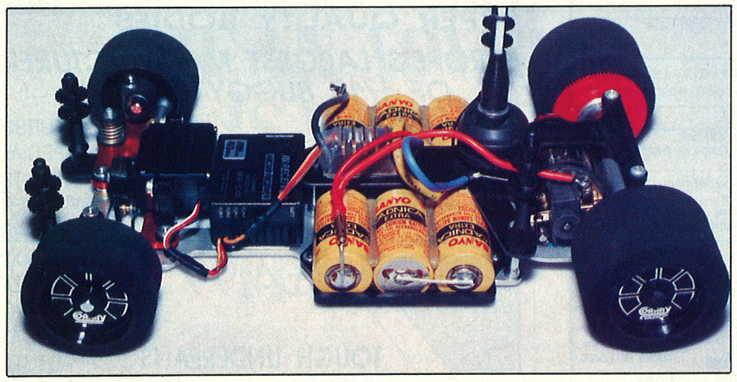
Corally SP12

Chris Evans' detailed review of the Corally SP12

It must be well over three years now since most of us first had a glance of one of the first Corally cars in the hands of Matt Ford (National champion Stock and Modified in 88/89), and it certainly caused a stir with its exceptional high quality and design.

The Corally team have never stopped working, testing and developing the car and certainly this effort is now paying off with the results obtained over the past eight months or so and its large number of followers. So it was with great delight that I received my car for review.

This was going to be a kit review with a difference as on opening the handsomely presented box, one finds the rolling chassis in a built form, virtually ready to go with a compact manual and a few other bits and pieces including a hi-torque screwdriver for the majority of the chassis screws. Like I said the car comes 99% ready to go, even with glued and trued tyres, and only requires the fitting of radio gear, electrics and bodyshell of your choice before you can hit the track!



All ready to go.

The Corally SP12

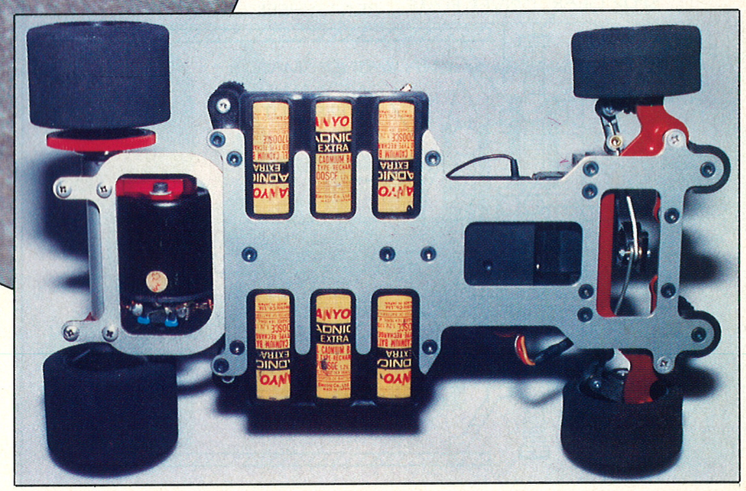
The basis of the car is a super high quality chassis made of Coral which is a hardened lightweight metal that has equal strength characteristics in all directions, unlike layered materials such as graphite and glass reinforced plastic. This gives us a chassis that will not weaken with time and hence will give a consistent performance.

At the front end we have a one piece suspension wishbone system mounted to the chassis in four places with a spring mounted above each side of the car to adjust roll rate, but the basic design gives for a very firm front end indeed with little suspension travel. Caster can be easily adjusted by placing washers underneath the front beam pivots. Corally suggest that if the front tyres wear more at the outside of the wheel than at the inside then you can place one or more 3mm washers under the front pivots to give extra caster, but this is not normally necessary unless on some very high grip tracks.

The kingpins are screwed into either end of the wishbone onto which the steering arms ride. There is also space on the kingpin to place three nylon washers in various positions above or below the steering arm to vary the degree of ride height (Fig. 3) with everything being held in place by a plastic clip.

These clips, that feature elsewhere on the car, are best described as a plastic 'E' clip but are far more easy to fit than the ones most people will have encountered on the Schumacher and Associated cars. The steering arm holds two bearings that the front live axles run in, on to which the wheel is fitted, again secured by one of those plastic clips. The steering arms already have the ball joints fitted which are superb items, being smooth in operation from the start.

Positioned just to the side of the



Underview of the car.

rear wishbone mounts we have two nylon post to which the servo is bolted. For this job I chose a Futaba FP 132H servo married with a Kimbro servo saver. The only job to finish the front end was to fit the trackrods. The two track rods were fitted to the servo saver at one central point and then they run out to the ball joints where the degree of toe in and toe out can easily be adjusted. One point to watch is that the linkage which runs along the longest side of the servo is mounted on to the servo saver first. I did find that at full lock though I was getting some binding of the steering but this was simply removed by putting a very slight tweak in the track rods.

At this point you notice that there is quite a bit of play in the steering mechanism, generated around the centre pivot for the track rods but this is normal and required for consistent handling.

Before we go on any further you may ask, "why centre point steering?". Basically a car cornering fast has little weight on the inside front wheel. The maximum angle between the wheel and the actual direction the car is going in, is smaller than that of the outside wheel which has more load. If the angle becomes too big, the wheel drags instead of rolls. The centre point track rods give the inside wheel a smaller angle in relation to the outside wheel, than a normal track rod system would give and therefore gives less drag. (Fig. 1).

FIG. 1

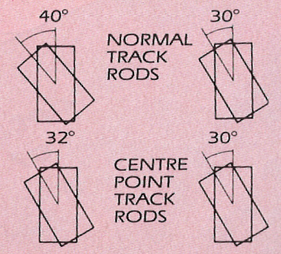


FIG. 2

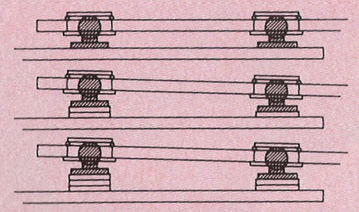


FIG. 4

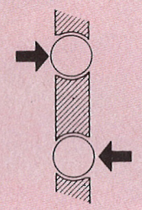


FIG. 3

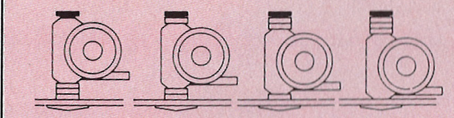
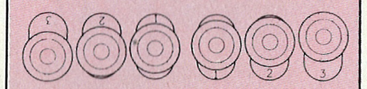


FIG. 5



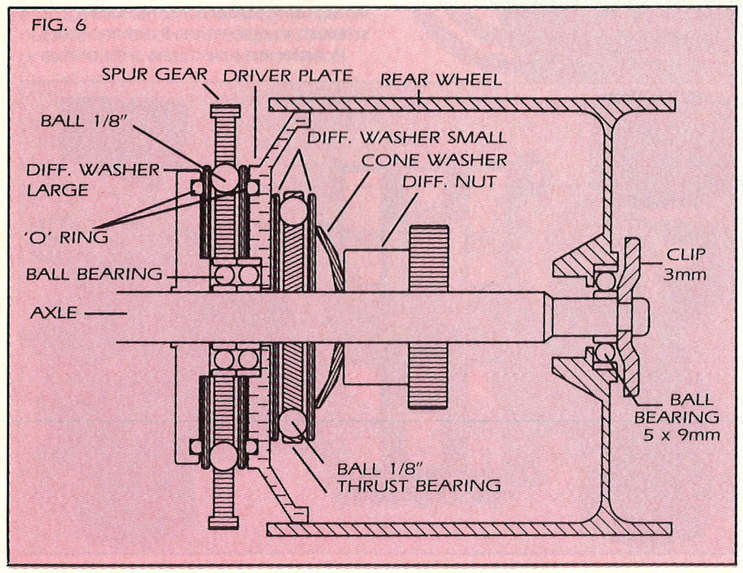
Moving towards the rear of the car we come to the T-bar arrangement. Most of the cars produced to date have been supplied with a graphite T-bar but later models as with the kit supplied now come with a Coral derivative. The pivot balls that the bar rocks on are bolted to the chassis and the ball cups which enclose them, being moulded in two halves, are held around the balls when the T bar is fitted, with the T bar being finally secured with two heavy duty 'O' rings.

Either side of the T bar we have space for fitting of the nicad battery holders. The idea is that for every set of nicads you use you have a set of battery holders, into which you can superglue your cells, the holders then bolt directly to the chassis. Above the T bar we have a small graphite shaker plate supported by three alloy posts. This is for mounting the rear body posts, rear damper arrangement and of course the speed controller. On this occasion I decided to use my tiny Gale Force Tornado unit but most prospective purchasers will no doubt opt for one of Corally's Motor Management Systems.

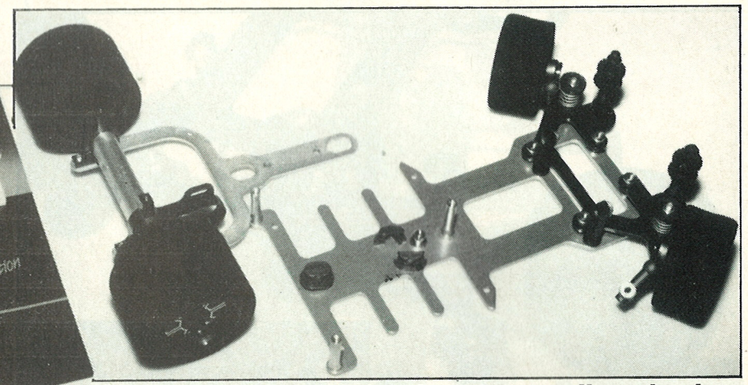
The rear end has a torque tube which is held onto either side of the T bar by two mounts, with the right hand one encompassing the mount for the motor. At each end of the torque tube there are three sets of inserts to hold the rear axle bearings and these can be alternated to give six ride height options (Fig. 5). A 7mm graphite axle rides in the bearings with a superb 'in the wheel' ball diff. This differential uses an 'O' ring system to grip the drive rings which means no more super glueing the drive washers to their bosses! (Fig. 6). The spur gear provided was an 81 tooth 0.5 module unit, fitted with twelve 1/8th balls. Six of the balls are put in from one side, six from the other and this means that the gear runs very true indeed with no sideways wobble (Fig. 4).

To the top of the axle mounts we have the damper plate which runs forward to the damper arrangement mounted on to the shakerplate. The

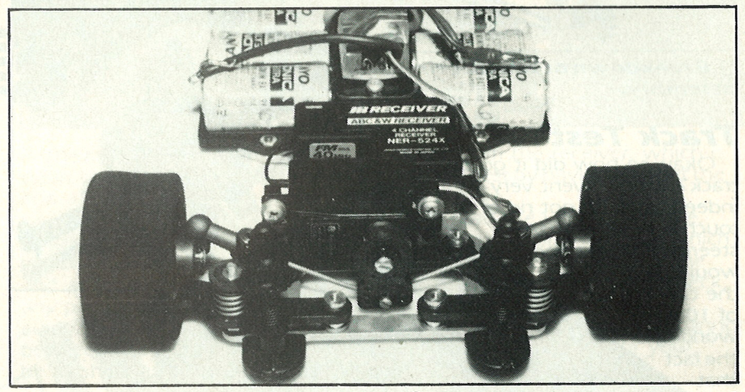
FIG. 6



The excellent instruction manual.



Breakdown of the chassis and rear roll mechanism.



Close up of the front end.

idea is that two damper washers are pushed against the damper plate by a spring but this mechanism in the SP12 is enclosed by two rubber gatters which enclose a silicone damper fluid to give a highly damped rear end. Normally you don't have to do much to the damper, but from time to time it is best to take it apart and clean it thoroughly. Mount it again and put some damper syrup in it so the inner system is completely covered by a layer of syrup, but do not fill it completely. The damper action should be checked periodically by removing it from the rear pod and moving it by hand in all directions to check for a continued smooth action.

The final job was to fit the roll mast to the top of the damper arrangement and to run the receiver aerial up it, being secured by three 'O' rings.

With everything fitted the next job was to carry out a bit of fine tuning. At the front end the degree of toe in and toe out needs to be set. Basically with all my cars I never allow any toe out but allow a very tiny amount of toe in or none at all. Corally also aim for a very neutral set up with their procedure for doing this as follows:

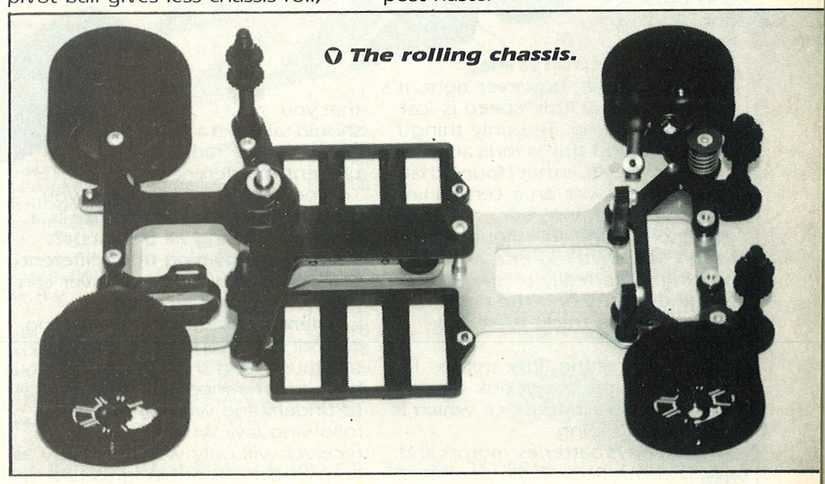
Place the car sideways on a table so it rests on the side of the rear and front wheel. Unscrew the set screw of the trackrod pivot ball at the side that rests on the table. Press the front wheel flat on the table and tighten the set screw again. Now turn the car around so the other side is on the table and adjust the track rod in the same way.

The one noticable feature of the SP12 is the lack of tweak adjustment. Basically with a very sturdy chassis linked to a very firm front beam with a free floating rear end the car is virtually tweak free.

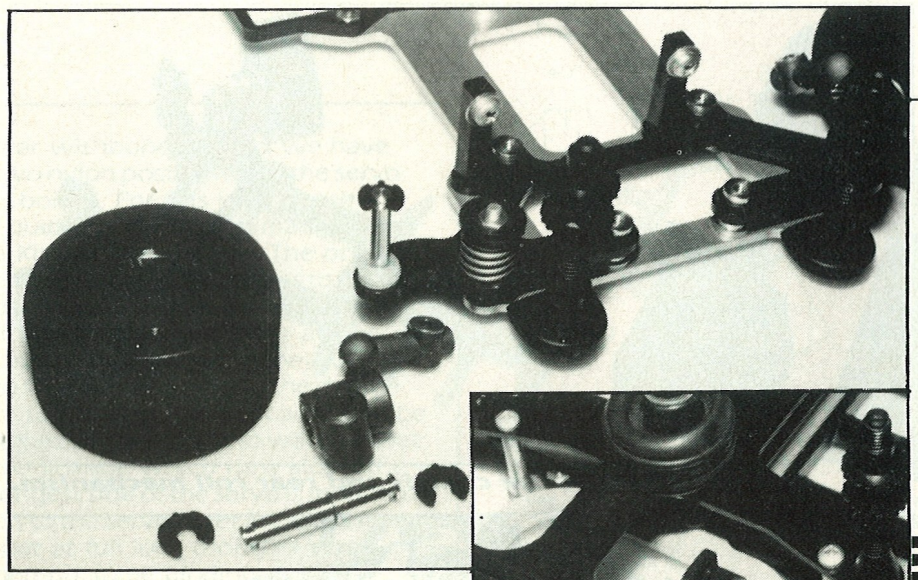
Adjusting the car further

The standard position of the T bar, i.e. with the balls mounted directly to the chassis is ideally suited to most tracks and generates the most amount of grip. On tracks with more grip you alter the height of the T-bar pivot balls and the angle of the T-bar. Two washers under the front and one under the rear pivot ball gives less chassis roll, giving more response to the steering. On very high bite tracks you can mount three washers at the front and two at the rear (Fig. 2).

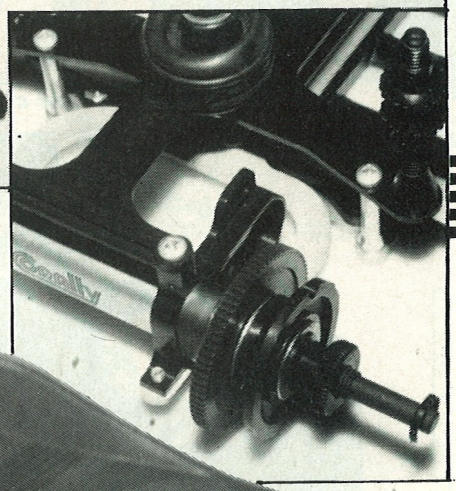
Last but not least was the fitting of the bodyshell. This is the one major item that does not come with the kit so a quick call to Helger Racing (Parma's European Distributors) resulted in a custom painted Osella PA9 Can Am, crafted by Richard Delves, despatched at post haste.



The rolling chassis.



Breakdown of the steering assembly.



'In the wheel' differential mechanism.

Track Test

Okay, so how did it go on the track? Well, it went very well indeed once I'd got rid of a touch of binding on the steering linkages and I would have to give the car 9½ out of 10, which working on the fact that only Bo Derek got 10, is not bad at all!

Once the car is on its line around a corner, however tight, it's noticeable how little speed is lost during cornering. The only thing I didn't like and this is indicative of my driving style, is that I found that once the car was on a certain line into a corner it was very hard to get it to change line slightly. Sorry I can't say anything else as there's nothing more really to say as building is easy and the car is superb on the track. Well done Corally!

One interesting little snippet in the back of the handbook was a little note on interference which is worth mentioning.

Nowadays batteries, motors and speed controllers are so powerful, that you should take extra care with the radio to prevent interference.

To understand interference, you must realise that interference is a matter of adding all the bits of interference coming from different sources together. The receiver can handle a certain amount of interference without you noticing it, until the interference becomes too much, and then you suddenly have interference. To make it easy to understand we can give the following law which is 'your receiver will only work properly as long as the signal being picked up by the receiver contains approximately less than 20% interference'.

These are the following notorious interference sources:

Motor.
Battery.
Speed Controller.
Battery Wires.
Static Electricity.
Damaged Crystals.
Radio and Receiver not tuned in together.
Interference from other radios.

All these things give a bit of interference. As soon as the total of these interferences exceeds 20%, you will have interference. Changing one of these interference sources might cure your problem, but sometimes its not enough.

Suppose your crystal is damaged, and it acts as an interference source. When you change the crystal, and you also have a bad motor which gives lot of interference, you will say "it's not my crystal, I've changed it and it's still the same."

Changing only the motor might also not be enough, but changing both might do the trick. This is what makes interference problems so difficult to solve.

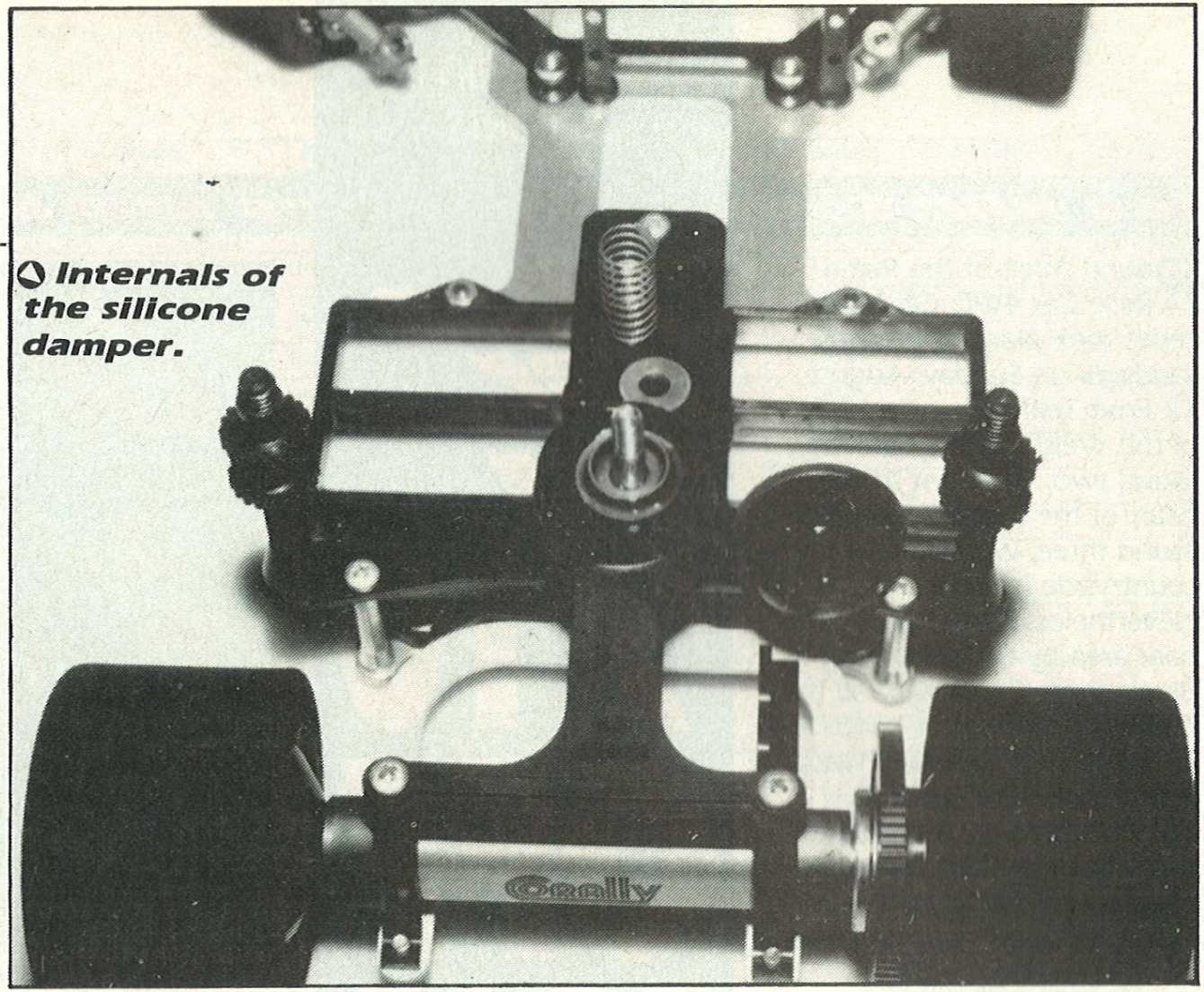
Therefore make sure that all the things to minimise interference are done, so when something happens that gives you more interference,

your equipment can handle it.

As a rule, you must keep the radio equipment as far away as possible from the motor, batteries, speed controller and wires.

We get good results by placing a shield between the receiver and the battery wires. This shield must be made from a type of metal that can be attracted by a magnet, so no silver paper should be used. This must be mounted to the receiver in such a way so that the receiver cannot see the battery, the wires or the controller. Sometimes if you have big interference problems, turning the receiver through 90 degrees might help.

Special care should be taken with the aerial wire. The aerial itself should be positioned as far away as possible from the interference sources. If your aerial is too long, do not wind it up, but cut it the length you need. Wrapping it up makes a coil of it, which influences the working of the receiver. The best thing is to have your radio equipment checked by professionals who can re-adjust your receiver to operate with a shortened aerial.



Internals of the silicone damper.

The motors you use must have a clean commutator, good brushes and must be fitted with three capacitors. The wires between the battery, the controller and the motor should be as short as possible and as far away as possible from any part or wires of the radio equipment. Especially the wire between the saddle packs should be as short as possible, and as far away from the receiver, which is usually best by having it under the radio tray.

Crystals are very vulnerable. They can be easily damaged which can cause interference in some cases. This is very difficult to check, but replacing the crystals sometimes helps when you cannot find another solution for your problems.