

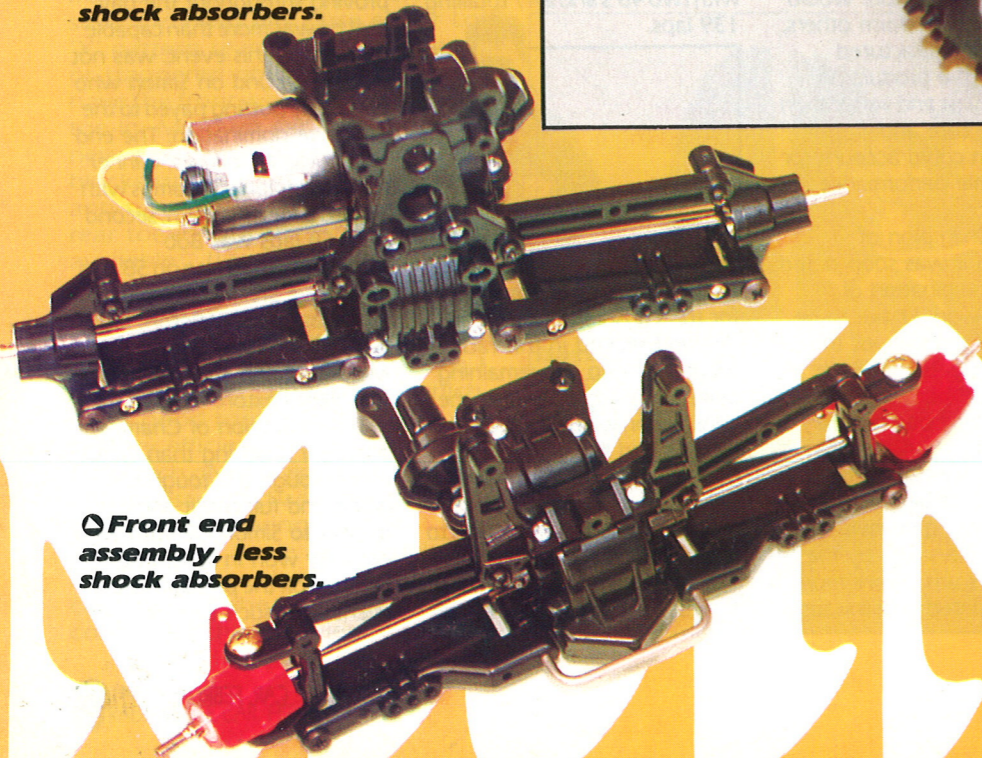
MANTA RAY

The Manta Ray is the latest four wheel drive buggy to come from Tamiya. The prototype was used to good effect at the recent buggy European championships by Jamie Booth when he finished an excellent fifth after qualifying second.

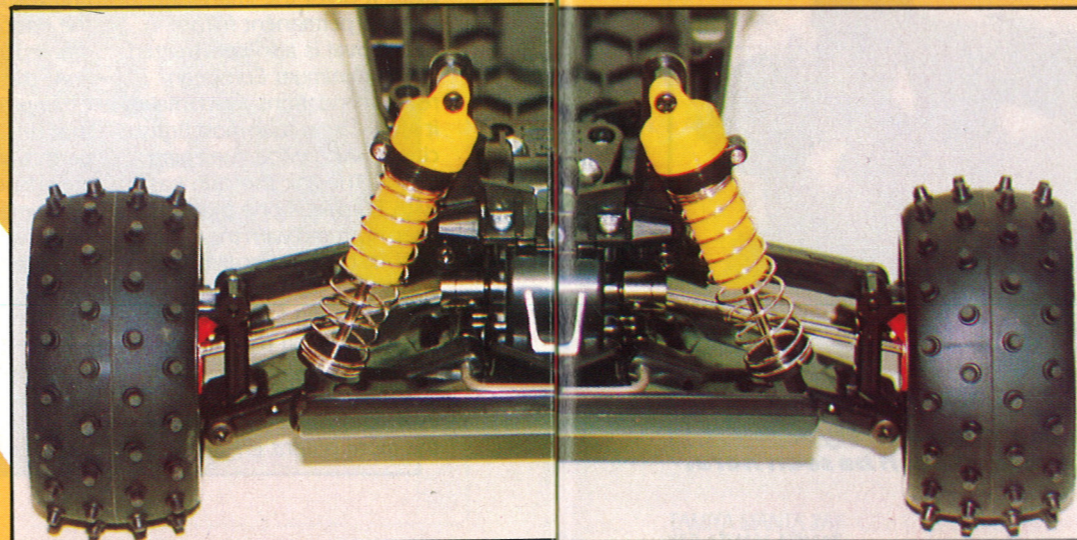
The design of the whole car is completely new, ie the chassis, suspension arms, gearboxes and differentials. The traditional Tamiya front to rear shaft drive is retained however, and as development continues this system is becoming more efficient and reliable.

RRC takes an in depth look at the Manta Ray.

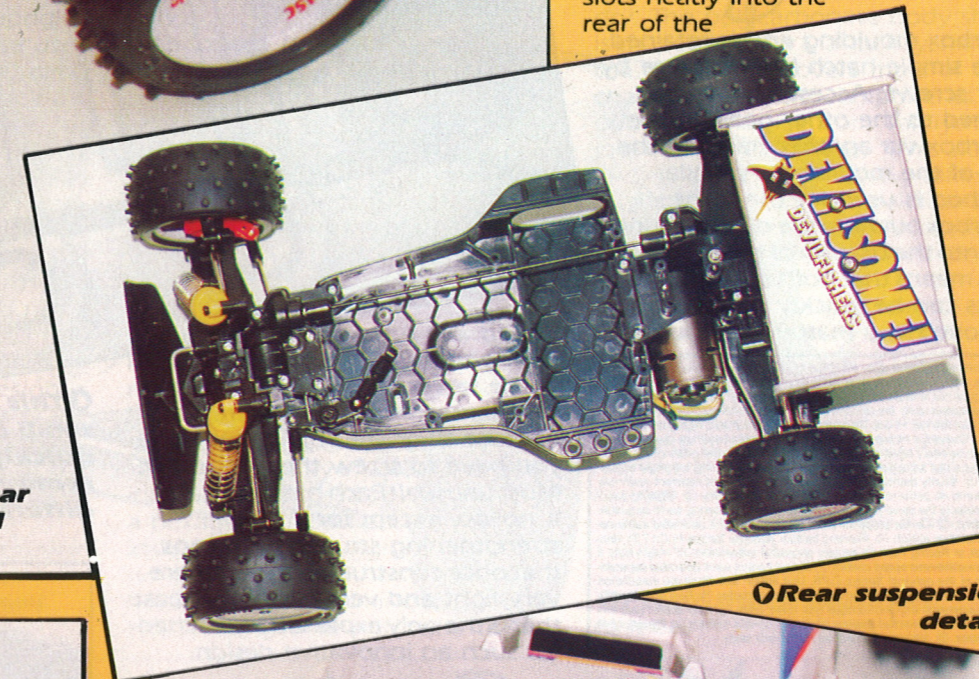
◉ Rear end assembly, less shock absorbers.



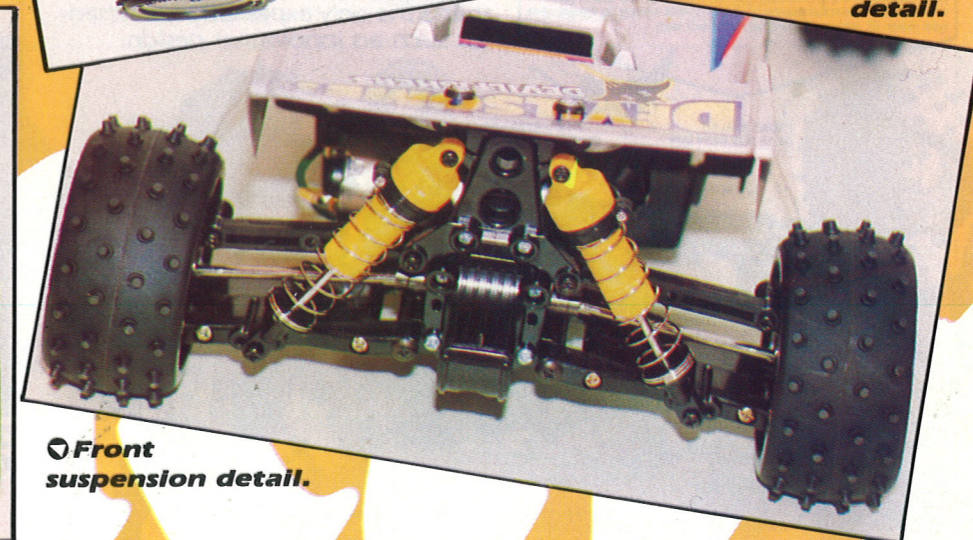
◉ Front end assembly, less shock absorbers.



◉ Overall view of the car showing the hexagonal pattern on the chassis.



◉ Rear suspension detail.



◉ Front suspension detail.

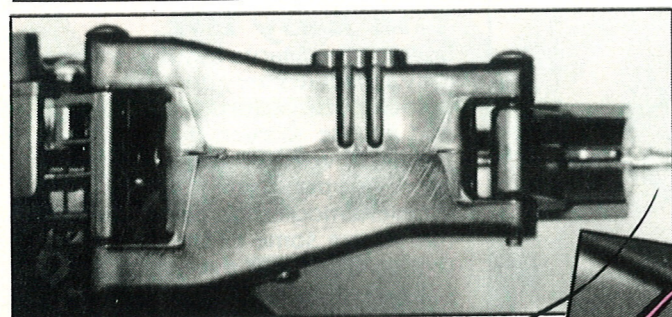
The Easy Bit

Building the Manta Ray is extremely easy, in fact it is very enjoyable. The detailed instructions are as clear and precise as ever. It seems that Tamiya have somehow managed to improve upon their already excellent mouldings, as the ones in this kit are some of the best that this reviewer has ever seen.

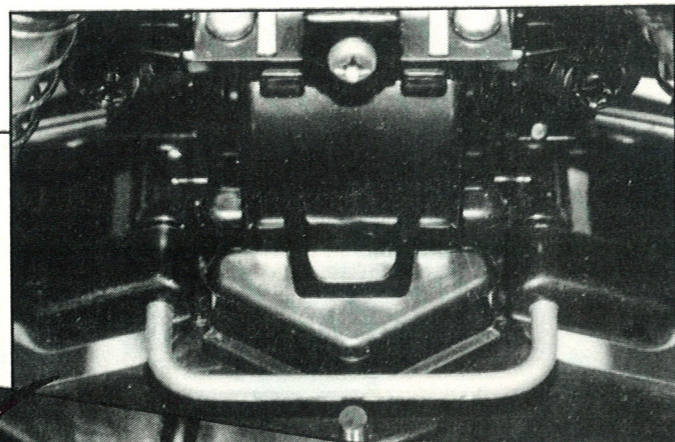
Because most of the kit utilises new, unique designs the majority of the construction process will be outlined.

The front and rear differentials are the first things to be constructed. They are both identical geared/drum type units and when built the first thing noticed was how heavy they were, still this should have no serious detrimental effect on the overall performance of the car.

It seems that Tamiya become more ingenious in fitting the differential units into their cars with every new kit they produce. In the case of the Manta Ray the rear diff slots neatly into the rear of the

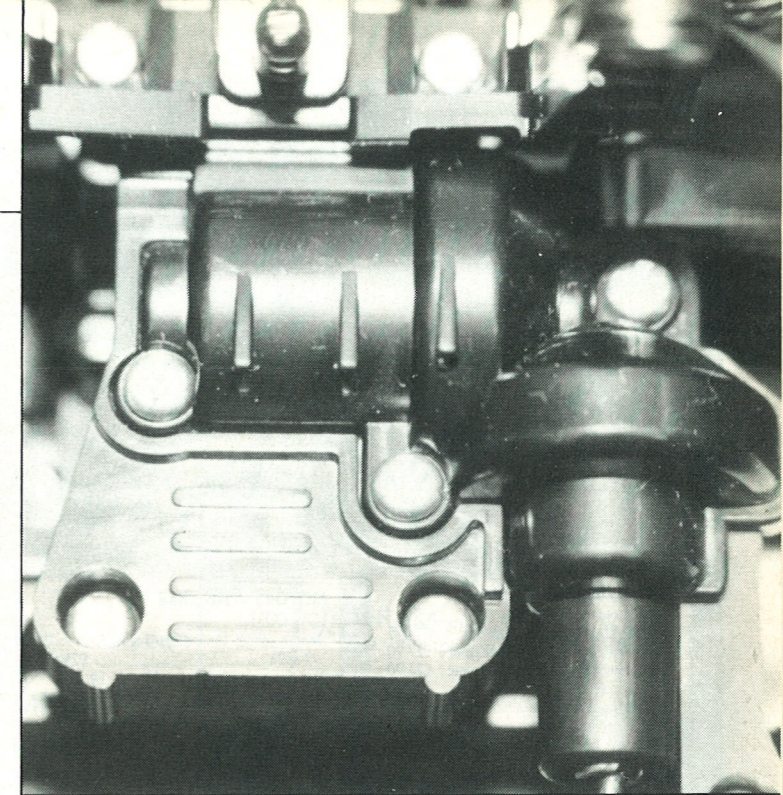
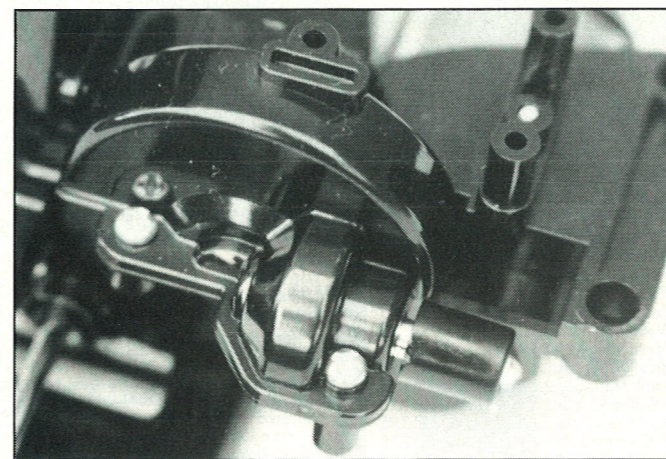


① The two halves of the lower suspension arms can be seen here.



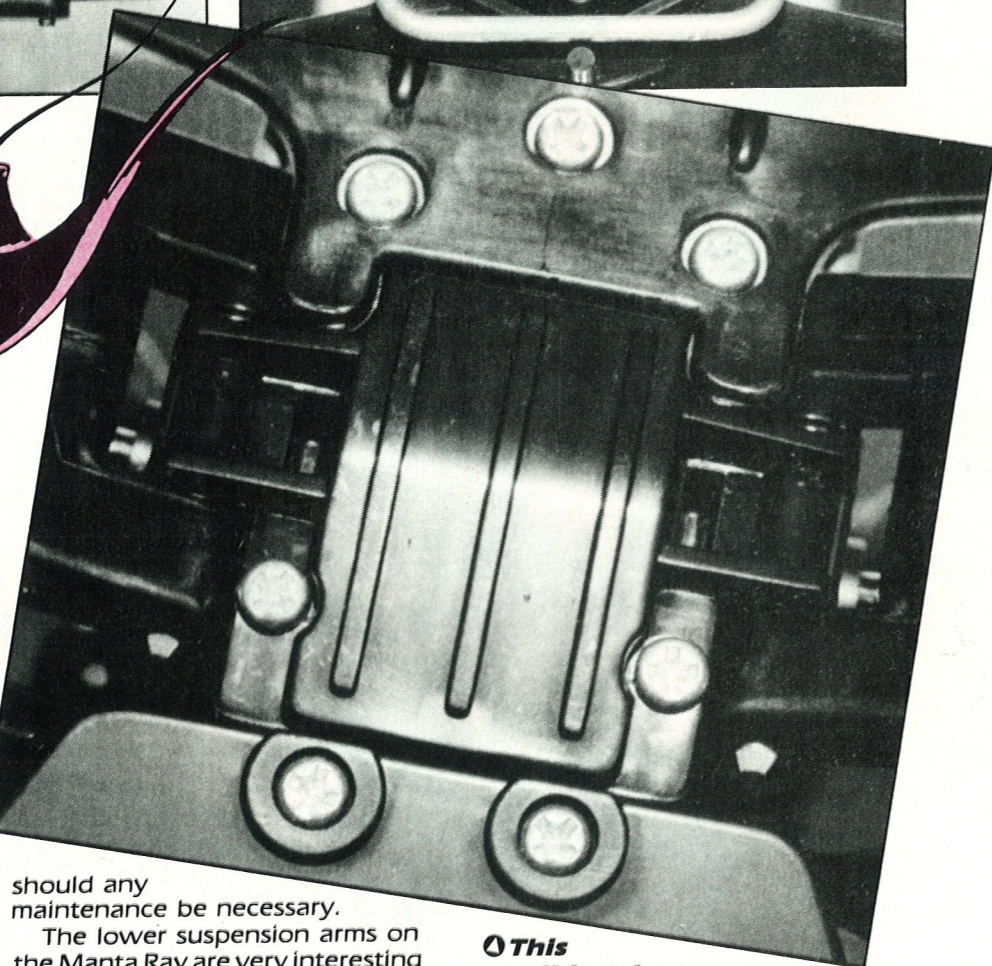
② The metal bar in the centre of the picture holds both the lower front suspension arms on.

③ Rear gearbox/differential assembly.



④ Front gearbox/transmission detail.

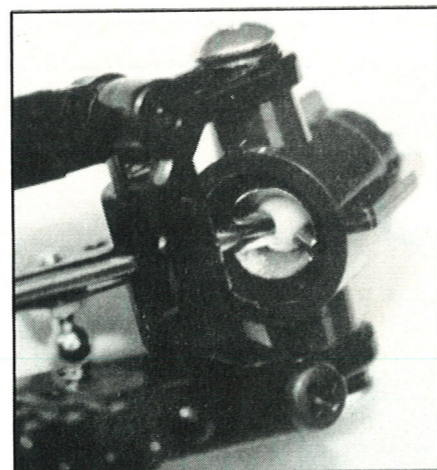
gearbox moulding and is retained by a simple hatch held in place by four screws. Access can also be gained to the other gears in the gearbox via another hatch in the top of the moulding. A similar method is used for the front gearbox but here the diff drum unit fits into the bottom of the moulding. This means that both front and rear units can be quickly and easily removed in a matter of minutes,



① Reinforced special resin front bumper. ② Front double wishbone suspension with monocoque type lower arms. ③ Front drive shaft. ④ Front sealed gear box with precision differential gearing. ⑤ Coil over oil filled C.V.A. shock absorber units are used at all corners. Can be replaced with the optional metal cylinder Hi-Cap Dampers. ⑥ Semi-pneumatic high grip stud spike tires. ⑦ One-piece molded dish type wheel. Plastic bearings used at wheel axles can be easily replaced with the optional 1150 size ball bearings. ⑧ Steering tie-rods use adjusters at both ends for quick steering toe-angle adjustments. ⑨ Sturdy bathtub type chassis/frame of impact resistant resin has honeycomb rib patterns molded inside, for added rigidity. ⑩ Steering servo saver protects the servo from excessive shocks. ⑪ Steering servo (available separately). ⑫ Center propeller shaft. ⑬ Receiver unit (available separately). ⑭ Receiver switch. ⑮ Running battery. Accepts Tamiya Ni-Cd 7.2V Racing Pack or Racing Pack EX battery (available separately). ⑯ Heavy-duty 3 step forward/reverse speed control. ⑰ Speed control servo (available separately). Use of the optional Tamiya C.P.R. Unit P100F will eliminate installation of speed control servo and mechanical speed controller. ⑱ Rear double wishbone suspension with monocoque type lower arms. ⑲ Rear sealed gear box with precision differential gearing. ⑳ Speed control resistor. ㉑ Powerful 540 type motor. ㉒ Vacuum formed polycarbonate body.

should any maintenance be necessary. The lower suspension arms on the Manta Ray are very interesting because they are in two halves, ie you have to screw them together. Most unusual! Each half of the arm is hollow except for a few strengthening struts. This means that once constructed the arms are very light and very strong, at least that is the only explanation reached for such an innovative design.

⑤ This small hatch can quickly and easily be removed to access the front differential unit.



⑥ The dogbone style driveshafts can be seen here.

The dogbone type driveshafts are used for all four wheels and are of the highest quality. Made from a very tough alloy with plastic coated ends, they should prove to be very strong indeed. The unadjustable upper suspension links fit onto plastic shock absorber towers front and rear. The front steering uprights are very reminiscent of those used on the original Hotshot some years ago. The kit utilises plastic bearings all round, hence the low price, but obviously ballraces could be fitted at a later date should you wish to go racing, as they increase run time and efficiency greatly.

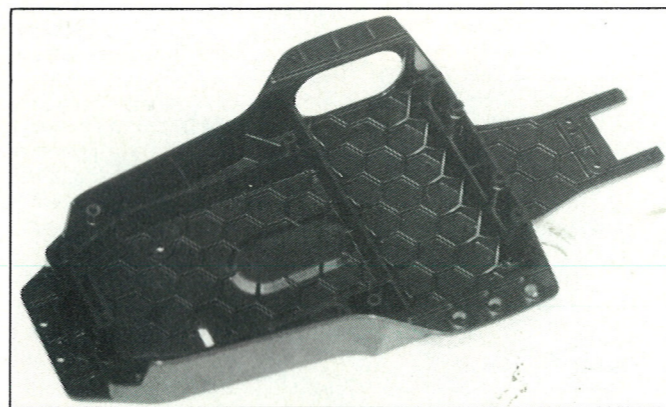
Other items that could be replaced at a later date are the shock absorbers. This would not really be too important however as the plastic ones in the kit work extremely well, and their design is well tried and tested. A soft grade oil is provided in the kit to fill the chambers with and once all of the air bubbles have escaped a rubber diaphragm/oil seal can be positioned into the top of the shock

chamber to give a super smooth, consistent action. A medium strength set of springs are supplied for all four shock absorbers, which incidentally are the same front and rear. Both oil and spring up rate kits can be purchased separately from your nearest Tamiya dealer, should you want to experiment with the suspension. Three different mounting holes are provided on the lower wishbones front and rear for different ride heights and roll stiffnesses.

The typical three step forward and reverse servo operated speed controller is provided in the Manta Ray kit. This unit bolts onto a plastic tray that also houses the necessary servo, which is in turn fixed to the chassis above the stick pack battery retaining recess. As usual with recent Tamiya kits there is more than enough room for the radio gear, whichever set you choose.

The Manta Ray chassis is another interesting feature of the kit. It has a hexagon shaped pattern on the inside to increase rigidity of the whole structure without the use of heavy, space consuming struts and braces. Only time will tell if this is

⑦ The hexagon patterned chassis.



successful or not, i.e. if Tamiya use it in the future.

The tyres are of a wide pin spike pattern and should give plenty of grip under most conditions, wet or dry. The polycarbonate body shell is shaped like the Manta Ray, hence the name, and covers most of the chassis and electric components. To quote a sentence from Tamiya's promotional literature, "This sleek and dynamic body styling takes after the Manta Ray devil fish that propels itself through the ocean deep and leaps high above the waves."

One thing is certain, the Manta Ray will become very successful because not only is it a very economically priced kit, it has a great deal of 'upratable' potential to make it competitive at the highest levels of international racing.

Available now from your nearest Tamiya stockist.

⑧ Front shock absorber tower.

