

When I first saw the **Ultima**, which appeared on the Australian scene very quietly in late 1986, most probably overshadowed by the launch of the Turbo Optima, my inclination was to dismiss the car as being only a lightweight fun car. But the Ultima is a classic 'wolf in sheep's clothing'. Designed by racers for racers, the Kyosho Ultima is the ultimate 2WD performer. The Ultima's super light, super durable, monocoque aluminium frame decreases weight and increases durability.

The Ultima's many stock features include: four oil-filled Kyosho shocks to smooth out rough terrain; low-profile, pin spike tyres on Schumacher CAT size, low profile wheels; and a clear Lexan body with an aerodynamic wing for stability. The special formula EX-66 glass-filled, nylon, double-wishbone suspension used in Kyosho's 4WD champion Turbo Optima has been adapted and improved for the Ultima, making it a virtually unbeatable racing buggy. Notwithstanding, the Ultima is eminently suitable for the novice, both to build and drive. For the more advanced driver the car can be easily modified to become a race winner at the highest possible level. And a winner the Ultima really is, taking out the first three places in the 1987 World Championships.

The Ultima will always be compared with Associated's RC10. Based on external appearance it looks quite a different car, but when you study the Ultima closely, it is apparent that Kyosho have designed, with little fuss and fanfare, an amazingly versatile 2WD which has a wheelbase identical to the RC10 and look-alike suspension geometry. The Ultima's advantage is in its longer suspension arms, which enhance its handling, and in its lighter weight.

I have previously described the Kyosho's 'hot-up' mods for the Ultima (Dirt & Track No. 2, pages 30 & 31). This time I will go back to basics and describe construction of the Ultima straight out of the box, with as much useful information for the novice as possible. In this way a lot more satisfied drivers should be able to hit the campaign trail in the 1988 season, with less of the frustrations so common for those without any previous experience in building and driving a new buggy.

PACKAGING & INSTRUCTIONS

The kit comes extremely well presented, and parts are beautifully packaged in separate plastic bags. A Mabuchi 540 stock motor is supplied, but Kyosho Le Mans 'Hot-up' motors can be installed for race-winning performance. Not supplied are a 2 channel radio and 6 cell, 1200 mAh battery and charger. Apart from a few drops of super glue and a small can of Holt's touch-up spray paint, there is nothing else needed to get the buggy onto the race track. Instructions are copious, with only the occasional word mis-spelled in translation. On pages 30 to 32 of the instruction manual are scale diagrams of all bolts, washers, screws, etc. It is important to use this chart carefully. Kyosho obviously want you to become familiar with all the packets of screws and bolts early on, because you continually have to go from packet to packet to obtain the required fittings for the various construction steps!

GEARBOX and REAR SUSPENSION

Parts are well finished of quality materials, as is expected of Kyosho. Suspension arms, for example, are constructed of the same hard nylon used for the gearbox, and are virtually bullet proof.

Assembly of the differential is straightforward, although it is wise to check the die cast gears for casting burrs. If any are found they can be

removed with a Stanley knife. Be sure to fit the nylon gear case with the inner flat surface against the rear of the sun wheels. If you find, after assembly, that there is undue roughness inside the diff, the die cast sun wheels can be lapped using fine valve-grinding paste and spinning with an electric drill. But, unless everything is thoroughly cleaned after this treatment, the diff will soon be useless; so be careful! Production clearances for the bushes are a little wide; fitting optional ball bearings is recommended. If you do decide to fit ball bearings, this should be done during initial assembly. Once there is any wear on the shafts and axles they will be too sloppy if ball bearings are fitted.

Work the half shafts onto the diff carefully, making sure that the spacing washer is propely centred. Then tighten the grub screw fully and lock with thread cement. Do not grease the swing shafts as shown on page 7 of the instructions; this only allows dirt to collect which causes more rapid wear than in a dry, loose fitting.

Warning! Bolts and screws that are set into plastic should not be over tight-ened; there is probably no single more important factor than the care required in assembling plastic parts.

Here is a hint for setting up the gearbox as shown on page 18 of the instructions. In every Ultima that I have constructed the centre gear is positioned a fraction too close to the counter gear, giving, in my opinion, insufficient backlash. This is easily remedied by drilling out the hole for the centre gear's mounting shaft to 9/64 inch, and tightening the shaft firmly, as far away from the counter gear as possible. Finally, the centre gear is best positioned with both M4

washers on the inside, not on each side as shown.

Parts will now fit together with ease, and they really do fit smoothly. Assembly of the rear and front suspension is rapid, utilising shafts and E clips, indicative of the ease of replacement should repairs be needed during a race meeting, although this has not happened to me in a full year of racing the Ultima.

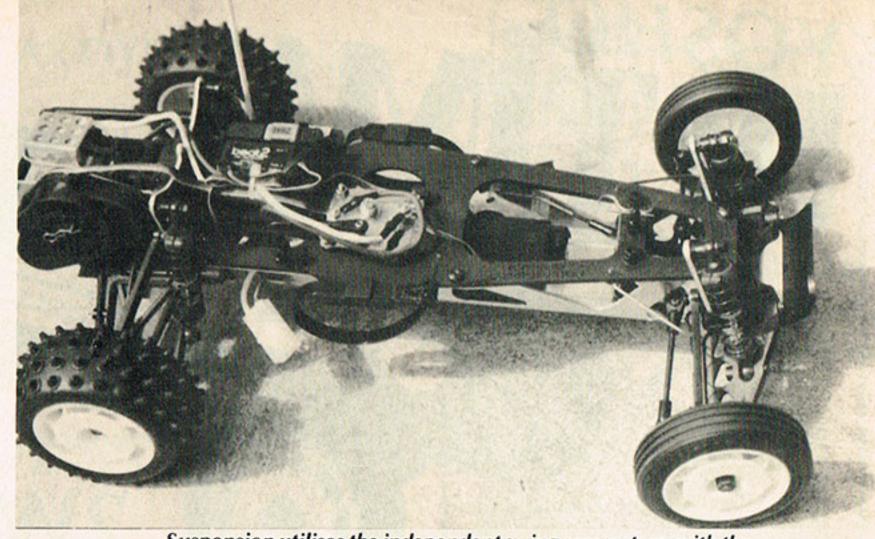
Skip the shocks at this stage; they can be assembled last. Take care with the front knuckle arm and king pin assembly. If there is any slop at all here, try a touch of super glue to locate the knuckle arm tightly. Of all the parts in the Ultima, it is only this assembly that seems to be prone to rapid wear. When assembling the tie rod ends, be sure to advance the ends equally onto the shaft, otherwise, if one end gets too tight, it will distort and bind onto the pivot ball.

STEERING and SPEED CONTROLLER

This is the time to get all the components of your radio gear together and check that everything is functioning correctly. I use a JR Beat 2 channel set with NES-505 servos.

Switch on and centre all trims. It is important that the servos are switched off in their neutral position before assembly, as it's a slow job to reach the speed control servo once it's in position. I prefer to mount servos with a little give, and used small rubber grommets around the mounting screws.

the inner one as shown. Use the longest threaded rod, and spend some time with a heavy screwdriver, a hammer and a bench vise to get the



Suspension utilises the independent swing arm system, with the suspension and the radio plate mounted on the pressed alloy chassis.

S bend to fit smoothly in the servo soldered joins. If you accidentally horn. Mount the servo as far back as make sure that there is no binding immediately - so be warned. between servo and steering arm.

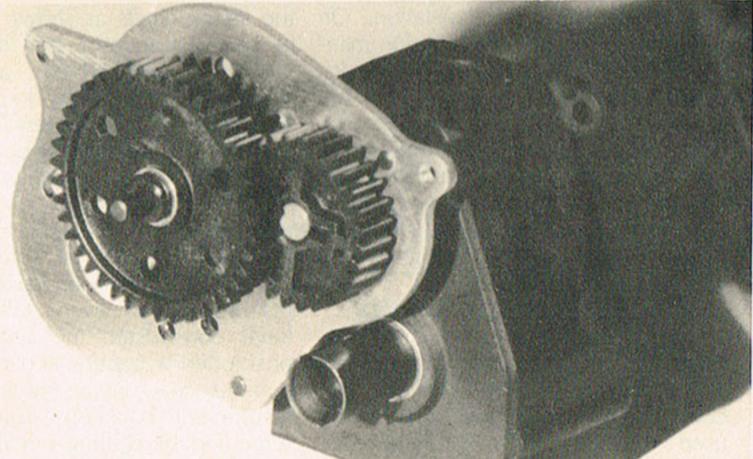
Optima's speed controller, which is together. Remember that the connwell proven, and has silver contacts ecting rod must fit smoothly; close solder the wires from the motor and horn with 12 mm throw, not 15 mm as mark +ve and -ve for later. The M shown, will give full movement on 2.6 x 6 bolt through the centre of the the speed controller speed controller should be located NES-505 servo. with super glue. Fit the motor wires FINISHING OFF in a curve around the speed control horn as shown, and don't cut the wires short, as the extra length helps in the smooth functioning of the con-To make the car easier to steer, the troller. You will need to cut the ball nut in the servo saver should be battery connection of your radio fitted in the centre or outer hole, not switch and solder to the regulator (diode). This diode gives a regulated supply for the receiver and the servos. A little heat shrink tubing can then give a professional finish to your

attach your battery with the wrong possible for a smooth throw, and polarity, the regulator diode will die

Fitting the speed control servo is The speed controller is assembled not easy, but have patience: follow as per instructions. It is similar to the the instructions and it will all fit for long life. For convenience, un- enough is not good enough! A servo with

Filling the shock absorbers with oil is even more simple than shown in the instructions. I fitted the nylon cap seal without taking the piston apart, and filled the shock body up to the level of the mark just below the threads. Simply let the piston sink down into the oil under its own weight till the threaded end settles into the shock body, and tighten carefully. Watch in case the shock seal doesn't seat properly. To reduce the chance of damage I would use a Phillips screwdriver of similar diameter to the end of the shock body instead of the Allen key shown in the instruction book.

Mount the radio plate, taking care not to pinch any wires etc. To simplify attachment of the body, don't use the 'body stoppers'. Replace with a small bolt and nut as for adjoining parts of the plate. This also saves drilling holes in the lower part of the Lexan body where it is easily torn. Use a 5 mm drill for the front location hole in the body. Assembly of the roll cage looks complicated, but is straightforward due to the excellent instructions.



The motor mounting plate, transfer gears and differential are a single unit. The large central idler gear can be ball-raced, although this is an option. Another optional ball-race set can be used in the gearbox itself.

Fitting the front tyres needs the help of a little soapy water and some patience. Once the tyre is correctly seated, locate with super glue.

The motor should then be fitted, and the motor wires resoldered. Make sure that you adjust the motor to give a generous amount of backlash between the pinion and the centre gear.

The really fun part of building any car, painting the body, I left to my son. Using a spray can, after careful masking, he had the body painted in no time at all. The kit provides excellent self-stick coloured labels, so it was easy for him to make up the body to look just the same as shown on the box cover. He also agreed to test drive the car for me. Some people have all the fun!

One real advantage of the Ultima is its light weight. With battery and radio gear it's a low 1.46 kg (2 lb. 2 oz.). This is actually underweight for competition, so you will need to add about 15 gm to bring the car up to the legal weight.

ON THE TRACK

We took the Ultima for its first run on the Templestowe track, which was the venue for the 1987 Victorian Championships. This track is fairly fast, and its hard surface tends to be very slippery, particularly for 2WD In fact, if a 2WD can hang on at Templestowe without losing it on the corners, it's a really well set-up car. The 15 tooth pinion gear supplied with the kit simply isn't suitable for this track. In fact, we would probably still be there waiting for the battery to dump!

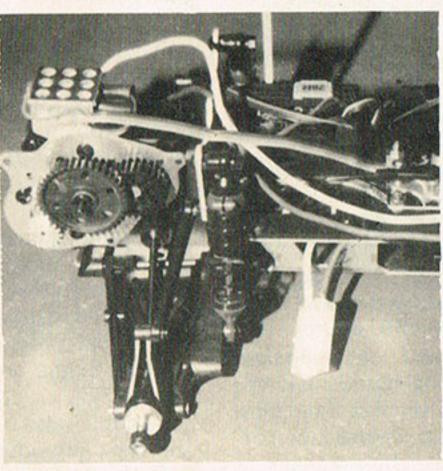
To increase speed to what we are more used to, realising that this car is running a stock standard Mabuchi 540 motor, we tried a 20 tooth pinion

The gearbox module fits into the chassis box, and also supports the rear suspension.

gear, which gives a final drive ratio of 6.2:1. Speed improved dramatically, and now was more like what we were used to. Handling was not good at first, and some rather severe suspension changes were rapidly carried out. First, to reduce the tendency to doughnut on the corners, the tie rod ends were lengthened a full two turns from the standard setting. A bit severe perhaps, but effective. Next we checked out the effect of the front torsion bar, and found that the car handled a lot better without it. So, at last we had the car tamed and able to circulate smoothly. There is no doubt that, to get handling characteristics up to competition standard, the Kyosho Option House mods are required, especially the shocks.

CONCLUSION

An excellent, well-packaged kit that has good performance and handling, and that can be raced almost straight from the box. The Ultima is eminently suitable for the first-time buyer, and is an easy car both to build and to drive. When modified with Kyosho Option House parts the Ultima is easily brought to race-winning standard. With such outstanding success at the World Championships, congratulations to Kyosho are clearly in order.



REVIEW AT A GLANCE

Quality of Instructions: Ease of Construction: Quality of Materials: Motor Supplied?: Chassis Type: Suspension Type: Shocks Type: Sway Bars?: **Ball Races Supplied?:** Motor Accessibility: **Battery Accessibility:** Speed Controller Supplied ?: Steering Servo Saver: Body Shell: Balance of Car: Handling on Track (as tested):

Ease of Setting Up:

*** **** **** Yes; Mabuchi 540. Aluminium box section. Independent arm. Coil over oil filled. Yes. No. *** *** Yes; Resistive plate.

Lexan; you cut out and paint.

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LIST OF PARTS' ADAPTATION WHICH REFER TO EACH MODEL)	041134	011-24	*****	341	3,	00000	- 110 Per - 1		- 24.00	100	SEPTEMBER
Parts No.			-0.00								
OPTION HOUSE	100										
W-BIEF MOTOR GUARD		•									
WHISE SUC GUINNO											
WHIRE GOLD PLATE SET							100				
FIRST HIGH CARBON PLATE 1.7											
W-MIN PRESSURE SHOCK(S) (PARI)	0				1700 (90						
W-SHE PRESSURE SHOCKEL) (PAR)	0				195						
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W 1619 HARD PAYON GEAR HET											
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W SHE SPECIAL ROD SET											
W-SINI UNIVERSAL SWAG SHAFT					•						
W SINT UNIVERSAL SWING SHAFT	200.0			4000							
W-5049 RACING CLUTCH 18T				200			1330				
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WHITE COMPETITION MOTOR SPA NEWS					•			•			
# 1917 COMPETITION MOTOR SPA 8998T						•					
WATER SPECIAL MARY CHASSIS							100				
# 1005 PLATINIAN CH. SHOCKSCS:							200		0	100	
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LATEST RELEASES

*W-0105

*W0108

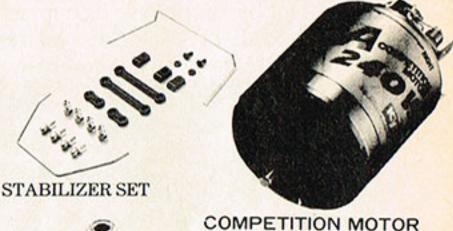
*W0109

*W-0106 *W0107

(Now in Stock). One way differential for Optima Series.

Belt drive conversion for Optima Series

Front ball differential set for Optima Series. Rear ball differential set for Optima Series. Ball differential set for Ultima Series.



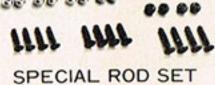
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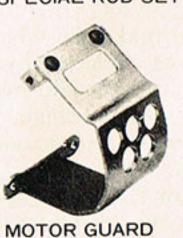


BALL BEARING SET (FOR OPTIMA)



PRESSURE SHOCK(L)





LOW PROFILE TIRE, HIGH GRIP TYPE





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