

# Schumacher Cougar II 'Works'



**Cougar II 'Works' - with the '93 Worlds coming up fast, Jason Dearden assesses Schumacher's 2WD contender.**

The Cougar II 'Works' is yet another derivative of the ever popular Schumacher Cougar II 2WD competition 1/10 off road car.

The 'Works' version is the ultimate production Cougar and is quite rightly the new flagship of the Schumacher 2WD range. Since the introduction of the Cougar II, Schumacher have adopted a similar policy to that of full size car manufacturers, in that they offer a range of Cougars, with differing specs to meet the customers needs and pocket. After all, not everyone interested in a Ford Escort would buy the Cosworth 4WD version, particularly when collecting the shopping is their main concern!!

The Cougar II 'Works' is basically a Cougar II Team car with a few further refinements, tried and tested by Schumachers 'Works' team over the past season, hence the name. It needs to be pointed out before assessing the detail changes on the 'Works' car, that the mod's introduced are designed to shave mere 1/10s of seconds off lap times at the highest level of competition. Such time savings can mean everything to drivers competing at National and International events, but do the changes benefit the club racer, and does the car represent value for money for the average driver?

### What 'Works' For the Team

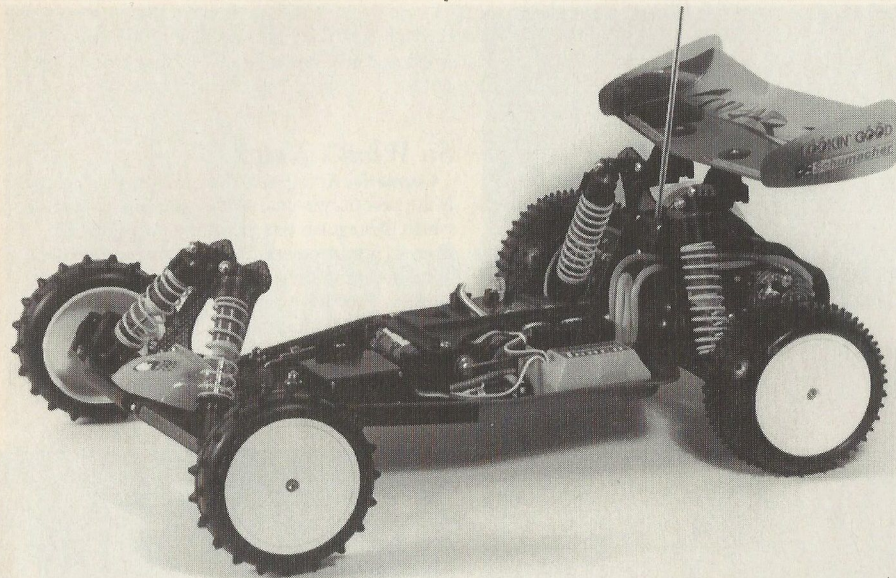
In late '91 the Schumacher team started doing battle with the Cougar II Team car, which was then the highest spec Cougar. As with any form of competition development in all areas gallops on, as everyone searches for the edge which could bring them glory. Schumacher, being former World Champions, are accustomed to development and their team of drivers have tested numerous changes and alternatives over the past year in search of the all important 'edge'. Some of these changes prove to be advantageous, whilst others are found to be less effective. The Works Cougar II is the product of this development process and is now available

through Schumachers extensive dealer network. "Performance that you can buy", as Schumacher put it.

### So What's New?

**Cosmetic.** At a glance the most obvious change is the new purple chassis and gearbox side plates, which distinguish this top of the range model from its predecessors. Both of these components are different in detail from the standard Cougar II items, they have been modified to accommodate other more productive changes, rather than offering individual improvements over the standard items. The chassis is still the well proven pressed alloy pan, which offers great strength and minimum weight.





**Power to weight.** Another means of identifying the 'Works' car is by its proven carbon fibre shock towers, which are fitted both front and rear to reduce weight and marginally lower the centre of gravity. They are identical in shape to the standard glassfibre parts, and like many of the improvements featured on the 'Works' car, they can be fitted to all Cougar IIs as direct replacements.

**Geometry.** One of the more important and less visual changes to the 'Works' car is the amended rear suspension geometry. New rear wishbones and hub carriers are employed to effect this change. The wishbones provide the same medium/long wheelbase, but are longer, and together with the new hub carriers provide a lower roll centre for the rear suspension. The new hub carriers are much smaller and are fitted with smaller stainless steel ballbearings.

This all serves to lower the unsprung weight of the rear suspension. What 'does' all that mean? Well, lower unsprung weight means that the

suspension can react more quickly to the terrain, or essentially the car can travel faster over the same terrain, before it becomes unstable. A lower roll centre on the rear suspension provides added stability and the impression when driving, of increased grip, particularly on rutted tracks,

shafts and the torque they transmit. The 'Works' model does not possess this trait due to the new gearbox, and so has less longitudinal weight transfer. The 'Works' car therefore has more steering coming out of the corners when being accelerated hard, and is less inclined to drive into corners with oversteer. In fact the car maintains much more neutral handling whatever the throttle position. It also makes the car jump much more consistently, as punching the throttle is less likely to promote a back flip.

### Absorbing

The Cougar II 'Works' also features re-vamped shock absorbers. They are now coated with an even harder surface layer to help reduce wear, the shafts are polished to a much higher degree, they feature new white seals and a different foam compensating material. Probably the most notable change is the use of plastic coated and colour coded springs. The springs feature a large diameter centre section and smaller diameter top and bottom coils to locate the spring. These springs are really very good and cannot rub on the shock body at all, ensuring a super smooth action.

### Getting to 'Work'

Building the car shouldn't provide any

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where the rear suspension is working hard. Basically the car is easier to drive hard. The new suspension geometry relies on an extra hole in the rear bulkhead for the rear suspension top link, which must be used to provide the required effect (so Cougar II upgrades be warned).

The second change to the rear suspension geometry is the increase in the amount of anti-squat. Anti-squat is the angling of the rear suspension pivot, so that the leading edge of the wishbone is higher than the trailing edge, which as the name suggests, reduces the amount the tail of the car squats under acceleration. It also enables the rear suspension to cope with bumps more easily, particularly those taken at a reasonable speed. The chassis has been narrowed either side of the gearbox to accommodate the higher front pick up point of the rear wishbone.

### Transmission

The 'Works' car also features a revised gearbox layout. As the Cougar has evolved over the years, changes have been made to the weight distribution of the car by fitting longer wheelbase wishbones. This means the drive shafts on a Cougar II, when viewed from above, are angled back from the gearbox to the hub centres. The 'Works' car features a 'compact gearbox' which puts the differential unit and thus the drive shafts in line with the wheel centres. A standard Cougar with angled drive shafts has a tendency to lift its nose when accelerating and drop its nose when decelerating. This is due to the angle of the drive

insurmountable problems for the experienced R/C racer who is likely to buy this model.

I was surprised to find however, that the front suspension did not move as freely as I would have liked and much time was spent making the suspension movement free. Another problem was experienced once the gearbox was built. The gearbox now leaves little space for the motor, which is situated very close to the drive belt, and the belt actually rubbed on the plastic gearbox housing next to the motor. The only solution I could find to this problem was to cut that part of the gearbox housing away and seal the gearbox with tape. This is not really good enough for a car of this stature, however I am sure that Schumacher will soon resolve this situation. The new white seals included as an option in the shock absorber seals kits are very soft and give a very smooth action, however they leak a little more than the standard items. I found the best solution to this problem was to use the old red large 'O' ring and the new white small 'O' ring, this gave a very good action with minimum leakage. Other than these criticisms the car went together very well and the instructions were sound.

### Great Expectations

The Cougar II 'Works' really does have an impressive list of specifications, ballraced steering, fully ballraced transmission and wheels, roller drive shafts etc, etc, but there are a few features which I and others expected to be

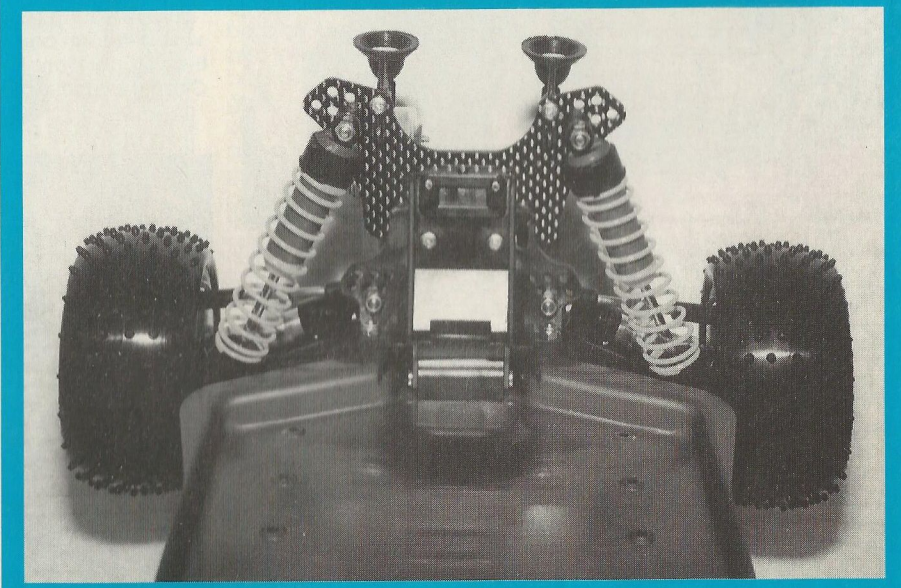
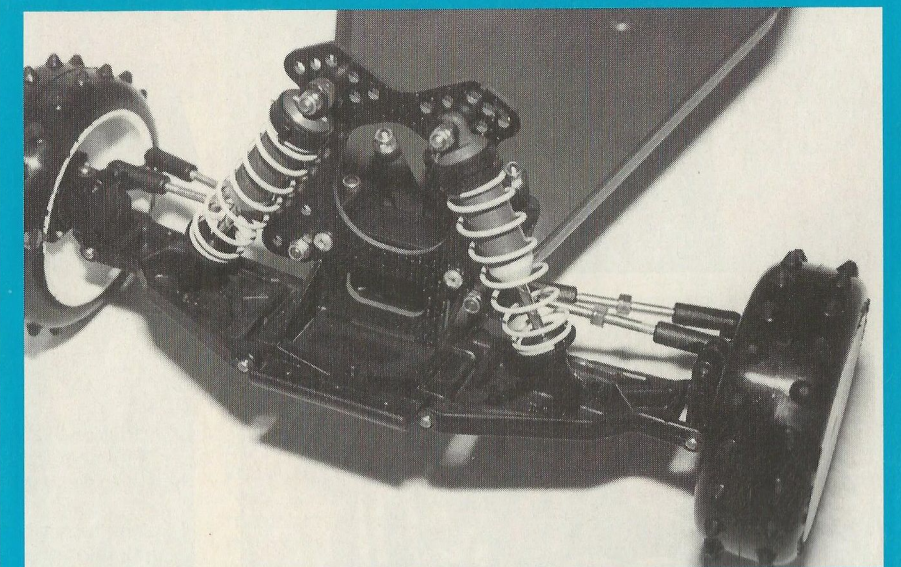
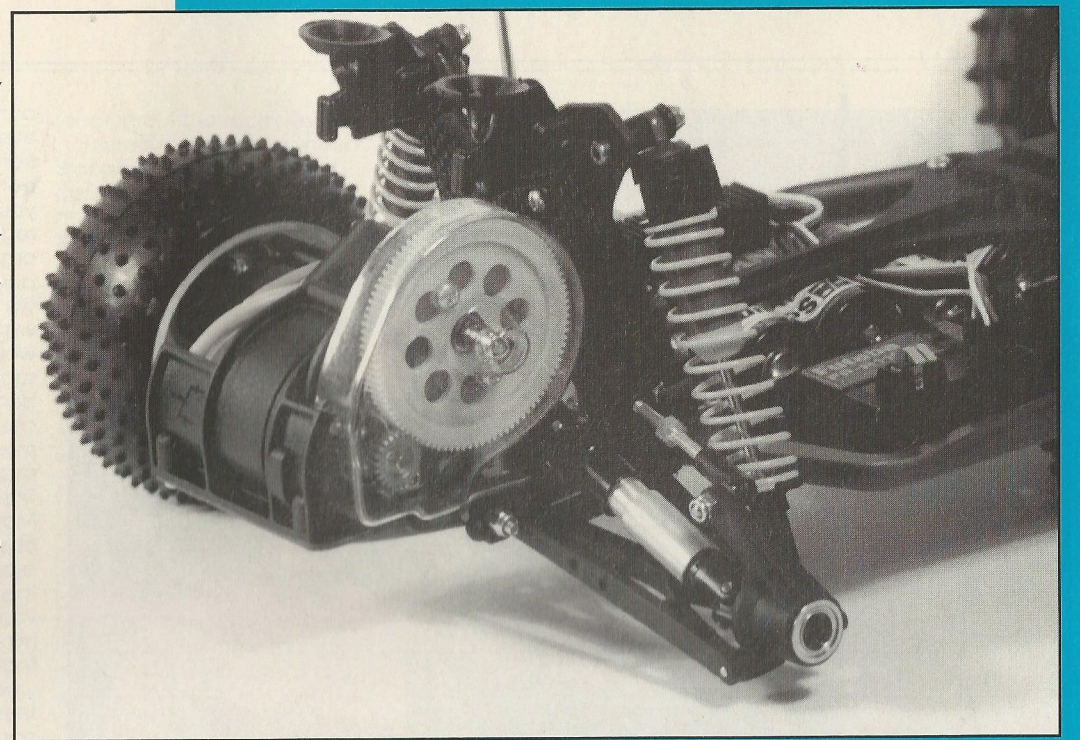
included in the 'Works' box spec.

A competition car should not rely on double sided tape to hold in the servo, and as there are only a couple of similar sized servos used by the competition drivers likely to buy this car, then Schumacher should really pre-drill the chassis and include some suitable servo posts. Another area which I feel lets the car down, and in fact let the Cougar II team car down, was and is the use of single bearing front wheels. Twin bearing wheel adaptors are available to give better support to the front wheels during cornering, as an option!!

### Conclusion

The Cougar II 'Works' is a fast, efficient, rugged racing car which benefits greatly from the suspension improvements. The new shocks and springs are on a par with the best on the market.

For the top level competition racer (with the addition of twin bearing front wheels) this is as good a 2WD competition car as



there is available, and it's British. For the club racer it's easier to drive faster, more consistent, it's tough and spares are readily available at a reasonable price.

Available now from your local shop. Manufactured by Schumacher Racing Products Ltd, Hanson Business Park, 71-73 Tenter Road, Moulton Park, Northampton. NN3 1AX.