

FLORIDA'S OFFROAD WINTER CHAMPIONSHIPS

MAY 1989
Vol. 4, No. 40

RC *Model Cars* CONTROL

CD 08658

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FOGGING MADE EASY**



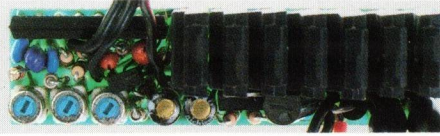
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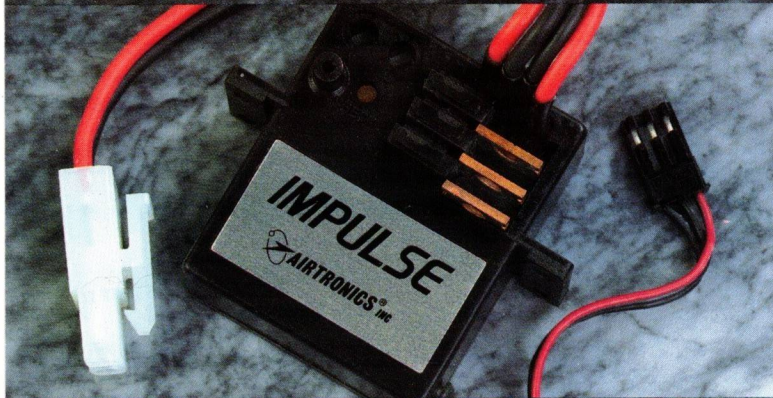
Specifications:

Voltage Loss: 0.010 Volts Per Amp

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Current Rating: Surge - 300 Amps / Continuous - 90 Amps

Weight: 0.78 oz.



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Weight: 2.2 oz.



96311 VORTEX SPEED CONTROLLER

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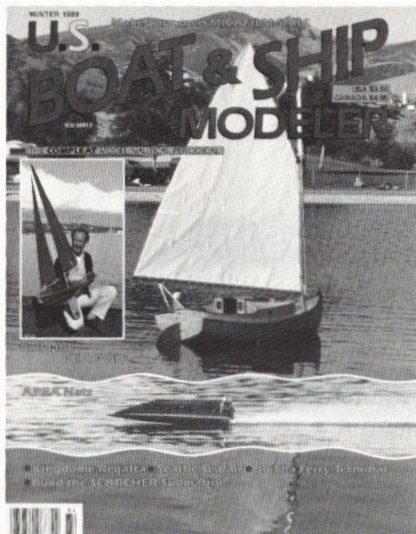
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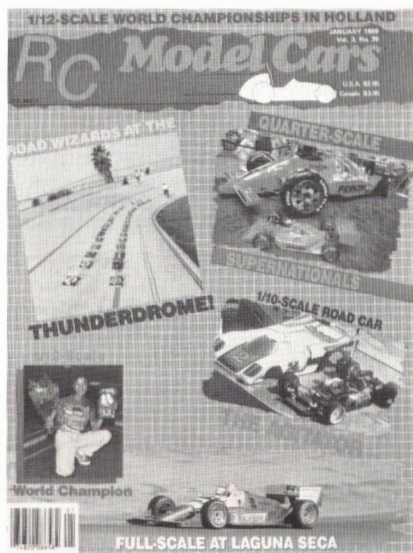
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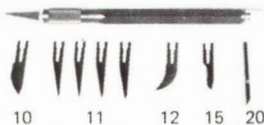
MODEL BUILDER, the premier modeling magazine covering all types of aircraft modeling, from Peanut to Giant Scale R/C. A one-year subscription brings 12 monthly issues to your door. **\$25.00.**



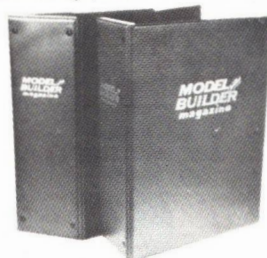
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Another candidate for the big and tough monster truck crown.

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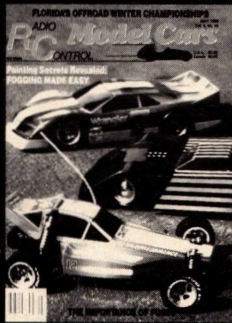
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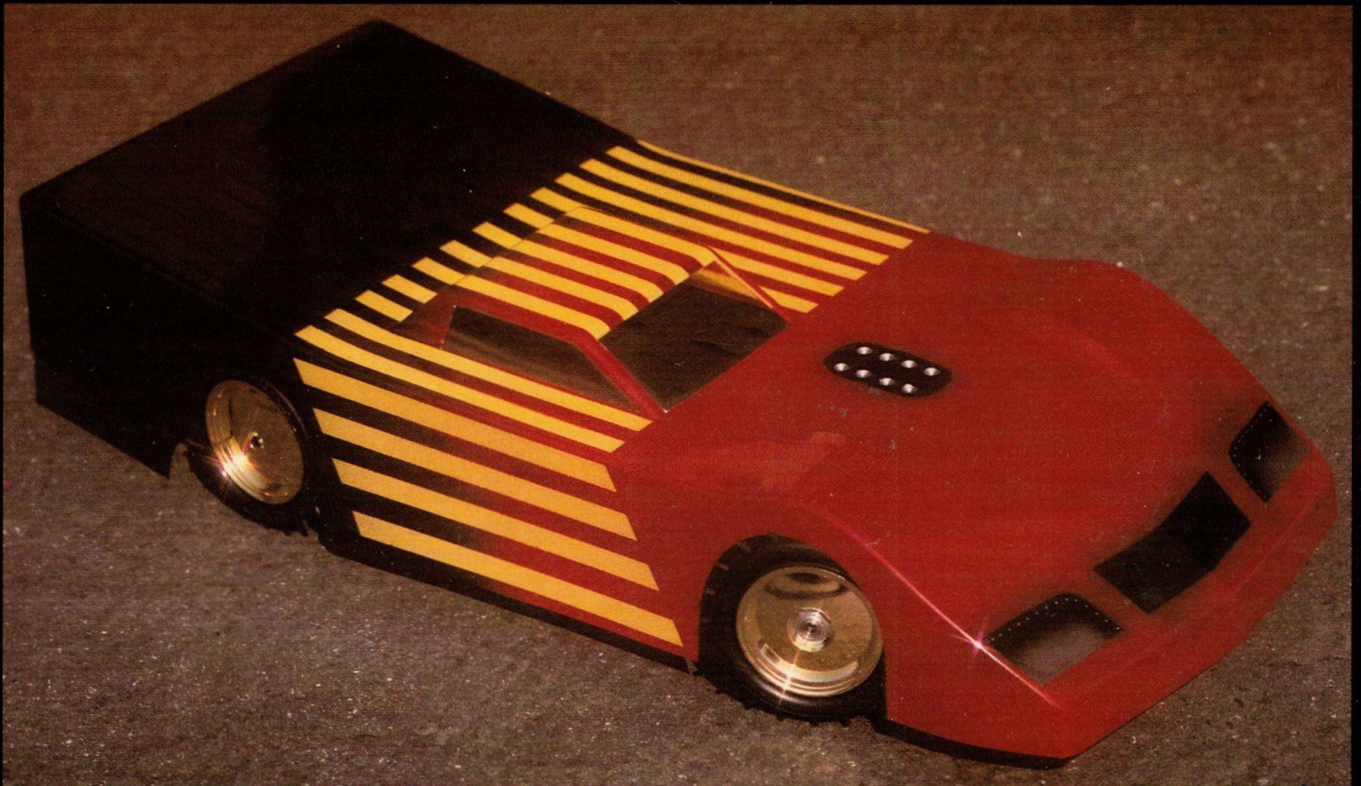
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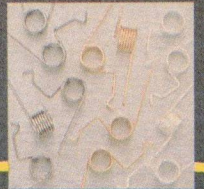
COVER: This month we run the gamut of R/C modeling with monster trucks, offroad racing, and 1/10-scale road cars, with a good measure of how-to advice for painters.





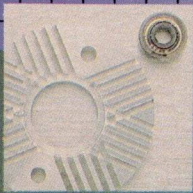
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- #0001 The Buggy Master, 20 Turns, 30,000 RPM
- #0002 427 4WD, 16 Turns, 36,000 RPM
- #0003 350 2WD, 18 Turns, 34,000 RPM
- #0004 Dirt Oval Stock, 2WD or 4WD
- #0005 Super Speedway Stock, On-Road
- #0012 The Road Beast, 20 Turns, 30,000 RPM



#4028, #4032 Lite
and #4033 Heavy
Replacement Springs.

Tomorrows Technology

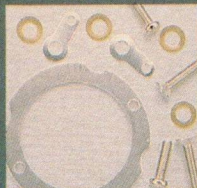


#4043 Motor Spacer,
#4031 Motor Bearing.

#0011 Sport Pack,
6 Cell Sanyo KR-1300SC



#4044 Motor Rebuild Kit.



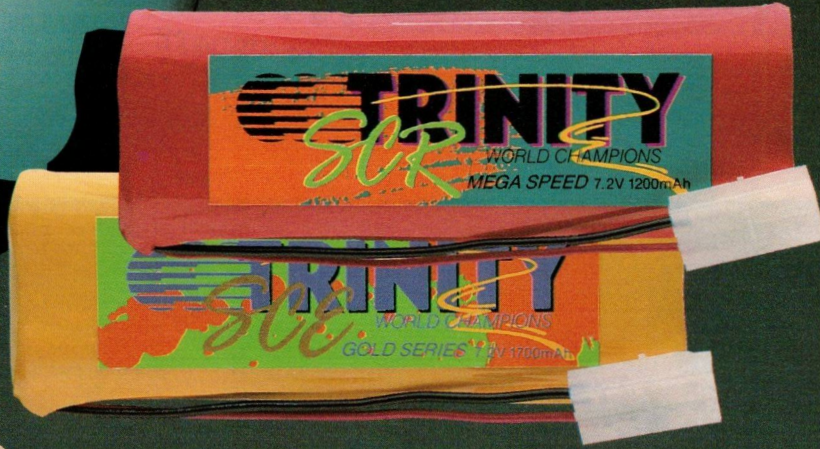
#4011 Capacitor Kit.



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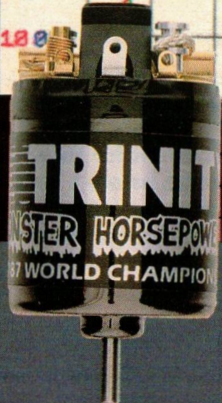
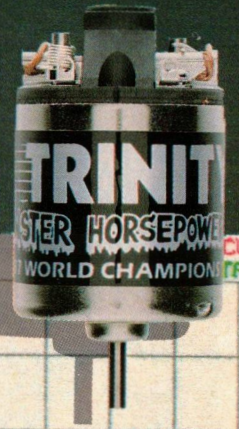
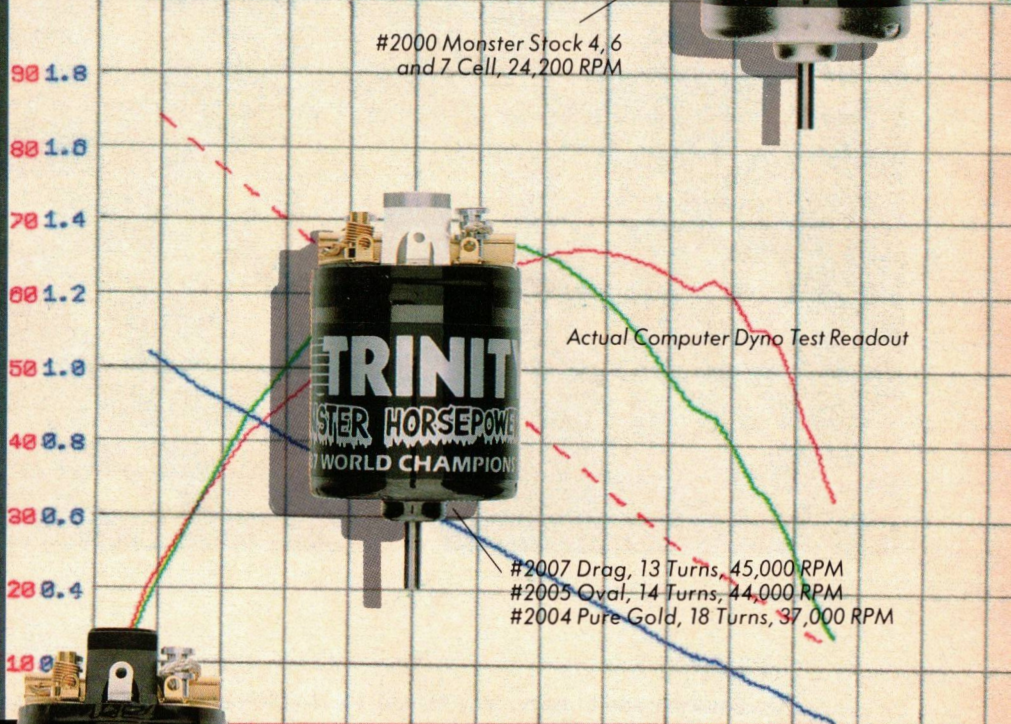
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TORQUE (kg.cm.)



#4005 Brushes/Springs,
#4006 Cut Brushes,
#4007 Timed Brushes and
#4035 Off Road Brushes.

TODAY

- #1012 Big Daddy, 10 Turns, 49,500 RPM
- #2014 Top Fuel, 11 Turns, 47,000 RPM
- #2015 Godzilla, 12 Turns, 46,200 RPM
- #2002 Sprint, 15 Turns, 41,000 RPM
- #1010 4 Cell Single, 15 Turns, 40,000 RPM
- #2008 Whippoorwill, 16 Turns, 39,500 RPM
- #1004 4 Cell Double, 16 Turns, 39,200 RPM
- #2011 Joel Johnson, 17 Turns, 39,000 RPM
- #1005 4 Cell Triple, 17 Turns, 38,000 RPM
- #1006 4 Cell Quad, 18 Turns, 36,000 RPM
- #2003 Enduro, 19 Turns, 35,000 RPM
- #1011 6 Cell Single, 19 Turns, 32,000 RPM
- #1007 6 Cell Double, 20 Turns, 29,000 RPM
- #1008 6 Cell Triple, 21 Turns, 28,000 RPM
- #1009 6 Cell Quad, 22 Turns, 27,000 RPM

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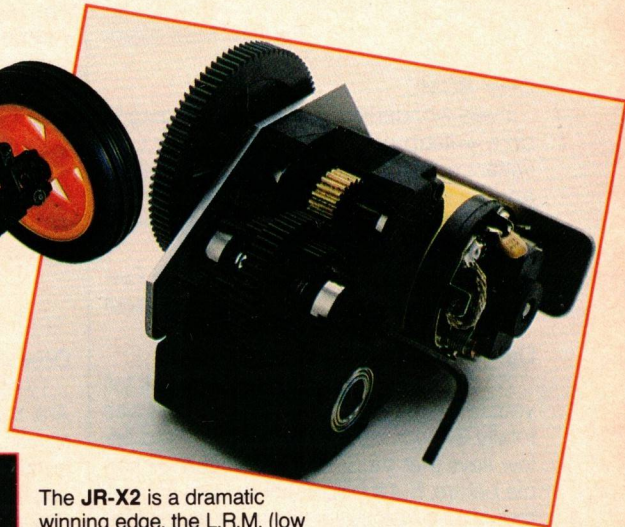
WHY JR-X2?

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GIL LOSI JR.

JR-X2 FEATURES:

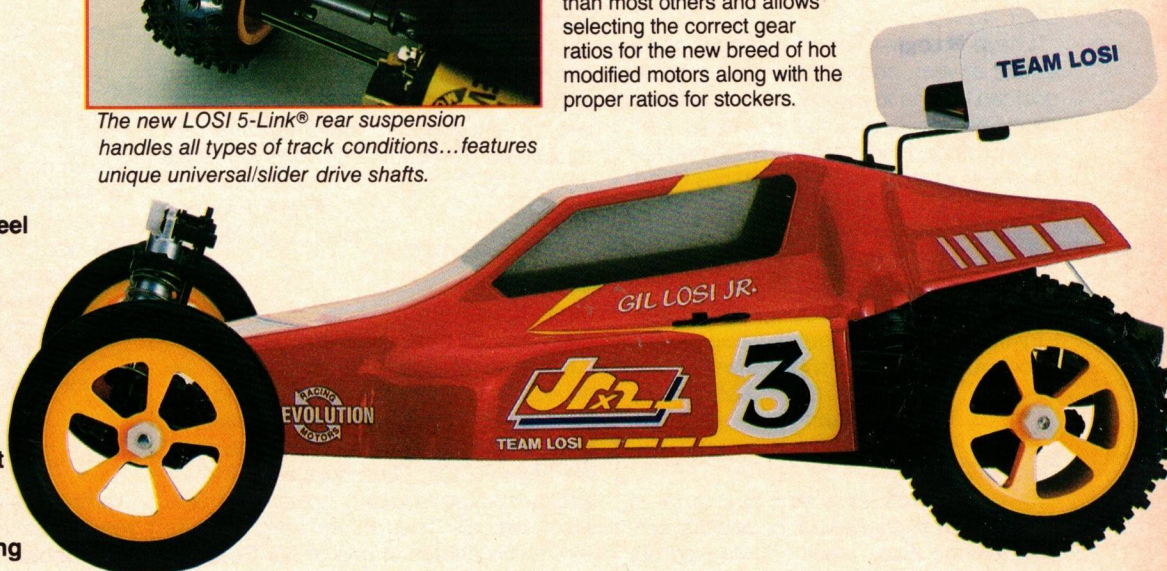
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The new LOSI 5-Link® rear suspension handles all types of track conditions...features unique universal/slider drive shafts.



Dear RCMC,

I really like the first few Readers' Pages of your magazine. You should have more of them. In your February, 1989 issue I like the Fox with the skis on page 12. I liked the Monster Beetles on page 14, especially the one on the bottom left. Also I liked the Clodbuster on the bottom right. Next year I want to get the Clodbuster. I have a Lunch Box now. I got it for Christmas. I really like your magazine. Keep up the good work.

Kurtis Dunn
Fenton, Mississippi

Dear RCMC,

I was wondering when you are going to do a writeup on the Kyosho Hi-Rider Corvette. I got one and haven't put it together and I want to know how good it is and if it is good for racing. PS: Your magazine is awesome!

Chadd Farr
Coventry, Connecticut

Dear RCMC,

Sorry I took so long to write, but I'll tell you, that article on the Thunderdrome was totally awesome! That Reed Deanfield fellow says that he has never written an article before, but if I didn't know I would have thought he had been writing for years! I felt like I was right there. Personally, it was the best article I have read. You better have him write another article!

Jeff Lee
Goshen, Kentucky

Dear RCMC,

I have been reading your magazine for about a year and a half, and I finally decided to write to you just to say that I think it just keeps getting better and better. I am an avid offroad racer with an RC10 that has been rebuilt extensively. I sent in a Readers' Page photo of my car but it hasn't appeared yet. I am hoping that it will show up soon. I hope to get into monster truck racing with a new Kyosho Big Bruiser, but as of now, I am saving my money for one. I think you guys are great! Keep up the good work. A faithful subscriber.

Alan Selwyn
Ann Arbor, Michigan

Dear RCMC,

In your March issue you have a lot of color photos of painted car bodies that simply blew me away. I was so knocked out by the colorful paint that I went and got a new oval track body (a Nissan GTP) and now I am waiting for the first installment of the series so I can paint it with the skill shown in your article. Let's see more of

these how-to features, like tire mounting and truing, motor care and rebuilding, and suspension setups for different tracks. I hope you like my suggestions.

Tracy Van Helms
Scranton, Pennsylvania

Dear RCMC,

I have been reading your letters column for the past several issues and I had not gotten around to writing like so many others before me have about the Thunderdrome article in the January issue. I just wanted to say that I thought it was the best thing I have ever read in your magazine. I felt like I was a participant in the race, and I live a heck of a long way from California! Your writer did a great job of informing and involving the reader in his saga. My compliments to your staff and writers for another terrific issue.

Ray Kenney
Boonton, New Jersey

Dear RCMC,

I just completed the *What Kind of Driver Are You?* quiz in your April issue, and the results say I am more suited for alligator hunting than R/C racing. I don't care what you say, I'm the Road Warrior from Mason City and I'll run over anybody who gets in my way!

Davey Hooker
Mason City, Iowa

Dear RCMC,

Thank you and Mr. Provetti for his informative article (*Battery Sense*, April, 1989) about battery cells and how to treat them. I never knew there was this much involved in charging and discharging Ni-Cd batteries, but now, thanks to your magazine, I am no longer in the dark. Why don't you tackle motors next?

Frank Eastman
Carson City, Nevada

Dear RCMC,

My friends and I built our own offroad track in a lot down the street from my house. We started with three of us, and now there are about eight or ten who come most afternoons and on the weekends to race. We have RC10s, Grasshoppers, Ultimas, and a Yokomo showing up at our track, which we call "The Prairie." I am going to take some photos of one of our Saturday sessions and send them to your magazine for a Track of the Month article. The Prairie rules in East Oakland!

Baxter Brissman
Oakland, California

Dear RCMC,

I just finished reading Stephen Brown's article on the new Trinity Speedworks Motors and boy was he right! They are very fast and even my friends and I can afford them. After reading the article, I bought the 350 and my friend bought the Buggy Master. We now have two of the fastest cars around.

What I want to know is how come my Speedworks Motor cost \$35 and my Twister cost \$79, but my Speedworks is faster. Thank you for letting me know about these motors and please thank Trinity for caring about us racers.

Mike Miller
Kimball Union Academy
Meriden, New Hampshire

Dear RCMC,

It was just the other day I was saying to a friend that I was thinking about getting a Parma Pro Panther 10 car for road racing, and then your magazine came out with a review (March, 1989) by Woody Trimble that convinced me. Thanks for your timely feature on the Pro Panther.

Dick Adler
Ironton, Missouri

Dick: The Pro Panther 10 article you mentioned that appeared in our March, 1989 issue was authored by Mike Liem, our well-known Trackside columnist, and not by Woody Trimble. Apparently Mike is well-known to most people, but not to our proofreader.—Ed.

Dear RCMC,

I have been saving my money for a new R/C car to replace my old Frog, so I haven't been buying your magazine every month and I was wondering if you have printed a picture of my Frog in the Readers' Pages yet. I sent it on January 4, 1989. Please tell me if it was in the magazine yet, which one, and what page so I can get it. As I said, I am saving my money for a new car and I can't buy every issue. PS: I will pay for the issue that my Frog's picture is in. It is red, white, and blue with stars on the side that my dad put on after I painted it. It looks total.

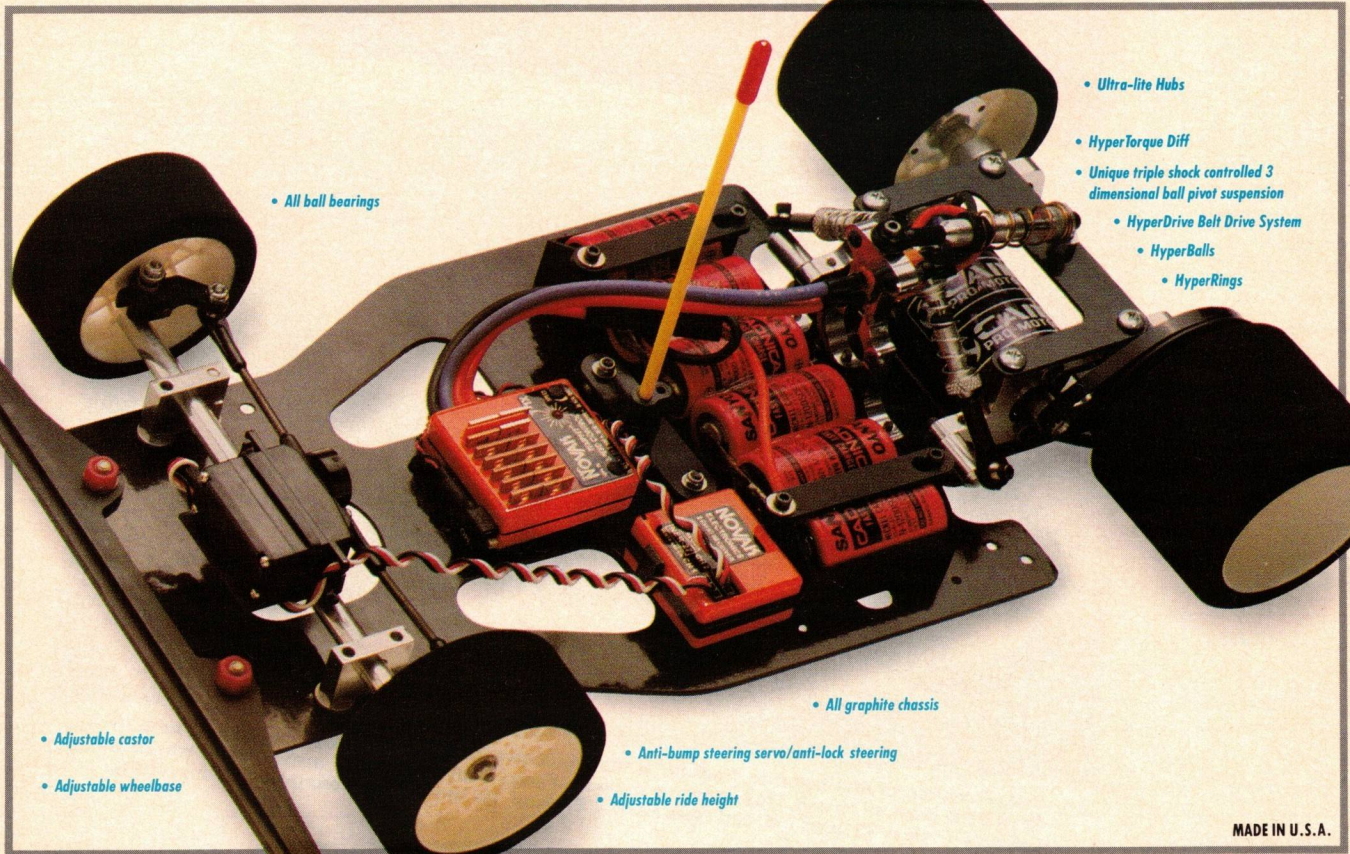
Warren Branfill
Ft. Walton Beach, Florida

Warren: We've been overwhelmed by the reader response to our Readers' Pages free photo section! When a Readers' Page photo comes into the office, our secretary puts it into a file in order received. That means that the photos in the front of the file came in the earliest, and they get used first.—Ed.

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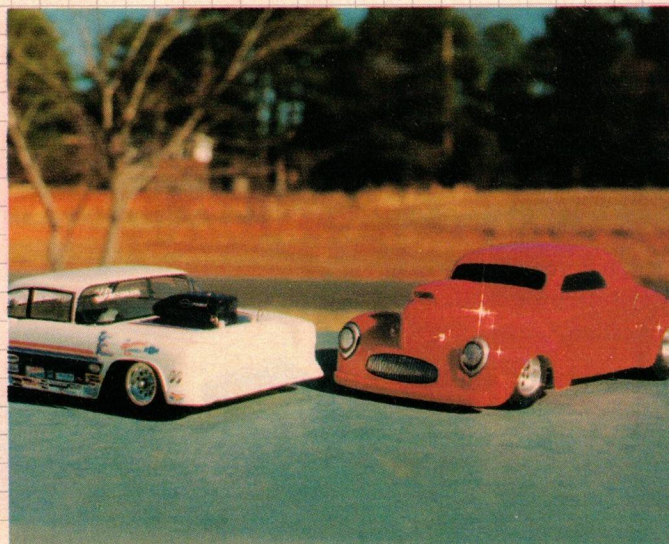
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READERS!

If you want to see your R/C car on these pages, and also have a chance at winning a free, one-year subscription to the best R/C car magazine anywhere, all you have to do is send your name, address, and a little information about your car to Readers' Photos, 898 W. 16th. Street, Newport Beach, California 92663. If your photo is picked as one of the month's best, you'll get a free subscription! All photos received are used in the magazine, so you are a winner any way you look at it!



Craig Drescher, of Staffordshire, England, is the proud owner/racer of this hot Ultima by Kyosho. It has a D&D graphite chassis, Option House shocks, a Parma body, and locally made chrome wheels and Cat tires. Craig is 13 years old, and races all over England. He wins a free subscription for his efforts.



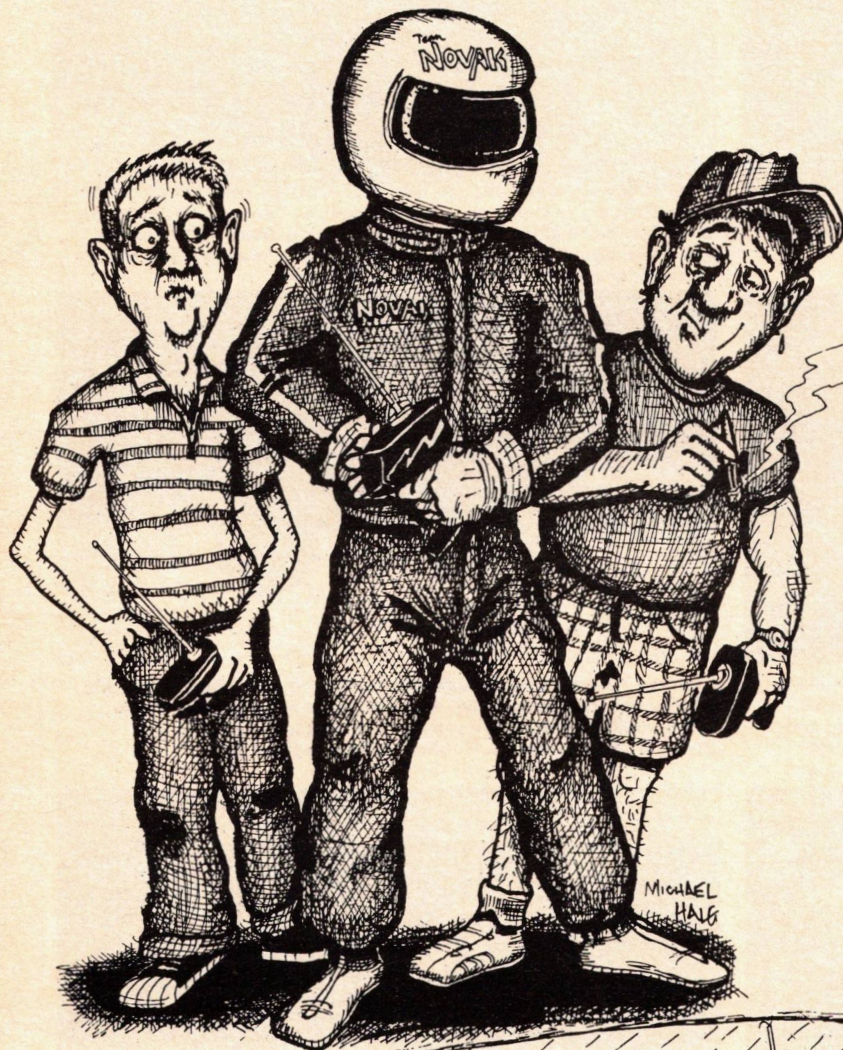
Two 1/10-scale drag cars from John Lee Roberts, of Charlotte, North Carolina. The '41 Willys has an Advanced Engineering Pro Stock chassis, and the '55 Chevy has a BoLink Round Tracker Chassis. The '55 has a Trinity motor, the Willys a Black Magic. A free, one-year subscription goes to John Lee for his Readers' Photo.



This Tamiya Wild One has a MRP Pinto modified body covering up a Trinity Stock motor, a Futaba Magnum Junior radio system, and full ball bearings. It also includes Pro-Line front bumper and Cherokee rear tires, and stock wheels. It is the proud work of Joe Kerckmar, of Reading, Pennsylvania, who gets himself a free subscription.

Because there's a difference
between being ready to race and just
showing up at the starting line...

...THERE'S
NOVAK

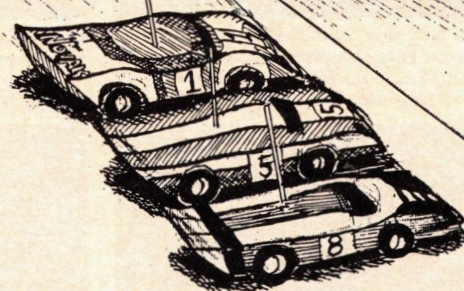


Novak products are designed with the racer in mind. With over 10 years dedication to the RC industry & over 35 years in active modeling & racing, it's easy to understand why performance parts from Novak were used by fifteen out of seventeen 1/10 & 1/12 Scale National Champions in 1988.

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- CHARGERS
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1988 Cleveland 4-Cell Race Results:
Shawn Ireland: Modified Class Winner and
Dwight Smith: Stock Class Winner using
NOVAK Speed Controls & Receivers.

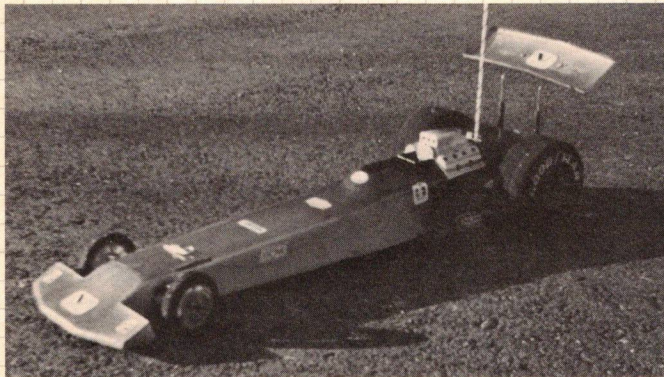
NOVAK ELECTRONICS, INC., 128-C E. Dyer Rd., Santa Ana, Ca. 92707



Mike Dailey, of Athens, Ohio, says his RC10 burns up the track with its stock motor and Race Prep parts. The car was painted by Mike's brother, Dave. The radio is a Futaba Attack.



Chris DeSocio's Clodbuster is nicknamed the Demon of Destruction. It has ball bearings, working headlights, two LeMans 480T motors, and Chris says when he brings it out, his dog runs away! He's going to have the suspension chromed too. Hot stuff!



This hot dragster is from Jack Moore, of West Chester, Pennsylvania. It was built by Ray Naylor at Hyatt Hobbies, in Lionville. With a Checkpoint 4-cell motor powered by 8 Sanyos, a Novak speed control, and KO receiver and servo, the dragster can do a 1/12-scale quarter mile in less than 2.5 seconds. Jeez, Louise, that's moving!!



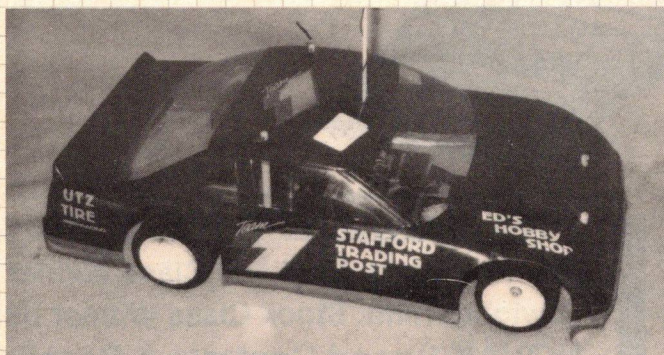
Thirteen-year-old Leo DeSade sent this photo of his Monster Beetle all the way from Monticello, NY. His Beetle has a LeMans motor, and a modified suspension system. Leo says he bought his big Beetle from Mid-Hudson Hobbies, in Middletown, NY.



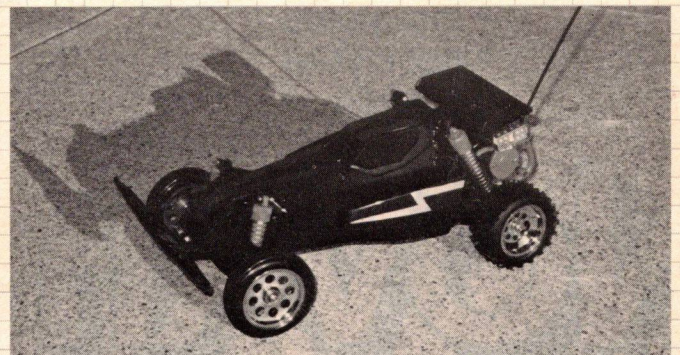
Hobie Chittenden, of Sodus Point, NY, says his RC12i was clocked by a cop at 44 mph in a 30-mile zone. It is called the Vapor, says Hobie, and is powered by a Dymond Super Sprint motor, with a Novak speed control, Losi gears and bearings, and a graphite axle.



Kevin Gabbard, of Perrysburg, Ohio, says his Tamiya Striker is almost totally stock, except for ball bearings and Pro-Line wheels in the rear with Fox tires. It does great wheelies, says Kevin, who notes that his Striker is really fast.



An asphalt/carpenter racer from an RC10 with an ASA Camaro body is from LaVerne Pangrazio, of Stafford, NY. It has a homemade lowering kit, a KO speed control, BoLink foam tires, Trinity Gold motor, and LaVerne says it smokes!

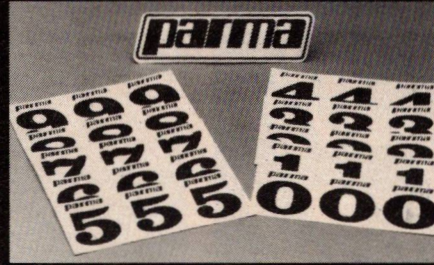


"I am 14-year-old Dan Blecher of Omaha, Nebraska. I own a Falcon with gold rims, Trinity motor and full ball bearings. It is controlled by a Futaba radio."

25 YEARS OF WINNING SERVICE TO THE HOBBY INDUSTRY



#10272 (Body) \$19.00
 #10450 (Body Mount) \$ 6.50
 Parma's latest 1/10 scale truck body is the Midnight Pumpkin, a direct replacement for the Tamiya car. Molded in clear lexan, it features all the detail of the styrene body, but with the crash resistance and easy painting qualities of lexan. The Midnight Pumpkin body will also fit other cars and trucks with the use of a body mounting kit. Both are available at your local Parma dealer.



#10721-10730 6/\$3.60
 Parma's classic race numbers. This bold black on white design is highly visible and will make sure all your race vehicles are counted correctly. Available at your local Parma dealer.



#12114 (Front, Pair) \$10.00
 #12115 (Rear, Pair) \$10.00
 Attention Tamiya owners... now you can get the popular three piece gold wheels with front or rear tires at a new low price! Both are available now at your local Parma dealer.



#13003 (Bushings) \$6.75
 #13215 (Front) \$3.50
 #13216 (Rear) \$6.00
 Parma's latest accessories are bumpers for the Tamiya Thundershot. Front and rear bumpers are made from durable kydex. Also shown are adjustable rear swing-arm bushings for the Tamiya Striker/Futaba FX-10 cars. Direct replacements for stock bushings, these allow you to adjust rear camber for better handling. Visit your local hobby shop for these and other Tamiya accessories from Parma.

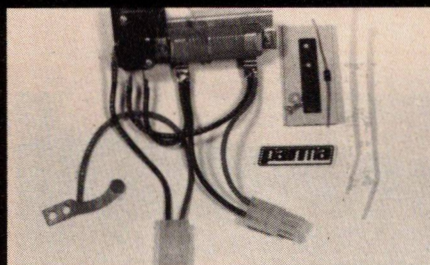
parma NEW PRODUCTS No. 5



#10284 (Body, Tray & Wing) \$29.50
 #10284B (Body Only) \$15.00
 #10284T (Tray Only) \$15.00
 Parma proudly introduces the brand new 1/10 off road Kyosho Optima-mid replacement body. This sleek, detailed champ is available in three versions, (as shown above). All components have been precision vacuum formed to make any Optima-mid look like a "winner". Rush down to your local Parma dealer and make your "winning choice" from Parma's wide range of quality bodies.



#1957 (Clear) \$11.00
 #10278 (Clear, not shown) \$19.00
 A beautifully detailed replica of one of Parma's finest 1/12th scale bodies! The real, Parma owned, Lola T-900; the very car that Mario Andretti drove to a winning finish in 1984. This same car can help you make your winning finish. If 1/10 scale is more your speed, look for our Penske, PC-17 Indy body (not shown). Both bodies fit all on road cars in their scale, and both are available now at your favorite Parma dealer.



#11518 \$24.00
 Parma's popular assembled speed control. This control is pre assembled with reverse for quick and easy installation in most R/C cars. Comes with complete hardware set and instructions.



#10234 \$22.00
 Parma's most popular 1/10 scale body is the classic 1957 Chevrolet. Available in clear lexan it sets the standard for detail and realism. Now available at your local Parma dealer.



#10267 (Clear Body) \$19.00
 #10450 (Body Mounts) \$ 6.50
 Parma's latest NASCAR body is the 1/10 scale 1988 Oldsmobile. Molded in clear lexan, this detailed aerodynamic body is sure to be a favorite with oval enthusiasts. Fits most 1/10 chassis with the use of Parma's body mounting kit. Look for this and other Parma bodies at your local Parma Dealer.

PARMA'S MOTOR SERVICE FOR ANY MAKE MOTOR

ONLY \$12.00

Parma motor technicians will give you *More Kick In Your Car.*

- Disassemble & clean entire motor.
- Computer balance your armature.
- Diamond true your commutator.
- Remagnetize your magnets.
- Dyno-test for maximum R.P.M. and minimum amp draw.

*** PLEASE INCLUDE EXTRA FOR FOLLOWING**

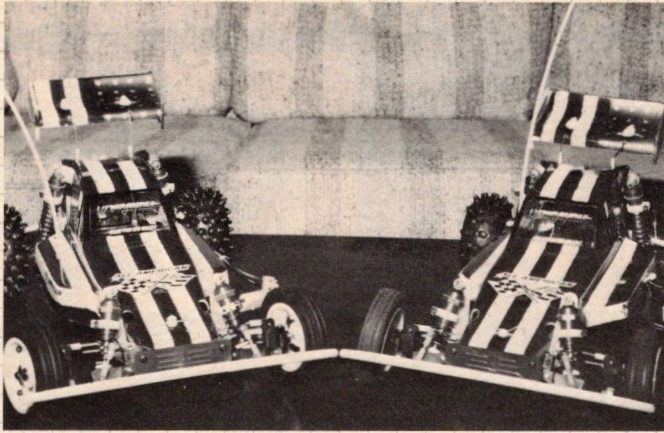
- New Motor Brushes \$3.50 pr.
- New Motor Springs \$2.00 pr.
- New Motor Bearings \$6.50 ea.
- New Armature \$30.00
- We pay shipping inside N. America
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- Armature tune-up
- Inside N. America \$5.00
- Outside N. America add \$1.00 postage

SEND \$2 FOR A FULL SET OF COLOR CATALOGS & 1/10 BODY POSTER

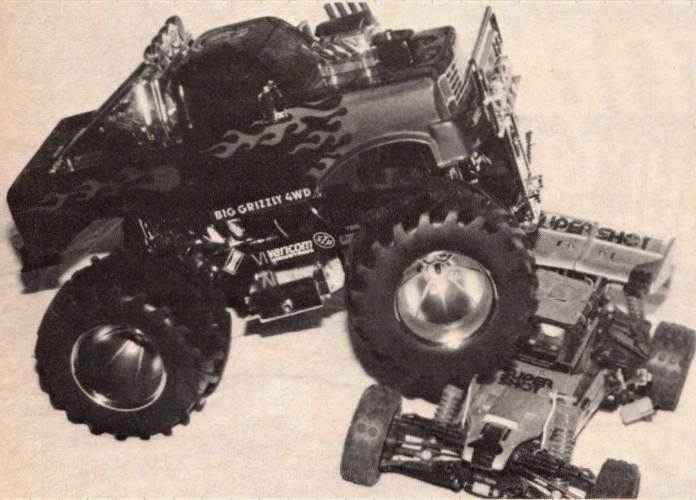
* Parma Regrets that we cannot supply individual orders on a retail basis. For parts and information, contact your local Parma dealer.



These two patriotic RC10s are from Jimmy and Uncle Don Gates, of Holbrook, NY. Both cars feature Twister modified motors, Sanyo matched batteries, Futaba speed controls, and ball bearings.



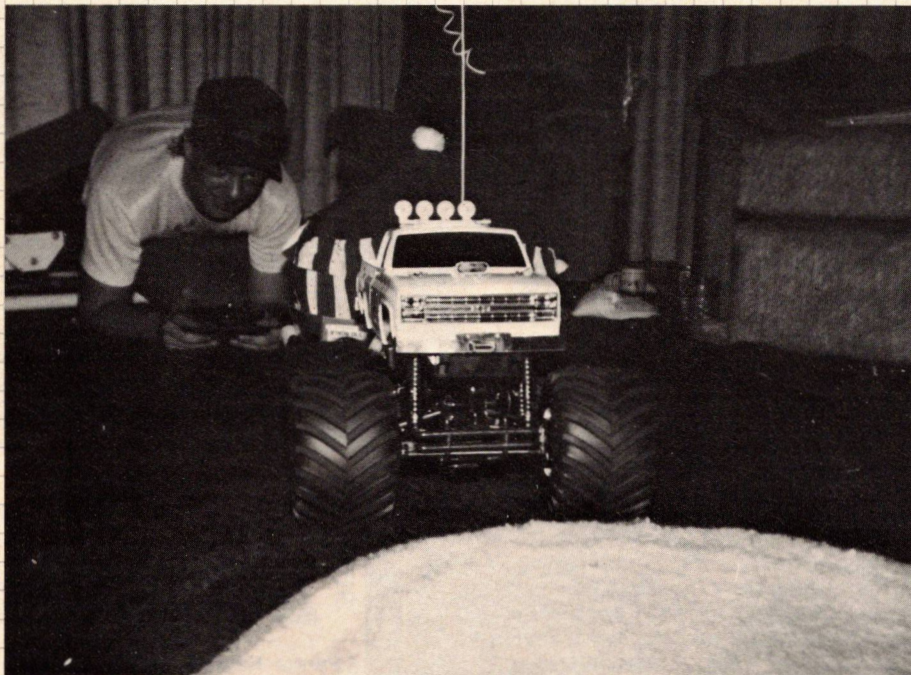
"I am one of your biggest readers and I have a Tamiya Lunchbox. It has regular coil spring shocks and a 3-step speed control which I will replace with an electric one. The motor is a Trinity offroad stock. Me and my dad did the painting. I plan to get some more Lexan bodies for my Lunchbox." Jim Mastroddi, 12, of Norwood, Pennsylvania. Jim, a free subscription is coming your way!!



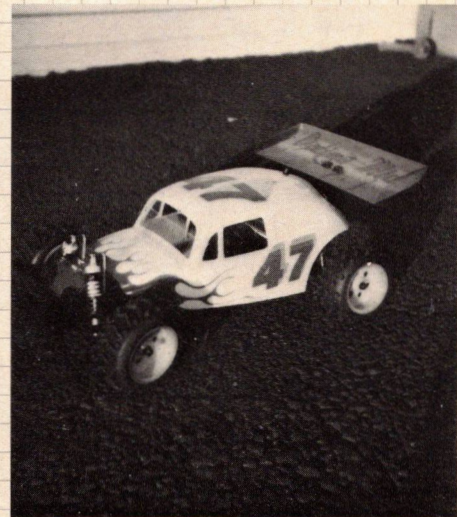
Big Grizzly II is from Chad Dorr, of Salem, Ohio, who also gets a one-year subscription to R/C Model Cars for sending in his photo. Chad and his dad sent a bunch of the parts out for chroming, and his dad went to work on the paint job. He's a tool & die maker for GM, and he's working on a trailer for Chad's truck so he can pull his Fox that will be remade into a Willys Pro Street racer.



A Turbo Optima from Thomas McCormick, of Portsmouth, Virginia has a 240 LeMans motor, a belt drive, front and rear stabilizers, a Tekin speed control, Kyosho Gold shocks and Kyosho racing clutch. The paint job was done by Tom with a brush!

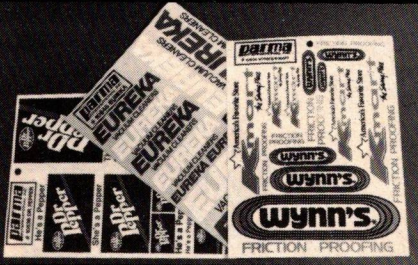


R. Buck managed to get his mug in the picture with his Clodbuster. Pretty sly, R.! He comes from Mishawaka, Indiana, wherever that is. Next time, more truck, less Buck!!



A BoLink Bug body and a Parma 1/8-scale wing covers a fast Optima Mid with bearings and Kyosho Platinum shocks. Powered by a Peak Performance motor and a Tekin speed control. Wheels and tires are Pro-Line, and the whole kit is the work of Skip Collingwood of Scappoose, Oregon.

25 YEARS OF WINNING SERVICE TO THE HOBBY INDUSTRY



#10636 (Dr. Pepper) \$3.00
 #10646 (Eureka) \$3.00
 #10634 (Wynn's K-Mart) \$4.00
 Parma's line of high quality, colorful, mylar decals continues to grow; with the introduction of Dr. Pepper, Eureka and Wynn's K-Mart. Many of our decals are also available in 1/8 scale and slot sizes. No matter which is your preference your bound to find a Parma decal to make your car look like a winner! Find a full selection of Parma decals now, at your local Parma dealer.



#10271 (Body, Tray & Wing) \$29.50
 #10271B (Body Only) \$15.00
 #10271T (Tray Only) \$15.00
 Definitely the winners choice! The Parma direct replacement 1/10 Schumacher cat body, is now available, in durable, paintable lexan. This hot combo is available in three versions, (as shown above). All components have been precision vacuum formed. These and other race proven products are waiting for you now at your favorite Parma dealer. Go ahead, make the winners choice!



#10406 \$7.00
 New from Parma is this Sprint car wing kit. Die cut from clear lexan, this kit contains the wing, side-dams and necessary hardware and is adaptable to most 1/10 Sprint cars available at your local Parma dealer.



#10215 (Clear) \$15.00
 #10215CP (Painted) \$22.00
 Parma is pleased to introduce the ever popular Chenoweth body for 1/10 scale. This precision vacuum formed lexan body is available in clear and custom painted versions. Although specifically designed to fit the RC-10 without any special mounts, it will fit other chassis. See your Parma dealer for details.

parma NEW PRODUCTS No. 6



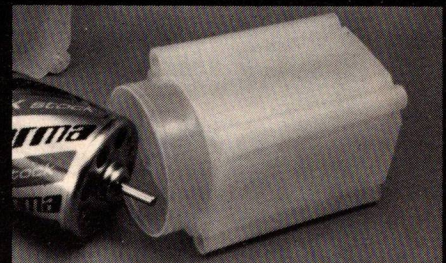
#15010 \$150.00 #15020 \$150.00
 #15030 \$150.00 #15040 \$130.00
 #15050 \$140.00

Get "Streetwise," with Parma's highly acclaimed Pro Panther series of on road 1/10 scale cars. Pictured from right to left is the Pro Panther Hot Rod (#15030), Sports (#15010), Challenger Sprint Car (#15040), Pro Drag Funny Car (#15050), and NASCAR (#15020). All are centered around a state of the art rolling chassis (center), and are available in basic, deluxe and deluxe kits with radio! To find out more, rush down to your local Parma dealer today!



#1964 (Body) \$11.00
 #8012 (Body Mounts) \$ 5.50

Parma is proud to introduce it's 1/12 scale NASCAR '88 Olds. Available in clear with Parma's usual detail, it combines excellent detail as well as superb aerodynamics. It fits all 1/12 scale chassis with the use of a Parma universal 1/12 body mount kit. Now available at your local Parma dealer.



#11028 (Motor Tube) \$ 1.75
 #14023 (K Stock) \$28.00
 Protect your valuable racing motors from dirt and abuse, with Parma's new motor tubes. Molded in plastic with a snap-lock top it's sure to prove itself in protecting your valuable racing motors. Also shown is the race proven Parma K-Stock motor. This motor is R.O.A.R. approved, and the hands down choice of many racing clubs. You'll find both, at your favorite Parma dealer.



#17025 (Front) Pr. \$16.00
 #17125 (Rear) Pr. \$17.00
 Parma is proud to introduce their new 1/10 scale on road wheels with mounted and trued race rubber. These fronts and rears consist of tough, lightweight Parma wheels with "green" rubber mounted and trued to "race ready" tolerances. Parma wheels and tires fit the Pro Panther 10 series of cars as well as Bolink, TRC, Compositecraft, Lazerlite, Victor, Associated and other 1/10 on road cars. Look for them at your favorite Parma dealer.



#18040 (3") 2/\$3.00
 #18041 (4") 2/\$4.00
 Parma's selection of body mounts and accessories has expanded to include super strong body mounts. Specifically designed to withstand the rigors of high speed road or oval racing, they are available in 3" and 4" lengths. Look for them at your local Parma dealer.

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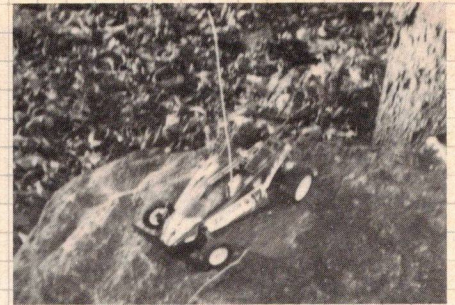
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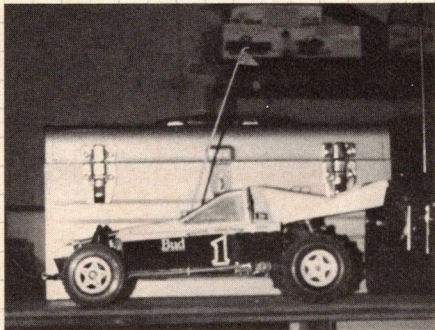
Here's Matt Fox' Big Bear doing a wheelie over his Grasshopper. The Bear has a LeMans 360 ST motor and a Parma speed control.



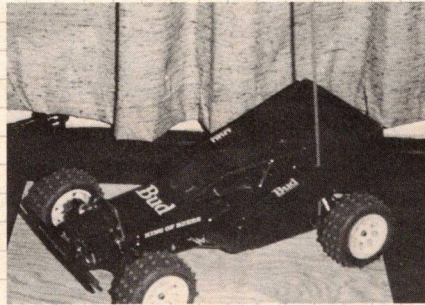
Damon Converse, of Fremont, Michigan hopped up his Monster Beetle with a Revolution motor and a Parma Blazer body. Yeoww!



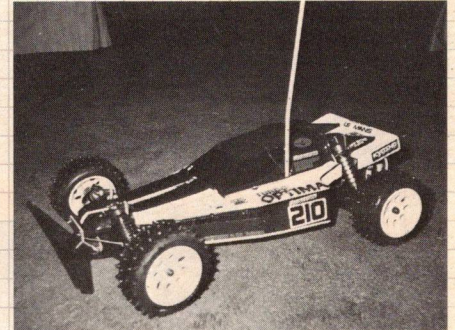
This month's journey into camouflage photography is from Gen Takahashi, of Huntsville, Alabama, who put a LeMans 240ST motor, ball bearings, and M&M front bumper on his Hornet, and it flies, says Gen.



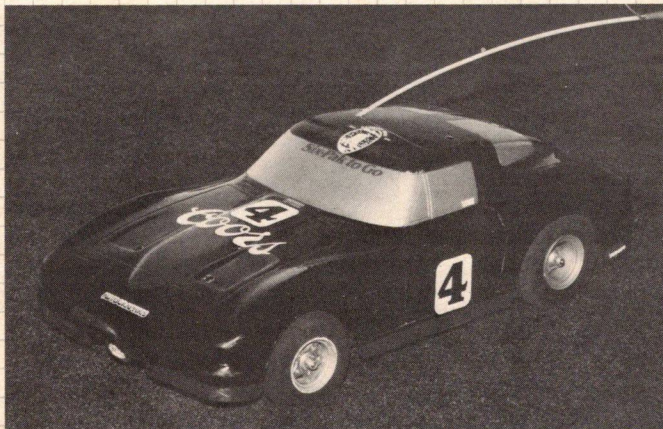
Steve Moore, of Oak Forest, Illinois has a Hornet with a Parma body, ball bearings, a LeMans 480 Gold motor, Troll tires, and a Futaba Attack-R radio.



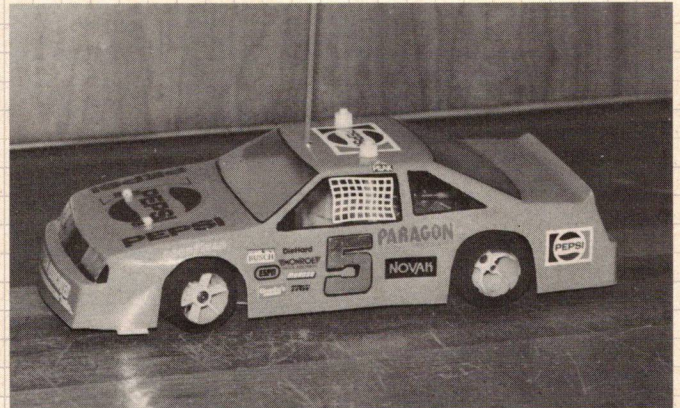
A Hot Trick/Optima Ram with a Race Prep modified motor, full ball bearings, Thorp Overdrive gear set, and Airtronics radio is owned by Sean Corcoran, of Corona, California.



Matt Miluk, of Staten Island, NY sent in this shot of his Turbo Optima with a LeMans 240DS motor, and Novak speed control.



This Frog has a '63 'Vette body that was painted by Denis (I'm 12) Boulter, of San Diego, California. The Frog has an Associated speed control, rear end shocks, and competition motor.



A clean RC12L is from Jim Gorumbei of Dolton, Illinois who added a Novak radio and speed control, Losi 64-pitch gears and Superstock motor. The body is a McAllister '86 Olds fastback. Even with a fiberglass chassis, the car is very competitive, says Jim.



"This is my Monster Beetle I got for Christmas. It took me about a day to build and two days to paint(with a brush). I added the Beetle visor and a rear view mirror with a foxtail hanging from it. It's got a 540 motor and mows down Hornets and anything else. Your friend, Ray Richardson, 16 years."



Jason Edwards, from Lincoln, Nebraska built his Midnight Pumpkin in about seven hours. It has a 540 motor and a Futaba radio. It runs great, just like a Chevy, says Jason.

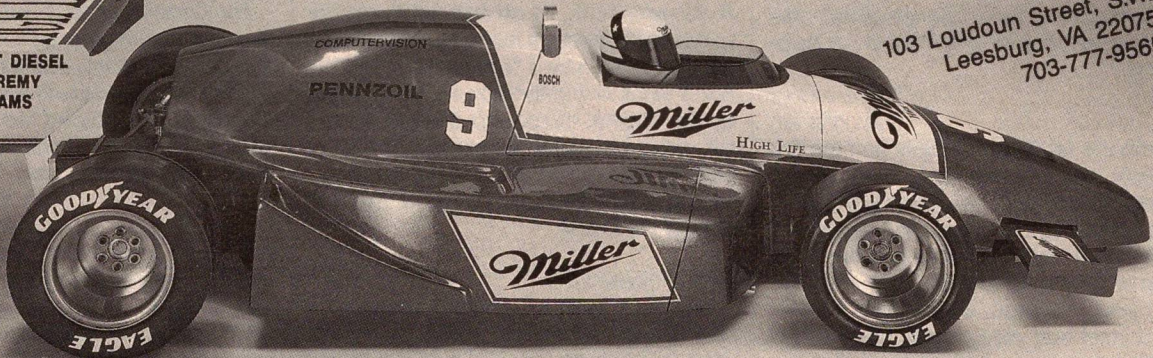
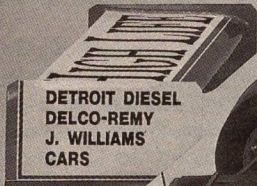
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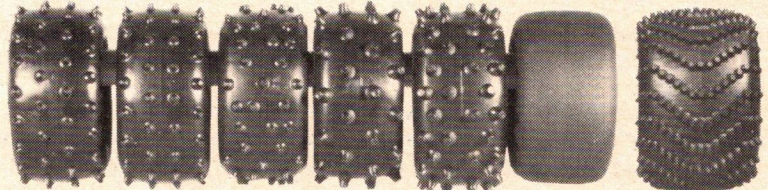
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...Margaret
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WHAT WOULD BE THE BEST?

Dear Answerman,

I have an Optima that I race in a racing club, but I've been looking for a carpet racing car. I've been looking at the McAllister Outlaw Stock Car and the Composite Craft Predator. I would like to know which one would be the best for oval and road course racing and how to set it up. What would be the best ESC, motor, radio, and batteries? What would be the best for pavement tracks, rubber slicks or sponge slicks? I like your magazine a lot and thanks for helping me.

Chris Landers
Elmore, AL

A. Both the McAllister Outlaw and the CC Predator are fine oval and road racers. However, the Predator is definitely the more competitive of the two, as it comes with full ball-bearings and lightweight graphite components. The lower-priced Outlaw stocker has metal bushings, a fiberglass chassis and a steel rear axle, and is more suited for the beginner in 1/10 on-road racing.

Choosing items like ESC's, motors, and batteries is really a matter of preference for most racers, as the latest in R/C car technology has produced the best available racing accessories. My advice is to go with well-known manufacturers like Novak, Trinity, etc.

Sponge tires are best for on-road racing (carpet or asphalt) as they give you the maximum in traction.

Dear Answerman,

I'm 12 and I have two R/C cars. I have the Panda and the Cyclone. The problem is it's winter. I would have sent away for a ski kit but I want to be sure of what I'm getting. The other problem is getting the best deal. I would also like to know if they are good for racing? Oh, yeah, what would you suggest for speed controllers? Is there any conversion kit I can get so I can get new bodies for the Panda?

Chevy Peters
Argyle MB, Canada

A. Chevy, the only manufacturer of ski conversion kits that I'm aware of is Vini's R/C and Hobby Supplies, who makes the S.T. 1000 Winter Conversion Kit. Their address is 36 - 13th St. West, Prince Albert, Sask. (Canada). Contact them on the feasibility of converting your cars using their kits.

Any of the speed controllers manufactured by the "big" names like Novak or Futaba will do just fine, but a good MOSFET-type speed controller will probably cost more than what you paid for your Panda or Cyclone. For mounting just about

any body style on your cars, the Parma body mount kit is the easiest way to do the job.

Dear Answerman,

My RC10 can almost go 70 mph and I was wondering if you can tell me the speed of a regular road RC10?

Nick Stewart
La Crescenta, CA

A. 70 mph! Nick, I'd go and get that radar gun recalibrated! I'm not sure I understand what you mean by a "regular road" RC10, but a stock out-of-the-box RC10 powered by the original motor and a si-cell battery will probably have a top-end speed of around 25 mph. Not too shabby when you consider that the scale speed comes out to over 200 mph.

Dear Answerman,

I want to know if it is possible to turn a radio-controlled car into a truck. And if so, what materials do I need. Could you tell me where to get a frame for a car? I think your magazine is rad. Thanks for your time.

Tommy Smith
Bradford, OH

A. I don't know what make and type of an R/C car you have, but it is possible to convert some offroad cars into "monster" trucks. The easiest way is to get a conversion kit like the ones manufactured by Andy's and JG Mfg. The kits are available for most two-wheel drive offroad cars.

Dear Answerman,

I was wondering if I could have your opinion. I have an RC10. Right now, it's totally stock. I was thinking about buying a better stock motor or just modifying it fully. If I modified it, what motor and tires would you suggest? If there is anything else that you personally would do to make it better, I would appreciate it if you would tell me.

Scott Norfolk
Berea, OH

A. A stock motor and new tires would definitely improve your RC10's speed and handling. Any of the stock motors from major manufacturers like Trinity or Reedy would be a good choice. For tires, Associated's new racing tires, which are of the spiked and low-profile variety, will give you much better traction than the original tires.

Dear Answerman,

First I would like to compliment you on your magazine. . . . Keep up the good work.

Two years ago, I bought the Rhino F10

made by Nikko at a local department store at a very good price. What I would like to know is what, if any, modifications I could I do to improve the car's performance? Or should I look for another offroad kit and what would you suggest? The Rhino is a tough car and runs well in our sub-zero weather. All that I have done to the Rhino is changed the rims and rubber to suit our climate.

For Christmas I received the Big Grizzly. Besides bearings, what else is there that can be done to this monster for full potential? My experience with R/C is limited. Your magazine has helped me to understand and experiment. I look forward to your magazine every month.

George Lieblein
Winnipeg, Manitoba

A. Thanks for the kind words, George. A positive response such as yours is always appreciated.

I'm glad you find the Nikko Rhino a tough and fun car. Unfortunately, such ready-to-run cars are play-type vehicles that neither Nikko nor other manufacturers are supporting with hop-up parts. I suggest you look into the possibility of buying an affordable entry-level car and radio system if you plan to go racing.

The biggest complaint about the Varicom Big Grizzly seems to be the speed, or the lack of it, to be exact. But a hotter motor and a seven-cell battery pack should take care of that.

Dear Answerman,

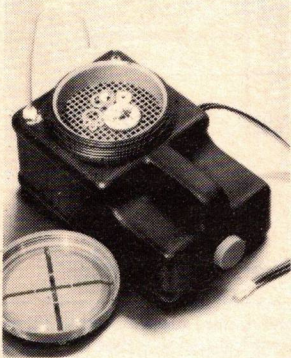
I have a big problem. I have a Frog, but my problem is that when I race on a dirt surface, like a baseball park, the car begins to turn to one of the two sides. In other words, it begins to sweep away without my use of the transmitter to do this. This is not a consequence of the interference of other radios. The Frog has a LeMans 240 ST. I would be grateful if you help me, because I am new in the hobby.

Ricardo Diaz
San Juan, Puerto Rico

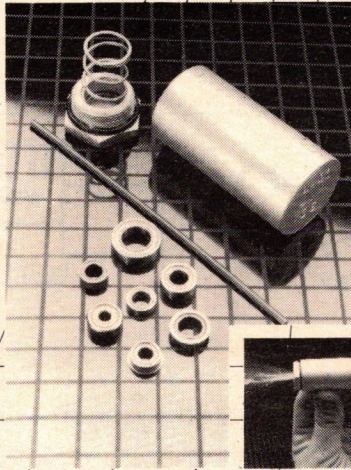
A. Although it's difficult for me to assess your problem without seeing the car, your Frog seems to suffer from massive front-end slop, which is a common problem for Tamiya cars that are equipped with plastic wheel bushings. If your car's front wheels wobble excessively, the bushings are badly worn. Replacement ball-bearings for Tamiya cars are widely available and they are not very expensive, but they'll reduce the slop and friction on your car and increase your running time and reliability.

MCS

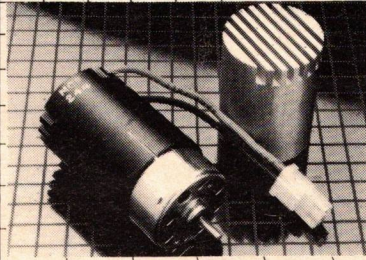
P R O D U C T S



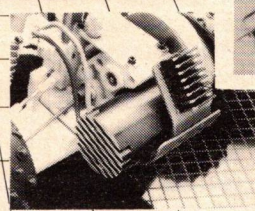
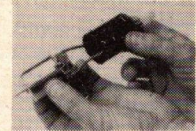
Portable Parts Washer
#8000



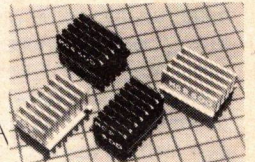
Bearing Cleaner
#6021



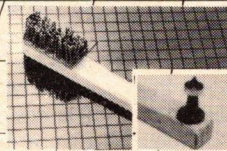
Motor Cover Heat Sink
#244



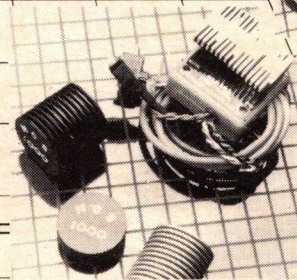
Speed Control Heat Sinks
#1000 B #1000 C
#2000 B #2000 C



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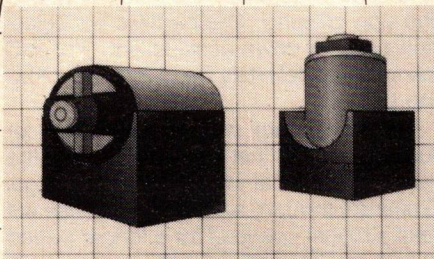
Ugly Stick
#1111



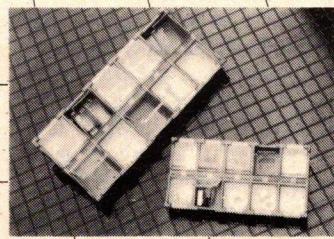
NEW PRODUCTS



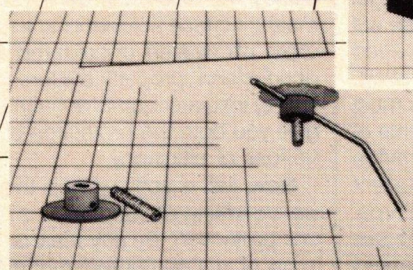
Dog Bone Straightener & Alignment Tool
#3000



Motor Block
#5000

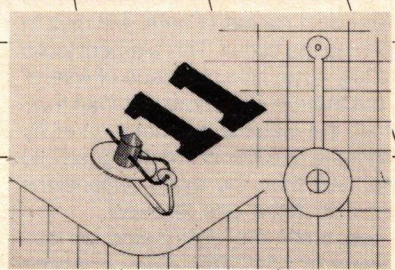


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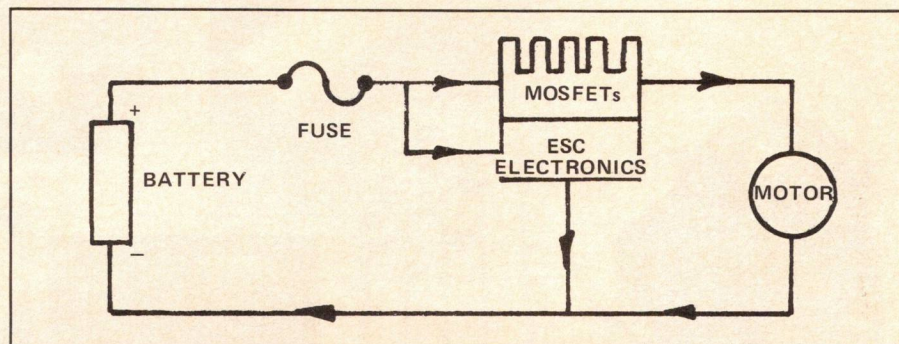
DON'T FORGET THE FUSE!

FUSES! Last time I promised you fuses, so here we go with this rather insignificant looking but—at some times—important component in the R/C car. Actually, I should say in some R/C cars, as not everyone agrees on the use of a fuse. Well, in my opinion, most of those who disagree do so because they are either unable or too lazy to install the fuse properly, and have run into some problems, or they are simply unaware or uncaring about the consequences of not having the protection that a properly selected and installed fuse can afford them. I know, I said opinion—which can also be applied to the use of a fuse. But as a hard fact to back up my opinion, I'll wager that outside of the R/C hobby, you will not be able to find any UL (Underwriters Laboratories) rated product that includes a battery capable of delivering the power that a six or seven cell 1.2 or 1.5 mAh capacity Ni-Cd can, and which does not include a fuse. Have you seen any R/C car or R/C car electrical component advertise or carry a UL label? Of course not—without a lot more protection, a fuse included, UL rating for any of our equipment would be out of the question.

Before going any further, let's take a look at what a fuse actually is. Well, there are fuses, and there are fuses, as I will explain shortly, but they all have one thing in common. The working element of every fuse consists of a metal wire or strip of such dimensions that it is limited as to the amount of electrical current that it can carry, and, if subjected to a higher current for a predetermined period of time, will melt in two, opening the circuit. This element looks just like any other little old piece of wire or metal, but there is a lot more to it than that. First of all, the material has been carefully chosen for the qualities being designed into the fuse, and then the exact dimensions must be calculated and followed.

You see, fuses are designated as fast-acting, slow-blowing, time delay, non-time delay, current limiting, and probably a few others I have never heard of. All of these different types have certain characteristics that make them better suited for specific applications. In actual use, these applications are governed completely by the type of equipment they are installed in, as some electronics can stand severe overloads while others must be protected almost instantaneously.

Fuses are rated, and so marked, for their



The current path from the battery, through the fuse and ESC electronics, and separately through the MOSFETs and motor. The fuse offers protection from massive failures in either or both the MOSFETs and the motor. Don't run your car without fuse protection!

current carrying capacity and usually with a manufacturer's identification but not generally with a type, as described above. Such information must be obtained from the maker's literature or sometimes the package. The maker's literature will detail for each fuse type the exact percentage of the rated current and the time at which the fuse can be expected to "blow." In all cases, the higher the applied current, the shorter the time it will be sustained. Luckily for us, outside of the actual electronic suppliers, most fuses available to us are of one of two categories, the fast acting, and the slow blowing. This narrows our selection process down considerably. For R/C car use, we definitely need the slow blowing time.

Now there are no real standards for fuses; no rules that state specifically the rates and times at which a fuse will let go. Generally though, a slow-blowing fuse will take a higher overload for a longer period than a fast-acting fuse of the same rating. And, because the fuse in the R/C car must stand the tremendous starting currents of the motor (NOT engine!) and still provide protection at the lower running current drain, it has to be of the slow-blowing type.

How to identify the various types of fuses can be a problem, as they are not marked "fast-acting," "slow-blowing" or anything else. However, each manufacturer does have some sort of designation marked on his fuses, and it can be matched up to a catalog which will have complete specifications. In some cases, the container will also specify the fuse type. When purchasing, don't just take some salesperson's word that what you have been handed is the type you asked for. Be sure, if you are not already familiar with the fuse on hand, ask

to see a spec sheet of some kind.

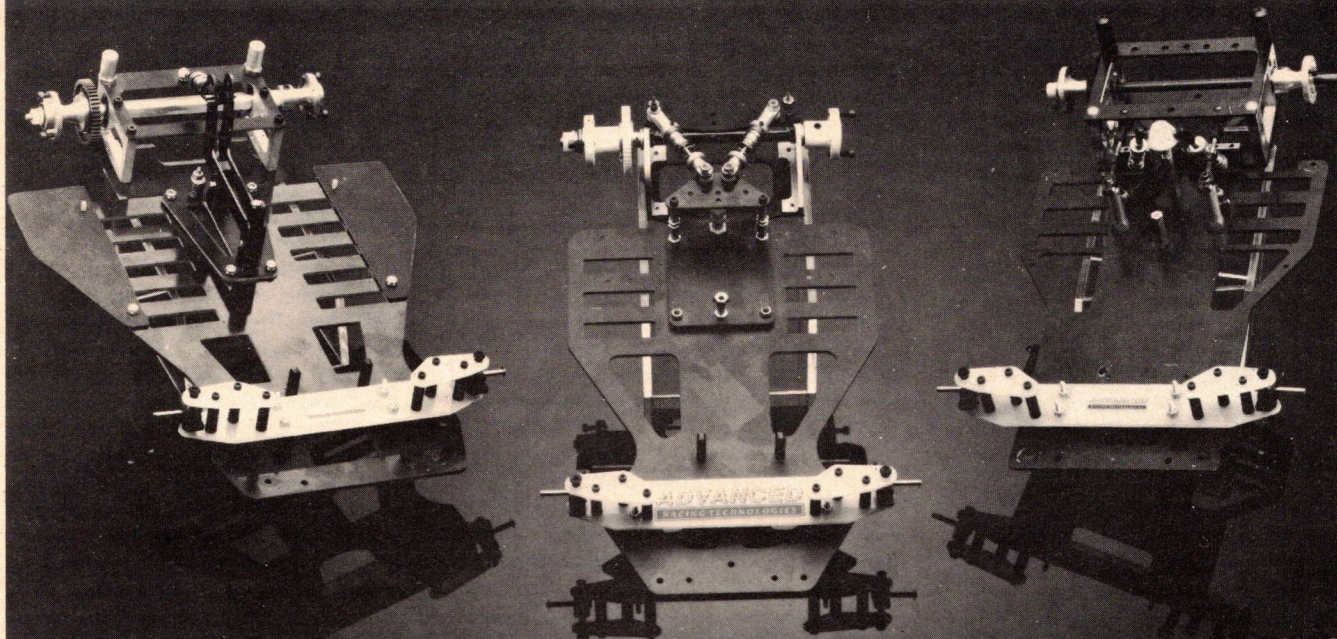
Physically, fuses come in many different shapes. Probably most familiar with the cartridge type used exclusively for many years. It is not a recommended fuse for R/C car use; a much better choice for many reasons is an automotive "blade" fuse. For maximum system efficiency, the fuse in the low voltage, high current environment in the R/C car *must* be soldered in. The cartridge fuse does not lend itself well to being soldered to, and in fact, as some of them have the fuse link soldered to the end caps, any attempt at external soldering will ruin the fuse. The blade fuse on the other hand comes with some heavy lugs to which soldering even the heavy 14 gauge wire now thought by many to be an absolute necessity, can be done cleanly and neatly.

I must repeat again—for maximum efficiency, the fuse *must* be soldered in. This means no fuse holders of *any* type, no fuse clips, no twisted unsoldered wires. Only good, clean, properly soldered and shrink-tubing insulated joints at each fuse lug will give you both the protection of a fuse and no loss of efficiency.

Now, just exactly what is this protection we are talking about? Well, it is not an absolute protection, by any means, and I don't know of any equipment manufacturer that has tried to tell you different. In this particular application, with so many things that can go wrong, a little luck is also going to come in handy now and then. Let's look at that further.

We don't often see a fuse used or recommended with the resistor-type speed control, which I think is a big mistake on the part of the car kit manufacturers. Could it be they are interested more in saving the 25 cents that a fuse costs than in saving

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The last few months have been full of theory and formulas and other boring stuff. I just wanted you to know that I don't forget that the object of all this is to run R/C cars, so here is a picture of a car. . .and Joni.

your car's electrical system? In some cases, I am sure that is true, however it is probably almost as true that it is sometimes left out to simplify things for the first time buyer who seems to fight learning the rudiments of the R/C hobby. Since the fuse is most often seen and used with the electronic speed control, let's dissect that first. Take a look at the fused ESC circuit furnished, which is a standard method for doing so, and notice that the fuse is the first thing that the positive side of the battery sees. After going through the fuse, the current actually divides—there being a positive/negative path for the speed control electronics *only*, and another for the MOSFETs and motor *only*. There are two circuits, and two actual loads for the battery. Should the fuse open for any reason, power is stopped to both circuits, and everything comes to a halt. Let's see now what can cause the fuse to fail!

You will remember that the fuse will open if a current exceeding the fuse rating flows through whatever circuit the fuse is in. Now, thirty amps is a pretty healthy current considering the relatively low voltages we are working with. Remembering that Ohm's Law tells us ($R=E/I$) that the resistance is determined by the voltage divided by the current, we can do that with a six-cell battery, in order to get a current flow of 30 amps, $(7.2/30)$ the resistance has to be .24 ohms. That is not a whole lot of resistance, and in order to increase the current flow past 30 amps, we are then having to decrease the resistance almost down to a dead short. In our cases, a dead short is

what often blows the fuse.

A little review is in order here. If you've been with us since the start of this series on electronic speed controls, you will remember that the only item in the electric system of your car that draws current to any significant degree is the motor. Yes, *only* the motor. The ESC does not do so, either in its electronic section or in the MOSFETs; the latter acting only as a type of valve. The receiver and servos do not; their current demands are measured in milliamps.

A dead short can occur at two points, (1) the motor and (2), the MOSFET section of the electronic speed control. The motor has extremely low resistance anyway, and being a high performance unit, is built to very close physical tolerances. It takes very little to create the type of internal short that will lower its resistance to the danger point. Now, the actual current demands of the motor are determined by how much work it is doing. Upon a hard acceleration, it will pull many times more current than at cruising speed. It will also pull an extremely heavy current if it is operated in a stalled or even a semi-stalled condition, as when something in the differential or the wheels is jammed and will not turn freely. Such a condition can be guaranteed to blow a fuse if one is in the circuit, or to damage a speed control, either electronic or resistor, if it isn't.

A shorted or stalled motor will draw excessive current through the MOSFETs, enough to damage them, often starting a type of chain reaction. In some cases the MOSFETs will burn or explode violently enough to damage the printed circuit board to a point at which the ESC is completely unreparable. Other times, there is enough heat generated to cause to solder on the PC board to become liquid and run together, causing a massive short circuit on which the whole thing keeps feeding. Not good! I have seen such humble (?) beginnings eventually take out all the wiring from the battery clear up to the motor. A fuse of the proper value would prevent all that!

At other times, the ESC itself is the culprit. MOSFETs are unbelievably efficient devices, but they are not completely fool-proof, and now and then, one will go west. When it does, it generally shorts, creating the same type of chain reaction just described. Again, a friendly fuse will prevent further damage to the ESC or any of the battery to ESC wiring.

The fuse will not prevent damage to any of the other ESC electronics, they simply don't draw enough current to ever blow the fuse. Should a conflagration start in other than the MOSFETs, it'll continue merrily along, as the 30 amp rating can cook a lot of solid state devices. But not to worry, as most component failures in the ESC merely cause it to stop working or to work only partially, and hardly cause any sparks at all.

How about the resistor-type of speed control, you say. Well, a short circuit or any condition that causes excessive current to flow will not recognize, or care one way to another what is or isn't in the circuit. Heavy

current is going to flow, and as soon as it exceeds the current carrying capacity of the weakest link in the chain, you will be able to tell it due to the smoke. A fuse in the non-ESC equipped car is just as good an idea as it is with the ESC.

Let's take a look at a real-world fuse, and see what we can expect from it and also dispel some of the "expert" opinions that exist about these valuable devices. Our sample is the "Littelfuse" Type 257 unit, a type that was quite common in ESC use at one time. Incidentally, the name is correct as "Littel" and is not a misspelling for a miniature fuse. The 257 is rated by the manufacturer as capable of carrying a 200% overload for as long as 5 seconds, which is a fairly long time at the speed of light travels of electric current. At 350%, it will let go in only .08 seconds. This is ample capacity for most installations, with a good safety margin. However, I know that the fuse will let go with some of the hotter motors under heavy acceleration, and this type of fuse does not come in higher ratings. The Littelfuse Company does have a new type called a "Maxifuse" which will be available in higher ratings, but it is not yet available and I don't have any specifications for it.

In any event, going to much higher fuse ratings is not the only answer, as the proper choice calls for a capacity that will handle all commonly drawn currents yet will fail under an overload. The 30-ampere seems to be the best choice, though sometimes a reduction of the gear ratio is necessary to keep it intact.

The other important component rating to consider in a racing situation is the resistance that the device introduces into the circuit. In the case of the 257, it is a miniscule .0019 ohm. Try to measure that with your \$9.95 multimeter!

Resorting again to Ohm's Law ($E=IR$) and figuring on a running current of 20 amps, we can calculate that the 257 fuse, installed in an efficient manner, will create a voltage drop of 0.38 volts. That is less than four one hundredths of a volt—at 7.2 volts, 0.053 percent. Now I know that it is a common fallacy that you can go faster if you aren't using a fuse, and if your calculator goes out to sixteen places or so, you can probably figure out just how much top speed you lose.

It might take even more decimals than that, since the speed of the motor is not perfectly linear to the input voltage/current, so that at the top end a loss of 4/100ths of a volt will not have an easily noticeable effect. I really doubt if anyone can tell the difference in actual racing conditions. Still, things being what they are, in the time you took reading this article, a couple of dozen speed controls were fried somewhere in this country for the lack of a fuse—but they were going faster. They thought!

Next month, now that we've convinced you to use one, we'll do a wrap-up and we'll tell you how to install the fuse properly.

Eloy Marez, 311 Mesa Dr. #10, Costa Mesa, California 92627. ●



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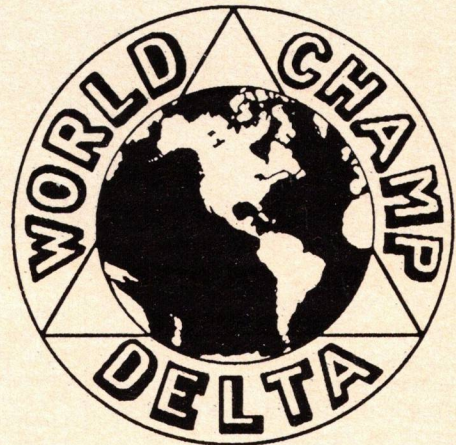
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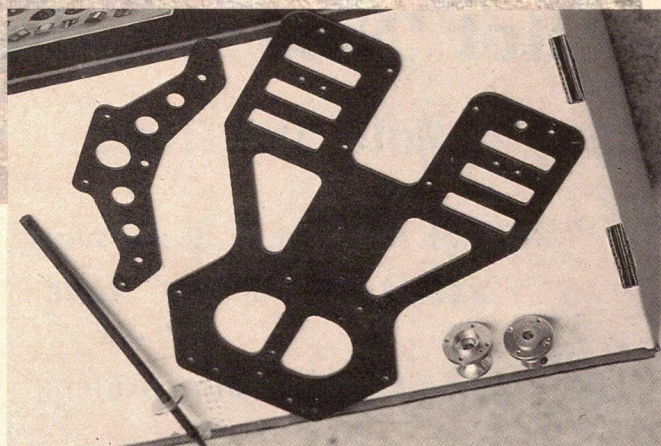
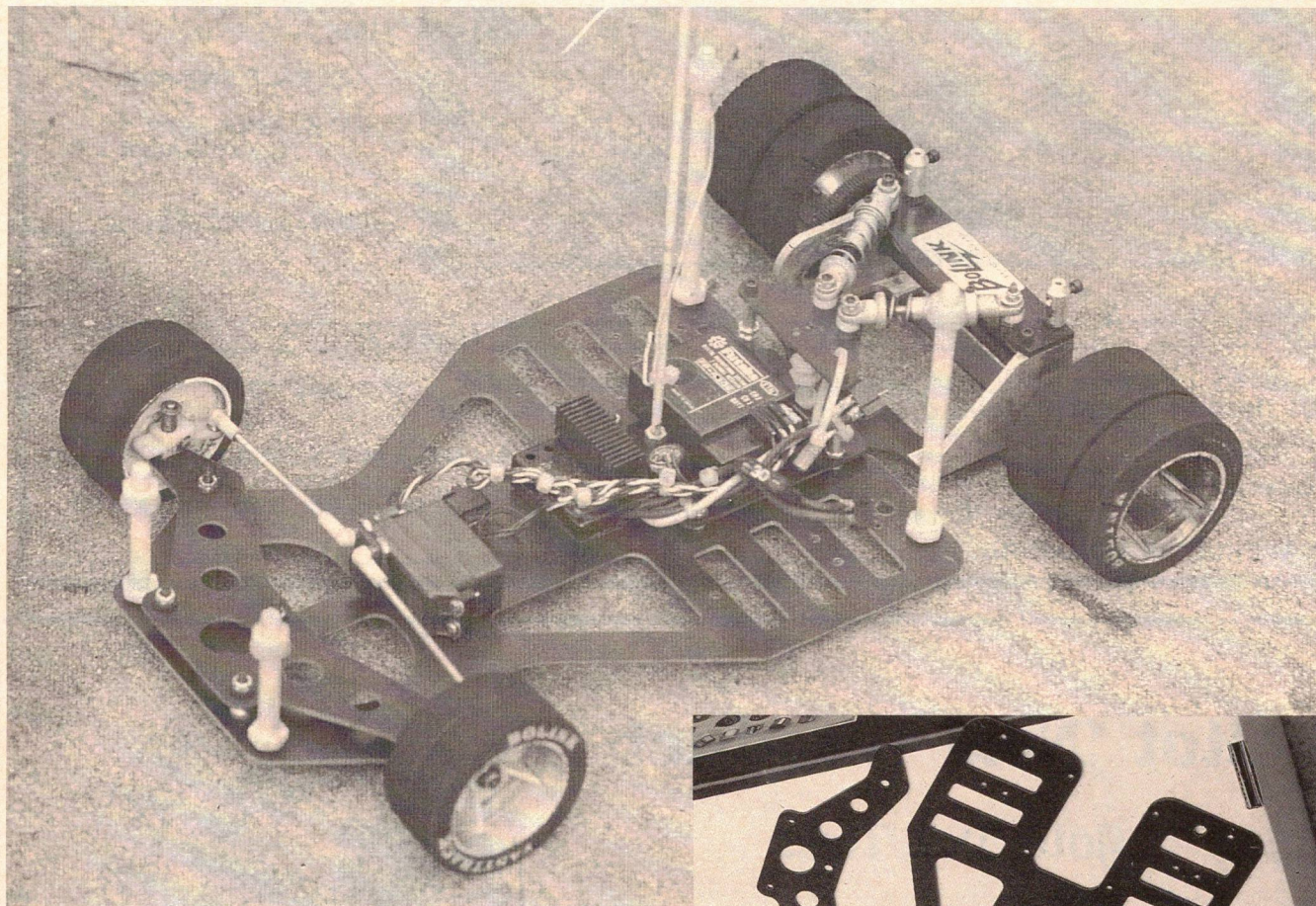
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GRAPHITE FOR THE ELIMINATOR 10



With the competitiveness of racing these days you begin to look around for ways to get increased speed and performance from your racer. This month I will reveal some improvements to the BoLink Eliminator 10 asphalt racer.

BoLink has produced some performance parts for the Eliminator 10 which are also available as part of their graphite kit. Basically, the parts consist of a graphite chassis, front axle, rear axle, and some aluminum rear wheel hubs. These parts, while not actually making your car go faster, will make it possible for you to drive the car faster and perhaps even more reliably.

The graphite chassis parts reduce the overall weight of the car and provide an increase in strength and performance. The reduction of weight allows you to accelerate faster and brake later. Both of these factors, while not actually adding speed to the car, such as a motor or batteries, should

Above: the assembled E-10 in graphite. At right, the individual upgrade parts, including aluminum hubs, graphite chassis components, and graphite axle. All are available from BoLink R/C.

allow you to make faster lap times and even increase your overall running time. You should notice a slight increase in running time since the lighter-weight car does not require as much battery power to accelerate or stop as a heavier car, thus conserving power to be transferred into speed. These parts are a perfect fit and require no alteration to mount onto your existing Eliminator 10. The graphite parts also provide a resistance to tweaking. It is readily said that graphite takes a hit and then returns to its normal shape better than fiberglass will.

The aluminum rear wheel hubs provide a more secure wheel mounting setup than the plastic wheel hubs. The main reason that I say that is because the plastic wheel hubs (at least for me, since I always overtighten things) strip out. I have been told that they are also rounder than the plastic wheels and retain their shape better than the plastic wheels, as well as allowing the rear wheels and tires to rotate truer, which should also provide for an increase in overall performance.

The graphite rear axle is probably the easiest, cheapest, and quickest change

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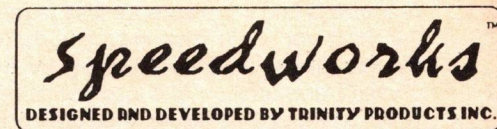
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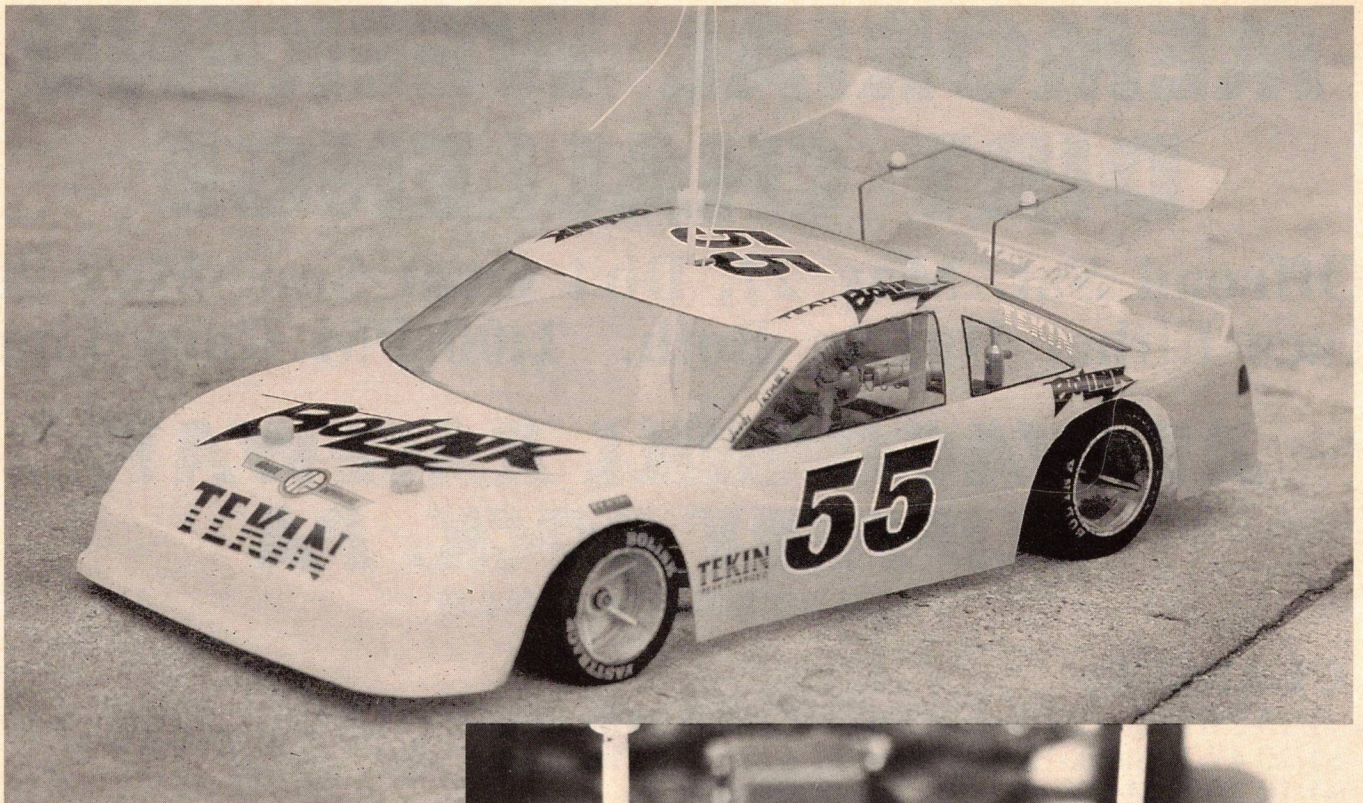
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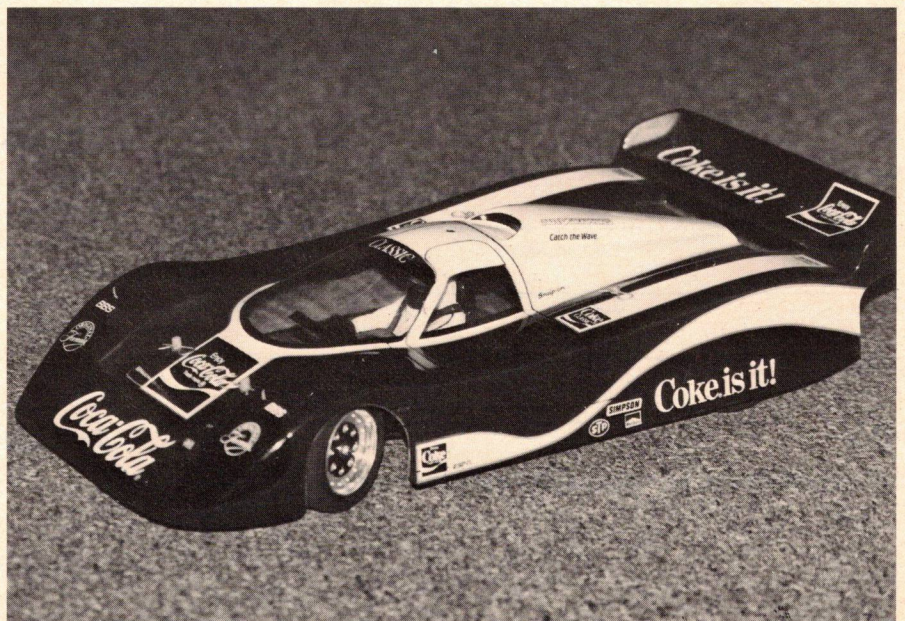
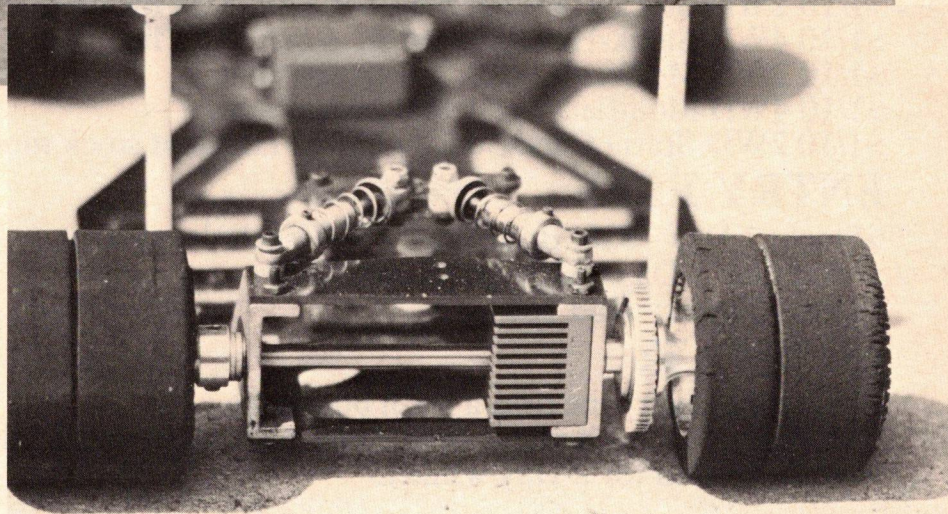


Above: the E-10 with a BoLink Pontiac body mounted. At right, the rear of the E-10 showing the Litesink heat dissipator installed.

that you can make to get an increase in performance. The main benefit of the graphite rear axle is that it provides for less weight that the motor has to rotate in order to move the car. Thus, it again provides for increased acceleration and quicker stops, which as mentioned before, should provide for faster lap times and perhaps even longer run time. However, one thing to watch for is to make sure small rocks do not get lodged in around the graphite axle as they will wear through it quite quickly. I have been using graphite axles for years on 1/12-scale as well as 1/10-scale cars, and when taking the car apart for cleaning, every now and then you have to use some fine sand-paper and sand the axle to get the bearings to slide off easily. I am not sure why this happens, but it always seems to.

Another piece of equipment that I have been using is a heat sink produced by Litespeed, Inc. This piece also fits with no alterations. This litesink fits both the BoLink Eliminator 10 and the Invader. Litespeed is well known for their heat sinks and this one continues that reputation. The Litesink will increase overall performance by keeping the motor cool, which again saves battery power as well as extending brush life. This Litesink has over ten square inches of heat-exchanging surface, which by their estimates, will increase your running time by approximately twenty to forty percent.

The body of the month is a Jaguar XJR-9 and was painted by Eddy Lacoste of Panama City, Florida. He not only paints cars that look like the real thing, but he is one of the fastest R/C racers in Northwest Florida, in the dirt or on the road.



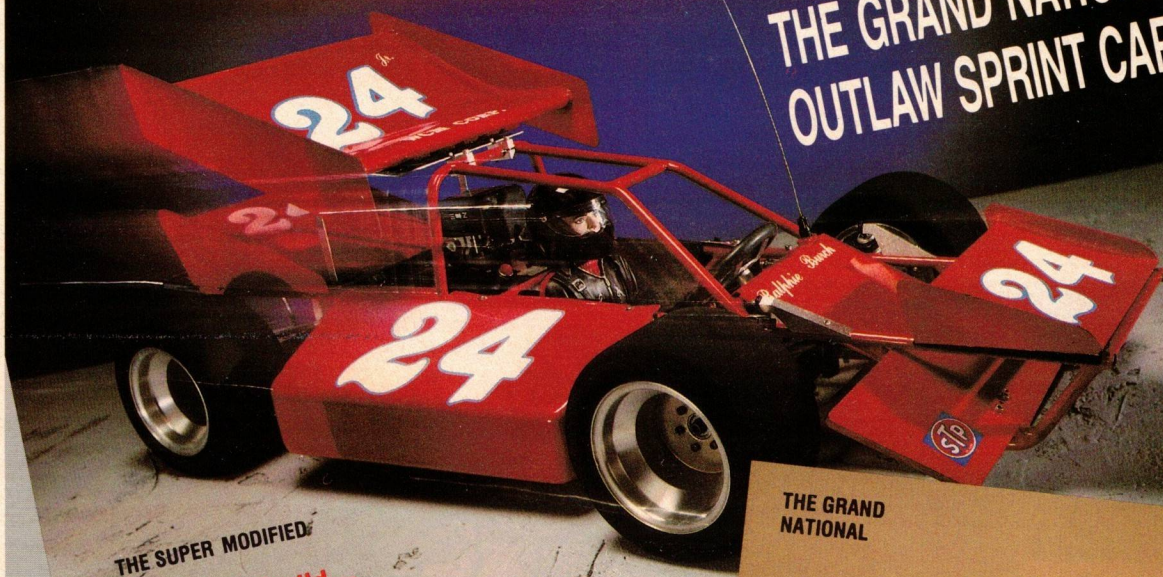
The car of the month for May: Eddy Lacoste's Jaguar XJR-9 GTP in Coke colors.

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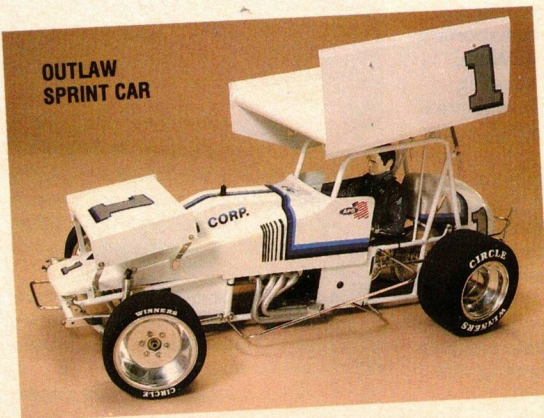


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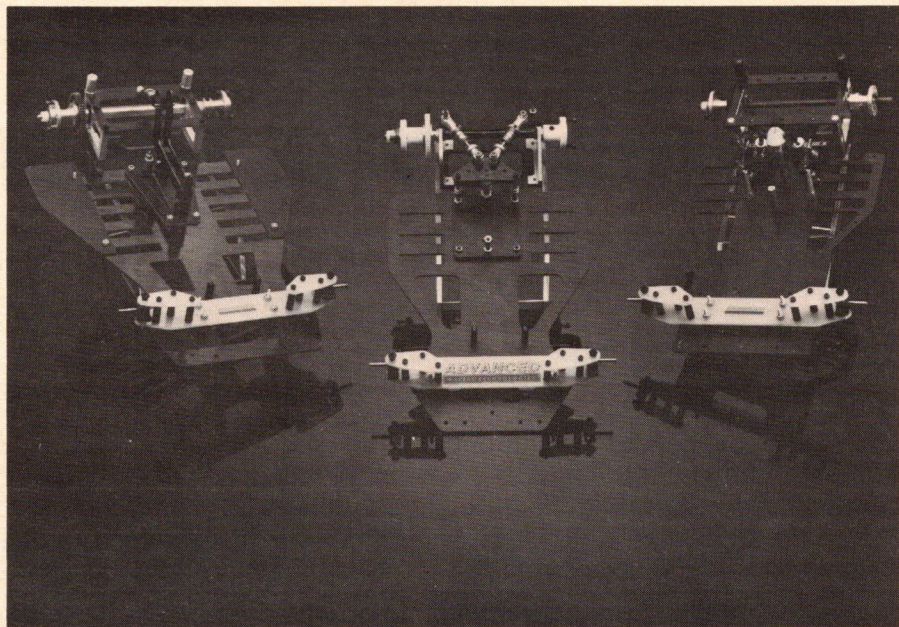
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Advanced Racing Technologies has designed a front end to replace the weaker single-supported front ends on the TRC Pro 10, the BoLink Eliminator 10, Predator Lynx, Delta Villain, Hyperdrive, and McAllister

cars. The Advanced front end is an adjustable, dual-supported front end and uses the ART pivot/saddle block system made popular on the race-proven Agitator. For more information, contact ART, 460 Cypress Lane, Suite F, El Cajon, California 92020.

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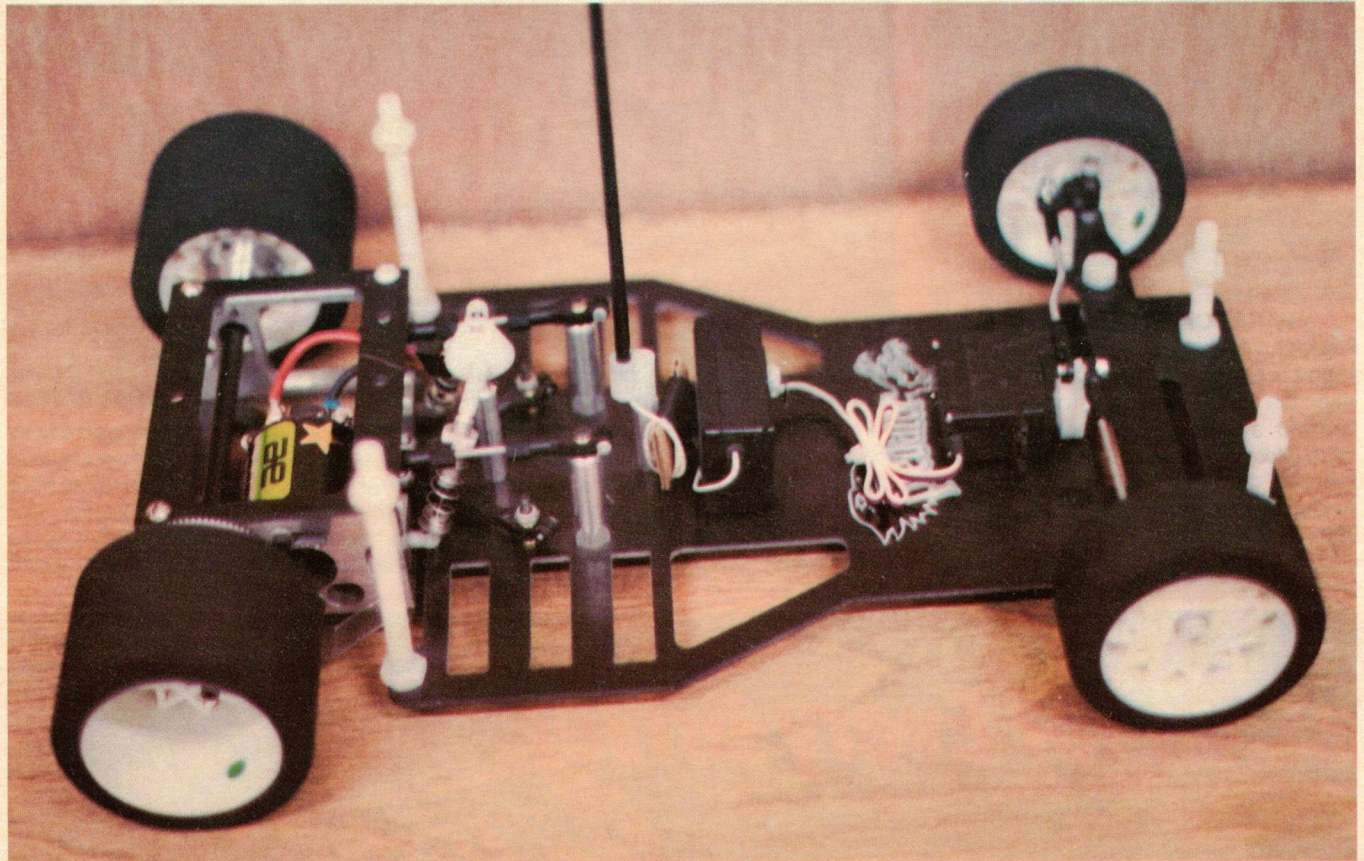
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The Kyosho Ultima swept First, Second and Third Places at the 1987/1988 IFMAR World Championships.

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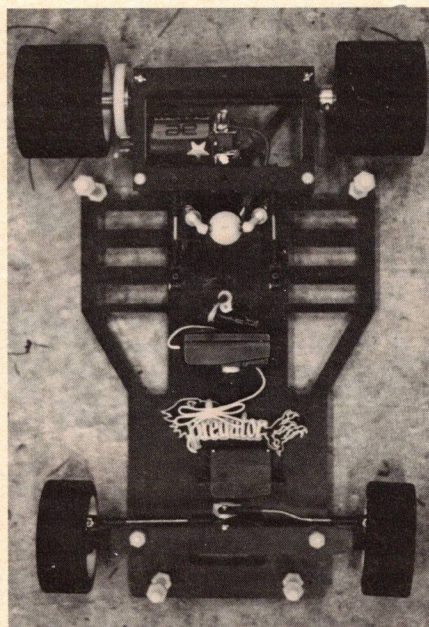
FINDING THE MISSING LYNX



Two years after the introduction of their first-ever race car, Composite Craft has become a household name in 1/10-scale on-road racing. Their latest car, the Lynx, is the revised version of the original Jeff Davis-designed Predator. The Lynx is considered by many to be one of the best available 1/10 on-road cars, and its track record boasts a number of impressive wins, including the inaugural ROAR 1/10 On-Road Nationals.

Here in the Pacific Northwest, where 1/10 on-road racing has become increasingly popular, the Lynx is the favored ride of many drivers. My good friends Brian Crane and Mark Anderson purchased their Lynxes toward the end of last season, and they've spent the better part of the winter researching and developing ways to improve their cars. Brian's car, in particular, shows the changes that the two have incorporated.

One of the prime objectives in modifying their cars was a lower CG. As most 1/10 on-road cars are simply a larger version of 1/12-scale cars, and many use parts from 1/12 cars, a ground clearance of one-half inch is not uncommon, simply because of



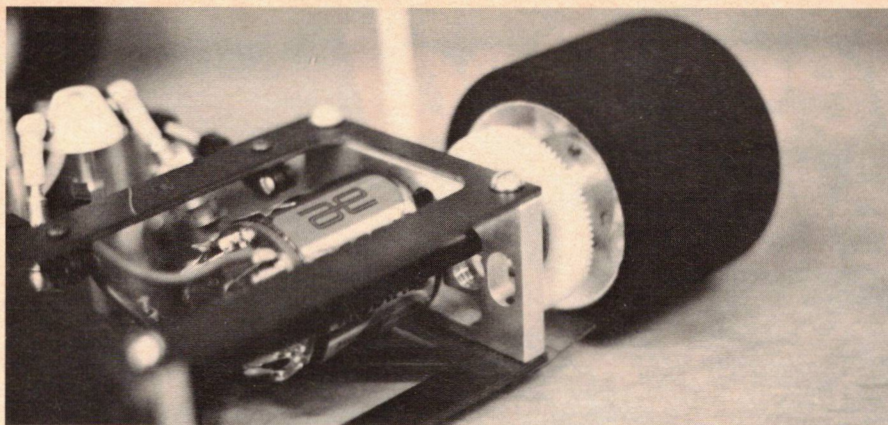
Top view of Brian Crane's Composite Craft Lynx shows the unique steering setup. Note the new Reedy Gold Star motor, one of the hottest of the hot ones.

the larger diameter tires used on the 1/10 cars. A lower car, however, would definitely improve the handling by reducing the chassis roll rate as the car goes around a corner.

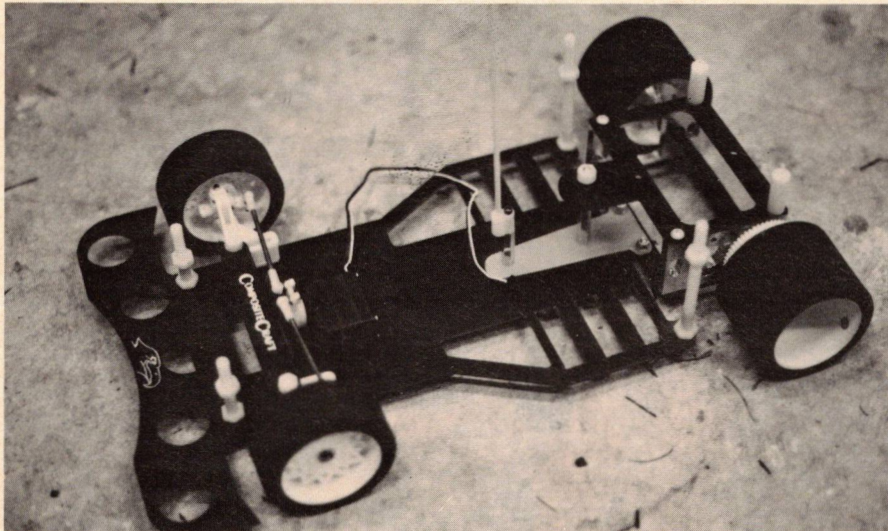
Starting at the rear of the car, Brian had a machinist drill new axle holes 1/4-inch above the existing ones. This created a sort of figure 8-hole in the axle/motor blocks, but it also dropped the rear pod 1/4-inch lower. This modification had no effect on the gearing, as Brian can still use a wide range of gear ratios.

Lowering the front end was much easier; Brian simply added another pair of huts under the crossbar. The Lynx's front suspension is limited in adjustability, as only the caster setting can be changed. Brian feels that a camber adjustment is badly needed, and he plans to install the Advance Technologies' Agitator front suspension onto his car. This will give him the capacity to adjust the caster and camber setting on the car, which will translate to better handling and more consistent tire wear.

An unusual front end treatment on Brian's Lynx is the non-Ackerman steering arrangement. By mounting the servo out-



Here's the rear power pod showing the redrilled axle holes which lowered the rear end 1/4 inch.



A sneak preview of the author's own modified Predator. Details next month!

put tie rods in the center of the servo-saver arm, the steering travel of both front wheels remains the same when the wheels are turned. This steering geometry was first seen on the Corally 1/12-scale car, and we're seeing that development crossing over to 1/10-scale onroad.

Going back to the rear of the car, Brian replaced the stock differential with a TRC Pro Diff. This unit is by far the smoothest-working ball diff on the market, and I dare say that it's even smoother than some gear diffs. The Pro Diff is not a cheap unit, but this is a quality diff that's well worth the money.

The final modification concentrated on reducing the side load on the wheel bearings. A crush sleeve was installed between the bearings in each front wheel. At the rear, a pair of thrust bearing/washer assemblies are installed between the rear wheel hubs and the axle bearings.

The first race of the season is still a few weeks away, so we'll have to wait to witness the fruits of Brian's labor. But the potential is definitely there, and when the green flag drops, we may find ourselves driving like crazy to catch Brian's Lynx.

MORE TRACKSIDE

Running a racing organization is no easy undertaking. We R/C car racers know the task that our sanctioning organization, ROAR, is faced with. Just think how much harder it is running a motor-sports organi-

zation for Formula One or Indycar racing. No, it's not ten times harder than running a 1/10-scale racing group; it's more like a hundred times more difficult.

In real-life motorsports, as in model car racing, you have the racers and the manufacturers to contend with. The big difference between the two is the number of dollars that's involved with big-league racing. Just look at the problems that the FIA, the accepted sanctioning body for international motorsports, had with Formula One. When they wanted to ban the turbocharger from F1 racing, the FIA didn't just revise the rulebook to outlaw the turbos. They had to deal with the teams and manufacturers who already had millions invested in turbocharged engines. It's a rare occasion when the FIA makes a change in the rulebook and no one threatens to pull out of racing.

Indycar racing, perhaps the most well-known type of racing in North America, has had its share of major problems as well. Some of you may recall the big dispute between USAC, the original promoter and sanctioning body for the Indycar series, and the team owners, which resulted in the formation of CART, the current organizer of the series. This was one of the most bitterly fought feuds in auto racing history, and it stemmed from a classic case of one party not willing to listen to the other, and vice-versa.

A most unique case involving an organizing body and a manufacturer occurred just recently in the oldest road-racing series in North America, the Trans Am series. It seems that the SCCA, who runs the Trans Am series, underestimated the potential of Audi's all-wheel drive turbocharged racer when it entered the series in early 1988. When Audi began winning race after race, the SCCA decided to add weight to the car in an effort to eliminate its obvious superiority over the other cars in the series. But there was a problem with the way the handicap was given to Audi; the SCCA started with 100 pounds, and increased it after the next two races until the Audi's advantage was all but eliminated. Audi ended up winning the 1988 Trans Am, but not before it had a few choice words for the SCCA and threatened to pull out of the series.

Of all the professional racing organizations, the one that has enjoyed a relatively turmoil-free existence is NASCAR. Oh sure, they've had problems, but it usually involved trivial things like carburetor restrictor plates and rear deck spoilers. And those complaints about the way NASCAR runs races are usually comments from individual team owners, not a concerted effort against the organization.

What's NASCAR's secret? A tight rein on the organization and a rigorously enforced set of rules that refuses to succumb to the latest in technology, that's what. Despite the on-going development that has produced such high-tech innovation as the active suspension and computerized engine management system, the premier attraction of the NASCAR series, the Winston Cup cars, have not changed much in the last ten years. Underneath the sleek sheet-metal is the same steel frame chassis and cast-iron V-8 engine that have been the mainstay of the Winston Cup series.

True, Winston Cup stockers do look like covered wagons next to a Formula One car or a sports-prototype racer like the Jaguar XJR-9. Europeans, in particular, are amused by the idea of a race car that weighs over 3000 pounds and goes around in circles. Their "version" of our stock cars, the Group A sedans (sometimes referred to as "saloon" cars) have full-independent racing suspension, Kevlar body panels, and teeny-weeny engines that develop over 500 horsepower.

Okay, so NASCAR technology is crude technology. But how you gonna argue with success? The Winston Cup is considered the Number One spectator sport in auto racing, and the attendance figure gets bigger every year. The NASCAR people, the team owners, the sponsors, and the drivers all get along like one big happy family. And the racing, well, we all know it's one of the best in the world. What more can be said?

As always, there's a lesson to be learned in almost every situation, and it's my hope that those of us who care enough about our sport can learn something about running an organization from the full-scale boys. Let's do what we can to make ROAR the NASCAR of radio-controlled auto racing. ●

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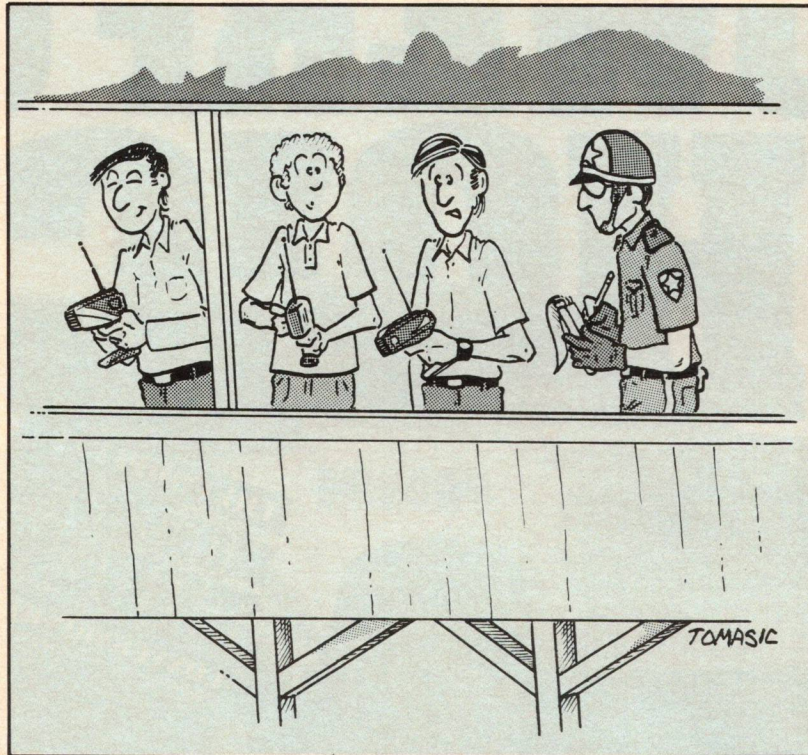
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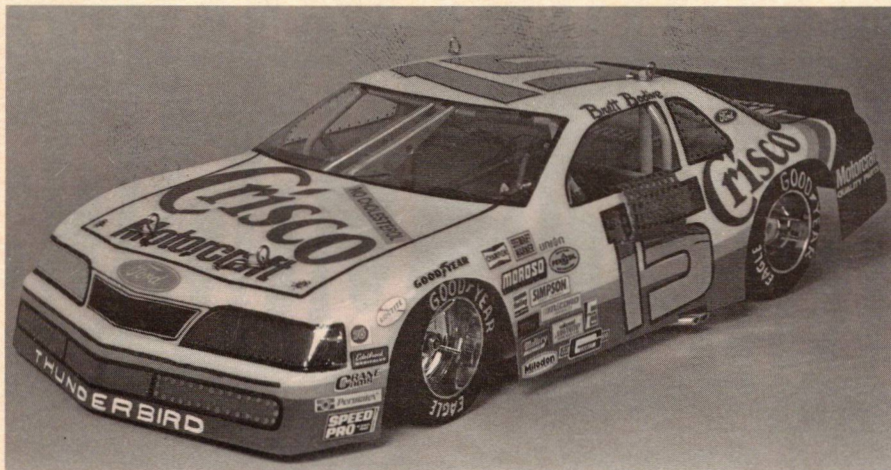
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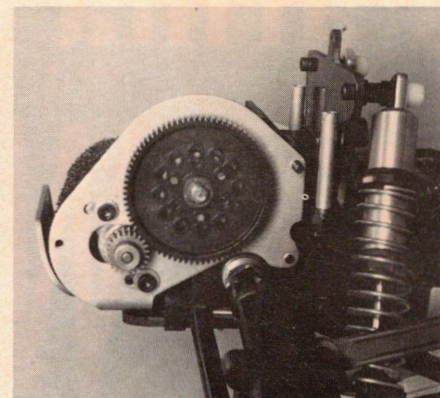
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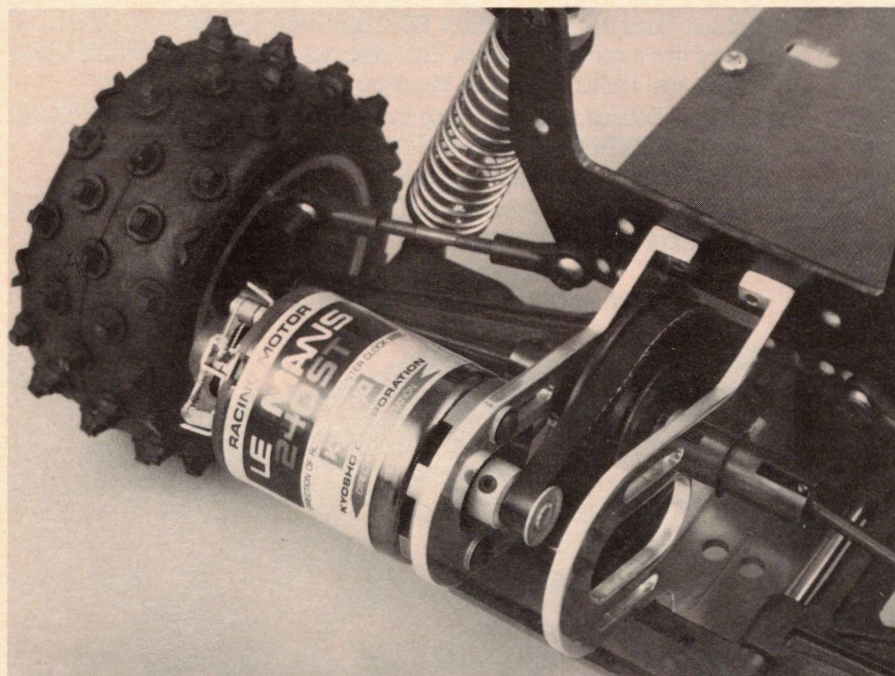
BoLink's '88 Thunderbird NASCAR body comes factory-painted for \$28.00, or \$18.00 for the clear Lexan version. Which ever you

choose, your 1/10-scale racer will look the better for it when you choose a BoLink NASCAR body. See your nearest BoLink dealer.



KIMBROUGH ADAPTERS

Kimbrough Products is offering free adapters that enable racers to use Kimbrough gears in their JRX2 cars. The adapters along with a gear chart will be attached to the Kimbrough 81- and 84-tooth gear packages. See your hobby dealer for your Kimbrough adapters while the supply lasts.



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COBRA

Simplicity and low cost make this new 1/10 road racer a winner



BY STEPHEN BROWN

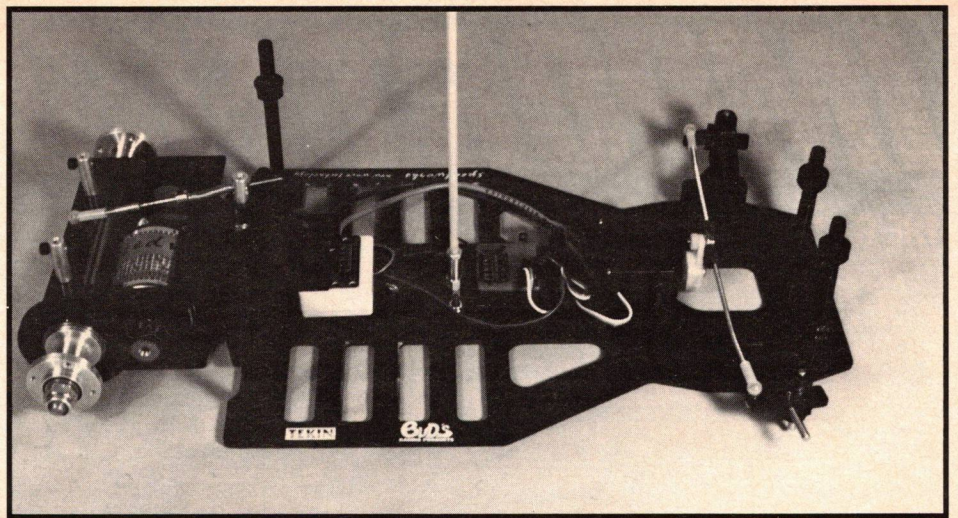
In the world of 1/10th scale road cars there are many choices, many decisions to make before buying a car. One of the greatest problems is for the beginner, or for the person without a substantial budget to spend on his racing hobby. Many of the best cars are difficult to build, difficult to maintain and expensive to buy. They require a degree of effort that is simply not right for every racer. This doesn't have to be. Enter the C & M Cobra.

The Cobra was designed to be easily built, easily maintained and economical to buy. It is all these things, and more. It is also a very good race car with an exemplary record of successes all across the country. Chris Farrell, designer of the car, realized that not all racers can, or wish to, put a great deal of time into maintaining their car. They also may come into road racing from offroad and have all their equipment geared to that. This car can be used for either stick (like most offroad cars) or saddle battery packs. This is a great advantage for the many people who already have stick

packs and don't want to have to throw them out and buy all new packs, or those who also need to use their battery packs for another car which must use the stick configuration. Many of the parts on this car are standard 1/10th and 1/12th scale parts that are readily available at most good hobby shops, in case you have trouble finding the part in Cobra packaging. A great deal of thought has gone into making this car easy to use and it shows.

Opening up the box for this kit reveals a surprisingly small number of parts, on first glance one would assume that this kit could be built in an hour, or so. If you are familiar with this sort of car it can take about that long, but for the first time racer it can be a bit more difficult. Fortunately ease of construction was an obvious priority here, all parts are in bags that correspond to the order in which they are used and mentioned in the instructions. This means that, according to the instructions, you will first start with the front-end assembly from bag one. Bag two has the rear end assembly

and so on. This system works very well, making the builder's job far easier than taking parts from various bags at various times and probably losing a few parts along the way. With a bit of care and patience (I know, I know, we're all impatient when building a new car, we want to get the sucker running but take your time doing it and do it right the first time, unlike me) the car should go together in a short time. The instructions are really quite good, explaining in small detail what needs to be done and when it should be done, unfortunately the photographs are so poorly reproduced that they are of little help in building the car. Chris did warn me about this and told me that he was working on new instructions that would solve this problem. I certainly hope so, as this is an important consideration for many kit builders. Fortunately, in the unlikely event



that you have a problem building the car, the phone number for C&M is listed in the instruction sheet and a call to them should solve any problem that you have. Chris is usually available (the man works scary hours, I have called him at all hours of the day and found him in) and always more than willing to talk about his car, he did design it, after all. I have talked to a number of people at races who have this car and many of them have spoken to Chris and found the same thing I have, that he

is knowledgeable, extremely helpful and very friendly. It should be a great comfort to anyone buying this car that this sort of help is available to them.

Although the kit is quite complete you will need radio gear (servo, ESC and receiver), motor, batteries, servo saver, steering linkage and body. For a body we used the marvelous new Nissan GTP from Andy's. The real version of this is well-known to all who follow racing, winning a record number of races last year with Geoff Brabham

driving, and Andy's version of this car might well do the same. This is the first time that I had ever used an Andy's body (although I have been beaten by them many times at races) and it will certainly not be the last. The Nissan has superb detail, indeed concurs quality detail, and handles beautifully. There isn't a lot more that you could ask of a body and this one delivers. Andy painted up a beauty for me (regular read-

Continued on page 46

IMPORT FIGHTER.

THE TEAM DOES IT IN THE DIRT.

Race the car that beat the imports in the toughest kind of off-road competition.

The All-American Associated RC10 took home the gold in both the ROAR and ORRCA National Championships.

Our RC10 turned back the foreign car invasion with the

same racecar technology that has kept Team Associated on top of the RC car racing world for over 15 years.

A RACE CAR, NOT A TOY.

Sure, you've heard that before. But Team Associated designs and engineers only model RACE cars. The new RC10 features

fully adjustable, four wheel independent suspension, an aluminum alloy monocoque tub and race-proven hardware throughout.

And the RC10 doesn't need expensive accessories and modifications to handle the roughest tracks. The strength and durability is standard equipment.



Sealed gearbox
VariLok
differential

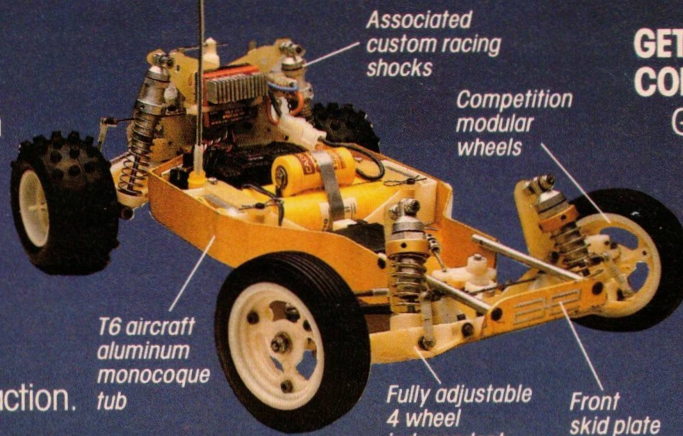
Smooth undercarriage for
maximum ground clearance

Full race rear suspension includes bulletproof
half shaft and u-joints with tapered and
keyed modular wheels. Quick release knock
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RACE-WINNING ENGINEERING.

For maximum traction the RC10 suspension is damped by long throw, oil-filled racing shocks. These custom shocks use machined alloy cylinders and drill blank shafts for silky smooth action.

Rugged, yet light, the suspension gives you all the adjustability of full size, full race buggies. The A-arm/Ball joint design allows precise camber, caster, ride height and spring rate tuning. Even anti-roll bars and a VariLok dif are included.



T6 aircraft aluminum monocoque tub

Associated custom racing shocks

Competition modular wheels

Fully adjustable 4 wheel independent suspension

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Exceptional ground clearance and low center of gravity also contribute to the superb balance and performance of the RC10 over all types of terrain.

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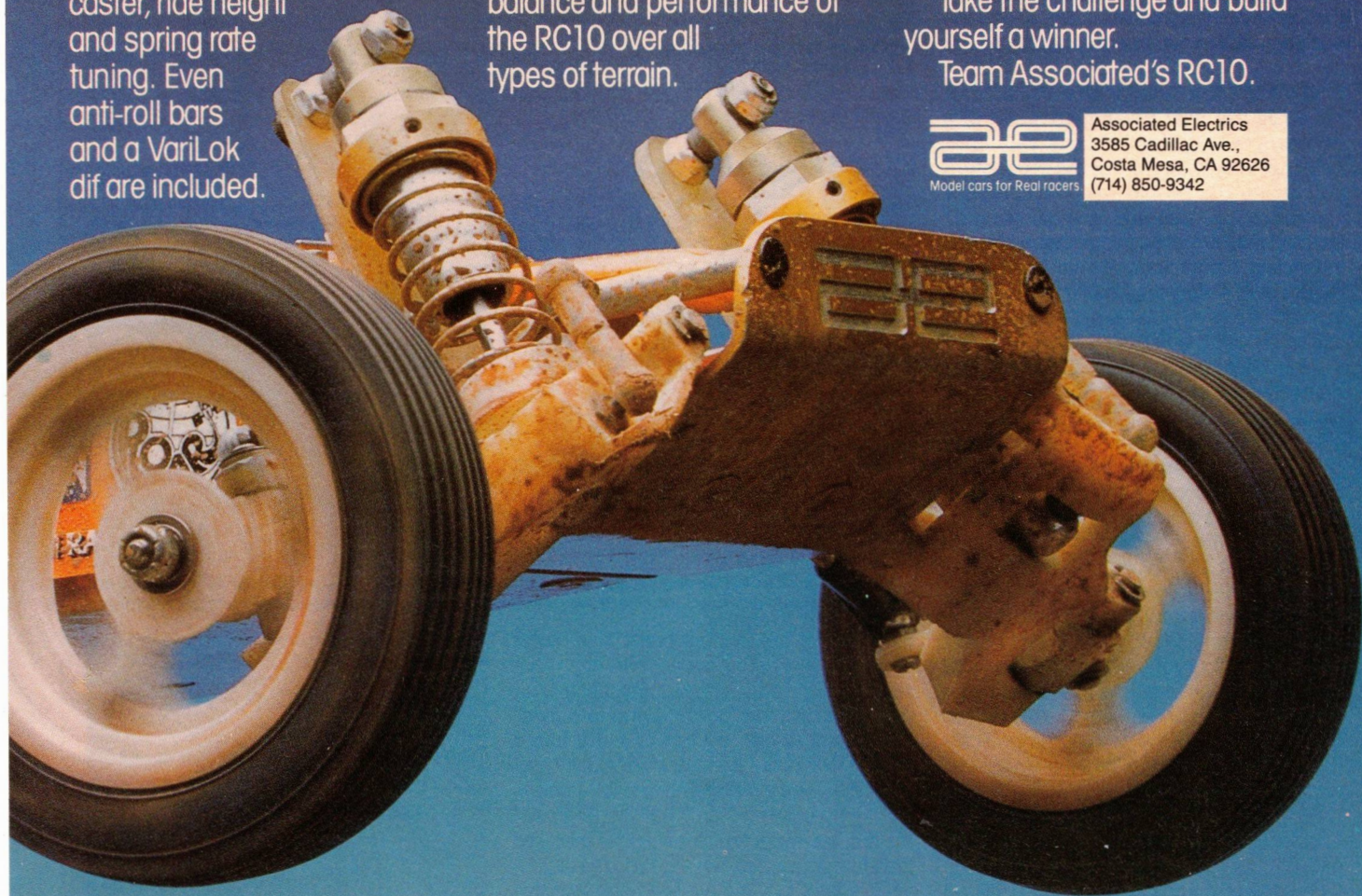
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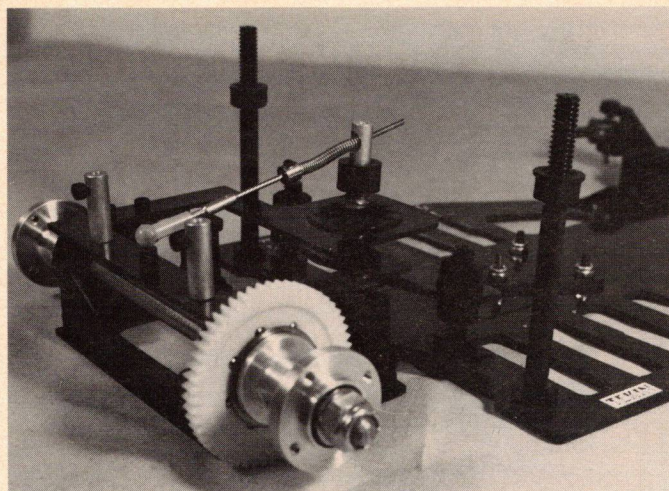


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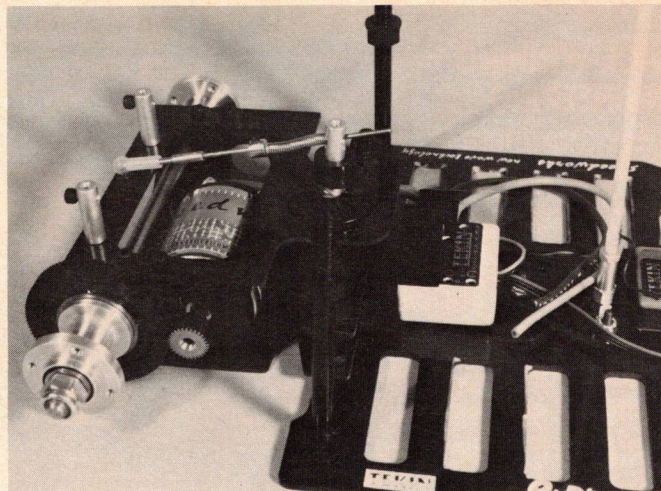


TEAM ASSOCIATED RC10

ROAR 1:10 NATIONAL CHAMPION / ORRCA NATIONAL CHAMPION
IFMAR WORLD CHAMPION



An early assembly shot of the rear pod with 32-pitch ball diff and steel axle. A graphite axle would help reduce the weight back here.

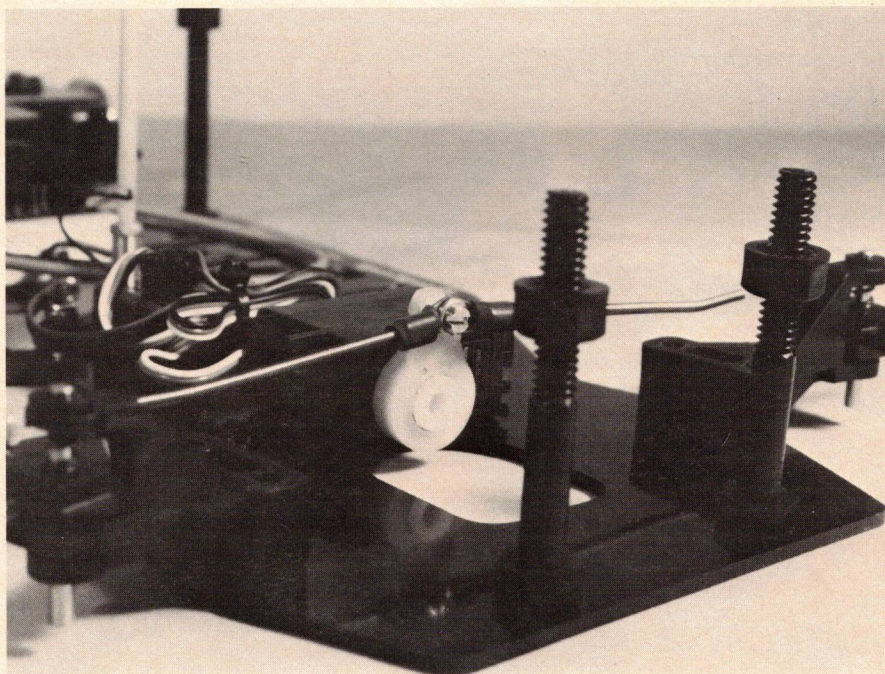


The Cobra with 64-pitch diff and Superstock Speedworks motor. The Speedworks motor performed flawlessly, as did the Cobra itself.

ers have already noticed that there is no way I painted that!) and sells pre-painted bodies, as well as the unpainted ones, through hobby shops for those of us without the talent or time to do something like this.

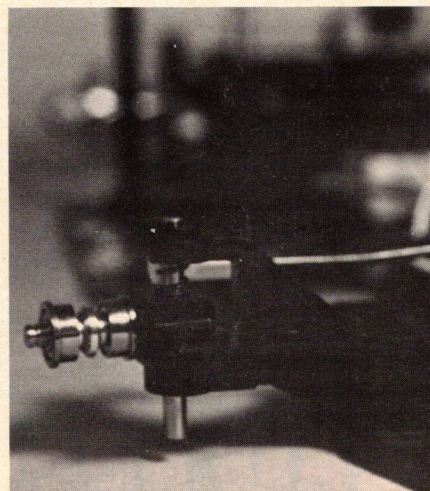
While in Cleveland for the 1/12th scale nationals this year I was introduced to a company with a wide range of very interesting products: Scale Racing Products. If you are not yet familiar with this company I would encourage you to look into their product line. We used two of their products in this test, a machined aluminum antenna mount and a universal center-point steering kit. Both of these products are of extremely good quality and really enhance the car. I noticed that most of the best, big name racers at Cleveland were using a center-point system for steering linkage so I was very happy to have the opportunity to try one on my next car. According to what I was told by racers, it will give more consistent steering at higher speeds. Although I have only tried it on this car to date, I can report that it did its job perfectly and I expect that this will become a staple on my race cars in the future. A steering linkage may seem like a small, unimportant part of a race car, but anyone who wins will tell you that it is attention to details that makes your car just that little bit faster than the competition. Racers call it the winning edge. Scale Racing Products have other unique, well made parts and would be well worth your looking into. They can be reached at: 6900 Chadbourne Dr., North Olmsted, Ohio 44070.

Speedworks motors have been taking the country by storm. Everywhere you go, from small raceway, to dirt lot, to the legendary Lake Whippoorwill Raceway in Florida you will see these new, inexpensive, ultimately quick motors. Ever since this magazine broke the story of this new line of quality motors from multiple world champion Team Trinity they have become an astounding (and deserved) success. The Speedworks -0005 "Super Speedway Stock Motor" is a natural for this test, as it fits right in with our concept of terrific per-



Author added a Scale Racing Products' Universal Center-Point steering linkage kit on the Cobra, and on the track it proved itself with silky-smooth operation and positive high-speed response.

formance at reasonable price. This motor will go as fast as, or faster, than any other stock motor on the market, yet last longer than other motors of comparable speed. The reason it can do this is that it has a "hotter" wind but comparatively lower timing. This gives a motor that is faster but less inclined to blow up than other "super stock" motors. If a motor that is faster, cheaper and lasts longer sounds like a good idea to you, you're right, it is. If there is a hitch with this concept, it is that these motors are not legal at all racing venues across the country. Some places would prefer that you buy a new motor or two every week to be competitive, instead of having a motor like this that will give a great deal more service. Some of these places do it out of greed, some out of ignorance, but the result is the same: the hobbyist is forced to buy a product that is inferior to the Speedworks



Like the rest of the Cobra, the front end assembly is designed to be simple to put together, and simple to maintain. Often in racing, simplicity means consistency, a necessary ingredient in a winning performance.

Continued on page 64

Hyperdrive and RC-10

Ralph Burch wins
1988 Whippoorwill
Race of Champions,
TQ's, and sets new
track record using
Hyperdrive!

**Made for
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patent pending

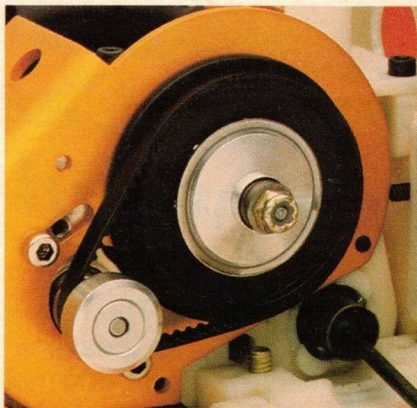
The Associated RC-10. One of the most popular RC off-road race cars of all time.

Hyperdrive. Quickly establishing itself as the hottest new bolt-on high performance item for off-road ever! Ask the guys on the east coast about the new track records set with Hyperdrive on dirt.

Hyperdrive survives in the toughest off-road racing environments.

Rocks, grit, and grime that can quickly kill gear drive simply sling off Hyperdrive.

Hyperdrive handles more horsepower, higher R.P.M., runs with far less friction,



and is easier to set up and maintain than other systems.

Cost is comparable to gear drive. (Actually less expensive if durability and finishing races means anything.)

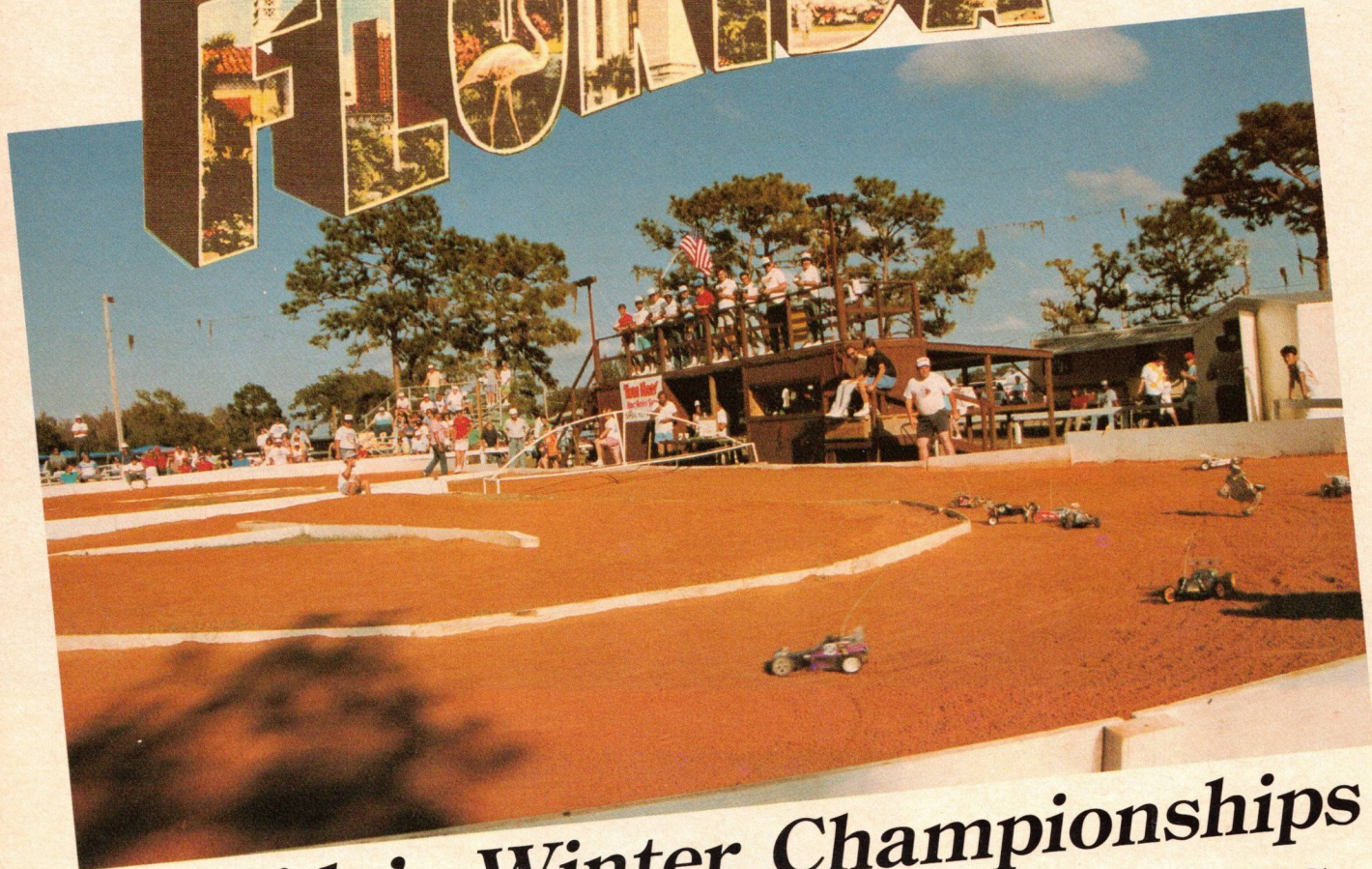
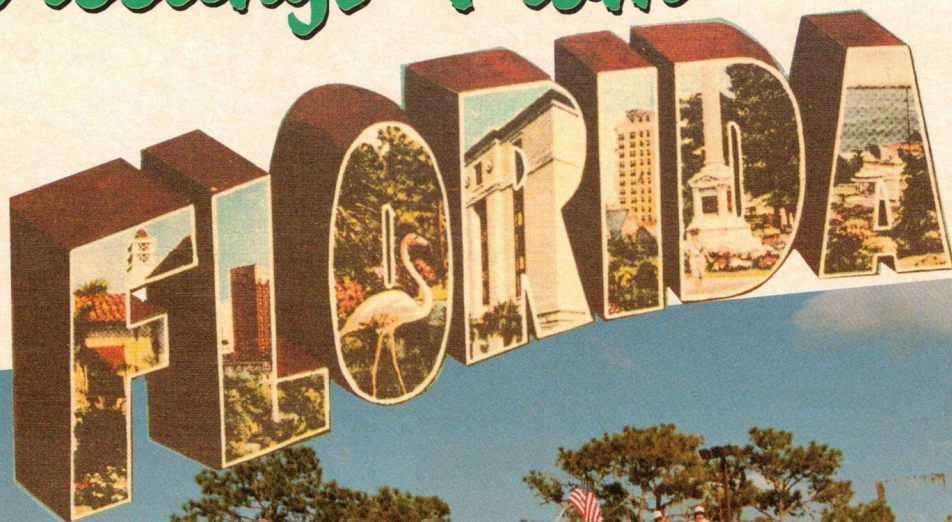
6 motor pulleys and 3 differential pulleys are available plus belts giving you a complete range of ratios for competition.

Hyperdrive is available for the RC-10 and most other popular off-road race cars and practically all $\frac{1}{10}$ and $\frac{1}{12}$ on-road applications. Ask for our RC-10 full race kit.

Contact us for our new catalog and ordering information today!

Hyperdrive
Belt Drive Systems™

Greetings From



Florida's Winter Championships attracts a crowd of dirt racers

This annual event continues to grow, with 320 entries this year. All the major teams participated: Associated, Kyosho, JRX2, Schumacher, Yokomo, and Tamiya, as well as all the motor manufacturers, Reedy, Twister, Revtech, Trinity, Revolution, etc. While the rest of the country was caught in a winter storm with record lows, Tampa was enjoying 85-degree weather. No wonder all the racers look forward to this race!

The race was held at Lutz Park, near Tampa, an ideal site with all kinds of room for pit areas, cars, and motor homes. The park has even offered the Tampa club more room, so the club is thinking of putting in a 1/10 on-road track, too. It takes a great deal of work to put on a race this size, and the Tampa club, as well as the sponsor, Han's Hobby Shop, deserve a lot of thanks for all their efforts.



COMPETITION

BY GENE HUSTING

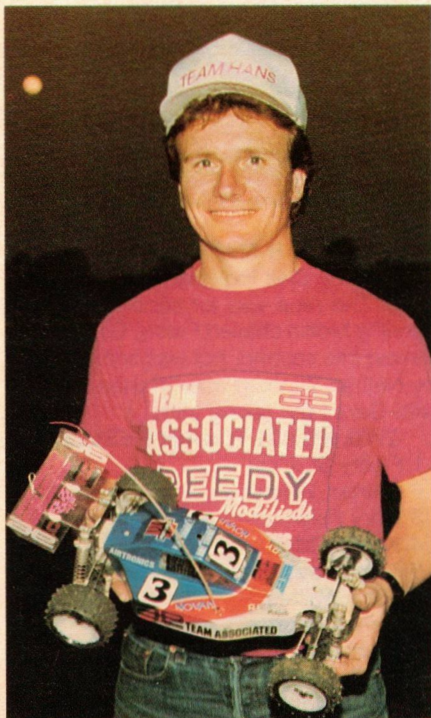
There were three classes: 2WD Stock, 2WD Modified, and 4WD Modified. As usual, 2WD Modified was the largest class. The racers were only allowed to enter in two classes. All the faster racers entered 2WD and 4WD Modified, leaving the 2WD Stock class open for amateur class drivers. This system works out very well because amateurs can race against each other without having to compete against factory teams.

This is going to sound a little funny, but Florida doesn't have the same kind of dirt that the rest of the country has. Florida's dirt is composed of powdered coral and shells, so you end up with a very fine powder that is something like flour. In order to have a better racing surface, red dirt is imported from Georgia. The Tampa club did a super job manicuring and watering the track between every heat, so every driver got a fresh track to race on. There were three rounds of qualifying, with four minute heats per ROAR rules.

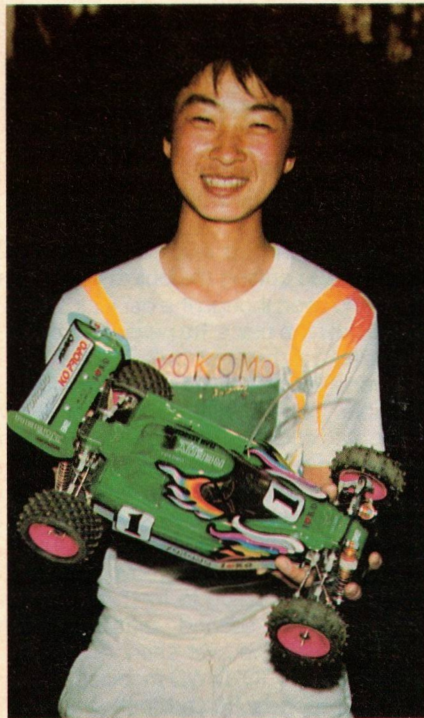
During the practice days, the track was only maintained a couple times a day, because there was nonstop racing, with more than 10 cars on the track all day long. This turned into a real off road track with craters everywhere. Trying to learn much was a waste of time. You could make sure your radio and motor worked, but that was



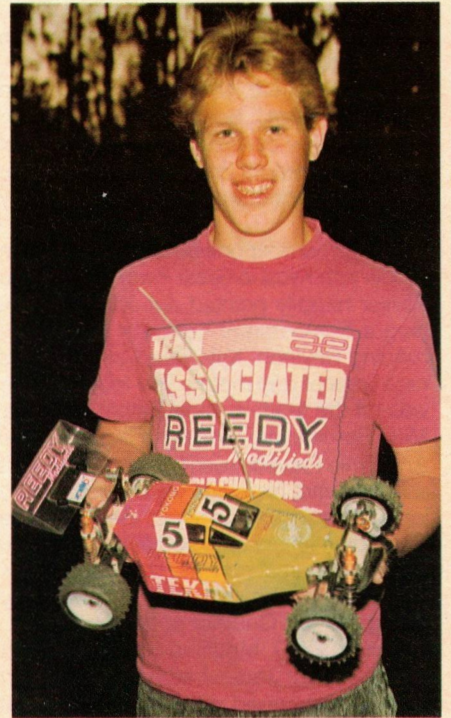
Masami Hirotsuka came all the way from Japan to win the 2WD Modified race. Here he accepts his trophy from Miss Lake Park. Masami was TQ in both 2WD and 4WD Modified classes.



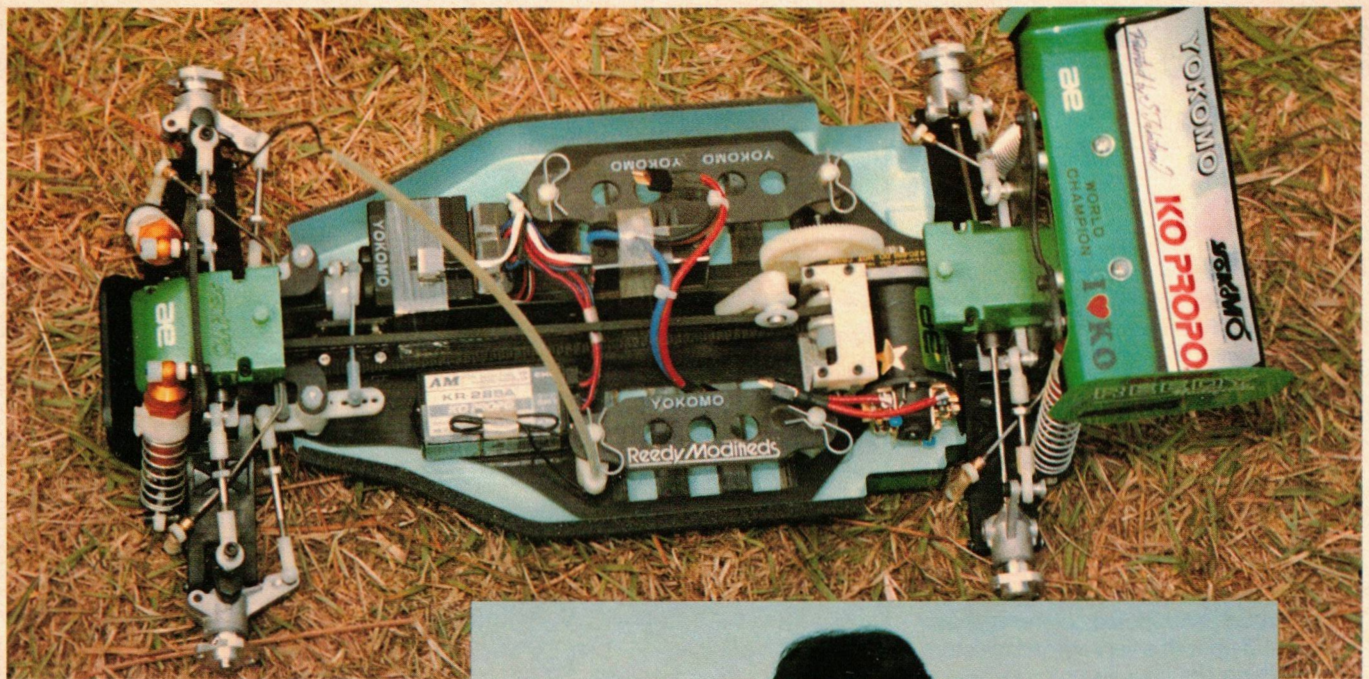
1988 Driver of the Year has kicked off '89 with two big wins: the Reedy Invitational and the 4WD Modified crown at Tampa.



Masami Hirotsuka was second behind Lett in the 4WD Modified with his Yokomo. Masami won the 2WD Modified here.



Darrin Stump represented Florida proudly, taking a third in 4WD with his Reedy-powered Yokomo.



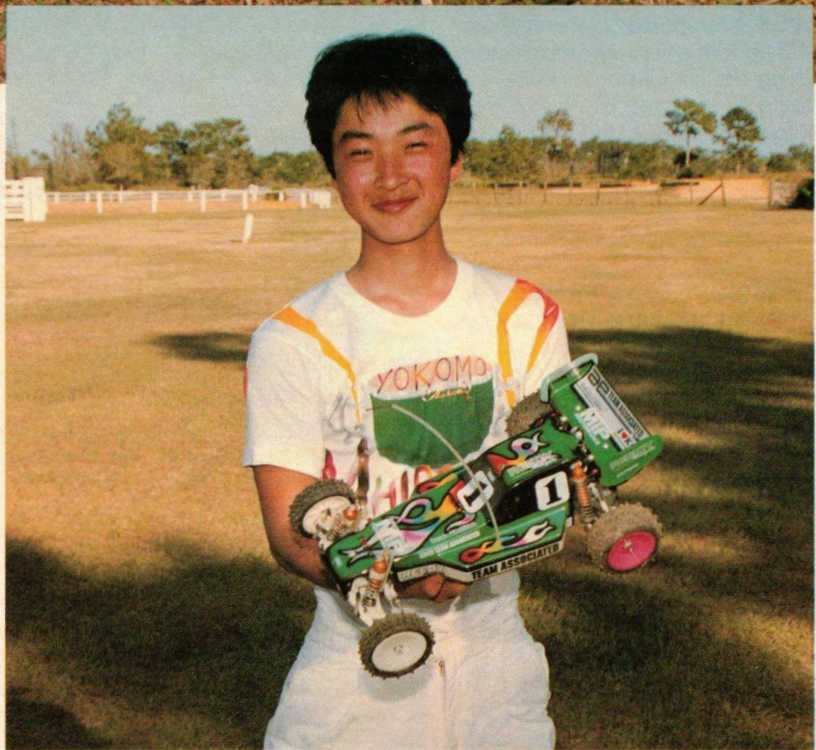
Masami Hirosaka's 4WD Yokomo racer features KO radio and speed control, and a Reedy motor and batteries. Yes, his car is always this clean! At right, Masami and his 2WD modified TQ- and Main Event-winning car, an RC10.

about all. It wouldn't help much to tune your car to these track conditions, because for qualifying, the track would be different. However, it was just a fun time to run.

In Formula One racing, wintertime is called the "silly season" by the sports writers. Drivers say they're perfectly content with the teams they're on now, but a week later they have a press conference to announce the new team they're on. This happens with about one-third of the drivers. I think we've just had our biggest silly season in R/C cars. I was talking with Chris Doseck, and he said "look," as he was pointing to his Trinity T-shirt, "I'm the only Trinity driver here. Me and Bob Light are the whole team." Now this is quite amazing when you consider Trinity had one of the biggest teams last year. I asked Chris what was happening, but he didn't really know.

Trinity's number one driver, Joel Johnson is now with Kyosho/Great Planes, and Mike Walker happily pointed out Joel was running a Twister motor here. Jim Dieter was running Revtech. Kyle Reed came to this race without any motors. He found out he was off the team a week before the race. Mike Burnett was running a Twister motor. And Ernie Provetti wasn't here, so I couldn't ask him what his plans were. There was a lot of talk going on in the pits. Because Kyle Reed didn't have any modified motors, he entered the amateur 2WD stock class. He's not exactly an amateur and he proved it by taking the Top Qualifier spot by half a lap.

In the 2WD Modified class, Masami Hirosaka from Japan had a run that could only be described as unbelievable. The track is outlined with boards, so it's impossible to cut corners. All the drivers found out that when you cut the corners too tight,



you simply end up stuck in the boards. Masami was cutting the boards within an inch, and even though the car was bouncing all over the place, he never backed off. Lap after lap he kept pulling away from everyone. What he was doing looked impossible, but he was doing it in every corner, lap after lap. He ended up with Top Qualifier in six seconds, which was a third of a lap ahead of Jim Dieter, who came in second. Jay Halsey and Kris Moore ended up with identical times in third and fourth, but the next day Cliff Lett moved into third place. Second place to tenth place was exactly a four-second difference—the closest I think I've ever seen.

Masami also TQ'd 4WD modified, but by just two seconds. Butch Kloeber and Cliff Lett turned identical times for second and third spots, and Kris Moore was right there for fourth spot.

2WD STOCK B MAIN

Frosty St. Clair took the lead and pulled away. The race was for second place as Timothy Mottin chased Frosty. Gil Comeau moved into second, but was soon passed by Nathan Wincek, who finished second, with Gary Fulp taking third.

2WD STOCK B MAIN RESULTS

- 1 Frosty St. Clair
- 2 Nathan Wincek
- 3 Gary Fulp
- 4 Kenny Gillett
- 5 Mark Novotny
- 6 John Walters
- 7 James Rhodes
- 8 Mike Spehn
- 9 Gil Comeau
- 10 David Mottin

2WD STOCK A MAIN

When someone takes TQ spot by half a lap, he naturally gets the number one start-

ing spot and you expect him to run away with the race. But it didn't happen that way. The motor Kyle Reed used in qualifying got burned up and Kyle had to use another one for the main. When the horn sounded, Kyle didn't have enough power to pull away from everyone and he got caught in the first corner traffic jam.

Doug Laurent took the lead with Freddie Rpauana second and Kyle third. Doug wasn't making any mistakes. Freddie was close enough behind that if Doug made one mistake he would be in trouble. Kyle started to fall back as Mike Meighen took over third spot. Doug held the lead all the way to the end with Freddie finishing second and Mike third.

2WD STOCK A MAIN RESULTS

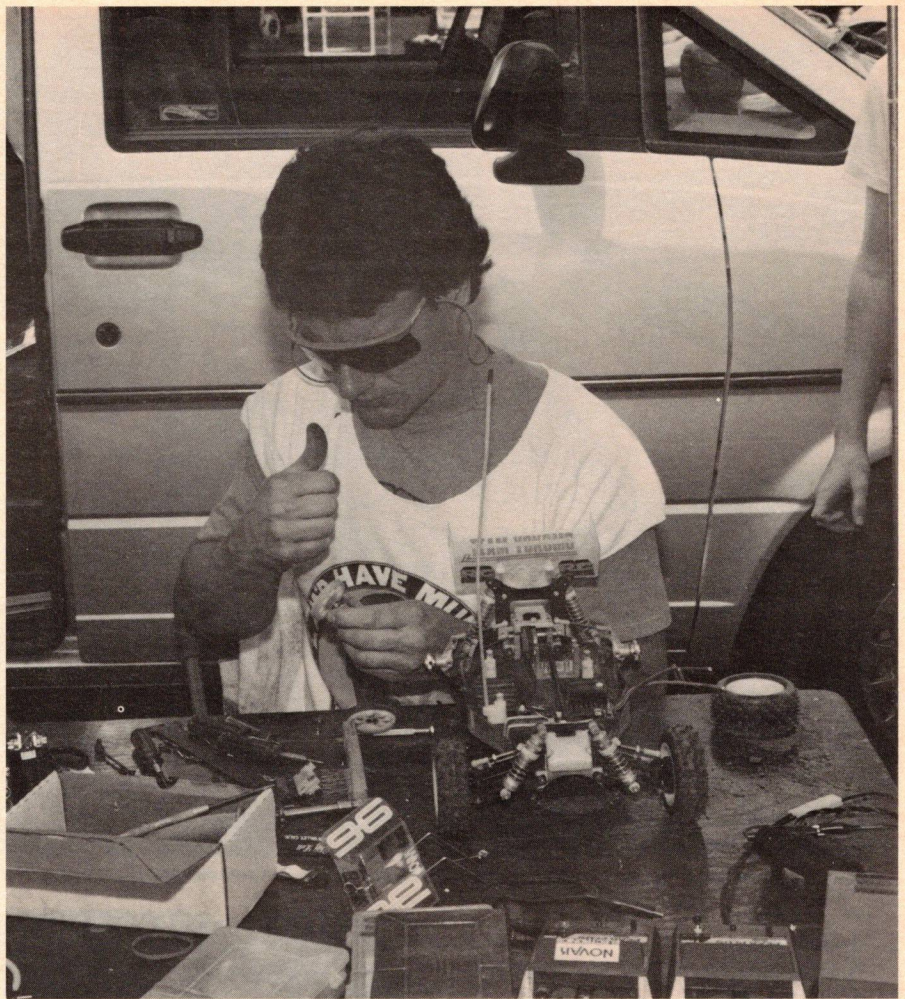
Place/Driver	Car
1 Doug Laurent	RC10-Houge
2 Freddie Rpauana	JRX2
3 Mike Meighen	RC10
4 Mike Barone	RC10-Houge
5 Timothy Mottin	Kyosho
6 Billy Hock	JRX2
7 John Dieiver	JRX2
8 Edwin McIureus	RC10
9 Kyle Reed	JRX2
10 Joel Watkins	JRX2

2WD MODIFIED B MAIN

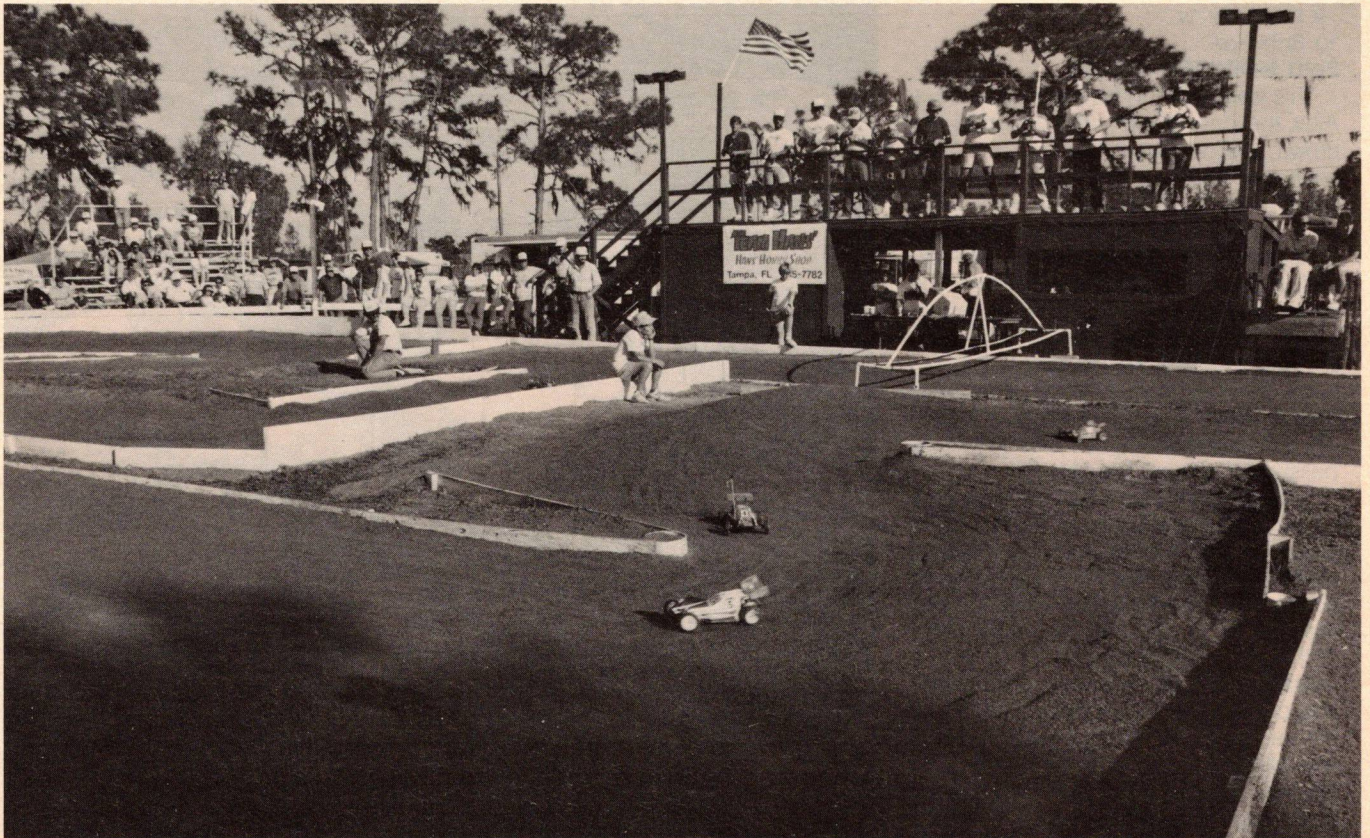
Gil Losi Jr. chased Jack Johnson around for four minutes, but he couldn't quite catch him as Jack won, with Gil second and Mike Meighen third.

2WD MODIFIED B MAIN RESULTS

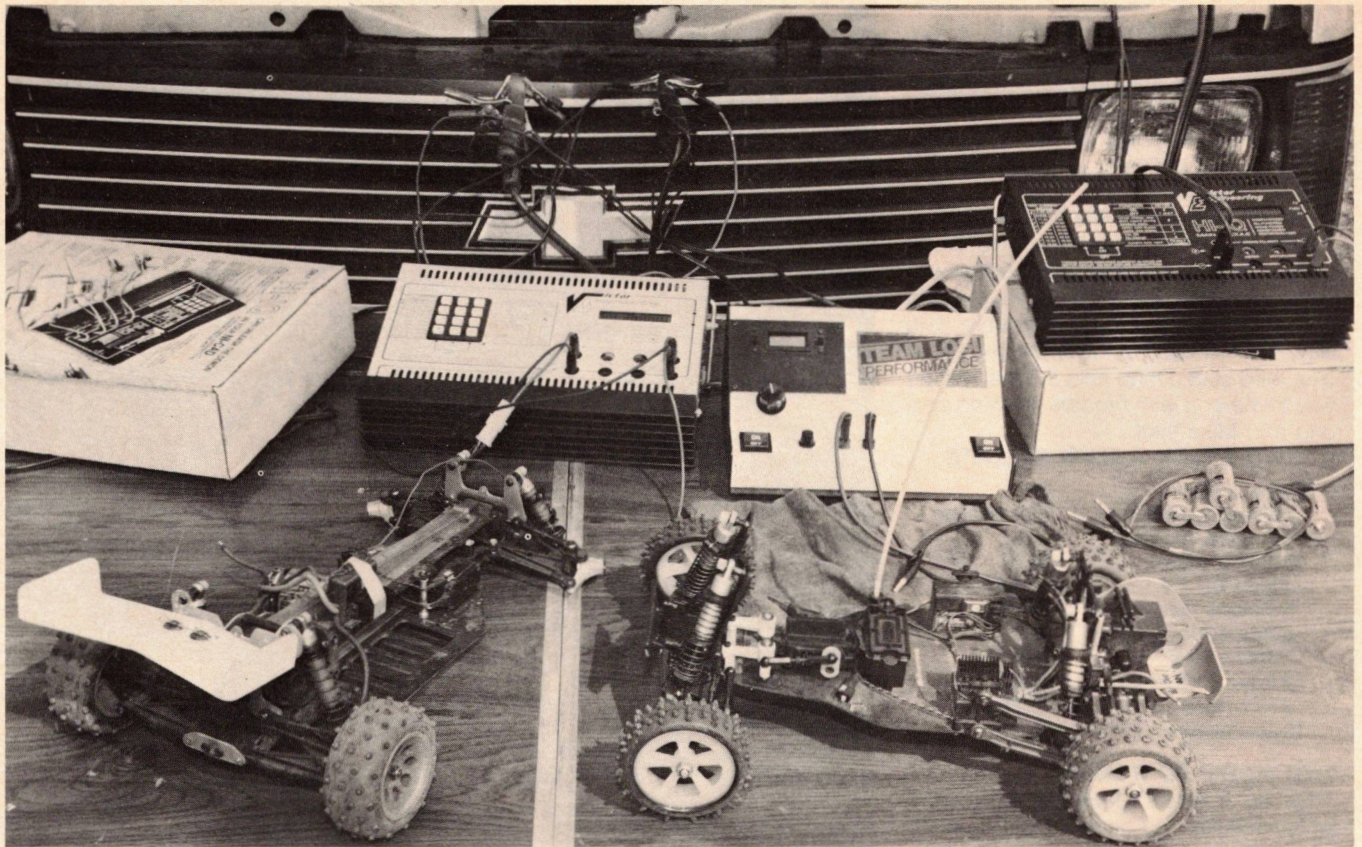
- 1 Jack Johnson
- 2 Gil Losi Jr.
- 3 Mike Meighen



Cliff Lett decided that if he hopes to consistently beat someone like Masami, he's going to practice and race a lot more. His record shows it is paying off.



The esses were a tough part of the track at Lutz Park, with many of the cars becoming hung up on the boards.



Team Losi was using the new Victor digital battery chargers. Pushbuttons and liquid crystal displays look pretty trick.

- 4 Gary Kyes
- 5 Mark Novotny
- 6 Chris Allec
- 7 Joel Johnson
- 8 Jeff Harris
- 9 Rick Vehlow
- 10 Bob Hall

2WD MODIFIED A MAIN

This was going to be an exciting race. After the drivers were introduced to the crowd, the cars were lined up, the horn sounded, and the race was underway. Masami had a slight lead, but went a little wide out of the second corner, so Nathan Wincek, from Florida, shot into the lead with Cliff Lett following and Masami in third. The three cars weren't more than three feet apart. Cliff was all over Nathan trying to get by, while Masami was all over Cliff trying to get by. They all knew they had to make a clean pass, because if they got locked up with each other's car, they would be passed by at least five cars.

Masami momentarily got hung up on a corner, but he was soon back in third. Cliff finally passed Nathan, but then Nathan passed Cliff in the next corner, and then two corners later Masami passed Cliff. Masami then got by Nathan and two corners later Cliff also passed Nathan.

Masami and Cliff were still right together. You could hear the crowd scream every time a pass was made. Then Cliff rolled over, still holding onto second but giving Masami some room. That's all he needed as he went on to win by ten feet over Cliff with Nathan another ten feet back in third. This was a crowd pleaser.



Gil Losi Jr. and Gary Kyes prepare their JRX2 cars for the next round of competition. Gil took sixth in the 4WD Modified A Main, while Gary was second in the B Main.



The Lake Park area near Tampa has lots of room for pits and campers.

4WD MODIFIED B MAIN

Jay Halsey was in this main, but it was obvious he didn't belong in this main. He took the lead and won it going away by half a lap, with a time that would have qualified him fourth in the A Main. All you've got to do is get hung up once in your qualifier and it can really hurt your time. Gary Kyes took second spot with Joel Johnson taking third.

4WD MODIFIED B MAIN RESULTS

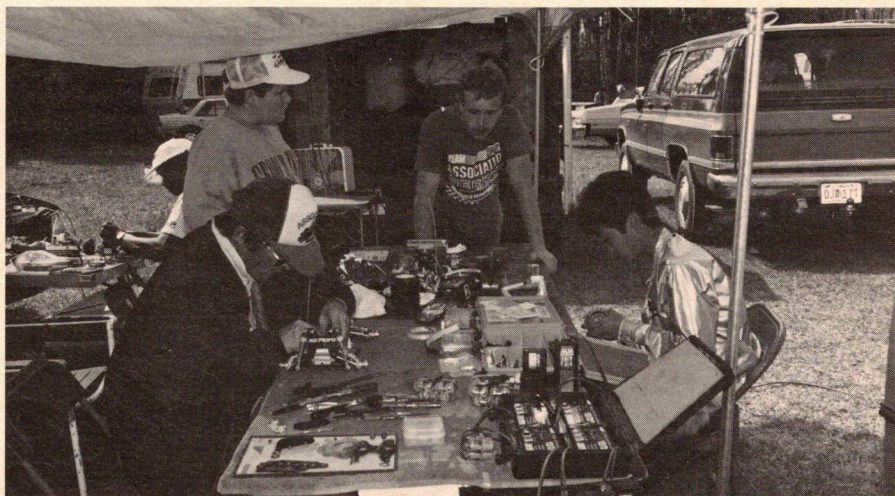
- 1 Jay Halsey
- 2 Gary Kyes
- 3 Joel Johnson
- 4 Chris Allec
- 5 John Wong
- 6 Bill Blakeslee
- 7 Kevin Clark
- 8 Jim Dieter
- 9 Erik Soderquist

4WD MODIFIED A MAIN

This was the fast one coming up. The drivers were introduced to the crowd again, the cars lined up, the horn sounded, and Butch Kloeber jumped in the lead. But Butch slowed to make the sweeper, was tapped by Masami, and spun out. Cliff Lett passed them both to go into the lead. Darrin Stump went into second spot with Masami in third, but in a couple of laps, Masami got by Darrin to take over second.

The track had dried out some, making it a perfect 4WD test track. Cliff wasn't waiting for anyone. With Masami chasing you, you can't afford to wait around. As hard as Masami was trying, he couldn't even close up on Cliff. Darrin was holding onto third spot.

It's a whole lot easier to get around the track when you're out in the lead by your-



Mr. Hirosaka and Masami are continually working on their cars so that every time Masami hits the track his racer is ready.

2WD MODIFIED A MAIN RESULTS

Place/Driver	Car	Motor
1 Masami Hirosaka	RC10	Reedy
2 Cliff Lett	RC10	Reedy
3 Nathan Wincek	RC10-Houge	Reedy
4 Jay Halsey	RC10	Reedy
5 Frosty St. Clair	RC10	Reedy
6 Kris Moore	RC10	Twister
7 Ron Rossetti	JRX2	Revolution
8 Butch Kloeber	RC10	Reedy
9 Jim Dieter	JRX2	Revtech
10 Mike Burnette	Kyosho	Twister

self, but if you really want to watch the great drivers in action, watch how they pass traffic. Traffic is what separates the men from the boys. Cliff, Masami and Darrin were all getting through traffic clean. As good as Masami had looked in the 2WD main, Cliff was looking equally good in this 4WD main. Masami couldn't catch him and that's saying a lot. Cliff won with Masami

4WD MODIFIED A MAIN RESULTS

Place/Driver	Car	Motor
1 Cliff Lett	Yokomo	Reedy
2 Masami Hirosaka	Yokomo	Reedy
3 Darrin Stump	Yokomo	Reedy
4 Mike Burnette	Kyosho	Twister
5 Kris Moore	Yokomo	Twister
6 Gil Losi Jr.	Kyosho	Revolution
7 Chris Doseck	Schumacher	Trinity
8 Ron Rossetti	Kyosho	Revolution
9 Butch Kloeber	Yokomo	Reedy
10 Rick Vehlou	Yokomo	Reed

about twenty feet back in second, and Darrin another thirty feet back in third. At the rate that Cliff and Masami are winning races, they're not leaving much for anyone else.

The Tampa club should be congratulated for running a race this size and keeping it all on schedule and with a well prepared track. Thanks, guys and gals. ●



Royal CRUSHER

Monster muscle in a smart package

BY STEVE SAIK

1 /10 Monster Trucks are the latest rage at race tracks all over the U.S., with their giant, oversized tires and mean-looking bodies to match. Royal has now entered the Monster Truck world with the introduction of the new Royal Crusher, and it is not to be taken lightly by any means.

The Crusher is the first 1/10th-scale "monster truck" to be released by Royal, and it features the latest innovations designed to make it competitive. The Crusher features a twin wishbone, independent suspension that is molded of reinforced nylon. The tube-like chassis frame is made of a high-strength ABS resin, which provides for an easy-access servo mount and a solid bullet-proof compartment for radio mounts and wiring. An important feature of the Crusher is four-wheel steering which makes high-speed control easier and provides for stable off road handling and traction. Extra heavy-duty ball-link tie rods with easy adjusters for fast, convenient wheel alignment are also included. The transmission is sealed with differential gears used to maximize cornering characteristics and handling. The Crusher comes with the

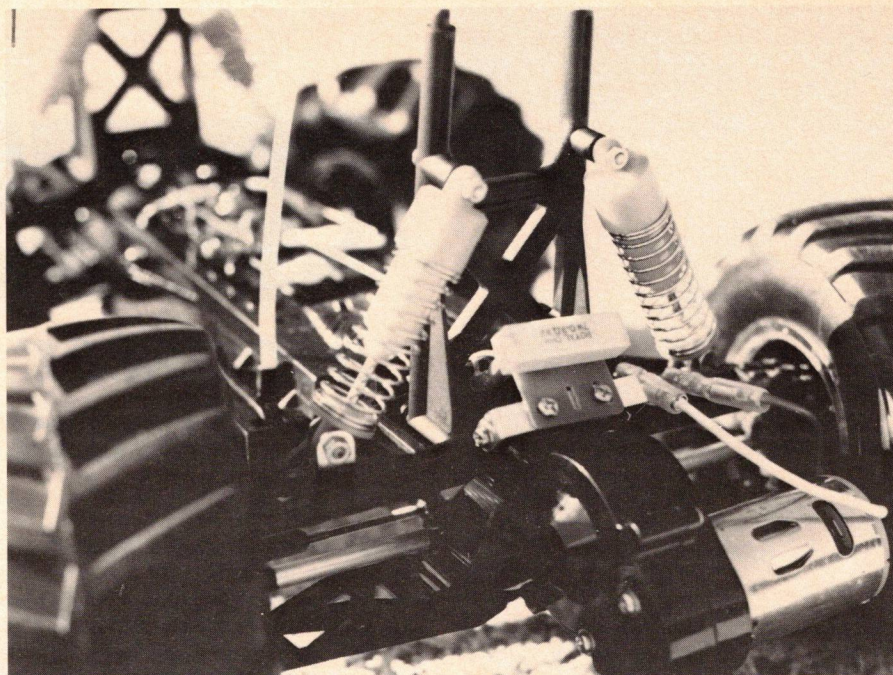
Mabuchi RS-5405 motor, yet motor mounts will accept custom-style racing motors for added performance. The kit includes three-step forward and three-step reverse speed control with silver contacts. The Crusher has upper and lower A-arms in all four corners, giving it a rugged suspension system throughout. The Royal Crusher has another unique plus—it can be converted to four-wheel drive by using an extra kit; so if you decide you would like a four-wheel drive monster truck, it should be an easy change. I did not have access to such a kit, but I believe it should be forthcoming from Royal. All plastic parts used in the assembly were dyed red and black, making the Crusher look awesome.

Directions for assembly proved adequate, yet I had a few misgivings about certain steps in the building process. I found it difficult to locate parts due to the fact that the part bags were not labeled with any reference numbers. The directions on pages 17 to 20 showed a complete parts listing with assigned letters and pictures, which did help in locating parts. It was just a matter of inspecting each parts bag to



find the correct part. In certain instances where directions lacked clarity, the pictures made up for it so that I was not slowed down.

Now let's get on and look at some trouble spots in the assembly and how you, the builder, can overcome them. There are also a few suggested changes and hints that will make your Crusher a top-notch truck. The first pitfall I encountered came in the assembly of the gear box, but I could easily see why. I tried to install the C-ring retainer onto the Sm-3 out-drive shaft and could find no place to do so. The directions did not show me clearly where to install it, but after some thinking, I found the groove on the shaft and installed it. The groove was hiding as a common-looking slice in the shaft, which fooled me into thinking it was just part of the out-drive shaft. I had to hit myself over the head for not seeing it at first. Next, I stumbled onto a very frustrating problem that I believe is crucial to the proper assembly of the Crusher. Upon trying to install the heavy-duty monster brass ball joints, I found that they would not seat correctly; that is, they would seat or screw in at an angle



Motor access on the Crusher is generous, which makes cleaning or changing the motor an easy task. Author recommends replacing the factory shocks with a set of adjustable shocks.

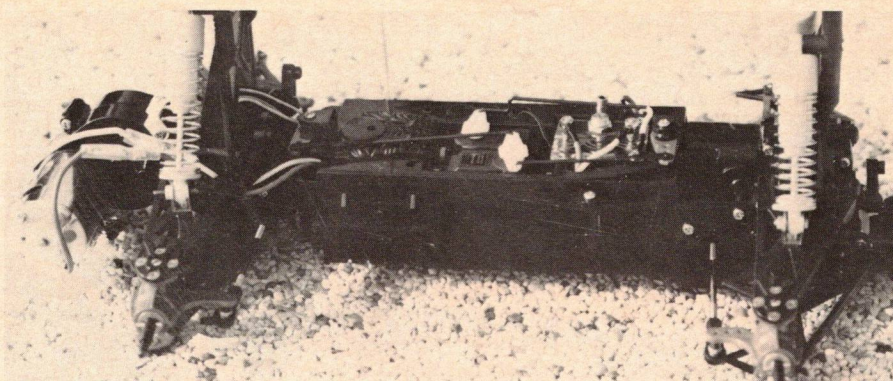


only. Threading the ball joints straight is paramount due to the fact that the ball joints position the wheel axles for both front and rear. This can be quickly remedied by using the same size, or the next size smaller drill bit, and drilling out the #A-10 knuckle holes. Repeat until the ball joint will seat correctly, but be advised that if the hole is too large, the ball joint may pull out easily. Be very careful during this step; the use of a thread lock or CA glue may be helpful in holding the ball joint steady in the mount if you over-drill. The whole device, while threading down, will be easier to control. Remember, in the very last few turns, while you are threading, the ball joint will straighten out to some degree. As the instructions and I both agree, it is advisable not to strip the end of the ball joint where you place your screwdriver during the installation. If some stripping does occur, file any burrs that do pop up.

Okay, good, that was the only really bothersome trouble spot I felt was important to work through, but note that there are some minor details which can be fixed easily. When trying to install the heavy-duty steering king pin on the control arm A-7 and the A-10 axle out-drive, the holes proved to be too small so stripping on the TR-3 small ball joint did occur. To fix this problem, drill the holes out larger to accommodate the threads of the small ball joint on the steering linkage. The joints did not pull out the whole time I ran the truck, and it makes for easy toe-in, toe-out adjustment. If you want to be on the safe side, add a nut to the end and screw it down to protect it from the pulling out of the small ball joint in both parts A-10 and A-8. Remember, stripping will damage parts on the truck that you will have to replace, so enlarging the places where screws will not fill will save time and money.

In testing the Crusher, I noted that the stock shocks popped apart at the top end due to the rigors and punishment the wheels were taking. Glue, Zap, or Jet whatever you find and glue it onto the shock assembly to quickly fix the problem. Also, a final hint or reminder which is rather self explanatory—do not get glue on the bushing when gluing the crosspins into the axles or your car will not drive. This may sound stupid, but many of the glues are very free-flowing, and I made this same stupid mistake while trying to generously glue my crosspins onto the axles.

As with any R/C car or truck, there are always products which will step up the performance. The Crusher is a good-performing R/C truck. If you are serious about making it a competitive truck at the races, there are a few items I would like to suggest. Of course, it's perfectly fine to leave your Crusher the way it is, especially if you are just out to have a good time and aren't thinking too seriously about the competition. The first step would be the purchase of good, adjustable, oil-filled shocks for all four corners of the Crusher. The current shocks on the Crusher do not provide



The tub-type chassis has ample room for the receiver and servos, with a compartment below for a standard six-cell stick-type battery pack. This rugged package should stand up to much abuse.

enough dampening, nor are they adjustable. Remember that if you have tension-adjustable shocks, you will be able to get your truck to hook up to the curves and take the jumps without rolling. A number of companies make very good shocks that do the job. Kyosho makes the Option House Gold and Platinum shocks which retail at \$34.95, and \$39.95 for Long Golds, which are very good for our purposes. Other companies such as Associated make a very good shock, and since that too is your choice, you should ask your local hobby shop what they recommend according to tracks in the area. I recommend buying shocks before you purchase any other upgrade because better shocks will provide the greatest difference in handling, which in my opinion, is more important than any speed-related item.

My second recommendation would be the purchase of a bearing kit. A bearing kit will let the gears and wheels spin freer, resulting in more speed and less motor heat caused by friction, which would then permit longer run times from your batteries. The present speed control is durable; it produces three forward and reverse speeds which will cause the car to move, throw the car in turns, and perform adequately, other areas of track. My suggestion is a wire-wound speed controller, or if you have the money, an electric speed controller—although a good one can run upwards of \$80.00. So if your budget is tight, the wire-wound speed controller is the thing for you. A variety of companies make good wire-wound speed controllers, varying in features from braking to reverse.

BoLink, along with Parma and Team Associated, make fine speed controllers, all of which are very good for your needs. Again, though the brand for you is strictly your choice, do take advantage of your hobby dealer's advice.

If you're ready to give your Crusher some extra speed, then a competition off road stock motor is what you need to boost the horsepower in the Crusher. Trinity, Reedy, Revtech, Peak Performance, Twister, Revolution, and many other companies, make fine competition stock motors. If you're interested in racing, then purchase one of these motors for your truck. But if you have a lot of extra money, a modified motor will really send you flying. The problem is, to begin racing, you must start in a novice class where only stock motors are allowed.

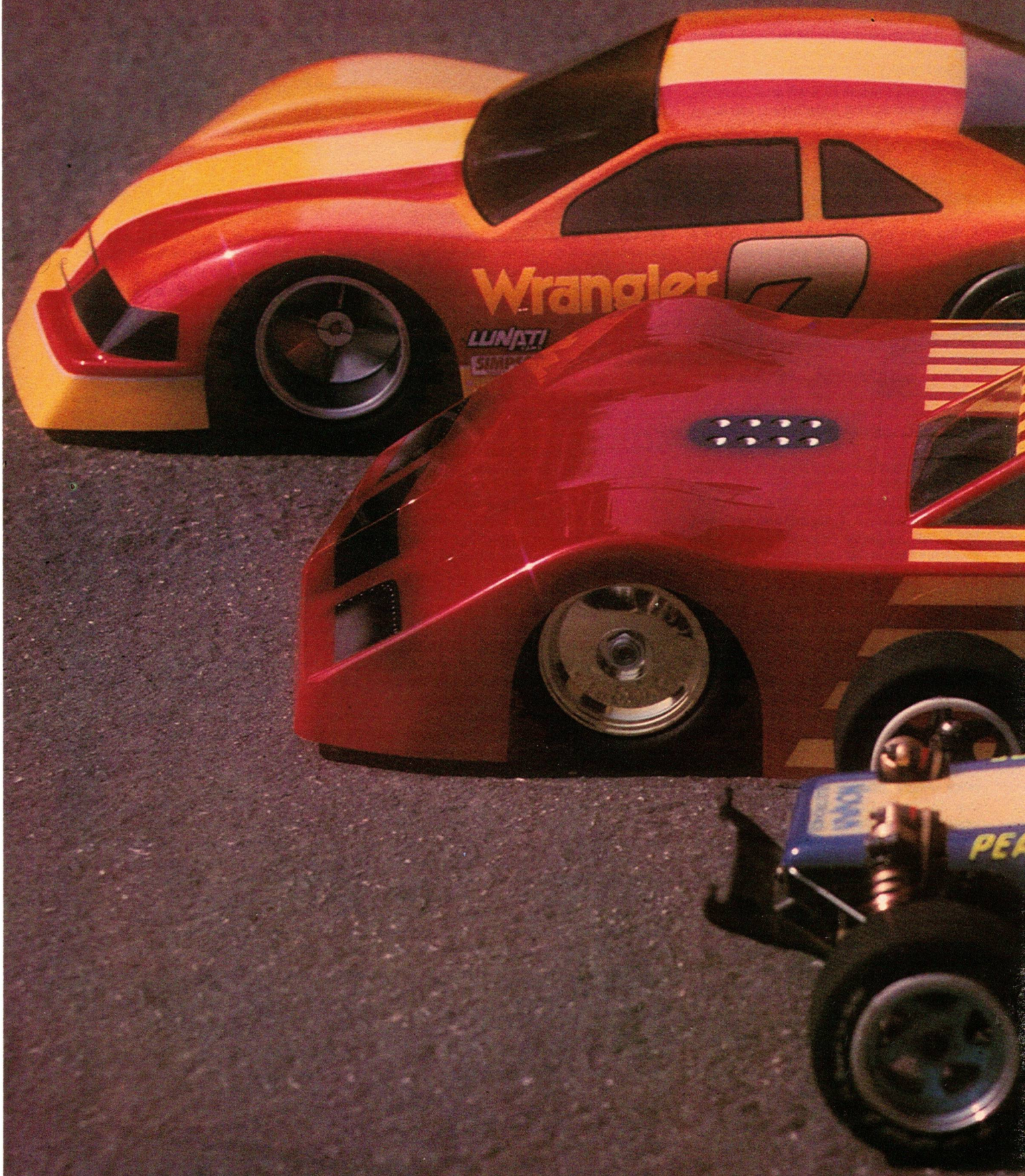
Finally, one of the most important things to choose is a tire that will work for you on the track on which you will be racing. To find out which tires to use, test the Crusher with existing tires and ask around the track about which tires they think will work. In other words, it's really an experiment to find out what works and what doesn't. The existing tires may be fine for you, but you just gotta get out there and race the Crusher and find out for yourself.

In conclusion, I hope most of all that you'll have a good time building the Crusher and running it over the most punishing terrain you can dream up, because it can handle it. Remember, relax and have fun with it—that's what it's all about!

For more information on the Royal Crusher, write to Royal Products, 790 W. Tennessee Ave., Denver, Colorado 80223.



The Crusher at speed searching for a few bumps to tame. Performance on the track can be positively influenced with new shocks and a competition stock motor.



Wrangler

LUNATI
SUPER

PEA

HOW TO PAINT

PART TWO

FOGGING



BY MIKE OGLE

Whether you're lucky enough to own an airbrush, or even if you're just using spray cans to paint your race car's body, you can get great results using the technique of "fogging," or spraying two different colors of paint so they blend into each other. Fogging is probably the most widely used custom painting technique, and when you learn to control the pattern of your spraying, you can achieve some great effects.

Last month, we said that the main advantage of using an airbrush is that you can adjust the width of your spray pattern by the nozzle and air pressure controls. This enables you to get small, blended detailed areas or large, solid areas of coverage. This control is necessary when doing advanced tricks like murals or "bursts."

Of course, when you use spray cans, you have a fixed spray pattern. Don't try to adjust the spray pattern of your aerosol can by only partially pressing down on the noz-

zle; all that will do is reduce the pressure and make the can "spit" paint instead of delivering it in a smooth, fine spray. Nevertheless, don't think that spray cans limit you to a solid-color car. By the use of creative masking, you can get a super-looking fogged paint job. You'll just have to blend colors together, because you won't have very tight control over your spray pattern. How you use these areas of graduation of colors will determine the "depth" of your car's paint scheme. This is because the shaded areas you create will simulate the light and shadow areas of three-dimensional objects.

When you spray your colors, you will notice that you get your heaviest area of coverage right in the center of the spray pattern, and the lightest areas of coverage are on both outside edges of the pattern (photo 1). In most fogged schemes, you use only one-half of this pattern. By centering your spray pattern directly on a

masked edge, you leave a solid, hard edge on the masked side and a soft, graduated edge on the other, unmasked side. You can readily see this in photo 2.

DETERMINING WHERE TO START

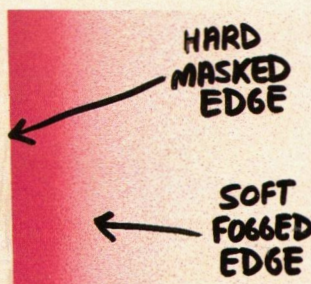
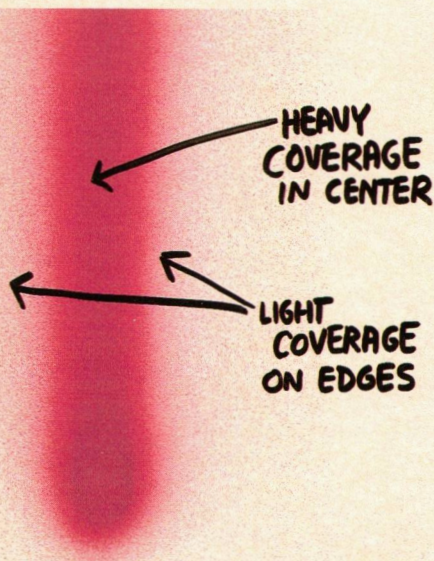
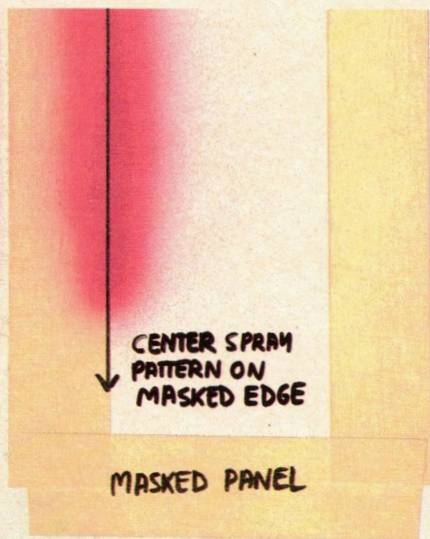
Carefully planning your masking and spraying sequence is the only real secret to getting that killer paint job. So, how do you start to figure out what to mask and what to spray first? Well, one rule that I use is the "laziness factor." Whatever requires the least taping is usually the preferred sequence. Remember the joke about needing four people to change a light bulb—one to hold the bulb and three to turn the ladder? Well, if I were planning to paint a car that was mostly red with two black stripes, it would certainly be easier to just mask out the smaller areas—the black stripes—than taping off the entire rest of the body. So, the least amount of work is, fortunately, the right way to go.

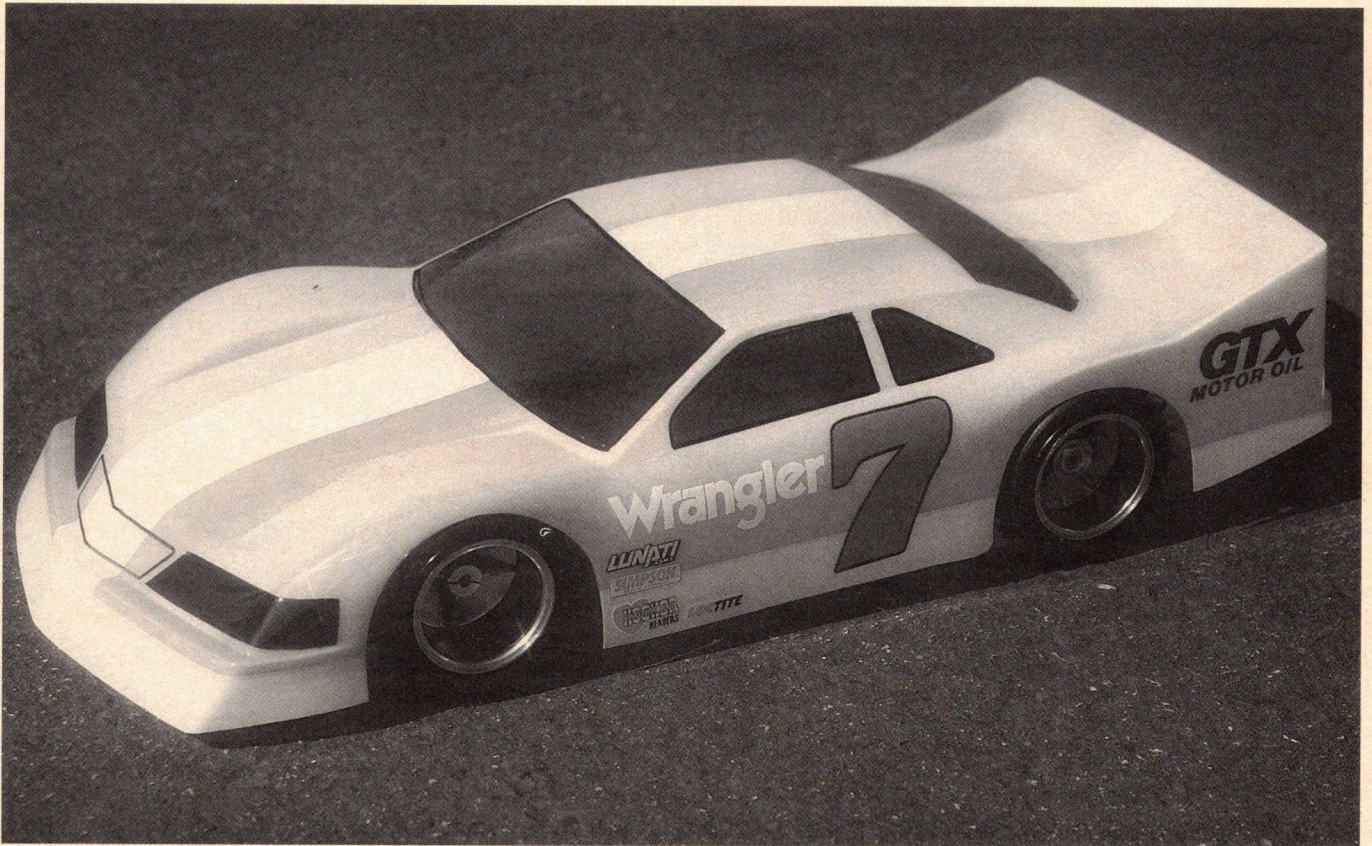
The exception to this rule is that if your initially sprayed color is very light—a fluorescent or a color that needs backing coats, then you aren't going to back this color with any very dark colors that may show through or dull-out the first color. If you have to back a light color with a darker color, be sure to get a heavy coat down of your light color first.

Of course, when spraying a clear Lexan body, you should never have to apply tape over a painted area. All of your taping and masking work usually gets done before any spraying is done. Then, it's spray, peel, spray, peel until all areas of the car body have been exposed and painted. Usually, you don't have to wait until the previous coat of paint is totally dry before applying your next one. This speeds up the painting process quite a bit. In fact, you will probably spend at least three times as much time masking as you will in actually spraying paint!

Remember the basic steps we covered last month, and be sure to wipe down any areas of the body that you're spraying with denatured alcohol first. This is especially critical when you fog two contrasting colors together. Although the body may look perfectly clean, if there is any tape on it, or if tape just touched it for even a second, residue from the adhesive on the tape will catch and hold small particles of color, and the area will turn out looking "dirty." It only takes a second to do a wipe-down of each new area as you unmask it, and it's better to be safe than sorry. It took me a long time to figure out why my paint jobs sometimes looked "dirty" in areas, as the impurities on the surface are practically invisible until the contrasting color of paint goes over it, and then it's too late.

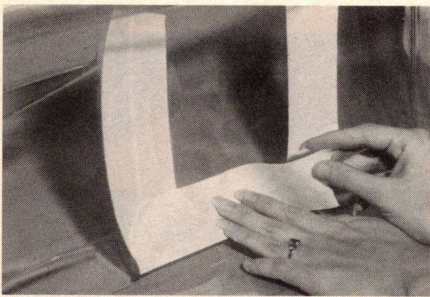
Try these easy fogging techniques, or combine them to create your own special scheme. Use your own colors or patterns, take your time, and you can get the finish you want.



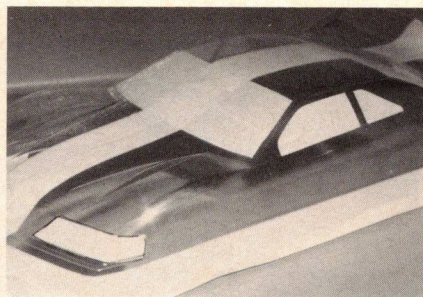


FOGGED SIDES

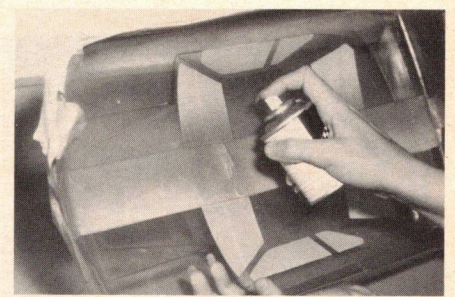
This custom paint scheme looks good on a full-bodied car like this ASA Thunderbird by Premier Designs. A thin pinstripe was used to make a sharp line between the red and solid yellow areas. The center stripe and sides of this car, which are solid yellow, could be made another color with no additional masking necessary. This is a little tricky to do with spray cans, but, as you can see, with a steady hand, it can be done.



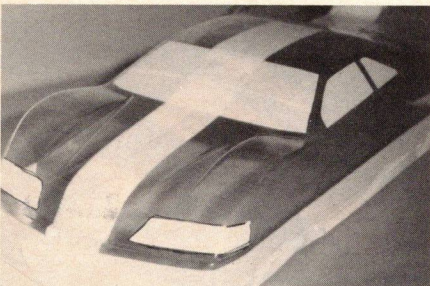
Mask windows as shown. Use wide tape to cover large areas with fewer pieces.



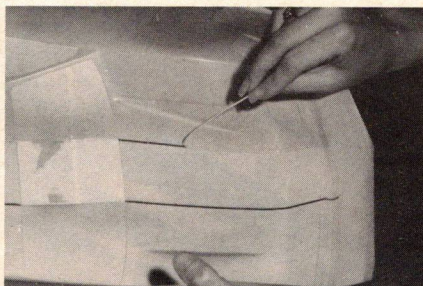
Mask sides and center stripe. Be sure to rub down edges of tape with Popsicle stick.



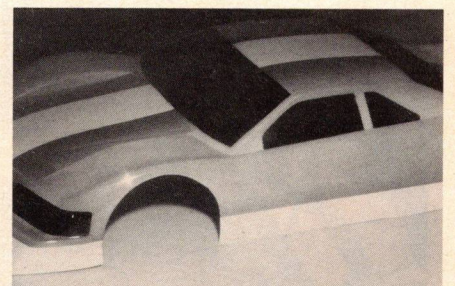
After wiping Lexan with alcohol spray around edges of tape with red paint.



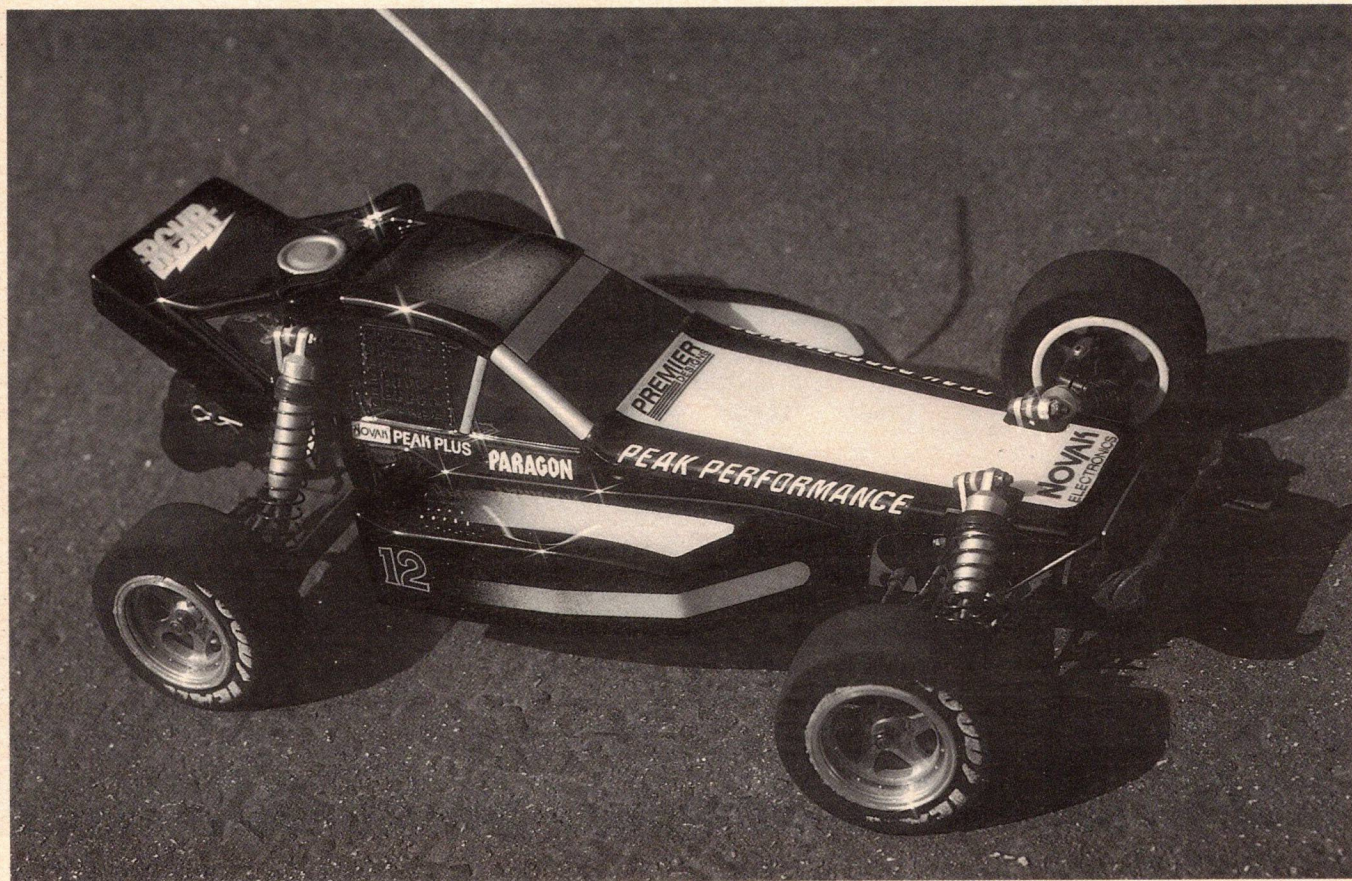
Remove wide masking tape and spray car yellow overall.



Now remove the thin pinstriping tape and fill in with white paint.

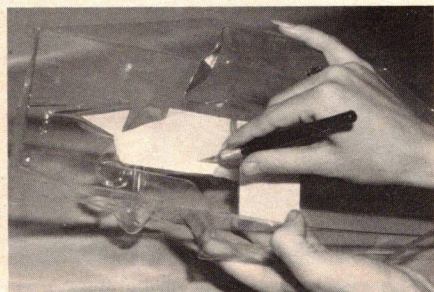


Notice how red and yellow colors softly blend in on the finished body.

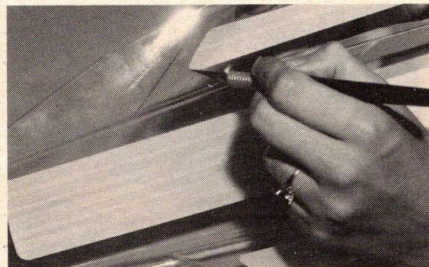


SPEED LINE STRIPES

This fade-out stripe look is achieved by first spraying the main blue body color, then removing the masked-out stripes and spraying the back half of them with blue so they disappear into the main color. Then spray a little yellow on the front of the stripes and fill in the middle with white. Try this with small, thin stripes too.



Mask out windows using wide masking tape.



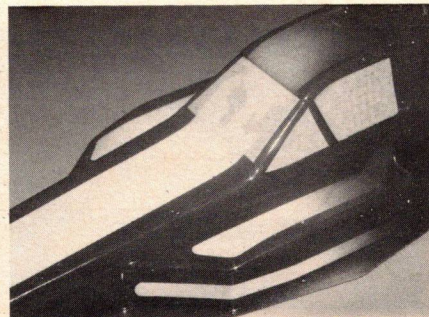
Apply different widths of tape down body to make stripes.



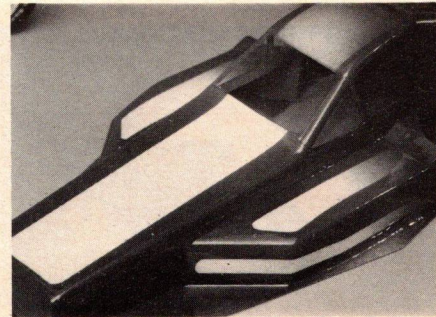
Spray entire car with blue paint.



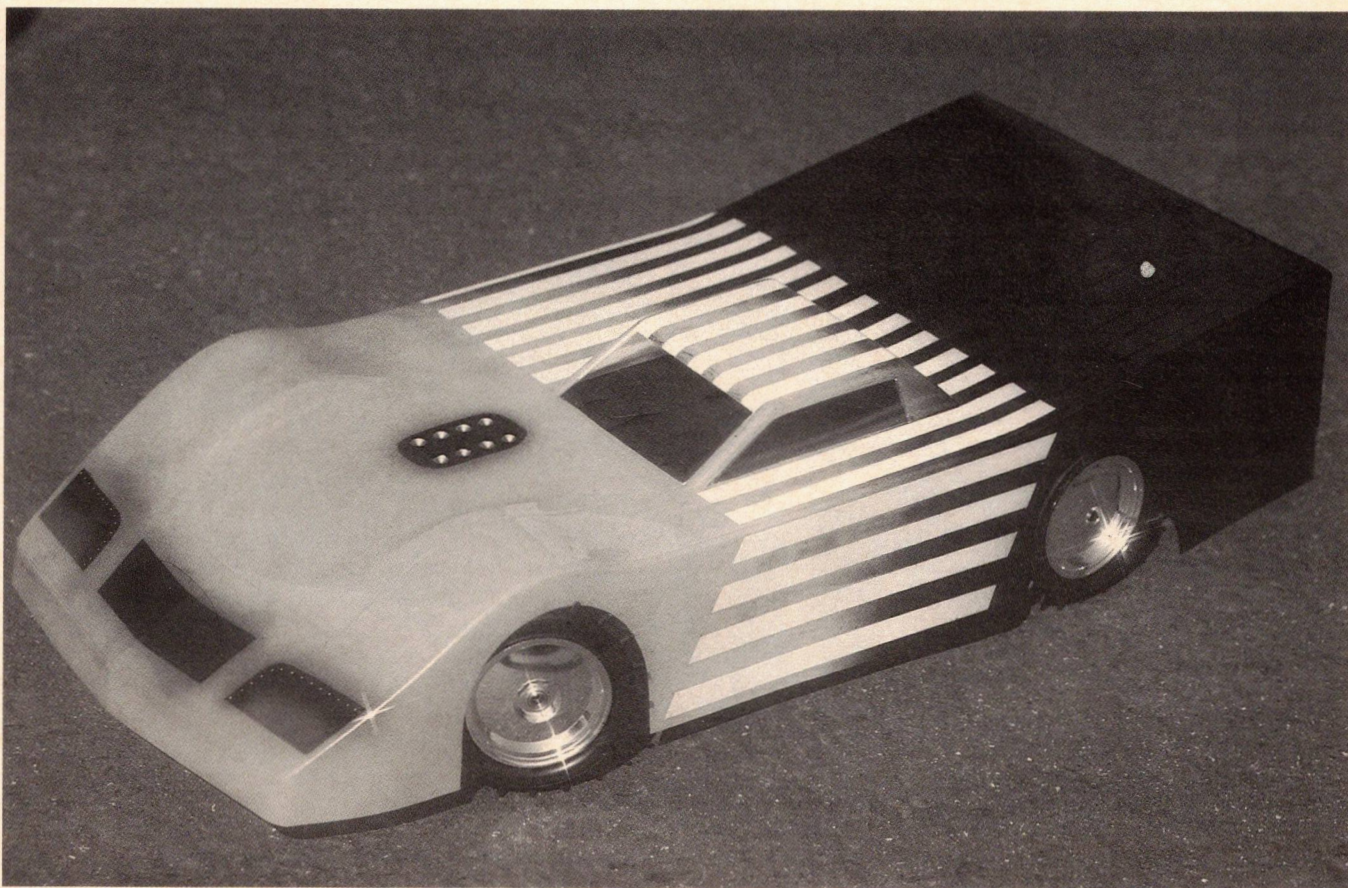
Peel stripes and spray the back half of them with the same blue color.



Spray remaining areas of stripes white and yellow.



Note how stripes gradually fade into the main body color.

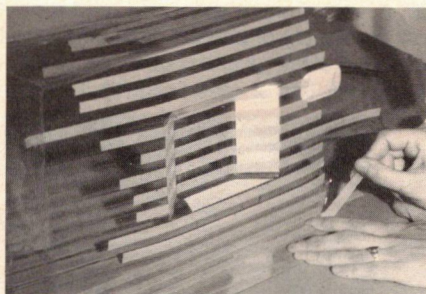


COMPETITION STRIPES

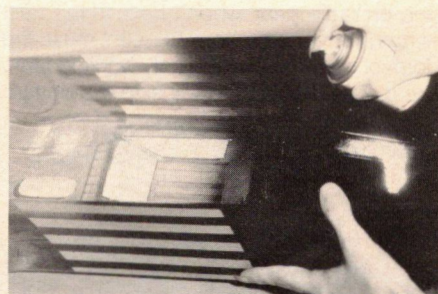
This "competition" paint job gives you high visibility out on the track. It can be accomplished easily with spray cans or an airbrush. In another variation of this scheme, the "bars" can be done in two different colors by unmasking very other one and painting one color, then unmask the remaining ones and spraying them another color.



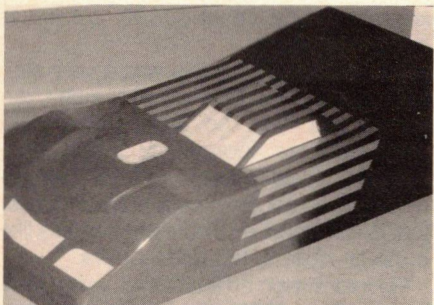
Mask out windows with tape and rub down car with denatured alcohol.



Apply evenly spaced strips of tape as shown. Keep them straight as possible.



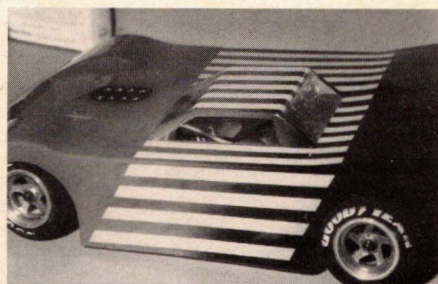
Spray back half of car black, overlapping half-way onto stripes.



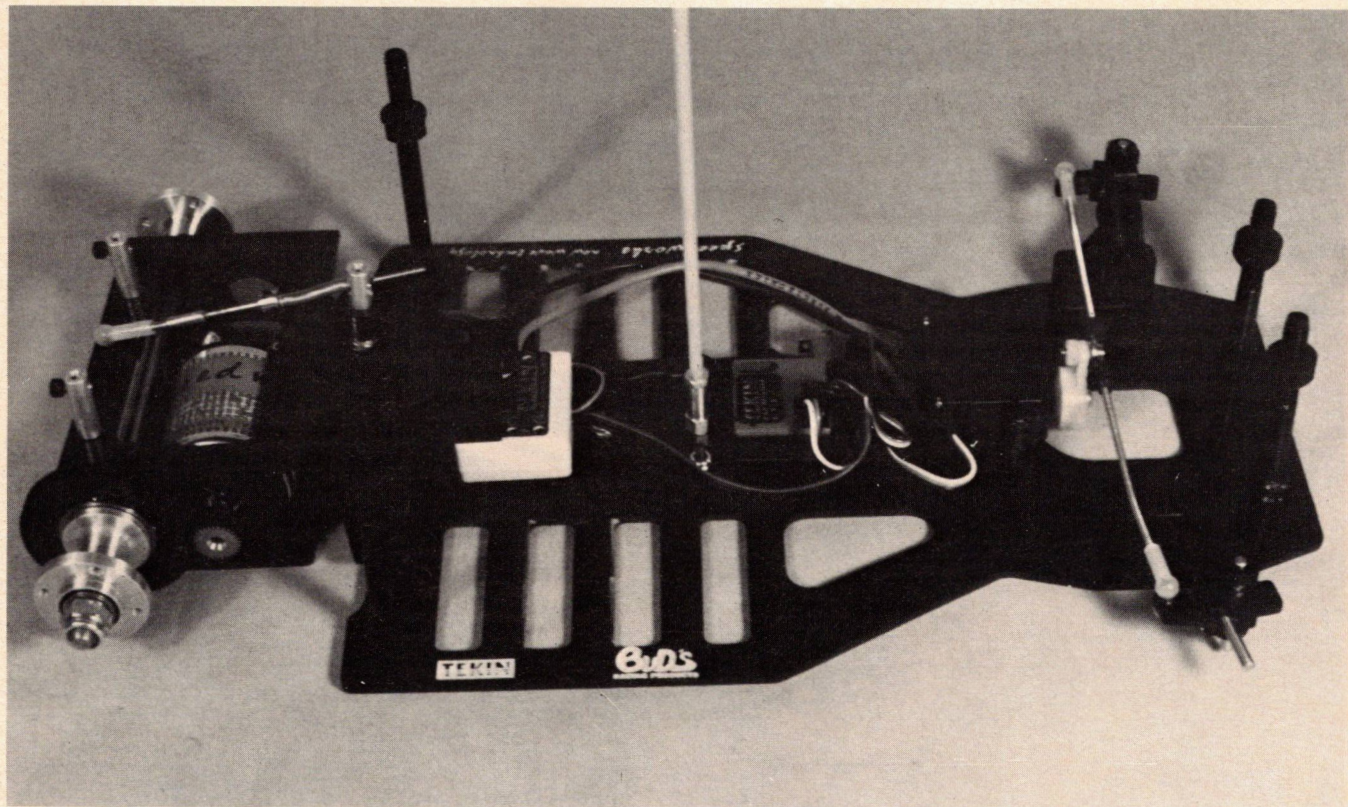
Spray front half of car red.



Peel stripes and paint them yellow.



Note how color graduates from red to black between bars of yellow.



The Cobra chassis with Speedworks motor, Tekin receiver and ESC, and Futaba steering servo with SRP steering arms installed.

motors. Where I race, Zeppelin Hobbies in Riverdale, New Jersey, there is no such problem, fortunately, so I was able to use the Speedworks stock as part of our very potent package.

Selection of car and motor for this test were made with price very much in mind. For radio gear that is not always the most important criterion. I don't believe in scrimping on radio gear, when I have in the past it has always come back to haunt me in the form of non-working, or badly working radio gear. To avoid that we will skip the bottom

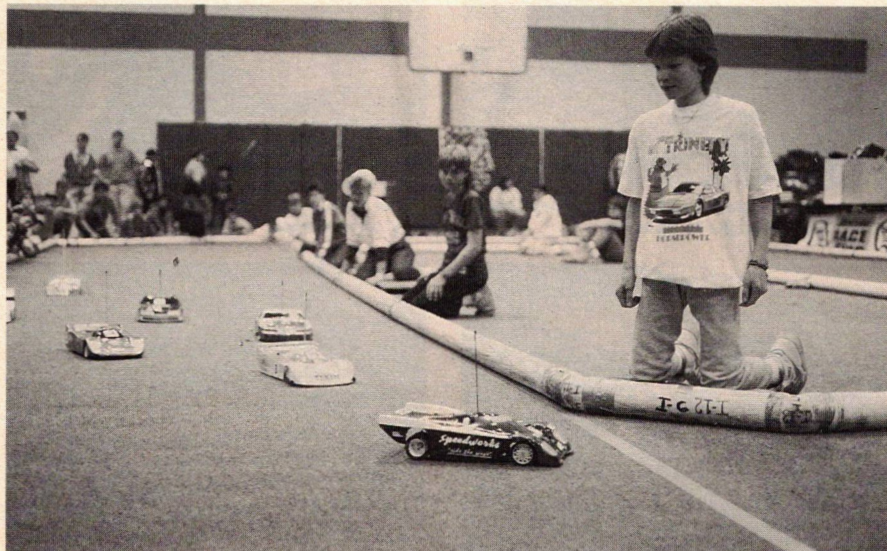
priced radio gear and for a very few dollars more get quality that will last and performance to match. We will use Tekin's extraordinary new ESC 300 PT, a Tekin Pro receiver and a Futaba S-132h servo for steering.

After putting all these parts together it was off to Zeppelin Hobbies to do some testing. I knew the car would run great, after all, it looked great, didn't it? I tried a couple of minutes of practice first, just to get the hang of things and check the car. It ran really well, lots of speed (don't tell anyone

that I only paid about \$20.00 for my Speedworks motor; I was beating some modifieds!) and good handling, but a bit of oversteer. Back to the pits for some tire traction, saying some naughty words under my breath for leaving my wing home, and then back to the track to try again. The addition of Trinity Green Dot tire traction on the rear tires made all the difference in the world. I still would have liked to have tried it with a wing, but it ran very competitively. I could turn inside almost anyone after the straight, and let my Speedworks horsepower pull me out of the turn, ready for the next one. I must say that the car handled remarkably well, I had to keep reminding myself that this was only an inexpensive fiberglass car. I would love to eventually try the graphite version of this car, if the fiberglass handles this well, think how great the graphite must be. The only suggestion I would make if you wanted to race this car would be to replace the steel differential with a TRC Pro diff. I know they cost about \$35.00, but this is money well spent.

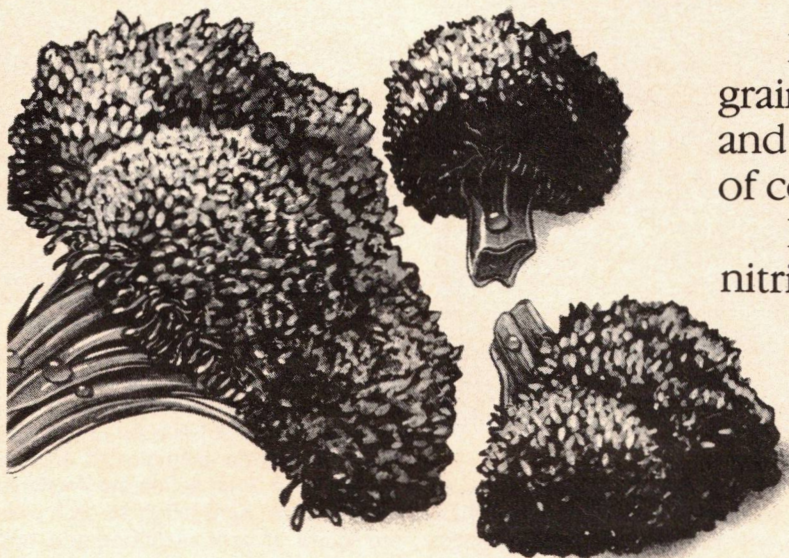
No doubt about it, this was a very successful test. The Speedworks motor ran strong and fast, the Tekin Radio gear impressed me enormously, I was introduced to Scale Racing Products' extraordinary line of accessories and I found a car that doesn't cost a bundle but handles like a million dollars: the C&M Cobra.

For information on the Cobra, write Chris Farrell, Box 6802333, Park City, Utah 84068-0233. ●



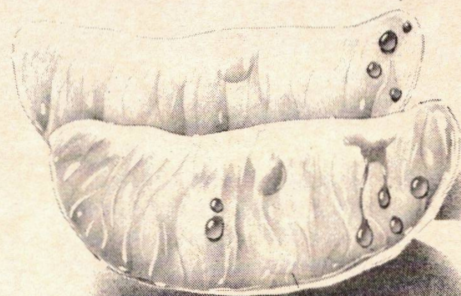
Author's Cobra/Nissan GTP leads the pack through a left-hander at Zeppelin Hobbies in New Jersey. The Cobra ran fast and true with a Speedworks Superstock motor in the Stock Class.

A defense against cancer can be cooked up in your kitchen.



Fruits, vegetables, and whole-grain cereals such as oatmeal, bran and wheat may help lower the risk of colorectal cancer.

Foods high in fats, salt- or nitrite-cured foods like ham, and



There is evidence that diet and cancer are related. Some foods may promote cancer, while others may protect you from it.

Foods related to lowering the risk of cancer of the larynx and esophagus all have high amounts of carotene, a form of Vitamin A which is in cantaloupes, peaches, broccoli, spinach, all dark green leafy vegetables, sweet potatoes, carrots, pumpkin, winter squash and tomatoes, citrus fruits and brussels sprouts.

fish and types of sausages smoked by traditional methods should be eaten in moderation.

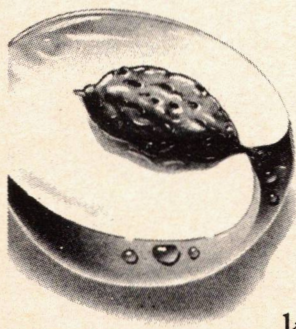


Be moderate in consumption of alcohol also.

A good rule of thumb is cut down on fat and don't be fat.

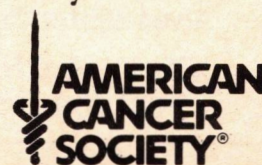
Weight reduction may lower cancer risk. Our 12-year study of nearly a million Americans uncovered high cancer risks particularly among people 40% or more overweight.

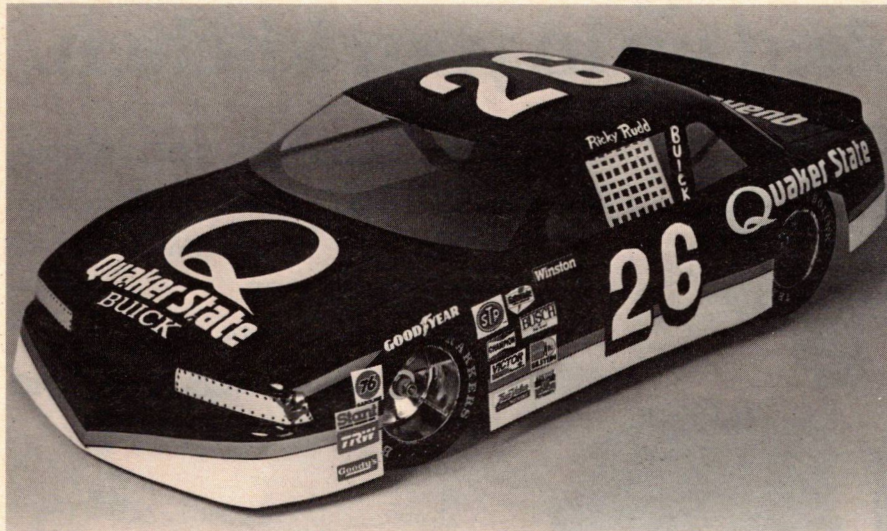
Now, more than ever, we know you can cook up your own defense against cancer. So eat healthy and be healthy.



Foods that may help reduce the risk of gastrointestinal and respiratory tract cancer are cabbage, broccoli, brussels sprouts, kohlrabi, cauliflower.

No one faces cancer alone.

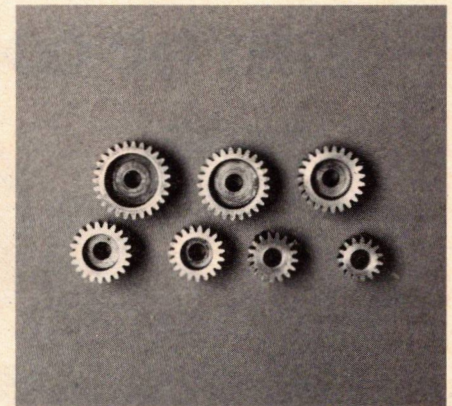




RICKY RUDD BUICK

Here's BoLink's version of NASCAR driver Ricky Rudd's hot 1988 Buick Regal in 1/10 scale. It's available in clear Lexan, or a factory-painted version that comes ready

to mount on your road chassis. See your BoLink dealer, or write: BoLink R/C Cars, 420 Hosea Rd., Lawrenceville, Georgia 30245.



KIMBROUGH PINION GEARS

New hardened steel 48-pitch pinion gears from Kimbrough Products are machined burr-free with a smooth finish for precision running. They last twice as long as gears made of unhardened materials, and come tapped for a 3mm set screw. Available in 15 to 27 teeth, Kimbrough 48-pitch pinions are found at your neighborhood hobby shop.

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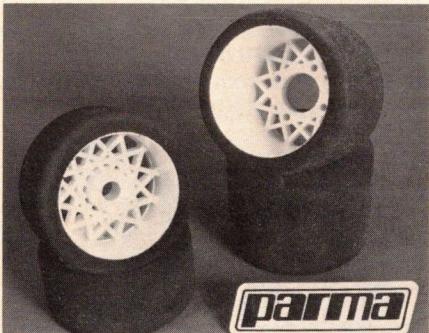
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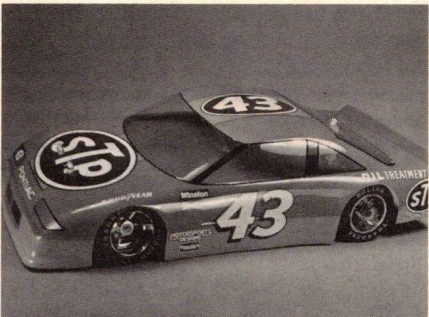
MCALLISTER OUTLAW 1/10-SCALE RACER

McAllister's 1989 Outlaw stock car for pavement racing is available in a basic kit, or a bearing kit. The bearing kit has been updated by machining the rear power pod for lighter weight and now accepts the motor on either side. It comes with a 48-pitch, 90-tooth spur gear and 2-1/2-inch machined aluminum front body posts. If you're looking for a car that's easy to assemble and is capable of winning modified races, look at the Outlaw, at your nearest McAllister dealer.



BBS WHEELS WITH TIRES

Parma has designed these BBS-style wheels with tires mounted and trued for the 1/10 road racer. The tires are available in blue and green compounds, and are made for asphalt or carpet tracks. The tires come ready to mount and run right out of the package. From Parma International, and available at your favorite hobby shop.



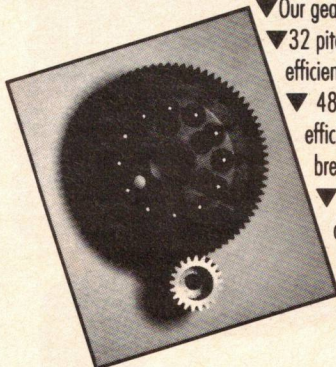
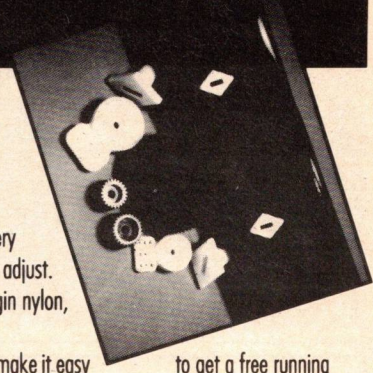
PETTY'S NASCAR BODY

BoLink has introduced a new Richard Petty stock car body that comes painted in the familiar red and blue paint obtained direct from the Petty shop in Randleman, North Carolina. A decal sheet comes with the body to make your 1/10-scale racer a duplicate of King Richard's car. See your BoLink dealer, or write: BoLink R/C Cars, 420 Hosea Rd., Lawrenceville, Georgia 30245.

The True Facts About R/C Car Gears

Kimbrough Products Precision Differential Gears are the best because:

- ▼ We do our own injection molding and control the quality, every gear we sell is round and concentric, so the gear mesh is easy to adjust.
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- ▼ The twelve 12 ball bearing hole circle and Teflon lubrication make it easy to get a free running differential adjustment, so your car gets more tire bite when powering out of the corners.
- ▼ Our gears can be purchased with or without 12 ball bearings pre-installed.
- ▼ 32 pitch gears for high strength and long lasting off-road use with good efficiency.
- ▼ 48 pitch gears for oval or on-road racing at high speeds with high efficiency, and still tough enough to take a banging without breaking.
- ▼ These gears fit the R/C 10, R/C 12 and other compatible ball differentials.



Sold through Distributors & Dealers only

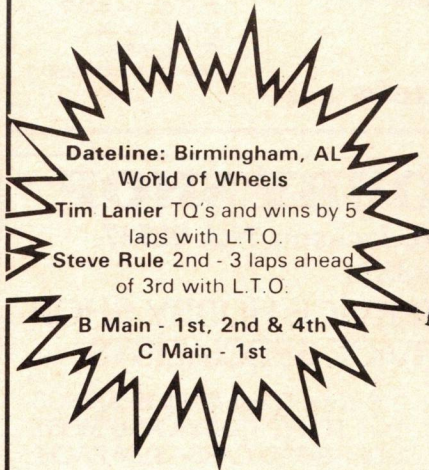
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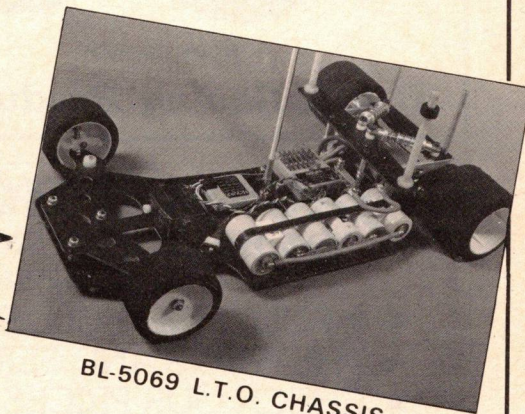
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B Main - 1st, 2nd & 4th
C Main - 1st

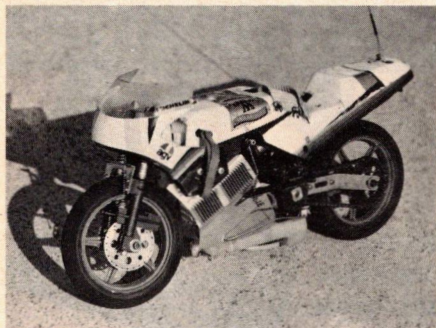


BL-5069 L.T.O. CHASSIS

For complete information on BoLINK's full line of products, send \$3.00 for a catalogue, price list and ELIMINATOR brochure to:



R/C CARS, INC.
420 Hosea Road (RCM), Lawrenceville, GA 30245
(404) 963-0252/FAX: 404-963-7334



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Live Performance, U.S. distributor for DWA Commando 1/4-scale gas motorcycles, announces the opening of a shop for these new cycles. Euro-Racer Special Bikes, Parts, and Service, located in Florida, offers complete sales and service for R/C cycle enthusiasts. For more information, call (407) 628-1610.

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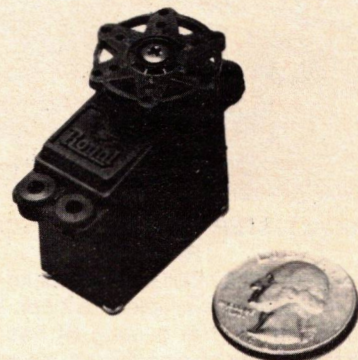


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ROYAL'S MICRO TITAN II

New from Royal Products, 790 W. Tennessee Ave., Denver, Colorado 80223, is this Micro Titan II servo, which weighs a mere .9 ounces. The new servo has twin bushing support for the output shaft, and a cold-molded gear train for precise movement and less gear play. The servo's splined shaft allows convenient external centering of the servo saver, and the isolated electronic pot minimizes wear from vibration. For a closer look, see your Royal dealer.



PARMA TRUED ROAD TIRES

New from Parma is their 1/10-scale onroad wheels with mounted and trued race rubber. The tough, lightweight Parma wheels are mounted with green rubber and are ready to run. The wheels and tires fit the Pro Panther 10, as well as BoLink, TRC, Compositcraft, Vicfor, Associated, and other 1/10 road cars. Look for them at your favorite Parma dealer.



DECAL SHEETS

Parma continues to produce some fine mylar decals, the latest being these offerings that feature Dr. Pepper, Eureka, and Wynn's/K-Mart logos. Look for them at your Parma dealer.

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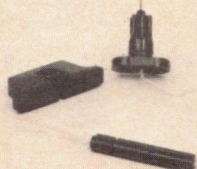


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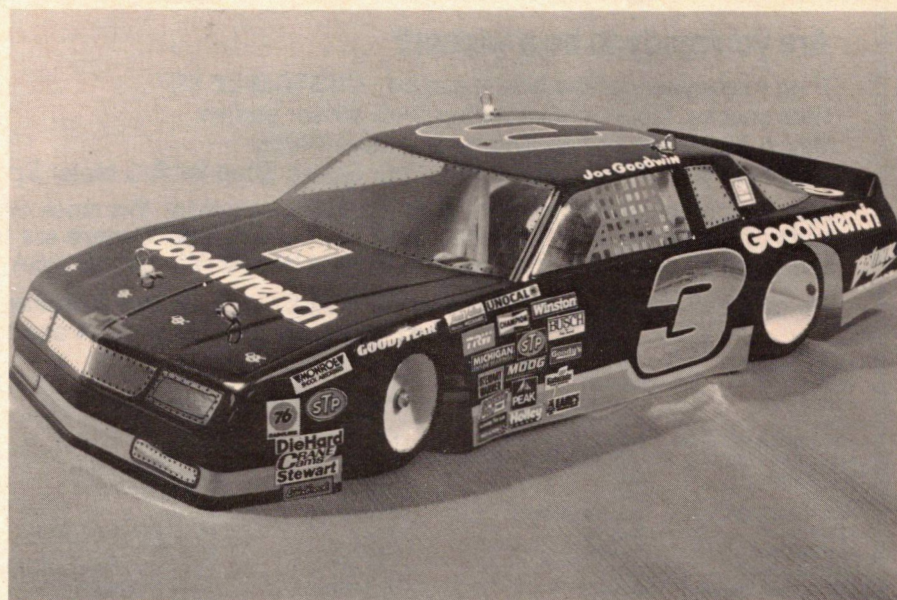
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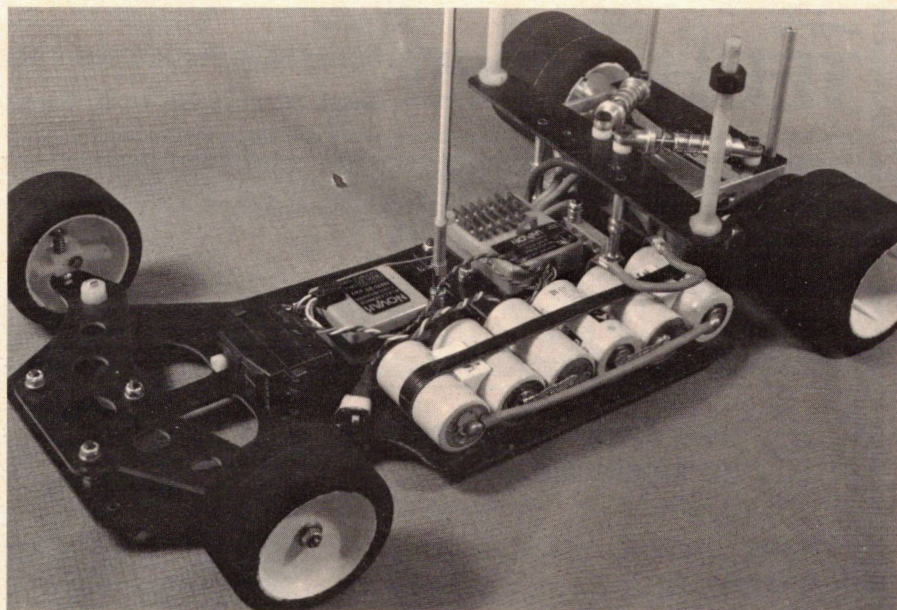
WHAT'S NEW



BOLINK 1989 MONTE CARLO

BoLink's faithful recreation in 1/10 scale of the NASCAR Chevy Monte Carlo racer of Joe Goodwin is available as a factory-

painted body or just in clear Lexan plastic ready for you to paint. You'll find it at your BoLink dealer.



ELIMINATOR L.T.O. CHASSIS

A graphite chassis for the Eliminator 10 has mounts for all six batteries on the left side for oval racing. All standard Eliminator 10

parts fit the L.T.O. chassis. BoLink R/C Cars, 420 Hosea Rd., Lawrenceville, Georgia 30245.



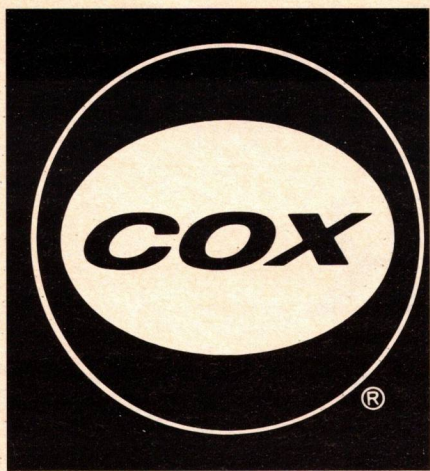
'89 T-BIRD BODY

The newest 1/10-scale body from BoLink is the 1989 Thunderbird NASCAR coupe with sleek lines that can make it a winner on any track. See your BoLink dealer for a close look at this new Lexan Body.

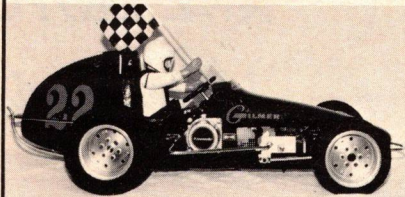


NISSAN 300 ZX TURBO

BoLink has come out with a new 1/10-scale version of the Newman-Sharp racing Nissan that won the SCCA National Championship. It's available at your nearest BoLink dealer.



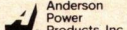
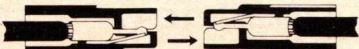
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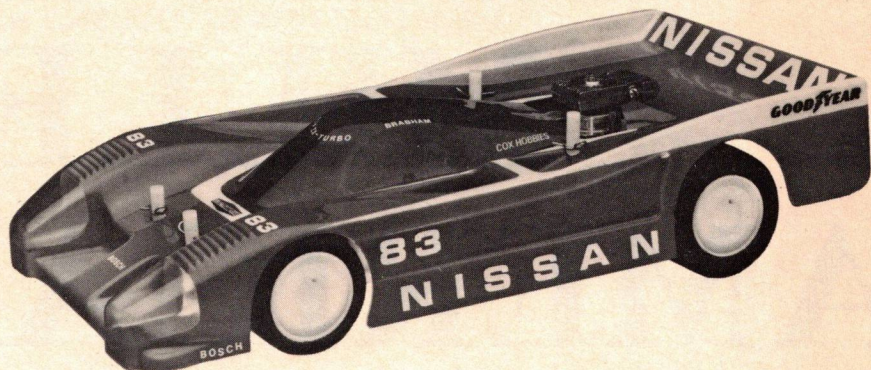
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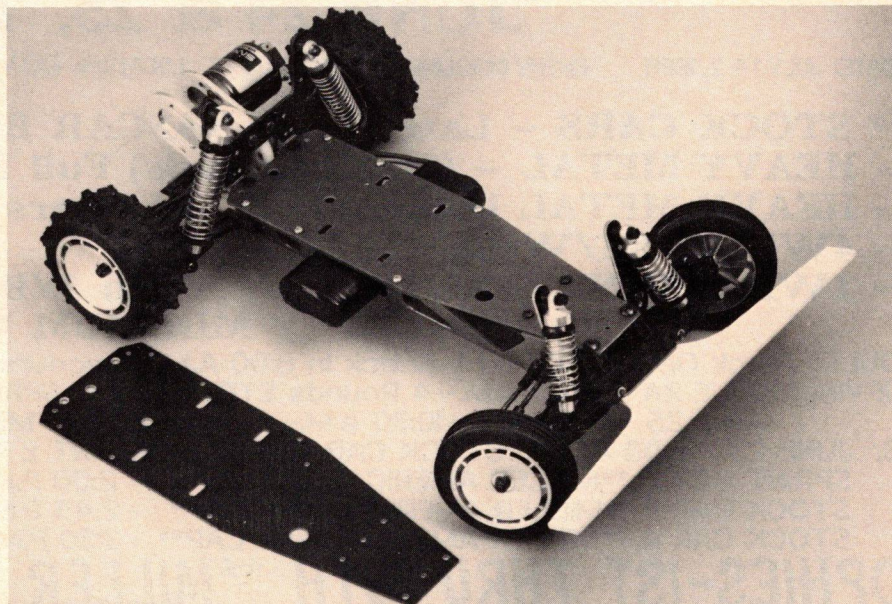
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1/12-SCALE GAS GTP CAR

Cox Hobbies has a new .049-powered GTP Nissan racer in 1/12 scale for those who want to experience the sound of power in a road racer. The Nissan comes with a ratchet pull starter, and the 1.5 ounce gas tank allows a 15-minute run time. Fully

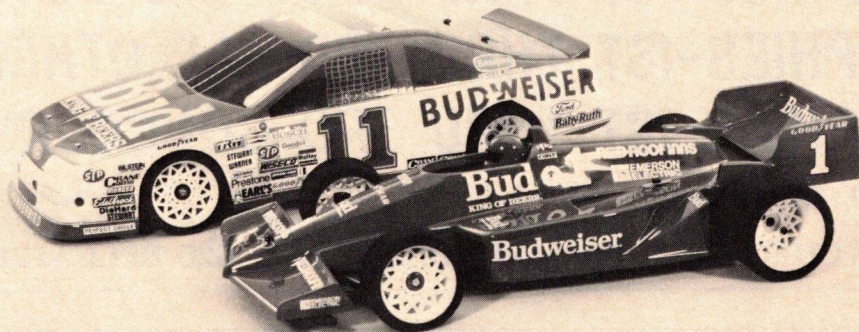
proportional throttle and brake give total control to the driver. The Nissan is available alone, or with a two-channel Sidewinder radio. For more information, see your Cox dealer, or write: Cox Hobbies, 1525 E. Warner Ave., Santa Ana, California 92705.



J-CAR ULTIMA CHASSIS PLATE

The J-Car Chassis Plate for Ultima's won't break, and eliminates chassis bending too. It provides a solid place to mount the speed

control and receiver. The chassis plate comes in black, blue, and red. Look for it at your favorite hobby shop.

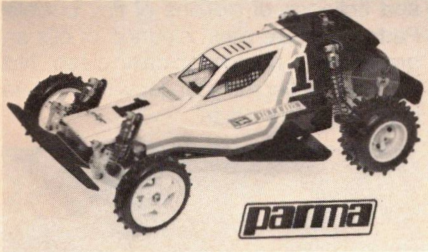


FACTORY-ASSEMBLED RACERS

MRP has put together 1/10-scale road racers in a ready-to-race kit that is available

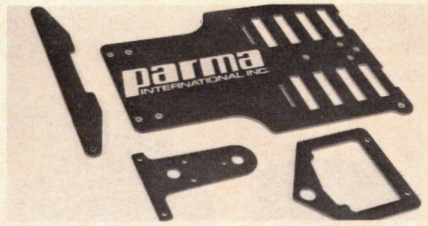
as a complete unit including radio and receiver, or just as an assembled car.

Choose from the Budweiser NASCAR stock car, or the Bobby Rahal replica Indy car. Both are powered by a 540 electric motor, and the prefinished bodies need only the application of the authorized and supplied decals for a complete model. For a closer look, see your MRP dealer.



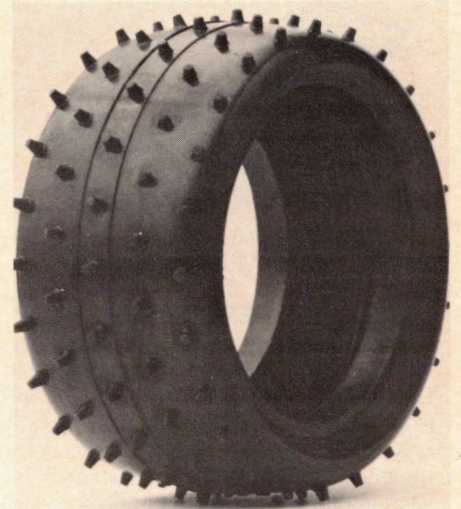
ADVANTAGE BODY

The latest 1/10-scale body from Parma International is called the Advantage, and it is designed to fit on the RC10 chassis for added aerodynamic influence. It is available from Parma dealers.



PANTHER ACCESSORIES

Here are some new lightweight graphite components for the Parma Pro Panther that are sure to put you into the winner's circle: A front crossbar, chassis, dampener plate, and flex plate, all in stiff, lightweight graphite, are direct replacement parts for the Pro Panther in 1/10 scale. You'll find them at your nearest Parma dealer.



TIRE-CAT MINI SPIKES

Custom Racing Products' new rear Tire-Cat Mini Pin Spike tires provide excellent traction on hard track surfaces. They'll fit stock

Schumacher Cat rims, and several other racers too. Check 'em out at your nearest CRP hobby dealer.

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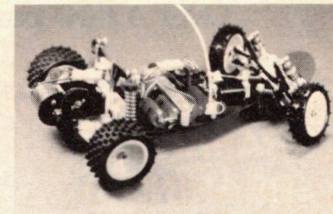
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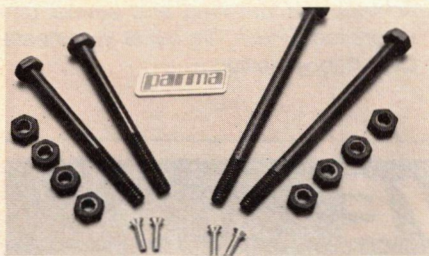
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OPTIMA-MID REPLACEMENT BODY

Here's Parma's answer to replacing the Kyosho Optima-Mid body: a sleek, detailed Lexan body available in three different versions. First, the body only, or the undertray only, or the whole kit, which includes body, undertray, and wing. All components are vacuum-formed to make your Optima-Mid look like a winner. See your Parma dealer.



PARMA BODY MOUNTS

New super-strong body mounts are speci-

cally designed to withstand the rigors of high-speed oval or road racing. They are available in 3 and 4 inch lengths at your favorite hobby shop.



FRONT, REAR MONSTER WHEELS

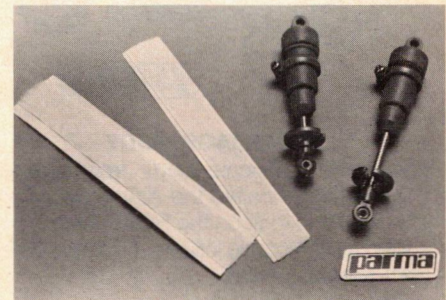
From CRP come these new replacement wheels for the Blackfoot and Monster Beetle. These plastic wheels are dyeable and use 5x11 bearings. See your CRP dealer.



ULTRASONIC CLEANERS

The Branson Ultrasonic Cleaner has a

stainless steel bowl that is ideal for cleaning bearings, motors, and gears. The compact model comes with a sample of Cleaner Concentrate and a parts holder. In a process known as *cavitation*, the ultrasonic energy produced by the transducer at a frequency of 55KHZ releases an enormous amount of energy in the generation and collapse of millions of tiny bubbles. Parts that have been cleaned of oils and greases are microscopically clean. Now you need never run your car with dirty bearings or motors again!



PARMA OFFROAD ACCESSORIES

New from Parma: velcro mounting material to mount electronics and bodies to your R/C race, and Big Bore Shocks for the Tamiya Bigfoot, Monster Beetle, and other big trucks and cars come in kit form and accept aftermarket shock springs (not supplied). See your Parma dealer.

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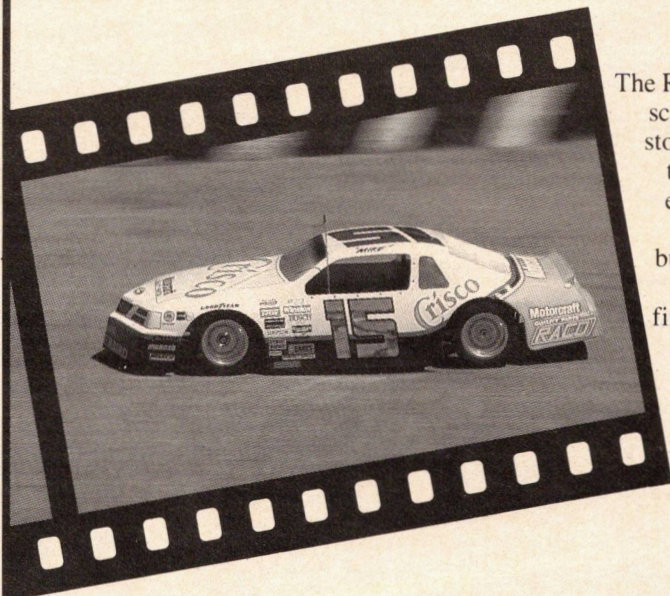
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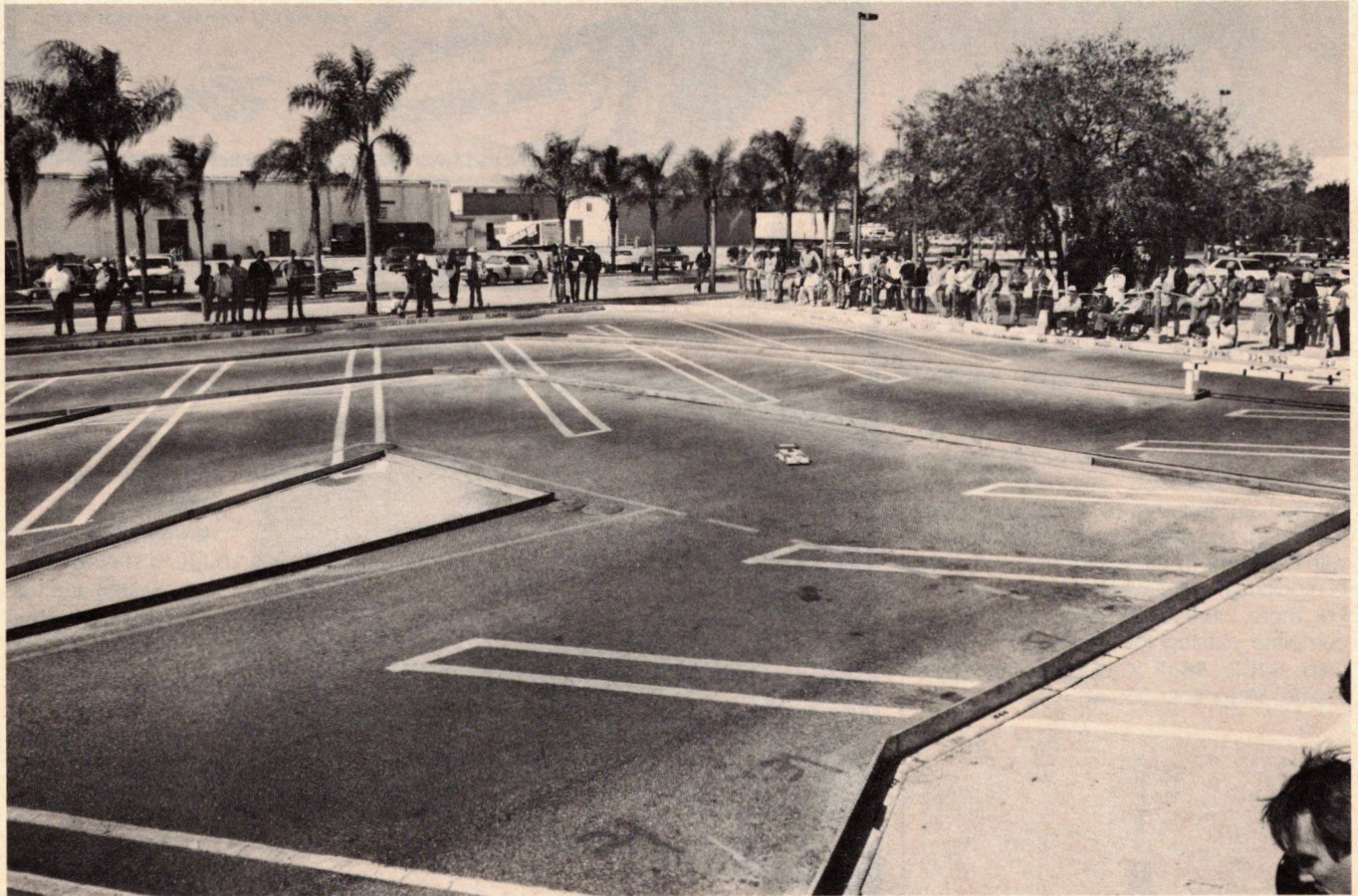
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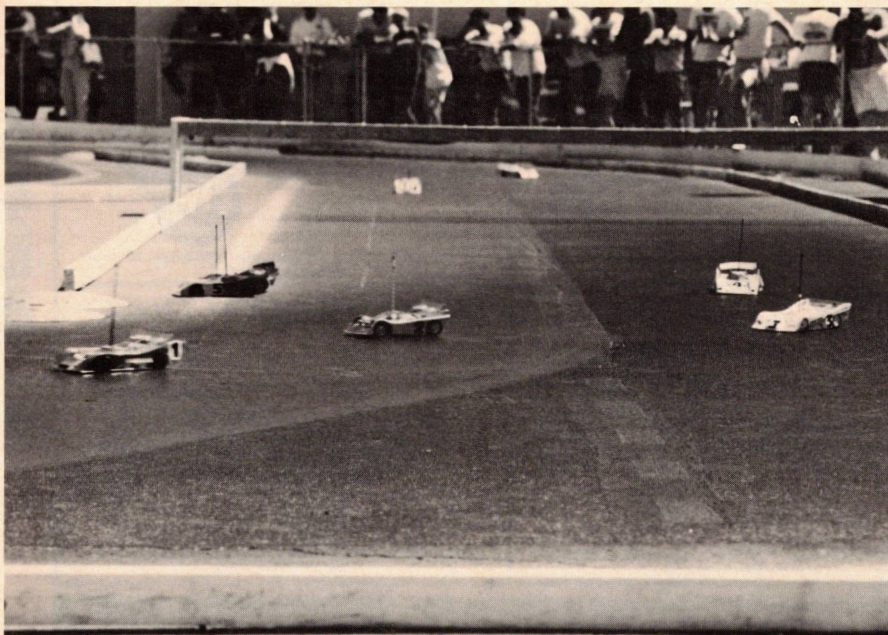
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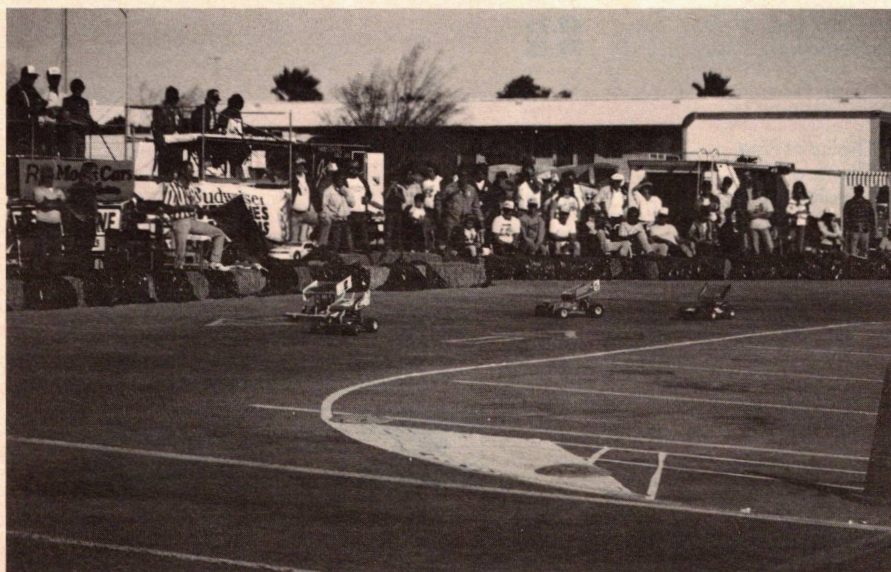
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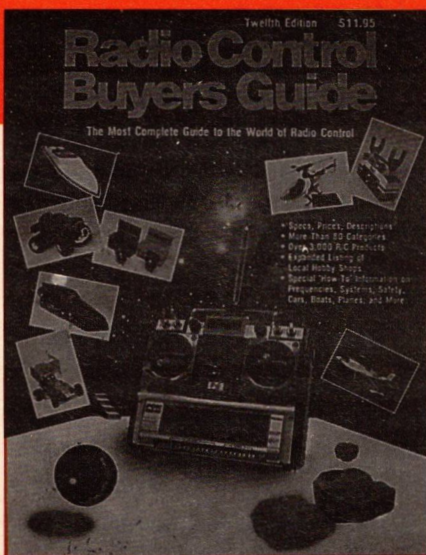
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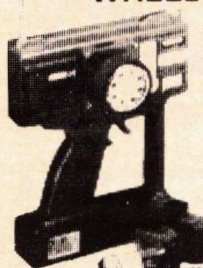
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Hirobo Excitement

Because your passion is R/C car racing then your desire for a better than



Length: 15.75"
Width: 9.45"

Invader SR

ever driving machine can be fulfilled by the newest line of performance engineered, pure racing machines to come on the scene. Hirobo cars have been the rage of Japan in recent years, and now they are taking the checkered flag all over the U.S. Hirobo is a purebred family of cars aimed at giving you the right machine to fit your style.

HIROBO

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Take off with three of the best new 1/10 scale off road racers. From the world class 4WD Jealousy, and the out of this world Alien Mid 4SS, to the really hot Invader SR, no one can give you more winning combinations than Hirobo.

Length: 14.76"
Width: 9.45"



Alien Mid 4SS

Ready to Race

With Hirobo, ready to run means ready to race right out of the box. Hirobos unstoppable speed and handling can also be found in these two hot ready to run models! Look at the 1/10 scale Toyota Celica GT four and the Peugeot 205 Turbo 16. Both cars are pre-assembled true on-road competitors, not just toys. So, make tracks to Hirobo!

Length: 16.5"
Width: 9.6"



Peugeot 205 Turbo 16 Ready to Run

*Available at your
local hobby dealer.*

Length: 18.3"
Width: 9.6"



Toyota Celica GT four Ready to Run

**hobby
Dynamics**
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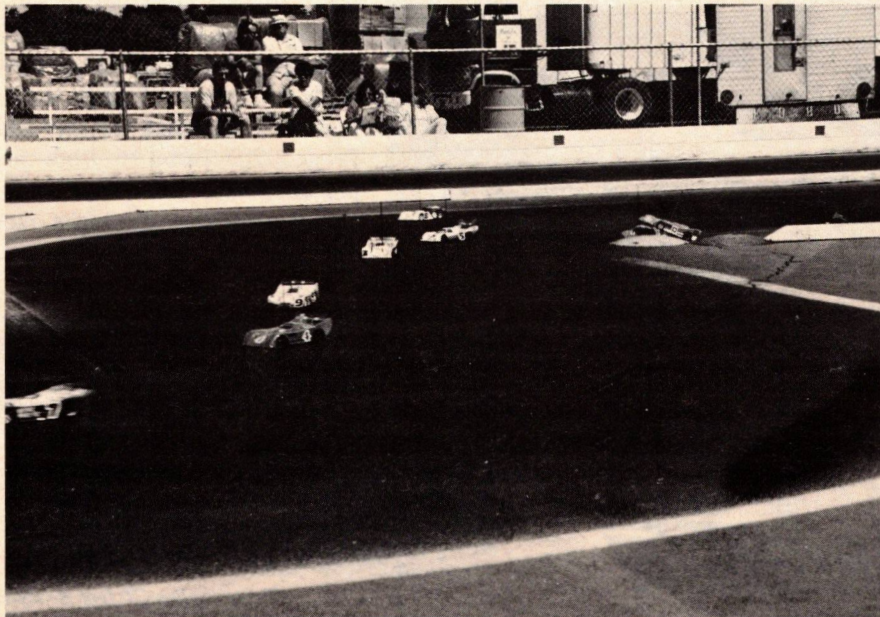
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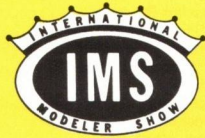
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SECOND ANNUAL



Atlanta

May 13 and 14, 1989

Trade Only Day, Friday, May 12, 1989

MODEL SPORT & HOBBY SHOW

- LIVE INDOOR RADIO CONTROL MODEL FLYING DEMONSTRATIONS*
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Following up on the highly successful introductory 1988 Model Sport & Hobby Show in Atlanta, Georgia, IMS is once again bringing major model manufacturers from all over the U.S. for its second annual

show in the great Southeast. The IMS show, where selling by exhibitors is permitted, continues to be presented by, and for, the model hobbyist. Y'all come on by, ya hear!

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- * Radio Controlled Model Aircraft, Boats, and Cars
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(Send legal size SASE to IMS office for list of categories, competition rules, and advance entry forms)

Bring your children, so they can learn to build and fly a model airplane, FREE, during the show!

GEORGIA WORLD CONGRESS CENTER

285 International Blvd., N.W. Atlanta, GA

SATURDAY, MAY 13, 1989, 10 a.m.-6 p.m.

SUNDAY, MAY 14, 1989, 10 a.m.-5 p.m.

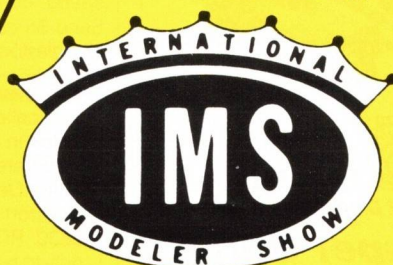
ADMISSION: Adults \$5.00, Juniors (12 and under) \$3.00
Children under six, FREE when accompanied by an adult.

ADVANCE TICKETS: Save time and waiting in line. Order your tickets in advance. U.S. only. Send check or money order payable to IMS, Inc. (Allow 3 weeks for checks to clear), and include self-addressed legal-size stamped envelope. One adult ticket \$5.00, 12 and under \$3.00 (No charge under age 6).

* Watch this ad for time and location of outdoor R/C flying demonstrations, including helicopters and ducted fan aircraft (subject to site availability).

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GOLD CHAIN! ONE TO
BE GIVEN AWAY EACH
DAY; SATURDAY
AND SUNDAY
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WEEK-
END**

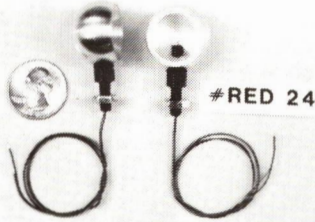


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HOBBY SHOP in Maui, Hawaii. Mall location, with adjacent R/C car racetrack. \$50,000. 1988 gross: \$209,000. Write: Hobby Habit, Maui Mall, Kahului, Hawaii 96732. (808) 871-6666.

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Monocoque, resin racing chassis

Futaba.

BECAUSE YOU PUT IT TOGETHER YOURSELF.

FEAR OF BUILDING.

RC cars are a blast. Building RC cars makes a lot of people nervous.

Because building a radio controlled car should be as much fun as driving it, Futaba designed the FX10.

The FX10's step-by-step assembly

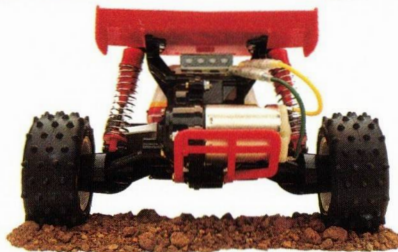


Detailed step-by-step instructions and coded parts make building fun.



instructions include over 60 detailed photographs. All the parts are packed in coded bags or precision molded on coded trees. Metric 4-way mini socket wrench, special grease, allen wrench and pre-wired resistor speed controller are all included.

The quick cure for building fear? It's the FX10.



Designed by pros, the FX10 comes with the largest engine legal for competition.

ALL TERRAIN RC.

When you've built your own FX10 you'll also be pleased to find out that its high speed performance isn't limited to the road or track.

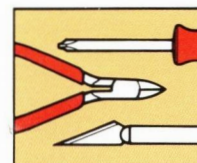
Four wheel, coil spring independent suspension and all terrain tires give the FX10 offroad capability. Trailing arm, full independent rear suspension provides optimum traction. And the FX10's sealed gearbox/differential delivers power to the wheels on all types of surfaces, from pavement to dirt and grass.



Dirt or pavement.

FX10. THE FORMULA FOR PERFORMANCE.

One test drive and you'll quickly realize what separates your FX10 from the toys. It's designed by RC car racing pros for bigtime 7.2v/1200mAh NiCd power and BEC-equipped. In fact, the FX10's 540/05 Class motor is the largest size legal for organized competition.



A few simple tools are all you need.

Servo saver steering, sealed 3-stage speed control with forward and reverse and polycarbonate body shell are just a few of the racing features you'll appreciate.

Make your first step into RC car building a real success. Put together an FX10 and you'll see just how easy it is.

FX10/ALL TERRAIN RC OFFROAD CAR KIT

Futaba Corporation of America
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Steer clear

The Clod Buster. The monster 4-wheel drive, 4-WHEEL STEERING R/C pickup from MRC-Tamiya.

The first thing that catches your eye are those mammoth tires. Any R/C truck that sits on tires nearly 6½" high will attract your attention.

But the second thing...the most exciting thing to hit R/C yet...is the steering system. Four wheel steering. And only Tamiya has the guts and foresight to bring this technology to you now.

Now, 4 x 4 x 4. 4-wheel drive...and 4-wheel steering

Never before could you get so many advanced features in one package. Like dual motors for turf-tearing power. Motors that can be switched to run in parallel for power climbing...or in a series for endurance driving. These motors are no babies, either. Our 540 type motors alone set records for speed and torque. So imagine harnessing two of these brutes together! Each motor powers a set of wheels shod with huge, crusher tires. So now you can run over even the largest obstacles, or crush

them in your dust. Add new excitement to your driving. Almost nothing will stand in your way.

4-wheel steering...a new direction in R/C

You might expect a huge truck like this to be a little clumsy in the tight spots, right? Wrong! The all new four wheel steering lets the Clod Buster navigate the narrowest ditches, squeeze around fallen trees, maneuver on just about any terrain... wet or dry.

Heavy duty suspension

We've complemented this sophisticated new steering system with a rugged link-style single trailing arm suspension, with rigid

axles both in front and rear. Then we damped it with not four but eight heavy duty coil spring shock units. If you like, upgrade them later to oil-filled units.

The Clod Buster's engineering uprights are also super heavy duty, measuring more than a full 1½" in diameter. Now that's tough.

See the 4-Wheel Steering Clod Buster at your hobby shop, now... and let the competition steer clear.

MRC  

Model Rectifier Corporation
2500 Woodbridge Avenue
Edison, NJ 08817

(This is no illusion. It's an actual photo of the Clod Buster climbing over 1/10 scale off-road cars. Note the size difference.)

