THE WINNING WAY TO BUILD A CAT 2000 E.C!!

Carbon front shock mount.

The Works Cat

BY KARL MARSDEN

All of the following advice and details which are about to be mentioned, are all aimed towards improving your cars strength, speed and reliability. The following factors all help towards your car being the best on the day, but are not necessary in order for the car to be competitive. The main factor I think is important is that you should enjoy Model Car Racing at what ever level and cost you wish to enter racing at.

It's all in the prep

The biggest step, I feel towards being the quickest on the day is the preparation of the car. It's no good having every speed secret available and the car not finishing the race through poor maintenance. The single most important thing you can do to the car when building or maintaining it, is to make sure every moving part is free. This may sound simple, but it is one of the biggest steps towards having that winning edge and extra reliability from your model car.

Modification No1

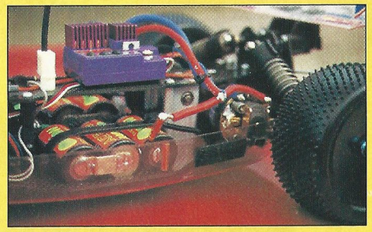
My first modification to the standard kit, was the replacement of the standard castor blocks, with the 5 degree option. From running the standard blocks I round the car to have a lot of turn-in but then 'washed out' under power exiting the corner. The 5 degree blocks helped by killing some of the aggressive turn-in and giving it more steering out of the corner making the car, for me, much more smoother and easier to drive. This is probably the most cost effective mod. Along with the blocks I then added to the front of the CAT a 15 degree brace. The kit comes with a standard 12 degree brace, which compared to what I was used to, still gave to much turn-in, so as previously the new brace gave me more predictability into the corner with more steering coming out under power. The brace is off the old CAT 2000 and you simply cut and file the top hole of the bracket because it is longer than the E.C. brace.

Modification no2

My next step was to Fit an anti-roll bar to the rear of the car. After running them back to back, with and without the roll bar, I noticed that the

Made in Britain. Modification no2, Rear anti-roll bar. You can see the alloy transmission housing. Also note the alternative pick-up points for the "camber" link in the rear carbon mounting plate.

car stopped "twitching" around in a straight line, making it much easier to point the car into the corner and then accelerate between each bend. The normal reason for running a roll bar is too increase the initial steering, of which it did, but without causing the rear of the car to step out and become unpredictable. The best thing to do is experiment with different thicknesses of wire to find out the difference, and also to see which style of roll bar suits your driving style the best.



A very tidy lay-out and Reedy/Orion cells.

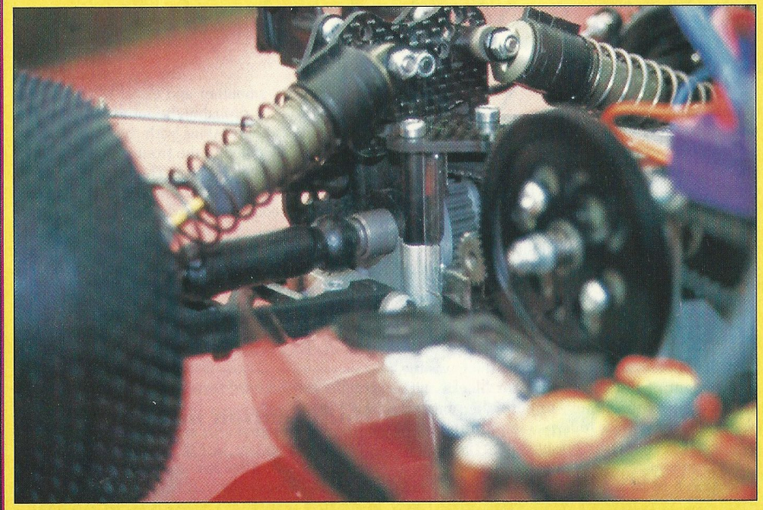
Carbon Fibre Bit's

The use of this Speed Secret is definitely becoming more and more popular today. The reasons for this change are multiple . Firstly I changed from the standard W.F.E chassis so I could reduce the cars weight, for two reasons:

One was to increase the cars straight line speed and agility through tricky sections of a track but more importantly to improve the cars efficiency on those battery draining tracks. Along with these two good reasons for choosing carbon fibre it also improves the cars rigidity, allowing no twists in the cars chassis under extreme racing conditions and prevents the car from wanting to do more of its own thing between corners. On the carbon fibre front I also replaced the front shock mount. Again this is a much stronger item than standard, also there are also extra holes for both the shockers and camber link positions to enable you to find out if a different location is better for and individual track.

Alloy Gearbox Housing

The rear transmission housing, like the carbon fibre, also has more than one benefit . My first initial motive for fitting the alloy housing, was for its extra help towards keeping the motor cooler on the indoor tracks. This along with two heatsinks allowed the motor to run at a much lower temperature, increasing both efficiency and the wear rate on the comm. After running my car like this for some period of time, I then went outdoors and began the season. With the typical British weather around April time, being quite cold, I noticed hardly any heat being generated from the motor. I then decided to take the heatsink set out, because it was simply extra weight and then fasten the motor straight on to the Alloy box using shorter screws of course, ensuring not to jam the motor up. To my surprise, because of the heatsink being removed, I noticed that the cars balance had improved on certain parts of the track. Over the large table tops and sleeping policemen the car had reduced its occasional tendency to fly through the air setting down on its rear left hand side. I did not realise that by removing the heatsink plate the motor moved 2-3mm nearer the centre of the car. On the track this helped towards having a better flight position, which improved its landing characteristics and also the smoothness and handling of the car. Amongst these advantages the alloy housing also increases the cars strength and rigidity. Also with continuous maintenance you do not have to worry about stripping the threads, which is possible with the standard plastic housing. On the front of my car I also use the front lower alloy housing, because of continuously taking the car apart to check it over after every meeting. Personally I also found it to generate a little more steering when particularly using the two row stud design tyre on the car, which has proved very popular on grass surface tracks. This is mainly in combination with Blue minispike tyres on the rear of the car, which together provide you with enough grip and make the car so much easier to drive.



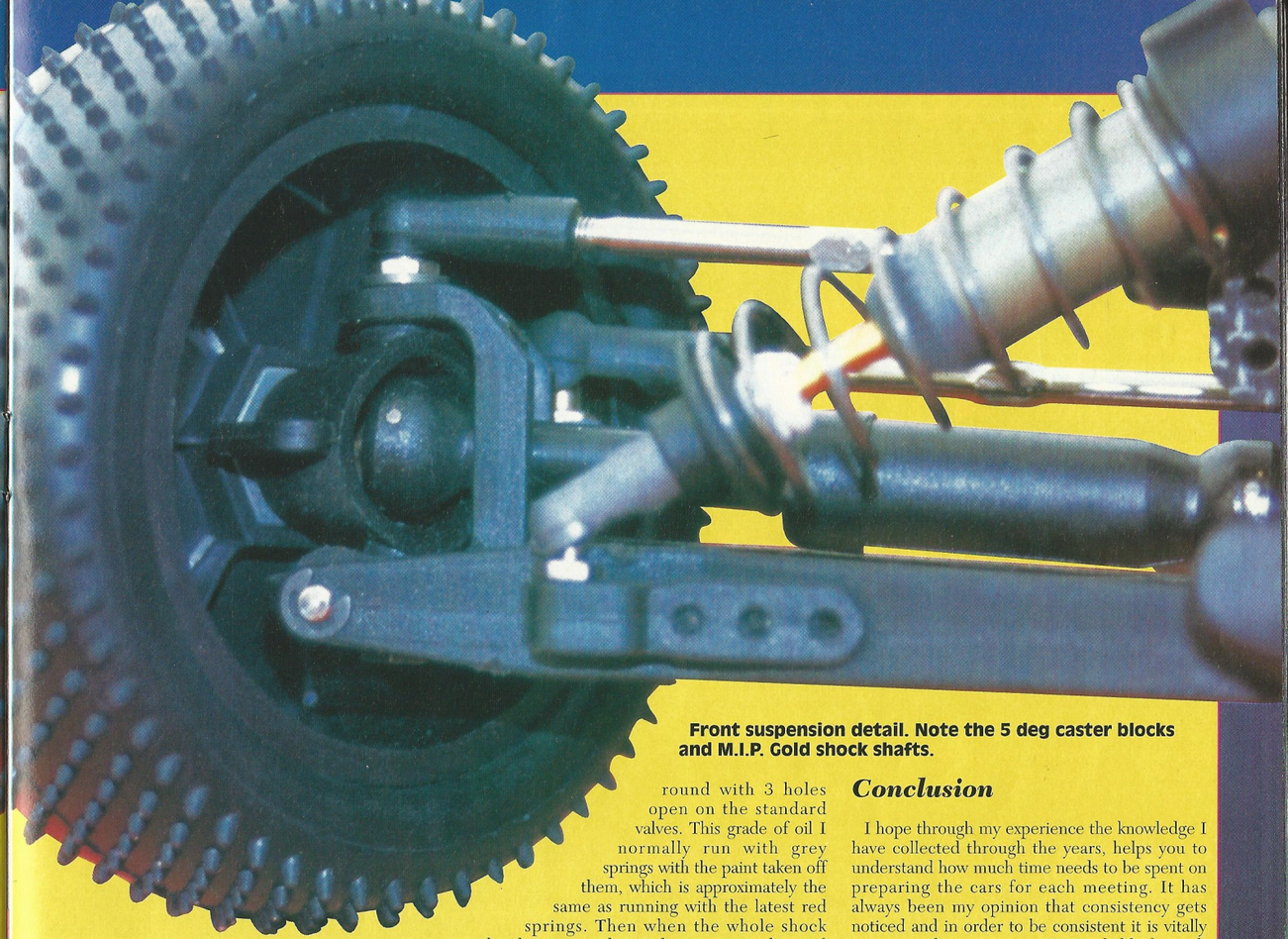
Alloy rear housing and slipper clutch.

3° Rear Inboard Toe-in Brackets

As used at the 95 Euro's this modification was designed in conjunction with the bracket made for the Cougar 95 Team car. It is aimed towards generating more traction at the rear, particularly on the dirt tracks. I also found this modification to help on the indoor multi-surface tracks where grip is always a problem. The blocks generate more traction and they actually shorten the cars wheelbase by about 4mm, which then helps to generate steering lost by the grip gained at the rear

Toe-in

This can be changed on my car simply by using a 1 degree hub carrier to increase to total toe-in to four degrees, or simply reversing the blocks to take 1 degree of toe-in off to give me a total of 2 degree toe-in. This along with a few other settings I very rarely change from track to track, and I always run with a total of 3 degrees toe-in on the inboard end.



Front suspension detail. Note the 5 deg caster blocks and M.I.P. Gold shock shafts.

Camber

By increasing the amount of negative camber to a certain extent increase the cars grip through a corner, and generally makes it less nervous over bumpy sections of the track. I always run with about 1 degree of negative all round and occasionally 2 on the rear, on low grip tracks. Again this is not normally changed for every track and it does not make dramatic differences if you are not far out on the settings. Try to make sure though, it is the same on both sides.

Shock settings and positions

The shocks are one of the most common items on the car which are changed in some way from track to track. However I found that by testing I now can go to each track with the same settings and now the car will handle well enough without changing too many things. If I do change the settings, it normally is a five weight change in oil or maybe a softer spring. Some time ago there was a craze to use Associated pistons in the car for what ever reason, and everybody at some point ran them. I was one of them, and because of that change I have stayed with these pistons. Having established these settings and know how they work on different tracks. If you was to use them on the standard shock shafts you will have to thin them down to fit, so instead I chose to use the M.I.P. shock shafts because they fitted straight on. I usually run 35 weight oil all round with Associated Number 3 pistons, which is equivalent to running approximately 25 weight all round with 3 holes open on the standard valves. This grade of oil I normally run with grey springs with the paint taken off them, which is approximately the same as running with the latest red springs. Then when the whole shock absorber is complete I then measure the total length of it from the very top to the bottom of the ball joint. This is so that the car, when complete has the same amount of drop on each side.

Total length of the rear shock absorber =102mm
Total length of the front shock absorber = 87mm
See kit set up sheet for more details.

"Let's take it from the top"

Conclusion

I hope through my experience the knowledge I have collected through the years, helps you to understand how much time needs to be spent on preparing the cars for each meeting. It has always been my opinion that consistency gets noticed and in order to be consistent it is vitally important that your car is 100% reliable for each race. If you can not finish a race you will never win one! Good luck with your racing in the future, and I hope this guide helps you on your way to becoming a champion of some description, whether it is winning a club meeting or the next World Championship. Always remember that the main thing is to enjoy it, and from then on it is down to you to make the difference!