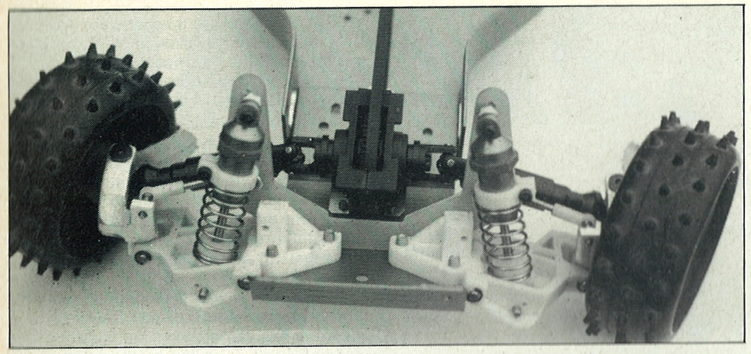
4-WD CONCEPT CAR

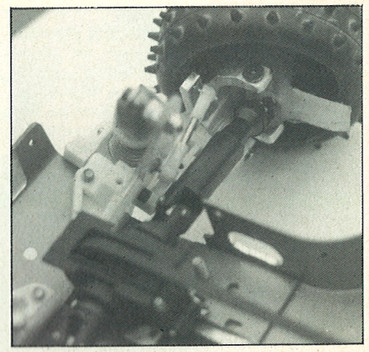
JOHN VARLEY reports on this exciting new development from the Midlands

Over recent weeks the West Midlands has witnessed development of a four wheel drive Associated car from two sources. Whilst this article will concern itself with only one of those projects, a more detailed and informative article will follow in next month's magazine.

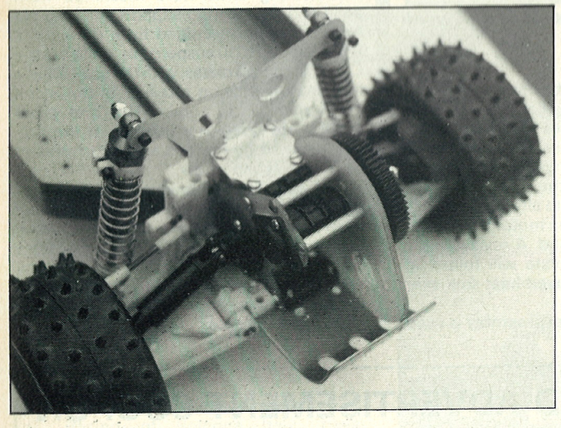
Alan Stewart of Model Motor Sport Ltd., based in Birmingham, the city noted for its diverse engineering skills, had only nurtured the idea of converting the Associated RC10 into four wheel drive form.

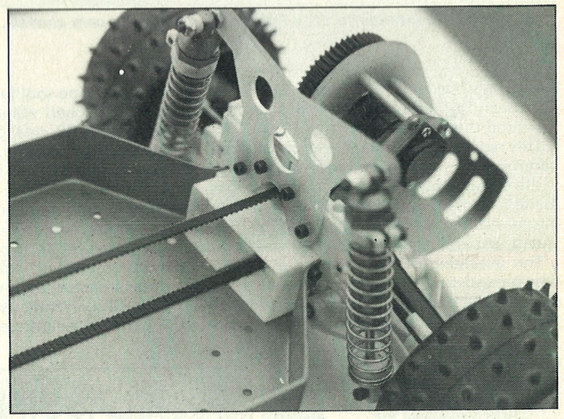
Having assembled, driven and sold enough RC10's over the last eighteen months he needed no convincing of its superb handling characteristics once set up correctly. However, doubt always existed over the overall efficiency of the RC10 gearbox, and its capacity for handling additional drive to the front wheels.



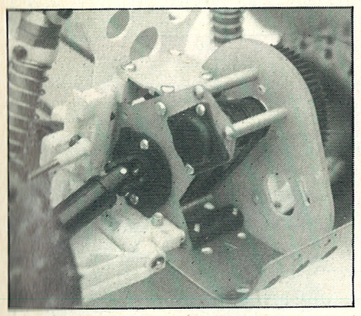


Above: RC10 wishbones and dampers have been retained and mated to Schumacher's excellent drive shafts, new hub carriers had to be machined using nylon 66.

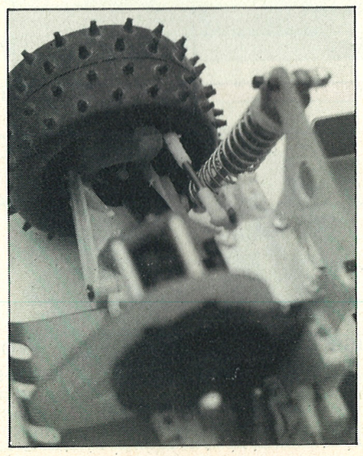




Above Left: New motor side plates had to be machined to alter both the differential shaft and motor mount position. Above right: A small machining job on the rear bulkhead soon had the drive belt running true. Below Left: As this photo clearly shows, a lot of design time went into keeping the RC10's original weight distribution as close as possible. Below Right: Schumachers' wheels and tyres are retained and located by the same method as the cat, that is using one M3x 20 stainless steel cap screw.



With the writer having a close association with Alan Stewart, it was convenient to monitor the characteristics of his Schumacher Cat, and easily arrive at the conclusion that the Cat's drive system was extremely efficient, once enough thought and care had gone into setting up.



At this point in time, it was an easy decision to dispel thoughts of a one-off modified car, and formulate plans to take the best of each car and put them into one.

The reader will note, that we have been fortunate to get a sneak preview of this project, and therefore we will refrain from being objective or critical of the concept and keep that until our following article next month.

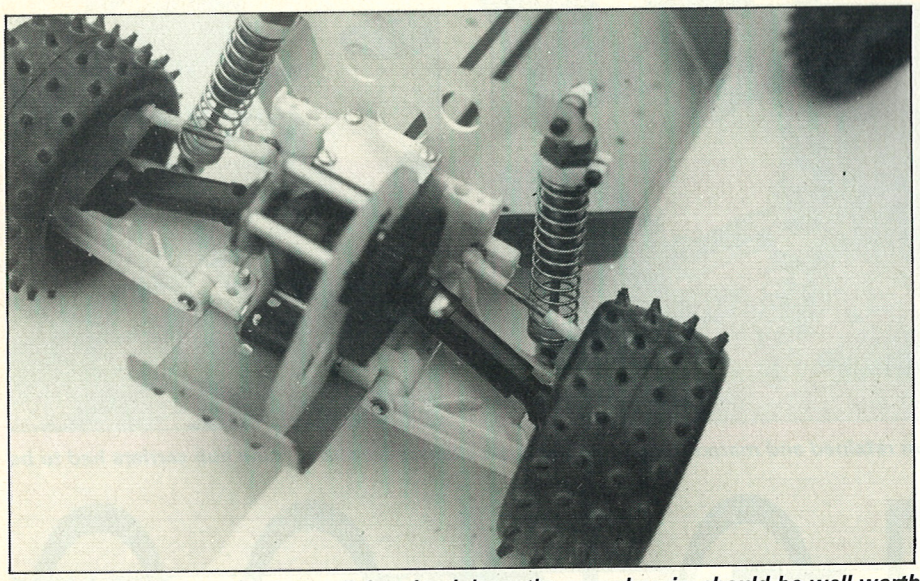
To get the car to its current level, over 50 hours of work have been put in so far, therefore it has to be treated at this stage as a labour of love until further development has ironed out any anomolies, before it can be taken to a possible commercial future stage.

Getting down to specifics, we find that the basic full length RC10 chassis is used, with Alan eventually intending to do one of his superb lightening jobs on this. Along with the standard chassis, the following parts we retained. All wishbones, pivot blocks, mounting blocks, upper links for suspension, front and rear bulkheads, shock absorbers and battery clamps.

The only modification to any of these parts being a small machining operation to the rear bulkhead allowing the toothed belt to pass through.

The Cat drive system was retained at first, exactly as it came out of the car, except for the removal of the high points on its side plates, and allowing provisions for the belt to come out from what was originally the rear of the drive assembly.

The reason behind the change in this belt



Alan eventually intends to do a lightening job on the cars chassis, should be well worth seeing.

direction is because the whole assembly has been turned round to give a rear mounted motor, as per normal RC10.

This rear mounted motor was considered paramount in the whole concept, because of the opinion that the greater bias of weight to the rear of no less than 60% would retain the cars ability to take rough ground at high speed, and still remain relatively stable.

The overhang of the original Cat's gearbox proved to be too excessive and here we come across the first new parts to be manufactured. As a self employed engineer with machine tool facilities at his disposal, Alan has been able to machine out very accurate GRP side plates that rearranged the position of differential shaft and motor mounting. This now brings the final assembly into the confines of the rear of the RC10 chassis, without having to alter the 'kick-up' at the rear, protecting the motor from damage when hit from behind. A revised alloy motor mounting side plate will follow in order to act as an improved heat sink over the GRP currently used.

Up front the differential assembly is used on this car, although a second car will use one-way clutches to allow back to back testing to search for any improvement in handling, one over the other under given circumstances.

Provision for clamping and adjusting the front diff. assembly have been made with a minimum of machining to the chassis and nose piece. One very satisfying point was the case in which the fully extended belt and front diff. housing just fitted a couple of millimetres short of the front bulkhead, thus leaving no modifications to the front suspension.

Schumachers well designed drive shafts and universal joints are used, thus meaning that rear hub carriers were made. At the rear nylon 66 has been the material used and thus carriers took time to be machined from solid, prompting some thoughts on means of production and time saving for the future.

At the front, once more using nylon 66, the steering arms were machined from solid and the steering support and king pin housing being machined from duralumin. By using the RC10 suspension, gone are the Cat's nylon backplates, with the sealed Cat's axle bearings being retained in the nylon parts mentioned above. The one piece wheels are obviously used from the Cat, still retained by the one M3 x 20 stainless steel socket cap screw.

At this stage we have to conclude our brief article on this interesting project, but I can assure you of an in depth concluding article next month which will include a track test report, full final assembly details along with thoughts of further development and future marketing prospects.

Watch this space.