

CHOOSING THE RIGHT TIRES

JUNE 1989
Vol. 4, No. 41

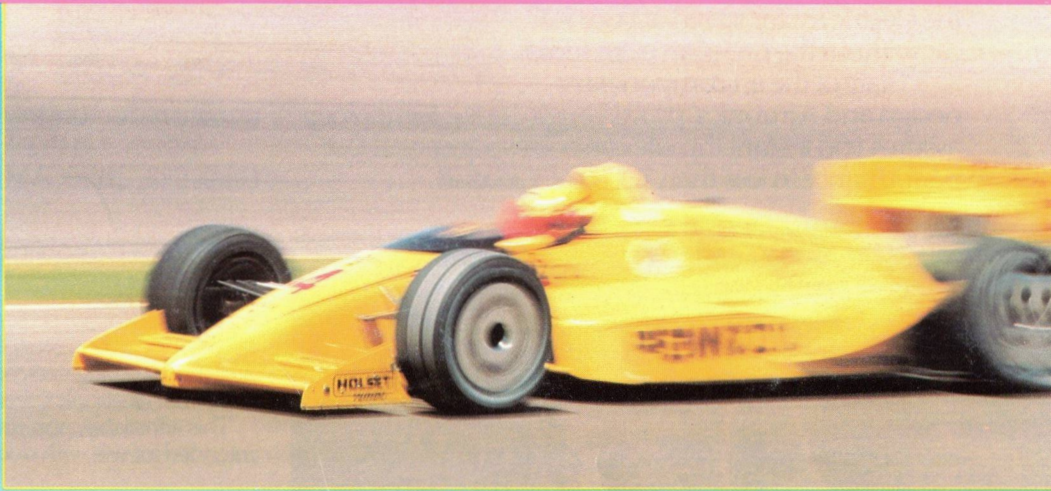
RADIO CONTROL *Model Cars* CONTROL

CD 08658

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Canada \$3.95



**INDYCAR
PREVIEW:
THE SEASON
BEGINS**



**RACE TECH'S
QUARTER SCALE
INDYCAR**



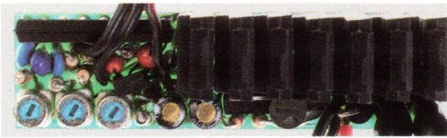
HOW TO PAINT FLAMES

Think fast.

Increase the response time of your R/C model with Airtronics' top quality electronic speed controllers.

Airtronics speed controllers enable you to proportionally control the electric motor speed of your R/C car without the use of an extra servo.

State of the art componentry design and Airtronics' proven engineering technology assures you instant throttle control response and fast performance in less than 1/1000 of a second.



These compact, lightweight solid state units utilize MOS FET Transistors and feature Proportional Electronic Throttle Control and Battery Voltage Regulation.

Our complete line of electronic speed controllers are fully compatible with all Airtronics high quality radio control systems and accessories.

When you think about electronic speed controllers, think fast. Think Airtronics.



96309 CHAMP SPEED CONTROLLER

Designed for the performance-minded R/C enthusiast, Champ allows modelers to economically replace outmoded throttle servo and mechanical speed controller functions with the advantages of a superior electronic speed controller system.

This affordable, non-reversing electronic speed controller is intended for use with stock motors utilizing 6 cell battery packs.

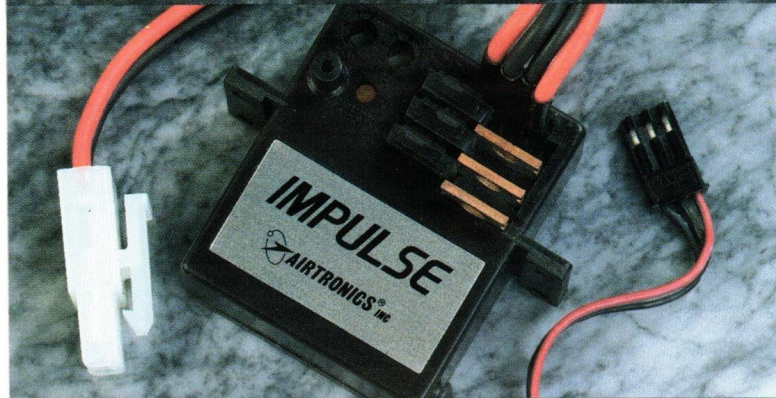
Specifications:

Voltage Loss: 0.010 Volts Per Amp

Dimensions: 1.26" x 1.69" x 0.63"

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

Weight: 0.78 oz.



96310 IMPULSE SPEED CONTROLLER

Ideally suited for on or off-road use, Impulse offers the convenience of reverse throttle at an affordable price. Responsive reverse and proportional forward control functions gives modelers all the performance advantages of advanced electronic speed controller technology.

The economical Impulse speed controller is specially designed for use with stock motors utilizing 6 cell battery packs.

Specifications:

Voltage Loss: 0.010 Volts Per Amp

Dimensions: 1.81" x 1.54" x 0.63"

Current Rating: Surge - 350 Amps / Continuous - 90 Amps

Weight: 2.2 oz.



96311 VORTEX SPEED CONTROLLER

Engineered for the advanced competition driver, Vortex is suitable for on-road cars or competition oval racer application. Vortex features the fast performance response of electronic speed controller technology that helps give racers the competitive edge.

This highly efficient speed controller is intended for use with stock or modified motors utilizing 6 or 7 cell battery packs.

Specifications:

Voltage Loss: 0.0052 Volts Per Amp

Dimensions: 0.67" x 2.2" x 0.57"

Current Rating: Surge - 420 Amps / Continuous - 105 Amps

Weight: 1.13 oz.

At Airtronics, we want to be known as the best, not just the best known.



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The team at **ANDY'S[®] R.C. PRODUCTS** is dedicated to designing and manufacturing the highest quality, race tested performance products that are blowing away the competition.

The geometry of **ANDY'S[®]** arms is designed to extend the width of your car to meet the maximum legal R.O.A.R. requirements; wheel bases are also extended to maximize stability through rough areas and minimize "push" at high speeds.

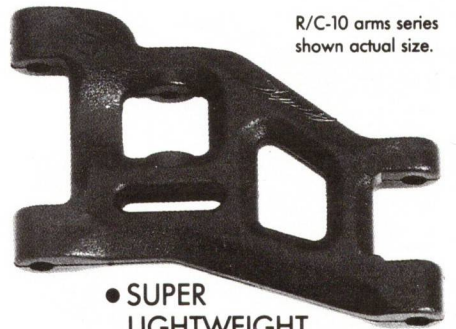
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NEW-YOKOMO LIGHTWEIGHT FRONT & REAR ARMS

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R/C-10 arms series shown actual size.



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- NYLON TOUGH
- RIGID
- PRECISION ALIGNMENT
- SLEEK DESIGN



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Andy's[®]

RADIO CONTROL Model Cars

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This handy chart can put the right tires between your car and the dirt.

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By Gene Husting

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COVER: The start of the 1989 Indycar season and Race Tech's new quarter-scale Indycar highlight this month's issue.





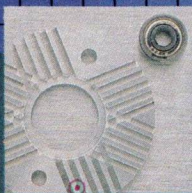
...On The Cutting Edge
Of Speed And Horsepower.

- #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

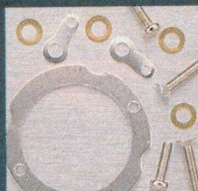


#4043 Motor Spacer,
#4031 Motor Bearing.

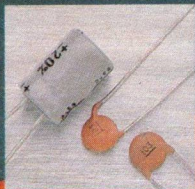
#0011 Sport Pack,
6 Cell Sanyo KR-1300SC



#4044 Motor Rebuild Kit.



#4011 Capacitor Kit.



Improvement. That's what it's all about. If you don't improve, you can't win. At Trinity we know this, we live for it! We have gone to the limits of state-of-the-art technology to design, manufacture and test products that can make you a winner. Motors, batteries and hundreds of other accessories that can give you that competitive edge. Stock or Modified, 2 WD or 4 WD, on road or off, novice or pro — let's face it, without the right equipment in your car, you might as well stay home.

Nobody goes to the limit for you like Trinity. When you're looking to push back your limits, make improvements, and get your shot at winning, choose the high-tech leader in the world of R/C racing — choose Trinity!

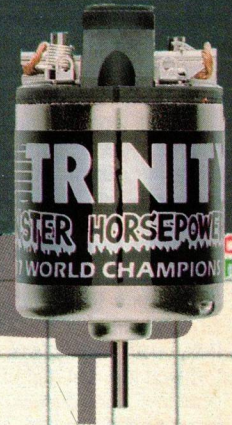
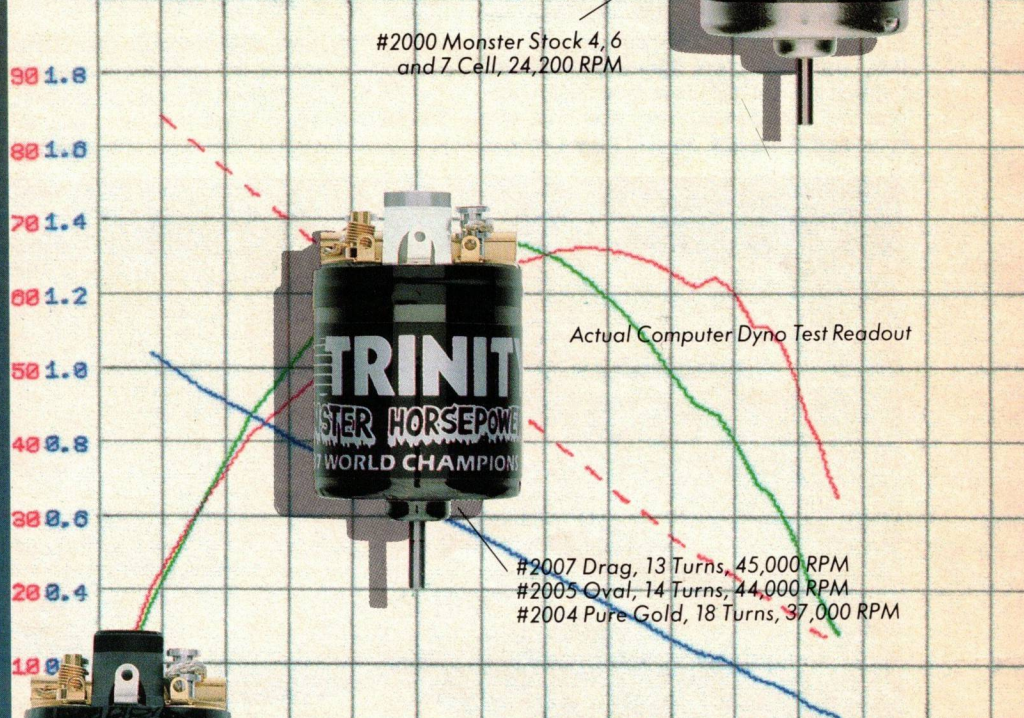
#5050 SCR 6 Cell Racing Pack
#5051 SCE 6 Cell Racing Pack



#5043 Matched SCE 4 Cell Set
#5044 Matched SCE 6 Cell Set
#5045 Matched SCE 7 Cell Set

TODAY

OVERALL EFFICIENCY (%)
TORQUE (kg.cm.)

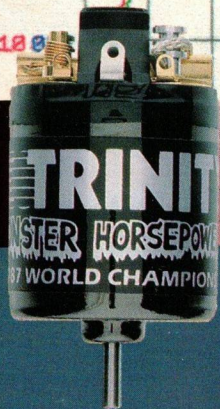


#2000 Monster Stock 4, 6 and 7 Cell, 24,200 RPM



Actual Computer Dyno Test Readout

#2007 Drag, 13 Turns, 45,000 RPM
#2005 Oval, 14 Turns, 44,000 RPM
#2004 Pure Gold, 18 Turns, 37,000 RPM



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

- #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

TRINITY
WORLD CHAMPIONS

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'TIS THE SEASON

Racing season is here in full force; the winter slowdown in activity is behind us and it's time to get down to the track for some friendly competition.

In the world of full-size racing cars, the season has begun as well, with the 1989 Indycar debut at Phoenix International Raceway as fast and spectacular as it was hoped to be. Rick Mears shattered Mario Andretti's track record during qualifying, then came back on Sunday and overcame a stall in the pits to win the 200-mile race. His Chevrolet-Penske PC18 was smooth and fast, and afterwards Mears allowed that through the first half of the race the car was pushing considerably, and after that was remedied in the pits, he didn't even have to

push the car to its limits to maintain his lead. That news couldn't have been well-received by all the drivers who were pursuing him on a hot Sunday afternoon.

Across the country in Florida, specifically Ft. Myers, the annual Winter Gas Championships were held for 1/8-scale 2WD and 4WD cars. Our Gene Husting was there to call the action as Bob Card, Cliff Lett, and Re-Pete Fusco, among others, took the hardware home from a weekend of spirited competition.

You may have noticed that Quaker State Porsche Indycar on the cover this month. It's the Race Tech Defiant, the first production model of an open-wheel Indycar in quarter scale. Al Novotnik finished this almost-

ready-to-run racer in Porsche/Indycar colors and then put it through its paces for a racer's review of a hot new Q-scale car.

Also this month we welcome Barry Spinner, who gives us his Racer's Point of View, this issue concerning the Victor Hi-Q Battery Matching machine.

For offroad aficionados we have two treats: a review of MRP's Stage II 2WD racer, and Mike Hahn's handy chart for choosing the right tire for your offroad car.

Next month: the Edelbrock Sprint Car in quarter scale; Advance Racing Products' Gearjammer road conversion kit for the RC10; Motors & Batteries by Gene Husting; MRC/Tamiya's Vanquish; and more from the R/C racing world. See you here.



JR-X2 TECHNOLOGY IS HERE!

WHY JR-X2?

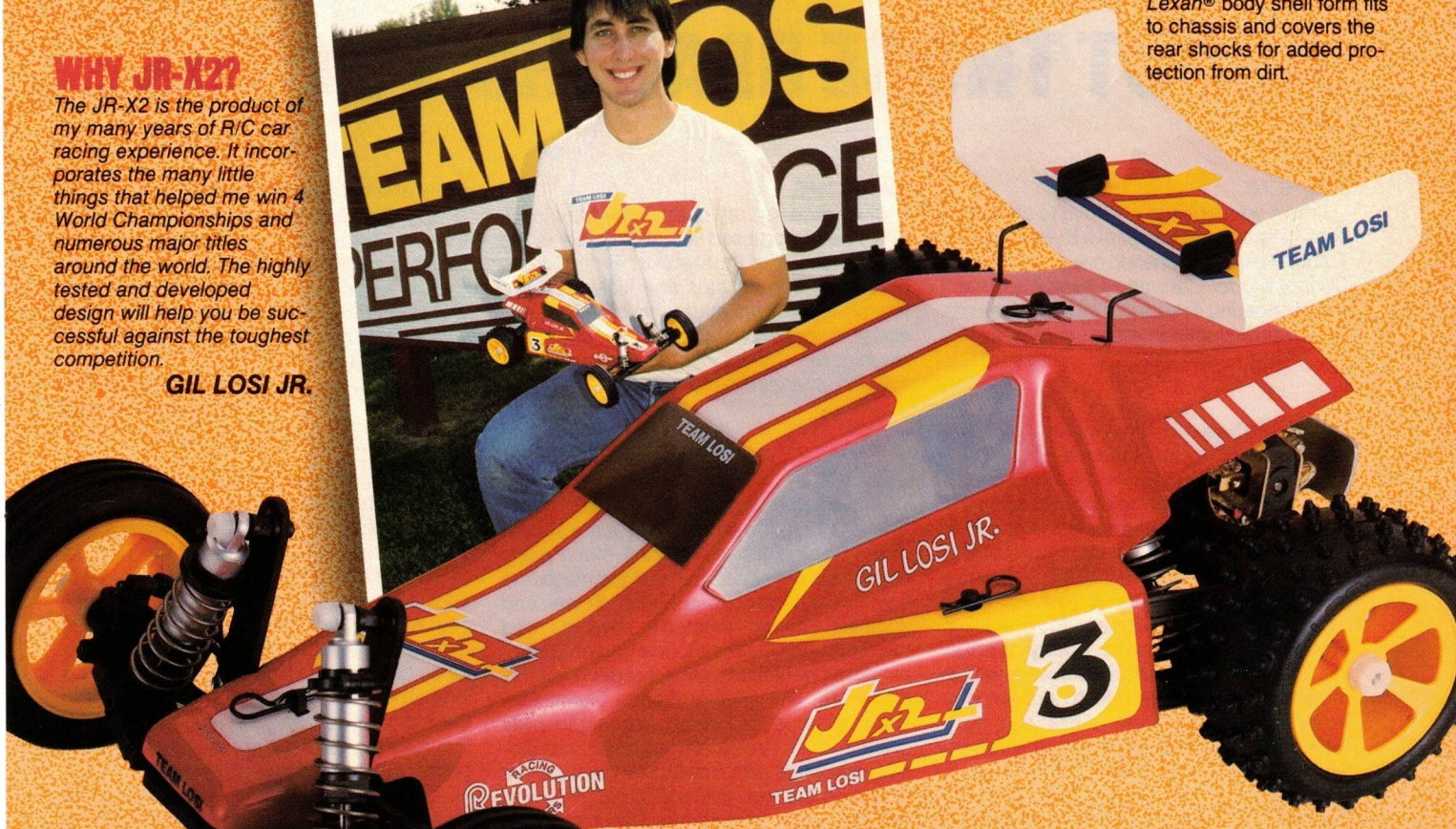
The JR-X2 is the product of my many years of R/C car racing experience. It incorporates the many little things that helped me win 4 World Championships and numerous major titles around the world. The highly tested and developed design will help you be successful against the toughest competition.

GIL LOSI JR.



BODY AND WING

Super tough and stylish Lexan® body shell form fits to chassis and covers the rear shocks for added protection from dirt.

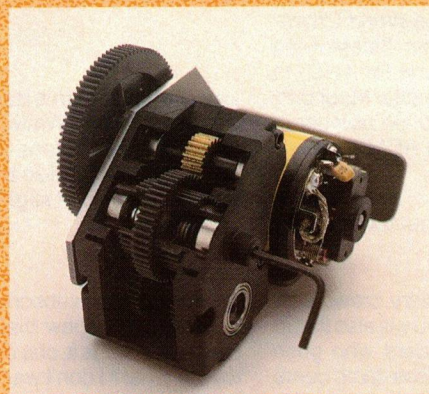


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The new LOSI 5-Link® rear suspension handles all types of track conditions ... features unique universal/slider drive shafts.

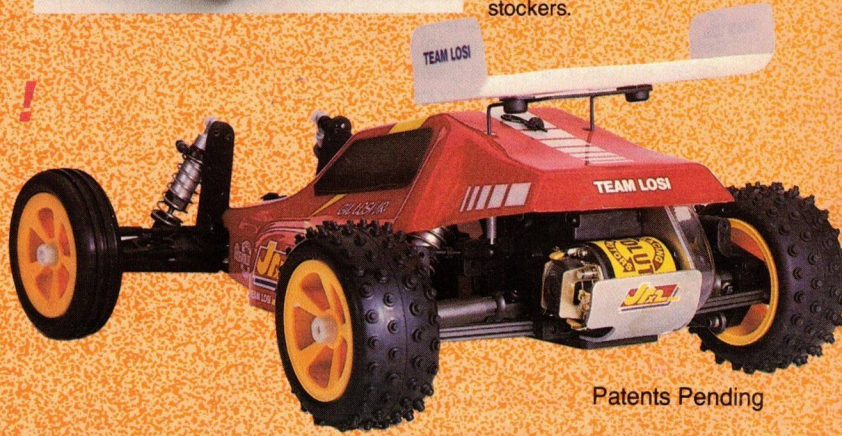


"ALL-NEW" JR-X2 TRANSMISSION

The JR-X2 is a dramatic winning edge. The L.R.M. (low rotating mass) gears are 48 pitch and molded from self lubricating materials specially formulated for low friction and durability. The 2.18 to 1 final drive ratio is lower than most others and allows selecting the correct gear ratios for the new breed of hot modified motors along with the proper ratios for stockers.

THE WINNING EDGE . . . !

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ABOUT THOSE READERS' PHOTOS...

Dear RCMC,

I'm 14 years of age and love to drive R/C cars! I am a proud owner of a Kyosho Ultima Turbo. I've only purchased one copy of *Radio Control Model Cars* and I think it's great. I was wondering if I sent in a picture of my car, would you include it in your next issue?

Jason Cole
Illinois

Jason: We have been publishing pictures from readers in our Readers' Pages for a long time; we have gained a huge inventory of photos which are published in the order received. Right now, your photo (if you sent it in) would appear sometime in early 1990! We're going to have to stop accepting new Readers' Photos for a while until we've reduced this backlog. We want to adhere to our policy of printing each and every photo received, which means we won't be able to accept any new photos until we work our way through the mountain of letters received thus far.—Ed.

Dear RCMC,

I would like to know whom the majority of R/C racers think will win the World Championships in Australia this year. Please send your votes (one for 2WD, one for 4WD) to Jason Belisle, Box 692, Battle Mountain, Nevada 89820. I will tally up the number of votes and send them in to RCMC to print. Thank you.

Jason Belisle
Battle Mountain, Nevada

Dear RCMC,

You always find one in every crowd who reads RCMB magazines. You will also find one in every crowd of readers who goes through the magazine with a fine-tooth comb or even with a magnifying glass to see the detail of the cars featured in these great pages, as I do. That was a great picture of a fine-looking bunch of "subscribers" you find in RCMC in April '89 on pages 36-37. Did you notice there is always one out of a crowd who likes to wave. Wait a minute: on page 37, what is the guy to the right of the waver doing with his hand? Find him yet? Could being such a diligent reader be a qualification for earning a free subscription? Gotcha!

John Pelehowski
Iroquois, Illinois

John: Such diligence cannot go unrewarded. You managed to pick Reed Deanfield's uncle out of all those subscribers! You're a real hawkeye, kiddo! Enjoy your subscription.—Ed.

Dear RCMC,

I just received my copy of the May issue and I was impressed with the review of the Cobra road car by Stephen Brown. I am selling my offroad cars and looking to use the money to buy a road racer in 1/10 scale, and your review of the Cobra helped to make my mind up. Thanks for your always informative and entertaining magazine.

L. Zerbian
Topeka, Kansas

Dear RCMC,

I have just subscribed to your fine magazine and the other day the May issue arrived and I wanted to tell you first that I really appreciate the plastic bag that the magazine travels to me in because it keeps it clean and unsoiled. Second I wanted to say that I read the fine report on the Florida Winter Championships by Gene Husting, but did you know that there was another Florida Championships, this one for 1/8-scale gas cars? My preference is 1/8-scale gas, and I was disappointed that you didn't give the race the coverage that you devoted to the 2WD and 4WD dirt races from Florida. Other than that, keep up the good work!

Lew Newbry
Jacksonville, Florida

Lew: Check out this issue's story by Gene on the Florida Winter Gas Championships; they took place after the 2WD/4WD Champs, and couldn't make our deadline for May. We won't slight our 1/8-scale gas coverage!—Ed.

Dear RCMC,

I noticed your subscription ad that says if I subscribe or renew that I could win a free R/C car. What is it, one of those Radio Shack toys or what? I don't want to look a gift horse in the mouth, but I would like to know what the car I'm going to win is going to be.

Steve Elkins
Los Angeles, California

Steve: If you subscribe or renew your subscription before June 30, 1989, you have a chance to win a brand new MRC/Tamiya 4WD Avante, a super-hot offroad racer that has become a contender in the dirt wars. You have just as good a chance as anyone who subscribes to win, so do so before the deadline!—Ed.

Dear RCMC,

After reading your April issue's article on batteries, I am much more knowledgeable about the subject than I was before. I have been able to pick up some information at the

track and from friends, but half the time I get conflicting advice. Ernie Provetti's straightforward explanations about the different battery cells and their care and use was excellent. Let's have more such informative articles such as this for those of us who don't know everything there is to know about R/C racing. Thanks!

Ron Woods
Springerville, Arizona

Dear RCMC,

Now you tell me! I have been racing for about eight months and I've been recharging my six-cell packs about a dozen times a day! They get hot, and they aren't as juicy as when I first bought them, but now I read in your April issue that you should only use your battery pack once a day! Holy Ned! If I had known that, I wouldn't have abused these batteries like I did. Now all the hot guys in town are soldering their packs directly to the motor, eliminating the plug connections that they say take a lot of the juice from the battery. Should I be doing this too?

Tony Abbruzzio
Stamford, Connecticut

Tony: The current loss is small, but for those who are *really*, into getting the competitive edge, direct soldering in place of plug connectors is the rule. It is a hassle, but if you want every advantage you can get, hard soldering is the way to go.—Ed.

Dear RCMC,

After seeing Joe Pizur's super-hot photograph of his Optima (March, 1989), I had to write to congratulate you and Joe for a terrific photo. I don't know how he got the lightning to strike his antenna, but I bet the flames coming off the tracks in the rear are lighter fluid! It's a terrific shot, and it should of been on the cover!

Gary Marquardt
Santa Rosa, California

Dear RCMC,

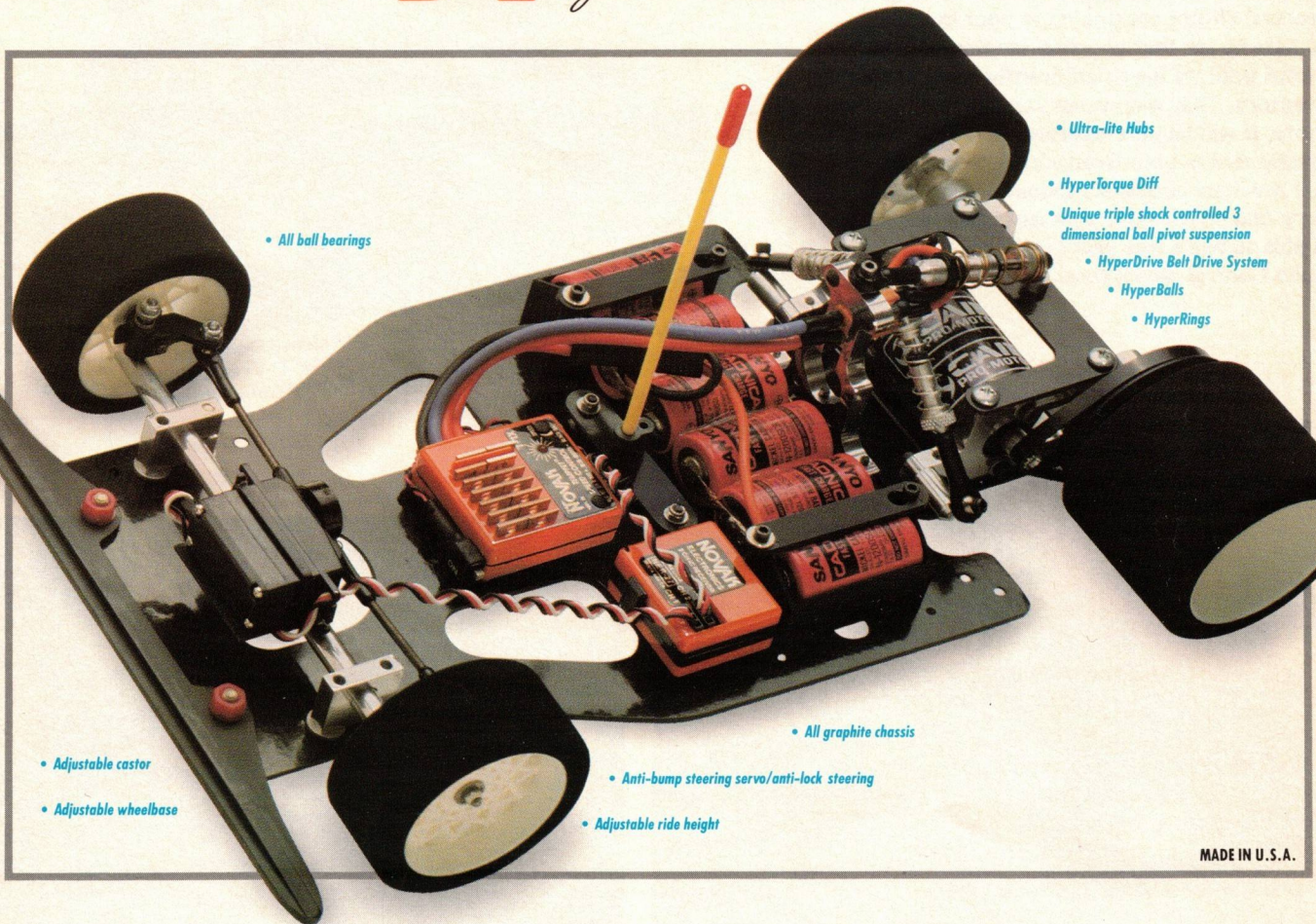
When are you going to do a feature on monster trucks? I really liked your story on the Clodbuster, but there are some more trucks out there that I think you should show in your magazine. I like the rompin' stompin' crusher style and never miss a chance to go to the tractor pulls at the fairgrounds because they have monster trucks crushing old cars. I saw the jet-powered truck of Art Arfons in person and it was rad. Maybe someone should make a radio-controlled version of the jet truck. I'd buy one.

Leon Bryars
Tuscaloosa, Alabama

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Hyper 10™

By G.S. Industries



• All ball bearings

• Ultra-lite Hubs

• HyperTorque Diff

• Unique triple shock controlled 3 dimensional ball pivot suspension

• HyperDrive Belt Drive System

• HyperBalls

• HyperRings

• Adjustable castor

• Adjustable wheelbase

• All graphite chassis

• Anti-bump steering servo/anti-lock steering

• Adjustable ride height

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- No options to buy. Everything included less body and electrics.
- Makes 42 oz. race weight minimum without modification.

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READERS!

HOLD ON! With an unprecedented number of Readers' Photos continuing to pour in daily, we have to ask that you stop sending your photos until we have significantly reduced our inventory. That way, when you do send in your photo, it will be published sooner. If you have already sent in your Reader's Photo, rest assured that it will be published, sooner or later! And every one of you who have sent in photos is eligible to win a free year's subscription to Radio Control Model Cars.



A hot sprinter on asphalt is from a guy named Don from Titonka, Iowa who wrote his name so we couldn't read it! The car looks great, and we have a free one year subscription if the owner will contact us.



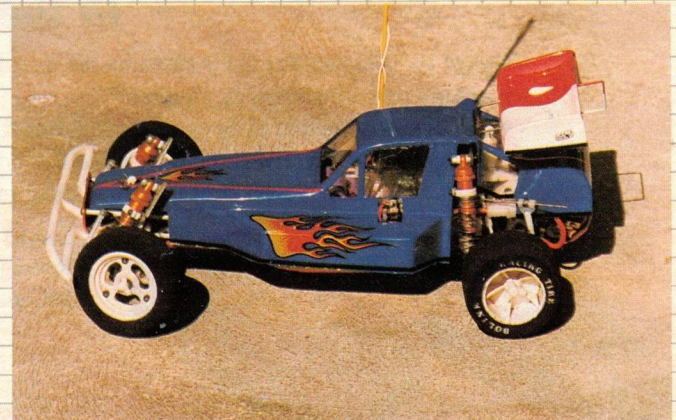
Jason Stowe, of Shawmut, Maine sent this shot of his Lunchbox in metalflake red. It does great wheelies, says Jason.



Here's a modified Tamiya Hotshot by A.L. Pelletier, of Islington, Ontario, Canada. The rear portion of the body is from a plastic orange juice bottle. It also has working front and rear lights.



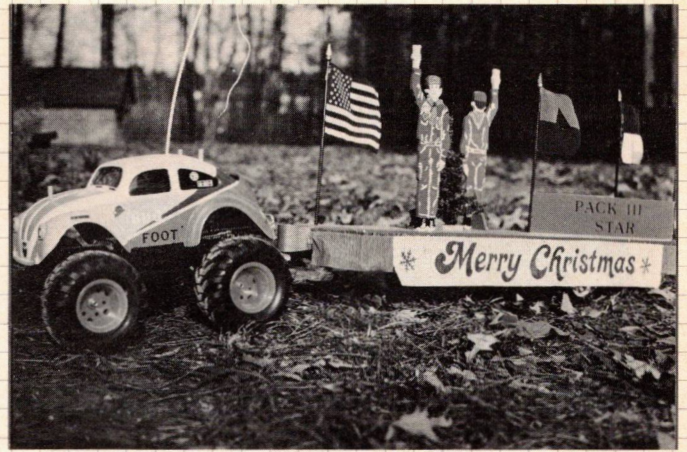
"My Clodbuster is the best and most powerful on the block. It has two Trinity motors and bearings, and working headlights too." From Brian Tobia, of Paradise Valley, Arizona. A free subscription for Brian!



Chris Snow, of Glendale, California says this RC10 is the third car he's built. It has full ball bearings, BoLink slicks and sway bars, and was painted to emphasize the All-American theme. A free subscription to R/C Model Cars is going to Chris for this beauty.



Carra Brand, from Edmonton, Alberta, Canada gets a free, one-year subscription for this photo of her Tamiya Big Wig with a Futaba MC-110 speed control, and a Kyosho 240WS motor. Nice car, Carra!



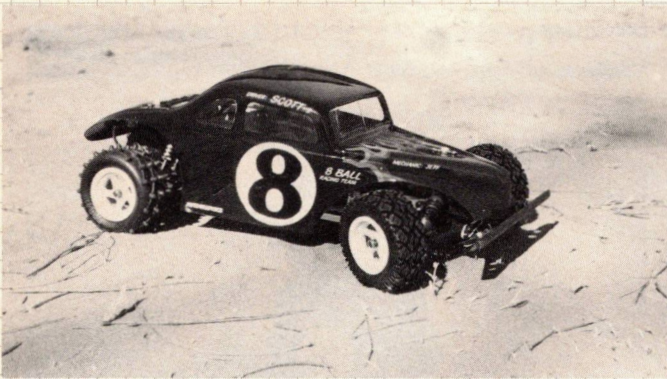
This Baja Buggy has been extensively modified by David Trogdon and his son Matthew, including Lunchbox front axles, a Parma body mounting kit, and a Futaba radio system.



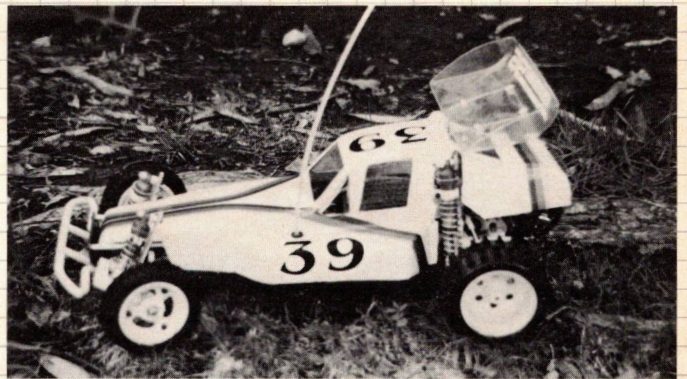
Bill McCall, of Columbus, Ohio, says his nearly stock Tamiya Hornet was painted green in honor of the Green Hornet. It's won two firsts in its first two outings on the track, says Bill.



A Kyosho Turbo Optima with a Desert Dog body is from Doug Baynes, from Elsberry, Missouri. It has a 240 LeMans motor, a Novak speed control, and an Airtronics radio system.



A hot-looking roadster by Scott Henderson, of Blair, Oklahoma, from the 8-ball Racing Team, runs circles around the competition in his neighborhood. We believe him, too.



Scott Vrooman, of Carmichael, California sends this picture of his RC10 as painted by Mark Ebbert. It has a Novak speed control, CRP rims & tires, and an Airtronics radio system.



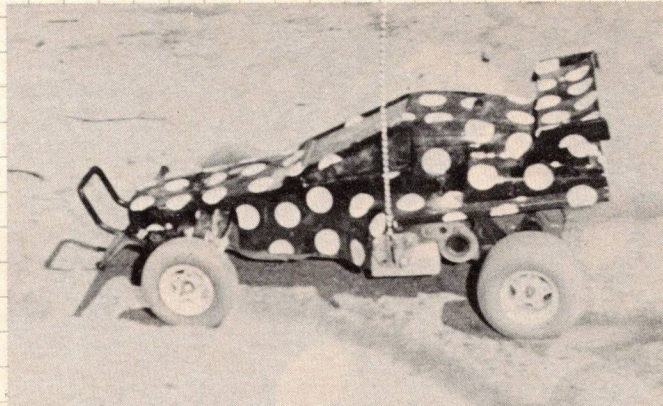
Here's a snapshot from Brad Howe, of Toronto, Canada, of his Ultima with a LeMans 480 Gold motor and cut brushes. With an 8.4 volt battery, it really flies, says Brad.



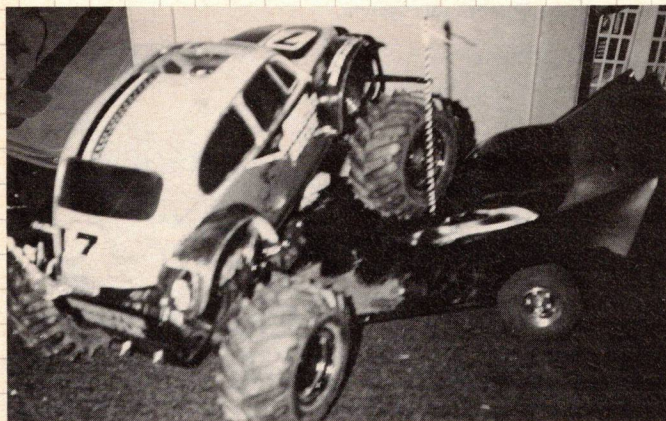
Frank Cesar, of Foxboro, Massachusetts says he has as much fun painting the cars as he does racing them. Frank, have I got a deal for you! Here's a free subscription for sharing your photo with us.



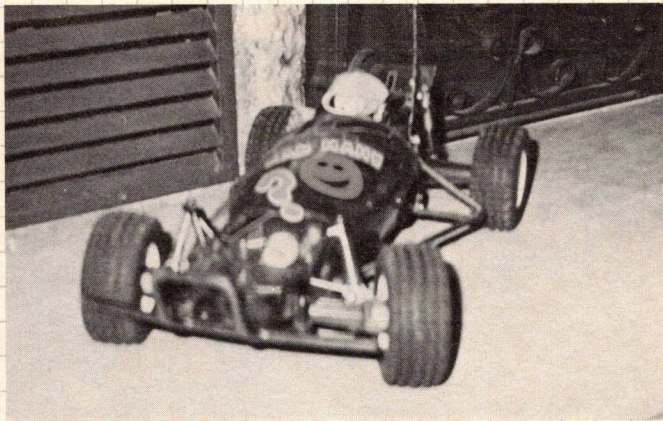
Here's a wild Clodbuster from Paul Lalonde, of Alexandria, Ontario. It has two RS540S motors, tinted windows, a Futaba Magnum Sport radio system, as well as working KC lights.



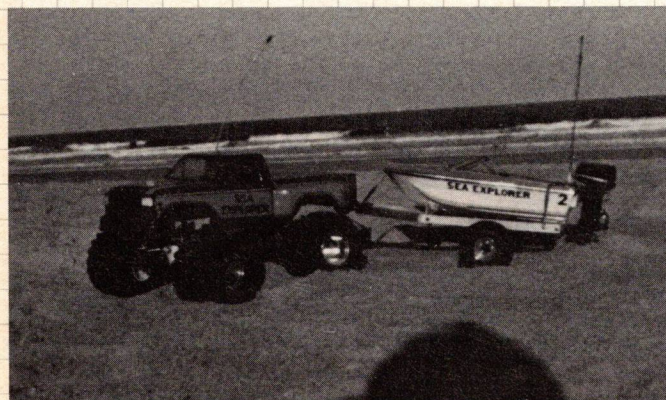
Noah Zimmerman writes: "My car has waffle tires, a LeMans motor, and it is a Frog as I hadn't said in the first place. It has won two 3rd-place trophies at a local track." Noah is from Teaneck, New Jersey.



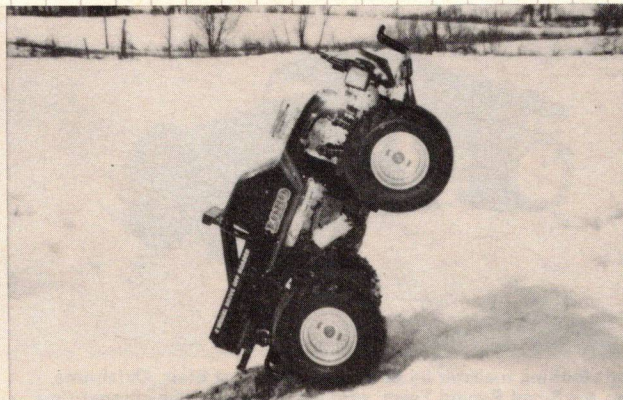
Fifteen-year-old Lance Bernstein, of Far Rockaway, NY, says he built his Monster Beetle himself, and did the painting, and made a beard on the driver! He tinted the windows with help from his brother, Jordan.



Ken Wong, 13, says his Grasshopper has a Beat 2 radio system, Sand Blaster tires, ball bearings. He made the body from a two-liter bottle, and made the air intake to cool down the resistor. Neat!



This Big Bear has a Ford F-150 body and a motorized boat converted into radio control to make up the Sea Explorer Team. It is the work of Dan Merriam, from Leominster, Massachusetts.



Geoff Lewis, of Sullivan, Ohio, modified his Chevy S-10 Lobo 4WD from Sears with a 540S Mabuchi motor and a set of headlights, and tractor-tread pin-spoke tires. A real Snow Monster, says Geoff.

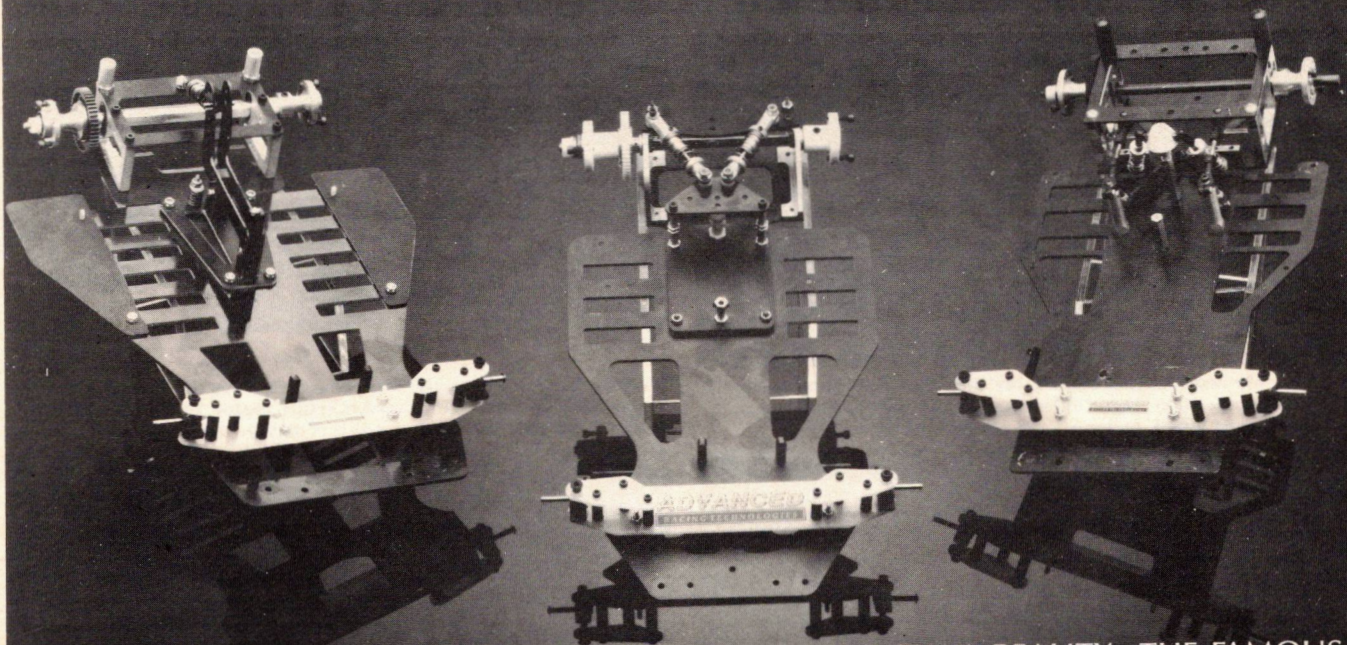


George Titko of Mount Holly, NJ built this Monster Beetle with full bearings, a stock Race-Prep motor and a 14-tooth pinion. It is a show class winner, says George.



Here's a pair of big ones from Robert Schelb, of Uniontown, PA. The Clodbuster has a Parma Ford truck body mounted with custom body mounts, and the T-bird sits atop a former Monster Beetle.

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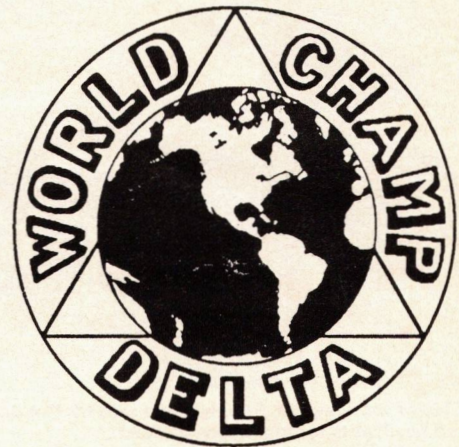
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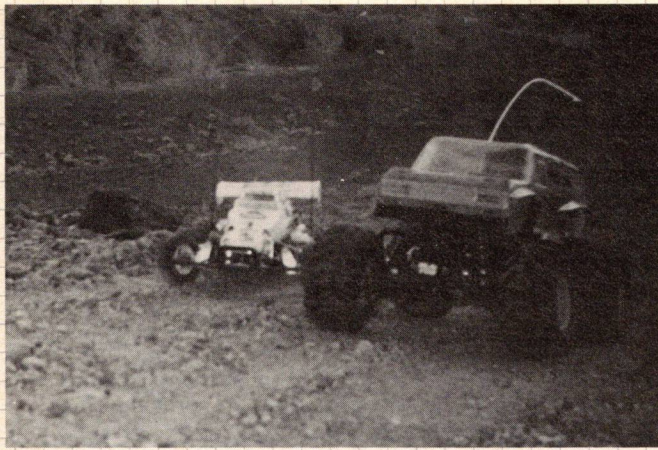
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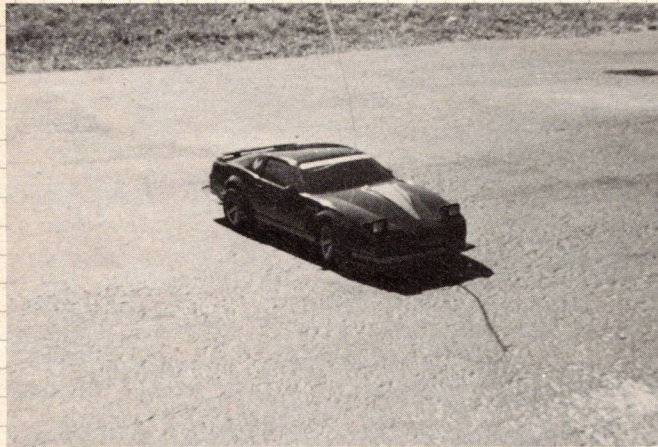




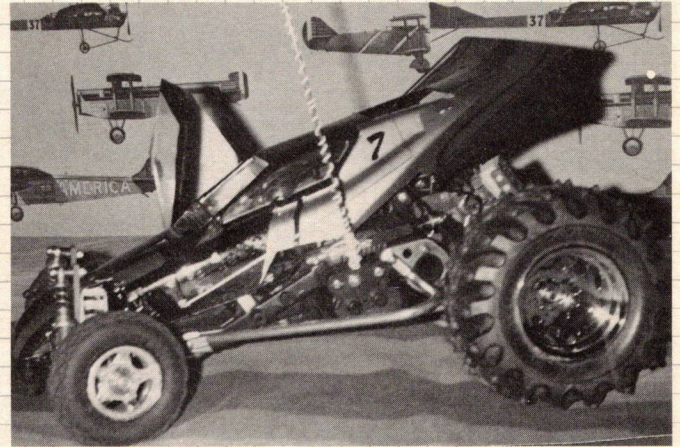
"I am 11. My name is Rick Stefani. My Blackfoot is so good it can crush the competition. It has a Diamond Green motor, dogbone half shafts, dust guard, balloons, and a couple of other things."



Timothy Baron of Wisconsin sent this shot of his Big Brute, in which he has dumped \$400. Tim added a 360ST motor, four more shocks, extra braces attached to the mounts. Tim says the white stuff is snow.



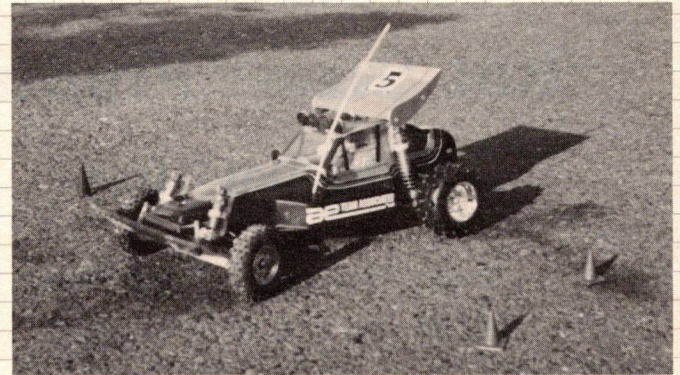
Steve Turley, of Huber Heights, Ohio says his Firebird Trans Am has working headlights, a RS-540 motor, Bridgestone racing slicks, Novak speed control, front and rear suspension, and an Airtronics radio.



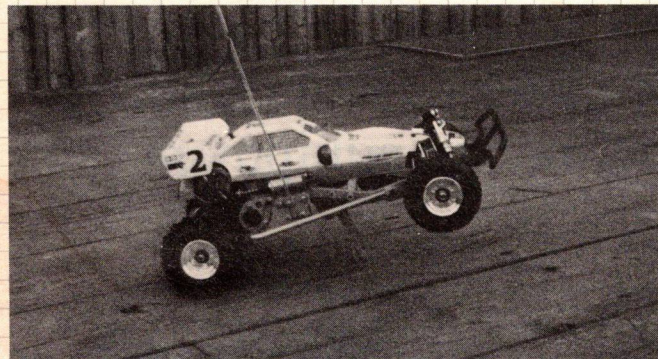
Jordan Bernstein (twin of Lance on page 14) sends this photo of his Tamiya Frog with a Trinity motor, front shock kit, chrome hubs & nerf bars, and Monster Beetle rear tires. It runs smooth, says Jordan.



Kevin King of Mt. Pleasant, Pennsylvania says his Big Brute has built-in fog and headlights for night driving. Neato!



Rod McNutt, of Banks, Oregon, gets a free one-year subscription for this shot of his RC10 with a Team Losi Insane motor, 8.4 battery, Futaba radio, bearings, Novak speed control, and detailed interior.



Here's a tricked-out Tamiya Frog from Scott Johnston, of Mt. Vernon, Illinois. It has a Race Prep motor, CRP front shocks, Pro-Line tires, Gold Seal ball bearings, and a Novak speed control.



Eddie Perez, from New York City, says his Turbo Optima has been converted with Hot Trick stuff like belt drive conversion and one-way clutch, Bud's wing, Thorp diff, and a Parma Chenoweth body.

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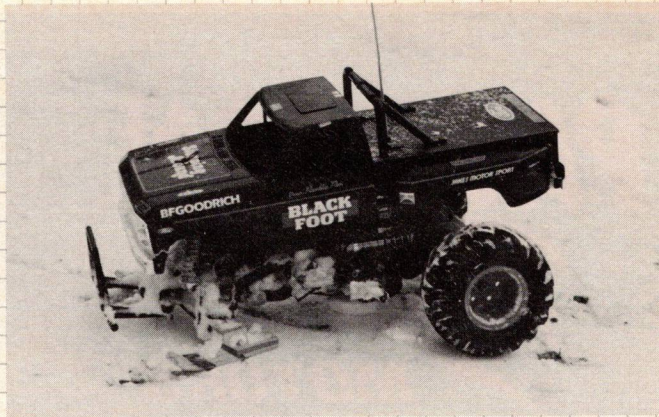
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"My name is Junior Quate and I live in Butner, North Carolina. My car is the Monster Beetle, with a Trinity stock motor, CVA shocks, and I built a track in my backyard."



This Blackfoot belongs to Eric Schatz, of Poughquag, New York, who says it likes to play chicken with the neighborhood Foxes, Hornets, and Grasshoppers. It has a LeMans 600E motor.



Eight-year-old Heather Dovan, of Pittsford, New York was asked to pick the colors for her Blackfoot, and she picked hearts and rainbows, and that's what her dad gave her! Beautiful!!!



Matthew Thopson from Antioch, Tennessee, says his Rocky has full ball bearings, a stock 240St motor and an Airtronics SR-2P radio. Matt says he loves the magazine, and so do we, Matt!



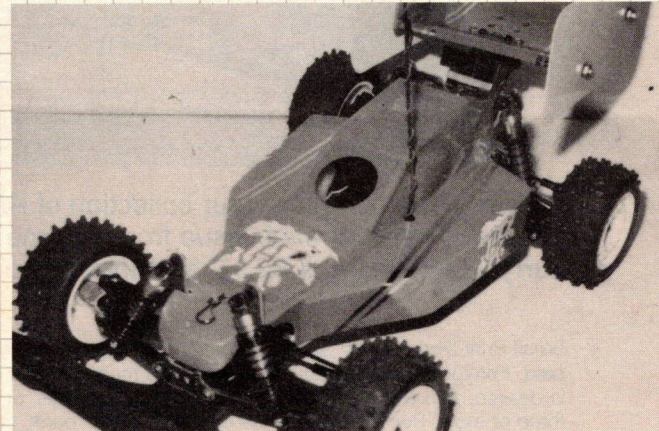
Ryan Roark and his dad built and race these cars. Ryan's Fox is stock except for the Desert Dog Body, Bud wing, and Option House tires. Ryan has won 11 firsts and 3 seconds. Ryan's from Sumner, Illinois.



"Jon Post bought this Monster Beetle from Hobbytown in Hyannis, Massachusetts and added a wing to the top. He made it from a Coke bottle. Sincerely, Jon Post."



This traffic jam is the work of Curt Watson, of San Jose, California, who deserves a free year's subscription for all this. They include sprint cars, an Ultima, a Frog, Blackfoot, and more. Wow!



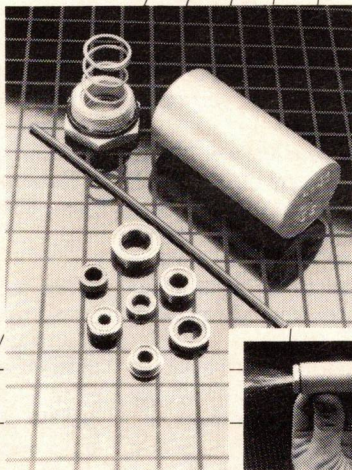
An Optima Mid from Lanny Loague Jr. shows his enthusiasm for the UK Wildcats. The car has a LeMans 240ST motor, a Novak speed control, universal drive shafts, and a bearing kit. Go 'cats!

MCS

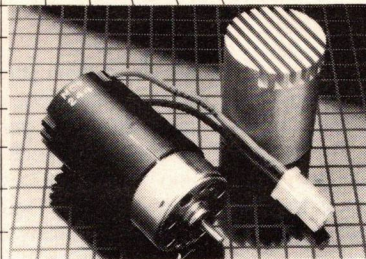
P R O D U C T S



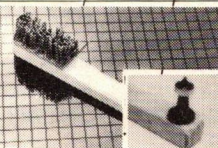
Portable Parts Washer
#8000



Bearing Cleaner
#6021



Motor Cover Heat Sink
#244



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Speed Control Heat Sinks

- #1000 B #1000 C
- #2000 B #2000 C



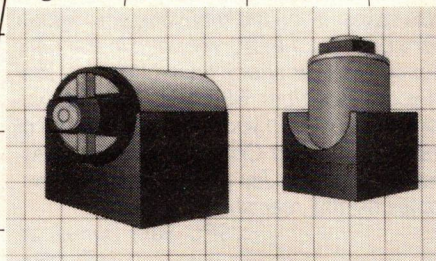
Bond On Heat Sinks

- #400 B #400 C
- #500 B #500 C

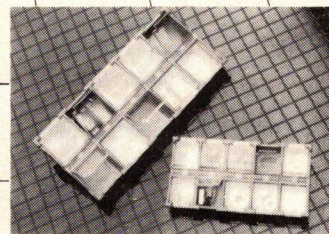
NEW PRODUCTS



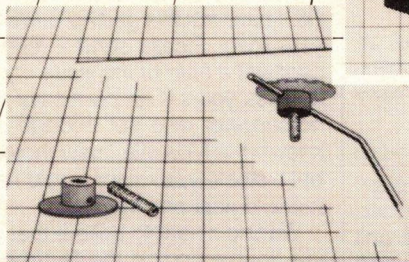
Dog Bone Straightener & Alignment Tool
#3000



Motor Block
#5000

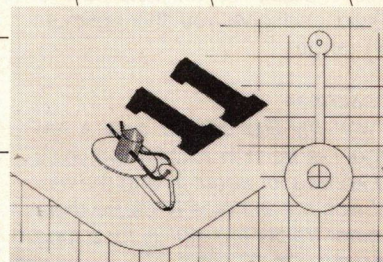


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SHOP AROUND

Dear Answerman,

I'm a twelve-year-old boy and am getting into R/C cars. I have a Tyco Outlaw and it is fairly nice for me right now. I'm looking forward to a new R/C offroad car, but I don't know what I should get. I've looked around but can't seem to find one that would be right for me. I was wondering if you could give me some tips for a good deal. I would like a good car for under \$160.00 (not including charger, battery, and radio). Could you help me?

Jason Hahn
Omaha, NE

A. The only way to get a good deal, Jason, is to shop around. But I hope you will take the time to look for a hobby shop that specializes in R/C cars; they can give you the best support and advice. There are plenty of entry-level cars for under \$160.00, and these include the Kyosho Raider and the Tamiya Frog, both of which will give you a good start in offroad racing.

Dear Answerman,

I have an older model Futaba receiver with an exceptionally long antenna wire. There is so much that after stringing it up the antenna mast, there is still about 14 inches left hanging there. I know I can't cut it off, but what can I do with the excess?

John Knowles
Sacramento, CA

A. Instead of inserting the antenna lead inside the antenna tube, just coil the lead around the outside of the mast from the bottom up and secure at the top with an antenna end cap. This will take care of excess lead and give you the optimum reception range.

Dear Answerman,

I just won my first offroad race a few weeks ago. I've been in R/C for two years now and know a lot about it, and the reason I just won my first race is 'cause there was no other tracks around us for a long time. Anyways, I'm 12 years old.

How would the Double Dare stand up to racing in sand and dirt? How could I hop it up? And what other car kit (no radio) would stand up to cars like the Avante for under \$120.00?

Finally, what motor would be good 'n' fast for on-road? I plan to send pictures of my three cars, 2 buggies, and hopefully one for Christmas.

Shawn Smith
Springvale, MO

PS. I also think you should have a contest when readers could draw a car, you judge them and they get a prize!

A. Congratulations on your first win. I hope you'll continue to win many more races!

The Kyosho Double Dare is really more suitable for pulling and "car crushin'" rather than all-out racing. Although the truck is fairly new, look for other manufacturers, as well as Kyosho, to offer a variety of after-market and "hop-up" parts.

There are several offroad cars that would give the Avante a run for the money, but not for \$120.00 or less. As for the motor, it's difficult to determine the type of motor that would suit your on-road needs without such information as the scale of the car you race, how many battery cells, and how long your races are run.

Your suggestion is pretty good, but isn't it easier to take a picture of your car than to draw them? I'll pass along your idea to our editor and see what he thinks, OK?

Dear Answerman,

I recently purchased a Novak NESC T-4 speed controller. I have an RC10. The instructions for the T-4 states as follows: Mounting your speed controller on the front of the rear shock tower in the RC10 gives a minimum cooling. Directly below this, it also states: If you are mounting your speed controller in an RC10, mount it in the pan, not on the rear shock tower! Why is it that in your December '88 issue I notice a picture of an RC10 in your "Antioch" feature of the 2WD Offroad Championships, professionally built by Jay Halsey, with his controller on the rear shock tower?

SPC Sam Burrell, Jr.
U.S. Army
Schweinfurt W. Germany

A. Sam, there are many reasons why most RC10 owners prefer to mount their speed controllers on the rear shock tower instead of the chassis pan. First, it puts the unit away from the batteries, which, as we all know, emit a lot of heat during a discharge period. With the speed controller mounted closer to the motor, the overall length of the wiring is also reduced, increasing current efficiency and minimizing voltage loss. Lastly, since most RC10 drivers prefer to mount their batteries lengthwise in the chassis, it's much more convenient to stick the speed control on the rear shock tower. Your NESC T-4 is equipped with a heat sink, so cooling shouldn't be a problem.

Dear Answerman,

I live in a small town about 150 miles west of Denver and about 90 miles east of Grand Junction, Colorado and there are no tracks in between. I was wondering how we can get a small but good R/C track going?

Steve Pawlak
Glenwood Springs, CO

A. Steve, the best way I know to get an R/C track project going is to solicit the sponsor of a hobby shop. A good offroad track requires a suitable site and the combined effort of more than just a few people to build. If you can convince your local hobby shop operator to back your project, you'll be off to a good start. Good luck and let us in on any new developments, OK?

Dear Answerman,

I was wondering if you knew what type of motor the Avante comes with. Oh, and does it come with an electric speed control?

Josh Dugan
Carpinteria, CA

A. Josh, the Avante comes with the Technigold RX540, which is Tamiya's top-of-the-line motor. You can also purchase the car without a motor. No, the Avante does not have an electronic speed controller.

Dear Answerman,

I've got a problem with my Tamiya Grasshopper. I've installed a Trinity Monster Horsepower motor, and with a fast motor like that, it rolls in all the turns. I don't race, but I do need advice.

Russell Anderson
San Jose, CA

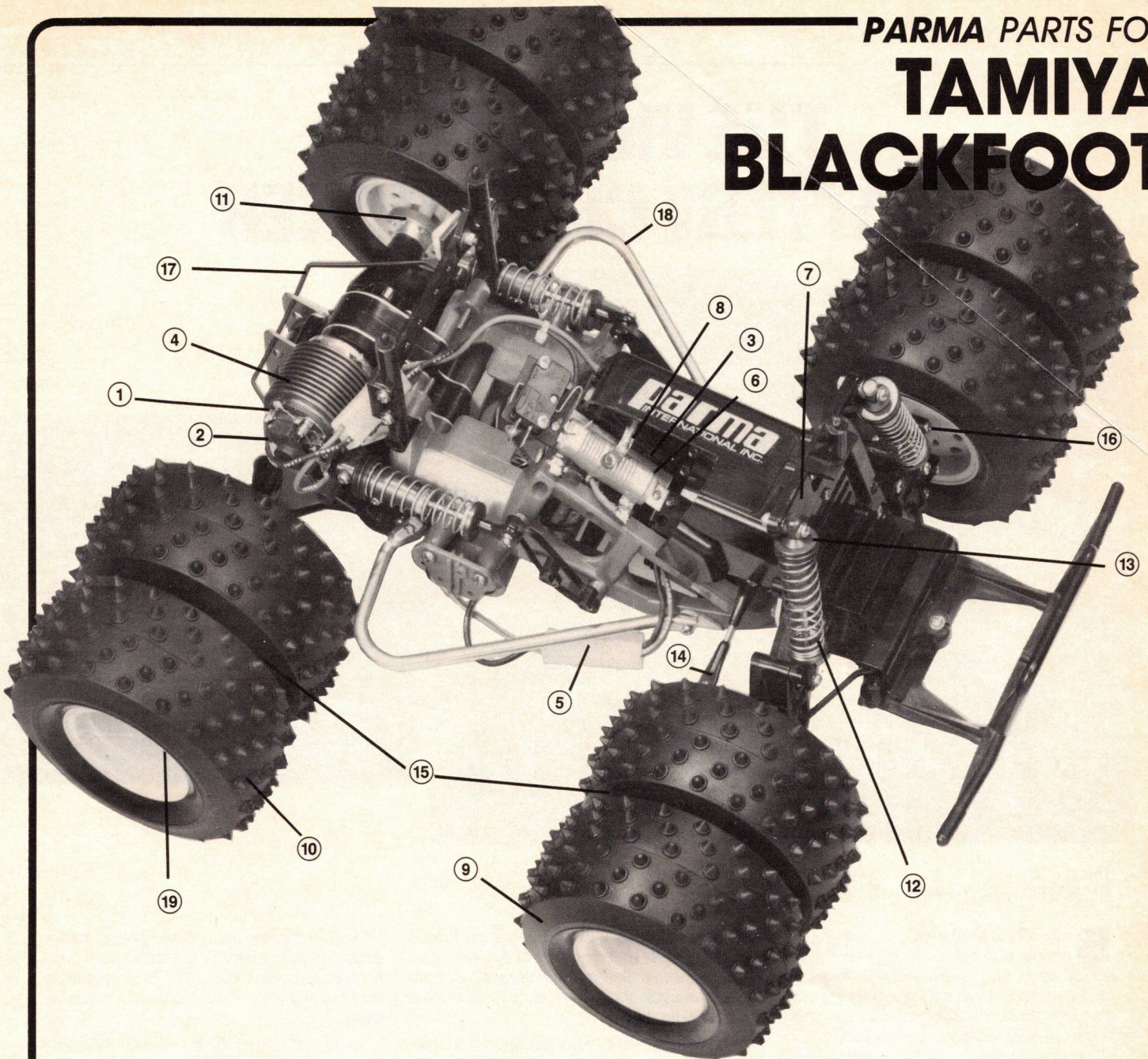
PS. I have trouble getting current issues of your mag. Please send a letter in case I can't get a hold of the issue my reply is in.

A. Russ, yours is simply a case of too much horsepower and not enough car. I don't know what type of a Trinity motor you have, but a stock-type motor would have been a more logical choice.

We find it hard to believe that you're having trouble finding the Number One R/C car magazine in the world, but why not just subscribe instead? That way, you won't miss a single issue!

DO YOU HAVE A QUESTION for the Answerman you'd like to have answered? It's easy, all you have to do is send your question to Answerman, *R/C Model Cars*, 898 W. 16th St., Newport Beach, California 92663. Your question will be answered in the Answerman column in a future issue.

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①	4042	Motor capacitor kit	\$ 2.00	⑪	12110	Rear Aluminum hub	Pr/\$18.00	
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③	8055	Servo tape	\$ 2.60	⑬	12639	Coil over adjusters for Parma shocks	Pr/\$ 6.50	
④	11026	215° wrap-around heat sink	\$ 7.50	⑭	12827	Heavy duty rod end kit	\$ 6.50	
⑤	11500	Heavy duty Tamiya/Kyosho connector set	\$ 2.10	⑮	12847	Dual wheel adaptors	Pr/\$10.00	
⑥	11518	Assembled speed controller w/reverse	\$24.00	⑯	12848	Blackfoot steering blocks	Pr/\$ 7.00	
⑦	11810	Universal servo saver	\$ 5.00	⑰	13229	Rear adjustable anti-roll bar	\$11.50	
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11011	"Cool Filter" dust cover	\$ 2.75	12602	"Big Bore" shocks	Pr/\$15.00
11501	Pre-wired Tamiya/Kyosho connector set	\$ 3.00	12609	"Big Bore" shock springs	Pr/\$ 3.00
11515	Resistor speed controller without reverse	\$15.00	13001	Rear suspension arm bushings	\$12.00

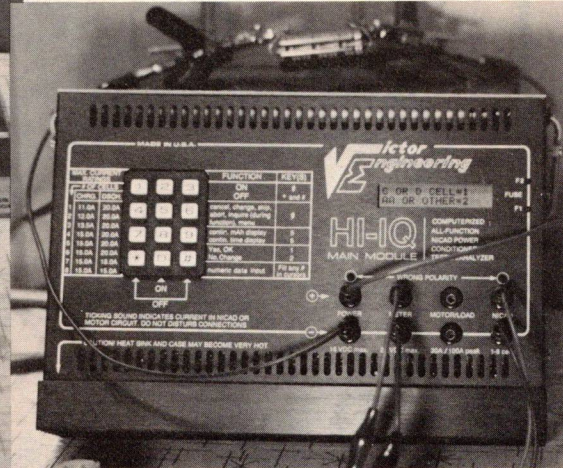


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THE VICTOR HI-Q BATTERY CONDITIONER



BY BARRY SPINNER

Back on the east coast, we're busy preparing our pavement cars for those sunny days and warm summer nights of racing under the stars. Everyone knows one of the most important parts of racing or going fast is closely matched battery packs. One of the newest ways to do this is with a Ni-Cd conditioner from Victor Engineering - The HI-Q.

This computerized analyzer is so simple to operate, you don't even have to read the instructions. Just hook up your power supply and you're able to charge single cells from a 0-11 amp rate, and 6- or 7-cell packs to as high as 15 amps. From my experience, I've found that matching them in single-cell form is more accurate. Then discharge and evaluate the numbers, saving the best cells for your A-main. The discharge enables you to reach as many as 20 amps with a voltage cutoff adjustable in .01 increments.

Just push one button to cancel at any time, or choose another button to review a continuous display of milliamps and the time elapsed. A continuous ticking sound is present during operation enabling you to spend more time getting your car race-ready, and less time staring at the machine. When the ticking stops, it automatically displays the total capacity in milliamp voltage and time.

Another feature is extra jacks on the front panel, which when clipped directly to the

battery, will take into consideration losses due to length and diameter of the wire supplied. There's also a mode selection where you can cycle the same cell or pack maxed out to 99 times.

Future software available soon will allow you to print graph readouts of your cells while another module will automatically rate up to 8 cells individually and give you approximately eight hours of free time. This will make today's way of matching cell is a thing of the past.

For those of you who use battery chargers for power, you will have to make a quick stop at your local electronics store for a capacitor and two alligator clips to insure proper filtration of current. Solder the two clips to the ends of the capacitor, and connect the negative sign (in my case it's an arrow), to the negative side of the charger. Of course, the other side goes to positive. The minute your racing friends see how simple, yet futuristic this is they'll be asking to borrow it.

You may think I'm just rambling on about the features, but I just want you to know how much this is really needed for serious racing. You can charge in either a peak, timed or trickle mode and discharge with a voltage or timed cutoff.

The special functions mode offers you a variety of features: three-minute battery test;

full test, computerized battery grading; motor check, stock or modified with 30 amp continuous draw and 100 amp surge, available soon; digital voltmeter; stop watch, available soon.

In the full-test mode there is an initial and final discharge with voltage cutoff in .01 increments. You can choose a cool-off period of up to 10 hours and soon there will be optional software that attempts to revive shorted cells. There are still many features I haven't mentioned, and even more which are not as yet available. I look forward to using all of these items to make me a better racer.

Battery matching isn't everything but it is necessary to last the whole four minutes in a race under full power. Once again, I want to stress how very easy this is to use. Racing nowadays is very competitive, and matching your batteries will help you to get to the main event at your local race track.

Victor Engineering has been very helpful in answering any questions I have had after purchasing the main module HI-Q. Just contact Vic for any further information and tell him you read this article in *Radio Control Model Cars*.

So keep your eyes on the road, and your hand upon the wheel and I'll see ya in the winner's circle.

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#12017 (Pin spiked fronts, center) \$10.00/pr.
 #12032 (For hard surfaces, right) \$12.00/pr.
 #12033 (For loose surfaces, left) \$12.00/pr.
 Three killer tires styles from Parma. The #12032 & #12033 low profile tires are made of durable compounds, for serious off road racers, and both can be used as rears or 4 WD fronts. These 2-1/8" tires fit Kyosho, Hot Shot & Supershot style wheels and are available at your local Parma dealer.



#1243 \$19.95
 Parma's newest body for 1/8 scale, is this sleek Osella PA-9 Can Am winner! Molded in clear .050 lexan, it offers superior aerodynamics for today's fast 4 WD gas cars. It's now available at your favorite Parma dealer.



#1962 (Tiga) \$11.00 #1961 ('88 Buick) \$11.00
 These two popular 1/12 scale bodies feature the famous Parma detail, durability and aerodynamics. The Tiga is fashioned after the popular sports 2000 car and the '88 Buick NASCAR is striking in its realism. They are both offered in clear lexan, and both are available at your local Parma dealer.



#10262 \$19.00
 Parma is proud to say that our very popular '88 Pontiac NASCAR body just got better. Without compromising the famous Parma detail, subtle design changes have given this body increased aerodynamics and improved handling. Check it out, at your local Parma dealer.

parma NEW PRODUCTS

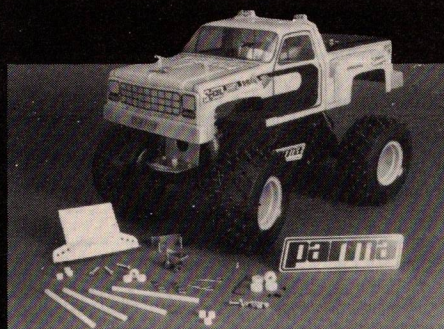
No. 7



#10286 \$15.00
 This latest Parma body is rightly named "The Advantage." This hot looking body is designed to snugly fit the RC-10 for added aerodynamics and possesses classic Parma detail and quality. To get "The Advantage", visit your local Parma dealer.



#17026 (Blue fronts) \$15.00
 #17126 (Blue rears) \$18.00
 #17027 (Green fronts) \$15.00
 #17127 (Green rears) \$18.00
 Reliable new BBS, low profile wheels give added stability on the turns and the blue or green rubber compounds give the right amount of "bite", making these mounted and trued tires perfect for asphalt or carpeted tracks. Race down to your favorite Parma dealer for yours!



#12603 (kit) \$29.95 #12041 (rears) \$25.75
 #12040 (fronts) \$25.75 #10244 (body) \$19.00
 This Parma conversion kit makes it easy to create your own monster truck from your Grasshopper or Hornet. Although shown with a #10244, F-150 body any 1/10 scale body will fit this "monster." The tires and wheels are also available separately.



#10285 \$19.00
 New in the Pro-stock category is this beautifully crafted Chevy Beretta! This clear lexan body is the latest great looking addition to Parma's 1/10 scale selection, and is sure to be a hit among Pro-stockers. Look for it at your local Parma dealer.



#10267 \$19.00
 The improved '88 Buick NASCAR body, offers the same fine handling characteristics, detail and craftsmanship Parma bodies are noted for. This 1/10 scale dream is molded in clear lexan, and is now available at your local Parma dealer.

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CHOOSING THE RIGHT TIRE FOR OFFROAD RACERS

BY MIKE HAHN

In today's world of R/C car racing, the consumer is faced with many tough, potentially wallet-emptying decisions. Racers will try batteries with enough voltage output to effectively light a modern duplex. ESCs that could handle the voltage from Hoover Dam, motors that...well, you get the picture. All of the above will do about as much good as a two-footed pack mule if there is no effective connection between the driveshafts and the ground.

That's where tires come in. That's right, plain, simple tires. Although some of you are about ready to turn the page, take a minute to look at the charts that follow. Hopefully they'll illustrate to you, the racer, which tires will best suit your purposes. Keep in mind, the most disposable part of our cars, the tires, may be the most critical link between the ground and all those expensive electrics.

There are a few general points that an R/C driver today should remember. In loose dirt, the longer the spike or knob, the better. On hard packed dirt, keep the spike as short as you can and still get good traction.

By no means does this chart represent every possible situation a racer will face at different tracks. In fact, it's only the tip of the iceberg. It does, however, present a few of the more common situations. If you find this chart at all helpful, clip it and tape it to the inside of your field box. If you don't find it useful, clip it and line your bird cage with it.

CAR TYPES	TRACK SITUATION			LONG STRAIGHTS WITH GENTLE CORNERS. IDEAL OR NEAR-IDEAL DIRT CONDITIONS.
	HARD-PACKED MAIN SURFACE WITH LOOSE DIRT ON THE FRINGES. NOT ROCKY, WET OR DRY.	LOOSELY PACKED MAIN SURFACE WITH OCCASIONAL ROCKS OR CLOUDS OF UNBROKEN DIRT. DAMP OR DRY.	SMALL TRACK WITH TURNS THAT MAKES IT IMPERATIVE FOR YOU TO HOLD TIGHT LINES (GOOD DIRT).	
FOUR WHEEL DRIVES with one-way diff. Examples: Yokomo C-4, Shumacher CAT	A very low pin spike will work best on the rear of the car. Shumacher low spikes are probably going to be the most effective. Use the same length of spike in the front.	Fairly long pin spikes will be your best choice for the rear of the car. Look at the CRP tire or Dynamite Tires. Stick with a set of low spikes on the front (Less drag).	Your 4WD will come in handy here, but don't get overconfident. Try medium Associated TQ Pyramids on the rear and medium-soft Shumachers on the front.	You'll want to keep the drag on the front as low as possible, so try out a pair of short, short spikes on the rear. CRP round spiked tires would work.
FOUR WHEEL DRIVES. Examples: Optima, Turbo Mid SE, Avante, Thundershot, Shadow.	Low spikes made of real rubber would be beneficial. If you don't have a pair of steady front wheels, try 'em. They'll cut down on drag and make handling better.	Once again, Shumacher long or medium spikes are the tire of choice. Traction will be pretty easy to come by, so you might save a few bucks by going to Race Prep or Parma Tires.	If you own an Avante or similar car, you might want to leave the wide rims on the front. Associated TQ Stacked Pyramids or JRX2 rears would work well on all four corners.	If you haven't already, go to skinny front rims. CRP medium-profile Cat fronts will hook up nicely, and CRP Cat rears will tear up the track.
TWO WHEEL DRIVES. Examples: Ultima, RC10, JRX2, Hornet, Falcon, Raider, etc.	Option House low-profile, Shumacher Short spikes and tires like them are recommended. On the front try Associated TQs, Pro-Line Knobbies, or Pro-Line Terra-Tamers.	The tires found on stock JRX2s are making a name for themselves. Try them on the rear and Race Preps, Pro-Lines, or Shumachers on the front.	Get a set of long, pointed spikes for the front and maybe change to a medium rim width. Long or medium Shumachers on the rear will work, as will Dynamites.	On the front try a Pro-Line Knobby (the lowest knobs are the best) or maybe use stock, ribbed fronts. Any of the rears by Losi, CRP, Parma, and Shumacher work.
TWO WHEEL DRIVE TRUCKS. Examples: Monster Beetle, Blackfoot, Lunch Box, Crusher, etc.	Lunch Box tires seem to work very well under conditions like these. They offer fairly good bite. Truck spikes by Imex are also good.	Toss your stock tires in favor of a set of Killian or Duratrax clipped-spike tires. These are super and offer traction previously just a dream for trucks.	Once again, the Killian and Duratrax knobby-type tires will work best. You might try something with cleats or spikes on the front.	I can't say enough about the all around usefulness of Killians. These are my obvious recommendation.

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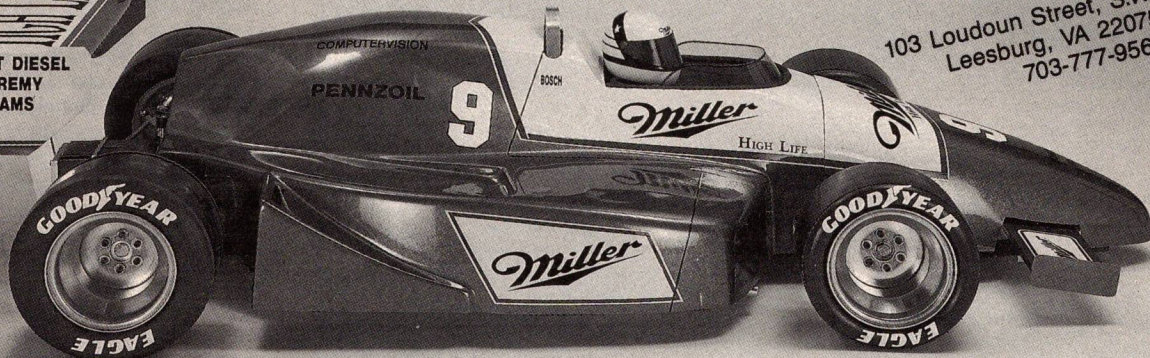
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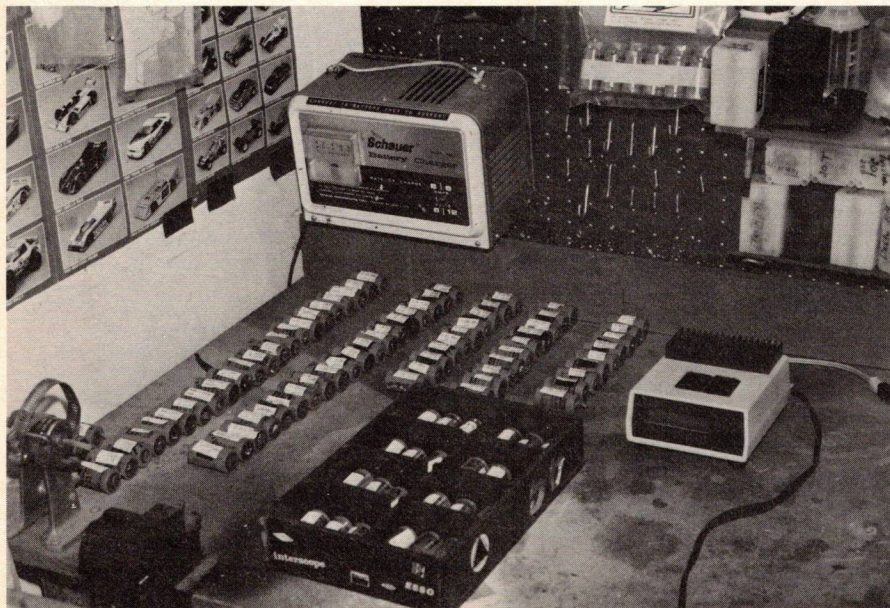
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BATTERY MATCHING



The topic of matched batteries comes up almost anywhere that two or more R/C car racers gather. Most racers now believe that matched batteries will provide an additional edge when it comes to race performance. Basically, the matched batteries will allow the total battery pack to discharge at the same rate and become discharged at the same time, thus getting the maximum potential from each individual cell. This in turn provides the motor the maximum power right up till the battery dumps or reaches the discharge point.

The topic of matched batteries plays a part in both stock and modified classes. Most modified racers are using matched SCE battery packs while most stock class racers are using the matched SCR batteries. These batteries are not cheap. There are instances where matched 6-cell packs cost as much as \$75. No matter what is done or said to keep the cost of racing down or low, it always seems to go up. If one racer shows up with a \$75 battery pack and wins then next week there will be two more show up with the high dollar equipment. That is the nature of the racing world. You have to match the competition to at least stay even. You know the old saying - How fast you want to go depends on how much money you have or want to spend.

That thought brings me to this month's article - how do I keep my expensive matched batteries matched or how do I

match them on my own. There are several makers of equipment to match batteries. While they are not exactly cheap, they are not really all that expensive when you consider the cost of the matched packs (\$75 and up) and that you are going to have to have a charger any way. I will admit that some are more expensive than others. I had the opportunity to give the CRP MOSFET pulse peak detector charger and cell lab, a system to charge and match batteries a brief trial. I have also had the good fortune to use the Competition Electronics Turbocharger (charger and matcher) and really put it through its paces. I will not really compare the two systems as they are both good and both do what they are advertised to do. You have to decide on your own which technique and price range you prefer.

When I rated these packs, I only cycled them one time. Thus, there could be some variance that an average over three cycles would remove. However, you can see the type of results that you get with this system. You have to decide if you want to rely on the mAh readings. On a personal note, I had for about a year thought that the P2 pack was one of my worst packs. During one of the Panhandle series races last year I saved it for the main event and won with it as it really is one of my better battery packs. Without the information from the cell lab, I would have left this pack laying in the bottom of the box for practice.

The Competition Electronics Turbocharger is a one-piece unit that charges and cycles your battery cells. The charge rate of this unit is adjustable from 0.00 to 9.99 amps. When the charge cycle is over, it automatically goes into a trickle charge if you are charging at a rate of 3.0 amps or greater. While charging, the charge rate in amps is displayed along with the time of charge, and pack voltage. The actual charge rate will fluctuate slightly and be within 0/1 amp of the rate selected. During the charge cycle, you can view the voltage of the battery that you are using to charge your race packs from. In addition to the normal peak charging; there are two other functions that are well worthy of the cost of this unit. There is a discharge rate and the cell cycle function. The discharge function has an automatic shutoff at approximately 9 volts per cell and is used to discharge a pack after running to determine the amount of run time left to possibly adjust gearing. After the discharge, you can read the remaining run time of your battery pack in seconds and also the average pack volt that was available during the discharge cycle. The discharge function calculates the remaining time in seconds based on a 10.0 amp rate.

	CHARGER DISCHARGER	
PACK	MAH	MAH
G3 (1700)	1858	1287
G4 (1700)	1179	1429
SR (1300)	-	1213
G1 (1300)	-	1330
G2 (1300)	1637	1548
P1 (1200)	1062	1260
P2 (1200)	-	1348
FR (1200)	1473	1199
PA1 (1200)	1258	1303
M1 (1200)	1160	1191

The CRP system is actually two separate units, the charger and the discharger. During the discharge function a small fan is required to keep the unit cool. This charger performs all standard functions plus some additional ones. It has three charge ranges - 3.0, 5.5, and adjustable 1.0 to 10.0 amps. It has an LED that changes color when it goes from fast to trickle charge and can take the input leads being connected backwards without self destruction. They both have large easy to read liquid crystal displays. The unique feature about this charger is that when you start from a totally discharged pack, it will indicate the approximate amount of contained "power" in mAh. The discharger also indicates the amount of capacity in terms of mAh. I only had a short exposure to this

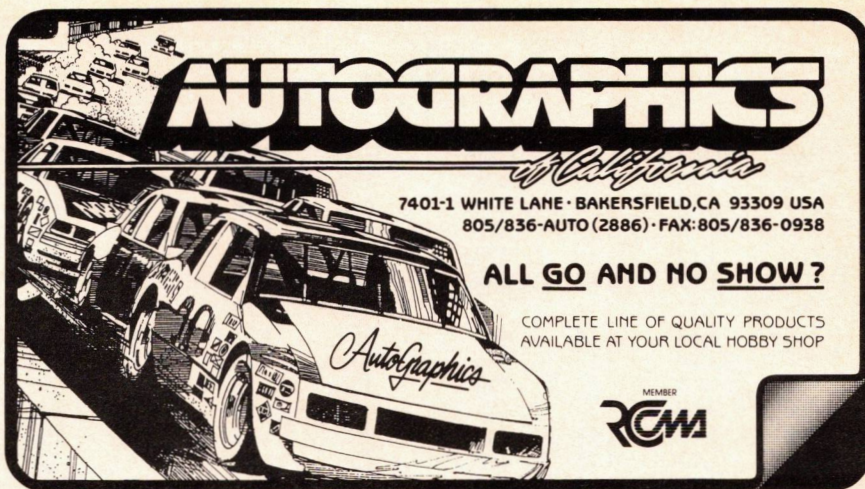
system; however, I used it on ten six-cell stick packs. I got different readings from the charger and the discharger for the same battery pack. In some cases the differences were significant while in others they weren't. The following table shows the results of the capacity check for the total battery pack. I did not have the opportunity to try individual cell matching with this system so I can not really say much about that part of the system except that the part I did try worked and knowing CRP's reputation I will surmise that the cell matching portion also works.

However, the cell cycle function is the one that I have used as much as the charge function. This function is what this piece of equipment is really all about. This is how you match your individual cells or completed packs. The number of cells to be cycled can be set as either 1, 4, 6, or 7. The results are shown in the approximate run time of either your cell or pack. In addition, the average voltage of the cell or pack is displayed. These two pieces of information allow you to perform your own cell matching as good as anybody. One piece of advice that they give you is that during the cell cycle function, you must have a small fan blowing across the heat sinks to keep the unit cool. It will get hot.

To cycle one individual cell from a discharged state is rather slow. However, if you charge a six-cell pack and then cycle each cell the process is speeded up. This is a durable unit also. I have cycled cells from six in the morning to nine at night without a break for days and the unit has not missed a beat. I did use the fan.

I had 15 SC and four SCR 6-cell battery packs that range in age from six years old to about six months. These are the ones that I cycled for this review. Needless to say the results of the cycling process was that I had to rebuild every pack that I had. When I was through with the cycle process, I then had to choose how to sort the cells as I now had the average volts as well as the approximate run time for each individual cell. I had cells that ranged from a run time of 516 seconds to 400 seconds and average voltages that ranged from 1.15 to 1.07. The results of sorting the cells based on time and also on average volts is shown in Table A. As you can see, there is a difference in the cells depending on the way they are sorted. For example, the highest rated SC pack based on run time is 516 with a voltage of 1.13. However, when sorted by the average volts, this particular pack ranks only 12th. The highest ranking pack based on the average volts is not even in the top 18 cells but ranked 27th based on its run time. Thus, you can see the problem that arises. How to sort the cells. You have to derive a scheme that uses a little of both techniques - a multiple attribute selection process. If you have a large number of cells (you need a bunch), I would suggest that you sort first by the average volts then by the run time. This way will provide the longest running and strongest packs.

You will also notice from the results shown in Table A that the SCR packs have a higher average voltage than do the SC packs. The reason I said that you need a large number of cells to really get matched packs is also shown in the data in Table A. Notice the



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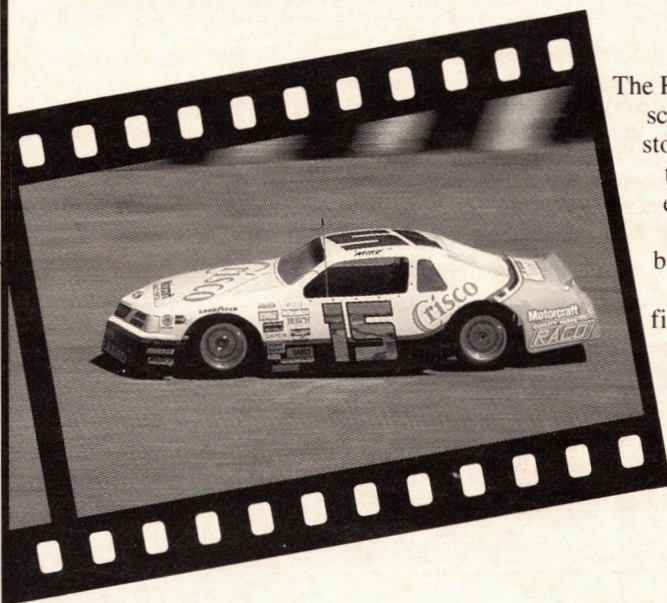
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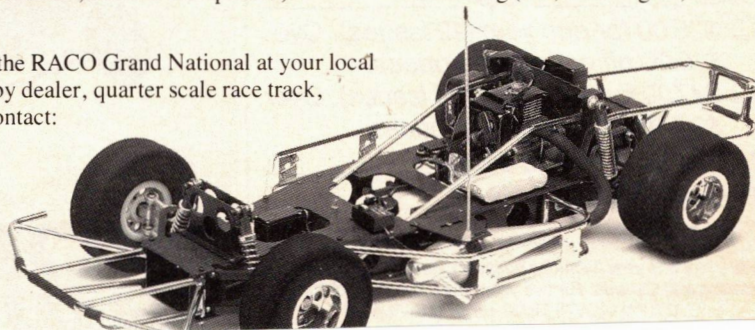
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**TABLE A
TOP 18 PACKS**

SC PACKS			SCR PACKS				
TIME	VOLTS	VOLTS	TIME	TIME	VOLTS	VOLTS	TIME
516	1.13	1.15	476	487	1.17	1.18	474
511	1.12	1.15	474	474	1.18	1.18	470
510	1.13	1.15	472	471	1.17	1.18	454
508	1.12	1.15	465	470	1.18	1.18	452
506	1.12	1.14	498	459	1.17	1.18	437
504	1.12	1.14	497	458	1.16	1.18	427
498	1.14	1.14	475	456	1.17	1.17	487
498	1.12	1.14	473	454	1.18	1.17	471
497	1.14	1.14	470	454	1.17	1.17	459
496	1.13	1.14	464	453	1.16	1.17	456
496	1.12	1.14	441	452	1.18	1.17	454
494	1.12	1.13	516	451	1.17	1.17	451
493	1.12	1.13	510	449	1.17	1.17	449
491	1.12	1.13	496	445	1.17	1.17	445
490	1.13	1.13	490	444	1.17	1.17	444
488	1.13	1.13	488	439	1.17	1.17	439
488	1.12	1.13	480	437	1.18	1.17	427
488	1.12	1.13	475	437	1.16	1.17	426

range of run time and assume that every six cells represent one six-cell battery pack.

Notice that there is a range of 32 seconds for the top six-cell SC pack based on the average volts. That is not all that close for a real good match. However, it is better than not having them matched at all as the batteries are maintaining their potential for a

closer uniform time than being an unmatched pack.

That may be the real value of this unit; checking your battery packs to know when they are going bad. With this unit you really can tell which cell is going down. All you have to do is rate each cell of a new pack and rate the pack as a whole also. Then

every now and then you would cycle your pack and if the results are close or equal to the original value then the pack is still good. However, if the packs value is down then you would need to check each cell to determine which cell or cells is/are going down. Then only those cells need be replaced.

There is only one thing that I found to be on the negative while using the Turbocharger and that is the display would be easier to read if it was placed on top of the unit at an angle. As it is you must either place it high up or at an angle to read it. In addition, if it did not cost an arm and a leg to do, it would be nice if the unit had an output device that would allow you to print a discharge curve without having to sit and watch the display for the entire discharge time. Also, I do not understand why there is no discharge cycle for a three cell-stick battery. With so many stick batteries in use, it would seem that this would be a very useful asset to this unit.

In summary, we all agree that matched packs perform better than unmatched ones and with the Turbocharger you can keep your packs as close as possible for maximum performance. However, let me be the first to remind you that a four-year-old matched pack will not outperform a new matched pack. Using the Turbocharger will allow you to keep your packs performing at their best longer than you thought possible, but eventually you will have to buy new packs to maintain your competitiveness. •

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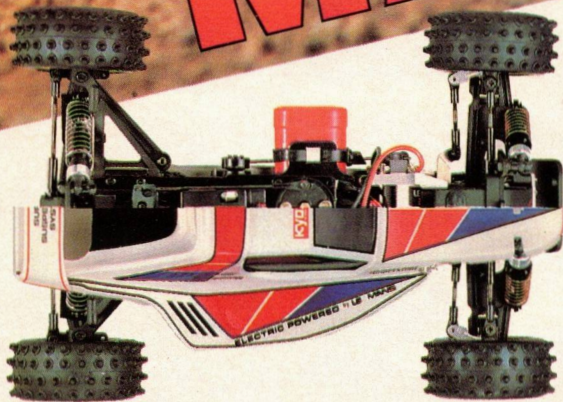
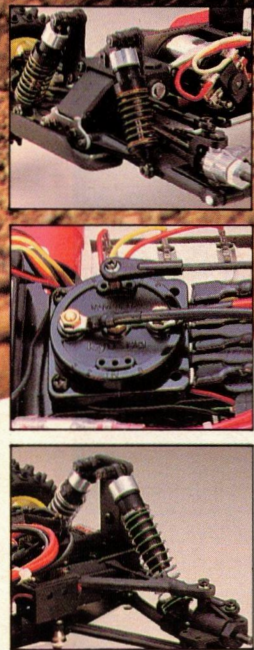
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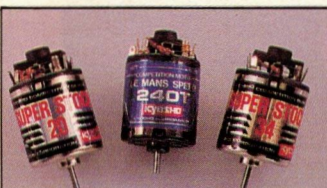
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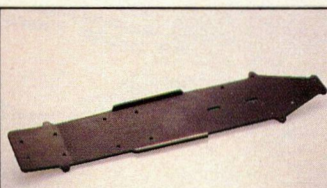


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PAINTING

PART 3

FLAMES & SURF GRAPHICS

BY MIKE OGLE



Classic Plastic

Street is neat. And nothing says "cruisin" better than a '57 Chevy built to the hilt, and Parma's got the goodies to create such a boulevard blaster. Like their '57 Chevy clear lexan body, colored and flamed with Parma paints.

The muscle under the hood comes from a mighty Sprint-wind Parma Yokomo modified motor, and keeping it cool, a Parma 360 degree motor heatsink. More than enough get-up-and-go juice from a high-powered battery pack of Parma matched Sanyos is fed through a Parma resistor speed control.

Burnout style torque is achieved with Parma's 10T steel pinion and 48T spur gears,

while wheel hop is controlled by a set of Parma teflon pistoned coil-over shocks and adjustable anti-roll bars. Traction action happens with meaty Parma rear sponge slicks and front smoothies mounted on sparkling styled chrome wheels.

Of course this Main street missile is just one example of the Parma-packed street machines that are possible. For help in building your "cruiser", send \$2.00 for the latest catalog of hot products from Parma that you can purchase at your local hobby dealer.

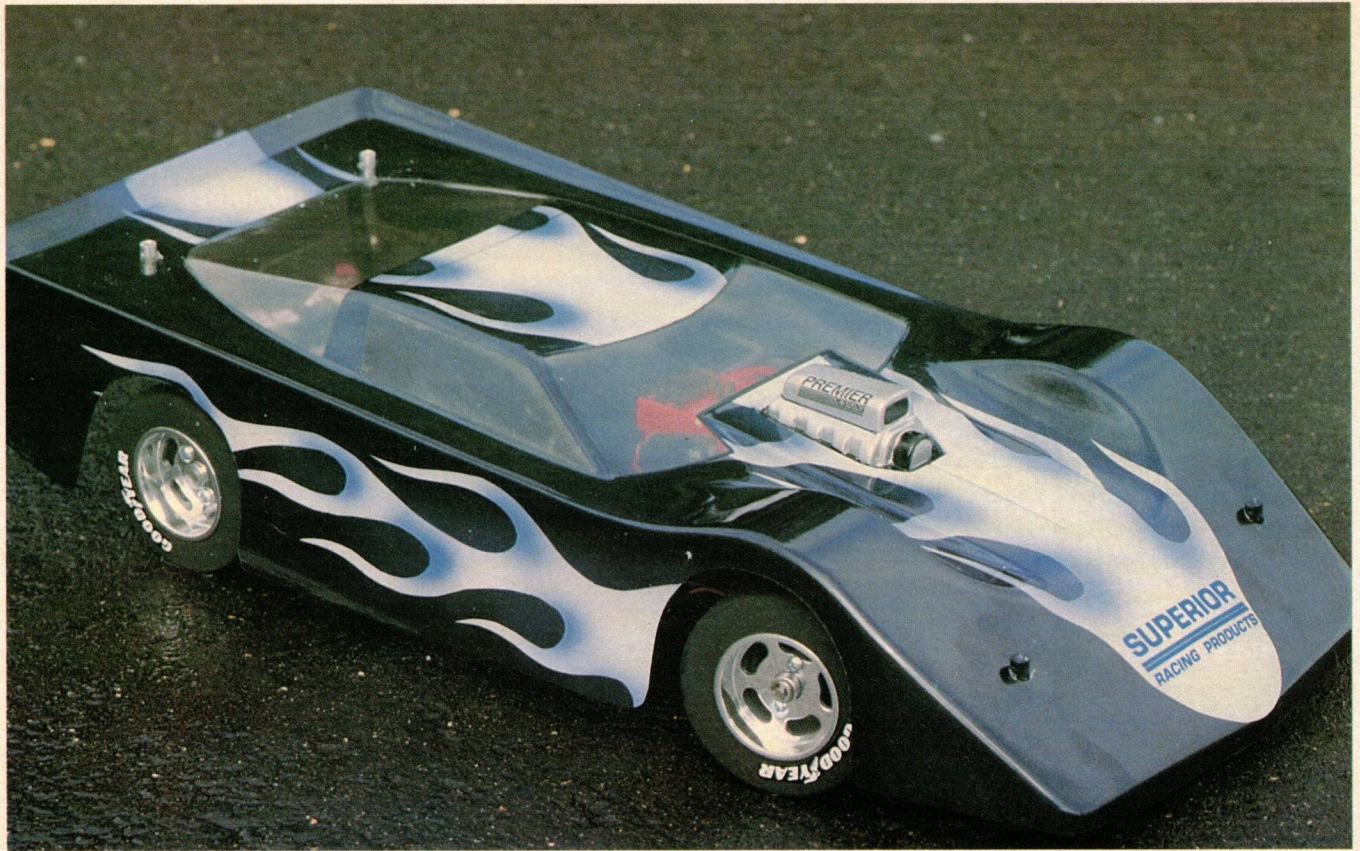


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Now that we've seen the possibilities and limitations of what kind of finishes can be done with spray cans, let's take a look at some trick techniques that require the use of an airbrush.

The basic trick that we are going to use to do these paint schemes is controlling your spray pattern to spray just the outside edges of your masked areas in the first step, and then filling these areas in with a different shade of color next. The big skill here to be developed is your "aim" with your airbrush. If

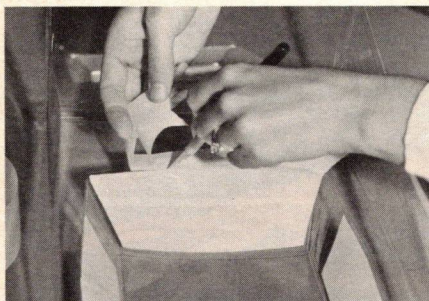
you're at all confident that you can get paint to go where you want it, you'll have no trouble with any of the upcoming techniques.

First, let's go step-by-step through a classic "flame" paint job. The two problems I see most often with flame paint jobs is that they don't accent the existing lines of the car, by using the car's natural contours to dictate the parameters of where and how the flames fall. The other problem is that the flames aren't shaded correctly to give them a rounded, dimensional look. Just spraying the

tips of the flames won't give you the classic effect you're looking for.

Let's start our flame paint job by masking out all your window areas. These are always the first things to be masked and the last thing to be unmasked. If you have any other scale detail areas, like the car's grille or lights that you don't want to have painted the same color as the body, you can mask them off now too.

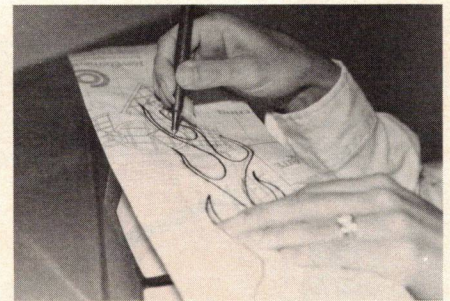
Now, before we tape, we observe. Turn the body over and take a look at the lines of



Mask windows using large strips of two-inch masking tape and trim to size with knife.



Draw flames on outside of body with Sharpie. Clean mistakes off with denatured alcohol.



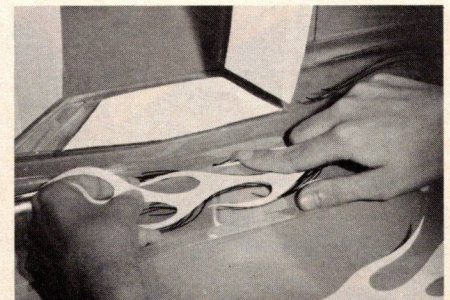
Now trace flames onto the back of a sheet of contact paper.



Cut out flames with scissors or a sharp hobby knife. Take your time when cutting!



Peel the backing sheet off the contact paper to reveal the sticky-backed vinyl.



Carefully position flames on inside of body using Sharpie guidelines on outside of body.

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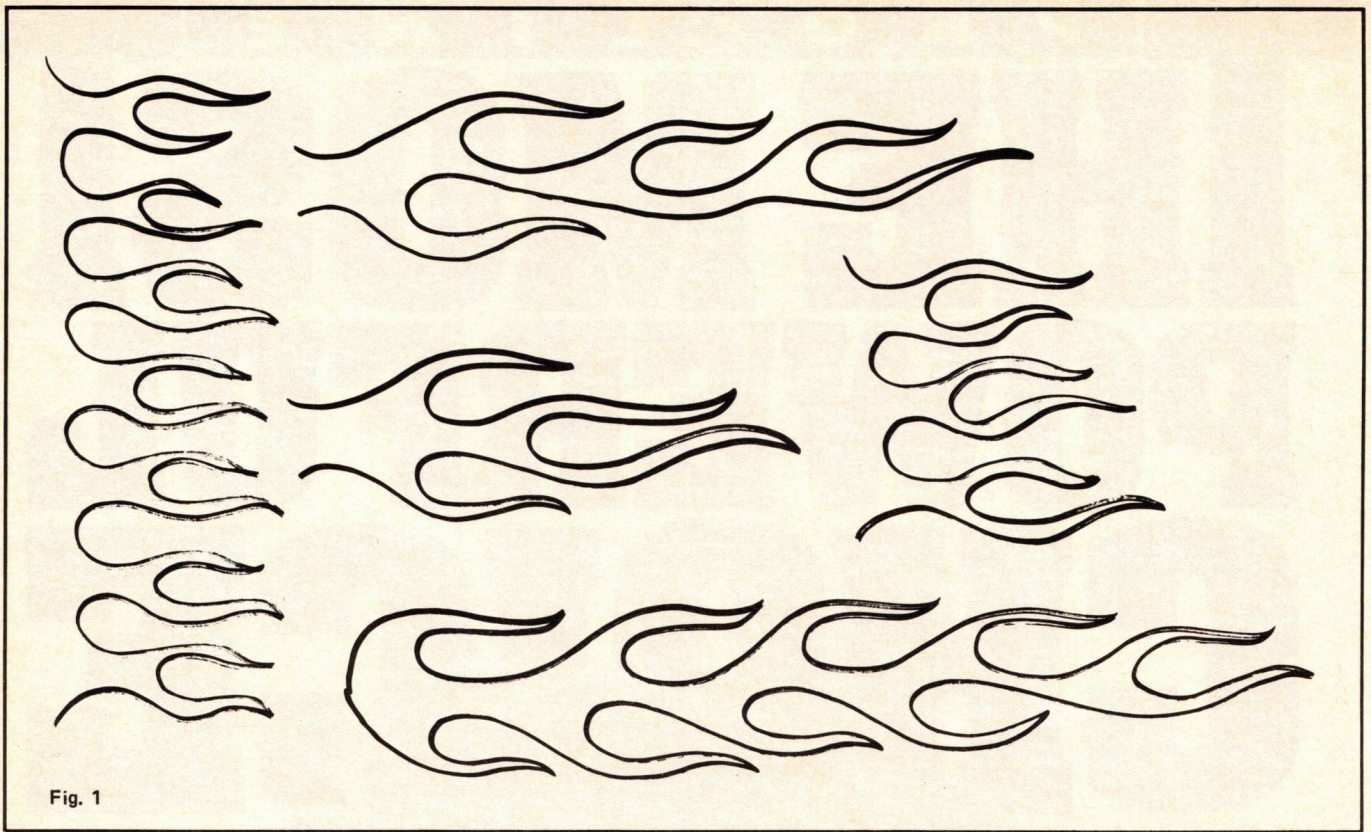


Fig. 1

the car. Can flames fit all across the front of the car, or is there an obstructing grille or something there? Will the flames go down the sides of the car? If so, how far back? Look for natural break points in the body to indicate to you where the flames should start and end. Every body is different, and if you take your time with this step and pay attention to making the flames "fit the car," you're sure to get better results in the end.

Take a "Sharpie" brand marker and draw your flame patterns on the outside of the body. As you know, denatured alcohol will

take these lines right off later. Figure 1 shows a typical short, medium and long flame patterns. Notice that they have slender, rounded shapes. These flames are not "clunky" and sawtooth-edged like some I have seen.

Once you get a sketch of the flames you want on the outside of your car, take a large piece of adhesive shelving paper (sold in most grocery and hardware stores; Con-Tact is one common brand name) and place it over your flame areas with the backing side up, and then hold the car up to a strong light, like you would do to mask the windows. You

should be able to see your flame's sketch through the contact paper well enough to trace their shape onto the backing sheet of the paper.

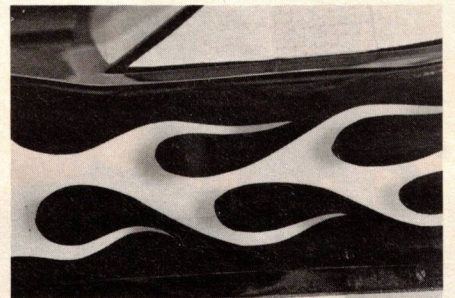
You can trace the flames onto the vinyl adhesive side of the paper, of course, but you shouldn't do this for a couple of reasons. For one, if you use a pen to do your tracing, you'll transfer ink to the inside of the car's body. Try tracing onto the backing sheet; you peel and discard it and the messy ink goes with it. More importantly, you will get a backwards (or more correctly) cut-out mask



Wipe down the body to remove tape residue and fingerprints.



Now, spray the main body color (in this case it's black).



Peel out the contact paper masks, leaving the clear flames.



Spray the tips and inner forks of the flames in red or some contrasting color.



Shading tips of the flames and forked areas gives a rounded, dimensional look.



Notice how the dark areas seem to be receding, and the lighter areas coming forward.

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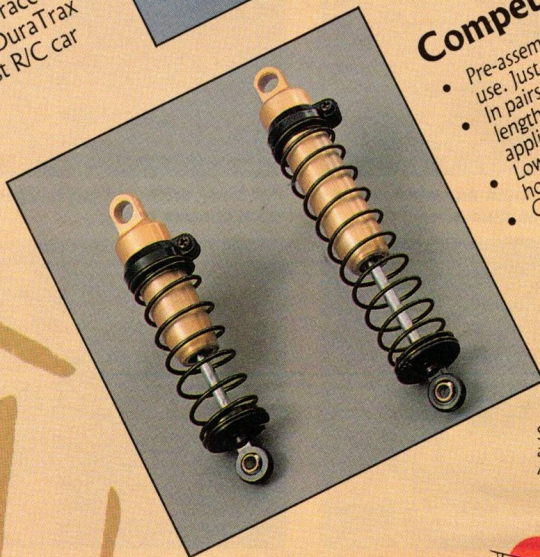
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because the flames are to be applied to the inside of the body, so the adhesive sticky-side of the paper should face up towards the backing sheet.

This may sound slightly confusing, but when you peel the backing sheet off your masked flame, if you haven't been careful you'll get a useless, backwards flame, with the sticky side in the wrong place.

Use a sharp hobby knife or scissors to cut out the flames. Just don't rush this and

you'll be more satisfied with the end results. This part of the paint job is tedious, but at least you're following traced lines.

When you're finished cutting them out, very carefully peel off the backing sheet of each flame, being careful not to let any of the thin "arms" of the flame double over and stick to themselves, and apply them to the underside of the car's body, using the Sharpie marker lines on the outside of the car as a guide to positioning. Smooth them out from

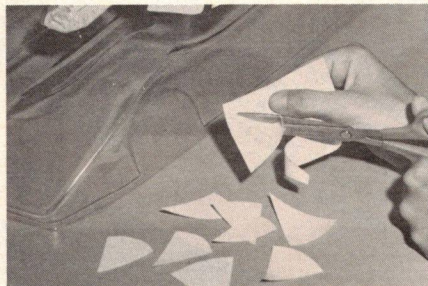
the front end of the flame, down each successive "arm" of the flame mask.

Once the masks are in position and smoothed down well, you're just about ready to paint. But first, take a rag and your denatured alcohol and thoroughly wipe out the inside of the body, removing any tape adhesive residue and fingerprints which could attract and hold paint particles of color where you don't plan for them.

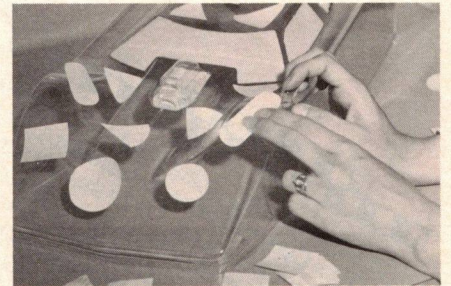
Now you can spray your main body color.



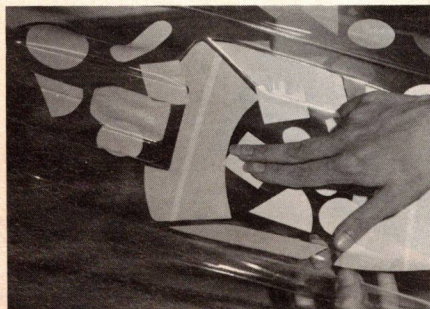
For surf graphics look, mask out windows and any other details first, as always.



Put body aside and cut out geometric shapes from contact paper.



Lay these shapes on car to get some idea of the positioning.



Now peel off the backing and press them, adhesive side up, to the inside of the body.



Next tear a wide strip of masking tape in half lengthwise, the more jagged, the better.



Place jagged-edge strips inside car. This will make your "tear" in the body.

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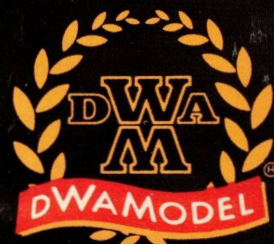
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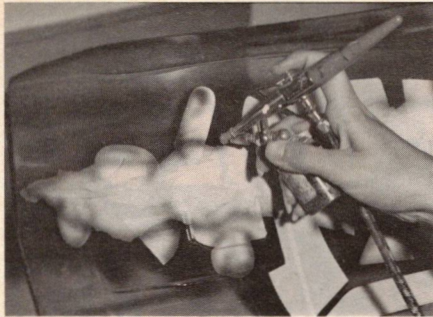
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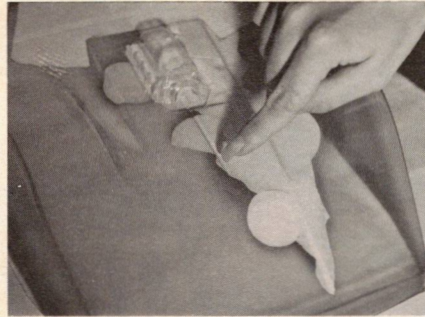
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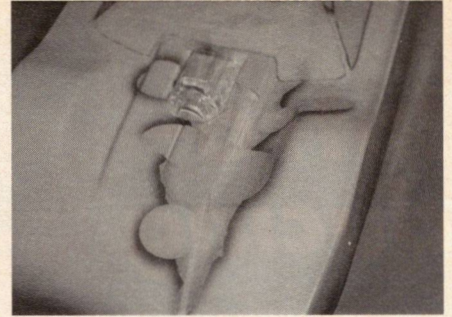
Photo courtesy of LIVE Performance



Spray black or dark color around edges of the tear and all of the geometric shapes too.



This forms a shadow and makes the shapes appear to stand above the basic body color.



Now spray basic body color. I fogged a little blue around bottom edge of body.



Now peel out jagged-edge tape and outline the jagged edges with a brush or paint marker.



Spray the rest of the tear in black or a similar dark color.



Peel out each geometric shape and edge it with a dark red or orange. Just around the edges!

Choose something to contrast with the color you plan to paint your flames. I usually prefer to make flames light in color; white, orange or yellow and make the car's body darker. Whenever I see dark flames on a lighter-colored body, they look like "vines" or some alien growth to me. In this case, we'll do a classic black car with orange and yellow flames.

When your basic body color is fairly dry, peel out your flame masks, leaving the flame areas clear, and wipe them out carefully with denatured alcohol to remove the contact paper's adhesive residue.

Now, adjust your airbrush to spray a small thin pattern (about 1/4-inch or so) and spray a "dot" of orange right in the fork of each flame as shown in the photo. Also, at this time, spray the very back tip ends of the flames orange. These two steps give your flames their depth and dimension. Finish by spraying the whole flame area in yellow. Remember, no matter what color you want your flames to be, make the forks and the tips a darker shade than the rest of the flames for a dimensional look. If you used blue for your flames, for example, use darker blue in the forks and on the tips, then mix in a few drops of white for the rest of the flame area.

Finish off the car by unmasking the windows and wiping off the Sharpie marker on the outside of the body.

Now that you've got the idea of using lighter and darker shades to get the illusion of depth, let's go into a real perspective trick with a surf graphics-style paint job.

The wedge oval racer in the photo belongs to Martin Buchanan, winner of the Reedy Oval Race of Champions at Racer's Haven in Bakersfield, California. It features a variety of floating square, triangle and circle shapes over a basic pearl white paint scheme. If your aim with the airbrush is pretty good, you'll be amazed how simple this paint job is to do.

Start by, you guessed it, masking out the windows. Now, set the car's body aside for a few minutes and get a big piece of contact paper. Using your scissors or a hobby knife, cut out six-to-ten of each shape you want, squares, circles, triangles, diamonds, or whatever you want. Then take them and lay them on the outside of the car to get an idea of how you want to arrange the shapes. You can be pretty random with this, and it will still look good.

Now that you've thoroughly eyeballed the positioning of the shapes, start peeling off the backing sheets and apply them to the inside of the car's body. Be careful to smooth the shapes over any ridges or contours in the body. The vinyl-based paper will easily flex and form to most contours, and it won't soak up paint, leaving a good, sharp line when peeled out.

Next step, take your wide masking tape that you used to mask your windows and peel off a strip about as long as the car's body. Now, carefully tear it in half lengthwise. The more jagged you tear the shape, the better. Apply these strips of tape to the inside of the car with the straight, untornd sides facing each other, as in the photo. Go ahead and put it right over any of your cutout contact paper shapes that may fall wholly or partly underneath it. Be sure to tear the pieces of tape to a point at the front end to give the illusion of a rip forming in the car's body, and tape in any space left unmasked between them.

At this point, the car doesn't look like much, but the masking is complete and it's time to start spraying - after a thorough wipe-down with denatured alcohol, of course.

Start spraying by taking some dark blue or black paint with a small (again 1/4-inch or so) spray pattern and spray down the whole jagged edge of the masking tape strips you just applied to the body. Now, very carefully, spray an edge of your cutout shapes to form

their "shadows" on the basic body color. On square shapes, spray two edges, on triangles, one or two edges and on rounded shapes, spray halfway around, or a little less. If you turn the body over, you'll see what effect this is making. By spraying a small, dark edge next to the shape, you get a close shadow that makes the shape look as if it were floating just above the surface of the car, and casting this shadow. Increase the size of the shadow and the shape looks as if it were farther above the surface of the car. Don't get carried away with this, just vary the shadow's size enough to give variety.

That was the tricky part. Spray the main body color now. Lighter main body colors will show the shadows you just sprayed better, but medium-toned colors (medium reds, blues, etc.) will work too. The effect will just not be as pronounced. When the main body color is nearly dry, peel out that jagged-edged masking tape. If you got a little paint that crept under the torn edges, it won't really show on such an already jagged edge. Take a brush and "edge" this jagged line with a light color, silver or gold. When using silver or gold, you'll get that ripped "metal" edge look. You don't have to be particularly neat at this stage. Make this line as ragged as you want. I used a broad-nib silver Tamiya paint marker to trace down the ragged edges and it gives great results, although it has a tendency to be TOO neat.

Now spray the entire "tear" area in some dark color or black. This is the dark "crevasse" that is forming through the car. All that's left to spray now is the small cutout shapes of contact paper.

Take your hobby knife and work it under the edge of the various shapes to lift them off. You can unmask them all at once if you want all the shapes the same color, or you can half of the shapes, or all the squares, or however you want to break up the different colors. I usually do one-third of the shapes

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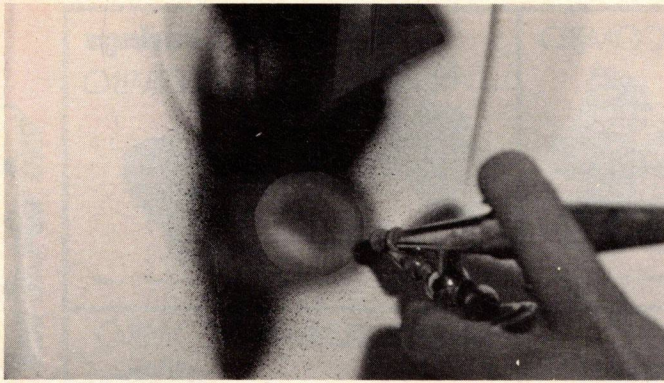
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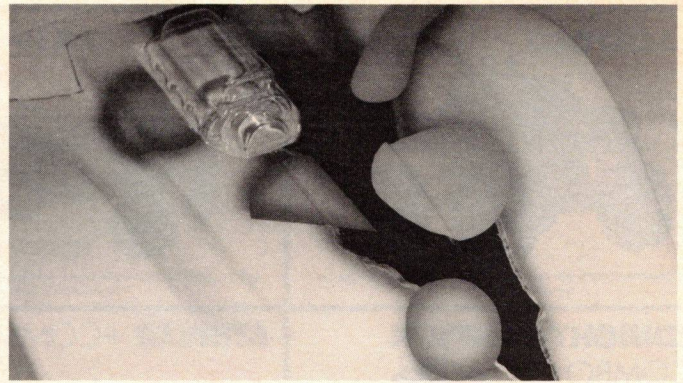


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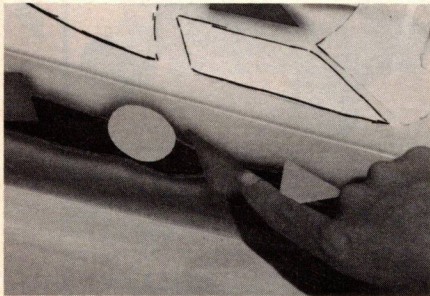
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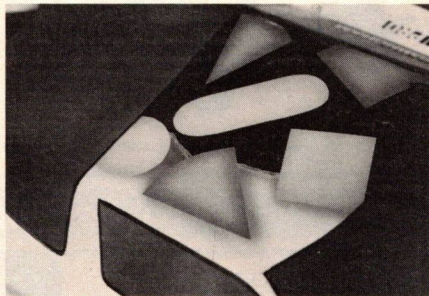
Now spray a lighter color into the rest of the geometric shape.



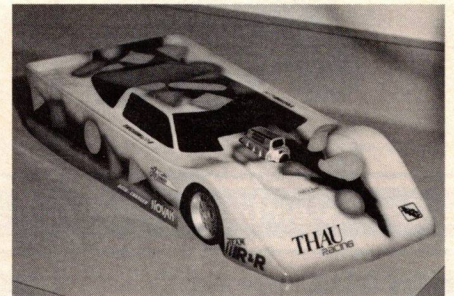
This rounded, dimensional look is what makes this paint scheme work.



If you don't spray the shapes' edges darker, they will be flat-looking, like this circle.



Differently shadowed shapes appear to float over the car's surface at different heights.



Finish by detailing the body. It looks pretty wild, but it is fairly simple to do.

one color, the next third another color and the last third of them a final color, just for variety.

To spray these shapes, first gently wipe them with alcohol to remove any contact paper adhesive residue. Then, take a darker color (I used red) to spray around the whole inside edge of the shape, leaving the center clear. Do this to all your unmasked shapes the same way, around the edge only.

Now you can go ahead and spray the rest of the shape with a lighter color, like yellow,

white, orange, or even a lighter red. Once again, you can see how this gives a three-dimensional effect to each of the shapes. If you choose not to spray the shape with a darker color around the edge first, your shapes will look okay, just "flat."

Of course, you can use any colors you want to do any of these areas. Just remember that we're imitating true-to-life, three-dimensional shapes that always have a dark, shaded edge to them and, because of the way light naturally falls, always shadow what

they're in "front" of. This effect of simulated dimension brings an eye-popping depth to your paint scheme.

Have fun and experiment with these techniques to create your own original paint job. Keep refining your own "signature" paint scheme on your successive cars and you build a strong identity for your car and yourself. And you're not likely to be missed by whoever counts laps. You sure won't be ignored on the starting line either!



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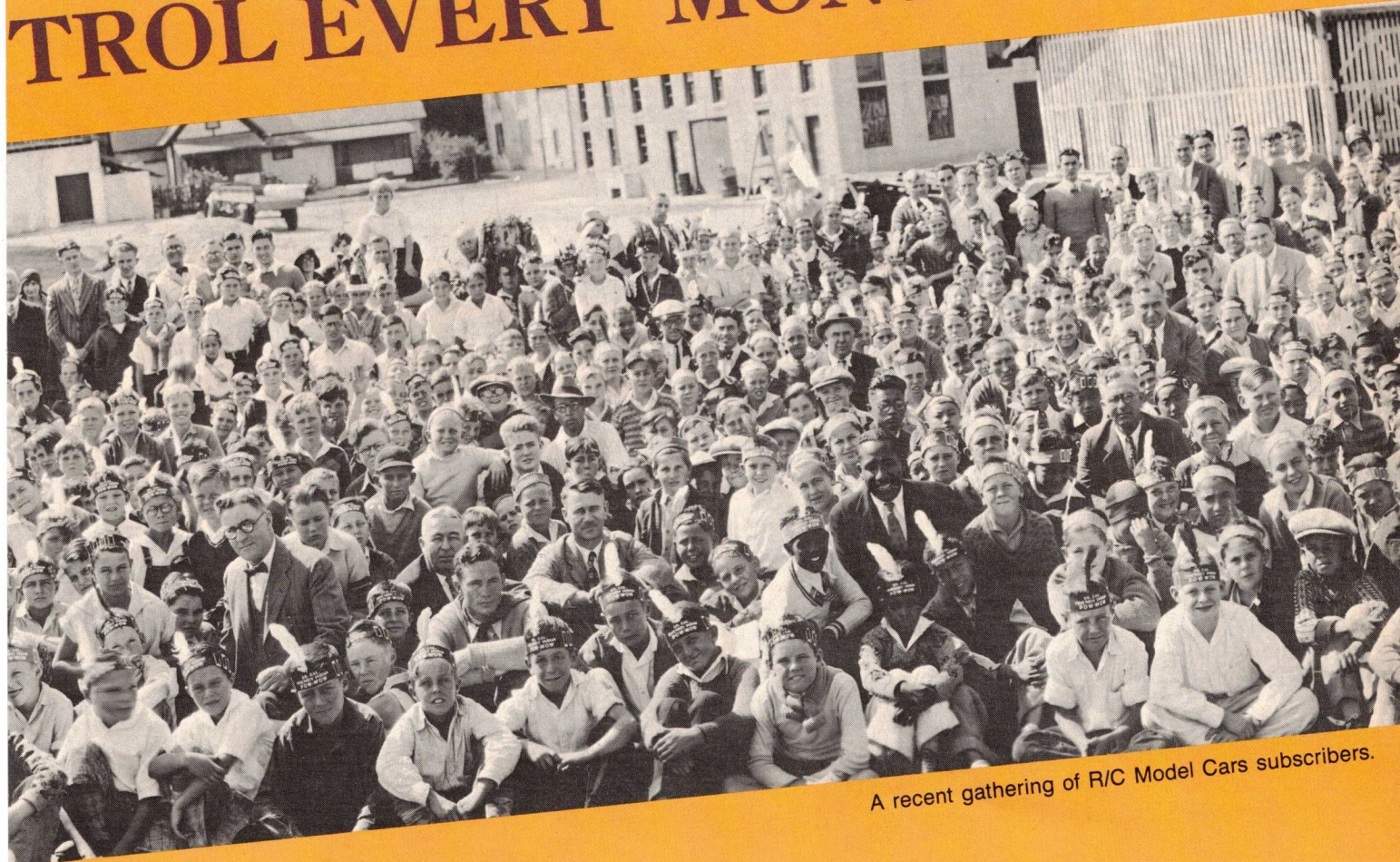


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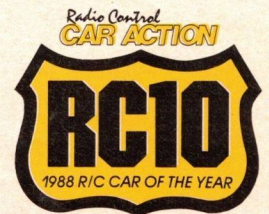
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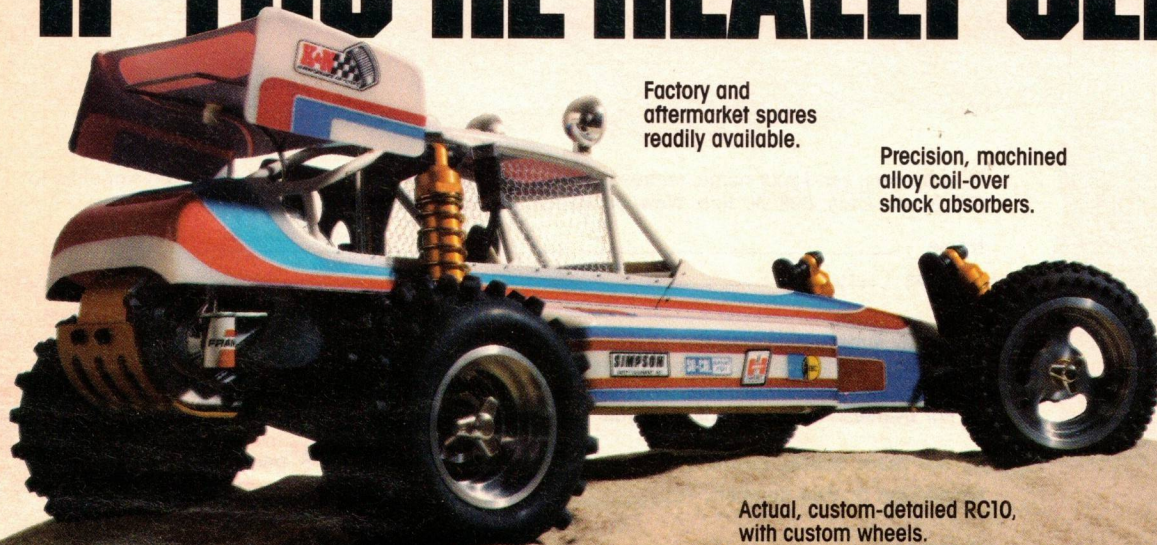
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Associated cars win more than just the biggest races, too. Readers of *Radio Control Car Action* magazine voted the RC10 the 1988 R/C Car of the Year, and by a resounding margin of six to one over the second place car! Thank you very much, readers. *Radio Control Car Action* also held a shoot-out between the RC10 and the next most popular car, and the RC10 came out a winner again!

And at the Reedy Race of Champions (called a re-run of the World Championships because all the drivers from *Europe*, *Japan*, and the *USA* who made the A Main at the

World Championships were present), the RC10 finished first and second.

Racers, readers and dealers all agree. Performance, reliability and readily available spares make the RC10 a big Number One.

Whoops, gotta go now. I want to watch *World Champion Jammin' Jay Halsey* take a victory lap with his RC10.



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RACE TECH INDY *Racer*

An almost-ready-to-run Indycar in quarter scale

BY AL NOVOTNIK

Quarter Scale cars are on the move! First it was the sprint cars, then the Grand National Stock cars, quarter-scale midgets, dragsters, and now, make room for the Indy Racer, brand new from the ground up from Race Tech of Leesburg, Virginia (703) 777-9565. The car was designed by professionals from the world of full-scale race cars.

The big difference between the other cars and the Race Tech Defiant is that this car comes to you assembled; it's not a kit. It's also not small. The Defiant stands 10 inches tall at the roll bar, has a total length of 46 inches and a width of 18-1/2 inches. This is a vehicle that can reach scale speeds in excess of 200 mph.

The only thing you have to do when you receive the Defiant is to paint the body in your favorite colors, add your radio system, and in no time at all, you'll be ready for the races.

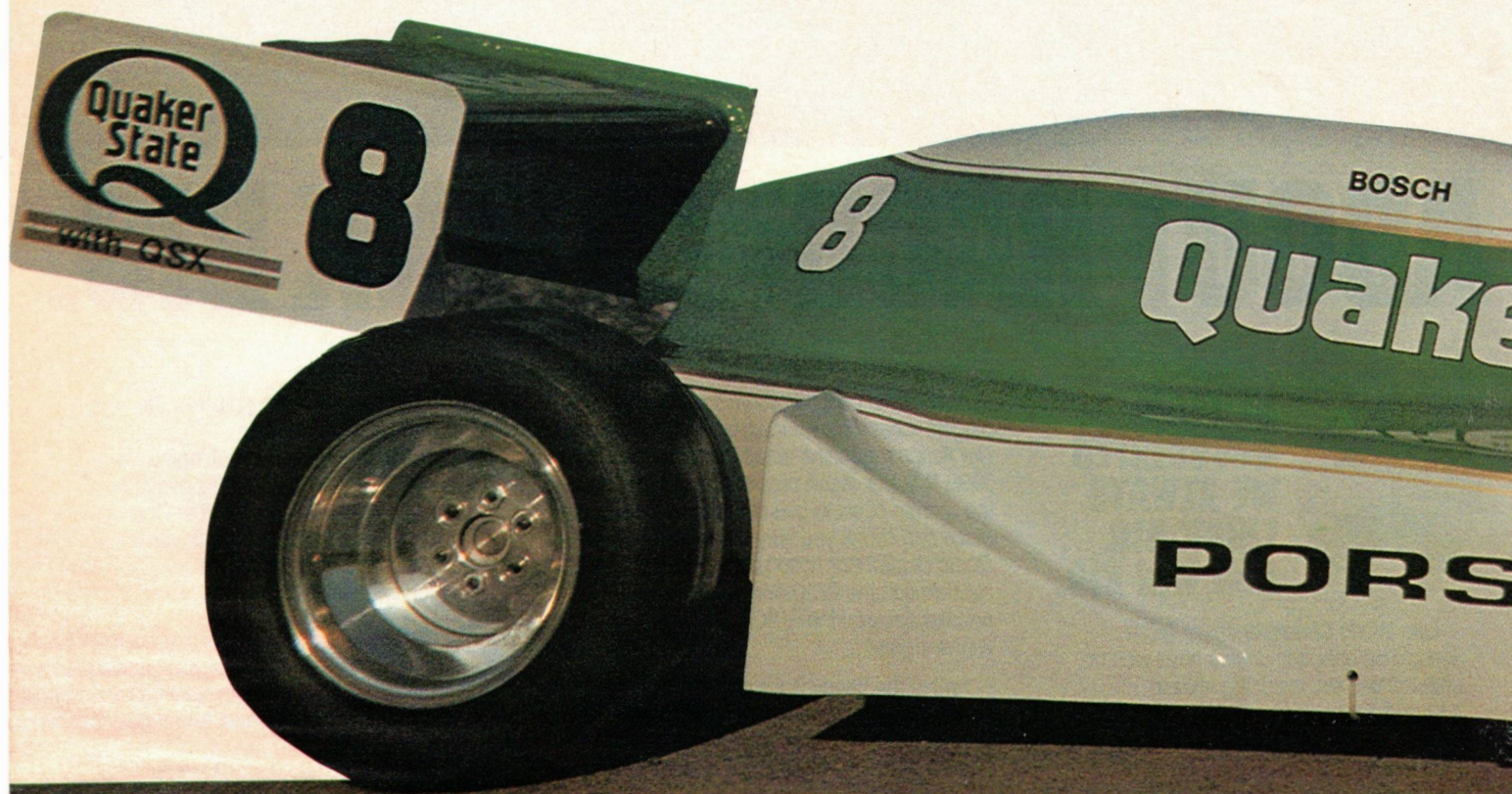
When you open the huge box that the Defiant is packed in, remove the body and nose cone and you'll see the workings of your new Indy Racer, including a rugged chassis constructed of welded square steel tubing and 3/8-inch round tubing. Outriggers are also 3/8-diameter tubing welded to the frame to support and mount the body.

A husky aluminum plate is bolted to the rear of the chassis with socket and cap screws and locking aircraft-type nuts. Mounted on the rear of the plate is the multi-gear quick change gear box. The housing is molded from rugged composite material. There is an aluminum bar on top of the motor mount that mounts the top of the shock absorber; the shocks are oil-filled and adjustable. The motor plate also supports the aluminum link between the motor plate and the bird cage (axle housing), and the lower shock attachment bolts to this bar.

Fastened to the rear of the gear box are two stainless steel drag lines on each side of the car with spherical joints on each end. The other end is fastened to the bird cage. The spherical joints are fully adjustable. Heavy-duty ball bearings are used in the bird cages, and rotating within the bird cage is the rear wheel axle housings. These are connected to the gear box with a half shaft with an universal joint on each end.

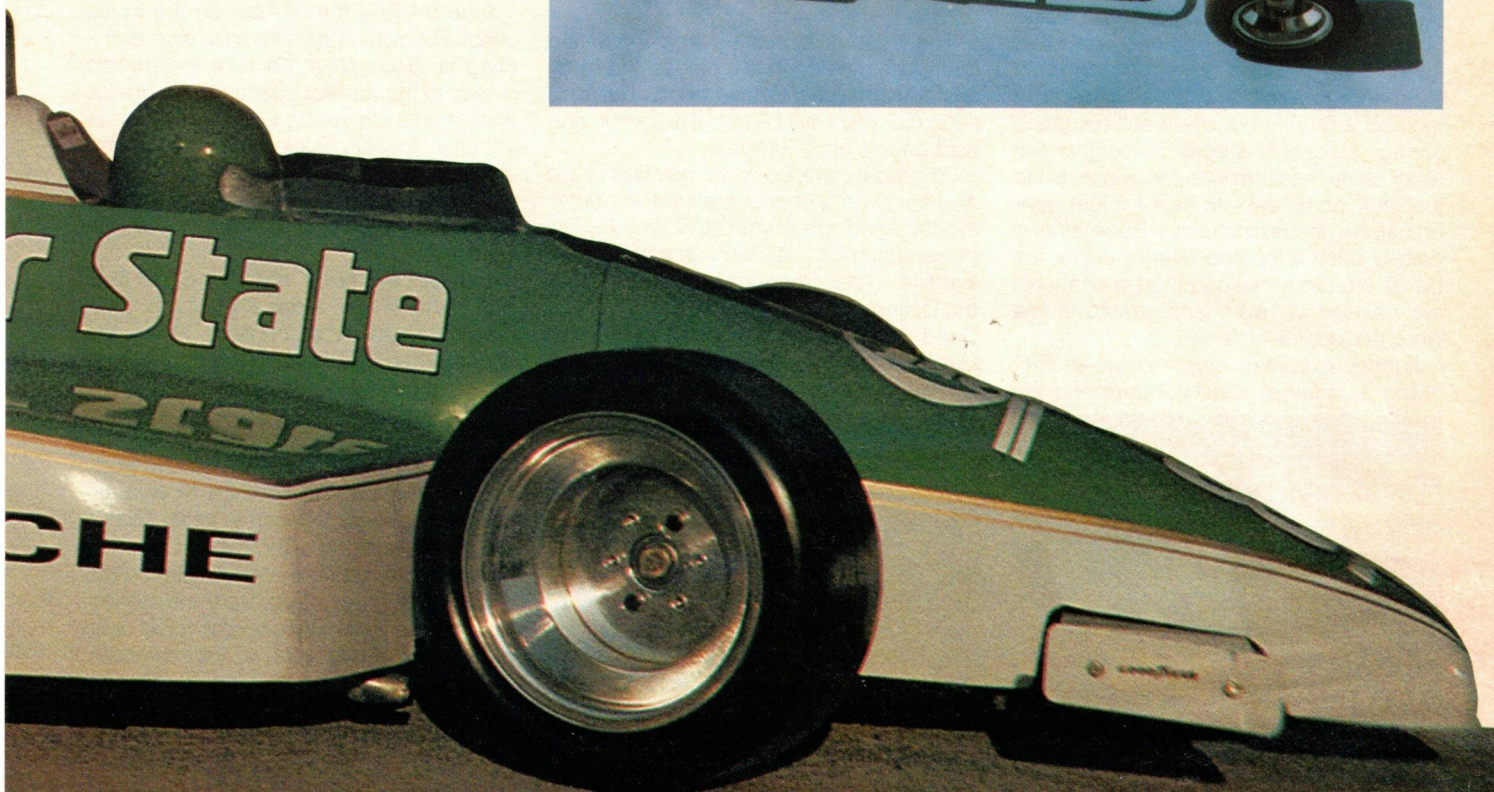
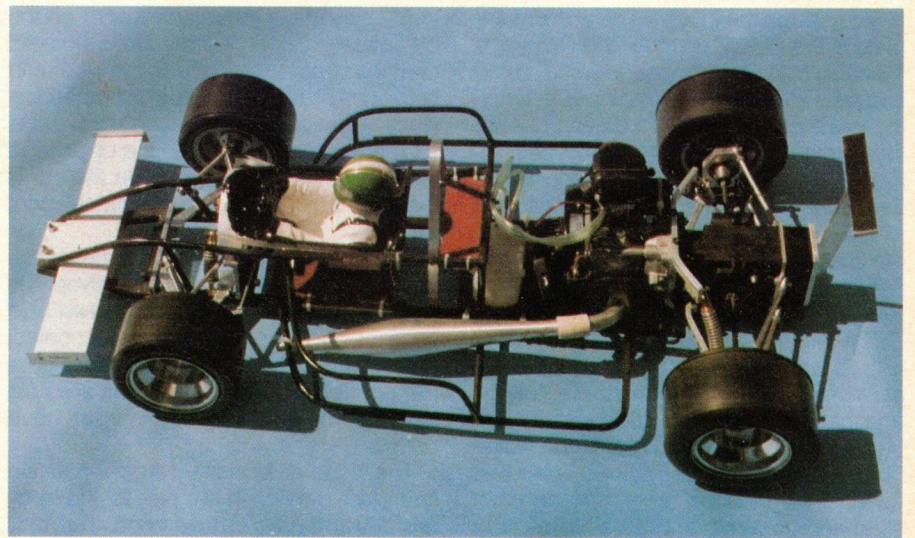
Also mounted on the extreme rear of the gear box is the support for the adjustable rear wing. The wing is fabricated from thin aluminum sheet stock and held in place with velcro. The velcro is used because it makes the wing easy to remove for transportation, or in an accident, it will easily come off and not be destroyed.

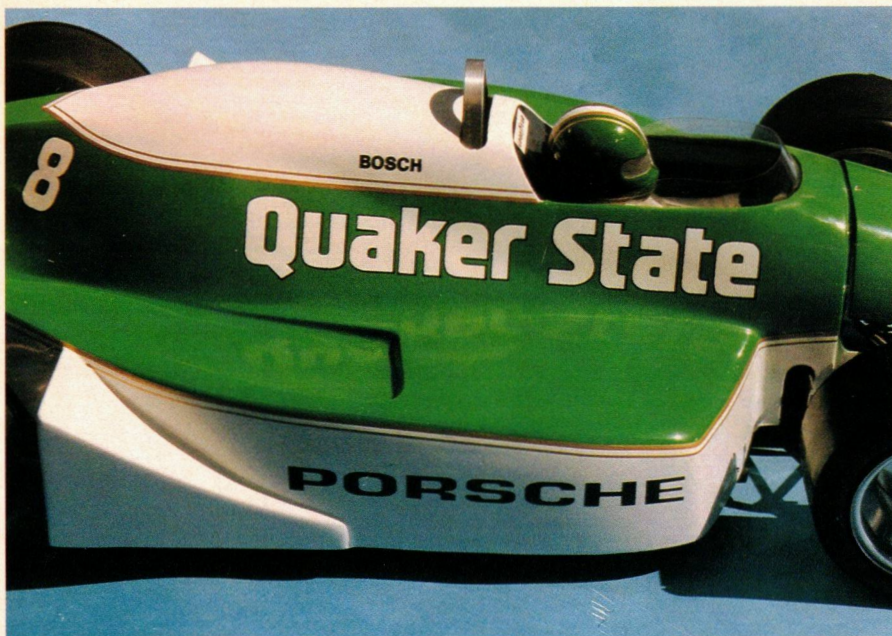
Mounted on the left side of the gear box is the fast-acting disc brake assembly. This is actuated by a rod from the throttle servo. When you go into low motor position, the



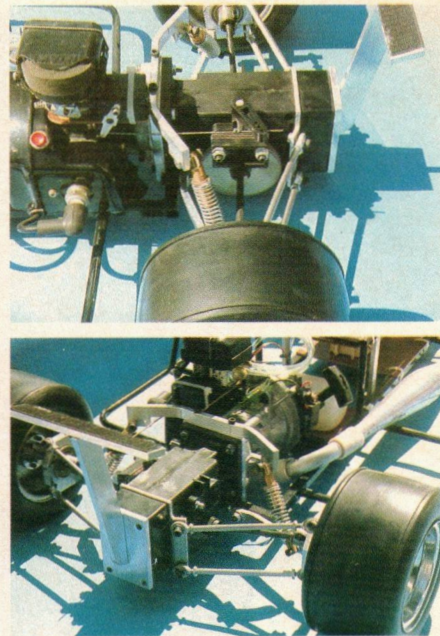


Teo Fabi at the wheel of the real thing, the Quaker State Porsche Indycar. Below, Race Tech's version in 1/4 scale, showing chassis and 1.3 cubic inch gas engine. Scale speed is about 200 mph.





Paint for the replica Porsche Indycar was custom-mixed by a PPG dealer to match the Holbert Green color used on the full-size racer. Stickers were custom made for the author.



Racer comes with Zenoah engine installed; add your servos and receiver, and gas 'er up!

disc brake actuates, providing quick slowing down of the Defiant.

Mounted on the forward side at the motor plate is the power plant for the Defiant; a 1.3-cubic inch Zenoah gas-powered racing engine. Fitted onto the engine is a housing that encloses the clutch assembly. Also, the engine has a pull-starter for ease of starting. Another thing in addition to the Zenoah engine is the tuned exhaust pipe to give you the utmost in power. Fitted to the Zenoah is a carb with a built-on choke assembly and air cleaner (a must when running on a dusty track).

The throttle servo is mounted on a plate with tie wraps, and is located just aft of the carburetor, connecting the throttle linkage and the brake assembly. The steering is the heavy-duty type with the linkage connected from the servo to a molded arm that accepts the steering arms, one on each side, and connected with ball joints. The molded arm also houses a self-centering spring. Mounted directly in front of the recoil starter assembly on the engine is the fuel tank, complete with Kwik-Fill fuel valve and all the necessary tubing. Receiver and battery pack is located directly under the driver. No fancy radios or extra channels are needed. A two-channel radio is just what the doctor ordered.

Further up front on the chassis is another heavy aluminum plate that supports the

upper shock attachment and one side of the lower A frame. The other side of the A frame support is mounted forward on the chassis, the upper A arms are supported from the plate assembly, and the other end is supported off the chassis with spherical joints. The steering arms and front wheel supports are held between the upper and lower A arms. Way up front on the car is the fully adjustable and functional front stabilizer.

The wheels on the Defiant are metal spinners, and each wheel has two halves. The tires are mounted between the two half-sections and glued to the rim with contact cement. If this is not done, the tires will leave the rim at high speed. The rims are held in place on the car with socket head screws.

The body is fabricated from hand-laid fiberglass molded in two pieces, the body and the removable nose cone. The only thing that you have to do to it is paint it, and add decals and numbers.

To prepare the body for painting, sand and spray on a coat of automotive primer. Lightly sand the primer and look for pin holes, which can be filled with any automotive filler. (After filling and sanding, I gave the Defiant body one more coat of primer.) Sand well, and prior to painting the final colors, make sure the surface is smooth, then wipe down the car with a tac rag. Now

you're ready for the color of your choice. I chose to use acrylic enamel which is a two-part mix. The paint is rather expensive and you must have proper spraying equipment for the job. But any spray method you are familiar with will work just fine.

To tape off between colors, I have found that black electrical tape works fine. When painting is completely dry, add the decorations, numbers, etc., and glue on the windscreen. Now the body is complete. Install the velcro on the body and chassis rails to secure the body in place.

The driver area of the Quaker State Car is filled with a vacuum-formed driver complete with his hand on the steering wheel and a helmet that can be put in any position, thanks to a small piece of velcro.

Before trying the car out on the track, check the radio system to make sure everything is functioning; be sure the throttle moves in the correct direction, the brakes work, and the steering turns the wheels in the right direction. Backwards could be disaster. When satisfied that everything is okay, it's off to a big parking lot (asphalt of course), or local track that lets you run 1/4-scale.

Remove the body and fill the fuel tank with Kwik-Fill fuel, a gas and oil mix. Turn on the transmitter and receiver, move the choke arm on the carb to the choke position, and pull the starter a couple of times. When the engine fires, put the choke in the running position and one more pull on the starter should get it running. Put the body back on the car and ease the throttle forward, and the car will start to move. Gently feel the car out on the throttle and steering before full-throttle racing is attempted.

Driving the car, I was very impressed. The throttle response couldn't have been better; the Defiant is a very smooth-handling car with no bad habits. Why not get started in 1/4-scale Indy Car Racing? Try it, you'll enjoy it!





WINTER GAS CHAMPS

This is one of the year's biggest gas races, along with the ROAR Nationals and the Annual McCoy race. And if this event is any indication, gas racing is going to be bigger than ever. Last year there were 80 entries for this race, and this year it went over 100.

The Ft. Myers R/C Car Club holds this race every winter on the parking lot of Edison Mall. It's an ideal location, right on the two biggest streets in Ft. Myers, with plenty of spectators. The track is large, compared to some other tracks, but is just about the right size. A liberal sprinkling of sugar water brings the traction right up. Tires wear a little bit the first couple days, but after that, tire wear is no problem.

The majority of the racers come from all around the country to this race. It's easy to see why. There was a large winter storm coming from Alaska, down over the United States, just as these racers were leaving to come to Florida. In Florida they were greeted to 80-degree weather, and by their fellow racers from around the country.

The event was divided into 2 classes, 2WD and 4WD. The experts run in the 4WD class, leaving the 2WD class open for amateurs.

There were about 40 2WD cars and about 60 4WD cars. A lot of guys will start off in the 2WD class, while they're learning all the fundamentals. Then later on they'll convert their cars to 4WD and race with the fast guys.

1/8-scale gas racing is alive and well; that was evident in Florida as most of the big names in 1/8-gas showed up for the Winter Championships.

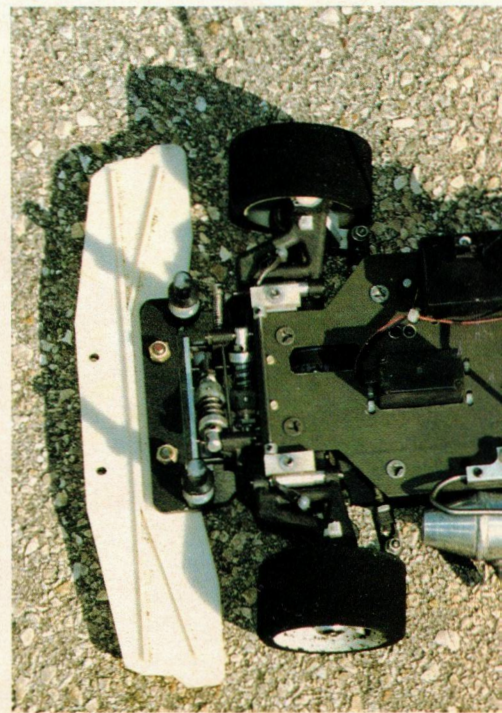
For the first two days of practice, the weather as perfect, 85 degrees and sunny. And the track was full of cars. Most of the guys in the northern states hadn't run for months, so they were really looking forward to some driving time. Everybody had a chance to go around and see what's new. These are the pure fun days. It always takes

a couple days to get the cars dialed-in the way the driver likes.

The next day, the front edge of that Alaskan storm hit Florida, with intermittent rain all day. So what was the most exciting thing we did all day? Water balloons. Not just your ordinary water balloons. Chuck Moon had a slingshot that was so strong it took three guys to work it. We must have set an all-time water balloon record. They were going at least the length of a football field. No, we didn't wipe anybody out. We were only shooting for records. It was quite unbelievable how far they went.

The first day of qualifying, it was 45 degrees, very windy with rain in the morning. The night before, they were showing the icicles on the orange trees on TV. This is Florida we're talking about here. But we still managed to get one round of qualifying in under cold and windy conditions. Cliff Lett simply ran away with this first round, turning 18 laps in 5 minutes 13.9 seconds. Re-Pete Fusco was next with 17-5.04 followed by Chuck Moon from Tampa with 17-5.08.7.

The last day of qualifying it was still cold; 45 degrees and windy, but there was no rain, so we were able to get in four rounds of





COMPETITION

BY GENE HUSTING

qualifying. Cliff Lett started things off with the quickest time in the next round with a 17-4.55. He ran out of fuel, and the same thing happened to Butch Kloeber with the second spot at 17-4.59. And Bobby Horan, a young Florida racer followed with 17-5.08.

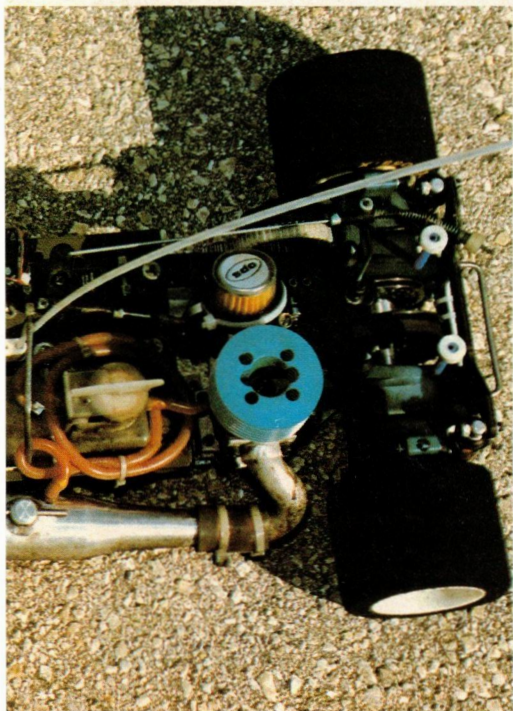
In the third round Cliff Lett led the way again with a fast 18-5.13, followed by Re-Pete Fusco with 18-5.10. Ralph Burch Jr. finally got his car working right the next round and took the top spot with a very quick 18-5.06. Re-Pete followed with an 18-5.10 and Butch and Cliff both turning 18-5.13.

In the final round Ralph went a little quicker to take the Top Qualifier honors with an 18-5.05 with Butch just a couple seconds back at 18-5.07 and Cliff turned another 18 laps.

Main event day the weather was perfect, 65 degrees, sunny and no wind. This brought the spectators out. Steve O'Donnell and Rich Lee were busy preparing Re-Pete Fusco's and Butch Kloeber's cars for the main, while Ron Paris was continually helping people. Incidentally, Ron Paris and Team Associated have made a new two-hour video, "How to Tune Your RC500 Car and Engine" that is a must for anyone who races any gas car. It



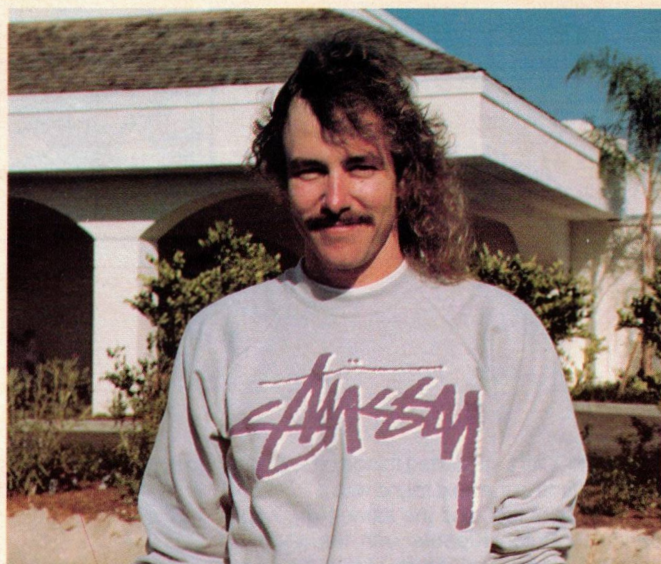
Above: Ralph Burch Jr. was TQ and winner of the 4WD Main with his RC500, powered by Paris-NovaRossi with a Futaba radio. Opposite page, left: Jerry Owens, "Mr. Goodyear," certainly earned the title! He built the best tire truing machine around, then spent all his time truing up tires for the racers. He doesn't even get a chance to drive! Center: Re-Pete Fusco's RC500 4WD car was built by Rich Lee and Steve O'Donnell. Power is from an O'Donnell-NovaRossi with a special O'Donnell muffler. Bottom right: There's a 40-mph short straight leading into this corner, with only enough room for one car in the right groove. These four didn't make it through as one.



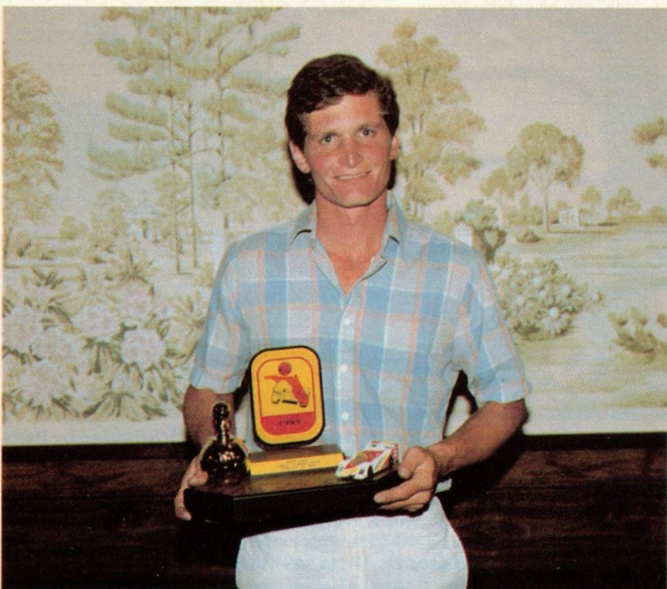
WINNERS' CIRCLE



Bob Card won the He-Man class, the 2WD "A" Main with his RC500 powered by an O'Donnell NovaRossi.



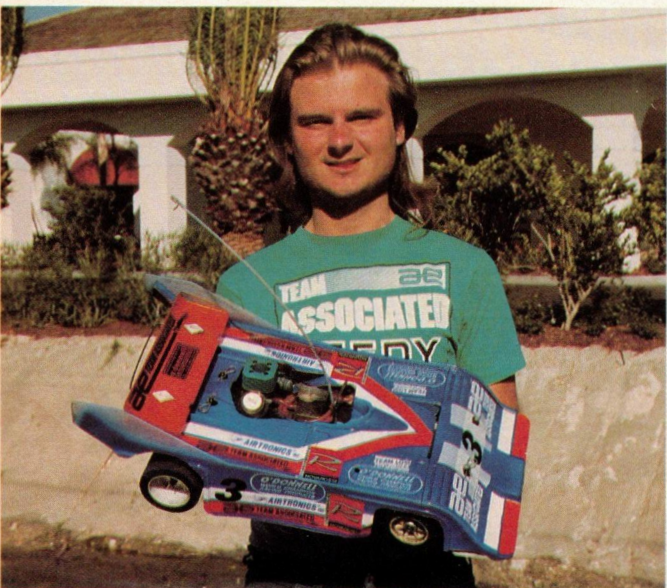
Mike Burnett was Top Qualifier and took 2nd in the 2WD "A" Main with his Cook car powered by NovaRossi.



Mark Botto took the 3rd place trophy for the 2WD "A" Main with his O'Donnell-NovaRossi-powered Cook racer.



This guy can drive anything! Cliff Lett took a well-deserved 3rd place with his RC500 4WD Paris-NovaRossi combo.



World Champ Re-Pete Fusco had to settle for 2nd spot with his RC-500 4WD, powered by an O'Donnell NovaRossi.



Curtis Husting won the 4WD "B" Main with his RC500 powered by a new Paris-NovaRossi REX engine.

will certainly help you to go faster. The video is available from Associated.

You could see all the drivers busy trimming and detailing new bodies. Others were checking over their cars to make sure everything was O.K. Some were truing tires. Everybody was busy doing something waiting for their mains. The Ft. Myers R/C Car Club, with Jim Rice and Dennis Barry, were keeping things running smoothly, as they always do. They all deserve a lot of credit for running such a big race like this every year.

2WD "A" MAIN

A lot of the 2WD drivers like to say, "The 4WD cars are for sissies. Real men drive the 2WD cars." It's hard for anyone to argue with that. Learning how to go fast with a 2WD car is tougher, so it will make you a better driver. I don't want to say either one is harder than the other. It's easier to go faster with a 4WD car, but that also means that it's easier for your competition to go faster with their 4WD car too. So in the end the fastest guys still do the winning, in either class.

But if you've driven 2WD cars, it's easy to appreciate good 2WD drivers, because you understand all the problems. So when Bob Card won the 2WD "A" Main, he's earned a lot of respect from his fellow 2WD, as well as 4WD, racers. Mike Burnett, who was Top Qualifier, couldn't quite catch Bob and had to settle for second spot. Mark Botto took third place.

2WD "A" MAIN RESULTS

1. Bob Card
2. Mike Burnett
3. Mark Botto
4. Tony Rice
5. Bob Leckron
6. Gay Sullivan
7. Chris Matheny
8. Mike Alexandro
9. Paul Knudsen
10. Rudy Ramos

4WD "B" MAIN

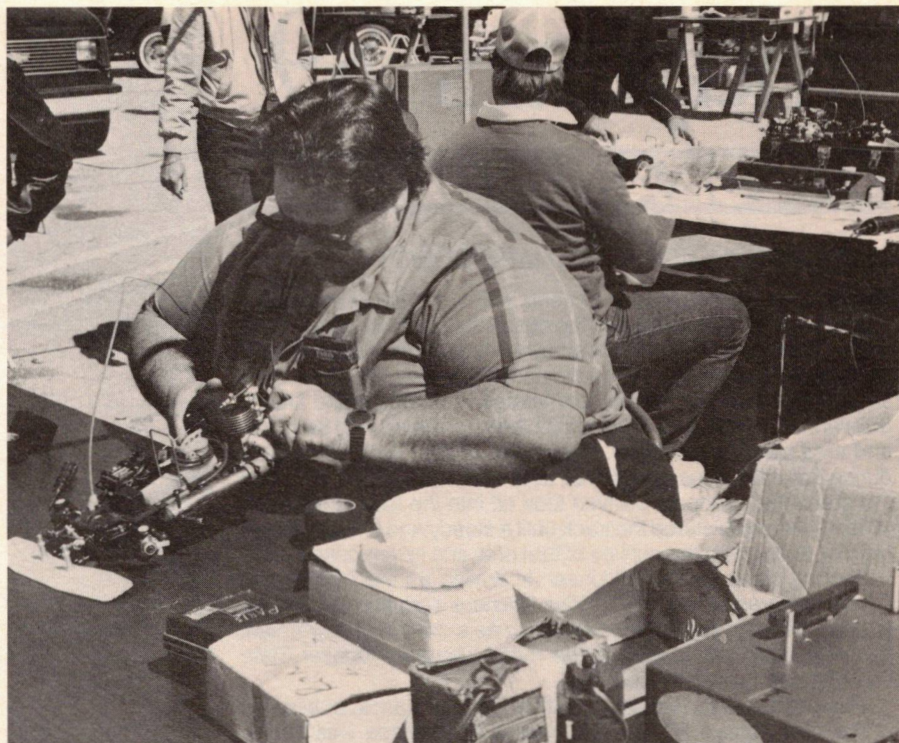
The "B" Mains are generally very close because the qualifying is so close. Curtis Husting had some traffic problems in qualifying, but he led the "B" Main from the green flag to the checkered flag. It wasn't as easy as it sounds though, because Bob Hall was chasing him the whole 25 minutes. Bob was no more than 30 to 50 feet behind the whole race. Curtis knew it, but wasn't making any mistakes, so Bob couldn't catch him. Curtis was running a new prototype NovaRossi-Rex engine by Paris. You'll be hearing a whole lot more about this engine.

4WD "B" MAIN RESULTS

1. Curtis Husting
2. Bob Hall
3. Mike Swauger
4. Barry Grossenbacher
5. Pete Fusco
6. Ray Schreider
7. Omar Formisano
8. Robert Andreotti
9. Ralph Phillips
10. Sean Lue

4WD "A" MAIN

Time for the fast one. World Champion, Re-Pete Fusco, had won this race the last two years, so he would have to be considered



Ron Paris is one hard worker. He spent his time preparing engines for the race, and his toil paid off with two of the cars he built finishing in first and third place.

4WD "A" MAIN RESULTS

PLACE	NAME	CAR	MOTOR
1.	Ralph Burch Jr	Associated	Paris-Novarossi
2.	Re-Pete Fusco	Associated	O'Donnell-Novarossi
3.	Cliff Lett	Associated	Paris-Novarossi
4.	Tony Neisinger	Associated	Paris-Novarossi
5.	Bobby Horan	Associated	Paris-Ops
6.	Chuck Moon	Associated	Paris-Novarossi
7.	Art Carbonell	Mantua	Paris-Ops
8.	Rick Davis	Associated	Paris-Ops
9.	Butch Kloeber	Associated	O'Donnell-Novarossi
10.	Gary Soltys	Associated	O'Donnell-Novarossi

the favorite going in. However, there were nine other drivers who had their own versions on how this race was going to come out.

All the drivers were introduced to the crowd, then they had a short practice session, before the cars were lined up LeMans style. The horn sounded and the race was underway. Ralph Burch jumped in the lead, with Re-Pete Fusco, Butch Kloeber Lett, and Chuck Moon chasing him. Ralph's car was working great, and when it's that good he knows what to do with it. He opened up a straightaway lead and then was just content to stay there. All the drivers had to be concerned about tire wear. You had to go fast, but still do it smoothly without wearing any extra rubber. Not an easy thing to do. Only the best of drivers can do it.

The positions didn't change until the pit stops. Ralph was in and out clean, Cliff Lett came in headed out, but found Butch coming into the pits in the wrong direction. Butch had just run out of fuel in front of the pits, so he turned into the pit exit. Cliff hit him and lost half a lap trying to get out.

Ralph had his straightaway lead and Re-Pete didn't seem to be able to cut it down. When Butch ran out of fuel, he dropped to last. Even though Cliff lost time in the pits, he

was still in third and very slowly gaining on Re-Pete, as Chuck Moon was doing great in fourth.

Then about the middle of the race, as Cliff was exiting the pits, there was someone standing in the pits and Cliff couldn't get out, so he lost a few more seconds. So Ralph still held his straightaway lead, Re-Pete now had about a straightaway lead over Cliff. Although Cliff was gaining on Re-Pete, it didn't look like he'd have quite enough time to catch him.

Then at the last pit stop, Re-Pete ran out of fuel! It was right in front of the pits, so Steve grabbed the car to get it started. Cliff was now starting to go on the drivers' straightaway and take over second spot. However, at that exact moment he clipped his only dot of the race, and the car rolled upside down on the track. By the time a marshal went to get Cliff's car, Re-Pete was pulling out of the pits.

Cliff was now about 20 feet behind Re-Pete, but he couldn't quite catch him. Ralph took the win, with Re-Pete in second and Cliff close behind in third. You just can't say enough about Ralph. I've seen him win so many of these big races that I've lost count. But it's got to be over 20 by now. He's the guy you've got to beat.

Indycars '89

THE SEASON BEGINS

STORY AND PHOTOS BY RICHARD DOWDY

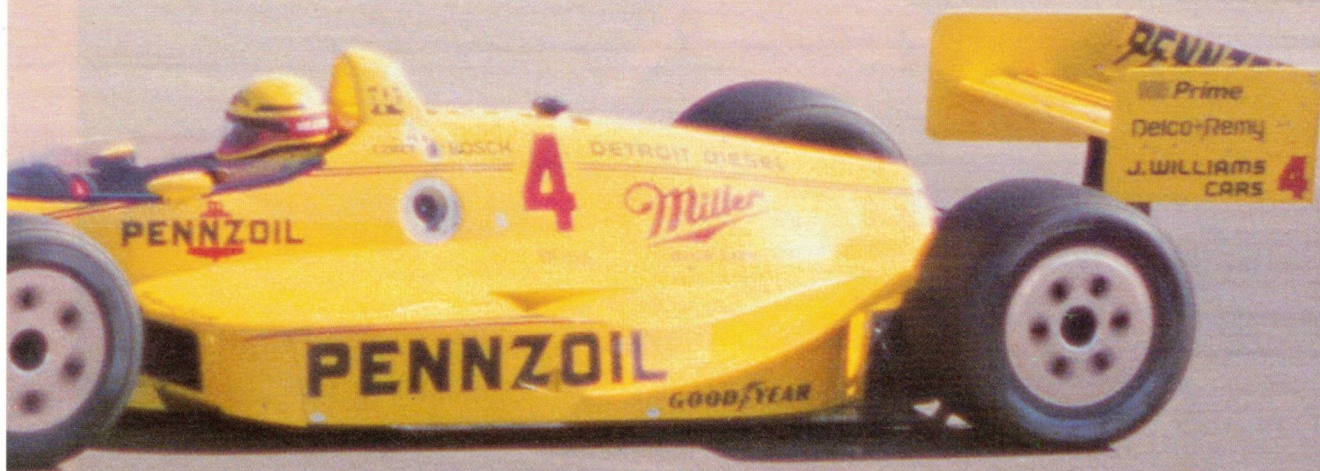
The season opened in Phoenix with a decidedly unseasonable heatwave even for the desert that sent temperatures at the raceway into the 100s, but the debut of the 1989 Indycars went off without a hitch as the class of the field in '88 came back strong in the form of Penske teammates Rick Mears and Danny Sullivan, who piloted their identical Chevy-powered PC18s to first and third place respectively. Mears had broken the track record during Saturday's qualifying to nail down the pole position, but when the green flag dropped, Sullivan took off into the lead in his No. 1 Miller racer and blistered the track until a steady and smooth Mears blew by Sullivan on the outside of turn one, and never looked back.

Second place went to Al Unser Jr. driving a Lola T8900, also Chevy powered; in fact, the first five finishers were powered by the strong Chevrolet engine which looks to be a dominant powerplant this year. Sixth place went to the much-improved Quaker State Porsche car, piloted by Teo Fabi.

This year Emerson Fittipaldi's Patrick Racing Team acquired one of the new Penske PC18s, and whenever Emerson was on the track, his lap times plummeted. Unfortunately, early Saturday morning Fittipaldi put the PC18 into the wall. The damage was too severe to be repaired, forcing him into the backup PC17, which he drove to a fifth place finish. Just ahead of Fittipaldi was the Chevy-powered Lola of Michael Andretti, who left the Kraco team to join his father in the K-Mart stable.

The next event in the Indycar schedule is the Long Beach Grand Prix, the tuneup event for the big one in May, the Indianapolis 500.

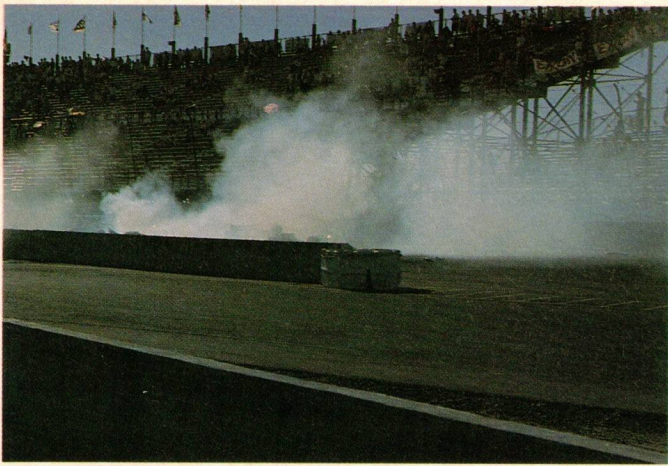




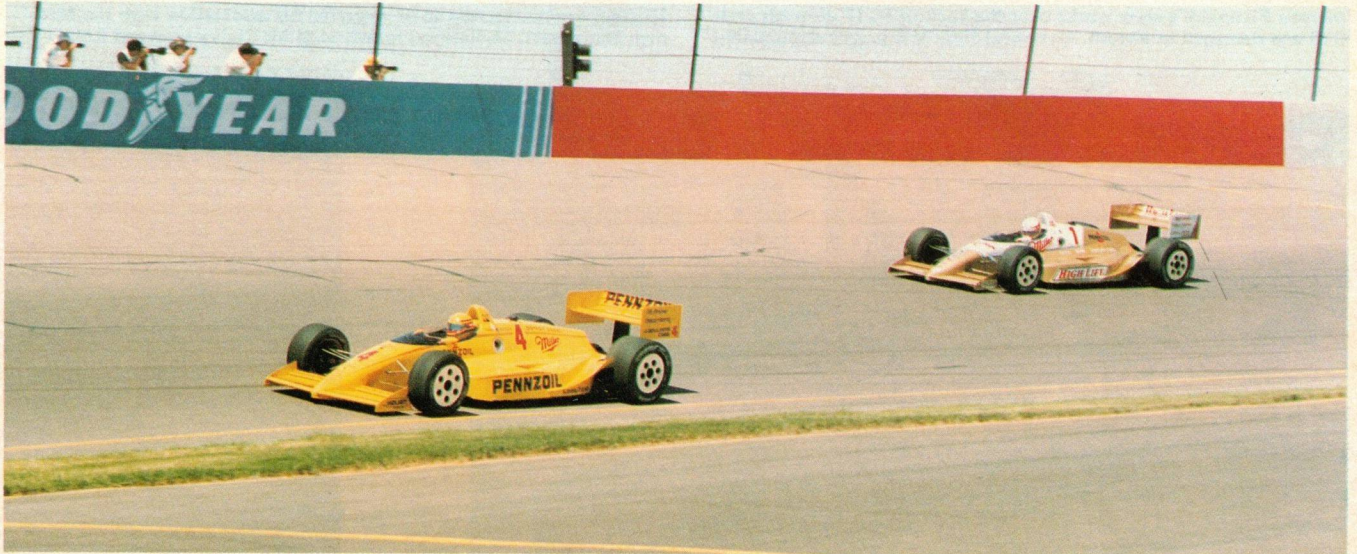
The 100-degree temperatures at the Phoenix International Raceway's one-mile oval didn't faze 1988 Indy 500 Champ Rick Mears, who broke the track record in qualifying, and then went on to win the season-opening 200-lap feature race in his new PC18.



The 1988 PPG/Indycar champion Danny Sullivan gets ready to take the Penske PC18 out for a qualifying run. The Chevy-powered Penske cars will be tough to beat in '89.



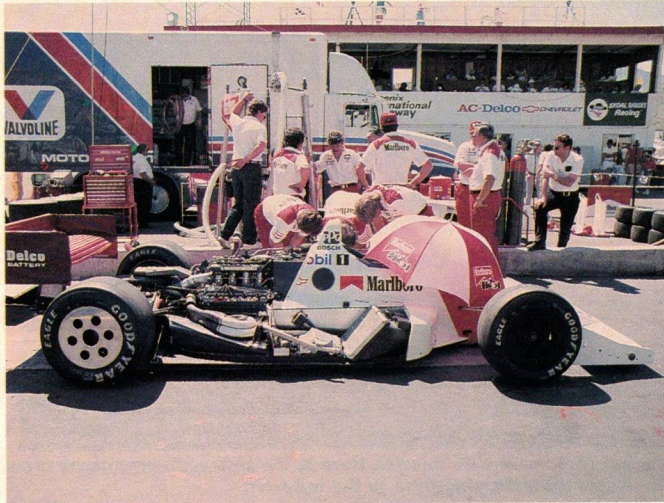
A chaotic five-car pilup on the straightaway resulted in some broken racecars, but fortunately, no injuries. Here in the aftermath emergency crews assist drivers involved in getting clear of the wreckage. The Buick-powered ARS cars are a steppingstone to the Indycars.



1988 Indy 500 winner Rick Mears leads '88 CART champ and teammate Danny Sullivan through turn one at Phoenix International Raceway as the 1989 season gets underway. Temperatures on the track were 140 degrees; air temperature seemed close to that mark.



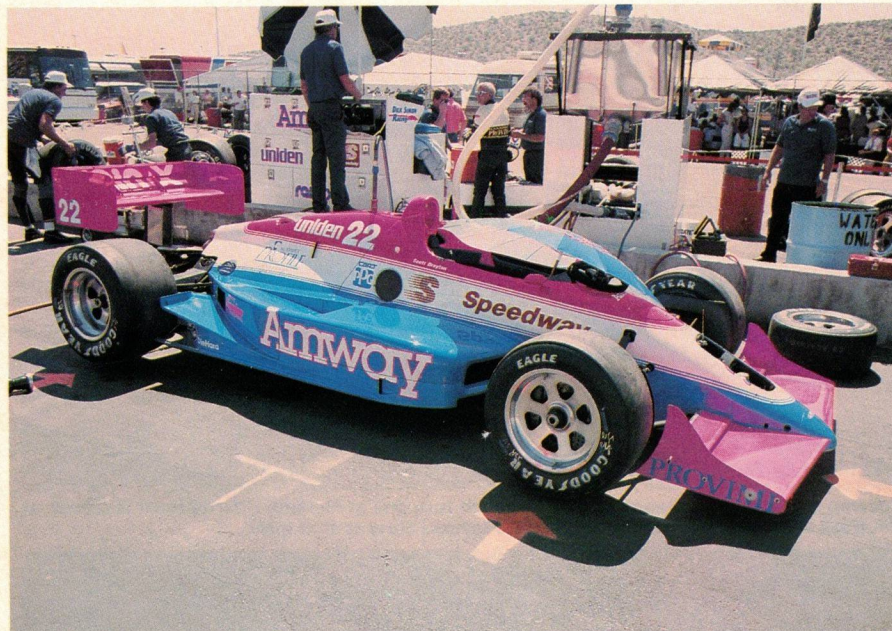
The champ awaits his carriage: Danny Sullivan (left) stands ready to pose next to his Miller racer as crew members buff it out.



Emerson Fittipaldi's crew works over the backup PC17 after his new PC18 was damaged in a crash. Chevrolet Indy V-8 is very dependable.



Michael Andretti seems to be enjoying his association with the Newman Haas team; he finished fourth with his Chevy-powered Lola.

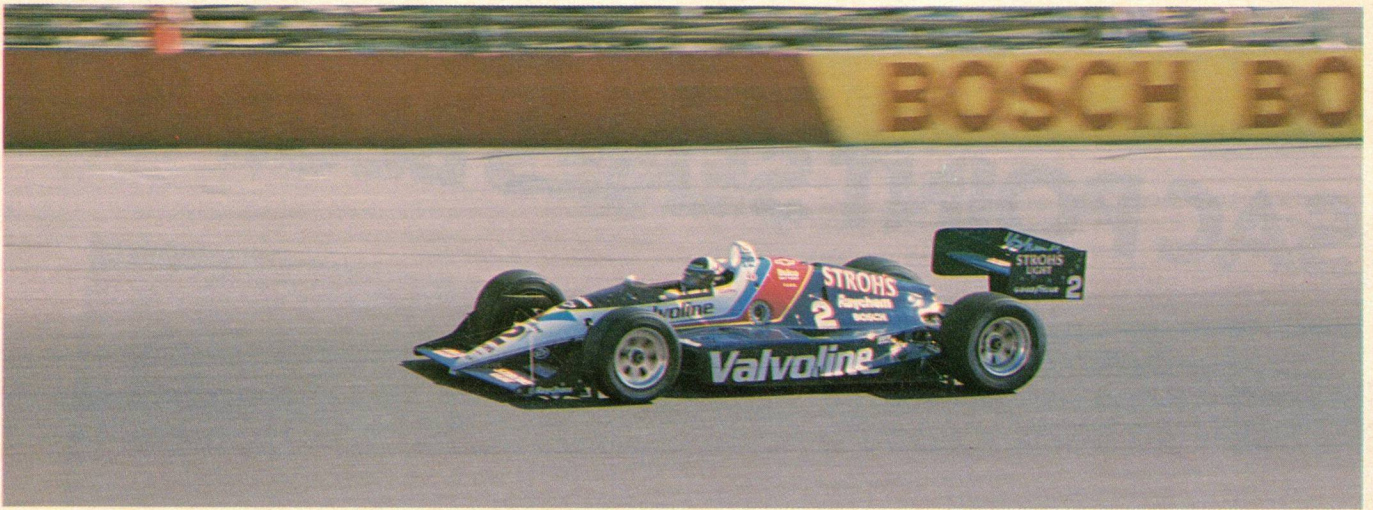


One of the flashier CART cars is Scott Brayton's Lola T8900 Cosworth. Engine trouble forced him out after 145 laps of the 200-lap race on the one-mile Phoenix oval.



Early Sunday morning pitstop drill being conducted by Roger Penske (in front of Mears' car) is one of the reasons the Penske team is so successful.





Al Unser Jr., runner-up to Danny Sullivan for the CART crown last year, drove his Lola T8900-Chevy to second place behind Mears.



Bobby Rahal in the Kraco Lola-Cosworth starts around Kevin Cogan on the outside of turn four at 185 mph. Rahal's day ended after tangling with Bernard Jourdain's slower Lola racer in turn three. Bobby was not pleased.

QSAC POINT SERIES BEGINS

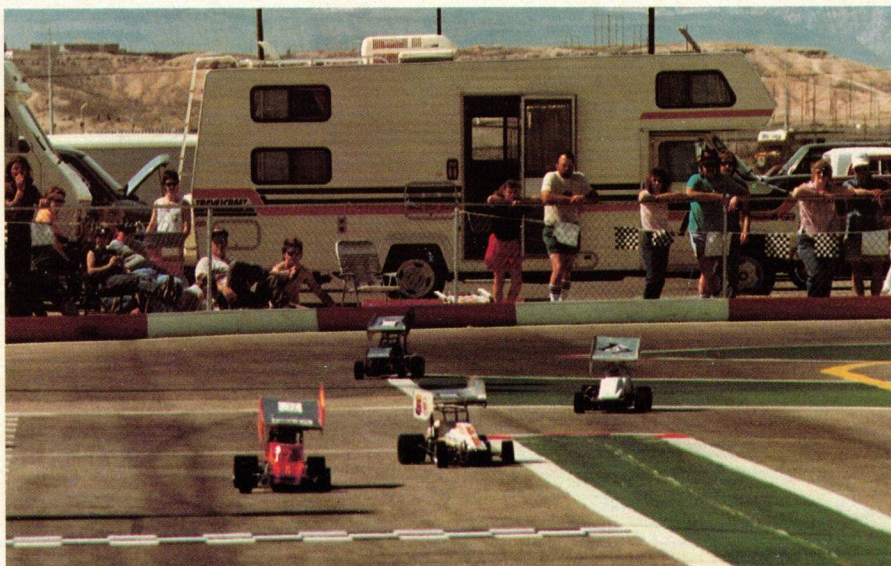


A new racing series starts up out West

BY JOHN RAHE

QSAC and their Western Regional division has just put together an eight-race points series for quarter-scale cars. The first race was held (where else) in Las Vegas! The Las Vegas R/C Club has built an exceptional quarter-scale (and other scales) facility at the Silver Bowl Soccer Complex on the southwest side of town. Cars showed up from California, Arizona, New Mexico and Virginia to kick off the QSAC Western Region Point Series for quarter scale. Nearly 50 cars were entered and raced for a purse of \$1500 split among three classes - sprint car, super modified and Grand National. For two sunshine, but windy, days the big cars battered the boards to find out who was going to be the "Best in the West." Given the nice weather and excellent facility, no one came away disappointed. The "slots" were a little more worn and the track fences had a few more marks on them, but it was a good racing weekend.

Most of Saturday was spent practicing (or driving) with qualifying in the late afternoon.



Right after this photo was taken, the first sprint car heat race turned into a real disaster, with cars careening in all directions.

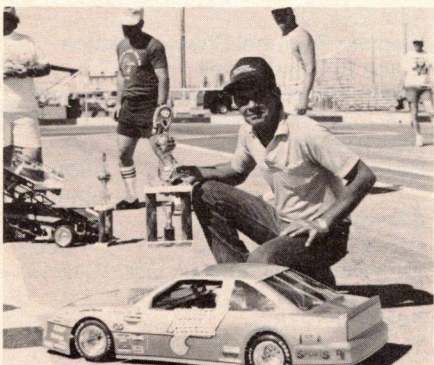


John Lorenzo's concours-winning WCM car.

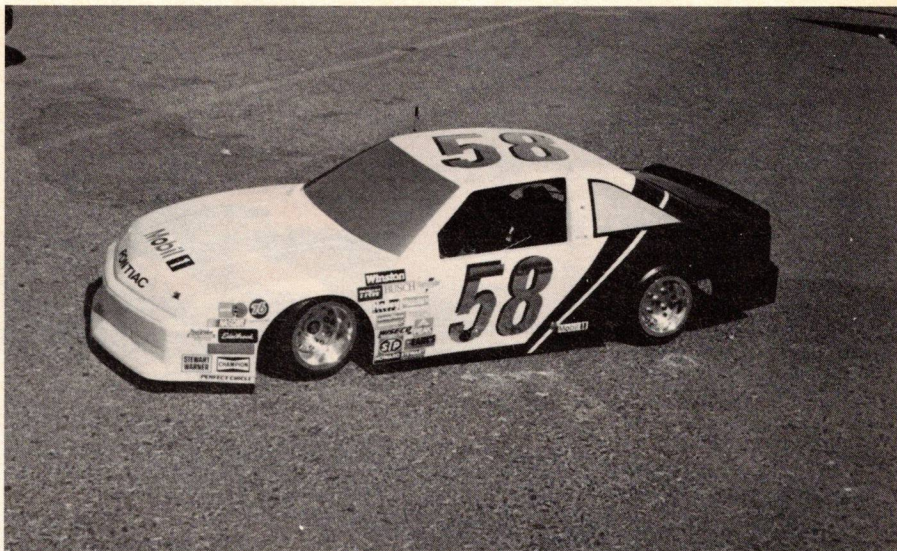
Unfortunately, a giant cloud covered and cooled the track just as the sprint cars lined up for their single-car qualifying. The pesky cloud wouldn't go away and had an effect on everyone's lap times. Ray Luther, from Albuquerque, New Mexico managed top qualifier in the sprints, with Joe Alves of Alves Manufacturing, and Gary Kyes (no intro needed) close behind. The New Mexico contingent of Alves sprint cars showed well all weekend, especially considering their home track is dirt and they only race pavement two or three times a year. These guys are always fast. The turnout of super modifieds was somewhat small but the racing was intense and they put on a great show. Fast qualifier went to Chris Rahe with his RACO. Dale Smith's WCM car was not far behind. Fred Brue's RACO was third.

There were 22 Grand National cars signed up making it the largest and most competitive class. Gary Kyes came out on top in qualifying, Chris Rahe came second and Fred Brue third, all with RACO cars. Skeeter Vee of San Diego, with his WCM missed the top three by only .05 seconds. This class is getting more competitive each race.

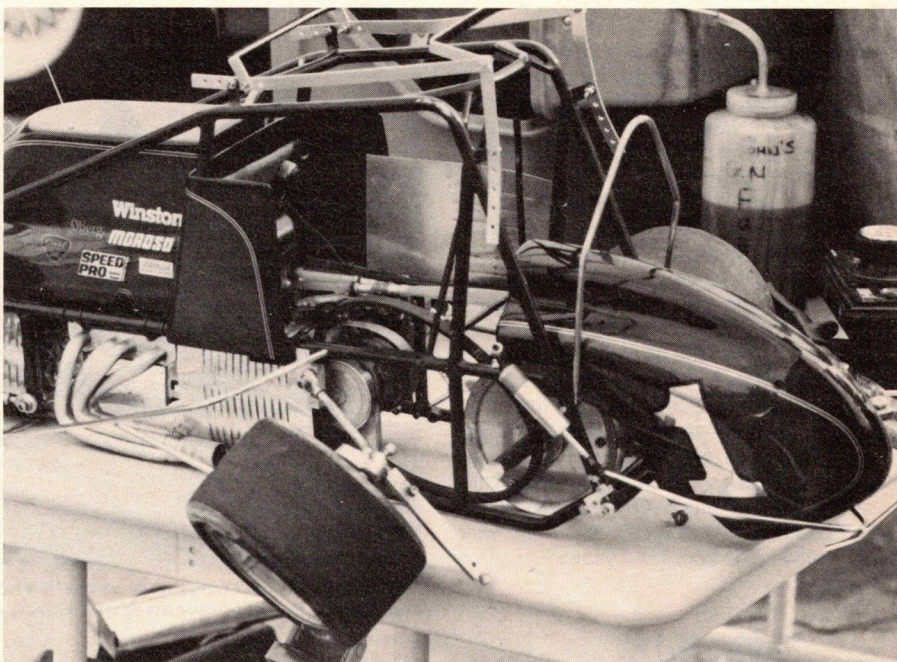
The following day brought great weather (except for the wind) for the heat races and main events which began right after concours. The concours cars in quarter scale have to race in the day's program, but still some beautifully prepared cars took part. John Lorenzo's No. 17 WCM sprinter took the honors in that class with an immaculate paint job and lots of polished goodies. Ron Schoeb's No. 7 WCM was the cream of the crop in Grand Nationals. It not only was extremely well done on the outside, it had a complete and very detailed dashboard (with gauges) under the body along with all the other detailed parts. Nice job, Ron!



Ron Schoeb's Pontiac GN racer took the honors in its concours class.



This beautiful car from Virginia nearly won the A-Main with Eric Clapp Jr. driving.



It wasn't all fun and games! This car was repaired in time to race again despite the damage.

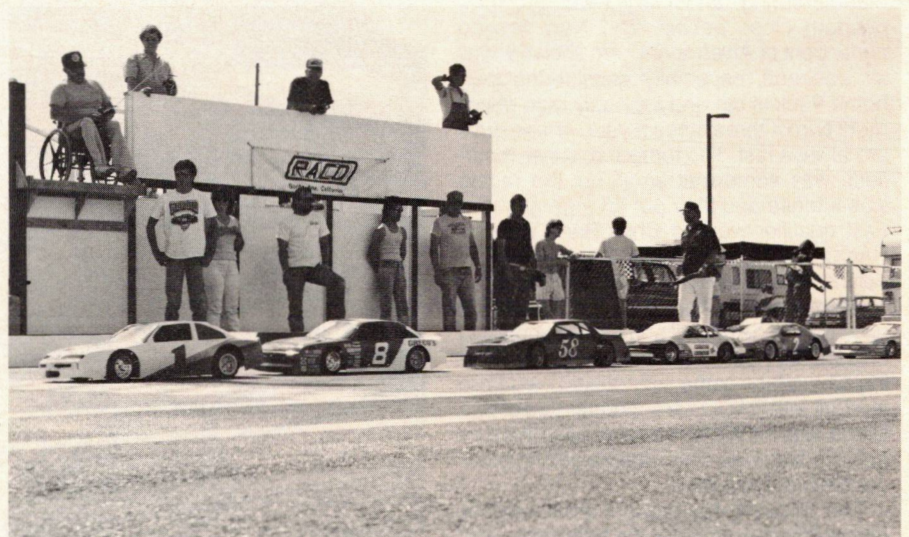


Bill Cain brought two well-prepared RACO cars. His Grand National racer with Ted McKay driving nearly won the 150-lap A-Main race.



Gary Kyes' No. 6 was fast all weekend. He won both the sprint and the Grand National A-Mains.

Highlights from the heat races included a horrendous crash in sprint heat No. 1 that took out more than half the field, requiring that it be run after the other heats. Steve Skellinger finally posted the win and transferred direct to the A-Main. The fast guys from Albuquerque, George Brazil and Ray Luther, had rotten luck and were forced to run the B-Main. Heat Race No. 2 saw Joe Alves lead wire to wire as did Gary Kyes in Sprint No. 3. In the "supers," Chris Rahe came out the winner but this was probably the cleanest race run all day - no yellows. In the 4 GN Heats, Gary Kyes, Chris Rahe, Fred Brue and Skeeter Vee "got the gold." Heat Race No. 2 saw Chris Rahe and Eric Greco put on a great race in the last half changing leads a dozen times, sometimes twice a lap. Eric has been the "hot shoe" at the El Cajon track lately with six straight wins since moving up from 1/10 scale.



The Grand National heats were competitive and exciting to watch. This class has become highly competitive in recent months as new drivers enter the fray.



The super modified car turnout was down a little, but the racing was all "thumbs up."

Gary Kyes is just as good in quarter scale as he is in any other R/C car class, unbelievable! Glen Higdon's Sprint Drive was something to see. Driving a very comfortable WCM, he came back from two horrific crashes to finish seventh. Dave Smith and Chris Rahe put on the best show of the weekend in the Supers with Dave Smith winning in the last straightaway - by six inches! In the GN Mains, Bill Dirr of San Diego, came from the C Main to third place in the A Main with steady and consistent driving. Bill has been improving each race and is one of the most popular drivers at the El Cajon track. Eric Clapp of Dove's Hobbies in Sterling, Virginia (he came a long way), was probably the happiest driver in Grand National. Despite the wobbly knees and shaking radio, from being his first race in quarter scale, he won the B-Main and nearly won the A-Main with a brand new "out of the box" RACO car.

As is standard procedure in all QSAC races, the top three cars in each class went

1989 SCHEDULE Q S A C TRACK SERIES SCHEDULE AND ROAR NATIONALS

Silverbowl Speedway Las Vegas, NV	March 11,12
Cajon R/C Speedway El Cajon, CA	April 1,2
Racer Haven Raceway Bakersfield, CA	May 13,14
San Jose R/C Raceway San Jose, CA	June 3,4
Western Regional Championships	
Cajon R/C Speedway	July 1,2,3
Racers Haven Raceway	August 5,6
San Jose R/C Raceway	August 26,27
ROAR NATIONALS	
Racers Haven Raceway	August 31, Sept. 1,2,3
Silverbowl Speedway	Sept. 23,24
Cajon R/C Speedway	Oct. 7,8
King 8 Supernationals Las Vegas, NV	Oct. 11,12,13,14
To be held at the Thomas & Macks Stadium	

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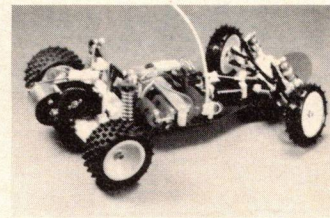
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Here's a portion of the 50 cars entered in the QSAC Points race in Las Vegas. The facility for racing was excellent, and the scenery beautiful.



Kenny Higdon's WCM car was immaculate and very fast.



Chris Rahe warms the tires before a practice run. He lost by six inches to Dale Smith on the last lap!

through tech inspection afterwards, with the engines carefully, and capably, checked by Steve Cheeks of WCM. As usual, no infractions.

The First Western Region QSAC Points Race is now in the books and we're looking forward to the next seven and the crowning of the Points Champions who sponsored this event: The Las Vegas R/C Club, Las Vegas, Nevada; SECO Quarter-Scale Rearends, Santa Ana, California; and Greco's R/C Sales, Glendale, California. ●

QSAC WESTERN REGION POINTS RACE

MAIN EVENTS

Sprint Car - A

Driver	Home	Car
1. Gary Kyes	Pomona, California	Alves
2. Bill Jones	Albuquerque, New Mexico	Alves
3. Joe Alves	San Joes, California	Alves
4. Larry Lebon	Las Vegas, Nevada	Alves
5. Steve Skellinger	Santa Ana, California	SECO
6. George Brazil	Albuquerque, New Mexico	Alves
7. Glen Higdon	Las Vegas, Nevada	WCM
8. Jerry Epperson	San Jose, California	Alves
9. Randy Loveless	San Jose, California	Alves
10. Kimball Shirey	San Jose, California	Alves

Super Modified A

1. Dale Smith	Tucson, Arizona	WCM
2. Chris Rahe	Santa Ana, California	RACO
3. Fred Brue	Ojai, California	RACO
4. Ted McKay	San Marcos, California	WCM
5. Floyd Trujillo	Las Vegas, Nevada	RACO
6. Torry Burke	El Cajon, California	WCM

Grand National - Main

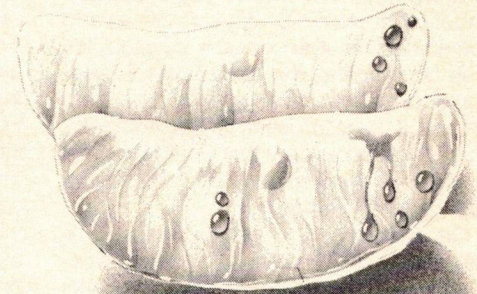
1. Gary Kyes	Pomona, California	RACO
2. Eric Clapp, Jr.	Sterling, Virginia	RACO
3. Bill Dirr	Fallbrook, California	WCM
4. Duane Neff	Las Vegas, Nevada	RACO
5. Fred Brue	Ojai, California	RACO
6. Ted McKay	San Marcos, California	RACO
7. Eric Greco	Glendale, California	RACO
8. Todd Bishop	Buena Park, California	RACO
9. Skeeter Vee	Lakeside, California	WCM
10. Chris Rahe	Santa Ana, California	RACO

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.

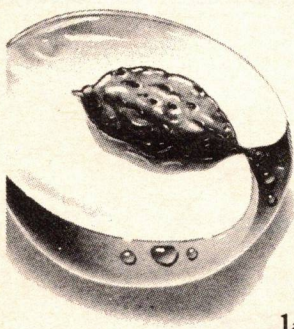
Be moderate in consumption of alcohol also.

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

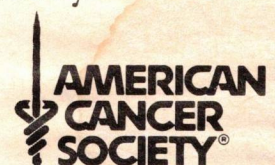
Weight reduction may lower cancer risk. Our 12-year study of nearly a million Americans uncovered high cancer risks particularly among people 40% or more overweight.

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

No one faces cancer alone.



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



QUARTER-SCALE ALLEY

ANTI-SQUAT REAR SUSPENSION FOR QUARTER-SCALE RACE CARS

BY DAVE LEE

Have you ever noticed the guy with the hot motor who comes off the turn under full power? His front end lifts up, and sometimes he even does a wheelie! He may be dazzling the crowd, but it takes horsepower from his engine, or to be more precise, it takes torque to lift that front end. This is wasted energy that could be used to improve acceleration. Do I have your attention yet? Read on. . . .

Geometrically, the application of anti-squat rear suspension, or anti-dive front suspension for that matter, may be beneficial to the hard-core racer with any size car. Some feel this application reduces longitudinal load transfer; wrong, at least not to any appreciable extent.

Because most R/C race cars are two-wheel drive, and do not incorporate front brake systems (at least not yet anyway), I'll concentrate primarily on anti-squat rear suspension geometry.

Actually, what we're trying to do is arrange the suspension components to take mechanical advantage of the torque being applied to the rear axle. This principal applies to any type of rear suspension design, whether it be leaf, trailing arm, A-

arm, or four link.

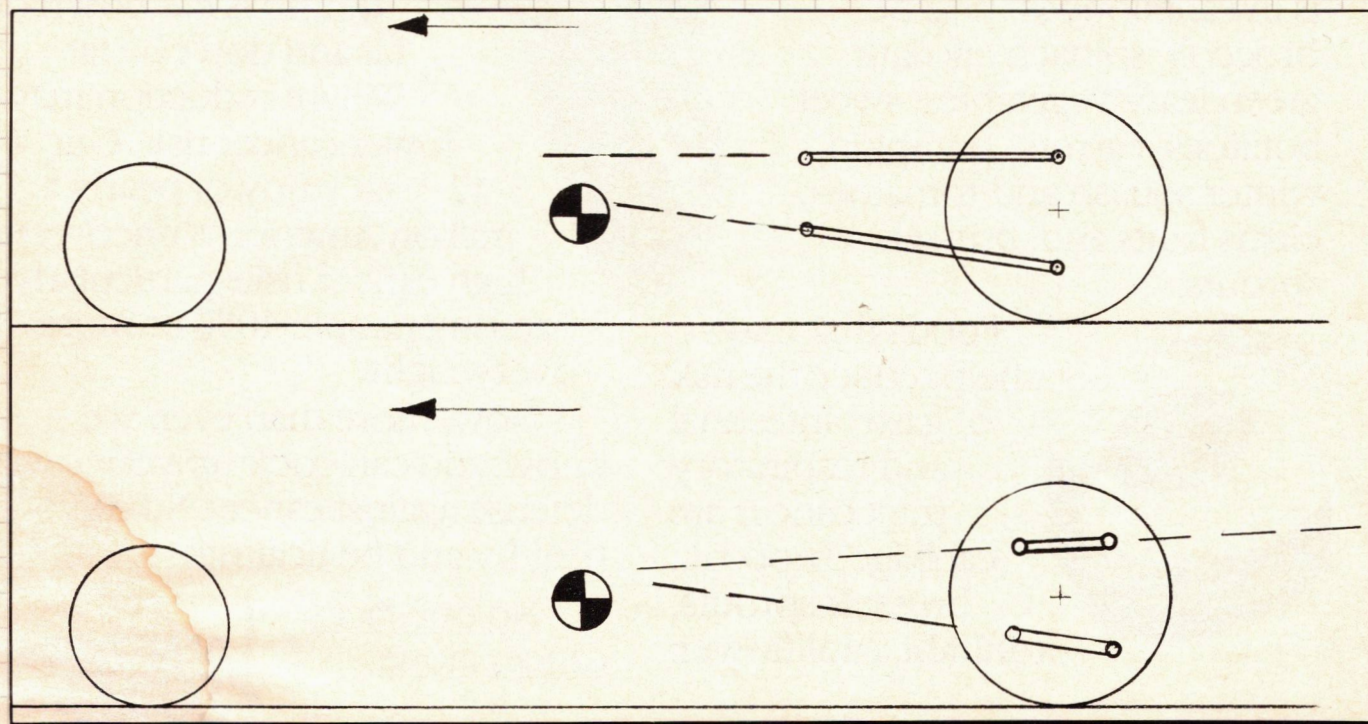
The illustrations show the left side of the car. Note the links or A-arms are not parallel. An imaginary line drawn through these pivot points should converge on, or near, the center of gravity. As a general rule, try to keep the upper component as horizontal as possible. The more angle you adjust, the more effect you generate. This is true only to a certain extent. If you exaggerate these angles too far, your car will feel unstable in the turns and will develop a power-on oversteer problem. With that in mind, I do not recommend this adjustment for curing an understeer condition caused by wrong tires, too much front anti-sway bar, incorrect aerodynamics, or any problems, for that matter. You must realize this is not a cure for a poorly set up car. Use it in moderation, and experiment to determine the best geometry for your needs.

When you apply anti-squat geometry, here's what happens under acceleration: the rear axle, while torque is being applied, is trying to roll under the chassis, i.e. lift the rear of the car. We already recognize the fact that longitudinal load transfer won't let that happen. The result? First, the rear tires

are driven downward onto the track. The amount of force pushing down is the same force the other guy uses to lift his front end! Second, the ride height virtually stays the same during acceleration, maintaining rear wheel camber. This lift is directly proportional to the amount of torque being applied. In other words, more torque applied equals more rear chassis lift and axle downforce.

Now, here comes the freebie! During deceleration, exactly the opposite effect takes place. Now, the torque being applied to the axle, in the form of brakes, or engine resistance at closed throttle, is in the opposite direction. Therefore, the anti-squat geometry now becomes anti-left; the rear end tries to squat down. Again, the longitudinal load transfer won't let that happen either! The result is that the ride height stays the same here too, and your chassis ends up with a very constant attitude.

The bottom line is, your race car is more forgiving and more predictable. With this additional driveability, this might be the extra edge you need to jump on the power a little sooner off the turns, or stay on the power a little deeper into the turns! ●



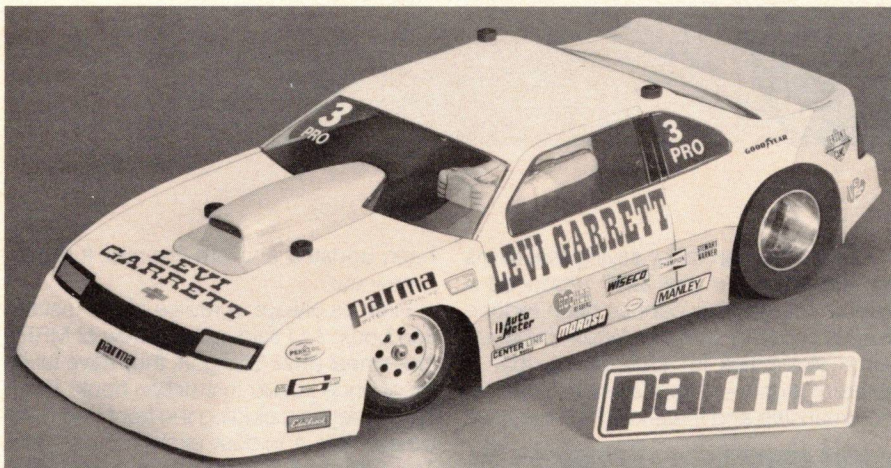
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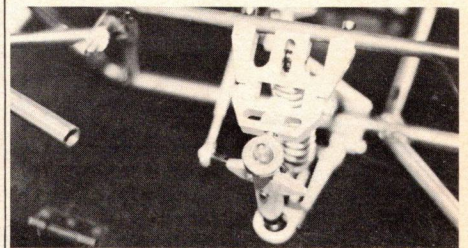
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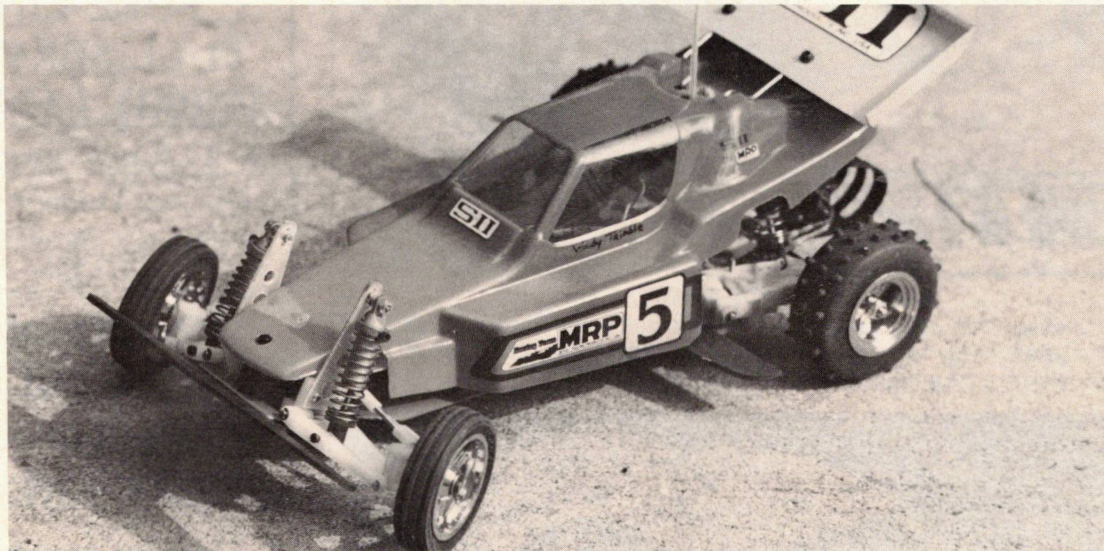
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Stage II



BY WOODY TRIMBLE

Model Racing Products (MRP) has been involved in radio control car racing as long as anybody. They have had champion caliber 1/8- and 1/12-scale cars and they now have a full-fledged contender for the two-wheel drive offroad car racing circuit.

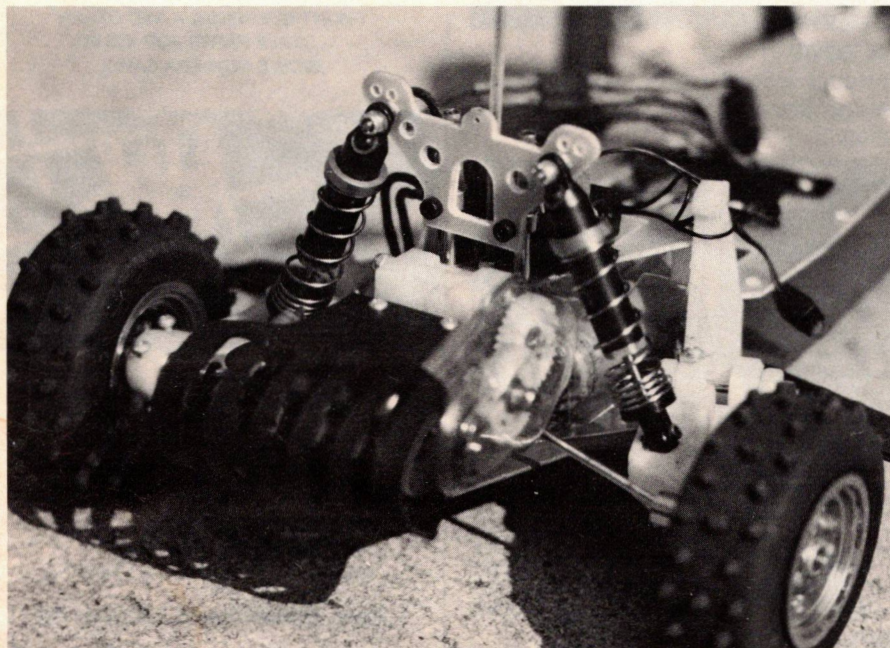
First let me start off by saying that this is not the same car that MRP produced a year or so ago. This car has been redone from bumper to bumper. While there are some similarities in appearance, that is where it stops—in appearance. Both the workmanship and material in this car have

been updated and are first-rate. It is truly a new car.

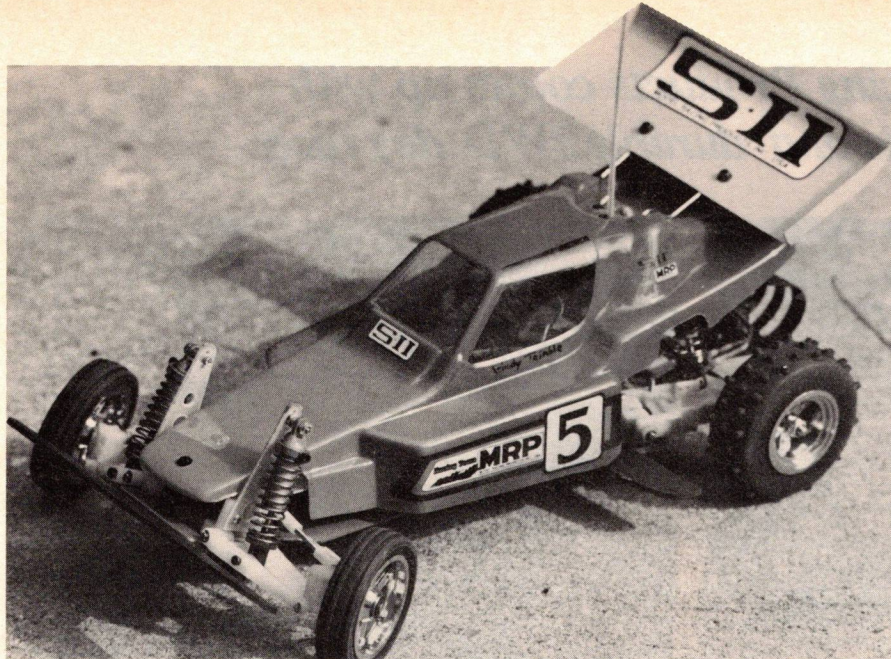
First, as always, a review of the instruction book. As I said in the review of MRP's four-wheel drive Shotgun, they have taken great pride in their instruction book. There are 16 pages including the front and back covers plus a foldout exploded diagram. The exploded diagram has each part identified by a number and on the back of the diagram is a listing of all the parts. The purpose of this is to enable you to be able to order any part that you may need. Inside the front cover is an illustration that shows the screws, nuts, washers and bolts in full size. This allows you to be sure you are using the correct piece when a #5 washer is called for. Each step has a drawing with each of the parts labeled and shows the order of assembly. The parts used in each step are in separate bags and only required to be opened as you work on each step. This really helps in keeping the parts from being mislaid.

The first step in the assembly is the differential, a standard ball type. The differential is adjusted by first removing the rear wheels and dogbones, then by loosening a set screw on one axle and the adjustment screw on the other axle. The set screw holds the adjustment screw tight.

The second step is the shocks. This car has four internal pressurized-style shocks. These have a small "bleed" screw that



The rear suspension on the Stage II uses progressive springs on the shocks that are adjustable by the use of aluminum collars that move up and down on the shock body.



The finished Stage II. Replacing the stock front wheels and tires with Cat-type rubber and Pro-Line front wheels will improve the racing performance of the car considerably.

allows you to let out any excess air and/or oil.

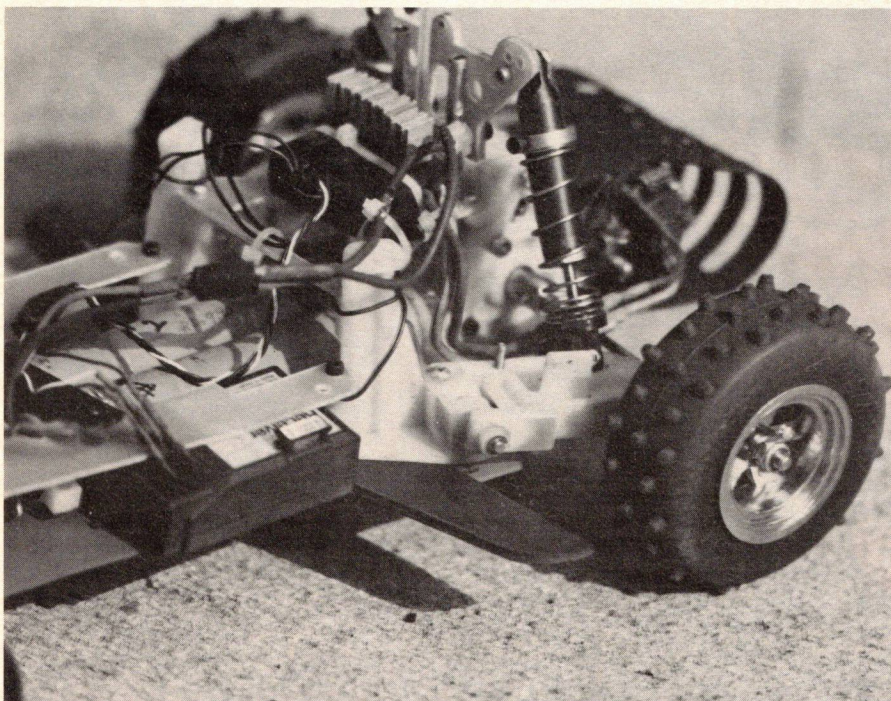
MRP has a unique idea which is to color code some of their car parts. The front shocks are blue and the rear shocks are red. The car comes with progressive springs for the rear and standard springs for the front. The adjustment of the spring tension is made by moving an aluminum collar up and down the shock body. It should be adjusted so that when the car is dropped from a height of three inches, the axle shafts are level after the rebound. The shock action is controlled in two ways: the weight of the oil and the number of and size of holes in the shock piston.

The gear box has two gears inside, one of them is the actual ball differential, the

other just a small pinion used to spin the differential gear. The only thing to remember for this part is to be sure and put the thread lock on the set screws. If you don't, they will come loose and then the rear dogbones spin without turning the wheels.

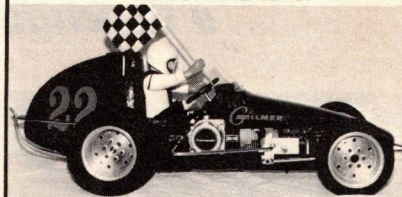
On the motor plate, there is a primary gear and an idler gear. The motor engages the idler gear which has a small gear made onto it which spins the primary gear which spins the pinion inside the gear box. Boy does that sound confusing, but it works. If adjusted correctly, the car runs with no noise. If you start hearing a loud noise, stop and check the gear alignment.

This car comes complete with trailing arm rear suspension. The rear suspension also has a cam adjuster that is used to



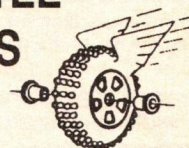
The MRP Stage II comes with trailing arm rear suspension, seen here. Wheelbase width is changed in small steps, as a little makes a big difference. Dogbones should have a little play.

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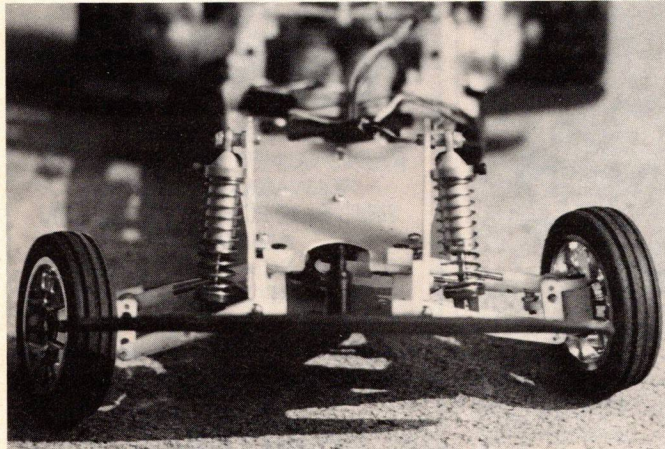
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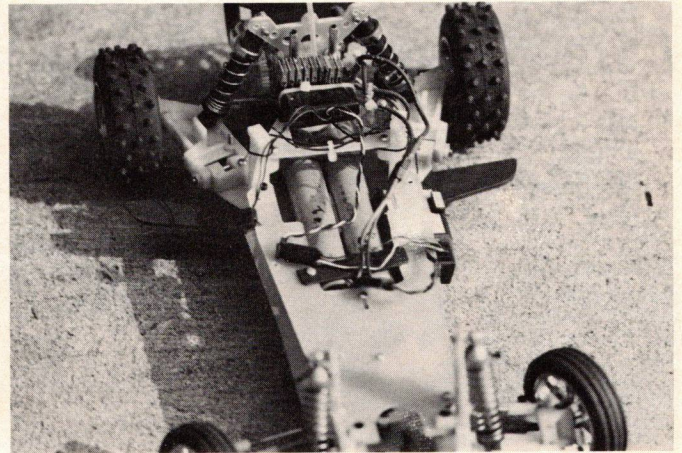
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Model Racing Products comes up with a dependable and durable 2WD dirt racer



The front suspension on the Stage II is simple, yet is effective in controlling the car in the dirt. New tires from Pro-Line would help.



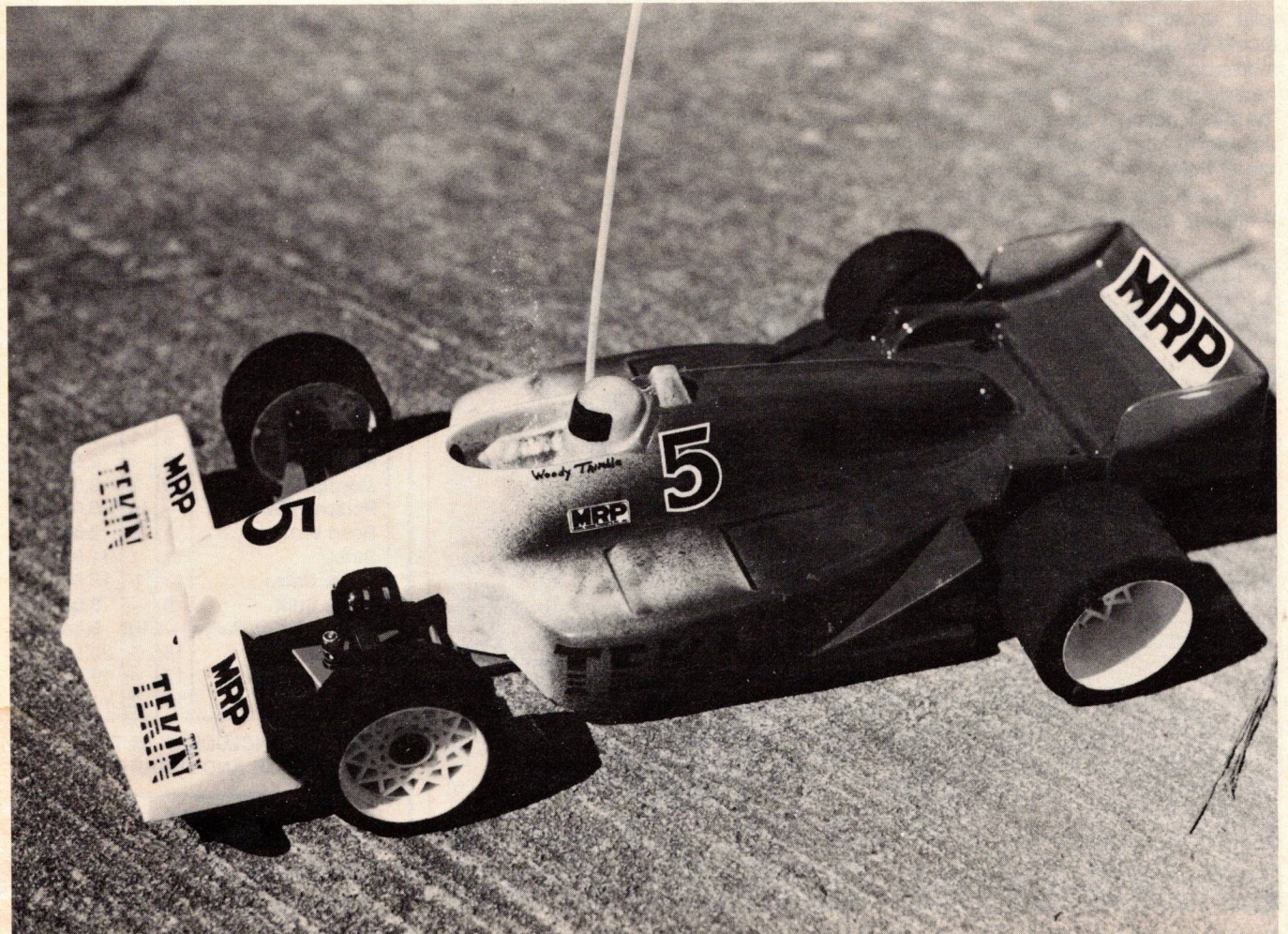
Two-tier layout of chassis offers ample room for radio placement and battery pack, which is set longitudinally for neutral balance.

make small adjustments in the rear wheelbase width. Not much adjustment makes a significant change. You want to adjust these so that the dogbones have a slight "end play" when the axles are level. Also be careful when installing the gear case as the holes take some careful alignment to

get them right.

The rear shock mount is held on with two set screws. These set screws go through the fiberglass shock mount into two aluminum collars that slide up and down on the wing tubes. This allows you to adjust for any differences between the two rear shocks as

well as adjusting the ride height of the car. These small differences can result in significant performance problems. For example, if your car pulls to the right under acceleration, the left rear wheel may be pulling harder than the right. So to straighten out the car's acceleration, you



NEXT: the MRP GP10 road racer, seen here with the Lola T87 Indy body mounted.

back a little off of the left rear shock.

The front of the car has adjustable toe-in and camber. The rear wheel toe-in and camber are factory set and can not be adjusted.

The battery placement is designed for the use of "stick" batteries and can be placed either front to rear or side to side. I had to grind a little off the radio tray to get the batteries to slip in easily.

PERFORMANCE

The performance of the car will surprise you. I have tried the car on both an oval and offroad tracks. The car came with real rubber tires and three-piece rims that you screw together. The front tires were smooth, and in stock configuration, the car worked great on the oval. The stock front tires provided a little understeer; however, I prefer that, especially on our local oval. It took a little while to figure out what pinion gear to use, but once I figured that out, the car was equal to any other on the track in both acceleration and speed. However, as I said before, if you don't use the thread lock on the rear axle "yokes," they will usually come loose as mine did. The car tracked straight, went through the turns smoothly, and accelerated as good as any. On the offroad track I made no adjustments except to tighten up the front shock springs a little. The car went over the jumps flat. However, the stock tires did not provide enough steering to allow the car to turn tightly.

The only thing you need to watch for is to follow the hints when they give you one. If they say the set screw will come loose if you do not use the thread lock, believe it; it will. MRP has told me that the use of the one-piece Pro-Line wheels and the "Cat"-type tires will improve the performance. I have not tried this yet, but if they say it I believe it!

The car weighs in, on my scale, at 3 pounds and 7 ounces. That weight is for this race-ready, six-cell car with a body painted by myself. The paint job is significant because I tend to put on more paint than most other people. This body alone weighs 3.5 ounces.

If you are looking for a dependable, rugged 2WD offroad car, take a look at the MRP Stage II. It's definitely worth your while.

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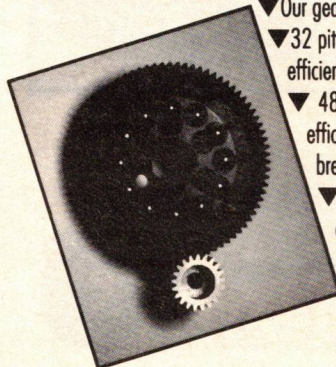
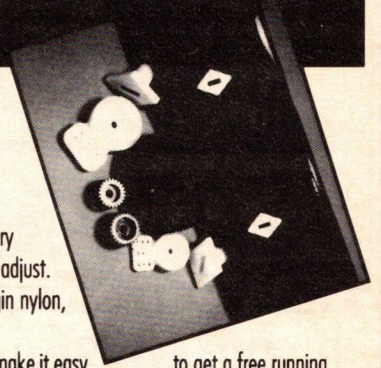
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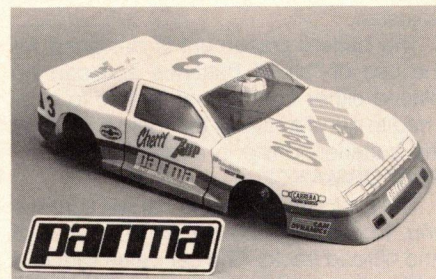
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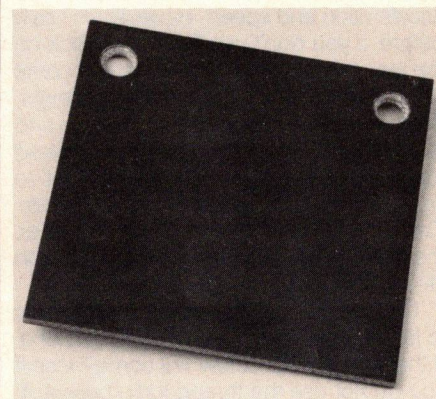
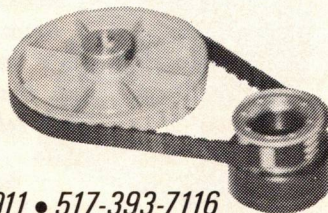


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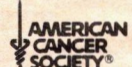
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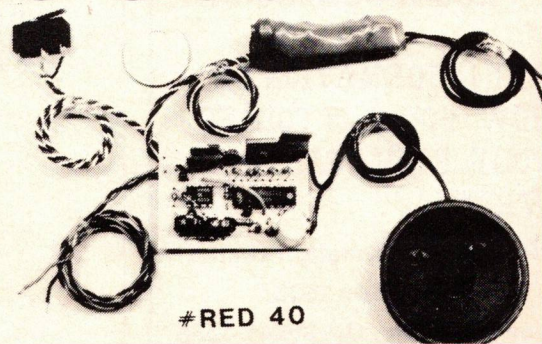
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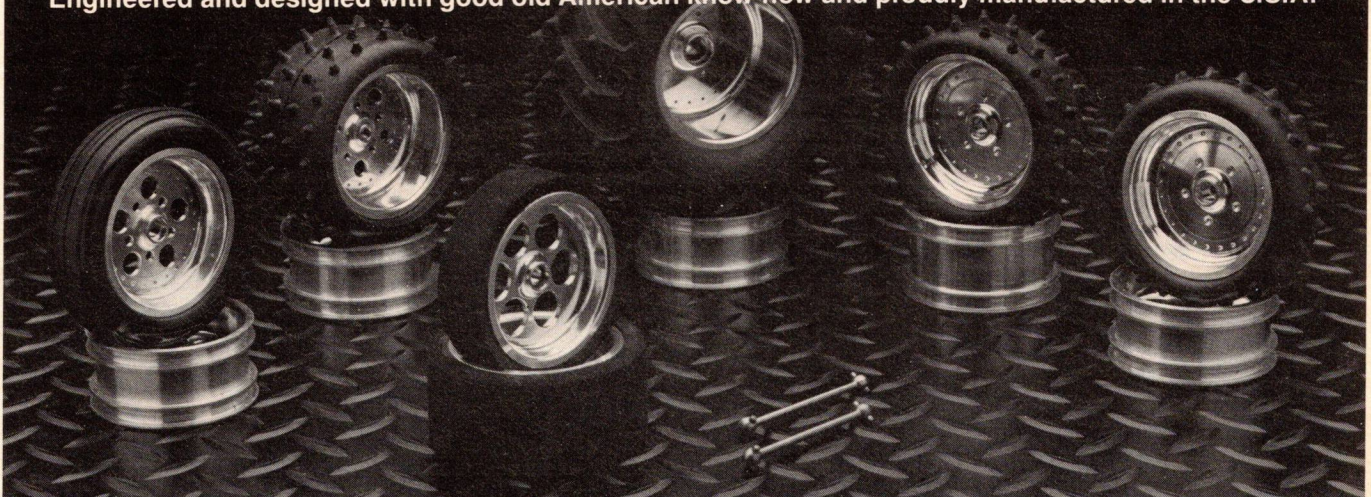


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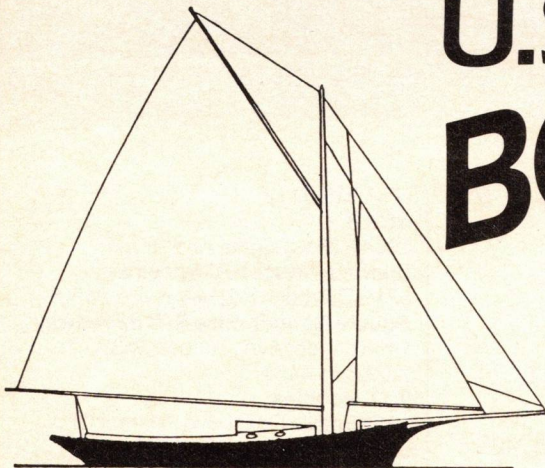
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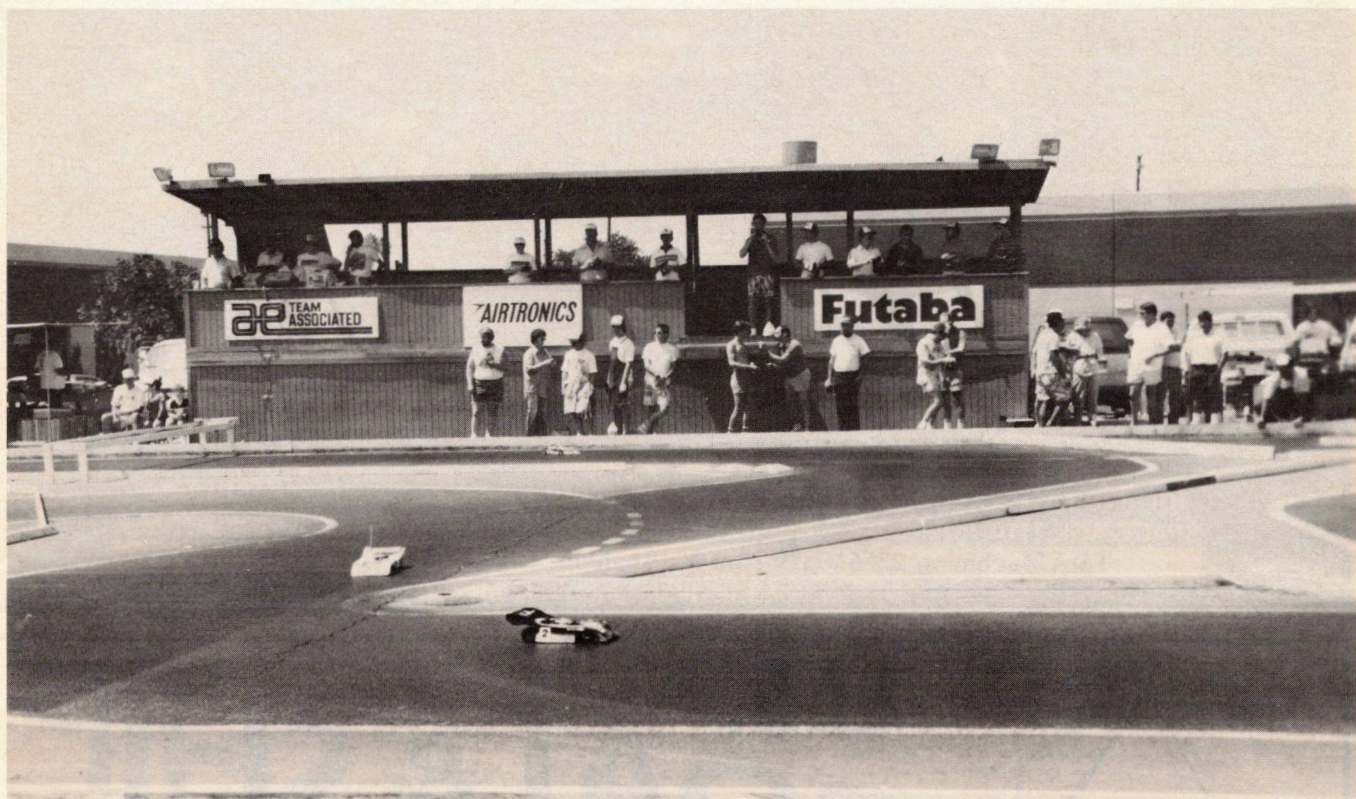
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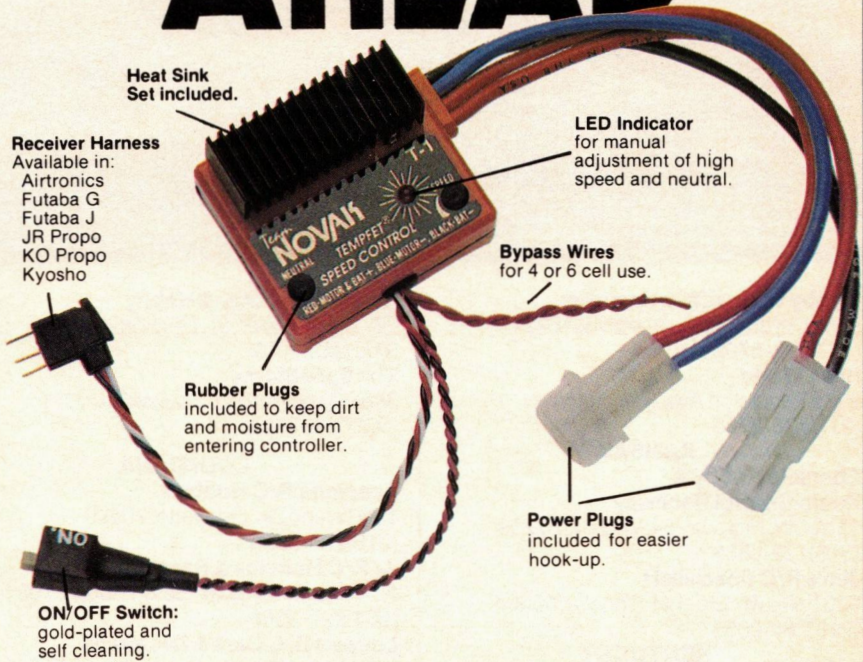
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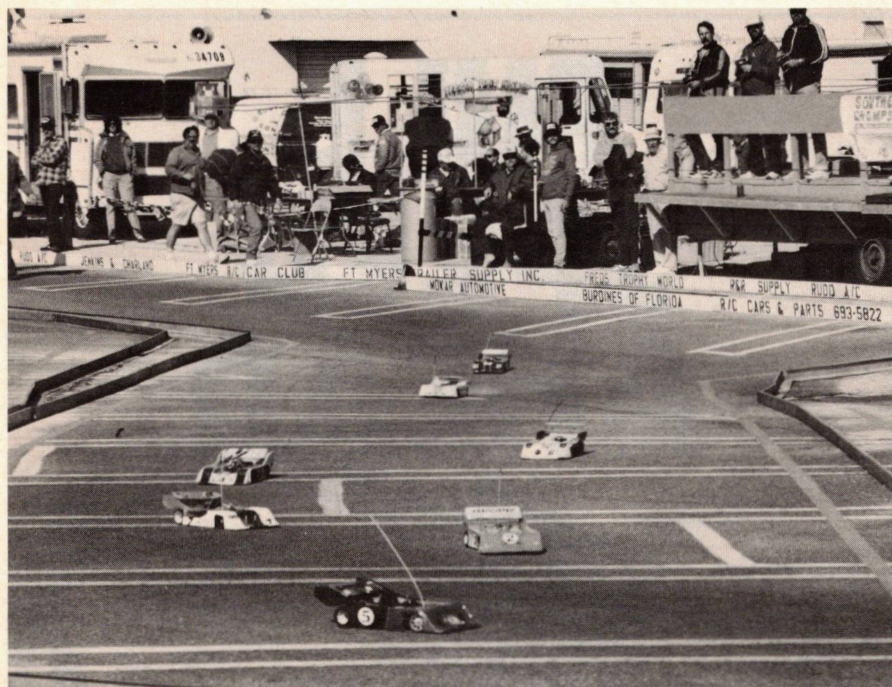
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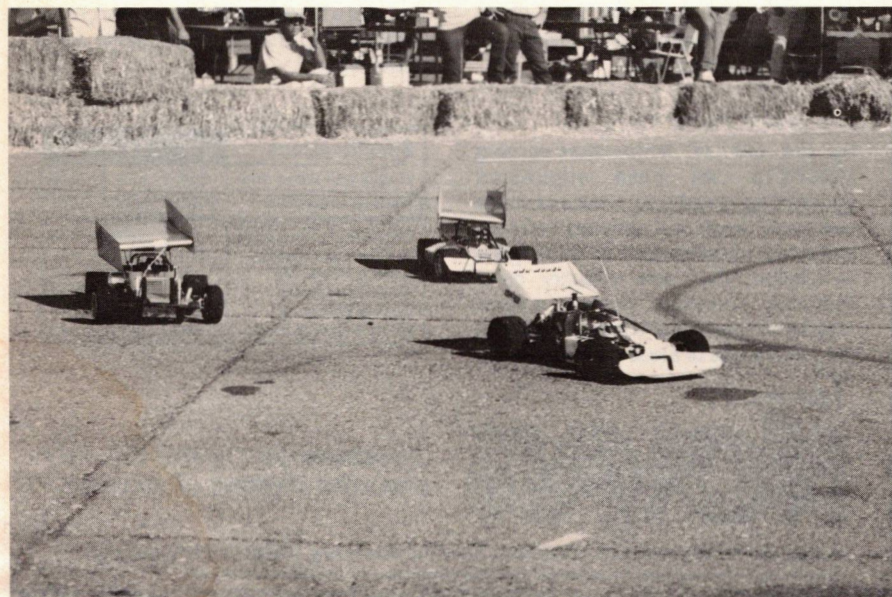
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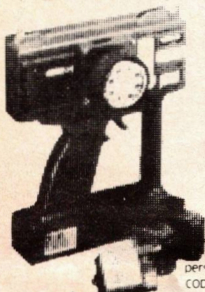
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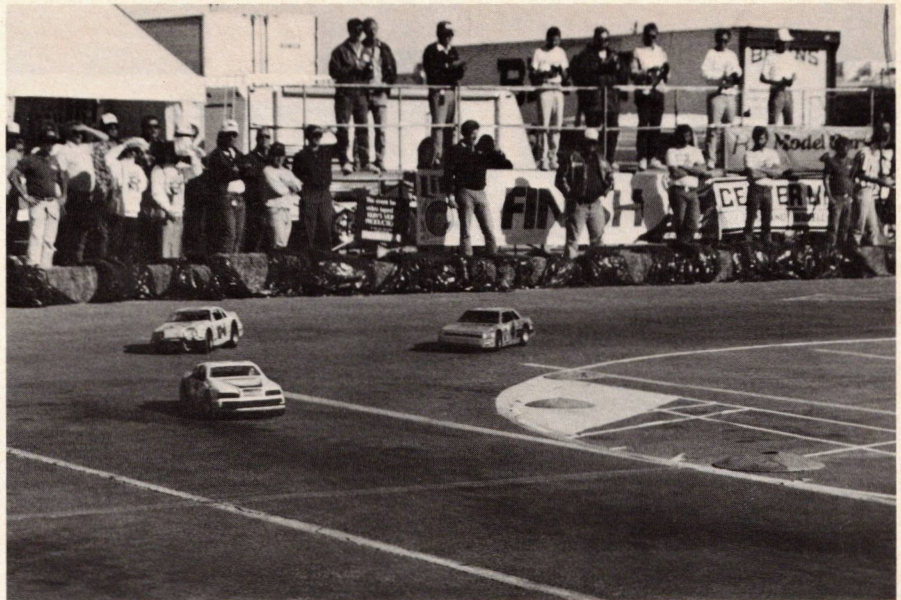
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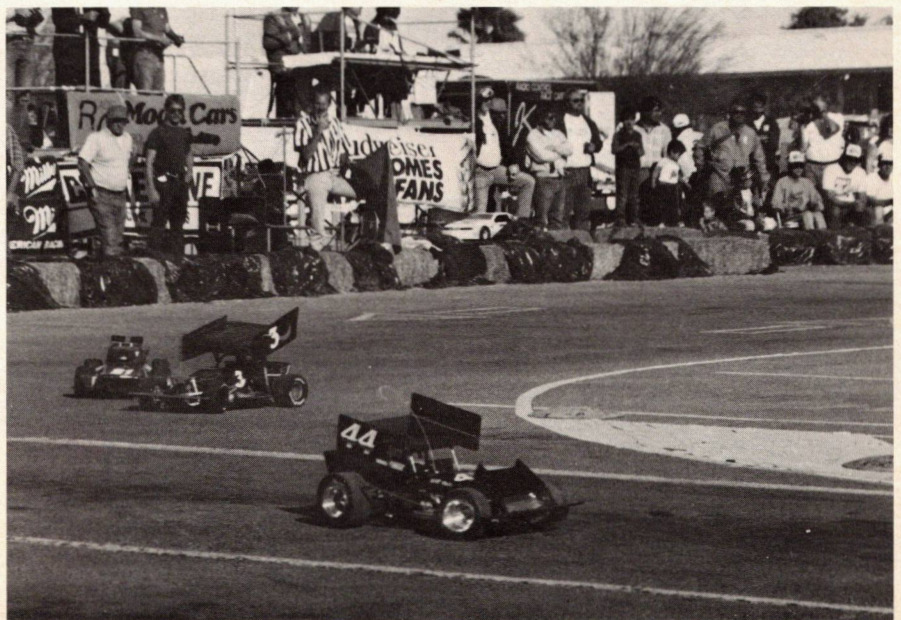
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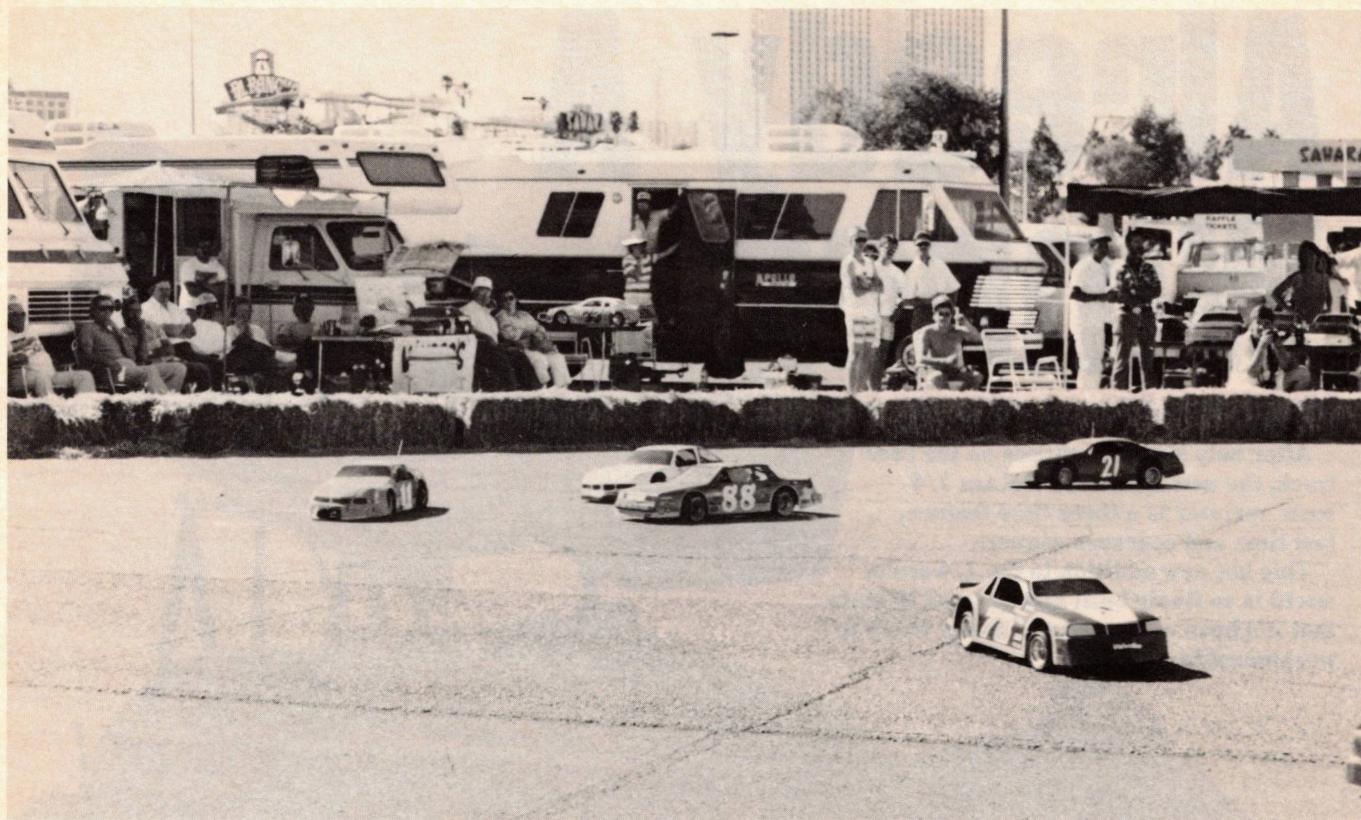
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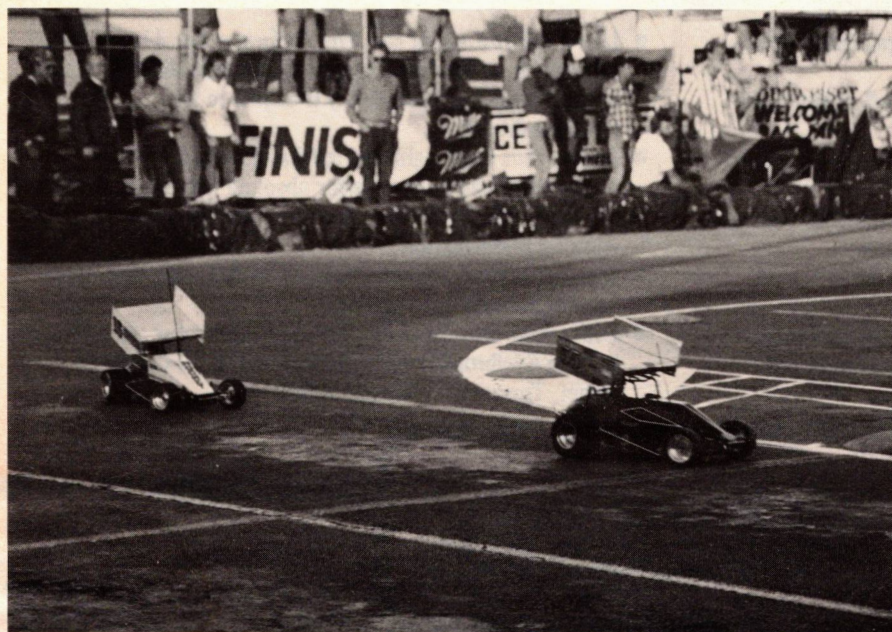
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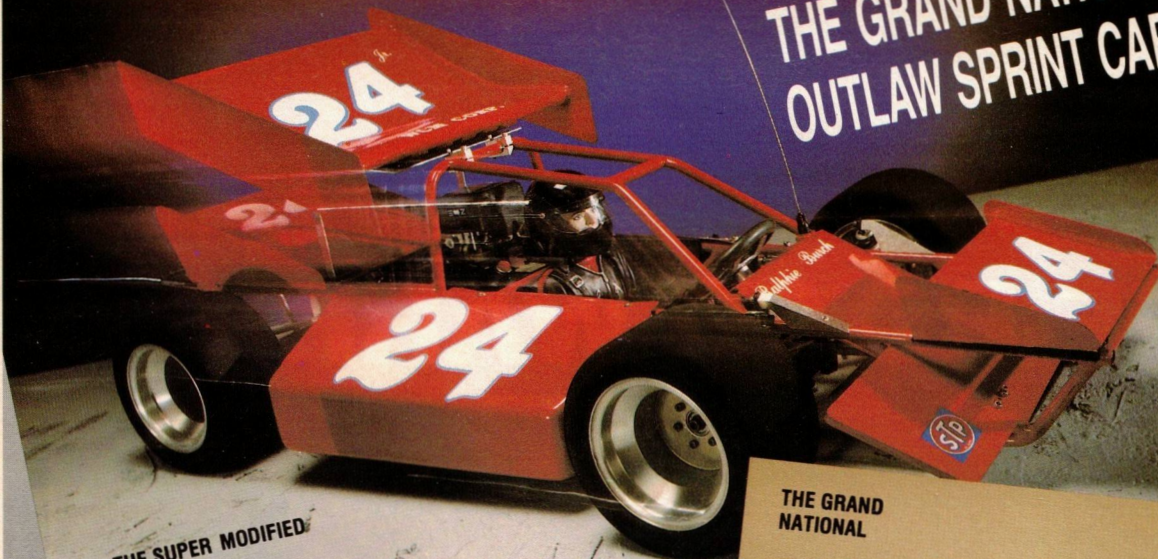
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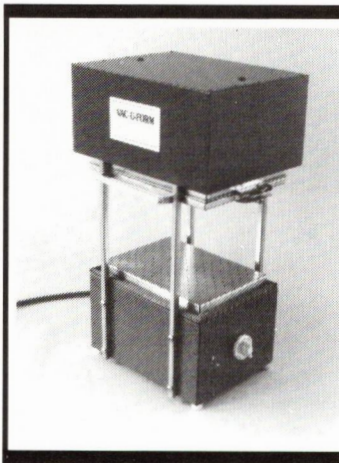
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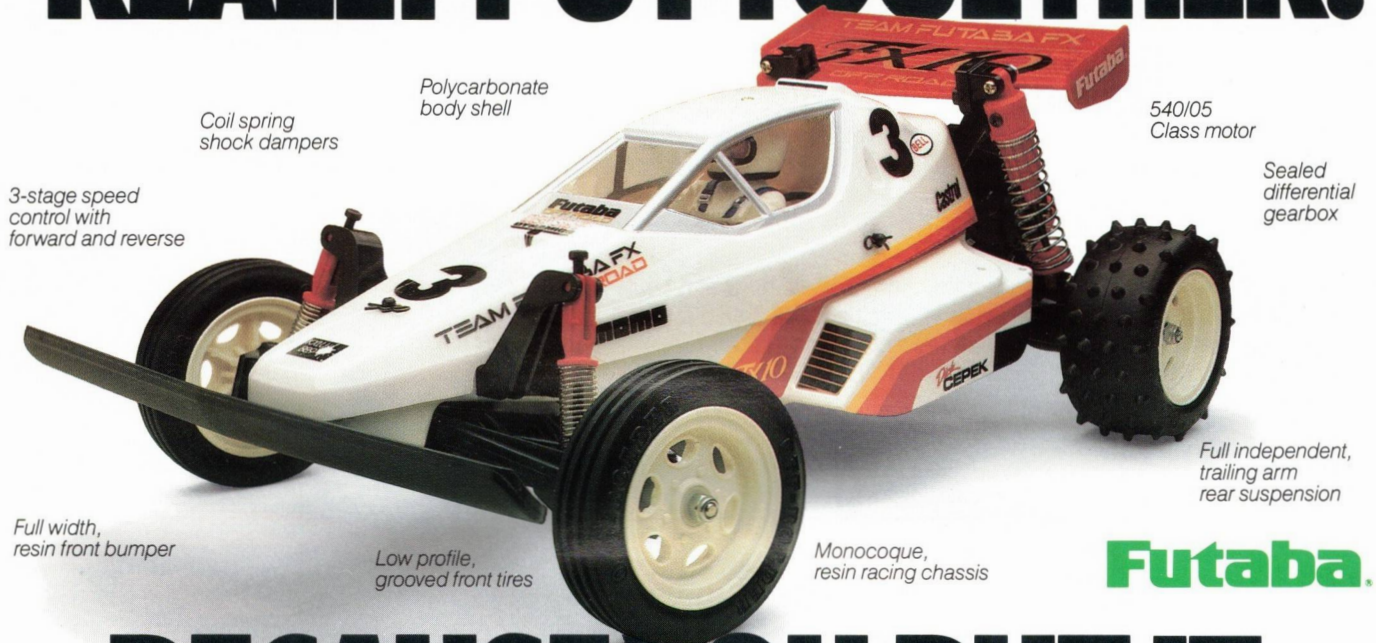
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Monocoque, resin racing chassis

Futaba.

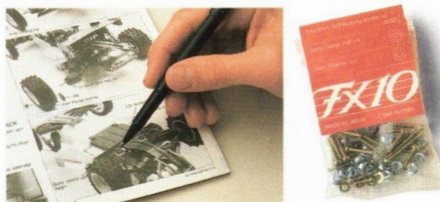
BECAUSE YOU PUT IT TOGETHER YOURSELF.

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.

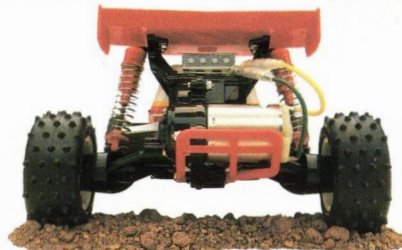
The FX10's step-by-step assembly



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.

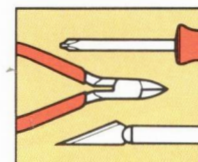
Four wheel, coil spring independent suspension and all terrain tires give the FX10 offroad capability. Trailing arm, full independent rear suspension provides optimum traction. And the FX10's sealed gearbox/differential delivers power to the wheels on all types of surfaces, from pavement to dirt and 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
4 Studebaker/Irvine, CA 92718
714-455-9888

Outrageous

MRC-Tamiya's LUNCH BOX

Who else but Tamiya could design a classic 1/12 scale Dodge van and put it atop monster tires a full 4.5" in diameter and 2.7" wide? And who but Tamiya could style it so that it begs to be customized, and comes ready for you to do the body work?

You can paint this baby anyway you'd like, and modify it by adding wild windows, radical spoilers and so much more. Add the already chrome-plated front and rear bumpers and exhaust mufflers onto its rugged body and you're set to impress.

Now, once you've got the right look, look underneath. You'll find a front independent suspension. On

each end, 5" high coil springs buffer the blows of off-road. And a 540-type motor turns out torque to drive the monster tires over and around the bumps, bogs and boulevards, throttled by a 3-step forward and reverse speed control.

Tamiya's LUNCHBOX... It'll eat the competition for breakfast.

For a 64 page MRC Radio Control Products Catalog, send 50¢ to cover catalog, postage and handling.



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