

McLaren M23, 1976

Right, that's it, the gauntlet has been thrown down! SFC News Issue 35 said, and I quote "you could convert a Yardley McLaren M23 to Mr Hunt's car", the author (Andrew 001) adding one of the biggest understatements ever, "you will need to carve the airbox around a bit though".

The conversion of a 1/12 McLaren M23 (1974 Texaco/Marlboro or Yardley versions) into a 1976 James Hunt Texaco/Marlboro M23 had been a long-held desire of mine and yes it is possible. To refashion the airbox, arguably the most characteristic part of the car, may suffice, but they are two very different cars. Virtually everything except the engine, gearbox and wheels, needed to be changed to produce what must be one of the most visually stunning and memorable F1 cars of the mid '70's. Additionally, our born and bred 'Brit' went to school at Wellington College in Crowthorne (the town in which I work) and won the 1976 F1 World Championship sensationally from Niki Lauda, as chronicled in his biography 'James Hunt Against All Odds' written by Eoin Young.

I started on this marathon quest of research and building a 1976 M23 almost two years ago. The essential steps included obtaining

- 1) an 1/8 scale Eidai Grip '76 M23,
- 2) investigation of and acquiring the correct Dayglo fluorescent orange paint ,
- and 3) finally striking gold by being introduced to an ex McLaren Works Engineer who owns M23/9. This led to a private viewing of the car from which 90-100 photographs provided my 'instruction manual', along with measurements galore. Fabricating each part was a challenge and pure joy as it often involved developing an ingenious strategy in both manufacture and then implementing a building plan. However, getting the paintwork right was 'murder' and required several attempts months apart, extending the build-time considerably. Having been inspired by my personal experience of M23/9 last summer, I wanted every area of the car to be a faithful representation. Photographs and measurements from the car itself and scaled down dimensions from the 1/8 scale kit resulted in an accurate chassis.

General Build Program

The bodywork of the top and bottom chassis sections had to be modified, then painted before assembly. Firstly, the side pod extensions with their oil cooler ducts were constructed. Modifications carried out to the upper deck included revised suspension cutouts necessitating cutting away of the forward 1cm and fitting a plasticard replacement section, sounds easy! The steering column aperture was slightly altered and attention to the lower chassis only required minor adjustment to the area of suspension cutouts. To later fit realistic body fasteners (nosecone, cockpit cowl and airbox), the kit's various peg-in-hole and crude airbox clips had to be filled or removed in favour of appropriate Dzus fasteners, Pip-pins and large forward body clip for the cowl. Next, the front bulkhead was perfected and the cockpit finished with the scratchbuilt dashboard and sloping platform that provided a mounting point for the electrical loom connection boards. After filling and sanding, painting involved the usual priming and application of

topcoats of Halfords Appliance Gloss White and then the Dayglo fluorescent orange. The original paint used by McLaren was called Rocket Red made by Trimite who no longer manufacture this hazardous two part urethane polymer product. Trimite gave me a lead to a chemical company who produced the pigment and thus to an aerosol paint company who could supply the Fire Orange fluorescent paint in a can. This pigment is U-V sensitive and will fade. Therefore, a topcoat of U-V filtration lacquer was also applied. This combination was very slow curing indeed, resulting in blemishes and a need to strip the paintwork down to base and respray, more than once— extremely tedious. It remains to be seen whether the combination of primer, Fire Orange and U-V lacquer will be light-stable and physically robust, without cracking as the various layers dry at different rates. If the more recently available Halfords Fluorescent Orange is the right colour and is light-stable, this would cause less anxiety.

The bulkhead and cockpit were painted and the front suspension constructed. After an application of the U-V filter lacquer, the gold pin stripes on the white alongside the Dayglo orange were applied using gold foil (Bare Metal Foil Company). After the decals were applied, these were carefully oversprayed with Halfords Acrylic Lacquer to settle the pinstripes and provide further toughness to the whole paint finish. When sufficiently cured, the two chassis halves were brought together incorporating the cockpit and front suspension components. Steering rack bolts and sidepod rivets were fitted in pre-drilled holes and the tanktop superdetailed. The electrical wiring loom and instrument cable bundle were wired down to the chassis and neatly over the tanktop before the two halves of the chassis were glued together with epoxy resin. The front antiroll bar was made and mastercylinders were attached and plumbed. The front subframe was fitted, thus concluding the front of the chassis. Next the dashboard unit was fixed in place and the main roll over bar attached securely on the tanktop.

The engine, gearbox and rear suspension were then brought as one, onto the rear bulkhead with plumbing of the oil tank being carried out at this stage. The throttle cable and instrument cables were then routed over the tanktop and into the engine bay. Rear radius rods stabilised the rear suspension and exhaust tail pipes were then attached.

The wheels were resprayed gloss black with bead retaining studs and tyre valves being made and fitted. The tyres were scrubbed by spinning them in a low speed drill, applying glass paper. Finally, the Goodyear logos were painted in. The 1974 tyres in the original kit were slightly smaller than those used in the '76 season, but this compromise had to be accepted.

Decals were in part constructed using Fire Orange paint sprayed onto clear decal. This was achieved by using some 1/12 scale decals produced by the ever helpful Richard Hower who kindly scaled down the 1/8 scale items from the Eidai Grip kit of the same car. A number of decals were cut with a scalpel blade and steel ruler, including the number 11's and all the sponsor logos (which were originally signpainted on the car). Again, the Fire Orange decal was used with detailing by black and white Trimfilm (Microscale). The Marlboros were a combination of those on Richard's 1/12 sheet and

photoreduced versions from the 1/8 kit applied onto clear decal. Dzus fasteners and Pip-pins were applied as finishing touches along with the underbody skirts.

Specific Build Details

The nosecone on the '76 car was much shorter and there was no way around a scratch build here. It was quite difficult to maintain symmetry when all the pieces of triangulated plasticard sections were bonded together and Milliput and filler were employed for the final shape. An aluminium tube was placed internally near the forward edge to accept both the front subframe grips and the brass rod supports of the front winglets. This aluminium tube had to be 'true' in three dimensions so that the scratchbuilt front winglets looked right when fitted. Small, incident adjustment fittings, were fitted to the inner aspect of each winglet underside, against the side of the nosecone, as in the real car. There were no central or lateral NACA ducts in the '76 nosecone as in the 1974 kit. The crude notches Tamiya used for screw fitting the nosecone were omitted in favour of two pear-shaped recesses into which scratch built Pip-pins (brass rod and a wire circle) were later fitted for the same more realistic purpose. The inside of the nosecone was painted pale yellow and the underside was covered with pale yellow fibreglass-like decal. A black forward rubbing strip was attached as a final detail.

The cockpit cowling was lengthened at the front (Milliput) and slight changes were made to allow a close fit against the two forward rollover bar braces. The gear change bubble was accentuated with Milliput to proportions that were more normal. Acetate sheet was cut to form a new windscreen by first using a light cardboard template to perfect the shape. This was secured to the finished cowling by fine wire ties. Mirrors were scratch moulded in Milliput, then sanded to perfection before painting Appliance Gloss White. These were attached by a series of very small brass pins to the screen. Dzus fasteners (Marshall Auto) were applied to the cockpit sides opposite small scratchbuilt fittings placed on the front outer edges of the tanktop. These with the giant body clip further forward secured the cockpit cowling.

The rear wing was drilled along its leading edge to accept 1mm-diameter brass rod extensions (the longest being placed in the middle) to form a skeleton of the typical rear wing shape. Again, Milliput was used to build up on this with filler and much sanding to achieve a final shape. End plates were scratch-built and drilled as in the real car. A 90° lip similar to a Gurney flap was constructed and fitted to the trailing edge of the rear wing.

The airbox was of pivotal visual importance and here the 1/8 scale item proved invaluable. The base rim of the original 1/12 scale part was preserved and the basic shape of the ear-like air inlets was fashioned from plasticard observing critical dimensions and proportions. These changes were then added to with a Milliput shell and later filled and sanded for many weeks to finalise the shape before painting. The airbox interactions with the rollover bar and engine trumpets had to be borne in mind and these internal tolerances were another area in which to strive for accuracy. Forward Pip-pins either side and a

central rearward clip was added, replicating the original method of fixing the airbox in place.

While all these body parts received regular fine-tuning by way of filling, sanding, priming, filling, sanding etc, it was necessary to keep observing the car from every angle in photographs to make sure the parts 'looked right'. The cockpit itself needed attention before the chassis halves could be brought together. Here, the seat panels were incorrect for the later car and were easily changed with plasticard. This produced more room for a second fire extinguisher under the driver's knees, one being for the driver and a smaller one in front for the engine. The kit kneepads (for D.Hulme) were completely removed and two oval access panels were opened, one each side of the driver's hips. Appropriate panelling and rivets were applied afterwards. The seat itself was much abbreviated with a cutting disc and then reshaped with ever-useful Milliput before spraying semi-gloss black. A small adjustable bolster was formed from Milliput with plasticard fittings and placed across the cockpit floor, positioned under the thighs. Two aluminium plates (plasticard) with rivets were used to affix the pelvis and crotch seat straps firmly to the cockpit/chassis floor.

The next area to tackle was the fuel tank top. Here, the rollover bar was made somewhat taller for James Hunt and quite fiddly changes were needed to preserve the realism of the titanium original. The seat belt locating points on top of the fuel tank were cut out and lugs were fitted from within the chassis as in the real car. A much more highly detailed electric fuel pump was made and plumbed into the fuel system via the mechanical fuel pump and wired into the electrical loom passing nearby on the right hand side of the car. The kit version is excellent, but it can be superdetailed. A new oil tank and catch tank with sight-glass was constructed from plasticard and filler and these items were later plumbed into the oil system as originally intended. The water header tank was sited on a curved bracket attached to the right rearward bracing bar of the rollover bar. This was then fitted with four pipes, one to the water pump and two narrow pressure relief pipes, one from each of the two water rails around the engine and finally a slender overflow tube.

The medical air bottle was scratchbuilt and wired into the electrical system. The instrument cable bundle and wiring loom were wired down just inside the two plasticard guide channels for the airbox. Pip-pin holes were drilled near the bottom of the rollover bar, which would be used to secure the lower forward corner of each side of the airbox. A clip was fashioned for the rear of the airbox retaining it against an element of the crossbeam.

The forward rollover bar was formed from brass rod and braced forward by two diverging aluminium tubes replicating the titanium originals. This type of arrangement became obligatory in time for the Spanish GP in 1976. The details of the scratchbuilt dashboard were difficult and fiddly to copy but it was essential that this area of maximal interest was faithfully reproduced. The original photographs and the 1/8 scale kit made this task a success. The dashboard itself was mounted on a taller, sloping dash support panel than on the earlier M23's; and so, another case of scratchbuild.

The forward steel bulkhead onto which the front suspension, mastercylinders etc were to be secured was made more open than shown on the original kits, so this needed extensive modification. Before bringing the monocoque together, the forward bulkhead, cockpit, tanktop and rear bulkhead were painted gloss pale grey (stove enamel grey) which was used by McLaren on these older chassis to tidy up the polished aluminium, scarred by use over the previous season or so. Plumbed mastercylinders, a throttle-stop, nosecone Pip-pin mounts, and a scratchbuilt shorter subframe enhanced the appearance of the front bulkhead. The titanium subframe was well represented by aluminium tubing, epoxy resin and the kit slide-in pickups for the nosecone transverse rod between the front wing sections.

The front suspension had to be sorted out before the chassis halves could be assembled. This involved stripping out the prototypical rising-rate geometry and replacing it with a simple top rocker and lower wishbone. The top rocker was made by preserving the inboard rosejoint and the outboard pick-up whilst maintaining the same length between the two in the newly fabricated item. The rocker system was again characteristic of the car, while the earlier suspension simply would not do. The geometry necessitated breaking down and realigning the lower wishbone to prevent unrealistic toe-in/camber variations when under steering input due to offset on the front upright ball joints. Semi-gloss black paint was used for the most part with an anodised colour for the machined alloy anti-roll bar mounts. Narrow steel rod and plasticard parts enhanced realism over the kit parts.

The steering column and rack and pinion system in the kit was discarded in favour of aluminium tube, scratchbuilt steering U-J and visible rack and pinion box. The kit track rods were utilised to link the narrow gauge moveable aluminium tube within the steering rack to allow the wheels to steer, although independent of the steering column itself, in. The engine was further detailed using braided wire to simulate oil hoses etc. A throttle linkage system, throttle slides, in-turned final pair of injectors were all fitted. The kit ignition box was begging to be superdetailed. Three retaining clips and enhanced wiring from the business end all served to increase realism. Beneath the ignition box support plate, a 3-pin plug was simulated wired into a simple heating coil inserted into the Cosworth DFV's block. McLaren dreamed this up as a clever means of warming the engine oil and block for an hour or so before attempting to start the DFV more reliably than was usual if otherwise cold. Marshall Auto cast hose ends (coloured red/blue as in Goodridge products), ^{were invaluable aids to realism. The} Oil coolers were made from plasticard and curtain net with braided hose plumbing to oil tank, oil scavenge and pump. The oil coolers were sprayed semi-gloss black.

The spacer between the gearbox and engine was further lengthened to seven inches as in the 1976 season. This required brass rod, Milliput and plasticard to both give the right appearance of continuum with the kit's shorter item and also structural integrity to the model. The gearbox was standard (Hewland) but plumbed to its own oil cooler mounted across the forward aspect of the rear wing pylon mounting plates. External oil pumps and

rear wing support frames from the original kit were discarded. The oil filter's position was slightly altered.

The geometry of the rear suspension was unchanged, though the crossbeam was unique and formed from brass rod, Milliput and filler using the original as a base. A rear anti-roll bar (aluminium tube) improved upon the original. Fortunately, the concentric spring damper units, the reversed lower wishbones and rear uprights were the same as in earlier M23's. New half-shafts were cut from aluminium tube and these looked far better than the plastic originals. Radius rods were made from aluminium tube utilising drilled end mountings from the kit, secured by 0.5mm brass rod into the open end of the tube. This is where a steady hand and variable speed drill set at slow speed, is needed to prevent the plastic from melting and producing a larger than desirable hole.

The electromechanical starter motor was omitted in favour of a scratchbuilt compressed air starter modelled to exact size and shape from the 1/8 kit and photographs. Multiple materials were needed to achieve the desired effect (8mm glass tubing, Milliput, brass rod, epoxy resin and cast hose ends). This compressed air chamber was then plumbed into the mechanical starter and an air line fixed to the left rear wing support plate to be accessible by a mechanic to connect to a remote compressed air cylinder.

The exhausts were carefully filled, sanded and painted a slightly rust coloured matt black. These were then stabilised against the rear brake callipers with a fine wire spring around the tail pipe...looks good. Race to race variation of rear wing support plates (9mm magnesium) was confusing. A loaned example (surprisingly light to handle) was photo-reduced and from this plasticard replicas were made. The tricky vast number of holes was successfully drilled. These items were then primed and sprayed Halfords Aluminium. The rear wing pylon was scratchbuilt using 1/8 version as a guide to shape and dimensions. Here, plasticard, aluminium tube and Milliput were the answer. The rear light and wiring completed the assembly. This whole structure had to be carefully constructed so that when bolted to the support plates either side of the gearbox, it was vertical and the rear wing angle of incidence was natural.

Some Final Thoughts

This beautiful and very modern F1 car in its day, especially in terms of paint colour, was quite simply stunning to see in the flesh for the first time. My version is hopefully as impressive and contains some interesting compromises and materials.

The main compromise included in my model was the presence of the oil catch-tank within the space formed by the roll over bar. On seeing M23/9 for real, stripped down, I always believed this to be accurate. In fact, this was a development to bring the centre of gravity slightly more centrally in 1977 and to remove a source of risk of an oil slick following rear end damage by a pursuing car. In '76 the catch-tank was still incorporated in the rear wing pylon as in earlier seasons.

Being a vet has its advantages, as I was fortunately able to find some ideal and novel materials to help in the scratchbuild aspect.

- 1) an 0.5mm Steinman Pin (stainless steel orthopaedic pin for fracture repair) was used as part of rearward clip on the airbox rim.
- 2) an intravenous drip bag provided an ideal tough but flexible plastic skirt material after painting the appropriate colour from behind.
- 3) The protective plastic sheath from a heart pacemaker cable was just right in colour, flexibility and diameter for the water expansion/header tank overflow pipe, and
- 4) A particular product's syringe barrel, which turned out to be glass, was an ideal diameter for the compressed air cylinder next to the mechanical starter unit alongside the lower left of the gearbox.

This gave my model a unique feel to it and after more than 18 months work, I felt I really knew the car quite well; pity I can't afford to buy a real one (on the market for approximately £200-400,000 depending on provenance and condition). However, I believe I have the next best thing!