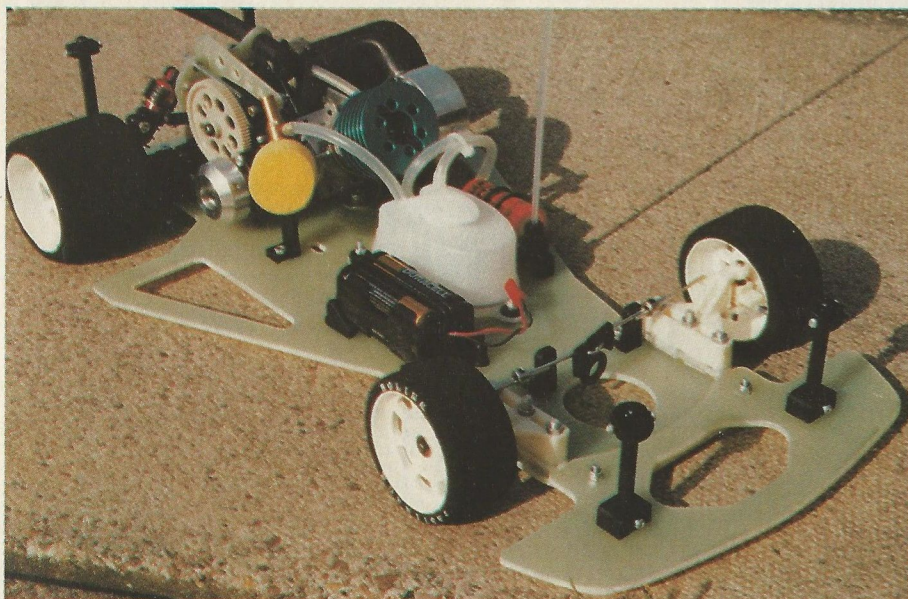


Schumacher

'Prototype' Nitro Circuit Racer



Yes, yet another product from the ever-expanding and successful English RC model car company. Schumacher's latest design is targeted at Europe's 1/10 scale circuit scene, and the latest thing in the US, 1/10 scale 'gas' oval racing.

Schumacher kindly donated a pre-production example of the Nitro 10 Circuit-Oval car to Radio Race Car for a long term review. The only difference between our car and the production

version, soon to be seen in shops world wide, is a simple but very significant one. The production cars will be based around much more rigid, much lighter and stronger carbon-graphite chassis parts.

The Formula

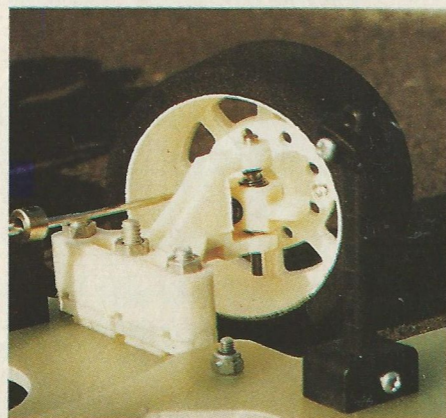
As the name 'Circuit-Oval' suggests, the car is designed to compete in 1/10 IC circuit races and 1/10

Gas banked oval races.

One tenth IC circuit racing has evolved from the introductions of the Serpent Impact and Schumacher's original Road & Track Nitro 10 cars.

Nitro circuit racing is becoming more and more popular and there is now a championship for such cars. Electric circuit racing has evolved into an unhealthy reliance on matched nicads which is very restrictive for the average racer, and very expensive for the committed racer searching for consistent results.

The fact that these cars don't rely on ni-cads is a major advantage, as the running costs are lower and the power available to everyone is very consistent. The rules for such racing are as yet, not approved by any recognised racing organisation, and with the introduction of the Schumacher Nitro 10 Circuit-Oval the cars are



evolving in very different directions. The Serpent cars are dominating the current championship, however as they have many components in common with their larger 1/8 scale brother they are being upgraded extensively.

Most of the Serpent cars are being run with alternative engines, two speed gear boxes and tuned pipes. The Schumacher Circuit-Oval design incorporates a simple lightweight car, and the team are obviously banking on a superior power to weight ratio to gain the results.

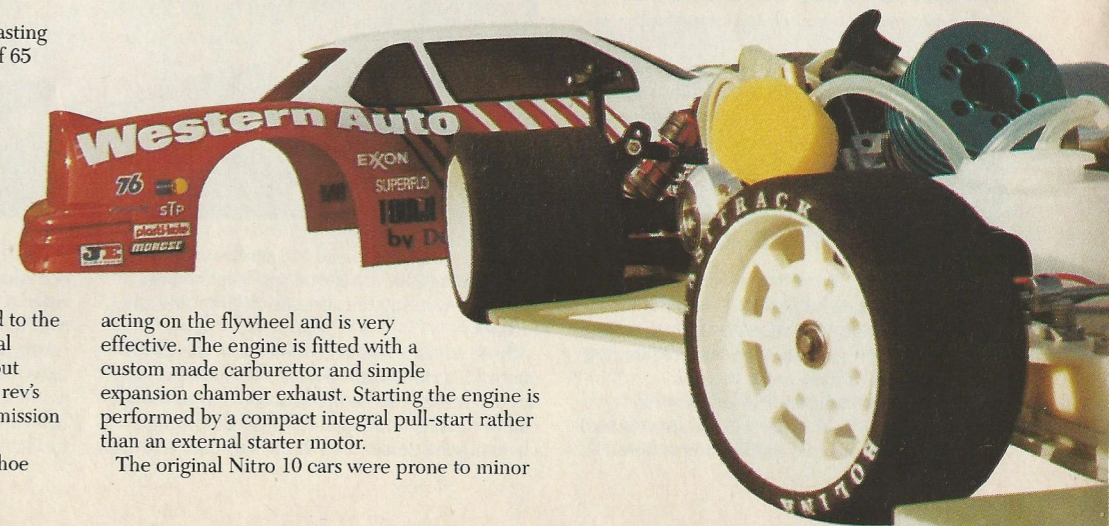
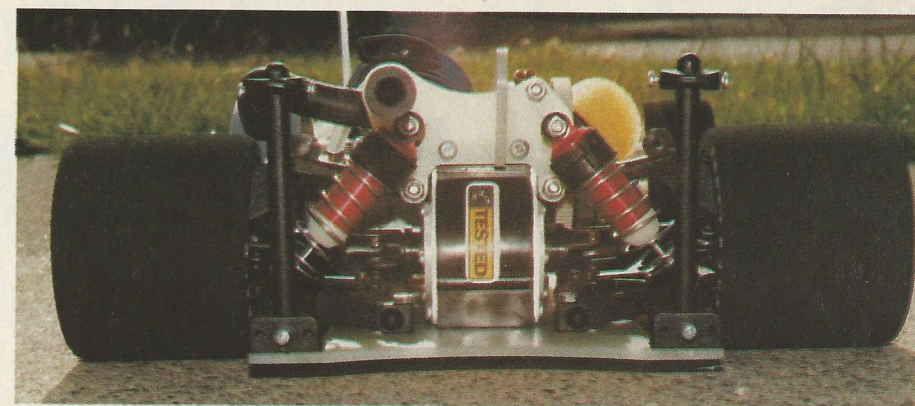
It will be very interesting to see how Schumacher's new car performs in comparison with the high-tec, high-spec heavyweight Serpent race winners.

The second formula for which the Circuit-Oval car has been designed is Gas oval racing. We don't see much of this in the UK but it's something which really appeals to me. Blasting round a banked oval at speeds in excess of 65 mph, with a car which sounds and looks like the US Nascar monsters, seems like fun.

Power Plant

Schumacher's Nitro 10 Circuit-Oval utilises their 1.5cc single cylinder two-stroke engine. The engine sits at an angle of around 35° to horizontal to lower the centre of gravity and is bolted to the chassis using integral mounts. A centrifugal clutch allows the engine to tick over without propelling the car, however as soon as the rev's build the clutch opens engaging the transmission and thus getting the car underway.

Braking is conducted by a single brake shoe



acting on the flywheel and is very effective. The engine is fitted with a custom made carburettor and simple expansion chamber exhaust. Starting the engine is performed by a compact integral pull-start rather than an external starter motor.

The original Nitro 10 cars were prone to minor

problems with the carburettor pull start and exhaust after many hours use. The starter has been 'beefed up' to reduce the chances of Rambo types breaking the internal return spring. The exhaust is now one piece and so cannot leak even after much abuse. The carb has also been revised to prevent wear and tear, and long term tests have proved its durability.

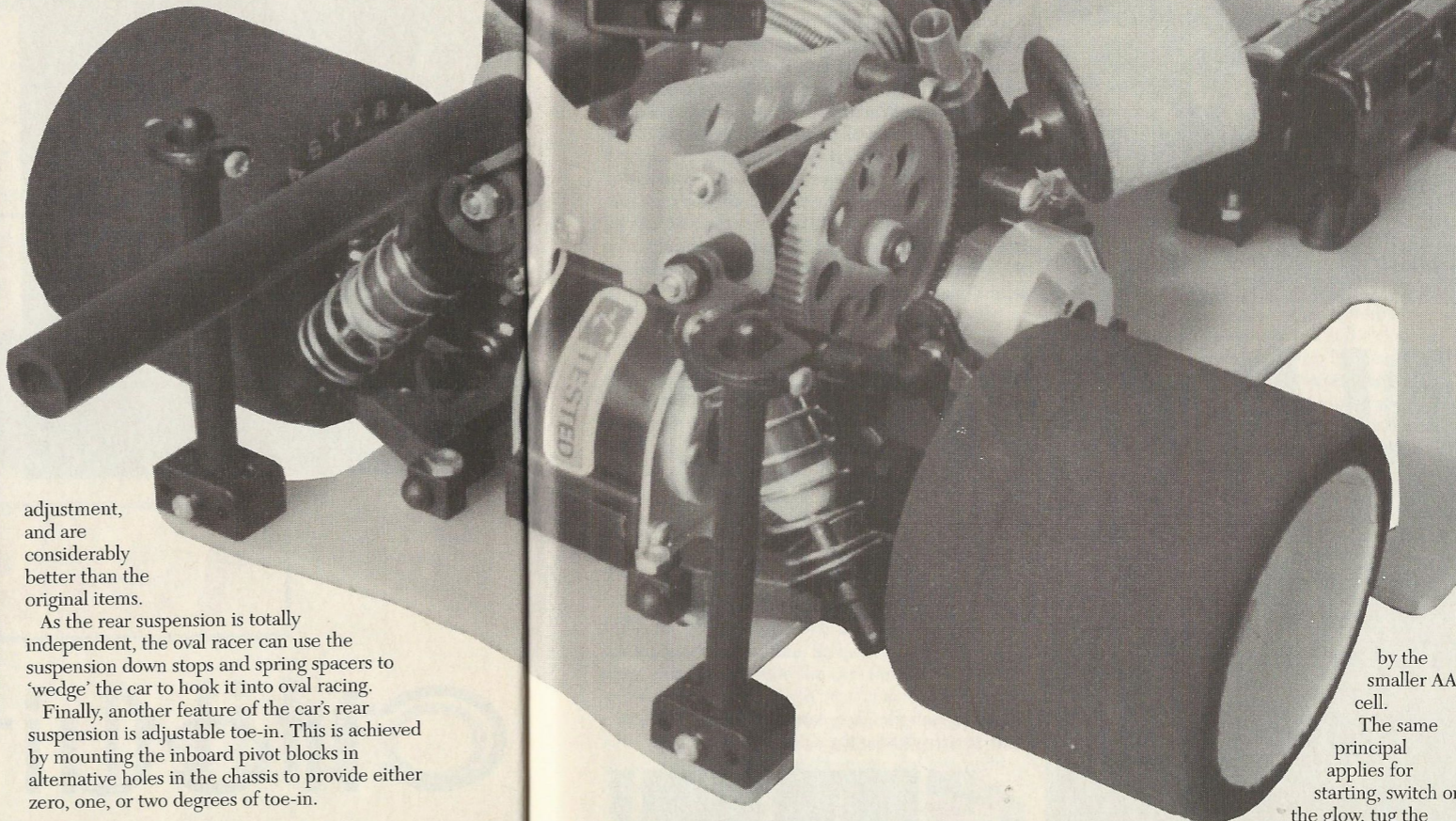
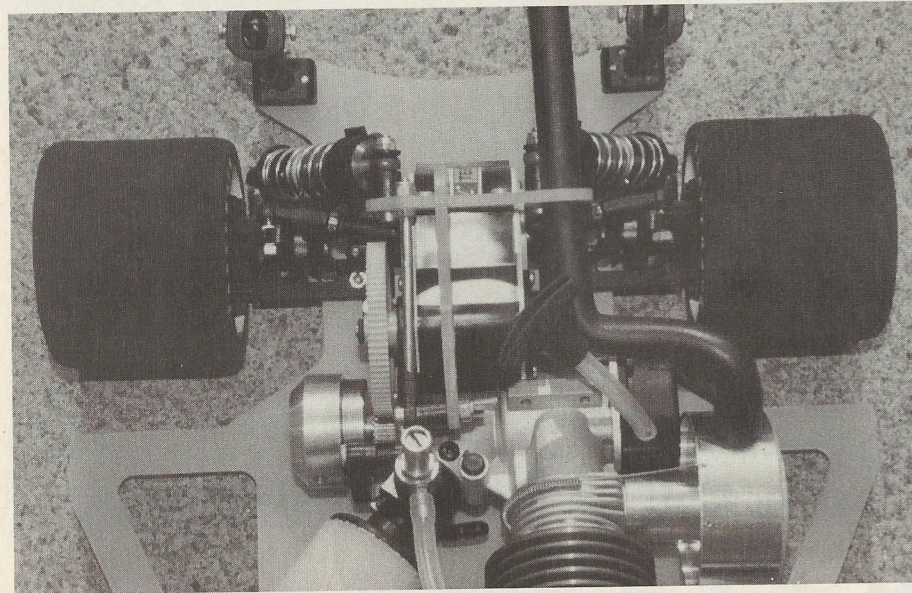
The power provided from this engine and carb set up is impressive but more about this in the track test.

The rear hubs are identical to those used on all Schumacher cars and are very strong. Wheel adaptors connect the Schumacher hub to the BBS style wheels which are used on all Pro Ten cars. In fact the list of wheels and tyres which can be used on this car is endless, and they are available from most model shops currently.

The wishbones are supported by good-looking red alloy oil filled shock absorber units. The spring pre-load can be changed by using alternative springs and spacers in conjunction with adjustable suspension down stops. The down

the number of holes in the damper pistons.

The dampers feature variable pistons which can be turned to expose or cover a number of holes. These pistons have recently been revised to give them a positive clicking means of



adjustment, and are considerably better than the original items.

As the rear suspension is totally independent, the oval racer can use the suspension down stops and spring spacers to 'wedge' the car to hook it into oval racing.

Finally, another feature of the car's rear suspension is adjustable toe-in. This is achieved by mounting the inboard pivot blocks in alternative holes in the chassis to provide either zero, one, or two degrees of toe-in.

by the smaller AA cell.

The same principal applies for starting, switch on the glow, tug the starting cord and off

you go. Much simpler than carrying a 12v battery, starter motor and connecting leads to the track.

Schumacher

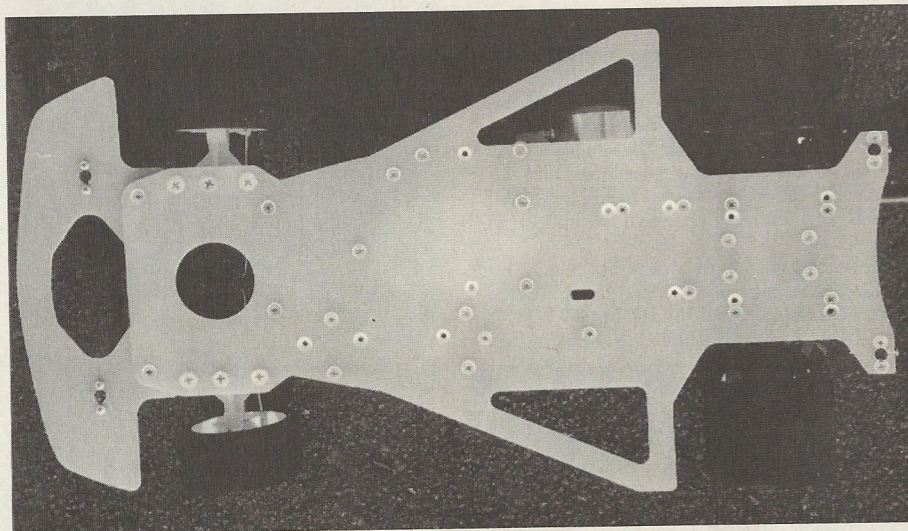
'Prototype' Nitro Circuit Racer

Transmission

Primary drive from the engine to the gear box is via standard Schumacher 48dp whisper gears. These gear ratios can be changed to suit differing track lengths and applications. The Circuit-Oval car also features an alternative set of mounting holes for the engine to accommodate very large 50 and 56 tooth pinions.

The largest pinion should, in theory, provide top speeds of 70mph plus for the Oval racing. That's an actual 70 mph not scale speed, and would be very impressive to say the least. Drive is then taken from the second gear by a 10mm wide Kevlar reinforced drive belt to the rear diff.

The gear box is taken straight from the proven Cougar II and features the best differential in RC racing. The diff is fully sealed, can transmit very large amounts of torque and is renowned for its ability to maintain its setting even under the toughest conditions. Drive from the diff is then taken to the ballraced hubs via short telescopic driveshafts and universal joints.



Suspension

The rear suspension on any 2WD car is very important as it must maintain good traction for the rear drive tyres, and it must control the mass of the car which is focussed at the rear. Schumacher have opted for short, very rigid lower wishbones on the rear with adjustable top links to provide essential camber adjustment.

stops are simply cap head M3 screws which are fitted through the wishbone and locate on the chassis preventing the suspension dropping any further.

These adjustments also double as a means of controlling ride height which is very critical in circuit racing. The damping at the rear of the car can be changed independently of the spring by changing the grade of oil in the dampers and/or

The front suspension featured on the Schumacher Circuit-Oval car will be familiar to anyone who has dabbled in electric circuit racing over the last five years. The front independent suspension uses Associated spring blocks which have proven their pedigree by winning several world championships. These front blocks are very light, strong and effective, so there was no need for Schumacher to re-invent the wheel and pass

on the development costs to the customer.

They feature polished sliding king pins which are sprung, by simple coil springs. There is a range of springs available through good model shops to enable the car to be dialled into the track. Wedges are supplied with the car to enable the caster to be changed, and the blocks are machined to give two degrees of negative camber, which can again be changed using shims.

The front suspension is also compatible with the Pro Ten range of wheels and the unsprung weight of the whole set up is very low.

Fitting of Radio Gear

The car is designed to utilise standard sized servos and receiver and any commercially available set will do the job. The four cells used to power the receiver and servos are held in a convenient cradle by a rubber 'O' ring. A servo saver for the steering servo is included in the kit, as are all the linkages for throttle and steering.

Creative Features

The major 'creative feature' used on the car is the revised integral glow supply. The Circuit-Oval car uses a much more powerful Sub-C cell to power the glow plug for starting the engine. The cell is also held in a cradle, strapped down by a heavy duty O-ring. The use of the larger cell removes the reliability problems sometimes experienced

Sensible

— For ease of assembly, the complete engine, carb, starter, clutch, exhaust and gear box came ready assembled.

— The weight saved by keeping things simple has been used to protect the car, through the use of a full width front bumper and large nerf bars. The bumper and nerf bars have been tested on the high speed US ovals and they do a very good job, which is nice to know when you've spent all your hard earned cash on the car.

Track Test

After painting and trimming a very realistic Parma Chevy Lumina Nascar body shell, off I went to the Ashby Pro Ten track to give the car a try. I had prepared the car to sit with around 5mm ride height, using kit springs and the Bolink Fastrack Pro Ten tyres in Green compound front and rear as supplied for the test.

I had made no attempt to start the car at home as I knew the subsequent running process would not be popular with our broadminded neighbours. I was therefore very surprised to hear the engine fire up on the second tug of the starting cord, after completing the priming

process as detailed in the instructions.

Obviously all the detail changes have made a big difference to the reliability of the Nitro 10 range of cars, which were previously temperamental at times.

On the track the car handles very, very well. I ran the car with no caster to maximise high speed steering and turn-in, anticipating high top speed. The car has lively steering response very similar to a Pro Ten but feels like it has much more traction. To quantify the increase in traction against a Pro Ten car, I would estimate the Schumacher Circuit-Oval provides around 10-15% more traction than the fine tuned solid axled electric racers.

This improvement is due to three factors, the extra weight (Pro Ten — 1200gms, Circuit-Oval 1500gms), the independent rear suspension which works very well, and the fact that IC engines have very smooth power delivery up to their peak power which is at much higher revs than an electric motor.

Whilst I was conducting the first test a spectator clocked my lap times and I was amazed by the results. With a tight engine, which was well under-geared for the straight on the Ashby track, I was matching the lap times of the fastest speed Serpent cars who hold the IC track record. This confirmed without a doubt my feelings that the car was cornering very well, and means that the car has great potential.

I will conduct further tests with higher gear ratios, I may even get serious and use a tuned exhaust pipe. If column inches permit I will report back on the results.

Conclusions

This car will retail for £250 in the UK and the only extras required is a set of Radio gear and bodysell, bringing the total to a whisker over £300. There is no need for a glow supply, starter motor, 12v battery, high frequency speed control, numerous sets of matched cells, fast charger etc.

The Schumacher Circuit-Oval car represents great value in comparison to Pro Ten cars and the more high-tech IC alternatives, with comparable performance.

It will be interesting to see how the rules for such racing are resolved, maybe the most sensible solution would be to have two weight limits for single and twin speed cars otherwise exotic and expensive materials like titanium will be introduced.

Schumacher have also been sensible in making their car compatible with the market standard wheels which are available worldwide.

The extra suspension travel available from the independent suspension means that the cars could be used on any relatively smooth tarmac, such as car parks and this means that tracks



would be available countrywide.

We feel that this car could be very popular, as it is not restricted by the requirement for expensive peripherals and the races are not restricted to five minutes.

No car currently on the market can match the new Schumacher Circuit-Oval on the performance per £ ratio.