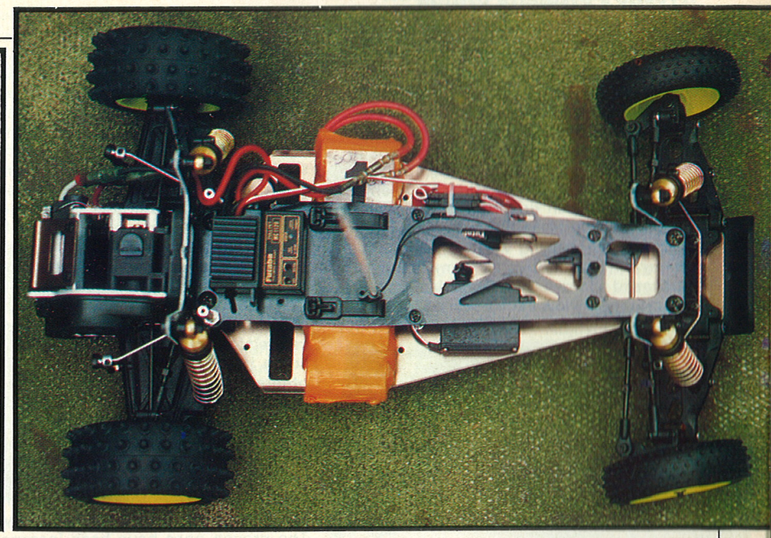
Access to diff for adjustment is via drive cup.

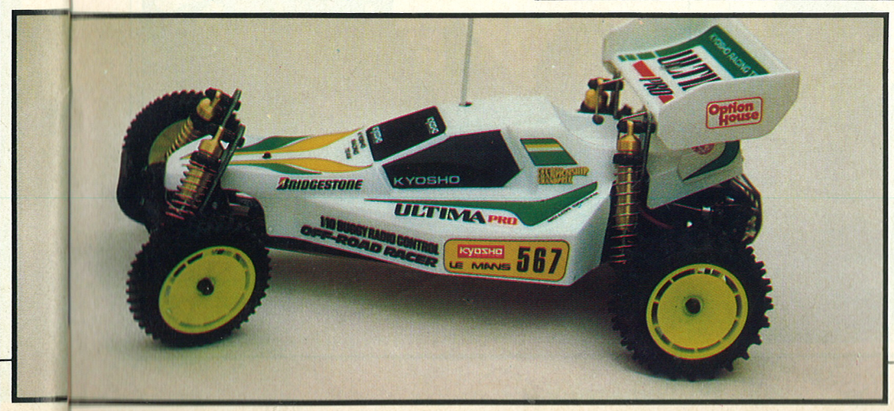


ULTIMA

Pro

Jim Crabb takes a long hard look at the latest Ultima 2WD racing car from Kyosho.

Body also looks good without the wing.



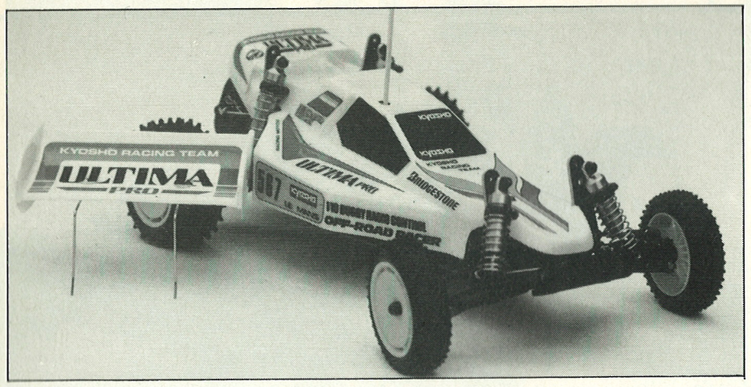
I was privileged back in June 1987 to be asked to review the original Ultima when it was first introduced into this country. The review conclusion asked the question "Would it be the car to re-kindle serious 2 wheel drive interest in the UK?".

The answer must be a resounding "Yes" for the majority of the UK but here in the South East interest is only warm, I think it's a pity because many drivers feel there is more skill in driving a 2WD car to its limit and certainly for the spectators there can be fewer more pleasurable sights than a 2WD car with its tail swinging out on opposite lock being powered round a bend.

Beautiful, clear lines, fast even when standing still.

The Ultima's appearance and instant success at the 1987 IFMAR World Championship in August of that year, where Joel Johnson, Katsunori Kondo and Kris Moore took 1st, 2nd and 3rd places driving Ultimas, sent drivers rushing to the shops to buy them or to their attics to dust off their old RC10's and Falcons so they could enter 2WD events. Each driver who track tested the original Ultima said they had forgotten how much fun racing was with 2WD. The Ultima certainly motivated them as they all purchased and raced 2WD cars last season. The original review car was raced throughout last year quite successfully by Wayne Darwell with only one major modification and that was uprating the suspension from Red Kyosho shocks to Option House Gold. It may surprise you but the importers of a car feel quite flattered when specialist firms start to produce go faster and "performance improving" parts because it indicates they have a successful well selling car which has plenty of built in reserve and potential capability to handle the extra power and performance which out and out racers not only demand but seem able to conjour up. A look through the advertisers in RRC will show you how well the Ultima has been catered for in respect of all those "goodies", some in my opinion do improve the car others are just "hype", this must be the point to introduce the "Ultima Pro" which is Kyosho's Ultima with many of those improvements fitted as standard. Modifications to the standard Ultima which racers have felt necessary and found desirable over the last 18 months of competition have been observed and evaluated by Kyosho. The proven ones have been incorporated into the kit so that the racer can build the Ultima that the out and out racer has been using over the past 18 months. The Ultima Pro obviously is more expensive than the normal Ultima and if you are a potential driver you will want to know what more (or in some aspects less) you get for your money when you purchase the top of the range model. The Ultima will remain available for drivers who wish to upgrade progressively, cannot afford the initial higher capital cost or only wish to race at Club level.

Ultima Pro also looks good without rear wing.



Car Concept

Remains the same as it is a development of a car which was designed from the outset as a racer with simple maintenance and running adjustments in mind. It has a two wheel drive transmission system with independent suspension on all four wheels via coil over oil filled shock absorbers. The chassis is a flat plate type made out of 17S aircraft aluminium which is very light and extremely strong, cut outs are provided to enable saddle pack or stick batteries to be used.

Technical Specification

Neither motor nor a speed controller are included in the kit as the driver who is expected to use the car will already have his own equipment or will have very fixed ideas as to the best products for his particular style of driving.

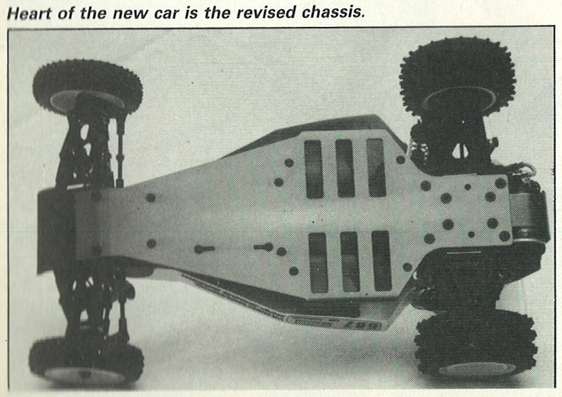
A motor of the driver's choice is mounted outboard of the rear wheels which are driven via a gearbox comprising 48 DP gears of which the final lay gear is metal. The gears are very wide which will reduce the stress on individual teeth, the final item of the transmission is a limited slip ball differential which should prove ideal on loose grip surfaces.

Suspension is fully independent with extra long single wishbones of glass-reinforced plastic (GRP) for both strength, lightweight and extra long wheel travel. Damping is provided by Option House Gold oil filled dampers with a choice of three diffrerent pistons, Gold springs are supplied which are the "hard" type. Anti-roll bars are provided for both front and rear. Adjustable "turnbuckle" type upper links which have a left hand thread one end and a right handed thread the other, are fitted to enable the camber angle to be changed in situ without removing the link from the car.

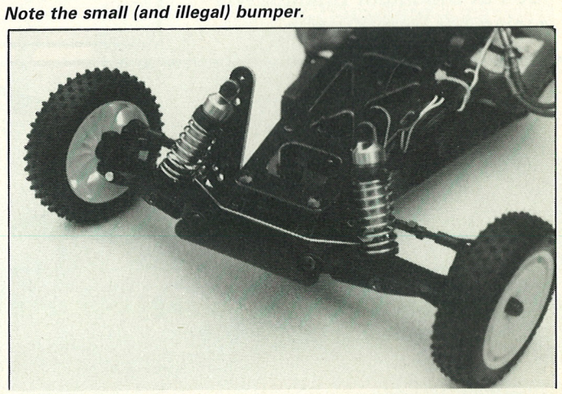
Both front and rear shock absorber mounts are made of black carbon fibre and are ready drilled with various holes to alter the car's height and also cater for roll induced steering effect (RISE). Further height adjustment is possible by relocating the shock absorber bottom mounts on the wishbones.

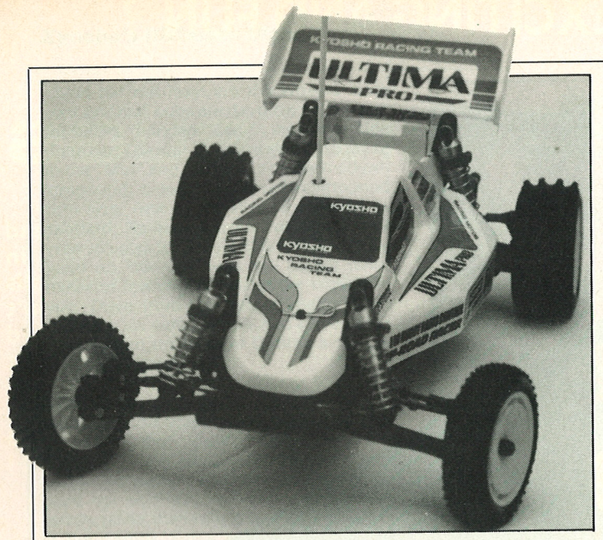
Running gear is mounted on the 17S aluminium-alloy plate chassis which can take either stick or saddle pack configuration of battery lay out. A GRP radio plate runs the length of the car and gives it strength and rigidity. A total of 14 ballraces are supplied in order to ballrace each bearing point.

Heart of the new car is the revised chassis.



Note the small (and illegal) bumper.





Technical Comparison

	Ultima	*Ultima Pro*
Differential	Gear Type	Ball Limited Slip
Length	14.2 in.	Same
Track	7.9 in.	Same
Wheel Base	10.6 in.	Same
Ground Clearance	1.6 in.	Same
Front Tyre	Ribbed	Mini Spike
Rear Tyre	High Grip Spike	Same
Dampers	Kyosho Red	Option House Gold
Damper Mounts	Alloy	Carbon Fibre
Chassis	Channel Type	Flat Plate
Bearings	14 Bronze Bush	14 Ballraces
Camber Angle Adjustment	Fixed	Adjustable in Situ + R.I.S.E. Facility
Anti-Roll Bars	Front	Front and Rear
Motor	RS540	Not included
Motor Guard	Not included	Option House
Speed Controller	3 Step Resistor with reverse	Not included
Battery Position	Stick Transverse	Stick or Saddle Pack

Low-profile high grip tyres are fitted to one piece lightweight coloured hubs, narrow pin spikes on the front and wide larger spikes on the rear. The body is unusual in the respect it comes in three pieces, the main shell looks good and is very similar in shape to the "Mid", it's close fitting to the chassis to give protection to the electrics. Second part is a large rear aerofoil which is mounted on two stainless pieces of wire thus enabling the angle of attack to the air and hence down force on the rear wheels to be altered. Final and unusual item is a small cowl which fits on the rear of the car's main shell but under the wing. Track testing may determine if it is of practical use or put there for aesthetic reasons.

Frontal protection is minimal with the very small bumper we have seen in the past on both the Mid and the original Ultima.

Rear protection for the motor is provided by an Option House motor guard.

Built By Another

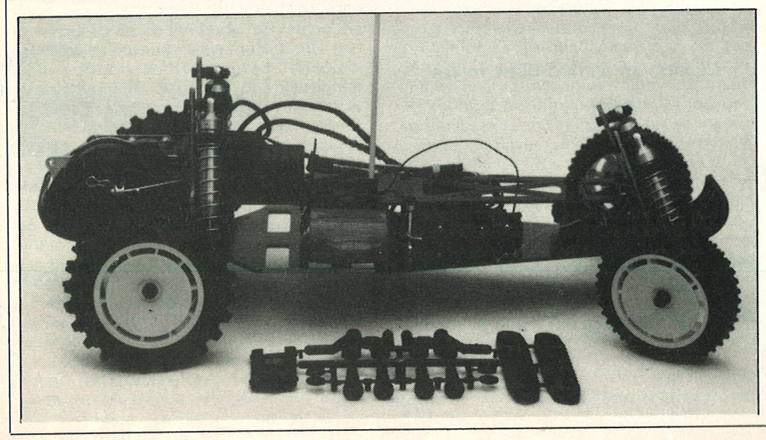
It was a chance conversation with Tim Halstead who is a 2WD advocate and very successful driver at local club meetings that gave me an idea. Who better to build the car than a person who had built one in the past and therefore be able to evaluate the improvements both during building and on the track. Before I put my proposition to Tim he made the job his by saying after I had showed him the Japanese instructions (kits sold in this country will of course have English instructions). "No problem, I could build it with my eyes closed!!" Tim accepted the challenge and started to build that evening.

It's fascinating watching someone else build a car because you can see how to overcome problems and want to dive in and help all the time. A case I suppose of not being able to see the "wood for the trees". Tim kept his eyes open, had no problems. and built the car and trimmed the body in 4½ hours.

Construction

The presentation and packaging is as expected from Kyosho: first class. The comprehensive 25 page instruction manual lists every part and has a two page exploded view of the car on the last two pages. It would be quite possible to build the kit using this alone as each individual item is identified and listed by name on a third sheet. Kyosho use their little cartoon character of a boy in a Kyosho hat to point out the more important steps of construction and make the builder aware it may be a point where the inexperienced could go wrong.

Three different sized allen keys are provided for the cap headed screws used during construction, also supplied are thread lock and silicone grease. There are other tools required to construct the car, they are long nosed pliers for the circlips, a small Phillips screwdriver and spanners for the 3mm and 4mm nuts. A model knife and scissors are required for trimming the body.



All current model car owners will already possess these tools but if you do not have them the investment will be more than worthwhile.

Putting the bits together

First items are the well proven and superb in action Option House Gold shock absorbers as they come unassembled. Assembly of the short front and long rear is identical with two port pistons fitted in each. Tim and I were surprised to find Gold (hard) springs supplied for front and back, we thought there would be soft or mediums on the front.

The gearbox is very efficient yet simplicity itself with only two gears actually inside the box, they are the final ley gear which is metal and drives on the periphery of the pre-assembled differential. Externally situated are the counter gear and the spur gear which are protected by a gearbox cover. Once built up and the motor guard fitted it can loosely be fitted to the chassis with the truss screws done up hand tight. The motor guard is a must as it protects the motor from a rear end shunt which on the Optima and standard Ultima can move it forward making too tight a mesh between the pinion and spur gear. The rear shock mount, shock absorbers, anti-roll bar, adjustable upper links and wishbones are added to completely build the rear end. A small rubber insert is fitted in the drive cup via which adjustments are made to the diff. Front suspension assembly follows the same procedure as the rear and presented no problems, the complete unit including anti-roll bar is bolted to the front of the chassis with two of the retaining screws also locating the illegal (in U.K. only) bumper.

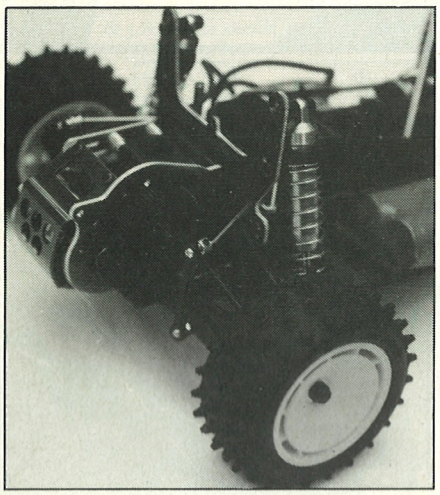
Bump steer is reduced to the minimum by using a two bellcrank system which incorporates a much improved servo saver, although the instructions suggested the steering servo was mounted on the radio plate we fitted ours on the chassis.

Our reasons were threefold, it gave a better action, would also make maintenance easier and keep the centre of gravity lower. A very good plus point with the car is that all ball joints are captive as they are held in situ with a cheese headed screw which prevents them from popping off, this includes the steering gear. Final major item of assembly is the radio plate which gives the car its rigidity and a large area on which to mount the speed controller.

Last but not least are the wheels, both front and rear hubs are dayglow yellow and not being "handed" can fit on either side of the car. The rear tyres are similar to those on the "Mid" and "Raider" and are medium compound, a mini spike hard compound front tyre, new to Kyosho, is supplied as standard, Raider, Scorpion or Tomahawk tyres will also fit. The front tyres need to be glued on, the rear hubs will accept other makes of low profile tyre of the friction fit type. Drive from the output shafts is via Kyosho's six sided centre hub drive collar first used on the original Optima and now used on all their cars.

Electrics

Depending on your choice the car can be run with saddle pack or stick batteries. When run with sticks reusable cable ties locate the battery and the saddle clamps need not be fitted, conversely if you use saddle packs then forget the cable ties and fit the clamps. Either choice can be fitted after the radio plate is in position, change over if required could be carried out track side as only four screws are involved.



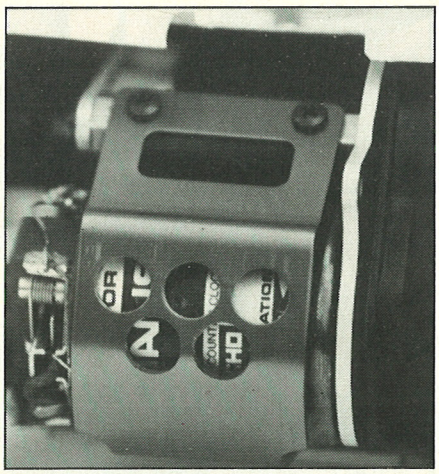
The body

Tim built the car so quickly he suggested he should also paint it although this time he did not offer to do it with his eyes shut. The shell is very good quality of constant thickness and very good looking being very similar in shape to the "Mid".

The large wing is detachable and the rear cowl held in place with double sided tape. If you are a driver who does not like wings then this could be the body for you as the rear cowl comes into view much better and looks quite nice with it removed. The transfers were so good we opted for a plain white body which looks striking with the yellow wheels, being a wide body it was easy to spray, the only difficult part being the side panels on the rear wing.

Construction tips

No problems were experienced even a beginner would have little difficulty provided the instructions were followed. You will need a strong and sharp knife for the body, different length and also different styles of both self tapping and machine screw are used during construction, therefore a rule is handy to measure them during initial stages of construction. Remember to tighten all the truss screws once the motor guard and rear gearbox is in place.



Motor guard; and cut out in body so the car can be picked up.

The night before had been New Year's Eve so New Year's Day was perhaps not the ideal day for taking photographs of the car or track testing, especially as there had been plenty of falling over liquid available for those who wished to partake. Ken who was taking the photographs told me the automatic focus on his camera would compensate for the lack of focus on my eyes!!! Tim I am pleased to say because he was driving had not indulged the night before and was raring to drive the car as soon as the photographs were taken.

Tim mainly drives indoors and had not raced outdoors for four months so was looking forward to the Bank Holiday meeting at Medway on their new custom built track. The track is compacted earth very similar to Romsey. The track has a long start straight which goes into a sweeping right hander and then another long straight before entering the tight infield. Five expert drivers have achieved 13 laps with 4WD cars, good club drivers get 11, there is no official FTD for a 2WD car.

Because of the tight schedule for the review the car had not been run prior to the meeting and we only had time for one practice before the heats. We were a little disappointed not to have been put in a slightly higher heat as there were three very inexperienced drivers in the line up of eight cars, all of which, except the "Ultima Pro", were 4WD. We felt that with the other cars all being 4WD and half a pound heavier together with the inexperience of some of the drivers it would be a good test of the strength, resilience and reliability of the car.

Practice with a Le Mans 240ST showed the gearing to be too high with the standard 20T pinion as we only achieved 4 minutes duration, the car was very fast, turned well and was very stable in a straight line but as we thought during construction the front springing was too hard, the springs were changed to Silver (soft ones) and the pinion to 17 teeth.

Heat 1 — the car went very well not a hint of understeer for the first six laps but then towards the end of the race some understeer became evident due to the front tyres clogging with the damp earth. We were very pleased with the speed of the car, the way it handled and its second place in the heat with a slow ten lapper. After Round One the car was 19th out of the 62 entrants and highest placed 2WD car.

Heat 2 — a change of front tyre to Cat's gave the car oversteer which is unusual on 2WD and did not help with a heat which can only be described as mayhem. The car did finish first but was so scrappy eight laps were sufficient to win. After Round 2 the car had dropped to the 'D' final.

Heat 3 — the best run of the day and the one that should have put the car into at least the 'C' final. The weight distribution with the new chassis is perfect, there is sufficient weight on the back to put the power down and sufficient on the front to get tight steering. At the first bend the car was in second place, by the end of the second lap it was in first place a position it held for the next eight laps until the car unexpectedly dumped: Tim had put a not fully charged set of cells in the car so it was a ten lapper without a split time and pole position in the 'E' final, the car remained the highest placed 2WD.

The Final — we had not appreciated the change in track conditions due to the sun dropping behind the trees which put the track into their shadow and the rising damp made the track quite slippery. Tim did not cope very well which annoyed him, especially as he is predominantly an indoor man and used to slippery surfaces. The car finished in fifth position on the same lap as the eventual winner.

Summary

We left the meeting feeling that we had let the car down and it was because of us it had not achieved what it undoubtedly was capable of. One practice, three heats and a final did not give us time to try out the dialability of the car on either the front or rear suspension but it did show that the new chassis and suspension have transformed an excellent car into a super one. The turning is much improved due to the changed weight distribution and repositioning of the steering servo, the new tyres will be perfect on grass and should dig in well on dry loose grip surfaces. Option House Gold shock absorbers are some of the best available and give the car the capability of riding the bumps well although softer springs are needed on the front. The roll bars and ball diff give the car predictability, it proved to be very strong and survived the meeting using the small kit bumper. The car sits a little high on the standard setting suggested in the instructions and I would think unless the track is long grass the lower setting will be used by most drivers.

Conclusion

A car for the dedicated two wheel man as it has everything needed to succeed at the highest level in one box, but equally within the capabilities of the first time buyer. Every good point of the original Ultima in respect to ease of building and maintenance, simplicity of design and good handling is retained together with improvements gained from racing the car world wide. The improvements over the original car should keep it as a top competitor in 2WD competitions at all levels. The resurgence in 2WD in this country that was started 18 months ago with the "Ultima" will continue with the "Ultima Pro" and that experience gained will keep it at the top although it will not be a two horse race this time with the advent of the new Meteor, Top Cat and Losi cars. 1989 should prove a very fascinating season for both drivers and spectators alike and I will follow the progress of the "Ultima Pro" with great interest.

My very special thanks to Jim Stammer, Ken Miller and Tim Halstead for their help with the preparation of this report.