

The latest and already very successful 4wd machine from Schumacher, reviewed by Cliff and Nicky Evans.

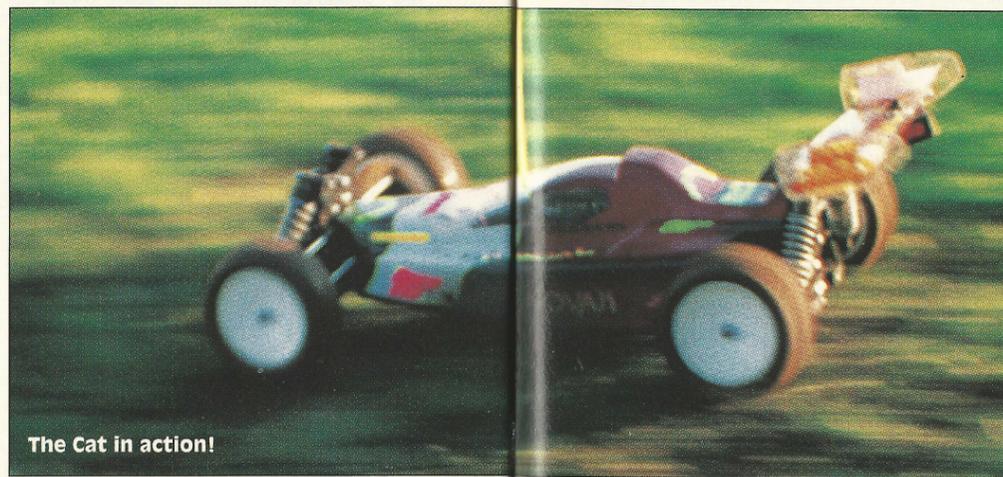
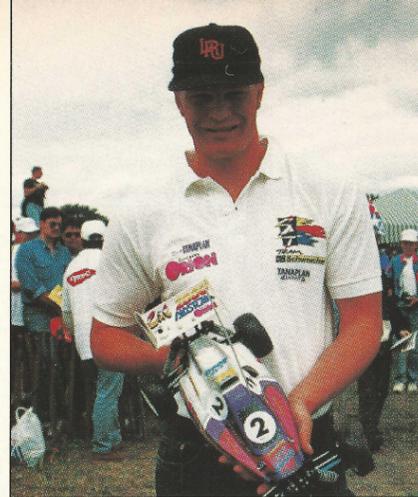


The 'Next Generation' slogan describes very accurately the latest offering from Schumacher Racing. The engineering and design of this new car has put Schumacher firmly back in the fast lane, where they so rightly belong. Schumacher cars have been popular for many years and are well known for their quality and performance. The new Cat 2000 is no exception.

For the purpose of this review, I will follow the instruction manual section by section and comment accordingly.

The Chassis.

Schumacher have opted for a narrow twin deck chassis design, and have used W.F.E. (woven fibre epoxy) for its construction. The result is a chassis and top brace that combine to eliminate any possible flexing, letting the suspension do the job it was designed to do, and is well capable of handling those awkward landings which we all have every once in a while. The Cat 2000 has very little overhang at both the front and rear, following the same design principle as the Cougar 2000 2wd car, so it should be impossible

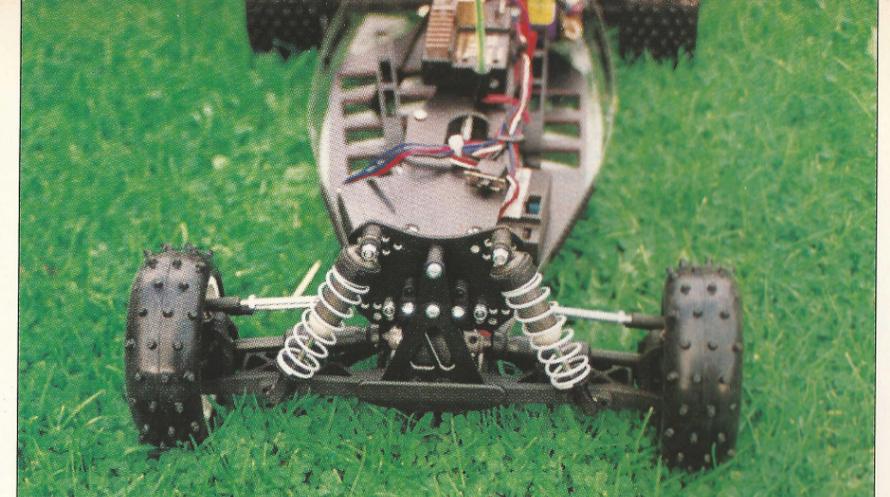


The Cat in action!

to get the car to 'dig in' when landing off a jump at steep angles.

Before I started building the car it was necessary to chamfer the edges of the nicad slots, as doing so enables the cells to sit comfortably in the chassis. This also prevents any sharp edges damaging the heatshrink around the cells. There are also some small pips on the edges of all the W.F.E. parts left by the routing process, and these have to be removed with a file.

One tip worth carrying out before progressing any further, is to go around the edges of all the W.F.E. parts with emery paper then a black felt pen, this will give the finished car a very clean and professional appearance.



The front shock mount is well braced in the manner of the Cougar 2000. The top shock mounting position is variable for the first time on a Schumacher 4wd car. Note the length of the suspension arms and driveshafts due to the use of very narrow differentials at the front and rear.

The low, narrow and sleek Cat 2000 bodyshell. Cutting an aperture in the cockpit roof air scoop will direct cool air to the heatsinks.



One interesting feature of Schumacher's new rear suspension design, was the introduction of small plastic insert blocks with which to vary the amount of rear wheel toe-in. Three blocks giving varying degrees of toe in are supplied with the kit for each side, to give a wide selection of settings if required.

The rear shock absorber varimount will also allow for virtually endless permutations for the suspension settings, but for the purpose of this exercise I intend to build the car with the settings described in the handbook.

alone makes the build up time much shorter.

The diffs come with the U.J. knuckle assembly already fitted, but they do need to be removed later to assist in the assembly of the drive shafts. Before progressing on to the next stage, it is perhaps worthwhile checking the adjustment of the differentials, they probably won't need any alteration, but it's far better to be safe than sorry!

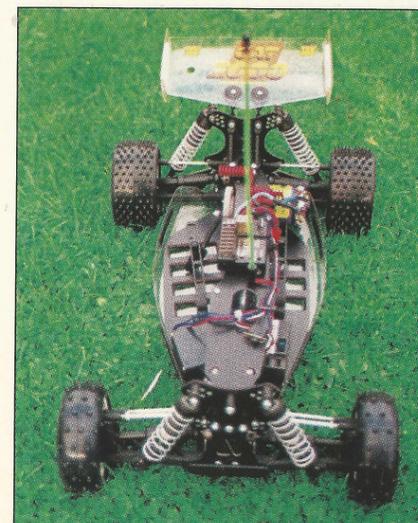


The Differentials.

As with some other very popular 4wd cars, the differentials are supplied already built in the Cat 2000 kit. This

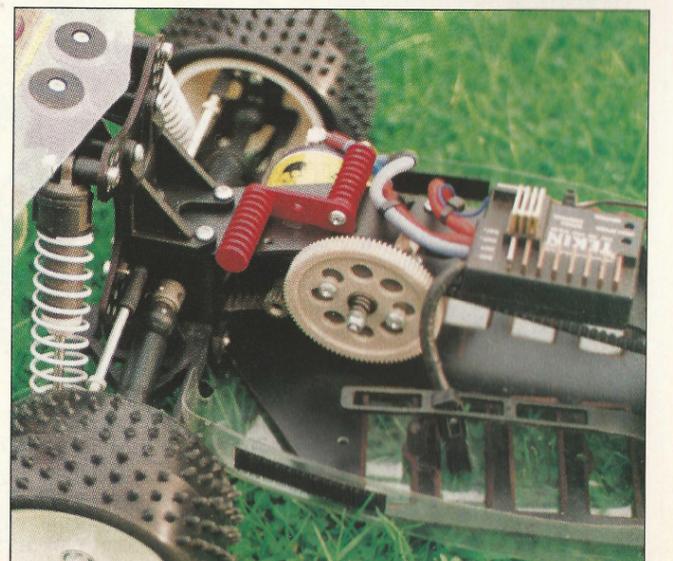
The Rear Suspension.

As expected, the rear suspension has been totally redesigned from that used for the BossCat Works. Assembly was straight forward, and all the rear suspension parts were clearly marked and packed in their individual bag.

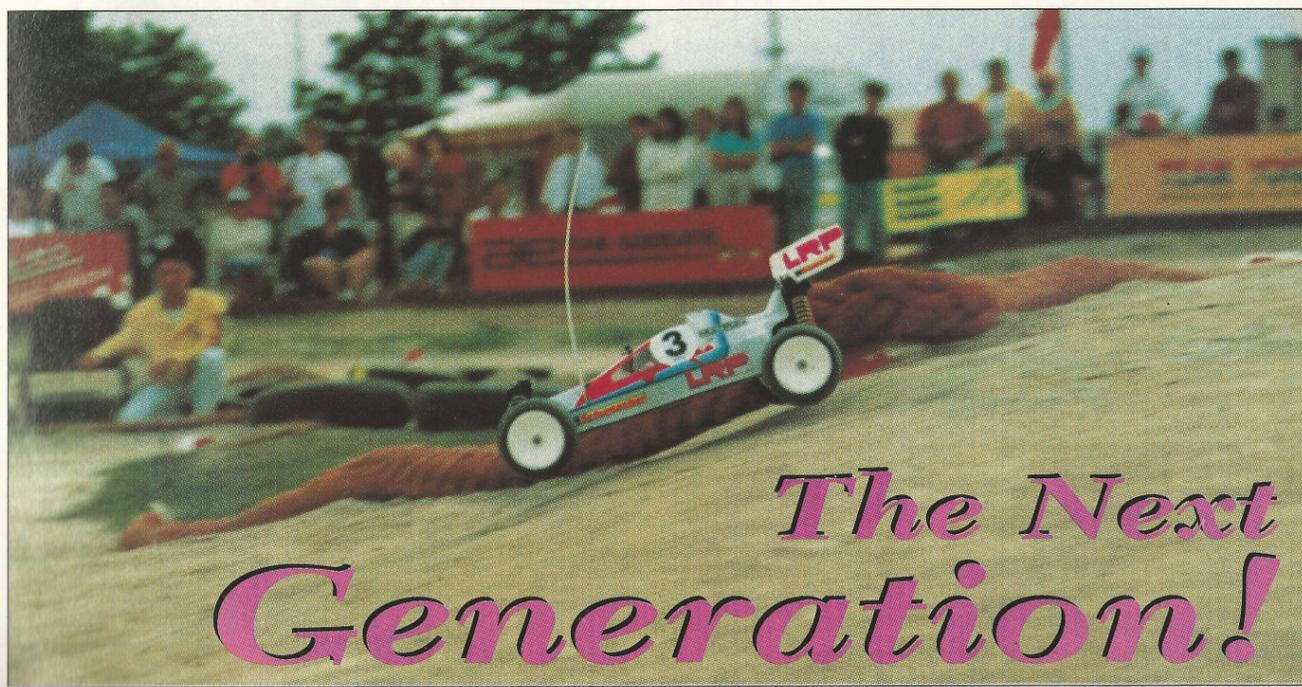


The sharp eyed may spot the 2.5 degree angle of offset in the front drive belt in this shot. The cells are mounted very close together.

This shot clearly shows the well braced rear shock tower, the slipper clutch and the top brace support to the right of the Tekin 700 speedo. Two heatsinks are fitted to the motor plate, but up to five can be used in warm conditions.



Schumacher's Cat 2000



The diffs supplied in the kit reviewed here were spot on and super smooth in their operation.

The Drive Shafts.

Assembling the new style telescopic co-axial shielded drive shafts was the only testing part of the whole car's assembly procedure. Younger racers will find that perhaps now is the right time to ask Dad for a little bit of help...

The assembly instructions are very good and show exactly what must be done, but putting theory into practice hardly ever proves as easy as it should be. The instruction book advises that the assembly of the front drive shafts should be done at a later stage, so make sure this advice is followed, or it is possible a problem may emerge later.

Schumacher have designed a very good telescopic drive shaft that is strong, very smooth in operation, and appears to be free of any snatch when taking up the drive unlike those found on so many other cars. As I mentioned previously, it is best to remove the universal joint assembly from the differentials before building up the drive shafts, as this makes the task easier and saves quite some time. To further improve the life expectancy of the drive shafts, I am now informed of the availability of a new steel roller drive shaft kit as a Speed Secrets part No. U1525M.

The Transmission.

When compared to the earlier Pro Cat, building up the transmission on the Cat 2000 is child's play!

The Cat 2000 features a special 'lowline' transmission which results in an extremely low centre of gravity. The motor, differentials and lay shafts are all mounted very low in the car to increase cornering speeds and lessen the tendency for the car to roll over. One aspect of the design that surprises many when seeing the car for the first time is the 2.5 degrees of off set for the belts. This is done to allow the narrow front and rear differentials to be mounted on the car's centre line, allowing the use of very long suspension arms.

The 3mm pitch drive belts are produced with Kevlar strengthening, and feature a very thin back for light weight. A 'one way' drive system is fitted to the centre lay shaft. Assembly of the centre lay shaft is very simple and shouldn't cause any problems. The plastic one way ratchet used on the centre layshaft is a delight, and was obviously lighter than the more conventional one way bearing design. The slipper clutch is next on the list, this is straight forward, except that I would advise putting a little grease on the thrust race to hold the very small thrust balls in place during assembly.

The Front Suspension.

As was found with the rear suspension, if the instructions are followed to the letter then the job proves easy. One important feature of the design is the very good servosaver built as part of the steering post. Careful adjustment was needed to obtain the free movement desired for the steering arms, so a little time spent 'fettling' here will be time well spent.

One other small point worth mentioning at this stage, is that before fitting the top part of the front and rear transmission housings, it is advisable to thread a 3mm cap head screw partway down each of the four retaining holes in

the front and rear lower transmission housings. Doing so will really help when fitting both the transmission housing upper halves and the chassis top brace using the 30 and 35mm long pan head screws. Placing a little grease or light oil on the screw threads is a real help when screwing any of the fixings into the mouldings throughout the build up of the kit.

Apart from the few points mentioned above, every other part of the front suspension assembly procedure was carried out per the instruction book.

The Shock Absorbers.

Following the instructions regarding the build up sequence for the shock absorbers results is easy, as is the actual assembly, but this is one aspect of the build that definitely shouldn't be rushed.

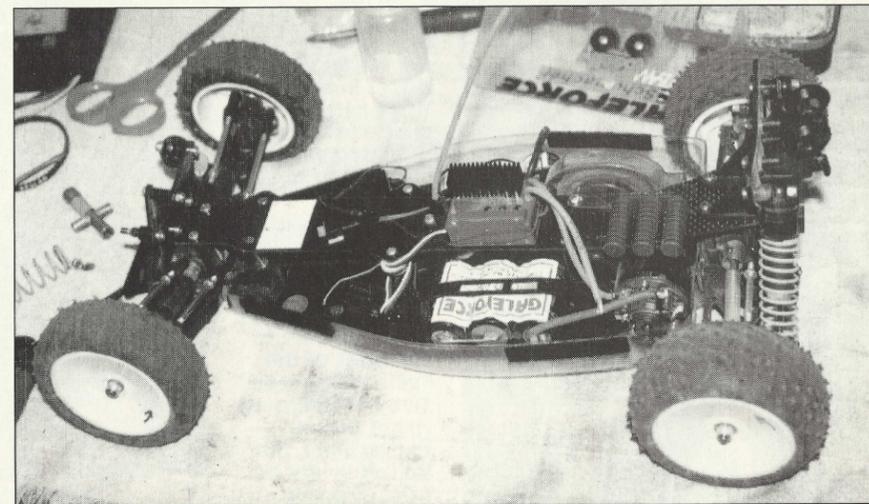
Schumacher shock absorbers, if built properly, are among the best in the World, and the examples used for the Cat 2000 are no exception.

Before starting to assemble the shock absorbers, I made sure that I had removed any moulding pips or flash that remained having taken the moulded items off the sprues. The kit comes with a choice of rubber 'O' rings which act as the shock seals. I chose to use the white 'O' rings described as the 'Pro' extra low drag types.

The latest Pro shock bodies are made from a super hard anodised alloy, and the shock shafts are made from micro polished stainless steel for low drag properties and no corrosion. The Teflon loaded shock pistons feature the Schumacher one to four hole variable click-stop system for ease of adjustment.

A little shock oil on the shock shaft before inserting it into the assembled seal housing will reduce the chances of the thread damaging the shock seals.

Having fitted the shock absorbers to the car and checked that the suspension was working properly with no sign of oil leaks etc, it was time to fit the electrics and motor.



The Radio Installation.

The installation of the electrical gear is simple regardless of whatever equipment the builder may have. Unlike some of the other cars on the market, the Cat 2000 has plenty of space available in which to fit a wide variety of receivers, speed controllers and servos.

I chose to use a KO1001 steering servo which fitted perfectly in place, the receiver was a 40 Mhz Sanwa unit. The speed controller I had intended to use was a Tekin 410K, but unfortunately it decided to go on strike immediately before its swap from another car, so I resorted to my faithful Tekin 700 Pro Pulse and an AGR 12 x 3 motor.

All that was now left to do was fit the undertray and wing, then to paint the bodyshell with that special custom job (dream on Cliff).

Comments

On the whole, the Cat 2000 was a very easy car to build. Some of the operations that used to require a third pair of hands simply no longer exist.

Fitting the universal joints to the drive shafts can and will cause some people difficulty when attempting this operation for the first time, in



particular younger builders, but once the first one has been assembled, the rest are fairly easy.

As mentioned earlier, I chose to build the car exactly as described in the instruction manual, this is obviously a good starting point. I found it necessary to make adjustments to the camber angles, to make them exactly as recommended in the setting up information, but this was probably caused by my not assembling the track rods to the correct lengths in the first place!

All that now remained to do now was to try the car out on my local track. When testing the car

caused by my not assembling the track rods to the correct lengths in the first place!

All that now remained to do now was to try the car out on my local track. When testing the car out for the first time, don't forget to take the instruction manual, as the tuning information on pages 22, 23, 24 and 25 is very helpful indeed, and will allow the Cat 2000 to be set up perfectly, very quickly.

The Track Test.

The venue for the Cat 2000's track test was the Abergavenny Model Car Club's track. This track is generally fast and flowing, with one or two jumps and a couple of rather bumpy sections. The track was wet and the grass a little longer than normal, which would probably drain the batteries a little more than would normally be the case.

Nicky was elected to do all the driving, leaving me to observe the car's performance.

During the first few laps of the Cat's initial run, the car had a tendency to 'dig in' on both right and left hand bends. We had started out by using yellow springs all round, 20 weight oil, and the standard kit tyres. My first alteration was to add extra spring spacers to both the front and rear shock absorbers, this improved the situation somewhat.

It was then time to try changing the shock oil, so I opted to leave the front alone and put 30 weight in the rear shocks. This made an immediate improvement in the car's performance when going over the bumpy part of the track, the Cat seemed to take this all in its stride, even a sudden change of line on the bumpy part of the track didn't make the rear end jump out, its

stability being quite obvious.

I was surprised at how responsive the Cat 2000 was becoming, and Nicky was pleased with its driving characteristics. He asked for a small adjustment to the front wheel camber angle to improve the entry to fast corners, and with this duly done the cornering appeared to improve, becoming very neutral.

At this point we were still running the Cat 2000 on the kit tyres which were not really the best choice for the track conditions, however, the car's set up was improving with each run.

While examining the car prior to further testing I started with the transmission, this was free but devoid of any slip when I built the car and was just the same now. The slipper clutch was initially set as per the advised setting, and only needed a small amount of adjustment after quite a few runs. Because of the car's simple design there is little else to check, unless you are one of those drivers who like to dismantle their cars between races, which is actually quite possible with the Cat 2000!

I wanted to test the car on a wider range of Schumacher tyres and springs to find out exactly what the car's response would be to spring rates etc, so following a conversation with Tim Walden at Schumachers, he was kind enough to send me a selection of tyres and springs to experiment with.

We took the Cat 2000 back out to the same track, now armed with the assortment of tyres and springs. The front shock absorbers had been filled with 20 weight oil for the first test and yellow springs, I now changed the front and rear springs for the grey ones and left the oils as before (20 front, 30 rear). Cornering the Cat with the harder grey springs showed a marked improvement, and allowed the car to be pushed

into the bends with a little more aggression, which suits some driving styles, but not all.

A change of tyres from the kit rubber to 2.2" blue mini spikes and foam inserts marked another step up in the handling stakes, Nicky now felt perfectly comfortable with the Cat 2000 and was able to really push the car around the track.

We then tried several other spring, oil and tyre combinations, and saw some quite significant changes in the car's handling characteristics which, while not quite entirely suited to the track itself, showed how versatile the Cat 2000 can be if required, and that it is immediately responsive to changes in the set up.

I haven't had time to run the Cat 2000 indoors on carpet myself, but was lucky enough to see Jon Tucker try his out at one of our local indoor clubs. Once again, the car was demonstrating its versatility and a clean pair of heels to the opposition.

Our Conclusion.

The results achieved at the World Championships this year with the Cat 2000 gave an early indication of the Cat's potential prior to its release. We must say that our first impressions are that it is certainly a very nice car to drive and, unlike some 4wd cars on the market, the Cat 2000 driver will not have to spend a fortune on after market 'add on' parts to win with the Cat 2000. It is a winner straight from the box.

The radical new engineering design and the quality of the Cat 2000 kit should ensure that Schumacher Racing has in their stable a car that will provide their 4wd challenge for quite some time to come.

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