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May, 1987

volume 2, number 17

# **RADIO CONTROL Model Cars**

ICD 08658

U.S.A. \$2.50

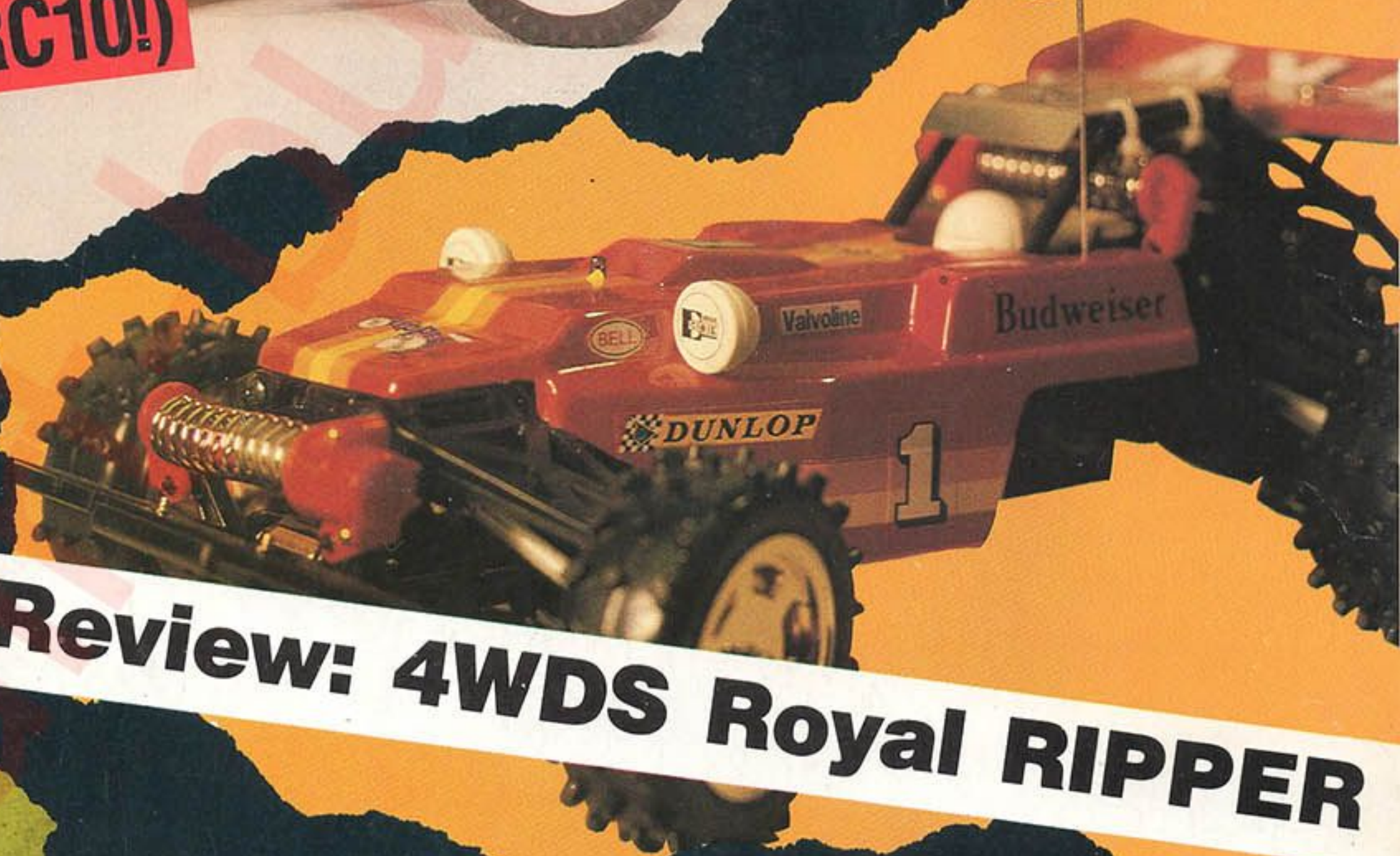
Canada \$3.25

**An Outlaw Sprint from an RC10!**



**(It's an RC10!)**

**RADIO  
WORKSHOP**



**Review: 4WDS Royal RIPPER**



**Review:**

**YOKOMO SE**

**ANSWERMEN**

**NEW PRODUCTS**

**ROAR Club List**

**Inside the Reedy Race of Champions**





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Our new generation of high performance Contest servos are specially designed and engineered for a wide variety of R/C applications.

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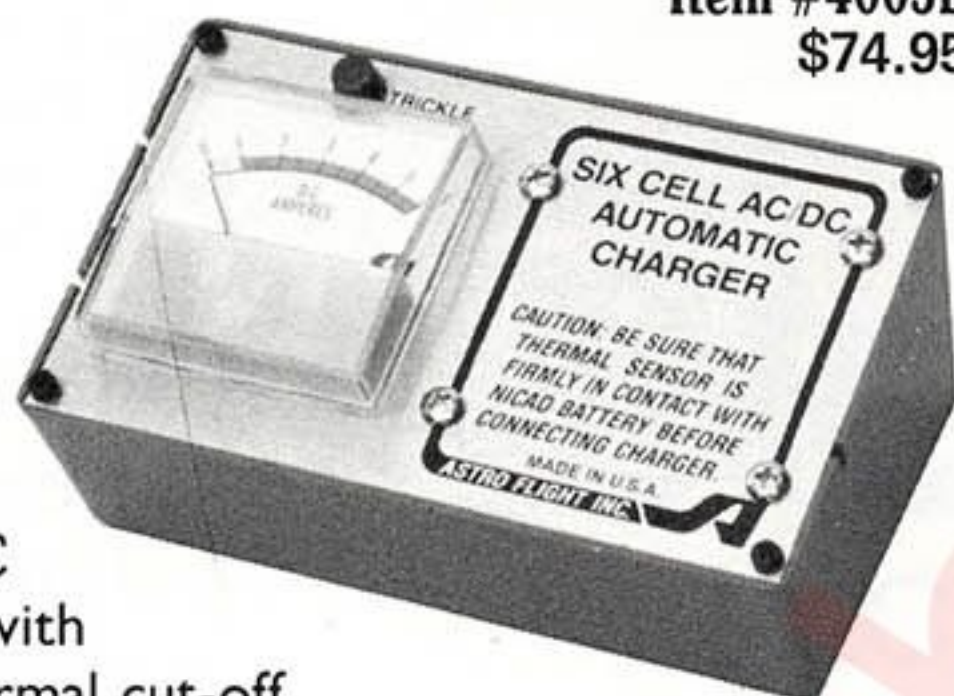


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Automatic charger with thermal cut-off. Thermal cut-off senses pack temperature to give you a maximum charge every time without burning up batteries! Automatically switches to trickle charge. Works from both 110V ac and 12V dc. A perfect choice for the beginner in r/c racing.

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# RADIO CONTROL Model Cars

CORPORATE OFFICE: 898 WEST SIXTEENTH ST., NEWPORT BEACH, CALIFORNIA 92663

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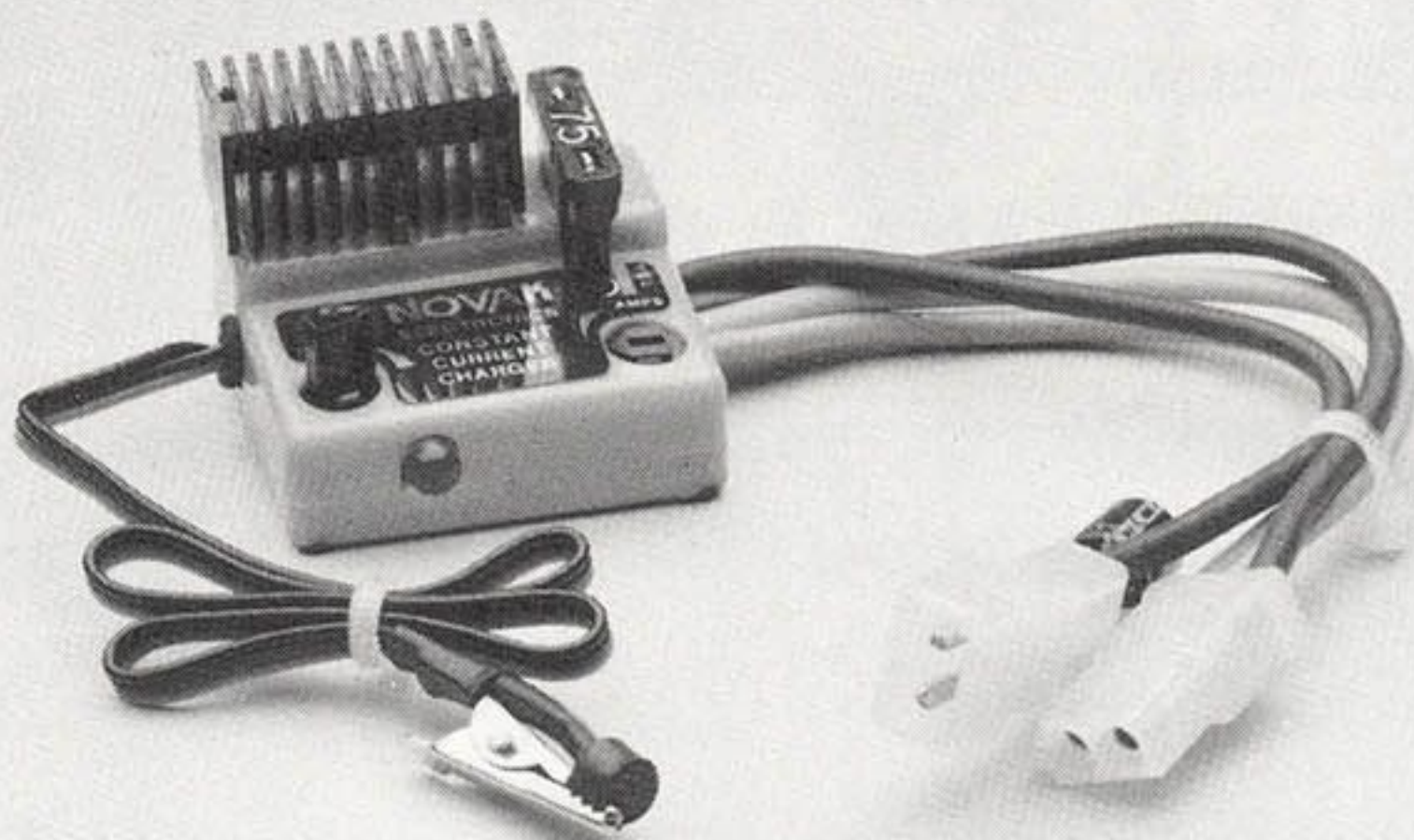
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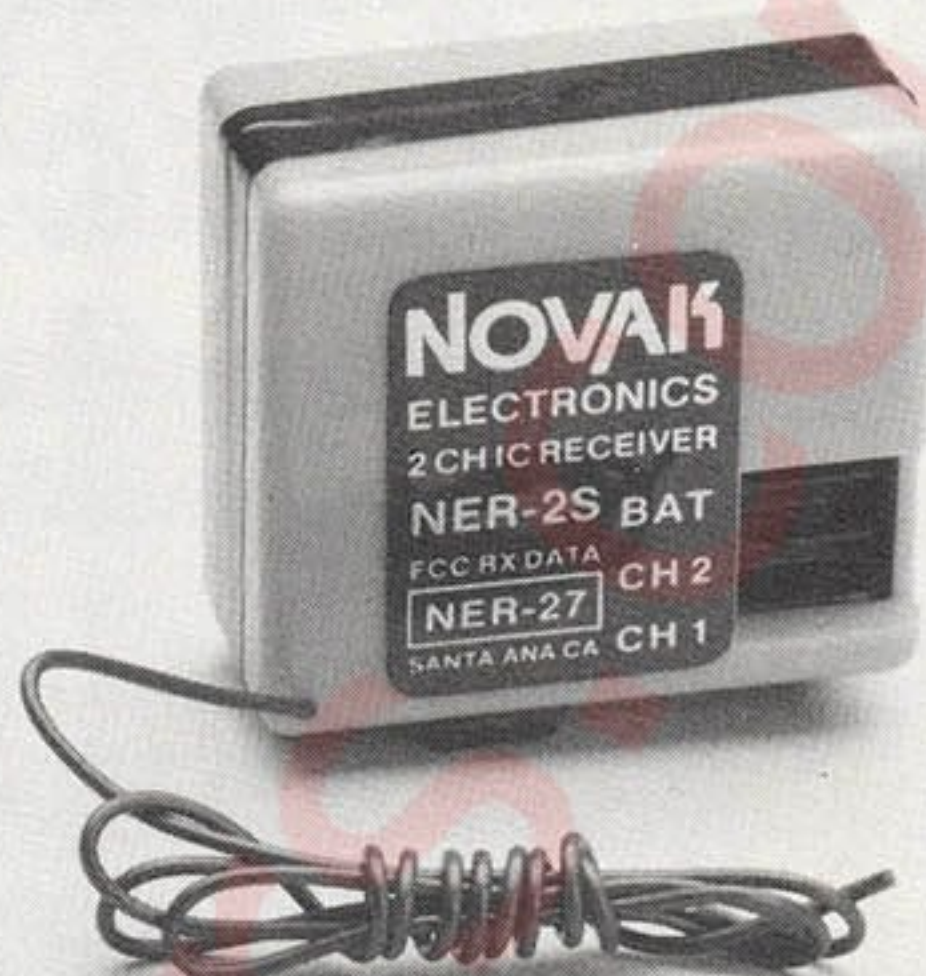


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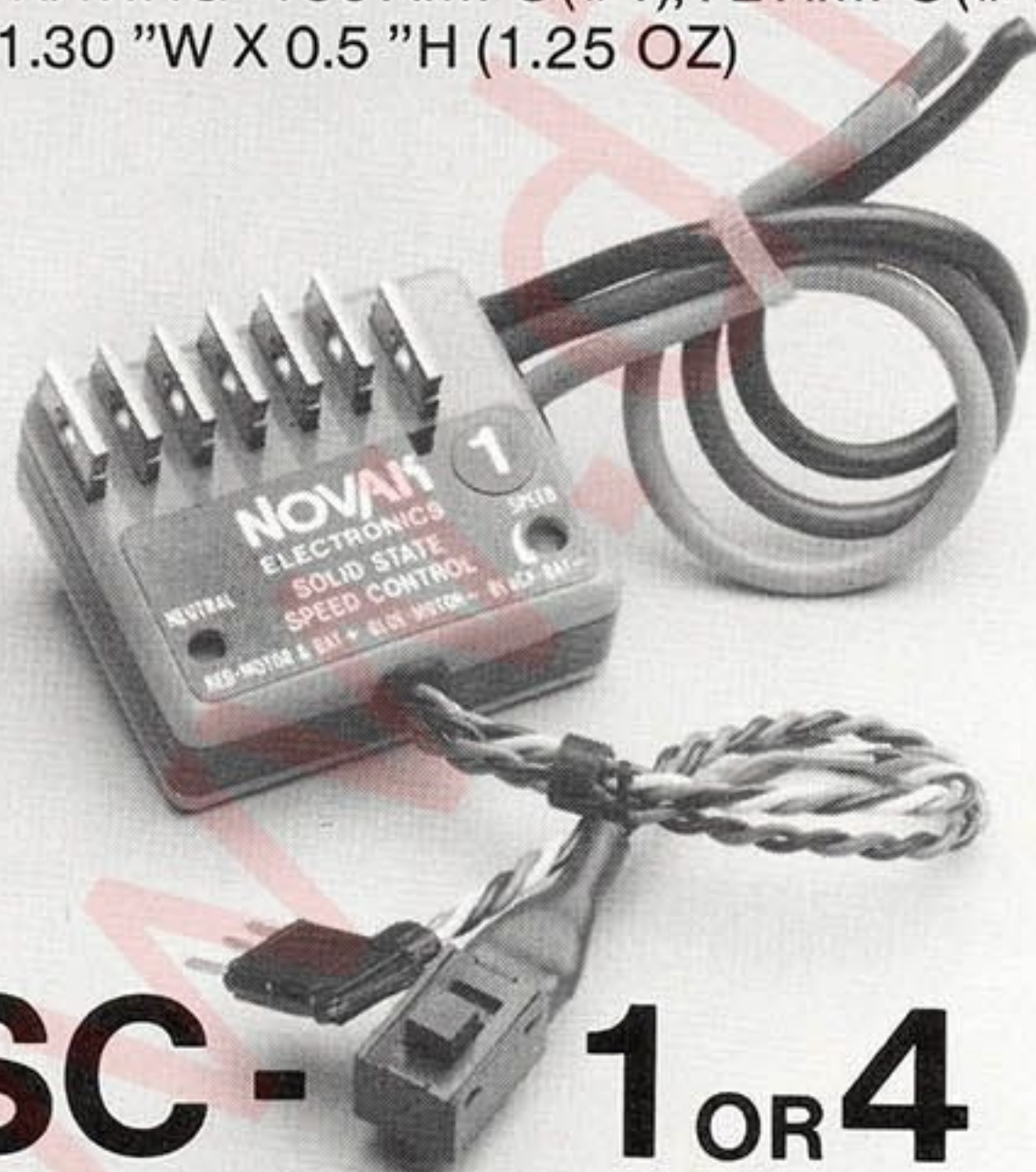
COMPETITION RACING SPECIALISTS

# NOVAK

## ELECTRONICS

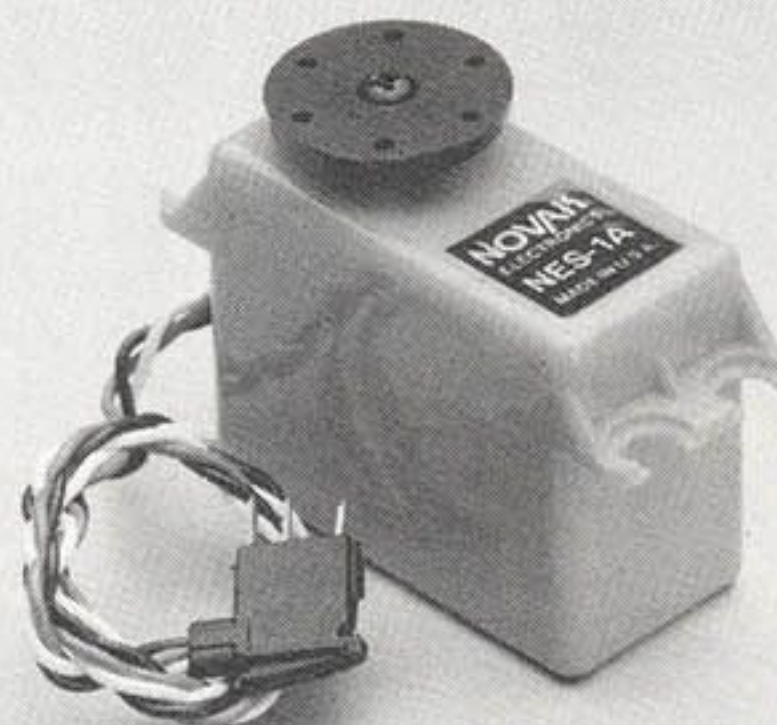
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# NES - 1A

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## ELECTRIC THRILLS

Indications are, that 1/10-scale road cars are the big new hit of 1987. "New" may not be the correct term, as variations from stock 1/10 offroad cars have been running here and there for several years. But the influx of new kits, after-market conversion parts, special bodies, and sprint car conversion kits shows that this facet of R/C cars is growing in popularity at a tremendous rate.

In this writer's opinion, the explanation and logic behind this booming increase in popularity of 1/10 road cars goes back almost 12 or 13 years, when nearly 100 percent of R/C car activity centered around or-

ganized racing. Back then, 1/8-scale gas was it, with 1/12-scale Cox .049-powered gas making some inroads. Electric was just on the brink, but still in road, all-for-racing, style.

Chuck Hallum was our R/C car columnist in *Model Builder* at the time, when I noticed photos of electric-powered, radio-controlled dune buggies in the Japanese model magazine, *R/C Technique*. I brought this to Chuck's attention and commented that this could be the wave of the future. My reasoning was that, in R/C model airplanes, only a small percentage of the flying activity involved competitive racing, aerobatics, etc., whereas most modelers simply enjoyed singular or group sport activities . . . building and flying models for their own amazement, you might say . . . not for organized competition.

The additional support equipment required for gas operation, plus the need for smooth, dirt, and peddle-free racing surfaces, kept R/C car activity down to the dedicated, race-oriented hobbyist . . . until electric offroad came along. Now the non-race-oriented car enthusiast had an easier inroad to success, and could run a car virtually anywhere, even inside the house . . . very unlikely with low-clearance, gas-powered cars.

So, now, along comes electric-powered

1/10 road cars with almost the same amount of surface clearance and the big wheels of offroad. Also, there's a whole bunch of new categories; open-wheeled Indy and sprint cars, and the type so visible on today's TV, the Grand National stock cars. All of these can be built and operated by the great, silent, buying majority, the sport hobbyist and non-racer, who just likes to run the car when and where he feels like it.



Francis Reynolds and his amazing 1/10 scale R/C offroad Manitowoc 3900 Yard Crane. It's scratchbuilt, and fully operational.

### CRAZY CRANE

How about a 1/10-scale offroad R/C vehicle that weighs 172-1/2 pounds, stands up to about six feet high, uses nine electric motors, 16-channel radio, and loads itself into the back of the family station wagon? Francis Reynolds, of Redmond, Washington, built such an animal and demonstrated it at the Northwest Expo in Puyallup, Washington, in January of this year.

After watching Francis operate this exact 1/10-scale Manitowoc 3900A yard crane at the show, we were able to convince him to write us an article and supply photos, explaining how this magnificent project was accomplished. The article will appear in the June or July issue of our companion magazine, *Model Builder*. Watch for it at your local hobby shop or newsstand.

And speaking of companion magazines, RCMB, Inc., is also about to launch . . . if you'll excuse the expression . . . a third publication, *U.S. Boat & Ship Modeler*, quarterly at first, beginning with the summer issue, which is scheduled to be on sale by mid-May. All types of static and operational boat and ship models will be featured, with expert modeler/writers covering all aspects of this oldest of model hobbies. ●

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### R/C OFF-ROAD CARS

The **Cox Bandido** features quick, easy assembly, rugged chassis and gear differential. Loads of fun to build and drive! Also available with fully assembled chassis.

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Little things like chrome rims, brass bushings, unusual decals, pre-painted body, two-wheel steering modification and detailed pictorial instructions backed by full written step-by-steps set the Ripper apart from the rest. **BEST OF ALL IS THE RIPPER'S LOW RETAIL PRICE** — offering all the features without added expense.

In short, when it comes to off-road performance, the **ROYAL RIPPER** is **KING OF THE ROAD**. ...on or off!  
See it today at your local dealer!

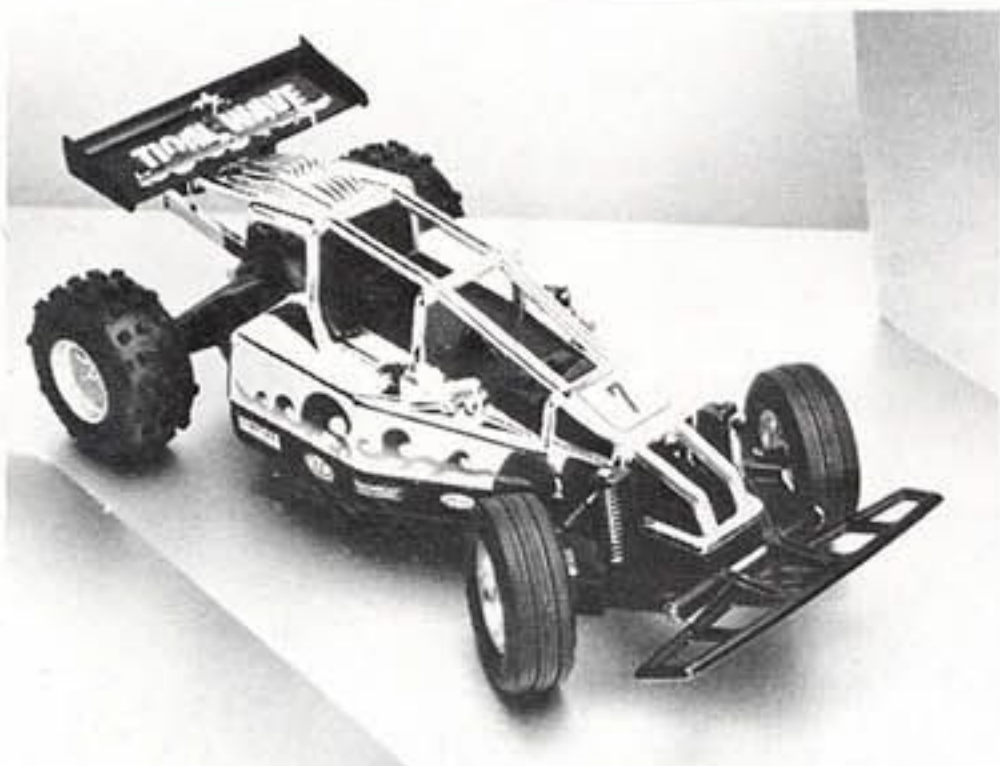
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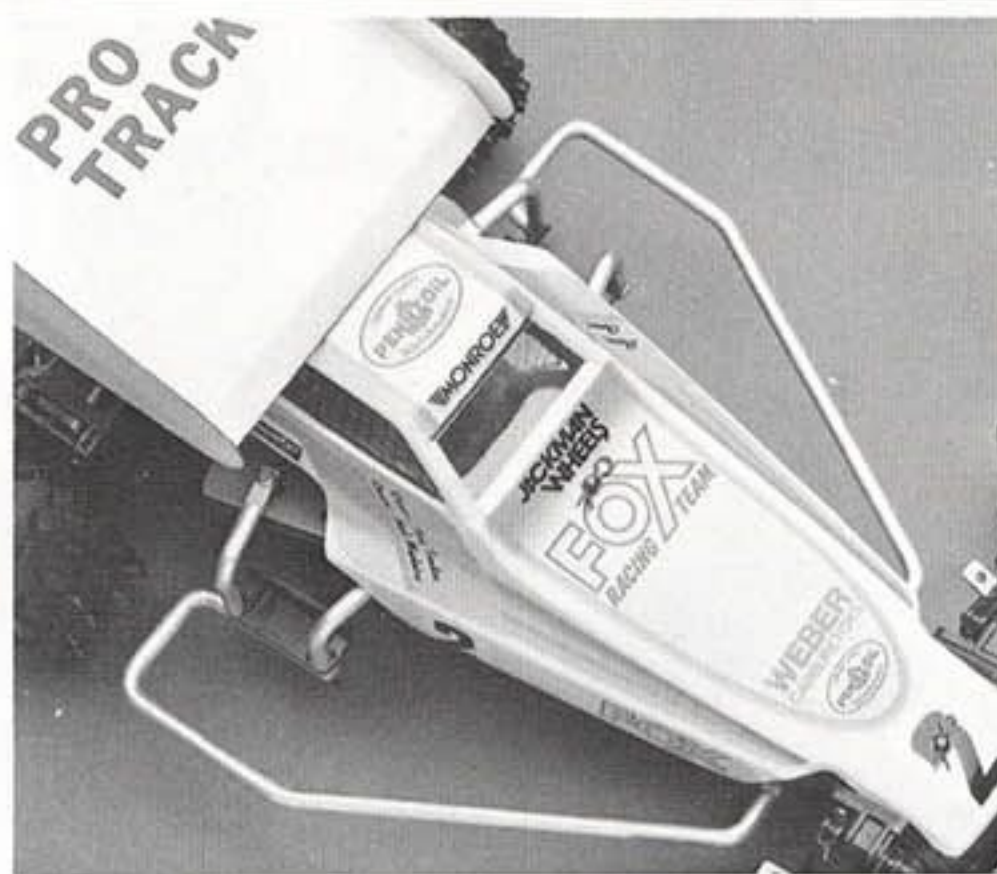
## TIDAL WAVE BUGGY

Monogram's new Tidal Wave buggy can be assembled in one hour, as many of the difficult assemblies are installed in the factory-assembled and tested chassis. The Tidal Wave comes with a special handling package, consisting of an adjustable oil-filled rear monoshock, a precision adjustable tie rod kit, and four ball bearings for the front wheels. These high performance, value-packed extras improve handling, increase speed, and extend battery running time. The Deluxe Tidal Wave kit also includes a 2-channel radio transmitter; a 7.2-volt, Ni-Cd battery pack with 110-volt charger; and 10 Duracell AA batteries. Get this complete package from your hobby shop, and you're ready to roll!



## FRONT STABILIZER FOR FOX

Custom Racing Product's Front A-Arm Stabilizer for the Fox is designed to reduce lateral (side-to-side) movement of the front suspension arms, giving you a straighter driving line as you race. The Stabilizer sells for only \$1.99, at your nearest hobby shop.



## PRO-TRACK NERF BAR

The new Pro-Track Nerf Bar can protect your car from devastating t-bone collisions that can wipe you out. Designed for the MRC Fox, the Pro-Track Aluminum Nerf Bars are lightweight, and designed so that they keep the car from hanging up on other cars or barriers. The kit is easy to install, as it comes with complete hardware and instructions. Price for the Fox Nerf Bar kit is \$15, at your hobby dealer, or contact Pro-Track, 9320 Bechtel Road, Elyria, Ohio 44036-0441.



## CHEVY STEPSIDE

Parma's new Chevy Stepside 1/10 scale

body is available in clear Lexan and is a perfect replacement for the Tamiya Blackfoot body. The Chevy Stepside body also fits most other cars with the use of a Parma body mount kit and is the perfect body to run in the new Heavy Metal class of racing. Only \$19 at your hobby shop.



## LAMBDA QUICK CHARGER

The new Kyosho Lambda Quick Charger will give your batteries an automatic 100% charge every time—just by pushing a button. It will never undercharge or overcharge; this makes it perfect for the beginner and big shot racers too. The Lambda Charger has an adjustable current switch, allowing it to charge from 4 to 7 cells, from 100 to 4000 mAh capacity. It also features a handy built-in ammeter, universal spring-loaded output terminals, and voltmeter jacks to allow easy monitoring of the voltage. See the new Lambda Charger at your hobby shop today. It's from Great Planes Model Distributors.

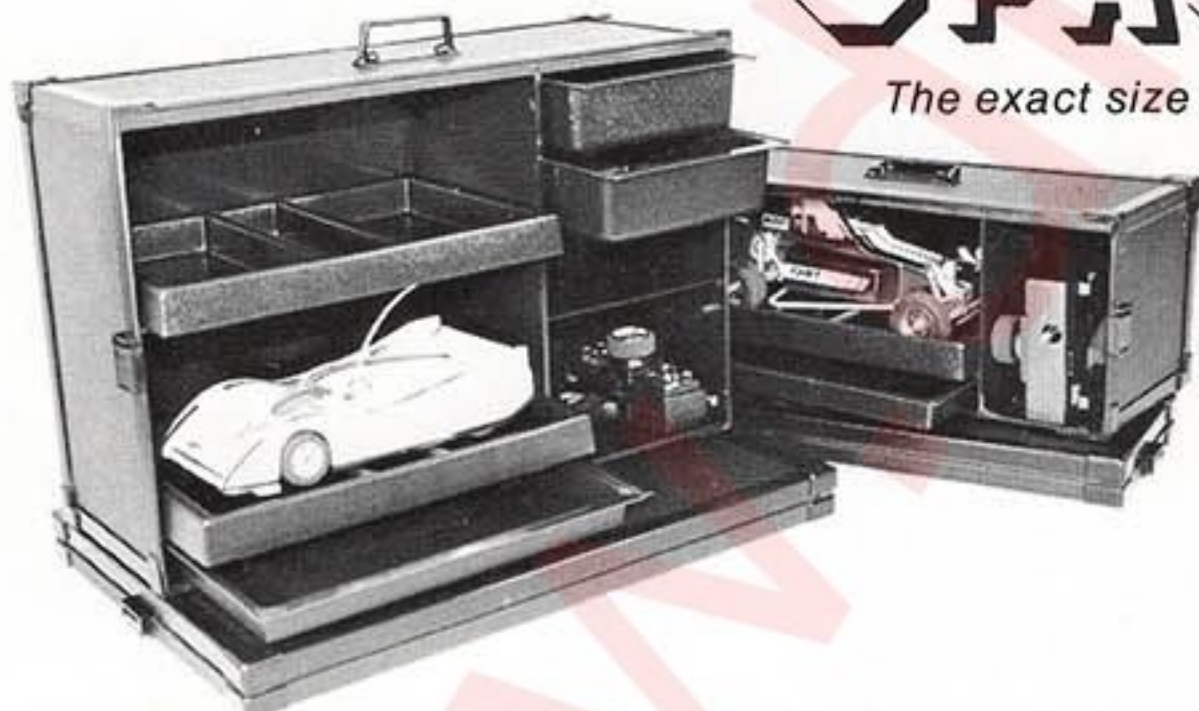


## MAGNUM 2P/SPORT

The Futaba Magnum radio is for the racer on a budget. The new 2P is a no-frills system with the Futaba reputation intact. The Sport features a superb grip and balance, and a steering wheel that is adjustable for spring tension and lock-to-lock throw. Included with the Magnum is an R2GS receiver, two S28 servos with servo reverse features, switch harness and battery case, and frequencies of 27, 72, and 75 MHz available.

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The exact size you need—from quick, easy kits.



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The Ultimate Car Case

- No Finishing Required
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The Ultimate Car Case — **SpaceCase 2001** — (12x27½x18") offers you more useable area, for its size, is lighter, and more durable than other cases on the market. This case comes with these molded parts: 2 car trays (11x16¾x1½"); 2 part drawers (9x11x3"); 1 tool drawer (11x16¾x1½") plus a compartment for 2 transmitters. Single Car — **SpaceCase 2011** — (12x23¼x10") \$99.95

Step-by-step instructions, all materials and bonding agent are included for quick, no-tools assembly. Constructed of tough, fuel-proof 1/8" textured black A.B.S. plastic.

The SpaceCase concept allows building a case of any width, length and depth to 10 cubic feet for transporting or shipping your models.

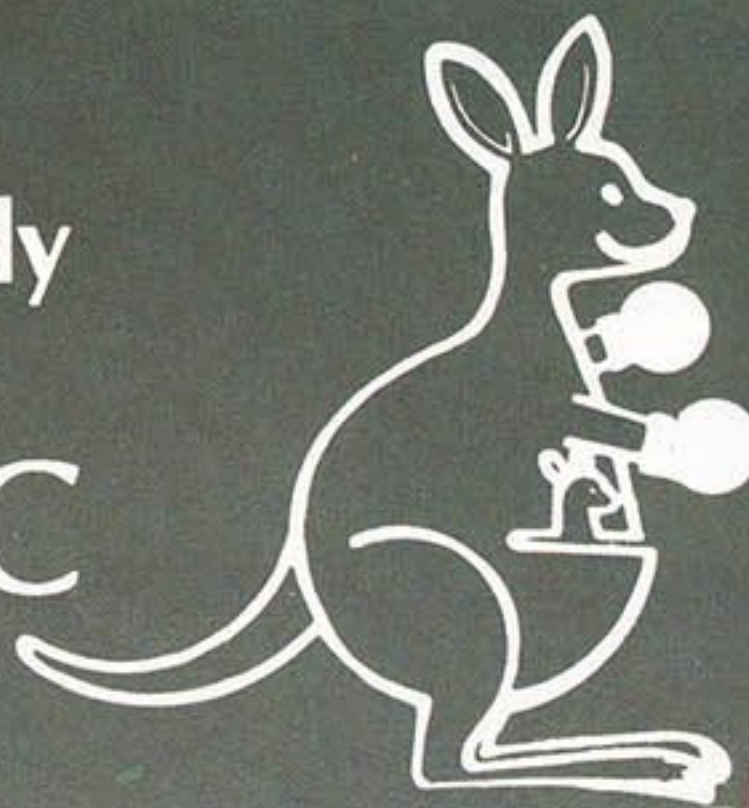
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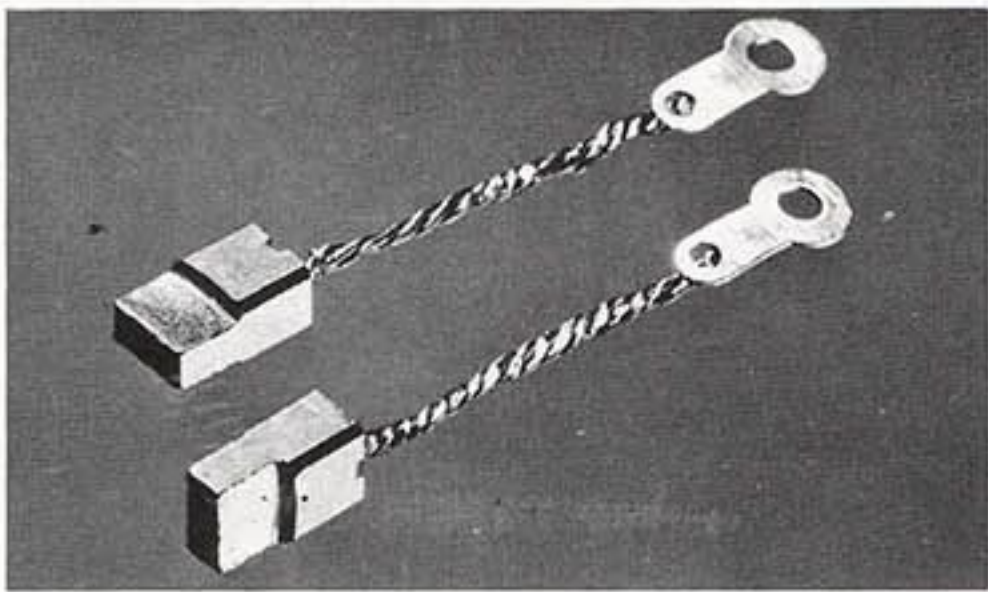
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- Extra large, front bumper design.
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- Low and high speed pinion gears provided.
- Servo saver device factory installed.
- Independently replaceable servos and receiver.





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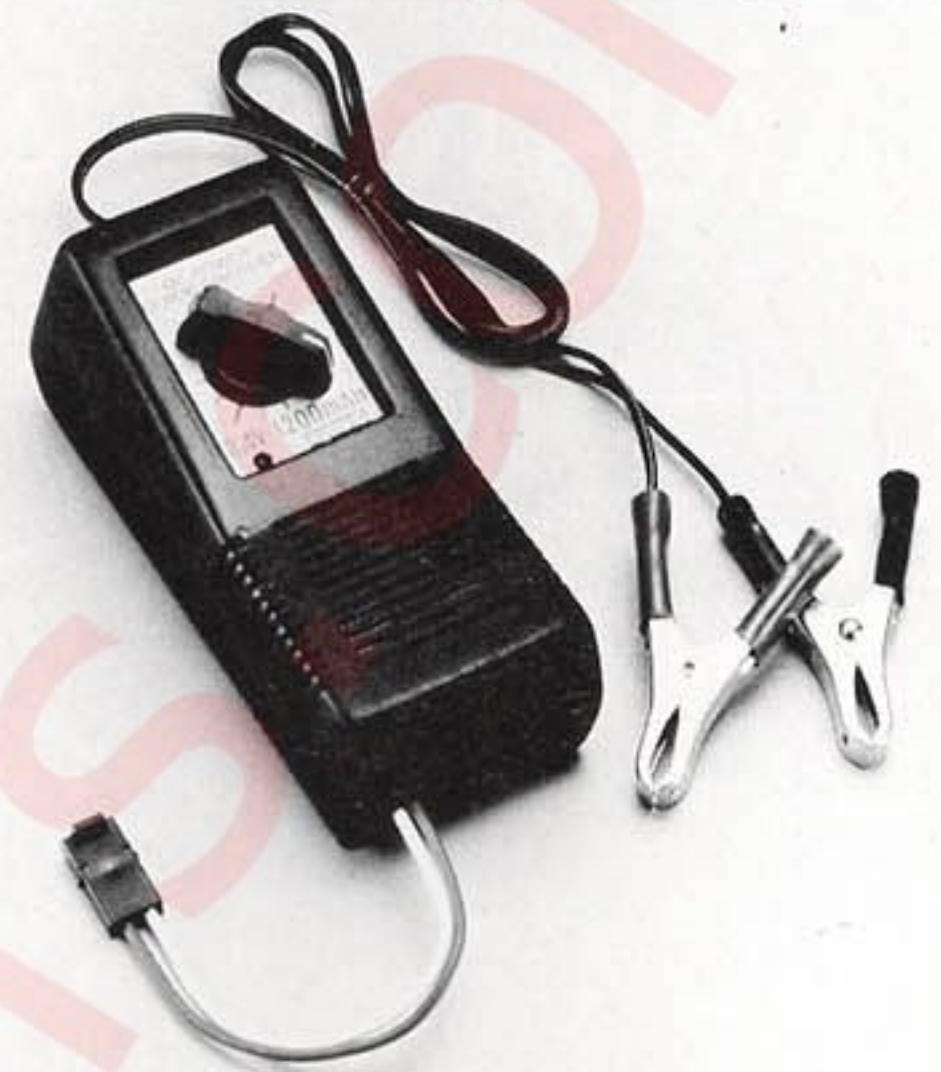
These new cut brushes from Parma will "tune-up" Yokomo and Kyosho motors by reducing the friction on the commutator. This in turn allows high rpm, and less amp draw. Look for the Parma Tune-up Brushes at your favorite hobby shop.



## MONOGRAM'S BRUSHFIRE

A new car from Monogram Models, the Brushfire, is a streamlined offroad car with eight ball bearings included, along with four adjustable oil-filled shocks. The Brushfire comes ready to paint, and ready to run, so there is no long, tedious assembly

process involved. Bring it home, paint it up, install the radio, and you're ready to race!



## KYOSHO QUICK CHARGERS

The new Kyosho Power Chargers will quickly and easily charge your Ni-Cd batteries, and come in two configurations: a 6-cell 1200 mAh pack charger, and a 7-cell charger. Both have alligator clips to use with a 12-volt battery and adjustable timers to help you get a good charge each time you use it. These chargers are reasonably priced, and available at your hobby shop. Distributed by Great Planes Model Distributors.



## MOLYBDENUM GREASE

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- LED power indicator.
- RF output indicator meter.
- Servo reversing switches.
- Fuel resistant transmitter, receiver, and servo cases.
- New small, lightweight, rugged high performance AM receiver.
- New 75 MGHZ, narrow band AM circuitry for extended range.
- High torque, indirect drive for gear train protection, water resistant servo with fiberglass reinforced case.
- 4 color, gift packaged.

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- Wheel tension adjustment.
- Easily interchangeable crystals.
- Charger connections for optional nicads.
- LED power indicator.
- RF output indicator meter.
- Servo reversing switches.
- Fuel resistant transmitter, receiver, and servo cases.
- New small, lightweight, rugged high performance AM receiver.
- New 75 MGHZ, narrow band AM 1991 circuitry for extended range.
- High torque, indirect drive for geartrain protection, water resistant servo with fiberglass reinforced case.
- Wheel angle adjuster.
- 4 color, gift packaged.

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## NEW! HIGH TORQUE INDIRECT DRIVE SERVO

03402



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Futaba type connector **\$4.00**

Specs: centering 1/2 deadband.

010 ms. 36 degrees. Size = 1 1/2 long.

3/4 wide. 1 7/8 high. And weighs 1 3/4 oz. per servo.

Water resistant fiberglass case

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Solid state electronic speed control w/proportional 1/2 speed reverse. 6-8.4 volts only **\$39.95**

03SD 2040R



off road buggy

**Kangaroo**

1900

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Ready to run w/2ch R/C and electric solid state speed control



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0500

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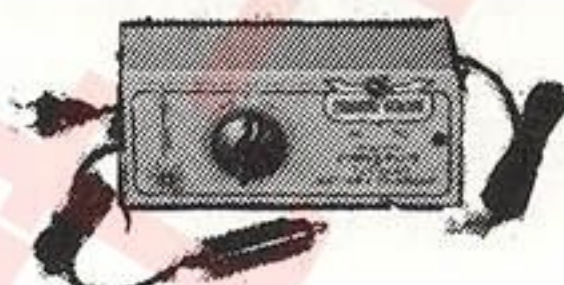
## STARTING DONUT

0501



**\$3.95**

## AC/DC FIELD QUICK CHARGER



**\$27.95**

0802

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## COUNTERS, CLUBS, AND CONFUSION

Dear Answerman,

I got a Tamiya Hornet for Christmas. This is my first R/C car, and I would like some tips on taking care of my car. I have some trouble with the Airtronics radio control too. It is digital proportional SR-2P with two 946535 Airtronics servos and a Sanwa receiver. When I adjust the steering to go straight after I turn my car, it does not return to the same neutral position. I would also like some ideas on hop-up parts for the Hornet for competition racing. I enjoy reading your articles. Your friend,

Arthur

A. The Hornet is a good little car, and the SR-2P radio is a quality unit. Your steering problem is probably a bind in the linkage. Disconnect the linkage from the servo, and check for binds or clearance problems. Although the Hornet is a good entry-level car, it is not a good racing car. The only parts I would suggest are aftermarket replacement for worn or broken items. Practice, learn, and have fun. When you are ready to go racing, buy a race car. To pour money into your Hornet to try to make it a racer is not smart. Save your money for a better car.

**"My problem is that I do not have control of the cars when racing on a carpeted floor in a metal-roofed building..."**

Dear Answerman,

I have an RC10, and I would like to dye the nylon parts black. I have tried using two different clothing dyes on the wheels, but all they did was turn the parts purple. What kind of dye should I use, and how should I go about dying the parts? Thanks. Sincerely,

Peter S., Huntington, New York

A. My experience is that RIT brand liquid dye works best. I also suggest that you heat the water close to boiling before submerging your parts. The longer you leave the parts in the hot dye, the darker they will get.

Dear Answerman,

I really enjoy your magazine, I think it gives more useful information on R/C cars than any other publication. I've seen many

different radios of varied prices. I would like to know if a more expensive radio will really help the car that much. I would also like to know if you can use any electric speed control with any radio, or if they have to be compatible. Last, but not least, the Kyosho Ultima looks competitive. Can we expect a review of it in the future? Keep up the good work.

Bill M.

A. An expensive radio does not help the car. All better radios start at about \$150. The servos are the biggest difference in radios. The better servos cost more, but the standard servos in the better radios are adequate for most 1/10 cars. Most electronic speed controls are compatible with most radios. I think the Ultima will show up soon.

Dear Answerman,

I recently purchased a Tamiya Super Shot. Since its assembly I have had trouble with the gears in the front gearbox popping. Is this really a problem, or is it normal? If it is a problem, how can it be fixed? I am currently running with a 13 T pinion gear and the Mabuchi Technipower motor. Would I get more speed and/or torque with a larger pinion gear? What type of motor would you recommend for more speed and performance? Thank you.

Shawn D., Frankfort, Kentucky

A. The clicking is the differential gears skipping—a common problem on Tamiya cars. Pick up some CRP 5mm shims, and place them on either side of the crown gears that press into the beveled spider gears. This should remove the play from the gears and eliminate the skip. If you are not using ball bearings this fix will be short-lived. Going to a larger pinion will increase top speed and torque but at the cost of your battery and/or motor life.

Dear Answerman,

I have two cars (RC10 and a Parma 1/12 scale) both on different Futaba frequencies, pistol-type controllers with Novak NESC-4 electronic speed controls, and .1 cap on both brushes to ground and brush to brush (3 total) on a RS-540 motor. I also have a 47pf cap in the motor leads before the motor at the connector (one on each side of the connector). My problem is that I do not have control of the cars when racing on a carpeted floor in a metal-roofed building. The nicest thing I can say is it goes nuts, especially when coming by the drivers'

stand. I lose control of the car. I have tried standing elsewhere, and it is a little bit better but not much. I am sure that no one in the pit area is turning on their transmitter accidentally when I am racing. Also, I have had the transmitter and receiver retuned at an electronics business. Is there anything I can do to improve the control of the car? Thank you.

W.P., Portland, Vermont

A. If you feel sure that your radio equipment is tuned correctly, I suggest you try having all of the competitors try running with their transmitter antennas at about half of their total extension. This makes it easier for the receiver to find the correct signal. It also makes it better for the rest of the competitors as they will have fewer problems as well.

Dear Answerman,

Two questions: 1) I've watched electric offroad cars race, and I quickly observed that there was a considerable difference between the performance of an entry level car (Hornet) and a racing car (RC10) primarily because of suspension. Considering this, would a pan car (RC250) perform poorly compared to a suspension car (RC500) or does the fact that these gas cars race on smooth surfaces nullify the need for suspension? 2) I live on a dirt road, and the nearest place to run on asphalt is 15 minutes away. I was considering an offroad gas car, but I've been told that dirt and gas don't mix. And even with the best care, the engines only last half as long, and the cost of maintenance on the car is noticeably increased. Have you found this to be the case, and would you consider the 15-minute drive and a road race car a better investment? Sincerely,

Richard S.

A. Yes, your assumption is correct. The suspension car will out perform the pan car under most circumstances. It is very rare that a pan car can compete with a suspension car even on a smooth surface. All things considered, I think the 15-minute drive is a good idea. The 1/8 scale offroad gas cars do require a fair amount of additional dust-proofing and maintenance. This is not quite bad if you are running on grass, since the dust which is so destructive is kept to a minimum.

Dear Answerman,

I have a Bolink Invader. It is made for 1/10



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## FIVE STAR

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scale on-road racing. I put a Reedy Modified motor called the "Enforcer" in my car. Will this be bad for the gears? Can you put an electric engine in a car that will be too fast? Also, when I race my Bolink I have had a hard time keeping the tires from slipping, and what usually happens is my car fish-tails. I have heard of solutions that you can put on your tires to make them sticky. What are some? (The track surface is asphalt, and the tires are slicks.) One more question. When I am changing the timing on my motor (twisting it), I hear a higher pitched sound, and it seems like it is turning more rpm. Does this mean I will have as much torque, and will my car start out as fast? Thank you for your help.

Joey W. McE., Marble Falls, Texas

A. Yes, you can definitely overpower a car. Try dropping a tooth on your pinion. This will give good, smooth acceleration without losing much, if any, top speed. This will also yield longer run time, and extend the life of the motor. Try cleaning your tires with WD-40 for the best natural traction. If the area you are running on is clean I would suggest you try the Rev-Tech, Trinity or similar tire preparations. A cheaper method is to pick up a can of BelRay spray chain lube, and spray the track area you are running on as it will last all day. As you increase the timing you will decrease the torque. I do not suggest you run more than 5 to 10 degrees of timing as you will only create more heat and shorten the life of the motor.

Dear Answerman,

I have been looking at radio controlled monster trucks for a while, but none of our hobby shops have any. I've narrowed it down to MRP's High Roller and MRP's 4 x 4 Kong. Our hobby shops don't have aftermarket parts, but both ads that I read about them said only the best about each car. Which car is more powerful, faster, and rugged? Thank you.

Eric S., Valley Forge, Pennsylvania

A. I think you are talking about the same item! The new MRP HighRoller is replacing their own Kong truck of several years ago. The new HighRoller truck looks very good, and, although not yet available, I suspect it will be a good performer.

Dear Answerman,

Let me first say that I just bought my first copy of RCMC, and I'm going to be a faithful reader from this day forward. (But how about adding a few more pages.) I've just purchased my first R/C car. I acquired a Frog for a good price from someone who needed a quick buck. I'm glad I did! Now I'm obsessed. I've built a track in my backyard, but I'm having a problem. I've put a couple of banked turns in my course, but my Frog won't make the turns, no matter how far I adjust the steering. The car just goes straight over the banks. Is it the way I'm controlling the car, or could it be the car itself? I'm running on rubber tires. Would sponge help me with making better turns?

I sure would hate to have a problem like this deter my obsession from such a great hobby.

Ed B., Albany, New York

A. Foam tires will not help you turn on dirt. I would suggest you pick up some Rough-Rider front tires or try the Pro-Line brand knobby fronts. It is also possible that you are just going too fast to make the car turn at the rate you wish. And, note that we've added more pages!

Dear Answerman,

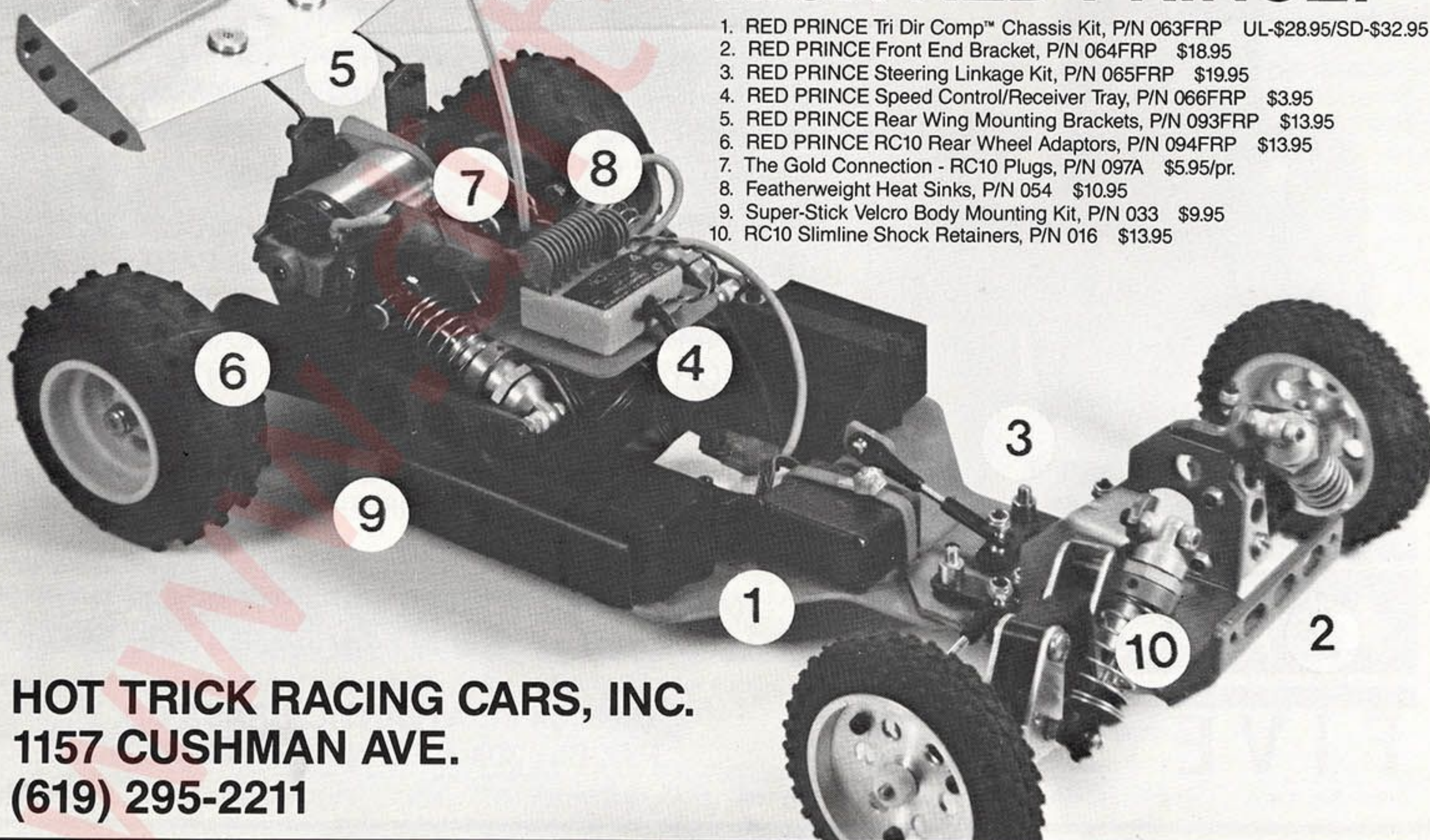
I own a SuperChamp, and I was wondering if you could give me some hot setups. The track that I am planning on racing is a clay oval track. I have a suggestion for your magazine. The suggestion is to have some shootouts between two different equally matched cars. The object is to compare and evaluate them. I love your magazine. Thanks.

Greg H., Mableton, Georgia

A. Try using coil-over springs on your shocks, and get rid of the junky little torsion springs. This will allow finer suspension adjustments. Start with 30W shock oil for oval racing. A full set of ball bearings is also a good investment for added performance. Experience with a front and/or rear sway bar for stability on the high speed ovals.

**Send in your photos of your hot car setups; we'll print the best in our new Reader's Racers Photo Section. The best photo of the month gets a free subscription to R/C Model Cars! You can't lose! Send your pictures today!**

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chassis is a born-to-run clear lexan body and protecting the underside, a fiberglass skidplate.

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## SERVICE FOR YOUR EQUIPMENT

**H**ow radio control systems work has more or less been the main subject here in Radio Workshop since we started the column back in 1985. I say, "more or less," because we have strayed more than once, as other subjects that needed to be discussed came up. As I have said before, this is your place to talk about those electronic items that the full enjoyment of the R/C hobby depends upon. If you want to know more about a particular subject, please ask. Or if you have run into something interesting that you think the rest of the clan should know about, please share it with us.

**"The most qualified people to service your radio are those with the most experience on that brand of radio..."**

With all of the talking that we have done about how radio systems work, we have not said anything about what to do when they don't. Unfortunately, the time comes for just about every R/C system when it will need service of some sort. Now this is not saying that the quality, either of design or workmanship, is poor; because, generally speaking, there are a lot of good bargains

to be had in R/C systems. But it must be remembered that most radios, especially the car-mounted components, lead a far from peaceful existence. They are subject to heat, cold, shock, vibration—and, if that isn't enough, they can become victims of the "experts" who are found at just about every R/C site one can go to. The best advice I can give you here is that you not let anyone whose experience you are not familiar with fool or otherwise work on your R/C equipment. No matter how fast his cars are or how good a driver he is—radio technicians are made of something else entirely. Every R/C repair facility will tell you that they collect a lot of money for correcting things that some well-meaning "friend" fixed for their customers!

The next bit of advice has to do with where to send your R/C equipment for its needed service. The place is the manufacturer or importer! The primary reason for this is that he will have the best qualified personnel to work on his particular radio. Not that Company A's technicians are better than Company B's—it is simply that they each will have more experience on their particular equipment, and there is no substitute for that! Secondly, they will have the necessary technical data and replacement parts, without which the best technician in the world can not help you.

Let's run that by once more: The most qualified people to service your radio are

those with the most experience on that brand of radio—and they get that experience from the place the radios are made or distributed. There are some exceptions; we'll get into that later.

Obviously, that also says don't take your non-working R/C gear back to your dealer or send it back to the mail-order company it came from in the first place. Here too, there is an exception, as it applies to the local dealer. Some of them will accept defective equipment to be sent off for needed repairs as part of their customer service, which we think is commendable, and which you should take advantage of—if you know the entire procedure will be acceptable. Is your equipment going out today, or is it going to sit there until the dealer has enough on hand to make it worth packaging and shipping? Will he add his own fee, other than shipping costs, to the repair fee, if any? These things are generally a matter of individual reputations, and are usually known by the other customers—ask around.

Sending the system yourself, except for the logistics of finding a box and a shipper, can simplify things somewhat. You will be dealing directly with the repair facility and can call or discuss the matter with them if required. By not introducing a third person, the dealer, between you and the technician's workbench, you have more control of the whole operation. It can be helpful!

The exception here can be warranty service. If the equipment is still within the warranty period, and you can fulfill all of the requirements of the warranty, it can be helpful in some cases to let the dealer handle it. They will often have an established rapport with the maker or importer and can expedite getting you back on to running. Again, the reputation of your local dealer can usually be established by asking around at the track.

Now comes that all-important warranty we just mentioned. See whether your dealer is to send it back or if you yourself will take care of it. Read the warranty statement in the instruction book so that you will not run into unpleasant surprises later on. Normally, it will tell you that your radio is guaranteed for a certain period of time but then you start to run into phrases like "misuse," "abnormal manner," "high impact," and "improper repairs." In other words, you have certain responsibilities when it comes to complying with the terms of the maker's warranty. If, in fact, the system failed within the specified period, and you have not misused, etc. any of it, you should not have any



*It has proportional steering, and proportional forward and reverse. It was seen at the Nurnberg (West Germany) Toy and Model Fair. More about it next month!*



Aisles and aisles of on-road electric cars and they're all beginning to look alike – blurring together to the point where you can't make a decision about your first or next R/C car. But one line of quite uncommon cars stands out. Kyosho's long-time engineering excellence and attention to detail has continually produced high-quality, 1/12 scale on-road racers that really stand out in a crowd. No matter what your level of experience, Kyosho has the cure for the common car.

### Super Alta Porsche Turns It On For The Beginner.



Easy-to-build, easy-to-drive and very affordable with no sacrifice in performance, the 1/12 scale, Kyosho Super Alta Porsche is ready to turn it on for the beginning driver. Adjustable front suspension, rear differential and powerful RS-540S electric motor are stock on the Super Alta. Its nylon frame is extremely strong and durable, yet lightweight. Paint the clear Porsche 956 body and your sleek Super Alta will be turning heads wherever you go.

### Fantom EXT – Uncommon Performance in a World-Class 4WD



For world-class 1/12 scale competition, the Kyosho Fantom EXT 4WD is unparalleled. Featuring ball bearings, super-efficient chain-drive system, and magnesium parts, the Fantom EXT is built for lightning speed and incredible handling. For quality, speed, and uncommon good looks, the Fantom EXT is an unbeatable 1/12 on-road racer.

### Plazma MK III Breathes New Life Into Racing

Kyosho's newest 1/12 racer is the Plazma MK III – tweaked for improved speed, strength, outstanding good looks. Building upon the successful racing predecessor, the Plazma MK II, Kyosho has added friction-reducing ball bearings, a lightweight two-piece FRP plate

chassis, and a newly-designed aerodynamic "KS-2" body that cuts the wind like a knife.

Power and quick acceleration are provided by the high-performance Kyosho LeMans 600E motor and the Plazma's low center of gravity enhances its cornering ability. Kyosho also includes independent coil-spring front suspension and a live rear axle with a coil-spring friction shock to give the Plazma road-hugging traction. The Plazma MK III is destined to be a worthy successor to the line of winning Plazma track racers.



Plazma MK III

In engineering, appearance, performance and attention to detail, only Kyosho far surpasses the accepted standards. Whether you choose the sporty Super Alta Porsche, super-handling Fantom EXT 4WD or the state-of-the-art in 2WD 1/12 racing Plazma MK III, you'll be driving the best there is. Kyosho is the cure for the common car.

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# Kyosho. The Cure for the Common Car.



Plazma MK III



problem at all in having it repaired under the warranty, though generally you will be asked to provide some proof of when you purchased the system.

Now this can be important, and a money saver to you. Some companies include a registration card with their equipment which you are required to complete and return to place the warranty into effect. Others ask that you return a dated sales slip or other "proof of purchase" whenever warranty service is requested. Fair enough—but it means that you have to follow these instructions. I do not know of a single radio equipment manufacturer or importer who will fix its radios at no charge simply because they are received with a note that reads: "Please repair under warranty." Yet, they receive them like that every day—ask them!

Where to send your R/C system when it isn't working properly. If you have decided to deal with the head man directly, here are the addresses of the major R/C car, R/C system manufacturers or importers, to be used regardless of where you bought the system that bears the indicated name:

Acoms: Altech Marketing, P. O. Box 286, Fords, New Jersey 08863; (201)572-5792.

Airtronics: Airtronics, 11 Autry, Irvine, California 92718; (714)830-8769.

Challenger: Aristo-Craft, 346 Bergen Avenue, Jersey City, New Jersey 07304; (201)332-8100.

Futaba: Futaba Corp. of America, 555 West Victoria St., Compton, California 90220; (213)537-9610.

Ko Propo: Hobby Shack, 18480 Bandilier Circle, Fountain Valley, California 92728; (714)963-9881.

Kyosho: Great Planes Model Distributors, 1608 Interstate Dr., Champaign, Illinois

61820; (217)398-3630.

The following are manufacturers of speed controls and other accessories:

Novak: Novak Electronics, 128-C Easy Dyer Road, Santa Ana, California 92798; (714)548-3741.

Tekin: Tekin Electronics, 2411 S. El Camino Real, San Clemente, California 92672; (714)498-9518.

Victor: Victor Engineering, 19572 Waterbury Ln., Huntington Beach, California 92646; (714)962-3090.

I've missed some? I've missed some! I have listed the major ones, though, which will help the majority of you. This does bring up a point—I would like to repeat my previous requests to R/C manufacturers and importers out there to send me information about your products so that I can tell our readers about them when the subjects arise.

We now know where to send our inoperative R/C equipment. Let's talk a little bit about what you should send along with it. Simply, a short comprehensive letter! I know; in this age of relatively inexpensive phone service and even no-charge 800 numbers, we all find it much easier to just pick up the phone and call. This is fine if you are looking for advice about the malfunction or anything having to do with the operation of your system. But if the decision is made to send your equipment in for service, do not then make the mistake of enclosing a note that says only: "Reference our phone conversation..." By the time your equipment arrives next week, the person you talked to will have talked to many others and will have little idea of what was said. Also, the chances are slim that the person you talked to on the phone will be

the same one that will repair your system.

So enclose a short letter, brief and to the point, describing the malfunctions—all of them—that you have noted. Also include any specific request that you may have. For example, a certain servo or receiver case might be perfectly functional but no longer look too good, and you want it replaced simply to preserve your equipment's looks. Do not take for granted that it will be replaced, ask for it to be! Also, if you have modified any of the equipment in any manner and do not want it restored to its original configuration, be sure to state that in your letter. However, be prepared to accept a less than complete repair warranty, as most companies will not warranty modified equipment or any parts that they did not furnish, or equipment operation related to those parts. If that sounds a little hard, think about it—I'm sure you wouldn't care to be responsible for anything you did not furnish or have control of either!

Estimates are rather difficult to make on electronic equipment, and thus are difficult to obtain. The reason is that electronics work in steps, and unless you find and correct a fault in Step One, you usually cannot test or verify the operation of Step Two. To get a comprehensive estimate, you have to almost complete all purely electronic repairs—as distinguished from those needs which are purely mechanical. Some companies simply don't give estimates, but will return equipment that is deemed as beyond economical repair. Others will give you an estimate, which you are expected to pay for if you decide not to go ahead with the required service. If you do give them the OK, the cost of the estimate is then absorbed in the cost of the repair, since they already know most of the faults.

Earlier I mentioned the exception to my belief that the best place to send equipment for service is the original manufacturer or importer. Yes, there are a few independent Service Centers around who are qualified, experienced, stock parts, and who in some cases are even authorized by the parent companies to do service and in some cases even warranty service on certain brands of equipment. In some cases they are your only hope in getting older equipment serviced. If you are fortunate enough to have one of these services closer than the factory facility, don't discount the fact that by dealing with them you will often save shipping costs—and more important sometimes, time!

There are some exceptions, but the majority of our R/C equipment suppliers are quite fair in their approach to repairs on their equipment. I am happy to say also that I know of some that rate a "ten" in that respect. In time, you will learn who they are—and who they aren't! But remember that unless you run over it with the family car or insist on trying to do it yourself with your favorite ice pick and blow torch, your ailing R/C equipment can be made to operate reliably without taking out a new mortgage.

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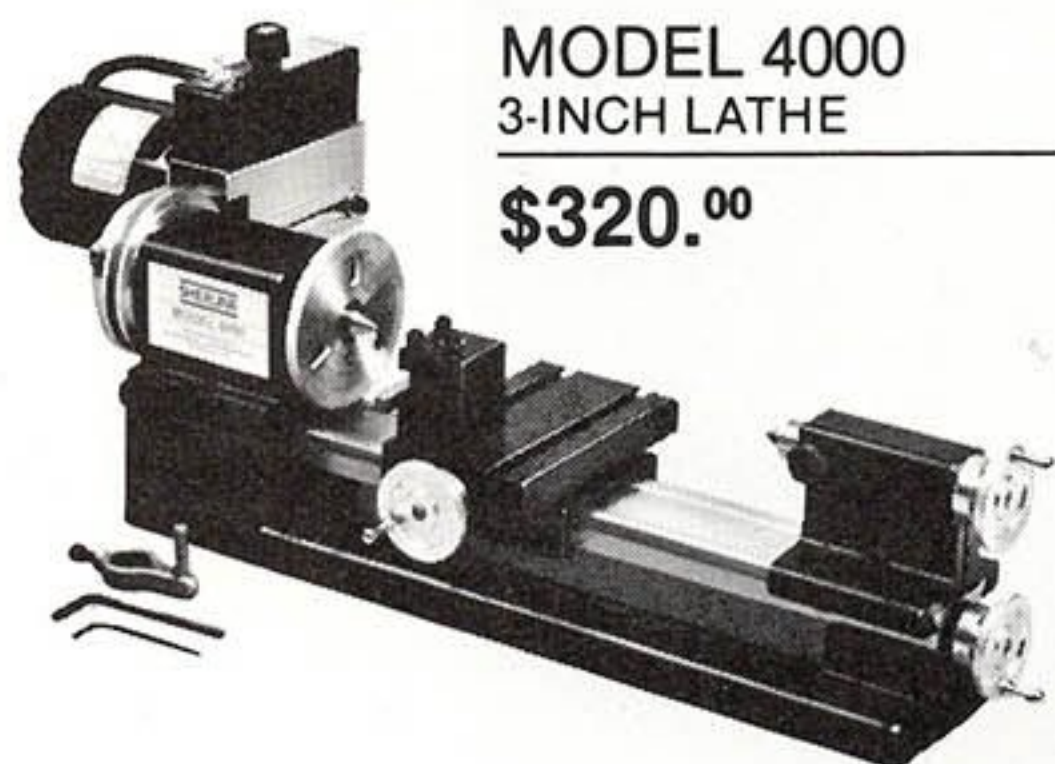
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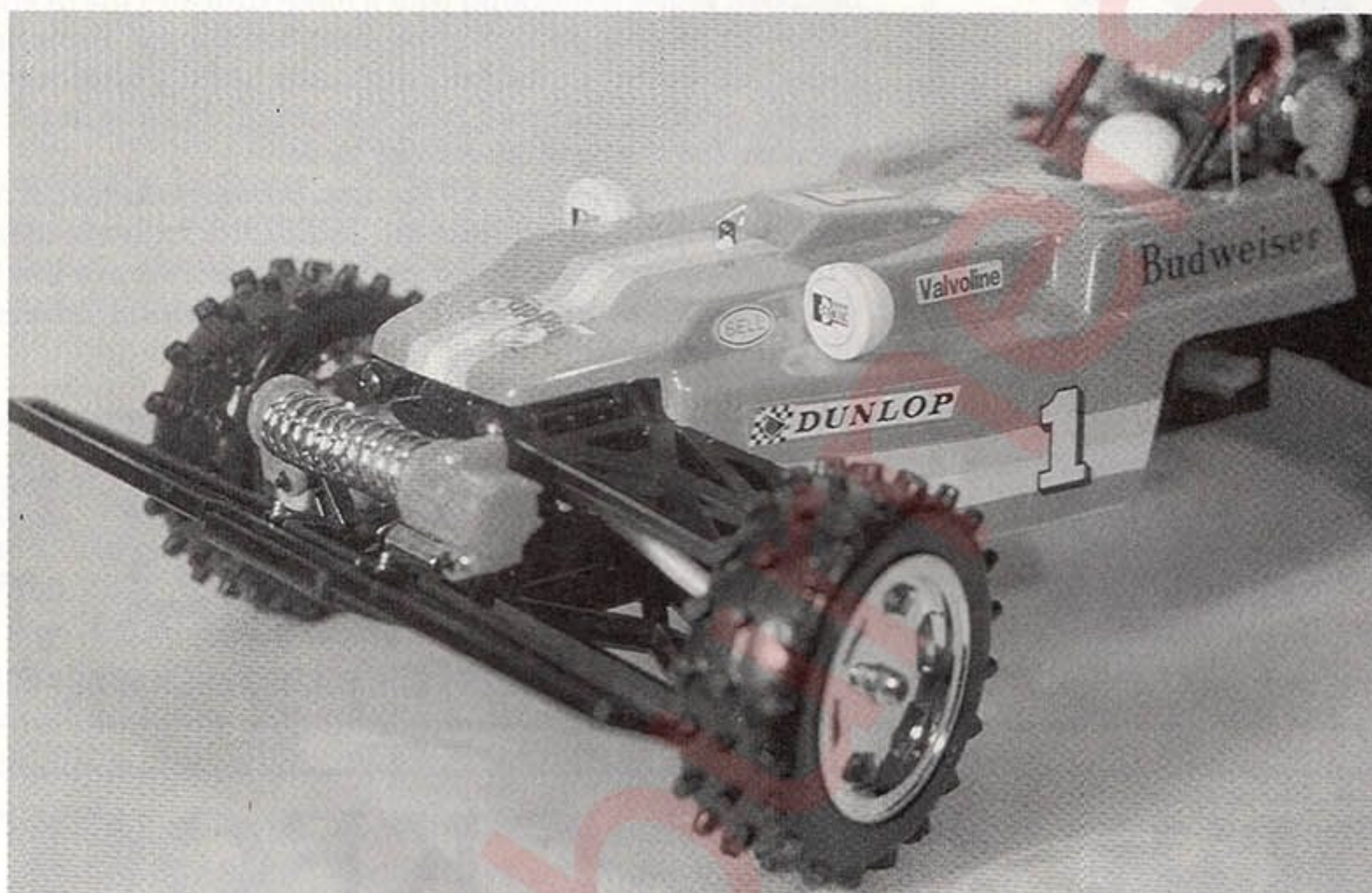
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ROYAL

# ripper



BY C. PETRASK

**L**et 'er rip... Royal Products of Denver, Colorado, has just the ticket: a superb new four-wheel drive, four-wheel steering

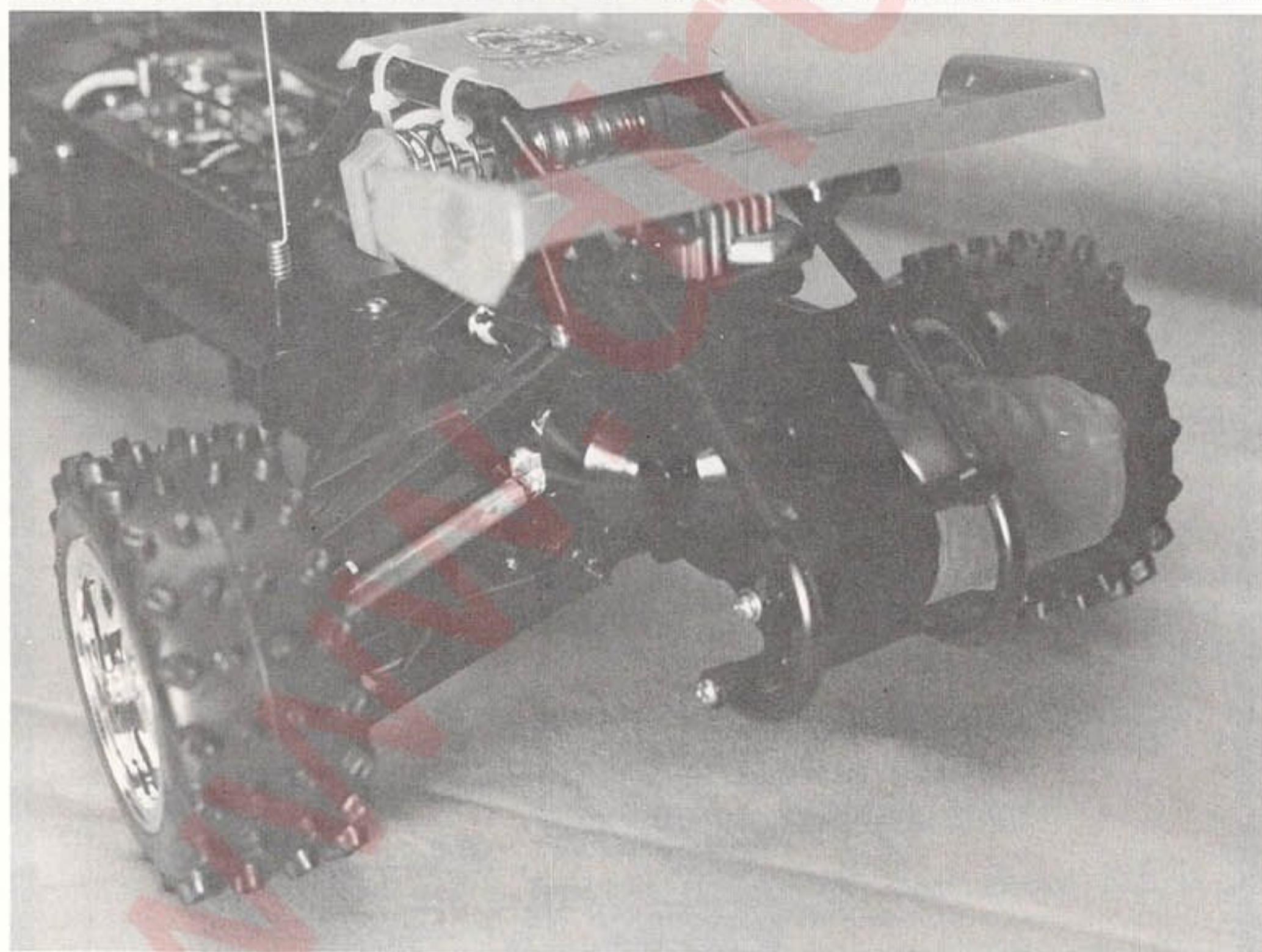
offroad 1/10 scale R/C car called the *Ripper*. t into the packaging. But there's more to the Ripper than a pretty package. A com-

plete instruction manual, crammed full of isometric drawings showing the entire assembly of the car, is a plus. All parts are separated into individual plastic packages. It's best to keep the parts in their own packages until you use them.

Even if you have never built a 1/10 scale car before, you'll have no problem with this one. The kit is so complete even the body is painted for you; all you do is add decals. That sure eliminates a lot of work and gets you on the track in no time at all. The Ripper is designed with a wishbone suspension and single spring in front and one in the rear. This tied together with the four-wheel steering makes a good-handling, easy-steering car. You'll also find in the kit a four-way box wrench, allen wrench, another small wrench, a bottle of shock oil, a tube of grease, and a container with liquid thread lock.

To assemble, you'll have to have a Phillips screwdriver, long-nose pliers, a pair of diagonal cutters, and a model knife (Uber Skiver, of course). These are all the tools you'll need.

Now you'll have to get yourself a two-channel radio system, a 7.2-volt flat battery pack to power the car and radio, and a 7.2-volt quick charger. With all this, we are



*The Ripper is a 4-wheel drive, 4-wheel steering buggy with wishbone suspension and single-spring shocks front and rear. The stance is wide and sure, making handling easy.*



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The driver remains to be painted, but the Ripper body comes already painted, ready for assembly and addition of your favorite stickers.



Close up view of wishbone suspension and single-spring shock, mounted laterally. Ripper is a stable performer in the dirt.

finally ready to begin assembly.

The first thing you'll notice that has to be done is something I'm sure you have never seen before in a model kit. It says to boil the plastic parts in water and vinegar for three hours! This is to add some strength and flexibility to the parts. After the parts are boiled, follow the instructions, checking each item off as you go. Everything progresses very smoothly when you follow the manual exactly.

The radio we selected to use was the Challenger 2PX from Aristo Craft. The radio is designed for R/C car operation. It's a pistol grip-type, and its controls are very easy to handle. The transmitter features reversible control for left- or right-handed steering. The steering wheel is equipped with a new break-protection mechanism. If

you apply more force than the wheel can bear, the wheel will turn freely without breaking nor affecting the steering servo. Servo reversing is standard on the 2PX. Battery consumption can be monitored with a glance at the level meter, and crystals can be changed easily from outside.

The receiver is of the latest narrow band design using a ceramic filter to resist adjacent channel interference. The servos included in the system are the HS-402 with an output torque of 42 oz. in. Operation speed of 0.20 a second/60 degrees.

The radio comes complete with battery case for batteries (dry cells), switch harness, and an assortment of output arms and hardware.

Install the radio per the instructions and do exactly as the instructions say about

using the 7.2-volt battery that powers the car to power your receiver. It works great and gives the servos a turbo-charge. The car will stop running long before the radio stops listening.

#### DRIVING

Make sure the battery pack is charged. Turn on the transmitter, the switch on the car, and the moment of truth has arrived. A squeeze of the trigger and the Ripper is off and running. Steering is very positive and precise with all four wheels steering. It seems that the four-wheel steering makes the car easier to drive and eliminates the spinning out that is so easy to do with a conventional front-steering car. If this is your first attempt at 1/10 R/C cars, the Ripper and Challenger combination is a super combination both for price and performance. ●

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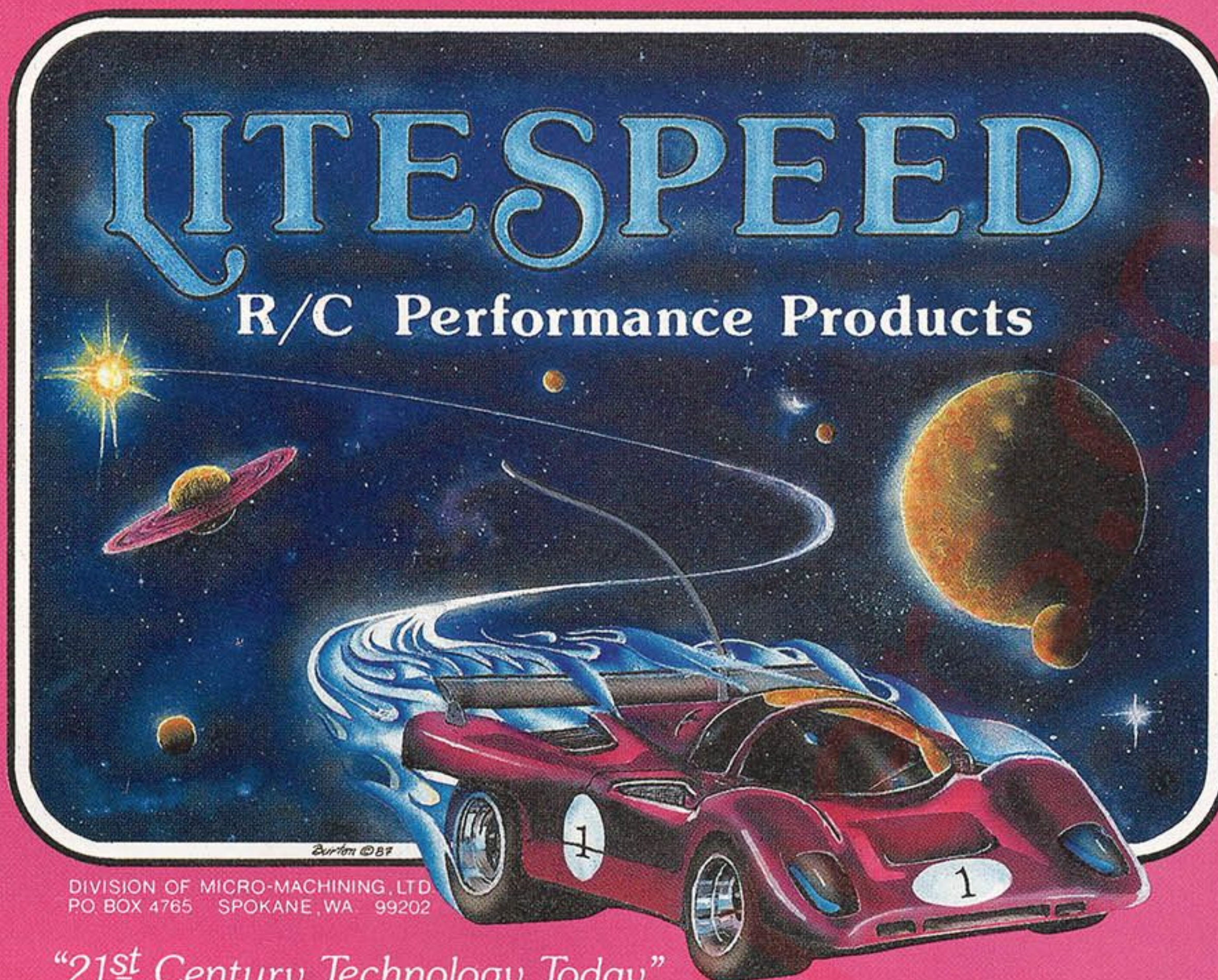
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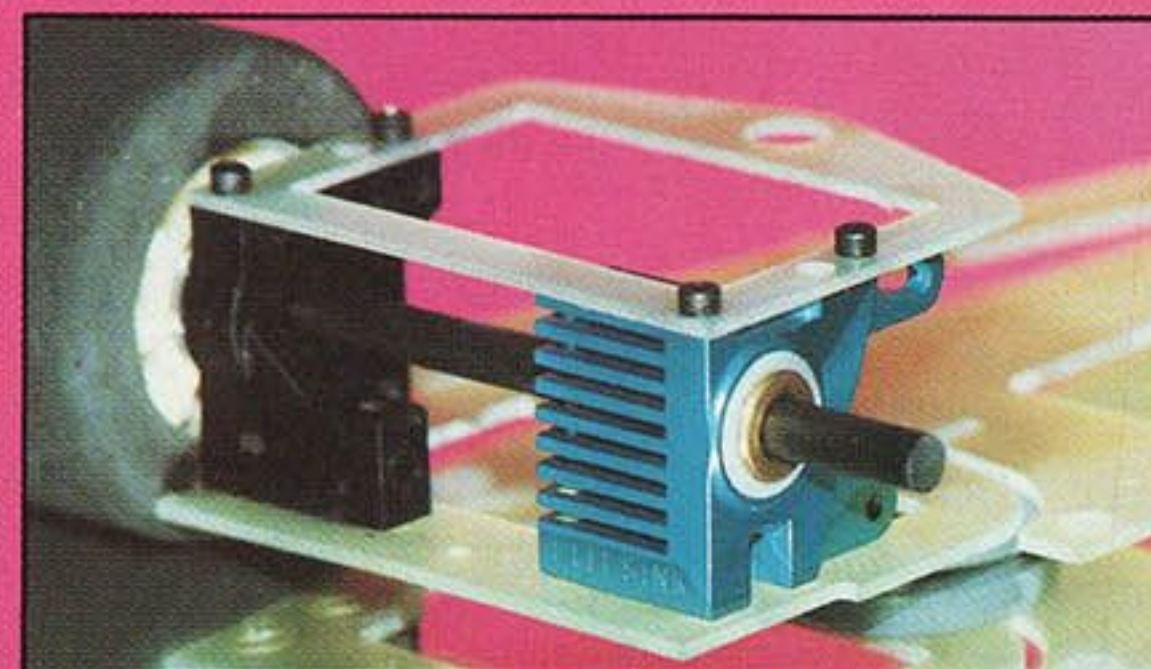
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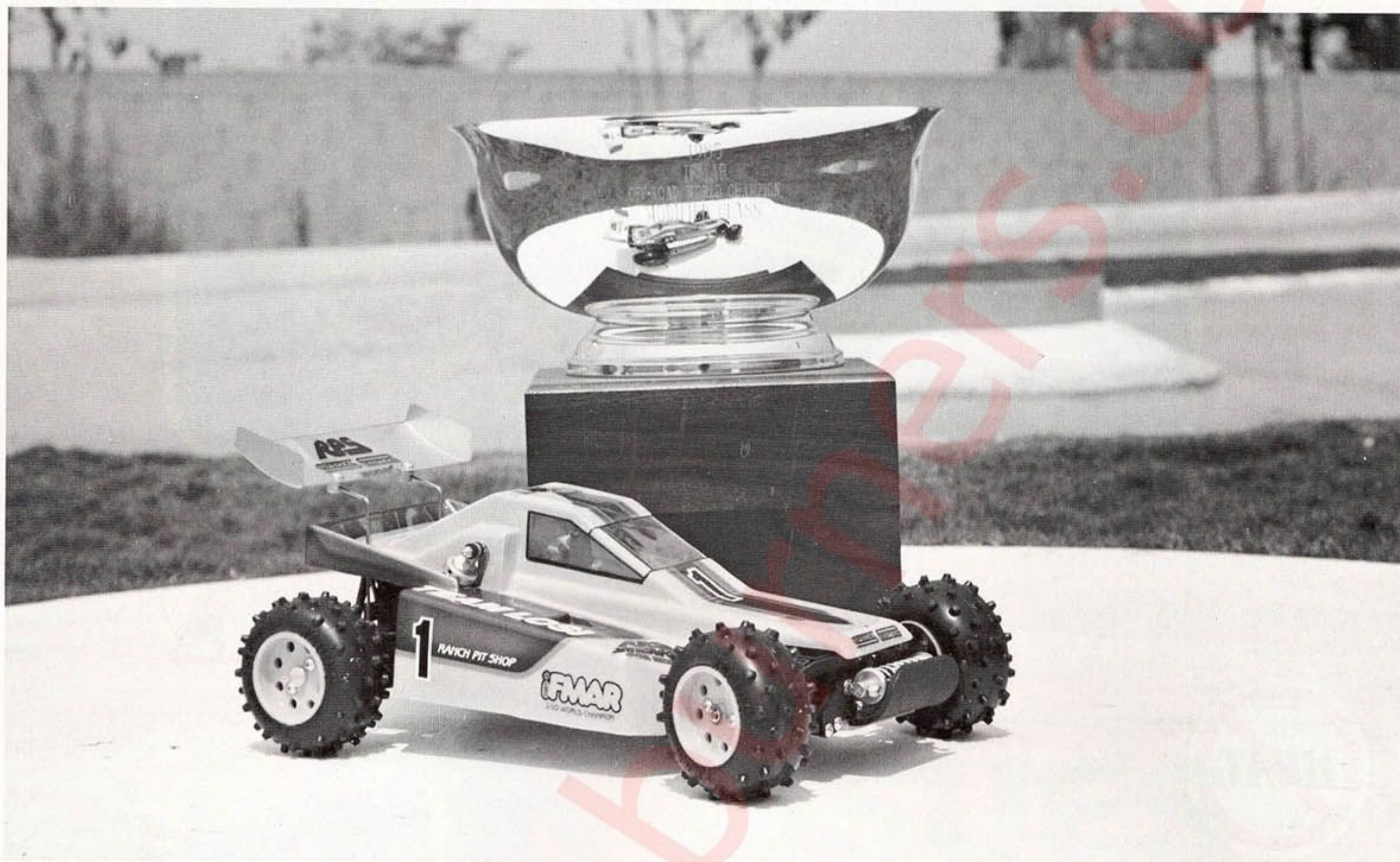
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# RPS/Yokomo SE

## A High-Performance 4WD Offroad Racer



BY GARY KYES

**T**he name "Yokomo" is second only to that of Tamiya in the history of the development of 1/10 scale R/C offroad racing. In the beginning, a bunch of Southern California crazies took a Tamiya R/C model kit and transformed it into a quasi-R/C offroad racer. The next big step in the evo-

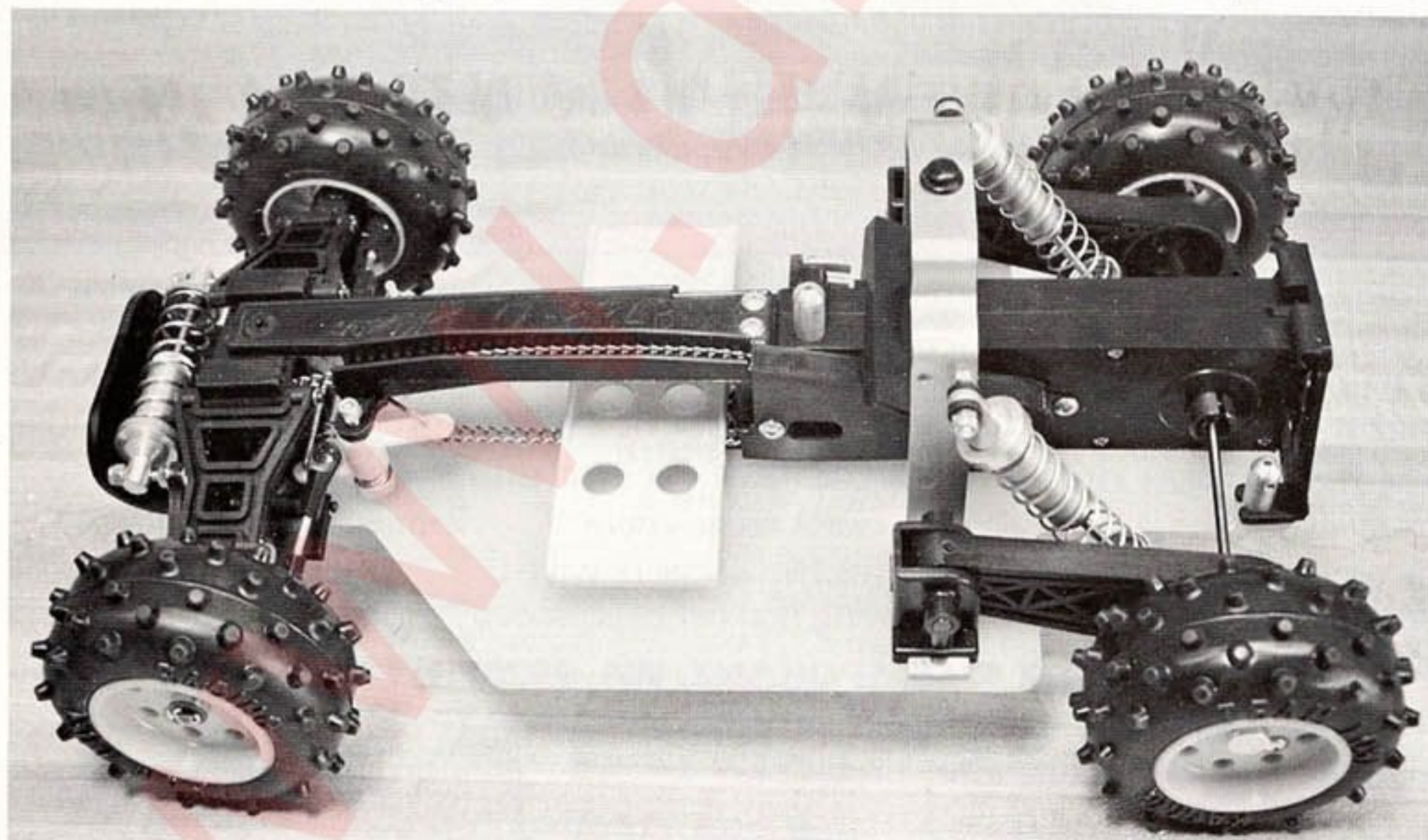
lution of offroad racing as we know it today occurred with the release of the Yokomo "Dog Fighter" which subsequently dominated offroad racing. The subject of this review article, the RPS/Yokomo "SE," most successful of the current generation of high performance four-wheel drive, offroad race

cars.

This newest Yokomo offroad car is really not a true Yokomo kit as was the "Dog Fighter." Instead, it is the product of on going development at RPS/Team Losi and the Yokomo factory in Japan. In days past, the racer had to buy a Japanese kit, then go out and purchase several hundred dollars worth of aftermarket accessories to modify this kit car into a real racer that wouldn't break every time you ran it. This was true of virtually all cars available and surprisingly is still the case in most cars today.

Among the pioneers of this sport and its development is the father/son team of Gil Losi and Gil Losi Jr. Gil Losi Jr. is now world-renowned as the 1/10 scale World Champion and this new RPS/Yokomo "Special Edition" (SE) is the result of his development and refinement of the "SE" 4-wheel drive offroad racer.

If you are into buying "trick-looking" boxes I think you will be very disappointed with the SE. When questioned about the simple-looking box compared to the flashy highly illustrated Japanese models, Gil Jr. advised that they were selling race cars, not boxes and that they would rather put



*The SE's Yokomo-made chassis, showing chain drive to front wheels. Yokomo chassis components and U.S.-made accessories add up to a winning combination in the SE.*



money into the product than fancy packaging. Wise words for a rather young man.

After you get by the box you cannot help but be impressed by its contents. This box is just full of parts and pieces—no air here! Upon further examination you find that this kit is almost like the result of a shopping spree. All the aftermarket parts that you would have had to locate and buy separately after buying the kit are all in this one box. This combination of basic Yokomo chassis components and U.S.-made parts and accessories makes for one exciting kit.

The super detailed and complete instruction manual includes many photographs that are referenced throughout the construction process. The assembly itself is quite simple; for the most part, the SE is modular in design with a gear box, chassis, and front end/drive as major components. Assembly as per the instructions starts with the transmission. As with any R/C car the transmission is probably the single most important part/assembly of the model. Be prepared to spend a fair amount of time on this or any transmission as it will pay big dividends later.

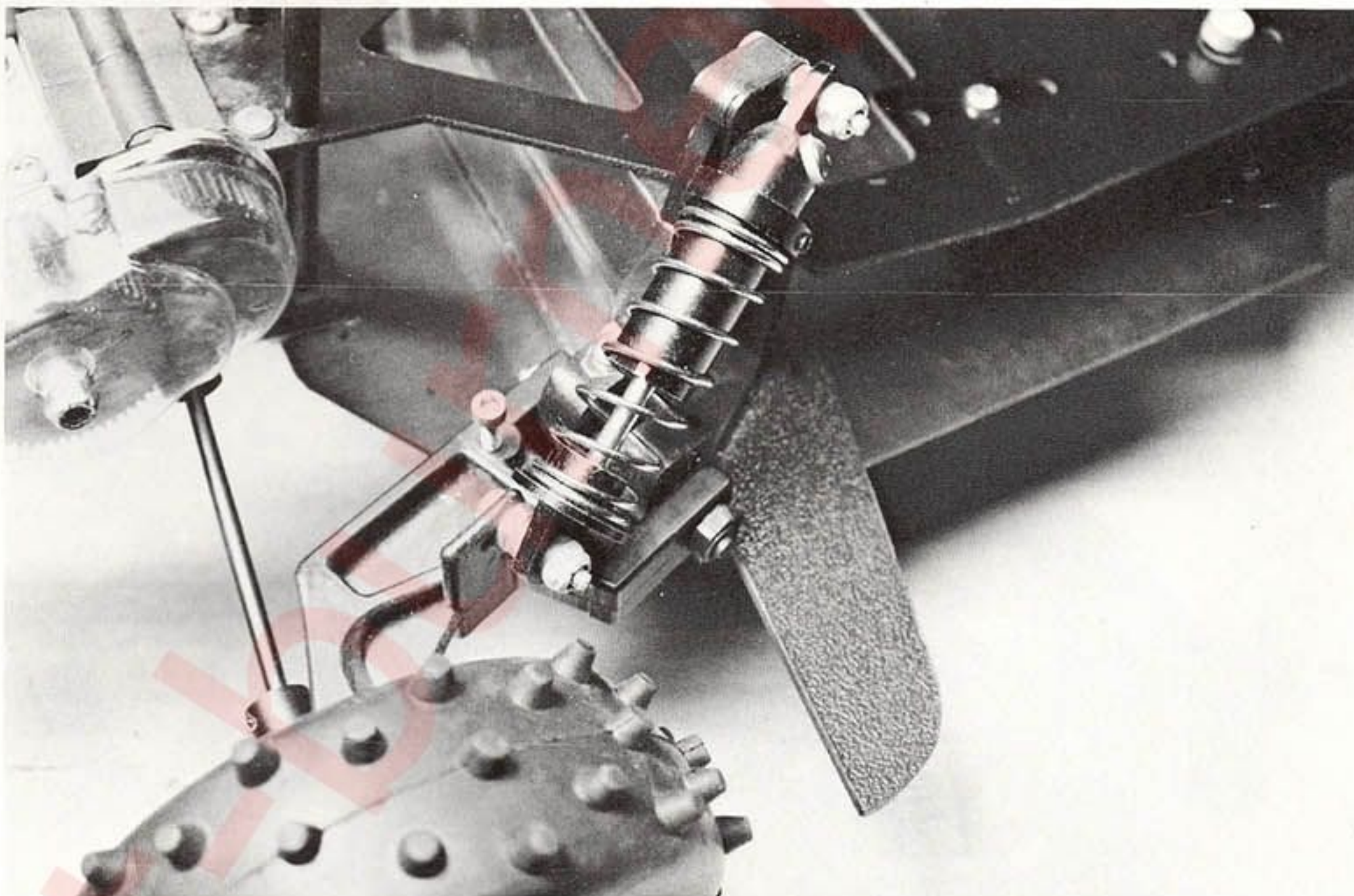
The RPS/Yokomo comes standard with a racing-type (what else!) ball differential. Before installation it is suggested that you disassemble the diff and grease the thrust bearing as well as the diff balls. Make sure you notch the adjusting screw as per the instructions. The photos show the exact assembly sequence which makes this very easy. When setting up the gear box I suggest you use some 5mm (Delta or CRP) shims to eliminate most of the side play from the gears. The best method of doing this is to insert the diff and assemble the remainder of the gear box. There should be a very slight bit of side to side movement. Spin the diff and notice how free it is. Now install the idler gear that runs in front of the diff. Start with a single shim on either side. Assemble the gear box, and spin the diff again. If it is still free and smooth, disassemble and add a shim to one side, then reassemble. Recheck until you sense the gears begin binding. At this point you should remove a shim, and while the box is apart start with the next gear. I realize that this is time-consuming, but your perseverance will guarantee great results. By the way, since you now have several minutes invested in shimming your gear box, take just a minute more and make a note of how many shims you used where to get the best results so you will know where they belong when you take your gear box apart to clean the bearings.

After completing the final assembly of the gear box with its neat and simple slipper device, the rest of the assembly goes very quickly. After the gear box is attached to the chassis the single trailing arms can be installed along with the rear axles and drive shafts.

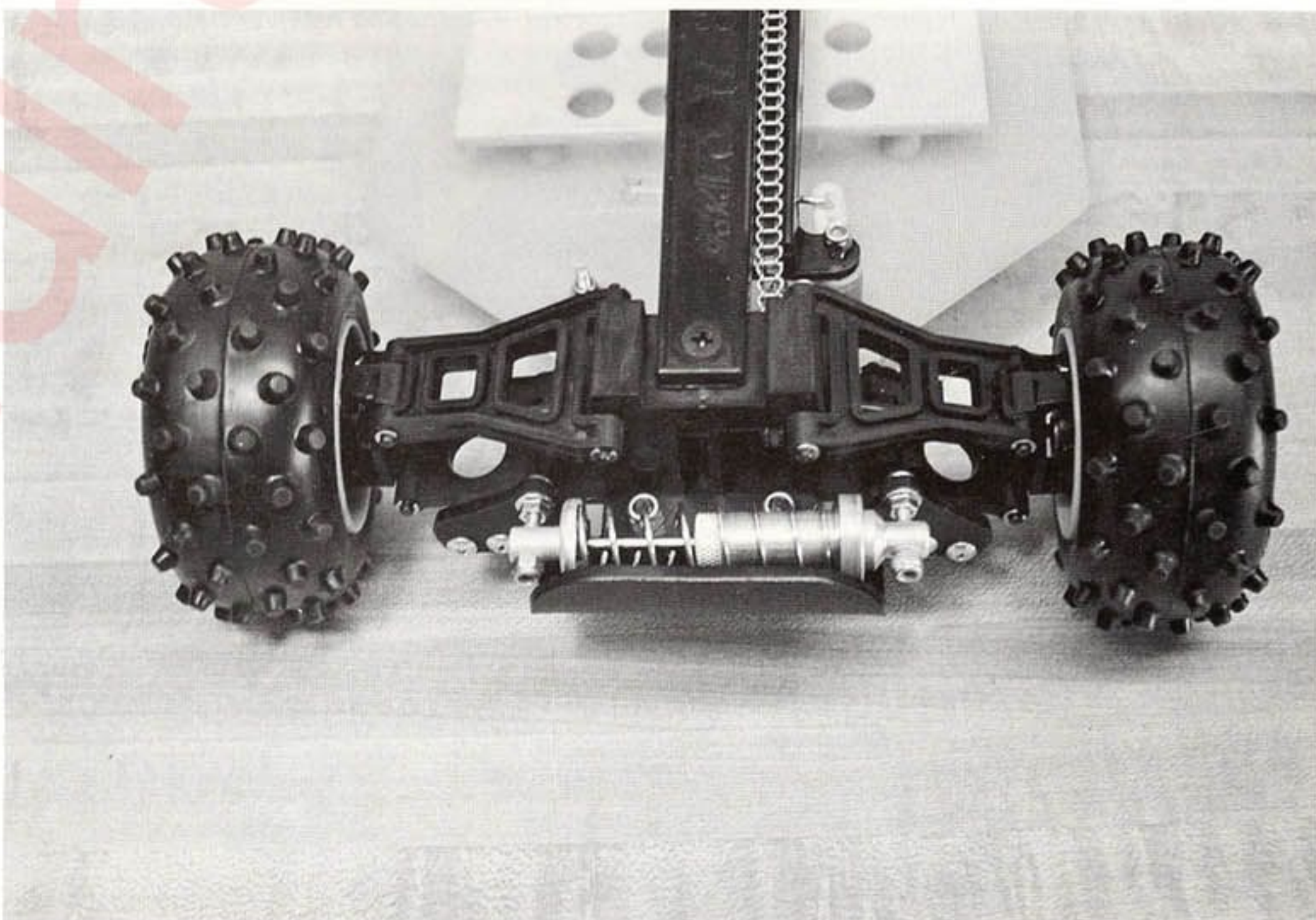
The new gold anodized rear shocks are really quite nice—a giant improvement over the old "Dog Fighter" units. I suggest you start with 10-weight oil in the shocks as this



*An array of 'aftermarket' products that come with the RPS/Yokomo kit. Bearings, Team Losi racing knobbies, Yokomo motor add up to a complete, professionally designed kit.*

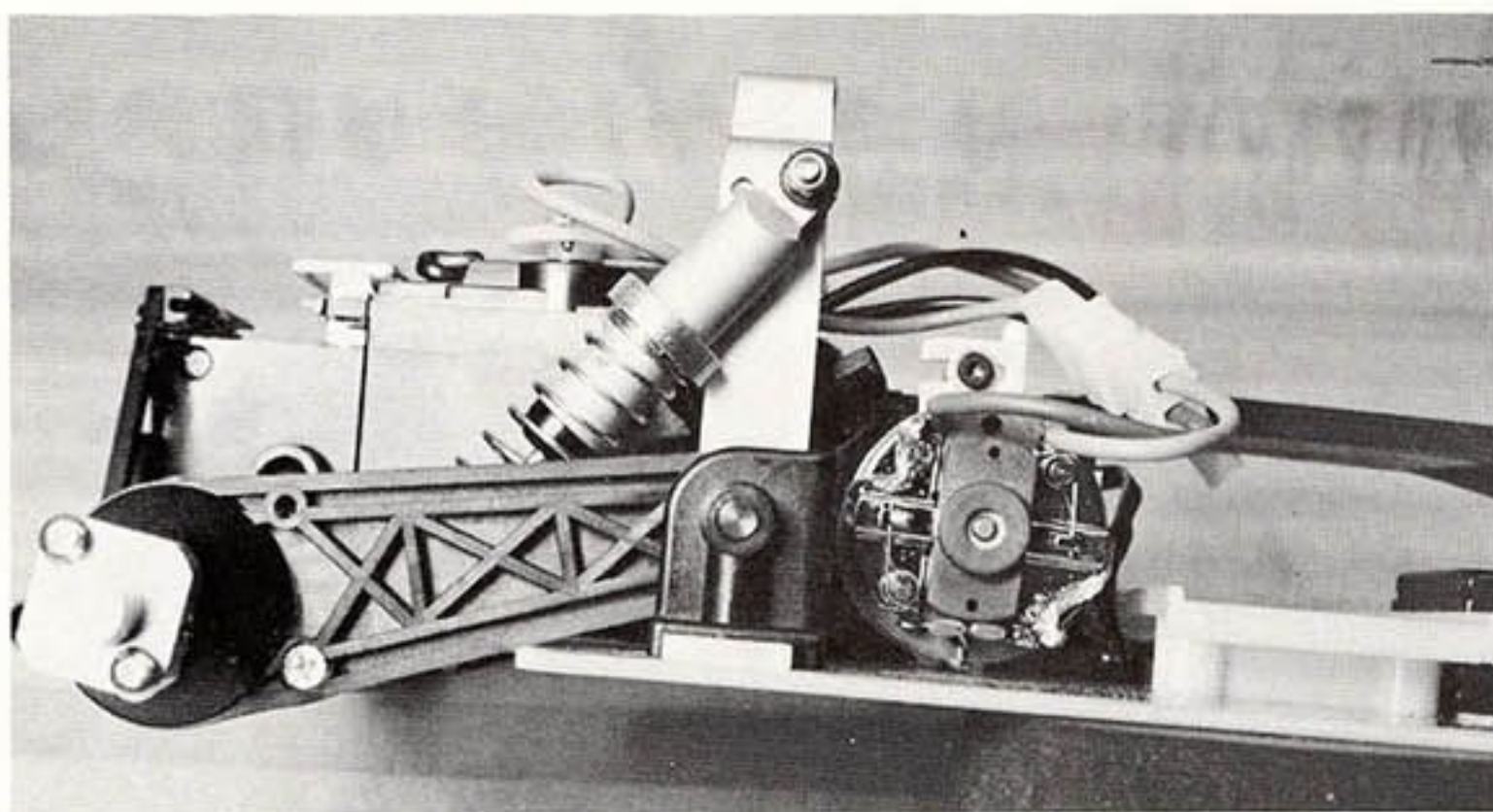


*Gold anodized rear shocks are filled with 10- or 20-weight oil; author advises starting with the 10-weight, switching to 20 if more dampening is necessary to limit bounce.*

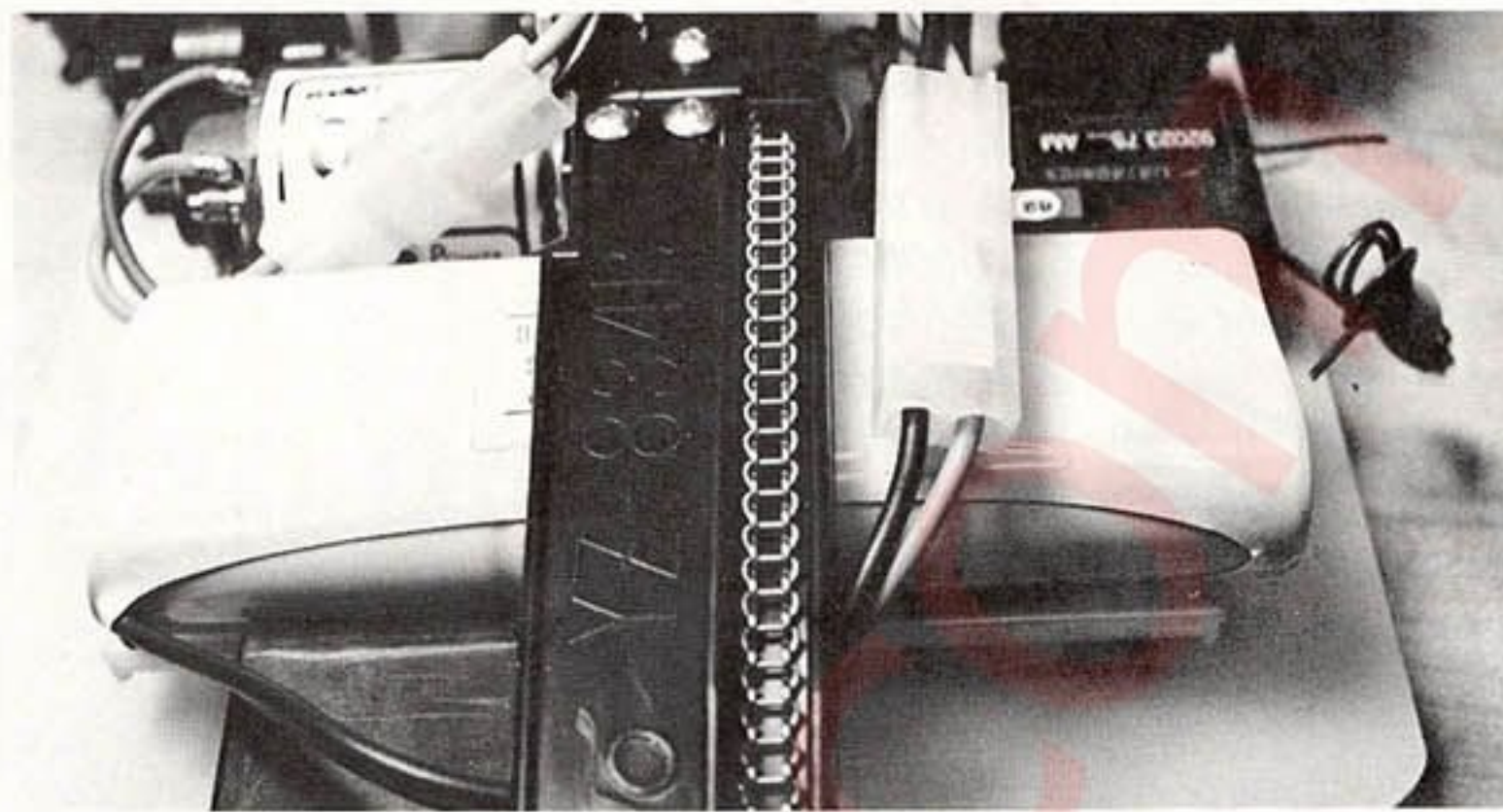


*Front end set up is simple and efficient. Author recommends a drop of CA glue to secure the bearings to the front bulkhead and front axle carriers.*





Rear assembly of the SE showing enclosed diff and gear box. Author explains how to use shims to eliminate gear sideplay.



Author calls installation of the chain drive the second most important step; links must be running in the right direction, or it will stretch.

is a "middle-of-the-road" setting. If you find more dampening necessary due to excessive bouncing change to 20-weight oil.

Perhaps the second most important item in the construction process is the proper installation of the chain. The pictures show the correct direction to run the links. If you

install it backwards the chain will still work, but you will find that the sprockets will wear very fast, and the links will stretch very quickly, necessitating chain replacement.

The front end is very simple and efficient in construction. I suggest you use a drop of "Zap" or similar CA glue to secure the

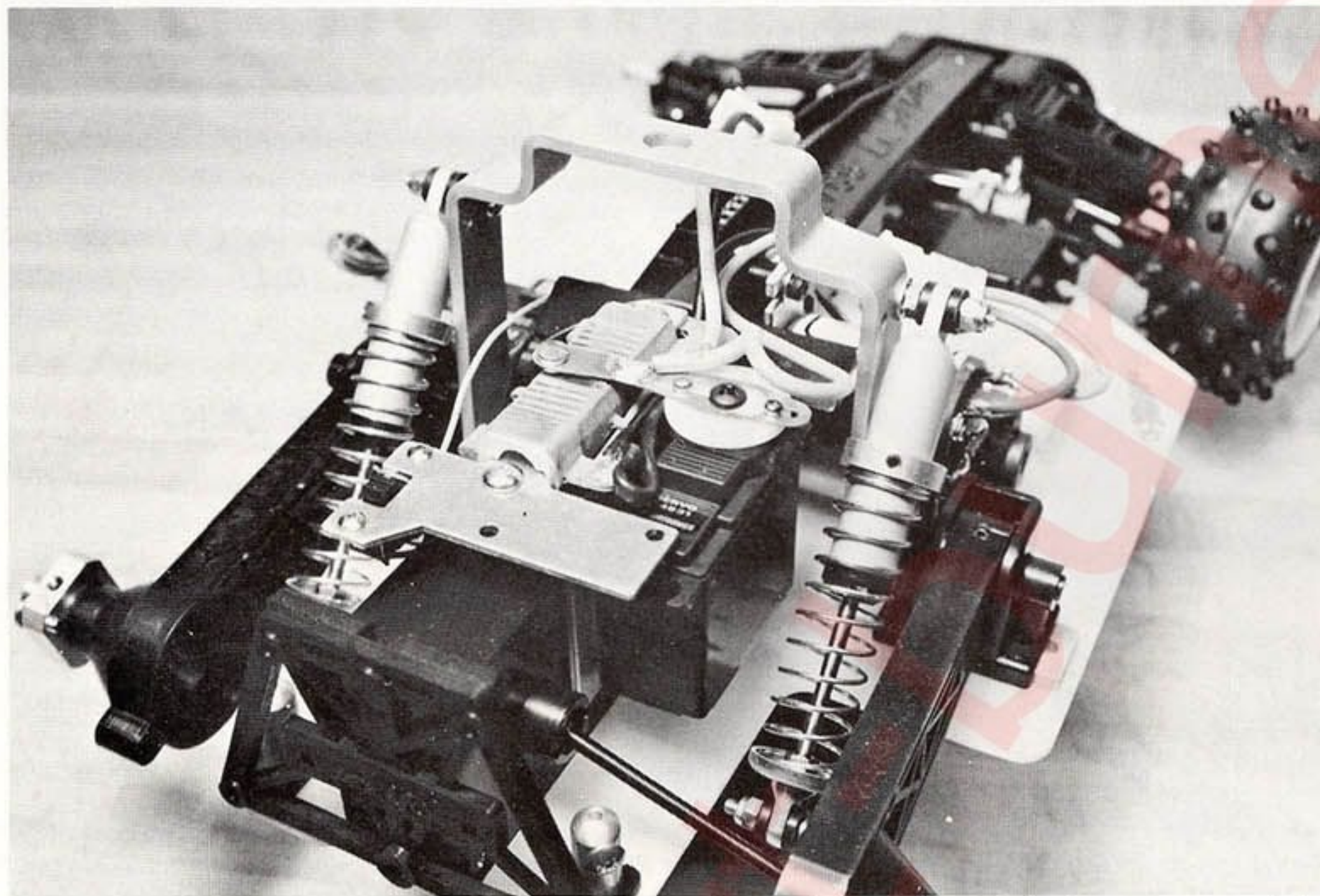
bearings to the front bulkhead and front axle carriers. About the only other tip I can give you here is make sure you do not overtighten the set screws in the plastic hub carriers. If you do, use a drop of Pic "Vibram" in the stripped hole. You will be pleased to note that all of the suspension arms move freely through their suspension travel without binds or hang-ups.

The SE uses one-way bearings in the front hubs instead of a differential. This system of allowing the front wheels to run free while not under power fosters better handling and maximizes run time. When installed correctly the front wheels should spin forward freely but lock up when rotated backwards. If you find that the wheels work backward just switch the wheel hubs from one side to the other. Do not oil or grease the one-way bearings as this will only accelerate the wear of both the axle and the "one-way." While on the subject of the front axles I must say that these new axles are absolutely the best I have ever seen. After many hours of use they show no wear whatsoever.

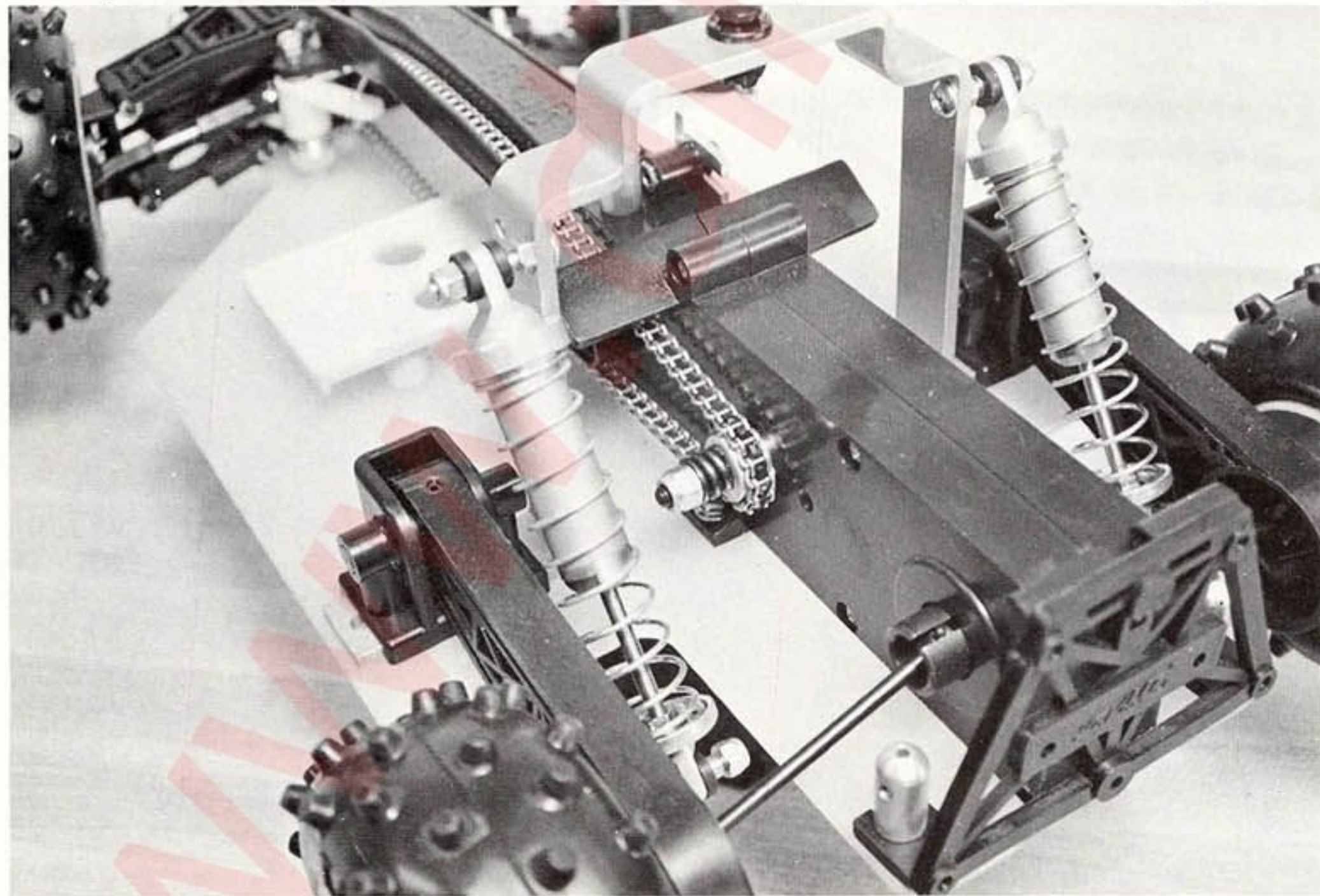
The balance of the assembly takes all of 10 minutes and is very simple and straightforward. The only other tip I can lend in final assembly is to tape closed the openings on the aluminum motor mount so as to eliminate an inlet for dust and dirt.

The radio installation is extremely easy as it only takes double-sided sticky tape (included) to do the job. I was especially impressed with the speed control. The one included is very sturdy with an extremely heavy-duty resistor and wiper arm assembly. Another nice point is that it requires no soldering. The receiver runs off the speed control which has a built-in mini-switch. This means that no extra radio receiver battery pack has to be carried on the car. Extra weight like that of the receiver pack only impairs the performance of R/C cars, as it taxes the suspension and must be accelerated and decelerated constantly which robs battery power.

The tires supplied in this kit were a real surprise. I don't know of any other kit where the tires provided are used on other cars as aftermarket racing accessories. The Team Losi racing knobbies in the SE kit are on the soft side and feature strong sidewall construction. These same tires are very popular with those racing the RC10 and



Supplied speed control on the SE is sturdy, with a heavy-duty resistor and wiper arm assembly that require no soldering. Receiver runs off speed control, eliminating receiver battery pack.



Rear view of the SE's setup showing drive shaft and shock assemblies. Chain drive required only minimal adjustment (removal of one link) after prolonged running.



Optima.

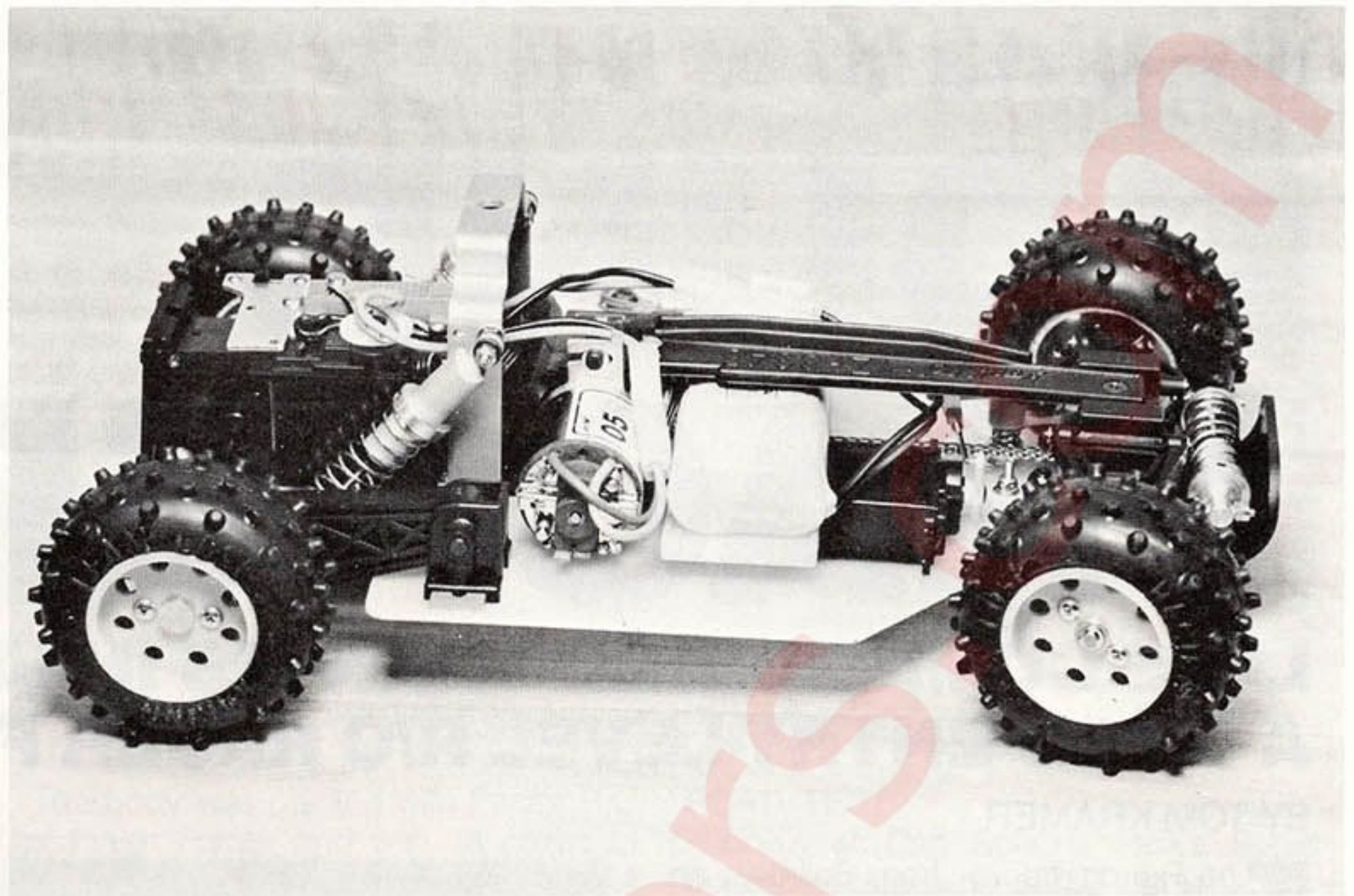
The body shell is made of clear Lexan and does require trimming. Another little trick that I found most amazing is the neat, self-contained body mount.

Although Velcro is used at the front, a simple push-pull unit fixes the back of the body to the aluminum roll bar. To mount the body you merely push the button down which expands the jaws under the roll bar. By popping it up you release the jaws and allow the unit to come free through the roll bar and off the chassis. I used Pactra's new Lexan spray paint to finish the body. This stuff really works well, and the wide range of colors is fantastic.

Racing the SE was a real pleasure. It is quite obvious that this model is designed to be a highly competitive racer. Perhaps the toughest thing to do with this car is back off the throttle. Due to the advanced design of the unique four-wheel drive system, the SE was able to maneuver effectively on the dry, slick track. I first tested it at almost constant full-throttle. When the car started to get loose, I just punched the trigger and let the four-wheel drive do its stuff. The Yokomo stock motor which is the standard by which all racing motors are compared, provided more than sufficient horsepower for all my running and racing. The soft compound tires worked extremely well, especially on the hard and slick unprepared track surfaces. One little tip that I might pass along is that when running on an oval course, I found that at times the addition of a rear sway bar (part #ZB45) to be very helpful. After several hours of very hard racing I found that it was necessary to adjust my slipper twice, once after three or four runs and again after several hours. I also found it necessary to remove one link from the chain as it had stretched. But after this initial stretch no further stretching has occurred.

After running the SE I can only say that the crew at RPS/Team Losi really know their stuff. This car comes out of the box a winner. No need for a ton of modifications and expensive aftermarket parts here. Just as the old Yokomo "Dog Fighter" was the example used to compare its challengers (which have all seemed to fall short) the Special Edition is the current standard by which entries into the four-wheel drive market must be judged. It's interesting to note that just as the old "Dog Fighter" had to bear the burden of the addition of costly aftermarket parts to make it reliable and competitive, so now must the SE's competitors. It appears that the World Champion RPS/Yokomo is a generation ahead of the competition. Needless to say, I liked this car. It's a good product at an almost unbelievable price. If you need a second opinion just ask Ron Rossetti from Riverside, California; he won the (ROAR) United States National Championships this year with his SE.

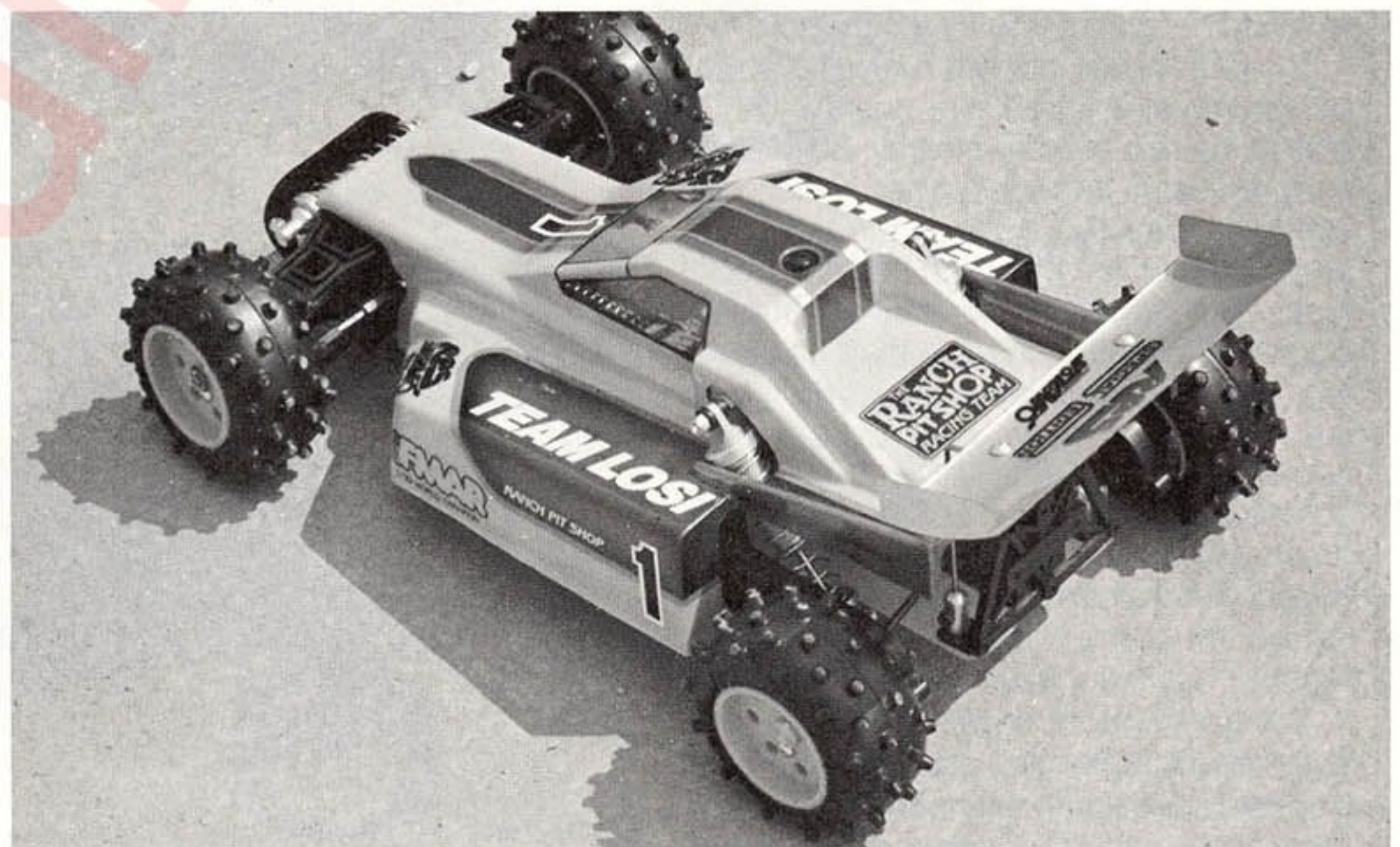
For more information on the RPS/Yokomo SE contact: RPS/Yokomo 1655 E. Mission Blvd., Pomona, California 91766. ●



*The Yokomo, all assembled and ready for the body to be attached. The 'stock' tires, Team Losi knobbies, are aftermarket choices for many other racers.*



*The painted body sans stickers. The time invested in taping and painting your body will return dividends in self-pride and the comments of fellow racers. Take your time and do a good job!*



*The stubby, wide-stance Yokomo profile is unmistakable; the Special Edition with its stickers on is ready to take on all comers. It holds the world record for 4WD racers at present.*



# BoLink's ROUND TRACKER II

**LESS COMPLICATED THAN ITS INVADER COUSIN, THIS IS A GOOD ENTRY-LEVEL R/C RACER FOR THE ENTHUSIAST**

BY TOM KRAMER

**T**he Round Tracker from Bolink is an easy car to put together; when you get the kit, you have to look twice, because there are so few parts! But it's all there, and the best word to describe assembly is *simplicity*.

The car comes with a six-page set of instructions, along with one supplemental page. Simple though it is, don't fall into the trap I did by jumping ahead of the steps. Just follow each one as Bolink intended, and you'll come out okay.

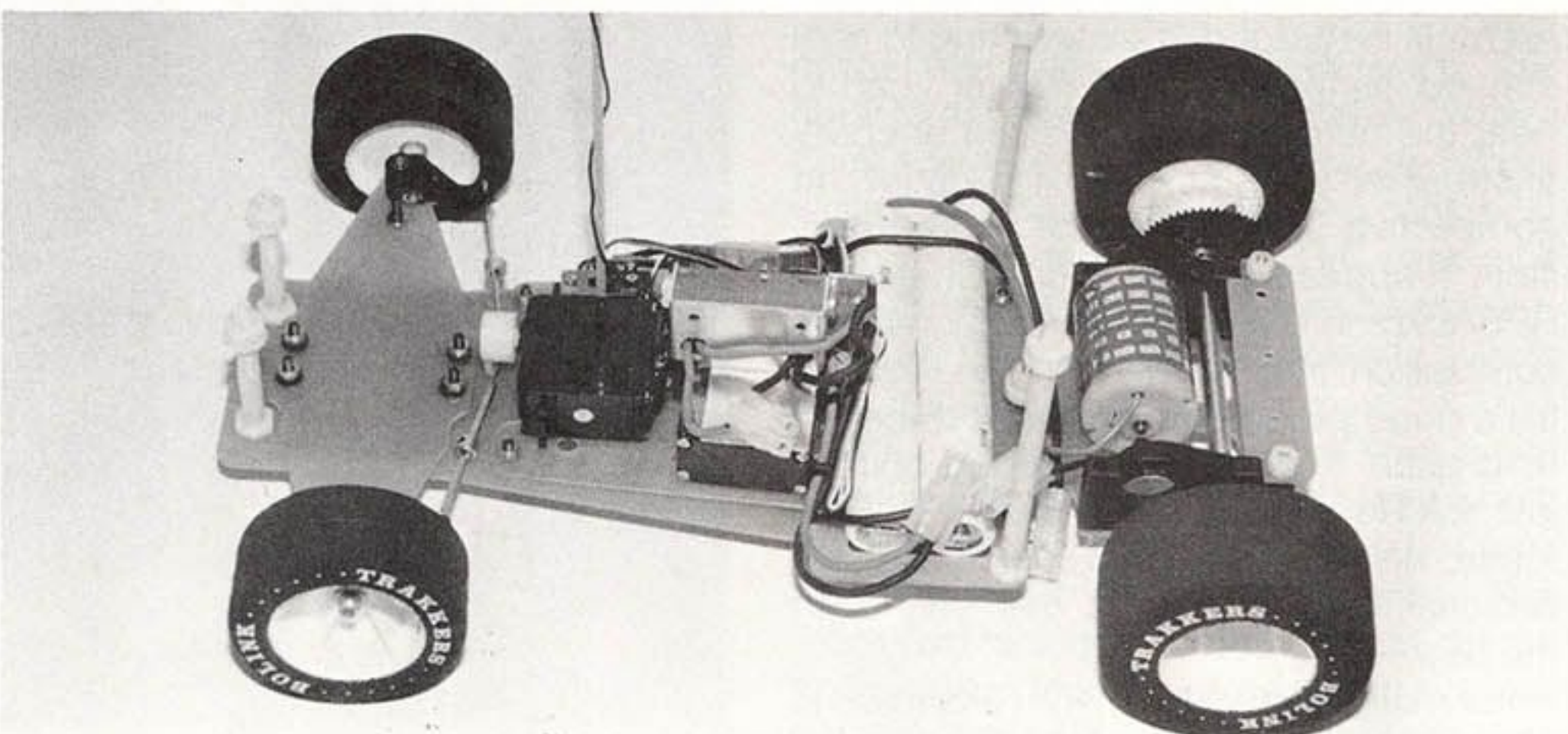
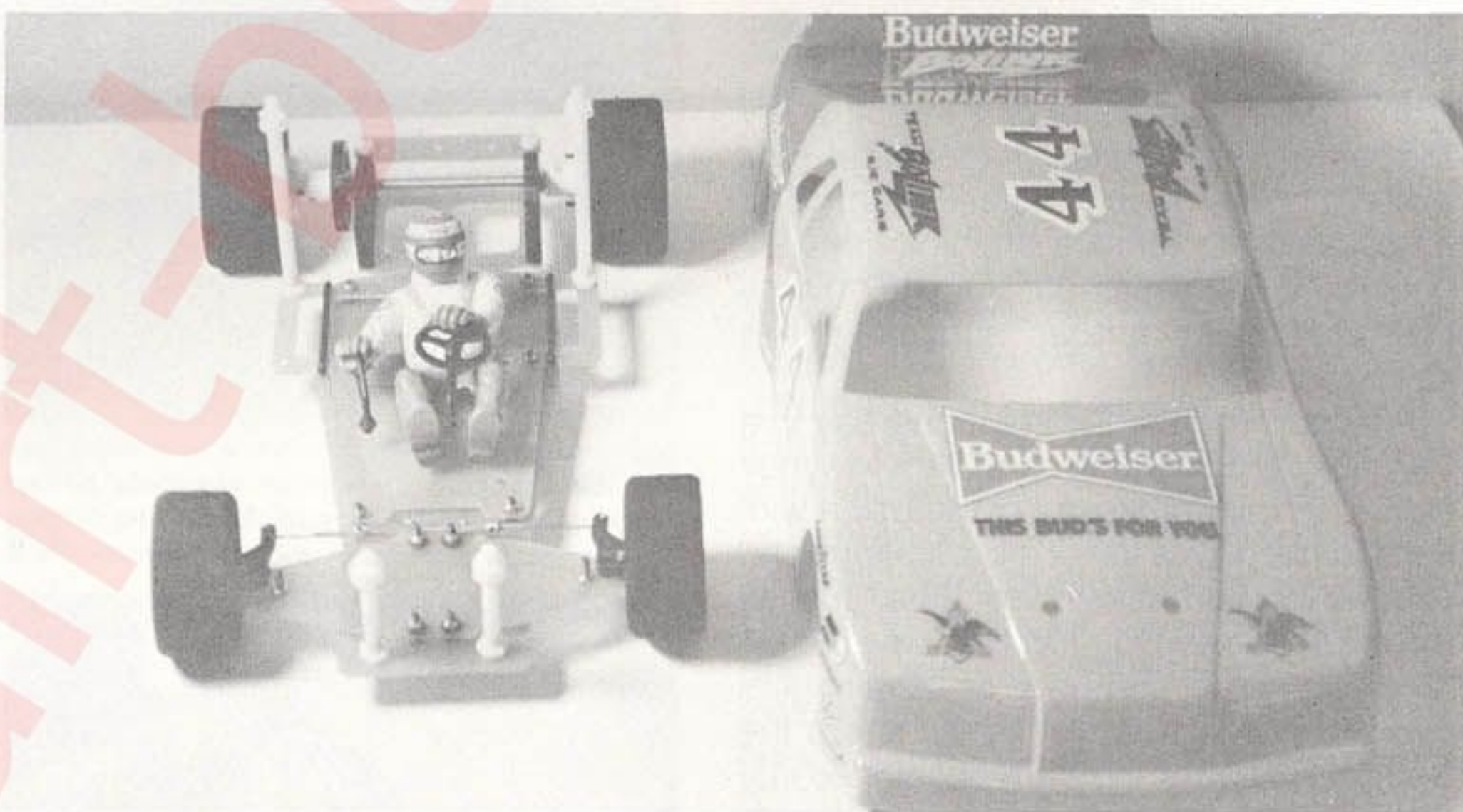
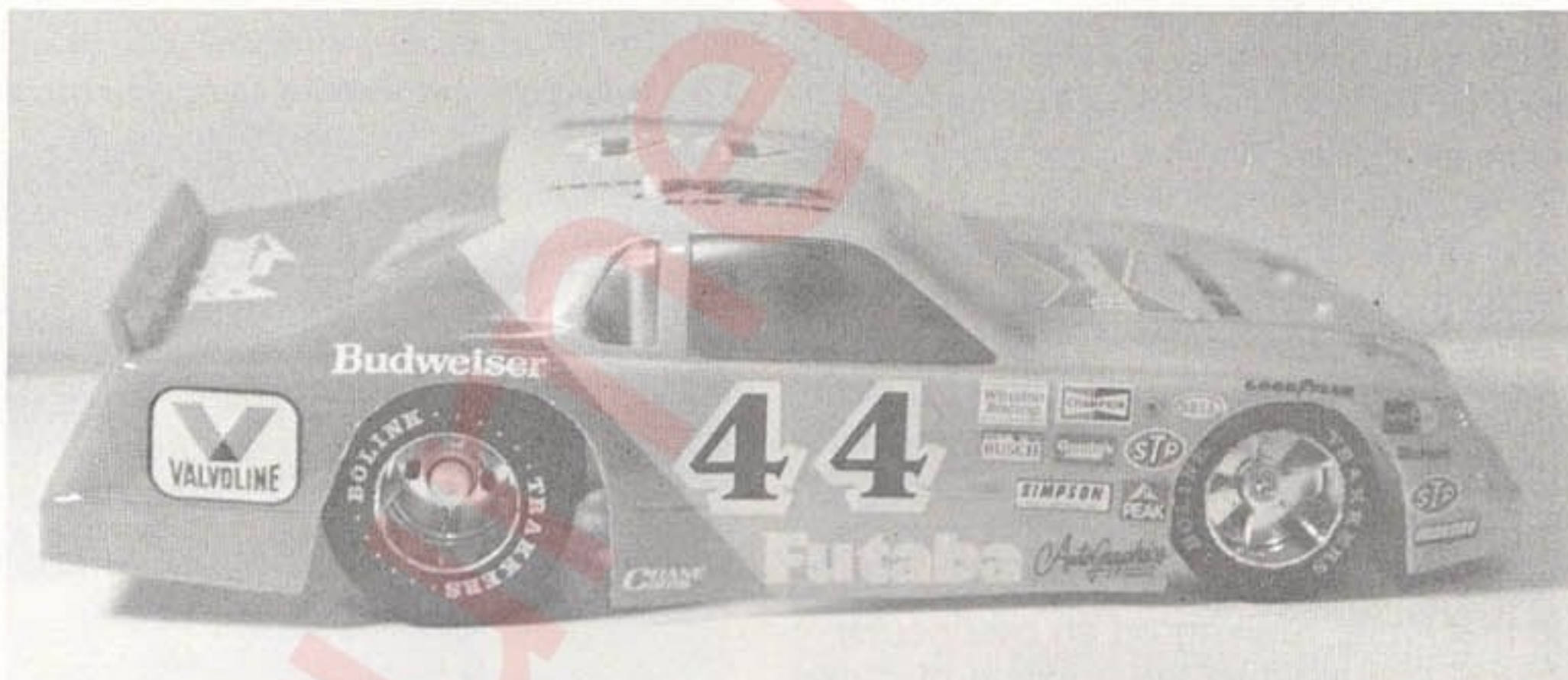
Voted the Creative Excellence Award by HIA (Hobby Industry Assn.), the Round Tracker 2 features front and rear working suspension and a limited-slip differential. Included in the kit is a fiberglass chassis, and a body, in either asphalt, dirt, or sprint car configurations. This particular car had the Thunderbird NASCAR body.

## **BUILDING YOUR TRACKER**

Initial steps in building the Tracker involve mounting the radio tray standoffs to the chassis. Six screws, four 1/8-inch thick spacers, a T-brace, and six jam nuts are used to mount the chassis. Bolink points out in a side note to make sure that on the center set the T-brace goes on first, then a 1/16-inch spacer, then the jam nut.

The radio tray is installed next, and a rubber grommet is lubed and pushed into a hole in the rear of the radio tray. Bolink has supplied large rubber O-rings which are stretched over the sides of the tray, and these will hold the battery in place. A good idea. They appear to be strong, but their durability over the long run may be wanting. Still, I like the way these work. If you plan on using Tamiya or Kyosho racing packs you will have to widen the battery compartment, as Sanyo or Saft stick packs are the only type that fit easily. The Tamiya-Kyosho packs can be used, but one end will be left out of the tray; although only slightly. Use your own judgment.

The front end assembly is actually very easy. Let's take it a step at a time. The front pod is installed with flat-head screws, jam nuts and spacers, rubber washers and locknuts. Tighten the locknuts only enough to take out the vertical play; don't mash the

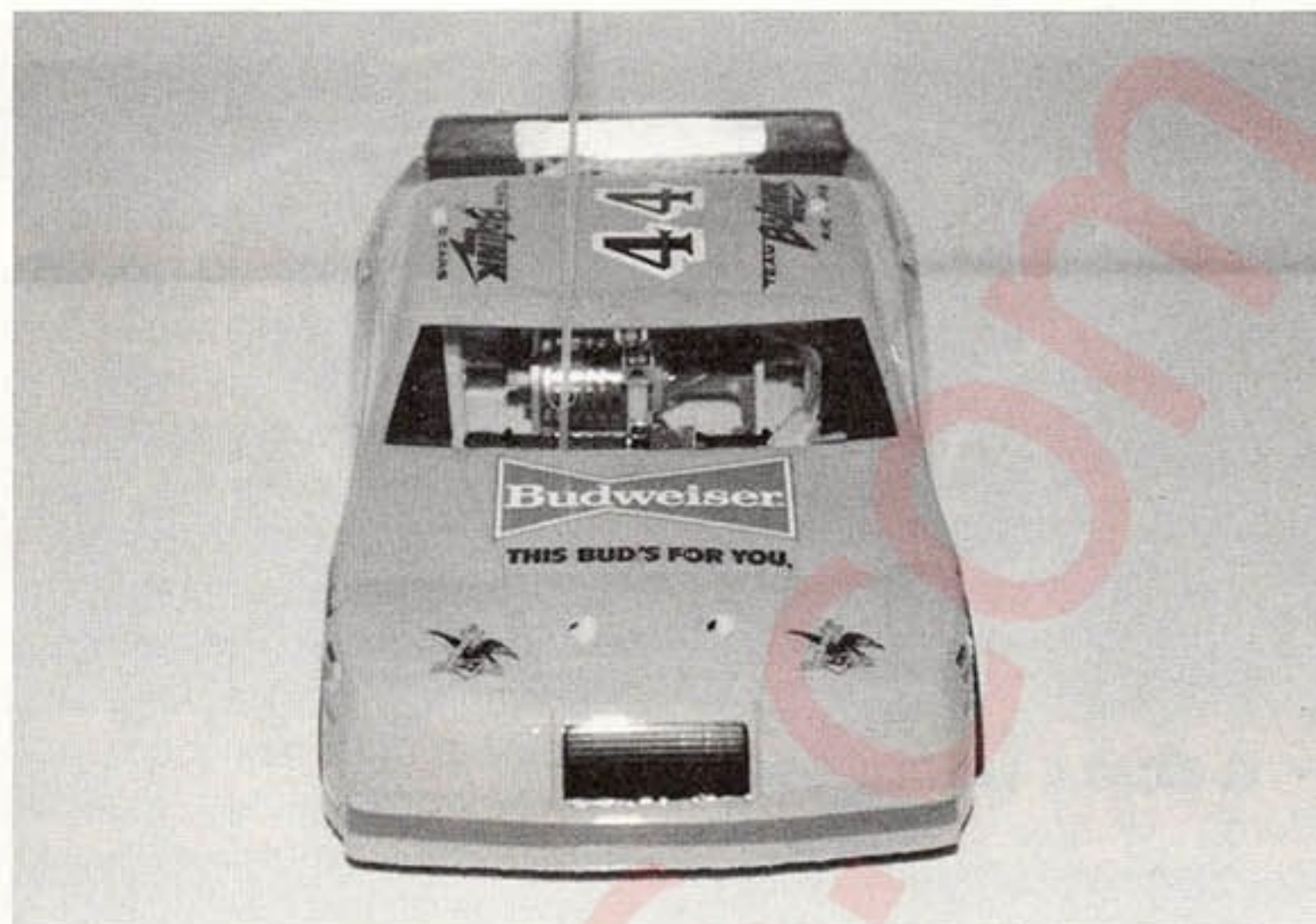


*The Round Tracker II is a simple car to assemble, and access to the innards is no problem. Wiper speed control comes with the kit, so all you need to add are the servos, radio, and battery pack.*





Futaba's FP-T2P two-channel Magnum Sport radio system is a good choice for the Round Tracker.



Stickers from Autographics finish off and really enhance the Grand National Stocker look on the Round Tracker. Let's go racing!

washers! The kingpin is installed in each side, then you thread a jam nut on all the way. This is then inserted through the pod and then a locknut is added. You'll need a vise of some sort to tap the stub axles into the steering blocks. This is the only strength tester in the assembly.

The differential assembly is easy; just make sure you don't put a set screw in the adapter on the diff side of the axle. Bolink offers remedies for any problems you may encounter during assembly, so our hat's off to them for the consideration.

The tires, body posts, motor, and, of course, your radio installation are all that remain, then it's off to the races!

The body was painted with Pactra R/C Car Finish Paints, and with 18 colors to choose from, I'll be coming back again! They went on smoothly, covering completely with the aerosol can I used. They won't crack, chip, or flake, so this is one product you can rely on. Some Autographics stickers from the choice of 11 multicolored theme sheets helped to brighten up and personalize my Tracker in no time.

I used a Futaba Magnum Sport radio, and an Astro Flight AC/DC charger. You can charge any four- to seven-cell pack in about fifteen minutes with its variable current adjustment. Larry Scribinick of SR provided some battery packs, and we were ready.

## ROAD TEST

Down at Carl Schurtz Park's Super Speedway, featuring a 250-foot straightaway, and two 80-foot turns, is a speed racer's dream. At first, the Tracker didn't seem to be handling well. I checked, and found I'd overtightened the locknuts on the front pod causing the racer to oversteer in the turns. I loosened the nuts, and the car started performing much better.

All considered, the Round Tracker is a good choice for someone who is looking for a simple 1/10 car to build that will perform well on the track. The Round Tracker should make some people very happy this year. ●

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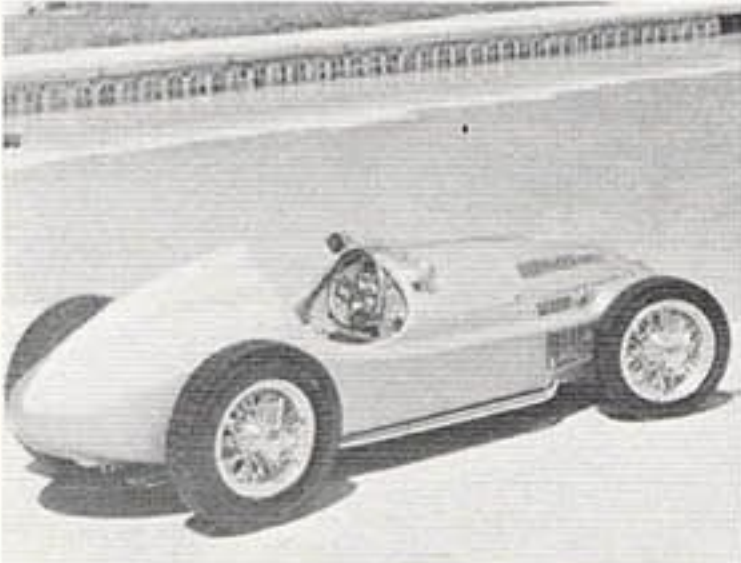
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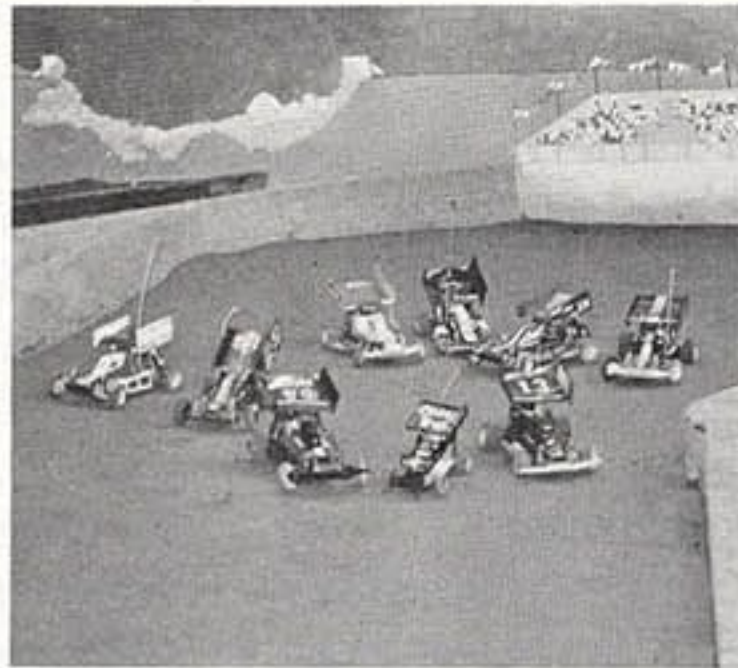
Jeron Quarter Classics, the company that brought us the incredible \$10,000 Ferrari (March 1987 RCMC), has done it again with this silver gray Mercedes W165, built to mark Mercedes' 100th Anniversary, is being produced in quarter scale in a very limited number by Jeron in its Birmingham, Michigan, workshop. The Mercedes racer, a replica of the 1939 Grand Prix champion, is gas-powered and full of features you won't believe. Watch for it, coming soon to *R/C Model Cars*.



## HOT TRICK RACEWAY

Hot Trick Racing Cars has branched out into raceway ownership. The first track under the Hot Trick banner is the Hot Trick Raceway and Hobby Shop, Route 1, Box 390, Wilkes-

boro, North Carolina. This well-equipped indoor dirt track offers a computerized lap counting system with transponders, heating and air conditioning, compressed air for cleaning cars, a fully stocked hobby shop, and formica worktables surrounding the track. A restaurant and motel are right next door, and the track could easily host 200 racers at one event. For more information on this new facility, call Hot Trick Raceway at (919) 973-7444.



## WALT'S IN SYRACUSE

Here's the place to race in Syracuse: the clay indoor track at Walt's Hobby and Craft, on Genesee Street. Monday nights are devoted to sprint cars, in 1/10 and 1/12 scale, and Saturday afternoons the track is taken over by open racing for novice through expert drivers. The rest of the time, the track is open for practice. Walt's has already run a six-hour enduro, and another is planned. If you're in the neighborhood and are looking for a race, drop in to Walt's!



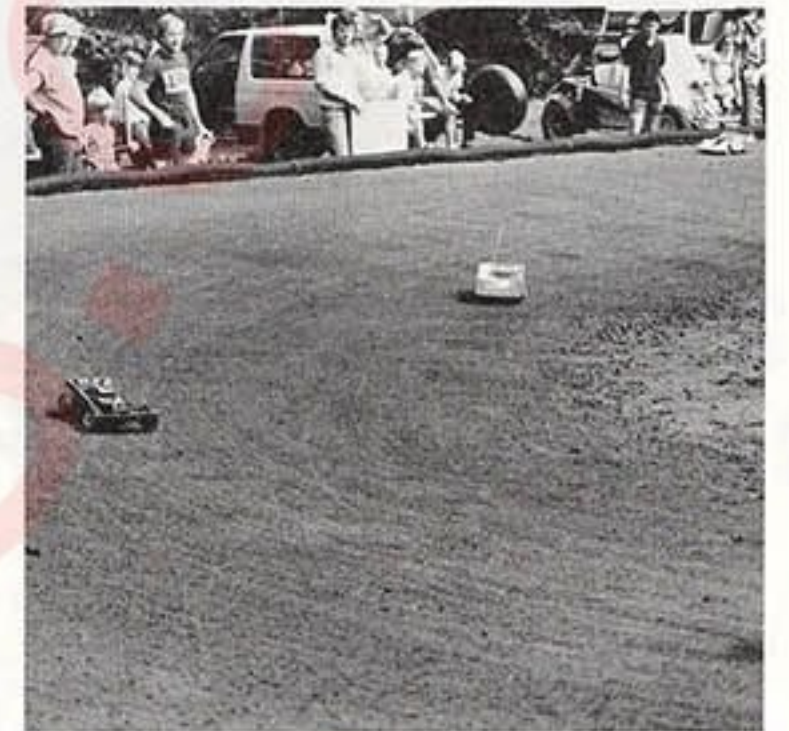
## BRAND NATIONAL 200

The Rochester, New York, area ROAR club is putting on a 200-lap, nonstop race at the Midtown Plaza, with festivities and events beginning on June 15th, and culminating in the big 200-lapper on Saturday, June 20th. Each participant (who must be a ROAR of Rochester member) will be given an RC10 to drive, equipped with ball bearings, Hot Trick suspension, Novak Speed Control, Bolink tires, and four HO/RC 1600 mAH batteries for use during the race. Each contestant, pit crew member, and corner marshals will receive T-shirts and hats to commemorate the race. For more information, contact John Downey at (716) 442-9527.

## MIDWEST OFFROAD CHAMPS

Billed as the Midwest's premier offroad spectacular, the 1987 American Offroad Championships, sponsored by Parma International and Sanyo USA, will be held August 14 through 16

at the NORCAR club track, in Cleveland, Ohio. This meet is likely to draw the top drivers in the country, so you should plan on attending. If you want more information, call (216) 826-3088.



## MERIDIAN OVAL RACES

The Meridian Fast-Trackers of Meridian, Mississippi, are alternating offroad racing at their track with a series of oval races. The most recent oval event was held Sunday, April 5, with a good turnout of drivers and enthusiastic spectators. The current hot driver on the circuit, Brian Wade, drives an RC10 with Trinity power; close on his heels at this writing is Billy Heard with a Trinity-powered Grasshopper, and on his tail is Chris Walker, with a Frog. The Fast Track R/C Speedway, in conjunction with the Hobby Fair Speed Shop, is sponsoring a series of offroad and oval races throughout the summer; check with the Hobby Fair Speed Shop in Meridian for more info.

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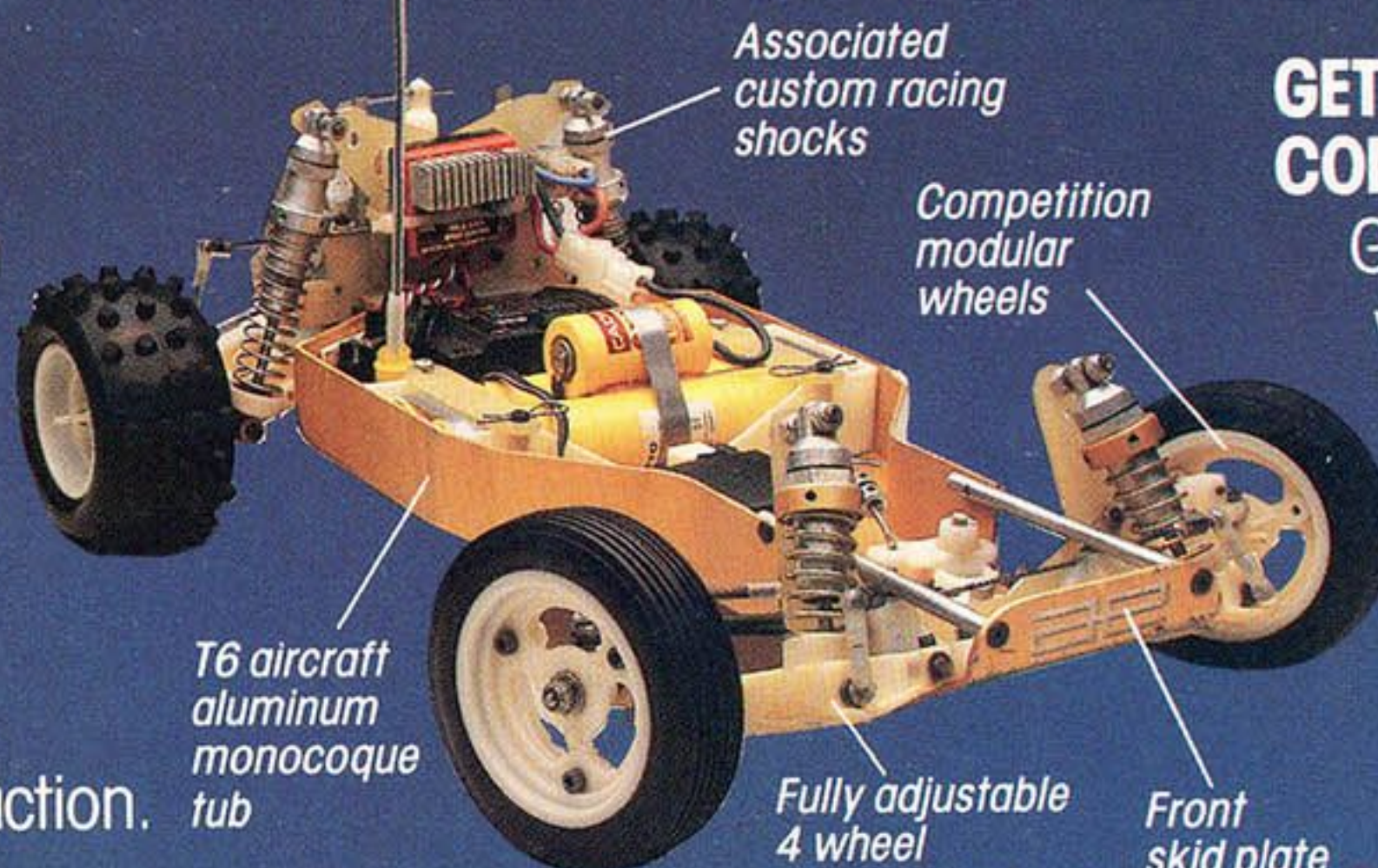
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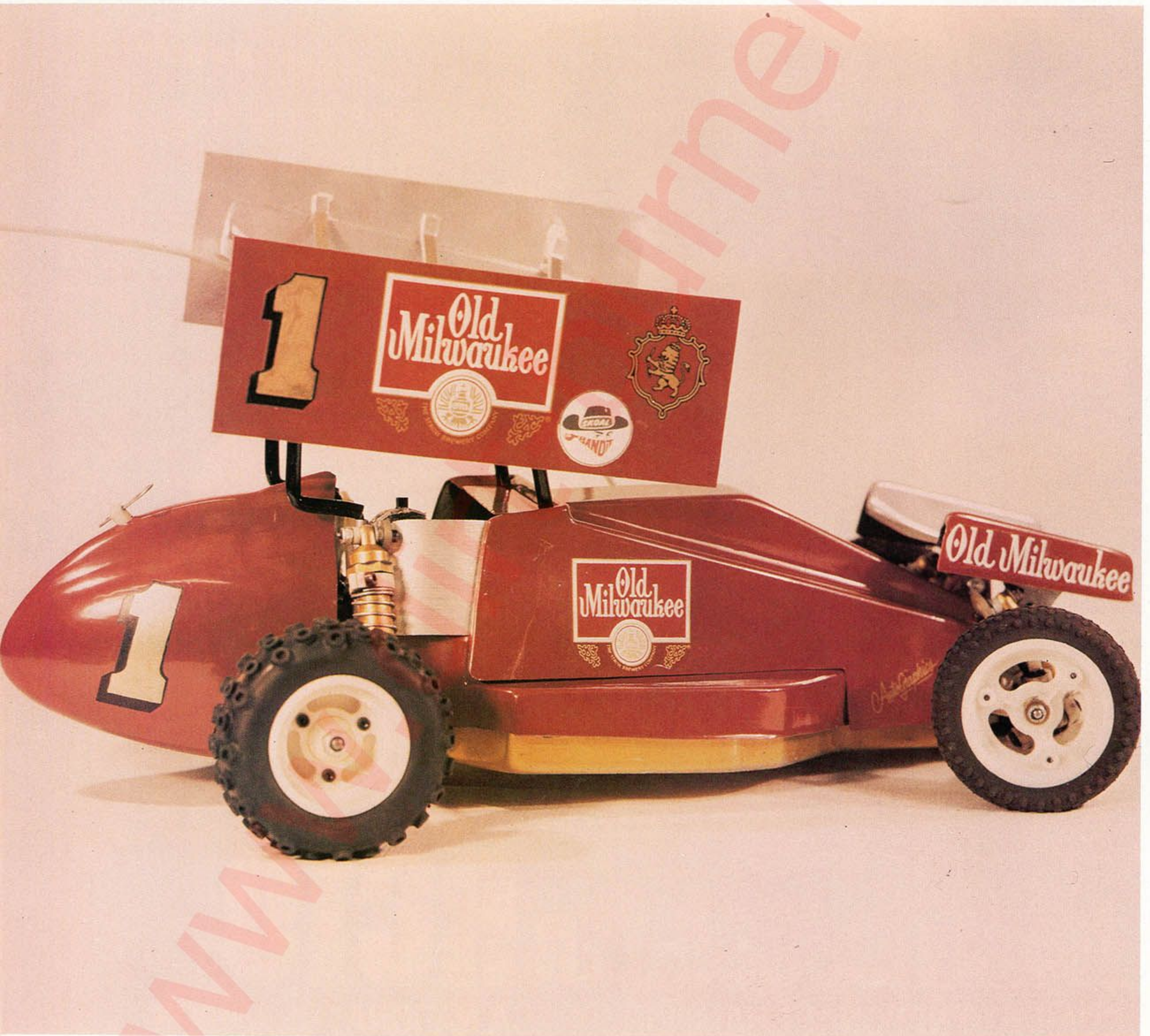
# TEAM ASSOCIATED RC10

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



# Converting Your RC10 into an Outlaw Sprint Car

BY ROGER ARNDT





In our last project we converted the Grasshopper and Hornet into sprint cars. By this time there should be a goodly number of Hoppers and Hornets kicking up dirt on the ovals all across the country.

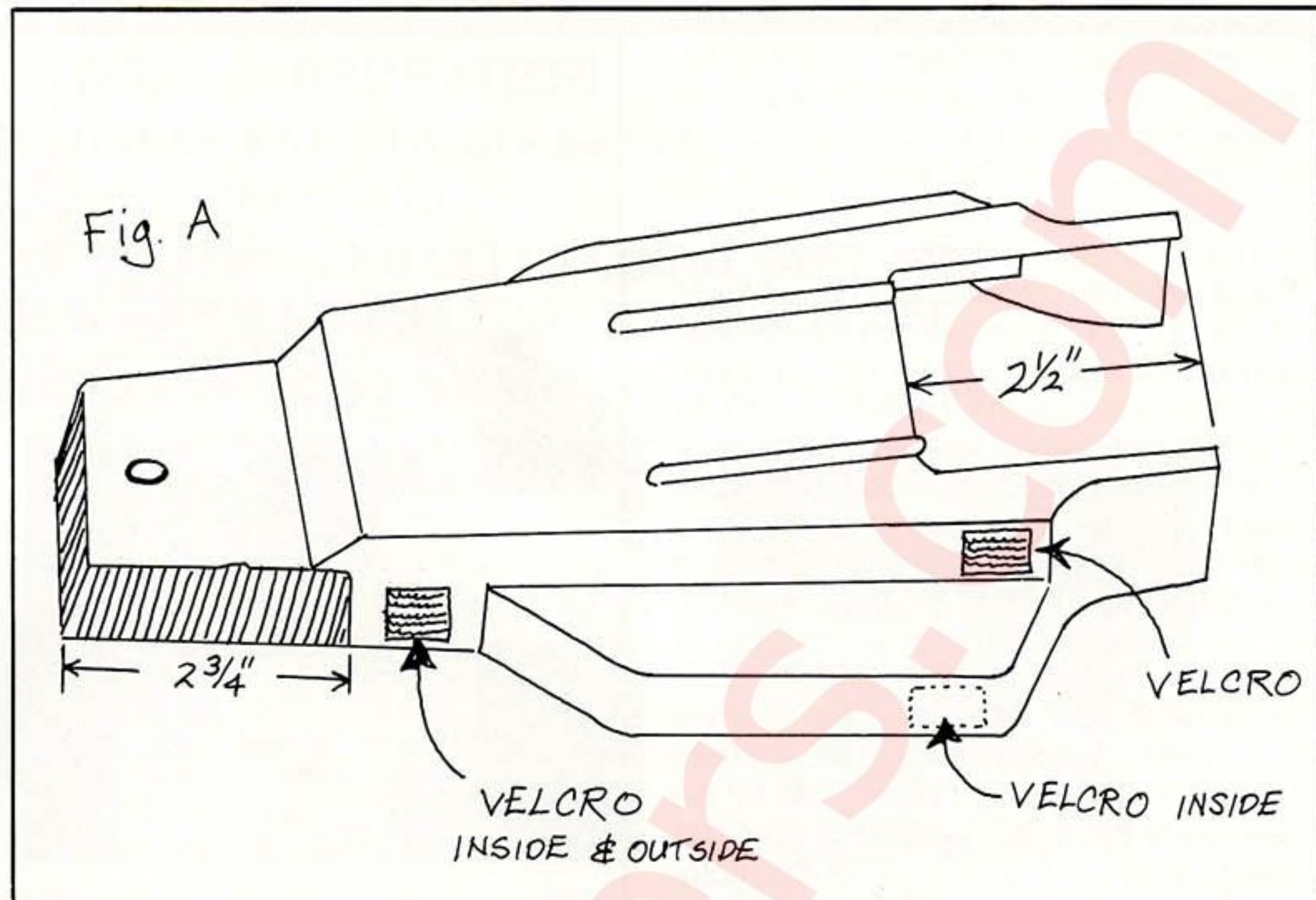
This month we will deck out an RC10 in full sprint car garb. For those who built the other conversion, stick around; we are going to use a modified top wing on our RC10, and you can make the same modification to the wing on your car.

When the folks at Associated engineered the RC10, not only did they come up with a winner on the offroad tracks, but they came up with a car that will perform like a real champion on the oval. With the fully adjustable suspension, setting up your sprint conversion for the oval, be it pavement or dirt, will be just about like dialing-in a real sprint car. A little change here, a little change there, and you will be able to fine-tune the chassis to give the ultimate oval track performance.

Let's get started. Once again we will be using the "Little Outlaw" Sprint Car Kit by Oval Track R/C Racing. This is actually a kit rather than just a body, as it comes with both a nose wing and top wing, a complete set of mounting instructions, and a full-size set of roll cage plans.

As we did with the Hornet and Grasshopper, we will again be using the alternate plans for mounting the body without the roll cage. The cage can always be added at a later date.

To start with, carefully trim out all the wing

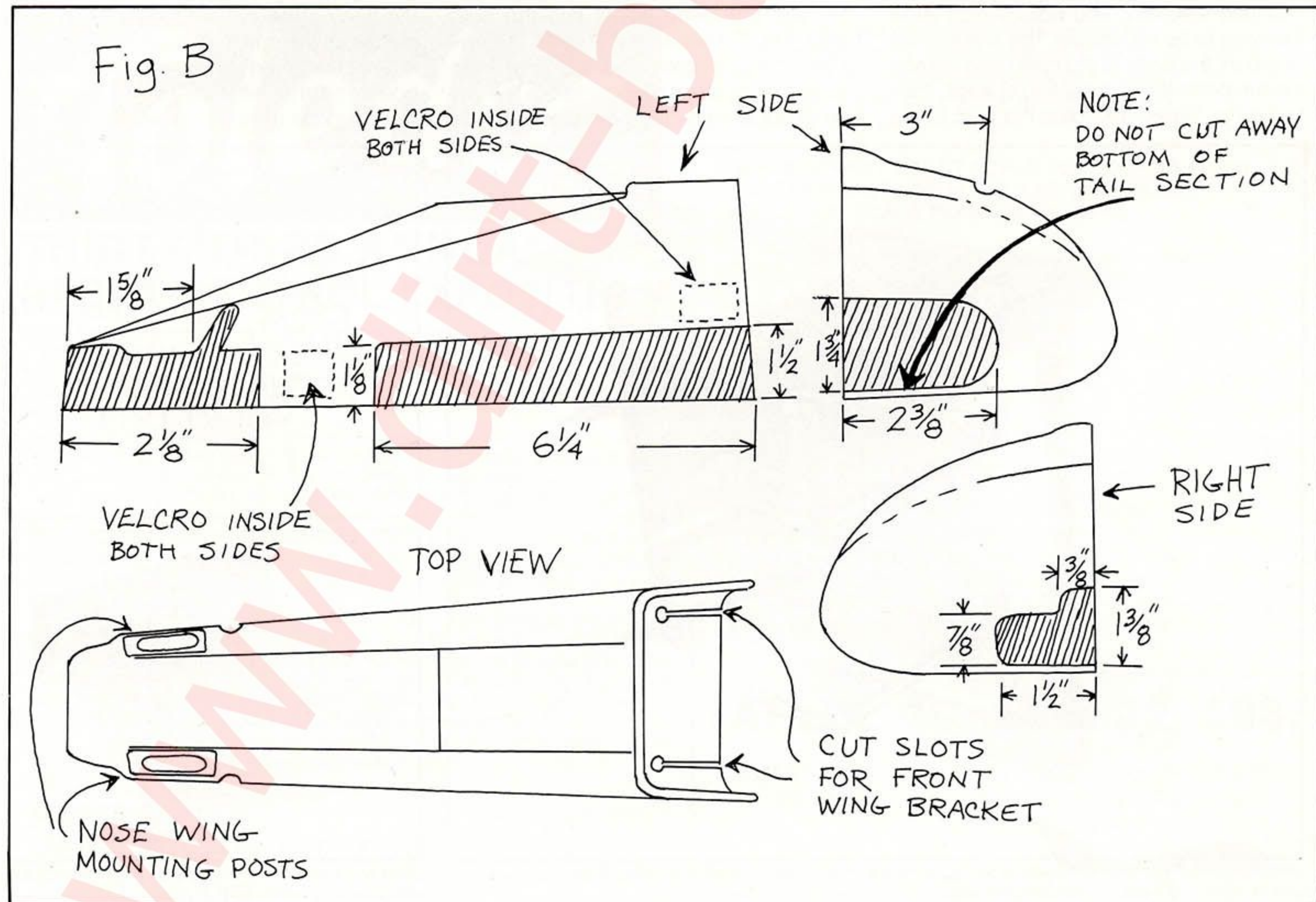


and body parts, making sure to salvage some large pieces of scrap plastic from around the hood and tail. You will need it later for the top wing.

Fit the tub cover to the chassis, referring to Fig. A. Trim away the shaded portion of the tub cover, and drill the hole for the front mounting post. The hole at the rear of the cover will vary according to how you have your chassis set up. I cut the hole the size indicated to allow for better cooling of the

Polk Hobbies' Aristo-Hitech electronic speed control, which I am using. Strips of Velcro go on the inside of the cover, as indicated in Fig. A. The Velcro strips on the outside can be applied after painting is completed. Check the fit of the cover to the chassis, and attach the mating pieces of Velcro.

Next check Fig. B. Trim the hood to fit over the tub cover. You will note that slots need to be cut in the side of the hood to





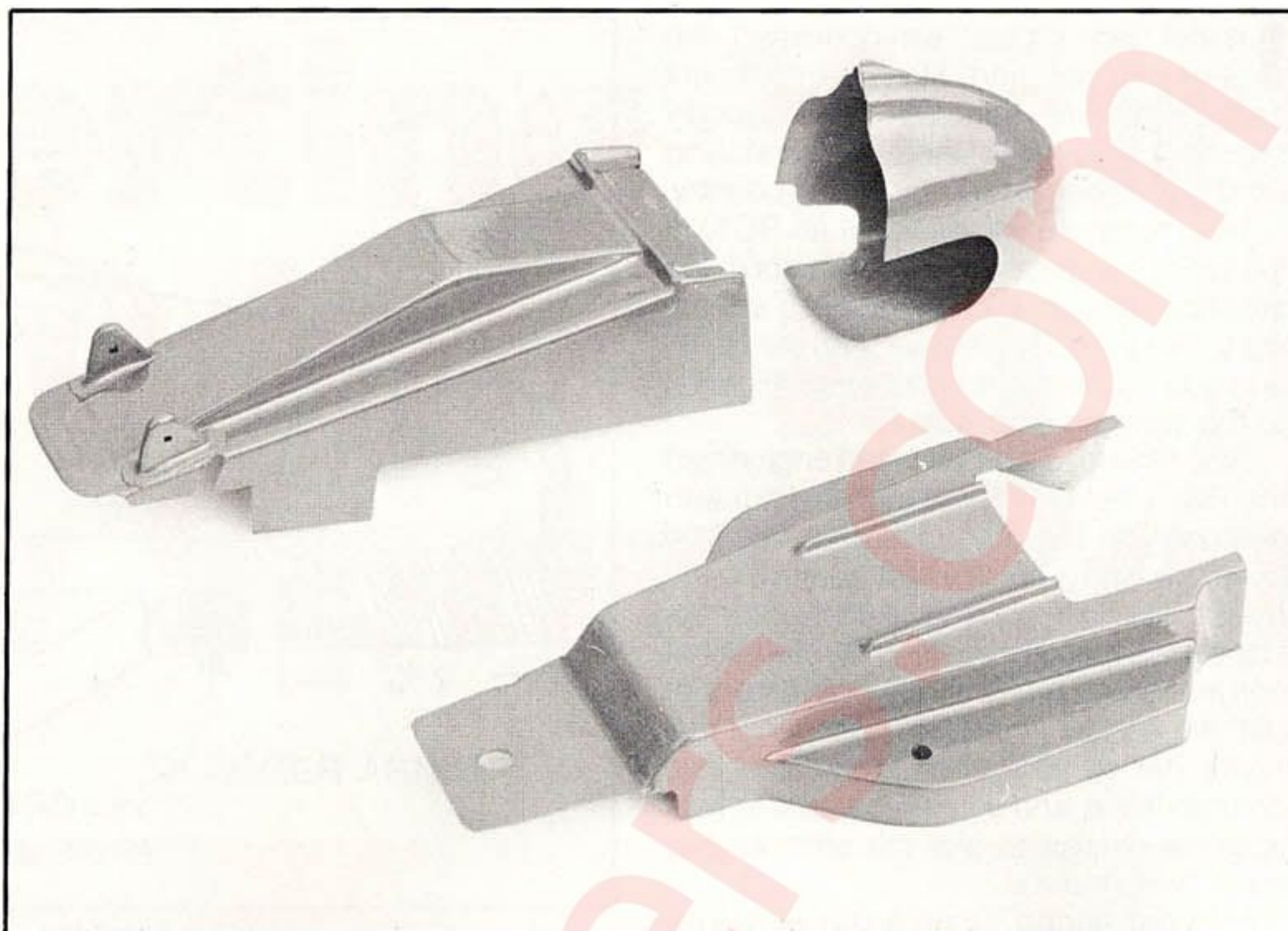
clear the shock mounts. Also slots must be cut in the dashboard to accommodate the top wing front mounting bracket. Attach the Velcro strips inside the hood to match up with the Velcro strips on the outside of the tub cover.

The tail section is trimmed out next. In Fig. B we show both the left and right side of the tail. The large hole on the left side needs only to be cut out if you are using a motor such as the LeMans 360ST or 360PT, which are longer than stock motors. If you are using a stock motor, both sides can be trimmed the same as shown on the right-hand drawing. Be sure when trimming the tail not to cut away the bottom portion of the tail section, a strip of Velcro is attached to the inside bottom of the tail and to the underside of the chassis to hold the tail in place. Measure back 3 inches from the top front of the tail. Drill the hole for the rear body mounting post. This post has been located in the top hole of the motor mounting bracket.

This brings us to the wings. The nose wing is made up of four parts; the wing itself, plus the one-piece mounting bracket,

**"With fully adjustable suspension...it'll be just like dialing-in a real sprint car."**

and the two mounting posts that are glued to the hood. The mounting posts are attached to the mounting bracket by two one-half-inch 4-40 nuts and bolts, which allow the wing to be adjustable. The easiest way to mount the posts to the hood is to assemble the posts to the mounting bracket, then using Pic Plastic-Stic, glue the post to the



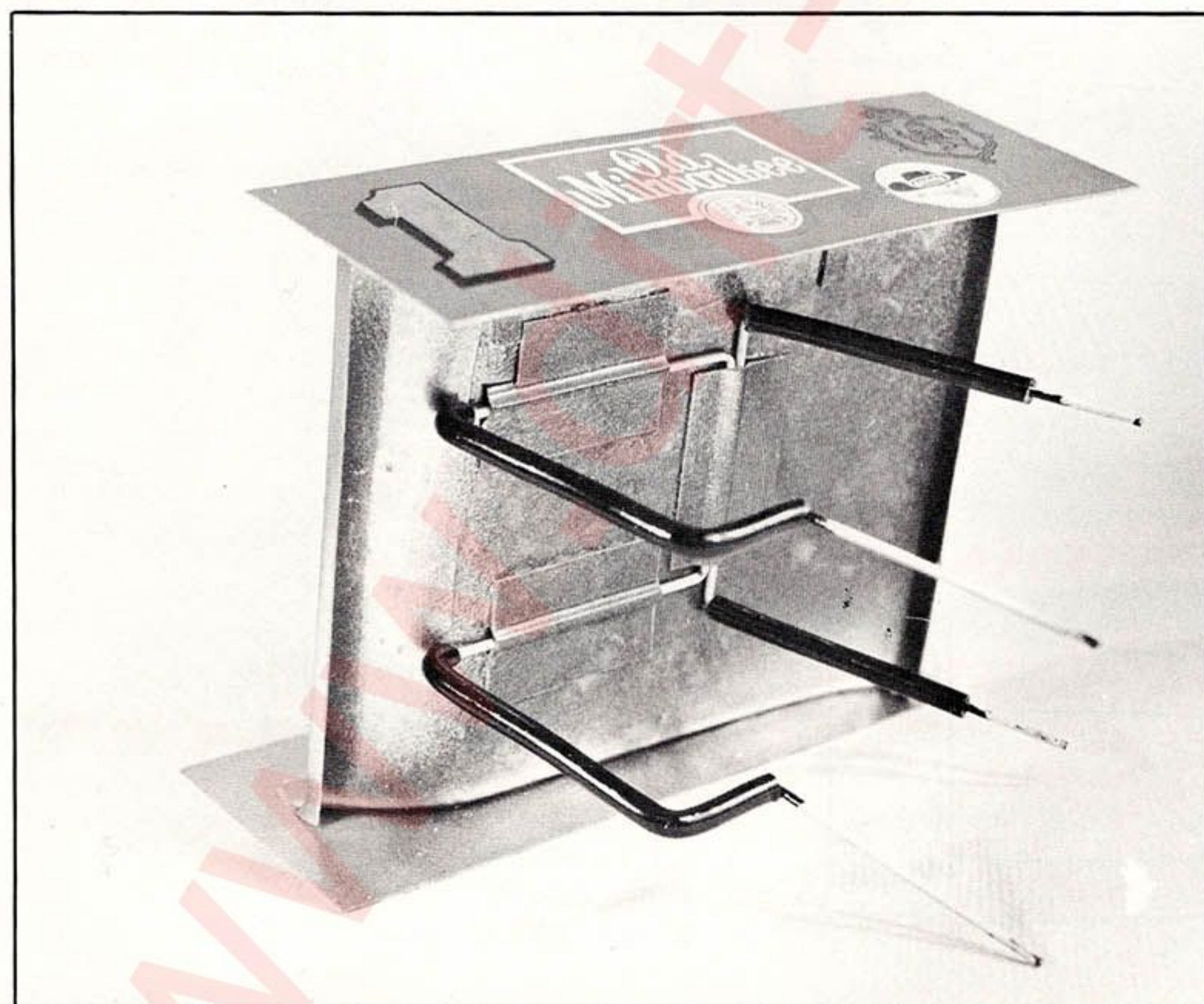
The body is now ready to paint; you can see the position of the front wing mounting posts, and the slots for the shock mounts and wing bracket.

hood about three quarters of an inch back from the front edge of the hood. After the glue has dried the bracket can be removed and glued to the bottom of the wing, about one quarter of an inch back from the front edge.

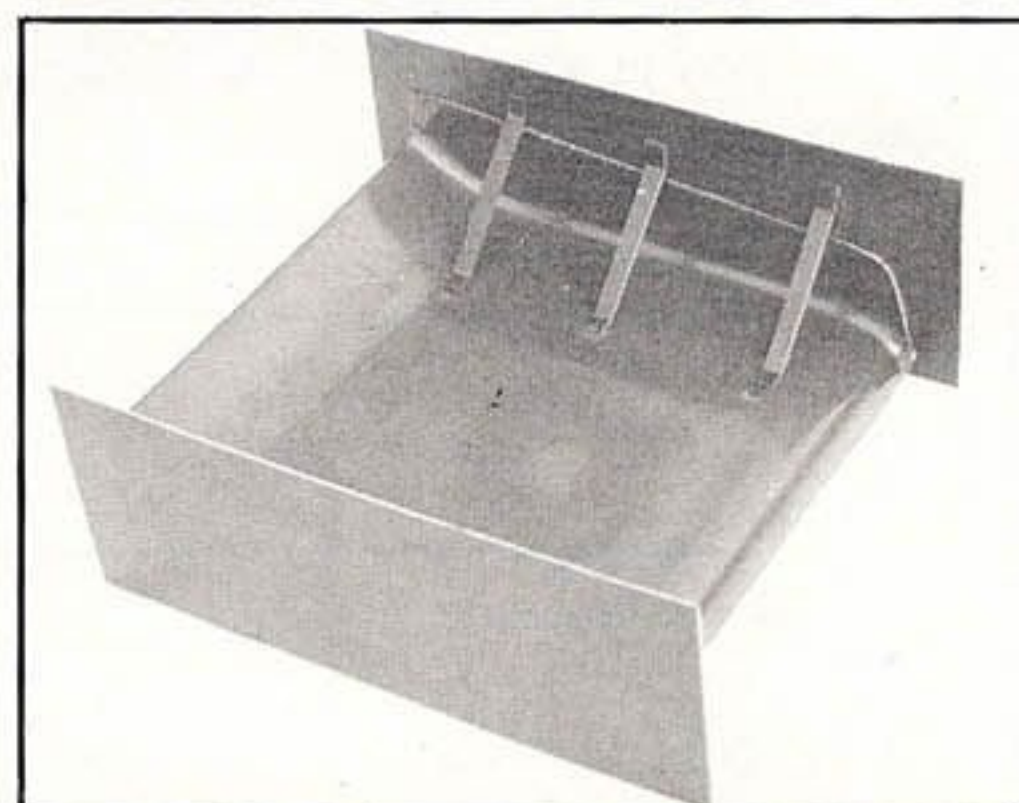
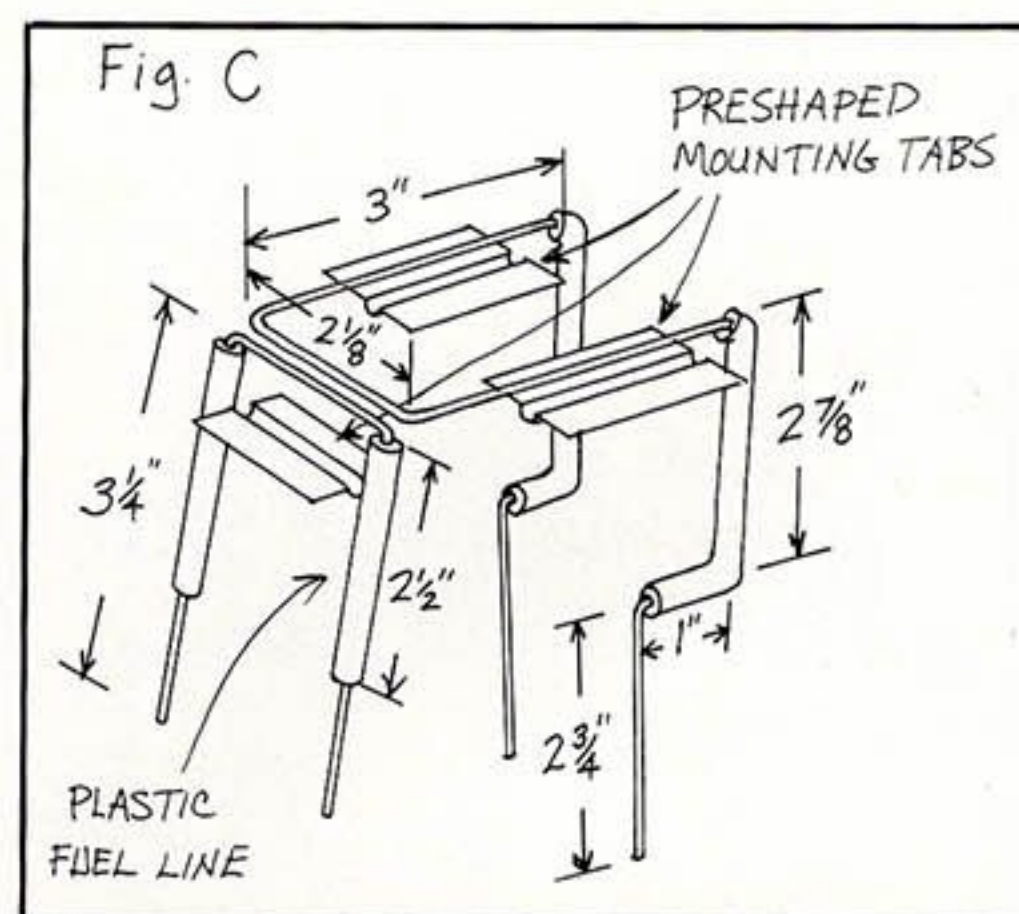
To mount the top wing, we will use the stock RC10 wing tubes, and will need to make a mounting bracket. This bracket is made from a piece of coat hanger wire. Before you start bending wire, make sure the wire you are using will fit into the wing tubes. Fig. C shows how to bend the wire to make the bracket and the front loop. These pieces are then mounted to the bottom of the wing by the preshaped mount-

ing tabs included in the kit. If you would like to make the wire bracket look more like part of a roll cage, you may cut lengths of plastic fuel line and slip them over the bracket legs. After painting, it will look like part of a roll cage protruding below the wing.

We are going to modify the top wing to make it more like the real thing. We will start by removing the outside portion of the stock side boards. See Fig. D. Using some of the scrap plastic, you saved while trimming out the body parts, cut out two 2-3/4 x 7-inch pieces for the new side boards. These side boards are glued to the wing, with the side board on the left side up and the side board on the right side down. Several one



Installation of the brackets on the wing using the pre-formed mounting tabs. Also shown, the plastic fuel line used on the bracket legs.



Top wing with the new sidepanels installed, and the plastic braces now in place.



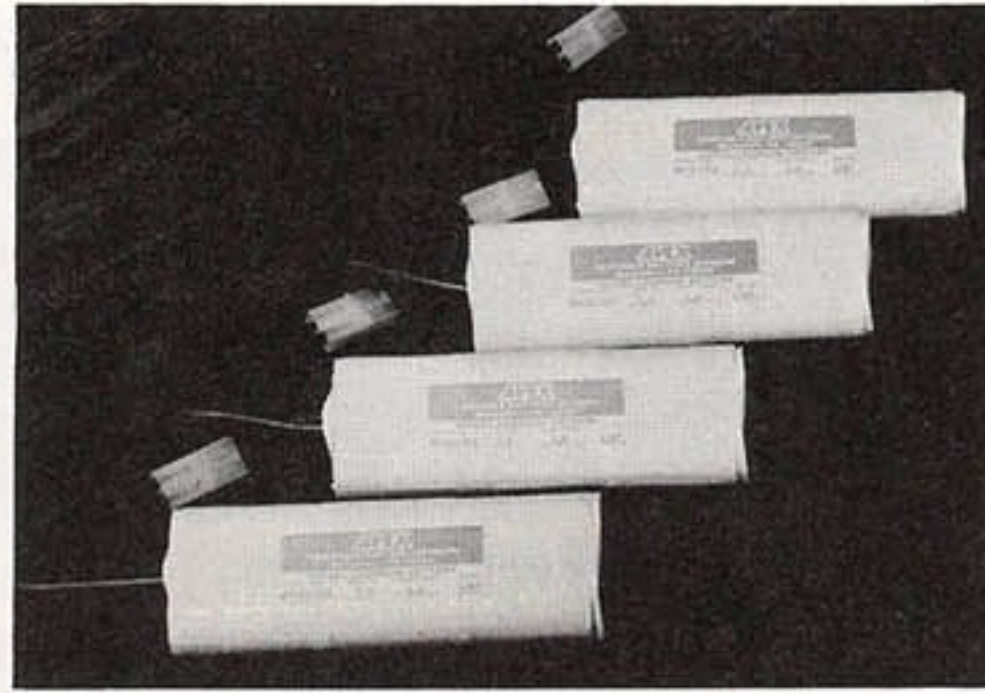
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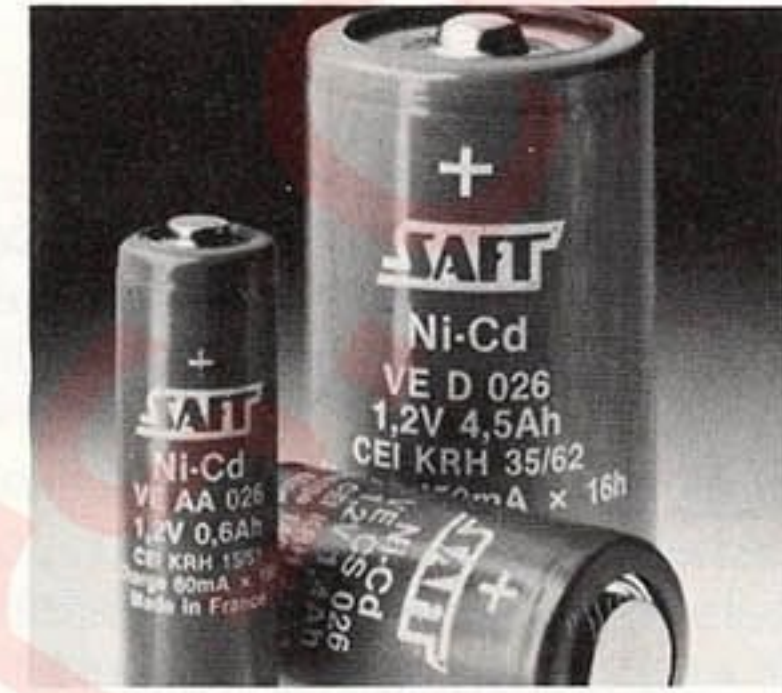
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Include a check or money order in U.S. funds made payable to the "Weak Signals R/C Club" along with **25 cents per order** handling charge. **You must state** which expo days the tickets are to be used and the prices are: \$4.00 per day for adults, and \$1.00 per day for children 12 and under. Deadline for ticket orders is March 31, 1987. Ticket sales are final and non-refundable.

All orders with a program will be returned near Mid-March. Tickets are also available at the door.

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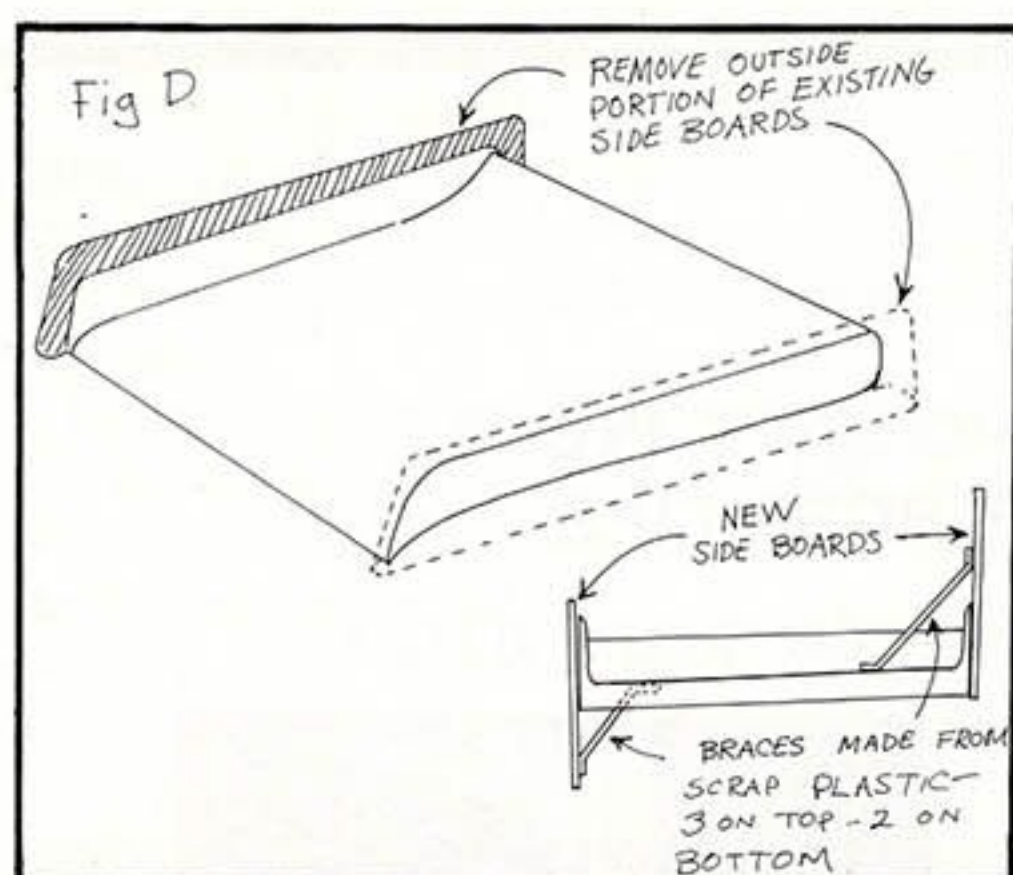
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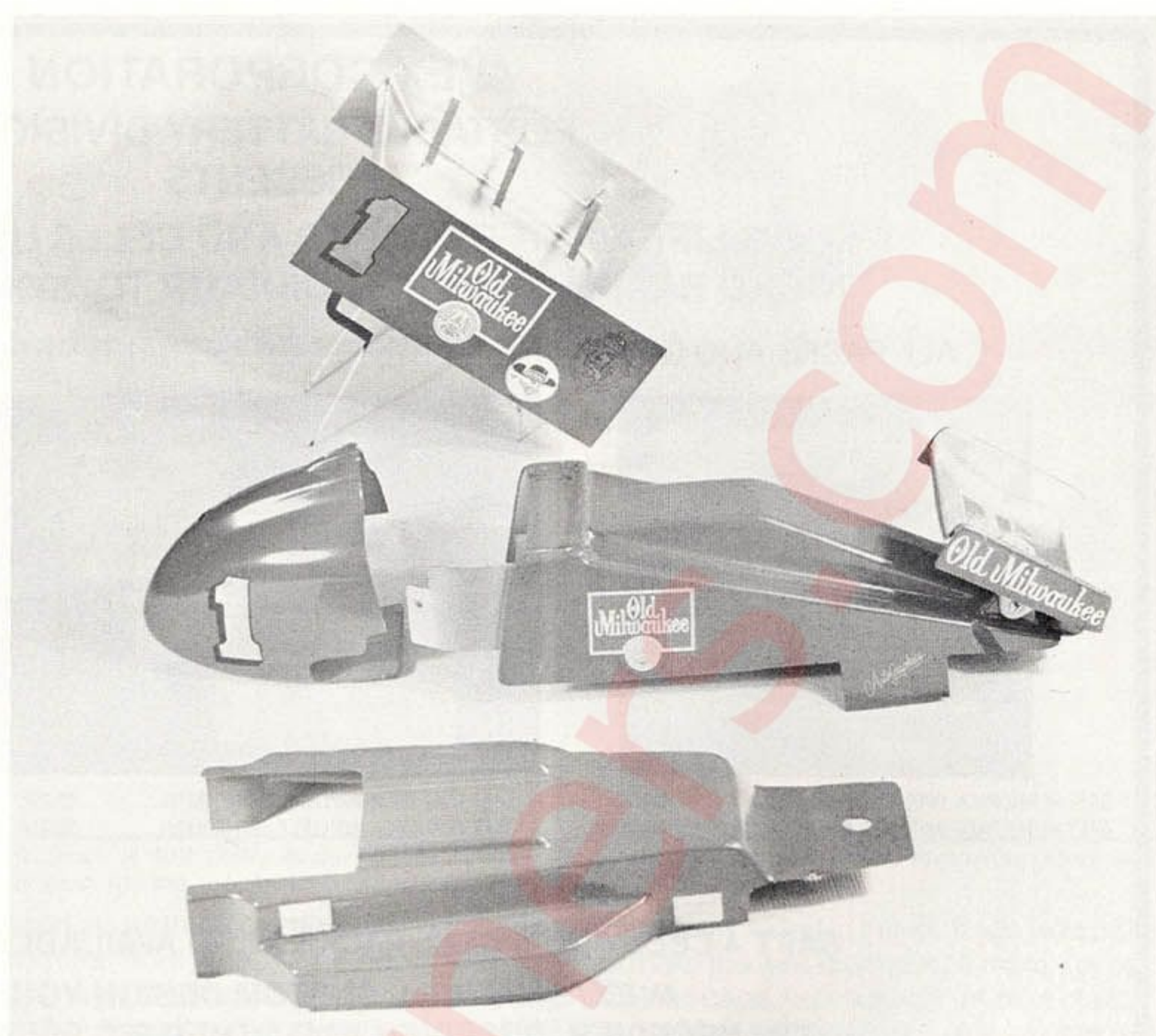




quarter-inch wide strips of scrap plastic can be cut and formed into side boards braces, using three braces on the top of the wing and two on the bottom.

About all that is left to do is to make a trip to the paint shop, finish with some sponsor decals by Autographics, your favorite number, and you are ready to mount the body on the chassis and hit the track for some hot laps.

To mount the body, fit the tub cover to the tub, install the pin in the front body mounting post, and the Velcro strips along the sides of the tub will now hold the cover in place. Next slide the tail section down over the rear body mounting post, secure it in place with the pin and the Velcro strip on the underside of the chassis. The hood is next; it fits down over the tub cover and is held in place by the Velcro strips along the sides of the tub cover. The rear legs of the top wing fit down into the RC10 wing tubes while the front legs snap forward into the slots in the dashboard. The wing angle can be adjusted by bending the wing up or down, at the rear mounting legs.



*The completed sprint body ready to mount on the chassis. The mud door is made from scrap plastic and glued to the hood. It must be notched as shown to clear shock and mounting strut.*

To transfer the power to the track we mounted a pair of Pro-Line 117-R tires on the rear, while a pair of Pro-Line 015-Fs up front improved front-end action on the loose dirt.

The only changes we made to the stock chassis setup was to move the rear shocks to the outside holes in the A arms and to

the back side of the shock strut. Silver spring are used all the way around, the adjusting collars are run all the way to the top, then adjusted slightly as needed with a little more spring on the right front and left rear.

Well, that about does it for now, so until next time, Happy Racing!



*The top wing mounted in the wing tubes. You can see the position of the rear body mounting posts as well as the way the sidepanels are attached to the wing; left side goes up, right side down.*



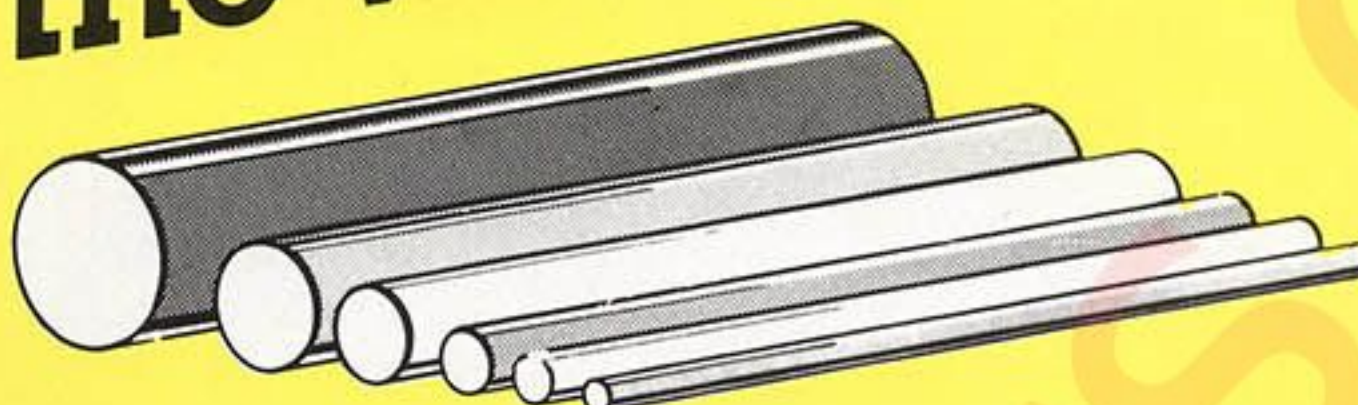
# DU-BRO CAR ACCESSORIES

## the winners choice!

### HEAT SHRINK TUBING

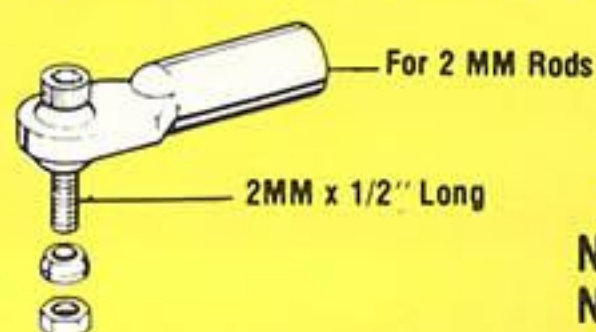
Heat shrink tubing is the ideal solution for many of your modeling needs. This tubing has been specially formulated to shrink up to one half its original diameter simply by using a heat gun, soldering iron, or cigarette lighter. Ideal for insulating electrical splices, and also covering electrical plugs and connectors. A must for every modelers workshop and field box. Packaged in 3" lengths.

|          |                                   |          |
|----------|-----------------------------------|----------|
| No. 2144 | 1/16" Dia. Heat Shrink Tubing-Blu | 4/pkg    |
| No. 2145 | 3/32" Dia. Heat Shrink Tubing-Grn | 4/pkg    |
| No. 2146 | 1/8" Dia. Heat Shrink Tubing-Red  | 4/pkg    |
| No. 2147 | 3/16" Dia. Heat Shrink Tubing-Wht | 3/pkg    |
| No. 2148 | 1/4" Dia. Heat Shrink Tubing-Yel  | 3/pkg    |
| No. 2149 | 3/8" Dia. Heat Shrink Tubing-Blk  | 3/pkg    |
| No. 2150 | Heat Shrink Tubing-(Asst. Pack)   | 2 ea/pkg |



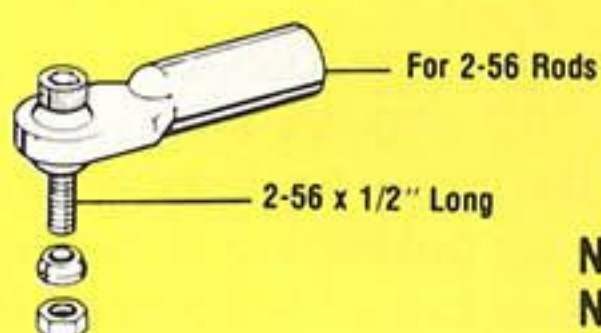
### SWIVEL BALL LINKS

These high quality Ball Links feature burnished Brass Swivel Ball for smooth friction-free operation.



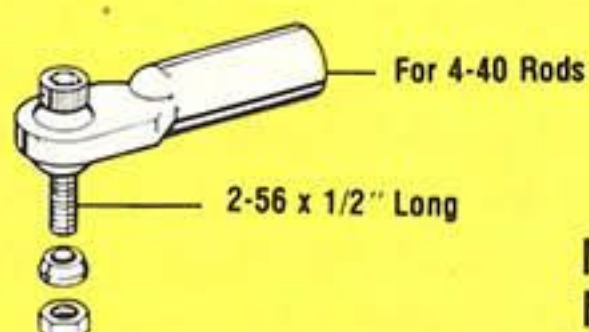
#### 2MM SWIVEL BALL LINKS

|          |              |       |
|----------|--------------|-------|
| No. 2132 | W/O Hardware | 2/pkg |
| No. 2133 | W/ Hardware  | 2/pkg |



#### 2-56 SWIVEL BALL LINKS

|          |              |       |
|----------|--------------|-------|
| No. 2134 | W/O Hardware | 2/pkg |
| No. 2135 | W/ Hardware  | 2/pkg |

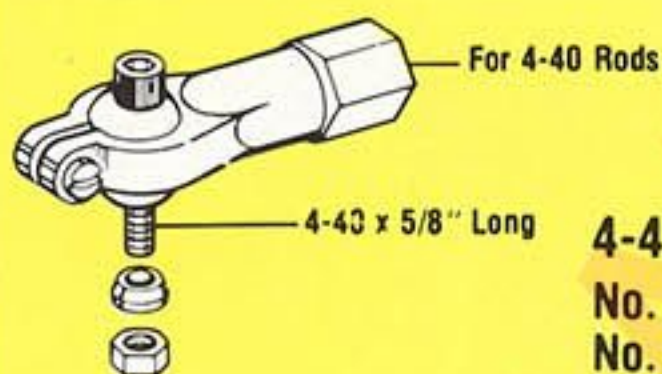


#### 2-56 SWIVEL BALL LINKS for 4-40 RODS

|          |              |       |
|----------|--------------|-------|
| No. 2138 | W/O Hardware | 2/pkg |
| No. 2139 | W/ Hardware  | 2/pkg |

### E/Z ADJUST BALL LINKS

Adjustable ball tension. High quality burnished Brass Swivel Ball for smooth friction-free operation.



#### 4-40 E/Z ADJUST BALL LINKS

|          |              |       |
|----------|--------------|-------|
| No. 2136 | W/O Hardware | 2/pkg |
| No. 2137 | W/ Hardware  | 2/pkg |



#### 4-40 E/Z ADJUST BALL LINKS (Short)

|          |              |       |
|----------|--------------|-------|
| No. 2140 | W/O Hardware | 2/pkg |
| No. 2141 | W/ Hardware  | 2/pkg |

### STANDARD & METRIC BALL WRENCHES



The perfect tool for getting at those hard-to-reach places. Ball wrenches make it possible to turn socket head screws or bolts from any angle.

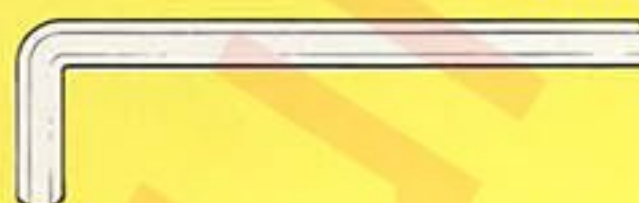
#### STANDARD BALL WRENCHES

|          |                      |
|----------|----------------------|
| No. 2151 | 5/64 (2-56 Skt. Hd.) |
| No. 2152 | 3/32 (4-40 Skt. Hd.) |

#### METRIC BALL WRENCHES

|          |                          |
|----------|--------------------------|
| No. 2153 | 1.5 MM (2.0 MM Skt. Hd.) |
| No. 2154 | 2.0 MM (2.5 MM Skt. Hd.) |
| No. 2155 | 2.5 MM (3.0 MM Skt. Hd.) |

### METRIC HEX WRENCH



|          |        |       |
|----------|--------|-------|
| No. 2128 | 2 MM   | 1/pkg |
| No. 2129 | 2.5 MM | 1/pkg |
| No. 2130 | 3 MM   | 1/pkg |
| No. 2131 | 4 MM   | 1/pkg |

### NYLON INSERT LOCK NUTS



|          |      |       |
|----------|------|-------|
| No. 2101 | 3 MM | 4/pkg |
| No. 2102 | 4 MM | 4/pkg |

### HEX NUTS



|          |        |       |
|----------|--------|-------|
| No. 2103 | 2 MM   | 4/pkg |
| No. 2104 | 2.5 MM | 4/pkg |
| No. 2105 | 3 MM   | 4/pkg |
| No. 2106 | 4 MM   | 4/pkg |

### FLAT WASHERS



|          |        |       |
|----------|--------|-------|
| No. 2107 | 2 MM   | 8/pkg |
| No. 2108 | 2.5 MM | 8/pkg |
| No. 2109 | 3 MM   | 8/pkg |
| No. 2110 | 4 MM   | 8/pkg |

### METRIC SOCKET HEAD CAP SCREWS

Replacement screws for R/C Cars. Great for easy installation and removal.



|          |             |       |
|----------|-------------|-------|
| No. 2111 | 2 MM x 4    | 4/pkg |
| No. 2112 | 2 MM x 6    | 4/pkg |
| No. 2113 | 2 MM x 10   | 4/pkg |
| No. 2114 | 2 MM x 12   | 4/pkg |
| No. 2115 | 2.5 MM x 4  | 4/pkg |
| No. 2116 | 2.5 MM x 6  | 4/pkg |
| No. 2117 | 2.5 MM x 8  | 4/pkg |
| No. 2118 | 2.5 MM x 10 | 4/pkg |
| No. 2119 | 2.5 MM x 15 | 4/pkg |
| No. 2120 | 3 MM x 4    | 4/pkg |
| No. 2121 | 3 MM x 6    | 4/pkg |
| No. 2122 | 3 MM x 8    | 4/pkg |
| No. 2123 | 3 MM x 10   | 4/pkg |
| No. 2124 | 3 MM x 15   | 4/pkg |
| No. 2125 | 3 MM x 18   | 4/pkg |
| No. 2126 | 3 MM x 20   | 4/pkg |
| No. 2127 | 3 MM x 30   | 4/pkg |

### HOOK & LOOP MOUNTING MATERIAL

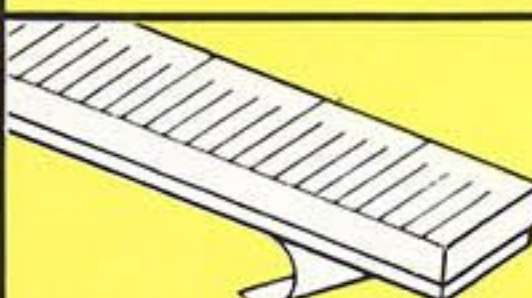


Super tough material with a glue-like stick—good for mounting receivers, batteries—unlimited uses! Adhesive back on one side for easy mounting.

No. 2143

1/pkg

### KWIK-STIK LEAD WEIGHTS



Perfect for adding extra weight to your R/C Cars. Strong stick tape on back for easy installation. Two 3 oz. strips divided into 1/20 and 1/4 oz. increments.

No. 2142

2/pkg

See Your Local Dealer And Ask For The Finest

**DU-BRO PRODUCTS INC.** 480 Bonner Rd. Wauconda IL 60084



# The Reedy Race of CHAMPIONS



BY GENE HUSTING

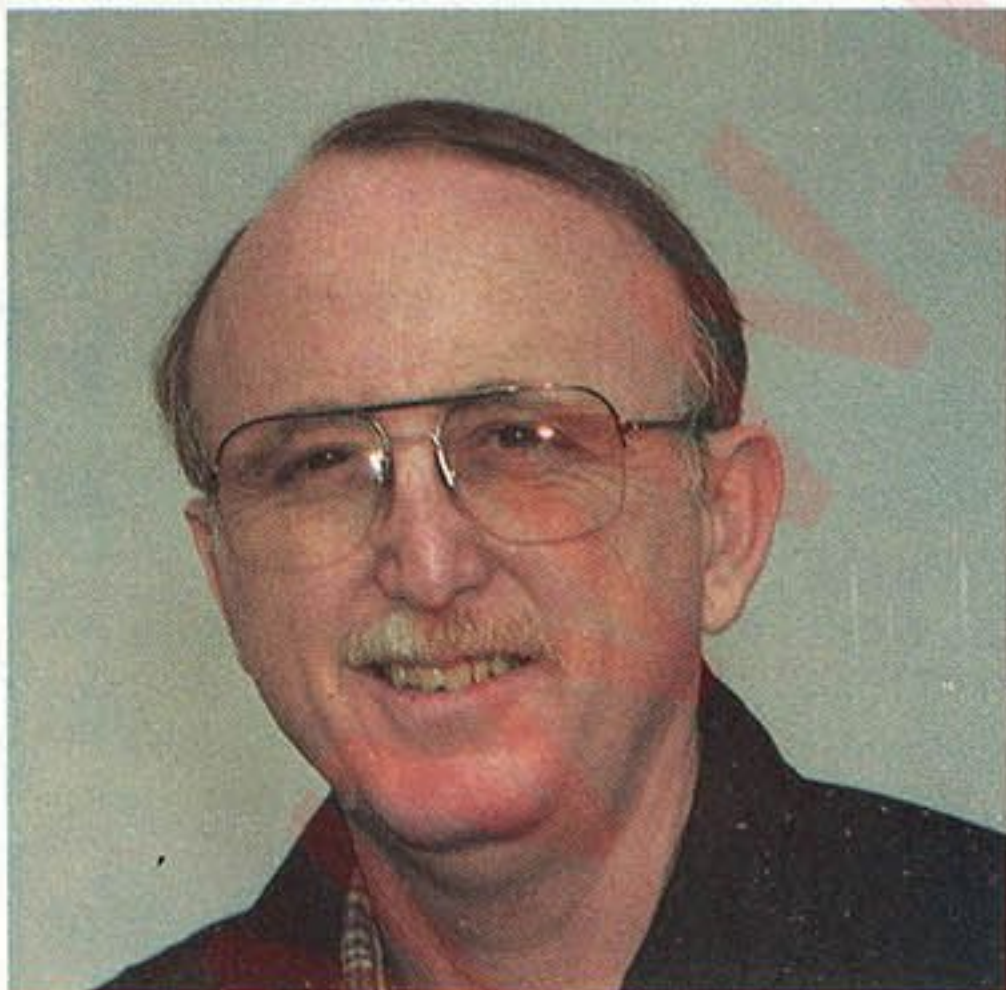
**E**veryone knows there are indoor offroad and 1/12 tracks where the racers from the cold weather states spend their time in winter at the races. But then in the summertime, it's back to outdoor racing again. This seems like a perfectly normal way to do things.

However, there is another way of racing, that at first glance, seems backwards. But a new trend could be developing here. The Barana family, mom and dad, Marie and Cory with their children Peter, Monica, and Leo have been very active in R/C car racing over the last five years. Cory, Peter, and

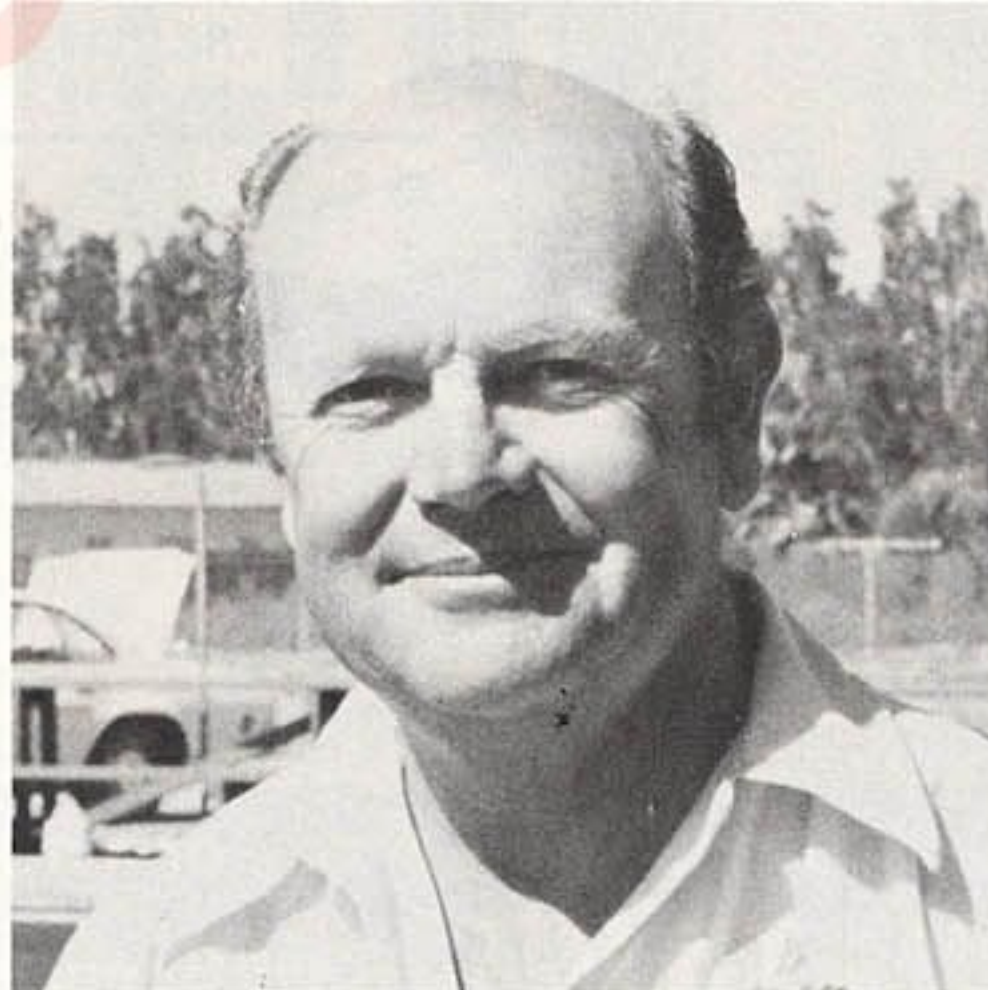
**Twenty of the best off-road drivers were invited indoors to fight it out in 2WD and 4WD competition, with the winner being the one who had accumulated the most points.**

Leo have actively participated in 1/8 gas, 1/12 electric, 1/10 and 1/8 offroad racing and then got the rest of the family involved with R/C cars by publishing a magazine. The next step was to start Nationwide Hobbies Distributing Co. And, as if they didn't have enough to do, they started, operated, and participated in an 1/8 gas on-road track and a separate 1/8 gas offroad track, which were both located in the largest park in Orange County, California.

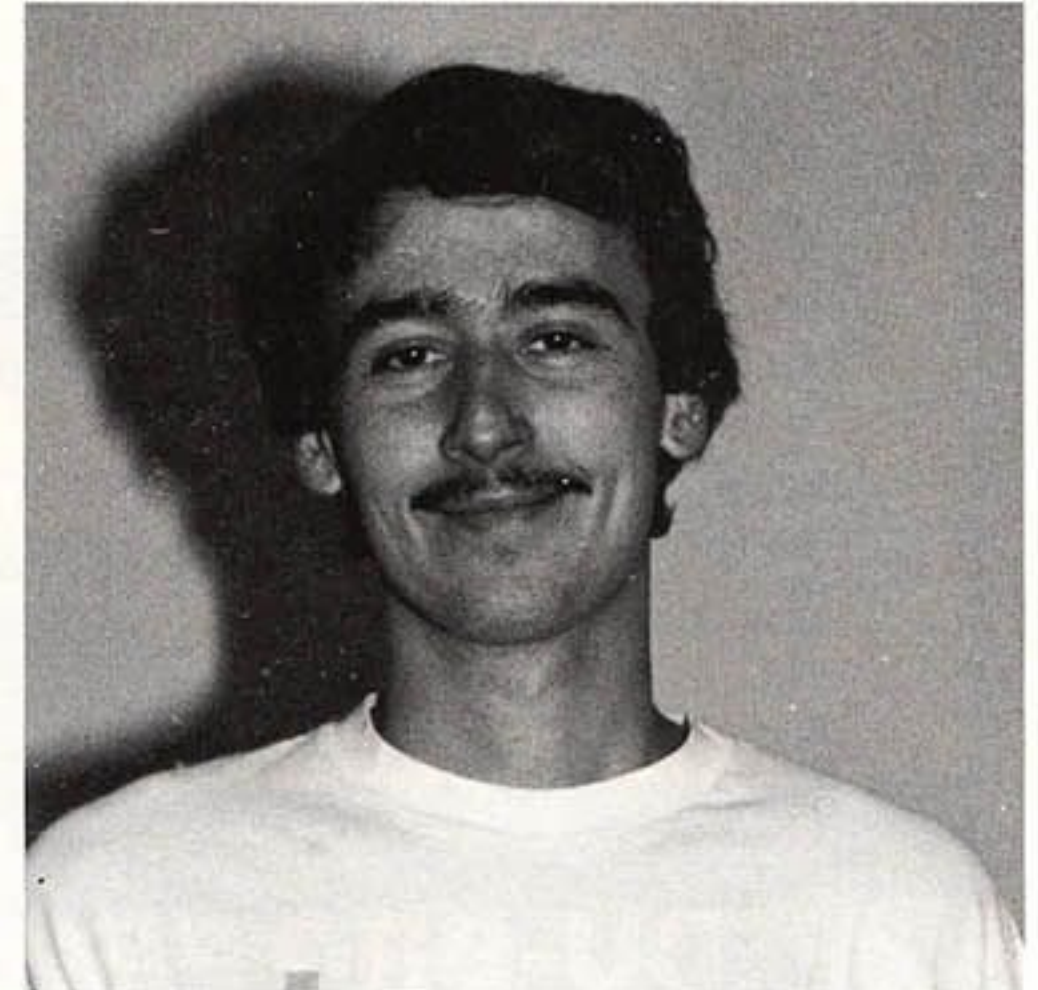
But they began to realize that the larger number of racers were involved with 1/10 offroad. So they took a new approach, and



Mike Reedy, instigator of the first Reedy Race of Champions.



Competition Editor Gene Husting headed to Huntington to cover the Reedy Invitational.



Overall champion Chris Allec put it away with 2 thirds, a fifth, and a first place finish.





The Reedy Invitational was held at the Hot Trax facility in Huntington Beach. A fine indoor track with a hobby shop as well.



Jay Halsey's RC10 was Top Qualifier in the 2WD class, with a little help from Reedy power and a Novak speed control.



It was Mike Reedy's birthday, so after qualifying everyone got together to celebrate. The big smile at the lower right is Reedy.

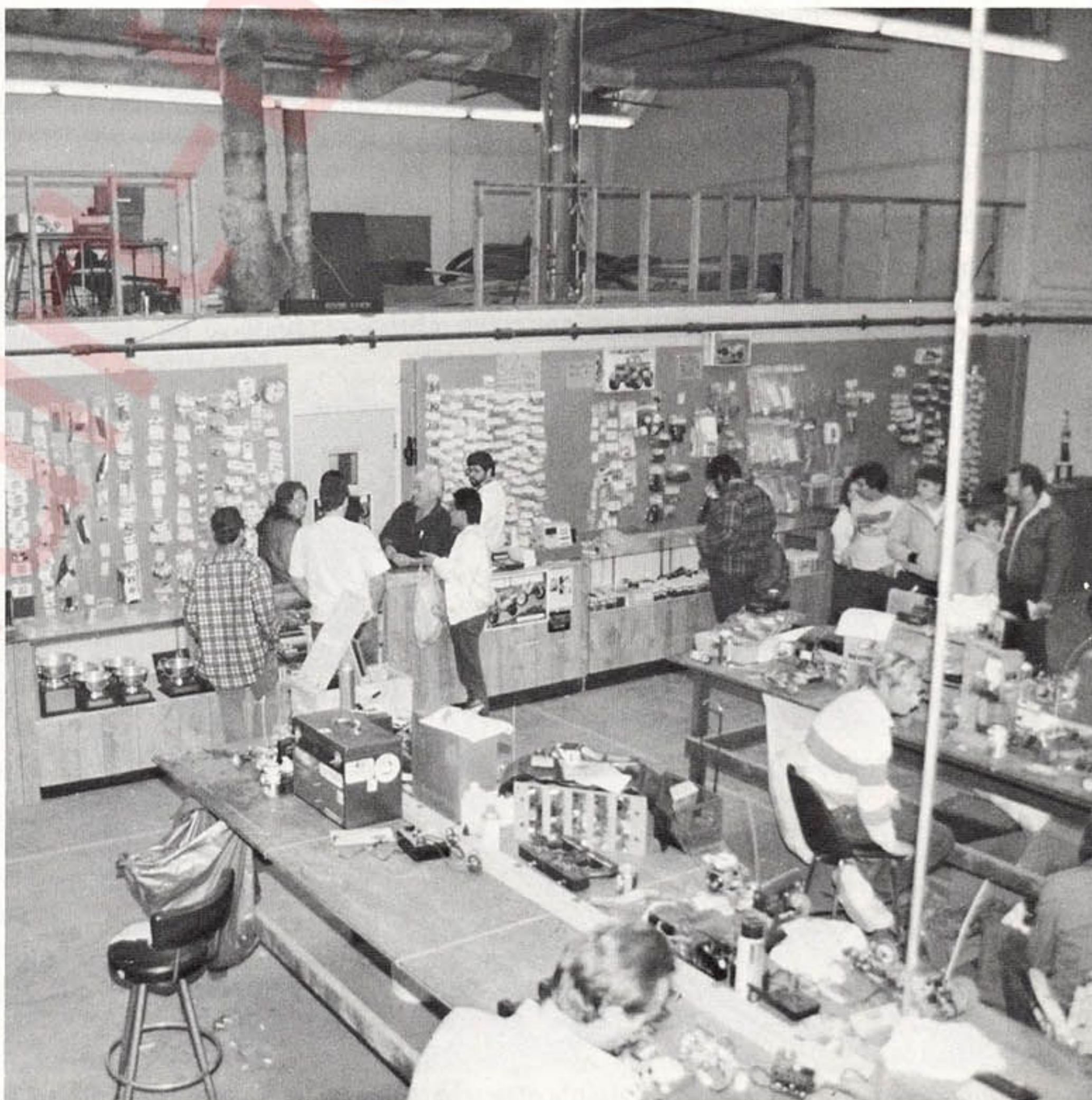


Part of the pit area with the checkerboard drivers' stand at rear. All of the contestants had praise for the Hot Trax facility.

went with 1/10 offroad. But they didn't want just another outdoor track like everyone else in Southern California. They decided to have an indoor track in sunny Southern California! But why would they do that? It sure doesn't snow here, and it hardly ever rains. So why indoors? Why not? It's worked out so great, that just after a few short months they moved into a new, very large building and added a carpet track. So they now have a big indoor offroad dirt track, with pit tables to accommodate 120 racers, and in the next room is a combination 1/12 carpet road race course and a 1/10 carpet oval track. All of this is located at Hot Trax Hobbies, 5201 Argosy, Huntington Beach, California 92649. By racing indoors they can have day as well as evening races. On Wednesday, Friday, and Sunday they race 1/10 offroad; Thursday is 1/10 and 1/12 carpet oval; and Tuesday and Saturdays is 1/12 on-road carpet. Something for everyone!

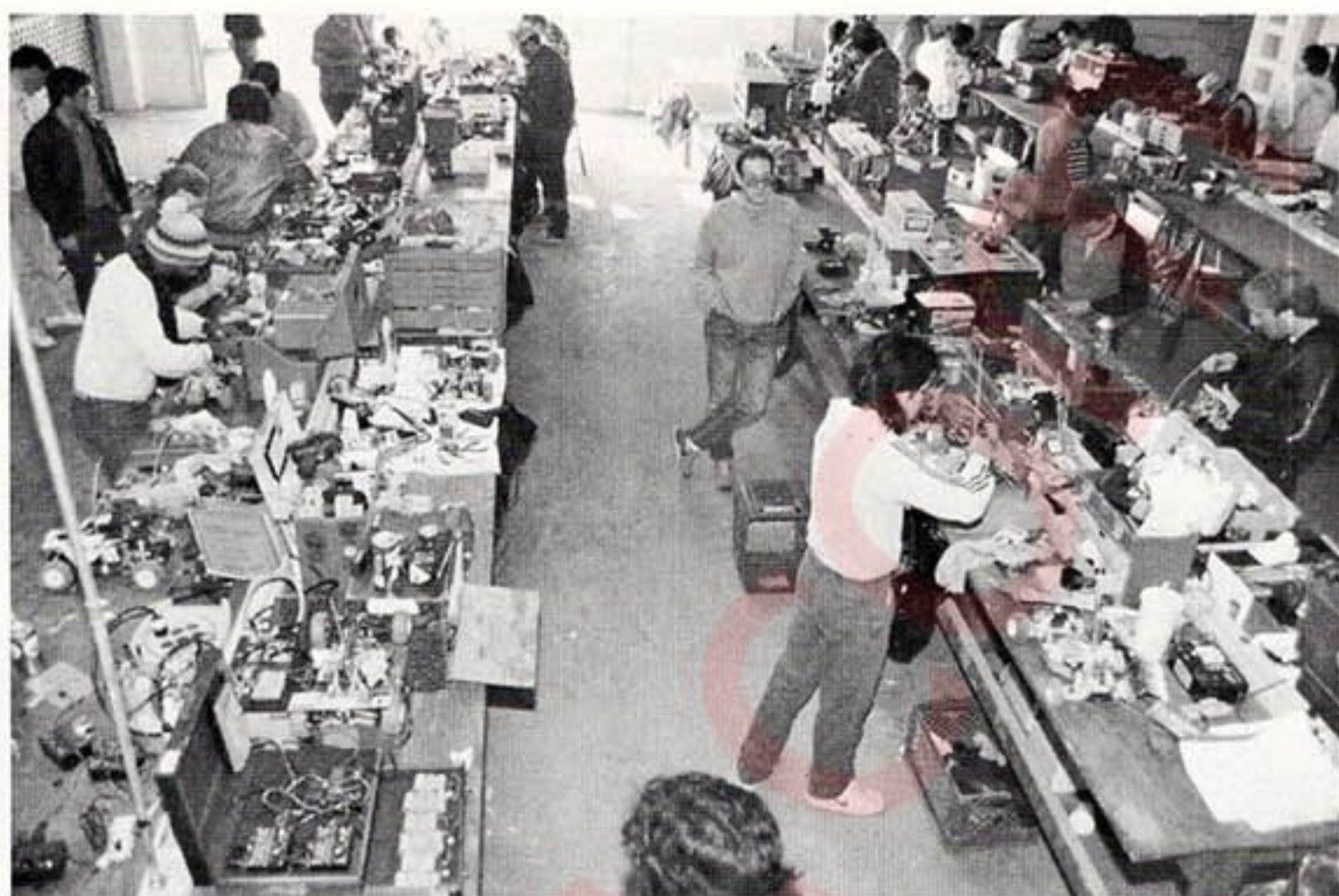
Mike Reedy, of Reedy Modified Motors got together with Hot Trax to help sponsor their first big offroad race. They decided on an Invitational Class of 20 of the best offroad racers competing in both 2WD and 4WD classes and combining points to determine the winners. And there would also be a separate Open 2WD Modified Class and Open 4WD Modified Class, with entries limited to 140 total.

Friday was open practice with most racers not only having been there Friday, but the week before practicing too. One of



The Hot Trax shop has a lot of parts and supplies for most popular car makes.





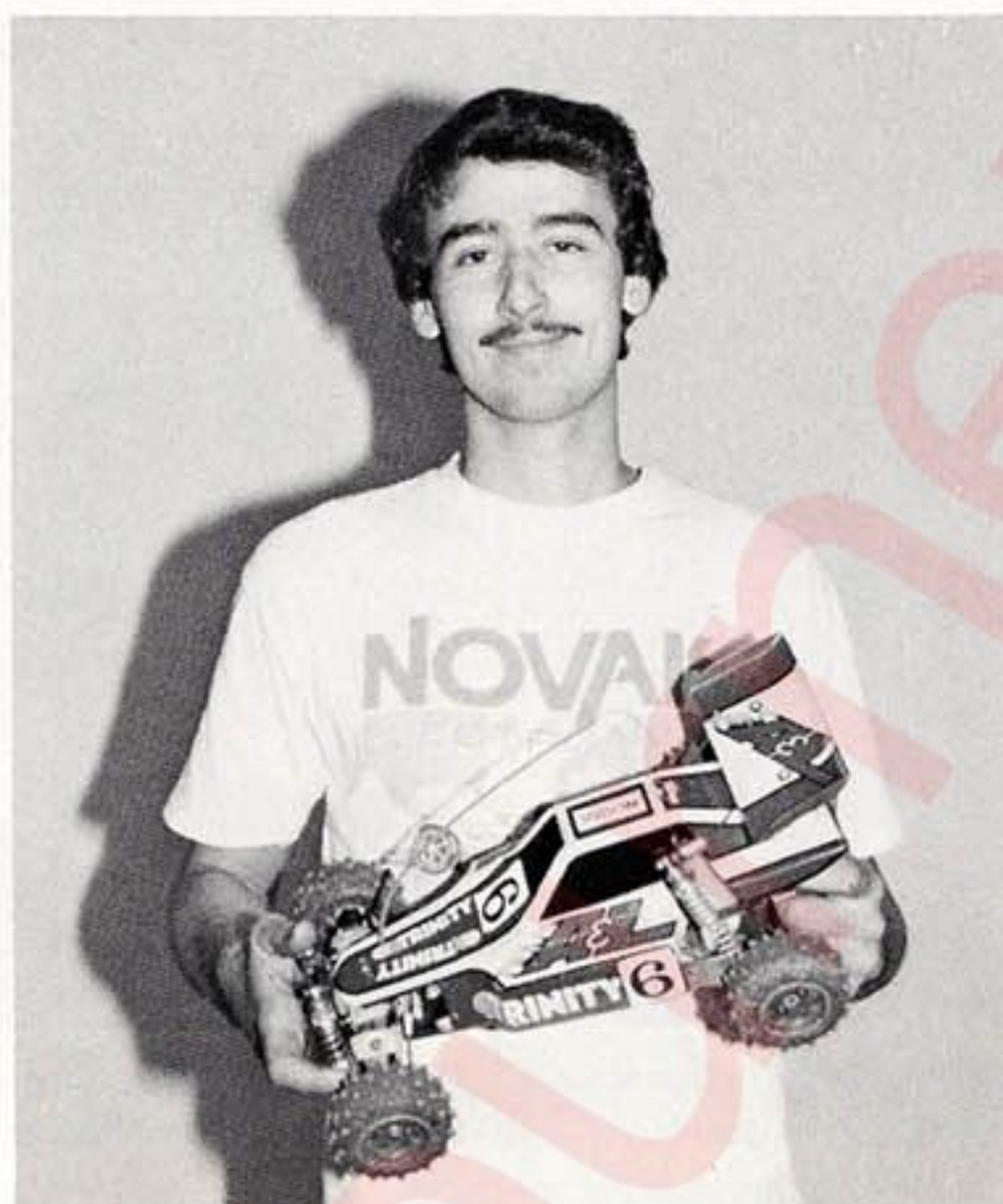
At the Hot Trax indoor facility in Huntington Beach there is enough pit area for all the contestants. A trip through the pits is always interesting.

the things that I was concerned about was the possibility of so much dust or dirt in the air in an indoor offroad track. We had run into this problem while spending three days indoors at the Cabin Fever race in Indianapolis. Breathing dirt for three days gives you a rather sore throat. The Indianapolis track was a clay composition, which you would normally think couldn't produce dust clouds, but it did. On the other side is the

**"Winning drivers know how to punch the throttle and when to back off."**

Hot Trax composition which is just plain brown dirt. But it's kept damp, not wet or muddy. There is no sun to dry it out, so it doesn't turn to dust, and because it remains damp, it has great traction. The racers really like it! This has worked out so well, that Radio Control Hobbies, in Costa Mesa, California, has also just opened up their beautiful new indoor offroad track.

Most offroad racers have found it's much easier to participate in either the 2WD or the 4WD class, but not both. And most



Overall Champ Chris Allec took a first, 2 thirds and a fifth with his scratchbuilt cars.

have found out that the 2WD cars are more reliable, so the vast majority of racers specialize in the 2WD class. But the racers in the Invitational Class of this event had to run both classes, so some had problems finding a second car. Everyone knows World Champion, Jay Halsey, always runs in the 2WD class. But now Jay also needed

a good 4WD car. So why not ask the 4WD World Champion, Gil Losi Jr., if he had a backup car that Jay could run? Gil said sure, so Jay was using a Yokomo car in the 4WD class. They want to beat each other really bad, but they're still friends. And that's the way it should be.

#### 2WD OPEN MODIFIED CLASS

This was by far the most popular class, with more entries in this one class, than all the others put together. Jack Johnson was the fastest driver in qualifying, taking the Top Qualifier spot. Jack is from Las Vegas and is one of the top drivers in the country.

#### 2WD OPEN "A" MAIN

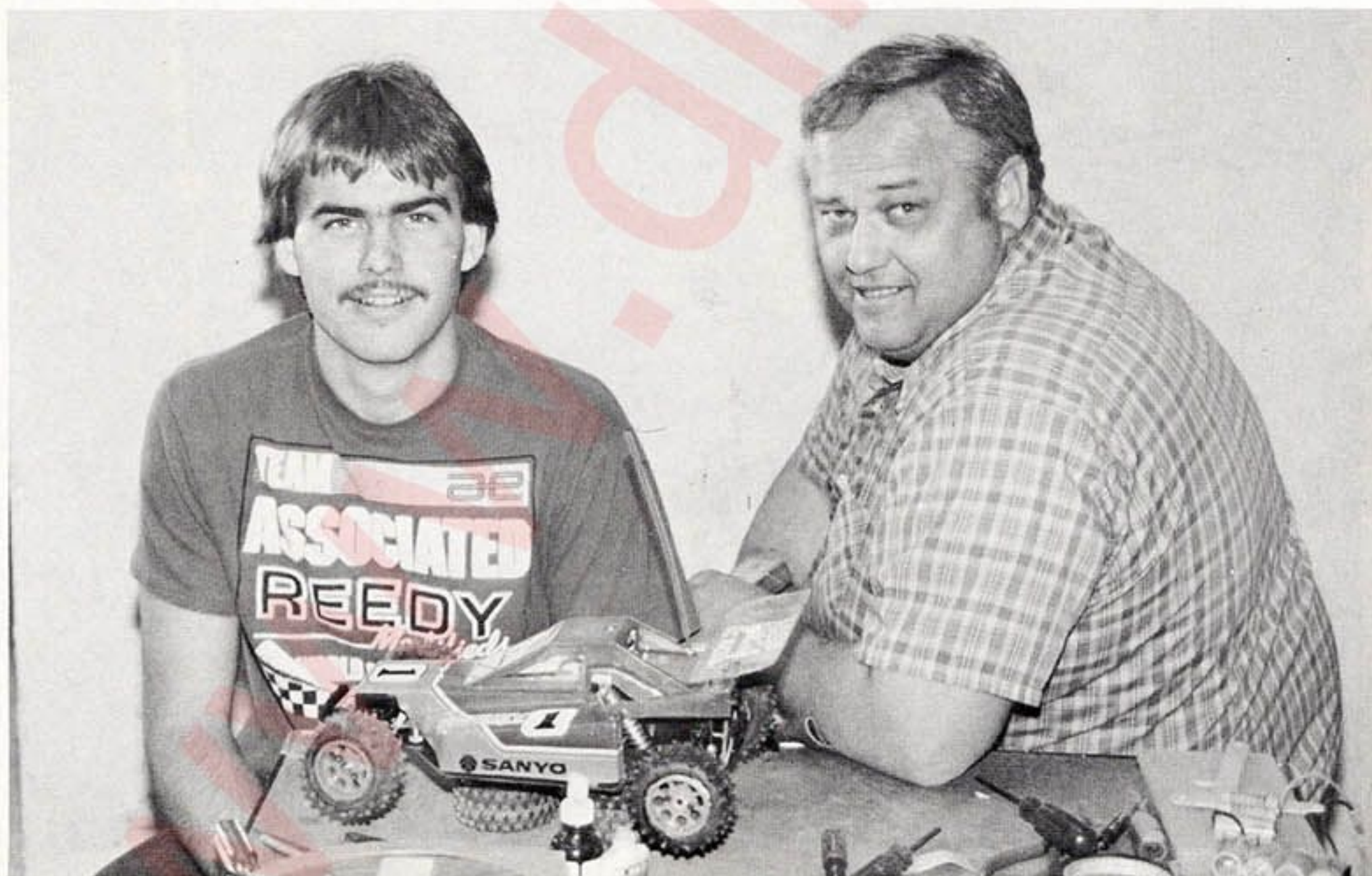
The cars are lined up two by two on the straightaway according to their qualifying times. There was a traffic jam in the first corner, but shortly Jack Johnson was able to take the lead. Winning drivers not only know how to punch the throttle, which anyone can do, they also know how important it is to back off the throttle at the right time. They also know that a certain amount of patience must be used at times in passing situations. It's obvious that Jack has learned all of this and was putting it to good use, going just fast enough to keep the lead, while being cautious in passing, so he wouldn't get tangled up with any backmarkers. Jack drove perfectly, as I've seen him do a number of times now, and won the race with Rob Robinson less than half a lap back in second place and Chris McElroy taking third.

#### 4WD OPEN "A" MAIN

Top qualifier, Barry Henderick, simply ran away with this race. Jack Johnson had a close race with John Gudvangen Jr. for second with Jack just winning by a couple seconds.

#### INVITATIONAL 2WD CLASS

It was very important for all the drivers in this class to qualify into both "A" Mains, 2WD and 4WD, in order to get enough points to win the overall championships. The following drivers have all won major national offroad races: Gil Losi Jr., Eustace Moore, Mike Dunn, Steve Dunn, Gary Kyes, Mike Christensen, Ron Rossetti, Tony Rossetti, and Curtis Strawn. And they are all certainly capable of winning any race they enter, except this one. Because after qualifying was over they each did not make both



Jay and Jim Halsey with a Yokomo car! All the drivers in the invitational class had to run a 2WD and a 4WD car, so Jay borrowed a Yokomo 4WD from Gil Losi Jr.



2WD and 4WD "A" Mains. This means that the drivers who made both mains were a little faster today.

In the first 2WD "A" Main, Top Qualifier, Jay Halsey, took off in the lead until the fourth corner when the second place car overshot the corner and got tangled up with Jay's car. Cliff Lett then went by both cars to take over the lead, with Gil Losi Jr. now in second and Jay third. The positions stayed this way for about two minutes when Gil's car went around a corner and just stopped running. Jay then moved into second with Eric Soderquist moving into third.

In the second 2WD "A" Main Gil Losi Jr. got a good start and led, with Cliff Lett in second and Jay Halsey in third. Gil led for almost two minutes, then he caught a rut in the sweeper and his car rolled over. Cliff went by to take the lead with Gil now second. Jay got stuck in traffic and Chris Allec went into third.

Going into the 4WD competition Cliff Lett had a great start with 200 points, five more than Eric Soderquist and four more than Jay Halsey and Chris Allec, but there were two more races to go!

#### INVITATIONAL 4WD CLASS

Any driver who has ever tried to drive a 2WD and a 4WD car at the same event knows how difficult it is to do. It takes two totally different driving styles. And yet the speeds on this track were almost identical. The winner of the 2WD invitational race turned 17 laps in 4.11 and the winner of the 4WD turned 17 in 4.10. It would be interesting to see what happens in 4WD.

In the first 4WD main, Ron Rossetti got the lead with Cliff Lett in second. But Ron was pushing just a little too hard, and he rolled over letting Cliff take over first. But Cliff also pushed a little too hard on the straightaway and got a little sideways and then got hit by about three cars, putting Cliff out.

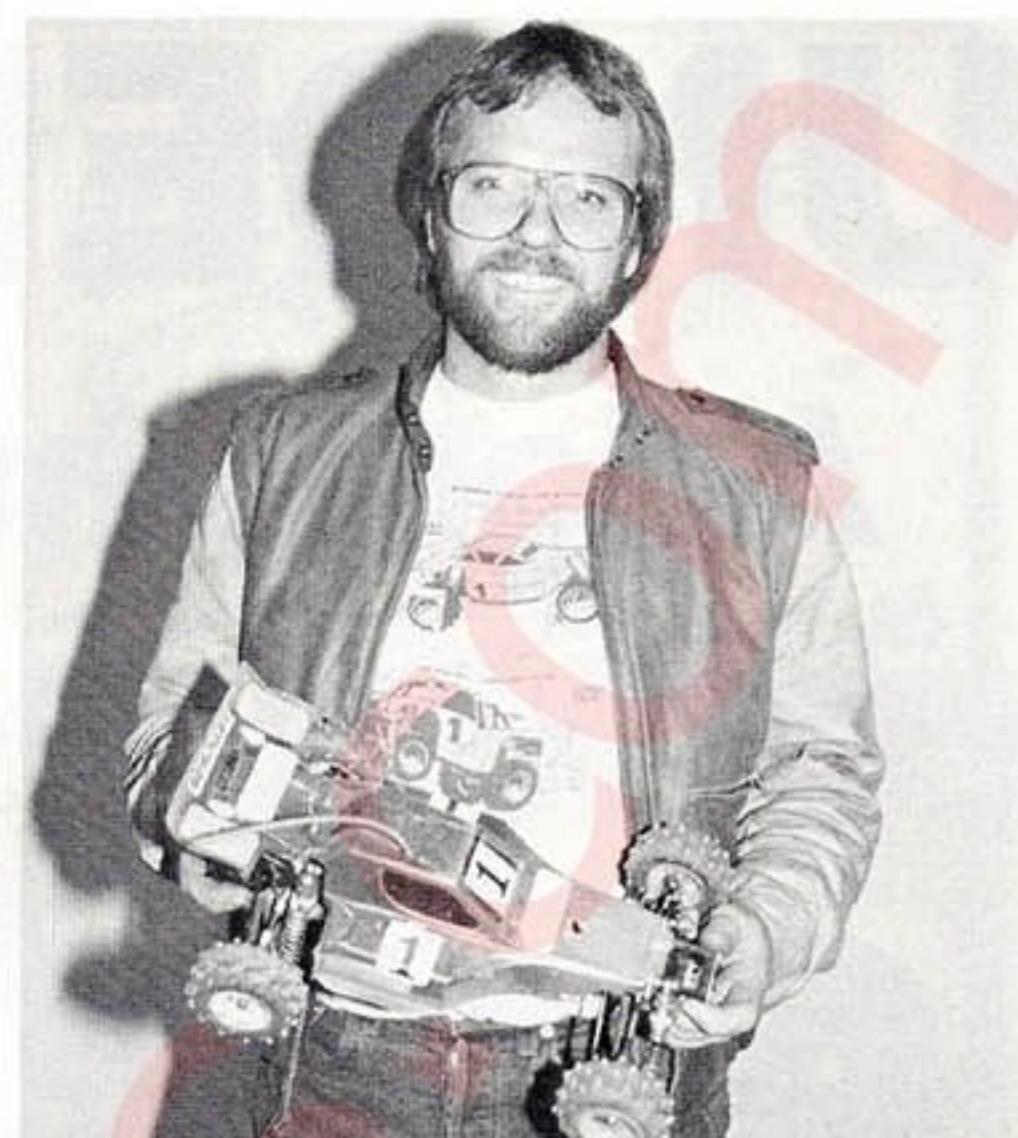
Chris Allec was now leading with Kris Moore in second and Ron Rossetti in third. Allec got caught in traffic, and Moore moved into first place, but a couple laps later Allec drove around Moore on the straight to regain the lead. So Allec won with Curtis Strawn moving to second and Ron Rossetti taking third.

Going into the last 4WD main there were still about five drivers that still had a chance to win it all. Cliff Lett was one of those drivers, and he was driving to win it all. Curtis Strawn was in second, but Chris Allec soon passed Curtis to take over second. Top Qualifier, Tony Rossetti, then moved into second, but Cliff was holding on to a 3/4-lap lead. If the race finished like this, Cliff would be the overall winner. And the way Cliff was running, no one was going to catch him.

It looked like Cliff had it made. Then on the last lap Cliff's car started to die, and Tony Rossetti went by to take the lead. Cliff finished in second with Chris Allec third. Two firsts and a second place finish was still not good enough for Cliff to win. Chris just beat him by two points to win the Championships!



Jack Johnson was TQ in 2WD, and won the A Main with his RC10 powered by Peak.



Barry Hendrick was 4WD Open TQ, and won the event with his Optima racer.

## RESULTS OF THE FIRST REEDY INVITATIONAL RACE OF CHAMPIONS

### 2WD OPEN "A" MAIN RESULTS

| PLACE/NAME        | LAPS | TIME | CAR    | MOTOR      |
|-------------------|------|------|--------|------------|
| 1. Jack Johnson   | 16   | 4.14 | RC10   | Peak       |
| 2. Rob Robinson   | 15   | 4.02 | RC10   | Checkpoint |
| 3. Chris McElroy  | 15   | 4.08 | RC10   | Reedy      |
| 4. Duane Inouye   | 15   | 4.09 | RC10   | Reedy      |
| 5. Leo Barana     | 15   | 4.10 | RC10   | Reedy      |
| 6. Larry Deweese  | 15   | 4.13 | RC10   | Premier    |
| 7. Kurtis McElroy | 15   | 4.14 | RC10   | Reedy      |
| 8. Carl Casanova  | 14   | 4.00 | RC10   | Twister    |
| 9. Rick Vehlow    | 14   | 4.01 | RC10   | Rev-Tech   |
| 10. Tracy Grieger | 14   | 4.10 | Ultima | Barry      |

### 4WD OPEN "A" MAIN RESULTS

| PLACE/NAME            | LAPS | TIME | CAR     | MOTOR    |
|-----------------------|------|------|---------|----------|
| 1. Barry Henderick    | 16   | 4.05 | Optima  | Barry    |
| 2. Jack Johnson       | 16   | 4.19 | Yokomo  | Peak     |
| 3. John Gudvangen Jr. | 15   | 4.01 | Yokomo  | Rev-Tech |
| 4. Terry Schomk Jr.   | 15   | 4.07 | Yokomo  | Twister  |
| 5. Rick Extra         | 15   | 4.13 | Yok-Opt | Barry    |
| 6. Samuel Smith II    | 15   | 4.15 | Yokomo  | Trinity  |
| 7. Larry Grant        | 15   | 4.19 | Yokomo  | Twister  |
| 8. John Wheeler       | 14   | 4.02 | Yokomo  | Trinity  |
| 9. Matt Musselmann    | 11   | 3.53 | Hotshot | Reedy    |

### INVITATIONAL 2WD "A" MAIN RESULTS—1 & 2

| PLACE/NAME         | POINTS | FINISH | CAR     | MOTOR     |
|--------------------|--------|--------|---------|-----------|
| 1. Cliff Lett      | 200    | 1-1    | RC10    | Reedy     |
| 2. Eric Soderquist | 195    | 3-4    | RC10    | Reedy     |
| 3. Jay Halsey      | 194    | 2-6    | RC10    | Reedy     |
| 4. Chris Allec     | 194    | 5-3    | Scratch | Trinity   |
| 5. Chris Moore     | 193    | 4-5    | RC10    | Twister   |
| 6. Steve Dunn      | 188    | 7-7    | AYK     | Race Prep |
| 7. Mike Dunn       | 187    | 6-9    | AYK     | Race Prep |
| 8. Dan Binter      | 186    | 8-8    | RC10    | Peak      |
| 9. Gil Losi Jr.    | 184    | 9-2    | Scratch | Trinity   |
| 10. Kyle Reed      | 182    | 10-10  | RC10    | Reedy     |

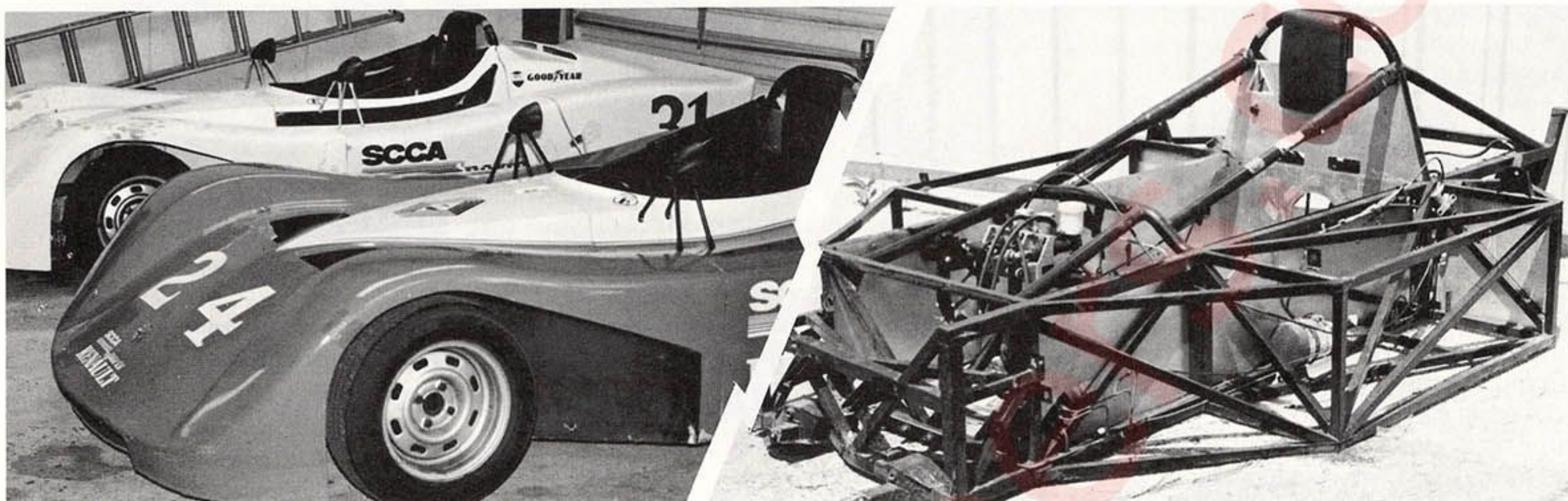
### INVITATIONAL 4WD "A" MAIN RESULTS

| PLACE/NAME         | POINTS | FINISH | CAR     | MOTOR   |
|--------------------|--------|--------|---------|---------|
| 1. Chris Allec     | 198    | 1-3    | Scratch | Trinity |
| 2. Curtis Strawn   | 194    | 2-6    | Yokomo  | Premier |
| 3. Ron Rossetti    | 194    | 3-5    | Yokomo  | Reedy   |
| 4. Tony Rossetti   | 192    | 9-1    | Yokomo  | Twister |
| 5. Cliff Lett      | 190    | 10-2   | Scratch | Reedy   |
| 6. Eric Soderquist | 190    | 8-4    | MIP     | Reedy   |
| 7. Kris Moore      | 189    | 4-9    | Yokomo  | Twister |
| 8. Jay Halsey      | 188    | 6-10   | Yokomo  | Reedy   |
| 9. Eustace Moore   | 187    | 5-7    | MIP     | Reedy   |
| 10. Mike Martin    | 187    | 7-8    | —       | Twister |



# UNDER THE SKIN:

## A look inside real race cars



BY STU RICHMOND

**R**/C Model Cars recently got a chance to look under the fiberglass body shells of some real race cars. We thought you'd like to take a look too. It's one thing to run and race R/C model cars, but it's a rare treat to look inside to see how the *real* cars are made. These cars we're looking at are the Sports Car Club of America's "Sports Renault" racers. The Sports Renault was designed by Harro Zitz, owner of Zitz Enterprises, 2272 N. Semoran Blvd., Winter Park, Florida 32792.

The Sports Renault is the official road race car for the SCCA. It's 38 inches high, 65 inches wide, 145 inches long, with a ground clearance of 2-3/4 inches. The car's design and related patents are owned by the Sports Car Club of America.

Harro told us his car business began when he bought a wrecked Porsche in 1960 and started rebuilding it at home. He

recalled that more space was needed, so he rented a larger garage and began preparing Porsches for racing. He'd work on his own cars on the weekend, as people began pestering him to work on their cars. It all began as just a hobby. . .

**R/C MC:** Harro, what's the car weigh?

**HZ:** The car weighs a minimum of 1580 pounds *with its driver*. It's strictly a Sports Car Club of America racing class. We've given some thought to selling the cars overseas too.

**R/C MC:** Please tell us about this baby blue car.

**HZ:** It's a customer's car. It's in for an engine rebuild. Cars #24 and #31 are my cars that I rent for racing. One of them is in for an engine rebuild too. . . at the customer's expense.

**R/C MC:** Where do these cars race?

**HZ:** They're raced on tracks across the

United States, but here in the Southeast we race at Miroso, which is West Palm Beach; at Daytona on the full track; at Sebring in south central Florida; at Savannah, Georgia; and at Road Atlanta, just south of Atlanta.

**R/C MC:** How many of these cars will run on a weekend?

**HZ:** We raced at Road Atlanta last weekend; there were 27 cars entered.

**R/C MC:** How fast are the Sports Renault cars?

**HZ:** At Daytona we've clocked them at 126 mph under the starter's stand—coming off the east banking. That's a little faster than we expected them to go! We were shooting for a car that weighed about 1200 pounds and would run about 120 mph with about 100 horsepower engines. The Sports Renault cars perform beyond our expectations in that we are developing about 90 horsepower in a car that weighs 1580 pounds with the driver, and it goes 126 miles per hour!

**R/C MC:** The car goes great; doesn't it?

**HZ:** Yeah, and whatever speed you're running, you're *always* "involved" and running with other cars and drivers, because the cars are all the same.

**R/C MC:** The engines are all 4 cylinder, 8-valve standard Renault powerplants?

**HZ:** Right, with overhead cam and inline configuration—1700ccs, 89 to 90 horsepower, and dead stock. The engines even have tamper-proof seals on them. The pan is sealed to the crankcase; the head is sealed to the crankcase, and the valve cover is sealed to the head. When new, the engines come from France sealed this way. When we rebuild them with genuine factory parts as we do here at Zitz Garage, they are resealed in the same way as you see here.



Harro Zitz, who designed the Sports Renault car for the Sports Car Club of America, sits in the cockpit of the racer. The front and rear fiberglass body shells have been removed.

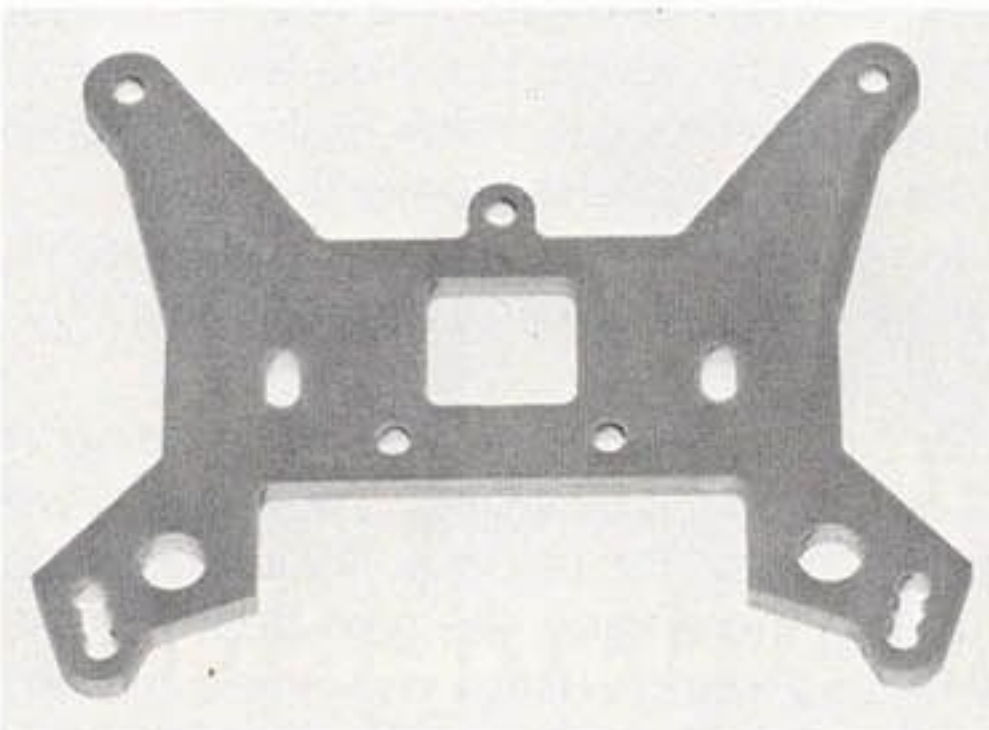


# WHAT'S NEW



## KYOSHO COSMO

Great Planes Model Distributors has a new 1/10 electric offroad car available that's perfect for newcomers to the hobby. With four-wheel independent suspension, oil-filled shocks, an RS-540 motor, and low-profile tires, the Cosmo should be just the car to get the beginner off to a great start. Assembly is simple, and the Cosmo also features a racing clutch to prevent damage to the motor if the wheels jam. You can find the new Kyosho Cosmo at your nearest hobby dealer.



## OPTIMA SHOCKS

Custom Racing Products, at their new address, 3250 El Camino Real, B-3, Atascadero, California 93422, has some replacement fiberglass front and rear shocks for the Optima racer. These shock mounts allow you to add Associated RC10 short shocks to the front, and RC10 long shocks or Tamiya long plastic shocks to your Optima's rear. No modifications are needed to utilize these fiberglass shock mounts, available at your dealer, or from CRP.



## MOTOR CAPACITOR KIT

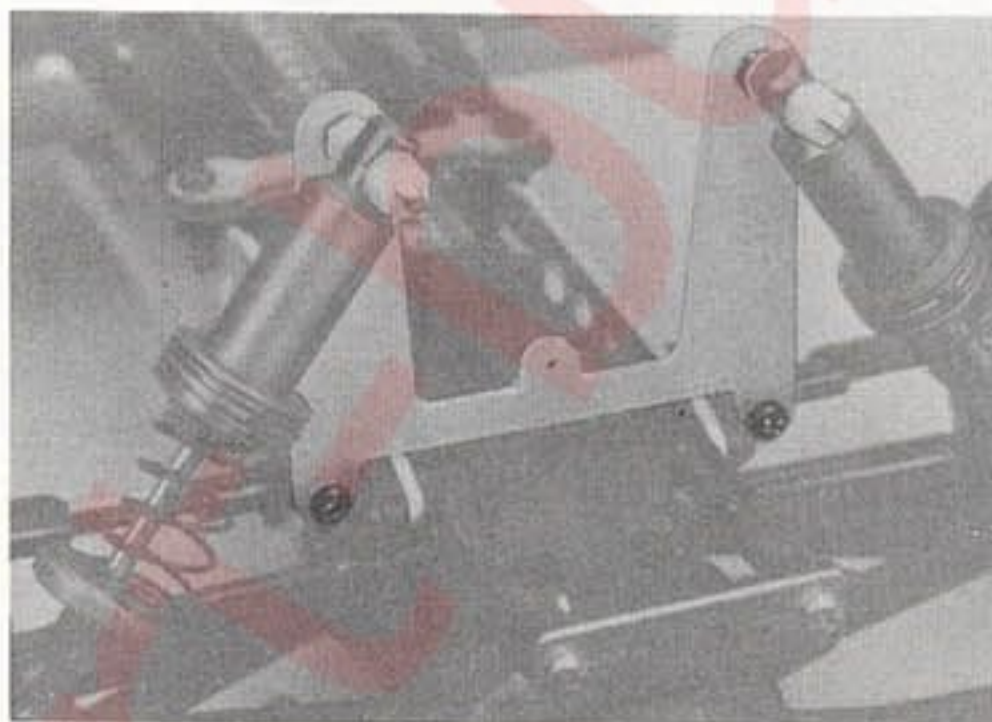
The Parma Motor Capacitor Kit is for use on all electrically powered R/C equipment. By installing the capacitors as instructed, motor interference to the radio is virtually

eliminated. It should be noted that this capacitor arrangement is a requirement in races using an AMB Auto-Count system. Be safe! Get a Motor Capacitor Kit at your hobby shop today, only \$2.00. Parma International, 13927 Progress Parkway, North Royalton, Ohio 44133.



## SPRAY GREASE

Atlantic Brass Company's Five Star brand Molybdenum and Teflon greases come in precision grease guns, only \$3, and the Racing Spray Oil and Racing Spray Motor Cleaners sell for \$3.99 a can in aerosol sprays. Protect your expensive equipment with Five Star lubricating and cleaning equipment. Call or write for a new Five Star catalog: Atlantic Brass Co., Box 304, Farmington, Michigan 48024; (313)477-2813.



## OPTIMA SHOCK MOUNT

The Parma front shock mount for the Kyosho Optima 4WD racer allows the use of Parma long or short shocks, and includes the stock-type body mounting. Look for it at your favorite hobby dealer.



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The new Parma servo is mid-sized and intended for use in all Tamiya cars. It is comparable in size to Futaba's S-28 servo, and sells for only \$20. At your hobby shop now.

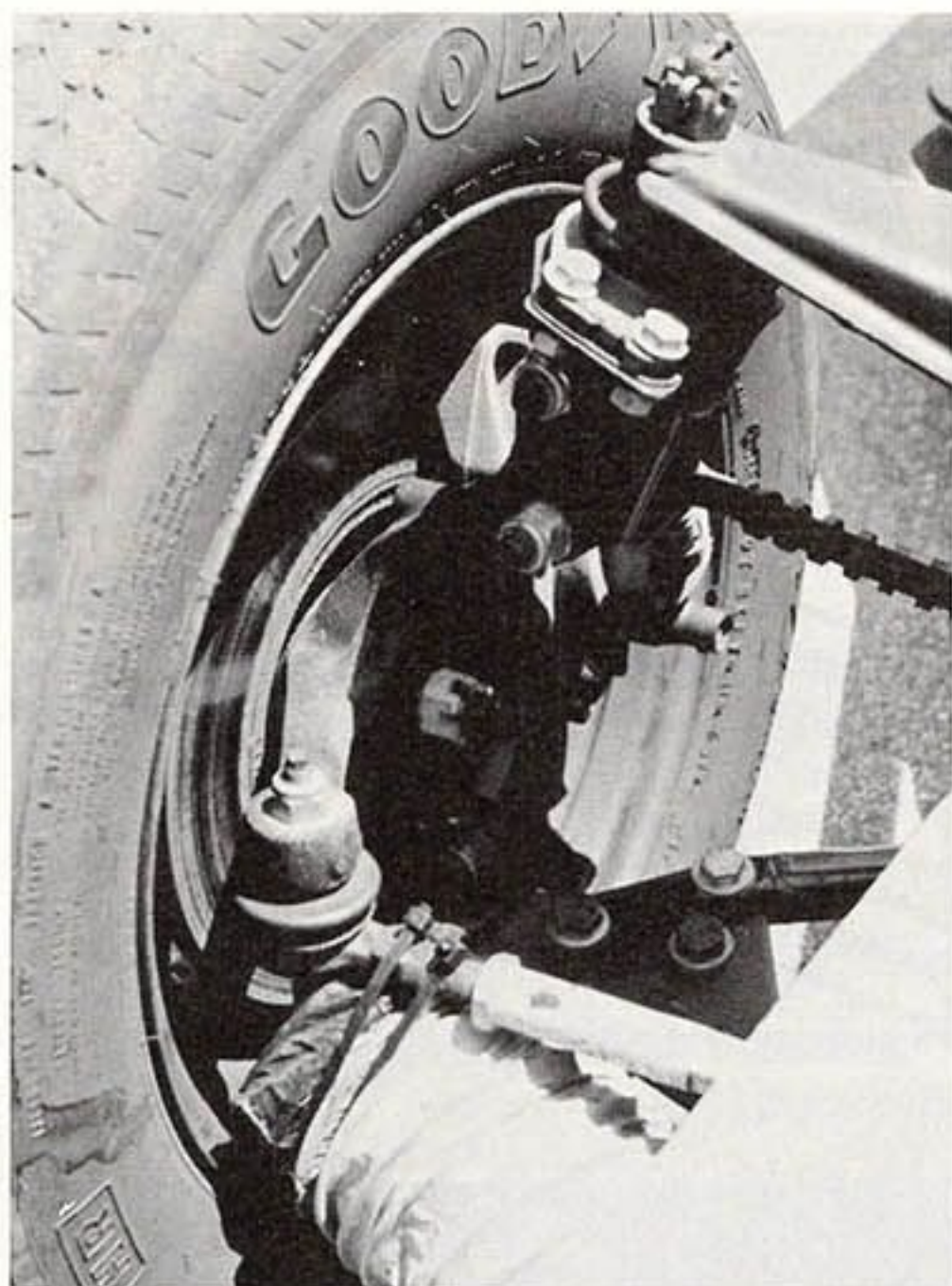
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Cooling ducts for the brakes are attached with simple wire ties. Looks a little like your R/C car suspension, doesn't it?



Chicken wire screen in front of the radiator protects it from puncture by rocks and sticks when the drivers lose control and go off the track into the weeds and dirt.

**R/C MC:** When I visited a couple of days ago to arrange for today's interview there was an engine in the "white room." (Zotz rebuilds all Mercedes, Porsche, Audi, BMW, and Renault engines in air conditioned, clinically clean "white rooms" within their shops. All the white rooms are kept locked when not in use.)

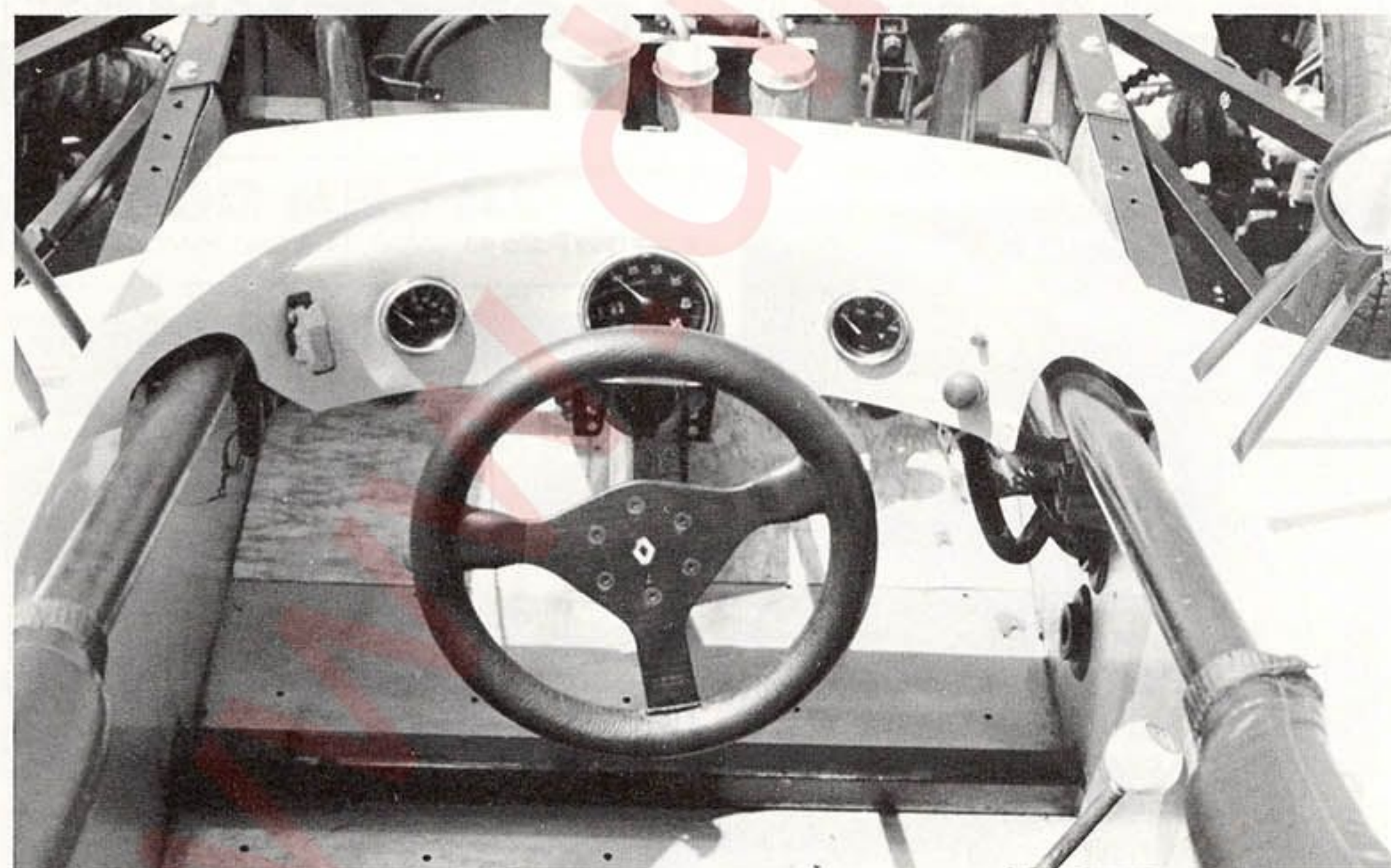
**HZ:** Yes, let's go in and look at it. This engine is going in the baby blue car; it really needed a rebuild. Incidentally, there are ten service centers across the USA for the Sports Renault cars, and we're one of them. We ten are allowed to rebuild the engines and reseal the components as you see here. The owners aren't allowed inside the engines or transmissions which are also sealed. We use an unleaded "street pump" type of gasoline just like you'd buy at an Amoco, Esso, Exxon, or Shell station.

**R/C MC:** No little tanks of nitromethane are allowed for reserve passing power?

**HZ:** No, no. Nitromethane wouldn't do any good in this type of engine anyway.



Rebuilt engine on the assembly rack, ready to be shipped back to its owner in Ohio.



Handle on lower left is for fire extinguisher; left-hand switch on dash is the ignition. Next to it is the oil pressure. Next is the tachometer, and water temp gauge. Engine idles at 800 rpm.

**R/C MC:** What oil do you run, a synthetic?

**HZ:** We've found that if you don't use a regular good standard natural petroleum oil that the engine will melt down and fail. It doesn't like synthetics at all! Every engine that has run space-age synthetics has lost its bearings; the same is true of transmissions. There are a lot of tricky transmission oils, but the only thing that keeps them running and living longer is a regular, standard, uncomplicated, low-cost, transmission fluid like Pennzoil, Quaker State and such. Every time a rental customer tries fancy oils, it makes money for me! They always break.

**R/C MC:** When an engine fails, what's the first sign(s)?

**HZ:** First we find the engine will use a quart of oil in a single race heat. The oil rings will cease to hold the oil back. If you don't stop running the engine, the next heat will use 1-1/2 to 2 quarts. Then you come around on the last lap of the next race, hit a hard turn where you need acceleration, and you find you have no oil pressure for 30-40 seconds. That's when you lose the bottom end of the engine. The main bearings and lower ends of the con rods do a meltdown. The guys racing these cars know they get about 18 race heats from an engine and then the engine has gotta come in for a rebuild—generally about \$1,000—before the car can race again. A weekend of racing generally has a car in three heats of racing, so six weekends of racing is about the life of an engine.

**R/C MC:** Please tell us about the rental cars, #24 and #31

**HZ:** Generally a customer will rent to see first if he wants to race. If he likes the sport, then we talk about selling him a car. Some guys will go through drivers' school and 3-4 race weekends with a rental car while we are assembling and building up his car here in the shops. When we get the car done, rental stops, and they start racing with their own personal car.

**R/C MC:** That then brings up the big ques-



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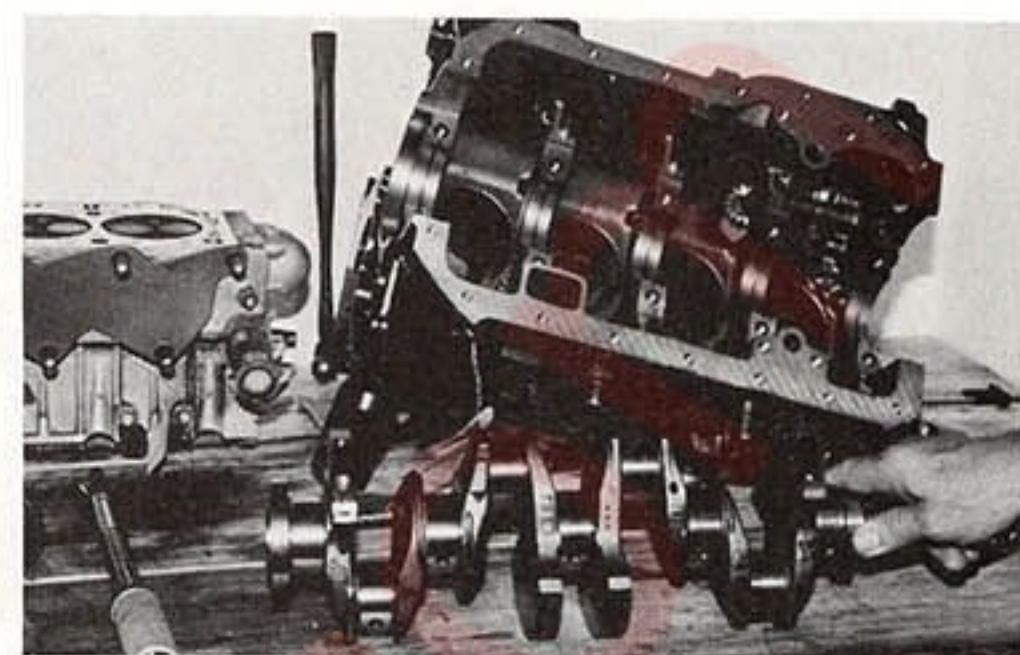
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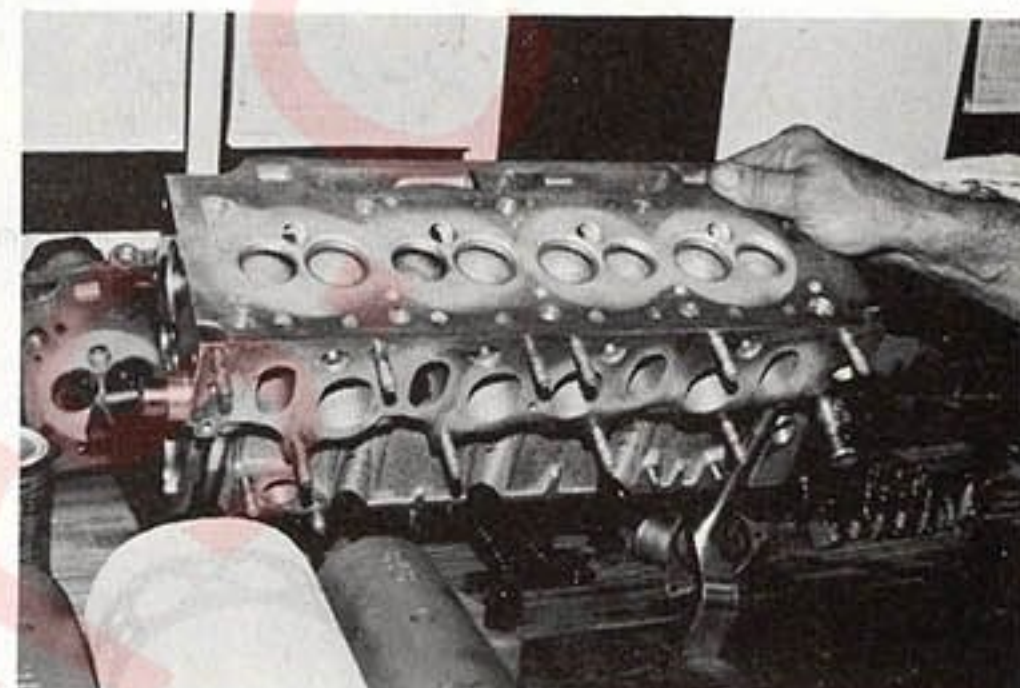




A look at the Sports Renault's transmission housing, engine mount and suspension arms.



Cast iron block and crankshaft of the Renault.



Engine head cleaned and ready for new valves.

tion about costs. . .

**HZ:** All up and ready to race including one color paint, the car costs about \$13,000. The kit costs \$9,995, plus the shipping box costs another \$300. Shipping from Detroit, where AMC-Renault actually builds the car, costs another \$500. Sales tax is additional. If Zotz Racing assembles the kit car, that's an additional \$1,500. The one-man loading trailer for the Sports Renault costs \$2300.

**R/C MC:** So the total cost to get into racing fun is about \$15,000?

**HZ:** Yes, and the prudent racer will put aside \$100 every weekend he races so that when it is time to service the car, he'll have the funds ready. To think that it's *not* going to cost money to race is crazy! Another important point of this race concept is that the cars are all equal; they can't be screwed around with! There's a whole group of SCCA officials at all the races who do nothing but make sure the cars stay the way they were when they were bought. That puts all the performance onto the main-

tenance, the quality of front end alignment and how often it is done (and how much you understand about alignment), and your driving. That's the whole gambit of the Sports Renault racing class, and the value in the car is the same this year as it was last year. . . as it will be two years from now. The value will actually be determined by the *condition* of the car; not its age; not because you have "trick-stuff" on the car, cuz that's not allowed. One of my cars is Serial No. 12, and it will run with *any* car built since then.

**R/C MC:** Do you race these cars yourself?

**HZ:** Yes, I raced about a year ago. I finished second.

**R/C MC:** What did you win?

**HZ:** A small trophy. It's strictly amateur racing, strictly for fun. The trophies awarded in most R/C model car races are twice as nice!

**R/C MC:** Who does the work on these cars?

**HZ:** Ron (one of the two sons) and I do

most. We've just hired Dave to help handle the race car end of the service garage full time. Ron and Dave have been out of town the past eight weekends attending races with our service truck. The truck is a traveling white room, machine shop, and spare parts supply too.

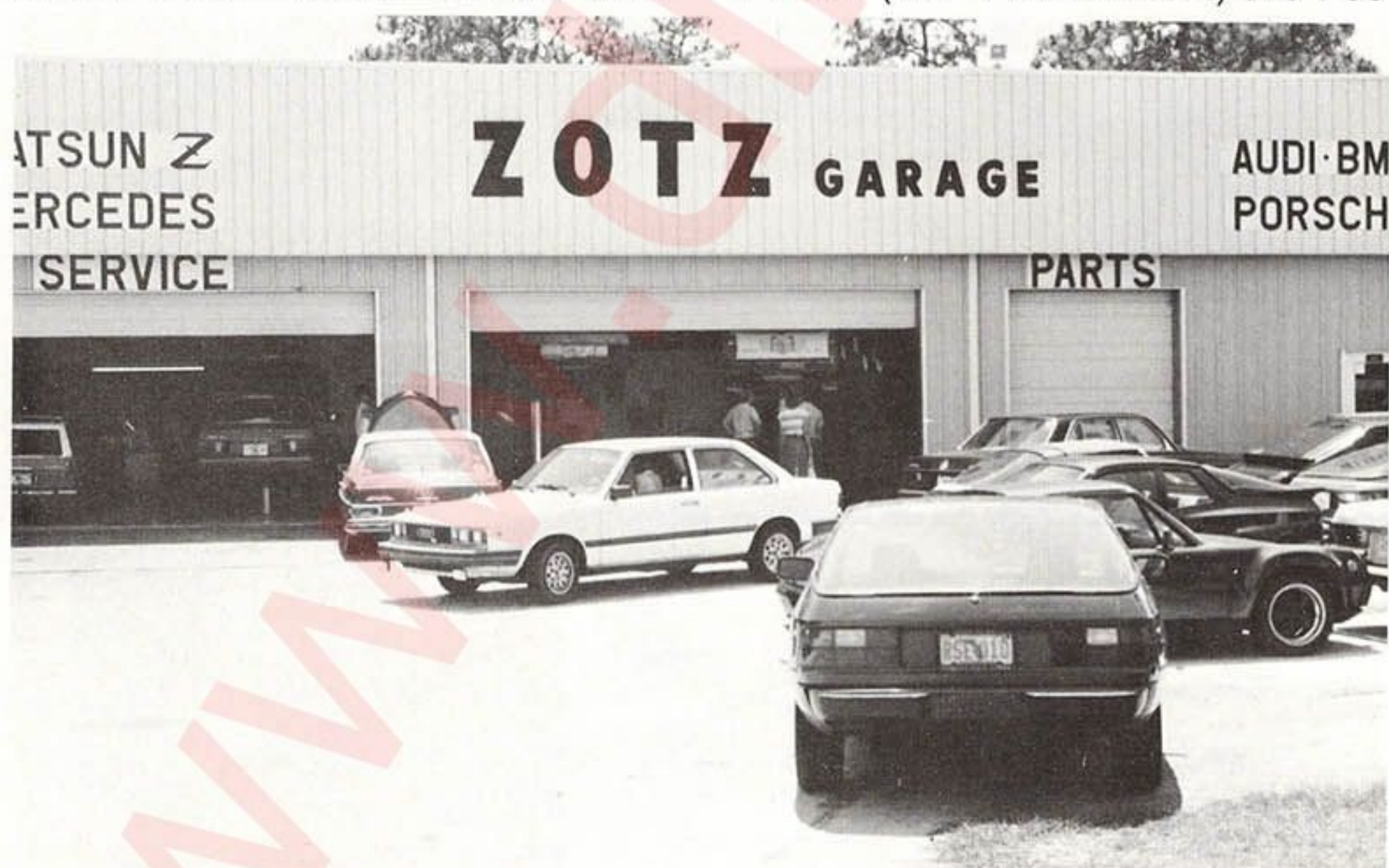
**R/C MC:** Can we go out to the car and see what makes it go?

**R/C MC:** What's all this behind the driver's seat?

**HZ:** Here you have the back side of the "kill" switch. The gas filler cap with the attached safety wire is visible, and the flat polyethylene tank is expansion for the radiator's coolant. The brake light is just seen at the very top. It's a round truck-type sealed beam unit. We've also got the electronic ignition system in here and the magnetic pickup system for crankshaft timing too. There's a lot to the Sports Renault. We even have a tool for testing out the electronics module to make sure it hasn't been tampered with. It even monitors the maintenance program. It has no mechanical breaker points, using a simple distributor to divide/distribute the spark to the four plugs.

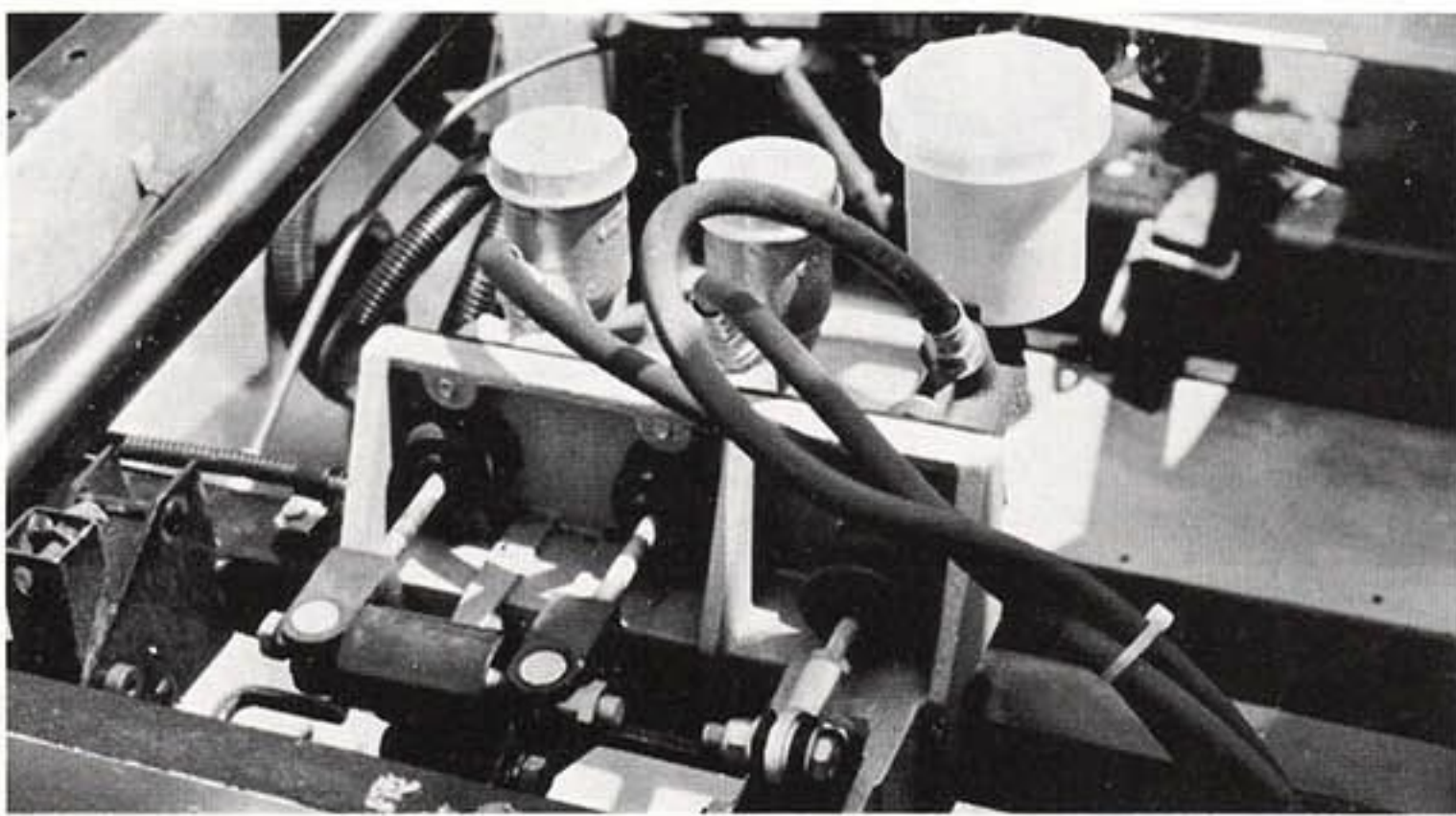
**R/C MC:** Can we go look at the chassis over there?

**HZ:** Yes, this car was in an accident, and the important thing is to see that the cockpit area is totally undamaged. This car was hit four times at the Pro race in St. Petersburg last year. Every time it was hit, it *also* hit the wall and bounced out into the track to get hit again. Its cockpit was padded for a 210-pound driver, but the car was being driven by a 100-pound woman who probably was injured, because the safety padding system had not been refilled with styrofoam peanuts to better protect her. Had the safety foam kit been properly in use there'd probably been less or no injury to the driver; she simply wasn't packed right. The egg carton was there, but there wasn't any filler.

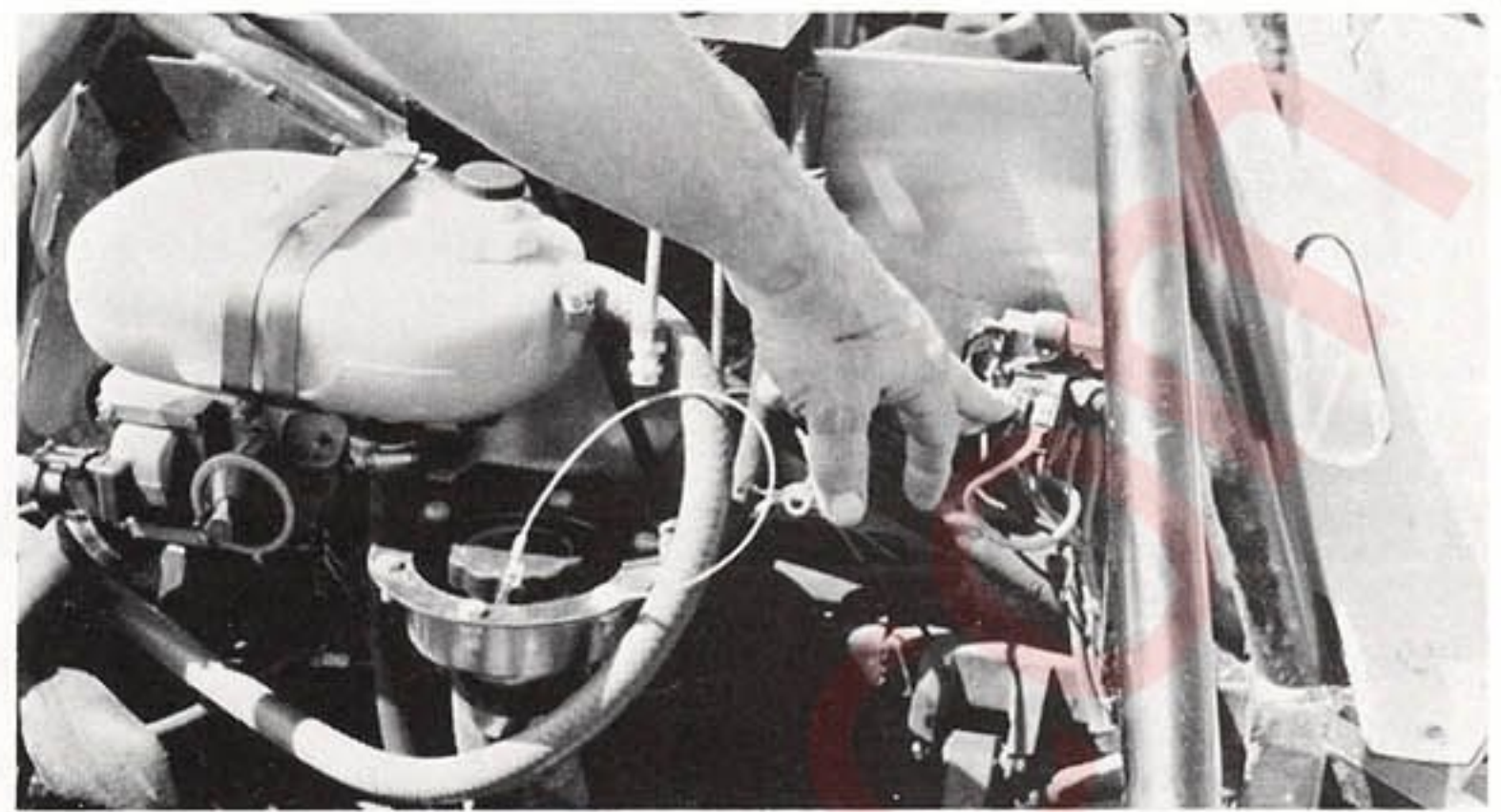


The Zotz garage in Winter Park, Florida, from where the Sports Renault SCCA racecar is assembled and rebuilt. During the week, it's a full-service foreign car garage.





Hydraulic reservoir tanks in front of the cockpit; two small ones for the brakes, the large one for the hydraulic clutch in the Renault.



Behind the cockpit, Harro points to the kill switch the driver uses to stop the engine during an emergency.

**R/C MC:** What's the red round tank we see?

**HZ:** That's the fire system that comes with the car, part of the SCCA requirements.

**R/C MC:** Are there different classes of Sports Renault racing?

**HZ:** No, we have regional races, and we have national races. When you go through the SCCA driving school and get your permit, you have to go through at least six regional races before you can apply to drive in a national competition. Regional races are a lot more fun. You do a lot more racing in one weekend; you get lotsa track time. The national races attract the real "pros." You spend a whole weekend and get to drive one heat race.

**R/C MC:** Is this damaged chassis going to be scrapped?

**HZ:** Oh, no. When I get caught up on the

engine/transmission work we have in the shop we'll start on this car, and it'll go back into racing. I'll spend weekends and evenings on it, and it will be running again soon.

**R/C MC:** Harro, how much break-in is needed on a rebuilt engine? Do they require special running in?

**HZ:** Not really. The biggest small problem the engine has is the oil rings are a bit soft, so basically they're broken in and seated in the engine's first practice session.

**R/C MC:** How did the Sports Renault concept start?

**HZ:** We had an idea, we knew what we wanted to do. We knew what SCCA needed in the way of a race car, and we had the concept and authorization of the SCCA Board of Directors to develop the car; it took four years. We tried to work with Honda initially, but we got lost in their bureaucratic

jungle. They were all excited initially. We also talked with Volkswagen, but they already had involvements with SCCA. This car was an idea I simply couldn't put down. A bunch of us just worked and worked and finally made a good connection with Renault in France who was looking for a car to use as a stepping stone up to their Formula I cars. In Europe there is a Class Renault car of their design that races all over Europe. Promising drivers are selected from that group to drive the Formula III cars, and the best of that group then gets a shot at driving the Formula I cars. Unfortunately Renault lost a lot of money last year, and they've curtailed a lot of racing activity for awhile. That's really all I can tell the readers of *R/C Model Cars* about our real race cars.

**R/C MC:** Harro, we thank you very much and wish you much continued success! ●

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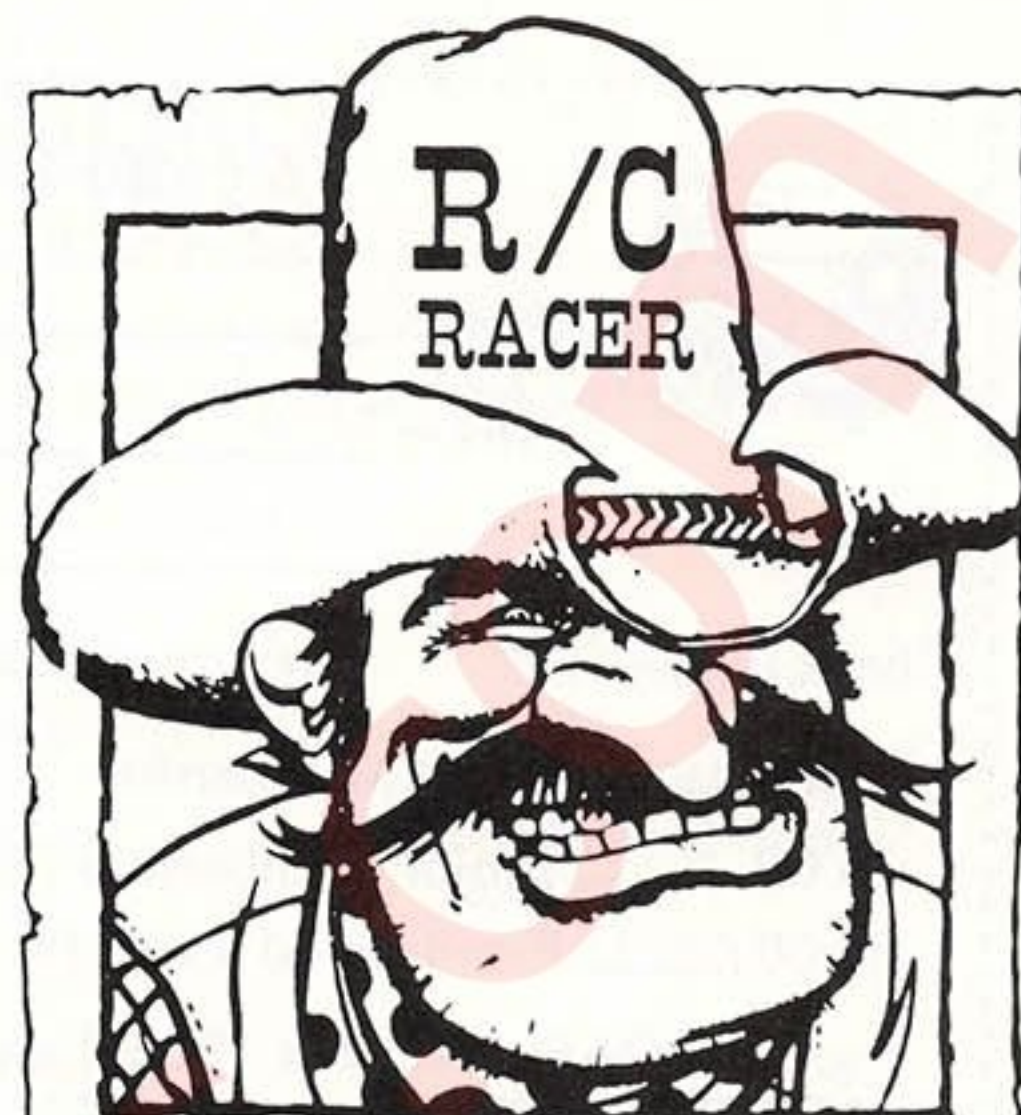
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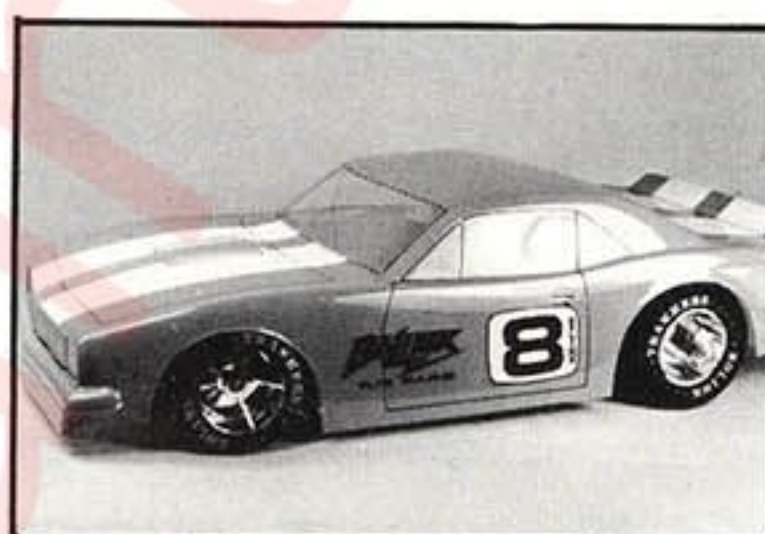
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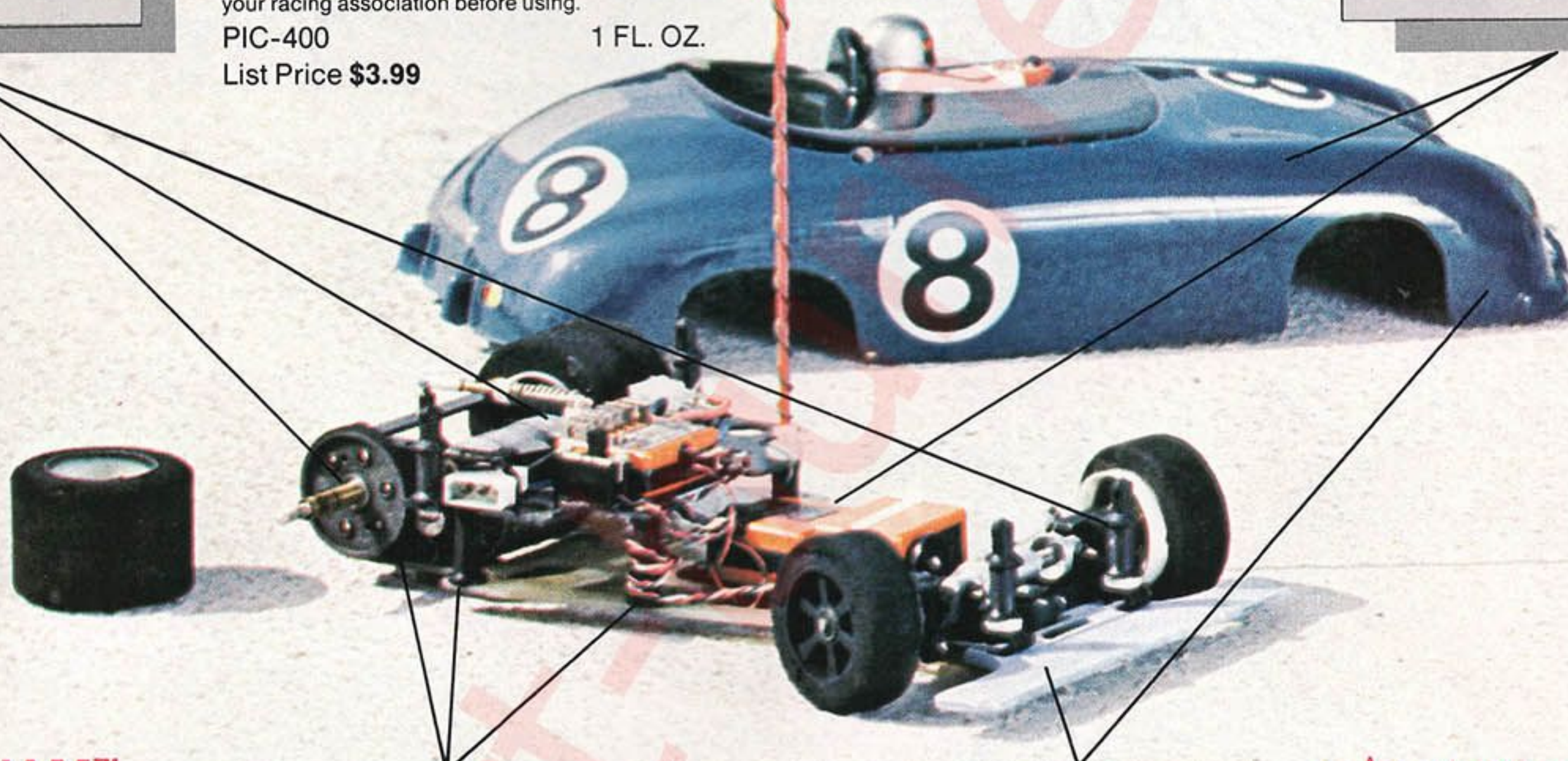
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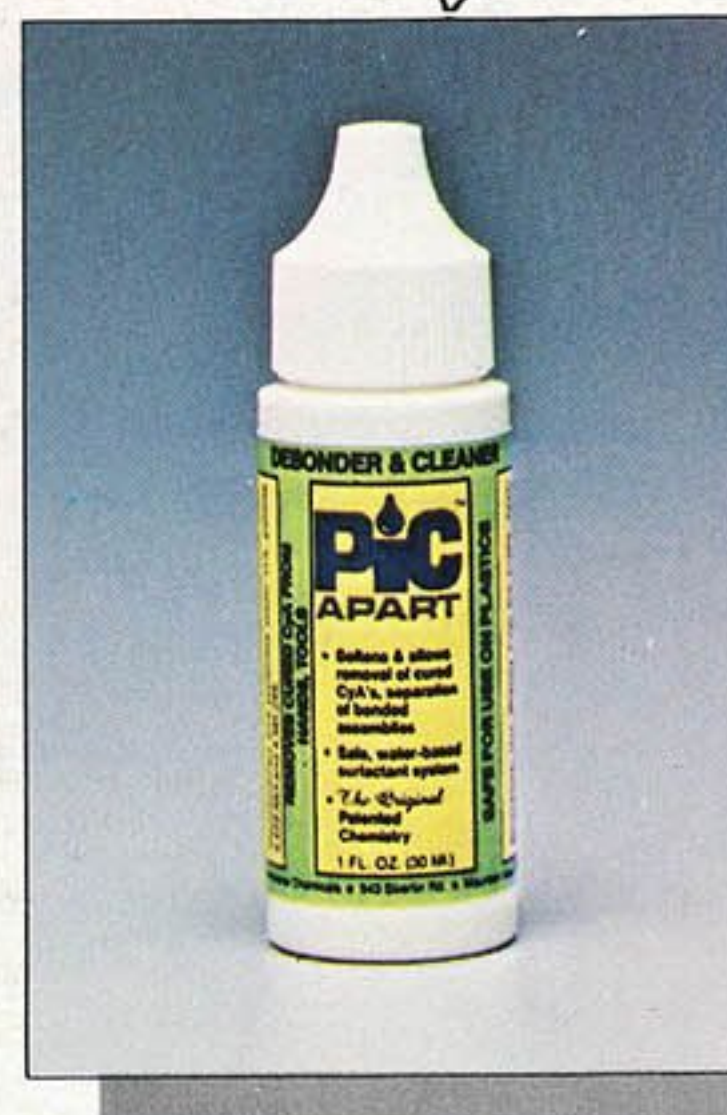
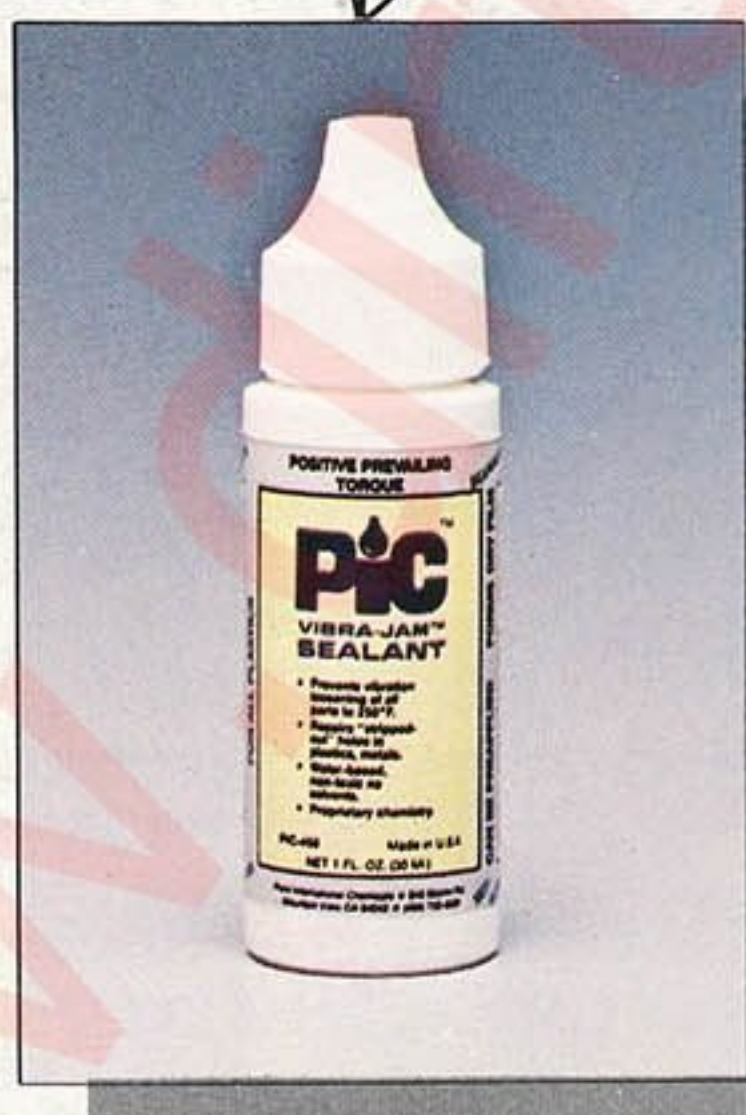
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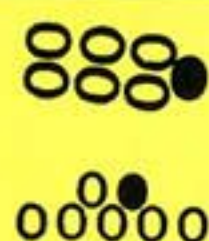
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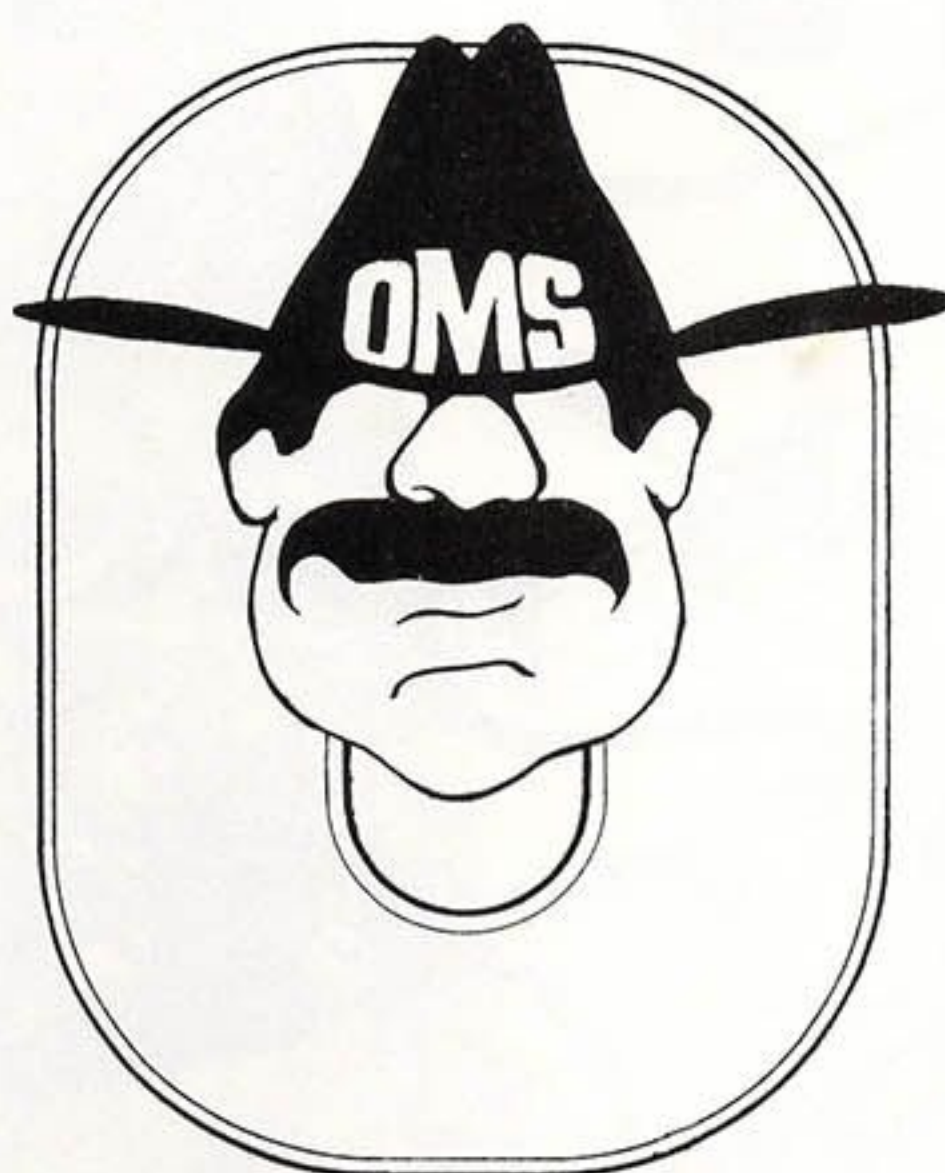


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# LIGHTS For Your Car

**All it takes are a few simple items and you can drive your car into the night with this novel do-it-yourself light setup.**

BY HANK JACOB

**D**on't miss opportunities to enjoy both sport driving and racing with your offroad buggy just because the sun goes down. Now anyone with the ability to assemble an offroad buggy will be able to assemble working headlights with the inexpensive materials outlined below.

These running lights can be modified to fit almost any vehicle, and they are removable for daylight driving. They were designed with three goals in mind:

One: Design a set of lights that would actually allow operating an off-road buggy at night.

Two: Make the lights easily removable to protect them from excessive wear and tear and to keep the added weight off when the lights were not needed.

Three: To provide a separate power supply and a convenient switch, thus keeping the running lights separate from the rest of the car's electrical system.

After comparing the performance of different power supply and a convenient switch, thus keeping the running lights

separate from the rest of the car's electrical system.

After comparing the performance of different battery and light bulb combinations, the combination of a 9-volt battery and two 1.5-volt miniature bulbs was selected. By wiring the two 1.5-volt bulbs in series, they develop enough resistance to operate for many hours while providing a very bright light. This combination operates for approximately three hours on one 9-volt battery. After about five hours operating time, the light bulbs in the prototype were still going strong. This combination provided more illumination than did two 6-volt light bulbs with a 9-volt battery or two 1.5-volt bulbs powered by two 1.5-volt AA batteries wired in series or even when the batteries were wired separately to provide 1.5 volts to each light bulb.

Besides the illumination factor by using the 9-volt battery, both weight and cost are kept to a minimum, as all that is needed to add the battery to the system is a 9-volt battery snap-on clip that can be found on

many discarded radios or toys. If you don't have a broken toy or radio, you can purchase a battery snap clip from an electronics supply store.

The following is a list of materials that can be purchased at any electronics supply store; such as, your local Radio Shack, all for under five dollars:

Two 1.5-volt mini bulbs with wire leads—Radio Shack part #272-1139.

Two phono plug covers—Radio Shack part #274-321.

One SPST miniature slide switch—Radio Shack part #275-406.

One expired credit card.

A piece of aluminum foil approximately 2 x 4 inches.

One 9-volt battery clip—Radio Shack part #270325.

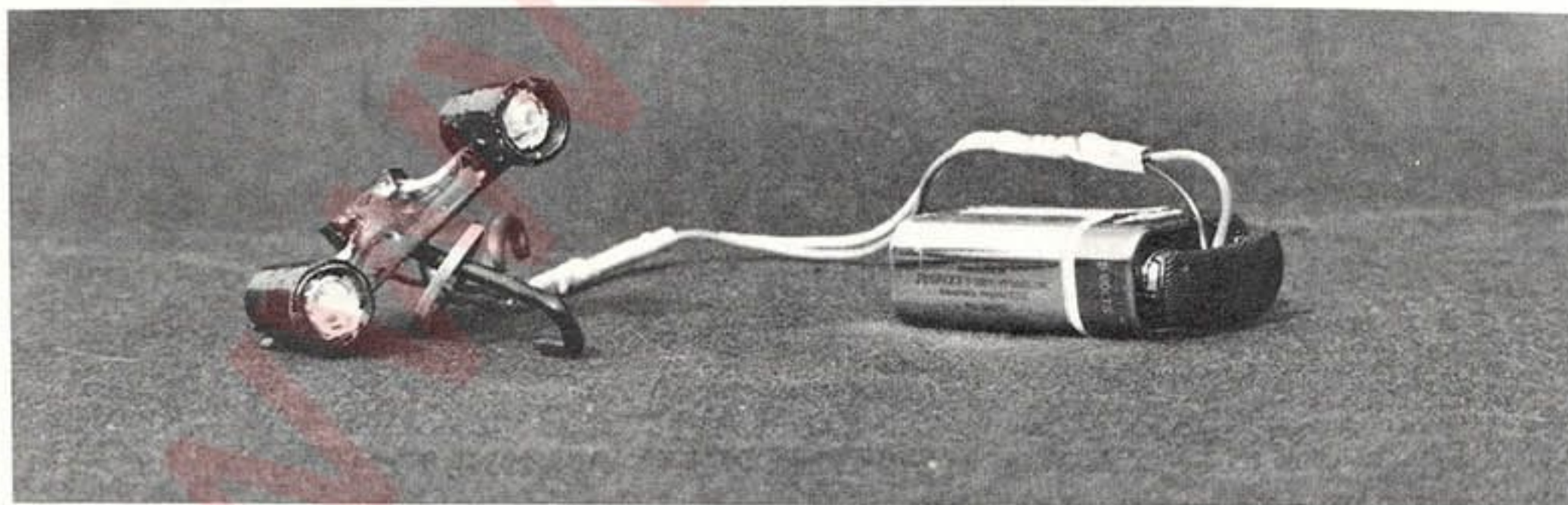
A paper clip or two, 6 inches of insulation from some #18 lamp cord, and 12 to 20 inches of stranded hookup wire.

And, of course, a 9-volt battery.

Assembling your running lights is very straightforward.

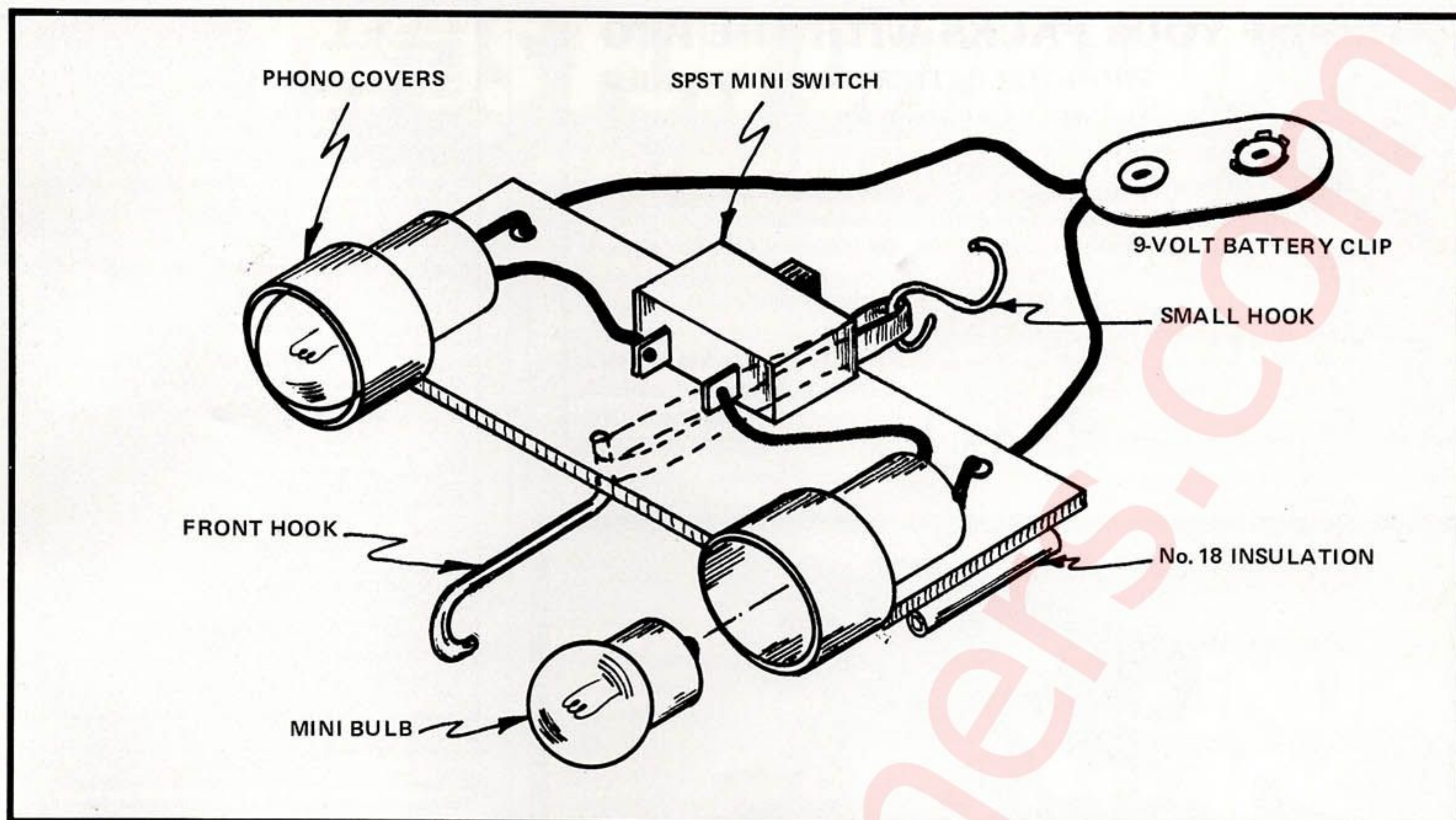
Start by measuring the width of the roof on your buggy and cut a piece of the expired credit card to that width by 5/8th of an inch. This will provide the platform on which the removable running lights are constructed.

Now you should decide how you are going to attach your light assembly to your buggy. The prototype was made with a single hook that fastened to the front center edge of the running light assembly platform and hooked over the front of the roof. A rubber band was placed over the base of the



*The finished product, ready to install in your car. Once you have accumulated all the parts, the assembly and wiring is very simple. Attachment to your car is quick, as is removal.*





hook where it attached to the light platform and another, smaller, hook was fastened to the other end of the rubber band. The rubber band was stretched across the roof to the rear deck of the buggy and hooked to a vent slot with the small hook. Each installation may require slight variations; however, the mechanism can be the same. This has proven to be very effective in order to make the assembly removable and more durable as opposed to a rigid mounting system. Before making the hooks, push some #18 wire insulation over the paper clip wire. Form your hooks out of this material and

**“Racing in the dark is great fun; why not make a set for a friend?”**

you will have very neat, cushioned hooks. The longer front hook can be fastened to the light platform by drilling a 1/16th hole in the front center of the platform and attaching the hook with a “Z” bend through the hole and then by using some five-minute epoxy to securely hold it. While you are drilling holes, drill a 1/16th hole in the light platform, behind each light housing location.

Two pieces of #18 wire insulation are glued front to back on each end of the undersides of the platform to act as a base to stabilize the platform on the roof of the buggy.

Now glue the phono plug covers and slide switch in place. Glue the covers to the front of each end of the platform with the large opening facing front. The covers have a “step” on them that make a natural

groove that helps glue the plug covers to the platform. Add the slide switch to your running lights now so that when you epoxy the light housing in place you also glue the mini slide switch to the assembly. *Caution:* Don't get five-minute epoxy in the slide switch or on the soldering lugs when assembling this unit. It is advisable to put some Vaseline in the slide switch so that the epoxy does not get into the switch. Put a small amount of Vaseline on the switch solder lugs too. Locate the switch between the light housings on the credit card light platform. The switch should be glued with its side flush against the platform. The slide part of the switch should be sticking out over the rear edge of the platform. Don't get the Vaseline on the side of the slide switch or the five-minute epoxy will not hold. Flip the switch so that the solder lugs are above the platform and not flush to it, otherwise, you will not be able to solder the wires to the switch later. Use a liberal amount of five-minute epoxy to attach the light housings and the slide switch.

Now you should choose the color that you want to paint your light assembly. Spray paint the entire assembly, including the inside of the light housings. Let it dry before proceeding.

Next, cut two pieces of aluminum foil approximately 2 inches square. Individually shape the foil squares around the eraser-end of a 5/16-diameter pencil, making two cylindrical “reflectors.” Insert one reflector into each of the plastic phono plug covers. Cut off the excess foil from around the opening, thus forming a reflector for your headlights. Poke a small hole in the foil at the rear of the plug cover to allow the bulb wires to exit the back of the “light housing.”

Put a dab of silicone glue or five-minute epoxy on the back inside of each light

housing, and insert the two wire leads from the bulb into the housing and through the small hole in the rear of the housing.

To finish, solder the hookup wire to one of the light bulb leads on each bulb and connect the other light bulb lead from each bulb to the switch lugs. Be sure to run one light bulb lead wire through the hole that was drilled behind each bulb housing before connecting it to the hookup wire. The proper length of hookup wire will depend on how you route the wire from the roof to the internally-stored 9-volt battery. Heat-shrink tubing will make a very clean installation rather than electrical tape when connecting the battery clip and light bulb leads. If you don't have heat-shrink tubing, but you do have various sizes of insulated wire in your shop, you can usually find some larger diameter wire that when stripped, its insulation can be used to slide over your solder joints on the hookup wire. This will make a neat installation.

Now add some additional five-minute epoxy to the switch assembly lugs in order to protect and insulate the wiring. When this assembly dries, paint the epoxied area with matching paint.

If you have timed your assembly project correctly, it is now about sundown, and you are ready to take your buggy out for a night ride! Remember, just like when driving a real car, don't over-drive your headlights! You should familiarize yourself with the surroundings in the area in which you will be doing your night driving. Being able to see your buggy because of the running lights will enable you to maneuver very effectively and at top speeds too.

Racing other cars in the dark is really great fun, so while you are constructing your lights, why not make a set for a friend. Have fun, and drive safely. ●



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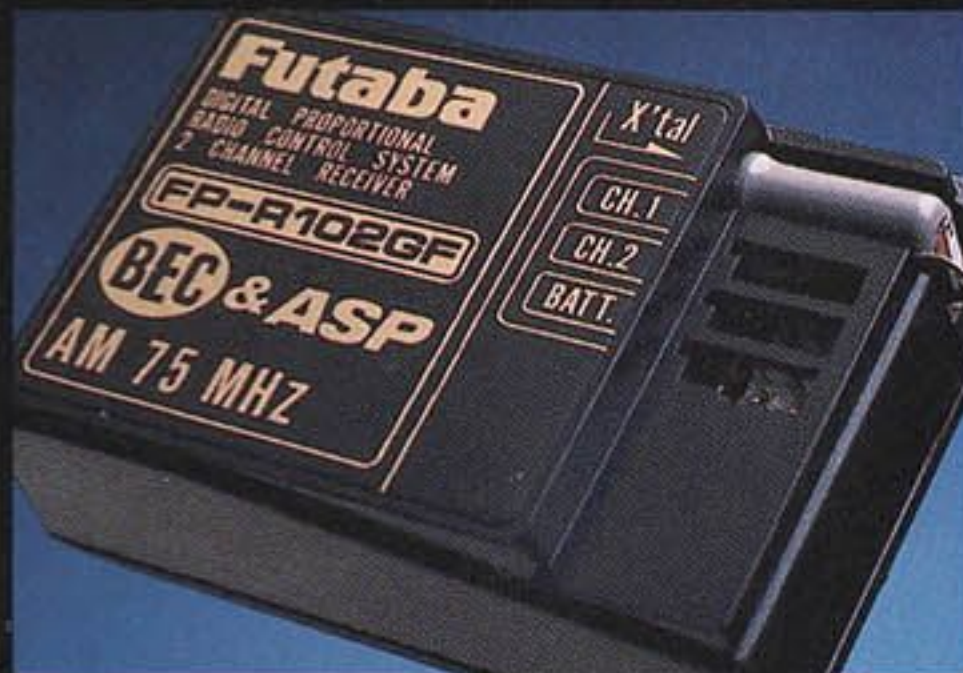


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