

Yokomotion

Performance seems to have been the main aim in mind when Yokomo designed their latest release as Matt Benfield finds out

It all started in the United States of course. The idea of putting an I.C. engine into a buggy chassis to create longer run times. Nowadays, reliable and compact units can be found in many different varieties of vehicle including trucks, buggies and on-road. With its arrival, I.C. has meant that many manufacturers have made an effort to field a vehicle of good quality, reasonable price and be competitive within its market.

In 1/10th I.C. the pinnacle of the class can be seen in cars such

as the Serpent or the P.B. These machines are manufactured to meet the requirements of today's top racer in strength and reliability, while they are designed from a plain sheet of paper, making full use of the dimensions set in the rules.

Yokomo instead of starting from scratch, have carefully adapted their highly competitive YZ-10 off-road buggy, (the current World Champion) into an Yokomo I.C. powered, on-road car. Unlike other manufacturers, Yokomo have not just bolted on an engine; instead,

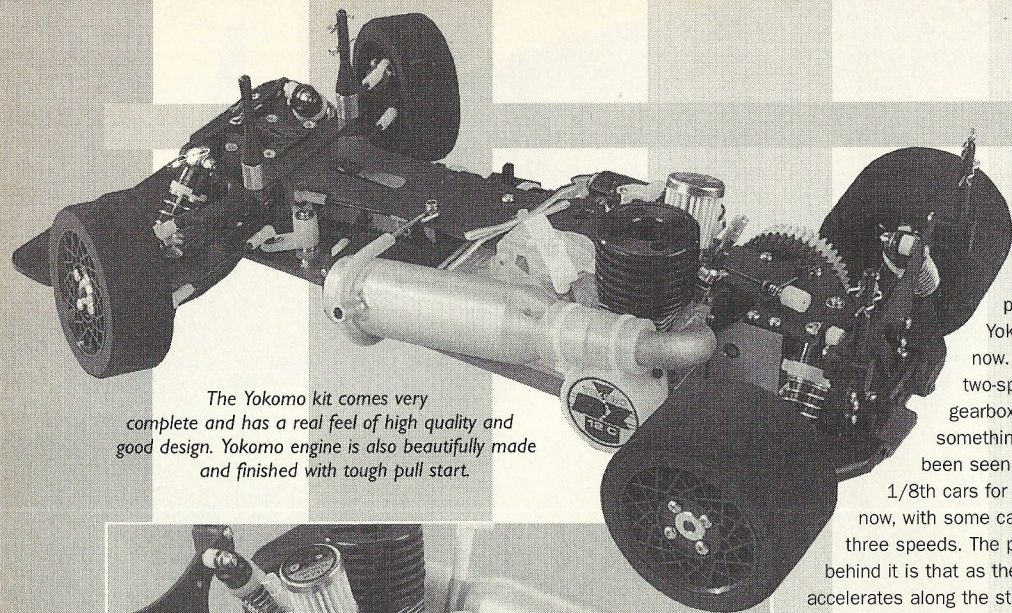
the original design has been tweaked and tuned to take on board the extra power of the Yokomo RX-12C high performance I.C. engine.

Thicker heavier and purple!

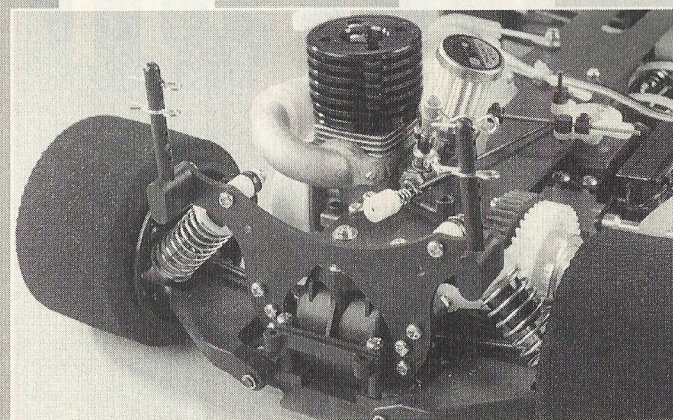
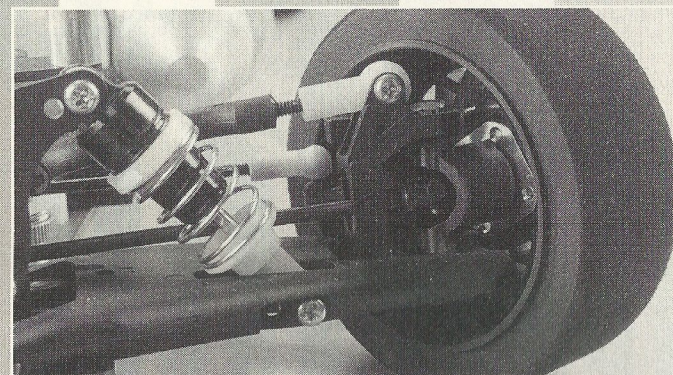
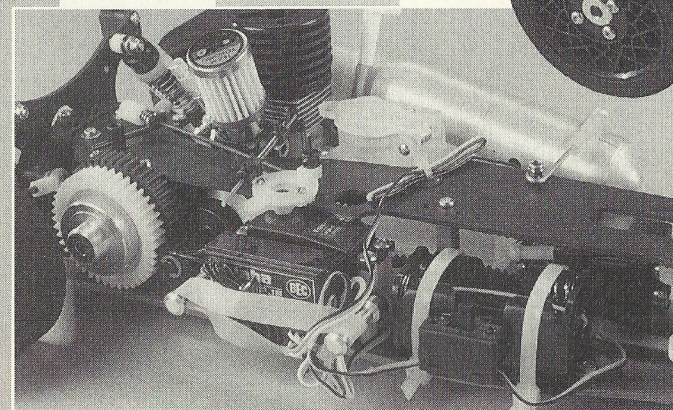
The chassis on the YR-10, was one of the first items that I took out of the box. It is a 3mm thick piece of aluminium, anodised in the current fashionable colour of purple. This is very different from

the excellent carbon fibre chassis that comes as standard in the YZ-10 kit. It retains the kick-up at the front which has been taken from its off-road counterpart, but apart from this, it is the only thing that is the same on the chassis. The chassis acts as a sturdy base for the engine and the rest of the equipment to go on.

The plastic gearbox housings screw onto the chassis from underneath and they each have the simple job of supporting one of the two differential units. The two differentials are exactly the



The Yokomo kit comes very complete and has a real feel of high quality and good design. Yokomo engine is also beautifully made and finished with tough pull start.

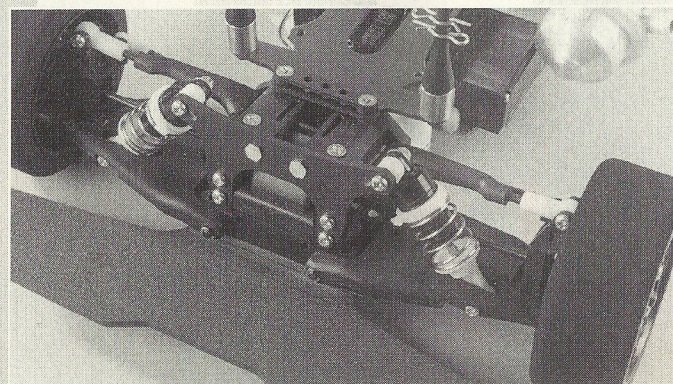


seen on a production Yokomo until now. That is the two-speed gearbox. It is something that has been seen on all 1/8th cars for many years now, with some cars offering three speeds. The principle behind it is that as the car accelerates along the straight, the speed of the car and the centre lay shaft increases. That is until a point, where the centrifugal force is great enough to throw out a sprung loaded pawl, until it locates against the alloy housing. This housing is screwed to the second gear which

and the two steel plates which work against the disc. Once this was constructed, it made up a very rigid, strong unit, easily capable of handling all the power supplied by the Yokomo engine. From this lay shaft, the second belt transfers drive to the front differential, thus creating the four wheel drive.

With the transmission virtually complete, the suspension was the next area to be assembled. The suspension arms, hubs, caster blocks, bearings and drive shafts are all the same as the YZ-10. This results in a design that can well stand up to the knocks and crashes that are expected of such a vehicle.

The only difference on the wishbones is the small hole that



therefore engages. The plastic gears have been cut in 32 dp for long life and their general ruggedness.

On our particular kit, I found that the meshing was a little bit out. The meshing could not be adjusted a great deal as the engine was held in with countersunk screws in fixed positions, although it was possible to make small adjustments by playing with the existing tolerances of manufacture.

The centre lay shaft was held in place with alloy supports, which also housed the carbon fibre brake disc

has been drilled on the inboard side. This allows a grub-screw to be threaded through, allowing the amount of drop to be adjusted easily and precisely. At the front, the screw works against the edge of the chassis, but at the back, there is a specially designed plate which sits under the wishbones for the grub-screw to push against.

Once the rear hubs have been fitted to the wishbones, the bearings inserted into the hubs, the drive shafts inserted into the bearings and the drive outputs screwed onto

the drive shafts, it can all be fitted to the chassis. The front end can all be put together in one piece as both the front wishbones attach to the same inboard mounting.

The front goes together the same way except for there is a hub/caster block to be fitted to the wishbone before the steering arm can be screwed on with the king pins. When constructing the front end, make sure that the king pins go in square to the steering arm otherwise they will be tight. Also, do not over tighten the king pins as they may strip and subsequently, the king pins will tend to fall out on a regular basis.

Size is important!

The shock absorbers that are fitted to the car are exactly the same as those used on the YZ-10 Touring Car. They are very small and neat and come complete with seals pre-fitted. All that is required is for the rods to be inserted into the barrels and the ball joints to be screwed onto the bottom. In touring car use, they have found that very little travel is actually used which accounts for the size of these shock absorbers. They take only a small amount of oil, but I found them quite fiddly to get to grips with.

Jason Varley of C.M.L. has informed me that they have found that by using diaphragms in the shock absorbers, they can reduce the air left in the shock. Using a diaphragm though, means that the amount of up travel is limited, although this has not had any adverse effects on the handling of the car.

Once the shock absorbers had been fitted to the arm and the fibreglass shock towers, it was time to install the steering arms. Once again, these parts are the same as

those used on the YZ-10, but there has been a modification made to allow the steering servo to sit in a different position. This has been a small gripe of the YZ-10 where there is no space to screw the servo down. Instead, on this car, there are holes and posts provided to fit the servo securely.

If you fit the steering assembly as standard, then it will feel a little tight. To free this up, all you need to do is to put a small upwards bend in the wire link as the tightness is actually the wire in the plastic. If you drill out the plastic to free it up, it will result in a noticeable amount of slop after one or two runs.

More Yokomo

The Yokomo RX-12C engine is supplied as standard in the kit and comes complete with its own pull start. Also in the kit are a pressurised fuel tank, an exhaust manifold and a tuned silencer. With all these coming in the kit, it means that the YR-10 requires very few extras for it to be run. Those extras are radio, four AA batteries, a body shell, fuel and a glow plug. The set up that Yokomo offer makes it very easy for the model shop to sell, as the customer does not need to keep returning to the shop to purchase something else that is needed to run the car.

World Champion design deserves world champion body shell I decided to use a Touring Car body shell instead of a Group C design. This gives the car a look of realism, and allows us use more recognisable designs and colour schemes. For this reason, I chose the body shell of the current 2 litre World Champion, the Ford Mondeo. This Parma body shell was kindly supplied by Helger Racing, and sprayed by Jason Hampton of Hamton Designs using the colours

that Ford have adopted for the 1995 season in order to fit this shell, the front bumper had to be trimmed a little to allow it to clear and fit properly. Once it was sprayed and fitted, it ended up with a very purposeful looking machine indeed.

Troubleshooting

There was very little wrong with the car in terms of building the kit. It went together easily and quickly. I was only hindered by the instructions which were supplied. They were in Japanese and only had a small photograph and drawing to accompany them. I found this a particular problem when installing the engine as I am fairly new to the world of I.C. and the basic instructions were a little difficult to decipher.

What I can tell you though is that the instructions were pre-production. This means that an English more complete version will follow. This will help the beginner a great deal, further improving the high level of quality that has already been shown.

The kit tie rods are of poor design and proper turnbuckles would be more suited to a kit of this type. Apart from these minor gripes there is very little wrong with the YR-10 kit.

More additions...

The YR-10 has benefited from being developed from the YZ-10 as there is a whole host of upgrades and new parts that can be fitted to the kit to improve its looks, durability, and further increase the amount of adjustment.

To start with, there are lightweight wishbones available which have been carried over from the off-road car. These are machined in order to reduce the weight from areas in excess. The front wishbones can have 0 degree caster

blocks fitted to change the turn-in characteristics of the car, while the standard drive shafts can be replaced with hardened versions which will last a little longer.

As mentioned before, the drive train can be further strengthened by fitting bearings in the differentials and changing the standard diff balls for tungsten carbide versions from Fastrax.

The two-speed gearbox in the future will have different gears made available so that the ratios can be changed to suit either more acceleration, or increased top end speed.

The shock absorbers can have Fastrax diaphragms fitted to make them even more smoother, although the amount of up travel will be limited as a consequence.

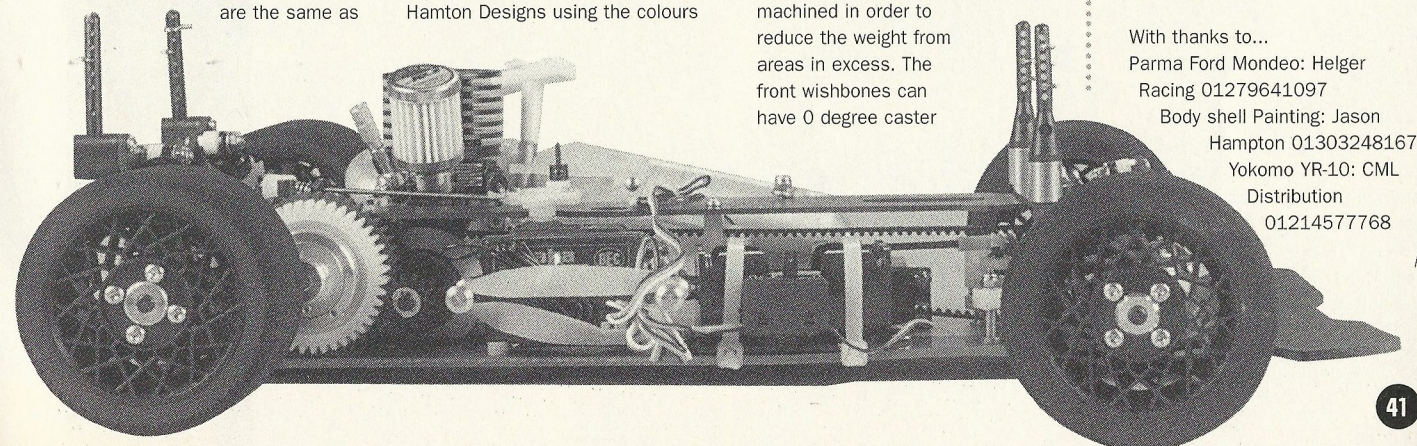
Other compounds of tyres are already available for the car from Yokomo as well as other manufacturers. This is one of the biggest changes that can be made to the car in order affect its handling from one track to another.

Carbon fibre and titanium

Finally, there are the many different pieces of carbon fibre and titanium that can be added. There are shock mounts and a top deck that will fit straight on, these being stronger and more rigid than the kit items. Also there is a steering brace in carbon fibre that can be fitted to strengthen the steering posts. The steering geometry can also be adjusted by using the carbon fibre steering link which has a small affect on the way that the car steers.

The kit links can be changed to titanium turn buckles which will offer finer adjustments and will also improve on the robustness of the suspension.

With thanks to...
Parma Ford Mondeo: Helger Racing 01279641097
Body shell Painting: Jason Hampton 01303248167
Yokomo YR-10: CML Distribution 01214577768



same as previous Yokomo design, except that they employ a wider centre pulley to cope with the increased width of the new 5.5mm belt. Unfortunately, in standard form, the balls inside are only steel and not tungsten carbide, while bushes are also used in preference to the more expensive ball bearings. The

diff balls and bearings are all available if and when you wish to upgrade.

Gear it up!

It is one of the most interesting parts of the kit, yet it has not been