



YOKOMO 4X4

For months we have been eagerly waiting for production versions of the new 'Yokomo Dogfighter' to appear. At last some nine or ten months after the World Championship successes at Romsey, the cars are beginning to filter into the UK. It seems that one of the major problems with this car is availability. 'Yokomo' is probably one of the smallest Japanese manufacturers and as such has limited production facilities. Not only are the cars difficult to obtain in the UK, the European mainland has virtually no supplies and even Japanese RC enthusiasts are having to wait their turn. The lucky ones must be the Americans who seem to have had first bite of the cherry. Needless to say it has not been the easiest of tasks getting hold of a kit to review, but we managed it. Enough of the background, what have

'Yokomo' been making all the fuss about?

Firstly, a description of the kit.

The main chassis component is a flat plate made from a GRP and has slots machined to accept saddle pack

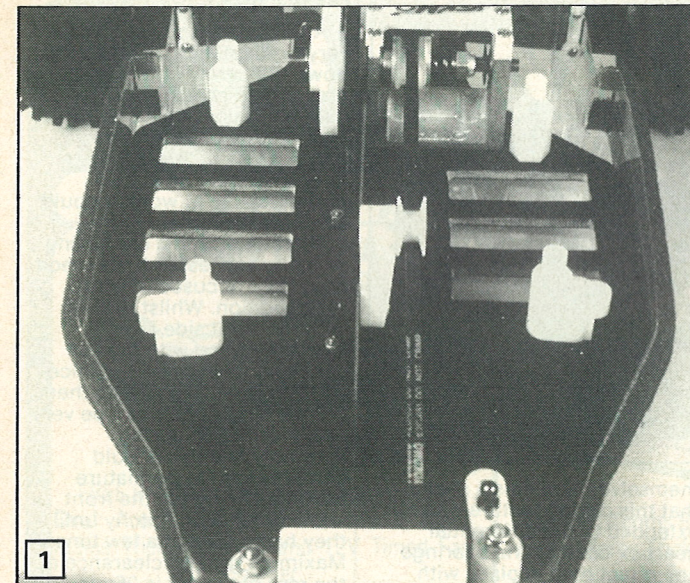
configuration of 6 or 7 cells. The instructions suggest filling the edges of the battery slots to let them sit deeper in the chassis. Most of the chassis holes are predrilled for mounting the gearboxes and other assemblies, although you

are expected to drill some small holes for fixing the backbone in place. A full length polycarbonate under tray virtually seals the chassis against the ingress of foreign bodies when the body is in position.

The motor (not supplied) fits far enough in front of the rear wheels to justify the description of mid mounted. The motor drives the main nylon reduction gear which is mounted on a gearbox sub-assembly.

This sub-assembly provides the front to rear transmission division. It includes a one way clutch (although an alternative straight coupling without a clutch is also provided) and a spring loaded tensioner to give a variable torque split.

A short belt couples the drive to the rear axle and a separate belt extends drive to the front axle. The longer front to rear belt has an adjustable belt



tensioner mounted approximately halfway along its top side. In line with the belt and bolted to the chassis is a backbone to improve the longitudinal strength of the chassis. Both the front and rear 3mm wide belts drive onto nylon gears in the ball type differential assemblies. The outputs of the differentials are taken through ball raced output shafts to the drive shafts with ball and pin inboard joints and conventional Hooke joints at the wheel end. The stub axles are supported on ball races which are carried in alloy uprights. The same pattern of upright is used at the front and rear suspension, but by a neat piece of design the rear uprights are rotated through ninety degrees to allow them to be used without the need of a fixed track rod to prevent rear wheel steering.

The independent suspension uses 'Yokomo's own design of coil over damper with a limited range of adjustments on the swinging arm and on the top suspension mounting. The car comes with a rear anti-roll bar but no front anti-roll bar. Front steering uprights are supported

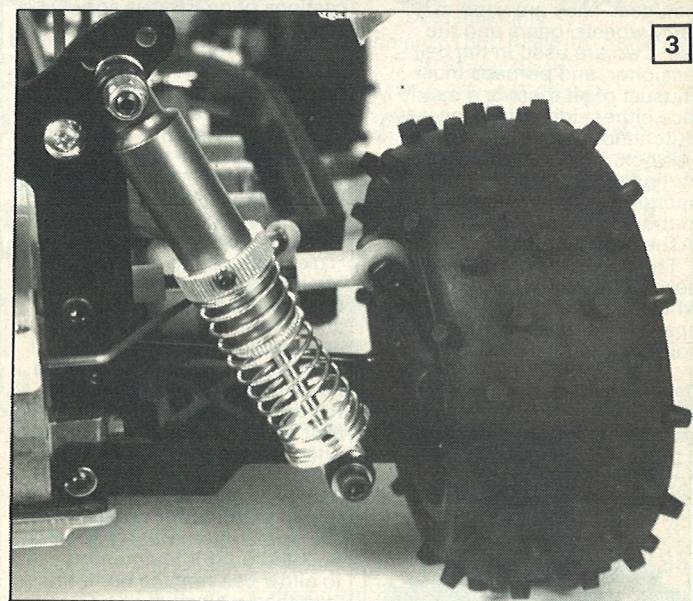
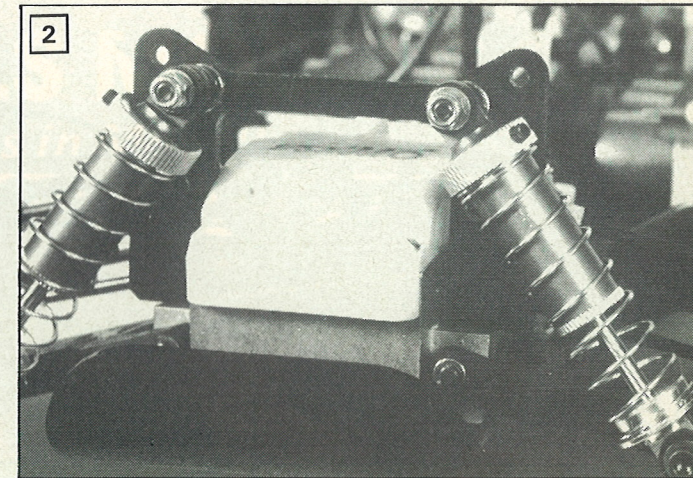
in a carrier to provide steering movement and top suspension arm support. Steering is provided by track rods connected to a spring loaded nylon servo saver. A slave bell crank looks after the other wheel. Both left and right units are mounted on pivot pins bolted to the main chassis.

The front and rear lower suspension arms pivot on the appropriate front or rear differential gearbox. Nylon covers allow access to the workings of the differential units.

The shocking pink wheels are held in place by two machine screws which locate into square driving blocks mounted on the end of the drive shafts.

That then is the factual mechanical description. Is it well made? Is it a good design and are there any problems or shortcomings? It would be so easy just to get carried away with superlatives about a car that is now being driven by a world champion.

There is no doubt of the car's potential. In the right hands it wins. It is in the price bracket that allows us to say "among

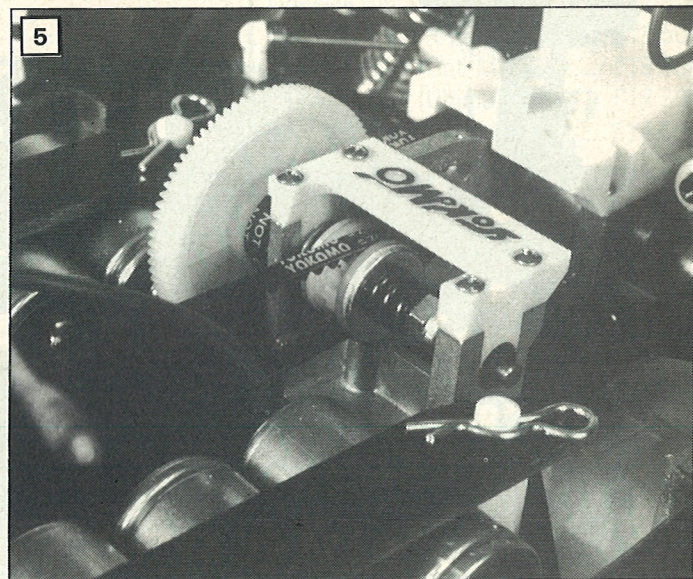
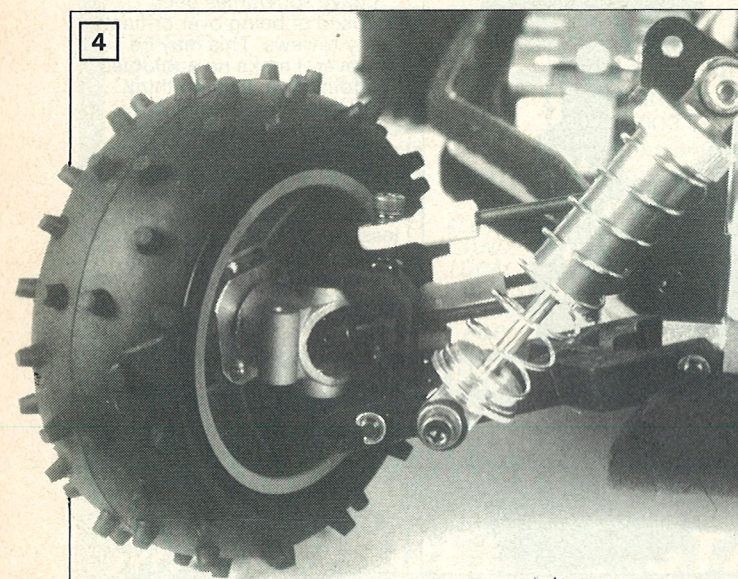


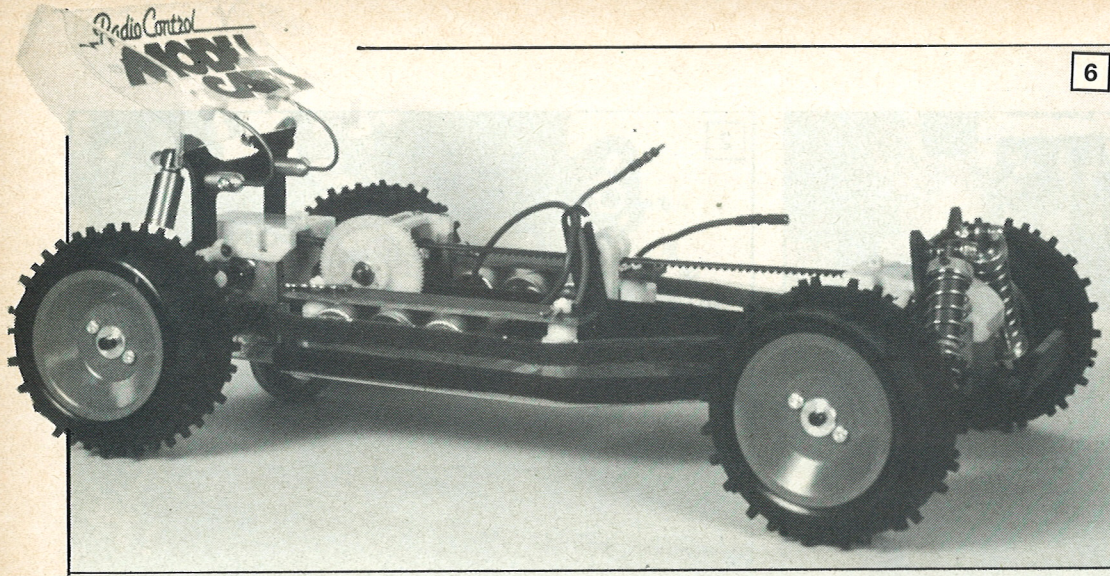
Top left: 7 cell allocation is allowed for. Top: front shock absorbers are angled at approximately 45 degrees. Above: Rear suspension has long stroke shock absorbers which feel very smooth.

the most expensive". Is it all worth it? Firstly the quality of the kit. It is in my opinion of a first class quality. Materials chosen are of the best for the purpose. Such things as the trueness of the moulded gears are excellent. Some cars I have

looked at in the past have gears that wobble like an out of balance wheel.

There are features about this car that make it quite different. According to the manufacturer's description there are twenty four ball races

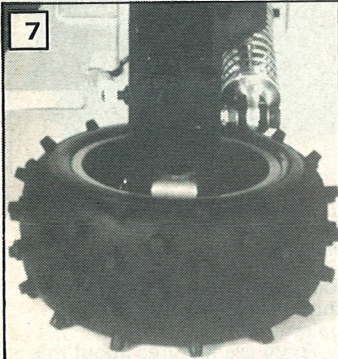




included. They are used to carry wheels, gears and the like. Two are used in the belt tensioner, and perhaps most unusual of all there is a ball race either side of the one way clutch mounted in the centre gearbox. The differentials are particularly smooth in their operation due in no small part to the ball thrust race mounted in the centre of them.

The only problem with this device is putting it together, which is quite fiddly. Assembly apart, I like these mechanically sound principles. The metal

Rear suspension arms are tough and are braced to help strength.



castings of gearboxes and steering uprights are according to the manufacturer's description made from magnesium alloy. This most expensive material is exceptionally strong and very light. It was used for many years in the manufacture of racing car wheels.

Features such as these certainly justify some of 'Yokomo's' claims regarding kit quality. For my money there is one feature that stands out above all others. Although not exclusive to 'Yokomo', there are very few makers producing kits with such easy access to the differentials. By undoing four screws at the front or rear differential gearbox and removing the cover (which incidentally have cavities moulded in to reduce weight) the whole differential unit can be lifted out for maintenance or to allow belt replacement. This is indeed a piece of good original thinking and design. All clearances and fits are good, bearings fit snugly into housings and there is minimal slop at joints. On the centre gearbox assembly the top plastic moulding fits neatly around the bearings

themselves. It seems a shame that this design feature was not extended to the differential gearbox covers. The bearings are in fact held in place with just the flat shoulder of the moulded cover.

A nice touch of detail is the simple but effective bracket that supports any wires that must cross over the drive belt. Of the belts themselves, I can only say that the pitch seems very similar to the style of the original PB type used on the first 'Mini Mustangs'. The gears seem to be 48DP, an odd choice for a car produced in Japan, maybe there is an American influence at work here. The centre transmission assembly does include a slipper clutch which may help to reduce understeer on grippy tracks.

What don't I like. Very much a personal preference I admit to not liking saddle packs. Some people love them but I do not. It seems to me that the theory of shifting weight to the outer edges of the car is all wrong. Anyway, this does not stop the car winning major races, but I have yet to be convinced it is sound practice. I also am not impressed by the

chassis' rigidity.

A flat pan is unlikely to be very rigid, planing a backbone down the centre line might prevent the chassis folding in half, but it does little for lateral rigidity. The problem I anticipate with this is that handling could be at best unpredictable at worst it could be unmanageable.

Of course, with a car having so many successes to its credit I could be accused of wild exaggeration. Whilst dealing with the debit side I was not over impressed with the shockers. They look very nice with a gunmetal sheen to them but the single seals can be very easily damaged during assembly and this should certainly lead to premature leaking. On my car the front shocker felt a bit notchy until they had operated a few times. Maximum ground clearance at the rear of the car is 25mm and 28mm measured at the end of the bottom wishbone.

What appears to be a mistake in the moulding makes it just about impossible to position the aerial tube without some more drilling. Fortunately not serious, but the clip that locates one of the battery brackets comes right in line with the aerial tube preventing it from being mounted in its dedicated position.

The body is distinctive and owes more than just a passing nod to the original 'Dog Fighter' of some four or five years ago. I did not like it then either. The car is equipped with a wing and wing wires which are preformed. The final nice touch is the sealing of the body to undertray. As well as the Velcro used to hold the body in place, plastic foam is provided to keep out the smallest particles of dust and grit.

Kit assembly other than the one detailed point already mentioned presented no problems even though my Japanese is non-existent. All screws fitted without problem and all mouldings and engineered bits fitted extremely well.

I have sometimes been accused of being over critical in my reviews. This may be so, however, I make no apologies for doing this. I like to think that I give credit where I believe it is due as well as criticising. If I do anything less, it would not be fair to you, the readers.

Every car has its good and less good points, engineering design is for the most part a compromise. In my opinion the new 'Yokomo' has struck a good balance and the credits outweigh the debits. This car will undoubtedly win many championship honours, if they make enough of them!



Underpan of the car is smooth - this coupled to the undertray makes the car extremely slippery. Note cells sit towards rear of chassis.

