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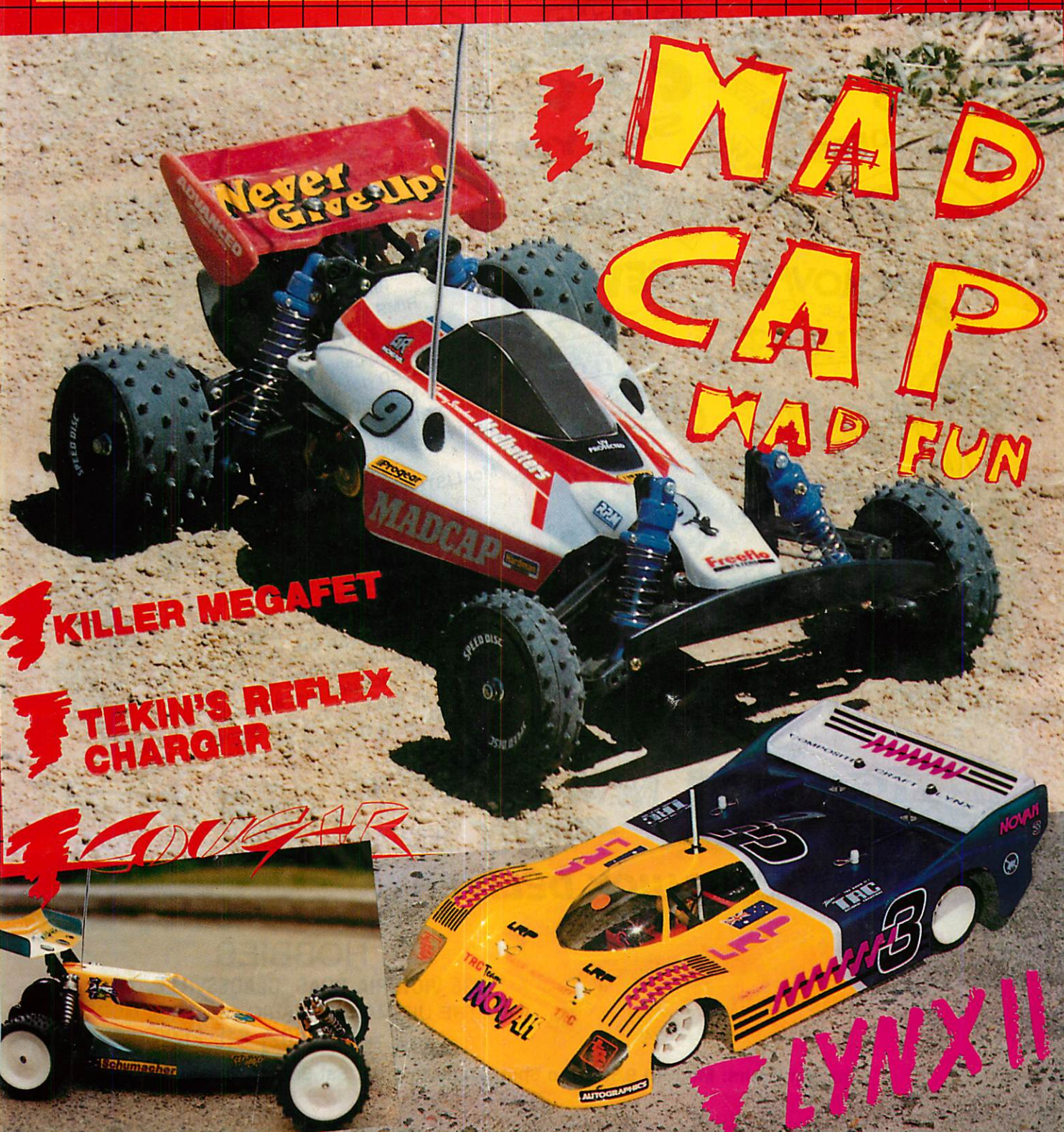
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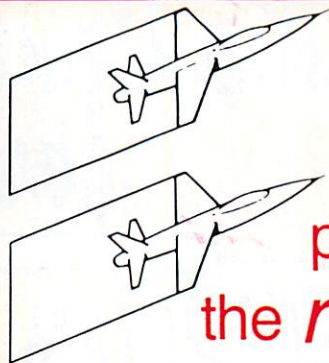
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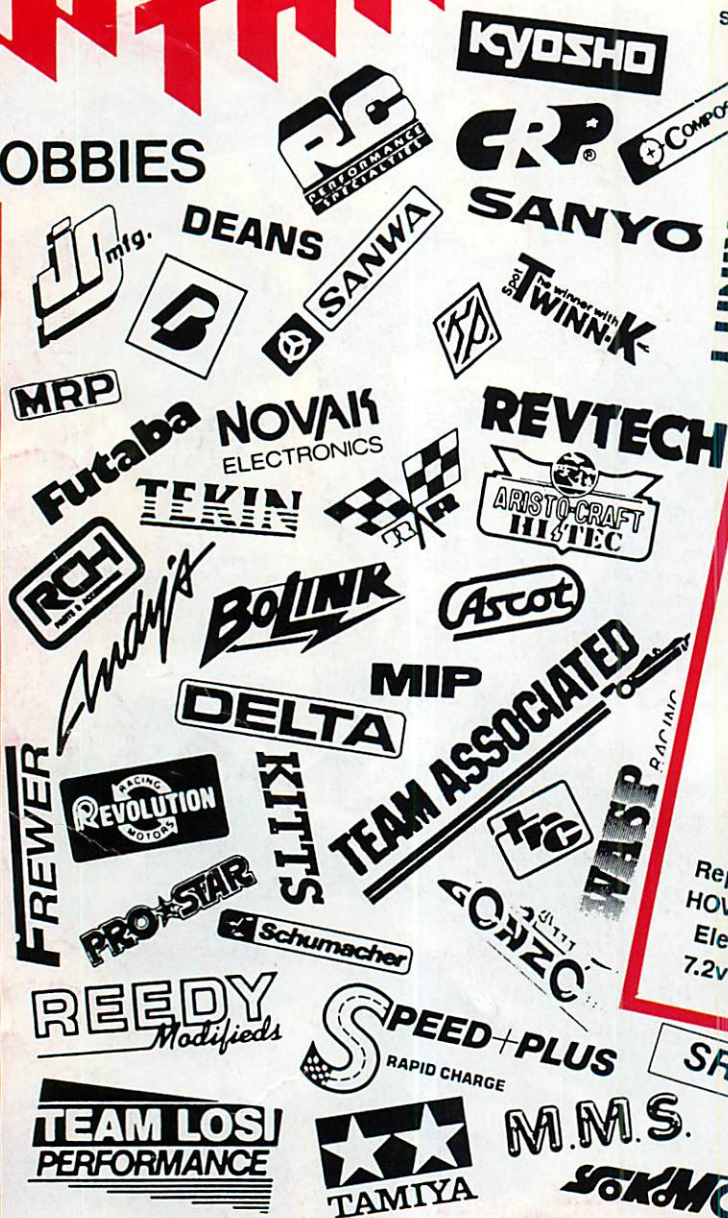
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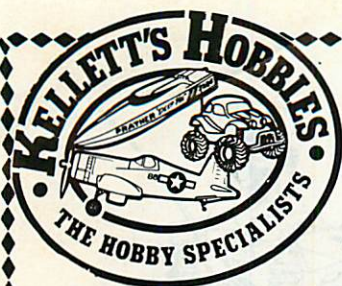
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- Photographs to be either black and white or colour prints and accompanied by captions on a separate sheet of paper. Photographs will be returned only if a stamped, self-addressed envelope is supplied.

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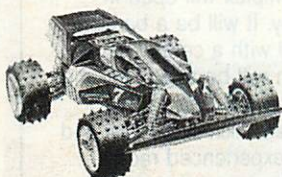
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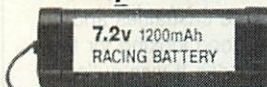
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FROM THE DRIVERS SEAT



THE WORLD'S BEST MODELLER

The June issue of the American RC Model Cars magazine carried an article with the title 'The World's Best Modeller?' written by another top modeller, Gene Husting (big chief at Associated). This lavish colour article heaped lots of praise on one individual. The person in question was a dedicated and meticulous artisan in all respects — model aircraft, a large and finely detailed model railway layout, heaps of running cars and other vehicles, and a workshop that would do NASA proud. He also cared about the directions the model car sport was heading, had a son with a long list of successes in model driving and the full support of his wife. All this was revealed in the article. Who is this Guru? It wasn't any of the so called "names" from the States or Europe but rather, an Australian. We had his picture in D&T No.13 where he was described as the father of 1/8th gas in Oz. Last issue he wrote the report on the 1/8th off-road world champs in Bangkok. Congratulations JOHN GRANT, the praise is well justified. Our only regret is that Hustings beat us to it.

TYPO TROUBLE!

They go hand in hand with the written word. Give a man a typewriter and before long he will make a mistake. Or the typesetter, paste-up person or printer will. In the trade we call them typographical errors, or typos, but that's just a fancy name for a mistake. You see them in magazines and newspapers, and of course you see them in Dirt and Track. Mostly they are harmless,

sometimes humorous and sometimes not. We can claim a big typo last issue. In the Birtles article 1990 — Year of the Horse or Dog? we managed to change history (that's not so bad — the politicians do it all the time!) and have Reece top qualify at the last Nationals. Describing their experiences with the new large Yokomo tyres, Geoff Birtles wrote that Reece top qualified at the Vic. Titles that had heaps of traction and also placed second at the Nationals that had no grip. Unfortunately, somewhere along the line, a few words went astray and the sentence did not appear as Geoff wrote it. This has caused great embarrassment to the Birtles and we apologise to them and also to Rick Bartolozzi who was the true TQ and winner at the Nats. To help make amends to Rick we have his story in 'Speed Secrets of the Team', this issue. We cannot blame the late arrival of the last issue on a typo. Due to some publishing hiccups No.17 was tardy to say the least and this meant the deletion of old news. Some race reports were casualties and it was no good looking for the Oz Calendar. It was pulled. However, I pray that you will find the calendar somewhere within these pages this time. Again I would like to remind clubs and organisations to send details of their major events direct to the editor. If you have something planned next year then don't keep it to yourself. It doesn't even have to be a race. Major display, seminar, big beginners' day (now there's a concept that ought to be more widespread), if you plan it then we publish — providing you send us details

first. Errors, omissions, typos and hiccups excepted, of course.

LAKE WHIPPOORWILL FOR SYDNEY

Well, not quite, but pretty close. Soon after you read this a new on-road RC racing complex will open in Sydney. It will be a banked tri-oval with a central circuit. Length will be about 140 metres and banking 12 to 25 degrees. Rick Bartolozzi and other experienced racers have designed the circuit so you can be sure it will be good. Yep, maybe as good as the famous Lake Whippoorwill oval in the States. There's more. The circuit is situated in the fun park, Magic Kingdom at Lansvale. The park's owners are very enthusiastic about the concept and it will be a part of the Kingdom's attractions. They are also picking up the tab of around \$10,000 to \$20,000 for track construction. The racing will therefore have a captive audience and should be the best thing that has happened to circuit racing. Hopefully it will pre-empt a boom in model car racing in Sydney. Once enthused by the racing, visitors will even be able to drive themselves since it is also planned to construct an adjacent track with Nikko cars for general use. We wish the venture every success and encourage readers to take themselves and maybe their families along to Magic Kingdom for a look. Racing dates and further particulars can be obtained from the LECRCC secretary, Peter Townsend on (046) 25 1209.

BATTERY BLOW-UP

It seems that the Sanyo bat-

tery people took umbrage to one of the photographs last issue. The one on page 10 that showed a pack of Sanyos in a very sorry state after being grossly overcharged. They thought that readers might infer that their batteries are inferior and particularly susceptible to blowing up. Nothing could be further from the truth, of course. As all our intelligent and well educated readers know, any Ni-Cad from any manufacturer does not take kindly to massive abuse. Remember, particularly if you still use the old charge leads, to never leave Ni-Cads to over-charge. If you do, then your cells and your wallet will suffer a massive haemorrhage.

1991 OFF-ROAD NATIONALS

The 1/10th scale off-road circus returns to Canberra in January for the National Titles. We had a warm up (if you can call it that, in the freezing conditions!) a few months ago at the ACT Titles which were big and successful and proved that CORMCC were up to the job. Secretary Gary Davey has now forwarded some details of the Big One. Dates will be January 24-27, 1991. As before, venue is the National Velodrome, Goyder Street, Narrabundah, ACT. This is a great track and a good venue and Gary has assured me that parking space will be expanded this time. Entry forms should be available about now and all communication should be addressed in writing only to: The Secretary, CORMCC Inc., PO Box 1355, Tuggeranong, ACT 2901.

FEATURE CLUB — SRCORCC INC.

If the name Sydney Radio Control Off-Road Car Club has you guessing, then RYDE should help you out. This well known club races on a nice track tucked just under one of the cities busy highways and right opposite what used to be channel 10's TV studios. However, unlike the ill fated television station, Ryde club has lifted itself out of a slump in early 1989 to again become a force. First Gear is the name of the club's well presented and informative newsletter edited by Gabe Chiplin "and others". In a regular Club Member Profile section of the newsletter Gabe recently listed his current buggy as a "Graphite Grasshopper", and his sex as "No — I'm married you know"! This gives you an idea of the generally light hearted nature of the publication which seeks to maintain the sport as intended — for fun. In other news, the club delights in announcing that it whopped BORMAC club in a recent challenge and looks forward to a similar event with St. Ives club. Ryde will also be hosting the second leg of the world champs qualifying final in October. Interest throughout the year is maintained with points score events and a Top Gun series. The usual off-road classes are run with an emphasis on club racers via their Junior and Production (540 motors) classes. This is paying off with large numbers of new members this year. Who says buggy racing is dead?! Andrew Chivas is the President of SRCORCC Inc. and if you want more details of what sounds like a good club then contact the secretary, Jennie Thorn: PO Box 385, North Ryde, 2113. Telephone (02) 809 1717.

KEEP IN TOUCH

Thank-you to all those clubs and associations that continue to send the editor their newsletters and press releases. It helps us to keep in touch with the grass roots racers. We read them all and can always read more. Please put us on your mail-

ing list and send to the editor at the address found on page four.

NATIONALS VIDEO

It has been a long time coming — but worth waiting for. The video presentation of the 1990 Off-Road Championships held during the Adelaide International Motor Show is now available. We thought the last efforts of D.R. Productions, the IFMAR World Champs in Sydney, was quite good — but this is even better. They have captured more of the racing, more of the winners and more of the atmosphere and still managed to keep things entertaining. Even the ads are good. The video starts by setting the scene around Adelaide. We are shown the glamour of the Motor Show, the Concourse winner, truck pulling, car catching and the fun-filled RC celebrity race. Then it's over to commentator and interviewer, Ralph "very-very" Gibson for a chat with Peter Brock and Jim Richards. This is the first of many interviews as Ralph nabs drivers and other famous names that you would only usually read about in Dirt & Track. One minor comment is that more car close-ups and technical details could be featured. Of course there is no shortage of buggy racing. Optimum camera positioning and some editing ensures most of the action is captured. With Ralph doing the race calling, some of the heats and all of the A finals are shown. For only \$45, (state VHS or Beta) including P/P, this production should be part of everyone's library. Don't be a cheapskate and copy someone else's. Send to: D.R. Productions, 28 Kirra Road, Allambie Heights, NSW 2100. Your support will encourage them to undertake future videos including the next buggy world champs in Detroit.

AARCMCC NEWS

With the growing popularity of 1/10 Circuit and a number of clubs wishing to hold sanctioned events, the Association of Australian Radio Controlled Model Car Clubs, after discussion with inter-

ested parties, has decided to combine 1/12 and 1/10 Circuit (including oval racing). This section will be known as the "Electric Circuit Section" instead of the "1/12 Section". It is hoped that by combining 1/12 and 1/10 Electric Circuit, racing will grow. Geoff Booth has offered to head this new combined section, for which the AARCMCC is grateful, after the resignation of Rick Bartolozzi as the former head of 1/12 Section.

1/12th NSW

The Sydney Carpet Club has come to an end. With declining numbers attending the Friday nights, Philip and Ian Kennedy could not cover the cost of the hall hire. A sad end to some of the best racing in NSW.

1/10th NSW

Elsewhere in this issue of D&T is a report of the NSW Championship. Congratulations go to Rick Bartolozzi for a fine win and to the Liverpool club for a well run meet. The meeting was also used to iron out any bugs for the Australian Championship to be hosted by the club in June 1991.

SA

The South Australian Title is set down for November 10 and 11, 1990 and will be hosted by the Model Radio Car Club of Adelaide. For more information contact Ray Harrison on (08) 250 4114. For more information on Electric Circuit contact Geoff Booth: 20 Hazelglen Avenue, Panania 2213.

RESULTS 1/8th QLD CHAMPS

Results of 1990 1/8 Queensland Champs held at Bren-

dale From August 31 to September 2.

1. S. Burgess NSW Serpent/Rex 90 1808
2. S. Grant NSW Serpent/Maxima 89 1805
3. S. Allen QLD Blitz/Rex 89 1814
4. P. Cooper QLD Serpent/Rex 82 1810
5. G. Mulvena QLD Serpent/Ops 81 1806
6. R. McArthur ACT Serpent/Rex 79 1819
7. K. Bradshaw QLD Blitz/Rex 60 1819
8. L. Campfield NSW Blitz/Rex 56
9. R. Lowe QLD Serpent/S'Power 45
10. J. Hamon NSW Serpent/S'Power 41

TOP QUALIFIER:
S. Grant 33.604

FUTURE WORLD CHAMPS EVENTS

1991 1/8 World Champs — Austin, Texas USA
1991 1/10 Off-Road World Champs — Detroit, Michigan USA
1992 1/8 Off-Road World Champs — Usigen, Germany

*** LATE NEWS ***

1990 ROAR OFF-ROAD NATIONALS (USA)

Livermore, California, Hobby Haven Raceway — Team Associated dominates the Nationals, taking 1st, 2nd and 3rd with their RC10s equipped with the new STEALTH transmission. Cliff Lett won both modified classes.

CLEARANCE SALE



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1/10 Circuit: Sizzler\$175

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NEWS & VIEWS

by Rob Reade

Here we are again and as usual there is plenty to tell you about in this very exciting business!

Before I get into the real news I want to do just a little bit of "ego tripping". At the end of August my wife and I had a short break and drove to Queensland which just happened to coincide with the running of the State 1/8 Champs there. Now of course I had to compete and I managed to win the 2WD class! So many years on, it was a nice feeling (my last State 1/8 title was the Victorian champs in 1982). The Queensland Club is to be congratulated on the excellent purpose built facility they have at Brendale and the first class organisation of the meeting. It was also good to renew acquaintances with an old racer like Trevor Wright whom I reckon has been around as long as I have!

1/8 CIRCUIT RACING

The big news here is the expansion of the 1990 PB PHOENIX range. The Phoenix is now available in either 2WD or 4WD form. There are also optional packages to move either way from 2WD or 4WD, that is, you can purchase it as a 2WD kit and upgrade it later to 4WD or, if you wish, change a 4WD to a 2WD. The PHOENIX has always run well as a 2WD racer (when converted from a 4WD) but this latest 1990 purpose built 2WD version is absolutely brilliant. Because of the release of this 2WD version I was personally motivated to return to racing. Now old "Grandpa" here has raced the '90 2WD PHOENIX three times and won with it three times including at the Queensland Champs. Sure I was using a strong motor to achieve these results (REX) but the whole point is that the chassis handled it superbly. This car steers, brakes hard, puts the power to the ground exceptionally well, is efficient, fast, light, strong and reliable. What more could you want?

Now I have been giving the 2WD PHOENIX a plug but everything mentioned equally applies to the 4WD version. Shortly we will also have entry level 2WD and 4WD versions of the PHOENIX. So, the PHOENIX range from PB will consist of top of the line 2WD and 4WD models with lower priced versions of the same as well but with the ability to upgrade if required. With this range PB have a model for all no matter what your budget. If you are, or want to be a 1/8 racer, give some serious consideration to the '90 PB PHOENIX range. The PHOENIX has been the big mover in the sales race in the UK this year and the "Guv'nor" of PB UK, Keith Plested, tells me he expects more top racers to be

running the PHOENIX soon. PB have made big strides in the development of the PHOENIX over the last two years and the '90 model is very, very good. It is certainly the most technically advanced 1/8 racer you can currently purchase, but the best news of all is that your PB dealer is now in a position to make it much easier for you to own one. For a limited time special pricing applies (2WD - \$515 and 4WD - \$647) so talk to your local stockist now or contact us direct. Help and information is readily available.

PB has also released some worthwhile options which include a very nice alloy shocker mount bracket kit for the PHOENIX and a very special trick "high rev" conrod for Nova Rossi and Rex engines. Soon to arrive for the PHOENIX are different colour wheels (black, blue and bright green); a range of shocker pistons and a new clutch system.

NOVA ROSSI/REX 3.5cc RACING ENGINES

You could say that REX engines are currently the most wanted 3.5cc model car racing engines in the world. Such is worldwide demand, we do not always get what we order from the factory, so it is very much a case of "first in, first served". Currently available are REX NORMAL (1.7hp at 28500 revs), REX SUPER COMPETITION (2.1hp at 32000 revs), REX ULTRA COMPETITION TURBO (2.2hp at 32500 revs) and REX BUGGY (2hp at 26000 revs). The race winning record of REX 3.5cc engines is second to none. They are complimented by an equally fine range of glo plugs (standard or turbo), manifolds, mufflers, fuel filters and air filters. Price list available on request.

There is another new 3.5cc car engine coming from Nova Rossi/Rex to add to the model line up and we should have it by the time you read this. Full details next issue.

In the meantime if you really want the ultimate, we have some Rex Turbo engines in stock that have been specially prepared by ace American engine whizz Steve O'Donnell. Apart from mods to increase power even more, they feature "high rev" conrods and pistons. Two only available. P.O.A.

1/10 PRO 10 ELECTRIC CIRCUIT CAR RACING

These racers are doing very well here in Adelaide with a lot of fast, close, exciting low cost racing. The PB SIZZLER has always stood out as an innovative and very competitive design in this class. It has certainly been a success both in sales and per-

PB Phoenix wins 1990 1/8 Australian champs with 1st, 2nd and 3rd in 2WD and 1st, 3rd and 5th in 4WD. Nova Rossi/Rex Engines take ALL major placings in both classes.

formance on the track (I also believe it is doing very well in America). We have just received a shipment of the very latest 1990 update model. It features a narrower rear track and upright gear shocker location for improved traction from its "De Dion" type rear end. These kits also feature super grippy long life rear tyres and, combined with the fact that we are also including Chevy Lumina Nascar body (Days of Thunder type), this fully ballraced top of the line competition kit is super value for money at \$295 RR.

GENERAL

A quick run through some of our regular lines just to let you know what other products we have available. In no particular order they are: electric motor pinions in 32dp, 48dp, .6 module and 64dp in all sizes; spur gears in 32dp, 48dp and 64dp for various buggies; lots of "trick" accessories for buggies from RW Racing UK and of course lots of Losi kits, motors, spares and accessories as well. Mardave 1/12 electric Mini stock car kit; Serpent kits (1/8 and 1/10); spares and accessories and heaps of bodies in 1/12, 1/10 (Buggy and Pro 10) and 1/8 sizes. Hot Box and Challenger mosfet chargers; KO Digiace radios and accessories; EDL oil; "after run" engine oil; carbon fibre sheet and Arrows tyres for Pro 10 and 1/8 like you wouldn't believe. Decal sheets; promotional wear for both PB and Serpent and some marine and plane 3.5cc engines from Nova Rossi as well. Electric starters; glo plug drivers, the list goes on and on. We do back our product lines with the right accessories.

BARGAIN CORNER

Here's a new section. It could contain new or second-hand items but whatever, they will be BARGAINS, so watch this space every issue.

What about a complete 1/8 circuit racing outfit for \$895! The car is a Serpent Sprint 6000 4wd 2 speed auto racer (we sold it new last year) with a Porsche 962 Group C body. It has an almost new OPS Mondial Blue head motor, comes complete with a n-caded KO Digiace EX1 radio, electric starter, glo plug driver, fuel bottle, spare wheels and some spare parts, in fact everything you need to put it on the track. Well under half replacement cost, just add fuel and go racing! This outfit is a genuine bargain so call us now and remember "we're racing with you, not against you".

Regards
Rob Reade



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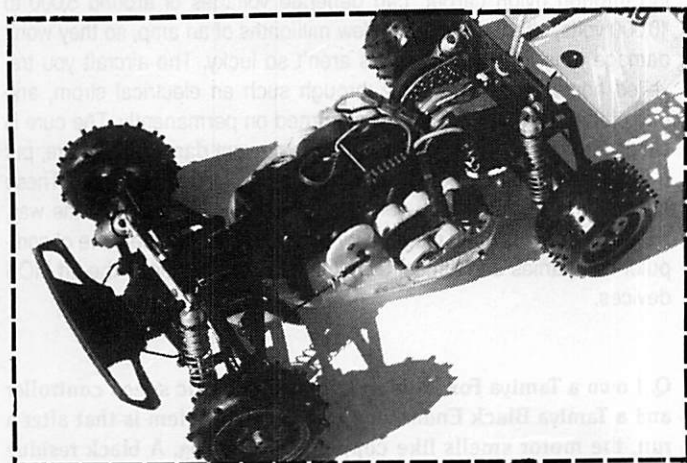
YOU WANTED TO KNOW?

Q. I have just obtained a P.B. Mini Mustang with a 540 motor, running two sets of gears, 24 pinion, spur gears 80 tooth and 90 tooth. Which of these gear ratios would be the best? I was wondering if you have ever done a review on the Mini Mustang, and if so, would I be able to have a copy. Would you also please be able to give me info. on a good set of shockers and any modification for setting up the Mini Mustang?

Alan H. Ascot Park, SA.

A. The P.B. Mini Mustang is a sensible choice Alan — a much under-rated buggy that is still available at a bargain price. Our review was in issue 4. The Mustang can be competitive out of the box but like all kits it may be improved. Here are our suggestions:

- Fitting a ball raced belt tensioner and universal drive shafts will give you more speed.
- Associated or Kyosho Gold (or maybe the cheaper copies) shocks are an improvement on the originals but new shock mounts may have to be made. The front mounts should have a cross bar fitted and this may be extended to carry the top of the shocks (see photo).
- Mount the steering servo so that the output shaft is forward. This shortens the wire link and also gives more space for fitting saddle pack batteries.
- Here's a tip to improve both drive efficiency and handling by moving the front top suspension arms rearwards. Simply cut about 6mm off the front of the top arm mounting block then use the removed portion as a spacer at the rear end of the pivot pin.
- With a 540 motor the 90 tooth (48 D.P.) spur would give too low gearing. The 24/80 or up to 26/80 should be okay.
- Don't fit the rear stabiliser bar and don't worry about ball differentials and fine pitch belts at club racing level.



Q. Is it a good idea to change the two shocks on my Falcon to a single shock at the front? Also, is it possible to put 'double wish-bone' type suspension on the rear instead of the trailing arms? Lastly, I've cleaned out my car thoroughly like they said in 'Get Down and Buggy' in issue 14 and I have decided to buy a stock motor such as a Reedy Ultra Stock. Could you please tell me more about it? How much running time will it have with my Saft 1200mAh racing pack? Would all of these things improve my car performance enough to race in clubs and finish in 'B' finals? Hope you can help.

Jeffrey P. Yangebup, WA

A. I will answer the last question first since this is most important. Many clubs will make newcomers very welcome. Just turn up with any 1/10th buggy and have a go. It's nice to win but initially this is not important. Just observe, ask questions, and soon you will find your understanding and then performance will increase much quicker than before. How you place will depend more on how good the fellow competitors are. Don't concern yourself with front monoshocks or other major suspension changes. Better handling will come with tyre selection and tuning the existing suspension. Again, fellow club members will advise. There are many high performance 'stock' motors available with little to choose between brands. You only need to get enough running time to finish a six minute race, something that the Saft 1200 in good condition should handle easily.

Q. I was thinking of buying a Tamiya Monster Beetle but people say that it rolls over too easily. Is this true? How could I remedy this problem? Also, I wanted to know what wheels would be bigger than the Monster Beetle wheels and if they would fit.

Ryan C. Clifton Springs, VIC.

A. The Monster Beetle came before today's Monster Truck era and is actually more of an off-road racer with big tyres. It's the big wheels that raise the centre of gravity and make these vehicles more susceptible to rolling. The Monster Beetle is rugged and heavy which makes it more top heavy than most. There is no practical solution to this problem — bigger wheels would only make matters worse! If it's performance you're after, then the King Cab or Losi JRXT is your baby. Otherwise, take a look at any of the more modern monster trucks.

Q. Do you know of any electronic speedies with variable, at least two-speed reverse, or perhaps one speed that is adjustable on the case like neutral etc., to put in my Clod Buster? I would also like to get a peak detection charger like the Charge-a-Matic with variable current but no-one makes them in an AC/DC version. Some clubs supply 240v and this is much safer than 12v batteries. It's also easier to charge up at home before the race meet. Does anyone make one?

Michael J. Wattle Park, SA

A. Refer to issue 14 for our comparison of E.S.C.s. Reverse models usually only have one reverse speed with an adjustable neutral position. Even full size cars only have one speed reverse — why would you want more? I think there must be an opportunity for an enterprising manufacturer or importer to sell an A.C. charger. We have had several requests but despite being widely available overseas, few shops seem to have them here. You can use an auto battery charger with Ni-Cad charge leads and with clockwork chargers but not with most peak detection chargers. Many expert racers use a power supply such as the D.S.E. Powermaster but you're looking at \$200 plus. Despite its mass, a 12v auto battery still provides the cleanest power for the least cost.

Q. I have a Tamiya Striker and I don't like the hard body. I wanted to know if you can modify it to put a Lexan body on. Also, is it possible to put the speed controller etc. on to a flat chassis, rather than the one supplied?

Wayde R. Nakara, NT

A. Unfortunately Wayde you have picked a bad buggy for changing bodies. The lower Striker body is actually the chassis and would weaken the car if removed. However, it shouldn't be difficult to fit a Sedan type body over the original lower chassis/body. You would also have to extend the three body mounting posts. Forget about fitting a flat plate F.R.P. or carbon chassis. This would entail a lot of work and would be expensive. Maybe you should save up for the new Tamiya Madcap.

Q. Would you be able to tell me whether Avante Wheels would fit Kyosho cars, particularly the Turbo Optima, without modifications and whether the Cam-Loc system works on Kyosho axles. Would you know of any other hubs that fit Tamiya Tyres and still fit on Kyosho cars without mods? What system does the Tamiya Egress use for fitting its hubs to the car? Is it similar to the Avante or is it like the Hotshot's method? I'd also like to know if the Tandy range of R/C equipment is any good, in particular their fast charger which works off a car battery.

Marcus L. Carina Hts, QLD

A. Although we haven't tried it, the Avante wheels should fit on Kyosho axles since the hexagonal drives are similar. Wheel diameters are now standardised at 2 in. although some Tamiya cars such as Hornet and Falcon still have 1.6 in. wheels. Any use of the 2 in. tyres will fit Kyosho rims. Suggest you look at the tartan brand rims (in outrageous fluoro colours) mentioned in issue 5. We haven't been able to get an Egress for review but the hubs don't appear to use the Cam-Loc method. The Tandy range is aimed at the toy type market and should be okay if buying only on price. Consult one of the shops advertising in D&T for more expert advice.

Q. I own a Tamiya Falcon and my dog-bones are always snapping after three race days. What shall I do? What would your first suggestions be to get an out of the box Falcon competitive?

Adam C. Wameral, NSW

A. The Falcon's drive shafts are a weak point and often require replacing. Improved parts are made by C.R.P. and a metal dog-bone kit, and drive is produced by dirt burners. Try one of the Sydney RC car specialists advertising in D&T for more details and prices. The Falcon, like most entry level buggies, will benefit from the following improvements: ballraces instead of plastic or dilite bushes (less friction — more speed — less wear on shafts); battery eliminator circuitry (B.E.C.) to replace the four heavy pencils and power the receiver from the 7.2v Ni-Cad; fitting of Fox wheels and adaptors so that the more common 2 in. tyres may be used. Always keep the car clean and free running, lean the motor, try different steel opinions — maybe an E.S.C. — and keep practising!

Q. I own a Tamiya Hornet and I recently bought some On-Road tyres. It is a lot of fun but when I do hard starts it tends to be very squirrely because the planetary gear differential spins the least loaded wheel. How can I stiffen up the action? Also I was wondering if you could do an article for an On-Road conversion for Hornets, maybe with a Grand Prix or GTP body.

Rodney M. Bonalbo, NSW

A. We guess that Rodney has read the comprehensive article on differentials in issue 16. With his Hornet he has correctly identified the effect but not the cause. His problem is most likely caused by incorrect type selection. Stiffening the diff by adding a thick grease will do little to fix the problem. Try different rear tyres but remember that the Hornet range is not designed to get much power to the ground without showing its displeasure in some way. Body post kits are available to allow many On-Road bodies to fit buggies. Suggest you call one of the RC car specialists and discuss this as well as tyre selection.

Q. I would like to know what size ball bearing the Clod Buster uses. Is the Trinity Monster stock a good motor for the Clod Buster and what pinion gear would I need? I have an Acoms Techniplus BEC system. Which ESC with reverse could I get to fit. I have a stock speed controller. Is it possible to fit a 8.4v battery in my Clod Buster?

J. Chan Brisbane, QLD

A. The Clod Buster uses two kinds of ball bearings; 20 of them are the 1260 size and the others are 850 metal bearings that are used in the gearboxes. The code numbers represent the size of the bearings. The larger type is a 12mm x 6mm, and the smaller is 8mm x 5mm. If you are in doubt, take your instruction booklet to your local model store and compare the bearing to the scale diagram in the booklet. Remember to buy only 16 large ball bearings and four small because Tamiya has already given you four large ball bearings for the wheel hubs. Better still, get a Clod Buster ball bearing kit. Everything should be there, and it'll be cheaper than buying them separately.

Q. Hey guys, I've just been to America for a short holiday. While I was there I had the chance to race my Ultima a few times. I had a great time, but when I got back and returned to my local club, my Novak T-4 speed control packed up. The drive Fets create massive amounts of heat when I connect the battery. The speed control has never been in danger of getting wet or having dust contamination or even shorting out, let alone overheating. Could you tell me what has gone wrong, and will it happen again?

James N. Stirling, SA

A. Most speed controller failures are user induced. Connecting reverse polarity, either at the 4.8v input (receiver) or 7.2v battery is common and often easily done. Other failures are due to the Fets receiving a damaging voltage spike during handling or soldering. Your situation, however, is a little different and may have an unusual cause. We asked Craig Jackson from Canberra's Holeshott Hobbies (phone 06 231 8306) for an opinion and this was his answer.

C.J. - One possible cause of your problem stems from your flight home. The MOSFETs used in speed controls will turn on with a very minute current on their inputs. This is the very reason why we use them. This feature unfortunately makes them sensitive to electric charges. The voltage on the input of the MOSFETs must not exceed 20 volts, or the device may be damaged. An electrical storm, or even walking through nylon carpet, can generate voltages of around 5,000 to 10,000 volts, although only at a few millionths of an amp, so they won't damage most things. MOSFETs aren't so lucky. The aircraft you travelled home in probably flew through such an electrical storm, and one of the FETs IN YOUR T-4 was turned on permanently. The cure is simply to replace the offending FET. To prevent damage in future, put it in an anti-static bag, available from most electronics stores. These bags short out these high voltages, preventing damage. By the way, we aren't the only ones plagued by this problem. It is the bane of computer companies and almost everyone else using state-of-the-art MOS devices.

Q. I own a Tamiya Fox with an Acoms electronic speed controller and a Tamiya Black Endurance motor. My problem is that after a run, the motor smells like copper wire burning. A black residue forms on the armature, but disappears after about 10 minutes. Is the motor alright? How good is the Acoms speed controller? Also, would it be advisable to drill a cooling hole in the chassis for the speed controller?

Adam G. Caloundra, QLD

A. Your motor problem has us puzzled, Adam. From your description it appears to be self cleaning — which is impossible. We will assume that you mean commutator when you say armature. It is normal for the comm. to discolour soon after running. Clean the comm. with lighter fluid or proprietary cleaning stick (eg. "edge"), but don't use Brasso,

WD40 or erasers, which can leave residue and burn. Maybe this is what you can smell. The Black Endurance motor should not worry the Acoms E.S.C but I wouldn't use it with anything under an 18 turn motor. Speedos lose efficiency when hot and they can burn out so a flow of cooling air is important. However, if an E.S.C. is found not to be hot after a run then leave well enough alone.

Q. I recently bought the RC30G Con bike. It's a great bike but I read in a US mag. that you can get hot-ups for the bike such as a stronger motor, different gears etc. I have already gone to some trouble trying to find out where I can get these but have not got anywhere. It will help me as well as all your other eager readers if you could please tell me where I can get hold of these hot-ups

and, if possible, their price.

Michael M. Orange, NSW

A. The article in question did mention the possibility of some performance boosting parts and we have checked with the importers, Model Engines Aust., regarding their availability. The only hot-up currently available is a high speed gear set. Price is only a few dollars and would give better top speed. Replacing the Nylon bushes would be worthwhile — take a bush to a local bearing supplier and see if he can match it. Expect to pay five to 10 dollars for one bearing. Do not try and fit the larger 540 type motor in your bike. Too much has to be cut away and the balances will be adversely affected. Happy riding!

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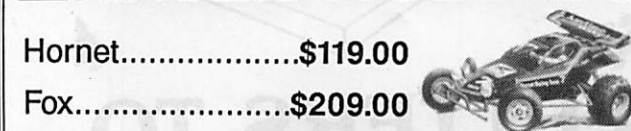
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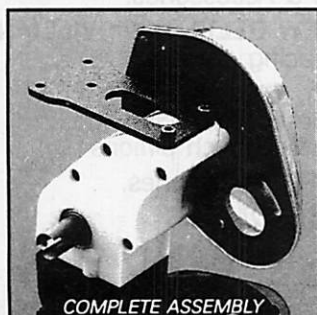


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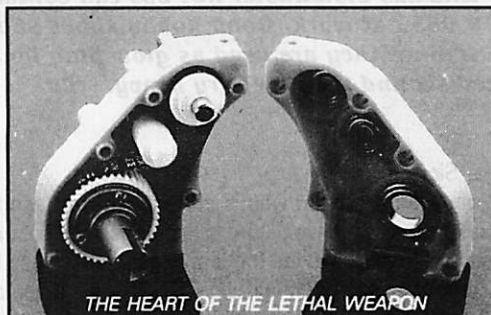


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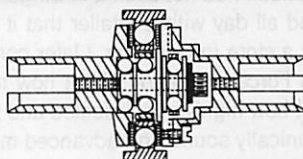
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LETTERS TO THE EDITOR

Dear D&T

I have a few tips for some people who have trouble getting paint off bodies. Most people paint the inside of Lexan bodies with Tamiya paint. The best things I've found to remove this are Big Boy or Mr Muscle oven cleaners. Spray one of these products on until the body is well covered with foam, leave for 30-45 min and then just simply wash it off with hot water. You'll find it comes off soft. Make sure you get it off before it dries or you'll have to do it again.

Also, I would like to join a club, but I don't have a car to drive around to the meets. Don't get me wrong, I'm 22 years of age and I'm an electronics technician. I would like to find out if any people who live around the Oakleigh, Clayton or surrounding areas would like to get in touch with me and start up a new club. I would like to meet some people with R/C modelling experience living in these area.

I have a couple of other questions. Can you tell me the best way to clean ball bearings and to re-lube them? Do any clubs have tractor pull races etc.? I'm also modifying a Clod Buster at the moment and would like to find anyone who has hot-up parts. Finally, I would like to know about the Clod Buster battery packs that are rated at 4000 mAh.

Allan F. Oakleigh, VIC

Thank-you to the many readers who wrote in with ideas on removing paint from bodies. This subject is now closed! Anyone who would like to help Allan start a club, or who has Clod Buster Hot-Ups can contact him on (03) 579 0833 at work. Good hobby shops should have 4AH cells since they are used as glow plug igniters. You will need six and they are very heavy. Ed.

Dear Sir

I am a Singaporean who is currently in Brisbane for a while. From where I come, we have all the latest ranges of electronic products from around the world. We are the first to get them. When I heard about the Purge Force computer assisted E.S.C. with automatic calibration, I could not believe it, since I had not seen it in Singapore up until when I left in June. I argued all day with a retailer that it was not true until I actually saw one at a store in Brisbane. I later contacted the manufacturer of the Purge Force and learnt about how much of a wonder this E.S.C. is — about how highly sophisticated and powerful electronics and the most technically sound and advanced methods were used to produce it. In addition to this, the Purge Force has a track record in the eastern half of Australia which is indeed something to rave about

and is very impressive.

Being strictly a Novak and K.O. user myself, I was very surprised that this product was not Japanese or American, but rather, Australian! In comparison with most of its competitors, I find that the Purge Force is the most "State of the Art" E.S.C. known to R/C modellers and is indeed very cost effective.

I am sure that these E.S.C.s would be a knock-out in Singapore as well as other S.E Asian countries where electric racing is prominent. For the benefit of the Australian economy as well as increasing foreign ties, why then are they not being exported to Singapore?

Sebastian J. Muthu, Woolloowin, QLD

Dear D&T

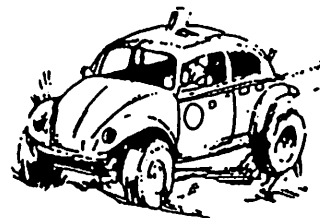
Re: 'Soap Box' on stock motors D&T No.14.

After reading Darren Baker's comments last issue, D&T No.17, about stock motors, I couldn't agree more.

To quote Robert Shoebridge, 'I'm sure that some competitors could open a can and replace it without detection'. Have you tried opening a 540 can? The RS 540 would be the fairest form of stock racing available. Certainly, you do get the odd dud motor, but it comes down to driving and understanding your car's handling characteristics etc. I raced 540 in Queensland for three years and found it extremely competitive as everyone was the same speed. For newcomers to the sport, it's an ideal class to get into, as the 540 Johnson can be bought for \$10 to \$15. Calculating that you replace a motor every one to three months, it's not a great deal, as nobody races every weekend of the year! But compared to Super Stock motors averaging \$45, which would be replaced every three months, that adds up to quite a hefty sum of money, especially for kids on a tight "budget". To quote Robert, "What can we do about it?" It's simple. Go to the Johnson 540. If the motor is twisted, it can be detected. Placing a 27 turn armature in a modified can is great, but remember there's the initial cost then replacement bearings and brushes. At \$10 a pop, the 540 motor can be afforded to be thrown out.

Michael K. Brisbane, QLD

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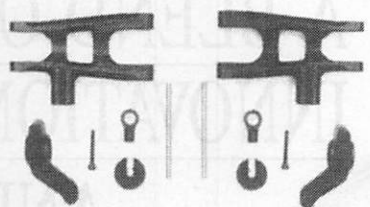
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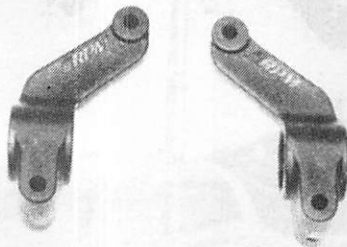
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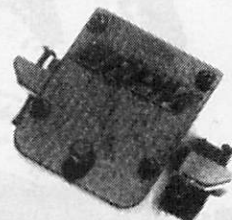
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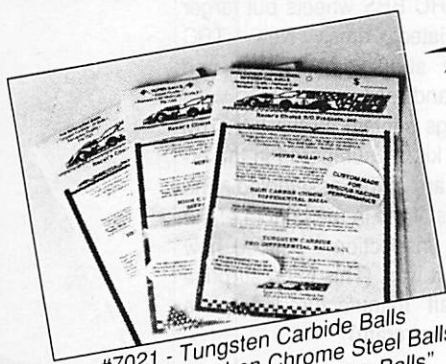
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RPM PRECISION MOLD PRODUCTS INCLUDE;

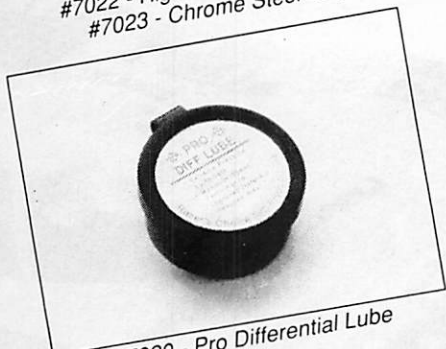
- #7550 Yokomo Rear Bulkhead. #7330 JRXT2 Front Bulkhead 10 Caster. #7302 Heavy Duty Bellcrank Set (JRXT2 & JRXT) #7010 Small Parts Tray with Magnet.
- #7002 RC-10 Bellcrank Set. #7004 RC-10 Spindle Block Set.
- #7350 JRXT Wide Front Arms. #7020 RC-10 1pc. Front Suspension Mount.
- #7340 JRXT2 Front Arms. #7060 RC-10 Truck Wide Front Arms.
- #7510 & 7515 Yokomo Front and Rear Carriers.
- Quick Adjust Spring Coil Clips . For JRXT2 #7032. For Assoc/Kyosho Gold #7022.



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- #7022 - High Carbon Chrome Steel Balls
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#7020 - Pro Differential Lube

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- #7014 Hyrev speed drops and
- #7025 MACH I Modified Drops
- Increase motor RPM
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- Remove brush glaze
- Polish commutators
- Lower AMP draw
- Cleans and lubes brushes and commutators.

- #7016 Hyspin+ Gearbox Lube
- Used in satellites, missiles, planetary landing craft.
- Works on bearings, bushings, gears, spools, springs etc.
- Extremely long lasting.

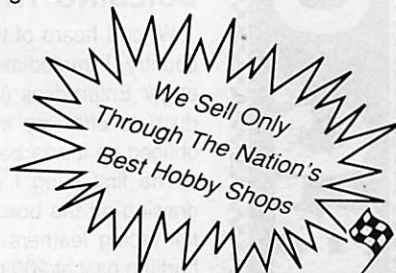
- #7015 Hyspin oil
- For bearings and bushings
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LYNX II

ELITE



New style wheels are just one innovation on the Lynx II.

A BLEND OF
INNOVATION
AND
TRIED
AND TESTED
FORMULAS

by Rick Bartolozzi

WHY the extraordinarily long name? Well, I am led to believe Composite Craft actually manufactures this car and TRC package, market and distribute it.

I had been eager to get my hands on a Lynx II Elite since my business trip to the States in April this year when I had the opportunity to race at the ranch pit shop in Pomona, California.

This is a marvellous R.C. facility owned and operated by Gil Losi and Gil Losi Jr. It has a great 1/10th off-road track, a 1/10th-1/12th bitumen circuit and the best hobby shop I have ever seen! Anyway, a certain Mr. Tony Niesinger (two times 1/12th world champion) was in attendance for their club race day debuting the Lynx II.

I had never seen one, but was immediately impressed by its strange rear motor pod assembly. The car looked heavy with all the hardware, but actually weighs in underweight with a lightweight servo and receiver. Tony's driving was immaculate as he tq'ed and won the 'A' main quite comfortably.

BUILDING THE LYNX II

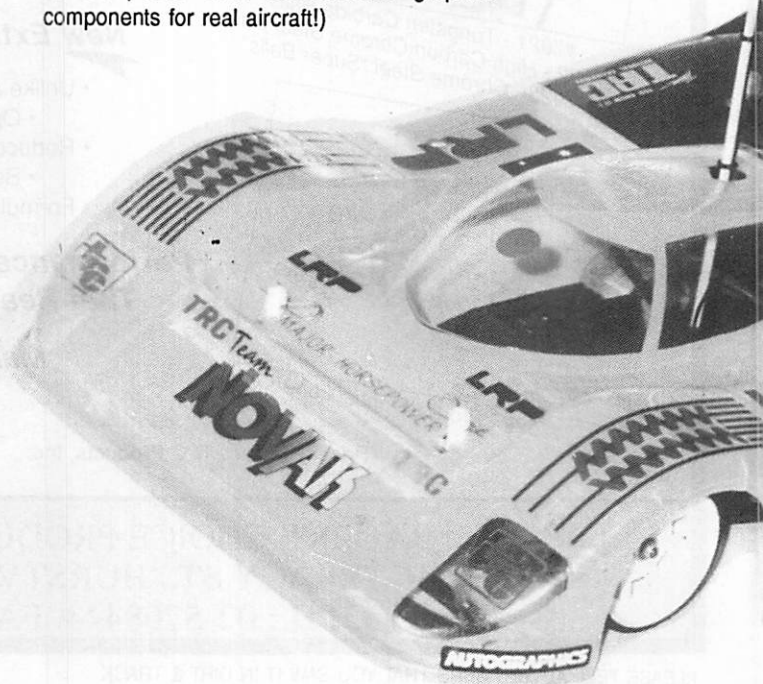
When I heard of the arrival of the kit in this country, I immediately rushed down to Grenger Enterprises (which distributes this product) to offer my services as reporter. They obliged so it was back home to start building.

The first thing I noticed was the colourful drawing on the box. A mean looking driver in full racing leathers and a screaming Nascar hurtling past at 200 miles per hour! Great stuff.

On opening the box I was pleasantly surprised by the quality packaging. All the parts are protected by a large air bubble bag which would protect them on their long journey O.S.

The instructions are of the two-part type — one with pictures, one with words. New design rims are a feature of this car and are of the eight slot variety. They are smaller in circumference than the TRC BBS wheels but larger than the Associated rims. New TRC 'green'rubbers are supplied, mounted and trued for the front and rear.

Three plastic bags contain all the parts required to build this kit, all numbered in the order in which they are to be assembled. The graphite chassis sits alone in the bottom of the box, and on close inspection I noticed how beautifully finished it was. (This is no surprise as Composite Craft manufactures graphite components for real aircraft!)



On the rear of the chassis there are no cut-outs for the T-Piece which most manufacturers employ, but instead, a strong flat section which will help strengthen rear end lateral stability. On the front there are two mounting positions for the magnesium axle beam, one forward, one rear. More on this later.

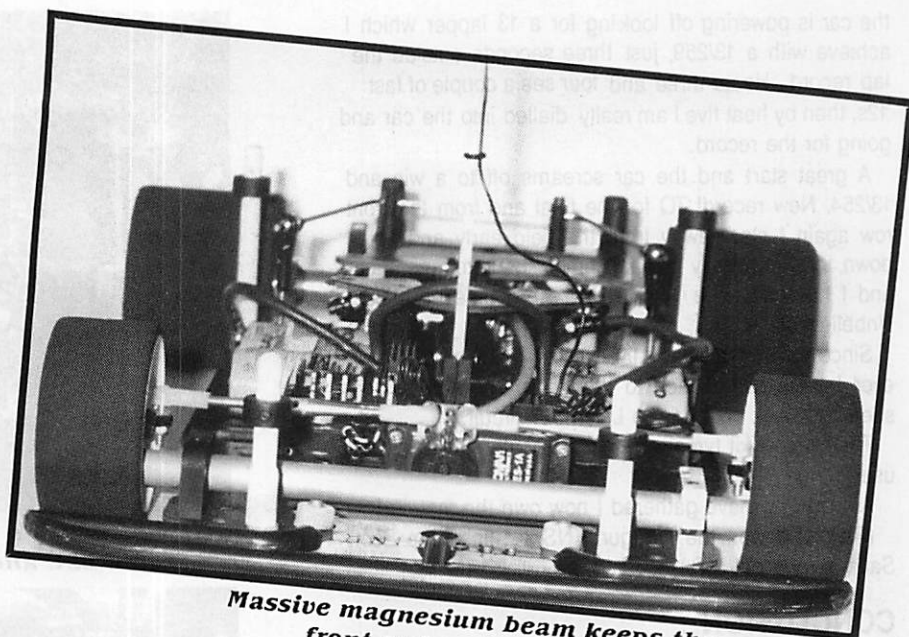
"CONGRATULATIONS! YOU NOW HAVE THE BEST 1/10TH OVAL AND ON-ROAD CAR IN THE WORLD FROM TWO OF THE MOST SUCCESSFUL MANUFACTURERS IN THE WORLD." These are the words which greet you on page one. A rather grandiose statement I would think, or is it?

"TAKE YOUR TIME! How carefully you assemble the car is going to determine how well it performs on the track. Don't be in a hurry. You won't win anything for the fastest chassis assembly." This statement rings true when building any kit, R.C or static, but is more important if you wish to be successful in R.C racing.

Step one is mine and many other racers' pet hate — filing out the battery slots. Be careful to file the correct side and not to touch as you don't want your cells scraping along the ground!

Step two is the front end assembly which is straight forward. At this stage, you must make the choice of long or short wheel base. I recommend the short w.b for circuit racing as the chassis seems to turn-in to the corner more precisely, and the long w.b for oval, as stability is more important for this type of racing.

On to the rear end, which shares one similarity with another manufacturer, that is, the entire motor pod pivots on a steel ball (for smoothness of operation, this ball should be polished with fine emory paper so as to ensure free movement within the plastic cup — the



Massive magnesium beam keeps the front end under control.

freer this action, the better the handling). This allows sideways swivelling, and that is where the similarity stops as the pod rides up and down on a Cantilever system which is controlled sideways by a sway bar which is adjustable for rear end tension, and vertically by a neat delta type shock absorber. This shock, when assembled correctly, works efficiently and smoothly and I have seen no reason to replace it in the time I have had the car.

There are two springs with the kit, one firm for oval, and one soft for circuit. Again there are two choices for length of wheelbase, the short w.b is the one I chose for circuit, as agility is my main requirement.

The Cantilever system, when fully assembled, should be free and smooth in all movements. Some care is required, however, if you follow the instructions carefully you will have no problems.

On to the Diff. Now this is a real treat — the smoothest diff I have built! It's a three ball bearing unit and comes supplied with a 120 tooth, 64 pitch spur gear which is quiet and effective. No real dramas here, however a tip in assembling this and any other ball diff. is in how you glue on your drive rings. The manufacturers recommend super gluing the rings once the diff is assembled. However, I have found this to be a little unreliable

as no contact is made between rings and hubs. I mix a little araldite and smear it onto the hubs and then assemble the diff. while the glue is still wet. I then tension the outer nut until it is firm and rotate the diff to evenly spread the glue so as not to create any tight spots. This process takes about ten minutes, however it is well worth the trouble.

Once having reached this stage you should be ready to instal your wheels and radio equipment and go racing.

ON THE TRACK

My prayers were answered for a sunny day (a rarity in Sydney lately) for our next club race day at Crossroads, Liverpool and first run apprehensions were quickly dispelled. I had installed a rather mild motor as I wanted to become familiar with the handling characteristics of the Lynx II.

To my delight, the car worked great from the outset, showing no signs of under or oversteer.

If you have not raced at the Crossroads, traction can be low, especially when it is overcast and there is no heat build-up in the track surface. We are not allowed to use any tyre additive so a lot has to do with how you set up your car. The Lynx II did not realise this and it seemed to revel in these conditions.

Time to go for some real ponies. A twister 14 triple found its way into the car and out for another practice run. Still the car gripped superbly well. I couldn't believe my eyes as I would throw it into a corner and apply power very early to find its limitations. There seem to be none (within reason of course).

Now into the heats and I am starting to get used to the car. I win the first heat easily with a fast 12 laps. Second heat from the front row and



the car is powering off looking for a 13 lapper which I achieve with a 13/259, just three seconds outside the lap record. Heats three and four see a couple of fast 12s, then by heat five I am really dialled into the car and going for the record.

A great start and the car screams off to a win and 13/254. New record! TQ for the final and from the front row again I clear away from the field early and settle down to some really fast lap times. Four minutes later and I have won the 'A' final in record time of 13/252! Unbelievable!

Since its debut I have tried other adjustments, however I have come back to the original set-up as this seems to work best on the Liverpool circuit.

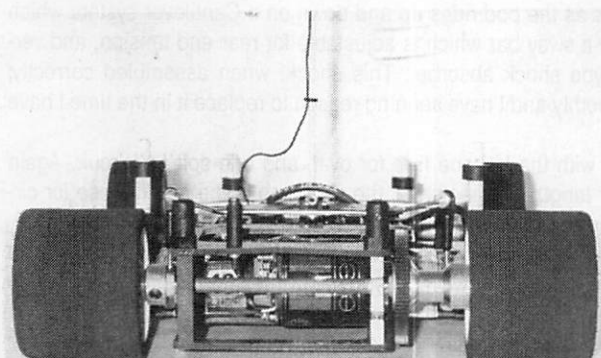
The original kit tyres work exceptionally well and I still use them.

As you may have gathered I now own the test car!

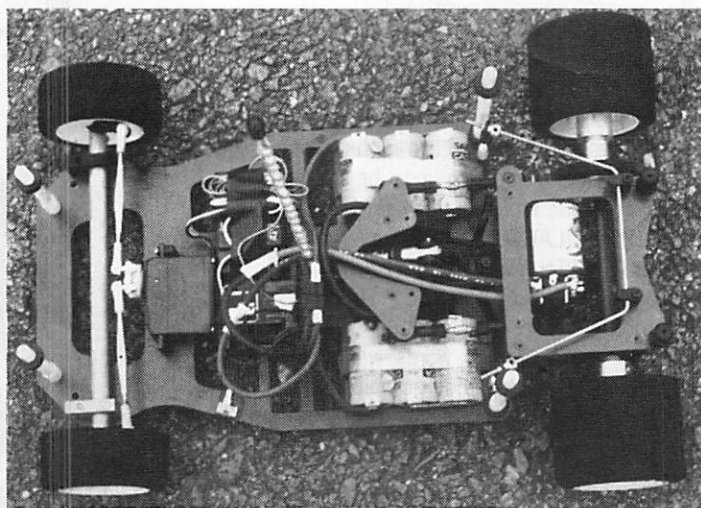
(Rick also won the inaugural NSW Titles. See Scott Salter's report — ED.)

CONCLUSION

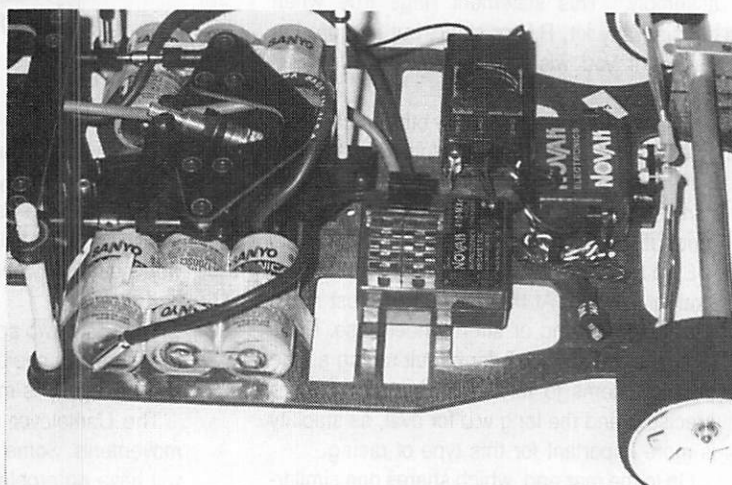
An excellent out of the box performer which contains many innovations to keep the expert and newcomer happy for years to come.



Innovative rear end is mainly responsible for the Lynx II's superb road holding.



Borthwick's version of the Lynx has Purge Force ESC and Associated's Clubman motor.



Rear suspension supports dominate the Lynx chassis but still leave ample space for the electronics.

REVIEW AT A GLANCE

Quality of instructions	*****
Ease of construction	****
Quality of materials	*****
Motor Supplied	No
Chassis Type	CRP Plate
Suspension Type	Full Floating Cantelever Rear, Magnesium Beam/Kingpin Spring Front
Sway Bar	Rear Only
Bearings	Fully Raced Three Bearings Ball Diff
Motor Accessibility	*****
Battery Accessibility	****
Speed Controller	Not Supplied
Body Shell	Not Supplied
Weight as tested	1185g
Handling as tested	*****
Rec. retail price	\$399

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- Adjustable Wheel Base
- Spring Front Suspension
- On Centre Motor Pod
- Aluminium Wheel Hub
- Magnesium Front Cross Bar
- Front and Rear Racing Tyres
- Front and Rear Ball Bearings
- Rear T-bar Mono Shock Suspension
- Aluminium Steering Linkage
- Graphite Chassis

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NOVAK & LYNX II

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Team

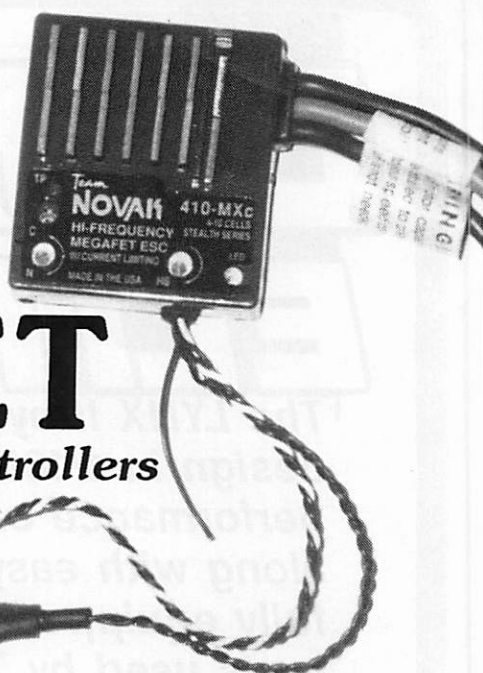
NOVAK

410-M1C

MEGAFET

The New Buzzword in Speed Controllers

by Steve Carruthers



THE high competition level that exists in RC Model Racing has forced manufacturers to design products using the latest materials and componentry available. This is mainly the case with electronic speed controllers, where microprocessor-controlled devices using the latest surface mount technology are now becoming available.

Novak Electronics has responded to the competition by developing a new series of digital speed controllers that are very much "State of the Art". The 410 series of controllers have been some time in development, however, there is no doubt this product will increase the performance level of our sport.

In this article we will review the Novak 410-M1C Speed Controller and explain the many features in a technical manner. Without a good level of understanding, you may fail to take advantage of the technology this product offers.

THE 410 SERIES

"The Team Novak 410 Series MEGAFET electronic speed controls are true digital, high frequency controllers designed to give the racer the absolute advantage on the race track. Features exclusive MEGAFET transistors for the lowest ON-resistance, 2500 Hz high-frequency pulse width modulation for more efficient recharging of batteries during partial throttle and braking, perfect linearity for smooth acceleration, and adjustable current limiting for maximum efficiency and performance.

Other features include a built-in BEC to power the radio system, an input signal filter to eliminate electronic noise, dual-colour LED for easy pot adjustments, and the exclusive Novak Input Plug System."

This is how Novak describes the features of the new controller. Let's examine them one at a time.

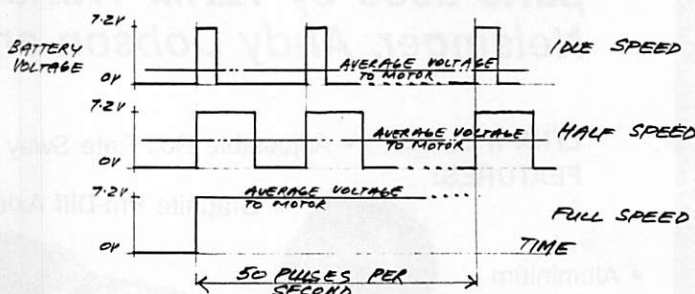
MEGAFET TRANSISTORS

Apparently "MEGAFET" is the manufacturer's trade name for the transistors used in the 410 series controllers. Whatever the name, with an on-resistance of only 0.003 ohm. They are certainly efficient. Too good it would seem to continue using "TEMPFETS". Novak has opted for a separate device to sense transistor temperature and protect them in the event of overload.

It is important to realise that as the operating temperature of the transistor's rise, so does the on-resistance. The provided heatsinks must be used in order for the transistors to operate efficiently.

2500 HZ HIGH-FREQUENCY PULSE WIDTH MODULATION

Speed controllers vary the speed of the motor by "Pulsing" or turning on and off the power at a fast rate (normally 50 pulses per second). The more time "on" compared to "off", the faster the speed.



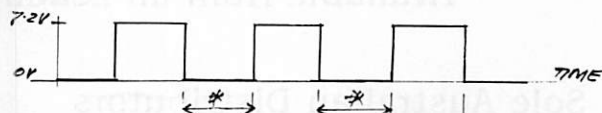
The Novak 410-M1C pulses at a much faster rate of 2500 times per second. The benefit is reduced brush arcing (increased commutator life), longer magnet life, and very linear delivery of power. Driving with the 410-M1C, you immediately notice how incredibly SMOOTH the car accelerates. There is no rush of power hesitation out of slow corners, just total control.

High frequency pulsing can give rise to interference problems, so it's important to fit three 0.1 uf capacitors on the motor as instructed in the manual.

RECHARGING OF BATTERIES DURING PARTIAL THROTTLE AND BRAKING.

The motor in your car acts like a generator when the momentum continues to spin the motor after power is no longer applied. The brake in speed controllers makes use of this generated power to stall the motor. Bob Novak has created some clever circuitry to further utilize this power to recharge the batteries, while you drive.

The surprising aspect of this recharging is that it is cost effective during partial throttle. To understand how this is possible, refer to the half speed diagram again.



At half speed the power to the motor is "on" for as much time as it is "off". During the time it is "off", the motor's generated power can be used to recharge the batteries. Of course this is a very inefficient system and at best you could expect 20 per cent longer run time. From our experience, even 20 per cent would seem an optimistic figure. Basically, here is a speed controller that encourages you to drive at partial throttle. The advantage will be reduced battery power consumption with only a slight reduction in overall speed.

ADJUSTABLE CURRENT LIMITING

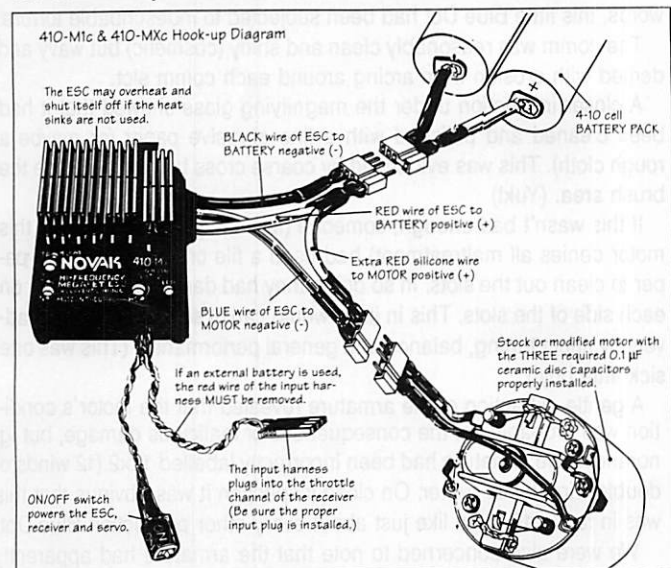
In order to understand the benefits of current limiting we must first look at the reasons why this feature might be required. When the motor in your car is under load, that is off the line or out of slow corners, it will draw more current than it requires to give maximum torque. Most of this excess current is converted to heat, hence motors become very hot during a race. By restricting the current to the point that still allows the motor to obtain maximum torque, it will give the following benefits:

- Increased and more consistent run time;
- Motors run cooler for increased life.

Novak has taken current limiting further by providing ADJUSTABLE current limiting. By measuring the voltage at the test point, the driver can set the limiting in the range of 20 to 140 Amps. The benefits of current limiting are now even better:

- Now possible to set current limiting to suit motor being used;
- By reducing current limiting further you can have the effect of "Punch Control". For slippery tracks you can create a "soft" motor to control unwanted wheelspin.

In summary, adjusting current limiting becomes a balance between battery duration and softness of motor.



Hook-up diagram for the Megafet is easy to understand if this happens to be your first electronic speedo installation.

BUILT-IN BEC

The 410-M1C Controller has a much improved power supply for the radio system. One of the latest voltage regulators with minimal "headroom" requirement has been used. This means the voltage will remain a constant 5.7v until the battery voltage drops lower than approximately 5.8v. This will allow the radio system to stay operational well into the battery dumping stage.

DUAL-COLOUR LED

Setting up the 410-M1C is certainly very easy and logical. There should be no problem with incorrectly aligned speed controllers.

NOVAK INPUT PLUG SYSTEM

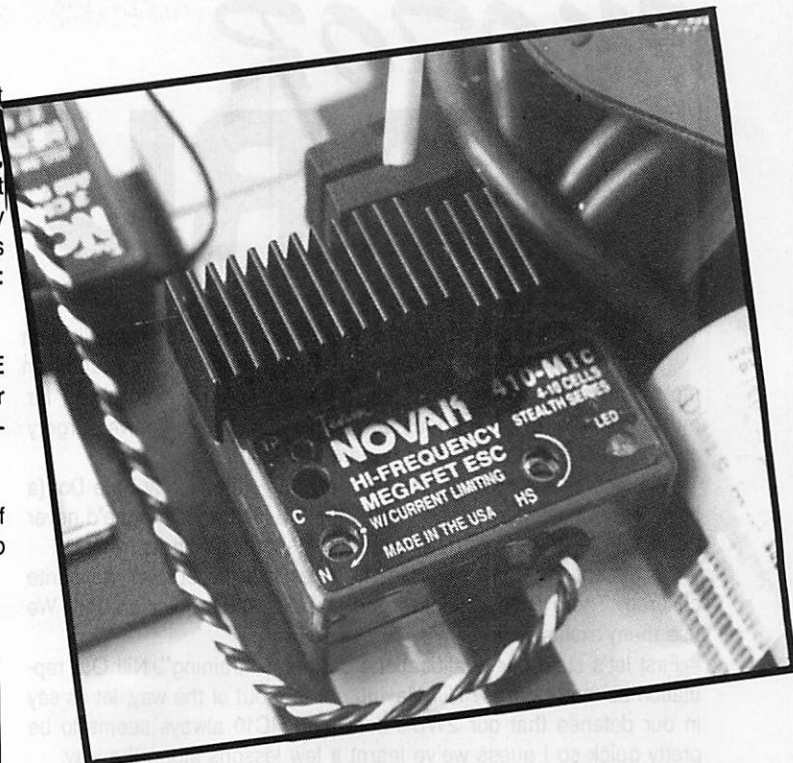
This is a great idea. Supplied with this system are radio plugs to convert the input harness to suit Airtronics, Futaba J, KO, Kyosho and JR. If one of these plugs does not suit your receiver — buy another radio system!

CONCLUSION

It's hard to find fault with the Novak 410-M1C speed controller. The product has been well thought out and built in a high quality manner. From the review you should have perceived that this controller is technically competent and, to quote from the instruction manual, "Designed To Give The Racer The Absolute Advantage On The Track".

Many thanks to Bob Novak for supplying the 410-M1C for our use.

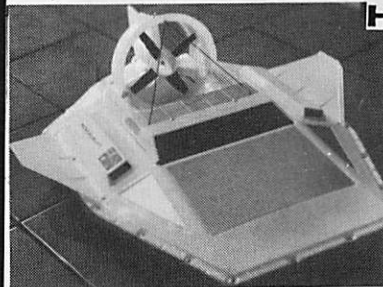
PLEASE TELL ADVERTISERS THAT YOU SAW IT IN DIRT & TRACK



REVIEW AT A GLANCE (more stars the better)

Name:	Novak 410-M1C
Recommended Retail Price:	\$320
Size (with heatsink):	35 x 40 x 28
Weight:	49g
Reverse:	No
Brake:	*** (50A Continuous)
Switch:	Yes
Adjustments:	Neutral High Speed Current Limiting
Max. Continuous Current:	250A
Measured Volt. Drop at 12A:	0.036v
Smoothness:	*****
Instructions:	*****

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MOTOR BRUTALITY

by Geoff and Reece Birtles
TEAM ASSOCIATED/REEDY AUSTRALIA

Our daily newspapers devote a lot of space to the brutalisation of children and females. But have you ever seen a report on motor brutality? I'll bet you haven't. And yet the problem is far more widespread with serious consequences. Like primitive surgery at best, generally too late and generally a failure.

This story starts with the arrival of a pretty little Reedy Blue Dot (a boy!) Its adoptive parent had complained to Reece us that he'd never been able to get it to perform and cast aspersions on its heritage!

We accept the challenge. Reedy Blue Dots are our very favourite children. There isn't a quicker and sweeter 2WD motor around. We use them exclusively.

First let's state our qualifications on motor "training". Nil! Our reputation as motor gurus? Nil! Having got that out of the way, let us say in our defense that our 2WD Associated RC10 always seems to be pretty quick so I guess we've learnt a few lessons along the way.

Superficially our "NSW" friend's motor looked good. Super clean, as new. On second glance we realised that its parent was probably "caring" but at least, misguided.

Springs were not Reedy modified and had a non stock ninety degrees pressure. Stock is about 135 degrees. Worse, each spring was by a different manufacturer and each had a different pressure. (Reedy modified springs are distinctively different to other brands and markedly better in terms of pressure and progression — they improve any brand of motor and do not need "tweaking".)

We are not sure what different spring pressures on each side of the motor do (probably unbalance the motor) but we do know that low spring pressure causes arching and comm damage.

Brushes were also non-stock. Reedy now uses a number 6517 on all production modifieds and they are his latest go fast weapon (took us some time to catch on to this) for a little while we were using number 6512s as replacement brushes — and going backwards!) Hospitalisation time. Pre-prepping for "open heart surgery" involved baseline testing on the dyno (see photo).



The Birtles Dyno. Motor under test drives a "slave" motor via Yokomo Dogfighter diff pulleys (mounted on a home-made boss) via a Dogfighter rear belt. "Loads" are applied by switching resistances across positive and negative slave motor brushes. Model Flight (SA) tachometer reads RPM, digital voltmeter reads voltage in (from 20 Amp power supply) and analogue amp meter measures current drawn by motor under test. This unit is home made but Mike O'Reilly of Model Flight (08) 293 3674 can supply something similar, but without the load feature, for around \$200.

FREE RUNNING	4 amps
FIRST LOAD	29,700 RPM/9 amps
SECOND LOAD	27,700 RPM/15 amps
INPUT VOLTAGE	6.5

This was one very sick little Blue Dot — other symptoms included severe shaking (out of balance), arcing and oscillating amp draw.

A quick incision with the "phillips head" and careful removal of the endbell immediately revealed horrific "brutalization". No mincing of words, this little Blue Dot had been subjected to indescribable torture.

The comm was reasonably clean and shiny (cosmetic) but wavy and dented with erosion from arcing around each comm slot.

A closer inspection under the magnifying glass showed that it had been cleaned and polished with a fine abrasive paper (or maybe a rough cloth). This was evidenced by coarse cross hatching outside the brush area. (Yuk!)

If this wasn't bad enough, someone (and the person who owns this motor denies all maltreatment) had used a file or folded abrasive paper to clean out the slots. In so doing they had damaged the comm on each side of the slots. This in itself would cause severe arcing and adversely affect tuning, balance and general performance. (This was one sick little boy!)

A gentle extraction of the armature revealed that the motor's condition was probably not the consequences of malicious damage, but ignorance. The armature had been incorrectly labelled 12x2 (12 winds of double wire) by its owner. On close inspection it was obvious that this was in fact a 12 triple like just about every other production Blue Dot.

We were also concerned to note that the armature had apparently been subjected to static balancing (drilling holes) but we could not really determine (at this stage) whether this had been good or bad, as an out of round comm will unbalance the motor. A "comm true" (shaving of the comm on a precision lathe) was the only hope for this very sick lad. And the prognosis was not good.

Comm truing is done in 1/10 cat whiskers. Like, you've got to be careful since half a thou per cut is almost too much. After shaving in excess of 3 thou O.D (!!!) the comm was still sick. And we were starting to feel even sicker. Finally we got up just short of removing the file damage on each side of the comm slots. It wasn't our motor and we were scared of destroying it completely.

After further reflection and a few "observations" on the motor's owner, we decided to measure the comm (with a micrometre). Surprisingly, it still had plenty of meat (6.985mm is minimum). We decided to go for it! Two thou. more and the comm was "purr-fect" (still with enough meat for further comm trues). A thorough cleaning with Reedy Motor Spray (it clears the slots just fine), a drop of oil on each bearing and it was time to "stitch up" the patient.

During re-assembly we noted that stock Reedy spacer washers had been replaced with coarser washers from another manufacturer, with the armature incorrectly pushed towards the endbell. (If you must pull your motors apart, keep track of which washers belong to which end — the armature should float without bias in either direction.)

High tension! Had we saved this little Blue Dot? Would our boy still have a useful life ahead of him?

New number 6517 brushes (soldered to the endbell), 60 seconds running-in (at 6.0 volts), aided and abetted by a healthy squirt of Reedy Motor Cleaner, half an hour rest and recuperation (so that all traces of Reedy could evaporate) and it was Dyno time. (We decided to leave the timing as we found it, ie; at 2.5 degrees advance.)

FREE RUNNING 3.5 amps
1ST LOAD 33,800 RPM/10 amps
2ND LOAD 31,400/16.25 amps
CONDITION No arcing, smoother, stable current draw

Immediately we dropped surgical mode and commenced to plot how to liberate "Bluey's" owner of this very trick (not sick) motor. He didn't deserve it and it performed better than our best "team" Blue Dot. The moral of this story is TLC incorrectly applied and motor misuse. At the risk of offending the many who know more about motors than us, here are a few rules that we follow to keep our "Blue Boys" fast and mean.

1. Use only in 2WD. (ie; do not over-tax the motor).
2. Use Reedy No.6517 brushes — change each six runs (Blue Dots "eat" brushes).
3. Only clean inside the motor when you change the brushes. Run Reedy through the bearings, can and around corners. (Do not disassemble motor until it's due for a comm true.)
4. Clean and polish the comm with a rubber "Edge" stick. Use the "green" soft compound polishing stick.
5. Two drops of "Mobil-One" in each bearing.
6. Use stock timing (factory set to 2.5 - 3.5 degrees).
7. Use a final drive ratio of 10.5:1 as a starting point. (That's 108 tooth spur and a 21 tooth 64DP pinion on the stock RC10 transmission.) Undergear, rather than overgear — all Reedy motors like low gearing.
8. Comm true about every 20 runs. Use someone you can trust to do the comm true — watch them do it!

Finally, we'd like this opportunity to dispel the myth that modified racing is more expensive than stock. There isn't a motor sold (stock or modified) that has no more than 20 competitive runs in it at top level racing without a comm true. This means chucking out a stock motor (at \$50 plus each 15 to 20 runs). (Unless you cheat by opening the comm.)

Modified motors (at about \$120 each) can be comm true'd (for about \$10) many, many times. We log every run on every motor we have and some of our best motors have close to 80 runs on them and are still going strong.

Single class modified racing at club level should require only two motors and these (with knowledgeable TLC) should last over a year. If you race 2WD try a Reedy Blue Dot (for top end) and Gold Star (for grunt). If you're into 4WD try a Reedy Green Dot (for speed and grunt) and Gold Star (for duration). Keep 'em clean, keep 'em cool and save money going faster! (Like, who wants to watch the grass grow?)



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 Dogfighter, Losi JRX2 & JRXT
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Trinity 48P Spurs (Fantastic)
 Trinity 2.2 Wheels for Losi, RC10

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Associated Racer Packs **\$79**
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 (limited stock)
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Schumacher COUGAR

**Latest 2WD from the Fertile
Mind of Cecil Schumacher**
The Top Cat Sharpens its Claws!

It had to happen. In the beginning it was the highly successful CAT now enjoying a new lease of life as the ProCat. Then came the two wheel drive derivative — the Top Cat with its revolutionary lie down front shocks. This is still clawing its way successfully around many tracks but it has a couple of perceived problems. Firstly, the front end is a little too radical for some, especially the Yanks who can't comprehend subtlety.

Secondly, the sit-up-and-beg front shocks do offer some advantages in top level racing. Aerodynamics is not one of them! So, to appease the pundits the COUGAR was born.



EVOLUTION

The Top Cat was reviewed in D&T No.12 and most of Paul Bird's comments still apply. The front end is the most obvious change. The COUGAR'S more conventional layout features turnbuckle adjustment for the top suspension link (allowing camber changes), fully captive medium volume shock absorbers and no bumper or crash-back suspension. It might be more conventional but Cecil couldn't help throwing in a couple of good new ideas. The lower plate incorporates a "live" hinge which allows the whole suspension to pivot and thereby adjust the kick-up or caster angle. The steering bellcranks are curved to allow a narrow front chassis and the steering block design completely encloses the single wheel bearing and makes it maintenance free.

Ongoing improvements during the life of

the TopCat are also incorporated into the new COUGAR, such as new rear suspension arms and a smoother running gearbox. The outer rear suspension pivot pin was an early problem (it kept falling out) which Cecil's crew fixed in typical ingenious fashion by bending the end so it can be pushed home then latched into the hub carrier. You also get a sleeker body and wing to match. The latest CAT may not be revolutionary but it is evolutionary.

THE MORE THINGS CHANGE THE MORE THEY STAY THE SAME

Other good gear on Schumacher's 2WD machine has not changed. You still get a very efficient belt driven gearbox that is easily removed for maintenance, lightweight tele-

scoping driveshafts and sealed, easy to maintain rear hubs. Like the front, the rear suspension is fully in the modern idiom and adjustable for camber, toe-in and rake, or anti-squat. The tail-end motor is protected from shunts by a smart plastic moulding. Schumacher's wing mount is so good it should be copied by others. The wing is held down by stretched "O" rings which provide a positive but flexible fixture. Like the willow tree, the wing reacts to disturbances by flexing not resisting.

The result of all this smart thinking and good design is reflected in the finished weight of the Cougar. In a time when the propaganda dictates that "space-age" materials such as carbon fibre must be used for strength and light weight, the Cougar goes against the trend. Apart from a glass fibre front shock mount this machine is all aluminium and glass reinforced plastic. The result? A cheaper car that comes in right on the minimum racing weight of three and a quarter pounds without even trying. This weight is almost impossible to attain with certain American designs and CRP chassis. Goes to show what can be done with lateral thinking rather than cubic dollars.

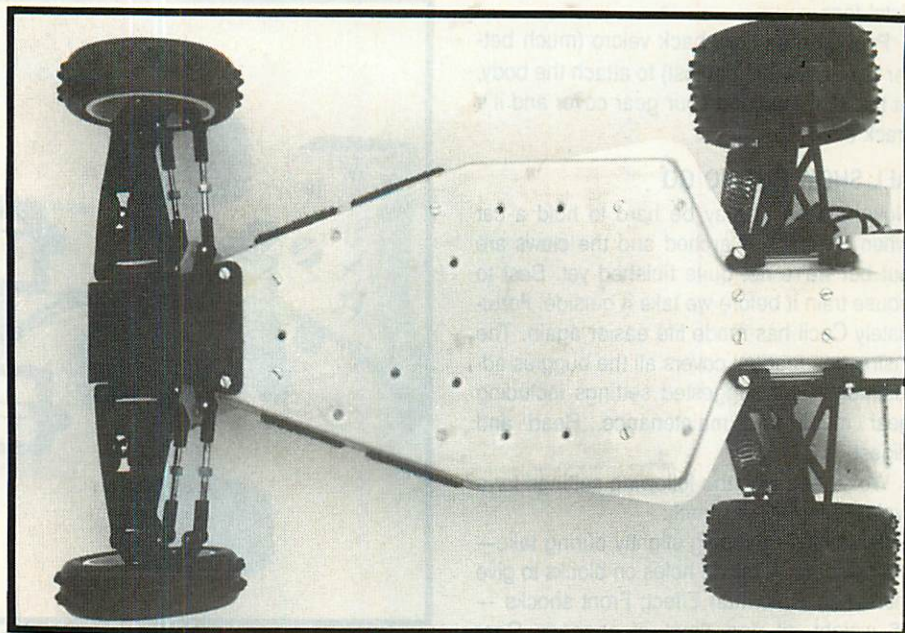
COUGAR CONSTRUCTION

Nowhere does the evolution of the Cat family reveal itself better than in the instruction manual. Gone is the scratched out directions and amateur presentation to be replaced by a work of art. Well, nearly. The booklet is now on thick glossy paper with a full colour cover and large clear diagrams. No excuse for not reading before you build!

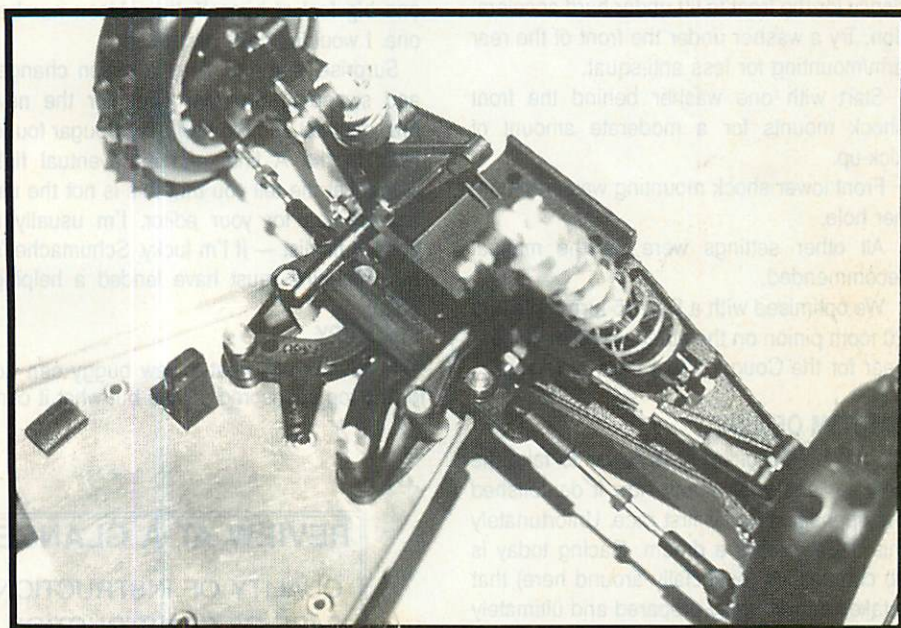
There is not much I can add to aid in building the Cougar — but as usual we'll think of something.

To prevent any damage to the "O" ring seals in the shocks it's a good idea to not pass the threaded part of the shock shaft through the seal. Push the shaft up from the bottom of the shock body and then assemble the piston. Although not mentioned until late in the instructions it's wise to fix the antenna tube very early in the piece to avoid dismantling parts later. Schumacher still advocates using friction paper (supplied) behind the drive washer in the ball differential but this seems rather crude. I prefer to epoxy the drive washer to its plastic carrier. One of the few after-market parts available, or indeed necessary, for the TopCat/Cougar are aluminium washer carriers for the diff. which are more accurate than the plastic version. However, I stuck with the originals for this test.

Having sung all the praises for this new Schumacher offering, it is time to find fault. There aren't many but no machine is perfect. Some of the plastic ball joints were very stiff in their balls. Squeezing with pliers helps but doesn't fully cure the problem. Fortunately the joints wear themselves in after a few runs and you are left with a good fit and no slop.



Pressed aluminium chassis is light, strong and has a smooth bottom.



Cougar front end is all new — part conventional and part innovative.

Be careful when pressing-in the tight ball links. The hollow balls are only brass and can be destroyed if held with pliers. I used a short metal tube and the vice to ease the sockets over their balls.

Design wise I could only pick two misde-meanors. The single ball race on the front hubs allows some wobble but this doesn't seem to get much worse with age; and the supplied battery holder doesn't work. It's too small to fit a typical six pack. The aluminium chassis is holed for many cell configurations but you will have to buy the optional holders. Fortunately they are pretty cheap. And finally, just to be consistent with every other kit I have reviewed, there were two threaded ball studs with no threads. Either the kit makers are in collusion to frustrate us reviewers or the metal fastener industry has a real quality control problem.

FINAL TOUCHES

Finishing off the COUGAR is a real pleasure. Unlike the plastic bathtub shape chassis of the cheaper cars there's no shortage of space on the aluminium pressing. Electrifying the Cougar is quite simple. As always, plan ahead and mentally nut-out your installation before proceeding. Position the speed controller rearwards to keep the wires short and electrically efficient, and the steering servo close to the bellcranks without fouling.

Window masks should be compulsory with all model kits and naturally Schumacher has them. They make body painting so much easier. Don't feel like spraying a Concourse colour scheme? No worries — Schumacher has included a colourful and imaginative set of stickers to jazz up the most boring body. Must have cost them a fortune in graphic ar-

tists' fees.

Peel off the sticky-back velcro (much better than clips that get lost) to attach the body, fit the nice moulded spur gear cover and it's track time.

ALL SHOW BUT NO GO

Now hold on. It may be hard to hold a cat when the back is arched and the claws are out but we're not quite finished yet. Best to house train it before we take it outside. Fortunately Cecil has made life easier again. The instruction manual covers all the buggies adjustments and suggested settings including gear ratios and maintenance. Read and digest.

We started with the following settings for a typical slippery dirt track:

Differential — Slipping slightly during take-off; Steering — Inside holes on blocks to give increased Ackerman Effect; Front shocks — 15 weight oil and 8mm of spacers; Rear shocks — 20 weight oil, 3mm spacers and second hole from outside on lower mounting.

With very powerful motors there is a tendency for the front to lift under hard acceleration. Try a washer under the front of the rear arm/mounting for less anti-squat.

Start with one washer behind the front shock mounts for a moderate amount of kick-up.

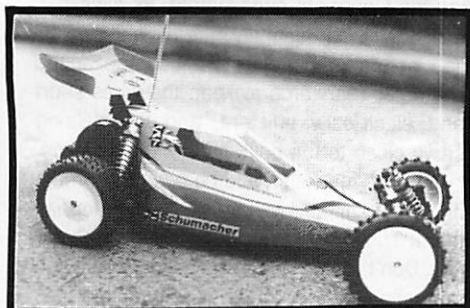
Front lower shock mounting was on the inner hole.

All other settings were as the manual recommended.

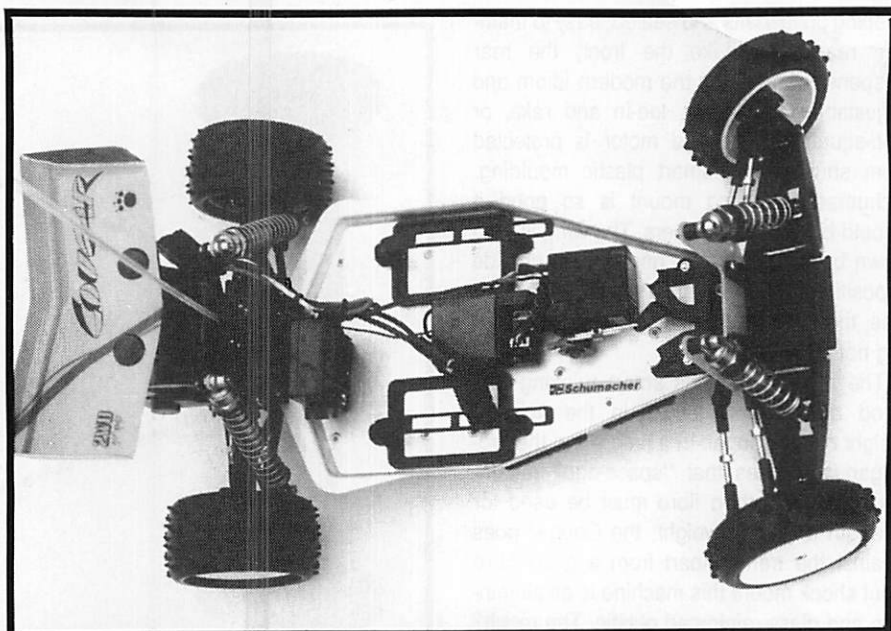
We optimised with a Dart 15 turn triple and 20 tooth pinion on the standard 95 tooth spur gear for the Cougar's first taste of racing.

BAPTISM OF FIRE

It's the dream of every reviewer to take the new car and write about how it demolished the opposition in the first race. Unfortunately this usually stays a dream. Racing today is so competitive (especially around here) that it takes a thoroughly prepared and ultimately equipped machine to get even near to the top of the heap. So there I was with the sparkling new Cougar, not a speck of dust having soiled the lexan, with no practice and no chance to set the suspension or optimise the tyres, and with only budget class electrics on board but other wise all fired up to meet the big boys in 2WD Open on our club's biggest



Schumacher's Cougar is a 100 per cent competition ready racer.



Chassis will accommodate many battery and radio configurations.

race day of the year. Dad's going to make one big fool of himself, thoughtson number one. I wouldn't have disagreed.

Surprise, surprise. After a pinion change, and swapping the rear tyres for the new Frewers, Mel and the now dirty Cougar found itself in the A final and an eventual fifth place. Let me tell you that this is not the usual position for your editor. I'm usually a good B finalist — if I'm lucky. Schumacher's new machine must have lended a helping hand.

SUMMARY

Ask yourself not what a new buggy can do for the top sponsored drivers but what it can

do for you. Schumacher's latest offering can now legitimately join the select ranks of world class cars but more importantly it is ideal for the average club racer, like you and me. And the price is the best around. Apart from the battery holder, it is ready to take on all comers without spending more money on upgrades. Fairly easy to build, rugged, reliable and easy to maintain and incorporating most of the latest thinking for high performance. Go on — sharpen your claws.

Review car supplied by Greneger Enterprises (02 905 6330) and available at all good hobby shops.

REVIEW AT A GLANCE

QUALITY OF INSTRUCTIONS	* * * *
EASE OF CONSTRUCTION	* * * *
QUALITY OF MATERIALS	* * *
MOTOR SUPPLIED	No
CHASSIS TYPE	Hi-Tensile, Aluminium Tray
SUSPENSION TYPE	Independent, Radial Arms, Fully Adjustable
SHOCK TYPE	Oil Damped, Sprung Shaft
SWAY BARS	None
BALL RACED	Yes
MOTOR ACCESSIBILITY	* * * *
BATTERY ACCESSIBILITY	* * * *
SPEED CONTROLLER	Not Supplied
BODY SHELL	Polycarbonate
BALANCE OF CAR	* * * *
HANDLING	* * * *
EASE OF SETTING UP	* * * * *
VALUE FOR MONEY	* * * * (\$325 RRP)

PB Phoenix

4WD/2WD by Ashley Cox



PB first released the Phoenix in 1988 and since then the car has undergone continued development right up to the recently released "1990" version, which has competed so successfully this year at both club and state level. Added to this, PB has now released a 2WD single speed kit and the appropriate update kits to convert a 2WD to 4WD, or even vice-versa.

REAR ASSEMBLY

Assembly starts with the new ball type differential. The advantage of the new diff. over the previous model, apart from its lighter weight, is that it can now be set looser without slipping. The diff. fits between two aluminium hangers which also carry the rear suspension arms as well as the layshaft, which is connected to the diff. by a short belt. The right hand hanger also extends up past the motor to the rear of the radio tray, making for an extremely rigid chassis. The suspension arms are unchanged but new axle locks are used; these are to accommodate the rear body mount which connects both left and right axle blocks and thus puts all the down force from the body straight to the rear wheels.

New alloy constant-velocity joint drive shafts are used on the rear and really do make for very smooth and efficient drive to the rear wheels. The drive shafts themselves, which use four steel balls in each end, have to be greased and are kept well protected by excellent protective rubber boots.

Also new to the "90" model Phoenix is the extremely adjustable alloy coil-over shocker, which also works well.

The rear end is finished with the fitting of the single disc brake to the layshaft, and either a two speed gear box or a single speed drive, depending on the kit purchased.

FRONT ASSEMBLY

The front suspension, which remains unchanged from the previous model, is built next and assembles easily in two, left and right hand, sections. In the 4WD version, when both sections are fitted to the chassis, the front axle is via a long belt from the rear diff. One-way roller

bearings are mounted inboard in the drive-cups for the front drive shafts. Beautifully made universal joints are used on the outer edge of the front drive shafts. The inner end uses the more usual ball and pin arrangement.

Of course the 2WD version comes minus all the front drive gear and it is a simple matter of assembling the suspension using special "non drive" front axles.

Torsion bar type springs are used on the front and can be easily adjusted with an allen key from underneath the car. Constant volume aluminium shockers finish off the front suspension.

RADIO

Radio installation is simple and straightforward with ample room for all radio gear. Both the receiver and battery pack are mounted underneath the radio tray on the right hand side. Once this is done all that remains is to fit the fuel tank and install the engine, all of which is well covered in the instructions.

SUMMARY

The Phoenix is not a difficult car to build and, most importantly, is easy to work on and maintain. The use of only two coarse tooth belts makes for probably the most free rolling car in the business, which must mean more efficiency.

Race results in both 4WD and 2WD classes this year show the Phoenix is a very capable car. Although only just released officially as a 2WD car, the Phoenix has been the class of the field at state level this year with the 4WD Phoenix dominating racing in SA all year as well as achieving good results interstate.

Let's Race !

Bodies and accessories for your buggy or model car from Frewer International, New Zealand.

1/10th BODIES

SEDANS

Porsche 911 Turbo & Aerofoil	\$34.70
BMW M3	\$31.22
Sierra Cosworth & Aerofoil	\$34.70
Peugeot 205 & Aerofoil	\$31.22
Metro 6 R4 & Aerofoil	\$26.46
Holden Commodore	\$31.22
Escort XR3	\$26.46
Ford RS200	\$31.22
Camaro Z28 Iroc	\$31.22
VW Baja	\$22.28

RACING BODIES

Midi (SWB Mid Optima)	\$22.28
Gull (LWB Mid Optima)	\$22.28
Dog (Schumacher Cat)	\$22.28
Protech (RC10)	\$22.28
Grub (Mini Mustang)	\$22.28
Progress	\$22.28
Dart & Wing (Hot/Super Shot)	\$22.28
Hornet	\$22.28
Mid LWB (LWB Mid Optima)	\$22.28
Underdog (Schumacher Top Cat)	\$31.22
Funco (RC10)	\$22.28
Meteor	\$22.28
Superstar (Bommerang)	\$22.28
Losi JRX2	\$31.22

LEXAN UNDERTRAYS

Midi (SWB Mid Optima)	\$12.15
Gull (LWB Mid Optima)	\$12.15
Dog (Schumacher Cat)	\$12.15
Meteor	\$12.15

TRUCK BODIES

Ford F150	\$26.26
Range Rover	\$26.46

AMERICAN WEDGE (Speedway)

Ford Thunderbird	\$31.22
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SPORTSCARS

Jaguar XJR 6 (Pro 10)	\$31.22
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SPRINT CAR (Speedway)

This body features both left and right handed separately moulded scale exhaust pipes. The most scale body yet

\$31.22

1/8th SCALE BODIES

SPORTSCARS

Elfin RHD	\$34.70
Elfin LHD	\$34.70
Lola T310	\$34.70
Lola T310 LHD	\$34.70
Porsche 917	\$34.70
Jaguar XJR 6 (Group C)	\$34.70

SEDANS

Mazda RX7	\$34.70
Corvette	\$34.70
Maserati Ligier	\$34.70
Holden Commodore	\$34.70
Ford Falcon	\$34.70
Ford Escort XR3	\$34.70

FORMULA ONE

Lotus Renault 94	\$31.22
Williams FW07	\$31.22
Brabham BT49	\$31.22
Ferrari 126C2	\$31.22

1/12 Scale BODIES

TOJ	\$18.71
Ford C100 (Group C)	\$18.71
McRae	\$18.71
Mazda RX7	\$18.71
Capri	\$18.71
BMW 635 CSI	\$18.71
Holden Commodore	\$18.71
Mini Stock Car	\$18.71
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BODY POST KITS FOR MOUNTING SEDAN BODIES

Frewer have four different configurations of body post kits that will mount virtually any Sedan or similar bodysell to any chassis. Four posts are used and the complete set up is very light and very strong. The bodysell will be very stable on the chassis.

UNIVERSAL BODYPOST KITS

Vertical Post Base	\$7.29
Horizontal Post Base	\$7.29
Angle/Horizontal Post Base	\$7.29
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Bodyposts Only	\$7.29

Illustrated information available on request.

WINGS / WING KITS

10"x3" Approx	\$7.67
9 1/2"x3"	\$7.67
8 1/2"x3" (sidedams)	\$7.67
7"x3"	\$5.83
6"x3"	\$5.83
6 1/2"x2"	\$4.86
5 1/4"x2" (sidedams)	\$5.83
3 1/2"x2" (sidedams)	\$5.83
4"x2 1/4"	\$4.86

UNIVERSAL WING KITS FOR 1/10th SCALE OFF ROAD

Available with either 6x3 or 7x3 wing, wing buttons, chassis mounting wign wire blocks, sidedams, sidedam retainer mouldings, all hardware and instructions.

6x3 Wing Kit	\$16.76
7x3 Wing Kit	\$16.76

SPRINT CAR WING KIT

Contains moulded main wing approx. 6" square, die cut main wing side dams, 4 wing buttons and hardware to mount dams to main wing (no gluing needed) A108 front wing and instructions.

SMALL WING FITTINGS

WING BUTTONS 2 wing buttons, 2 screws	\$4.37
WING WIRE BLOCKS 2 chassis mounting blocks and hardware to accept wing wire	\$5.58
SIDEDAMS 2 die cut polycarbonate	\$2.43
SIDEDAM & RETAINER MOULDINGS As above plus 2 glass nylon (L/H & R/H) mouldings that allow the	

sidedams to be fixed to the wing without glue. Foolproof. Cannot come off. Complete with screws and washers, Instructions.

\$5.34

FOAM TYRES

Frewer manufacture foam tyres for 1/12th, 1/10th, 1/8th and even 1/4 scale.

Frewer have seven available compounds that are widely used in top competition in most countries.

Compounds made by Frewer are colour coded as follows:

GREEN HARD Firm tyre mainly used as a 1/12th front tyre.

GREEN Firm tyre used in all scales

YELLOW Medium tyre used in all scales mainly as a rear tyre.

BLUE Medium tyre used in all scales which gives unusually good traction in dust and damp.

RED Soft tyre used in all scales but mainly as a rear tyre.

ORANGE Slightly less grip than Green used commonly as a 1/12 or 1/10th Front tyre.

BLACK Front tyre compound giving understeer — suitable all scales.

FREWER FOAM TYRE RINGS

FT101	\$2.91	1/8 — 1/10 rears
FT102	\$2.55	1/10 converted O/Roaders
FT103	\$2.55	1/10 converted O/Roaders
FT104	\$2.91	1/10 converted O/Roaders
FT105	\$1.70	1/12 rears
FT106	\$1.45	1/12 rears 1/12 fronts
FT107	\$2.30	1/10 Pro 10 (C.O.Roaders)
FT108	\$2.30	1/10 Pro 10 (C.O. Roaders)
FT109	\$2.30	1/10 Front Tyres

1/2 Rings (FT107 & FT109)\$1.70

NOTE

Above tyre rings cover 1/8th, 1/10th, & 1/12th in all compounds.

ON ROAD 1/10th (for converted buggies)

Semi Pneumatic slick tyres. (Complete set)	\$24.30
Slicks Rears Only	\$12.15
Slicks Front Only	\$12.15

NEW ! - NEW ! - NEW !

1/10 Body for buggy

Nissan King Cab	\$31.22
Peugeot 405 Rally (really wild)	\$34.70

1/10 Body for Pro 10 circuit class

Chevy Lumina Nascar	\$31.22
---------------------	---------

1/10 Buggy tyres

Some say these are copies of the latest Yokomo tyres but whatever, they are brilliant. Probably the "grippiest" tyre available and good life as well!

8 row by 24 spike rear tyre	\$14.45 pr
4 row by 20 spike front tyre	\$14.45 pr

1/12 body

Ford Cosworth Sierra	\$26.46
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Other

BBS style wheels for Pro 10 electric circuit cars.	
Front & rear set	\$15.60

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1. 1/10 Mercedes 190 E body
2. 1/10 VN Commodore
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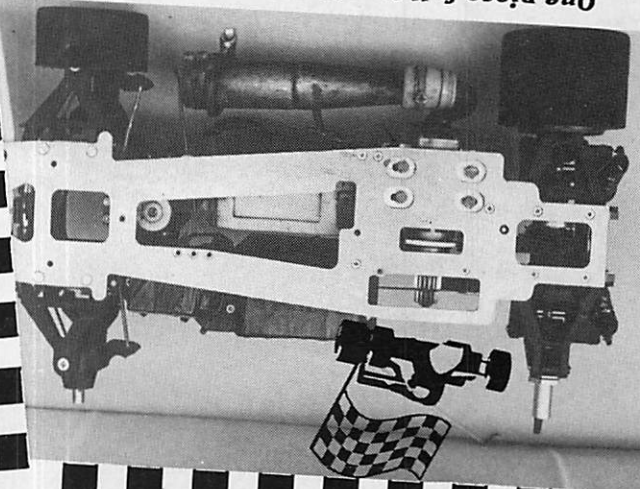
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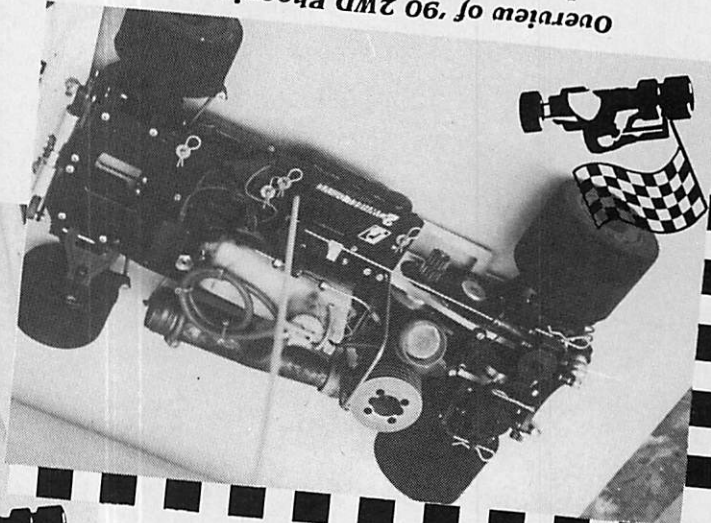
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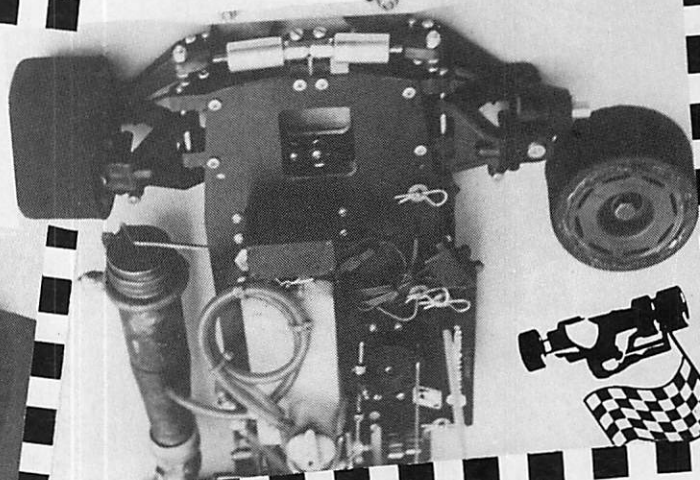
Overview of '90 2WD Phoenix.
A neat compact package.



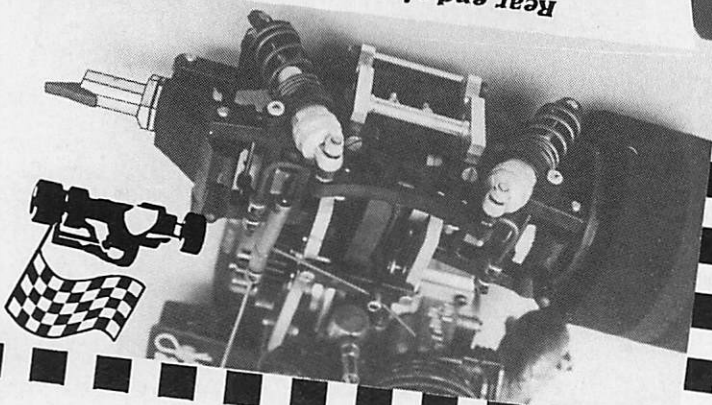
Front top wishbone which allows
adjustment of front wheel
camber and castor.



Front end view.



Rear end view and axle for
quick change rear wheel.

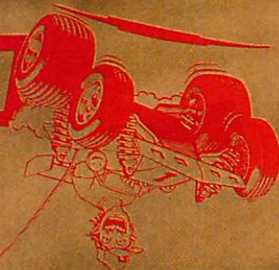


Rear body mount system which allows
aerodynamic downforce from the body to
be applied to rear wheels. This car has
plenty of rear wheel traction!





Radio Control Cars
for
DIRT & TRACK





SPEED SECRETS OF THE TEAM

by Mel Gillot

Number four in the series as we probe the successful racing career of current dual Nationals buggy champ, Riccardo Bartolozzi.

Model car racing may be all about high speeds, high tech. and big business but it's also about people. In the past we have tried to bring you the stories behind the names and the secrets behind the success. It began in issue number four with Troy Lysaght, continued with Andrew Bolton in number six and then the World Master, Masami Hirotsuka in issue number nine. Now we bring you arguably the most successful and experienced racer in OZ, Ric Bartolozzi.



Ric receives one of his many trophies — this time for the NSW On-Road Titles.

MOTIVATED IN MARYBOROUGH!

Although a modeller for more years than he can remember, Ric's car career began during a trip to Queensland in late 1982. It was in Maryborough that he called into a model shop and fell in love with the Tamiya Super Champ. Back in hometown Sydney he practised in the street (don't we all!) before discovering the St. Ives track and his mentor to be, Colin Greneger. Under Col's guidance the fledgling racer was steered in the right direction and inspired to improve. A couple of years down the track found our subject zip-ping around Dave Smith's 1/12th scale bitumen track at Merrylands with an old AYK. This started a long passion with the speedy and precise pastime that is 1/12th.

SUCCESS BREEDS SUCCESS

Who can ever forget their first big win? For Ric it was the 1/12th Queensland On-Road Titles circa 1985. He took the AYK Roadrunner to a win in modified at Surfers. Next year it was a similar story at the Victorian Champs at Ballarat where Ric was fortunate enough to have a chaindrive 4WD AYK on the slippery outdoor track. The last big one in this scale was the 1987 Qld. Titles again but this time the win was achieved with a Schumacher "C" car.

The Off-Road scene hasn't been forgotten. The old Super Champ gradually evolved into the Pit Stop Taipan which ultimately became a four wheel drive car using, can you believe, a flexdrive to the front MIP gearbox. The latter expended much energy and dollars during development but was instantly obsoleted by the appearance of the Japanese Mugen. This disappointment was enough to precipitate a temporary halt in Ric's car career and gave him an excuse to get married. Eight months later he was back with an RC10 which eventually lead to a victory at the Vic. Titles at Warnambool. Shortly after, his allegiance changed and we find him with his old mate Greg Collins, Performance Hobbies as his sponsor and a Schumacher CAT on the other end of his radio signal. This car was later changed to his present 4WD favourite, the world champs winning Yokomo Dog-

fighter. For 2WD he now races the Losi JRX2 and this car combination has brought Ric more wins than he can remember. Many successes in the St. Ives Cup, the Sydney Cup, a 2WD victory at the '89 Nats. in Melbourne and a win in every NSW Shield class including 7 cell. With Twister motors, Bullet battery packs and Purge speed controllers, 1990 has been kind to Ric. He won 2WD at the NSW Titles at Coffs Harbour and became the Bartolozzi blitz that swept everyone aside at the last Nationals in Adelaide. Get the Nats. video for more details. Finally, to top this unusually successful career we have just watched him win Australia's first really major 1/10th On-Road titles (NSW, at Crossroads circuit) to make it four in a row. A feat that will probably never be equalled.

RIC'S RACING ROUTINE REVEALED!

History and triumphs are all very well but it's time to get real — to focus on some of the procedures and technicalities that have got Ric where he is today. Experienced racers know that there are few secrets. Just a careful blending of all the many facets of the sport to achieve a winning combination of man and machine. But experience has taught a lot so we asked Ric to describe some of his successful racing routines.

BATTERIES

Sanyo SCEs are used exclusively for Unlimited class racing so a strict regimen is necessary to get the most out of these powerful but delicate cells, (see also the Tekin charger review this issue). Packs used are the Bullett Matched from Performance Hobby Supplies. As soon as possible after a race he will discharge the pack at 10 amps down to about 5.7 volts on an HI-IQ and note the energy remaining. This determines whether gearing etc. can be changed for an improvement. It's important to discharge quickly after a run since, if delayed, the cells can get lazy and not give their all next time. Packs are then fitted with a power resistor of around 33 ohm to drain all remaining energy.

This is removed when cool (a couple of hours or overnight maximum) and the packs left to recuperate for a week. Come next race day he likes to leave the charging as late as possible. Only for practice will he pre-charge the night before. Charging is done at a constant 4.5 amps linear to peak voltage cut-off using the HI-IQ again, then left to trickle until the race before his. A re-peak at 4.5 amps and it's off to the start grid. Ricardo says that a lower charge current gives slightly more capacity but slightly less speed. Usually a maximum of around four amps is recommended for 1700s but Ric says he has always used 4.5 and some of his good cells are now 18 months old. However, after 15 to 20 cycles he will re-match cells using a 15 amp discharge rate on his HI-IQ Senior.

MOTORS

Having and keeping a fast motor is certainly not the only consideration to winning races but it helps, especially at the top levels. Again, Ric was very open in telling us how he maintains the edge. Starting with a brand new motor, he will do two things. One; run the motor on a low load to heat up the commutator and then dismantle the motor and re-true the comm. Note, dismantling does not apply to Stock type motors that have fixed endbells. Stresses are produced in the copper when manufactured and these serve to distort the commutator during the first hot runs. A slight skim can work wonders at this stage. Two; whilst the motor is apart clean out the bearings and re-oil with Mobil 1. Ric says he has had excellent results with this synthetic auto engine oil in motor bearings.

From then on, he avoids pulling down a motor unless necessary or no sooner than 10 to 15 runs. Dismantling is done when required, not as a matter of course. After a race he will use the conditioning meter on a Kyosho motor checker to see if performance has deteriorated, but he says that simply listening to a running motor gives a good indication of condition. If it doesn't sound like it did when new then it's time to investigate further. Then there is the screwdriver test. This simply involves placing a small screwdriver on top of the brush of a restrained but running motor and checking for no more than a very slight vibration. Brush bounce is a killer of performance.

Motor cleaning is also done on the KISS (Keep It Simple - Stupid) principle. He connects up a four cell Ni-Cad and sprays a motor cleaner (Surefilm SS113, Reedy or Paragon) through the running motor from the endbell end. He says that letting a motor run free on six cells might sound impressive but

the high rpms overload the bearings and commutator. A Twister or Edge brand commutator cleaning stick is then used to freshen-up the copper.

Motor brushes may be used for up to 12 to 15 runs but he usually changes them after about six races for a big event. Brush wear depends upon factors such as motor advancement and airborne dust so they should be checked regularly. Riccardo runs-in new brushes for about five minutes on the four cell pack and sprays motor cleaner on the comm. every minute to keep it cool. He says it is important for the brushes to bed-in without overheating (too many volts) or without glazing the commutator (too few volts for too long).

MORE WORDS OF WISDOM

We thought Ric may have some fancy transmitter set-up tricks but we were wrong. Everything is linear or neutral. He doesn't believe in using any exponential on the steering control and would only consider exponential for the speedcontroller if he did not use the digital controllers such as the Purge and Novak.

What does he consider to be the most important technical factor to winning races? SUSPENSION and CAR SET-UP. Since the car spends most time in the corners and not on the straights then handling, not speed, is the deciding factor. Unfortunately it is not within the scope of this article to describe every suspension and steering set-up for every car and every track. Ric's advice is to look, listen, read and ask. In fact he is often to be seen helping other drivers who are doing just that. He is definitely not one of those self-centred competitors that we talked about in the editorial section last issue.

THE DRIVING FORCE

No matter how good the car, there is, of course, one factor that overrides all others — how it is driven. Ric's driving advice is simple but significant.

1. Check track condition before every race.
2. Watch the proceeding race.
3. Think and plan up to 10 metres ahead whilst driving.
4. During every corner, plan your strategy for the next corner.
5. Watch your nearest rivals and drive accordingly. There is no point in driving 110 per cent if they are well behind and not gaining.
6. Spend time in overtaking safely.
7. Keep a cool head.

Easy isn't it!

BANANA REPUBLIC?

Ric has recently run in two world championships. The Buggies last year in Sydney and the 1/12th just a couple of months ago in Singapore. We asked him for his thoughts on why Australia does not do better at this level. He answered without hesitation. Despite our intense competition scene and depth of very experienced drivers, no-one can compete with the big sponsored names. Their factory

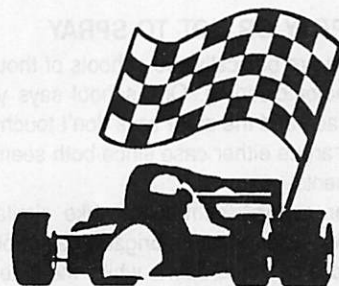
support is total and complete. For example, he has visited the Losi factory in California and seen the computer-aided design facilities and other technology that enables the factory drivers to maintain that slight edge. Some of the drivers actually work in the factory and therefore live and breath RC racing every day. It takes the occasional genius like Masami Hirosaka to break into this scene, and Australia, because of its small population, is less likely to breed genius. Off-putting isn't it! But don't let that stop anyone having fun.

ENTREPRENEURIAL TOO

Back to history and philosophy. In 1987 Ric could see the advantages of racing indoors on carpet (for super traction), something that was popular overseas, so he went about constructing and commissioning Australia's first carpet track. See D&T No.3. Here was an example of the self motivation behind successful men and women in all walks of life. You don't follow the path to the top — rather go where there is no path and leave a trail. Single-handedly he raised the considerable cash required to purchase the carpet and operated the club in a rented shed at St. Ives Showground as a reasonably profitable business venture. Moving with the times, this enterprise was sold (to the Kennedy brothers, see editorial in D&T 16) but it wasn't too long before Ric was encouraging another facet of the sport in the form of 1/10th on-road circuit racing at the famous Crossroads mini raceway. This era has just ended with Ric and the

LECRCC announcing the great news of a move to a very high profile purpose built tri-oval at Sydney's Magic Kingdom. See From the Driver's Seat for details. Amongst all this activity Mr. Bartolozzi continued to race the buggies and also found time to try his hand at the bigger stuff. As a break from the politics and pressures of electric racing he bought a Serpent 6000 Sprint in early 1989 and circulated with the 1/8th gas guys for a while.

Ric now has considerable experience in most model racing environments. Unlike some of his peers he is not too wrapped up in his own importance to realise his responsibilities and help others. At least this is our opinion, and we thank Riccardo Bartolozzi for his patience and assistance in preparing this article. It contains a wealth of good information for racers of all levels so take note and do yourself a favour. Whether methanol motivated or electrically encouraged, on dirt or on pavement, Ric's the racer's racer.





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• 13 TURN DOUBLE	• 14 TURN DOUBLE	• 15 TURN DOUBLE
• 16 TURN QUAD	• 17 TURN TRIPLE	• 18 TURN DOUBLE

These winds have been specifically formulated for Australian conditions - 6 cell, 5 minutes.

RECENT RACE RESULTS

- 1st ACT 2WD Junior Stock - Matthew Brown. More than 25% of Stock class drivers chose Paragon's Stock Motor
- 1st WA 4WD Stock - Guy Condor
- 1st Albury-Wodonga 2WD Stock - Jeremy Williams
- TQ same event - David Ferriggi
- 1st Albury-Wodonga 4WD Stock - Troy Burgess. 15 out of the 32 Stock drivers used Paragon Stock motors
- 1st ORRCA NSW Interclub Shield 2WD Stock - Matthew Brown. The first 6 placegetters in this class used Paragon Stock Motors! A total of 28 out of 64 entrants used Paragon Stock motors at this meeting.
- 1st Albury-Wodonga 2WD Open B Final - Matthew Roberts (RC10, 14 Turn Double)
- Three straight 4WD Open A Final wins at BORMAC to Jason Arnold driving a Yokomo CE powered by Paragon's 14 Turn Double and 16 Turn Quad.

WHAT'S NEW & WHAT'S DUE

RADIO CONTROLLED CARS ARE A TODAY ACTIVITY. HIGH TECH, RADICAL AND ALWAYS SOMETHING NEW. DEFINITELY NOT FOR THE FAINT OF HEART! HERE AT DIRT AND TRACK WE ARE LUCKY ENOUGH TO SEE MOST NEW RELEASES AND TRY SOME OF THEM. THAT'S WHERE THE PRODUCTS TESTS COME IN. BUT THERE ARE MANY ACCESSORIES AND SMALLER ITEMS THAT DO NOT WARRANT A FULL REVIEW — NEITHER SHOULD THEY BE OVERLOOKED. HERE'S WHERE WE LOOK THEM OVER AND TRY OUT AS MANY AS WE CAN.

TO SPRAY OR NOT TO SPRAY

There are basically two schools of thought when it comes to track-side motor cleaning. One school says you clean meticulously after every race and the other says don't touch the motor if it's going good. I won't argue either case since both seem to work for their respective proponents.

Motor sprays seem to provoke similar dissension. Basically the leave-well-enough-alone brigade do not object to the occasional spray to remove dust and debris whilst the other lot do not see the need for sprays. Stock motors can be cleaned by using all that excess body air (blow through it!) and open motors can be dismantled and cleaned. Take your pick.

We prefer to compromise. A quick check of motor condition at the end of a run reveals a lot. In dusty conditions a blow through the can is a good idea together with spraying the commutator. We have been using PARAGON FORMULA 1 motor spray with good results both on stock and open motors. At the world titles we noticed Mike Reedy cleaning his motors by spraying so the process cannot be bad. Of course Mike was using his Reedy In A Can.

In summary, motor sprays such as the Paragon ought to be part of every racer's field equipment and the most accepted uses seem to be: Cleaning dirt from around the bearings in Stock motors; Always re-oil the bush afterwards and do not spray through the ball races in open motors unless the bearing is to be removed and re-oiled; Spraying through all motors to remove dirt; Spraying onto the commutator of a running motor to help bed-in the brushes or clean the comm; When cleaning a dismantled motor, after the comm. has been cleaned with either a cloth and lighter fluid or one of the propriety cleaning sticks (eg. Edge), the spray should be used to clean any debris from the slots in the comm. Refer also to Birtles Motor /Brutality article this issue.

The Paragon Formula 1 motor spray contains a high quality blend of solvents that leaves no residue after use. It has a neat adjustable nozzle for low, medium and high spray rates. I would like to report that it is also ozone friendly but unfortunately the propellant type is not disclosed.

Available from Hobby World and Model Race Car World in Sydney.

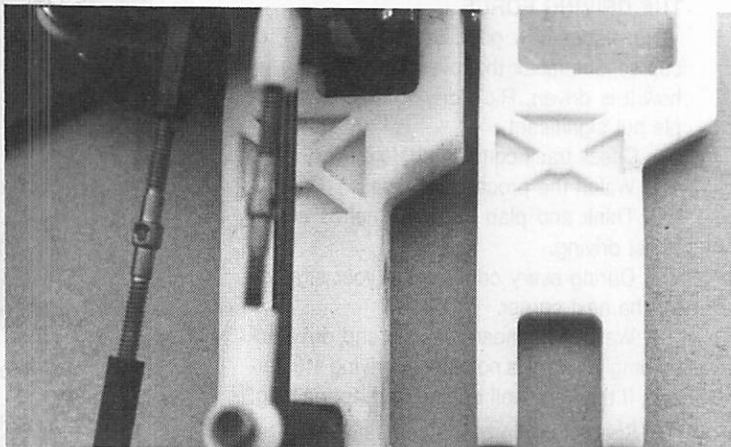


FOR COOL RACERS

Anyone who was at this year's buggy State Titles in Canberra will know what's coming next. The arctic conditions caused a few strange things to happen including unprovoked snapping of plastic parts. We had a Dogfighter suspension arm break without even crashing. Apparently it's all got to do with polymers, monomers and co-polymers. In other words, the type of plastic used. You may have noticed what happens to the garden hose in winter — the cold makes it stiff as the proverbial. This is a problem for the Poms and others who race in colder climes as they can suffer breakages unless parts are kept warm until just before a race. Kits that originate from cooler areas, such as the Schumacher cars, are at less risk but readers should be mindful of this phenomenon if they race in the cold.

As far as the Doggy was concerned Yokomo already had a solution — new suspension lower arms, colour coded white, that have their co-polymers (or whatever) changed to resist cold snaps. You can feel that the white arms are less brittle. The new arms simply replace the black-arms and are identical except for the change in material.

Talking about Yokomo suspension arms, it is now common practice to fit rear arms to the front suspension. This widens the front end considerably and gives the car more stability. However, the down side to this mod. is poorer turn-in and a tendency for the shafts to fall out of their slot in the sides of the diff. The former problem would only be worth considering on a tight twisty track and the latter can now be fixed with the new Super Long UJ set from Yokomo. Previously rear UJ/dog bones were used on the wider front but they were dangerously close to falling out. The Super Long UJ's will solve this problem. Part numbers are ZC 407C for the white arms and ZC 423 for the longer shafts.



White rear Dogfighter arms fitted to front suspension. Front arms shown for comparison. Note also TPS titanium turnbuckles.

FREWER TYRES

At the NSW Off-Road Champs earlier this year the merry team from New Zealand were all sporting new tyres by Kevin Frewer. This Kiwi manufacturer is well known worldwide for his excellent bodies (did you know that the JG or Gudgaven Manufacturing bodies popular in the States are actually made by Frewer NZ? It's true!) But now he has diversified into rubber moulding. It looks like he has a winner.

At first glance on the smaller rims it is advisable to glue on or use double sided tape to prevent the tyre from spinning on the rim. On 2.2



WHAT'S NEW & WHAT'S DUE



inch wheels they fit tightly, do not require gluing and give a very low profile.

On the track Mr Frewer must have done his homework (or got very lucky) since they really work well. The visiting Kiwis at Coffs Harbour were complaining that, if anything, the grip was too good on the damp track. After trying the tyres on various tracks we can only concur. At St. Ives my son made me take them off the Yokomo because they gave too much grip and he couldn't do Masami Slides at the end of the long straight!

The overall diameter of the Frewers is not as large as the Yokomo 30 series tyre that is now the standard in top level racing circles (but see Soapbox this issue for more comments), which could be a disadvantage on bumpy tracks but because of their super grip, wear rate and reasonable price, the new Frewers could become the standard for entry level and club racing.

ions wear, then take a closer look at yours. Chances are that the teeth profile will have changed slightly and be marked. This contributes, albeit in a small way, to gear noise and power loss.

Robinsons titanium nitride coated pinions are a step in the right direction and only cost a little more than uncoated steel pinions.

SEEN BUT NOT TRIED

The enterprising Dave Smith of Model Race Car World in Sydney also sent a few more items that we have not yet tried. However, from past experience we know that these products are worth considering.

Thorp Manufacturing, under its Dirt Burners label, now have transmission sets for the Associated RC10 and the Losi JRX2. Both feature the finer pitch 48DP gears and are of the usual Thorp quality. We tested the Thorpe ball diff. a few issues ago and were very impressed with this manufacturer's attention to quality. The RC10 package includes six parts and the JRX2, five parts plus miscellaneous screws etc., which is enough to revitalise each gearbox. Field reports show better wear characteristics and more strength when compared to the standard set-up, and the Associated 'box' should be quieter and more efficient with the finer pitch gears. You cannot expect to get a Rolls Royce at a Lada price so the conversions will set you back \$79 for RC10 and \$85 for the JR.

Dave also has a Stepped Diff Nut (sounds painful) by Edge, which is a clever little gadget for the RC10. This replaces the standard nut on the end of the diff which tended to work loose or strip its threads. The Edge product has more meat in the right areas and is cheap insurance for only \$3 each. Finally, MRCW has the titanium turnbuckles to make any racer leaner and meaner. They are by TPS and the six we fitted to our Yokomo cost \$45.

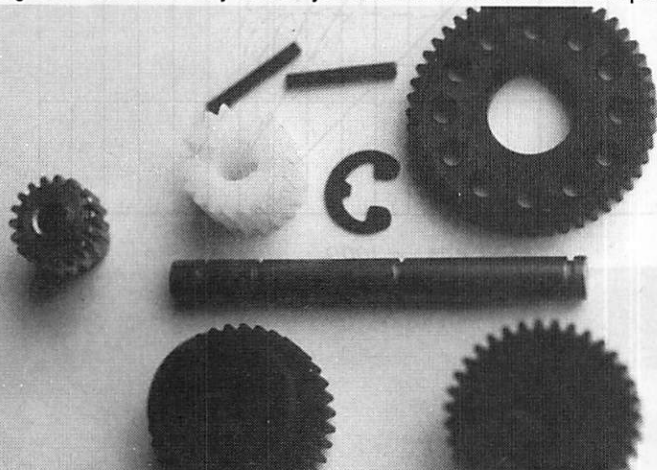
PROS AT AN AMATEUR PRICE

Electronics are still getting cheaper and better. Coming up next issue we will have a full review and test of two new electronic speed controllers (ESCs) by ARISTOCRAFT. These are already in the shops and are being snapped-up by budget conscious buyers. The Aristo PRO and PRO-X retail for around \$140 and \$170 respectively which puts them in the popular price range but their specs. read like more expensive controllers. Andrew Nelson (Wings N Things, Sydney) has tried the Pro-X in his two wheel drive buggy and is full of praise. Reports are that the MOSFETS are top quality and the ESC very smooth in operation. Ideal for On-road racing too. Watch this space next issue for full details.

Spy shot of the new Frewer tyres.

O-PINION-ATED

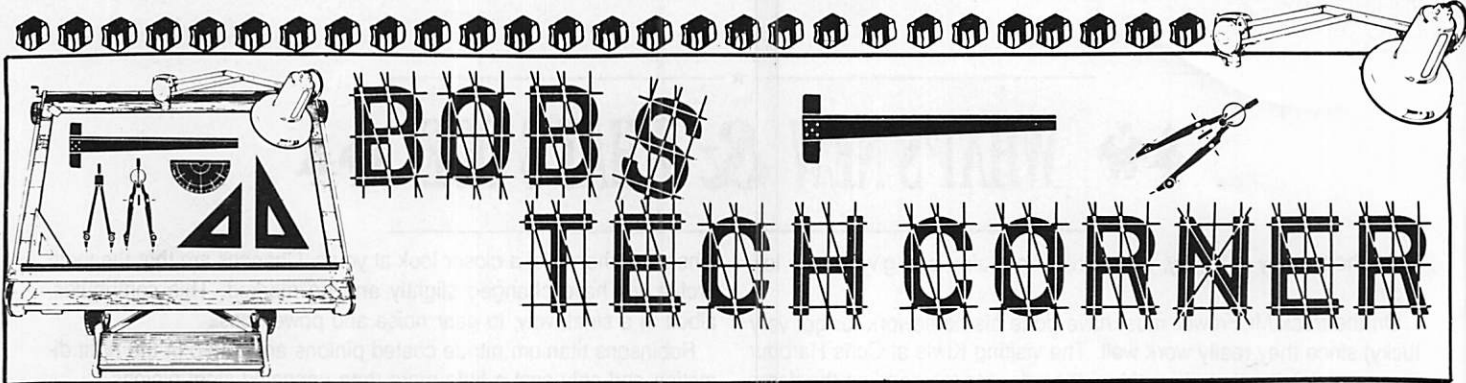
It would be easy to dismiss the new gold pinions from ROBINSON RACING as just another gimmick. They look too pretty to be serious. This range of motor pinions, now available from Model Race Car World in Sydney, is machined from steel and then coated with titanium nitride. Sounds impressive and the shiny gold finish really looks excellent but what else can they do? Well, we've been using a pinion for some time and can report that the beauty is more than just skin deep. The coating is purported to be more frictionless as well as harder and after testing we have no arguments. The first thing you notice is that the gears run quieter. It takes energy to make noise — energy that would be better employed driving your RC car — so the Robinsons score in the efficiency department. Our pinion is also showing no signs of wear after many runs. If you don't think that normal steel pin-



Thorp's transmission set for Losi JRX2. Robinson titanium nitride pinion is at left.



Tim Wearne, a very promising junior pictured at Bendigo "ZIG ZAGING" his way to a good finish. Photo: B. Mathews



MOTOR	PARAGON MODIFIED STOCK	PARAGON 14
COST \$	50	125
TURNS	27	14
WIRE DIAMETER mm	0.65	0.7
WIND	S	D
AIR GAP mm	-	0.5
MAGNET TORQUE Nmm	18	21
BEARING	BUSH	BALL
FREE RPM	ZERO	31
X1000	+6	27
FREE AMPS	ZERO	3.0
	+6	5.1
PEAK POWER	ZERO	78
WATTS	+6	38
PEAK POWER	ZERO	11
RPM x 1000	+6	7
AVERAGE RATIO	ZERO	1.3
	+6	1.7
TORQUE @		
N mm		
5k	ZERO	85
	+6	57
10k	ZERO	65
	+6	32
15k	ZERO	46
	+6	8
20k	ZERO	30
	+6	50
25k	ZERO	12
	+6	30
30k	ZERO	
	+6	
35k	ZERO	
	+6	
40k	ZERO	
	+6	
AMPS @		
5k	ZERO	57
	+6	28
10k	ZERO	45
	+6	18
15k	ZERO	34
	+6	10
20k	ZERO	23
	+6	29
25k	ZERO	12
	+6	17
30k	ZERO	4
	+6	7
35k	ZERO	
	+6	
40k	ZERO	
	+6	

Just two motors this issue, both of the PARAGON brand. First is the modified stock, that is this motor (as other modified stock motors) is 27 turns of 0.65 diameter wire. They usually have stronger magnets, bushed bearings and the timing is advanced by the manufacturer and locked or sealed end cap so the motor cannot be altered. A Mabuchi 540 motor has brushes you cannot get to and is also sealed but with zero advance.

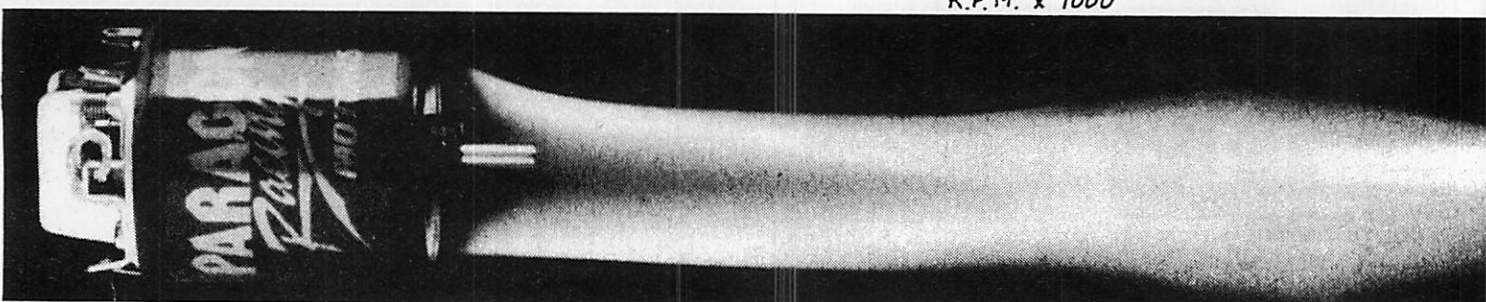
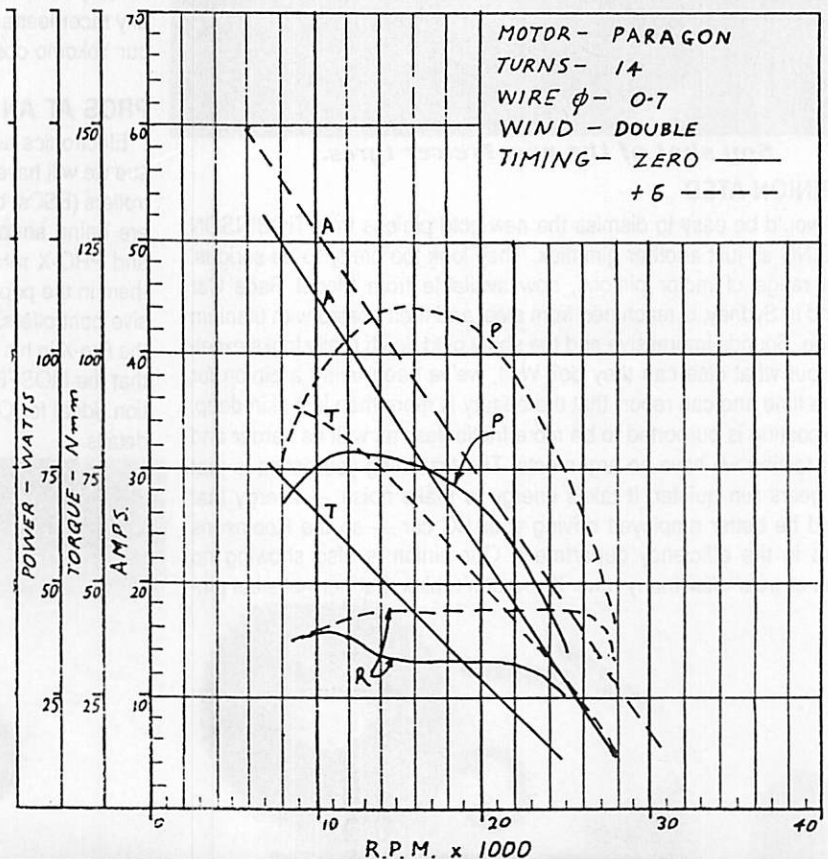
Well, the PARAGON Stock, free running, will rev to 27,000 RPM but apply a load and it quickly drops back to about 15,000. The amp draw is not too bad under high load but is high at 5 amps when running free (a Mabuchi 540 will run free at above 1.6 to 1.8 amps). You can see from the results the power is down also. I would think that a low gear ratio (9 or 10 to 1) should be used to reduce the loading and utilise the high revs. At

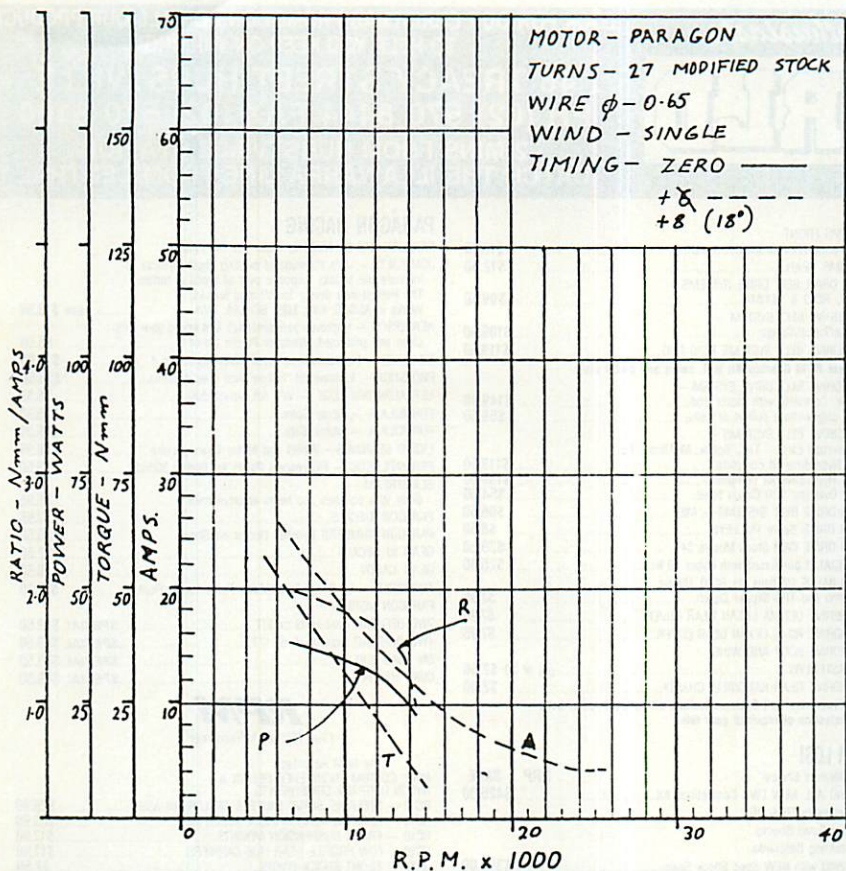
18 degrees advance it is made to rev, not produce torque.

The 14 turn double wound motor when advanced (to about 6mm at the outside of the casing) produces good results. You can see from the curves it will deliver plenty of power up to 110 watts at the mid rev range of 14-16,000 but at this power will pull 40-45 amps from the battery. Remember these tests are at full throttle under load and driving the car. It is doubtful all this power would be absorbed. What it produces is good acceleration and the power is still very good in the upper 20 per cent rev range, so with the correct gearing, this motor should do very well. It responds well to advancement as the different curves show.

Your editor has tried these motors on the track with good results and they are both winning races around the country.

- Bob Roach





A MATTER OF CLARIFICATION

Last issue we showed you this photograph of what can happen to a racepack by overcharging. It should be noted that this can happen to **ANY** brand of Ni-Cads if you abuse them to the point where their internal chemistry just won't take any more. Remember — it doesn't matter what brand you buy or how much you pay, lack of proper care and a disregard of proper charging techniques will end up costing you big bucks. Be warned!

DIRT & TRACK

RACING IN OZ

CALENDER

NOTE: Clubs and Associations are invited to send details of their major events for publication in this section. Notice must be received at least two months and no more than 12 months before the event.

DECEMBER 2nd

EVENT: Vic Shield 1/10 Rd 6
 VENUE: Hamilton
 CONTACT: Les Bone
 PHONE: (03) 743 1153

EVENT: Young Guns Shootout
 VENUE: Bormac
 CONTACT: Dave Smith
 PHONE: (02) 892 1463

JANUARY 19th - 20th

EVENT: Summer Invit. 1/10
 Off-Road
 VENUE: Nelson, NZ
 CONTACT: Bruce Clark
 9 Chisnall St, Nelson NZ

JANUARY 26th - 27th

EVENT: 1/10 Off-Road Nationals
 VENUE: Canberra
 CONTACT: Gary Davey
 PHONE: (062) 31 8306

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MONSTER TRUCK Conversions for RC10 JRX2 & Ultima. Includes wheels, tyres and body. \$99.50

CUSTOM STREET MACHINE including body of your choice. \$189.00

CUSTOM SPORTS MACHINE including aluminium rims/ treaded tyres and body of your choice. \$249.00

ALUMINIUM RIMS OFF-ROAD IND. ADAPTORS for RC-10, JR-X2, KYOSHO, TAMIYA. set of four \$89.00

ALUMINIUM RIMS ON-ROAD for Magnum 8 custom street/sports machine. set of four \$69.00

ASSOCIATED

RC10L ON ROAD. \$255.00

BEARINGS 3655 1/12 pair. \$18.50 \$15.50

BEARINGS 6902 1/10. \$18.95 \$15.50

BEARINGS 6997 1/12 & 1/10 pair. \$20.95 \$18.50

* Spare parts for RC12, RC10G, RC10L also available

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OPS 21 COMPETITION (6 port). \$275.00

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K02 Delrin for KYOSHO ULTIMA — 5mm Output Shafts. \$49.50

K18 GRAPHITE for KYOSHO ULTIMA — 5mm Output Shafts. \$59.50

K19 for GRAPHITE RC10 — incl. hardened output gears. \$99.50

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MOTOR CLEANER — LETRA CLEAN 5 litre bulk. \$12.50 \$10.50

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CHOOSING THE RIGHT MOTOR

One question many novice racers ask is which motor do I use, and how do I select the right one for my car?

Well, in order to choose the right motor, it is necessary to have a very basic understanding of some of the theory behind the electric motors which we use in radio control model car racing.

WHAT'S INSIDE

A motor consists of two magnets, which are attached to the inside of the motor can. These are usually called can magnets.

There are two types of magnets in use today; wet and dry. This term refers to the way the magnets are manufactured, and it is true to say that wet magnets are the stronger type.

At the top end of the motor is the end-bell, which holds the brushes at right angles to the magnets. The brushes are small pieces of carbon which carry electrical current to the armature, the section inside the motor which revolves and drives the car's powering.

THE ARMATURE

The armature is split into three sections called stacks. These are made up from laminated sections of sheetmetal, which have been cut to shape to provide three 'heads' on the central shaft.

A length of copper wire is wound around each head of the stack, and the ends of wire are connected to three copper segments, called the commutator, which are attached to one end of the main shaft.

The carbon brushes come in contact with these segments, putting electricity into the motor and making the armature spin.

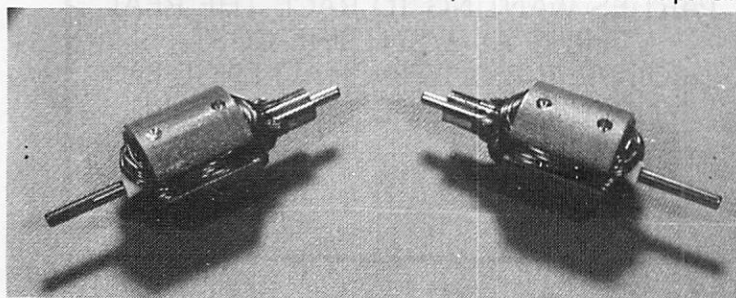
The number of times the copper is wound around each stack is called the number of turns, hence a 27 turn motor will have an armature which is 27 turns of copper wire wound around each of the three armature stacks.

But the wire is sometimes split into two, three or four strands, usually referred to as double, triple and quad winds respectively.

So, a 13 turn double motor is one which has a double strand of wire wound 13 times around each armature stack, and a 27 turn single is a motor whose armature stacks have just the single strand of wire, wrapped around them 27 times.

Another term often mentioned is wire gauge. This refers to the thickness of the wire used. Obviously, the thicker the wire, the fewer turns around the armature, and the more current, or power, the motor will draw from your batteries.

Generally, the more turns a motor has, the more smoothly it will react, and the milder it will be. Therefore, less turns mean more power.



The metals section standing clear of the main shaft is the stack, around which wire is wound.

MOTOR TYPES

There are two basic types of motor; stock and modified.

Stock motors are usually raced as a class in their own right, and are also a good starting point for beginners. Once you can control a car's speed and direction you can move on to the hotter wind modified motors.

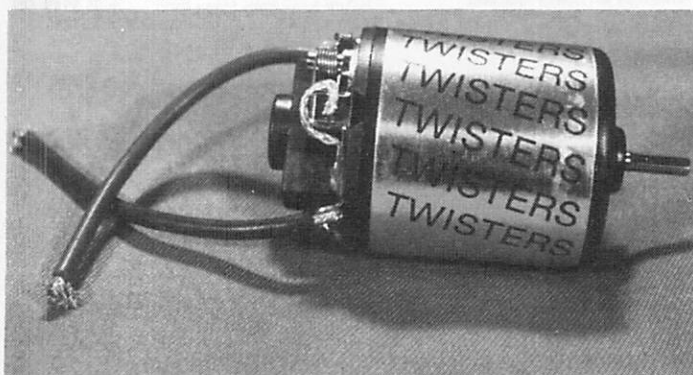
In Australia, stock motors are all 27 turn motors, using a specified gauge of wire. The armature is supported on two bronze bushes, and the endbell is fixed so that the timing cannot be adjusted and the motor cannot be tampered with.

Modified motors range in armature winds from 30 to 8 turns. Of course, the trick is to select the right motor for prevailing track conditions, your car and your driving ability.

Depending on the motor you choose, your gear ratio and battery duration will be affected accordingly.

In a modified motor, the armature is supported by ball-race bearings, and the end-bell can be rotated, changing the position of the brushes relative to the commutator and the can's magnetic field.

Altering the endbell's position changes the motor's timing, and can be used to tune a motor for more torque, or bottom end grunt, or more top end, or revs.



The outer metal casing is called a 'can', and houses both the armature and the magnets.

BREAKING IN

Like all new equipment, motors need to be run or broken in. The idea behind this is to allow the brushes to properly sit on the commutator and give maximum performance.

A cheap way of running-in a new motor is to connect it to a three volt battery pack and run the motor for about three minutes. The low speed seats the brushes without damaging the motor.

RADIO INTERFERENCE

Sometimes, an electric motor can cause interference with the radio gear, but this can easily be cured by using three capacitors. If they don't come with your motor, you can buy them from electronics stores.

You'll need two 0.1uf capacitors and one 0.47uf polarised capacitor. One of the 0.1uf caps is connected between the positive terminal and the motor can, the other between the negative terminal and the can.

The 0.47uf capacitor is connected between the motor's positive and

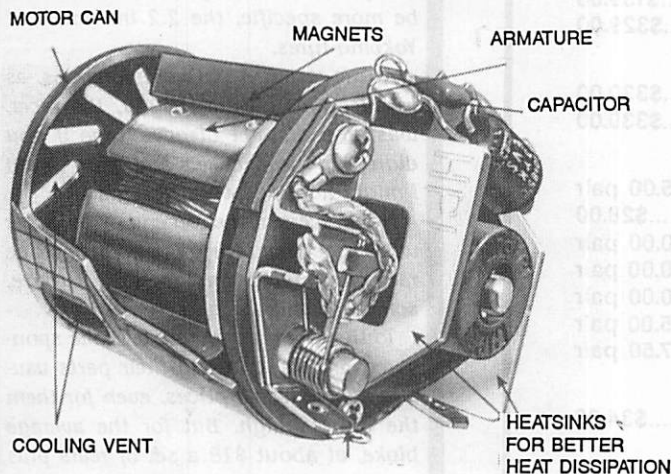
negative terminals. BE CAREFUL, THE CAPACITOR IS POLARISED, WHICH MEANS THE LEAD MARKED POSITIVE MUST BE CONNECTED TO THE MOTOR'S POSITIVE TERMINAL.

CLEANING

Finally, remember to keep your motor clean, and the brushes or bearings lightly lubricated. You can clean the commutator after every run by using either commutator cleaning sticks or a contact cleaner spray. A clean motor runs and lasts better.

WHAT TO USE

The following chart should give you an idea of what wind motor to use for different purposes, and different types of cars or buggies.



MOTOR CHART

MOTOR WIND	USE
27 Single	Stock Motor
21 Double	Made primarily for 1/12 use on carpet but would be OK as a mild motor in all off-road buggies.
20 Triple	Another 1/12 motor which can also be used for 1/10 bitumen racing, or as a mild buggy motor.
19 Quad	Very good all round motor for all classes of modified. Extremely quick for 1/12 carpet racing, 1/10 on-road or buggies. Also a good motor for monster truck use.
18 Double	Suitable for 2 or 4WD off-road, also on-road use.
17 Double	2 or 4WD off-road.
17 Triple	Excellent 1/10 flat track motor which will also work in 2 and 4WD buggies.
16 Single	A medium fast buggy motor to suit 2WD. Also 1/10 on-road.
16 Double	2 or 4WD off-road, but a smaller pinion gear.
15 Single	4WD off-road, or for experienced 2WD racers.
14 Double	A very fast 2WD buggy motor for good conditions. Otherwise, will suit 4WD.
13 Double	Very hot wind. 4 and 2WD but in good conditions only.
13 Single	Made for the driver who needs awesome punch, corner to corner, or for smaller tracks.
12 Triple	Excellent for 2WD on long tracks.

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Universal Servo Saver.....	\$7.50
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Tekin BC210 Reflex Charger.....	\$329.00

RADIOS

KO EX5 with CX2 speed cont. & servo.....	\$330.00
KO EX5 with CX2R speed cont. & servo.....	\$330.00

WHEEL & TYRE SPECIALS

RC10 Front Slicks.....	\$15.00	pair
Set of 4 donuts for Optima etc.....	\$28.00	
Off-Road front tyres for Frog/Hornet.....	\$10.00	pair
Low-profile O/R rear tyres Hard Surface.....	\$10.00	pair
Low-profile O/R rear tyres Loose Surface.....	\$10.00	pair
Adjustable Track Front Wheels.....	\$15.00	pair
Adjustable Track Rear Wheels.....	\$17.50	pair

BODIES 1/8

Lola T530 Canam.....\$34.00

BODIES 1/10

Mercedes Group C.....	\$30.00
Porsche 962 GTP.....	\$28.00
Jaguar XJR8.....	\$28.00
Toyota GTP.....	\$30.00

DECALS

Mobil No.1.....	\$6.80
Shell.....	\$6.80
Castrol.....	\$5.33
7-Up.....	\$5.74
Coke.....	\$6.80

MOTORS

8 Turn Single Modified.....	\$110.00
12 Triple Modified.....	\$110.00
13 Single Modified.....	\$110.00
14 Double Modified.....	\$110.00
16 Single Modified.....	\$110.00
17 Triple Modified.....	\$110.00
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SOAPBOX

I hope you can find space to publish this cry for sanity in our off-road section of R/C racing.

It deals mainly with our governing bodies, failing to come to grips with problems that are fast leading to the extinction of our sport because of costs. I refer in this instance to allowing the use of tyres and wheels — illegal in the U.K, Europe and in most parts of America. To be more specific, the 2.2 in. rims and Yokomo tyres.

At the recent ACT Championships, as in all major meetings, you, the racer, was at a distinct disadvantage if you didn't run these wheels and tyres — and I might add, at a very heavy cost.

Most racers at the top end of the scale will agree they are only good for one race, depending on the track surface, sometimes maybe two races.

To the favoured few, that is the sponsored drivers who buy their parts usually at wholesale prices, even for them the cost is high. But for the average bloke, at about \$18 a set of rears plus the wheels, it is exorbitant.

I know how difficult it is at O.R.R.C.A level to bring in changes, but it only requires racers to tell their clubs they want these tyres banned, have the delegate move a motion to this effect and — if all delegates have been instructed to vote them out — they are out.

In case some of you readers don't know the story of the Yokomo tyres and wheel, briefly it is as follows.

Yokomo came out for the International held at St.Ives before the World Titles. They took home a bag of soil (no I'm not having you on) and said that they would make tyres to suit.

In England, Europe and America there are tyres and wheel sizes laid down, but doing their homework, the Japanese found that in the IFMAR World Titles rules, the only mention of tyres was that they just be black.

As Australia has adopted the World Titles rules, they are officially legal here. Not so in most other parts of the world.

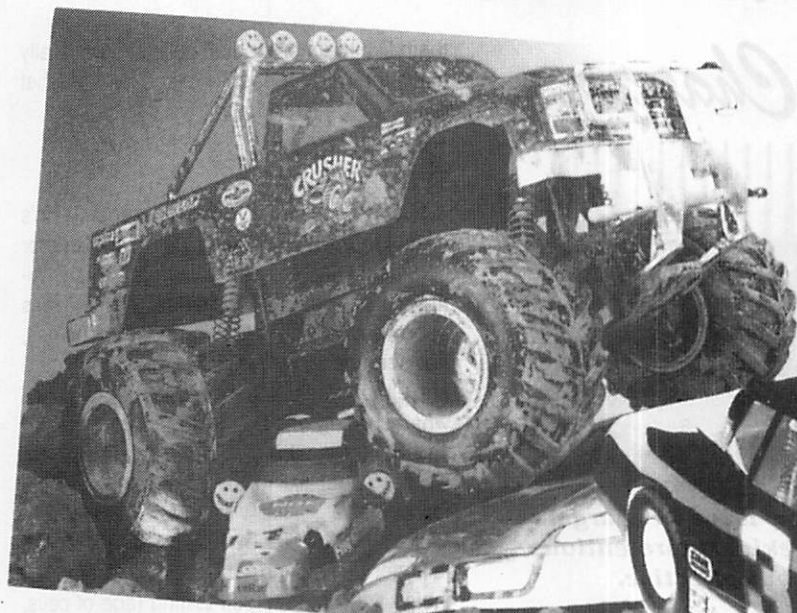
So now you know why to be competitive you have to spend so much money on tires and wheels.

There are many other aspects of high costs to our racing that I haven't the space to go into here, but I will at a later date.

In the meantime, you — the racer — run your sport, start taking a more positive interest, and do something.

• **Jack Greneger**

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The Turbo DC Quick Charger features a 30 minute timer, built-in trickle charger, auto shut-off and indicator light. Simply hook up to any 12 volt power source.

Has Panda/ Tamiya style battery connector.

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TEKIN BC 210 REFLEX

The New Wave in Chargers

THERE ARE CHARGERS AND there are chargers. Now there is the reflex charger from Tekin. A new wave, or to be more precise, a new waveform. This is not just the latest buzzword — the BC 210 actually discharges your battery whilst it is charging. Weird but wonderful. To explain why a charger should do such a strange thing it is necessary to know a little more about the Ni-Cad batteries we use in RC cars.

THE SCE STORY

In the beginning, re-chargeable cells were quite simple. The sub C size cell was only available in 1200mAh capacity and racers soon found that the Sanyo SC or SCF was the best. Then the SCR came along. Still 1200 but more robust and able to handle higher currents and the punishment that we dish out. Other manufacturers, such as Saft, produce equivalent cells. The extremely excessive charge and discharge rates that we subject the little cells to are frowned upon by all manufacturers but still the batteries survive to give good performance and a useful life.

Enter the Sanyo SCE.

It looks like any other Sub C but thanks to modern technology and a little bit of cheating, it actually packs about 40 per cent more capacity. This means that motors can run 40 per cent longer. When the 1700mAh cell was introduced a few years ago it attracted its share of sceptics. Too expensive — too high an internal resistance — not able to supply enough current — it will never catch on, were the cries. This criticism was soon proven groundless and nowadays the SCE can be bought for the same price as other cells and is responsible for the warp speeds we see in the Unlimited classes of racing.

Unfortunately the SCE does have drawbacks that are not so obvious. That little bit of cheating by the manufacturers enables them to pack more active material into the cell by reducing the thickness of the separators between the roll of chemicals. This, together with the new chemical make-up, simply makes the cell more fragile. This hardly matters when the battery is put to its designed use, such as in power drills and the like, but it matters a lot when you abuse the cells as we do. We now have to treat the 1700s with kid gloves and should obey the following laws: Don't charge above about 4.5 amps if you want your SCEs to have a decent lifespan (SC and SCF are quite happy at 5.5 amps and SCRs up to 10 amps); Don't let



***The new wave in chargers
from Tekin. Unpretentious
but effective.***

them get hot during charge, for the same reason; Let the battery recover for 24 hours or preferably seven to 12 days between charges. If you don't then two things will occur; the second discharge will only give as little as 80 per cent of capacity and you will significantly shorten the life of your cells. This last phenomenon is the real killer. The novice racer in his/her ignorance will merrily use charge-leads or clockwork, non constant current chargers (initially putting out about six amps), charge his new battery half a dozen times a day and be disgusted when he has to junk it a few weeks later. Scratch another potential champion.

Until we have SCR type cells available with 1700mAh then this is the situation today.

BRING IN THE CAVALRY!

Three years ago, just before the SCE was introduced, I was talking to Tony Haseler in Canberra. He mentioned the idea of a pulsed charger where the charge current is occasionally interrupted momentarily and a short negative (discharge) pulse is applied to the pack. The idea was that this would give a fuller charge. Unfortunately Tony emigrated to Queensland and him and his idea haven't been heard of since. Where are you Tony?

So finally we get to the new Tekin charger. This uses the idea that Tony advocated but Mr. Tekin has given it a name — Reflex. They claim that the short reflex pulse acts to break up crystal formation in the cell and help maintain optimum gas and chemical balance. The result, they say, is similar to what happens when you discharge a battery fully and let it rest for a few days. In other words, this charger will circumvent the problems associated with SCEs, allow you to almost treat

them like the more robust cells and generally make the world a happier place. At least that is the idea — but does it work?

THE D&T SCE MEGA TEST PROGRAM

First thing we did was to send Tekin's claims to the two major battery suppliers for comment. We are still awaiting a reply. Although we believe that reflex charging has been used in some leading edge industries, like aerospace, it seems that the manufacturers either don't know or don't want to tell what is going on. So, on the premise that if you want something doing — do it yourself, we set about trying to prove Tekin's claims for ourselves. This wasn't easy, even with Victor's HI-IQ (refer D&T No.14 and 16 for details) for cell testing. There are so many variables applicable to cell testing (age of cells, type and duration of discharge, recovery time, charge type and magnitude) and 1700s are so temperamental (if you look at them sideways the test results will change!) that facts are hard to come by. But despite all the excuses, we did get some results.

Generally, reflex charging works but with provisos.

New cells, say those with less than 10 cycles, will not benefit from reflex charging. If anything, performance will be reduced if reflex charged.

Older cells will benefit with one reflex charge. The amount of improvement is almost impossible to quantify because of the many variables.

The first reflex charge applied to older cells will give improved capacity. If subsequent reflex charges are used over a short timespan (like the same day) then performance will be maintained or will only drop slightly. However, if reflex charges are used over a longer timespan (after about 12 hours when the cells have had time to recover naturally) then capacity is reduced.

Cells should revert back to normal capacity if a linear charge is used following a recovery period of at least overnight.

To put those findings into track talk. A reflex charge after 10 to 15 cycles should show an improvement in the pack but don't use the reflex any more frequently unless you want to re-use the same pack more than once in a day. Basically, this confirms the comments included in the excellent instruction sheet provided with the Tekin BC210

FLEXING ITS MUSCLES

Even without the reflex feature this charger has all the accepted goodies. The

pulsed charge is switchable between high and low (soft) pulse and the reflex feature may be switched in or out. Even without the reflex, current thinking says that soft pulses are desirable for longevity of SCE cells whilst the harder pulses are for other types and for peaking all cells. It also has adjustable current from zero to 4.5 amps in the soft pulse mode or zero to nine amps in hard pulse. The fuse is easily accessible on the front panel, sockets are provided for a separate digital multimeter connection and the meter readout can be switched to read either volts or amps. Of course there is a pushbutton to start the whole box of tricks going and another pushbutton to give a four-minute timed charge and over-ride the peak voltage cut-off. Trickle charging is automatic both on connection and after fast charging and a flashing LED lets you know what's going on. There is no audible warning. Of course, the Tekins are fully protected against typical abuse and are one of the few chargers that can be used with a 12 volt battery charger without tripping the peak circuitry.

Everything works as advertised although one must be careful to check all settings before charging. The small current knob and its even smaller pointer are not for the near sighted. Maybe Mr. Tekin should get the assistance of an ergonomacist to help tidy up his front panels. Voltage readout was unstable during reflex charging which is understandable but I was surprised to note that

current drops off slightly during any charge. On the positive side the unit is small but very robust, runs cool thanks to a generous heat sink, and for amusement you can hear the cells ticking when the reflex is on.

CHARGING SECRETS?

Speaking of amusement, readers may be interested to hear about the competition battery charging method that is mentioned in the instructions. This is what they advocate for SCE cells.

For a totally discharged pack trickle charge for 15 to 20 minutes.

Fast charging totally dead SCEs is bad for them, they say.

Charge at four amps on soft pulse setting until peaked.

Leave on trickle charge (about 1/20th of the fast rate current) for two hours. This will add an extra 15-30 seconds running time, they say.

Fifteen minutes before racing, disconnect the pack and let it cool.

Finally, repeak twice on the hard pulse setting. Once at four amps and then at nine amps.

Wow! So much discipline and organisation is enough to take all the fun out of racing. Another reason why SCEs are such a pain. I should also point out that many "experts" recommend never re-peaking more than once, and the instruction sheet that accompanies Reedy SCE packs advises trickling no more than one hour, or voltage will be

suppressed. No wonder we are all confused when the experts cannot agree.

WHERE TO FROM HERE?

It is fitting that the claimed inventor of peak detection battery chargers should be the first with the new wave reflex charger. Tekin has always lead the way and one wonders whether reflex will soon be commonplace. At the moment, cost is the only barrier. The R and D required to develop this kind of sophistication and the complex circuitry required to make it work do not come cheap. Even in the States the BC210 is around \$100US more than the similar model without the reflex feature, and racers must seriously question whether it's justified. However, if only three or four packs can be saved or extended in life then the extra is quickly recouped. It may be worth getting together with a mate or three to buy the BC210 between you since the reflex feature should only have to be used every few weeks.

Buyers should have no fears about the reliability or durability of Tekin chargers. Most racers of long standing will testify to their excellent reputation. The long and drawn out SCE tests we performed gave us the excuse to really put this product through its paces over a long period of time. It never missed a beat and came through with flying colours.

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TRADE NOTES

New products from Frewer International New Zealand, imported exclusively by PB Model Cars Australia and their sister company Model Imports International. PB TRN (08) 356 8698



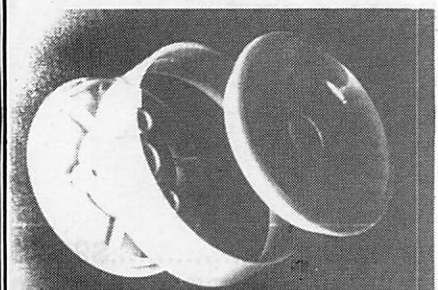
New body for 1/10 or Pro 10 Peugeot 405 Rally with wing. Rec Retail \$34.70.



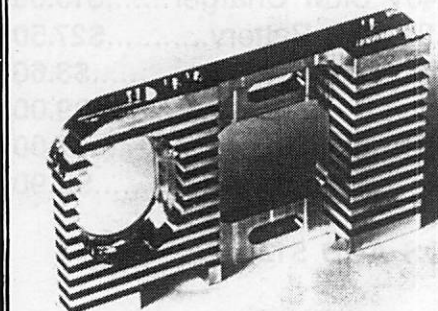
New body for 1/10 buggy or monster truck. Nissan King Cab with optional wing. Rec Retail body \$31.22. Truck Wing kits are available for both Nissan king cab and Ford F150 bodies. Rec Retail \$10.00.



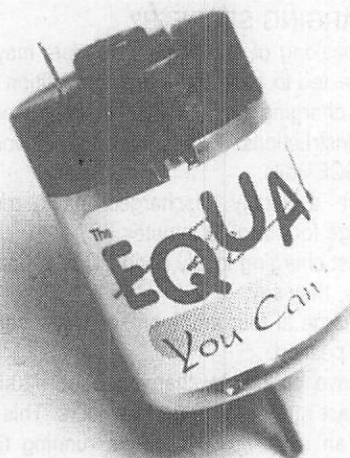
New body for 1/12 circuit racers. Ford Cosworth Sierra with wing. Rec retail \$26.46.



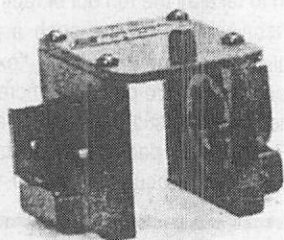
Associated three-piece front wheels for mounting two 1/8 inch front tyres without gluing them on. May be used over and over. Dealers contact Dawn Trading on (02) 666 4999.



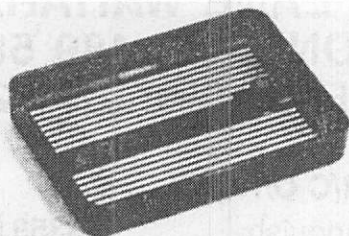
Team Associated Right Hand Aluminium Bulkhead with Cooling Fins for Associated's RC10L and RC12L. #4354. Dealers contact Dawn Trading on (02) 666 4999.



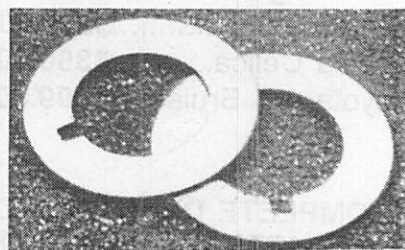
From Trinity comes "The Equalizer". This stock motor has been specially designed for stock car racing. The pictured endbell motor is tweak proof. No more brush or spring tweaking. The Equalizer will bring drivers back to the same level for better and fairer racing. Contact Trinity Products Australia: 46 Treacy St, Hurstville NSW 2220 Ph: (02) 570 8444.



Yokomo YZ10 Rear Bulkhead Part #7550
The RPM rear bulkhead is molded nylon tough. The great feature is a five position adjuster, so you can take the slack out of the rear belt as it stretches with stress and heat. The RPM rear bulkhead is about 20 per cent lighter than stock!



Small Parts Tray with Magnet Part #7050
The RPM injection molded parts tray is ideal for keeping small parts together during car, plane or boat maintenance. Measuring 2 3/8 inch x 3 3/8 inch, this tray features a magnet that keeps "very" small items like "E" clips together.



Notched Diff Rings
These diff rings give superior differential action owing to their tremendous surface hardness, extreme flatness (no distortion from notching) and lack of burrs. These features ensure the smoothest, most consistent differential action possible from any available diff ring — especially a notched diff ring.

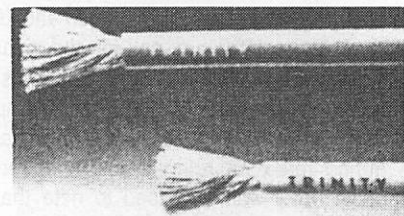
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TRINITY

Variable Servo-Saver

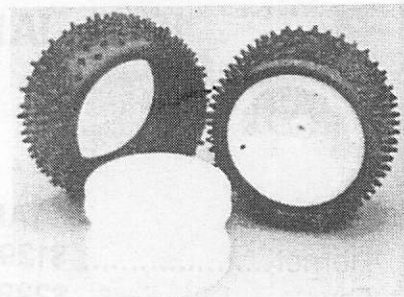
Trinity's servo-saver is designed with today's cars in mind. It has a number of linkage mounting holes that allow you to vary the amount of Ackerman in your front steering to suit track conditions. Made of high density filled nylon for maximum strength and resistance to twisting and bending, the servo-saver comes with mounting centers for Futaba, Novak and Airtronics servos, so you'll be able to use it even if you decide to change your servo or radio system. The servo savers are packaged under three different part numbers, and they're available assembled with the center that's marked on the package (the other two centers are in the bag). The included alignment tool makes changing the servo centres a breeze.



TRINITY

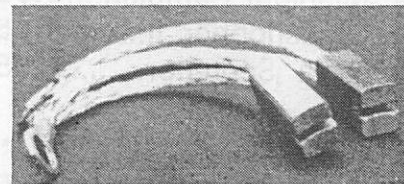
Jumper Cable

Trinity's new Jumper Cable is one of the largest, most resistance-free wires available for young R/C car. The Jumper is a whopping 12-gauge wire! Imprinted with the Trinity logo, the Jumper Cable comes in bright yellow (5068) or purple (5062), and it's packaged in 2 1/2 foot lengths.



2.2 inch Tyres & Rims

You've heard all the talk about the 2.2 inch diameter rear wheels and tyres used at the Off-Road World Championships? Now "Worlds-style" tyres are available to everyone! Trinity's awesome high-bite tyres are made of natural rubber in two compounds and two spike patterns to suit most tracks. Available for the JRX2, the RC10 and the Ultima.

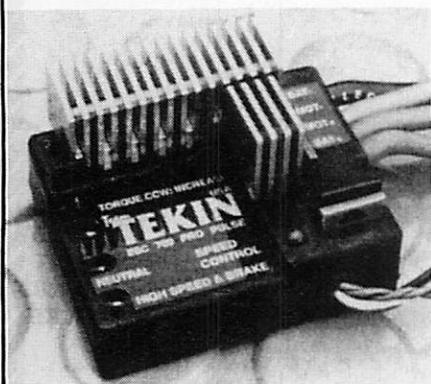


Slotted Dual Brush

Designed for today's motors, this new brush has dual shunts for the lowest resistance, a new non-glazing formula, and a slotted face for less arcing and heat build-up while still allowing better brush-to-commutator contact. These are the only brushes that allow the hot 8-14 turn motors to reach their potential performance.

TRADE NOTES

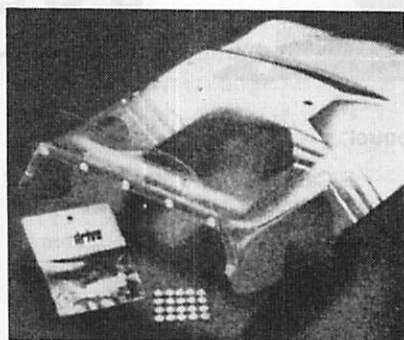
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The Tekin ESC 700 Pro Pulse electronic speed controller is designed for use with the brute horsepower motors common in 4WD modified racing. It has 11 Mosfets, one of which is reserved as a voltage regulator. The 700 has all the features of the popular, high performance controllers.

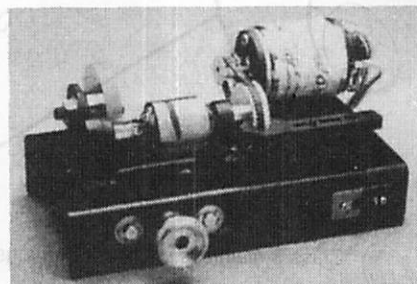
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Nylon Pop Fasteners

Extremely light and strong, these little fasteners can be used to attach spoilers, air dams, etc., to bodies and wings. Lighter and cleaner than servo tape, they're also re-usable. Product no. AC 0103.



MAGIC MOTORSPORTS Commutator Machine

As a motor runs, the brushes wear grooves in the commutator. Previously, you needed a \$500 lathe to re-true your commutator and keep your expensive modified motor running like new. Now, Magic Motorsports introduces an economical machine that will restore your commutator by grinding it to a perfectly true, smooth finish for maximum power.



TRINITY Torkzilla

The Torkzilla was designed for 1/10th scale high-banked oval racing. This motor produces massive amounts of torque owing to its single wind, it's excellent on tight tracks and has the proper power band for oval racing.

The Torkzilla has a Trinity can with new, high-density, two-stage wet magnets; a high-temp, graphite-filled composite endbell; grade-7 precision ball bearings; medium-tension springs; No. 4038 soft brushes; and 13 turns of heavy single wire.

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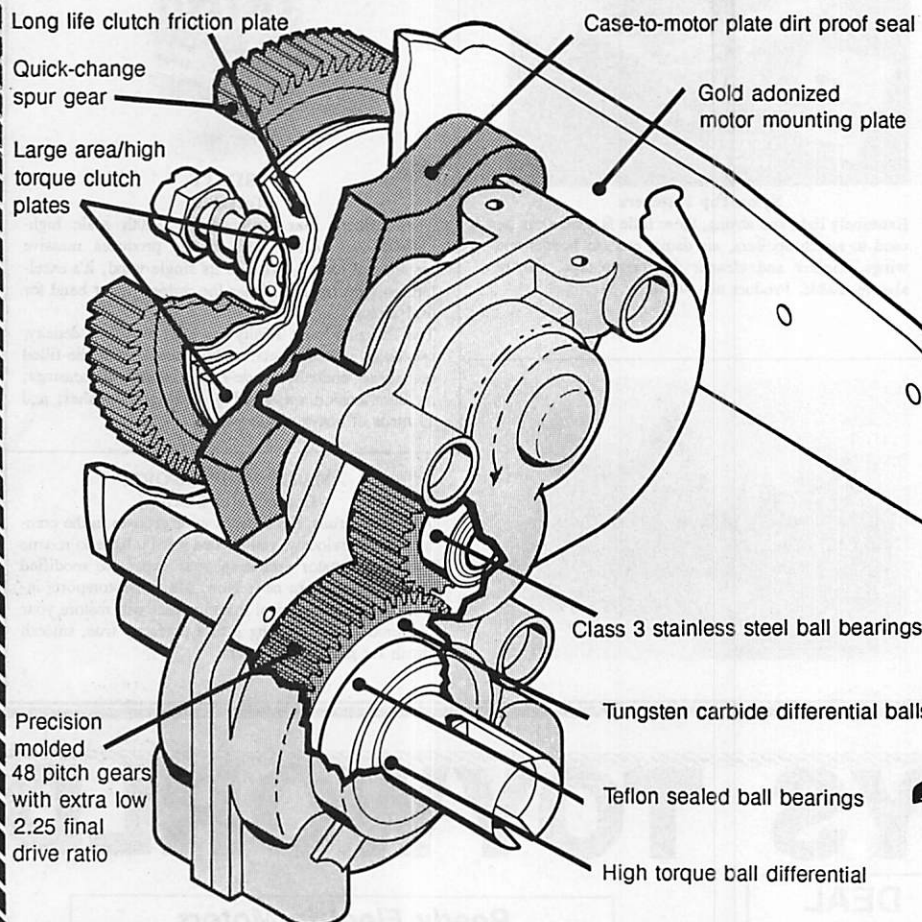
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— RESULTS —
1990 1/8 AUSTRALIAN CHAMPIONSHIPS
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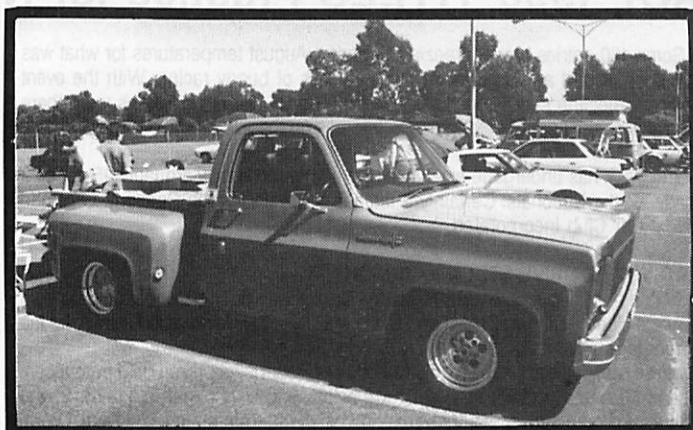
				LAPS	TIMES
1. Andrew Reade (SA)	PB Model Cars Aust.	PB Phoenix	Rex O'Donnell	119	1808.69
2. Stewart Grant (NSW)	Serpent Model Cars Aust.	Serpent Sprint	Paris	119	1810.89
3. Ashley Cox (SA)	PB Model Cars Aust.	PB Phoenix	Rex	114	1801.16
4. David Braund (WA)		Serpent Sprint	S-Power	113	1804.02
5. Devin Soltoggio (WA)		PB Phoenix	Rex	111	1809.95
6. Gary Culver (UK)	Serpent Model Cars Aust.	Serpent Sprint	Paris	101	1811.82
7. Ron Prins (VIC)	Eastern Hobbies	Serpent Sprint	Paris	100	1814.79
8. Chris Reade (SA)	PB Model Cars Aust.	PB Phoenix	Rex	95	1803.30
9. P. Pongrai (Thailand)	Custom Model Cars Aust.	Serpent Sprint	Rex Maxima	50	1800.06
10. Tony Warren (TAS)	Warren Racing	Blitz	Paris	48	732.58

TOP QUALIFIER: Gary Culver (UK); 42 laps, 608.00

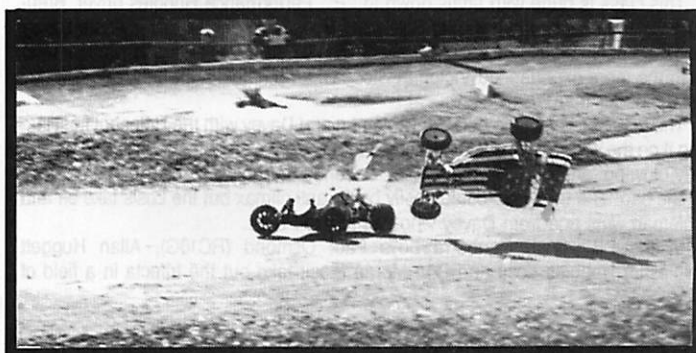
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(time for new people to "learn the ropes").

WORLD TITLE QUALIFYING — Round 2

The Off Road Radio Control Association of Australia would like to thank the Sydney Radio Control Off Road Car Club of New South Wales for hosting Round 2 of the World Title Qualifying events and a special thank you to Tasmania and Victoria for their assistance. ORRCA Australia apologises for the unfortunate problems that occurred with the scoring system.



Pictured at a recent Melbourne meeting was the magnificent Chev Cheyenne Super 10 being used as a mobile pit. The paintwork must be seen to appreciate it. Photo: Saville Coble.



Inverted overtaking! Not a recommended method for winning races. Photo: Saville Coble.

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ACT 1990 TITLES Practice for Nationals '91 plus Sheepstations!

Some 160 entries braved freezing Canberra August temperatures for what was a well organised and most enjoyable two days of buggy racing. With the event holding selection status for the 1991 World Titles, all the big names were there plus a large contingent determined to impress on the site for the Nationals in January, 1991.

The track has undergone extensive upgrading and is now arguably 95 per cent ready for the Nationals. Certainly a feather in the cap of the Canberra Off Road Model Car Club Incorporated.

TWO WHEEL DRIVE STOCK — JUNIOR

With a healthy bunch of drivers we see Daniel Watt put his Cougar on Pole from Michael Head, Matthew Brown and Craig Mazik — the Illawarra kids strike, let the others try an' catch 'em!

Three runs later and the RC10G of Matthew Roberts has taken gold from a consistent Michael Head with David Crowther blasting his Cougar into third. Shane Whitaker takes fourth in his trick Bolt-on Losi JRX2 from an unlucky Daniel Watt.

A special mention to hardworking local drivers Mark Wunderlich, Graham Walker and Scott McArthur. When these dudes can convert some of their working effort into race rewards they will be "A" finalists — cowabunga!

TWO WHEEL DRIVE STOCK — SENIOR

This class is huge with finals down to "E". Performance Hobbies driver, Brendan Coleman takes his Losi into Pole from Holeshot Hobbies driver Adam Davey using a Losi in his first major 2WD event. The tussle between these two is a treat with the more experienced Victorian Stock Champ holding out the Canberra guy by a slender margin.

The first final is a battle between Coleman and Davey with the Holeshot Losi taking it on the wire. Second final and the Canberra boys are cheering with Adam Davey blowing 'em away — a win by 12 seconds and the host club has first place in the bag. The third final could easily be an anti-climax but the Losis take off and Coleman wins one from Davey who has relaxed a bit.

In the "B" final, Canberra boys Paul Osmond (RC10G), Allan Huggett (Holeshot Hobbies Losi) and Don Moran (Losi) take out the trifecta in a field of class.

TWO WHEEL DRIVE MODIFIED

A good 16 laps is needed if you want a look in — help! The track is most demanding at WARP 3 and beyond. Unlike the Stockies these guys use the full straight and closing speeds into the banked but evil sweeper are very, very high. David Crowe TQs using his Performance Hobbies Losi.

Second place on the "A" final grid goes to likeable Andrew Nelson flying the flag in a big way for Team Schumacher with a mega-speed LRP-powered Cougar.

Reece Birtles has placed the Stealth Machine in third from another Cougar/LRP missile driven by Brett Willoughby. Pure action promised — for sure!

Final one and Schumacher pride is flying high — the Nelson and Willoughby Cougars howl. Nelson is three seconds clear of Willoughby at the line with Birtles and Crowe back a teeny bit — all have done 17 laps.

The second final is faster with the 17-laps club reduced to three. Cougar wins by a decisive margin and Nelson has the whole thing in the bag! Birtles comes back for Associated from Crowe's Losi JRX2. All others are back on 16 laps.

Nelson's runaway wins could have meant an anti-climax in the third — like hell! Nelson and Birtles run wheel to wheel for five minutes of power-on action. At the line we see Reece take one from the Cougar — by 1.21 seconds. Less than a blink, more than you think.

Ladies and gentlemen, we now have three major forces in 2WD — the RC10G (in various forms), the Losi JRX2 (long wheel base only please — watch for the NEW JRX-PRO, you read of it in D&T first!) and now the Schumacher Cougar.

By January the battle lines will be in place. Can Cougar take out all classes? Will sufficient talent defect? Only time (and your trusty Dirt and Track) can tell — stay tuned, as they say in the classics.

FOUR WHEEL DRIVE — JUNIOR

Disappointing numbers in this class but the youngsters enjoyed themselves a heap — specially Frank Lamanna who hauls it in a big way with his trick Dogfighter. Frank grabbed TQ from David Crowther (CAT), with Daniel Watt (Procat) and Michael Dawidowicz (Dogfighter) on the second row.

Final one sees a boilover with Daniel Watt pinching a win from Lamanna and Chan. These boys have raised the ante to 18 laps an' things are getting real tough.

Final two sees a real brawl with Chan and Dawidowicz gaining another lap to post 18 — problem is that Lamanna, Crowther and Watt have all decided to raise stakes to 19!

The third final is tense with points pretty close. No sweat says Franky — cop 19 laps you guys an' they all fall down. Crowther cruises home from a revitalised Chan but the game is over and we see first place go to Frank Lamanna, second to David Crowther and third to an unlucky Daniel Watt.

FOUR WHEEL DRIVE SENIOR STOCK

In a strong field several drivers stand out. Lyle Harbour TQs with his Procat from Brendan Coleman (Dogfighter) with Canberran Scott Blair in third (Procat). The balance of the A final grid consists of Andrew White (CAT), Brett Sainsbury (Procat), Adam Beniston (Dog), Keith Barton (Dog) and Brian Smith (Procat).

The second final sees Coleman knock 'em dead with a cool run — close to one lap ahead of the Procats of Brett Sainsbury and Brian Smith. White posts his second fourth with his venerable CAT.

Third final sees the money up for grabs with Coleman on 18 points from Smith, Harbour and Sainsbury. Coleman needs to beat Harbour to win, Harbour needs a win badly, Smith can only finish second or third, while Sainsbury is trying to make the top three — hell, how tight does it get?

Harbour puts up big and leads from start to finish from an equally talented Coleman. In winning the last run, Lyle takes the Championship — and posts the fastest ever seen on the demanding Canberra circuit.

The B final goes to Rami Holsman with an electrifying 19.623 — next time Rami, next time! As an observation, there were two PBs running in the Championships — one driven by Mark Mason (of course), the other a rare ACE was driven into the C final by local lad, Ian Buckham.

FOUR WHEEL DRIVE MODIFIED

To the master blasters and we are witness to a fine battle between the Procats and the Dogfighter derivatives — YZ10s, CEs, factory specials etc.

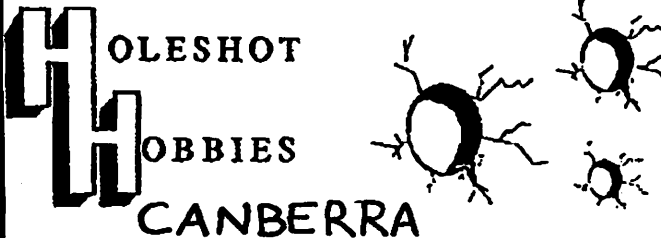
Performance Hobbies driver David Crowe TQs with the YZ10 from Schumacher drivers Darrin Campbell and Andrew Nelson. Fourth spot on the grid goes to Illawarra's Andrew Gillot (YZ10). Yokomo factory driver Reece Birtles is in fifth with Michael Chard (YZ10) in sixth, Andrew Jackson (Procat) in seventh and Ross Kramer (YZ10) claiming last spot on the grid.

The first final is breathtaking to watch with Crowe finally beating the Campbell LRP-powered Procat by less than one second. Nelson's Procat is only 0.08 back with Andrew Gillot a scant 0.09 ahead of Birtles. The others are shell-shocked — one lap in arrears.

Final two sees another Yokomo win. This time Birtles gets it right with the fastest time ever posted on the track, an 18.510.78.

As the third final starts we see that things are very close with the top three separated by only a few points. Although Crowe looks favourite, a poor place in this race will see a dramatic change in the end result. Campbell and Birtles are level-pegged with Nelson poised to move in on ANY little error. Andrew Gillot has also shown his mettle and is capable of moving up easily should the leaders falter.

Birtles may have set a record track time in final two but this is very short lived as David Crowe and Darrin Campbell blast the Canberra track apart with a withering run which takes everyone to a heart-stopping finish. These two (one Yokomo, one Schumacher) treat us to a spectacle which sees David beat Darrin by 0.66 of a second — a bare margin indeed. Back a few split seconds we focus on another Yokomo versus Schumacher struggle — this time Reece Birtles just holds out Andrew Nelson using his very standard Procat. Continued on page 53



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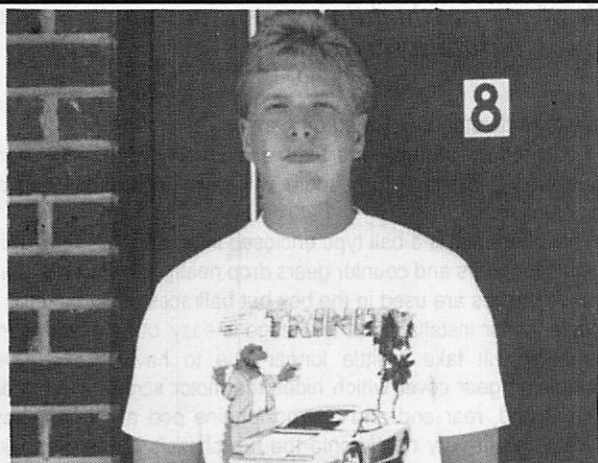
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— NEWS UPDATE —

IFMAR 1/12th WORLD CHAMPION

Pictured left is the new IFMAR 1/12th world champion, Chris Doseck. Chris took out the title together with concourse. Obviously a Trinity powered driver.



2WD MAD FUN

by Laurie St John

Some time ago I promised my two kids that I'd update their RC cars to something that could and would give them fun and durability in an RC car. Both of my two budding racers are anything but kind to RC cars so my first criteria was durability and price.

Many years ago yes, we all get older, my first off-road car was a Tamiya Sand Scorcher — this really is revealing a few things now! One important design aspect of the Sand Scorcher I really liked was the Tub chassis. Tough and durable! Visions of my old Sand Scorcher poured back to me when I had a peek at the Madcap, but that was where the similarity ended.

The front end arrangement of the Madcap is substantially stronger and seemed to be just what the doctor ordered for my two apprentice car destroyers.

Construction

As with all Tamiya manuals, the only person who could find difficulty following the instructions would be Stevie Wonder or my wife. Big,

easy to understand exploded diagrams.

Firstly, check all the parts bags and identify where all the various parts are. This simple procedure will save untold confusion during construction.

The differential is a ball type enclosed in an alloy housing, while the nylon spur gears and counter gears drop neatly into a plastic gear box. Bronze bushes are used in the box but ballraces could be fitted as an update. Motor installation at this stage is easy, but a motor change at the track will take a little longer due to having to remove the spur/pinion gear cover which hides the motor screws. No big deal.

Front end, rear end and gearbox/engine pod all go together very quickly and fit very neatly onto the tub chassis. I was quite pleased with the fit of all components and no minor mods. had to be done to

make any parts fit.

By now my two eager beaver helpers are all set to go "birko" if I don't get this car finished before it's time for "happy hour". (Those readers not familiar with terms synonymous with tonsil lubrication should interpret the last sentence as best they can.)

Building now proceeded at a frenetic pace. The three main sub-assemblies are all constructed in stages then fitted to the chassis. A real snap! As this was a car to be run by my inexperienced terrors, I decided very early on that the Stock Mabuchi 540 motor included in the kits would be fitted.

The shocks were now put together. These are friction type shocks, with rubber tube inside the shock housing providing the damping effect against a lightly lubricated piston rod. As an entry level shock, this works fine. Just remember to keep the shocks maintained by regularly cleaning and regreasing.

As per the instructions, I opted to use the 70 tooth spur gear with the 23 tooth pinion. A 77 tooth spur gear is also provided in the kit.

By now my ear drums are all but numb from the constant hammering they have been getting from the "eager beavers".

Radio installation was a snap, with plenty of room and easy access. The Madcap has a three speed mechanical speed controller, including reverse. My tried and tested Hi-Tec BEC wheel radio gear was installed to the universal style servo mounts.

The instructions can't be faulted at this stage as they also give you schematic layouts for installation of electronic speedos, for those who haven't had the pleasure of using one to date.

Body

All that remained for this brow beaten, abused, half deaf, badgered, thirsty, RC car constructor to do was finish off the body. A scalpel type X-Acto knife, five minutes of careful cutting and the body and rear wing looked the way they should.

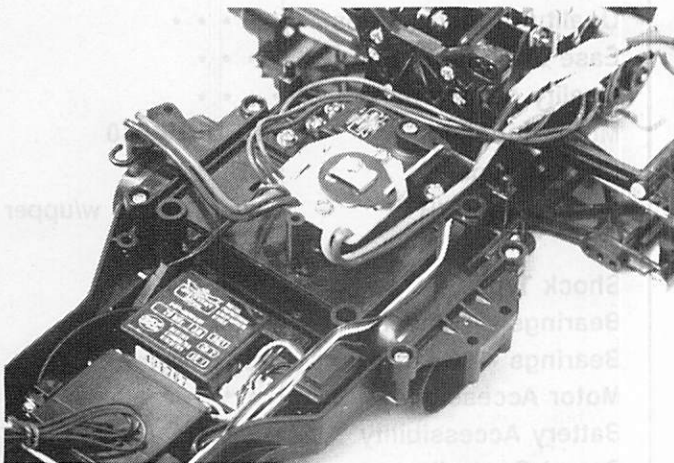
Old hands at body painting will know this but first timers won't. **WASH THE POLYCARBONATE BODY BEFORE YOU PAINT IT.** This is a most important step. Use plenty of soap or detergent to get rid of any release agent on the body, otherwise the paint — she won't stick no good!

Decals fixed in place and at last it's off to our favourite place of destruction.

At the Track

By now I was bodily carried outside and dumped on my differential at the chosen spot for the inaugural Madcap bash. Being the chief mechanic in this motley crew (not to mention the biggest) I decided I'd get first drive.

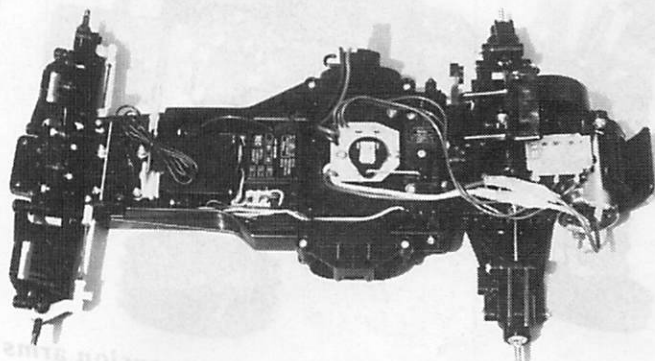
The area chosen is a granitic sand area of 40 metres by 30 metres with the odd tree thrown in, just to keep things interesting.



Three speed mechanical speed controller is standard equipment. BEC receiver and two servos fit easily into the tub chassis.



Motor/Gearbox pod prior to installation onto the chassis. The motor is quite exposed to dirt and grit, and a protective dust cap would be a handy accessory.



Overall chassis layout provides good overall protection to radio components while proving to be durable yet responsive.

The Madcap ate up the bumps after an initial set-up where the coil spring stiffness was increased by moving the damper tensioning ring downwards by 7mm. The surprising performance of the car wasn't due to the superlative driving of its chief mechanic, but more to the good design and construction of the car.

The first couple of laps were a real effort. Plenty of understeer on this surface proved a handful but a small amount of spring adjustment (stiffer the back and softer the front) improved performance.

I'm a great advocate of all drivers starting with a 2WD vehicle, by virtue of the fact that (in my opinion) greater skill is needed to drive the car around a track, where techniques such as application of opposite lock, power slides and countering the more unpredictable nature of the beast, give novices a very good basis with driving techniques as opposed to those who simply "point and shoot" in more sophisticated 4WD cars.

Time for my two charges to take the radio in hand. This is their first bash at a "decent" 2WD (previous experience only in the toy end of the hobby).

By now the chief mechanic was relegated to the demanding task of keeping the battery packs coming fully charged off the Land Cruiser.

The little mongrels showed a surprising lack of fear as they pushed the Madcap to and beyond the limits of human (my own) endurance. The car stayed on line and only went astray when there was an error in judgment..

At the end of an exhausting late afternoon's running, the Madcap came through with flying colours. Front end, diff, axles, suspension, speed controller etc., etc., were all intact and still functioning well. It passed the St John "Two young, over confident, inexperienced driver's test"!

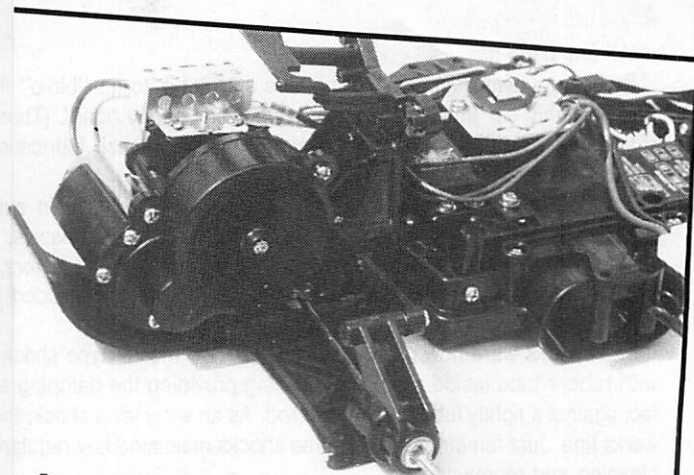
Improvements & Mods

As an entry level Stock 2WD, the Madcap is probably the car any parent would like for the kids. Its simplicity and rugged construction are the keys to its success.

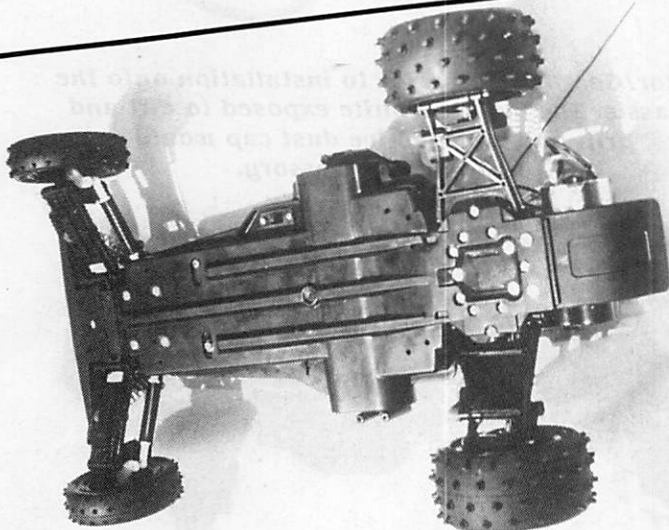
Modifications for the more adventurous would include putting ballraces in the gearbox and on all wheels, fitting oil fitted shocks and a hotter motor. These mods. can be done step by step to lessen the impact on the hip pocket nerve.

Summary

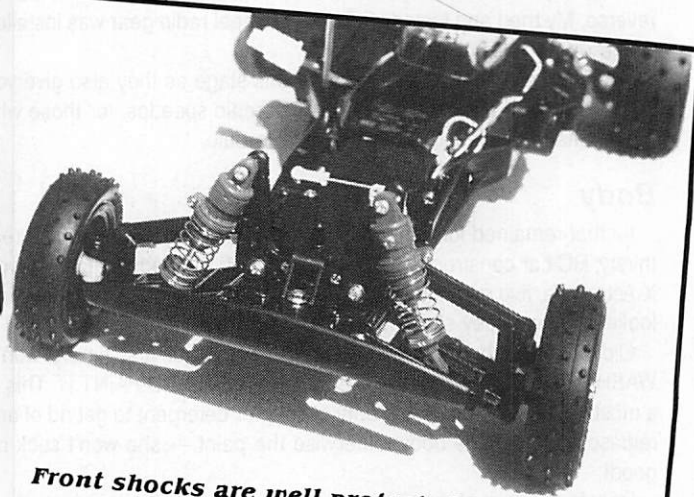
A really good entry level fun car that is easy to build, maintain and drive. Good value.



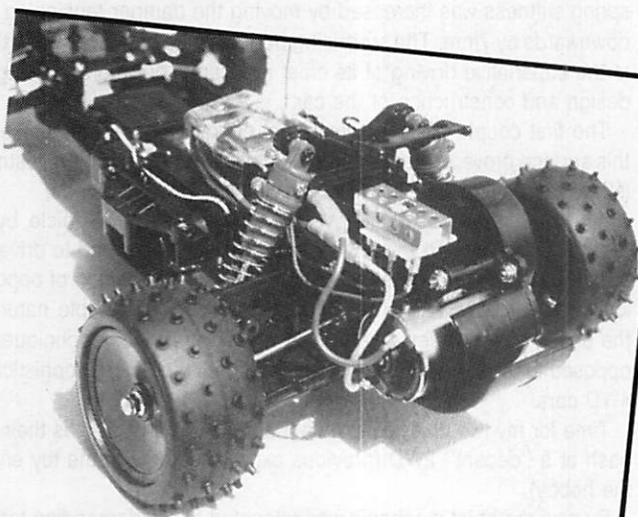
Access to the spur/pinion gears and motor mounting screws can only be gained after the removal of four retaining screws. A little time consuming but to date no dust or dirt has entered the vital area.



Underview of the chassis and suspension arms which shows reinforcing to the chassis, rugged suspension arms and all screws countersunk.



Front shocks are well protected behind the substantial bumper plate. Friction type shocks work quite well, but a few extra dollars later on would see a set of oil filled shocks front and rear.



With the motor and shocks installed, the rear end is finished. With battery in place, I found the shock tensioning ring had to be more downward by five to six mm.

MADCAP — Review at a Glance

Quality of instructions	*****
Ease of construction	****
Quality of materials	****
Motor supplied	MABUCHI 540
Chassis type	TUB
Suspension F/R	Lower A-arms w/upper control rod
Shock Type	Friction
Bearings — Wheels	Nylon
Bearings — Gearbox	Bronze/Nylon
Motor Accessibility	***
Battery Accessibility	*****
Speed Controller	3 Speed Mechanical
Handling as tested	****
Tyres (front)	Narrow mini spike
Tyres (rear)	Wide mini spike
Body	Polycarbonate

Continued from page 48

The B final is won by Stewart Grant (Dogfighter) from Dallas Gardiner (Dogfighter) and Colin Grenenger (Procat).

In the C final Greg Brooks glues together one magnificent run of 18.515 — the other C final drivers don't know what hit 'em.

THANK-YOU TIME

No meeting can operate without workers and the 1990 ACT Titles had terrific people who put in 101 per cent — some did it all weekend, some did it for months beforehand. Particular mention to Ian and Graham Walker, Scott McArthur, Don Moran, Allan Huggett, Heather McPherson, Adam and Heather Davey, Graham Brown, Chris Fraser and Paul Osmond. Others helped, of course, and the club is grateful. Many thanks also to the visiting drivers and their families. See you all in Jan. '91 for the Australian Titles.

RESULTS TABLES

JUNIOR 2WD STOCK	BUGGY	BEST LAPS
1. Matthew Brown	RC10G	18.614.51
2. Michael Head	RC10G	18.621.86
3. David Crowther	Cougar	17.607.60
SENIOR 2WD STOCK		
1. Adam Davey	Losi JRX-PRO	18.600.62
2. Brendan Coleman	Losi JRX-2	18.610.96
3. Mark Phelan	Losi JRX-2	18.613.97
2WD MODIFIED		
1. Andrew Nelson	Cougar	17.507.77
2. Reece Birtles	RC10 Stealth	17.510.43
3. David Crowe	Losi JRX-PRO	17.514.54
JUNIOR 4WD STOCK		
1. Frank Lamanna	Dogfighter	19.604.57
2. David Crowther	CAT	19.613.32
3. Daniel Watt	Procat	19.620.36
SENIOR 4WD STOCK		
1. Lyle Harbour	Procat	19.608.46
2. Brendan Coleman	Dogfighter	19.609.27
3. Brian Smith	Procat	18.600.44
4WD MODIFIED		
1. David Crowe	Dogfighter	18.505.81
2. Darrin Campbell	Procat	18.506.47
3. Reece Birtles	Dogfighter	18.510.78

FIRST 1/10 ON ROAD STATE TITLES

by Scott Salter

Saturday morning bright and early (well early anyhow), I arrived at the track at 7.20am not expecting a lot of people. To my surprise I found that most of the racers had already arrived, the track was being sprayed (sugar water), signs and P.A. set up. Showers threatened though stayed away, fortunately.

Scrutineering was from 8 until 9am. At 9.15 the driver's meeting was called and the heats started at 9.30. There were three rounds before lunch and the first regrade after Stock class was a little down on numbers though there was a good tussle through the heats.

Modified; the title class was fairly competitive with only one 13 lap score by Rick Bartolozzi before lunch. A low 12 lap score was needed to place in the first heat of modified.

After lunch in the regraded heats Colin Grenenger became the second person to post a 13 lap score, followed by Ben Caruthers in the afternoon. Quite a shuffle was going on just behind these three on 13 laps.

Sunday, and I arrived at the track earlier this time. The day looked brighter, so all would be good for racing — we hoped.

The heats were regraded again and I was pleased to find myself still in the first heat of modified, though I knew it would be tough to stay there. Racing commenced at 9.30am and there were two rounds before lunch and the regrade for the finals. During the morning session Stewart Grant posted the fourth 13 lap score.

The cut off for the A final was 12 laps 4 mins 2.03 sec, fairly competitive one might say. Fortunately for myself I managed to stay in the A final.

The times in Stock as expected were slower as all were using the supplied 540 motors. However, a good battle went on. TQ was 11 laps with the rest not far behind.

To the modified A. There were two success stories, one was Rick Bartolozzi who really dominated qualifying and won two out of the three finals. The second success story was that of the Composite Craft Lynx 2; the four drivers to post 13 laps

drove this car. These four in the final held first to fourth place, a tribute to the standard of the car's design.

The hard luck story of the finals had to be Col Grenenger with the mysterious radio bug rearing its ugly head for the first two finals and mysteriously disappearing in the third when it was only enough to save him for fourth place.

Winner of the B final was young Jason Wicks with the New Gold Edition Bolink.



Line-up at Crossroads track for Australia's first 1/10th circuit titles.

NEW ADELAIDE CIRCUIT

by Ray Harrison

After many years of racing on supermarket carparks and the like, the Model Radio Car Club of Australia has finally found a venue that we can call home. Our new track is located on unused tennis and netball courts at The Parks Community Centre, approximately five minutes north of the city centre. After a short trial and evaluation period, the club was able to negotiate a permanent lease and permission to paint down the track lay out, complete with green infields and red and white apexes. The track comprises 1/8, 1/10, 1/12 and oval circuits.

This venue will be the site for the 1990 South Australian 1/10 Circuit Championships which will be held on November 10 and 11.

On August 26 a trophy meeting was held as a lead up to the State Champs. Twenty-one entries were received for this event. Unfortunately this was not a true indication of the popularity of 1/10 circuit racing in Adelaide due to some racers having commitments at other race venues on the same day.

The four drivers in the Stock class contested 5x5 min. heats, of which the best two heats were counted to decide the winner. These drivers were all using Mabuchi 540 motors limited to 17,500 rpm which provided close and consistent racing. The winner of this class was Allen Salisbury, driving an Associated 101 with a total of 24.55 laps. Second place went to Craig Westwood with 23.77 laps and third place went to Colin Grey with 23.56 laps after a count back to third best heat to separate third and fourth place. The 17 entrants in the open class contested 4x5 min. heats with the best single heat being used to grade the drivers into A and C finals. Top qualifier honours went to Scott Kilford with a score of 14.32 laps which he set in the first round of heats driving an Associated 10L.

The A final was contested by the top six qualifiers over 3x5 min. heats, of which the best two were used to determine the winner. Scott Kilford was the eventual winner with a total of 23 laps. Second place went to Kym Griffiths driving a PB Sizzler with 27.38 laps, and third place went to Brook Alexander driving a TRC Pro 10 with 26.78 laps.

The next six qualifiers contested the B final over 2x5 min heats, of which the best single score decided the winner. Craig George, driving a TRC Pro 10, was the winner of this final with 12.76 laps. The C finalists contested a 1x5 min heat with all three placegetters finishing on 12 laps, the winner being R. Glinz.

This event provided a good lead up to the SA Champs in November although everyone will have to do their homework for this event all over again as the heats for the State Champs will be of 4 min. duration to fall in line with current AARCMCC Electric Circuit Section rulings.

Racing at the MRCCA Parks Raceway is conducted on the second and fourth weekends in the month and Ray Harrison may be contacted on (08) 250 4114 for any enquiries about the club's activities.



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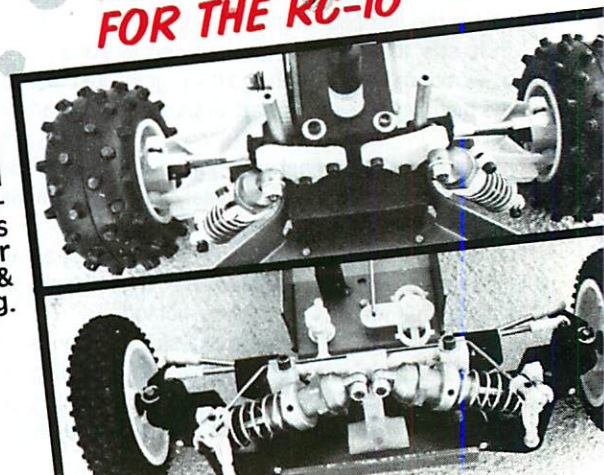
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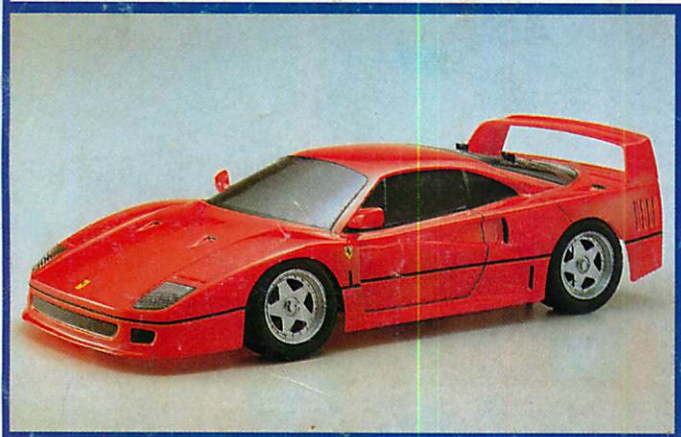


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