

The Cat 2000 E.C

The Theory Of Evolution Schumacher Style

Antony Griffin reviews the latest 4wd bullet from Northampton

If the best points from some of the most popular and 'winningest' cars in the World were thrown into a melting pot, the resulting car would be something special, not to mention possessing a visible resemblance in certain areas to the cars from which an influence was drawn. A quick examination of the latest Cat 2000 shows that the front and rear shocks are laid down as per the very successful French Laro Rush 1/8 scale RallyCross car, whilst the layout of the chassis is similar to that utilised by one of the Cat's Far Eastern competitors. The transmission is the familiar belt system already proven in the original Cat 2000 as being very hard to improve upon, so Schumacher have retained one of the earlier car's strong points.

The Chassis

Once again Schumacher have opted for a narrow double deck chassis, made from Woven

Fibre Epoxy, or W.F.E as it's known in 'Schumacher Speak! The difference in this car is that the cells on the left hand side have been moved both forwards and inwards in a similar fashion to the fast response chassis for the old car. This measure both increases the car's stability as well as also giving it a better balance when 'taking some air' off jumps. The only other difference to the new chassis is that the rear has been made wider to compensate for the new, shorter wishbones, which we will talk about later. The upper chassis plate has been designed in such a way that the new shock mounts are slotted onto it rather than being screwed on, which makes the car a lot easier to work on.

Schumacher's rigid chassis design allows the shocks and suspension to do the job they're intended to, so it would seem that carbon (graphite) alternatives aren't essential (they are however even stiffer and lighter).

As with the earlier Cat 2000, the new E.C. has very little overhang at both the front and rear, which makes those little mishaps when landing

badly off jumps a lot less severe. Before beginning construction, filing the battery slots and rounding off the edges of the chassis and shock brackets (they can't be called 'towers' anymore!) is a must. Sealing the edges with superglue then colouring them with a permanent black marker pen is a must in the sex appeal contest!

The All Important Suspension

Well here it is, my explanation of the quite radical 'laid down shocks' theory! The bottom pick-up for the rear shocks is now located at the very end of the wishbone, actually inside the rear wheels, but this time on the front of the wishbone (and before you ask I don't know why!). As for the shock's upper pick-up point, this almost rests on the upper chassis plate, and

because of this the shocks are almost horizontal, lowering the centre of gravity which in turn gives a higher resistance to grip rolling, allowing the car to be pushed harder in the corners. There is one other advantage, and that is because the shock brackets are very much smaller, with the rear one hidden under the bodyshell, there is less aerodynamic drag which of course makes the car faster in a straight line!

As with the latest Cougar 2000 'Team', the rear wishbones are shorter, with the hubs now being a solid, one piece design giving three degrees of toe-in, with the pivot pin in the old 'High' position. There's no messing about to be done now with various inserts and instruction manuals to get the car set up. You know the story (I've done it!): Five minutes before a race, you suddenly realise you've mistakenly got 2° of toe-out on one side and then you drop the correct insert block in the longest grass you've ever seen - Panic! Because the hubs are now solid this means one less thing to worry about, but of course you can use the old hubs with the new

wishbones if needed, to achieve less toe-in on grippier tracks.

Also supplied now with all of Schumacher's new kits are ball grippers! Actually these are their new 'Ball Gripper' ball joints, which are great once you've managed to get them on the balls. Once they are on, they are very smooth but really hard to get off, in other words just what the Off Roader ordered!



The rear shocks are mounted in a very similar fashion to those at the front, and manage to 'hide' neatly behind the bodyshell, improving the car's aerodynamics.

The Transmission

As with all of Schumacher's kits, the diffs are supplied ready built, which is a really nice touch (I wouldn't like to build diffs all day though!), and I must say that they are well built and completely ready to use.

The driveshafts are the same as those used on all Schumacher cars nowadays; the telescopic, Co-axial shielded type. As long as you follow the instruction book carefully, not forgetting to put the bearings on the diff halves before connecting the drive shafts to them, there won't be a problem. The drive shafts have a nice smooth action, with little or no play evident when rotating the wheels.

To allow the very narrow diffs to be mounted along the centre line of the chassis, a 2.5 degree offset for the belts is engineered into the design,

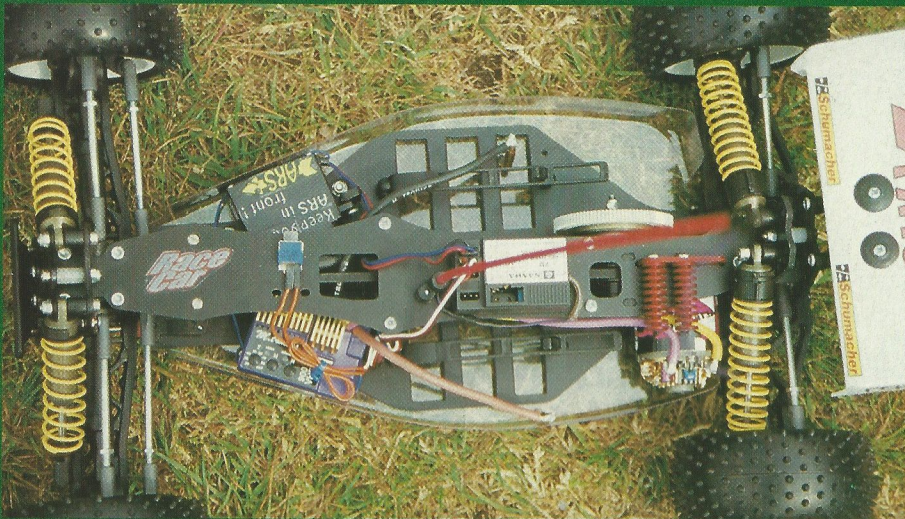


The low-line front shock mounting bracket (no way can it be called a 'tower'!) and the positioning of the outer pick-up point result in the really 'laid down' angle of the coil over shockers.

as per the original Cat 2000, from which the one way roller system is retained, rather than the one way roller driveshafts as sported on the Bosscat. This is achieved by adding a ratchet onto the layshaft, fairly crude, but effective in operation. As with all competitive cars these days, a neat little slipper clutch is fitted as standard, an essential on less grippy tracks or for when the morning dew hasn't dried off for Round 1...

Shocks

The all important shock absorbers, as always from Schumacher, are of the highest quality. The pistons etc are made from low friction molybdenum disulphide loaded plastic, whilst the super hard anodised bodies and micro polished stainless steel rods give really low drag. The triple diameter, colour coded springs are designed not to touch the shock's body.



Schumacher have again kept their easy adjustable pistons, which offer a choice of one to four holes to alter the damping without changing the oil. Again, two types of O ring seals are supplied, red and white, but be warned, the low-drag white ones can leak slightly.

The Icing On The Cake

A moulded speed controller tray, which fits neatly onto the chassis by the spur gear, is where Schumacher advise mounting the speed controller. I thought the wires ended up rather too close to the spur gear for comfort though, so I mounted it as seen in the photos. Either position is perfectly OK, as the handling won't change one iota.

I chose to use the very popular M-Troniks 900VHF speed controller for its high frequency operation and ABS braking system as used very successfully by Karl Marsden and David Ward. The new KO 1002 FET servo had to be the one to use for its high torque and superb speed, whilst the motive power was an ARS (Arrow Racing Supplies) 12x3.

Testing

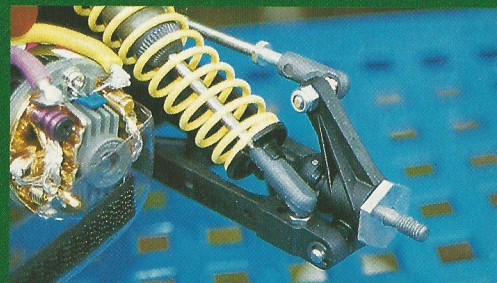
So, all the rambling aside, now it's down to the real business! I chose to test the beast at Kidderminster's superb all weather track (which I suppose it needed to be if you saw the weather at the time!). I took along with me some of the big brains of racing in the form of John Needham (Matt's dad), Paul Worsley and the Merediths, Tony and Richard. With this motley crew on hand, it wasn't long before the ideas were fast

The placement of the cells in the narrow chassis results in a great 'balanced' feel to the car, both on the ground and in the air!

evolving. We decided to compare the old and new cars in a back to back test, running the 'old' Cat 2000 with a set up only known to John Needham (John's the only person I know that uses every known weight of shock oil in the same shock at the same time!), but it certainly worked. With very experienced Kidderminster driver Rich Meredith on the sticks, it wasn't long before a decent time was set, so out came the new E.C. 30 weight oil and Yellow springs all round was the initial setting, but alas the handling wasn't that brilliant. Time for some thought... After trying out a few different set ups (and getting through a few packets of cigarettes!) John proclaimed "Grey



The new rear hubs no longer use fiddly interchangeable inserts, but are now moulded in one piece with fixed toe-in of 3° and the pivot in the old 'high' position.

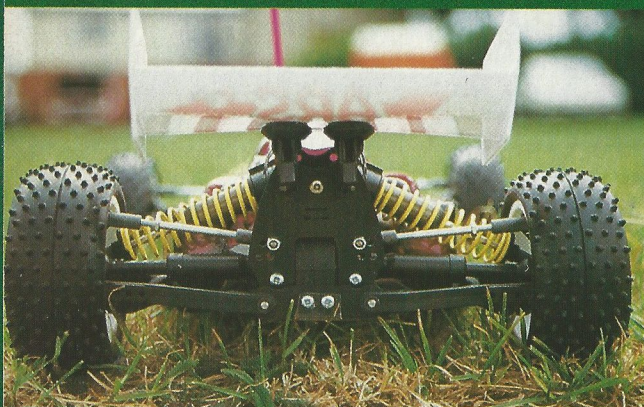


The new rear wishbones are 4mm shorter than before, and thanks to the shock's outer pick-up positioning, the damping action is greatly improved.

springs all round and use 20 weight oil on the back!" As soon as the car hit the track it was excellent! It not only took the bumps in its stride (and there are plenty of them at Kidderminster), but it caned around the corners as if they weren't there, it was so aggressive but yet stable. The result was that Rich managed to knock a complete second off the quickest single lap time set with the 'old' car. When you're talking mere seconds between an A or C Final placing, it's obvious that the E.C. has effectively made the earlier Cat obsolete at a stroke!

With fourteen of the top twenty cars at the first National of the season being of the Cat E.C. variety, what more needs to be said? The Cat E.C. is much easier to build and maintain than the earlier version, as it seems to slot together rather than be held together with screws. The aerodynamic and geometry modifications, combined with its light weight, make for a much more efficient and faster car, so it's bound to be a winner. What more can I say, other than I for one really like it!

The Cat 2000 E.C. is manufactured in Britain and distributed World-wide by: Schumacher Racing Products, Hanson Business Park, 71-73 Tenter Road, Moulton Park, Northampton, NN3 1AX. Available from good model shops everywhere.



Left: The angle of the shocks does look 'different' to say the least, but on the track the design works very well.

Right: Definitely a low-rider, the E.C. looks really mean and squat!

