

Model **CARS** Monthly



MODEL PUBLICATION



**NUREMBURG
CAR SHOW**

-new wheels for '85

**ASSOCIATED
'RC10'**

**-born in the
USA**

S...BUGGIES...CIRCUIT RACERS...STOCKCARS...BU

TEAM ASSOCIATED RC10

ROAR 1:10 NATIONAL CHAMPION ORRCA NATIONAL CHAMPION



THE TEAM DOES IT IN THE DIRT.

Race the car that beat the imports in the toughest kind of off-road competition.

The All-American Associated RC10 took home the gold in both the ROAR and ORRCA National Championships.

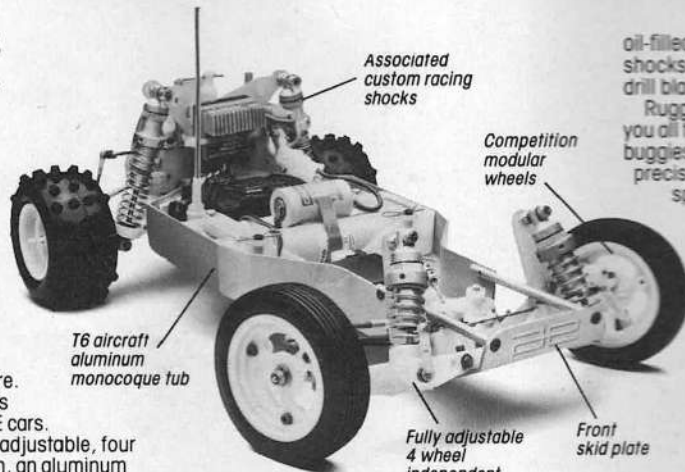
Our RC10 turned back the foreign car invasion with the same racecar technology that has kept Team Associated on top of the RC car racing world for over 15 years.

A RACE CAR, NOT A TOY.

Sure, you've heard that before.

But Team Associated designs and engineers only model RACE cars.

The new RC10 features fully adjustable, four wheel independent suspension, an aluminum alloy monocoque tub and race-proven hardware throughout.



oil-filled racing shocks. These custom shocks use machined alloy cylinders and drill blank shafts for silky smooth action.

Rugged, yet light, the suspension gives you all the adjustability of full size, full race buggies. The A-arm/Ball joint design allows precise camber, caster, ride height and spring rate tuning. Even anti-roll bars and a VariLok diff are included.

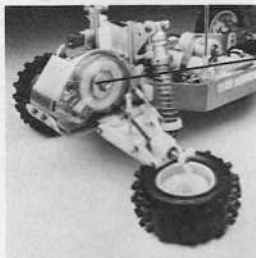
Exceptional ground clearance and low center of gravity also contribute to the superb balance and performance of the RC10 over all types of terrain.

GET THE JUMP ON THE COMPETITION.

Go RC off-road racing with the leaders. The National Champion RC10 is available now and legal for ROAR and ORRCA nationally sanctioned competition.

Complete RC10 kits, replacement parts and spares are readily available through model car racing's most extensive dealer network.

Take the challenge and build yourself a winner. Team Associated's RC10.



Sealed gearbox
VariLok
differential

And the RC10 doesn't need expensive accessories and modifications to handle the roughest tracks. The strength and durability is standard equipment.

RACE-WINNING ENGINEERING.

For maximum traction the RC10 suspension is damped by long throw,

Full race rear suspension includes bulletproof half shaft and u-joints with tapered and keyed modular wheels. Quick release knock off design for fast pit work and tuning.



Smooth undercarriage
maximum ground clearance



Model cars for Real racers.

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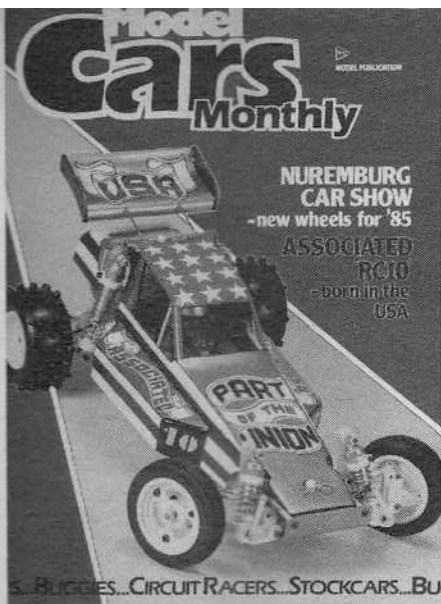
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Fareham, Hants
Tel (0329) 233945



Cover
Another creation from the brush of Gary Cannell adorns our front page this month. This time the 'Associated RC10' in distinctive 'American' colour scheme. Photo: Manny Cefai.

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Model Cars Monthly

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A brief look at page 11 will reveal to you a listing of events for April and May. There are in fact 32 events listed and we're quite ready to admit that it is not as comprehensive as it might be.

What is most interesting is the number of different leagues, championships, series and so on. Everybody seems to be running some sort of local championship many with very grandiose titles, e.g. West Midlands Summer Championship meeting round four.

Reading some of the details I often wonder how many people actually turn up to these 'Championship' events? It's clear that there is still an awful lot of grass roots racing going on even though our so-called National Championship events are becoming increasingly under-subscribed. With such a fragmented racing scene, is it any wonder?



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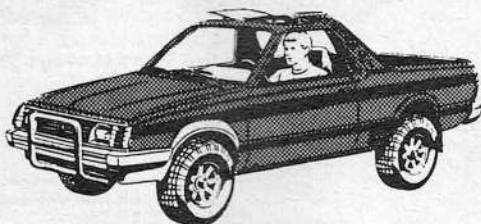
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We value your custom ... the customer is important to us, we cannot survive without you so we try harder to please. We are even willing to keep up the good name of Tamiya by offering to deal with any problems connected with your Tamiya car purchased elsewhere ... all you need do is bring in your car along with your receipt and if we can we will help you with your problem or guarantee complaint (how can we be fairer than that?).

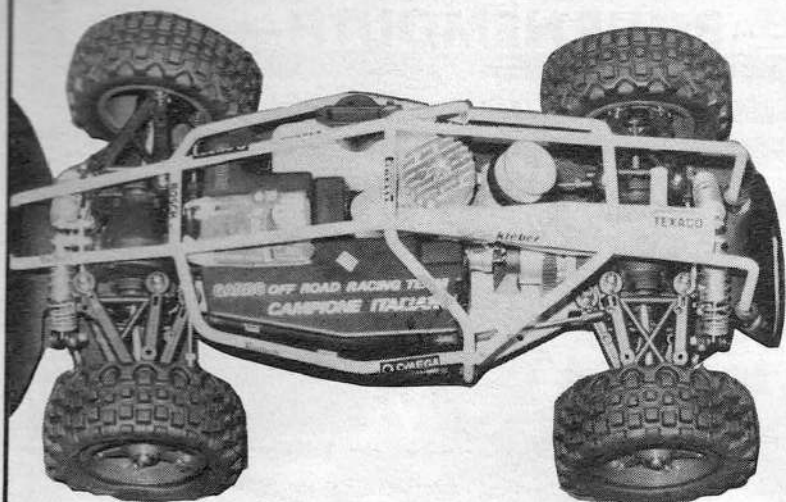
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£275.00

incl. VAT and
Picco 21 engine



The assembled off road excellence the winningest 1/8 buggy of 1984 continues to be distributed by PB in 1985. 4 wheel drive, 3 diffs, roll cage, low profile types, hydraulic shocks.

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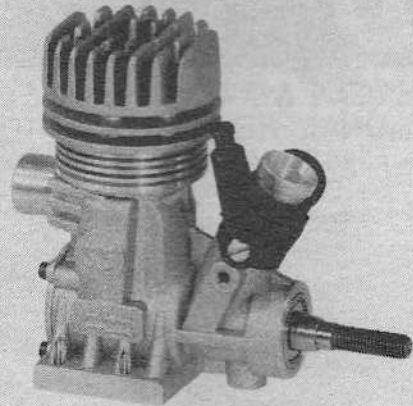
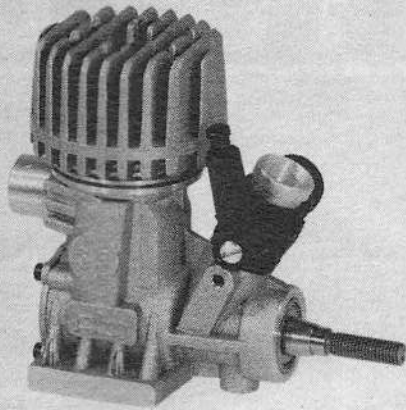
Mustang Xi2

£214.00 inc VAT

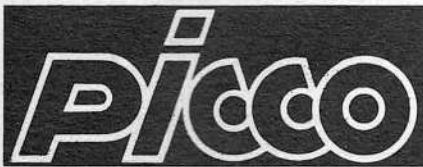


- 4 wheel drive
- 4 wheel steering
- 2 of PB's strong diffs

Lexan body A stamped, addressed envelope will bring more exciting details



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1/8 Circuit Racing News

Are you considering the purchase of a 4WD circuit car? If the answer is yes then does it have these features?

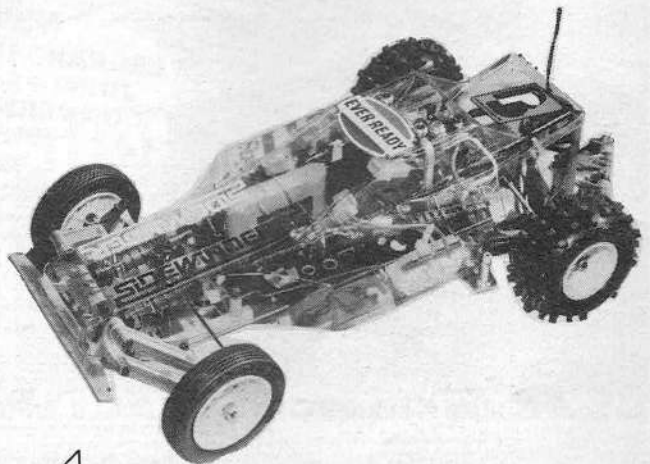
- A conversion from your existing 2WD car to 4WD so offering 4WD at minimum cost.
- Simple, adjustment of front wheel to rear wheel ratio to allow differing type sizes to be used.
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- Torque apportionment front to rear to ensure the necessary drive and so retain steering and type life.

If the car that you're considering is not the

NOVAX4

then it probably doesn't have most (or even all) of the above, vitally important, features. It will pay you to consider very carefully before you make a hasty and expensive mistake. You get a fair deal from PB — The Innovators

SIDEWINDER



If you would like to receive all the latest news join the exciting PB Owners Club Send a postcard with your name and address

1/10 electric off roader £89.50 with Baja Body on £93.92 with roll cage including gear differential, speed controller with reverse, Lexan bodyshell strong, lightweight 54D motor, pre-assembled



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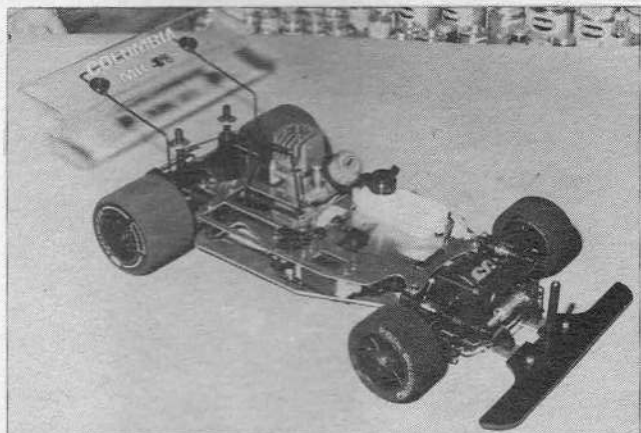
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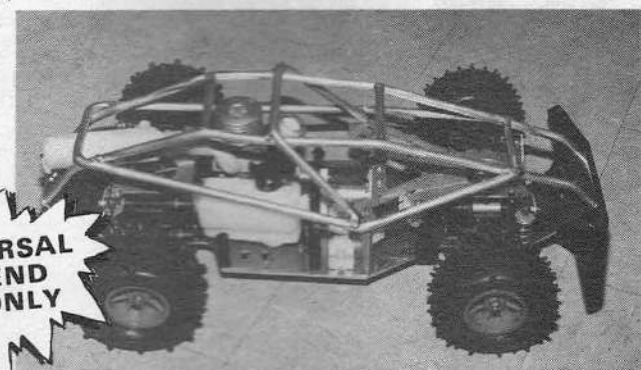
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 SENSATIONAL NEW CAR FEATURING FOUR-WHEEL SHAFT DRIVE, CONSTANT VOLUME MONO SHOCK DAMPERS, QUICK-CHANGE WHEELS. 3 DIFFS. CAN BE FITTED. **£295.00**



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£19.95

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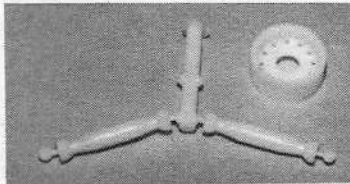
FROG FRONT SHOCK SET
£12.25



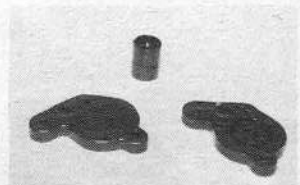
KYOSHO ADJUSTABLE COIL SPRING SET



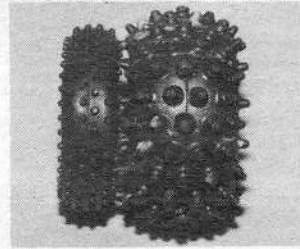
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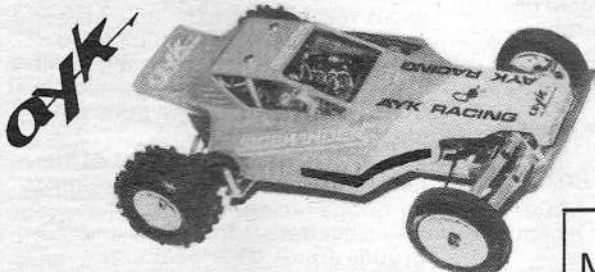


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Sidewinder wins BRCA Nat. Championship Modified Class

SIDEWINDER

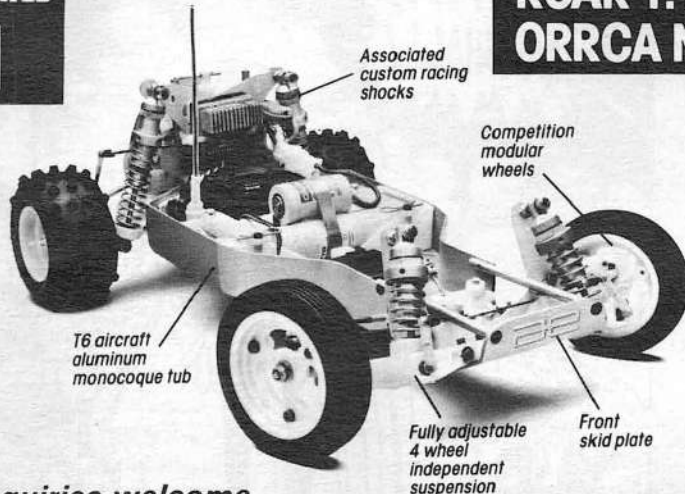
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SIDEWINDER
Now only £84.95

TEAM ASSOCIATED
RC10

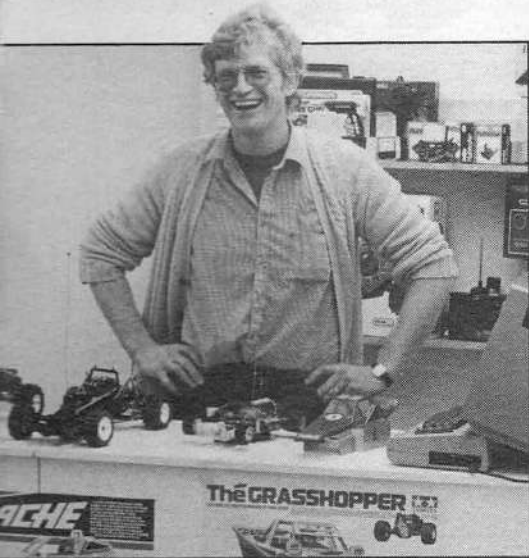
ROAR 1:10 NATIONAL CHAMPION
ORRCA NATIONAL CHAMPION



All Trade Enquiries welcome

ae
Model cars for Real racers.

Seen & Heard



Bill Jones gets dirty

We thought it was just a filthy rumour at first — but no, it's true, Bill Jones (BRCA 1/12th Secretary) has opened up a model shop and started a 1/10th electric buggy club in the quaint old town of Romsey, Hants.

We paid a visit to Bill's new premises and found the man himself about to attack a club car with a red hot soldering iron. *Supercharge Models* is already an established mail order outlet dealing mainly with 1/12th scale goods. Now that it has gone retail, Bill has recognised the need for a healthy local club and has formed and promoted the **Romsey 1/10th Off Road Club**. They race every Sunday at the 'Malthouse Inn,' Timsbury, Nr. Romsey, Hants on a purpose built circuit. The club was started just before Christmas and already has over 40 members. Obviously *free* membership and *free* racing plus great fun represents the escalating membership.

Supercharge Models is situated at 20 Church Street, Romsey, Hants. SO5 8BT. Tel: (0794) 517403 for more details.

Plumpton Model Show

The successful Plumpton Race Course Model Show is to be repeated this year on the weekend of August 17/18th. The list of attractions will appeal to all modellers and their families and provide an action packed weekend.

R/C, 3000mph Jets	Helicopters
Blue Angels	Boats
Parachutists	Model Rockets
Helicopter rides	Micro Lights
Aeroplanes	Traction Engines
Cars	

Camping and caravanning is available from Friday evening to Monday morning for £15.00 total. All the amenities are available including bar and food. The racecourse is situated ten miles from Brighton in Sussex. Full details from Dave Bishop, *DB Sound*, 17 The Square, Tatsfield, Kent. Tel. Tatsfield 550.

OPS at MacGregors

MacGregor Industries have added to their comprehensive range of modelling products with the acquisition of the UK OPS engine Agency.

These top quality motors from Italy are renowned worldwide particularly in the field of high performance, two stroke car engines.

MacGregor Industries have already begun distributing OPS products and will be delighted to hear from customers.

MacGregor Industries, Canal Estate, Langley, Berks.

North Devon Radio Controlled Model Car Club

The North Devon RCMCC has had a change of secretary, the job has now been handed over to Mr. Don Luongo who took over from Mr. Bob Stiles in January.

The club is keen to hear from any people in the North Devon area who have 1/8th IC cars, 1/10th Off Road, or 1/8th Off Road buggies for the club would like to expand its racing activities.

At the moment we only race circuit cars at a local car park in Barnstaple, but hope one day to have a permanent circuit. If anyone is interested, Don would be only pleased to hear from them on Bideford 2774.

The club will start racing again on Sunday morning as from March, 10.30am to 12.30 in Pottington Industrial Estate *SO LO* car park. Hope to hear from potential racers soon as we want to move forward fast.

Worcester Model Car Club

The club has been racing 1/10th electric buggies here since December 1983, when the club moved to Worcester from Malvern.

They currently race indoors on Tuesday evening at Christopher

Whitehead School, St. Johns, Worcester from 7.30pm.

The track is laid with sand filled hose on 1/12th carpet, with various ramps, jumps and bumps to negotiate. The lap counting and final sorting is done by a computer (Dragon 32K) coupled to a printer, to keep the racing flowing smoothly.

During the school summer holidays they race outside on Sunday afternoons behind County Hall on the Spetchley Road. They also perform at various fetes throughout the summer.

The club currently have 50 full members and a race attendance of between 20 and 30 entrants a night.

Non-members are always welcome and for £1.50 they can enjoy an evening's competitive racing which usually consists of three rounds of heats and two finals, trophies being awarded to the winners.

Racers or other clubs who want to know more about the club's activities should contact the club secretary at 58 Carlisle Road, Ronkswood, Worcester WR5 14X. Tel. (0905) 356247 after 7pm.

Denham RCMC

The club has only recently started operating at the Memorial Hall, Denham Village, Bucks. At present we only race 1/12th and 1/10th scale electric vehicles indoors on carpet from 7-11pm on Fridays. The hall is easily reached from the A40, M40 and shortly the M25 will be completed. Race fees are; Seniors £1.50, Juniors 80p light refreshments are available at the hall although several pubs are close by.

A large car park at the rear of the hall may be used during the summer for buggy racing.

Further details from Pete and Brenda Jones, 31 Broadhurst Gardens, Eastcote, Ruislip, Middx. HA4 9JQ. Tel: 01-868-7352 or 01-965-2122.



Contest Calendar

APRIL 6/7/8

1/8TH CIRCUIT
BRCA National Championship, Round 1, Southampton, Weston Shore.
Saloon, Formula, Sports/GT

APRIL 6

1/12TH CIRCUIT
Vauxhall Radio Car Club, Vauxhall Motors, Luton, Beds.
Tel: Keith Helmke, (0582) 864420

APRIL 7

1/10TH BUGGIES
BRCA National Championship, Round 1, Eden Park Overlanders, Kent.
540 Std. Class, BRCA Rules.
S.A.E. to Jim Paffett, 124 Chestnut Avenue, West Wickham, Kent.

APRIL 7

1/10TH BUGGIES
Bell Fruit Rally-Cross Champs, Norwich Rough Riders, Norfolk.
BRCA Rules, 540 Open, Fee £2.00.
S.A.E. to, Graham Crisp, 70 Hillcrest Avenue, Toftwood,
East Dereham, Norfolk NR19 1LP. Tel: (0362) 67538

APRIL 7

1/10TH BUGGIES
Tamiya Off-Road Championship.
White Hart Rallycross Club, Chesterfield.
S.A.E. to: Derek Bailey, 2 Bank Street, Brimington, Chesterfield.
Tel: (0246) 35796

APRIL 7/8

1/8TH OFF-ROAD
BRCA Off-Road Nationals. Remote World, Reading, Berks.
Restricted Class A-Final. Unrestricted Class A&B Final.
S.A.E. to: Richard Stinson, c/o Windsor, Model Shop, 45 Albany Road,
Windsor, (off St. Leonard's Road), Berks. Tel: (075 35) 56321

APRIL 13

1/12TH CIRCUIT
Ally Pally Carpet League, Woodside Leisure Centre, Garston, Watford.
Mod Class, A-Z Finals.
Tel: Nick Adams, 01-866 5945

APRIL 14

1/8TH CIRCUIT
East Midlands League, Round 2.
Tibshelf, Derbys. Sports/GT Class.
Tel: Joan Heffer, (0773) 872805

APRIL 20/21

1/12TH CIRCUIT
BRCA National Championship, Round 2, GEC Stychfields, Stafford, Staffs.
Std/Mod Classes. A-Z Finals.
S.A.E. to: J. Robson, 1 Aldersleigh Drive, Wildwood, Stafford ST17 4RY.
Tel: (0785) 662242

APRIL 21

1/10TH BUGGIES
Donisthorpe M.W.M.C.C. Staffs. Radio Race Car Round 2.
BRCA Rules, 540 Class Std.
S.A.E. to: Roy Statham, 5 School Street, Oakthorpe, Burton-on-Trent
DE12 7RE. Tel: (0530) 71285.

APRIL 21

1/10TH BUGGIES
Worlds End O.R.C. Audi Sport Challenge, Northants.
BRCA Rules. A-Z Finals. Pre-Entry £4.00.
S.A.E. to: CRS Promotions, 63 Wantage Road, Northampton,
Northants. Tel: (0604) 844943

APRIL 21

1/8TH CIRCUIT
London Sports Car Championships, Round 2, Crystal Palace
National Rec. Centre, London.
Tel: John Daniels, 01-656-9904

APRIL 28

1/10TH BUGGIES
Northern League, Round 2, Baggeridge B.C., Wolverhampton.
S.A.E. to: Ian Littley, Penn Models, 317 Penn Road, Penn, Wolverhampton.

APRIL 28

1/8TH OFF-ROAD
BRCA National Championship, Round 3, Basingstoke M.C.C. Hants.
Restricted and Unrestricted Class. Entry Fee £4.00.
S.A.E. to: S. Pyne, 11 Woodpecker Close, Kempshot, Basingstoke,
Hants RG22 5QH.

MAY 4/5

1/8TH OFF-ROAD
BRCA National Championship, Round 4, Primrose Valley, Filey, Yorks.
Unrestricted and Restricted Class.
S.A.E. to: J. Lindstrom, 6 Parkway, Queensbury, Bradford BD13 2JA.
Tel: (0274) 815465

MAY 4/5/6

1/8TH CIRCUIT
BRCA National Championship, Round 2, Wombwell R.C.C.C., Yorks.
Saloon, Formula, Sports/GT.

MAY 5/6

1/10TH BUGGIES
Tamiya Off-Road Championship, Rushden Historic Transport Festival,
Northants. S.A.E. to: CRS Promotions, 63 Wantage Road, Northampton,
Northants. Tel: 0604) 844943

MAY 12

1/10TH BUGGIES
Donisthorpe M.W.M.C.C. Staffs, Midland Championships.
BRCA Rules. 540, 380 Std Class. SAE to: Roy Statham,
5 School Street, Oakthorpe, Burton-on-Trent DE12 7RE.
Tel: (0530) 71285

MAY 11/12

1/8TH CIRCUIT
BRCA National Championship, Round 3
Aldershot, Badshot Lea, Hants.
Formula, Sports/GT.

MAY 12

1/10TH BUGGIES
Tamiya Off-Road Championship, Sandown Park Model Show, Surrey.
S.A.E. to: CRS Promotions, 63 Wantage Road, Northants, Northampton.
Tel: (0604) 844943

MAY 12

1/8TH OFF-ROAD
BRCA National Championship, Round 5 Bicester, Oxon.
Restricted and Unrestricted Class.
S.A.E. to: Alec Hudson, Howes Model Shop, 9-10 Broad Street,
Oxford OX1 3AJ.

MAY 18

1/12TH CIRCUIT
Vauxhall Motors RCC, Vauxhall Motors, Luton, Beds.
Tel: Keith Helmke (0582) 864420

MAY 19

1/12TH CIRCUIT
Stafford Mini-National Series, GEC Stychfields, Staffs.
Tel: J. Robson (0785) 662242

MAY 19

1/8TH CIRCUIT
East Midlands League, Round 3, Lilford Park, Northants.
Saloon Class.

MAY 19

1/10TH BUGGIES
Tamiya Off-Road Championship.
Three Magpies Buggy Club, Rotherham.
S.A.E. to: Kevin Creaser, 10 Chatsworth Rise, Brimsworth, Rotherham,
Yorks. Tel: (0709) 66217 after 7 p.m.

MAY 19

1/10TH BUGGIES
BRCA/Ever Ready Series, Round 2. Scarborough R.C.M.C.
Std. & Mod. A-Z Finals. Fee £3.50.
S.A.E. to: Dave Webb, 60 Newlands Park Grove, Scarborough,
N. Yorks. Tel: (0723) 366442

MAY 24

1/10TH BUGGIES
Northern League, Round 3, Whitefield, Gtr. Manchester.
S.A.E. to: Kevin Blears, 90 Deans Road, Swinton, Manchester.
Tel: 051-793-9188

MAY 25

1/12TH CIRCUIT
Ally Pally Carpet League, Woodside Leisure Centre, Garston, Watford.
Mod. Class. A-Z Finals. Tel: Nick Adams, 01-866 5945

MAY 25/26

1/12TH CIRCUIT
BRCA National Championship, Round 3, Chesterfield, Derbyshire.
Std./Mod. Classes. A-Z Finals.
S.A.E. to: Sheila Goodyear, 40 Twickenham Crescent, Halfway,
Sheffield S19 5HS. Tel: (0742) 483112

MAY 26

1/10TH BUGGIES
Tamiya Off-Road Championship, Southend Estuary Gala,
Southend, Essex.
S.A.E. to: John Newton, 4 Aylesbeare, 4 Thorpe Bay, Southend-on-Sea,
Essex. Tel: (0702) 585770

MAY 26

1/8TH CIRCUIT
London Sports Car Championships, Round 3,
Crystal Palace National Rec. Centre, London.
Tel: John Daniels, 01-656-9904

MAY 25/26/27

1/8TH CIRCUIT
BRCA National Championship, Round 4,
Aberdeen, Minerwall Park, Scotland.
Saloon, Formula, Sports/GT.

Letters

Letters to the Editor are published on the understanding that views expressed are not necessarily those of the Editorial Staff or publishers of Model Cars magazine. All correspondence requiring a reply should be accompanied by a stamped addressed envelope.

*The 4WD argument hots up!
Here we present two points of view
from contrasting activities*

Rough Stuff retort.

Dear Sir,

In the March edition of Model Cars Steve Newey (1/10th Off-Road columnist) asked if two classes are needed in 1/10th Off-Road racing to cater for 2WD and 4WD cars. If we were discussing cars that had the power to weight ratio of a 1/8th I.C. buggy then the answer would certainly have to be yes. It would appear that the power of the engines used in 1/8th certainly seems to be greater than the cars ability to corner and get traction from 2WD only. However we are talking about cars that have only a fraction of the power and a very limited supply of fuel (i.e. Ni-Cads) available.

The difference between 4WD and 2WD cars has to be compared very carefully. I think you will find that although the former obviously have an advantage in traction and stability this is negated to a large degree by the fact that they draw more power from the batteries to provide power to all four wheels and overcome the drag created by the front wheels.

It has also been found that 4WD cars in general have to run slightly lower gear ratio's than 2WD cars to get the same race duration.

The other inborn problem associated with 4WD cars is that when power is applied they tend towards power-on-understeer; subsequently in good conditions rear-wheel drive cars have a cornering

advantage. In contrast 4WD cars get grip from all 4 wheels and so can usually accelerate better and as track conditions become worse 4WD starts to gain an advantage.

At the moment I do not believe 4WD offers any great advantage but in two or three years technology may develop such that the situation could change such that two classes would be necessary.

In the same article comment is made on the cars being a lot more complex and expensive. Mechanically they have to be more complex because they have to drive all 4 wheels and therefore have either 2 diffs or 1 diff with 1 way roller clutches in the front wheels.

With regards to expense of the 4WD cars I have listed what appear to be the most popular competition cars in price order as found from adverts in the magazine. Generally the 4WD cars are not a lot more expensive than the 2WD cars with 1 of the 2WD cars being the most expensive by far.

Tamiya Frog	£72.00	2WD
Kyosho Scorpion ...	£79.00	2WD
Yokomo Dogfighter	£80.00	4WD
Kyosho Tomahawk	£84.00	2WD
Ayk Sidewinder	£89.00	2WD
Hirobo Rock 'n' City	£98.00	4WD
Kyosho Progress	£99.00	4WD
Associated	£140.00	2WD

I can only say that the running costs of 4WD drive cars (and this is based on the car I personally use, the Hirobo) is less than for the conventional, rear-wheel cars I used before.

So I do not believe the argument on the grounds of expense stands up especially when you consider that you get more

for your money with a 4WD car.

Personally, I think that there is room for both types of car in our racing and that it is all the more interesting for the difference.

George Land,
Chingford, Essex.

Anyone else out there care to comment?

Championship point.

Dear Sir,

Having read the proposal by Gene Hustings for the 1/8th scale circuit racing World Championships to accommodate 4WD (March '85 'Letters'). I cannot see how a division between 2 & 4WD can be workable without answering the following questions:

(1) Who will be world champion - a 2WD driver or a 4WD driver or will we have two champions?

(2) If it is necessary to separate 2 & 4WD for world championship status, why not include classes for flat bed chassis with and without differentials?

(3) If only 15 drivers race 4WD cars and they happen to be the top 15 in the world, would this not devalue the 2WD championships?

(4) Has anyone proved beyond doubt that the 4WD will be consistently and reliably better than 2WD?

(5) Are any of the drivers attending the world championships in Japan really affected by the cost of their cars?

(6) Will the drivers be presenting photographic evidence of their 4WD GT and F1 car's eligibility, or is

that element of scale not important anymore?

While I am concerned about escalating costs, I feel that the world championships should remain the ultimate event by attracting the best machinery (within the rules) and the best drivers of the world.

With regard to our national racing, I think we must wait until the end of the '85 season before passing judgement on the acceptance of 4WD alongside 2WD.

The idea of separate classes for 2 and 4WD will only serve to thin out the numbers of competitors in each class and place additional financial pressures on clubs with respect to trophy requirements.

At the end of the '85 season, I think the question to be answered will be 'do 2 and 4WD run together or do we ban 4WD'?

Ron Major,
Chairman Mendip.

The Complete picture . . . ?

Dear Sir,

I have read with interest and dismay the article by Ian Peacock on Badger Air-Tex paints (February '85) in that the picture of Air-Tex states 'the complete range'.

I would point out that there are FIFTEEN colours in our range not nine as stated, the colours omitted being Magenta, Scarlet, Orange, Powder Blue, Green and Turquoise.

I would appreciate it if a correction to your statement could be made in your next issue.

E. A. Darnell (Mrs.)
Morris & Ingram (London) Ltd.

Hmm, looks like we 'spun out' again - sorry.

Clubs... Clubs... Clubs

HERE AT THE 'Model Cars' office we receive regular enquiries from individuals wishing to know where their nearest racing club is.

Most of the time we can help or else know somebody else who can. However there are times when we just have to give up and write back suggesting that the person contact their nearest Model Shop for information.

Often the information we do have is wrong. The Secretary has changed, the club race somewhere else, on a different night and so on.

We know of great many clubs up and down the country, but we also know that there are an awful lot more besides. Subsequently if someone writes in and we don't have the info we can't help them.

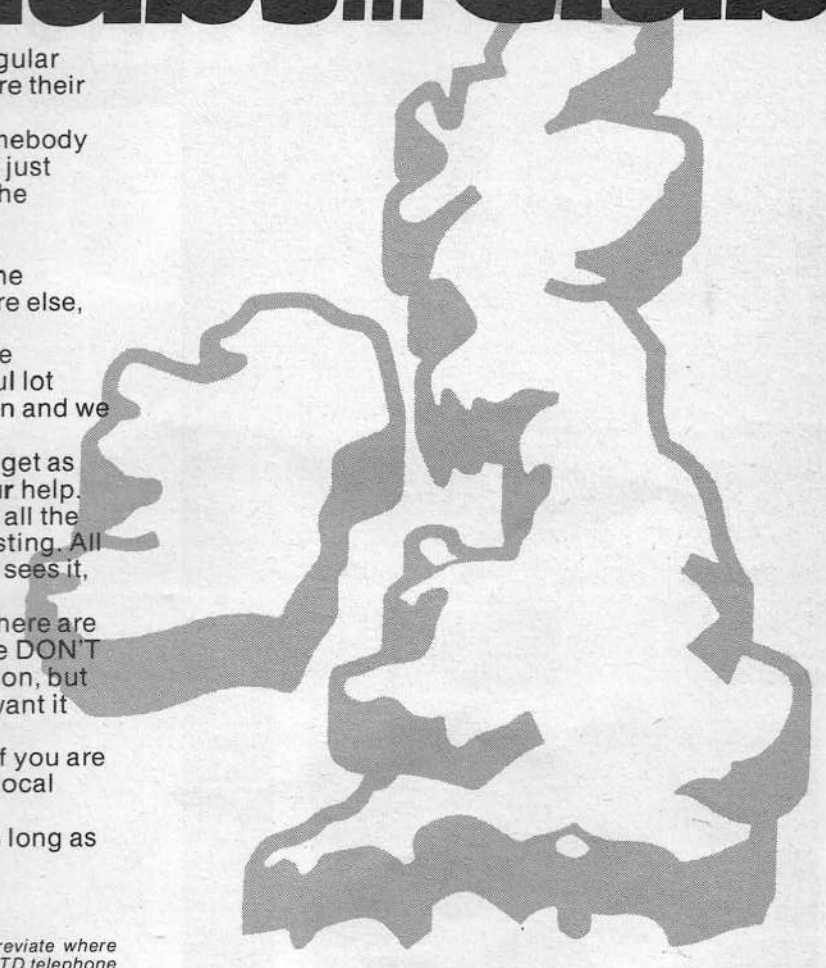
Now, once and for all, we are going to try and get as comprehensive a club listing as we can with **your** help. Below we have printed a form which will give us all the necessary information to produce a complete listing. All you have to do is make sure your club secretary sees it, fills it in and sends it to us as soon as possible.

Obviously a great many club secretaries out there are saying: "but you know all about our club" Please **DON'T** assume this, we probably have got the information, but to make the whole operation much simpler we want it again — on this form.

No club, large or small, must be left out even if you are only a small group of people racing around the local park fill in the form — please.

We will keep updating our computer listing as long as the information keeps coming in.

Thanks.



Use only the allotted number of squares for each section. Abbreviate where necessary. Please tick appropriate box for type of racing. Include STD telephone code. Please write clearly in ink using block capitals. Send to Model Cars Clubs, PO Box 35, Wolsey House, Wolsey Road, Hemel Hempstead, Herts., HP2 4SS.

Club name

Location

Street

Town

County

Region

Type of Racing

1/8 circuit

1/12 circuit

1/8 Stox

1/12 Stox

1/10 Buggy

1/8 Buggy

Contact

Secretary

Address

Town

County

Code

Tel.

Photo-Action Competition

How to win a set of Acoms R/C equipment

- (1) Send *Model Cars* an action photo that you have taken.
 - (2) The photo may be of any type of R/C Model Car, the theme is ACTION.
 - (3) You may send black and white or colour prints (not negatives) or colour transparencies. Maximum size of 'Half Plate' please. Colour transparencies may be either 35mm or 120 size.
 - (4) Any number of photos may be submitted but please mark the back of the photos clearly with your name and address plus details of the models, the site and the camera used.
 - (5) If you wish us to return the photographs please include a stamped addressed envelope.
 - (6) Photographs must be all your own work, no copies of previously printed or published material will be eligible.
 - (7) The photographs must be your own work — commercial processing is allowed.
 - (8) Entries will be judged by staff of MAP. No correspondence or telephone conversation can be entered into about entries.
 - (9) The judges' decision is final.
 - (10) *Model Cars* retains the right to publish winning entries plus selected runners-up in any form it sees fit. All photographs will be paid for at our usual rates.
 - (11) The publishers, MAP Ltd., can accept no responsibility for photographic material submitted but every care will be taken to ensure its safe return when requested.
- SEND YOUR ALL-ACTION PHOTOS TO: MODEL CARS PHOTO PRIZE, PO BOX 35, WOLSEY HOUSE, WOLSEY ROAD, HEMEL HEMPSTEAD HP2 4SS.





PHOTO 1: Mark Bishop of Dursley in Gloucester snapped a 'Sand Rover' in the act of attacking an unsuspecting piece of foliage, Mark used a Zenith camera.

PHOTO 2: Philip Southgate of Hornchurch, Essex made the most of the snow to snap this Tamiya 'Wild Willy' fighting freezing conditions in his back garden. Philip used a 126 Ilford camera.

PHOTO 3: Another snow shot, this time from Christopher Fry of St. Albans, Herts. Christopher photographed this Tamiya 'Hornet' at a local track using a Nikon FG camera.

PHOTO 4: Stuck in a rut! Paul Brown from Australia captured this Marui 'Super Wheelie' in his backyard using a Minolta 460 Tx camera.

PHOTO 5: Steven Higgs from Gassin, South of France used the first snow in that area for 30 years to good effect when he took this photo of a Tamiya Toyota 4 x 4 driven by his brother Richard.

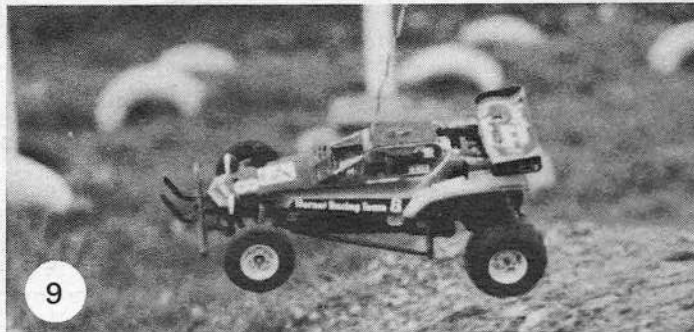
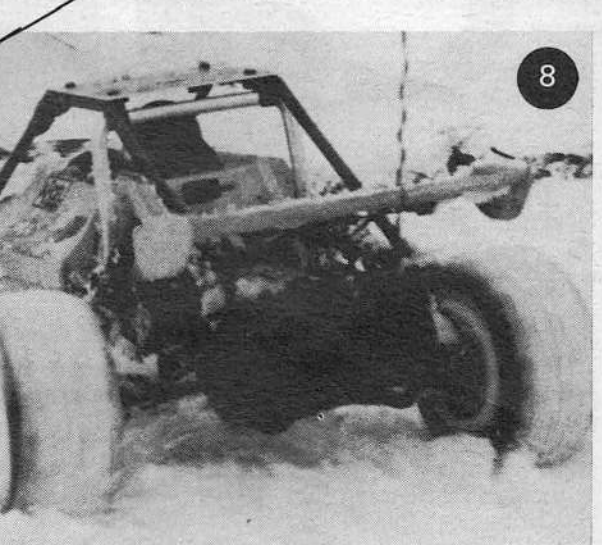


PHOTO 6: A good head on shot of a standard Tamiya 'Superchamp' from Peter Nippess of Swindon; Peter uses a Fujica ST605N.

PHOTO 7: A slightly 'posed' shot from Andrew Mitchell of East Goscote, Leicester but good photography nonetheless. Andrew used a Agfa Optima 500.

PHOTO 8: WINNER Simon Dew of Deddington in Oxford wins the set of radio this month with this wintry shot of a Kyosho 'Scorpion.' Simon used a Braun Werra II camera to winning effect.

PHOTO 9: In flight entertainment from Jonathan Blout of Newquay in Cornwall taken at the local BMX track with a Pentax 'Spotmatic.'



Nuremberg Car Show

Bill Burkinshaw picks out this year's highlights from the cars on show at the world's largest toy and hobby fair.

ONCE AGAIN a British product and again from *PB Racing* at that, stole the show at the Nuremberg Toy and Hobby Fair this year. Last year the World's Model Hobby Distributors, Manufacturers and Importers were excited by the *PB 'Nova'* 1/8th scale circuit racing car. This year it was the innovative 'Mustang Xi2' 4-wheel drive, 4-Wheel Steering 1/8th scale buggy that excited the visitors to this West German highlight of the world's toy fairs circuit.

Indeed, 4-wheel drive was yet again the theme of the show for R/C car enthusiasts, whether they were interested in circuit racing or both electric and I.C. Buggy racing. A preview of the new *Tamiya 'Hot-shot'* 4WD 1/10th electric was given at the Earls Court show a week earlier but *PB's 'Mustang'* was totally fresh.

New engines were also to be seen, a totally new power-plant under the *Mantua* banner and also an S.G. motor which bore very clear evidence of its *Super Tigre* origins. Also now available is an interesting innovation in the form of a 4-stroke motor for Buggies. The Austrian company *H.P.* have developed a 0.25cu.in. version of their rotary valve

0.21 cu.in. 4-stroke with heat-sink head and purpose-built carburettor which although not eligible for competition use has tremendous potential for those who would like to use their Buggies in noise sensitive areas.

The only manufacturer not to show a 4WD circuit racer was in fact our very own *PB Racing*. Discussions with Keith Pledsted indicated that all the companies development effort had gone into the 'Mustang' and even though there was a prototype 4WD car built, they 'Would rather get it right than be first' as Keith put it.

Mantua, S.G. (of course), *Garbo* (2 different models!) *Carlsson*, *Serpent* had 4WD cars on show, the *Garbo* impressing above the rest for the high quality of the tooling and the evident thought that had gone into the design. The simpler, low cost, *Garbo* features a toothed belt drive system and the whole transmission and suspension sees a dual use in their low cost 4WD Buggy.

All over the European Continent, 2WD flat chassis 1/8th circuit racing flourishes with 'Classic' series being very well supported by drivers and

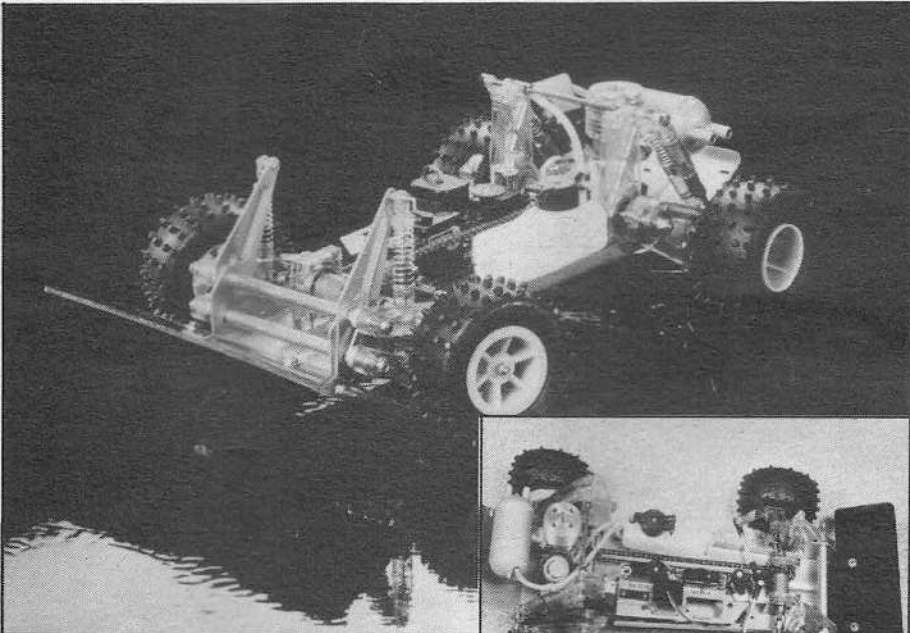
manufacturers. In Italy there has been an 85% growth in 1/8th scale circuit racing membership of the national federation AMSCI during the last 6 months. Largely as a result of the push given to the low cost end of the circuit racing aspect of the sport. What a contrast to the situation in our own country where we see the steady decline of a sport which seems intent on presiding at its own funeral. Italian manufacturer S.G. has introduced the 'Prima', a ready-built 1/8th scale flat chassis circuit racing car with R/C equipment installed that incorporates a simple form of self-starter that operates on the 'Push and Go' principle. One of the biggest manufacturers in Europe, *Robbe*, have also introduced Almost Ready to Go models to their ranges under the 'Robby' brand name that includes a 1/10th electric car with ready painted *Mercedes* body shell and *Futaba 'Compact'* R/C. *Robbe's* theory being that the R/C equipment can be used in other models when the novelty of the simple car wears off unlike the totally dedicated R/C usually fitted to High Street Toy Shop R/C cars.

With the exception of the *Tamiya* and *Kyosho* products, the latter

displayed by Graupner, there was very little to interest the electric enthusiast. There were some additional tune-up parts on the *CRP* stand for 1/10th Buggies and new body-shells from *Bo-Link* plus a couple of additions to the *Garbo* range of electric Buggies but the latter would not really be of interest to serious competition enthusiasts. Continental Europe is very much orientated towards the I.C. model, even for 'Fun' driving where a simple electric Buggy would be the British choice. We see such models as the *Serpent 'Jeep'* a 2WD version of the *Serpent 'Cobra'* with additional silencing and reverse gear. This can be operated by a 3rd function on the R/C equipment or using a special electronic device from a 2-function R/C outfit. No doubt we will be seeing a few of these reverse devices finding their way onto racing Buggies.

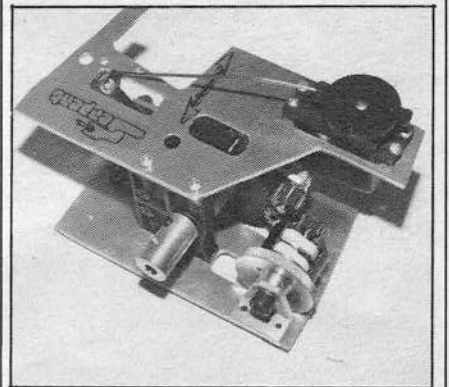
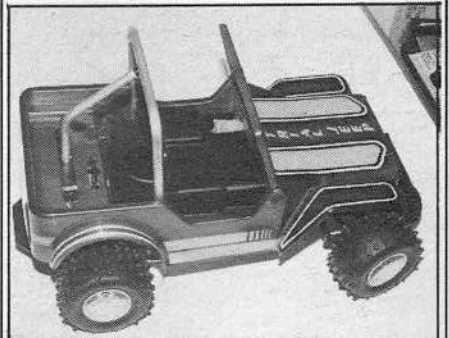
As always plenty to see with the promise of some intriguing new cars on the circuits for 1985. Perhaps now that we have seen the back of the home computer boom, the slimmed down R/C model car industry can look forward to growth again after quite a few lean years. Roll on the summer!

Siccom



Above and right: the French Siccom range of buggies have performed well in 2WD competition, French Champs and all that, here is their 4WD machine. Plastic mouldings are intriguing, Siccom use transparent polycarbonate plastic.

Serpent

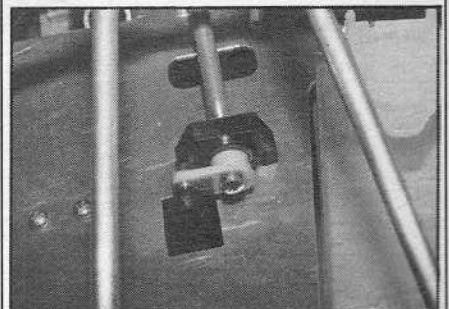
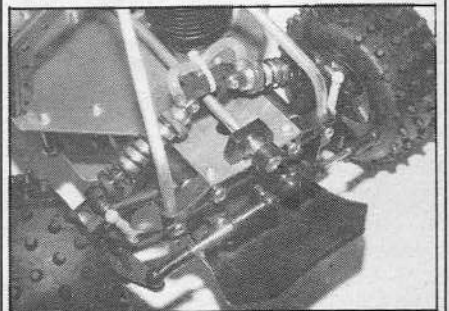
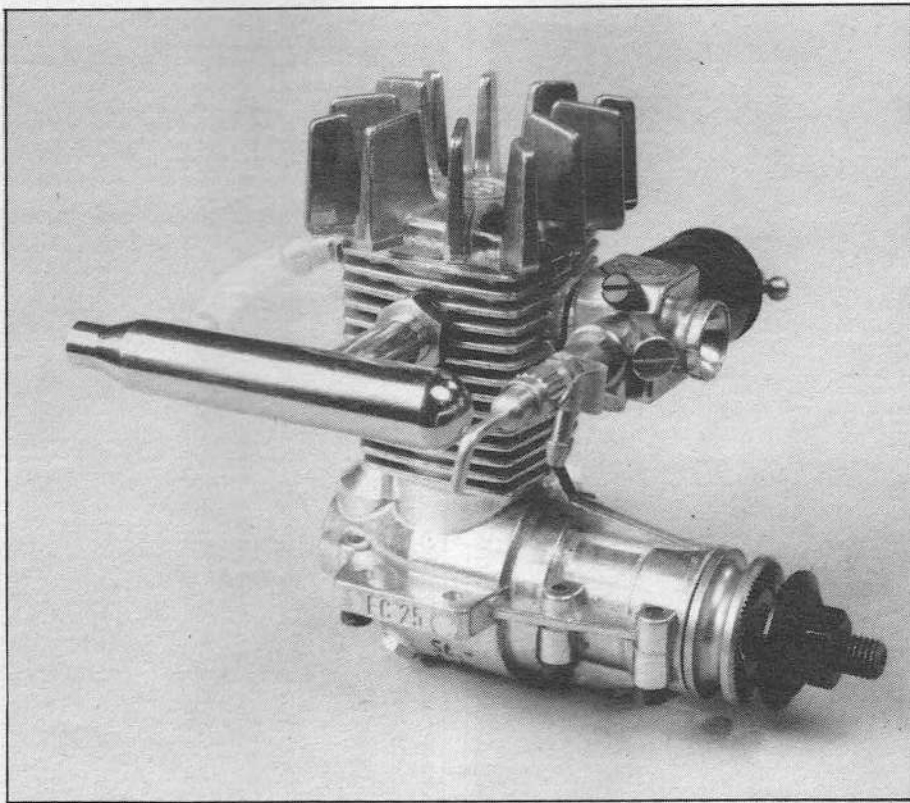


Top: Serpent's 'Trial Jeep' looks great fun, extra silencing and reverse gear lurks beneath that Lexan bodyshell.

Above: reverse gear on the Serpent 'Trial Jeep' can be operated by an additional R/C channel or from the throttle stick using an electronic coupler to be available from Serpent.

HP Engines

Below: first four-stroke with R/C cars in mind, the attractive rotary valve HP25 VT (that's Viertakt folks!) is for fun Buggy use, not for competition. Specially designed slide carburettor is fitted plus a mini silencer which brings the noise down to an unbelievably low level. Flat dwellers form a queue . . .



Top: business end of the Serpent rear wheel steering system, it's very simple and fits a standard Buggy.

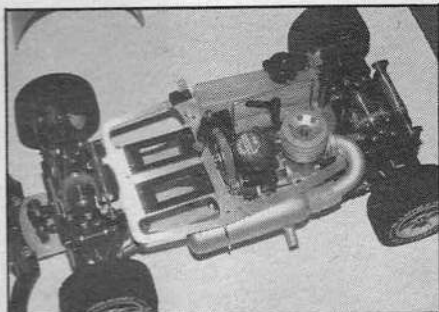
Above: four wheels steering is an option on the Serpent 'Cobra,' link shown here couples direct to the steering servo.

Kyosho

Three new models from the Kyosho stable, a Biiig!! quarter scale motorcycle for 0.21cu.in. motors shown here fitted with OS rear exhaust motor. For two function R/C. Below left: 1/10th IC power buggies have not proved popular in the UK but they should really be very exciting with all the power available, this is called the 'Advance 1000.' Below right: a change of styling for 1/8 scale buggies, the long favoured trailing arm suspension has been abandoned in favour of a wishbone set-up.



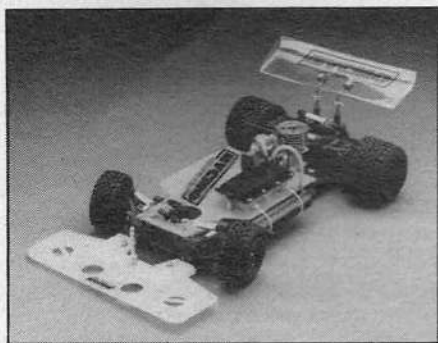
Mantua



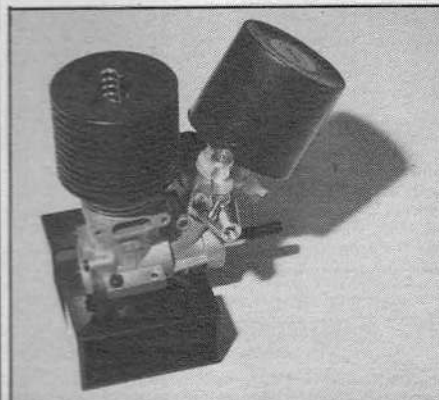
Bycno



Bycno is a new name to UK modellers but if you were Spanish, then the top home producers' products would ring bells. A full range of 1/8th scale cars is produced, a full competition 4WD shown above and a circuit racer below left plus a 2WD machine below right.



OPS



OPS have improved the cooling of their Buggy 21 by the addition of this large black anodised heat-sink - new air filter too.

MRC

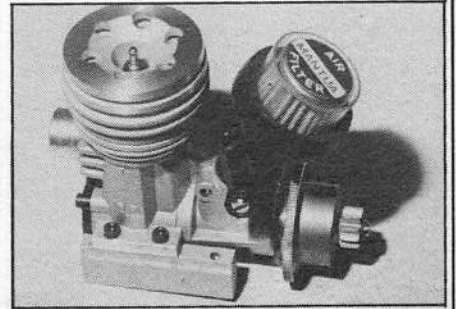
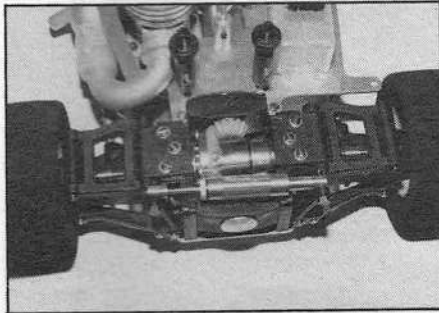
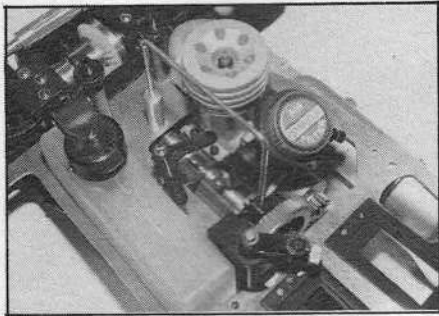
Below: 'Rabbit' is not a name that we would have chosen for a buggy, but perhaps the name doesn't mean quite the same to a Frenchman as it does an Englishman. Be that as it may, MRC, they made the 'Buxy' chose it and they must like it!



Parma

Peugeot's 205 has come in for the Parma bodysell treatment, looks good on a Buggy.

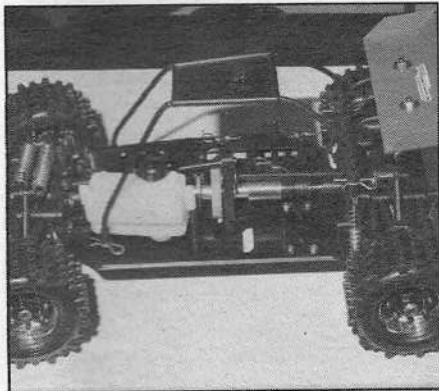
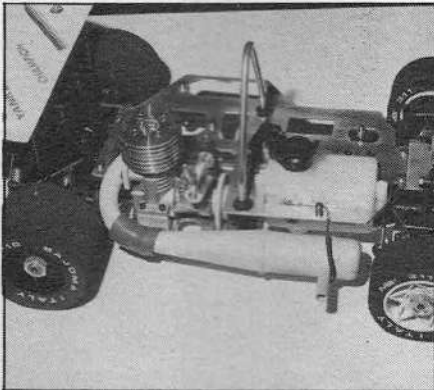




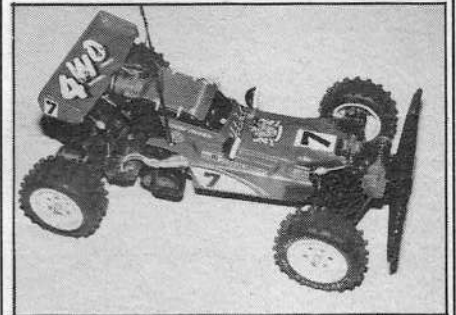
Mantua manufacturer top line 1/8th scale racing machinery, they have now jumped in at the deep end with a 4WD circuit racer, powered with their own engine, it also features the unusual sight of equal size front and rear wheels. Designer Poldi of Mantua claims it works well, enabling better control of gear ratios and thus tyre wear and traction. There were a few sceptical looks cast its way at Nuremberg but Poldi is no fool and no mean driver either.

Yankee

Below: can three times in a row Euro Buggy Championship winners do it again in 1985? Will the new Yankee match the latest that Britain can bring to bear? Wait for the next exciting episode! Circuit racer also under the Yankee name is built by the Italian distributor from Yankee parts.



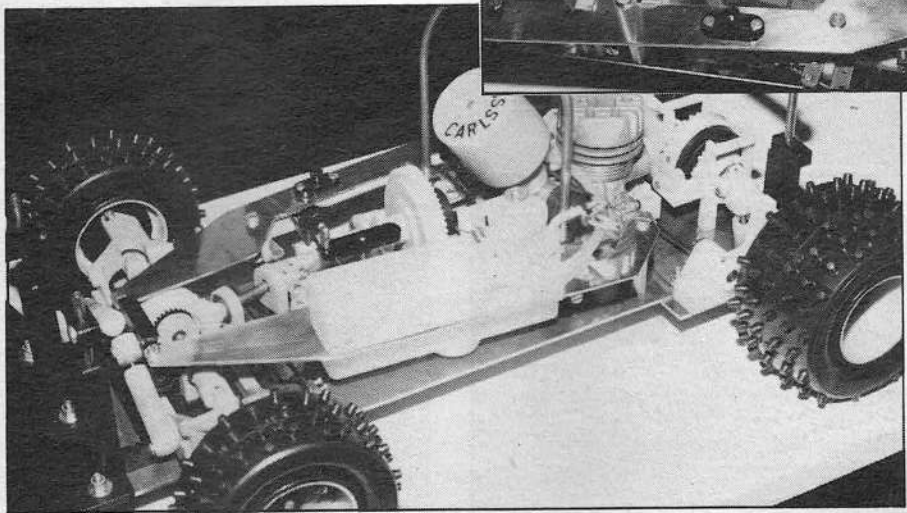
Tamiya



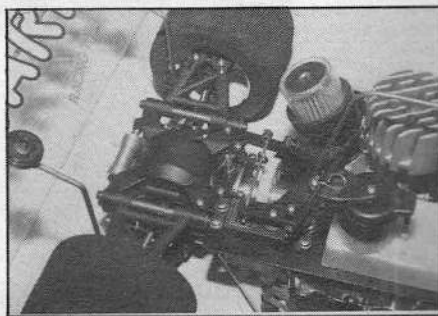
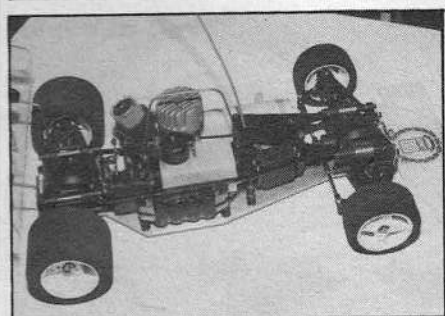
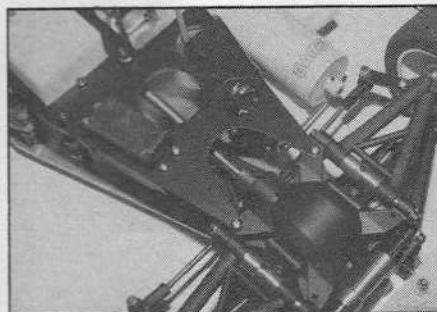
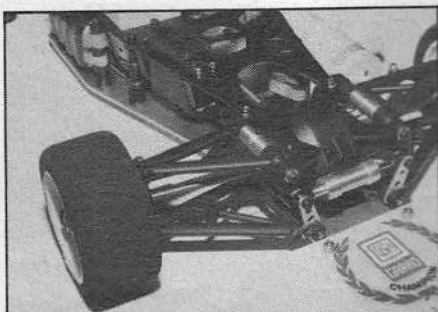
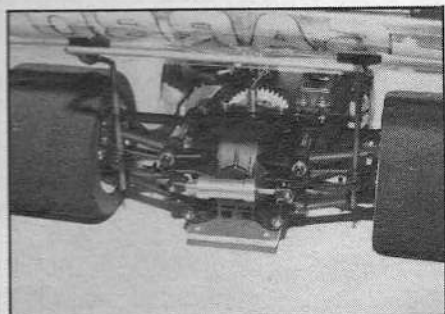
You always risk your ankles if you visit the Tamiya stand at Nuremberg, there is always a top Japanese driver from the factory on hand to give high speed demos of the company's latest products. This year we were privileged to be bruised by the 'Hot-Shot' 1/10 scale electric 4WD wonder machine shown here with its designer, Mr. Taki.

Carlsson

Innovation again from Rune Carlsson, a torque sharing differential divides up the power in varying parts to front and rear in the latest car from Sweden.

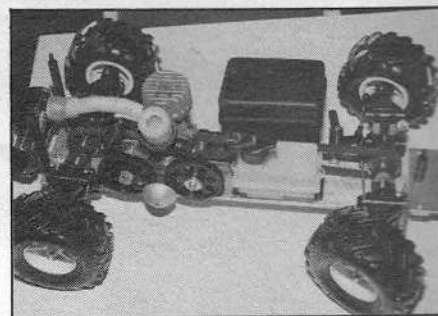
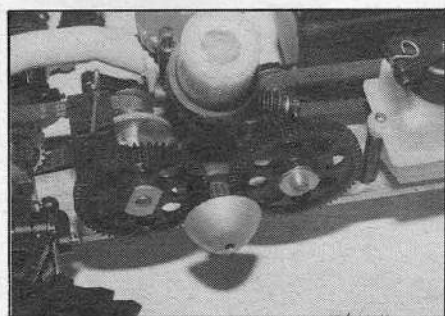
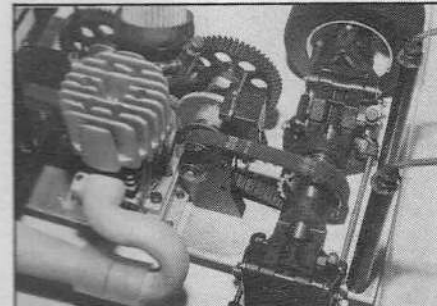
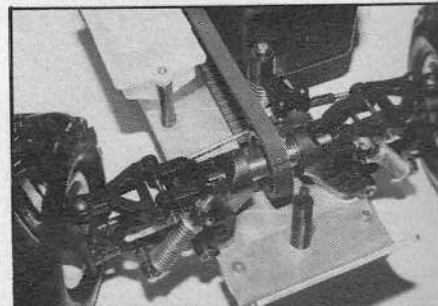


Garbo



Very slick toolmaking is a hallmark of Italian manufacturer Garbo's creations. Plenty of interest generated by this latest product for the circuit racer. Garbo are trying very hard to oust both SG and Mantua from their established positions in the Italian R/C car world. A very compact layout reverses the engine position from the normal and also places the throttle servo in a novel location. Garbo products should be available in the UK.

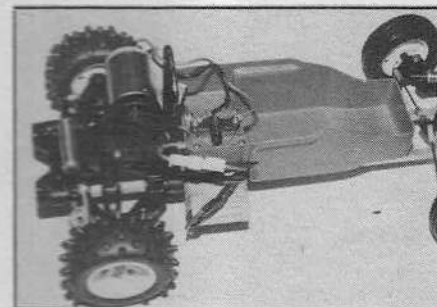
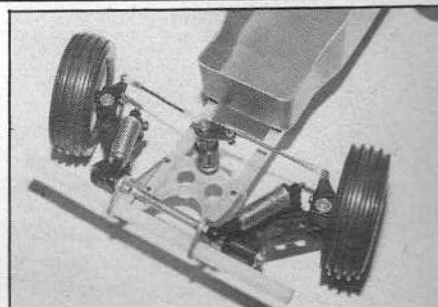
Garbo



As well as the new circuit racer, Garbo have developed a new simpler belt drive transmission which is to be used on a low-cost 4WD Buggy and a circuit-racer. Provision for ball differentials is made at front and rear plus a direct start cone on the end of the engine crankshaft, a system that is far easier for the beginner to cope with than the more usual rubber friction driving against the flywheel underneath the car. The Buggy is to be available through Graupner on the Continent we are not sure of its availability in the UK.

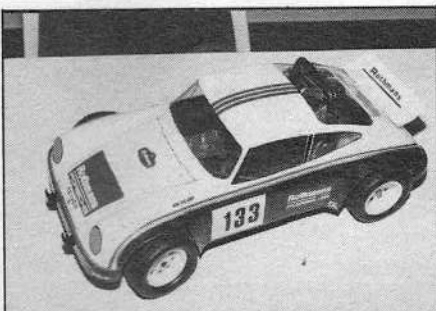
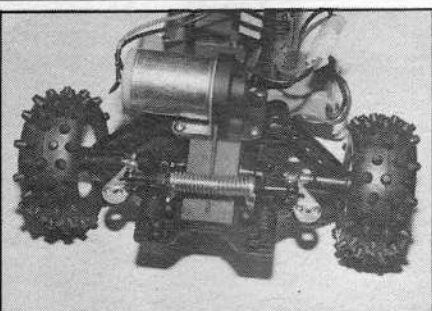
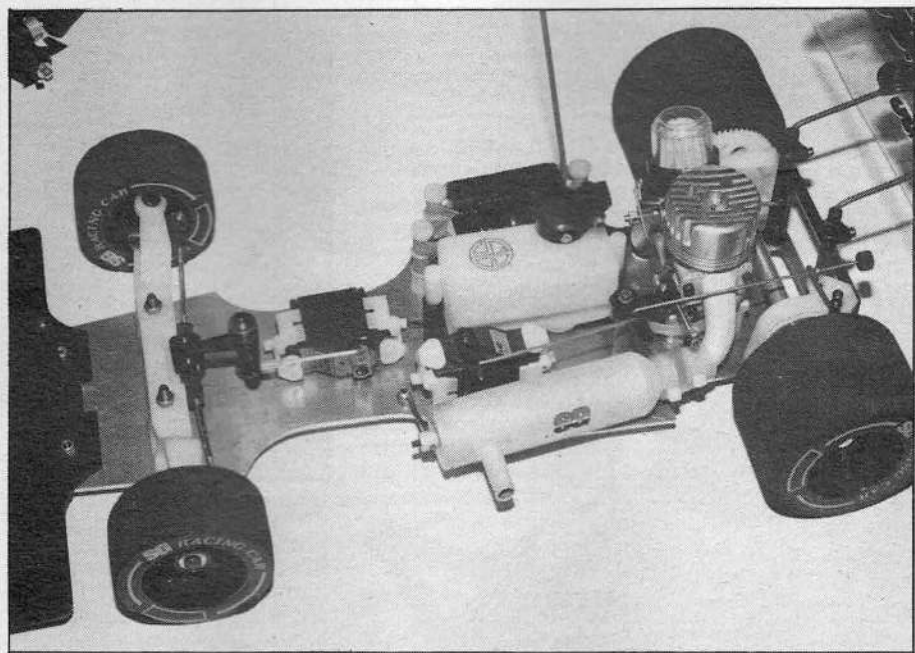
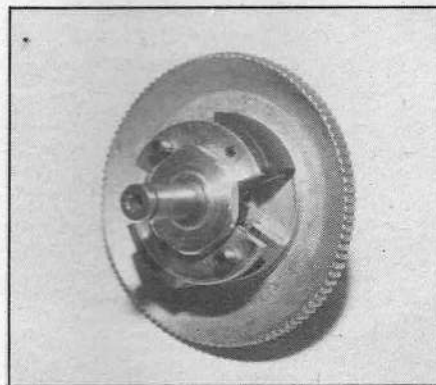
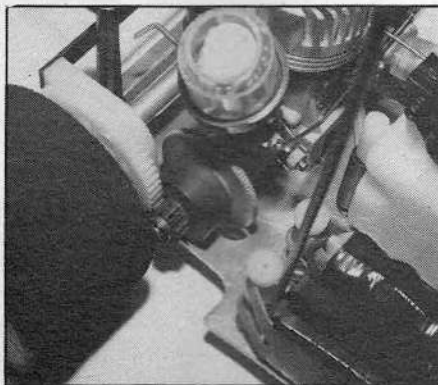
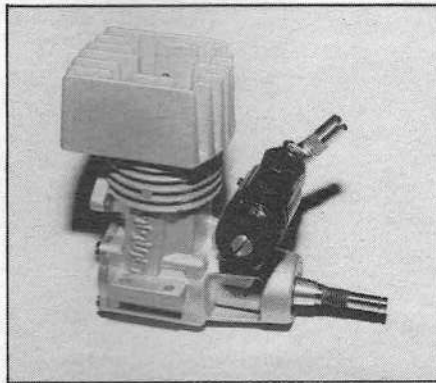
Garbo

Strip to the right: still with Garbo, but this time a 1/10th electric Buggy, one of the few new electric Buggies to be seen at Nuremberg. Front end is very reminiscent of a well established Far Eastern product as is indeed the rear suspension but from a different model. Who said that putting all the good features of a range of good products together produced a camel?

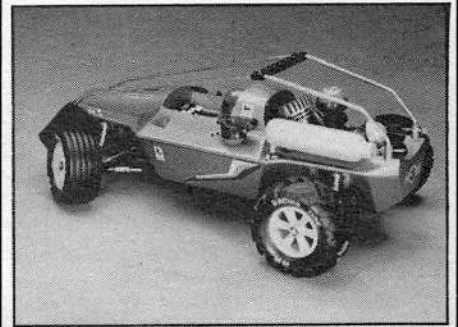


SG Racing

Right: close co-operation with Italian engine manufacturers' Super Tigre has produced an SG21 engine, the 'G350' with matching slide carburettor. Below right: rising power outputs of top racing motors is forcing a re-think on clutch design; here is SG's! Below left: the 'Prima' from SG is a 'Flat Chassis' car which complies with the Continental Classic Formula idea, it incorporates a special clutch which enables a 'push and go' start to be used. Bottom: the 'Prima,' is sold fully assembled complete with R/C equipment.

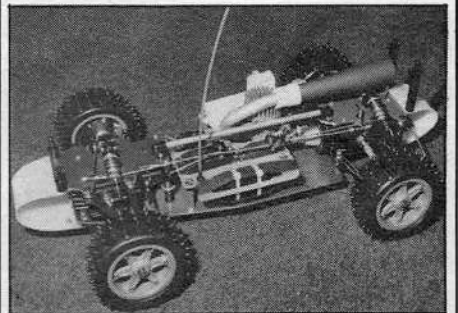


Simprop

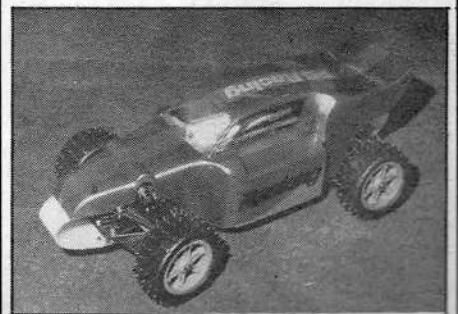
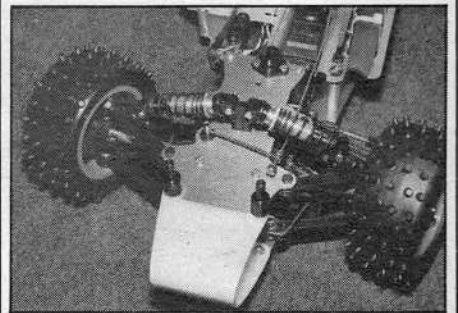


Above: Micro Racing of Switzerland produce this 2WD machine for IC power, available through Simprop.

PB Racing



Above: the PB 'Mustang X12,' not quite the final version we understand but this gives you a very good idea of what to expect. The kits should be available at about the same time as this magazine is on sale. A fuller description appears elsewhere in this issue.



Below: the complete 'Mustang Xi2' from PB Racing Products. The 'Xi2' is probably the largest 1/8th scale buggy available as it has been produced right up to the rule limits.

Exciting Xi2!

Bill Burkinshaw previews the new PB Racing Products 'Mustang' 1/8th Off-Roader

IT WAS INEVITABLE that when PB Racing's Boss Keith Plested put his mind to producing a 1/8th scale Off-Road Buggy we would expect to see a highly interesting design. After all, last year we saw the innovative 'Nova', which followed on from PB's highly successful 'Alpha' Series of 1/8th scale circuit racers, so the racing pedigree is apparent. Last season saw Keith actively promoting the imports of a company destined to be racing rivals, and it was obvious that Keith was hooked on racing Buggies. Equally obvious was the fact that he would not for long be content with racing a 'Gepard' no matter how good it is.

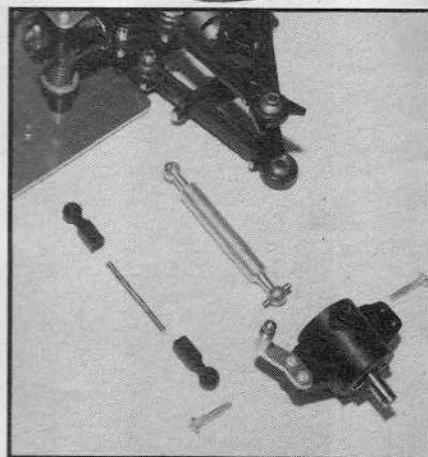
Towards the end of the 1984 season a new shape



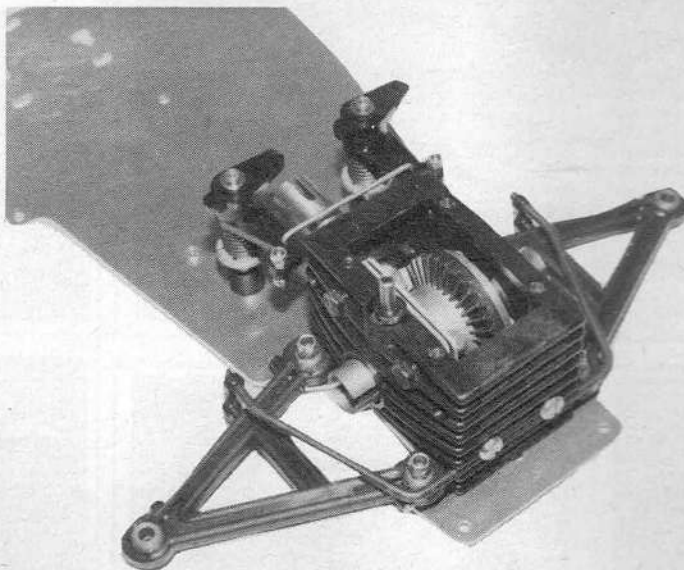
Right: chunky drive-shafts (ball and pin type) and hub carrier which is supported on knuckle joints.

was seen on the circuits and although the car Keith was racing did use several imported parts, the concept was pure Plested in the form of 4-Wheel Drive and 4-Wheel STEERING. At the

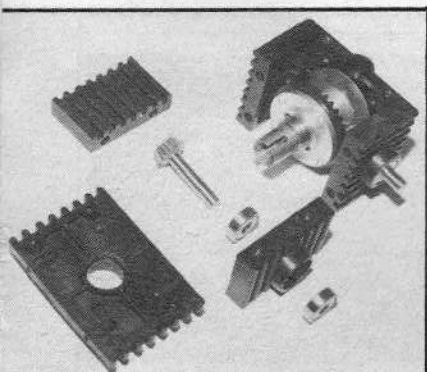
time the 1/10th electric 'Progress' was not even a rumour so it was obvious that both the Japanese *Kyosho* company and *PB Racing* had come up with an innovative solution to the problems of 4WD power-on

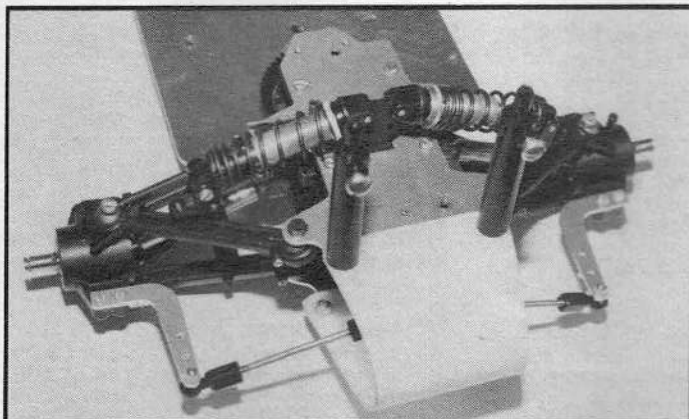


understeer at similar times. The power-on understeer problem is one that even the full-size 4WD builders have had to cope with, sophisticated variable ratio centre differentials have been used with torque sharing systems that can be adjusted with the car in motion. The latter solution is that currently favoured by *Ford* for their latest Rally car. How much simpler is this idea adopted by the R/C car racers, arrange for the rear wheels to steer by even a small amount and the cornering force is dramatically increased enabling the Buggy to take far greater advantage of the



Left: one of the differential units dis-assembled to show the transmission system. Above: the front end fitted with lower 'A-arm' wishbones, hefty anti-roll bar and linked double servo savers.





Picco 'Delta' base mount rear exhaust engine with SG style crankshaft is the selected model, although other rear exhaust motors can be fitted and we understand that an alternative Radio Plate to suit side exhaust motors is to be available.

Checking over the suspension soon shows how careful the design has been in this area, throughout the

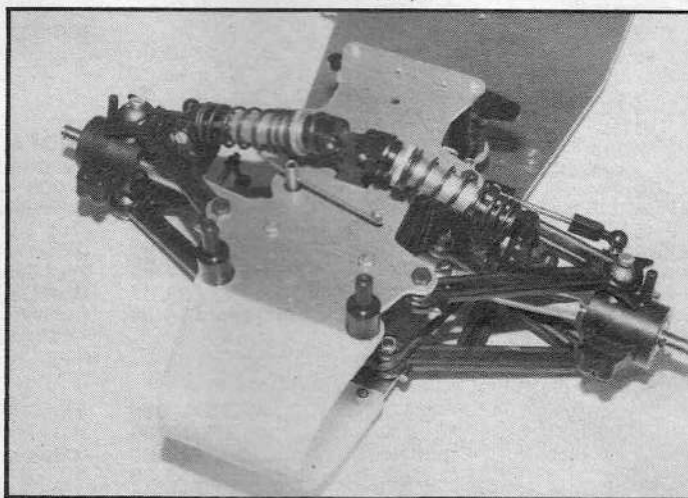
Above: the rear suspension showing the rear steering linkages from the servo saver hidden within the bumper.

usually prevailing high traction.

The new 'Mustang' is a straightforward Buggy, large wheels look like being mandatory for top competition, so does a fair degree of negative camber to the wheels. A lot of suspension travel is provided, controlled by coil-damper units with a progressive action arranged for by flat mounting attitude and springs with closer spacing of the coils at the ends. Only two differentials are used, Keith Plested claims that the third differential is 'Good for business, but not a lot else!' A view for a long time held by this author and other more notable authorities such as Pieter Bervoets of *Serpent*.

The major advantage of using only two differentials is that if by any chance a drive-shaft is lost, the Buggy still drives, add a central diff. and as soon as one drive-shaft goes, all drive is lost. Also if a wheel comes off the ground then all drive goes to that wheel. The actual differential used is the trusty *PB* spur gear unit, which has

Below: close up of the coupling for the full length drive shaft. The shaft is spring loaded either end to provide shock resistance. Below right: R/C gear configurations. Twin servos for steering or else the new Futaba 'FPS 134' steering unit.



Above: the front suspension complete with brake cam lever and spring bumper. Note the steering throw limiter on the hub carriers. Right: the 'Mustang' coil damper units.

proved as near 'bomb proof' as such things are ever likely to be. The steel pinions are either integral with the half shafts or just run free on spindles. In model car terms, the actual gears are enormous, there is little likelihood that breakages will ever be experienced in normal use. Disc brakes are fitted to both front and rear gearboxes, steel discs are used with easily replaced aluminium alloy pads.

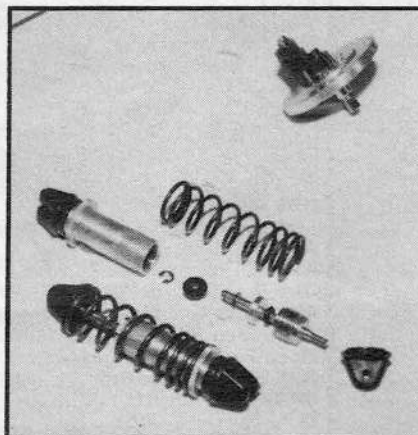
As might be expected when one realises that *PB Racing* are distributors for the *Picco* range of engines, the 'Mustang Xi2' is heavily biased towards the use of that make of engine. The

suspension travel and steering movement, there is barely any variation in the end float of the drive shafts which are very unlikely to be able to pop out. A lot of castor angle is used on the front which also has a very thick anti-roll bar fitted. Considerable Ackerman steering is incorporated and bump steer is limited by careful positioning of the steering ball joints on the front but bump steer is deemed to be advantageous on the rear steering. If rear steering is not required it is a simple procedure to disconnect it, the rear servo-saver can be locked by insertion of a single screw.

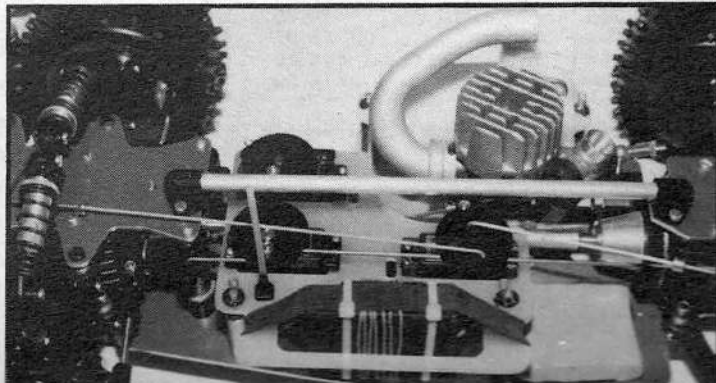
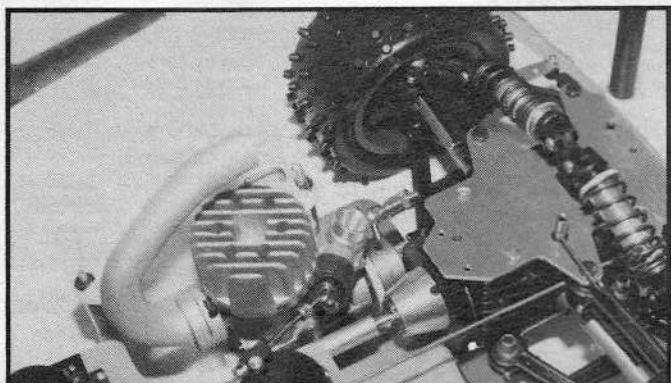
As far as gears are concerned *Serpent* proved that it is not the choice of metal or plastic that is critical but the choice of the correct type of plastic. *PB* have followed this philosophy using a glass-filled nylon for both centre gear and large bevel and steel for the small bevels. The centre gear is fitted to the carrier by a clever adaptation of the 'Rawl-nut' principle. The drive systems use ballraces throughout, all sealed of course.

The basic mechanics of the 'Mustang' are topped off with a new Lexan Polycarbonate bodyshell and stylish polypropylene front and rear bumpers. A rear aerofoil can be fitted if required.

At the time of writing, the exact details of the kit specification have still to be decided by *PB*. However we understand that there are to



be three versions of the kit, a basic model without R/C linkages or wing but with a body and tank followed by a deluxe version which is to include all the extras such as linkages, wing, etc. and a top of the range kit with engine, silencer, muffler, air filter, manifold and fuel tubing. We hope to be able to bring you a full Track Test of the 'Mustang Xi2' in a future issue of *Model Cars*. □



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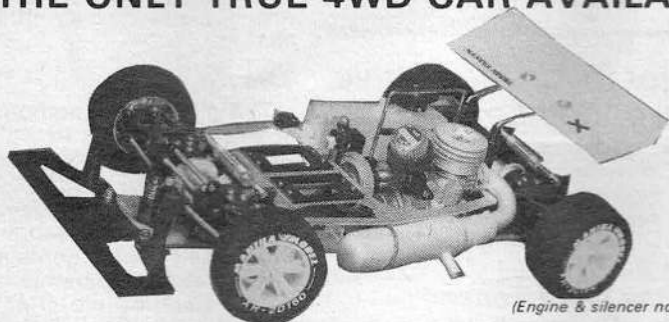
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Track Test

Associated RC10

It's not Japanese. It's not four-wheel drive. It is expensive. Is it any good? Lewis Eckett assesses the US answer to 1/10th buggy racing

The paper on my desk was piling up fast, the post was yet to arrive and I was bored.

Bored with writing about the latest *Tommo* 'Newt', fed up with the *krashy* 'Prospect' and sick to the back teeth of the *Harubi* 'Girder'. Would it never end! Could the fiendish oriental manufacturing machine be stopped? or would they assume total domination of the world buggy markets. I could almost feel my eyes beginning to slant and my skin turn yellow when . . .

Suddenly, in a blinding flash of Californian sunshine a box bearing customs declaration and US postal stamps hit my desk. I reeled with the shock. It couldn't be . . . could it? Not . . . the All American hero? Captain Marvel? Uncle Sam? Apple Pie? but here it was, in living colour the . . .

Associated 'RC 10'

I must explain my reaction. The 'RC10' has been looming on the racing horizon for some time now, in fact a prototype was seen at the beginning of 1984. At that time we were told eighty days was all that separated us from the kits; then it was next month; then soon and so on. Now, almost a year later the kit has arrived. Is it worth the wait?

Well, if *Associated's* previous successes with their other cars is anything to go by it should be. After all this Company has been producing race-winners since 1969, so you would think they might know something! Also if it has taken a year to arrive then presumably (and hopefully) that time will have been well spent developing and testing the design. We have some proof of this with the 1984 USA ROAR Nationals trophy sweep by *Associated*, winning both

the stock and modified events . . .

Also, when I saw the prototype I must admit to being impressed and thus anxious to get hold of one. I liked the uncluttered layout, range of adjustment and general purposeful feel of the car. It is interesting to compare the pictures of the prototype with the end result — there is very little change.

The Kit

The *Associated* method of kit production is to introduce grades of kits so that buyers can decide which specification they need. These grades range from 'Basic' which contains just the car components but no electrics, motor or Ni-Cads right up to 'FULL'. Even the latter specification can be upgraded with the addition of various 'goodies'; ball-races for example.

I can only describe the review kit as 'Deluxe' as it constituted everything necessary to go racing except the radio gear. The accompanying photograph and diagram illustrates the kit components. It should be made clear that the

Below: the 'RC10' presents a racy image with its 'stars and stripes' bodyshell produced by Gary Cannel. The body is made from 1/8th scale thickness clear polycarbonate plastic. No bumper is provided in the kit and this item will be needed for the car to comply with most sets of racing rules. The car took approximately 12 hours to complete making sure that everything was right. Fit of the parts was excellent throughout.





Above: a view that Associated hope will be seen by all other cars around the circuits.

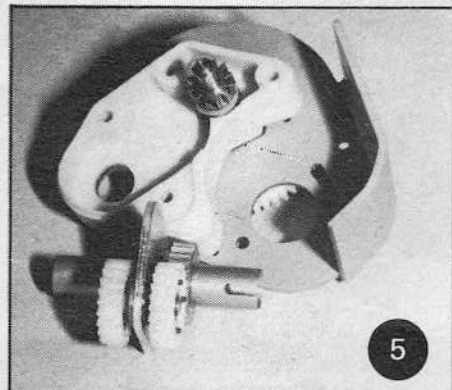
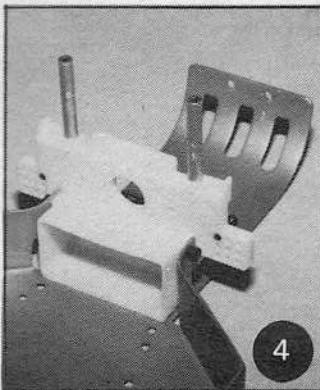
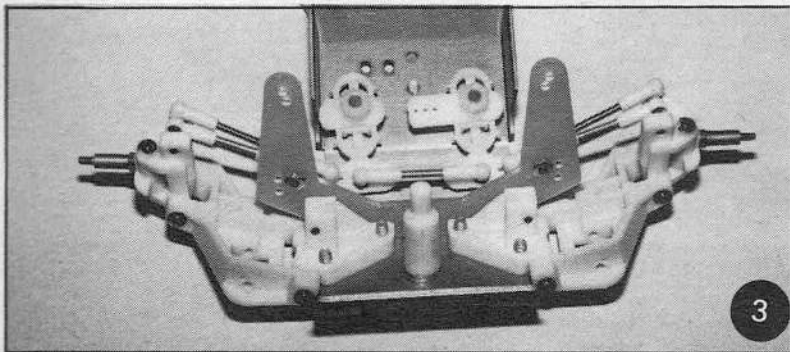
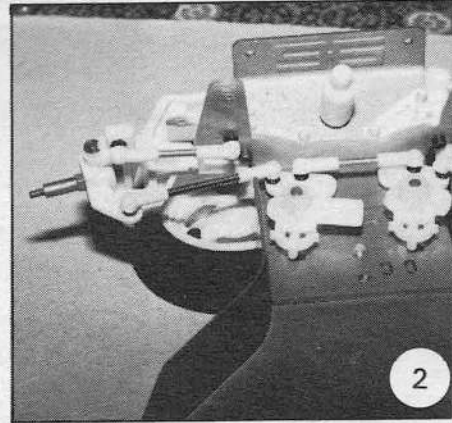
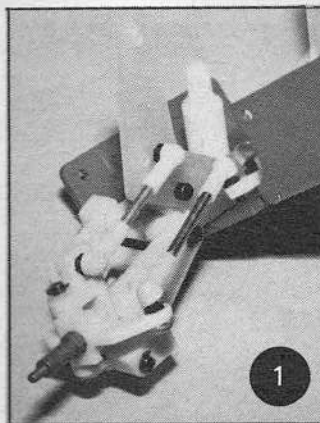
Associated kits available here in the U.K. will be of the 'Basic' variety and a check on the exact kit contents should be made.

Construction

In their previous kits, 1/12th and 1/8th circuit racers, Associated have assumed a modicum of modelling/engineering/electrical knowledge on the part of the builder. With the RC10 however, Associated have obviously taken a leaf out of the Japanese kit

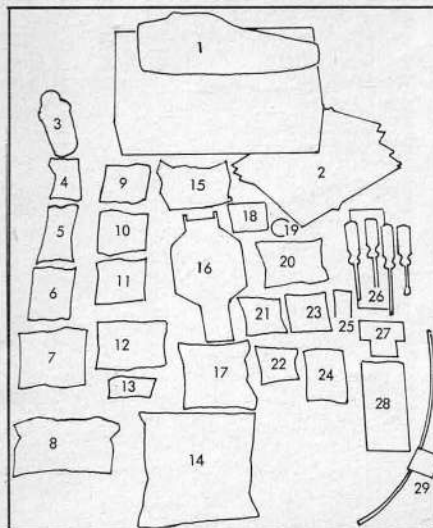
manufacturers book and produced as "berk-proof" a kit as possible.

Two instruction booklets are supplied one with all the step by step construction photos the other carries the corresponding notes. The components are packed in numbered plastic bags which relate to the appropriate stages in the instructions. The first thing the instructions tell you to do is use both sets simultaneously. Do it!



Diagram

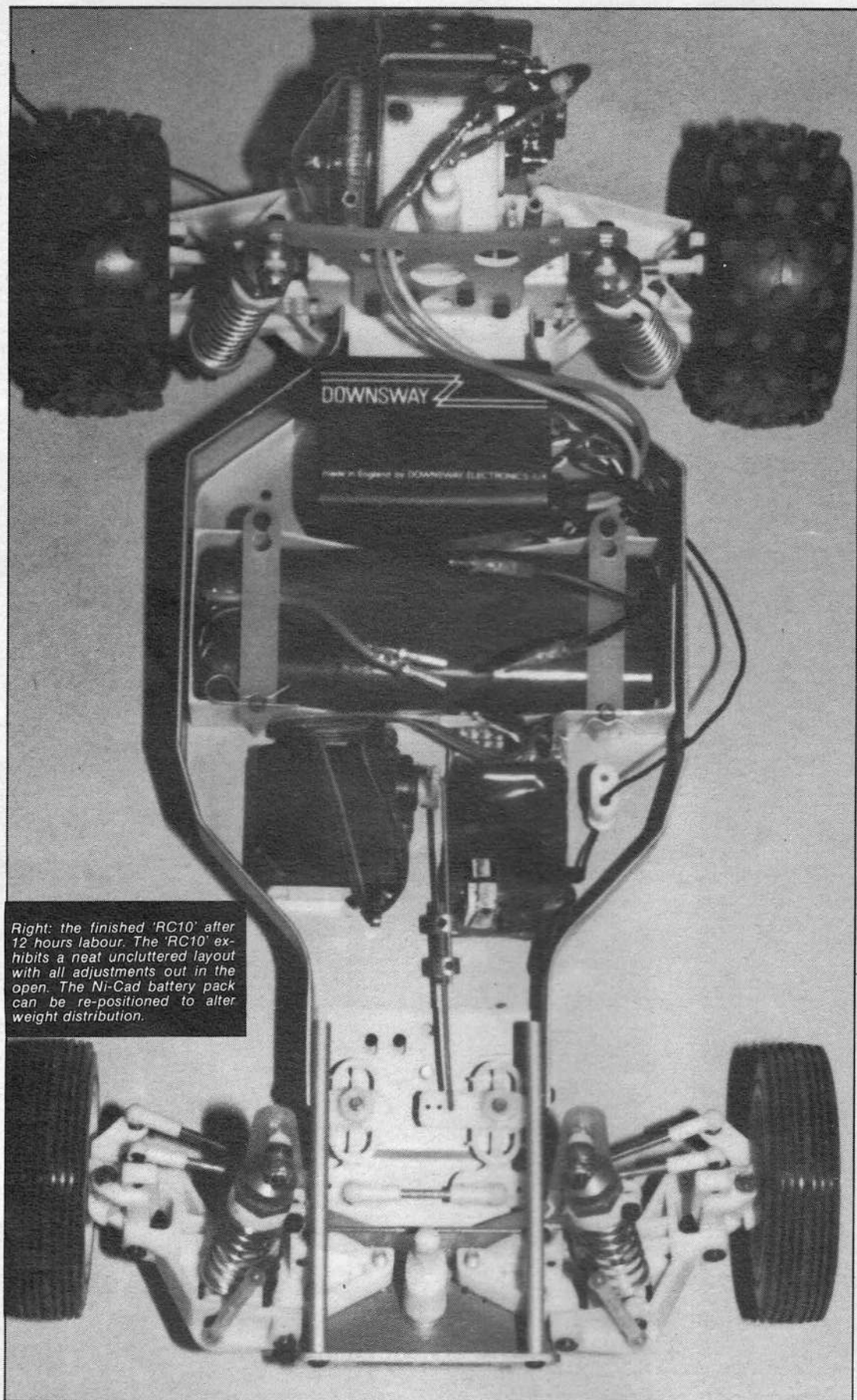
1. Body shell. 2. Instructions. 3. Motor spray. 4. Motor. 5. Ni-Cads. 6. Charger. 7. Speed controller. 8. Front wheels, tyres. 9. Damper springs and oil. 10. Front dampers. 11. Rear dampers. 12. Front suppressor. 13. Body posts. 14. Rear wheels, tyres. 15. Diff. gearbox. 16. Chassis. 17. Various parts. 18. Diff. gear. 19. Grease. 20. Rear suspension. 21. Servo savers. 22. Ball joints. 23. Servo mounts. 24. Tie-wraps. 25. Allen keys. 26. Tool kit. 27. Ball races. 28. Anti-roll bar. 29. Aerial.



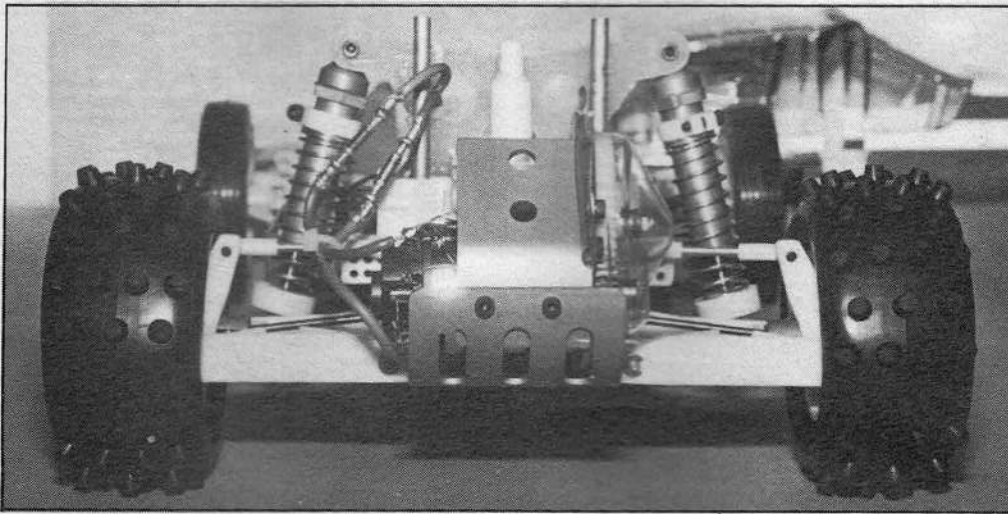
(Photo 10) The front-end features single wishbones and adjustable ball joint upper links. Kingpin installation for the steering/stub axle block and wishbone was simple and smooth. (Photo 2) The front-end minus dampers and anti-roll bar. The ball joints are difficult to get off and on the ball heads. The instructions carry the measurements for the length of track rods. (Photo 3) From the front showing the chunky mouldings. (Photo 4) The rear main bulkhead for the gearbox and suspension also acts as a chassis former. (Photo 5) The gearbox and differential assembly is the most complicated part of the kit. Once properly assembled it should be virtually maintenance free.

ers-Rough Riders-Rou

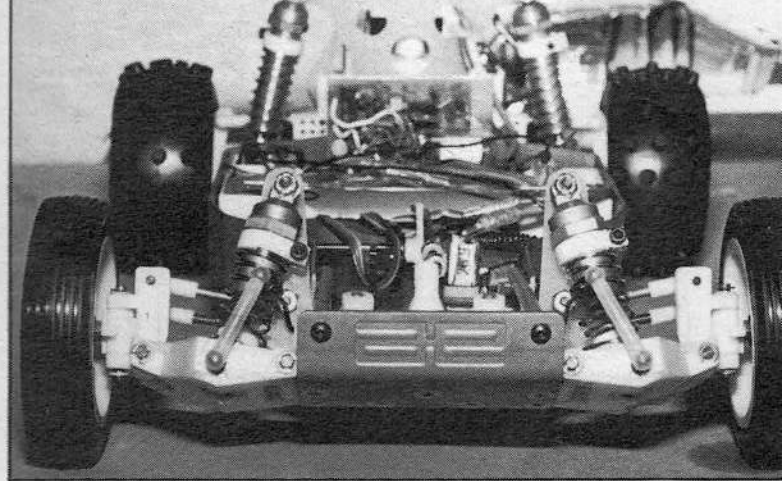
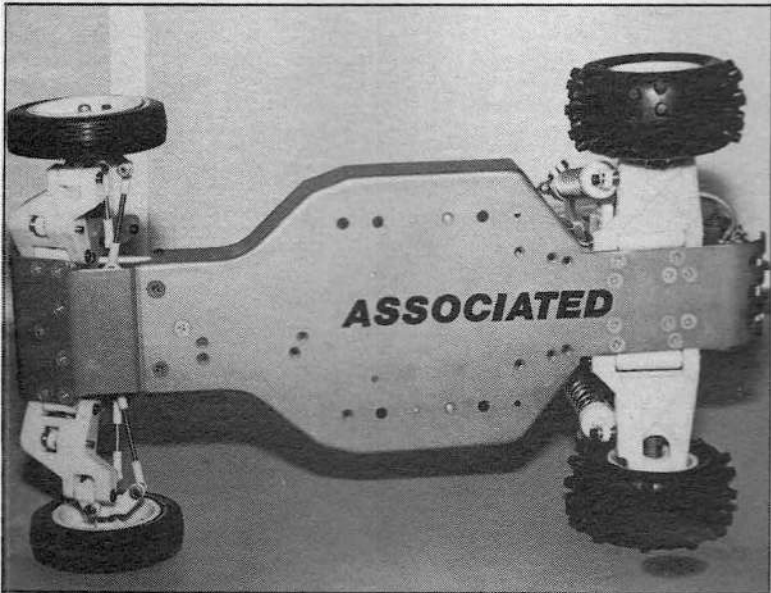
Track Test



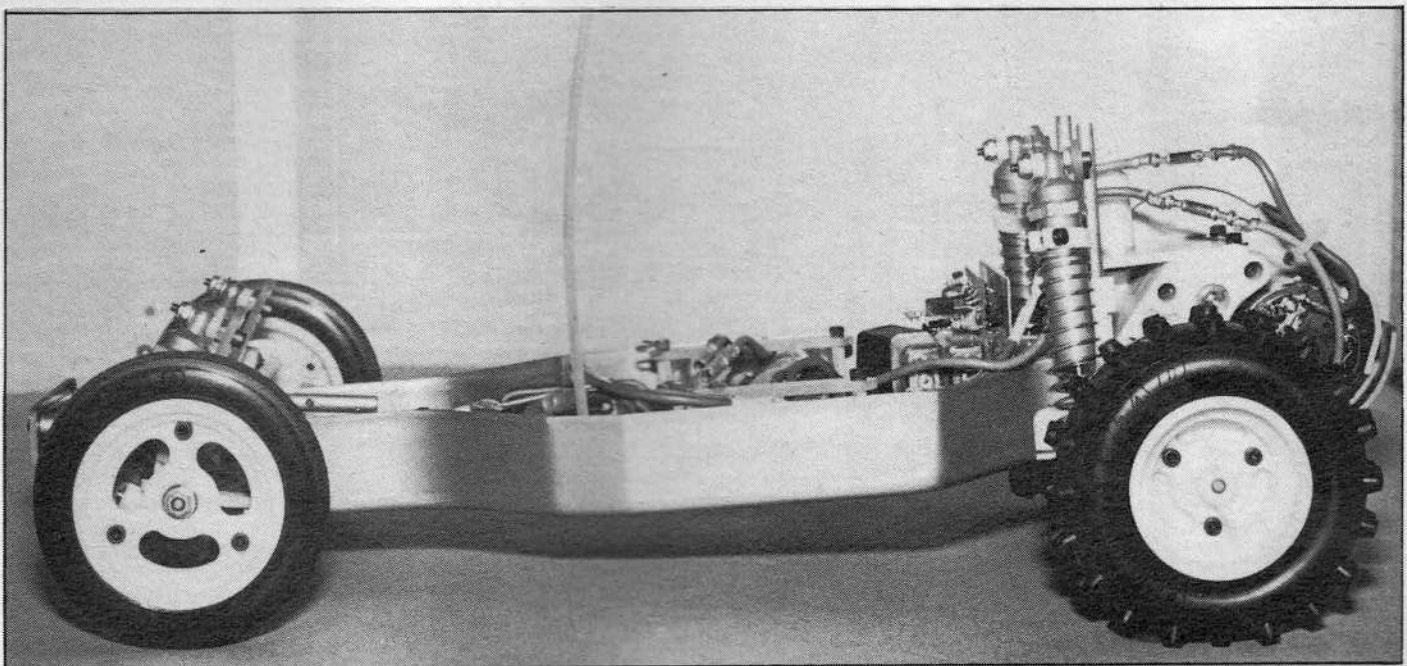
Right: the finished 'RC10' after 12 hours labour. The 'RC10' exhibits a neat uncluttered layout with all adjustments out in the open. The Ni-Cad battery pack can be re-positioned to alter weight distribution.



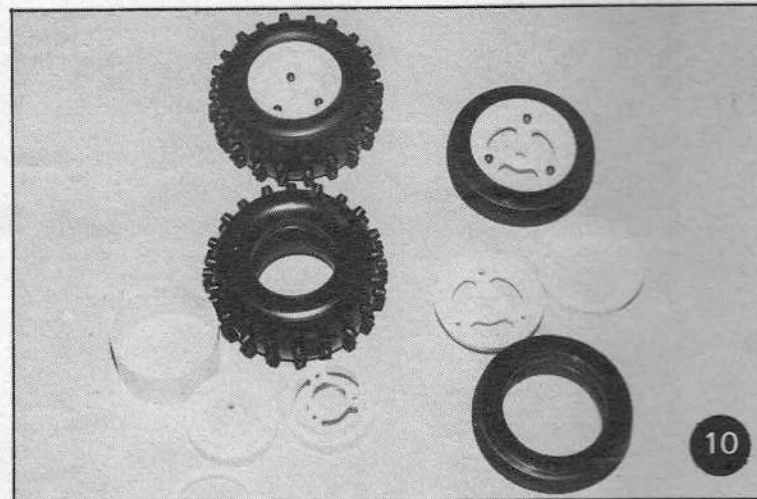
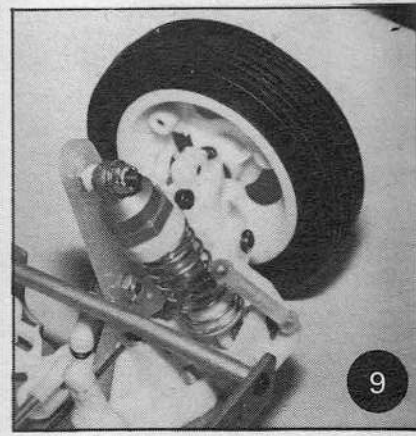
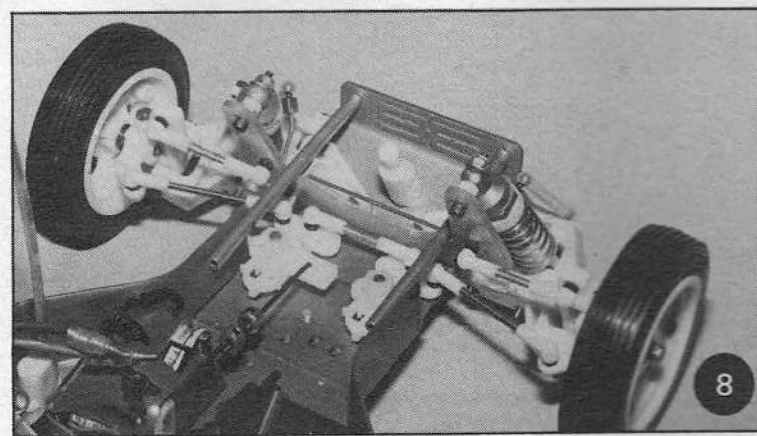
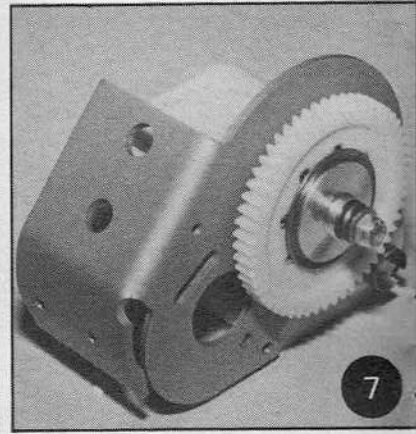
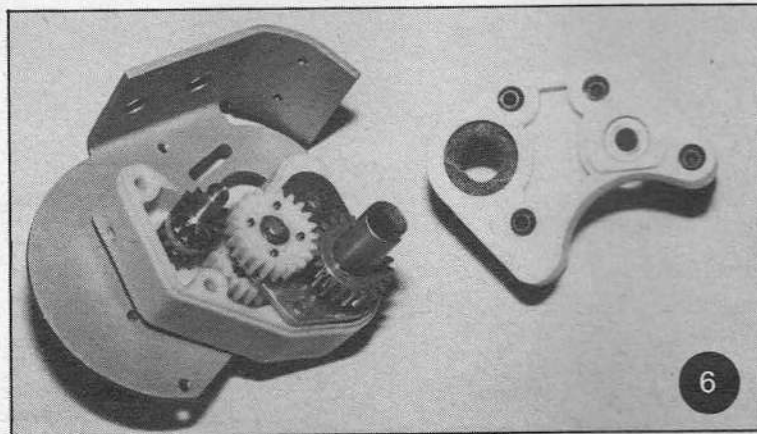
Left: viewed horizontally from the rear the 'RC10' as set up following the instructions displays neutral camber. Negative camber can be introduced by adjusting the upper suspension links. Below: the front-end view showing the built-in castor angle. Camber can be adjusted as per the rear-end. Below left: viewed from underside, the 'pan' type chassis prevents a smooth under surface, and provides a very rigid base for the suspension to work from.



Below: side profile shows the R/C equipment and Ni-Cad pack mounted very low down to give a low centre of gravity and less body roll during cornering. The 'pan' type chassis also gives excellent protection for the internals.



lers-Rough Riders-Rou



(Photo 6) The complex gearbox features machined steel and glass filled nylon gears. The half shafts are hardened. (Photo 7) the complete gearbox/diff unit. The main gear is fitted with steel balls to provide limited slip operation. This can be adjusted by compressing or releasing the spring on the shaft to give varying amounts of slip. (Photo 8). The completed front end with dampers and anti-roll bar in place. Note the stiffening tubes to strengthen the front-end. (Photo 9) the Associated oil fitted damper units are very smooth and progressive in operation. Two grades of spring (hard/soft) are supplied. Ride height is adjusted via the collets. (Photo 10) Tyres are sandwiched between the composite wheel hubs. Adaptors for Tamiya wheels and tyres are included in the kit.

Conclusions

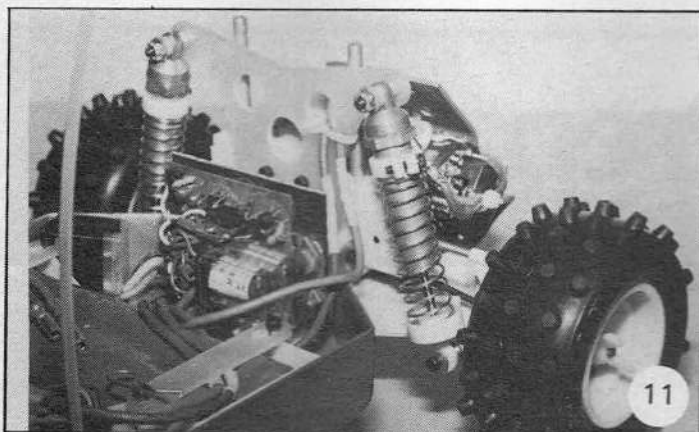
Associated's advert in the American modelling press announce the 'RC10' as an 'Import Fighter.' Comparison with the dominant Far Eastern manufacturers products will be obvious and instantaneous. Naturally Associated will want the comparison to be favourable which is why they have spent such a long time getting it right.

And 'got it right' they have.

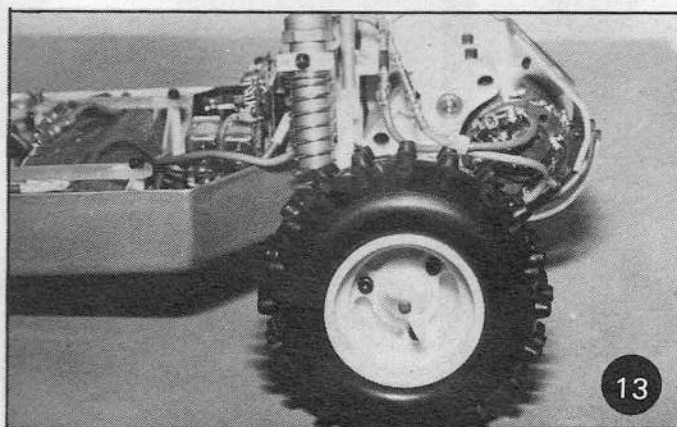
Never before has the dedicated racer been offered a machine specifically designed for the express purpose of winning buggy races. Let's be honest, other products are basically a compromise between the racing element and the lone-hand fun racer.

The major obstacle in the way of this aim is going to be the price. Basic kits which do not include Ni-

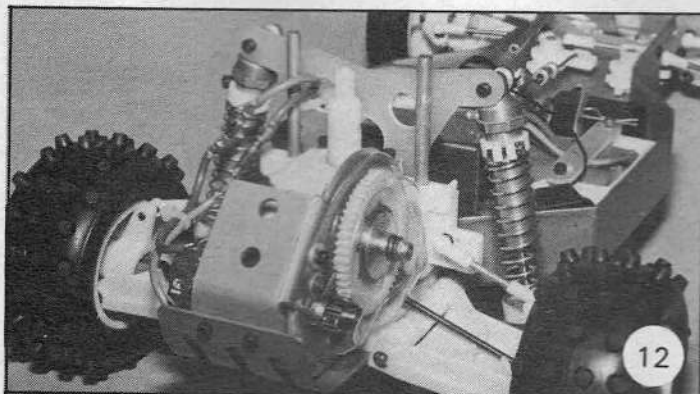
Cads and ball races will cost approximately £170.00. Personally though I feel this price is slightly misleading as the ongoing expense will be significantly less. This will be because of greater durability on the part of the components. In my book, injection moulded nylon parts beats cast alloy hands down. The strength of the 'RC10' can only be proved over a season's racing (I'm not going to drive mine flat-out into a



11



13



12

brick wall several times just to satisfy your curiosity!) and we will keep careful tabs on its progress.

Manufacturer: Associated Electrics Inc., 1928 E. Edinger, Santa Ana, CA92705, USA.

US importers: SRM Racing, 140 West Street, Fareham, Hants.

Elite Models, 145 Newgate Lane, Mansfield, Notts. NG18 2QD.

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Next Month:

On the track with the 'RC10'. Impressions, setting up, experts' opinions, Hints and tips.

(Photo 11) The rear coil shockers are positioned in front of the suspension arms and out of harm's way. Once again two grades of spring are supplied. (Photo 12) The diff gear and pinion is protected by a clear Lexan cover. The motor pinion can be changed quickly and easily. Alternative Associated gears are easily obtainable in the UK. The alloy motor mount also acts as a good heat sink for the motor. (Photo 3) The rear wheels feature quick change wing nut retainers.

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The Rough Stuff

Race-Prep

Steve Newey gives some ideas on keeping your wheels in contact with the track



APART FROM HAVING good motors and Ni-Cads it is essential to have good suspension to cope with the bumps, jumps and other obstacles on our Off-Road tracks. No matter what type of suspension your particular car uses; trailing arm, single wishbone or double wishbone, the most important thing is to get the springing and damping working correctly.

The advantages of having good suspension are three fold.

One, because the wheels will stay in contact with the ground, motor power is used to maximum effect (power is being wasted driving the wheels if they are not touching the ground!)

Two, the car will be more stable at high speed as all the small bumps and even larger ones to a certain extent will be absorbed.

Three, the car should steer more predictably and accurately, again due to the

fact that the wheels are staying in contact with the surface. Its probably stating the obvious but if the front wheels are in the air when the steering is applied, that car just ain't gonna turn!

So, can you improve your suspension? Before doing so here are some points to bear in mind.

1) The suspension should be set up softly to absorb all the small bumps common to all our outdoor tracks, no model car can be made to smooth out giant bumps or pot holes and these should be avoided.

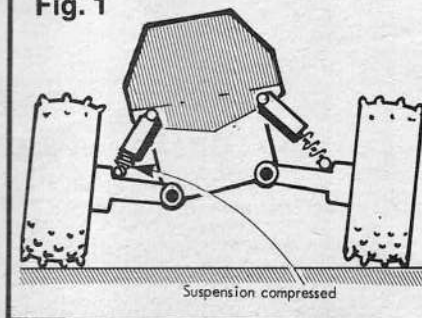
2) Unsprung weight.

The wheels and suspension arms, should be as light as possible to enable them to react to the irregularities.

3) Low centre of gravity.

This means having all the heavy components in the car as low down as possible to reduce the amount of body roll during cornering which uses up suspension

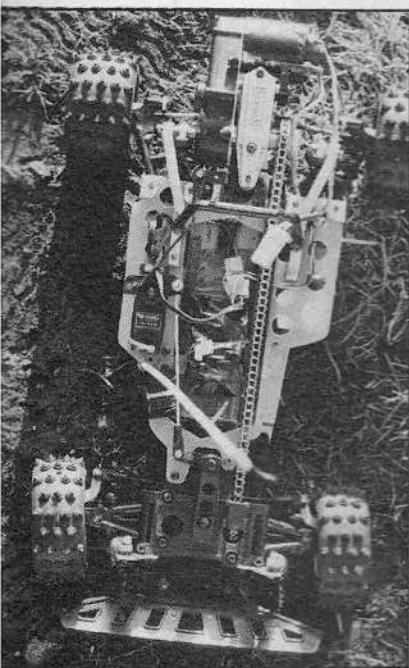
Fig. 1



travel (**fig 1**). A low CofG will also benefit high speed stability and turning on adverse camber bends.

4) Weather Conditions.

Oil filled dampers offer the best damping qualities but they can be affected by changes in temperature. Always carry a few different grades of oil with you and use accordingly as changes in temperature can cause oil to thicken, therefore making the car over damped. High temperature will cause the oil to thin out and the damping effect is lost.



Above: the 'Progress' fitted with the alternative GRP radio plate to alter the radio position; weight distribution and centre of gravity (see text for details). Left: the 'Progress' at speed around the Liverpoolclub track.

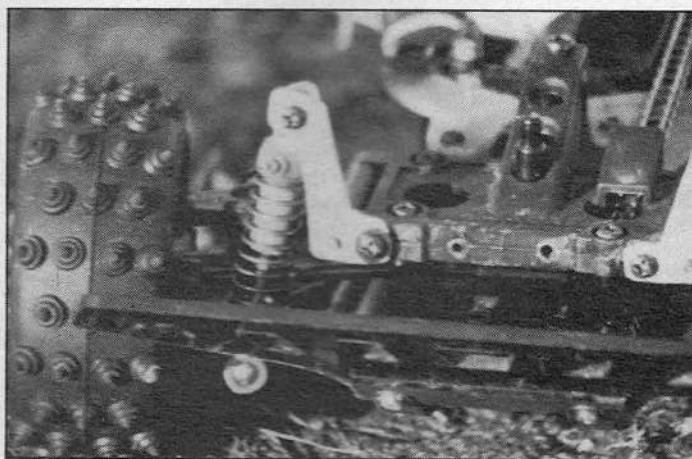
Setting Up

Firstly, make sure the car is clean and all the moving parts (suspension arms, dampers) work freely and are not worn out.

It is important that the dampers are in reasonable condition for the suspension

downwards and fully compressed into the damper bodies. Pull one piston rod out fully, quickly followed by the other, the damping resistance should feel the same in each one. If not, file a small flat on the piston wall of the 'tighter' damper

Below: the revised front suspension on Steve Newey's 'Progress'. The mono-shock is replaced by independent coil spring damper units from Kyosho. The support brackets are made up from alloy sheet. The torsion springs supplied in the kit are removed.



5) Mono shock suspension.

Sounds great, but because one damper is used to service both sides of the car only half the damper movement can be used for each, making it very difficult to achieve good damping on both. Also there is no roll damping even with an anti-roll bar fitted.

to work properly, assuming they are, assemble as per kit instructions using a thin grade of oil, 3 in 1 will do nicely.

Next, take one pair of dampers (front pair) and check for similar damping in each one. To do this hold both dampers in one hand with the piston rods pointing

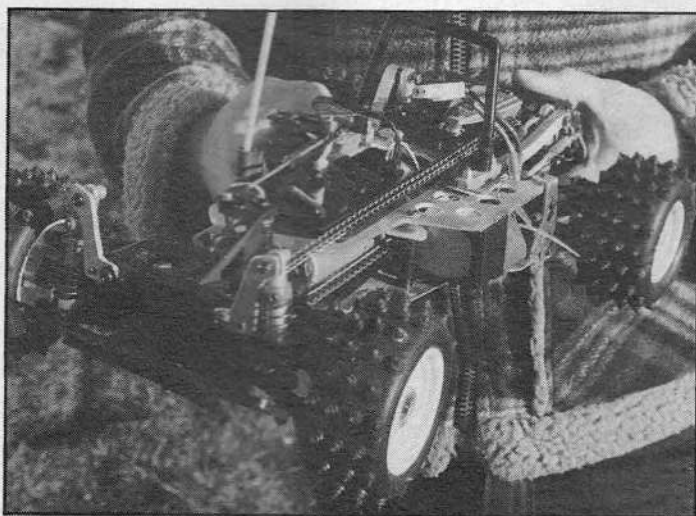
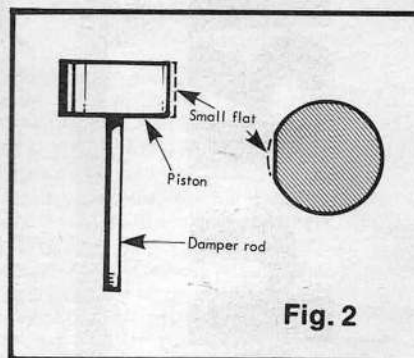
to allow it to pass through the oil more freely (fig. 2) then assemble and test again. When the front dampers are matched, repeat the process on the rear pair.

Refit to the car along with the springs, the car should have all its running gear installed, motor, Ni-Cads, bodyshell and R/C, to set the suspension up.

Place the car on a firm surface and set the springs on the hardest setting all round, push the front bumper down and then release, the suspension should return to the top of its travel.

Now slacken the front springs off until the suspension returns to about seventy five percent of its full movement when the bumper is pushed down and released. If the suspension still 'tops out' with the springs fully slackened off then some softer rated springs will need to be used, also if there is no spring adjustment its a case of finding the correct rate springs.

When you have the correct spring setting try the damping by picking the front of the car up by the bumper and dropping it from about three inches. The suspension should 'bottom out' that is, compress fully, then return to the previous setting quickly without bouncing or topping out.



Above: Steve Newey's modified 'Progress', note the heavy components: speed controller and Ni-Cads, mounted between the chassis and radio plate as low as possible to lower the CoG. The rear dampers' top mounting point is provided by some suitably formed alloy section taken from an old 'Scorpion' chassis. Right: the Ni-Cad pack is now positioned lengthways along the chassis.



The Rough Stuff

Depending on weight distribution (the rear of the car usually being heavier than the front) slightly harder springs and heavier damping (thicker oil) may be needed. Remember the softer the springing and damping, the better the suspension will perform under most conditions.

Handling

No doubt everybody is familiar with those well used terms *understeer* and yes, you've got it, *oversteer*. These are used to describe the handling characteristics common to all model cars. For the beginner the car is best set up to give a slight amount of understeer, which makes the car easy to drive yet will still corner quite quickly.

Run the car, trying the steering on full lock each side, if the car tends to run "straight" or will only turn in a wide arc with full steering then you have 'understeer'. Soften the front suspension and try again, softening the suspension will give the front wheels more 'bite' and should give the car more steering.

If you can't get enough steering by softening the front suspension try some different front tyres to get more grip.

If on the other hand, the car 'spins out' when the steering is applied you have *oversteer* that is, the rear tyres loose grip and the car

spins round. Try setting the front springs stiffer or soften the rear springs.

If the car still spins out change the front wheels for some with less grip or the rear wheels for some with more grip. It really is a case of trying different types of tyres and suspension settings until you get it right, it's not easy to do but keep at it and results will come with experience.

If by any chance the car should understeer one way and oversteer the other try adjusting the suspension to make the steering even either side. If the car oversteers to the right, stiffen the front left suspension spring, if there is too much understeer soften the same spring.

If your car is fitted with an anti-roll bar, use stiffer (thicker) or softer anti-roll bars to vary the steering bite.

Making "Progress"

I managed to get my 'mits' on the new four wheel drive/steering machine from *Kyosho* in December. I built the car and took it down to our new track near the famous Aintree Racecourse. The car was totally standard except for the substitution of ball races for all the power sapping bushes.

Using 8.21 gearing (15x26) the car was very good on top speed and acceleration but seemed unstable on the bumpy track and kept falling over on some of the adverse camber bends.

So after taking a long hard look (about 30 seconds) I decided some modifications would have to be done to lower the cars high centre of gravity and improve the weight distribution.

As can be seen from the photographs, there is now a GRP radio plate replacing the original, allowing the Ni-Cads to be turned 90° and also lowered about one inch and mounted on the chassis. The Ni-Cad pack is held in place with *Velcro* and a quick release GRP strip. The speed controller (*Star Electronics 'Quasar'*) fits nicely under the radio plate and the receiver on top of the Ni-Cads (*velcro*) to give a very low C of G. Also there is slightly more weight towards the front of the car because the Ni-Cad pack is mounted further forward.

Rear dampers are mounted on the lower suspension arms the main reason being to get them out of harms way. The front mono shock and torsion bars were removed in favour of independant dampers and springs.

Unfortunately I've not been able to test the car again because of the snow, but I'll mention how the tests went next month.

A couple of things did disappoint me about the car, in particular the differential, which seems to be slightly less than robust. I will be looking into this in the next issue. Also I believe you have to buy the front wheels complete with one way bearings at £9.95 a pair. I feel this is a bit excessive and I hope somebody markets some standard front wheels at a reasonable price without the bearings.



Above: the completed 'Progress' proudly displaying the owner's choice of motors and speed controller.

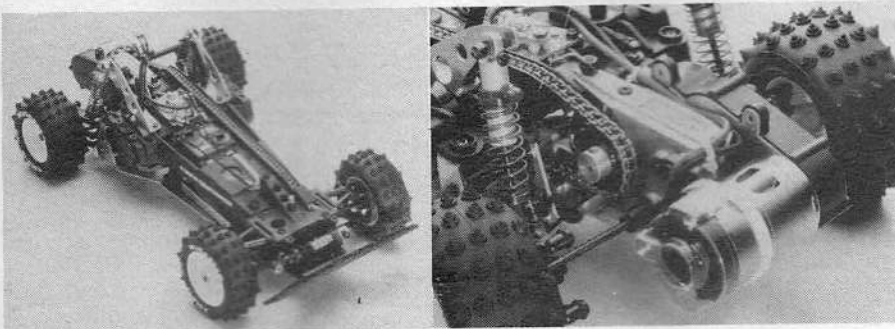
PROGRESS

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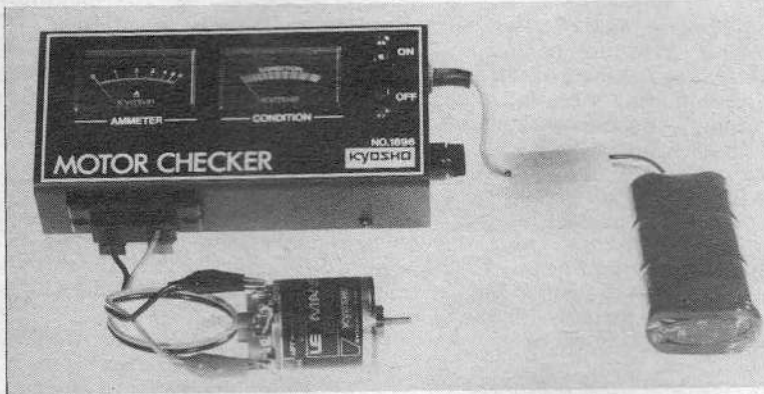
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The **ELECTRIC MOTOR CHECKER** (shown left) is an invaluable item for getting peak performance from your **LE MANS MOTOR** or any other electric motor. Allows timing point to be checked when either a rotor or brush is replaced, or when the break-in period is completed, or after any crash damage. Useful also for checking the state of brushes and whether any blemish or deformation of the commutator is developing. Full instructions for use are included.



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OPS 3.5cc Buggy motor.

Mike Billinton assesses the powerful OPS answer to Off-Road racing

CONTINUING ITALIAN dynamism threatens to engulf car engine users with a proliferation of new or revamped models in most categories of 2-stroke motors. Fortunately for this writer the OPS Car and Buggy section has now become clearer with, in effect, just 3 models — Buggy Sport, Buggy Competition, Car Competition.

The very recent addition of 'Professional' versions of their 2 Competition engines strictly does nothing for performance, but rather, adds a measure of running reliability because the central feature is a new and much larger oil-filled air cleaner. This in turn has necessitated a taller cylinder head to ensure adequate cooling when in-line engine mounting is used as in certain 4-wheel drive set-ups.

Reasons for power differences between the various OPS engines listed here are more a consequence of the fuel and rpm levels chosen:

- OPS Ref. no. 8781 — Buggy Sport — Methanol/Tuned pipe — 1.3bhp at 27,000 rpm.
- 8831 — Buggy Comp. — 25% nitro/Tuned pipe — 1.52bhp at 28,500rpm.
- 8832 — Buggy Pro. — 25% nitro/Tuned pipe — 1.52bhp at 28,500rpm.
- 8750 — Car Comp. — 25% nitro/Tuned pipe — 1.52bhp at 28,500rpm.
- 8751 — Car Pro — 50% nitro/Tuned pipe — 1.93bhp at 29,500rpm.

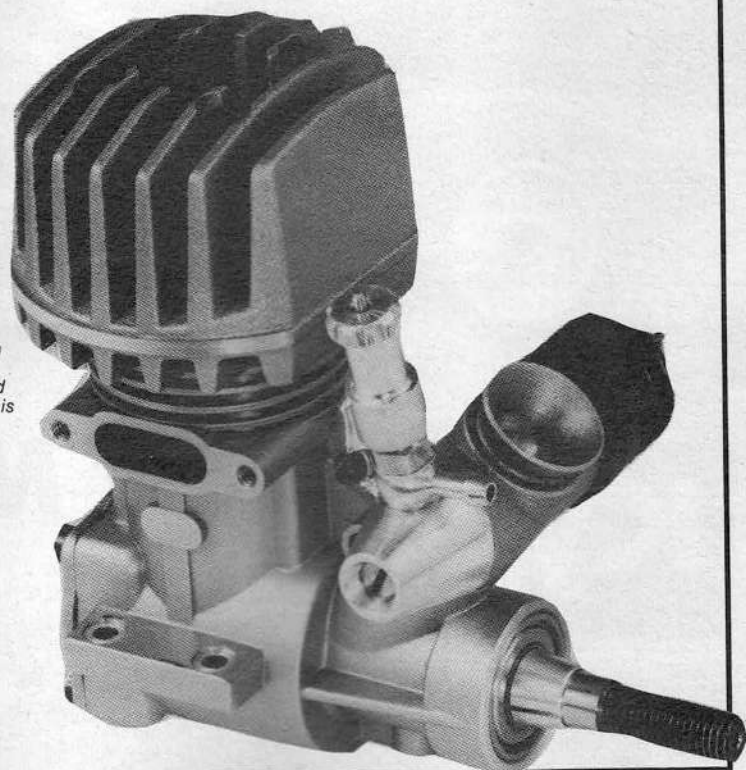
It will be noted that the 2bhp mark is definitely on the manufacturers horizon. (Rossi also claiming 1.95bhp).

The associated equipment of 50% nitromethane and tuned pipe has been the norm during the tests of top 3.5cc Car engines in this series. For the testing of Buggy engines however, it is felt more appropriate to pitch test bench operations at a less demanding level and one having a wider bandwidth area... hence the use of 5% nitromethane fuel and minipipe.

Not to confuse the matter further, the engine tested here is the 2nd in the above list, and which in its early 1985 guise at least is quoted by OPS as

Left: this Buggy motor and in fact all OPS 3.5 engines are supplied with either 8mm or 9mm bore size standard design carburetors.

The OPS reputation for quality and performance should combine to make this Buggy motor a popular choice for many Off Road racers.



producing 1.52bhp on 25% nitro and tuned pipe. The 1.11bhp reached during this test on 5% Nitro and the much less 'pushy' minipipe is therefore quite in keeping.

Mechanical Details

In most respects there is little change to report compared with the earlier 1981 SLA engine: for instance, the **Crankcase** remains the reliable, smooth die-cast finish side exhaust casing familiar to OPS 3.5cc users for some 8 years. The brass **Liner** timing is largely unchanged, though transfer ports are now angled up some 20° in common with the exhaust port. Again, the **Crankshaft** layout and timing are similar to the earlier SLA model, although the crankweb counterweight appears now to be increased slightly in weight. **Cylinder head and Rear cover** from the 1982 Rear Exhaust Car engine have here been matched to the Buggy engine, and the head especially is advantageous by virtue of the rougher-cast and improved heat-dissipating finish. The wider spaced fine geometry is a decided improvement over the earlier SLA model. The rear cover appears better able to resist wear from connecting rod side thrusts than was the earlier smooth die-cast cover.

The **Combustion chamber** insert has a narrower squish band than previously and, being set at a large .022in piston clearance, reveals the continuing experimentation being undertaken by OPS. The new 1984



slide-valve **Carburettor** is now a single design to suit all the Car and Buggy engines, and is available in either 8mm or 9mm bore sizes. It is now fitted with a servo rod giving a sprung 'override' facility when the brass throttle slide is fully closed against throttle stop. To ensure total reliability of Idle settings **OPS** indicate a method of sealing up the adjustable Idle jet by use of Teflon tape.

Performance

Test 1: Open Exhaust/5% Nitromethane and 15% Castor/8mm Carburettor/OPS 250 plug.

In view of the apparent lack of obvious design changes in this 1985 Buggy engine, the initial strong rpm figures on standard propellers would have been quite a surprise were it not realised that performance improvements can often emanate from small accumulated changes. Here these have resulted in an Open exhaust performance not far short of the 1983 OPS rear exhaust top car engine. (Reported in 'Model Cars' June 1984).

Certainly the first torque readings indicated a very strong low-speed 'punch' as being available from 12,000 rpm onwards, and which should be of considerable value in the Off-Road Buggy classes. Conversely though, the high rpm end showed a slightly swifter falling off in torque such that operation past 30,000 rpm is

Dimensions & Weights:

Capacity — .2116cu.in. (3.468cc)
 Bore — .654in. (16.6mm)
 Stroke — .630in. (16.0mm)
 Stroke/bore ratio — .963/1
 Timing periods:
 Exhaust — 160°
 Transfer — 128°
 Boost — 120°
 Induction:
 Opens — 35° ABDC
 Closes — 50° ATDC
 Total opening — 195°
 Exhaust port height — .210in.
 Combustion chamber volume — .34cc
 Compression ratios — Effective — 7.8/1
 Geometric — 11.2/1
 Cylinder head squish — .022in. (.56mm)
 Squish band angle — 0°
 Squish band width — .10in. (2.54mm)
 Crankshaft dia. — .722in. (12mm)
 Crankpin dia. — .1965in. (5mm)
 Crank bore — .355in. (9mm)
 Crank nose thread — .245in. x 28 tpi (1/4 UNF)
 Gudgeon pin dia. — .1572in. (4mm)
 Con-rod centres — 30mm
 Carburettor bore — 8mm
 Weight overall (with carb. and filter) — 10.5ozs. (.29 Kilo)
 Width between bearers — 1.19in.
 Mounting holes — 16 x 36mm with 3mm holes.
 Width — 1.71in. (across lugs)
 Length — 2.3in. (to front bearing)

Height — 3.6in.
 Frontal area — 5.12sq.ins.

Performance:

Max. BHP — 1.11 at 25,770 rpm (PB Minipipe and 5% Nitro)
 1.03 at 27,220 rpm (open Ex. and 5% Nitro)
Max Torque — 48oz. ins. at 18,950 rpm (PB Minipipe and 5% Nitro)
 48oz. ins. at 18,650 rpm (Open Ex. and 5% Nitro)

R.P.M. Standard propellers:

	Open Ex.	PB Minipipe
10 x 4 Zinger	12,390	10,520
10 x 4 Taipan	12,990	—
9 x 4 Zinger	16,020	—
8 x 6 Zinger	16,320	15,650
7 x 6 Taipan	18,920	19,100
7 x 4 Taipan	23,800	24,240

Performance Equivalents:

BHP/Cu.in. — 5.24
 BHP/cc — .32
 Oz.in./cu.in. — 226
 Oz. in./cc — 13.8
 Gm. metre/cc — 9.8
 BHP/lb. — 1.69
 BHP/Kilo — 3.72
 BHP/sq.in. frontal area — .216

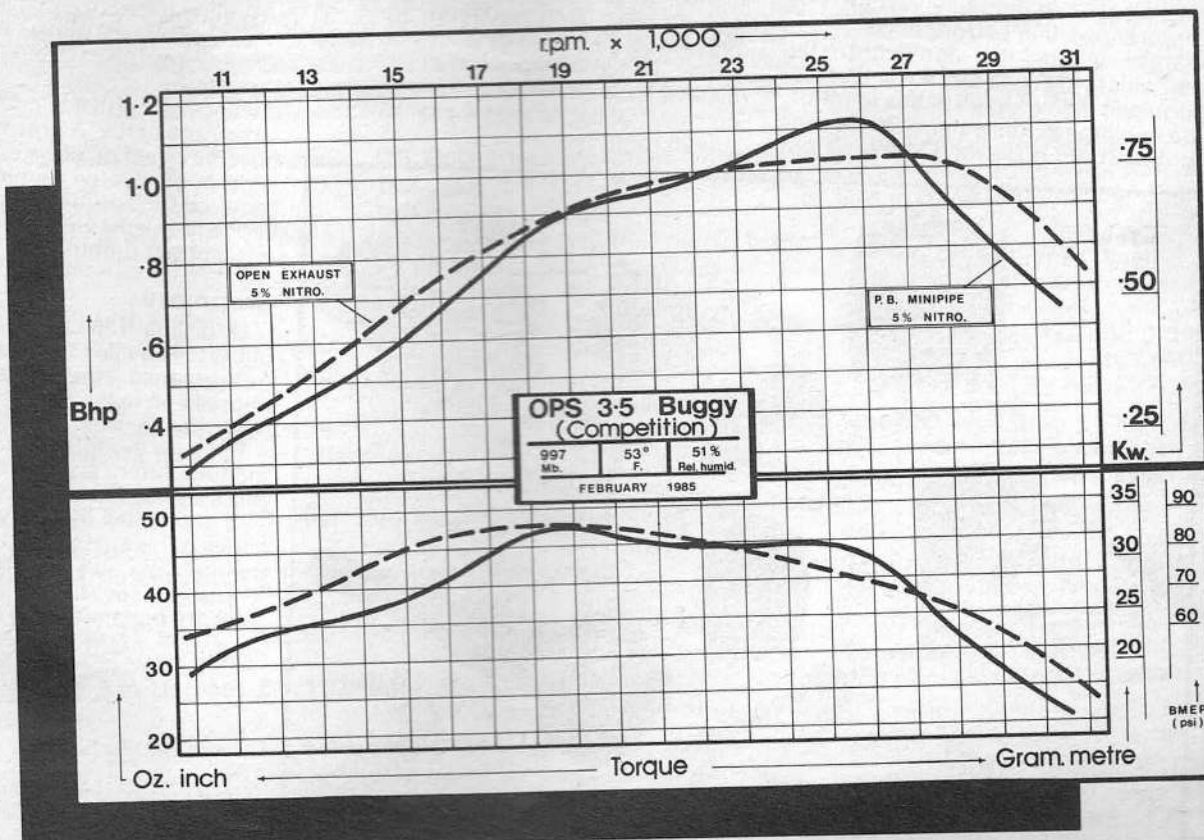
Manufacturer:

OPS, Monza, Italy.

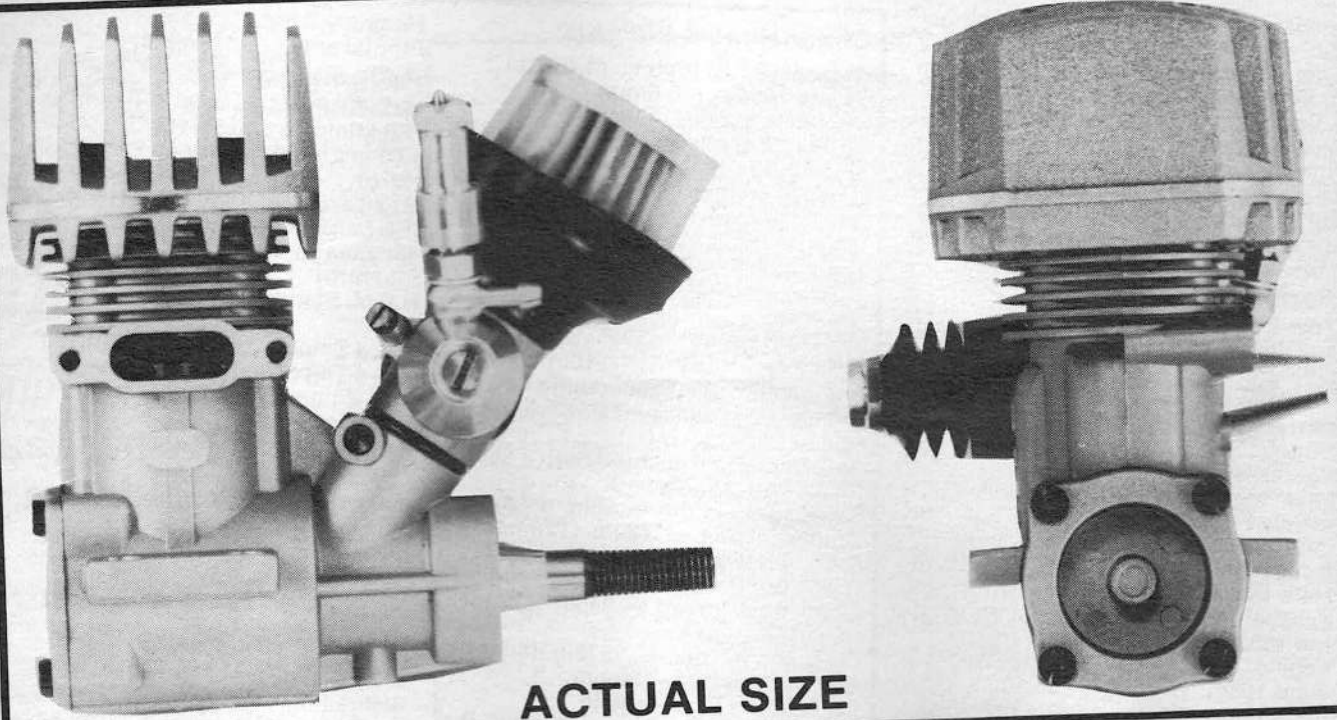
UK Distributor:

MacGregor Industries Ltd., Slough, Berkshire.

OPS 3.5 Buggy results table and power graph



Engine Test No. 18



ACTUAL SIZE

relatively counter-productive compared with that 1983 Rear Exhaust engine.

Test 2: PB minipipec/Other equipment as test 1.

To provide some similarity with the Picco Buggy engine tested recently, the minipipec was again fixed at 5 3/4 in. length from piston face to end of minipipec within the silencing can. The graph shows that performance increase was not that significant in this particular case, and moreover it can be surmised that, as fixed at this length, the minipipec actually harms low-speed torque. It did however allow peak bhp

to be reached at a similar rpm to that of the open exhaust operation.

Depending on the particular need for low-speed pulling power (as opposed to high power at elevated rpm's), it would seem sensible to operate this minipipec at a longer length — say around 6 1/2 in. Though this was not tried during the test, the likelihood is that torque figures around 50oz. in. from 16,000 rpm upwards would then be possible. The consequence of this will of course mean a definite restriction (even collapse) of performance past say 25,000 rpm.

Idling performance

Once a correct fuel level was arrived at (around 1/2 in. below fuel jet), rpm's down to 3,000 were achieved with good clean pickup, though slight excess richness at mid-throttle was apparent — a frequent finding with model engine carburetors.

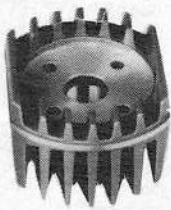
To explain the fuel height situation — during dynamometer testing it is usually the practice to use gravity feed because the lack of pressure feed when operating in Open Exhaust format often means a lack of fuel-draw if using the normal suction feed with large bore carbs. A gravity feed has no adverse effect on constant speed wide-open throttle running (as required for Torque tests), but will cause problems with low-speed and intermittent running.

Summary

Once again an OPS engine impresses by solid reliable performance — almost generating the impression in the operator that nothing can go wrong.

For sure though, other manufacturers also are reaching up to this sure-footed style of performance — it does seem that only the most active of manufacturers can hope to maintain contact with the 'top runners' — and one sees little sign as yet that OPS are becoming any less active. □

Cylinder head



Cylinder liner



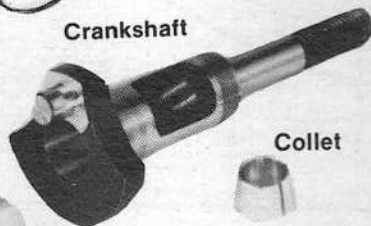
Back plate



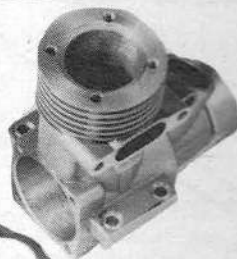
Piston



Crankshaft



Crankcase



Gudgeon pin



Connecting rod



Collet



Left: the components of the OPS Buggy motor as described in the text.

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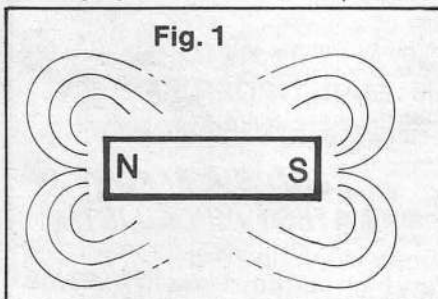
Checklist

More performance boosting hints and tips for 1/12th scale circuit racers

LAST MONTH WE dealt with rejuvenating your modified motor. There are also ways of re-assembling the motor which can enhance its performance and reliability.

When dis-assembled you will have a collection of nylon and fibre washers which came off the armature and in some cases out of the can end bearing. These should not necessarily be refitted in the same order in which they were removed.

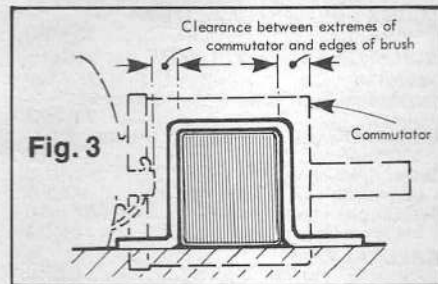
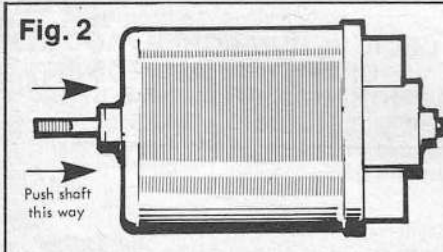
Consider first the magnetic field that is used to promote rotary motion in the armature. We all take for granted the fact that the magnetic field envelops the armature. It also travels around the ends of the magnet in a fashion similar to the classic first year physics pattern (see Fig. 1). As such it tries to 'pull' the



armature into the centre of this field. In this position the motor is at its most efficient since the field is not trying to pull the soft iron core (the stack) one way or another.

We should try to repeat this when rebuilding the motor. With all spacers removed from the armature, re-assemble the motor with the endbell stripped of brushes and springs. Do up the endbell retaining screws and align the two marks made (before removal) on the endbell and can.

By pushing on the pinion end of the armature, (Fig. 2) the whole arm should move towards the endbell and then return towards the can. As can be seen, the stack is trying to centre in the middle of the magnetic field. Easy isn't it? You can now match the

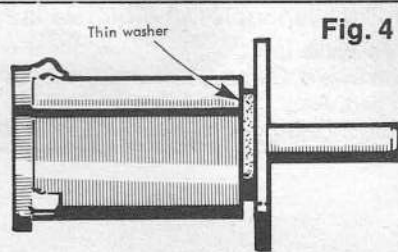


spacers at each end so that the arm is held central in the mid position you have now located. No such luck! If it was this easy I'd be out of a job!

Establish the mid position of the arm as best you can. There will be a range of positions across which the stack will remain unmoved, try to find the middle of that. Now look down the brush slot. The commutator must not be too far forward or backwards in the slot. Too far forwards and the brush will run off the end of the commutator. Too far back and the tags which hold the windings down will destroy the brushes quite rapidly. (Fig. 3) This may mean the armature has to be pushed against the field to prevent these conditions. If this is the case, then keep the amount you deflect the armature to a minimum. It may well happen to your motor, so do not despair.

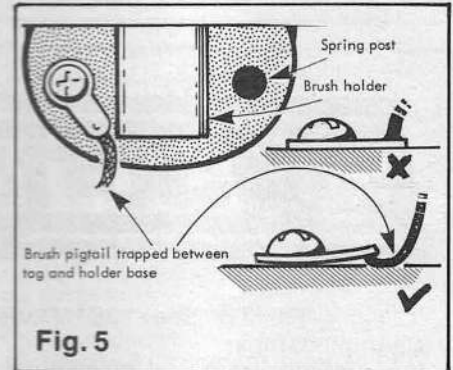
There is no simple rectification and it is not worth throwing away the armature. The detraction from ultimate performance is minimal. The care you take in re-assembly will probably give a better result than the original set up. So now we fit the washers to the arm? Well yes, but not quite yet.

Look carefully at the washer sizes and types. You should find small nylon and fibre washers of varying thicknesses and one or two large nylon or fibre washers. When re-assembling ensure that one of the large diameter washers always goes on the commutator end. It acts as an



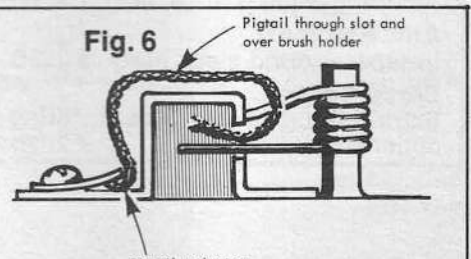
oil thrower and tends to prevent oil creeping onto the commutator when you oil the endbell bearing. As assembled by the factory this large washer is normally placed next to the commutator. When you re-assemble, place a thin fibre or nylon washer between the commutator and the large washer. This will prevent the build up of brush dust on the large washer causing partial shorts between segments of the commutator. (Fig. 4)

Now estimate the number of washers required between the commutator and the bearing. Dismantle the motor, fit the washers and check the stack and commutator are now where required. If not, try again. Once you have done that end, then place washers between the stack and the can end. The object is to have around .005in. to .010in. end play. This is difficult to measure, but it is important not to leave too little play otherwise the motor may bind up in use as it gets hot and things expand. Better to leave too much then add washers after a couple of runs when things settle down. There must not however, be enough play to allow the brushes to come off the end of the commutator or be fouled by the winding tabs.



Now completely re-assemble the motor and tighten the endbell retaining screws. Refit a new set of brushes and position the springs on the posts. The shunt wire tab that screws down into the endbell has the wire spot welded to one side. Place this side down onto the brush holder and place the tab as near to the holder as possible. (Fig. 6)

Now place the brush in the holder with the shunt wire above the spring slot. Fit the spring and then route the shunt wire through the slot and over the holder. In this position the shunt wire will suffer the least interference with free movement of the brush in the slot. (Fig. 6)



Now look at the timing marks on the can. They usually take the form of a sticker, and a notch in the can is aligned with the required number on the sticker to indicate the degrees of advance required. Since it is a sticker it can be stuck anywhere and usually is! We advance the brush timing to improve motor performance much as one does in real car engines. But too much advance does nothing except drain current for no visible return. True top dead centre (tdc) is attained when the little cutouts in the periphery of the endbell are in line with the small depressions in the can. (Fig. 7)

Now look at the stick-on timing marks. You may find that the mark is less than zero. For normal use do not exceed 3° to 4° advance. Above this level, gear ratio selection is critical as are a good set of cells. My advice is not to bother but try around 5° to 7° in small steps to see what difference it makes.

Your fully assembled motor should be run for about three to five minutes on a used set of cells (i.e. not fully charged). Oil both bearings first.

This type of work takes time and concentration to achieve a good result. Keep at it and don't be surprised if it takes up to two hours to complete the job.

Once the technique of rebuilding a motor has been mastered, the possibility opens up of having a selection of armatures available which can be fitted into existing modified cans. You will find this an inexpensive way of having different winds of armature available. Since the majority of modifieds use the same endbell and magnets it is the type of wind on the armature that alters the performance characteristics. New armatures cost between £13.00 and £20.00, quite a saving on the £35.00 cost of a new modified. Race the armature for about half an hour before sending it away for commutator retrueing. This will allow the base material to stress relieve; and thus obtain maximum benefit from the first retrueing.

During use, keep an eye on the condition of the commutator. Watch

for excessive discolouration, and for signs that the edges of the slots are starting to 'burn.' Using the 'screwdriver' test outlined last month, when the brushes seem to be 'bouncing' the time has come for another retrue.

Lastly, keeping the commutator regularly retrueed will eventually result in nothing left to true! Regretfully there is no cure for this. Experts used to be able to fit a new commutator to

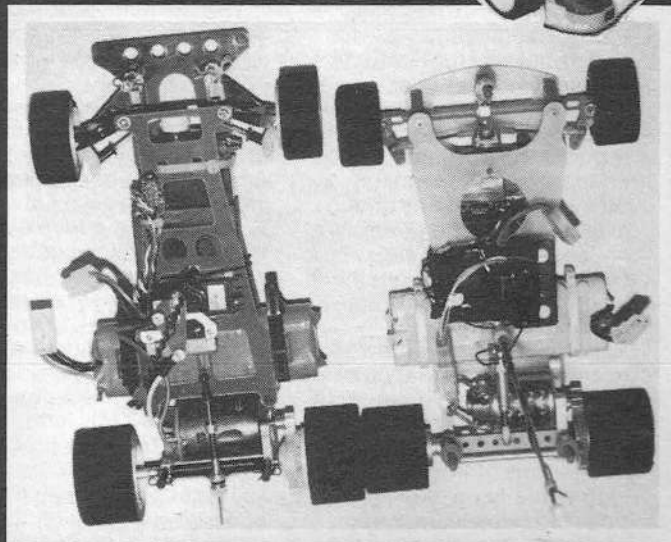
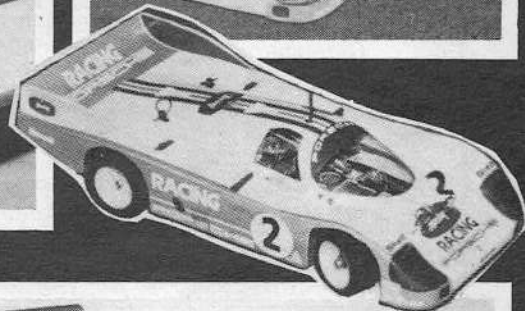
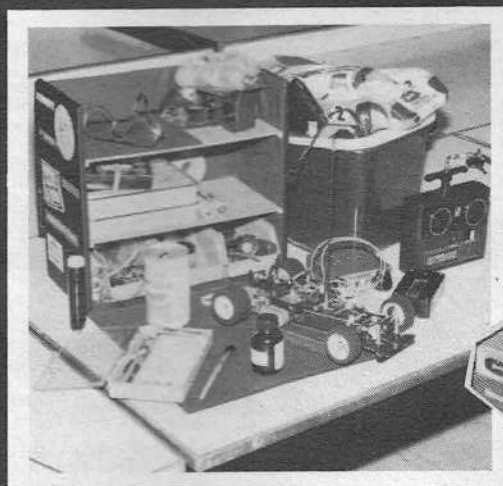
slot race motor armatures, but I don't know of anyone able to do the same for these types. In any event, such a repair may cost more than a replacement.

I hope you will find these tips useful. As always experiment with different set-ups to measure the effect. You will always find something new, and if it works write to us and let us know. The best ones will go into glorious print. More articles on motors will follow. ▶

Porsche 956

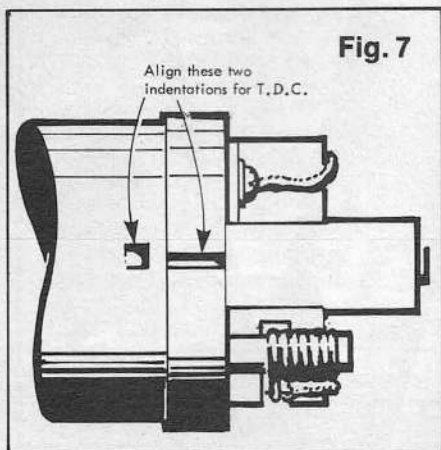
Further running reports as we go racing with the Tamiya "Starting Point"

Below: all the equipment you need for successful racing. Pit box, fishing tackle spares, boxes, tools, 12 volt car battery (in bucket), charger, car, transmitter. Left the '956' out on the circuit.



Right: the 'Porsche' matched up with another popular 1/12th scale racer, the 'Demon MF83'. The 'Porsche' has a longer wheelbase which although aids stability on the track, should cut down cornering performance. The equipment layout is virtually identical.

Fig. 7



Gear

Pete Winton takes a closer look at some ideal 1/12th scale racing goodies

IF THE TRUTH be known the Editor was unsure how exactly to deal with these three items. That was until 'Scavenge' Winton entered onto the scene. The 'Model Cars' office is like a treasure trove, always new and exciting things to be had if you are in the right place at the right time and say please. A typical scenario goes thus...

Winton: *Hmm; what's this?*

Ed: *Leave things alone will you!*

Winton: *Good, I'll take it (slips into pocket).*

Ed: *(yelling) Where is it?*

Winton: *(innocently) Shall we put the article in 'On the Carpet' or 'Gearbox'.*

Ed: *(Screaming) Put it back!*

Winton: *PLEASE, can I write you a piece on this stuff in the black can?*

Ed: *Oh all right then.*

Tri-Flon

Tri-flon is a Teflon based lubricant claimed to cure just about any lubrication problem and act as a penetrant to loosen corroded components. I thought that I would concentrate on the claim that *Tri-Flon* 'Cleans and provides a unique protective shield that rejects abrasive particles'. I cleaned out the front and rear wheel bearings on my *Schumacher* car in the normal way, and then sprayed a minute quantity of *Tri-flon* onto the races before replacing the shields. In bearings of this quality with virtually no load it is not possible to measure any reduction in friction. There is no doubt however that

treated with *Tri-flon* they ran for twice as many races before clogging with dirt.

When used on motor bearings again the frictional reductions are debateable, but there is a marked improvement in the amount of time the treatment lasts.

The aerosol is both compact and convenient, and will last for a long time since only small amounts are used. At £1.89 it is hardly expensive. Recommended for 1/12th and 1/10th scale car bearings etc. Available from *Trade Model Supplies*, 40 Bank Street, Morley, West Yorks. LS27 9JB.

JR "BEAT 2" Receiver

Following the short piece a couple of months back on *MacGregor Industries* tentative steps back into R/C car racing. I have been testing one of their *JR Radio* products most suited to 1/12th racing. Called the 'Beat 2', it is a very compact, lightweight, receiver which can be used with most AM transmitters.

The main attraction of the 'Beat 2' is its weight. I have never had trouble with the *Futaba* receiver I used previously in terms of size, but the 'Beat 2' is tiny and obviously much lighter. According to our scales you can expect to save between 1/4 and 1/3 of an ounce over the 2LGX receiver, more if you are using older heavier types. *MacGregor* state that cutting the aerial down in length will only affect range, so I cut the (excellent quality) aerial wire down to 11 inches. At this length you can run it from the receiver to the top of a *Schumacher* roll mast without having lots of aerial coiled up on the radio plate. Reducing the aerial height reduces the

range, not the sensitivity.

In two months of use the 'Beat 2' has given no trouble. It is no worse than other receivers in terms of interference, and subjectively is slightly better. *MacGregor's* service back-up is excellent and they have years of R/C experience to call on if needed.

The only drawback is the price. £23.00 is a lot to pay for 'just' a receiver, but cheaper types cost approximately £14.00 and I know which one I would have. Recommended to serious racers and available as part number *NER 722X* from *JR* and *MacGregor Industries* stockists.

Check that your transmitter is compatible before you buy.

The 'Beat 2' transmitter should arrive soon, we hope to bring you a test on that as well.

Ever Ready Cells

The last BRCA conference (MC-Feb. '85) voted to remove the 1.2Ah limit on Ni-Cads. This allows the *Ever Ready* and *General Electric* cells to be used in this country despite their 1.4Ah rating.

Since the *GE* are Dollar based they will be at present expensive. The *Ever Ready's* are Sterling based and so should be able to obtain a competitive price edge on *Sanyo's* and *GE* soon.

I tried a set of *Ever Readys* sent in by *Trade Model Supplies* for review. I assembled them in the normal way and charged at 1/2 Amp for the first time, followed by two charges at 1 amp. Each time the



Above: the 'Beat 2' receiver shown approximately full-size.

discharge was through a 21W car bulb. In back-to-back testing it is clear that they do not have the same 'punch' as *Sanyo's*. On a hot modified motor there is not the same acceleration, or top speed (subjectively). On mild modified and standard motors it is a different story. For club use on those types of motor the *Ever Ready's* do a good job and provide just a small amount of extra duration. They are very popular with buggy racers because of this feature.

The *Sanyo* (Dollar based) product must go up in price sooner or later and when it does *Ever Ready* will have a real edge. I'll keep using them to give you some idea of how long they last. If you need new cells soon and race mostly at club level I recommend you try a set.

Available through *Trade Model Supplies*, 40 Bank Street, Morley, West Yorks. or *Schumacher*, Rudge Church Brampton, Northampton, Northants.

Right: can of *Tri-Flon* lubricant and *Ever Ready* 1.4Ah Ni-Cad cells both supplied by *Trade Model Supplies*.



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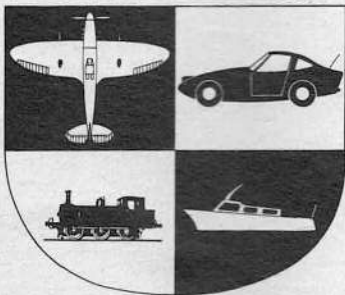
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STOCKCAR RACING has always been a cost conscious sport, the idea being that costs do not escalate to such a degree that competition becomes too expensive. This is an aim I am sure most stockcar racers would back 100% but is that aim always achieved by setting a cost limit e.g. £55 maximum kit price on the components required?

It is interesting to note that in electric stockcar racing there is no maximum price figure anywhere, yet the cost of racing is not excessive. Why? Maybe the answer lays in the

jointed steering linkages as part of their package and of course all components excluding radio gear, engine and silencer.

The main difference between the *Mardave* and *Puma* is that in the *Mardave* the nylon parts are moulded, whilst in the *Puma* they are machined, which is the main reason why the *Puma* is that little bit more expensive. If the price limit was to go then I suspect that more people would opt for the machined parts as they tend to be more accurate than the moulded. This would be limited to such things as

example and introduce a rule to ban them. At the moment stockcars (1/8th) do not have bearings in the wheels or axles, because the cost limit prohibits it, these could be sold as an accessory, but would they make any real difference to the racing?

My feelings are that at the end of the day a stockcar is a stockcar, doing

R/C Stockcars

*Mike Chilvers
looks at the
stockcar racing
scene*

wording of the regulations, the limiting of the motor and battery packs, plus the exclusion of electronic speed controllers and differentials. So long as the regulations are adhered to the car can be made of any material you choose. The *Mardave* has a nylon chassis, the *Lectricar* an alloy one and the scratch builders use lexan, fibreglass and just about anything they can get their hands on! One can argue as to whether the price of an electronic speed controller with reverse is any more expensive than a good resistor and servo set-up.

Back to the 1/8th scene.

We have seen the demise of the price limit on engines without it having any detrimental effects because many of the engines being used are only a few pounds more than the old price limit.

So I wonder what would happen if the kit price limit was to go? With the regulations as they are all chassis' would have to meet the same dimensional requirements and at the end of the day not exceed the weight limit, so I would not envisage that the chassis would be much different. Also I would expect steel to be used rather than other metals for its strength and weight. Subsequently there should be no increase in the cost of any major component other than that due to inflation. Both of the popular kits in current production now include ball



Above and top: racing memories from last year's RSCA Series round at Lillford Park, Northampton.

servo savers, axle blocks and rear trailing arms, plus the rear drive pulley. Obviously none of these things make the car go any faster.

It may be worthwhile to reflect at this stage that with the current kit prices the *Puma* driver has £2 to play with, and the *Mardave* driver £5.50.

The price limit should theoretically stop people modifying their cars. For instance brakes are allowed but neither manufacturer includes them as standard, so any driver fitting them should do so within the price limits. The existing rules do not ban limited slip differentials on the 1/8th cars, again, provided you can do it within the cost limit. Do away with the price limit and you could have differentials, unless you follow the 1/12th scale

away with the price limit on kits would do very little to alter the price on the market. The car still has to be robust enough to stand up to the knocks it gets on the track so some of the expensive items found on other model cars would not be incorporated as they would not stand the strain. Careful checking of the regulations could keep a tight reign on restricting development to that of essential parts. Moulded or machined nylon or aluminium, with or without bearings and all without the worry of incurring the wrath of the local scrutineer for being a few pennies over the cost limit.

It may be worth remembering that not long ago people were concerned that tuned pipes would be necessary to remain competitive. Well that did

not prove to be the case as drivers discovered that a tuned pipe produced too much power to be controlled through the narrow tyres required by the regulations. Maybe now is the time to consider removing the price limit from the kits, what do you think?

1/12th Scene

Not really a great deal to report on this month, except that there are one or two changes of dates for the National Series. Wirral were due to have their meeting in October, but due to financial reasons they will now have their National in June to coincide with the local Festival of Sport fortnight, on June 9th to be exact. As a result of this the Loughborough National has been moved to September 29th.

There has also been rumours about National meetings being run on carpet following the success of the meeting at Wembley. Firstly there will NO Nationals run on the carpet this year, as for the future, well that will depend on an agreement with the affiliated Clubs at the AGM. Secondly, there would be a number of problems if some Nationals were held on carpet and some on polished floors. The cost of a carpet for a stockcar track would be about £100. For many Clubs this would be too costly. Even if a Club was prepared to purchase a carpet and lend it, then comes the problem of transporting a couple of hefty rolls of carpet around the country. However having said that I think the time will come when carpeted tracks are the rule rather than the exception.

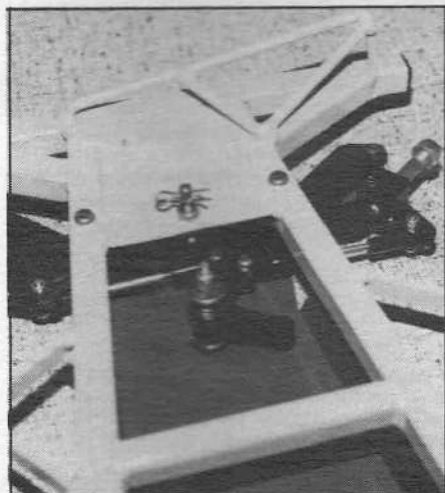
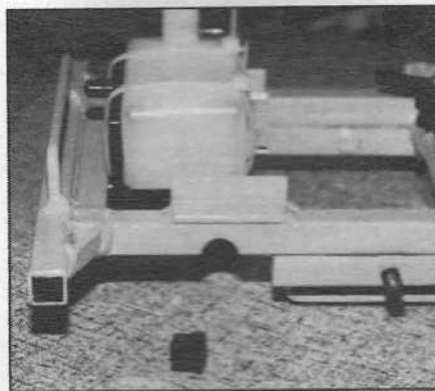
Lectricar spares which have been a bit scarce recently should now be back in full swing as problems with the injection moulding equipment have been rectified.

The Rugby Stock Car Club have changed their racing night from Wednesday to Monday. Also the membership has increased which is a good sign, anyone interested contact John Cutts (0788-72110) for details.

Many thanks to Chris Loughran for passing on the above information.

Stoxs around the World

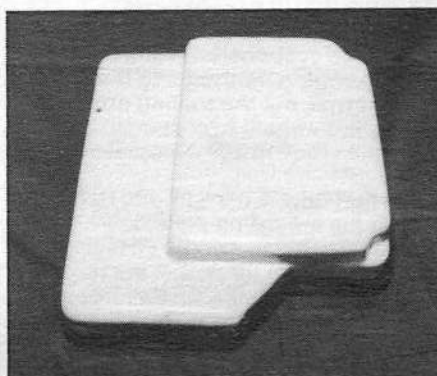
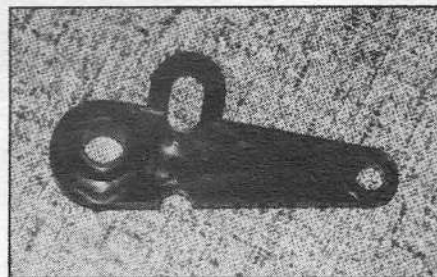
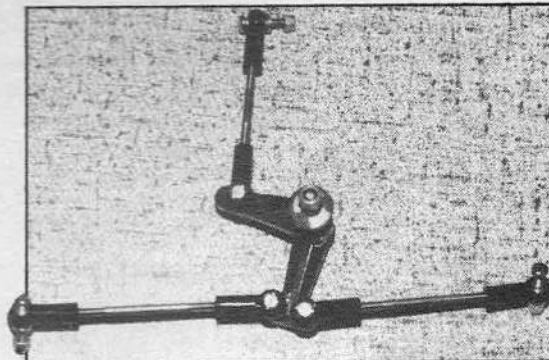
A letter from Paul J. Xuereb of 23/3 Saddler Street, St. Venera, Malta made me think of all those other people I have heard from in New Zealand, Australia, America and Cyprus who have written because they are interested in stockcars. Paul was writing because he hopes to start something in Malta, and wanted information on chassis design so that he could build his own plus some for friends. To all those 'ovalling around' in foreign parts how about dropping me a line and letting us all know how things are going.



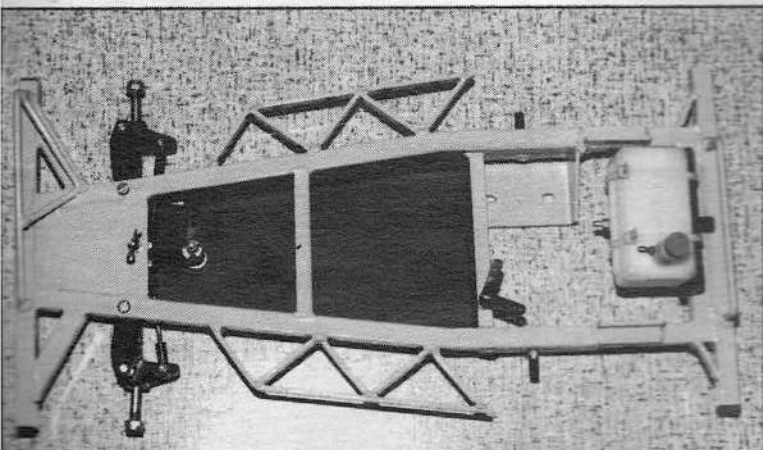
Mardave Mk III

After a year of track testing in an attempt to construct the best possible chassis the *Mardave Mk III* has officially been released. The kit is the toughest and best that *Mardave* have produced, and a great deal of thought has gone into it.

The chassis has a fully welded-in undertray which is slanted up at the front from just in front of the front axle, dropping to just over an inch under the main chassis rails. The front bumper override bar is supported by two braces from the top of the right chassis rail, one of which goes to the centre of the override bar, the other to the highest point on the extreme right. At the rear of the chassis diagonal braces have been placed between the outside of the bumper and main rails, in an attempt to stop them being bent inwards. Engine mounting is via mounting blocks, bolted to a welded-in engine mounting plate. Additional strength has been built-in by welding a cross beam just in front of the engine, on which the bell crank for the throttle servo is located, and by welding-in an additional cross beam mid-way



Left: the *Mardave Mk III* chassis fitted with nylon front axle beam. Centre top: the moulded plastic stopper which fits into the rear bumper. Also shown is the rear axle cut-out. Above centre: close up of the new front end. Top right: the sturdy *Mardave* servo saver and standard ball-joint linkages. Right centre: the new rear trailing arm with built-in suspension limiter. Right: the shape of the radio crate.



Taking Stock

between that and the front axle. The ends of the bumpers are plugged by four solid nylon plugs provided for the purpose. Radio installation is catered for by the provision of a radio crate to house the throttle servo, receiver and battery which is neatly located in the section of the chassis nearest the engine. A mounting plate for the steering servo has to be cut and mounted in the front half of the chassis.

The front axle is *Mardave's* own nylon moulded beam, onto which new stub axle blocks are fitted. These new blocks are sturdier than the previous ones, and feature a stub axle that is of the same diameter as the rear axle, thus allowing the fitment of the same size wheels to all axles. This stub axle is also well fitted into the blocks, being both splined and fitted with a circlip on the inside. One little tip when assembling the front unit is to place a small washer on the kingpin between the spring and the top of the axle beam, as this will prevent any sticking that will otherwise take place. A new servo saver is also included, again a thicker design than before, and all linkages are now nylon ball jointed with metal rods, all of which add up to a much more substantial front-end. The wider chassis on the 'Mk III', (a quarter of an inch wider than the Mk II) means that any engine can be fitted without having to remove any of the crankshaft. The clutch unit supplied can be fitted with an adapter to fit the engine, and the engine mounting blocks mentioned earlier can be supplied in either a drilled and tapped form, or an undrilled form so that the mounting can be done to the driver's own liking.

Again as a result of the wider chassis the rear axle is also wider than the Mk II, and features a positive drive system for the rear wheels achieved by a crimping up of the ends of the axle that slide into slots in the wheels. This now means that rear wheels do not have to be tightened up to such an extent that the wheels are deformed in order to avoid them slipping on the axle. Again another tip here, I have found that it still helps to have a washer on the inside of the wheels, and it is necessary to file out a couple of grooves in the inside of the washer to enable it to fit over the axle crimpings.

Rear end suspension is still by the usual springing method into the trailing arms, but the trailing arms on the Mk II have built in suspension limiters, in the form of a loop at the top.

The fuel tank is the same as before, though the mounting plate now screws into the rear of the chassis (which is double thickness at this point) by self-tapping screws from the inside. The mounting plate is flush to the chassis, which makes it much more rigid than in the past, and it has

two slots moulded into it to allow the fuel tank to be held in place with tie wraps which are supplied.

A new style body is supplied in the kit, and is lower and more rounded than many others. It of course has to have the windows fretted out and requires painting. Body fixing is by a stud moulded into the rear of the fuel tank mounting plate, which incidentally is longer than the one on the Mk II and allows for a hole to be drilled in it to take a body pin. At the front there is also a longer and more useful body post which is held in place by a couple of nuts tightened against the front tray above the front axle. I did notice that this post does tend to come into contact with the front axle beam when screwed down to its lowest position, so a small amount may need to be cut off.

Construction of the new car is clear and simple, being mainly a bolt together operation. Mounting the radio gear and making the connections I always find fiddly, though the adjustable ball joint kit did make the steering linkages much easier. In order to assist at getting at the screw in the centre of the servo for the steering, I found drilling a hole big enough to take the screwdriver through the side of the undershield was a help, and I also found it useful to drill one through the underside of the shield to locate the screw holding the linkage to the servo saver. Holes also have to be drilled through the undershield for the exhaust outlets, or outlet if you have a single pipe silencer. The ends of the exhaust will also have to be fitted with a length of silicone tube to permit the exhaust to vent out under the car, otherwise you will get an awful oily mess in the undertray. This additional tube must be flexible, a solid type of pipe could easily damage the engine if it made any solid contact.

The throttle servo has to be mounted in the top of the radio crate, and on the Mk III is designed to push the bellcrank into an open position rather than pull it, this needs to be borne in mind when completing the radio installation and bending wire for linkages, etc.

My verdict at this stage, having as yet not used the car because it is

January, is that this is very much *the best* that Mardave have ever produced in this scale of racing. It is a much more substantial car kit than any of its predecessors, and I await the start of the new season with interest.

Price of the new Mardave Mk III should be around £49.95. If your local model shop has not got one in stock, then contact Mardave direct at 7 Heanor Street, Sanvey Gate, Leicester. (0533 24701).

Bits and Pieces

Only one item has been brought to my notice this month, and that is an extension lead for the receiver crystal, which enables the crystal to be located away from the receiver, for example on the top of the radio crate, and so makes the task of crystals changing easier. The producer of this is Stew Busby of 72, Rosamund Avenue, Leicester and the leads are priced at £2.

Racing Round and About

The 1/8th racing season will be underway by the time you read this, with all Clubs well into the usual round of Club meetings. On the national scene the second round of the Series Championships takes place at Lilford on April 21st and a new event the British Grand Prix is being staged by the Leicester Club on April 28th. In May we have the Brighton International on May 5th, and Sandown Symposium with racing organised by the Chessington Club on May 11th and 12th. On May 26th the EMSA European Championship organised by the Sussex Club on their new track at the Adur Rec., All meetings should provide good racing for the driver and spectator alike.

The 1/12th Nationals are at Leicester on April 14th and Pendle at a date in May that at the moment I have not got, but if interested please contact the Pendle Club or Chris Loughran.

Well that's it for this month. Please remember to drop me a line to 85, Elliott Road, March, Cambs PE15 8BP.

See you ovaling around.

Below and right: Sean North poses next to his F1, quarter scale stockcar. Below: close up of the engine installation showing spark ignition.



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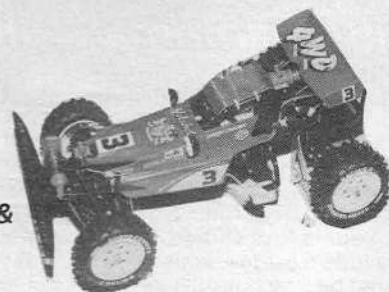
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MOST RACERS WHO have been used to driving on *Scalextric* style track are often surprised at how easy it is to drive on the smooth, purpose built, BSCRA circuits. To throw a little light on the matter and maybe help racers to build such a track, we will describe here the basic methods of building a four-lane permanent circuit.

The first consideration is space, and the same method can be used for any size track. It is necessary to plan your track accurately for the space available, and make an accurate plan on graph paper before you begin. Unfortunately, just drawing

a circuit. The most popular tracks have a mixture of slow and fast bends, and long and short straights. Never include chicanes or other obstacles in your layout as you will make construction harder and slow down racing. Tracks built for BSCRA events must have a minimum lap length of 50ft. so if you plan to build to this size now is the time to do it.

Planning

Now you can make an accurate plan of the room you will build in (See Fig. 1). Make sure you put in the windows and doors, and if possible power points and



Track Building

Gary Cannell details the basics of designing and building a slotcar circuit

a track shape is not enough, and you must consider the following points before settling on a design.

1. Your layout should include a bridge, which must be positioned away from bends and will not restrict visibility. A bridge will ensure all the lanes are of equal length, an important aspect of racing.

2. The track will be permanent, so you must leave space for drivers, a race control, marshals, pit area, and access to all parts of the track. Don't fill your room with track, as no-one will be able to race on it!

3. Scale of cars to be raced. Normally, cars will be to 1/32 scale (*Scalextric*, *Parma*, *MRRC*, 16D, BSCRA cars) but if you want to race 1/24 scale cars the track will need to be much wider, and take up more room.

4. Your personal requirements. You may need a rally type track or even a replica of a real

other relevant items. Reading through the list above, draw your track onto the plans to scale and then check the list to make sure that you are happy with it. Once a scale plan has been made, you can measure your exact lap length, and also start to plan your materials needed for building. Before we do this, however, there are some useful details to digest first.

Bridges

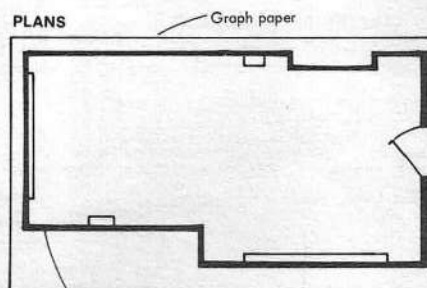
Include a bridge to make every lane of equal length. The ideal shape is a Figure 8 but you can also include as many other bends of different sizes as you like, and the end product will probably not look anything like the '8'. You can also have extra bridges, but remember to finish up with an ODD NUMBER. A bridge is probably the hardest part

of the track to make properly, so keep to a minimum if possible, and bear in mind that every bridge will restrict visibility to another part of the track. (See Fig. 2).

Track width

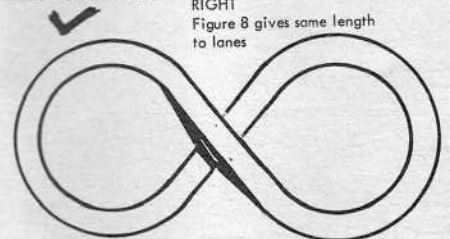
Just about every car these days is 2½ in. wide. To allow cars to overtake each other the slot centres must be further apart than this. *Scalextric* track has 3 in. lane centres and by now you will

Fig. 1



Make an accurate plan of your room—include details of doors, windows, electrics etc. Draw your final track plan on here

INCLUDE A BRIDGE



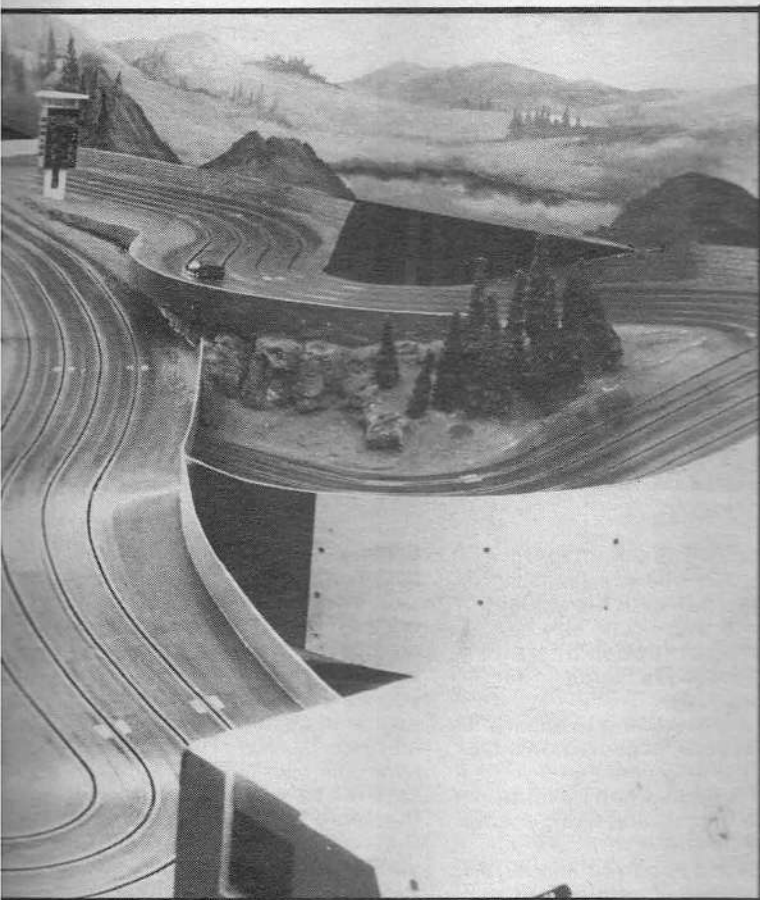
RIGHT
Figure 8 gives some length to lanes

✗

WRONG
An even number of bridges results in unequal lap lengths



Fig. 2



circuited in some cases, as we can show here. A compact track can make use of two bends, one large and one small, but both having the same centre. This saves a lot of space, is easier to construct than two separate bends, and means that one marshal can do two corners. Do remember a couple of things about the 'Concentric Corner' however; the bend must always be away from the drivers so that both corners can be seen and the marshal can stand outside the bend; secondly that a firm barrier must be built in this type of bend as the cars will usually be travelling in opposite directions. (See Fig. 4).

On any track, the marshals must be able to do their job without blocking the view of ANY part of the track, and must be able to reach their positions easily and quickly. Don't overdo it with marshals, work out how few you need, and remember that every race will have four drivers and a race controller as well. How many people can you really spare?

coming directly towards or away from the drivers are harder to drive, so plan your track with a sensible driving position.

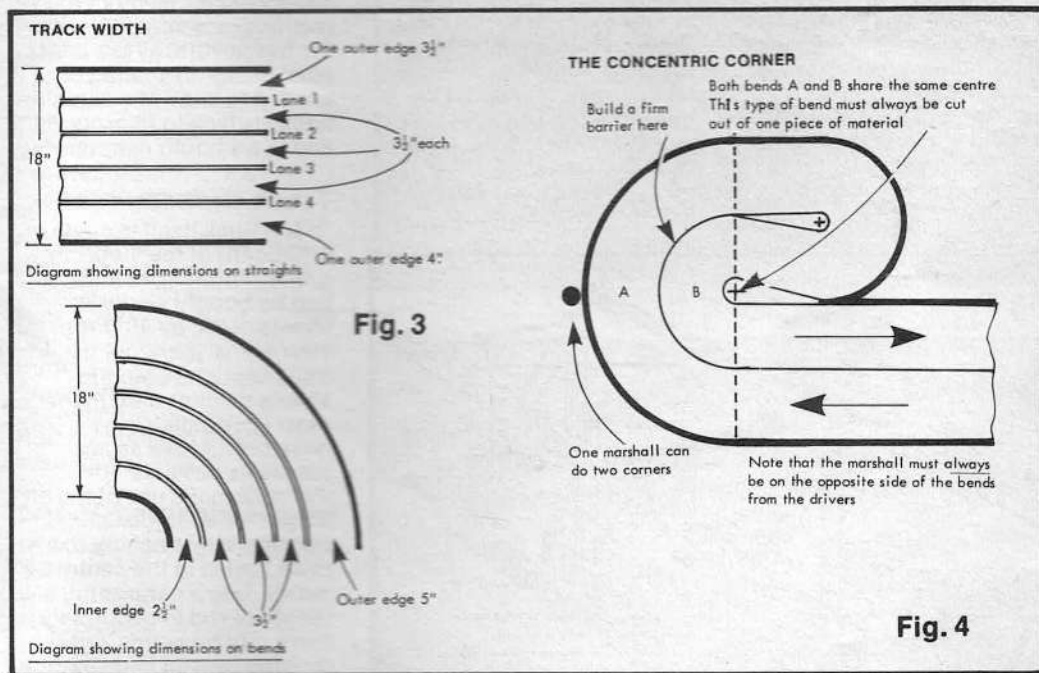
The race controller must also be able to see the whole track, but most especially the start/finish line. If possible, place the start next to race control as this will save time once racing gets underway, but make sure that the start is NOT just after a corner. Cars often fall into another lane if they de-slot on a bend, and a situation with cars crossing the lap counters on the wrong lane must be avoided. Plan your startline with the same care as the rest of the track.

Making support trestles

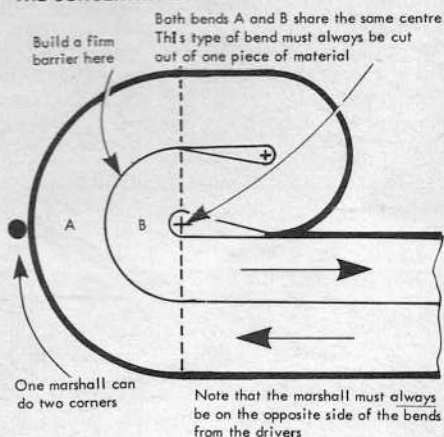
Having drawn an accurate plan, the practical business of preparing to build can begin. Clear out the room where your track will be, and start transferring your scale plan to the floor of the room full size. A light background with the exact track layout marked in black felt pen is

all realise that passing can be hazardous, especially on corners. Therefore, leave at least $3\frac{1}{2}$ in. between slots, and if you have the space, 4in. On corners, this figure will remain the same, but the cars will need more room on the outside of bends. It is NOT a good idea to allow the cars to slide round on the barriers, as the cars become damaged quickly and the track itself will suffer. However, the overall track width does not need to be wider on bends, as less room is needed on the inside of corners. A suitable width for our track is 18in. made up as follows: four slots with $3\frac{1}{2}$ in. between them makes 10in., plus $3\frac{1}{2}$ in. on one outer edge, plus 4in. on the other outer edge. (See Fig. 3).

On corners, the same width of 18in. will be used as follows: four slots with $3\frac{1}{2}$ in. between them makes $10\frac{1}{2}$ in., plus $2\frac{1}{2}$ in. on the edge inside the bend, plus 5in. on the outside of the bend. The extra distance here is to allow cars which have de-slotted to have a



THE CONCENTRIC CORNER



'run-off' area and not block the other cars still racing.

Marshals

A marshal is needed for every bend. This sweeping statement can be short-

Drivers and race control

The drivers must be able to see all the track. An obvious point, but one that is often missed. Also, you will soon realise that cars

ideal. If your layout needs to be fixed to the walls as well, mark this out as well.

The track itself can be built at any level, but the most sensible height is anything around 3ft. high. If you have planned your track

Slot Car Acceleration

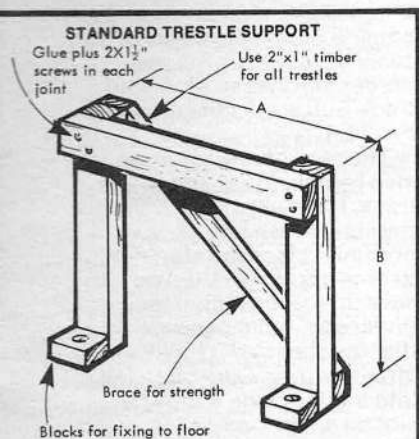
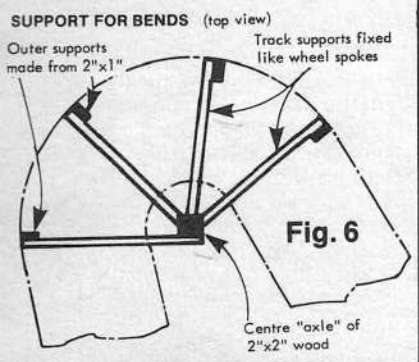


Fig. 5 Width A must be 2" less than overall width of the track it supports. Height B must be the height you want the track above the floor. NOTE Take great care when building trestles for bridge sections.

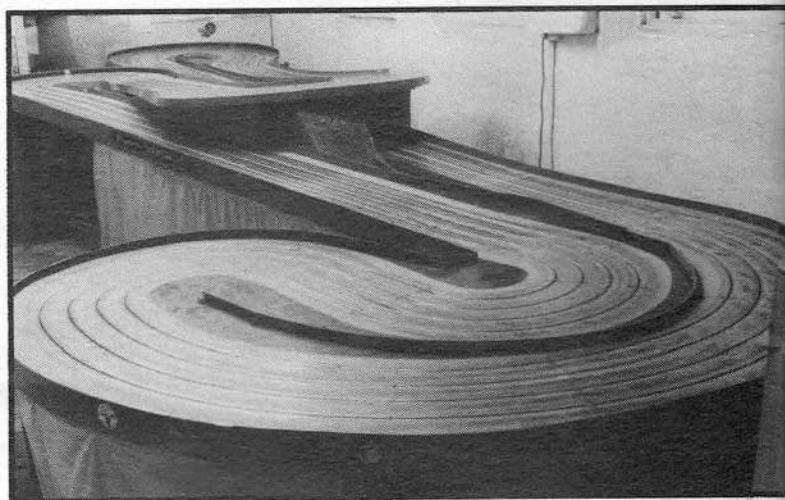


to be at floor level, you will save money on supports and make building much quicker, but also make driving and marshalling very much harder. For this article we will stay with popular tracks and begin building

our support trestles. Using 2 x 1 (50mm x 25mm) timber, make a series of support trestles to follow the track plan at distances of 2ft. For single width track of 18in. wide, make your trestles to be 16in. wide to allow the 'rails' of the framework to be fitted along the outside. On sections of track where it is possible to support two or more sections, or where you have an enclosed area that widens the track surface to be supported, always make your trestle 2in. less than the overall width. (See Fig. 5).

The trestles can be simply made, but must be braced for strength and be strongly fitted together; use glue as well as screws on final assembly. The trestles must all be the right height for the track, so measure carefully where you will need any higher ones for your bridge. On corners, several outer supports can share a common centre, like spokes in a wheel, but make sure the 'axle' support is of thicker timber to take the load. 2 x 2 (50mm x 50mm) wood will be ample. (See Fig. 7).

When you have your trestles built, screw small blocks of wood to their feet, and screw these directly to the floor. The structure MUST be rigid. As you fix down the trestles, join them together with the 'rails' to give the track edges and finish the framework of supports with as much



strength as possible. On corners, the short rails will be underneath the actual bend, and will be able to support the track where the loadings are highest. (See Figs. 7, 8).

It is important to ensure that your measurements are constantly checked from your plans when building the trestles and fixing them down. Any errors now will be hard to correct in future stages, and could result in an uneven track or one that could cost much more to rectify. Once satisfied with the framework, all the joints must be lightly planed or sanded to allow the actual track surface to fit properly and in a smooth manner.

Cut the longest dimensions first using a circular saw, with a guide to keep the edges straight. When cutting out the bends, use a jig-saw; with little practice you will be able to follow any bend accurately, but in all cases DO NOT RUSH. A little time spent cutting with care will save you having to buy more timber to replace that ruined by silly errors. If you have two straights running next to each other, do not cut them out separately but leave the centre section for strength and to make the finished track more attractive. Similarly with tight corners which double back on themselves.

Track surface

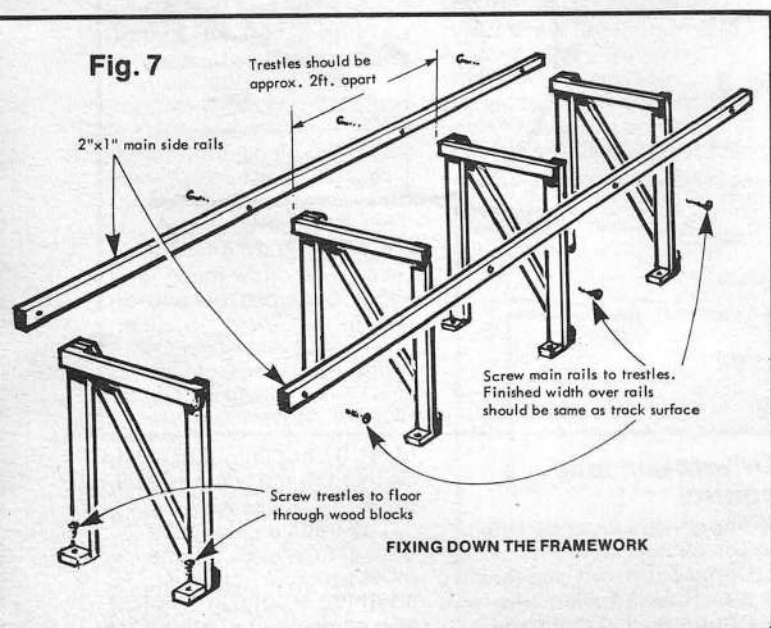
The track itself is made of chipboard of the 'flooring' grade. This is 5/8 in. thick, and can be bought easily in sheets of 8ft. by 4ft. From your plans, mark out the track sections onto the sheets of chipboard in the most economical way possible. Do use as few pieces as possible, for instance make use of the 8ft. length for straights, and if possible avoid having the track joined in the centre of bends. Use a pencil and length of rod to accurately mark out the bends, lightly pinning the rod in the centre of the bend and moving your pencil to the right distances for the outer and inner edges. (See Fig. 9).

Once you have the whole track marked out in sections, start cutting it out ready to fix to the trestles.

One tip for sections which double back and change height at the same time is to use one piece of sheet for the whole section. Just make a single cut along the centre, and you will find that a smooth change of gradient can be achieved for the track leading up to and down from your bridge. (See Fig. 10).

Having your track in pieces 18in. wide, and larger sections for bends etc., will look a bit like a jigsaw puzzle. Start fixing it down firmly to the trestles with the corners and bends fitted first. The straights can then be trimmed to fit exactly by gently cutting the ends until they match the bends precisely.

The track surface must be fitted flat and strong, so screw it to the trestles every 8-9in. Make sure you countersink the holes for the screws, as these can then be



FIXING DOWN CORNER TRESTLES AND RAILS

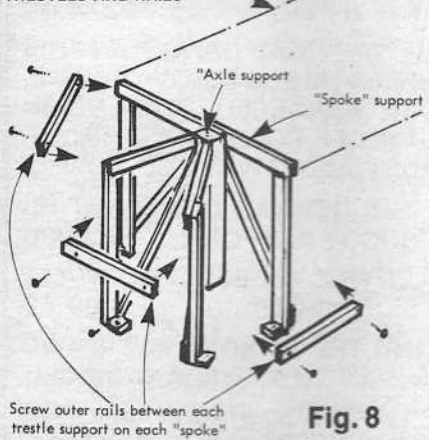
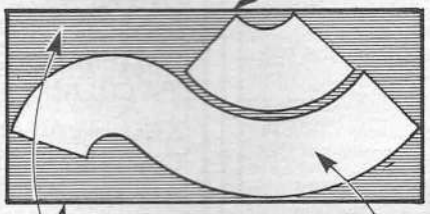


Fig. 8

CUT AS MANY SECTIONS AS POSSIBLE FROM EACH SHEET



Do not throw away waste pieces, they can be used for other things later

Fig. 9

SMOOTH GRADIENTS

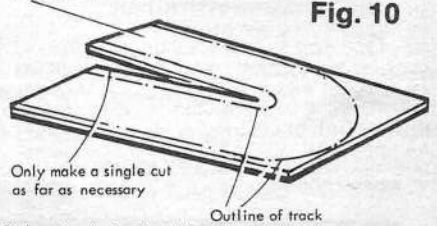


Fig. 10

By keeping the bend and short sections on one piece of material, you can get a smooth change of gradient with no joints. The chipboard will bend enough to give the rise required. **FIX THESE SECTIONS DOWN VERY FIRMLY**

filled to give a smooth surface to the track. As well as fixing along the edges, screw the track down to the trestle crosspieces as well to stop the track buckling or bowing. Where track sections meet, it is important to have a smooth join. Use a batten under the join, and firmly screw down the track on each side, making sure there is no difference in height between the sections. (See Fig. 11).

Once the whole track surface is finally attached and you are satisfied with the result, fill in all the screw holes and track joints with filler and sand it flat. If this is done properly you will have a very smooth track surface which will last a long time and be strong enough to resist the hardest knocks.

Don't throw away the offcuts of chipboard and other timber, as most of them will be used in later stages. The long sections especially are useful for making track barriers along the straights, and other odd shapes can all be used to build the various extraneous items we'll come to in part two.

Lastly, to finish this part, you should now put a coat of paint (primer will do) all over the bottom of the track and the trestle framework to prevent any moisture or condensation from getting in and making the chipboard and wood swell up. The results of this would be disastrous, and render useless all the hard work you have just done. In part two we'll actually cut the slots, and get the track painted, taped, and wired up ready to run on.

List of tools needed

For making plans and measuring with

- Tape measure
- Ruler
- Compass
- Set square
- Protractor
- Pens and pencils

For building the track with

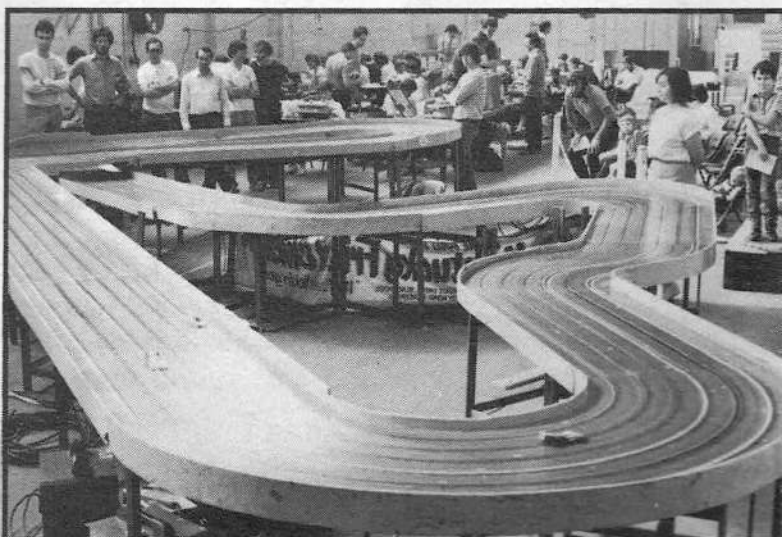
- Circular saw
- Jig saw
- Hand saw
- Electric drill
- Hammer
- Screwdriver
- Countersink bit
- Rod for marking bends
- Various drill bits

List of materials needed

(Enough to suit the track YOU will build)

- Graph paper
- Lengths of 2 x 1 timber
- Lengths of 2 x 2 timber
- Chipboard 5/8 flooring grade in 8ft. x 4ft. sheets
- Strong wood glue
- Filler for track joins
- 1 1/2 in. screws for building trestles and framework
- 1 1/4 in. screws for fixing track surface with

Preceding page: Surbiton SRC circuit. Opposite page top: Ipswich track. Below: the BSCRA Nationals track at the Blackpool Olympia Exhibition Hall venue. Bottom: the ubiquitous One-a-One portable track which was used for the 1985 Model Engineer Exhibition.



JOIN TRACK SECTIONS SMOOTHLY

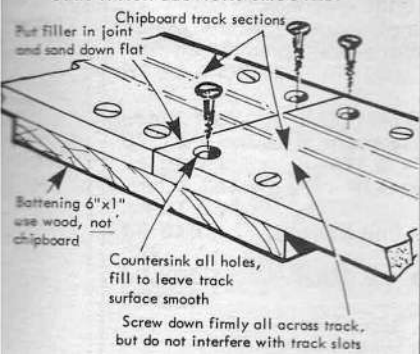


Fig. 11



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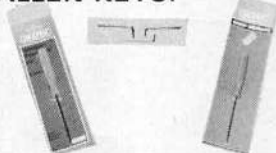
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