

by John Varley

part 1

Even with several European and two World Championships under their belt, PB Products can never be accused of sitting back and resting on their laurels. Keith Plested has always followed a policy of being a front runner in improved design conceptions, and those that work being introduced into new kits. That's not to say that all the ideas work effectively. The regular drivers in top level and club competition have seen many 'different' cars being driven by Mr Plested and team drivers of the day, only to find that they have been shelved under headings such as 'Unsuccessful' or 'needs more attention'.

World Success

Those who followed the recent World Championships, and unfortunately this one will probably be best remembered for its off track controversies, rather than the exceptionally high level of competition taking place on track, will know that David Lecat proved that a well prepared car (in the right hands) can win at top level, virtually 'out of the box'.

I suppose that SG can boast a similar situation, and this bodes well for the punter who can reassure themselves that they are not continually one step behind any team driver.

Fully assembled and ready to go with latest Picco RE fitted.

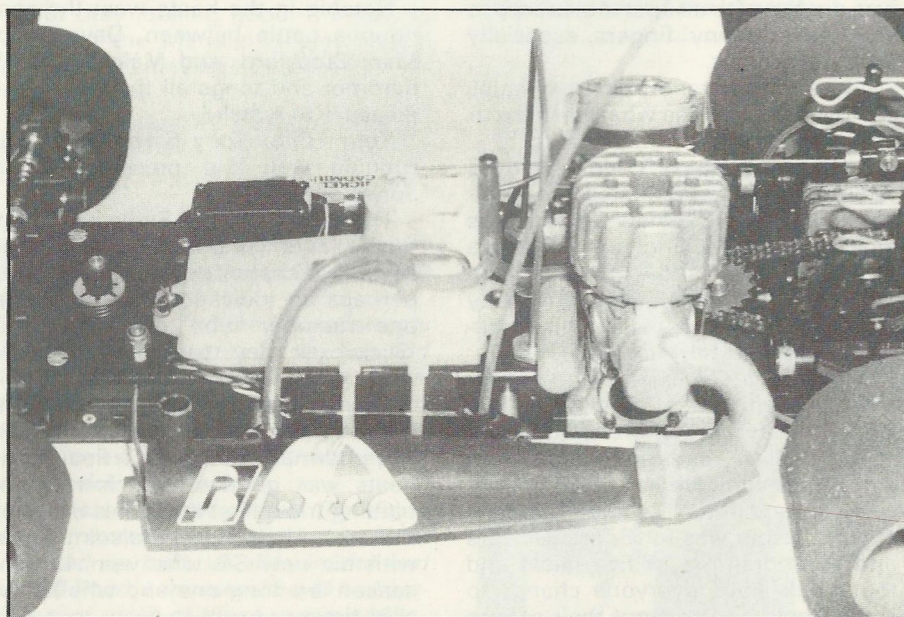
I found it surprising therefore that PB came out with the Nova immediately after their success. This surprise soon tempered to admiration when I saw photos of the finished car prior to its official launch.

As an engineer, I am a great believer in the saying that if it looks right then it's halfway to being right. In this instance, this car did look right, which more than compensated for the fact that even before the wheels touched

the track surface one felt that it would perform right. More however about the car's performing potential at a later date, let us see what we are in fact getting for our money.

Advantages in Design

As one would expect, as many parts as possible have been retained from the Alpha, and major alterations in design have been restricted to the centre chassis section, with updates in



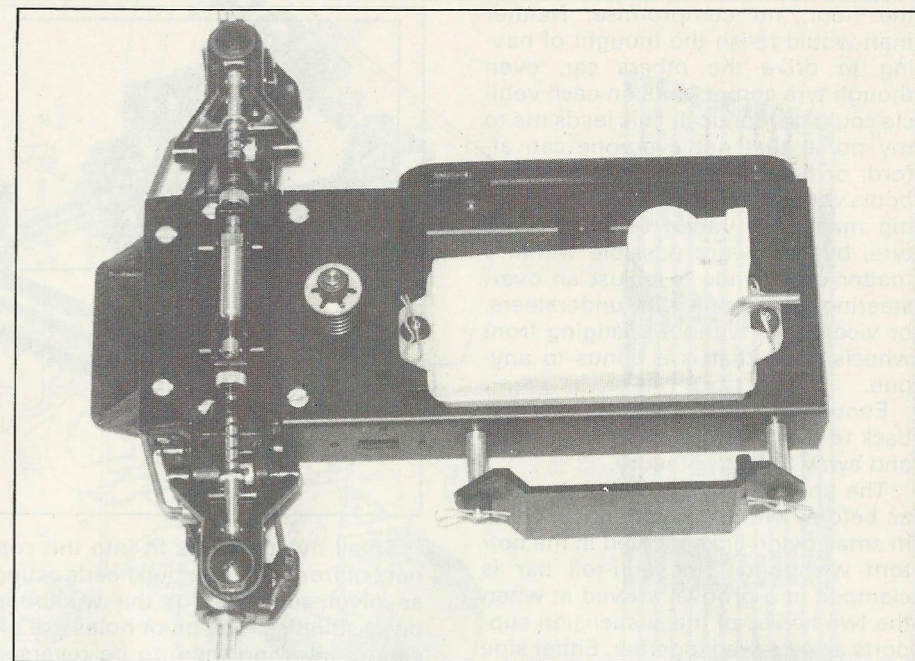
geometry to front suspension, rear braking, body and wing mounts, and wheel location.

The car's design allows for easy on and off track maintenance, because it comes in three easily dismantled sections.

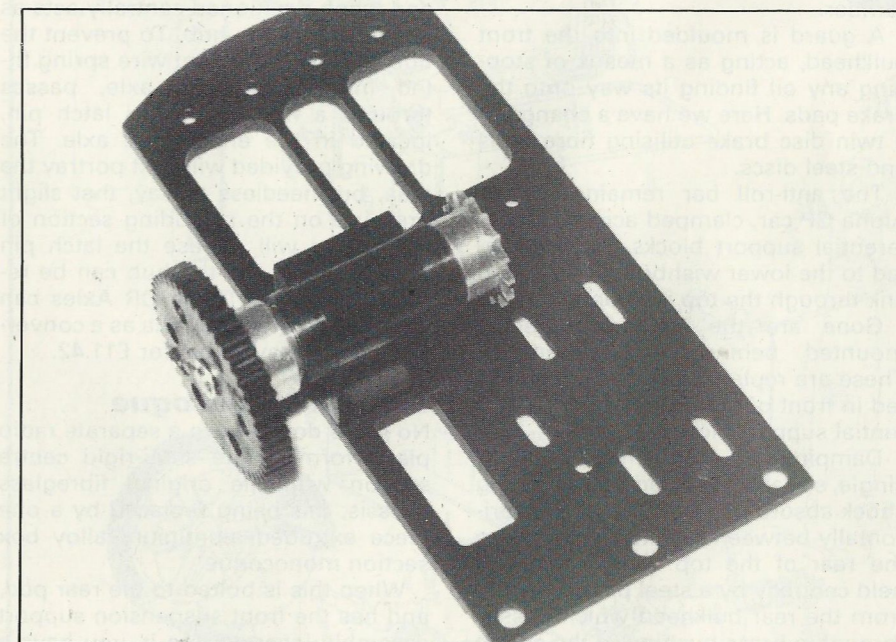
This specific sectionalising of the car help immensely with the initial build up of the kit. Seasoned campaigners, surrounded with a multitude of spare parts, can begin to build up ready to bolt on sections at a moments notice, should they encounter a terminal mechanical failure during qualifying heats.

Front and rear sections could be assembled, with differing suspension geometry, so that comparisons could be made on the best settings from heat to heat.

Conditions on the day, do not always allow a competitor to contemplate major rebuilds between heats, so the advantages mentioned so far, are obviously apparent.



Centre monocoque section with front section fitted.



Rear alloy power pod with layshaft fitted.

Assembling the Nova Kit Front Suspension

Let us look now at the specific changes in design and manner in which the kit goes together, beginning with the front suspension.

Gone are the bulkhead supports of the Alpha car for the top and bottom wishbones, replaced by a two-part nylon moulded assembly, giving a narrow, very tidy appearance to the front end that bolts directly into the centre monocoque.

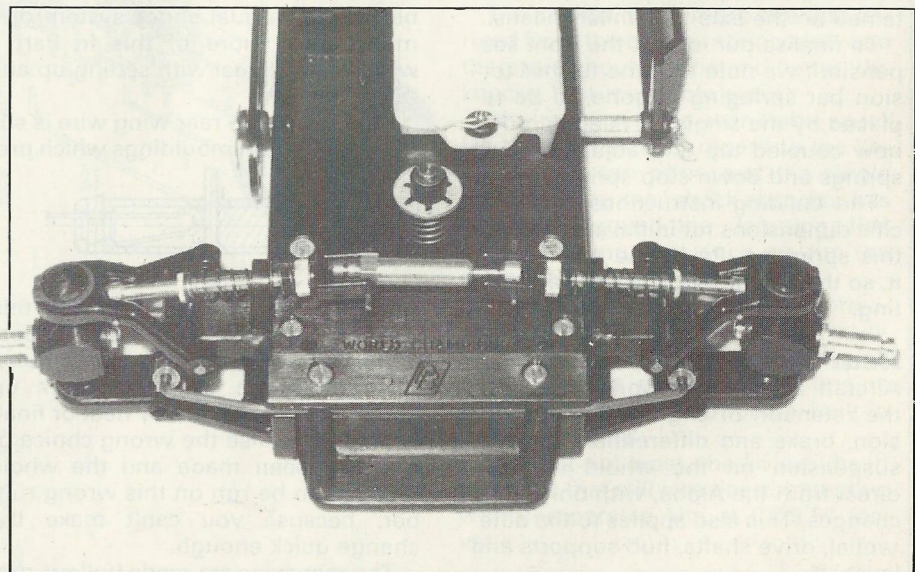
Top and bottom wishbones, axle block, steering arms and circlip retained ball joints remain as with PB's previous car. Small changes have been made to the position of the top wishbone, in that more caster is built

into the front end. I presume this move is to dial out the tendency of the Alpha to have an understeer characteristic, and allow power-on cornering.

Although necessitating further design changes, I would personally like to have seen a quickly adjustable means of adjusting the steering caster.

As with full size cars, each driver likes to set up the car to suit his or her own driving style. For example Jacques Laffite will set up a Williams car that has a slight understeer characteristic, whilst Keke Rosberg will set up an identical vehicle with oversteer, that will only perform best when his foot is either right off or right through

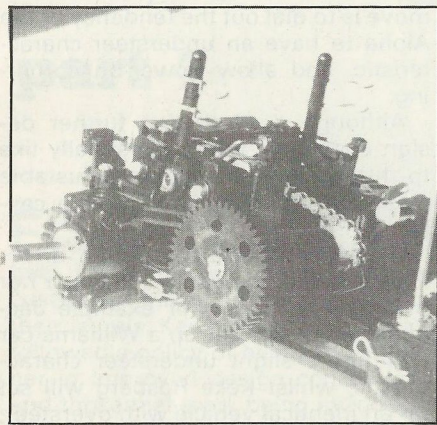
Front suspension detail showing single mono shock, coil springing etc., making it neat and simple to service.



the floor, no compromise. Neither man would relish the thought of having to drive the others car, even though tyre compounds on each vehicle could be identical. This leads me to my point, that not everyone can afford, or has the inclination to fill his boots with numerous wheels comprising many and varied compounds of tyre, but if it were possible within a matter of seconds to adjust an oversteering car to one that understeers, or vice versa, without changing front wheels, then that is a bonus to anyone.

Enough of this however, lets get back to the known facts in front of us and away from the theory.

The anti-roll bar assembly remains as before, with ball joint ends located in small nylon links pivoted in the bottom wishbone. This anti-roll bar is clamped in a groove, arrived at when the two halves of the suspension supports are screwed together. Either side of the block is located a small nylon side plate that allows adjustment to the roll bar, giving a fair amount of stop or a firm clamp.



The almost completed rear end, showing the drive chain and rear wishbones.

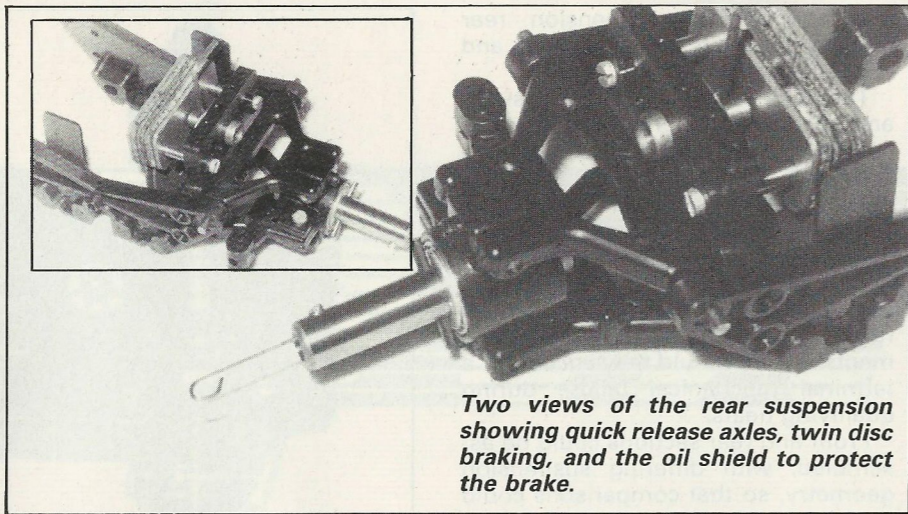
Precision ground stub axles run in roller bearings in the steering block, held in place by circlip with hubs retained on the axle by similar means.

To finalise our look at the front suspension, we note that the former torsion bar springing is gone, to be replaced by the single oil filled damper, now coupled top and adjustable coil springs and down stop springs.

The building instructions give specific dimensions for initial assembly of this springing. Pay close attention to it, so that you arrive at a workable setting.

Rear Suspension

Aircraft alloy power pod is used for the retention of engine, rear suspension, brake and differential. The rear suspension on the whole is taken direct from the Alpha, with only small changes. This also applies to the differential, drive shafts, hub supports and layshaft.



Two views of the rear suspension showing quick release axles, twin disc braking, and the oil shield to protect the brake.

Small nylon inserts fit into the corners of front and rear bulkheads acting as pivot supports for the wishbone pivot spindles. The pivot holes are off centre, allowing them to be reversed to give the rear wheels an alteration in camber.

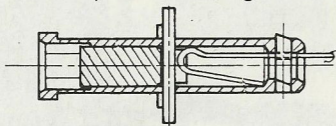
A guard is moulded into the front bulkhead, acting as a means of stopping any oil finding its way onto the brake pads. Here we have a change to a twin disc brake utilising fibre pads and steel discs.

The anti-roll bar remains as per Alpha GP car, clamped across the differential support blocks and connected to the lower wishbone, by a nylon link through the top wishbone.

Gone are the long body posts mounted behind the suspension. These are replaced by small posts fitted in front of the rollbar on the differential support blocks.

Damping is now effected by a single, sizeable, oil filled double acting shock absorber. This is mounted horizontally between brackets screwed to the rear of the top wishbones, and held centrally by a steel pin projecting from the rear bulkhead which passes through a brass bushing in the centre of the shock absorber body. This can be used as a dual shock system or a monoshock, more of this in Part II when we will deal with setting up and racing the car.

The adjustable rear wing wire is still located in nylon mouldings which project



from the hub carriers, and this leaves me with the final revised aspect of the rear end, the quick release hubs.

No more the worrying warm up time before the off in any heat or final, when you realise the wrong choice of tyre has been made and the whole race has to be run on this wrong rubber, because you can't make the change quick enough.

The rear axles are made hollow, pre-

cision ground on the outside diameter to fit through the roller bearing located in the axle housing, and allowing the revised rear hub to be a precise sliding fit onto the axle. A spring tension pin is a press fit through the axle, and when positioned centrally acts as a location for the hub. To prevent the hub coming off, a bent wire spring fitted into the hollow axle, passes through a hardened steel latch pin, located in the end of the axle. The drawing provided will best portray the idea, but needless to say, that slight pressure on the protruding section of the spring will release the latch pin into the axle, and the hub can be removed. — N.B. These QR Axles can also be fitted to the Alpha as a conversion and are available for £11.42.

Central Monocoque

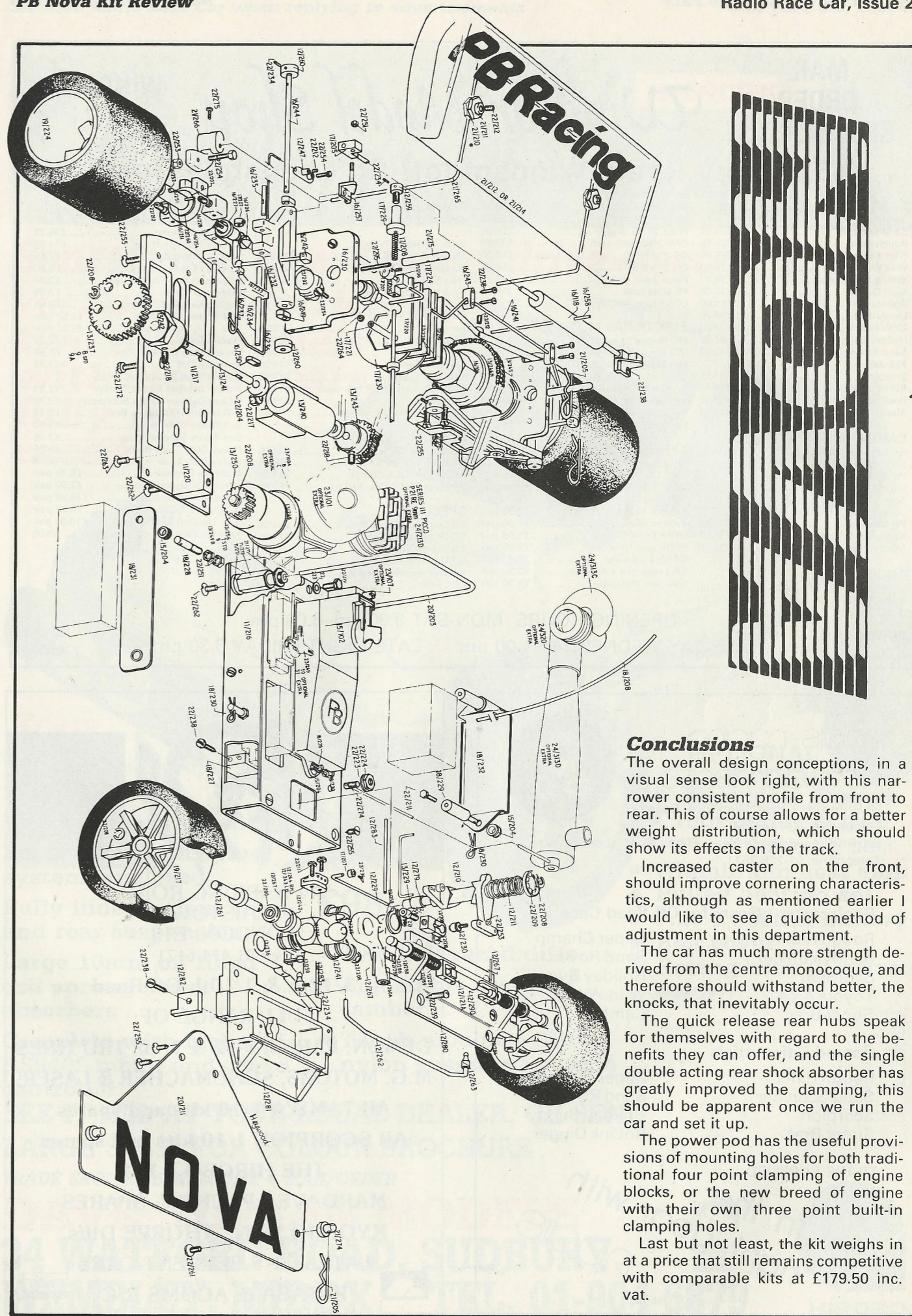
No more do we have a separate radio plate, forming the semi-rigid centre section with the original fibreglass chassis, this being replaced by a one piece extruded aluminium alloy box section monocoque.

When this is bolted to the rear pod, and has the front suspension support assembly inserted into it, you have a very solid chassis, allowing no flex whatsoever. The same principles therefore as a full size racing car.

Provisions are made in the top of the monocoque to locate an unchanged fuel tank, and both servos now sitting together alongside the tank. On the sides a cut-out is provided for a radio switch and aluminium posts allow for suspension of radio batteries and receiver.

To finalise, the roll over bar is now fitted into the two rear pillars that support the monocoque where it is bolted to the power pod.

At this point, we will admit to not having run the car in anger, but with the kit tyres provided, a suitable paint job done in the Lola lexan body and our Picco 21 RE fitted, we will be doing a report, hopefully in the next issue, on the cars performance from a day spent at our Local Circuit.



Conclusions

The overall design conceptions, in a visual sense look right, with this narrower consistent profile from front to rear. This of course allows for a better weight distribution, which should show its effects on the track.

Increased caster on the front, should improve cornering characteristics, although as mentioned earlier I would like to see a quick method of adjustment in this department.

The car has much more strength derived from the centre monocoque, and therefore should withstand better, the knocks, that inevitably occur.

The quick release rear hubs speak for themselves with regard to the benefits they can offer, and the single double acting rear shock absorber has greatly improved the damping, this should be apparent once we run the car and set it up.

The power pod has the useful provisions of mounting holes for both traditional four point clamping of engine blocks, or the new breed of engine with their own three point built-in clamping holes.

Last but not least, the kit weighs in at a price that still remains competitive with comparable kits at £179.50 inc. vat.