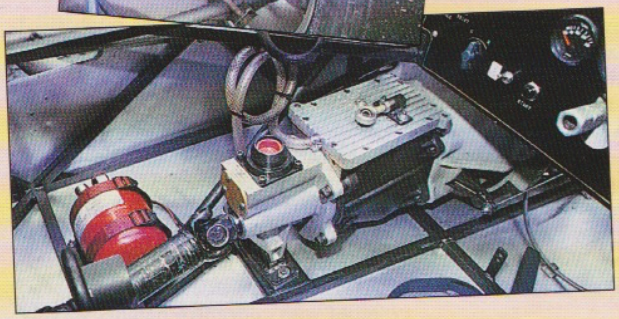
The underbody venturi offer a relatively uninterrupted airflow, thanks to the layout of the "Trailing Arm Magic" rear suspension.



Extra ducting cools the Carbon Metallic pads. There is a second gearlever mount forward of the standard position.

centrelines. This arrangement reduces roll-centre height movement in roll and bump to less than 0.1in.

As the illustrations show, the transverse links are inclined downwards at some 20deg towards the centre of the car, where the projections of the lines through their pin centres intersect at rollcentre height. As a result, the rear venturi is not compromised by the Mumford link, yet the rollcentre can be set at 3in above ground level – well below the undertray. This would be very difficult to achieve with other methods of live axle location.

Pullrods are now used to operate the rear dampers and co-axial coilsprings. Previously, the dampers and springs were located on top or just behind the axle and were mounted, either vertically or slightly inclined at the top, to upper pivots on the chassis. The latest design consists of vertical links from the extreme ends of the axle connected to two rockers which pivot on the chassis below, and ahead of, the axle. Each rocker operates a damper and coilspring which is mounted at an acute angle at floor level.

This system has a number of advantages. First, the unsprung weight is reduced, and the centre of gravity at the rear is lowered. Second, the effective spring base, and more importantly the damper base, is increased by 6in at both ends of the axle. Third, the motion ratio between each wheel and each damper is 1:1, and this is an improvement over most pullrod arrangements. This facilitates the use of monotube dampers rather than the twin-tube versions which the old setup favoured.

As a result of these improvements, the rear of the car is stiffer in roll than previous models, despite the removal of the antiroll bar and a reduction in spring rate from 550 to 500lb/in. Because of the high roll stiffness at both the front and rear of the car, the aerodynamic platform remains relatively stable under most conditions.

The actual rear axle casing is from an early version of the Ford Escort passenger car. It is extensively modified to cope with the additional loads and to combat oil surge under conditions of high lateral acceleration. The differential is based on Ford components but has an aluminium housing to reduce weight, and special forged star wheels to transmit the power of the Vauxhall engine. Typically, a 3.77:1 rear axle ratio is used.

The halfshafts are manufactured by Quaife from EN24 steel with a different heat treatment to the standard items. Also, the shafts are of smaller diameter and are waisted, so that they twist to absorb shocks. At the outer ends of the shafts, special hubs incorporate twin ballbearings to eliminate changes in toe between acceleration and braking.

The hubs are now manufactured from steel, following heat expansion problems with the aluminium versions. Again, additional heat buildup from the Carbon Metallic brake pads appears to have caused the problem. CP2577 two-pot alloy calipers are used at the rear, with 10.5in diameter brake discs.

The chassis has a flat floor which extends from the foremost part of the frame to below the rear axle and under the sidepods. The left-hand sidepod contains the exhaust system and mandatory silencer. The aforementioned crushable structure is covered by the right-hand sidepod.

A diffuser is fitted to the lower rear of the chassis to generate additional downforce. The rear aerofoil, made from sheet aluminium, is mounted on composite sheet endplates which are fixed to the rear of the chassis. The location and width of the aerofoil is governed by regulations specific to each formula.

Separate front mudguards are a requirement of most of the classes in which Mallocks compete. They are made from glassfibre and attached to lightweight frames, which are secured to each front upright. A one-piece top and separate nosecone complete the bodywork, which is all made in glassfibre with carbon reinforcement.

Some wind tunnel development work was undertaken fairly recently with the objective of reducing drag while maintaining the same level of downforce. The result was the latest design of bodywork and rear aerofoil, which gave an average negative lift to drag ratio of 1.765. The profile of the aerofoil was copied from that of the Ecurie Ecosse Group C2 racecar, which was built by Ray Mallock.

Aerofoils are available in four different chord dimensions: the smallest is used on the latest cars, because most of the downforce now comes from ground-effects. The angle of attack is usually set at about 7deg. A Gurney strip is fitted to the left-hand trailing edge of the rear aerofoil and extends across one-third of the wingspan. Full-width Gurney strips are used in some formulae where extra downforce is needed, at the expense of increased drag.

For Vauxhall Supersports, a sealed, 2-litre, 16-valve Vauxhall engine is mandatory. Engines are built to virtually standard specification except for the addition of dry-sump equipment and twin sidedraught carburettors. Their maximum power is about 180bhp. Drive is transmitted through a paddle clutch to a Quaife four-speed gearbox with dog-ring gears. An additional gearlever pivots in a spherical joint mounted on the top of the gearbox and is connected by a longitudinal link to the normal gear selection lever. This arrangement places the second gearlever within easy reach of the driver's left hand.

The road wheels are 13in diameter with single bolt fixings to the hubs. In Vauxhall Supersports, Dunlop racing tyres are mandatory.