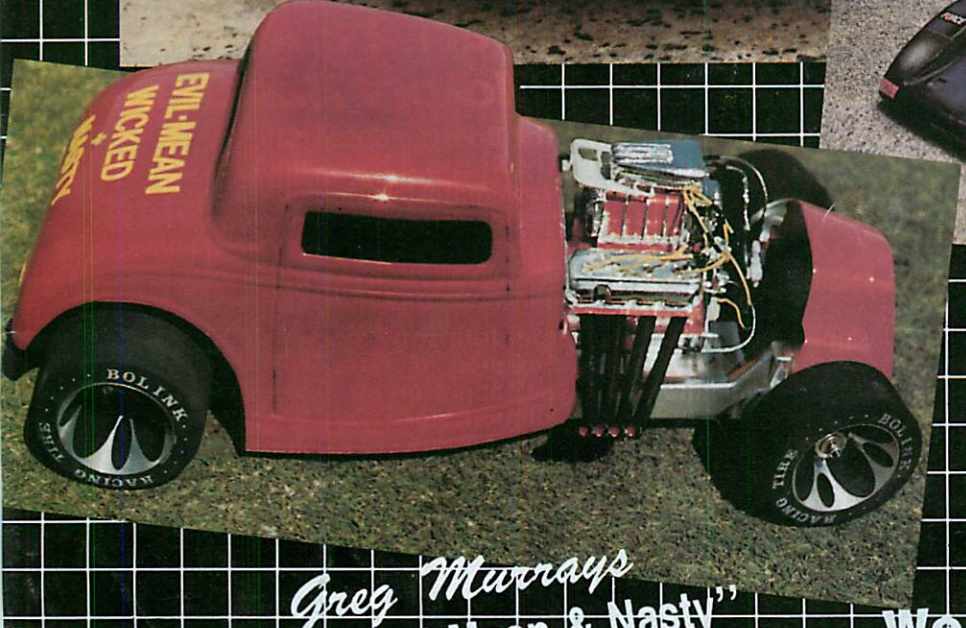
We review KYOSHO'S fast flyer The TRIUMPH 2WD

Radio Control Cars for DIRT & TRACK

NUMBER 23
AUSTRALIA $3.70
NEW ZEALAND $6.40 (Inc. GST)

VOTED HOBBY OF THE YEAR

PRIZE WINNING 1/10th CELICA GASSER



HYPERDRIVE H10SC ON ROAD

Under the microscope

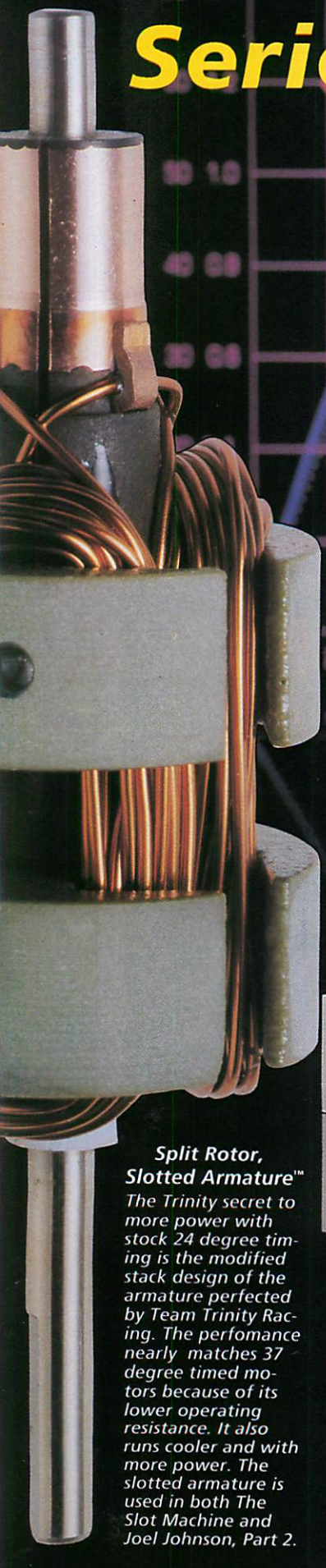
SPEEDO SHOOTOUT

Greg Murrays "Evil Wicked Mean & Nasty" MAD MODIFIEDS

We explain all about 1/10th DRAG RACING

REGISTERED BY AUSTRALIA POST PUBLICATION No. VBQ-8237

Serious Stock Options



Split Rotor, Slotted Armature™
The Trinity secret to more power with stock 24 degree timing is the modified stack design of the armature perfected by Team Trinity Racing. The perfomance nearly matches 37 degree timed motors because of its lower operating resistance. It also runs cooler and with more power. The slotted armature is used in both The Slot Machine and Joel Johnson, Part 2.

The Slot Machine™, Joel Part 2 and The Boss™ ...A New Era in Stock Motors Has Begun

The 1991 ROAR rules are here and our new Trinity and Speedworks motors are the hottest legal motors available. We've also updated the world's best selling R/C motor, the "Joel Magic Johnson®" stock.

The Slot Machine™, PN2024, $28.00
To meet the new rules, we started with a clean sheet of paper and designed an entirely new, superfast, motor, rather than modifying an existing one. We locked the commutator to the stack very precisely for exact, 24.0 degree timing which works with the slotted armature and 4.9 wet magnets to give the highest rpm of any motor under the new rules.

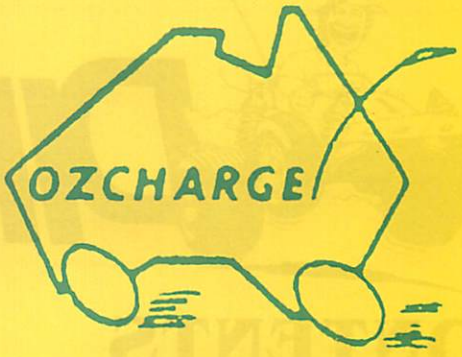
The Boss™, PN0914, $19.99
The Boss is a high torque, new Speedworks® stock motor which is excellent for small, twisty tracks, 4wd cars and monster trucks. The torque comes from the latest 4.9 wet magnets combined with a full armature. It really punches out of the turns!

Joel Johnson® Stock, Part 2, PN 0450, $28.00
Designed for races where the old 1990 rules still apply or for serious street racing, Joel Johnson Stock, Part 2 replaces the older Joel Johnson Stock. Its slotted armature and 45 degree timing makes it the fastest stock motor money can buy. This is not for the timid!

TRINITY G & M TRADING, P.O. BOX W197, West Tamworth, NSW. 2340 PH/FAX: (067) 65 2701 Trade Only

PROUD TO BE
AUSTRALIAN

OZCHARGE ELECTRONICS



MANUFACTURERS OF SPECIALIST ELECTRONICS AND ACCESSORIES FOR THE R.C. HOBBYIST

• 24 HR CHARGER AND SPEED CONTROL REPAIR - ALL BRANDS

SANYO 1700 SCR AVAILABLE APRIL

THIS NEW BATTERY HAS BEEN DEVELOPED BY SANYO ESPECIALLY FOR THE HIGH PERFORMANCE R/C RACING MARKET. ADD THIS TO OUR NEW "PULSE MATCH" PROCESS AND YOU HAVE ALL THE POWER YOU CAN HANDLE.

PACK RACKS

OZCHARGE PACK RACKS ARE NOW AVAILABLE AGAIN FROM MOST GOOD HOBBY STORES. INCREASE YOUR BATTERY LIFE AND PERFORMANCE BY UP TO 30%.

PROMPT AND RELIABLE SERVICE

MILLER SHATTERS THE RECORD BOOK

TIME: 16TH FEB 1992

PLACE: MAGIC KINGDOM RACETRACK

ANDREW MILLER DECIDED TO TRY OUT HIS NEW OZCHARGE "PULSEMATCH" SCE PACKS. IN THE PROCESS HE CLOCKED THE FIRST AND FASTEST 18 LAP TIME RECORDED AT THE TRACK SO FAR.

CONGRATULATIONS ANDREW.

2 ELSTEAD CT.
ALEXANDRA HILLS
QLD 4161
Ph (07) 824 0594
Fax (07) 824 5247
TRADE ENQUIRIES ONLY

BOLT-ON performance

PEAK PERFORMANCE

We sell and stock parts for the following cars:
Kyosho, Yokomo, Associated, Schumacher and Losi.

KO the makers of the best controls and servos now at the lowest prices.

EX 5.....**$199.00**
The all NEW EX 1.....**$299.00**
PS 1001 KO's best servo.....**$89.00**
KO Receiver.....**$79.00**

Just arrived R.C.P.C. products from the U.S.A. used by Cliff Lett and Masami.

RC10 Turbo Mirage body, stronger, better looking than standard body also cheaper. **$29.00**
Titanium turnbuckles for RC10 and RC10 Truck....**$29.00**
Titanium hinge pins for RC10 and RC10 Truck.....**$25.00**
Yokom Steering Brace.....**$6.00**

EX-5
$199.00

TEKIN Speed Controls, Chargers at the lowerrs prices in the country. 408s....**$129.00.** 410s....**$155.00.** Chargers BC 870....**$99.00.** 411p....**$199.00.** 411g....**$239.00.** BC 100L....**$129.00**

MAIL ORDERS AVAILABLE - TRADE ENQUIRIES WELCOME FOR PEAK PERFORMANCE PRODUCTS

Prices subject to change without notice.

BANKCARD * VISA *** MASTERCARD**

8 BELLBIRD CRESCENT,
FORESTVILLE, NSW. 2087.
PHONE: (02) 451 7775
FAX: (02) 451 8047

PEAK PERFORMANCE

BOLT-ON performance

DIRT&TRACK

CONTENTS

ADVERTISERS INDEX

ISSN 1030-4282

Published by:
ROPOMOD Productions Pty. Ltd.
Unit 11, 67-75 Garden Drive,
Tullamarine, Vic, 3043, Australia.

Postal Address:
P.O. Box 30, Tullamarine, Vic, 3043.
Phone: (03) 338 5696 & 330 3740
Fax: (03) 330 3751

Editor: Mel Gillot
64 Beverley Avenue
Unanderra Heights NSW 2526

Managing Editor: John Rogers
Advertising Manager: John Rogers
Subscription Manager: Joan Buckmaster

Newsagency Distribution:
Network Distribution Co.

Printed by:
Franklin Web, Melbourne.

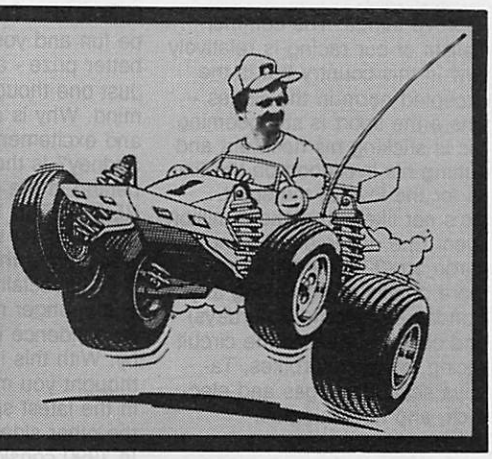
Artwork & Typesetting by:
Ropomod Productions Pty. Ltd.

New Subscription orders and Renewals should be sent to:
P.O. Box 30, Tullamarine, Vic, 3043.

ANNUAL SUBSCRIPTION RATES

(6 issues)	Surface	Air
Australia:	**$18.00**	**$28.00**
New Zealand:	**$27.00**	**$32.00**
Other Countries:	**$31.00**	**$46.00**

FROM THE DRIVERS SEAT



STRANGER THAN FICTION

We may not be having much success in reducing our typographical errors in D & T (but we're still working on it) but telling the truth is another matter. Unlike many newpapers we put accurate reporting at the top of our priorities and go to some length to achieve this.

Race results are a case in point. sometimes we get it wrong in which case a correction is called for. Last issue had Darrin Campbell winning the Truck event at the big NSW State Titles when in fact GREG BROOKS was the victor and Darrin second. Our congratulations to Greg and apologies for the mistake. I have the official computer printout that lists Campbell first but the race times show Brooks winning two finals for victory. That will teach me to check results more carefully and try and be in two places at once when finals are being run!

Not a mistake but an update on the same event - the largest held in OZ. You may recall a dead heat between Darrin Campbell and Reece Birtles in 4WD Modified which wasn't resolved in the article. A Dogfighters dilemma you might say. Upon scrutiny of the rules the countback had to be taken to the qualifying rounds which gave Birtles the edge. Congrats to Reece for another win.

Opinions may differ, and we try to present as many opinions as possible. But with facts we like to stick to the truth. So please tell us first if we transgress.

REPAIRING THOSE LITTLE BLACK BOXES

As reported last issue the Force range of electronic speed controllers are no more. Intac Engineering and it's brain, Noel Lovisa have defected to California. Fortunately, owners of Force controllers can still have them repaired in Australia. A letter from Paul Thompson Electronics (9 Chopin Court, Burpengary QLD 4505, (07) 888 4330) gives full details.

Paul is the sole authorised repairer for these technically advanced speedo's and he was actually working for Intac before they took off for the States. He has the gear and parts and is claiming the same high standard of service we have come to expect from Intac. Paul explained the procedure for returning a unit and since this is good advice for anyone sending any electonic part to anyone for repair we well spell it out.

First step is to write a short note on what happened and what you think/know the problem to be. This is particularly important in cases where the unit is not completely dead and the problem may not be obvious. Now remove the heatsinks. Place the unit in a number one padded post pack and don't forget to include your name, address and phone number. I know how this obvious step is sometimes forgotten. You should see all the letters to our You Wanted To Know segment that have forgotten their full return address.

Paul goes on to say that when he receives your ESC he will book it into the system and start a job sheet. When the turn comes up for repair he will read your note and then test on his test rig. This will show up any obvious faults. After repair he will return with a test sheet showing that the speedo is back in shape and guaranteeing the work for three months.

Paul also related a couple of tips. First was the fitting of suppressor capacitors to motors. He says the caps should be soldered onto the motor and not the leads at the plug. Also, do not use larger than a 4.7uF Tantulum or bipolar electrolytic cap.

The second tip applies to Force Mach 7's and may apply to other speedo's. If the red wire becomes disconnected from the battery plug the speedo will get it's power via the motor and this will damage the speedo in a few seconds. Better make sure this is not likely to happen or you will find yourself buying a number one padded bag.

Another notification came from another electronics wiz in Queensland (the air must be good for the brain cells up there!). Barry Puttee from Ozcharge (see ad) advises that he can now fix FET servos. Previously you had to send these ultra high performance servos overseas for repair and wait an inderterminable time for return. Ozcharge have obtained the parts and this makes them Australia's only repairer of the various KO FET type servo's. I expect Bazzers usually efficient, good quality service will apply. There are a number of other repairers for our little black (or any other colour) boxes throughout the country who handle receivers, non FET servo's, chargers and other ESC's. These are specialist jobs that cannot be handled by your average TV repairman so check with your supplier or enquire at the local RC racing club for details. Some shops will handle the repair for you but if sending direct remember to follow Paul's advice as given above for a safe and speedy job.

MORE MAGIC AT THE KINGDOM

The financial pages of the daily scandal sheets may have declared that the age of the Aussie entrepreneur is past but me thinks that Ric Bartolozzi reads Dirt & Track. Ric was the star of one of our "Speed Secrets" features (yes, we are working on another one of these popular articles now) in D & T number 18 and since then has been concentrating much of his energy towards the fantastic on-road facility at Sydney's Magic Kingdom. This is in between winning a few races of course. For a reminder of what can be done and seen at Magic Kingdom take another look at the inaugural 1/10th on-road report last issue.

Now things are changing at the Kingdoms Lakeside raceway and Ric is the one making it happen. The owners of the facility were not to happy with the progress so Ric has taken on the raceway as his own business. Given the present economic climate this is not a good time for a risky enterprise but it was the only alternative. The good news for racers is that Ric's risk is their gain. With more control over the operation of the track Ric is planning more diverse racing and expanded facilities. Specifically;

- The latest AMB lap scoring (transponder) system together with the AlyCat software is already in use and available for hire to others. This is state-or-the-art race recording and will be hired by ORRCA NSW for its events in 1992.
- Lights are being erected for night racing.
- Hosting of the 1/10th Gas Car Challenge, see details below.
- Permanent under cover pit tables are planned and maybe a well equipped hobby shop.
- Construction of world class off-road track.

The latter is a significant development and deserves elaboration. It's being designed from the ground up by Ric who intends it to be the best in the country. But it won't be like other Aussie buggy tracks. More like the US circuits. It is already being built on a fine crushed rock drainage layer with a built in pop-up watering system. The intent is to create a high traction (unusual in Oz) low wear track with no dust to blow around. It will also be more of a true off-road track and less of a high speed flat circuit. Ric calls it visionary. We should be racing on Ric's vision very soon and can't wait to give it a try.

The Lakeside operation will still be run like a club but Ric will now be the owner. club members will pay $8 for a days racing and non members $10. Your mechanic will pay just $2 to get into the grounds and other non members $5 which is the normal admittance to Magic Kingdom. The exception that is pretty cheap for a days entertainment considering that the Magic Kingdoms facilities, including rides, are all free.

This is a sensational development that has great potential for the promotion of the sport. Many new racers have already been introduced to the sport thanks to the facility at Lakeside and this expansion can only

improve things. The commercialism of our racing is relatively new in this country but is the excepted norm in the States - where the sport is still booming. Ric is sticking his neck out and putting his livelihood on the line all for the love of the sport. He's not likely to make a million even if he deserves to. Ring Ricardo on (02) 709 2415 for more details or pop along any Sunday (and some Saturdays) and check out either the circuit racing, oval, motorbikes, Tamiya scale cars, gas and electrics, and now buggies.

THE 1/10th GAS CAR CHALLENGE

This novel event has been announced for 1992 with a top prize that will knock your socks off! How would you like to win a twelve months fully sponsored drive of a 1/8th gas circuit car -the Formulae One of RC. Not just any car but a Team Serpent mean machine. That's the prize and it is provided by Serpent Model Cars Australia. All you would have to do is just turn up at the circuit and drive with the fully prepared Serpent. Of course this type of prize does not come easily. You can't just send in a few Cornflakes packets. This fabulous drive has to be earned by winning the Gas Car Challenge. Here are the rules.

You will need a 1/10th scale RC racing car fitted with no larger than a 12 size engine. There are a number of cars on the market that fit this description but the most competative would have to be Serpents Impact with it's rugged construction and fully independant suspension. See review this issue. The car and motor must be basically stock but changes are allowed to tyres, clutch, gearing and exhaust system - normal track tuning components. Bodies must be Group C.

Ten race dates have been set aside for the Challenge with races alternating at either Sydney's Magic Kingdom or Crossroads raceways. At each race day there will be four five minute heats and finals up to 30 minutes long. Points will be allocated and the driver accumulating the most points in eight rounds will win the big drive.

For full rules and any further information contact Stewart Grant on (02) 579 4007.

Naturally the aim of this event is to promote gas circuit racing and lead drivers into the ultimate thrill of 1/8th gas. Stewart maintains that 1/10th gas is almost as thrilling as 1/8th and for half the cost of a competative electric buggy. No arguments from me.

So, if racing with the fast gas machines has been high on your wish list then now is the time to act. The racing should be fun and you wouldn't find a better prize - anywhere.

Just one thought springs to mind. Why is all the inovation and excitement taking place in Sydney? Is there nothing happening in the other cities?

NEW SPEED RECORD

The need for speed is alive and well among the readership of D & T. Especially amid the newer and younger readers if our correspondence is anything to go by. With this in mind we thought you might be interested in the latest speed record from the other side of the Pacific.

In 1990 considerable interest was generated by Kent Clausens Insane Speed Run of over 112 kph (70.1 mph) on Californias Encino Thunderdrome Oval. Despite concentrated efforts from others with such monstrosities as 20 cells and twin cobalt motor cars Kent again come out on top in the latest event with a one lap run of over 122 kph (75.9 mph). He used a narrow Associated 10L with Jaguar Group C type body, Reedy Mr M motor and 12 cells.

Remember this is only 1/10th scale and at that speed the wheels are turning at over 12000 times a minute, that's 200 times every second! The scale speed is something like 1200 kph which is well above the land speed record for full size vehicles. Incredible.

Readers who have access to a Velodrome can figure out a models speed for themselves. The distance around the oval is usually marked on the start/finish line and some simple maths will convert your oval time to speed. But don't expect to get anywhere near 120 kph. We tried this on our slippery dirt oval and timed the fastest at 32.5 kph and the fastest Stock powered buggy not far behind at 30.2 kph. Write in and tell us your best timed speed accompanied by a few technical details.

WHAT'S HOT

1700 SCR's
Ceramic balls
Hi-Iq's
240 volt generators
Short stack stock motors
Titanium everything
Computer Motor Dyno's
Single cell dischargers
Portable comm truers
and anything Mega, Fluoro, Hyper, Awesome, Ballistic or expensive.

WHAT'S NOT

Monoshocks
Nerf Bars
Front wings
Timer chargers
Chain drive
Shaft drive
05R's
Four wheel steer
1200 SC cells.

FROM THE VIC CHAMPS DAILY.

TRIBUTE TO A FRIEND

Friendship is a priceless gift. This is what Bob Roxburgh gave to a lot of people. Sadly Bob Roxburgh passed away Saturday Fegruary 22nd. Bob will be missed very much from the St. Ives (Sydney) Club where he was one of the original founders, served for many years as President, Secretary, Committee member, Chairman of ORRCA NSW, Delegate ORRCA Australia and more importantly a good friend to all.

St. Ives Club will never be the same without Bob. Bobs attitude to life was an inspiration to all - his quiet determination, great sense on humour, always a smile and helping hand to all members and his love of the sport was tremendous. Many was the time Bob would miss his races to help another club member who was having difficulties.

Bob was a gentleman, a true friend, and has left behind a wife and two small sons. Words cannot describe this wonderful man and our heartfelt sympathy are with Jo his wife and sons Robert and Jeff. Bob was only 37 years old at the time of his death.

We all miss this wonderful person so much.

Committee and members - St. Ives Club.

During a lifetime one gets to meet many people, most of whom 12 months down the track you have forgotten completely, others you recall perhaps in three or four years, some you remember with fondness, but with no great feeling of loss, with "I wonder what happened to so and so."

Then one day you meet a person and although you don't place them in the category of "mate as in army mates' this person instills their being into your mind and down the road of life you are proud to be able to say he was a good friend and you hope he thought the same about you.

One such person in my life was Bob (Roxy) Roxburgh. I first met Bob about 1978, I think it was when 1/12th scale circuit cars were running at Sydney Showground.

He later joined a club we formed and run at Nolans Park, North Manly and still later on was one of the 12 foundation members of the St. Ives Off Road Club.

We spent many hours chewing the fat over the pros and cons of having a bridge and an underpass in the circuit, developing rules etc., for this new off road sport.

"Roxy" was known to most everyone associated with radio control cars, here was a man that the old adage of "winning is not important, participating is what it is all about" was written for. Bob never complained, never got visibly upset and he was in the sport because he liked it, winning was a bonus that happened sometimes, his pleasure came from setting his car up, changing this altering that, he never bought expensive after market products, part of his pleasure came from making something work out of nothing.

He could have, like so many others bought all the goodies he wanted but like I said that wasn't his style, Roxy was a racer who really enjoyed his sport.

Our sport is the loser with the passing of Bob, we will all miss him, a tireless worker for his beloved St. Ives and for his sport, never too busy to help a fellow racer always there with advice and assistance when needed.

My condolences to Jo and the two boys, what can I say, what can anyone say, it will I hope give them some comfort knowing we all miss him, a good friend, and Jo try to remember that while the world will be a sadder place by his passing it was a better place by his having been here.

See you later "Roxy"

Jack Grenenger.

YOU WANTED TO KNOW ?

Letters of a Technical nature are welcome. from beginners to experts. Please restrict queries to 1/12, 1/10 and 1/8 scale R.C. Vehicles and send to: The Editor, 64 Beverley Avenue, Unanderra Heights, N.S.w. 2526. If a reply is required please enclose and S.A.S.E.

Q. I own a JR X2 with a Pro-Formance kit and run Stock at my local club. I don't own a charger and I have a Sanyo SCR 1200 Pack and a Tamiya Racing Pack but the problem is that I can't finish my race, with my race ending with about two or three laps to go. I have been advised to use Reedy Matched 1700 SCE's which I can obtain fairly cheap. I am buying a charger and was wondering can the 1700 SCE's be charged two to three times in one day. Is there a charger that can allow me to do this, and if so how will it affect run time?

Lyndon T. Winston Hills NSW.

A. You don't say what stock motor you are running Lyndon but with any 24° stock motor, conservative gearing and a JR X2 in good condition you should manage six minutes. Even with 1200 cells and using a charge lead. That's assuming the packs are in good condition and you are charging until just warm. Sanyo 1700 cells and any constant current peak detection charger should greatly extend run time (or allow use of taller gearing or hotter motors) but 1700 cells should not be charged more than once per day and preferably only once per week. Misuse will quicly destroy the delicate 1700's. You can buy a Tekin Proflex charger and re-use the 1700's daily (but read full report D & T 18) but better to go for Sanyo of Saft 1400 cells. Refer to "Something for Nothing" last issue.

Q. I own a Tamiya Mad Cap and would like to purchase a Nissan King Cab for higher ground clearance. I was wondering if I would get the same speed and performance out of the King Cab. Also I would like to know if I would have to buy a new radio for it? The one I have now is an Acoms Technisport 2 channel AW-29 Mk II. Is the King Cab able to be hotted up or would it start to roll? Do you know of any good E.S.C.'s with reverse that will handle a Dynatech 02H motor and are under $100? I looked in issue 14 and couldn't find one with all the things I need. Does the Tamiya C.P.R. Unit P100F cover all my requirements and will it handle a Dynatech 02H? Congratulations on an excellent magazine.

Dennis M. Kurwongah, QLD.

A. Despite their extra size and weight the new breed of racing trucks perform almost the same as 1/10th buggies. You wouldn't pick the speed difference between the King Cab and the Mad Cap. All trucks and buggies will accomodate todays two channel R.C. receivers and servo's. The centre of gravity of a truck is higher but the wider track and big wheels keep them stable even with the Hottest of motors. We have many enquiries for cheap electronic speed controllers (E.S.C.'s) but there are only a couple under $100.00 and these don't have reverse. Reversing controllers are available from MK and Sunlux for around $90.00 but these are only suitable for Mabuchi type stock motors. Expect to pay about $150.00 for a racing type ESC with reverse or you could pay more for the Tamiya car unit which has a built-in receiver.

Q. Can you help me with my problem of excessive wheel spin? I run a JR X2 with a Trinity Boss stock motor, using a Sanyo 1400 mAh battery. My present gear ratio is 4:1. would a Slipper Clutch help? Also with regard to shock absorbers would long shocks on the front improve performance? (eg JRX PRO). Finally, what modified motor would you recommend that is suitable for my car. Needless to say my buget is limited! You help would be greatly appreciated.

Peter W. Wellard, W.A.

A. If your spur to pinion ratio is 4:1 (something like a 80 spur and 20 tooth pinion) then the overall ratio for the Losi JR X2 would be 8.72 which is about right for the super stock motor. Check out the "Gears" article this issue for full details. A Slipper Clutch might be an expensive solution so assuming both wheels are spinning about equally and you are not running excessive camber (just a few degrees negative is normal) then that only leaves the tyres. Try new rubber - and go easy with that throttle finger! Longer shockers can improve performance over bumpy ground providing geometry and adjustments are correct. Best to copy off someone else. Most manufacturers have machine wound motors that do not cost a lot more than the super stocks. Choose any brand with a double or triple wind of 16 to 19 turns.

Q. I own a Silver Fox with a Leo engine. I was wondering if I could join the club you showed in you Gas on Grass story. I am an experienced driver and my car is very fast. I'm sure I could show these CORRBA boys a thing or two about off road racing.

Paul A. Cabramatta, N.S.W.

A. I realise our photographs with the "Gas on Grass" article were good but you should have read the text Paul. The author, Tom Drygalla was almost begging for interested parties to join them. Ring (046) 27 2235. I'm sure Tom will look forward to you showing him how you do it but don't expect too much from the Silver Fox against the more expensive gas racing buggies.

Q. I own a Tamiya Boomerang and used to own a Tamiya Frog. I first got the Frog in March '88. I am planning to buy a Losi JR X2 or JRX PRO. Do you think I am ready for such a car? I am planning to race. Do you think this is the way to go? Which one would you recommend for me, the JRX2 or JRX PRO? I was planning to set the car up with a Tekin 310, a Trinity 17 turn triple Joel Johnson Signature and a Futaba Bionic Gold radio (FP-T2NCR). Do you think this setup will work well for racing? Any help would be greatly appreciated.

James D. West Lakes Shore W.A.

A. You are doing all the right things James. You don't have to be "ready" to move onto a more competative buggy. If anything the top cars (particularly 2WD) are easier to build, drive and maintain than many entry level cars. Biggest disadvantage is cost. Do not worry about extra complexity. The thoroughbred racers do not have to be tuned "spot-on" to be competative - and you will learn quickly. You may still find the original JR X2 or the PRO update in the shops but the new Losi buggies are called PRO SE and JNR2. Either are fine.

Q. I bought myself a Bearhawk and loved it. But unfortunately, due to the never-ending saga of battery recharging and lack of genuine speed I have started to loose interest. I am now going to buy a Schumacher Nitro 10 racing truck but before I do I would like to know several things: 1. Are there any gas clubs to accomodate a Nitro 10? 2. Are ther any reliability problems. 3. Are maintenance costs high or more importantly does it need a LOT of care with cleaning ect...? 4. Could you recommend some radio gear for competition use? 5. Is it possible to buy the gears and body mounts etc, to change it to an on road 190 Evolution?

Stephen C. Lane Cove, 2066.

A. There's no doubt that the Nitro 10 range

is very fast although we should point out that many electrics go a lot quicker than the Bearhawk. To answer your questions in order; 1. Gas racing in 1/10th scale is in its infancy although I'm sure most clubs would run a race given the numbers. Try ringing a club and asking if you can race with the electrics as a demonstration. 2. We haven't heard of any reliability problems and the importers assure us that complaints are few despite them selling large numbers. 3. Maintenance and running costs are low when compared with the Ni-Cads in electrics. Routine maintenance is needed but it shouldn't be any more regular than an electric racer. 4. Any 2 channel radio will do the job but most racers in this country use KO. Look at the EX5, EX1, or EX9. 5. Any of the Nitro 10 range (racing truck, 911 Sports & 190 Evolution) can be easily changed to either of the other two by purchasing the relevant parts.

Q. I have a Kyosho Vanning and I am thinking of purchasing a Kyosho Burns DX and was wondering how much it costs and if it can be up graded to a Kyosho Turbo Burns and if not what are some hot up tips. Is there any difference between the Ky osho Burns and the Burns DX? Last of all how much is the Mugen Super Sport and is the Burns DX as good as the Mugen? I have really enjoyed reading your magazine, keep up the good work.

Lee m. Warnbro, W.A.

A. The Burns DX cost around $560.00 for the 2WD version or $616.00 for 4WD. The Turbo Burns is $880.00 and the just released Kyosho Inferno (completely new 1/8th gass offroader for challenging the next World Titles) comes in at about $1200.00 The 2WD DX can be converted to 4WD by adding front diff and drive shafts.both DX models can be made competative just by adding ball races but you would have to change many other parts to bring a DX to full spec. It always costs a lot more to upgrade a car compared to buying the higher spec. car in the first place. The Mugen Sport is $500.00 and the Super Sport is $600.00. We should have a review of the 1992 model Super Sport next issue. Both the Mugen and Kyosho are good cars. I would base your decision on price, availability of spares and what others are running in your area. For more information on racing these care in W.A. contack Henk Van Esch on (09) 332 3351.

Q. I am 15 and want to become involved in radio controlled track racing. In the December 1991 issue of Radio Control Model Cars there is a feature on the Traxxas Hawk and I was wondering if it was available in Australia yet. Would this be a good choice. What would be the price, and would Futaba Bionic Gold control work well with this? Any help on this subject would be greatly appreciated.

David G. Toowoomba QLD.

A. The Traxxas Hawk is now available as an entry level version of their Blue Eagle and at around $285.00 would be a good introduction to racing trucks. You might also consider the Losi Junior 'T'. Newcomers should be aware that any of the current two channel radios (including Futaba's Bionic Gold) on the 29 mhz frequency are suitable for any 1/10th scale RC car, buggy or truck. At club racing level the steering wheel type of transmitter is much more popular than the twin stick type, but both work the same.

Q. I own a Tamiya Falcon which is geared for a Mabuchi 540 or Technipower motor. What motor would drastically improve my cars performance, keeping in mind that I can only use an 18 or 19 tooth pinion gear? Would the ball diff which is available for the Mad Cap fit my Falcon? Any tips or help you can give me would be greatly appreciated.

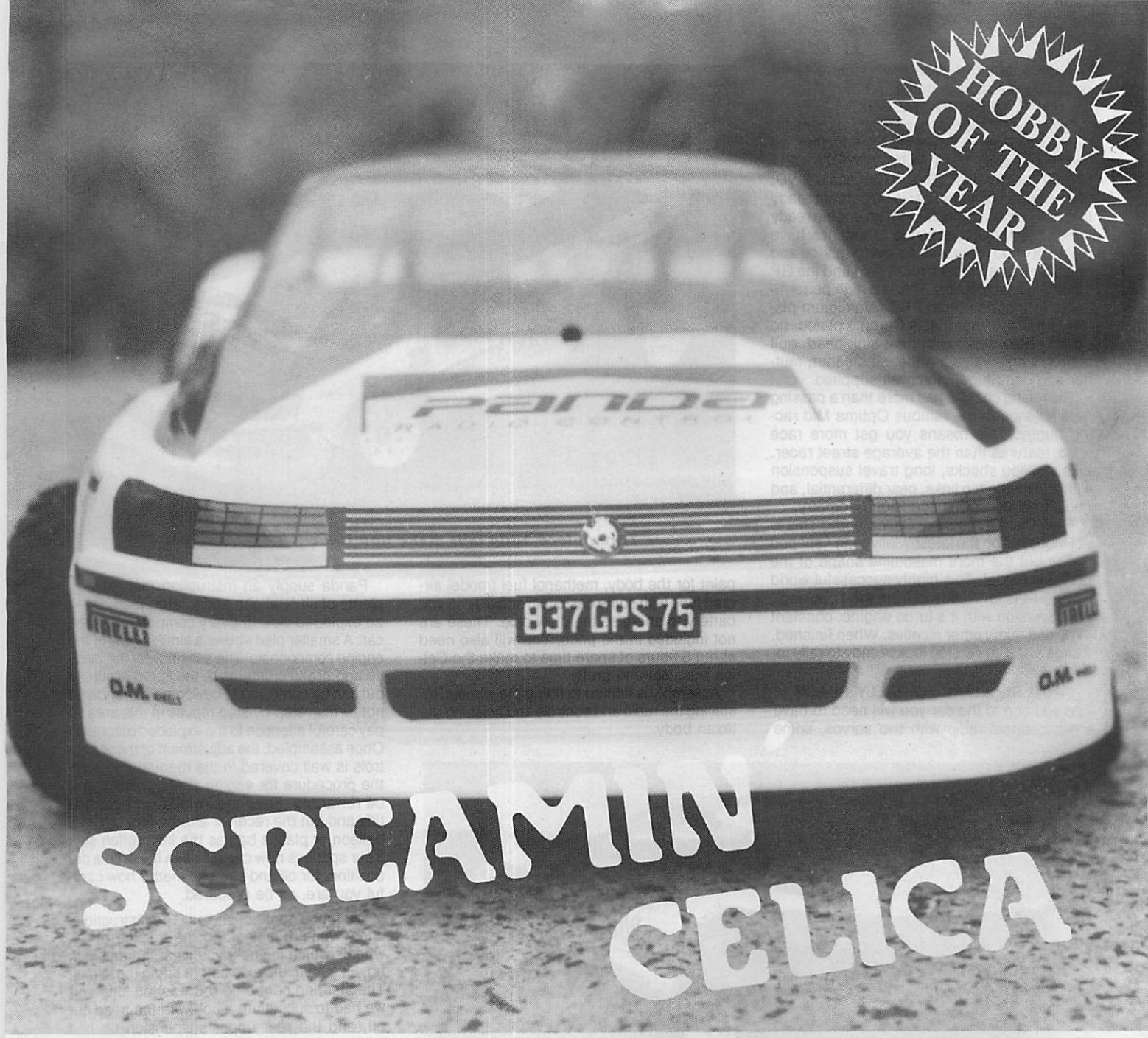
Adam J. Horsham, Vic.

A. We have covered Falcon modifications many times in past columns. A Tamiya Technigold or Dynatech or any motor with 19 turns will give improved performance without destroying the gearbox. Pinion size should come down with a faster turning motor. Unfortunately the newer Tamiya gearboxes such as found in the Mad Cap are of a different design to the older Tamiya cars such as the Falcon. This means that the Tamiya ball diff will not fit. Don't worry, I doubt you would notice the difference between gear and ball differentials.

Q. I have three questions. 1. I have just bought a Tamiya Thundershot and I was wondering how competitive it is compared to the Manta Ray? 2. What would be the lightest wheels I could get for my Thundershot? Where could I get them and how much (I am on a tight budget) would I have to pay? 3. What is the output of a Sanyo 7 cell 1200 mAh SCR Pack and would it work in my Thundershot with a Mabuchi 540 or Trinity Monster horespower stock motor?

Danny E. Banksia Park, S.A.

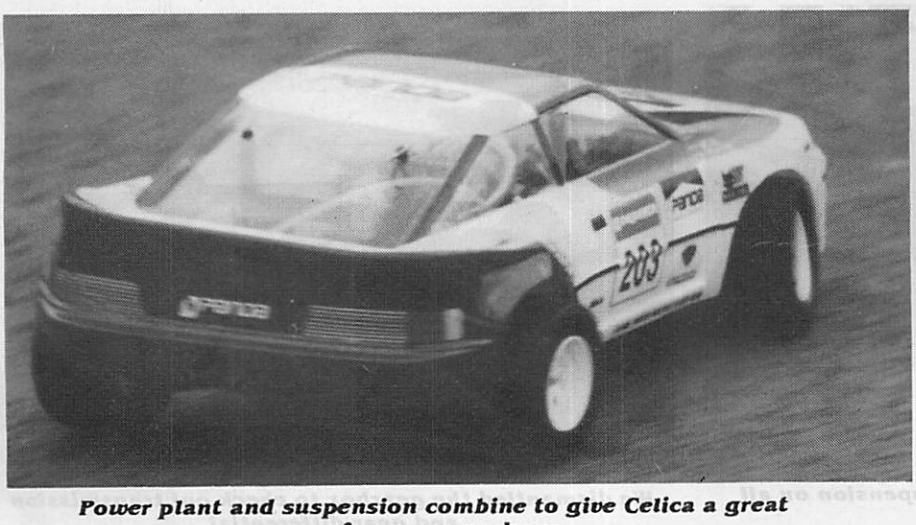
A. The Manta Ray is a later design than Tamiya's Thundershot and has several refinements to increase performance. The Thundershot has some flex in the suspension arms and toe-out (should be toe-in) on the rear wheels that should be rectified. Competitiveness, however, often depends more on driver ability at this level - so keep practicing. The Thundershot has small 1.8 inch wheels. For about $11.00 Tamiya sell an adaptor set to convert the hubs from 3 pin to hexagon type fittings. This conversion would allow you to fit the later type of Tamiya rims or even Kyosho 2 inch or 2.2 inch rims for a total outlay of around $30.00. However, tyres would be extra. Most wheels are about the same weight in this range. All R.C. cars use a Ni-Cad cell of a size called "Sub-C". All Sub-C cells have an output of nominally 1.2 volts. Most cars use six cells wired in series (positive to negative) for a total of 7.2 volts. This voltage determines the speed of the vehicle. The capacity of the cells determines the run time per charge. Hence a 1400 mAh capacity pack will give longer run time than a 1200 mAh pack. Don't worry about the "SCR" designation which is just a code number. A 6 or 7 cell (8.4 volts) pack will safely power any motor irrespective of brand or winds.



SCREAMIN' CELICA

A SOUPED-UP SUBURBAN GAS RACER AT A BUDGET PRICE FROM THUNDER TIGER

The street was about to get it's first taste of gas. Everything was set. Tank full - Glow connected - Needle valve open one and a half turns - Two squirts from the tank pressure prime. Check. We yanked the pull starter. Nothing. More pulls. Still nothing. Check again.



Power plant and suspension combine to give Celica a great performance package.

The inquisitive onlookers bent forwards and offered useless advice. Another pressure prime than a couple more pulls and the Magnum 10 emerges from the birth canal and bursts into life. The onlookers fall backwards in surprise.

We give the throttle a few blips. Everything seems in order. Initially the idle is a little high but this is preferable to stalling with a new engine. Engine idle and response is otherwise good and the simple flywheel brake is functioning. Time for action. On the read the speed was okay but nothing world shattering. Be patient. After a couple of tanks full we gradually wound in the needle and the stuttering four stroke changed to a screaming two stroker. And I mean screaming. As in beautiful music. It seemed noisy until the guy across the road started his Victa and drowned out the little Magnum. Meanwhile the Celica speed was terminal. Sounded the part too - none of your whimpy electric silence. After five years of striving for speeds with modified electric racers here was an out of the box gassie going just as fast for the price of a race day of matched batteries.

But we are jumping the starters gun. That

was the final bit of good news - more came before as the story unfurls.

OPENING THE BOX

The presentation was typically Japanese. Since this was a Taiwanese production we were impressed The PANDA TOYOTA CELICA GT4 is not a kit. This 1/10th scale 2WD, glow engined powered car is 90 percent ready to run. It comes complete with an engine ready fitted. The MAGNUM range of engines have gained a good reputation for performance and reliability in the model aircraft field and the GP 10 BXL is no exception. This is a high performance, schneurle ported ABC (Aluminium piston with Brass liner that is Chrome plated -no piston rings) motor with heat sink head, pull starter, single valve throttle, air cleaner, muffler and centrifugal clutch all supplied.

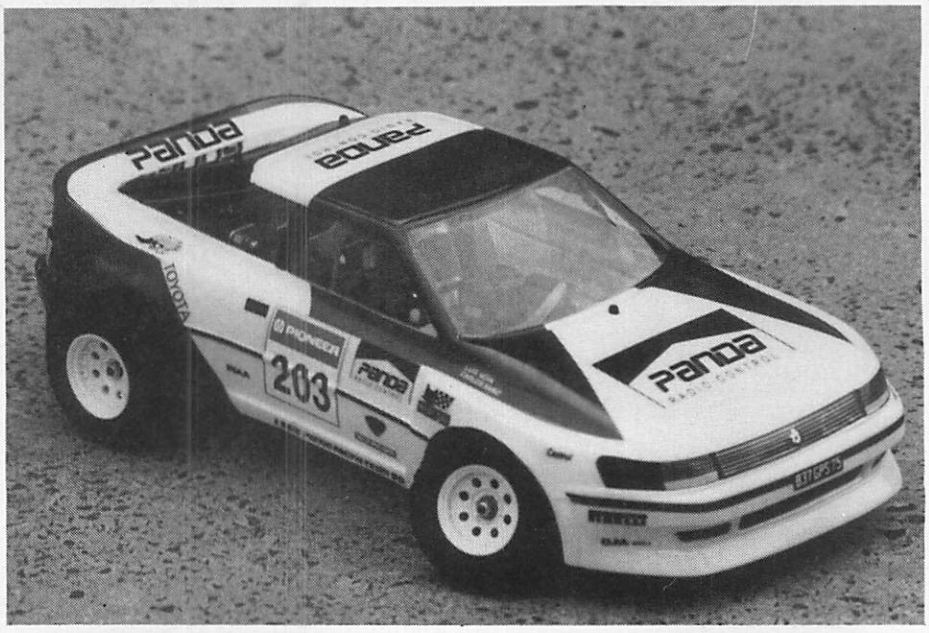
The rolling chassis has more than a passing resemblence to the famous Optima Mid racing buggy. This means you get more race spec. features than the average street racer. Like oil filled shocks, long travel suspension with adjustable top links, gear differential, and good steering and suspension geometry.

Then there's the sexy Celica body. This is not modelled on the latest "Jellybean" shaped Celica but the more masculine shape of the previous model. This highly successful world Rally GT4 is far removed from the "cooking" street version with it's turbo engine, constant 4WD and many other niceties. When finished, Panda's 1/10th version looks ready to rally for a tiny fraction of the cost.

FROM RECEIVAL TO RALLY READY

In addition to the car you will need to have a two channel radio with two servos, some paint for the body, methanol fuel (model aircraft type with some castor oil) and a 1-1.5 volt battery to energise the glow plug. These are not included in the price. You will also need about 5 hours of spare time to make the Celica practical and pretty.

Assembly is limited to fitting the wheels, installing the radio and controls and finishing the lexan body.



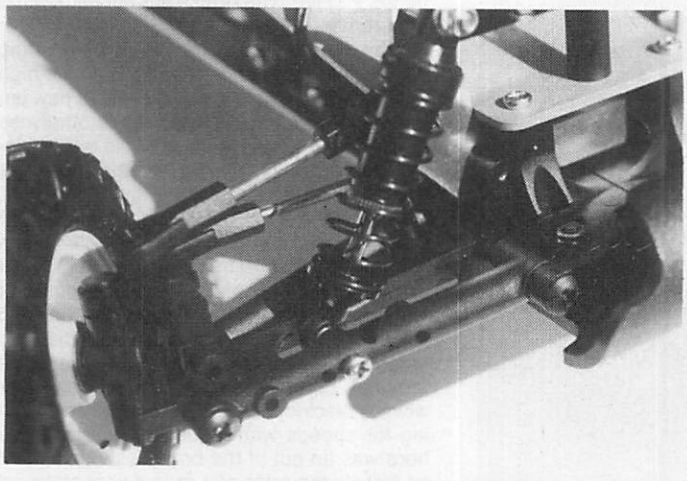
Three piece body will make you the envy of the street.

Panda supply an instruction manual with plenty of illustrations and a large plan giving an exploded view of every component on the car. A smaller plan shows a similar view of the engine components. The assembly of the throttle and brake elements to the servo is simple but can be confusing to newcomers. Panda do not furnish step-by-step moves in this area so pay careful attention to the exploded diagrams. Once assembled, the adjustment of these controls is well covered in the manual and so is the procedure for engine starting. Read and be rewarded. Keep the installation neat and tidy and put the receiver and battery box in a balloon or plastic bag as the instruction say. Your spotless new car will soon become a depositiory for oil and such no matter how careful you are, so be prepared.

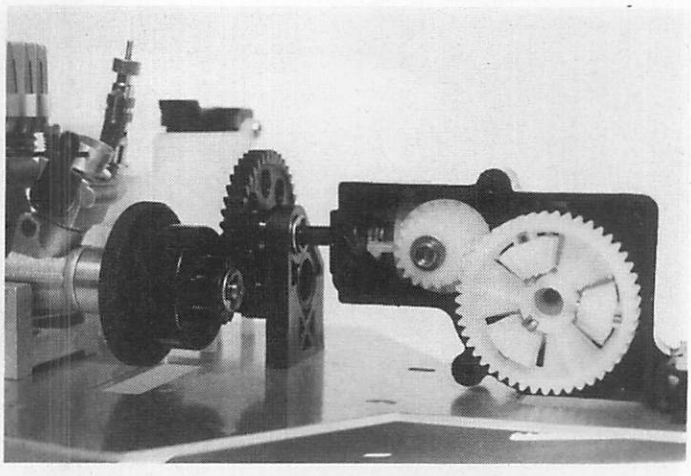
We found some mistakes. The instructions show wheel bushings on the outside of the wheels which is fine if you want them to lock up. Fit both to the axle before fitting the wheel. The steering centre tie rod was too long and we had to substitiute a bolt with the head cut off, and the rear upper suspension tie had been assembled on the wrong side of the mount.

Some of the plastic links were a tight fit on their balls but this is easily fixed by squeezing the plastic with pliers. Actually the result was a set of ball joints that fitted better than

Panda's Celica represents excellent value - looks good too.



Oil filled shocks and racer bred suspension on all four corners.



We dismantled the gearbox to check out transmission and gear differential.

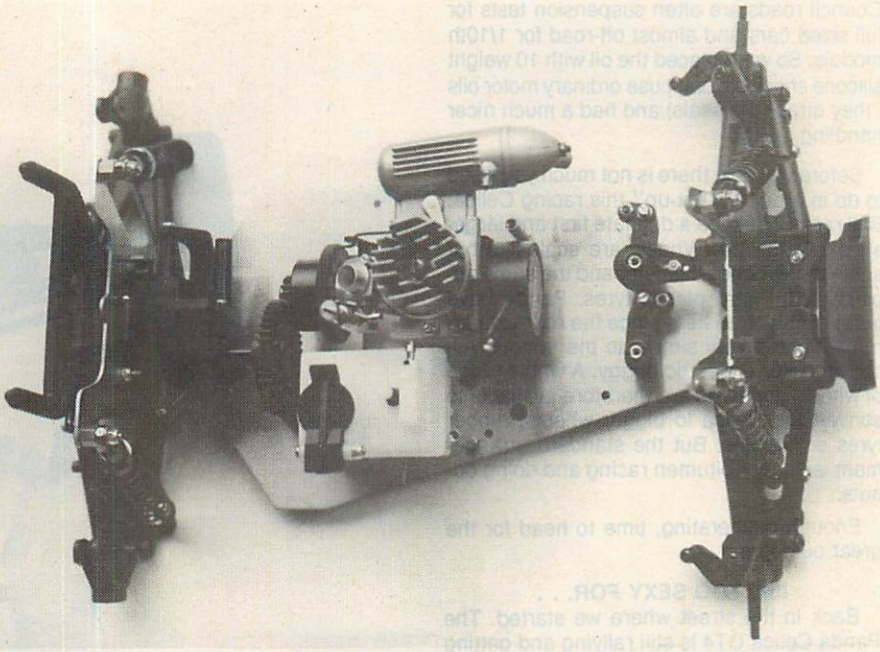
on many expensive buggies. These may be annoying problems but were easily fixed.

The manual may not be perfection but it can be entertaining. Panda are to be congratulated on their unintentional humour such as; "Niddle throttle opening", "Front Bumder bar" and "Put the model on a box or anything like that, to make aloof from the ground". Very droll.

As usual we masked the body on the inside with PVC (don't use the paper type masking tape) and sprayed with our favourite Pactra Racing Car Finish. Alternatively you can use the pressure pack acrylics sold in hundreds of colours for auto touch-up. Naturally a good selection of stickers is furnished to adorn the body. Seperate mouldings are supplied for front and rear spoilers and these really bring the car to life. We had no trouble attaching the spoilers with double sided tape instead of the tiny screws supplied.

TUNE UP TIME

Nearly ready. As befits a fighting machine there are some little adjustments that should be made for best performance. These are not covered in the manual.



Panda's Celica is 90 percent ready - out of the box.

In the best racing tradition the top suspension links are adjustable. Screw in (or out) the tie rod ball ends so that the tops of the tyres lean inwards a little throughout suspension travel. This is called negative camber. Likewise, adjustments should be made to the steering tie rods so that the front wheels are pointing slightly inwards (toe-in) at the fronts. When connecting the tie rod to the steering servo make sure the servo output arm is neutral at 90 degrees and the two steering bellcranks are both neutral when the wheels are straight. These simple precautions will make for more predictable steering on any car.

As supplied the shock absorbers are quite stiff. This is fine if you can run the vehicle on smooth surfaces all the time. Unfortunately our

Celica goes even better than it looks.

No matter which way you view the Celica, its gas power is a real blast.

Council roads are often suspension tests for full sized cars and almost off-road for 1/10th models. So we replaced the oil with 10 weight silicone shock oil (don't use ordinary motor oils - they attack the seals) and had a much nicer handling Celica.

Before you ask, there is not much you need to do in order to "hot-up" this racing Celica. Ball races would be a definate first and larger shocks a maybe. Wheels are scale-like but small at 1.8 inches diameter and the same applies to the hard plastic tyres. Panda have been considerate here since the rear axle arrangement is very similar to the famous Associated RC10 electric buggy. A whole range of wheels and tyres are therefore available to convert the Celica to bigger wheels, rubber tyres or foamies. But the standard arrangement is fine for bitumen racing and doing donuts.

Enough deliberating, time to head for the great outdoors.

I'M, TOO SEXY FOR. . .

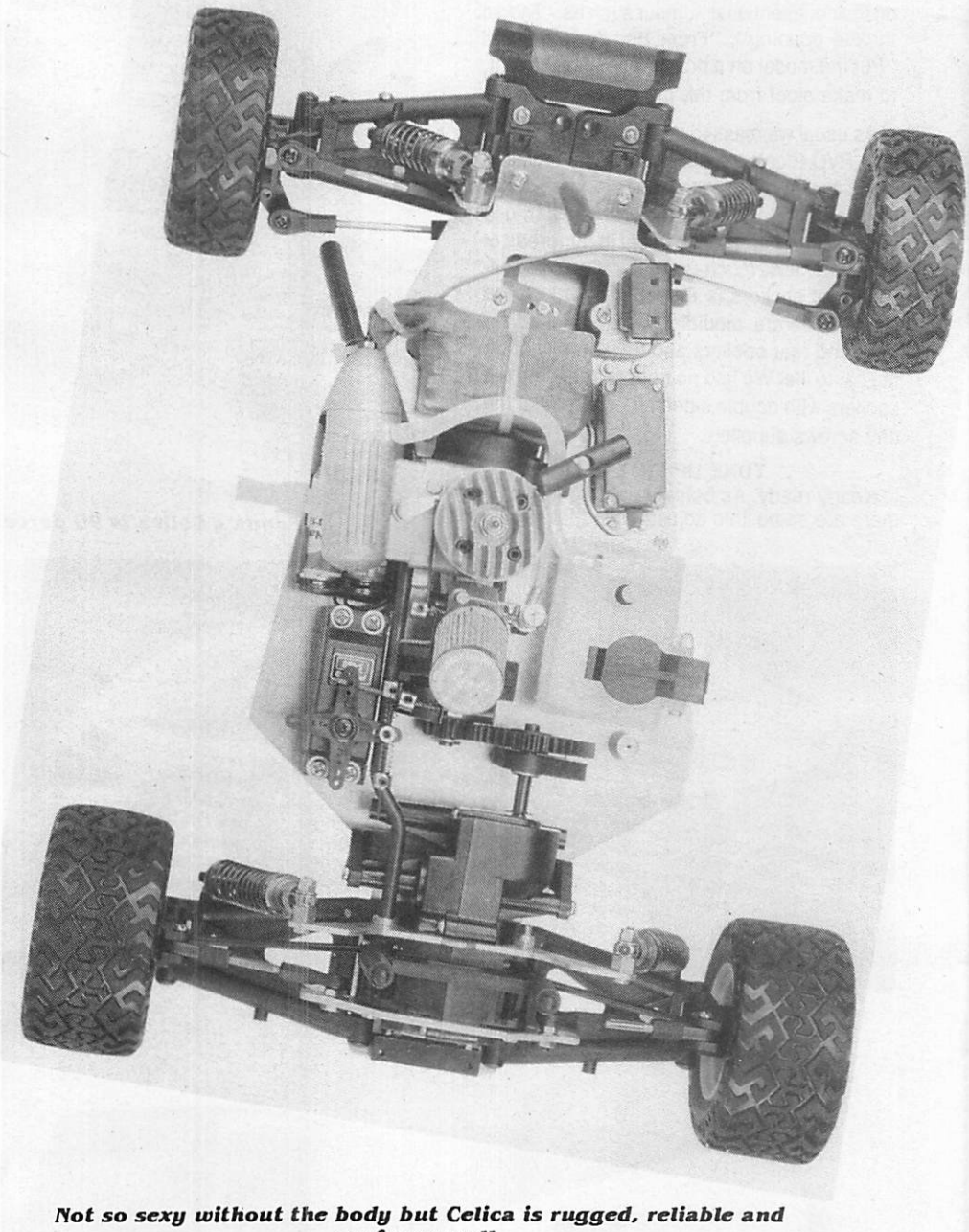
Back in the street where we started. The Panda Celica GT4 is still rallying and getting sexier all the time. We couldn't resist screwing in the engine needle a little more but that only damaged the glow plug and made subsuquent runs unreliable. Check the plug often. It may still work but if the spiral element is not clean and shiny then performance will suffer.

Throttle and brake hook-up need to be adjusted for proper operation.

Yep, spares are available and the same well proven layout can also be had with a Peugeot 405 rally body.

Forget what you may have heard about engine powered cars. Yes, they are messier and should be cleaned after every run but this one now starts almost instantly every time, runs for about ten minutes, performs reliably and outperforms most entry level electric buggies without even trying.

Hundreds of thousands of Tunder Tiger's glow powered racers have been sold worldwide which is testament to their performance and reliability. With a maximum price of $395 for car and engine they have a desirable balance of appearance, performance and price. And the Celica has a sexyness that cannot be bought at any price.



Not so sexy without the body but Celica is rugged, reliable and performs well.

REVIEW AT A GLANCE	
QUALITY OF INSTRUCTIONS	★★
EASE ON CONSTRUCTION	★★★★
QUALITY OF MATERIALS	★★★★
MOTOR	Magnum 10GP Glow supplied
CHASSIS TYPE	Aluminium Plates
SUSPENSION TYPE	Radial Arms with adjustable top links
SHOCK TYPE	Oil Damped, Sprung Shaft
DIFFERENTIAL	Planetary Gear (2WD)
BALL RACES	Optional - Metal bushes supplied
MOTOR ACCESSIBILITY	★★★★
BODY SHELL	Polycarbonate - 3 Pieces
HANDLING AS TESTED	★★★
RRP	$395.00

NEWS & VIEWS Rob Reade

If race winning results influence you to purchase a product then consider this, all the products that we sell have had some fantastic results of recent times. THIRTEEN World Championships in THIRTEEN years from our total range and still the wins keep coming, be it here or overseas.

ARROWS CIRCUIT TYRES from Italy

These tyres have totally dominated World Championship 1/8 circuit racing, taking every World Championship run since 1985. ARROWS have always been the leader in introducing new tyre technology, they may not alwawys be the cheapest tyres, but they are, one could say, the best. Now in 1992 together with PRO-10 1/10 scale tyres, there is a new line up of both front and rear extra long life 1/8 circuit tyres. check our BARGAIN BUY section

BLITZ MODEL TECNICA, BMT OR "BLITZ" 1/8 CIRCUIT RACERS & OFF ROAD BUGGIES from Italy

What can I say about the fabulous range of cars and accessories from this relatively new Italian Company? To win a World Championship at your first attempt (1/8 circuit 89/90) and then follow it up with a back to back win next time (1/8 circuit 91/92) is indeed testimony to a sensational product. Apart from cleaning up in World Championship competition, last year the BLITZ won the European Championship, the Italian National Championship (2WD and 4WD), the European Cup Classic, the German National Championship (Sedan), the English National Championship (Sedan), the Dutch National Championship, the Greek National Championship, the Portuguese National Championship, (Sedan) the Portugal Cup, the Grand Prix Kyosho Japan and the Japan Cup and that is just a random selection!

We have been representing BMT in Australia since late last year and had our first race with the BLITZ at the Victorian 1/8 Champs at the end of January. Team driver Chris Reade was able to "blitz" the field in 4WD Open to top qualify and win the Championship final by three laps.

This is indeed truly a superb race car and is available in 2WD and 4WD versions with kit prices starting at just $499. The good news continues with the release of the BLITZ line of 1/8 buggies. There is a lot of winning BLITZ race car technology in this new concept of design of buggy and you can expect some winning results as they make an impact on the buggy scene world wide in 1992. Available in 2WD and 4WD (kit prices from $499) as well as a pull start buggy. The pull start model comes with a Novarossi built BMT 3.5cc buggy motor, manifold and pipe and is sensational value at $895. Full trade terms available.

FREWER INTERNATIONAL BODIES & BUGGY TYRES from New Zealand

No, Frewer products have not won a World Championship but here is a product from our next door neighbour that is able to mix it with any comparable product world wide. It is really a credit to Kevin Frewer that he has been able to take on the big boys and achieve success. Here, at the recent SA 1/10 Buggy Champs, Frewer tyres won every class but one. New products currently coming on line from Frewer are a 10 by 40 buggy tyre, a new Group C Pro-10 Jaguar body, a new 1/10 Nissan GTR body and a new style BMW M3 1/10th body. Now remember Frewer has a vast range of 1/12, 1/10 and 1/8 bodyshells, wings, wing mount kits, body mount kits and tyres for 1/12 circuit, 1/10 circuit and off road, 1/10 monster truck and 1/8 circuit. A '92 catalogue of Frewer products is available now. Full trade terms available.

MODEL TECKNICS PRODUCTS from England

For those who wish to mix there own fuel we have MODEL TECKNICS EDL (Extreme Duty Lubricant). This is a highly refined synthetic oil with a big reputation and is available from all good model shops or direct from ourselves. Model Tecknics also produce an after run engine oil and TRIMLINE TAPE. If you want to be really nice to your model and have it look as good as it goes, then TRIMLINE TAPE is for you. TRIMLINE is a permanent adhesive pin stripe tape with eight different widths on a 2.5 metre roll of either Black, Red, White, Royal Blue, Sky Blue, Yellow, Orange, Silver, Gold or Green. Recommended Retail $8.95 per roll. Full trade terms available.

NOVAROSSI 3.5CC ENGINES AND ACCESSORIES from Italy

This is a product line that is hard to justify with words. Apart from winning the last three 1/8 circuit Wold Champs in succession and the most recent 1/8 buggy World Champs, the race winning results world wide are awesome, so much so that I could not possibly list them here. Locally it is much the same and it is not unsual to find at major 1/8 circuit events in Australia that Novarossi manufactured engines cover up to 70 percent of the field. In some events like the 4WD final of the last Australian Champs and in the 4WD final at the recent Victorian Champs every engine was of Novarossi manufacture. The Novarossi engines are produced under the brand name of Novarossi, Rex, or Top and we have them all, be it 1/8 circuit and buggy or in 3.5cc size for marine or plane. And there is more good news, just check or BARGAIN BUY section for some special prices.

PB RACING PRODUCTS from England

A two time World Champion in 1/8 circuit racing, PB are releasing some terrific new products. The PB DIAMOND 4WD and the PB PHOENIX 3 4WD are the new kids on the block in 1/8 circuit racerrs. I noticed the PB DIAMOND has been getting excellent reviews in the English magazines, it is aptly named because as a machined alloy car it certainly is a work of art. The PB PHOENIX 1 2WD continues on it's winning way, winning it's class at the last Nationals, winning the AHMC 500 lap Teams Enduro, the AHMC Christmas Classic and also taking 1st and 2nd places in 2WD class at the '92 VIC Champs. This 2WD class is fun, especially with a PB PHOENIX 1, so come on all you would be racers out there, talk to me now about 1/8 circuit racing. For the budget conscious I do occasionally have some very good second hand equipment. Some new goodies soon to arrive from PB are a Jaguar 1/8 group C bodyshell, a Williams F1 1/8 bodyshell and an optional trick diff for the DIAMOND and PHOENIX 3. Check out our BARGAIN BUYS.

TEKIN ELECTRONICS PRODUCTS from America

Another World Championship winning product and again another superb product line which is hard to do justice to with words. We have now been appointed the sole authorised Australian import agent for Tekin USA and with that we have totally restructured our marketing of TEKIN products in Australia. Our prices on speed controller, battery chargers and mini receivers are now the best in Australia, we service the product, we stock the product in quantity and we keep you up to date with all the latest product and service info. Arriving any day are the new Tekin 410K, the mini computer "smart" speed control, the new 610 speed control with reverse and a new mini FM receiver. Full trade terms available.

BARGAIN BUYS

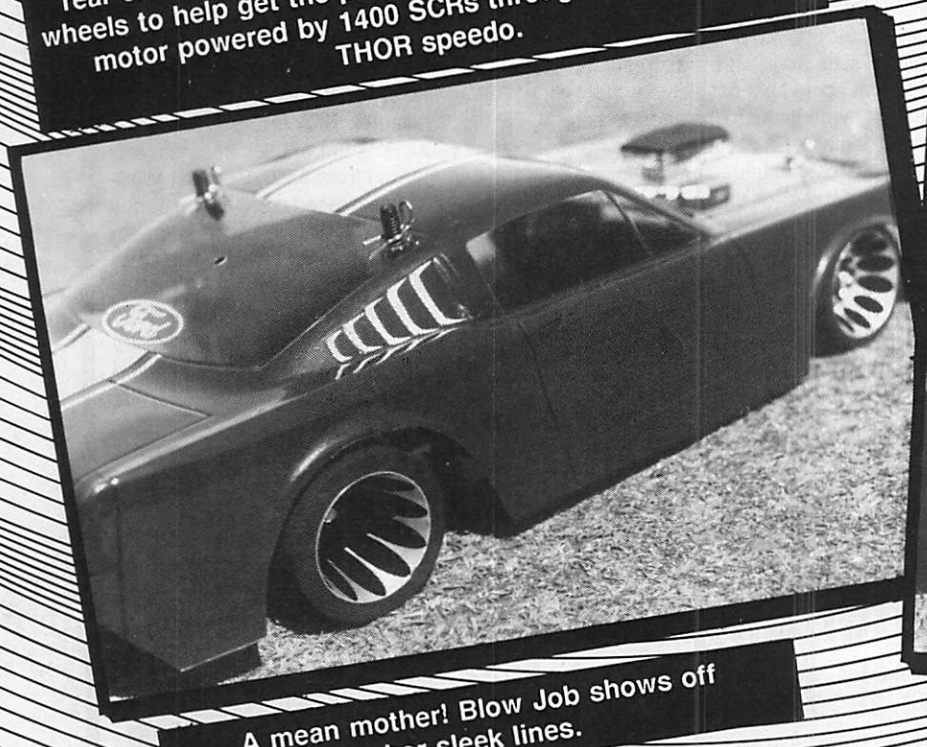
ARROWS 1/8 purple rear tyres $17, some 1/12, 1/10 and 1/8 scale bodies at 50 percent OFF (list available), NOVAROSSI 3.5cc car engines $200, REX turbo 3.5cc engines (car, plane and marine) from $350, PB MINI MUSTANG 4WD fully ballraced competition buggy $214, PB ACE 2WD fully ballraced competition buggy $214, some PB PHOENIX 1/8 parts at 50 percent OFF (list available), PB PHOENIX 1/8 rims at $10 a set front and rear (second hand), RW RACING accessories and hot up parts for 1/10 buggies at 50 percent OFF and some Pro Curcuit tyres at 50 percent OFF (list available)

Best regards
Rob Reade

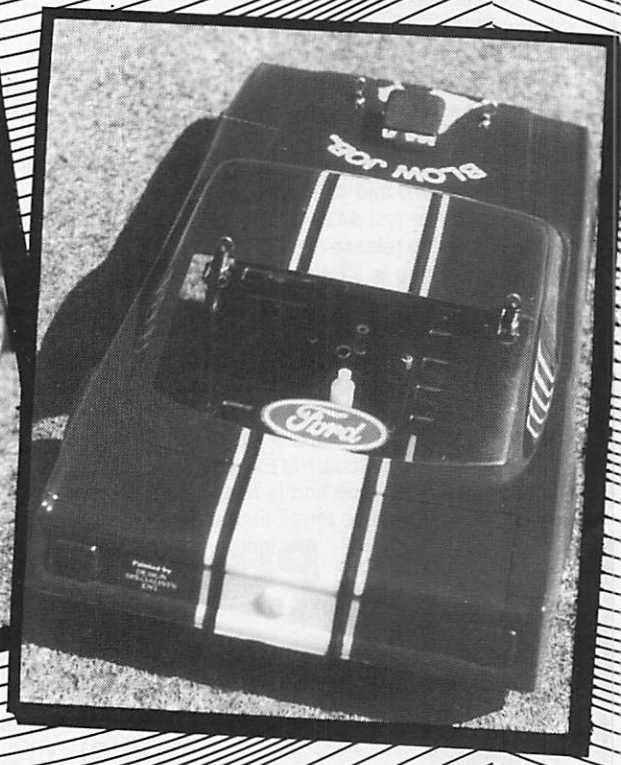
HOME GROWN HANDYWORK

Some people might say that Canberra is full of public servants and politicians. It may well have more than its fair share but it also has an

"BLOW JOB", while the name sounds ambiguous, the '64 Mustang, sporting a Tamiya Cold Buster blower through the bonnet says it all. The Bo-Link Eliminator has modified rear end and suspension and also has hand spun alloy wheels to help get the power down from a Reedy Blue Dot motor powered by 1400 SCRs through a Aristocraft THOR speedo.

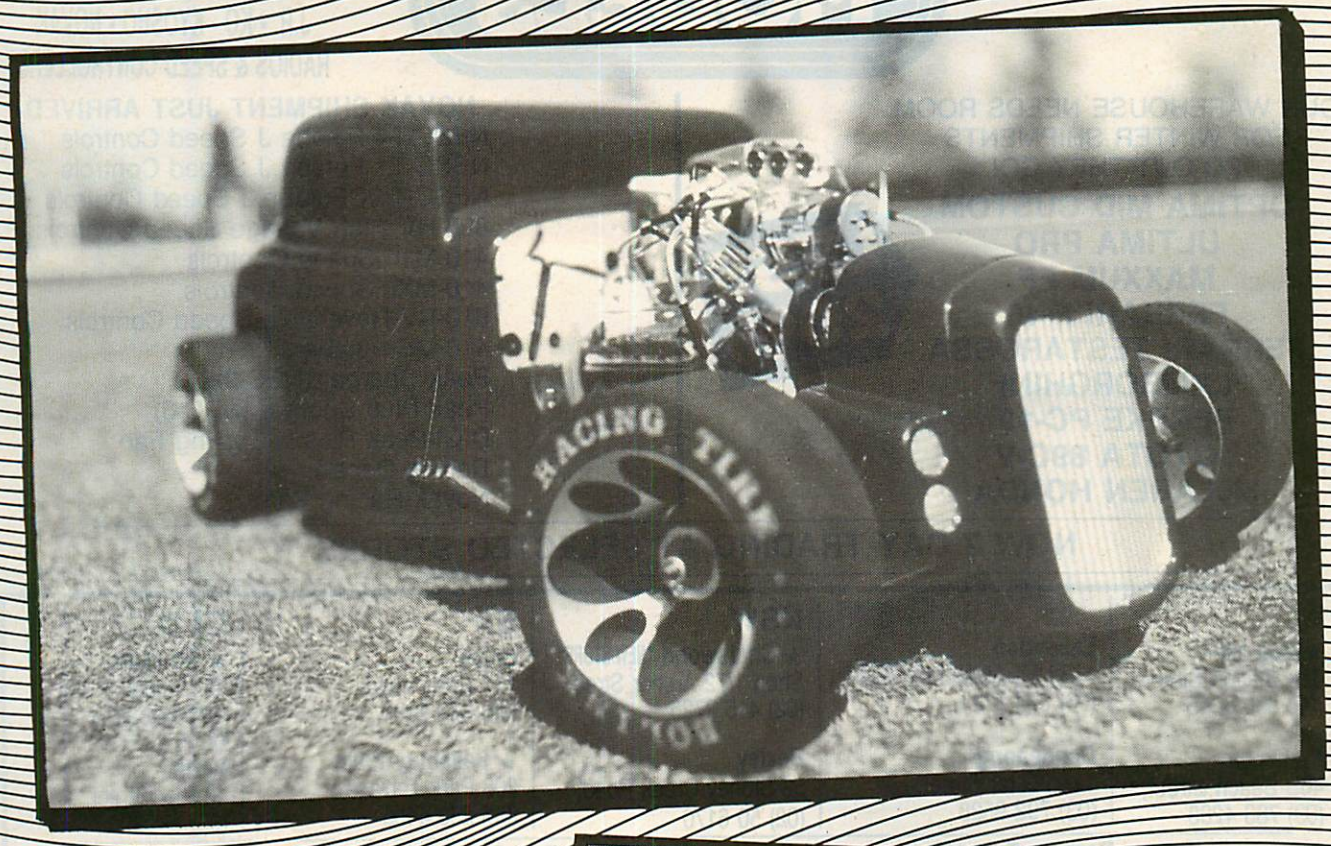


A mean mother! Blow Job shows off her sleek lines.



EVIL - WICKED, MEAN & NASTY

"Evil - Mean, Wicked & Nasty" HOT TRAMP with a '64 Mustang called "Blow Job" that tags along with a Hemi Coupe. Confused?



EVIL - MEAN, WICKED & NASTY is Gregs Parma Hemi Coupe fitted with a blown & injected "big block" all sitting neatly on a Bo-Link Sports Chassis. The awesome custom made alloy wheels are hand made and cost a *mere* $180.00 for a set of four. If you want to stand out in a crowd, then these are for you.

With three sets of wheels to choose from, Gregs Coupe will always be the best dressed car on the block.
If your interested in being the fast dude on the block ring Grey Murray at the Hobby Shack in Canberra on (06) 280 6225 and he'll be able to help you.

AUSTRALIA'S LEADING HOBBY STORES

ABC MODELS

Stocking ALL Kyosho Cars & Spare Parts Including parts for OLD Kyosho Cars

SALES AND SERVICE ON
J.R. - KO - KYOSHO - NOVAK
RADIOS & SPEED CONTROLLERS

OUR WAREHOUSE NEEDS ROOM FOR WINTER SHIPMENTS SO OUT THEY GO!

OPTIMA MID CUSTOM
ULTIMA PRO
MAXXUM FF
FERRARI F-40
FERRARI TESTAROSSA
LAMBORGHINI
PENSKE PC-19
TOYOTA 89C-V
McLAREN HONDA

LESS 20%

NOVAK SHIPMENT JUST ARRIVED
NESC-T4 Futaba J Speed Controls
NESC-T1 Futaba J Speed Controls
NESC-T1X Futaba J Speed Controls
828-HV High Voltage Speed Controls
410-M1c Speed Controls
410-MXc Speed Controls
610-RV Reversible Speed Controls
410-MS Futaba J
Peak Charger (NEC-2)
Peak Plus Charger (NEC-3)
DIGI-Peak Plus w/Cooling Fan
Racing Decals
Novak Racing Wire

NOW 7 DAY TRADING AT SELECTED STORES

VIC
★ **Box Hill**
424 Station Street,
(03) 890 6845

Frankston
46B Beach Street,
(03) 783 4288

Essendon
1138 Mt Alexander Road
(03) 374 2711

Dandenong
118 Foster Street,
(03) 792 9528

NSW
★ **Chatswood** *NEW STORE*
Shop 1/72 Archer Street,
(02) 415 2725

Bexley
58 Stoney Creek Road,
(02) 50 6170

SA
Unley
117 Unley road,
(08) 373 1191

★ **Salisbury Plain**
208 Park Terrace,
(08) 258 4485

QLD
★ **Sorrento**
48 Bundall Road,
(075) 38 9433

WA
Perth
48 Pier Street,
(09) 325 8117

★ **Denotes 7 Day Trading.** **Mail Orders Welcome** **BankCard/MasterCard/Visa Welcome**

NEW!

KYOSHO

NEW!

RADIO CONTROLLED 10 SIZE ENGINE POWERED STADIUM TRUCK

OUTLAW RAMPAGE TRUCK™

WITH KYOSHO'S OWN NEW GS-11 CR MOTOR

Technical data:
- Length/423mm (16.7″)
- Width/292 (11.5″)
- Height/202mm (8.0″)
- Wheelbase/272mm (10.7″)
- Ground clearance/49mm (1.9″); R: 235mm (9.3″)
- Weight/1650g (3.6lb)
- Tires (F/R)/104x56 (4.1x2.2″)
- Gear Ratio/11.5:1
- Engine (included)/.10 glow w/built recodl-type starter.

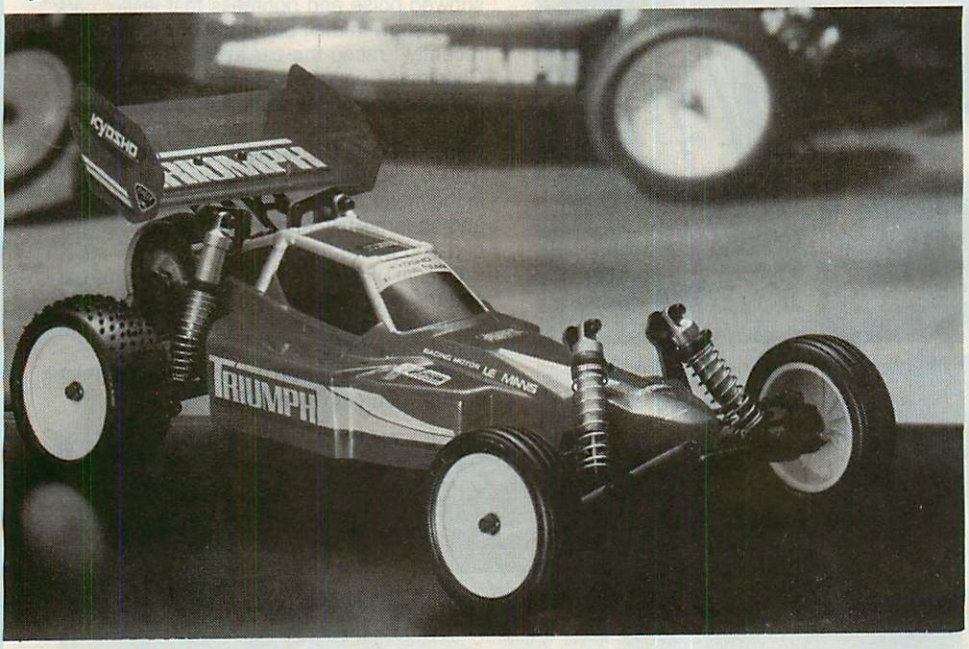
Distributed by

ADVANCED HOBBIES INTERNATIONAL
424 STATION STREET, BOX HILL, VICTORIA. 3128
PHONE: (03) 890 0660 FAX: (03) 890 0693

BANKCARD - MASTERCARD - VISA

KYOSHO
THE FINEST RADIO CONTROL MODELS

TRIUMPH OFF ROAD RACER



Superb gearbox. Access button and slipper clearly visible.

New Kyosho doesn't mind who eats it's dust.

by Geoff Lewis

When asked to do this test I eagerly accepted. It is not very often one get's to drive, let alone race a car of this calibre.

"Ah it's the new Ultima" I hear you say. Well it's not. This is not a revamp, update, restyle or rehash. With the Triumph, Kyosho has taken a quantum leap forward in designing it's latest off-road 1/10 two wheel drive racing buggy by bringing together many proven ideas with the benefit of the factory precision engineering which Kyosho is renowned for.

THE FEATURES

Where to start? The Triumph bristles with great engineering features, which not only make the car easier to drive but make the job of fine tuning to individual tracks a breeze. Your ability and experience is the only limit.

1. Belt drive gear box.
2. Live hinge to alter front kick up.
3. Rigid F.R.P. chassis with perimeter top plate.
4. Pressure oil filled coil over shock absorbers.
5. Adjustable slipper clutch.
6. Independent suspension with adjustable rear wheel toe in.
7. 48 dp pinion and spur gear.
8. Ball diff for improved traction.
9. Low profile 2.15 inch tyres and rims.
10. 12 ball races included.

and that is by no means all.

Yes I know it's all been done before but not all in one car and certainly not to this over-all standard of quality.

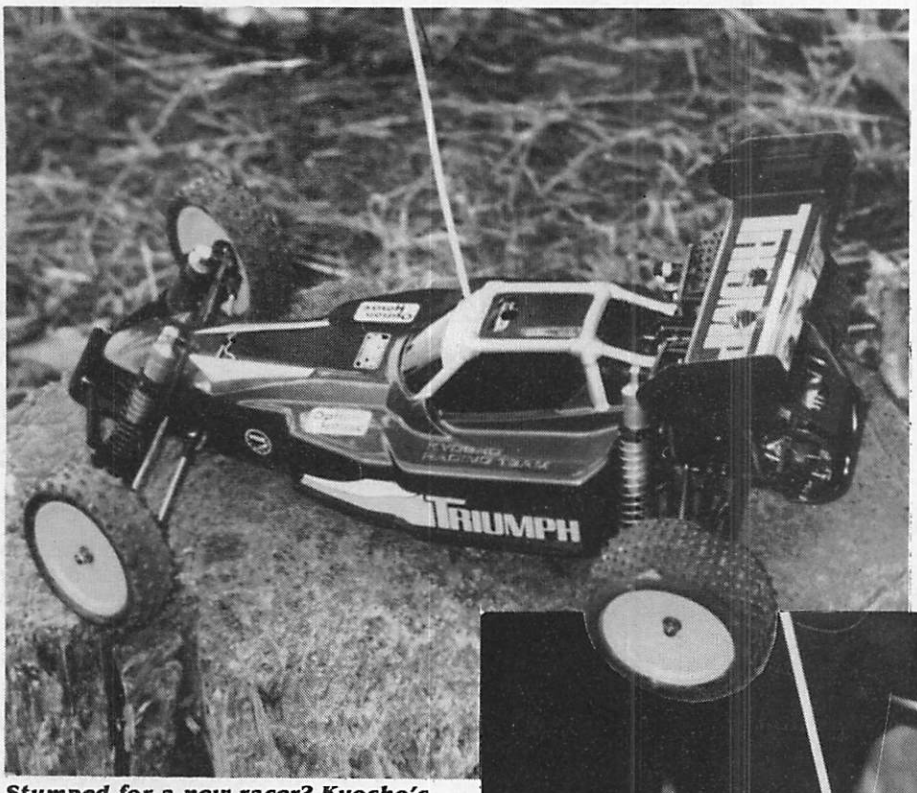
THE KIT

The kit is typical Kyosho, well presented, packaged and labelled including, a fairly concise instruction booklet encompassing construction and setting - up for competitive racing. Although not the easiest car to build, if you stick to the instructions the building should not present any problems.

The ball diff comes pre-assembled as do the gold shocks, eliminating the possibility of incorrect or poor assembly. With this car Kyosho introduce their new intermediate length front shocks. Done away with is the need to cobble rear shocks onto the front of your car in an effort to cope with the rough tracks which we experience in Australia. The shock pistons are also of a new design and appear to give a very smooth stroke.

Strong, light double decker FRP chassis. Quick-change batttery holder.

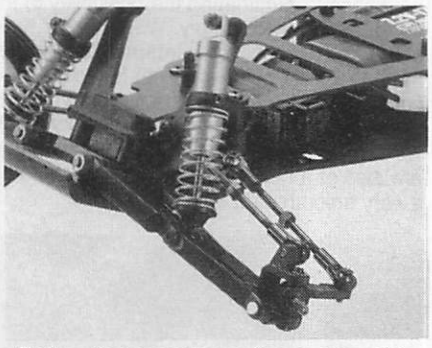
The car has a twin belt gearbox which should prove very strong and almost maintenance free. In Mabuchi and Stock class re-



Stumped for a new racer? Kyosho's Triumph is as good as they get.

moval of one of the belts would increase efficiency with little decrease in reliability. In order to increase or decrease front wheel bits to suit track conditions the front wheel caster can be changed by either altering the front 'kick-up' in three stages 20, 25 or 30 degrees or by buying the optional caster blocks which change the angle at the hub. Rear wheel caster or anti-squat can be changed between two settings by turning the 'A' arm rod stopper-block over.

The chassis with perimeter top plate is very rigid in fact it is about as flexible as a house brick and probably as strong. The new body and wing give the Triumph a chunky and aggressive look that is very distinctive without looking too futuristic. All in all a comprehensive package which impresses.



Extra -long suspension arms give long travel to absorb bumps and keep the Triumph on course.

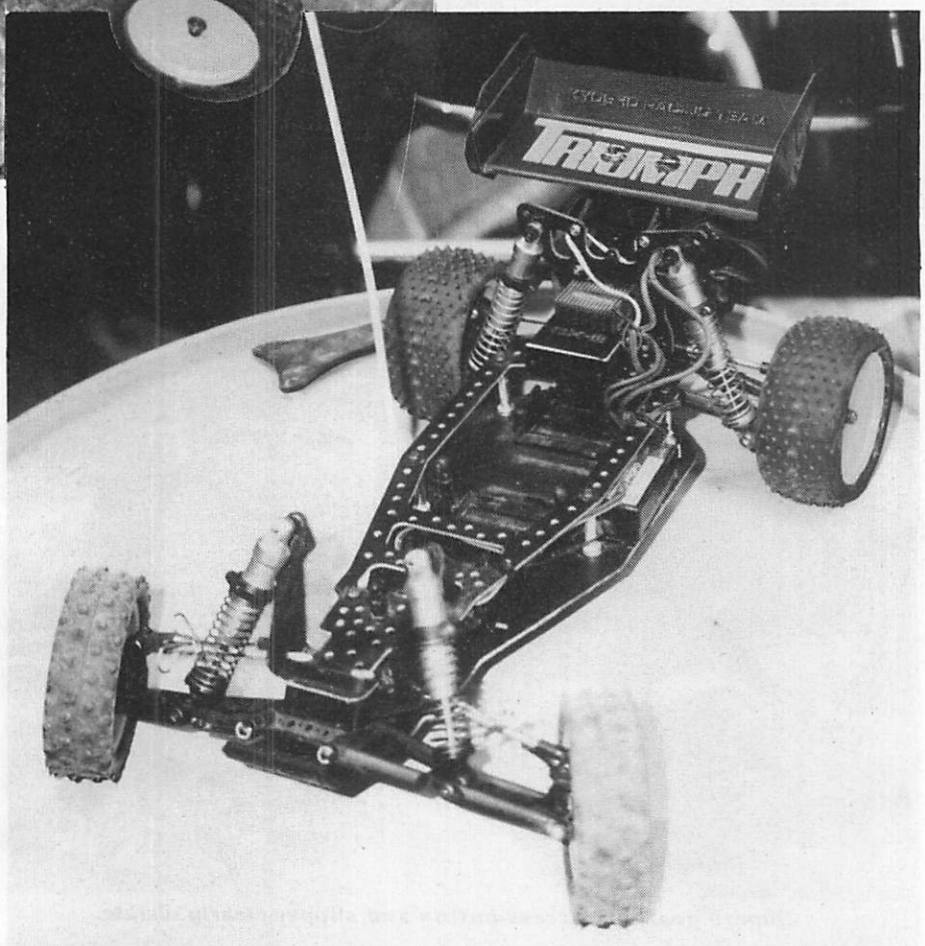
SETTING UP

Adjustability is great when it's easy to do and it works. The slipper clutch can be adjusted by popping over the small access button on the gear cover and tightening or loosening a nut with the small wrench provided. In fact all the adjustments on this car can be done 'trackside' a desirable feature indeed. It is interesting to note the change by Kyosho ot 48dp pitch pinions thereby stepping closer to standardizing consumables in buggies, - very sensible. The kit tyres are excellent and five races or more from one set of rears makes them economical to boot.

RACING

The cars race debut was at the Keilor round of the Victorian Pro-Am series. As per the instructions the set up was very good and powered by a Kyosho stock 34 motor the handling showed poise and rightness that lesser cars rarely show in their out of the box form. More recently I raced the car at the Templestowe Christmas Cup in two wheel stock class. Qualifying second on the same lap as the top qualifier the only other car to do so and found myself leading the 'A' final at the four minute mark by two thirds of a lap only to throw a wind in the motor, but the car was handling so well and so large my lead, I still managed a second and a fine trophy.

Overall I was more than pleased with the car and the only criticism I have is that the car is somewhat heavy but with some sensible lightening this can be easily overcome. This car, once sorted out will be the one to beat in 1992 of that I am convinced. Truly a triumph.



Body removed showing top plate. Note holes in top plate not standard but are the result of lightening.

REVIEW AT A GLANCE

QUALITY OF INSTRUCTIONS	★★★★
EASE ON CONSTRUCTION	★★★
QUALITY OF MATERIALS	★★★★
MOTOR	Not Supplied
SPEED CONTROLLER	Not Supplied
CHASSIS TYPE	Bi-Level CRP/FRP plates
SUSPENSION TYPE	Lower 'A' Arms. Top links ads.
SHOCK TYPE	Oil damped sprung shaft long throw
DIFFERENTIAL	10 Ball
BALL RACES	Throughout
MOTOR ACCESSIBILITY	★★★★
BODY SHELL	Polycarbonate (Lexan) & wing
HANDLING AS TESTED	★★★★
RRP	Ring Your hobby shop for pricing.

AUSTRALIAN HOBBY CENTRES

PERTH HOBBY CENTRE
385 MURRAY STREET, PERTH 6000 **(09) 322 3376**

SOUTH AUSTRALIAN HOBBY CENTRE
1st FLOOR, 135 RUNDLE MALL, ADELAIDE 5000 **(08) 232 0080**

VICTORIAN HOBBY CENTRE
21A SWANSTON STREET, MELBOURNE 3000 **(03) 650 4817**

3 SHOPS NEAR YOU

welcome here

MAIL ORDER CREDIT CARDS LAY-BY

Buggy Kits and Package Deals (package deal includes Radio, 7.2 battery pack and quick charge leads).

HORNET 2WD
Car Price $110.95
Deal Price $250.00

77 MUD BLASTER
Car Price $229.00
Deal Price $349.00

82 MAD CAP
Car Price $179.95
Deal Price $310.00

TOP FORCE
No Motor
No S/Control
Car Only $389.00

MERCEDES C11
Car Only $249.00

SUPER ASTUTE
Car Only $359.95

86 TOYOTA HILUX
Car Price $335.95
Deal Price $439.95

89 BULL HEAD
Car Price $409.95
Deal Price $529.95

67 THUNDERSHOT
Car Price $239.95
Deal Price $359.95

FREE OFFER
8 BALL RACE 11 x 5 BEARINGS WITH EVERY BUGGY DEAL SOLD
VALUE.....$32.00

58 BLACKFOOT F-150
Car Price $199.95
Deal Price $358.95

65 CLOD BUSTER
Car Price $399.95
Deal Price $499.95

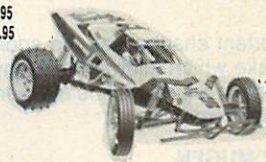
89 F-1 FERRARI
No Motor
No S/Control
Car Only $229.00

BEAR HAWK
Car Price $169.95
Deal Price $269.00

60 MONSTER BEETLE
Car Price $229.95
Deal Price $358.95

87 MANTA RAY
Car Price $249.95
Deal Price $439.95

81 KING CAB
Car Price $299.95
Deal Price $439.95



74 GRASSHOPPER
Car Price $95.95
Deal Price $229.95

TERRA SCORCHER
Car Only $289.00

TRINITY STOCK MOTORS

SLOT MACHINE	$39.95
BOSS	$29.95
TAMIYA GOLD	$69.95

WE ALSO CARRY
WIMPY, MODIFIEDS, REEDY
ASSOCIATED & TAMIYA

RADIOS

FUTABA MEGATEC JUNIOR	$139.95
FUTABA ATTACK SR STICK	$79.95
SANWA SABRE	$79.95

BATTERIES

TAMIYA 7.2 1200 (Sanyo's)	$39.95
TAMIYA 7.2 1700 (Sanyo's)	$55.00

MASTER INSTRUMENTS 1400 SCR (Sanyo's)	$45.00
SADDLE PACK (Sanyo's)	$45.00
A.A. NICADS	$3.50

RECIEVERS

SANWA 29 Mkz AM	$25.00
FUTABA	$39.95

SERVOS

FUTABA S148	$29.95
SANWA 102	$29.95

BALL RACES

1105	$3.50 EA

PACTRA POLYCARONATE PAINTS
IN FLURO COLOURS

SPRAYS	$6.95
BRUSH ON	$3.95

CAR KITS - ELECTRIC

TAMIYA 2WD	
HORNET	$110.95
BEAR HAWK	$169.95
MAD CAP	$179.95
SUPER ASTUTE	$359.95
RC-10	$449.95
4WD	
MANTA RAY	$249.95
TOP FORCE	$389.00
AVANTI	$329.95
PETROL (GAS)	
PEUGEOT 405	$379.95
FERRARI TESTAROSSA	$379.95
CELICA RALLY	$379.95

ALL WITH 1.5CC AND ZIP START
WITH RADIO (STICK)
DEAL PRICE.....$450.00

PARMA CARS	
DAYS OF THUNDER	$150.00
HEMI COUPE	$210.00

MAIL ORDER FORM

Prices are valid until the next ad, or while stocks last.

Qty.	Description	Price	Total

Money Order enclosed☐ or please charge my BankCard☐ MasterCard☐ Visa☐ AMEX☐

Card Number: ☐☐☐☐☐☐☐☐☐☐☐☐☐☐☐☐ Expiry Date.....

Card Holder's Name..... Card Holder's Signature.....

Please send to.....

.....P/Code..... Card Holder's Phone No.....

Please include Freight and Insurance. *Freight rates:* Minimum $3.95; Radios, Kits and Deals $10.00. *Insurance:* $1.00 per $100.00

MUGEN 92 SUPER SPORT

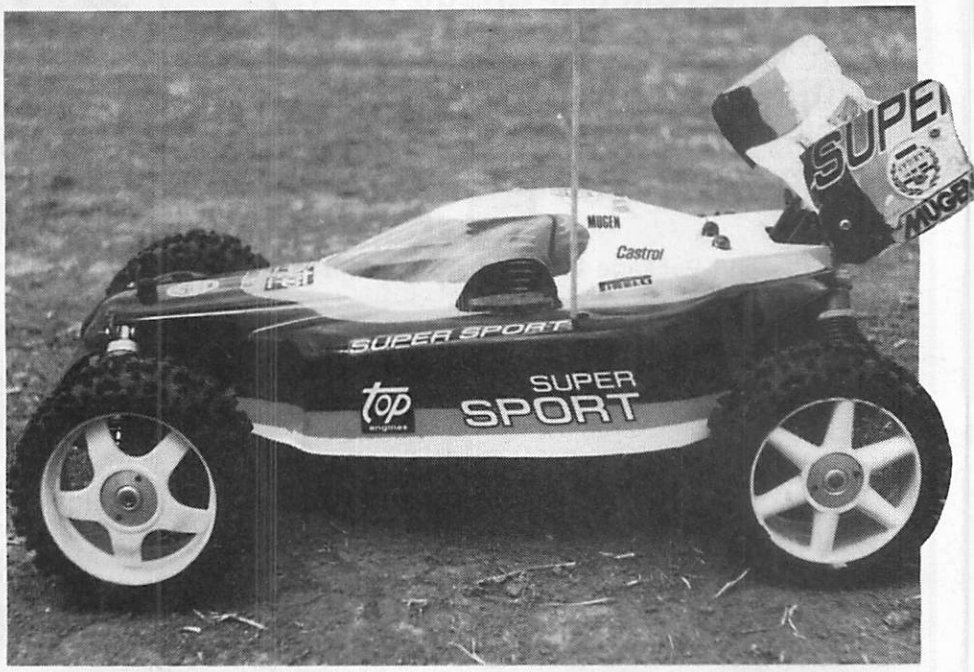
1/8th GAS OFF-ROAD BUGGY

by Tom Drygalla

First a few word's about MUGEN. The name Mugen might be familiar to some people. It is the first name of Mr Mugen Honda the son of Mr Honda Senior, the original founder of Honda cars, bikes and Honda Racing. Mugen in Japan are also well known in motorcycle racing and for building excellent Rally cars and Formula 3 engines. so you can ba sure that there was plenty of research and design done for these buggies.

Mugen has also made another appearance into Australia in the form of an Electric buggy named Mugen Bulldog which was also very successful.

1/18th Gas Off-Road can be a difficult place to start racing but this new 92 Super Sport from Mugen makes it a whole lot easier.



Move out of the way when this mean monster gets motivated.

BUILDING THE KIT

To build this kit is very simple with the easy to read and follow instructions and pictures in the manual. The three differentials are full built. When you lay-out the parts in this kit you will notice all the rest of the parts are in bags marked by alphabetical letters, which should be laid out in order and then per instructions built bag by bag.

Keeping in mind that all cars need care and most importantly the use of a good quality lock-tite to be put together correctly.

CHANGES FOR '92

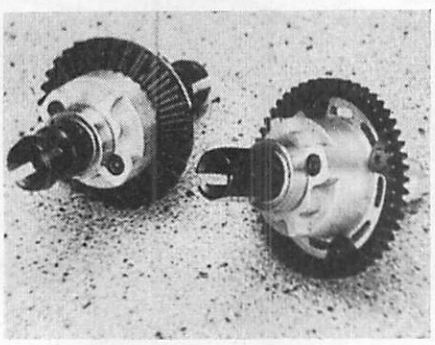
New longer travel shocks with swivel balls at both ends and also taller shock towers for all round better road holding.

Also strengthened suspension arms which of course are double wishbone suspension front and rear and this gives Mugen that winning edge.

The most important change was the addition of a front brake which allows the buggy to "Slow and Stop" in a straight line even on loose dirt which is incredible.

ABOUT THE '92 MUGEN

The '92 Mugen is extremely robust. It now uses all steel gears throughout. Excellent low profile mini spike tyres are provided with very strong lightweight rims, these tyres work well with Mugen's precise steering and excellent road holding again even on a loose surface.



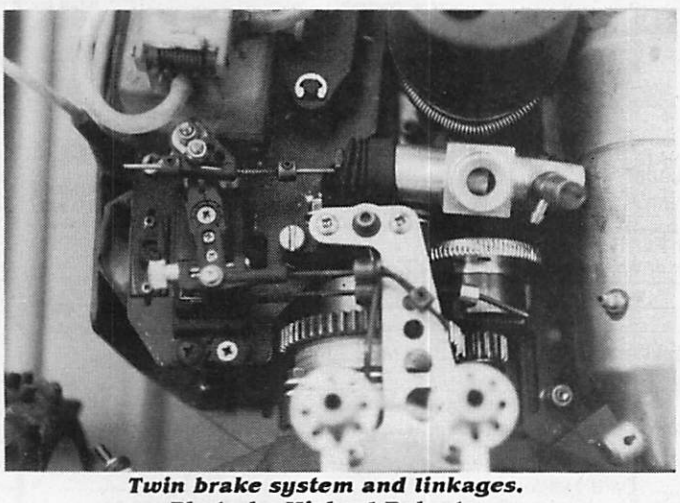
Diffs include spur and conical steel gears.

Other features include shaft driven 4WD system, front Universal joints for more steering. All countersunk screws are now used together with the new lightweight ribbed chassis. The top radio plate has also been strengthened with an aluminimum post and new rear attaching point. A nicely designed rubber receiver case to protect the receiver has also been included. The addition of stone guards now keeps the inside of the buggy reasonably clean. This kit now also includes a rear stabilizer and of course the whole buggy is ballraced.

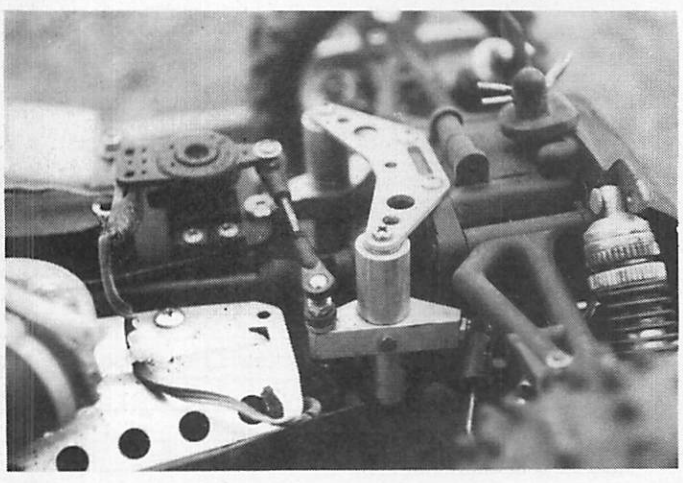
Mugen has already in its radio plate positioned where the servos must go. The steering servo should have at least 5 kilos of torque and the throttle should also have at least 5 kilos of torque.

For the receiver you need a battery pack, this is then tie wrapped under the aluminium plate provided which is then screwed down to the chassis. Also mounted in the radio plate is the fuel tank. It has a fliptop lid with a strong spring which makes sure there is a strong seal and this is very important as all fuel engines need a pressurized tank to insure proper running of your engine.

Then the only other things you need are:



Twin brake system and linkages. Photo by Michael Roberts.



Steering is rugged and precise.

A suitable 3.5cc engine (I recommend the new Bergonzoni Mirage buggy for under $300), a suitable clutch and flywheel (I recommend a full boss clutch which costs around $50), also a good legal muffler and header which can be purchased for around $80. The only other thing needed is, as I have already talked about is a good radio with good servos.

TRACK TESTED

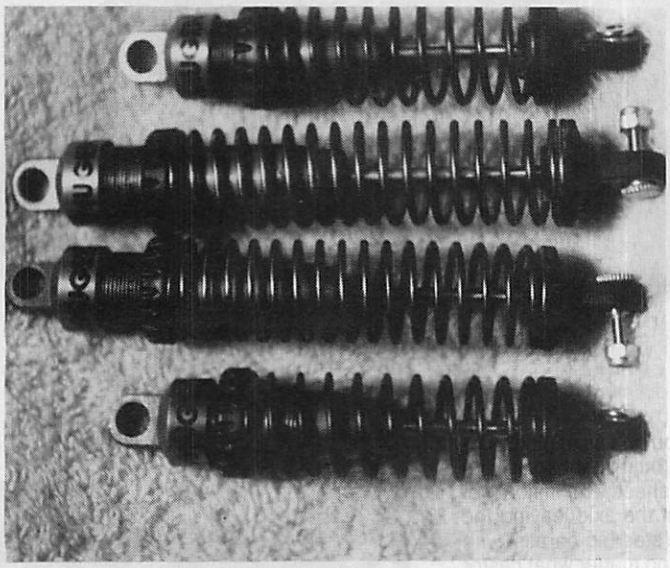
We have already track tested the buggy by itself and also against the '91 Super Sport and all the changes they have made do make a difference. They make the buggy a whole lot easier to drive and also a lot steadier on the track. The '91 buggy was a bit hard to control but he '92 buggy is the complete opposite. We will be using the '92 Mugen at the World Championships in Germany in June.

PRICE

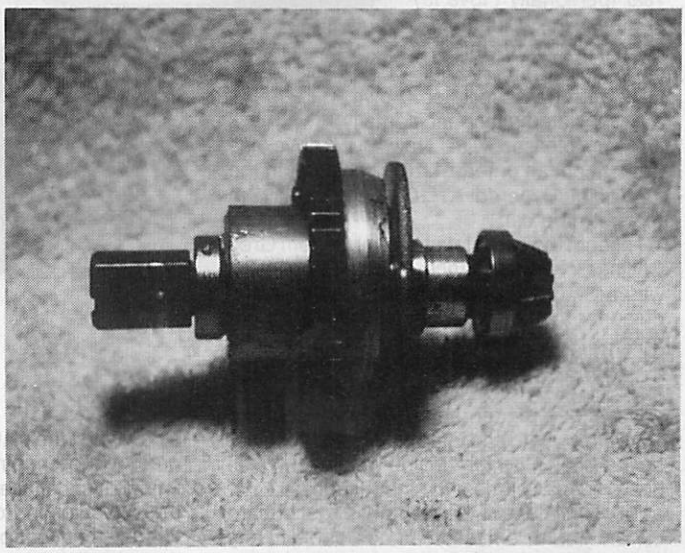
The price of this proven world class buggy is around $600 which makes it one of the cheapest 4WD gas buggies you can buy. Try the price against a top of the line 4WD electric buggy and you will be surprised.

FOOTNOTE:
MUGEN'S RACING HISTORY

Although Mugen gas buggies have been around for three years it was at the 1990 IFMAR World Championship in Bangkok where Mugen campained three buggies against the might of the whole world and there they finished 1st, 2nd and 7th. In the 1991 European Championship, which was held in France, two nonfactory drivers took on the best European drivers and finished 2nd and 3rd with their Mugens only to be beaten by a local French driver using a French made Yankee buggy. So you can see that the Mugen buggy has proven itself all round the world to be an excellent buggy, but most importantly at Club racing or just having fun you can be confident you have purchased the best in value for money.



Shocks now have screw adjustable spring tension.



Here's a $300 option for gas off-roaders. The Bergonzoni Thurson differential.

HYPERDRIVE H10SC

by Andrew Cooke

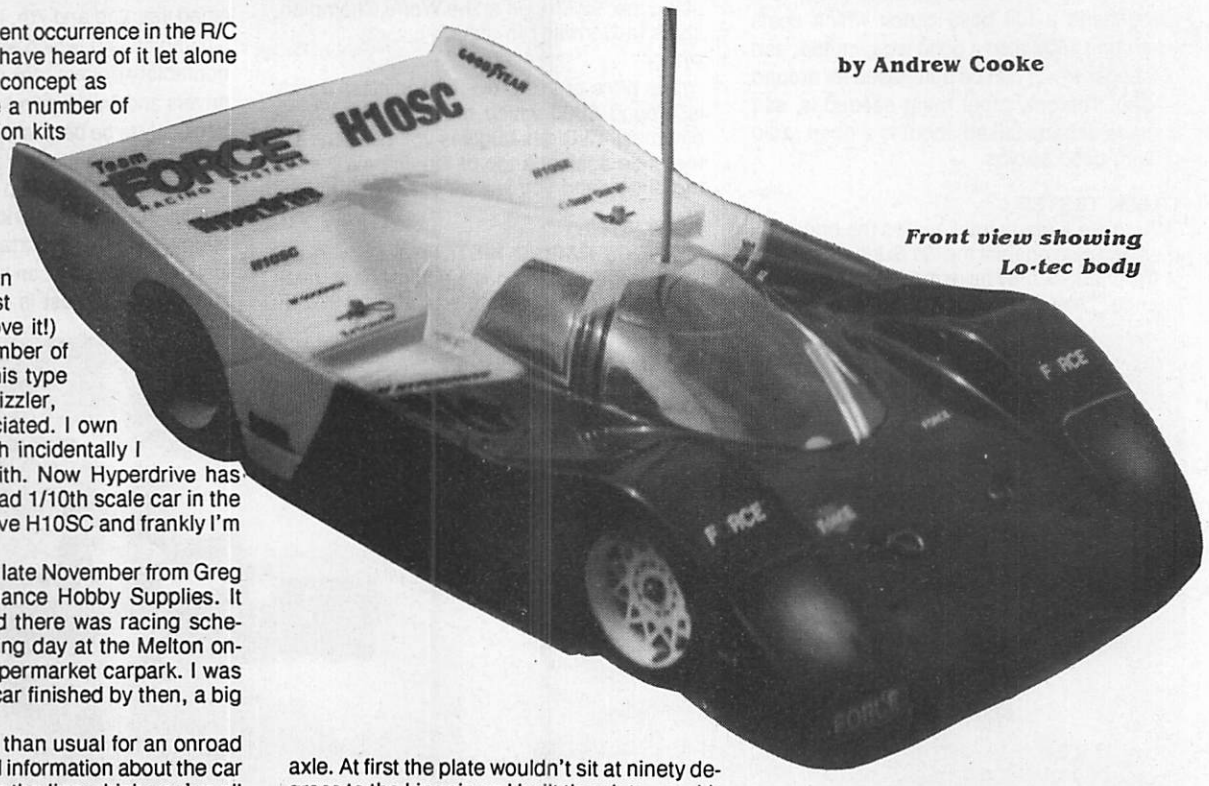
Hyperdrive is a recent occurrence in the R/C game and few of us have heard of it let alone own a car with this concept as standard. There are a number of Hyperdrive conversion kits on the market for 1/10th scale offroad cars, but not for onroad. Onroad racing has grown enormously in Victoria over the last year (personally I love it!) and there are a number of cars available for this type of racing e.g. the Sizzler, Lynx and the Associated. I own an Associated which incidentally I am very pleased with. Now Hyperdrive has brought out an onroad 1/10th scale car in the form of the Hyperdrive H10SC and frankly I'm rapt with the car.

I bought the car in late November from Greg Collings of Performance Hobby Supplies. It was a Saturday and there was racing scheduled for the following day at the Melton onroad track in the supermarket carpark. I was hoping to have my car finished by then, a big task!

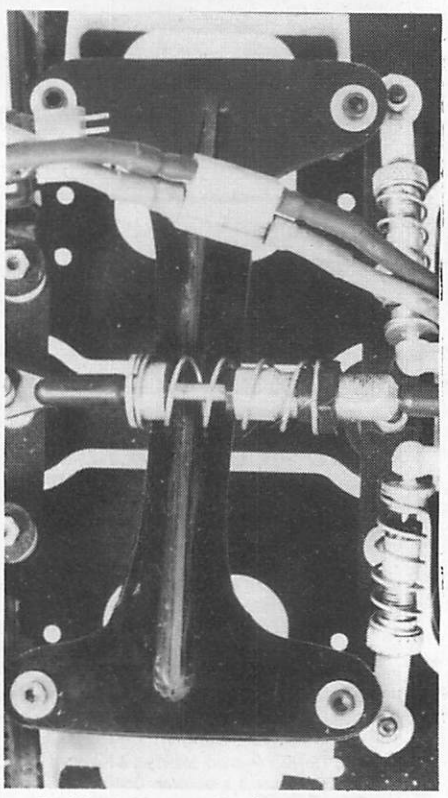
The box is bigger than usual for an onroad car, with a photo and information about the car on the front. Now for the line which you've all heard so many times: the instructions are not as good as those in the Japanese kits, but are certainly sufficient, as I had no trouble in any facets of building this car.

In the early stages of building you have to tap thick plastic washers with allen-head screws, it is hard work and you have to be careful but with a bit of patience it can be done reasonably easily. The front axle is aluminium, held in place also by aluminium blocks, one being a clamp hence the castor can be easily adjusted. Here there is a point that makes this car unique, the servo is mounted on a carbon fibre plate which is screwed to a flat on the axle. At first the plate wouldn't sit at ninety degrees to the kingpin so I built the plate up with a few slivers of acetate sheet. The majority of the servo lies in front of the axle leaving the tie rods that control the steering parallel with the axle all the time, so no matter what castor angle you choose the steering adjustment does not change.

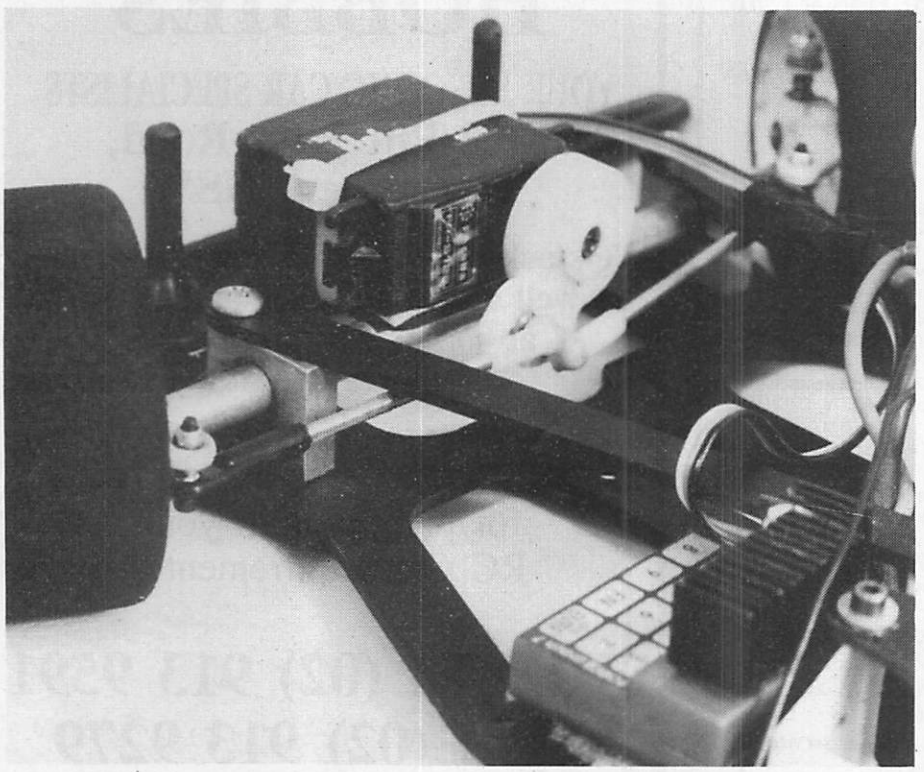
From the front of the top shock absorber mounts, up to the front axle blocks, there are two carbon fibre beams (shown in photo) for stiffening. These, the chassis and the top and bottom pod braces are all made out of high grade carbon fibre, which explains the higher price compared to other onroad cars. However I'm sure it's worth the extra money.



Front view showing Lo-tec body



Battery Brace designed by the author to hold saddle packs.



Note beams to stiffen chassis and servo mount on front axle.

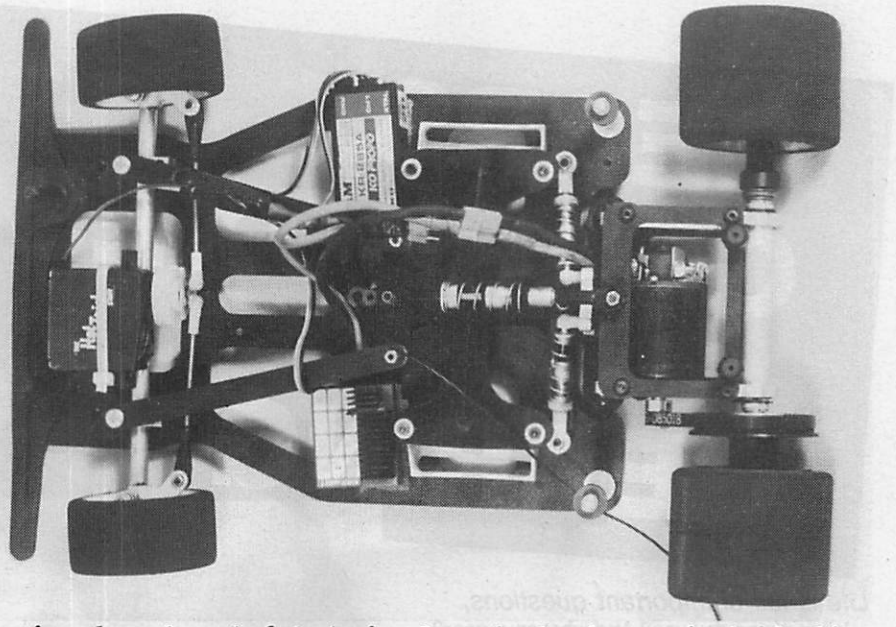
The battery mounts are a'la Associated although they are drastically cut down for fitting and weight purposes. If your batteries are in saddle formation they do not get properly secured so to overcome this problem I made up a brace to serve the purpose, (as shown). If you have stick pack batteries there is no problem.

This car unlike others of it's contemporaries, has a fully floating rear end, i.e. when the shock absorbers are removed the pod can move freely in all directions, having ball swi-

vels at each attachment point. This adds to very smooth operation.

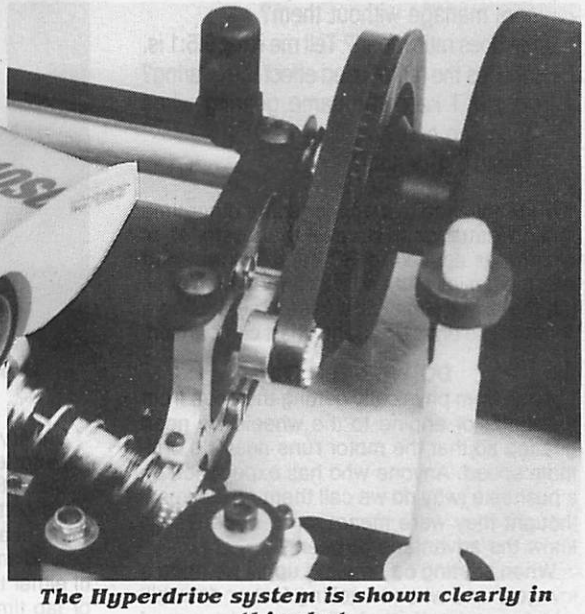
The shock absorbers are not unlike the Yokomo type but don't get me wrong they have, so far, worked extremely well for me (although I have only run it twice at the Melton track). They have a main spring on the outside and then a secondary spring inside the cylinder, which is pressurised when assembled i.e. without the outer spring the piston rod when compressed by hand will slowly rise out of the cylinder again. The top and larger shock controls the amount of ride height and rear end traction that you desire for the specific track, while the two smaller side shocks control the tweak, which on some cars is accomplished by a couple of screws. Heavy oil is recommended for the shocks, such as Losi 30 and 40 weights.

Now for the highlight of the car - the transmission. The Hyperdrive system is the use of belts and pulleys, and has been designed to minimize friction and noise to produce a quiet, efficient and fast racing car. Because of the belt keeping both of the gears going in the same anti-clockwise direction the car would travel backwards if installed straight into a conventional setup. So to counter this the Hyperdrive has a motor mounting position on the left side of the pod. Also the pod is centrally positioned so this does not have any effect on the balance of the car. The conventional method of transmission is also catered for if so desired, and gears are provided.



Top view shows layout of electonics. A good nylon bumper is standard in kit and wiring can easily be made neat.

Good aerodynamics help traction all round.



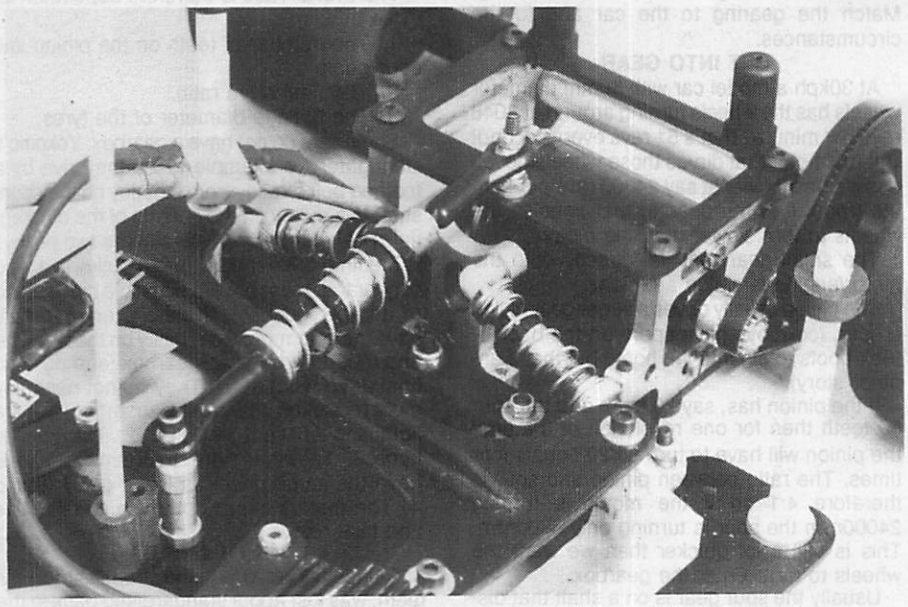
The Hyperdrive system is shown clearly in this shot.

The first outing of the car with the Hyperdrive system installed was a great success. It was extremely quiet, although lack of a selection of pinions and spurs was a problem and top speed was not achieved. In spite of this, it qualified second and won the 'A' final at the Melton track. A very pleasing debut for any car.

The kit does not include a body or wing so over it I lowered a prepainted Lo-Tec body (also from Greg Collings) and although not used yet I have an Associated seven inch wing. The kit does not come with wingmounts but Lynx mounts suffice well, the only modification needed are two holes drilled in the top pod brace. There is lots of room and I'm sure any radio gear would fit into this car. I am using a KO EX1 and Purge Mach 7 speed controller for, the Melton track I use a 15 double motor and boy, does it go. The kit comes with tyres and rims all round but I usually use, and stayed with, Associated greens on the rear and blue compound on the front.

Hyperdrive have also brought out a Velodrome car in the form of the Hyperdrive H10SE. It is as per the H10SC but is narrower. This car is only for oval racing and is not recommended for track events.

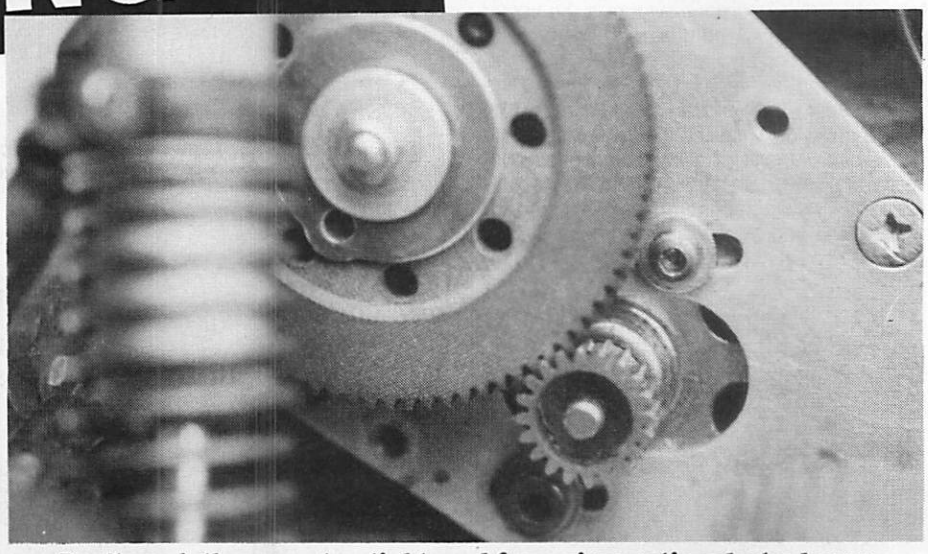
I'm very pleased with the H10SC. It is much quieter, smoother and noticeably faster through the corners and I would recommend it to any racer who is looking for that edge on the track (and a deep pocket!) That's all for now, have fun and HAPPY RACING!



Steering system and revolutionary shock absorber lay-out.

GEARS, GEARBOXES and GEARING

Put your brain into gear and educate yourself into going faster.



Don't mesh the gears too tight, and for a given ratio select a larger pinion for most efficient operation.

Life is full of important questions,

What pinion do I use? And what spur gear?
What are gearboxes for and why can some cars manage without them?
What does ratio mean? Tell me what 9.5:1 is.
How does the motor used effect the gearing?
How can I keep the same gearing when changing cars?
Is Masami a genius?

We will save the last one for some other time and now attempt to unravel the mysteries of gearing as applied to RC cars. We will start with the basics and end with information even the top experts may find useful. Like using a computer to draw up a ratio chart comparison.

DO WE NEED IT?

Apart from physically getting the drive from the motor or engine to the wheels we need gearing so that the motor runs near it's optimum speed. Anyone who has experience on a pushbike (why do we call them *push*bikes -I thought they were meant to be ridden?) will know the advantage of gears.

When starting off or going uphill we need a low gear and when travelling fast or downhill a high gear is selected. This is making use of a mechanical advantage. We are using the mechanics of the gearing to take advantage of our circumstances. We want to exert the optimum force on the pedals whether travelling uphill against gravity or downhill with it. Of course, uphill we are pedalling like crazy and going somewhere only slowly. That's called a trade off.

In a car the human machine is replaced with an electric or fuel powered motor but the principal is the same. The motor has an optimum speed or RPM range at which it produces the best power so we gear the motor to run in this range. Too high a gear and the motor will labour and too low a gear will cause the car to rev a lot but not go anywhere. Run your model car up and down in front of yourself and accelerates and decelerate from various speeds. Check for the following:

Too LOW gearing:

Car accelerates well and gets up to top speed quickly.

Top speed doesn't seem high but motor is screaming.

For electric cars the run time (battery life) will be good and for gas cars the over-revving may damage the engine.

Too HIGH gearing:

Acceleration is not good.

Top speed is better.

Battery iife is less or engine is struggling.

Motor/engine and batteries get hot quickly.

Since there are less disadvantages it is always better to under gear (too low) than over gear. In a racing situation start slightly under geared and experiment with higher gearing until either the battery doesn't last the distance or lap times are obviously suffering.

For our younger readers I hope you can see that there is more to racing than having a top speed that's ballistic. A car that does 40kph is not much good if it takes 50 metres to get there but the straight is only 30 metres long. Match the gearing to the car and to the circumstances.

GET INTO GEAR

At 30kph a model car with 50mm diameter wheels has the wheels turning around at 3048 revs per minute - that's 51 revs every second! But the motor that dirves those wheels develops it's best power at say 24000 revs per minute (rpm). It is the gearing that enables the wheels to turn slower than the motor.

The small gear that fits directly onto the motor/engine is called a pinion.

The pinion usually drives a larger gear called a spur, (cowboys have spurs on the back of their boots to dig into the horse but that's another story).

If the pinion has, say 20 teeth and the spur 80 teeth then for one revolution of the spur the pinion will have to turn 80/20 equals four times. The ratio between pinion and spur is therefore 4:1 so if the motor is turning 24000rpm the spur is turning only 6000rpm. This is still a lot quicker than we want the wheels to turn. Enter the gearbox.

Usually the spur gear is on a shaft that disappears inside the gear box where the small to large gear scenario is repeated to give more reduction. The final gear often drives a differential inside the gearbox and it's the output from this diff. that finally powers the drive shafts and the wheels, (see D & T issue number 16 for the definative article on diffs.). The reduction inside the gearbox varies from car to car which is why a certain spur/pinion combination does not determine the overall ratio of the car. We usually refer to the reduction inside the gearbox as the *final drive ratio.* Some actual final drive ratios are given later.

The overall ratio is therefore dependant on three things:

1. The number of teeth on the pinion and spur gears.
2. The final drive ratio.
3. The outside diameter of the tyres.

Some cars do not have a gearbox. Yokomo's Dogfighter for example takes the drive by a toothed belt directly from a pulley on the spurs shaft to a pulley on the outside of the differential. The relationship between the two pulleys is the final drive ratio. Note, a pulley is a kind of gear that meshes with a flexible belt instead of another gear. Most electric on-road cars have the spur mounted directly on the rear axle and therefore have no gearbox (and no fixed final drive ratio) at all. They do not need any more reduction gearing because; 1. They are light and efficient vehicles, 2. The spur is large, 3. The wheels are small (smaller wheels have the same effect as lower gearing) and 4. The motors usually produce more torque and less revs.

TEETH AND DP

The teeth form, that is the shape of the gear teeth, was just about standardised back in the days of the industrial revolution. However, the

size of the teeth may be varied even though the diameter of the gear remains the same. We usually measure teeth size by Diametral Pitch or DP. This is defined as the number of gear teeth to each inch of pitch diameter. The larger the DP number the more teeth there are to an inch and therefore the smaller the actual teeth. A gears DP may be easily checked by dividing the number of teeth by the pitch diameter, (this diameter is slightly less than the overall diameter of a gear). For example an 86 tooth spur gear has a diameter of 1/8 inches which gives a DP of 86/1.8, or 48.

Gears with different DP's cannot be mixed so if you are trying a new motor pinion ensure that it is the same DP as the spur gear. Three different DP's are used in modelcardom.

32 DP is mostly found on entry level electric cars and on gas cars. The largerr teeth are easier to set-up, stronger and less liable to strip out.

64 DP is the other extreme. The very fine teeth run quieter and are more efficient but they are difficult to set and strip more easily. They are found on, on-road electric cars especially 1/12th scale.

48 DP is a popular compromise that is now common on competitive buggies.

Note that we are still using the old Imperial system to measure tooth size. The metric system measures the distance between teeth (pitch) and is simpler to understand but we follow the yanks who haven't yet embraced the metric way. A number of Kyosho cars use 0.6 module gears which are very close to 48 DP but not interchangeable. Kyosho owners (except the new Lazer ZXR which has a 48 DP spur) are on their own with spurs and pinions. For conformity this article will refer only to the 48 DP gears.

NO POINTY TEETH PERMITTED!

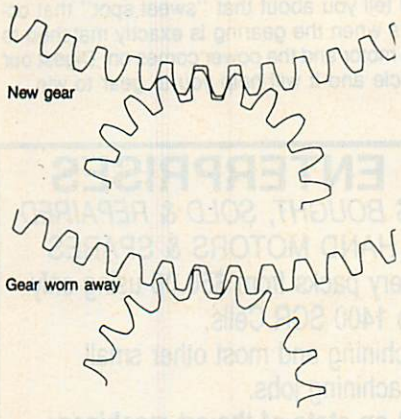
On a practical note all gears should be regularly inspected for wear. Look carefully at a new gear and note the shape of the teeth. It will look like a nice symetrical flat topped pyramid. Now check your gears and look for the following:

Pointed teeth instead of flat topped.

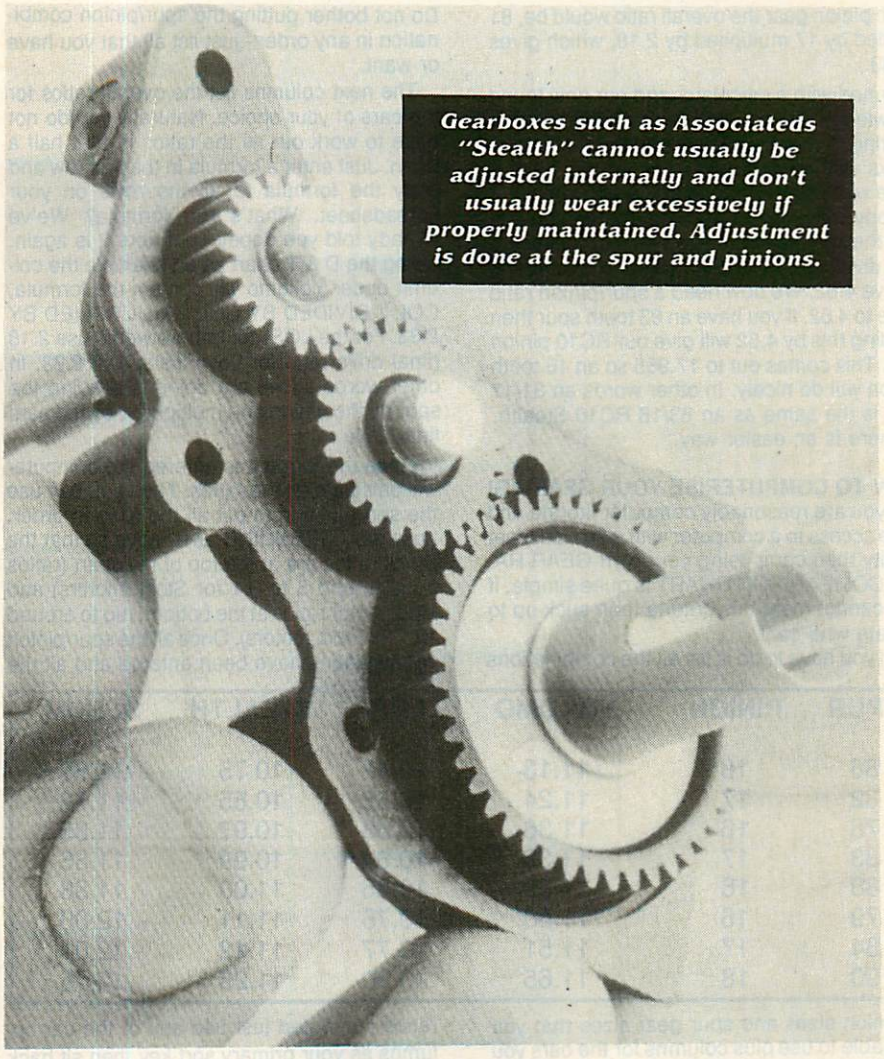
Teeth that appear to be leaning over instead of being upright.

Noticeable wear on one flank of the tooth form.

A gear with any of the above imperfections may still work but it will be inefficient and waste power. A noisy gear is often a sign of wear. It wastes power to make noise and we would rather be using that power to go ballistic not for sound effects.



We cannot usually adjust the gears in the gearbox but the pinion to spur mesh has the best shot at a long life if it is adjusted properly. There must me some play, or free movement, between the gears in mesh. If the gears are meshed too tightly a lot of power will be wasted. Conversely, there should not be a large amount of play between the gears or the tops of the teeth will wear off and the teeth will strip. Most entry level cars have non-adjustable gear mesh (and no provision for changing gear sizes) so here there is no problem. For the rest you must rotate the spur and stop at about six positions around the circle, each time rocking the spur slightly to check for a little free play at each position. The spur is sometimes slightly eccentric (a bit like a few racers I know!) hence ther mesh must be checked all around the circle.



Gearboxes such as Associateds "Stealth" cannot usually be adjusted internally and don't usually wear excessively if properly maintained. Adjustment is done at the spur and pinions.

MOTORS AND GEARING

The various electric motor winds and types and their relationship with overall ratios is an article in itself. Then there are gas engines and different tracks and surfaces to consider. Details some other time but for now we will repeat the few accepted generalisations concerning electrics.

The lower the number of turns on the armature the more revs the motor will do.

The more the timing is advanced (endbell twisted opposite to direction or rotation) the more a motor will rev.

More revs does not neccessarily mean more power.

The higher the wind multiple the lower the gearing should be. For example a 14 quad will usually rev more than a 14 single. The quad is said to have more "top end" (for long straightaways) whilst the single has more torque (for twisty tracks).

So if you have a track with a long straight with a very twisting infield and little traction what motor do you use? Answer, the most powerful you can handle. You won't get all the answers from magazines sogo out and practice. This is supposed to be a seminar on gearing, remember?

GEARED TO WIN

So, having read thus far and been suitably educated (or depressed!) we come to the final analysis. We know that the pinion/spur relationship gives us one ratio, which may be user adjustable, and the vehicles final drive ratio, which is fixed, gives us another ratio. Put them both together and we have an overall ratio. Assuming the tyre diameter is constant (more on that soon) then if the car is pushed so that the tyres turn once then the motor will turn 'X' times. For example, with an overall ratio of 9.5:1 the motor will turn 9.5 times for every revolution of the wheels.

We can calculate the overall ratio quite easily - but first you need to know the final drive ratio of the car. This is sometimes given in the Instruction Manual or it may be gathered by carefully counting the number of times the geabox input shaft rotates with one rotation of the output shaft. Here are some final drive ratios that we have collected:

Original RC 10 - 1.83
Lazer & Triumph - 2.21
Losi - 2.18
Stealth RC10 - 2.25
Mad Cap & Astute - 1.76
Egress - 1.80
Ultima - 3.00
Yokomo - 2.30
PB Mustang - 2.33
Schumacher - 2.43
Optima Mid - 2.65

The overall ratio is simply the final drive ratio multiplied by the spur/pinion ratio. So for a Losi running and 81 tooth spur with a 17

tooth pinion gear the overall ratio would be, 81 divided by 17 multiplied by 2.18, which gives 10.39.

Armed with a calculator and our new found knowledge we can take some shortcuts to gearing to win. If we know that the ratio 10.39 works well on a certain track, or you have a mate with a Losi running 10.39 and you want to copy with your RC10 Stealth then you can use the calculation in reverse. For this scenario divide 10.39 by 2.25 (Stealth final drive) to give 4.62. We now need a spur/pinion ratio close to 4.62. If you have an 83 tooth spur then dividing this by 4.62 will give our RC10 pinion size. This comes out to 17.965 so an 18 tooth pinion will do nicely. In other words an 81/17 Losi is the same as an 83/18 RC10 Stealth.

There is an easier way.

HOW TO COMPUTERISE YOUR GEARING!

If you are reasonably computer literate and have access to a computer with a spreadsheet facility then composing your own GEAR RATIO COMPARISON CHART is quite simple. If you cannot meet this criteria then suck-up to a mate who can!

All you have to do is list all the combinations of pinion sizes and spur gear sizes that you are liable to use plus columns for the cars you are interested in. As an example her is an extract from the D & T gear chart:

SPUR	PINION	YOKOMO	LOSI	STEALTH	SCHUM
86	18	11.13	10.42	10.75	11.61
82	17	11.24	10.52	10.85	11.72
78	16	11.36	10.63	10.97	11.85
83	17	11.38	10.64	10.99	11.86
88	18	11.39	10.66	11.00	11.88
79	16	11.50	10.76	11.11	12.00
84	17	11.51	10.77	11.12	12.01
90	18	11.65	10.90	11.25	12.15

If you have paid attention so far then composing this chart should be a piece of cake. However, since most racers always have half a brain on something else here is the detailed explanation for those with half a brain. There's nothing like insulting readers to get their full attention! In your spreadsheet (I used Lotus 123 but even the simplest spreadsheet and many word processing packages should handle this) use the first two columns to enter all your pinions with all your spurs. You might start with your largest spur and list this with say every pinion from 16 to 30 teeth. Then do the same thing with your next largest spur. If you race Stock and Mod. classes then there are a huge number of spur/pinion combinations. Our chart has over 250 and it's still growing. Do not bother putting the spur/pinion combination in any order - just list all that you have or want.

The next columns list the overall ratios for the cars of your choice. Naturally you do not have to work out all the ratios in that half a brain. Just enter a formula in the first row and copy the formula to all the rows on your spreadsheet. What's the formula? We've already told you dopey - but here it is again. Using the D & T chart as an example the column under Yokomo will contain the formula, COL 1 DIVIDED BY COL 2 MULTIPLIED BY 2.33. For the LOSI column we would use 2.18 (final drive ratio for Losi) instead of 2.33. In other words all we are doing is dividing the spur by the pinion and multiplying by the cars final drive ratio.

Once the formula is entered the computer will calculate all the ratios. Then you can use the sort function to put all the rows in order. I use the ASCENDING alternative so that the Stock ratios are at the top of my chart (ratios from around 5 to 9:1 for Stock motors) and Mod. motor ratios at the bottom, (up to around 13:1 for Mod. motors). Once all the spur/pinion combinations have been entered and all the ratios computed just use any of the car columns as your primary sort key then sit back and watch the magic of a computer at work. You can always add more combinations later on. Just type in anywhere in the chart then do another sort.

PUTTING THE PAPERWORK TO USE

Once compiled the chart can communicate many things. The most obvious is that once you know the spur and pinion combination you can find the ratio for any car listed. Secondly, you can check the effect of changing a pinion or a spur, or both. For example if one pinion tooth change is too extreme then the chart may show the spur/pinion combination equivalent to half a pinion change, eg; 79/23 is about halfway between 84/24 and 84/25. But probably the most useful information the chart can impart is comparing and matching ratios between different cars. We showed how to do it the slow way (with calculator) before but the computer generated chart is much more convenient. Let's demonstrate by another example.

Ralph is doing very well with his Elite powered CAT so Bruce wants to use the same set-up in his Elite powered Yokomo. Using the pretence of being friendly Bruce casually admires Ralphs handiwork and notices that the gearing is 86/23. Hurrying back to his chart, at the same time repeating 86/23 fifty times so as not to forget, Bruce finds the gearing and reads across to the ratio 9.09 in the Schumacher column. He then looks for this ratio against the Yokomo column and finds that a 78/20 will give exactly 9.09 or (since he only has a 81 spur) an 81/21 will give 8.99 which is close enough. Naturally (since all our stories have a happy ending), Bruce proceeds to go ballistic using the pilfered ratio and blow Ralph into the dust. Thanks and sorry Ralph.

KICK THE TYRES

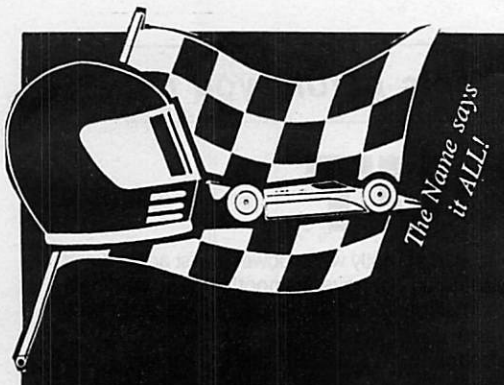
All the foregoing assumes that tyre diameter is constant. The tyres outside diameter is the final variable in the drive chain and must be considered in some classes of RC racing. Buggy racers who stick with 2.2 inch rims/tyres have no worries but changing from/to 2 inch rims will require a 10 percent adjustment.

Even worn tyres will affect the overall ratio slightly. Remember that a smaller tyre O.D. will have the effect of lowering the gearing (like changing to a smaller motor pinion) and a larger tyre O.D. will be like running taller gearing.

To account for changes in wheel/tyre diameters there is another way of measuring ratio. By giving a figure for millimetres per rev (mm/rev) we are measuring how far the vehicle travels for one revolution of the motor. This will take into account every aspect in the drive train and is the often used method for On-Road racers. It has the other advantage of being independant of the type of vehicle and any final drive ratio. We will not delve into this any further except to say that it would be easy to draw up our comparison chart using various tyre diamenters instead of different vehicles.

SUMMARY

Hopefully we have given satisfactory answers to all the questions about RC car gearing. It's an important topic if you want to get the most from the motor since a powerful powerplant alone may not show an increase in performance if the gearing is wrong. Top racers will tell you about that "sweet spot" that occurs when the gearing is exactly matched to the motor and the power comes on. Digest our article and it will help you to gear to win.



NEWCASTLE MODEL AUTO SPORTS

Griffiths Road, Broadmeadow, Newcastle (opposite Goninans)

(049) 61 6499

RECESSION BUSTER SALE

ONCE ONLY - BE EARLY

ONLY WHILE STOCKS LAST

ESC'S
SCI, TEKIN, TRAXXAS
20% OFF

FUTABA MEGATECH **$134.00**
FUTABA ATTACK **$79.50**

NOVAK - Prices slashed

410 MI.C	**$269.00**
410 MX.C	**$299.00**
610 REVERSE	**$249.00**
828 HV	**$299.00**
PLUG CONVERSIONS	**$10.00**

DIGI PEAK PLUS CHARGERS
NOW AVAILABLE

LARGEST SELECTION OF
STOCK - MODIFIED
MOTORS
SPECIALS ON PARMA 24°
WET OR DRY **$37.50**
TRINITY SLOT MACHINE
(THE BEST) **$39.95**

BATTERY PACKS - CELLS

SAFT 1200	**$29.50**
SAFT 1400	**$40.00**
SAFT 1800	**$50.00**
PARMA 1400 SCR MATCHED PACKS	**$68.50**
PARMA 1400 FINAL MATCHED CELLS	**$89.50**
TRINITY 1200 MATCHED CELLS	**$79.50**

and MANY MORE

50% OFF ALL
ROBINSON RACING PRODUCTS
RPM, MCS,
PARAGON, and HYPERDRIVE
RING FOR A PRICE

PARMA CHEVY
LUMINA
DAYS OF THUNDER
BODY AND DECALS
$39.95

20% OFF
PARMA & ANDY'S BODIES
TOO MANY TO LIST
RING US!

FULL RANGE OF
TAMIYA, TRAXXAS,
ASSOCIATED, KYOSHO
CARS, BOATS & PLANES

FASTEST PHONE ORDER SERVICE

Buying an Electronic Speed Controller? Know the facts before you do.

ESC SHOOTOUT

How time flies when you're having fun! It is over two years since our last shootout - covered in D & T number 14 at the same time as our buggy world champs reports at St Ives. As expected, things have changed since then. At the lower end of the market you can now get more performance for about the same price whilst the other end has seen the introduction of the microprocessor controlled, high frequency digital device. Latest technology has thankfully worked to keep prices down and todays state-of-the-art ESC's are actually less than their counterparts from two years ago.

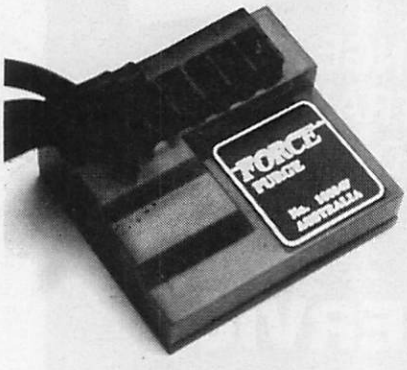
Despite the progress, electronic speed controllers have not yet penetrated at this level although these are just as primitave now as ever. They are soon discarded when the new chum starts to get a little more serious and begins to look around for and ESC. But whether this is your first, second or tenth ESC the astute consumer will check the specifications before buying. Our Shootout compares the specs., adds our own test results and impressions whilst comparing 14 of the ESC's that we have tested.

THE AMMUNITION

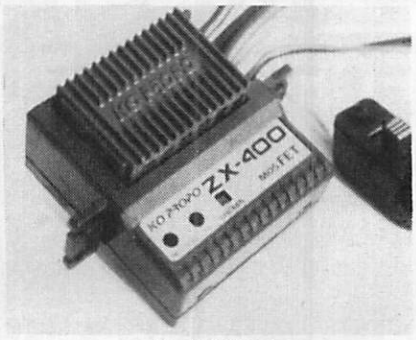
The manufacturers come up with some very impressive numbers in their advertisements. The would-be purchaser needs to be able to wade through all the hype in order to make an informed decision. Here's what the columns in our chart refer to.

NOVAK T1X

"Freq" refers to the power pulses that enable the ESC to vary the motor speed. The new generation of controllers pulse at a high frequency of 2500hz (cycles per second) whilst others have a low pulse of 50hz. Others are in between so we have simply rated them "low", "med", or "high" frequency. The advantages of higher frequency are smoother response and less wear to motor commutator and less degradation of permanent magnets.



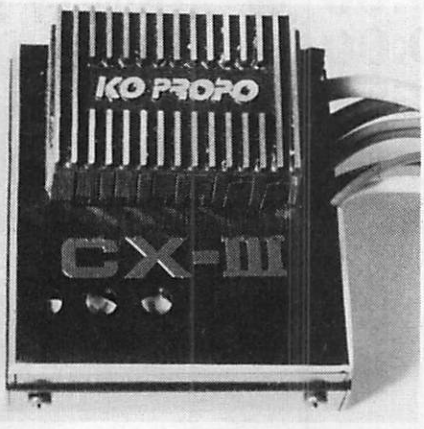
PURGE FORCE



KO ZX400

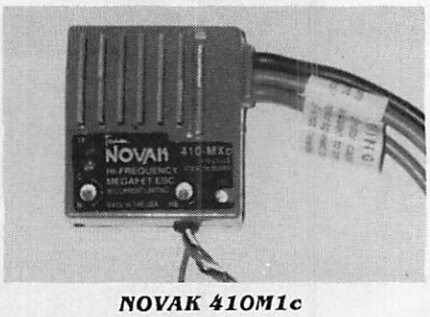
"Cont" refers to the maximum continuous current. This is the theoretical power that the total of all the power transistors can constantly handle. In practical terms the numbers are fairly meaningless but they do give a guide to power handling capacity between controllers.

"Peak" or maximum momentary current is calculated (by the manufacturers) on the same basis but the rating applies for only a short period. For example, during the first instant of heavy acceleration.



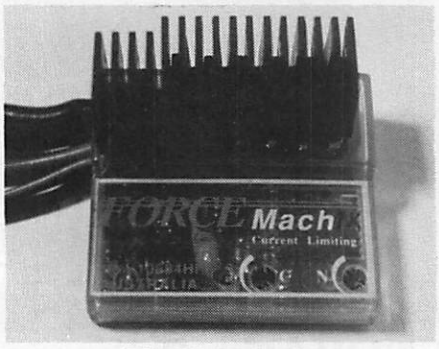
KO CX-3

Voltage drop (V-drop). This is a good measure of the efficiency of the ESC. The more volts the controller takes to power itself the less is available to power the car. We take our own reading on V-drop between the negative input and output whilst the ESC is fed with a steady 12 amps, (volt drop is proportional to current so if it was measured at 10 amps, for example, the V-drop reading would be even lower). The smaller the number the better the speedo.



NOVAK 410M1c

Smoothness. Some of the ESC's will tend to start abruptly when power is first applied and some do not have a smooth and proportional transition up to full throttle. We observed this and gave star ratings. The more stars the better.



FORCE MACH 1X

Instructions. All manuals should assume no prior experience of these devices and guide the owner through all phases of installation, setting-up and running. Again, our subjective assessment is given by star ratings.

Brake. Most controllers are fitted with a motor brake. Some have a brake adjustment and some manufacturers rate braking power in amps. We assessed braking power and smoothness and gave star ratings.

TEKIN TSC411P

Adjustments. All ESC's had a means of setting neutral (N) and the position at which full throttle comes on, (F). Other adjustments are; (B) braking power, (PC) power curve adjustment makes throttle more sensitive around neutral or around full throttle. The force controller has automatic adjustment operated from the transmitter. Current (CL) is a feature of the generation of ESC's. It enables the power output to be wound down to prevent waste and wheelspin.

All controllers were fitted with an ON-OFF switch.

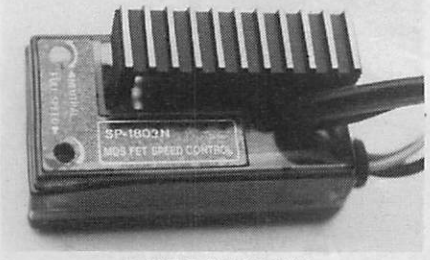
The initials NS means a figure was Not Stated by the manufacturers.

Tekin TSC 411G

WHO'S SHOOTING WHO?

We have included many of the ESC's from out last Shootout plus all those we have reviewed since and added a couple of extra's that came our way. This covers most of the popular units on the Australian market.

Our chart lists them in price order, starting with the cheapest. Note that retail prices are given and you may find them for less if discounted. Some models are no longer made (marked with a "*" in the chart) but are shown with their last known price for comparison purposes.



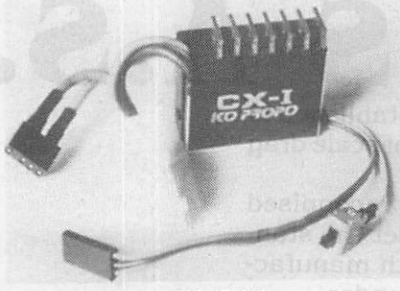
HITEC SP1802N

HI-TEC

The 1802N is the latest version of this popular entry level ESC. It is still small and light and the least expensive but now sports smoother performance and a more professional looking case. Fine for all Stock motors and mild Open type winds. Instructions are poor and beginners should consult someone with experience before powering up. Distributed by Model Engines, (03) 429 2925.

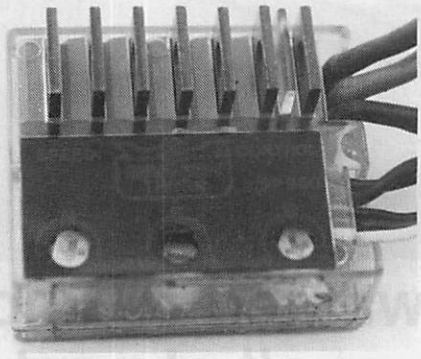
KO Speedo's

The ZX-400 is a robust controller in a servo type case. The CX-1, although now been



KO CX-1

around for a while is still the smallest and lightest of the lot - and with good performance to boot. Both were reviewed in D & T number 13. The CX-111 is big, powerful and efficient but without the benefit of the latest technology. Distributed by Advanced Hobbies on, (03) 890 0660.



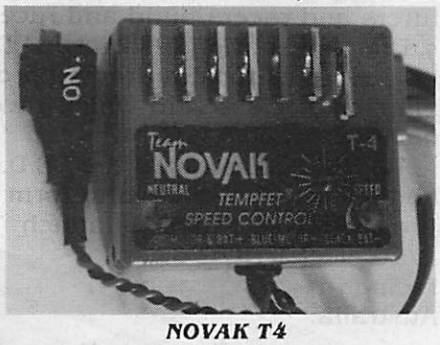
ARISTO 960

ARISTO

Distributed by Dawn Trading (02) 666 4999, the Aristo 960 is outstanding value for such a fine and powerful performer. Our review sample (see D & T number 19) is still going strong and may be used for all but the very hot winds in motors.

NOVAK Speedo's

The T4 was the old standard in mid-range ESC's and the T1X the state-of-the-art until recently. Both are still admirable performers but



NOVAK T4

the newer 410-M1c (reviewed in number 18) has the benefit of higher frequency pulses and adjustable current limiting.

TEKIN

We look at the new Tekin range this issue and test two of them. The popular 411P has a new version in the 411G and the new 410S (not tested) has similar performance to the old 411P but at a cheaper price. Exclusive Australian agents are PM Model Cars Aust. Phone (08) 356 8698.

NAME		RRP	SIZE	WEIGHT	REVERSE	BRAKE	FREQ	ADJUSTMENT	CONT.	PEAK	V DROP	SMOOTH	INSTR.
HITEC SP1802N		$99	48x25x21	39g	No	****	Low	N.F.	150a	600A	0.11	***	*
FORCE MACH 1X	*	$150	43x40x18	32g	No	***	Med	N.CL.	210A	870A	0.064	****	***
KO ZX400		$175	43x40x20	44g	Yes	***	Low	N.F.	110A	420A	0.14	****	***
TEKIN 408S		$180	41x38x15	54g	No	****	Med	N.F.	250A	050A	0.062	*****	*****
ARISTO 960		$185	38x30x20	40g	No	****	Low	N.F.B.	720A	1440A	0.052	****	***
NOVAK T4	*	$199	40x34x16	49g	No	***	Low	N.F.	176A	708A	0.09	****	*****
NOVAK 410 M5		$230	40x36x16	51g	No	***	High	N.F.	250A	NS	0.060	****	*****
NOVAK T1X		$275	46x41x16	70g	No	****	Low	N.F.	576A	2308A	0.05	****	*****
TEKIN TSC411P		$280	41x38x15	48g	No	****	High	N.F.CL.	300A	1050A	0.057	****	****
PURGE FORCE	*	$288	40x35x19	35g	No	*****	Med	AUTO.	360A	1440A	0.04	*****	****
KO CX-1		$295	36x27x15	27g	No	****	Low	N.F.PC.	306A	960A	0.06	****	***
TEKIN TSC411G		$310	41x38x15	48g	No	*****	High	N.F.CL.	300	NS	0.046	*****	****
NOVAK 410M1c		$320	40x35x28	49g	No	***	High	N.F.CL.	250A	NS	0.036	*****	****
KO CX-3		$345	44x41x15	43g	No	*****	Low	N.F.PC.	510A	2100A	0.036	*****	****

WHAT IS A.S.D.R.A.

A.S.D.R.A. is a non-profit orgainisation established to set guidelines and rules for the running of scale drag racing in Australia.

A.S.D.R.A. draws it's rules from the recognised international bodies whose own rules set the standards by which the vast majority of both manufacturers and racers build and race cars under.

The International Electric Drag Association, I.E.D.A. rules for drag racing provide for a diverse number of classes in which racers can find their niche.

A.S.D.R.A. has taken the I.E.D.A. rules and chosen five classes to form the base from which to launch 1/10 electric R/C drag racing in Australia.

All you ever wanted to know about R/C Drag Racing, well almost everything!

The five eliminators of 1/10 Drag Racing that A.S.D.R.A. will be letting loose on Oz offer participants a fairly large range of options as far as car type, motors, batteries and budgets. From the low end of the scale in SUPER STREET eliminator to the quickest and fastest R/C cars in the world of UNLIMITED TOP FUEL DRAGSTER there is a class of car for everyone.

This is just an overview of the A.S.D.R.A. eliminator rules and is not intended as the be all and end-all as far as restrictions on the classes go. Why do I sometimes say classes and other times eliminator? Because as in 'real' drag racing A.S.D.R.A. will run three single class heads-up non-indexed eliminators and two multiple class heads-up indexed eliminators. Now is the time to talk about the ELIMINATORS.

UNLIMITED TOP FUEL DRAGSTER: The UT/FD's are 'RAIL' type cars powered by a maximum of 20 cells. Typically these will be 600 mAh cells. Sometimes a racer may use 900 mAh but when carrying 20 cells the weight factor is paramount over run time. Less than two seconds; a run time any cell should be able to manage! They are allowed two driven wheels only which must be the rear wheels. Typically the rear wheels are around two inches wide and carry very soft 'Drag Only' foam.

These cars are quite capable of smoking the tyres just like the real thing! There is maximum wheelbase and a minimum wheelbase is not stated as anything under 20 inches simply would be too unstable to be competitive. UT/FD's are typically powered by COBALT drag motors and do not use ESC's. Instead they, like most R/C drag cars use high amp micro switches. The UT/FD's normally run two 25 Amp switches to handle the job. The current World Records in UT/FD racing are an amazing 1.750s and 87.4 mph in only 132 feet.

TOP FUEL FUNNY CAR: TF/FC's are R/C drag racings version of the 'Plastic Fantastics' of full sized dragging. They are powered by a maximum of 14 cells. Just as with UF/FD's the cell size is normally 600 mAh for reasons of weight, although sometimes 900 mAh are used. Once again they are allowed to be driven by the two rear wheels only. Wheelbase is again open so long as the wheels remain under the Funny Car type body. A rear spoiler is allowed but no wings! Just like their full scale namesakes the TF/FC's can, because of their power combined with a short wheelbase (usually between 11 inches - 14 inches), be quite a handfull. Wheelstands and unicycling are not uncommon! The current World Records in TF/FC racing are 1.960s and 64.93 mph.

PRO STOCK: P/S cars like their full sized namesakes are 'Full Bodied' race cars. Using late model sedan type shells they are powered by a maximum of eight cells. They may use modified motors including Cobalt motors. The reason that Cobalts are allowed to compete is that being heavier, and requiring more power to turn than conventional motors, the Cobalt motors do not have the advantage that they do in the 'big cell' classes. Typically P/S cars run US made 2-door sedan bodies with 8 x 1 400 SCR's powering and 11, 12 or 13T single motor. This combined with their 1.5 inch rear tyres and light weight can turn times and speeds such as the World Records 2.086s and 63.72 mph.

COMPETITON ELIMINATOR: Here we have the first of our Eliminator type categories. Where UT/FD, TF/FC and P/S are one class eliminators Competition Eliminator is wide open! The cars may be of any type, rails, altereds, hot-rods, sedans, sports cars, funny cars, buggies even sprint cars! They may be powered by any type of motor, any number of batteries and may be four-wheel drive. How can such a mixture of classes exist and work together? Simple! The start, like all other A.S.D.R.A. eliminators is heads-up (no handicap) but the eliminator is governed by an Index of 2.75s. What's an index? an index is like a dial-in in a bracket type racing. In this case everyone in the eliminator dials in at 2.75s and tries to go as close to that time as possible without going below it. If you run quicker than 2.75s you lose! Of course if you red light first you lose regardless of whether your opponent runs under 2.75 or not. The only thing worse than a red light is crossing the centre line, and in drag racing it's 'first or worst' that you have to live by. Qualifying is decided by who ran closest to the index without going under. A typical field in the US would be around 20 to 30 cars seperated by less than 0.2 of a second!! If we can do that here, and there's no reason why not, Competition Eliminator should see the biggest fields of any eliminator.

SUPER STREET ELIMINATOR: This eliminator is the low budget index eliminator. With an index of four seconds, and restriction of a maximum of six cells and stock type motors, this is where the wanna-be's who haven't the folding stuff will start their racing. Once again any type of car is permitted, with converted off-roaders expected to make up a large percentage of the fields. Some of the low cost drag kits such as the Bolink Dragster and the Parma Funny Car will do very well in this and Comp. Eliminator.

Cars such as the Firefox kits, the Composite Craft Illusion and Phantom kits, the Premier Designs Evolution kits and the like are hard-core drag only cars. The cost involved in setting up a full-on drag operation is such that Super Street and Competition Eliminator may well find these top of the line kits being powered by stock motors and bargain-basement

packs until their owners can afford their ground shaker motors, big packs and the chargers that go with them.

Thats's great! As long as people are competing it doesn't matter what eliminator they choose or what type of car they want to run, so long as they're out there having fun.

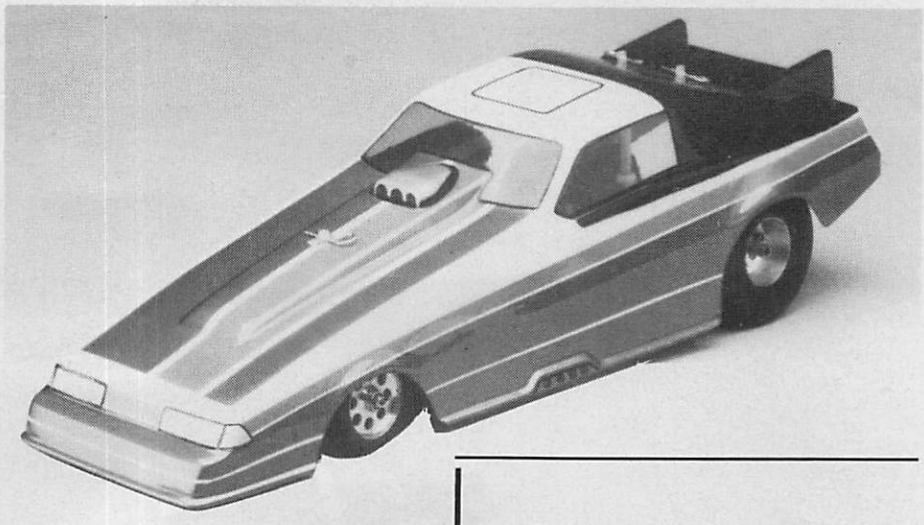
In the beginning it was planned that the five eliminators would be UT/FD, TF/FC, P/S, S/S and the 14 cell Top Fuel Dragsters, TF/D. The problem with that structure was that there was not transition eliminator betwen Super Street and Pro Stock, and there were not transition eliminators. After some discussion the inclusion of competition Eliminator and the dropping of the DF/D was approved.

That's the way it'll stay until the sizes of the fields increase enough to warrant further expansion.

The I.E.D.A. rules which A.S.D.R.A. uses have quite a number of eliminators from which we can choose when expansion becomes appropriate. The most obvious choices will be Top Fuel Dragster and Econo Dragster.

The Econo Dragsters use seven cell packs and stock motors to run 2.7s et's. They would of course be eligible for competition Eliminator as well so multiple nominations are possible.

Multiple nominations are of course possible under the present eliminator structure. A UT/FD competitor could swap motors and packs and race in comp. Eliminator as could a TF/FC or P/S racer. By really putting the brakes on they could even run in Super Street! That means that a racer could use his/her car in three eliminators at a race meeting! That's value for your money, and these days that's damned important.



So there you have it. Nearly everything you need to know. The only thing you need now is an A.S.D.R.A. (nee I.E.D.A.) rule book and a piece of asphalt about 230 feet long and 15 feet wide. Timing equipment and 'trees are being made in Oz as well as imported but for the moment it's who gets there first that wins! Hasn't that been the way all along?!

For a full A.S.D.R.A. (I.E.D.A.) Rule Book contact: A.S.D.R.A. Northern Regional Director, (Qld, NSW, ACT, NT) Mike Crawley, 100 Birdwood Road, Holland Park, Brisbane, Qld., 4121. PH: (07) 397 9771. A.S.D.R.A. Southern Regional Director, (S.A. Vic., Tas., W.A.) Tony Burlinson, 14 Musgrave Street, Evanston Gardens, South Australia, 5116. PH: (085) 22 4681.

Radio Control Cars for DIRT&TRACK


KYOSHO
MODELS
desert
rat

IN THE FAST LANE

Some BIG news from . . . Tony Burlinson

Sometime back I wrote a letter to the editor of Dirt and track regarding SCALE DRAG RACING here in South Australia and since that time I've had phone calls ans leters from people all over the country who are also interested in Scale Drag Racing.

Well, with the help of the editor I hope to keep people informed on what's happening on the Drag Racing Scene here in South Australia as well as from all over the country.

As I've said before, the major problem with this sport at the moment is the lack of kits, parts and any kind of help, that was until MIKE CRAWLEY from Bandit Racing called me to say that he was going to be bringing in some kits and just about every other thing that you could need to get a dragster going.

The other major problem is the lack of places to go racing as you can't run these cars on just any old bit of dirt. This is proving to be a bit of a problem for us here in S.A. because at the moment there are only shopping centre car parks to race on. While I guess that it's better than nothing it's not the best surface to run on and council authority also takes a dim view of using public car parks as make shift drag strips so there's another stumbling block that needs to be overcome.

Also by the time this goes to print I hope to have an I.E.D.A. RULE BOOK which will help in setting racing classes etc. The R.O.D.R. Assoc. of S.A. has five classes at the moment. So if anyone would like a list of the different bracket classes and a fact sheet that I'm putting together at the moment then drop me a line together with a business size S.A.E. and I will send out the information that you want.

I hope that early in the new year a public meeting will be organised here in Adelaide to see just how many people are interested in Scale Drag Racing and to see if there is enough interest to warrant the building of a permanent strip, one of which, I'm told, has already been built up in the sunshine capital BRISBANE. I don't have any info on it as yet but as soon as something comes to hand I'll let everyone know. As a P.S. to the strip in Brisbane, it seems that the original track was a little to short and is to be extended by some fifty feet to allow for run off to let the cars slow down.

By the time this goes to print I should have a complete list of just about everything that should be available to the drag racing public in the way of kits and parts.

So if anyone, and in particular the South Australian readers would like to know more about Scale Drag Racing here in S.A. or Scale Drag Racing in general then drop me a line 'TONY BURLINSON' 14 Musgrave Street, Evanston Gardens S.A. 5116 or give me a call on (085) 22 4681 or for those up the Sunshine State way give MIKE CRAWLEY a ring on (07) 397 9771 and he'll be able to help as well. Also the SCALE DRAG RACING ASSOCIATION of AUSTRALIA has also been formed but to date I don't have much on it. When I do I'll let you know.

To help things along I have started "THE FAST LANE", Scale Drag Racing Information Service which is available to anyone who has any problems with anything to do with Scale Drag Racing both here in S.A. and Aust. in general, there is no charge for people asking for information so don't be afraid to ask for help. BUT PLEASE if you require anyhelp put in a S.A.E. to help get things moving a little faster.

Now on some-what of a larger and a little slower note there is a guy here in S.A. by the name of STAN PRATT who has started doing R/C Monster Truck shows in shopping malls and the like, with a bunch of CLOD BUSTERS and other assorted monster trucks and he calls his outfit "THE STUNT BUSTERS RADIO CONTROLLED MONSTER TRUCKS".

It seems that Stan is going all out to make a living doing something that most of us regard as a hobby.

After seeing some of his shows I must admit that it won't be long before we'll be hearing a lot more of the "STUNT BUSTERS".

Again if anyone would like any info on the "STUNT BUSTERS" they can drop me a line and I'll pass it on.

Just recently the Victorian Quarter Scale Speedway Titles were held at Willow Park Speedway which is located in the Western Victorian town of Stawell.

Drivers from as far away as Brisbane came down for the meeting and the South Aussies were represented by KEITH NOBLE and JOHN COOPER who race under the "N.A.C. RACING" banner.

These two blokes build and race their own cars and after seeing the cars running they are indeed a work of art!

The event was held over a weekend with Saturday used for setting up the cars and for time trials, and Sunday the big race day.

The weather was unusually hot for the time of year which made things a little hard for everyone as it's not the best type of weather for running these types of cars.

The Time Trials on the Saturday saw the two "WISE OLD MEN OF QUARTER SCALE RACING" take out the first and second spots for the day. John Cooper from N.A.C. in Adelaide took out the first place with his stocker and Geoff Miles with an N.A.C. sprint car in second place.

On the Sunday the 15 lap final for the sprint cars saw Geoff Miles take the win and in the stocker race John Cooper from the N.A.C. team took the win with Frank Taylor from Brisbane taking second place.

Even though there were only a few there to race everyone had a great time and after the trophies were handed out and the photo's taken everyone headed off home happy that the event went well.

N.A.C. Racing Research Team. Keith Noble, and John Cooper.

All show, shocks, and shine on Stunt Busters Tamiya Bullhead.

There was one black note to the weekend however, it seems that the team of Frank Taylor and Steve Coyle from Brisbane, when travelling back to Brisbane had an accident and wrote their car and trailer off, however they came out of it with only a few minor cuts and scratches and I'm told that their Quarter Scale race cars were allright as well. An interesting way to end a race meeting.

An interesting model of a BULLSHEAD came across my desk the other day and I thought that it might be worth a look at!

This one is owned by Stan Pratt of Stunt Busters fame and seeing as he is an agent for CUSTOM CHROME PARTS from the States, his BULLSHEAD is decked out with all the chrome bits that go to make it a little out of the ordinary.

Well that's about all from me for now but remember if you want any information on Drag Racing or if you would like me to have a look at anything (those that live in S.A. that is) then drop me a line and I'll see what I can do.

See ya for now!!

Tony

IT'S "T" TIME!

TWO TRI-ROTOR MOTORS FROM TEAM TRINITY

It's often difficult for experts to pick a good motor for the electric racing game so imagine the problems novices have. We've said before that there is not a lot to choose between different makes of motors - the biggest difference is often the sticker on the can. Well, Trinity have just changed the rules with a radically new armature design, exclusive to them, that claims both extra torque and revs. This is the first major armature design change since the inception of RC cars.

The Trinity Slot Machine stock type motor (with bi-rotor not tri-rotor) has already earned much respect and many wins in the Stock racing class so we couldn't wait to get our greedy hands on this pair of modified Tri-Rotor motors. Under test are;

Trinity Monster Tri-Rotor System 15 turn x 6 wire (part no. 3332). This is a full blown hand wound modified for the serious racer who demands the best.

Trinity speedworks Oval Man 13 turn double wind (part no. 0333). This is the fastest of the top selling range of machine wound modifieds. They give the most power per dollar.

PHYSICAL CHARACTERISTICS

Armatures. This is the most distinctive part of these new motors with the armature laminations split into three separate stacks. If nothing else this should premote a cooler running motor since air can circulate better and more lamination material is exposed to the air flow. Heat is the killer of motors. This six turns of wire (two 25 guage and four 26 guage wires) on the hand wired motor are extremely neat, an achievement in itself, and the ends are welded to the tab on the commutator. The 15 machine wound turns on the Oval Man are also quite neat with the ends crimped onto the comm. tab. Both arms. have the distinctive drilled holes of the dynamic balancing process and have just the right number of washer spaces to give slight end play when installed into the can.

Endbell. Trinity motors are based on the epic endbell which has upturned cooling plates, more plastic material in critical areas and plenty of cooling slots. The "serious" modified motor has the addition of twin silver braid brushes, cooling posts on the plate hold down bolts and coloured springs. Both sets of springs feel the same in tension so I am not sure if the different colour is significant. Trinity use and advocate eyelet type bolted connections on the end of their brush leads instead of soldered leads. I remain unconvinced and promptly cut off the eyelet and soldered the leads before testing. The two capacitors (supplied) were also soldered on at this stage.

Both motors have adjustable timing, 4.9 wet magnets, grade seven ball bearings, and a thick metal can with four large cooling holes at the shaft end. Magnets were located well into the can which meant the armature was biased away from the endbell so that a minimum of spacer washers should be used on the shaft end. This was the case, but is should always be checked when dismantling a modified motor.

I was surprised that the cheaper Oval Man had the same high grade bearings. This means that you get a lot of good motor for a good deal less money.

PERFORMANCE

Remember that the less turns a motor has the more powerful it should be and the more current it will draw which means better batteries will be needed. In general terms a single wind will have the most torque and the least efficiency - usually for small tight tracks. A double or larger multiple will have less torque, more high speed power, higher efficiency - usually for a bigger faster track. Trinity say that you should gear the Tri-Rotor motors as if they had one less turn compared to any non Tri-Rotor motor.

All tests were conducted on the Tekin Pro Dyno, which operates at a regulated five volts, and results are comparable with the figures given for other motors in D & T number 20.

Latest Tri-Rotor technology from Trinity proves to be more than just a flashy label.

Monster Tri-Rotor 15x6

The brushes were bedded in and the timing position checked. The setting as delivered was found to be optimum with about 3mm of advancement. Straight away it was obvious this motor was different to the rest. It was smooth running, with very little vibration, and quiet. Let's run through the Dyno results with some explanations.

PWR. This is a number produced by the Tekin Dyno. The larger the number the more power. More power relates to greater acceleration and holding of speed better on oval tracks. The reading of nearly 92 is excellent and puts this 15x6 among the most powerful tested, irrespective of wind.

RPM. This is the no load (actually there is a slight load since the motor is also turning a slave motor - see Dyno article in D & T 20) revs. Despite what the ads say this figure has little bearing on the power of the motor since the motor is always under some load when it powers a vehicle. Racers use this RPM figure only to choose the gearing. The more free running revs the lower the car must be geared. The figure of 23,400 is high for a 15 turn and substantiates Trinity's claim of gearing like a 14 turn.

The Tri-Rotors unique armature design produces more rpm's with out effecting torque adversely.

Amps. This is the no-load current draw of the motor. The lower the reading the more efficient the motor however the figure is greatly influenced by the timing setting so it is difficult to compare between motors. The reading of 3.1 is about normal.

10A, 15A and 20A. The figures in the columns refer to the motors RPM when subjected to a loead of 10, 15 or 20 amps respectively. Under load, more revs equals more torque or power. We have found this manual test a good indicator of performance on the track. Particularly the 20A reading. A good figure here will guarantee lightning fast acceleration out of a slow corner. The 15A reading is an indicator of acceleration from a faster corner and the 10A a guide to speed along a straightaway. All the figures for the 15x6 were very good, especially the 20A reading, and some are better than motors with 13 and 14 turns. This would seem to verify Trinity's claims for Tri-Rotors since a six wind multiple does not usually produce so much torque.

Usually after a full test the motor is hot but this one was only warm.

Oval Man 13x2

After the usual preliminary checks, this motor was subjected to the same test procedure as above. Subjectively this Speedworks Modified was not as smooth or ran quite as cool as the other Trinity but it was no worse than average.

Simalarly all the power readings were about average for a 13 turner which shows that this budget Modified gives plenty of performance for the price. Score another for Tri-Rotor technology. Only expert racers would pick the difference between this and a "real serious" 13 turn costing nearly twice as much.

SUMMARY

There are many motor manufacturers in the marketplace but the names Trinity and Monster have not become well known for nothing. Trinity is one of the few *real* motor manufacturers. Many just put their sticker on motors they buy in. As a manufacturer Trinity can update their winds or any other part of a motor that is neccessary to suit trends and to stay on top. With their own design and engineering departments they are able to institute changes quickly. This might sound simply like sales talk but our test of these two motors, and the results coming in from the tracks seem to support their arguments.

The Monster Modified is serious, expensive and appears to have the edge by design and attention to detail. The Oval Man is part of the Speedworks range that offers high performance with a modest price tag not much more than a Stock motor.

Ask your retailer to contact G & M Trading (02) 742 6310 for Trade Supply.

DYNO TEST RESULTS

MOTOR	WIND	RRP	WT	PWR	RPM	AMPS	10A	15A	20A
Trinity Tri-Rotor	15x6	$129	168g	91.8	23.4	3.1	21.3	20.8	19.5
S/Works Oval Man	13x2	$75	162g	88	25.7	2.8	24.0	22.6	20.5

THE 25 YEAR DAWN

One of our biggest hobby wholesalers, Dawn Trading, celebrates 25 successful years in the trade.
Their story reads like a history of model cars.

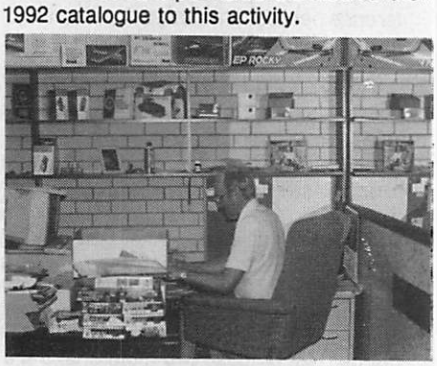
Do you know how many Associated RC10 buggies were sold last year? How many pairs of Yokomo tyres? Ever wondered if Dawn's high profile personality, Ian Bannister, really was a champion? We got the answers from Dawn's founder and Managing Director in an interview with the company that began in the heyday of slot cars and once sold 15,000 RC bodies in one year.

With a background in Law and Property Management, Carl Melvey started the ball rolling by financing a slot track for some friends. Then, in 1966 Carl used his contacts in USA and Japan to begin importing brands such as Associated, Parma, Testors and Champion. All except the latter are thriving today and all started with slots. Thus Dawn Trading was born.

This was boom time for slot cars with 300 centres spread around Australia. But like hula-hoops, the Twist and to a lesser extent RC cars the fad quickly evaporated leaving only hard core enthusiasts and lots of unsold stock. Rather than pull out of the market, Carl used his smart business acumen to buy up the redundant stock and gradually re-inject into the centres that survived. Determined to stabilise the hobby he pioneered the Australian Slot Car Association and brought together the NSW and Victorian Associations who were at loggerheads over racing format. Sound familiar!

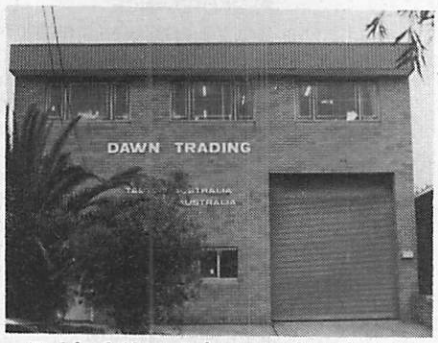
Carl also sent slot teams interstate and began sponsoring teams and drivers. Todays RC racers will recognise the roots of this business practice in which Dawn are still prominent today. They still support the sport by assisting selected drivers who have proven themselves worthy of financial help.

It was amongst all this hectic activity that Ian Bannister appeared. Ian was slots National Champion for four years (and often the Association Chairman and clerk of the course at the same time) in the Enduro and Sprint classes and Carl liked his style enough to make him a permanent member of the Dawn business team. Ian reminices of the days of Champion and Lancer chassis, Testor motors and the hot re-winds and specialist chassis of Steve Hutcheson. Naturally he dosn't forget the $1000 first prize he won at Campsie (many commentators believe it was the big cash prizes that caused the downfall of slot cars). Ironically, slot car racing is now making a modest comeback and parma devote much of their 1992 catalogue to this activity.



Banno's corner. Here's Ian looking busy.

In the seventies Dawn expanded their range of hobby accessories and moved into plastic kits which at one time accounted for around 60 percent of their business. They also had a brief flirtation with pure toys. Mid decade saw Carl make more of a commitment to the hobby trade and more of his family join him in permanent buildings established close to Sydneys



Behind the plain exterior lies a veritable treasure trove of hobby goods.

famous Botany Bay. The era also saw Ian Bannister defect to the mother country where he became a champion with radio control speedboats. Meanwhile Associated, then PB had produced 1/8th scale Radio Control gas cars and the secretary of the slot car association was one David Smith.

Dawn Tradings deep involvement with RC cars began with Bannisters return to our shores in 1978. In early 1979 Ian and the late Brian Stickland had set up and run the first organised electric RC car meeting at Sydney's Flemington Markets. Melvey snapped him up first as a promotions consultant and then full time later in '79. By this time electric cars were making an impact and Banno was right in the thick of it with his Jomac Jerrobee 1/12th scale racer. This injection moulded plastic chassis machine was one of the first. Later, with the release of Associated's famous RC12E Ian became Australia's first ever electric RC car champ with a win at the 1980 Nationals.

Dawns creditable sponsorship record continued with the setting up of Team Associated Australia with names such as Borthwick, Bowring and Denning successfully waving the flag in 1/12th racing and ultimately winning eight successive Australian Titles.

Carl Melvey has a long standing and personable relationship with Associated Electrics of the USA, a company that was started by Roger Curtis and the Husting families in the swinging sixties. Famous motor man Mike Reedy joined the relationship in 1980. The more recent acquisition of Cliff Lett in charge of R and D (research and development) has made Associated a very powerful force. Carl claims that their turnover is double that of all their competition combined and they sold in excess of 70,000 RC10's worldwide in 1991. That contradicts the ravings of the doom merchants who talk about a dying sport and almost makes the business recession proof. Of course, the fact that their cars have won nine world titles probably helps.

Back to the past and Orwells 1984. Acting upon the recommendation of their freinds at Associated Electrics, Dawn took on the Yokomo line from Japan. This very shrewd move was to nett Dawn Japans top name in competitive RC racing. Ideally complimenting Associated, Yokomo had the world winning car and motor components on the last two occasions. Like their US compatriates Yokomo are a family company with which Dawn Trading shares a fantastic and mutually trusting relationship. There does not appear to be any financial ties between Associated and Yokomo just another relationship based on mutual respect. Also in 1984 Dawn relinquished the Parma RC agency but regained it in 1991.

Nowadays, Dawn Tradings enterprises are diversified into three facets of the hobby and sport, (if anyone asks, the Department of Sport and Recreation classes model building as a hobby and flying/racing as a sport). Plastic kits account for some 20 percent of turnover and model aircraft, covering materials, accessories, tools and associated products over 70 percent. Last year they sold 15,000 model aircraft kits and their agency for Solarfilm, a heat shrink film that is synonymous with model covering, is "very big". Radio control cars make up the other 5 to 10 percent which in Carl's words is small but profitable. The numbers sold in 1991 give some idea of the size of the Dawn operation. Last year was one of their best (recession proof again?) with Yokomo and Associated car kit sales running in excess of 2,500, and 30,000 pairs of tyres were sold. These figures are not misprints so it makes you wonder where they've all gone.

Just a small part of the Dawn Trading stores.

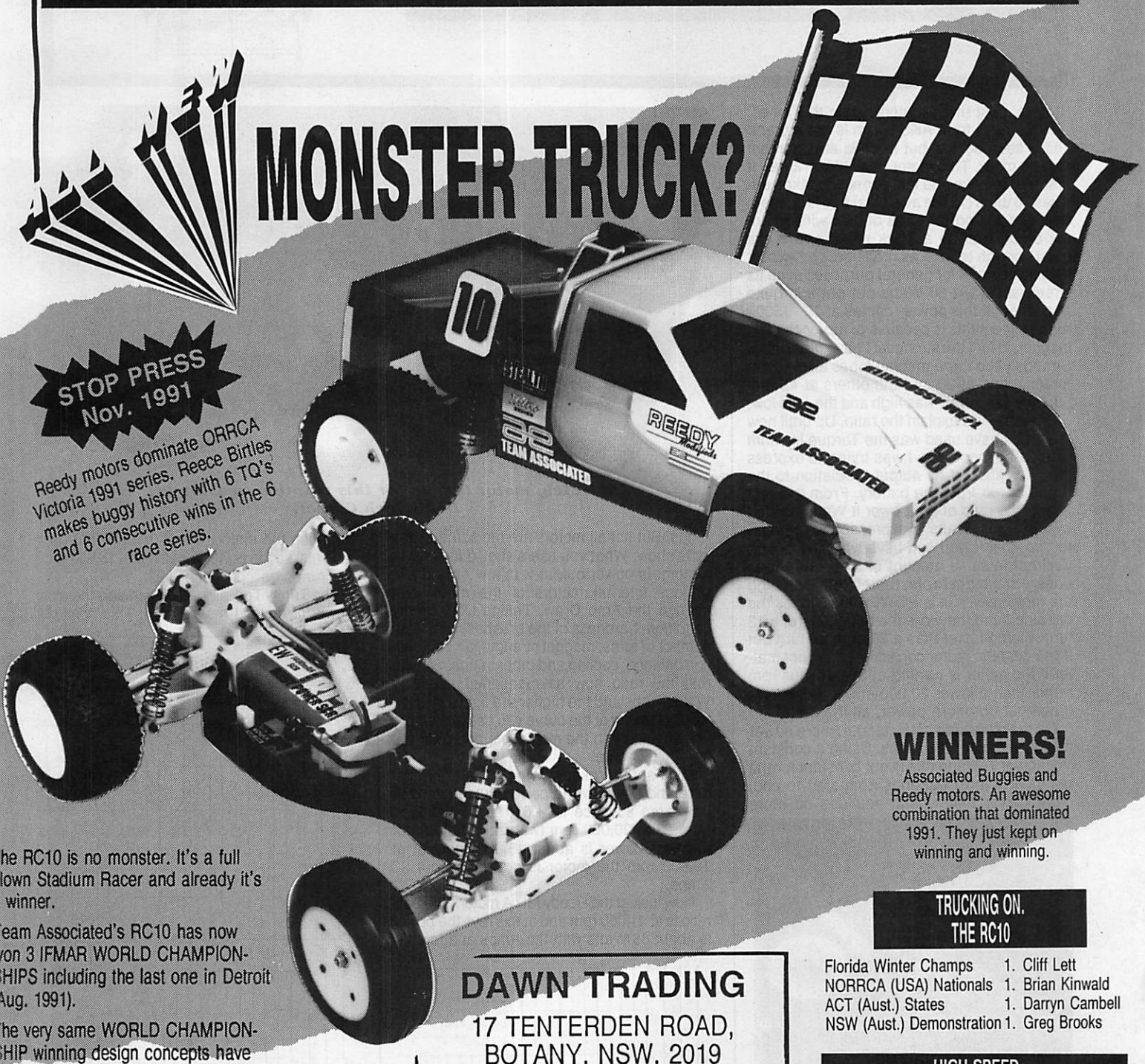
What keeps a company solvent through good times and bad? Carl and Peter Melvey, Ian Bannister, John Hunter and the rest of the crew run Dawn by collective contribution. Decisions about new lines are made cooperatively with Carl permitting his experi enced staff to excercise their skills to the full. Carl may not have handled a slot or radio controller in anger but he knows his business. He likes to treat people fairly and build a sense of loyalty in commercial dealings and his own staff. As an example, Carl agreed to the publication of this article on the condition that we print a tribute to their NSW Central Coast representative, Bonnie Hawkins. After 20 years she is the longest serving member of the organisation after Ian Bannister, does a terrific job and is highly respected by all.

With extraneous activities that include National Councillor for Cross Country Skiing, Chairman of the third biggest specialist charity for the aged in Australa and Life Member of North Bondi SLSC he needs a staff who he can trust, and delegate. This he has acheived. Carl Melvey comes across as a workaholic that is fair but firm and this as much as anything is one secret to success. With 30 agencies and 25 years under their belt the future looks rosy for Dawn Trading and the hobby.

RC10T

CHAMPIONSHIP WINNING ENGINEERING

MONSTER TRUCK?



STOP PRESS Nov. 1991

Reedy motors dominate ORRCA Victoria 1991 series. Reece Birtles makes buggy history with 6 TQ's and 6 consecutive wins in the 6 race series.

WINNERS!

Associated Buggies and Reedy motors. An awesome combination that dominated 1991. They just kept on winning and winning.

The RC10 is no monster. It's a full blown Stadium Racer and already it's a winner.

Team Associated's RC10 has now won 3 IFMAR WORLD CHAMPIONSHIPS including the last one in Detroit (Aug. 1991).

The very same WORLD CHAMPIONSHIP winning design concepts have been used to engineer a whole new car: the RC10T Stadium Truck.

This is not a conversion kit. Sure, it uses the Worlds winning transmission (THE STEALTH), Worlds winning shocks (hard anodised GREYS) and the race winning aluminium tub of the RC10, but that's where the resemblance ends.

The rest is all new. It's tough, it's fast and it's the best you can get!

TEAM ASSOCIATED

TRUCKING ON. THE RC10

Florida Winter Champs	1. Cliff Lett
NORRCA (USA) Nationals	1. Brian Kinwald
ACT (Aust.) States	1. Darryn Cambell
NSW (Aust.) Demonstration	1. Greg Brooks

HIGH SPEED THE RC10 TEAM CAR

THE WORLD'S '91	1. Masami Hiroshaka
WA Titles	
2WD Modified	1. Gavin Reynolds
2WD Stock	1. Travers Hardman
ACT Titles	
2WD Modified	1. Reece Birtles
2WD Stock	1. Mathew Brown
NSW Titles	
2WD Modified	1. Greg Brooks
2WD Stock	1. Tim McLure
VIC PRO-AM	
2WD Modified	1. Reece Birtles
2WD Stock	1. Brendan Coleman

DAWN TRADING

17 TENTERDEN ROAD,
BOTANY, NSW. 2019
PHONE: (02) 666 4999
FAX: (02) 666 3404

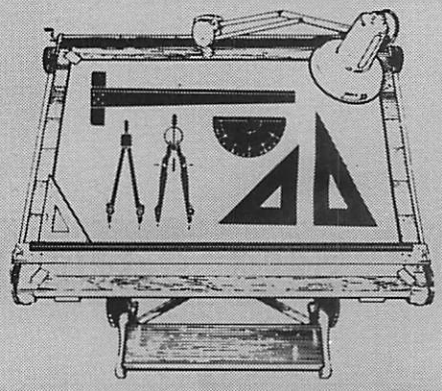
STATE REPRESENTATIVES

NSW Central Coast: Bonnie Hawkins...**(043) 82 1345**
NSW North West: Peter Pine.....**(067) 72 5971**
Queensland: John Pearce**(018) 88 1740, (07) 257 1909**
South Australia: Pam Mitchell.....**(08) 337 6339**
Tasmania: Roger Mahoney.....**(002) 72 1049**
Western Australia: Robert Bennett Phone/Fax**(09) 246 3744**
Victoria: Kevin Cowling.....**(03) 761 4246**
Terry Dodds.....**(03) 801 8194 or (018) 38 9817**

Modellers, contact your nearest hobby outlet for further details.

Trade Enquiries Only

BOB'S TECH CORNER



Hi folks. Just three motors again this time.

First one is from AKS which is not a brand I have seen before, but there is always room for one more. This motor is a little strange. It is sealed, i.e. the end bell cannot be taken off. It has 18 turns (15 are available) and is bushed. Because it is not 27 turns of 0.65 wire it cannot be classed as a stock motor and is not good enough to race as modified, so I expect it could be used for general purposes such as street racing. At 80 Watts out put it is quite good though this power comes at 12 - 15000 rpm. I expect this is because of its very strong magnet, in fact the strongest I have measured. Strangely the three magnet lobes all read differently, one at 30 and the others at 40 and 50. Free Amp draw was high and the ratio low.

Perhaps I will explain the ratio. Up until now the ratio I have used was the Torque in Nmm divided by the Amps. I was trying to express an Indication of its output in relation to the Amps drawn from the battery. From this test I show the ratio of the power it Watts divided by the Amps. Watts is expressed in rpm and torque, that is you can have two motors producing the same amount of torque, but one does it at a higher rpm, therefore it is putting out more power. It is POWER that drives the car along and the more the better. Sure, a 13 turn will run faster than a 20 or more turn but if you gear the motor correctly it does not matter if the motor is turning at 30,000 plus rpm rather than a lower 20,000 etc. If at this rpm it can put out more power, all the better.

On the other side of the ledger, more power usually means more Amps. Using a constant Voltage of 7.2 (and this is not constant for the duration of most batteries from start to end) more power means that you use up more

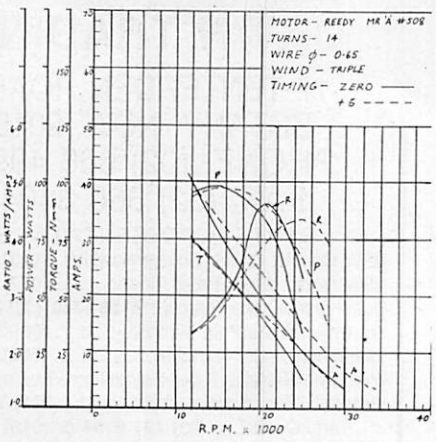
New Yokomo racing motors are called Super Wing. Have aluminium end bells.

Motely motor line-up for this month's measure in Bob's Tech Corner.

Amps. But not all motors are the same as my tests show. What you users should look for in a motor is power output with low Amp draw. Various internal factors of the motor can change the Amp Draw. Things like commy condition, hardness of the brushes, wire size, number of turns, magnet strength, air gap, friction balance, cooling and other things. So with that the ratio now as mentioned above is Watts/Amps and the higher the figure the better. By looking at the curve you can see where you should pitch the motor rpm and gear the car for this area.

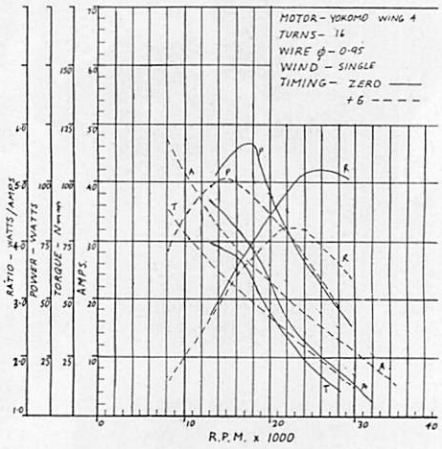
Look at the Yokomo Wing 4 motor on test here and see how the performance changes from zero advance to +6. The best ratio is from 23 to 30,000 rpm (with zero timing) but the best power is about 18,000 rpm yet at 18,000 rpm the motor is drawing about 30 Amps.

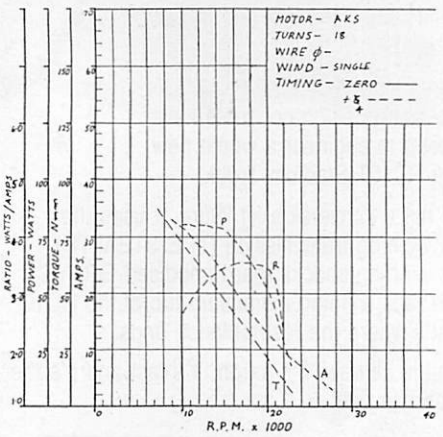
Now look at the Reedy MR A motor. The best ratio is at 21,000 rpm and at this revs the power is about 85 Watts with the Amps at a low 17,



but push the motor harder (by a higher gear ratio etc) so the power is peaked at 15,000 rpm, the Amps go up to about 32.

The Trinity Torkzilla tested earlier is the most powerful motor I have tested. This does not





MOTOR			AKS	YOKOMO WING 4	REEDY MR A #508							
COST $			55	75	125							
TURNS			18	16	14							
WIRE DIAMETER mm			-	0·95	0·65							
WIND			S	S	T							
AIR GAP mm			-	0·45	0·35							
MAGNET TORQUE Nmm			40	30	33							
BEARING			BUSH	BALL	BALL							
FREE RPM X1000		ZERO		32·6	30·6							
		+6	23	36·0	35							
FREE AMPS		ZERO		2·9	3·6							
		+6	11	5·0	4·5							
PEAK POWER WATTS		ZERO		116	98							
		+6	80	101	98							
PEAK POWER RPM x1000		ZERO		18	15							
		+6	15	15	15							
AVERAGE RATIO		ZERO		5·0	4·5							
		+6	3·2	4·0	4·0							
TORQUE @ Nmm	5k	ZERO										
		+6	100									
	10k	ZERO		80	80							
		+6	70	80	85							
	15k	ZERO		70	62							
		+6	45	60	62							
	20k	ZERO		42	40							
		+6	20	41	43							
	25k	ZERO		20	12							
		+6		27	25							
	30k	ZERO										
		+6		12	10							
	35k	ZERO										
		+6										
	40k	ZERO										
		+6										
AMPS @	5k	ZERO										
		+6										
	10k	ZERO			46							
		+6	32	42	42							
	15k	ZERO		34	32							
		+6	24	30	30							
	20k	ZERO		22	20							
		+6	13	24	25							
	25k	ZERO		12	10							
		+6	5	16	15							
	30k	ZERO		5	4							
		+6		11	6							
	35k	ZERO										
		+6		5	4·5							
	40k	ZERO										
		+6										

mean it is the best. It's just the most powerful I have tested. If you look at its curve, the ratio (Watts/Amps) is a high 6.1 at 34,000 rpm and at maximum power at 27,000 rpm the ratio is still 5.7, which means it is putting out 140 Watts but using only 26 Amps. Again if you look at the curve it can put out 125 Watts at 31,000 rpm using 20 Amps and also 125 Watts at 15,000 rpm, but here it takes 50 Amps. I hope this shows you the importance of gearing your car correctly. Not only will it go faster, but the battery will last longer and using less Amps will reduce heating of the motor and make it last longer.

I did not intend this writing to last so long, but I thought it might help explain the curves of my test and help you compare motors. Now to finish the other two motors.

The Reedy MR A uses "Ultra Torque Magnets" which are suitable for high heat conditions and should suit 2WD, 4WD and ON ROAD. They provide a different set of brushes and springs for ON ROAD use. I expect this is because the wheels are slipping less and more current (Amps) is being used. The springs are made from a new material. It is built into a Yokomo can with wings adjacent to the brushes and the can looks the same as the other motor which is a Yokomo called Wing 4. With all its new material, the performance is only average as my tests show.

As mentioned above, the other motor the Yokomo Wing 4 puts out more power. It is classed as a "Budget" quality open type and for $75.00 is a good buy. The caps and leads come already soldered and it is suitable for 2WD and 4WD.

Your editor has some track experience with these motors (or at least one of them) and I hope he can add his comments below.

Bye for now, **BOB ROACH**

EDITORS NOTE:

Yes, the performance of the Reedy MR A (14 triple) is unusual but not surprising. The Reedy MR series is very popular at the top racing levels and in fact I have two other MR motors that are top of their class. But in use the 14 triple is lacking. It's no slouch but it doesn't have the sparkle of it's brothers. The Reedy 14 Double appears to be a better motor which goes to show that even the great motor guru Mike Reedy is not infallible.

Tekin Dyno. Test results for these three motors were given last issue.

CUSTOM COLOUR

New Acrylic paints designed for use on lexan bodyshells... For that superior custom finish!

★ 24 colours including metallics, flourescents and pearlescent white.

★ Available in 150 ml spray cans or 170 gram (6 oz) tins.

Colours available: Black, Light Blue, Blue (dark), Lime Green*, Green (dark), Orange, Red, White, Silver, Yellow, Lilac* and Purple*.
Flourescent: Orange, Yellow, Pink, Green and Blue.
Metallic: Red, Blue Gold and Purple.
Pearlescent: White.
* Available in Aerosol only.

DAWN TRADING - 'The House of Hobbies'

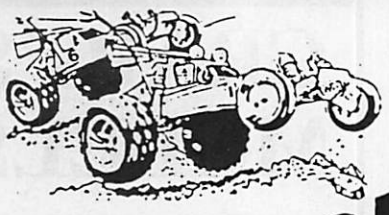
17 TENTERDEN ROAD, BOTANY NSW 2019 PHONE: (02) 666 4999, FAX: (02) 666 3404

DAWN TRADING STATE REPRESENTATIVES

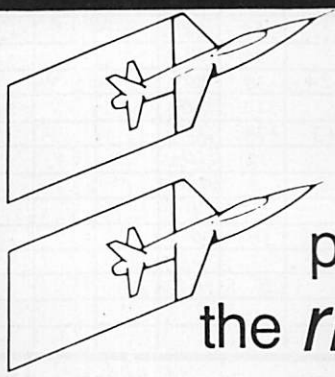
NSW Central Coast: Bonnie Hawkins.....(043) 82 1345
NSW North West: Peter Pine.....(067) 72 5971
Queensland: John Pearce.....(018) 88 1740, (07) 257 1909
South Australia:Pam Mitchell.....(08) 337 6339
Tasmania: Roger Mahoney.....(002) 72 1049
Western Australia: Robert Bennett Phone/Fax.....(09) 246 3744
Victoria: Kevin Cowling.....(03) 761 4246
Terry Dodds.....(03) 801 8194 or (018) 38 9817

Modellers, contact your nearest hobby outlet for further details.

Trade Enquiries Only



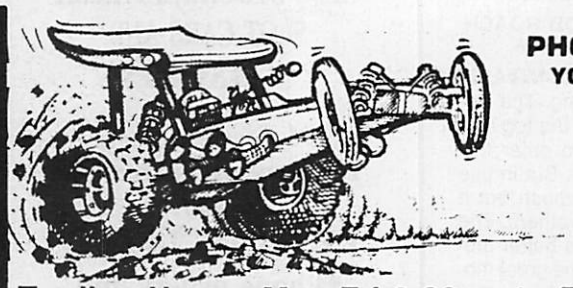
WINGS 'N' THINGS



The most efficient purchase is the *right* parts the *first time!*

For the *best* expertise behind the counter speak to Andy, Ray or Gilly, all World Titles Competitors

HOBBIES



QUICK DELIVERY!

PHONE ORDERS WELCOME
YOU CAN SHOP FROM HOME!!

Simply telephone and quote your credit card number, or post a bank cheque or money order.

MasterCard VISA

HOBBIES

236 VICTORIA ROAD, GLADESVILLE, 2111

FOR THE ULTIMATE IN RADIO CONTROL MODELS

PHONE ENQUIRIES: (02) 816 2699

Trading Hours: Mon-Fri 9.30am to 5.30pm, Thurs 9.30am to 8pm, Sat 9.30am to 2pm.

TWO UP FROM TEKIN

A review of two new speed controllers from Tekin - one at each end of the price range.

We know that the majority of our readers are not into competitive racing. If they were then they could go along to almost any meeting in the country and check out the ESC's (Electronic Speed Controllers). What would they find? Easy. Most would be Tekin's. In fact most would see the familiar black case of the Tekin 411P.

It doesn't take much investigation to figure out why. The TSC 411 is small, light, efficient and has most of the desirable features without being overly fancy. Importantly, in these days of rampant recession, it has the right price.

With all this in mind, a new version of the 411 is a noteworthy event. The acclaimed 411P now becomes the 411G and the rest of the Tekin ESC range is adjusted accordingly. There are no earth shattering breakthroughs in the new, four model range just performance improvements to the ESC's many racers have come to depend on. Design, update and improve, that's the buzzwords from Tekin - the originators of Mosfet speed controls. Let's examine the range and test two of them.

Tekins high class sports speedo the 408S. Only $150.00.

LINE UP AND BE COUNTED

The prices might vary by up to $130 but all Tekin TSC speedos are technically advanced and have the following features.

Regenerative battery charging. The battery is actually re-charged a little during braking and driving at partial throttle openings.

Reverse voltage protection. Tekin's special fuse protects against reverse battery connection without affecting the units efficiency. No, we didn't test this feature (we have to keep our tests non-destructive), but we have no reason to doubt their claims. Note that the fuse does not protect against wrong wiring of the receiver plug. More later.

Digital high and medium frequency control. Unlike the older generation of ESC's the new HF units send more rapid pulses to control motor speed. Advantages are smother control and longer life for motor commutators and magnets.

Digital glitch detection and elimination, and automatic BEC bypass when voltage drops low.

Robotically assembled with SMT components to enhance reliability.

All but the budget model 408S also have Varitorque control which allows adjustment of the amperage flow to the motor to regulate torque, wheelspin and battery waste. Nowadays this feature is just about essential for competative racing.

In summary the Tekin range includes; **408S:** A new economy model ideal for suburban racing and motors with 14 or more turns. Tested later. **410S:** Equivalent to the old 411P and now with the same Megafet transistors. **411G:** An update of the 411P and destined to become just as popular. Tested later. **420F:** Suitable for up to 20 cells (24 volts) and very high currents but larger/heavier and not really necessary for ordinary 6 cell racing.

Update of the very popular 411P is Tekins new 411G

TUNE IN AND TURN ON

First appearances are always important and the Tekins impress in this department. They come in a stout sealed box filled with goodies. You get an excellent step-by-step manual, heatsinks, motor capacitors, rubber plugs, adjusting screwdriver, double side tape, various receiver plugs and three sheets of stickers. Tekin's may be inexpensive but they're not cheap skates!

Experts who buy the 411G will know how to get their speedo going so we will concentrate on tuning and using the 408 Sport. This model comes ready wired with Tamiya plugs to connect straight to the battery and the motor. But make this the last thing you do - not the first. With any piece of electronic equipment you should always power-up last after double checking all connections.

First you have to make sure the small plug and wiring is compatible with your receiver. Like all ESC's the Tekins will work with any receiver provided it is connected up properly. Tekin make this chore easier than most by providing plugs to suit all common radio types and snap-in wire connectors for the plugs. Polarity differs between radio brands so it is most important that the wire colours marked on the plug are followed or you could blow the speedo, steering servo and the receiver. Believe me! All Tekin ESC's have a short red wire lead coming out of the unit for powering a FET boosted servo. You will have to buy a small choke from Ozcharge (the Dick Smith chokes do not have high enough capacity) to protect this line and maybe install some other capacitors in the receiver line. "Choke your ESC" in D & T number 21 is required reading if a FET servo is used but ignore if using a standard servo.

If all checks out then you can power up the ESC and adjust the neutral position and the position when full-forward comes in. This is easily done and again the manual gives full details as well as set-up tips and a troubleshooting guide. Sadly, the medium frequency pulses of the 408S do not emit that nice metallic chime at low motor revs - like the 411's.

GOLDFETS

It's difficult to keep up with electronic developments. Things change almost daily. Field Effect Transistors (FET's) are a good example as their efficiency continues to increase. With Tekin the next stage after Megafets (sounds like a heavy metal band!) is their Goldfets.

With all modern ESC's the large power demands (over 100 amps at times) of our motors is handled by the FET transistors. Other components in the speedo do not have to pass these high currents but the FET's switch the current on and off many times every second in order to vary the motor speed. Whilst doing so a small amount of power is lost in the FET's. Not very long ago this power loss was measured in tenths of a volt - now it's in hundreths.

The truth is we are into the realm of rapidly diminshing returns. The top speedo's have voltage losses so low that even say a 10 percent improvement in efficiency will only allow an extra few thousanths of a volt to reach the motor. This is probably equivalent to shaving a couple of millimetres off one corner during a race so don't expect to notice the difference on the track.

If it is comparisons you want then our tests came up with the following voltage drop figures with the ESC's on full power under a constant 12 amp load:

Tekin 408S, 0.062 volts.
Tekin 411P, 0.054 volts.
Tekin 411G, 0.046 volts.

Even the economy model 408 is very good - the 411 Goldfet is exceptional, especially for a 6 FET controller.

We checked a second example of the 411G and this gave an even better reading of 0.042 volts.

The volts taken by the FET's materialises in the form of heat which is why the heatsinks get warmer more quickly in the speedo's with higher voltage drops and less efficiency. Also, as the FET's temperature rises they become less efficient which in turn produces more heat. An escalation effect. This can be minimised by providing cooling air through the fins of the FET's heatsinks and a bigger outlet in the car body for the heat expanded air to escape. The Tekin's have thermal sensors to shut down the speedo if too hot but some other speedo's do not.

MORE ON THE 411G

Which brings us to Kevin Orton's (the brains behind Tekin) latest and greatest masterpiece. We have proven how efficiently it carries out it's duties so let's now take a quick trip around it's other attributes.

The 411G has all the features described for the 408S (you should be familiar with all these numbers by now!) plus the following additions.

Most obvious is the torque control feature. This is easily adjusted from zero to 120 amps but you will need a digital volt meter to check the setting. On the 411G (not the "P") you can bypass this feature for drag racing and pulling so the speedo puts out over 1000 amps peak. Also obvious is the three power wires with a big 13 gauge diameter compared to four wires of 15 gauge for the 408S. One critisism is the unplugged hole left by the vacated wire. Users should tape over this hole to stop any possibility of water running down the wires and into the unit.

Apart from the GoldFets the new 411G has some more subtle changes to the circuitry and Tekins custom digital processer chip. Under subjective testing we found these changes quite noticeable when used side by side with the 411P. We thought the "G" was slightly smoother and definately more linear than the "P". Also the new 411G exhibited no motor jerkiness on start up where the "P" gave a slight kick. We thought the brake on the "G" was slightly more powerful than the "P" but note that our test model 411G was brand new whilst the 411P had given a year of faithful service.

No shortage of accessories with Tekin.

The 408S has the same chip as the 411G so, not surprisingly, our subjective comments apply equally to the cheaper model. In other words the base model 408S feels as good as the top line 411G.

Other changes with the 411G, which as far as we can tell also apply to the 408S and 410S include; improved transistor switchng ciucuit for cooler operation even under heavy loads. Isolated ground wiring system which results in more range if a receiver pack is used. And a new, exclusive high speed BEC with RF noise suppression for greater range with a wide variety of radios. The latter is also claimed to reduce servo "hunting" around neutral, making the car feel more solid.

THE FUSE

Tekin owners can have a miserable time if they are not familiar with the effects of a blown fuse so listen up. If the fuse blows the ESC will keep working but it will be erratic. This has caught out a few racers who have sometimes spent ages looking for interference problems that don't exist. It's best to keep a spare fuse handy although at $8.20 they are not real cheap, (but cheaper than blowing something else). Fortunately they don't blow often (we haven't done one yet), but just remember the symptoms.

FOUR UP FROM TEKIN

It looks like the familiar Tekin cases will still be around in abundance with the new model line up. They offer terrific performance and value.

The 408S for those who want a new generation ESC at a budget price.

The 410S should be as good or better than the top selling 411P. A competative speedo for a very competative price.

The 411G for those who want the latest with just a little bit extra. One of the best in non computerised ESC's.

The 420F if you pull bigger than normal amps and volts.

Watch out soon for - "the only speed control better than a 411G", Tekin's version of the Force, the 411K Smart Speedo.

Units supplied thanks to the exclusive importer, PB Model Cars Australia, telephone (08) 356 8698.

REVIEWS AT A GLANCE

NAME	TEKIN 408S	TEKIN 410S	TEKIN 411G	TEKIN 420F
RRP	$150	$178	$260	$274
SIZE	41x38x15mm	41x38x15mm	41x38x15mm	50x38x15mm
WEIGHT	54g	54g	48g	68g
REVERSE	No	No	No	No
BRAKE	★★★★	Not Tested	★★★★★	Not Tested
PULSE FREQUENCY	Med	High	High	High
SWITCH	Yes	Yes	Yes	Yes
ADJUSTMENTS	N.F.	N.F.CL.	N.F.CL.	N.F.CL.
MAX CONT. AMPS	250	250	300	400+
PEAK AMPS	1050	NS	1050	NS
MEASURED V DROP	0.062	Not Tested	0.046	Not Tested
SMOOTHNESS	★★★★★	Not Tested	★★★★★	Not Tested
INSTRUCTIONS	★★★★★	Not Tested	★★★★	Not Tested

WHAT'S NEW & WHAT'S DUE

SERPENT CENTAX CLUTCH

The most important aspect to improve performance of a 1/8th scale gas powered car is the clutch. Over the years we have seen clutch technology go from two shoes to three shoes to four shoe and even to a six shoe clutch. The more shoes that were used the greater the shoe contact area, ie.: less slip but the lighter the shoe therefore the longer the take up time. This allowed the engine to rev to a point where it was delivering maximum power to drive you out of the corner before the clutch engaged with virtually no slip. The problem however with all these clutches was that to adjust the clutch take up point (a vital adjustment for car performance) the clutch had to be unassembled and each shoe individually lightened. This meant that from day to day hour to hour you needed to have many sets of clutch shoes cut to different weights.

The new Sperpent Centax Clutch does away with this need as you have a totally adjustable engagement point (by tightening or loosening a screw) and a virtual slip-free engagement which transmits maximum power at all times. This allows a driver to quickly and efficiently adjust the clutch engagement point, even to the point of adjusting the clutch seconds before the start of a race.

Available from Custom Model Cars, 598 Forest Road, Penshurst NSW. 2222. Phone: (02) 579 4007.

THE KOPROPO TRENDY MX-2

by Tony Gray

KO Radios have long been considered the standard setter in R/C racing circles. Check out any 'A' final in top level competition, and you will see at least 80 percent of drivers using radios manufactured by Kopropo.

Up until now, KO has concentrated on the upper end of the market, with the legendary EX-1 and ultra high-tech EX-9. That has all changed now with the introduction of the new entry-level radio system, the Trendy MX-2.

Yes the name is rather silly but the MX-2 exhibits all the quality we have come to expect from KO. Although it is only a basic two stick radio, the MX-2 is far from the boring square boxes we've seen in the past. Featuring smooth sculptured styling, the transmitter actually manages to look quite attractive, and it even has special ridges moulded into the rear of the casing which makes it extremely comfortable to hold.

The transmitter's front panel houses the twin sticks and fine trim adjustments,with the battery level meter mounted in between. Down beneath is the 'Power On' switch and, just next to it, the servo reverse switches. That's all you get folks. No E.P.A. or exponential adjustments on this, it's all straight down the line, and that's just what you'd expect from an entry-level system like the MX-2.

Basic it might be, but the rest of the equipment is top-line. The receiver is a model KR288 which would be worthy of inclusion in any radio system as it measures only 41x36x21, and weighs in at 25gm. This makes it extremely light and compact and is well suited to any car.

KO provide two PS701 servos with the MX-2, and these have been KO's base-line servo now for many years. No, they're not as strong or fast as KO's own FET servos, but they are ultra reliable, and an excellent choice for the sometimes ham-fisted beginner.

We installed the Trendy MX-2 in the Kyosho/EOX F1 Ferrari, (tested in the last issue) and it performed exceptionally well. We were able to get the car to a point where its lusty two-stroke scream was inaudible, with absolutely no radio problems. In fact the radio was able to transmit a strong signal far beyond where our aged eyes could see.

KO rates the range at 300m on the ground, and 1000m in the air. For anyone looking for an affordable radio to start their racing career,

or perhaps a second system for another car, the MX-2 is well worth a look. coming in well under anything else in the KO range price-wise. It's now possible to get the much lauded Kopropo quality at a bargain basement price.

Many thanks to Advanced Hobbies for supplying the MX-2.

FROM DETROIT TO YOUR LOUNGE ROOM

D & R's excellent video of the Buggy World Champs is now available.

Only a privileged few saw the spectacle that was the 1/10th World Titles. Now, the official video of RC racings most important event is available and it's the next best thing to being there. You can't catch Masami in the flesh but you can pause, freeze frame and replay over and over again. This presentation is too good to play just once.

It surpasses all D and R's previous efforts in camera work, editiong and production. In most parts it's good enough to watch and show your non racing friends - relations just for the entertainment. The Hirosaka/Lett battles (two of the worlds greatest drivers) are as good as anything you'll see on Weird World of Sport.

We start with some in-flight shots of the track and surrounding areas and some Detroit sightseeing. This Motor city of the US of A can be quite pleasant if you forget about it's reputation as the murder capital of the world. In the opening minutes we also find a short history of the World Titles and some terrific in-car performances using the liptick sized "buggy-cam". For those who prefer stunts there is a segment filled with nothing but stunning slow-mo tumbles. Amazing how our cars survive such punishment.

This time the lipstick camera probes the pits with revealing close-ups of the "secret" cars but I would have liked to see more, including tech tips from the big names. However, knowing how the big teams stand guard over their latest secret developments this video tries well in this respect.

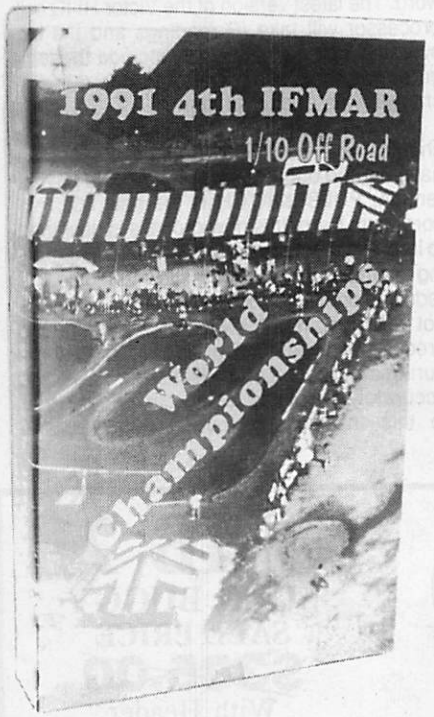
Some of the qualifying heats are covered, including a rare shot of Masami requiring the assistance of a marshall, but the video does not dwell on what is a rather tedious part of the proceedings. All the C, B, and A finals are featured in full.

Multiple cameras and mostly good positioning ensures the viewer will not miss the critical bits. As mentioned, the 4WD A final duels between Cliff Lett and Masami Hirosaka will have you on the edge of your seat. Classic racing at it's best.

It's interesting to compare the styles of the old vs new (Lett) world champs. Hirosaka is dynamic and likes to throw the car around whilst Lett is a little more cautious. Lett would take a relatively safe line through the treacherous "surfs up" section and loose a little ground and Masami (and others) would take the slightly faster but less predictable route. On this day the Lett style won out.

The video also emphasise's the incredible speeds obtained by the modified buggys. Especially on this undulating track. Maybe it's the little screen but they seem faster than in the flesh. Or maybe we are not quite on the pace here. The cars get around the big Detroit track very quickly and zip over the bumps like a grasshopper on steroids. Maybe Tamiya should have raced their Super G! Despite this, the two Yokomo team drivers of Lett and Hirosaka appeared faster than the fastest. No doubt Mike Reedy had something to do with that.

More excitement after the 4WD finals as Masami entertains with some trick driving. Like round the track driving backwards. Or using only the fingers of one hand to drive - and then driving with his feet. It was disheartening to realise that his demo version of the RC10 seemed faster than my balls out racing version!



On to 2WD and the classic battles continue. This time there are new players as Lett did not make the A final and Masami has to contend with team mate Rick Vehlow and Losi/Trinity driver Kyle Reed who won the first leg. Again all the action is on the tape, accompanied by a professional and not-hysterical commentary by John Thawley, the ROAR President. The much vaunted Associated "Stealth" car certainly looked strange with it's swept forward front arms but there is no denying it worked. In fact the 2WD's seemed to handle the undulations better than the 4WD's - or did the track flatten out as the meet progressed? Get this video and watch lots of drivers opinions on the track surface. I wonder why the more successful drivers had a better opinion of the track than the rest.

This two and a half hour tape concludes with the presentation dinner which includes a nice thank you speech from Cliff Lett. Like the rest of the video the atmosphere of the moment is captured.

So far, this is the best non-commercial video of our sport that I have seen. With numerous voice-overs and caption overlays (including results) the D and R team have the 1191 Buggy Worlds dialled-in as good as Letts Yokomo.

IT'S EVEN BETTER - BLUE EAGLE-LS

Offroad truck competition is getting faster and faster all the time. To meet the demands, the trucks must contimue to evolve into better machines. The new Blue Eagle-LS from Traxxas contains all of the best components and trick factory team parts you need to go straight to the front of the pack.

The backbone of the Blue Eagle-LS is a true 100 percent graphite chassis. While the LS transmission is designed specifically for truck use with its 2.72 final drive ratio. This exclusive lower ratio eliminates the sluggishness that can occur when a regular car transmission is used with truck-sized wheels.

NEW LS COMPONENTS

X-tra Long rear Pro arms. X-tra Long Pro half shafts. Dished "Life" wheels. Hardened short stub axles. Pro-Series black springs. Pro-Trax

multi-ribbed front tires. Pro-Trax spiked rear tires. Pro-Series caster blocks. Blue performance shock seals. Narrow stadium truck body and 100 percent graphite chassis.

Contact your local Traxxas stockist or G & M Trading (067) 65 2701.

BATTERY-EQUALIZER DISCHARGE BOARD

"Hard-discharging' is the best way to discharge your battery packs after a run but, when you do, there's always the possibility that the cells' polarity will be reversed. The Equalizer Discharge Board discharges each cell separately, and the pack can be left in for days without any cell reversal. The unit works with 4, 6 and 7 cell packs. It comes as a kit, and assembly takes roughly 15 minutes. (Some soldering is required). Part no. RC 5900. Available from G & M Trading: P.O. Box W197, West Tamworth, (067) 65 2701.

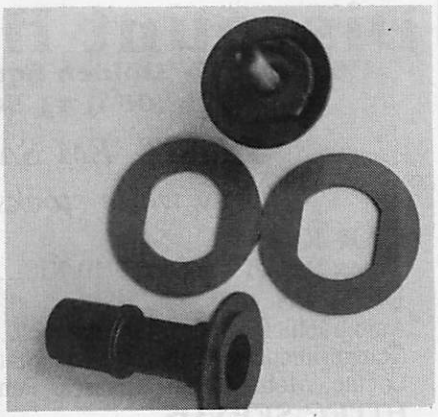
TRINITY MONSTER STOCK Jr.

Trinity's new Monster Stock Jr. motor has a slotted short-stack armature, a fluorescent-pink can and an edbell with 4.9 wet magnets. The short stack requires less wire, and this reduces the motor's resistance, making it faster than a standard stock. Its timing has been set at 36 degrees, and although it isn't ROAR-legal, it has been submitted for NORRCA approval. Part no. 1000. Available from G & M Trading: P.O. Box W197, West Tamworth, (067) 65 2701.

HALSEY LIGHTWEIGHT DIFFS

In our report on the new Yokomo Works 91 (now the World Champs winning buggy again) in issue number 21 we paid tribute to the Dogfighters differentials. They were top quality units that had passed the test of time and foiled the accessory manufacturers who hadn't come up with anything better.

Times move quickly in this business. Now Jay Halsey (part of the Losi empire) is marketing metal differential halves that have the edge even on the excellent originals, (readers who are behind on their education should read our comprehensive article on model diffs in D & T number 15). These are direct replacements for the steel diff outdrives - you still use the original plastic pulley, balls, thrust bearing and through-bolt.



"Jammin" diffs. for Yokomo are a little lighter and truer running.

The Halsey Lightweight Diff is also dimensionally similar to the original but is beautifully engineered and finished. The new bearing plates engage with an hexagonal step on the oudrives which obviates the need for gluing. This set-up is similar to the Losi and Schumacher diffs and, if manufactured accurately, makes for a smoother truer running unit. We couldn't fault the Halsey diff in this respect and have been running the unit for some time without problems.

By careful machining of unneccessary metal the Halsey outdrives are also lighter than the originals, but only by 6 grams according to our scales. What you have to remember is that weight is being lost in the most important area - the rotating parts of the drive train com-

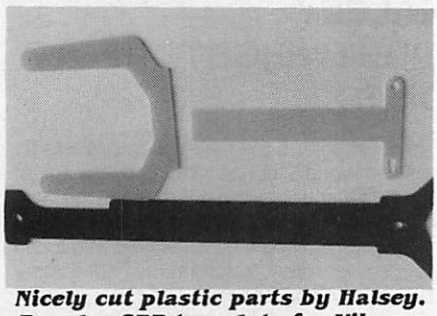
ponents. This has the double advantage of lessening the load on the motor in addition to reducing the overall weight. It's small but significant.

At $45 per differential the Halsey Lightweight Diffs are not bad buying and worth considering for the top level racer looking for another fraction of a percent advantage.

MORE HALSEY

Arriving in the same package as the diffs were some Halsey FRP and CRP parts for the RC10 and Yokomo. Again, harking back to our Works 91 review and the critisism of the sloppy top plate. Yokomo owners who are ready for something better should look no further than the Halsey product. It's been around a while and fits both the old and the new Dogs. Nicely cut from a carbon and glass fibre laminate the Yokomo top plate is light and rigid.

Also it extends forward to support the rear



Nicely cut plastic parts by Halsey. Popular CRP top plate for Yikomo and shock mount and battery hold - down tee for RC10.

of the front shock mounts which adds further strength. The optional Yokomo lightweight magnesium front bulkhead has a nasty habit of breaking across the shock mount hole so the Halsey plate is designed to prevent this. The plate comes with mounting hardware for the Yokomo belt tensioner which no-one uses nowadays and plate hold down bolts and spacers that should also not be used since the plate will distort if bolted through the existing bulkhead cap holes. Instead, drill four new holes and screw fix to the inboard corners of the bulkhead caps. A bit of messing around but the result is a very ridgy-didge job. Serious racers are not put off by the $53 price tag but maybe Mr Halsey should look at supplying just the CRP for a lower price.

For the venerable Associated RC10 Halsey now have extended shock mounts front and rear. This is so you can use longer shock absorbers which seem to be the rage as our tracks appear to get more bumpy (are off-road tracks getting worse or is it that speeds are just quicker?). The mounts are in fibre glass which is a little heavier (and cheaper) than carbon fibre but which offers more flexibility without the sudden death breakage of graphite. Remember that fitting longer shocks is not the end of the story - just the begining. Shock rates and positioning will all have to be adjusted before the car again becomes dialled to a particular track. Mr Jammin Jay Halsey gives some set-up recomendations wth the towers. Cost is reasonable at under $13 for each tower.

Finally the Jammin Battery Hold down allows RC10 owners to secure saddle pack nicads (3 plus 3 configuration) in the existing battery box down the centre of the chassis. You will have to move the front of the battery box forwards slightly since six nicads side by side are longer than two rows of three nicads as used in the stick packs. Think about it! I chamfered the end of the "T" piece so it slides more easily into the rear holder and also placed some sticky backed foam (door draught excluder from hardware shops) on the "T" for a firmer grip on the cells.

Halsey parts are distributed by Custom Model Cars, telephone: (02) 579 4007.

OZCHARGE GOES PULSEMATCH

Ozcharge Electronics are currently sitting smug in the knowledge that emulation is the most sincere form of flattery. Three years ago they set up their own design equipment for grading and matching of nicad cells and developed a system for matching by internal resistance. They have always claimed that this is a far superior method of matching than by average voltage under discharge. Let's admit it - Ozcharge batteries have proven theselves good but being Aussies we all took this "internal resistance matching" business with a grain of salt. After all it couldn't be as good as the overseas methods, could it?

Now look what's happened. Using an internal cell resistance reading as a measure of speed or "punch" has become the new buzzword. The latest version of the Victor HI-IQ cell processor will take IR readings and the big overseas cell matchers now include these figures on their cells. Barry Puttee (Mr Ozcharge) was ahead all along.

Now that the opposition has caught up Ozcharge have advanced another step. They have earned our respect so we should pay attention. PULSEMATCH is the new line. According to Barry this new process is designed to improve the cells performance without having to employ any of the drastic, damaging, life reducing practices such as "pushing" etc. he's not giving too much away but apparently the process involves pulsing the cells at 40 amps during a typical 20 amp discharge. This more accurately simulates racing conditions. Prior to this the cells (Sanyo 1400SCR's and

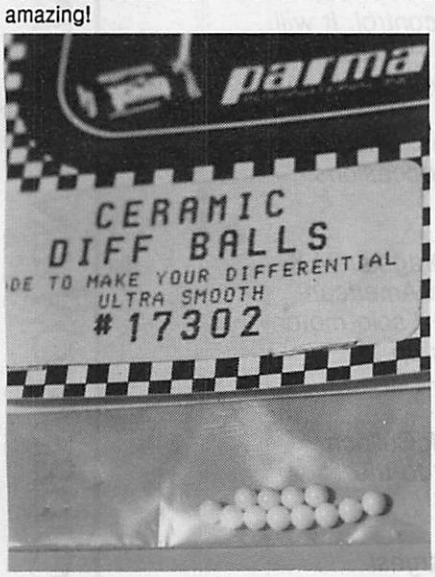
1700SCE's) have been cycled five times before undergoing the pulsematch process and measurement of internal resistance. Barry says this method is a lot harder to design into the equipment but gives much better results.

Does it work? So far all we know is that the cells are coming through with better readings and a look at race results show that Ozcharge is featuring more and more on the leader board. Time will tell whether the northern hemisphere catches on, but remember you read it here first.

IT'S ALL BALLS

First the good news. Every now and then you pick up some little improvement that can advance your racing. Dawn Trading the Associated/Reedy/Yokomo importers have quietly taken on the radio control componenets from Parma International (they've always had Parma's slot cars bits) and a glace through Parma's 1992 catalogue found a few interesting items. Like ceramic diff balls.

These lightweight balls are much harder than even carbide steel and are ground to within 0.0002 inch. They fit into RC10 and Yokomo differentials and others that use 3/32 inch balls. We bought a couple of packets of 12 (part no. 17302), cleaned up the diffs on the old Dogfighter and re-assembled with the little white ceramics. The difference was amazing!



Very hard, small, precise and expensive. Parma's little white ceramic diff balls.

We've raved about some pretty smooth diffs in the past but none like this. With the diff locked for no slip there was virtually no notchyness at all and the whole assembly was silky smooth. On the track this may give only a slight advantage over a good steel balled diff but it sure impresses fellow racers who habitually pick up the car and spin the wheels.

The bad news? This came when I received the bill. You will pay around $40 for a packet of 12 balls. I'm not sure why they have to be so expensive - maybe they are made in space. So, even though they should last forever (I hope!) these balls are not for everyone. Only those with more balls than brains?

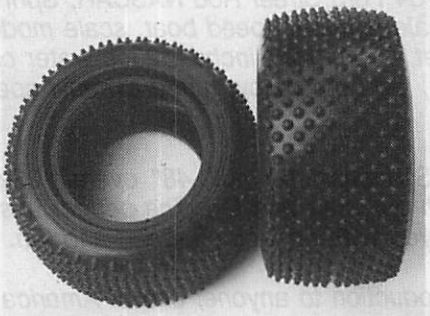
EVEN MORE FROM TEKIN

To compliment our Tekin ESC reviews this issue, news has just been received of two more speedos from this Californian manufacturer. The first was alluded to last issue (page 8) and has just been released. Looking like a Force Mach 7 the rather agricultural appearance of the case hides some highly sophisticated electronics in the Tekin 410K. Its features include three timer activated current limiters, an adjustment for throttle input sensitevity and programmable braking power. There will be even more features on the 411K which should be available later in the year.

Tekins all new 410K speed controller looks somewhat familiar.

The new 610R on the other hand is a little more conventional and answers the requests of drivers who want a proportional reverse facility as well as motor braking. An adjustable reverse delay will determine whether reverse kicks in instantly or up to five seconds delay. Or reverse can be disabled altogether. This larger case ESC will handle up to 10 cells with hot modified motors which should make it fairly idiot proof.

There's more good news from the Tekin importers, PBMCA (08) 356 8698. They have now been granted exclusive Tekin rights for Australia and are celebrating by reducing the prices throughout the range. These are reflected in our reviews but other examples are; BC100L Linear Charger at $150 and TERX mini receiver at $102.



Don't bother counting. There's 560 spikes offering exceptional grip on Frewer's new truk tyres.

BMT ARRIVES

The honour of winning the last two World Championships for 1/8th circuit racing has been achieved by the Italian BMT's four wheel drive, three speed gas car. Although a few of these highly sophisticated machines have appeared on Aussie race tracks they have not been generally available.

That situation has been remedied and the full range of BMT one eighth racers is now imported by Novarossi Model Engines Australia. This is good news for racers and for the sport in general.

The range includes 2WD and 4WD circuit cars with the latter available in either two or three speed versions. Additonally, BMT have applied their engineering expertise to 1/8th Off-Road. Four versions are available - standard 4WD and 2WD plus a flagship 4WD with three diffs, and a 2WD with pull start engine that looks like it could be the ultimate in suburban RC racing.

Prices start from around $499 (on or off road), which is not bad considering some 1/10th electric buggies cost more. NRMEA can be contacted on (08) 356 8698.

DEATH OF THE SCE

Batteries for the electric racing game are still in the news but the news is getting better. The sub-C Panasonic P-170SCR is now widely available including supplies from Panasonic Australia. This means that the local distributors and cell matchers can now offer packs of nicads, matched or unmatched, and the price should be less than the imports.

Top racers have been using imported cells for a while but the jury is still out on the best ways to handle them. There are plenty of ideas around but not much consistency. We are currently testing and evaluating these cells but so far the following seems to be a reasonable resume of the various opinions;

First in the new generation of high capacity, less fagile cells is Panasonics P170 SCR.

Charge like a SCE, ie under 4 amps to peak then re-peak once or twice. Don't let them get too hot when charging. From new they appear to need up to a dozen cycles before they stabilise enough to take tests. Unlike SCE's that only give top performance for less than about a dozen runs, the 170SCR's seem to get better with age. Performance is sometimes erratic and unpredictable but this may be resolved when we become more familiar with them. They don't seem to mind continual re-charging on the same day and may even give better performance when re-used.

We also have some vague news on the Sanyo equivalent, to be called the 1700SCRC. Yes this cell has been specifically designed for radio control use with the Sanyo designation supposedly standing for "Sub C Radio Control". We also understand that North America will see the production version of this cell first and that Australia has second priority, before Europe. We already have samples being forwarded for evaluation and should be able to report in depth next issue.

All this should mean the long awaited demise of the dastardly 1700SCE. Despite its fragility and short, expensive life this is the cell racers had to use to stay competative in Modified racing. Beginners were also tempted into buying the SCE because of it's longer run time but soon found out it's drawbacks - to their cost. The new 1700 SCR's show great promise both in performance and longetivity and should be a great boost to the sport. And nobody will miss the SCE.

A LONGER LEGGED RC10

Associated Electrics of California have a knack of coming up with the goods neccessary to win a World Championship. At the 1989 Buggy Worlds in Sydney it was the winning Associated, dubbed the "Stealth" car because of its anonymity, that eventually materialised into the highly efficient Stealth gearbox now fitted as standard to all RC10's. Less secretive was the Detroit '91 Worlds winning Associated with it's distinctive spindly front suspension. Like the full sized race scene these cutting-edge developments eventually find their way into mass production and the '91 Worlds front end is available already. But there are a couple of twists.

Firstly it is not produced by Associated but by Rohart Precision Mouldings or RPM. We understand that RPM do plastic moulding work for Associated and in fact produced the arms for the winning RC10's in Detroit. Secondly those who have seen Hirosaka's all conquering RC10 either in magazine photo's or the excellent D and R video (which covers just about everybody) will have a mild shock if they buy the RPM kit sight unseen. It's fairly obvious that the RPM "91 Worlds, RC10 Team Car Front End Kit, part number 7077", is not what winner Hirosaka used.

This is not a rip off, the explanation is simple. As we understand it, Associated designed more than one experimental front end for the Detroit track and this RPM production version is one of them. It may not have been used by Messrs Hirosaka and Vehlow but this RPM front end was used by others in the worlds 'A' final. Some of the Aussie team were also privy to this update and have used it to advantage back home. Most notable example was Greg Brooks win in the big NSW State Titles last year and more recently Tim Worme's third place at the Vic Titles in March.

The RPM 7077 kit does not have suspension arms as long as the worlds winning Associated nor are the arms swept forward and the shocks mounted behind the tower. What it does give are arms that are about 8mm each wider and the provision to fit longer shocks with the latest springs.

In detail what you get is; A pair of longer front arms nicely moulded in strong white nylon, a taller top braced shock tower, new silver springs, truck front bulkhead and nose plate, Delrin balls, longer inside front hinge pins, nose brace tubes, shock clips/collars and an assortment of screws. You will have to add your own 1.02 inch shocks (medium length and longer than the Team car kit fronts).

Note that this RPM kit is designed to easily bolt onto the RC10's aluminium chassis but it can be modified to fit a graphite chassis, this is what the Worme's did. This is a fairly difficult and destructive modification involving cutting of the graphite so there is no going back if you change your mind. Also, if you are not into chassis flex, a top plate/brace would become more neccessary when the chassis is weakened to accomodate this mod.

The retail price is around $70 which is reasonable considering the many parts included but remember that longer shocks may have to be purchased as well.

RPM Front End Kit provides 8mm longer arms and more shock travel.

REAR LEGS

From the same camp is the RPM Team Car Rear End Kit number 7079. This is not claimed to be a Detroit Worlds modification but anything that lengthens the relatively short arms on the RC10 is welcome. Like the front, this kit will increase each suspension arm by about 8mm without putting the car over the maximum legal width of 250mm. It does this by moving the inboard pivot points more toward the gearbox. The kit also has a few other potentially performance enhancing mods.

You get a choice of either 1.5 or 3.0 degrees of toe-in by using either of the two pairs of inboard mounts supplied and the bearing carriers (supplied) have the axles raised by about 4mm. The three degree mounts would generally be used here since they tend to make ther rear more stable and generate more grip at the expense of slightly less speed. Raising the axles actually gives less ground clearance at the outboard ends (not usually a problem with RC10's) but makes the drive shafts more horizontal at normal suspension height settings.

The other benefit (again not advertised by RPM) we found was that the arms are less swept forwards thereby putting the drive shafts in line and not swept forwards as with the standard arms. Wheelbase is extended with this modification and with both front and rear RPM arms fitted to our graphite Team Car we measured an increase of about 15mm to 285mm.

The 7079 rear end kit will fit on both aluminium and graphite chassis RC10's and a good drilling jig is provided for drilling two new holes and carving away some of the chassis. This is not difficult but care is needed. All parts are included to make this change including new inboard hinge pins and good instructions for a price of around $42.

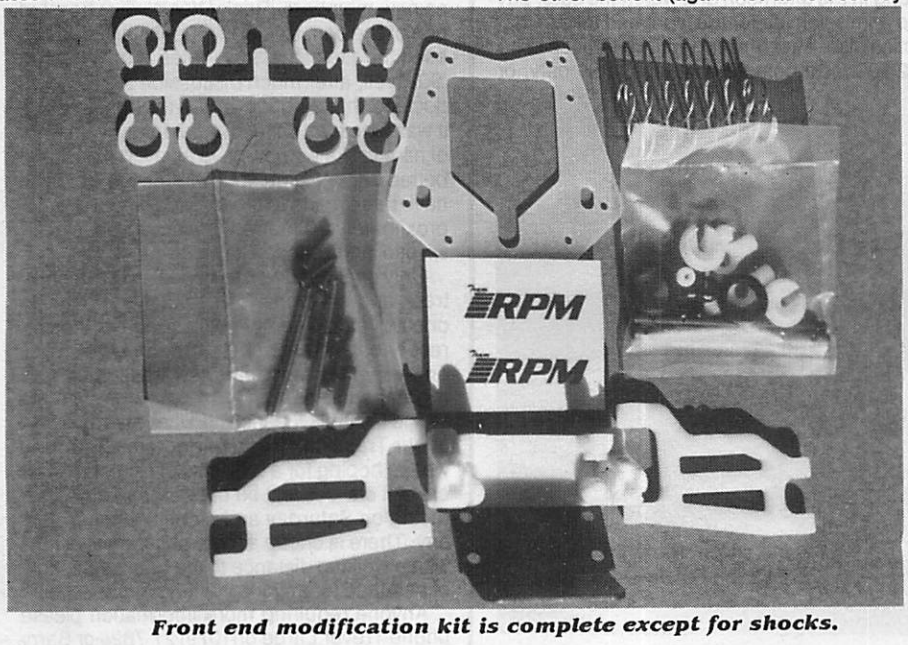
Is it all worthwhile? We were suprised to find that despite the strength of the new supsension arms total car weight had reduced by a useful 40 grams or so. With both kits fitted we then carried out an extensive practice session and made a number of changes to the traditional RC10 set-up. Two of the more major changes were increasing the viscosity of the rear shock oil and using more grippy tyres than usual on the front. Rear traction appeared to be improved with the wider arms, and the revamped RC10 handled the bumpy sections of the track very well.

The competition is as tough as ever but overseas the Associated RC10 continues it's winning ways. Latest news is nine RC10's in the top ten 2WD cars at the latest Reedy International Race of Champions held at the RCH track in California. Rick Hohwart was overall winner with RC10/Kyosho/PP combination with new World Champions Cliff Lett and Masami Hirosaka in fourth and seventh respectively. Only non RC10 was Jack Johnson's Lose JRX in fifth.

Fortunately the grass roots racers can now get something approaching the works cars by fitting the RPM suspension kits. You won't be dissappointed but don't expect miracles. As we said in our review (D & T number 20) there is not much wrong with the standard RC10 Team Car even if some of the components don't seem fashionable.

In the meantime one may well ask what Associated is doing. Is a new kit in the offing? Will similar changes be incorporated into the RC10 or will we get the Masami version? Or will they just sit and smile! Watch this space but don't hold your breath.

Retailers should contact G & M Trading (02) 742 6310 for trade supply of all RPM products.



Front end modification kit is complete except for shocks.

AROUND THE CLUBS

QUEENSLAND ¼ SCALE CARS

Line up of the Quarter Scale Cars.

Is South East Queensland lucky enough to have use of most probably the best dirt oval track for Remote Control Quarter Scale car racing in the world? I think it is. Have a read through the following features and judge for yourself.

1. A 158 metre pole line granite and clay track surface over an aggregate base with a 1.2 metre high wood panel fence around the outside and open grass on the inside. The track is modelled on the famous costa Mesa Speedway in California U.S.A .
2. A 2 metre Drivers Stand.
3. Two giant light towers with clusters of a least 30 floodlights on each tower.
4. A covered Grandstand seating 2,000 people with another open Grandstand seating 3,000 and the rest of the viewing areas are elevated above the track.
5. A Computerized 10 x 6 metre Result Board.
6. Hot showers and clean toilet facilities.
7. Efficient P.A. system.
8. Hot and cold food stalls operating in the evenings along with a licensed bar and refreshments.

How's that? Is the above a "wish list" of an R.C. racer or club, well it's right here in Brisbane, built inside the pushbike velodrome of the Sleeman Sporting complex at Chandler, owned by the Brisbane City Council and built for the 1982 Commonwealth Games.

The dirt track was built by two of the nicest, genuine people in the business, Ron and Sue Langdon who promote State League solo bike racing. They also have Junior Bikes and Senior Sidecar action as a regular feature along with either Trikes, Go Karts or Mini sprints as added entertainment.

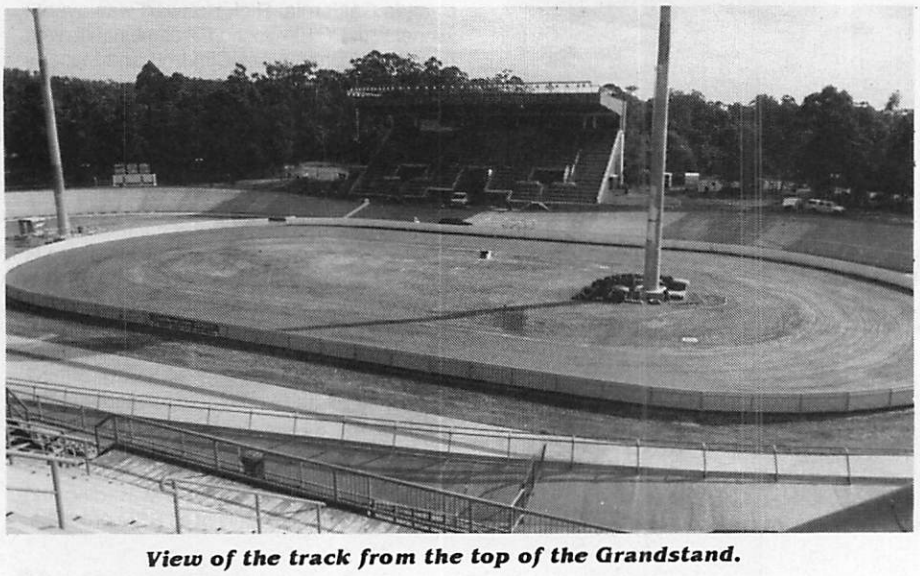
With enough entries (5 or 6) I'm sure they would allow the ¼ scale cars to have a feature race during interval each night as we already run a pre programme race now. There are presently three of us with five cars (3 sprint and 2 sedan) so how about telling anyone you know who might be interested about what is available and get some racing going or come along in the afternoon and watch the cars, pay the admission fee for the night and take in that action also. After the high initial purchase price ($2,200 for a complete kit less radio only, or build your own) the cars are very economical to run, using 1½ litres maximum of 2 stroke petrol per day and only needing to replace an outside rear tyre once during the season. Body damage is at the mercy of your driving and luck.

Powered by 23cc pull start Brushcutter engines the 25lb sprint cars have been tricky to set up and a little fragile, but the 30lb sedan cars are very easy and a real ball to be able to hang the tail out through the corners and watch the rooster tail of dirt fly off the tyres.

The Speedway season starts in early April and goes through to October on the first and third Saturday nights of the month and the ¼ scale cars start mid afternoon running through until 6.00 pm.

So come and watch or preferably join in and then you can stay on and take in all the action of the bikes where we also have a static display going throughout the night.

Further details or information contact: Richard Anderson (07) 356 5581 B.H. (07) 205 2131 A.H., or Frank Taylor (07) 349 3068 A.H.



View of the track from the top of the Grandstand.

ROCKHAMPTON RADIO CONTROL CAR CLUB

Just a note to let everyone know that Rockhampton Radio Control Car Club is up and running for another year.

The Club is looking forward to a great years racing and through public awareness we're actively aiming to increase public interest as well as new members. Rocky has always boasted one of the best tracks in Queensland and has been the site of the State Titles in both '88 and '90. Well, after much discussion all members decided that as good as the existing track is, it was time for a change. After many weekends of hard yakka we now have an even bigger and better track. Some very interesting changes have been made to the existing layout and approximately 30 metres of extra soil has been spread and rolled.

Only one meeting has been held on the new track and everyone is absolutely rapped. No one as yet has completely sorted out the correct tyres and car set up, but from the smiles on everyones faces the new track is already a great success.

The Central Queensland Titles are to be held at our Track on 19 - 20 of September, 92 and we are hoping for a big show of Southern Drivers. All classes will be catered for with Stock racing on Saturday and Modified racing Sunday. There is cheap accommodation available within walking distance to the track and plenty of parkland for anyone wanting to pitch a tent.

Anyone requiring more information please phone Trevor Large on (079) 27 7825 or Barry Krapkat (079) 28 3425.

PIT TIPS

Our wandering spy camera continues it's clandestine activities and brings readers more secret shots from the pit shops of Australia.

THE TEFLON TAPE TRICK

We pinched this great idea from a friend who shall remain nameless in case he wants money.

The problem is sloppy ball joints and the solution is teflon tape. Most ball joints on our cars develop free play after a while and some are bad even when new. Replacing the ball and the plastic link is the ultimate solution but the teflon tape trick can provide at least a temporary cure and often a better job.

Look closely. The ball in this joint has been wrapped with teflon tape before the plastic ball cup was popped on.

Just go to a hardware shop or plumbers supply and buy a small roll of the tape which is designed to be used on the treads of plumbers pipes. Carefully wrap a few layers around the offending ball then pop the plastic link back on. The thin tape takes up the free movement in the joint and, being teflon, is almost frictionless. The number of layers around the ball can only be found by trial and error but ensure that the tape is pulled tightly with no wrinkles. It's a fiddly job but can be done with patience. While the tape is in place there will be virtually no wear on the joint but don't expect the soft teflon to last more than about a half dozen runs. The tape is cheap so give this idea a try.

BLOW ME DOWN

Heat is the killer of many things in electric RC racing but especially the nicad batteries. Ambient temperatures on a good Aussie summers day don't help but if you want to get the best charge out of a battery then it should be charged from cool. Storing the cells in an Esky placed in a well ventilated shady spot (like under the car) is a good idea but maintaining the same temperate environment when charging is not so easy.

A fan to waft the hot air away is important not only for the batttery but also the charger which can get dangerously hot performing it's duties when the ambient is 30 degrees plus.

We like the el cheapo fan shown in our pit pic. It works off 12 volts, has on-off and oscillating switches and is made of a flexible plastic that can be thrown around with gay abandon, (whoever she is). It moves plenty of air but the small DC motor uses very little power. Best of all the price is a ridiculous $8 or so from your local bargain basement type store. Your wife/mother/girlfriend will find lots of other uses for this little fan so buy two.

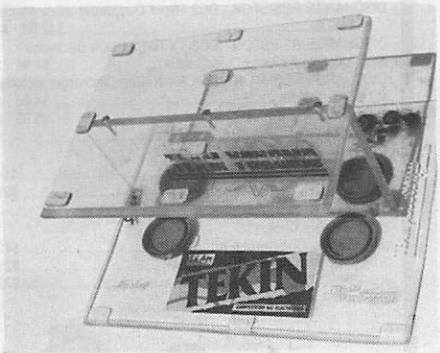
Cheap 12 volt fan used for trackside cooling.

CAR STAND

Working with the car up on a stand makes life so much easier. Things are nearer to eye level, you can get under the suspension, it's easier to move the car around and the shocks are not under any load. You can buy some nice stands or you can knock one up in the workshop fairly easily. We liked the one in our spy photo because it worked well, was easy to build, see through and looked really neato. Very cheap too - as little as nothing.

The stand was made from 6mm thick perspex that had been discarded from an office. Apparently it had been used under typists chairs as a carpet protector. Alternatively you can buy perspex (cut to size if required) in clear or various colours from plastics suppliers.

The three pieces of plastic were cut out by hand saw and all exposed edges bevelled on a power sander. When the owner wasn't looking we whipped out the ruler and noted the following dimensions; base 23x18cm, top 19x14cm, vertical joiner 19x10cm high. Six countersunk woodscrews hold the three pieces together in a "H" formation and household silicone sealant was used to stop the joints creaking. Lids from 35mm film containers were epoxied on top of the base to hold small parts. To finish off, a packet of small self adhesive foam pads were purchased from the local newsagents and stuck on the top and bottom of the stand to stop sliding. Decorate with some stickers and it looks better than a bought one.



Neat and useful car stand is home made out of perspex.

HOBBY WORLD

2 MINS FROM HURSTVILLE STATION
CATCH THE ILLAWARRA LINE FROM CENTRAL

Quality products and the lowest prices give you the winning edge.

46 TREACY STREET HURSTVILLE
PH (02) 570 8444 FAX (02) 570 8100
POSTAL ADDRESS: P.O. BOX 189, BEXLEY, NSW. 2207

Apex 5. 4 to 7 cell, 1 to 5 amps.....$195.00
Apex Tx Rx Peak Charger.....$175.00

ASSOCIATED
BEARINGS 3655 1/12 pair.....$18.50
BEARINGS 6903 1/10.....$18.50
BEARINGS 6897 1/12 & 1/10 pair.....$18.50
ELECTRIC Motor Bearings.....$9.50 each.

GPM RACING PRODUCTS
Gold Battery Bars.....$8.50
Zinc Alloy Trunbuckles. Sets 2/pk. 30mm-60mm.....$9.50

HOBBY TECH	**RRP**	**SALE**
"Our Products give you a little Extra"		
POWER DIFF LUBE - silicon diff grease that won't fly off!	$5.95	$4.95
ELECTRIC MOTOR BRO. OIL - BRG withstands high temp	$5.50	$4.50
MOTOR CLEANER 500ml aerosol	$12.50	$10.95
5 litre bulk	$56.50	$48.50
TEFLON DRY LUBE - 500ml aerosol	$12.95	$10.95
SILICON LUBE - silicon spray lube	$8.95	$6.95
SILICON SHOCK OIL - #5 to #50	$3.50	$2.50
MOTOR STORAGE TUBES	$2.50	$1.95
HEATSHRINK 2.5mm for servo lead wire 1m	$4.95	$3.95
HEATSHRINK 4.0mm for power lead wire 1m	$5.95	$4.95
HEATSHRINK 35mm Red, Black, Yell, Wh, Clear for single stick 2m	$4.95	$3.95
HEATSHRINK 65mm Red, Black, Yell, Wh, Clear for Stick Packs 2m	$6.95	$5.95
HEATSHRINK 75mm Red, Black, Yell, Wh, Clear for Saddle Packs 2m	$7.95	$6.95
SILICONE WIRE - HEAVY DUTY MULTI STRAND. 14AG per metre		$6.95
SILICON WIRE - HEAVY DUTY MULTI STRAND 16AG per metre		$4.95
DISCHARGE RESISTOR - DC1 Slow Discharger ensures cell are discharged prior to use. 7.2, 8.4 or 9.6v		$6.95
DISCHARGE RESISTOR - DC2 Rapid Discharger w/hsinkk can DC up to 9.6v	$42.50	$39.50
DISCHARGE RESISTOR - DC3 TX Ni-Cad slow discharge cells safely includes LED Indicators	$4.95	$3.50
DISCHARGE RESISTOR - DC4 RX Ni-Cad Discharger includes LED Indicators	$4.95	$3.50
Dean Connectors (pair)	$5.95	$4.95
BATTERY HOOK UP BRAID 1 Metre		$4.95

KO
KO PS 1001 FET Servo.....$149.50
NEW KO EX1 Wheel set with PS1001 & RX.....$395.00

TEAM LOSI
"The Winners Choice"
JRX Pro SE, Competition Kit.....$425.00
JUNIOR 2 with Matrix GRP chassis.....$295.00
JUNIOR T, Truck with matrix GRP chassis.....$325.00

BALLRACED DIFF.....$39.50
BALLRACED BELLCRANK.....$69.50
Matrix GRP LWB chassis & Top Plate.....$49.50
Light Weight Swept Front Arms.....$14.50
Shock Tower for Swept Front Arms.....$16.50
Rear Shock Tower PRO SE.....$18.50
New Heavy Duty Rod Ends. Pkt. 16.....$14.50
Losi Alum 4.40 mini nuts L/weight Pk 10.....$9.50
Losi L/weight Transmission screw set.....$7.50
Losi L/weight 4.40 screw set.....$18.50
New double 'O' rings shock cartridges.....$4.95 ea.
Hard anodised shock cylinders FR & RR.....$18.50
High Speed Sealed transmission output bearings.....$15.50 pr

MUGEN
Sport 4WD 1/8 Gas Off-Road Buggy body and low profile tyres incl.....$499.00
Super sport, all options fitted.....$599.00
Steel Spur Gear.....$49.50
FR & RR antiroll bar sets.....$24.50
Universal drive shafts, pair.....$79.50
Std Servo Saver (chassis mount).....$24.50
Chassis Stone Guards pair.....$29.50
New Alloy ballraced steering bellcrank, pair.....$89.50
Competition H way clutch kit OPS, Rex, OS, On/Off Road, 1/10, 1/8.....$38.50
4 piece clutch shoes.....$18.50
4 piece clutch springs.....$9.50
Pilot shaft.....$9.50
13T, 14T, 16T, 17T, 18T clutch bell.....$24.50 ea.
Front Shock set.....$49.50
Rear Shock set.....$49.50
3 Spokes Wheels for Mugen - White/Pink.....$26.50 pr.
Mugen polycarb body.....$39.50
LOW PROFILE OFF-ROAD TYRES.....$29.50 pr.
QUICK FILL-INSTANT FUEL BOTTLE.....$18.95 $16.95

Teflon Muffler & Header Joiner.....$8.50
Headers all bends and angles from.....$12.50
Silicone Muffler & Header Joiner from.....$4.95
High temp silicone fuel line 1 metre.....$5.95
OPS 21 Buggy Pro Motor.....$325.00
OPS Buggy Pipe.....$84.50
Mugen Buggy Pipe.....$48.50
MM Buggy Pipe.....$58.40
Recleanable/reusable fine mesh fuel filters.....$9.50
Recleanable/reusable foam and paper element air filters.....$28.50
*Comprehensive spare parts and accessories range in stock to keep your buggy competitive.

PACTRA
Polycarb Spray Cans in Fluoro, Candy and Racing colours.....$6.95

PURETECH
Velcro battery straps.....$14.50

RACER'S CHOICE
MACH 1 Break in Drops 2 oz.....$9.50
HY Rev Speed Drops 2 oz.....$9.50

ROBINSON RACING PRODUCTS
48 Pitch Titanium Gold Pinions.....$10.50

SCALE TECHNOLOGIES	**RRP**	**SALE**
LEXAN WINGS - 5"	$6.95	$5.95
LEXAN WINGS - 5" *VEE*	$6.95	$5.95
LEXAN WINGS - 5" Competition VEE	$6.95	$5.95
LEXAN WINGS - 6"	$6.95	$5.95
LEXAN WINGS - 7"	$6.95	$5.95
LEXAN WINGS - 8"	$6.95	$5.95
UNDERTRAY - JR-X2 & ULTIMA. Save your graphite chassis! LWB		$16.50
LEXAN SHEET - Make your own side dams! 70 x 400 x .030		$5.95
NEW HORNET AERODOBY .030		$29.50
Lightweight Body JR-X2 LEXAN 0.20		$39.50
FIBREGLASS SHEET - 250mm x 300mm 1.6	$29.50	$24.50
250mm x 300mm 3.0	$49.50	$46.50

SERPENT
Impact 10, 1/10 On Road Gas Car.....$695.00

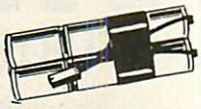
SCHUMACHER
EXCELLENCE IN HIGH TECH DESIGN.
Cougar 2WD Off-Road.....$350.00
PROCAT - 4WD Off-Road.....$495.00
SHOTGUN - 2WD Off Road.....$475.00
SHOTGUN - 2WD Truck. Basic.....$299.00
FORD RS 4x4 Rally Road.....$550.00
NITRO 10/190E/911S, 1/10 Gas Buggies.....$695.00

TAMIYA
GRASSHOPPER II Off Road buggy (entry level).....$149.00
TOYOTA HI-LUX Truck.....$295.00
NISSAN KING CAB Truck.....$295.00
MAD CAP 2WD Off Road.....$199.00

MANTA RAY 4WD. Off Road.....$225.00
LOTUS 102B Judd F1.....$225.00
FERRARI F189 Late version.....$225.00
240 V main charger 30 minutes.....$59.50
Polycarb spray paints incl. NEW metalic colours.....$6.95
Polycarb Paint Tinlets incl. NEW metalic colours.....$3.95
Ball diff assembly for Mad Cap/King Cab/Astute.....$19.95
Curved Scissors for Lexon.....$12.95

TRAXXAS
BLUE EAGLE, Competition 2WD Truck.....$499.00
VILLAIN IV, Electric Boat.....$325.00
XL1 ESC FET type w/reverse.....$159.00
XL2 ESC FET type Fwd/brakes.....$175.00
Max Peak II Peak Detection charger 0 - 6.5 amp.....$165.00

SANYO



NI-CADS "MORE HORSEPOWER FOR YOUR MOTORS"
SANYO 1400 SCR High output, stick or saddle.....$59.50
SANYO 1700 SCE Longer duration, stick or saddle.....$49.50
SANYO 700 mAh AA Tagged loose cell.....$5.95 $4.95
SANYO 600 mAh AA loose cell.....$3.95 $2.95
SANYO 270 mAh 2/3 AA loose cell.....$5.95 $4.95
SANYO 200 mAh AA Tagged loose cell.....$3.95 $2.95
SANYO 1400 mAh SCR loose cell.....$7.95
SANYO 1700 mAh SCE loose cell.....$7.95
SANYO 1500 mAh SCR loose cell.....$12.50
SANYO 4000 mAh SCR loose D size cell.....$18.50
SANYO AA Alkaline. Pkt. 4.....$3.95
VARTA 9V Rechargable.....$19.50

TECHNACRAFT
5" AEROFOIL.....$22.50
7" AEROFOIL.....$24.50

TRINITY ELIMINATE THE OPPOSITION

1700 NUCLEAR MELTDOWN 9 x 2 53,000 rpm.....$129.50
1704 KING KONG II 13 x 2 49,000 rpm.....$129.50
1706 BEHEMOTH 15 x 2 46,500 rpm.....$129.50
1707 GARGANTUA 16 x 2 45,000 rpm.....$129.50
1708 JOEL JOHNSON 3, 17 x 3 44,000 rpm.....$129.50
1709 HEAVY METAL 18 x 2 38,000 rpm.....$129.50
1711 KILLER FORCE 20 x 2 34,000 rpm.....$129.50
1712 TORKZILLA II 12 x 1 49,200 rpm.....$129.50
1713 HAMMER TYME 10 x 3 51,000 rpm.....$129.50
1714 CHRIS DOSECK 11 x 1 50,000 rpm.....$129.50
1715 BAD BOY 14 x 2 48,000 rpm.....$129.50
1720 BALLISTICATED 17 x 2 36,000 rpm.....$129.50
1779 SPEED METAL 12 x 3 49,700 rpm.....$129.50
3330 TRI ROTOR 16 x 4 46,000 rpm.....$129.50
3333 TRI ROTOR 17 x 3 45,100 rpm.....$129.50
0002 SPEEDWORK 427 16 x 2 36,000 rpm.....$79.50
0003 SPEEDWORK 350 18 x 2 34,000 rpm.....$79.50
0007 SPEEDWORK POLE POSITION 15 x 2 39,300 rpm.....$79.50
2030 MATCHED MADNESS 16 x 1 34,000 rpm.....$49.50
2040 EQUALIZER, TAMPER PROOF 24,900 rpm.....$32.50
2045 MONSTER JAM 45° Stock.....$49.50
2024 SLOT MACHINE 24° Stock.....$49.50

0914 BOSS 24° Stock.....$49.50
2009 PSYCHOTIC REATION 13 x 1 bushed.....$49.50
0777 GROUND ZERO 15 x 1 bushed.....$49.50
REPLACEMENT Standard Armatures.....$49.50
TRI ROTOR Armatures.....$59.50

MOTOR ACCESSORIES

CODE	**DESCRIPTION**	
4027	Brass Spacers for Motors, Axles	$4.50
4028	Medium Tension Motor springs (pr)	$3.95
4030	Bearing Setter	$24.50
4032	Light Tension Springs (pr)	$3.95
4033	Heavy Tension Springs (pr)	$3.95
4034	Triple Cuts (Soft)	$9.50
4035	Off-Road Cut Brush (Hard)	$8.95
4036	Foam Motor Cover	$4.95
4037	Triple Cuts (Hard)	$9.50
4038	Full Hard Brush (Hard)	$8.50
4039	Brush Heatsinks	$6.95
4041	4.5 Wet Magnet Motor Can	$39.50
4043	Motor Spacer Heatsink	$16.50
4044	Motor Rebuild Kit	$6.95
4046	Full Soft Brush (Soft)	$8.50
4050	Commutator Cleaning Kit	$18.50
4060	Commutator Cleaning Stick	$9.50
4061	Commutator Polishing Stick	$9.50
4103	Slotted Dual Brush System (Medium)	$8.50
4444	Sterling Silver Team Brush	$12.50
4447	Replacement Purple 4.9 Wet Magnet Motor Can	$42.50
4448	4.9 Wet Magnet Motor Setup	$89.50
4450	High Frequency Capacitator Kit	$4.50
4453	Sterling Silver Team Brush, advanced timed	$12.50
6008	Aluminium Purple Wing Buttons	$6.95
	TRINITY Spur Gears 48DP, 64DP	$12.50
	TRINITY Pinion Gears 32DP, 48DP, 64DP	$10.50
	7132F Purple Plus Power Shock System (Complete shock and spring assembly)	$59.95 $49.95
	7132R Purple Plus Power Shock System (Complete shock and spring assembly)	$59.95 $49.95
	TRINITY Tyres - Cut Spikes, Mini Spikes, STD Spikes, Hard/Soft	$18.50 pr
	Gumball Front Tyre: Minidash	$18.50 pr
	Spike w/dash ends	$18.50 pr

TRIFLOW
MIL Spec Teflon Lubricant. Great for wheel bearings and small moving parts. Triflow 2 oz. (handy squeeze bottle)...$6.95 $5.95
TRIFLOW Aerosol.....4 oz. $7.95 6 oz. $12.95

PRICES APPLY ONLY WHILST STOCKS LAST

Hours: Monday - Friday 9am-6pm Thursday 9am - 7.30pm Saturday 9am - 3pm
Hobby World Mail Order Hotline makes it convenient to shop from home. BankCard. MasterCard. Visa. Amex. COD Post Accepted.

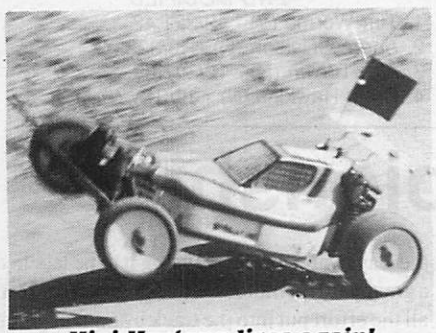
RACE RAP

YOUNG GUNS SHOOT IT OUT AT BANKSTOWN

As the sport of RC Car racing evolves and matures more ways are found to format the racing. This helps maintain interest and shares the laurels around more. The second annual Young Guns Shoot-Out hosted by Sydneys BORMAC is a good example. The rules are cunningly contrived to exclude over 21's and the very top echelon of Modified racers which still leaves a good number of kids and youths to vie for the Young Gun title in each of the classes. And, with the usual split of two and four wheel drive, plus Production class and further segregation into under and over 16 years olds there was more than the usual opportunities to get amongst the winners.

On the race track there were a few surprises with some of the regular hot-shots not quite having things all their own way. Scott Pettet had his RC10 dialled-in on the hard and bumpy track to be the most awarded driver with a win in both 2WD Senior Stock and 2WD Modified. This ousted the favourites Mathew Brown (Stock) and Andrew Gillott (who was still top 2WD Mod Junior) to the position of bridesmaids. Another very happy man on the day was Dennis Entwistle. After nearly five years of quietly trying, the win in 2WD Junior Stock was a personal best for this Illawarra driver. More surprises in 4WD Senior Stock with Shane Whitaker topping a very talented field driving no less than an ancient PB Mini-Mustang. We hear that this is the same car that won the Nationals for Mark Mason a few years ago and that it sports a few drastic mods such as Schumacher diffs.

The BORMAC Club regularly run a Production class using Johnson motors to keep the cost down and introduce new buddies to the racing scene. The concept is perpetuated at the Young Guns with both two and four wheel drive classes catered for. Unfortunately we didn't get to see much of the action in this class (it's tough racing and reporting but someone has to do it!) but the results show that the winners would also have placed high in the Junior Stock classes.



Mini Mustang lives again! Shane Whitakers PB is just begging for a win at the Young Guns.

Michael Santalab didn't let a plaster casted left arm hinder his talents for a good win in 4WD Junior Stock whilst fellow Illawarra team mates Mathew Roberts and Craig Mazik (usually at the top in Stock) annexed 4WD Modified, Senior and Junior respectively. For the record, Wollongongs Illawarra club took home five of the ten first places (this reporters obvious bias will have to be tolerated until someone else volunteers to write!).

Big crowd of Young Guns gather at the Bankstown presentation.

Also for the record the cars at this event brake down (now there's an unfortunate choice of words Ed.) into the following types; RC 10, 31. Yokomo 23, Losi 12, CAT 8, cougar 6, Lazer 4, and one each of Kyosho Triumph, PB and Tamiya Boomerang and Egress.

The numerous trophies were a little more subdued than last years monstrosities (my opinion - the kids thought they were great) and another highly successful "Guns" event was made possible thanks to sponsors:

G & M Trading (Trinity/Traxxas), Dawn Trading (Associated/Reedy/Yokomo), Model Race Car World (Victor/Stage 111/B&R Motors) and Hobbyco.

RESULTS:

2WD PRODUCTION

1. Mark Tersoiero - RC10 Team. 2. Brian Ritchie - Losi JRX Pro.

2WD JUNIOR STOCK

1. Dennis Entwistle - RC10 Team. 2. Alex Rapson - RC10 Team. 3. Tim Inglis - Losi JRX-2.

2WD SENIOR STOCK

1. Scott Pettet - RC10 Team. 2. Matthew Brown - RC10 Team. 3. David Crowther -Cougar.

2WD MODIFIED

1. Scott Petter - RC10 Team. 2. Andrew Gillot (J) - RC10 Team. 3. Alex Brown -RC10 Team.

4WD PRODUCTION

1. Matthew Davis - Yokomo Works '91. 2. Craig Sainsbury - ProCat.

4WD JUNIOR STOCK

Michael Santalab - Yokomo Works '91. 2. Jason Hunter - Yokomo S/Dogfighter. 3.Tanya Noss - Yokomo Works '91.

4WD SENIOR STOCK

1. Shane Whitaker - PB. 2. Matthew Brown - Yokomo Works '91. 3. Craig Mazik - Yokomo S/Dogfighter.

4WD SENIOR MODIFIED

1. Matthew Roberts - Yokomo Works '91. 2. Danny Curby - Yokomo Works '91.

4WD JUNIOR MODIFIED

1. Craig Mazik - Yokomo S/Dogfighter. 2. Trent Redding - ProCat.

VICTORIA VICTORIOUS IN CHALLENGE CUP

For the second time running Victoria proved to be the stonger team at the annual NSW Vs Vic. Challenge Cup. They won both Modified classes and placed well in all but 2WD Modified. It was closer this year but when the points were tallied the guys from south of the border were six in front.

Held in warm conditions and pleasant surroundings at Wodonga clubs Willow Park buggy track this event brought together 64 drivers (32 from each State) hand picked from the best each State had to offer. The civilised format allowed for two rounds of heats starting late Saturday on December 7th, followed by two more rounds and finals then an early finish on Sunday. There was time for practice and allowances made for the round trip from the Capital Cities to the neutral duelling ground at Wodonga. Beats dawn to dusk racing any day and even permits some amber refreshments and Go Carting on Saturday evening, (also skinny dipping in the motel pool in the wee hours). Not mentioning any names but it wasn't mamma bear). Of course there are always those fastidious types who spend Saturday pulling their cars apart.

The enthusiastic Wodonga club have gradually been improving their track and although not a large layout the surface offers consistent medium grip and durability. The layout has some different and interesting features including a jump before a bend (too fast and you can shread the car through the barriers) and a new steeply inclined "U" turn. I liked the latter which reminded me of an old slot car track in Nottingham.

When the dust of the heats had settled we had 17 New South Welshmen and 15 Mexicans in the four 'A' finals. The qualifying order was fairly predictable but there was to be

some upsets in the finals when the short grid starts and the first jump/corner introduced more of the luck element. The quality of refereeing also deteriorated in the finals and some blatant corner cutting went unpunished.

In 2WD Modified Andrew Nelson (NSW) had dominated the heats and he looked to have a winner in the new Traxxas.But ex-Stock superstar Tim Worme (Vic) got the early lead with his RC10 and held it despite almost constant forays from Nelson in second. The Traxxas had behaved superbly all day but a minor mechanical problem in the closing stages of the final held Nelson back. Never the less a very cool and confident drive from young Worme

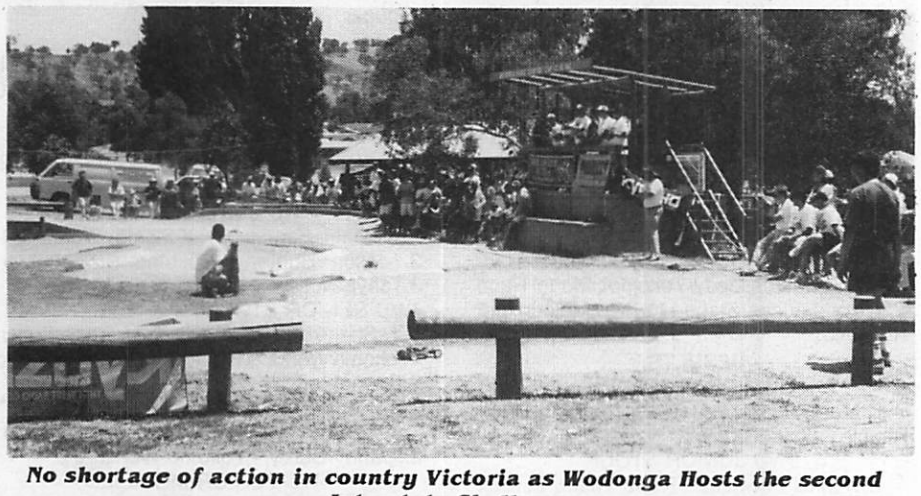
Who else but Reece Birtles was TQ in 4WD Modified followed by Gillott and Brokes from NSW then Victorian Michael Chard who had been improving in leaps and bounds with his newly aquired Kyosho Lazer ZXR. it was Chard who emerged from the usual first lap lottery and he was never really bothered for the remainder of the race. The Chards now run with Peak Performance motors/batteries and the Lazer was virtually box stock.

In the Stock classes Victorians Dettmann and Polistena looked good early on in the 4WD heats but 13 year old NSW champ Craig Mazik took command in the later heats and drove his YZ10 with Paragon power to a solid finals win. The McClure brothers were having a good meet and Tim sat on pole for the 2WD Stock final after winning the previous two rounds of heats. But a Stock win was to elude any Victorians with second qualifier Matthew Brown striking up another win for NSW.

But winning wasn't enough in this teams event. Further down the ranks some of the

Moving into the picture in a big way is the all new Traxxas. Nelsons version leaps into a T.Q. spot at Wodonga.

guys from North of the border couldn't come to grips with team racing and were still taking each other out. On the other hand the Vics seemed a little more organised and the drivers had support from a partisan and very vocal cheer squad. That's what team racing is all about.



No shortage of action in country Victoria as Wodonga Hosts the second Interstate Challenge.

All together a very enjoyable weekend at Wodonga and we look forward to the Victorian State Titles which will hopefully have been held there in March. Apparently some individuals are lobbying for major events to be kept in the major cities which in this scribes opinion is an unproductive and narrow minded attitude. Wodonga has proven that it can attract the city racers and run a successful event so why the fuss. If the model racing scene develops the same way as competative model flying 10 years ago then the sports future could well be in the country.

But enough of the soapbox stuff. Congratulations to all on the victorious Victorian team and make the most of it 'cause there's no way it will be three in a row!

Tim Worme surprised everyone with his cool finals drive at Wodonga. Here, his RC10 practises levitation.

RESULTS:

4WD STOCK
1. Craig Mazik (N) - 15/361.57.
2. Mark Polistena (V) - 15/369.32.
3. David Crowther (N) - 15/371.74.
4. Michael Santalab (N) - 15/382.61.

4WD MODIFIEDS
1. Michael Chard (V) - 14/321.64.
2. Reece Birtles (V) - 13/303.46.
3. Andrew Gillot (N) - 13/316.15.
4. Neal Millard (V) - 12/311.26.

2WD STOCK
1. Matthew Brown (N) - 15/380.80.
2. Tim McClure (V) - 14/361.96.
3. Brendan Coleman (V) - 14/363.77.
4. Scott Pettet (N) - 14/367.07.

2WD MODIFIED
1. Tim Worme (V) - 13/321.42.
2. Andrew Nelson (N) - 13/322.03.
3. Alex Brown (N) - 12/307.69.
4. Craig Hawkins (N) - 12/315.76.

1/10 WA State Championships

Once again the WA State Buggy championships have come and gone and produced an entirely new set of WA state champions, with not one of last year's champions retaining their titles. With the added pressue of the 1992 Nationals being held at the same track, all drivers were keen to do well in their own State Championships.

After TQing 4WD Modified, Gavin Reynolds (Yokomo/Reedy) took out his first 4WD title after close racing with Chris Bozich (Yokomo/Reedy), Steve Davis (Procat/LRP) and Nathan Hodder (Yokomo).

Reynolds was quick to put his name on both titles by top qualifying 2WD Modified and winning the first two finals easily, regarding the title he narrowly lost to Hodder last year.

Many drivers abandoned modified to race Stock and it was the two Stock divisions that provided the most exciting and competitive racing. After stamping his authority on 2WD qualifying, Travers Hardman (RC-10/Reedy) fought off determined challenges from young Ben Quinn (JRX-2/Reedy) and Aurelio Tacconi (JRX-2/Trinity) in 2WD, but went down fighting in 4WD to veteran driver Ian King (Yokomo) and Shaun O'Sullivan (Lazer/Reedy) after TQing.

Junior Mabuchi was hotly contested between two of WA's best junior drivers, Daniel Mitchell and Simon Sander. In a series of close tussles, Sander (Yokomo) had to concede his crown to Mitchell (Lazer).

Qualifying

The lead-up to the titles had been a nervous one for the hard-working WCMRC crew as there had been much criticism of the softness of the Bayswater circuit, causing it to be labelled a graveyard for motors and batteries. However, all the effort put into the track by a small group of WCMRC members paid off, producing a superb racing surface for qualifying.

Finals

Rain greeted the drivers and there was some doubt about getting any racing done at all. However, the showers stayed away long enough to finish all finals. West Coast had planned its track well, as the surface allows racing very shortly after very heavy rain. Everybody rushed to change from TR-32s to Losi X-Patterns.

Junior Mabuchi

Four anxious juniors awaited the siren, and Sander was quickest away, leading until the four-lap mark when Mitchell took over, stretching it to a six-second gap by the finish. It was

a do or die effort for Sander in Final 2 and he led all the way until the final corner when Mitchell caught him, winning by the barest of margins (11/312.14 to 11/312.58). Mitchell was now the new State Junior Champion. Sander still had a score to settle, again leading until the two-minute mark, with Mitchell keeping his scorecard clean with a 16-second win.

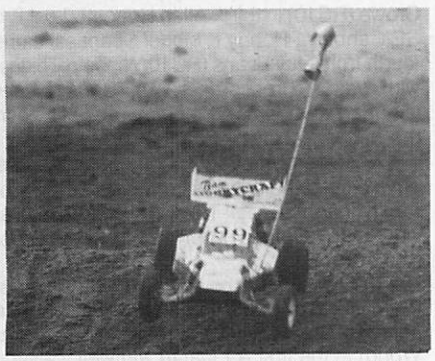
4WD Stock

Hardman was fairly confident about his chances of improving on his TQ; however, everyone was amazed at the efforts of Shaun O'Sullivan as he hit the lead and stayed there. This put the pressure back on some of the favourites for Heat 2. There was some really tough racing until lap 5, when Hardman pulled out with a burned-out motor. This left King to pull off a very narrow win (14/367.40 to 14/368.44) from O'Sullivan, Bennison, Smith and Hyndman. It was down to the wire, with O'Sullivan having the results to warrant the short odds. Hardman went for it, driving aggressively to post a big win, by more than 20 seconds, from King, with Smith driving well to come in right on King's rear wing.

There was a dead-heat for first so, on a countback, it was King's fourth place in the first final that got him the state crown. Chris Smith came in a well-deserved fourth, from Crawford, Bennison (mighty work), Hyndman (deserved better) and everyone's mate, "Wild" Bill Davies.

4WD Modified — Traction Action!

It was the big boys' turn, the fastest cars around the track. Who would be king after three heats of traction action? Heat one and Bozich scored off the line, leading Hodder (making a great start), Reynolds, Davis and Fry. Davis flipped into turn one, allowing Bozich, Hodder and Reynolds to get a good break. Bozich was driving well, streching a small lead until tipping over on the large jumps, allowing Hodder and Reynolds through. Reynolds kept the pressure on Hodder, forcing an error, and then it was all over, Reynolds powering away to a nine-second win over Bozich (13/315.06 to 13/324.23), who passed Hodder on lap five. Davis had a front wheel come off, which spoilt a great comeback drive.

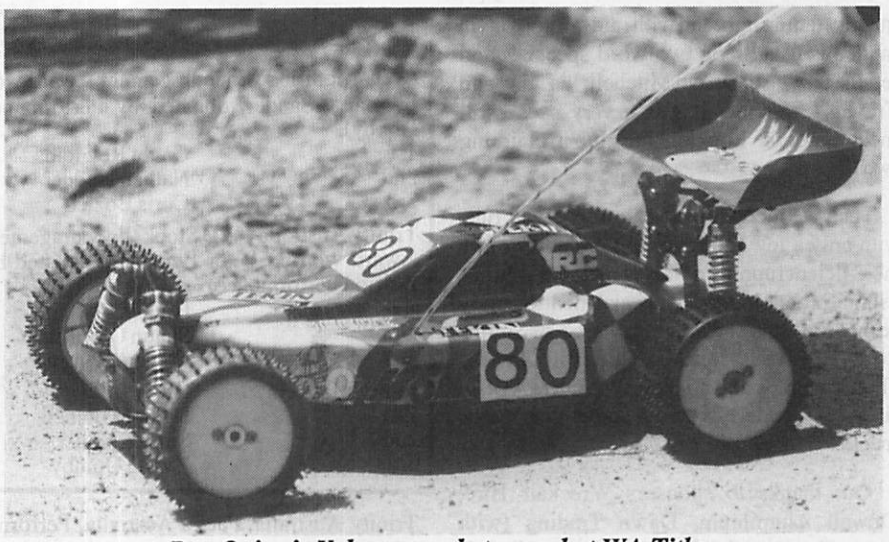


Reynolds' modified winning RC10 catches some air in Perth

All the pressure was on Bozich, Hodder and Davis; if Reynolds won again he could not be beaten. Boz did another of his space warp starts to lead into the first corner. Reynolds was right in his tyre marks, with Hodder and Davis just behind. Hodder hit Reynolds, causing him to spin out, and then Bozich crashed heavily, along with Hodder. There was mass confusion as there was another huge pile-up, with Reynolds going into the wall and Hodder into the ropes. Through all this came Davis, driving smoothly to grab second. Bozich held his lead until Davis took him on the triple jumps.

It was down to the wire for the third leg, with Davis and Bozich able to take the championship from Reynolds' grasp. Bozich put the power down best again but there was an almighty bingle on the first corner, with Hodder coming out of the melee best, followed by Bozich, Davis and Reynolds. Bozich drove well to consolidate his lead, until a major shunt going into the triples. Hodder outdid Bozich in the spectacular smash department and almost ripped his wing off.

This allowed Davis into the lead briefly until Reynolds slipped by. The next lap, Davis claimed the lead back when Reynolds lost it going into a corner. Hodder worked hard to pick his way through and grab the lead. The pace was furious! Bozich took the lead briefly, then Hodder and Reynolds went through, with Davis shadowing. Hodder scrambled home second ahead of Reynolds, with Bozich getting third, but only after a backmarker's car dumped, causing his car to wander all over the track near the start/finish line and tangle with a mildly upset Bozich! Davis came in fourth ahead of Fry and Shadforth.



Ben Quinn's Yokomo ready to snarl at WA Titles.

2WD Stock

The B Final was first on a track starting to get very cut up and heavy. After a poor start, Luke Chivers showed why he TQed the B Final by driving superbly to record his first big win. Bill Davies pushed Chivers in the early stages, but fell away as battery power slowed. Chivers time was so good that he would have secured third in the A final. Ian Johnson drove steadily into third, followed by a quiet new 4WD Stock champ, Ian King. Rowlands Adams, Soto and Lwin completed the field.

The A Final was going to be a ripper, with five potential winners. Hardman blasted off the line with Tacconi in tow. Quinn made a good start and worked his way into second place, with Tacconi, Chow, Hall and Simpson behind. Hardman drove like on rails to record a big win.

After making it look so easy in Heat 1, Hardman was expected to storm away with the race. Nobody bothered to give Tacconi a copy of the script as he went ballistic, not giving Hardman a chance to close on him.

There were many nervous looks in the Hardman and Quinn camps as they were preparing for the shootout. Tacconi was taking it easy as the clown prince on R/C cars in WA always does, talking to his mascot, Cecil the Parrot (you have to see it to believe it!). There were no jokes as Hardman used his top position to effect, moving away rapidly from the dicing group of Quinn, Tacconi, Hall and Simpson. As time ran out, Hardman got the championship he rightly deserved. Quinn deserved better with two fine drives, but got third behind Tacconi's Social Security Special.

2WD Modified

Heavy rain looked like raining out 2WD Modified but held off long enough to steal all finals in. After a convincing effort in qualifying, Reynolds looked to have the stuff, with only Bozich getting close. After his usual slow start, Reynolds had to wrestle the lead from Bozich and was never headed, winning from Hodder, Bozich, Harrison, O'Hara, Davies and Dwyer.

Leg 2, and once again Reynolds had to work his way through the field, picking off Bozich and then Chris Davies.Bozich made some errors which allowed Hodder to third, but it was to no avail, as Reynolds cleared away and won from Davies (superb drive from the back).

Gavin was given a warm three cheers from the drivers' rostrum as he had regained the 2WD title after holding it in 1988 and 1989. It was time for some serious power in heat three, as Reynolds bolted in some bulk horsepower and turned the wick up on his Tekin speedie. Chris Davies came from nowhere to lead from Bozich and Reynolds. Hodder slipped by the new champ as Gavin was having trouble keeping his RC-10 on the track with far too much grunt. Meanwhile, Davies was setting a blistering pace from Bozich and Hodder. Boz nailed Davies late in the race to record a popular win.

The trophy presentation had to be held in

quickly fading light and with rain falling. Gavin made his usual long two-word speeches and left the talking to Daniel Mitchell, Ian King and Travers Hardman. It was a very successful meeting for the Rockingham club in claiming two titles.

The race meeting was extremely well run, with only a few mumbles. As an indicator of the efficient running of the event there was not a single protest lodged. A special mention must be made of Alan and Steve Davis, Chris Smith, Rob McCulloch, John Garside, Bill Davies, Theo Reynolds and all other WAORMA officials who made this event something really special.

Our thanks to sponsors Wreckair Hire, Dowell Aluminium, Dawn Trading (with general manager Ian Bannister in attendance), Trinity Australia, Pactra Australia, Performance Hobby Supplies and Bolt-on Performance. Without sponsors of this calibre we wouldn't have such a popular pastime.

Results WA State Championship

4WD Modified (Encouragement Award won by Barry Sander, donated by Performance Hobby)

1st	Gavin Reynolds
2nd	Nathan Hodder
3rd	Chris Bozich

Trinity Australia 4WD Stock (Encouragement Award won by Peter Bennison, donated by Bolt-on Performance)

1st	Ian King
2nd	Shaun O'Sullivan
3rd	Travers Hardman

Junior Mabuchi

1st	Daniel Mitchell
2nd	Simon Sander
3rd	Yvette Quinby

2WD Stock B Final

1st	Luke Chivers
2nd	Bill Davies
3rd	Ian Johnson

2WD Modified (Encouragement Award won by Julian O'Hara, donated by Dawn Trading)

1st	Gavin Reynolds
2nd	Chris Bozich
3rd	Chris Davies

Trinity Australia 2WD Stock (Encouragement won by Aurelio Tacconi, donated by Dawn Trading)

1st	Travers Hardman
2nd	Aurelio Tacconi
3rd	Ben Quinn

CANBERRA CUP 1992 - RIGHT ON TRAXX

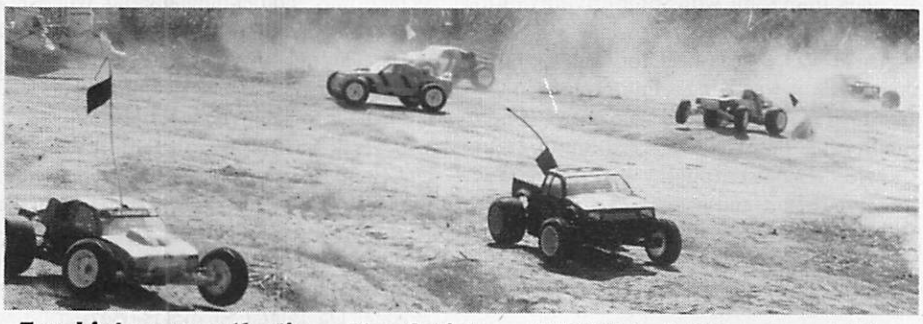
by Gary Davey

The Canberra Cup held its inaugural Pro-Am over the January long weekend. Looking to offer something different to their usual well-organised event, the organisers decided to run a Pro Class with drivers competing in both Pro 2WD and 4WD. Points were allocated for best two of three Finals with 2WD and 4WD being added together. The intention was to reward consistency and all the drivers enjoyed the format. Encouraged by success, the Canberra Club will be using their Pro-Am formula again.

The beauty of buggy racing is that so many different types of events can be run. Individual Clubs can tailor events (but NOT rules affecting racing) to suit themselves. No Club should be told what event to run outside State Titles. When our sport/hobby allows itself to be dictated to by self-elected experts empty tracks will be the result - just ask any BMX Club! It was unfortunate that an event to consider itself the "real" Pro-Am is patent nonsense. Cut it out guys, we all just want to have fun.

An excellent turn-out weathered the usual Canberra "you won't practice" storms. A further tribute to the track (which has seen several major events, including the 1991 Nationals) - this track is amongst the best in Oz - with nary a neophyte in sight, the weekend was a great success.

In 2WD, Andrew Nelson (now sponsored by Traxxas importer, G & M Trading - boy doesn't this firm put back into racing) drove his TRX-1 Traxxas superbly. Smooth and quick, Andrew was darn impossible to catch, despite a slow start to the day. the Traxxas/Trinity combo conquered the demanding Canberra track with ease - right on Traxx! Darrin Campbell (RC10/Team Associated) was second overall, Queenslander Scott Guyatt (RC10/Ozcharge) came third from Ross Kramer (RC10/Dawn Trading) in fourth, with Adam Davey (RC10/Trinity Australia) slotting ahead of Greg Brooks (RC10/Dawn Trading), Justin Watts (Losi/Trinity Australia), Craig Hawkins (RC10 Stealth) with Michael Matheson (Losi Pro/Canberra Hobby & Model Supplies) racing with the guys for the first time.



Trunkin' on roun the line - Alan Salisbury (RC10T) tryin' the ole outside line from Chris Fraser (Schumacher Shotgun). Yes, the Shotgun has narrower front tyres - you eagle eyed reader!

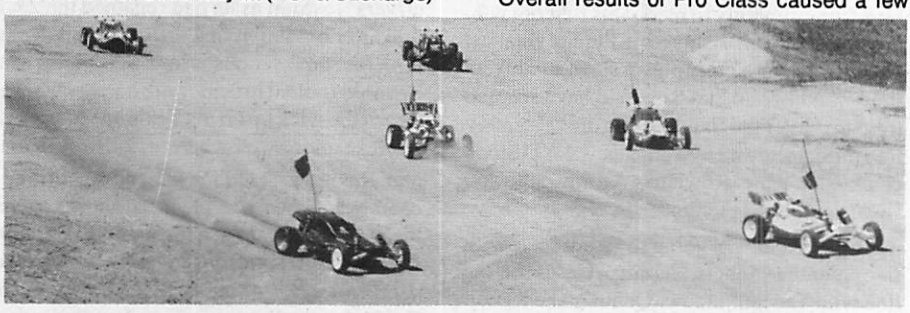
4WD saw Greg Brooks (Works '91 Dogfighter/Dawn Trading) take the points from TQ Darrin Campbell (Works '91/Team Yokomo) in a great struggle with Surfie Kramer (Works '91/Dawn Trading) back one point in third. Others had their chances - Trinity driver Justin Watts (YZ10/Hobbyco) and Adam Davey (Works '91/Canberra Hobby & Model Supplies) were under no team orders with Justin getting the better of it by a small margin. Scott Guyatt and Andrew Nelson showed the Pro-Cat is still alive, while Michael Matherson (Works '91/Canberra Hobby & Model Supplies) led home the Tamiya Top Force driven by Craig Hawkins.

Overall results of Pro Class caused a few upsets with Darrin Campbell taking the magnificent Canberra Cup home despite only winning one 4WD final and none in 2WD. Of course, all the seconds kinda helped - Knob does it well! Second went to Ross Kramer, third to Greg Brooks while Scott Cuyatt, Andrew Nelson, Adam Davey, Justin Watts, Michael Matheson and Craig Hawkins claimed the other places.

2WD Open: This class gave a number of drivers the opportunity to shine with the absence of the munsters enjoying Pro-Class. Alex Brown (RC10) certainly proved practice makes (almost) perfect with a fine TQ and two wins from Mark Banyard (Losi/Top Cat), with Wayne Crowe (RC10) in third. Allan Huggett (Losi Pro SE/Canberra Hobby & Model Supplies) came fourth from Guy Evans (RC10/Wings'n'Things) with Jason Prescott (RC10), Chris Fraser (Cougar) and James Coleman (Losi) filling in the minor placings.

4WD Open: Although poorly attended, the guys ejoyed themselves immensely. Don Moran (Dogfighter) took TQ and the win from David Fevre (Optima Mid) and Garry Cooper (Cat).

2WD Stock: Matthew Brown (RC10/Model Race Car World) TQ'd and came back from a scare by Craig Mazik (RC10/Model Race Car World) in the first A Final to win well. Despite a breakdown in the last A Final, Craig finished second overall from Wayne Crowe (RC10), Daniel Watt (Cougar) and Paul Osmond (RC10/Canberra Hobby & Model Supplies) all on equal points and awarded fourth to sixth on countback! Robert Gibson (Trinity Australia) ran his Traxxas TRX-1 for the first time and did well from Don Moran (RC10) and Brett Sainsbury (Cougar).



Pro 2WD - A Finals time and the dirt takes a pounding with assorted Traxxas, RC10's and Losis putting the pedal way down!

The B Final was won by Shane Young from Warwick Ferguson and Chis Fraser. The C Final went to Troy Woods from youngster Andrew Walker (Cougar) and Simon Brereton in his first major meeting.

4WD Stock: Michael Santalab (Yokomo Works '91) showed monster horsepower to run away from consistent Craig Mazik (Works '91) and Matthew Brown (Works '91) in the A Finals. Craig took second on a countback.

Just to prove a Works '91 isn't actually compulsory, Shane Whitaker came fourth and Daniel Watt sixth with Pro Cats. Everyone else ran Dogfighters - Robbie Gibson (Trinity Australia) came fifth, Troy Burgess seventh and Paul Osmond (Canberra Hobby & Model Supplies) drove well for eighth.

Brett Sainsbury (Pro Cat) won the B Final from Warwick Ferguson and Mark Wallin (Pro Cat).

Truck: These are now a feature at Canberra with an ever-increasing number of sign-ons. Sixteen entries of mostly Associated RC10T trucks plus a Traxxas Blue Eagle, two Shotguns and several Losi JRXT's fought it out.

The A Finals had Darrin Campbell (RC10/Team Associated) stomp it from Ross Kramer (RC10/Dawn Trading) and Greg Brooks (also RC10/Dawn Trading). Fourth went to Craig Hawkins using ? - yes another RC10T. Andrew Nelson spoilt the RC10 (Mad-Hatter)T party with his Traxxas Blue Eagle. Now, Andrew had only fair handling but did he have power. Watch it when the Traxxas handles the Trinity Tri-Rotor monster horsepower as well as the Traxxas TRX-1. Other RC10T's were driven into the minor placings by Leigh Cheesman, Guy Evans from Wings'n'Things and Paul Osmond of Canberra Hobby & Model Supplies.

The B final went RC10T mad as well with Craig Larkin beating local good guy Alan Salisbury (the sheepish one) from Warwick Ferguson.

In Summary, a great event for the drivers and a success for the Canberra Club. The organisers acknowledge the following contributions: Losi Kit - Custom Model Cars. Trinity motor and T-Shirts - G & M Trading. Trinity Accessories and motor - Canberra Hobby & Model Supplies. Technacraft RC10 Titanium Trunbuckle Set - Hobbyco.

See you all in August for the 1992 ACT Titles.

KOOL KEMPSEY

The 1992 Kempsey Radio Control Off Road Championships for 1/10th Electric 2WD (Sunday 31st May) and 4WD (Sunday 30th August) have once again attracted widespread support from within the Hobby industry, (refer comment in D & T 21).

Many of last years sponsors have increased their involvement as a direct result of the interest generated by the Championships.

US companies are again to the forefront with prizes donated by: RPM Custom Engineered RC products, Associated Electrics, Hobby Products International, C & M MFG Team Cobra, RAM Radio Controlled Models Inc. and Endurance Racing Products.

Master Instruments P/L and Ozcharge Electronics are the Australian sponsors while Englands Radio Control Products is another to support the Championships.

Donated items include battery packs, gift certificates, stickers, rims, motors, motor spray etc.

The prizes will be distributed at a giant free draw for all competitors at the conclusion of each meeting.

Entry fees for the 1992 Championships remain at $10 but a new stipulation is that racing will be for Mabuchi 540/Johnson 540 Stock motors only.

Both meetings are expected to conclude by 2 p.m. ensuring plenty of time for visiting competitors to travel home.

The venue is the Kempsey Squash and Recreation Centres indoor concrete skate rink with timber ramps/jumps and sind filled fire hose marking the course.

Entry forms are currently available by sending your name and address together with a 45 cent stamp to: Rod Thurgood, 11 Perrins Lane, West Kempsey, NSW. 2440.

PORT WORLD OF MODELS

In an effort to encourage young competitors to maintain their cars, improve their driving ability, and get more enjoyment out of the Sport the PORT WORLD OR MODELS FUTURE STAR Series has been instigated.

The inaugural Port World of Models Future star Series will be contested over six rounds at the Kempsey Squash and Recreation Centre.

Round one of the Port World of Models Future Star Series was held on February 25th with other rounds scheduled for Tuesday March 17th, Tuesday April 7th, Tuesday September 8th, Tuesday September 22nd and Tuesday October 13th.

Entry Fee is $5.00 with nominations closing at 7p.m. on the night.

FANCY A GOLD COAST WINTERS BREAK

This year the Queensland State Titles will be hosted by the Jimboomba Radio Control Car Club on June 6th and 7th.

Through Dirt and Track we would like to invite any interested racers to come to Queensland and have a go at beating us on our home territory. In the recent past, Queenslanders, Chris White, Scott Guyatt, Michael Keen and Shane Strachan have competed in interstate events and we would welcome some visitors from the South.

The track is situated at Jimboomba, a small semi-rural community about 45klms south of Brisbane. It is located in a picturesque park at the corner of the Mt. Lindesay Highway and South Street.

The track itself occupies an area roughly 40m x 20m in size. We have the option of running either of two tracks. They both have a straight of about 38 metres leading into three very tight esses and continuing into a twisty infield. From the infield you come out into a banked turn and back onto the main straight. The longer track is 120m and the shorter one is 105m in length.

We have tried to design a track where driving skill is paramount. While top car preparation, motors and batteries will ensure you have the speed and the distance, only good driving will get you to the finals.

Recently we have installed four 1,000 watt metal halide lights and we have run several night meetings with them, so a late finish to the racing would be no problem.

The event will be fully catered for on both days. A range of food and drinks will be available from breakfast through till late afternoon.

Camping is allowed in the park at Jimboomba. The closest motel accommodation would be in Beaudesert (south) or the Browns Plains, Calamvale area (north).

The Gold Coast with all it varied attractions is about one hours drive away via Canungra and Nerang. This is generally a quiet and scenic drive, which avoids the main freeways except for the distance between Nerang and the Gold Coast.

For further information on the event and entry forms ring David Guyatt (07) 376 7153 A.H.

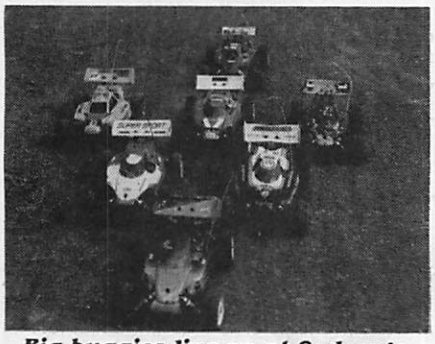
For further locality information ring Col Powell (075) 46 9175.

SYDNEY'S 1/8 SCALE OFF ROAD CHAMPIONSHIPS

from Nicki Drygalla

Sunday 1st of December saw the running of our third Championship. It was our first major race on our new track which is very different from the old track. It is 270 metres long with a 60 metre straight and two easy jumps. The track surface was dirt but we now have grass and dirt because the engines would only last two minutes and you would have to replace air-filters when it gets dusty.

Now to the serious side of racing. The day started at 8am for two hours practice, but some drivers were still turning up at 9.30am. The race did start just after 10am under a cloudless sky. We had 15 entrants and all had six heats. Within those heats each driver had to race the clock for six minutes and complete the most amount of laps to see who qualified for the A and B final.



Big buggies line up at Sydney's Liverpool Club.

Top qualifier went to Nicki Drygalla with 11.7 laps, showing everyone he would be hard to beat again.

The B final went for 12 minutes, it was a close race with both Michael Roberts and David Cheng's cars both stoping one minute before the end. David did not restart so Michael was the winner.

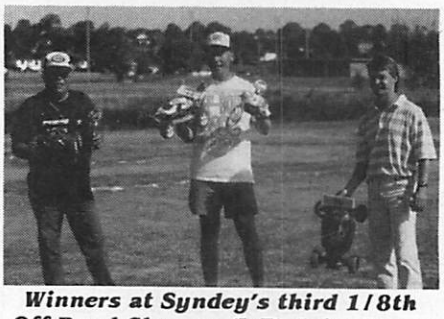
B FINAL RESULTS

1. Michael Roberts - Mugen/Turbo Rex 13/3 laps.
2. David Cheng - Mugen/OPS 12.0.
3. Geoff Miles - Mugen/OS 11.3.
4. Joel Dwyer - Mugen/Bluebird 7.4

Now the A final, which ran for 15 minutes. At the start Alan Miles got the lead but right behind was Nicki Drygalla by the second lap Nicki had the lead and did not look back. Alan had engine problems so John Sugar moved into second place.

The final placings were:

1. Nicki Drygalla -Mugen/Top 28.3.
2. John Sugar -Mugen/OPS 23.5.



Winners at Syndey's third 1/8th Off-Road Champs (L-R) John Sugar (2nd), Nick Drygalla (1st), and Andrew Hammond (3rd).

3. Andrew Hammond -Mugen/OPS 19.0
4. Alan Miles -Mugen/OS 17.0.

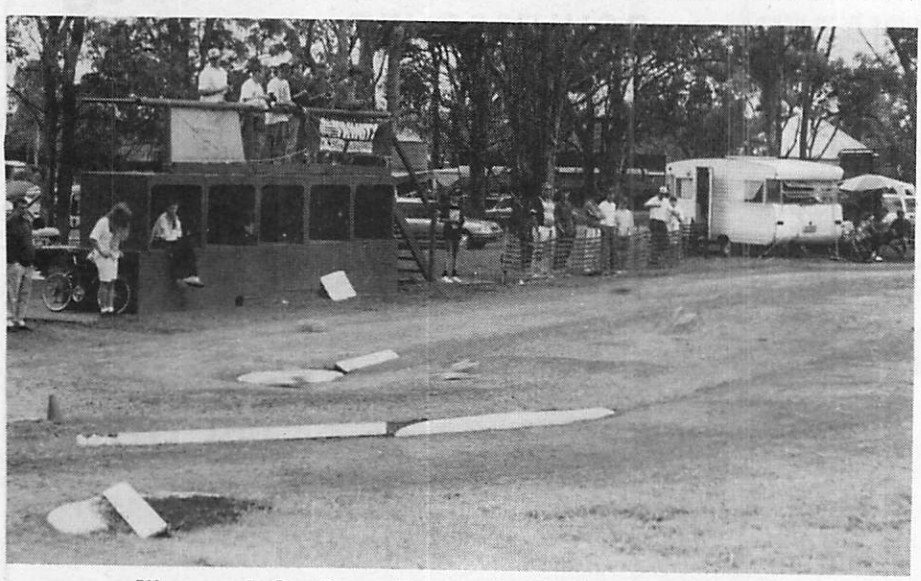
One driver not to reach the finals due to mechanical problems and just having bad luck was Tom Drygalla.

Everyone enjoyed themselves and our thanks to Wendy and Mary for lap counting and also the BBQ lunch.

Anyone interested in seeing these cars racing, the track is located at the end of Iraking Ave., Liverpool. For more information contact Tom Drygalla, President of LIVERPOOL RALLY-CROSS CLUB on (046) 27 2235.

SOUTHERN CHAMPIONSHIPS

Some things are just not meant to be. Illawarra club's (NSW) 1991 big race day seemed to be destined to disappoint from the start. Originally scheduled for last October it had to be cancelled due to clashes with other events. It was re-scheduled for February 9th 1992 but was rained out. Things looked a lot better on the new date of February 23rd. Good entries, a track and surroundings in top condition and forecast of nice weather. But fate was to intervene.



Illawarra's Southern Champs just before the big wet.

The day began with a minutes silence for Bob Roxburgh. Bob was one of the original exponenets of the sport, one time ORRCA NSW Chairman and wrote the Nationals history featured in D & T number 20. His sudden death was a great shock.

Later we heard that David Smith, the proprieter of Model Race Car World, had lost his mother that morning.

Onto the more positive aspects and the racing began in earnest with 26 entries in 2WD Stock. They were all gunning for one person but again Matthew Brown proved unstoppable. Especially on this home track. Chris Primmer from Newcastle came closest driving an interesting Cougar fitted with Losi front suspension arms. Daniel Watt's exCampbell Schumacher was also close after three rounds, but no one got the chance of another bite at Browns RC10.

Greg Brookes continues to put his stamp on major events and lead both 2WD Modified and the new Racing Truck class after three rounds. Some new names were chasing Brooke's Associated truck and they all provided some earth shaking action for this first event at Illawarra.

Onto the 4WD where Michael Santalab, fresh from a runaway victory at Canberra,

achieved the only 15 lap time when the track was at it's wettest. This was with a Yokomo W91 and Reedy Tru-Stock Motor. Chris Primmer was there again in second. A small field of seven in Modified had Darrin Campbell ahead after two heats, now reverting back to his Pro-Cat and LRP power.

But that was it. Around mid-day the great organiser in the sky decided to intervene yet again and put the final dampener on proceedings. Literally. The final results are based on best race after three rounds for 2Wd and two rounds for the rest.

Illawarra had tried really hard to make the Champs successful but fate had the final word. Fortunately the re-vamped track seemed to be popular with all. The concensus was that the new track layout (very big but requires skill) and surface (medium traction, drains well and is complete with a "rock 'n roll" section) at Croome Road was of Nationals standard and could easily accomodate that event when NSW's turn comes around in 1993. As for the Southern Champs, no competitior went away empty handed as those who missed out on the trophies got to choose a small prize. Also, a major raffle was drawn for no less than a Sony TV and Sony Walkman as prizes. If that wasn't enough, sponsors provided some great merchandise for a free Competitors raffle. Thanks to the following for their support.

Ozcharge Electronics - computer matched 1400 SCR pack. Bolt-On Performance - PP Macho Stock motor. HobbyCo Sydney - Bolink Torkers set. G & M Trading - Trinity Truck Tyres. Dirt and Track Magazine - Two free subscriptions.

RESULTS

2WD STOCK (26 entries)
1. Matthew Brown 14:4.18
2. Chris Primmer 14:11.32
3. Daniel Watt 14:14.96

2WD MODIFIED (13 entries)
1. Greg Brookes 13:20.07
2. Alex Brown 13:23.61
3. Mark Banyard 13:25.79

4WD STOCK (14 entries)
1. Michael Santalab 15:18.88
2. Chris Primmer 14:1.29
3. Troy Burgess 14:5.46

4WD MODIFIED (7 entries)
1. Darrin Campbell 13:15.58
2. Andrew Gillott 13:19.37
3. Scott Johnstone 12:16.89

RACING TRUCK (5 entries)
1. Gregory Brookes 10:19.35
2. Leigh Cheeseman 9:9.61
3. Colin Pettet 9:18.72

RACING IN OZ

DIRT & TRACKS NATIONAL CALENDAR OF EVENTS

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

APRIL 17-20
EVENT: Buggy Nationals
VENUE: Perth
CONTACT: Alan Davies
PHONE: (09) 276 3227

APRIL 17-20
EVENT: NSW 1/8 Spt/GT Chmps
VENUE: Crossroads
CONTACT: Stuart Grant
PHONE: (02) 579 4007

APRIL 17-20
EVENT: NZ Buggy Nationals
VENUE: Palmerston Mth
CONTACT: Dave Smith
PHONE: (02) 892 1463

MAY 3
EVENT: SA Buggy Titles
VENUE: Adelaide
CONTACT: Wayne Currie
PHONE: (08) 326 3272

MAY 10
EVENT: North NSW Interclub
VENUE: Taree
CONTACT: Stephen Cause
PHONE: (065) 56 1255

MAY 16-18
EVENT: SA 1/10 Crt Champs
VENUE: Adelaide
CONTACT: Ray Harrison
PHONE: (08) 250 4114

MAY 23-24
EVENT: 1/12 Nationals
VENUE: Magic Kingdom
CONTACT: Ric Bartolozzi
PHONE: (02) 709 2415

MAY 17
EVENT: ORRCA Vic Interclub
VENUE: Templestowe Reserve
CONTACT: Chris Young
PHONE: (03) 846 3249

MAY 31
EVENT: NSW ORRCA Interclubs
VENUE: Castle Hill & Ryde
CONTACT: David Smith
PHONE: (02) 892 1463

MAY 31
EVENT: Knox Cup
VENUE: Knoxfield
CONTACT: Sue Crowe
PHONE: (03) 560 1843

MAY 31
EVENT: Kempsey 2WD Titles
VENUE: Kempsey NSW
CONTACT: Ron Thurgood
PHONE: (065) 62 8209

JUNE 7
EVENT: QLS Buggy Titles
VENUE: Brisbane
CONTACT: David Guyatt
PHONE: (07) 376 7153

JUNE 7
EVENT: Nth Coast Champs
VENUE: Coffs Harbour
CONTACT: Fred Paskin
PHONE: (066) 52 4737

JUNE 5-8
EVENT: SA 1/8 Crt Champs
VENUE: Adelaide
CONTACT: Ray Harrison
PHONE: (08) 250 4114

JUNE 21
EVENT: Vic Pro-Am
VENUE: Keilor
CONTACT: Kevin Seckold
PHONE: (03) 338 8183

JUNE 21
EVENT: Mid Season Shootout
VENUE: Bankstown
CONTACT: Dave Smith
PHONE: (02) 892 1463

JULY 5
EVENT: Grand Prix
VENUE: Bankstown
CONTACT: Dave Smith
PHONE: (02) 892 1463

JULY 4-5
EVENT: 1/12 Crt Worlds
VENUE: USA
CONTACT: Geoff Booth
PHONE: (02) 771 4260

JULY 4-5
EVENT: 1/8 Off-Rd Worlds
VENUE: Germany
CONTACT: Bob Green
PHONE: (08) 339 5057

JULY 12
EVENT: Central Coast cup
VENUE: Bateaux Bay
CONTACT: Derek Adams
PHONE: (043) 84 3541

JULY 18-26
EVENT: 1/10 On-Rd Worlds
VENUE: Pomona, Calif.
CONTACT: Geoff Booth
PHONE: (02) 771 4260

AUGUST 22-23
EVENT: 1/10 Circuit Nats
VENUE: Adelaide
CONTACT: Geoff Booth
PHONE: (02) 771 4260

AUGUST 2
EVENT: Hornsby Open
VENUE: Hornsby, Sydney
CONTACT: Matthew Whittard
PHONE: (02) 481 8757

AUGUST 9
EVENT: North NSW Interclub
VENUE: Taree
CONTACT: Stephen Cause
PHONE: (065) 56 1255

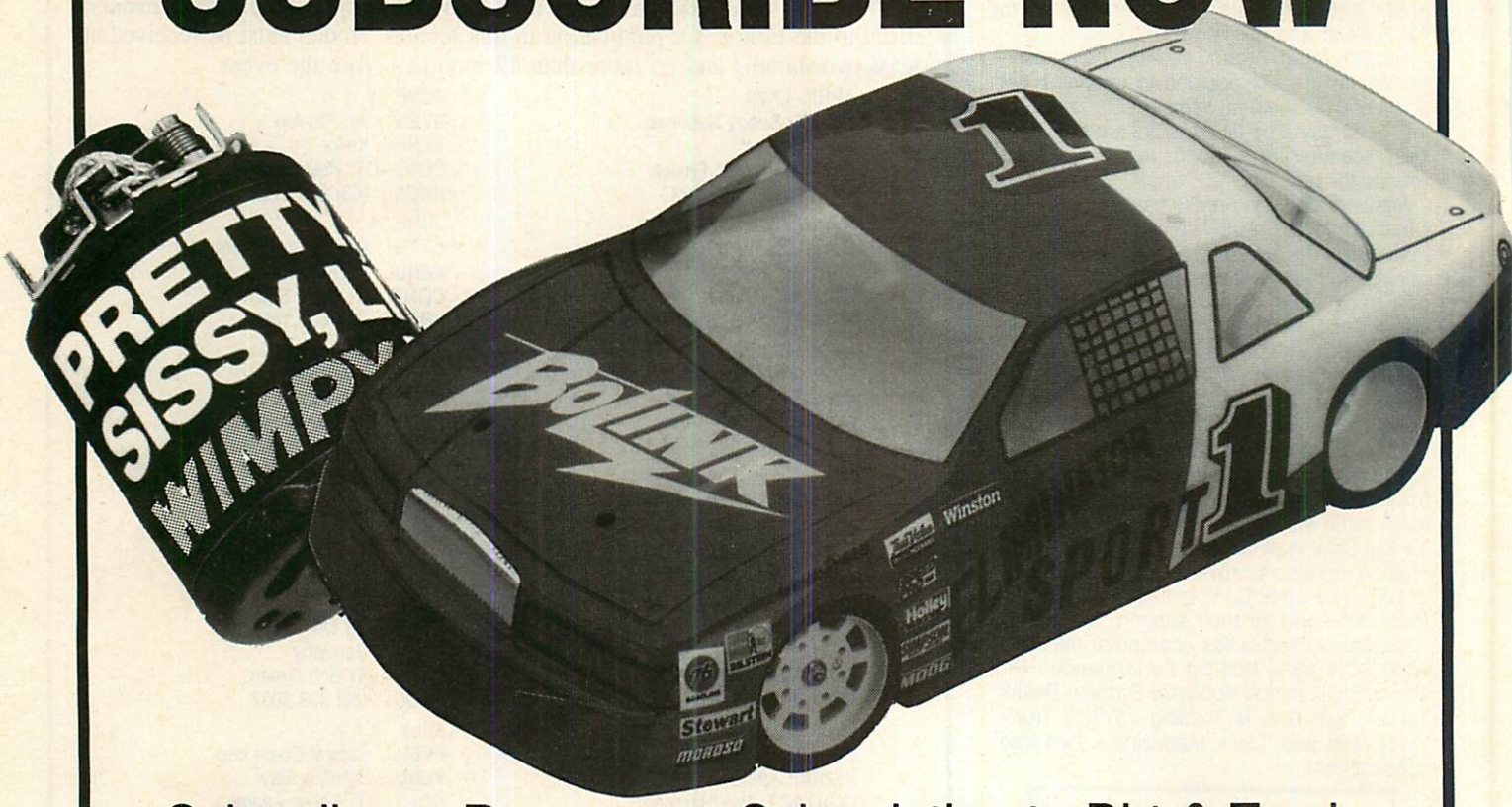
AUGUST 9
EVENT: Vic Pro-Am
VENUE: Templestowe
CONTACT: Reece Birtles
PHONE: (03) 846 1983

AUSGUST 22-23
EVENT: ACT Buggy Titles
VENUE: Narrabundah
CONTACT: Gary Davey
PHONE: (06)281 6460

AUGUST 30
EVENT: NSW ORRCA Interclubs
VENUE: Illawarra & Castle Hill
CONTACT: Dave Smith
PHONE: (02) 892 1463

AUGUST 30
EVENT: Kempsey 4WD Titles
VENUE: Kempsey NSW
CONTACT: Ron Thurgood
PHONE: (065) 62 8209

SUBSCRIBE NOW



Subscribe or Renew your Subscription to Dirt & Track andyou will automatically be eligible to go into the draw for a Pretty Sissy Little Wimpy Motor and a Bolink Eliminator Sport.

ONLY **$18** (6 ISSUES)

ANNUAL SUBSCRIPTION RATES

(6 issues)	Surface	Air
Australia:	**$18.00**	**$28.00**
New Zealand:	**$27.00**	**$32.00**
Other Countries:	**$31.00**	**$46.00**

Kindly complete the details below and return to:
Ropomod Productions Subscription Manager,
P.O. Box 30 Tullamarine, Victoria, Australia 3043.
Cheques and Money Orders should be made payable to Ropomod Productions Pty. Ltd.

Radio Control Cars for DIRT&TRACK

Enclosed is my cheque/money order For:$.....

or debit my BankCard ☐ MasterCard ☐ Visa ☐ Expiry Date:.....

Card Number: | | | | | | | | | | | | | | | | |

Cardholders Name:.....

Cardholders Signature:.....

SUBSCRIBERS NAME:.....

POSTAL ADDRESS:.....

.....STATE:.....POSTCODE.....

CLUB DIRECTORY

AUSTRALIAN NATIONAL	CONTACT	PHONE
Australian National Body		
Association of Australian RC Model Car Clubs	John Grant	(02) 773 4921
AARCMCC Electric Circuit Section	Geoff Booth	(02) 771 4260

NEW SOUTH WALES	CONTACT	PHONE
Armidale RC Off Raod Car Club	Russell Johns	(067) 72 4525
Bankstown Off Road Model Auto Club	Dave Smith	(02) 892 1463
Broken Hill Off Road RC Car Club	G.P. Curtis	(080) 88 2047
Campbelltown Off Road Racing Buggy Association	Tom Drygalla	(046) 27 2235
Castle Hill Model Off Road Buggy Racing Club	Nicole Smithwell	(02) 634 4316
Central Coast Off Road Radio Car Club	Glen Spain	(043) 92 7181
Coffs Harbour Bailey Caltex Centre RC Car Club	Fred Paskin	(066) 42 4853
Dubbo Radio Control Car Club	Darran Neave	(068) 82 3896
Grafton RSL Radio Control Model Club	Kevin Woodward	(066) 52 4737
Hornsby Model Off Road Buggy Club	Gordon Creed	(02) 476 1017
Illawarra RC Electric Car Club	Geoff Brown	(042) 56 3259
Kempsey Model Motor Sport	Rod Thurgood	(065) 62 8209
Lake Macquarie PCYC Radio Control Club	Bill Nicholas	(049) 46 8519
Liverpool Electric Oval Racing Club	Ric Bartolozzi	(02) 94 3803
Maitland Off Road Radio Control Club	Ron Edwards	(049) 32 6667
Nothside Radio Controlled Circuit Racing Car Club	Gary Adams	(02) 981 2594
New South Wales Radio Controlled Racing Car Club Inc	Stewart Grant	(02) 579 4007
Southern Suburbs Off Road Car Club	Peter Ready	(02) 521 7837
St Ives Radio Control Electric Car Club	Barbara Bolton	(02) 451 7775
Sydney Radio Control Off Road Car Club (Ryde)	John Pidler	(02) 817 3326
Taree Radio Control Car Club	Geoff Powys	(065) 52 7579
Wagga Wagga Radio Control Car Club	Theressa Hines	(069) 21 2719
Westlakes Model Raceway	Trevor Rogers	(049) 77 2073

VICTORIA	CONTACT	PHONE
Altona Off Road Electric Car Club	John Willoughby	(03) 369 4003
Ararat Model Car Club	David McAdie	(053) 52 1817
Australian Model Car Club (Static Models only)	B.I. MacKay	(03) 51 3163
Ballarat Off Road Radio Control Association	Gayle Collier	(053) 31 4684
Ballarat Radio Control Car Club	Peter Pelchen	(053) 34 2139
Bendigo Radio Control Car Club	Manse Shepherd	(054) 47 9780
Bright Radio Controlled Car Club	Leigh Kennedy	(057) 55 1607
Broadmeadows Electric Off Road Association	Russell Harris	(03) 359 4474
Electric Racing Club	Greg Collings	(03) 898 2791
Frankston Remote Control Electric Car Club	Rod Boxall	(03) 789 2163
Geelong Radio Control Car Club	Eric Beilby	(052) 44 2336
Geelong Off Road Racers	Ruth Goldberg	(052) 63 2536
Glenroy Electric Off Road car Association	Rowie Watt	(03) 309 1859
Hamilton Radio Controlled Cars	Robert Masters	(055) 72 4290
Horsham Radio Control Car Club	Jeff Meister	(053) 82 3001
Kelior Electric Off Road Car Association	T. Spencer	(03) 336 1925
Knox Radio Control Off Road Car Club	Suzanne Crowe	(03) 560 1843
Latrobe Valley Radio Control Car Club	David Hurst	(056) 55 1128
Melton (T.O.R.R.C.C.)	Les Bone	(03) 743 1153
Mildura & District Radio Control Vehicles Club	Kerry Strachan	(050) 23 4899
Melbourne Radio Control Circuit Racers	Ron Prins	(03) 726 4246
Portland Recreational R.C. Model Car Club	Alan Johnson	(055) 23 3486
Shepparton (G.V.R.C.C. Inc.)	Peter Chamberlain	(058) 25 1295
Stawell Radio Control Car Club	Peter Marrow	(053) 58 1098
Templestowe: T.O.R.R.C.C.Inc	Chris Young	(03) 846 3249
Wantirna Radio Electric Car Club	David Russell	(03) 878 0062
Warnambool R.C. Buggy Club	Dirk Holbrook	(055) 62 1976
Wodonga Radio Control Car Club	Craig Langman	(060) 24 7128

NORTHERN TERRITORY	CONTACT	PHONE
Alice Springs Radio Control Modellers	Glean Saxby	(089) 52 4027
Darwin Radio Control Car Club	Wolf Loenneker	(089) 27 2087

QUEENSLAND	CONTACT	PHONE
Beenleigh Car Club	Jim Dermaid	(07) 287 1237
Bowen Off-Road R.C. Racing Enthusiasts	Barry Tait	(077) 86 1794
Burdekin Off Road Model Car Club	Frank McCabe	(077) 82 2336
Cairns Radio Controlled Buggy Club	Peter Humphries	(070) 54 3034
Ekibin Outlaws	Colin Bostock	(07) 369 9847
Gladstone	Geoff Humberstone	(079) 73 7182
Gold Coast Off Road Club	Robin Dando	(075) 52 9564
Ingham Radio Control Car Club	Michael Valinoto	(077) 77 2847
Ipswich Radio Controlled Car Club	David Johnston	(07) 812 1482
Kensington Village Radio Electric Car Club	Peter Hoer	(07) 261 3371
Mackay Off Road R.C. Car Club	Kev Schapland	(079) 56 1058
Maryborough Radio Control Buggy Club	Leisa Ethell	(071) 21 2225
Mount Isa Radio Controlled Model Car Club	Vic Trotnar	(077) 43 9157
Nomads Model Radio Car Club	Martyn Ward	(07) 341 0708
Noosa District Off Road R.C. Car Club	Brett Powter	(071) 47 6446
Pine Rivers Off Road Racing Club	Wayne Lait	(07) 285 0772
Qld, R.C. Car Racing Association (1/12 scale)	Trevor Kerr	(07) 205 4879
Rockhampton Radio Control Car Club	Trevor Large	(079) 27 7825
Sunshine Coast Association of R.C. Cars	Steve Tyler	(079) 94 1876
The Hills Model Off Road Racing Club Inc	Joe Ballam	(07) 351 3017
Toowoomba Police Youth Club Model Off Road Ass	Colin Young	(076) 34 2334
Toowoomba Radio Control Model Club	John Carter	(076) 32 940
Townsville Model Off Road Club	Heath Erkkila	(077) 75 2739
Warwick	Trevor Knight	(076) 61 2432

WESTERN AUSTRALIA	CONTACT	PHONE
Bunbury Radio Controlled Buggy Club	Malcolm Brown	(097) 25 1183
Carine RC Model Car Club	Peter Quinby	(09) 307 3510
Cavell Model Race Car Club of W.A. Inc	Helen Cavanagh	(09) 457 1745
Esperance Radio Control Car Club	Cheryl Dickerson	(090) 71 3161
Perth Radio Electric Car Club	Paul Baartz	(09) 362 2302
Perth Southern Districts Model Race Car Club	Shane Files	(09) 454 5761
Radio Rally Club of Western Australia (Inc.)	Rod Van Bruchem	(09) 453 9445
Rockingham Radio Control Car Club	Anne Sander AH	(09) 525 5338
W.A. Off Road Model Association		(09) 276 3227
W.A. R.C. Model Car Club	Rex Wedd	(09) 276 2930
West Coast Model Rally Club	Nick Klaver	(09) 276 9900

TASMANIA	CONTACT	PHONE
Burnie R.C. Car Club	John Gillam	(004) 31 6719
Devonport R.C. Car Club	Craig Higgs	(004) 24 7017
Hobart Auto Modellers Association	Roger Mahoney	(002) 72 1049
Hobart Electric Off Road Club	John Guest	(002) 29 5616
Hobart Radio Control Car Club	Colin Whitton	(002) 47 7968
Launceston Radio Control Car Club	Wally Atkins	(003) 44 4298
Tasmanian Electric Car Club	Mike Keller	(002) 47 9393

A.C.T.	CONTACT	PHONE
Canberra Off Road Model Car Club	Gary Davey	(06) 231 8306

SOUTH AUSTRALIA	CONTACT	PHONE
Adelaide Hills Model Club	Ashley Cox	(08) 381 2834
Jamestown Radio Control Car Club	Phil Lacey	(086) 64 1115
Mitchell Park Model Buggy Club	Garry White	(08) 270 3349
Model Radio Car Club of Adelaide	Ray Harrison	(08) 250 4114
Murray Bridge Radio Control Car Club	Bruce Pearson	(085) 32 1231
North Eastern Radio Control Car Club	Lucy Cunningham	(08) 264 8256
Penfield 1/10 scale Buggy Club	W. Williams	(08) 281 4101
Port Augusta Radio Control Car Club	Pamela Case	(086) 42 5886
Scale Off Road Racing Club of South Australia	Craig Westwood	(08) 252 3206
Southern District Model Car Club	Wayne Currie	(08) 382 0380
The Farm Radio Controlled Car Club	John Hutchins	(08) 263 0411
Whyalla Radio Control Car Club	Helin Sellar	(086) 45 9539

NO MERCY!

1. Super-efficient transmission has a three-gear design and a unique final drive ratio of 2.14.
2. Adjustable, torque-regulating slipper clutch.
3. Externally adjustable dual-ball bearing "pro" differential.
4. Maximum width rear suspension arms supply unsurpassed stability, plus adjustable toe-in & anti-squat features.
5. Long front and new X-tra long rear oil dampers are hard-anodized and teflon-coated with stainless steel piston rods.
6. Narrow bulkhead and long arms provide unmatched control in the roughest sections and deliver precise steering.
7. High ground clearance with 2.1" of suspension travel in the front and a full 2.5" of travel in the rear.
8. Durable nylon materials prevent breakage of the suspension components.
9. American-made, 100% graphite chassis completely minimizes flexing.

"The consensus agreed (Scott Montgomery's car) was the most impressive car on the track."

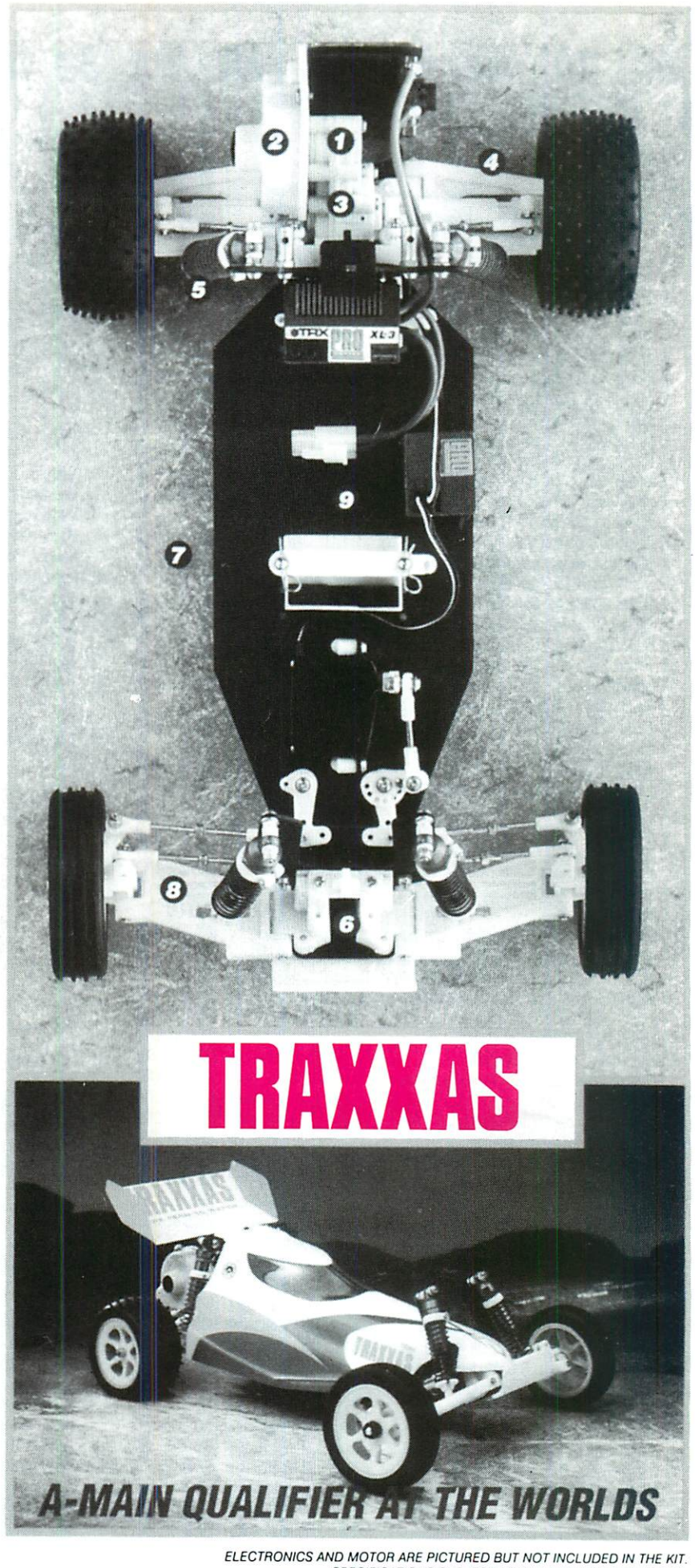
Competition Plus, August 1991

"The Traxxas car looked good at all times."

Radio Control Model Cars (England), October '91

The TRX-1, driven by Team Traxxas' Scott Montgomery, impressed everyone at the Worlds Warm-Up and IFMAR World Championship races in Detroit. Only a handful of the cars on the track were box-stock; and of those, Scott's TRX-1 had the fastest qualifying time (4th in the A-main!). The TRX-1 comes fully loaded with all the special "team" parts and trick set-ups giving you the advantage over the competition. Ask for the new TRX-1 "Worlds Car" at your favorite hobby shop and see first-hand what world-class performance is all about.

TRX



ELECTRONICS AND MOTOR ARE PICTURED BUT NOT INCLUDED IN THE KIT.
SPECIFICATIONS SUBJECT TO CHANGE WITHOUT NOTICE.

TRAXXAS. Sole and Exclusive distributor in Australia: G & M TRADING.

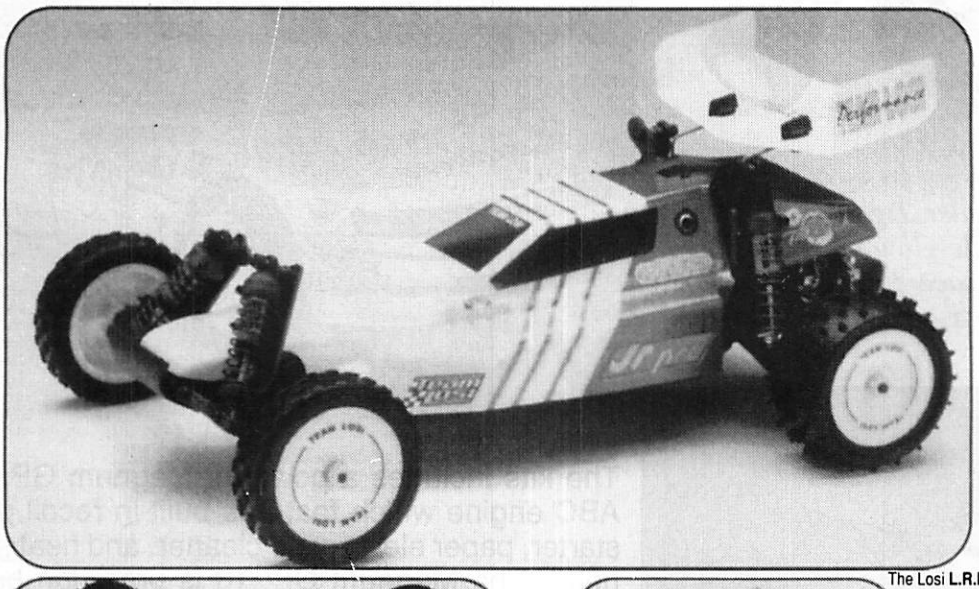
Write to - G & M TRADING P.O. BOX W197, West Tamworth, NSW. 2340 or call (067) 65 2701 for your free catalogue of TRAXXAS full range of Trucks (The Race winning BLUE EAGLE and the Sledgehammer Monster Truck), Off-Road Buggies (Worlds qualifier TRX-1 and the Radicator), the Racing Boat (Twin motor, twin prop VILLIAN IV) and Electronic Speed Controllers and Charger.

TEAM LOSI Performance

IF WINNING WASN'T EASY, IT IS NOW!

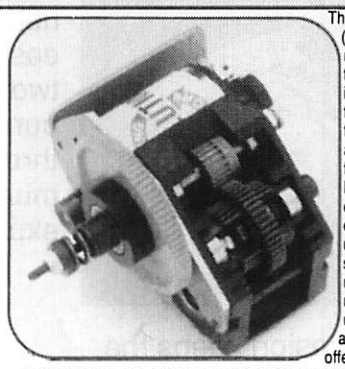
WITH THE JRX PRO SE!

TEAM LOSI KEEP YOU AHEAD. WITH THE JRX PRO SE — '91 ROAR STOCK & MODIFIED CHAMPION



NEW FEATURES INCLUDE

New - narrow lightweight "Slim-line" matrix fibre chassis.
New - Heavy duty 30° ball cups
New - Double O-ring shock cartridges
New - Teflon shock pistons
New - Shock towers front & rear
New - Hard coated shock bodies
New - "Slim line" bodyshell
New - Front & Rear Springs
New - Neon yellow logo wheels
New - Friction slipper (will accept hydraulic unit)
New - Carbide diff balls
New - Swept front A-Arms
New - Foam Things
Fully ballraced



The Losi **L.R.M.** (low rotating mass) transmission is now better than ever, with the new addition of a friction slipper. Not unique in concept, the design and use of specialised materials makes this unit easier to adjust and offers more constant operation. It is also designed to accept the revolutionary and exciting new "Hydra-drive" unit. With the centre mounted limited slip differential and lubricant impregnated precision moulded gears, this gearbox is surely the ultimate drive system.

The front suspension now features the new swept front A-Arms. These being developed to provide much quicker steering response as well as enhancing jumping characteristics.

CUSTOM MODEL CARS

598 Forest Road, Penshurst, N.S.W. 2222

PHONE: (02) 579 4007 FAX: (02) 570 4529

TIME TO GET SERIOUS

OPEN THE THROTTLE to 1/10th Scale

by Thunder Tiger
THE MOST RELIABLE RADIO CONTROL MODELS

Glow Powered Action

EASY TO USE
RECOIL STARTER

Thunder Tigers Panda 1/10th Scale glow powered Radio controlled rally racers are 90% factory assembled and almost ready to run.

The kits includes a powerful Magnum GP .10 ABC engine which features built-in recoil pull-starter, paper element air cleaner, and heat sink head. The Magnum GP .10 is precision built, easy to start, and dependable. Just a stroke or two of the pull starter will light a fire in this fuel burning speed demon! Plus, the GP .10's deep, throaty roar is always kept to a civilized minimum with Magnum's exclusive quiet-chamber expansion muffler.

Four-wheel independent suspension keeps the pulse pounding power on the ground. Adjustable-damping, coil-cover shock absorbers, beefy glass-filled nylon wishbones and metal control links combine for a truly effective suspension system. The 6061-T4 aluminum chassis features a well balanced, mid-engine chassis layout and quick release body latches for easy access to the recoil starter.

RCS

RADIO CONTROL SUPPLIES

7/14 DEAN PLACE, PENRITH N.S.W. 2750
PHONE: 047-31 41 45. FAX: 047-31 15 63

TRADE ENQUIREIS ONLY

Thunder Tiger gives you extraordinary racing fun and speed. Take on the great outdoors - join the Panda Racing Team today!!