

# ACES HIGH

## Is PB's latest 4WD off-roader the leader of the pack? Model Cars investigates

**P**B Racing's first competition 1/10th electric buggy appeared in a blaze of publicity as long ago as 1985 after what seemed to be a lengthy period of design and development.

The wait for the Mini-Mustang was given extra spice since another UK manufacturer, Schumacher were also planning a home-grown assault on the

Japanese dominated buggy scene. Even better for race fans was the knowledge that a proposed deal between the two to pool their resources and build a car together had ended after a dispute over the final transmission system.

Cecil Schumacher, a former transmission engineer for Cosworth engineering, obviously felt he knew best and there are few who would

disagree with experience of that nature. But equally so Keith Plested, the man at the controls of PB, could point to the fact that at the time his company was the most successful model car manufacturer in the UK, with a history built on world championship winning technology - albeit in 1/8th scale racing.

So the two went their separate ways leaving the rest of us with endless track-side debate and rumour as to who would be first with the goods and whether it could compete against the best Kyosho and Tamiya had to offer.

In the final event it was PB's

Mini-Mustang which was first past the post whilst Schumacher continued to fiddle with the CAT. PB's new car was an instant success simply because there was nothing to touch it in terms of performance, efficiency and cheap spares back-up. This was a time when buggy racers accepted that reliability was as much up to them to engineer as it was the manufacturer. If it wasn't built-in then you added it yourself without complaint. Against the opposition from Japan however the Mini-Mustang was positively bomb-proof and with spares in ready and cheap supply, kit sales rapidly outstripped demand.

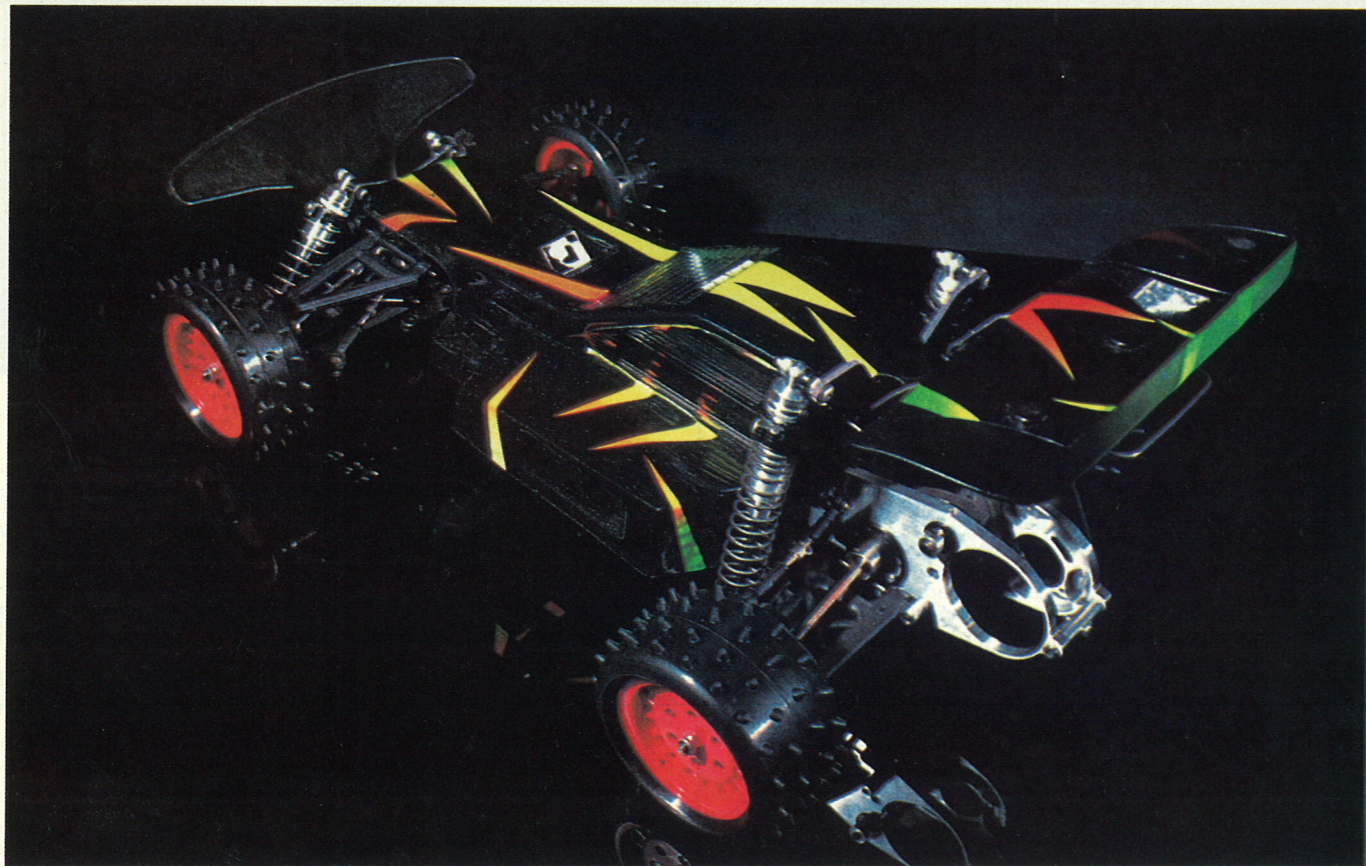
The CAT came out with its radical and idiosyncratic design to quieter applause. It was a pig to build and even worse to set up but in time-honoured Schumacher fashion the team drivers showed that it could win. Andy Dobson won their Reedy International race at Romsey and what had almost looked to be extinction for the CAT turned into another success story for the Northamptonshire manufacturer.

Not surprisingly both companies had placed much emphasis on the efficiency of the drive system, perhaps even to the point of paying less attention to how the car

actually handled. However this factor was hidden by lap times and battery duration levels previously only dreamt about.

As to the relative merits of the two different approaches to transmission, PB proclaimed a single belt system looped around the twin differentials was the only way to go whilst Schumacher believed a three belt set-up was best.

Now in 1989 it would appear that Schumacher was right if we take PB's latest incarnation of the original Mini-Mustang as proof positive. The Ace does indeed now use three belts: one running from front to back and the other two from the top drive layshaft to the rear



differential. Keith Plested is now reported to be claiming that the ACE is the most efficient car in the world which may or may not carry sufficient weight in the competition scene since racing buggies also have to handle a bit these days.

But a CAT-style transmission system is not the only surprise. Having joined the pack on that one PB has decided to hang out its views on where the motor should be positioned. In fact they have decided to hang it out the back in a style reminiscent of the original Kyosho Optima and the venerable Associated RC10.

So once again Keith Plested has decided to go his own way.

Contemporary design thinking from Schumacher, Kyosho, Yokomo and even Tamiya has the motor in front of the rear wheels (dubbed mid-engine) but placed as close to the rear axle as possible so that the weight is effectively over the back wheels.

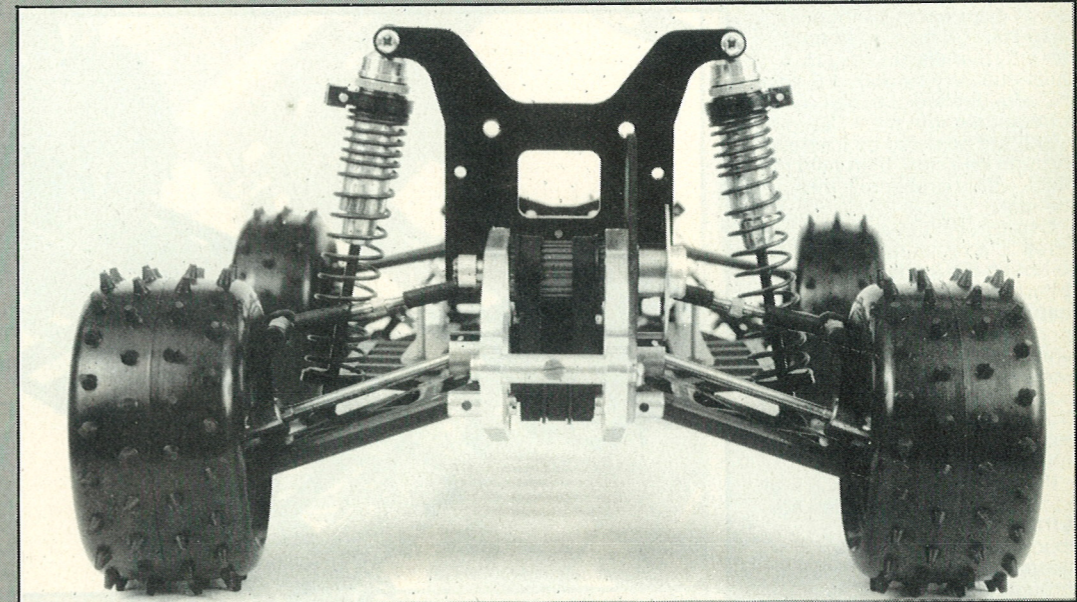
On the ACE the motor is the furthest thing away from the front bumper and protrudes out from the back of the car beyond the line of the rear wheels. So much for contemporary design thinking, particularly when you realise that the CAT, Mid Optima and Dogfighter are the cars that are doing all the winning.

Interestingly it is rumoured that the ACE was to be built with a mid-engine location until a last minute suggestion from PB test drivers, Glyn Pegler and Bill Jones to change the rear engine. Their theory centred around the way in which the RC10 handled bumps using this layout.

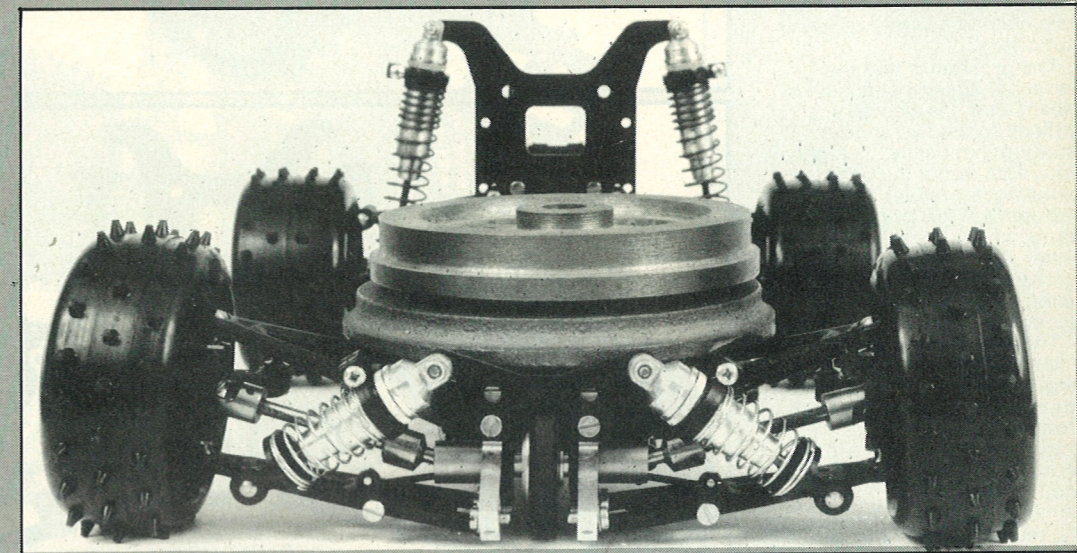
So they tried it - and we have to suppose that it worked reasonably well because the ACE is solidly set as a rear-engined car. PB's notion that the ACE will handle better over the bumps and thus be easier to drive can only be tested on the track but the precedent of the RC10 ensures some faith in the theory.

In spite of surprise at finding the motor so far away from the rest of the car, a fully built-up ACE feels remarkably well put together and purposeful in the hand. It's probably the impeccably machined alloy differential side plates and dampers that catch the eye. Also the ACE is a very uncluttered car with everything on show and easy to get to. This factor spreads itself to the way in which the car is put together, because instead of the very British approach of using self tapping screws to hold everything together, the ACE features tapped screws throughout. This has the effect of making the build and re-build task much easier along with greater reliability since continually fiddling around with self tappers soon destroys the fit of the components.

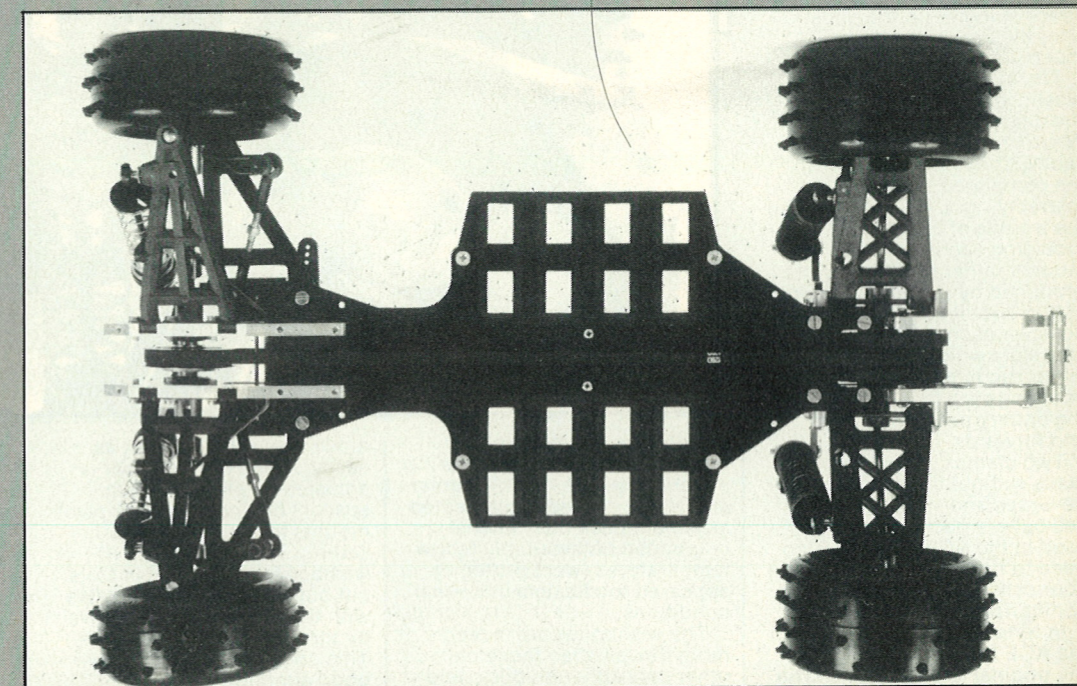
Internally there are some noteworthy features and a few



Above: rear shocks are fitted with progressive rate springs and stand almost upright.



Above: the front shock are laid at approximately 45 degrees - and are fitted with soft silver springs. Below: chassis allows for batteries to be fitted in either saddle or stick formation.



which inspire less confidence.

To start off on a good note the differentials are easy to build and very smooth. PB have included limited slip, ball differentials with the ACE which are adjusted by a screw through one side, then held in place with a grub screw through the other.

Underneath the adjusting screw is a thrust race designed to lessen the loads on the differential ball races. This item features a collection of incredibly small steel balls which should keep the fumble fingered amused (if not exasperated) for some time. The ball races are all very high quality and the ACE kit has a full set included.

If we are taking the good and bad points alternately then now is the turn of the shock absorbers. They look nice in gleaming alloy but all the way through assembly and then when finished do not give the impression of being able to compare against the best that Associated and Option House can offer.

The problem is that the variety of adjustments built in means that it is also very difficult to get two shocks working identically - a highly important factor in consistent handling. Moreover the design features a large air gap in the barrel which doesn't help either. At the top of the damper stroke you can feel the air being squirmed around the piston.

The rear dampers are huge and are set at a near vertical angle from the rear wishbones for maximum throw, whilst the front pair are a more conventional size and are set more splayed out. Both sets are mounted to very chunky damper mounts, in the case of the rear the piece of black GRP is positively agricultural. That said however fitting a mount that stands less chance of breaking rather than something which will give up the ghost after the first roll over is a much better proposition.

The black glass reinforced plastic is used throughout for the chassis and the top deck. When the alloy side plates are sandwiched between the two the completed chassis is tolerably rigid. PB have gone to the trouble of injection moulding saddle pack battery mounts rather similar to those produced by Corally for their 1/12th circuit car. In this case however each mount features four slots which means you can either run eight cells (yippee!) or change the location point of the battery pack backwards and forwards.

Two clamps keep the cells in place without the need for tie-wraps and such like: stick cell battery packs can also be used in the ACE so there is no need to rush out and change all your cells to saddle pack configuration.

In terms of suspension layout the ACE bears a similarity to the original Mini-Mustang. The

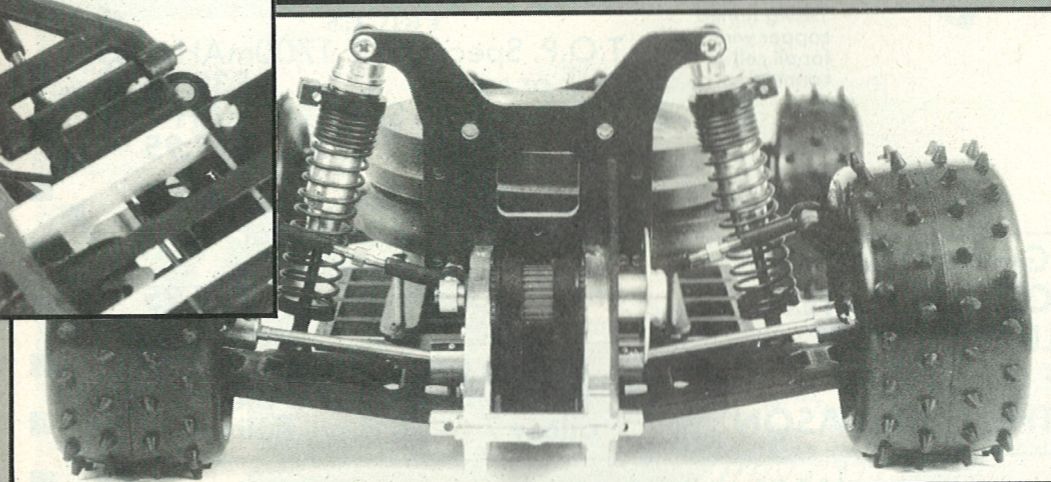
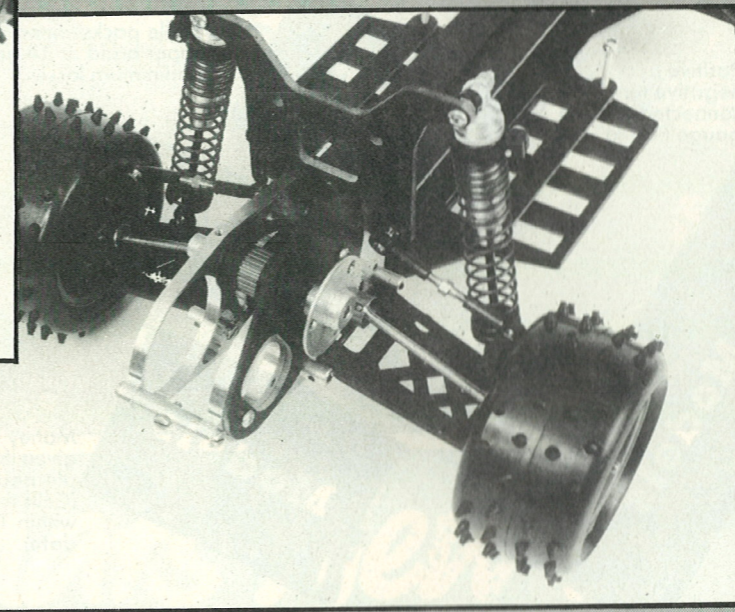
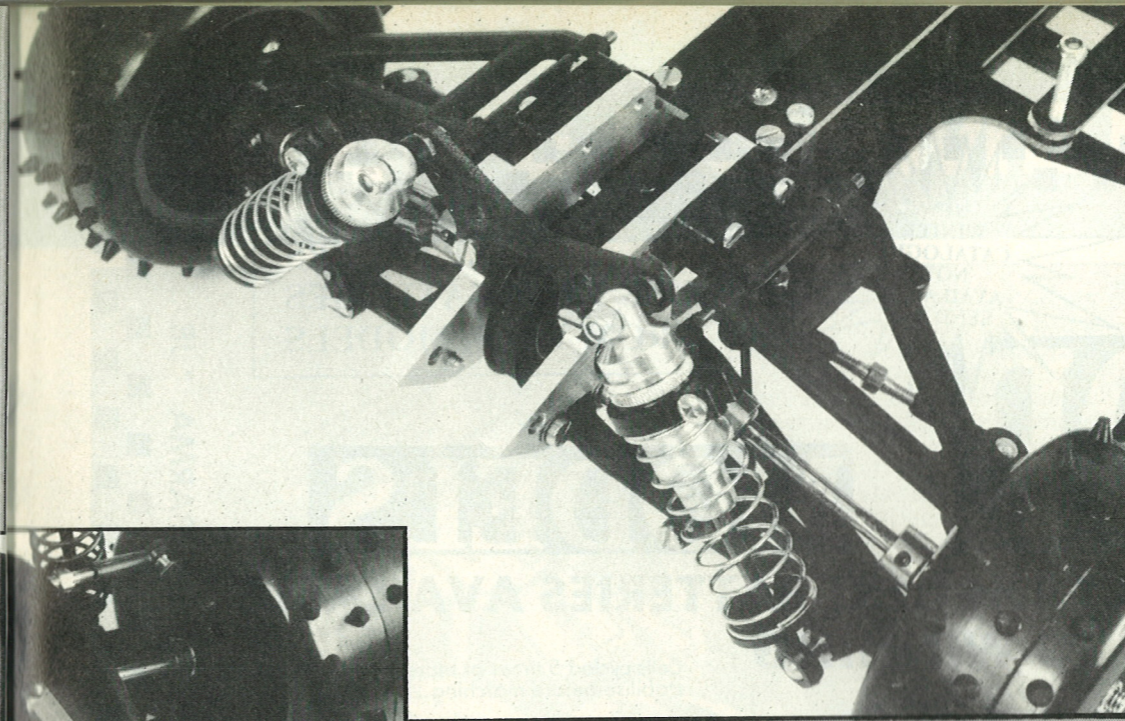
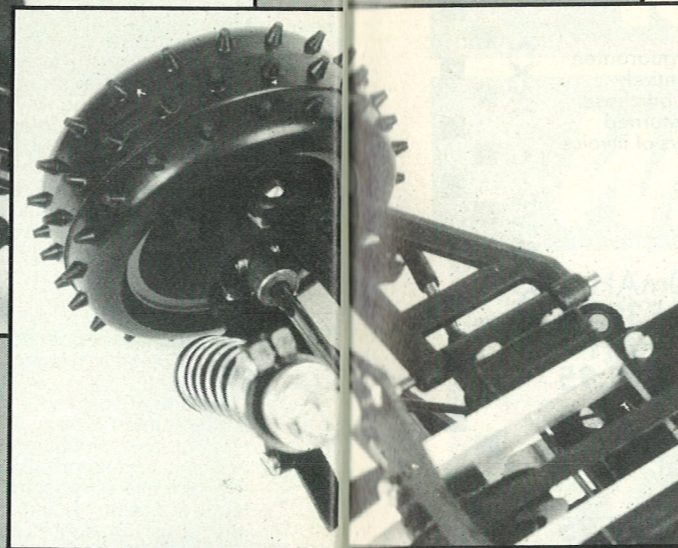
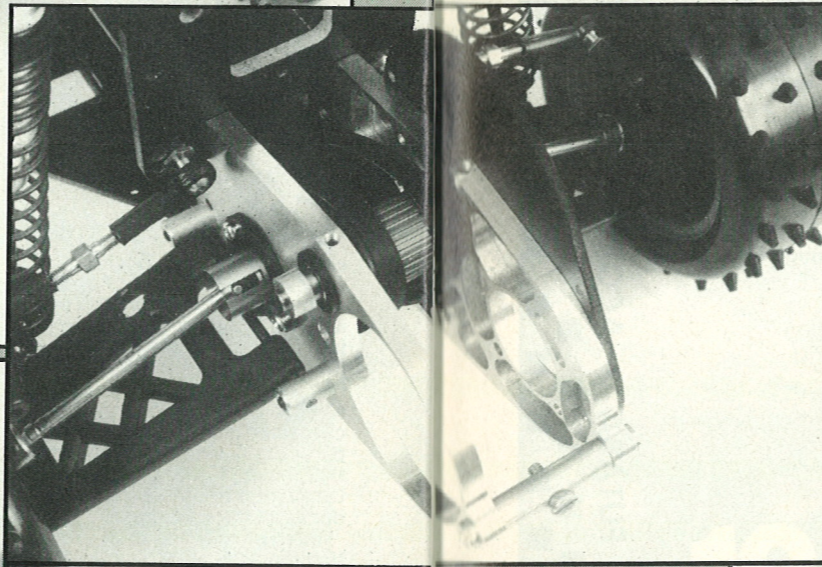
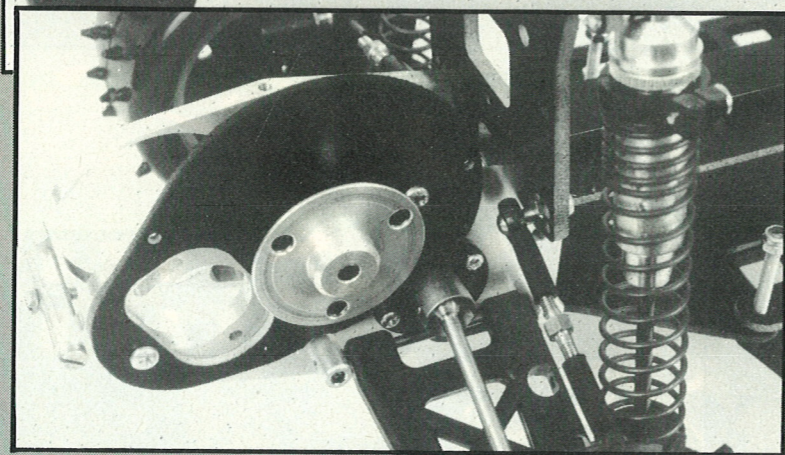
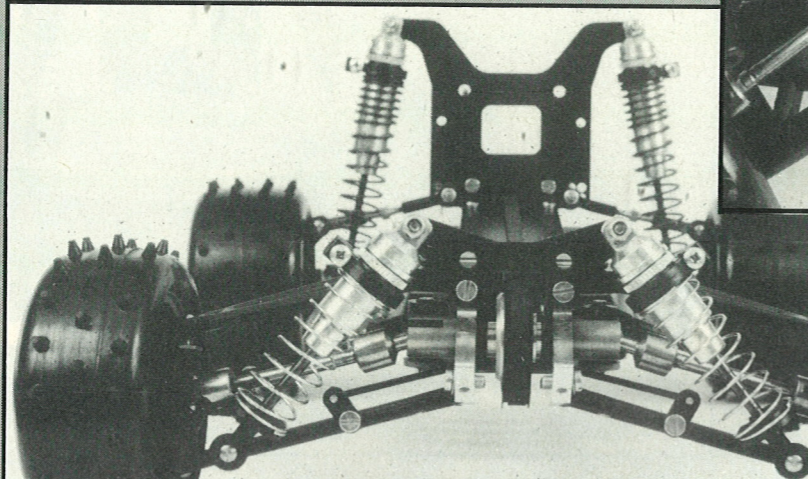
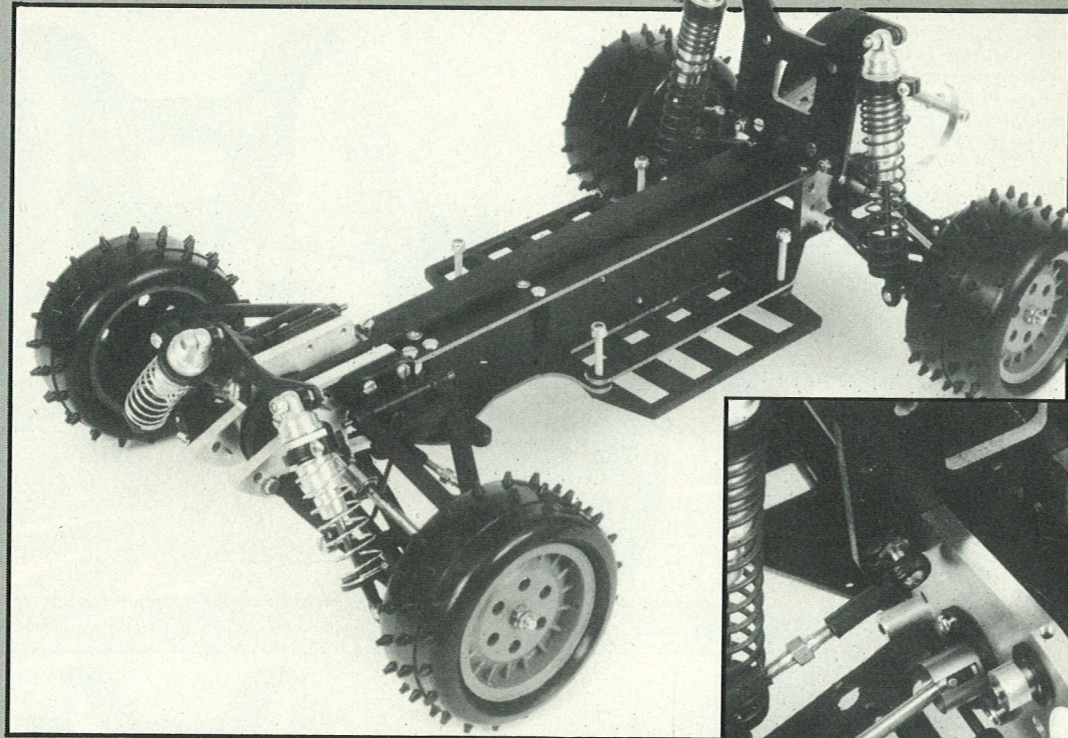
plastic used is a particular reminder since it is the same material used on the forerunner and which caused much heated argument back then when it responded unfavourably to low temperatures (went brittle) or appeared too flexible in normal conditions.

The wishbones are indeed more flexible than those on other cars although this could

mean they will not break as easily. At the front camber is adjusted by placing plastic spacers behind the upper pivot mounts to get the desired setting. The front lower wishbones actually sit in slots cut out of the alloy side plates with the pivot pin held captive by three screws and washers. This doesn't really look very good although so far it has

been impossible to pull them out manually. Hopefully PB have done their testing to the full and at the very least this will not be a major reliability problem.

At the rear both anti-squat and toe-in and toe-out adjustments can be made. For anti-squat the ACE already has a factory recommended setting built-in but it is possible to



raise the front pivot mount of the lower wishbones still higher.

The same points also determine the set of the rear wheels, because by placing washers behind toe-out can be adjusted. With no washers at all the rear wheels point straight ahead (you don't need toe-in).

For the rest of the car PB have included few features to

justify the £199.00 price tag, particularly since the majority of kits these days also include them as standard.

The ACE is fitted with universal-joint drive shafts with an option for the front to fit one way roller clutches. And yes, when fitted they still make the familiar 'clicking' noise which Mini-Mustang owners found impossible to find the cause of

let alone cure.

Both suspension pivots and steering links are threaded left to right with an adjusting nut mid-way so it is not necessary to remove the ball joints to change settings.

The ACE is supplied with 48dp gears, so if you buy the car and haven't got any be prepared to go out and buy some, although it should be

Left: the Ace looks very smart in its alloy and black finish. The adjustable shocks are finished in silver and have adjustable damping. The car comes with PB's own version of the CAT tyres. Note all photos do not show the undertray or belt protective covers.

possible to use more conventional 32dp types.

Perhaps the worst feature is the wheels which are the distinctive PB shade of red which was a common feature of the race tracks back when the Mustang was sweeping all before it. On the ACE however the plastic is just too soft with the result that they flex alarmingly when pressure is applied. By grasping hold of the wheels with both hands they can be distorted by a long way although how much this will affect the handling of the car on the track is debatable.

And that is basically it, apart from the bodyshell which has a shape of sorts - this isn't helped by a lump sprouting from the side to accommodate the steering servo. The protection for the insides of the chassis is an undertray shaped like a wing section which also fits snugly into the Return of the Blob upstairs.

In the face of stiff opposition from the likes of CAT, Mid and Dogfighter it is not enough to have a car which is just supremely efficient. Moreover designating it a club car is no good either since all club drivers want to be Jamie Booth anyway and pick their equipment to match their aspiration not their pocket.

At a price of just under £200,000 the ACE will have to go round the corners as well and do it in style: despite the feelings of Glyn Pegler and Bill Jones the act of putting the motor behind the rear wheels will need to be justified by race results at a high level. It is worth remembering that the MIP four-wheel conversion for the Associated RC10 worked very well - it's just that nobody really took it seriously. It would be a shame if the same happened to the ACE especially as the car feels well put together and strong. There is the other consideration with PB cars which is that the spares are plentiful and cheap - again not the real issue, but something to consider.

If one or two of the top drivers ran with the ACE it would win and perhaps the key for Keith Pledest and PB Racing is to find someone prepared to give it a go.

In the meantime the paradox of the ACE is that if anyone else had built it - it would probably do very well. Let's hope we are wrong, since on this evaluation the ACE deserves to do very well.