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Xtreme R/C Cars

THE REAL WORLD OF R/C CARS WITH AN EDGE

We Test
Losi's XXX-NT
FIRST!

Inside:
Become a Nitro Clutch Master!

Keep your Race Rig Right!

TESTED:
Tamiya **F103LM-TGF**
Mugen **MBX-4RR**
Tamiya **Juggernaut 2**



TAMIYA



JUGG 2

7 FM Budget Radio Guide
Radios Compared



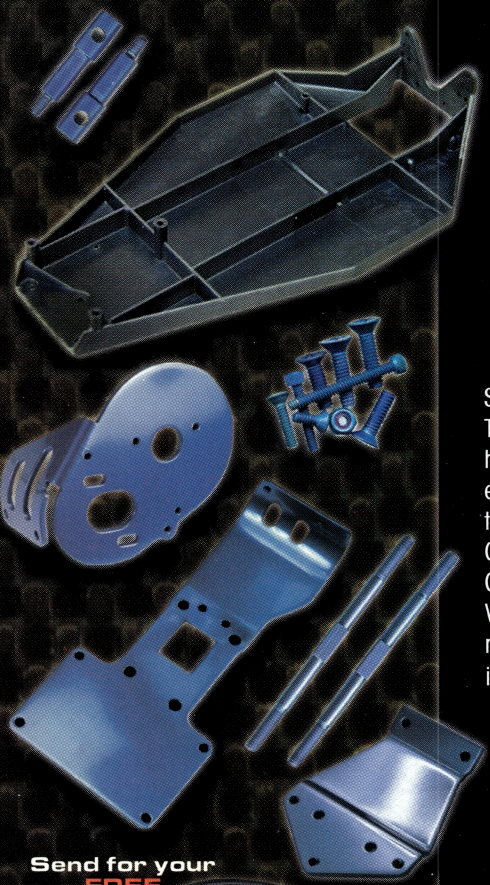


MBX-4RR

MUGEN

September 2000
USA $3.99 CANADA $5.99
09>
Issue 6.1

FACTORY Team T3



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

Over $179 Worth of UPGRADES!

Send for your **FREE** RC10T3 Catalog



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

Factory Team T3 #7048

FEATURES:

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

Also, New Updated...
RC10T3 Team Kit
#7038

FEATURES:

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

***3*-TIME WORLD CUP CHAMPION!**





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Trinity Off-Road Shoot Out
2wd, Matt Francis
Truck, Adam Drake
4wd, Brian Kinwald

US Indoor Championships
1/12th, David Spashett
Touring, Josh Cyrul

Reedy Race Of Champions
Brian Kinwald

Florida Winter Champs
Truck, Matt Francis

Trinity On-Road Challenge
Touring, Josh Cyrul

Cactus Classic
2wd, Matt Francis
Truck, Brian Kinwald
4wd, Brian Kinwald

ROAR Carpet Nationals
1/12th, Josh Cyrul
1/10th, Josh Cyrul
Touring, Josh Cyrul

1/12th Euro Champs
David Spashett





Josh Cyrul and Barry Baker celebrate their 1-2 finish in Modified Touring at the ROAR On-Road Nationals

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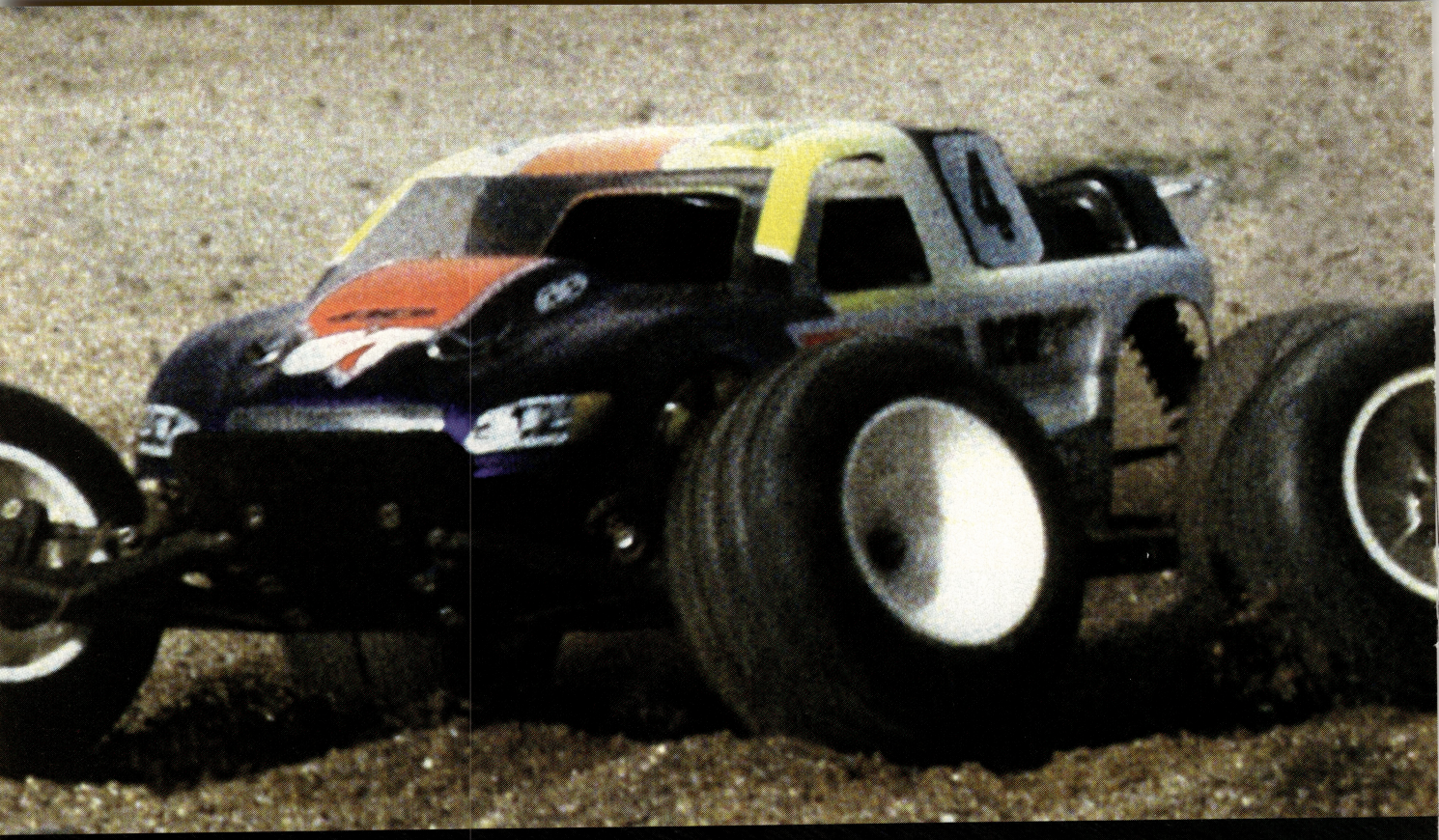


Don't Settle For Anything Less...

Here's The Team Associated RC10GT Lineup For 2000... A GT For every racer, from Novice to Factory Pro!

Team Associated RC10GT's have been the dominant force in nitro truck racing since their introduction in 1993. No other nitro truck even comes close to the GT's winning record, including 3 NORRCA Truck World Cup wins.



All Team Associated RC10GT's feature fully adjustable caster, camber, and toe-in, fully adjustable oil-filled shocks, and our race-proven Stealth differential with 2.60:1 final drive ratio to handle the power of today's nitro engines.

The new, updated RC10GT Team kits feature one-piece racing wheels, Pro-Line F-150 Truck Body, MIP CVD's and a new, heavy-duty one-piece blue-anodized chassis which virtually eliminates chassis flex problems, and increases the GT's wheelbase to the maximum legal length.

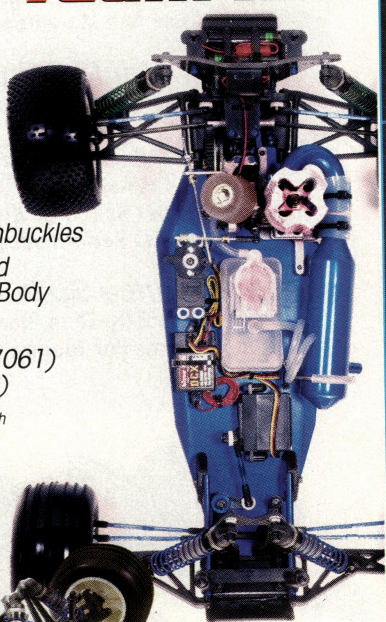
The new RC10GT "Factory Team" kits also include a Factory Blue Tuned pipe and manifold, Factory Blue Titanium turnbuckles, graphite shock towers, blue screws and more... it's the full "factory ride" GT!

The RC10GT is also available in a fully-assembled Ready-To-Run version, kit #7090, complete with .15-size engine and 2-channel radio.

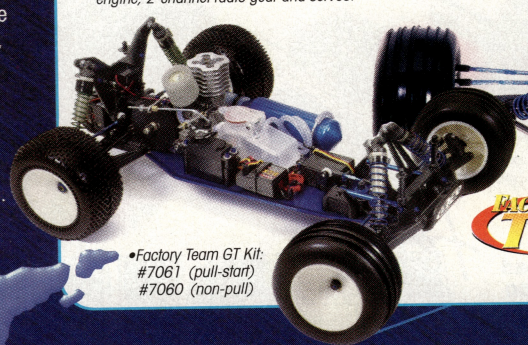
Nobody knows Nitro truck racing better than the Team!

Factory Team Kit

- *New super-rigid Alloy chassis, blue anodized*
- *Factory Blue Tuned pipe and manifold*
- *Sealed ball bearings*
- *Graphite shock towers*
- *Factory Blue Titanium turnbuckles*
- *Pro-Line Racing Tires, and #3078 F150 Ford Truck Body*
- *MIP CVD's*
- *Available in Pull-start (#7061) or Non-pull Start (#7060)*



RC10GT Factory Team Kit #7060 shown with items not included in kit: .12 to .15 size engine, 2-channel radio gear and servos.



•Factory Team GT Kit:
#7061 (pull-start)
#7060 (non-pull)

FACTORY Team GT

RC10GT

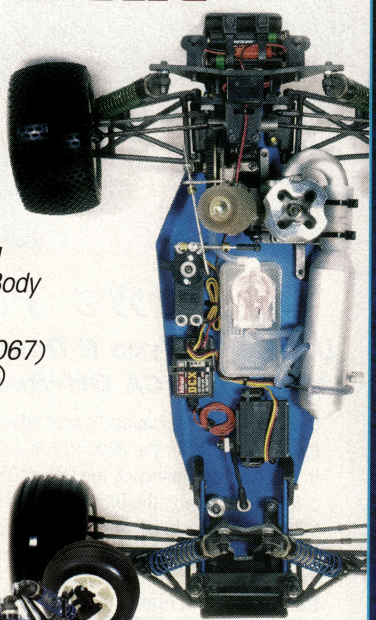
For more information on the RC10GT, visit our website:
www.rc10.com • www.teamassociated.com



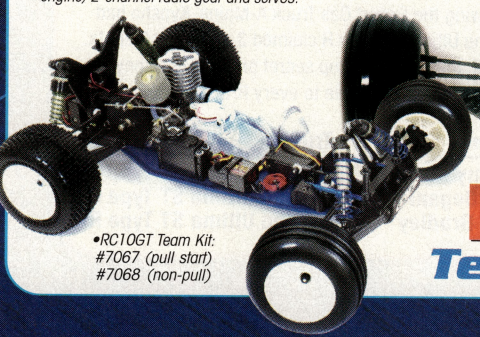
Get a REAL Associated RC10GT!

Team Kit

- New super-rigid Alloy chassis, blue anodized
- Tuned pipe and manifold
- Sealed ball bearings
- Composite shock towers
- Hard-anodized, Teflon-coated shocks
- Pro-Line Racing Tires, and #3078 F150 Ford Truck Body
- MIP CVD's
- Available in Pull-start (#7067) or Non-pull Start (#7068)



RC10GT Team Kit #7068 shown with items not included in kit: .12 to .15 size engine, 2-channel radio gear and servos.

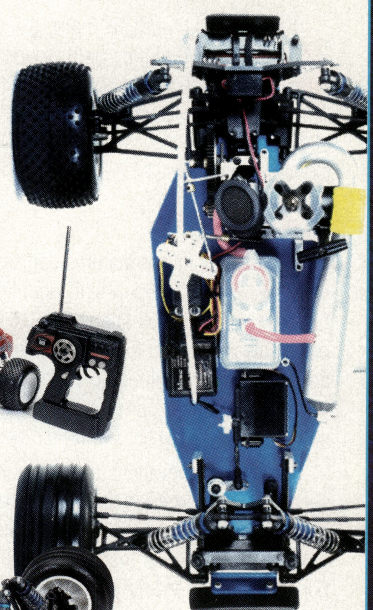


•RC10GT Team Kit: #7067 (pull start) #7068 (non-pull)

RC10GT Team KIT

Ready-To-Run

- Fully assembled, just add fuel and radio system batteries!
- High-quality 2-channel radio system installed
- Includes powerful Team Associated .15 engine
- Painted and trimmed body
- Uses most standard GT replacement parts



.15 Engine Lifetime Replacement Policy!





•RC10GT RTR #7090 Complete with .15 engine and 2-channel radio

RC10GT Ready-To-Run

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ULTIMA ST EP & GP TYPE-R

Meetin' the test of 1/10 scale

It takes hard work to make the grade in off-road racing. You do your homework. You study hard. You learn from the masters, polish the moves and what does it get you? Maybe, just maybe, a shot at the next "A" main. And to make sure your next shot is a title shot, Kyosho has taken all the secrets of 2WD success they've learned, and put 'em all into two brand-new curve-busters: the Ultima ST EP & GP.

Competition classics — and historic firsts

The list of common features comes straight from the best racing technology of today. A fully independent, double-wishbone suspension. Turnbuckles for fast-action tuning. A slipper clutch. Responsive bellcrank steering. Steel universals in the rear. Extra-long, fiber-reinforced nylon suspension arms. Hard-anodized, Teflon®-coated oil shocks. A removable button on the gear cover for fast adjustments. Foam inserts for the tires. Full bearings, including a big, smooth-running 10x15 bearing for the ball diff.

But it's the innovations that really set Type Rs apart. Some have never been seen on a Kyosho truck before. The ball diff design that's SAE, not metric, and big enough for a dozen 3/32" balls. The built-in transponder mount. The spring-tensioned servo saver that adjusts with fingertip pressure. The muffler & round port manifold for the GP version. The 3-piece, modular chassis on the EP. Pure centerline design that aligns and lowers on-board component weight for the lowest CG and best handling of any Kyosho truck in history.

A few innovations are so totally new that only Type Rs have them. Pressurized and non-pressurized dampening options, both in the same shock. A tranny that can run with the best on the straights, and give you a tenths-of-a-second per lap edge in the corners. A mount that can handle manual or recoil-start engines. A 75cc, race-legal fuel tank that won't leave you high and dry.

And do you want it all with the best rims, tires and body that a racer can buy? Then check out the Ultima Type R EP & GP—and go to the head of the class.



NEWS FLASH!

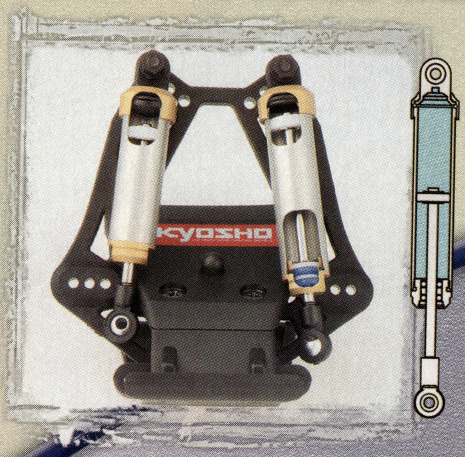
Ultima ST Type R Dominates 2000 NORRCA Off-Road Gas Nationals!

On April 15-16, the country's best drivers met at Racer's Haven in Bakersfield, CA, for the 2000 NORRCA Off-Road Gas Nationals. When the dust settled following the Expert Gas Truck A-Mains, Kyosho had clearly dominated...the Ultima ST Type R claimed 3 of the top 5 spots. Most impressive of all, these weren't top secret prototypes – they were the same production kits available to every R/C racer!

Position	Driver	Truck
2	Jeremy Kortz	Kyosho Ultima ST Type R
4	Greg Degani	Kyosho Ultima ST Type R
5	Chad Bradley	Kyosho Ultima ST Type R

For the location of the dealer nearest you, please call 1-800-682-8948 and mention code number 2335H.

Look for these winning features in both Type R Trucks!



Twin Cap Pro Shocks

Filled from the bottom up, they're unpressurized. Filled from the top down, they're pressurized shocks ready for the roughest grounds and bumpiest courses.



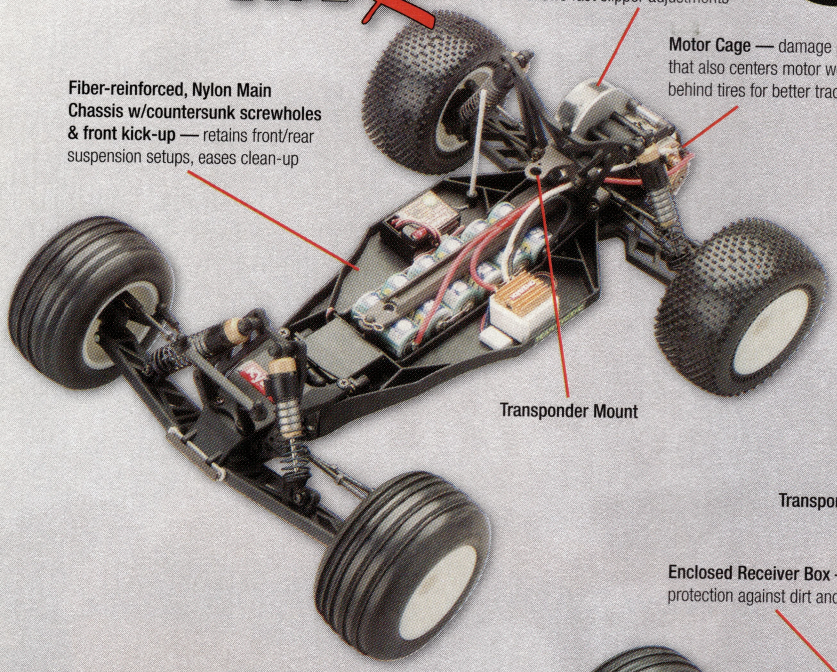
Triad Pro Tranny

Superb on the straights and the king of cornering. Extra-wide, reinforced nylon gears help you hit 'em hotter and leave 'em faster.



Equipped with class! Both Type Rs include 1-piece rims, foam-lined tires and a racing body from Pro-Line®, one of the top names in R/C racing rubber!

ELECTRIC POWER ULTIMA ST TYPE-R



Protective Gear Cover — Defeats dirt, minimizes maintenance. Removable button allows fast slipper adjustments

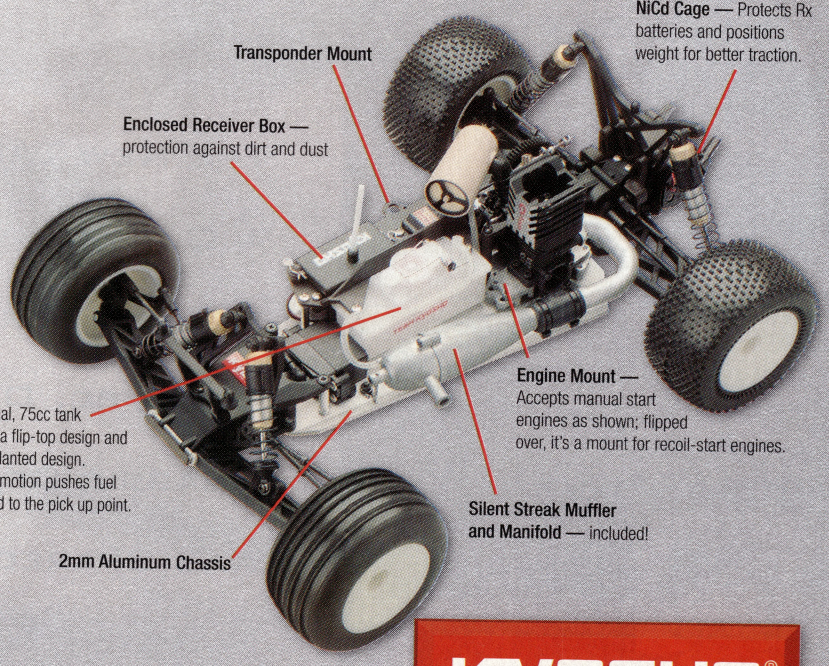
Motor Cage — damage protection that also centers motor weight behind tires for better traction

Fiber-reinforced, Nylon Main Chassis w/countersunk screwholes & front kick-up — retains front/rear suspension setups, eases clean-up

Transponder Mount

KYOC0220
Length: 16.4 in (417mm)
Height: 6.5 in (165mm)
Front Track: 10.4 in (263mm)
Wheelbase: 11.2 in (285mm)
Width: 12.5 in (317mm)
Weight (approx.): 4.1 lb (1840g)
Rear Track: 10.2 in (260mm)
Ground Clearance: 1.5 in (38mm)
Gear Ratio: 12.65:1 (overall); 2.50 (internal)
Requires: 2-channel radio, motor, speed control, 6-cell NiCd & charger

NITRO POWER ULTIMA ST TYPE-R



Transponder Mount

NiCd Cage — Protects Rx batteries and positions weight for better traction.

Enclosed Receiver Box — protection against dirt and dust

Race-legal, 75cc tank features a flip-top design and a back-slanted design. Forward motion pushes fuel backward to the pick up point.

Engine Mount — Accepts manual start engines as shown; flipped over, it's a mount for recoil-start engines.

Silent Streak Muffler and Manifold — included!

2mm Aluminum Chassis

KYOC0520
Length: 16.4 in (417mm)
Width: 12.5 in (317mm)
Height: 6.5 in (165mm)
Weight (approx.): 4.1 lb (1840g)
Front Track: 10.4 in (263mm)
Rear Track: 10.2 in (260mm)
Wheelbase: 11.2 in (285mm)
Ground Clearance: 1.5 in (38mm)
Gear Ratio (GP): 11.41:1(overall); 2.89 (internal)
Includes: manifold, Silent Streak muffler,
Requires: 2-channel radio, .12 engine, glow fuel, glow starter & support equipment

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THE FINEST RADIO CONTROL MODELS

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SERVO NOT INCLUDED

BALL BEARINGS THROUGHOUT

FRONT AND REAR ANTI-SWAY BARS

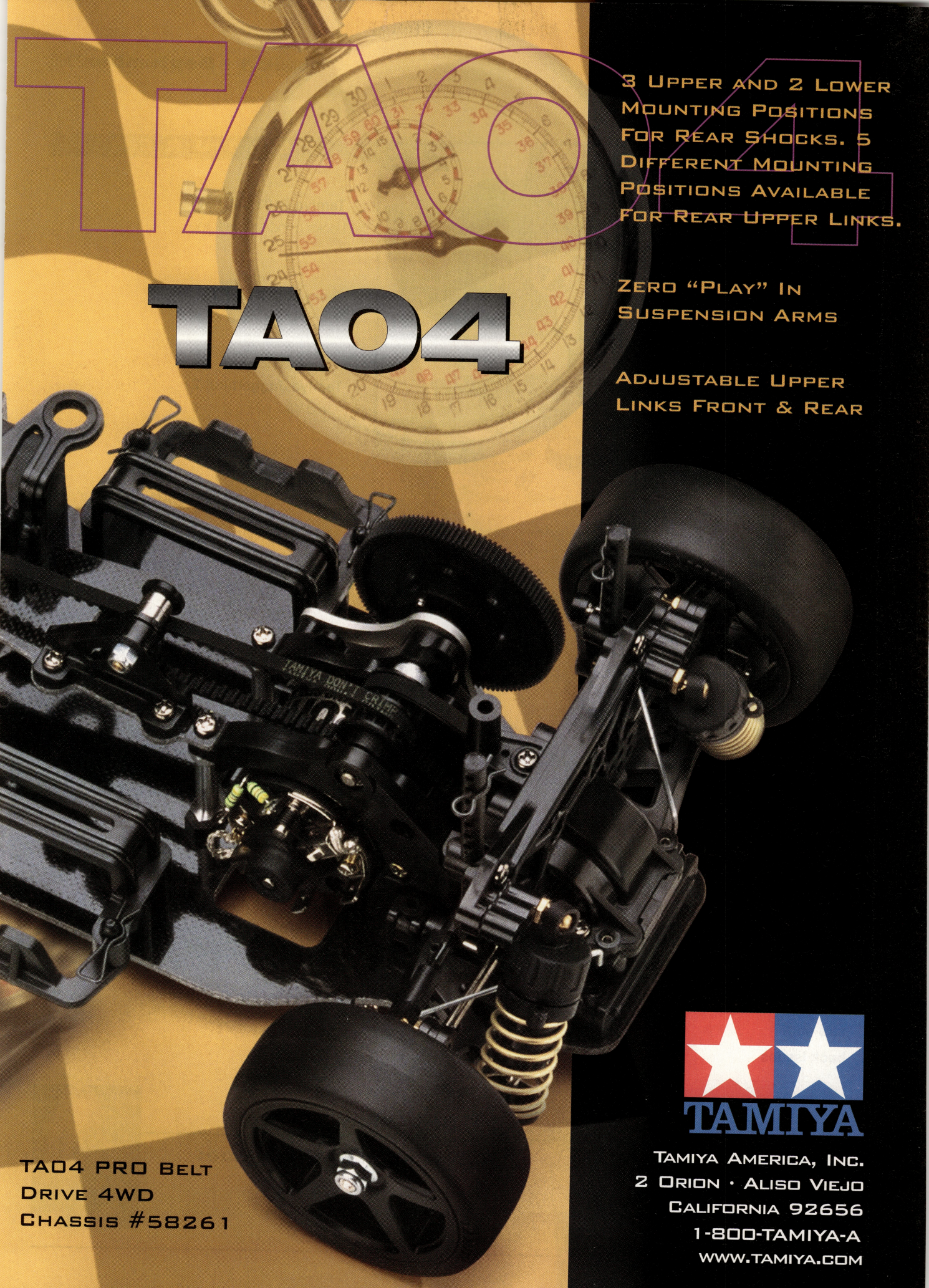
"...WE FELT IT WAS IMPERATIVE TO PROVIDE A CHASSIS WITH AS MUCH SETTING POTENTIAL AS POSSIBLE."

— MASAYUKI MIURA, TAMIYA DESIGN TEAM

THE NEW TA04 REPRESENTS A QUANTUM LEAP FORWARD IN HIGH-PERFORMANCE, 4WD ELECTRIC, ON-ROAD RACING CHASSIS DESIGN. NOTHING WAS SPARED TO DELIVER MAXIMUM PERFORMANCE AND TUNING VERSATILITY.

4WD

TCS QUALIFIED!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Zero "Play" In Suspension Arms
Adjustable Upper Links Front & Rear
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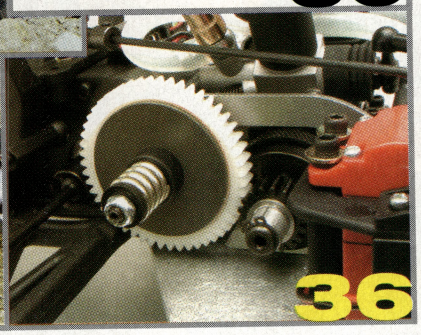

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Once again, it's Barry's world.

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ATTENTION!

This is our biggest issue ever.
Cover Photos by:
Elliot Crabtree



Other stuff in this issue:
The 7 degrees of R/C, Fight Club references, Nikki Cox, Canadians, hot celebs and other good stuff.


"Josh, I think you're neat also."

That's Nichole talking, not us. Not that there would be anything wrong with that.

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It's In The Details

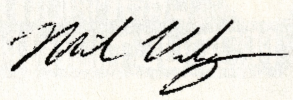
Greetings. As you may or may not know, I recently became a daddy. Being a new dad has thrust upon me a number of new duties: Changing loaded steamy diapers, 2am feedings, dealing with teething, flashing back to my high-school experiences and worrying about her dating, but the most taxing duty of them all – building stuff. You know what I'm talking about – during every toy commercial on television that "some assembly required" line at the end. Now I'm no auto mechanic, but I consider myself more than reasonably mechanically inclined than most thanks to fifteen years of R/C experience. But little did I know I've been spoiled all these years by decent instructions. Even the worst R/C car instructions have been ten times better than some of the building instructions I've come across while doing my fatherly duties.

First there was the crib. My wife Sonya and I figured we'd buy a good crib that would last us at least a couple of kids. We threw down five bills (read: $500) on some Italian job. It looked great in the showroom, all shiny and wood. When we got it home, I was greeted by a dozen pieces, a huge bag o' screws, and a large schematic drawing. The drawing was basically the instructions. The drawing itself looked as if the Godfather himself had been drawing it with crayons just before that scene in the first movie when he drops dead after his grandson douses him with poison. The drawing had as much detail as Rosie O'Donnell's hourglass figure. Did I mention there were no words (in English or Italian) or numbers indicating in what order to build in? I don't know how I managed, but I got the thing built in about an hour. It seems to be built correctly. We'll find out during the first earthquake.

So far the crib has been the worst, but this little toddler activity center is a close second when it comes to crappy instructions. At this point you're probably thinking to yourself "why is he telling us this?" Well, the whole point of this story is to point out the fact that we've got it pretty good. The R/C biz has done a pretty good job when it comes to building instructions. We might complain about the lack of detail on a step here or there, or the occasional addendum sheet. But let me tell you, most R/C car makers do a hell of a job when it comes to building instructions. Consumer demand and competition has forced R/C car companies to do their best in this department. Otherwise magazines and consumers will point out these short comings in print articles and on message boards around the web. I'm sure the crib industry doesn't have this great consumer force to deal with. All and all, I'd say the R/C biz is doing a pretty good job. That is until they come up with a Ready-To-Sleep crib.

Issue Notes

As always I like to do a little summary of what you've gotten yourself into this month. Inside you'll find review on Tamiya's Juggernaut 2 and F103LM-TRF. We'll find out if Tamiya's upgrades do the trick. Also, a new debut review this month is Losi's secretive XXX-NT nitro truck. Does this new rig redefine nitro off-road racing? And last but not least, Mugen's new MBX-4RR 1/8-scale nitro buggy – big, violent, and beautiful. Also this month we've got articles on nitro clutches, between-race teardowns, mod-motor tuning plus ROAR On-Road Nats coverage, *Xtreme's* Budget FM Radio Guide, and more. Lastly I'd like to welcome Nathan Miller and Mike Henry to the staff full time as Editors at Large. Read on and enjoy.



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Xtreme R/C Cars

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NITRO RUSH

2WD STADIUM TRUCK R-T-R

PRE-ASSEMBLED

ASSEMBLED CHASSIS WITH ENGINE INSTALLED
— ONLY REQUIRES MINOR FINAL ASSEMBLY —



Includes yellow pre-painted and trimmed Rush truck body.



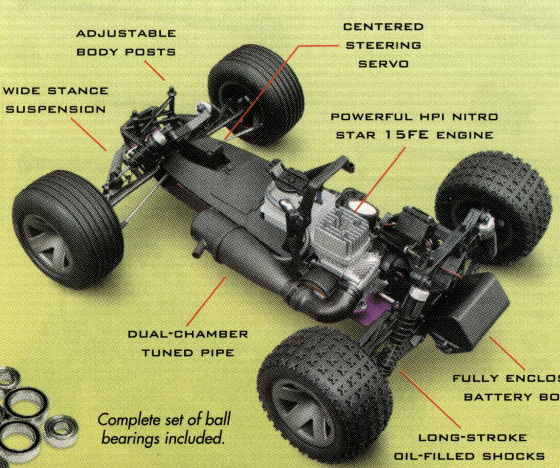
NEW! #560 RTR Nitro Rush (RS2 ST) (Includes radio system)
NEW! #564 Nitro Rush (RS2 ST) (Radio system not included)



Easy to apply pre-cut decals are included.



Included in the RTR Rush kit (#560) is our new TX-2 pistol grip AM radio with dual-rate steering.



Complete set of ball bearings included.

THE ALL-NEW NITRO RUSH

HPI Racing is proud to announce our all-new Nitro Rush trucks. The Nitro Rush is a 2WD nitro powered stadium truck that continues the HPI tradition of durable kits at competitive prices, excellent customer service and great aftermarket hop-up potential. The Nitro Rush is based on our all-new RS2 ST platform: tough trucks that offer high performance features, pre-assembled to get you racing quickly. The Rush is fast, yet easy to start and tune. It's simple, but uses the same suspension geometry as you'll find on competition trucks. If you've always wanted to try a quick and nimble 2WD nitro truck, try the all-new Nitro Rush. Pre-assembled with or without radio, the Nitro Rush is ready for action.

FEATURES

- Pre-assembled with or without radio
- Painted and trimmed body
- Decals die-cut for easy application
- Full ball bearing set
- Powerful, refined Nitro Star 15FE engine
- Dual-chamber tuned pipe
- Enclosed "laydown" gearbox
- Adjustable slipper clutch
- Sealed receiver and battery compartments
- Rear chassis upper and lower braces
- Vented disc brake



COUNTERSUNK ALUMINUM CHASSIS



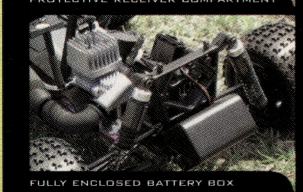
DUAL-CHAMBER TUNED PIPE



LONG-STROKE OIL-FILLED SHOCKS



PROTECTIVE RECEIVER COMPARTMENT



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NITRO RS2 ST
BASED ON THE ALL-NEW RS2 ST CHASSIS

1/8 SCALE
4WD GAS POWERED
RACING BUGGY

MBX-4R

NEW



● Dimension ●

Length	: 480mm	Tread(F/R)	: 266/266mm
Width	: 307mm	Gear Ratio	: 10.95:1
Height	: 182mm	Drive	: Shaft Drive 4WD
Wheel Base	: 326mm	Weight	: 3390g



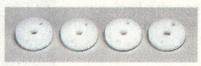
● Features ●

●3 Differential Shaft Drive 4WD ●4 Bevel Gears ●Steel Conical Gear ●Steel Spur Gear ●Differential Case (Nylon) ●Separate Al.Suspension Mount ●F/R Lower Arm ●Front Universal Joint ●F/R Anti-Roll Bar ●F/R Tension Rod ●Double Disk Brake ●F/R Damper w/Dust Rubber ●F/R Damper Spring ●A70-75(T6) F/R Damper Stay ●Al.Engine Mount ●A70-75(T6) 1/8 Inch Chassis ●3-pcs Clutch & Flywheel ●Fuel Tank w/Filter ●Fuel Tank Guard ●Fuel Filter Holder ●Fuel Pipe Holder ●Air Filter ●Box type Receiver Case ●Stone Guard ●Battery Holder for 6V5N-600mAh Receiver Battery ●Adjustable Wing Stay ●Nylon Wing ●Light-weight Spoke Wheel ●Ball-raced

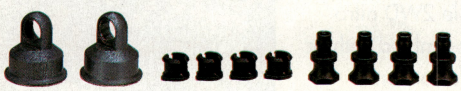
MBX-4RR OPTIONAL PARTS



C0184
Rear Anti-Roll Bar ϕ 2.8mm



C0579
Damper Piston ϕ 1.3mm



C0568
Damper Cap

C0569
Damper Bush

C0570
Steel Damper Mount

NEW

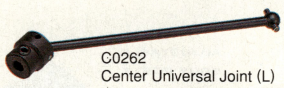
UNIVERSAL JOINT for MBX-4RR



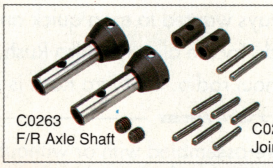
C0260
F/R Universal Joint Set



C0261
Center Universal Joint (S)



C0262
Center Universal Joint (L)



C0263
F/R Axle Shaft

C0264
Joint Shaft

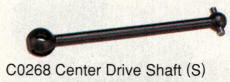
C0265
Joint Pin



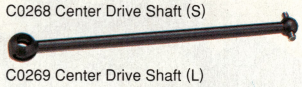
C0266
Joint Cup



C0267 F/R Drive Shaft



C0268 Center Drive Shaft (S)



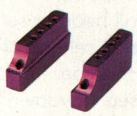
C0269 Center Drive Shaft (L)

1/10 SCALE
GAS POWERED 4WD TOURING CAR

NITRO MTX-2

CHASSIS / CHASSIS With MT12 ENGINE KIT

MTX-2 OPTIONAL PARTS



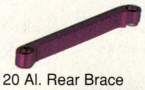
T0702 Al. Engine Mount



T0116 Anti-Roll Bar Link Parts



T0117
Rear Anti-Roll Bar ϕ 2.0



T0120 Al. Rear Brace



T0405
Front Wide Bumper

T0121 Al. Wheel Hub

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Irvine, CA 92614
Phone: 949-475-9505 Fax: 949-475-9511
http://www.mugenseiki.com
e-mail:support@mugenracing.com

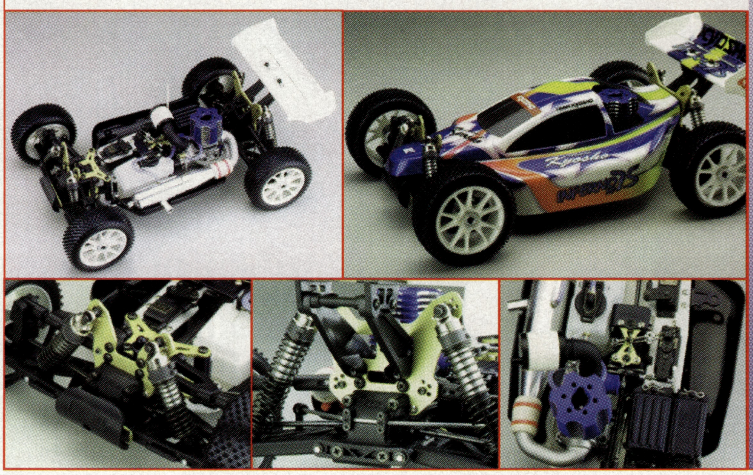
Associated Factory Team T3

You had to see it coming. After releasing a Factory Team GT and a Factory Team B3, you knew a Factory Team T3 wasn't far behind. Team Associated is giving the full Factory Team treatment to their popular 2WD electric stadium truck. As you'd expect, the new truck will feature graphite suspension components, MIP CVDs, Teflon-coated shocks, Unobtanium shock bodies, blue anodized hardware, full bearings, Pro-Line body and tires, and all the other racer gear you would expect from this type of high-end ride. Expect to see the new kit in stores by the end of summer. If history is any indication, we'll go out on a limb here and say that a Factory Team TC3 might be in the works before year's end.



Kyosho Updates In Time For the Worlds

Just recently, Kyosho released test prototypes of their newest off-road creation to select team drivers who received their new MP 7.5's just weeks before this year's ROAR Off-Road Gas Nationals in Missouri. There are a number of new features touted on the MP7.5. The car has an overall lower center of gravity than the previous MP6. The gear box height and engine height are both lower. To reduce gyro effect, the differentials are smaller in diameter. Kyosho promises that these smaller diffs will help the MP7.5 to turn sharper. The smaller diffs also allow for longer suspension arms. Other features include; a dust-proof radio box, an asymmetrical fuel tank (125cc), Teflon™-coated pressurized shocks, adjustable wheelbase, rear stabilizer, a new brake system, and a new aerodynamic body. Expect all of Kyosho's sponsored drivers to be sporting the latest version MP at the Worlds later this year in Vegas.



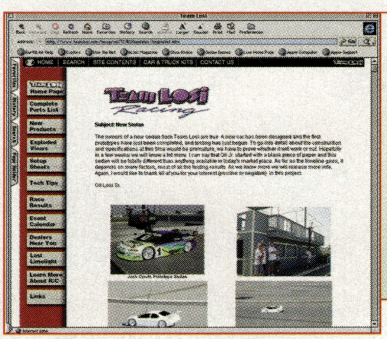
Also new from the Kyosho camp is the EP Ultima RB Type-R 2WD buggy. The new buggy closely resembles the Ultima ST chassis. Many of the features found on the new buggy come directly from the ST truck. Those items include:

- The TR-Pro transmission and slipper. The large capacity ball differential uses twelve 3/32" balls .
- Seventeen ball bearings flank just about every rotating piece of the buggy.
- For quick and easy maintenance, the rear suspension mounts and transmission are designed as independent units. This allows the transmission to be removed without disturbing the suspension.



- The front of the car uses a more pliable material that allows the front end to absorb impacts.
- Pro-Line M2 compound tires sit at all four corners.

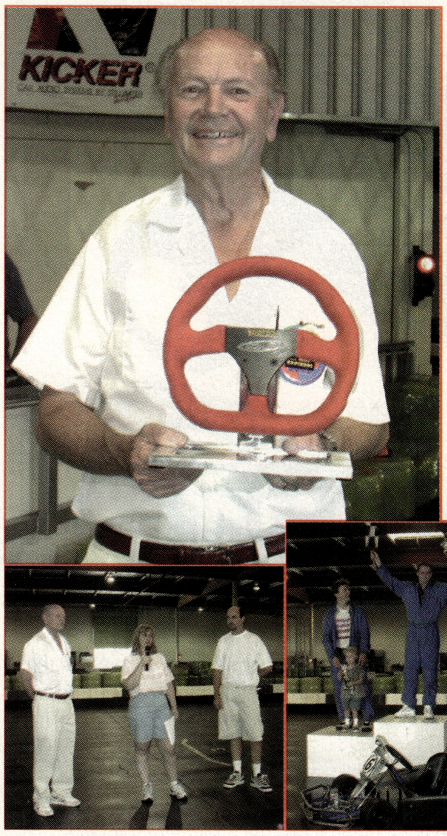
We first got a peek at the new buggy, or at least a very early prototype, at the IFMAR Worlds last summer in Finland. No word exactly when either of these new kits will make their way onto hobby shop shelves. We'll be sure to keep you posted as more information makes it across the Pacific.



Losi's New Sedan

The rumors are true. In fact, the rumors were confirmed by the big man himself, Pops Losi, on their website. Team Losi is currently testing a replacement for the Street Weapon touring car. We haven't seen an actual prototype yet, but secret sources close to the project tell us that the prototypes being tested use a unique one-belt drive system. At this early point in time, details are sketchy. Expect to see more details as they become available.

David Spashett flew in from the UK to test the sequel to the Street Weapon.



Gene Husting Retires

One of the R/C industry's most respected pioneers has decided to hang it up after more than 30 years. Gene Husting, partner of Roger Curtis and co-owner of Team Associated, has decided to retire from the R/C biz. Roger has become the sole owner of Team Associated. To honor Gene, Team Associated hosted a retirement party in a very fitting venue – an indoor go-cart track in Southern California. Industry notables and friends of Gene were all in attendance at Dromo 1, indoor go-cart track. Scott "The Squirrel" Hughes took the overall win with Cliff Lett and Tony Niesinger in third. Towards the end of the day, Gene's son and daughter, Curtis and Julie, read heartfelt tributes to their father.

Powers Japan 3000s Hit Our Shores

They've been advertised for some time now, but Powers Japan has finally released their new Powers 3000 Ni-MH cells. The cells are made by Matshusta, which also makes Panasonic's 3000 Ni-MH. (Can you keep a secret? They're the same battery. Shhhhh.) Powers is selling the new cells as individual build-up 6-cells or in stick packs. The stick packs feature temperature probe holes so that standard temp probes will fit perfectly during temperature peak charging.



Unequaled Precision

Absolute Series Spurs



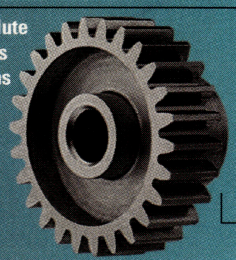
Available in 48P in 80T thru 91T, this is the quietest spur you can buy!
RRP 1780 - RRP 1791

B3 / T3 Lite Aluminum Outdrives



Blue anodized and 40% lighter than stock ball diff outdrives.
RRP 1502

Absolute Series Pinons



Available In 48P in 16T thru 28T sizes. Super hard, lightened and cut unmatched precision. Great with any spur, but with an Absolute spur, even on-off noise is gone!
RRP 1416 - RRP 1428.

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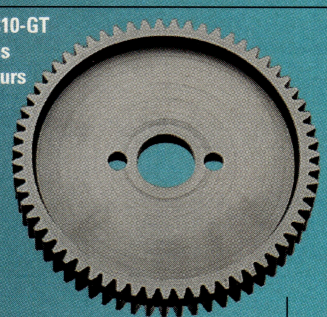
Outstanding Performance

Associated Blue Lightened Slipper Kit



The rear plate is hard anodized to reduce wear and the front plate is color treated. The front plate is designed to hold the slipper pad forcing the pad to slip on the rear plate. When pad shows sign of wear just flip it over for a new surface. Metal parts are CNC machined for a flawless fit. RRP 1515

RC10-GT Gas Spurs



Super tough and precision machined from heat-resistant plastic, these spurs mesh flawlessly with our Clutch Bells. 32P spurs in 54T thru 67T, RRP 2261 - RRP 2267, and 32P bells in 14T (New) thru 24T, RRP 2214 - RRP 2224.

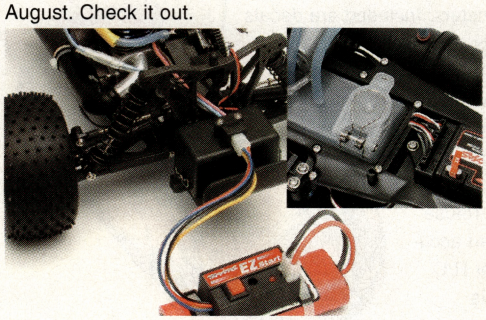
www.robinsonracing.com

Correction on GM

Last month, we incorrectly reported that GM Racing had essentially shut down their racing operation. That report was incorrect. GM Racing still sponsors a number of pro drivers, including Brian Dunbar. We apologize for the mistake and the confusion it may have caused..

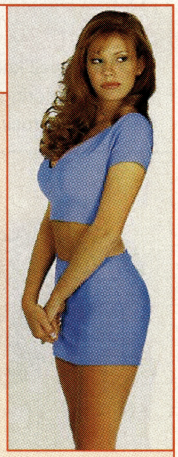
Traxxas Rustler and Stampede get Y2K Version

Check out these spy shots of Traxxas' new Y2K Rustler. Details are sketchy on exactly what the updates are. Looks like new blue anodized chassis', new fuel tanks, and Traxxas' super cool EZ-Start. Expect a full review soon. We'll also have some major news from Traxxas on our website in mid August. Check it out.



Babe of the Month

Nikki Cox



Nikki's been bouncing around Hollywood for years. Although she was too young to bounce then, Nikki made her television debut on "Mama's Family" back when she was 10 years old. Since then, she's been on a number of shows and bounces weekly on the WB's Unhappilly Ever After, which is a horrible show. It's a bad Married With Children with a sock puppet. But the show does have two things going for it: Nikki Cox. Nikki's also been known to make an appearance or two on ABC's Norm, but given Norm's lack-luster ratings, we might not see her for long. ABC is working on a show that will star Nikki. Hope and pray before you go to bed tonight.

About Nikki: Nikki was born in Los Angeles, CA back in '78, which would put her at the ripe young age of 22 these days.

Here's one drawback: On any scale, in any book, in any country, Nikki is arguably a 10. But, upon doing some research for this piece we came across some very disturbing news. It turns out that Miss Cox is dating Bobcat Goldthwait. This little fact immediately drops Nikki's rating by no less than 4 points. In case you don't know, Bobcat is the extremely talented comedian with the annoying voice who torches furniture. It's really quite funny. No, seriously. It is funny. Trust us. We're not kidding. Think of it, an annoying voice, matches – what could be funnier?





Superb Quality

RC10-GT Steel Combo



Precision machined one-at-a-time from a single piece of steel and then hardened this 65T spur and 15T bell combo will last and last. The extra-hardened clutch bell fits ALL Associated and MIP shoes. RRP 2365

Associated Titanium Stealth Top Shaft



CNC Machined from a single piece of titanium, this super hard, super light top shaft will fit any Stealth transmission. No serious racer should do without this part. RRP 1512.

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RC10-GT Hardened Steel Idler Gear



Cut from solid steel stock, this gear is lightened and then hardened for super quiet precision and extra long life. Jamin' tranny grease is included. RRP 2213

Thoughtful Design



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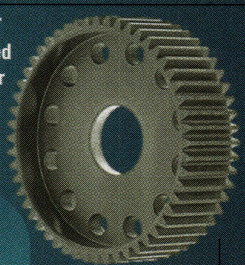
"I only care about performance, and that's why I run Robinson Racing gears and slipper clutches exclusively."

— Richard Saxton

RC10-GT Hardened Diff Gear



Hard anodized, precision machined aluminum diff gear. RRP 1513

RRP

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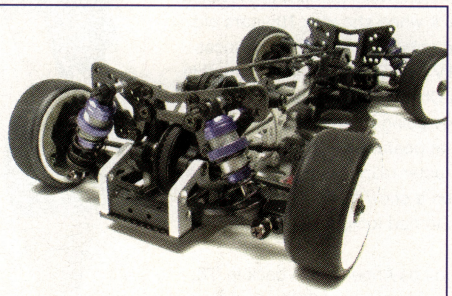
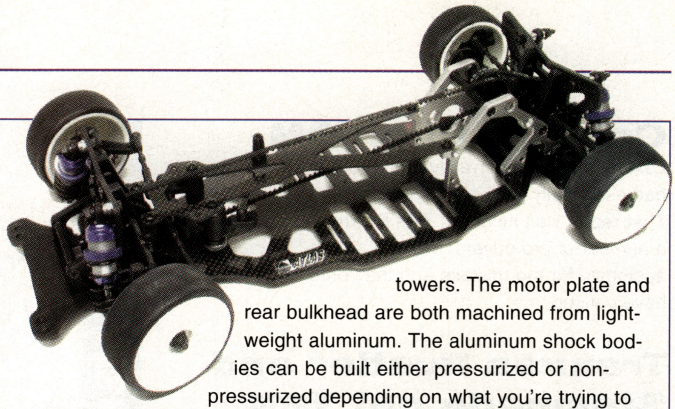
Integy Imports Atlas

Atlas is a well known racing brand in Japan. Integy is bringing Atlas' latest TC offering to the States. The YM-34 is now being imported by Integy. The stock YM-34 features plenty of race-ready features straight out of the box. The new ride sports a conventional two-belt drive system with adjustable ball diffs at each end. The kit comes with a graphite chassis, top plate, and shock towers. The motor plate and rear bulkhead are both machined from lightweight aluminum. The aluminum shock bodies can be built either pressurized or non-pressurized depending on what you're trying to achieve on the track. Bearings and universals are also included. The YM-34 is extremely adjustable with suspension adjustments everywhere. The kit also includes tires, wheels, and a high-density foam front bumper. Look for parts support from Integy. We'll take the new car for a spin in next month's issue.





The Body Shop is Open

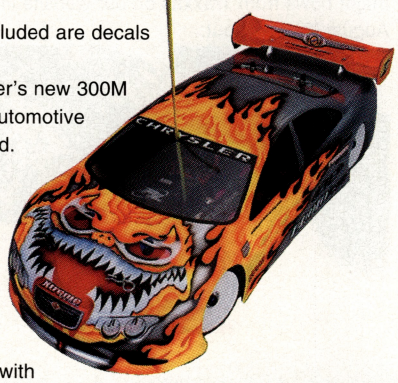
Protoform and Pro-Line have been busy lately churning out tons of new bodies. Here's a look at few of them.

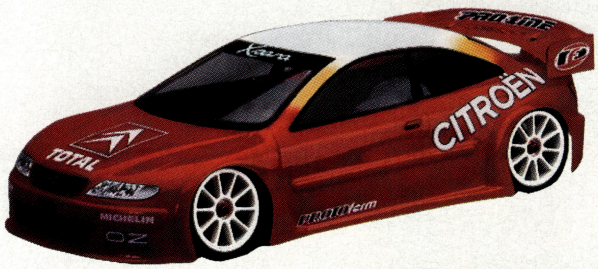
• PROTOform Citroen Xsara Rally is designed to fit most electric rally touring cars set at 190mm in width. The Xsara comes with a wing and attachment hardware, window masks, and detail decals.

• Pro-Line Ford F-350 Super Duty for the Traxxas T-Maxx: Designed to fit perfectly on the T-Maxx, all the engine, starter, and fuel tank cutouts are molded in. The F-350 adds some scale appearance to the monster of all monsters. Included are decals and window masks.

• PROTOform 300M Chrysler's new 300M has touched the hearts of automotive enthusiasts around the world. Even though it doesn't conform to racing rules, Dale Epp couldn't refuse his desire to see an accurate 300M body for R/C cars. The new lid is designed to fit all popular 190mm sedans and comes with detail sheets, window masks, and an add-on wing.







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The GT4 is the best gas touring car I have ever driven!
-Chris Tossolini (ROAR National Champion)

This is an awesome car right out of the box!
-Barry Baker (National and International Champion)

Years of development make this the best gas car available!
-Masami Hirosaka (10 Time World Champion)

PROTOTYPE SHOWN
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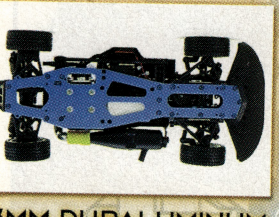
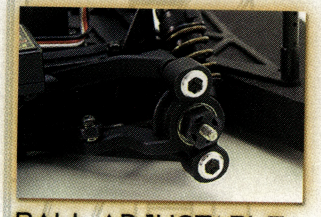
A new generation of nitro turing cars

Rather than transforming an electric touring car into a niro powered version, the all new GT4, was specially designed to handle the power of today's high output nitro engines. Built from the ground up as a purpose built competition nitro touring car, the GT4 was also designed to be user friendly for a wide range of users. Whether on a parking lot or race track, beginners and racers alike will be able to enjoy the world class performance and workmanship of the all new GT4.

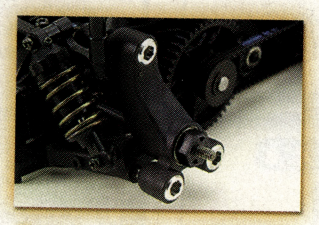
KEY FEATURES



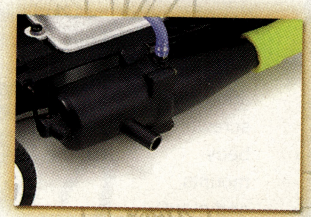
MM DURALUMINUM CHASSIS



BALL ADJUSTABLE FRONT SUSPENSION



BALL ADJUSTABLE, REAR SUSPENSION



DUAL-TUNED MUFFLER PIPE

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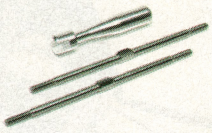
The T-Maxx mods are coming!

The T-Maxx modifications are starting to infiltrate the market. Traxxas, as you'd expect, is unleashing a whole slew of aftermarkets for everyone's favorite nitro breathing monster. Traxxas' aftermarkets include:



- **Titanium Tie-Rods (Our sources tell us they're actually Lunsford originals!)**



- **Hard anodized aluminum pivot balls**
- **An aluminum spool that replaces the diffs, for off-road use only.**



- **An 8-pack of coated aluminum Big-Bore shocks.**



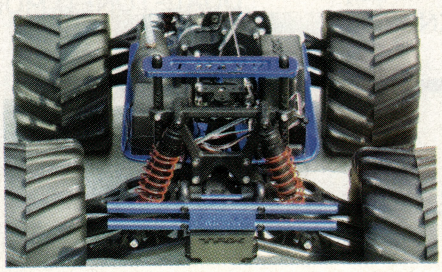
- **Aluminum pivot ball caps.**
- **Machined, anodized, aluminum skid plates.**
- **Machined, anodized, aluminum servo mounts.**

Also for the T-MAXX is this new fiberglass brake disk with titanium calipers from **Hardcore Racing**. Hardcore makes just about everything out of titanium. Along with this first T-Maxx hop up, their planning a bunch of new machined titanium pieces.



Team Trinity is also jumping into the T-Maxx biz with aluminum machined pieces. Some of the new pieces included these cool-looking customized front bumpers, servo mounts, aluminum anodized screws, body mounts, and more.









We've got a T-Maxx aftermarket blow out planned for next month.

BIGGER? OR BIG?



Dirt Works

#1072 fits 2.2" truck wheels
front or rear

(both tires shown on Agitator Chrome wheels)

Masher 2000

#1074 fits 2.2" truck wheels
front or rear

Agitator



chrome

#2651C fits Stampede & Rustler Electric Front
#2652C fits Stampede & Rustler Electric Rear
#2653C fits Nitro Stampede & Nitro Rustler Front
#2654C fits Nitro Stampede & Nitro Rustler Rear



white

#2651W fits Stampede & Rustler Electric Front
#2652W fits Stampede & Rustler Electric Rear
#2653W fits Nitro Stampede & Nitro Rustler Front
#2654W fits Nitro Stampede & Nitro Rustler Rear

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quick TIPS

Pringles Tire Tube

I've got the fever for the flavor of a... Once you pop, you can't stop... No matter which advertising slogan you like best, you better start eating your Pringles™. But when you finish gobbling down the last potato crisp, don't just throw away the container tube or recycle it either. Save it and store your tires in it. After you've finished those delicious potato crisps, wipe down the inside of the container with a paper towel. Once the container's clean, keep mounted touring, 1/8-scale, and 1/10-scale foam tires air tight and fresh when not in use. Keeping your tires in an air-tight container will keep the rubber soft and clean. One container will hold at least four foam tires or eight standard-width touring car tires. Using a permanent marker and a piece of masking tape label what kind of tires are inside.



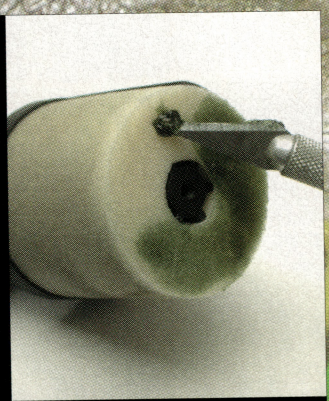
Don't Scratch It

Under very loamy off-road conditions, rear tires loading up with dirt can become a problem. Dirt loads up in between the tire pins or in between treads and causes the tire to lose traction. After few laps into a race under these conditions, your car or truck will be skating around the turns. What you need to improve traction just might be lurking in your medicine cabinet. When driving in loamy, somewhat moist, track conditions, a coat of foot powder spray around the tread on the front or rear tires will help to keep dirt from packing the tire treads so quickly. Be sure to try this tip before the actual main to make sure it works for the particular conditions you're driving under. If it doesn't work, Simple Green, water, and a brush will take it right off. And hey, if that athlete's foot or jock itch flares up again, you're all set; you won't have to miss a qualifier.



Greasing Your Filter

This tip was actually shared by Regan LeBlanc a few issues back in a nitro engine prepping article. But, in case you missed it, here it is again. If you're going to be using a three-piece sponge foam filter like those from Kyosho, Tamiya, Thunder Tiger and others, try the following. When assembling the filter, place a thin layer of thick petroleum-based lube between the filter and the plastic pieces that sandwich the filter. The lube will ensure that air and debris are forced to flow through or into the foam filter itself rather than flowing between the filter and the plastic holding pieces. Be sure to repeat this tip after thoroughly cleaning your filter.



Less Slop is a Good Thing

Nobody likes sloppy seconds or coming in second because of a sloppy steering system. Slop in your car's suspension can cause your car to wander and not steer straight. If you don't have time to replace ball cups and ball ends, there's a simple and quick cure to sloppy steering and loose ball cup connections. First, remove the ball cup from the ball end. Next, slip a standard Associated-style silicone O-ring over the ball end so that the O-ring is at the base of the ball end, below the ball itself. Then, snap the ball cup back over the ball end. You'll notice that the ball connection will move freely, yet not nearly as sloppy as before.



Now you've got a legit excuse to eat more potato chips.

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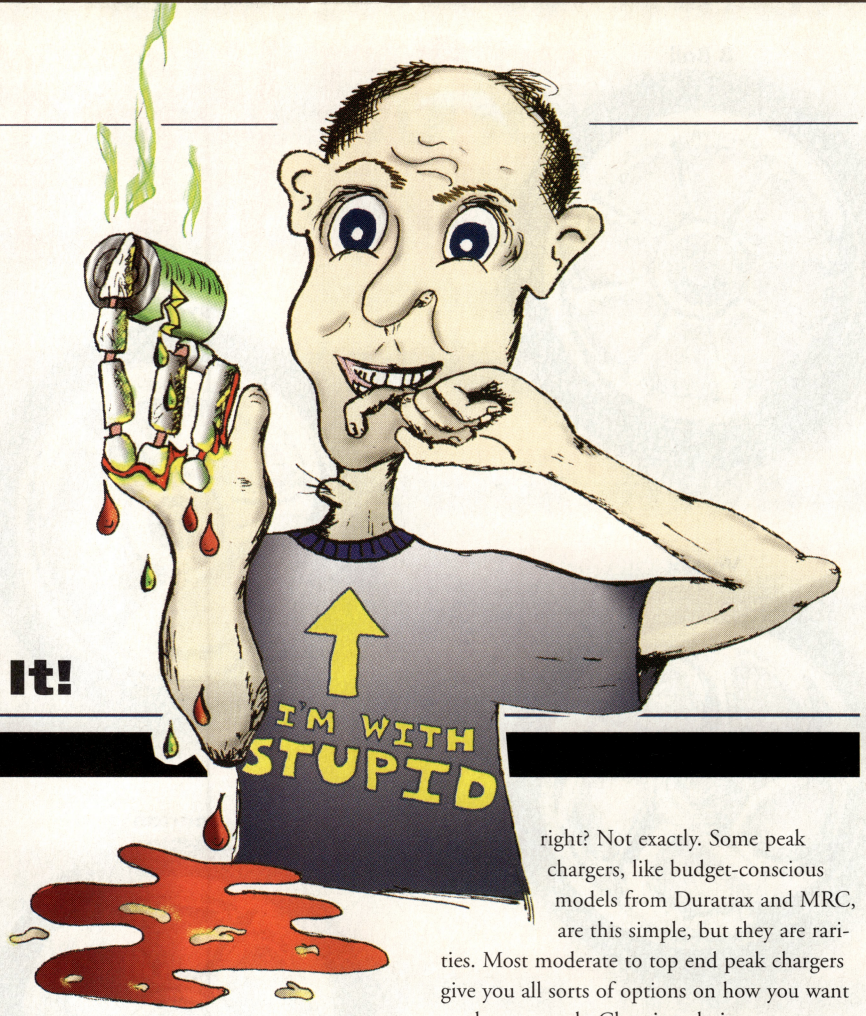
OOPS!

I think I Overcharged It!

Battery care basics you need to know.

By Nathan Miller

One of the most confusing aspects of getting started in R/C is how to properly take care of battery packs. What's the best way to charge them? How do you keep them running at their peak? Will any charger do? The list of questions can go on and on. Making matters worse is the fact that just about everybody has their own special methods and tricks that they use and swear by. Sorting through what really works and what doesn't can be confusing. Here are some general rules, tips, and guidelines to help you keep your cells healthy.



Chargers

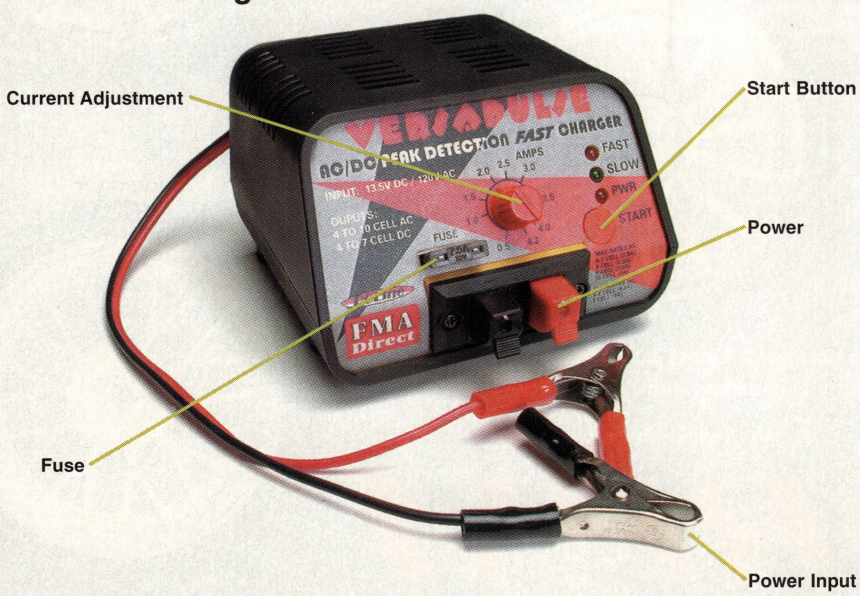
Peak Chargers

Peak detection chargers make life easy when it comes to knowing when a battery is finished charging. These chargers have built-in devices that will shut off all juice to the battery pack when they sense that the voltage of the pack starts to drop. So, you just hook the battery up to the thing, push a button, and let it go, right? Not exactly. Some peak chargers, like budget-conscious models from Duratrax and MRC, are this simple, but they are rarities. Most moderate to top end peak chargers give you all sorts of options on how you want to charge a pack. Charging choices can range from the amperage at which you want to charge the pack to features that allow you to condition your packs. So where to start?

Generally, a good rate at which to charge your packs is around four (4) amps. Why? Because four amps are easy enough on the cells so they won't harm the cells in the long run. Some people charge their cells at a higher rate for a lot of punch off the line. This ultimately winds up backfiring because all that punch at the beginning fades quickly, and leaves you with a "flat," or punchless battery later in the race. Charging at a rate lower than four amps will usually give you a battery that will last a little longer, but not have much punch. Four amps provide a good compromise.

Some of the other tricks that many peak chargers have are quite useful. Some chargers have special settings that allow you to safely and easily charge transmitter and receiver batteries and glow plug igniters. Other chargers have features that can extend battery life by conditioning the cells as they charge. Some devices condition by actually drawing current from the pack occasionally as it charges, while others are able to vent gasses from inside the cells. However, there's really no need to go overboard with features. A peak charger with adjustable amperage and a few varied charge cycles will suffice for the average person, even if you plan on racing.

The Peak Charger:



Overcharging a battery cannot only be costly, but also dangerous.

File Edit Mailbox Message Transfer Special Window Help 4:14 PM

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

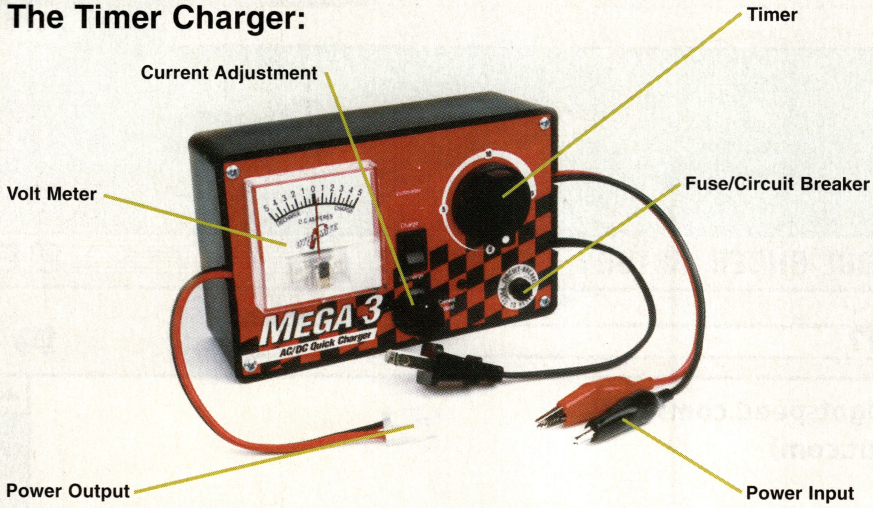


Trash

deans

W. S. Deans Co. 10875 Portal Dr., Los Alamitos, CA 90720 tel 714-828-6494 fax 714-828-6252
www.wsdeans.com • deansco@earthlink.net

The Timer Charger:



Timer Chargers

Although not cutting-edge technology, timer chargers still do the job. However, the 15 minutes that most chargers have on their dials is not enough time to properly charge a pack. You could just charge the battery until it gets toasty to the touch, but that's not a very scientific way to do things. The best way to peak a battery on a timer charger is to use a good digital voltmeter. The meter built into most timer charges (if there is one at all) won't really help you here. Plug the meter into the charger's jacks (they're usually marked), and set the volt meter to the 12-volt setting or the setting that allows you to read voltage to the hundreth. As the battery charges, the voltage number will increase. Pay close attention to the meter. At a certain point, the voltage will peak and start to drop off; this will be evidenced by the voltage number starting to decrease. When you see voltage start to drop, disconnect the battery, which should now be fully peaked. While this method requires you to pay a little more attention to the charger, it ensures your battery won't be harmed by overcharging.

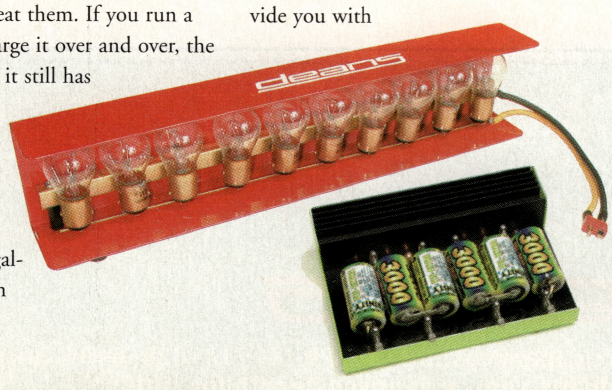
Thanks for the Memories - Not!

Rechargeable Ni-Cad batteries (not Nickel Metal Hydrides, which I'll discuss later) can develop a memory over time, meaning they remember how you treat them. If you run a pack and fail to discharge it over and over, the pack will "forget" that it still has some power to give, and not charge to full capacity. Think of this like a shrinking gas tank. Over time, it's like going from a 15-gallon tank to a 12-gallon tank. The result is decreased run time and shortened battery life.

So how do you combat this? By making sure you discharge your batteries after every single use. Like chargers, dischargers can range from simple to sophisticated. The most common discharger is a light bulb-style discharger, made by wiring automotive taillights in parallel to get about a 20-amp draw rate. This method is simple, cheap, and effective – but not without its drawbacks. Bulbs can get hot and present a safety hazard, but they also can over-discharge your pack leading to cell reversal. Not good! The best way to avoid this is to buy a cutoff device like the Dean's Black Box. This box plugs in between the pack and the bulbs, and automatically breaks the circuit when the voltage reaches a safe point, saving your cells.

More sophisticated devices, like Trinity's Real Time 2 discharger, discharge batteries using resistors with a cut-off device built in. This discharger, and other similar implements, discharge each cell individually, equalizing the internal voltage of every cell. This is great for saddle and side-by-side packs, but won't work on stick packs, as the discharger requires the ends of the cells to be exposed.

For high-end folks there are computer controlled battery chargers and dischargers. These machines will discharge and condition your batteries at the same time, and can provide you with information on how your cells are doing. But again, for Joe Average, a simple discharger will be good enough.



Top Left: The Deans discharger must be assembled. Racers Edge sells assembled bulb dischargers for a few dollars more. Each can be used with various cut-off devices.
Below Left: Various equalizers will discharge each cell independently.

Can you spare a Nickel?

New on the scene are Nickel Hydride Metal, or NiMH batteries. These cells offer incredible capacity (3000 mAh), but have their own maintenance regimen for charging and discharging. First and foremost, you must remember that these cells should not be allowed to get too warm while charging. To properly charge these cells, set your charger to four amps, and connect your voltmeter like described above. Start charging the cells while keeping an eye on the meter and checking the temperature of the pack. As soon as the pack's voltage starts to level off and the battery begins to feel warm, disconnect it!

When you finish running your pack, there's no need to discharge it, as NiMH batteries don't develop a memory. The only discharging that is recommended for these cells is an occasional trip to a discharge board to equalize the cells. And one last note: it's OK to run these cells more than once a day – just let them cool off completely before recharging.

Some Basic Tips

- Always discharge your cells before storing them in a nice dry, cool place.
- Unless they are sport cells made to take the abuse, try to avoid using your batteries more than once or twice in a day.
- If you do recharge your batteries, discharge them first, and let them cool off before placing them on the charger. Let them cool naturally or with a little fan. Too rapid of a cool down can be harmful.
- Get batteries to suit your needs. If you're a backyard basher only, what do you think will provide you with more fun; one $80 3000mAh pack, or four sport packs for roughly the same price?

Remember, the better care you take of your cells, the longer they'll last and the more fun you'll have with them. Make proper battery care a habit!

Deans is just one of the many companies that sells traditional bulb dischargers.

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— Peter Vieira, R/C Car Action



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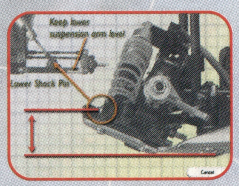

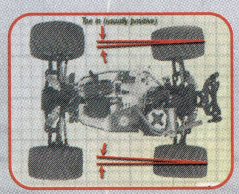

"RealRace is most effective as a setup and tuning simulator. It serves as an excellent lab before doing the wrenchwork."

— Lito Reyes, R/C Car Magazine June 2000

Over 120 parameters are available, so you can try almost every tweak imaginable. See how different engine displacements affect fuel consumption, or how changes in motor winds affect amp draw. Adjust clutch slippage and engagement, and set 2-speed shift points. Compare ball diffs to gear diffs, and 2WD to 4WD. Alter the suspension travel, camber, caster, toe-in — even shock oil weight. Swap tires. Re-arrange battery configurations. Vary the body's aerodynamics, and so much more...all with just a simple 'point and click'.





"The best benefit of RealRace is the education and understanding of R/C car technology it promises, and the improved performance you'll see at the track when you apply what you've learned."

— Peter Vieira, R/C Car Action

Thanks to RealPhysics™ technology, every change, no matter how small, will be accurately reflected on-screen, just as it would in real life. So you'll be able to see just what works best for your model and your driving style — and that could be the advantage that puts you in the winner's circle more often.







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More comfortable using gimbals instead of a wheel and trigger? RealRace is also now available with a 2-stick controller as well!

For the location of the dealer nearest you, please call 1-800-682-8948 and mention code number 2333T.

Visit the RealRace web site for more information, system requirements, 3D graphic samples, and more!

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It's no wonder that Traxxas sells more cars and trucks than anyone else. Everything on a Traxxas model, including the engine and radio system is designed and manufactured by Traxxas. From the ground up, It's all engineered to work together for incredible speed, performance and dependability. And down the road, Traxxas is there with service and support you simply won't find anywhere else. Everything is covered by the same warranty, service, and parts support from ONE manufacturer. Whether it's a question about an engine, a radio, or performance upgrades, 1-888-TRAXXAS is your toll-free link to fast, friendly solutions. Traxxas puts the fun into Ready-To-Run. It's the right choice made by R/C enthusiasts everyday. The original, the leader, TRAXXAS.

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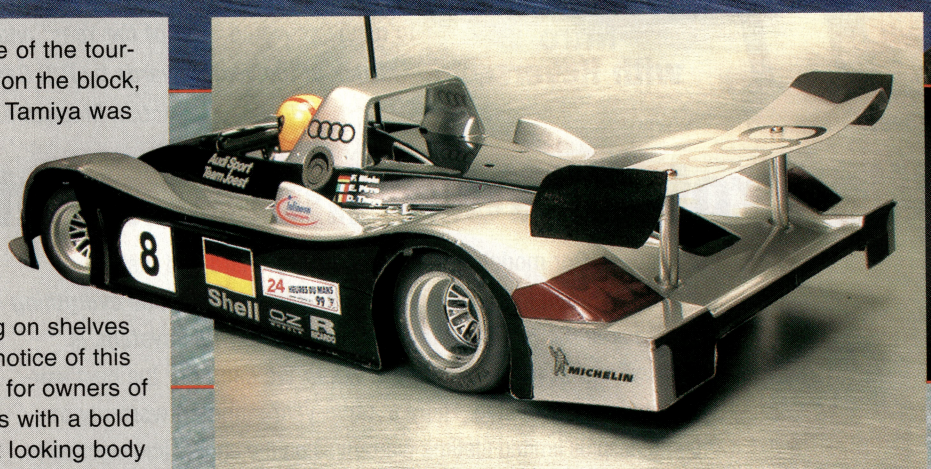
Tamiya F103LM-TRF

by Nathan C. Miller



A few years ago, before the rise of the touring car, pan cars, and the new kid on the block, the F-1, ruled parking lots all over. Tamiya was one of the innovators of this class, producing cars that were simple, yet handled well and had realistic, good looks.

Gradually, though, F1s were pushed aside by the touring car craze. This left many F1 kits sitting on shelves collecting dust. Apparently taking notice of this trend, Tamiya came up with a way for owners of these kits to revive that old chassis with a bold new look by releasing a line of hot looking body shells that duplicate the cars running the Prototype and Roadster classes in races like the 24 Hours of Le Mans and the 24 Hours of Daytona. Not content at stopping there, the big T also decided to release kits featuring these bodies and some new chassis improvements. Now, for those of you who want to race this class with the best of everything, you can get all of the most important hop-ups in one box with the new F103LM-TRF.



Vital Info

Tamiya America, Inc.
2 Orion, Aliso Viejo, CA 92656
Ph: 800 TAMIYA-A
Fax: 949.962.2250
www.tamiya.com

Who It's For

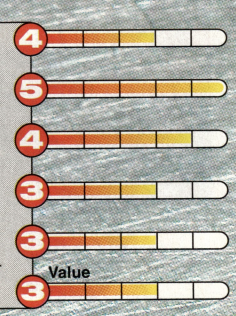
Parking-lot racers who want something different, or those who want a car that has scale model good looks.

Hits:

- Lots of goodies in one box.
- Stable handling.
- Easy to assemble, even for novices.
- Low maintenance design.

Misses:

- Could use a more adjustable front end.
- In a class of its own, finding competition may be tough.
- Uncommon metric pitch gears.
- Accepts only stick packs.



The real R8R runs timed 24-Hour events. And, you thought 4 minutes were rough.

Steering

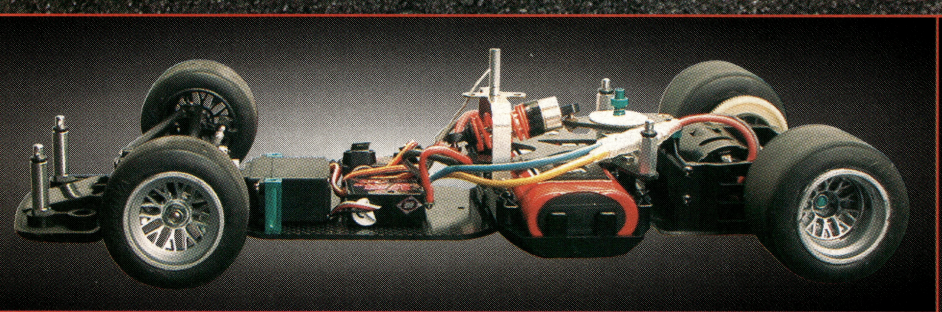
Turnbuckle tie-rods that attach directly to the servo get the front wheels pointed wherever you want to go. It just doesn't get any simpler than that. Worth mentioning are the nice anodized servo mounting posts; they help add a splash of class and color to the chassis. Also included is a servo saver that can be built to suit just about any servo on the market.

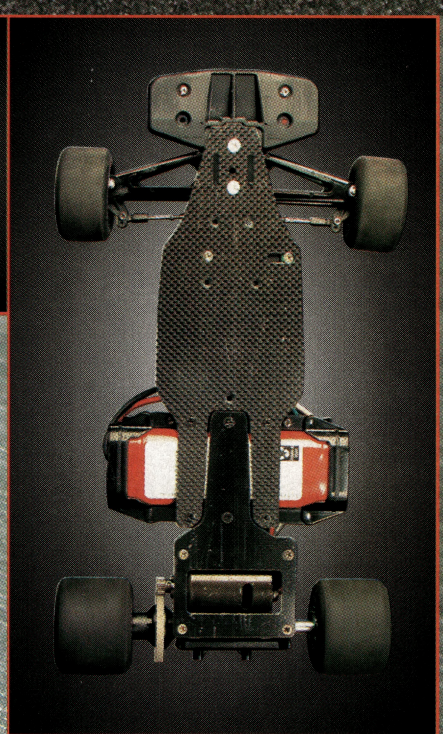
Chassis

The base of this modified F103 is a top quality piece of woven graphite that is wider than the standard F-1 chassis. While this added width might appear to do nothing for performance, it actually does allow you to mount the electronics flat, improving the car's center of gravity. On the older F1 chassis, space constraints meant standing the steering servo on one end and removing its?mounting tabs. Not so here.

The chassis actually closely resembles a pan car chassis – countersunk up front to mount the suspension with a cutout in the rear for the T-bar. A stick-pack battery holder mounts toward the rear of the chassis and supports an upper deck where parts of the rear suspension are mounted. Up front, a plastic bumper/body mount keeps the front end protected, but it's a little narrow for my taste.

A wider piece of foam to complement the plastic part would have been nice.





Drive Train

While at first glance the F103's direct drive rear end may resemble any other pan car's, it has some features that make it a little different. The biggest difference is the thrust assembly is located in the rear wheel, as opposed to the rear hub. My only real gripe about this is that the rear diff has to be reset any time a tire change is made. Both rear hubs are made from machined aluminum, anodized blue, and mount on a lightweight rear axle that is keyed to accept the setscrews that mount the hubs.

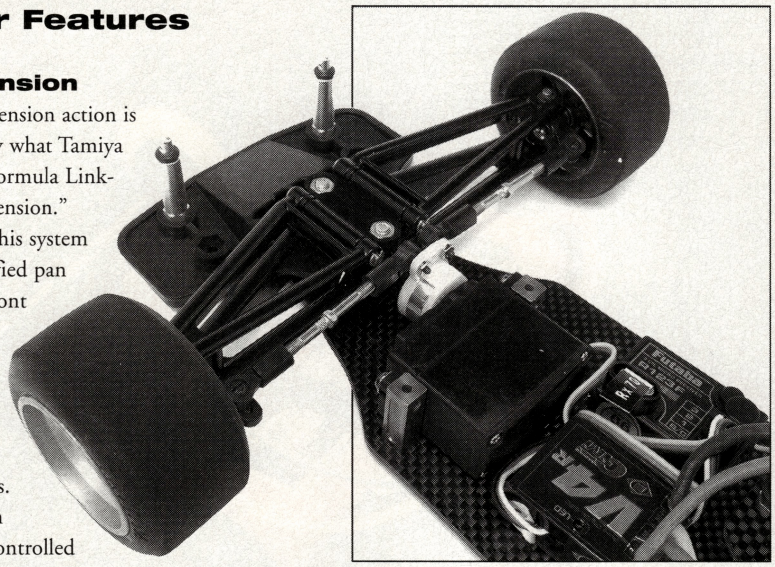
Tamiya supplies a ball diff to get the rear end hooked up, with a 93-tooth, 0.4 module pitch spur gear and a 25-tooth pinion. This leads to another complaint. Only Tamiya gears fit this car. If you don't have any in your toolbox, your going to have to grab some. A nice touch on the rear pod is a black anodized, lightened motor mounting plate, ribbed for your motor's cooling pleasure.

I accidentally decapitated my pilot during testing.

Other Features

Suspension

Front suspension action is handled by what Tamiya calls its "Formula Link-Type Suspension." Basically, this system is a simplified pan car style front end with fixed lower arms and articulated upper arms. Suspension action is controlled up front by a pair of springs that fit over the pin that is used to attach the steering spindles. While this design wins high marks for simplicity, it loses points for lack of adjustability. Both camber and caster adjustments are unavailable.

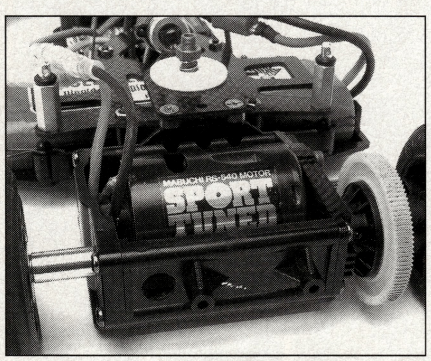


Out back, the F103 uses a pivot-ball mounted T-bar setup complete with full tweak adjustment. Smoothing out the bumps are gold anodized, oil-filled, coil-over shocks. The shocks attach in the front to a plate that forms part of the battery holder, and in the rear to a puck-style friction plate. A knurled adjustment nut allows you to loosen and tighten the setting of the friction plate, and different weights of grease and other springs can be used to fine tune friction plate settings. The whole system is simple and easy to adjust.

Tires, Wheels, and Body

Tamiya provides a set of their Type A F1 slicks for all four corners. Out of the package, these things are sticky enough that I was flinging them at the walls and watching them crawl down like those old Wacky Wall Walker things. These things come with foam inserts, and ride on black mesh spoke wheels. The front wheels a one-piece affair, while the rear tires are hollow with the mesh as a snap-in insert. I sprayed mine silver with a little Testors model paint. A body is not included, but Tamiya offers a wide variety for you to chose from. I used an Audi R8R body for testing, because I like the open-roof, bugs-between-your-teeth look of the Roadster class.

Along with all the graphite and aluminum goodies that come with this kit, Tamiya also throws in one of their Sport Tuned RS 540 motors and a full bearing set.



The included Sport Tuned motor is pretty quick. It should keep most drivers happy for a while if just motoring around the parking lot is what you had in mind.

Testing

Setup

For power, I used:

- The kit-included RS-540 motor, which despite being a closed end bell mill is quite snappy.
- Trinity 2000 mAh battery packs, which combined with the kit motor, gave me awe some run time.
- A GM Racing V4R ESC, which is light, simple to use, and a reliable performer.
- I used a Futaba R113F receiver with my trusted Magnum Jr. FM radio and a Hitec HS300 servo.
- I stuck with the kit 25/93 gearing, and all other settings were as recommended in the manual, or as per building. I used the kit shock oil, springs, and used Trinity diff grease on the damper pucks. Unfortunately, the manual doesn't help much in the setup department – disappointing in a car that has otherwise been given the factory treatment.

Test Drive

To test the F103LM-TRF, I took it to a large, open parking lot near my house. It had just rained the day before, so the surface was fairly clean and dust free. After setting my trims and getting the diff perfect, I set up a small course using stuff from my car's trunk (oil bottles, soda cans, etc.) and tore into the F103LM-TRF

Acceleration

Combined with the fact that this is a direct drive, lightweight machine, the provided motor and gearing really shine here. A quick pull of the throttle is all that is needed to get this car rolling. This acceleration really makes coming out of the corners with a head of steam fun. Acceleration to top speed seems almost instantaneous if you really flog the throttle.

Top-Speed

As I expected, top speed is good. It is enough to make the car exciting to drive, but not so

The Specifics

Item Info:
Part #58258
ESP: $270-$300
Manufactured in Japan

Vehicle Type:
Electric-powered, RWD rear-motored direct drive pan/LMP chassis

Chassis:
Type: Flat plate
Material: Woven graphite

Wheels and Tires:
Tamiya mesh spoke wheels with Tamiya F1 Reinforced Slick Type A with foam inserts.

Transmission:
Type: Direct Drive
Diff: Ball
Bearings: Yes

Suspension Type:
Independent front with floating solid axle rear.
Damping: Coil spring front, friction disk/coil-over, oil-filled shocks with steel shafts, molded pistons, aluminum body with O-ring seals and bladders.

Other Items You Need:
Tamiya body, 2-channel radio with one servo and ESC, stick pack battery, and charger.

Main Competition:
In a class it of its own.

Watch cars like the R8R on ESPN2 and Speedvision.

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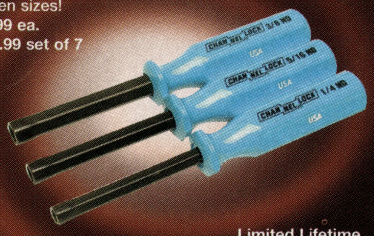

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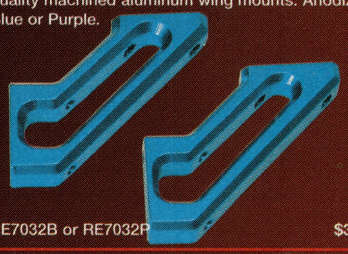

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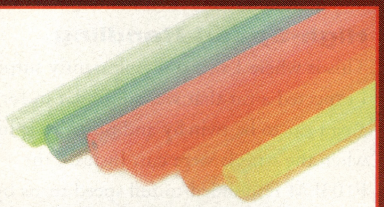

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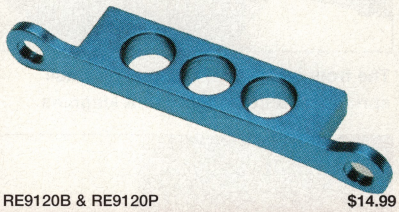

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MT-2 (w/o laser)
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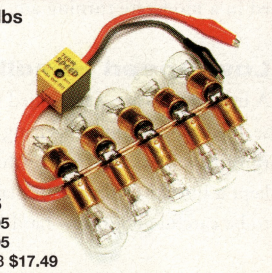

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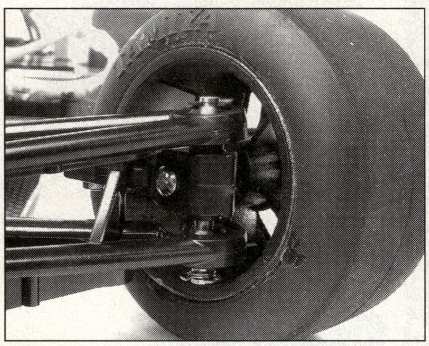
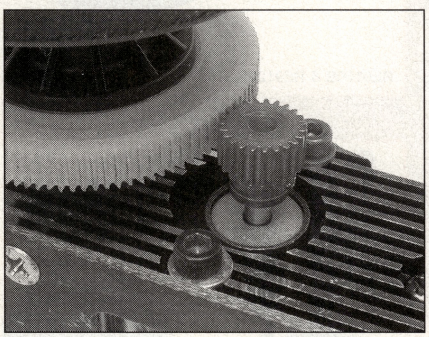
Building Tips

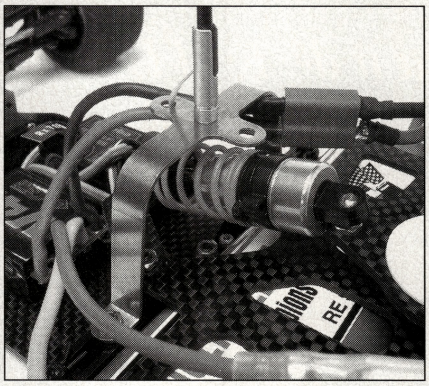
- Before building, lightly sand the edges of the graphite components and seal them with some CA glue to keep the graphite plate from splitting.
- In Step 1, take your time when working with the tire inserts, and be aware that you will have to trim the rear inserts a bit for them to fit properly. This is crucial, as poorly fitting foams will wreak havoc on the handling.
- Note the piece that is removed from Part E2. Be careful only to remove the indicated section, and do a nice, neat job.
- Don't bother with the Motor Plate (MA22) when installing the motor in step 3. It is too thick, and will not allow the motor screws to get a good grip on the motor. Just install some washers under the screws.
- Step 5 concerns building the friction plate. Save yourself some trouble, and put some kind of grease on the damper puck now, instead of during Step 26!
- On all steps, pay specific attention to the part numbers. Many parts look alike, and some are not used at all.



The front wheels are damped by small springs mounted on the front kingpins.

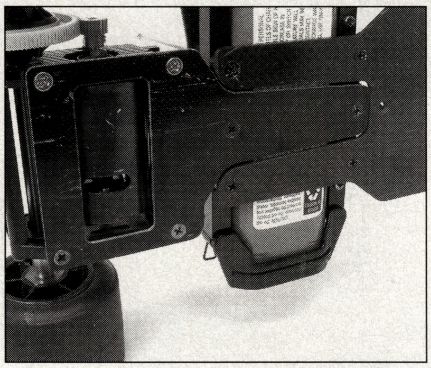


Tamiya uses their own metric pitch gearing. The metric pitch is slightly larger than 64-pitch.



Right: The F103 uses a conventional and proven T-plate design.

Left: The antenna mast is raised above the rear oil-filled damper.



fast that it is uncontrollable. For the adventurous type, this car could easily be given a goose in the top-speed department by using different gearing or popping in a stock or mild modified motor. I wouldn't go too crazy. Because of the lack of adjustments for this car, dialing more power in might be tough.

Braking

Because this is a rear-wheel-drive vehicle, I expected braking to be tricky. I was pleasantly surprised to find the F103LM held a fairly straight when the brakes were mashed. Heavy braking while turning took a little care, though, as the back end had a tendency to try and step out. A light tap of the brakes was usually enough to get the car slowed down to take even tight turns without the car becoming unstable. Combining a quick, hard tap of the brakes with a quick throttle finger usually resulted in a controllable drift – really neat to watch!

High-Speed Handling

This is where I was really pleasantly surprised. I expected a car that was so similar in form to a pan car to be twitchy and prone to spinning when the wheels were cut. Instead, the F103LM responded to full speed turns by pushing slightly. Jerking the wheel back the other way suddenly loosened the rear end up. But even with the throttle mashed, the car quickly recovered, and went back to pushing. At full throttle, keeping the wheels cut resulted in a moderate turning arc.

Low-Speed Handling

A little more care was needed here, as the car seemed more prone to getting loose when the throttle was off. To combat this, I merely just kept a little throttle on. In places, I also had to be careful about how hard I gassed the car coming out of a sharp turn. If I was a little overzealous with the trigger, the car would loop. Exiting really tight turns required a carefully application of the throttle – jamming it just wasn't feasible in some areas of my makeshift track, especially the hairpins.

Stability

Overall, for a direct drive car, the F103LM is surprisingly stable, and that makes it a lot of fun to attack the fast turns at full power without the fear of the car getting loose. Even sudden direction changes are no real problem with this car, as long as you keep a little throttle applied.

Damage Report

After tapping a few of my corner markers, I accidentally clipped my real car. Damage? To the chassis: none. The body received a few marks and wrinkles, but surprisingly, that was all.

Conclusion

I had a lot of fun putting this car through its paces. Not only is a competent handler, but also it goes together in no time. With Tamiya's selection of sharp-looking bodies, you'll easily be able to produce a car that looks as good on the shelf as it does on the track. Add to the fact you get all the goodies you could ever want in one box, and you've got a car that will make taming the parking lot look easy.

To see the F103LM in action go to www.xtremerc.com

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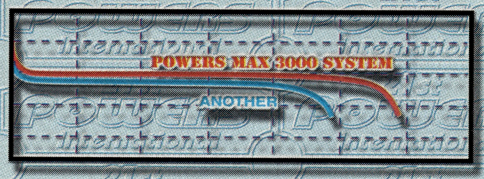

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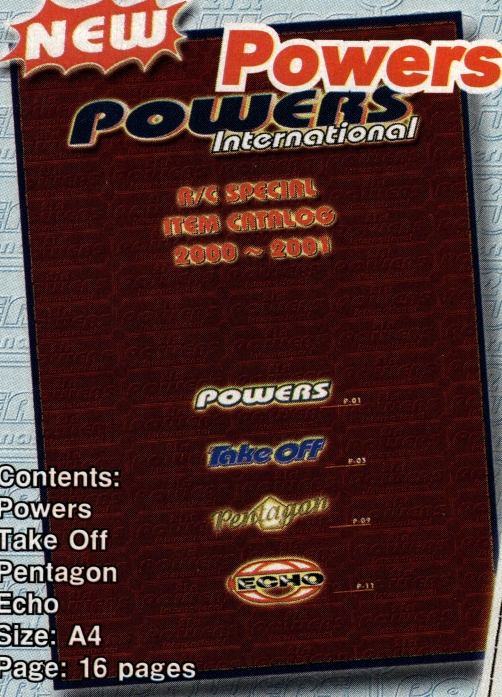

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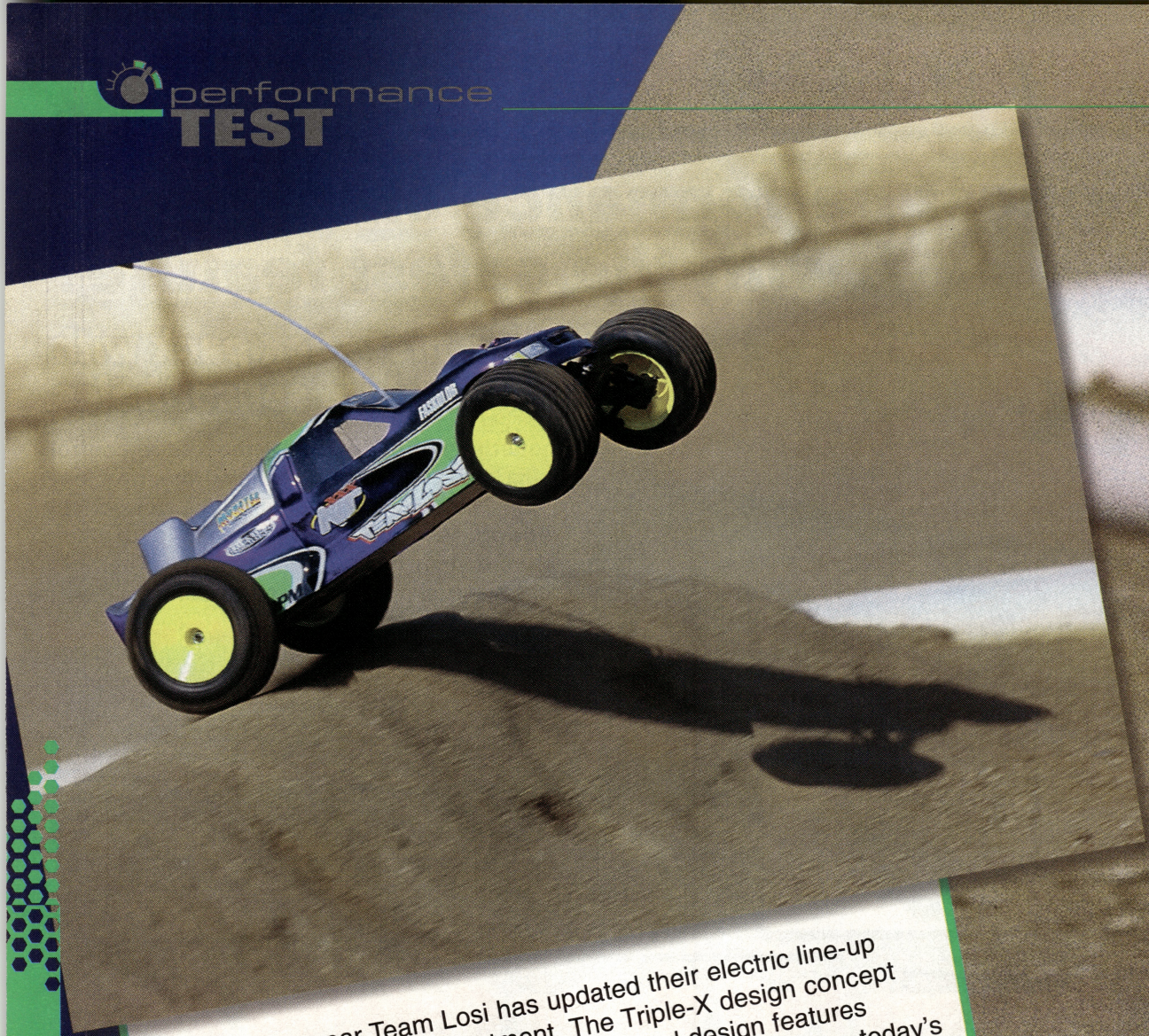


In the past year Team Losi has updated their electric line-up with the new Triple-X treatment. The Triple-X design concept incorporates a number of innovations and design features geared at optimizing performance for the average driver on today's race tracks. It's only logical that Losi would carrying over these winning design principles to the nitro set. At first glance the XXX-NT might look like the NXT. But once you get past the fuel tank and pipe, you come to realize that the XXX-NT is all new. The XXX-NT features a completely new four-gear transmission along with some other new innovations not to mention every applicable Triple-X design concept. Let's take a close look at this new arrival from the Losi stable and see how it does under the rigors of nitro racing.

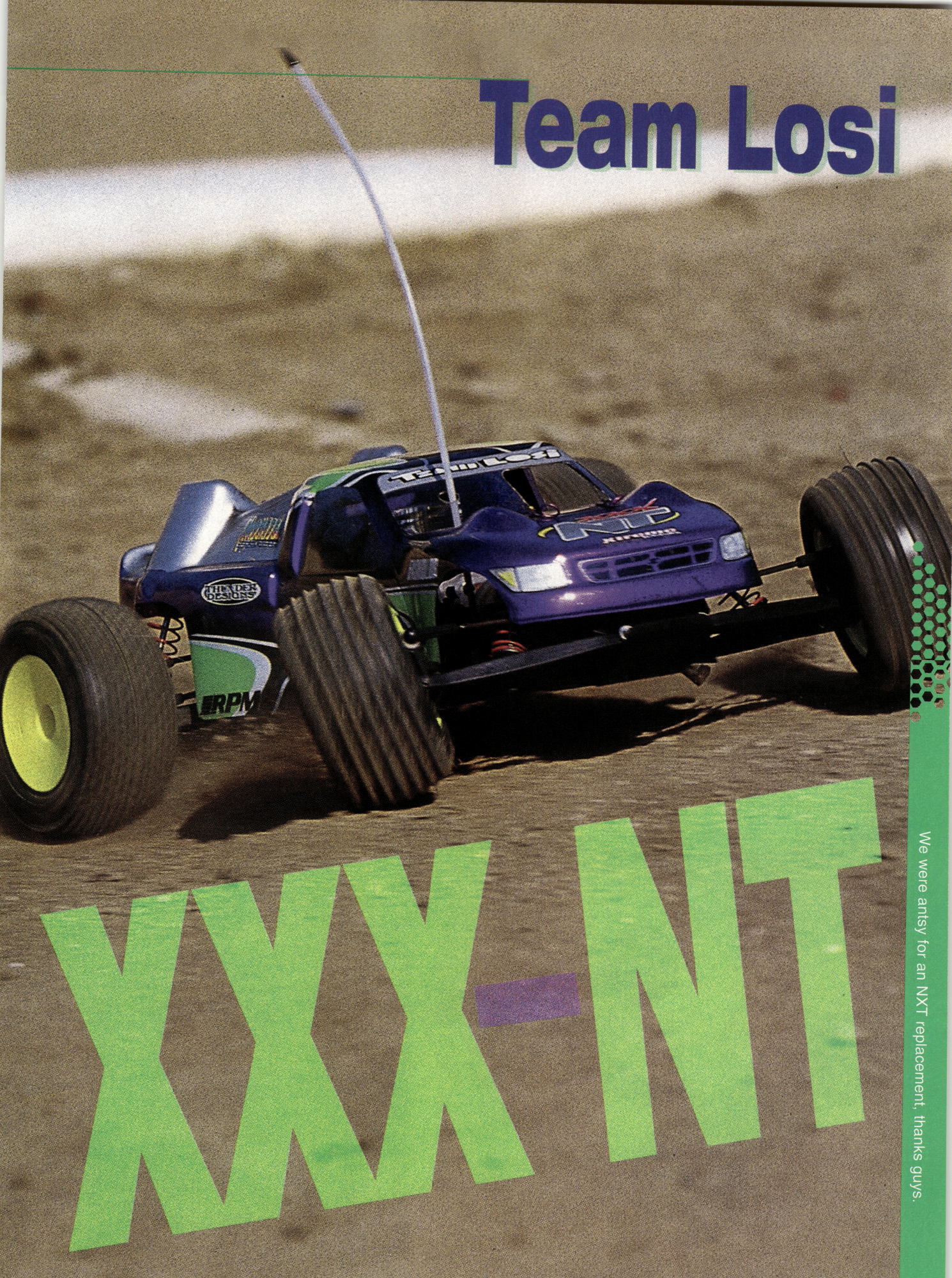
by Mike Velez

Hits:
- Handles like an electric. 4
- Accelerates hard. 4
- Innovative transmission design. 4
- Good fit and feel. 4
- Low center of gravity. 5

Misses:
- Chassis looks unfinished.
- Return spring interferes with linkage on the slide carb. 4

Value

Team Losi



XXX-NT

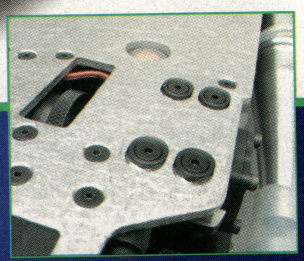
We were antsy for an NXT replacement, thanks guys.

Running Gear

The XXX-NT comes with a nice complement of gear. The engine mounts and exhaust manifold can accommodate either a pull- or non-pull-start engine. Throttle linkage and instructions for using either a rotary or slide carburetor are also included. A large, 75cc-capacity fuel tank sits square in the middle of the truck. A flywheel and 2-shoe sprung clutch are standard.

Body, Tires, and Wheels

Out of the box the kit comes with red compound Step-Pin tires in the back and red compound Directional front tires. All four tires come with standard foam and mount to solid-faced, yellow Triple-XT truck wheels.

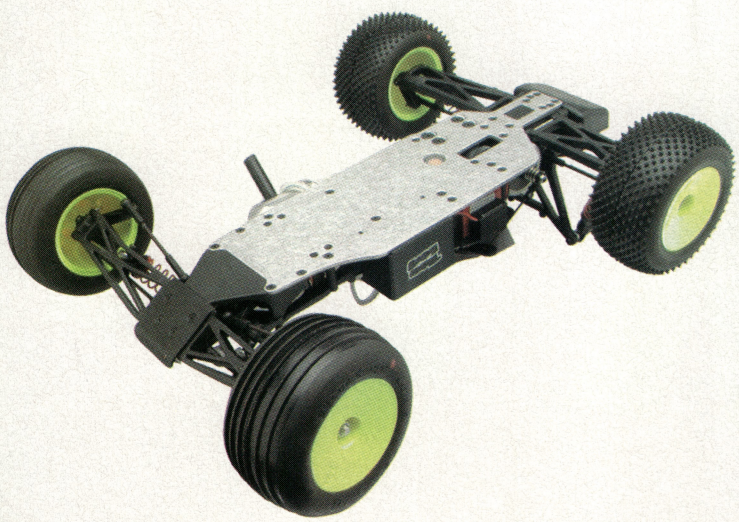


Chassis

The XXX-NT is built atop an 1/8" thick, machined, aluminum chassis. The chassis is completely countersunk, including the channeled motor mounting holes. Countersunk washers allow the engine to be mounted without any screw heads protruding beneath the bottom of the chassis. The chassis has an unfinished look. Some black anodizing or something would have been a nice touch. The front suspension mounts to the chassis with four screws and then is attached to a top brace with two more additional screws. The suspension mounts to the back of the chassis using four screws also. Even with the chassis bare it's incredibly difficult to flex.

Other features

The XXX-NT comes complete with a tuned pipe, complete ball bearings, universal drive shafts, and adjustable steel turnbuckles.

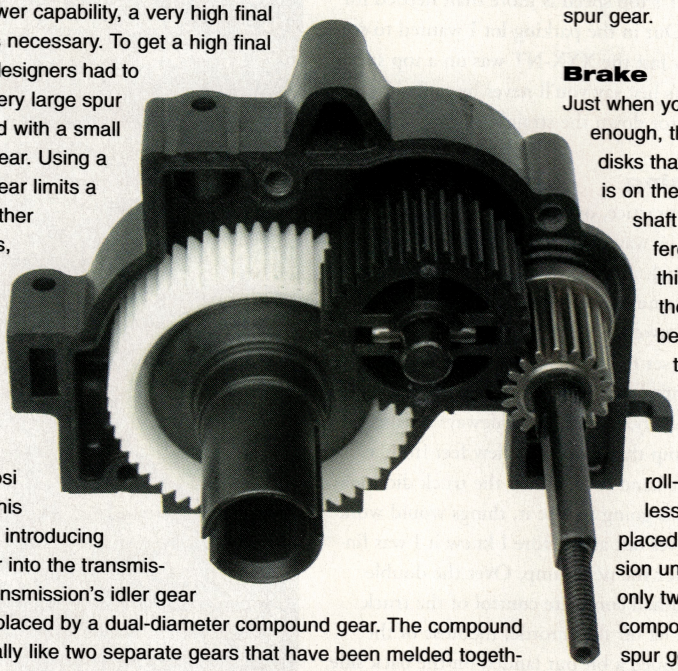


Other people we'd rather not see strip...

Drive Train

Transmission

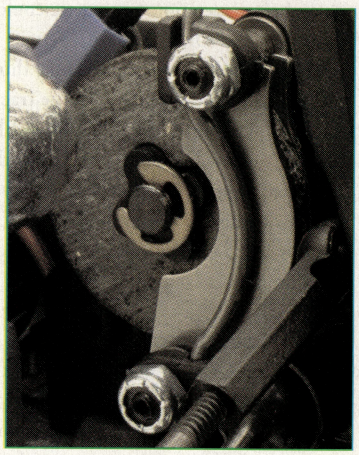
The most innovative design feature of the new XXX-NT is its drive train, especially the transmission. For years, nitro truck designers have been plagued with a common problem. Conventional transmission designs have been limited to internal drive ratios 2.6:1 or so. In order to achieve a final drive ratio that would get the most out of a nitro engine's power capability, a very high final drive ratio is necessary. To get a high final drive ratio, designers had to factor in a very large spur gear coupled with a small clutch bell gear. Using a large spur gear limits a number of other design areas, such as suspension mounting, engine placement, and center of gravity.



Team Losi has solved this quandary by introducing another gear into the transmission. The transmission's idler gear has been replaced by a dual-diameter compound gear. The compound gear is actually like two separate gears that have been melded together side by side. Power comes into the transmission through the top gear. The top gear turns the larger diameter gear on the compound gear. As the compound gear turns thanks to the rotation being transferred on the larger diameter, the smaller diameter side of the compound gear turns the diff gear. The end result is a transmission that has two reductions rather than just one like most other transmissions. The high amount of reductions allows the XXX-NT transmission to use a 51-tooth spur rather than a spur with a tooth count in the 90's. The smaller spur gear allows for more flexibility in rear suspension design, not to mention the engine can be mounted farther back to help put more traction down on the ground. The larger differential allows for more time between rebuilds and smoother differential action. To keep the transmission safe, a dual-pad slipper surrounds the small diameter spur gear.

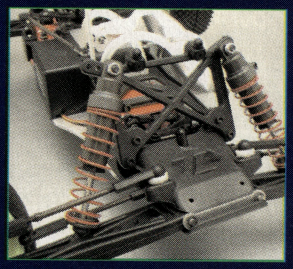
Brake

Just when you thought the XXX-NT's transmission was innovative enough, they went and played with the brake. Unlike other brake disks that mount somewhere next to the spur gear, this brake disk is on the other side of the transmission, mounted to the same shaft to which the compound gear mounts. There are a few different advantages to this design. First, the spur gear can be mounted closer to the support bearing in the transmission resulting in less roll-out. Next, there's less wear and tear placed on the transmission under braking since only two gears – the compound gear and the spur gear – are stressed. One last notable feature on the brake design is the clover leaf brake hub. The unique design ensures that you'd be more likely to see Oprah strip before this thing does.



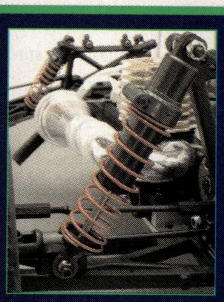
Front Suspension

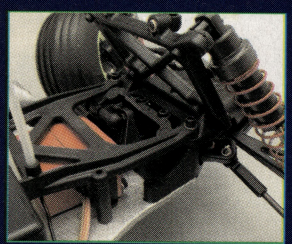
With the exception of the bulkhead and the piece that mounts to the chassis, all the attractive front end features of the Triple-XT were brought over to the XXX-NT. The front end of the truck is completely adjustable. Camber, camber location, shock location, and caster are also all adjustable. The Triple-XT front end package should help XXX-NT to be very recoverable and smooth driving should you get the truck into trouble.



Rear Suspension

Many of the suspension geometry angles from the Triple-XT are present in the rear of the XXX-NT. But, the suspension arms are completely new and have a swept-forward angle. There are 3° of rear toe-in at the suspension mounts, and, like the front of the truck, the rear is extremely tunable depending on the track conditions. Overall the XXX-NT's suspension should carry over many of the positive characteristics from the electric Triple-XT thanks to the similar design.





Steering

The XXX-NT's steering is also straight off the electric version. The steering bellcranks have a bit of an angle on them to cut bump-steer to an absolute minimum. The steering servo mounts just behind the front suspension. Toe and Ackerman are both easily adjustable. The left-side bellcrank is spring-loaded should servo saving be necessary.

Radio Mounting

Two of the most important parts on any gas car are the radio receiver and the radio battery pack. Team Losi has done a good job of protecting both. A completely-sealed, molded battery box doubles as a rear bumper and keeps the truck's batteries safe from a bad crash or fuel spillage. The box will accommodate either a standard 4-cell AA battery pack or a smaller 5-cell receiver pack. The other vital organ, the receiver, is protected by a molded receiver box. The box screws into place and is channeled to prevent fuel from working its way into the receiver. The throttle servo sits just behind the receiver box and is coupled with a switch harness to hold the power switch in one place.



...Mike Velez, Roseanne Barr in Playboy...

Testing

After adjusting the trims and throttle linkage, I headed out to K&M Raceway in Grand Terrace, CA. The track is a large, outdoor, off-road track with loamy dirt and plenty of traction. The track features a variety of turns including a bit of a sweeping 90º turn, a chicane section, and a number of hairpins. As far as altitude changes go, the track's got it all – a couple of decent-sized double jumps, a huge table top, and rollers along the straightaway. (K&M was actually one of the tracks at which Team Losi tested the prototypes of the XXX-NT.) The XXX-NT comes with Red Step-Pin rear tires, which just happen to be the tire of choice at K&M.

Elliot and I arrived at the track a few hours before race time so that we could take some pictures. Once the shots were in the can, I began to run a few practice tanks through the engine to get familiar with the track and the truck. Once practice was closed, I brought the truck in to clean it and to play with the engine settings a bit. Somewhere I went a bit too far off tune. Local nitro pro Dan D. from Pegasus and I got the engine tuned back to perfection.

Acceleration

Even running the engine a little rich, the XXX-NT leapt from a dead stop with the jump of a modified electric truck. I was able to stop just a few feet in front of either of the double jumps, nail the throttle and clear both jumps consistently. Later in the evening when the engine was tuned to perfection, it was truly amazing how much the XXX-NT felt like an electric truck when it came to getting up to speed.

Top Speed

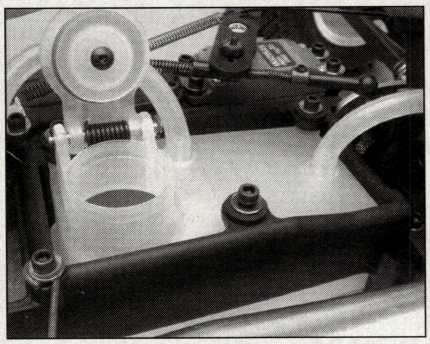
At the track I never really got to see the XXX-NT go balls out. The rolling hills along the back straightaway relegated my throttle to about 80% at best. There were a few times when the hammer was down, but even then just for a short stint. Actually, after my first race I brought the truck in and made some linkage adjustments a found that the carb was never even open all the way. (I beat Elliot in my first race and immediately proceeded to talk trash about never even having to use full throttle.) Under my testing conditions full throttle was never needed or realized. With that said, with any race-worthy engine the XXX-NT's top speed is more than needed for racing. Out in the parking lot I wanted to see just how fast the XXX-NT was on a top speed run. Let's just say you'll never be pulled by a competitor down the straight away.

Jumping

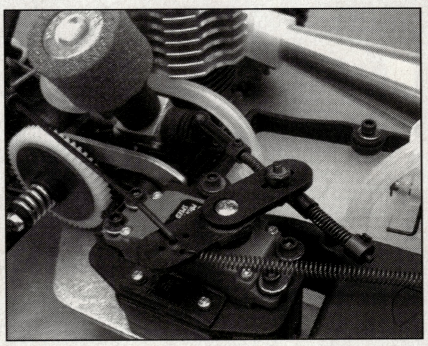
During practice, one of the shock screws worked its way loose thanks to the lack of thread-lock. I didn't notice this until my truck always came off one particular jump at an angle. Between rounds I resolved the problem and was set to go for racing action. The XXX-NT jumped nice and flat lap after lap. Occasionally, I would get sideways on this one large jump that was only a few feet from a hard left-hand turn. When the truck did look as if I was going to lose it, things would work themselves out and before I knew it I was lining up for the next jump. Over the double jumps, I had complete control of the truck. When I let off the throttle, the nose of the truck dipped a bit but landed on the back side of the double jump on all fours. Overall, the truck did well on the different size and profile jumps.

Braking

While racing, I wasn't really on the brakes that often, but when I was, the truck was very stable and controllable. A few times during the Main I needed to drive really hard in to a few of the turns. When I needed the brakes, they were there. The brakes brought the truck to a crawl without locking up the tires and causing the truck to become unpredictable. During the course of a 15-minute practice session the next day, I saw no signs of brake fade.



The Handle on the fuel tank is easy to grab.



The throttle return spring was a nice touch.

The Specifics

Item Info
Part #:A-0153
MSRP: $449.95
Estimated Street Price: $270-$290

Vehicle Type
Nitro .12-size engine powered, 2WD, off-road competition race truck.

Chassis Type
Type: Flat pan with upper brace
Material: 3mm thick machined aluminum chassis with countersunk holes.

Wheels and Tires
Losi yellow Triple-XT dished wheels with Losi Red rear Step Pins and Red Directional fronts.

Transmission
Type: Four-gear
Diff: Large adjustable ball
Drive Shafts: Losi Universal Bones
Slipper: Adjustable friction
Internal Ratio: 4.11:1
Bearings: Yes

Suspension Design
Type: Independent, molded composite lower arms and adjustable upper control links with steel turnbuckles.
Damping: Coil-over, oil-filled shocks, aluminum anodized, coated shock bodies with steel shafts and O-rings seals.

Other Items You'll Need
2-channel radio with 2 servos, receiver, receiver battery pack, fuel, fuel bottle, .12 or .15 size engine, glow-plug ignitor, starting box, paint, and CA Glue.

Our Test Gear:
Airtronics CX2P radio and receiver, Multiplex Profi-Speed servos, Orion 5-cell 600mAh battery pack, O'Donnell 20% fuel, O.S. CV Hyper .12 engine with slide carb, Duratrax Glow-Starter, Mugen RII Starter Box, Thunder Design Masks with Parma Faskolor paint, and Trinty Bead-Lok Tire Glue.

Main Competition
Team Associated RC10GT, HPI Nitro Rush, Kyosho GP Ultima ST Type-R.

Who It's For
Nitro racers looking to be competitive right out of the box. Or, backyard bashers looking for great off-road performance and the ability to race later.

...Andrew Mock, Janet Reno, Brook Shields, forget that last one.

Low-Speed Turns

Slightly on power, the XXX-NT had plenty of steering and was able to negotiate around some of the tight sections the track had to offer. But, off-power the truck pushed. I put a little bit of drag brake into the brake linkage. This helped some, but the truck still pushed a little too much off-power for my liking. I plan to play with this aspect of the truck's performance and tune it a bit sometime soon. While accelerating through turns, the XXX-NT is very controllable. Only once in a while did I have to let off throttle to regain control.

High-Speed Turns

At the end of the straight was a sweeping 90° turn. Coming hot and heavy into that first turn posed no problem for the XXX-NT. I had complete control of the truck through the first couple of high-speed turns. Through the entire night of racing, I had some very good starts and was never far behind the leader thanks to this control. At high-speeds, the truck felt very neutral and predictable.

Damage Control

Most of the XXX-NT is made from Losi's famous Stiffezel material. The suspension components are rigid enough to provide performance as designed, yet won't shatter on impact. During testing I damaged a clutch bearing. I'm not exactly sure how or why the bearing went out, but in years of racing it wasn't my first blown bearing and surely won't be my last.

Trackside Tuning

The XXX-NT is pretty easy to work on. Changing the clutch bearing was very easy; remove the spur, remove a C-clip, and I was set to go. I could easily get to the diff with a flat-head screw driver. Getting the transmission out requires a little work, but that's not trackside tuning now is it? All of the tuning adjustments are straight forward and easy to reach.

Maintenance

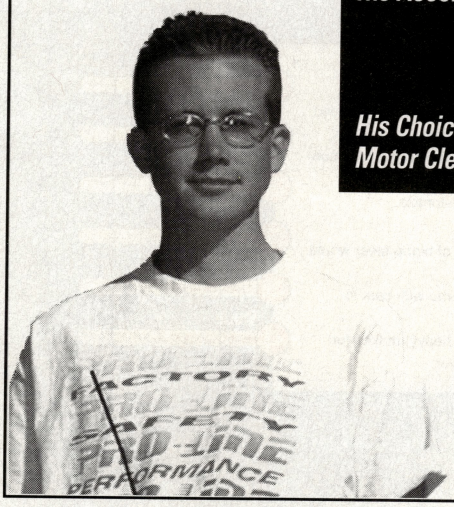
I like to remove the engine and pipe when I clean my gas vehicles after a race. Removing the engine on the XXX-NT is fairly easy to do. Once the engine is out, the truck's layout is easy to clean and maintain with an air compressor and dust brush in hand. The receiver and battery boxes should make things easy since they're sealed off and are pretty much safe from dirt and fuel. The large differential should require less rebuilding than most.

Conclusion

Team Losi's got a real winner on its hands. Under the control of a capable driver, there are no limits for this new truck. In the hands of the sportsman, the truck's easy to drive and handles at the top of its class. The new drive line features make this nitro truck feel more like a more controllable electric truck than a nitro. The Triple-X suspension package provides a very controllable and driveable platform for most any track conditions. With a street price around $280, the XXX-NT is priced right considering all of the innovative features. I'm sure you'll be seeing many at the local nitro track soon. As far the XXX-NT's position in the market place, the rest of the nitro field should be scared. The XXX-NT delivers across the board.

Building Tips

- **Figure 27:** Install all 12 of the coned washers so that they open cone side is facing toward the diff gear.
- **Figure 63:** Before you get started, read through the shock building section. Separate the items needed for the front and rear shocks into separate piles. Pay special attention to the pistons; the reds and oranges look very close in color at first glance. The orange pistons go in the front pile, and the red pistons go in the rear.
- **Figures 68 and 69:** Pay attention to the shock mount bushings. The thinner shock mount bushings are used in the rear and the thick ones are used in the front.
- **Figure 73:** You may need shorten the length of the crank shaft on some engines. Our CV Hyper needed about a 1/4" cut off its crank shaft. You can use a Dremel or Moto-tool to cut the shaft.
- **Figure 82:** When attaching the engine, the countersunk washers will seem too snug to fit in the engine mount channels at the bottom of the chassis. Don't worry. Once you tighten the engine, the washers will seat themselves without problem.



His Name: Scott Hughes
His Specialty: Expert R/C off-road racer
His Accomplishments: 2000 Silver State 1/10-scale truck champion, 1997 IFMAR Off-Road World Championship 2WD 4th, 1999 Florida Winter Champs Truck Modified TQ & 2nd, 1998 ROAR Off-Road Nationals Winner and TQ
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Tamiya JUGGERNAUT 2

by Richard Dee

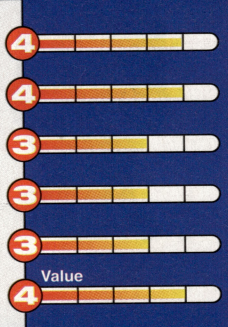
This truck is to crush, not to race!

It's back! The big bad Juggernaut is back on the field after being sidelined and put on Injured Reserve. The original Juggernaut's production was halted for issues concerning the drive train. But that's old news; all that matters is that the Clod-Buster has a brother that went to the gym and beefed up the gearbox and toned up the suspension. In addition to the revised suspension, the Juggernaut 2 delivers more power by having two motors working together rather than fitting with each other like that on the Clod. When I first finished building the Juggernaut 2, I thought that the "real truck" features looked great, but I wondered if they would perform as good as they looked? You'll soon read whether or not the Juggernaut 2 not only talks the talk, but walks the walk.



Hits:
- Nicely detailed body.
- Virtually unstoppable (provided you have a charged battery.
- Looks and runs like a real monster truck.
- Easy to customize.

Misses:
- Reduction of bump steer would be nice.
- Doesn't come with cars to crush.
- A little top heavy; makes for easy rollover.

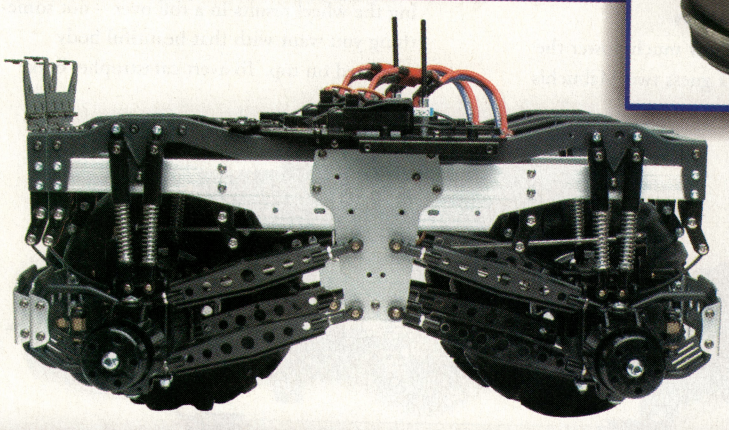


Chassis

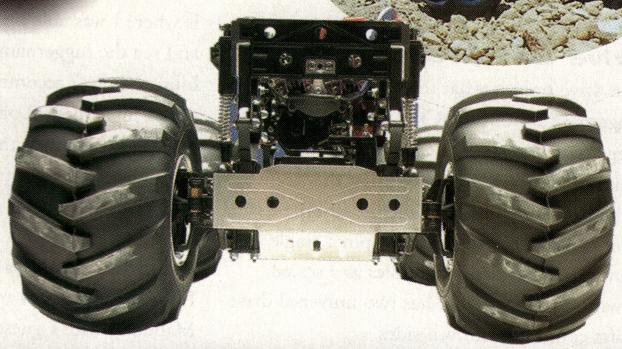
Just like full-sized trucks, the Juggernaut 2 sports a ladder-frame chassis. The only difference is that the Jugg's is made of plastic. The ladder frame is reinforced with aluminum plates that flank each side. The aluminum plates add rigidity and offer a place to mount the swing arms, not to mention adding a cool customized look.

Suspension

To keep with the authentic look, the Jugg 2's suspension closely resembles something you might catch on the Monster Truck races on TNN. Each corner is comprised of a multi-link ladder arm featuring dual shock dampers and steel leaf springs. The leaf spring really stiffens the suspension, but I guess it's okay since it's all part of the monster truck idea. The dual ladder control arms connect to each side of the axles. The other ends of the ladder arms connect to the alloy plate that is mount to the main chassis.







Tires, Wheels, and Body

The Jugg 2's shoes are huge, deep-grooved, directional truck tires that are fitted around drilled chromo wheels. The body replicates a Ford F-350 Super Duty 4x4. This Ford is detailed in traditional Tamiya fashion with chrome front grill, bumpers and roll bars. The bed of the truck is cleverly designed to tilt backwards in order to access the batteries. With all the detail the body packs, all that's needed is a nice paint job to produce an awesome looking body. I want to give Greg Dee, my dad, from GRD big thanks for getting my truck body beautifully painted in time for this review.

If you value your side-view mirrors, you'll want to keep the Jugg 2 on all fours.

The Specifics

Vital Info
Tamiya America
2 Orion, Aliso Viejo, CA 92656
1-800-TAMIYA-A
www.tamiya.com

Item Info
Part #58256 MSRP $534 Est. $350
Made in Japan

Vehicle Type
Dual electric motor-powered, mid-engine 4wd Monster truck

Chassis
Molded ladder type with aluminum chassis rails, molded electronics tray

Wheels and Tires
One-piece chrome monster truck wheels and Tamiya V-pattern oversized monster truck tires

Transmission Type
Reinforced transfer case to universal shaft, with front and rear differentials with bevel gears, Ball bearings and metal bushings

Suspension Design
Multi-Link Suspension with dual dampers and steel leaf springs.

Other items needed
2 channel radio system, two servos, 6-cell stick pack batter, and charger

My Test Gear
Hitec Lynx 3D radio, GM V12 ESC, Trinity Zip Pack2 batteries, Peak 14-T motors.

Main Competition
Tamiya Clod-Buster, Kyosho USA-1



I opted for two Peak 14-turn double motors to provide plenty of ground-pounding power.

Other Features

Steering

Front and rear steering is achieved by the use of only one servo. From this one servo, two long steering rods mount on both sides of the servo horn to connect to the front and rear to create four-wheel steering. To protect the servo from stripping its gears as a result of the amount of leverage the huge tires create, two large servo savers are integrated onto the front and rear axles. A brace also sits on the other side of the servo horn to relieve stress on the servo and to provide better steering.

Drive Train/Transmission

The drive train is what separates the Juggernaut 2 from the Clod Buster. The Juggernaut 2 is all about replicating its full-scale counterpart. The only thing that seems to be R/C is the dual Mabuchi 540-type motors that work together to spin a single spur gear. The gearbox doubles as a scaled-down transfer case that has two universal drive shafts connected at both sides.

The drive shaft action is one of my favorite features of this truck. The drive shafts transfer power from the gear box to both front and rear differentials that are made of beefier bevel gears that are twice the size of those on the first Juggernaut.

Testing

My first test was on the grassy lawn in front of my house. Although the grass was level, the soil underneath was not. I ran the Juggernaut across and it was as bumpy as WWF's Rakishi's backside. It took a while for me to get used to the four-wheel steer and keep it stable under acceleration. The truck torques under hard acceleration by lifting the left wheel off the ground, which was very exciting to see because it adds to the realism factor of this truck.

The second test took place at the baseball field at a high school next to my house. This is where I was able on stand on the throttle and see the Juggernaut 2's smooth-track capabilities. I don't recommend running your R/C car or Juggernaut 2 on a nicely prepared baseball field. I grabbed the culprit and loaded it in the trunk of my car. Tire treads were the only evidence left for the grounds keepers.

Acceleration

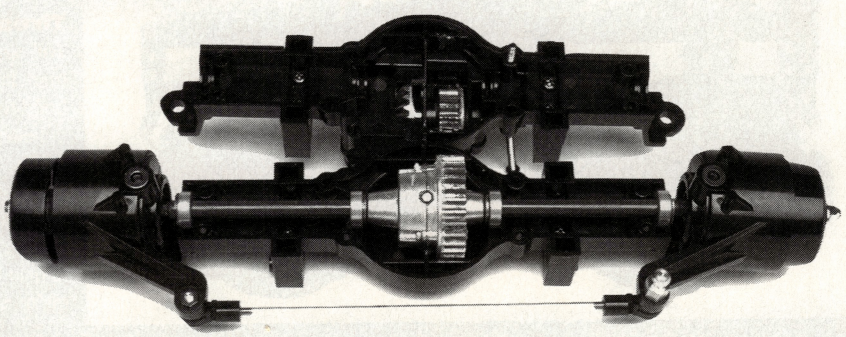
I was surprised how much power the Mabuchis had. I guess two Mabuchis working together makes a difference. Acceleration was pretty good, but it got pretty challenging trying to control the Juggernaut 2 in a straight line. Not only did I have to expect the torque lifting the left wheel, the rear end's bumpsteer action kind of made the truck a little harder to control. Remember though that this was only under hard acceleration; a soft squeeze of the trigger and it was all good.

Top Speed

Top speed was respectable for the Juggernaut 2 – at least it was faster than the stock Clod! The top speed wasn't blinding with the Mabuchis, but I also noticed that the motors were reving very high. That told me that most of the straight-line speed was sacrificed for the low-end power – which was cool. On the other hand, when I installed the twin 14-turn Peak motors, the truck lept off the line as fast as John Rocker leaving Shea on the #7 train. I was literally pulling wheelies under acceleration and top speed was almost as fast as a regular touring car sporting stock motors.

Braking

Braking largely depends on which speed control is chosen. I used a GM V12, which was pretty good. I didn't have a reversible speedo handy that could handle the amp draw of the two mod motors. While braking, turning the wheel results in a roll over – not something you want with that beautiful body mounted on top. To avert catastrophe, brake straight.



The front and rear diffs, along with some other transmission gears, were all beefed up for the Juggernaut 2.

"Juggernaut 2 is strong like ox."

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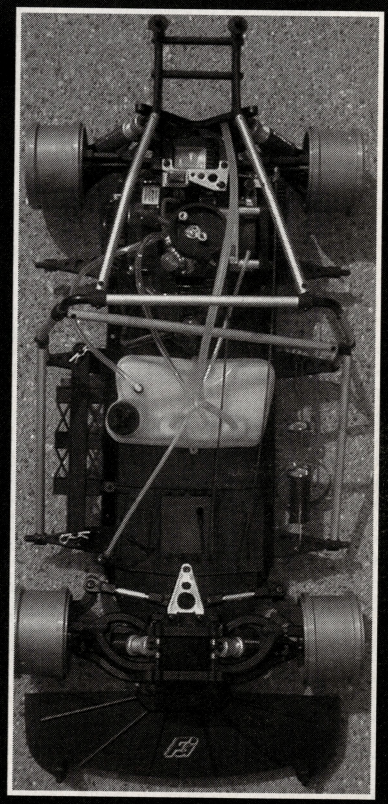

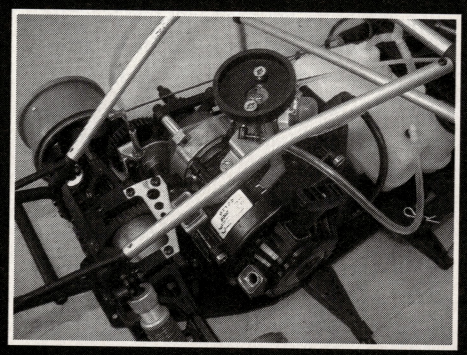

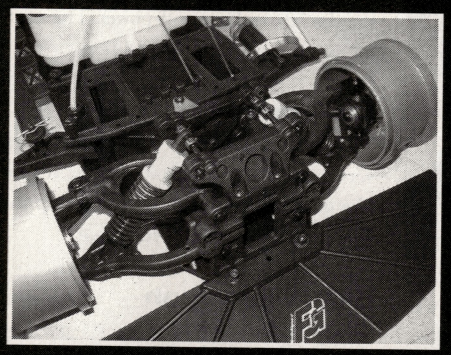

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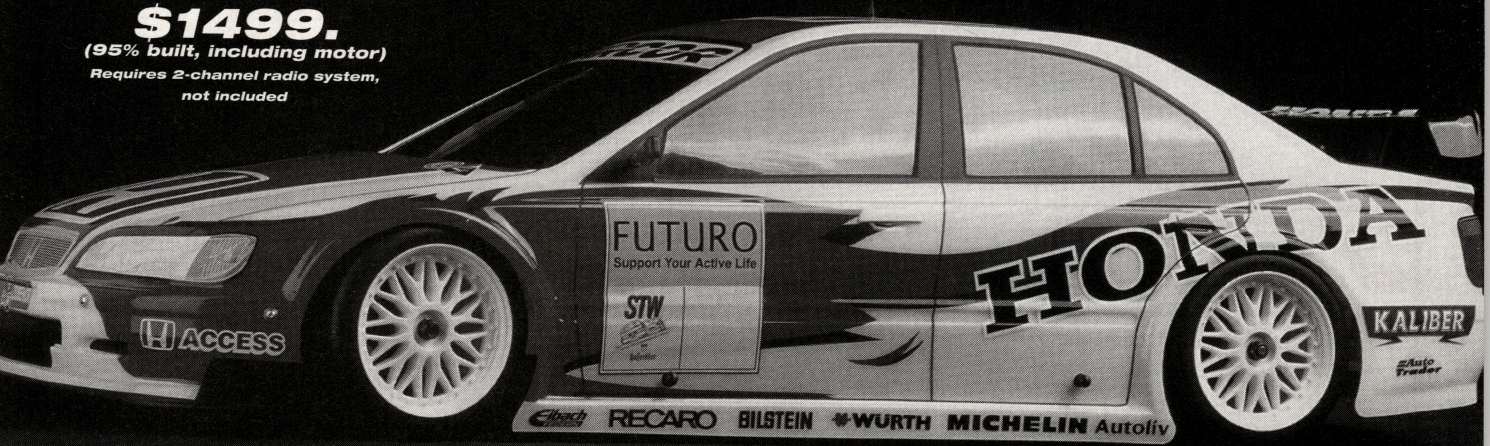

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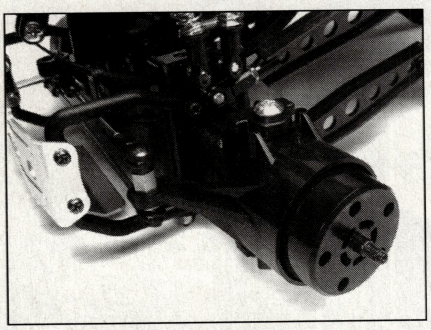
Building Tips

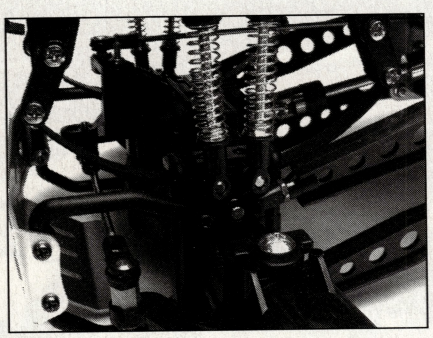
1. Thread-lock everything that needs locking. Pay close attention for these locations. This truck creates so much stress on the chassis that it is important to take precautions.

2. Pay attention to the direction of the truck when putting parts together. Many steps are repeated since the truck is pretty much symmetrical. Be careful not to mess up the left parts with right ones. Remember, just because they fit doesn't mean that they're right.

3. Step 15. Leaf Spring Assembly
Make sure to line up the dot on the spring to the notch on the upper mount. If these are not aligned, your leaf spring will be all out of whack and truck will not run straight. It will also cause the leaf springs to be impossible to mount to the chassis mounts.



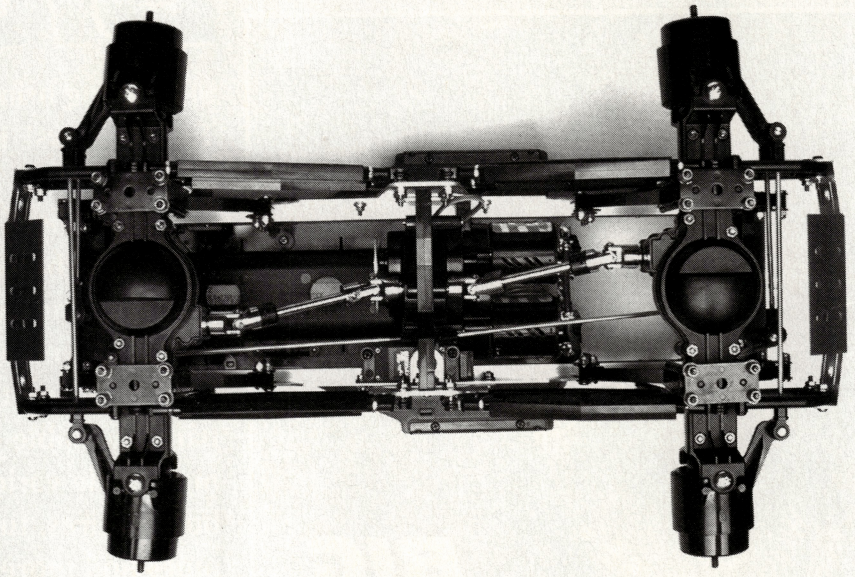
Four-wheel steering is made possible by a rear end that looks a lot like a front end.



The steel leaf-springs complete the authentic look.

High-Speed Handling

Once the Juggernaut 2 was rolling, it was a piece of cake to drive. However, it was suicide trying to corner aggressively with the four-wheel steering. Like an idiot, I turned the wheel just for the sake of doing it and the Juggernaut 2 rolled like a bum in a bad part of town. You have to remember that this truck



Two heavy-duty universal drive shafts move power to the front and rear diffs.

is for going over stuff and looking cool; it's not a super speedway racer. If you want to turn hard when carrying lots of speed, let off the throttle and turn off-power. The truck is more stable under that condition.

Low-Speed Handling

This is where the truck feels right. Turn-in was consistently sharp and precise. It seemed like there was nothing that could stop this truck from going over everything.

Jumping/Rough Track Handling

Landing the Juggernaut 2 from a jump is pretty scary because it seems like it will just bounce itself upside down, plus it makes a crashing sound like a bunch of parts just spilled. The truck did a good job handling rough stuff. I ran the truck through my bumpy lawn and the monster suspension made every bump seem like a pebble.

Overall Drivability/Stability

It takes a while to get used to the four-wheel steering. Its main purpose is to steer the Juggernaut 2 at slow speeds. The torque action also must be anticipated. After a while, I started to automatically countersteer under hard acceleration. For the most part, the Juggernaut 2 is maneuverable. High-speed stability can get pretty nerve racking though. The truck looked so good that I didn't want to roll it.

Damage Report

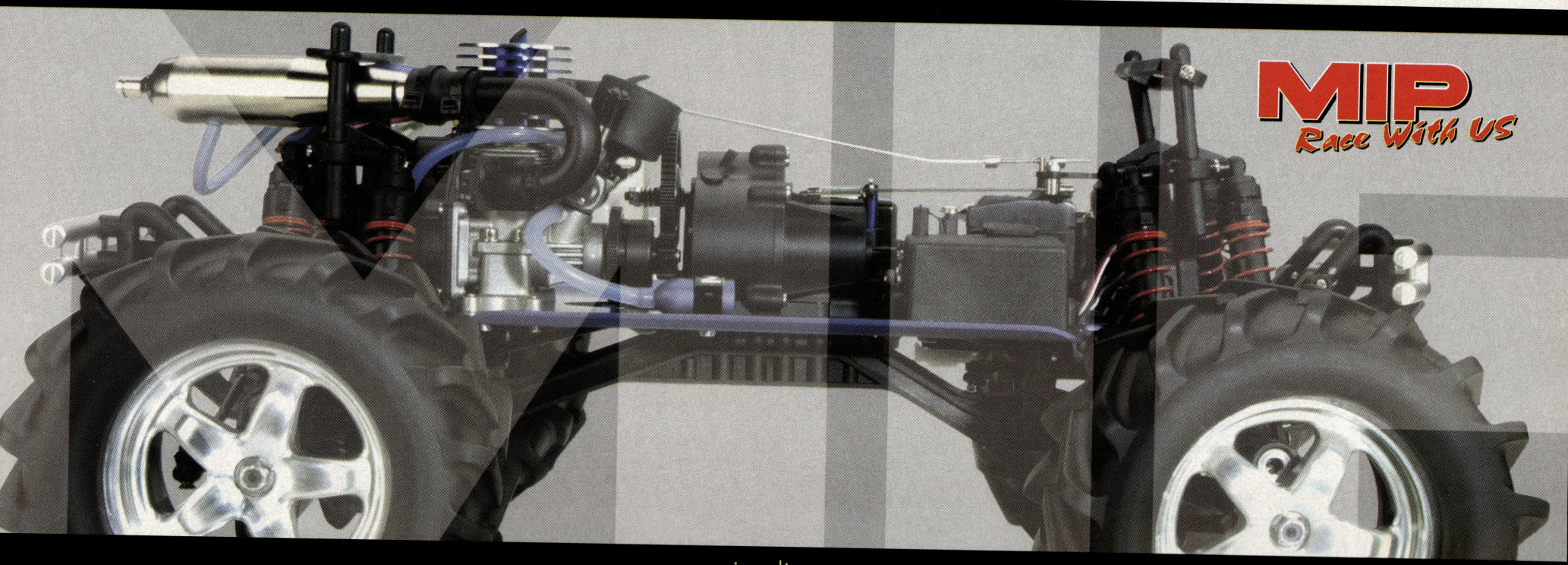
I didn't try to break the truck intentionally, but I did run it hard. Although the Juggernaut 2 does make a crashing sound every time it lands, nothing broke. It wasn't until I was on a high speed tear that I hit a concrete boulder and tumbled the truck for about four complete somersaults. After inspection, one of the brass ball ends that holds to the ladder arms had broke. Considering the spectacular crash, I got off easy. As far as the drive train went, the fixes Tamiya made appeared to hold their own without problem.

Conclusion

The Juggernaut 2 is definitely here to stay. The basic design remains the same as the original Juggernaut with exceptions to the drive train and suspension to make it more reliable. The fun factor of this truck is tremendous. It looks, runs, and acts like a real monster truck. Just like what the Rock would say, "I guarandamn-tee" that the Juggernaut 2 will be the next Clod Buster. It will attract all modelers, from those who just want a truck to beat around the yard to those who want to add the aftermarket parts that are already available for this truck. Driving this beast takes a little while to get used to with mod motors installed, but once you get the hang of it, it's nothing but fun.

For video of the Juggernaut 2 in action go to www.xtremerc.com

A nitro Juggernaut 2 would be nice.



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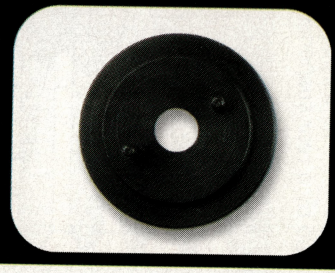

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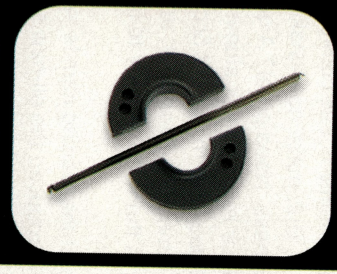

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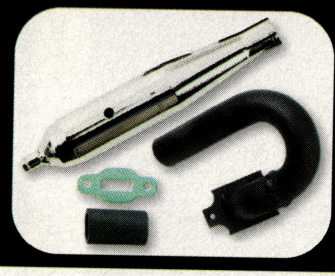

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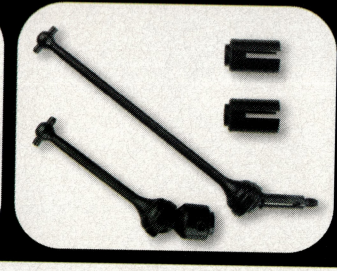

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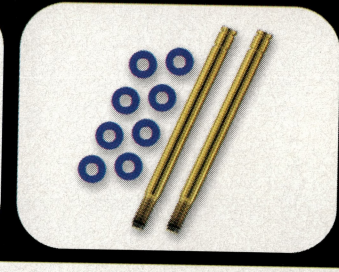

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by Mike Henry

Eighth-scale off-road buggies are the true heavyweights of the R/C world. They may not grab all of the big headlines, and they're certainly not as common as their 1/10-scale counterparts. But, make no mistake; these cars mean serious business. Need proof? A quick glance at a modern 1/8-scale car reveals thick aluminum construction, all-metal gear differentials, 3.5cc nitro engines that produce almost 3 horsepower, and more suspension adjustments than you're likely to find on any other size R/C car.

Mugen Seiki is one of the leading names in 1/8-scale racing. The company introduced the all-new MBX-4 last year, to a lukewarm reception. Although a solid design, the MBX-4 was hampered by a rear suspension that aimed the hinge pins at a very awkward angle. The car also came up short on rear suspension down-travel, and this led to lackluster finishes at some very important national events.

The MBX-4RR aims to resolve its predecessor's short comings, and takes the concept a giant leap further. Of course the entire rear half of the car has been redesigned. But Mugen didn't stop there. Almost every hop-up that was optional on the old MBX-4 is standard on the RR. They even threw in a full set of sealed bearings! Price, you ask? The MBX-4RR still checks in about $200 less than its most expensive competitor. Is the proof in the pudding? Follow along as we put Mugen's latest super-size monster through its paces.

Hits:
- Amazing potential.
- Most of the hop-ups are already in the box.
- Great Value
- Race-able tires.

Misses:
- Underside of chassis is sharp!
- Instructions are a little weak.

3
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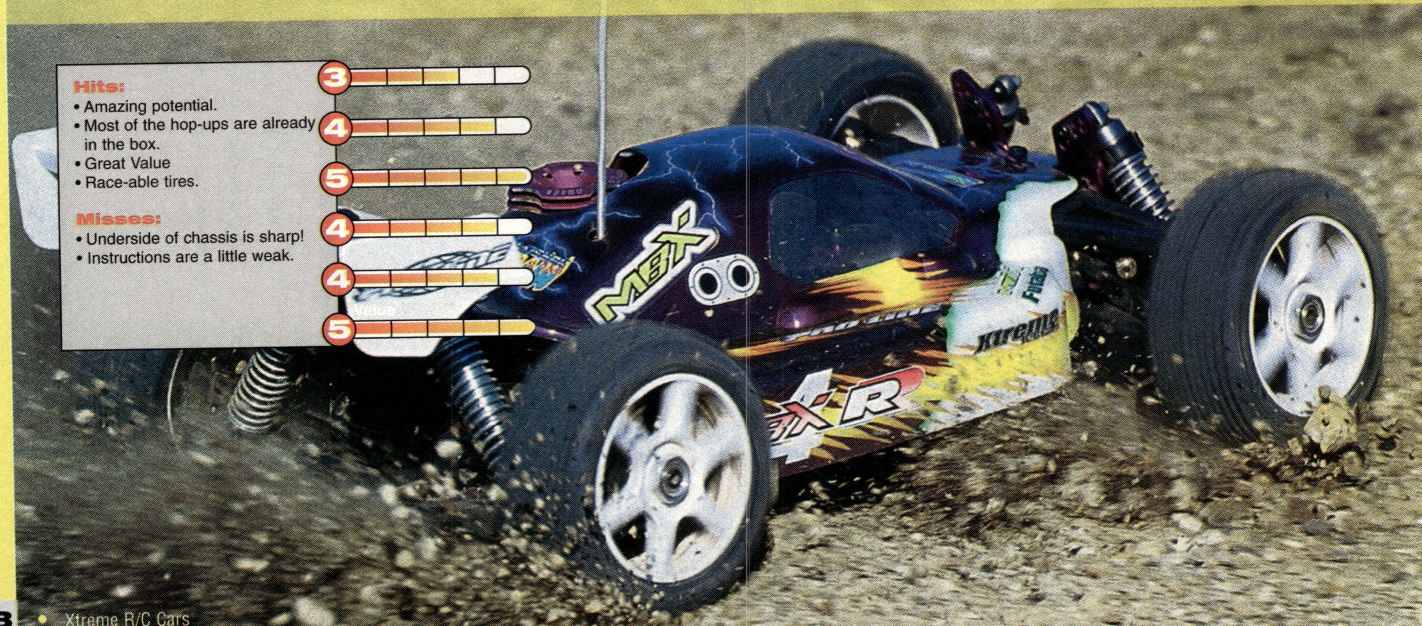
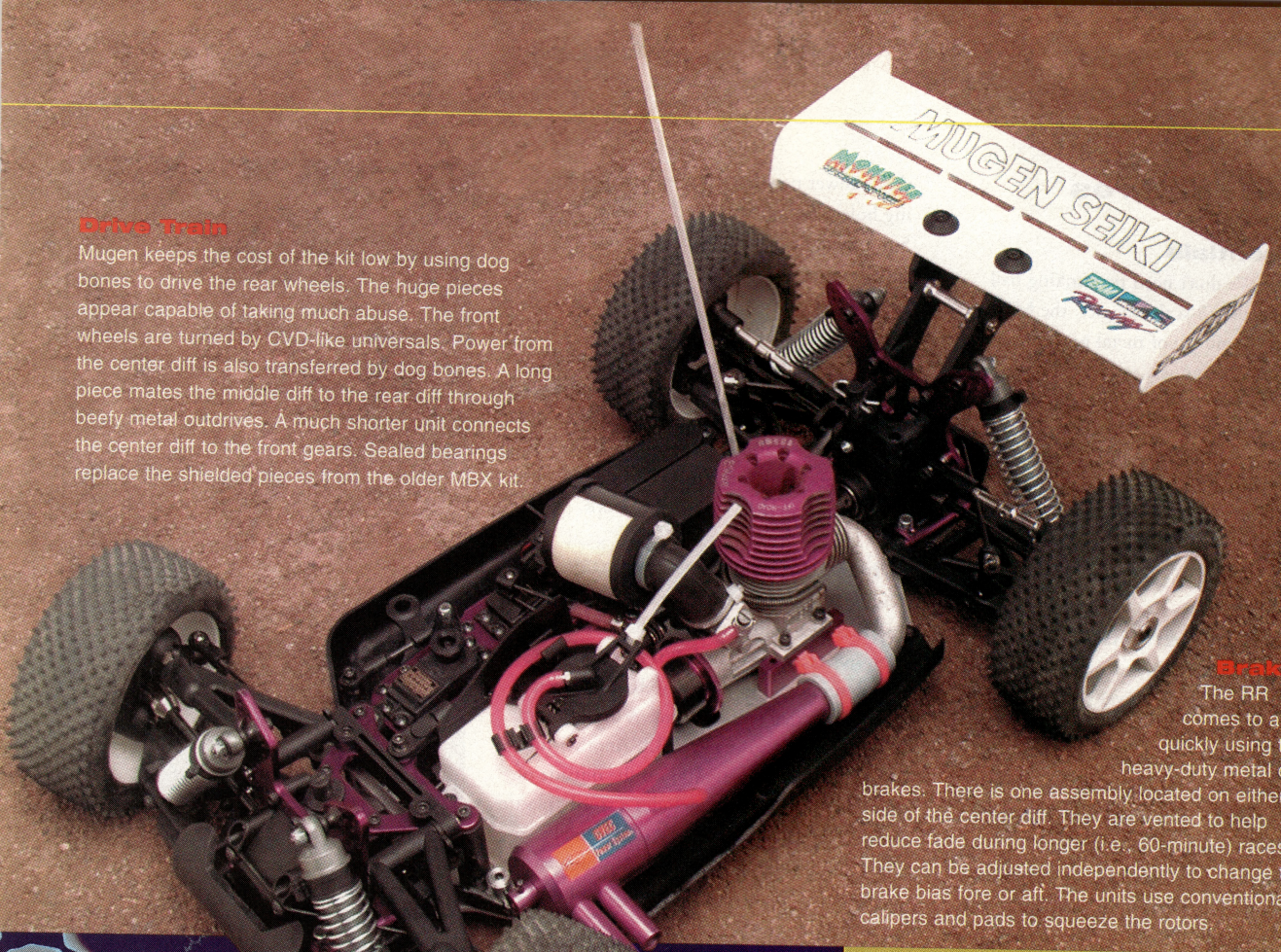


The IFMAR Off-Road Worlds will be held in Vegas this year.

Drive Train

Mugen keeps the cost of the kit low by using dog bones to drive the rear wheels. The huge pieces appear capable of taking much abuse. The front wheels are turned by CVD-like universals. Power from the center diff is also transferred by dog bones. A long piece mates the middle diff to the rear diff through beefy metal outdrives. A much shorter unit connects the center diff to the front gears. Sealed bearings replace the shielded pieces from the older MBX kit.

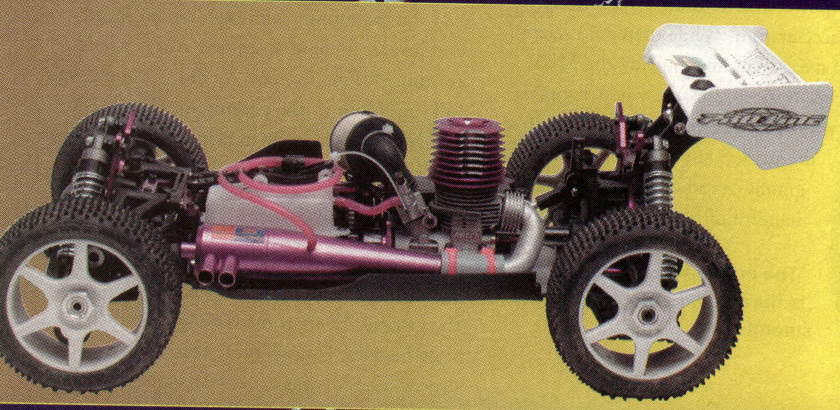


Braking

The RR comes to a halt quickly using two heavy-duty metal disk brakes. There is one assembly located on either side of the center diff. They are vented to help reduce fade during longer (i.e., 60-minute) races. They can be adjusted independently to change the brake bias fore or aft. The units use conventional calipers and pads to squeeze the rotors.

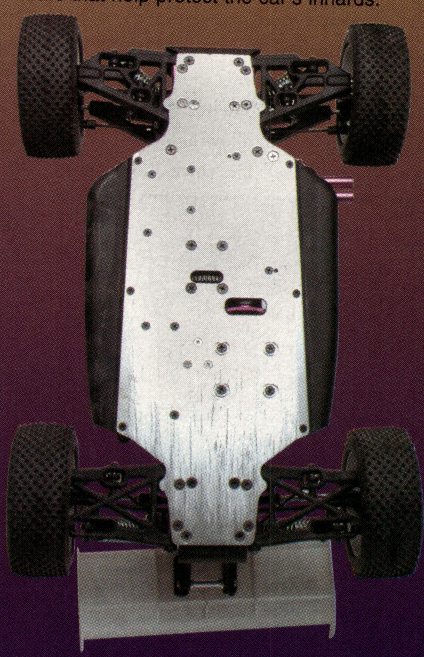
Engine

I borrowed Mike's Omega X6 SC .21 mill (Made by Picco) for testing the MBX. This engine has been touched by the hands of Eduardo Picco himself, and makes more power than anyone really needs. The engine was loud enough to scare all of my neighbors, and even prompted my landlord to say it sounds like the devil. The block is bolted to the chassis using two purple anodized alloy engine mounts. The package is rounded out using Omega's 069 tuned pipe and header. The engine turns a 14-tooth clutch bell. The older MBX featured a 13-tooth unit, so the new car should be even faster on the top end. A small, lightweight, purple-alloy flywheel fastens to the end of the crankshaft. The kit also includes a very efficient high-flow air cleaner assembly.



Chassis

The new MBX features a thick 3.5mm aluminum chassis that is 6mm longer than the original buggy. All of the holes on the underside are countersunk, but there are some extremely sharp edges around the outside of the chassis. The unit is channeled – the port and starboard sides are bent up to provide extra rigidity. The holes for the engine mounts are also channeled, and allow for gear mesh adjustments. Mugen uses Phillips-head fasteners almost exclusively. But, don't worry; they're made of high-quality steel, and will not strip out. Note the sweet nerf bars that help protect the car's innards.



Things will get ugly in Vegas...

Other Features

Differentials

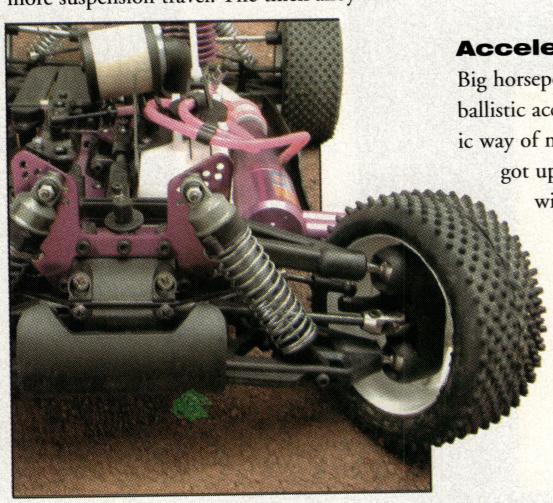
Ball diffs? We don't need no stinking ball diffs. Like all 1/8-scale buggies, the Mugen uses three bomb-proof metal gear diffs. The 6-gear bevel design is a carryover from the original MBX, but the diff housings are now molded plastic. This design allegedly seals the units tighter, which should help prevent leaking. The kit does include three different viscosity silicone oils – 7000WT, 3000WT, and 1000WT – for the center, front, and rear diffs, respectively.

Front Suspension

Many of the new MBX's front suspension parts appear to be carryover pieces. The entire assembly mounts to huge pivot balls. Both camber and front track can be adjusted by turning the threaded balls without removing the wheels. The alloy shock tower features eight upper shock mounting positions, and there are three more located on the lower suspension arm. The front shocks appear to be similar in length in comparison to the older MBX, but feature new springs. A new swaybar ties the front end together nicely. The entire steering assembly is another carryover from the previous model, including the tiny threaded-rod steering links. How about some real, stout turnbuckles, Mugen?

Rear Suspension

The rear half of the MBX received most of Mugen's attention when they re-designed this car. Sweet, purple-anodized, alloy suspension mounts are now standard. The inboard hinge-pins are aimed at a more conventional angle. Rear toe adjusters have been moved to the front of the suspension arms to make room for the 2.6mm swaybar. The rear shocks have grown 10mm in length, allowing a bunch more suspension travel. The thick alloy rear shock tower now has 10 upper shock mounting holes and four camber link holes. Huge 5mm turnbuckles link the hub carriers to the shock tower.



The entire suspension system is durable and tough, yet silky smooth.

Fuel Tank

A regulation-size 125cc pressurized "chicken hopper"-type fuel tank is included in the kit. It is located on the front left-hand side of the chassis. The small plastic splash guard is a nice touch, and helps keep the front brake assembly dry during those hectic fuel stops.

Wheels, Tires and Body

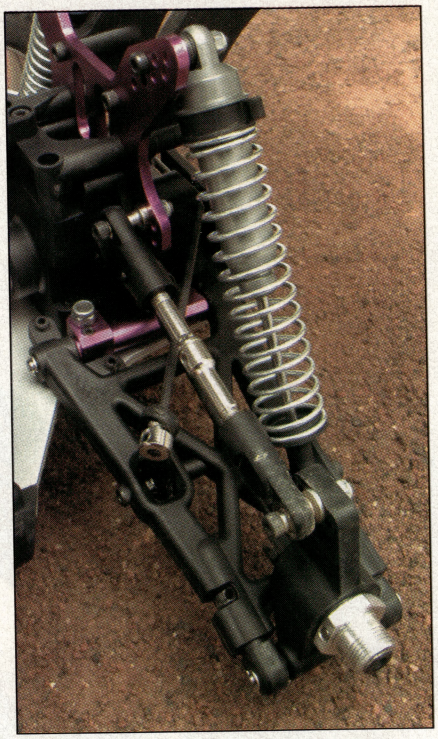
Unlike some more costly 1/8-scale kits, the MBX comes complete with wheels and tires. The rollers are Pro Line's 9011 Multi-spikes in M2 compound, and the wheels are Mugen's newly-designed 6-spoke rims. A low-profile Lexan body tops off the MBX. Another nice touch is the overspray film on the outside of the body. The kit also includes a sturdy plastic wing. The angle of the wing is adjustable, so you can increase or decrease downforce at high speeds. Eighth-scale cars push a lot of air at 60+mph!

Testing

The city of Tucson, AZ is known for many things. Unfortunately, a 1/8-scale off-road track isn't one them. I decided a BMX track would be the next best thing. The folks at the newly-reopened Manzanita BMX Track were gracious enough to let us spend a few hours testing at their facility. While a BMX track isn't an off-road racing track, its hard-packed, smooth surface proved an ideal setting. We weren't able to use every section of the track, but there were more than a few killer jumps that really tested the limits of the big Mugen. I enlisted the help of the local Hobbytown's Jay Rose for tuning advice. I also needed someone to retrieve the car when I got a little overzealous.

Acceleration

Big horsepower and 4-wheel drive add up to ballistic acceleration. While there's no scientific way of measuring how quickly the MBX got up to speed, I assure you it happens with great urgency. The take-up of the stock 3-shoe clutch was never grabby. As soon as I applied a handful of throttle, the car just went. The car exhibited the same characteristics when exiting slower corners; no drama, just a lot of horsepower being laid down by all four wheels. When the car was under hard acceleration, a small amount of weight transfer was visible in the suspension.



The new rear suspension mounts are machined, anodized aluminum. Rear toe is adjustable on the suspension arms.

Top Speed

Eighth-scale off-road buggies often boast top speeds in excess of 60 miles per hour. The track at Manzanita was big, but not that big. Not wanting to grenade the Omega or send the car into the stratosphere, we ran the engine a little rich. It didn't seem to affect the insane speeds of which the car was capable. The drive train of the MBX seems to be very efficient. The car was bullet-fast, especially in the mid-range. The car's own weight also seemed to help it maintain high velocity. If I had the car running at a high rate of speed and just let it coast, it seemed as if it would continue rolling forever. We did run the car at full speed, but in the parking lot. The MBX whizzed by our feet at an alarming rate. (Note to self: Don't do that again.)

Jumping

The Mugen took to the air so well, I'm willing to bet it spent more time in the air than on the ground. Being somewhat "green" to 1/8-scale buggies, I wasn't quite sure what to expect. The car was extremely stable over

...Hopefully the cocktail waitresses won't.

The Specifics

Item Info
Part # C0055
MSRP: $799
Estimated Street Price: $480-$500

Vehicle Type
Nitro .21-size engine powered, 4WD, off-road competition buggy.

Chassis Type
Type: Flat Pan with top braces.
Material: 3.15mm anodized aluminum chassis with countersunk holes.

Wheels and Tires
Mugen white 6-spoke wheels with Pro-Line 9011M2

Transmission
Type: 3 diff 4WD system
Diff: 6-gear bevel
Drive Shafts: Universal/dogbones
Bearings: Sealed bearings
Final Drive Ratio: 10.95:1

Suspension Design
Type: Independent molded lower arms with upper adjustable arms.
Damping: Coil-over, oil-filled large volume shock bodies.

Other Items You'll Need
2-channel radio with 2 servos, receiver, radio battery pack, fuel, fuel bottle, .21 size engine, manifold, pipe, glow-plug ignitor, starting box, paint, and CA glue

Our Test Gear
Futaba 3PD FM radio, Futaba S9404 steering servo, S9450 throttle servo, Orion 600 mAh receiver pack, Trinity Monster Horsepower 20% fuel, Omega .21 engine, CVEC pipe, Duratrax glow starter, Mugen B11 Starter Box, and Body painted by Greg Carroll Greg's Graf-X 520-722-0435

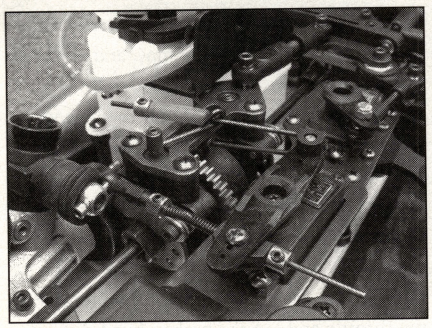
Main Competition
Thunder Tiger EB-04, Kyosho MP-6, Kyosho MP-6 International

every type of jump at the track. I started out on the smaller roller-type jumps, and worked my way up to the table-tops. We decided it was time to go for it. We found the biggest, gnarliest jump at the track. I circled the car around, and took a full-speed run at the jump. The MBX approached the jump, compressed the front suspension at the face, and took off. It seemed like it was in the air for minutes. I actually had enough time to goose the throttle and tap the brakes, but I didn't have to do either. All four wheels touched down, and the suspension just soaked up the landing. Awesome! The MBX jumps predictably and true.

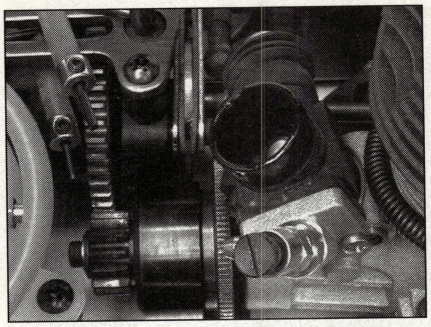
Braking

When you combine a big 1/8-scale buggy with a 2-stroke engine that does not want to slow the car down, you need some serious stopping power. The MBX has two disk brakes, and it doesn't need more than two. As my confidence began to build, I started approaching jumps with a lot more speed, getting hard on the brakes just before the face of the jump. The dual-disk setup flat out





Both the front and rear brakes can be adjusted independent of each other.



No molded gears here, nothing but metal.

worked. The front suspension dove as the weight transferred to the nose of the car, and it continued in whatever direction I pointed it. I started experimenting, trying to get the MBX out of shape. Nothing short of "Bo Duke"-style stunt driving seemed to upset the balance of the car.

Low-Speed Turns

Being a BMX track, most of the turns were high-speed sweepers. But there were a few places I was able to throw the car around at lower speeds. Every component of the MBX's suspension seemed remarkably balanced. The shocks, springs and sway bars seemed to function with each other. Even at low speeds, this was evident. The MBX was neutral, and never a hand-full to drive into the corners. Four wheel drive vehicles are notorious for lacking steering, especially on-power while exiting turns. The Mugen just went about its business, quietly (ok, loudly) laying down power everywhere on the track.

High-Speed Turns

The track at Manzanita featured some killer berms. I wasted no time leaving my mark on them. If I entered the turn too hot, laying off the throttle would slowly start to swing the back end of the car around. In the rare event that more speed was needed, mercilessly grabbing the throttle just made the car go faster. Navigating the berms became a point-and-shoot affair. Simply point the front wheels in the direction you want the car to go, and grab throttle at will. The car was always stable, and the suspension never washed out.

Damage, Inc.

Eighth-scale buggies often run mains that last for one full hour. That's the equivalent to 15 four-minute mains that most of us are used to! Needless to say, cars in this class need to be built like tanks if they want to finish races. The MBX features two large braces – one at each end. The braces link the bulkhead/differential areas to the floor of the chassis. The chassis is more than 3mm thick, and upswept on the sides to further strengthen the car. The plastic nerf bars help to protect anything inside the car when the going gets rough. We abused the car all afternoon and broke nothing. Early feedback from the field is positive,

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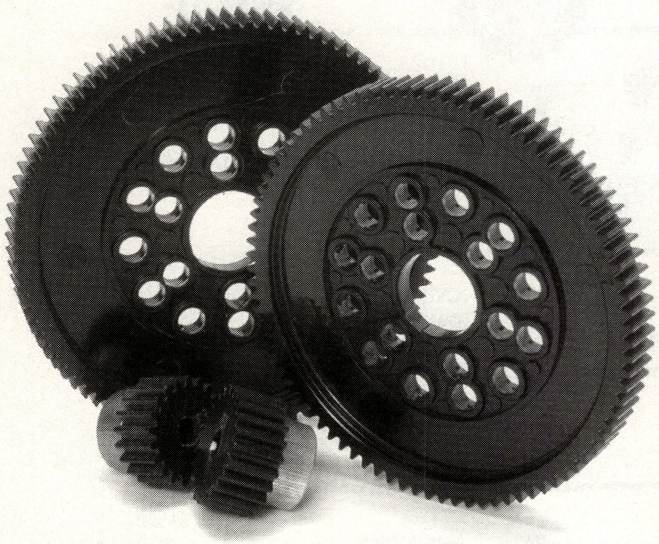

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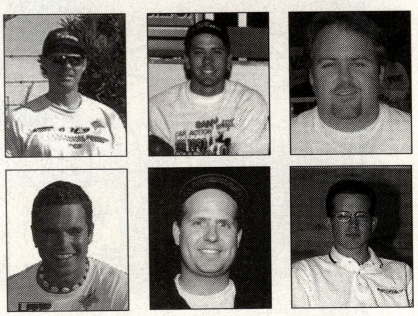

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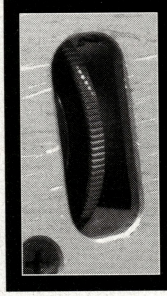
Building Tips

Eighth-scale off-road buggies are not designed with the beginner in mind. If this is your first 1/8-scale kit, make sure you read the directions thoroughly before you begin. Take your time, and pick up a few tubes of Loctite blue thread-lock. Use thread-lock when mating any two metal surfaces. No exceptions!

Mugen's instructions lack any real text to guide you in putting the MBX together, but there are enough detailed, exploded diagrams to get the job done. The following observations were made during assembly:

• **Step 1:** The front and rear differentials are identical, with the exception of the silicone oil used in each. Once you have filled the first diff with oil, mark it with an "F" or "R" using a Sharpie so you will know for sure which is which.

• **Step 4:** Before you begin fastening assemblies to the chassis, you'll need to file the sharp edges of the chassis off. Using a Dremel with an angled bit, carefully smooth the entire outer edge of the chassis.



I neglected to do this, and sliced my pinky finger while picking the car up. When my pit-man did the same, I decided it was time to take action. Safety first! Also, using the same Dremel bit, bevel the flywheel hole. This will save the rubber wheel on your starter box from turning into Swiss cheese.

• **Step 7:** The instructions call for you to assemble the swaybar links to measure 38mm. Don't guess or eyeball them. Use calipers and be sure. If all four links are not exactly the same length, you will tweak the suspension. This is a bad thing. Also, use calipers when assembling the rear toe adjusters. (Pay attention to the supplemental yellow instructions that come with the kit.) Again, if your car has more rear toe-in on one side, the car will exhibit some funky handling.

• **Step 10:** Screwing the massive pivot balls into the suspension arms will take some muscle. To make this easier, I applied a drop of dish soap to the threads. I then put a rubber dish-washing glove on my right hand so the wrench wouldn't slip. My girlfriend walked in while I was doing this. Things have never been the same between us.

• **Step 21:** The MBX doesn't come with servo horns. For a car of this size, you'll need serious servo horns. I ran to my local hobby shop and picked up a pack of Du-Bro Super Strength servo arms (#670 for Futaba). These things are stout!

• **Step 25:** The shocks went together without a hitch. All of the small internal parts are pre-cut, so you don't have to remove any burrs. Dab some Factory Team Green Slime on the threads to make the shock shaft's first trip through the O-rings a smooth one.

• **Step 29:** Mugen's new wheels have only an inner lip, so gluing the tires on can be unnerving. Clean both mating surfaces with rubbing alcohol before you attempt to glue them. I also used electrical tape to wrap each wheel/tire to ensure a tight fit. Nearly three horsepower driving all four wheels can wreak havoc on even the best gluing job. Team Kinwald Bead Loc held everything together.

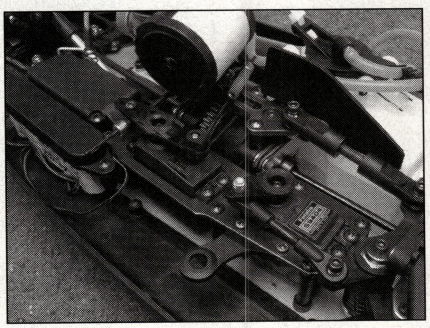
and we all know that if there's a weakness in a car's design, racers will find it.

Trackside Tuning

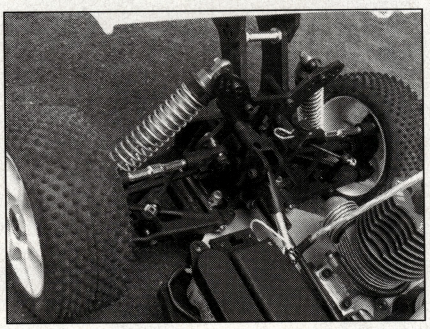
One of the advantages of racing a bigger car is that things are usually easier to get to. Making changes to the MBX's suspension doesn't require any more effort than a typical buggy. There are a slew of shock mounting/camber link holes to tune the car for nearly any condition. Don't forget about the swaybars. Changing the geometry of the bar can be a useful tuning aid. Most 1/8-scale racers also tune their cars by changing the viscosity of the oil in the differentials. While this isn't exactly a last minute setup change you can make five minutes before the start of a race, it can be done with a minimum of wrenching. The brake bias can also be adjusted, depending on what you want more or less of. The size of the shock preload spacers are even marked to make tuning easier. Cool!

Maintenance

The rules of R/C maintenance still apply to 1/8-scale cars. After you pull the car off the track, remove the body and look for obvious problems. During testing, I found a loose front wheel nut and one of the setscrews that holds one of the brake levers had backed out.



With the radio installed the entire buggy has a clean, well designed layout.



Camber adjustment is a breeze with the steel turnbuckles.

This is not the car's fault, but I'm glad I found them before they caused a problem. Between rounds, turn on your radio and check your throttle/brake linkage. Make sure there is no binding, and that both brakes are operating. Keep the air filter element clean, and well-oiled. Before I put any nitro car away for the day, I use a fuel bulb to empty the fuel tank completely. I also remove the glow plug and place a few drops of after-run oil in the cylinder. (For a comprehensive seminar on nitro maintenance, read Regan LeBlanc's column in Issue 6.0.)

Conclusion

Mugen has done their homework in redesigning the MBX-4RR. It appears they have solved the rear suspension woes of the previous model. They've also stepped up the list of standard features in the MBX kit. The car certainly seems capable of running up front with the Thunder Tiger EB-4 and the Kyosho MP-6 International. The new MBX-4RR is aimed squarely at both of these world-class cars, and hopes to trounce them both in Las Vegas later this year. I can hardly wait.

After the last trip to Vegas, Mike thinks he's got a warrant out for him.

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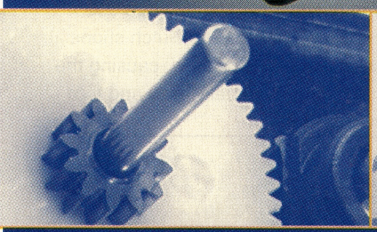

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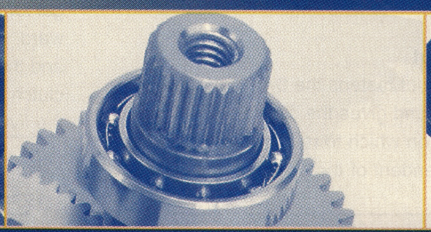

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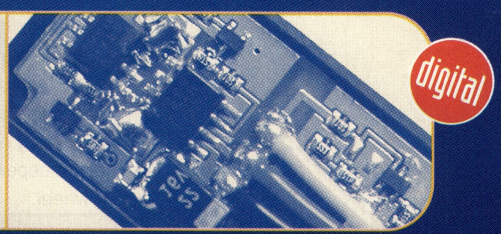

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SERVO	DESCRIPTION	SPEED	TORQUE	HOLDING POWER	WEIGHT	SIZE
HS-625MG	HIGH SPEED	0.13	93OZ/IN	—	2.1OZ	1.6"X.08"X1.5"
HS-645MG	HIGH TORQUE	0.18	133OZ/IN	—	2.1OZ	1.6"X.08"X1.5"

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

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

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

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

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

HS-5925MG	HIGH SPEED, CORELESS MOTOR, DIGITAL	0.08	128OZ/IN	384IN/OZ	2OZ	1.5"X0.8"X1.5"
HS-5945MG	HIGH TORQUE, CORELESS MOTOR, DIGITAL	0.13	180OZ/IN	594IN/OZ	2OZ	1.5"X0.8"X1.5"

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how
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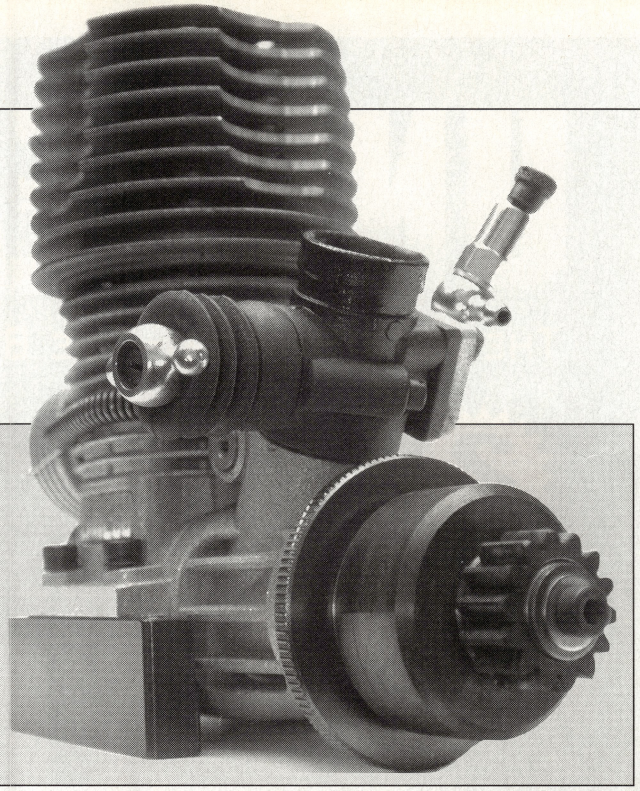
Be a Clutch Master!

by Regan LeBlanc



Understanding and tuning nitro clutches

On a nitro vehicle, the clutch is one of the most important components necessary for successful operation. Whether you're talking about racing in the World Championships or just cruising around the back yard, proper clutch operation makes all the difference. A clutch that isn't working is the difference between first place and last place, or even a running car and one that isn't.

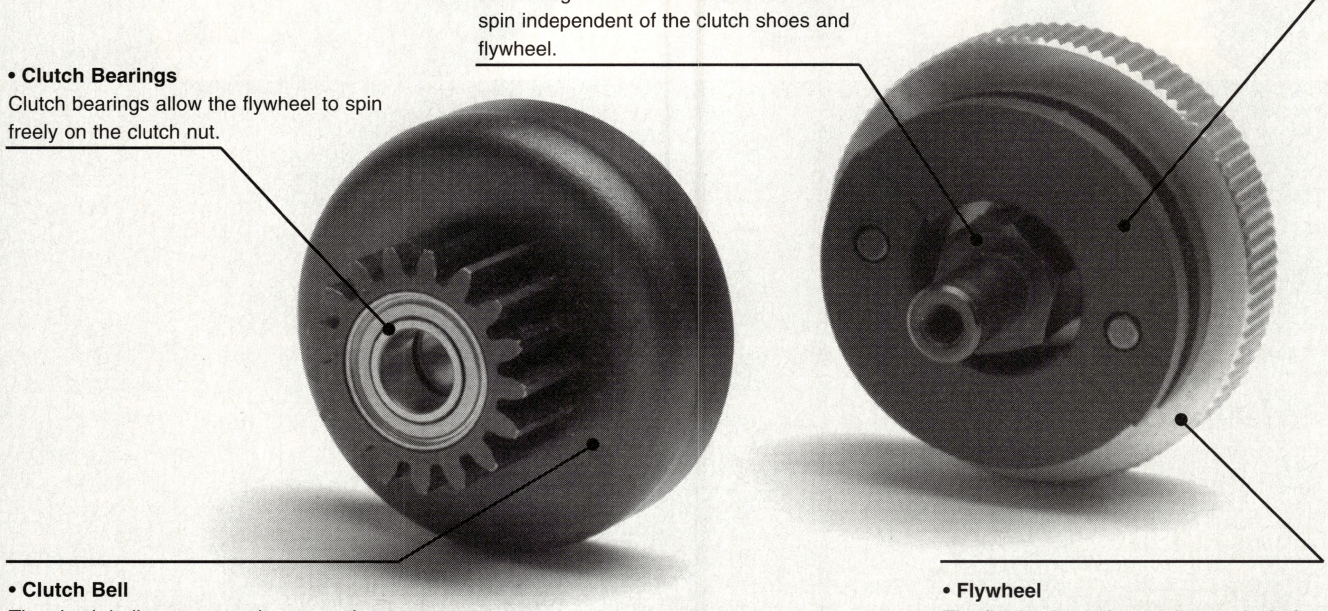
What a Clutch Does

Before you know how a clutch works, you should know what a clutch does. A clutch allows a nitro engine to idle without the vehicle being in drive. Without a clutch, the engine would stall every time you hit the brakes. A basic nitro clutch is made up of five different components.

• Clutch Shoes
Clutch shoes hinge on pins embedded into the flywheel. As the rotational speed of the flywheel wheel increases, centrifugal force pushes the clutch shoes outward. Friction between the clutch shoes and the clutch bell increases, causing the clutch shoes to eventually grab and turn the flywheel.

• Clutch Nut
The clutch nut fastens the flywheel onto the engine and gives the clutch bell something on which to rotate and free spin independent of the clutch shoes and flywheel.

• Clutch Bearings
Clutch bearings allow the flywheel to spin freely on the clutch nut.



• Clutch Bell
The clutch bell encases and protects the clutch shoes. Once the engine's speed reaches a certain point, the clutch bell is rotated by the clutch shoes. The clutch bell features a gear on the end so that it can transfer energy to the car's transmis-

• Flywheel
The flywheel attaches to the crank shaft of an engine. The flywheel is used to start the engine, as a place onto which the clutch shoes mount, and to absorb energy on acceleration to help smooth out an engine's torque band.

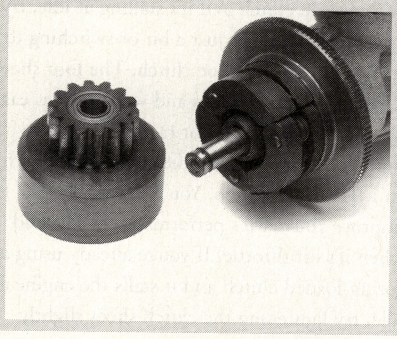
Although clutch designs vary, they all use the same basic principle.

Different Types of Clutches

In the world of nitro R/C cars there are basically three types of clutches.

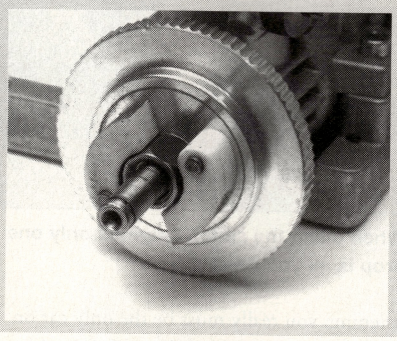
• 1/8-Scale

Clutches used on 1/8-scale cars and buggies are always spring-retained. Because .21 size engines typically idle at a pretty high RPM, mousetrap springs are necessary to keep the clutch shoes from dragging on the clutch bell.



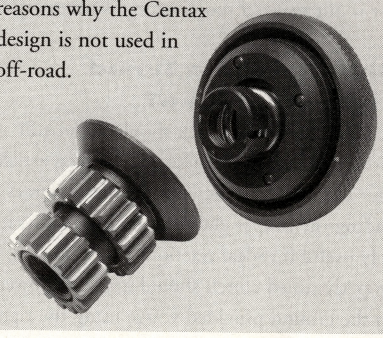
• 1/10-Scale

A 1/10-scale-style clutch is used for most 1/10-scale cars using .12 and .15 size engines. Between two and four clutch shoes hinge on the flywheel under the clutch bell. Tenth-scale clutches typically use a round spring to keep the clutch shoes from contacting the clutch bell when the engine's at idle. The most common exception to this rule is Team Associated two- or four-shoe clutch; the Associated clutch doesn't use springs, but very light clutch shoes instead.



• Centax

A Centax clutch is used strictly for on-road racing. A Centax clutch uses a one-piece clutch shoe that sits next to small spacers that ride on the inside of the cone-shaped flywheel. As the RPMs increase, the spacers press the clutch shoe against the cone-shaped clutch bell. Centax clutches are extremely easy and quick to tune. A small spring between the clutch bell and the shoe can be tightened or loosened to affect the engagement point. But this design is susceptible to dirt and debris and is one of the reasons why the Centax design is not used in off-road.



Building Your Clutch

The most important thing to do when building a clutch is to follow the directions to a tee. Some manufacturers call for specific sized shims and washers. Deviating from what's called for could cause problems. When tightening the flywheel, try to find a nut driver that properly fits the clutch nut. Grab the flywheel with a pair of channel lock pliers and tighten the clutch nut. Once you put everything together make sure that the clutch bell spins freely. Don't over-lube the clutch bearings. The lubricant can work its way into the clutch and cause your clutch to slip.

Tuning A Clutch

Depending on track conditions and the performance characteristics you're looking for, a clutch can be tuned to perform better in a given situation. When it comes to tuning, you can either make a clutch engage sooner (at lower RPMs) or later (at higher RPMs). There are two basic ways to alter when a clutch engages. First, you can make a clutch shoe heavier or lighter. Lighter clutch shoes will engage later than heavier shoes. Second, if your clutch uses spring(s), you can use a lighter or heavier spring. A lighter spring will allow the clutch to engage quicker than a heavier spring.

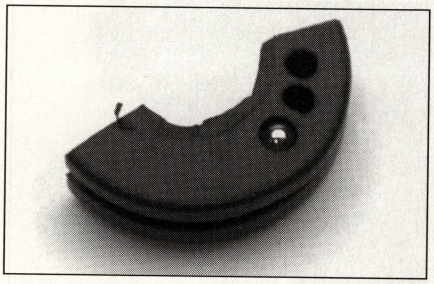
Tuning To the Conditions

Quick Engagement

Contrary to conventional wisdom, on low-traction conditions like a slick track in on-road or a dusty, blue-grooved off-road track, you want the clutch to engage quickly. You would think that a slower-engaging clutch would help in loose conditions, but if the clutch takes too long to engage, the clutch will engage near the high end of the engine's power band. That will just cause the tires to break loose. You actually want the clutch to engage low on the power band before the engine starts building too much power. Today's newest engines produce so much power that even at the lower end of the power band, the acceleration power is there. You can go too far and make the clutch engage too quickly. If the clutch engages at too low an RPM, it will never really disengage. This can cause your engine to stall on idle or cause the clutch bell to get excessively hot during idle.

Tuning for Quicker Engagement

If replacement springs are handy, simply lighten your clutch springs to cause the clutch to engage sooner. The other way to quicken clutch engagement is to make the clutch shoes heavier. To make a clutch shoe heavier is a little more involved. First, you must drill a hole in the shoe and then insert a small ball bearing or small piece of metal rod into the hole. The ball or rod must be firmly press-fit into the shoe so that it doesn't come loose, and the extra material must be located where it won't come in contact with the clutch bell and won't interfere with the operation of the clutch. When adding weight, be sure that you all shoes are identically weighted.



Slower Engagement

If the traction is there and having the tires break is not really a concern, tune your clutch to engage at a higher RPM. This will make your vehicle accelerate with a lot of punch. You'll have to adapt your driving style to stay on the gas a little more than you might otherwise drive. But, under the right conditions you may be able to produce faster driving times or with a slower engaging clutch especially if the track is a really point-and-shoot-type track.

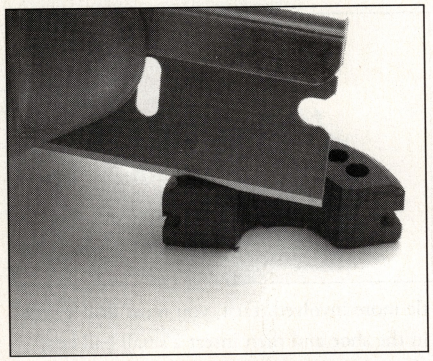
A purple clutch bell that's not anodized is not a good thing.

Tuning for Slower Engagement

To cause your clutch to engage slower at a higher RPM, simply replace the spring with a heavier spring, or you can lighten the shoes. To lighten a clutch shoe, simply grab a sharp X-acto knife or blade and cut away a small sliver of clutch shoe material from the backside or end of the shoe. Cut about an 1/8" with each cut. Don't remove material from the face of the shoe that contacts the clutch bell, and don't remove material from around the hinge. When cutting shoes, be sure to remove the same amount from all of the shoes. Once you make the cut, reassemble the clutch and test it out to see if more tuning is necessary.

What Should a Tuned Clutch Feel Like?

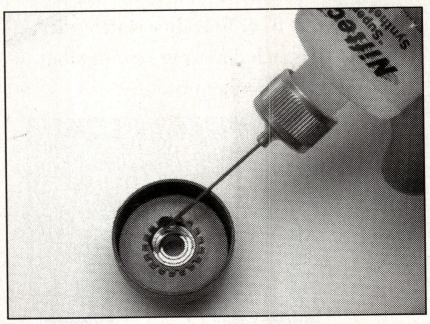
At idle, your car or truck should stand still without being on the brakes. (I've seen articles refer to taking distance times when it comes finding the proper clutch setting. But, this is only useful for ideal traction conditions.) A properly tuned clutch should keep the power on the ground provided you're using the right tires. Your vehicle should accelerate quickly and not labor to get going. The clutch should disengage off power. The clutch should not heat up during idle and it should not slip.



Be sure to remove equal portions from each clutch shoe.

Troubleshooting

Is my clutch slipping? First you need to identify whether or not your clutch is slipping. On the track, you should be able to hear it slip. You'll hear the engine wind up, but the car won't seem to be accelerating. To spot this by listening, you really must be the only car on the track or have somebody at track level listening for you.



When oiling the clutch bearings only one drop is all you need.

Other signs of slipping might be excessive heat build up. When you disassemble the clutch, take a look at the inside of the clutch bell. Is it blue or purple? If so, your clutch is slipping. The last way to spot a slipping clutch is for off-road cars. If you're balls out and your car nose dives coming off jumps, your clutch is probably slipping.

If you are certain your clutch is slipping, make sure that you're not using excessive lubrication on the clutch bearings. If this is the case, clean out the bearings and just use a drop or two of lubricant on each bearing. Also make sure that you're not getting fuel into the clutch when you're refueling. Fuel in the clutch will cause the clutch to slip. Also, try a different compound shoe if one is available for your clutch. If your shoes are worn, replace the shoes with a new set. If that doesn't work, add some weight to the shoes as prescribed earlier.

My Clutch Stalls on Idle

First make sure that it's the clutch that's causing the engine to stall and not carb adjustment, glow plug, compression, or something else. Next, recognize what type of clutch you're using. If you're using an Associated two or four shoe clutch and it's stalling at idle, try ligthening the shoes just a bit or switching to an Associated four shoe clutch. The four shoe clutch uses lighter shoes and won't stall as easily, it's more intended for racing. Another thing to try is replacing the stock clutch with an MIP 4-in-1 clutch. You'll drastically improve you're car's performance at idle and when it's off throttle. If you're already using a spring-loaded clutch and it stalls the engine at idle, try lightening the clutch shoes slightly until the problem goes away.

Well, there you go. Understanding clutches, how they work, and how to tune them is important. Whether you're just bumping around the back yard or getting ready for the Nitro Worlds, being a clutch performer is a must.

Clutch Notes

- Only use a slipper clutch to save your tranny when landing on big jumps if you're running off-road.
- Adjust the gear mesh so that there's a little bit of back and forth movement between the clutch bell and the spur gear. Check the mesh in several spots.
- Before a big important race, replace the clutch bearings. It's a good idea to have an extra set of clutch bearings at all times. A slipping clutch that heats up will cause the clutch bearings to fail prematurely.

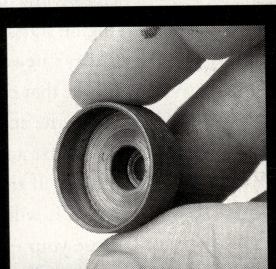
Cleaning Tips

Don't be squeamish about tearing your car down. Cleaning your clutch is simple.

Step 1: Remove the engine from the vehicle.

Step 2: Remove the clutch bell and the shoes.

Step 3: Using some electric motor cleaner or denatured alcohol, spray down the inside of the clutch bell.



Step 4: Using a Scotch Brite™ pad, remove any glaze that might have accumulated on the inside of the clutch bell.

Step 5: With the scouring pad, scuff up the face of each clutch shoe.



Step 6: Dust off any of the glaze that might have been removed and reassemble the clutch.

A set of spare clutch bearings can save the day.

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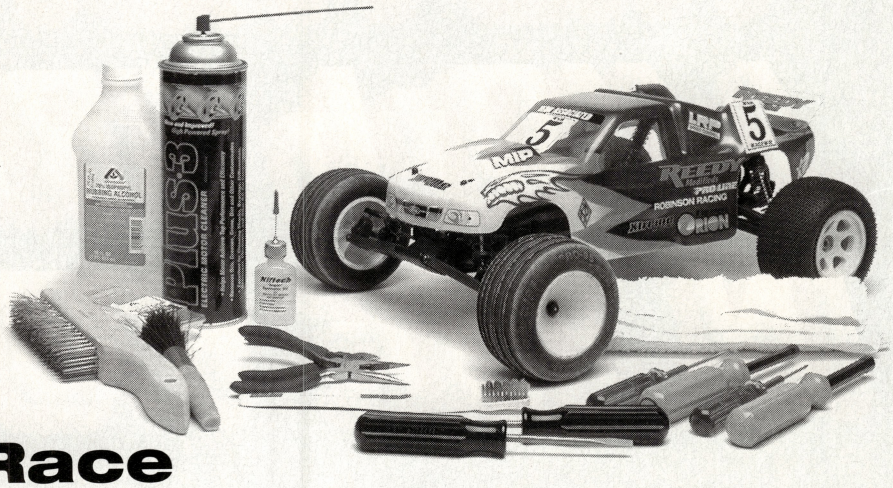


Between Race Maintenance

by Mike Henry

Don't let dirt and grime keep you out of the winner's circle.

Cleaning the suspension is pretty simple. Bind bad; free movement good.

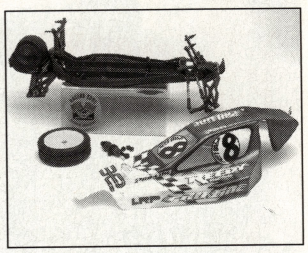
Modern competition-level R/C cars are engineered to withstand incredible amounts of abuse. But they are not immune to breakage, and require a certain amount of attention even when things appear to be in working order. We've all neglected cars or trucks in the past, and gotten away with it. But sooner or later, lack of maintenance is going to catch up with you. Murphy's Law dictates that this usually happens at the most inopportune times, like the first or last lap of a main. We can't tell you why your car works flawlessly in practice, then falls apart in the main, but we can help guide you through regular maintenance.

Not surprisingly, the two main areas we'll focus on are the suspension and the drive train. More often than not, when something goes wrong, it happens in one of these two areas.

SUSPENSION

DO-IT-YOURSELF

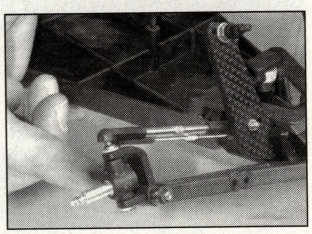
The first thing I usually do when I bring a freshly-raced car home is remove the wheels and tires. (We'll clean those later.) Before you unfasten anything, give the car a good once over, and look for any missing E-clips or signs of damage.

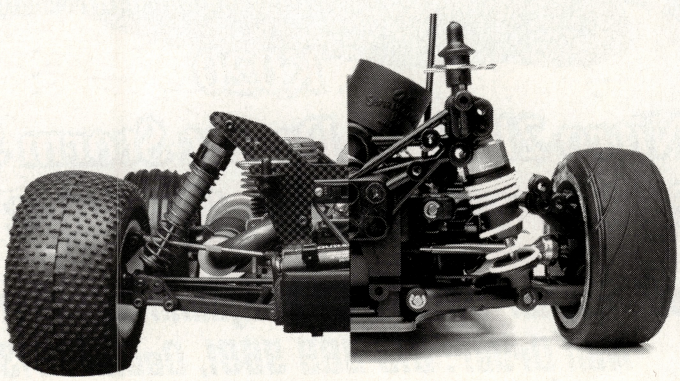


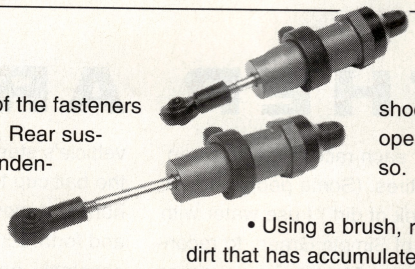
• Twist all of the turnbuckles to ensure there is no binding, and to make sure none of them are bent.

• Put the car on a car stand and remove the shocks. Make a note if any of the shock hardware is loose. If the same screw is loose after every run, you probably need to replace it or the piece to which it fastens.

• Move all of the suspension arms and make sure there is no binding. If the arm does not move freely, you might have a bent hinge pin.







• Check to make sure all of the fasteners on the underside are tight. Rear suspension mounts have a tendency to loosen over time.

• Remove the springs from the shocks, and check the "action" of each unit. Depending on your type of shocks, check the rebound. If the rebound is not almost exactly the same on each shock, you need to open it up and make it so.

• Using a brush, remove any loose dirt that has accumulated on each shock. If one has a lot more crud on it, it may be leaking. If it looks like you've got a leak, replace the O-rings.

• Silicon shock oil never really loses its viscosity, but dirty oil will kill your seals and prematurely wear the shock shafts. I try to change my shock oil every two or three race days. Again, if your vehicle uses pressurized shocks, properly setting the rebound is critical.

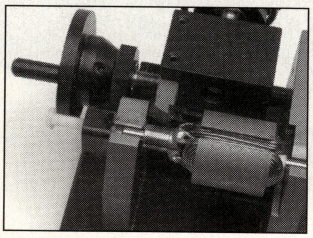
DRIVE TRAIN



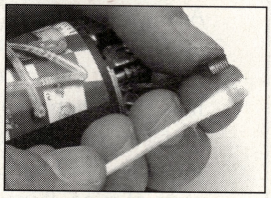
Drive train maintenance varies greatly depending on what type of vehicle you're racing. Obviously, a 2WD off-road buggy is much simpler than a 4WD on-road sedan. Use common sense, and cover all of your bases.

• I usually begin by pulling the motor out of the car. Regular readers may know I'm not a big advocate of dousing motors with motor spray. If a motor is really nasty, a few shots of compressed air will normally clean it up nicely.

• If you're using a modified motor, you may want to consider resurfacing the commutator. I don't like to put more than three or four runs on a mod before I clean up the comm. Stock motors are much more forgiving. Between rebuilds, I like to use a comm stick to keep wear to a minimum.

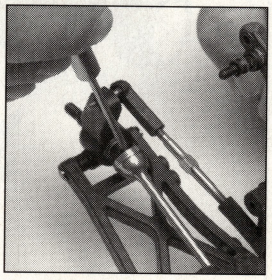


• Try using Q-tips to clean the face of the brushes. Motor spray will dry out brushes faster than you can say denatured alcohol.



• Place a few drops of bushing oil at each end of the motor, then set it aside.

• Spin the drive shafts to make sure there are no rough spots or binding. Watch the bones as you spin them, making sure they are not bent. If your car has CVDs, examine the small setscrew that holds the cross pin in place. Grab your .050" wrench and snug-fit each setscrew.

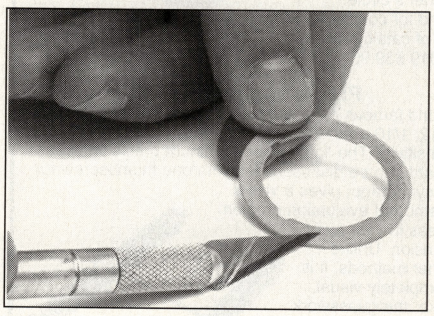


• Inspect the outdrives for chips or unusual wear.

• Reattach the rear wheels, grab the spur gear and give one of the wheels a good spin. If you grit your teeth and cringe with every rotation, your differential is probably hammered; it's time for a rebuild.

• Check the spur gear for tiny rocks and debris. (XX-4 and Street Weapon owners can skip this step. Sealed drive trains rule.)

• If your vehicle uses a slipper clutch, you might want to remove the assembly and scuff the slipper pad. If the pad is shiny or glazed, carefully scrape the surface with a sharp hobby knife.



• If you have a car with an open drive train, such as a two-belt sedan, make sure you inspect all of the pulleys. Dirt often builds up in the pulleys, especially on the rear unit.

When scraping your slipper pad, be careful not to cut the pad.

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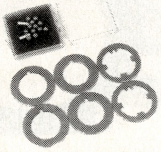

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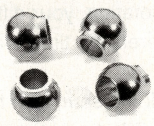

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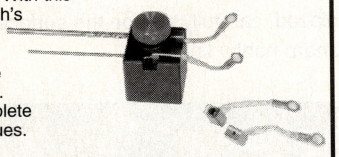
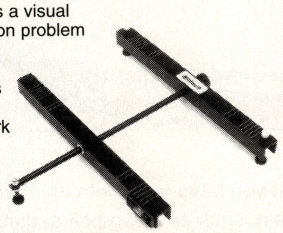


Precision Tweak Board
World famous adjusting tool. Capable of tweaking 1/12, 1/10 and 1/8 scale cars; offers 3 to 5 grams of sensitivity. The lightweight aluminum precision tweak board can be disassembled with one thumbscrew for easy storage; gives a visual method of evaluation problem areas in your suspension. Unlike other methods, it is completely visual, take the guesswork out of suspension adjustment. #3002 $74.95



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OTHER AREAS

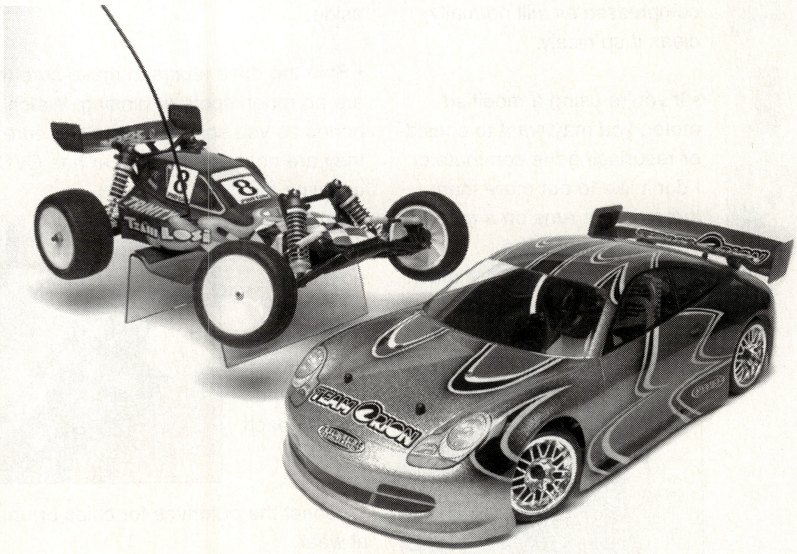
I like to start each race day with clean wheels and tires. (Some people prefer the "racy" look of dirt.) I use water with a few drops of Simple Green, to recondition the rubber. Make sure you never immerse the tire in water. This will kill the foams, and they will never be the same. To remove all traces of dirt and mud, a very light stream of water is always sufficient, with some help from a small brush. Make sure you remove the bearings from the wheels before you do this! Ensure that the vehicle's steering is smooth. Pop off the ball cup that attaches to the servo horn and move the front wheels back and forth. Examine the servo saver assembly, and make sure it isn't loose. Don't forget about your electronics! Brush them off with a small paint brush. Dirt can easily get inside of your receiver. Remove the crystal and the plugs from the unit, and open it. You may be shocked to see how many hidden treasures have lodged themselves inside your $80 receiver. Carefully remove them with a small brush or compressed air.



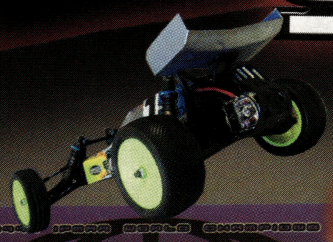


To Wrap Up...

A clean car is a fast car. If you perform regular maintenance, you have a far better chance of finishing a race. You might even take care of a problem before it sidelines you for the rest of the night. Cleanliness is a state of mind. If you had a horrible race day the last time you went out, wash away all of the malaise and disappointment and start over. A lot of racers get sucked into the "if I buy the latest part, I will go faster" mentality. The two most important aspects of going fast and winning are practice and maintenance. Ironically, these two ideas almost always cost the racer nothing but time.



Chrome Stock RS



Team Orion

Precision machined dual rotor armature







Team Orion introduces yet another powerhouse to it's arsenal of blistering fast electro magnetic motor's. The Chrome Stock RS! This "stock" motor's feature Dual Rotor armatures that are precision machined for maximum RPM & power, solder free flushmount capacitors, brush dampeners, high air flow can & endbell, extra large heat sinks, and newly redesigned race tuned brushes. This motor is anything but stock!



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"Speedy Drops Pro"
Our new comm drops are poised and ready to boost you and your motor into first place, without gumming up and dragging you down in the last portion of your race. part # 41700

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by HPI
eHobbies price: $144.99





◂ SKU# 1000-0605
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eHobbies price: $99.99

SKU# 1004-0511 ▸
MTX2 4WD Touring Car, w/ Out Engine
by MUGEN
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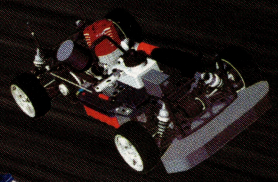



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by TEAM LOSI
eHobbies price: $199.99

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by TEAM LOSI
eHobbies price: $279.99





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eHobbies price: $279.99



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Volkswagen New Beetle R/C Car
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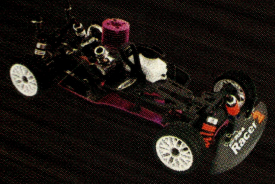
◂ SKU# 1000-1460
Nitro Mini 4WD w/ Civic Body
by HPI
eHobbies price: $194.99

SKU# 1000-1409 ▸
TC3 Racer R/C Car Kit
by ASSOCIATED
eHobbies price: $169.99





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Nitro Racer 2 R/C Car w/ Out Engine
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eHobbies price: $259.99

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Double-X 4WD Off-Road Buggy
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1003-0844	MIP 2.5 Hex Driver	$14.50
1003-0692	MIP CVD, RS4 Pro/ Nitro Wide	$32.00
1003-0639	MIP Shiny CVD's All Associated Team Trucks	$35.99
1002-5676	HPI Nitro Tuned Pipe and Header Set	$64.99
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HPI RS4 Nitro Aluminum Brake Kit



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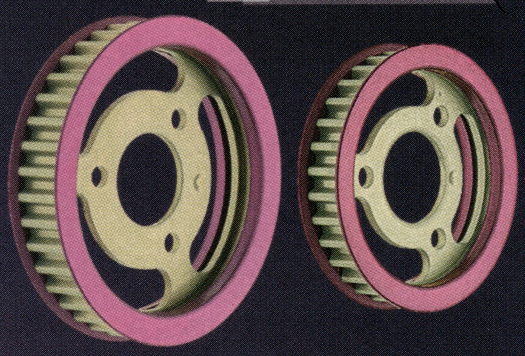
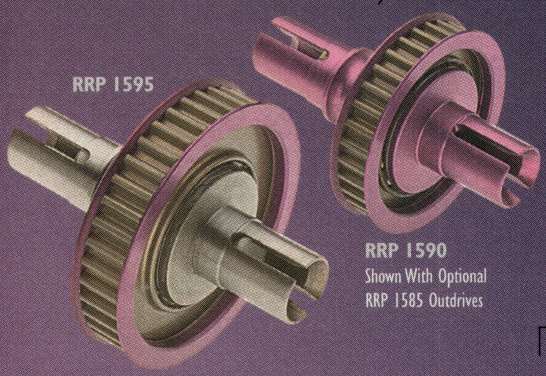
HPI RS4 Front One Way Diff Pulleys



Precision machined, hard anodized aluminum one way diff pulleys.
RRP 1540 fits HPI Nitro sedans. RRP 1529 fits HPI electric sedans.

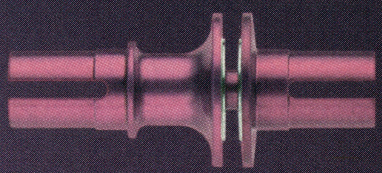
Performance from Precision

HPI RS4 Complete Ball Diff Units



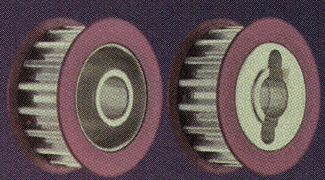
Hardened steel outdrives, ground and polished thrust washers, 2 5x8mm ball bearings, and aluminum pulley.
RRP 1590 for RS4 Electric, and RRP 1595 for RS4 Nitro

HPI RS4 / Pro / Pro2 / Nitro Lite Aluminum Outdrives



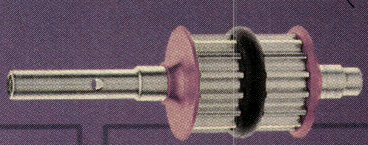
Purple anodized and 40% lighter than stock ball diff outdrives.
RRP 1585

HPI RS4 Nitro Small Drive Pulleys



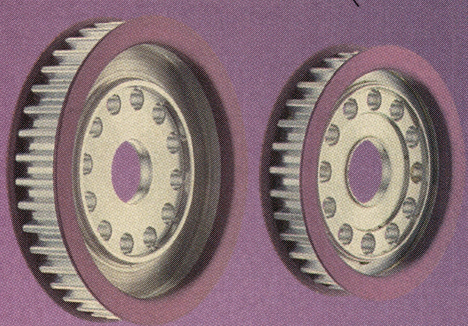
Drive pulleys sold in pairs. RRP 1538

HPI RS4 Top Shaft Pulley



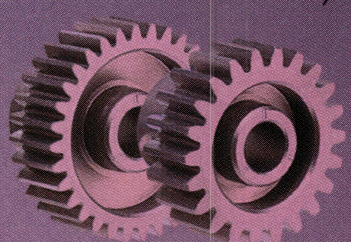
HPI RS4 Top Shaft Pulley: One piece pulley and shaft are precision cut and hard anodized. Purple anodized side flanges are pressed on.
RRP 1527

HPI RS4 Diff Pulleys



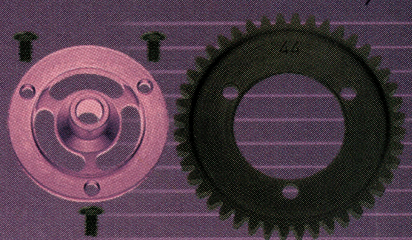
Precision machined, hard anodized aluminum diff pulleys. RRP 1539 fits HPI Nitro sedans. RRP 1528 fits HPI electric sedans.

HPI SuperLite Purple Aluminum Sedan Pinions



They're lightened, hard coated and precision cut.
Available in 48P in 16T thru 28T, and 64P in 24T thru 38T.
RRP 30XX (48P) and RRP 31XX (64P). Only $5.25

HPI RS4 Nitro Lightened Gear Adapter



This lightened gear adapter includes a machined nylon spur that is tougher than the stock gear and will last longer.
RRP 1535

An HPI RS4 Nitro 32 Pitch Conversion Kit is availble. RRP 1536

All performance accessories shown here were produced with precision CNC equipment. They're hard anodized where necessary, and color accents are added to help improve the looks of your machine. We spare no expense on the quality of the raw materials we use so that we can offer you only the finest in high performance drive train components. All RRP products are manufactured here in the USA.

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Trinity TRU-LATHE 2 PRO

There are literally thousands of tools floating around the R/C industry, but very few are as necessary as motor lathes. With the advent of rebuildable stock motors, no serious racer should be without a "Modified Style" lathe. But with so many different models and features, how do you select one for your needs?

Enter Trinity's Tru-Lathe 2 Pro. The Tru-Lathe 2 is Trinity's latest entry in the field, and it's packed with enough features to appease even the most dyed-in-the-wool comm cutters. Let's have a look.



Vital Info:
Trinity Products
36 Meridian Road
Edison, NJ 08820
732-635-1600
www.teamtrinity.com

Hits:
- Ball bearing V-blocks.
- Trick blue-anodized finish.
- Sweet carrying case.

Misses:
- No motor or wiring hardware.
- Relatively expensive.



The Last Word
If you're in the market for a motor lathe, you need to check out the Tru-Lathe 2 Pro. While it lacks a few features, it more than makes up for them with its performance and quality feel.

First Impressions

The most noticeable thing about the 2 Pro is the striking blue-anodized finish. The entire unit, except for the guide plates, is constructed of aluminum. Ball bearing V-blocks are utilized for a smoother, truer commutator cut. The Tru-Lathe 2 also allows you to adjust the tension of the drive motor. The components are pinned to the base plate for more accurate alignment. As with most motor lathes, the Trinity unit comes with a standard 1/4-inch carbide cutting tool. The lathe does not come with a drive motor or motor shims, but does feature a handful of thin metal shims to raise or lower the cutting tool. The entire unit is housed in a compact carrying case, which includes six plastic tubes for storing armatures, and two larger tubes for complete motors. It also includes a small bottle of cutting fluid.

Operation

Before you can begin using the lathe, you do have to finish assembling the unit. This consists of dropping four 3x6mm ball bearings into the V-blocks, and attaching your drive motor. I dug into my personal archive and found a shiny closed-end bell Mabuchi 540 motor. You can use a standard stock motor, but they spin at a much higher rate. Trinity recommends using less voltage (3.6 volts) if you drive your lathe with a stocker. I was a little disappointed that the lathe didn't come with any motor shims, which are absolutely necessary for operating the unit. A quick run to my local hobby shop netted me Trinity's bag o'shims (Part #: TK3004).

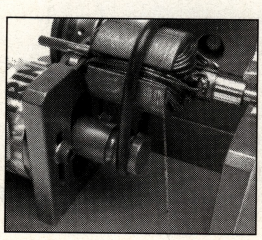
Once my guinea pig armature was shimmed and in place, I connected my 4-cell pack and began cutting. My spirits were dashed again when my search for an on/off switch proved fruitless. While on/off switches aren't standard fare on all lathes, they really should be. I regained my composure and began cutting. Sparing you the blow-by-blow of the cutting of my motors (I took off a thousandth of an inch and made another pass. etc...), I can tell you the Tru-Lathe 2 is a super-precision piece of equipment. There was very little play in the slide screws, and the commutator surface was mirror-perfect every time even with a carbide tip. Once I became more familiar with the lathe, my confidence grew, and I found myself looking for more motors to cut. The carbide cutting tool cuts flawlessly, but wears very quickly. According to Trinity's Mike Wood, the carbide tool should last long enough to cut around 20 motors before it needs to be re-sharpened or replaced. I highly recommend ordering the optional diamond bit cutting tool (RC4105). At around $80, they aren't cheap, but diamond bits will last a long, long time.

The Specifics:
Part #: 4111.
Estimated Street Price: $150

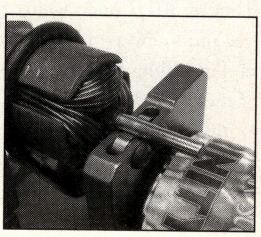
Manufactured in USA

Final Thoughts

The Trinity Tru-Lathe 2 Pro works as advertised, and delivers professional results. Its design is very efficient and user friendly. But like almost any product, it isn't perfect. With an asking price of $150, it sits near the top of the scale, but it lacks some key features that its competition has. If the whole package included a drive motor, an on/off switch, and a few motor shims, I'd rate it near-perfect. The included carrying case and plastic tubes sure are cool, though. In the final analysis, the lathe worked well. It is, after all, a tool. One that is going to see quite a bit of work as long as I have my hands on it.



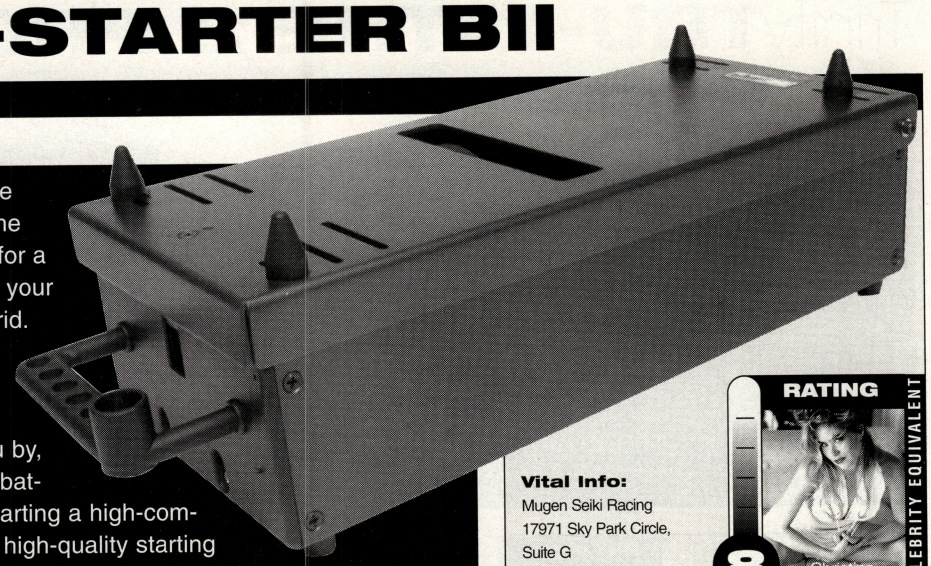
Drive O-ring tension is completely adjustable by moving the drive motor up or down.



The armature being cut rides on two roller bearings.

Nicole happens to be Josh Cryul's favorite babe.

Mugen PRO-STARTER BII



There's nothing quite like having the right tool for a given job. At the same time, there's nothing as frustrating for a nitro racer than the inability to start your car just before you're due on the grid. Pull-starters work fine for beginners, but are totally out of the question for hardcore racers. A hand-held bump starter will get you by, but who wants to lug around a car battery? (Have you ever tried bump starting a high-compression .21?) What you need is a high-quality starting box!

Mugen Seiki, the same company that brought you the MTX-2 and the MBX-4, introduces the Pro Starter BII. The BII is intended for use with 1/8-scale buggies and 1/10-scale touring cars with transverse-mounted engines. (That is sideways to you and me.) An in-line version is available for all other vehicles.

Vital Info:
Mugen Seiki Racing
17971 Sky Park Circle,
Suite G
Irvine, CA 92614
949-475-9505
www.mugenseiki.com

Hits:
- Enough torque to turn over any engine.
- Simple, efficient design.
- Cool purple-anodized finish.

Misses:
- Had to be shimmed to work properly (on BII)
- No 12-volt hook-up for use with a gel cell.

RATING

The Last Word
It takes a lot of torque to turn over the modern high-compression engines. The Mugen BII does it without breaking a sweat. Don't think twice about purchasing one of these trick starter boxes.

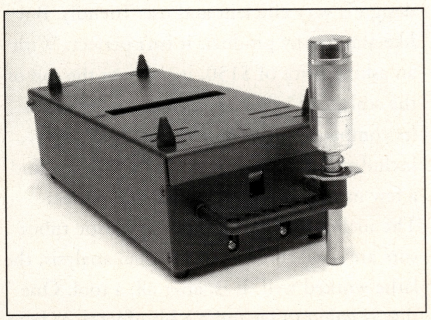
The Specifics:
Part #'s: B0230 (1/8 90º), B0220 (1/10, in-line)
Estimated Street Price: about $110
Manufactured in Japan

Features

The Pro Starter BII is a professional-quality unit. It can be set up to accommodate vehicles with both left- or right-hand motors. The case is made of purple-anodized aluminum and strong molded plastic material. Powering the rubber drive wheel are two closed-endbell 540-type motors. Each motor is assigned its own belt, and both belts turn a large rubber wheel. The switch is internal, and is activated by pressing on the rear half of the box once the vehicle is in place. The BII requires two 7.2 volt stick-type battery packs. Unlike some units, the BII does not have optional wiring for use with a 12-volt source, such as a compact gel cell. As with most starter boxes, four moveable locating pegs direct the vehicle's flywheel to the box's rubber wheel.

Assembly

The instruction manual is actually one large sheet of paper, with English text on one side and Japanese on the other side. There are plenty of exploded diagrams, but text is minimal to say the least. There is no fastener size chart to compare actual screws and washers with. Use caution when the instructions call for an "SL3x12" or an "SM3x12." (The difference being one has a countersunk head and the other has a button-head.) The rubber drive wheel actually rides on two ball bearings! Use your best No. 2 Phillips head screwdriver. This kit uses a lot of self-tapping screws. Before you install the drive unit, make sure its direction agrees with that of your vehicle. If you assemble the box for a left-hand motor vehicle and your car's motor is on the right side, you'll have to disassemble the whole unit. The tension on the two belts is adjustable. I recommend setting the belts to a tension similar to a two-belt touring car; not as tight as a piano wire, but not flapping in the breeze. This will allow the starter box to work at its maximum efficiency (and give your killer Piranha packs incredible run time).



The sturdy plastic handle also has a built-in glow igniter holster. Too cool.

Testing

For testing the Pro Starter BII, I once again dug into my archives and found two 1500 mAh Piranha packs. I'm willing to bet most racers have a few of these lying around. I hooked them up to my BC112 and Power-Flexed the hell out of them. Once they were done cooking, I strapped them into the box and tested the motors. Wow! I never knew that two 540 motors could make such a racket!

I decided to skip right over the 1/10-scale testing and went right for the bigger challenge – my freshly-built Mugen MBX-4 with its super high-compression Omega .21. I began lining up the locating pegs with the engine's flywheel. I had to open and close the lid on the starter box a few times, but success only took a few minutes.

I threw my glow igniter on the glow plug and went for it. Nothing. The rubber wheel on the starter box was going a million miles per hour, but the engine wasn't turning over. I turned the car over, and examined the flywheel. The flywheel is about 1/8 inch up inside the chassis, and the rubber wheel on the box didn't appear to be hitting the flywheel. I tried moving the locating pegs a few times, but with no luck.

continued on page 74

"Don't get me started."

Orion/Peak TOP REBUILDABLE STOCK MOTOR

A year ago Team Orion and Peak teamed up to produce a new modified motor from the ground up. At the time the new motor tear down introduced some new innovative features including surface mounted capacitors. A feature that has since been copied by other manufacturers. Although it took a lot longer than we had hoped, we've finally landed our hands on the rebuildable stock version of the 4WD World Championship winning motor. The new motor was co developed by Orion and Peak and hails a long list of features. Let's put it to the test.



Vital Info:
Made by Peak & Orion
Peak - 714.692.8533
714.692.8534 fax
www.peakmotors.com
Orion - 714.694.2812
714.694.2815 fax
www.team-orion.com

Hits:
- Plenty of down low grunt.
- Lots of top speed.
- Surface mounted capacitors.
- Aftre about ten runs, still runs strong.



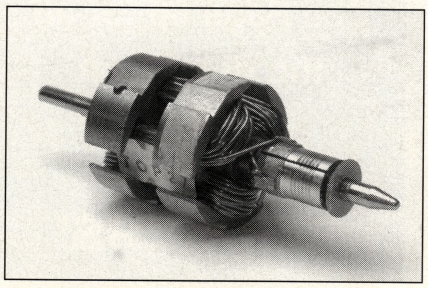
Misses:
- Should have been out eight months ago.
- Not very tamper proof.

The Last Word
The Spitfire/Chrome RS is an excellent performing stock motor with enough power for anyone's racing demands.

The Specifics:
Part #: Various
MSRP: $40,
ESP: $35-$40
Manufactured in USA of some Japanese components

What It's For

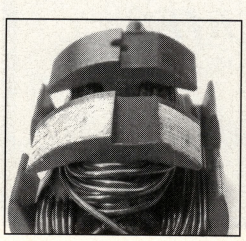
The Spitfire/Chrome RS is a 27-Turn rebuildable stock motor made to ROAR and NORRCA Specs. It's intended purpose is for use in organized racing, but can be used for just about any purpose. The fact that the Spitfire/Chrome RS is rebuildable means that the motor can be easily opened for armature replacement, bushing replacement, or comm cutting. This ability greatly reduces the cost of racing compared to a closed endbell motor that might require you to pick up a entirely new motor.



What it's got

The Spitfire/Chrome RS comes with a number of features;

- **Wet Magnets.** The latest wet magnets come standard on the Spitfire/Chrome RS. These magnets are designed to stay stronger longer, even under high temperature stress.
- **Cool Running Can and Endbell design.** The can and endbell are both vented to allow for airflow to cool the motor while in use.
- **Surface Mounted Capacitors.** The first TOP motor was the first to use surface mounted capacitors. The Spitfire/Chrome RS comes standard with two surface mounted capacitors installed.
- **Double Stack Tapered Armature,** to reduce rotating mass the armature features a two rotor design. The armature poles have been ground down in Paradox'esque fashion. The idea is to give the motor more power.
- **Brush heatsinks.** Color coded brush heat sinks help to keep the brushes and endbell cool.
- **To Dyno or not to Dyno.** Both Peak and Orion offer the Spitfire/Chrome RS in either a bare bones model or in a dyno tuned version. The dyno tuned versions come with blue printed with better springs and brushes installed, along with a dyno sheet.



The armature meets all of the legal specs and features a machine ground taper on each stack.

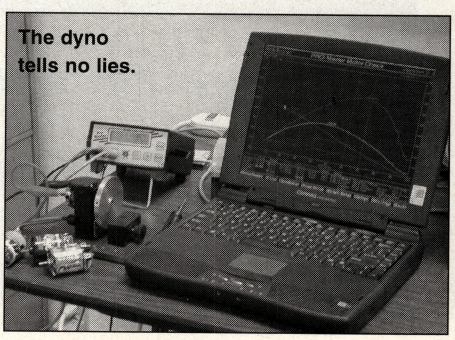
- **Tamper proofing.** The Spitfire/Chrome RS isn't the most tamper resistant motor. It does meet the rules, but there's only one small molded tab on the endbell preventing the motor timing to be advanced. This could be looked at as a selling point depending on your ethics. The motor features all of the ROAR and NORRCA specs, extended tapered shaft, and labeled armature.

Available

Peak and Team Orion both offer their own versions of the same teardown. Peak sells their version as the Spitfire while Team Orion brands their's the Chrome RS. Both motors are available in standard and Dyno tuned versions. Both companies have strong distribution networks and should be available in hobby shops around the country.

Testing

To test the Spitfire/Chrome RS I first wired



The dyno tells no lies.

Look for a rebuildable motor Buyers' Guide in the near future.

the motors up to our Robotronics Pro-Master Dyno and Laptop. Consistently we were very impressed by the numbers on the computer. Both the Dyno and non-dyno'd (although the Dyno'd motors were much stronger) motors were strong in the average power and max RPM departments and stout in all of the other readings. In comparison to other rebuildables we've tested the Spitfire/Chrome RS was on par with anything we've come across.

Once the dyno had spoken it was time to hit the track. We strapped the Spitfire into an Associated T3 geared with a 23 tooth pinion and an 87 tooth spur and headed to the track. On the track the motor was very punchy. Coming out of the corners the truck accelerated hard. Top speed was also very strong. After 5 minutes on the track with RC2000 cells the motor was hot, but not blistering. I played with the gearing the next couple of runs, but settled back on the 23 tooth pinion given the track conditions. The next test came in our HPI RS4 Sport 2 touring car. Once the motor was bolted into the car it was time take it for a spin. I geared the motor with a 28 tooth pinion and an 87 tooth spur (48-pitch). Off the line the car was very quick and smooth through the motor's power band. Top speed was very fast with the stock gearing. Through about four battery packs the motor was hot once again, but within a safe range.

In the end

On the track and on the bench the Spitfire/Chrome RS is a definite winner. Its got a strong powerband with enough punch down low for off-road truck and touring car. The Worlds winning TOP design is a solid platform for a stock motor. Why it took so long to get to market I don't know. Both Peak and Orion showed prototypes at the Chicago Show last year. Oh'well, on track performance proves that it was worth the wait.

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#7439 Alfa Romeo GTV (200mm)

CIVIC COUPE Si
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CELICA
#7440 Toyota Celica (200mm)

ALTEZZA
NEW! #7346 Toyota Altezza Netz Castrol (190mm)
#7315 Lexus IS 200 / Toyota Altezza (190mm)

Mercedes-Benz AMG
#7443 Mercedes-Benz AMG S-Class (200mm)

Silvia
#7341 Nissan Silvia (S15) (190mm)

NISSAN GT R SKYLINE
NEW! #7327 Nissan Skyline R34 GT-R (190mm)
#7427 Nissan Skyline R34 GT-R (200mm)

NEW 200mm!

Stratus
#7416 Dodge Stratus (200mm)
#7316 Dodge Stratus (190mm)

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NISSAN GT R SKYLINE
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BMW
#7512 BMW V12 LMR (WB 280mm)



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Orion DECAL MASKS

These decal sheets will make your ride look HOT!

While thumbing through a copy of *Xtreme*, you spot a number of the top drivers' killer paint jobs. You find one you like and attempt to replicate it on the new Lexan canvas you just picked up at the hobby shop. After hours of masking and pulling out the air brush you haven't touched since you first bought it, you take a gander at your new masterpiece. Instead of looking like Scott Hughes' B3 or Brian Kinwald's XXX-T, your new paint job looks a little more like steamy piece of modern art – abstract modern art at that.

Team Orion realized how frustrating this problem can be and has introduced a complete line of Thunder Designs Decal Masks. The Decal Masks are designed by Thunder Wessels. Thunder is Team Orion's main graphics man, and he is the painter for about half of the top pros in the world.

Vital Info:
Team Orion
22601 La Palma Ste 103
Yorba Linda, CA 92887
714-694-2812
www.team-orion.com

Hits:
- They look good.
- Easy to use with Thunder's tips.
- Reasonably priced.
- Allows us non-artistic types to paint a killer body.



Misses:
- The instructions that they come with are shallow.
- Tricky when working around sharp body contours.

What Are They?

The Paint Decal Masks are silk-screened, die-cut, vinyl decals that are applied from the inside of the body. The printed design shows through to the outside of the body. When accompanied with some paint, these decals give that intricate airbrushed look. Many of the designs feature that pro-style look. Each design is available in five different colors. Since each design is die-cut, no cutting or trimming is necessary.

What Are They Made For?

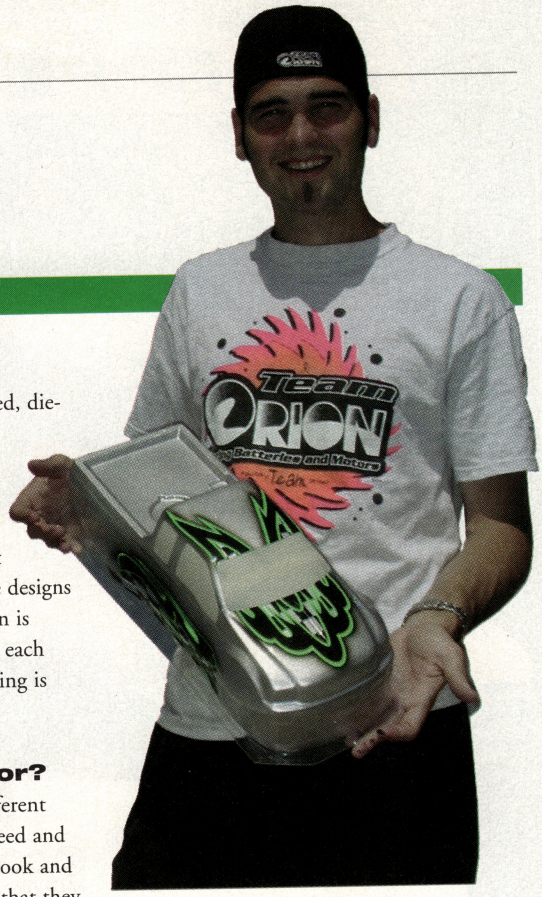
Currently Team Orion offers four different designs. Two of the designs (Light Speed and Speed Streaks) feature that pro-racer look and are broken down into small pieces so that they can easily be placed on just about any body, including off-road buggies and trucks. The two other designs are a little more contemporary and are made for larger plane bodies (for those of you who didn't pay attention in geometry class, they are bodies that have large flat spots) like sedans, oval bodies, and trucks.

What Do They Look Like and How Much Do They Cost?

The four different designs and five different colors give you quite a few options. I especially like the Light Speed and Speed Streaks designs. The Main Event design is cool, but the Spit Fire design isn't quite my taste. Each sheet retails for $10. Since there's nothing else like them on the market, you can't really say that the price is competitive, but it is definitely is reasonable. What would you pay for a sweet looking body?

The Specifics:
Part #'s: Various.
Suggested Retail Price: $10

Manufactured in USA.



How Well Do They Work?

The decals come with some basic instructions. By simply following the directions as indicated, the results were sometimes disappointing. Bubbles and wrinkles were not uncommon on some of our test bodies. But, when following additional directions we picked up from Thunder himself, we were thoroughly impressed with the results. The only area of difficulty is on bodies with lots of curves or counters.

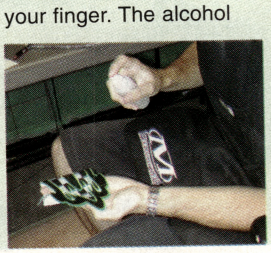


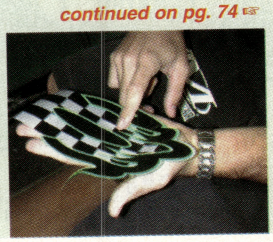
Each design is available in one of five different color combinations.

Application Tips From Thunder

1. After removing each decal from the decal sheet, pour some rubbing alcohol into a spray bottle. Spray a small amount of rubbing alcohol onto the sticky side of the decal. Only use a small amount and rub the alcohol around on the decal using your finger. The alcohol will keep the decal from strongly adhering to

continued on pg. 74 ☞





These decals have graced three of our covers. They're just so damn easy to use.

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continued from pg. 72

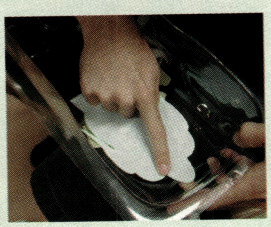
the body until you're ready to put the decal in place. **DON'T USE DENATURED ALCOHOL; ONLY USE RUBBING OR ISOPROPYL ALCOHOL.**

2. For large decals, fold the decal slightly like a taco to keep the decal from folding down on itself.

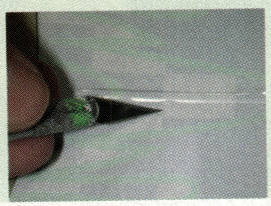


3. With the alcohol on the decal, you'll be able to lift the decal easily in case you have to reposition the decal before final placement.

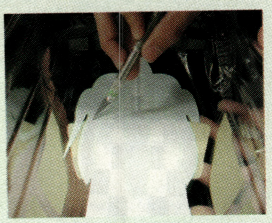
4. Once you have the decal in place, start from the center of the decal and use your finger to rub out any bubbles that might be underneath the decal.



5. For bubbles that are hard to press out, use a sharp hobby knife to pierce a small hole. Then press the air out through the new hole.



6. If the edge of the decal goes over a window mask or other part of the body that's masked off, now is the time to cut the decal. Cut the decal now instead of waiting until after the paint's down. You won't be able to see exactly where the cut needs to be if you cover it with paint.



7. Once the decals are right where you want them and are without bubbles, it's time to lay down the paint.

For how-to video go to www.xtremerc.com

When I used the Speed Streaks design on a Pro-Line RC10GT body, I ran into some problems working around the hood scoop. I would have liked the material to be a little more pliable, but that might distort the printed image. Thanks to these decals and a can or two of your favorite colors, you'll get a pretty good looking body. If you have an airbrush handy, you can trim the edges of the mask with a light shadow that really gives a finished look.

The Verdict

The Thunder Designs Decals are unique, easy-to-use, look good, and are reasonably priced. My only complaint is that the instructions that come with each decal sheet are inadequate. After using the tips we've included in this article our results were consistently pleasing. These decal sheets are perfect for anyone who wants that pro-look, but doesn't have the skills to do it the hard way or want to pay somebody big cash to do it. With more designs promised, Team Orion has created a strong product line.

Mugen Pro-Starter BII
continued from pg. 68

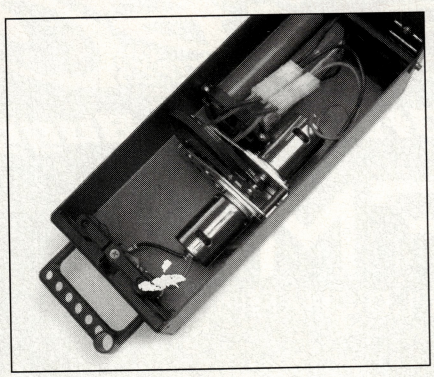
I decided the whole drive assembly inside the box needed to be shimmed up to raise the rubber wheel. Another trip to the parts bin netted a handful of HPI internal shock limiters. I sandwiched the limiters between the inside of the box and the base of the drive assembly. Once everything was back together, I was ready for another attempt.

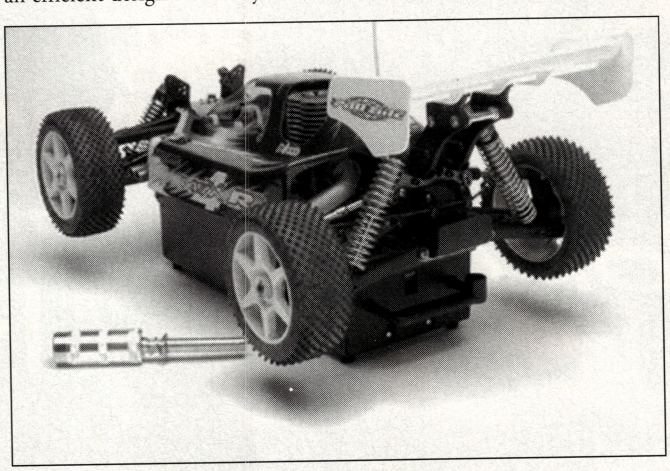
Success! This time, the engine turned over right away and came to life. This quick fix raised the rubber wheel enough that it contacted the flywheel perfectly. The Pro Starter BII is efficient enough that if both batteries are fully-charged, it should have plenty of power and run time to start your car during an entire day of racing. After using the box a few times, bringing the big Omega .21 to life became old hat.

Just for kicks and grins, I decided to discharge the batteries using my Deans rig. I expected the lights to stay on for maybe 60 seconds, having used the box all day. To my shock, both packs discharged for about three minutes at 20amps before the Black Box cut them off!

Conclusion

The Mugen Pro Starter BII flat out works. It's an efficient design that easily turns over even the highest compression "big block" engines. I was a little disappointed that I had to shim the motor assembly to get the box to work properly on my 1/8-scale buggy. In fact, Mugen recommends using the BII in the MBX-4RR's instruction manual! The box is compact, well-designed, and should stand up to years of use and abuse. If you have a nitro monster with a transverse-mounted mill, do not pass up the Pro Starter BII.





Far Left: **The dual Mabuchi motors coupled with two 7.2V batteries produce more than enough power to start even the most high compression engine.**
Left: **Our test box started all of our test cars perfectly.**

Just think how quickly you could start your car with a couple of 9-turns.

1/10 SCALE
GAS POWERED 4WD TOURING CAR

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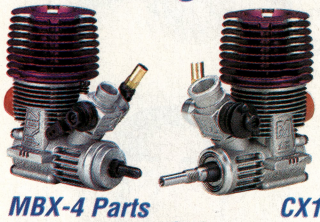
- Adjustable Rear Bump Stop/Rebound Stop
- Adjustable the angle of Front/Rear Damper
- Adjustable Camber/Toe/Caster angle (only Front)
- Full-Bearing



■Technical Date■

- Length……380mm
- Width……198mm
- Wheel Base……260mm
- Tread(F/R)……172mm/172mm
- F.caster Angle……6.2°~14°
- Gear Ratio……1st 7.421:1/2nd5.717:1
- Weight……1,640g

MT12 Engine (Rear Exhaust)



MT12S1 SG-Shaft, Slide Carb.

MT12R2 STD-Shaft, Rotary Carb.

MT12S2 STD-Shaft, Slide Carb.

Cubic Capacity：2.1c.c. Bore ：13.80m/m
Power：1.15HP Weight：215g
Rpm ：36.500rpm Shaft ：φ11m/m
Stroke：14.00m/m

MBX-4 Parts



C0179
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PRIME12/MTX-2 BODY 200mm



K1001 CASTROL TOYOTA TOM'S SUPRA GT BODY



K1005 MERCEDES BENZ CLK-GTR BODY



K1008 TOYOTA COROLLA WRC BODY



K1014 PEUGEOT 406 STW BODY



K1010 SUBARU IMPREZA WRC BODY



K1016 TAKATA DOME MUGEN NSX BODY



K1012 MITSUBISHI LANCER EVOLUTION V WRC BODY



K1018 DODGE RAM TRUCK BODY

The Best Get Warmed Up in Japan



Easton & car



Hirosaka & car



Baker & car


The Winners

Just weeks ago, the world's best 1/10-scale, 1/12-scale, and touring car racers packed up their stuff and headed for Yatabe Arena in Tsukuba City, Japan. The drivers came to size each other up for this year's upcoming on-road worlds. Nine American's made the trip, but only two managed to make it into the A-main in the TC class. Barry Baker finished in second place overall right behind overall A-Main winner, Masami Hirosaka. Billy Easton managed to make the A-main, but finished in tenth place.

After this warm-up race, it looks like Masami Hirosaka remains on top as the odds-on favorite for the championship. But, we shouldn't discount Barry Baker who has been on a tear lately, winning the Reedy Touring Car Race, the ROAR On-Road Nats, and finishing a strong second behind Masami here in Japan. Team Losi drivers were sporting early production prototypes of their upcoming, unnamed Street Weapon replacement.

How The Americans Did:

A-Main
2nd Barry Baker
10th Billy Easton

B-Main
4th Jon Orr
9th Chris Tosolini

C-Main
2nd Cliff Lett
8th Scott Hughes

D-Main
4th Gil Losi, Jr.
9th Josh Cyrul

Jukka Steenari was their highest-placed finisher; he was tenth in the B-Main. The R&D team at Team Losi has about two months to continue testing and development on their new sedan until the buzzer sounds at the World's. Given their proven track record, we're sure they'll field a competitive rig.

Tune in to Xtreme On-Line – www.xtremerc.com – from September 14th thru the 17th for on-line coverage of the touring car portion of this year's Worlds.

Mark Pavidis Goes Kyosho In 1/8-Scale

Just a week before the ROAR Off-Road Gas Nationals in Sterling Missouri, Mark Pavidis made the switch from running his Mugen MBX4-RR to running Kyosho's new prototype MP-7.5. Mark will be running his new Kyosho at the IFMAR Off-Road Gas Worlds in Las Vegas later this year.

David Spashett Makes a Move in Touring Car

Current 1/10- and 1/12-scale World Champion David Spashett has made the switch from driving for Team Losi to driving for Yokomo when it comes to touring car. David will be piloting a Trinity-powered Yokomo touring car (MR4-TC Pro presumably) later this year at Yatabe Arena in Japan.

News Flash!





Brian Kinwald has won the ROAR Off-Road Gas 1/8-scale Nationals in Sterling Missouri. Brian was running one of Kyosho's new MP-7.5's. Of seven MP-7.5's that made the trip, five managed to make the A-main. In the truck class Richard Saxton walked away with the win with his Associated Factory Team RC10GT. Richard also picked up the 1/8-scale truck win using a Megatech engine. Richard's looking to pick up 10 G's from Megatech thanks to their open contingency offer. The weekend was filled with controversy. For the whole story check out next month's issue of *Xtreme R/C Cars*.

Typically the musical chairs are played after the Worlds.


REAL RACING
DRIVER: RICK HOHWART
OCCUPATION: PRESIDENT, PEAK PERFORMANCE
WIFE'S LICENSE PLATE: RC WIDOW
RADIO: FUTABA 3PJ
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SEVEN RADIOS UNDER 220 BUCKS • SEVEN RADIOS UNDER 220 BUCKS • SEVEN RADIOS UNDER 220 BUCKS • SEVEN RADIO

BUDGET

There comes a point in your R/C life when just one more radio glitch will be the glitch that sends you over the edge. Frustration racks your brain as you turn the wheel of your radio to your left and your car proceeds to make a hard right-hand turn. At this point in time, your first AM radio has served its purpose, but it's time to let go and move on.

You run down to the local hobby shop. The first FM radio you happen to pick up looks like the one. It's got that huge laptop display screen and lots of shiny buttons; it's everything you could ever want in a radio. That is until you get a gander at the little neon $400 price tag dangling from the antenna – the mere sight of which sits you down quickly and brings you back to earth. Don't fret. In your rush to gawk at the top-of-the-line FM radio, you glanced over an entire crop of radios that just might fit your needs. We came across seven different radios that offer FM performance and reliability, a wide realm of features, and are all available at your local hobby shop for less than 220 bones.

How We Rated Them

Along with descriptions of each radio and the packages they're sold in, our rating system is broken down in to four important fields: Quality, Features, Comfort, and Value.

- **Quality:** This indicates the overall feel, look, and operation of the radio; how solid and responsive the trigger and the steering wheel feel; if there's play or slop in the antenna connection.
- **Features:** This is purely the number of distinguishable features a radio possesses. The more features, the higher the number.
- **Comfort:** This is the only area that's a little subjective. We passed each radio around to four of us here at the office. Each of us put in our two cents in regards to feel. The rating given is our office's total average.
- **Value:** This tells how much bang you get for the buck. A radio with few features might be given a high mark in this category if the cost of the radio is low, whereas the most expensive radio might also get a high rating if carries along enough features. This rating is a relative rating dependent on all the other categories.
- The numbers used in each rating correspond to the following descriptions:

1= poor, **2**= adequate, **3**= good
4= very good, **5**= outstanding.

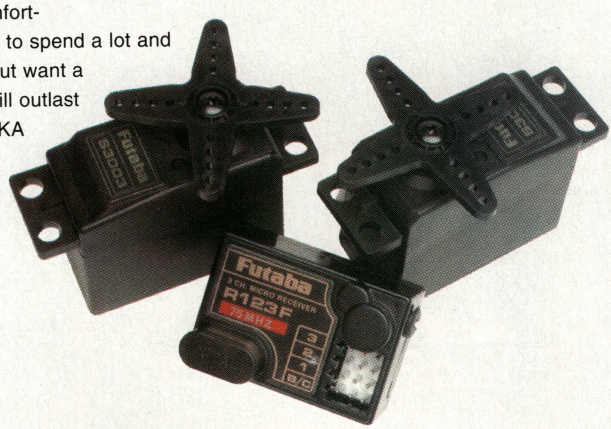
Futaba 2PEKA

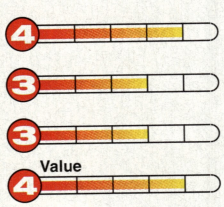
The 2PEKA, aka Magnum Junior FM, is Futaba's least expensive FM Radio. The 2PEKA offers some basic functions that will fit most racers' and gas drivers' needs. All of the adjustments and trim settings are analog. Throttle and steering trim are easily adjustable thanks to large knobs just in front of the steering wheel. Steering dual rate is adjusted via a thumb dial at the top of the grip handle. Throttle ATV (EPA) and servo reversing are accessible under a translucent smoked trim panel cover. Simple LEDs indicate battery level.

The real jewel with the 2PEKA system is Futaba's R123F receiver. The 3-channel filtered FM R123F receiver is a very high-quality receiver that when sold separately sells for a 60% of the total cost of the 2PEKA system. Also included with this system are two Futaba S3003 servos that deliver respectable stats for a standard servo. Mounting hardware, horns, a switch, and a battery holder are also included.

The 2PEKA is very simple to use and operate. The adjustments are quick and easy to locate. The grip has a comfortable feel. The eight AA batteries mount at the base of the radio, and this mounting location gives the radio a comfortable feel. If you're not looking to spend a lot and don't need a lot of features, but want a nice, high-quality radio that will outlast any car you put it in, the 2PEKA is a solid choice.





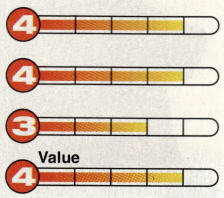


Let's think of some other things that $220 can buy you...

FM RADIO GUIDE



Buyer's Guide FM JR Racing XR3



The XR3 is an FM, 3-channel version of JR Racing's popular XR2 radio. The XR3 uses completely digital trim. This is handy so that you don't accidentally move a trim adjustment when the radio is off. The XR3 has all the basic racing adjustments along with a few notable features including: Three model memory, assignable levers, throttle and steering EPA, and lithium memory back-up.

The XR3 comes with JR's R-133 3-channel FM receiver. The receiver features JR's ABC&W interference technology, which narrows the range of acceptable reception. The XR3 also comes with two Z250 servos, mounting hardware, horns, a 4-cell battery holder, and switch harness.



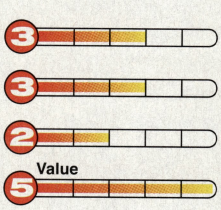
The XR3's grip isn't the most comfortable. The handle has a square feeling. The weight distribution on the radio is comfortable, and the controls are easy to access. The membrane that covers many of the menu buttons protects the radio from fuel spills and other debris, but doesn't provide the most sensitive feel. You sometimes have to push very hard on the buttons for them to register. Navigating through the adjustment menus is easy. The large display screen to read even at the most obscure angle. As far as price goes, the XR3 is the least expensive digital radio in the bunch making it a great first computer radio choice.

Buyer's Guide FM Hitec Lynx FM

The Lynx FM from Hitec is the low-price champ. It comes in as the least expensive FM radio in the bunch. The Lynx FM doesn't pack a lot of features; it just stocks the bare essentials. The Lynx FM features steering and throttle trim, steering dual rate, steering and throttle reversing, throttle end-point, and steering dual rate override. The steering dual rate override allows the radio to have full steering through at the push of a button. The trim adjustments on the Lynx FM have a wobbly feel, but are accessible and accurate. A small adjustment tool (i.e., a small Phillips head screw driver) is needed to adjust the throttle end points, and one does not come with the radio.

The Lynx FM comes with the standard fare: a 3-channel HFS-03MC FM receiver (the transmitter is 2-channel), one HS-300BB ball bearing servo, servo horns, mounting hardware, a battery harness, and switch.

When you put the Lynx in your hand the first thing you'll notice is a tight and crowded feel. The trigger and handle are designed for small hands and will feel awkward to many. Once on the road, the Lynx FM feels as solid and sure as any thanks to glitch-free operation. If you don't need a lot of features, don't want to spend a lot of money, and want the glitch-free operation that comes with an FM radio, the Lynx FM is it. The comfort in your hands will be overlooked thanks to the comfort in your wallet.



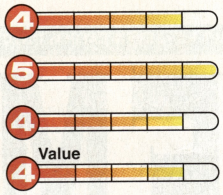




...A new DVD player and your very own copy of Barbwire...



Buyer's Guide FM Lynx 3D



The Lynx 3D is Hitec's top-of-the-line three-channel radio. The 3D transmitter boasts the greatest number of features out of all of the radios we tested for this guide. The 3D uses a large screen digital interface for making just about every adjustment. Along with all the features you'd expect from a digital radio, the 3D packs two separate dual rate modes, ten model memory, ABS brakes, idle up, timer, a removable frequency module, and direct servo control via a DSC cable.

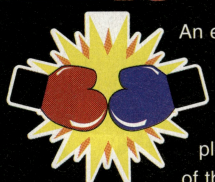
The Lynx 3D is available from Hitec in a number of configurations. Two configurations made our price point. The first comes with rechargeable Ni-Cad batteries along with a charger, Hitec's top-of-the-line DCX Dual Conversion receiver, and DSC cable. The other configuration comes without the Ni-Cads and comes with a standard three-channel HFS-03MC FM receiver. Neither configuration comes with servos or servo mounting gear. Thanks to the removable frequency module, the 3D accepts Hitec's optional Spectra frequency synthesizer.

Once the 3D is in your hands you can quickly feel comfort and quality. A couple of the toggle switches wobble a bit when moved, but aside from that the radio has a solid, sturdy feel. The lowered steering wheel adds to the complete comfort package. Moving around the digital interface takes a lot of getting used to thanks to lots of abbreviation. Even after a couple of days with the radio, some of us (we'll leave names out of this) were constantly referring back to the instruction manual. The DCX receiver is a very nice touch and adds to the top-of-the-line theme. Both models are near the top of our price range, and do keep in mind that neither comes with servos. But, the Lynx 3D packs just about all the features you'd find on some competitors' top-of-the-line models at a hundred to two hundred dollars more.





F.M. - VS - A.M.



An entire article can be written on the differences between AM and FM. I'll try to simplify so you get the gist of things. What do AM and FM mean? AM stands for Amplitude Modulation and FM stands for Frequency Modulation. An AM radio modulates the amplitude of the radio signal. An FM radio modulates the frequency of the radio signal. For the sake of this analogy let's equate a radio signal to sound. When you transmit with an AM transmitter and turn the wheel, the amplitude of the signal fluctuates slightly within the given frequency. This would be like adjusting the volume if your transmitter was emitting a constant audible tone. With an FM radio, changing the direction of the steering wheel will change the frequency that the transmitter is emitting. In terms of sound, it would be like having two distinct tones or notes coming from your transmitter. If somebody was listening to the sounds coming from your transmitter (just as your car's receiver does), they could decipher any type of code you were sending them by either the change in volume (AM) or the change in tone (FM).

Any FM radio will modulate its exact frequency – 20KHz – in order to transmit the input you dial into the radio. To transmit a clear signal the transmitter must run the signal trough different types of filters to keep within that 20KHz range. On the receiving end, FM receivers will not accept signals outside of that 20KHz range as specified by the installed crystal frequency. By its nature, an AM receiver will pick up RF noise much easier than an FM receiver thanks to bleed over from other frequencies. That is why FM radios and receivers provide a clearer, more glitch resistant signal.

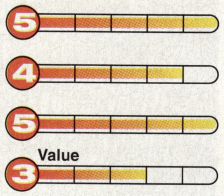
...A front and rear brake job on your '93 Honda Civic...

GLOSSARY
Of Radio Terms

- **ABS (Anti-Lock Braking System):** On digital radios, ABS does the same thing as ABS on full-size cars. The ABS pulsates the brake input going to the throttle servo or ESC.
- **Adjustable wheel tension:** An adjustment that allows the user to adjust the amount of resistance to the left and right from the steering wheel.
- **Battery Alarm:** When the radio's battery voltage reaches a certain low level, the radio will produce an audible tone to warn that new batteries are needed.
- **Channels:** This is not like the channel on a television set. In R/C, channels indicate the number of functions. Throttle control requires one channel. Steering control requires a second channel. Most R/C car radios are two-channel radios. Some three-channel radios feature a third channel for an auxiliary purpose like shifting into reverse on a vehicle like the T-Maxx.
- **Charging Jack:** Allows direct input from a Ni-Cad charger without requiring the batteries to be removed from the radio.
- **Direct Servo Control:** DSC is a direct connection between the transmitter and the receiver that allows trim adjustment and operation without transmitting a frequency over the air. Perfect for making adjustments in the pits at a race track without needing frequency clearance.
- **Endpoint Adjustment (EPA):** Allows the user to adjust a particular servos range depending on whether you're adjusting throttle EPA or steering EPA. Typically you can adjust the left-hand throw of the servo independent to the right-hand throw. Example: You can set the throttle servo on a gas car so that you have 45° of forward travel and only 25° of brake travel. Very useful for gas cars.
- **Exponential (EXP):** Exponential adjusts the ratio curve of servo movement to radio input. The curve can be either linear or non-linear. A higher EXP value will make the initial movement from neutral more sensitive and reduce sensitivity near the end of the servo's range. A lower EXP will do just the opposite, and make the servo less sensitive near neutral and more sensitive near the end of the servo's range.

cont'd

Buyer's Guide FM Futaba 3PDF



The 3PDF is Futaba's entry-level, three-channel radio with a digital interface. The 3PDF features all of the essential adjustments needed for any type of racing. Along with a number of essential adjustments and features you'd expect, the 3PDF also features three-model memory, steering exponential, throttle exponential, model naming, lever function selecting, and digital trim.

The 3PDF comes with a R113F 3 channel FM receiver. The R113F isn't Futaba's latest and greatest receiver, but it's more than adequate. Two S3003 servos, mounting gear, servo horns, a 4-cell battery holder, and switch are also included.

The 3PDF uses the same basic body as Futaba's top-of-the-line 3PJS. The trim LCD interface is small and easy to navigate with four selection buttons. Learning to navigate through the adjustment menus only takes a few minutes. Trims flank all four sides of the steering wheel and are pretty easy to access.

The 3PDF has a very comfortable feel. A rubber grip on the handle gives the grip a large handful feel. The foam grip on the steering wheel has a tendency to move towards the radio body after a few minutes of use; the grip needs to be secured with some contact cement or glue. The 3PDF doesn't use an RF module, and is dedicated to either 27 or 75 MHz; a removable module would be nice. The 3DPF pushes the limit at the top of our $220 price point, but quality, comfort, and features make it a strong contender, and places it at the top of our list for any racer.



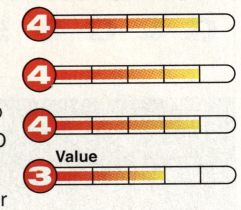


...A circa 1984 stand-up, coin-up Zaxxon machine...

GLOSSARY
Of Radio Terms Cont'd.

- **Left-Hand Ability:** Allows left-handed drivers to reconfigure the transmitter so that steering is operated with the left hand and throttle is operated with the right hand.
- **Model Memory:** Allows the user to set up the radio to more than one vehicle without having to reset all of the trims each time.
- **Ni-Cads:** Some radios can suck down the Alkalines like college seniors at a frat party. Ni-Cad batteries can be recharged over and over again without needing replacement.
- **Programmable Controls:** Most digital radios allow you to customize your radio and place certain adjustments on whichever trim levers you desire.
- **Removable RF Module:** Allows you to choose between 27 or 75 MHz band without having to purchase a new radio. The module is all that needs to be replaced.
- **Servo Reversing:** Reverses the movement of a servo without requiring servo removal. Reversing a servo from the radio will cause left-hand input on the steering wheel turn the steering servo to move the car's tires and wheels to either the left or the right depending on the reverse or normal operation indicated on the radio.
- **Steering Dual Rate:** Allows the user to increase the steering servo's total range proportionately to the left and to the right. On digital radios, this is indicated by a percentage. Steering dual rate is a quick and easy adjustment that allows you to quickly "Dial In or Out" steering.
- **Subtrim:** Allows very fine adjustments to accurately center the servo. Typically available for both the throttle and steering channels.
- **Throttle Trigger Adjustment:** Like the steering adjustment, this allows the throttle tension to be adjusted to the user's liking.

Buyer's Guide FM KO Propo EX-11



The EX-11 Presto is KO's entry-level digital radio. It packs a lot of features, some of which sport some very fancy names (e.g., Traction Control, Steering-Response System), but they basically boil down to throttle and steering exponential. The digital interface is a small LCD screen with four-button navigation. The four buttons are protected by a plastic membrane, but are easy to feel when depressed. The other trims are digital to prevent accidental adjustment when not in use. The Presto packs lots of features including 3-model memory, ABS, and expandability up to four channels.

The EX-11 Presto comes in one basic configuration: radio, receiver, and that's it. The receiver is a 2-channel FM receiver.

The EX-11 Presto has a very unique look that takes a little bit of getting used to. In hand, it's really pretty comfortable. The large steering wheel made the radio feel very sensitive. The trims are easy to find and moving through the adjustments menus was easy to get acquainted with. The throttle and steering trims located around the steering wheel are not marked which can sometimes be confusing. At the track, the Presto performed great. The Presto comes in at the upper end of the price scale and is lacking servos. Like most of the radios in this guide, the Presto packs the features needed for any level of racing and meets our price target.



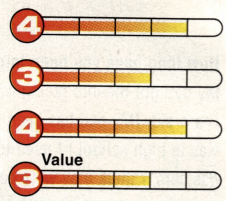


Features

	Dual Rate	Servo Reversing	Battery Meter	Throttle Trim	Steering Trim	Throttle EPA	Steering EPA	Throttle Expo	Steering Expo	Sub Trim	Battery Alarm	Led Power Indicator	Wheel Tension Adjustment	Charging Jack	Idle Up
JR Racing XR3	•	•	•	•	•	•	•	-	•	•	•	-	-	•	-
Futaba 2 PEKA	•	•	-	•	•	•	-	-	-	-	-	•	-	•	-
Hitec Lynx FM	•	•	-	•	•	•	-	-	-	-	-	•	-	•	-
Airtronics CX 2P	•	•	-	•	•	•	•	•	•	•	-	•	-	-	-
Futaba 3PDF	•	•	•	•	•	•	•	-	•	-	•	-	-	•	•
KO Propo EX-11	•	•	•	•	•	•	•	-	•	•	•	-	•	•	•
Hitec Lynx 3D	•	•	•	•	•	•	•	•	•	•	•	-	•	•	•

...A courtside ticket to a Lakers pre-season game...

Airtronics CX2P



At first sight the CX2P would easily be mistaken for the Airtronics Caliber digital radio. The CX2P is minus the LCD screen and uses analog dials for all of its adjustments. The CX2P is an FM 2-channel radio that packs about as many features as you can on a non-digital interface radio. Along with the usual stuff (e.g., Dual Rate, Throttle and Steering Trim, and servo reversing), the CX2P allows the user to adjust throttle and steering EPA, throttle and steering exponential, and sub trim. The CX2P doesn't discriminate. You lefties will like the ability to change the radio to a southpaw configuration. The CX2P also uses a removable frequency module which is a nice touch. The trim settings and dual rate are easy to access. All of the other settings can be made by hand, but a adjustment tool allows for more precise adjustment.

The CX2P comes out of the box with two 94102 standard Airtronics servos, a 3-channel FM receiver (the transmitter is 2-channel), a battery harness, a switch, mounting gear, servo horns, and an adjustment tool.

In hand, the CX2P has balanced, comfortable feel. The CX2P tips the scales at 26.5 oz. and is the heavy of all the radios we tested. Weight is only a factor for those of you looking to run a hour long gas race or enduro. With a little oil on your fingers the steering wheel will slip a bit. At the track, our test radio worked flawlessly. At first we thought the trim knobs might get in the way being so close to the steering wheel, but the knob placement was never an issue. In order to get accurate adjustments, an adjustment tool is necessary to adjust all of the adjustment pots under the clear shield. The CX2P is the perfect radio for those of you with a phobia of things digital. It packs a lot of adjustments and is as straightforward as you can get without the intimidations of a computer radio.



Interface	LCD Contrast	DSC	ABS	Channels	Frequency	Warranty	Removable RF Module	Ni-Cads	Left Hand Capable	Receiver Weight	Transmitter Weight w/Batteries	Model Memory	List Price	Street Price
DGTL	•	-	-	3	27/75	1yr	-	-	-	0.8oz.	22 oz.	3	$209.95	$165
ANLG	-	-	-	2	27/75	1yr	-	-	-	0.6oz.	20.5oz.	1	$169.95	$120
ANLG	-	-	-	2	27/75	2yr	-	-	-	0.8oz.	20oz.	1	$169.95	$90
ANLG	-	•	-	3	27/75	1yr	•	-	•	1oz.	28.6oz.	1	$315.99	$170
DGTL	•	•	-	3	27/75	1yr	-	-	-	0.6oz.	22.5oz.	3	$349.95	$210
DGTL	•	•	•	4[1]	27/75	1yr	-	-	-	0.6oz.	21.6oz.	3	$249.99	$220
DGTL	•	•	•	3	27/75	2yr	•	•[2]	•	0.7oz.	29.3oz.	10	$349.95	$200[2]

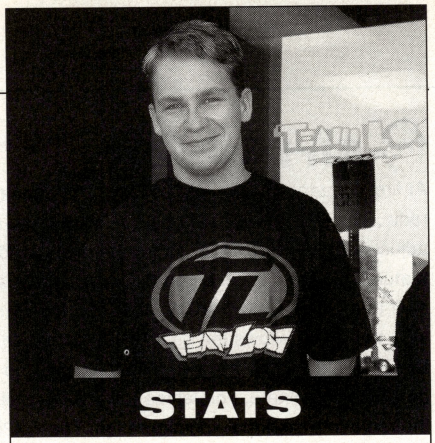
KEY

DGTL = Digital
ANLG = Analog
1Included receiver is for two channels, four channel receiver can be purchased seperatly
2 Price listed is Lynx 3D available with DCX receiver, AC charger, and Nicads. Also avaliable with HFS receiver and no nicads or charger. List Price on that model is $289.95 and Street is $180.

...An autographed copy of Britney Spear's debut album.

racer
PROFILE

Josh Cyrul



STATS

Age: 22
Residence: Corona, CA.
Favorite Full-size: Any Ferrari.
Favorite TV Show: RPM 2Night; anything on Speedvision.
Favorite Movie: The Matrix.
Dream Girl: Nicole Kidman; I like red heads.
Favorite Sports Team: Detroit Red Wings.

How long have you been into R/C racing?
My dad got me into racing when I was about seven years old. (My dad has been into R/C racing since he was in high school.) I used to run those old Associated gas cars, I think they were called RC100's or RC500's. I just remember the fuel tanks being made of metal Band-aid™ boxes welded together.

Tell me about your first racing experience. How did that go?
Not too good. My first car was a Marui Big Bear. I raced in the novice class for that type of truck. I was all over the place, even going backwards on the track. My dad made me get around the backyard track before I could got back and race.

What's been your greatest racing experience so far?
Probably when I got hooked up with Reedy and Associated. I was only 13 years old. I ran for a couple other companies before that, but being that young and running for Reedy and Associated that young was very cool.

How did a 13-year old get hooked up with them?
Mike Blackstock was a local racer. I was having trouble in modified getting ready for the Cleveland race. Mike helped me out with some batteries and motors for the warm-up race with Joel (Johnson) and those guys. And, I almost won the race. Well actually, Joel and Mike crashed and I almost won until they caught up at the end. Mike Blackstock introduced me to Mike Reedy and that's how I got sponsored by Reedy and Associated.

What do you do at Losi?
Lately I've been busy with R&D stuff with Gil, Jr. We're working on the touring car right now. That's the big project right now.

What do you like about the job?
I like being in the middle of what's going on. Being back home, it's like you're on the outside, calling every week to see what's new and what's going on. Here, I'm right in the middle of what's going on.

What do you not like about the job? Waking up in the morning to get there on time.

What do you do to pass the time on road trips?
Sleep. I'm a big fan of sleep. I take my CD player and head phones with me to all the races.

What's in your CD player right now?
I'm not sure – either Korn or Rid Rock or something.

Speaking of road trips, what's been your worst trip?
Unfortunately I'd have to say this last trip to Japan Worlds warm-up (see Racer World). I have to preface that comment with the fact that we're working with an all-new prototype car. But, everything that could go wrong did. We got there, I ran my car, crashed, fixed it, ran my car again then something else stupid happened. I'd go out again and be careful not to hit anything, then I punched the throttle and a diff nut stripped out. You name it; every stupid little thing that could go wrong did. Stuff that I've never had trouble with, I had trouble with. It was really frustrating. Not only was I trying to learn a new car, but I was trying to learn somebody else's home track. It was a really frustrating trip. I was lost at times. As the weekend progressed, it got much better. But, the first three days were really, really rough.

California or Michigan?
They're definitely different. I don't miss shoveling a few feet of snow back home; I do miss my family. I like California; the weather's an obvious plus. The girls look a little different out here, which also helps a little.

Is there one thing you miss the most back home?
My family, definitely my family.

What's your favorite race to go to?
The Cleveland Indoor Champs. The whole setup is very cool. Everybody's got their room doors open. Aside from the racing, it's like a big fun party. It's a blast sitting in the lobby on Wednesday when everybody gets in. You see so many people that you've met over the years.

Do you remember a Thanksgiving dinner at home?
No. Not at home, it's been a while. But, it's fun in Cleveland. My mom, my dad, my little sister, they all come. All the racers know my mom; she's pretty cool. She brings drinks, turkey, and stuffing. It's pretty cool. I get a Thanksgiving with my racing family and a few weeks later with my real family.

What's your favorite racing class?
One-twelfth-scale with 1/8-scale gas as a real close second. Those are the classes I grew up with. They're both pretty basic. Tires aren't an issue like they are in other classes. With 1/12-scale, there's some strategy involved. You need to worry about battery life and learn how to go fast efficiently. Eighth-Scale gas is just like 1/12-scale, but you don't need to worry about dumping. Just full tilt; anything that goes over 70 MPH and you can drive that aggressively is awesome. Touring cars are fun. I'm just getting burned out on all the tires. It's getting better thanks to controlled tires at the races.

Is there anyone you don't like to race against?
No, not really. I've been racing against a lot of the top drivers for years. The more you race with those guys, the more mutual respect is built up. I know where I can put my car on the track and where the other guys are going to be.

Have you ever had any run-ins with racers on or off the track?
Nothing bad. At the last 1/10-scale On-road Worlds in England, Mike Blackstock and I constantly crashed with each other. We used to race for years back home. But, in England it got kind of bad. On the first leg of the A-main I ended up with Jump Start penalty. When we came off the line, he got a little sideways. I went into the sweeper inside him. We ended up banging wheels. I was fine, but he ended up flying up into a wall. After that it was a hackfest for the other two legs of the Main. The sad part was both Mike and I were very fast and could have had a shot at winning if it wasn't for us beating the hell out of each other. It was really sad. We pitted next to each other and had a great two weeks of racing. In just those four minutes it just went down hill.

What would you change about racing?
I'd lose rubber tires in touring car. Foam tires would be so much easier. With foam you know what's going to work.

What's really good, what wouldn't you change?
In touring car, there are a lot of good drivers. There are also a lot of different chassis that are competitive. It's not dominated by any one or two companies. In touring car, there's Losi, Associated, Yokomo, Tamiya, HPI, Schumacher, the list goes on. It's cool to see a field of cars like that where everybody's got a shot at winning.

What's after R/C for you?
I want to become a Mechanical Engineer. That's one of the reasons why I came out here. I'll be learning the different computer programs and will be going to school.

Any racing superstitions?
Not any more. When I was younger I would pay attention to which shirt I was wearing when I won a race. That kind of stuff. I go to too many races to worry about that stuff any more. There are certain ways I do things, but it's more out of habit than superstition.

How about a most embarrassing moment at a race?
Yeah, actually this has happened to me a couple of times. Just messing around I'll sometimes motion like I'm going to throw my car to somebody near my pit. A few times my car has accidently slipped and gone flying. One time I knocked Kinwald's coffee into his toolbox. Another time I hit my own toolbox and made it flip over. There were tools all over the place.

Do you still get nervous before or during a big race?
I really don't get nervous before or during the race. But, afterwards I'm a wreck. As soon as the race is over I start to shake. I can't shake anybody's hand it's so bad. It's weird that it hits me that way.

Anybody you'd like to thank?
My parents, Cindy and Jerry Cyrul, Mike Reedy, Ernie Provetti, Pops Losi, and Gil Losi, Jr.

"Would you discharge my batteries for me? Here, catch!"

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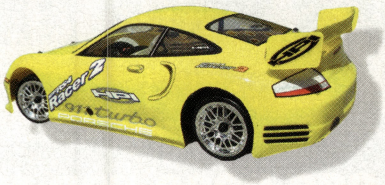

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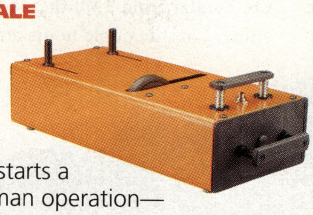

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ROAR

On-Road Nationals: Jacksonville, Florida

Written by Xtreme Staff with Bill Fraden reporting.

What better place can you think of to hold a major on-road race than Jacksonville, FL? Jacksonville was the scene for this year's ROAR On-Road Electric Nationals. In mid-June J-Ville's typically nice and sunny. But as luck would have it the event was under the constant threat of rain. In between some cloud bursts, we had all the sun and dry weather needed to pound out this year's race. Drivers from around the country made the trek and were treated to a weekend packed with great racing.

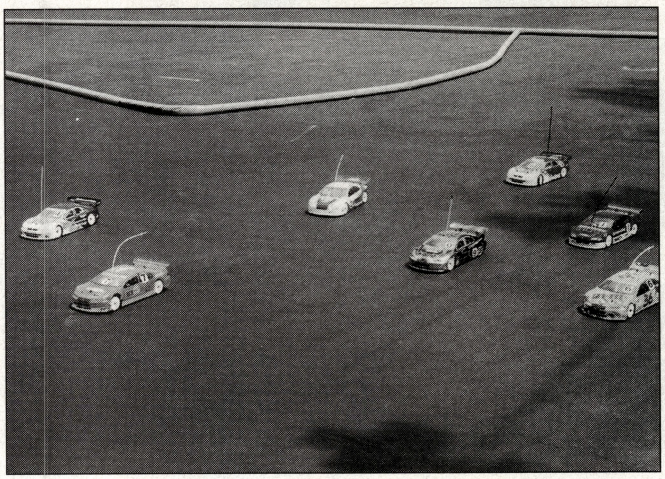
The Track

River City R/C Car Club (the first rule of River City R/C Car Club is you do not talk about River City R/C Car Club) was the host of this year On-Road ROAR Nationals. The club's track is located just outside of Hobby World's hobby shop. The track measures at 188 feet by 88 with 12° banking in the far corners. Recently resealed asphalt with high-visibility yellow piping through the inside gave the drivers something to negotiate. For the event, the track featured a pretty high-speed design. In modified touring, the fastest lap times were in the low thirteen, high twelve second range. The club did their best and provided pits, power, and plenty of shade for all that attended.

The Format and Buzz

The total number of entries was 124 with half of those racers signing up the week of the race. The field was dominated by touring car entries which accounted for more than half the number of entries. A number of notable pro racers didn't attend this year's race on account of the fact that many were getting ready for the Worlds warm-up race in Japan just a week later. Barry Baker and Chris Tosolini arrived on the scene the Monday morning before the race.

The race consisted of four rounds of qualifying total, two rounds on Friday and two rounds on Saturday. The Mains were scheduled for Sunday. The Thursday before the race, there was one complete round of practice, but then Mother Nature put an end to that with plenty of drenching rain. On Sunday from 1:00 the skies were threatening. Only a couple hours after the race ended the clouds let go with off and on rains for the next four days.

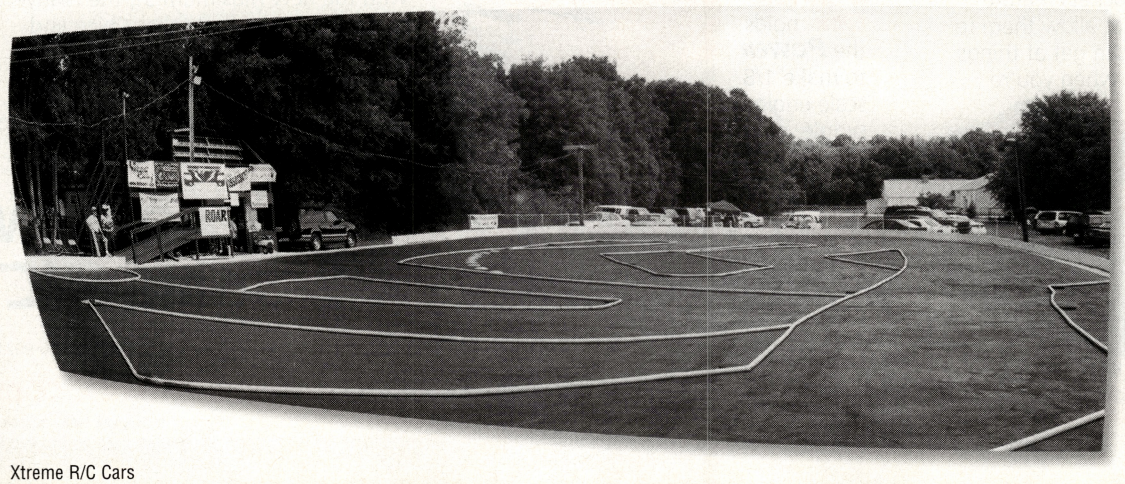


Touring cars dominated the weekend.

In the touring car class, Yokomo G compound and Pro-Line 1095 were the tires of choice. After just a couple of runs a bunch of the pros proceeded to discard complete sets of mounted tires. The locals were in shock at first, but then ended up collecting the discards for themselves. Wouldn't you?

Qualifying

Qualifying was held on Friday and Saturday. Typically at a Nationals event the qualifying rounds are shuffled around so that drivers compete against different racers in each of their qualifying rounds. But a software glitch didn't allow for shuffling of the qualifiers between rounds. Aside from that qualifying went smoothly. The TQs for each class were as follows:



"I am Jack's sweat gland."



Racers kept cooi in the pits with plenty of water and fans.

1/12-scale stock – TJ Bradley; 1/12-scale modified – Barry Baker; 1/10-scale stock – Dave Vera; Touring stock – Joe Freitas; Touring stock – Chris Tosolini.

The Mains

1/12-Scale Stock

In the first A-main, Tom Esposito finished in first followed by Joe Freitas and Bruce Carbone. In the second leg of the A-main, Esposito took the win again with TJ Bradley in second and Freitas in third. By the time the third leg came around, Esposito had already sewn up the title. In the final leg, Freitas took the win and the overall second. TJ Bradley got the third spot overall thanks to a third place finish in the final leg.

1/12-Scale Modified

In the first leg of the A-main, Mike Blackstock picked up the win after eight minutes of back-and-forth racing. Barry Baker finished in second with Mike McMahon not far behind in third. In the second leg, Mike Dumas ended up taking the checkered flag with McMahon in second and Blackstock in third. By the final leg, it was still anyone's race, but Barry Baker ended up wining the final leg just ahead of Blackstock and Dumas. When the points were totaled, Blackstock's throw out race was better than Baker's. The higher overall point total gave Blackstock the overall win followed by Baker and Dumas

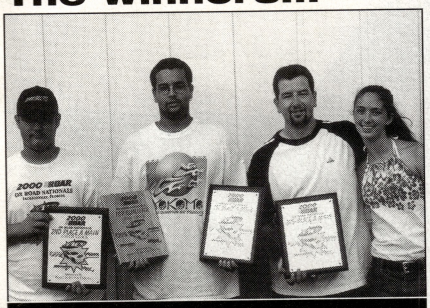
1/10-Scale Stock

Dave Vera was the man to beat. He picked up a win in the first two legs of the A-main and the overall win. Alex Lopez managed to get a second in the second round and a win in the third to give him second position overall. Scott Jakes and Bruce Carbone tied for third with 196 points a piece using two races and were tied again with 96 points a piece on the throw out. The tie breaker came down to the laps and total time using all three races. Even then, the margin between the two drivers was only sixteen seconds. The lower total time gave the third place position to Scott Jakes.

Touring Car Stock

Scott Haake and Joe Freitas traded firsts and

The Winners...



1/10 Stock



1/12 Modified



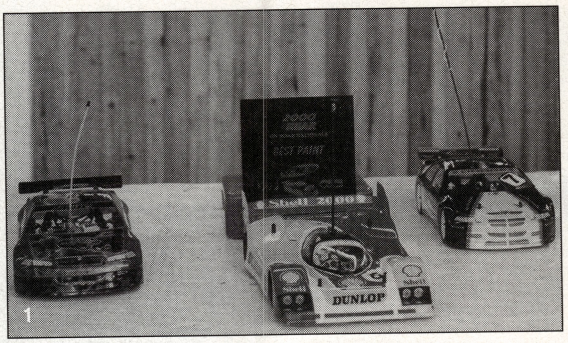
1/12 Stock

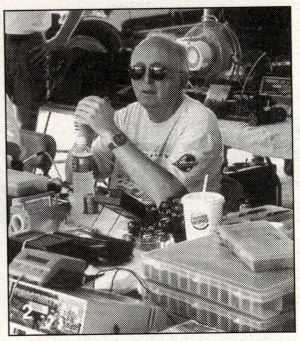


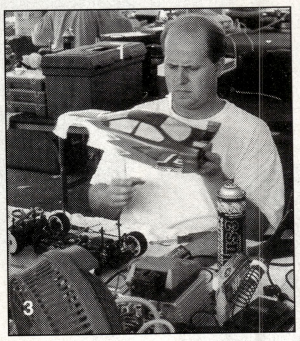
1/12 Stock



1/12 Stock









1. The Concours winner was this sweet-looking 1/10-scale car. 2. Mike Reedy kept his drivers nice and fast all weekend. 3. Is it not enough that Mark Pavidis has to deal with bodies all week long working at Pro-Line? 4. Barry Baker readies his winning ride.

seconds in the first two legs of the A-main. It all came down to the final leg. In the last leg, Freitas made one too many mistakes and finished just four seconds behind Haake who won the race. Scott Haake ended up taking the first spot overall thanks to winning two legs. Joe Freitas finished in second with a first and a second place finish. Using two race totals, there was a three way tie for the third place overall. It came to throw-out points to crown Billy Bruce the overall third place finish

Modified Touring

A1

Barry Baker lead from the start of the race. Jimmy Jacobson and Chris Tosolini battled for about the first four laps of the race. By the fourth lap, Mark Pavidis was in the heat of things battling as well. At about the 30-minute mark, Baker and Tosolini had taken first and second, respectively. After a bad start, Paul Wynn did a good job from coming from the tenth position and worked his way into the third spot with a minute to go. By the time the buzzer sounded, the finishing order was Baker, Tosolini, and Wynn.

A2

For the second leg, Tosolini used his TQ position to his advantage and moved into an early lead that he wouldn't relinquish. Jacobson, who started strong, fought for second place midway through the race, but some bad wrecks sent him down to sixth place for the rest of the race. Barry Baker did his best to come from the sixth spot to move into second place by the 2:30 mark. Wynn also did a good job of working through the traffic and managed to get into the third spot from the seventh position. That's the way the race would finish with Tosolini in first, Baker in second, and Wynn in third.

A3

By the final leg of the A-main the stage was set for a real battle between Tosolini and Baker. A win by either would wrap up the overall win. For the overall win Paul Wynn wasn't far behind in points. If Paul could finish ahead of either Tosolini or Baker he'd have a chance. When the starting buzzer rang, Tosolini took the lead early with Baker not far behind. The two battled back and forth for the first minute of the race. From then on, it was tight with Baker in the lead and Tosolini right on his tail. Mike Dumas worked from the sixth spot and finished in third behind. Tosolini was second and Baker was first. With the win, Baker took the overall win and the National championship.

Despite a lower turnout than previous years, the weekend was filled with plenty of good racing. Congratulations to all those who participated and went home bearing a trophy. Thanks to all the sponsors; Team Associated, Team Orion, Yokomo, Hitec, BSR, and Xtreme

"I am Barry's blond hair."

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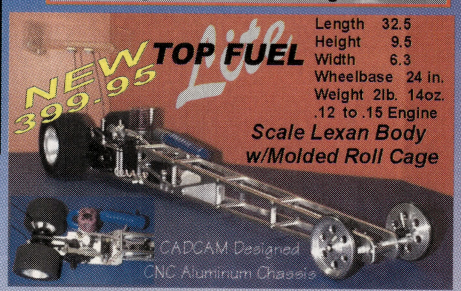

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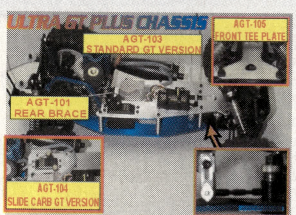

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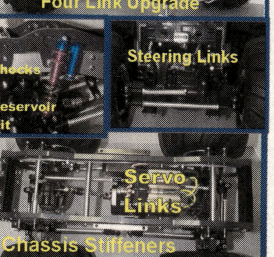

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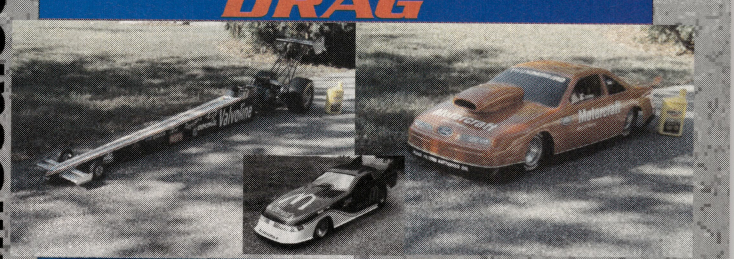

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618 446 - 3282

Monee R/C Raceway
755 Ash St.
Site: 26049 S. Ridgeland, Monee
Flossmoor IL 60422
708 799 - 5597

Indiana

Huntington R/C Racing
221 E. Washington St.
Site: Police Athletic League
Huntington IN 46750
219 356 - 4362

Kentucky

Somerset Raceway
188 Sycamore Dr
Bronston, KY 42518
606 561-4522

Louisiana

Deep South Oval Racers
10094 Magnolia Rd.
Denham Springs LA 70706
225 665 - 5616

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

St. Charles Parish R/C Spway
187 Schexnaydre Ln.
Site: East Bank Bridge Park
Destrehan LA 70047
504 764 - 0625

Gator R/C Raceway
3691 Hwy 171
Lake Charles LA 70611
337 855 - 3206

Maryland

Glen Burnie Model Racing Assn.
406 Delmar Ave. SE
Glen Burnie MD 21061
410 796 - 8828

J.R.'s Race Place
3649 Gelston Dr.
Site: Waldorf MD
Baltimore MD 21229
410 947 - 2766

Qualified RC
734 G. Street
Sites: Jacobsville Pk & MIE Properties
Pasadena MD 21122
410 360 - 6405

Massachusetts

Northeast Auto Racers
PO Box 12
Site: Rt. 106 Racepark, Pembroke NH
Merrimac MA 01860
978 346 - 9611

Michigan

Great Lakes R/C Racers
2393 Barber Rd.
Site: 3810 Chaffee, Gr. Rapids
Hastings MI 49058
616 948 - 9798

R & L Hobbies
9782 Portage Road
Portage MI 49002
616 323 - 3686

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

Minnesota

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

Mississippi

Meridian R/C Speedway
PO Box 229
Site: 1615 Sowashee St.
Meridian MS 39302
601 483 - 7000

Small Cars Unlimited
820 Cooper Rd.
Jackson MS 39212
601 372 - 3278

Missouri

B & L Hobbies and Raceway
PO Box 522
Site: 2800 Anchor Dr.
Park Hills MO 63601
573 431 - 9444

Kansas City R/C Raceway
101 Chevy Duty Dr.
Riverside MO 64150
816 896 - 5272

N. Missouri R/C Raceway
200 S. Washington St.
Site: 223 Graves St.
Chillicothe MO 64601
660 646 - 1120

Real R/C Speedway
24204 St. Rt. 58
Pleasant Hill MO 64080
816 358 - 0238

Nebraska

O.N.R.O.A.D.
3307 N 58 St.
Omaha NE 68104
402 556 - 8674

New Mexico

Albuquerque R/C Off Road
1809 Miracerros NE
Albuquerque NM 87106
505 262 - 4820

New Mexico R C R C C
526 Mesilla NE
Site: Cottonwood Mall
Albuquerque NM 87108
505 268 - 4201

If you don't see your track here let us know.

New Jersey

American Raceway
5 Patton Dr.
Site: 557 Englishtown, Monroe
Sayreville NJ 08872
732 446 - 3737

Edison Model R/C Car Club
154 Prospect Ave.
Edison NJ 08817
732 819 - 8693

Jackson R/C Racing Assoc.
PO Box 565
Site: Columbus Blvd., Jackson
Jackson NJ 08527
732 269 - 0545

New York

B & S Speedway
15661 Telegraph Rd.
Albion NY 14411
716 589 - 0604

Willis Hobbies Speedway
300 Willis Ave.
Mineola NY 11501
516 746 - 3944

North Carolina

Dixie River Raceway
5017 Sirus Lane
Site: 9324 Dixie River Road
Charlotte NC 28208
704 423 - 9100

Sandhills Raceway, Inc.
PO Box 178
Southern Pines NC 28388
910 245 - 4450

Ohio

A.O.S.C.A.
1708 Empire Road
Wickliffe OH 44092
440 944 - 9966

One - Eighth Racers of Toledo
5926 Walnut Cir. # 4
Site: Woodville Mall
Toledo OH 43615
419 866 - 5624

Classic Hobbies
1994 E. Waterloo Rd.
Akron OH 44312
330 733 - 6400

Free Xtreme R/C Track Directory Listing

TRACK OR STORE NAME:_____
_____
ADDRESS:_____
_____
CITY:_____ST:_____
ZIP:_____COUNTRY_____
PHONE:_____
WEB SITE:_____

Check all that apply:

- ❑ Indoor
- ❑ Outdoor
- ❑ Off-road
- ❑ Oval
- ❑ Parking lot
- ❑ Carpet
- ❑ Asphalt
- ❑ On-site Hobby Shop
- ❑ AC Power
- ❑ Auto Lap Count
- ❑ Concessions
- ❑ Drag
- ❑ 1/5-Scale
- ❑ 1/8-Scale
- ❑ 1/10-Scale
- ❑ 1/12-Scale
- ❑ Touring
- ❑ Mini

Return To:
Track Directory
Xtreme R/C Cars
14175 Telephone Ave., Ste. O
Chino, CA 91710

Attention Track Owners! Fill it out and send it in today.

Glass City RCCC
5957 Rolland
Site: Graystone Hall & Soda Pk.
Toledo OH 43612
419 478 - 2016

Tri-State RC Auto Racers
4031 Lansdowne Ave.
Site: Joyce Park
Cincinnati OH 45236
513 891 - 2523

Oaklahoma

Competition RC
100 SE 89th
Oklahoma City OK 73149
405 634 - 1809

Oregon

Competition Racing Association
2603 SE 138th Ave.
Site: 17941 NE Glisan
Portland OR 97236
503 761 - 1334

RC-Outlet.com
PO Box 9
Site: 4355 Silverton NE, Salem
Turner OR 97392
503 743 - 3010

Rose City Scale Racing
2267 SE Kane Ave.
Site: Milwaukie Big K-Mart
Gresham OR 97080
503 666 - 7918

Pennsylvania

DC Ultra Trax
13 York Road
Site: 1381 Creek Rd., Wycombe
Warminster PA 18974
215 672 - 5200

Mushroom Bowl Speedway
960 West Cypress St.
Kennett Sq. PA 19348
610 444 - 1850

Willow Mill Speedway
37 North Seasons Dr.
Dillsburg PA 17019
717 432 - 4445

South Carolina

Atomic Raceway
373 Boyd Pond Rd.
Aiken SC 29803
803 642 - 0134

Bethany Motor Speedway
13107 W. Hwy. 55
Site 959 Wilmoth Rd., Clover
York SC 29745
803 222 - 4758
Region 3

Tennessee

Hobbytown - Franklin
2000 Mallory Lane
Franklin TN 37064
615 771 - 7441

Mt. Juliet R/C
PO Box 1748
Mt. Juliet TN 37121
615 754 - 6344

Texas

Indy R.C. World
2020 Saturn Road
Garland TX 75041
972 271 - 4844

Issac's Hobby Center
18177 Gulf Freeway
Site: Houston (Clear Lake)
Webster TX 77598
281 488 - 8697

K&M Racing
17910 Russwood Ct.
Site: 45000 Hwy 59 N.
Spring TX 77379
281 655 - 0149

Performance Raceway RC
9622 Meadowglen Ln.
Site: 1106C Witte Rd.
Houston TX 77063
713 464 - 4458

R.C.C.A.R.S.
7825 Beauregard Cir. # 9B
Site: Walmart Center
Austin TX 78745
512 445 - 0363

RC/RC of San Antonio
427 Forrest Hill Dr.
San Antonio TX 78209
210 930 - 2663

RCRC of North Texas
11312 LBJ Frwy # 500
Site: Texas Motor Speedway
Dallas TX 75238
214 349 - 2847

T & T Racing
3420 Avenue K Ste 154
Plano TX 75074
972 633 - 2470

Comanche Trail R/C Park
508 Dealy Rd
Big Sprint, TX 79720
915 263-4241

Utah

Intermountain R/C Raceway
8481 West 2700 South
Magna UT 84044
801 250 - 8303

WOR R/C Raceway
3170 Brinker Ave
Ogden, UT 84401
801 393-2530

Virginia

Brown Brothers Hobby Shop
924 N. Main St.
Dumfries VA 22026
703 221 - 5746

The Tiltyard
6994 Tiltyard Dr.
Dayton VA 22821
540 828 - 3476

Stream Hobby Shop
10015 Jefferson Ave.
Newport News VA 23605
757 591 - 0720

Cooper's R/C Race Center
1020 Cooper Road
Site: 4000 Sago Rd.
Chatham VA 24531
804 724 - 4182

S.A.R.A.
3021 Quail Walk Dr.
Site: Doswell VA
Glen Allen VA 23059
804 261 - 7639

D R C W Raceway
2200 Commerce Parkway
Virginia Beach VA 23454
757 340 - 6681

Dads Day Off R/C Speedway
940 Radford St. Booth 22
Christiansburg VA 24073
540 387 - 3414

Washington

Four Seasons R/C Racing
2941 Sleatter Kinney Rd. NE
Olympia WA 98506
360 491 - 2430

Mike's R/C & More
1272 44th Ave.
Sweet home OR 97386
541 367 - 7271

Rain City RC Raceway
3636 South Rd. Ste A3
Mukilteo WA 98275
425 438 - 2454

RC Car Club of Spokane
PO Box 18601
Site: Sullivan Park
Spokane WA 99228
509 467 - 9149

S.A.R.C.A.R.
777 108th Ave. NE #1200
Site: 2 Renton Place, Renton
Bellevue WA 98004
425 672 - 7848

Wisconsin

ABC R/C Inc.
244 W. Main St.
Waukesha WI 53186
414 542 - 1245

MARCCA Raceways
526 S. Monroe St.
Monticello WI 53570
608 938 - 1527

Midwest Tri - Clone
144 North Main
West Bend WI 53095
414 334 - 0898

Racine Radio Car Club
9135 37th Ave
Site: Bradford High School
Kenosha WI 53142
262 632 - 8676

Canada

R.C.G.E.A.R.S.
87 Castlebrook Way NE
Calgary ALB T3J 2A7 CANADA
403 285 - 0170

Thompson Valley R/C Race Club
2345 Briarwood Ave.
Kamloops BC V2B 4Z6 CANADA
250 376 - 7843

Steeltown Speedway
3580 Kirk Road West RR#2
Binbrook ONT L0R 1C0 CANADA
905 692 - 3407

Sudbury Organized Auto Racing
c/o Peacock 3159 Daniel Ave
Site: 1010 Lorne St.,Sudbury
Val Cron ONT P3N 1E6 CANADA
705 897 - 1435

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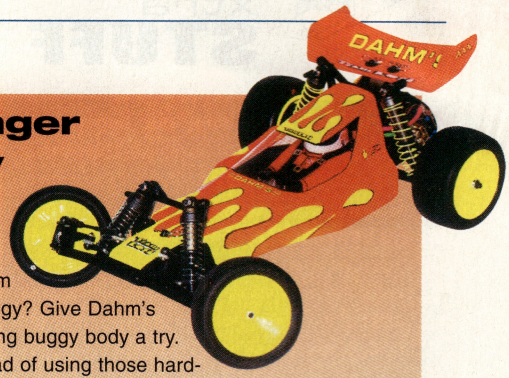
Kyosho **Temp Gauge**

When it comes to operating a nitro car, whether it's a full racer or an RTR, knowing the engine temperature is extremely important beavuse it allows you to tune for maximum performance and reliability. The AD-One Digital Temperature Gun from Kyosho measures surface temperature from just inches or feet away. The gun shows temperature from -20º to +315º C. The gun comes equipped with a laser pointer for pointing accuracy. The LCD display is backlit and shuts off after 5 seconds to conserve power. The gun also comes with a protective carrying case. Along with measuring engine temperature, the AD-One can also measure tire temp, electric motor temp, road surface temp, and more.

Part#: KYOC9990; price: $249.99.

Dahm's **Stinger XXX body**



Looking for more speed, better handling, and less aerodynamic drag from your Losi Triple-X buggy? Give Dahm's new Stinger XXX racing buggy body a try. It's a perfect fit. Instead of using those hard-to-reach rear body mounts, you can use Velcro™ along the sides of the chassis to mount the body. The Stinger XXX comes with an adjustable "Super Fin Wing." Molded-in trim lines help make mounting a breeze. The Stinger XXX is also available custom painted from Dahm's. Go to www.dahms-intl.com for more info on custom painting.

Part#: D319; price: $17.98.

Duratrax Tools

Duratrax is answering the call of racers for economical, high-quality tools. Their new line employs hardened Chrome Vanadium shafts and tips that Duratrax says will stand up to excessive torquing. Rubberized handles add comfort and a secure slip-free hold. The tips of the handles are rotating caps that increase fingertip control. The new tools are available separately as well as in sets. Each set comes with a nylon pouch for carrying and storing the tools. The pouch rolls up for space-saving convenience. Three sets are available: A standard screw driver set (DTXR0140), and 10-piece General Car Tool Sets in Metric (DTXR0375) and SAE (DTXR0380) that include ball hex-drivers, nut-drivers, and screwdrivers.





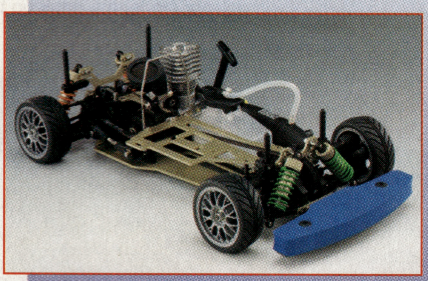
Part#s: listed above; prices: $18.99 (screw drivers); $36.99 (10pc. sets).

Dynamite **Vision Peak AC/DC Charger**



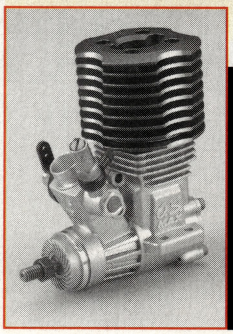
The new Vision Peak charger from Dynamite offers simple design and lots of features all in one simple package. The Vision Peak is an AC/DC peak detection charger. You can select either a 2-amp or 4-amp charge mode, and can charge either 6- or 7-cell Ni-Cad packs. (This charger is designed for Ni-Cad cells, not Ni-MH.) Features include single push-button operation, LED bar graph charge level indicator, auto trickle charge, fuse protection, voltmeter jacks, and a 5-year limited warranty. Part#: DYN4045; Estimated Street Price: $50.

Thunder Tiger **TS-4N Touring Sedan**



Thunder Tiger is jumping head first into the hotly-competitive nitro touring car market with a design of their own. The new TS-4N was designed by world-renowned Franco Sabattini. The TS-4N comes with a long list of features including: aluminum top deck, shock bodies, shock tower, and chassis; front universal drive shafts; fiberglass-reinforced, Dupont plastic parts; full ball bearings; steel turnbuckles; color-coded springs; and more. A Thunder Tiger Pro-12BZX pull-start engine is also included. The TS-4N comes 90% assembled, and is available with three different body styles. A laundry list of hop-ups is already available from Thunder Tiger. Look for the TS-4N to be available soon.

Part#s: TTR6134-A, 35-A, 36-A; price: MSRP $249.99; ESP $199.



O.S. Engines .12 CV-R engine

For years, O.S. has dominated the .12 nitro racing market. But companies like Picco and Nova Rossi have put the pressure on. O.S. Looks to regain their stronghold with the release of their newest truly race-ready .12 engine. The new .12 CV-R is packed with some neat features. Three larger ports instead of two smaller ones significantly increase air and fuel intake. The crankshaft is 1 mm larger than previous engines, and features a larger crank port that directs fuel more smoothly. The crank bearings have been increased in size for more durability. The cast con-rod is gone; in its place is a machined aluminum rod with bronze bushings on both ends. The fit between the crankshaft and the bearings is said to be much tighter than on previous CV engines. The .12CV-R comes equipped with a 10E-R rotary carburetor.

Part#: OSMG2045; price: $259.99.

All prices listed are the manufacturer's suggested price unless we say different.

xtra STUFF

We're sick of writing; our fingers and brains are tired. Help us please. Get off your duff and write us a letter. Whether you want to tell us what great guys we are or you want to tell us how much we suck, send us a letter. You can even ask a question or two. If we know the answer, we'll probably publish your letter. If we don't know the answer, we might ridicule you for asking a stupid question.

xtrastuff@xtremerc.com
or
Xtrastuff, 14175 Telephone Ave., Ste. O, Chino, CA 91710

Mr. Manners

I have a question on track etiquette. If, by chance, I happen to be driving a good line, but due to circumstances I'm being lapped by the first place driver and I pull off my line to let him pass, then a short time later he pipes and I pass him, am I obligated to let him pass again? If he's good enough to be in first he should be good enough to get by me without my help don't you think? And, if third place is 25 feet behind me and I'm pulling away, should he be allowed to distract me by yelling pull over? And another question, after the start should the corner marshal wait until all the cars pass the crash on the first turn or jump out and interfere with the rest of the pack? I mean at what point should I just pull my truck off and quit the race? I'm writing this with the hope the race director will get the hint that this is a race, and if you are good enough to be in first you don't need my help to stay there!

Michael Watkins
dirtballmike@hotmail.com

Tough questions. During a qualifier, I wouldn't necessary pull over, but tell the driver where to pass when the time is right. For instance, if he's right behind you on a straightaway, I would tell him to go inside, while I went wide or let off the throttle just a bit. Battling him or not letting him by because you're tired of it won't help you any. You'll only turn slower lap times. As for the guy that's in third yelling 25 feet in advance, he needs to relax. If he's lapping you, you should give him the same courtesy you would want him to afford you. But, if he's 25 feet behind I would ignore him until he's right on you.

Now if you're in a main it's a completely different story. You don't want to take out the leader, but you must be aware of your position on the track. If you're battling for a position be aware of who the leader is and who you're battling with. Drive clean, but don't pull aside to let the leader go by along with your competition.

Just the last time I went racing there were these two old men. They sounded like Walter Matthau and Jack Lemon complaining about everything. Even when it was their fault they were bitching and yelling about how everybody was hacking them and so on. Every track has a guy or guys like this; their reputation will get around and basically you just need to ignore those guys. Not to get biblical on you, but treat others like you'd like to be treated. If you hack the leader it will come back to bite you when you're in the lead.

As for the turn marshal question, he should let the pack go by. The most important thing is the turn marshal's safety. After it's safe for him to turn the cars over, he should marshal the cars. He's not the one who crashed. And the guys behind the crash should not be penalized by having to deal with a turn marshal stepping on their car because somebody else ahead of them crashed.

And last, never quit the race. I hope you're not one of those guys that leaves the track cussing and cursing because somebody else ruined their day. Sh*t happens. Deal with it, find a way to get back into the pack and win. My answers to your questions might not have been the ones you were looking for, but I hope they help.

No Starch Please

I was wondering if an iron would hurt my magazine. One of my issues is really bent up because it was the first one I got. I want to iron it, but I don't know if it would melt it or something.
Matt Wessinger,
Lexington, SC

The iron won't straighten your mag out completely, but try this. Lay the pages that are bent out flat on your ironing board. Take a pillow case or a T-shirt that doesn't have silk screening on it and place the cloth over the magazine. Set your iron at the highest setting without steam and proceed to iron the pages with the cloth between the magazine and the iron. This tip may work depending on how badly bent your issue is. The other alternative is not being a cheap bastard and ordering a new back issue.

Racers' Rides

This truck is no dumper

Leon Booth of Liberty IN, likes to pull his little boy and his wagon around with his custom-made crew cab Bullhead. His Bullhead sports a Sassy Chassis frame, an ESP working stainless-steel plow, Stormer gear reductions, and Juggernaut tires and wheels. The bed on the back is from a Tonka truck. Power comes from Trinity 6-cell D-cell pack, Novak Super Rooster, and a small 6V fan for cooling. The lights flanking the top of the truck are actually made from cigarette lighters. For now, Leon's keeping things mild with a stock motor, but plans to put some real ponies in soon.



Cool Truck 'eh?



Frank Logan is checking in again from north of the border. We published pictures of his Juggernaut when it was right out of the box last September. Since then Frank's been busy with plenty of treks to the local hobby shop. Frank's added New Era's frame chassis, Traxxas long throw shocks, New Era ladder arms, and two steering servos thanks to a Y-harness. Everything is topped off with a Parma F-350 Ford body fastened to the chassis with Velcro. To keep the look scale, Frank added a vinyl Tonneau cover with monster truck roll bars attached to the back window going through to the cover. Thanks for keeping in touch Frank; keep up the good work on your project Juggernaut.



DVD to see: Denise Richards in *Wild Things*. Good Stuff!!!

Babe Request

I want more babes! Where are the babes?
Bill Dumphey
Nashville, TN

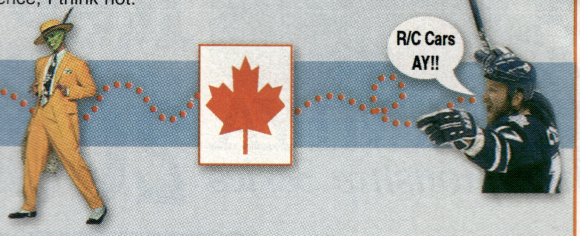
After pounding out issues month after month, it's sometimes difficult to think of witty excuses to put babes in *Xtreme*. But, despite an eleventh hour rush on Red Bull and Mountain Dew, we've done it! A witty excuse to put some of our favorite babes in the magazine. And just for you we've come up with one. We call it:

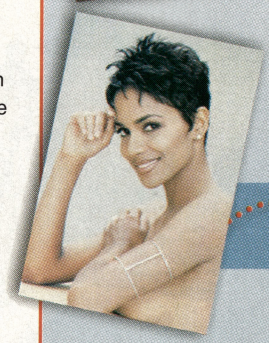
The Seven Degrees of R/C

You've heard of that game, the seven degrees of Kevin Bacon? Well basically, every actor in Hollywood is only seven connections away from Kevin Bacon. For instance, take Nicholas Cage. Nicholas Cage was in Snake Eyes with Gary Senise. Gary Senise was in Apollo 13 (as was Kevin Bacon so it actually only takes 2 degrees to get there, but what the hell, I'm trying to illustrate something here) which was directed by Ron Howard. Ron Howard was on Happy Days with Henry Winkler. Henry Winkler was in Scream with Neve Campbell who was in Wild Things with Kevin Bacon. Get it? We've come up with the Seven Degrees of R/C. We can connect any of the worlds hottest babes to R/C cars in seven degrees or less.

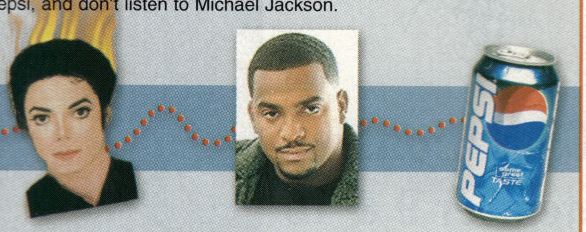


Cameron Diaz was in The Mask with Jim Carrey. Jim Carrey's from Canada. Two of our Racers' Rides letters this month are also from Canada. Coincidence, I think not.



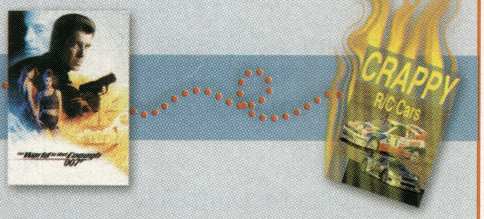


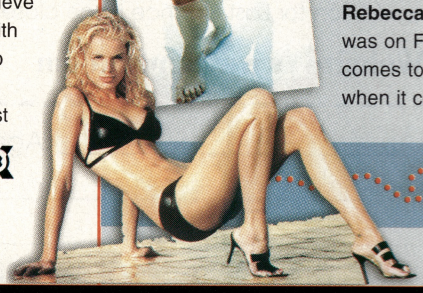
Halle Berry was in The Flintstones with Elizabeth Taylor. Elizabeth Taylor is buddies with Michael Jackson who is buddies with Alfonso Ribeiro. Alfonso Ribeiro used to pimp Pepsi in ads with Michael Jackson. We drink Pepsi, and don't listen to Michael Jackson.



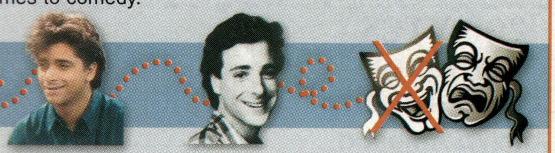


Denise Richards was in the latest James Bond flick. The latest James Bond flick sucked, big time. There are other R/C car magazines on the market that also suck, big time.





Rebecca Romijn-Stamos is married to John Stamos. John Stamos was on Full House with Bob Saget. Bob Saget has no talent when it comes to comedy (at least not on that video show). We have no talent when it comes to comedy.





What fun, 'eh?

Normally we like to paraphrase the letters that come in with the racer's photos, but this one we decided to leave as is:

Greetings from the great white north. I was wondering if you ever saw the Canadian version of the RC10GT RTR? No, seriously. My friends and I have raced everything from lawn mowers (don't ask) to Motorcross to stock cars to watercraft – you name it, we've raced it. But being slightly over 30, things don't quite work the same and we just kind of get up slower now. Mortgages, car payments, you know the story.

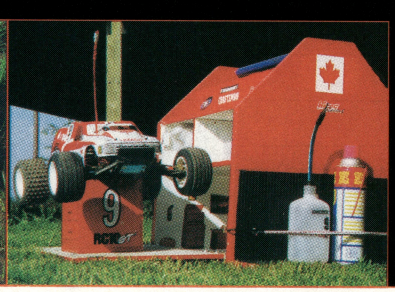
So about a month ago we found out that we can go R/C racing for the same price as a good set of motorcycle riding gear.

We get the same sound, the same thrill, and we can now do the double that was really the triple and go to work the next morning. What fun! We went to a couple of local tracks, but they were just ovals. Hell, anybody can turn left. So we took a corner off of a wheat field and built our own MotoX track. The track's about 600 feet in length with up hills, down hills, off camber truns, camber turns; the track's the real deal. We have a blast!

We love your rag, but would love it even more if we could get some free sh*t. Anyway, I have to go and fight for the last beer. We love the sport and its pain-free nature.
Dan Moore
Ancastor Ontario Canada

P.S. These are pictures of our first time out. I made the race box myself. It's not from Sears despite the Craftsman boxes.





Our favorite Canadian Imports: Molson, Hockey, Pamela Anderson.

TCS
TAMIYA
Championship Series

Register for the 2000 TCS Nationals



Qualify to Win a Trip to Japan!

TCS Nationals September 9 & 10

The National Championship is open to anyone who has competed in a TCS Regional Event between October 1999, and August 2000, and placed in the top 10 in the F-1, Super Touring GT1, Touring GT2 or M-Chassis classes. A last chance qualifier will be run on **Friday, Sept. 8th**. If you entered a TCS Regional but did not finish in the top 10, you will now have another opportunity to qualify. The top 10 in each class will bump up to the Nationals.

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Mail in attached form(s) to: Tamiya America, Inc., Attn: Customer Service, 2 Orion, Aliso Viejo CA 92656 or
Phone: (800) TAMIYA-A or Fax: (949) 362-6852 Hurry! Registration for Last Chance Race closes 9/5 and Nationals closes 9/6

Check out our Website www.tamiya.com

2000 TCS National Championship

Tamiya America
Aliso Viejo, CA
September 9 & 10, 2000

Check One:

☐ **Last Chance Qualifier**

☐ **TCS National Championship**

Name_____ Age _____

Address_____

City_____ State _____ Zip _____

Phone #( )_____

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

(Minimum of 2 frequencies required)

I Qualified In Race #_____ **at** _____

Circle Class:


Super Touring GT1


Touring GT2


Formula-1


Mini

Next Qualifier

☐ **TCS Race #74**
August 20, 2000
Galaxy Hobby
Lynnwood, WA

This the final qualifier of the 1999/2000 TCS season.

Name_____ Age _____

Address_____

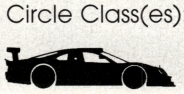
City_____ State _____ Zip _____

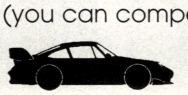
Phone #( )_____

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

(Minimum of 2 frequencies required)

Circle Class(es): (you can compete in a maximum of 2 classes)


Super Touring GT1


Touring GT2


Formula-1


Mini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Reviewed: Associated RC10GT, Yokomo YR-4 M2. How-to: Add Body Detail, Tighten Suspension. 10 Keys To Big Race Success. ROAR On-Road Nationals. T3 Pics.

3.3 October '97
Reviewed: Novak Pit Wizard, M.troniks Prodigi, Schumacher CAT SE, Tamiya TL01 Skyline. How-to: Use Swaybars to Tune Your Ride. Features: Motor Mysteries Revealed, They Call So Cal Home, A Close-Up Look At David Jun's Winning TA03. Also, B3 Pics, Worlds Results.

3.4 Nov-Dec '97
Reviewed: Associated T3, Trinity Switch Blade 12. How-to: Tune with Down and Up Travel, Mount Rubber Tires, Hop-up and Tune the HPI Nitro RS4. Features: All About Discharge Trays, '97 Off-Road Worlds Coverage.

3.5 January '98
50 New products for '98, Reviewed: Losi Street Weapon, Associated RC10L2. Inside Look at Kinwald's XX, Learn About Airbrushes. How-to: Rebuild Shocks, Tweak Touring Cars. NORRCA Off-Road Nats Results

3.6 Feb-Mar '98
Ultimate Touring Car Tire Guide, Reviewed: Associated B3, HPI Nitro Mini, Tamiya Nissan R390, Kyosho Lotus GT1. How-to: Reduce Your Cars Weight, Pack Light. Race Calendar

3.7 April '98
Reviewed: Losi XX 'CR' Kinwald Edition, Tech Voggerd T-10, Mugen Prime 12, Kyosho Super Sport 10 Learn How-to: Break-in gas engines, Turnmarshall, Convert your B2 to B3. Carpet Oval Nats coverage. Midnight 2 tested.

3.9 June-July '98
Reviewed: HPI Mini RS4, Losi XXT 'CR' Graphite Plus, Tamiya M-02L Porsches', Tekin G-10 Learn How-to: Use Caster, 24 Radio Glitch Fixes Features: '98 Winter Champs Coverage, Allen Driver Buyers' Guide. Evaluations: Xipp Power Jig, GM Discharge Box, Traxxas Free Wheel.

4.2 Sept-Oct '98
Reviewed: Associated L3 Oval, FSR Bullet Pro, TT VSpec. How-to: Cut 4WD tires, Stock Comm Cutting, Better Batteries. Features: MaxTec's Aftershock, On-Road Nats.

4.3 November '98
Tested: Schumacher Nitro 21 Xtreme, Tech Racing Voggered GT, JR Racing R-1 Radio, Tenth Tech. Streetwise Rally. How-to: Prep Stock Motors, Clean Tires. Features: ROAR Modified & Stock National Coverage.

4.4 December '98
Tested: HPI Nitro RS4 Racer, Kyosho Quad Rider ATV, Tamiya M-03 Rover Mini. Learn How-To: Start your own club, 10 Moto-tool R/C Uses. IFMAR On-Road Worlds Reports. Hook-Up: T3 & Street Weapon Guide to Pinion Gears. X-rattings: Team Cobra Probe 4000, Hitec CG-330 Charger, PSE Hood Tool

4.5 January '99
Tested: Losi NXT GP, Kawada SV-10, HPI RS4 Mini Pro, Tamiya SVT Lightning, GM GMVIS Commander. Learn How-To: Read Dyno Sheets, Build Your First Car. Tamiya TCS Nationals Coverage. What's New for '99

4.6 Feb-Mar '99
Tested: FSR Nitro Bullet V12, HPI RS4 Rally, Fox Team Losi R/C Racer. Learn How-To: 11 Tips to Better Decals, Use Camber to its Fullest Hook-UP: Associated B3 and Tamiya TA-03F Pro. First Takes: HPI Super Nitro RS4, Traxxas Nitro 4Tec, Tamiya Nitro TG-10, Losi IWC Street Weapon.

4.7 April '99
Tested: Yokomo YR4 M2 Pro, Traxxas Nitro 4-TEC, HPI Super Nitro RS4, Schumacher SST '99 Pro, Novak Millenium. Learn How-To: Choose and Use Nitro Fuel, Repair Broken Servos. Hook Up: Losi Double-XT. X-Ratings: Trinity Paradox, Take-Off Sedan Tires, INDI 16X2 Nitro, Parma Faskolor Paint. First Takes: Kyosho TF3-R Spider '99, Duratrax Maximum ST, HPI RS4 Pro 2.

4.9 June '99
Tested: Tamiya Wild Dagger, Kyosho '99 Spider, Kyosho MP-6 Int., Tamiya TA03R TRF, Lynx 3D Radio. Learn How-To: Mounting Electronics, Get a job in R/C, Anodize Titanium. Silver State Challenge race coverage. Losi Double-X and HPI RS4 RTR Hook-Ups .And More!

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Tested: Tamiya Juggernaut, Associated 10L3 Touring, Yokomo Mr-4 Touring Car, Trinity 12SB "Spashett Edition." How-To: Rebuild and Bleed Shocks, Driving Strategies and Techniques, Engine Break-In. Hook-Up: Associated RC10GT. Reedy Truck Race Coverage and more.

5.1 September '99
Tested: Losi Triple-X, Traxxas Nitro 4-Tec Pro, Tamiya McLaren MP4/13. How-To: Charge Ni-MH, Hook-up your HPI RS4 Pro2. Race Coverage: ROAR Off-Road gas and Modified electric Nationals, Reedy Touring Car Champs. Feature: R/C and the Internet, Drag racing basics.

5.3 December '99
Tested: Kyosho F-150 Landmax, Traxxas Stampede, New Era Drag. How-To: Sedan Tuning, Using Multi-stage foam. Features: ROAR On-Road Nationals, Tire Glue Buyers' Guide.

5.4 January '00
Tested: Associated TC3, HPI Nitro RS4 2, Kyosho MP-6 Sports, Tamiya Wild Willy 2, Tecnago 1/5-scale. How-To: Balance wheels, do everything better, Practice like a pro. Features: New for Y2K, Hook-Up Yokomo MR4 TC.

5.5 February '00
Tested:Thunder Tiger EB-4, Tamiya M-04L, Traxxas T-MAXX, Schumacher SST Rally, INDI 16X2 Pro V2.5, Motor Saver Filters. Features: Budget AM Radio Buyers Guide, Histor of Xtreme, Losi Triple-X Hook-Up, The Science of R/C, U.S. Indoor Champs. How-To: Get your Nitro Race Ready, Buy Ssed on the web.

5.6 March '00
Tested: Losi XX-4 Worlds,Yokomo MR-4TC Pro, Associated GT RTR, DuraTrax Axis. Learn How-To: Rebuild Gas Engines, Sell Your Gear On The Net. Xtreme's Bible of R/C Terms. Industry Insider: Ernie Provetti. And More.

5.7 April '00
Tested: Kyosho TF-4 Type R sedan, Tamiya Mad Bison, Losi Triple-XT, Schumacher Axis. Learn How-To: Set Throttle and Brake Linkage, Dyno Tune Your Stock Motor. Features: Hook-Up Your TC3, Reedy Race Coverage, How Graphite Worx

5.8 May '00
Tested: HPI Nitro MT, Mugen MTX-2, Kyosho EP Ultima, Yokomo MR-4 MT. Learn How-To: Reduce Drag and Resistance, Prep a new nitro engine. Features: Florida Winter Champs coverage, Battery Bar Buyers Guide, David Katz Interview

5.9 June '00
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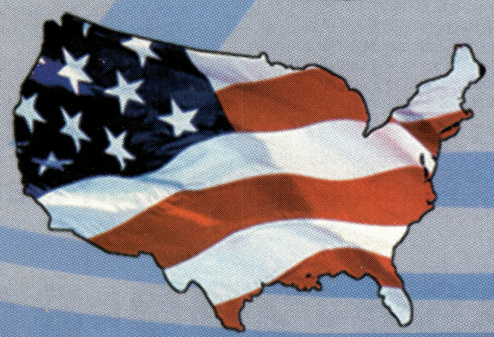

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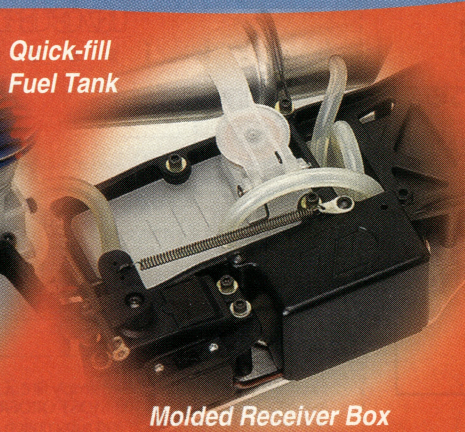



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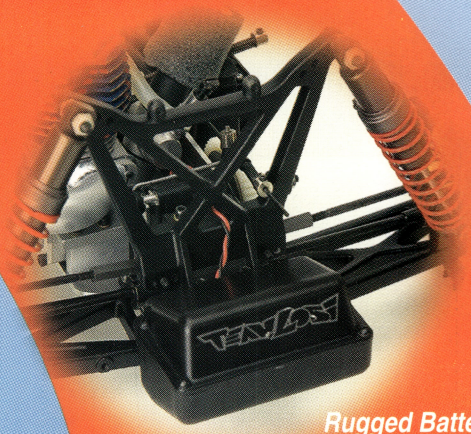
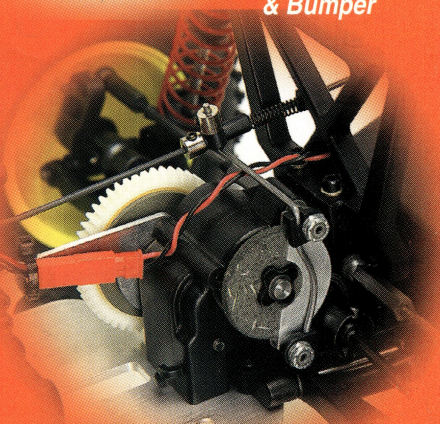


Rugged Battery Box & Bumper



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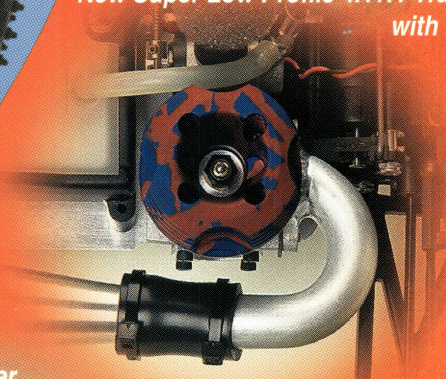

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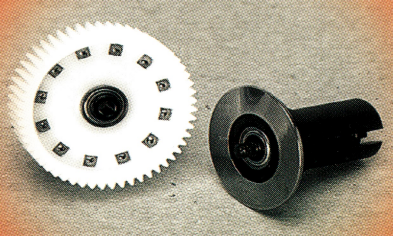

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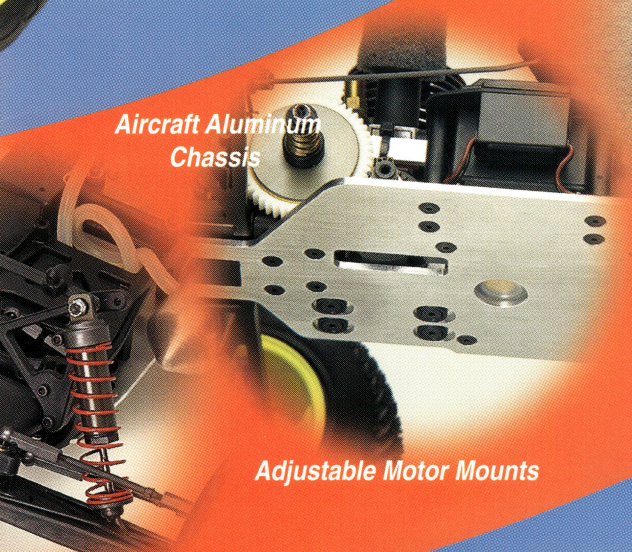

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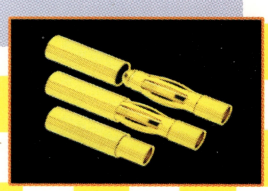

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