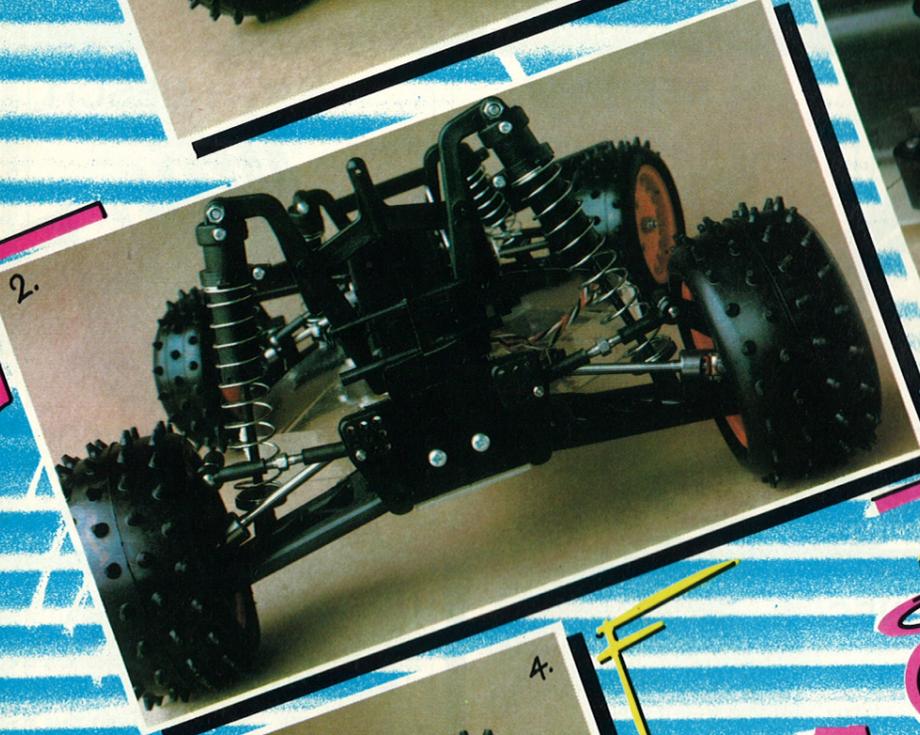


Competition off-road racing is like a pendulum; every so often a car comes on the scene that becomes a winner and sets the trend. The two wheeled drive associated was a good example of this about two years ago when virtually every competition was won by an RC10 in one form or another. Occasionally the odd highly modified Hotshot or Optima got in amongst the Associateds and showed that four wheeled drive could be competitive. When Schumacher produced their early Cat, this too won the odd competition but it never

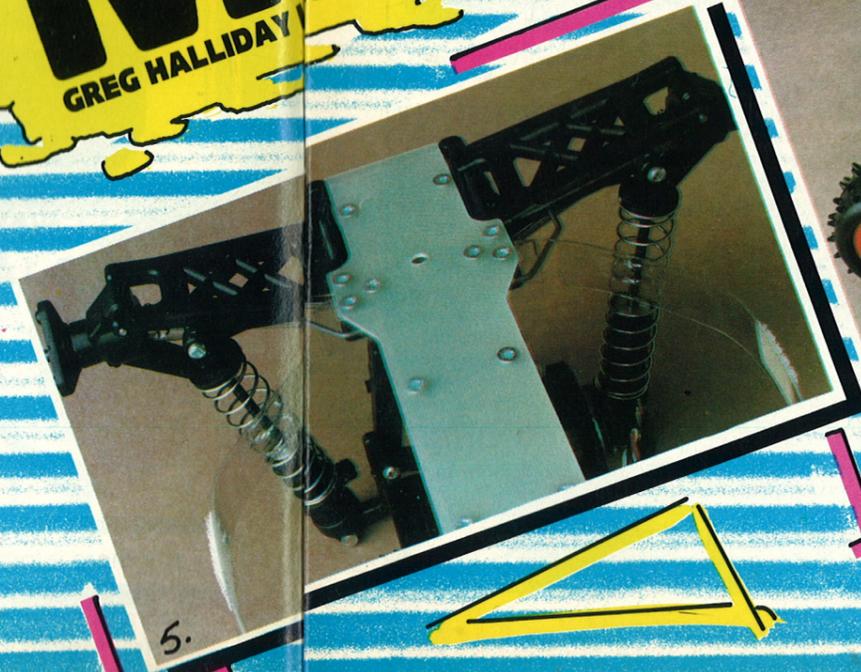
1. PB's new universal rear driver shaft.
2. Close up shows off the nine position fixing points and those clever adjustment rods.
3. Steering assembly could benefit from ball joints on the tie rod but overall the set up works well.
4. One way roller clutches and universal joints are shown clearly here.
5. New wishbone design is tough and durable.
6. The rolling chassis complete with lexan undertray to keep even more of the mud out of the works.



# MAXIMA

looks at the new 4wd contender from PB the Maxima

GREG HALLIDAY



really dominated the scene. Then, right at the end of 1986 the PB Mini-Mustang appeared and seemed an instant success. People who saw this car competing at the Model Engineer Exhibition were very impressed and many immediately put their RC10's up for sale and ordered a PB. Within a few months competitions were being dominated by the Mini-Mustang — the pendulum had swung! However, Cecil Schumacher had constantly been developing the Cat and with the advent of the long wheelbase XL version, he really showed the potential of his brainchild. Yes, the pendulum swung again and now virtually all the really keen racers drive Cats.

Of course, PB have never been a company to rest on their laurels, and they too have been developing their design. Well, now at last the new car is available and it's called the Maxima! Will this be the car to swing the pendulum in 1988?

### So What's New

First of all, don't get the impression the Maxima is just a slightly modified Mini-Mustang. The product appears about 80% new and all of the problems areas previously complained of have been redesigned. Mind you, there is really nothing wrong with the Mini-Mustang for the club racer, but when you are competing at top level you must have the best handling car.

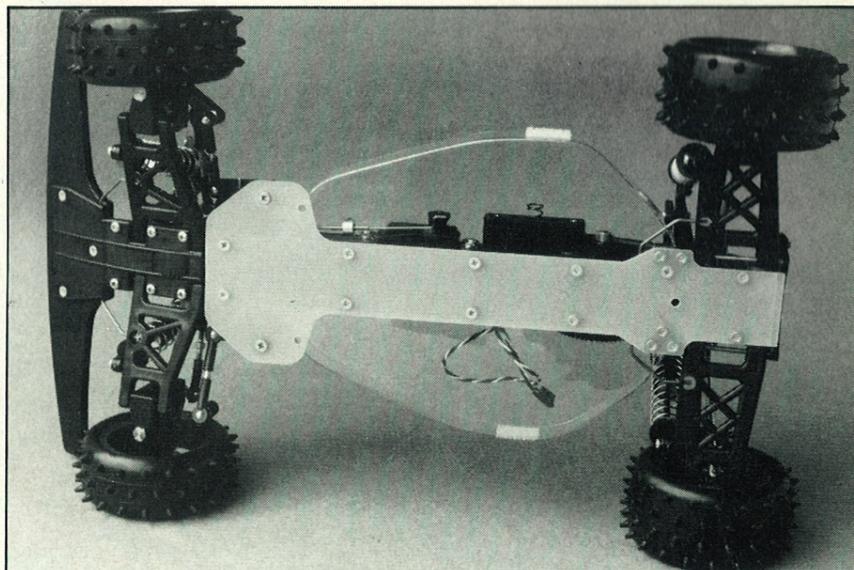
The major criticisms of the last model were a 'skittishness' on the rear end and understeer on the corners. Well, the new Maxima comes with a fully adjustable suspension system incorporating rear end castor, that should control the rear and a new universally jointed transmission system which, along with the revised front layout, is claimed to allow 22 degrees more lock in each direction, plus the ability to use wide rear wheels and tyres on the front — if that doesn't get you around the corners, nothing will! So the major criticisms appear to have been answered, now what about the details of the other modifications?

### Faster?

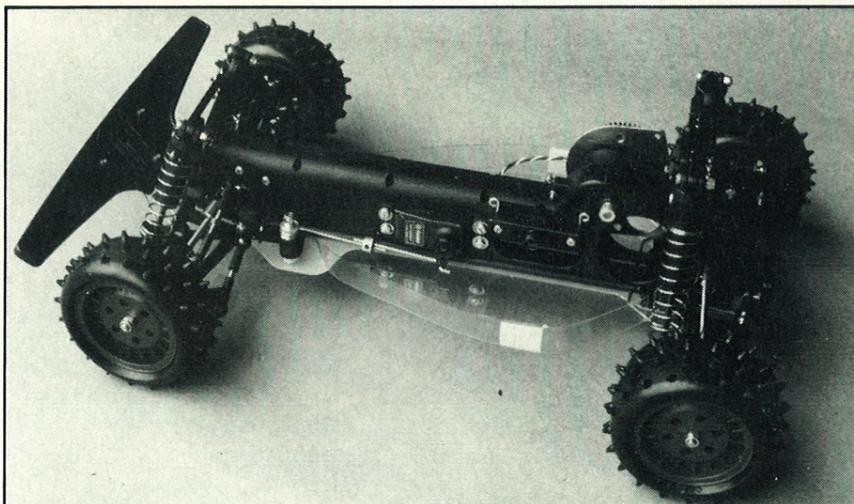
First of all the transmission is claimed to be some 20% more efficient than any other car currently available and 26% more efficient than its predecessor. The Mini-Mustang was always a fast car so that is quite some claim! A new fine pitch belt (or mini pitch as PB call it) is driven by the motor through a belt tensioner, now ballraced, to front and rear geared differentials. The drive-shafts are ball ended on the chassis side, with beautifully made all-metal universal joints on their outer ends. One way bearings come as standard on the front and naturally the rest of the car is fully ball raced. Surprisingly the tyres supplied in the kit are hard Cat spikes, possibly a case of: "If you can't beat 'em, join 'em"! Another claim of PB's is that the new transmission efficiency enables gearing up by as much as 2-3 teeth on the drive pinion whilst still maintaining the same battery duration — that's also some claim.

### Smoother?

Now let's analyse the suspension modifications. The mouldings are appreciably stiffer than before and quite a lot of the components looked to me as if they are formed in glass filled nylon, which is extremely tough and strong. (Servo cases are normally made of this material). Gone are the very flexible upper and lower wishbones to be replaced with a nylon cross-braced



Above, new skid plate and undertray are evident in this photo. Below, the rolling chassis shows how different and how new the Maxima really is.



lower and fully adjustable metal link type upper. This means camber can be set to your liking. I particularly liked the right and left hand threaded rod top link as this enables in-situ adjustments; by rotating the nut shaped centre it either expands or contracts dependant on the direction rotated. The rate of camber change can also be set by repositioning the top link inner ball joint fixing in any of four holes at the front, and nine holes at the rear. There is an adjustment for two ride heights obtained by moving the location of the front and rear shock absorber tower fixing screws. Incidentally these towers are much stronger and more rigid than the previous type, as are the bodyshell mounts. It is interesting to note the wheelbase has also been extended in line with current trends, and front and rear anti-roll bars are fitted as standard.

The four shock absorbers are as before, but the geometry is entirely different with the top mountings being further out from the centre line of the chassis which enables a more vertical and better acting location. On the front lower wishbone three alternative shock absorber fixing holes are provided and this is increased to five holes at the rear. These, coupled with the ability to

harden or soften the suspension with the spring collars, permit the car to be set up for virtually any track or driving style. Incidentally, the Maxima's front spring rates are different to the Mini-Mustang.

### Cleaner?

Having re-designed the operating bits PB weren't going to put it all under one of their original bodyshells, so they have produced a new one — the Bee-Jay. This shell may not be the prettiest around (people say beauty is in the eye of the beholder) but it is extremely practical. It is of minimum dimensions to get all the equipment inside and is provided with a full polycarbonate undertray to keep the muck out. A large fully adjustable rear wing (or aerofoil) is also supplied. I particularly liked the position of this wing being mounted high up out of the turbulence created by the bodyshell. It's in a location where it should really work. A nice touch is that the wing wires are pre-kinked to hold them in the mount.

### Hints And Tips

Most of you who will build the Maxima will probably have built a few cars before,

therefore I don't propose to take you through the construction stage by stage. However, you may find the following points useful if you do decide to become a Maxima owner.

The plastic parts are packed in bags still containing a small amount of water (this was used to 'cure' the nylon) and removal some time before you require the components saves lots of kitchen roll being used for drying! Our parts didn't have a lot of flash on them so some time was saved not having to bother with this chore. When constructing the differentials make sure you rub down the backs of the small planetary gears on wet and dry paper or the assembled unit won't work smoothly. I also had to slightly ream out some of the pivot pin holes. Make sure you also ream out the two holes in the front upright carriers so that the king pin bolts revolve smoothly. Quite a bit of plastic had to be removed on our car and even then the axle block did not rotate as smoothly as I would like to see. Perhaps the gap between the carrier is a little wide and would help.

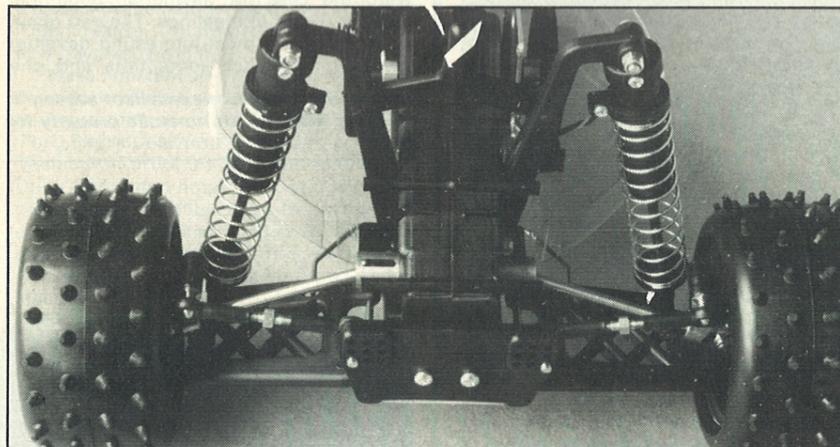
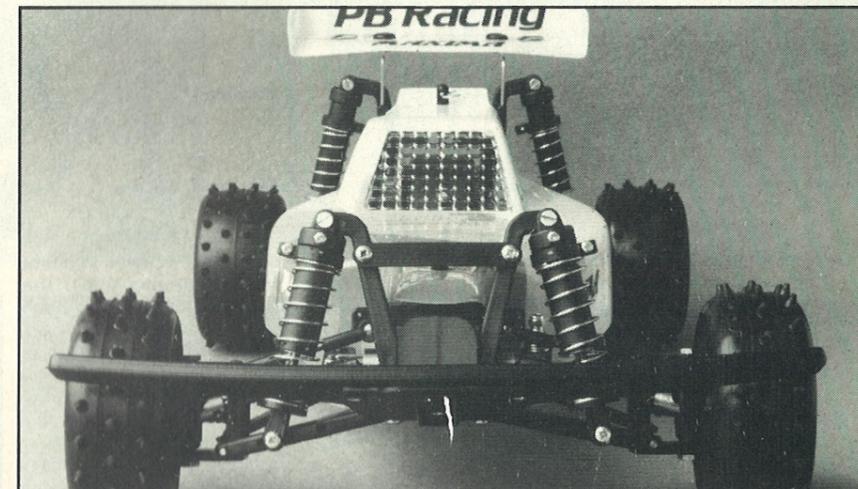
Make sure you put a lot of pressure on the steel ball joints when driving them into the plastic or the threads will not be cut properly and will strip. Take care when pinching the ball joint cups and with pliers as it is possible for the cup to jump off the ball and be crushed. Don't cut away a lot of the chassis spine when installing your servo. If you are using a Futaba 131, cutting the back off the grommets will allow the servo to sit further into the spine and then

only a small amount of plastic needs to be removed on the opposite side for the wires. (Don't use the Futaba brass ferrules either). The right hand rear shock absorber tower/wing mount fixing hole needs drilling right through the moulding, and I was unable to shorten the front shock absorbers below 75mm; PB say the overall dimension should be 74mm.

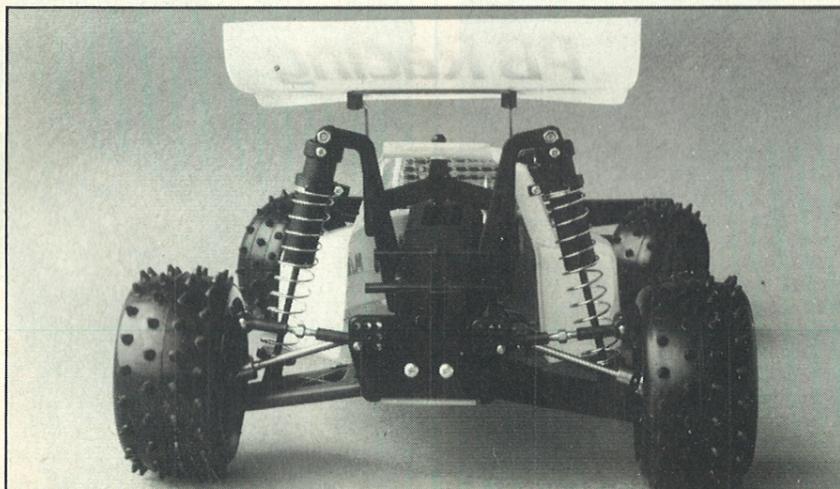
One very important point specified in the instructions is to ensure the front and rear drive shaft lengths are correctly set and altered when you change the camber angles — if you fail to do so this correctly, the con-

sequences could be either shortened suspension travel on the rear, or possibly damage to a one-way bearing on the front. PB suggest you carefully chamfer the top of the shock absorber pistons with a modelling knife — this is quite difficult to do, but if you put the piston on the rod and very lightly clamp it in the jaws of a mini drill, it is possible to sand it down on wet and dry paper. Use only light pressure though or the piston will revolve on the rod.

Finally, if you want your Maxima to look like the one in the adverts, don't trim the



A range of suspension settings, camber angles and track conditions can be allowed for with the Maximas very complete variable position fixing points.



front of the bodyshell to the line on the moulding as it won't cover the front of the chassis spine. Shaping it as per the ad could also stop dirt and dust getting into the shell. It might also be a good idea to glue some sponge rubber across the spine behind the front body mount to further protect the internals.

### First Impressions

At first the price of the kit seems expensive, but when you consider the extent of the contents and that a Cat XL with a front differential and one-way bearings costs a few pounds more, it's actually competitively priced. I do have one gripe though — an aerial tube is not included!

PB claim the Maxima is for the expert racer and no doubt they are right. With all the transmission modifications, plus an all-up weight of around 3lb 6oz, it's bound to be very quick and with so many permutations of suspension set-up available it certainly looks as if the car should be capable of excellent handling. All who have seen the assembled car have been impressed, so look out Cecil, maybe the Maxima will turn out to be a Cat crusher in 1988!

### Technical Specification: PB34 Maxima

Overall length — 396mm  
Overall width — 249mm  
Wheelbase — 272mm  
Track — 249mm

### Track Test

When a car of this calibre comes on the scene, a few five minute runs at the local track just can't do it justice, so I have enlisted the help of two of the top Welsh drivers, Mark Stockford and Steve Jones, in carrying out a short test programme. In next months issue we'll tell you how we got on.

The Maxima is available from your nearest PB agent, price £199.00.