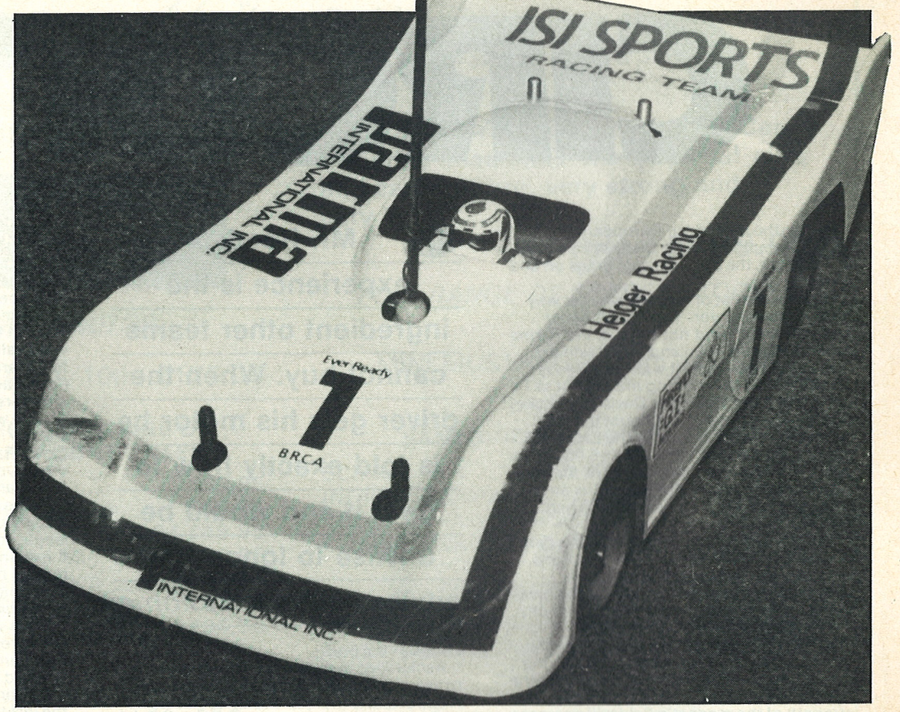


CHALLENGER

Pete Winton test drives a 'privately' designed 1/12th scale race-car that is taking on the established competition

In any form of motor racing, it is rare for an individual to successfully design and race a competitive car. 1/12th is no exception, and the days of home-built or modified cars are now long gone for the majority. What a pleasure then to find just such an individual new car alive and well, living in Luton.

Keith Helmke is the driving force behind the Vauxhall Car Club, one of the most competitive clubs in the country which boasts the entire *Schumacher* works Team among its regular club night drivers. In the current Standard Class National Championship, no fewer than eight drivers in the top ten are regular Luton attendees.

In such company Keith and his team-mate Pat Hodge are regularly seen in the 'A' final.

For some time, Keith ran the *Demon* 'MF83' car, but when it became obvious that he could no longer stay on terms with the rest, he did not take the easy way out and buy a *Schumacher*. Using first a new rear pod, and later the front beam pioneered by Glyn Peglar, he began to update the car.

At the time Bill Bodison was starting out in 1/12th racing at the Hatfield club. When the quality of drivers declined, Bill moved to Vauxhall to try and improve his driving. Bill is one of the world's characters. Never afraid to ask, he is instantly recognisable. He calls everyone 'ace' (e.g. how's it going ace?), and has a fascinating past racing sidecars all over Europe with among others the late George O'dell. His story of the airborne sidecar at the Manx TT is as amusing as it is frightening. Bill is the engineer, and enjoys making things. Somehow this unlikely pair teamed up to design and build their own car called the 'Challenger'.

The car is neatly prepared and well built. At the rear they tried to make their own motor pod, but found the time and investment involved not worth the return. After a brief flirtation with the *Demon* alloy pod — discarded due to its lack of ride height adjustment — they settled for the latest 'Tornado' item from *Tru-Tyres*. This new design features a cunning cam system for changing the rear axle height, and is made from a single piece of aluminium formed into a 'U' shape. The motor retention and clearance holes are machined conventionally on the right side, and the top is drilled and tapped to take a glassfibre plate on which the damping system is mounted. This solid construction is on the 'fit and forget' mould, no problems having been experienced to date.

The cells are supported in a full length radio plate which also carries two plastic mouldings with ball-joints. Connected to a similar arrangement on the damper plate by O-rings, the natural hysteresis of the rubber damps the side to side movement of the pod as well as the fore/aft action of the suspension. The receiver is mounted on top of the radio plate, with the *Demon* speed controller underneath. At the forward end of the plate the servo is fitted on the lower facing allowing the steering rods to run parallel to the front suspension the same as the 'C-Car'/Corally/Tornado/Sigma.

Front suspension is taken care of by wishbones mounted in the same way as the cars mentioned above. No tricks here, just established practice at work. The wishbone pick-ups are quite wide spaced, and the wheels are mounted on conventional axle blocks and live axles. The standard of workmanship is very high for a limited production car. Accurate milling, drilling and countersinking makes for easy replacement of damaged items. Credit here must go to Bill for his skill. This year the Team are receiving sponsorship from *ISI Sports*, Keith's company, and *Parma*, through *Helger Racing*. *Parma* are providing bodyshells (the excellent Osella PA9) some motors, and the superb *Parma* 'T' Green tyres. As an aside, I use the Greens as well. Three sets made up for the Dutch meeting at the beginning of February have only just worn below a decent size nearly three months later. That includes weekly racing with modified motors, the Dutch meeting (eight rounds), two Nationals, and two local league meetings. I guess around 70 eight-minute heats averaging over 20 heats per set. That is longevity and quality unmatched in the UK.

Pat Hodge is the third 'Challenger' Team member, and is also a mean sprayer of body shells. For some time Pat has provided a ready source of these for the local lads, and still sells a fair number each month. The 'Challenger' shells are simple in design, but well sprayed and unique. Pat has run many cars in his time, but has stuck to the 'Challenger'. His is the odd one out, using *Parma's* motor pod on the back of his car on a special chassis cut to suit. All three cars are identical apart from this.

I drove Keith's car for this test, fitted with the aforesaid Greens, and a 'modified' Standard motor. This is a 35 turn amature fitted into a modified can running some advance. Many of the club members run this type of motor as a low-cost alternative on a club night. With the tight tracks involved, it is an ideal compromise between speed and cost. Keith's transmitter is the familiar *Futaba* 2LGX, so I felt right at home as the car was moved out onto the circuit. A couple of slow warming-up laps to see what was what, revealed some understeer, but arrow straight tracking hands off.

Starting to push the car along, there was still this initial understeer off the power, but the car snapped very nicely out of the turns with no wander or oversteer. Pushing harder reveals that Keith likes to turn in under power until very late, since this technique found the car much more positive. The only corner giving problems was the hairpin off the straight, but then everyone was missing that. Once the car was driven the way Keith drives, it started to feel much better.

Changing direction in the short sharp chicane did not upset the balance at all and soon I was mixing it with the other cars, including Pat's example. Despite my lack of 'Challenger' mileage, I kept with Pat for some time before a lapse of concentration gave the car an unexpected flying lesson. On fast sweeps the car was stable and medium speed turns could be taken with gusto. The sharp hairpins showed too much understeer for my liking, but Keith was quick to point out that he likes it this way, and has tried settings which favour tight turns; he didn't like that! Most impressive is the lack of bounce in the car. Where my own car tended to hop a bit on the bumpy straight, the 'Challenger' rode more smoothly and held its poise better. This was particularly noticeable at the Model Engineer meeting in January when Keith made the A-final, and Bill showed well with the smoothest looking car on the track. Whether the larger movement on the rear suspension helps, or the stiff chassis using the forward mounted radio plate is the trick I do not know. Suffice to say that the damping is excellent.

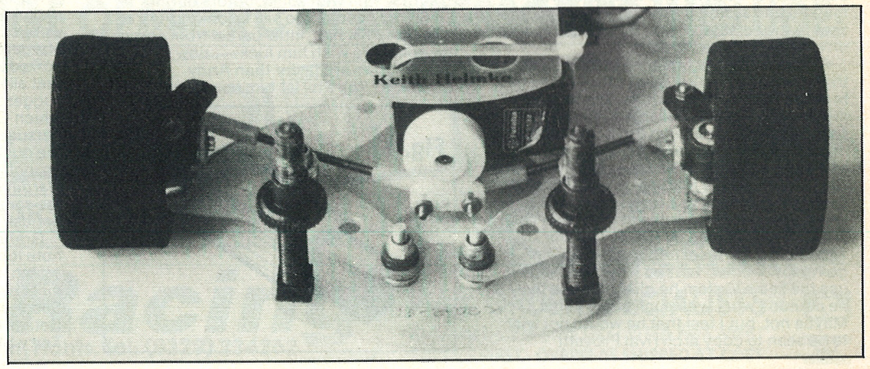
For personal choice, I would not run the car as Keith had set it. The front-end was too prone to understeer which made it difficult to turn in smoothly for my driving style. Bill Boldison has his car set much more to my style, but I only had a brief try of that. There is little doubt that the car could be made to handle exactly as one wished, and my only real reservations concerned the lack of adjustment to rear roll stiffness. However, it is possible to change the O-rings to 'stiffer' types, and this would have the desired effect. The front suspension is fully adjustable for camber and castor. Again personal choice would be to run more castor and more camber, with perhaps higher rate springs to give more travel and greater roll stiffness. I did feel that the wishbones were not thick enough for the job, and may have been contributing to the overall spring rate. This is purely subjective, no measurements were taken. The question of chassis stiffness in all cars, and its contribution to overall roll stiffness, is on several minds presently, hence the damper conversion currently being tested by *Schumacher* and featured in our recent report of the Dutch International.

I came off impressed. I suppose I kidded myself that any amateur design would be a slight pup, but how the mighty ego's are fallen. Whilst comparisons are often odious, it is worth saying that this is no 'C-Car' or 'Corally'. It lacks that last bit of positive feel which marks out a highly developed chassis. It is the best effort to date at taking those people on at their own game. The result is a car which will beat the club racer whatever his car, and which can compete with the best on its day. Maintenance is simple, and barely necessary. There have been no major breakages on any of the cars, even a full speed trip into the tables (not by me I hasten to add!) did no more than crease the wishbones. Replacement is quite easy.

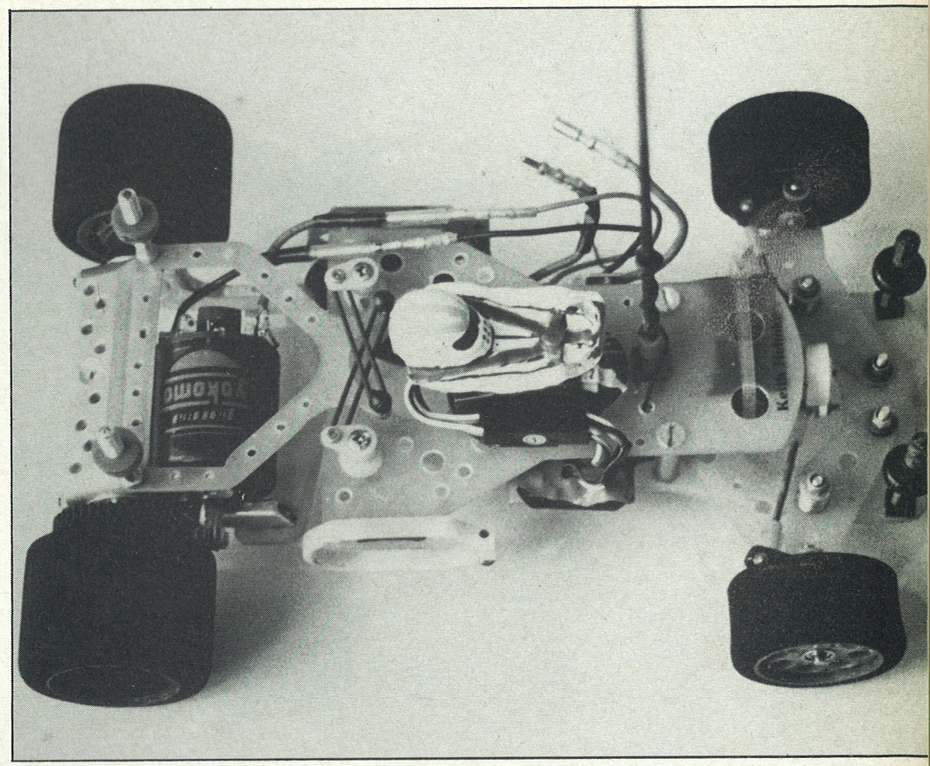
To elaborate on the adjustments detailed above, the rear suspension could be adjusted by fitting different section O-rings. The larger the section, the stiffer the rear suspension, the more oversteer generated. At the front, wheel castor is changed by fitting extra washers under the front wishbone pivots. The camber can be altered by adding or removing washers from under the wishbone which acts as a down stop for the spring. Both the latter methods are the same as many other cars currently in use. The rear pod will accept any gear ratio from 10:44 to around 16:50, quite a spread. In the 12, 13, 14 pinion area, up to 53 tooth *Schumacher* gears should prove no problem. The ride height adjustment at the rear enables tyres from 55mm to 46mm to be accommodated whilst retaining a sensible amount of chassis clearance, and at the front the *Schumacher* kingpins give adjustment from 48mm down to the plastic rim!! Small tyres do reduce grip, so going to the limits of these tyre sizes is not advisable.

Bill and Keith are able to supply copies of the 'Challenger' at around the £45 to £50 mark for a conversion chassis, depending on specification. This is quite competitive, and the car can be recommended to all racers looking for a chassis that is easy to set and run. Bill, Keith and Pat are to be commended for their effort in producing this car, and taking its development seriously.

Contact Keith Helmke on 0582 864420 for details. □



Below: close-up of the challenger's front-end featuring conventional wishbone suspension. These are one-piece GRP with wide spaced pick up points.



Above: Keith Helmke's example of the privately designed challenger chassis. Take a close look at the novel rear-end damping system. The diagonally opposed O-ring links between the motor pod and radio plate controls the fore and aft, plus side to side movement of the rear-end. The Ni-Cad pack is supported in the normal way: in sticks slung across the chassis.