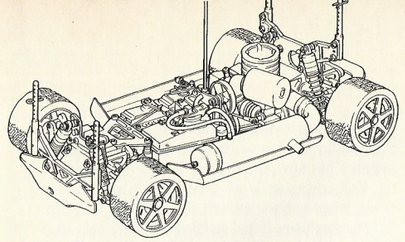
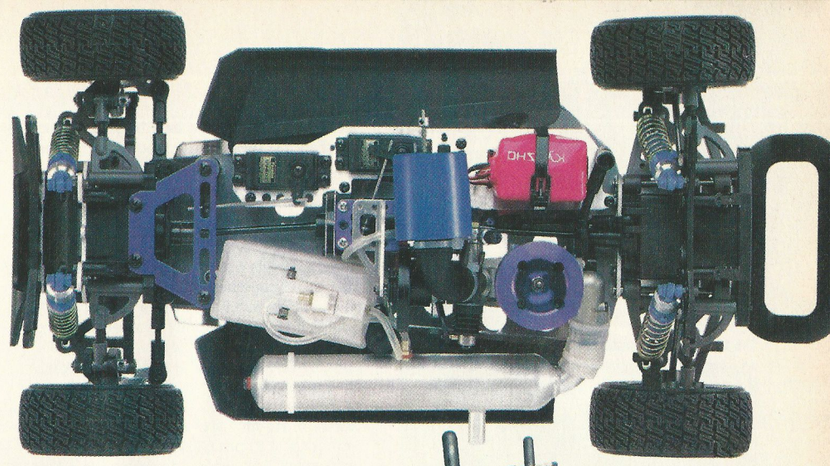
Malcolm Mitchell

The Kyosho 1/8th WRC Escort

the sainz go marching on





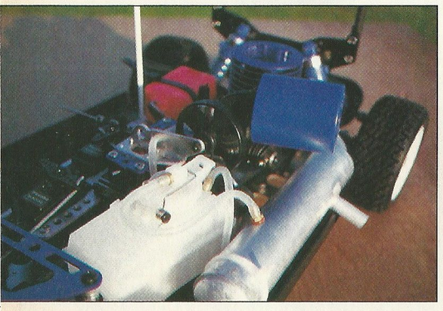
A model career

1997 has been a good year for Ford in the World Rally Championship, and it will no doubt be remembered as the turning point in their competitive fortunes under the brilliant direction of Malcolm Wilson in his first year as team boss. They have come within a gnat's whisker of clinching the World title after many years in the doldrums playing very much second fiddle to the Japanese contingent, and seem to have a new vitality having shaken off the 'boring Boreham' links. The name 'Escort' has been synonymous with many rally successes in the past, especially in the years between 1972 and 1979 with the Mk1 and Mk2 models, the most memorable probably being Roger Clarks' RAC victory in 1972 and 1973 navigated by the irrepressible Tony Mason of 'Top Gear' fame. But in recent years form dropped off, and only this year has there been a spectacular renaissance with what has turned out to be one of the best handling and well balanced cars in the pack, plus the definite advantage of one of strongest driver line-ups ever in Carlos Sainz and Juha Kankkunen.

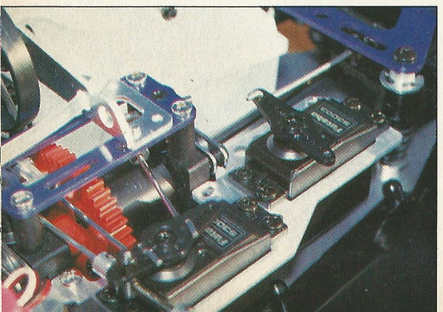
A car for Carlos

Sainz's car is the subject of KYOSHO'S terrific new release and comes in Super Eight gas-powered form. It is based on their highly successful GP Landmax chassis from the World Championship winning competition off-road buggies, and features: four wheel drive, three geared diffs, twin powerful disc brakes, four long-stroke oil-filled shocks with variable spring settings, and fully adjustable all-round independent suspension. It is designed for fairly rough terrain as well as smooth tarmac. The power - and what

The Fuel tank and engine cooling fan detail



Twin Disk Brakes for Excellent stopping power



power! - is provided by the reliable .20 class (3.5 cc) GS21R pull-start, fan cooled, glow engine driving through a tough centrifugal clutch geared to the centre diff'

The engine is ready fitted to the part assembled alloy pressed chassis, the other attached bits being the three diffs, with the front and rear suspension attachment points already fitted, prop shafts and twin brake assembly. The whole drive train features no less than 10 precision ball races to reduce wear and friction, which makes it all the more surprising that only plain bearings are provided for the four wheel hubs - but more of that later.

Who me?

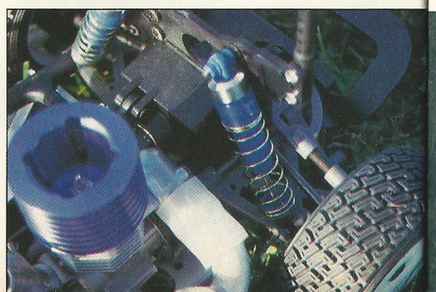
I've been a life-long rally and motor sport fan, and I used to take part in many local club events in Gloucestershire before family life came along and re-directed my finances towards more mundane things such as mortgages and nappies! So, when your worthy new Ed. approached me to renew my enthusiasm and participation in the sport on a slightly smaller scale by building and reviewing this model from a beginners perspective, I jumped at the chance!

Although I am a novice at RC cars and racing I've been making models in other forms for as long as I can remember, from control line aircraft to steam engines with varying degrees of success! So hopefully I can approach this model build-up from a fresh viewpoint, and go into the details of construction a little more deeply than most articles do, so as to hopefully illustrate potential pitfalls that other novices such as myself may encounter along the way. I hope this will help other beginners in basic techniques that may otherwise be taken for granted as common knowledge.

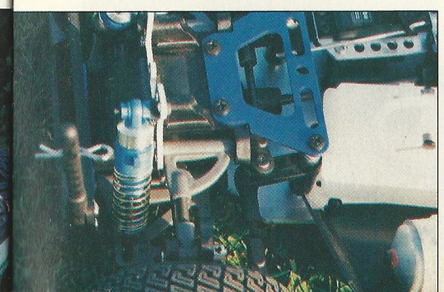
Ready? Get tooled up

So, are you sitting comfortably? Then I'll begin! Wow! What a box! The size of box Christmas and Birthday dreams are made of, with quality photos and graphics printed thereon that more than hint at the quality of the goodies to be discovered inside! In fact you have to look twice at the photographs on the side of the box of Sainz's Escort chucking up the gravel before you realise that this is the model and not the real Mcoy! Appetite wetted even more! On opening the lid the sheer quality of this kit is revealed. The big Lexan shell is beautifully vacuum-formed with crisp detail and the basic part-assembled chassis looks a real piece of engineering dominated by that lovely engine unit with it's bright blue anodised cooling fins. The chassis pressing itself is well formed in a natural alloy colour, and the various holes and slots therein are virtually burr-free, any small sharp edges can be easily removed with a small round needle file. All the other bits and pieces are contained in numbered and coded bags that are referred to throughout the comprehensive instruction book.

Rear suspension features long travel oil filled coil overs



The robust front



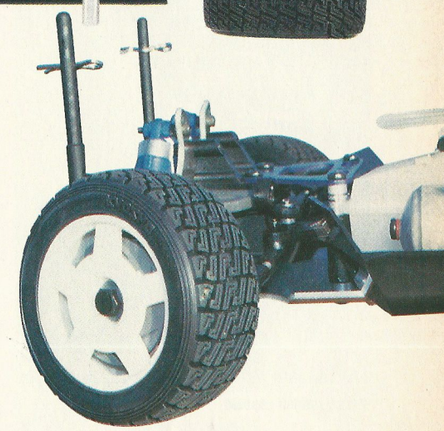
I tipped the contents of each bag into separate plastic containers such as ice-cream tubs (empty preferably!) and stuck their appropriate label to each one. This makes sorting out and finding the bits and bobs much easier than grubbing around in a bag, and since many components are quite similar it really helps in preventing a mix-up. As far as constructional tools go very little is needed. The kit comes with its own cross-wrench, together with the required Allen keys, a tube of grease (not enough!) and the special hydraulic shocker oil. The only other things you need are a decent pair of needle nose pliers, a couple of Phillips screwdrivers, medium and small, some side cutters, a hobby knife, a few small spanners, Super-glue and some Screw-lock such as Loctite Threadlock. For cutting off the various plastic and nylon parts I use a pair of cutters called XURON. They are sold as a model railway track cutter and cut with a close shearing action that leaves hardly any nib to trim off, they are a lot safer than a craft knife and will cut through anything, except hardened wire, really squarely. They can be obtained from 'Acme Model Co. Phone No:0181979-0672. When it comes to the body work, a pair of curved scissors is great advantage when dealing with the wheel arches with a good quality pair of normal craft scissors for the straight runs. A selection of drills and a taper reamer or broach for opening out holes in the shell complete the basic requirements.

Radio active

The one major requirement you do of course need is the radio gear. I opted for economy for starters and equipped myself with the admirable but entry-level Futaba Attack 2DR together with a R122JE receiver and a pair of S3003 servos. The next job is to thoroughly read the manual. This is not so much a read as a study of the clear and concise line drawings, as there is relatively little text. The step by step illustrations guide you through the construction in a logical and helpful sequence, in fact I don't recall coming across any detail that wasn't crystal clear and even the English was pretty good compared with early colourful Far Eastern versions of our language! Each section lists and illustrates in a 1:1 format the various screws and washers required making identification a cinch, together with the ref. number of the bag or bags of bits required. On with the build-up then!

First checks

The first job was to just check the tightness of the screws already installed in the chassis just in case, but they were all OK. Next job was to build and attach the rear suspension. This is very straightforward and consists of screwing socket-

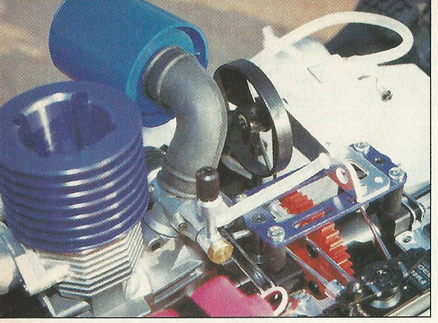


Scale tyres are a fairly hard compound

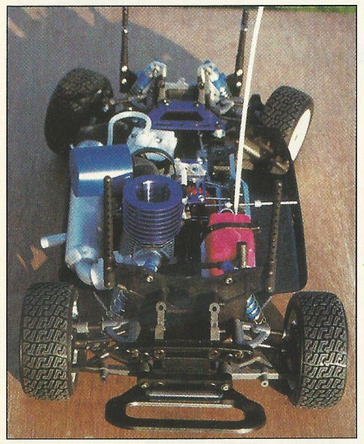
ed set screws into the top wish-bones then screwing on the trunion that attaches to the top of the hub assembly. The length of exposed thread is pretty critical for initial suspension set-up as it controls the camber of the wheel and was measured accurately with the aid of a caliper. Make sure you have used the correct wishbone, as the fronts and rears are very similar, yet slightly different in dimensions, I thought it was a very tight fit between the fixing holes before I realised my goof! Attach the wishbones using the pin and E-rings then screw the ride-height adjustment set screws into the lower arm to the dimension recommended, this can be finally adjusted as required after running trials dependent on conditions and terrain.

This will have a bearing on things

Now we come to the only weak point in the kit as far as I am concerned, that of the wheel bearings. Why oh why Kyosho don't put proper ball races in the kit I just don't know, It would only cost pence on their production costs at factory level, yet would complete the very high spec. that the rest of the kit enjoys, especially when they've made such a big thing of the "10 precision bearings in the drive-train" Anyway, straight from the box we are stuck with plain bearings, so make sure that they are well greased after inserting them into main hub units. I will be getting proper bearings as soon as possible though for my first 'hop-up'. On the subject of grease, as mentioned the little tube supplied doesn't really contain enough to give



The air cleaner is waterproofed



The completed chassis

all the moving parts a good application, so get some more while you're in the hobby shop, DON'T be tempted to use any old car grease as this will more than likely dissolve any plastic parts it contacts! Modern silicon or PTFE greases are OK though. Finish assembling both sides of the rear suspension and fit the 'dog-bone' drive shafts, using the grease in the universal joint. There is a train of thought now that if you put too much grease in the joints, dust and grit thrown up by the wheels will stick to it forming a very effective grinding paste. On the other hand, a dry joint will wear quickly, so you just can't win! The only answer would be to have some kind of gaiter covering it, or go for a proper sealed constant velocity joint. The front suspension assembly is tackled in exactly the same way except that the front cast metal hubs swivel for the steering inside a ABS plastic housing. These are attached using King Pins which are retained using a Threadlock liquid to save vibrating loose with the inevitable dire results! Take care when applying Threadlock near moving parts otherwise it will all seize up due to it getting where it shouldn't! Best thing is to apply it to the inside of the threaded hole with a cocktail stick rather than to the screw itself. Grease and attach the bearings and assemble, remembering that a small rubber 'O' ring fits inside the universal driveshaft joint at the diff end. The instructions tell you to snip off the top of the plastic hub housing where shown, but I couldn't see why so I left it! Make sure all moves freely and check that all those screws and clips are well attached. Resist the temptation to bung the wheels on and go brumm brumm all over the carpet and move on to the next section and attach the engine cooling fan. The drawings make this all nice and clear but do make sure that the fan is round the right way so that it blows towards the engine rather than sucks! It is driven off the end of the clutch pulley by an 'O' ring pretending it's a fan belt, grease the fan bearing well having attached the shaft to the bracket with 'threadlock'.

Suspension

Next assemble the shocks. These are a real treat to put together and work like a dream. The only point to watch is to make sure all the moulding pips are carefully removed from the plastic piston heads so they don't bind, then carefully bleed out all the air bubbles having filled them with the special hydraulic oil provided, before screwing on the caps and rubber seals. Test each one for smooth action then attach the springs using a spring spacer/tensioner to your requirements (the wider the spacer the harder the spring rating). Assemble each shocker to it's appropriate suspension arm using the plastic nuts and spacers provided. I was a bit worried about the use of plastic in an area of high stress such as this, but my fears appear groundless as it is a very tough nylony type of material and copes admirably. Make up and attach the rear stabiliser rod that stiffens up a potential flexing area between rear diff and the floor-pan. This is followed by making up the various steering arms and track rods, make sure the correct ball ends are used as they are quite similar and can be easily confused. Once again the callipers are used to measure the critical lengths of the rods so that the steering geometry is basically set. The little metal balls (my, don't they roll a long way!) clip satisfyingly into the plastic ball ends to complete the assembly. The steering pivots that fit onto the main floor-pan are now screwed into place using 'threadlock' and grease applied to the shafts, the steering operating cranks, including the 'servo saver' (this is a spring-loaded unit that 'gives' under excessive torque to protect your precious servos against damage should the steering jam up or similar). All the various arms are fitted as per the diagrams and the whole lot connected up to the front swivel hubs, not forgetting the 'threadlock' on the tie-rod end retaining nuts. Test for free and easy movement from lock to lock. I found that the central cross tie-rod slightly fouls the top wishbone pivot on the left-hand side here so I relieved the side of the plastic ball end slightly using a craft knife so as to avoid a potential cause of steering 'lock-up'.

Mounts and systems

Front and rear body mounts are finally added to complete the diff and suspension areas. Fuel tank and primer button are fitted next using the flexible mounting posts, taking care to identify the correct mounting holes in the chassis plate. Dimensions are given to cut the fuel lines into the various lengths required and are generous so as to avoid any tight bends and possible kinks that would lead to fuel starvation. Thread the pipework neatly around the tank and through the hole in the fan support to the engine making sure no moving parts are fouled. The air filter, that comes with an optional wet weather cover, is assembled but left off until the throttle linkage has been fitted because it only gets in the way. Incidentally, when you do fit the filter in place make sure it points to the left and not the right as the colour illustration on the box shows, otherwise it will foul all of the brake linkage. Also, even more important, is to fit a small 'Jubilee' clip to the rubber pipe where it attaches to the engine, this prevents the filter moving round under engine vibration and making contact with the cooling fan. I machined a fair groove in the cover of the filter in a split second before I realised what was going on! The radio plate is next prepared by fitting the servos, antenna mount, receiver and battery pack as per the very clear drawings. Take time to make a really neat and tidy job of routing the wiring tucking any excess into the astonishingly pink weather-proof cover for the receiver, this is then strapped to the top radio plate with the battery pack under. The whole assembly is now screwed firmly to the flexible mounting posts. Now the fun-bit, making up and attaching all of the operating rods for throttle, brakes and steering. Actually it's not that bad, as the diagrams and dimensions given are, once again, very clear and give a good base setting ready for final adjustment under power. All you have to worry about at the moment is to ensure that all the rods move freely without fouling and that the ends are an easy fit in the servo horns. Front and rear bumpers can now be fitted, the rear one doubling as a neat carry handle (Now you know why those countersink screws were sticking up proud under the rear of the chassis!). An optional front urethane foam bumper can also be obtained and may well be worth having, considering the speed that this beast can travel! It will also protect your ankles as you master the art of steering towards yourself (Sorry Mrs Ed.!!)! The tuned exhaust can now be connected to the exhaust manifold with the length of silicon tubing provided (why doesn't it catch fire?), and is retained using straps trimming off the excess once fully tightened. A length of tubing connects the forward end of the muffler to the fuel tank providing a desirable degree of pressurisation. The side guards are finally screwed into place (the fixing holes don't quite align here, but if attached loosely and gradually tightened up, all pulls into place), and the exhaust system strapped to the moulded bracket. That completes the chassis leaving just the wheels to assemble and fit. These are a two-part design, the idea being that the tyre bead is effectively clamped between the inner and outer sections, but super-glue is still required for tyre retention. Assemble each wheel as per the diagrams, not forgetting that the brake disks are handed, then wash the tyres and rims with washing-up liquid to remove any trace of mould release agent. Dry thoroughly with a hairdryer and fit the tyre in place on the rim, tucking the bead well into the gap between inner and outer sections and then run the wheel along the bench to make sure it is true. No foam

"how does it go? - Fast!"

inserts are provided which is surprising, but I'm sure KYOSHO know what they're doing! Wearing eye protection, and laying the wheel flat on the bench, carefully prise the tyre away from the inner rim and dribble a small amount of 'super-glue into the gap. Capillary action will draw it a fair way around the rim, so you only have to apply it in three or four places. Release the tyre gently so that the glue doesn't spit out in your face and all over the wheel, and push the bead well down into place. Treat both sides the same on all wheels starting on the inner sides for practice where the odd mistake won't show. The slower setting super-glues or spray-curing types are more suitable for this job as it allows a little more time to get the tyre nice and straight, normal type can catch you unawares with the speed of setting, and you'll end up with the bead in and out all around the wheel. So all done, now you can attach the wheels to the chassis with the 'O' rings, locking pins, bolts and washers and at last go BRUMMM! BRUMMM! all over the carpet!

Fire it up!

With fuel in the tank, glow plug fitted and the basic mixture set up as described in the engine instruction sheet, the running-in sequence can begin. Prime the engine using the rubber button by the fuel tank, attach the glow-start and pull the recoil starter cord in short, quick bursts. Pull the cord in a straight direction out of the recoil housing and not at an angle otherwise you will break off the plastic guide-neck as I did so beware! The engine burst into life quite readily and settled down into a fast tick-over. The glow-start was removed after about ten seconds, and the engine run for about two to three tanks of fuel keeping the revs to a medium tick-over. The chassis was then power tested and the final adjustments made to the throttle, brake and steering linkages. The brakes are very powerful and well worth taking time to adjust to optimum performance, after all they are the most important component to a beginner!

Quick Spec

1/8TH SCALE 4WD GAS RC CAR	
Engine	.20 class. 3.5 cc
Length	550 mm
Width	250 mm
Height	190 mm
Wheelbase	325 mm
Track F/R	210 mm
Tyres	94 mm x 37 mm
Weight	3200g (approx)

Testers Kit

Transmitter	Futuba Attack 2DR
Receiver	Futuba R122JE
Servos	Futuba S3003
Wheels/tyres	Kit
Glow plug	Kit
Glow-start	Ripmax

Likes:

Superb quality
Proven performance
Easy build
Fantastic appearance with quality bodyshell & decals

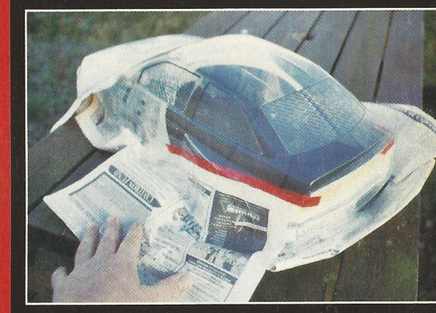
Dislikes:

Plain penny-pinching wheel bearings, but that is all!

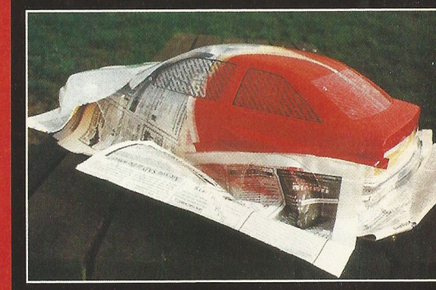
You too can have a body like mine with cotton buds and hairdryers!

On to the body! The bodyshell is well worth taking time and care over as it is a lovely bit of moulding, the detail is crisp and the dimensions and overall appearance are accurate. A great sheet of decals is also supplied giving you the full set of graphics for the REPSOL sponsored Escort in 'RALLYE DE PORTUGAL' guise. Not an awful lot is written about bodyshell preparation and finishing, at best there is a short comment such as "I painted the shell and stuck on the decals" or "I passed the shell over to so and so graphics expert and he did his usual stunning job" - very informative! I was determined to do it all myself and found it not too difficult a job and very satisfying when an acceptable final product emerged. First job is to roughly trim up the shell using a pair of curved scissors for the wheelarches, and a quality normal pair for the straight runs. Cut just outside the correct line moulded on the body, having marked it with a fine felt-tip pen first to avoid taking any wrong turns! You can use felt tip to mark the Lexan without any worries as it still has it's protective film on which will not be stripped off until all of the painting is done. Once it has been trimmed off I used a large flat medium cut file to finish the straight runs, and a small hobby drill such as a 'Mini-Craft' fitted with a rotary grindwheel, to deal with the curved wheel areas. It's worth wearing a face-mask when performing this operation as the dust can be quite irritating on your chest and throat. When you are satisfied with the finish of the cut edges, finish off with 600 grade wet and dry to remove any remaining burrs. Drill pilot holes for the body mounting locations, windscreen wipers, antenna, dummy aerial, mirrors and spoiler, - deburr, then cover with small pieces of tape to prevent overspray coming through. Wash the shell thoroughly in washing-up liquid, rinse, then dry with a hairdryer on a warm setting. Masking off the inside of the shell comes next, and luckily the tricky bit of blanking out all of the windows accurately is catered for in the kit by the provision of a set of ready-cut self adhesive masks. Position these first, pressing down firmly into place, eliminating all air bubbles by working from the centre out, pay particular attention to the edges. The main paintwork on the REPSOL works Escort consists of orange, red and white, and needs care in masking off each colour to give a professional looking finish. Study photographs of the car carefully, together with the painting diagrams to see exactly where the colours meet, often dictated by the decal positions, and mark on the outside surface with the fine felt tip pen, where each colour joint line occurs. Starting with the orange area on the rear roof and upper rear body, mask, using a thin strip of masking tape so that curves can be easily followed, the inside of the shell as indicated by the guide lines. Using wider pieces of tape and newspaper along the applied edge, continue to cover the inside of the shell until all is covered, sealing the edges well as the overspray will get through the slightest gap and ruin all your hard work! I used TAMIYA spray paints on the shell, and it covered admirably with two or three coats. Don't be tempted to use any other spray paints other than those specifically formulated for polycarbonate, for at best it won't stick, and at worse it will dissolve your shell! Spray with light passing coats, at a distance of about 300 mm, until the colour coat covers well, leave to dry for about an hour, then carefully remove the masking. Allow to dry thoroughly then mask up the next colour edge, and spray, red in this case, in the same way. Obviously you don't have to mask off your first colour as it acts as a mask in itself. Remove

Apply the window masks and start masking off

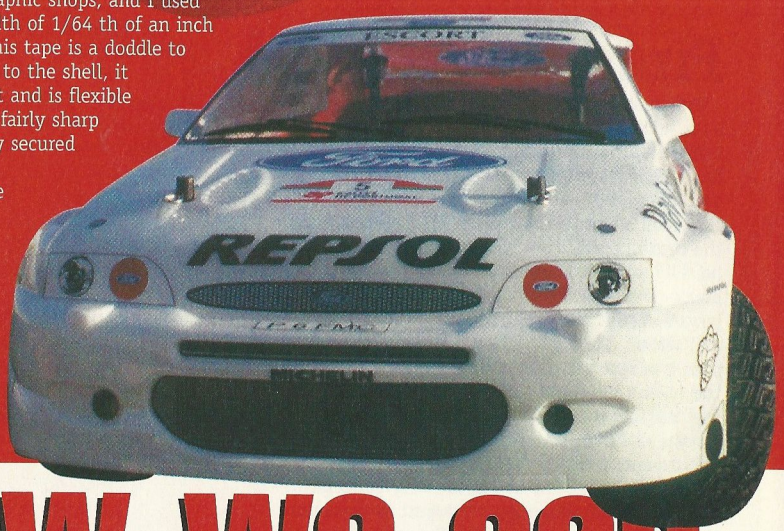


Beware of over spray



Darker colours first

the masking once again, and check carefully the remaining clear bodywork against a light background for any marks or overspray before applying the final white coat. Care in this area is essential as the special paint etches into the surface of the Lexan, and is very difficult to remove. Small marks or overspray can be reduced or eliminated using white spirit or turps on a cocktail stick or cotton bud, but on no account be tempted to use cellulose thinners or similar, for it will just dissolve the shell! A final touch that I think improves the look of the shell a lot, and makes it seem less 'plasticky' and 'see though' is to spray the inside with a final coat of matt black paint. This especially improves the appearance around the wheel arches. Peel off the window masks, check for blemishes, peel off the outer protective film, and leave to dry thoroughly. The instructions show the two front windows cut out to aid cooling, so this can be done now by careful use of scalpel, scissors and file, allowing enough material to remain around the edges for attaching the window surround decals These openings are important even with that efficient fan installed, you don't want to 'cook' your engine in the heat of competition! Applying the decals comes next and this was not nearly as difficult as I had anticipated, but the appearance does make or break the whole model so take your time! The instruction sheet gives a numbered sequence to the job, and it's worth following their advice, cutting each decal from the main sheet only as required using a quality pair of scissors and a scalpel with steel rule. Make the cut just outside the printed area keeping any excess carrier film to a minimum. Fitting decals to flat surfaces is no problem, just align carefully, touch lightly into place, check position once more, then rub down from the centre out, using a soft cloth to eliminate all of the air bubbles. Any stubborn bubbles can be removed by puncturing with a fine pin and rubbing firmly over the top with the cloth. Curved and complex surfaces are a different ball-game altogether and having experimented with a few methods I found the following to be the most successful. Carefully peel the cut decal from it's backing paper and lightly touch it into place as accurately as possible. Using a hairdryer once again, gently waft warm air over the decal to soften it, and as it gives, press into the body shape. When your fingers aren't small enough to get into the corners, use a cotton bud to gently coax and burnish the decal into place, reducing to a cocktail stick for the sharper edges and more defined shapes. You'll be surprised how much the decal will stretch and distort without splitting as long as you keep it warm. Apply all of the transfers required and finish off with the window surrounds which do a great job of covering the usually ragged paint/clear window joint. Press all down well with the soft cloth, paying particular attention to the edges. You may notice that I have a small non-prototypical Texaco sticker on the roof at the rear, this effectively covers an errant bit of paint that went astray - very handy! Since the photos were taken I have now added the panel joint lines around bonnet. doors and tailgate. Most people use paint applied with a bow-pen or similar for this, but I have used a product by LETRASET called 'Letraline'. This is obtainable in rolls of varying thickness and colours from most graphic shops, and I used 'Black Matte' at a width of 1/64 th of an inch (.4 mm). Ref: 471. This tape is a doddle to apply and sticks well to the shell, it is easy to get straight and is flexible enough to get round fairly sharp radii. It can be finally secured with clear varnish if required. Open up the pilot holes in the shell using the taper broach to the sizes specified, de-burr and fit wipers, mirrors and dummy aerial in place using the nuts and washers provided. Assemble, paint and fit the plastic rear spoiler and screw into place. This may seem a little hefty at first compared to the rest of the shell, but since it is positioned right next to the mounting posts it is more than adequately supported. The wing would benefit from a touch of gloss lacquer to match the finish of the rest of the shell, as the paint tends to stay a little matt on this material. The black strip decal around the bottom of the spoiler tends to peel off a little too easily in this vulnerable position so I've replaced it with a length of wiring sheathing, slit longwise with a scalpel down one side, and glued over the bottom edge. Open up the holes for the body mounting points so that the shell fits easily over the posts, then test fit onto the chassis using the body-protecting plastic washers and metal spring-clips. Trim the posts to length and smooth off, mark the position of the exhaust outlet and radio antenna and drill a clearance hole to suit. I painted my antenna black so that it was a little less conspicuous than the white one provided which makes it look more like a dodgem-car pickup!



now we can have fun!

Well, that's about it, great fun to build and a really good-looking and accurate finished model. But how does it go? - Fast!! Having run it in carefully as described, I took it to our local school car park for a blast. It is really quick, but the powerful brakes cope really well, with all four wheels locking up on full application. The handling is excellent, and as you explore the limits it is incredible to see how much like the full size car it behaves, diving into corners under heavy braking, power sliding round and sitting down under acceleration, - great stuff! The standard tyres are quite a hard compound, and can slide around a fair amount, but I think this is quite accurate when you see film of the works' cars drifting from side to side, a picture of controlled power, through the forest bends. One point I would make having run it over some reasonably rough and loose surfaces, is the vulnerability of the plastic gear on the central diff where it peeps through it's clearance hole in the chassis plate. It would only take a small stone to whip up into the mesh to foul up your teeth, so I intend to make up a simple sump-guard to protect it, there being plenty of fixing screws around to attach it to.

Happy Rallying! RRCi