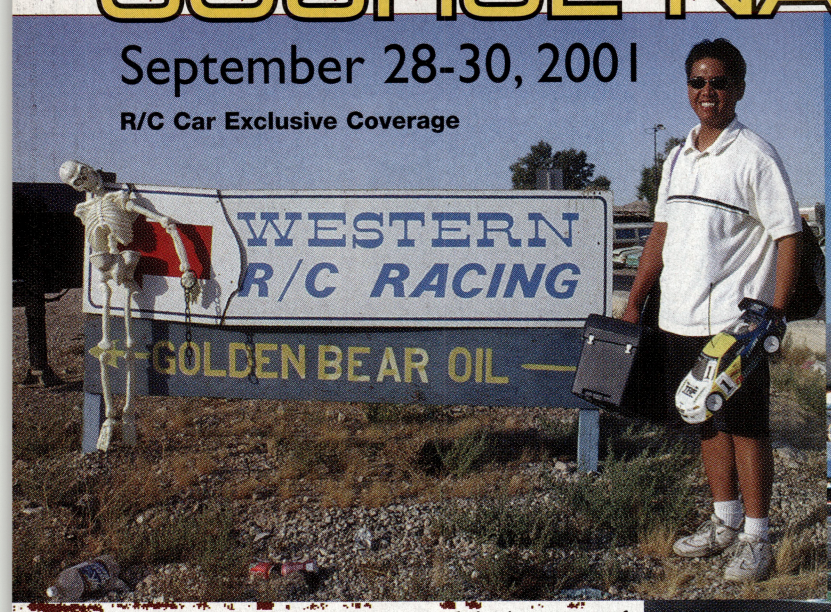
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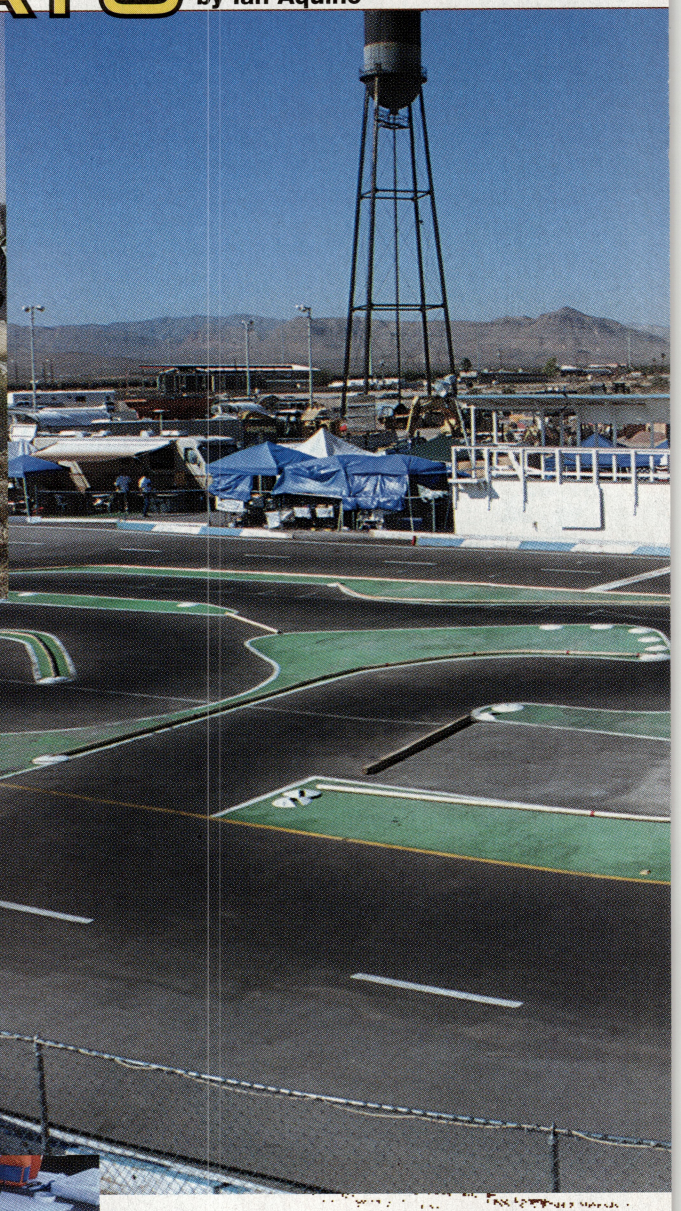
2001 NORRCA ROAD COURSE NATS

by Ian Aquino

September 28-30, 2001

R/C Car Exclusive Coverage





Although promotions were light, by means of mere hobby shop flyers, via website postings and through frequent word of mouth, the 2001 NORRCA Road Course Nationals will never pass by without getting appropriate attention. Held at Las Vegas R/C Raceway's first-class on-road facility in sizzling Las Vegas, Nevada, about 15 minutes off the main city strip, the three-day event (September 28-30) was filled with more controversies than your afternoon talk show. But thanks to the valiant effort of the entire LVRCR Club under the supervision of NORRCA's California Director, Don Risner, this national event came to be a success, which brought out some of the best racing action, great camaraderie and ideal sportsmanship between racers.

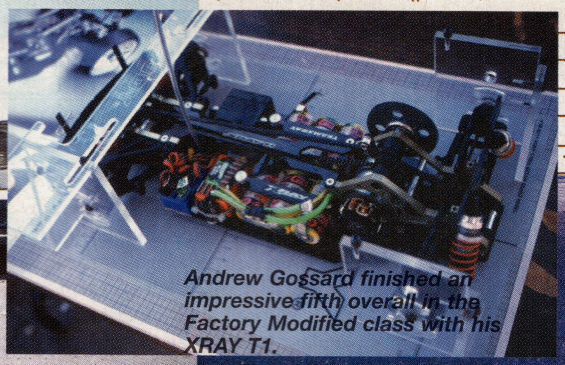
Attendance was a decent 154 entries that led to 20 heats of qualifiers in nine different classes. The overall turnout was just right, letting all qualifying days to end hours before dusk, which then allowed out-of-state visitors to still enjoy the sights and sounds of Las Vegas,



The entire field of the direct-drive 1/10-scale GTP class awaits tech-inspection.







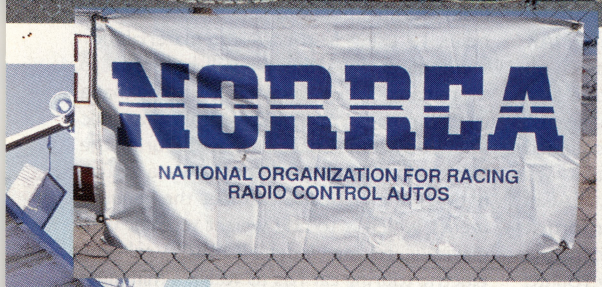
Andrew Gossard finished an impressive fifth overall in the Factory Modified class with his XRAY T1.





The Factory Mod winners.







sinfully dubbed as the city that never sleeps. What's interesting to see is that even though there were only a few well-known hotshots in attendance, almost all major R/C car manufacturers were represented, particularly in the Expert and Factory modified electric classes. Team Kyosho International, Team Losi, X-Ray/Hudy, Yokomo, Schumacher and Associated Electrics either had locally-based team members or specially flown-in drivers to duke it out for the much coveted National titles. As mentioned, there were a total of nine categories up for grabs, but one thing was apparent; with the enormous popularity of 4WD sedan-type races, direct drive cars were literally bumped to extinction at a staggering rate of one pancar to 15 sedans. Yet, no matter how few or how ample the number of drivers raced under a specific class, the overall excitement just never ceased all through the weekend. After all, a national race won't be called that if not for the best racers battling it out for the much-deserved recognition, whether going against only two or an overwhelming 200 other racers.

THE FACILITY

The LVRC Speedway is home to an oval racetrack with an excellent road course amidst the embankments. The facility is top notch with a neutral driver's stand, a computerized AMB system and a pit area that's capable of housing over 70 drivers under the shade with extra room to accommodate personal tents. Even though

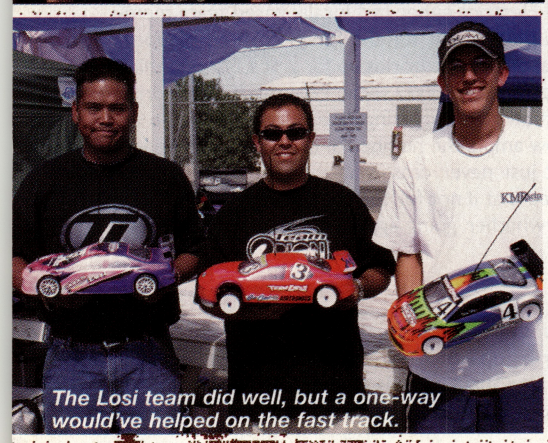
2001 NORRCA ROAD







Kyosho's V-One R swept the nitro class.



The Losi team did well, but a one-way would've helped on the fast track.

traction was excellent across the track, the LVRC crew didn't hesitate to spray a mixture of grape juice and high concentrate VHT on the already high-bite asphalt surface to make sure that all drivers had a "no complaint" outlook and experienced consistent handling. As a matter of fact, it was apparent that there was too much traction on the first qualifying day as numerous cars were seen traction rolling, with rear ends abruptly breaking loose by vigorously bouncing off from one side to another on each corner. As there were no rules on which tires and inserts to use, many found success with various compounds from a number of manufacturers, but the dominant choice for most sedan racers were the Sorex brand. This may sound like an endorsement, but these proven rubbers performed exceptionally well, especially under the extreme burning temperatures associated with the desert.

While the track has every aspect of a first-class facility, the buzz in the pits was that the layout wasn't challenging enough for racers to do battle under pure driving skills alone. Due to the unprecedented huge straight sections, most of the races became a show of who's got the most horsepower. There was virtually no first corner, as half of the oval track embankment was used as part of the straight. Therefore, if you had plenty of speed to spare, chances are you'd find your car zooming past others in the first critical seconds of the race. With mostly sweeping turns, one-way differentials were in and high-speed gearing was a must. Run a less-than-adequate setup and the rest of the field might just kiss you good-bye.

CONTROVERSIES

THE POINT SYSTEM LAYOUT IN QUALIFYING: Entering the event, not everybody knew what race format was to be implemented. As it turned out, the IFMAR start in qualifying was applied. Based on IFMAR's book, cars were to start one at a time in intervals leaving room to race against the clock and not each other. This sounded fair enough in the first two days, until it was announced on the last race day that EACH round would use the point system format which would then determine the grid for the finals. As we look at it, all qualifying rounds basically became a race against each other instead of the clock under these circumstances. Did this affect everyones' hopes in the overall qualifying standings? Definitely! Read on and find out why.

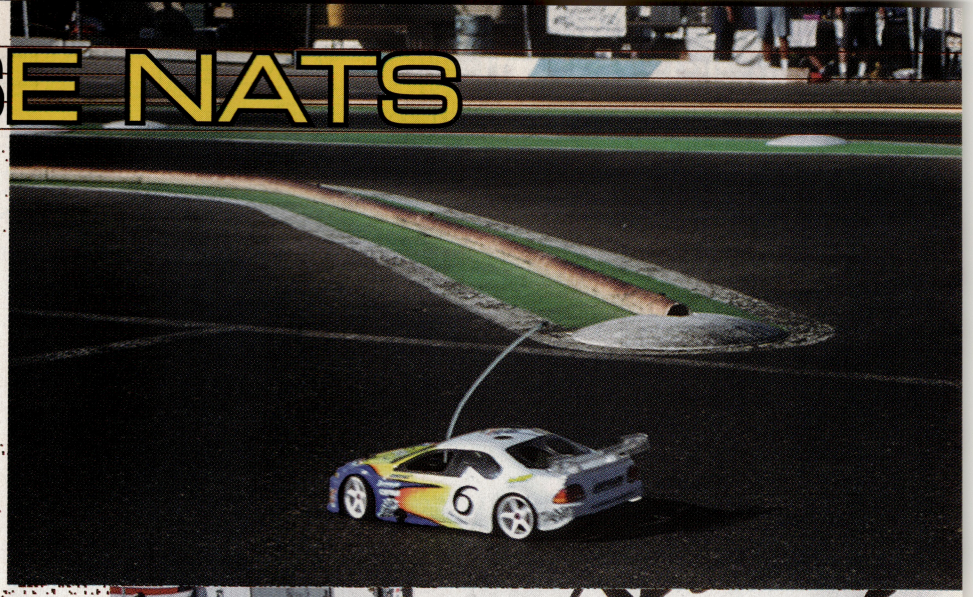
First, let's talk about race ethics during qualifying. Let's say a faster car is looking to pass you and you're up defending your position from him. Should you let the other driver by or "race" against him? Strict courtesy would say to let him pass (which I regrettably did a couple of times!), but if it did matter to get into the A-Main, the point system format dictated an all or nothing run on each and every qualifying round! Clearly, if this rule was laid out before the race even began on day one, a lot of racers could have managed better positions with the "forget the times, I have to be in front no matter what" mentality. Unfortunately, this is something NORRCA should seriously look into. In our opinion, the term Top Qualifier should have been based on the fastest times in all rounds instead of positions per round. Only then will the idea of TQ be more accurate.

Here's a grave example of how the national race was run: there were four qualifying rounds but only two were counted and the driver with the lowest points (based on position) got to sit in front of the grid. Let's say driver "A" placed first in the first and second round with 22 lap runs. This gave "A" a total of 0, which is the lowest point possible. Now here comes driver "B" placing first in the third round with a much faster 23-lap run but only managing to place second in the fourth and final round BUT with another fast 23 lap run! Driver "B" gets 2 points (for a first and a second) with his otherwise exceptional runs. Note that driver "A" did not do well in the last two rounds. In the end, driver "A" was still declared the Top Qualifier because of winning the first two rounds despite of B's 23-lap run times. What's wrong with this picture? Well, we'll leave it to you to figure out!

RULES, RULES, RULES

WEIGHT PROBLEMS: Gain it or lose your qualifying round! Throughout the years, I have seen racers do crazy things to dramatically reduce the weight of their cars from cutting portions of chassis components to using featherweight materials for some parts. Sure, the car will be prone to more damage but everyone will agree that a light car goes much faster against a tank. Wow, how times have changed! During the Nationals, a number of people were actually doing the opposite to meet the requirements, which is to add weight to their otherwise illegal car. Under NORRCA rules, an electric touring car has to weigh a minimum of 52 ounces (w/o transponder), which is equivalent to about 4-1/3 cans of soda! Most of the sedans competing at this event passed the test easily but if you were running Associated's TC3, the chance of having an underweight car was a high possibility. Every end of each heat, everybody just crossed their fingers hoping to meet the magic number of 52 ounces. Unfortunately, some careless racers were disqualified due to weight issues.

COURSE NATS



ADDING OUNCES: I talked to Tony Phalen of Team Associated regarding his factory mod winning TC3, and he's quick to note that the car was underweight entering the competition. He mentioned that the easiest way to put back more ounces is to use steel screws instead of aluminum or titanium ones. This will bring it up to spec most of the time. If not enough, the next logical option is to attach small lead weights where you deem it will not affect the balance of the car (I saw his TC3 with weights located dead center under the shaft in order to not impinge on handling). His factory ride just skimmed past 52 ounces.



ILLEGAL MOTORS (and SCANDALS?): The risk of taking the trip home early? Unbelievable! Who would think that people would carry out the foolish act of using an illegal motor, especially at a national event? On day one, a racer competing in stock sedan managed to run a 19-turn modified armature in a P2K stock motor can. It wasn't determined until the end of the day when officials noticed that this perpetrator was posting some suspiciously fast lap times in stock class! How could he have passed tech inspection early in the race? Simple; none of the cars were being scrutinized early on, which made tech virtually ineffective. How's that for a national event? NORRCA Director, Don Risner, completely turned the scene around when he ordered everybody to attend another driver's meeting before the start of the next qualifying day. Here's a breakdown on what he had to say: If you use an illegal motor, you're automatically banned from the race. Forget to turn marshal or miss having your car tech'd? You lose laps in your qualifying rounds. And here's an odd statement that surprised everyone: if you're wearing slippers or sandals anywhere on the track, get ready to pack up, because you're heading home as NORRCA's insurance policy is being strict about it. When asked what happened to the guy who violated the motor rules the day before, Mr. Risner mentioned that he "volunteered to leave early." A word of advice: follow the rules before you join a sanctioned race or you'll end up embarrassing yourself. Cheaters beware!



RACE REVIEW BY CLASS

19T "NASCAR"

QUALIFYING

A 19-turn motor limit and NASCAR type bodies on pan cars just didn't attract enough racers. Only two racers started and finished the race. It was a one-on-one battle as NORRCA director Don Risner and Lou Maldonado duked it out in early quali-

2001 NORRCA ROAD COURSE NATS







THE CONCOURSE COMPETITION

The concourse competition was a BIG surprise, as it wasn't announced until minutes before the mains that it was going to be held. It definitely helped to come prepared, as the majority of racers didn't even know about it. Though only a handful of competitors participated, the crowd was treated to some of the finest and imaginative paint jobs ever seen on an r/c vehicle. Believe us, no picture can give these rolling works of art justice compared to actually being there and seeing firsthand the seemingly never-ending effort that went into each unique creation. With several cars airbrushed in tremendous detail flaunting mixed mural design themes, the judges took a lot longer than expected trying to decide and single out the best from the pack. The chore wasn't easy, but in the end, airbrush maestro Charlie Barnes was declared the event winner with an out-of- this-world concourse package. Detailing accents in the form of a customized interior, as well as a decked-out exterior with full race-prepped gear combined with a gothic influenced paint job had the judges coming back to take another look. Check out Charlie's one of a kind sedan and be amazed by what extra effort can accomplish!

fying. Lou managed to get TQ in the first two rounds, but Don finally set the pace with the only 16-lap run.

FINAL A-MAIN

Don held on to win the triple A-Mains and add the National Title under his belt.

1/10 Mod GTP

QUALIFYING

With only eight drivers in the direct drive modified, one would think there wouldn't be enough competition. Well, think again! These guys were pushing the pedal to the metal. It was just amazing how these drivers tore the track with their flat-out wedge rockets. At the onslaught, Mark Anton dominated qualifying. With three fast runs, he decided to sit out the last round, which left Richard Tompkins and Jim Bishop Jr. to fight for the second grid position. Richard managed to win the last heat, which secured him second with Jim settling in third.

FINAL A-MAIN

Still the man to beat, pole sitter Mark seriously was on a mission. After the A-Main finals, it was Mark finishing first, with third qualifier Jim besting Richard for the runner-up position.

Sport Stock Sedan

QUALIFYING

Sport Stock started with four different points leaders in the four qualifying rounds. It's as close as the competition gets under the controversial points format (see sidebar). The fastest times didn't guarantee TQ, but rather consistency played a big role. Surprisingly, all three top drivers won a round, a second and a third finish each, which constituted a three-way tie. With an unprecedented three best rounds being tied among the three top drivers, it stretched down to whoever got the fourth best run. In the end, it was John Peterson, Adam Smith, and Bren Lugo for the 1, 2 and 3 spot.

FINAL A-MAIN

Bumped to fourth during qualifying, Steve Allen made a leap to the front to secure the Sportsman Stock National Title. Bren Lugo and John Peterson consistently held the second and third place respectively.

Sport Mod Sedan

QUALIFYING

Sport Mod brought out some local fast guys who are closing in on expert status. With extra horsepower left to spare, Steve Allen of Sport Stock fame was the man to beat with two qualifying wins. Once again, Adam Smith and John Peterson weren't far behind in the points race. After four quick rounds of qualifiers, it was Steve, Adam and John for the top three.

FINAL A-MAIN

Who says luck doesn't play a big role in these big races? Fifth qualifier Chris Krein and ninth qualifier Chris Wilde surprisingly found themselves as front-runners against the host of fast guys. Excuse us for the widely used cliché but these two guys were literally "on fire" at the get go. A strong finish for the two Chris' secured first and second respectively with Adam Smith rounding out the top three.

Expert Stock Sedan

QUALIFYING

Consistency is a huge advantage in Expert Stock Sedan as it would be hard for anyone to simply walk away with the win. Running the only HPI Pro 3 that placed in an A-Main, privateer Wayne Beebe secured the pole position with two fast qualifying runs with XXX-s driver Gus Rosal close behind. Alex Siemantel with his Banzai sponsored Yokomo ended up in third.

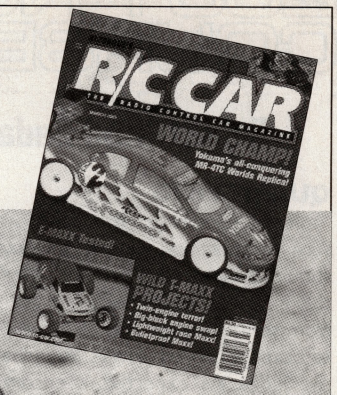
FINAL A-MAIN

It was again a show of consistent driving as the top three qualifiers battled it out for the National Title. Chassis-wise, it was Yokomo, HPI and Losi with a few Associated cars getting in the mix. This class just illustrated how the cars were evenly matched under strict stock rules! In the end, it was Yokomo driver Alex taking the win with Wayne and Gus not too far off.

TURN TO PAGES 106-107 TO SUBSCRIBE

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2001 NORRCA ROAD COURSE NATS

Expert Mod Sedan

QUALIFYING

It is a known fact that if you want exposure to sponsors, winning the Expert Mod should be your top priority. Why? Because this is where casual hobbyists are separated from serious racers. But to be on top means to beat sponsored drivers. Sound fair? You be the judge. As expected, sponsored drivers dominated the field with only a few skilled privateers managing to squeeze in. Team Associated's Brent Thielke won two qualifiers back-to-back giving him TQ honors. Rounding out the second and third spots were Yokomo's Jay Neill and privateer Wayne Beebe.

FINAL A-MAIN

The battle for first and second place went on to the Mains as Brent's TC3 and Jay's MR4-TC were posting almost identical lap times. After the triple A-Mains were over, Brent held on to secure first regardless of Jay's persistent challenge. Third place went to Jonah Gallant with an impressive charge to the front from sixth qualifying spot.

Factory Mod Sedan

QUALIFYING

In R/C racing, no other class is as closely watched as the Factory Mod. After all, these racers are the cream of the crop; the best of the best, and probably the ones that just won't settle for second overall. It was good to see a diverse field vying for the highly contested National Title. There were three TC3s, a couple XXX-s and KX-Ones, an Axis-II, an MR4-TC and an X-Ray T1. This is definitely racing at its finest, and it was time to push the capabilities of each distinct chassis beyond the extreme! Team Associated definitely did their homework by sweeping all of the qualifying rounds. The shaft-driven TC3s were just untouchable on the wide-open track layout. Lead man Tony Phalen, with supporting casts Sean Cochran and Mike Kennedy, were all posting the only 23-lap runs in the class with Tony even managing an unbelievable 24 laps in one of the qualifiers! Although valiant efforts were seen from the rest of the world-class drivers, it was strictly Team AE with a 1,2,3 finish for the grid.

FINAL A-MAIN

In the mains, the story wasn't at all different as Team AE made a clean sweep on the podium. It was apparent that the TC3s had an absolute advantage in speed against the suite of belt-driven sedans. At the buzzer, it was still Tony Phalen, Sean Cochran and Mike Kennedy making a run for their money and bringing home the National Championship for Team Associated.

Sport Gas Sedan

QUALIFYING

With only three drivers entered in Sport Gas, it was deemed to be just another race if not for the participation of the only lady driver throughout the event, Debbie Phumirat. All eyes were on her ability to drive clean lines with a Kyosho V-OneR and everybody agreed that she could seriously be a strong contender in the future. After the 5-minute qualifying runs, it was Jim Bishop Jr. driving a Mugen MTX-2 taking the pole position with Debbie in second and Rich Panganiban in third.

FINAL A-MAIN

As expected, the 30-minute main was a test of patience and skills for all involved. And as it happened, the three racers had their work cut out in driving as well as pitting. Showing great camaraderie, Team Kyosho International offered their full support to Debbie and made sure that she was able to finish the demanding 30-minute contest. Likewise, Jim and Rich also had much needed help from fellow racers to keep their cars moving in the main. After a strenuous workout, Jim secured the win with Rich in second. Although Debbie finished third, her 100-lap run in 30-minutes was just amazing.



Expert Nitro Sedan

QUALIFYING

Substitute three non-Kyosho cars in the Expert Nitro with another three V-OneR chassis and you could probably dub this class the "Kyosho Cup Challenge". Somehow, the V-OneR chassis was simply a popular choice in this field of expert nitro drivers. The race boiled down to who had better skills and a consistent power plant. After qualifying was done, it was Don Vinkemulder of Schumacher for TQ followed by Jason Moberly and Andy Smolnik. All three drivers ran consistently with the Kyosho car.

FINAL A-MAIN

Enduring the 30-minute main is a long time, even for expert veterans; therefore, credit should be given to all who finished the race. Driving an O.S. powered V-OneR, Don once again proved that he was the man to beat with a whopping 122 laps that led to a commanding eight-lap lead in front of sixth qualifier Freddie Phumirat, a privateer who was considered a big surprise placing second overall in the finals. Gene "The Machine" Hickerson of Team Kyosho International rounds out the top three with a decent 106 laps. That's a sweep for the Kyosho V-OneR.

CLOSING ITS DOORS

Out-of-town drivers were taken back when it was announced late Sunday that the NORRCA Nationals was probably the last race to be held at the Las Vegas R/C Speedway. After more than five years running, rumor has it that the on-road track is permanently closing its doors. The crew of LVRC isn't embarrassed to admit that the reason lies in financial problems. Maintenance of the track currently exceeds their budget and it will be difficult to continue the lease with these shortcomings. Any establishment closing up is always a sad episode, especially for people who have come to accept it as part of their lives. And for those of you who have actually stepped and raced on this track, I'm sure you'll agree that this world-class on-road facility will surely be missed. And now, the only thing I can say is that I raced there once.

WRAPPING UP

After three long grueling days of stiff competition under the intense heat of the desert, the 2001 NORRCA Road Course Nationals wraps up in successful fashion. Once again, the spectacle that is R/C racing was showcased with the help of some of the best drivers in the business, not to mention a number of non-sponsored hobbyists leaving their mark at the national level. This is my first time covering a large-scale event, and I've got to be honest by saying that it was one experience I surely wouldn't want to miss. If given the chance to cover such an event in the future, there's no thinking twice. We'll definitely do it again. We'd like to thank the whole crew of Las Vegas R/C Raceway for hosting the event and the NORRCA organization for making sure everybody had a great time despite a few inevitable glitches in the early days. We can hardly wait to hear where the next venue will be. Until then!

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SMITH BROTHERS HOBBY	8941 RESEDA BLVD	Northridge	91324	818-885-8636
SO CAL R/C RACEWAY	19118 BROOKHURST ST	Huntington Beach	92646	714-963-7484
SPEED WORLD RWY & HOBBY	1704 CHILTON DR	Roseville	95747	916-783-8864
THE HOBBY PLACE	10600 W. PICO BLVD	Los Angeles	90064	310-836-2000
VISALIA HOBBIES	2137 W.WHITENDALE AVE	Visalia	93277	559-734-8072

COLORADO

COLPAR HOBBIES	804 S. HAVANA ST	Aurora	80012	303-341-0414
CUSTOM HOBBIES	2813 E. PLATTE AVE	Colorado Springs	80909	719-634-7400
HOBBYTOWN USA	4348 S. COLLEGE	Fort Collins	80525	970-226-3900
HOBBYTOWN USA	6815 WEST 88TH AVE	Westminster	80021	303-431-0482
HOBBYTOWN USA	800 SOUTH HOVER RD	Longmont	80501	970-226-3900
MHOR R/C RACEWAY	12559 E. KENTUCKY	Aurora	80012	303-343-0151

CONNECTICUT

DANBURY HOBBY CENTER	366 MAIN ST	Danbury	06810	203-743-9052
NEW ENGLAND HOBBY SPY	71 HILLIARD ST	Manchester	06040	860-646-0610
PIT STOP HOBBIES	43 GRASSEY PLAIN ST	Bethel	06801	203-778-9249
RC MADNESS TRACK & HOBBY	640 ENFIELD	Enfield	06082	860-741-6501

DELAWARE

HOBBY STOP SPEEDWAY	RD 4 BOX 100 RT 13	Seaford	19973	302-629-3944

FLORIDA

ACE HOBBIES	2127 S. RIDGEWOOD AVE	Daytona Beach	32119	904-761-9780
ATOMIC HOBBIES	13205 S.W. 137 AVESTE 103	Miami	33186	305-235-3232
BOB'S HOBBY CENTER	7333 LAKE UNDERHILL RD	Orlando	32822	407-277-1248
CENTRAL FLORIDA HOBBIES	5600 W. COLONIAL DR #310	Orlando	32808	407-295-9256
COLONIAL PHOTO & HOBBY	634 N. MILLS AVE	Orlando	32803	407-841-1485
CROWN HOBBIES	7439 S.W. 24TH ST	South Miami	33155	305-264-3964
G & C HOBBIES	1228 HYPOLUXO RD	Lantana	33462	561-547-3812
GRAND SLAM HOBBIES	20505 U.S. HWY 19 NORTH	Clearwater	33764	727-548-0699
HOBBIE WAREHOUSE INC.	1237 AIRPORT RD S.	Naples	34104	941-262-2701
HOBBY CENTRAL	UNIVERSITY MALL	Pensacola	32504	850-471-9800
HOBBY NUT INC.	12679 DIXIE HWY	South Miami	33156	305-235-9584
HOBBY WORLD	7273 103RD ST	Jacksonville	32210	904-772-9022
HOBBYTOWN USA	12608 S.W. 88TH ST	Miami	33186	305-273-7803
JACKS HOBBIES	131 N.E. 17TH PLACE	Ocala	34470	352-351-2224
MONSTER HOBBIES	616 S.E. 10TH ST	Deerfield Beach	33441	561-392-5447
ORANGE BLOSSOM	1975 N.W. 36TH ST	Miami	33142	305-633-2521
PHIL'S HOBBY SHOP	6050 PARK BLVD	Pinellas Park	33781	727-545-1251
R.C. HOBBIES	6800 N. UNIVERSITY DR	Tamarac	33321	954-721-5720
ROB'S HOBBY WORLD	8602 S.W. ST RD 200	Ocala	34481	352-854-2799
SCOTT'S HOBBIES	26690 61ST RD	Branford	32008	904-935-0758
SPACE COAST HOBBIES	2135 PALM BAY RD NE	Palm Bay	32905	321-722-3696
SUPERIOR HOBBIES	1478 E. SEMORAN BLVD	Casselberry	32707	407-834-9299
TAVERNIER BIKE & HOBBIES	91910 OVERSEAS HWY	Tavernier	33070	305-852-2859
WARWICK CUSTOM HOBBIES	7676 PETERS RD	Plantation	33324	954-370-0708

GEORGIA

ALLISON PERFORMANCE HOB.	12 GREENVILLE ST	Newnan	30263	770-254-9557
HOBBY MART	6889 PEACHTREE INDUST. /STE H	Peachtree Corners	30092	770-840-8495
HOBBYTOWN USA	19 NORTHSIDE DR EAST	Statesboro	30458	912-489-8700
HOBBYTOWN USA	6770 VETERANS PKWY/STE I	Columbus	31909	706-660-1793
HOBBYTOWN USA	800 E. BARRETT PKWY	Kennesaw	30144	770-426-8800
NATIONAL HOBBY	1975 SOUTH COBB DR	Marietta	30060	770-333-0190
SUGAR BOWL SPEEDWAY	5272 NELSON BROGDON WY	Sugar Hill	30518	770-945-6709

HAWAII

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

IOWA

BOB'S R/C HOBBY	6322 UNIVERSITY AVE/UNIT E	Cedar Falls	50613	319-277-0211
BOX KAR HOBBIES	3649 FIRST AVE S.E.	Cedar Rapids	52402	319-362-1291
FAGAN'S	2327 CENTRAL AVE	Dubuque	52001	319-588-0846
HOBBY CHEST	209 E. MAIN	Ottumwa	52501	641-683-4436
HOBBY HAVEN	7672 HICKMAN RD	Urbandale	50322	515-276-8785
HOBBY SHOP	1700 S. FIRST AVESTE 17	Iowa City	52240	319-338-1788
HOBBYTOWN USA	2406 E. 53RD ST	Davenport	52807	319-355-2071
HOBBYTOWN USA	2737 16TH AVE S.W.	Cedar Rapids	52404	319-364-3289
HOBBYTOWN USA	620 LINCOLN WAY #6	Ames	50010	515-232-9060
WILD BILLS R/C HOBBIES	901 W. JONES	Knoxville	50138	515-842-5973

IDAHO

BOISE HOBBIES	4516 OVERLAND RD	Boise	83705	208-363-9555
DAPCO HOBBIES	2211 GARRETT WAY	Pocatello	83201	208-233-8163
HOBBYTOWN USA	1870 W. PULLMAN RD	Moscow	83843	208-882-9369
HOBBYTOWN USA	3317 N. COLE RD	Boise	83704	208-376-1942
THE TOY SHOP	837 POLELINE RD	Twin Falls	83301	208-734-2725

ILLINOIS

AL'S HOBBY SHOP INC.	121 ADDISON, BOX 449	Elmhurst	60126	630-832-4908
CORNER HOBBY	308 NORTH VIRGINIA AVE	Swansea	62220	618-277-6030
DEPOT HOBBY SHOP	180 SOUTH SEMINARY ST	Galesburg	61401	309-342-9323
G & D HOBBIES	1950 W. CHURCH ST	Sandwich	60548	815-786-8553
HOBBY LAND	616 N. MAIN	Bloomington	61701	309-828-1442
HOBBYTOWN USA	1000 LAKE ST	Oak Park	60301	708-445-8056
HOBBYTOWN USA	1772 S. RANDALL STSTE 200	Geneva	60134	630-208-9062
HOBBYTOWN USA	4338 E. NEW YORK	Naperville	60540	630-778-8707
HOBBYTOWN USA	MACHESNEY PARK MALL	Machesney Park	61115	815-282-0727
LA GRANGE HOBBIES	25 S. LA GRANGE RD	Mc Cook	60525	708-354-1220
LEISURE HOURS HOBBIES	2712 N. PLAINFIELD RD	Joliet	60436	815-439-1477
PAT'S HOBBIES & CRAFTS INC.	5730 W. 95TH ST	Oak Lawn	60453	708-424-6131
RADIO ACTIVE RACEWAY	751 N. BOLINGBROOK DR #15	Bolingbrook	60440	630-759-7557
STANTON HOBBY SHOP	4718 N. MILWAUKEE AVE	Chicago	60630	773-283-6446
VENTURE HOBBIES	23 HUNTINGTON LANE	Wheeling	60090	847-537-8669

INDIANA

B & R HOBBIES	9014 CRAWFORDSVILLE RD	Indianapolis	46234	317-297-4257
BREMEN HOBBIES	308 N. BOWEN AVE	Bremen	46506	219-546-3807
G & G HOBBIES	105 E. MAIN ST	Griffith	46319	219-924-6686
GRANGER HOBBY STOP	12131 STATE RD 23 UNIT L	Granger	46530	219-243-2390
HAPPY HOBBIES	1398 EASTERN BLVD	Jeffersonville	47129	812-282-0060
HOBBY TOWN USA	139 N. BURKHARDT RD	Evansville	47715	812-477-7200
HOBBYLAND INC.	2564 MIRACLE LANE	Mishawaka	46545	219-255-1722
HOBBYTOWN USA	6336 E. 82ND ST	Indianapolis	46250	317-845-4106
HOBBYTOWN USA	1858 E. 80TH PLAZA	Merrillville	46410	219-736-0255
JOE'S HOBBY BARN	1950 E. SPRINGHILL DR	Terre Haute	47802	812-299-5773
P & T HOBBIES AND RWY	2412 N. POORFARM RD	Bedford	47421	812-849-6666
PHILS HOBBY SHOP	1722 LAKE AVE	Fort Wayne	46805	219-426-5056
R & D HOBBIES	4217 FRANKLIN ST	Michigan City	46360	219-879-7563

KANSAS

HOBBY HAVEN	10560 METCALF	Overland Park	66212	816-942-2205
HOBBYTOWN USA	2108 W. 27TH ST	Lawrence	66047	785-865-0883
HOBBYTOWN USA	8229 EAST KELLOGG	Wichita	67207	316-683-7222
HOBBYTOWN USA	9270 METCALF	Shawnee Mission	66212	913-649-7979
MIKES R/C	121 S.E. 29TH ST	Topeka	66605	785-266-5767
R/C SUPERDOME & T.Q. SHOP	14 E. AVE A	Hutchinson	67501	316-665-6633

KENTUCKY

HOBBYTOWN USA	12615 SHELBYVILLE RD	Middletown	40243	502-245-5755
PIT STOP HOBBIES	1927 IRVIN COBB DR	Paducah	42003	502-527-8216
SCALE REPRODUCTION	3073 BRECKINRIDGE LANE	Louisville	40220	502-459-5849

LOUISIANA

HARES ART-N-HOBBY	4529 LEE ST	Alexandria	71302	318-443-2755

MASSACHUSETTS

BARN SPEED HOBBIES	109 CENTER ST	Lee	01238	413-243-2651
BIG BOYS TOYS	33 FATHER DE VALLES BLVD	Fall River	02723	508-677-9400
DAVE'S HOBBIES	281 CABOT ST	Beverly	01915	978-921-1559
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
THE TRACK	16806 OAKMONT AVE	Gaithersburg	20877	321-417-9630

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	48098	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
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	
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

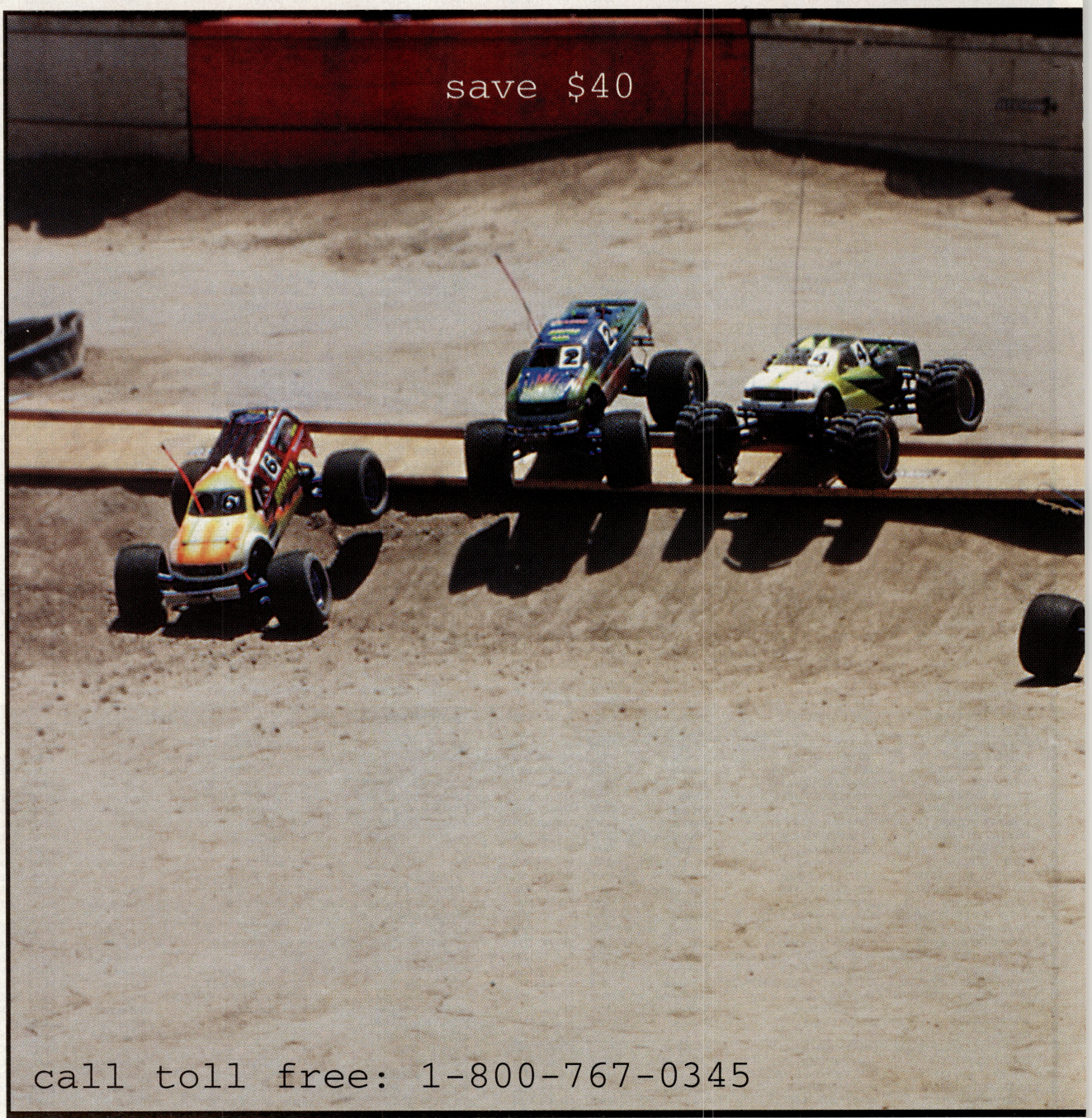
MINNESOTA

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
NORTHWOODS HOBBY	2638 HWY 25 NORTH	Brainerd	56401	218-829-9257
R.C. CAR KINGS	1913 W. BURNSVILLE PKWY	Burnsville	55337	952-895-9643
TWIN CITIES HOBBY & RWY	7577 BROOKLYN BLVD.	Brooklyn Park	55443	763-569-5069
MISSOURI				
CHECKERED FLAG HOBBIES	4451 LEMAY FERRY RD	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
HOBBYTOWN USA	533 S.E. MELODY LANE	Lees Summit	64063	816-525-6885
JOPLIN R/C HOBBIES	1900 S. RANGELINESTE 9	Joplin	64804	417-623-0011
MARK TWAIN HOBBY CTR	2793 WEST CLAY ST	Saint Charles	63301	636-946-2816
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
MISSISSIPPI				
HOBBYTOWN USA	4378 MALL DR	Tupelo	38804	662-690-6030
HOBBYTOWN USA	6380-D RIDGEWOOD COURT	Jackson	39211	601-957-9900
MONTANA				
NORTHLAND HOBBIES INC.	1325 HWY 2 WEST	Kalispell	59901	406-257-1808
PRAIRIE UNIQUE	114 S. LOGAN ST	Terry	59349	406-635-5598
THE TREASURE CHEST	1612 BENTON AVE	Missoula	59801	406-549-7992
NORTH CAROLINA				
ACTION HOBBIES	8500 PINEVILLE MATHEWS RD	Charlotte	28226	704-540-0311
HOBBY TOWN USA	8332 PINEVILLE MATHEWS RD	Charlotte	28226	704-544-2303
HOBBYTOWN USA	1319 MILITARY CUTOFF RD	Wilmington	28405	910-256-0902
HOBBYTOWN USA	SHERWOOD PLAZA SHP CTR.	Winston Salem	27106	336-774-2324
HOBBYTOWN USA	TERRYMORE SQUARE	Raleigh	27604	704-544-2303
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
NEBRASKA				
FUN TIME HOBBY	2020 CENTRAL AVE	Kearney	68847	308-234-1806
HOBBYTOWN UNLIMITED	EAST PARK PLAZA	Lincoln	68505	402-434-5056
HOBBYTOWN USA	13110 BIRCH DR	Omaha	68164	402-498-8888
HOBBYTOWN USA	3537 WEST 13TH ST	Grand Island	68803	308-382-3451
NEW HAMPSHIRE				
HOBBY ETC. INC.	90 WEST PEARL ST	Nashua	03060	603-883-4919
NEW JERSEY				
ALLIED HOBBIES	CHERRY HILL MALL	Cherry Hill	08002	856-665-7888
ALLIED HOBBIES	207 ECHELON MALL	Voorhees	08043	856-772-1268
ALLIED HOBBIES	264 BURLINGTON CENTER	Burlington	08016	609-386-5044
CRUIZIN WITH RC'S INC.	53 EAST MAIN ST	Ramsey	07446	201-825-4884
FISHKIN BROS.	285 MADISON AVE	Perth Amboy	08861	732-826-0048
HOBBIES ETC.	240 S. BRD ST	Woodbury	08096	609-384-7740
HOBBY WORKSHOPS	510 WEST KINGS HWY	Mount Ephraim	08059	856-931-2400
JERRY'S HOBBY CENTER	336 RT 22 W	Greenbrook	08812	908-752-6030
THE HOBBY SHOP	ABERDEEN TOWNSQUARE	Aberdeen	07747	732-583-4189
WACKY RC'S HOBBY SHOP	409 EAST 2ND ST	Roselle	07203	908-241-6700
NEW MEXICO				
ALBUQUERQUE HOBBY CO	1431 EUBANK BLVD N.E.	Albuquerque	87112	505-275-1882
BIG BOYS TOYS	1735 JUAN TABO N.E.	Albuquerque	87112	505-298-1023
CHARLIES HOBBY SHOP	225 E. IDAHO/STE 11	Las Cruces	88005	505-541-1097
FLIGHT DECK HOBBIES	1513 9TH ST	Alamogordo	88310	505-434-6563
HOBBIE'S & STUFF	9577-L OSUNA RD N.E.	Albuquerque	87111	505-293-1217
HOBBYTOWN USA	636 W. BRDWAY	Farmington	87401	505-325-5156
NEVADA				
DANSEY'S INDOOR R/C HOBBIES	741 N. NELLIS BLVD.	Las Vegas	89110	702-453-7223
HOBBYTOWN USA	5085 W. SAHARA AVE #134	Las Vegas	89146	702-889-9554
HOBBYTOWN USA	3789 S. CARSON ST	Washoe Valley	89701	775-883-5475
NEW YORK				
ACTION HOBBIES	1070 MIDDLE COUNTRY RD	Selden	11784	516-736-1574
ACTION HOBBIES	502 W. 167TH ST	New York	10032	212-568-3677
BROOKLYN HOBBIES	3842 FLATLANDS AVE	Brooklyn	11234	718-951-2500
BRUCKNER HOBBIES	3587 E.TREMONT AVE	Bronx	10465	800-288-8185
COMPETITION HOBBY SUP	1006 LOUDON RD	Cohoes	12047	518-786-3622
EAST COAST HOBBIES	2515 65TH ST	Brooklyn	11204	718-627-3814
FANTASIA HOBBIES	17169 46TH AVE	Flushing	11358	718-460-5671
FROGTOWN HOBBIES	RT 37 MINI PINES VILLAGE	Hogansburg	13655	518-358-3686
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
RACING CITY HOBBIES	MIDTOWN SHOPPING CTR	Glens Falls	12803	518-792-7272
RAMPAGE R/C AND HOBBIES	782 RT 9G ROCKLEDGE PLAZA	Hyde Park	12538	914-229-1379
TONY'S HOBBY SHOP	229 HARRISON AVE	Harrison	10528	914-835-4765
TRANS BORDER CUSTOMS	C/O MODELER DISTRIBUTION	Champlain	12919	514-687-6214
UNIVERSAL ENTERTAINMENT	1611 PINE AVE	Niagara Falls	14301	716-282-4840
WALT'S HOBBY	2 DWIGHT PARK DR	Syracuse	13209	315-453-2291
WILLIS HOBBIES	300 WILLIS AVE	Mineola	11501	516-746-3944
OHIO				
A K HOBBY AND RACEWAY	3826 NORTH BEND RD	Cincinnati	45211	513-661-7080
CAPSTONE HOBBIES	562 W. SCHROCK RD	Westerville	43081	614-899-6313
DIVE IN SCUBA CENTER	3182 WARREN SHARON RD	Vienna	44473	330-856-6275
GRANDVIEW HOBBIES	1460 W. FIFTH AVE	Columbus	43212	614-486-3532
HOBBY STOP WEST	4550 MONROE ST	Toledo	43613	419-471-1108
HOBBYTOWN USA	8000 PLAZA BLVDSTE 9	Mentor	44060	440-946-5588
RIDER'S HOBBY SHOP	5333 MONROE ST	Toledo	43623	419-843-2931
OKALAHOMA				
ACTION HOBBIES	4955 S. MEMORIAL DR	Tulsa	74145	918-663-8998
WINGS N' THINGS INC.	5241 S. PEORIA AVE	Tulsa	74105	918-745-0007
OREGON				
AERO SPORT & HOBBY	17941 N.E. GLISAN	Portland	97230	503-669-7665
EUGENE TOY & HOBBY	32 E. 11TH AVE	Eugene	97401	541-344-2117
HOBBY CENTER	1125 DALE ST S.E.	Albany	97321	541-928-5255
LEISURE HOBBIES	982 LANCASTER DR N.E.	Salem	97301	503-588-9884
R C ADDICTION	2810 N. PACIFIC HWY	Medford	97501	541-779-8298
R/C PLUS HOBBIES	1685 25TH ST	Salem	97302	503-364-9188
TAMMIES HOBBIES	12024 S.W. CANYON RD	Beaverton	97005	503-644-4535
ULTIMATE HOBBIES	1210 JANTZEN BEACH CTR	Portland	97217	503-247-8194
WAYNES WORLD OF HOBBY	10910 N.E. HALSEY ST	Portland	97220	503-261-8598
PENNSYLVANIA				
ADAM & EVES PET & HOBBY	313 LATROBE 30 PLAZA	Latrobe	15650	412-539-7130
ALLIED HOBBIES	204 OXFORD VALLEY MALL	Langhorne	19047	215-757-8086
CRANBERRY HOBBY DEPOT	GARDENS PLAZA	Cranberry Twnshp	16066	724-776-3640
GLENNS ALLIED HOBBIES	6607 RISING SUN AVE	Philadelphia	19111	215-745-5777
HOBBY EXPRESS INC.	309 MARS-VALENCIA RD	Mars	16046	724-251-1550
J.C. R/C HOBBIES	13 YORK RD	Warminster	18974	215-672-5200
LORESKI'S INC.	MIRACLE MILE SHOPPING CTR	Monroeville	15146	412-372-5155
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NSANE TOYS	267 POCASSET AVE	Providence	02909	401-943-2629
NANCY'S CO-OP	350 MAIN ST	Warren	02885	401-247-0288
SOUTH CAROLINA				
ATLANTIC WORLD HOBBIES	2458 REMOUNT RD	Hanahan	29406	
ED'S HOBBY SHOP	702 MAIN ST	Myrtle Beach	29577	843-448-8685
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
THE GREAT ESCAPE	1426 LAURENS RD	Greenville	29607	864-235-8320
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
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HOBBYTOWN USA	2000 MALLORY LANESTE 610	Franklin	37067	615-771-7441
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HOBBYTOWN USA	634 NORTHGATE MALL	Red Bank	37415	423-877-9885
HOBBYTOWN USA	COMMONS II	Knoxville	37923	865-690-6423
HOBBYTOWN USA	KINSINGTON PLACE SHOP CTR	Murfreesboro	37130	615-890-6777
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DRYCREEK HOBBIES	2518 I 30 WEST	Greenville	75402	903-527-5381
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HOBBYTOWN USA	2500 W. PARMER LANE	Austin	78727	512-246-8904
HOBBYTOWN USA	4107 S. CAPITAL OF TEXAS HWY	Austin	78704	512-440-7877
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HOBBYTOWN USA	5276 S. HULEN ST	Fort Worth	76132	817-263-1196
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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
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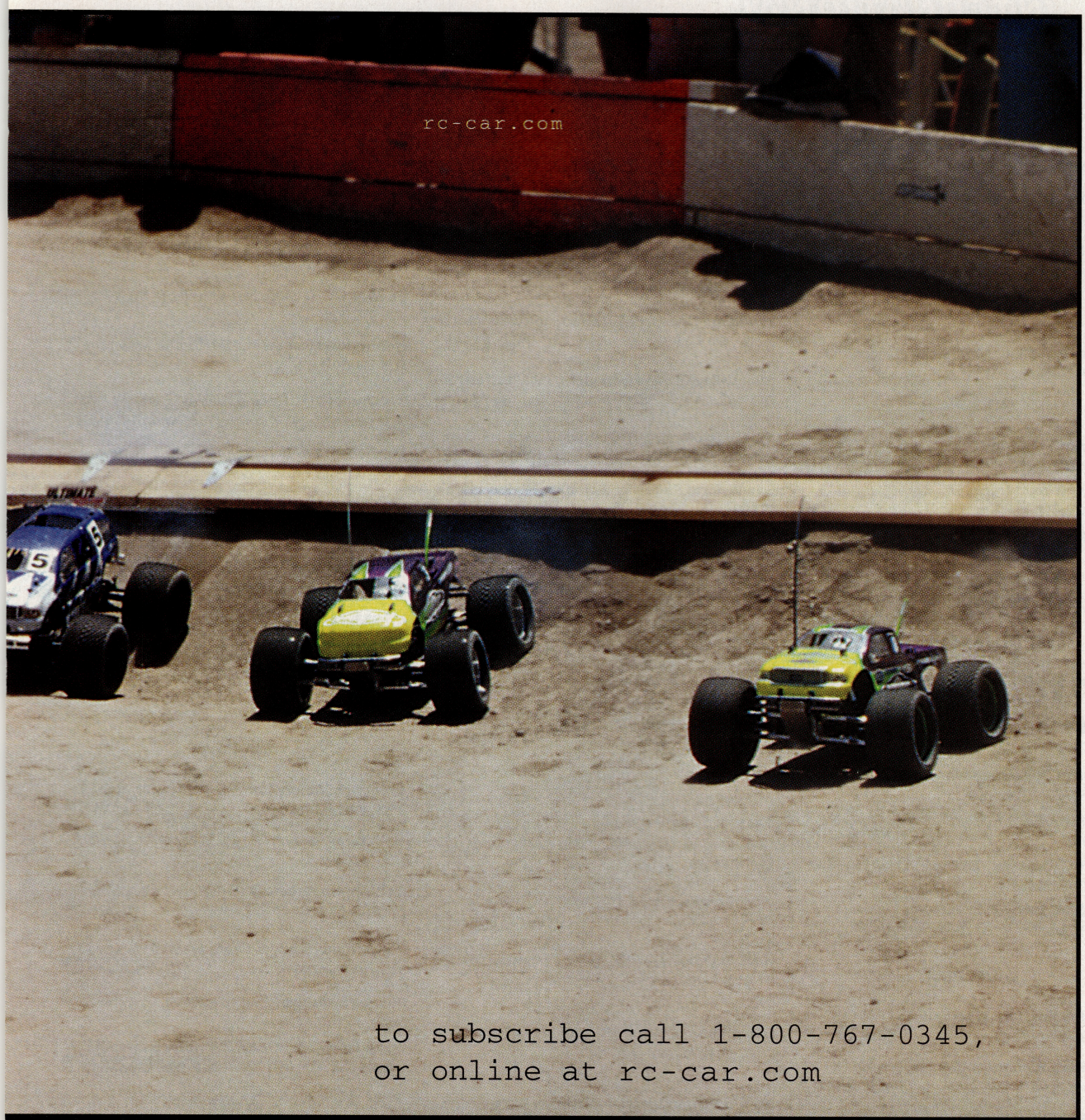
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Dirt Road Rage, 208 3rd Ave. S.E. Cullman, AL 35055 877-435-9866 www.pyramidhobbies.com

Hobbytown USA Raceway, 4500 Schillinger Rd. N., Mobile, AL 36608, (334) 633-8446

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

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

ARIZONA

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

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

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

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

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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

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

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

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

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

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

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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

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

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

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

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

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

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

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

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

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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

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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

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

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

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

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

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

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

P&T Hobbies & Raceway, RR2 (Hwy. 60), Mitchell, IN 47446, (812) 849 6666 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

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

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

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

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

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

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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

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

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

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

MARYLAND

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

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

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

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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

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

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

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Patriot Racing, 5531 Fox Meadow Dr., Meridian, MS 39307 (601) 483-7000

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

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

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

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

NEVADA

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

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

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WYOMING

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

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

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

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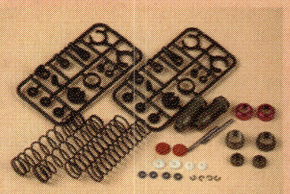











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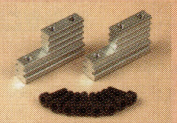

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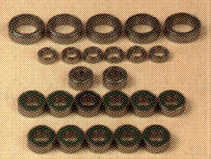

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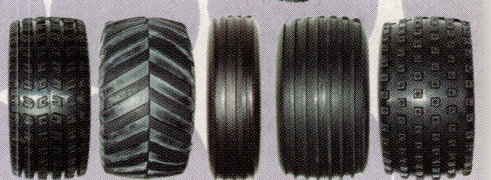

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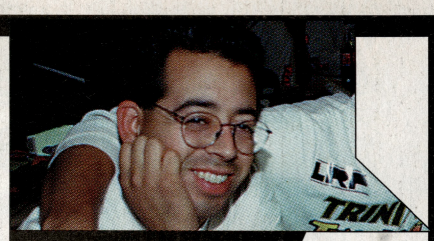


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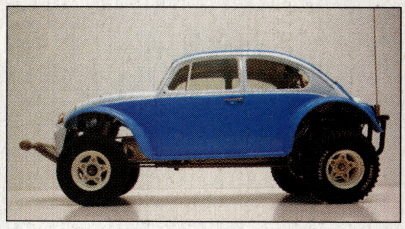
Sand Scorcher: a classic gem

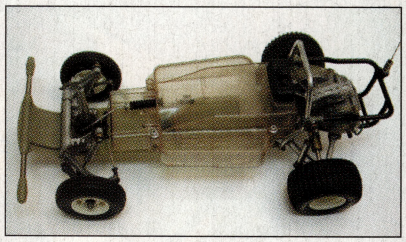


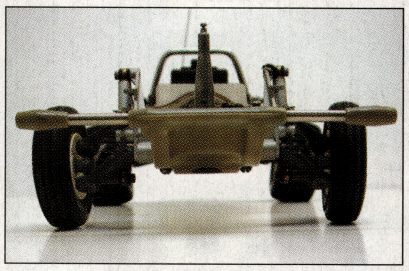
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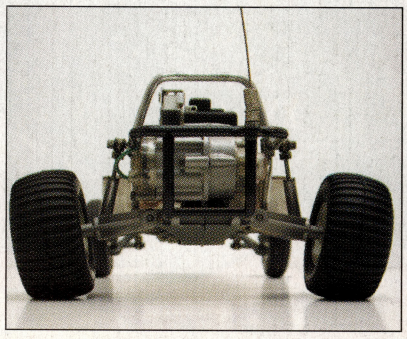
When I was about 10 years old or so, I remember riding my bike to my local toy store. This was back in the days when there were actually toy stores not owned by Toys R Us or Kay Bee. It was Uncle Tom's Toys and Hobbies. I used to go there just about every day to buy baseball cards. One day I walked into the store and they had just received a shipment of R/C cars.













This was the first time I had ever seen the Tamiya Sand Scorcher Baja Bug. I couldn't believe that it was actually an R/C car. The detail looked incredible. Of course I wanted one, but again the lack of funds kept that from happening. About 20 years later, while searching the web, I came across a personal website that featured a collector's cars with some items he had for sale. One of the items was a Sand Scorcher in poor-to-good condition. The body was pretty beat and was missing a chunk out of the front fender, the tires were trashed, and some of the parts where not in the best of shape. We agreed on a price and I received it a week later.

Unlike most R/C cars nowadays, The Sand Scorcher (kit number 58016) was made of mostly metal parts, with a Styrene body and a waterproof radio box! The front end had a fully independent suspension, which was based off of its full-sized counterpart. The rear suspension consisted of a lower control arm with aluminum oil-filled shocks. When the car sat at ride height, it had the ever-familiar VW positive-camber, and as it went through its travel it changed to massive negative camber, just like the real thing. The fully enclosed radio box housed all the electronics, from the servos to the battery and everything in between. It worked pretty well at keeping water out and in fact, in the promotional Tamiya video, they actually drive it into water that is almost over the headlights!

While in the process of restoring the body, I noticed that the front nose was broken and not repairable. I ordered the front nosepiece from a Blitzer Beetle to replace it. Although the Blitzer Beetle doesn't have the turn signals, it was close enough. I'm still trying to locate a sticker sheet and some other goodies to finish off the restoration.

As for being collectable, this is probably one of the most sought-after kits next to a Bruiser. I've seen NIB (new in box) Sand Scorchers sell for as much as $1500! A NIB body kit goes for about $300! Most of the parts are fairly tough to find and this could be one of the hardest kits to add to your collection. However, if you keep your eyes open, you may come across one at a good deal. By the way, if you ever come across a Sand Scorcher sticker sheet, I know someone who's looking for one.

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

XXX-NT

XXX-T GRAPHITE
MATT FRANCIS EDITION

XXX-S
TOURING SEDAN

engineering wins

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Matt Francis – Modified, Doug Scrafure – Stock

Midwest Off-Road Winter Championships
Brian Dunbar – Modified, Rob Schaffer – Stock

Winter Championships
Jukka Steenari – Modified, John Waters – Stock

Cactus Classic
Brian Kinwald – Modified, Brian Westerman – Expert Stock

Rumble in the Rockies
Jimmy Babcock – Modified, Mindi Brockman – 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 Durfee – 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-S Race Wins 2001

David Spashett – **Orion/HPI Touring Car Classic**

ROAR National Championships
Paul Lemieux – Modified, Ryan Cavalieri – TQ Stock

David Spashett – **European Touring Car Championships**

Jason Cox TQ, 1st – **Reedy Race of Champions**

Hitec Sedan Challenge
Brian Kinwald – Factory, Modified, Mark Barney – Expert Modified, Albert Guardado – Expert Stock

XXX-NT Race Wins 2001

NORRCA Off-Road National Championships
Matt Francis – TQ, Adam Drake – Expert, Theo Costanis – Sportsman

Adam Drake – **NORRCA Truck World Cup**

Brian Kinwald – **Silver State Nitro Challenge**

Hot Rod Hobbies Shoot Out
Travis Amezcua – Expert, Theo Costanis – Sportsman

Adam Drake – **Nitro Challenge**

Jesse Flobbers – **Midwest Winter Gas Championships**

XX-4 Race Wins 2001

Jukka Steenari TQ – **EuroChamps**

ROAR Off-Road National Championships
Matt Francis – Modified, Jonathan Noor – 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**

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