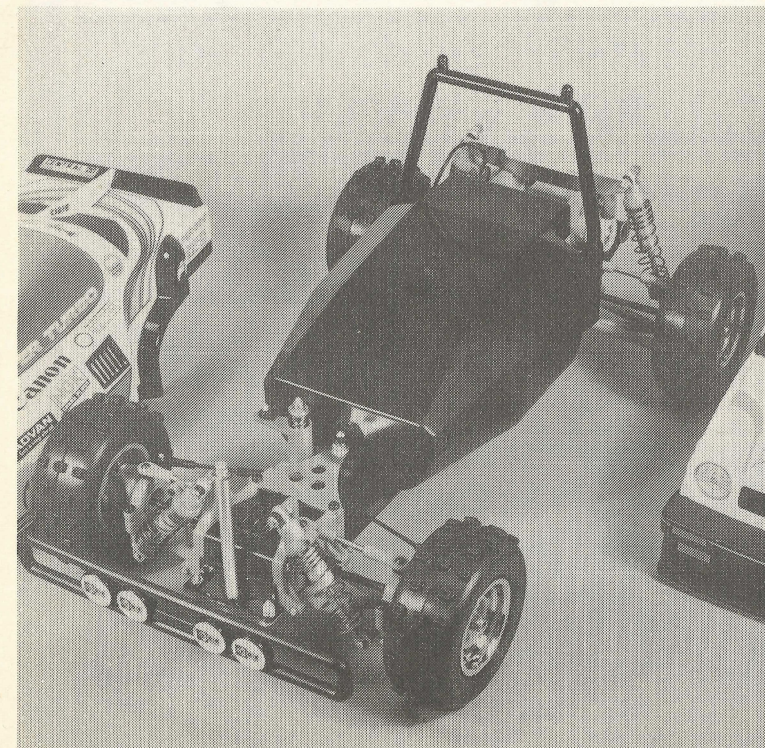


TO ENTER THE highly competitive R/C model car market with a new design is a bold enough step for any manufacturer to make, but to introduce a radically different product is a praise-worthy move indeed. The *Hirobo* Company of Japan have done just that with the introduction of their 'Rock 'n' City' four wheel drive 1/10th Electric competition Buggy.

Up until now, 4WD cars have only featured prominently in the 1/8th I.C. Class of racing where their superior handling qualities have paid dividends on loose or slippery racing surfaces. However, it seemed impracticable to produce a competition orientated 1/10th scale electric powered 4WD car simply because of the extremely complicated nature of producing an efficient transmission system in such a small scale. The other main factor is the huge cost involved in actually tooling up for mass production of such a machine. Nevertheless, *Hirobo* have taken the bull by the horns and gone ahead regardless utilising their undoubted experience gained from the manufacture of very high quality R/C helicopter kits. Their expertise in this exacting branch of the R/C model hobby has given them a better chance of success than most. Whether they have succeeded or not is the subject of this Track Test.

Interestingly, the complete transmission system to each end including gearbox, differentials, and

Below: the Rock 'n' City ready for the track with a choice of bodyshells either the kit item or Lexan 'racing' version.



motor mounting is pre-assembled and set-up by the factory. The rest of the bits and pieces are packed into numbered bags and relate to the instructions. Although the kit is almost two thirds finished, the instructions start from scratch. Wheels and tyres, bodyshell and decals are all in there and can be left to later.

Transmission

As it comes in the box, the pre-assembled chassis is a very intriguing piece of machinery and definitely warrants a closer inspection. Not that I doubt the *Hirobo* factory assemblers skill, just that I wanted to know what makes it tick.

Drive to both pairs of wheels is via a toothed belt, running the length of the car and which engages around differentials either end with drive shafts transmitting the power to the wheels. A closer look at the differentials shows them to be of the

planetary geared variety using cast alloy gears, which have been greased, ball-races are supplied as standard for the differential outputs. Two jockey pulleys at the rear end, (one of which can be adjusted) give the main belt the correct tension. A smaller drive belt takes the power from the 540 motor to the main drive shaft and this also features an adjustable, ball-raced tensioning pulley. The other two inside the gearbox and the third one at the front are standard. Doubtless, by ball-racing these, an even more efficient drive system will be produced. Different gear ratios can be easily produced by changing the motor pinion/timing pulley and an alternative ratio is available from the importers.

Finally the drive belt channel is protected from underneath with a removable aluminium spine, the radio box when fitted will protect the top. If correctly tensioned and not over stressed the drive belt should last as long as the car.

Suspension

Both the front and rear suspension systems feature single wishbones on each side. The wishbones, suspension bulkheads and most other parts are attractively produced in red, injection moulded nylon, a material which is not only strong but has a greater resistance to general wear and tear. The front end is by far the most interesting as obviously steering has to be incorporated whilst still allowing the front wheels to be driven. The *Hirobo* system features a steering pivot block which locks into an upright clamp. Caster or king pin inclination can be adjusted simply by rotating the hub carrier in the clamp and locking it up. Camber adjustments are also possible for both suspension set-ups simply by lengthening or shortening the tie-rods between the top of the hub-carriers and suspension bulkheads. Plain bushes are set into the hub carriers to support the wheel spindles, again, ball-races are a good

buy if you wish to get the best from this machine.

The coil-over shock absorbers are next on the list and before installation onto the car have to be filled with the oil provided. In many ways these items resemble those of the 'scorpion' as an adjustable locking collet to vary spring tension is fitted. The springs themselves are very soft, just the job to allow the suspension to do its stuff and keep all four wheels driving onto the track. The wheels and tyres are the same all way round with nice 'Off-Road Knobbles'.

With the body post and bumpers fitted this completes the rolling chassis ready for the R/C installation.

Radio Installation

A large vac-formed plastic crate sits amidships and will accept and protect any set of radio control equipment you care to fit. The kit also includes servo tape for sticking all the bits in plus steering and

throttle servo track rod connections, the Ni-Cad pack (not supplied) sits squarely in the middle, lengthways along the chassis.

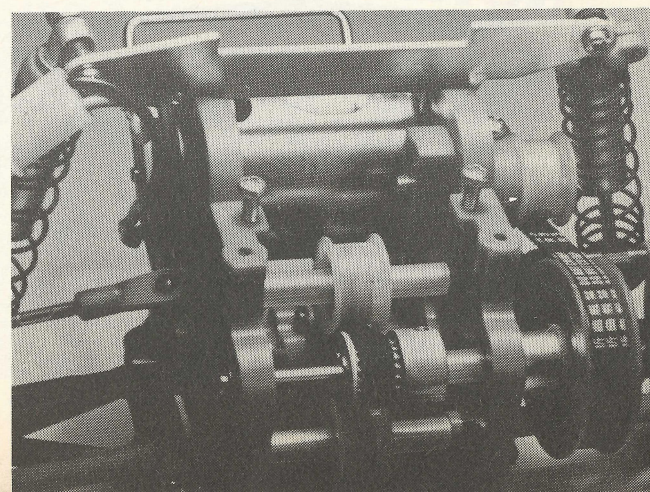
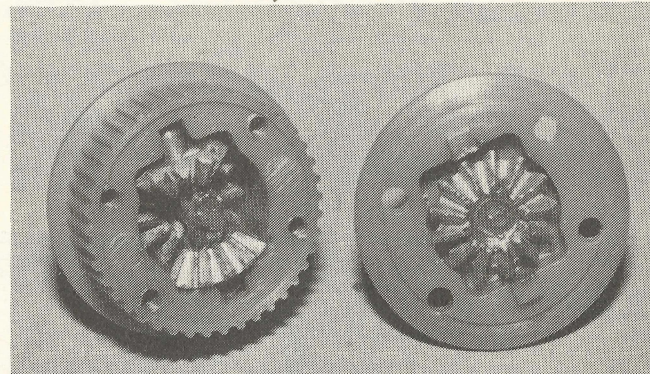
The resistor type speed controller included in the kit box was duly fitted although an electronic type controller is my usual preference. This controller is fitted with diodes to drop the voltage from the Ni-Cad pack so that the receiver can be wired in directly, this allows you to get rid of the receiver battery pack an extra weight of 4-5 ounces. My only worry in doing this was the knowledge that Japanese R/C car enthusiasts only run four minute races. If the gear ratio was too high for our style of racing (five minutes) then there could be a danger of losing control early as the Ni-Cad pack lost its power.

The body shell remains the only item left prepared, before actually getting the car moving. The body supplied in the kit can only be best described as interesting. I think its supposed to resemble a *Honda*

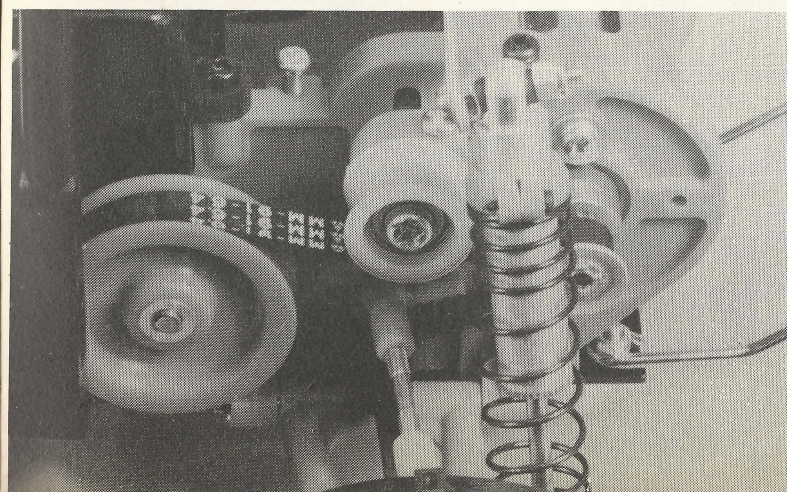
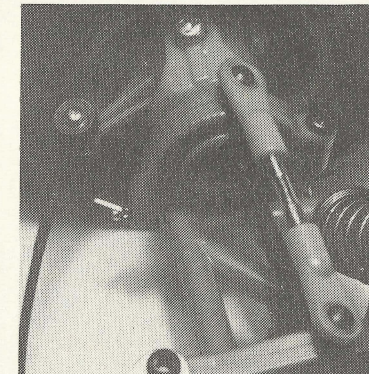
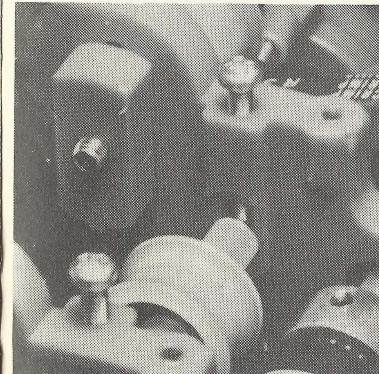
Rock'n'City...

Get to grips with Four-Wheel Drive using the latest in 1/10th electric Off-Road racing machinery from *Hirobo*

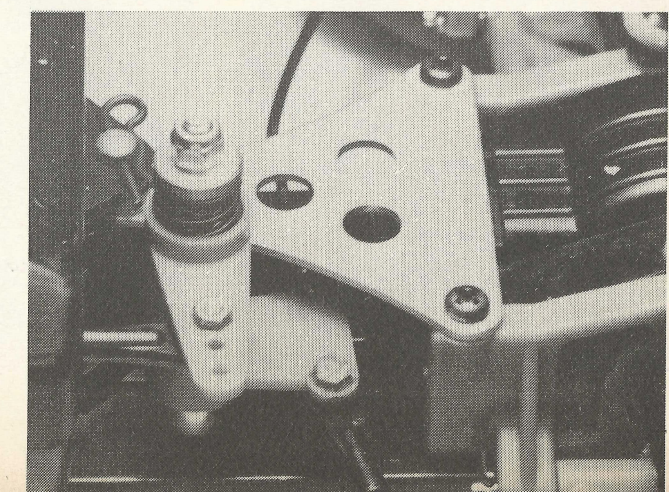
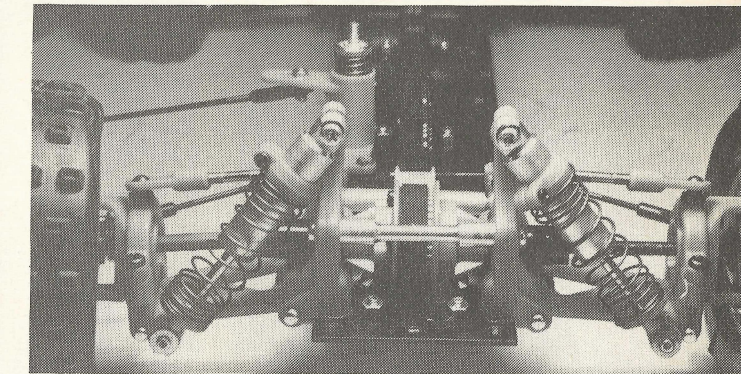
Bottom: the rear belt tensioning pulley system comes pre-assembled by the *Hirobo* factory. Below: inside one of the differentials, showing alloy cast gears.



Bottom: the motor to main belt transmission system. The centre pulley can be moved up and down to vary the belt tension. Below: left the main belt tensioning screws. Below left: front steering and drive shaft system.



Bottom: adjustable *Hirobo* Servo Saver sits to one side of the main chassis. Below: head on view of the front end, drive, steering and suspension set-up.



Track Test

'City' or something similar, to be honest I thought it looked like an upsidown lunchbox, still an alternative polycarbonate 'racing body is available as an extra if the kit item isn't to your liking.

Setting Up

The instructions suggest that a little prudence should be exercised before launching the 'City' onto the track. This takes the form of setting the car up on a wooden block and checking that drive is being transmitted to all four wheels, and in particular the front wheels as the steering is applied. If all is well (and it should be) then a further charge to the Ni-Cad pack is all that separates you from the real test.

Out on the Track

Even though everything had checked out on the bench I still resisted the temptation to push the car too hard early on. The extra complications of a four wheel drive system suggest that a little running in is necessary particularly for the differentials. With five minutes of tooling around over and done with, an extra Ni-Cad pack was installed and off we go.

Depending on your previous experience with other cars and racing in general the 'Rock 'n' City'

may appear to be slightly sluggish off the start line, and out of the corners. This is to be expected of course as there is the extra complication of a 4WD to be gotten over. Nevertheless once up at top speed the 'City' should hold it's own against the more conventional competition, certainly weight is not a major problem as in kit trim, the 'City' comes out at a respectable 3lbs, 12ozs with plenty of scope for further lightening work to be carried out. Apart from that, a full compliment of ball-races and a well prepared motor will add to the 'City's' pace.

On handling side the 'City' exhibits some interesting Characteristics not the least it's incredibly stable and easy to drive nature on any surface. The super soft suspension really

irons out the bumps and makes for a very smooth ride indeed, in fact the belt drive is so smooth and quiet that you can hear the armature whizzing around inside the motor can!

However, the 4WD aspect does pose problems not the least understeer which is particularly noticeable at high speeds, the front wheels tend to straighten up as power is applied resulting in a wide turning circle. On tight corners this problem is totally reversed; if you lift off from the throttle too early the front differential takes over sharply and the front wheels 'dig in' bringing the car to an almost standstill and prompting oversteer. This effect is quite noticeable on a fast circuit as the soft suspension causes the front end to 'dip' quite dramatically. The only real

way to get over this is to get used to it and learn to gauge the speed properly in and out of the corners.

On a hard and fast surface, 4WD is probably not the best way to go, however, if the track is loose slippery or bumpy (and in this country it's usually all three) then a definite advantage can be expected.

As far as reliability is concerned, once again there are good and bad points to be noted. On the plus side the drive system and all its ancillaries have proven to be faultless. However, the suspension systems, in particular the front end, has a few problems. As we mentioned earlier the front steering blocks are held into an injection moulded clamp, unfortunately a hefty sideways knock to the front wheel will cause the

steering block to pull-out quite easily. Basically the simple clamping arrangement is not sufficiently robust enough and has to be modified in some way. Fixing it in permanently with 'superglue' is one way but this will lose you the castor adjustment. Perhaps the best method is to fit, two small tie-wraps around the two components to keep them together.

The drive shaft sockets also need to be fitted with small foam rubber cushions to keep the shafts central as the suspension moves up and down and so lessen the chance of a shaft popping out. Whilst you're at it wind some brightly coloured insulating tape around the shafts so that it can be easily seen if you lose one.

Another reliability improving tip is to

place washers over all the steering and suspension ball-joint connectors to stop them popping off.

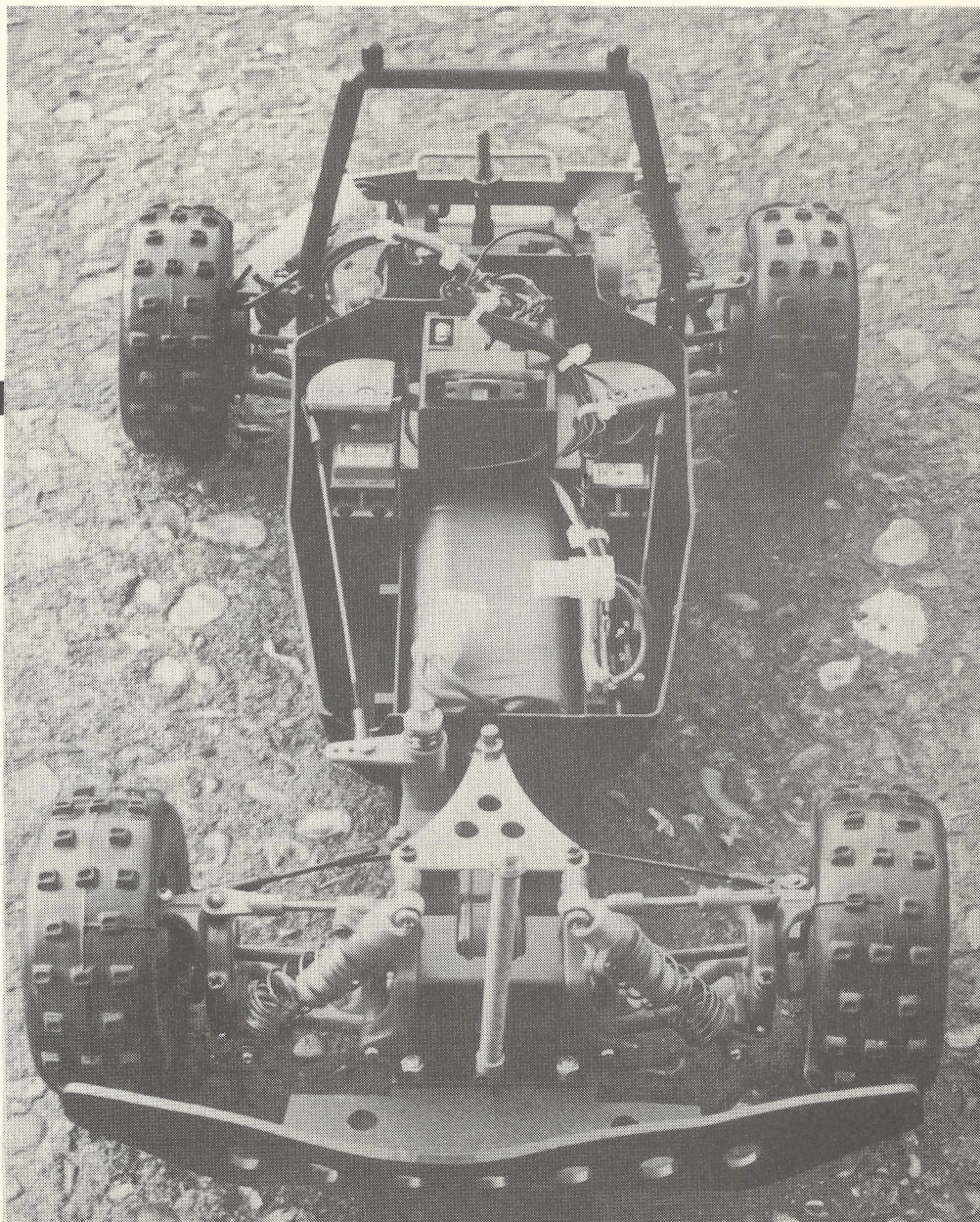
Finally, I have heard from other Hirobo owners that the suspension mouldings tend to be rather brittle and will snap. Unfortunately I cannot comment on this as I haven't broken one. Nevertheless I will say that anything will break if you hit it hard enough!

Conclusion

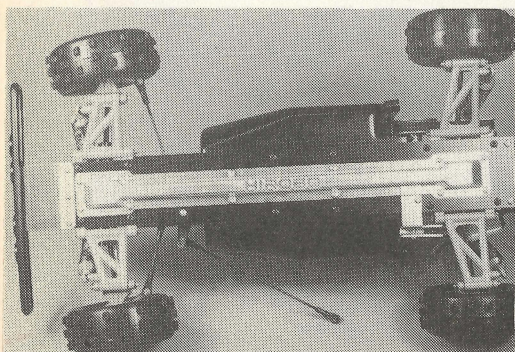
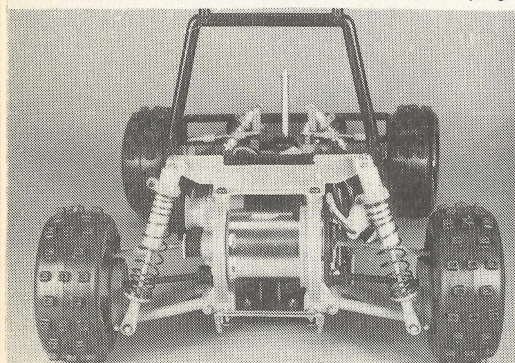
In my mind this is one of the most exciting R/C Car kits to come onto the market for some time not just because it is fourwheel drive but also because it offers the dedicated enthusiast plenty to work on and experiment with, whilst still remaining an ideal choice for the first time buyer. I'm sure that this racing season will see an interesting, extra dimension added to our racing scene as experimentation takes place. 4WD cars have proven to be superior in the 1/8th scale I.C. class and with a good driver on the sticks this fact can be mirrored in 1/10th scale racing. Certainly, you get a lot of car for your money and when comparing the contents and prices of other commercially available products a cost of £98.00 for the Hirobo 'Rock 'n' City' doesn't seem too bad.

U.K. Distributor, Dave Nieman Models, 34 Watford Road, Sudbury, Wembley, Middx.

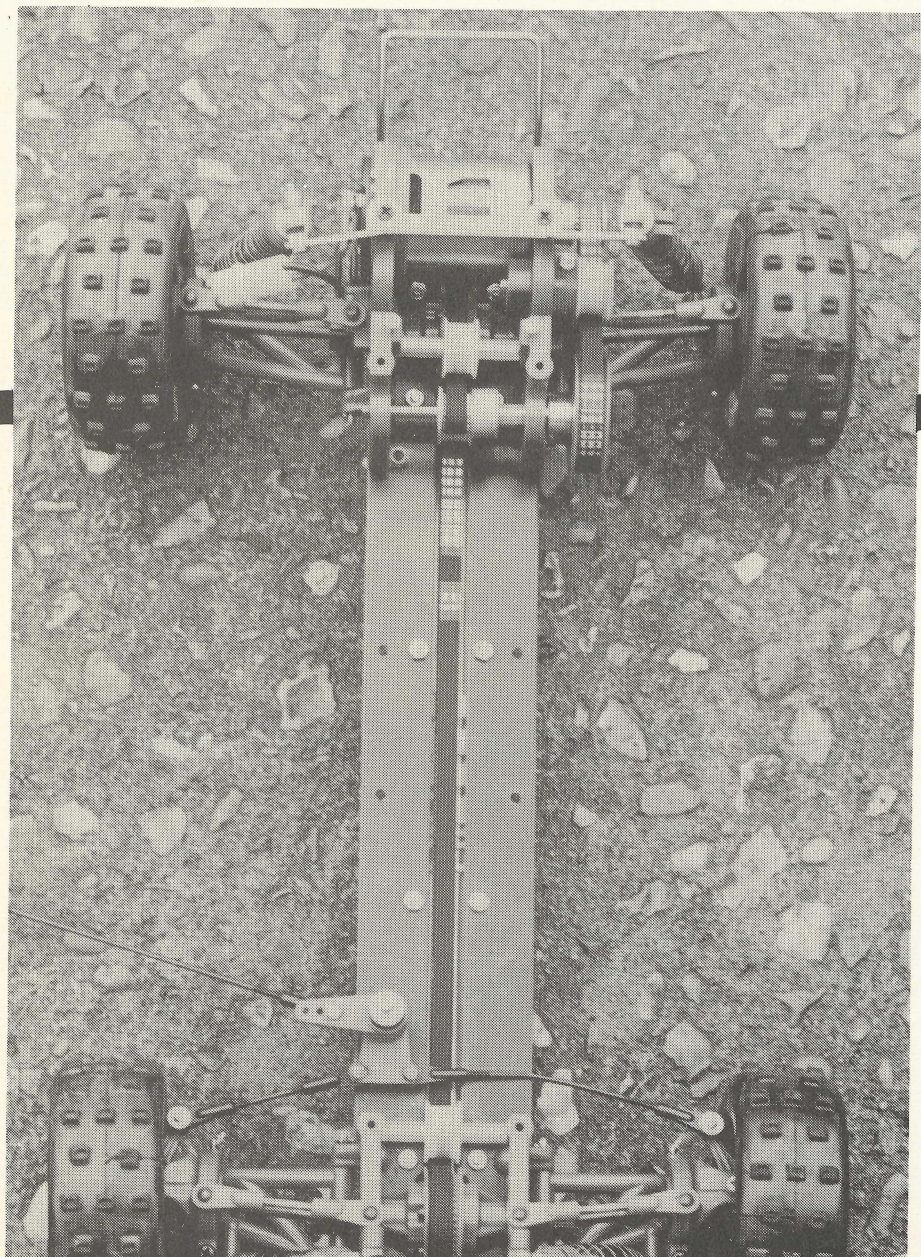
Below: the completed Rock 'n' City ready for the track. Hirobo Importer Dave Nieman Models can supply a range of racing accessories as extra.



Bottom: the chassis underside showing the full-length protective 'spine' for the main drive belt. Below: the Hirobo rear suspension with long stroke coil-over shockers for maximum damping.



Below: the Rock 'n' City minus the radio crate and showing the complete, full length belt drive system.



Below: the well thought out and spacious Vac-Formed R/C crate. R/C linkages are supplied in the kit but Ni-Cad pack is an optional extra.

