

Radio Control Cars  
for

NUMBER 9  
DEC-JAN 1988  
AUSTRALIA: 3NW4270

# DIRT & TRACK

WIN A  
HUNDER  
SHOT

SUPER  
DOG FIGHTER

TURBO ULTIMA

Off-Road Nationals

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WORLD CHAMPION  
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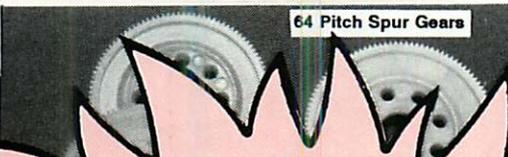
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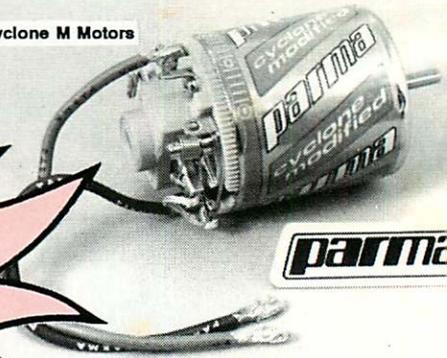


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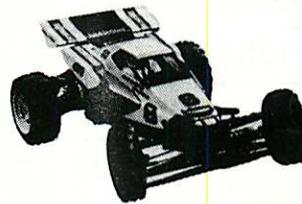
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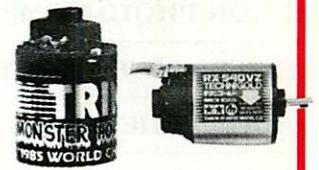


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# DIRT & TRACK

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# You Wanted to Know

OFFICIAL MAIL

**Q:** *I have a Tamiya Grasshopper which I have geared as high as the kit allows. I would like the Grasshopper to travel at about the same speed as a Hornet, but my car has a 380 motor in it. Would I be able to put a 540 in my Grasshopper?*

**Mark P, Newy, Vic.**

**A:** Put simply the answer is yes. You should be able to put any 05 type motor in your Grasshopper. That means you could put a Mabuchi 540 stock in it, or a Twister Stock, or even any of the modifieds. What it gets down to Mark, is whether you can handle the extra speed given out by a more powerful motor. The 380 is a very good beginner's motor. Once you drive your buggy properly with the 380, by all means upgrade to a more powerful and higher revving motor.

**Q:** *Is the AYK 48R motor a good motor to use in 7 cell racing? Is an AYK TX400FR 8.4 volt charger any good as a charger? Does it give a full charge? I'm planning to add a Max Trix Thermax so I can be sure the battery has peaked every time, is that a good gadget? Could you also explain about gear ratios, eg, 13.8, 9.85 etc? Finally, what is a good discharger, and where can I buy one?*

**Adrian A, Wheelers Hill, Vic.**

**A:** Wow! a multiple choice question! The answers are:

1. Any motor is fine for 7 cell racing, providing the gear ratios are correct. If the motor is geared too high, the commutator will be burned because the load on the motor is too great.
2. The AYK TX400FR is, to our knowledge, as good as any other similar charger on the market and 3. it does give a full charge.
4. The Thermax performs well to detect Ni-Cad temperature. See D&T#6, page 15 for a review.
5. Gear ratios are expressed as a series of numbers, like those you mentioned. Simply, those numbers refer to the amount of revolutions the motor must travel to allow one revolution of the car's wheels. See Bird Torque this issue for more detailed explanation.
6. Choosing a discharger depends on the ultimate usage. If you want to measure Ni-Cad capacity then either a Cell Mate or a Watts Left are good units, but if you just want to discharge Ni-Cads after a race for storage, then use a 33 Ohm, 5 Watt wire wound resistor.

**Q:** *I Have a Hornet which is about 18 months old, and I thought it would be a good time to replace the stock motor. What motors are available in the \$25 to \$50 range. I also need a 7.2 volt Ni-Cad pack in the \$40 to \$60 range. I have a whopper of a problem with the battery plate, which keeps coming off when driven, thus scraping the battery.*

**Andrew W, Aranda, ACT**

**A:** Andrew, prices really depend on where you shop, as some hobby shops discount the retail price and others don't. The best advice we can give you is to ring some of the hobby shops which advertise in this magazine and find out what they have which meets your price range. You should certainly be able to get a Mabuchi 540 or Parma K Stock motor for less than \$50.

SC Ni-Cad packs are also generally available for around \$60, so you shouldn't have too much trouble. But do shop around. Your battery plate problem is interesting. If the plate is screwed down, make sure you put thread-lock on the screws before putting it all together. If that doesn't work, you may have to use Cyanoacrylate glue, (Zap, CA etc) which can be unglued if necessary by using a de-bonder. Check your hobby shop for supplies.

**Q:** *I own an Ultima and one of my friends has a Boomerang. We both use Sanyo Red 7.2 volt Nicads and charge leads. The problem is my batteries last longer in the Ultima, about 15 minutes, but the batteries in the Boomerang only last for about four minutes. We have tried swapping batteries but the Ni-Cads still only last for about four minutes in the Boomerang. My friend's batteries will power my Ultima for about 15 minutes. What's wrong? Also, I'm thinking of buying a modified motor but don't know what to get.*

**Jason B, Beechworth, Vic.**

**A:** There will always be a running time difference between the Boomerang and the Ultima Jason, because the Ultima is two wheel drive, therefore there's less friction and less power lost through the drive train. However, it does sound as if there's something wrong with your friend's Boomerang. It's very difficult to be specific, as it could be a massive difference in gear ratios; there might be something wrong with his motor, or maybe an axle or drive shaft is "binding". You'll need to make sure everything is spinning freely, and give the motor a good clean. If that doesn't work, try running the Boomerang with a smaller pinion. When all else fails, pull the car apart, thoroughly clean everything and put it back together, making sure all moving parts are properly lubricated.

**Q:** *I have a Kyosho 4WD Shadow. Assuming all conditions are the same, why is the car quite fast sometimes and slow at other times? The front gearbox, diffs etc turn very freely, but the rear gearbox is stiff. From full speed to stop is achieved in two car lengths, is this normal? On the rear transfer, the bush between the casing and the gears wears out rapidly, despite liberal amounts of grease. I've checked and there is no sign of dirt getting in. Hoping you can help.*

**Dave H, Christchurch, N.Z.**

**A:** Great to get a letter from over the Tasman! Dave, let's see if we can assist. Your first question is one that puzzles most of us. There are just so many parameters to consider, and I'm not quite sure what you mean by "all conditions are the same". Speed variations can be caused by differences in lubricant viscosity, changes in discharge characteristics of Ni-Cads, variations in motor brushes, etc, etc. In other words — we don't know! In regards to your inquiry about stopping distance, that would depend on your speed controller's braking system, some are more effective than others, but if the front differential is spinning freely, the back one should too, so it's probably worth taking a look at that. In the subject of bush wear, bushes will always wear, no matter what you do to them. The wear is caused by friction, which is directly proportional to the amount of pressure applied to the two surfaces. The cure — replace all bushes with bearings as quickly as you can afford it!

**Q: I own a Super Sabre and have been racing 540 class, but have now decided to race stock class. Could you recommend a good stock motor, and how much will it cost? Is it possible to change the monoshock to a dual shock system and how much would that cost?**

**Tim F, Invergordon, Vic**

**A:** Tim, we don't ever recommend one product over another, we just assess each on its merits. There are plenty of stock motors available, and at a wide range of prices. To make a choice, why not check back through D&T#6 and this issue and look at the motor tests conducted in Bob's Tech Corner. That's the best way to find a motor that suits your needs. Stock motors are made by Race Prep, Revtech, Twister, Parma, etc, but you'll need to contact your local hobby shop for price details. It shouldn't be too difficult to make up some new front shock mounts so you can replace the monoshock. You could probably make the mounts from fibreglass.

**Q: I have a Tamiya Fox and would like to know if there are any kits to allow twin shock absorbers to be put on the front. If so, where could I get this, and approximately how much? Could you also tell me if you know of any wishbones (from cars with twin shocks) that might fit the Fox. My car dips slightly to the right, making it unparallel with the ground, what do you think the problem could be? Is it good to discharge your 7.2 volt battery fully after running a car with it? If so, could you please name a good device which will do this. Is a good radio important?**

**Dominik W.**

**A:** We aren't aware of any kits to replace the monoshock on a Fox but you might be able to modify the car yourself. Try using a front shock mount from another car and adapting it to fit yours. Changing wishbones is something that you need to be careful about, as it can change the wheelbase, and affect the handling and balance. With regard to your question about the car dipping to the right, the first thing you should check is your shock absorbers to make sure that none of them are leaking oil, and to make sure that the rear shocks are both the same length. Different length rear shocks can cause dipping at the front. In the case of the Fox, dipping could also be caused by one of the front wishbones 'binding', that is not moving as freely as the other. Yes, it is a good idea to fully discharge a Ni-Cad after using it, as it ensures that all the cells discharge equally, and recharge evenly. This is called tracking. Most drivers use a resistor to do this, a 33 Ohm 5 watt wire wound resistor is quite adequate for the job, and can be left attached to the battery connections until the next time you charge the battery. Finally, yes, a good radio is important. There are some brands of radios which are cheap, but which aren't very accurate when it comes to frequency bands. Inaccurate frequency bands cause interference with other people's radios, which in turn causes problems on the track. It's worth spending the money to get a good, well-known brand of radio so you can be sure that the chances of interference are reduced.

**Q: I have just purchased a Trinity Drag motor PT#2007. I am going to fit it in my Tamiya Porsche 959. It is running a gear ratio of 5.1:1, and I would like to know what top speed it would reach. By the way, the car is fully ball raced and could you please tell me how many revs the Trinity motor puts out.**

**Gervince G, Nth Richmond, Vic.**

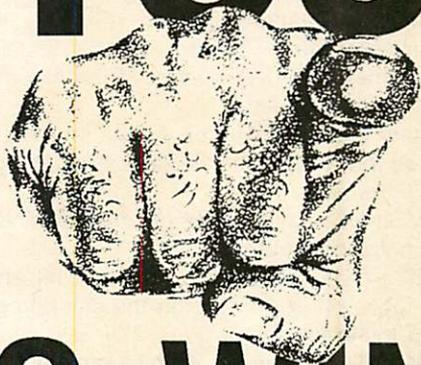
**A:** You've got some awesome horsepower with that Trinity motor Gervince, hope you can keep that Porsche on the road! To answer your last question first, your motor is a 14 turn double wind and should put out a massive 45,000 r.p.m.! As for trying to figure out top speed, that's almost impossible from here, because of the number of variables, like the type of speed controller, Ni-Cad pack, wheel diameter and the internal gearbox ratio. However, you can be assured that your car will be very quick!

**Q: Firstly, some advice. In D&T issue #6, Chris G complained of suspension arms rubbing on his Supershot's rims. He should try screwing the 8mm ball connector in further (this may involve filing some of the front upright away) and ensuring the metal ball plate is on correctly. Andrew K's Falcon ride height can be reduced by removing the 3mm flange nut from the shaft of the shock absorber and replacing it with longer rubber tubing (instead of 6mm, make it 9mm) or several 3mm washers. Then make sure the shaft is screwed into its connector all the way. Now I need some advice. I race a Tamiya Porsche 959, which has been upgraded with 26 ball bearings. What should be my next upgrade, or should I change cars – mine already beats Cats!**

**Philip de G, Sorrento, Qld.**

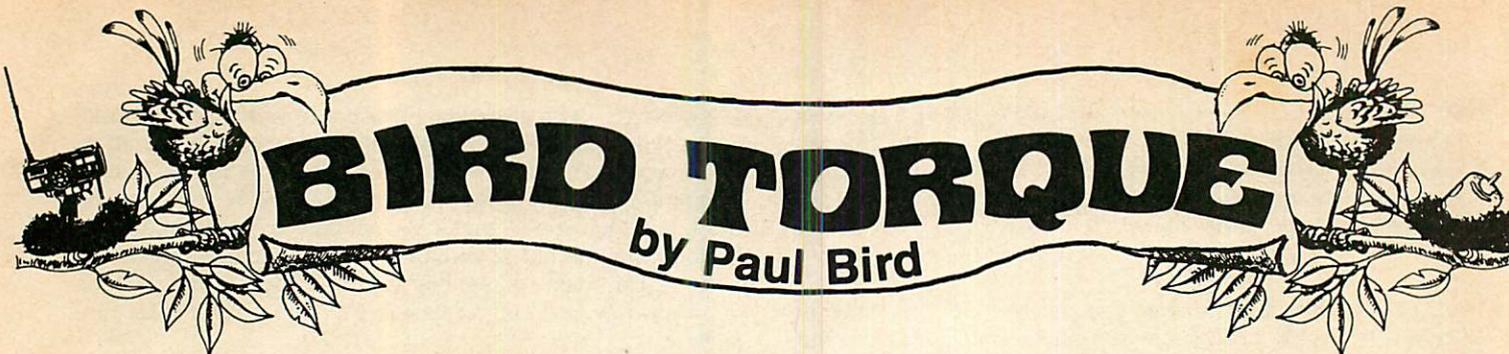
**A:** Philip, thanks for your help and advice for other readers. If anyone has suggestions to answer any questions in the column, please send them in, as they might help other racers. In response to your own question Philip, what can we say? If your Porsche beats Cats it's going pretty well. There's probably not much more you can do to it, except upgrade Ni-Cads if you're not already using 1700mAh packs, and fit a hotter motor.

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You're a new-comer to the sport of R/C car racing and you're standing around at the track listening to a conversation between two experienced racers. It goes something like this: "Fred's T.Q'd and he's got the new Tekin MOSFET, a micro servo, front one-ways, a 14 Quad and he's using 1700's peaked on a Novak. The Tekin's set up with a Pulse Checker, and his CAT's geared at 4:1."

I won't keep going, I think you get the picture. Experienced people talk in the jargon of the hobby, and for beginners it can be a little difficult to understand. And very few people want to ask what the person talking means, in case they appear idiots. The one useful thing about jargon is it cuts down the number of words necessary in conversation, and saves space on paper. Jargon is fine when you understand it, so I thought I'd try to give you a small dictionary of terms which you might find useful.

To translate the fictitious conversation; Fred has Top Qualified (T.Q.'d) and he's using a new electronic Metal Oxide Silicon Field Effect Transistor speed control made by the Tekin company (Tekin MOSFET), the car is fitted with a micro servo (very small) for steering, it has front one-way drive shafts, the motor armature has 14 quadruple turns of wire (14 Quad), the Ni-Cad batteries have a capacity of 1.7 Amps, and they've been charged to peak voltage using a Novak brand of charger. The speed controller has been set up using a special electronic device (Pulse Checker) and his buggy, a Schumacher CAT is running a gear ratio which means that for every four times the motor turned, the wheels turn around once.

Well, here we go with our jargon dictionary which should help novices cope with what can sometimes sound like a foreign language.

**ANTI-ROLL BAR** — A wire torsion bar assembly which can be fitted to the front and rear suspension of a car or buggy to help resist sideways roll which occurs during cornering. Some cars come with these as standard fittings.

**A.S.P.** — Adjustable Safety Position. A feature found on expensive radio systems to recover control of the car when the Ni-Cad batteries start to go flat.

**B.E.C.** — Battery Eliminator Circuit. Found on most modern radio receivers so that you don't need an extra battery on the car to run the radio gear.

**BRUSHES** — Small oblong pieces of carbon which carry electricity to the motor commutator.

**BUMP STEER** — Usually occurs on the front end of a car. When the suspension is sitting high the steering geometry is changed from toe-in to toe-out.

**CAMBER ANGLE** — The angle at which the car's wheels tend to lean, when viewed from the front. If they lean outward at the top, and the distance between the wheels at the top is greater than at the bottom, then the camber angle is positive. If it's the other way around, the distance is greater at the bottom than at the top, then the camber angle is negative.

**CARBON FIBRE** — A very tough and expensive material used to make ultra-lightweight chassis and other car components.

**CASTER ANGLE** — The angle between the steering pivot axis and an imaginary line drawn through the wheel. The greater the caster angle, the better the car's ability to travel where the wheels are pointing.

**COIL-OVER SHOCKS** — Shock absorber units with the spring outside the oil filled damper unit.

**COMMUTATOR** — The copper segmented part of the armature in an electric motor which the brushes run on.

**COMM DROPS** — An additive applied to the commutator and which is said to improve the efficiency of the motor, reduce running-in time and make the car accelerate quicker from the starting line.

**DIFFERENTIAL** — A device in the rear gear box of two-wheel drive cars, and in both gear boxes of four-wheel drive cars which allows the wheels to rotate at different speeds when cornering.

**BONE** — A drive shaft. It's called a dogbone because that's what some people think it looks like.

**DUMP** — The term used when the main Ni-Cad battery doesn't have enough power left to drive the car. The battery is said to have dumped.

**DVM** — Digital Volt Meter. A very accurate device used to measure Ni-Cad battery voltage.

**FET** — Field Effect Transistor. An efficient solid state device used in speed controllers, chargers and other electrical equipment. They can be expensive.

**G.R.P.** — Glass Reinforced Plastic. A tough, strong and lightweight plastic composite material used in car component manufacture.

**LED** — Light Emitting Diode. An electrical indicator, often used on electronic speed controllers, chargers, etc.

**LIMITED SLIP** — Usually refers to the type of Differential where not all the power is transferred to the wheel which is off the ground. Makes for better traction.

**LWB** — Long Wheel Base. The distance between the front and back wheels. With some brands of car there are two versions; the Long Wheel Base being about 25mm longer than the other version.

**MODIFIED** — Not usually applied to the cars themselves, rather to the motor. Modified motors usually have less than 27 turns of wire on the armature, are ball raced, and have adjustable timing.

**MOSFET** — Metal Oxide Silicon Field Effect Transistor. Even more efficient (and expensive) than FETs.

**MONO SHOCK** — One shock absorber is used between two wheels to provide the suspension and damping. The mono shock system is used on the Tamiya Hot Shot and the AYK Buffalo, for example.

**NI-CAD** — A type of rechargeable battery used in R/C car racing.

**OVERSTEER** — When the car tends to turn more quickly than the driver intends.

**PEAK CHARGER** — A special type of Ni-Cad fast charger which uses a feature of the Ni-Cads themselves to decide when the Ni-Cads are fully charged. At maximum charge Ni-Cads experience a rise in voltage, followed by a drop. This is known as the peak.

**QUAD** — Quadruple. This term refers to the number of parallel strands of wire per turn of windings on the motor's armature.

**ROLLER CLUTCH** — A centrifugal device which can replace the motor pinion to give a smooth take-off.

**RECEIVER** — The electronic unit which receives signals from the transmitter and decodes them into electrical current to operate the servos.

**SADDLE PACK** — A configuration of Ni-Cad batteries where the pack is split in half to sit on each side of the car's centre line.

**SERVO** — A device driven by electrical impulses. It usually operates the car's steering, and sometimes a mechanical speed controller.

**SERVO SAVER** — A spring loaded protection device which cuts down the level of shock transmitted from the wheels to the steering servo. If you don't use a servo saver you risk having the servo gears destroyed.

**SHOCKS** — An abbreviation for shock absorbers.

**SINGLE** — Refers to motors where there is only a single strand of wire wound around the armature.

**SPLIT TIME** — The time it takes to complete the lap you're on when the five or six minute racing time is completed. The lower the split time, the closer you were to finishing the extra lap.

**STOCK** — Usually refers to motors. Stock motors don't have ball races, the timing can't be adjusted and the armature wind is not less than 27 turns of wire, single wound.

**SWB** — Short Wheel Base — see also LWB.

**THERMAL CHARGER** — A type of fast charger for Ni-Cads. It charges the batteries until they become quite hot. Thermal chargers usually result in a higher capacity charge.

**TIE ROD** — The rod which goes from the servo saver to the wheel mounting. It's the steering operating arm.

**TQ** — Top Qualifier. The driver with the fastest heat time, or number of laps, for the day. This driver will start in the final from grid position number one, the ideal spot.

**TOE IN** — When the distance between the front of the wheels, (looked at from above) is less than the distance at the back of the wheels.

**TOE OUT** — Similar to Toe In, but means the distance between the front of the wheels is greater than the distance at the back of the wheels.

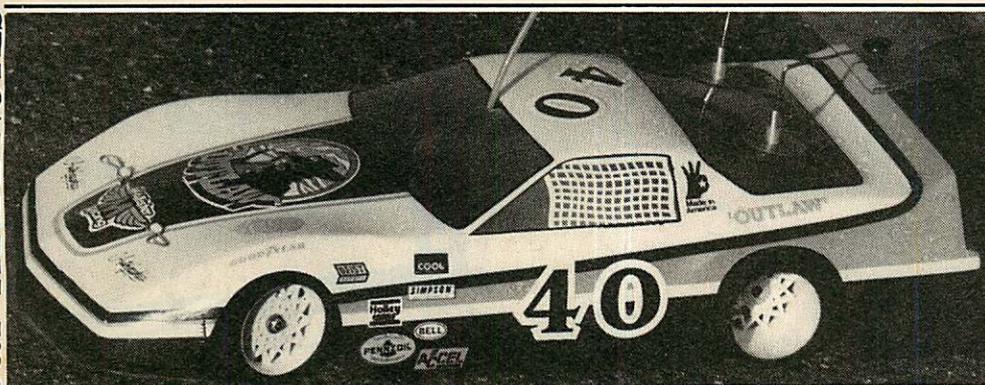
**TRANSMITTER** — The box you hold in your hand to drive the car.

**TRIPLE** — Once again referring to motor winds, but in a triple wind there are three parallel strands wound onto the armature.

**UNDERSTEER** — When the car turns around the corners more slowly than the driver intended.

**ZAP** — A brand of cyanoacrylate adhesive. It's also a term used to describe a method of restoring or increasing the magnetism of an electric motor.

D&T TRADE NOTES



All of the thunder and excitement of NASCAR style racing comes to you for 1/10th scale from McAllister Racing. The "Outlaw" comes complete with rolling chassis, body and decals. Other bodies such as the 88 Pontiac and Jaguar GTP will fit. Available from better hobby stores. See advertisement this issue.

# BOLT-ON

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Peak Performance Ultra Stock Motor — 1st place NSW State Titles,  
4WD Stock using Peak Performance SCE.  
P.P. 20 turn — 2nd NSW State Titles  
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powered to 'A' final using P.P. motors & batteries).  
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COMING SOON 13 TRIPLE

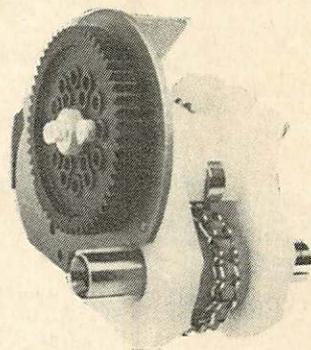
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The rumour had been around for months that Kyosho were planning to release a Turbo Ultima two wheel drive model. Now it's here!

The Turbo Ultima must be just about one of the most complete kits available with almost every option included as standard.

The original Ultima was first released over two years ago and has always been very popular with buggy racers. Especially since the 1987 World Championship where the Ultima placed 1st, 2nd and 3rd in the two wheel drive class.

My nine year old son, Matthew, has been racing an Ultima all of this year with great success. I therefore jumped at the opportunity to undertake this review on the new Turbo Ultima.

#### MAIN FEATURES

Hardened aluminium chassis, fully ballraced, Option House platinum shock absorbers, ball differential, universal drive shafts, Le Mans 240ST motor, fibreglass shock absorber mounts, sway bars front and rear, Option house rear tyres, fibreglass radio plate.

As stated previously this is a very complete model, just check out the feature list and try to think of another 'extra'. I can think of one, the Option House motor guard. With such a complete model perhaps Kyosho should have included this item, which costs less than \$20.

Nevertheless this must be one of the best value for money kits available. I can speak from experience on this as Matthew's original Ultima has been progressively upgraded to about the same level as the Turbo Ultima but at a considerably higher cost. I wish it had been available last year!

The Turbo Ultima is suitable for both the experienced and beginner buggy racer. The experienced racer will have a top model with all the competition 'bits' (ball diff, universal joints, good shock absorber, fully ballraced etc). The beginner will find that he has a model which is easy to build and drive and will not need to be continually upgraded as he gains in experience.

by John Willoughby

Kyosho must have had the beginner in mind when they put this kit together as the two items that could give the beginner (and some experts) most trouble, the ball differential and shock absorbers, have been pre-assembled and are ready for use.

No doubt the experienced driver will take these items apart and re-assemble them, just to make sure. In fact I did this with the review kit to see how well they had been assembled by the factory. I can report that everything was first class. The ball differential required no further work and the shock absorbers only required filling with the oil supplied in the kit.

#### CONSTRUCTION

On opening the box the usual excellent presentation is evident. The Japanese manufacturers have almost made this type of presentation an art form with major items displayed in clear plastic and the remaining parts in labelled plastic bags.

The instruction manual gives step by step construction details very well illustrated with exploded view diagrams, each step has a small block which shows the different nuts, bolts and screws illustrated full size.

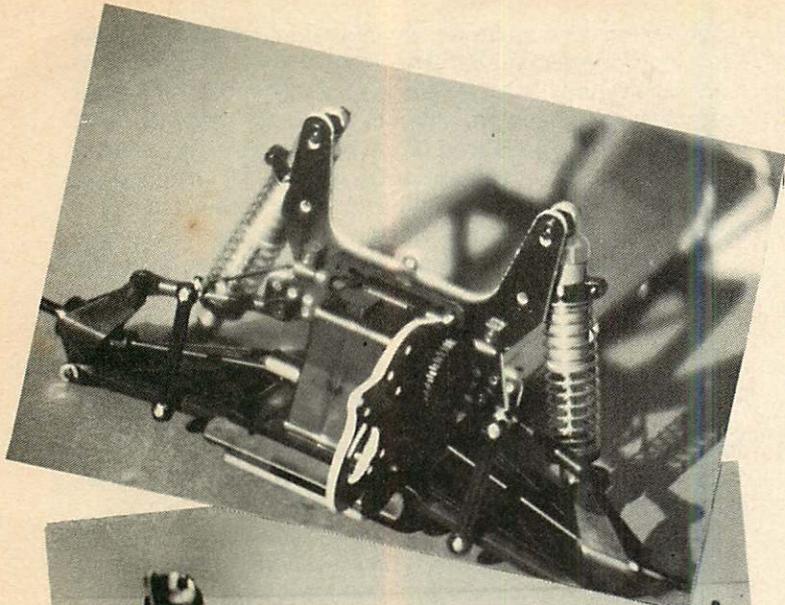
The beginner should therefore have no trouble in assembling this model by following the instructions. I would also recommend that the experienced modeller read through the instruction manual at least once. I know of several who have rushed into building a new model only to find out later that they had missed something that was explained in the instructions.

Because the instructions are so good it would be pointless to go through them step by step, so I will just go through the major points.

Construction starts with the gear box (being two wheel drive there is only one of them). This unit is one of the most simple and efficient around with only the ball differential and final drive pinion being fully enclosed in the gear box casing. The gear box is then attached to the chassis together with the rear shock absorber mounting.



# THE KYOSHO TURBO ULTIMA



The rear suspension is then fitted onto the gear box/shock mount assembly along with the shock absorbers (filled with oil) and the rear anti-roll bar. This then completes the rear end of the Turbo Ultima.

Next we start work on the front end. The front suspension is attached to the front bulk head together with the front shock absorber mount and front anti-roll bar. Like the rear end this unit is attached to the chassis.

The servo saver comes next. A word of warning here, make sure that the servo saver assembly is fitted onto the servo saver shafts before attaching them to the chassis. If the servo saver shafts are fitted to the chassis first it is nearly impossible to fit the assembled servo saver.

The fitting of the radio system comes next. The steering servo is fitted directly onto the chassis. The radio receiver and speed controller servo (if using the mechanical speed controller) are fitted to the radio plate.

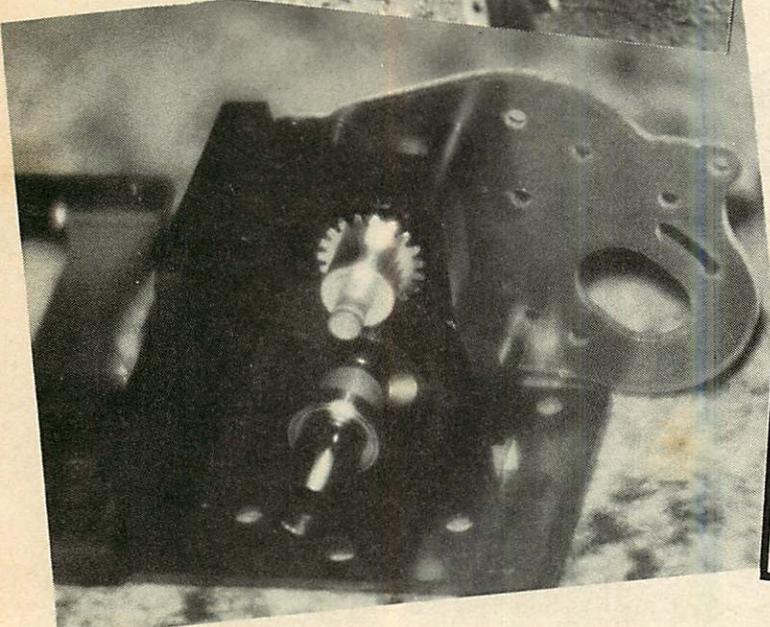
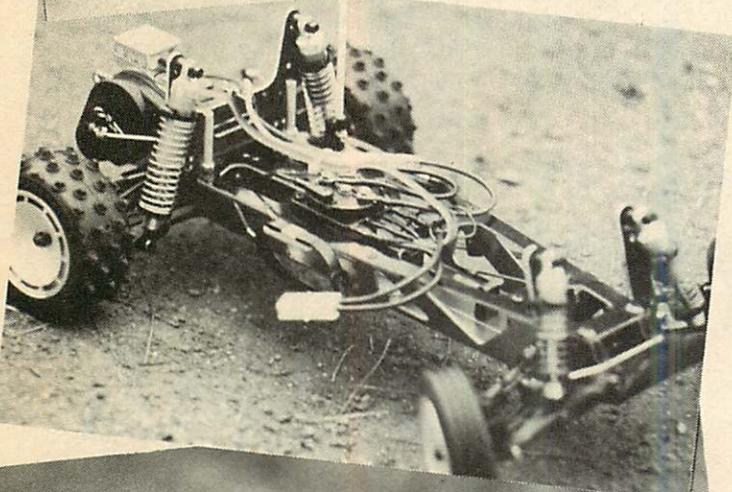
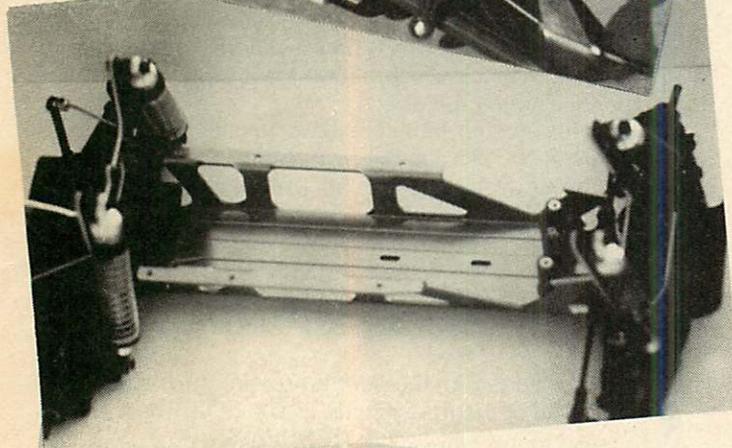
The radio plate is a new item, made from fibreglass and replaces the plastic one used on the standard Ultima. The speed controller is also a new item and comes fully assembled and ready for use. In order to check out this unit it was used in the review Turbo Ultima. It proved to be faultless in operation and must be one of the best mechanical speed controllers available.

The final assembly involved fitting the centre gear and motor. The centre gear is identical to that used on the original Ultima and Optima models and has been proved to be very efficient in operation. The motor supplied is the Le Mans 240ST. I find this choice of motor strange as the 240ST is classed as a modified motor both here in Australia and overseas. Therefore, any person wishing to use this model in stock class (where most beginners start) must purchase a new motor. That is not to say that this is a bad motor, it is not, in fact it is very good but unfortunately not good enough for serious modified racing.

Perhaps the motor would be ideal for a 'one class' racing event. Especially as it is now available separately from Kyosho dealers. How about it someone!

The body is an attractive lexan moulding of a new design, with a separate wing. This body is a great improvement over the original Ultima and there will be many existing Ultima owners that will want this new body shell as soon as it becomes available as a spare part. Put me down for one!

To complement this new body the kit includes a new set of wheel rims with an 'aluminium' finish and a colourful set of decals. The finished model looks superb and has a performance to match.



REVIEW AT A GLANCE	
QUALITY OF INSTRUCTIONS	★★★★★
EASE OF CONSTRUCTION	★★★★
QUALITY OF MATERIALS	★★★★★
MOTOR SUPPLIED	Yes (LeMans 240ST)
CHASSIS TYPE	Hardened Aluminium
SUSPENSION TYPE	Independent glass reinforced Nylon Arms
SHOCK ABSORBERS	Oil filled Option House platinum type
SWAY BARS	Yes front and rear
BALL RACES SUPPLIED	Yes 14
MOTOR ACCESSIBILITY	★★★★★
BATTERY ACCESSIBILITY	★★★★★
SPEED CONTROLLER SUPPLIED	Yes mechanical
STEERING SERVO SAVER	★★★★
BODY SHELL	clear lexan moulding
BALANCE OF CAR	★★★★★
HANDLING ON TRACK (AS TESTED)	★★★★★
EASE OF SETTING UP	★★★★★

**ON THE TRACK**

The review car was set up exactly as in the instructions with the motor supplied and the mechanical speed controller.

The car was very stable and handled the test track with ease. During the test it was noticed that the car had a tendency to spin out when pushed very hard. This was corrected by backing off the ball differential adjustment slightly to give a little 'slip'.

When making adjustment to the ball diff remember that a small adjustment has a large effect (try about 1/8th of a turn at a time).

As Matthew is the experienced two wheel driver (I'm a lazy four wheel driver), I let him do most of the test driving. He said that the review car was nearly as good as his Ultima. I think he is a bit biased!

I have not gone into any great detail in setting up the car as I feel that every driver has their own 'special' way of setting up a car. The beginner can set the car up as stated in the instructions and be sure of a car that will perform very well.

Overall though the Turbo Ultima has excellent rack manners that will give the beginner confidence in his driving and the experienced driver a car that will give the opposition a hard time.

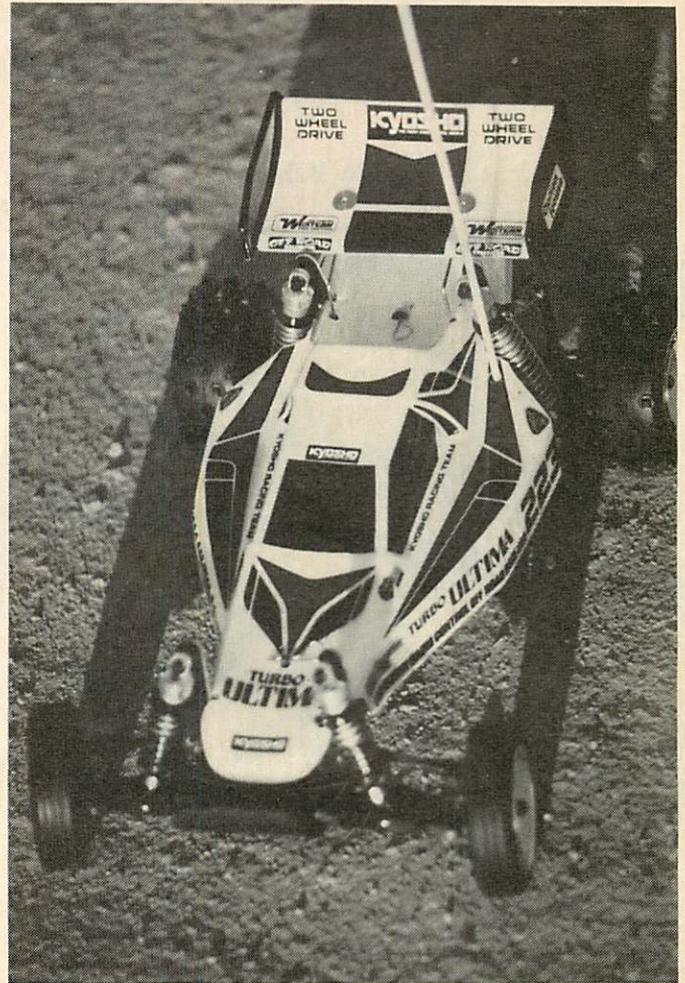
**TO SUM UP**

The TURBO ULTIMA is a top quality model which is extremely good value for money.

It is suitable for both beginners and experienced drivers and judging by the number already on the tracks around the country is proving very popular. I highly recommend this model.

*Review car kindly supplied by Kyosho Australia.*

*The Turbo Ultima must be just about one of the most complete kits available with almost every option included as standard.*



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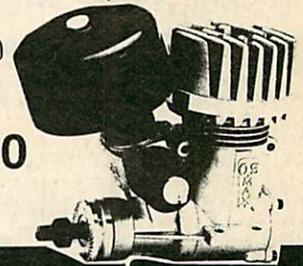
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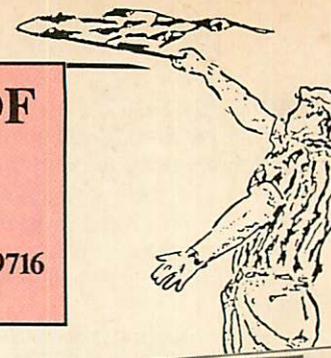
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MAX. CONTINUOUS CURRENT	365A	180A	120A
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VOLTAGE INPUT	4 TO 16VDC	4 TO 16VDC	4 TO 16VDC
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FLUKE INSTALLED	YES	YES	YES

**REEDY MOTORS**  
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**cat**

New for 1985 is the 'XLS' Cat 4WD World Champion Kit. The kit enables you to build an exact replica of the World Championship winner and Top Qualifier. The Schumacher CAT has won almost every major international event in 1987 and it has done this without the use of expensive 'Hot-up' parts. The World Championship Winning car was built from totally standard, off-the-shelf parts.

**1/10 SCALE ELECTRIC COMPETITION R/C OFF-ROAD 4WD RACING MACHINE**  
**Super Dog Fighter**  
 4WD chassis "YZ-370"

**TEAM YOKOMO**

**FREWER MARDAVE**

*Metec*

2

COMES COMPLETE WITH: BALL DIFF, MECH S/C CONTROL & 540 M

**FREWER MARDAVE**

*Marlboro*

5 MINI

This model is based on a full size low cost car for circuit or oval tracks. 1/24th scale miniature have proven even more popular, being the cheapest form of competitive R/C racing and being suitable in small halls or on smooth outdoor areas. Up to 12 cars can race together by using different frequencies. This kit includes 540 motor and speed control and all major items required with the exception of the radio control equipment.

**MINI STOCK CAR**

**PRO-LINE**

**FEATHER-LIGHT RACING WHEELS**

2517 Tamiya Rear Wheel 2 WD hub (also fits 2.0" diameter tires)

2518 Kyosho Rear Wheel fits 2.0" diameter tires

2519 Associated R/C10 and Kyosho (early) Rear Wheel fits 2.0" diameter tires

2520 Yokomo SE and other cars that use Yokomo wheels fits 2.0" diameter tires

2522 Tamiya front wheel fits 2.1" diameter tires

2523 Kyosho-Associated front wheel fits 2.1" diameter front tire

2524 Tamiya front wheel fits 1.8"-1.7" diameter tires

2525 Associated Kyosho front wheels fits 1.8"-1.7" diameter tires

2521 - Tamiya 4WD hub and PB Mustang fits 2.0" diameter tires (COMING SOON)

**CHECKPOINT**

NEW 13 TURN TRIPLES & DOUBLES  
 NEW 14 TURN TRIPLES & DOUBLES  
 CHECKPOINT PLATINUM SERIES

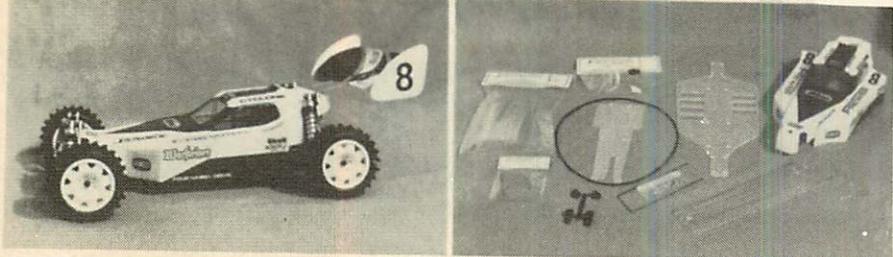
**JOHNSON 540s**  
 The fastest 540 on the track

**CHEQUERED FLAG MOTORS**

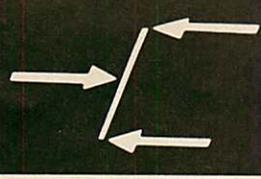
STOCK 18° BENCH RUN IN ORRCA APPROVED WET MAGNETS THE BEST STOCK MOTOR ABOUT. PLUS MODIFIED 15T & 17T SCREAMERS AT THE RIGHT PRICE.



LONG WHEELBASE & PERFORMANCE KIT FOR KYOSHO MID OPTIMA

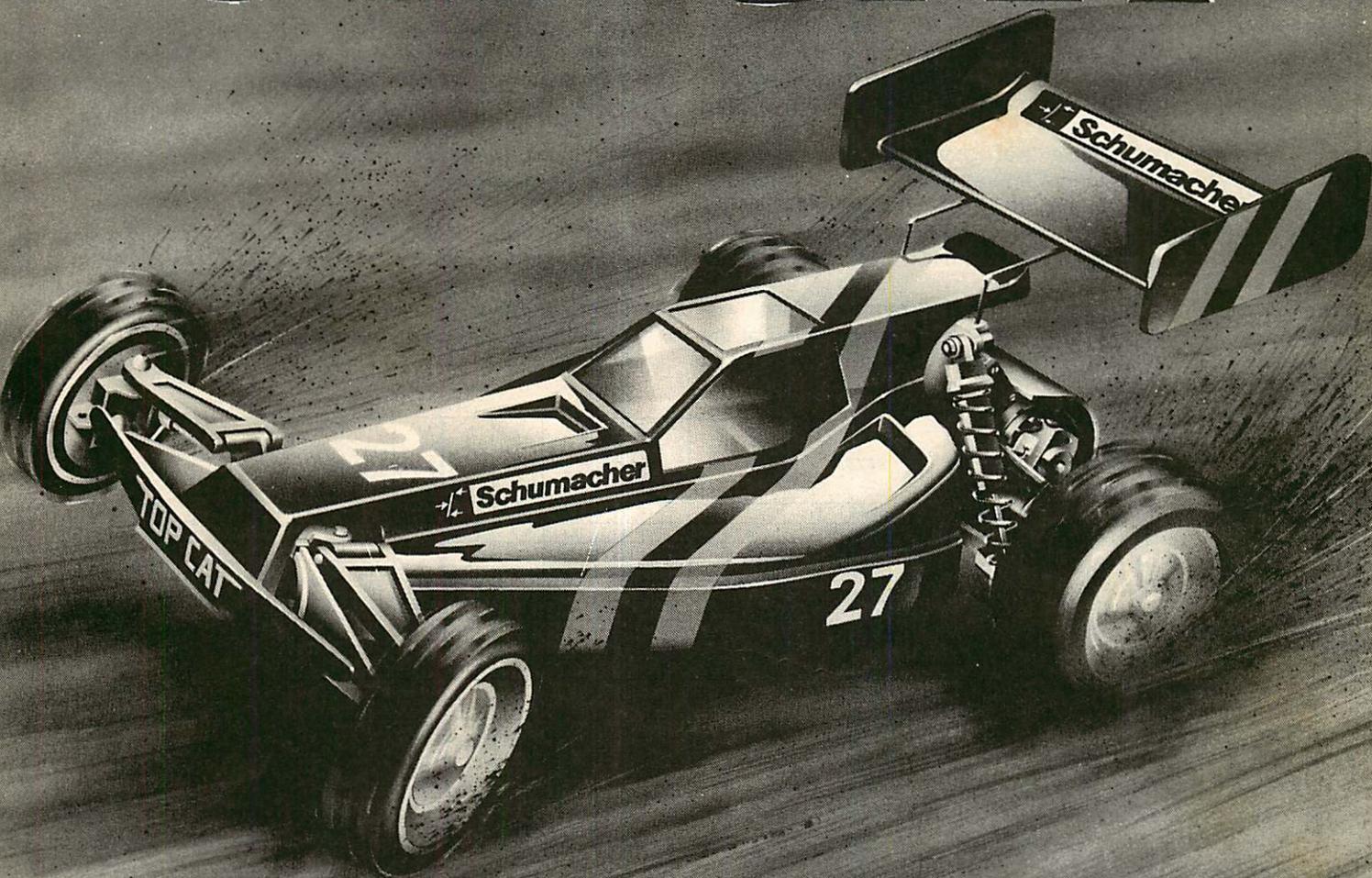


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# Schumacher

# TOP CAT<sup>TM</sup>



## Bred for success by World Champions

# TOP CAT<sup>TM</sup>

## 2 WHEEL DRIVE 1/10 SCALE OFF ROAD RACER

The Schumacher TOPCAT comes from the same team that designed the worlds most successful 4WD Off Roader, the World Championship winning CAT. The TOPCAT - 2WD is a state of the art competition car designed with many innovative features to leave the opposition far behind. The design combines easy construction and high reliability with incredible performance.

### TRANSMISSION

The TOPCAT transmission features a 14 ball differential on the rear axle for minimum friction. New specification kevlar drive belts built specially for Schumacher to give increased torque capacity and maximum flexibility plus revolutionary design of quick release 48 d.p. gears for smooth reliable drive and fast simple ratio change.

### CHASSIS

High quality alloy chassis gives great strength with low centre of gravity. The rear mounted motor design optimises traction on the most slippery tracks. The weight distribution of the TOPCAT is easily adjusted to suit all track conditions enabling the car to fly the biggest jumps and smooth out the worst bumps in any track. The chassis pan is covered by a lightweight polycarbonate body shell styled for aerodynamic down force and to effectively seal out the dirt.

### SUSPENSION

High quality alloy constant volume shock absorbers control each wheel independently. The suspension features double wishbones all round with Schumachers unique 'Crashback' facility at the front to prevent damage and fully adjustable top link at the rear for total control over car set up.

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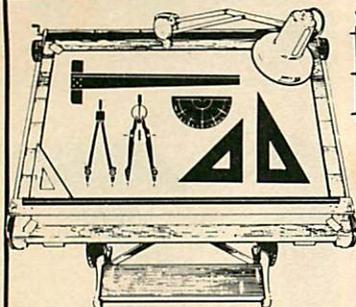
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# BOB'S TECH CORNER

by Bob Roach

## Motors Galore II

These tests are an extension of those published in D&T #6. The method was the same so the results can be directly compared. All motors were new and straight out of the box and thus were not run in, as I did not have time. No doubt the performance will improve. The last group (mostly Twisters) were not run in also.

The PARMA motors have "wet" magnets and this shows up in their high magnet torque figures of 14-15 Nmm. Compare this to the average magnet of 7-8 and the new RS 540 SH which is only 2.5. This motor is so low you can hardly feel the bumpiness as you turn it. It's a wonder it puts out any power at all!

A point of criticism about the PARMA range (and the Twisters) and possibly others, is that there is no branding of the motors to tell which is which. Apart from the number on the box, you cannot tell which is a hot motor, i.e. 15 Turn Quad or a 24 Turn Double etc. I had to be very careful during my tests to keep the motors apart and identified. This is all right if you only own one of a brand, but not if you have several which is what the motor boys want.

**Johnson HC-13-G** This is a long can version of the sealed 540 type motor (the long can is a 550 type). I would expect it is 27 turns and 0.65 wire and the extra torque comes from the longer magnets and armature. It is very efficient in the low range, i.e. it can give 125Nmm of torque for only 28 Amps. Some other so-called HOT motors take 50-60 Amps to produce this torque, but they would deliver their power at higher revs and their top revs would be double the Johnson.

**Mabuchi RS 540 SN** This is a new version of the standard Mabuchi that everyone knows. No doubt the insides are the same, but the sealing of the can is much improved, such that you cannot open the motor without destroying it. This motor is now the ONLY LEGAL stock motor to be used. With a peak power of only 59 Watts it is somewhat surprising what times can be done with it, on some tracks and in the hands of a good driver almost as good as the so-called hot motors.

**Parma 14018 and 14028** These are interesting as they are both 15 turns. One has a strong magnet and is a quad wind. Four 0.4 wires is equal to one 0.8 wire. Double 0.75 wire is

equal to a single 1.06. Compare these motors with the Twister 702 tested last time. It has 14 turns of a single 1.0 wire; also compare the Twister 701 with turns and double 0.7 wire. The results are interesting and show the worth of these tests. The differences are small, with the 702 a little faster with slightly more power, but the Parma has a better ratio so is less hungry on Amps. The 14018 quad is more efficient, with a higher ratio, but the double wind (thicker wire) 14028 is closer to the 702. Anyway, it's interesting.

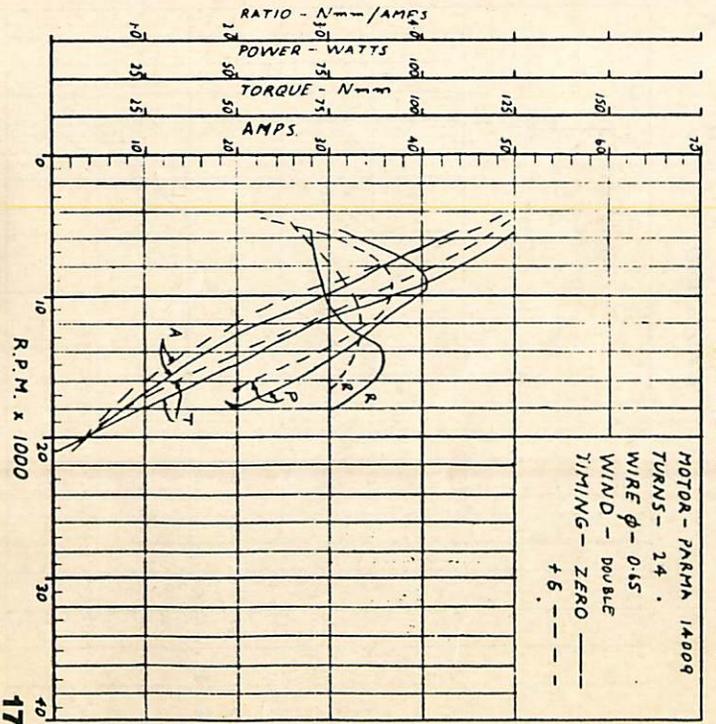
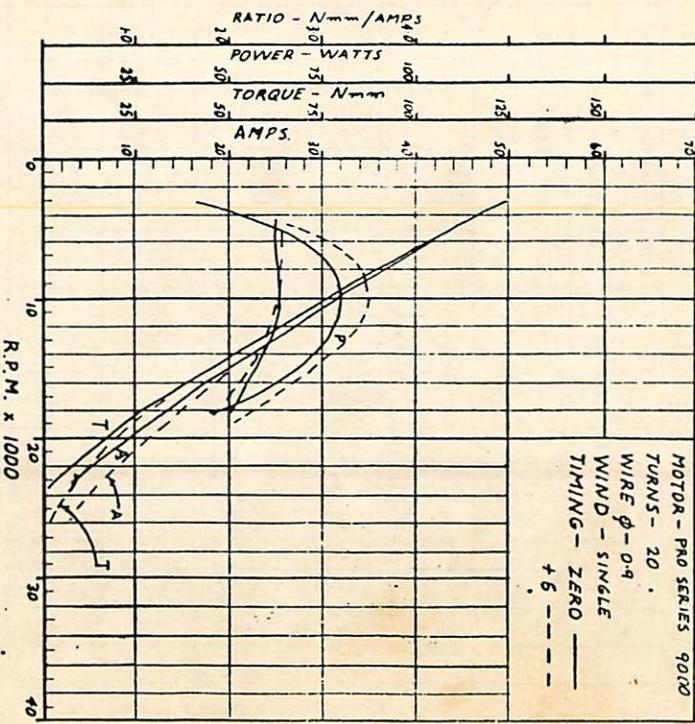
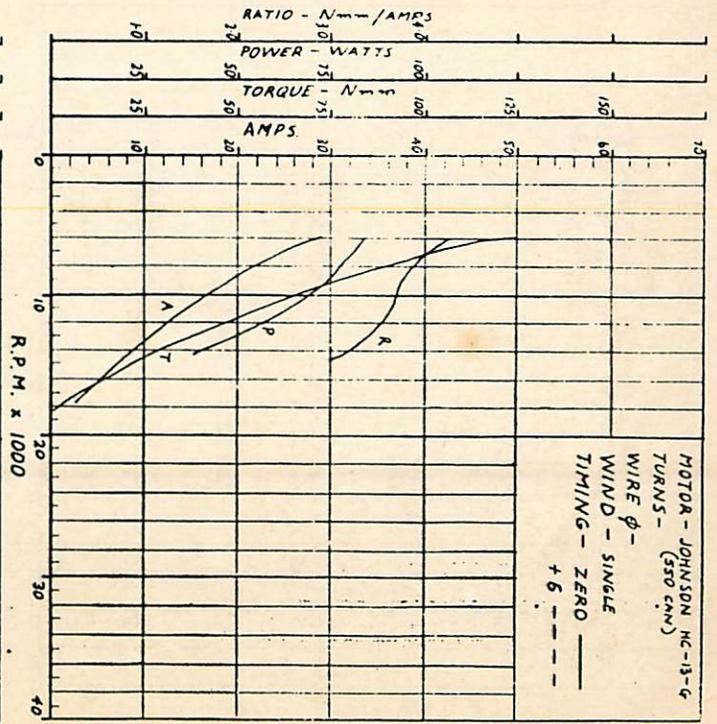
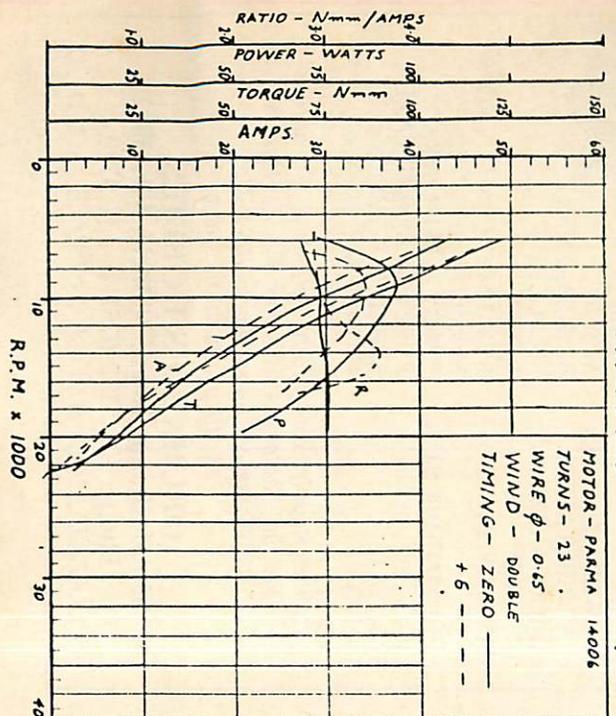
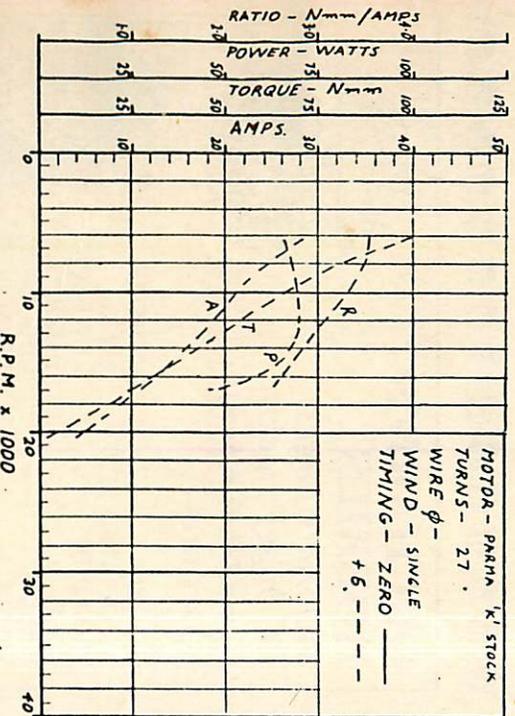
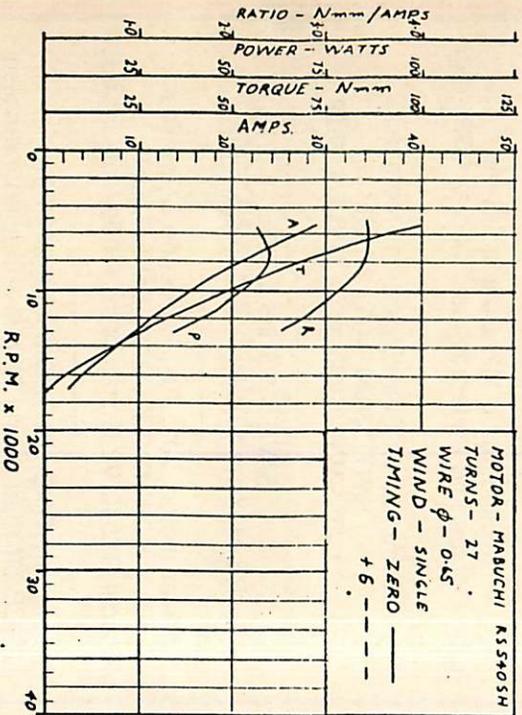
**Pro Series 9000** At \$60-\$70 is a reasonable motor and you should compare it with the Mabuchi gold or Technigold.

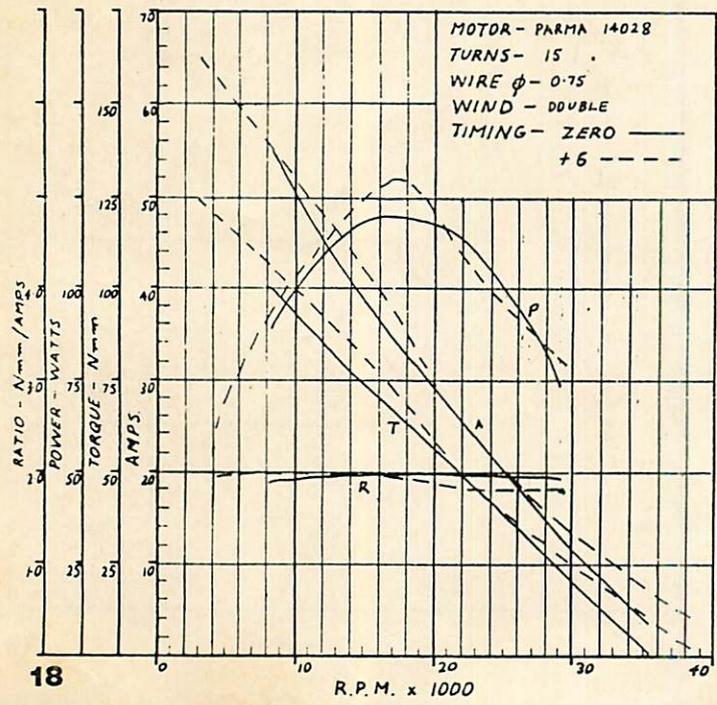
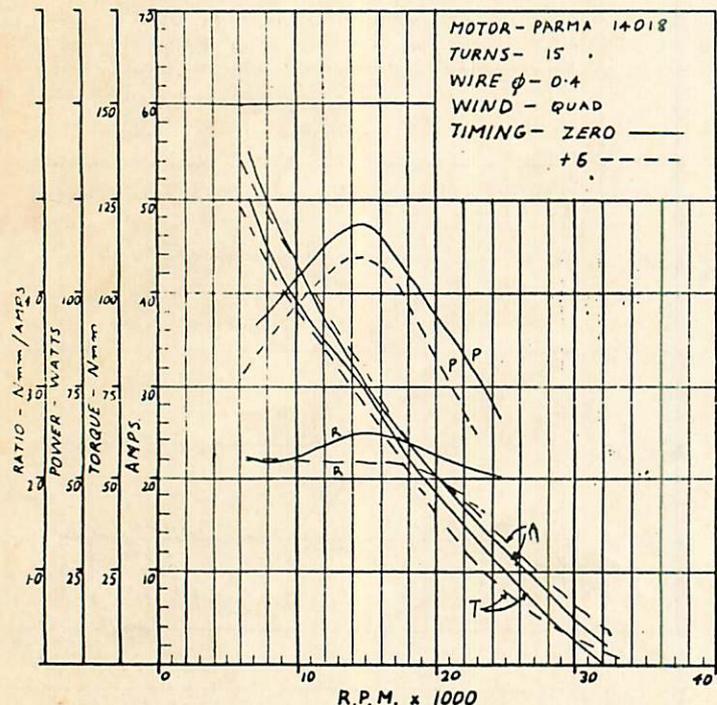
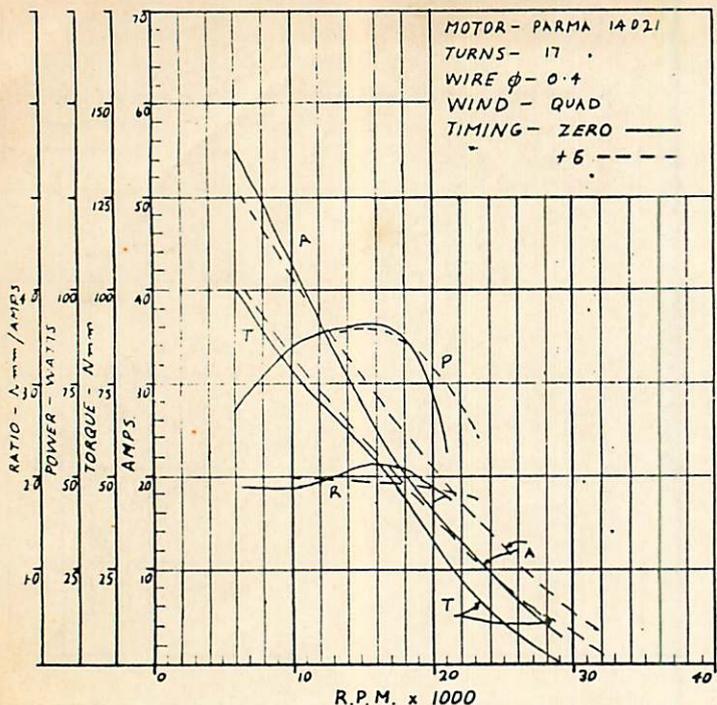
Remember, just because various 15 odd turn motors get 40000rpm does not mean they will suit your car conditions. This is why various motors are presented for you to choose

MOTOR		JOHNSON HC-13-G (STD CAN)	MABUCHI RS540 SH (NEW DESIGN)	PRO SERIES 9000	PARMA 'K' STOCK	PARMA 'C' ASSEMBLY 14009	PARMA 'C' CARPET 14006	PARMA 'C' AND 14021	PARMA 'C' AND 14018	PARMA 'C' DRAG 14028
COST \$		15	60-70	45-50	130	130	130	130	130	130
TURNS		27	20	27	24	23	17	15	15	
WIRE DIAMETER mm		0.65	0.9	0.65	0.65	0.65	0.4	0.4	0.4	0.75
WIND		S	S	S	D	D	Q	Q	Q	D
AIR GAP mm			0.25		0.3	0.3	0.35	0.3	0.45	
MAGNET TORQUE Nmm		8	2.5	10	11	14	14	15	15	8
BEARING		BUSH	BUSH	BALL	BUSH	BALL	BALL	BALL	BALL	BALL
FREE RPM x1000	ZERO +6	18.2	17.6	24.8	21.5	23.1	31.5	33.4	37.4	
FREE AMPS.	ZERO +6	1.3	1.3	2.4	1.4	1.3	2.2	2.0	3.0	
PEAK POWER WATTS	ZERO +6	77	59	79	102	92	89	118	118	
PEAK POWER RPM x1000	ZERO +6	6	8	10	11	13	11.6	8	15	17
AVERAGE RATIO	ZERO +6	3.6	3.2	2.4	3.2	2.9	1.9	2.3	2.0	
TORQUE @ Nmm	5K ZERO +6	132	105	110	128	135	115	150	113	
	10K ZERO +6	65	48	75	82	88	80	100	43	
	15K ZERO +6	20	10	43	45	37	40	60	68	83
	20K ZERO +6			15	20	5	7	20	45	60
	25K ZERO +6				5			36	40	60
	30K ZERO +6							10	25	38
	35K ZERO +6								16	37
	40K ZERO +6								7	20
									7	25
										4
										12
AMPS @	5K ZERO +6	35	30	45	45	45	58	63	65	
	10K ZERO +6	16	15	32	32	33	48	48	58	62
	15K ZERO +6	7	5	19	32	21	27	27	41	43
	20K ZERO +6			22	15	13	12	30	32	42
	25K ZERO +6			9	4	4	4	16	20	30
	30K ZERO +6			12	5	4	4	20	20	30
	35K ZERO +6							8	12	20
	40K ZERO +6			4				12	13	20
								6	6	12
								4.5	6	14
										4
										7

from. These HOT motors have large surge of Amp requirements and your car's wiring and most likely the Mostet will not handle the power. You MUST have a very good Mostet, with very high current rating to use these powerful motors and also a slipper clutch to cushion the torque to the drive line. The Johnson here with 132Nm at 5000rpm and the Technigold at 140Nm can do a lot of damage to the drive line of your car and a slipper clutch should be considered. The Johnson only takes 35 Amps for this torque, whereas the Technigold at 70-80 is in the class of a good Mostet.

Data on Mostets is important and hard to find, and you, the public, need to know these ratings to choose your unit. D&T hopes to clarify Mostets in various articles still to come.  
Bye for now, Bob Roach.





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# DWA MOTOR CYCLE

by Rob Reade



*Side view of complete model. Radio receiver, aerial and switch harness at rear, radio battery fits inside rider.*

DWA, the Italian manufacturer of 1/4 scale R/C cars have introduced this 3.5cc engine powered 1/4 scale version of a racing motor bike.

The steering arrangement, (the front wheel is free to caster and the front fork assembly is leaned from side to side) apparently produces a very stable machine without the need for continuous balancing connection. The driving technique could probably be mastered by most modellers quite quickly.

Either 3.5cc car side exhaust or rear exhaust motors can be fitted and with some of these engines now producing a claimed 1.95hp the formula is there for a real 'go' machine.

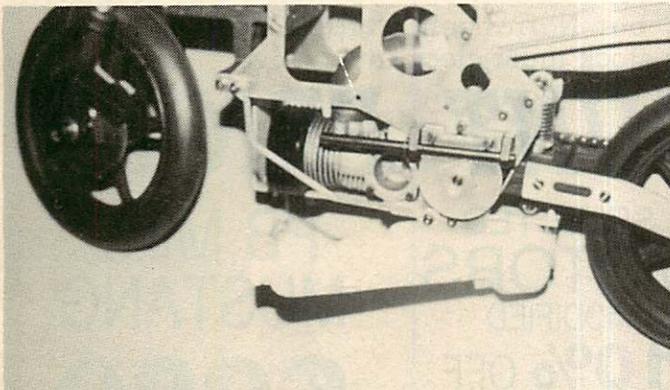
The clutch system is identical with that used in many 1/8th scale cars with primary drive being via a clutch bell pinion and gear and secondary drive chain to the rear wheel.

Dual braking is by a disc brake on the primary drive and while a disc on the front wheel provides dual braking, with a reputed top speed of 100kmph and acceleration to match, dual braking is certainly needed.

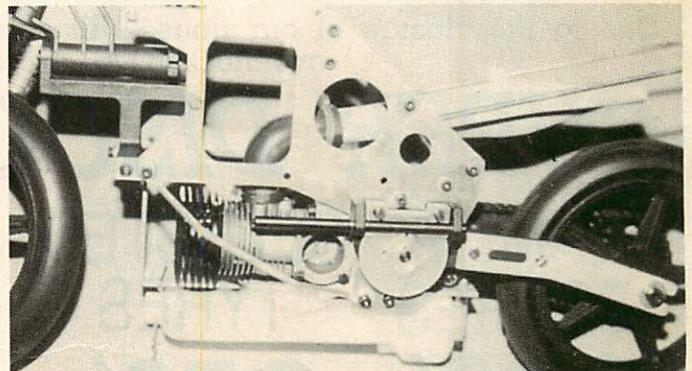
Other features are hydraulic suspension front and rear, quick fill fuel tank and slick tyres.

Regular race meetings are held for these bikes in Europe with good numbers turning out to race. So for all you would-be Wayne Gardners out there, here is your chance to indulge in some wheel spinning mono wheeling action at a fraction of the cost.

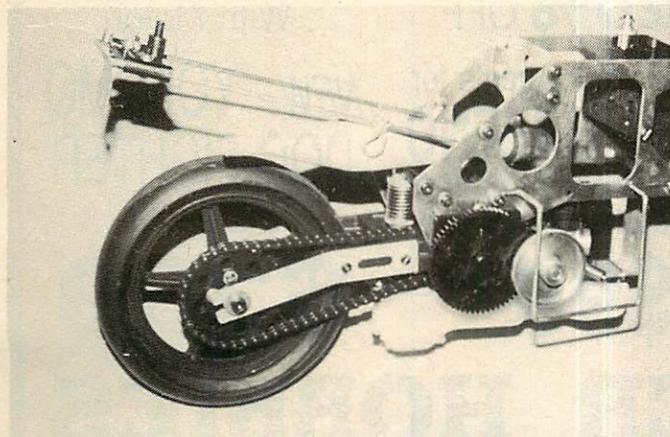
Model supplied courtesy of PB Model Cars Australia phone (08) 356 8698.



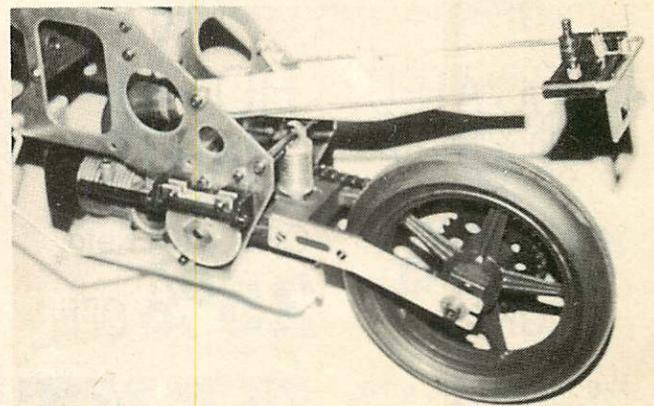
*Fuel tank swings out for easy refill.*



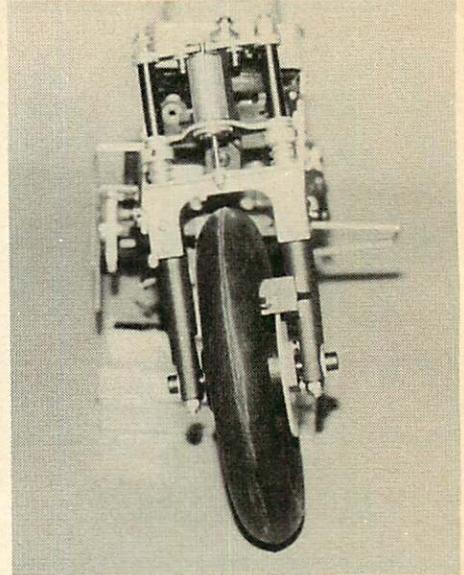
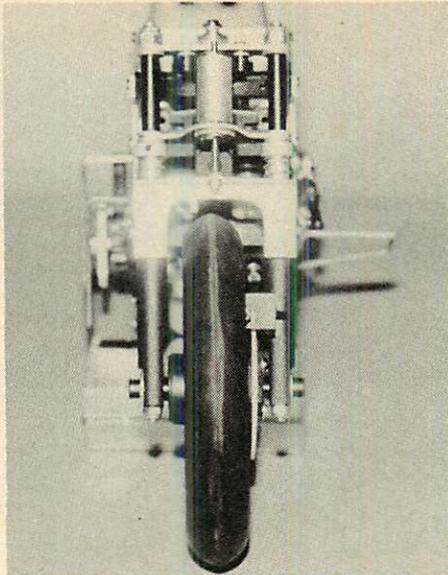
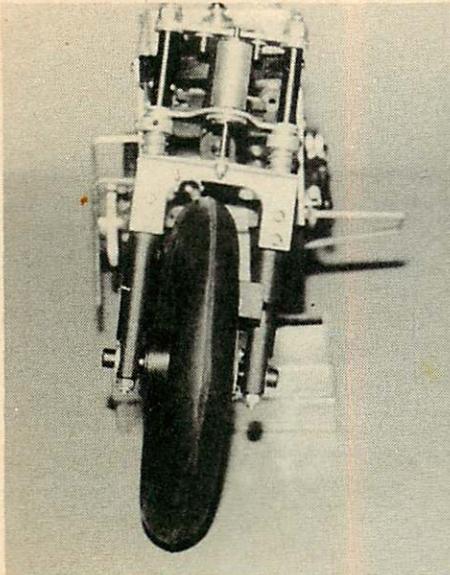
*Nova Rossi 3.5cc side exhaust motor easily fits and allows exhaust to be swept out rear of model.*



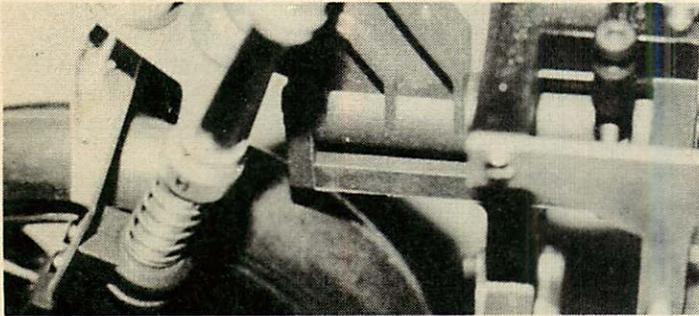
*Rear suspension with hydraulic shock absorber and variable load coil spring.*



*One brake disc on primary drive, the other on front wheel. Very powerful brakes!*



Steering is achieved by servo leaning front forks from side to side. Front wheel actually runs free, the leaning effect of the forks causing it to steer in the intended direction.



Model is superbly engineered, front suspension is by dual coil springs and hydraulic shock absorber.

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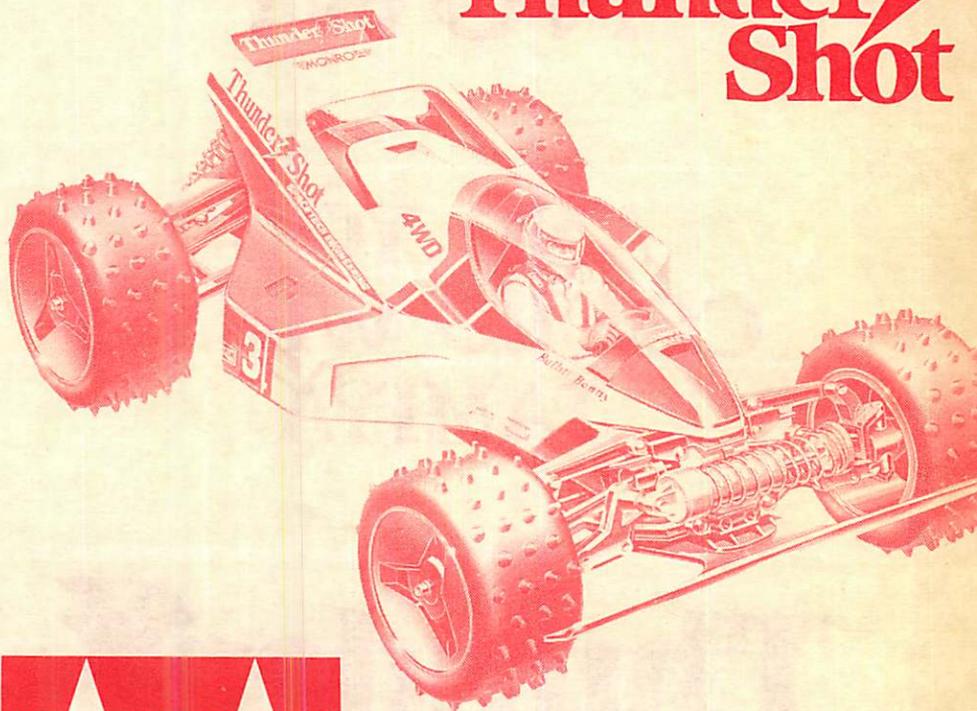
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# Thunder<sup>⚡</sup> Shot



**TAMIYA**

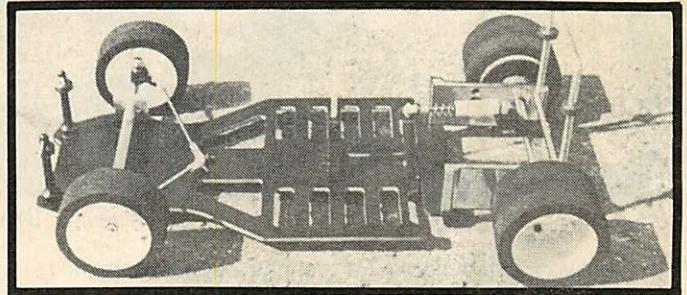
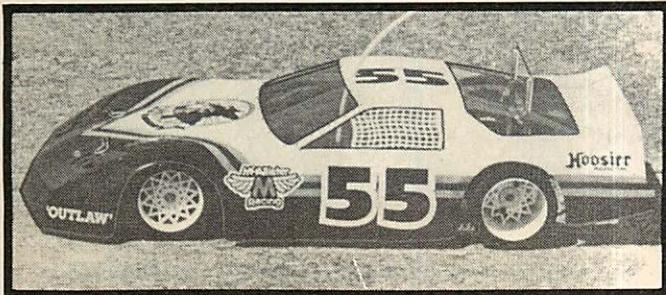
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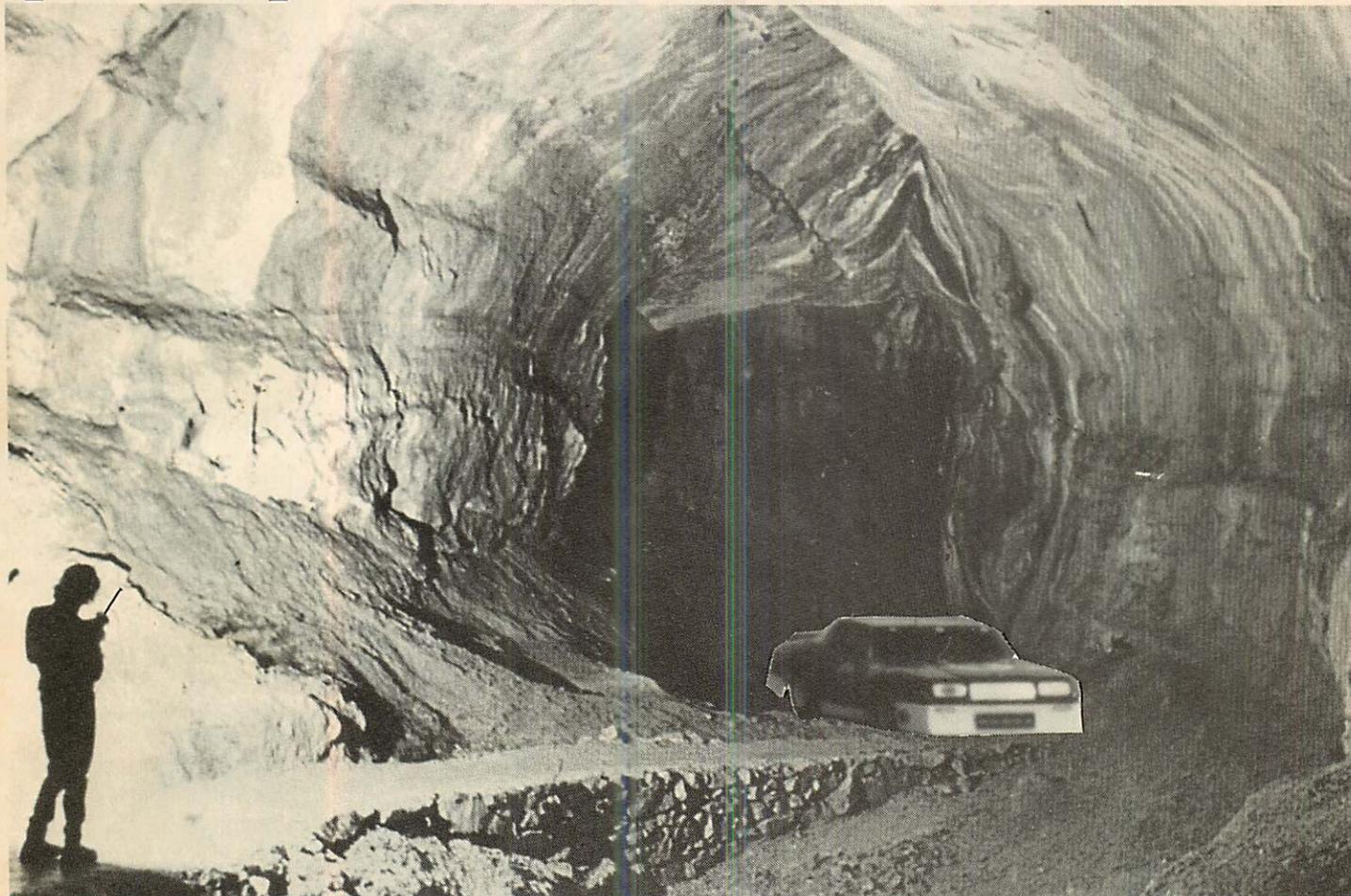
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# (PRO) PANTHER SIGHTED



A review by Laurie St John

For many years, the name Parma has been synonymous with hotup and trick parts for radio controlled racing cars, from slot cars to 1/8th scale.

Parma has now entered the world of 1/10th on-road racing in a big way, with a series of special application kits under the Pro Panther-10 range. The Pro Panther-10 is available either as a Nascar kit, Funny/drag car, Sprint car, Hot Rod, or Sports car kit. With the exception of the funny car, the others are basically the same chassis with different bodies.

## WHAT YOU GET FOR THE MONEY

The Pro Panther-10 chassis is fibreglass plate, with slots to take saddle pack Ni-Cads. It will handle up to seven cells.

A rocker-ball flex plate mounted motor pod is attached to the main chassis, allowing for excellent suspension, and good tweak adjustment.

The rear axle is made of graphite for lightness, and is fitted into a ball differential which will take not only Parma spur gears, but also Kimborough and Associated gears.

The tyres come pre-glued to the wheels, and are also pre-treaded, saving the modeller from a reasonably awkward job.

Whichever kit you buy, the body shell is clear lexan, and has the kind of moulded detail that Parma is famous for.

## PUTTING IT TOGETHER

The construction manual is well laid out, with clearly written instructions and reasonably clear black and white photographs to help. Mind you, construction shouldn't be too hard because this car is really a blown-up 12th scaler!

Assembly is amazingly simple. Start with the main chassis plate, and add the front end crossbar on its special stand-offs. Adjusting the castor is simply a matter of inserting wedges between the stand-off and the crossbar.

The front suspension uses a small spring sandwiched between the front hub and an E clip. Very simple, but also very effective. There isn't much travel, but then an on-road car doesn't need a great deal of suspension movement.

The motor pod is easily assembled. It's just a matter of fitting top and bottom flex plates to the anodised aluminium pod. Having a metal motor pod is a great idea, partially because it's light, but also because it acts as a heat sink for the motor, and a cooler motor runs better!

The assembled motor pod is connected to the main chassis by using two special balls enclosed in plastic cages. These are what Parma call "rocker balls", and they allow excellent movement of the rear pod without putting stress on the main chassis itself.

Assemble the differential and rear axle as per the instructions, and the rolling chassis is completed, ready for the installation of motor and radio gear.

## CRITICISMS

Unfortunately, there are some problem areas with the Parma Pro Panther-10. None of them are particularly serious, but they do detract from what is otherwise a very good 10th scale on-road or velodrome car.

Firstly, the steering linkages supplied with the kit are extremely poor, and do nothing for good handling. The first step in any modifications would have to be to replace them with heavy duty, full length bolt on tie rods.

It was disappointing to find that the kit comes with oilite bushes rather than ball-races. The front wheels certainly spin quite freely when bushed, but the lack of ball race bearings cause significant wear on the graphite rear axle. The ball races are available as after-market add on parts.



*The Parma Pro Panther-10 Nascar, ready to take to the track and win.*

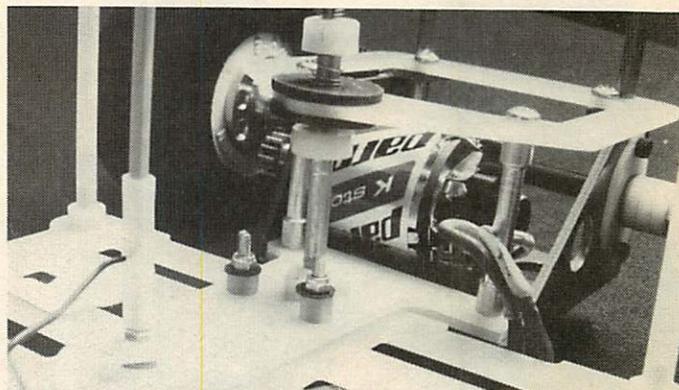
### CONCLUSIONS

The critical comments aside, the Parma Pro Panther-10 is an exceptionally quick two wheel drive on-road car, which is equally at home on a velodrome as a circuit. The suspension allows it to cope with surfaces which aren't entirely smooth, without affecting the handling and chosen line.

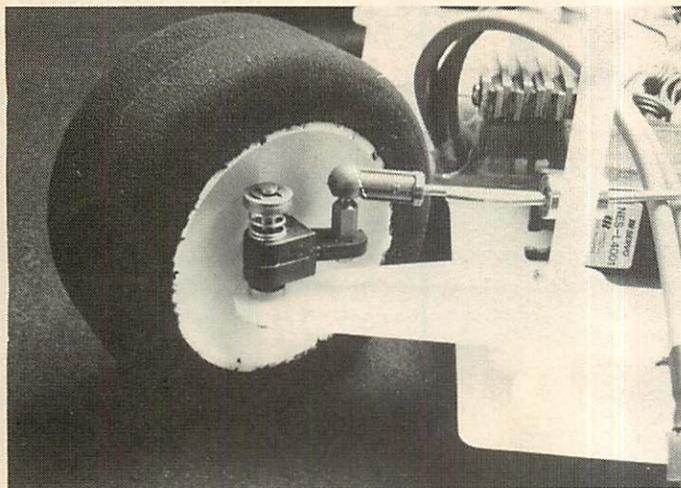
Set up with a small amount of toe-out on the front wheels, the car was very stable at high speed, and very predictable on the track. It's always nice to drive a car which goes where it's meant to go and is very predictable in its handling; the Pro Panther-10 meets that criteria admirably.

Without a doubt, this car would suit any driver keen to get into circuit racing, or even the new craze of Thunderdome.

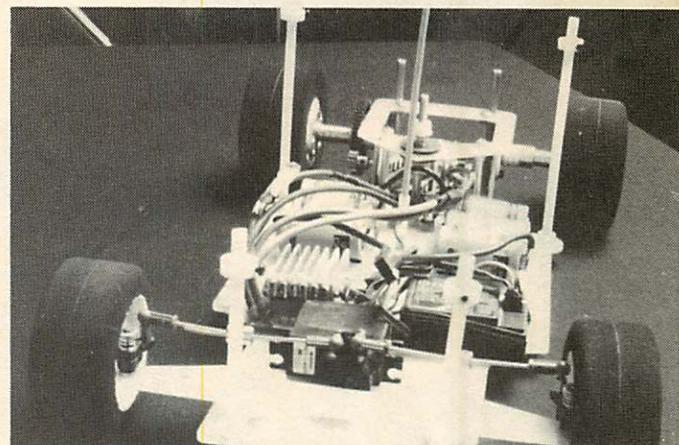
*Thanks to Parma RC Hobbies who supplied the review car.*



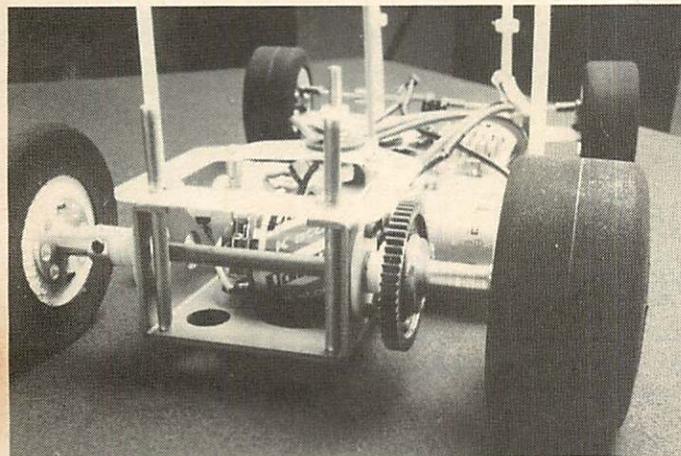
*The bottom flex plate also provides tweak adjustment and is joined to the chassis by two rocker ball joints, enclosed in plastic housings.*



*The front suspension consists of a spring trapped between the wheel hub and an E clip. Very simple, and very effective.*



*The finished rolling chassis, fitted with radio gear and saddlepack Ni-cads.*



*The transmission end. Note the graphite axle. The spur gear is fitted with balls and acts as a differential.*

REVIEW AT A GLANCE	
QUALITY OF INSTRUCTIONS	★★★★
EASE OF CONSTRUCTION	★★★★★
QUALITY OF MATERIALS	★★★★
MOTOR SUPPLIED	No
CHASSIS TYPE	Fibreglass Plate
SUSPENSION TYPE	Front spring/rear pod
SHOCKS TYPE	N/A
SWAY BARS	No
BALL RACES SUPPLIED	No
MOTOR ACCESSIBILITY	★★★★
BATTERY ACCESSIBILITY	★★★★★
SPEED CONTROLLER SUPPLIED	No
STEERING SERVO SAVER	N/A
BODY SHELL	Clear lexan
BALANCE OF CAR	★★★★★
HANDLING ON TRACK (AS TESTED)	★★★★
EASE OF SETTING UP	★★★★★

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Left to right, top: Andrew Jackson,  
Reece Birtles, bottom: Justin Watts,  
Masami Hirosaka (world champion),  
Dennis Garlick.

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## MANIAC MAXIMUM

## TEAM YOKOMO

By Johnathan Borthwick

Well, they haven't got rid of the silly names, but Yokomo have released a real world beater with their newest car which we will simply call the Yokomo in the interests of sanity.

When Masami Hirotsuka, current World Champion in both 1/10th 4WD and 1/12th, arrived in Australia recently for our Nationals, it may have raised a few eyebrows that he was racing not a Kyosho but a Yokomo. A lot of people remember Yokomo's as funny looking things that made lots of mashing and clunking noise as some of them at least went around the track at quite a rate.

Unfortunately the original Yokomo Dogfighter (then Wonder Dog Fighter if you can believe that name!) received a bad reputation for unreliability and overweight, requiring some ludicrous gear ratios to run six minutes in stock class.

In fact, in recent times, Yokomo have been best known for their fine range of motors and accessories.

Apart from being a brilliant driver, Hirotsuka must know something about cars as the Yokomo is quite sensational in its simplicity and performance in a time when more and more cars are becoming more complex and involved, both in terms of construction and maintenance.

Having said that, there are a few areas with the new Yokomo which are puzzling, but more on that later.

### PACKAGING

That Yokomo have close ties with Associated and take note of what their opposition are doing is evident. While the box work doesn't really reach out and wrench your eyeballs from their sockets, it's what's inside the box that attracts the serious racer.

Probably I should mention that this may not be a wise choice for a beginner's first model, however there is no reason that a newcomer who took a deal of care couldn't put it together.

The instructions are first class and very warm and friendly, advising you at one very tricky stage that "this would be a good time to take a Coffee or Coke break and relax a bit before continuing"!

As with the first Yokomo, all the parts are packed in plastic bags, easily identifiable and one pertaining to one stage construction so you don't have 4 million parts on the bench at one time.

### CONSTRUCTION

As I have said many times before, the best place to start is at the beginning. If you build the model step by step, you will end up with a Yokomo. If you don't you will probably end up with a Maximum Maniac and not a Maniac Maximum as you should have.

Before you progress, go out and buy yourself a tub of Associated #6636 diff grease or similar as you will need it and it isn't supplied in the kit. Lose one gold star Yokomo.

In the main, construction is very straight forward as long as you follow the instructions and make sure everything is straight. Construction proceeds at a fairly quick rate, but don't rush it.

Possible trouble areas are few and have been detailed here for the convenience of any one putting together a Yokomo.

The first one concerns locating and glueing the graphite stiffening rib to the chassis. I felt that maybe Yokomo could have done some of the hard work here as this is a really critical step which will make or break the car. Certainly it would break the heart of a builder if he/she were to muck it up as it would be very hard to remove. You only get one chance.

This extends to the drilling of the chassis. If you know someone with a drill press, offer them whatever it takes to get it done. Better still, get them to do it for you (like I did) and blame them if it goes wrong!!

The second and final potential trouble spot is when it comes to loading the smallest thrust balls into the front and rear differentials. You need exactly 9 for each diff, and they give you a total of 18 so there is no room for error. Clear the bench and put down a nice clean white rag to catch any which drop. Other than that, assembly is a relative breeze.

Where this car differs from others on the market is that Yokomo supplies in the kit the option of full-time 4WD or part-time 4WD with a one way clutch on the motor lay shaft.

The first option will tend to understeer more than the part-time set-up, but is easier to drive for a newcomer who wants a more conservative setting. It is only a 5 minute job to change from one mode to the other and could easily be performed at the track.

Ball differentials are used at both ends of the car, and both can be adjusted for slip, making this one of the more adjustable vehicles on the market in terms of obtaining the fast set up if

you are prepared to fiddle.

The car is fully ballraced, which makes it a nice departure from earlier Yokomos which you had to ball race after purchasing the original kit. Very neat universal driveshafts are included which to date have handled racing conditions well.

Available, but not supplied, are longer driveshafts and upper suspension links which allow a wider front end and which is more stable but more prone to understeer.

The two differentials are cleverly bolted to the fibreglass chassis, sandwiching neat rubber gaskets to insulate the chassis and guard against the ingress of dirt.

The motor, in keeping with previous Yokomo practice, is mid mounted but not supplied. First runs were with a Reedy Yokomo stock motor, but it wasn't long before something more radical went in. I was initially surprised that the screws securing the motor pod to the chassis were pan head and not counter-sunk. It was only when I put the lexan undertray on that I realised my concern was without foundation.

Unlike the earlier Yokomos with their threshing machine chains, the new Yokomo uses a belt system, which works very efficiently and quietly. A tensioner is supplied for the front belt, although the rear belt is prone to stretching if initial reports are true. I believe Hirosaka's Australian Nationals winning Yokomo used a clever system which got around the problem of belt stretching. Quite simply he had a way of sliding the motor and spur gear assembly backward or forward, taking up the resultant looseness of the front belt with the front belt tensioner.

One of the final jobs is to build the shock absorbers. My first thought was that these look too complex, will wear and won't work very well. To date they have worked very well, although how they wear will not be evident until more use is on the car.

The standard oil looked too thin for our heavy tracks, so we opted for R/C Pro oil which, with its molybdenum content and anti foaming and seal swell agents should prevent any wear.

The quality of the nylon and alloy parts are excellent with close tolerances maintained and good parts fit.

Heavy duty ball links are used all over the car for suspension, although why they aren't used for steering baffles me. Two servo savers are used, limiting bump steer. Yokomo list as optional, ball bearings for the servo savers, giving an arrangement not unlike the RPS RC10 set up. In fact Gil Losi Jr (Along with father Gil Sr, Jay Halsey, Gary Kyes Hirosaka and Ron Rosetti) had a lot of input in this car.

The wheels supplied are a very 'pretty' pink so you can't miss it on the track. The tyres supplied feel good and seemed to work okay on the track. Other tyres will be tried as they may be a better bet on our slippery tracks.

I didn't like the instruction detailing the nipping of the tyres with a pair of side cutters to allow the air to escape, preferring the tried and tested (and neater) method of drilling 3x2mm holes into the rims before fitting the tyres.

Radio installation is quite simple, although space is at a premium, in line with this being a top line race car, it is recommended that top line radio gear be used. That means small, fast and not inexpensive unfortunately.

The servo used was a Futaba S132H with a Novak receiver and an old but reliable Futaba MC6. Note this is not a speed control with reverse. While not a tight fit, things were very comfortable.

The body is quite attractive, but critical on how it is painted if it is to look right. As always, Tamiya's fine range of Polycarbonate sprays were used for this part of assembly.

A decal sheet would have been a nice inclusion in the kit, although these are available from your hobby shop if ordered. A nice wide wing finished things off and we're ready for racing.

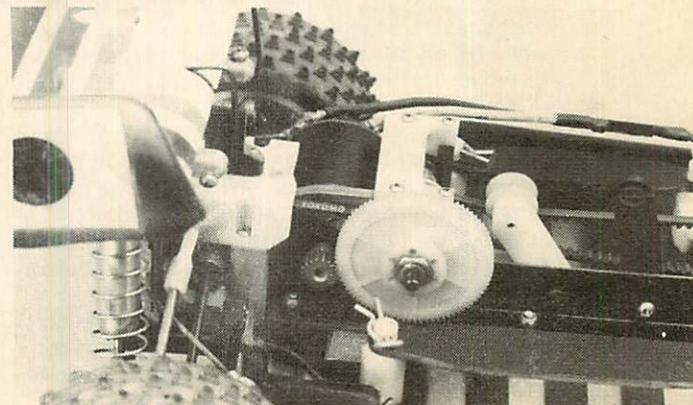
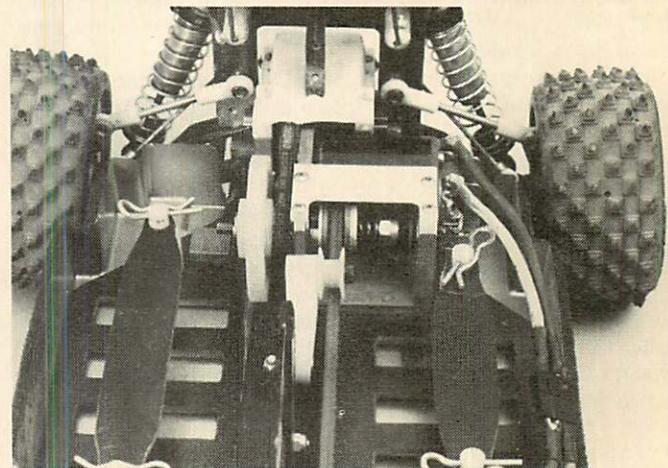
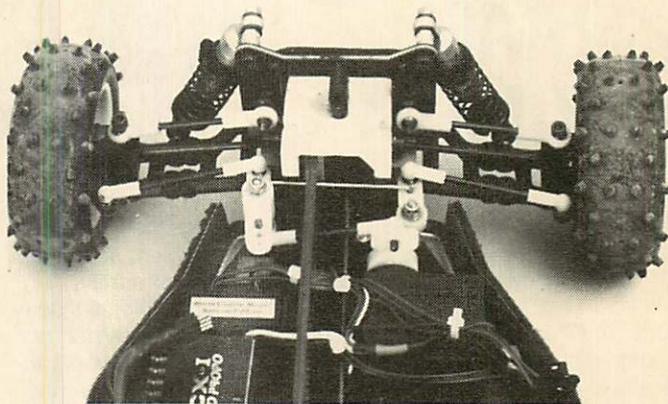
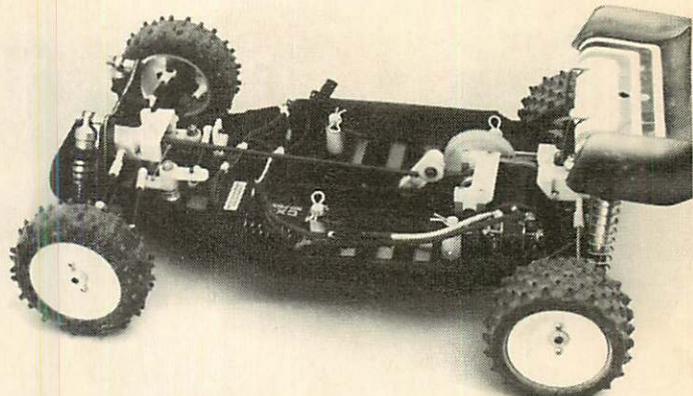
#### ON THE TRACK

Starting with a stock motor and an old 1200mAh six cell pack, I was very impressed with how well this new Yokomo drove through corners and sat flat on the track across all but the biggest bumps. We ran 10 weight oil in the front and 15 weight in the rear which seemed to suit the track well.

With a 48 pitch, 20 tooth Yokomo pinion on the stock motor, speed, acceleration and run time were all good, the car impressing with its quietness.

A 16 tooth pinion on a Reedy Yokomo Silver Dot produced a lot more excitement, yet still was very manageable. The ability to change line through a corner was most effortless and would be a big advantage on the track when others are fighting to stay on line. Of course, this was in part time 4WD mode which gave a little more run time and seemed to give a slightly better top speed.

Next issue we'll look at ongoing maintenance of the Yokomo (if any!), a few modifications and hopefully boast of a few race successes. Stay Tuned!



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- **TRINITY** - 1/10th On Road - Single, Double, Triple, Quad Winds, Lake Whipperwill, Davis etc.
- **TRINITY** - 1/12 On Road - Single, Double, Triple, Quad Winds.
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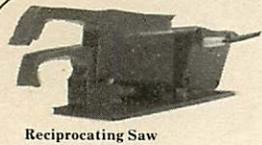
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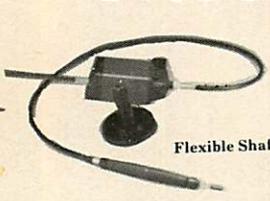
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Orbital Sander



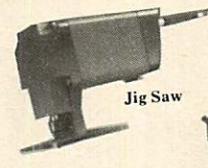
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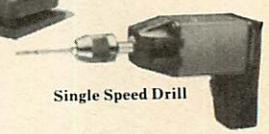
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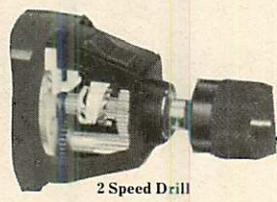
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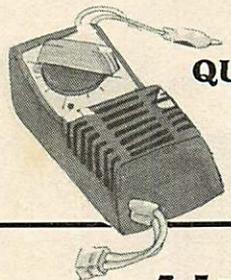
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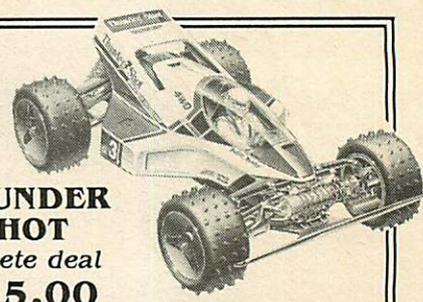


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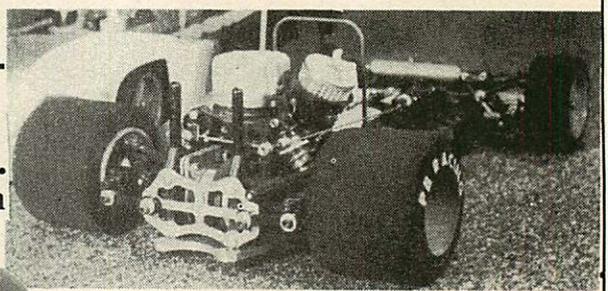
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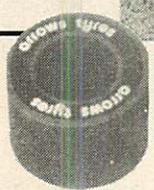
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MAIL ORDERS, BANKCARD, MASTERCARD, VISA, AMERICAN EXPRESS & CHEQUES ALL WELCOME

After the great washout last Easter the Sydney weather couldn't have been better for the October long weekend. Combine this with good organisation, large entry (195 total) and a good track and facilities at St. Ives Showground and you have all the ingredients for a classic competition. For icing on the cake what better than the reigning world champion, Masami Hirotsuka, and his Yokomo team from Japan.

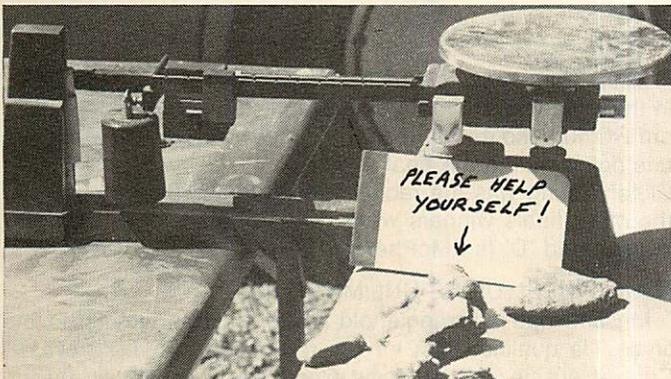
#### THE TRACK

Enlarged to meet the challenge of the World Championships there next October few could find much to complain about. Adequate width, left and right handers, fast and slow corners and a very long straight combine to give something for everybody. Surface was generally smooth with some breaking-up on corners as the weekend wore on — but nothing drastic. Yes, it was dry, dusty and slippery which suited some drivers more than others — but that's just part of the challenge.

#### THE ORGANISATION

After enquiring of many competitors from all States and overseas none had a bad word for the weekends organisation. This in itself is an amazing achievement. The pre-arranged system of transponder/transmitter collection and retrieval, marshalling and scrutineering worked as well as you could ever expect in the conditions.

Race refereeing appeared to be firm but fair. Two or three referees were placed around the track and passed on warnings to the race announcer. A number of warnings were given during the meeting but only one driver (who would definitely have placed in 4WD stock) was disqualified for race infringements. Overall, racing was fairly clean. In the scrutineering tent four competitors had their heats wiped after being checked underweight and one was caught allegedly placing rocks in his car after the race!



Scrutineers have a sense of humour after all! Pic: M.G.

**A Final 2WD Mod (4 drivers from Templestowe). Left to right: Masami Hirotsuka, Reece Birtles, Clifton Young, Stefan Frahm, Andrew Jackson, Ray Wood, Greg Collings, Andrew Nelson, Ross Kramer.**



**It's on for young and old! Line-up in 4WD Stock 'A' final shows good spread of age groups.**

#### QUALIFYING

Everyone had 5 opportunities to gain a best time. Three in the heats and another two in re-graded heats. Most personal bests were achieved in the earlier heats when the track and ones temperament were at their best. 2WD Stock and Unlimited, and 4WD Stock classes were all over by Sunday lunchtime leaving the rest of the day and Monday for eleven heats and the finals of 4WD Unlimited. Three 'A' finals were held in all classes (best two counting) and a single final for B, C, and D grades. Stock 2WD had only enough entries for A and B finals. For some it must have been difficult to concentrate on the R/C racing, for on the Sunday an added distraction was the many portable TV sets tuned-in to the big stuff racing at Bathurst.

#### TWO WHEEL DRIVE STOCK

It's good to see most of the experts and sponsored drivers keeping away from this class so giving more of a chance to the rest, particularly younger drivers. At the Nats. the winner was not decided until after the third final as 3 different drivers won a final each. Mark Phelan from Canberra was top qualifier but was just pipped into overall first by Dennis Garlick with a winning time of 16 laps 10.8 seconds. Third, and top junior was Illawarra's Damien Foord. Winner of the 'B' final was Tony Gray. Tony Bovard was the only survivor from last years National Titles where he also placed eighth in 2WD stock.

#### FOUR WHEEL DRIVE STOCK

Young Justin Watts with his Super Dogfighter was unchallenged in this class. He T.Q'd and won all 3 finals to easily take out the title. Best finals time was 18 laps 16.7 seconds which reflects the high standard of driving in this class and is nearly two laps ahead of the 2WD stockers. The elimination of the Junior Stock class doesn't seem to disadvantage the youngsters with most of them featuring well. Top junior was Scott Thornton in fourth overall. However it was good to see a couple of mature age drivers in second and third spot namely Bob Burbage (sixth at the last Nats.) and Australia's number one motor man Mark Mason. When are we going to have an over 30's class?!

Winner of the 'B' final was Graham Moore, 'C' final Glen Ducker, and 'D' final Lee Sheppard who actually qualified last.

Mel Gillot



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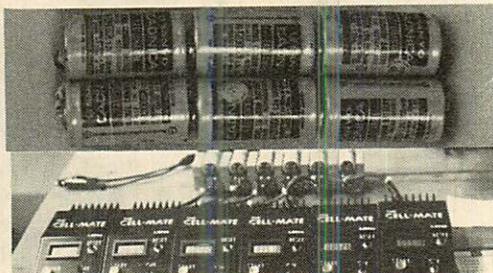
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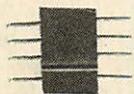
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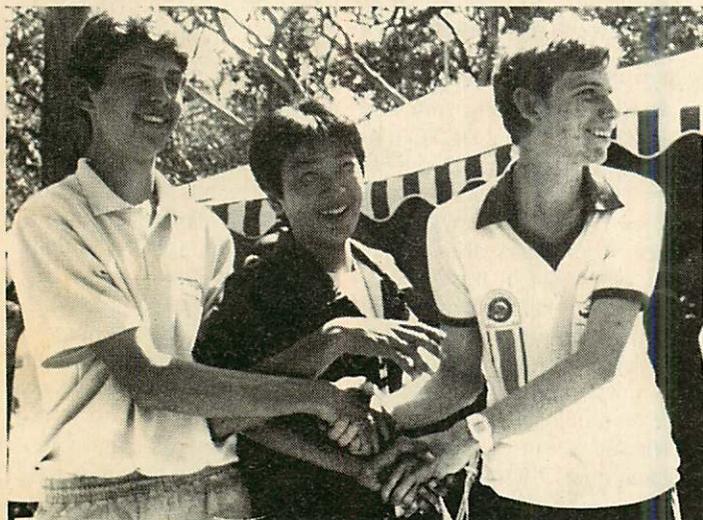
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United Nations time. Justin, Masami and David Garlick, the three happy national champions. Pic: Brian Watts.

#### TWO WHEEL DRIVE UNLIMITED

With both Unlimited classes counting towards qualifying for the World Champs these events saw the biggest entries and the super serious drivers. They also saw the appearance of the World Champion Masami Hirosaka from Japan. Masami and his full time mechanic didn't have a good start — not completing the first 3 heats. Then he went out and quietly devastated the field by turning-in the top qualifying time on his fourth try. His RC 10 stopped again during the third final but by then it was all over as he had already won the first two. Ray Wood celebrated his birthday and impending birth of a second child by being the best Aussie to qualify and winning the third final but lesser performances in the other two allowed Andrew Nelson to take over behind Masami.

Ross Kramer was another birthday boy (21 on the Monday) in these finals with, more significantly, an almost stock standard RC 10. Also it was good to see two Aussie built MME motors doing well in the finals.

Clifton Young was the recipient of the best junior trophy and the other finals winners were; 'B' Rick Bartolozzi, 'C' David Watson and 'D' Ian McPherson.

#### FOUR WHEEL DRIVE UNLIMITED

Masami had a stranglehold on this class right up to the finals. He qualified first for the re-grading and T.Q'd overall. Current Aussie champ David Conroy was second in the re-grading but slipped to 5th for the finals and young Mark Anderson was the only driver to move up to the 'A' final from the re-graded heats. These three were joined by six others of the countries best in the 'A' final. Only about 18 seconds separated top qualifier in 'A' from lowest qualifier in the 'D' final and many 'name' drivers were relegated to the minor finals. Neil Millard missed out on the 'A' by just two tenths of a second! Such is the depth of competition we now have in Australia.

First 'A' final. Masami and his works Dogfighter got a good start which he gradually improved upon to open up a lead at least the length of the straight. At 5 minutes he was starting to lap the field. Conroy was chasing, followed by Jackson and Phillibosian but Hirosaka was never really challenged. Bartolozzi was a drop-out in this race and so was Bolton with a blown motor. Second 'A' final. Masami again lead but this time it was more of a race. Phillibosian and Conroy were within 1-4 metres throughout most of the race and Bartolozzi not far behind them. Meanwhile Andrew Bolton with his short wheelbase Optima Mid had worked through from the back of the grid. A few minor mistakes by the others and Bolton was through to second before the race ended. All this was enough to solicit applause from the large spectator crowd now gathered. And rightly so — this was racing at it's best.

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### *News Flash!* **PERFORMANCE HOBBIES & YOKOMO WIN AUSTRALIAN NATIONAL TITLES FOR 1988**

Justin Watts T.Q. and came 1st in 4WD Stock using a  804 Stock Motor  
Masami Hirotsuka (the world champion) driving a new Yokomo won 4WD Modified  
**VICTORIAN 1988 STATE CHAMPIONSHIP**

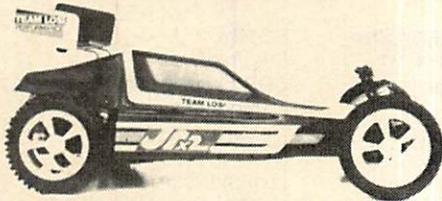
1st 2WD Modified Ric Bartolozzi — Performance Hobbies & 

1st 2WD Stock David Crow —  Stock Motor (also top junior)

1st 4WD Modified Neil Millard — using borrowed Bullet comp/matched 1700's

2nd 4WD Modified Michael Geddes — Yokomo &  motors

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★Wide track front end

Third 'A' final. With best 2 out of three counting our Japanese visitor had the championship won. Maybe this was why Peter Philliposian was never really challenged and won this race without drama. However there was drama and excitement aplenty for second spot. Throughout the race Bolton followed Masami's tail as if attached by a rubber band. Masami would usually gain a little in the tight corners which Andrew would make-up by slightly better acceleration out of the corner. This went on for most of the race with Bolton able to catch Hirotsuka but not pass him. That is until the final straight on the last lap when Bolton overtook to finish in second place. Did Masami let him through or did the Yokomo die? It didn't matter to the crowd who went wild at this great finish to a terrific race. It was a fitting and symbolic end to three days of great racing.

Winners of the other finals where; 'B' Col Greneger. 'C' Andrew Miller. 'D' Mark Alexander. Top junior was Mark Anderson.

#### THE EQUIPMENT

This was the year of the SCE battery. When the Sanyo 1700mAh was introduced there was rampant pessimism in some quarters that the cells would not be up to the job. A glance at the Tech. Charts obviously proves otherwise. Speaking of the Tech Chart, we would like to thank competitors for taking the time to fill them in. Having said that one can see that there are a few blank spaces due to forms not being returned or returned incomplete. Also we cannot guarantee the completeness or accuracy of the charts — but they don't look too far out.

Along with more battery capacity goes more radical motor-winds. Fourteen triple was the hottest of the lot although it is surprising to see this used in two wheel open on a slippery track. Either there was much slippage in the gearbox or the drivers were extra cautious with the throttle finger to contain that much power. In 4WD the 14 to 16 triple wind seems to be the norm which when coupled to the correct gearing gave



**The successful Yokomo Associated team, clockwise from left; Tony Bovard, Ian Bannisted, Bunzo Iisuka, Masaka Hirotsuka, Dave Jackson, Geoff & Reece Birtles, Masami Hirotsuka, Andrew Jackson. Pic: Brian Watts.**

most cars very similar performance at the titles. No longer is there an easily noticeable speed difference between cars.

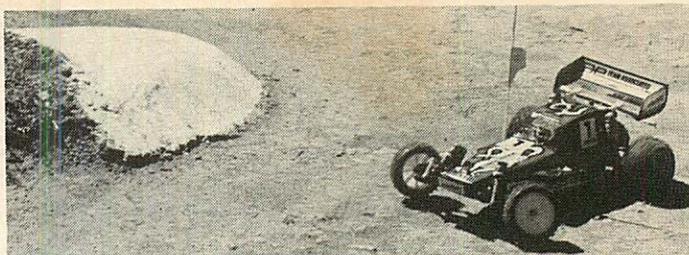
As for cars, there were no new revelations at these titles. In 2WD the RC10 just keeps going for ever with the only challenge coming from Kyosho. The Ultima is competitive, but needs a few major changes to the standard kit, then again there are not many standard RC 10's racing. The big four in 4WD, namely CAT, Optima, Maxima and Super Dogfighter, remain unchallenged with little to separate them. The PB excels on bumpy tracks, the Mid seems to be the most lively with good acceleration, the CAT and Yokomo do all things well with the latter scoring on stability and ease of maintenance. There were rumours of a 2 speed CAT being used at these titles, but this wasn't confirmed.

Of course a big event like this is more than a competition of individuals. There are team honours at stake and plenty of competitive commercialism. A glance at the Tech. Charts will show which manufacturers/importers should benefit from this event. However, readers should not be discouraged if they have other gear, remember that the greatest percentage in winning is in the driving. Ross Kramer did very well in the 4WD open 'D' finalising an unfashionable and rather antiquated Zerda.

#### UNTIL NEXT TIME

One unexpected competitor at these titles was a visiting Californian from the US battleship New Jersey. The ship was in port for the Bi-centennial naval salute. He said that he could practice driving on the ships deck but retrieval gets a little difficult if he goes off the track! He also said he thoroughly enjoyed the event, thought the organisation and camaraderie was great and would like to defect!

That shows us how lucky we are to have people prepared to work and put on such a successful event. Thank you to St. Ives club, ORRCA NSW and everyone involved. The standard has now been set for Victoria to match or exceed when the next Titles are run under cover at the Melbourne Showgrounds.



*Almost perfect line is the norm for Hirosaka's RC10. Unhurried cornering evident from lack of dust & all wheels firmly planted.*



*Twin dust trails from Rick Bartolozzi's Yokomo. Third qualifier in Nats Open. Pic: M.G.*

#### 1988 NATIONALS TECH CHART 2WD UNLIMITED

PSN	NAME	CAR	MOTOR/WIND	BATTERY	SPEED CON	NOTES
1	M Hirosaka	RC 10	Reedy 14T	Yokomo SCE	KO EX 111	See Interview
2	A Nelson	Ultima	MME 14T	Losi 1700	Magic	CRP chassis, Thorp diff, Andy's Arms Front adj Camber Rods
3	Ray Wood	RC 10	Twister 23Q	Tamiya SC	Novak	
4	A Jackson	RC 10	Reedy 14T	Yokomo SCE	Futaba 2PK	
5	R Kramer	RC 10	MME/Trinity	Sanyo SC	KO CX 11	Losi diff tube 17T6
R	Birtles	RC 10	Reedy 14T	Yokomo SCE	Futaba 2PK	CRP chassis FET Servo
7	G Collings	Ultima	Twister 23Q	Twister SCE	KO CX 1	Robinson 48P gears CRP chassis Gold shocks
8	C Young	Ultima	Twister 15D	Parma SCE	Tekin Pro	Saddlepack CRP chassis ABC Hobbies CRP shock mts Andy's Arms front gold shocks
9	S Frahm	Ultima	Twister 704	Twister SCE	Novak 1X	Robinson gears CRP chassis & shock mts 1988

#### NATIONALS TECH CHART 4WD STOCK

PSN	NAME	CAR	MOTOR	BATTERY	SPEED CON	NOTES
1	J Watts	Yokomo	Twister	Twister	Novak 1X	gold shocks
2	R Burbage	Mid	Twister	Bullet SCR	Tekin CRP	S/Pak chassis, ball diffs
3	M Mason	PB	Judy prep.	MIH SCR	KO CX 11	MME ball diffs Trinity
4	S Thornton	Mid PP or Ultra	Nosram SCR	Kits K80	Tufnol gears	
5	S Blair	Cat XLS	Scorcher	Nosram SCR	Tekin PRO	MMS diffs, gold shocks
6	B Wilson					
7	C Sautelle	Mid	PP	PP SCE	Novak 1	

#### 1988 NATIONALS TECH CHART 2WD STOCK

PSN	NAME	CAR	MOTOR	BATTERY	SPEEDCON	NOTES
1	D Garlick	RC 10	Trinity	Parma SC	MK 600	CRP chassis & shock Towers. Losi bell trnks platinum shcks rear
2	M Phelan	RC 10	Scorcher	SCR	KO CX 11	Andy's Arms front Pro-Line rims
3	D Foord	RC 10	Trinity Wet	Laser	KO EX 11	CRP chassis Andy's Arms front. MIP G/Box. Tamiya rims
4	S Hewett	RC 10	Trinity	Sanyo MK 600		Proline rims rear
5	J Golding	Ultima	Twister Wet	Bolt-on SCR	Nosram	CRP chassis Andys front arms. ball diff. Platinum shocks. Univ. D shafts. Fet Servo
6	P Shannon	RC 10	Trinity	Laser SCR	KO CX 11	
7	M Bolton					
8	A Bovard	RC 10	Assc 6502	Yokomo SCE	KO CRP	S/Pak chassis Losi bell cranks & diff tube. Yokomo Univs.

#### 1988 NATIONALS TECH CHART 4WD UNLIMITED

PSN	NAME	CAR	MOTOR	BATTERY	SPEEDCON	NOTES
1	M Hirosaka	Yokomo	Yokomo SCE	KO EX 111	See Interview	
2	P Phillibosian	Cat	Checkpt 15D	Technicad SCE	Novak Kapow diff.	
3	A Bolton	Mid	PP 14T	PP SCE	KO CRP S/Pak	Chassis ball diffs
4	D Conroy	Cat	Checkpt 15D	Technicad SCE	Novak	
5	M Anderson	Mid	PP 15T	PP SCE	K80 Turbo	CRP S/Pak chassis ball diffs
6	A Jackson	Yokomo		Yokomo SCE	Futaba 2PK	
7	G White	PB Losi 16T	Losi SCE			
8	A Reade	PB Losi 16T	Losi SCE	Tekin	ball diffs	
9	R Bartolozzi	Yokomo	Twister 15T	Parma SCE	Novak 1X	Andy's Arms & steering

NOTE FOR MOTOR WINDS, 'D'=Double 'T'= triple 'Q'=Quad. 'PP'= Peak Performance. 'CRP'=Carbon reinforced plastic (graphite).

# MORE THAN JUST A CHARGER!

*Most of the time when you buy a charger, that's all you get.  
But not with the Ni-Cad Alarm Multi Quick Charger from Thunder Tiger.*



*Shown here in the discharge mode, you can see that the battery is charged to full capacity and is being discharged at the rate of .5amp.*

## THE FEATURES

The features are impressive. This unit is a fast charger using a 12 volt supply, and utilising a 30 minute timer. It has an adjustable current output and will cope with 4 to 7 cell packs, and from 500 mAh to 1800 mAh.

The unit can also be used to discharge Ni-Cads ready for storage. It also features a motor checking facility, and will measure RF output of your transmitter!

## USING THE CHARGER

Charging Ni-Cads with this unit is incredibly simple. Just hook up to a 12 volt supply, connect up the Ni-Cad, turn the timer knob to any desired setting between 0 and 30 minutes, dial up the current rate required, and that's it!

When using a clockwork timer type of charger, it's always a good idea to make sure the Ni-Cads are completely flat before putting them on to charge, and this can easily be accomplished with this unit from Thunder Tiger.

## MOTOR TESTING

You've probably seen people out at the track using some pretty fancy gear to set up their modified motors, and get the timing right, etc.

With one of these chargers, you can do the same. Hook up the motor as per the instructions, and the unit will show you free-run current draw. Rotating the end bell while the motor is running will result in an audible change in speed, and of course current changes will be displayed on the charger's current meter.

## RADIO CHECKS

Finally, a very useful feature is this unit's ability to measure output power from your transmitter. It's helpful to be able to compare RF output wattage with new transmitter batteries against the output with partially discharged batteries.

This function could well save you from losing control of your R/C vehicle due to a radio problem.

## SUMMING UP

A nice compact and useful charger which is well worth including in any tool box. It has features often found on more expensive units, but doesn't cost as much as buying a charger, discharger, and motor checker!



*Motor testing is easy. Connect your Ni-Cad Alarm Multi Charger to your battery and then use the Alligator clips onto the motor. Readings indicate the RS 540 is drawing only .4 of an amp when free running.*

# WIN!

## ONE OF TWO PARMA K STOCK MOTORS or a FREE SUBSCRIPTION TO DIRT & TRACK

Simply read this issue of Dirt & Track to find the answers to the questions below.

Write the answers on the back of an envelope, include your name and address and post to Dirt & Track Answer Search Competition, P.O. Box 30, Tullamarine 3043 Vic. The prizes will be awarded to the first three neat and correct answers drawn. So hurry!

1. What do the letters B.E.C. stand for?
2. What is the peak power of a Mabuchi RS 540 SN Motor?
3. What shocks did Joel Johnson use on his World Champs car?
4. How many wheel drive is the DWA?

Competition closes 13/1/89. Entry is open to anyone. Judges decision is final and no correspondence will be entered into. Dirt & Track cannot accept responsibility for entries lost in the mail. All entries remain the property of Dirt & Track.

## Answer Search Competition Issue No. 8

We had lots of entries for our Answer Search Competition last issue. Thanks to all those who entered. Some of those questions were really tough! The answers were:

1. Russell Bryant/Ultima
  2. drag, lift and down force
  3. Masami Hirotsuka
  4. T6 or T7 (aircraft quality) alloy.
- and the winners are: Parma Peak Detection Converter: Geoff Kuehner, Uralla, NSW; Parma K Stock Motor: Daniel McShane, Ayr, Qld; Subscription to Dirt & Track: Kim Nuske, Kanmantoo, SA. Congratulations!



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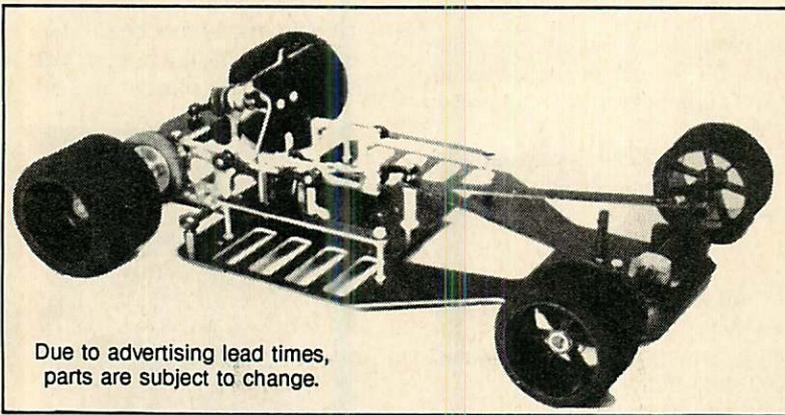
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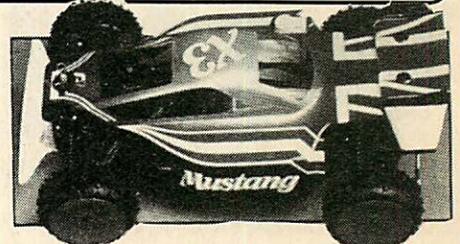
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# The Ultimate Ultima?

by Todd Cameron

In the wake of Joel Johnson's victory in two-wheel drive at the World's Championships with an Ultima — indeed the first THREE places were occupied by Ultima's — and the excellent series of articles on this car by Chris Young, I decided to seek out that rarest species of Ultima, the World Champion variety.

Although Joel wanted to give me his own car for this article, I had to turn him down, since this World Champion 'replica' was going to be everything his was, and more.

Chris Young has already expounded the virtues of the standard Ultima, which is a very successful basic design (see *Dirt and Track* #2) with more than a hint of RC10 geometry present, so I will not go into detail on the basic car, but rather refer you to the articles in the third, and particularly fourth editions of *Dirt and Track*. However, before I begin, let it be said that the car, in this state of tune is by no means cheap in terms of initial outlay, although in the long term I expect its 'value' will be in durability and almost maintenance free running at a very competitive level.

To begin with, the main components kept standard (YES!! KEPT NOT THROWN AWAY!) are the wishbones, gearbox housing, drive dogs and knuckle-arms, which undoubtedly sheds some light on the reason behind the expense!

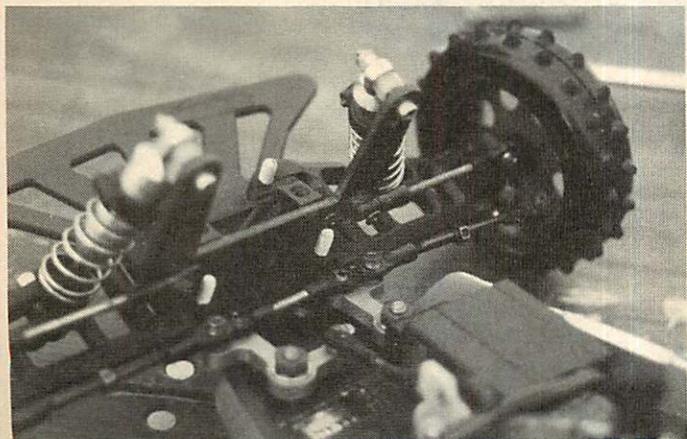
After the mandatory addition of ball-races (and Kyosho's own ball-races are of a very high quality so there's no need to go for exotic bearings for this car), one of the most important mods is the addition of a 'Thorpe' ball differential (I expect 'Nodis' would also make such a diff for the Ultima) of the limited slip variety, which is in



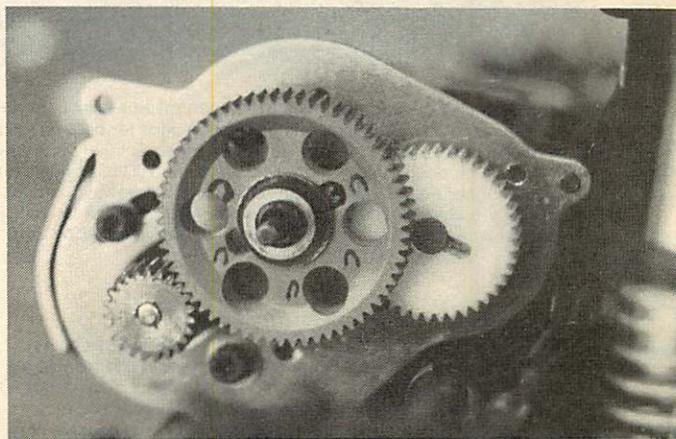
*Ultima all dressed up in CAT body & undertray!*

itself a magnificent piece of engineering, but, more importantly, its addition alone can produce a much more stable car, which translates to faster lap times. Thorpe also produce overdrive/underdrive gear sets to allow, obviously, higher and lower gearing than standard to be used. The gears themselves are made of Tufnol or Nylon 66 and stainless steel (i.e. running steel gears to plastic gears), providing a marginally better mesh than standard. I think that 64 pitch gears are too fine for outdoor buggy racing in Australia and hence I would move towards using 48 pitch gears which have been developed by Losi, and should be available in the near future.

Another important modification is, of course, the upgrading of the standard shocks. Although Joel used the Gold Option House shocks on his World Champs car, I decided to try the new Platinum Shocks from Kyosho's own Option House. I must confess that I was at first sceptical as to the ability of these shocks to be externally adjustable for dampening. However, my doubts were unfounded and I discovered that these really are smooth, excellent, sturdy and good-looking shocks, with all of the features of the gold shocks, but with the dampening adjustment feature as well. The shocker kit also has enough 'O'rings for at least one rebuild — a real bonus. For those unfamiliar with the shocks, the actual dampening factor — altered by changing the oil viscosity (and hence necessitating a shock pull down) in 'normal' shocks — is accomplished by rotating the bottom spring stay. Great for fine tuning at the track and a great aftermarket shock addition to any car.



*Front end of Ultima. Note: Losi bell-cranks, Carbon fibre chassis, Andys front arms, Option House tie rods.*



*Robinson Racing 48DP gears as fitted to Ultima — beautifully engineered.*



*Overview of Car. Note: CAT undertray, Losi steering bell cranks, Andy's front arms, Andy's bumper.*

The addition of the larger shocks necessitates the addition of larger shock mounts and these are also available from the Option House in black fibreglass. However, like Joel, I went all the way and fitted some 'Composite Craft' carbon fibre (graphite) uprights, which, although more expensive, are substantially stronger than the fibreglass units and are almost unbreakable. Note: the above is my own opinion and I should point out that the second and third placed cars in the World Championships, driven by Kondo and Moore used the Kyosho Option House uprights so they can't be too bad!

Of course, to go with the carbon fibre uprights, one also needs a carbon fibre chassis, also produced by Composite Craft and priced at about 2 arms and a leg, but it does complete the Joel Johnson replication. Although my personal preference is for the uncluttered layout of a flat carbon fibre chassis (or indeed any flat chassis), Option House produce an alternative which is a super-rigid, counter-sunk version of the standard chassis in anodised bronze. Once again, the Option House product must be very good since it also appeared on Kondo's and Moore's cars.

Most of us will want to run 'Hot Shot' sized tyres since nearly all competitive tyres come in this size, and it is here that 'Dynamite' (of tyre fame) came to the rescue with white nylon 66 wheels (which dye up brilliantly in simple clothes dye). These, too, are almost indestructible.

Also of worthy note are the Option House 'special rods', which are very cleverly designed tie-rods that can be adjusted by simply turning a nut which is an integral part of the rod, located in the centre. They achieve this by having oppositely threaded ends on the rods. The actual tie-rod set-up is no better than any other after-market set, but rather more convenient in that it can be adjusted simply and speedily. Combined with the Platinum Shocks, these two items make short work of fine-tuning at the track.

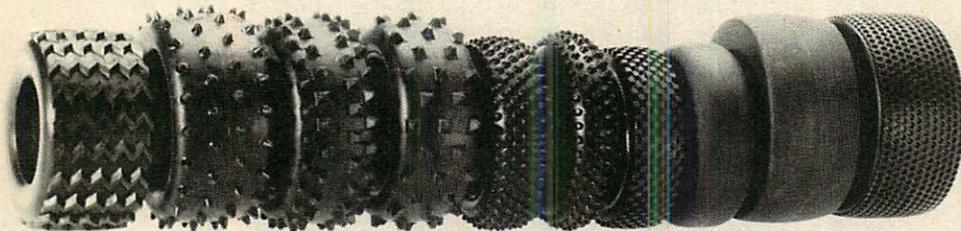
In a fit of one-upmanship (on Joel Johnson) I fitted a Losi ball-raced bell-crank steering set (originally designed for the RC10) which is beautifully engineered to provide almost zero 'slop' from the double ball-raced bell cranks, providing very smooth steering response.

Probably the only item which doesn't affect performance, but nevertheless is an important one, is the addition of the Option House motor guard — it is probably the cheapest modification and is insurance for your megabuck Nationals motor.

As an overall package, the car becomes an almost indestructible, very competitive two-wheel drive, and it is a credit to Kyosho that most of these mods can be carried out using parts from their own Option House range. Simplicity is the key to the success of this car.

How does it run? Well, first impressions are of an extremely good (and very fast) car which is quite predictable and not too hard to set up. Having said that, I am yet to give the car a full work-out but as it works for Joel Johnson, the car is the best there is at the moment — the rest is up to the hand behind the wheel.

Finally, this car and article were brought to you at great expense to the columnist. Now if only I could scrape up enough money to join a club and give it a race or two....



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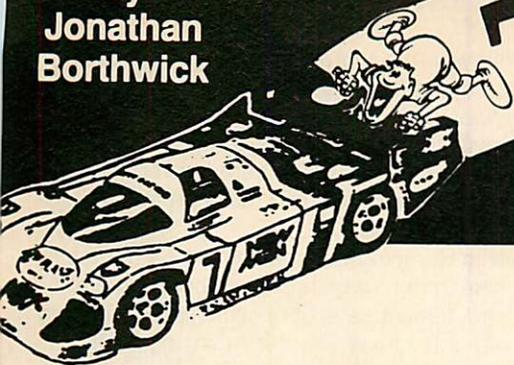
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There is full spare parts back up and services for this Tamiya car and its ideal as a high quality first R/C car for the very young driver. Sample courtesy of Toy Traders, Sydney.



by  
Jonathan  
Borthwick



# Tweaked & Dumped

1/12 SCALE ON-ROAD ELECTRIC RACING

After last issue in which I referred to some off road racing as being the worst I had ever seen, I was taken to task by one reader as to what I mean't and how a race should be run.

Firstly, I like to think of us as running scale race cars, be they 1/4th, 1/8th, 1/10th or my favourite 1/12th. Note the onus is on *scale!* This not only refers to the size of car we drive, but also the way they are driven.

To be quite honest, there are very few of us who would last more than two laps in a real race car. A large number would be killed outright, while the balance would be sufficiently injured (many by the doings of other drivers) to give up the sport altogether.

In some ways, this has been happening in off road. Forget overly competitive (read quick) racers. They are happy racing themselves. The dangerous ones are those who are somewhat out of their depth and overdo it, usually with a ludicrously powerful motor in an "entry level" type chassis.

The potential for damage to an off road car is probably the greatest among all the scales we race. 1/12th scale cars are so light that they can take enormous punishment, while the 80mph 1/8th gas cars take bigger knocks than many 1/10th cars.

As the race goes on for more agile 4WD off roaders (many of which are looking more and more like 1/12th cars in their layout) the weight comes down and the scope for an increased damage bill is a reality.

So, what a combination. Couple a number of over excited new (and some not so new) racers with state of the art (and very rapid) model motor cars and the result is wholesale carnage.

This all sounds very negative I know. What worries me is that 1/10th is where a lot of racers get their grounding. They either stay in, change scales or get out.

There is a positive side to this, and that is in the area of driving style and good old fashioned courtesy, both of which will help you move up the field, cut your repair bill, allow you to gear to go faster, and most of all enjoy your racing a lot more.

Where to start? In a word...practice! I know I have said this before, but it really is such an important aspect of our sport.

I am fortunate in that I have many (more than I care to remember) years of experience and a thing that is called "racecraft".

What this means, is that I don't have to drive every weekend to be competitive at all but a Nationals. This works out well as I do not have the time to devote to my hobby these days.

When I started, it was just when 1/12th was getting going around 1979, but I practiced whenever I could and learned at a time when everybody else was still learning.

Anyone coming into the sport now has to compete against people with a wealth of experience, not just in car preparation, but also in racecraft. This gives them an enormous advantage which the newcomer will have to whittle back until he or she can compete on more even terms. There are very few natural racers. Most of us have to work very hard at it.

## SO WHY NOT START NOW?

Even if you have been racing for some time, you never stop learning if you want to improve. The two most important things are to watch and listen. Oh, and a third. Take in what you learn, sift through the bull and pull out the valuable stuff that will help you beat the others.

The way I would like to attack this subject is by analysing a typical 1/12th or 1/10th race, although there may be a few areas specific to each which I will point out. For example race distance and changing track conditions. Let's look at a race as 5 parts.

The first, and in some ways most critical is before the race. This area covers that all important thing we call attitude. Do you want to go out and top qualify on this run, or take it easy and leave the quick laps until later? Is the race a final or a heat? If a heat, does it look like it may rain later on in the day, or are track conditions going off?

These all require consideration before you put the car on the track, and affect preparation also.

Another thing is to watch your opposition in practice or, if the upcoming race is a final, in the preceding heats. Work out where they are fast and slow, where they understeer (slide away from the corner) or oversteer (hang the tail out and almost spin), If you don't know the driver, watch how cars like his or hers go around the track. Some cars have very similar handling characteristics.

I know when I first started racing an RC10 against 4WD cars, I would have to wait until coming out of a corner to make my move when the 4WD would understeer out of the corner and leave a gap for me to exploit. If I had tried to go past on the track and we'd touched, I would have been off in the boonies while the 4WD continued unhindered.

In fact, you learn a lot racing 2WD, perhaps far more than those who race 4WD exclusively.

The second phase of our race is the start. This is a time I really enjoy as it doesn't worry me, while it worries the heck out of the others. Whatever you do, don't worry about it and look to take advantage of their nervousness and desperation but keep clear of it all.

Walk around and make idle chit chat, wish them luck and coolly hang around the stand, commenting on the way the track is breaking up or the grip is going away while they chew on their throttle and steering fingers and suffer the sweaty palms. Great fun!

Get on the stand early and make yourself comfortable and ensure you have good visibility. Most of all, make sure you don't stand next to someone like myself or my brother who block out the sunlight and most of the track.

This is where having a pitman helps as he can turn the car on and leave you to think about the race and tactics.

Now for some more gamesmanship. While the seconds to the start are counting down, leave one hand on the transmitter and keep looking cool. Now is the one time for that all important long last look at the opposition or repositioning of cap or sunglasses.

If you have qualified well, you should be up front and looking to get the hell away from the disaster that will happen behind you. Unfortunately, so will at least two other racers around you so think about it.

If you are at the very back of the grid, let the others go and pick your way through so that you are in third or fourth place after the first corner. This is the time that the smart driver will save his batteries for later in the race, but don't overdo it. If you are in the middle of the grid, good luck.

Remember, a good start (what we call a holeshot) will give you all the confidence in the world and worry the other blokes a lot. They have to catch you and will probably make mistakes and waste battery power doing it. Which brings us to the third part of our race.

The first couple of laps usually decide the winner in an off road race as there isn't a lot of time to pull someone back in and pass them. This is the time where you should assess the competition. If the people in front are too good, let them go and hope they dump or break. Usually at least one in three will, and it is no good if you are not in good shape to pick up the pieces.

Concentrate on your lines, overtaking, and above all, don't hit things. This is the time where batteries have that extra little bit of peak and your Reedy in a Can or RevTech Power Spray is doing its best to throw you off line and off the track.

Each time you hit something and have to start from a dead stop costs you enormously. Look at losing at least 10 seconds off your run time (or half a lap if you like) each time you hit something, not counting the time it takes a marshal to get you unhooked.

The very worst thing you can do in off road if you get wheels tangled is to try and power out of trouble. This is a sure fire torture test for a battery and will almost guarantee you will finish the race at a crawl while the others are flying past, picking up valuable qualifying laps. Resist the temptation, wait for the marshal, take off calmly and above all don't try and get the bloke back who stuffed the two of you into the wall.

Phase 4 and everyone has settled down except one racer who is pulling you in hand over fist. If this person is good let them go by so as not to slow you or them down. If you feel inclined to tell them where to pass you, resist it and let him get past you. As soon as you open your mouth, odds on you will tense up and take both of you out.

The other type of person who screams up behind you is "the hero". They're the racer who has overgeared grossly and will dump. Don't let them suck you into racing as you will dump with them. Even if "the hero" isn't overgeared, he will probably overshoot and stuff it into the next corner, probably taking you with him.

By the same token, if you are fortunate enough to swoop up behind someone, don't rush, and try to get by cleanly. If you have someone right on your tail and you are lapping traffic, take it easy and think your way through. You are the person in front with the most to lose if you screw up in traffic. So be cool and take it easy.

Almost there and you are looking pretty good, having taken all the right lines, not hitting anything and keeping your nose clean in traffic. Whether or not you are winning doesn't matter.

If you have improved your lap score, you can feel pretty happy. But it isn't over yet, so don't think about it or you will lose concentration and probably a few places.

Working on the basis that some of your competitors will lose concentration, batteries or both, make sure it isn't you. Like the start, this is the time where you can make great advances in your own track performance.

Beware of cars with dumping batteries sitting on the racing line as you come screaming up behind them or, if you are the one who has dumped, keep an eye out behind you or you may not be able to crawl home to a place or a qualifying position in the final.

One thing, and this is based on extensive experience with that common medical disease called "battery dumpitis", if you are crawling around to a finish, feather the throttle and resist the urge to drive normally, that is punching the throttle out of a corner and wrenching the steering. All of this aggression will only rob you of your depleted battery supply and cause the car to go off in a death spin.

I know the instructions tell you not to drive a car at part throttle, but let's face it, you haven't got enough battery power to do any damage!

Now for the sixth phase. Ahh you say, but you only referred to five phases. Well this one is reserved for the winners when they get the girl, spray champagne all over the expensive lenses of the world media and sign up lucrative contracts endorsing deodorant and hairspray.

But cheer up. If you haven't won the spoils detailed above, there is a sixth phase which is as important as any of the other five. That is analyse the race and see where you could have improved so that next time it is you up there with the booty while the others ponder what might have been and complain that you had a better car, better batteries, bigger wallet, sponsors, better looks, a better family background etc, etc.

All of the above is very serious if you want to enjoy the racing of model cars in a scale manner. Crashers never win races. Racers rarely crash. Make up your mind if you want to be a racer or a crasher. If the latter, make sure you stay away from me!

#### STOP PRESS

Associated are shortly to introduce a range of 48 pitch pinion and spur gears, changes to the RC10 and keep an eye out for the on road RC10L!

**DYNATECH** TAMIYA  
HOP UP OPTIONS OPT.1 DYNATECH 01R MOTOR



**NEW PRODUCT** from Tamiya the new Dynatech "01R" Motor. Part No. T53001. Made by Mabuchi along the same lines as the well known Technigold motor. It features a new endbell with external brush springs and newly positioned motor lead tags that are protected against breaks caused by heavy use. The motor appears to be a 19 Turn Single wind giving torque figures of 300g-cm with a 7.2 volt battery pack and will run at 25,000rpm unloaded. Recommended for use with either 7.2v or 8.4 volt battery packs. Sample courtesy of Toy Traders Sydney.

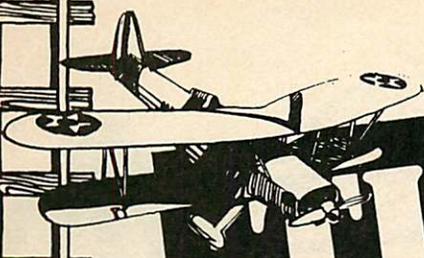


From McAllister Racing of the USA comes this "Pitmate" — a one piece formed car stand and parts organiser. No more parts rolling off your table when using the organiser Trays. Handy motor containers and foam strips to hold car steady on stand available in black or clear (paint inside like your car body). Distributed by Speedline International (phone (02) 816 2936) and available at better hobby stores.

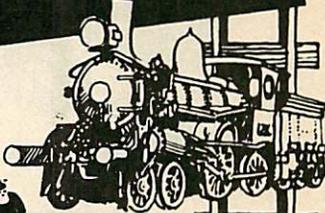
Autographics superb range of decals printed on 3M material is now available in Australia from better hobby shops.

The range is vast and only a small selection is shown. Others include Coke, Valvoline, Rebel and USA flags and racing numbers. Distributed by Speedline International phone (02) 816 2936.





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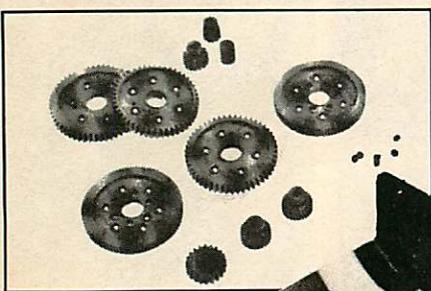
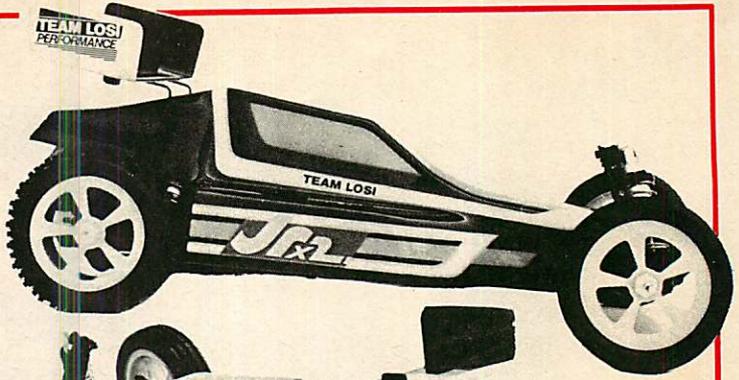
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# MARKING TIME

by Paul Bird

One of the more frustrating sides of R/C car racing is trying to work out what actual speed your car or buggy is travelling at. In serious competition it's also useful to find out what lap times the opposition is doing.

Stop watches are all very well, but they aren't cheap and only the really expensive ones give all the information needed. But that situation has changed with the advent of the Acutrak Speed Chronometer. This nifty little device is imported from America by Digital Chronometer Imports of Beresfield N.S.W.

The main market for the Acutrak has been in full scale motor racing. Peter Brock's team, the Toyota race team and NASCAR teams use the Acutrak. That kind of use seems to indicate that the watch is useful and accurate.

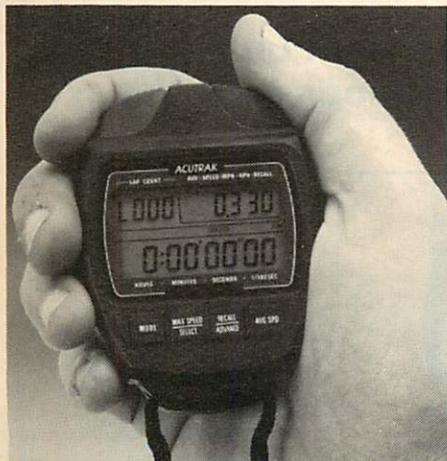
The Acutrak SC-504, which is the neck strap model, will automatically compute speeds up to 999.999 kph or mph; displays lap number, speed and time, can be used for 24 hour timing with a resolution of 1/100th of a second, and has a seven lap memory of lap number, time and speed which can be displayed at any time.

In addition, it can be programmed with any distance up to 999.999 kilometres or miles, with accuracy of 1/1000th of a mile or kilometre. On demand it will also display average speed and time of accumulated laps.

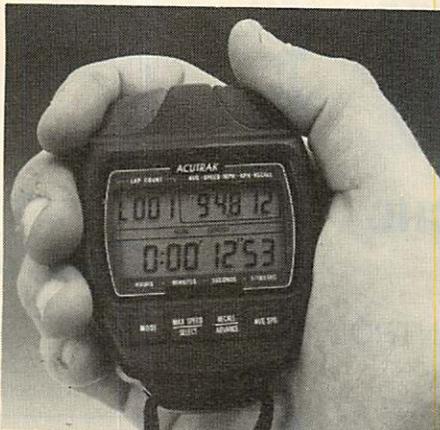
The Acutrak comes complete with a long life lithium battery, and as you can see from the photographs, the display is a large, easy to read digital type.

## OPERATION

Operation is very easy, using two large buttons which sit comfortably within reach of both thumb and fore-finger. The black



*In Speed mode, the Acutrak can be programmed with the track length, to allow it to calculate speed. In this example, the track length is 330 metres.*



*This shows the speed calculation result. On a track of 330 metres, with a lap time of 12.53 seconds, the vehicle being timed was travelling at almost 95 kilometres per hour.*

button on the right hand side starts and stops the timer, while the red button on the left gives lap splits and also resets the timer when appropriate.

Immediately below the read-out window is a row of four black buttons. These are the key to Acutrak's operation.

The first button, marked 'Mode' allows the user to select Split Time Chronograph mode (I'll explain all these in a moment), Interval Lap Timing, or Speed Chronometer.

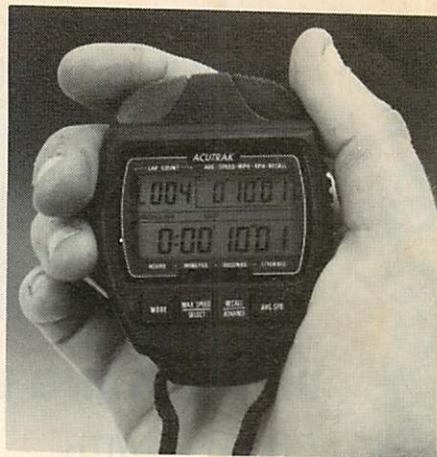
An explanation of terms — Split Time means the Acutrak will display the total time from the point when the start button was pushed. Each time the lap split button is pushed, the unit records the time since the start.

In Interval Lap Timing mode, the Acutrak will give a time for each lap, as well as the total time of the event. Used as a Speed Chronometer, the unit will give actual speed for each lap, as well as average speed for an event, and the fastest lap speed.

The second button, marked Max Speed/Select is used to enter the track distance into the Acutrak to allow it to calculate the speed. Getting a speed reading is very simple. Enter the track distance, start the watch, and when the lap button is pressed a speed reading is given. The second button is also used to give a reading of the maximum speed reached during the timing period.

The Recall/Advance button has a dual function. It is used to recall the previous seven lap times and speeds, and it's also used to program the Acutrak with the circuit distance in either kilometres or miles.

The fourth button is labelled Average Speed, and that's just what it provides. Push this button to get a read out of the average speed achieved during a race.



*In chrono/split mode, the Acutrak gives total time of the race, and also shows aggregate lap totals, or splits.*

## SIMPLICITY

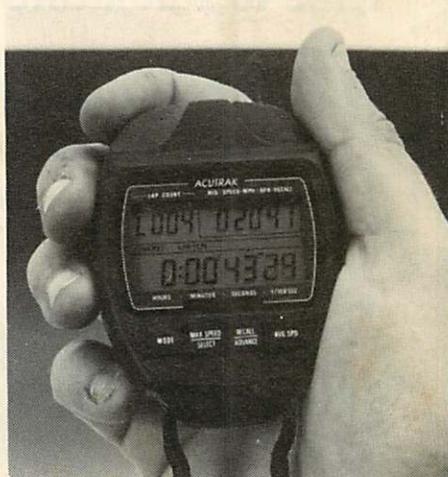
While all that might sound a little complex, fifteen minutes of playing with the Acutrak in conjunction with reading the instructions will have you operating it comfortably.

It's no surprise that the unit works so well, after all it was designed with car racing (full scale) in mind. For the reasonably serious racer, this is a must; but it's also suitable for the keen observer.

## WHERE D'YA GET IT?

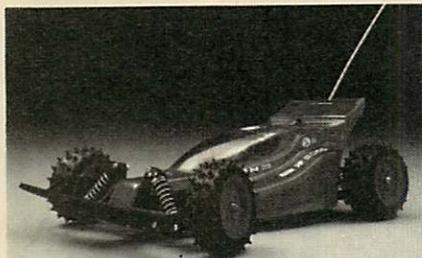
The Acutrak has been around radio control car circles before, but if you're wise you'll get yours through the accredited importers, Digital Chronometer Imports of Beresfield N.S.W. The reason is that if something does go wrong with your Acutrak, it will be covered by full service backup. Digital Chronometer Imports don't sell direct, but they'll tell you which hobby shop nearest you has stocks of the Acutrak.

By the way, this stopwatch is available in two forms; a neck strap model, and a version which can be strapped onto your wrist and also acts as a normal watch.



*In chrono/lap mode, the Acutrak lap split function gives a reading of the actual time taken to do the lap, and using the recall function, five laps can be recalled.*

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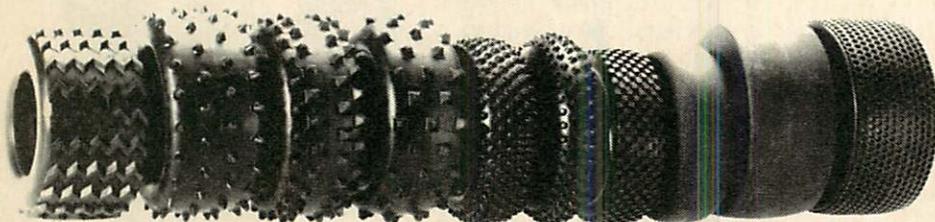
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# Speed Secrets of the Team

Number three in the series — we go straight to the top and interview the current 4WD world champion, Masami Hirosaka.

by Mel Gillot



**Happy victors at the Nationals Justin Watts and Masami Hirosaka with dog fighters and hardware.**  
Pic: Brian Watts.

Elsewhere you can read how the eighteen year old from Japan cleaned up at this years National Titles. Masami and his entourage, which included father Musaka Hirosaka and Bunzo Iizuka the assistant manager of Yokomo Ltd, made a flying visit to our shores to compete and also sample the track for the next world champs.

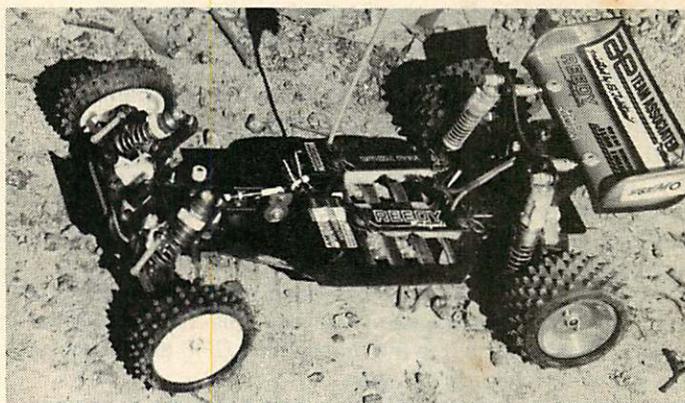
It wasn't easy, but in-between races and through interpreter Bunzo we managed to struggle through an interview to bring you this world exclusive.

Masami has been driving since he was ten years old — that's eight years of experience. He has had extensive practice driving 1/12th on-road and 1/24th indoor racers. The latter he attributes to his precise driving.

At our Nats this precision together with great skill and consistency, made him a winner. He always took the shortest line around the track even if it meant slowing down more than others on the corners. The car may have taken the corner slower but the net effect was quicker cornering. No, you couldn't call his driving style exciting, more cool and calculating.

**Radio.** Masami uses a very ordinary looking KO transmitter with sticks. Stick radios are still popular overseas but have all-but disappeared here. I wonder if this will cause a resurgence. Servo on both his cars was the special KO World Champs model which features a separate casing and FET amplifier. The servo motor is connected direct to 7.2 volts (the usual 4.8v feeds the amplifier) which gives very quick and powerful operation.

**Speed controller.** This is the new KO EX 111 which is not yet available here. No other details were obtained (try Kraft Systems Aust. if interested) but the photos show how the speed controller was mounted vertically on the works cars.



**Masami's RC10 derivative. See text for changes.**

**Motors.** Team Associated in the States had a hand in the development of the new Yokomo car and Mike Reedy is associated with Associated — if you see what I mean. The rub is that Yokomo use Associated motors prepared by Reedy. Bunzo claims that the Reedy motors are not opened by them and that they did not know the wind. And that's all they are saying. However I have it on good authority that a 14 turn triple wind was used in 2WD and a 15 triple in 4WD.

**Cells.** Sanyo SCE type 1700mAh are used exclusively. They are bought, selected and matched by Yokomo in Japan. Although available for the local market it is apparently not cost-effective to export the matched Yokomo's so don't ask for them here.

**Two wheel drive car** — Associated RC 10. If anything, Masami's RC 10 is distinguished by being rather ordinary. Many locals commented that their car was more modified. Here's a list of the changes on the works Yokomo RC 10; Andy's arms (lower wishbones) fitted all round. These give lighter weight and wider track on the front. Front and rear shock towers in carbon reinforced plastic (CRP). The rear one appeared to be home made. Chassis is also CRP, probably by Composite Craft, and caters for saddle pack (3 batteries each side) cells. Associated 25 degree front castor blocks fitted. Wheels are Yokomo on the back and Pro-Line front with



**The World Champion's 4WD Yokomo.**  
Any changes are subtle.



*There's not many can rightly carry that sticker!*

Yokomo TR9 rear tyres and various tyres tried on the front. Of course this might change at tracks other than St.Ives. Rear drive shafts have been replaced by new Yokomo hardened shafts which are much more resistant to bending.

**Four wheel drive car** — Yokomo Super Dogfighter. Yokomo were very patient when developing their new super car. Despite a very good first showing at the World Champs last year they didn't rush the new machine onto the market. Instead they continued development until sure it was the best they could make it. Now, six months after release even the works car is very similar to the one you and I can buy over the counter. However, if one looks close enough there are some subtle changes.

**Reinforced front end.** There has been a few breakages of a lug on the front magnesium casting. This casting will be stronger on new kits but in the meantime a CRP angle bracket is available to reinforce this area.

**Wheel camber adjustment.** A new hole had been drilled and the wheel tie rods re-positioned lower. Again this will be standard on new kits. The present kit car is under the maximum allowable width but longer drive shafts are an available extra to correct this situation. Later kits will have them as standard. Considering the new Dog Fighter is state-of-the-art these updates are fairly minor. Why, even Holden and Ford take at least 6 months before they learn how to build a new model properly!

Finally there are two other changes that Masami makes. The flatplate chassis is changed from black coloured fibre-

glass to CRP. This gives slightly lower weight and a stiffer chassis. Masami however prefers some flex in the front of the chassis so he has cut away both sides from the battery forward. See photo.

Tyres are one of many from the Yokomo range to suit track conditions. Masami likes to super-glue the tyres to the rims and appears to change all tyres and wheels after every race.

#### OBSERVATIONS

As befits a professional driver Masami doesn't get his hands dirty. He spent most of the time at the Nationals watching the racing (sounds a bit like my son!) or being friendly to everyone. Whenever possible he would be first on the drivers stand, often many minutes before the race. I am not sure whether this is because of impatience or whether he is mentally preparing himself for what is to come. Maybe he is just like the rest of us and wants a good position on the stand.

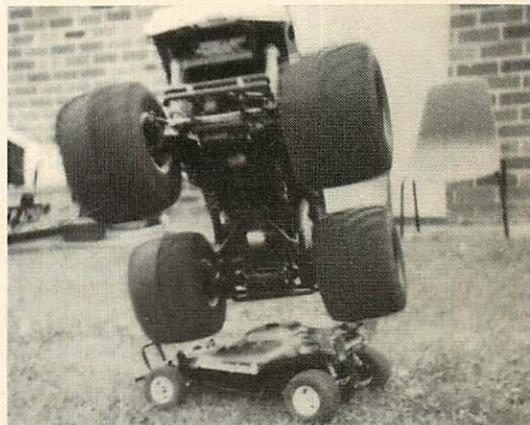
He could give many of our drivers a lesson in courtesy. Never a word was muttered whilst driving (not as we would be able to understand him anyway) and I never saw him once get in the way of anybody on the track. As such he is a worthy world champion.

Masami had plenty of kind words to say about us too. Bearing in mind that he has travelled the world to compete he compares our organisational ability and driving standards very favorably with overseas.

He thought our driving fairly courteous too. He should come to an ORRCA state meet! He was happy with the St. Ives track and didn't mind the slippery surface at all. Finally, he particularly liked the atmosphere at the Nats. and thought Australia was great.

We would like to thank our Japanese visitors for taking the time to answer our many questions. Thanks also to Dawn Trading for their assistance and the number of local drivers who provided information.

## Action Photo Competition



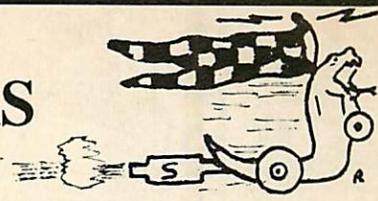
Bring on the action! Mr Anthony Smith of Warrnambool (left) is reaching 'dizzy heights' with his Frog while the car crushers — Evan Turner of Keilor Park (top) shows Matchbox that he is heavily into R/C and (bottom) Antony Saveski of Campsie says 'Bye Bye to Louie the Hornet'.

Thanks for all the entries — they're getting better all the time! Keep up the good work and keep trying. To enter, send your on or off road action photos and a self-addressed envelope for return of photos to Action Photo Competition, Dirt & Track Magazine, P.O. Box 30 Tullamarine 3043.



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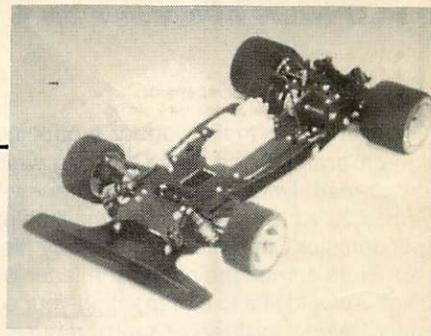
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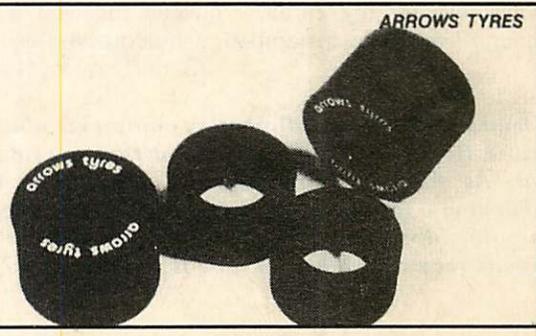
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## LETTERS TO THE EDITOR

Dear D&T,

I'm interested in R/C cars for off-road use. I have a Black Fox which is a cheap R/C car, but has done the job for me. I am now interested in getting a more expensive car, and also I would like to start getting into competitive racing with the car. Could you give me some ideas about what car to get?

Troy Carter, Aldinga Beach, S.A.

*Troy, it's always great to get letters from R/C car enthusiasts, especially ones who're just starting out. After all, people like you are future of our clubs. As for what car to get, it sounds as if you'll be needing an entry level buggy. Why not have a look at cars like the Kyosho Ultima, which can be developed beyond entry-level, anything in the Tamiya range, or even something from Marul. Good racing to you!*

Dear D&T,

I would like to thank you for producing a magazine of such high calibre. It is the only R/C mag which is worth taking the time to read. I would also like to thank whoever does the "You Wanted To Know" section for their helpful advice. I bought a Speedmaster Controller, and am very pleased with its performance. Here comes the part of the letter where I complain about things. I would like to comment on your so-called helpful advertisers. I wrote to three of them, requesting information about bodysells for my Zerda. I haven't received a reply, even though I enclosed a stamped, self-addressed envelope.

Berin Scriven, Newman, W.A.

*Thanks for your complimentary comments about the magazine, Berin, and it's good to know that you find it so helpful. As for your complaint - the hobby industry is changing a lot at the moment, with hobby shops and distributorships changing hands, so it's possible your letter wasn't received. Why not give it another shot?*

Dear D&T,

Could you please supply me with the address of the manufacturer of the "Clod Buster" featured in D&T#5. Or, if you have any further information about the Clod Buster or similar truck type 4x4 R/C vehicles, it would be appreciated.

Bradley Scott, Gladstone, Qld.

*The Clod Buster is a Tamiya product Bradley, and is distributed in Australia by Toy Traders in Sydney. This company is a wholesaler, so you'll need to contact your local hobby shop for a price. If they haven't got it in stock, they'll be able to order it in.*

Dear D&T,

I have recently changed from 1/10th buggies to 1/8th circuit racing due to rising costs of 1/10th parts and spares, and their

lack of availability here in W.A. Also, the extra skill and excitement involved in 1/8th scale prompted the change. I have read the last few editions of D&T, and have found it to be superior to the English and American counterparts as far as the club racer goes. But, although electric 1/10th and 1/12th cars are thoroughly covered, people reading D&T could be forgiven for thinking that 1/8th circuit and off-road cars just don't exist. I realise that 1/8th cars are a minority in the Australian model world, but we do exist. Just like any reader I would like to read about my area of model car racing. So how about it? Could us 1/8th scale drivers read something about the do's and don'ts of 1/8th scale racing?

Wayne Proud, Tuart Hill, W.A.

*Thanks for the letter Wayne, the answer is, of course, YES! But lets put the ball back in your court. The articles in this magazine are written by people experienced in their field of racing, but we seem to have a lack of interest from the gas car fraternity in supplying photos and words. I would like to see contributions coming in from 1/8th scale racers, so how about it?*

Dear D&T,

I've read your comments about sponsorship in racing. What would be the problem with running a class in 2WD, 4WD stock and 4WD unlimited for professional drivers, i.e. anyone who is sponsored or works in the business, like shop owners. This would allow the big bucks to race each other. As for 1700mAh batteries, these shouldn't be allowed. What the sportsmen in our racing should be doing is trying to make their cars more efficient. Look at Formula One, each year the cars have less fuel, less turbo boost and smaller engines, but they go faster and faster. All forms of sports have rules but our sport seems hell bent on changing every rule. Let's get back to a fun sport, run a professional class, put a price limit on motors and Ni-Cads, which should be limited to 1200mAh. If we don't, we'll have 2700mAh \$500 Ni-Cads, \$800 motors, no fun, no entry level drivers, no family involvement and no sport. Let's separate pro-drivers from the rest, have some guts and stick to the rules, winning on skill, not money.

Raymond Luke, Townsville, QLD

*Well said!*

Dear D&T,

I really enjoy reading the magazine, but when's it going to come out monthly? Could you bring back "Stingray" as I and my friends really enjoy reading his column.

Richard Sampson, Strathalbyn, SA

*Richard, I guess we'll go monthly when the bloke in the front office says so! We'll see what we can do about Stingray.*

Dear D&T,

A couple of years ago, I used to race radio controlled buggies, and the whole club made it a fun occasion. Just recently I have taken up the sport again, and was surprised at the difference in attitude of people towards a hobby that was once fun, but now it seems that the person with the biggest cheque book wins the race all the time. What ever happened to good old fashioned competition where driver's skill won the race? Recently I went to a local buggy club, where I asked the President if I could have a run, but the reply was negative, and not what I expected. Personally, I felt it gave the whole club a bad image. I sat and watched an event which, in my opinion, was way too serious, much too unfriendly, and what was once supposed to be a fun pastime on a Sunday afternoon. What has happened to the hobby I love?

David Mataic.

*David, I couldn't agree with you more. It's unfortunate, but the "win at any costs" merchants are ruining the sport for the rest of us. It's a pity, but they know who they are, and they know what they're doing to 1/10th R/C car racing, because they've already done it to 1/12th class.*

Dear D&T,

I have read the editorial in D&T#5, and whole-heartedly agree with you. Unfortunately, what you wrote is true, and I can see it happening everywhere in Australian clubs, including my own, Canberra Off-Road. There are a couple of "win at all costs" types who don't worry that they'll stuff up the club, because the young blokes without money aren't staying. It's the way some adults are going, and I can see that the only way out is to race without having any trophies or prizes. I have started a club in Canberra for Oval and Velodrome, and it will be a

friendly, lose if you will, no selling at the track, no taking things seriously type of racing (like the old days). I know you need to have rules, and everybody should race by them, but when rules are bent for some and not for others; so a certain brand of car or motor can win; where will it end? So everybody, let's forget personality clashes, claims and counter claims and court cases, let's get back to having fun and enjoying the few years that we're here.

Bob Beniston, Canberra, ACT.

*Bob, you've put it in a nutshell, but the main problem is getting people to listen, and getting rid of the few people who are causing the problems in the first place, without having to start new classes like "professional", which I believe we'd be better off without.*

Dear D&T,

I'm glad your mag is out, all the other foreign mags cost a fortune. D&T has now reached a good standard, and hopefully it will stay that way. Having read all the issues, I notice you're tending to only test the latest model cars; must we trade in our present ones in order to keep up with what's in fashion? Please try to devote some space to "old time favourites". Furthermore, can you advise me on how to charge Ni-Cads without the use of a vehicle. Is there some sort of combined charger-transformer that can be plugged into an ordinary house powerpoint?

Mario Polycarpou, Maylands, W.A.

*Thanks for the letter Mario. You've made a good point about "old time favourites", and we'll see what we can do. Regarding charging, we should soon have a review of a charger which operates from mains voltage, and this should suit your needs.*

## AROUND THE CLUBS

### WEST AUSTRALIAN STATE CHAMPS 1988 1/10TH ELECTRIC & 1/8TH GAS OFF-ROAD

The State Championships were held over the Holiday weekend of 24/25/26th September 1988. A total entry of over 100 drivers meant there was stiff competition in all sections of the event held at Moojebing Street Off-Road track, home of the West Coast Model Rally Club.

It was very pleasing to see entrants from local and country clubs as well as individuals. Clubs represented included: Bunbury Buggy Club, Carine Model Car Club, Radio Rally Club, Rockingham Model Car Club, West Coast Model Rally Club.

The Clerks of the Course addressed drivers and pit crew following what was described as the most stringent but fair scrutineering ever seen in Western Australia. A three tier lap scoring system was used, with a video recording of the start/finish line eliminating any protests/disagreements. The race programme was adhered to and the whole day went smoothly, each driver having three races against a different set of drivers each time. Best two out of three races being used to decide the qualifiers, and the third being used as decider in the event of a tie.

The West Coast Model Rally Club wish to thank all entrants and sponsors (including parents).

Congratulations go to the winners. Well done fella's you are now STATE CHAMPIONS.

Results:

#### ELECTRIC 2WD STOCK

Nathan Hodder	Fox	West Coast MRC
Ashley Morris	H'made	Carine MCC
Nathen Barber	R.C. 10	Carine MCC

#### ELECTRIC 4WD STOCK

Guy Conder	Optima Mid	Carine MCC
Sammy Singlee	Optima Mid	Carine MCC
David Matthews	Mustang	West Coast MRC

#### GAS I.C. OPEN

Scott Bryce	PB.X3	West Coast MRC
Anthony Lees	Burns	Radio Rally Club
Nic Klaver	Burns	West Coast MRC

#### ELECTRIC 2WD OPEN

Gavin Reynolds	Fox	West Coast MRC
Joe Frontino	R.C. 10	Bunbury BC
Chris Smith	Fox	West Coast MRC

#### ELECTRIC 4WD OPEN 'A' FINAL

Stephen Davis	Mustang	West Coast MRC
Mark Debono	Optima Mid	West Coast MRC
Ray Soltoggio	Maxima	West Coast MRC

#### ELECTRIC 4WD OPEN 'B' FINAL

Richard Masters	Maxima	Radio Rally Club
Bill Davies	S/Shot	Carine MCC
John Cope	Optima	West Coast MRC



*The St Ives track. Good venue for '88 titles and next years World Champs. Pleasant surroundings too.*

*Pic: Brian Watts.*

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## NEW CLUB IN NORTH QLD

Garry Tardiani

The Ingham Radio Control Car Club wish to advise all readers that our recently formed club will be staging the North Queensland Championships on the 30th April & 1st May, 1989 in Ingham, Nth Qld.

The Ingham club consists of juniors and seniors, male and female competitors, of which most have raced in competitions all over North Queensland. Our club, of forty members, takes great pride in the track we have built from scratch and extends a welcome to any competitor who wishes to try it out.

The photo shows the majority of our track. People who have raced on it have commented that it is fast and a joy to race on.



## NEW TRACK FOR THE HUNTER

Trevor Rogers

The Newcastle Off Road Radio Controlled Car Club at last has a new home at which they hope to stay for quite some time.

The new track has been slow in coming but is now operating every Sunday from 9.30pm. Occasionally some of the lads are away in Sydney (usually at St. Ives) or in Melbourne (yes — this lot are a bit mad!) but there is usually some action every week to be involved with.

The track is called "Westlakes Model Raceway" in Freemans Drive (ie the main road) Cooranbong and is commercially operated — so all that a driver needs to do is turn up and race! Main race days are on the second and fourth Sundays in the month, with mornings on other weeks. For more information ring the secretary Trevor Rogers on (049) 77 2073 (ah).

## 1988 1/12th NATIONALS

Ric Bartolozzi

The 1988 1/12th Nationals were held at Yennora Woolsheds, Sydney.

1. Col Grenenger	(T.R.C.) 3	5. Barry Corfe	(12L) 9
(won on best 3rd heat)		6. Michael Geddes	(T.R.C.) 10
2. Rod Denning	(12L) 3	7. Alan Douglas	(12L) 10
3. Ric Bartolozzi	(T.R.C.) 4	8. Winston Bartolo	(12L) 13
4. Kevin Chu	(Delta) 8		

Junior Champion Alan Douglas    Concours Winner — Patrick Tougher    46 entrants

## COFFS HARBOUR CHAMPIONSHIPS

R. Caffery

The inaugural 1988 City of Coffs Harbour North Coast Championships of the Coffs Harbour Bailey Caltex Centre Radio Control Car Club was held at the club's track on the weekend of August 27 and 28.

Thirty five drivers from Sydney, Kempsey, Grafton and Coffs Harbour contested 2WD stock and 2WD open on Saturday and 4WD stock and 4WD open on Sunday.

The Thornton brothers, Darren and Scott, of Coffs Harbour, blitzed the field on Saturday with Darren winning the 2WD open and top junior and Scott winning the 2WD stock and top junior. R. Thurgood of Kempsey was second and J. Hollis also of Kempsey was third in 2WD stock.

Col Grenenger (Sydney) was second and Peter Philibossian (Sydney) third in the 2WD open. In the 4WD stock Scott Thornton again proved too strong, he also took out top junior. Darren Swain (Coffs Harbour) was second and David Hull (Coffs Harbour) third.

The Sydney drivers came into their own in the 4WD open with Peter Philibossian winning the event and Col Grenenger second. Craig Klingbiel (Coffs Harbour) was third. Only 1.314 laps separated these three drivers.

Mr Jack Grenenger (chairman of ORCA, NSW) presented the trophies on both days. The Coffs Harbour club hopes to make this an annual event.

## VICTORIAN STATE TITLES

Les Bone

Geez what a fantastic weekend of racing! In the weeks preceding the event the Host Club, Warrnambool, had sat down and decided that they would be remembered for a well organised event. Under the guidance of Robert Poole (Club President) everything from the p.a. system and tent hire to a professionally constructed track surface was worked out to the last detail. Admittedly, there were a few problems with the registration forms where some drivers misunderstood the dual entry system and tried to enter into stock class as well as modified. But that was all sorted out after a bit of political interstate letter writing."

"For future reference, the dual entry system was brought in after Australian drivers returned from the World Titles last year. As only modified class is used in the World Titles and the 2WD class is run before the 4WD it is an advantage for a 4WD driver to have driven on the track previously. ORRCA (Aust.) therefore advised that anyone wishing to compete for a position on the Australian Team be allowed to enter 2WD Mod. & 4WD Mod. at the same race meeting. It was also obvious that these events would have to be run over at least 2 days to separate the classes).

Saturday morning the usual drivers meeting was livened up with a good bit of Club P.R. The Mayoress of Warrnambool was asked to open the event. (Take note new Clubs, especially if you are 'into the Council for financial assistance!')



The usual drivers, Bartolozzi, Reade and Birtles (2WD Mod.) were up there but it was good to see a few regular 4WD drivers in with them, Willoughby and Watson for example. In the 4WD Stock class it was a superb battle between Keilor drivers Seckold and Harbour for 1st and 2nd but nothing made Martin Dykers more pleased than to be beaten by his son in the same race!

After the last race delegates from Victorian Clubs gathered in the Club House for an ORRCA Vic meeting. One item for discussion was the 1989 Australian Titles, which are being hosted by Victorian clubs in the Melbourne Showgrounds on 11th-13th March. The track is being constructed under cover and will be available for use from mid December 1988 to mid September 1989. Another item was the need to purchase a transponder lap scoring system. All Clubs agree that the system is necessary and that although ORRCA Victoria do not have the full finance, loans have been pledged from some Clubs. The final item was the idea of introducing a 540 Class into the ORRCA shield next year. Clubs would still have 12 drivers per team but now have the option of entering 1 of 5 classes (4WD Mod or Stock, 2WD Mod or Stock or Mabuchi/Johnson 540). Also Clubs wishing to host an ORRCA Shield Round or the Victorian Titles must have their written submission into the Secretary before the Shepparton Round on 20th November.

The 4 races of 2WD Stock and 8 races of 4WD Mod flew by very quickly and by the time the finals had been posted the finalists were raring to go. In 2WD stock David Crowe showed his superiority by win-



ning all 3 of his A final racing, but only just. The A final of 4WD Mod. was billed as being the battle of the biggies and boy what a cliff hanger. The driving was so close and neat that the lead changed constantly throughout the races. The first of the A races was only just won by Neil Millard (driving the only Optima Mid). In the second race, Millard's arch rival was rounding the last corner while in the lead only to lose a wheel from his Yokomo and allow Millard to win the 2nd of the finals and therefore the Championship.

Congratulations go to all 4 State title Drivers. With the quality of the driving that weekend you all deserve the champagne that was (thankfully) sprayed into the wind.

The track surface was the neatest, smoothest and most hardwearing track that I have driven on. It was calculated that almost 20,000 laps were completed over 3 days and the surface showed very little sign of break-up. Contact the Club for the track surface recipe.

### Results:

**2WD STOCK:** David Crowe, Paul Savoy, Graeme Williams, Paul Gietman, Damien Timms, Denis Garlick, David Ferriggi, Brent Amphlett. (29 drivers in this class).

**2WD MOD:** Rick Bartolozzi, Andrew Reade, Reece Birtles, Brett Willoughby, David Watson, David Griffin, Andrew Nelson, Stefan Frahm. (44 drivers in this class).

**4WD STOCK: A Final** Kevin Seckold, Lyle Harbour, John Dykers, Graeme Moore, Mark Sonogo, Jason Roger, Craig Kermond, Martin Dykers. (35 drivers in this class).

**4WD MOD: A Final** Neal Millard, Michael Geddes, Colin Grenenger, Reece Birtles, Denis Beilby, Rick Bartolozzi, Peter Philibossian, Andrew Miller. (65 drivers in this class).

Total 169 entries.



*Rick Bartolozzi & Neil Millard spraying Michael Geddes & Co. with champers!*



*Here are some exciting action photos taken at the 88 Qld Champs from Stewart Marflett, winner of a subscription in the Action Photo Competition issue No. 8. Keep up the great work, Stewart!*

## PINE RIVERS OVAL EVENT

Brian Edwards

The Pine Rivers Off Road Racing Club held their first organized oval event on 11th September at the Caboolture Velodrome in South East Queensland.

### Results:

**540 Stock Final:** Martyn Ward 7 laps (34.65k/h), Leonard Lai 6.05 laps, Michael Davidson 5.95 laps, Lex Morley 5.90 laps, John Gear 4.90 laps.

**540 Super Stock:** Ian Brock 9 laps (44.70 k/h), Frazer Smith 8.05 laps, Brett Pomroy 5.85 laps, Brian Edwards 5.65 laps.

**Unlimited Final:** John Perkins 10.70 laps (52.96k/h), Bob Crawford 10.25 laps, Graeme Day 9.85 laps, Robert Lingard 8.35 laps, Andrew Bowie 7 laps.

**Fastest car on the day:** Graeme Day 10.755 laps (53.34 k/h).

Pine Rivers Off Road Racing Club wish to thank the following: Hamilton Wheelers, Mr John Low, Model Sports & Hobbies, Mr Graeme Day and the competitors.

There is to be another event on 11th December at the Chandler Velodrome — the 1988 Brisbane Oval Track Championships. Contact Mr John Low, 32 Mordant St, Doomben, Qld, 4007 or phone (07) 268 4276.

## NSW 1/12th TITLES

The NSW 1/12th Titles are to be held on December 3 and 4 1988 at the State Sports Centre, Homebush. A very large indoor complex and to be raced on carpet. For more information contact Rick Bartolozzi on (02) 94 3803.



Drivers at the Melton 2 hour endurance race.

### MELTON T.O.R.C.C. 2 HOUR ENDURANCE RACE — 30TH OCTOBER, 1988

Team No	Car	Motor	Battery	Speed C'trol	Tyres	Radio	Team No.	Club	Drivers Names	Final Laps
1 Black	PB Mustang	540 Mabuchi	Tamiya 1200 Trinity 1700	NEA 900 JR	Dynamite	Magnum Junior	1 PB Mustang	Broadmeadows	K. Powell K. Lowden H. Abbas J. Peterson	121 DNF
2 White	Ultima	540 Mabuchi	SCE 1700	NOVA	Schumacher Pinspike B	Maching A Sanyo	2 Ultima	Melton	L. McDiarmid M. Polistina G. Dettman D. Rodda	173.1
3 Red	Ultima	05R Reedy Special	Saft, Tamiya Mixture	900B JR	Yokomo	KO EXII	3 Ultima	Knox	I. McPherson G. McPherson C. Marshall A. Crowe	191.5
4 Green	Ultima	540 Mabuchi	Tamiya Reds	MK 600	Copy Cats	Futaba	4 Ultima	Melton	S. Brydson I. Brydson M. Bruce J. Barrett	128.4
5 Blue	Schumacher CAT	Trinity 17 T double	Trinity 1200 & 1700	Tekin	Copy cats	KO	5 CAT	Geelong/ Altona	D. Beilby B. Day M. Beath C. Simpson D. Walker	209.3
6 Yellow	Ultima	MG Brown Dot	Magnum	KO CXII	Copy Cats	KO EX5	6 Ultima	Melton/ Templestowe	D. Griffin K. Madder T. Grey N. Millard	162.7
7 Orange	Ultima	Kyosho 360 Gold	Trinity 1200 & 1700	KO CXII	Copy Cats	Magnum	7 Ultima	Broadmeadows	G. Harris A. Harris K. Olerenshaw F. Roberts	128.7
8 Check	Hotshot	Mabuchi Gold	Trinity 1200 & 1700	NEA 800	Copy Cats	Tactics	8 Hotshot	Melton	T. Heitbaum L. Bone R. Quarrier T. Sackl	118.1

### MELTON 2 HOUR ENDURANCE RACE

Les Bone

This was the third such endurance race that Melton has organised and they just keep getting better. A Committee decision a few months ago to keep requests for driving teams low key, worked well. In one sense it would have been good to advertise and announce the event requesting team entries, but then the sad part would be telling teams, sorry all full up! As it turned out we had a cancellation from Altona 2 nights before the race. It didn't take long, however, for the news to get around and a request from Geelong to enter came on the night before the race.

Sunday, 30th October, turned out to be a beautiful summers day. After the usual drivers meeting at which the very loose rules were outlined the call to race was given. The stop watch was started and the 8 cars hurled themselves into the first corner...and crashed! Why, O, why, if there is 2 hours to race do people go mad into the first corner? I suppose we are all revheads at heart. The race settled down with the Hotshot being the first casualty with what was thought to be an over geared motor. All of the others were going well with the CAT of Dennis Beilby looking very quick. It was going so quick in fact that Gary Griffin was overheard betting that it wouldn't last 2 hours.

As can be seen from the entry list the Kyosho Ultima had a good following. All the cars ran very well with almost no trouble, the lap scores were called out at half hour intervals and for the first hour there was very little in it but the CAT started to pull steadily away.

Down at the other end the Hotshot Team had lost so much time after discovering that it wasn't a crook motor but a broken speed controller they decided to enter another car (illegal and against the rules but all good fun!) The Neil Millard, David Griffin and Tony Grey team driving Tony's Ultima should have been a force to be reckoned with, especially with Kerry (Neil's girlfriend) driving but they just couldn't compete with the sheer power of Lance McDiarmid's team.

The PB from the Broadmeadows Club was going good until it melted its motor but the teams to watch were the Brydson (Ultima) from Melton and the Harris (Ultima) from Broadmeadows. The Brydson (Ultima) had blown a speed controller on the start line but fought back to just miss out on the 5th spot by .3 of a lap.

By the time it got to 1 hour and 45 minutes Gary Griffin had just about eaten his words as the CAT was not only still going but was leading by 10 laps. Then, at the 1 hour 55 minute point the CAT hit a barrier and pushed its front gearbox back causing the belt to go slack. It hadn't been using rear wheel drive all day anyway, so when it lost front drive it was really in trouble. 2nd place, (Ultima from Templestowe) was very discreet and of course saddened by the CAT's misfortune! It was all too late however, the 2 hours finished before Templestowe could catch the CAT's score.

Another fantastic day of racing, all entrants were given a medallion, the champagne was sprayed and they were already shouting "when is the next one?" "What about a 3 hour next time?"



# CLUB DIRECTORY

## AUSTRALIAN NATIONAL

### Australian National Body

Association of Australian RC Model Car Clubs.....John Grant

## NEW SOUTH WALES

Armidale RC Off Road Car Club.....Russell Johns  
Bankstown Off Road Model Auto Club.....Len Bocking  
Broken Hill Off Road RC Car Club.....Sean Connolly  
Castle Hill Model Off Road Buggy Racing Club....Alan McLeay  
Coffs Harbour Bailey Caltex Centre RC Car Club...Larry Thornton  
Dubbo Radio Control Car Club.....Darran Neave  
Hornsby Model Off Road Buggy Club.....Gordon Creed  
Illawarra RC Electric Car Club.....Fred Geerling  
Kempsey Off Road Model Auto Club.....Rod Thurgood  
Newcastle Off Road Car Club.....Trevor Rogers  
New South Wales Radio Controlled Racing Car Club Laurie Campfield  
Shepparton (G.V.R.C.C. Inc.).....Peter Chamberlain  
Southern Suburbs Off Road Racing Club.....Greg Page  
Western Districts Radio Control Car Club.....Noel Machon

## VICTORIA

Altona Off Road Electric Car Club.....John Willoughby  
Ararat Model Club.....David McAdie  
Australian Model Car Club (Static Models only)... B. I. MacKay  
Ballarat Off Road Radio Control Association.....Gayle Collier  
Ballarat Radio Control Car Club.....Peter Pelchen  
Bendigo Radio Control Car Club.....Ken Moyle  
Bright Radio Controlled Car Club.....Leigh Kennedy  
Broadmeadows Electric Off Road Association.....Russell Harris  
Electric Racing Club.....Greg Collings  
Frankston Remote Control Electric Car Club.....Rod Boxall  
Geelong Electric Racing Car Society.....Barry Hobbs  
Geelong Radio Control Car Club.....Tom Richert  
Geelong Off Road Racers.....Dennis Beilby  
Glenroy Electric Off Road Car Association.....Rowie Watt  
Hamilton (H.R.C.C.S.C.).....Dennis Morton  
Horsham Radio Control Car Club.....Jeff Meister  
Keilor Electric Off Road Car Association.....T. Spencer  
Knox Radio Control Off Road Car Club.....Suzanne Crowe  
Latrobe Valley Radio Control Car Club.....David Hurst  
Melton (T.O.R.R.C.C.).....Les Bone  
Mildura & District Radio Control Vehicles Club....Paul Robinson  
Melbourne Radio Control Circuit Racers.....Ron Prins  
Portland Recreational R.C. Model Car Club.....Alan Johnson  
Stawell Radio Control Car Club.....Peter Marrow  
Templestowe: T.O.R.R.C.C. Inc.....Chris Young  
Wantirna Radio Electric Car Club.....Colin Smith  
Warrnambool R.C. Buggy Club.....Robert Poole  
Wodonga Radio Control Car Club.....Wayne Barton

## QUEENSLAND

Boondall Electric Racers.....Graeme Day  
Bowen Off-Road R.C. Racing Enthusiasts.....Barry Tait  
Brisbane Electric Auto Racers.....Anthony Brown  
Burdekin Off Road Model Car Club.....Frank McCabe  
Cairns Radio Controlled Buggy Club.....Michael O'Brien  
Eagleby.....Peter McLachlan  
Ekibin Outlaws.....Colin Bostock  
Gladstone.....Geoff Humberstone  
Gold Coast Electric Car Club.....Alan McGilvray  
Gold Coast Off Road Club.....Robin Dando  
Ingham Radio Control Car Club.....Garry Tardiani  
Ipswich Police Youth Club R.C. Car Club.....Frank Matthews  
Kensington Village Radio Electric Car Club.....Peter Hoer  
Maryborough Radio Control Buggy Club.....Diane Packer  
Mount Isa Radio Controlled Model Car Club.....Vic Trotner  
Noosa District Off Road R.C. Car Club.....Brett Powter  
Pine Rivers Off Road Racing Club.....Wayne Lait

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Old R.C. Car Racing Association (1/8 scale).....Keith Berry  
Old R.C. Car Racing Association (1/12 scale).....Trevor Kerr  
Queensland Radio Electric Car Association.....John Platt  
Rockhampton Radio Control Car Club.....Trevor Large  
Toowoomba Police Youth Club Model Off Road Ass....Colin Young  
Toowoomba Radio Control Model Club.....John Carter  
Warwick.....Trevor Knight  
Wynnum Police Youth Club.....Leanne Cowan

## WESTERN AUSTRALIA

Bunbury Radio Controlled Buggy Club.....Malcolm Brown  
Cavell Model Race Car Club of W.A. Inc.....Helen Cavanagh  
Esperance Radio Control Car Club.....Cheryl Dickerson  
Perth Radio Electric Car Club.....Paul Baartz  
Perth Southern Districts Model Race Car Club...Shane Files  
Radio Rally Club of Western Australia (Inc.).....Jim Lees  
Rockingham Radio Control Car Club.....Lorraine West  
W.A. R.C. Model Car Club.....Rex Wedd  
West Coast Model Rally Club.....Nick Klaver

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## TASMANIA

Burnie R.C. Car Club.....John Gillam  
Devonport R.C. Car Club.....Peter Walker  
Hobart Auto Modellers Association.....Roger Mahoney  
Hobart Electric Off Road Club.....John Guest  
Hobart Radio Control Car Club.....Colin Whitton  
Tamar Radio Electric Car Club Launceston.....Glenn Price  
Tasmanian Electric Car Club.....Mike Keller

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(002) 47 9393

## AUSTRALIAN CAPITAL TERRITORY CONTACT

Canberra Off Road Model Car Club.....Gary Davey

## PHONE

(062) 31 8306

## NORTHERN TERRITORY

Alice Springs Radio Control Modellers.....Glen Saxby

## CONTACT

## PHONE

(089) 52 4027

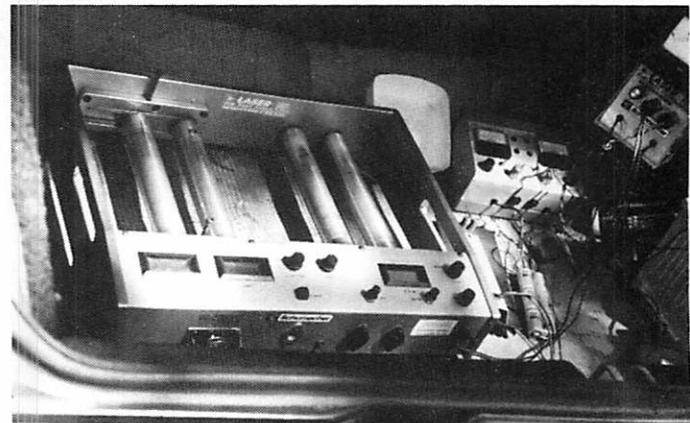
## SOUTH AUSTRALIA

Adelaide Hills Model Club.....Murray Scott  
Adelaide Northern Districts O/R Racing Club.....Philip Bushell  
Marion Model Buggy Club.....Mike O'Reilly  
Model Radio Car Club of Adelaide.....Ray Harrison  
Murray Bridge Radio Control Car Club.....Bruce Pearson  
North Eastern Radio Control Car Club.....Lucy Cunningham  
Port Augusta Radio Control Car Club.....Brett Prentis  
Scale Off Road Racing Club of South Australia...Ian Wade  
Southern District Model Car Club.....Wayne Currie  
The Farm Radio Controlled Car Club.....John Hutchins  
Whyalla Radio Control Car Club.....Hellin Sellar

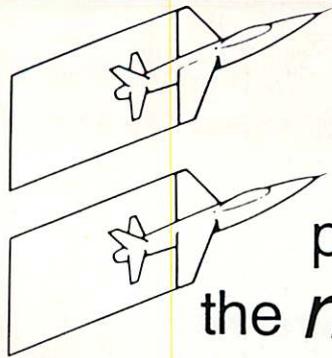
## CONTACT

## PHONE

(08) 391 1669  
(08) 252 0438  
(08) 29 3374  
(08) 250 4114  
(085) 32 1231  
(08) 264 8256  
(086) 42 6200  
(08) 46 5394  
(08) 382 0380  
(08) 263 0411  
(086) 45 9539



*Spotted at this years National Titles was Don Clarke's rolling road. Has own regulated power source and take-off for testing motors under load. A peak of 21 amps is typical load for most tracks. Gold anodised and beautifully made by fitter Don, but not marketed.*



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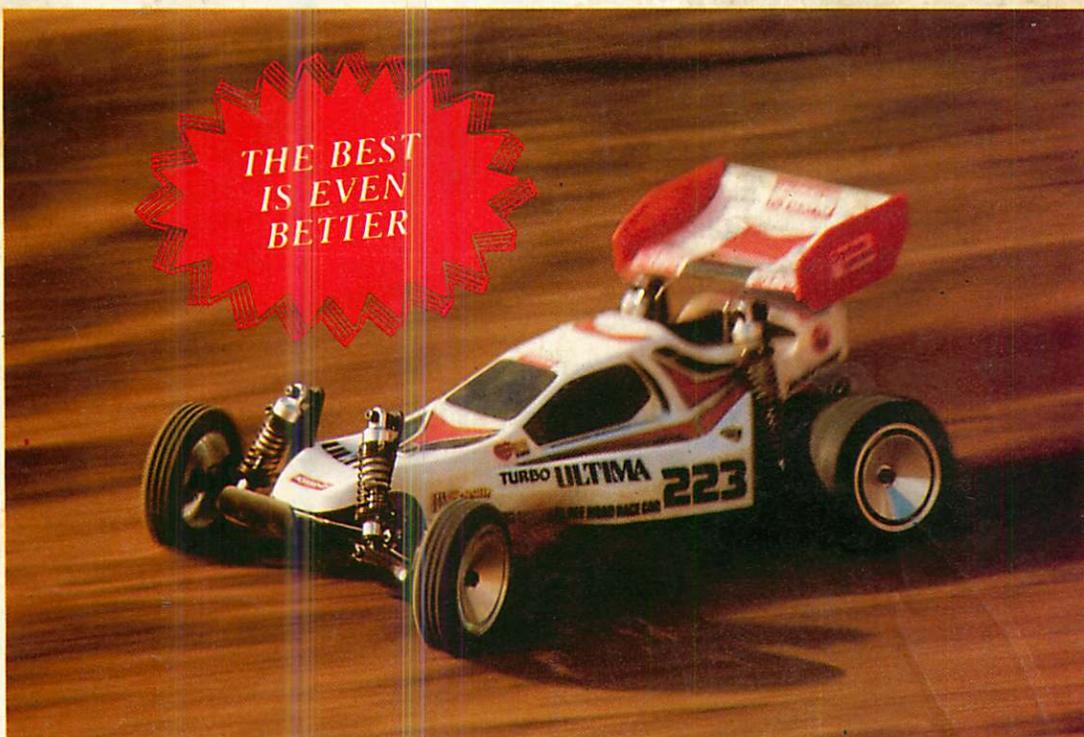


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