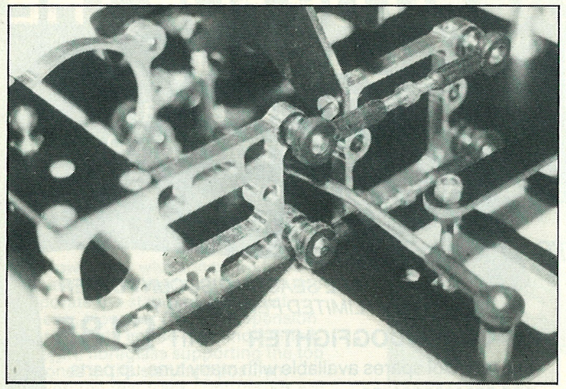
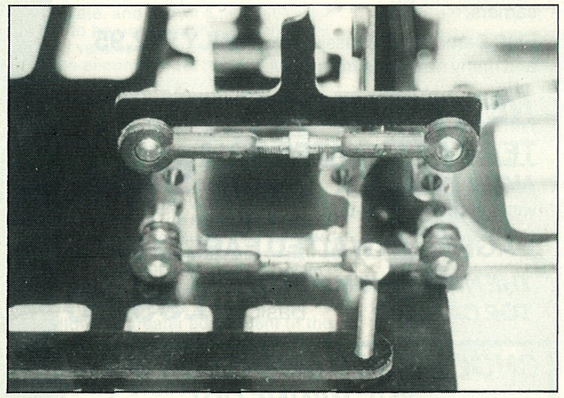
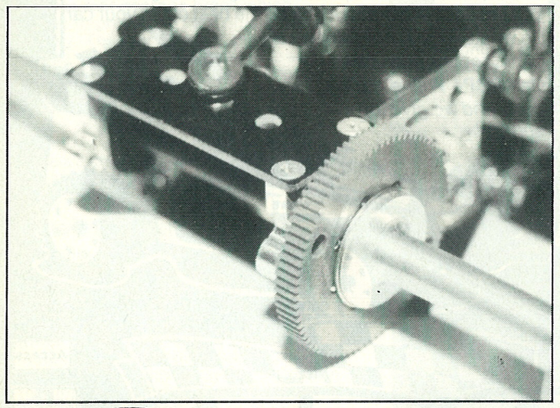


PB's excellent aluminium rear pod bolts together to form a very solid mounting for the motor and rear axle.



The di-Dion suspension works smoothly giving lots of travel. Below: PB's own cut Teflon gears are very good quality.



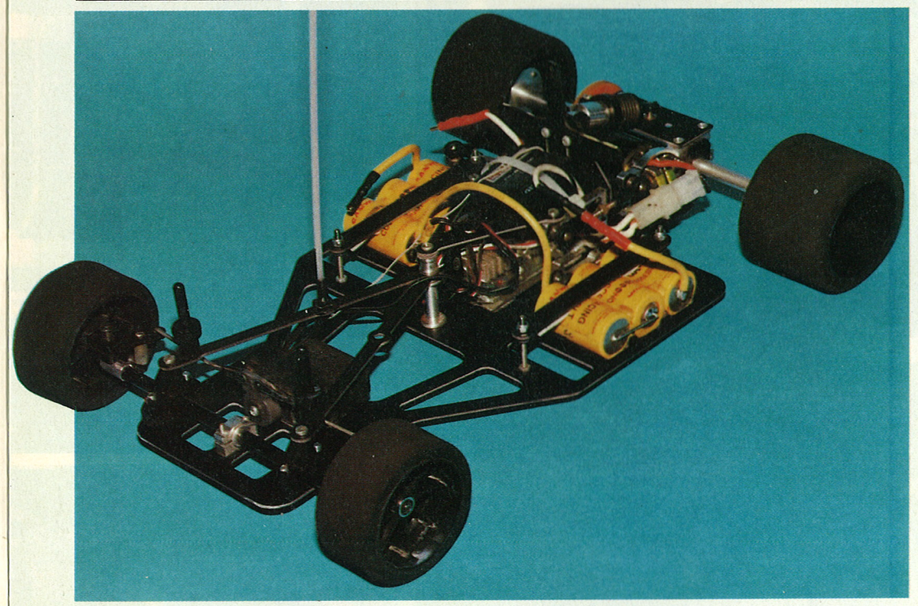
Last year was the year that yet another class of racing was to enter the rule books to further increase the choices available to anyone who has a desire to race cars. 'Pro 10' racing, as it is known in the U.S.A. where the class has really taken off seriously is the new format, and is a formula for racing 1/10th scale electric circuit racing cars. Using the same battery and motor regulations as approved by the BRCA for 1/10th Buggy racing in the UK. The winter of 1987/88 saw the racing begin to take hold at the Crystal Palace 1/8th scale circuit in London where 1/10th buggies were raced on foam tyres. This provided some interesting and cleaner diversions during the winter months when off-road racing was less than attractive. Fitted with saloon and sports bodies, many people became converts to the sport and this coincided with *Parma* and *Bolink* and *Composite Craft* among others introducing their purpose built circuit cars, based essentially on scaled up 1/12th circuit cars, onto a market hungry with buyers. As the year progressed more racing was held at several 1/8th circuits including Mendip, Lilford, Southampton and Crystal Palace, and the interest in these rapid and attractive cars mushroomed.

Our own domestic manufacturer *PB Racing* under the watchful and businesslike eye of Keith Plested saw the potential of this sport, and not to be left behind by the American manufacturers, but wishing to move one step ahead if possible, immediately began to develop his own 1/10th circuit car. To feature all that was essential to provide a car of the highest competitive capabilities, well engineered and attractive and all at a competitive price the prototype 'Sizzler' was born.

The Specification

Developed in the year of competition during these formative races of 1988 by Keith Plested ably assisted by Bill Jones of Romsey club fame. The 'Sizzler' evolved into the car that we are able to review today and that will be available for all to purchase by the time that you read this article. The design of the car was optimised to comply with the new 1/10 circuit car rules as formulated by the BRCA in November, 1988 which states that the car must be rear wheel drive only, a solid or tubular line rear axle, and independent front suspension.

The 'Sizzler' features a rigid chassis construction of a black glassfibre composite chassis plate, braced by struts of similar material from the front axle back to the rear aluminium side plates. The rear axle assembly is suspended by a five link 'de Dion' with Panhard rod rear suspension system, suspended by a constant volume shock absorber from the *PB* 'Phoenix' 1/8 circuit car. Fitted with an adjustable coil over spring the rear axle is a carbon fibre shaft incorporating a ball differential that runs as standard with a beautifully produced 48 dp machined tufnol gear drive with matching motor pinion supplied in the kit. Ride height can be adjusted by changing the plastic mouldings in the aluminium side plates that hold the axle ballraces. The chassis has slots milled o take the preferred six cell 7.2 volt saddle *Ni-cad* pack, although as an alternative a 7.2 volt stick pack can be slotted straight in all retained by the same battery clamps. At the front



Top: PB's well-designed bodyshell fits well – and looks good. Above: Complete PB's chassis looks great in black and silver.

of the car is a carbon fibre beam axle with coil spring independent suspension and with adjustment provided for both ride height and castor adjustment. Also in the kit are all the ballraces for the rear axle and front wheels, racing compound tyres and those beautiful lightweight wheels themselves. Completing the kit is a lexan bodyshell to the customer's choice from the *PB* 1/10 range.

The kit review car was provided with the 'Elfin Cavan' car, although a 'Ferrari Testarossa' will be available early in 1989 and other bodyshells are soon to be added to the range.

Building the Sizzler

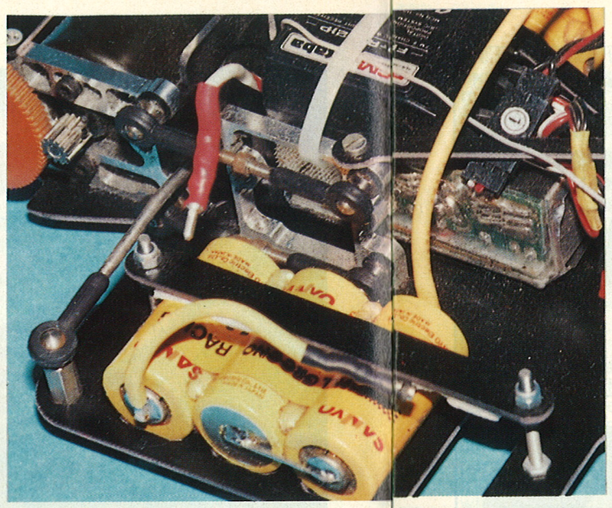
All these components greet you when opening the box and certainly stir the racer into urgent building mode as this is a car that really looks good, and in the appearance stakes, certainly has the opposition beaten. hands down, in my opinion. The well-written and produced instruction manual covers the build of the car in some detail, and combine with the clear photographs and excellent gear ratio chart should ensure that even a novice should have little trouble constructing the car. If there is any criticism then perhaps it should provide some more detail on the final installation of the steering servo and servo saver, some hints and tips on painting a lexan body. However, these are really small points to what is an excellent build manual which is better than nearly all the opposition can provide.

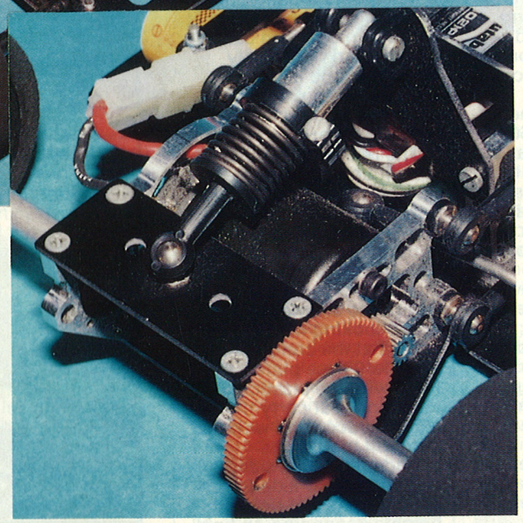
The introduction takes the builder through the tools that are required for the build and provides a few helpful hints for the beginner with a practical

SIZZZLER

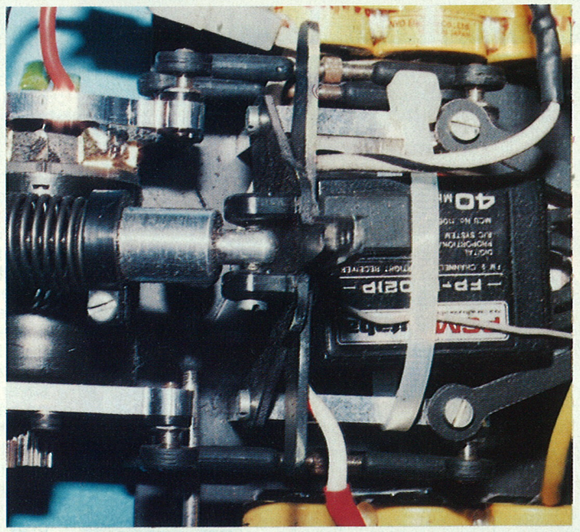
John Chamberlain builds PB's latest on road offering

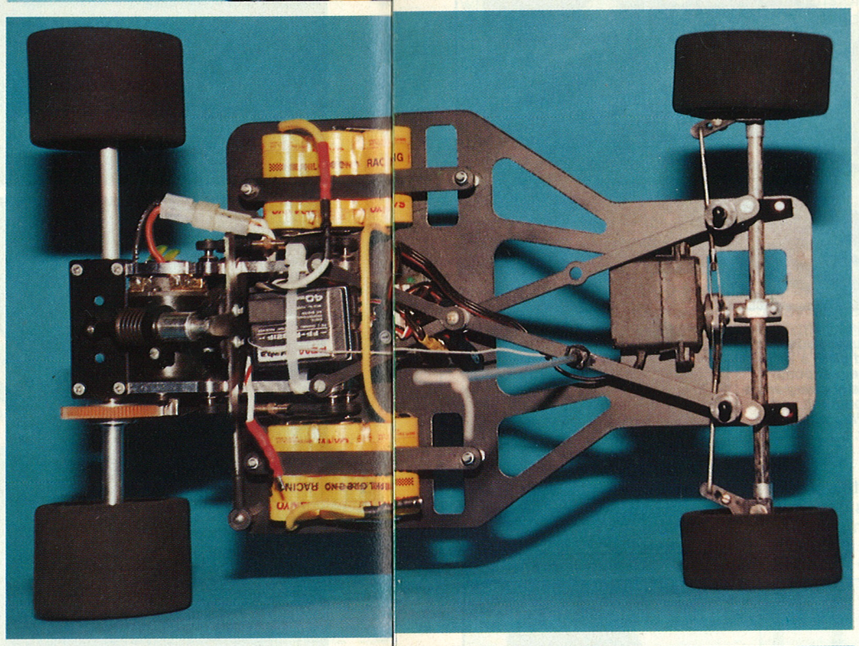
SIZZZLER

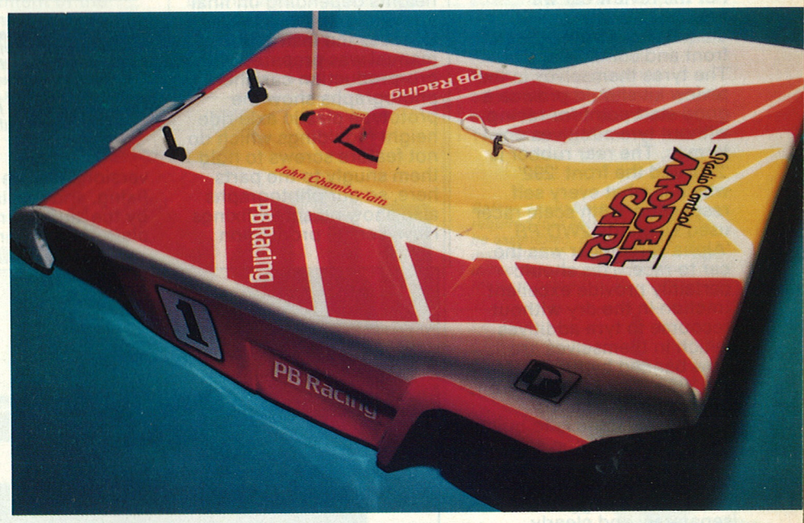


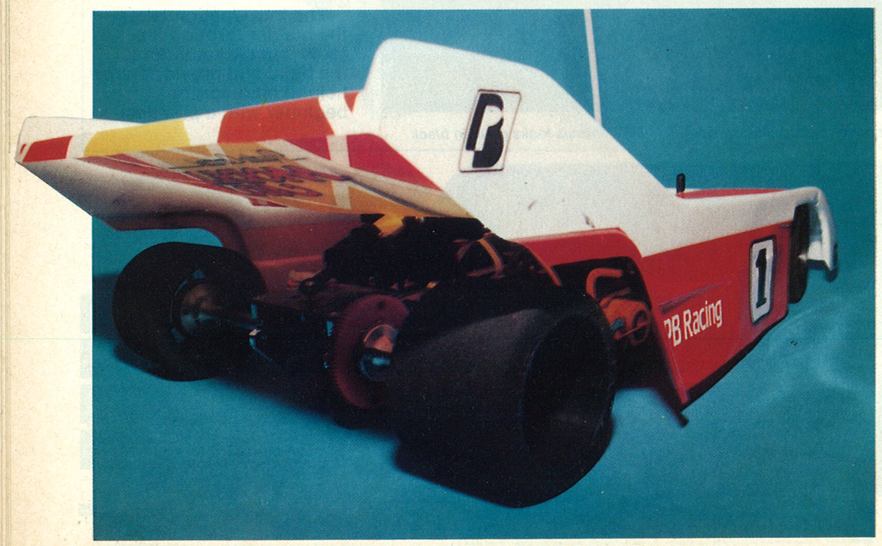


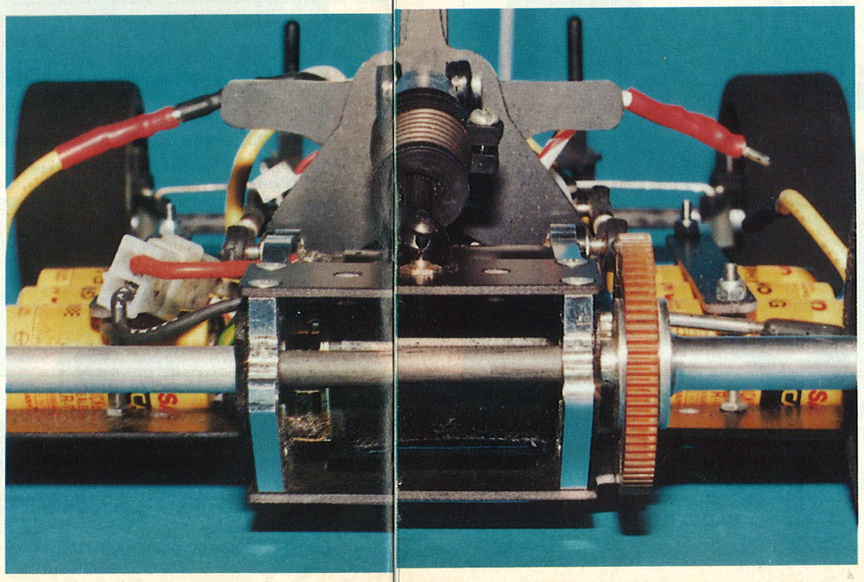
Right: Receiver sits up against rear bulkhead in front of the rear shock. Centre: The saddle-pack cells fit well back on the chassis and are widely spaced apart. Middle, bottom: The slim rear pod necessitates a long overhang on the rear axle. Top, middle: The cells are 'clamped' in via M3 nuts and fibre glass straps.











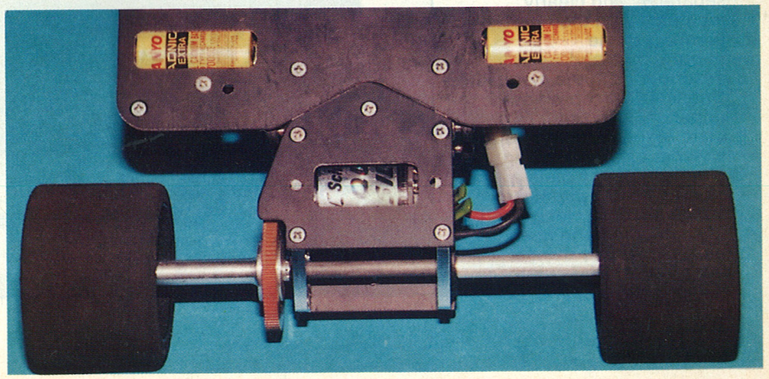
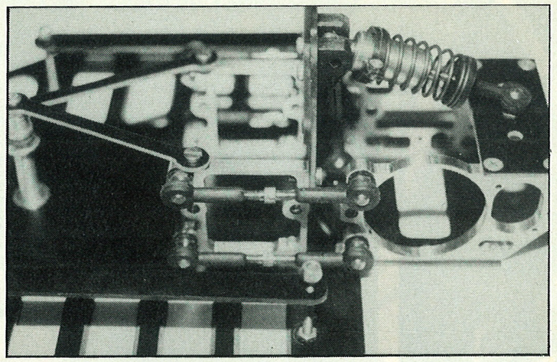


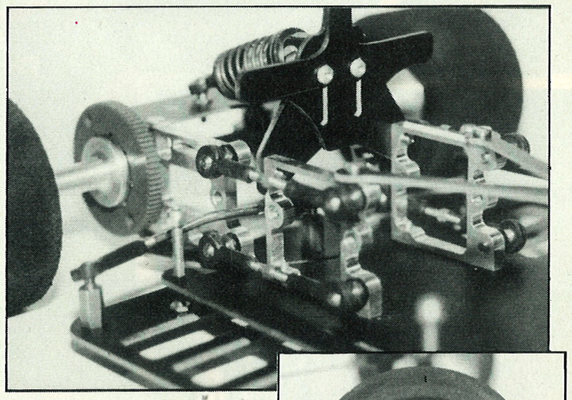
diagram showing all the various fixings supplied in the kit. *PB* suggests the first job to be carried out is the most messy one of gluing the tyres to the lightweight hubs. The hubs must be roughened up well on their outer surface before applying the contact adhesive to the tyre and wheel. I left mine the suggested 12 hours to fully harden before re-coating with more *Evostick* and slipping the tyre over onto the hub. To make the job easier I always use an aircraft propeller spinner of the correct diameter (50mm diameter in this case) as a tyre horn, to assist the tyre to slip onto the rim. Just make sure the spinner itself is coated with *Evostick* to enable the tyre to slip over it.

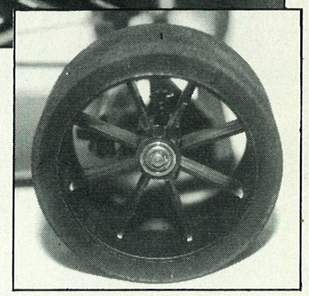
Once all the tyres have been glued to the wheels, eave them to dry thoroughly before sanding them to finished diameter. The instructions are vague here as they do not give any recommended diameter, just an indication that smaller tyres handle better but naturally last for a shorter number of races. For the review car we selected a compromise diameter of 45mm at the front and 55mm at the rear. The tyres themselves in the review kit should provide a good start point for racing without tyre additives on tarmac, The rear rubber is '215' and the front '292' which is what every self respecting 1/8th scale racer used when the 2WD *PB* 'Alpha' circuit car was the car to race. This should certainly provide excellent traction in the dry without recourse to tyre additives which in themselves are now banned by the BRCA for 1989 at all races held on 1/8 racing circuits.

The next stage is to build the rear suspension and prepare the chassis plate for action. All the parts required are bagged separately and clearly identified with their part numbers in the photographs and descriptions in the manual. Unusually the fibreglass upper shocker mounting plate rear floating chassis, lower shocker mounting plate and gauge plate and chassis braces, battery straps are partly left joined to each other, and need to be separated by using a large pair of wire cutters or Junior hacksaw, and the separation points dressed clean with a file. The parts have been prepared this way as the computer Bridport CNC milling machine that produces them needs location holes in the fibreglass sheet to hold it to the table of the machine during the cutting and drilling process. The location making unnecessary location holes in the individual pieces that are required for the car. As it is the parts are easily separated and a few minutes' work with the file soon has all the pieces ready for use.

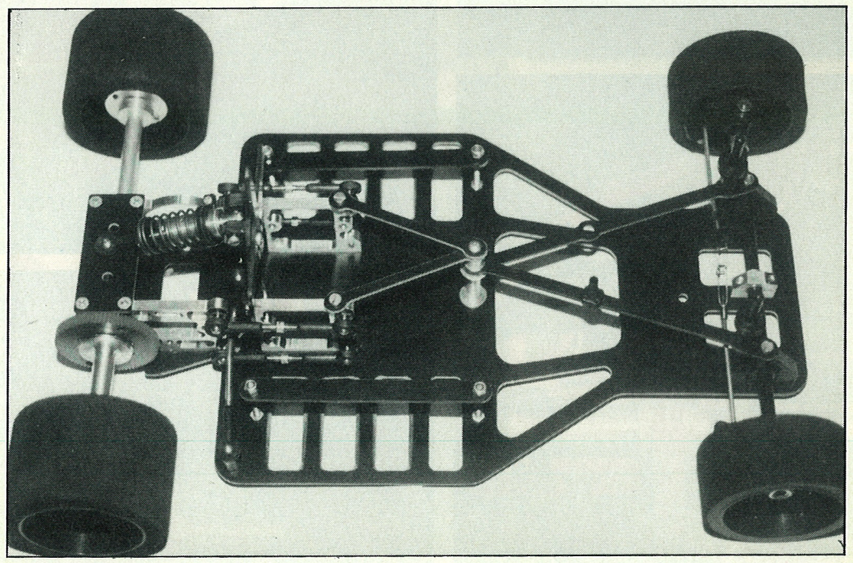
The rear floating chassis is built up first from the two fibreglass plated and the beautifully machined aluminium side plates that support the motor and rear axle. These aluminium parts are really a joy to behold and put to shame the crude-looking motor/axle pods that the competition provide. These plates are fitted with the plastic moulding that carry the rear axle ballraces and with two different mouldings provided for each side, enable the rear axle to run at three different ride heights depending on final tyre diameters used. Because the instruction manual was prepared with a pro-production car, the photographs show the prototype plastic axle ride height mouldings which do not feature screws to hold them snugly to the parts here, so our photographs also show no screw fixings. However, all production versions feature the screw fixing, and this is covered by the aluminium side plates and lower plate with the shock absorber mounting ball fitted to the top plate.







Top: de-Dion rear suspension is neatly produced and gives a very stiff mounting for the rear pod. Above: Rear shock is at a very acute angle and controls both roll and depression. Right: PB's wheels are very light and tough.

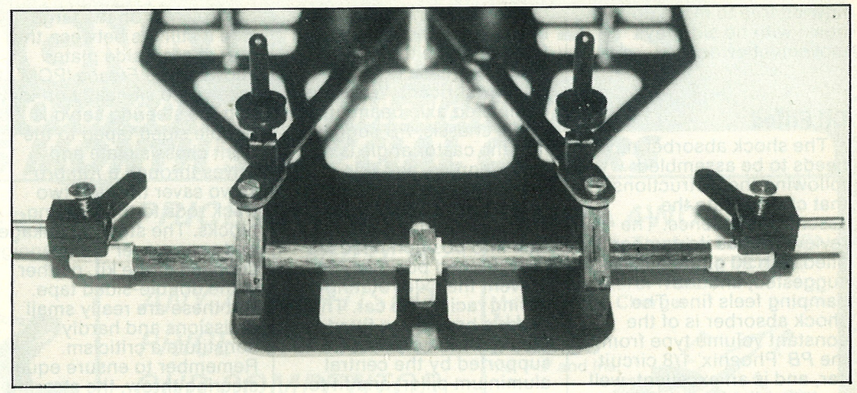


The rear floating axle assembly once fully screwed together provides a very rigid assembly to carry the vital transmission components and accurate location of the motor. This assembly can now be put to one side.

Bolt it on

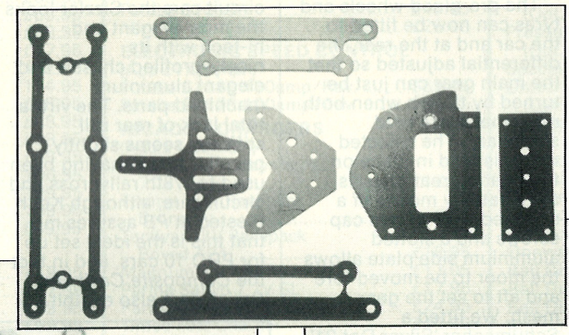
The main chassis plate is taken next and this must be carefully deburred with a file and all the edges made smooth. At this stage I personally like to chamfer the slots in the chassis where the *Ni-cads* are to sit so that they sit snugly in the chassis and as low as possible.

The two fixed side aluminium plates are then prepared with the steel ball joints thread locked into position and they are fitted to the countersunk chassis plate with the screws provided. The tall ball ended nut is attached to the chassis plate ready to mount the Panhard rod later and the lower shock absorber mount is screwed to the rear of the aluminium plates. Again the instruction manual photograph shows the pre-production one-piece shock/body mount rather than the production two piece adjustable height body mount version. Our photos show the production version and the instruction manual notes the change and in fact shows the production items in the later build sequence in the manual. The main chassis can also be put to one side with the floating chassis.

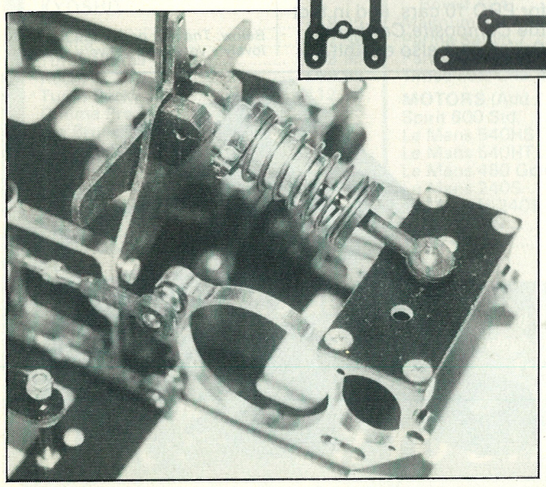


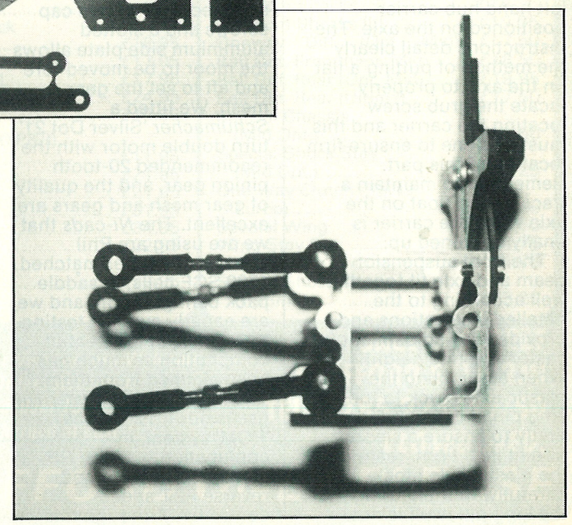
The heart of the rear suspension system is assembled now and these are the four radius arms. These comprise of four threaded metal rods with a knurled centre section to which the plastic ball joint mouldings are screwed on. The rods each have a left and right hand threaded end and it is important that the ball joints are screwed on an equal amount on each end. When fitted on the car the left and right hands threads make for easy adjustment of the length of the link. For initial setting up the four links are all set to measure 62mm from end to end of the plastic mouldings. The ball joint moulding should be checked for fit on the steel balls by snapping into position. The production items should pivot freely, but if they are slightly tight, gently squeeze the plastic ball end moulding with pliers until it swings freely, repeat this with all the joints. Now the rear floating chassis is together with the four radius arms. Using the near fibreglass gauge plate, the length between the four steel ball joint shanks can be checked, and the length of light resistance to being moved up and down on the ball ended screws. Set all four links in the same manner and the rear chassis should now be free to move vertically up and down. Next, the Panhard rod needs to be prepared and fitted to the chassis. The metal rod is supplied straight, and needs to be bent as in the instruction manual diagram before fitting to the chassis. The length needs to be adjusted so that when snapped into position on the floating and main chassis the front and rear sideplates are directly in line. Check this with a straight edge and adjust the length of the Panhard rod until this is so. The setup of the radius rods and Panhard rod must be accurate and 'square' or the car will never drive straight! The floating chassis should

Top: Front axle allows castor adjustment – also ride height adjustment is included. Below: How it comes – the glass fibre bits are still on a sprue.



Below: Assembly – rear pod required four sets of track rods to be assembled. Below, left: Motor installation is made easy by a large milled hole through which the motor is passed.





now be free to move up and down with no sideways movement evident.

Oil Filled

The shock absorber now needs to be assembled following the instructions that clearly state the assembly sequence. The review car has its damper filled with 90 grade oil as suggested, and the damping feels fine. The shock absorber is of the constant volume type from the *PB* 'Phoenix' 1/8 circuit car, and is an excellent, well sealed, reliable unit. Filling the assembly unit with oil requires patience and care, but if you bear this in mind and follow the instructions, the result is a very smooth shock absorber indeed. The shock absorber top mount mouldings are screwed through the shock absorber lower mount, the fixing screws also clamping the adjustable top body mounting plate into position and the shock absorber can now be fitted to the top mount and the other end snapped onto the steel ball on the rear floating chassis.

The rear axle and differential are assembled next and will pose no problems to those of you who have ever constructed a 1/12 electric car. The manual provides clear details on the assembly sequence and the result is a nice smooth ball differential. The carbon fibre axle can now be pushed through the axle bearings, the aluminium spacer tube fitted, and the left hand hub carrier positioned on the axle. The instructions detail clearly the method of putting a flat on the axle to properly locate the grub screw locating the carrier and this must be done to ensure firm location of this part. Remember to maintain a trace of end float on the axle when the carrier is finally tightened up.

The front suspension beam and axle fit together well according to the detailed instructions and provide easy adjustment for castor and ride height. When assembling the plastic axle block to the king pin, it is a good idea firstly to ensure a smooth, free fit if all tight, ream out the plastic axle block carefully after ensuring that the king pin itself is not damaged or showing any burrs. Once the assembly is free, lubricate the pin with ceramic grease or Holts rubber lubricant. When the completed axle beam fitted to the chassis, *PB* suggest that the castor angle is set at '0' degrees, and this is the setting we set out car at to start with. The aluminium clamp plate that locks the axle into position needs to be tightened positively to prevent the axle rotating during racing the car. The chassis braces are fitted to the top of the chassis supported by the central aluminium pillar, and fit to the front axle supports mouldings and to the rear main aluminium chassis side plates. This makes for a very lightweight and stiff chassis structure which also looks very elegant and businesslike. The front braces also carry the two front body posts and the radio aerial tube holder. This can all be clearly seen in the accompanying photos. The chassis is finally completed by fitting the battery restraining clamps to the main chassis plate by means of four M3 × 30mm screws and these can clamp the cells into the chassis easily and reliably without recourse to messy sticky tape to strap them into position.

The pre-glued wheels and tyres can now be fitted to the car and at the rear, the differential adjusted so that the main gear can just be turned by thumb when both rear wheels are held stationary. The selected motor is held in place on the floating rear chassis side plate by means of a supplied M3 × 10mm cap screws and a slotted aluminium side plate allows the moor to be moved fore and aft to set the gear mesh. We fitted a *Schumacher* 'Silver Dot 21' turn double motor with the recommended 20-tooth pinion gear, and the quality of gear mesh and gears are excellent. The *Ni-cads* that we are using are Phil Greeno computer matched 1700 SCE cells, in saddle pack configuration, and we are eagerly awaited testing these cells in the heat of competition as much has been claimed from them. The radio control system in use is our trust *Futaba* 'PCM' system, in conjunction with the *PB* electronic forward and reverse FET speed controller. Although this controller is on the large side it still fits between the rear chassis side plates allowing the *Futaba* 'PCM' receiver to sit neatly on top, and the steering servo is double sided taped to the front chassis plate and drives through a *Kimbro* servo saver through two track rods to the steering blocks. The steering linkage and servo saver are not supplied in the kit, neither is the double-sided tape. But these are really small omissions and hardly constitute a criticism. Remember to ensure equal steering throw, the steering servo output must be lined up with the centre line of the chassis.

Now is the time to stand back, and admire your handiwork on the chassis.

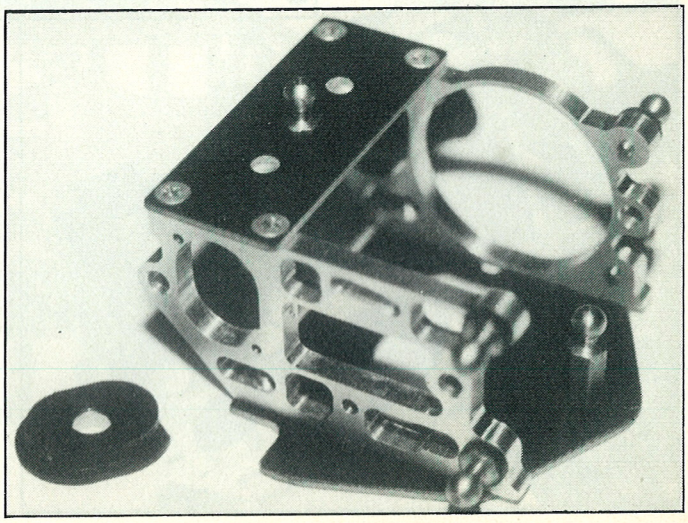
The design is truly attractive and weight distribution is ideal with the heavy moor assembly mounted centrally on the floating rear axle. This should ensure that the car drives and handles without any bias that would require difficult adjustment to dial out. The rear suspension with the de Dion axle feel very soft, but well controlled with progressive damping and excellent location provided by the Panhard rod. Compared to all the other 1/10 PRO 10 circuit cars the Sizzler looks the most elegant and hi-tech with its nicely-profiled chassis and elegant aluminium machined parts. The virtual total lack of rear roll stiffness seems slightly peculiar to me, having been used to 1/8th rallycross and circuit cars, although Keith Plested at *PB* assures me that this is the ideal set up for PRO 10 cars, and in fact the *Composite Craft* and *Bolink* cars also exhibit a similar free-floating rear axle, so I am sure they are right!

The only remaining job is to paint and fit the bodyshell before testing the car. Our Elfin body was painted and fitted the car nicely. It is noticeably wider than many of the current crop of 1/10 bodyshells as it is designed specifically to fit the Sizzler with its wide track to the BRCA maximum width rule. The lexan moulding is of a high quality with good detailing and includes the driver figure that is essential for complying with the 1989 BRCA rules.

We can only congratulate *PB* on a fine product in the 'Sizzler' 1/10 circuit car. Beautifully made and elegantly proportioned it really looks right, and possesses a blend of sophisticated features and quality manufacture that is not available elsewhere at any price. When it comes to price, the *PB* is very competitive again, providing a very full specification, with the few omissions as detailed in the review, and should provide a really competitive racing machine, to delight the most dedicated enthusiast or beginner alike.

Next month we will review how the *PB* 'Sizzler' performs where it really matters – on the track. Hopefully and weather permitting (!) this will include racing outdoors on the Southampton 1/8 circuit and indoors at the Model Engineer and Modelling Exhibition. We can't wait – can you?

Watch this space!



Below: The rear pod of the Sizzler is lovely – very light, yet very strong.