MINI OPTIMA

Kyosho continue to increase their off-road range – Geoff Driver has been building the 1/20th Optima

Originally seen at the 1987 World Championships the 1/20 'Turbo Optima' 2WD had a hard job to stir much more than a passing glance with all the excitement of the 1/10 racing, and *Kyosho's* other new products. In a way this little vehicle is just as important as all the high powered, super fast, high tech 1/10th cars to be seen. Obviously aimed at a new class of racing and probably intended to attract a new generation to the RC hobby without having to part with a king's ransom to buy a car, the new scale provides an easy way into RC racing. There are other advantages to this new smaller scale, not least of which is the smaller track requirements and the chance to go indoors and make realistic tracks without too much difficulty. At the moment (as far as I know) *Kyosho* is the only company to venture to this new scale with off road cars. No doubt, if it turns out to be successful, others will follow.

The new kits have been delayed in coming to the UK. They are sold in Japan with a drive battery and mains charger. This has taken some time to resolve because major voltage differences between the UK and Japan. The similarity of electricity mains supply between the US and Japan means far less problems with that market.

This review looks at the car design, the building of the car and how it performs.

The vehicle is primarily constructed from sub assemblies. The chassis, which is a pressed aluminium plate, the rear suspension and transmission and the front suspension.

The instructions show the construction of the gearbox as the first move. A traditional three pinion differential is assembled and held together with small self-tapping screws. It was at this early stage that I became acutely aware of the first problem. The size of the component parts are, as would be expected, smaller than 1/10 cars. This is OK if you have 20/20 vision, fingers like tweezers and the dexterity of a brain surgeon. However, if you need spectacles to find your specs and fingers that feel like bananas and have the agility of a pile driver, then be warned and take care. I suggest an immaculate and clean working surface (to make sure you can find all the bits) and all the artificial aids you can muster. Everything goes together without difficulty. The differential was on the tight side, but I have encountered this with 1/10 *Kyosho* differentials and they all freed up in time. Plain bearings are provided through-out the car, there is no mention of ball bearings, perhaps not an important consideration at this stage of the scales development. The plastic motor pinion is push fitted to the motor shaft and then the motor, complete with the spark suppression capacitors, lead and plug is fitted to the gearbox with two socket headed screws.

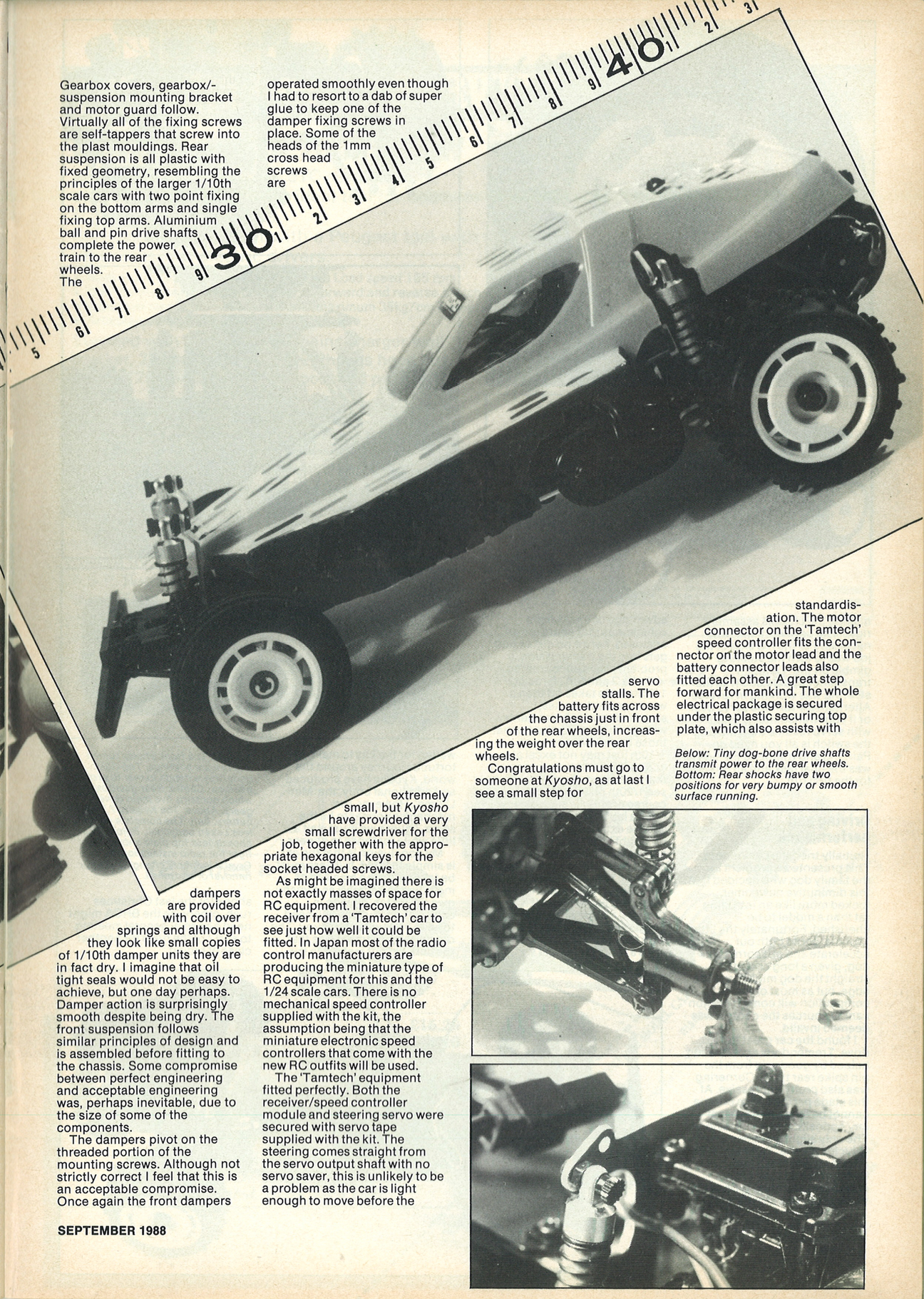
Gearbox covers, gearbox/-suspension mounting bracket and motor guard follow. Virtually all of the fixing screws are self-tappers that screw into the plast mouldings. Rear suspension is all plastic with fixed geometry, resembling the principles of the larger 1/10th scale cars with two point fixing on the bottom arms and single fixing top arms. Aluminium ball and pin drive shafts complete the power train to the rear wheels. The dampers are provided with coil over springs and although they look like small copies of 1/10th damper units they are in fact dry. I imagine that oil tight seals would not be easy to achieve, but one day perhaps. Damper action is surprisingly smooth despite being dry. The front suspension follows similar principles of design and is assembled before fitting to the chassis. Some compromise between perfect engineering and acceptable engineering was, perhaps inevitable, due to the size of some of the components.

The dampers pivot on the threaded portion of the mounting screws. Although not strictly correct I feel that this is an acceptable compromise. Once again the front dampers operated smoothly even though I had to resort to a dab of super glue to keep one of the damper fixing screws in place. Some of the heads of the 1mm cross head screws are extremely small, but *Kyosho* have provided a very small screwdriver for the job, together with the appropriate hexagonal keys for the socket headed screws.

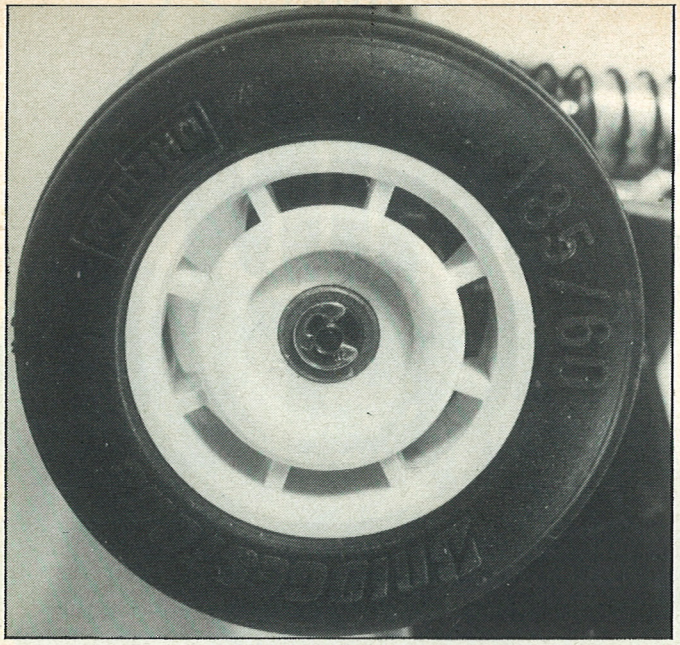
As might be imagined there is not exactly masses of space for RC equipment. I recovered the receiver from a 'Tamtech' car to see just how well it could be fitted. In Japan most of the radio control manufacturers are producing the miniature type of RC equipment for this and the 1/24 scale cars. There is no mechanical speed controller supplied with the kit, the assumption being that the miniature electronic speed controllers that come with the new RC outfits will be used.

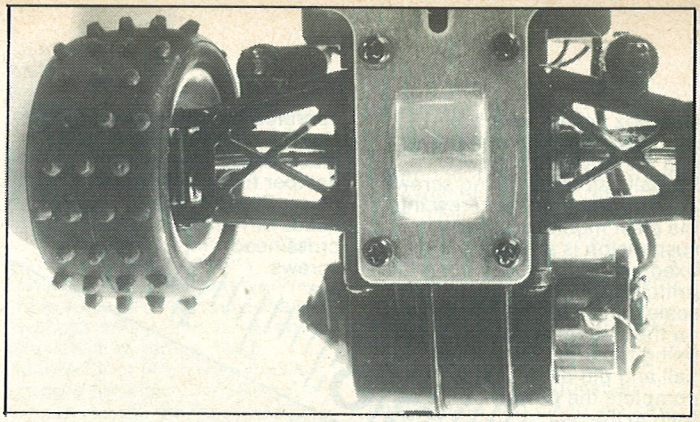
The 'Tamtech' equipment fitted perfectly. Both the receiver/speed controller module and steering servo were secured with servo tape supplied with the kit. The steering comes straight from the servo output shaft with no servo saver, this is unlikely to be a problem as the car is light enough to move before the servo stalls. The battery fits across the chassis just in front of the rear wheels, increasing the weight over the rear wheels.

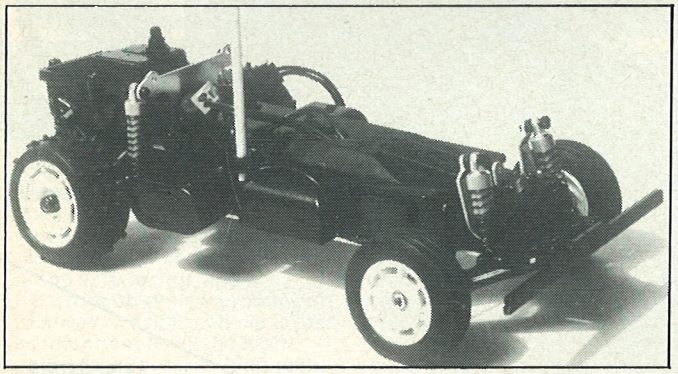
Congratulations must go to someone at *Kyosho*, as at last I see a small step for standardisation. The motor connector on the 'Tamtech' speed controller fits the connector on the motor lead and the battery connector leads also fitted each other. A great step forward for mankind. The whole electrical package is secured under the plastic securing top plate, which also assists with

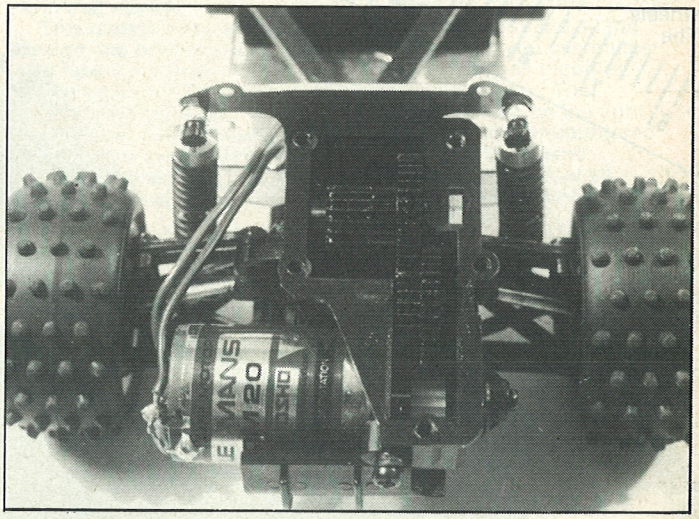


Below: Tiny dog-bone drive shafts transmit power to the rear wheels. Bottom: Rear shocks have two positions for very bumpy or smooth surface running.









making the chassis assembly rigid. The only work that was necessary to the RC side of the job was to turn the steering gimble on the 'Tamtech' transmitter upside down as the steering was working in reverse. Alternatively turn the servo over or if your transmitter is fitted with servo reverse then flicking the switch is all you need do. Painting and trimming the body was the final task and all is ready for the first run.

Driving and performance

I initially tried the car indoors,. This presented a problem for the family dog who decided that this diminutive newcomer looked more like an intruding rat than a model to be cherished. Fortunately the little 'Optima' could both out accelerate and out corner the dog, given a long enough straight the dog might have the edge, but as most of the competition will come from non canine sources the contest was deemed invalid.

I found the car great fun to drive. Tremendous acceleration helped by good grip from the pin spike rear tyres. Cornering was also pretty impressive. At this stage performance criteria cannot be measured against any opposition as there is none. The only slightly similar vehicles are the 'Tamtech' 1/24 circuit racers. Not a fair comparison as they are a completely different type of vehicle, but one significant advantage of the *Kyosho* vehicle was that gears are all enclosed, hence no dirt or fluff gets into the transmission, a problem I have encountered with the 'Tamtech'. If racing 1/20th scale takes off then a whole new set of rules, standards and achievements will apear. It would also be that those drivers who excel at 1/10th just may not excel at 1/20th if for no other reason than you need good eyesight to see 1/20th on the tracks. of course problems such as how does a lap counter manage to see the extra small numbers will no doubt be solved, but someone will have to think about these difficulties and come up with solutions. In the meantime I hope that this scale finds popularity (even if it remains a back yard hobby). From my short experience of the cars they seem plain good fun.

As a footnote, whilst we waited for the kits to make the tortuous journey around the world, *Kyosho* have produced and additional body, the 'Mini Ultima'. However, the mechanics appear to be the same. I guess we must wait a little while for those to appear.

My conclusion is that the car is simple to build, but care must be taken with the small parts including the screws as *Kyosho* give no spares. Driving is exhilarating, but you will need to keep your wits about you. The only disappointment was that the cars did not make it to the shops for the last Christmas rush, otherwise the BRCA might need a special general meeting to sort out the rules for another class of racing.

Top left: The front wheels run on tiny bronze bearings. Top right: undertray extends to rear to protect gearbox. Centre: Rear gearbox which contains five main drive gears. Above: The Kyosho 7.2 volt battery. Left: The complete chassis less Lexan bodyshell. Below: The chassis less top plate shows how tight the radio installation is. Crystal is simply changeable after removal of bodyshell.