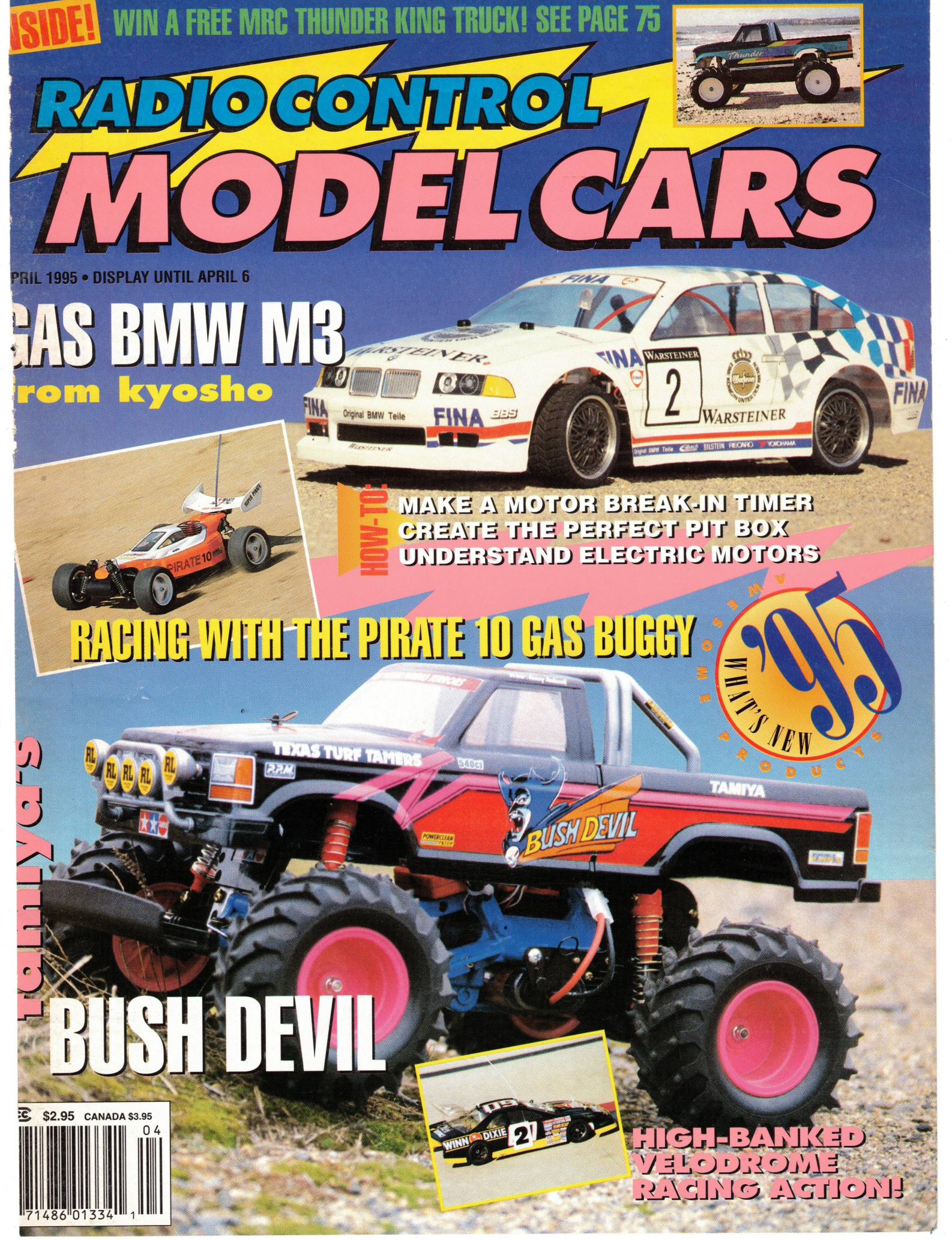
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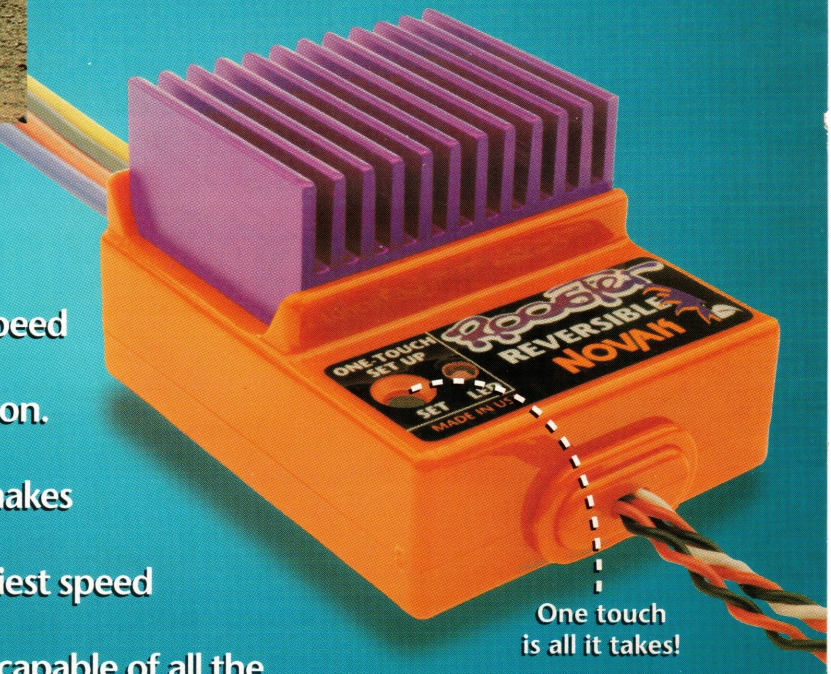

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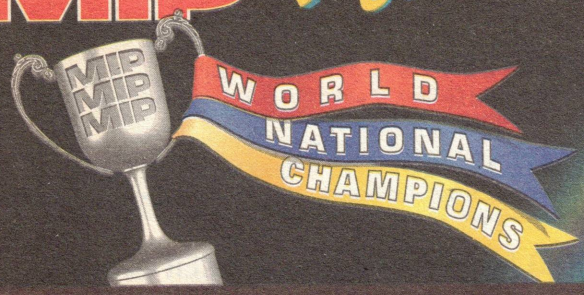



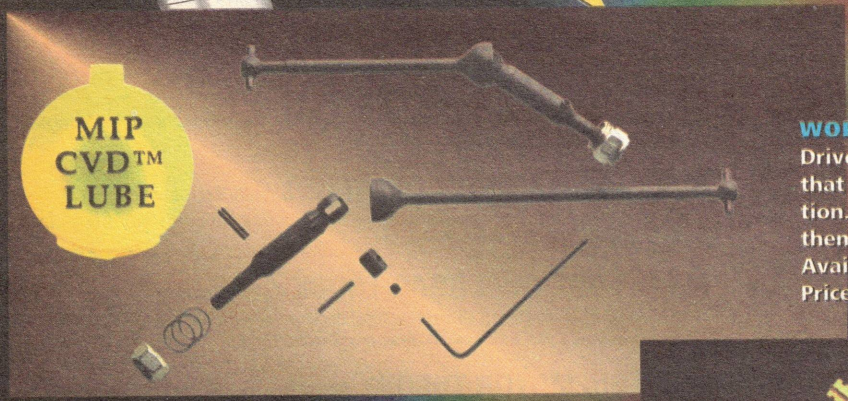

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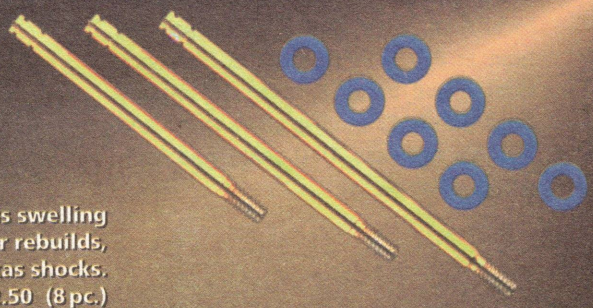

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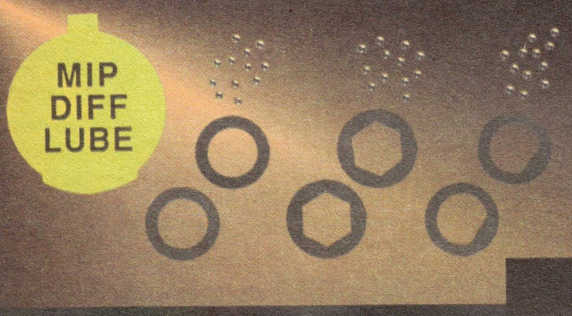

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RADIO CONTROL MODEL CARS

APRIL 1995 VOLUME 10 NUMBER 7

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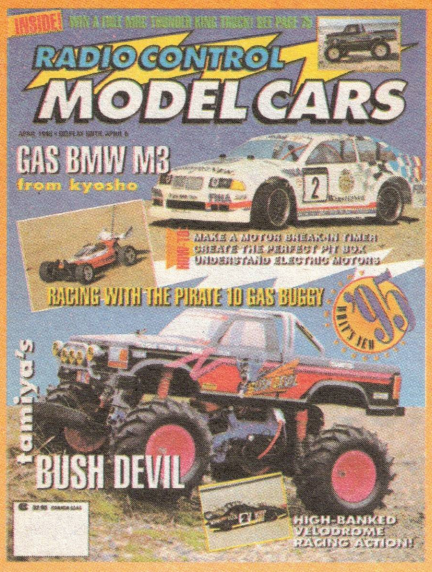

COVER: This month, we tell you how to put together a decent pit box, make a motor break-in timer, how the faster car can lose, and the theory of electric motors. Also, we'll steer you toward the best in RC with reviews of Tamiya's Bush Devil truck, Kyosho's gas-powered BMW M3 touring class racer and Pirate's hot new 1/10-scale gas four-wheel drive buggy.

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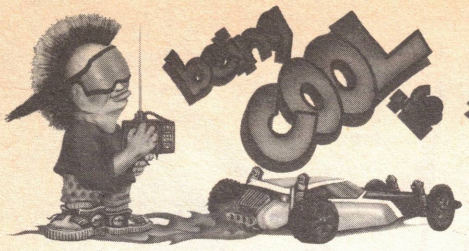

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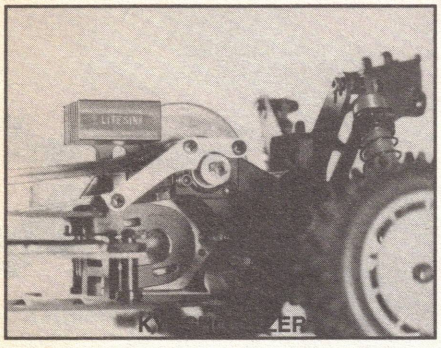

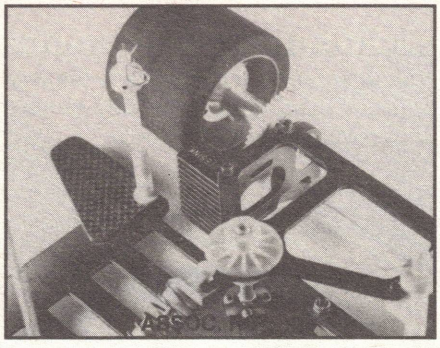

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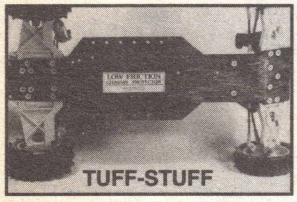

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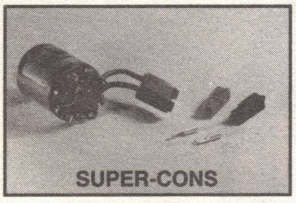

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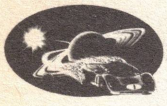

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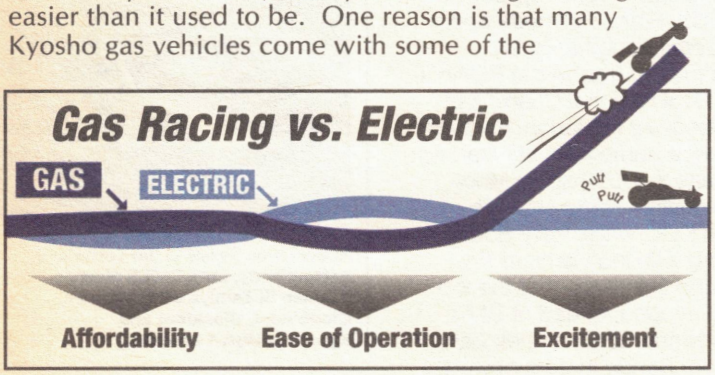

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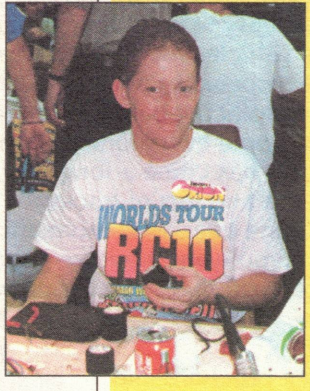
A near-rainout threatened racers in Miami, but the show finally went on.



Go to the rain tires! A big crowd of enthusiastic racers weren't scared off by wet conditions at the 9th Tamiya Championships in Florida.

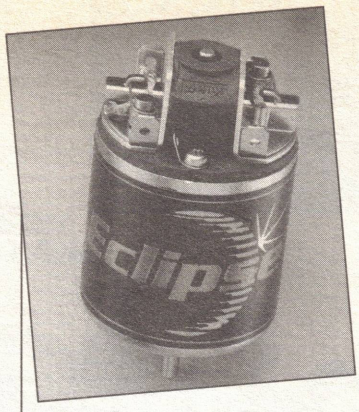
TAMIYA CHAMPS IN SAN JOSE, MORE RAIN IN MIAMI

Bad weather caused an early end to the racing at the eighth Tamiya series race in San Jose, but not before the first round of competition had been finished. F1 Stock went to Jim Rose, with Ryan Otis in second; F1 Modified was won by William Brown, with Albert Langarica in second; Sedan Stock was won by Chris Rogers, followed by Charles Heizer; in Sedan Modified, Randy West was first with Craig Black in second. William Brow was F1 TQ, while Randy West took the top-speed honors in Sedan. Ed Suarez won concours with his F1 racers, and Ji Malloy did the same in sedan class. In Miami, Florida, Tamiya's ninth Championship Series event was nearly washed away when the rains came, but the showers ended early enough to get in the entire program. When everything was tallied up, F1 Modified's winner was Dave Vera, second place was captured by Andres Garrido, followed by David Meeker. Sedan Modified went to Ed Delgado (TQ), Rick Schwartz was second, and Mike Contreras finished third. Congratulations to all the competitors.



PARKING LOT POWER

The hot setup for Tamiya's Box Stock class is the Paragon Eclipse motor. Each motor has been broken in at the factory and tested before being shipped to dealers' shelves. You can get the Eclipse in four winds: 14-,15-, 17- or 23-turn versions. How much? Only $28. Pictured here is the bearing version. Though not legal for Tamiya's current rules, the motor has shown its superiority over many hand-wound motors, at a fraction of the cost. With precision-balanced armatures, welded tabs and diamond-trued commutators, the bearing version is a stone cold bargain at $50, says Paragon's Hal Newell—and he should know. Get their catalog: send two bucks to Paragon, Dept. MC2, 340 Industrial Blvd., Waconia, Minnesota 55387. Tell Hal that RC *Model Cars* sent you.



HOT TAKES

Jon Orr won U.S. Indoor 1/12-scale Championships held recently in Cleveland. Jon, driving an Associated 12LS with Reedy power, took the modified class, as Mark Adams won the stock event, followed by Wayne Gerber in second. Both drove 12LS racers. . .At the Fall Blast at Scooter's Hobby in Niles, Ohio, Greg Greene, designer of the PSE Thor Dyno, set a track record, was top qualifier and won the A-main by two laps over his nearest competitor. Greg drove a PSE T-Bird with Blue Star foam tires and PSE Rocket Sprockets ... RUGBURNS: Frank Polimeda and Terry Rott, both racing for Team Novak, took the top trophies in ROAR's first Carpet Oval National Champs at the CEB Speedway in Marion, Pennsylvania. Polimeda came from 8th starting position to take the 1/10-scale Modified Championship, using Novak's Hammer Pro ESC, while Terry Rott took the 1/12 Championship driving with the Hammer Pro ESC. Frank was TQ in 1/12, and finished out of the top three. Shane Kocher finished second, ahead of Chris Smith—all drivers drove with Novak ESCs in their cars ... In other indoor racing action, Reedy motors powered

continued on page 29

MORE SUPERTRUCKS FROM DAHM'S

Ira Dahm of Dahm's Racing Bodies just keeps on pumping out the Lexan, the latest being two new Tornado II SuperTruck bodies for the NASTRUCK series instituted by NORRCA for '95. With one velodrome race under their belts and more scheduled for the entire racing season, drivers are flocking to this new racing class that mirrors the full-size NASCAR class. The Tornado II standard with is for the 10L chassis, but will also fit a host of truck chassis for fun runnin', like Tamiya's Clodbuster, Blackfoot and the Kyosho USA-1. The narrow version Tornado II is tailor made for the RC10LS superspeedway chassis and the Toyota Pre-Runner, Clodbuster and Blackfoot. Either one you choose is certain to be a winner, in looks and performance, says Ira. •



Dahm's latest is the Tornado II in standard width, with a flat bed.



Dahm's other latest in the SuperTruck Series is the Tornado II narrow body, for RC10LS chassis. It'll also fit Tamiya's Pre-Runner, Clodbuster, Blackfoot and Kyosho's USA-1 chassis.

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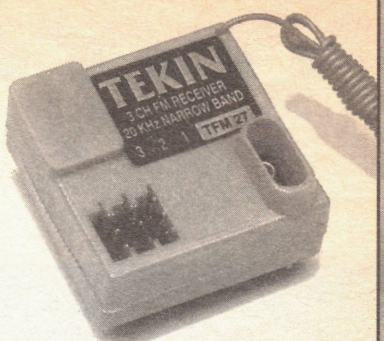

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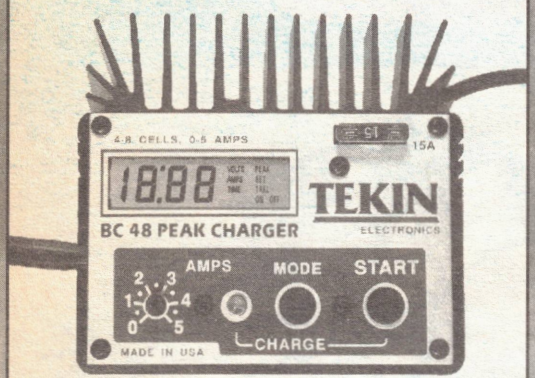
BC 48 Digital DC Charger



Enjoy affordable pro-style features with TEKIN's **BC48** DC charger. It runs off most 12 volt DC power supplies, charges 4 - 8 cells at 0 - 8 amps, and even charges receiver packs.

FEATURES:

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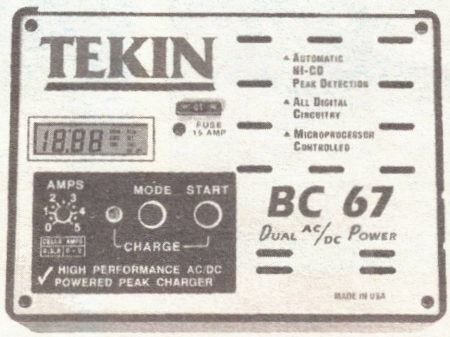
BC 67 Digital AC/DC Charger



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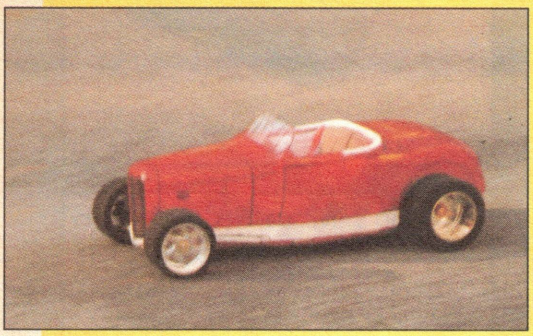
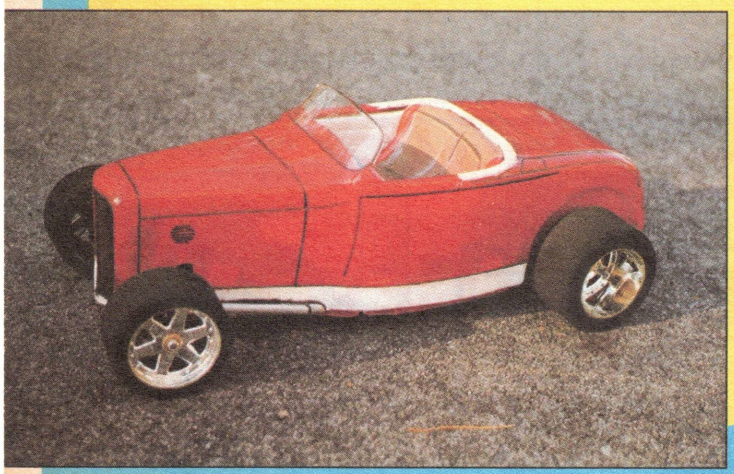
Readers' Page

READERS: NOW WE'RE HAVING FUN!© IT'S BEEN A LONG, COLD WINTER, BUT WITH SPRING JUST AROUND THE CORNER, I'M LOOKING FORWARD TO SOME FINE RACING DAYS AND LOTS OF PHOTOS FROM ALL OF YOU. I HAVE A CLOSET FULL OF STUFF TO GIVE AWAY, AND IT COULD GO TO PEOPLE JUST LIKE YOURSELF—IF YOU TAKE THE TIME TO SHOOT A DECENT PHOTO OF YOUR CAR OR TRUCK AND SEND IT TO ME, RIGHT HERE AT THE MAGAZINE. IF YOUR PHOTO IS PICKED, YOU'LL GET SOMETHING COOL—TRUST ME! SEND YOURS TO ME, DEL BAGSHAW, READERS' PAGES EDITOR, BOX 2459, CAPISTRANO BEACH, CALIFORNIA 92624.



How about this? A two-shot sequence of a fine Parma '29 Ford Roadster. It's by 15-year-old Adam Frazier, of Matthews, North Carolina. Adam says it's the first car he's ever built himself. He used vinyl for the interior, titanium tie rods, a Novak 610 HRV ESC, an Airtronics XL2P radio with 322 ball bearing servo and an 11-turn motor. Adam gets a six-month subscription for this cool short.

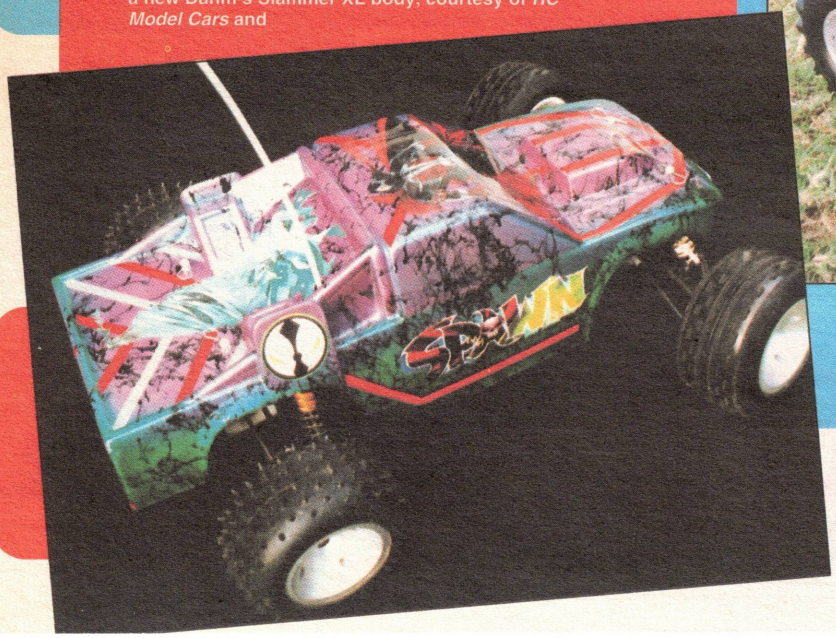




Keith Jones, of Port Clinton, Ohio, says his RC10 Team Truck has a Novak 410-M5 ESC, a Dynamite 1400 SCR pack, a Revtech Pro Stock motor and a Futaba Magnum Jr. radio. Keith airbrushed the body himself, and dyed all the nylon parts purple. He wants to add a Quarter Flash motor, some Pro-Line XTR tires and a super-trick homemade traction control system. Hey, Keith—your Quarter Flash modified motor is coming to you, free! Congratulations.



The Spawnmobile, based on the Image comic book Spawn, comes to us from Josh Pfoertner (pronounced *Pfoertner*), of Stinesville, Indiana. Under the splashy paint is an RC10T. Josh painted his body using Spectra paints and masking tape. Josh will be getting a new Dahm's Slammer XL body, courtesy of *RC Model Cars* and



Mr. No Ka Oi himself, Wallace Hernandez Jr., from Ewa Beach, Hawaii, writes to say his version of the Gravedigger began as a stock Super Blackfoot, then was transformed into what we see here, using Kyosho Black shocks, ball bearings, a Thorp diff kit and hub and axle, a 9301 Futaba servo, 210CB ESC, a Futaba Sport radio and Green Machine motor. The rims were made by a friend who combined Blackfoot rims and Clodbuster rims. Parma's Gravedigger body and Hemi engine kit is the added refinement, but Wallace wasn't finished—he installed working red headlights. We're going to send ol' Wal' a six-month subscription to *RC Model Cars* for his well-built model.

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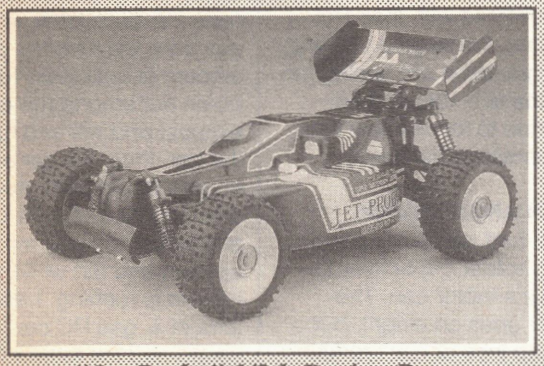
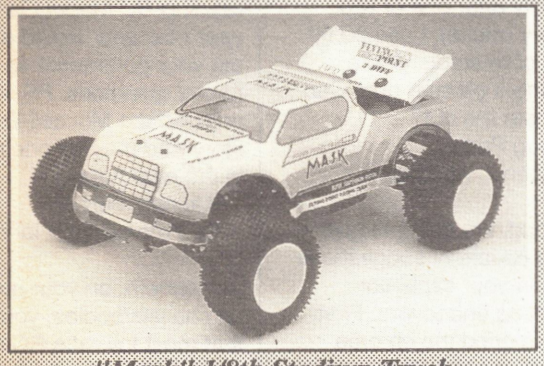


"Jet-Probe" 1/8th Racing Buggy



"Mask" 1/8th Stadium Truck



"Magic Climber" 1/8th Monster Truck

Features:	Jet Probe	Mask Truck	Magic Climber
Good Parts Availability	X	X	X
Four Wheel Shaft Drive	X	X	X
.21 Nitro-Powered	X	X	X
3-Diff. Planetary Style	X	X	N/A
2-Diff. w/Central Transmission	N/A	N/A	X
Steel Planet/Satellite Gears	X	X	X
Steel Bevel Gears	X	Opt.	X
Steel Main Gears	X	Opt.	X
Steel Pinion Gears	X	X	X
All Steel Dogbones	X	X	X
Front Universal Halfshafts	X	X	X
All Precision Ball Bearings	X	X	X
Hi-Capacity Adjustable Shocks	X(1)	X	X
Offroad Muffler Included	X	X	X
Double Filtered Fueltank	X	X	X
Non-Distorting Race Rims	X	X	X
Heavy Duty Disc Brakes	X	X	X
Front & Rear Dual Brakes	X	X	N/A
Brake Neutral Auto-Return	X	X	N/A
Duraluminum Race Chassis	X(1)	X	N/A
Extra-Heavy Duty Chassis	N/A	N/A	X
Duraluminum Upper Pate	X(1)	X	N/A
Quick Maintenance Diff.	X	X	N/A
3-Piece Racing Clutch	X	X	X
Double Ball Bearing Clutch	X	X	X
Light Weight Race Flywheel	X	X	X
Body/Wing or Body Included	X	X	Body
Heavy Duty Race Tires	X	X	X
Foam Tire Inserts	X	X	Opt.
Front Anti-Roll Bar	X	N/A	N/A
Rear Anti-Roll Bar	X	N/A	X
Waterproof Batt/Receiver Box	X	N/A	N/A
Adjustable Rear Wing	X	X	N/A
Adjustable Toe and Caster	X	X	Toe
Adjustable Camber	X	X	N/A
Heavy Duty Upper Arms	X	X	X
Heavy Duty Lower Arms	X	X	X
Steel Bushing Diff Case (2)	X	X	N/A
Torsen Differentials Optional	X	X	N/A
Arch Lower Rear Arms (3)	X	X	N/A
Competitively Priced? (4)	Yes	Yes	Yes

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(2) Steel Bushing Diff Case Is More Durable than Alloy Case.
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Answerman

DEAR ANSWERMAN,

I've been running 1/10-scale electric and gas onroad cars for the past two years. Now I'd like to try the larger 1/8-scale gas vehicles; I'd run the car on parking lots, and might want to try some 1/8-scale road racing once I get the hang of the car. Keeping in mind that I have limited cash, what car or cars would you recommend I try?

Brady Teel
Bothell, Washington

A: Brady, 1/8-scale onroad cars come in several types: two- and-four-wheel drive, and with or without full suspension. The two-wheel drive cars are usually like an enlarged version of a 1/10 pancar. While the fully suspensioned 4WD units are more complex, the 2WD units can be just as intricate, with multi-speed gearboxes, highly adjustable chassis and some high-output speed and power. For your purposes I might try a 2WD car first, and would suggest either Associated's RC250 Club Racer II or the RC300 BD. Both are basic in design but are also easily upgraded using Associated parts and pieces. You'll need to supply a .21 glow engine, tuned pipe and a body shell (plus your radio gear) to complete either kit. Whatever your choice, you've got hours of high-power racing excitement in store. Have fun!

DEAR ANSWERMAN,

I currently use a Futaba two-channel AM radio (FP-2PD) and want to switch the pistol transmitter over to rechargeable AA nicads. The current transmitter has a seven-cell holder, but to attain the needed voltage with the lower voltage AA nicads I need a eight-cell holder. Futaba makes an eight-cell pack, but I already have the separate AA cells and a suitable charger. Do I have any other options?

Jack Mulder
Vancouver, Canada

A: You sure do! A quick trip to your nearest Radio Shack store will provide you with an eight-cell AA battery holder for your Futaba AM transmitter. The Radio Shack part number is #270-407 and it sells for under two bucks. Now power up the AA's in your charger and you're all set (power-wise) with your Futaba Magnum AM.

DEAR ANSWERMAN,

I assembled an MRC MT10-M truck recently. Once completed, the slipper clutch slipped excessively on acceleration. I disassembled the transmission and found that the large black bushings on the twin diff hubs were tight as heck (something I didn't notice when I first assembled the truck). A call to MRC was graciously received, and resulted in the diff unit being sent to MRC for a look-see by them. The bottom line is, I got great and friendly customer service and concern from the MRC folks. This is one great truck for the price. This one was bought for my grandson and now I'll probably get one for myself. The Airtronics RVSP (used in the truck) radio was also a great unit and works great for young kids (and slow-reflexed grandpas as well).

Dick Swarthout
Penn Laird, Virginia

A: Mr. Swarthout, thanks for sharing your experience with the MRC truck. *RC Model Cars* (and the Answerman) are always interested in our readers ups-and-downs encountered with their RC vehicles. We're glad you and your grandson are having fun with the MT-10M and will continue to let us know how it's running in the future.

DEAR ANSWERMAN,

I've had problems attempting to solder capacitors to my car's motor can. The solder goes on alright, but the cap wire doesn't remain attached to the steel can (usually after one or two battery packs). I use 50/50 rosin core solder and a handheld electric gun. Can you help me out?

Doug Parker
Phoenix, Arizona

A: Doug, I'm going to give you a couple of suggestions to try in your capacitor-mounting endeavors. First, always grind the chrome plating or paint off the can where you're going to apply solder. Second, put a small (repeat, small) amount of paste flux on the ground area to clean and increase solder adhesion. And finally, think about using at least a 30-40 watt soldering iron (Ungar, K&S and Radio shack all make suitable units). These high-temperature irons will supply ample working heat, which in turn will allow the solder to flow quickly and secure your capacitors properl

DEAR ANSWERMAN,

I am brand-new to RC cars and have a couple of questions to ask. First, some companies advertise open-chassised kits without motor or body, while others sell bodies only. How does a person determine what chassis goes with what bodies? Secondly, I recently talked to a local hobby shop owner about gas-powered RC cars. He stated that while the gas cars are running, a small amount of unburned fuel will come out around the engine exhaust and will end up on the car. Plus, the car and engine would both need cleaning on a regular basis as the fuel residue will pick up dust and dirt while the vehicle is running. I like the idea of a gas RC car for the sound and the longer runtime over the electrics. I've been reading *RC Model Cars* for a year now and would appreciate your comments on the above questions. PS. I enjoyed the Mansell-Lola car story and may try one myself in the near future!

Kenneth Heiting
St. Petersburg, Florida

A: Kenneth, on your question on chassis/bodies, you'll find that most full-race RC cars come without body shells from the factory. Electric pancars use either stock car or road course sports car bodies unless they're special units, while vast majority of offroad cars come with bodies in the kits. You can fit just about any body shell on any car with a little ingenuity by adapting body mounts and posts from several outlets. Careful reading of the car ads should let you know what comes on each type of car. As for your inquiry on gas cars: the hobby shop owner was correct in his comments on gas vehicles. A certain amount of excess fuel will accumulate on the chassis and body after a day's running. The fuel will also draw in debris and this gunk must be cleaned up to ensure that the car and engine won't "absorb" any of the grime, thus reducing its performance and lifespan. Thanks for your letter and praise! •

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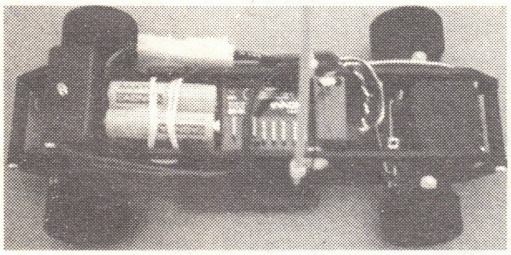

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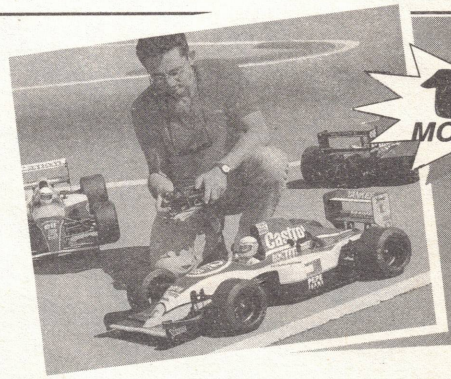

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ADVANCED ZENOAH ENGINE REBUILDING

BY RICK EYRICH

Let's say you need to tear down and rebuild a Q-scale car's Zenoah engine. In the past, I've gone over the basic things you need to check when the G2-D powerplant is apart. In this month's column, I'll give you some additional tips, and inform you of some other techniques to ensure you end up with a top shelf, fast engine.



During the racing off-season, many racers have to find a way to store their unused racing fuel or end up disposing of it. High-octane racing gasoline costs way too much to just let it go stale, so many try to extend its shelf life. Fuel stabilizers are available from auto and boat dealers and just a few drops per gallon can save your fuel and pocketbook.

TAKING IT APART

Okay, you've pulled the Zenoah free of the chassis, removed its clutch and mounting housing, and set aside the air filter, carb assembly and ignition system. Go ahead and disassemble the rest of the Zenoah and then thoroughly clean all of the pieces. While cleaning, keep in mind that the use of sand- or bead-type blasting equipment on the main cases or cylinder can lead to racing rules violations. QSAC maintains that a stock engine be run in most classes and using bead or sand on aluminum can alter the overall performance of the engine. Regular cleaning solvent and low-pressure air works the best, but, please use rubber gloves; solvent can be absorbed directly into human skin.

If you're replacing the twin crankshaft/case bearings, here are a couple of hints: a heat gun will make bearing removal easy. Heat the bearings (*just* the bearings) and simply tap them out with a socket and a dead-blow hammer. The dead-blow hammer (made from plastic/nylon with metal shot inside the head) does an excellent job on bearings, and it won't cause dings or dents in the aluminum. And finally: replacement bearings must be installed straight in the case holes, so a small press would be best—with second place going again to the socket/hammer procedure.

THE LAST SPOT TO CLEAN

Here's a final cleaning area to check on the G2-D, the cylinder/fin areas. Be sure all of the thin aluminum fins are free of any debris, gunk, or exhaust residue (a soft, long bristle wire brush works the best) and also check them for any dings or bends. A buildup of old oil and gas is common around the cylinder exhaust port; and this nasty substance can be cleaned with either the solvent or simple home oven cleaner.

PUTTING IT BACK TOGETHER

Put this right at the top of your building list: never use an old gasket on the Zenoah! If you have a new gasket (especially a center case gasket) that's creased—throw it away and use another. All it takes is one minor air leak through a gasket to cause you untold engine problems down the road.

Once the lower cases are together, you'll need to "center" the cylinder on the piston/crankcase properly. Slip the jug over the piston and rings and finger-tighten the four mounting screws. Install the flywheel, key and nut on the crankshaft securely. Hold the cylinder/cases in one hand and slowly turn the flywheel with the other. Now, shift the cylinder around until you feel the least resistance while turning the crank, and then tighten the four metric screws up good and snug, using a cross pattern.

With the basic Zenoah engine unit assembled, there are a few more small checks you might need to make before installing it back in the frame. Be sure to also clean the flywheel fins—they're just as important as those fins on the cylinder for proper cooling. Many racers will switch the stock Phillips head screws used on the Zenoah with Allen-head fasteners, which are less prone to stripping out. Another assembly check involves simply re-checking the torque of all of the engine screws—even after you've first installed and tightened them. And finally, you should always install a new resistor-type spark plug in your rebuilt Q-scale powerplant—just in case.

TIP OF THE MONTH

After the racing season, many Q-scale racers face the deterioration and dollar loss of their car's racing fuel. Mixed oil/gasoline (or alcohol) breaks down much quicker than straight fuel, and most small amounts of race fuel shouldn't be used after 30-60 days of sitting. One way to increase this storage life is to add a fuel stabilizer to the gasoline.

continued on page 29

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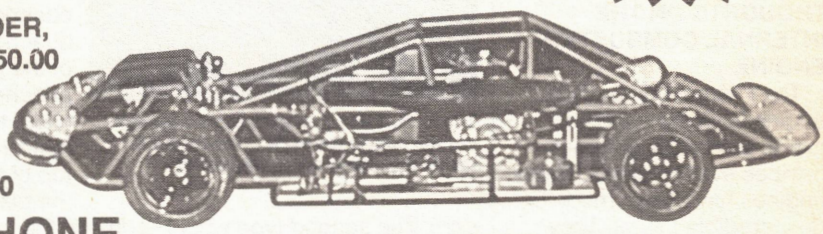

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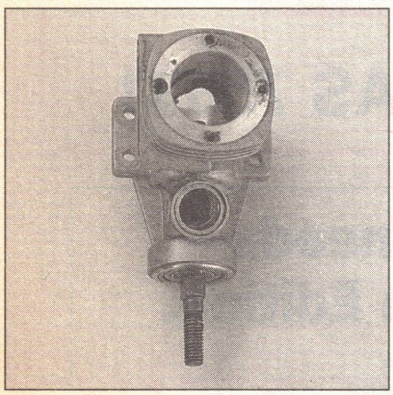
GAS POWER, PART TWO

BY JOSEPH RINGEISEN

Last month's column was about the various parts of the small gas engines used in today's gas-powered cars. This month, we'll cover how these gas engines actually work.

THOUGHTS ON THE INTERNAL COMBUSTION ENGINE

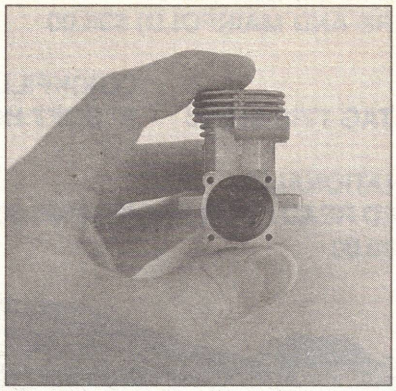
The internal combustion engine is, in the minds of many, one of the greatest devices ever invented. These engines have been made to do incredible things. They are capable of generating a great deal of power, especially for something that comes in such a small package. And they'll usually keep running as long as you have fuel for them.



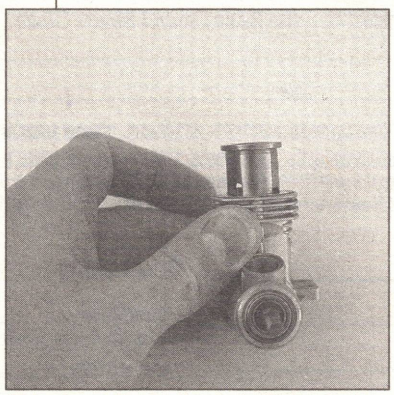
The crankshaft of an RC car engine is hollow. The air/fuel mixture enters the crankcase through the carburetor opening, and then into the crankshaft.

Generally speaking, when one talks about an internal combustion engine, you're talking about a gas-powered engine. In total, there are three types of internal combustion engines. The first is the reciprocating engine, which would include piston engines, such as those used in our full-size cars, or our RC cars. The second type would be the rotary engine. The best example of a rotary engine I would be the Wankel rotary engine found in the Mazda RX7. Turbine-type jet engines would fit into this class as well. The third type would be the rocket engine, which has no moving parts. Obviously, we'll be concentrating on reciprocating engines (hereafter called "gas engines," because I'm tired of typing "reciprocating" in this article.) Note that "gas-powered" when referring to model engines is a misnomer; the "gas" is in reality, a nitromethane fuel, and not gasoline. It's a generally accepted term to use gas when talking about model engines.

As I said last month, all gas engines have four basic parts: the cylinder, the piston and connecting rod assembly, the crankshaft and some source of fuel ignition. Here's a brief overview of how these parts go together: the piston fits inside the cylinder; the connecting rod, which is attached to the bottom of the piston, is also attached to the crankshaft; the means of fuel ignition is found at the top of the cylinder. As the piston moves up inside the cylinder, the connecting rod pulls the crankshaft through half of its total rotation. As the piston moves back down, the connecting rod pushes the crankshaft through the other half of its full rotation.

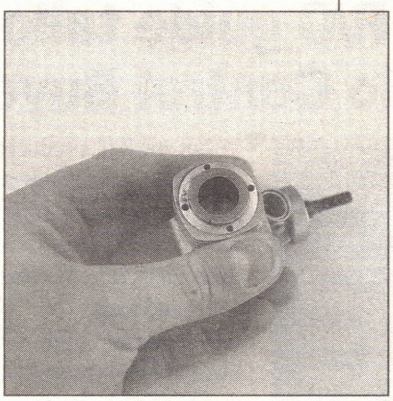


The air/fuel mix then exits the crankshaft out the hole in the back. The mixture is inside the crankcase at that point.

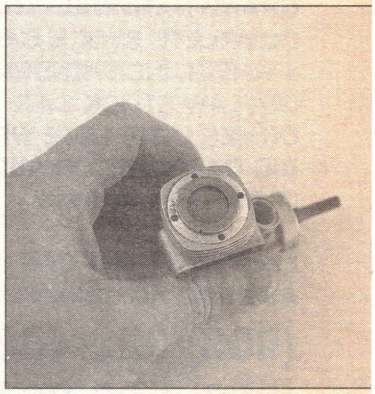


This shows the fuel ports in the engine's sleeve. The exhaust port is on the other side of the sleeve.

Gas engines can be divided up into two groups. The first group would be those engines that are classified as two-stroke engines, and the second group would be four-stroke engines. Incidentally, each time the piston moves up or down inside the cylinder, that's called one "stroke." The engines we use in RC cars are two-stroke engines, just like your average lawnmower engine. The engines we use in our full-size cars, however, are four-stroke engines. I'll explain a little about both.



When the piston moves down far enough so that the fuel ports are open, as it has here, the air/fuel mix enters the combustion chamber.



The piston moves up inside the sleeve, closing off all the ports, and compresses the air/fuel mix. The glow plug in the cylinder head ignites the air/fuel mix.

FOUR-STROKE ENGINES

First of all, this section is more to satisfy the curiosity that I'm sure some of you have. In actuality, you really don't need to be well-versed in the workings of a four-stroke engine to work with an RC car engine. If, however, you've ever been curious about how the engine in your full-size car works, follow along.

Four-stroke engines generally have four, six, or eight cylinders in the engine block. One of the other characteristics of a four-stroke engine is that they have at least two valves per cylinder. The valves open and close to allow the air/fuel mixture (which all gas engines must have to run) to enter the cylinder, or to allow the exhaust gases to exit the cylinder. One valve is the intake valve, while the other one is the exhaust valve.

In a four-stroke engine, each stroke serves a specific purpose. The first stroke is

continued on page 29

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AWESOME '93 WHAT'S NEW PRODUCTS

thetic rubber tires are mounted on eight-spoke Mini-type wheels, and the kit comes with a 540 electric motor and 20-tooth pinion. Other Tamiya hop-up parts are available for the Mini. See your Tamiya dealer for more information. Tamiya America, 2 Orion, Aliso Viejo, California 92656. (714) 362-2240.



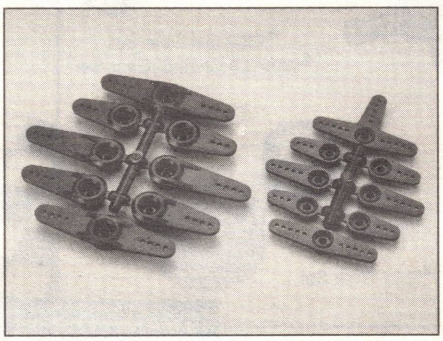
KYOSHO's PRO XRT

The latest electric 1/10-scale 2WD truck from Kyosho is the Pro-XRT, a racing version with the compact Super Sprint transmission that comes with 11 ball bearings. The XRT uses heavy-duty bellcrank steering, bearings on the front wheel shafts to prevent wobble, and lightweight one-piece racing wheels with Lexan dirt shields. The wheelbase and rear toe-in are easily adjustable, and a floating ball hinge pin installation automatically maintains pin alignment to prevent binding. See your Kyosho dealer for a closer look at the XRT racing truck, available in a Team or Sport version. Great Planes Model Distributors, 2904 Research Rd., Champaign, Illinois 61826. (217) 398-3630.



Q-SCALE SPRINT BODIES

JPK Enterprises, 5000 W. Oakey E8, Las Vegas, Nevada 89102, is selling quarter-scale sprint car body parts. Now available are hoods (wide, 5 inches; narrow, 4-1/8 inches), tail tanks (one- and two-piece sections) and secondary hoods as well. All are made from .040 Lexan, selling for $18.00 per piece. Custom paint work is also available from JPK.



SUPER-STRENGTH SERVO ARMS

Du-Bro's Super Strength servo arms are molded of long-fiber composite material for added strength, and are made in standard and long versions for Futaba, JR, Hitec, Hobbico and Tower Hobbies servos. See your nearest hobby shop for Du-Bro's Super Strength servo arms. Du-Bro Products, 480 Bonner Rd., Wauconda, Illinois 60084.



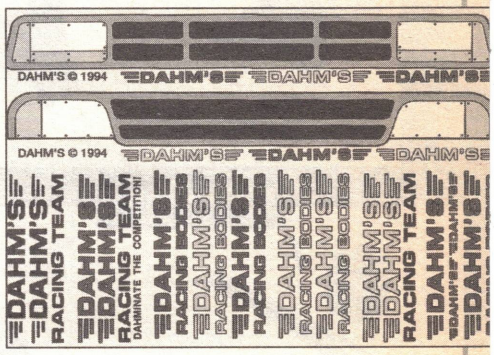
MINI COOPER FROM TAMIYA

This popular English mini-sedan has been a racing favorite for over three decades. Now it's available in 1/10 scale from Tamiya America. The Mini Cooper is adaptable to beginners and experts alike. The front-wheel drive car is fast and durable, using a front and rear double wishbone suspension with a single, horizontally mounted friction shock. Radial-type syn-



DYNAMITE THERMAL COUPLER TAPE

Now you can practically eliminate exhaust coupler blowout when you use Dynamite's Thermal Set Coupler tape on your gas vehicle's exhaust. The hot exhaust gases, engine vibration and crashes inherent in gas racing all weaken the rubber exhaust couplers routinely used on gas vehicles. Tears or rips in a coupler as a result of these effects can end your race prematurely. Using a heat-activated resin impregnated into the tape, Dynamite has created a virtually foolproof seal for your exhaust system. Simply wrap the 3/4-inch tape around the coupler. When the exhaust becomes hot while running the engine, the resin adhesive flows in the glass fiber tape and bonds to the coupler. After setting up, the tape is a virtual cast around your coupler, making it highly resistant to heat, vibration and shock damage from collisions. The tape comes in 20-foot rolls, enough for 20 couplers. From Dynamite Products, distributed by Horizon Hobby, 4105 Fieldstone Rd., Champaign, Illinois 61821. (217) 355-9511.

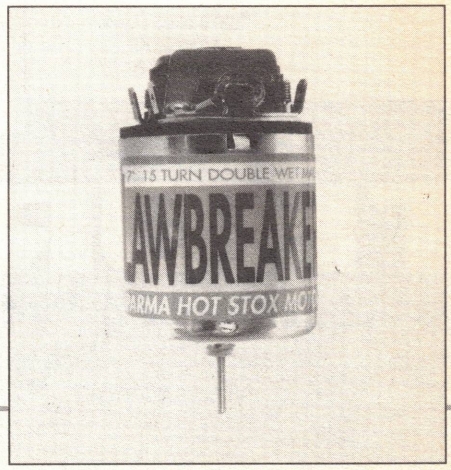


DAHM's DECAL SHEETS

Dahm's Racing Bodies has produced these colorful decal sheets to decorate your truck. The large truck grilles sheet has two different styles of large truck grilles plus and assortment of Dahm's logo decals. You get five different colors on a 7x10-inch sheet. Send $2.00 for a complete catalog to Dahm's, Box 360, Cotati, California 94931. Call (707) 792-1316 for more information.

PARMA's LAWBREAKER MOTOR

The new Lawbreaker motor from Parma International is a seven-degree, fifteen turn single with wet magnet that comes with a balanced and trued armature. At only $45.00 retail, it's a great bargain for competitive racing. Parma International, 13927 Progress Pkwy., North Royalton, Ohio 44133.



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PSE Thor Dyno
#99050



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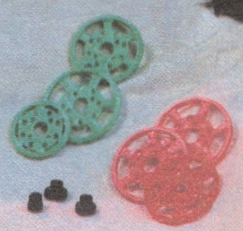
- 64 pitch - 18 to 45 tooth



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KYOSHO'S BMW M3



A TRUE 1/10-S RC

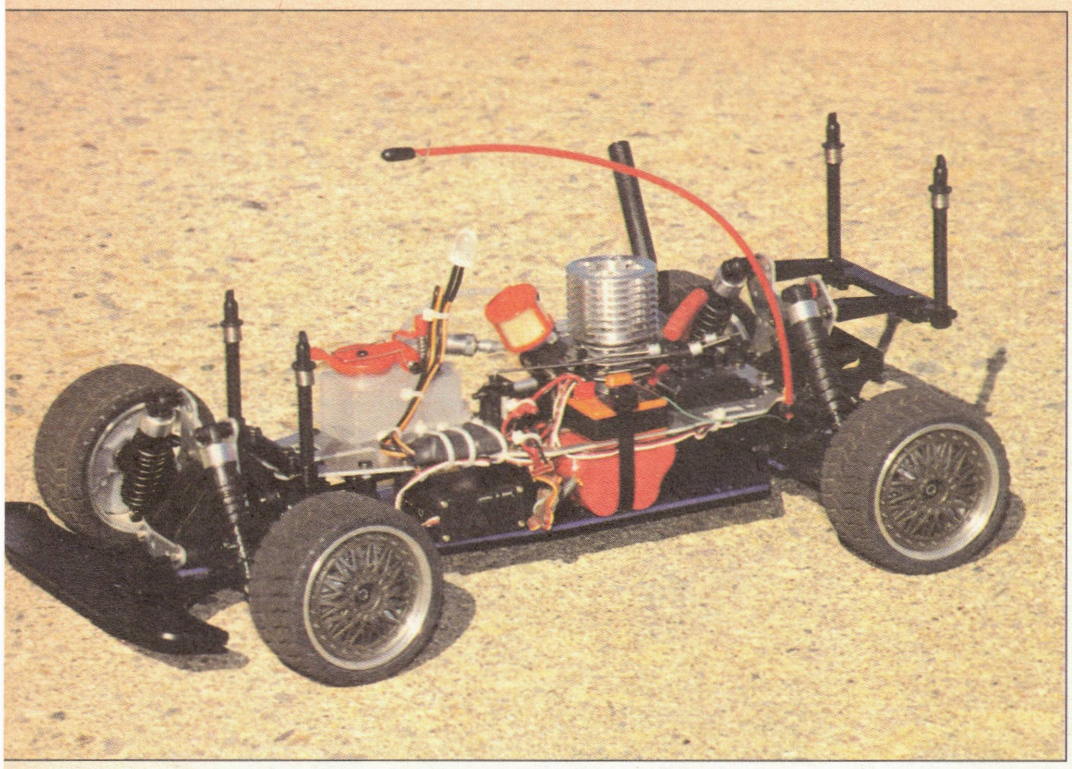
While channel surfing one night, I came across a pretty exciting form of racing known as the German Touring Car (GTC) series. Full-blown door slammers from the likes of Mercedes, BMW, Alfa, Audi and Opel compete against one another in one of Europe's most popular racing classes.

Well, it didn't take long for the folks at Kyosho to jump on the bandwagon and introduce to our shores their own scale version of one of Germany's most popular

BY JEFF BATES

CALE GAS CKET!

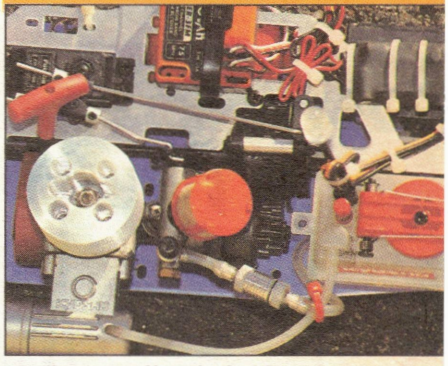




The layout seems a bit crowded, but the radio tray is easily removed for maintenance and cleaning. The two-piece wheel/tire is a real trick combo. The detail, fit and finish are first rate!







■ LEFT: A two-speed tranny is mated to an O.S. .11 powerplant. An aftermarket tuned pipe is just the ticket for top performance. Note the fuel filter—a must-have for proper motor maintenance. ■ CENTER: Power is supplied to the front wheels through a bevel-gear differential, output shafts and dogbones. Optional one-way bearing and universal driveshafts are the hot setup. Check out the rotary ride height adjusters at the top of the shock bodies. Just "click" the adjusters to the desired height. ■ RIGHT: You have to see the two-speed tranny in action to believe it (it's located just in front of the air filter). Shift points can easily be adjusted for top performance. The LED and wires coming out of the fuel cell are for the low-fuel warning sensor. The LED glows bright red when it's time for a refill.

POCKET!

wundercars: the outrageous, nitro-powered, 4-wheel drive, BMW-M3 GTC sports car!

GETTING IT TOGETHER

Based on the highly touted Inferno 10, 4-wheel drive, offroad car, the "Bimmer" brings to the table an impressive resume of components. Included in the kit is their new center shaft-drive conversion set, previously only offered as an option, is standard equipment along with a host of other winning features.

Located at both ends of the blue-anodized chassis plate is a pair of bevel gear differentials that are driven by the highly reliable center-shaft drive system. Known for its reliability and smooth transfer of power, the power train is as rock solid and efficient as they come. The kit comes mostly assembled, so I decided to take the time to tear it down to familiarize myself with its construction. Since the "Bimmer" is marketed as an entry-level kit, bushings were used in order to hold the cost in check. However, there is plenty of room to add some serious go-fast components. If you have ever worked on a Kyosho kit, one thing becomes very apparent, the fit and finish of the components are second to none!

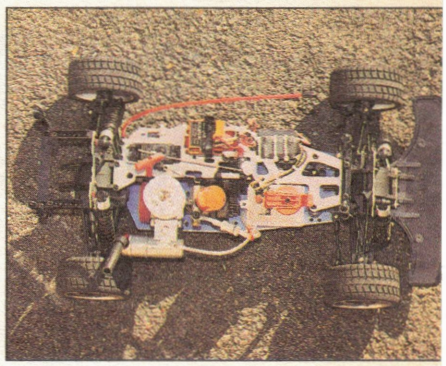
Although the outside of the box lists the power supply as an O.S. 10, I was pleasantly surprised to find a O.S. GS-11 power plant, mated to a two-speed transmission. Coupled with the center-shaft drive conversion, these features put this kit into the big leagues!

Attached to the center diff, located just in front of the two-speed tranny, is a well-designed disk brake that is actuated by a pivot cam and two pressure plates. It looks like it will

continued on page 33

OPTIONS

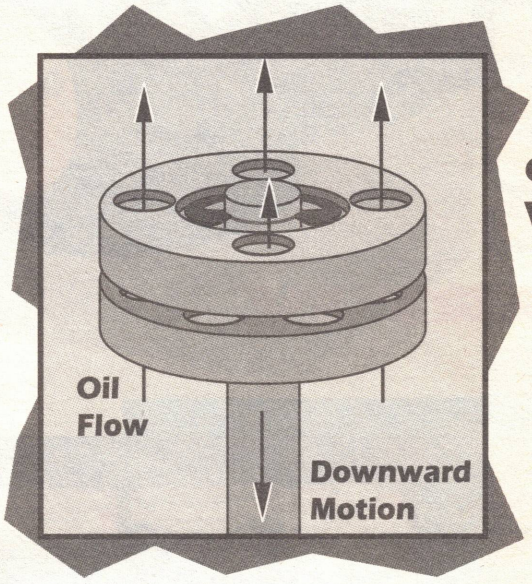
Futaba S-148 Steering Servo
Futaba S-132 Throttle Servo
Novak NER-3 FM Receiver
Kyosho Fuel warning Light
Kyosho Maximizer Fuel Filter
Blue Thunder 20% Nitro Racing Fuel

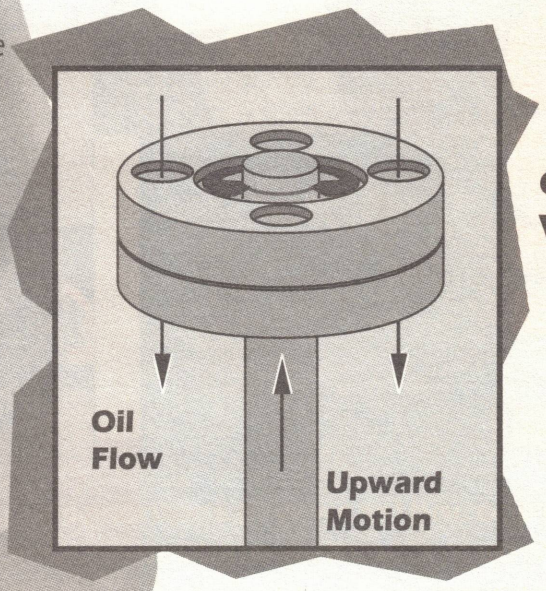


The radio tray does a great job of stiffening up the entire chassis plate. The new center-shaft drive system makes balance and setup a snap.

NEW
2-Stage Pistons

Now RPM has Shock Pistons for all Associated and Losi shocks that work at two different rates! Yes, the pistons allow the shock to move with full dampening in one direction and move at a quicker and lighter dampening the instant the direction changes! This is how full scale racing shocks work, they never use the same dampening in both directions of travel. These pistons will install on all stock Associated or Losi shock shafts. They can be flipped either direction to have the heavier dampening in either the up or down travel! The two piece pistons are color coded for the dampening hole size. There are six sizes to choose from and are packaged in packs of 12 pistons, 4 of each size. Great for on or offroad and oval!





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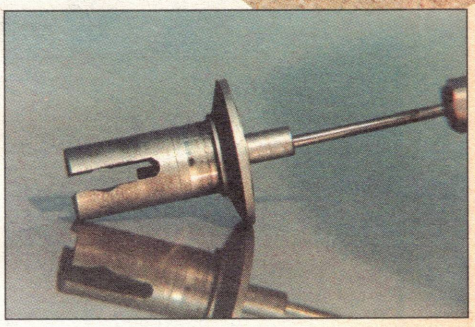
CONTINUING THE ENHANCEMENTS

PROJECT 10T

PART IV



"Slammer," a low blow, from Dahm's Racing Bodies. Along with the 10T, it fits Nitro Hawk, Blue Eagle, LSII and Losi LXT chassis. I believe the "XL" stands for Xtra Low! A very nice package.



Here's a shot of the old outdrives taken from my truck. It's obvious they were due for replacement. The enlargement of the slot can cause some major slop and backlash.



New upgrade parts include: Barracuda titanium outdrives (diff halves), gear adapter hub (cool red-anodized titanium) and MIP's Super Diff Rebuild kit. I added the tranny gasket, so we are now brand new.

Velcro applied to that concours body. Presto! No mounting holes to drill. Put the mating piece on the side of the chassis tub.



BY KEVIN MEYER

Long ago and far away in another galaxy we started with your basic Associated 10T kit. We have since then made several slight modifications, to the tune of: Part 1, RPM ball bearing bellcrank; MIP CVD shafts; World Class Shock Socks; Litespeed Litesink. Part 2, Pro-Line Road Hawg rubber; Protoform Sonoma truck body. Part 3, RPM suspension arms; bulkhead and rod ends; Tecnacraft titanium tie rods.

Ok, I admit I procrastinate sometimes when it comes to maintenance on my RC

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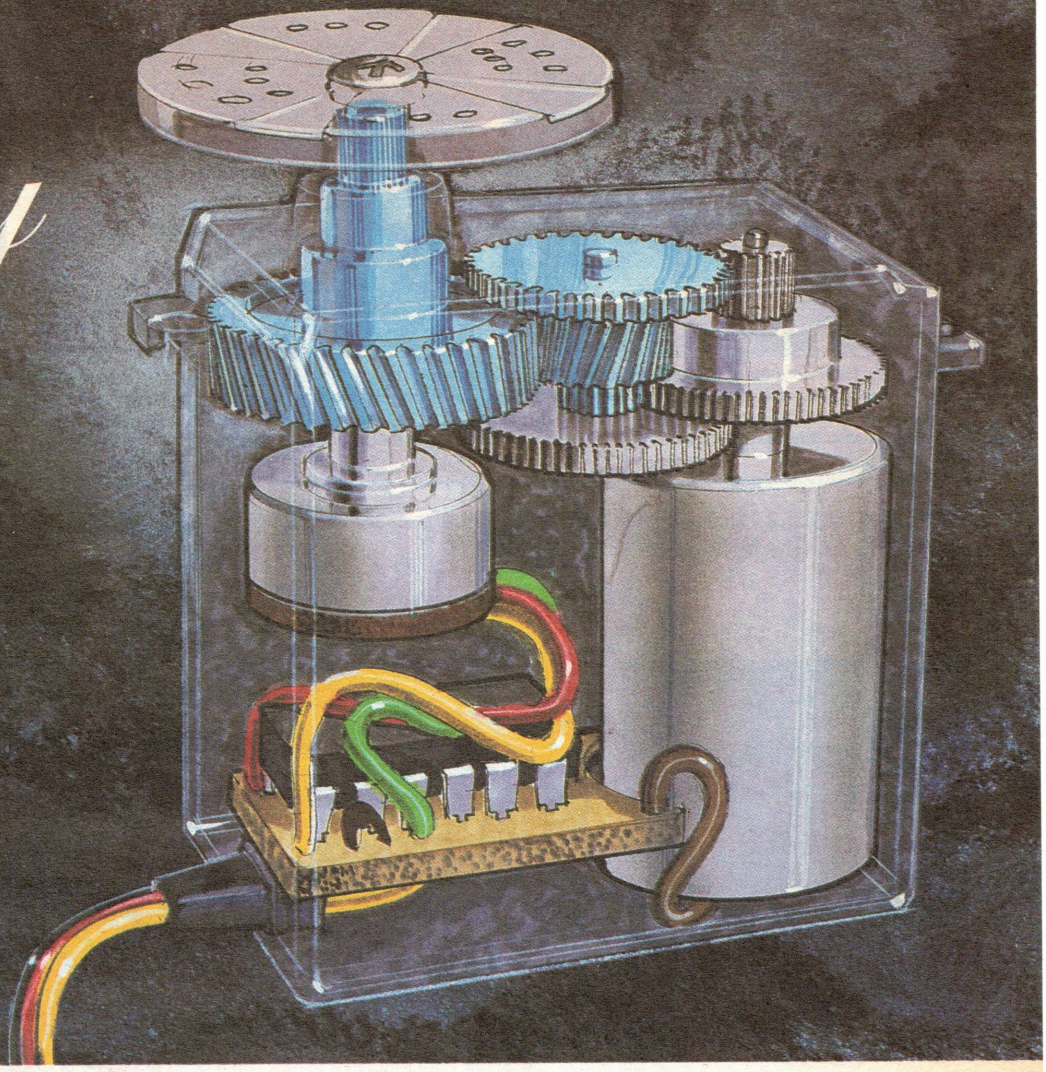
Beauty in the Beast



Let's face it. Servos are not exactly eye-catching beauties. They are used and abused with scarcely a second thought. Nothing more than a beast of burden.

But when you realize that a servo is the last link between you and your model, beauty takes on a whole new meaning. That's why every Hitec servo comes with our own custom-designed I.C. to provide strong standing torque, a very narrow dead band and improved stability under low voltage conditions. Precise, heavy duty gears are used throughout the gear train to improve the neutral position with minimal backlash. When you combine all this with the latest in SMT circuitry, you have a servo that won't cut out on you when the going gets a little rough.

In the eye of the beholder, beauty takes on many forms. We think you'll find our entire line of quality servos a sight for sore eyes.

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HS-80 HS-80MG	Sub micro Metal gear	31 oz/in 31 oz/in	.15 sec .15 sec	NONE	1.1x0.6x1.1	.62 oz .76oz	RCD924 3 servos
HS-101 HS-101MG*	Mini servo Metal gear	24 oz/in 24 oz/in	.20 sec .20 sec	NONE	1.3x0.6x1.2	.93 oz 1.07 oz	RCD920 3 servos
HS-205BB HS-205MG	Super mini Metal gear	44 oz/in 44 oz/in	.20 sec .20 sec	TOP BALL BEARING	1.3x0.6x1.3	1.1 oz 1.3 oz	none
HS-300	Std. Sport	42 oz/in	.19 sec	TOP NYLON	1.6x0.8x1.4	1.57 oz	RCD905 4 servos
HS-422 HS-425BB*	Std. Pro Ball Bearing	43 oz/in 43 oz/in	.20 sec .20 sec	DUAL OILITE DUAL BB	1.6x0.8x1.4	1.55 oz	RCD910 4 servos
HS-605BB HS-605MG	Ultra Torque Metal gear	77 oz/in 77 oz/in	.16 sec .16 sec	DUAL BALL BEARING	1.6x0.8x1.5	1.73 oz 2.12 oz	RCD605 3 servos
HS-615MG	Super Torque Metal gear	107 oz/in	.21 sec	DUAL BALL BEARING	1.6x0.8x1.5	2.12 oz	none
HS-700BB HS-705MG	Giant scale Metal gear	133 oz/in 161 oz/in	.22 sec .27 sec	TOP BALL BEARING	2.3x1.1x2.0	3.5 oz 4.0 oz	RCD915 3+1 servos
HS-75BB	Retract servo	90 oz/in	.50 sec	TOP BB	1.7x0.9x1.0	1.3 oz	none
HS-725BB	Sail Winch 4 Turns	161 oz/in	1.62 sec 360 deg	TOP BALL BEARING	2.3x1.1x2.0	3.8 oz	none

*Denotes servo only available with Hitec/JR connector. All other servos available with FUT "J", AIRT and Hitec/JR connectors. Please specify connector type when ordering. All servo packs come with switch harness.

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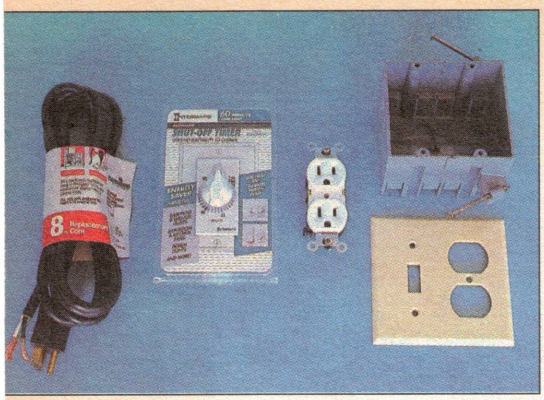
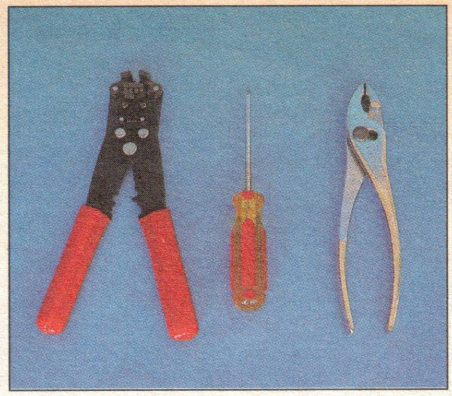
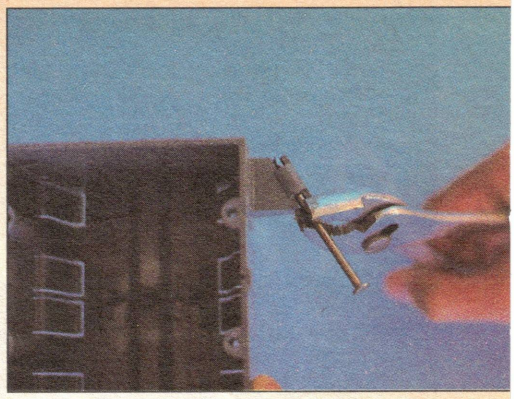
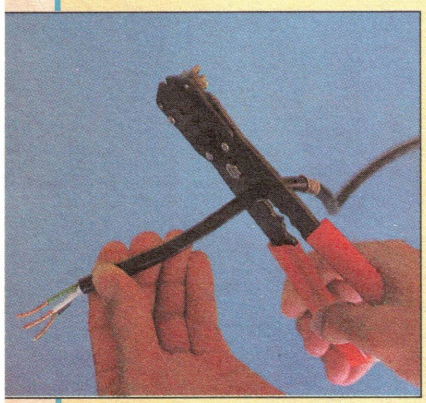


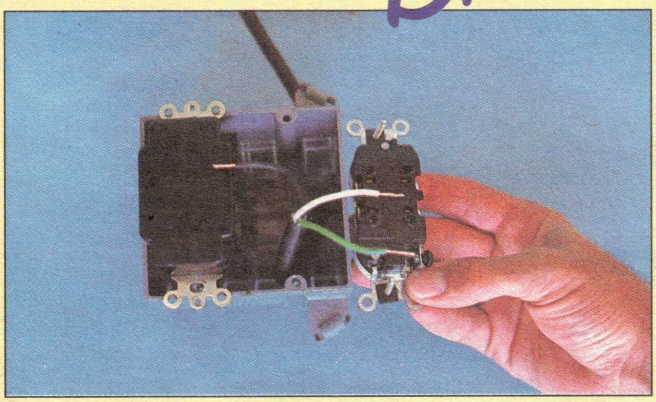


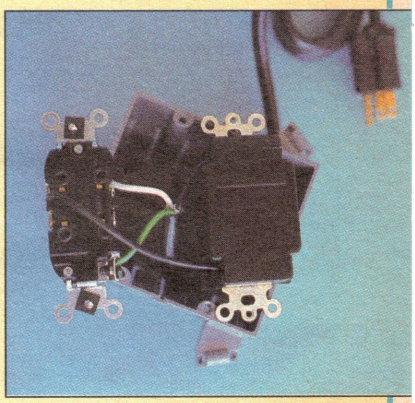


■ LEFT: These are all of the parts that you'll need. Just make sure the cord, plug and outlet are the three-pronged grounded type. Grounded components make for a safer unit. Not that the Motor Break-in Timer is unsafe, but just because it's better to be safe than sorry. ■ CENTER: A wire stripper, screwdriver and a pair of pliers are all you'll need. ■ RIGHT: Start by removing the nails from the gang box with the pair of pliers. If you use a metal gang box, you can skip this step. Be aware that a metal box does have its drawbacks. See text.

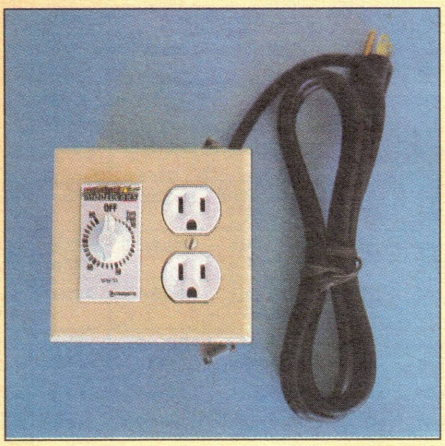
MAKING A MOTOR *Break-In* TIMER







■ LEFT: Cut about six inches off the end of the power cord and set it aside. You'll need the piece of black wire later. ■ CENTER: Push the end of the cord through one of the holes in the back of the gang box. Remove enough of the cord cover so you can work. Using the gauges on the back of the outlet and timer switch as a guide, strip the ends of the wires to the proper size. ■ RIGHT: The wiring is very simple. The white wire goes to the neutral side of the outlet, the green to the ground and the black to the top of the timer switch. Connect the bottom connector of the timer switch to the hot side of the outlet using the piece of wire you cut off earlier.



It's simple and inexpensive. I mainly use it as a Motor Break-in Timer, but it has many other uses.

MOTOR BREAK-IN TIMER PARTS LIST

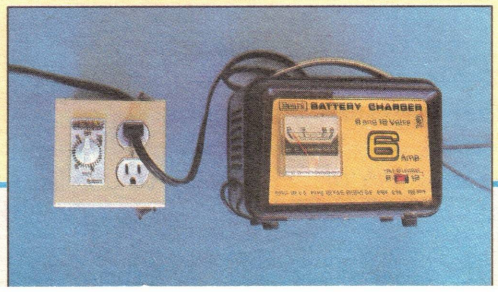
INTERMATIC - 60 min. Shut-Off Timer, model FD60MWC ($17.99)-$26.99
PACIFIC ELECTRICORD - 8-foot, 13 Amp, 16 AWG appliance cord Cat. No. C-1326-008-BL AIW 3026 ($3.99)
LEVITON - grounded, three-pronged outlet no. EDB3 ($0.49)-$2.49
LEVITON - duAl switch and outlet plate $0.19-$0.99 ($0.29)
RACO - plastic, two gang, nail-on box ($0.99)

** Parenthesis indicates price paid. Total cost of project excluding tax: $23.75.*

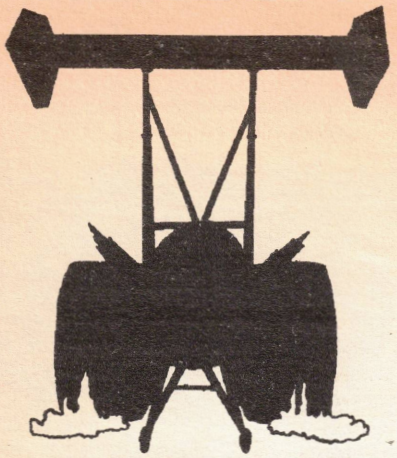
This is a simple, inexpensive, gadget that I use to break-in motor brushes and bushings. Although it was for exactly these same purposes that I put this thing together, I quickly realized there are many other useful things in RC (and outside of RC too for that matter) that this handy device can be used for. The completed unit is basically a switch that allows you to turn on an AC-powered device for a specific amount of time. It will then shut itself off after the user-specified amount of time passes. The beauty of this unit is that it will work with just about anything that runs on 110 AC current and draws less amperage than the lowest rated component that you have in your circuit. (More on this later.) I've used it for such things as limiting the trickle charge time on my non-computerized battery charger, which is really handy if you don't like to let your batteries "simmer" for too long after they have peaked, to turning off my coffee (RC

continued on page 33

BY BEN CHIU



To break-in motor bushings and brushes, I connect the Motor Break-in Timer to an old 6/12-volt battery charger from Sears to power the master motor.



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  Hobbies and More, Darlington, SC
- **BAY STATE NATIONALS (June 23,24,25)**
  Maryland Dragway, Clinton, MD
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  Northstar Dragway, Anoka, MN

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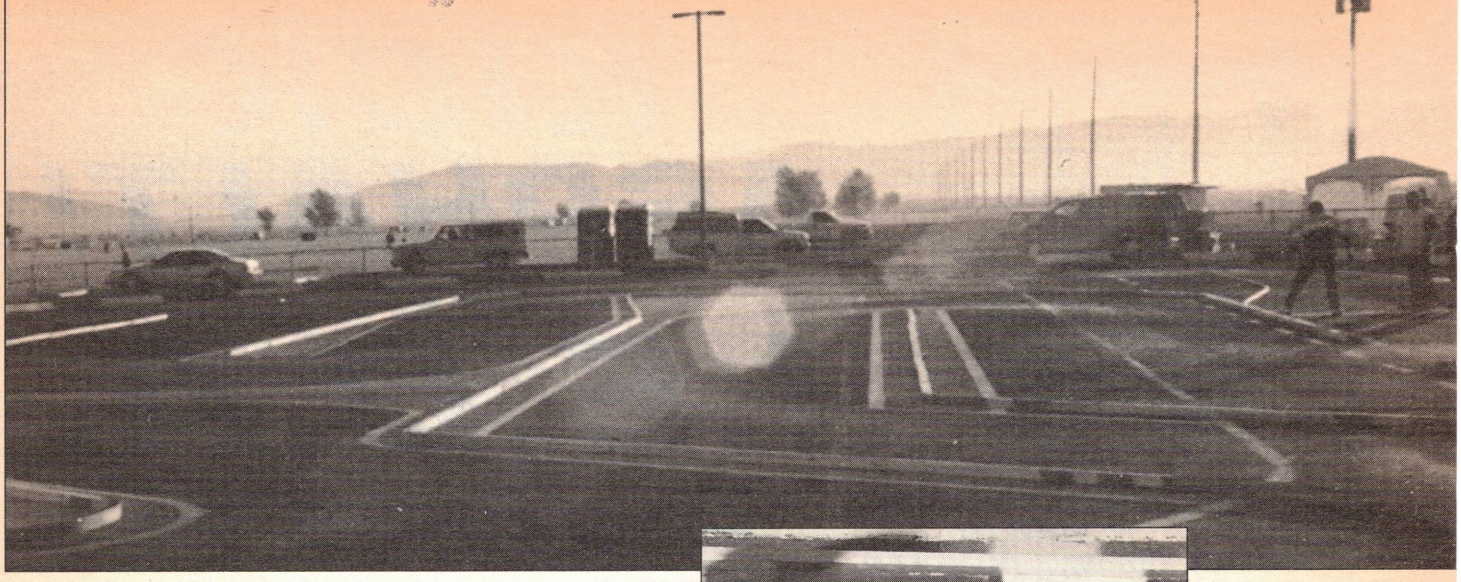


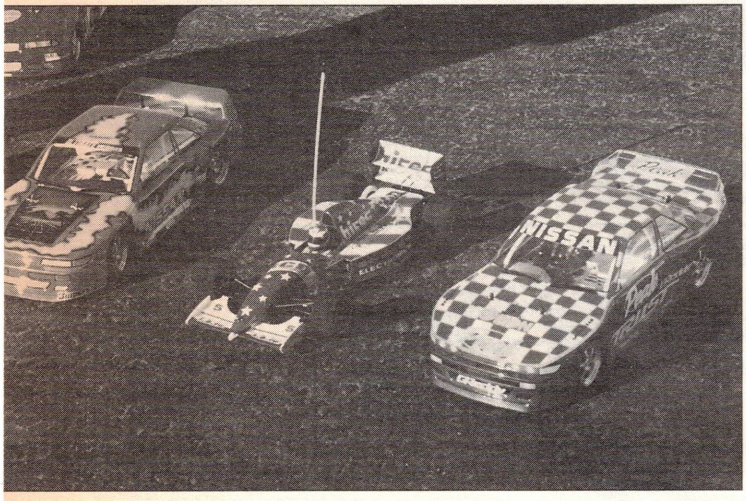
1994 NORRCA ROAD COURSE NATIONALS

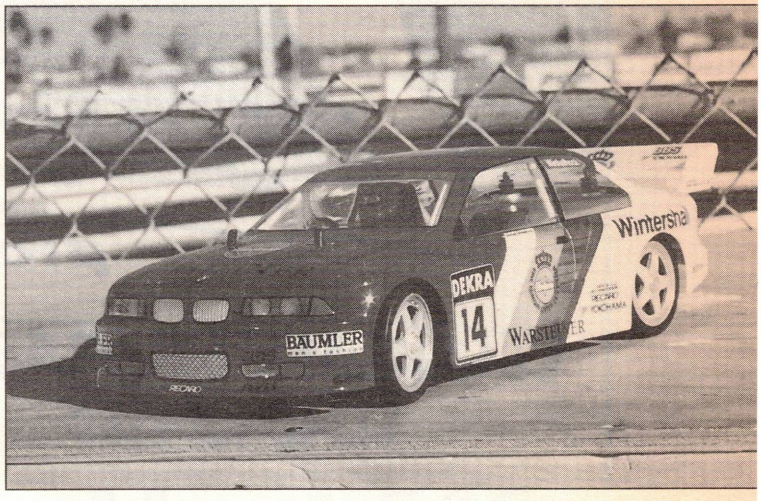
BY RON PONCE



An early morning at Silverbowl Raceway.

This is the winning concours car belonging to Mel Levine from Atlanta, Georgia.



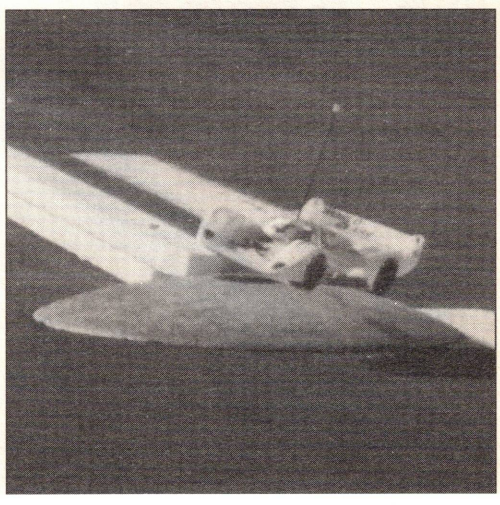


Formula One/ Touring car concours winners left to right: First, Steve Nguyen: Second, Bill Dunbar: Third, Bob Sager.

Silverbowl, Las Vegas, Nevada: Great weather, plenty of racers and a dynamite track. Who could ask for more? Well, how about two new classes debuting at the Nationals, Tamiya and Kyosho's Formula One cars and Touring Car/ Sedan. With the new additions, there are now eight different classes. Some drivers went for their own honorable "Ironman Award," competing in at least three of the eight different classes.

Starting the show: Saturday began with the infamous drivers meeting with NORRCA President J.R. Sitman explaining the race schedule and the fact that all expert classes would have triple A-mains. Local Director Steve Strobl and his assistant Ken Green, made sure everyone ran on schedule and had a good time racing.

continued on page 34



Here is a fine concours car belonging to Bob Lourenco that didn't even place.

One of our 1/12th scale cars going for the airborne approach.

HOT TAKES CONTINUED FROM PAGE 8

Jon Orr's RC12LS to the top spot in the Cleveland U.S. Indoor Championships. Mike Reedy reports that his motors also won the 1/12 ROAR Champs, the 1/12 NORRCA Champs and IFMAR's 1/10 World Champs. What a record! . . .Orion's Panasonic batteries were under the shell of Orr's race-winning entry, along with A-Main finishers Josh Cyrul, Kevin Jelich, Mike Lufaso and Andy Griffiths. . .Uh Oh: A call from our friend Matt "I'm with the band" Gilmore of Horizon Hobby pointed out that the cover line on the February issue that read "Apex 10" was in error—the 10L gas conversion by Dynamite Products is *not* the same animal as the Dynamite Apex 10 gas pan car we reviewed back in August. The fool responsible for the erroneous headline has been dealt with and relegated to the shipping department from whence he came. . .Speaking of shipping, Dan Moynihan is hard at work on a new program he calls FUNCAR (an acronym for Fundamental Understanding Naturally Creates Academic Results) that matches RC cars to reading and arithmetic in order to corral students into enjoying learning by participating in the fun world of RC cars. Moynihan has arranged for an RC track to be installed at the LA Auto Show in order to expose the 700,000 visitors to the excitement of RC racing. •

BIG TIPS CONTINUED FROM PAGE 14

Found at most auto parts stores and boat marinas, these liquid stabilizers will keep fuel in good shape by keeping moisture out, maintaining octane levels and protecting the fuel mixture's oil lubrication qualities as well.

TRICK OF THE MONTH

Those of you out there who paint your own Q-scale Lexan bodies (without the use of an airbrush), take note: after checking out several stock car bodies on Gary Crumb's Gram Cracker cars, I asked him what type of paint he used on the good-looking shells. To my surprise he informed me that all of the bodies (including ones multi-colored) had been done with regular Krylon brand spray paint! At first it was hard to believe; but, I've witnessed these Krylon-sprayed bodies take some serious hits with no paint flaking off or dissolved due to fuel spilling on the inner finish.

Plus, Krylon is available from a ton of sources across the country and comes in a wide variety of colors, including neons. Not only that, it's sold in nice big spray cans as well. So. you don't have to buy a zillion small cans of paint anymore to do a Q-scale-sized Lexan body.

UPDATE OF THE MONTH

In the recent March, 1994 issue, I covered the building process for a 16-ounce tank for the QSAC outlaw stock cars. This tank style was used on the 1994 Outlaw championship-winning car of QSAC co-chairman Bob Moore.

Since the first few tanks were built by myself and used, one small modification has been done to improve performance. The drilled 10-32 fitting used to vent the tank (first mounted on the tank's filler end) has been relocated to the opposite end of the Du-Bro tank. This was done to attempt to get a full 16 ounces of fuel when refueling the car. Final tests haven't completely proved this modification out yet, but you should be aware some racers are trying it. Like the eight-ounce Grand National tank done two years ago (in this column) the larger Outlaw fuel cell looks to be a winner in QSAC.

CLOSING COMMENTS

Hopefully this month's bits and pieces can help out a big percentage of the Q-scalers out there. Between the engine, body, fuel tank and gasoline storage hints you should find something that will relate to your particular large-scale RC vehicle. Moving on toward next month's column, look for an in-depth report on some new styles of car stands. Some enterprising Q-scalers have found several new ways to have a suitable work/storage zone both at home and at the track for their cars. Along with that information, we'll also have some early 1995 race results and any late-breaking new stuff seen at the races. Of course, we won't forget the usual Big Tips stuff seen here, because *RC Model Cars* will always be your only source for quarter-scale RC cars. And that's the bottom line.•

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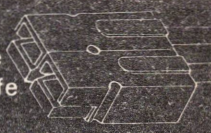

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STARTING OUT CONTINUED FROM PAGE 16

called the intake stroke. During the intake stroke, the intake valve in the cylinder head opens. While the intake valve is open, the piston moves down, which pulls the air/fuel mix into the cylinder. Once the piston has moved down in the cylinder as far as it goes, the intake valve closes.

Next we come to the compression stroke. During the compression stroke, both the intake and exhaust valves are closed, and the piston moves up to compress the air/fuel mixture into a smaller space. The reason for this is so that the fuel in the cylinder will burn more effectively, allowing the engine to create the most power. Perhaps you've heard of a compression ratio. This refers to how highly compressed the air/fuel mixture is in the compression stroke. For example, a compression ratio of "ten to one" (10:1) means that the engine compresses the air/fuel mix to ten times the normal atmospheric pressure at sea level.

When the piston gets to the top of its travel in the cylinder, the spark plug ignites the air/fuel mixture. At this point, the air/fuel mixture more or less explodes, although there are those who say that the air/fuel mix doesn't explode, but rather just burns really fast. (Correct me if I'm wrong, but wouldn't one definition of explode be "to burn really fast"?) At any rate, as the air/fuel mix explodes, it creates a great deal of pressure inside the cylinder, and it's this pressure that drives the piston down in the cylinder. This is called the power stroke.

Last, we come to the exhaust stroke. After the air/fuel mix has exploded, what's left in the cylinder is exhaust gas. The exhaust stroke is when the exhaust valve opens, and the piston moves up in the cylinder. This pushes the exhaust out of the cylinder. After that, the intake valve opens as the piston moves back down, and the whole process starts over.

Only one of the four strokes is "powered" (the power stroke). So how can the piston move up and down inside the cylinder for the other three strokes? There are two reasons. Remember that I said that four-stroke engines usually have four, six, or eight cylinders. The result is that at least one cylinder is in the power stroke at all times. The other reason? Momentum.

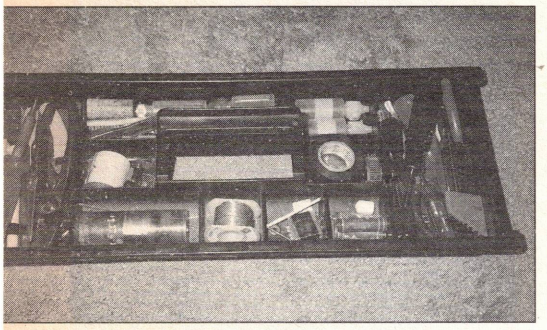
TWO-STROKE ENGINES

It's a bit more critical that you understand this section, because as I said before, the engines we use in RC cars are two-stroke engines. I'll talk specifically about an RC car engine in this section. Just keep in mind that not all two-stroke

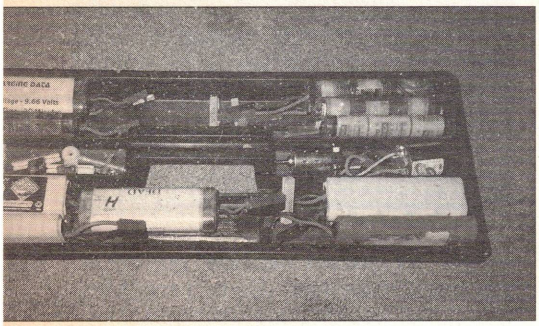
continued on page 32

THE PERFECT PIT BOX

You *Can* Take it With You



The two trays inside the box stack together, and multiple compartments made this the obvious choice for tools and assorted small items. This is the lower of the two stacking trays.



The second stacking tray. Open compartments and snug-fitting battery packs make this the perfect configuration. There are 14 packs here, and the tray will neatly accommodate two more. The raised center trays hold motors, wheel wrench and discharge resistors for easy storage.

Everybody has one, it's a necessity of the hobby. The toughest part is deciding which pit box at what size and how much can be crammed into it. I've outgrown two pit boxes as my collection of stuff grew, before finally settling on one that I think a lot of racers and backyard bashers alike, could use. I scored a Rubbermaid toolbox with two removable trays at BJ's Wholesale Club for $18. I measured it to ensure my charger would fit inside and mentally laid out everything in the box before I purchased it. The best way to estimate your requirements is to find an old toolbox or tackle box and start filling it, trying different combinations to pack the maximum stuff in the minimum amount of room. The inside of my pit box measures 21

continued on page 53

BY MATTHEW VERROCHI



The first priority for the pit box was function. This is the third and final size and type that I have settled on. Besides the company logos, I have a gearing chart I composed on my computer and attached to the front of the box.

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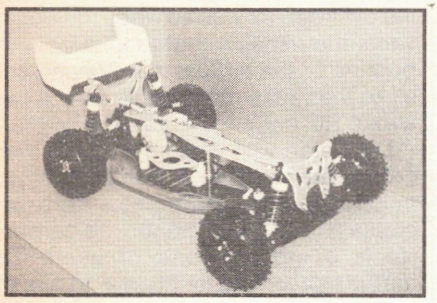
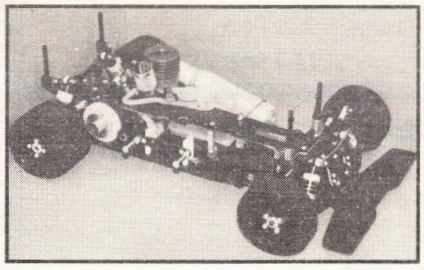
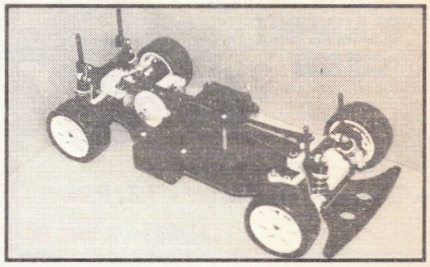


YZ-10N
1/10 4WD OFF-ROAD BUGGY
1993-94 1/10 IFMAR WORLD CHAMPION
1994 REEDY RACE OF CHAMPION
1994 CACTUS CLASSIC CHAMPION
1994 ROAR NATIONAL MODIFIED CHAMPION

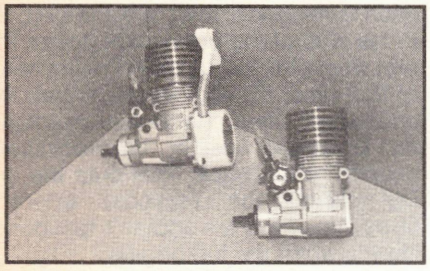


YR-10GP
1/10 4WD GAS 2-SPEED ONROAD KIT



YR-4K
1/10 4WD NARROW ON-ROAD SEDAN

YR-4GTS
1/10 4WD WIDE ON-ROAD SEDAN
1994 NORRCA NATIONAL CHAMPION
1994 NORRCA CALIFORNIA STATE STOCK CHAMPION
1994 NORRCA CALIFORNIA STATE MODIFIED CHAMPION



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RX-12CS
.12 GAS ENGINES WITH OR WITHOUT PULL START

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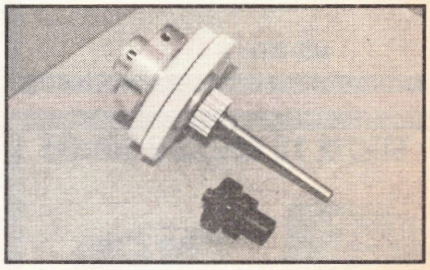
YZ-10GP 1/10 4WD GAS 2-SPEED OFF-ROAD BUGGY



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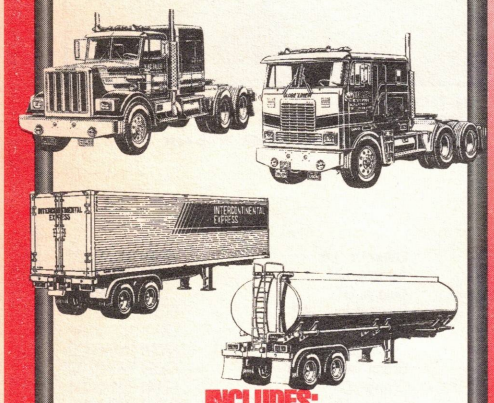

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STARTING OUT CONTINUED FROM PAGE 29

engines are alike.

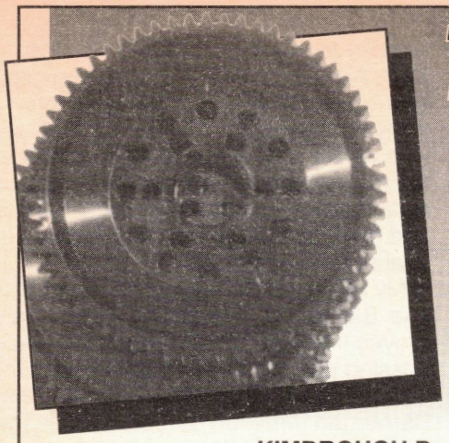
As far as construction goes, two stroke-engines aren't too much different from four-stroke engines. The main difference is that a two-stroke engine doesn't have any valves in it. Instead of valves, these engines have "ports." A port is basically a hole in the side of the cylinder wall, or as in the case of RC car engines, a hole in the sleeve. As the piston moves up and down, these ports are opened and closed. This controls the amount of the air/fuel mix entering the cylinder, as well as when the engine vents the exhaust that results from the burning of the air/fuel mix. Having said all of that, let's move on to how a two-stroke RC car engine actually works.

Let's start with when the fuel actually enters the engine. I won't cover too much about the carburetor here, because as I said last month, the carburetor is a story in and of itself. The carburetor's main function is to mix the fuel and air in the correct ratio to allow the engine to run properly.

Once the carburetor has mixed the air and fuel in the correct amounts, the air/fuel mix enters the engine's crankcase. The air/fuel mix is then held in something of a port of its own, which is sealed off by the crankshaft. The crankshaft, however, is hollow. One time during each revolution of the crankshaft, a hole in the side of the crankshaft opens the port where the air/fuel mix is being held. At that time, the air/fuel mix enters the crankshaft. Next, the air/fuel mix flows out a second hole in the crankshaft, located at the back. This puts the air/fuel mix into the crankcase, where it flows into one of the engine's fuel ports. Now is when the fun begins.

As the piston moves down in the cylinder (i.e. sleeve), the fuel ports are uncovered, allowing the air/fuel mix to enter the cylinder. At this point, the exhaust port is also uncovered. As the air/fuel mix rushes into the cylinder, the exhaust from the previous stroke is pushed out. The piston then moves up in the cylinder, closing off the fuel and exhaust ports. The air/fuel mixture is compressed during the piston's upstroke, and is ignited by the glow plug at the top of the cylinder. This forces the piston back down, and the whole process starts all over again.

As you can see, everything is pretty much happening all at once. In comparison to a four-stroke engine, a two-stroke engine can generate more power in a smaller package than a four-stroke engine can. Not only that, you only need one cylinder for a two-stroke engine. Then why don't we use two-stroke engines in our full-size cars? Because of a couple of disadvantages of the two-stroke engine. The first is noise. Two-stroke engines tend to be noisier than



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their four-stroke counterparts. The other reason is that two-stroke engines aren't particularly efficient as far as fuel is concerned. As I mentioned in the last paragraph, a two-stroke engine's fuel port and exhaust port are open simultaneously for a short period of time. Theoretically, as well as realistically, unburned fuel can leave the fuel port, and then go straight out the exhaust port. You know that "smell of nitro" in the air that everyone thinks is so cool when you run a gas car? Part of that smell is unburned fuel coming out of the exhaust. This is, of course, a much better option than sticking your nose directly into a bottle of glow fuel.

THE END

That's about it for this month. If you've got a question, comment, or article idea, let me hear from you. Write to me at Starting Out, Box 2459, Capistrano Beach, California 92624-0459. •

BMW M3 CONTINUED FROM PAGE 22

provide ample stopping power when needed. A neat aspect of the O.S. .11 engine is that it bolts directly to the chassis plate using its own alignment holes. There is no need to fool around with setting the proper gear mesh, as the clutch bell and transmission line up perfectly every time! Of course, if you want to substitute power plants, additional alignment holes are provided.

In order to achieve the proper scale effect and better onroad performance, the "Bimmer" has a somewhat narrower track than the standard Inferno. The body comes coated with a protective film, so don't forget to remove it before you add the decals. Speaking of which, there are two huge sheets, so take your time because it is going to take you a while to apply them. The finished design is worth the effort!

Mounting the molded suspension arms, shocks and radio gear is all that is required to get the BMW running. The black Kelron shocks, which are kit supplied, are a breeze to build, are leak-free and offer plenty of adjustment. Kyosho provides several damper disks and the ride height spring pre-loaders are notched for easy adjustment. The chassis plate looks somewhat cramped, but I was surprised how easy it was to get the radio gear in place. Steering, throttle servos, receiver and power supply are mounted to the radio plate, which not only helps stiffen the chassis, but makes maintenance a snap. The radio tray simply mounts with a couple of screws at either end.

CRANK IT UP

With the fuel cell topped with 20% nitro and the carb set on the rich side, a few quick rips of the heavy-duty pull starter brought the "Bimmer" to life. The first couple of tanks were used to break in the powerplant and check out the radio and throttle adjustments. After a while, I cleaned out the mixture and started to toss the BMW around. It has been quite a while since I drove a 4-wheel drive and I almost forgot how easy they are to drive. Just point it to where you want to go and mash the throttle! The car is very responsive to steering input and the two-speed transmission is a real kick (literally!) when it jumps into overdrive.

After each topping off of the fuel cell, it took a while for the O.S. 11 engine to get back up to operating temperature, but once there, it produced a fair amount of power to get the BMW out of a tight turn. Once I got the right carb setting, I spent some time playing with the tranny gear shift timing so that it upshifts around 80% of the engine rpm band. For reasons of safety, it's recommended that you adjust it only when the engine is not running!

The motor/tranny combo combined with way-cool scale rubber treaded tires and highly efficient Kelron shocks make the "Bimmer" a blast to drive. Considering that it lacks bearings and a high-zoot powerplant, Kyosho has another winning ride on their hands. With a huge choice of aftermarket hop-up items available, the BMW M3 GTR has potential to become a land-based Cruise missile on rails. Keep watching, 'cause "I'll be back. . . ."

PRODUCT SOURCES

Great Planes/Kyosho, Box 9021, Champaign, Illinois 61826 (217) 398-6300. •

MOTOR TIMER CONTINUED FROM PAGE 28

"go juice") maker. I'm sure you'll find other uses for it too. So with that out of the way, let's move on to the project.

WHAT YOU'LL NEED

At the heart of this gadget is a spring-wound shut-off timer. It's the type of timer you'll find controlling the heat lamp in some hotel bathrooms. You'll also find similar timers used on Jacuzzis. (Boy, it must sound like I frequent nice hotels with Jacuzzis!) After some searching, I found that these timers can be purchased at hardware stores and home do-it-yourself warehouse-type places. Be aware that I've also found that the price of these things vary greatly from store to store. I've seen them as low as $17.99 and run as high as $26.99! This was for the same exact product, so look around. (Being an "RC On A Budget" kind of guy, can you guess where I bought mine?)

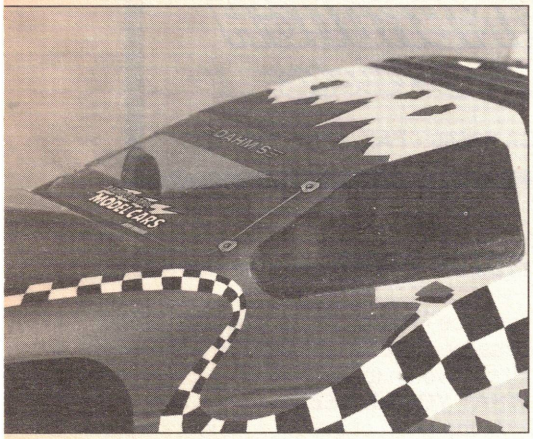
Anyway, the one that I bought is made by Intermatic. Your local stores should carry a switch like the one I used. I wouldn't be surprised if they carried the same exact one, as Intermatic is quite a large company. If you really live out in the boonies and can't find anything, call Intermatic (815-675-2321) and they should be able to help you out. I bought the 60 minute version, model number FD60MWC. They make 30- and 15-minute versions, but they cost the same as the 60. Seeing that a 60-minute version can also be set for 30 or 15 minutes, it made sense to buy the 60-minute unit since it would be the most flexible.

The next item you'll need is a cord with a grounded, three-pronged plug. You can build your own, or may even have one from an old appliance laying around in the house. I compared prices of making my own with using some three-lead power cord wire and adding one of those replacement grounded, three-pronged plugs, but the cost of that assembly was more than if I bought a ready made cord and plug. The one I used here (I paid $3.99) is made by Pacific Electricord (310)

continued on page 51

PROJECT 10T CONTINUED FROM PAGE 24

vehicles. So it was no surprise when I opened my diff to find not so much as a molecule of lubrication left on the balls. Which prompted me to check out some means of rectifying the situation. The solution was MIP's Super Diff Rebuild kit. I've had great success with their shafts, so it was the most likely conclusion. The kit supplies polished diff rings, custom carbide balls and special diff lube.



Check the angle on that windshield. It's about one notch up from zero degrees. Hey, it's legal!



Thumbs up on the quality and fine detail. Dahm's Pro-Mask was used to create the multi-colored paint scheme. Ample room on the inside of the body for the shock towers and on the outside, plenty of room for your number plate.



Serious spoilage on the rear deck is great for gas fuelers like the Nitro Hawk. The spoiler is included in the body shell. You also get detailed grille and tail light decals and, of course, Dahm's sponsor decals.

Because the truck is getting on in years, I figured a fresh set of diff outdrives (diff halves) would be the proper thing to do. The good people at Barracuda sent me a set of outdrives and also a gear adapter hub. These products are both ultra-light. Just holding them in my hand I could tell a huge difference in weight. These parts will definitely cut down on rotating mass. The gear adapter replaces the slipper clutch assembly, which is a hefty weight loss. The outdrives are some beautifully machined pieces. They were originally made for onroad use and I was cautioned that they were extremely high wear. Especially when used for offroad racing.

DOING THE TRANSMISSION, STEALTHILY

With my l0T manual in hand I proceeded to revitalize the number-one link in this chain, the Stealth transmission. The gears looked in good shape. At a minor expense, the thrust balls were replaced. The rebuild was done strictly by the book, with the exception of a few trick parts previously noted. With the transmission assembled and all bolts snugged down it was time for a new look.

DAHM'S SLAMMER BODY

I was graced with another finely detailed body from Dahm's Racing Bodies. The "Slammer " fits the l0T chassis tub so tightly you can use Velcro to hold it on, which is great for the concours body that you don't want to drill holes in. The rake on the front windshield is awesome. The Dahm's body has excellent aerodynamics, which include a rear spoiler. Because this body fits the Nitro Hawk, the spoiler will be a great asset for gas vehicles. The body also fits the Blue Eagle, LSII and the Losi LXT. A neat set of decals are also included with the body.

TRACK TRIALS

Now for the fun part: it's time to thrash! My friend Dan and I usually get together at lunch break to do some parking lot racing. With a few strategically place pylons we have a nice little oval track layout. This is a convenient place to start logging in some run time. Since we didn't have a timing marshal, our four-minute race turned into an enduro, (seven minutes plus). The last one running gets the win. Our lunch time only allowed for two battery packs and the victories were divided one a piece.

Well, we have not yet begun to torture the new tranny rebuild. So, it's off to the local dirt track for some Saturday night offroading. The track layout was perfect for my tests: lots of twists, turns and bumps. All in all, a very tight course. With a couple of practice packs depleted it was just about race time.

After struggling all night with an erratic steering problem (my servo saver was binding on the chassis tub) I ended up in the stock B-main. Unfortunately the truck outperformed my driving ability and I finished in the number six spot with 10 laps, 4:03. Although I did hold a good overall average of 11 laps, 4:12. I know I'm only a novice—so who am I to talk. I'm the guy who wins a race every now and then. I'm the guy looking for that one part that will make my car run just a little better handle and drive a bit smoother. I could be you. That's a scary thought!

My report? Fine quality parts from MIP and Barracuda. The Super Diff kit only proves the fact, MIP is a *hot* team that's passing winning products on to the consumer. Though the diff outdrives from Barracuda may be priced out of the novice's budget, they provide serious racers with some great parts options. I was originally told the outdrives were only good for about 5 to 10 runs. At this point there are 8 runs on the assembly and I aim to make liars out of those guys. The diff is still smooth as the first run. I'd wager it will still be just as smooth two months and about 20 runs later. Stay tuned for the results! In the meantime I'll be checking out the new MIP Gold Shafts and Blue Seals along with more RPM goodies. This series has more sequels than "Friday the 13th." So keep reading *RCMC* for the latest updates on Project 10T. It won't sit still!

PRODUCT SOURCES

Associated Electrics, 3585 Cadillac Ave., Costa Mesa, California 92626. (714) 850-9342.

Barracuda, Box 126, Glasgow, Montana 59230. (406) 228-4569.

Dahm's Racing Bodies, Box 360, Cotati, California 94931. (707) 792-1316.

MIP, 746 E. Edna Pl., Covina, California 91723. (818) 339-9008.

RPM, 14978 Sierra Bonita, Ln., Chino, California 91710. •

NORRCA VEGAS CONTINUED FROM PAGE 28

Manufacturers who showed up: Dave Kisby-H.P.I., Mace Horowitz-Bolink, Garry Owen-PSE/Parma, Mike Reedy-Reedy Modifieds, Ken Jones-B.B.R., Tyree Phillips-Novak, Jay Kimbrough-Kimbrough Products, Chuck and Jim Burns-Stealth Batteries, Suparat Uahwatanasakul-Maxtec and Bud Sly-Precision Motor. Other sponsers who made this a great success were Andy's Bodies-Team Cobra, Pen Racing, McAllister Products and Twister Motors. NORRCA would like to say thank you to all the above manufacturers.

Let's hear it for Mitch Streeter for some super announcing, warning drivers about accidents on the track and for making the racing exciting for the crowd. The computer duties were handled by Susie Edwards and Stephanie Sills, who kept track of all the racers' laps.

QUALIFYING

Sportsman Stock had Bob Lourenco as

continued on page 52

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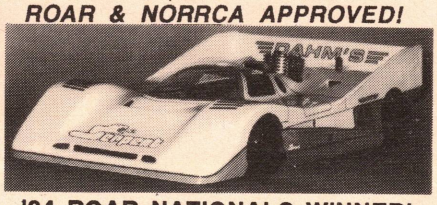

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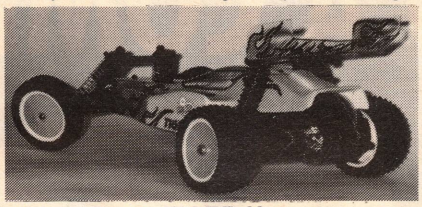

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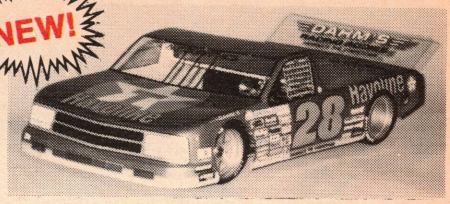

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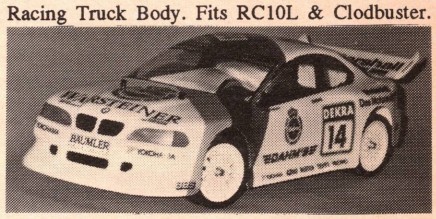

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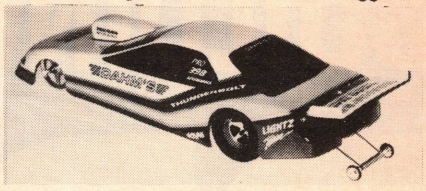

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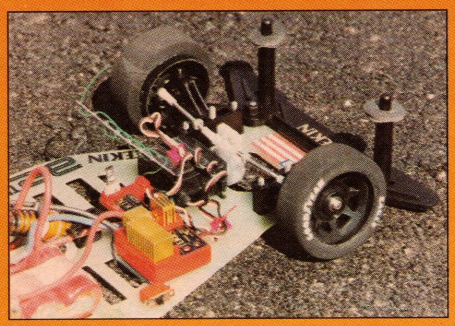
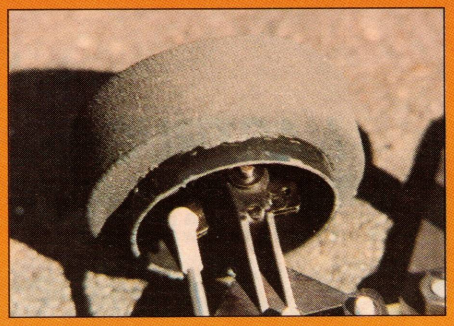
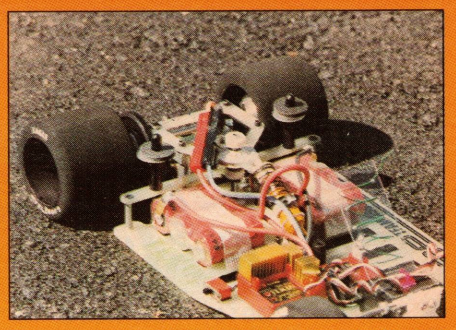


The standard front end is a good, basic start for the racing we have planned. Caster wedges were added under the steering arm blocks. A large Kimbrough servo saver was added to the Futaba S-148 servo along with RC Performance Specialties' tie rods.



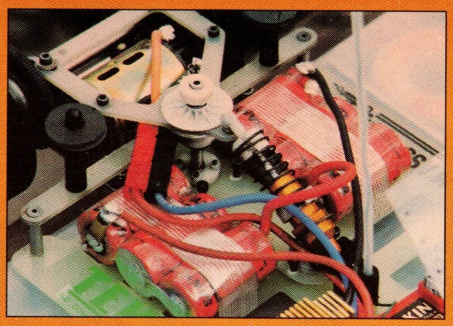
TRC blue foam is what we started with in front. The tires were cut back to reduce rolling resistance. Cutting the front tires also helps take away some of the steering.



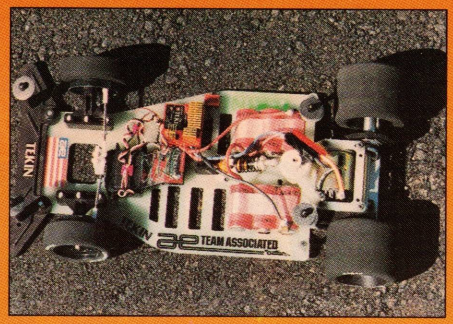
The rear suspension was left intact; only the nerf bars were removed. The battery was split into a saddlepack configuration and moved to the rear-most slots for more traction. Duratrax 1-1/2-inch body posts were used on the back to accommodate Dahm's Tornado body.

BY KEVIN MEYER

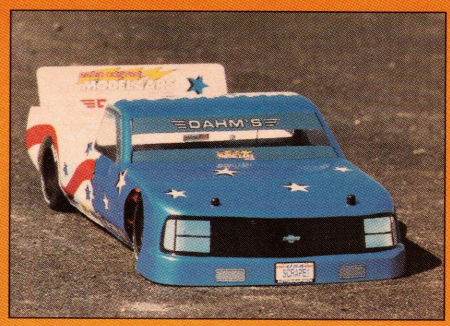
BUILDING A COMPETITIVE DRAG TR



The addition of the rear tweak screws will stiffen up the rear suspension and give more adjustability for different tracks.



Outward appearances of the car indicate it's still pretty much box stock. Note: in my haste, the center brace between the steering arms was removed. Replacement of this will greatly increase front end stability.



Like the plate says "SCRAPE!" I love it low! But, alas, the body must be raised to the proper level before the test runs could begin. Several washers and body pads were added to the front mounting posts. Because of the added meat on the rear, extra foam pads are needed here also to keep the tires from rubbing on the body.

Dahm's Racing Bodies makes the perfect match for our Drag Truck project. Awesome rake and smooth aerodynamics make the word "drag" a contradiction.

UCK

With the demise of the local carpet track, I was forced to look for another venue for my pan car (and an excuse for this project). This sent me cruising down alternative RC avenues. I didn't have to look far. My race buddy and photographer, John Davis, alerted me to the fact that there was a 1/10-scale drag strip set up behind one of the local department stores.

My car has an LTO chassis, though John's was a better candidate for this project as it has a basic fiberglass 10LSS chassis and it was long overdue for a revamping. His

continued on page 58

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ELECTRIC MOTOR THEORY:

WHAT IS THE BEST MOTOR FOR MY CAR?

BY BEN CHIU

With all of the different models of motors available today, e.g. wet mags, different winds (7 through 30); types of winds (singles, doubles, triples, quads); different wire gauges; bushing or ball bearing; hand wound, machine wound, can styles; heatsinks; brush orientation; timing; etc., deciding on a "killer motor" can be pretty confusing for both the novice and pro alike. Of course the best way to choose a motor is to try it. Unfortunately, in order to try a motor, you have to buy it first. Most of us aren't factory sponsored, so we just can't afford to buy one of each type of motor to see if it fits our needs. You can always call your local hobby shop or a motor manufacturer and ask them to recommend a motor. They can usually give you a fair ballpark estimate on what will work good. But most of us aren't interested in what will work good. We want to know what will work best!

What will work best for you depends on a number of variables, like the type of car you have (1/10- or 1/12- scale, 2WD or 4WD, monster truck, onroad, offroad, oval, or super speedway); the type and condition of your track (long and fast with only a few turns, short and quick with a lot of turns, hard-packed or sandy, etc.); the kind of batteries you run (6 cell, 7 cell, SCR or SCRC); your driving style (are you a relatively smooth driver, or do you drive like your hair is on fire and pitch your car into every turn because power slides look cool? Do you use the throttle like an on/off switch or are you smooth on the throttle?); and the amount of run time you need (4 minutes, 6 minutes, or enduro?).

Most manufacturers try to cover all the bases by putting out motors that will satisfy the largest segment of racers and tracks, and most have good suggestions. The only problem is they (most likely) have never seen your track or car, so they can only make a guess. The rest is up to you. By learning about how motors work and a couple of other things, hopefully you'll be able to choose the right motor for your needs.

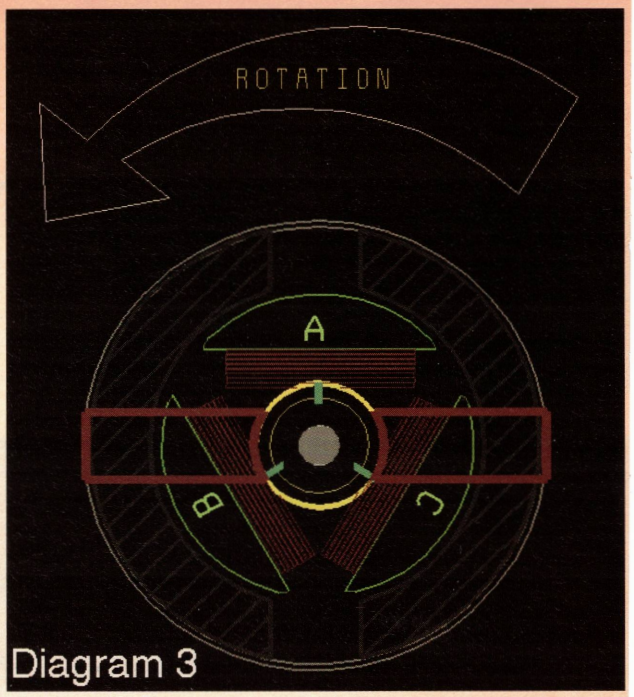

Diagram 3

BACK TO BASICS

D/C electric motors work on the same principles of electromagnetism that you probably learned about at one time or another. Do you remember wrapping wire around a nail, then connecting both ends of the wire to a dry cell battery and picking up paper clips with it? The wire wrapped around a motor's armature is doing the same thing. Instead of picking up paper clips, the armature is pulling at the magnets in the can (See diagram 1).

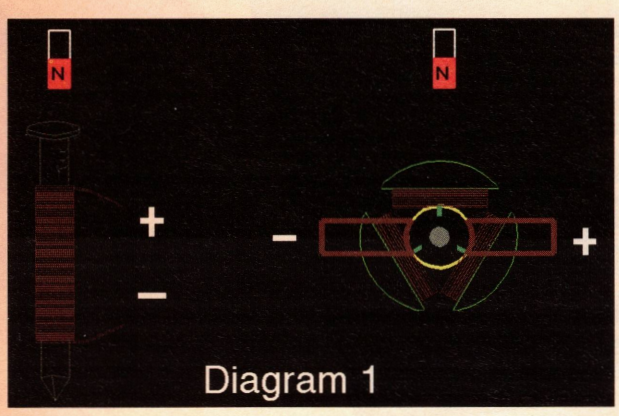

Diagram 1

As you may already know, every magnet or electromagnet has two poles. They are named just like the Earth's, North and South. If you reverse the current to your electromagnet, its polarity changes. The important thing to remember here is that opposite poles attract (N & S) and like poles (N & N or S & S) repel each other (See diagram 2).

Now let's look at how this works with our motors. Power comes from your battery and passes the electricity through you brushes to your armature.

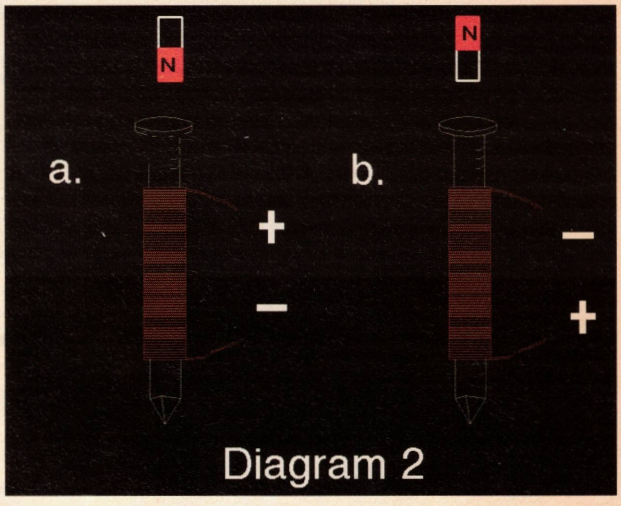

Diagram 2

An armature is designed so when the brushes make contact with two consecutive areas of the commutator, the winds of that lobe becomes magnetic. This repels the lobe from the magnet of the same pole, pulls on the opposite poled magnet and spins toward it. This spins the armature which spins the commutator. The brushes then make contact with the next two consecutive areas of the commutator. The next lobe becomes magnetic and spins toward its opposite poled magnet and so on (See diagram 3).

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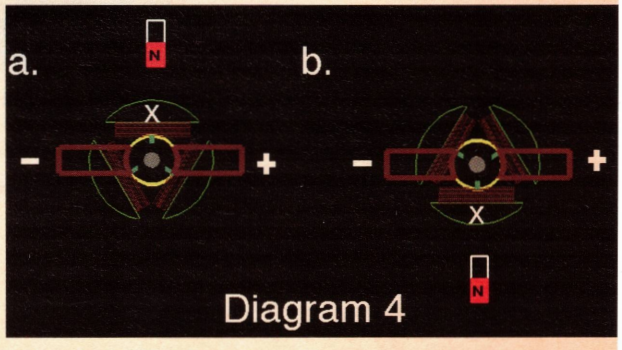


Diagram 4

TEAM ASSOCIATED

STILL

THE TOP NAME IN 1/10 OFF ROAD RACING

and 1/10 on road . . . and 1/12 on road . . . and 1/10 gas



R/C CAR ACTION TRUCK OF THE YEAR!

RC10T

A technological breakthrough! This truck's design is similar to the RC10, which has made it the dominat electric truck since its release. Winners race RC10T's.



R/C CAR ACTION CAR OF THE YEAR!

RC10

The RC10 has won 4 IFMAR World Championships, and was voted as Car of the Year by the readers of *RC Car Action Magazine.*

IFMAR WORLD CHAMPIONSHIPS
TWELVE

RC10L

On road racers have made our National Champion RC10L car the most popular on road car, and our RC10LSS has revolutionized high banked oval racing, shattering the speed record with an *85 mph run!*



R/C CAR ACTION CAR OF THE YEAR!



R/C CAR ACTION CAR OF THE YEAR!

RC12LW

Our family of RC12 cars have won 6 IFMAR World Championships. They're tough to beat!

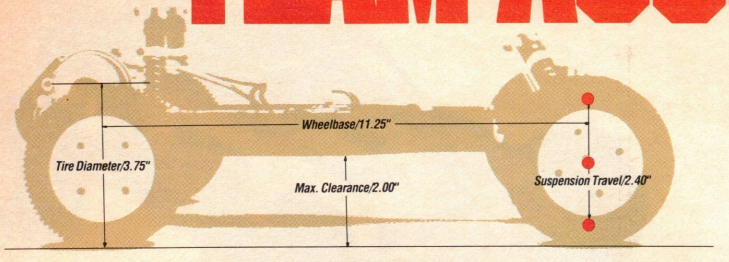


RC10GT

The most advanced 1/10 gas truck available anywhere, setting new track records everywhere.

TEAM ASSOCIATED
3585 Cadillac Ave. Costa Mesa, CA 92626
714-850-9342 fax 714-850-1744

TEAM ASSOCIATED TAKE TO A HIGH



WE GAVE EVERYONE ELSE A HEAD START AND THE RC10T STILL WON ITS FIRST RACE!

When our RC10T prototypes were first rolled out to the Florida Winternationals we were up against the top truck teams from all over the world. And most of the competition had the benefit of over a year of development.

Well, the Team may have been short on truck racing experience, but we catch on real fast. Up against a field of over 400 hostile entries, our RC10T's finished first and second.

What makes the new RC10T a winner from the start is what has produced an unparalleled nine IFMAR World Championships for the Team. Every component of every Associated race car is engineered and competition-tested until there is no competition....it's the very best.

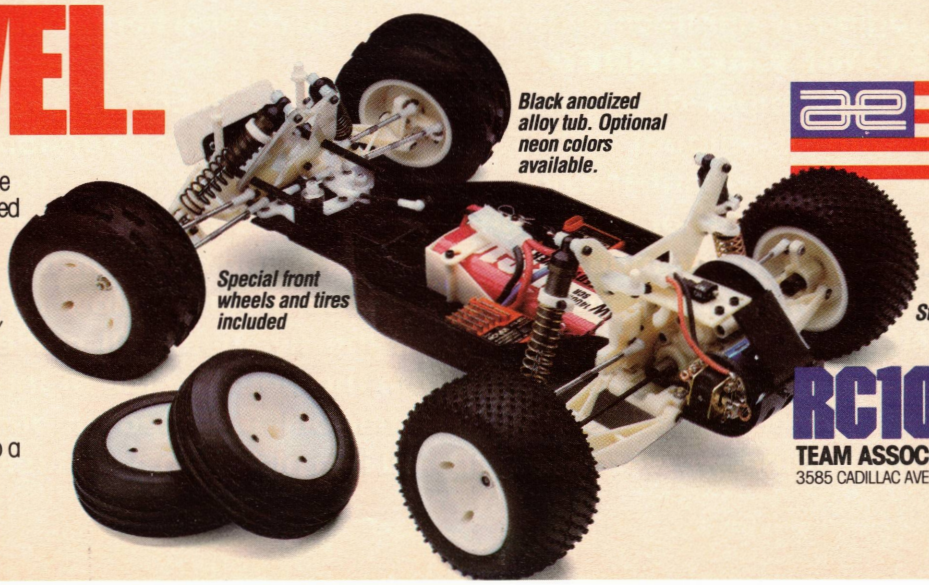
More specifically, the RC10T uses experience gained with our 2-Time World Champion RC10. In fact , the RC10T shares only the alloy tub, Stealth transmission and shocks with that legendary racer. No compromises were made. Our R&D team worked closely with ROAR specifications to produce the fastest, best handling and most reliable stadium truck available.

THE RC10T HAS WHAT IT TAKES TO OUTHANDLE THE COMPETITION.

The RC10T handles better, because its front and rear track are wider for higher cornering speeds. The longer wheelbase and special,



S TRUCK PERFORMANCE
ER LEVEL.



narrow one-piece bulkhead make the 10T more stable. Teflon-coated shocks and extra suspension travel keep you in control over the rough stuff. Our special, lightweight stadium pickup body, vacuum-formed in clear Lexan® tops it all off, and we've even tossed in a bonus pair of trick, narrow front wheels and tires.

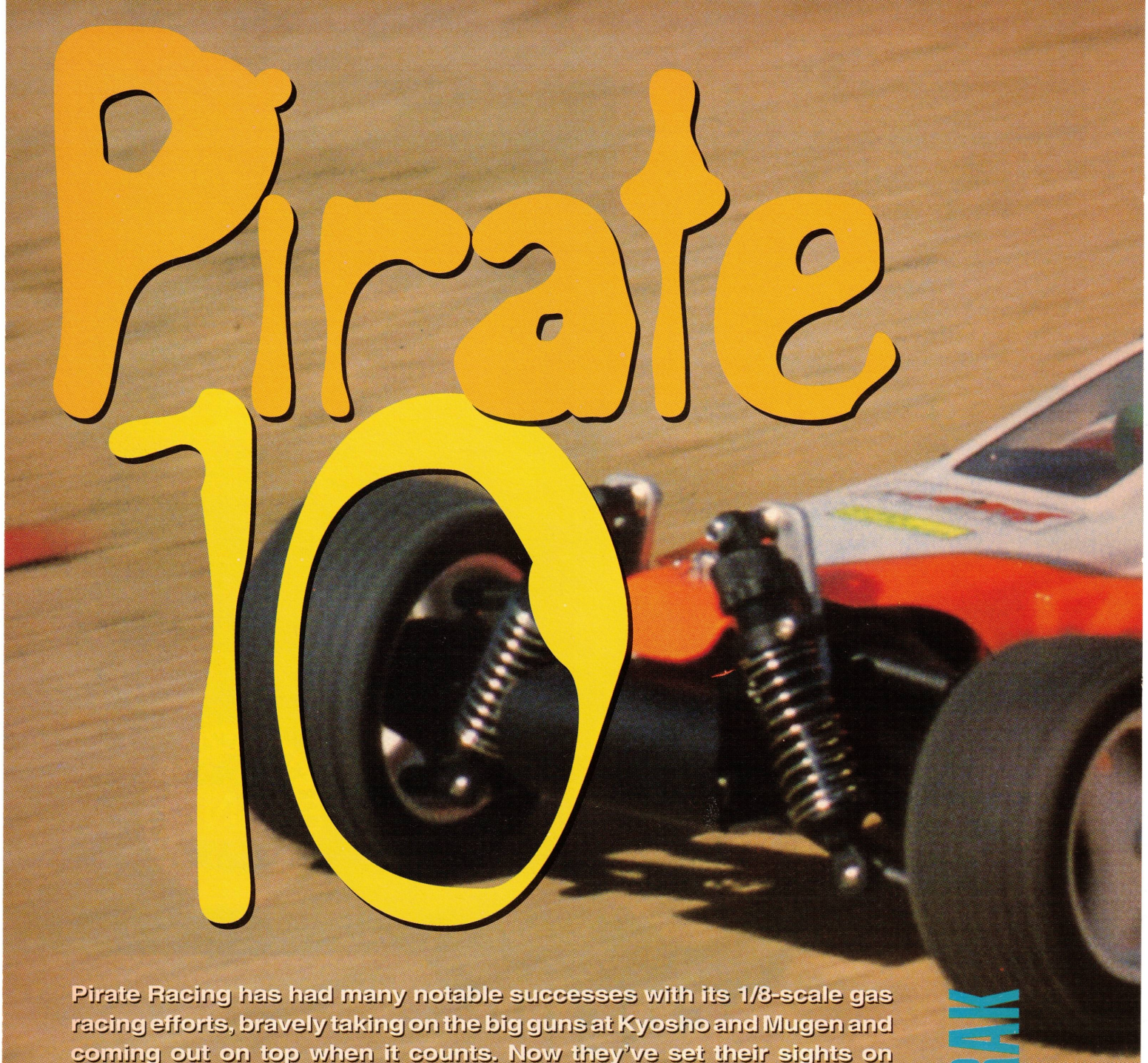
Now's your time to move up to a real racing truck, the RC10T.

RC10T

TEAM ASSOCIATED

3585 CADILLAC AVENUE/COSTA MESA, CA 92626

Pirate 10



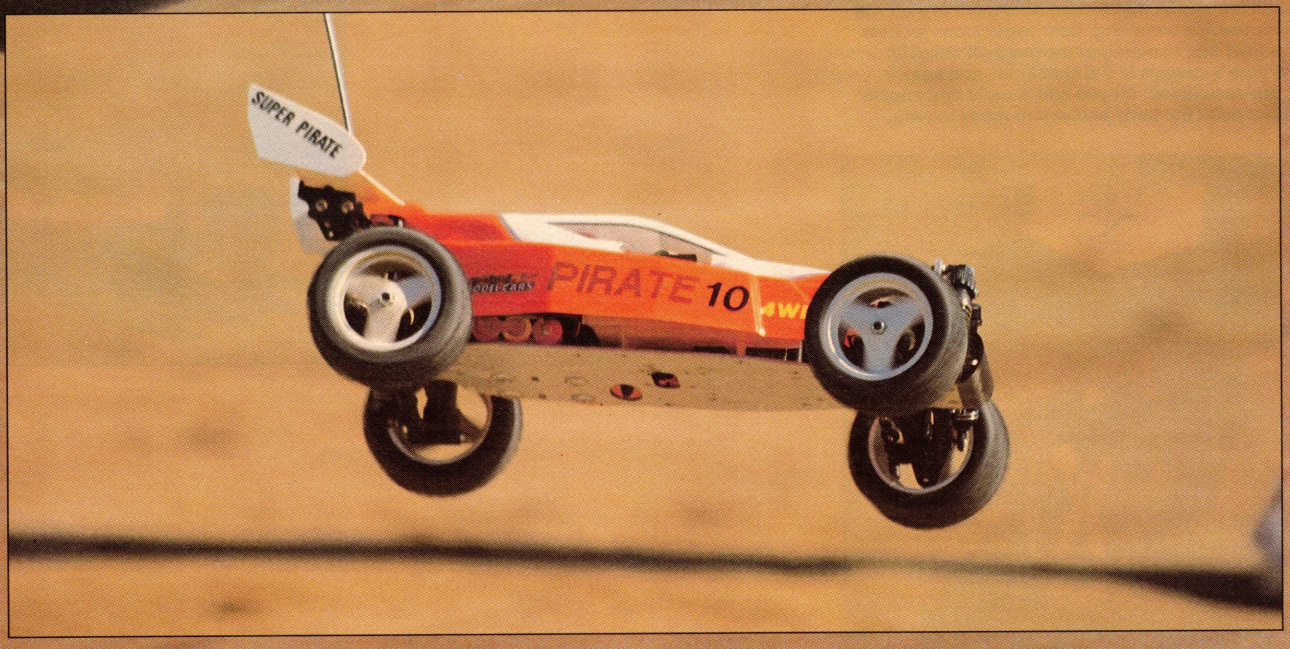
BY CHRIS DVORAK

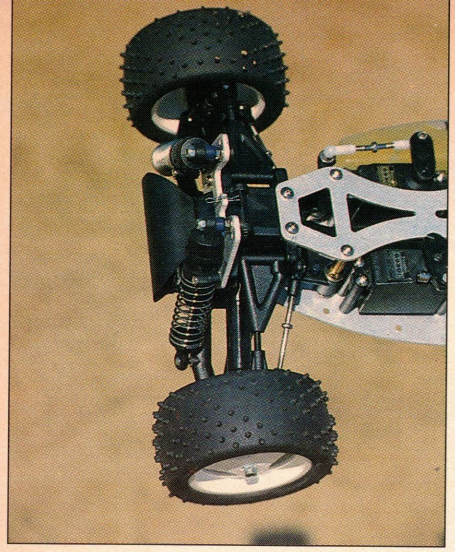
Pirate Racing has had many notable successes with its 1/8-scale gas racing efforts, bravely taking on the big guns at Kyosho and Mugen and coming out on top when it counts. Now they've set their sights on dominating the fledgling 1/10-scale four-wheel drive class with the new Pirate 10. Judging by our track tests, Pirate should do well here, too.

SOME ASSEMBLY REQUIRED

Pirate has done most of the work for us—the car comes pre-assembled, with or without a TNT .12 engine. Our test version included the .12 powerplant, the non-pull start version. Because the kit comes with mounts for the pull-start version, we bought the optional adjustable engine mounts from OFNA Racing to accommodate the engine without the pull starter. These mounts allow the engine to sit lower in the chassis so that the flywheel will make contact with the Dynamite Starter Box from the bottom side of the car. With the flywheel, clutch shoes and gear bell installed on our threaded-shaft engine, we were ready to bolt it in place, an easy task

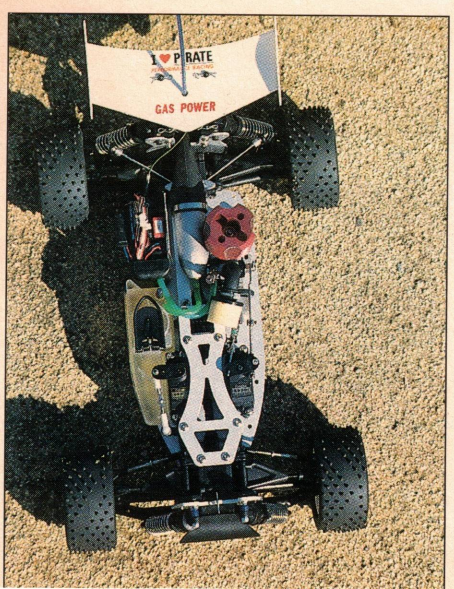
A CERTIFIED GAS!







■ TOP: Pirate's aluminum shock towers are built for abuse. Rubber tires are high traction, while the wheels are 2.2-inch standard, and will accept Pro-Line tires if desired. Oil-filled shocks were filled with 35 weight for racing setup, which worked well. ■ ABOVE: Tuned muffler and rubber adapter are standard in kit. A rear anti-roll bar allows adjustment of amount of side roll for precise cornering. Rear toe-in cams let user adjust rear handling of the buggy.■ BELOW: Pirate's chassis is T-6 aluminum, and comes pre-assembled. All you add is radio and engine and paint the body and you're ready to race.



as it bolts directly to the pre-drilled and tapped engine mounts. Once the gear mesh was set and the engine locked down, the carburetor and brake linkage were installed.

Even though the Pirate 10 comes pre-assembled, you have to supply the radio equipment and paint the body—not much to ask, don't you agree? We began our final assembly with the installation of the servos. All necessary mounts and linkage are included in the Pirate kit, so you are covered in that department. After the servos were in place and the linkages hooked to the steering arms and throttle/brake control, we assembled the receiver battery pack. The instruction manual recommends using 600 AE rechargeable batteries in a five-cell hump pack. The assembled pack fits nicely between the chassis and the battery box (most radio systems come with a four-cell battery holder, and it can also be used to power your receiver and servos, if desired).

The next task was to mount the receiver to the top of the battery box, which acts as a radio tray; a simple operation that was completed in no time at all.

TRIM IT

Now that the nut and bolt portion of our assembly task was completed, the next step was to trim the steering, brakes and carburetor. With a gas-powered vehicle, it is very important to check that the carb's slide valve comes back to neutral (idle) position with the radio and receiver pack turned on. I usually adjust a little drag on the brakes so that the car stays put at idle

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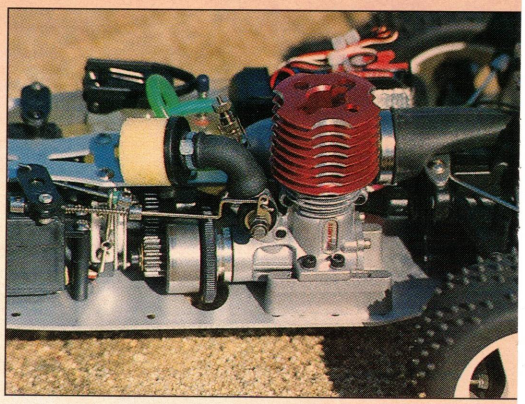

Our review kit came with Dynamite's TNT .12 nitro-powered engine already installed. Coupled with tuned muffler, the non-pull start engine was a spirited powerplant for the four-wheel drive buggy. Center dual disc brake worked well to stop the buggy in its tracks.

PUTTING THE PIRATE TO THE TEST

When we heard that the Hemet, California RC track was putting on a race to benefit the Toys for Tots foundation that included a 1/10-scale 4WD gas class, what better time to test the Pirate, contribute to a worthy charity and have a laid-back time at a fun run?

Austin and I got up early to make the drive, and found a real good turnout there ahead of us, which limited our chance at practicing. Austin felt that the car was reacting with a little too much bounce and the suspension was soft, so we spread the shocks both front and rear to the outer holes in the shock towers and went to 35-weight oil in the front. These adjustments really made the Pirate stable, and it took the rough stuff much better. After a short practice, Austin pronounced the performance of the Pirate ready for the first round of qualifying.

BEING FUELISH

When the 30-second buzzer sounded for the first qualifying heat, I got the Pirate on the grid. Because this was the first time he was to be running this car in competition, Austin was having trouble hearing the engine, and it flamed out. I ran for the pits to get the starter, and got back just in enough time to refire the engine and grid for the start. All things went well after that rocky beginning, but at the five-minute, 54-second mark, the Pirate coasted to a halt. In all the excitement, I forgot to fuel the car! Oh well, Austin's 12 laps with a five-minute, 54-second time put us in fourth spot.



At the Hemet race, we found the Pirate 10 to be a worthy competitor, finishing second to Kris Moore's Inferno 10.

A BETTER RESULT

When the second round came, we were definitely covering our bases and looking for a better result. Austin got off

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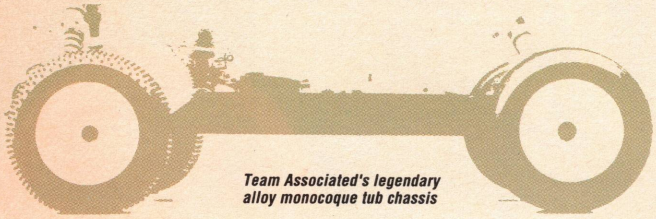
NOBODY KNOWS GAS RACING LIKE THE TEAM.

A lot of people would like you to think they created the whole concept of RC gas racing.

But with over 25 years of experience racing RC gas cars and winning two IFMAR Gas World Championships, Team Associated knows gas racing.

That's why the Team built the RC10GT.



Team Associated's legendary alloy monocoque tub chassis

Our RC10GT is the real thing, designed and engineered by the same racers that brought you the original RC10 and the RC10T.

While it might be enough for some to simply drop an engine and a fuel tank into an electric truck, the Team takes this kind of powertrain transfusion seriously. The RC10GT is a completely integrated package created to take maximum advantage of gas power yet versatile enough to accommodate all popular .12 and .15 size engines.

The most advanced, high performance vehicle of its kind, the RC10GT features competition proven, four wheel suspension with precision, coil-over



IFMAR World Champion factory drivers Brian Kinwald and Cliff Lett teamed with Curtis Husting in designing, track testing a racing our RC10GT prototypes.

shock dampening. Our World Famous Team Associated Stealth ATC gearbox is also adapted to the RC10GT, to get all that nitro power to the ground and our race-ready disc brake gets it all slowed down in a hurry.

Like all our kits, hardware and materials are nothing but the best. And because Team Associated understands RC racers, and their budgets, the RC10GT is available with either bushings or ball bearings and for both pull and non-pull start engines.

Enjoy the sound and power that makes gas RC racing come alive. The RC10GT is the ONLY RC gas truck with Team Associated's proven performance and reliability. Because no one knows RC gas racing like the Team.

Quick-fill 75cc fuel tank lets you race as long as you want with simple 2 second pit stops.

All terrain tires developed by Pro-Line specifically for the RC10GT

Wide track, long throw suspension, molded from durable, dyeable virgin nylon



The RC10GT is available in several Sport and Competition versions for most .12 or .15 engines. We highly recommend the .12 size for scale performance and reliability.

RC10GT

Associated Electrics 3585 Cadillac Avenue, Costa Mesa, CA 92626

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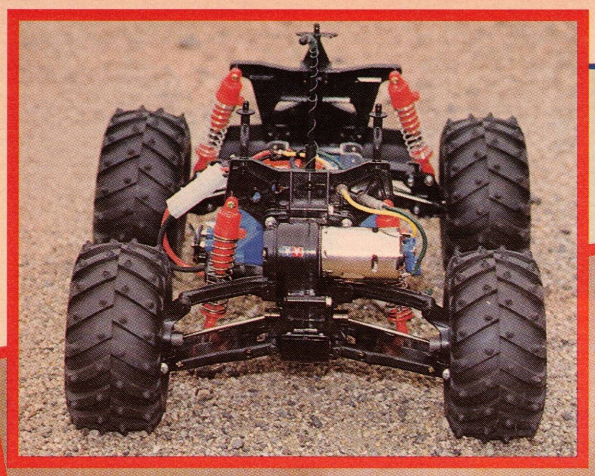
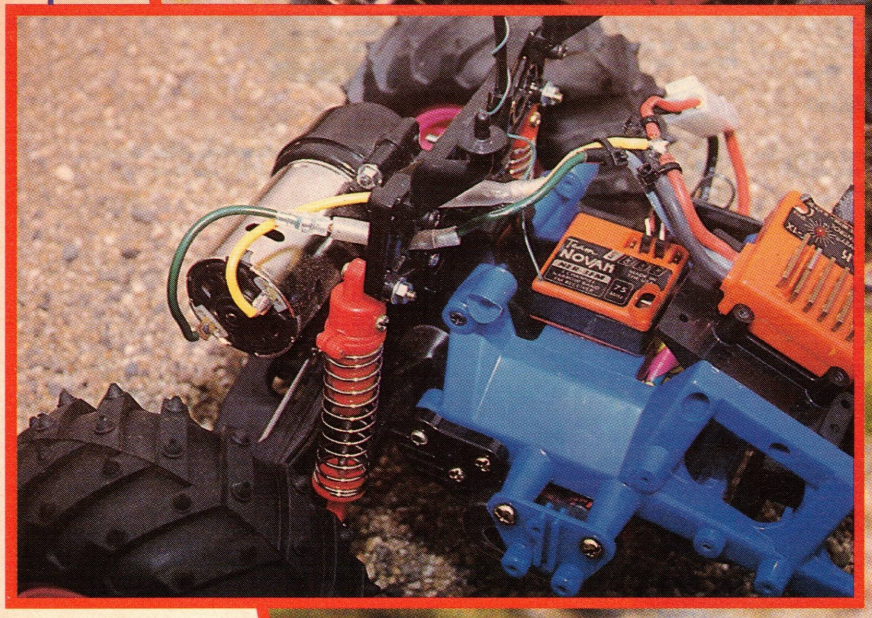


■ LEFT: The more traditional rear A-arm suspension allows for added stability and plenty of travel. The enclosed gearbox, along with nearly two inches of ground clearance will let you run just about anywhere without worrying about hanging up. ■ BELOW: The stock 540 motor offers plenty of wheel-standing power. The plastic shock bodies do a good job of keeping the huge tires planted to the ground.



TAM



YA BUSH DEVIL

BY JEFF BATES

My first venture into the RC arena came with the purchase of one of the industry's biggest sellers. Many years have past since I first "trashed" on the incredibly popular Blackfoot, so I was quite excited when I found out I would be getting my hands on one if its modern-day first cousins—the newly released Bush Devil from Tamiya.



The chassis layout is easy to work on and allows plenty of room to mount the electronics package. Lots of shock travel and huge monster truck tires make for a potent combination in the Devil.



THE KIT

The Bush Devil's construction is based on the latest chassis design from Tamiya's monster truck line. Their talented group of engineers did a major re-think and improved on many of the low reliability, high-wear items that always seemed to fail or break on the original Blackfoot.

When you first dig into a Tamiya kit, you come to appreciate the effort that goes into its user-friendly construction and design techniques. It's real hard to mess up one of these kits, so I'm not going to bore you with the tedious details of the build. Instead, let's take a look at some of the highlights.

The gearbox and output shaft

continued on page 70

The polycarbonate shell is not as durable as the older style styrene body but it looks just as cool. The front crash bar and rear roll bar did a good job of protecting during crash testing!

BUSH DEVIL

532-6600 and is the eight-foot long, 16 AWG model, Cat. No. C-1326-008-BL AIW 3026. This cord and plug set is rated at 13 amps. This means that the maximum I can run through the completed unit is 13 amps (provided that the wall wiring and circuit breaker are rated at least that high) even though the timer shut-off switch is rated at 20 Amps. You always calculate the maximum load based on the lowest rated component. If you think of this as the "weakest link in the chain" saying, you'll get it right.

The only other electrical part you'll need is a grounded outlet for three-pronged plugs. I bought mine on sale for $0.49. I've seen them range in price as high as $2.49 each, but you can generally find them around a dollar most of the time if you look. Leviton (the parent company of Pacific Electricord) is the main manufacturer of AC wall outlets, so you shouldn't have any problem finding them. Well, if you do, you can always call them (718) 229-4040. I chose to use one molded in white simply because it matched the color of the timer. In case you're interested, it is model number EDB3.

The remainder of the items you'll need are for housing and mounting the electrical components. I used a plastic, two gang, nail-on box. It cost me $0.99. I chose plastic because it is less conductive (and cheaper) than the metal type. On the other hand, metal will stand up to more abuse. Just make sure what ever you get, it has the mounting holes to attach the outlet and timer. Some metal boxes look like gang boxes, but are actually "pull boxes" and won't work because they don't have those mounting holes you'll need. The one I used is from RACO (219) 234-7151. Being a nail-on type of box, it has a couple of "ears" on the sides. While you could hack them off if you don't like them, I've found them to be quite convenient for keeping the cord in place when I wrap it around the unit for storage. The last thing you'll need is a dual switch and outlet plate. I bought one for $0.29 (also from Leviton), but have seen them for as little as $0.19 to as much as $0.99 each. The color is up to you.

For tools, you'll only need a wire stripper, a pair of pliers and a flat-head screw driver. That's all. (I told you this is a simple project!)

WHAT TO DO

If you decided to go with the plastic box, the first thing you need to do is remove the nails. Use a pair of pliers to help with the job if you need it, but a lot of the time, the nails are ready to fall out by themselves.

Next, cut about six inches off the end of the power cord and set it aside. You'll need one piece of wire from this piece of cord later. Take the end of the cord and push it through one of the openings in the back of the gang box. I found that the upper right hand side opening (when the box is situated with its ears on the top and bottom right-hand side) is the best one to use. Pull enough through so you have enough to work with. Use your wire strippers to expose enough of the three wires so you have room to work. Strip the ends off the white and green wires using the gauge on the back of the outlet as a guide. Next, strip the end of the black wire using the gauge on the back of the timer switch as a guide. Take the black wire out of the six-piece of cord you cut earlier and strip one end using the outlet guide and the other end using the timer guide.

Connect the white (neutral) wire to the side on the outlet that says (what else) "white." Connect the green (ground) wire to the green ground screw on the bottom side of the outlet. Connect the black (hot) wire from the cord to the upper (in relation to how it will be finally mounted) timer connector. This is simply because since the cord enters the box from the top, connecting it to the closest connector will cut down on crossed wires later. Now connect the six-inch piece of wire to the lower timer connector and connect the other end of that wire to the other side (one that doesn't say "white") of the outlet. Use the included screws to mount up the outlet and switch. When you're done, you can mount the cover plates and you're finished!

TURNING THE HANDS OF TIME

Before plugging in your Motor Break-in Timer, make sure the timer is all the way

THE WORLDS
WILL NEVER BE THE SAME AGAIN



JULY 19-24, 1994
SONNEBERG, GERMANY
IFMAR 1/10 PRO 10 WORLD CHAMPIONSHIP

MASAMI
WINNER • TOP QUALIFIER • CONCOURS

JON ORR
THIRD OVERALL

PARIS, FRANCE
1994 IFMAR 1/12 WORLDS:
6 out of 10 A-Main drivers
chose Protoform Race Bodies!

Nissan P-35.....#1402
Narrow Version..... #1402N
1/12 Scale..... #1603
Lite Version.....#1603L

SIMPLY THE BEST. PROTOform

off. Listen closely to it and see if it is ticking. If it is, don't call the bomb squad! Gently turn the timer knob counter-clockwise until it's in the 12 o'clock position. Check again to make sure it isn't ticking. Now plug the Motor Break-in Timer into the wall. Next, plug in what ever you're going to power (to minimize confusion, I'll call this an appliance) into the timer outlet, but before doing so, make sure that the unit is turned off if it has a switch. Now turn on the appliance switch. Nothing should happen. When you're satisfied that everything is right so far, turn the timer knob clockwise to the time that coincides with the length of time you want it to run. You're appliance should come to life! Pat yourself on the back. You've done it!

FINAL THOUGHTS

I use a 6/12-volt battery charger from Sears in the six-volt setting to power the master motor that I use for breaking-in motor brushes and bushings. As I mentioned earlier, you'll find all kinds of uses for this gadget. I probably could have named it a Hobby Timer, but the first name I gave it stuck. Well, what ever you call it, at the very least, it will help you break-in motor brushes and bushings. You can set it and you won't wear out a pair of brushes or motor bushings if you forget it's running. If you're in the dark on how to break-in motor brushes and bushings, never fear! I'll cover these topics in future articles. Until then...

Have fun and be fast! •

NORRCA CONTINUED FROM PAGE 34

the top qualifier through the first three rounds on Saturday, only to be overtaken Sunday morning by David Goss and new top qualifier, Dan Lantz.

Expert Stock saw Andy Power showing he was the act of consistancy this weekend, keeping all his times within five seconds. He wasn't walking away from the field, however; close behind him was Ken Prue and Ralf Severt only one and two seconds back respectively.

Expert Modified had almost as many leaders as there were tire changes. An early leader in qualifying was Brent Wallace for the first two rounds. Third round had its second leader, Kevin Jelich bettering Brent's time by one full second. Sunday, a couple more of the big guns brought out the heavy artillery with Tony Neisinger pulling out the second spot, just missing top spot by a tenth of a second in the last round to Barry Baker.

Formula TKS ran the same handout motors that the Sportsman Stock drivers used. There was some good racing from these open-wheel cars. Tyree Phillips had his run on the opening round for his number-one spot with Frank Killam only two seconds back. In the shadows, only one more second back was Steve Chamberlain for the third spot.

1/12th Expert Stock is where the little cars create big excitment. Ken Prue started qualifing with 20 laps to get things going, only to have Andy Power show how it was done, taking the top spot away in Round Two by doing a quicker 20 laps. Andy kept improving his own time with every run.

1/12th Expert Modified had Tony Neisinger and Kevin Jelich battling it out all weekend with Tony catching the top spot with 22 laps. Three other drivers hit the double-two mark, keeping it tight.

Touring Car saw Mike Hickman in a four-wheel drive and Frank Killam in one of the very few front-wheel drive cars just a second off of each other after first round action. Then came Greg Hodapp with a great run of IO laps in the second round to take top qualifier. Mike Hickman, in the last round, was the only other driver in the class to hit 10 laps. Third spot went to Doug Kott who was just off the 10-lap pace with a nine-four flat.

In concours there were so many sharp-looking entries, NORRCA President J.R. Sitman split the cars into two catagories, GTP and Formula One/ Touring Car.

In concours there were so many sharp-looking entries, NORRCA President J.R. Sitman split the cars into two catagories, GTP and Formula One/Touring Car. The gentlemen give the tough task of juding were Ken Jones of B.B.R, Garry Owen of PSE/Parma and Jerry Cyrul of Stage Three. Racers went all out on detailing these cars. NORRCA rules state that all winning cars entered in concours must be raced. Congratulations to the winners for their great entries. The GTP winners were: first place, Mel Levine, second place to Bobo "Fly'n Hawaiian" Butires and third place to Ken Green. The Touring Car/Formula One winners were first place for Touring Car to Steve Nguyen, second place for Formula One Bill Dunbar and third place went for a Touring Car done by Bob Sager.

MAIN RESULTS

SPORTSMAN STOCK "A"
1. Bob Lourenco
2. David Goss
3. Dan Lantz
4. Dave Koch
5. Vince Argento
6. Brick Casper
7. Antonio Ruiz
8. Alexie Guinitaran
9. Larry Dowell
10. Daniel Guastaferro

TOURING CAR "A"
1. Greg Hodapp
2. Mike Hickman
3. Steve Chamberlain
4. Doug Kott
5. David Gestoso
6. Steve Nguyen
7. Christian Durand
8. Frank Killam
9. Derek Furutani
10. Sam Ellis

1/12 EXPERT STOCK "A"
1. Andy Power
2. Ken Prue
3. Robert Gillespie
4. Mason Marks
5. Gus Rosul
6. Rich Maupin
7. Mark Kresser
8. Jeff Goodier
9. Antonio Ruiz
10. Brian Jones

1/12TH EXPERT MODIFIED "A"
1. Kevin Jelich
2. Tony Neisinger
3. Jim Walls
4. Bobbe Ochoa
5. Andy Wells
6. Ken Jones
7. Ned Cullen
8. Robert Gillespie
9. Richard Lake
10. Josh Cyrul

1/0TH EXPERT STOCK "A"
1. Paul Cathey
2. Andy Power
3. Brian McDonald
4. Ralf Severt
5. Ken Prue
6. Greg Larson
7. Fred Hubbard
8. Kenny Koch
9. Mike Means
10. Derek Povah

1/10TH EXPERT MODIFIED "A"
1. Barry Baker
2. Kevin Jelich
3. Brent Wallace
4. Tony Neisinger
5. Mark Matuszek
6. David Potter
7. Jim Walls
8. Frank Killam
9. Suparat Uahwatanasakul
10. Bobbe Ochoa

SPORTSMAN MODIFIED "A"
1. Kenny Duncan
2. David Goss
3. Dave Koch
4. Bobo Butires
5. Bob Knissel
6. Mike Kresser
7. Dewey Hill
8. Bob Boulette

FORMULA TKS "A"
1. Tyree Phillips

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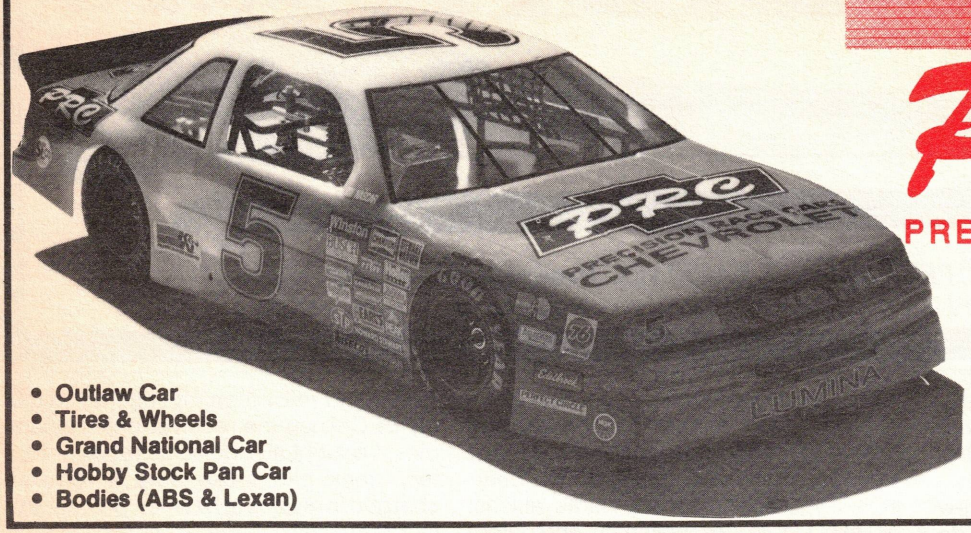

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5. Fred Medel
6. Todd Throne
7. Tracy Curtis
8. Suparat Uahwatanasakul
9. Dan Lantz
10. Steve Chanverlain

H.P.I. had their new prototype car doing some testing and turning some great laps. The car has some unique new items which will make it a contender when it comes out.

A special thanks to a lovely girl, Carla Scott from Ontario, California, who though ill, hung in, even in the cold weather, to pass out the trophies.

Last but not least, congratulations to the new national champions and all the other racers who made Vegas '94 Road Course Nationals a great success. •

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PIT BOX CONTINUED FROM PAGE 30

inches long by 9 inches wide by 7 inches deep.

To prevent unnecessary down time at the track, try to carry at least one extra of everything that might break and two extras of the real fragile stuff. That sounds difficult, but after you've run your car enough, you know what tends to break regularly. Being prepared ensures you won't have to sit on the sidelines simply because you don't have the $3 part that broke in the last crash. Determining what will break and what to carry is easy if you're an experienced RCer. But if you're new to the hobby here are some basic items that apply to almost every car or truck.

GEARS

Specifically the spur and pinions. If your gear cover lets in the smallest rock, and it makes its way to the gears (which it will, trust me) say good-bye to your plastic spur. You'll loose one tooth at a time off the spur until there is a pile of dust in the bottom of your gear case and the spur has no teeth on it. I've also found it helpful to replace the pinion at the same time under many circumstances. Sometimes when you munch a spur gear, the rock that caused the damage will ruin the pinion and the shape of the teeth. Unfortunately, when you install a new spur gear, it's only a matter of time before the damaged pinion starts eating away at the new gear. Practice will help identify when the pinion is bad enough to eat up the spur gear. I try to carry two of every gear that I run, both spur and pinion. Remember to replace the gear if you use a spare from your box, or the next time you eat a gear, that particular ratio may not be available to you when you need it most. Transmission gears are another potential problem. If you've never chewed one up you only need to carry one of each gear and you should be all set. You may decide you don't want carry any but remember, there is always a first time for everything. If your car eats transmission gears the way mine does, you carry two of every gear and an extra differential to repair the problem. If you run a ball diff, extra diff balls are a must. Don't forget the grease and the other appropriate lubes either.

HARDWARE

If your car or truck manufacturer offers a hardware kit of nuts, screws, washers and bolts, get it. For the few dollars the hardware kit costs, it certainly saves the aggravation of digging through tall grass

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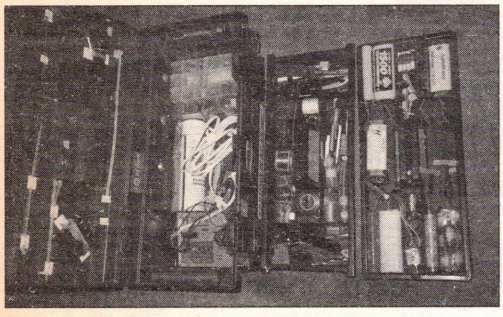
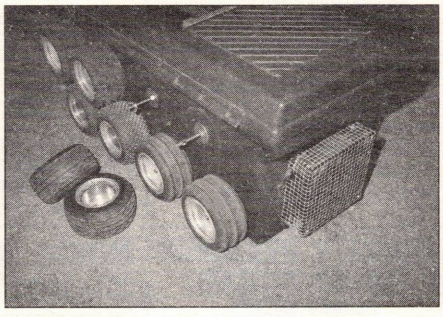
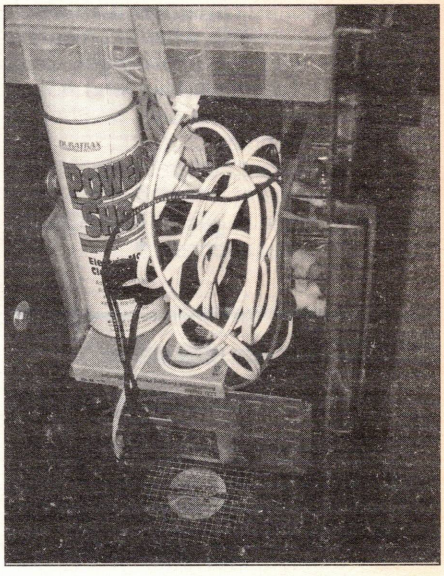
looking for one small screw—or worse—jamming the wrong screw in because you don't have a proper replacement. Rod ends and connectors for steering linkages are a must too. Those only take a few crashes before they break. You may do okay in the backyard, but when you and your friends are racing there's more to hit and be hit by. Extra servos, servo savers and a repair kit for your steering servo are a must.. If possible, carry an extra servo for the steering. That may sound expensive but a standard Futaba S148 can be had for about $12-14 and the repair kit for it is about $5. You know it is going to break after enough crashes. If you carry a servo and a repair kit you can handle two breaks in one day of racing (rather unlikely, but possible) with no down time. Motor brushes are nice to have in bulk too. Most of my driving involves backyard track racing, so motor brushes with eyelets do the job for me. You should be able to buy them for about $1 each, so carry six or more and you won't have to worry about brushes. While you're at it, throw a comm stick in with the brushes. There is no point in putting new brushes in against a glazed and cruddy commutator. Wheel and hub carrier bearings break on occasion and if you don't want to spend money buying extras, you may have bushings left over when you converted your vehicle to bearings. If you don't have any extras, at least get two. Dogbones, halfshafts and output yokes also break, sometimes with aggravating frequency. I used to carry three pairs of output yokes because they broke so often. I replaced them with Thorp steel yokes and now I'm replacing idler gears in the transmission. I carry two idler gears now when I used to carry one, but now I don't carry any output yokes.

Batteries and related electronics must also fit this box. I have 13 battery packs and 13 discharge resistors for them. I also carry not one, but two fully charged extra sets of nicads for my transmitter. I only need one set, but most of my friends don't have any extras. On more than one occasion, I have had to supply others with transmitter batteries. Here's a tip: Radio Shack sells Hi-Capacity Nicads with an mAH rating for AAs that is 850 (most are 500- 650). They are expensive batteries, but they last much longer than standard nicads and they are worth it. I also run a receiver battery pack. Rather than have to rewire and re-balloon my receiver to use my BEC when the receiver battery pack dies, I bought an additional receiver battery pack and make sure it remains charged in my box at all times. A programmable electric outlet wall timer and Futaba battery pack/receiver charger ensures that I can charge anywhere I go and the timer ensures that I don't overcharge anything.

Of course you need to carry a battery charger, and in my case, a 65 cfm muffin fan from Radio Shack to keep my charger cool. I have a Tekin BC-67 and it gets warm without a fan on it after a while. Rather than take additional space inside the box, I mounted it to the outside, blowing inwards, so I don't even have to take the charger out of my box. I can charge all day one after the other, with out the charger getting hot. To keep our cat's curious paws (almost like having children) out of the fan, I made a grille out of hardware cloth (quarter-inch square, heavy-duty screen) that I purchased for $1.45 a square yard at the hardware store. Mold the edges of the screen around the fan and make sure the holes in the screen line up with the mounting holes in the fan so you can mount the fan and secure the screen with the same bolts. A nine-foot extension cord

■ LEFT: Here's 50 pounds of everything I need to make my car run. Sometimes I even fit my transmitter into the bottom portion of the box. Quick clips from Radio Shack (or similar store) ensure that room under the lid does not go to waste. Note how neither the fan on the left, nor the tires on the right, stick out beyond the edge of the box—lucky! ■ CENTER: To me, these two ideas were a must because of size constraints and portability considerations. The fan must be mounted outside because of tight interior room. As it worked out, the fan is exactly as wide as the recessed edge is deep, so nothing sticks out. The power cord runs through the box and is wired to my nine-foot extension cord. The tire mount is perfect, using 1/4x20x4-inch stove bolts. Fender washers distribute stress on the plastic and wingnuts speed removal. It looks cool, too! ■ RIGHT: The wiring mess is for the fan and the charger. A quarter-inch square hardware cloth protects fingers and other objects from the peril of a spinning blade. Hardware cloth is cheap: about $1.45 for a square yard. The fan/charger/box setup minimizes the amount of bench room I require because most of my stuff is self-contained.

with three outlets at the end enables me to plug in anywhere I need to, leaving me with an additional outlet for my Weller 25-watt pencil-type soldering iron. I also carry a small digital voltmeter the size of a calculator that works wonders for finding bad cells in packs, verifying a peak charge or testing for power when everything is dead. A DVM is not something you will use often, but when you need it, you can't live without it. I also carry a 24-amp bulb-type discharger. When I got the discharger, it had small alligator clips for connectors. I thought if I exercised caution I could avoid the short circuit potential to my battery, and I did. Unfortunately, a friend of mine was connecting it to his battery and he got the clips too close together and his finger absorbed the bright blue arc that jumped the gap. He got quite a burn on his finger from the current, so I made the unit fool-proof and installed connectors, which I recommend to anyone who uses one. The battery may only put out 7.2 or 8.4 volts but at twenty-four amps, you'll get a shock you won't quickly forget. Motor spray and sometimes canned compressed air also live in my box. Extra antenna straws, a block for eight AA batteries (for completely discharging my transmitter batteries), a Tamiya-to-Sermos connector cord, the 12-volt supply cord for my charger and an alligator clip to Sermos connectors cord all are carried under the lid of my pit box.

If you look around you can probably find a small divided parts box that will fit perfectly into your pit box that can hold the small pieces. Aside from the small hardware parts mentioned earlier, I carry Sermos connectors, extra wire, solder, electrical tape, body clips, brush springs, cyano glue, two extra shocks (not at all a necessity, but I had extras), wheel nuts, wheel bushings, body washers, ESC tuning tools, Velcro, double-sided tape, Loc-Tite, radio/receiver crystals, spare charger fuses, tweezers, Futaba-J battery connectors, and a host of other items that I use. This is not only my pit box, it contains so much of what I need, I use it constantly in my house or anywhere I go.

Don't forget about packing those extra tires. If you race on a national scale, you need a support van for all your tires for every imaginable track condition. As a backyard basher, I can get away with carrying fewer tires with me, and still be exceptionally prepared compared to my counterparts. I installed some quarter-inch by two-inch long stove bolts, with washers inside and out (to diffuse stress on the plastic), and wingnuts to speed up the removal process and bolt ten tires to the outside of my box. The tires, when mounted, only stick out half the width of the tire because the lid overlaps the back of the box by about one inch. I carry a full set of road tires, two front mini pins, two rear large lugs and two rear small lugs. Additionally, I have whatever is mounted on the car to use as well and if I

continued on page 58

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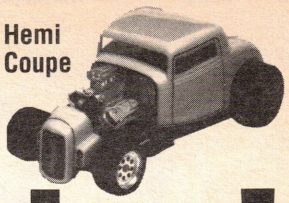

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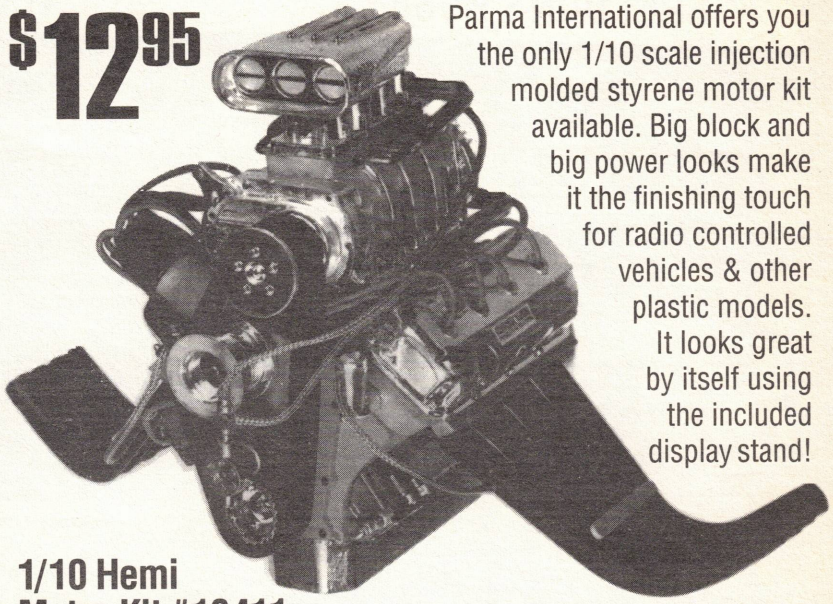

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Some of the participants in the Eighth San Jose Velodrome classic.

Dave Rice patiently awaits the start of the main.

SAN JOSE'S 8TH VELODROME

BY WES MCPHEETERS

A good field of drivers came out under sunny skies for the Velodrome VIII event in San Jose, California, hosted again this year by Sheldon's Hobbies. A biennial three-day event, this moves the regularly scheduled hobby shop races to the Superspeedway's 1,120- foot circumference velodrome bicycle race track located in Hellyer Park in San Jose. Entries numbered 74 across nine classes. The entries included a number of family groups to handle driving and pit chores.

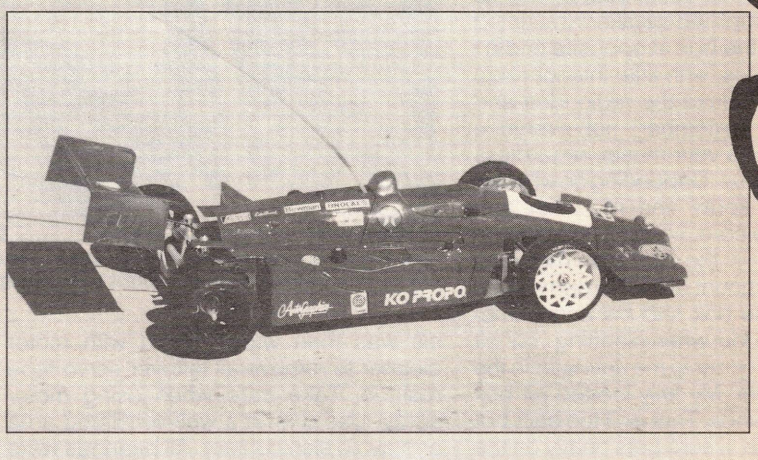
The schedule called for practice on Friday with qualification races on Saturday afternoon and Sunday, culminating on Sunday with the final qualification race and mains. The speeds attained by the cars on this track are very impressive, especially since this writer comes from drag racing where top speeds are in the 70 mph range. The Expert class averages 55 mph top speed, while the slowest classes still run at 45 mph around this track. The cars slow down about two mph going through the corners due to tire scuffing and the drivers manage to run very clean lines and manage microfine steering adjustments to navigate the track in traffic.

continued on page 70

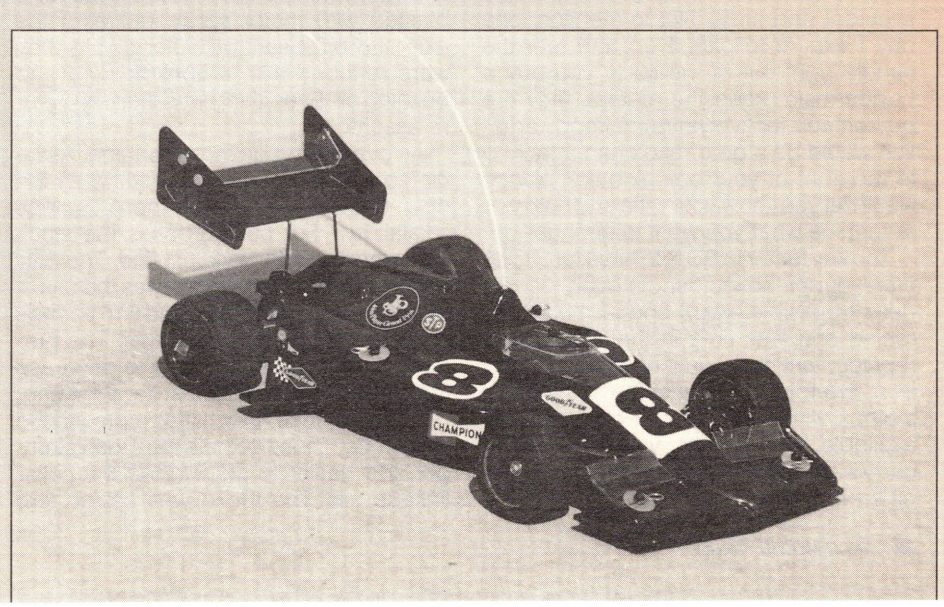


RaceAmerica's impromptu speed attempt was won by Dave Holmstrum (left) with a speed of 66.1 mph; runner-up was Len Berlew, with a 62.9 clocking.

Classic



■ LEFT: Indy modified car by Guill Cristobal.
■ BELOW: John Harbold's Indy modified racer.



PIT BOX CONTINUED FROM PAGE 55

know I'm only going to be running offroad, I can leave the road tread at home and free up four more posts for more offroad tires. I'm considering whether to expand my collection to the front of the box or leave well enough alone. I have more tires mounted on rims but I don't really need to have them with me.

TOOL TIME

Tools are a must, no doubt about it. I carry Phillips of three sizes, end cutters, side cutters, wire strippers, three small flat head screwdrivers, a round file, a flat file, needle nose pliers, spring clip removers, two X-Acto knifes, hemostats (for soldering), full-size pliers, wheel wrench and a small vernier for measuring shock preload collar height. Anything specific for your vehicle is considered a must-have item and would bump a lesser needed item if room is a problem. Shock oil and bearing lube is also in there for the unexpected disaster.

MOTORS, MUSIC AND MISCELLANEOUS STUFF

Motors are "iffy." If you have extras and can afford the room, why not toss them in there, you might need them someday. Most motors just keep on running, though I have had problems and was thankful I carried other motors with me.

A thought in the planning stage and low on my list of priorities was music. I have a Sony Walkman that could deafen you, so coupled with amplified speakers (mounted on the front of the box at opposite ends) I could have tunes, with little interior room taken up. If you take the radio idea and implement it, remember, not everyone wants to listen to your music, regardless how cool the setup. Depending on whether I have motor spray and my timer and Futaba charge cord, I can fit my Magnum Jr. transmitter in the box too. That cuts down on the amount of stuff to carry when I race—just the box and my car. Something to think about when planning your pit box that didn't occur to me until later in the game, is weight. My fully loaded pit box weights 47 pounds. That isn't too bad, but lug it for a while, it sure gets heavy on the shoulder and arms. Not to mention, one day I expect to pick it up and tear the handle right out of the lid (if you buy a Rubbermaid, keep the receipt, they are guaranteed for five years). A handy addition would be a gear ratio chart attached to the front of your box. A quick glance would let you know your ratio and help you determine what you want to change.

The key factor in RC is to have fun. If you plan your pit box to handle every contingency possible, you'll spend more time racing and less time in the pits without replacement parts. Just don't try to wheel in a five-foot tall Craftsman Mechanics toolbox with half a dozen of every part available for your car, you still have to carry it around and not take over the whole pit area. ●

DRAG TRUCK CONTINUED FROM PAGE 37

car was given the nod to undergo reconstructive surgery.

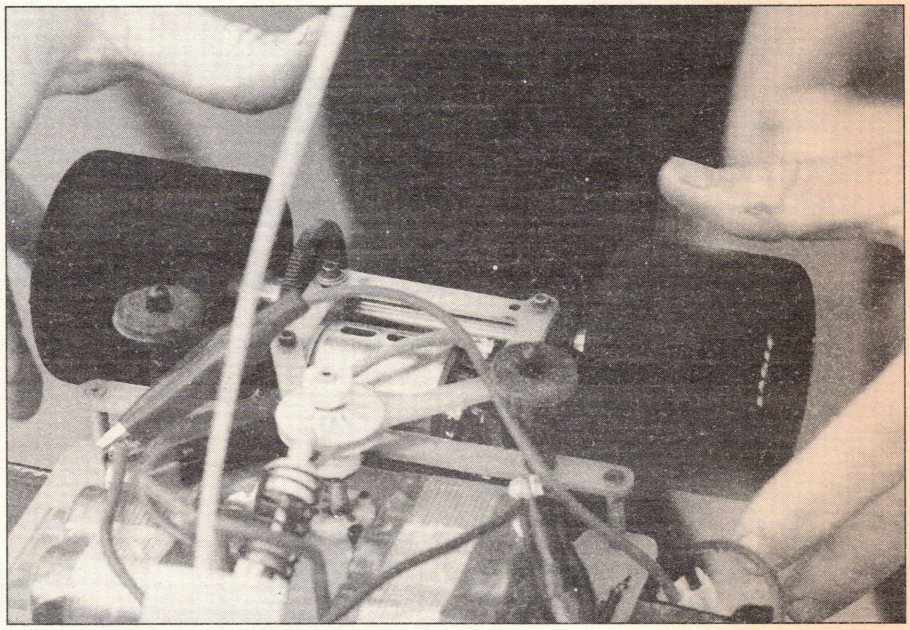
The plan was to come up with a competitive car for the strip without making too many changes or spending big bucks. This would allow us to easily return the car to original condition for oval racing if the need arose.

KICK-STARTING THE PROJECT

After the car was literally pulled out of the weeds, it needed a thorough clean up. The electronics were removed and all the white nylon parts were disassembled and placed in Litespeed black Dy-lon. For the initial oval setup, battery cups were used on the left side of the car. These were removed, and strapping tape was used to hold the saddlepacks in place. The chassis was then wiped down with motor cleaner to remove all leftover servo tape residue. Take care when using motor spray. Use only in a well-ventilated area and avoid skin contact. All bearings were blasted with motor spray including the axle and diff bearings. After drying they were re-lubed with a light bearing and bushing oil. Everything was then ready for re-assembly.

As oval racing goes, the original Associated front end is as competitive as the new 8400. Of course, there is less "dialablity." For our purposes the stock equipment would work just fine. The only changes to the suspension was the use of two-degree caster shims and 016 springs in place of the 020 kit springs. The purpose of those changes was to decrease the steering and traction in the front end. RC Performance Specialties replaced the kit tie rods. These tie rods are much stronger and easier to adjust then the collar linkage set. The toe-in was set at zero degrees. Also, the front tires were cut down to reduce steering. Remember, not much steering is required to run the length of the drag strip. Then the electronics were moved to the front of the car to allow use of all battery slots on the chassis.

The nerf bars were removed so the body will wrap around the chassis. The nerf bars aren't necessary for drag racing and are just extra weight. Yellow dot TRC foams were mounted and trued to a 2.6 diameter for traction and higher rpm. The shock was rebuilt and filled with 20 wt. silicon oil. Two additional tweak screws were added to the back of the T-plate to stiffen up the rear end and give more adjustment. Tweak adjustment on the rear end was set according to the Associated 10LSS manual. When the car is lifted from its center point on the rear motor, brace both tires should lift off the ground at the same time. The diff was locked up by gluing 320-grit wet-dry sandpaper to both sides of the diff rings. Be sure to trim off the excess paper. This will eliminate slippage of the diff. (Note: this may trash the balls on your spur gear. Be prepared to replace them when you want to restore your diff assembly to normal.) Adjustment to the thrust nut will help launch the car straight off the starting line.



Don Reynolds gave our rear tires the expert massage. This proves to be crucial for a good launch off the line. Notice the cobweb effect he's getting.

A SWELL SHELL

Everything was then nicely packaged under a fresh new truck body from Dahm's Racing Bodies. The Tornado is Dahm's latest creation for 1995. The design on this body is cool. The design let's you wrap the body around the chassis for better aerodynamics. It fits a whole list of RC models including USA-1 Clodbuster, the Hemi Coupe and Hemi Vette. The body was masked with Dahm's Pro-Mask. If you want ultra-clean paint lines, Pro-Mask is for you. The paint job consists of Pactra

Pearl White followed by Sprint White. Pearl White is semi-transparent and needs white backing. Metallic Red was applied, and backed by Indy Silver to ignite the metalflake. Outlaw Black was used for the shadows on the stars. I finished up with Metallic Blue backed with silver. Please remember to paint in a well-ventilated area and wear a paint mask to avoid breathing airborne paint particles. Finally, the sunvisor and headlight covers were cut from a sheet of chrome Coverite.

The race season at "Scale Rails" drag strip ended, but the managers of the strip, Paul Taylor and Randy Ray, were happy to set up the track layout for some practice runs.

We started with a 1400mAH six-cell pack and a Race Prep stock motor with cavity brushes. With the battery pack peaked and the rear tires properly prepped we went to the line. The first run brought in a 3.60 second run at 34.09 mph. Not bad! The truck ran straight and true (well, pretty close). My reaction time was .189 of a second. I reluctantly turned the controls over to John (after all, it's his truck). The truck ran equally consistent for him. We stayed in the 3.54- 3.60-second time zone. With some practice, and a hint on the timing light countdown from Randy, we progressed slightly. Other than some adjustments to the throttle and a quick re-peak on the battery pack, no other changes were made. My last run did show some improvement. Final score 3.48 seconds at 35.69 mph. Acceptable for the first time out.

One of my friends once commented, "Your car's not very fast but it sure looks good." I think we'll have to change that! The fact that the budget drag truck could be competitive and fun, was definitely proven. Outdoor racing is limited by the weather here in Colorado so at this point we'll just start preparing for the beginning of the next race season. Some improvements are already in the works. Maybe we'll be ready for some actual competitive racing come springtime! Special thanks to Paul, Randy and Don for making our first outing fun and productive.

PRODUCT SOURCES:

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Litespeed, Box 4765, Spokane, Washington 99202. (509) 535-2717.

RC Performance Specialties (RCPS) 18312 Gifford St., Fountain Valley, California 92708. (714) 962-6928. ●

MOTOR THEORY CONTINUED FROM PAGE 40

Remember when we said that if you changed the current to our electromagnet, its polarity changed? Well, this is exactly what happens in motors too. When one lobe reaches 180 degrees from where it started, its orientation to the brushes is exactly 180 degrees opposite giving it an opposite magnetic charge (See diagram 4).

INTO THE BRUSH

This brings us to some motor theory. The first thing we should look at is the brushes. This is where the electricity passes from battery via electric wire to your commutator. As always, the more contact area you can get, the more current can pass through, and the more that can pass through, the stronger the magnetic field will be. This translates into more torque/low end. This sounds great, but with this extra contact area also comes more friction and this will cost you some rpm. Timed or cut brushes have a smaller contact area which will give you more rpm, but less torque/low end. With more rpm and a smaller contact area, don't expect your brushes to last as long as regular brushes. Motors that feature "laydown" brush hoods have the same brush contact area as brushes in standard brush hoods, but since they are positioned edge wise, they act almost as if the motor had its timing advanced.

Don't attempt to use the same stock gear that came with your car's stock motor with your killer 14 wind. It just won't work.

WINDING UP

The next thing we should discuss is the magnet wire used for the windings. Remember when you changed the wire wrapped around that electromagnet nail to a heavier gauged one? The magnet got stronger right? This is the same again with motors. The thicker the gauge of magnet wire used in the winds, the more powerful the magnetic force will be. And the stronger the magnetic force is, the more torque (low-end punch) you'll get, but this sometimes comes at the cost of less rpm. Another thing to be aware of is that the thicker the wire, the more power it will use. This means shorter run times.

Even though we're talking about motors here, I think something should be said regarding batteries and winds. For motors over 17 winds, you can use a six- or seven-cell battery. For motors 17 winds and under, a six-cell pack is your best bet. You can use a seven for that extra "oomph," but the effects will be less dramatic than with a higher wind. For any wind less than 14, anything goes since you're probably looking for maximum acceleration anyway.

Let's go back to our electromagnet nail again. When we wrapped that nail with more winds, the magnet got stronger. Need I say more? The stronger the magnetic force, the more torque you get, but less rpm. So the lower the wind, the more rpm but less torque and less running time. It has to do with the overall area, or actually, the mass of the magnet wire. Power bands for motors generally go like this: The lower the wind the milder the low end, and the more powerful the mid and top end. The higher wind motors have powerful low ends and mild top ends. As you would imagine, the winds in between are just degrees, or steps in between.

Something else worth mentioning is gearing. Don't attempt to use the same stock gear that came with your car's stock motor with your killer 14 wind. It just won't work. Read the manufacturer's instructions. It's best to start out under geared and work your way up. It'll save your speed controls, batteries, and a lot of soldering.

MAGNET MAGIC

Let talk about magnets for a moment. The hot thing right now is "wet mags" or wet-press magnets. Magnets are made of iron and then magnetized or "zapped" by a machine. This machine works by creating a super-strong magnetic field around your motor magnets and forcing the molecules to line up with the magnetic poles that the machine is creating. The problem with this is that the magnets molecules don't move too easily when the iron is in its cooled solid state.

Wet-pressed magnets or wet mags are magnetized while the soon-to-be magnet material is still in its "wet" or in a molten like state. This allows more of the molecules to line up easier and makes them very hard to de-magnetize with out bringing them back to their molten state. Although you'll never get you motor hot enough to turn your magnets back to that molten state just by running it, heat is the enemy of your magnets and all electrical things. The cooler you can keep your electronics, the more efficiently they will run. This is the reasoning behind all of the cooling vents, cooling fins, brush and brush hood heatsinks, etc.. Do any of these gimmicks really make a difference? I really can't say for sure, but in theory they should.

A couple of motor manufacturers out there are coming out with Samarium Cobalt magnets in their motors. These are wet pressed also. The only difference is in the material they use. Cobalt turns molten at a much higher temperature than iron. These are about the strongest magnets available to our hobby today. Their prices, like anything else exotic is expensive. Another drawback is that they are illegal to use in most organized races, but then again, I can remember when SCE batteries were illegal also. I think it's just a matter of time.

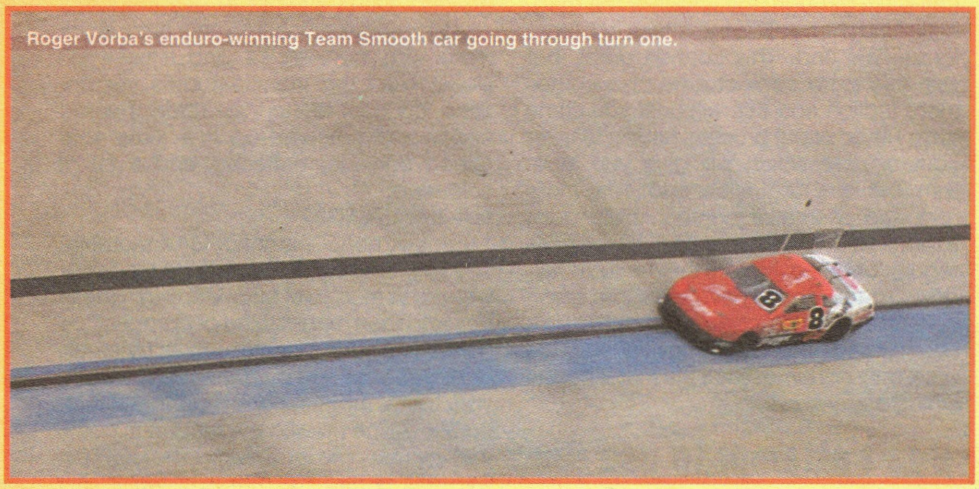
Anyway, what stronger magnets translate into is more torque and more braking power. The cost will be in the extra current draw needed to obtain the same highest rpm. With today's batteries (especially SCRCs), this doesn't seem to be much of a problem.

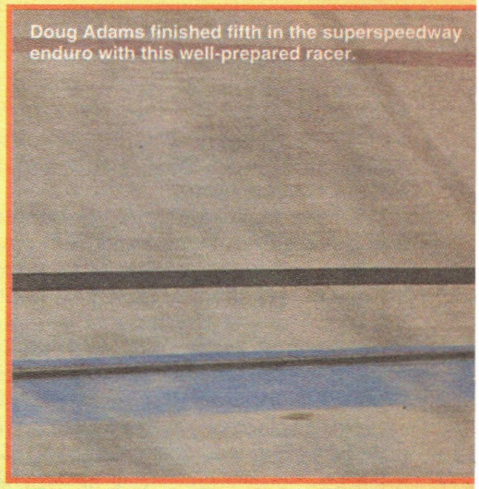
IN THE CAN

Some motors feature "vented," "slot-

continued on page 67

NORRCA'S VELO


Roger Vorba's enduro-winning Team Smooth car going through turn one.


Doug Adams finished fifth in the superspeedway enduro with this well-prepared racer.

The year's last race



NORRCA's last paved oval race of the year brought out a group of more than 100 racers to the high-banked Dominguez Hills Velodrome, all intent on making a good showing in the last big oval contest of the year.

To many of the racers, the most important event at this final race was the debut of the new NASCAR SuperTruck class (see accompanying NORRCA rules for the NASTRUCK/SuperTruck), with 10 competitors vying for the inaugural win. The leader of the pack was Mr. NORRCA himself, J.R. Sitman, who was the only truck driver to post a 16-lap run with a 4:07.69 time.

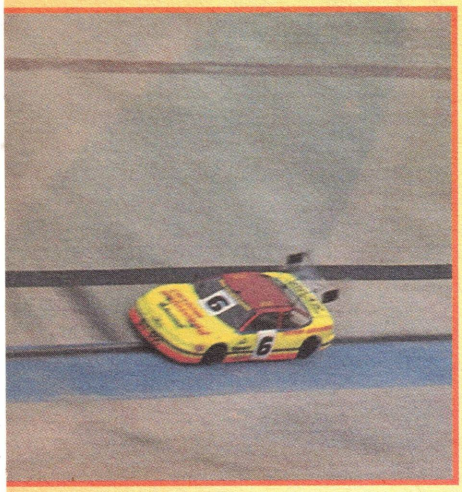
continued on page 80

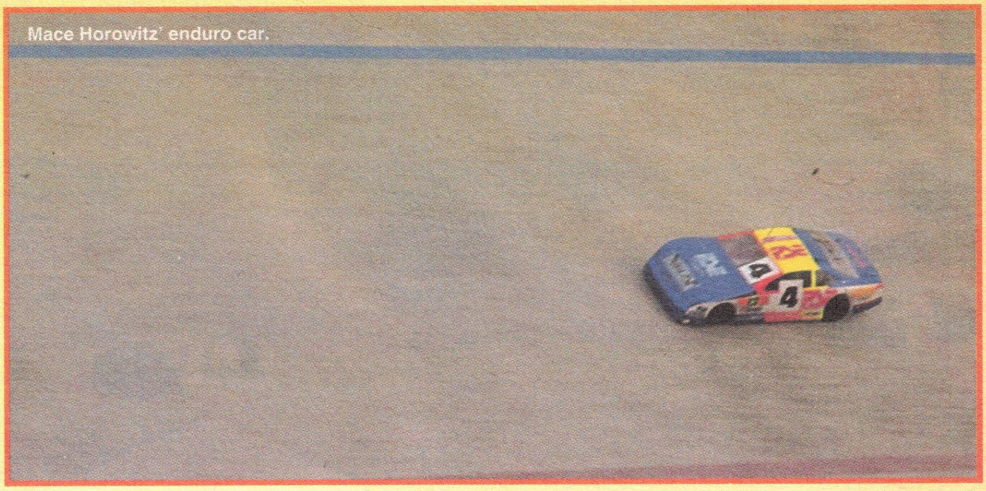
BY DOUG ADAMS

■ **ABOVE: The back straight leading into turn three. The Carson Velodrome at Cal State Dominguez Hills is smooth, driver-friendly and clean. A first-class facility.**
■ **RIGHT: NASTRUCK class racing is catching on! This truck was raced to fourth place by Ron Ponce. Body is Dahm's new Tornado.**



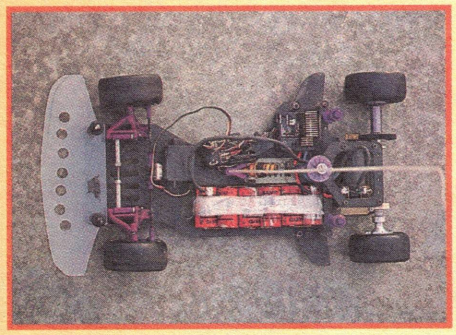
DROME FINALE



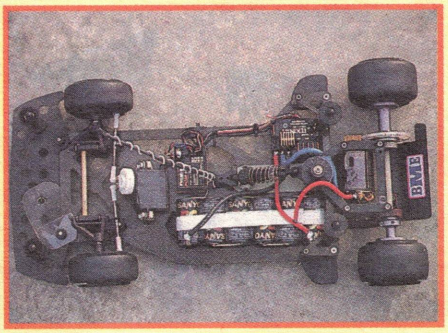


Mace Horowitz' enduro car.

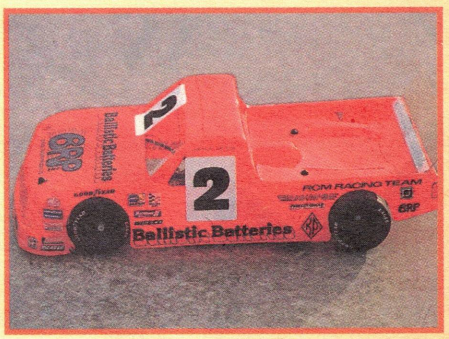
debuts a new class



Ron's chassis for the truck oval class, controlled by a Futaba 1024 PCM radio, with a Tekin speed control.



Danny Jones' race truck had a Tekin 411G2 speed control, Futaba's 1024 PCM FM radio system. Danny was second-fastest qualifier, but ran into trouble in the main, finishing in seventh.



Jones' colorful Dahm's Tornado SuperTruck was a consistent front-runner—until the A-main. He'll be back for the next NORRCA Velodrome racing, hoping to improve his finishing performance.

NORRCA 1995 1/10 NASTRUCK (SUPERTRUCK) RULES

N1.1 GUIDELINES:
The NASTRUCK classes will follow the 1/10th Pavement Rules as stated in the American Sedan class, with certain exceptions as follows:

N.2.1 BODY STYLES:
Body shell must be a close replica of a Full Size (mini trucks not allowed) original truck presently competing in Super Truck competition.

N2.1A BODY DETAIL:
The tailgate section may be cut out to a minimum height of 1/8 inch measured from the top of the tailgate to the bottom. The fender panels behind the rear wheels must remain in and they must not be trimmed higher than the lowest portion of the side panels.

N2.1B BODY MODIFICATIONS:
Bodies may not be modified in any way that changes the NORRCA-approved shape.

N2.1C BODY MOUNTING:
Bodies may not be mounted so as to change the NORRCA-approved shape. The body must be mounted from the front to rear at no more than a 5% rake.

N2.1D BODY BOX:
The box of the truck must be enclosed or covered. The cover must be flush with the highest portion of the box. The cover cannot be recessed at any portion. Bodies that were approved prior to November 1, 1994 will be legal until May 31, 1995.

N3.1 WINGS:
Wings are not legal in any NASTRUCK class.

N4.1 SPOILER:
A spoiler may be used off the rear of the bed with a maximum length of 2 inches and a maximum width not to exceed the width of the truck bed. Spoiler may be built-in but cannot exceed 2 inches. The spoiler will be measured from the lowest portion of the truck bed.

N5.1 SIDE DAMS:
Side dams are not allowed.

N6.1 WINDOWS:
The passenger and driver's windows may be cut out. Windows that are not cut out must be clear or painted a different color than the body.

N7.1 RIDE HEIGHT:
At no time will a body run with the roof panel mounted lower than 4.75 inches from the track.

N8.1 WIDTH:
Maximum width 9.5 inches. No portion of the tires, chassis, bumper or nerf bars can protrude outside of the body.

N9.1 CLASS SEPARATION:
All Sportsman and Expert class rules will apply as stated in the Pavement Rules.



The newly enlarged West Coast track in Tampa, Florida was the ideal location for the 1994 ROAR Offroad Nationals.

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'94

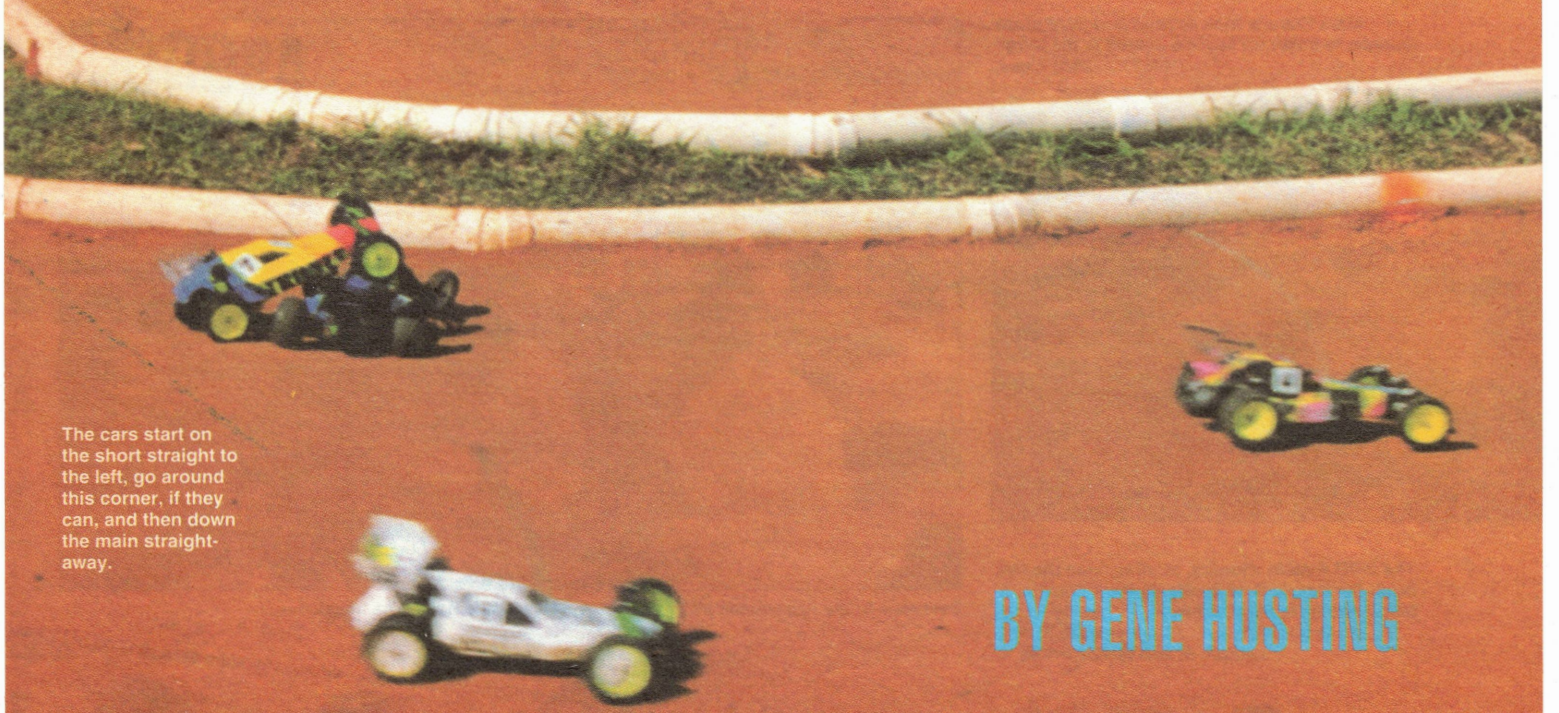
ROAR OFFROA



The steps look simple enough, but most of the cars had trouble getting down them.



Mark Pavidis started off by winning the first A-Main, but then everyone was using Mark's car as a ping pong ball after that.



The cars start on the short straight to the left, go around this corner, if they can, and then down the main straight-away.

BY GENE HUSTING

D NATIONALS

The West Coast RC Club of Tampa, Florida, which holds the popular, yearly Florida Winter Champs races, was also the host for ROAR's Offroad Nationals. The Florida club took on the big job of enlarging the track, and in the case of tracks, bigger means better. At least in this case. The racers all said they liked the new track layout.

This race was not only special because it was the ROAR Nationals, but also because it was a qualifier for the IFMAR World Championships in Japan next year. Everybody would be trying to make the A or B mains to qualify.

The first few days the weather was the

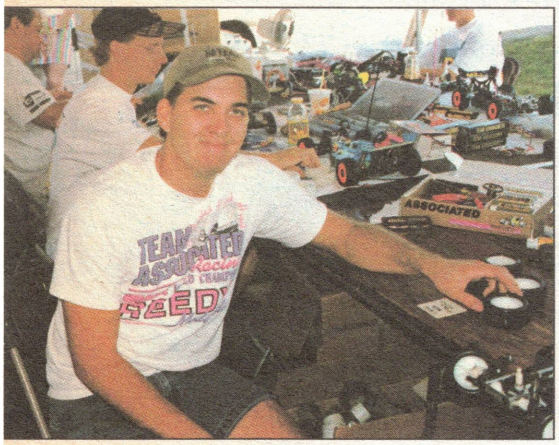


All the fast guys in the Losi pits get ready for the next race.

best I've ever seen in Tampa, in the low 70s. The next few days it went up to the mid-80s; ideal weather. Race Director Bert Price kept the program moving right along. Everybody would get three qualifying runs in both 2WD and 4WD.

Brian Kinwald was Mr. Consistency in 2WD qualifying, turning 8 laps in 4 minutes 2.79 seconds, or 8-4.02.79 on his first run. His next run was right there with 8-4.03, followed by his T.Q. run of 8-4.02.59. Just a whisker behind was Matt Francis with a quick 8-4.02.62, followed by Jeremy Kortz at 8-4.03.55, then Mark Pavidis with 8-4.04.43 and Mark Francis at 8-4.05.43. All within a second of one another.

Mark Francis took second and third place finishes to finish up second overall in the tough 2WD class.





Everyone in the Associated pits were busy, as was Mike Reedy, as usual.

The 2WD A-main winners, starting from the left, Brian Dunbar, 8; Bret Reelfs, 5; Mark Francis, 2; Matt Francis, 6; Brian Kinwald, 1; Jeremy Kortz, 10; Greg Hodapp, 7; Rick Hohwart, 3; Matt Ledger, 9; and Mark Pavidis, 4.



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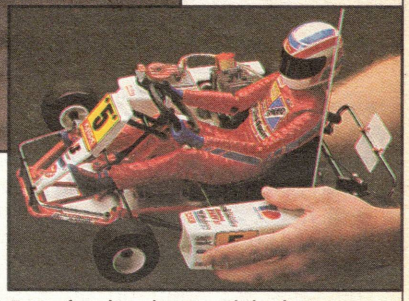

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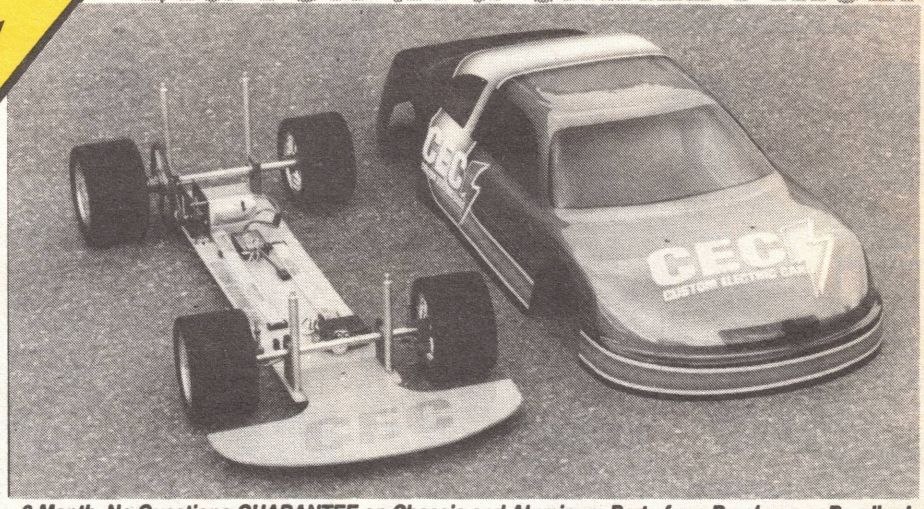

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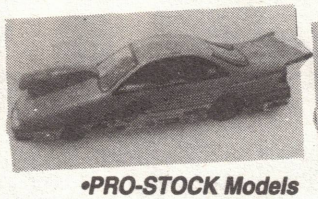

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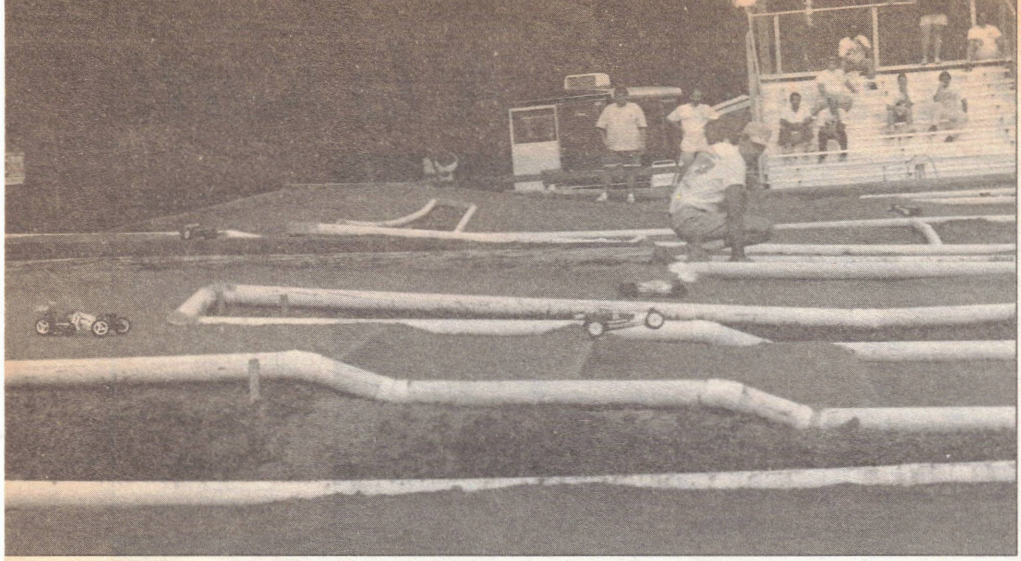

How could something that looks this simple be so hard? But it was.

Kinwald also took T.Q. honors in the 4WD class with 9-4.15.09, followed by Jeremy Kortz at 9-4.15.85, then Rick Hohwart with 9-4.18.23, and Greg Dennett at 9- 4.18.95, and Jason Ruona with 9-4.19.15. All very close.

2WD A MAIN #1

The cars are lined up on a short straight that goes into a fast left-hand turn onto the straightaway, then down the long straightaway, into a left-hand sweeping turn, down to a very tight, very slow left-hand 180-degree turn where a lot of accidents happen.

Brian got down the straightaway in the lead, and through the 180 turn clean. Jeremy and Matt Francis tangled as Mark Pavidis moved into second, about 20 feet behind Brian. Brian was going fast, with Mark slowly closing the gap, while the both of them were pulling away from the field.

Brian and Mark's cars were so close in speed that Mark was only gaining about a foot a lap on Brian, and time was running out. With two laps to go Mark had closed within 10 feet of Brian. Then Brian brushed the pipe going down the steps, his car wiggled and Mark took over the lead with Brian 10 feet back. Brian couldn't catch Mark, who went on to take the checkered flag.

2WD A MAIN #1
PLACE, DRIVER
1. MARK PAVIDIS
2. BRIAN KINWALD
3. RICK HOHWART
4. JEREMY KORTZ
5. GREG HODAPP
6. BRIAN DUNBAR
7. MARK FRANCIS
8. MATT FRANCIS
9. BRET REELFS
10. MATT LEDGER

2WD A-MAIN #2

This was a great race. A classic. At the horn, Brian and #2 qualifier, Matt Francis went down the straightaway together, around the short sweeper, into the 180 and through before anyone else got there.

Matt was only a foot behind Brian, and Brian couldn't pull away. Matt was definitely faster, but not enough to simply drive around Brian. For the first five minutes, Matt kept trying to find a way around. He kept sticking his nose in, but Brian would keep cutting it off.

It was really exciting to see how close together these two cars were, without touching. Lap after lap after lap this bumper to bumper race went on. The crowd was really yelling and screaming. Then Brian brushed a pipe. That's all Matt needed. He was quickly alongside Brian and into the next corner first.

Brian tried to get around Matt for the next two laps, but he wasn't fast enough to do it either. Then Brian overshot the

continued on page 73

4WD A-main winners, from the left, Frosty St. Clair, 10; Rick Hohwart, 3; Jason Ruona, 9; Greg Dennett, 7; Brian Kinwald, 1; Mark Pavidis, 6; Scott Brown, 2; Greg (Curly) Hodapp, 5; Jeremy Kortz, 8; and Derek Furutani, 4.



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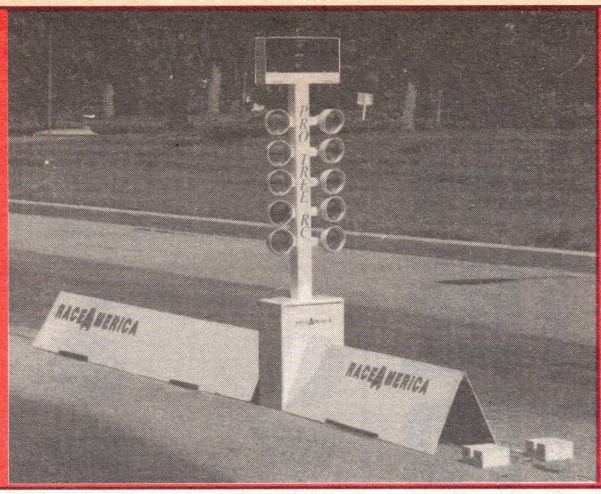

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- 1/8 Scale R/C
- 1/4 Scale R/C

MOTOR THEORY CONTINUED FROM PAGE 40

ted" or "variable thickness" cans. Their claims vary from decreased magnetic force in some areas (in addition to adding cooling effects) or concentrated magnetic force respectively. I can't tell if any of this really makes a difference, but in theory it sounds good to me.

This brings us to air gap. This is a term used for the space between the outer edge of the armature and the magnet. The closer the magnet, the stronger the pull. Now repeat after me...the stronger the pull, the more torque and the less rpm you'll get. Some motors have the outsides of the armature lobes machined to a polish. This increases the air gap and is supposed to decrease the air turbulence when it's spinning. Again, I can't prove whether this is true in practice, but in theory, it should be feasible. I have motors like this and they do produce more rpm, but the performance gain is probably due to the increased air gap and dynamic armature balancing.

BALANCING ACT

Speaking of armature balancing, a balanced armature will run better than one that isn't since it won't exhibit power-robbing vibration. The problem is that unless the manufacturer states that their armature is balanced, usually, there is no way to tell if it is or isn't without buying the motor first. This is because the only way to tell if it is balanced is to either take it apart or run it and see how much it vibrates. Unless your motor dealer allows you to "try before you buy," that means you have to buy the motor first.

I think you're starting to get the idea about all of this. Motors are just a series of compromises. In order to get more rpm you have to give up some torque and run time. To get more run time you have to give up some rpm. Some manufacturers try to get around some of these compromises by using multi-strand winds. For instance, instead of using 16 winds of a heavy gauge wire (High rpm, low torque), they will make a 16 twin made of two medium gauge wires. This will make a motor with more low end torque, and almost as high rpm.

TIME TRIALS

The timing of a motor, or motor advance, is the amount the brushes are rotated against the rotation of the armature. This advance will increase your amperage draw which will increase your rpm to a point. There is a point where you'll draw more amps than gain rpm. Timing motors is a subject that requires a whole column to itself and is one I've covered a little bit in my Motor Meter articles. If you don't know what your doing, leave timing to someone who does. Anyway the theory holds true here. The more rpm you get, the less low-end torque you'll have.

Timing motors is a subject that requires a whole column to itself and is one I've covered a little bit in my Motor Meter articles.

FRILLS FOR THRILLS

Should I get a ball bearing or bushing motor? The answer depends on your budget and class that you run. I've used bushing motors and they worked well if you take care of them, although they don't last nearly as long as ball bearings. If you want the ultimate, ball bearings are the way to go.

What about machine vs. hand wound? This depends on your budget also, but machine winds have come a long way. The only difference I have experienced is that machine winds must be missing the human quality control that hand winds exhibit. I have gotten a couple of poorly wound machine-wind motors that unwound and got caught in between the armature and the magnets. I guess that you get what you pay for. If you do buy a hand-wound motor, just make sure it is from a reputable manufacturer. •

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PIRATE 10 CONTINUED FROM PAGE 46

(no runaways wanted here!). Once adjusted, I trimmed the steering servo to center position, and we're about ready to run—oops! I forgot—we have to paint the body first (one of my favorite tasks!).

After that chore was complete, I took stock of the Pirate 10 before filling it with 20% fuel and attaching the air cleaner to the carburetor. The buggy's balance was perfect—the engine/electronic layout sets the weight equally on the chassis. The engine mounts on the left side, with the fuel tank, receiver and receiver battery on the right; the servos for throttle and steering are side by side up front, giving the Pirate a near-perfect 50/50 weight distribution.

The Pirate's TNT .12 engine is mated to a tuned muffler with a rubber adapter that sends exhaust gases out the rear.

START 'EM UP

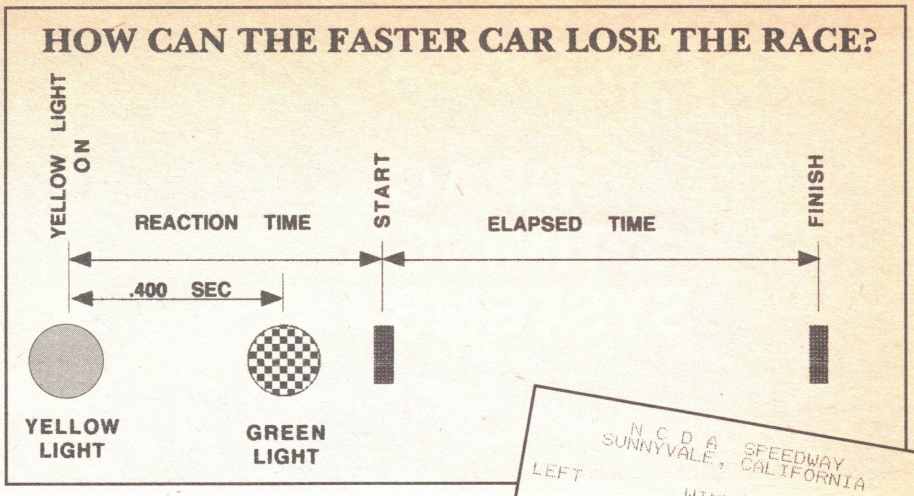
With the glow starter plugged in, a push down on the starter box got the .12 engine responding to the throttle nicely, the exhaust pipe spewing a rich mixture of unburned fuel—necessary to breaking in a new engine. (Run it too lean and it overheats and will drastically shorten the nitro-powered powerplant's life.) The piston and cylinder must be kept cool on the initial startup while they mate and wear in.

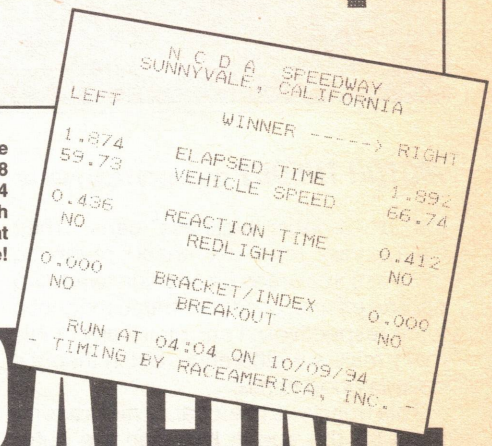
continued on page 69

BY WES MCPHEETERS

HOW CAN THE FASTER CAR LOSE THE RACE?

DRAG RACING



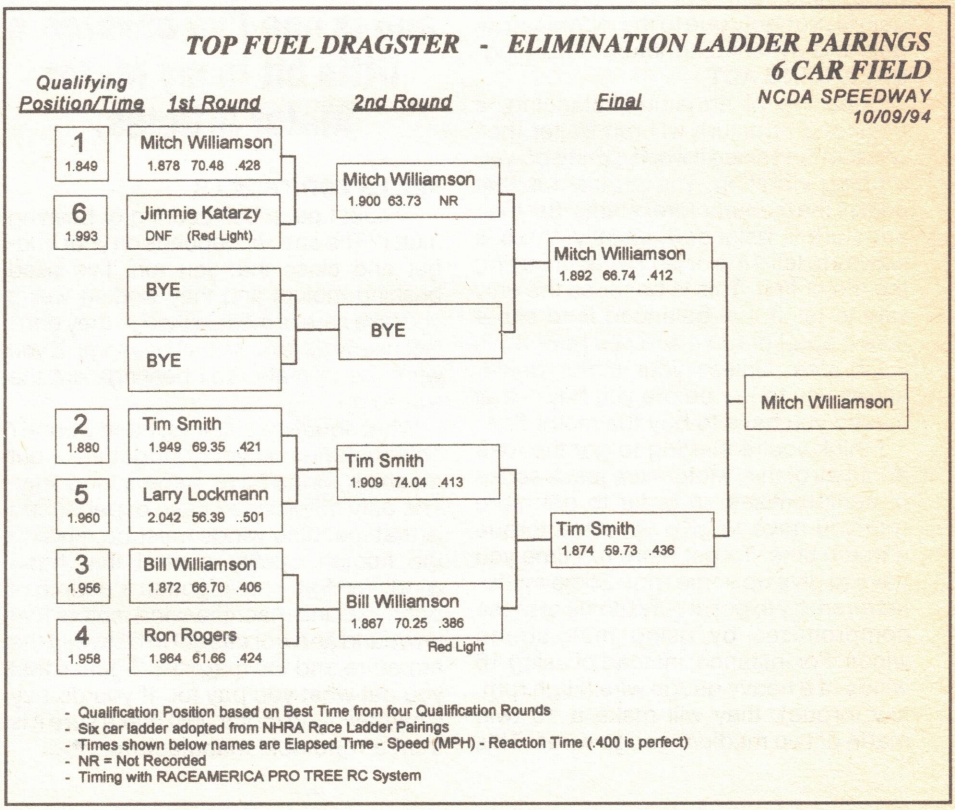


In this example, Tim Smith in the left lane had a faster ET (.018 seconds) and a slower RT (.024 seconds) and lost the race to Mitch Williamson by .006 seconds. That was one heck of a close race!

Car performance is measured by elapsed time (ET), which is the time between the interruption of the start and finish light beams. Driver reaction time is the time between the yellow lights and when the car interrupts the start beam. The time from the yellow lights to the green light is .400 of a second on a pro tree starting sequence. A reaction time less than .400 would be a starting foul, and would earn the driver a red light. Therefore, the driver with the lowest combined reaction time greater than or equal to .400 seconds plus elapsed time would be the winner.

So a driver with a slow reaction time can lose a race with a fast car. Now you can see that drag racing is more than just having a fast car; add bracket racing and you have another element of driver skill and knowledge to deal with. •

In drag racing, qualification passes are made to determine elimination pairings which lead to class winners. The faster cars are systematically paired against the slower cars to provide the best chance for the faster cars to advance to the next round as a reward for good qualification runs. The best ET in the last race determines lane choice; bye runs do not need to be made, but the driver will automatically lose lane choice. This ladders shows the races of a six-car field in determining a winner and the actual results by round.



PIRATE 10 CONTINUED FROM PAGE 67

After a few tankfuls, I leaned out the mixture to bring the bottom-end acceleration and top speed up to par. We put the car in the dirt and made a few passes to fine-tune the steering trim so the car would track in a straight line. The head temperature was monitored so as not to run too hot, using MIP's new Onboard Temperature Gauge. This incredibly handy (and remarkably inexpensive) LED temp gauge gives constant and instant readings of your gas engine's temperature without having to resort to one of those high-priced handheld units. With MIP's new gauge, you can check your temperature from a distance—no bending down or seeking out the screen—it's right there in front of you.

From the initial backyard tests, I was impressed with the whole Pirate 10 package. It has rubber-sealed wheel bearings to guard against dirt and grime creeping in, universal sliders on all four corners to get the power down to the ground. The buggy uses a double-reinforced aluminum chassis that remains stiff under duress and provides a stable platform for the nylon shocks to work effectively. Coupled with a rear anti-roll bar, which lets you adjust the degree of side-roll while turning, the Pirate's suspension package is doubly impressive. The steering turnbuckles allow easy adjustment of toe-in and toe-out, and the three steel-geared differentials make driving a smooth proposition. All in all, while listing the features inherent in the Pirate package, I became even more impressed with its breeding and potential.

The Pirate's acid test was yet to come: an on-track test of fire at Hemet's gas track, in a full-fledged racing environment(see sidebar).

I was confident in the Pirate's ability, and in the driving ability of our number-one test driver, my son Austin. Only time and experience would tell the complete story, but at this point, I can truly recommend the Pirate 10 as a complete nitro-powered racing package.

PRODUCT SOURCES

Distributed by Horizon Hobby, 4105 Fieldstone, Champaign, Illinois 61821. (217) 355-9511).

MIP, 746 E. Edna Pl., Covina, California 91723. (818) 339-9008. ●

PIRATE TEST CONTINUED FROM PAGE 46

to a good start (with a full tank of fuel!), running second for three laps before moving to the front for the remaining 10 laps. His time for the second round was 6:14.57 with 13 laps—good enough for second place in the A-main. This felt good, as we were second to Kris Moore—and he's one of the best there is in gas racing.

MAIN WARM-UP

The warm-up for the main found Austin's

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Note: If you know of a drag club or track that should be listed here, send the information to the Editor at RCMC, Box 2459, Capistrano Beach, California 92624. If you sell drag racing-related parts and equipment, we'd like to hear from you too.

Pirate 10 performing just as it should. The 30-second buzzer sounded, and I dutifully fueled the tank to the brim. The cars were put down and then were away in a cloud of dust and exhaust smoke. Austin didn't get the best start, going from second to fifth by the second turn, but I wasn't worried—he had 20 minutes to get sorted out and settle down. By lap two he was fourth, and by lap three he was up to second. That's the way the Pirate finished to Kris Moore's Inferno 10—not bad, finishing second with a brand-new car to veteran Kris Moore on its first time out.

I have to say (and Austin agrees) that the Pirate 10 4WD is a very fun 1/10-scale racer that's ideal for backyard fun or a winner on the competition trail. With a few easy mods, the Pirate 10 can run with the leaders of the pack—and get this: Dave Morales at OFNA Racing says a truck conversion kit is going to be released soon! We'll get one bolted on and have a story for you right here in *RCMC,* so hang tight.—*CD.* •

BUSH DEVIL CONTINUED FROM PAGE 50

design were always a weak link on the original design, as were the diff gears and drive shafts (dogbones) which were prone to stripping out during hard acceleration (read: abuse!). Anyway, the aftermarket crowd soon caught on and offered a wide range of options to keep the stock tranny in one piece.

So, it's to no one's surprise that the rear-end underwent a major overhaul. Metal bevel gears (planetary type) are now fully encased and the main diff gear appears to be of much stronger material than the old unit. An added plus is the use of metal output shafts and driveshafts (which was a high-wear item), it'll take some doing to wear these out!

The Bush Devil also utilizes the latest suspension components from the Super Blackfoot. A more traditional A-arm with upper suspension link is used on the rear, allowing for added suspension travel. Up front, wider a-arms are used which adds to the Devil's overall handling stability.

Although plastic shock bodies are used, they do a good job of keeping the huge tires on the ground. Of course, if you're looking for a more competitive ride, you can always upgrade the shocks from Tamiya's aftermarket catalog.

I was somewhat surprised to find a polycarbonate body included with the kit! I was expecting the hard-plastic (styrene), bulletproof shell that comes standard fair with the "Superfoot." No matter, Tamiya does a great job with the clear polycarbonate variety and besides, I had a ton of black paint sitting around waiting to be applied. After I thoroughly cleaned and dried the shell, I hit it with a couple of coats and let it dry overnight. One word of advice before applying the decals: don't forget to remove the protective film that covers the outside of the body from scratches and overspray!

POWER PACKAGE

The kit comes with a mechanical three-step speed control which I replaced with a Novak T-1 that I use for testing purposes. It's set up with Tamiya connectors and makes life a little easier during testing. The stock 540 motor was powered by "New Wave" 1400 mAH sport packs from RC Madness in Enfield, Connecticut, also the home of this week's test site.

CRASH DUMMIES

RC Madness is a full-service retail shop with indoor and outdoor offroad tracks. The weather wasn't too cooperative so I went inside to put the Bush Devil through its paces.

As a writer-photographer-RC junkie, it's always a good idea to take some static shots of the kit you're reviewing before you go beating the #$,@&* out of it. But what the heck, sometimes it's just real hard to be professional when your having so much fun!!

The redesigned suspension geometry made it almost impossible to roll it over and the drivetrain held up to some very serious abuse!

Keeping in mind that the Bush Devil wasn't designed for the serious offroading scene, it's still a blast to run it around this tight and demanding circuit. To its credit, the Bush Devil handled the jumps and rough track surface remarkably well. The redesigned suspension geometry made it almost impossible to roll it over and the drivetrain held up to some very serious abuse!

THE ENVELOPE PLEASE

Tamiya has again hit the mark with the Bush Devil. I couldn't think of a better way to get your son or daughter involved (or to revisit your RC roots) than by blasting around your backyard or local track with this kit. Easy to build, low, low maintenance and a fun factor that drops off the scale makes my decision easy.

PRODUCT SOURCE

Tamiya America, 2 Orion, Aliso Viejo, California 92656. (714) 362-2240. •

SAN JOSE CONTINUED FROM PAGE 57

The Friday practice session was very enlightening for the drivers as they became familiar with the Velodrome surtace all over again. The track surface is relatively smooth concrete 25 feet wide with typical velodrome banking—13 degrees on the straightaway increasing to 23 degrees in the corners. The track has developed a few bumps over the years from the shaking California earthquakes have given it, which the drivers have to reaquaint themselves with each visit. Heading into turn one you need to stay low; on the backstretch you also want to stay low to minimize erratic flights. The backstretch was heading right into the wind which may have contributed to a few cars just going airborne in that area.

On Friday the drivers spent a lot of time determining the critical balance point between maximum speed, lap count and battery life for a four-minute race. For the practice session, RaceAmerica set up a speed trap on the main straightaway to assist drivers with their speed after small setup changes. It turned out to be very helpful and appreciated by drivers to take a few laps, make a change, turn a few more laps and learn the speed difference. These cars aren't just poking along; the top classes are consistently turning laps in the 57 mph top speed range and average lap speeds of 54 mph on this track. Drivers were able to see their lap speeds stay within .1 or .2 mph for several laps and then start to fall off by 5 mph and then fall off by 1-2 mph just a few laps before their batteries would dump. This was where the magic of managing their top speeds to their four-minute battery dump was critical.

Event organizer and promoter Bruce Ashmore and his crew of volunteers had all the usual amenities and rules lined up for the drivers' meeting on Saturday morning. Holding the event in a county park added a few extra rules to the event, such as no glass bottles, fire extinguishers near portable generators (California fire danger is extreme at this time of the year) and no drinking and driving (actually no alcoholic beverages in the park), but also provided other amenities such as available restrooms and a picnic area. Event planning included intermission activities such as prize drawings from the generous contributions from the event sponsors for entered racers; open practice and a hosted barbecue prepared, planned and coordinated by Sandy Rodriguez. It was real nice not to have to run out for lunch.

QUALIFYING TIME

Qualifications on Saturday and Sunday progressed very smoothly with drivers getting through the three rounds of qualifications. There are tricks to be learned to starting out on an angled track with a high-powered car; some early mixups occurred right at the start as drivers did donuts on the track trying to come up to speed. New track records were established in seven of the nine classes entered, the event included the most cars ever completing 17 laps on the Velodrome track (six different drivers between qualifications and mains vs two in past events—all in Expert Modified), the only woman entered, Kathy

Birlew, qualified first and went on the win the Stock B-main to show the ladies can compete toe to toe with the guys in RC racing

SUNDAY FINALS

The Main events on Sunday brought out the best of the racers. Competition was keen and the battery management learned from practice and qualifications became critical. Several races were determined in the last 20 seconds as the leading speedsters ran out of juice only to watch other cars pass on the last lap. This was especially significant in the Expert Modified class where Todd Fossen walked past John Peterson at a cool 54 mph after John had led for much of the race while Todd paced himself for the whole four-minute event. In each event it seemed any number of drivers had more speed at any moment but the real discipline was to manage their whole race to the four minute. The Expert Main ended with the top four cars completing 17 laps, but the most impressive lap was run with the top four cars running 54 mph down the main straightaway side by side and into turn one without a mishap. The Pro Stock A-Main ended with five drivers completing 15 laps and four other starters completing 14 laps—pretty impressive. The Indy Modified class saw Jim Sterling completing 16 laps, with the next five drivers one lap back in a very tight race.

A few bad accidents occurred and as you can imagine, the amount of damage seems to be an exponential function related to speed. Complete chassis were snapped and wheels removed when hitting the link fence and supporting posts surrounding the track.

EVERYBODY SPEED NOW!

On Sunday morning, announcer Jerry Winklebauer suggested an impromptu speed challenge using the RaceAmerica drivers using whatever cars they had been running (after slight modifications) making twenty attempts to claim the prizes being offered for fastest and runner up. This was run after the completion of the regular program and had some pretty exciting moments. David Holmstrom came through the trap at 66.1 mph on the next to last attempt of the day with his Sportsman Modified main winner; the last attempt was by second-place driver Len Birlew who had been fastest with a 62.9 mph trapping but came home with the same speed again.

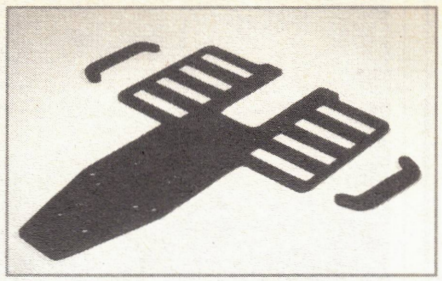
At the end of the racing, the trophy presentations were held—and did this event have trophies! There were a lot of happy faces for pictures as the drivers picked up their hardware.

The caliber of driver for this event was very impressive. Watching these drivers run cars as fast as they were going and staying in the groovearound the track is impressive. The sportsmanship was pretty neat to see

Hats off to Bruce and Debbie Ashmore for their efforts in organizing and putting on this kind of an event. Their tireless

continued on page 73

NEW! FROM T.M. R/C RACING COMPONENTS



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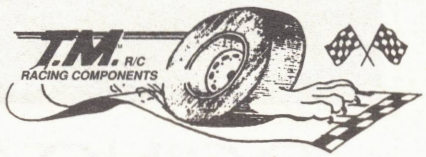
The Quad-2 F1 Chassis for Kyosho F-1 cars including the Impress. The Quad-2 Chassis is available in both fiberglass and graphite. With the new Quad-2 Chassis you can move your batteries forward or back to transfer weight to the front or back tires. To run oval you can run 4 cells on the left and two cells on the right. The Quad-2 Chassis makes the F-1 and Indy cars more stable and more predictable in handling. Also available are T.M.'s new F-1 wheels and tires to fit the Kyosho cars.



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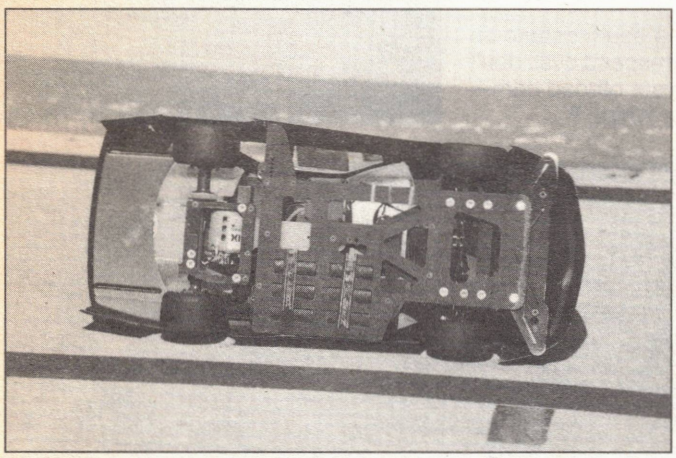
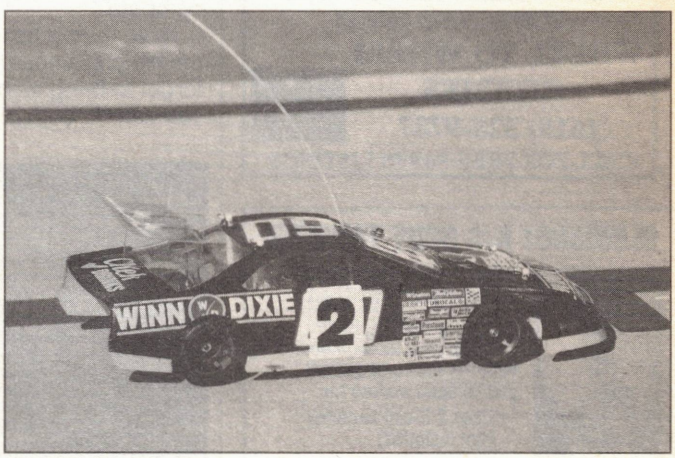


The business side of a modified car awaits its turn on the track.



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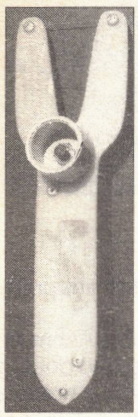
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GOING OFFROAD AT WHIPPOORWILL

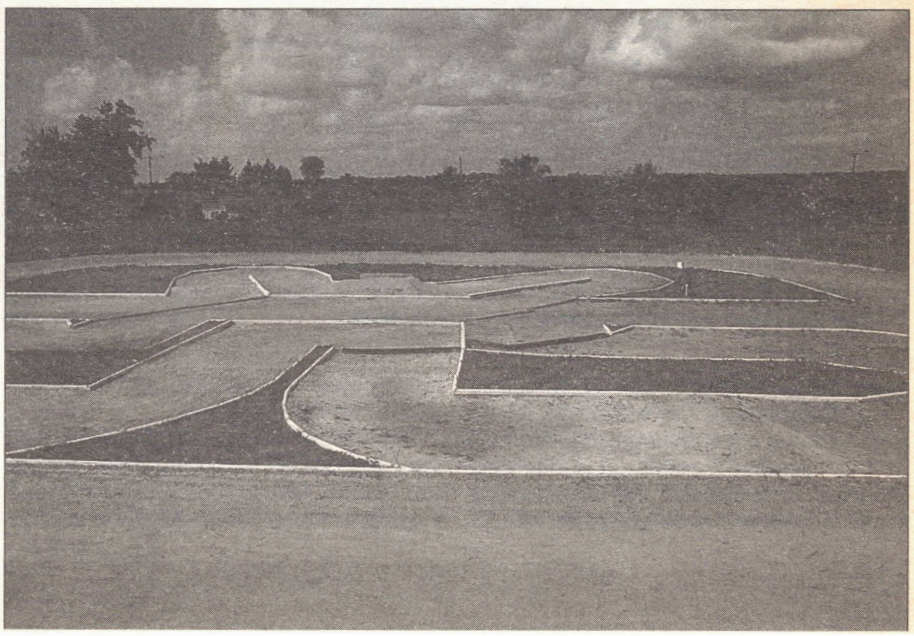
BY RICK EYRICH



Florida's famous Lake Whippoorwill International Speedway now has a high-class offroad track, located opposite the paved track, with a common pit area separating the two facilities. The offroad track has a separate drivers' stand, scoring booth and outer clay oval encircling the main offroad circuit.

Currently, races are being held on Sundays. The track was designed to allow enough room for the gas-powered cars to compete.

Now, if your heading south to take on the Whip's famous high-speed oval, don't forget to bring along your offroad cars—you can do both at the Whip! •



efforts and unselfish commitment to RC racing were recognized by presentation of an engraved tray from a group of the drivers headed by John Rodriguez. Even before everything was taken down and put away, there was talk of next spring's race. It will make for an awesome event.

Let's give a special thanks to Ron Sheldon who allows Bruce the time and money to put on this kind of event.

Generous event sponsors contributed over $1000 worth of merchandise including bodies, movies, T-Shirts, chassis, battery packs, speed controllers, stickers and lunch:

Associated Electrics, Tekin, DRS Co., BRP, Novak, Stealth Batteries, Wolfe Motor Sports, BBR, RaceAmerica, Sheldon's Hobbies.

OFFICIAL RACE RESULTS

EXPERT MODIFIED A-MAIN

FINISH	QUAL	NAME
1	1	Todd Fossen
2	3	John Peterson
3	5	Jake Rosen
4	8	Dan Lee
5	4	Kenneth Jones
6	7	Bryant Thomas
7	9	William Brown
8	2	Steve Sank
9	10	Len Birlew
10	6	Bill Beauchemin

EXPERT MODIFIED "B" MAIN

FINISH	QUAL	NAME
1	6	Bill Main
2	2	Ron Harter
3	3	Jim Sterling
4	7	Larry Mead
5	5	Richie Davis
6	4	Richard DeMars
7	9	Brutal Brutus

SPORTSMAN MODIFIED A-MAIN

FINISH	QUAL	NAME
1	2	Dave Holmstrom *
2	1	John Rodriguez
3	4	Guill Cristobal
4	5	John Harbold
5	6	Stan Rice

** Indicates current track record holder*

PRO STOCK A-MAIN

FINISH	QUAL	NAME
1	2	Dave Smith *
2	1	Brent May
3	3	Mr. J
4	10	Jake Rosen
5	5	Greg Moreland
6	9	Don Ortiz
7	6	Dan Quick
8	4	Richard Slejmar
9	8	Brutal Brutus

** Indicates current track record holder*

STOCK A-MAIN

FINISH	QUAL	NAME
1	2	Bob Lencioni
2	1	John Geisness Jr.
3	8	Frank Yates
4	6	Robert Dippie
5	7	Don Korn
6	5	David Rice
7	10	Dennis Tom
8	3	Rockman

** Indicates current track record holder*

INDY MODIFIED A-MAIN

FINISH	QUAL	NAME
1	4	Jim Sterling
2	1	Brent May
3	5	Mr. J
4	2	John Rodriguez
5	3	Dan Quick
6	6	John Harbold
7	8	Guill Cristobal
8	7	FuMan

INDY PRO STOCK A-MAIN

FINISH	QUAL	NAME
1	1	Perry Stevens
2	3	Ernie Haberman
3	2	John Geisness Sr.

IMPROMPTU SPEED RECORD ATTEMPT RESULTS

(no equipment limitations-only second lap counts)

1) David Holmstrom	66.1 mph
2) Len Birlew	62.9
3) John Peterson	61.7
4) Dan Lee	60.0
5) Perry Stevens	58.2
6) Wild Bill Beauchemin	56.6
7) Dan Quick	55.7
8) Brutal Brutus	55.5
9) FuMan	55.0
10) Richard Slejmar	51.7
11) John Geisness Jr.	51.4

ROAR NATS CONTINUED FROM PAGE 66

tight corner on the top of the hill, with both cars ending up stuck in the pipe. A good marshaling job put Matt back in the lead, with Brian right behind.

There were now two laps to go. Brian was close, but not close enough to try another pass. Then, on the short straight, before the main straight, Brian had gotten a slingshot out of the bank and ran straight into the back of Matt's car. Maybe Brian figured that was his only chance. Whatever. Both cars spun out and took off for the finish line with Matt just beating Brian to the finish.

2WD A-MAIN #2

1. MATT FRANCIS
2. BRIAN KINWALD
3. MARK FRANCIS
4. MATT LEDGER
5. BRET REELFS
6. BRIAN DUNBAR
7. RICK HOHWART
8. GREG HODAPP
9. MARK PAVIDIS
10. JEREMY KORTZ

continued on page 80

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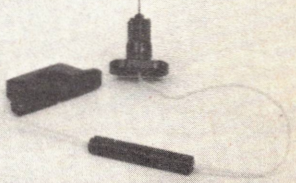

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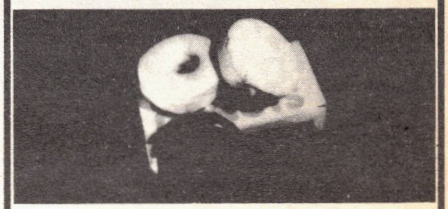

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Track of the Month

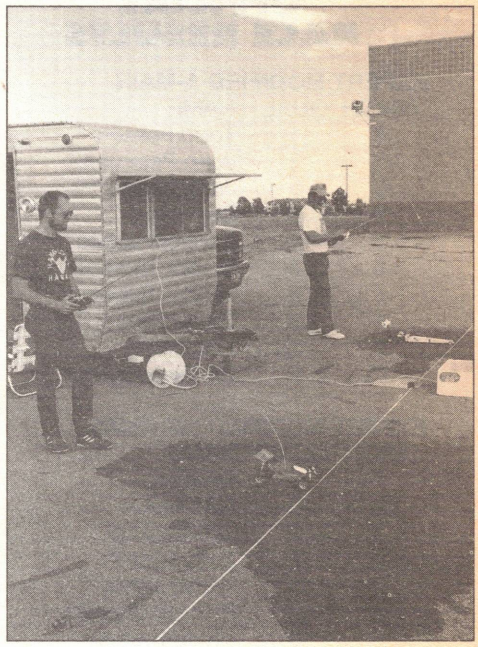
SCALE RAILS DRAG STRIP



Paul Taylor (left) and Randy Ray (right) prep their rails for battle.

BY KEVIN MEYER • PHOTOS BY JOHN DAVIS

With the RC track numbers being minimized in 1994, it's good to see alternate possibilities on the horizon. As RC drag racing has become bigger and bigger in many parts of the country, it's just getting started in Colorado. Gearing up for its third year of operation, Scale Rails is still recruiting racers. Track managers Paul Taylor and Randy Ray are looking forward to firing things up again this spring. With the closure of the only carpet track and also several offroad tracks in the Denver area, racing space is at a premium. Paul and Randy emphasize the point that with their handicap bracket system anyone can be competitive with any car (pan cars, stadium truck, buggies, etc.) With several promotional projects in the works to attract more racers, they just need to make their presence known. The largest turnout so far has been 15 to 20 racers. The guys are obviously not in it for the money. They invite all racers to come out with any car, motor and battery combo. During the course of the afternoon many curious spectators showed up to catch the action. Randy has several cars available to would-be racers for demo runs. They hope to get you hooked. For more information contact Paul Taylor (303) 857-2573 or Randy Ray (303) 469-4914. •



Don Reynolds (near lane) and Paul Taylor demonstrate the fact that any vehicle can be competitive.

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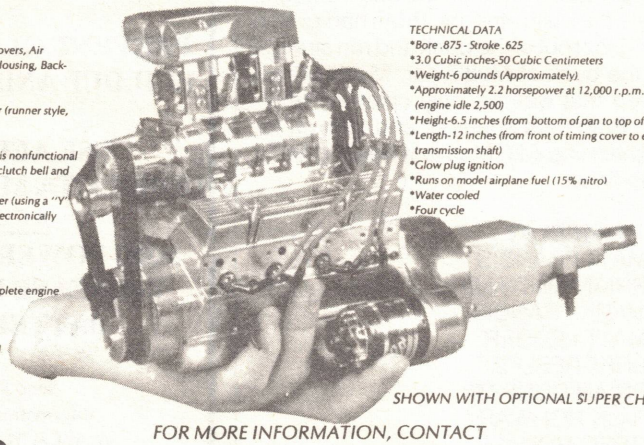

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*3.0 Cubic inches-50 Cubic Centimeters
*Weight-6 pounds (Approximately)
*Approximately 2.2 horsepower at 12,000 r.p.m. (engine idle 2,500)
*Height-6.5 inches (from bottom of pan to top of air cleaner)
*Length-12 inches (from front of timing cover to end of transmission shaft)
*Glow plug ignition
*Runs on model airplane fuel (15% nitro)
*Water cooled
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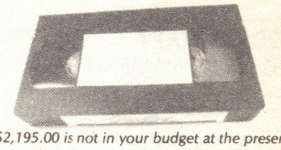

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Once Scott Bakke had his fill of large-scale RC aircraft and boats, the next step was Q-scale RC cars. The first was a Pacesetter sprinter, followed by a New Era Grand National done up in the #33 Harry Gant motif. As you can tell, Bakke's skill in both building and detailing is superb.

Is it Real, or



After racing and winning with a WCM Pro Grand National, Bakke decided to try his hand at constructing not only a complete Q-scale car, but a full pit crew as well. The "Brew Crew" was designed and built entirely from scratch, right down to the tools, radios and clothing worn by the workers.

...sit Q-Scale?

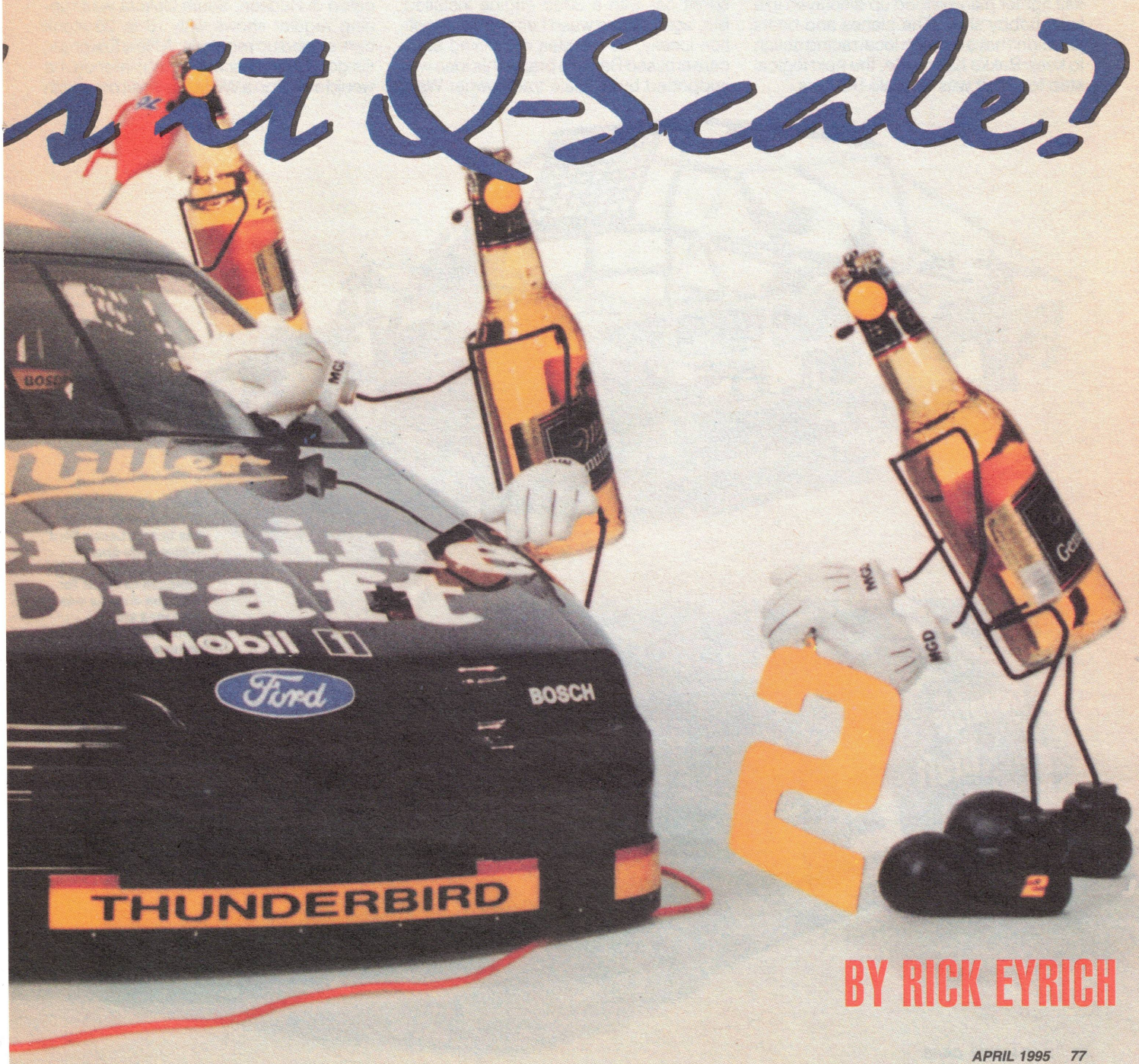
In a recent Big Tips column, I discussed the air induction system for Q-scale RC cars made and sold by Bakkeducts. But the company's owner, Scott Bakke, doesn't just limit his skills to Q-scale body-shell ducts. Scott has built and raced several Q-scale RC cars that would knock anyone's socks off.



The completed display was part of the Pontiac 125 quarter-scale race held at the Sioux Falls mall parking lot in 1993. Shown with the hauler used for the full-sized Penske Winston Cup show car is the first edition of Scott's Quarter-to-Midnight Q-scaler, which used a Grand Prix body shell.

IN THE BEGINNING

Scott started out 15 years ago with a large-scale RC airplane and then proceeded to build three



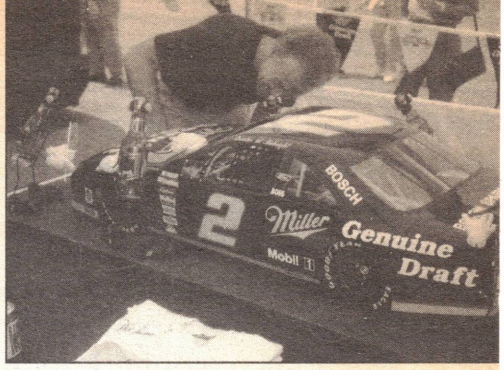
BY RICK EYRICH



After getting into the Michigan International Speedway pit area, Bakke was able to display the car and pitcrew under the Penske motorhome canopy. Scott (on the left) is showing the display to a Miller crew member and two staffers from the Inside Winston Cup Racing TV program.



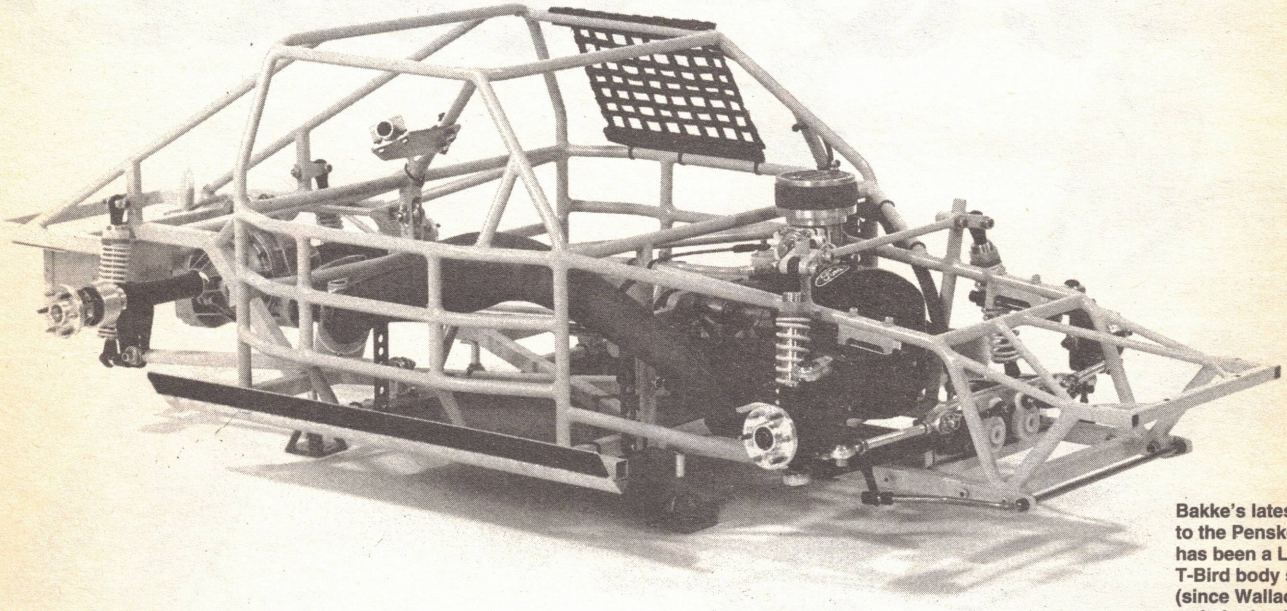
One of the high points of Scott's trip to Michigan included meeting former NASCAR champ and current team owner Bobby Allison. The first Q-scale RC car body shell Scott had done was a replica of Allison's last full-time ride, the Miller High Life #12 Buick, with which Bobby won the Daytona 500 back in 1988.

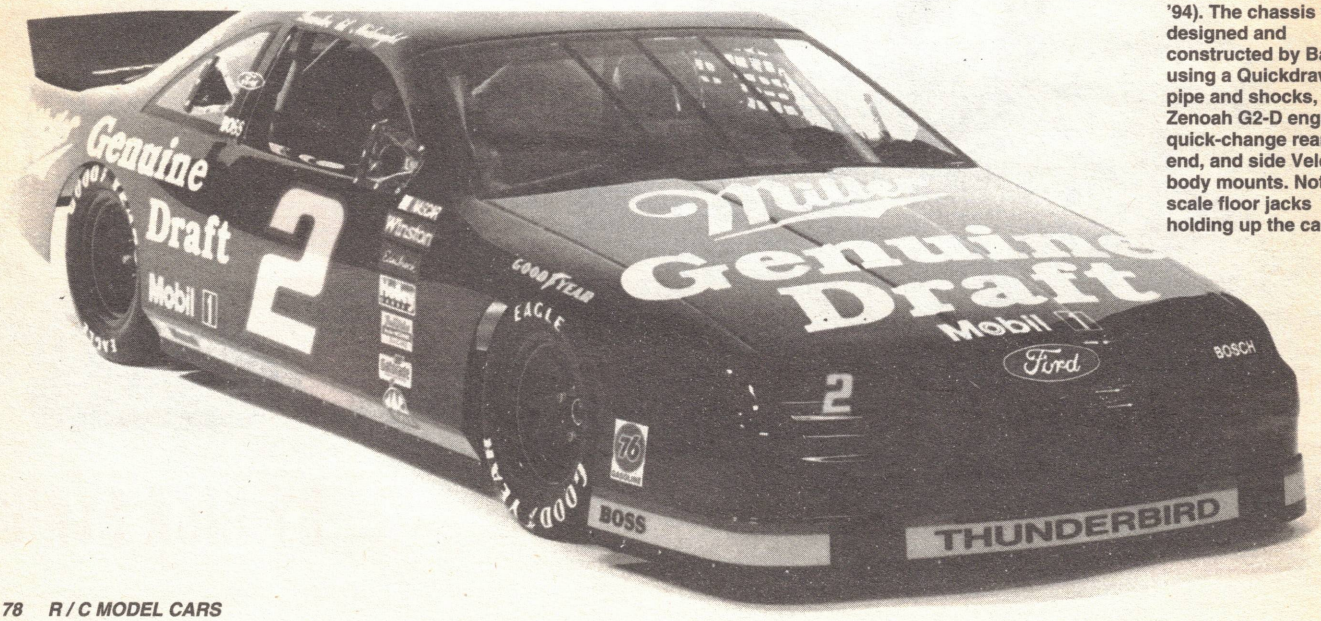


Citgo Ford driver Morgan Sheppard gets down low to check out the inner workings of the Bakke Q-scale RC car. Several other NASCAR competitors and car owners were interested in the unique display. Scott has been commissioned to build another Miller car (with a Conley V-8 engine installed) for Roger Penske's Michigan International Speedway museum.

sharp-looking RC racing boats. The Corsair fighter plane ended up displayed in a local hobby shop. The planes and boats just didn't have enough local racing action to keep Bakke happy. So, the next logical step for Scott was Q-scale RC cars.

The first car he tried was a Pacesetter sprint car with a 33cc engine installed; but, again, there wasn't enough competition locally, so the idea of running stock cars crossed Bakke's brain. This idea was supported by Q-scale track owner Wally Taylor, whose banked asphalt oval located in Hudson, South Dakota was running regular shows with 16 to 20 stock cars signed up regularly. A New Era chassis got Bakke Q-scale racing; later on, he would switch to a WCM Pro shaft drive with





Bakke's latest addition to the Penske replica has been a Lexan Ford T-Bird body shell (since Wallace switched to Fords for '94). The chassis was designed and constructed by Bakke using a Quickdraw pipe and shocks, Zenoah G2-D engine, quick-change rear end, and side Velcro body mounts. Note the scale floor jacks holding up the car.

quick-change rear-end car.

Scott's unique talent for reproducing sharp-looking Q-scale body shells started with a replica of Bobby Allison's Buick NASCAR racer. That was followed by a equally impressive version of the Harry Gant-driven Skoal Bandit. Both Gant and Rusty Wallace personally viewed the #33 Q-scale car at Jackson Speedway in Minnesota and a photo of Wallace looking inside the car was run in the *Hawkeye Racing News* magazine.

A fresh body for the WCM car featured a local sponsor rounded up by Bakke himself; it must have been lucky partnership, as he proceeded to win the Outlaw Raceway Park track championship with a record of 8 wins and 15 top-five finishes. Plus it was done with what was considered an uncompetitive shaft-driven Q-scale car. Of course, Bakke gives ample credit for his success to his then-new air intake ducts which improved fuel mileage and engine cooling.

Even with a track championship in his pocket, Bakke now had to find a new sponsor for the following season, and knowing that sponsors want to know what they're getting for their money, he came up with an unique idea.

QUARTER-TO-MIDNIGHT AND THE BREW CREW

This idea began with a self-constructed chassis using square tubing for the main frame and round tubing for the rollcage.

Scott used magazines as reference material to recreate a full NASCAR replica, right down to the fuel tank mounted inside a fuel-cell box. A Quickdraw pipe and shocks, along with a quick-change rear drive were also used; no detail was overlooked to create a very realistic Q-scale car. A Lexan Pontiac Grand Prix body covered the finished product. Again, Scott outdid himself in recreating the Miller/Penske Winston Cup car graphics.

Once completed, the local Miller distributor was impressed enough to use the car (now called Quarter-to-Midnight after Midnight, Rusty's favorite car) as an in-store display. Later, a parking lot Q-scale race (the Pontiac 125) was held in '93 and not only featured Bakke's racer, but the full-sized #2 Wallace showcar as well. A packed house at the Sioux Falls mall parking lot also got to see what Scott had built to go with the Penske car—the Brew Crew.

Using all of his creative juices, Bakke built six Q-scale "crew members" to work on his Wallace racer. Each pit person (fashioned around a bottle) has his own radio headset, gloves, shoes and tools at the ready. The crew's gear includes air wrenches, hoses, a hydraulic jack, gas can and pit sign, all made from scratch by Scott. A suitable work area/pit stall allows the Penske crew to do their duties on the Q-scale car and doubles as a viewing stand as well. The total package of car and crew was a major head-turner at the parking lot race, but that was only the tip of the iceberg.

TAKING THE CREW ON THE ROAD

Working with his local sponsors (Jerry Grode and Jim Burma), Scott secured some Miller credentials for the June '94 NASCAR event at Michigan International Speedway.

He'd also made up a suitable Lexan Ford Thunderbird body shell for "Quarter-to-Midnight" since Penske had made the switch to the T-bird for '94. Scott's original plan was to get the car seen by Wallace and his crew and hopefully get both to autograph the Q-scale car and pit figures.

Scott used magazines as reference material to recreate a full NASCAR replica.

Well, 800 miles later Scott and his girlfriend were at Michigan International Speedway three days before the race, carrying a photo of the car and crew. Bakke sought out the Penske hauler in the MIS pit area. Once there, he struck up a conversation with one of the Miller personnel and once he showed him the shot of the car, interest from the Penske camp started to snowball. Mark took the photo inside the motorhome, and on his return to Bakke, he informed Scott that the team was really busy, but would try to get the display inside during the next couple of days.

PASSES? WE DON'T NEED NO #@!% PASSES!

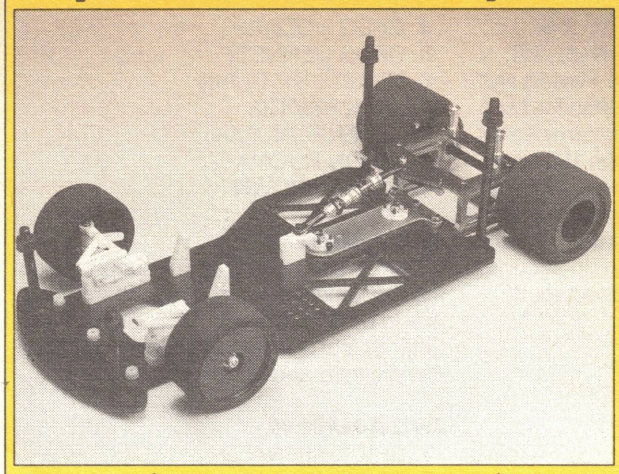
After two hot days of hoping and waiting, Scott arrived early Saturday morning and made a trip outside the Michigan track with the Penske team member. The idea was to bring the Q-scale car/crew back into the Penske pit area in the team van. Mark told Bakke and his girlfriend to just follow him in Scott's car through five track checkpoints—with no in-car paddock pass—to the Penske motorhome. Fearing they'd be stopped and asked to leave at any one of the five gates, they soon found themselves parked right next to the huge Penske complex, right in the pits.

Scott then set up Midnight and the Crew under a hospitality canopy connected to the Penske motorhome. Before they knew it, scores of people were eyeballing the Miller Q-scale RC car and crew. Along with the regular race fans, interested viewers of Bakke's handiwork included former Winston Cup champ and car owner Bobby Allison, Citgo driver Morgan Sheppard, and the Captain himself, Roger Penske. Scott's creation was a big hit with the NASCAR community, as most commented on the craftsmanship and detail found on the Q-scale car.

In fact, so much interest was shown that the Penske people had to finally rope off the area near the display to keep some semblance of order and to keep access to the motorhome open as well. Roger Penske's interest in the RC car prompted him to ask Bakke to build him a Penske Q-scale NASCAR racer for the track's museum! Changes to the design would be needed (a clip frame, an opening hood, and a Conley V-8 powerplant, but the display had definitely made a major impression on both the race fans and participants as well.

With a superior effort and a lot of hard work, Scott Bakke was able to not only to gain a sponsor and provide ample advertising via the display, he also showed that quarter-scale RC cars can and will in be more than just racing machines—they can also draw more and more new people into our hobby. And as we all know, there is strength in numbers. •

If you want to WIN...you've got to "XL"



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ROAR NATS CONTINUED FROM PAGE 73

2WD A-MAIN #3

There were now three drivers with a chance to win the overall class. Pavidis and Francis both had wins and Brian had two seconds. The outcome was determined on the first lap. Brian got around the 180 clean, while everyone else got tangled up there.

Brian was long gone. It was now a race for second place between Mark Francis and Bret Reelfs. Mark finished in second, with Bret third and Rick Hohwart fourth.

2WD A-MAIN #3

1. BRIAN KINWALD
2. MARK FRANCIS
3. BRET REELFS
4. RICK HOHWART
5. GREG HODAPP
6. BRIAN DUNBAR
7. MARK PAVIDIS
8. MATT LEDGER
9. MATT FRANCIS
10. JEREMY KORTZ

2WD OVERALL RESULTS

PLACE, DRIVER, CAR, MOTOR

1. BRIAN KINWALD, XX, TRINITY
2. MARK FRANCIS, RC10, REEDY
3. RICK HOHWART, XX, PEAK
4. MARK PAVIDIS, RC10, REEDY
5. BRET REELFS, RC10, REEDY
6. MATT FRANCIS, RC10, REEDY
7. GREG HODAPP, XX, PEAK
8. BRIAN DUNBAR, XX, TRINITY
9. MATT LEDGER, RC10, REEDY
10. JEREMY KORTZ, XX, PEAK

2WD B-MAIN

1. JASON RUONA
2. BARRY BAKER
3. JAMES BROWN
4. JACK JOHNSON
5. JIMMY JACOBSON
6. DEREK FURUTANI
7. DEAN KARNS
8. BRAD REELFS
9. CARLOS GONZALES
10. JON ANDERSON

2WD C-MAIN

1. JONATHAN MORGAN
2. RICHARD SAXTON
3. SCOTT ROBERTS
4. SCOTT BROWN
5. PAUL WYNN
6. FRANCOIS COUILLARD
7. DARRIN JENDREAS
8. CHRIS WHITE
9. J.R. MITCH
10. SCOTT HUGHES

4WD A-MALN #1

Brian, Jeremy Kortz and Rick Hohwart were in a close group, with Brian slowly pulling away. Jeremy and Rick swapped positions a couple of times, with Jeremy finally finishing in second and Rick third.

4WD A- MAIN #1

1. BRIAN KINWALD
2. JEREMY KORTZ
3. RICK HOHWART
4. GREG HODAPP
5. GREG DENNETT
6. FROSTY ST. CLAIR
7. MARK PAVIDIS
8. DEREK FURUTANI
9. JASON RUONA
10. SCOTT BROWN

4WD A-MAIN #2

Brian wasn't taking any chances. He got the lead and was long gone. There was a pileup behind him, with Scott Brown finally getting clear to take over second, with Mark Pavidis third and Greg Dennett fourth.

4WD A-MAIN #2

1. BRIAN KINWALD
2. SCOTT BROWN
3. MARK PAVIDIS
4. GREG DENNETT
5. GREG HODAPP
6. DEREK FURUTANI
7. RICK HOHWART
8. JASON RUONA
9. FROSTY ST. CLAIR
10. JEREMY KORTZ

4WD A-MAIN #3

Brian's two wins gave him the title, so he elected to sit this one out. This gave the pole starting position to Jeremy Kortz. Jeremy got through the 180 OK, but then he hung it up on the next corner and everyone went by.

Scott Brown had his act together and won the race with Derek Furutani finishing second and Rick Hohwart taking third.

4WD A-MAIN #3

1. SCOTT BROWN
2. DEREK FURUTANI
3. RICK HOHWART
4. JASON RUONA
5. GREG HODAPP
6. MARK PAVIDIS
7. FROSTY ST. CLAIR
8. GREG DENNETT
9. JEREMY KORTZ
10. BRIAN KINWALD - DNS

4WD OVERALL RESULTS

PLACE, DRIVER, CAR, MOTOR

1. BRIAN KINWALD, YOKOMO, TRINITY
2. SCOTT BROWN, YOKOMO, PEAK
3. RICK HOHWART, YOKOMO, PEAK
4. DEREK FURUTANI, YOKOMO, REEDY
5. GREG HODAPP, YOKOMO, PEAK
6. MARK PAVIDIS, YOKOMO, REEDY
7. GREG DENNETT, YOKOMO, REEDY
8. JEREMY KORTZ, YOKOMO, PEAK
9. JASON RUONA, YOKOMO, REEDY
10. FROSTY ST. CLAIR, YOKOMO, REEDY

4WD B-MAIN

1. MATT LEDGER
2. MATT FRANCIS
3. JAMES BROWN
4. SCOTT HUGHES
5. AARON BINER
6. JACK JOHNSON
7. BRAD REELFS
8. CHRIS WHITE
9. MIKE MELLIN
10. CARLOS GONZALES

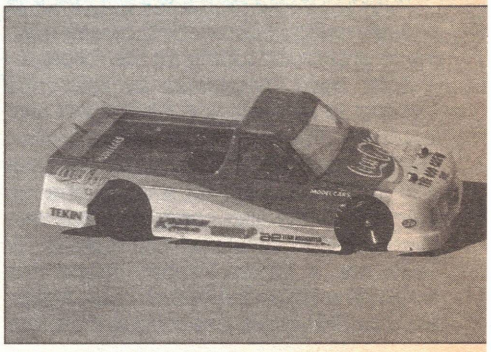
4WD C-MAIN

1. BRET REELFS
2. PAUL WYNN
3. EDWIN McTUREOUS
4. JONATHAN MORGAN
5. BRIAN KADOW
6. MARK FRANCIS
7. GIL LOSI JR.
8. ANTHONY ANDREWS
9. SCOTT ROBERTS
10. JON ANDERSON •

DOMINGUEZ HILLS CONT. FROM PAGE 62

Close behind J.R. in qualifying was Danny Jones with a 15/3:57, followed by Ron Ponce with a 15/4:16.

NASCAR is running a full schedule of SuperTruck races in 1995, and NORRCA is right up there with a similar RC schedule. The popularity of pickup trucks in the U.S. is the primary reason for the establishment of this new NASCAR racing class which puts purpose-built pickups on oval tracks in competition that mirrors the intense, close infighting that we see every weekend on the Winston Cup tour. J.R. Sitman is sure that the same degree of enthusiasm will infect RC racers who will be picking up on truck racing in increasing numbers throughout the season.



***RCMC* Editor Richard Dowdy's debut at the Velodrome with a SuperTruck found him finishing in sixth. His Dahm's Tornado truck used an Associated 10LSS chassis, Tekin 411 G2 speed control and Futaba's dependable 1024 PCM radio system.**

Though truck racing was the new kid in town this weekend, it by no means was not the only type of racing going on at the Dominguez Hills Velodrome. Superspeedway, Indy, plus stock and modified stock cars were also in competition.

ENDURO FOLLIES

The superspeedway event was contested over 75 laps, with the final race coming down to a hilarious conclusion as several drivers (led by Roger Pane) tried to set a pitlane speed record by racing through the speed trap flat out. J.R., who was monitoring the radar, finally gave up

on enforcement and began calling out top speeds as the cars threaded their way through the 2x4 trap. Pane's 56 mph was declared the top pitlane speed in an escalating contest that threatened to get out of hand, if the race hadn't of ended when it did. The Superspeedway Enduro was won by Roger Vorba, who turned in a 75-lap performance with a 17:26.96 time. Second was Roger Pane with 72 laps, 17:39.07 and Bill McAneney at 70 laps, 17:30.43. *RCMC* contributor Doug Adams finished fifth with 64 laps, 17:41.18.

NASTRUCK DEBUTS

The race we had come to see was the truck event. Even though this was the first Velodrome outing for the trucks, 10 eager competitors showed up with legal trucks, ready to race. TQ J.R. Sitman led the pack with his Bolink/HPI truck using Bolink's Ford Ranger body. A Kisbey modified motor and Novak electronics carried him to the front-runner position in qualifying.

Second-fastest qualifier was Danny Jones, who averaged 49.3 mph in qualifying, just one mile per hour slower than JR's time. Third was Ron Ponce, followed by Frank Killam.

An impromptu speed run for the trucks was announced, and the field filled quickly. Fastest was NORRCA's Chuck Mann, who defied the odds with a second-lap time that bettered his first lap mark. A 60.71 mph run was tops, followed by Ron Ponce's 60.32, and Frank Killam's 60.07.

When the buzzer sounded for the A-main, the race was on, with J.R. taking the lead and holding it for the entire race. Don Natale finished second, followed by Frank Killam, Ron Ponce and Tom Kendall. *RCMC*'s editor, Richard Dowdy, came in sixth (the last points-paying position), followed by Scot Peticlerc, Danny Jones and Chuck Mann.

If you're interested in getting in on the fun, see *RC Model Cars*' feature on building a SuperTruck in the February, 1995 issue by Kevin Meyer. It'll get you started off on the right foot.

RESULTS NORRCA PAVED OVAL VELODROME RACE

SUPERSPEEDWAY A-MAIN
1. Roger Vorba
2. Roger Pane
3. Bill McAneney
4. Mace Horowitz
5. Doug Adams
6. Terry Van
7. Dave Deerman

SPORTSMAN STOCK A-MAIN
1. Perry Lusk
2. Tim Ganous
3. Tony Jackson
4. Chas Cuzzoni
5. Tim Price
6. Jerry Bassett
7. Steve Pacquin
8. Marshall Smethers
9. Ronald Quintana
10. Richard Denney

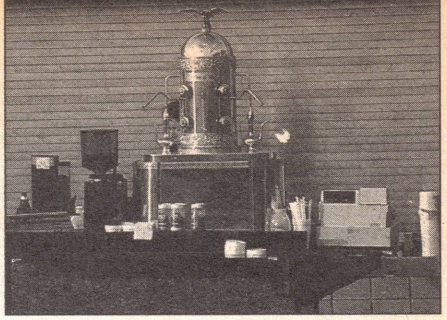
NASTRUCK A-MAIN
1. J.R. Sitman
2. Donald Natale
3. Frank Killam
4. Ron Ponce
5. Tom Kendall
6. Richard Dowdy
7. Scot Peticlerc
8. Danny Jones
9. Chuck Mann

INDY A-MAIN
1. Jim Collis
2. John Peterson
3. Bob Brockamp
4. Gary H.
5. Lee Patton
6. Nelson Walker
7. Jay Kimbrough

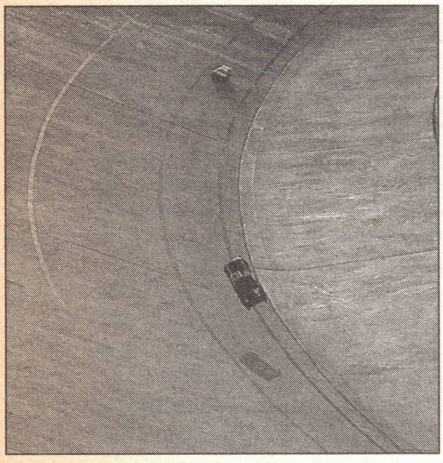
EXPERT STOCK A-MAIN
1. Odie Duncan
2. Joe Blackburn
3. Scot Peticlerc
4. Brett Patti
5. John Ligons
6. Scott Bassett
7. Mike Smith
8. Bob Sarnelle
9. Pete Hames
10. Art Gonzales Sr.

SPORTSMAN MODIFIED A-MAIN
1. Tony Jackson
2. Vic Nalley
3. Bruce Chong
4. Tim Smith
5. Randy Woodell
6. Chris Hadtrath
7. Kyle Mohan
8. Felipe Avila
9. Dennis Dunn
10. Marco Mediwa

EXPERT MODIFIED A-MAIN
1. Greg Larson
2. Roger Pane
3. Don Ham
4. Danny Egger
5. Ed Allen
6. John Peterson
7. Frank Killam
8. Steve Cervantes
9. Steve Lantz
10 Mike Reedy •



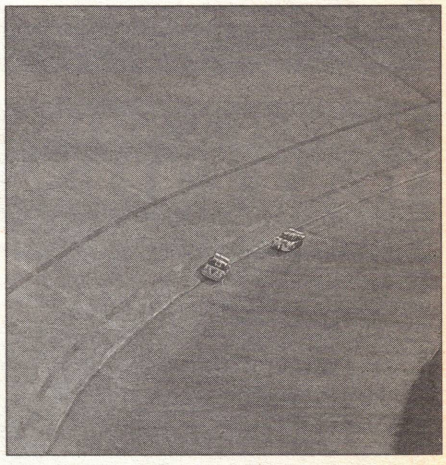
At first glance, racers thought J.R. had gone over the edge with this great Borg-Warner Indy 500 replica trophy. Closer inspection revealed that it was a cappuccino machine, set up near the snack bar.



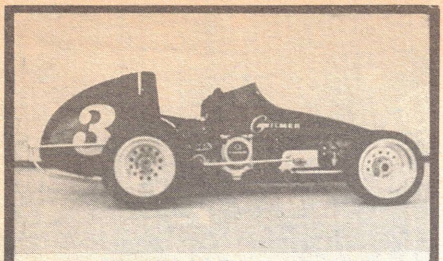
High-flying cars are never the exception in Velodrome racing. Every heat puts on a show of aerial excellence as cars take to the sky.



Using a competitor's car as a launching ramp, this enterprising driver has leapt ahead in one bold move.



Some close racing action during a qualifying heat.



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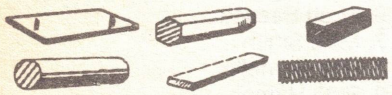

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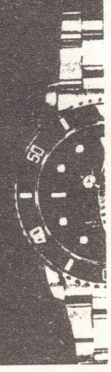

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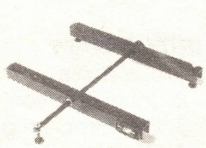

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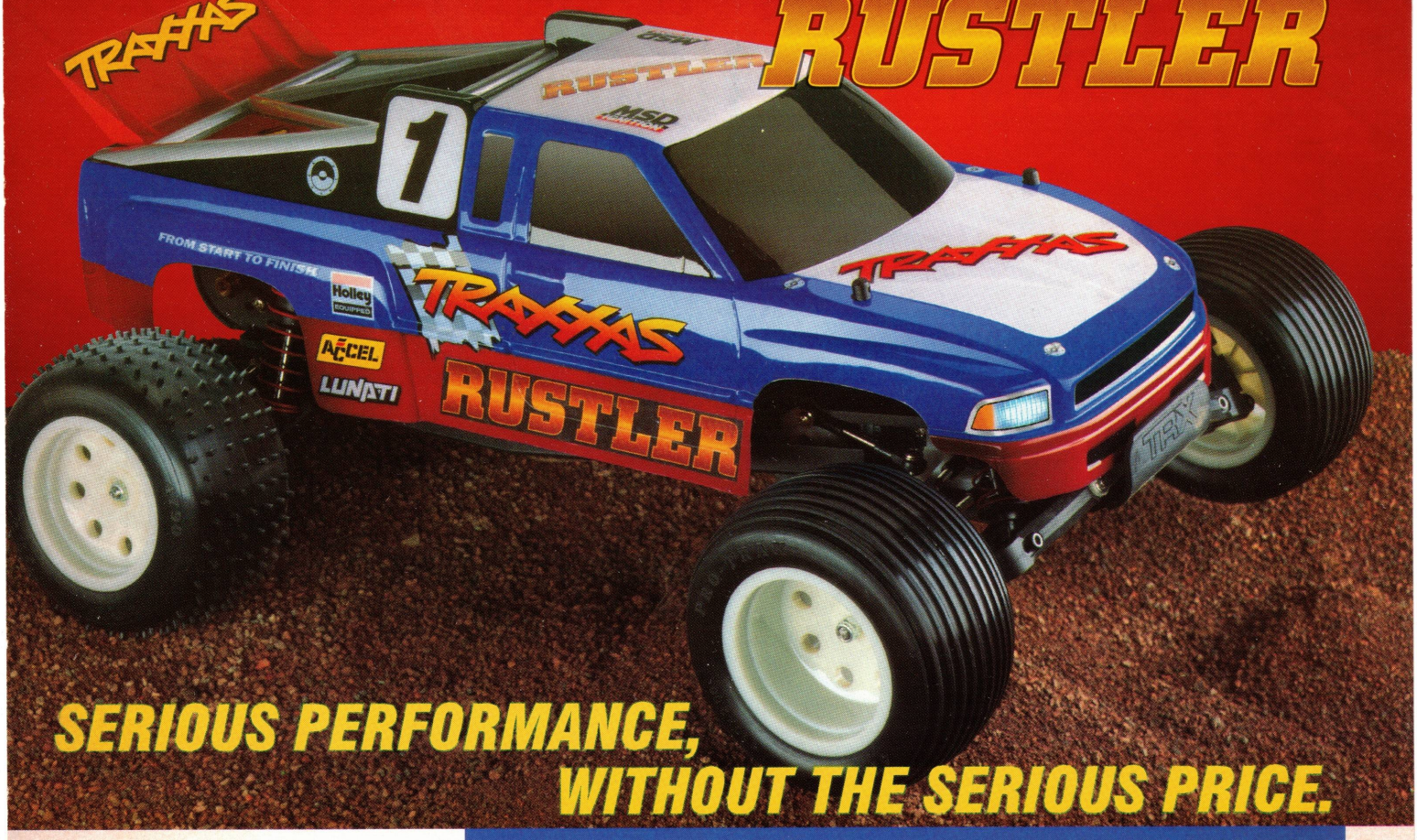

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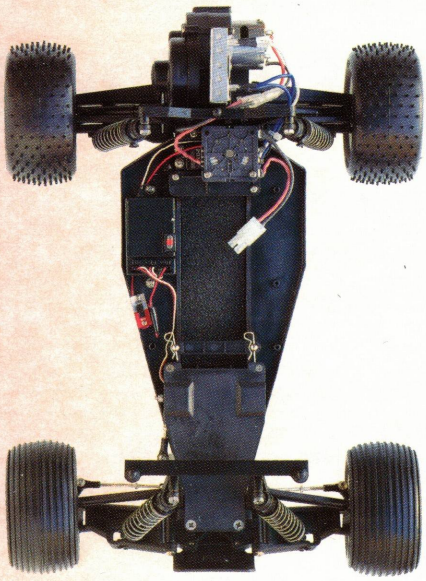

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CHASSIS		Composite Resin, non-flex, strong yet light.	ABS Resin	Nylon
SLIPPER CLUTCH	**Yes**	Smoother transfer of power to the ground. Increases traction control	NO	NO
48 PITCH SPUR GEAR	**Yes**	Smoother operation, increases motor efficiency	NO	NO

	MRC MT-10M BIG TIRE MONSTER TRUCK		BRAND X BIG TIRE MONSTER TRUCK	BRAND Y BIG TIRE MONSTER TRUCK
OIL DAMPENED SHOCKS	**Yes**	Fine tune suspension for increased control on varied terrain	NO	Yes
ADJUSTABLE SHOCK COLLAR	**Yes**	Lets you change spring preload to adjust handling & steering	Yes	Yes
MULTIPLE SHOCK TOWER MOUNTING POS.	**Yes**	Lets you adjust handling & steering characteristics front and rear.	NO	Yes Rear Only
ZERO BUMP STEER	**Yes**	Allows greater control and predictability	NO	NO

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