

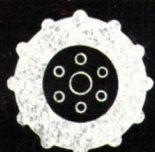
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Radio Control Car Action also held a shoot-out between the RC10 and the next most popular car, and the RC10 came out a winner again!

And at the Reedy Race of Champions (called a re-run of the World Championships because all the drivers from *Europe*, *Japan*, and the *USA* who made the A Main at the World Championships were present), the RC10 finished first and second.

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

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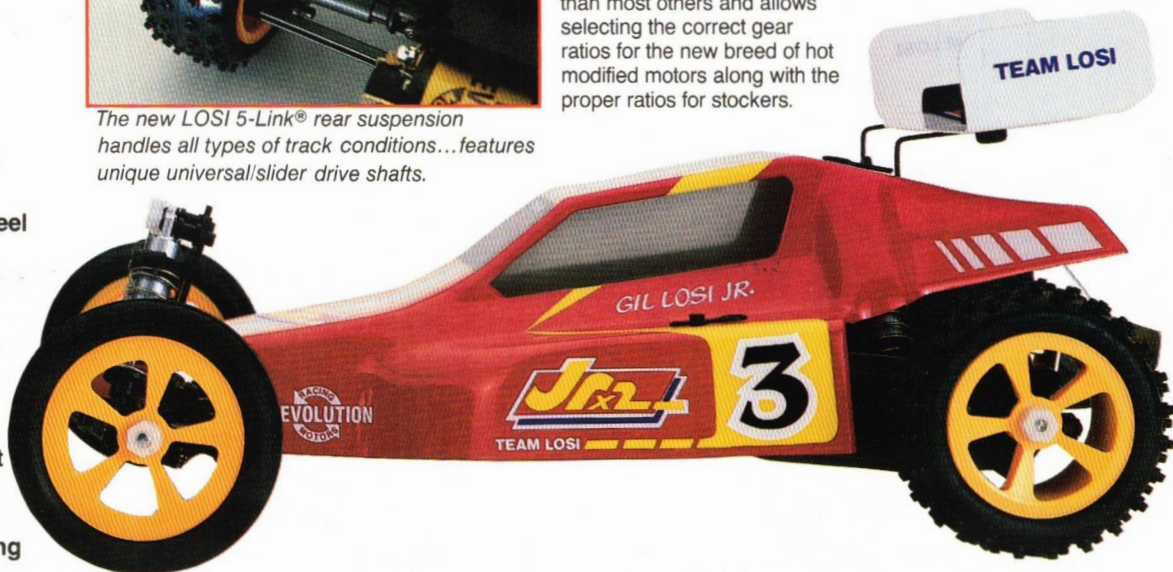
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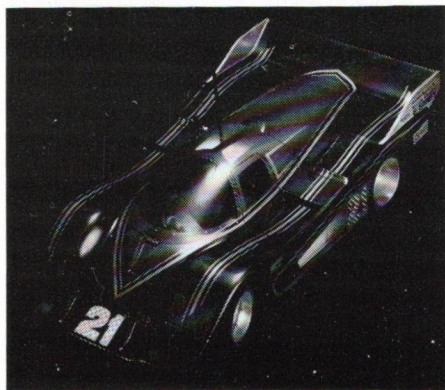
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ABOUT THE COVER

Cover photo of the Lucas "Agitator" with fantastic "Motion Graphics" body and Tecnacraft wheels.

Photo By Gene Crawford

Finish The Lap Your On . . .

R/C Racing Teams

As many of you know the history of R/C racing is not a very old story. During the early days there was only road racing. The idea of retail shops devoted exclusively to R/C cars was unheard of. Because of the scant appeal of R/C cars many companies started "teams" in order to promote racing, and supply racers at tracks with parts which were unavailable at hobby shops.

Whatever your opinion of that policy is, that is how it was and in retrospect the policy did work well. While only a few companies continue the practice of team racers supplying parts to the general public, all companies have "teams".

These teams are needed to do R & D and field test all new products that come on the market. What input the manufacturers receive from their team drivers goes directly into the production of stronger, faster, and in general better products.

So why is there such a black spot on "teams"? Why are "teams" an evil word, especially in the eyes of many hobby shop owners? I think the problem lies in that fact that there are too many team drivers around the country. Especially a problem when there are certain areas infiltrated by teams. The Solution? Limit manufacturers to a certain number of team drivers, then set up an expert ROAR class. After all, at almost all major races now, we have a special Invitational Class for these drivers anyway. When I say limit the size of the teams, I'm not talking about limiting the team to 10-20 members. I mean limit them to 3-5 per class. The real cream of the crop.

Lately teams have ballooned to incorporate drivers that can't conceivably be in the top three on a team, but are on the team so that other teams can't have them. By trimming down the teams to 3-5 members, it would also free many good drivers so the small and up and coming companies can have a few drivers.

Naturally the first criticism would be how to police the teams. After all, attempts at establishing team number restrictions have been made in the past, with no success. I am the first to admit that enforcing team members restrictions is tough. But so is drug enforcement, murder and speeding. Because a problem is tough to enforce, do we make it legal?

What do you think? Am I wrong? I could very well be. Write to me! Give me your opinion. Write to: Mailbox, c/o Peter Barana.

PETER BARANA,
Editor



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MAILBOX

INFORMATION PLEASE!

Gentlemen:

Please send me information on where I can find or order a "Roberts Power Cable Plus" 1500 strands of copper wire in a #12 guage wire. (Listed in your December issue.) Thank You.

Sincerely,
Jonathan Jones

Dear Mr. Jones:

This particular wire is available from: Stage III, 1189 Chicago Rd., Troy, MI 48083-4292, (313) 585-1150.

1/10 WORLD TEAM

ROAR 1989 1/10 World Championsip Team

1. Joel Johnson/'87 W.C.
2. Erik Soderquist/'87 W.C.
3. Kris Moore/'87 W.C.
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31. Ronald Webb/'88 Reg

32. Bill Siler/'88 Reg
33. Mike Burnette/'88 Reg
34. Brad Reelfs/'88 Reg
35. Jeff Harris/'88Reg
36. Steve Maslin/'88 Reg
37. Mike Boekdrukker/Reg
38. Rick Hohwart/Alternate
39. Kurtis McElroy/Alternate
40. Mike Ebert/Alternate

HOT NEWS!

Dear Peter:

It is with great pride and pleasure, Trinity Products, Inc., would like to announce the most recent addition to "Team Trinity", two time IFMAR World Champion and multi ROAR National Champion, Mr. Tony Neisinger!

We feel Tony's never say die attitude coupled with his driving expertise and car set-up skills will be the crowning jewel in the star studded Trinity Team of Bob Light, Chris Doseck and Dave Hechler.

Tony will be exclusively sponsored by Trinity and will use Trinity motors and batteries in his Schumacher CAT XLS in 4WD and JRX2 in 2WD Off-Road events. At the on-road races Tony will power his TRC PRO10 and Corally 1/12 cars with the same world beating Trinity horsepower.

Tony is anxiously looking forward to racing under the Trinity marquee and will soon be appearing at both off and on road tracks throughout the United States. Welcome Aboard Tony!

THANK YOU!

Good Morning Peter,

Just a quick note to thank you for printing the letter from John Elliot in your March issue.

Sometimes, you wonder if consumers ever think that we in the industry are human. Most of what we see is unfavorable to the manufacturers. So it makes us feel good to see positive comments. And, thanks to you folks, everyone can see a complimentary letter in print.

Best Regards,
Joe Goodwin
BoLink R/C Cars, Inc.

MRC MOVED!

MRC proudly announces that we have moved to a new and bigger home!! We have completed our changeover to a new office, warehouse and service center in Edison, only a few miles from our previous address.

We have expanded our offices to process your needs and requests faster. Our warehouse is larger to ship more products faster. Our service department has its own area and its own phone number for quicker response to your needs for parts and service on MRC products. Take note of the following address and numbers for prompt access to the information you may need:

Model Rectifier Corporation, 200 Carter Drive, Edison, NJ 08817, Admin. & Sales: (201) 248-0400; Service & Parts: (201) 248-0730, FAX: (201) 248-0970; International Telex: 844472.

Don't forget, we have a West Coast Service Center for new MRC products and their owners west of the Mississippi River. We're proud of our new home, just as you are proud to own an MRC product. Our pride will be evident as we will continue to introduce new and innovative products that the rest of the hobby industry wishes they could make.

CP



HobbyShopper's Guide



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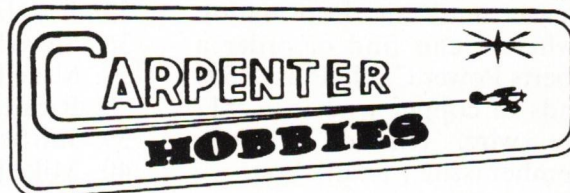


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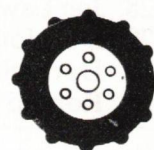
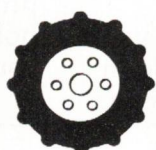


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JERRY IVANCIC
DENNIS CALKINS



Hirosaka — Lett Capture Winter Championship Gold in Florida

By Dave Vince, Sr.

The Third Annual Winter Championships held at the West Coast Radio Control Club's racing facility, in Lake Park, Tampa, Florida, turned out to be one of the best R/C car races that have ever been put together.

Last year, the weather was horrible, with rain and cold making everything difficult. This year, Mother Nature was much kinder, as the weather was ideal for racing.

Bernie Glassen, Sr., who directed the whole show, put together a truly sensational race. Most everyone present, including those who have traveled around the world racing R/C, said this was the best yet. Just as an example, the track was maintained to some degree between EVERY round. This was done by a crew of hired turn marshalls, who doubled as track crew between



One of the fringe benefits of winning the Winter championship gold. While he can't take the trophy girl back to Japan with him, he was able to take home a beautiful plaque.

rounds. This team, headed by Tim O' Daffer did a terrific job,



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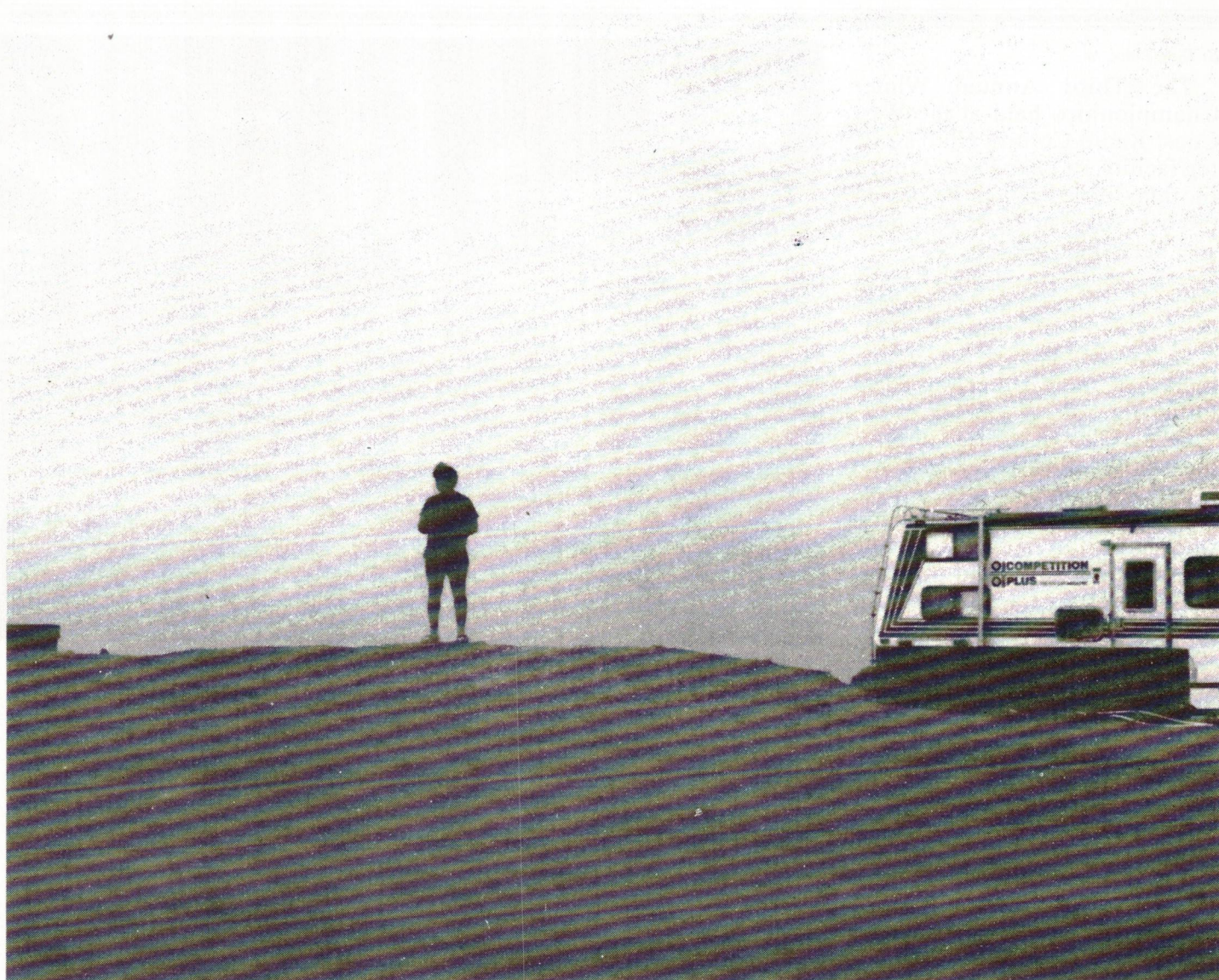
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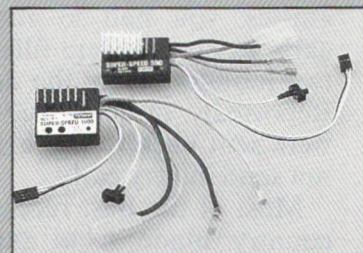
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Other manufacturers make chassis kits for the Optima Mid, but only Kyosho gives you everything you need for racing and winning at one low price. See the new Kyosho Long Graphite Chassis Kit at your favorite R/C car retailer today. It's sure to give you the racer's edge.

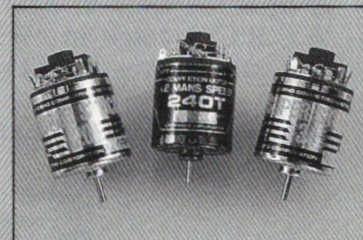
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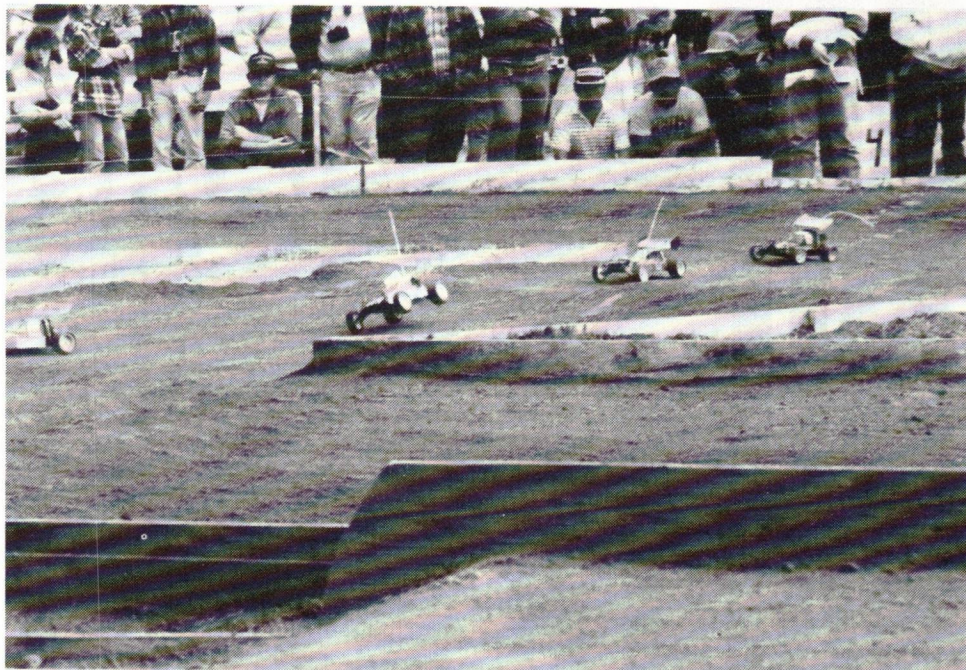
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and kept the track in tip top condition throughout the meet.

The popularity of this race is extremely high. Even with 300 entries, you had to enter very early as entries were filled up in two months before the deadline. Reportedly at least 300 entries were sent back to those who did not send in very early.

Most of the best racers in the country made it to this race, however, even some of them missed out due to late entry. World Champion, Masami Hiro-saka made his presence known by taking TQ in both 2 and 4 wheel Modified.

Masami in the very first 4WD qualifier set a new track record of 14, 4.15.0. Dropping 7 seconds off the record held by Dean Vince. Masami later dropped this time further, hitting a 14, 4.12.3, which is now the time to beat on the W.C.R.C.C. track in 4WD. Cliff Lett, and last year's 4WD winner, Butch Kloeber, tied for second spot, both turning identical 14,



Racing at the Winterchampionships was close all weekend.

4.14.5 times. Kris Moore hit the 14 lap mark to qualify fourth, and became part of the small, elite group to hit the 14 lap mark. Darrin Stump, Mike Burnette,

Chris Doseck, Ron Rosetti, Rick Vehlow, and Gil Losi, Jr., made up the rest of the 4WD A Main. During qualifying action, Cliff Lett had taken over the TQ spot

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JULY 7-8-9, 1989

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FOX RIVERFEST R/C OFF-ROAD 1/10 SCALE RACE

Limited to first 120 entries. Indoor track, open practice will be 3 p.m. - 11 p.m. Friday, July 7, 1989. Qualifying heats start at 9 a.m. Saturday, July 8. Qualifying heats will be four (4) minutes long. On Sunday, July 9, 9 a.m., all entries will run in a main. All mains will run four (4) minutes and numbers will be assigned. ROAR RULES APPLY!!! TROPHIES AWARDED AND GIFT DRAWINGS.

2WD Modified 6 Cell - 4WD Modified 6 Cell - Production Monster Truck Open 3" Tire Dia. Min.

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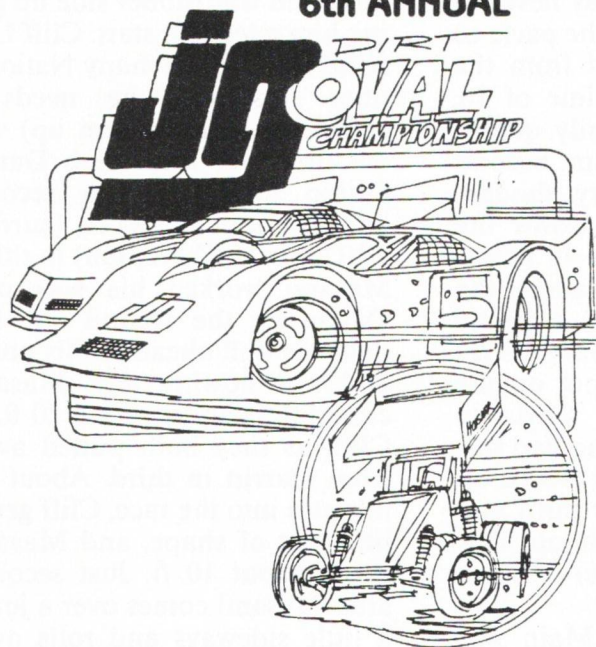
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ROAR Sanction No. 6-89-04 - ROAR Membership Required

2WD Mod. - 4WD Mod. - Outlaw Sprint Car - 2WD Mod. Monster Truck

- Everyone runs in a main - 1st, 2nd, 3rd place trophies
- Running Concours - 1st, 2nd, 3rd place trophies - Sprint Car/Full Bodies
- Trophy Dash - Fastest four/two minutes - 1st place trophy
- TQ Run - TQ's in each class will run against each other, with handicap start - 4 minutes - 1st place trophy
- Best Engineered - 1st, 2nd, 3rd place trophies - Sprint Car/Full Bodies
- All A Main drivers will trophy
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1. American cars only. Outlaw Stock ASA - Grand National Bodies Only. Handmade or Prototype okay. Spoilers and side dams no limit.
2. 4 minute heats - 4 heats per class.
3. All A Mains are twin (2) 4 minute mains to determine winner.
4. Sprint Car Class - 2WD modified motors, 7 cell, wings, guts!
5. Sprint car minimum weight 3 1/2 lbs, steel or aluminum cage, nerfs, rear bumper, headers may be lexan, top wing mandatory, front wing optional.
6. 2WD Modified minimum weight 3 1/4 lbs. and 4WD Modified minimum weight 3 1/2 lbs.
7. Maximum wheel width all classes 9 7/8.
8. 2WD and 4WD Modified cars, no CanAm or Off-Road type wings.
9. 2WD and 4WD Modified cars, rear spoiler must be attached to extreme rear of car BODY. Side dams no limit.

MODIFIED MONSTER TRUCK CLASS RULES

1. Wheels: Minimum diameter of 2 3/8 inch.
2. Tires: Minimum diameter of 3 3/4 inch.
3. Shocks: No limitation.
4. Speed Control: Any speed control may be used.
5. Body & Chassis: Any chassis may be used. Only American truck bodies may be used.
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9. Motor: Modified class as designated in "Modified Class" rules.
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Lowest qualifiers must be able to change bands.

in 4WD after the second qualifier, but Masami came back in the third round to take it back from Cliff.

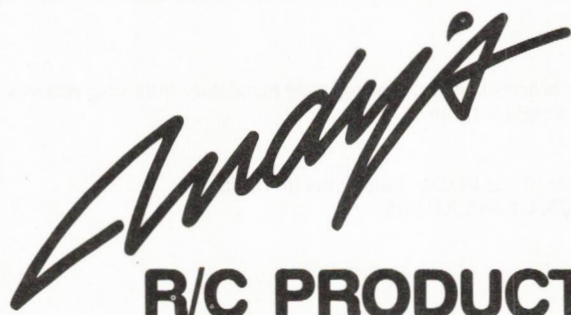
Making the C Main at a race of this caliber is quite an accomplishment, as many good drivers did not get as high as the C. The following is some 4WD C Main action.

Race action had Eustace Moore of MIP out first, with Joe Schmitz running an 'Avanti in second. Bob Hall, a local hero was in third. On the fourth lap, Bob moved past Joe while closing the gap on Eustace. Bob was on Eustace's back door, and these two ran nose to tail for about five laps, when unfortunately, Eustace broke. This put Bob in first and moved Joe to second. Moving into third spot at this time was Jack Johnson. These drivers maintained their positions for the last four laps to complete an excellent race.

4WD B Main was filled with top notch drivers. Jay Halsey, running his YZ-10 was first out of the gate, and he was never to be seen by the rest of the pack, as he ran away and hid from the field. Jay's winning time of 13, 4:01.6 would have easily qualified him for the A Main. Second spot was another story, though, as Chris Allec held down the second spot in the early going. Outside of the two leaders, the rest of the pack had a pretty horrendous start. Gary Kyes moved into second spot on the seventh lap moving Chris to third. Joel Johnson, who had suffered a very poor start moved up to challenge Chris for third and took third on the ninth lap. This was to be the final order of finish in the B Main.

4WD Modified A Main was the best of a terrific field of racers. The start of this race was fast and furious. Unfortunately,

Butch Kloeber, last year's winner, and a front row starter in this year's race was hit in the first turn, and was rubber side up giving him a terrible start. Cliff Lett, (Cliff has won so many National titles this year he needs a calculator to add them up) was out first with local hero Darrin Stump holding down second, and Masami Hirosaka, (current 4WD World Champion) in third. Masami worked his way past Darrin on the second lap, but Lett was well ahead at this point, and not slowing any. Masami closed the gap to within 20 ft. of Cliff, as they both pulled away from Darrin in third. About 1½ minutes into the race, Cliff gets a little out of shape, and Masami gains about 10 ft. Just seconds after Masami comes over a jump a little sideways and rolls over, but lands rubber side down. This gives Cliff some breathing room, and allows Darrin to catch up.

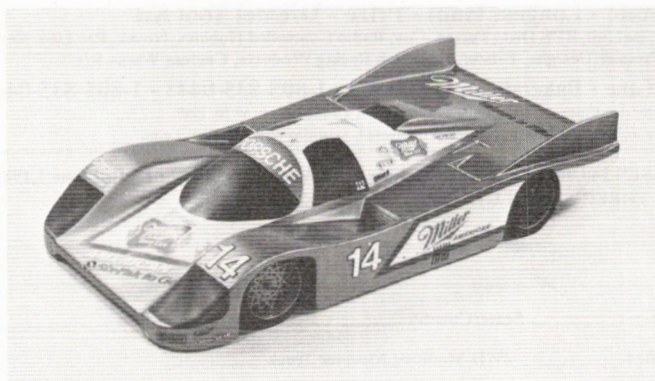


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Cliff maintained about a ¼ lap lead for the next 1½ minutes when the leaders came up on the back of the field. Lett moved smoothly thru traffic opening up his lead on Masami to ½ lap. Lett ran out the rest as safely as he could, making no mistakes. Masami pushed it hard, and got to within ¼ lap of Cliff at the finish, with local champ, Darrin Stump, holding onto third spot, about a ¼ lap behind Masami. Darrin took third in last year's 2WD Modified A, and this year repeating in even tougher competition was quite an accomplishment.

2WD Modified was Masami Hirosaka's race. He TQ'd on the very first 2WD Modified run, and this time 13, 4:07.1 stood throughout the meet as the best run in 2WD. This was also the best 2WD run ever, and stands as the time to beat in 2WD Modified at the W.C.R.C.C. track.

This time was only a few seconds off the old overall track record. Masami beat the second and third best times, turned in by Jim Dieter and Cliff Lett by a full 6 seconds. His car handled extremely well as I never saw it fishtail once, and it did not suffer from poor front end bite either. This coupled with Masami's great driving made for an unbeatable combination. If you get the chance to watch him drive watch the way he gets thru traffic without ever getting hit. There were drivers of all levels in his qualifiers so it wasn't as if he was up against only the best competition. Masami said the secret to his success is simple. It's practice. For two hours every day, after school, he works on his driving, and tuning of his cars. He is 17, and has been driving R/C cars for 11 years.

2WD Modified action, starting with the C Main had Mike

Barone out first at the start with Doug Laurent and Joe Schmitz following. Romie Lucas moved his way up from fourth to take the lead and the win, with Mike and Doug taking second and third.

B Main had some severe pileups at the start with Jack Johnson getting off to the best start with Gil Losi, Jr., and Mark Novotny following. Jack held the lead from wire to wire, as Gil hung onto second. In the battle for third, Mike Meighen moved up past Mark to take a well earned spot.

Now announcer, Bill Hock introduces the grid for the A Main. On the pole is Masami Hirosaka, in second position is Jim Dieter, third Cliff Lett, fourth Jay Halsey, fifth Kris Moore, sixth Butch Kloeber, seventh Nathan Wincek, eighth Frosty St. Clair, ninth Mike Burnette, and tenth Ron Rossetti. Making up a

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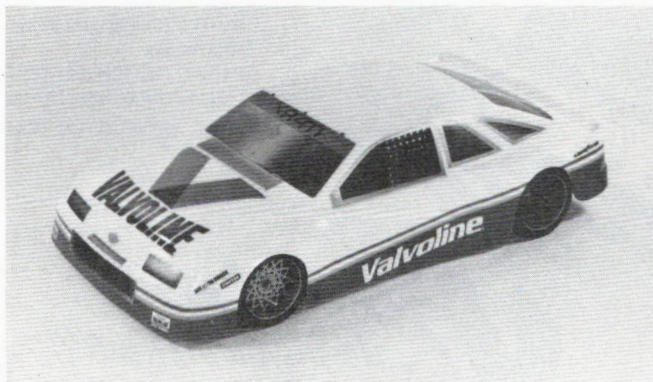
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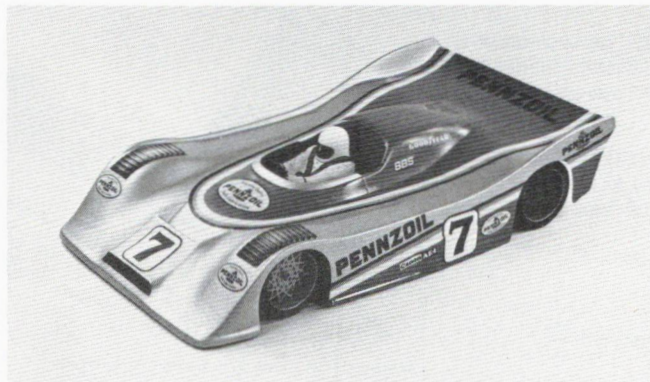
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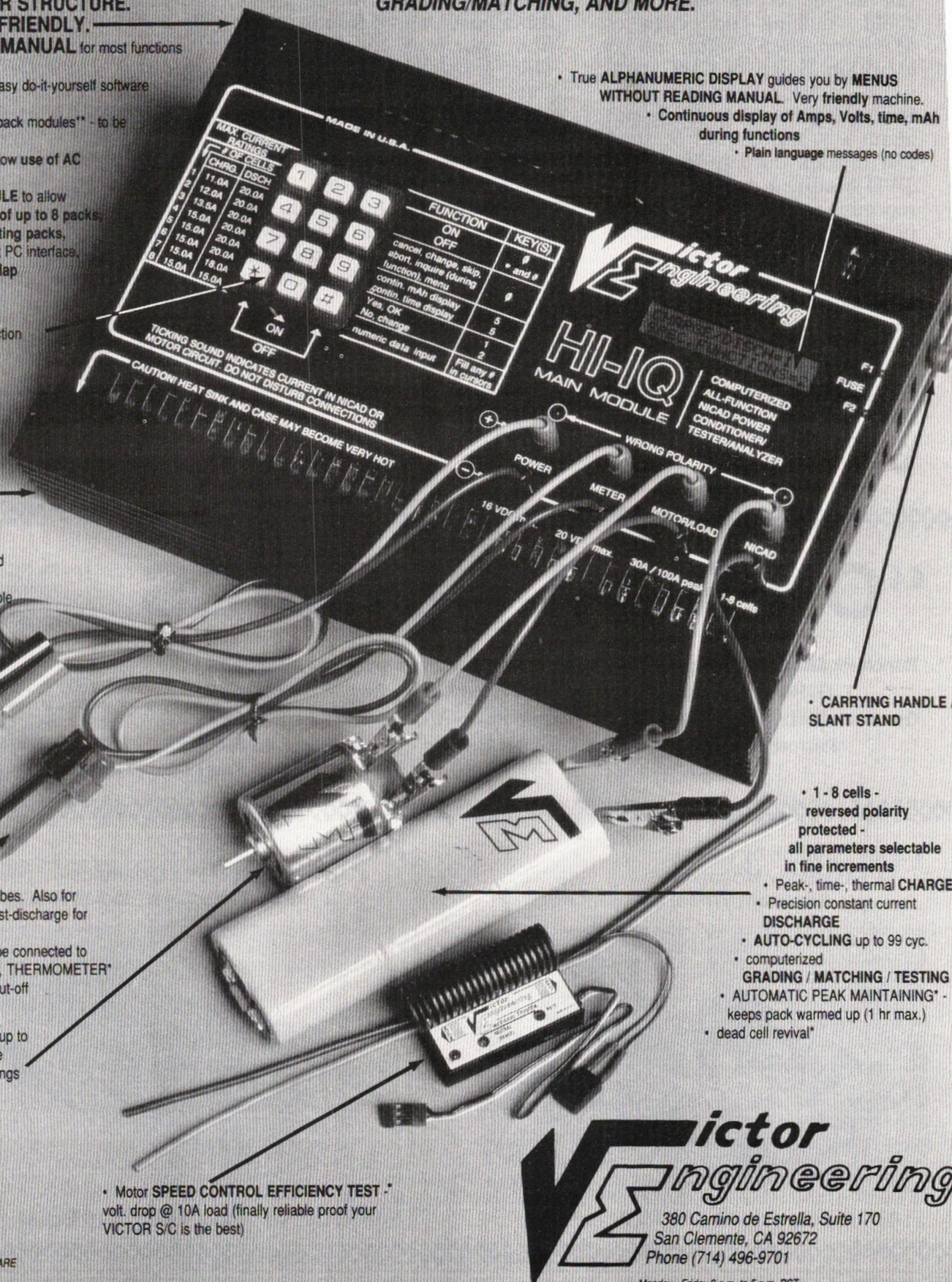
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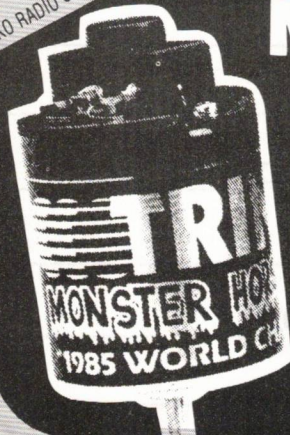
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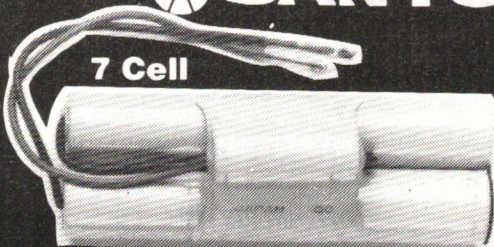


6 CELL



SANYO

7 Cell



SUB C

field of the best of the best. As the buzzer sounds the start of the race, Nathan Wincek (Red Line powered), who started in seventh position, gets out first in a terrific start. With Cliff Lett and Masami Hirosaka, (both Reedy powered) right on his back door. Nathan, one of our local heroes, who has been running strongly was able to pull away slightly from Cliff who was in second. Masami had a slight tap with the wall, and he lost a little ground on the leaders. Nathan continues to hold off the Lett challenge as he has a slight brush with the wall allowing Cliff to close the gap. Power wise there didn't seem to be any great edge between the top three, but Masami had the most stable rear end bite. On the fifth lap, Lett passes Nathan to take the lead, Masami then squeezes by Nathan to take second, as these three are battling nose to tail. Less than 15 ft. separates all three cars, as Masami now moves past Lett into first. Now Jay Halsey and Frosty St. Clair are battling for the third spot. Frosty slips by and Jay tries an inside pass and taps the wall. Nathan then passes Frosty to regain third. Nathan closes the gap on Cliff to challenge for the number two spot. Nathan hangs right on Cliff's bumper, as Masami pulled away from the battling pair. Masami then wisely put his car on cruise control, playing it safe as Cliff pushes it harder making up ground between them. Jay Halsey closes the gap on Nathan again challenging for the third spot.

Jay, riding on Nathan's bumper makes an inside move taps the wall, and loses a little ground. Lett has closed the gap on Hirosaka as they come down to the last lap. Masami turns on the power full steam to hold off Cliff by about a 20 ft. distance to take a well deserved win. Nathan held off a hard charging Jay by about 10 ft. to finish third in a very exciting race.

It has become the custom in the past three Winter Championships for the factory team drivers, and most of the top nationally ranked drivers run only in the modified classes. (You were only allowed to run in two classes at this race). Nevertheless, there were still plenty of top notch drivers running in 2WD Stock to make for some great competition. Kyle Reed in his first qualifier turned in a strong 12, 4:01.2, which stood as the best run of the qualifiers in 2WD Stock. This was the only class in which the track record was not broken. Mike Meighen held onto his record of 12, 4:00.3 in 2WD Stock as Dean Vince and Darrin Stump lost their 4WD and 2WD track records to Masami Hirosaka. Kyle, by the way, was a full 7 seconds ahead of the second place qualifiers, Doug Laurent and Freddie Rpauana.

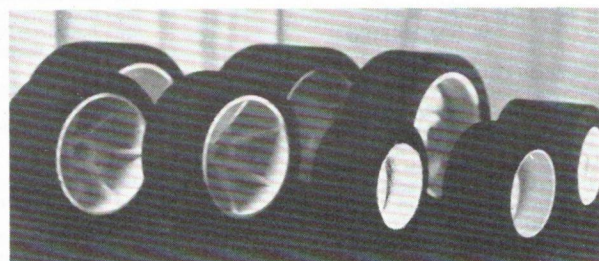
C Main had Tony Wahlay out first with Edward Weaver and Mike Bodner following in second and third. Tony, Ed and Mike held onto these positions throughout the race in a wire-to-wire run.

B Main had a lot more position changing than did the C. As the race got off the mark, Frosty St. Clair was out in front with James Rhodes and John Walters running second and third.

Meanwhile Nathan Wincek, former stock track record holder, suffered a terrible start, and was in dead last. Nathan showed us some super driving, and one swift stocker, as he moved from last place to take second spot against some tough competition. Frosty had blitzed the field with the best stock run of the meet, 12, 4:00.4. This run would have TQ'd by the way. Third spot was another story, as Gary Fulp, who was ninth after the first lap moved all the way up to third, as the B Main Stock put on a great show.

Now announcer, Bill Hock calls the A Main drivers up one by one. Kyle Reed was on the pole with Doug Laurent in second, then Freddie Rpauana, Mike Meighen, Mike Barone, Billy Hock, Joel Watkins, Edwin McTureous, Timothy Mottin and John Deiner making up the rest of the A

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Main.

The race is off the Doug Laurent out of the gate first, followed by Freddie Rpauana and Kyle Reed. At about the one minute mark, Doug had opened up a 30 ft. lead over Freddie in second. Kyle loses some ground on the leaders, as Mike Meighen has now moved into fourth place. Mike is about 50 ft. behind third place, Kyle. Doug continues to hold off Freddie by about 20-30 ft., halfway through the race, as they are now almost 1/2 a lap up on the third place, Kyle. Kyle on the ninth lap suffers some car trouble and loses third to Mike. On the finishing lap, Doug is passing a backmarker and gets tangled. Freddie takes the lead only to put it on the roof just 20 ft. from the finish to allow Doug to come back and grab the win, with Fred in second and Mike bringing home third, in a wild finish.

As the trophies were given out, we looked back on our Third Winter Champs as the best yet, hoping that next year will be even better. Maybe we can figure a way to allow about a 1000 or so cars to race, so nobody will have to be turned away. Here we would like to give thanks to all those who made this race possible. Hans Hobby Shop/Jeff Perry, our major sponsor; Bernie Glassen, our race organizer; Tim O' Daffer, our track director, who out worked everyone; Bill Hock, our great announcer, who says he can beat us all, but last time I saw his car, it was buried in the mud. Jim Scism, who received the hard luck trophy. Jim injured his knee while marshalling and all the others who worked the impound, tech, timing and record keeping. Let's also not forget the terrific prizes donated to the racers

by Team Associated, Reedy Motors, Twister Motors, Airtronics, Hot Trick, ProLine, Novak, Parma, Kyosho, Team Losi, Bud's, MIP, TRC, MRP, Autographics, Race Prep, MPE and Team Pit Stop. Also thanks to everyone I forgot to mention, including all who raced.

Good luck and good racing to you, see you next year!

4WD MODIFIED

A Main

1st - Cliff Lett/YZ-10/Reedy
2nd - Masami Hirosaka/YZ-10/Reedy
3rd - Darrin Stump/YZ-10/Reedy
4th - Mike Burnette/Kyosho/Twister
5th - Kris Moore/YZ-10/Twister
6th - Gil Losi, Jr./JRX2/Losi
7th - Chris Doseck/CAT/Trinity
8th - Ron Rossetti/JRX2/Losi
9th - Butch Kloeber/YZ-10/Reedy
10th - Rick Vehlouw/YZ-10/Reedy

B Main

1st - Jay Halsey
2nd - Gary Kyes
3rd - Joel Johnson

C Main

1st - Bob Hall
2nd - Joe Schmitz
3rd - Jack Johnson

D Main

1st - Tem Raskin
2nd - Greg Kvitkauskas
3rd - Howard Bennett

E Main

1st - James Spangler
2nd - Romie Lucas
3rd - Randy Minchew

F Main

1st - Brian Howell
2nd - Gil Comeau
3rd - Andy Sova

G Main

1st - Douglas Fichuk
2nd - Boz Sharif
3rd - Chris Hanus

H Main

1st - Thomas McElvy
2nd - Chance Hill
3rd - Cesar Felipe

I Main

1st - J.R. Mitch
2nd - Michael Rose
3rd - Josh Deitch

2WD MODIFIED

A Main

1st - Masami Hirosaka/RC10/Reedy
2nd - Cliff Lett/RC10/Reedy
3rd - Nathan Winck/Houge RC10/Red Line
4th - Jay Halsey/RC10/Reedy
5th - Frosty St. Clair/RC10/Reedy
6th - Kris Moore/RC10/Twister
7th - Ron Rossetti/JRX2/Losi
8th - Butch Kloeber/RC10/Reedy
9th - Jim Dieter/RC10/Rev-Tech
10th - Mike Burnette/Ultimea/Twister

B Main

1st - Jack Johnson
2nd - Gil Losi, Jr.
3rd - Mike Meighen

C Main

1st - Romie Lucas

2nd - Mike Barone
3rd - Doug Laurent

D Main

1st - Eric Soderquist
2nd - Sean Farmer
3rd - Long Hoang

E Main

1st - Kevin Clark
2nd - Dennis Gotto
3rd - Dave Harrison

F Main

1st - John Diener
2nd - James Rhodes
3rd - Stephen Miniea

G Main

1st - Andy Sova
2nd - Glenn Hammond
3rd - Dave Vince, Jr.

H Main

1st - Paul Wynn
2nd - Tony Wahlay
3rd - Randy Minchew

I Main

1st - Paul Canover, Jr.
2nd - Ron Smith
3rd - Shane Nicholson

J Main

1st - Ricky Burger
2nd - Bobby Hock
3rd - Zac Pollock

K Main

1st - Tony Calvert

2nd - Danny Buck
3rd - David Mottom
I. Main

1st - Eddie Herrmann
2nd - Barry Iztokowitz
3rd - Gregg Sarkin

2WD STOCK

A MAIN

1st - Doug Laurent/Houge RC10/Quarter Flash
2nd - Freddie Rpauna/RC10/Twister
3rd - Mike Meighen/RC10/Twister
4th - Mike Barone/?/?
5th - Tim Mottin/RC10/?
6th - Billy Hock/JRX2/Twister
7th - John Diener/?/?
8th - Edwin McTureous/RC10/?
9th - Kyle Reed/JRX2/Losi
10th - Joel Watkins/RC10/?

B MAIN

1st - Frosty St. Clair
2nd - Nathan Winck
3rd - Gary Fulp

C MAIN

1st - Tony Wahlay
2nd - Edward Weaver
3rd - Mike Bodner

D MAIN

1st - Thomas McElvy
2nd - Jeff Davis
3rd - John Riggs

E MAIN

1st - Stephen Miniea
2nd - Cliff Guest
3rd - Chris Wilbanks

F MAIN

1st - Tracy Carver
2nd - Bobby Beard
3rd - Car Zaniboni

G MAIN

1st - Rick Reynolds
2nd - George Prauata
3rd - Bill Fraden

H MAIN

1st - Mark Valeo
2nd - Jim Shea
3rd - E. T. Davis

I MAIN

1st - Dwayne Combs
2nd - Shane Nicholson
3rd - Allen Powery

J MAIN

1st - Paul Fontaine
2nd - Joe Albarra
3rd - Steve Fontaine

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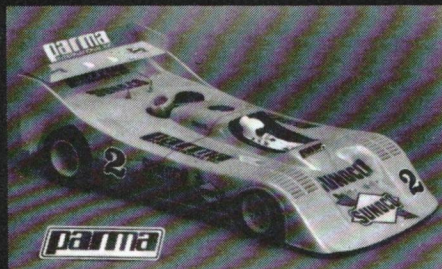
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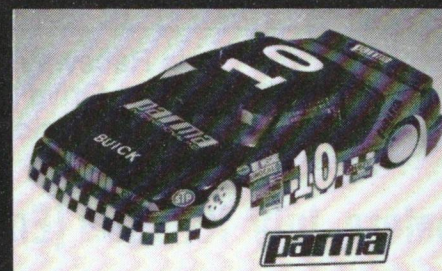
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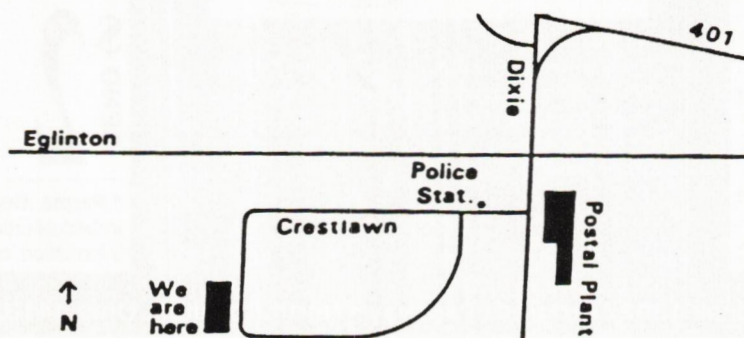
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Motors 201 – Stock Motor Tuning

By F. Dale Cauthen

Stock motors have been the center of attention lately because of this very subject. While the ROAR rule reads: "Legal stock motor wind to be minimum of 27 turns of 22 AWG wire having a minimum wire diameter of .67mm.", and additionally states that: "No modifications allowed that require internal work to the motor...", there is still quite a bit of leeway left for the manufacturer in that no specification is included limiting timing advance. Why? For the very good reason that enforcement would be impossible and ROAR was wise enough to not intentionally give cheaters an edge. So what happened was that as soon as one guy learned to maximize his motor's performance through

advancing commutator timing, everyone had to follow suit. By the time you read this, I expect that ROAR will have made some changes, with the agreement of the manufacturers, that bring stock motors back into line with the intent of the rule. Regardless of that, though, you as a racer should not attempt to advance the commutator timing on your stock motor. Hopefully, all stock motors built in the future will be locked at around 15 degrees timing advance and attempts to advance the timing will result in a damaged motor. If ROAR and the motor builders cannot reach an agreement, you can bet that all stock motors will be sold with 34 degrees timing advance, in which case it is foolish to further

advance the timing as performance actually begins to degrade beyond this point. So in either case, tuning will be limited to improving the motor's performance through fitting each individual motor with the optimum combination of brushes and springs, as originally intended by the motor rules. With this in mind, let's go through the ritual of tuning a stock motor on this issue's "Motor of the Month", Reedy's Yokomo based Competition Stock #6502.

First, before changing anything, take a good look at what you have to start with. The Reedy stock that I just bought has relatively soft brushes and medium tension springs. It has been pre-broken in well enough

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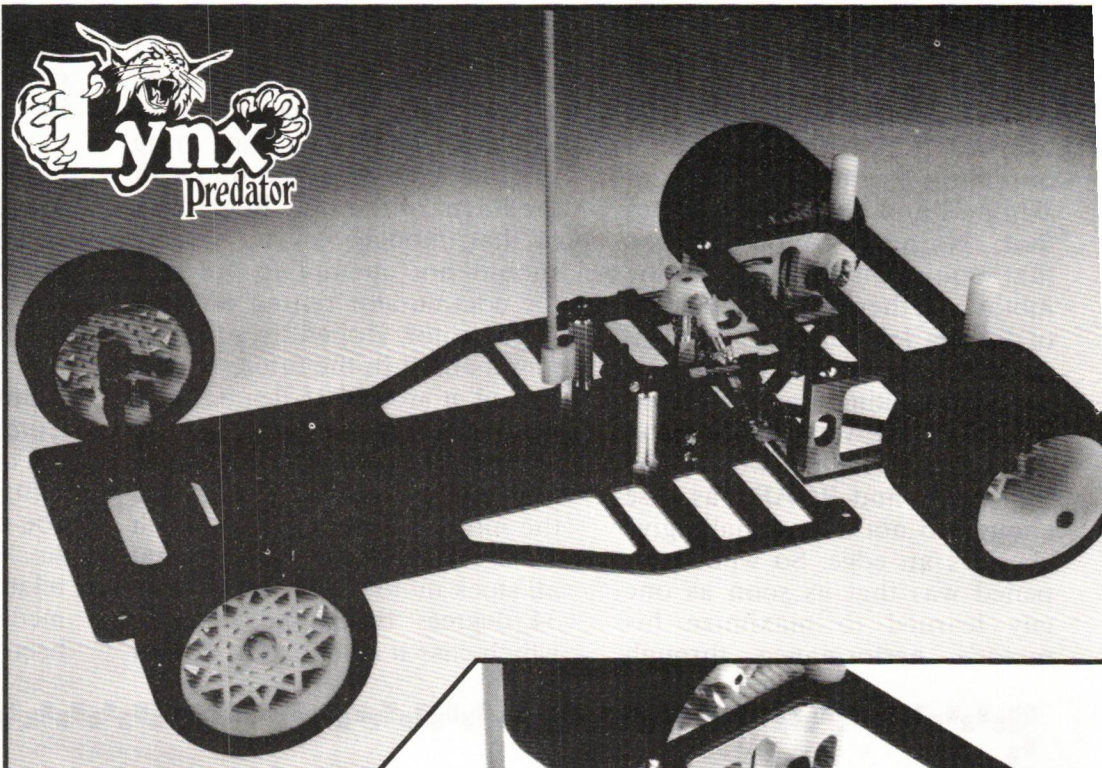
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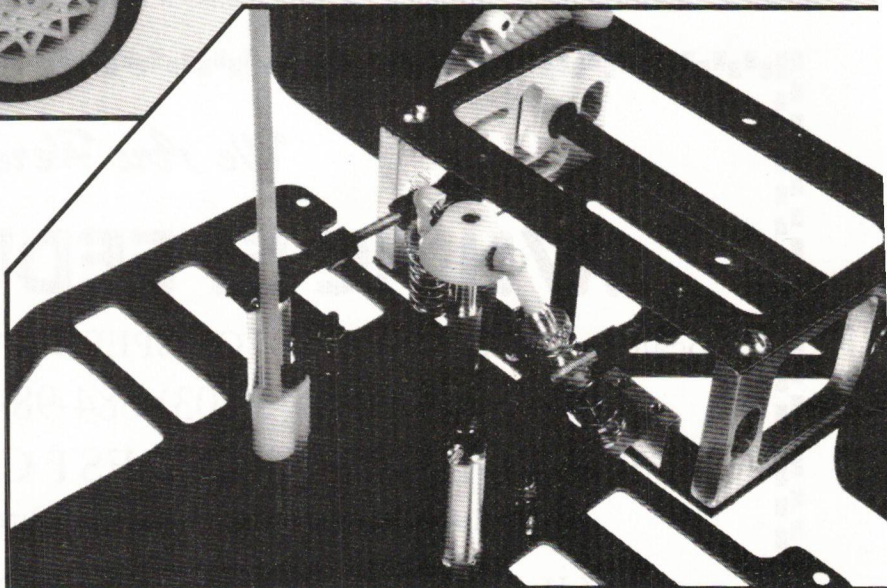
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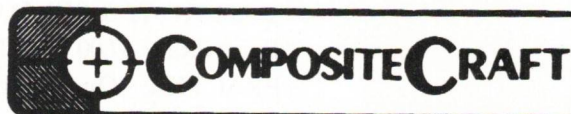
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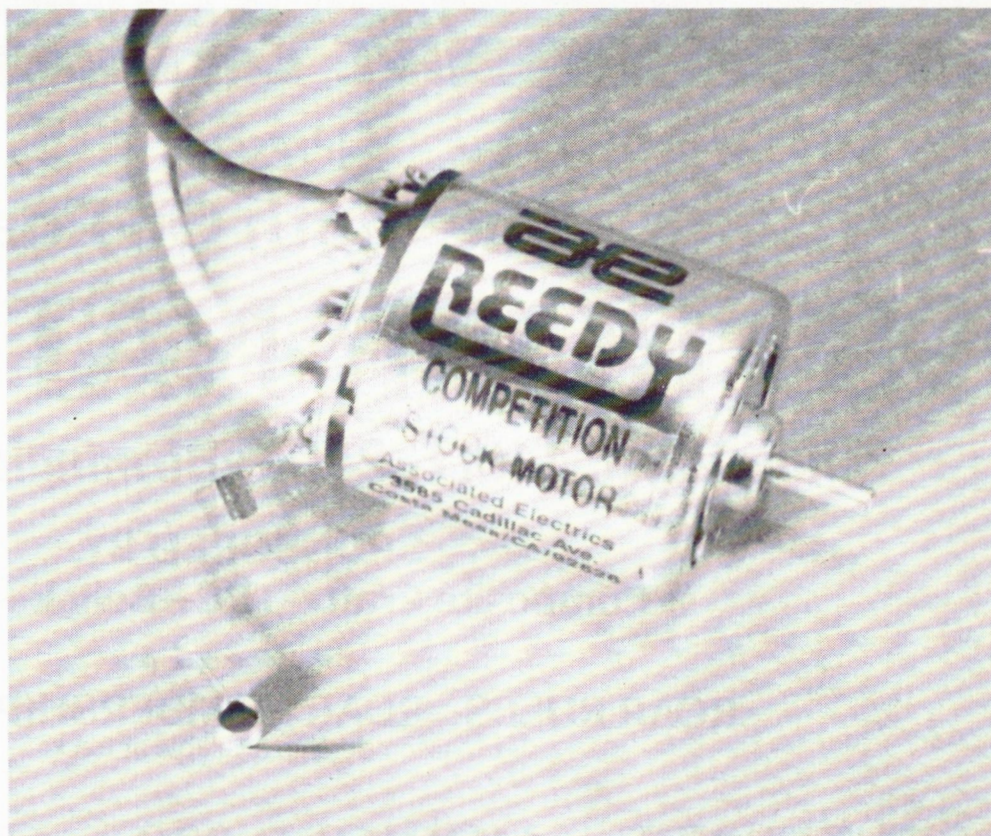
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that the brushes are fully seated. This saved me the tedium of running the motor at low voltage to wear the brushes to the shape of the commutator. To check the motor's "out-of-the-box" performance, a Pelican Products "DYNO-TUNE" is used to check amp draw and rpm. Like most low cost dynos, the Pelican provides a built in amp meter, output plugs for a digital voltmeter for measuring voltage produced by a driven slave motor and a load selector. These low cost dynos are designed to operate from a nicad pack but should be run from a controlled power input that provides consistent voltage with a variable amperage input available on motor demand. One simple way of providing stable input power is to simply attach the dyno to a six volt automobile charger, but don't leave the motor running longer than necessary to obtain a reading as the AC pulse coming through from the charger will



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gradually do bad things to your motor and degrade its performance. My power source is an old motor break in board left over from slot car racing. This power board is a simple rheostat with its own volt and amp meters that lets me attach to an auto battery and then dial up the desired voltage. Either method assures a constant power source that won't fluctuate or be as variable as nicad packs. Before attaching the Reedy stock to the dyno, soak the end of a Q-tip in motor cleaner and swab out each brush hood, rotating the commutator against the wet Q-tip end to remove any brush residue and wipe off the sides and ends of the brushes for the same reason. Since every dyno is different, your exact numbers will vary from mine, but relative results of the described changes should be similar.

Testing the motor as purchased produces readings of 6.85 volts output and 4¼ amps draw at no-load, 5.75 volts and 5 amps at

low-load and 5.2 volts at 5½ amps on high-load. Not too shabby for an untuned stock motor. This compares favorably with some of my older motors that have already been tuned to the max. But we know there is more power in there. We just have to find it.

While cleaning up my 12L for the next race, I'll run the motor at five volts long enough to break-in the other three sets of brushes we'll be testing in the tuning session, a pair of Race Prep stock brushes, a pair of Trinity hard and one of Losi soft. As soon as the motor has cooled off, the brushes provided with the motor are cut to remove one third of the brush face from the trailing edge of the brush. This simple change provides the most dramatic results of the entire session. Running the motor to break-in the additional brushes has seated the bushings and worn the armature shaft and with its newly "timed" brushes, the dyno readings are:

7.35 volts at only 3½ amps on the no-load position, 6V at 4A on low-load and 5.6V at 4½A on high-load. What we now have is a motor that will give longer run times (lower amp draw) at higher rpms (higher voltage output from the driven slave motor). Switching to a slightly stiffer spring produces slightly higher rpm readings of 7.4, 6.15, and 5.7 volts at an amperage increase too small to read on the analog scale. Changing to Trinity's lightest springs produces virtually identical readings to those obtained with the original springs, but a very slightly lower amp draw. With all these readings recorded for future reference, we move on to the Race Prep stock brushes.

These brushes have been cut slightly on all four sides to reduce the brush face just to the "flats". With the Trinity light springs readings of 7.2V at 3A, 6V at 3¾A and 5.7V at 4¼A result. To remove some retardation from the timing, almost half the brush

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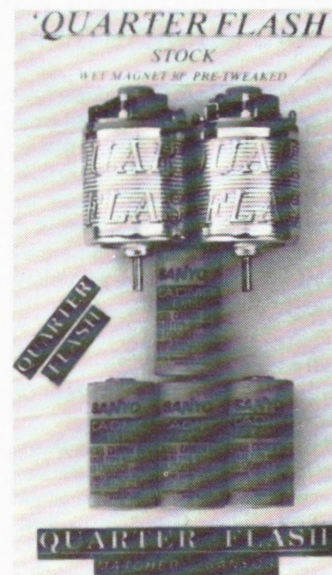
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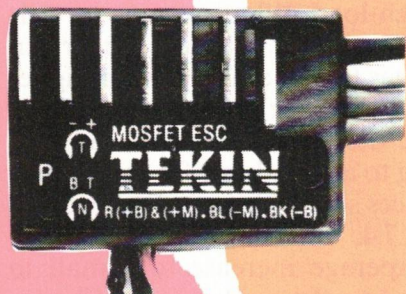
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face is now removed from the trailing edge, resulting in readings of 7.4V at 3¼A, 6.15V at 3¾A and 5.7V at 4¼A, nearly identical to the reading with the original brushes and medium springs. Substituting the Reedy springs for the "lites" yields slight increases in amp draw with a .05 decrease in rpm at the no-load position but a .10 increase in rpm at low-load and a .15 increase at high-load, meaning, (at least theoretically) more acceleration at low and mid range speeds with only a slight sacrifice of top-end speed.

Trinity hard brushes intended for use in modified motors are now fitted to the motor in uncut form. Readings are 7V-4A on no-load, 6V-4¼A on low-load and 5.45V at 4½A on high-load. If this motor was going into an off-road car for modified class racing on seven cell SCE packs, this would have to be option of choice and I would have spent more time trimming these brushes for optimum performance and checking various brush springs for maximum rpm and amp draw readings. Since this motor is going into a 12th scale car for use on four cell SCE packs, only two additional tests were made. By trimming 25% off the trailing edge of the brush, then 10% off the leading edge, rpms were increased by approximately 5% with only a slight decrease in amp draw.

The final tuning tests were run with Losi's soft brushes. For the first run, 1/4 of the brush face was trimmed off the trailing edge and the Reedy springs were used. Readings with this combination were 7.25V-3¼A at no-load, 6.2V-3¾A at low-load, and 5.75V-4¼A at high-load. Changing to Trinity's light springs gave readings of 7.5V-3¼A, 6.25V-3¾A, and 5.75V-4¼A and here I stopped. Based on experience with other motors, I expected that further trimming of the brushes might have raised rpm but would have lowered amp draw below the threshold of decreased performance from the 1700mah batteries.

Try as we might to tune a motor before a race, the only true test is putting it in the race car

and running it on the track in competition. The value of this tuning was brought home to me last Saturday when I had the rare pleasure of getting to run two races in one day. Starting early that morning, we ran a ROAR Michigan state championship series race at USA Raceways. In the first two heats, radio glitches kept me from getting in a good run. In fact, the interference was so bad in the second heat that I had a marshall remove the car from the track on the first lap after a frequency change failed to correct first heat problems. For the third heat, I switched to 75mhz because with drivers on channels 2 through 6, there was just no way to drive the car on 27 band. With only limited time to tune the handout motor, and only one good heat to check everything out, I finished somewhere around last in the B Main with a forty lap run. No, I wasn't a happy puppy and pitching everything in the nearest trash can crossed my mind more than once. Fortunately, the second race of the day was a more encouraging experience. With a different set of drivers (and transmitters) on the drivers' stand, the Reedy stock gave me a third heat of forty-three laps to narrowly make the cut into the A Main. The same motor running on Trinity's 1700mah batteries turned in a similar performance in the main and ran a strong second place until I made the mistake of moving over for a faster car, only to have him put me into the wall anyway. Oh well, live and learn. Most of my older motors in that same race would have probably only gotten the car up to a pole position in the C Main. There is nothing wrong with those motors and they have all been tuned to their maximum potential. Its just that the motors we're getting these days are tuned hotter and run faster. On my dyno, most of them turn out numbers much like the untuned Reedy did. So on the whole, I credit the dyno tuning session with the difference between a disappointment, and a terrific race that made me want to go home and work on my cars to try to finish better next time.

Tuning the motor is time consuming and tedious. It can often be frustrating. Some days it seems like everything you do makes the motor run worse instead of better. But stick to it. The difference can literally make your day.

Postscript: Disassembly showed the Reedy to have been assembled with very mild timing and with the locking spacer between the comm and the stacks so that attempts to advance the timing will be futile and can only result in damage to the motor if sufficient force is applied. With this tuning, the motor will live a long life with consistent good performance. Let's hope that all "hand-out" race motors have this feature in the future.

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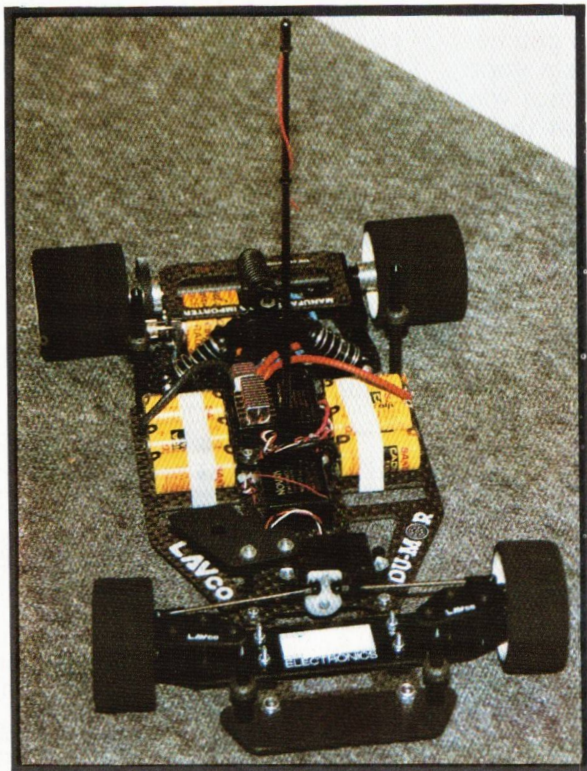
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Suggest you purchase the RCC5.V4 system now so that you will be computer-wise when the remaining hardware will be available.

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Speedworks Sportsman Cup Race

By Peter Barana



It has been a while since a race has proved to be more than a race. This event was also going to make a statement. Having the first off-road ROAR Nationals in New Jersey, not California, was an important statement that said 1/10 off-road was not just a California sport.

The Trinity Speedworks Sportsman Cup was another event that was more than just a race, it was a statement. The message was loud and clear. It is important to promote racing, but not always centered around the big names. This race was centered around the Sportsman racer. The guy who doesn't cross the globe all year around racing in Denmark, France, Australia, Japan and all 50 states in the Union.

There will be those of you out there who will flip by this article as soon as you come to realize that the next few pages will be devoted to racers you never heard of. Yes, there was an eight man Invitational Class, and I'll tell you quickly that Bob Light won. The only other mention of the Invitational Class racing will be in the sidelines. Devoting this article to the Invitational Class races would stifle the message of the Speedworks Sportsman Cup Race.

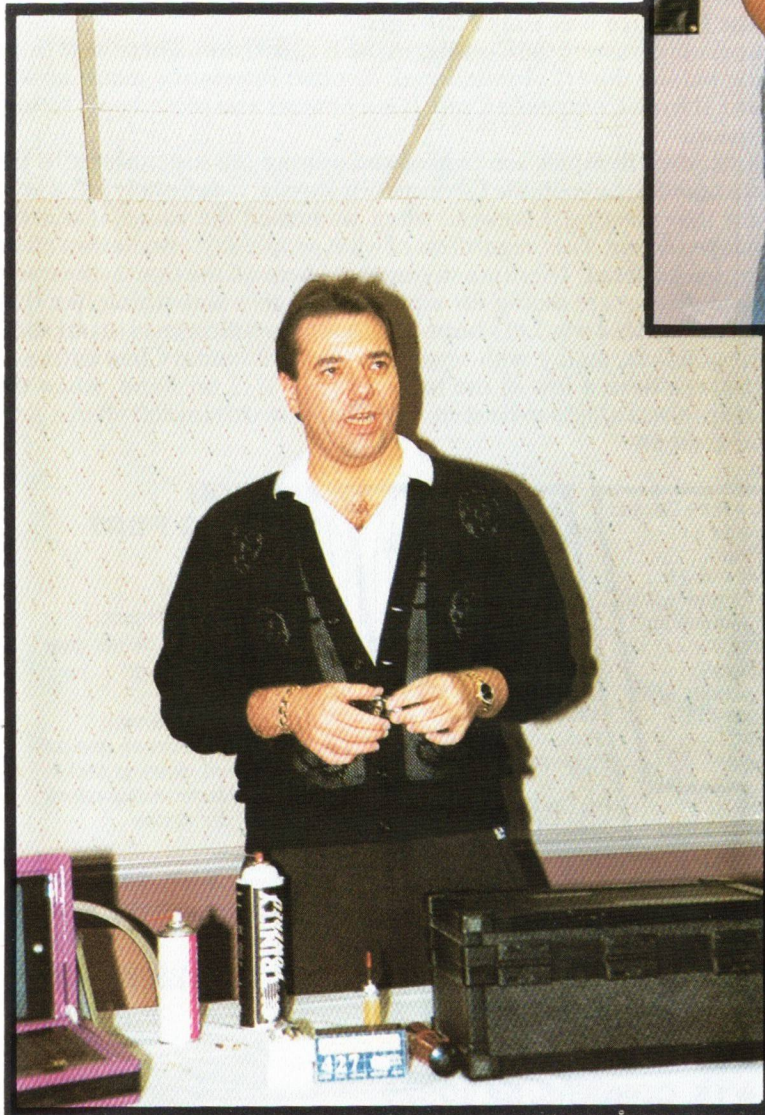
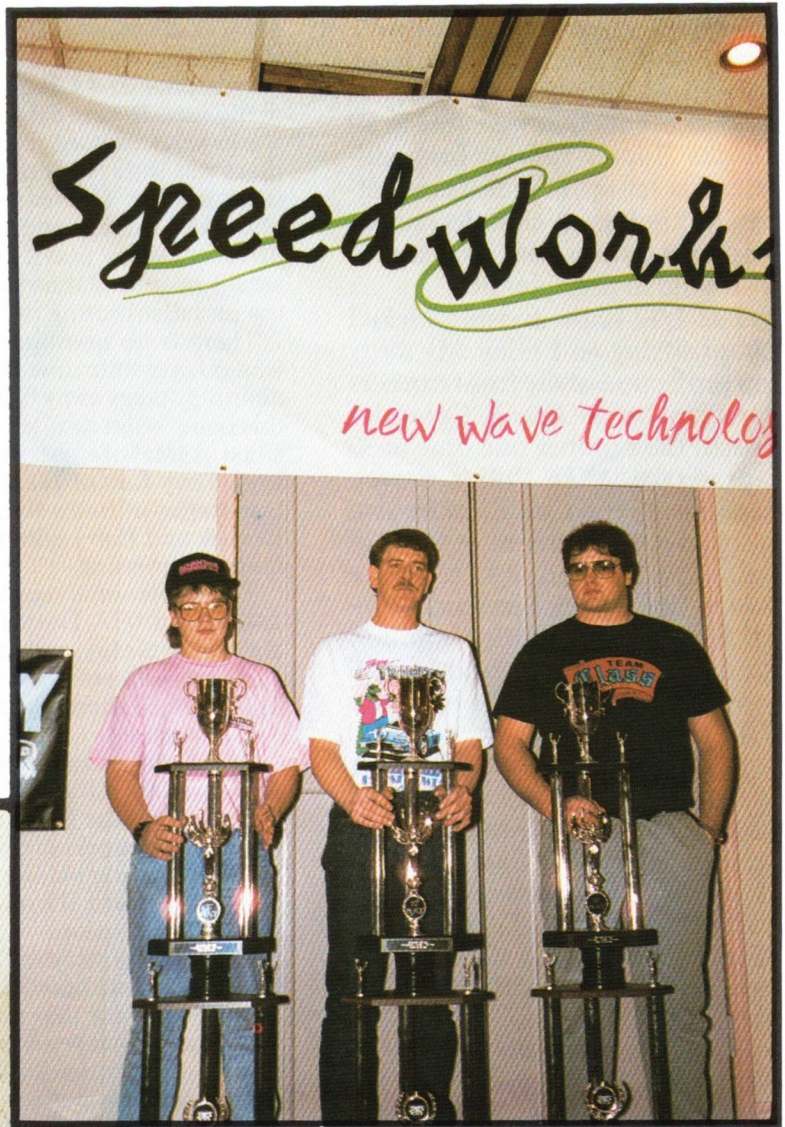
Left: Bob Light's 1/10 Invitational Class winning Lucas Agitator car. Bob's raced under the Team Trinity banner. Below: Invitational Class: Left to Right - Tyree Phillips, second; Tony Neisinger, third; Chris Doseck; Bob Light, first; John Thawley, Race Director; Terry Rott; Rick Hohwart; Joe Lawrence; and Bud Bartos.



The battle rules for this race were simple. All entries, whether in the 1/12 or 1/10 road divisions received Speedworks stock motors. Each participant competed in four qualifying rounds, two on Friday and two on Saturday. The finals were on Sunday with no bump up. The 1/12 scale events were all eight minutes, while their larger counterparts were four minutes.

The race was hosted by SEMROCC, which has become, in my opinion, ROAR's premier club with regards to big race organization and promotion. John Thawley was the Race Director and he and his crew ran the event flawlessly. Constant, correct introductions with a dramatic use of music on the main days provided an outstanding mix. The use of portable mics going through the racers was also a great touch. To say it was one of the best organized and well presented races I have attended, would not be an exaggeration. The event went extremely smooth and it was obvious a lot of preparation went into it.

Thursday was reserved for check-in, motor



Above: The Speedworks Sportsman Cup winners: Left to Right: Mike Pulfer, 1/10 Scale winner; Bob Light, Invitational class winner; Frank Calandra, 1/12 scale winner. Both Pulfer and Calandra were TQ in their classes. Below: Ernie Provetti (Trinity Products) heading one of the many seminars being held over the event. The seminars were very informative for the many racers who attended. Topics included diff preparation, motor and battery care, and chassis set-up.

hand-out and practice. Practice was done by the same system used in golfing. Each racer picked a tee-off time, with no frequency conflicts. The racer did not have to wait around for his frequency to be open. He came prepared at the specified time and off he went to practice.

For indoor carpet racing the track could be considered from large to extremely large. All the lanes were wide with room for both 1/12 and 1/10 cars to pass cleanly. For a temporary track the surface was rather smooth with just a few bumpy spots that would keep you on your toes.

Preliminary practice times indicated about 30 laps in the eight minute runs, and roughly half of that in the 4 minute races.

On Friday qualifying began. Throughout

the day, and on Saturday as well, many of the Invitational drivers, as well as Trinity staff members held seminars that were free to all entries. Topics ranged from differential set-up, to motor and battery technology. A complete report on the seminars and speakers is available in the sidelines.

The 1/12 scale division kicked off qualifying on Friday. My thirty lap projection of the front runners came to be as Frank Calandra posted the number one time at 30 laps, 8:06.0. Mike Pulfer, Steven Mancinelli and Curt Demars also clocked out 30 lap runs in times of 8:07.1, 8:18.6 and 8:19.6. Other drivers like Chuck Sommers, Conan Honeck and Keith Hamilton all came within a second of a 30 lap run. All put up 29s in under 8:01.0.

After the final round of Friday's qualifying session Wayne Penfold became the new TQ with a 30 lap 8:00.3 run. Frank Calandra was now second as close as you can get with a 30, 8:00.4. Qualifying for the A was close and the bubble position, number 10 qualifier, was Jon Orr at 29, 8:01.8.

Naturally with the 1/12 TQ at 30, 8:00.3, all were pushing for the magical 31 lap mark. It didn't take long as in round three, Saturday's first qualifier, Frank Calandra flexed his muscle and posted a 31, 8:13.9. Conan Honeck was the

Invitational Class . . .

In good conscience, I can't really say that I was impressed with the racing in the Invitational Class. For the most part they were there to do the seminars, not to really race. Because the Invitational Class drivers were also running the Speedworks stock motors, it was the opinion of many of the other manufacturers that there was little point of going if all the Invitational Class was going to run only stock motors. The reason the organizers insisted on Speedworks Stock was to allow the drivers and/or manufacturer reps more time with the Sportsman drivers. It is true that if modifieds were run in the Invitational Class, a motor war would ensue and time would have been spent winning the race, rather than talking and distributing information.

There is no question that running modifieds in the Invitational Class race would leave little time for seminars. Conversely only running one type of motor definitely takes away from the Invitational race. There are definitely two sides to this issue. What resulted was a light sprinkling of the top talent in the Invitational Class. A total of eight drivers came to compete. There was Tyree Phillips of Team Losi, Terry Rott of Team Composite Craft, Rick Hohwart of Peak Performance, Bud Bartos of Bud's Racing Products, and Tony Neisinger, Joe Lawrence, Chris Doseck and Bob Light of Team Trinity. It isn't hard to figure out the top drivers that were missing.

The Invitational race was comprised of eight races. They were split four in 1/10 and four in 1/12. The scheduling went one 1/12 and 1/10 on Friday, two of each class on Saturday, and one final run in both classes on Sunday. Points were awarded by position of finish. Each driver was allowed one drop per class of his worst finish. Since there were but eight drivers, they raced in eight-man heats the entire weekend.

As mentioned earlier Bob Light was the overall winner. "The Bullet" picked up three wins overall and three seconds. Finishing in second was Tyree Phillips and rounding out the top three was Tony Neisinger.

Of the best working cars were the Corallys in the 1/12 division. There were three of these running among the 1/12 Invitational. Another interesting machine was Terry Rott's Lynx II from Composite Craft. It is a new car and picked up a victory in the 1/10 division.

In many sports, the Olympics are considered among the top athletes in the world. When we opted to boycott the Olympics in Russia, it definitely left a void in the games for that meeting. Likewise, when we hosted the games it was the Russians who stayed home. This, regardless of what people say, also had an effect and the competition suffered. There is a saying that I hear all the time at the track, usually while two drivers are dicing for a position. It goes something like this, "Payback is a bitch." Indeed it is. Let's hope that the competition level in our sport doesn't suffer from this mentality, with regards to the Invitational Class entries.

Even though there were a few of the top names in 1/12 on hand, when the drivers mixed it up, it was a sight to be seen. The precision driving left all in a state of awe and amazement!

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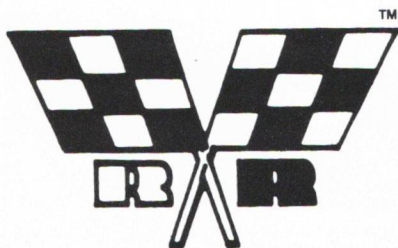
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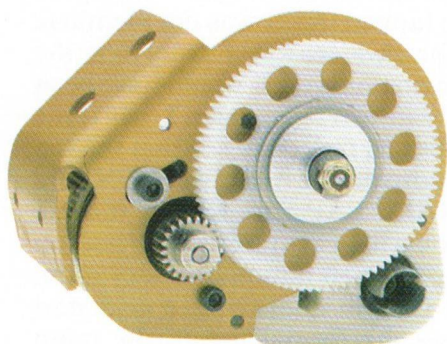
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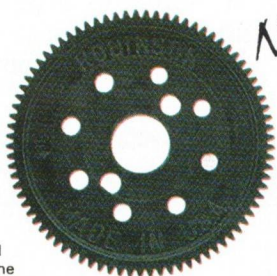
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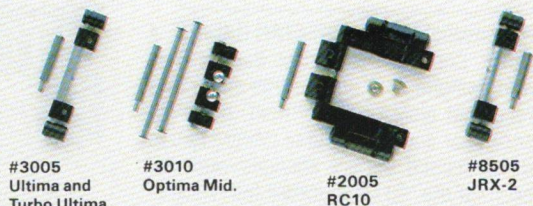


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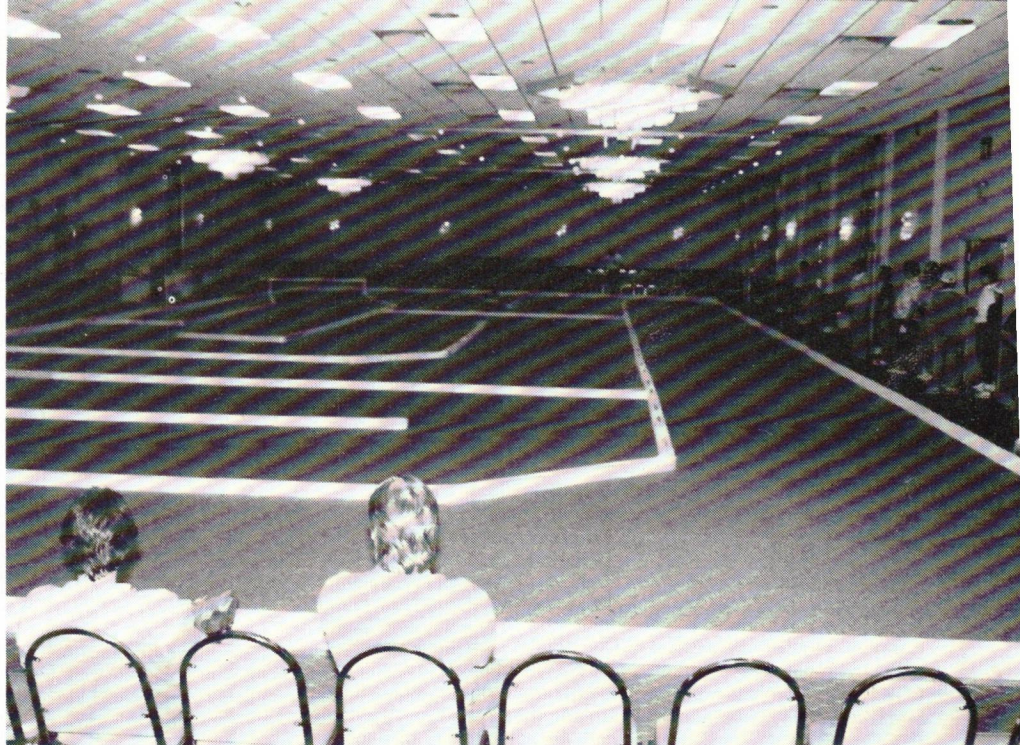
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only other driver to run at 31, his time of 8:17.4. The last shot at Calandra's TQ position was in the fourth round. While nobody could top Calandra's time, several good runs were posted. On a sad note Jon Orr's run which held for some time as number 10 was bettered. Orr settled for the TQ in the B Main as the cutoff time was 29, 8:00.8.

The 1/10 scale division qualified in the same manner as 1/12. A total of four rounds, two on Friday and two on Saturday, both following 1/12 scale. Fifteen laps was the number the drivers were shooting for and after round one, six drivers hit the mark. Mike Pulfer ran the swiftest at 4:07.0. Other fifteens were Chuck Sommers (4:10.6), Paul Morack (4:12.3), Steven Mancinelli (4:15.4), Jeff Roberts (4:17.4) and Ted McCarthy (4:17.7). A driver that should have turned 15 was Harry Arnold. He ran a 14 DNF (3:56.8). It was good for seventh on the grid.

In the second round Chuck Sommers really got things moving with his 15, 4:02.3. In fact, all of the front runners picked up the pace. A total of eleven 15 lap runs and two 14 DNFs were recorded as of



This might give you an idea of the overall size of the track the drivers raced on. As is clearly evident the lanes were very wide and allowed for clean passes the entire race weekend.

rounds one and two.

On Saturday morning there were more 15 lap runs, however, none bettered Chuck Sommers' time. The Sommers run lasted until late in round four when Mike Pulfer, in dramatic style, ran a 16, 4:10.0 to capture the prestigious TQ spot.

With qualifying completed, Sun-

day was reserved for the main events. All the 1/12 scale mains went off, followed by the 1/10 scalars. Before we get into the finals let me just tell you how fast the top Sportsman were by comparison to the Invitational drivers. Remember all of the drivers, invitational alike, were using Speedworks motors. Of course, batteries, and the cleanliness of the heats with regard to lapped traffic was not identical. For this reason I truly felt the Invitational class would have been about two laps faster. I was quite pleased indeed to see that the top Sportsman drivers were ONLY a HALF LAP BACK! Yes, indeed, you will hear more about these top Sportsmen nationally, very soon.

Like in qualifying, a grid start was the format for all the main events. I'm a big fan of grid starts, not only because they are aesthetically more appealing, but because they really limit the number of first lap incidents.

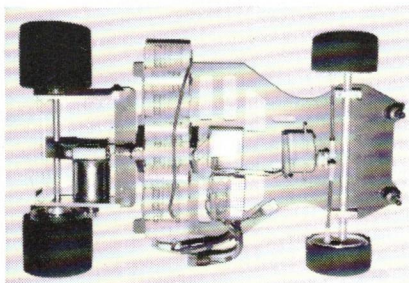
After the dramatic drivers' introduction, it was time to start the 1/12 A Main. From the word go, the TQ, Frank Calandra burst to the front. Tucking in behind was Chuck Sommers from row two. Also getting a good start was Mike Baker. Starting from the outside of row three Baker quickly



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found himself in the third place spot. Through the first minute the front three drove around with no change. At about the 1½ minute mark Calandra bobbled a bit, but still held on to the top spot. Almost simultaneously Sommers did the same. Baker managed to move into second with Sommers right on his tail. About three minutes had lapsed and Sommers and Baker were still going at each other for second. The biggest beneficiary was Frank Calandra. He slowly and quietly began to tiptoe away from the dicing pair. At about five minutes Sommers finally wrestled second from Baker. Their battle, however, really cemented Calandra's lead. With, but a minute to go, it was Calandra's race. The winner going wire-to-wire was Frank Calandra out of Rome, NY. Chuck Sommers finished a very respectable second. The saddest story was that of Baker. With just under a minute left his power dropped way off and that enabled Conan Honeck to squeeze by and take third. Baker finished fourth.

The 1/10 mains followed and the commencement exercise prior to this event was just as exciting. From the start your two front runners, Mike Pulfer and Paul Morack went to the front. Of the leaders Morack was the first to falter catching a board. Pulfer took control and it quickly looked like this could be a runaway. Pulfer was helped by the trio of cars behind him. Chuck Sommers, Paul Morack and Joe Fitzpatrick all were within a few feet of each other desperately trying to get a handle on second. In a four minute race, such as the 1/10 road cars, a two or three lap battle is all that one can afford. Theirs lasted two minutes, or about seven laps. Needless to say, Pulfer took every little advantage and exploited it into a big win. In the end, Pulfer took the win. Paul Morack did manage to grab second with Joe Fitzpatrick and Chuck Sommers finishing third and fourth.

Seminars . . .

Can you imagine what it would be like to attend seminars on chassis and motor set-up by heavy hitters in the R/C world as Tony Neisinger, Bud Bartos, Chris Doseck, Terry Rott, Rick Hohwart and Ernie Provetti, just to name a few? Some of the topics for discussion were motor car and maintenance, diff set-up and a battery seminar. After the in-depth talks you had the opportunity to pose questions to the experts.

Have you figured out what this would cost you? How about FREE! These seminars taught by the above experts and other top drivers like them were what many of the contestants at the Speedworks Sportsman Cup Race were able to take advantage of. Several of the drivers I talked to said they learned more in one seminar than they did in a year of racing!

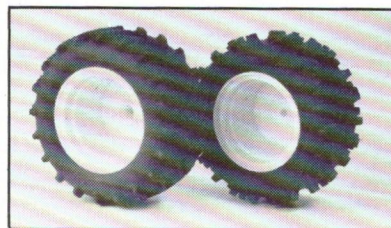
First of these seminars was given by Bud Bartos on differential set-up. The 1984 Stock 1/12 World Champion went into a discussion of the importance of a differential set-up and then proceeded to build his diff before all in attendance. Throughout his lecture questions were entertained with honest answers given.

Among the most popular of the seminars were the two held on motors. They were broken into two parts. Friday was a beginners class and on Saturday a more advanced class. The speakers were Ernie Provetti and Kevin Maurer of Trinity. Along with them, Rick Hohwart of Peak Performance, was also on hand to share his knowledge. These motor seminars were highly attended and rightfully so. Everybody wants to go fast and try to make their investment in a motor last the longest. If there was one message that the experts tried to stress in the motor seminars, it was the topic of heat. To quote Ernie Provetti, "Heat is the biggest enemy to your motor". Both Ernie and Rick stressed never to over gear your motor. Gearing too high will cause your motor to overheat.

Other seminars included chassis set-up and a battery seminar. Probably one of the most interesting seminars was to the few lucky drivers, who by luck of a draw, got the opportunity to spend a half hour with the great ones of our sport. I sat in on a few one-on-one seminars hosted by Chris Doseck and Tony Neisinger. Here the experts went through their guest's car completely. A comment of a winner of a one-on-one seminar said it was better than making the A Main!

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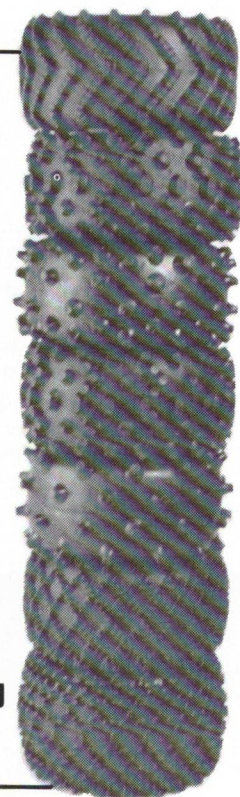
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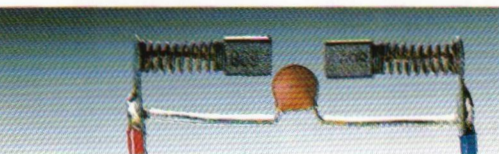
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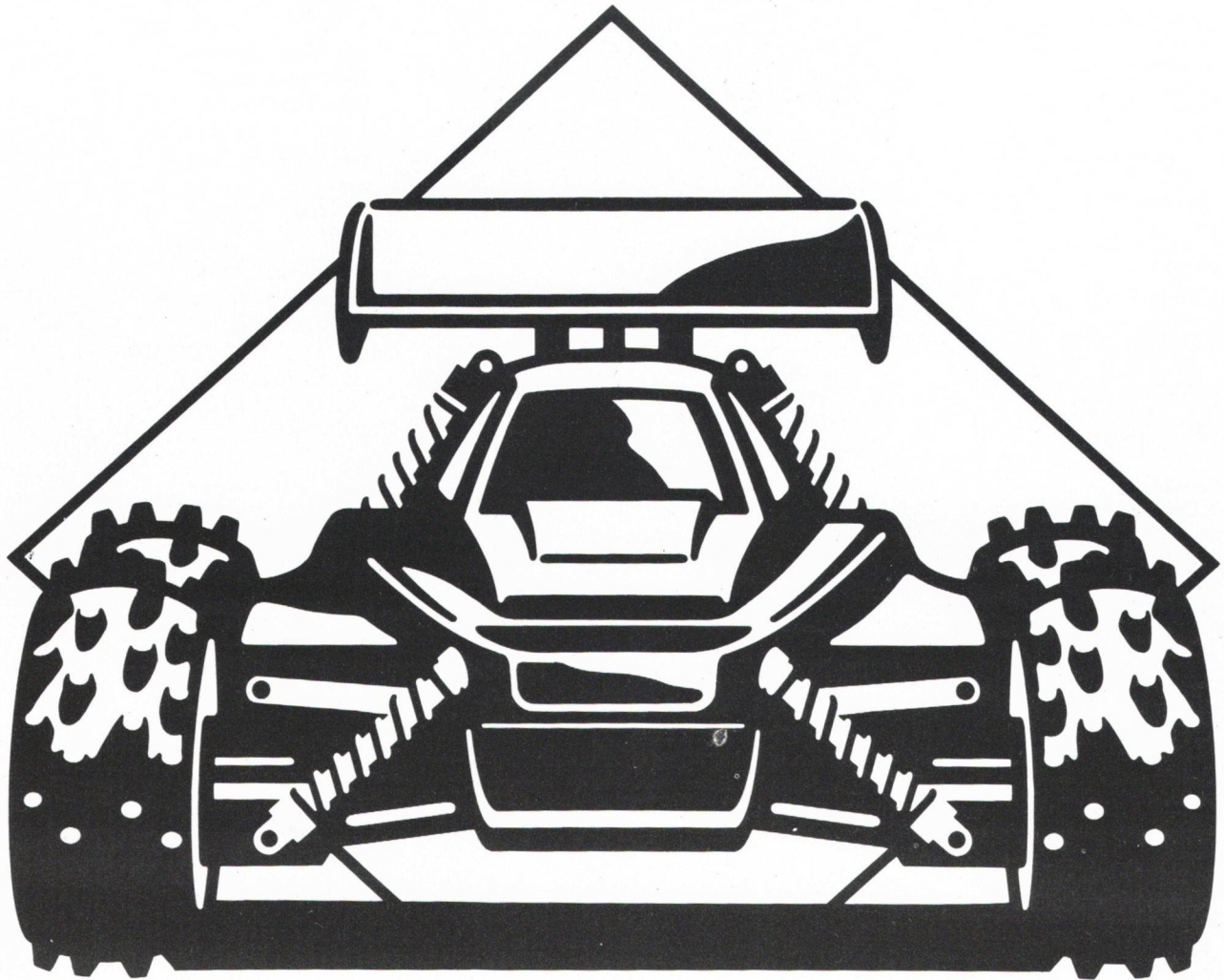
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#0003 350 2WD, 18 Turns, 34,000 RPM
#0004 Dirt Oval Stock, 2WD or 4WD
#0005 Super Speedway Stock, On-Road
#0012 The Road Beast, 20 Turns, 30,000 RPM



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

Tomorrows Technology



#4043 Motor Spacer,
#4031 Motor Bearing.

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



#4044 Motor Rebuild Kit.



#4011 Capacitor Kit.



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

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

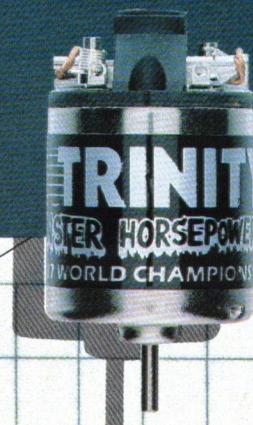
MONSTER AND MONSTER HORSEPOWER ARE REGISTERED TRADEMARKS OF TRINITY PRODUCTS INC.



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

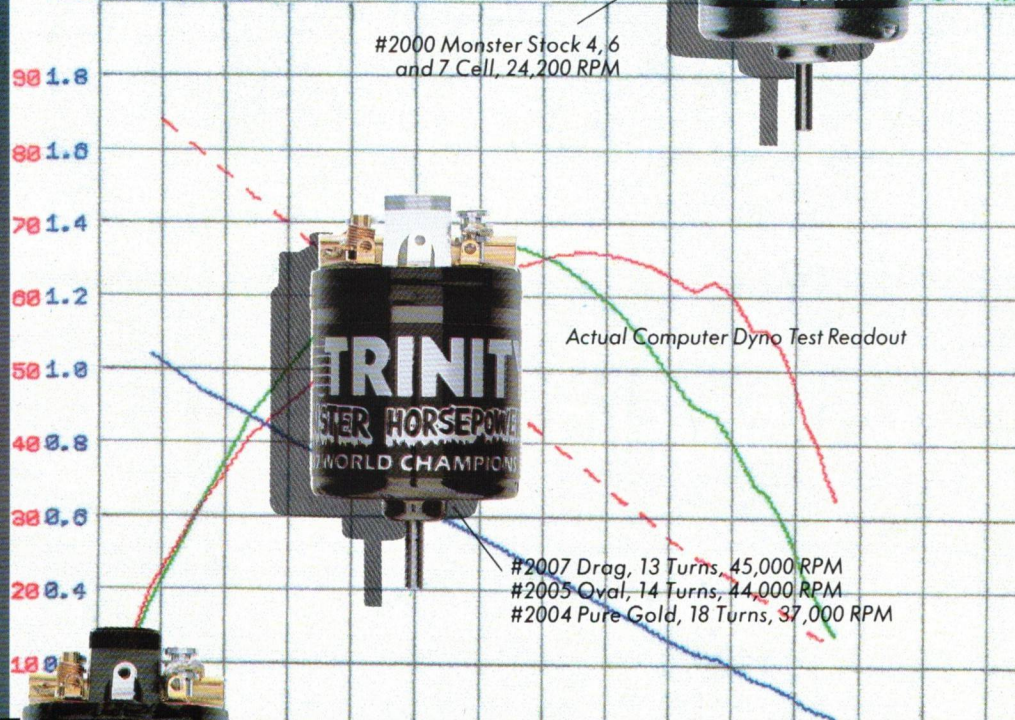


#5043 Matched SCE 4 Cell Set
#5044 Matched SCE 6 Cell Set
#5045 Matched SCE 7 Cell Set



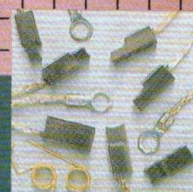
#2000 Monster Stock 4, 6
and 7 Cell, 24,200 RPM

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



TODAY

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



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

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The Lucas "Agitator"

Photos and Article By Bob Crane

What Lake Whippoorwill is to 1/10 on-road racing is what Daytona is to Winston Cup Racing. The mecca for those wanting to prove they are the fastest. The Lucas "Agitator" was born for the track. Whether you are racing the high bank oval of Lake Whippoorwill or the twisting road course at your local track the Agitator is your car.

The vision for doing this review started at the Chicago Model Expo in November. What I anticipated was a series of mini reviews within the framework of a major article. Each manufacturer who contributed to the overall performance would be featured. The result is a dynamic

car with all of the right components to bring you into the winner's circle every time.

The Agitator is a 1/10 scale on-road racing car. It was developed by Lucas Garneau, over a one and a half year period. The car utilizes a fully articulated dual-axis rear movement, five ball bearing modular graphite differential, suspended diaphragm stiffener, three point rear suspension, fully independent front suspension and adjustable front caster and camber.

The kit may be purchased with a fiberglass or graphite chassis. I elected for the graphite chassis with machined delrin plastic components. The kit is very com-

plete. All necessary ball bearings are supplied including those for the front wheels.

The assembly of the car requires no special tools, but the directions must be followed. There is a section in the manual that has line drawings and photos. These are very helpful. Twenty steps are all that is needed to assemble the car. Each part bag and part is numbered to take all of the guess work out of assembly.

The rear pod utilizes three shocks for rear suspension. I have driven other cars with a single mono-shock and I find that this arrangement is better for road racing. You can really

KYOSHO

A World Champion Ultima

For winning races, Ultima is the name to know. Whatever 2WD off-road crowd you race with, from beginners to pros, **Kyosho** has a 1/10 scale electric Ultima that is just right for you. Out of the box, the new **Ultima Pro** with graphite chassis puts serious racers in charge of the most advanced 2WD buggy available. If you're hungry for a taste of high-powered competition, the **Turbo Ultima** offers a long menu of the most important upgrades. The original World Champion **Ultima's** amazing record of wins is still unmatched — a perfect choice to begin your racing career!

The Kyosho Ultimas are Number 1 in 2WD off-road competition. There's a high-tech Ultima for every racing level, making your successful onslaught into the top ranks at your track simply a matter of good judgment. Choose your weapon carefully, and the winning will take care of itself.



Ultima™

The Ultima claims top honors every time, including sweeping the 1987/88 IFMAR World Championships and taking Number 1 at many demanding national, regional, and local competitions. It's the perfect car for anyone ready to start racing — and winning.

- **Most advanced suspension geometry available.**
- **Includes many features found in higher-priced models, from a powerful stock motor to high grip, low profile tires.**
- **Accepts hop-ups for even greater performance.**

Turbo Ultima™

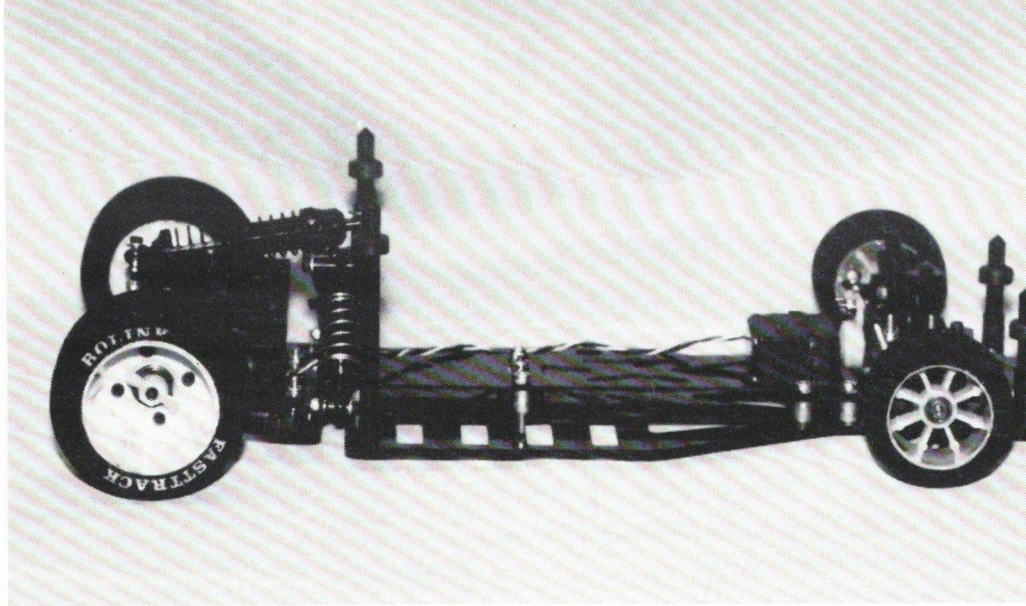
For drivers who are ready to move up in performance and durability, Kyosho offers the Turbo Ultima. It has all of the Ultima's proven features, plus over \$350.00 worth of hop-ups — at a price you can afford.

- **Full set of 14 ball bearings.**
- **Special, heavy duty 2mm chassis.**
- **Race-winning Kyosho ball differential, 4 Platinum Shocks, Heavy Duty Rotary Speed Control, and more!**

adjust the suspension to suit track conditions. The shocks are oil filled, so that you can use different weight oils, for different track applications. One feature of the shocks that I liked was the addition of a rubber bladder placed into the shock top cap. This bladder eliminates any leakage of oil from the shock.

The kit comes with two different springs for the car, silver and black. The silver springs are stiffer than the black springs. I use the black springs on my car that is set up for off-road racing. Being that the asphalt surface is uneven, the black springs compensate better.

If you are going to race on an indoor carpeted track or outdoor asphalt or high bank concrete oval, you can adjust the ride height of the car. You can lower the ride height for all out high bank oval racing or indoor racing, providing you don't scrape



The completed graphite chassis. Note the three shocks on the rear pod. (Note: wheels and tires are wrong size.

For photos only). Note Bud's Racing Products adjustable diff wing nut assembly in rear hub.

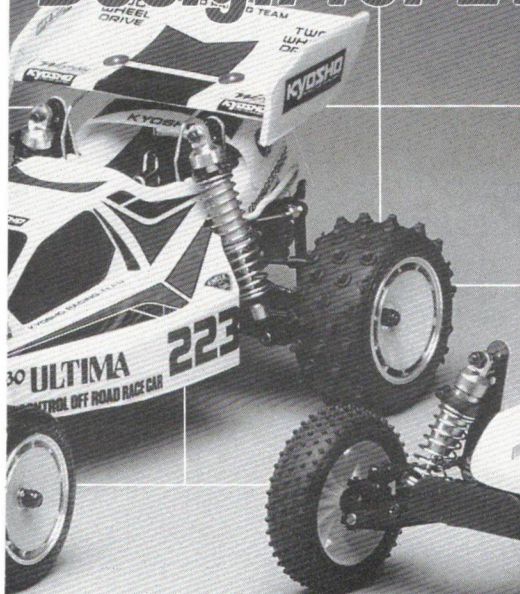
the bottom of the car or raise the ride height for asphalt road racing.

The Agitator comes with three different cams for ride height adjustment. Use the middle cam as a starting point. Tire diameter will determine which cam to use.

Cams can be changed easily, but not during a race. Wing tubes are provided, although we elected to use Bud's Racing Products, horizontal wire wing mount.

While reading the remaining sections of this article we have substituted various aftermarket

Design for Every Driver



The new Ultima Pro is the buggy that Kyosho Team drivers will be winning with at the next championships. Straight from the box, it's fully equipped to take experienced drivers racing through heated competitions in a blaze of glory!

- Over \$400.00 worth of top-quality hop-ups.
- Newly designed ultra-light, ultra stiff graphite chassis.
- Gold Shocks, ball differential, full ball bearings, universal swing shafts, and more!



NEW!
Ultima Pro™

Whichever Kyosho Ultima design you choose, you'll be in impressive company. Joel Johnson, Chris McElroy, Scott Montgomery, and hundreds of local racers everywhere have filled their trophy shelves by making an Ultima their choice. But there's still plenty of gold to be won. Drive the Ultima designed for your style of competition – and get yours!



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

For an inside look at the hottest Kyosho R/C models, send to the address below for your free copy of the Kyosho Mini Catalog from Great Planes.

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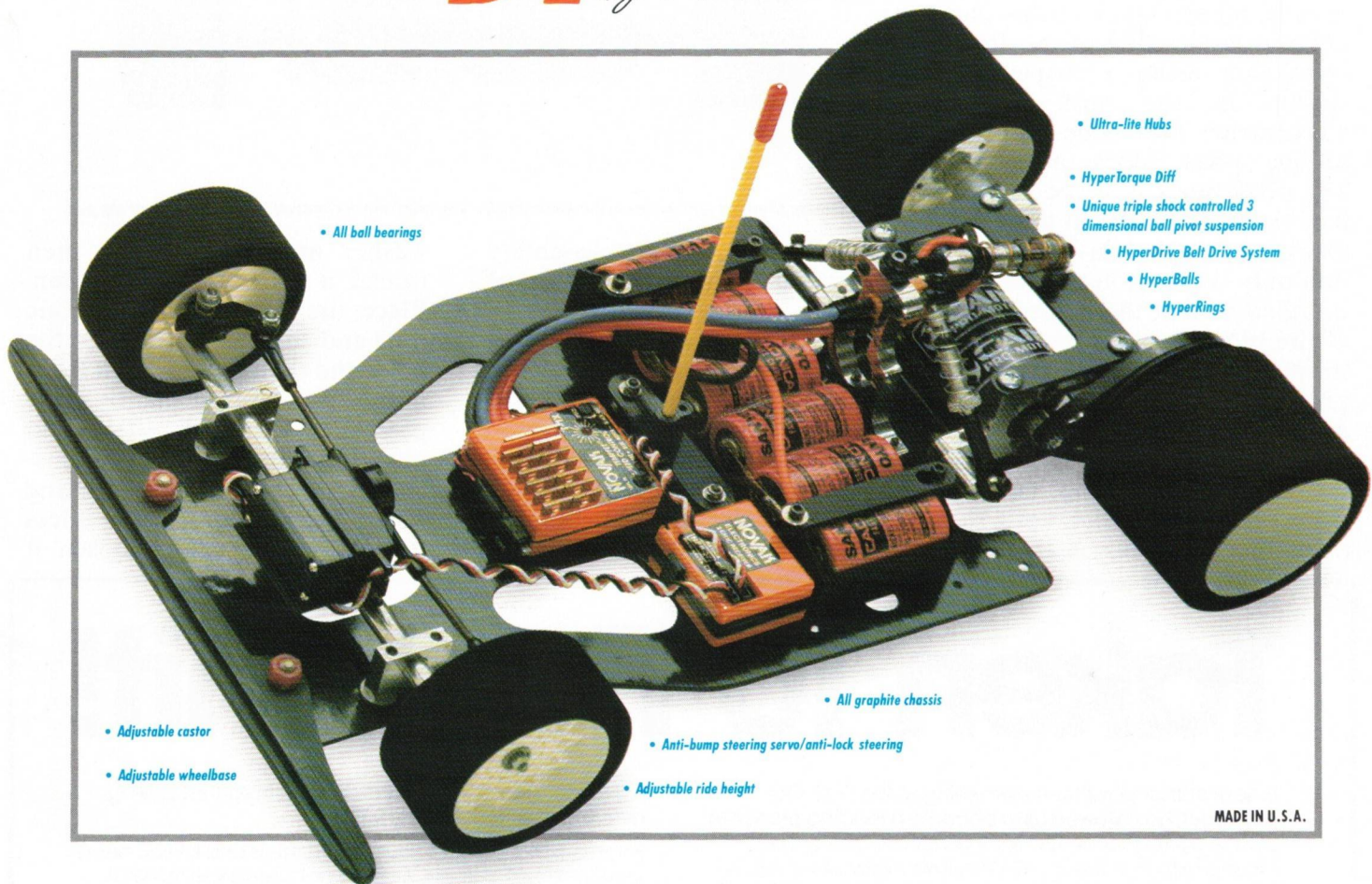
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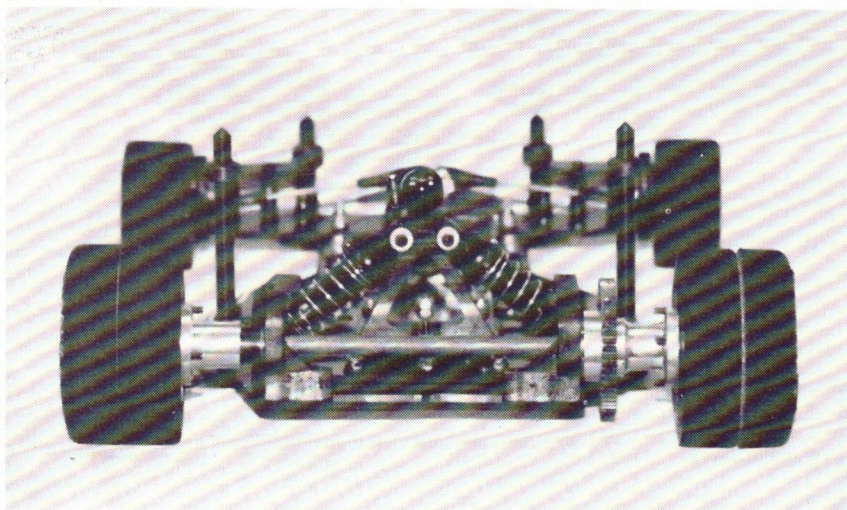
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parts in place of stock parts. Although the stock parts work fine, some aftermarket parts were used to aid in quick track adjustments. The differential thrust cone eliminates using a thrust washer set up on the car, that is stock.

Let's move on to the front end of the car. The front suspension is fully independent in that the kingpin is attached to the front crossbeam using a suspension spring on the post. Caster adjustments are made using a unique pivot block assembly. The pivot block is shaped like a half circle. The holes in the pivot blocks are angled in one direction only. These holes should be installed so that the angled edge of the block is oriented towards the rear of the car. The half circle pivot blocks sit in a corresponding saddleblock.

Install the saddleblocks into the screws tightening equally from one to the other until the pivot block is snug against the



Looking from the rear at two of the three shocks. The third shock connects to the top plate of the pod.

chassis pan. This assembly allows you to adjust the caster of the car.

Like I said before, assembly is very straight forward. I would now like to cover adjustments to the car.

T-BAR ADJUSTMENT

After installing the three 4-40 flat head screws throughout the bottom plate, slip a number 4

washer onto each screw, then thread a cone nut and tighten. Place the T-bar over the cone nuts and slide an o-ring onto the bolts and then tighten each locknut until the o-ring slightly compresses, locking the T-bar in place. Rear traction can be adjusted by tightening or loosening the three locknuts. Tighten if less traction is needed, or loosen if

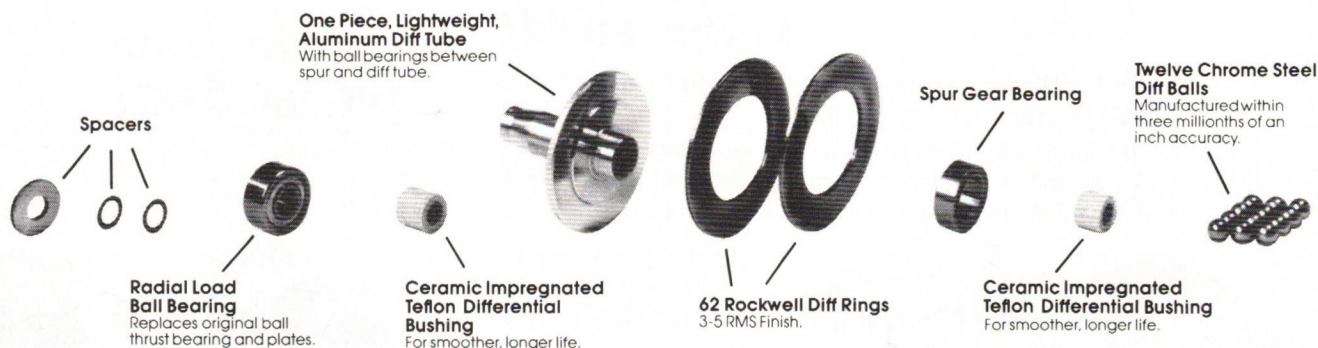
Taken To The Limit!

At Team Pit Stop we take everything to the limit. Our approach has allowed us to become a leading producer of high performance R/C race products. One of our latest products is the RC-10 Differential Rework Kit. This kit allows you to remanufacture the original RC-10 differen-

tial to the smoothest, least frictional, straightest pulling differential system on any R/C car.

If you're serious about your racing this is one kit you need for your RC-10. Without it, you're not taking it to the limit.

RC-10 Differential Rework Kit (#9040) \$37.99



New for RC-10, 10th and 12th scale cars:

62 Rockwell Diff Rings 3-5 RMS Finish . . . \$ 5.99

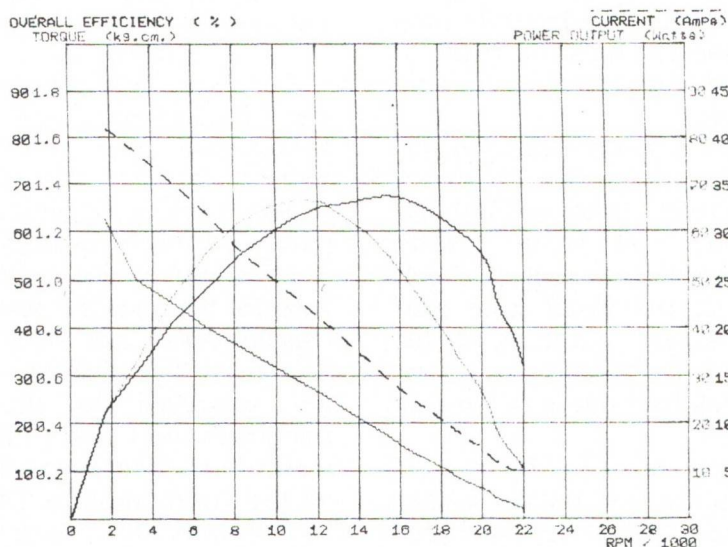
Titanium Dog Bone for RC-10 . . . \$12.99

Also New for Schumacher:

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- Rear Diff Rework
- Rear Integrator Rework



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The graph illustrates the overall efficiency of the new Speedworks Oval Motor from Trinity.

more traction is needed.

DIFFERENTIAL ADJUSTMENT TIPS

To properly adjust the differential on the Agitator hold the left hand wheel in your left hand, and the right hand wheel in your right hand, using the thumb of your right hand, try to rotate the differential spur gear forward. If you can't, loosen the diff adjusting nut until you can barely be able to push the diff spur gear. This is the average proper setting for the diff.

Make sure the diff feels smooth while turning the rear wheels. If it feels rough or is dirty after running the car, clean all the diff balls and washers, reapply silicone grease and reassemble.

FRONT TOE IN ADJUSTMENT

The toe in angle of the front wheels is the horizontal angle between the front two wheels. The amount of toe in may vary from 0 degrees (neutral) to 4 degrees (maximum). The more toe in, the more straight line stability, but the less steering sensitivity. The less toe in you have, the less straight line stability, but you will gain increased steering sensitivity. The toe in angle is adjusted by turning the steering rod ball joints in for more steering sensitivity and out for less steering sensitivity. Toe in will

depend on which track that you are racing on.

FRONT END ADJUSTMENT

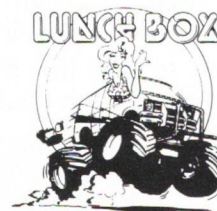
Caster is the angle that the tire comes in contact with the road in relation to the kingpin. Increased caster will give you more high speed steering, to a point. At this point you will start to "scrub" the front tires. Decreased caster will give more low speed steering, but the car will begin to "push" on high speed turns. Always use positive caster, or zero degrees (which is when the kingpin is straight up and down). The car usually works best with two to four degrees of caster. If the car is a little too sensitive through the infield, add one degree of caster to "de-sensitize" the steering. If the car "pushes" at high speeds, add one degree of caster. Do not exceed six degrees of caster or you will start to scrub the 4 front tires and lose speed in the corners. If adding one degree does not help and you have maxed out at six degrees, change to a softer compound front tire.

For more caster loosen the front bolts on the underside of the chassis. Loosen each bolt an equal amount, ie. one turn each. Then tighten the rear bolts the same amount on each side. For less caster, loosen the rear bolts on the underside of the chassis. Loosen each bolt an equal amount, ie., one turn each. Then

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tighten the front bolts the same amount on each side.

After adjusting the caster re-adjust the front wheel toe-in or toe-out. Camber may be adjusted by adding paper shims to the sides of the bolts between the saddleblocks on the front cross beam.

REAR SIDE SHOCK TWEAK ADJUSTMENT

The object of tweaking the suspension on the car is to set the spring rate equal on all four corners on the car. This is attained by adjusting the spring tension on the side shocks in the rear. To set the initial tweak on the car, remove all three shocks. Now install the motor and diff. Install the right side shock (motor side). Now adjust the shock collar, to set the spring tension up or down to get the rear lower plate level with the chassis plate, or as close as possible.

Now install the left side rear shock. Adjust the shock collar up or down to get the rear lower plate level with the chassis plate.

Next install the rear center shock and adjust the collar up or down to get the rear plate level with the chassis plate. To adjust the final tweak the car must be ready to run, batteries, motor and radio installed.

Place the car on a flat level surface. Now using the tip of an exacto knife, center the blade on the lower rear plate, directly below the rear upper shock mount in the small hole provided. Using the knife, slowly lift the car from its resting position and watch the bottom of the rear tires.

If the left rear tire lifts from its resting place first, the car is said to be light on the left side and heavy on the right. To adjust, loosen the collar on the left side shock and move it down a small amount ($1/32$, $1/16$) and re-tighten the collar and re-check. You want both tires to lift off the surface at the same time.

If the car turns in one direction better than the other, check for a slight tweak. If the car spins out

in one direction, check for a major tweak. Let's move on to the other components that make this car a great car!

MOTORS

The name Trinity means monster horsepower and World Champions. We selected Trinity motors for our car for this reason. They are dependable and parts are easily available. Our stock motor choice (not ROAR legal for Stock) is the new Trinity "Speedworks" dirt oval motor. The new "Speedworks" motors are produced to the same tolerances and with the same meticulous attention to detail as all the Trinity motors. The modified motors have precision ball bearings with machine wound armatures. The accompanying power curve is for the Number 0004, dirt oval stock motor.

Our motor selection for modified is the RC 2100, the 1/10 on road double motor. This motor is designed for 1/10 on road racing, for use on short tracks with lots of turns, (4 to 5 minute heats), 25

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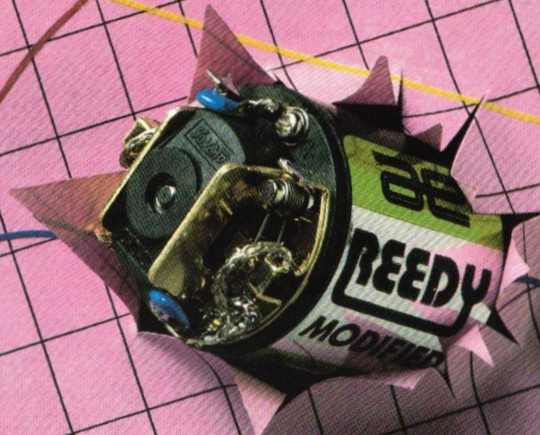
(Graph shown represents actual computer readout of Reedy Modifieds motor.)

CURRENT

TORQUE

POWER OUTPUT

OVERALL EFFICIENCY



turn, double wind, 26,000 RPM. Trinity has a vast array of on road motors from 26,000 rpm up to the Lake Whippoorwill hot Jeff Davis wind, which is a 15 turn single wind, 41,000 rpm motor (RC 2009).

BATTERIES

Our selection of power cells is the Sanyo line. Trinity Products matched Sanyos are responsible for more National Championships than all other brands put together. Our six cell pack is the RC 5003, matched SCR pack. The cells are hi-voltage output for stock class racing. Our choice for modified racing is the RC 5045, seven cell hi-capacity output SCE cells. Batteries do make a difference in racing. Stick with a sure winner!

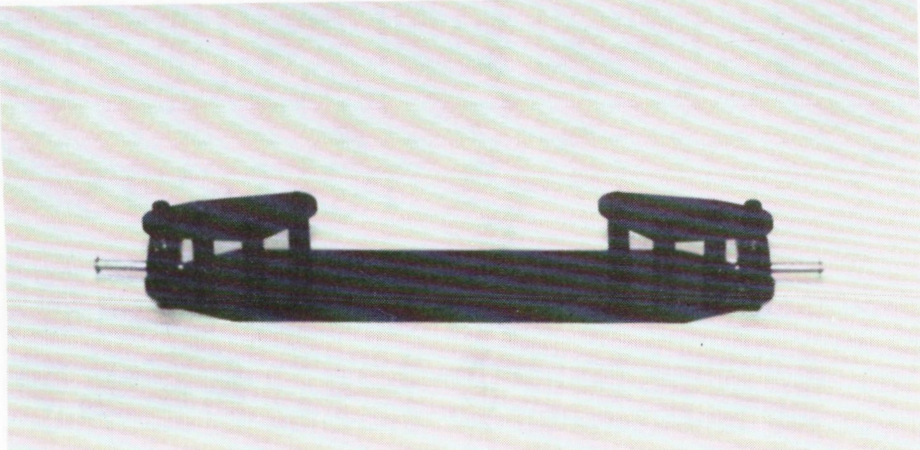
ELECTRONIC SPEED CONTROL

Tekin, ESC 600 Pro XT Tempfet is our choice. New from Tekin this unit features Tempfet circuitry which totally eliminates overheated speed controls; heat-sinks included with the ESC; large diameter 14 guage silicone wire (600PXT model); 50% stronger brakes; built in 3 function L.E.D.; mid range turnability for faster laps and longer runs; lower operating voltage.

Special advanced B.E.C. eliminates "motor cut out" and "turning left" when accelerating with high power motors. Size: 1.47" x 1.25" x .56"; Weight: 1.2 oz. less wires; Voltage Drop: .04v at 10 amps (ESC 300 PT) short circuit duration, continuous Tempfet models; Voltage: 4-10 cells; BEC: 5.5 volts; Warranty: 120 days; All popular plugs available. The new ESC 600 Pro eliminates the need for an inline fuse.

RECEIVER

Our choice again was the Tekin Ter micro receiver. This receiver is the world's smallest, lightest 2 channel receiver designed specifically for electric powered model cars. The unit is designed to reject speed control interference. The super low operating voltage of 2.2 volts,



The front cross beam assembly. This will attach to the front saddle blocks for adjusting the front wheel caster.

extends running time and also operates at up to 7.2 volts.

The narrow band ceramic filter design with 4 stages of I.F. reduces glitches from adjacent transmitters. The size is a small 1.17" x .50". Weight .45 oz. You must supply your own crystal. Available on either 27 mhz or 75 mhz. Channel 1 is steering, channel 2 is throttle and B is battery. A receiver power cell may be plugged into the battery port. We are using a Tekin power cell which extends running time by 2 - 10 seconds. It also reduces glitches by storing power in the cell and feeding that power to the receiver under hard driving conditions. It keeps the receiver voltage current and does not allow the voltage to drop and afford you a glitch. This may happen at the end of a long straight when braking hard. What happens is that the recei-

ver voltage drops off and you experience a glitch. When you install a power cell that glitch does not occur.

WHEELS

In radio control Tecna Craft is the BBS of Wheels. Tecna Craft precision machined and polished aluminum alloy wheels are made from aerospace quality aluminum stock. Tecna Craft wheels do not require additional or special adapters or hubs. They do not accept stock tires without glue.

Our choice was their new road wheels. These are two piece wheels with gold anodized spoke patterns. The spoke patterns are interchangeable. As you can see on the cover the wheels are beautiful and extremely well made.

TIRES

TRC, who else? On the Agitator you must use the larger

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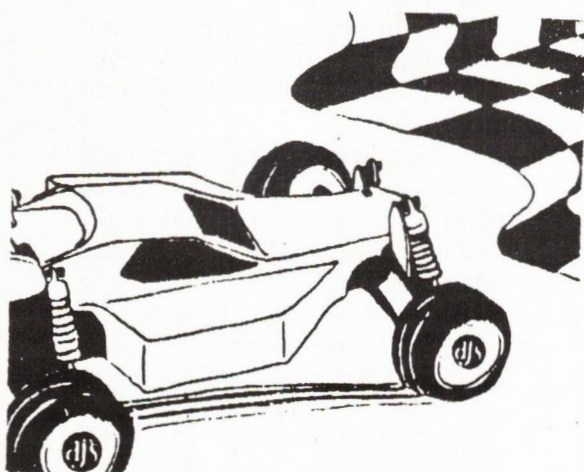
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MOD 100



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(available at race)

The wheel and tire will come to rest and then back itself off. Insert small pins in the rear of the wheel for balance on the opposite side of the wheel where it fell off. Use short pins so that they don't protrude to the front of the wheel. When satisfied with the balance, place a small amount of silicone on the pin and re-insert it in the tire.

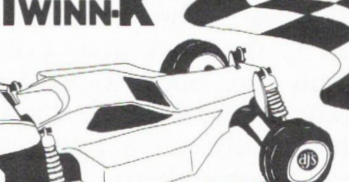
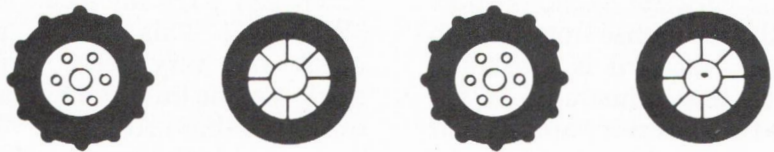
From Lake Whippoorwill to your door. You'll be faster with Bud's Racing Products on your car. Before you installed the Trinity motor you must install a motor capacitor kit. Bud's kit 7110 is designed to allow you to make a choice between just forward operation or both forward and reverse. But who uses reverse anyway?

small end first. Check to make sure that the end of the axle is below the outer face of the thrust cone. Lightly super glue the orange plastic spring washer to the thrust cone, beveled side towards cone. Install locking wing nut and adjust. No messy pliers. On our spur gear we used Bud's ultra precision .125 differential balls which have a tolerance to 5 millionths (product number 2135).

ing. Crush sleeve will be between the two bearings in the wheel. Install the wheel on the axle. You may notice slight end play between the wheel and the ball bearings. This is due to a slight difference between all makes of wheels. No Problem!

Our final Bud's product is the horizontal wing mount, bi-level super wing and wing buttons. You must supply your own wire. The wing mounts actually use a set screw to hold the wire in place. This makes the wing more secure at high speeds and forces pressure onto the rear pod, for more traction.

The bi-level super wing has an adjustable mid wing section. The



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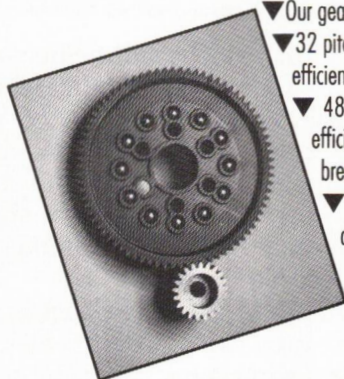
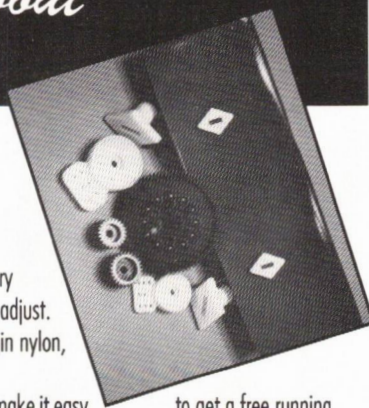
- ▼ We do our own injection molding and control the quality, every gear we sell is round and concentric, so the gear mesh is easy to adjust.
- ▼ They are molded from high temperature Teflon lubricated virgin nylon, to last longer and run friction free.
- ▼ The twelve 12 ball bearing hole circle and Teflon lubrication make it easy to get a free running differential adjustment, so your car gets more tire bite when powering out of the corners.
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wing utilizes a reverse airfoil to channel the air pressure down to push on the pod. By adjusting the mid wing you will cause more drag on the rear of the car. These are the only aftermarket parts that we used on the car.

CAR BODY

At the Chicago Model Expo I meet Richard Muise from Motion Graphics. Richard is a graphic designer and Illustrator. What Richard does best is paint RC car bodies. As evidenced by the cover, the Lamborghini body is awesome, outrageous, unbelievable, wow!! The attention to detail is the finest that I have seen on a RC body. Richard can do pinstriping, airbrush shading, flames, candy colors, tinted windows, personalized lettering, window netting and numbers. All bodies include trimmed wheel openings, clear windshield, windows, headlights and accented details.

The body for our car review is candy apple red with candy blue. Pinstriping is gold and silver

with tinted windows and headlight covers. You can even see the gold rivets on the car and body details. This car is the ultimate show car!

PERFORMANCE

With the Trinity modified motor installed and the Trinity seven cell pack all I can say is "Whoosh"! This car is really quick and very agile. Our test track is a one hundred foot asphalt oval, (non-banked track). We are using standard 32 pitch, 54 tooth spur gear with a 14 tooth pinion gear. The performance is outstanding. The Trinity combination is perfect for this car. We have also ran the Trinity stock motor and a 6 cell pack with awesome results. We have placed consistently in the A main at our local track with this combination.

The handling of the car is superb. Follow the instructions in tweaking the suspension. As with all of my R/C cars I first trim the car out. Center your steering servo trim tab and notice

the alignment of the front wheels. The wheels should be perfectly straight. If the wheels fall short of this position, either relocate the servo saver or adjust using the tie rods. Your car should cruise in a straight line with very little movement of the wheel on the transmitter.

At the track correct and fine tune your car for straight line tracking. Overall I would recommend this car to anyone who is interested in a winning on-road car. We have been racing this car locally and always turn some heads at the track, because of our lap times.

The following manufacturers contributed to this article and car set up.

Advanced Racing Technologies
on-road car kit

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Tekin Electronics
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The Age of Computer Controlled Chargers Has Arrived

Part 2: Competition Electronic's "TURBOcharger"

By Jeff Palmer

Today's field box has become a menagerie of electronic wizardry. Peak detection chargers, dischargers and digital multi-meters (amp/volt meters) have become commonplace at all racing events. In fact, my field box has become a clutter of electronics, battery leads and meter probes. The folks at Competition Electronics (CE) also took note of the proliferation of gadgets needed to care for batteries and designed a single unit which incorporates all these functions into one nice neat package - the "TURBOcharger". This unit is a peak detection charger, a discharger, digital multi-meter and a clock tied together via a micro-processor.

The physical features of the charger are the first clues to its thorough design. Its 5.5" x 4.5" x 2.5" dimensions and 20 ounce weight makes this unit compact and light. The simple controls of the charger consist of three buttons - "START", "INCR/OFF" and "FUNC". The display (2 rows of 16 characters) presents a complete picture of the status of the battery without having to switch from one display to the next. The terms used in the display are everyday English terms not computer-ese.

To begin the review of this charger, let's start with the display. As mentioned earlier, the display has 2 rows of 16 characters. The top row always has the status of the battery.

Time in	Charging	
Seconds	Amperage	
	NiCd	
	Voltage	

1234	12.34	1.23
CYCLE CELLS (6)		

Mode/Function Being Performed

The first 4 digits of the top row is the time in seconds spent

charging/discharging. The next 3 digits is the voltage of the battery and finally the last 4 digits is the amperage being charged/discharged from the battery. The second line is the mode or function being used by the charger of which there are five: 1) Charge Mode. 2) Power Supply Volts Mode. 3) Discharge Mode. 4) Average Discharge Display Mode. 5) Cycle Mode.

CHARGE MODE

When the charger is first plugged in, it comes up in CHARGE MODE. The amperage is preset to .3 amps and the charger is ready to trickle charge, as seen below. If "START" is pushed, the charger will trickle

0000	7.22	.00
CHARGE-AMPS 0.30		

charge for 2 hours. To increase the amperage, use the "INCR/OFF" button to change the

charge rate. The "INCR/OFF" button will increase the under-scored digit (0) 1 unit each time it's pushed. To move to the next digit, push "FUNC" and repeat the "INCR/OFF" process previously described. The charge

0000	7.22	.00
CHARGE-AMPS 0.30		

0000	7.22	.00
CHARGE-AMPS 0.00		

0000	7.22	.00
CHARGE-AMPS 5.00		

rate can be any value from 0.01 to 9.99 amps. In the above example, a charge rate of 5 amps was set - note the cursor (=) movement. Once the charge rate is set, push "START" and the charger will begin peak charging; the second line of the display will read - CHARGING BATTERY. When charging has completed, the

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charger will automatically switch to trickle charging and the second line will read TRICKLE

0000	7.22	.00
CHARGE-AMPS 5.00		

0351	10.92	5.01
CHARGING BATTERY		

1302	8.63	.29
TRICKLE CHARGING		

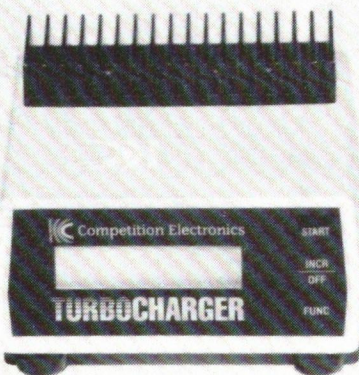
CHARGING. The time displayed on the first line contains the number of seconds it took to peak charge the battery. **SIMPLE.**

POWER SUPPLY VOLTAGE DISPLAY MODE

To enter this mode, keep pushing "FUNC" until the mode line reads "SUPPLY VDC xx.xx". The "xx.xx" is the power supply voltage but the first line still contains battery status information.

1234	7.12	2.99
SUPPLY VDC 18.12		

The power supply voltage can be



*A star is born:
TURBOcharger*

checked while charging or discharging a battery. Simply press the "FUNC" button to display power supply voltage. Press "FUNC" again to return to display of the function being performed. The "START" and "INCR/OFF" buttons have no effect in this mode.

DISCHARGE/AVERAGE DISCHARGE VOLTAGE MODES

To get to the DISCHARGE MODE, press "FUNC" until "DIS 10AR 0000 6C" is displayed on the mode line. The "INCR/OFF" button is used to change the number of cells setting being discharged - "6" default. The choices are 1, 4, 6 or 7 cells. Each time "INCR/OFF" is depressed, the charger will switch between these four settings. If the cell

0000	8.12	4.00
DIS 10AR 0000 6C		

0391	6.84	4.00
DISCHARGING BAT		

0608	7.17	.00
DISCHARGING DONE		

choice is set to "1", the battery is discharged at 8 amps. If the cell value is set to "4, 6 or 7", the batteries are discharged at 4 amps. Once the cell value is set, press "START" to begin the discharge;

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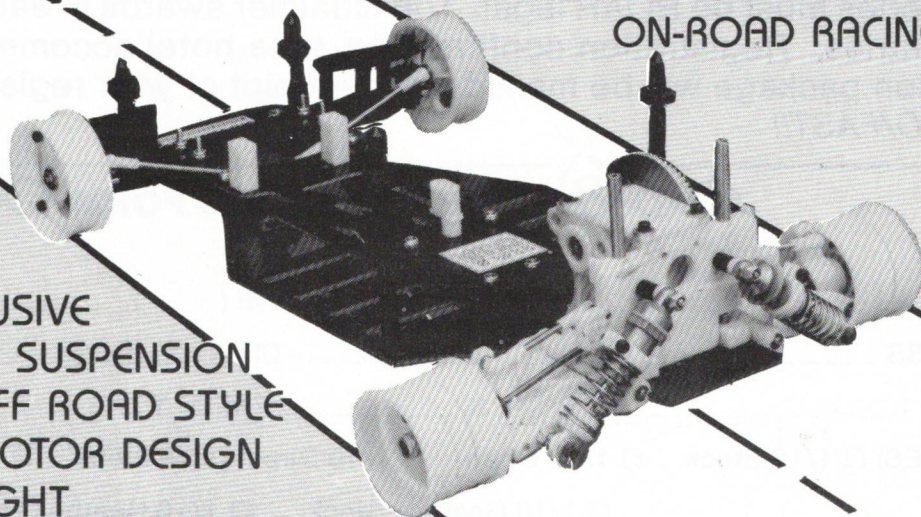
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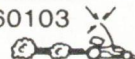
CLASS(ES) ☐ 1/12 Stock ☐ 1/12 Open ☐ 1/10 Direct Drive Stock ☐ 1/10 Direct Drive Open

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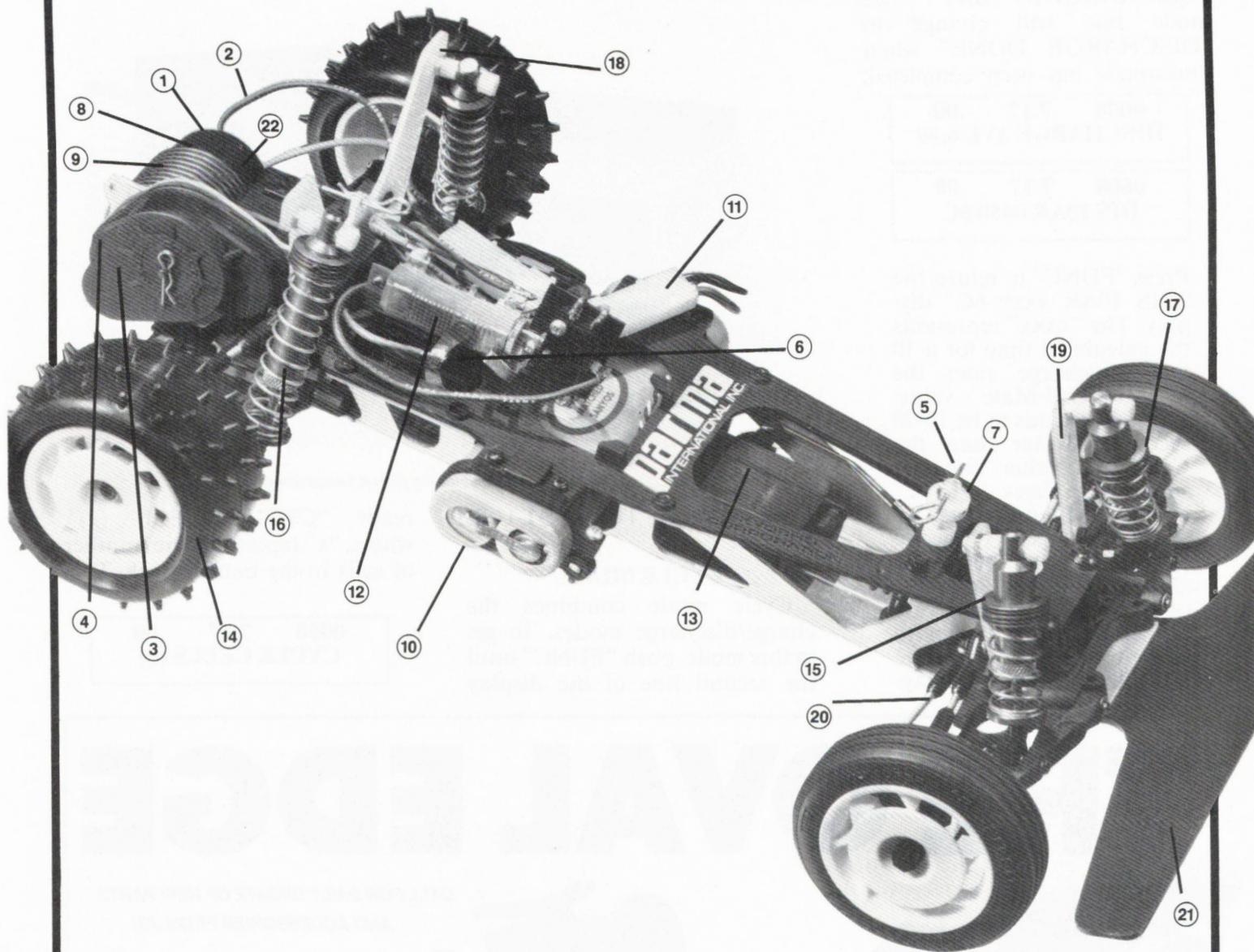
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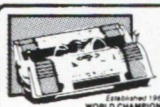
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the mode line will change to "DISCHARGING BAT". The mode line will change to "DISCHARGE DONE" when discharging has been completed.

0608	7.17	.00
DISCHARGE AVE 6.89		

0608	7.17	.00
DIS 10AR 0450 6C		

Press "FUNC" to return the "DIS 10AR xxxx 6C" display. The "xxxx" represents the calculated time for a 10 amp discharge rate; the LAVco Cell-Mate value. This value tends to be 10-20 seconds shorter than the Cell-Mate value for the same cell. Press "FUNC" again to get the average discharge voltage. A special note needs to be made about discharging a single cell: the unit becomes very hot and requires a fan to keep it cool, otherwise, the unit will shut down display-

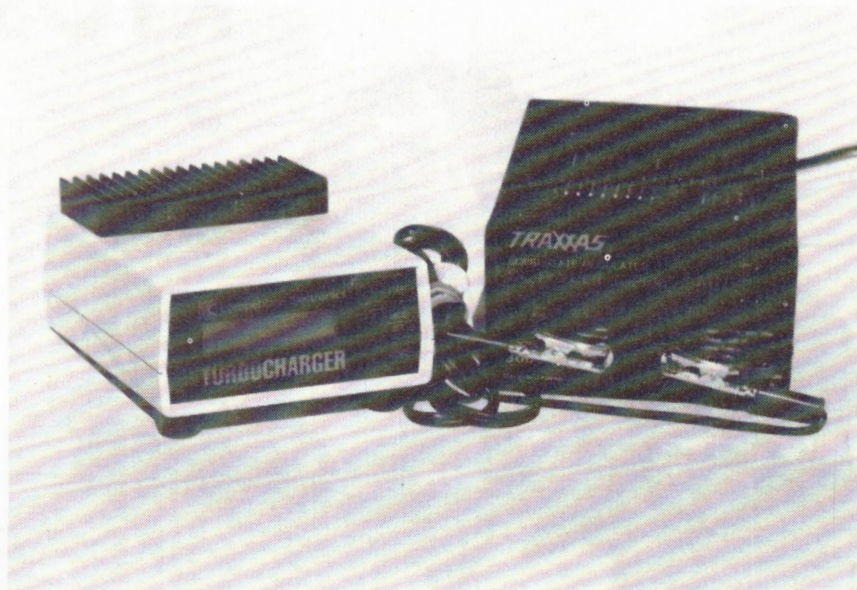
ing the message TOO HOT-USE FAN.

CYCLE MODE

Cycle mode combines the charge/discharge modes. To get to this mode, push "FUNC" until the second line of the display

reads "CYCLE CELL (x)", where, "x" represents the number of cells in the battery pack. This

0000	7.17	.00
CYCLE CELLS (6)		



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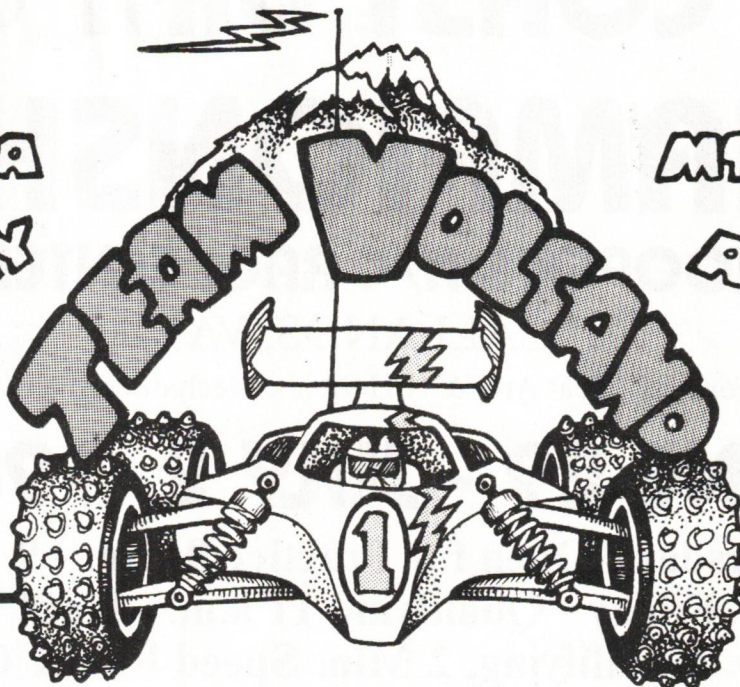
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CLASS 1) _____ Frequency 1st _____ 2nd _____ 3rd _____
2) _____ (Red, Blue, 72, 64, etc.) _____
T-Shirt Size (S, M, L, XL) _____

ROAR Membership Required
Available at Track

0800	10.17	3.00
CHARGING BATTERY		

0800	8.28	.29
TRICKLE CHARGING		

value should be set when passing through the DISCHARGE MODE. Charging in CYCLE MODE is done at a present current rate of 3 amps. When the cell value has been set, all is ready. Press "START" and let the charger do the work. The "TURBOcharger" will begin by charging the pack/cell and will display "CHARGING BATTERY" on the second line. The pack/cell will be double peaked before being discharged. Double peaked means the pack/cell will be peak charged, trickle charged for 2 minutes and peak charged again. Double peaking helps eliminate false peaks in new cells. The display now changes to "CYCLE/DISCHARGE" when the discharge portion of the cycle is entered. It

0420	6.78	4.00
CYCLE/DISCHARGE		

0800	7.17	.00
DISCHARGE DONE		

0800	8.28	.00
DIS 10AR 0447 6C		

notifies completion of the cycle by displaying "DISCHARGE DONE". Once the "DISCHARGE DONE" message is displayed, cycling is done. To obtain the 10 amp discharge rate and the average discharge voltage, press "FUNC" button as noted earlier in the DISCHARGE MODE section.

PROBLEM DETECTION

One of the benefits of intelligent hardware is its ability to notify the operator of problems and protect itself from damage. When the "TURBOcharger" overheats, it will shut itself down and display the message TOO HOT-USE FAN. This is a common problem when discharging or cycling a single cell. Another common problem solved by this

1134	1.48	4.00
TOO HOT-USE FAN		

0000	8.28	.00
HOOK UP BATTERY		

0000	1.17	.00
BATT VOLTS TOO LO		

0000	7.98	.00
BAT VOLTS TOO HI		

unit is to notify the operator that the power supply or battery is not hooked up when starting a function - HOOK UP BATTERY. In discharge or cycle mode, the voltage level of the pack/cell is checked just prior to discharging. If the voltage is too high, the BAT VOLTS TOO HI message is displayed. If the voltage is low, the BAT VOLTS TOO LO message will be displayed. Of course, if it's determined that a function needs to be stopped, press "INCR/OFF".

In the area of electrical protection, the "TURBOcharger" is protected by two 15 amp fuses. These fuses are located at the rear of the charger. One fuse protects the charger from the power supply and the other protects the charger from the battery. In a case where the charger is hooked up backwards, reversed polarity, one or both of these fuses will be blown. Replace the fuses and go. Note: I've always had trouble getting plug-in fuses in and out of their sockets until I started using Tamiya's "Switch Lubricate" on the fuse tabs.

CONCLUSION

Competition Electronic's "TURBOcharger" is the first in a new class of "multi-function Chargers". It's a work of art and will serve as the standard by which all other chargers of this class will be compared. The Traxxas Power Supply worked very well with this charger. 'Til next time GOOD RACING!

NOTICE OF UPGRADE

For those who bought one of the early "TURBOchargers", the

"TRICKLE MODE" was not mentioned. CE has combined this function into the "CHARGE MODE". The older charger would start up with a default 3.00 amp charge rate but the newer chargers start up with 0.30 charge rate. This change allows for better accumulation of charge time in the seconds display of the battery status line when cycling. In the old charger, double peaking would reset the seconds display for charge time, thus losing this information. To upgrade your charger to the new software, mail your charger to CE. It's a NO COST upgrade.

Competition Electronics
2542 Point O'Woods
Rockford, IL 61111
(815) 877-3322

Traxxas
12150 Shiloh Rd.
Dallas, TX 75228
(214) 613-3300.

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MAY 27 & 28, 1989

"EXTENDED TO 2 DAYS BY RACERS' REQUEST"

ROAR SANCTIONED # 4-89-13

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- Teams must be sponsored by a Texas Hobby Shop
- You don't have to be on a team to compete in the race
- Each teams' best FIVE finishes will be used to determine points.
- Least points for a five man team wins the cup and the rights to host the GOVERNOR'S CUP RACE IN 1990.
- All entrants have the option to assign their points to a TEXAS HOBBY SHOP even if they are not on that team.
- Points will be awarded as follows:

A MAINS

1st - 1 Point
2nd - 2 Points
3rd - 3 Points
4th - 4 Points

Thru 10th - 10 Points

B MAINS

1st - 11 Points
2nd - 12 Points
3rd - 13 Points
4th - 14 Points

Thru 10th - 20 Points

C MAINS

1st - 21 Points
2nd - 22 Points
3rd - 23 Points
4th - 24 Points

Thru 10th - 30 Points

- Must be ROAR member - ROAR Rules Apply - Membership available day of the race
- 2 Qualifiers and Mains
- Entry fee - STOCK \$35.00 (motors furnished) MODIFIED \$20.00
- Practice - May 25 & 26 - 11 a.m. til 8 p.m.
- Race - May 27 & 28 Check-in 8 a.m. - Drivers' Meeting 8:30 a.m. - Races start at 9 a.m.

Stock - Saturday 27th - Mod. & Heavy Metal - Sunday 28th

FOR MORE INFORMATION CALL RANDY "CHU" (713) 661-7574 or (713) 537-7758

Name _____ Phone _____ ROAR # _____
Address _____ City _____ State _____ Zip _____
Classes: 2WD Stock _____ 2WD Mod. _____ 4WD Stock _____ 4WD Mod. _____ Heavy Metal Open _____
Frequencies: 1st _____ 2nd _____ 3rd _____
Team Name: _____
Shop to Receive Points: _____
Address of Shop _____ City _____ Zip _____

Make Check Payable to: Roadrunner R/C - 5620 Bellaire - Houston, TX 77081

Entry Deadline: May 20, 1989 Late Fees: Stock \$40.00 - Modified \$25.00 Gov. Cup 1989

King of the Hill Competition

By Linda Reimer Cook

Winters in Wisconsin are usually braved only by the skiers and the skaters, but on a Sunday afternoon in February, "The King of the Hill" competition saw a new breed of winter warriors, the R/C Truckers.

"The King of the Hill" competition, held in Janesville, Wisconsin, is a race up a hill that has a 30 degree grade. It was 75 feet up to the top pylon, which the racers had to circle, before coming back down the hill to cross the finish line. The event was double elimination, with three competitors in each heat. It was divided into two classes, 2WD and 4WD trucks. The only limitation was a 7.2 volt battery pack, "anything else goes."

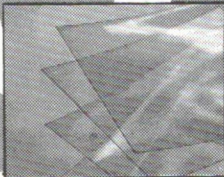
Over 35 entrants brought out



Clod Buster with Tire Chains.

WHEN IT'S TIME TO START WINNING...

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SUPER 13

The HOTTEST wire in the country! High current pure copper, with 805 strands! Super-flex silicone coated.



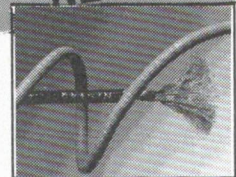
SUPER 13B

Cut your voltage drop! Blue coated Super 13 for your speed control!



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BIG and BAD, this new 12.5 gauge wire has 1620 strands of pure copper and is incredibly flexible!

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their Big Brutes, Clod Busters, Lunch Boxes, Midnight Pumpkins, Double Dares and Blackfoots to see if they could "top" the hill. Several inches of the packed snow challenged the drivers, as they tried their best to climb instead of spin on the steep grade.

Those drivers who went for a test climb prior to race day, were equipped with the most unusual looking tires you would ever hope to see. The tires were decorated with wood screws, insulated staples and a wide variety of homemade chains.

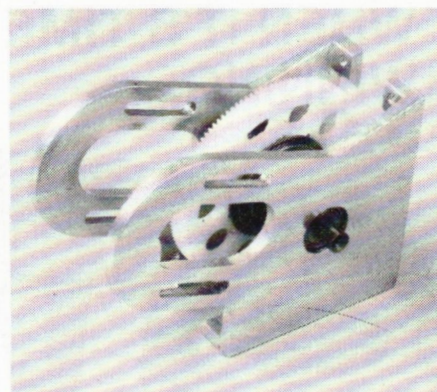
The steepness of the hill brought out additional last minute accessories for the trucks. This included wrenches taped to front bumpers, extra battery packs strapped on, and "wheelie bars". One competitor even attached two rolls of quarters to his truck's front end to keep it on track. This incurred added expense when his truck, hitting a marking code, dislodged the



King of the Hill Race Course

quarters which rolled down the hill amongst the two hundred

spectators. Anything to win! Many of the entrants were new



ROB CUTMAN - Invitational - Breaks Track Record By 2 Laps - Blows Away the Whole Field. JOHN PETERSON - Sprint Cars - Wins A Main, Breaks Track Record by 1 ½ Laps. JAY BOWMAN - BOB FELLEBAUM - A MAIN in 2WD OPEN.

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State & Zip: _____
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Date Needed: _____

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MILLER AMERICAN 200 OUTLAW STYLE - OVAL RACE - ANY MOTOR

Sponsored By

*Big Boys Toys Southland Maintenance Lightspeed
RaceMaster Tekin*

June 24 & 25, 1989

RAIN DATE: JULY 1 & 2, 1989 ENTRY DEADLINE: JUNE 17, 1989

LOCATION: COYOTE TRACKS, 12760 Veterans Memorial Drive

100 - STOCK CARS - Late Model NASCAR Body & 6 Cell

30 - HEAVY METAL - (Stock Chassis) Full Body & 6 Cell

30 - HEAVY METAL UNLIMITED - (Conversions) Full Body & 6/7 Cell

30 - 4WD - ASA/Wedge Body & 7 Cell

50 - 2WD SPRINT - Sprint Body with Wings & 7 Cell - 3 Minute Heats

Minimum Weight 60 ozs.

SCHEDULE: Track Opens 7 a.m. - Check In 8 a.m. - Concours 8:30 a.m. - Drivers' Meeting - 9 a.m.

QUALIFYING: June 24 - 10 a.m. - 4 Rounds Stock Car & Sprint - 3 Rounds Heavy Metal & 4WD

QUALIFYING: June 25 - 9 a.m. - 10:30 a.m. - 1 Round Heavy Metal & 4WD

MAINS: June 25 - 11 a.m. - Stock Car J thru C, Sprint E Thru B, Heavy Metal, 4WD

MAINS: SPRINT CAR A - MILLER AMERICAN 100 LAP - 2 p.m.

MAINS: STOCK CAR B - MILLER AMERICAN 100 LAP - 2:45 p.m.

MAINS: STOCK CAR A - MILLER AMERICAN 200 LAP - 3:30 p.m.

TROPHIES - 1st Thru 10th - Miller American 200

TROPHIES - 1st thru 5th - Southland Stock 100

TROPHIES - 1st thru 5th - Big Boys Toys Sprint 100

TROPHIES - 1st thru 3rd - All Other Mains

TROPHIES - 1st thru 3rd Concours & TQ All Classes

ENTRY FEE: \$25.00 Per Class

LATE ENTRY FEE: \$30.00 Per Class

FOR MORE INFORMATION CALL RANDY "CHU" (713) 661-7574 or (713) 537-7758

MAKE CHECK TO: ROADRUNNERS R/C, 5620 Bellaire Blvd., Houston, TX 77081

Name _____ Phone _____

Address _____ City _____ State _____ Zip _____

Class _____ Freq.: 1st _____ 2nd _____ 3rd _____

Class _____ Freq.: 1st _____ 2nd _____ 3rd _____

Class _____ Freq.: 1st _____ 2nd _____ 3rd _____

Amount Enclosed \$ _____

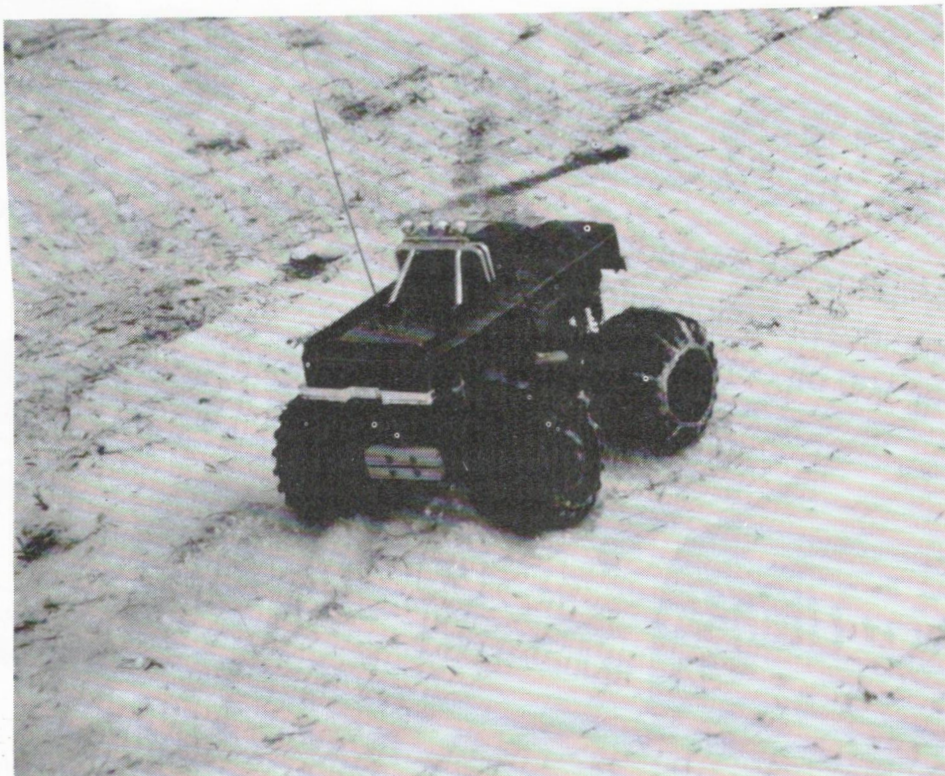
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MILLER AMERICAN 200

to the R/C sport, and this was their very first competition. Spectators were entertained with a lot of wild driving as many trucks were thrown off course by the uneven terrain. Somersaults, rolls and head to head crashes kept the cameramen from a local television station busy, as they tried to cover the action.

After two hours of competition, the final race in the Senior 4 WD class was between two Clod Busters. Smooth driving by Paul Roberts took him to a first place victory. He attributed his victory to practice on the hill prior to race time. "The fastest way to the top is a straight line, which takes controlled steering." Paul also had chains on his front tires and spikes on the rear tires. Ron Benish, the senior 2WD champ, claimed that a more powerful, modified motor along with spiked tires, brought his Big Brut across the finish line first.

The event was conceived and sponsored by one of the local



Clod Buster Action - Spinning Snow!

shops, The Hobby Shop, along with the City of Janesville. It was created to stimulate more interest

in the hobby and to give racers a chance to chase away those winter blues.

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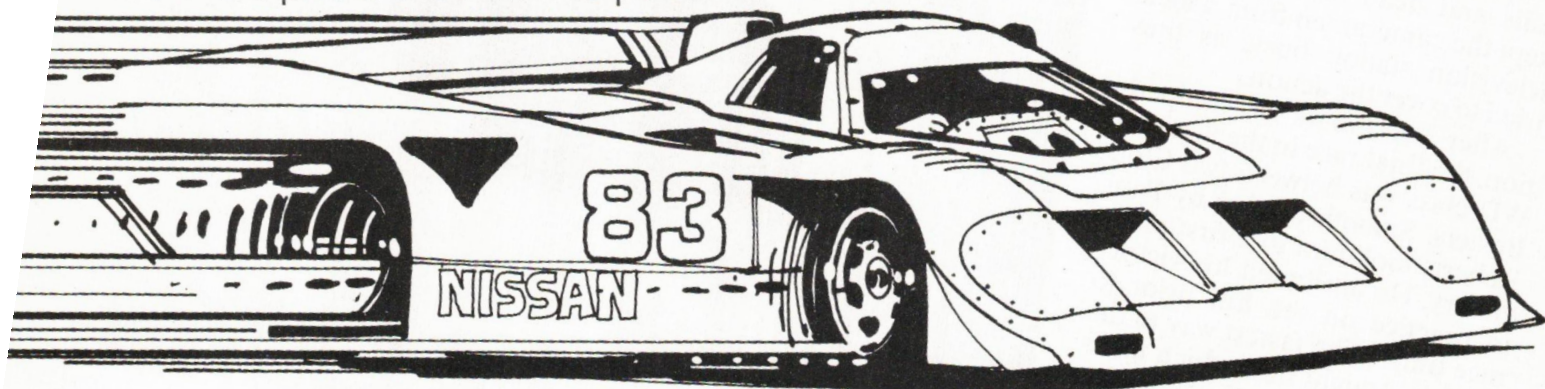
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Stock • 4 cell • Stock motor

Modified • 4 cell • Modified motor

All heats 8 minutes

ROAR Membership required

Sign in closes 6:30 p.m.

Entry fee:

SEMROCC Members\$6.00

Non-Members\$8.00

Saturday

JJ'S R/C SPEEDSHOP Presents

"Stadium" Off-Road Racing

1/10 Stock • 6 cell • Stock motor

1/10 Modified • 6 or 7 cell • Modified motor

All heats 4 minutes

Sign in closes 4:00 p.m.

Entry fee\$ 7.50

Sunday

TEAM **SEMROCC** RACING Presents

Championship Road Racing

1/12 Stock • 4 cell • Stock motor

1/12 Modified • 4 cell • Modified motor

1/10 Stock • 6 cell • Stock motor

1/10 Unlimited • Solid Axle cars • 6 cell • Modified motor

All classes require full bodies

All 1/10 Scale heats 4 minutes

All 1/12 Scale heats 8 minutes

ROAR membership required

Sign in closes 10:00 a.m.

Entry fee:

SEMROCC Members\$ 7.00

Non-Members\$9.00

Friday

JJ'S R/C SPEEDSHOP Presents

"Oval Madness"

1/10 Stock • Gear Box cars 6 cell • Stock motor

1/10 Superstock • Solid Axle cars 6 cell • Stock motor

1/10 Unlimited • Solid Axle cars 6 cell • Modified motor

1/12 Unlimited • 4 or 6 cell • Open motor

All heats 4 minutes

Sign in closes 7:00 p.m.

Entry fee\$ 7.50

CLASSES ARE SUBJECT TO CHANGE BASED ON PARTICIPATION

JJ'S R/C SPEEDSHOP and TEAM **SEMROCC** RACING

Located in the "Green Acres" Shopping Center, 5645 13 Mile Road at Mound in Warren, MI 48092
for more information call **JJ'S R/C SPEEDSHOP** (313) 977-0420

— Racing Schedule —

— 1/8 & 1/4 Scale —

OUTLAW MOTOR SPEEDWAY

Every first & third Saturday - 1/4 Scale
Dirt Oval. 7920 Webster, Highland, CA.
Call (714) 864-1770

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1655 E. Mission Blvd., Pomona, CA
91766, (714) 623-1506. Every second
Sunday.

MACHESNEY PARK RACEWAY

1/4 Scale - Large asphalt Oval and Drag
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27, Sept. 24, Oct. 22, Nov. 19 and Dec. 3.
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Race Track - Upper Marion School
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May 7, May 28, June 11, June 25, July 2,
Aug. 13, Aug. 27, Sept. 3, Oct. 22, Nov. 5.

1989 SOUTHERN CA CAR SERIES

May 14 - Ranch Pit Shop; Sept. 24 -El
Cajon; Oct. 8 - Ranch Pit Shop; Nov. 19 -
El Cajon. CanAm Bodies, Entry Fee
\$10.00 per class, Classes: Novice, Flat
Pan, 2WD, 4WD.

— 1/10 Scale —

G & S Off-Road Raceway

Every Sunday - San Carlos & Meri dian
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Every 2nd Sun. - Junction City - 1 p.m.
Every 4th Sun. - Enterprise - 1 p.m.

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electric auto racing. Nov.-Mar. Carpet
racing 1/12 scale. Oval and road racing.
April-Oct.

BIR INDOOR SEASON

Fridays - 7:30 p.m. Oval racing call (201)
352-6955. Saturdays - 12:00 p.m. Indoor
Off-Road racing. BIR Hobby Shop, 550
North Avenue, Union, NJ.

REECE'S R/C RACERS

1st & 3rd Sundays at Spinner's Airport
Raceway, 2nd & 4th Saturdays at Reece's
R/C Racers. (209) 784-0922.

PANTHORN RACEWAY

Panthorn Park, Burrirt St., Southington,
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1st. Off-Road, Oval, Baja, Truck Pulling.
Call (203) 628-9345 Ben Carr, 272-9326
Pete Church, 237-6976 Bob Lavoie, 879-
2316 Steve Magnani.

R/C HOBBIES RACEWAY

Route 163 Bozrah, CT
Racing Every Sunday - May 1 to Oct. 30.
For more information call: R/C Hob-

bies, (203) 886-9441, ask for Mike or Bob.

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We have 1/10 scale dirt tracks both
inside and outside, also 1/12 tracks both
inside, also 1/12 tracks both inside and
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Every Saturday from 9:30 a.m. to 4 p.m.
Practice: Track open all week. Hal's
Hobby Shop, 4886-A Hercules, El Paso,
TX 79904, (915) 755-1914.

RIVER CITY R/C OFF-ROAD

Racing is every Saturday, sign-ups 3
p.m., racing starts at 3:30 p.m. (512) 656-
5724 evenings.

MASON DIXON R/C CAR CLUB

Every Sunday at 1:00 p.m. Track location
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town, Maryland. Call King's R/C Cars,
219 E. Washington St., Hagerstown, MD
21740, (303) 739-0080.

SNORR

Racing every 1st and 3rd Sundays. P.O.
Box 438, East Haven, CT, (203) 469-2594
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Sandhill Ranch, Route 2 143 B,
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Indoor Racing - 7041 N. Pecos, Denver,
CO 80221, (303) 426-5255. Every Wednes-
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Every Friday - Oval 1/10 Dirt

Every Saturday - Off-Road 1/10 Dirt. All
races start at 7:00 p.m. - Practice all other
times.

TEAM RACE R/C CAR CLUB

Fridays: 6:30 p.m. 1/10 scale 505 Spring
Ridge, Clinton, MS 39056. Call (601)
924-0722.

ANTIOCH R/C RACEWAY

5631 Lone Tree Way, Antioch, CA 94509.
Every Wed. & Fri. 6:30 p.m., Every Sat. &
Sun. 10:30 a.m. Call Jack Hanson (415)
754-5700.

F/X CITY RACEWAY

Every Saturday 1 p.m. The Frame
Gallery, 13340 F. Franklyn Farm Road,
Herndon, VA 22071. For info call Eric
Zelman, (703) 471-4499.

RIVER CITY RACEWAY

On Quincy Road, Wichita Falls, Texas.
Every 2nd & 4th Sundays at noon. Call
(817) 691-1478.

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4300 West Genesee Street, Syracuse, NY
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ing on unique indoor clay track. Mon.
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Tuesdays: Oval Asa, Full Bodies
Thursdays: Off-Road - Stock
Saturdays: Off-Road - Novice

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Ben or Kent (615) 859-3465.

CARCLUB - COCHRANTON AREA

The Carclub races Fridays starting at 6
p.m., Saturdays starting 9 a.m. Sundays
starting at noon. Large indoor carpet -
dirt outdoor. Call for info Harry Turner,
120 W. Adams St., Cochranton, PA
16314. (814) 425-7788.

QUEEN CITY R/C RACEWAY

1/12, 1/8 and 1/10 scale cars. Every
Friday - 7 p.m. -Open Class Every at. -2
p.m. Stock & Open. Every Sun. - 2 p.m.
Drag Racing 5050 S. Federal Blvd.,
Englewood, CO 80110, (303) 730-1391.

PDQ RACEWAYS & HOBBIES

1/8, 1/10, 1/12 Scales

Call times and details. 429 Bankhead
Highway, Mableton, GA 30059, (404)
941-2626.

NEW ENGLAND'S

PINE BANKS R/C RACEWAY

We are located in Melrose, Mass. For
info contact: B & B R/C Accessories at
(617) 324-4465 or Brian Branon at (617)
322-9554.

GROUND ZERO RACEWAY

Sunday: Noon to 6 p.m. 1/10 Off-Road &
1/12 carpet races at 2 p.m. Sign up Noon
to 1:30 Tuesday - 1/12 carpet races at
7:30. Friday - 1/10 Dirt Oval races at
7:30. Saturday -Informal Junior Races
(16 & under). Speciality clinics. 208th
and West Dodge Rd., Omaha NE (402)
289-4184.

SROKA'S INDOOR R/C

Racing every Sunday - Oval racing every
4th Sunday. 5216B Arboga Rd., Marys-
ville, CA 95901. Call Michael or Vickie
Sroka (916) 742-6148 or (916) 741-3051.

FLINT R/C CAR CLUB

Flint, MI. Summer: Every other Sun.
from May to Sept., Fall & Winter 1/12 4
cell on carpet. For info: Ralph Herndon
(313) 658-5390 or Tom Hoos (313) 658-
1043.

MILE-HI R/C SPEEDWAYS

Thurs. & Sat. Off-Road, Fri. Carpet,
Sunday 2 p.m. 178 S. Kalamath, Denver,
CO 80221, (303) 722-6766.

AMERICAN HOBBIES

Thursday Night Oval Racing
Sunday Off-Road & Oval
For info call (201) 446-2010.

C.A.R. CLUB

Racing at Tamarack Raceways. Contact
Harry Turner, 120 W. Admans St.,
Cochran, PA 16314, (814) 524-7788.
Racing every Sunday.

ARROW HOBBIES

Wed. Nights - 1/10; Every other Fri.
night 1/8 Sprint Cars only; Sat. nights 1/
10 dirt oval. 2710 So. 1-35 West,
Burleson, TX (817) 295-2821.

BLASTERS OFF-ROAD CLUB

Every Sun. at noon-weather permitting.
ROAR. 42 Riel Dr., St. Albert, Alberta,

ROAR 1/12 SCALE '89 NATIONALS



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TOTAL RACING CONNECTION

June 8, 9, 10, & 11, 1989

PRESENTED BY —



To return entry blank or for additional information contact Scale Racing Sports, 1120 N. Hayden Rd., Tempe, AZ 85281 — (602) 829-9117.

Limit one class per driver. All drivers must provide proof of 1989 ROAR membership.

Stock Class \$40 Modified Class \$30

Name _____

Address _____

City _____ State _____ Zip _____

Frequency 1. _____ 2. _____ 3. _____

Phone () _____ Roar # _____

Skill Level: ☐ Beginner ☐ Intermediate ☐ Expert

Total Amount Enclosed \$ _____

IMPORTANT DEADLINE — All entries must be received by **JUNE 2, 1989** and must include check or money order.



Host Hotel:

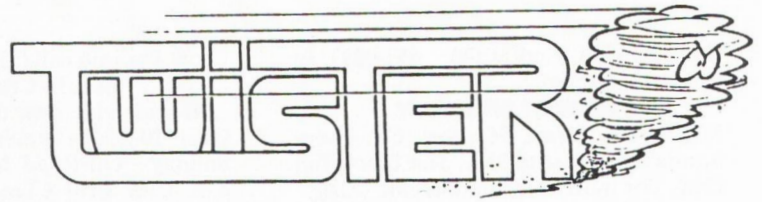
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STOCK MOTORS

R.O.A.R. and N.O.R.R.C.A. LEGAL
HEAT SINK ENDBELL • 18° TIMING
AVAILABLE IN 2 VERSIONS

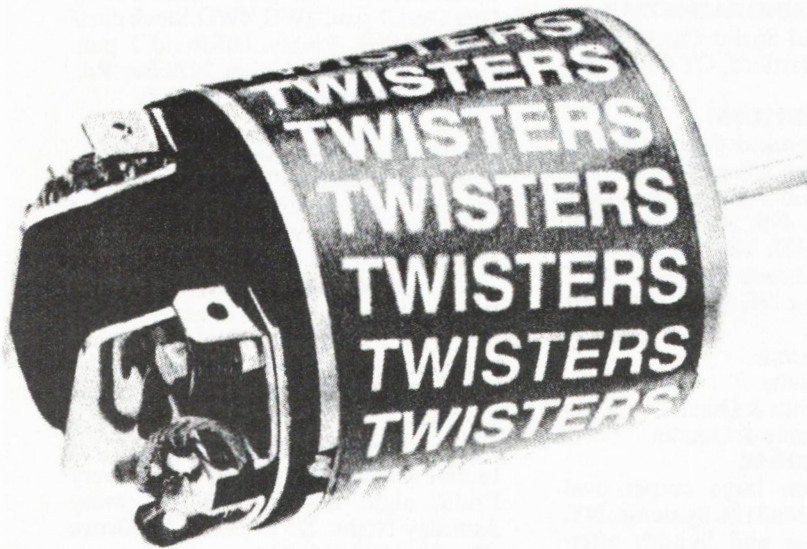
#802 - 2 WHEEL DRIVE ULTRA STOCK

#804 - 4 WHEEL DRIVE ULTRA STOCK



Ultra stock motors are dyno-checked, springs adjusted, brush hoods aligned, and tuned up for maximum performance.

FLASH!! NOW TWISTER STOCK MOTORS COME WITH A PRO STOCK KIT -- FREE!!!



TWISTER'S popular line of race winning **STOCK MOTORS** is now better than ever! Included with each **TWISTER STOCK MOTOR** is a new **PRO STOCK KIT - FREE!!** The kit includes high performance brushes, brush springs, three capacitors and complete instructions so you can build a screaming stock motor just like the **FACTORY "PROS"**!

**AN \$8.00 VALUE - FREE
WITH EVERY TWISTER
STOCK MOTOR**

TWISTER'S popular line of race-winning stock motors is now *better than ever!* We've added gold-anodized heat sinks to the endbell to ensure our motors run cooler than the competition. And *cooler means faster!* Cooler-running motors deliver better performance, longer run times, and superior life expectancy. Just what you expect from **TWISTER**, where our continuous R & D efforts consistently deliver more performance for your dollar. Get the **"UNFAIR ADVANTAGE"**. Let a new **TWISTER** power you to the winner's circle today.



THE UNFAIR ADVANTAGE !

Canada. Call Fred at (403) 457-9333. In winter on carpet.

BUCKLEY SPEEDWAY

37 Douglas Street, Hartford, CT. Every Sunday April 1st to Nov. 31st Black Top Oval. For more information call "Ziggy" or Debbie Kwasnicki (203) 246-4778.

HOBBY HAVEN RACEWAY

1756 First Street, Livermore, CA 94550 AC power, paved parking, computer scoring, trophy races, trophy dashes, gift certificates. Coming soon night racing & oval races. For info (415) 443-5828 M-F 10-6 p.m.

RADIO OPERATED AUTO RACING OF ROCHESTER

110 Anderson Ave., Behind Village Gate (274 N. Goodman St.)

7:00 p.m. - Monday Pro Night

7:00 p.m. - Tuesday Boy Scout Nite

7:00 p.m. - Wednesday Teen Night

7:00 p.m. - Thursday Indoor Clay

7:00 p.m. - Friday Roarr Meetings

7:00 p.m. - Sat. & Sun. Family Days

HOBBY HUT

2665 Park Marina Dr., Redding, CA 96001, (916) 241-3737. 1/10 Off-Road Racing, Norcal Mini Off-Roaders. Ask for Kevin Paschke.

USA RACEWAYS

6083 Dixie Highway, Bridgeport, Michigan, (517) 777-7USA.

Every Thursday Oval & Off-Road

Every Fri. Indoor Carpet Oval

R.C. BUGGYWORLD & RACEWAY

7511 Hamilton Ave. - RT. 127, MT. Healthy, OH 45231, 522-0809. Wednesday night off-road and oval on alternating weeks. Also carpet races on Monday nights 40 x 80 banked oval.

OUTLAW MOTOR SPEEDWAY

7920 Webster, Highland, CA, (714) 864-1770. Tues. Tamiya Off-Road; Thur. Off-Road & Dirt Oval; Fri. 1/10 & 1/12 on-road; 1st Sun. Dirt Oval; 2nd Sun. 1/10 & 1/12 On-Road; 3rd & 4th Sun. Off-Road.

LITTLES HOBBIES

Monday Nite - 1/10 Trucks

Tuesday Nite - 1/10 Sprint Cars

Wed.-Fri. - Open Practice Available

Sat. - 11 a.m. 2WD 6 yrs. to 16 yrs.

Sun. - 11 a.m. - All Classes Indoor Clay Oval and Road Track Fast -Stock & Modified Classes. Bolink AMB Lap Counter. 111 Main St., Rt. 66, Hebron, CT 06248, (203) 228-4942.

R/C WORLD & TRACK

New indoor facility for 1/10 off-road and oval dirt racing. Wed. and Fri. -oval. Sat. Daytime and Evening off-road. Practice anytime. Call Glen or Debbie at (303) 789-0838, 2788 S. Federal, Denver, CO 80202.

FAST LANE R/C

On Road Asphalt Track. 21616 Golden Triangle, Saugus, CA. Call (805) 255-2404.

RPM R/C RACEWAY

1112 S. 16th, Elwood, IN 46254. Indoor off-road racing every Sunday at 12:00

noon. For info call (317) 552-7758.

REC. R/C RACEWAY

1/10 scale clay oval track. Racing Sat. - Oval 10-2:30 - Racing at 3:00 p.m. - Sunday - Off-Road 10-2:30 Racing at 3 p.m. Call Erin Clancy (914) 868-7715. Route 82 to Standfordville, NY 12581.

MADISON AREA RADIO CONTROL

CAR ASSOCIATION, INC.

Factory Outlet Mall, Madison, Wisconsin. 1/10 and 1/12 scale carpet racing. Practice Sat. Afternoon Racing 6 p.m. Sat. & 7 p.m. Tues. George Jerdee (608) 873-7286.

THE RANCH PIT SHOP

1655 E. Mission Blvd., Pomona, CA 91766 (714) 623-1506. Every Wednesday night at 6 p.m. Alternating Oval and Off-Road.

COMPETITION HOBBY

Off-Road racing indoors on dirt. Every Wednesday night 6:30 -Sunday 12 noon. Juniors (12 and under) & Novice Saturday 12 noon. 8169 S. State St., Midvale, UT 84047, (801) 562-9452.

CONNECTICUT AUTO RACING TEAM

1/10 Off-Road and Sprint Car Oval. 37 Douglas Street, Hartford, CT 06114, Zig (203) 246-4778.

HOBBYTOWN

1/4 Mile High Banked Indoor Carpet Tracks at two of our stores. The Lincoln track is at our Sutter Place Mall store located at 5221 S. 48th St., Lincoln, NE 68516 (402) 483-7427. The Omaha track is located at Rockbrook Village at 11011 Elm Street, Omaha, NE 68144, (402) 391-5669.

Tues. - 7 p.m. - Lincoln

Wed. - 7 p.m. - Omaha

Sat. - 1 p.m. - Lincoln & Omaha

Sun. - 1 p.m. - Lincoln & Omaha

ROMAC

1/10 and 1/12 on large carpet oval (Northern Lights Mall) N. Syracuse, NY. Thursday evenings and Sunday afternoons. Information call (315) 468-1463 or (315) 468-6544.

COOPER'S RC RACE CENTER

Racing every Sunday 2 p.m.

Open Wed. and Fri. 6 p.m.

Open Sat. & Sun. 12 noon

Oval and Off-Road

Contact Norris, Rt. 4 Box 122B, Chatham, VA 24531, (804) 724-4182.

VICTORIA HOBBY SHOP

Every Saturday - 2 p.m. - Off-Road;

Every Sunday - 2 p.m. - Ovals.

5211 John Stockbauer, Victoria, TX 77904, (512) 575-3270.

M.H.O.R. R/C RACEWAY

155540 E. Batavia Dr., Aurora, CO 80011, (East on 17th Ave. at Chambers Rd.). Indoor 1/10 Off-Road Racing on Wed. & Sat. Practice/Track Time Tues., Thur., Fri., Sun. Complete Hobby Shop, pit area has AC & DC power, a nice clean handicap accessible racing facility. For info call Jess Brockman, (303) 343-0151 after 3 p.m. MST. Closed Monday.

HOBBYTOWN RACEWAY

4915 W. Elm, McHenry, IL 60050, (815) 344-1777. Hobbytown Raceway, 219 W. Cedar Lake Rd., Round Lake, IL 60073. Indoor - Dirt 80' straightaways, (312) 546-0707. Oval Racing every Friday 7 p.m.; Off-Road Sunday 10 a.m.

BNS COMPETITION HOBBIES

Route 7, Box 380, Anderson, SC 29624, (803) 224-8591, Contact Bob Sanford. Racing and Open Practice Wed. 6:30 p.m., Every Saturday 1:00 p.m. 1/10 Dirt Oval.

DESERT HOBBIES & RACEWAY

Off-Road racing 1st & 3rd Sundays. Sign in 10-11:15 a.m. Every Friday nite 7:30 p.m. 25 minutes from San Bernardino. 17210 Main St., Hesperia, CA 92345, (619) 94858.

TAIT'S HOBBY SHOP

Sat. Off-Road 12 noon, 2WD/4WD Monster Trucks. Sun. Dirt Oval 12 noon 2WD/4WD Any body style. Mon. Indoor Oval Carpet 7 p.m. 1/10 & 1/12. Tues. Truck/Car Pulls 7 p.m.. Wed. Outlaw Dirt Oval 7 p.m. 2WD/4WD Stock cars/2WD Sprints. Friday. Off-Road 7 p.m. 2WD/4WD Off-Road cars. 3270 Bay Rd., Saginaw, MI 48603, (517) 799-3900.

J.G.S.

Wisconsin's finest off-road race track. Perfectly groomed 100 ft. straightaway, computer scoring, drivers stand, starting lights. Racing every other Sunday 1 p.m. Menomonee Falls, WI (414) 255-2040.

TRACKSIDE RACEWAY

Dirt Oval Racing every Thursday night 6 p.m. Fully stocked hobby shop, computer scoring, lights, bleachers, concessions. Menomonee Falls, WI (414) 255-2040.

WAGONHILL HOBBIES

Indoor 1/10 & 1/12 on-road racing every Friday night. Outdoor Off-Road every Saturday Night. 225 S. Board St, Grove City, PA, (412) 458-4711.

HOBBY CENTERS/DIRT-DROME

Indoor Dirt Oval: Tues. 2WD Stock/Modified, Sprint Car Bodies Only. 4WD Mod. Oval full bodies 7:30 p.m. Thurs. Open Practice 6-10 p.m. Sat. 6 Big Classes 7:30 p.m. 2WD Stock A, 2WD Stock B, Box Stock Trucks, Modified Trucks, 2WD Modified, 4WD Modified. Sun. Open Practice 1-5 p.m. Call Brent Wilson (502) 683-7611. 715 E. 4th Street, Owensboro, KY 42301.

DIXIE R/C HOBBY SHOP

Every weekend Sat. & Sun. The races will alternate between oval and motocross starting May 14 with oval and May 15 with motocross. Dixie R/C Hobby Shop, P. O. Box 135, Ramseur, NC 27316, after 6 p.m. (919) 824-2770.

BREMEN RACEWAY

Clay Oval Track 60 x 100 ft. Under roof, lighted Friday nights 7 p.m. May thru Sept. Call for information (219) 546-3807. Bremen Hobbies, 308 N. Bowen, Bremen, IN 46506.

WEST TEXAS R/C RACEWAY

3477 Lee Blvd. - Racing every Sunday. 1/10 scale off-road and oval dirt. Mailing address: 301 Edith Dr., El Paso, TX 79915. For more information call Hector (915) 772-1382.

JIM'S R/C SPECIALTIES

3107 S.W. Van Buren, Topeka, KS 66611 (913) 273-4070. Racing off-road every Sunday 12 noon to 5 p.m. Oval racing every Saturday night 6 p.m.

EAGLE HOBBY CENTER & RACEWAY

Every Saturday night at 7:30 p.m. 1/12 scale cell stock and modified. 1/10 6 cell stock on-road, call for body style. Eagle Hobby Center & Raceway, 3601 Shepherd, Balch Springs, TX 75180, (214) 557-5290.

SUMMIT SPEEDWAY

Summer Schedule: 1/10 Indoor Oval Outdoor Tri-Oval - Fridays 7 p.m.; Tuesdays off-road 6:30 p.m.; Saturday nights and Sundays. Call for more information (219) 489-RACE.

ACTION SPEEDWAY Indian River's Facility

1/10 scale half mile clay oval & off-road. Two story covered drivers' stand, large pit area close to track, ample parking, classes for young and old, beginner's to expert's, and truck pulls. Coming soon - 1/10 scale super speedway and road course, night racing, full electric, and concessions. For further information call Trace or Chip Button (407) 231-9410 or Doug Upton (407) 569-8793.

THE INSIDE TRACK

Every Wednesday - 7 p.m. and Saturday 6 p.m. Classes: 2WD Stock and Modified, 4WD Stock and Modified and Monster Trucks. For more information call (312) 898-5649. 725 Hill Avenue, Aurora, IL 60505.

ABC R/C

Clay track racing every Saturday 1 p.m. Truck pulls every Tuesday 6:30 p.m. Complete R/C headquarters, 1441B E. Main Street, Waukesha, WI 53186, (414) 542-1245.

TC'S R/C'S

Inside and outside race track and RC shop. 1537 Freeport Road, Natrona Heights, PA 15065, call 226-8802.

BROCKTON INTERNATIONAL SPEEDWAY

Monday night 1/10 & 1/12 oval racing 5:30 to 7:30 Practice. Races start 7:30 p.m. 1217 Main st, Brockton, MA. For more information call Ruben (508) 588-9355.

SONOMA COUNTY RACEWAY

806 Brookwood Avenue, P. O. Box 9565, Santa Rosa, CA 95405 - 1/10 Dirt Oval, 1/10 Off-Road, 1/10 & 1/12 Asphalt. Mark White (707) 571-7565, Schedule info (707) 571-8044, Competition Products (707) 571-8048.

ALL IN 1 RACEWAY

5612 S. 108th St. Hales Corners, WI. 1/10 scale indoor dirt track. High speed semi-oval and true off-road courses. Practice Tues, Thurs., and Fri. 6 - 9 p.m. Racing



18312 Gifford Street
Fountain Valley, CA 92708
Phone: 714-962-6928

WHOLESALE ONLY

- THE MIRAGE SS 1/10 OFF ROAD BODY (Clear or Painted)
- RC10 TITANIUM SUSPENSION HINGE PINS
- NEW! • ULTIMA TITANIUM SUSPENSION HINGE PINS
- NEW! • OPTIMA MID TITANIUM SUSPENSION HINGE PINS
- FOAM MOTOR COVER THAT BREATHES
- RC10 RETAINING RING SETS FOR HINGE PINS
- RETAINING RING PLIERS
- YOKOMO/KYOSHO MOTOR MOUNT GASKET
- SF3 ANTI-FRICTION LUBRICANT
- RCPS DECAL SHEETS

RC Performance Specialties are available from the following quality distributors:

AKS • ERI • HORIZON EAST AND WEST • H.R.P. •
JA-LEA CO. • NATIONWIDE • PACIFIC MODEL • RACE PREP •
RPS • RCS • SPEED AND SPORT • TRINITY • UNIVERSAL •
W.K. LOVELESS • SRM • FAST TRACKS

"Performance is our middle name"

Wednesday nights at 6 p.m., Sat. & Sun. at 1 p.m. For more information call (414) 425-4060.

THE SQUARE ROUNDHOUSE SPEEDWAY

Saturdays - 3 Events per month -Off-Road, Monster Truck Pulls and Oval Race. Oval dirt track and Off-road track. 1468 Lander Avenue, Turlock, CA 95380, (209) 668-4454, Ask for Harold Lindquist.

COASTAL BEND SANDBLASTERS R/C CAR CLUB

Races first thru 3rd Sundays, 2 p.m. start. Bill Witt Park, Yorktown Road, Corpus Christi, TX, Call Pete Broadway (512) 992-4448.

CAJON R/C SPEEDWAY

1875 Joe Crosson, El Cajon, CA 92020. Fastest paved oval & road course in CA. 1/10 & 1/12 scale every Friday night. Please call for off-road dates. Hot Line (619) 449-0788/Parts 449-9948.

RADIO CONTROLLED HOBBIES & RACEWAY

Indoor Off-Road racing every Tuesday & Thursday evening beginning at 7 p.m. and Saturdays at 5 p.m. Open 7 days a week. 2011 Placentia Ave., Costa Mesa, CA 92627. For more info call (714) 631-1555.

RADIO CONTROL RACE WORLD

150 Clove Road, Staten Island, NY, (718) 448-0385. Wed. - Fri. 7-10 p.m. Open practice. Saturday 4:30-6 p.m. Race Registration. Sunday 12-5 p.m. Practice/Truck Pulls. Large indoor 1/10 off-road.

R/C RACEWAYS

1/10 indoor dirt oval. 100' straightaways. Wed. 6 p.m. oval. Friday 6:30 p.m. oval. Sunday 12 noon oval or off-road. For more information call (219) 747-6414. 2710 Nuttman, Ft. Wayne, IN 46804.

R/C PERFORMANCE CENTER

Tues. 7:30 p.m. - Practice 5:30 p.m.; Sun. 12 Noon - Practice 11 a.m.; Thurs. 1/10 Outlaw dirt ovals 7:30 p.m. - Practice 5:30 p.m. Route 27, 270 Main St., Hanson, MA 02341. For more information call John or Dom (617) 294-8980.

PARLOR HOBBIES

1/10 on Asphalt - Full bodies -Grand National or ASA bodies preferred. Rabbit Lane & 34 Broad St., Matawan, NJ 566-3158. May 7 -14; June 4 - 11 -25; July 2 - 9 - 16 - 23; Aug. 6 - 13 - 20 - 27; Sept. 17 - 24; Oct. 1 - 8 - 22 - 29; Nov. 5 - 12 -19.

R/C SPEED CENTER

R/C ADDICTION

2810 N. Pacific Hwy., Medford, OR 97501, Call Gene or Betty Skelton. (503) 779-8298. 1/10 and 1/12 scale, banked dirt oval racing, dirt off-road racing, sled pulls, mudbog. Racing every week, year around.

BROTHER-IN-LAWS R/C RACING

1/10 scale dirt oval. Racing every Sunday. Signups 10 a.m. Open Practice 12-6 Tues. - Sat. pit tables, 110 volt power. Call Bob (619) 949-5252. 16175 Main Street, Hesperia, CA.

CORCAR - COLUMBUS, OHIO

1/10 off-road racing May thru Sept. every Sunday. Signups start at 10:30 a.m.

Excellent dirt track, computer scoring and picnic area. For information call Ray Williams (614) 890-2983.

MACHESNEY PARK RACEWAY

1220 Shappert Dr., Machesney Park, IL. (815) 282-1311. Racing every Fri. - Clay Track - Summer; Racing every Sat. - Large Asphalt Oval - Summer; Racing every Sat. - Drag Racing - Summer; Racing Every Sat. - Carpet - Winter.

CENTRAL MARYLAND ELECTRIC RACING CLUB

(CMERC) Community R/C Speedway

Middletown Park, Middletown, Maryland. 100' x 50' dirt oval, 14' wide lanes, 2' banked turns. No electricity available. Contact John Mauchamer, (301) 698-9545.

SCHENECTADY R/C SPEEDWAY

Indoor Oval Carpet Racing. 1/10 & 1/12 and Monster Trucks. 955 State St., Schenectady, NY. (518) 370-3747.

THE COCKEYSVILLE ASTRODOME

C.A.R. Cockeysville Astrodome Racers, Inc., 10854 York Rd. (Rear) Cockeysville, MD. (301) 666-1098. High Bank Oval racing on concrete (indoors). Benches, Power, Grandstands. 7 p.m. Mon. - Open Practice; 7 p.m. Tues. - Rookie & Stock Practice; 7 p.m. Wed. - Computer Organized Racing; 7 p.m. Thurs. - Modified & Ultra-lite Practice; 7 p.m. Fri. - Trucks & Buggies Practice; 5 p.m. Sat. - Computer Organized Racing; 1 p.m. Sun. - Computer Organized Racing. Art LaPole, Pres. - (301) 889-2070.

BOB'S R/C SUPPLY & RACEWAY

Indoor Carpet Racing At Its Best! Every Tues. 1/10 Oval; Every Fri. 1/12 Road Course; Every Sat. Monster Trucks. Stock & Modified. AMB, computer - snack bar. Call Bob, Nancy or Kevin (319) 232-2235, 935 Sheerer Ave., Waterloo IA 50701.

EBERSOLE HOBBY & R/C RACEWAY

Off-Road and Oval. Races every Wed., Thurs., Sat., and alternate Sun. 11417 W. Highway 54, Wichita, KS 67209. Call Len Ebersole, (316) 722-8888.

METRO-FAST RACEWAY & HOBBIES

125' x 48' indoor carpet track, pitting for 140+, power, hobby shop, video entertainment, food bar. Oval - Friday night, Kid's racing every Saturday morning and alternate Sundays on on-road and off-road. 950 W. Irving Park Rd., Hanover Park, IL 60103, (312) 213-3977.

MID-CAROLINA R/C SUPER SPEEDWAY

The speedway is located on Flint Hill Rd. Off I-77/Carowinds exit, south of Charlotte, NC. 1/10 & 1/12 High-Speed Banked Quad-Oval and Road Course. 385 ft. plus 26 degrees banking in turns concrete track. For info call Fred Penland (704) 373-2535 7:30 a.m. to 4:30 p.m.

BROWNIE'S HOBBIES

Off-Road Dirt Track, hobby shop. Wed. eves and Sat. afternnons for practice. Racing - Fri. eves. 4Wd & 2WD. Track open April through November. 124 Ben-

nett St., Staten Island, NY 10302, (718) 727-2194.

ROADRUNNER R/C CENTRAL

5620 Bellaire, Houston, TX 77081, (713) 661-7574. 1/12 Carpet Oval or Road Course every Thurs. Night. 1/10 Carpet Oval every Tues. & Fri. night & Sun. pm.

ROADRUNNER R/C NORTH

12760 Veterans Memorial, Houston, TX 77014, (713) 537-7758. 1/10 Dirt Oval every Wed. Fri. night. 1/10 Dirt Off-Road Every Sat. & Sun.

ROADRUNNER R/C SOUTH

12902 Player, Houston, TX 77014, (713) 728-2277. 1/10 Indoor Dirt Off-Road Every Wed., Fri., & Sat.

NORTHERN MINI-RACERS

NMR Raceway, P. O. Box 415, 3524 E. Burdick, Minot, North Dakota 58701. 1st & 3rd Sundays. 1/10, 6 cell, NASCAR bodies, oval racing on carpet. Roger Lee, Pres. (701) 839-4731, 839-5294; Pat McWethy, V. P. (701) 839-8868, 852-6254.

OUTLAW R/C RACEWAY

7920 Webster, Highland, CA

— 1/12 Scale —

GLASS CITY RADIO CONTROL

Racing 1/10 & 1/12. For more info contact: Clayton White (1/12) (419) 882-2518 or Mike Marshall ((1/10) (313) 241-5321.

S.T.A.R.C.

Every Wed. Night - S.T.A.R.C. Club Series. Rockton, Ontario, Canada. Call Sam Burke (519) 621-5424.

TEAM RACE R/C CAR CLUB

Friday: 6:30 p.m. indoor track, 505 Spring Ridge Rd., Clinton, MS, (601) 924-0722.

NORTHERN MINI-RACERS

4 Cell indoor regular schedule 1st & 3rd Saturday. located at 1715 S. Broadway, Minot, ND Call Roger Lee, Pres. (701) 838-0654, or 839-5294.

KOUNTRY KLIN HOBBY

1/12 scale small indoor carpet track & hobby store. No regular schedule at this time. Box 247, 324 Railroad Ave., N. Mohall, ND 58761, (701) 756-6307.

USA RACEWAYS

6083 Dixie Highway, Bridgeport, Michigan 48722, (517) 777-7USA
Every Tuesday Nite On-Road
Every Sat. Nite On-Road
Every Other Sat. Eve. Stock On-Road

THE RANCH PIT SHOP

1655 E. Mission Blvd., Pomona, CA 91766, (714) 623-1506. Every 4th Sun. 1/12 & 1/10 On-Road Combined Program.

OMAHA NEBRASKA RADIO

OPERATED AUTO DRIVERS

On-Road 6 cell racing two nights per month. ROAR rules apply. Call (402) 331-3931.

S.O.R.C.R.C.C.

Southern Ontario Radio Control Race Car Club in Toronto, Ontario, Canada. Racing Alternating Sunday evenings from October to April. 6 p.m. to 10 p.m. For more information call Scott Reynolds at 298-4941 or Gary Joi at 421-

9061.

CENTRAL MARYLAND ELECTRIC RACING CLUB

COMMUNITY R/C SPEEDWAY

Middletown Park, Middletown, Maryland. 100' x 50' dirt oval, 14' wide lanes, 2' banked turns, drivers stand, no electricity available, open to the public. Race Director Mark Coats (301) 694-7420.

FLORIDA STATE SERIES

July 8 & 9 - Pinellas

Sept. 30 & Oct. 1 - Ft. Lauderdale, Nov. 4 & 5 - Orlando

Steve Whitney (407) 631-8761

— Special Events —

ROAR REGION VI

OFF-ROAD SERIES

May 27 - Metro Raceway, Bakersfield, Stock & Modified.

July 8 & 9 - Radio Controlled Hobbies, Costa Mesa, Saturday Stock, Sunday Modified.

ROAR REGION VI

OVAl SERIES

June 3 - Racer's Haven, Bakersfield, Stock, Mod. & Sprint

August 6 - R/C Outlaw, Highland, Stock, Mod. & Sprint

For further information call Cliff Soderberg, (213) 988-1006.

1989 1/8 GAS IFMAR WORLD CHAMPIONSHIPS

July 4-9, 1989

Tuesday, Wednesday and Thursday will be qualifying. Saturday will be the bump-up finals day, and Sunday the 9th of July is 1/8, 1/4, 1/2 finals and Main Event day. If you have any questions contact us by phone, fax or letter. P. O. Box 413, 2100 AK Heemstede, Holland, Tel. 31-23-292068, Fax: 31-23-284950.

1989 ROAR NATIONALS

1/10 Dirt Oval-May 11 - 14, 1989

R/C Hobby Workshop, Burlington, NC. Contact Dave Guerin (919) 228-6809.

1/10 & 1/12 Paved Oval - May 25-28. R/C Hobbies, Snellville, GA. Contact Roy Kelley (404) 985-1448.

1/12 On-Road - June 8-10. SRS, Tempe, AZ. Contact Larry Stewart (602) 829-9117.

1/10 On-Road - June 22-25. Magic City Car Club, Birmingham, AL. Contact David Swearingen (205) 841-6988.

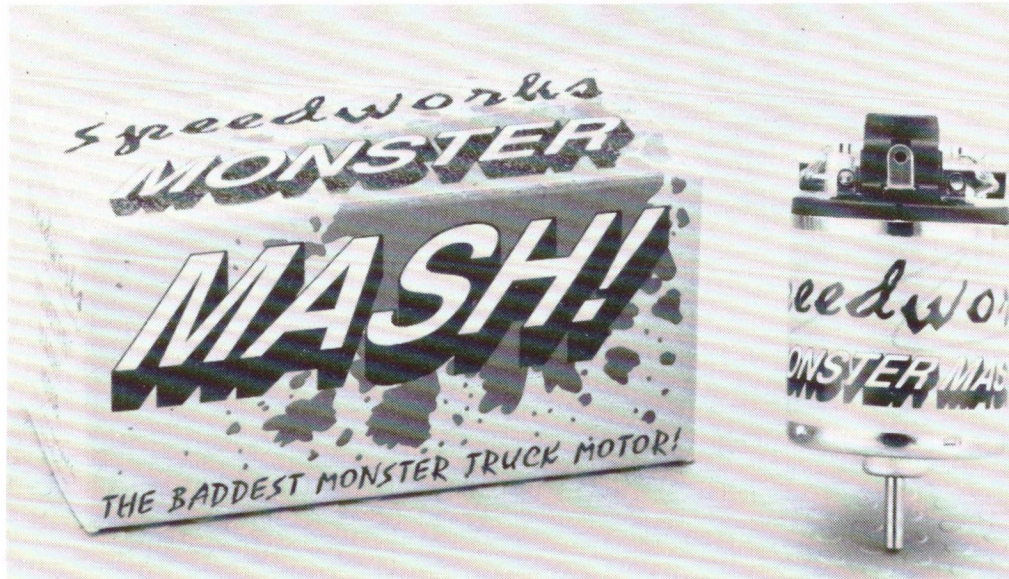
1/10 Off-Road - July 25-30. SEM-ROCC, Sterling Heights, MI. Contact John Thawley, (313) 644-0669.

1/8 Gas - August 7-13. St. Louis Car Club, St. Louis, MO. Contact Joe Poole, (618) 462-5334.

1/4 Dirt Oval - August 25-27. Two Bit Racers, Albuquerque, NM. Contact George Brazil (505) 345-7413.

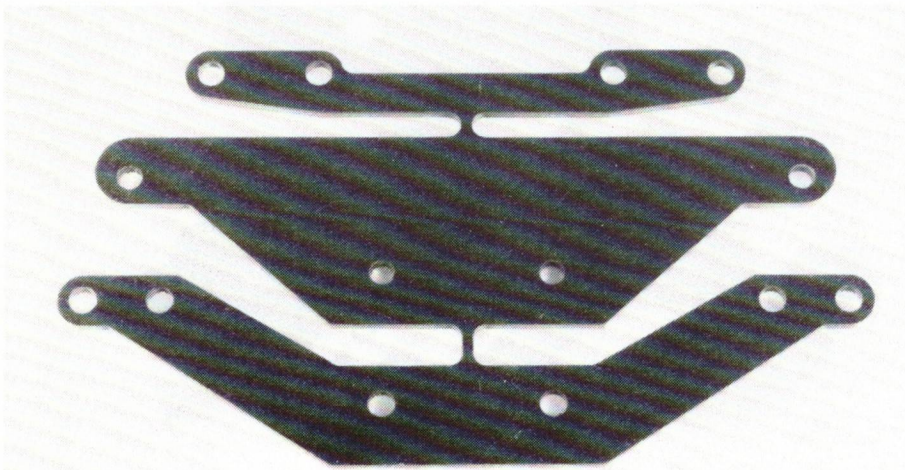
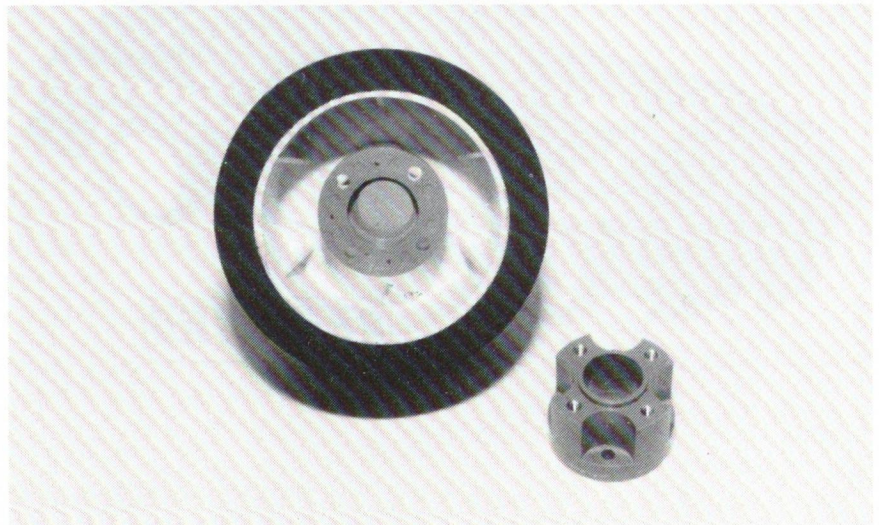
1/4 Paved Oval - Aug. 31-Sept. 3. Racers Haven, Bakersfield, CA. Contact Marty Buchanon, (805) 835-0441.

NEW PRODUCTS



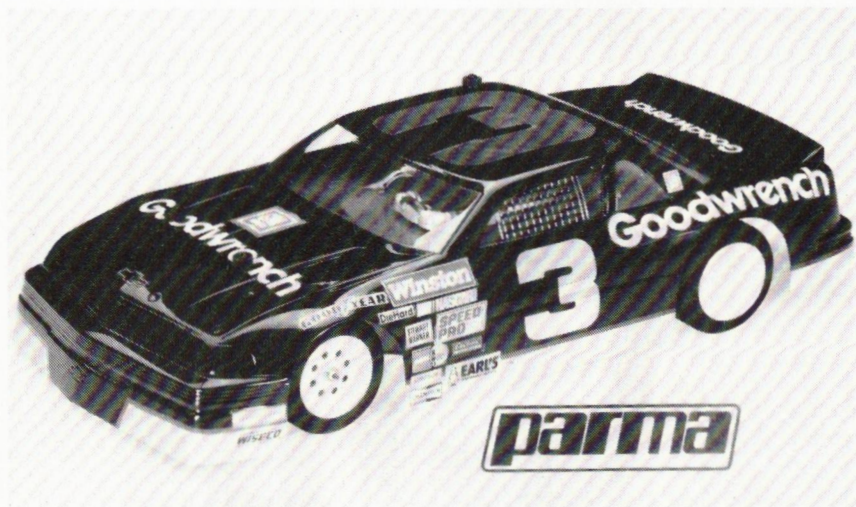
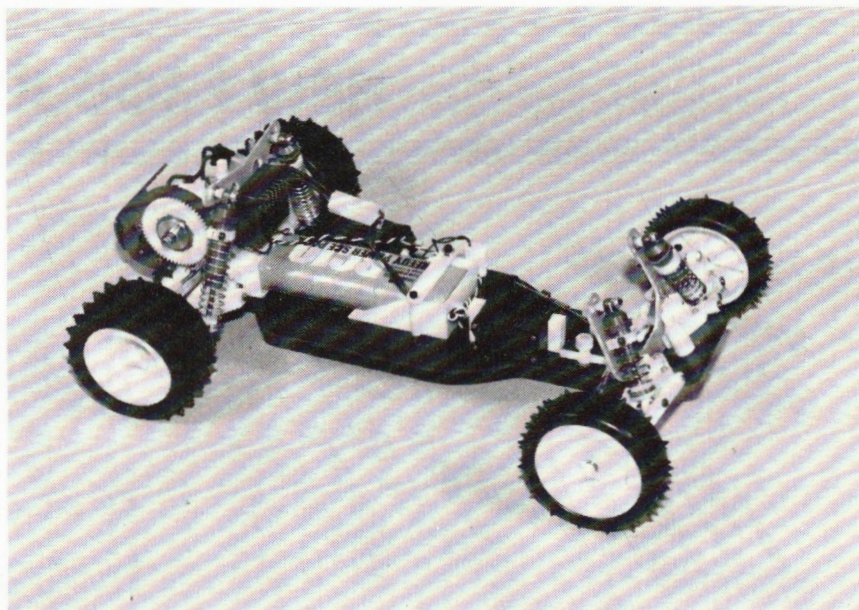
Monster Mash (Forward Rotation) #0008. This is the Monster Truck motor you have been waiting for. Designed with an incredible torque range for awesome low end pulling power. Works in the Blackfoot, Midnight Pumpkin, Hi-Rider Corvette, Big Brute and all the RC10 conversion kits. New "radially oriented" wet magnets, dual bearings, adjustable timing. 16 turn single wind, 36,200 RPM 4-6 minute races. \$39.99. Trinity, 1901 E. Linden Ave., Unit 8, Linden, NJ 07036, (201) 862-1705-08.

1/10 Oval and on-road racers improve your cars stability and handling with T.M.'s new wheel adapter. Reduces tire flex by inverting the tire. Adapters will not increase the width of the car. Works with any standard 4 bolt mounting pattern. Item No. 2415. T.M. R/C Racing Components, 39330 Donahue, Mt. Clemens, MI 48044, (313) 949-3506.



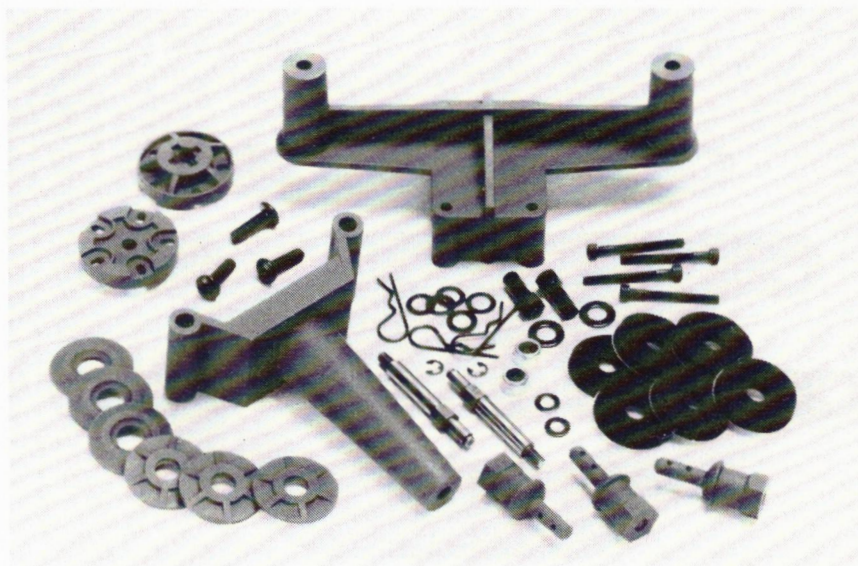
Attn. Schumacher Cat Owners: Compositecraft shock mount set for the Schumacher Cat, Part No. 10051, Retail Price \$8.95 per set. Compositecraft, Inc., 2400 Sand Lake Road, Orlando, FL 32809.

Associated RC-10 Graphite. One includes ball bearings, the other with bushings. These kits do not replace the RC10 - they are competition versions of the RC10! Kit includes: Graphite chassis, TQ wheels and tires, Protech II body, New front A-Arms, Redesigned front shock towers, Inline front axle and steering blocks, 3 degree total rear toe-in, Universal joint rear stub axle, Improved geometry rear bulkhead, black idler gears, turnbuckle tie rods. No motor or electrical items. RC10 Graphite (6025) w/o ball bearings \$250.00, (6030) w/ball bearings \$325.00. Associated Electrics, 3585 Cadillac Ave., Costa Mesa, CA 92626, (714) 850-9342.

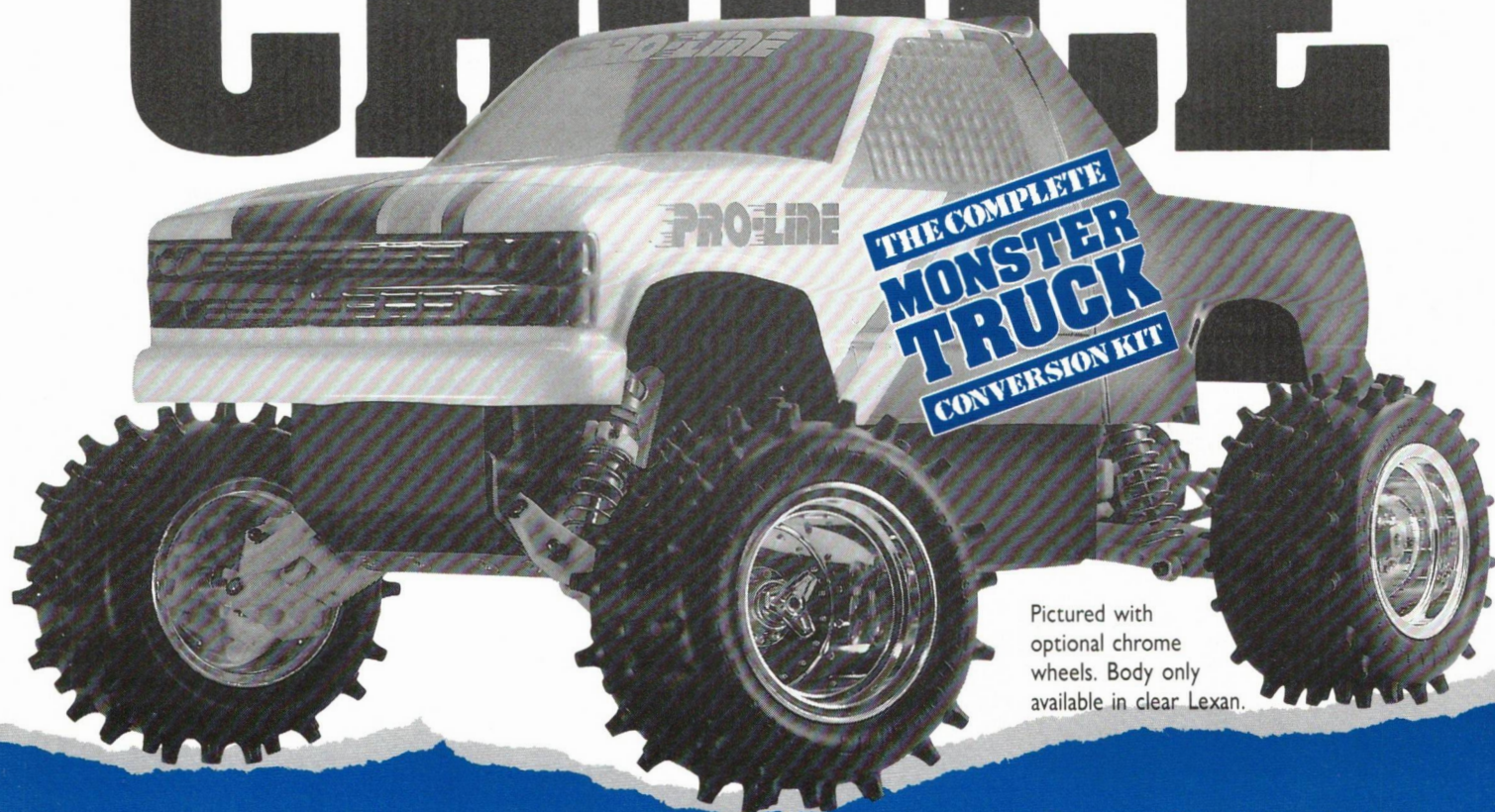


NASCAR Fans: Brand new from Parma is the 1/10 scale 1989 Chevy Lumina (#10291, \$19.00)! We are proud to offer this lexan body for on-road fans, in typical Parma style and striking detail. See it now at your local Parma Dealer. Parma International, Inc., 13927 Progress Parkway, North Royalton, OH 44133.

Basic Kit for RC10 to Monster Truck. Kit contains one each 1559, 1560 and 1561 plus body. Posts to convert your RC10 to a Monster Truck. Product No. 1562, Retail \$29.99. Custom Racing Products (CRP), 3250 El Camino Real-B3, Atascadero, CA 93422, (805) 466-6945.



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Our Magnum Junior is famous for competition features and performance. The original Junior became our most popular system for RC racing, with tuning features to give you extra control over the fastest cars and boats.

Now there's a brand new Junior, the Magnum 2PBKA, and advanced electronics and ergonomic design make it better than ever.

IMPROVED BALANCE AND HANDLING

Light and well-balanced, the 2PBKA transmitter was ergonomically



Magazine style battery loading concentrates weight in the palm of your hand for better balance. (Batteries not included, NiCd pack optional.)

designed for fatigue-free operation and a solid feel. The stable grip helps provide more positive and precise steering control without adding weight.

You'll feel the difference instantly, and appreciate it even more in longer events.

PRECISION FINE TUNING

For an extra level of fine tuning, the 2PBKA puts the controls you need at

your fingertips. Superfine, ratchetless trims for steering and throttle and throttle ATV let you do precise customizing.

These controls, like the steering rate adjustment wheel, are positioned for rapid, on-track set-up changes. Servo reverse switches, plug-in frequency crystal and an expanded voltmeter are also part of the package.



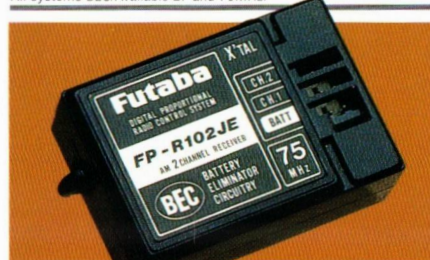
Precise trim and ATV settings are made on the Junior's control panel.

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S148 servos (2)	R102JE receiver	
S132H servos (2)	R102JE receiver	
S9601 servos (2)	R102JE receiver	
S148 servo	R102JE receiver	MC112B speed control
S132H servo	R102JE receiver	MC112B speed control
S9601 servo	R102JE receiver	MC112B speed control

All systems BEC/Available 27 and 75MHz.



R102JE/2 Channel BEC receiver uses the latest SMT construction.

There's a new Magnum Junior system for every type of RC car or boat. With high speed S132H servos it's perfect for 1:12 road racing; with 9601 servos it can handle high powered gas cars and 4WD. And the new R102JE and S148 feature SMT (Surface Mount) for extra reliability in offroad and oval competition.

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HOW DO YOU FOLLOW A LEGEND?



GRASSHOPPER II

Its namesake, the Grasshopper, continues to be the best-selling entry-level R/C off-road buggy made. It's the one responsible for introducing more hobbyists to the sport than all other vehicles combined. But the similarity between these two buggies ends with the name.

The Grasshopper II is another story. It's easy to assemble, offers high-performance features, and has an ability to be transformed into a racing machine.

If you're coming into R/C off-road, or looking for a sensibly-priced entry-level buggy that can offer Sunday fun, everyday value and still be competitive...you want the Grasshopper II.

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To begin with, there's a new, sleeker, more rounded aerodynamic shape to slice through the

wind. Rear spike tires have been added to dig in and hold tight. There's also a new, more rugged sealed gear box with longer throw coil spring suspension. In addition, there are heavy-duty coil springs on the independent front suspension. The drive train uses a rolling rear axle. And while it's compatible with standard two-channel radios, it can be equipped with Battery Eliminator Circuitry (BEC) or be used with a radio BEC R/C system.

Most interesting, is that as your driving skills advance, the Grasshopper II can keep pace. You see, it was designed to accept a wealth of souped-up parts, including ball bearings, oil-filled shocks, a 540 or Technigold motor. If you like, you can also install Tamiya's Adspec R/C system with electronic speed control.

Grasshopper II...it's the next generation and the only buggy that could follow a legend and borrow its name.



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