MUSTANG X3

1:8 Horse Power

During the past three years I have been able to sample each of the successive developments in the *PB* 'Mustang' range of 1/8th Rallycross cars, each of which has produced its share of interest and innovation to the racing scene. Designer Keith Plested's own keen interest in racing prompts him to try many experiments during the course of the racing season and it has become quite the racing enthusiasts game to try to guess which of the many bits and pieces seen will find their way onto the next car.

It would not have taken a great genius to guess that the new long stroke dampers fitted to the 'Mini Mustang' 1/10th car would feature, nor would it have taxed any bystander too much to bet on a centre differential. But now that the 'Mustang X3' has appeared, the extent of the changes are far more extensive than most would have guessed.

Gone is the forward facing engine to be replaced with a reversed layout necessitated by the lengthways layshaft running almost the full length of the car providing ample room for an adjustable limited slip centre differential. Brakes are removed from the interior of the gearbox casings and are now no longer the source of problems associated with the need to keep gears lubricated but brake discs dry. A full double plate chassis is employed resulting in a far stiffer assembly which certainly must result in more efficient power transmission. New wheels, revised suspension geometry, elimination of 'Bump Steer' by virtue of a new steering linkage, alternative solid drive or two speed transmission plus a new 'Ninja' style bodyshell to top off an exciting package should all go a long way to recoup a less than successful position at the end of the 1986 racing season.

Bill Burkinshaw builds PB Racing's latest creation

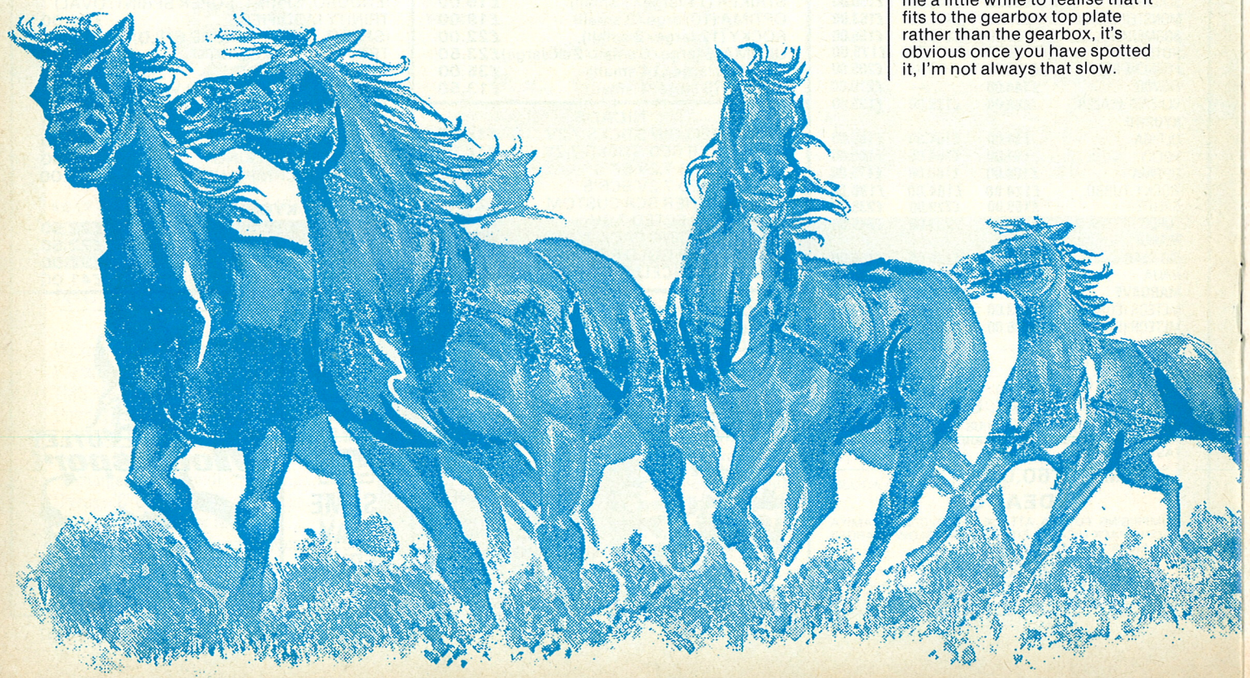
What's it go together like then?

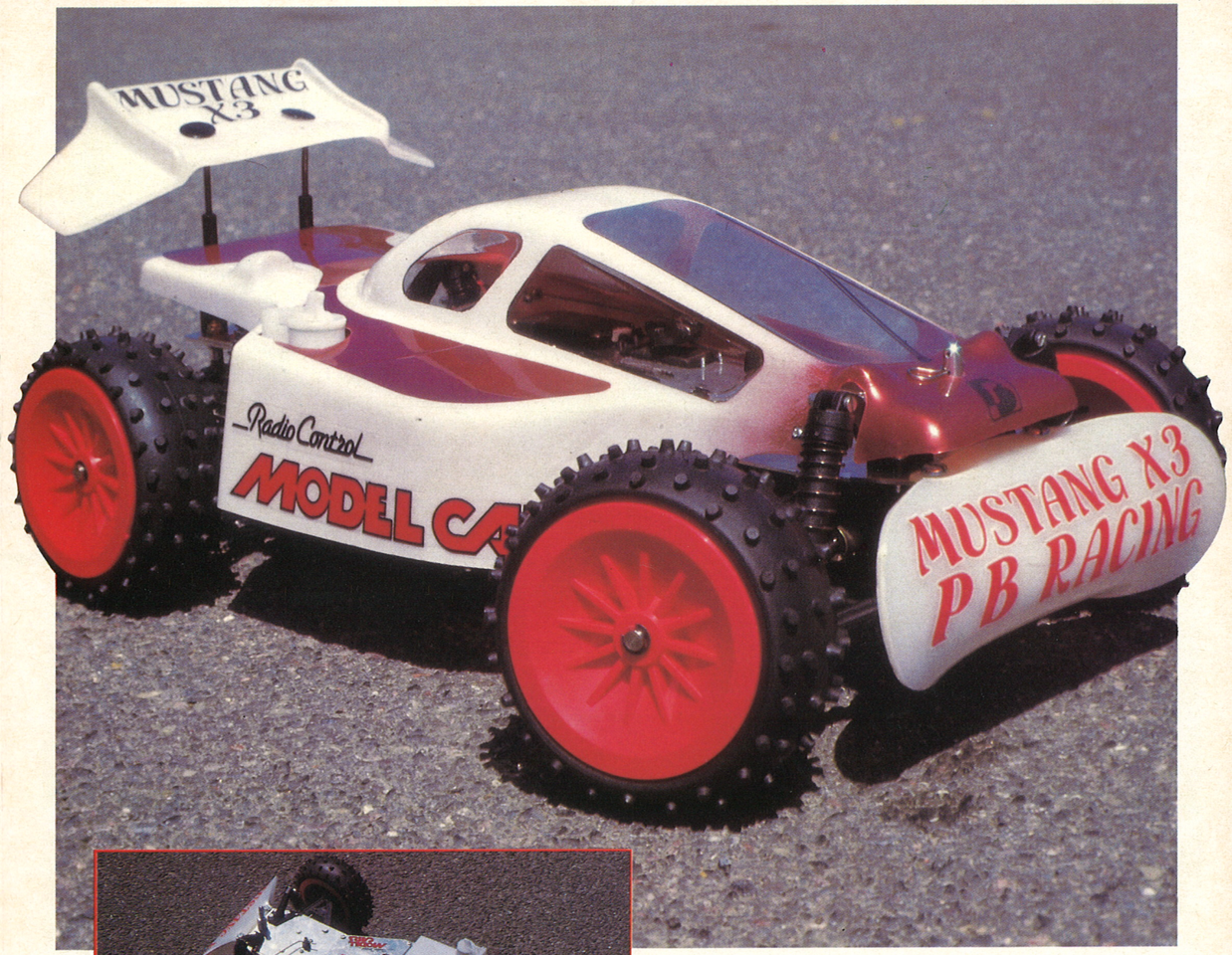
Before I started to put the 'X3' together I had a brief telephone conversation with *PB* during which they apologised for the fact that a sheet of amendments accompanied the otherwise excellent instruction booklet. This is a result of production schedules running out of step with one another and should present no difficulties at all if a few minutes are taken before assembly is started to run through the booklet and make the alterations detailed in the amendment sheet.

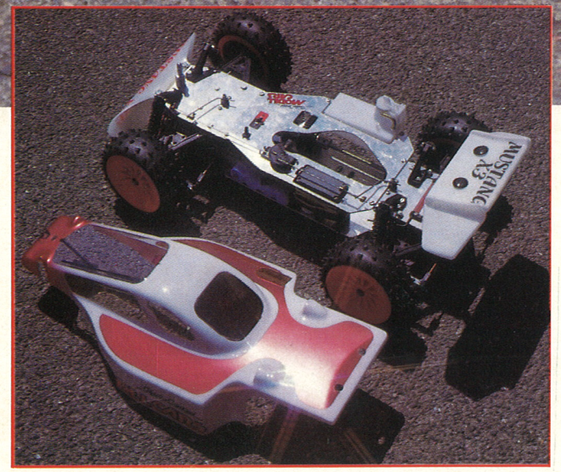
Beware if you have built a 'Mustang' before, from plunging into assembly without reading the instructions, there are numerous subtle differences which will catch you out — they did me!

Differentials are *PB*'s tried and tested spur gear type driven by a combination of large aluminium and small steel bevel gears which go together with great ease albeit a little messily as grease oozes out from every opening as the case is assembled. The cases are quick to put together, particularly if you have recently invested in an electric screwdriver as I have. The new brake is very neat; it uses parts common to the old unit but in a clever little device which now operates externally on the input shaft of the gearbox. Hexagonal gear carriers are fitted to both front and rear input shafts and the moulded plastic gears which engage with the layshaft are fixed to, these with circlips.

Do take plenty of time de-flashing these gears before trying to fit them, they are a very close fit on the carriers. It took me a little while to realise that it fits to the gearbox top plate rather than the gearbox, it's obvious once you have spotted it, I'm not always that slow.







Above: with one win already this year in the hands of James Weedon prospects look promising for the 'X3'. Left: the new shell next to the completed chassis.

Chassis change round

I did find it difficult to work out which way the chassis faced, poring over the photographs for a few minutes eventually gave the clue, a more general picture of the chassis could have helped here, the close-ups though good, are at times too close. The wishbones are now thickened to prevent flexing and provide a better fixing for the dampers which are mounted well out on the lower wishbones at front and rear.

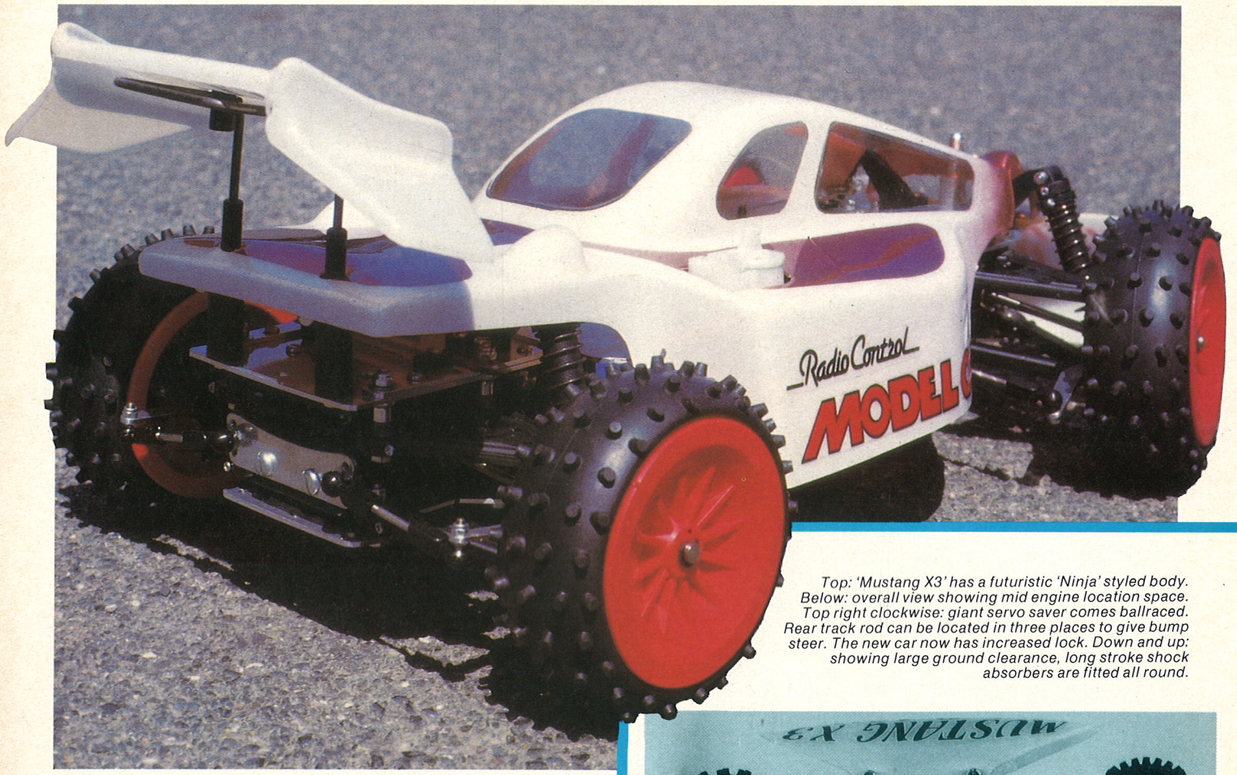
Rear camber adjustment facility is provided for; a plate with slots causes the hard anodised aluminium wishbone pivot balls to move outwards in angled slots in the top mounting plate as it is pushed back and forth. An enormous ball-raced bellcrank operates the steering, the potential throw causes a little alarm at first sight as it does not look as though any servo built could operate against the leverage possible. This is one car where the large *Futaba* 'Brick' servo is essential, indeed the steering is designed around this and it would not be advisable to try a lesser power device.

The axle block assemblies are exactly the same as those used on previous 'Mustangs' but do note when fitting them that there are now different drive shafts front and rear, the front shafts are longer than the rear. This once again caught me out, I could not work out why the front drive shafts kept dropping out! Then I read the instructions! At the rear, a simple plate bolts across the gearbox carrying two ball joints to which tie-rods are fixed. The ball joints can be positioned in three different holes to give various possibilities in terms of 'Bump Steer' to the rear wheels.

Centre drive choice

At this point a choice of centre drive is possible, a solid layshaft with no centre differential but a free-wheeling front end, a two-speed gearbox with free-wheel front or a centre differential with free-wheel front. It is possible to interchange between each of these systems simply by removing a maximum of six screws from the lower chassis, placing the chosen transmission in place and replacing the screws. Literally a five minute job. With each of the transmissions it is possible to vary the amount of over-drive (or not as the case may be) to the front wheels by changing the gears which as previously mentioned fixed with circlips.

The centre differential was the first option tried out although I will be giving a full follow up in the next edition of *Model Cars* comparing the



Top: 'Mustang X3' has a futuristic 'Ninja' styled body. Below: overall view showing mid engine location space. Top right clockwise: giant servo saver comes ballraced. Rear track rod can be located in three places to give bump steer. The new car now has increased lock. Down and up: showing large ground clearance, long stroke shock absorbers are fitted all round.

MUSTANG X3

Continued . . .

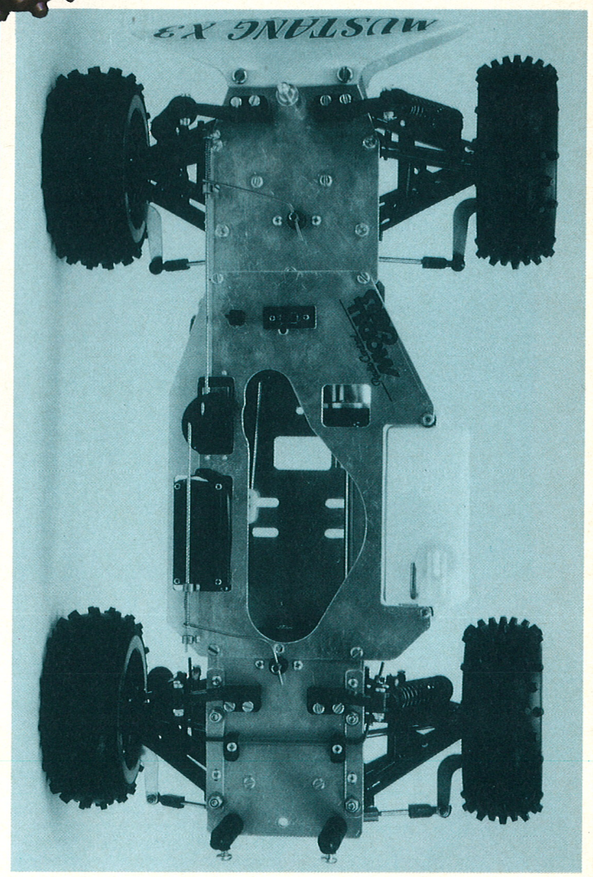
performance with the various options in place.

The heart of the centre diff is yet another of the standard *PB* spur gear units. This output from this is prevented from freely rotating if the load is reduced at either front or rear by an adjustable clutch formed by compressing a steel disc between aluminium thrust surfaces. Pressure is applied to the 'Brake Disc' by a sandwich of large dished 'Belleville' washers. A knurled aluminium ring nut compresses these and is in turn locked in place by a small grub screw. As this whole assembly is spring loaded this locking grub screw performs only a light duty and the instructions which advise caution in tightening this should be adhered to otherwise the unit could be very difficult to strip down for servicing.

Clutch is the standard *PB* PTFE shoe unit intended for direct fitting to an engine equipped with an *80* style crank. No separate clutch spindle is used with this clutch, a nut retains the flywheel, screwing onto the ¼ UNF threaded crankshaft which incorporates a ground extension to carry the clutch bell. The pivot pins for the clutch shoes were a mite over long on my examples and I needed to grind the ends off slightly to prevent them from fouling the inside of the clutch bell and enable me to get the retaining circlip on. Tweak the springs as necessary to prevent them from imparting a twisting action to the shoes. If the springs are not given a little attention there is sometimes a tendency for them to try to lift the shoes off the pins.

Manifold fitting

A special manifold is needed and waiting for this to arrive delayed completion for a short while, this takes the exhaust round the back of and outside next to the steering servo, I don't doubt that other manifolds could be used but this being purpose designed removes most of the headaches — Mr. *PB* suffered from those! Throttle and steering linkages are short and direct although no hardware of any sort to make the necessary connections is included. I do feel that this is a little penny pinching on *PB*'s part, the car is so specifically designed for a single layout of R/C and engine that it would be difficult to argue that individual preferences and choices of equipment would make it hard to choose something that would be of universal use. As it is, if



you don't have the bits and pieces it will mean a second visit to your favourite dealer for overrides, collets, springs and piano wire.

R/C Installation

Still on the subject of R/C installation, criticism is inevitable, the instructions blandly state 'no specific provision is made for mounting either receiver or Ni-Cad as they vary considerably but several alternative locations are possible'. Great, what are they? Nothing whatsoever is shown fitted to the car in the photos and it soon becomes apparent that whatever you do it is going to involve servo tape and tie wraps. On this point I feel that *PB* have let down the newcomer to the hobby, it's all right for the experts, they will let down the newcomer to the hobby, it's all right for the experts, they will probably look at dozens, even hundreds, of other racing cars and be bursting with ideas on how to cram everything in.

The fuel tank is a standard *PB* item and is suspended loosely beneath the top chassis plate which is fixed with self-tapping screws to the extended ends of the front and rear gearbox top cover plates. Earlier in the instructions it was advised that the screws fixing the top plates to the gearbox cases were not fully tightened and now the reason is revealed as the car is placed on a flat surface and all screws tightened carefully keeping the chassis flat and true. The new wheels are a much simpler design, no attempt is made to trap the bead of the tyre, instead a combination of extra friction provided by bounce eliminating stuffings to the tyres and larger diameter hubs provides a solid driving fit with large flanges to prevent the tyres from rolling off the rims. Overall this was an interesting kit to assemble, do be prepared to devote more time to it than you would have done to the earlier 'Mustangs', this is a more complex machine and a little detail work here and there will pay dividends when you come to run and maintain it. From this appraisal it appears that *PB* have overcome all the weaknesses of the 'Xi2' and so radical are the changes to the overall concept that it can quite fairly be reckoned a new car altogether which has great promise of exciting performance.

Coming soon

Press dates precluded a running report on the new 'Mustang' for this issue but it is intended to carry this in full in the next issue which should enable us to provide a more in-depth report than usual on new cars. I will be talking to both Ken Weedon and Ray Wilcox about the cars they both prepare so successfully for their sons James and Stuart respectively and including many of their hints and tips on race preparing the 'X3'. Don't miss it . . .

Reviewed by Bill Burkinshaw
Price: Approximately £275.00.