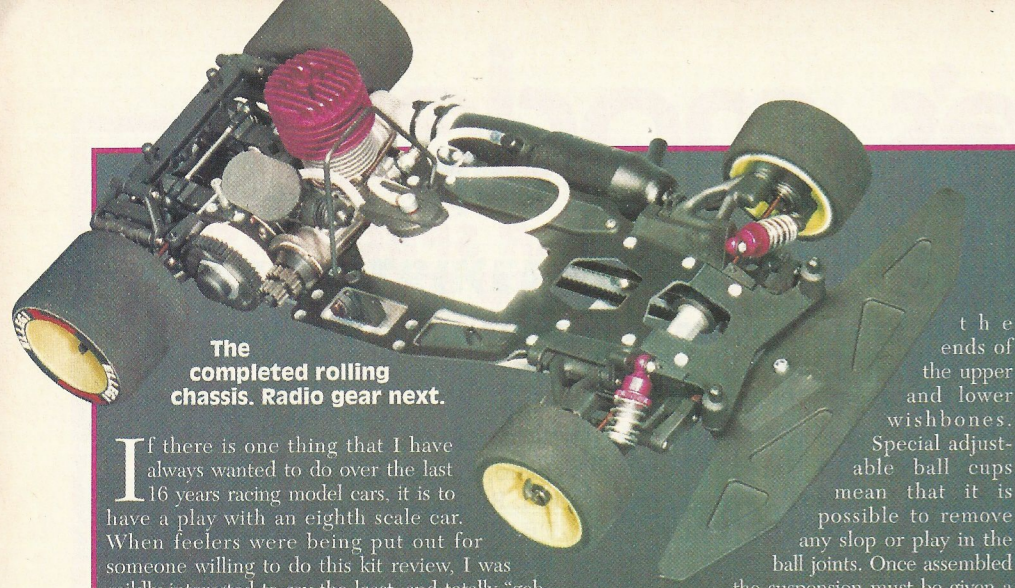


Review of the

# SERPENT EXCEL

WORLD CHAMPIONSHIP EDITION



The completed rolling chassis. Radio gear next.

If there is one thing that I have always wanted to do over the last 16 years racing model cars, it is to have a play with an eighth scale car. When feelers were being put out for someone willing to do this kit review, I was mildly interested to say the least, and totally "gob smacked" when the kit finally arrived. It's sheer size and presence makes all electric offerings seem totally tame by comparison. This is a monster product, guaranteed to give hours/minutes/seconds of pleasure depending on your skills on the track. All 1/8th scale cars are blindingly fast, and this one is the best (or so they say!)

The review kit, the Serpent Excel 9000 is based on the model used to dominate the last 1/8th World Championships by Umberto Collari and Michael Salven in Taiwan last year. Like its predecessors, the kit relies heavily on Serpent's reputation for producing kits of the highest quality. Being familiar with "that" other Dutch company, Corally, I knew from the start that the build quality would be excellent, and indeed this was the case.

Presentation quality of the kit is excellent for a European model car kit, with comprehensive instructions which carry more information than found in most Japanese kits. One of the most amazing aspects of the kit is Serpent's use and promotion of modern technology.

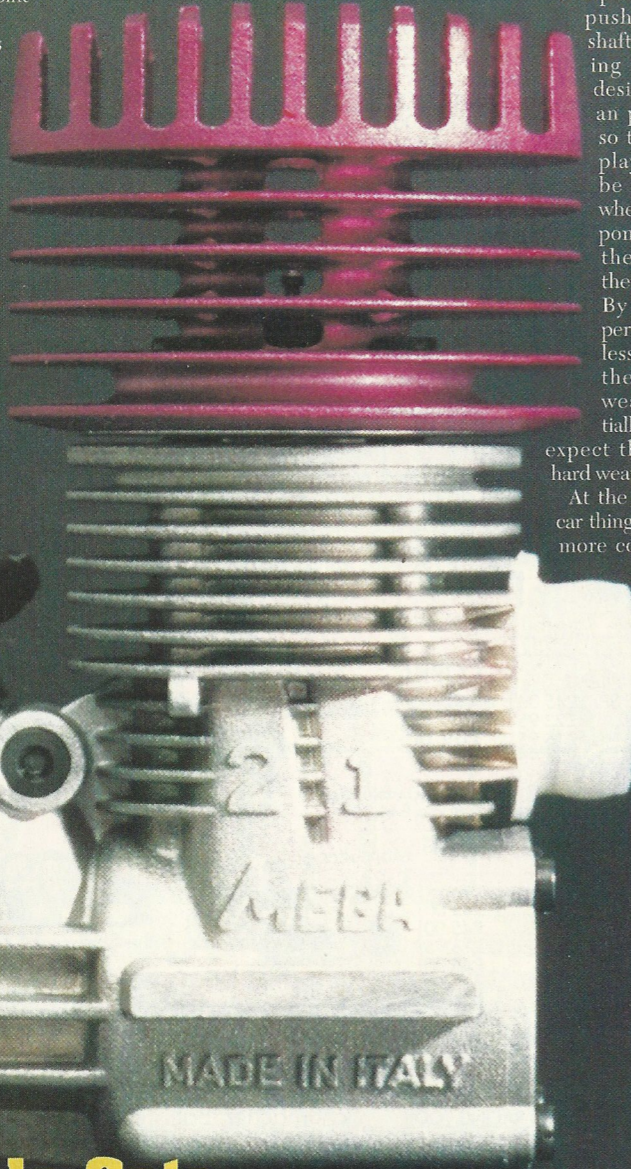
An example of this is included with the kit in the shape of a PC format disk containing a simple database for keeping record of track set-ups and other information. Got a PC and modem, then dial up Serpent's Internet site, and get the latest information on car set-up and kit upgrades. If you want to get set-up details for a particular track, then it is possible to get this information if there is any data in the teams track database. Whether this kind of open approach really works, only time will tell, but it gives an indication the commitment Serpent are prepared to apply in their efforts to keep their customers happy.

## Assembly Of the Car

Assembly starts at the front of the car, and is relatively straightforward starting with the suspension components. The geometry allows full adjustment of virtually all major settings. I particularly liked the system for adjusting the camber using ball pivots mounted into

the ends of the upper and lower wishbones. Special adjustable ball cups mean that it is possible to remove any slop or play in the ball joints. Once assembled the suspension must be given a good working over to make it as free as possible. Pay particular attention to this, as it will get worse as dirt and grime works its way into the pivots and wishbones. Once assembled there is virtually no play or slop, and gives a very free movement. In comparison with a BMT, there is probably as much slop in the entire suspension, as there is in one ball joint on the BMT.

The drive train is all belt drive, with one way drive shafts to give aggressive turn in under braking. Personally I would have preferred to see a ball differential, as the one way drive shafts seem to make the car very



Mega motive power, the SX 21.

nervous off power, as the drive to the front wheels is removed, and the car effectively changes from 4WD to 2WD. However, this seems to be the standard set-up in 1/8th circles, and power on stability seems to be the key to a good car set-up.

One thing soon became clear, in that tools acquired over many years of electric racing are not really adequate. Man size tools are the order of the day, and in particular a decent engineers vice to assist where components are a push fit. All shafts and moving parts are designed to be an perfect fit, so that slop or play will only be a problem when the components are at the end of their life span. By being a perfect fit with less slop, then the rate of wear will initially be less, so expect this to be a hard wearing car.

At the rear of the car things are a little more complicated, as this is where all the action happens. Basically there is a rear axle with pulley, and an

intermediate layshaft onto which the brakes and gearbox are fitted. Getting all the components fitted to the layshaft is a little tricky, especially fitting the brake pads and ventilated disk. This is not helped by the fact that you need to juggle the rear axle, and a drive belt all at the same time.

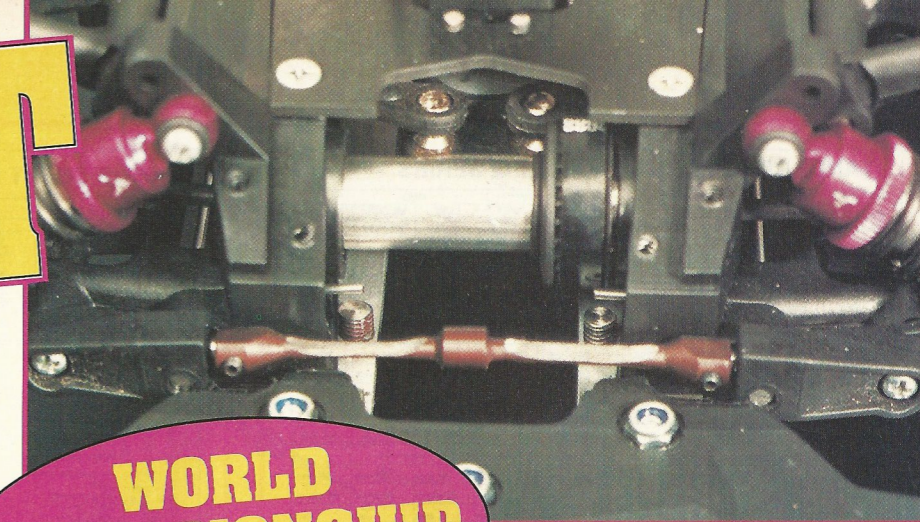
The rear axle is interesting, as there is no differential. The logic behind this being that with so much power going through the rear wheels, getting the power to the ground through a normal diff starts to be a problem, as the lighter loaded wheel starts to slip, or "Diffs Out". With so much power available, efficiency while cornering is not such an issue so a solid axle becomes the ideal solution. Also it allows the car to be steered on the throttle, 4 wheel drifts being the norm.

The brake pad material need to be glued to the steel pads, and here is probably one of the few complaints I have of the instructions, as they do not specify what type of glue to use. Likewise there is little or no mention of what components need to be thread locked together. Speaking to several 1/8th drivers, it would seem that it is best to threadlock every component, as the engines vibrations are transmitted directly to the chassis, and hence through to the rest of the car. Having said that I assembled the car without any threadlike, and to date nothing has parted company, with the exception of the front suspension "up" stops. These are going to escape whatever, as they are not retained in any fashion whatsoever, and could probably benefit from some form of locking assembly (Ed's note- Once set the "up" stops can be thread locked in place).

A two speed gear change provides maximum power at the wheels from the engine, and like the clutch operates as the centrifugal force exceeds a certain RPM. Take up points on the clutch and gearbox are easily adjustable, and seem to be very smooth in action.

All wheels are ready to run, complete with trued and glued tyres. These are unique, in that they are made from thin sheets of rubber glued around the circumference of the wheel in layers. This means that there are joins across the face of the tyre. Apparently this system requires less rubber than normal, and hence can be made at a lower cost. The down side is that the process can only work on relatively soft rubber, and whilst they seem to give ample grip, are prone to overheating.

The wheels are attached using Serpents tried and tested quick release wheel system. Part of the locking mechanism requires a special spring to be



The "UP" stop can just be seen behind the front anti-roll bar. These need thread locking after the car has been set-up.

fitted, inside the axle. The first few attempts to get these in place were like trying to pitch a tent in the dark. After a few more attempts, several pints of lager, and horror of horrors a look at the instructions, all became clear.

Tasty purple anodised shocks are supplied with the kit. Here there is the option of fitting fully adjustable pistons, or standard 2 or 4 hole versions. I found the adjustable pistons gave a very good action, but some people seem to prefer the action of the fixed pistons.

With the review car came a MEGA 21SX engine. This is the latest version of the engine used to TQ at the World Championships, and due to extensive rolling road testing and design by Michael Salven, is reputed to give as much power in standard trim as the team spec TLS engines used to win in Taiwan.

Fitting the engine was an absolute doddle, as it is designed specifically to fit the car/clutch. Some filing is required on the exhaust manifold, and the tuned pipe needs to be cut to the correct length. This is done by cutting the manifold to give a nominal length of 110 mm to the first chamber of the pipe. Apparently this is crucial to the performance of the engine, and hence some care needs to be applied.

Fitting the radio to the car didn't cause any major problems, although there could have been some more information on how best to fit the steering servo. This needs to be mounted

using spacers, to prevent the steering arms fouling the front drive belt. Likewise the linkage from the throttle/brake servo are not detailed very well, and if mounted as instructed will foul on the fuel tank. This is not a huge problem but when the rest of the instructions are so good, it is nice to have something to complain about.

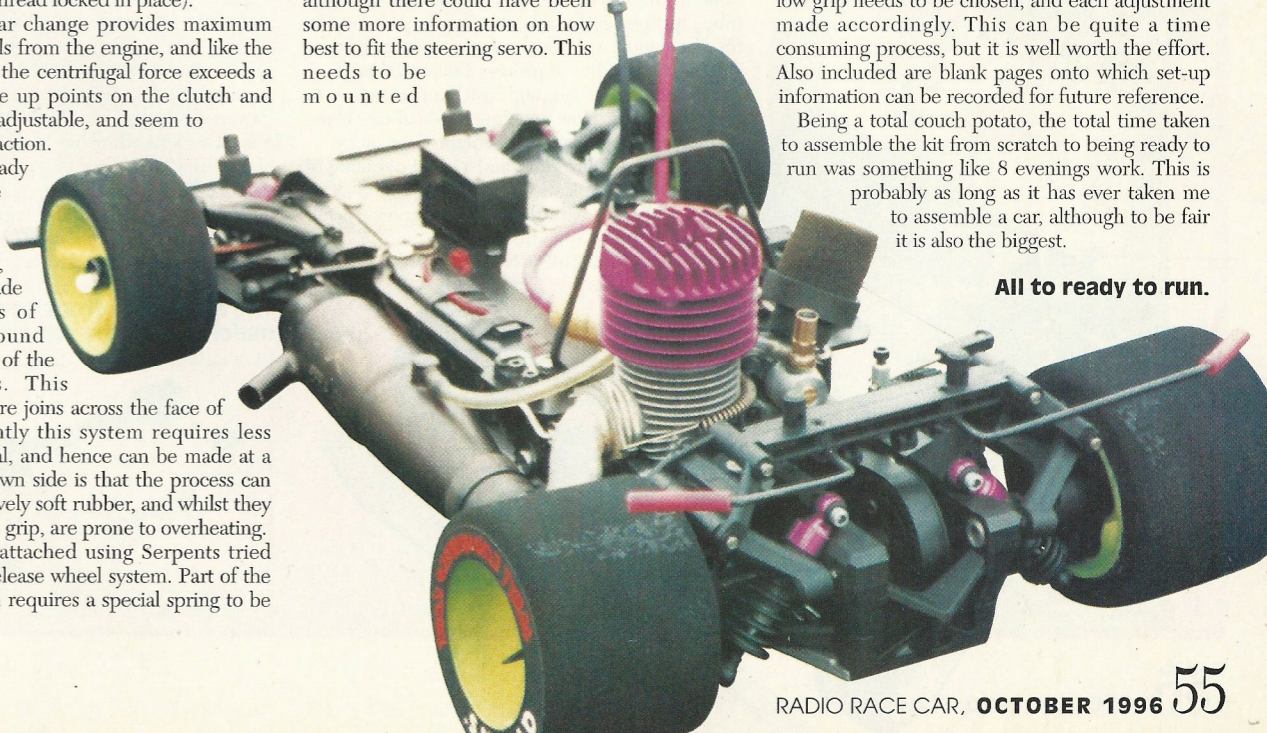
At this point I must make a few comments about the bodyshell, having been involved in model car racing now for many years, one of my pet hates is trimming and mounting the bodyshell. But Serpent even make that easy, the Porsche 962 shell which came with the review kit had all the cut lines mounting points marked in the shell. Paper masks were even supplied for the windows. Two other items came for the shell, lexan stiffeners which stop the sides of the shell folding in, and two sticky backed foam insert to stop the "wing" collapsing. All designed to get the most grip from the bodyshell

## Setting Up the Car

Once the car is fully assembled, the various suspension settings need to be "dialled" in to suit the track. As part of the documentation there is a separate booklet which guides you through all the adjustments that can be made to the car, and how to do them. This starts with a section which gives details of how to check that the suspension is in working order, and how to adjust it if not. After this one of the standard settings for high to very low grip needs to be chosen, and each adjustment made accordingly. This can be quite a time consuming process, but it is well worth the effort. Also included are blank pages onto which set-up information can be recorded for future reference.

Being a total couch potato, the total time taken to assemble the kit from scratch to being ready to run was something like 8 evenings work. This is probably as long as it has ever taken me to assemble a car, although to be fair it is also the biggest.

All to ready to run.



## David Gale Gets Bitten By The Snake

## STANDARD SETTINGS EXCEL MK2 SERIES

Drive Type	2WD				4WD			
	WET	LOW	MEDIUM	HIGH	WET	LOW	MEDIUM	HIGH
Traction	SILVER	GOLD	SILVER	SILVER	SILVER	SILVER	SILVER	BLACK
Spring Front	1 mm	1 mm	1 mm	1 mm	1 mm	1 mm	1 mm	1 mm
Up-Stops	1 mm	1 mm	1 mm	1 mm	1 mm	1 mm	1 mm	1 mm
Dampening F.	SILVER	SILVER	BLACK	BLACK	SILVER	SILVER	BLACK	BLACK
Spring Rear	0 mm	0 mm	0 mm	0 mm	0 mm	0 mm	0 mm	0 mm
Stop size	0 mm	0 mm	0 mm	0 mm	0 mm	0 mm	0 mm	0 mm
Dampening R.								
Front Trackwidth	256 mm	256 mm	256 mm	260 mm	256 mm	256 mm	256 mm	258 mm
Rear Trackwidth	266 mm	266 mm	266 mm	266 mm	266 mm	266 mm	266 mm	266 mm
Caster	4 mm	4 mm	4 mm	4 mm	7 mm	7 mm	7 mm	7 mm
Toe-In Front	0 mm	0 mm	0 mm	0 mm	0 mm	0 mm	0 mm	0 mm
Toe-In Rear	2 mm	1.5 mm	1.5 mm	0.7 mm	2 mm	2 mm	1.5 mm	1.5 mm
Tire Front Left	RAIN				RAIN			
Diameter F.L.	mm	68 mm	68 mm	68 mm	mm	68 mm	68 mm	68 mm
Hardness F.L.	shore	35 shore	35 shore	35 shore	shore	38 shore	38 shore	38 shore
Tire Wear/5 min	mm	mm	mm	mm	mm	mm	mm	mm
Tire Front Right	RAIN				RAIN			
Diameter F.R.	mm	68 mm	68 mm	68 mm	mm	68 mm	68 mm	68 mm
Hardness F.R.	shore	35 shore	35 shore	35 shore	shore	38 shore	38 shore	38 shore
Tire Wear/5 min	mm	mm	mm	mm	mm	mm	mm	mm
Tire Rear Left	RAIN				RAIN			
Diameter R.L.	mm	76 mm	76 mm	76 mm	mm	76 mm	76 mm	76 mm
Hardness R.L.	shore	30 shore	30 shore	30 shore	shore	35 shore	35 shore	38 shore
Tire Wear/5 min	mm	mm	mm	mm	mm	mm	mm	mm
Tire Rear Right	RAIN				RAIN			
Diameter R.R.	mm	76 mm	76 mm	76 mm	mm	76 mm	76 mm	76 mm
Hardness R.R.	shore	30 shore	30 shore	30 shore	shore	35 shore	35 shore	38 shore
Tire Wear/5 min	mm	mm	mm	mm	mm	mm	mm	mm
Pinion gear 1	T	T	T	T	T	T	T	T
Pinion gear 2	T	T	T	T	T	T	T	T
Gear 1	T	T	T	T	T	T	T	T
Gear 2	T	T	T	T	T	T	T	T
Side pulley S1 (4WD)					19 T	19 T	19 T	19 T
Side pulley S2 (4WD)					22 T	22 T	23 T	23 T
Best Lap	sec.	sec.	sec.	sec.	sec.	sec.	sec.	sec.
Turn-in								
Turn-out								
Straight								
Braking								
Acceler.								
Speed								

## SETUP SHEET EXCEL MK2 SERIES

Name: \_\_\_\_\_ Date: \_\_\_\_\_ Time: \_\_\_\_\_

Rear Shock-Piston Adjustable:  NO  YES

Front Shock-Piston Adjustable:  NO  YES

Fixed holes: \_\_\_\_\_

Oil Visc. \_\_\_\_\_

Length Rear: 73 mm

Length Front: 64 mm

Toe In Rear: \_\_\_\_\_

Toe In Front: \_\_\_\_\_

Caster: \_\_\_\_\_

Rear Trackwidth: \_\_\_\_\_

Front Trackwidth: \_\_\_\_\_

Differential:  L  M  T

Fixed Axle:  Flex

Pinion gear 1: \_\_\_\_\_

Pinion gear 2: \_\_\_\_\_

Gear 1: \_\_\_\_\_

Gear 2: \_\_\_\_\_

Side pulley S1: \_\_\_\_\_

Side pulley S2: \_\_\_\_\_

Over Drive Ratio: (19/22) X FR X 1.333

Country: \_\_\_\_\_ Race: \_\_\_\_\_

REMARKS: \_\_\_\_\_

Track L	mm	Body	Best Lap	sec.
Traction	L M H	Alu-Stein	Turn-in	
Dry/Wet	D M W	Engine	Turn-out	
Temp	C F	Nitro	Straight	
Quail	sec.	Oil	Braking	
Final	sec.	Oiltemp	Acceler.	
Pos. #		Pipe	Speed	

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TEL: (0031) (0)23 292068 FAX: (0031) (0)23 294602  
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## QUICK SPEC

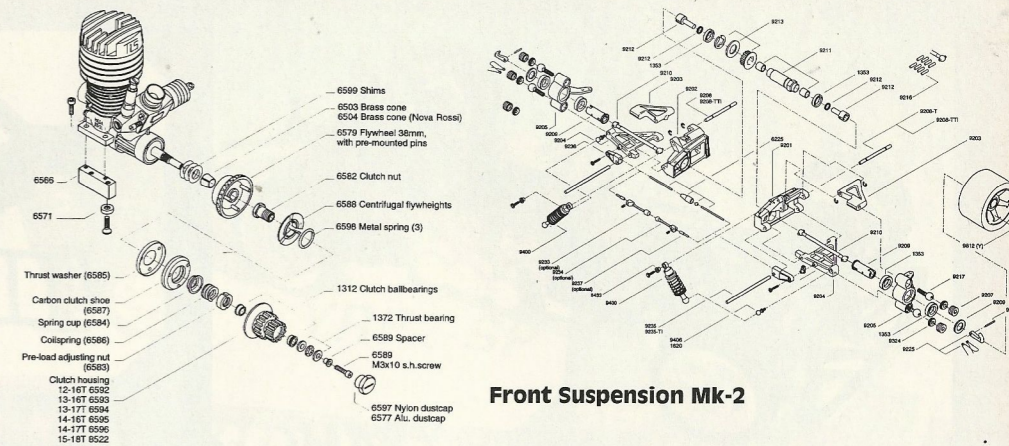
4WD, Triple Belt Drive, Flex Drive Solid Axle, Front Transaxle- One Way Bearings, Carbon Steel Drive Shafts, 5.3mm Alloy Chassis (Lowered Suspension Points), Carbon Radio Plate.

Independent Suspension, Unequal Length Wishbones Top and Bottom, Fully Adjustable, Adjustable Alloy Oil Filled Shock Absorbers, Adjustable Front Anti-roll Bar, Quick Release Front and Rear Wheels, Multi Spoke Wheels, Tired and Glued Elligi Tyres (40 shore Front 25 shore Rear).

longer period. Another significant difference is that the car is at its best on full brakes, or full throttle. Coasting into a corner is a recipe for disaster, and if possible the power should be used to tighten the line just before the apex. This can take some getting used to, and my apologies to anyone pitting near race control, as I started to learn how not to do it!

### Conclusions

What can I really say about a car and engine combination that has accomplished so much. They say that actions speak louder than words, and in this case, they speak for themselves, at last years World Championships and this years Euro's proves. The quality and presentation of the kit is superb and assembly is relatively straightforward, although time consuming. Once assembled the car is fully primed with very little that needs to be changed to get the most from the car, unlike some others that need to be kitted out with all the latest "trick" bits to get the most from the car. If assembled correctly the car handles like a dream,



Front Suspension Mk-2

### The Centax Clutch System

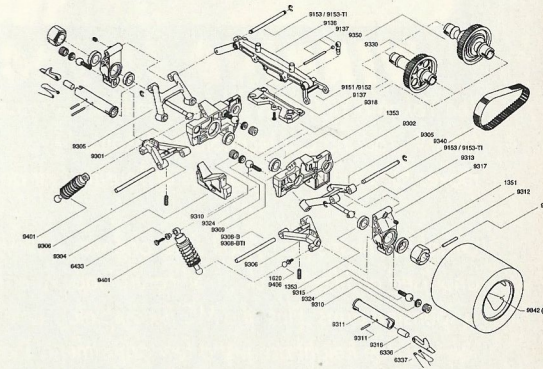
although the kit tyres will not be to everyone's taste.

Overall an excellent car and engine combination, that is guaranteed to shorten the longest straights faster than the opposition. During the period I have had the car my grin factor has increased a 100 fold. If you have like so many electric racers, dreamed of MEGA cells or that motor, to for fill your thrill factor, forget them, get an 1/8th Scale car and try some real performance. You won't regret it.

Available from: Elite Models

### Thanks to:

Serpent Model Racing Cars Mark Passingham and BJ for pointing me in the right direction. Mark Green, Chris Wilkinson, Walt Bailey and Eddie Beale for their help and guidance.



Rear Suspension Mk-2

### Running the Car

With everything installed, it was off to the palace to give the car a shakedown. With hindsight this was probably not the best place to start, as the high speed nature of the track, and various solid obstacles are renowned as car breakers.

Before being able to start, being a brand new engine, the first hurdle was to get it fired up and running. Apparently the MEGA21 SX is made to very close tolerances, as this is one of the keys to its performance. The down side of this is it needs

very careful treatment during its first few minutes if it is to perform at its best, as it is very, very tight. Luckily

Mark Passingham and Mark Green were on hand to help get the little beastie cooking. As a complete beginner as far as IC engines are concerned it was a simple case of leaving it to the experts, and attempting to follow their instructions on when to "Ying".

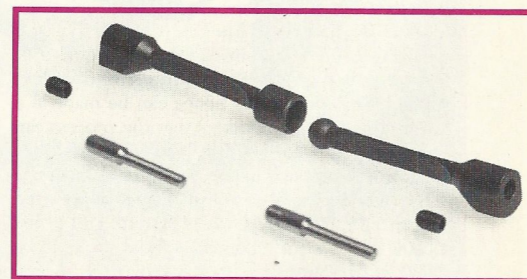
Once the engine had been run up a few times it was time to try the car out on the track. Luckily everything seemed OK, and I managed several short runs using no more than 75% throttle. Even driving so gently the car felt incredibly fast compared to an electric car, and needless to say I managed to bin it a few times. Initially the brakes were a little bit soft, but Mark (Pliers) Green soon came to the rescue with a handy selection of fuel tube, springs, and washers. Needless to say the transformation was a little severe, and took some getting used to. In the process I managed to get T boned by another car, and lost the connection to the tuned pipe. How anything so small can make so much noise is beyond my comprehension.

After a few more runs, and a bit of tweaking of the carburettor, it was time to start taking a few more liberties with the car. Under power I felt the car was incredibly stable and fully

able to handle the power. If full power is applied mid corner the car just tightens the line and goes round it. This is quite difficult to master, as normal logic screams at you to lift. Once mastered the next problem is that your brain cannot cope with the sheer speed exiting the corner, and the tendency is to brake far to early for the next corner. Under braking the car felt pretty good although I picked up a tweak that would cause the car to spin out easily. This was eventually traced to the aforementioned up stops on the front suspension, as one had quit totally, and the other had ended up restricting suspension movement.

Changing from an electric car with immediate response, and a very controllable power band to this gas guzzling monster is something of a culture shock, as the car is governed by the torque of the engine. Under acceleration the take off is initially very gentle, followed by a incredible shove forwards as it gets into its stride. Before you know it is time to start braking for the corner at the end of the straight. It is not enough to simply lift, as the speed is far too high to negotiate the bend. On an electric car it is normally enough to lift off the throttle, or at worst a quick dab of the brakes. Here the brakes need to be applied for a much

The adjustable front anti-roll bar is a major tool in the set-up of the Excel.



SERPENT EXCEL