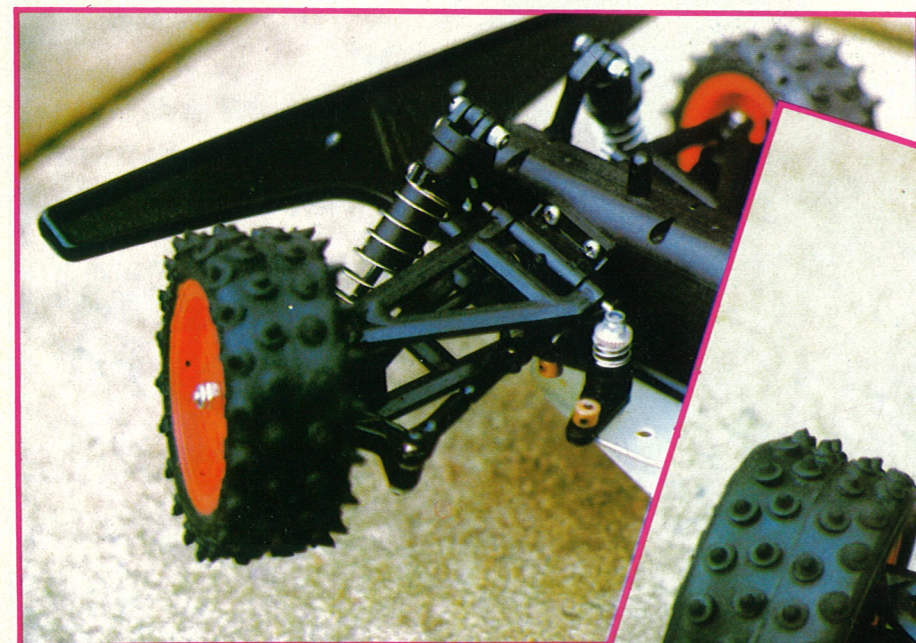


Mustang

NICK MARSON reviews this new 4WD 1/10th electric stallion from PB, the Mini Mustang



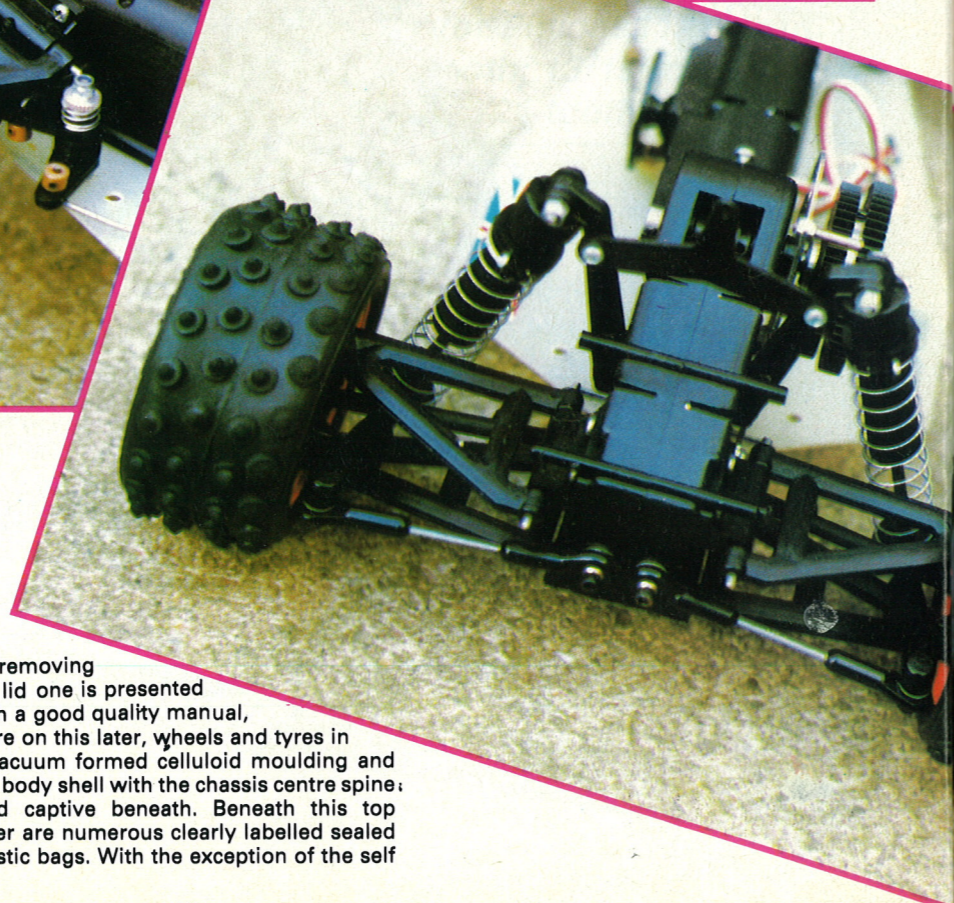
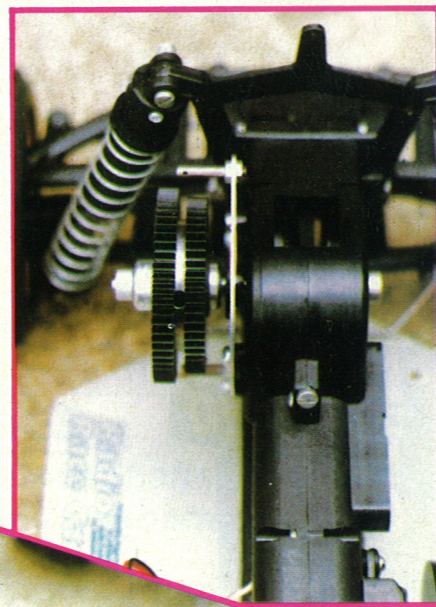
I recently returned from a business trip to America armed with various modelling items including a selection of their model car magazines (I didn't read them Boss — honest!). 1/10 buggies in the States fall into three distinct categories — toy cars, play cars, and competition cars. Quite clearly the Mini Mustang falls into the category of a competition car.

The Mini Mustang may be purchased as a 2wd, 4wd single speed or 4wd two speed.

The review kit is a 4wd two speed, however, a single speed gearbox was also supplied.

P.B. have surpassed themselves with their product presentation. Gone are the days of the overgrown shoe box in which one found an upturned bodyshell full of a variety of plastic bags.

On removing the lid one is presented with a good quality manual, more on this later, wheels and tyres in a vacuum formed celluloid moulding and the body shell with the chassis centre spine held captive beneath. Beneath this top layer are numerous clearly labelled sealed plastic bags. With the exception of the self



tapping screws and the ballraces each bag contains the item pertinent to its assembly stage.

The manual consists of some 24 pages. Each page is divided into two columns, one is for text the other photographic illustrations. Each step of assembly is covered in detail.



If a particular assembly stage requires a modicum of engineering, a "Helpful Hints and Tips" section precedes the step by step assembly instructions.

Simmer For Four to Five Minutes

Before bolting any thing together, I decided to boil some of the plastic parts. The instructions didn't recommended doing this and I had no reason to suspect that it was necessary. However, boiling the parts serves two purposes — it stress

Moving clockwise from left: rear suspension set up, shocker mounting parts are strong yet very light

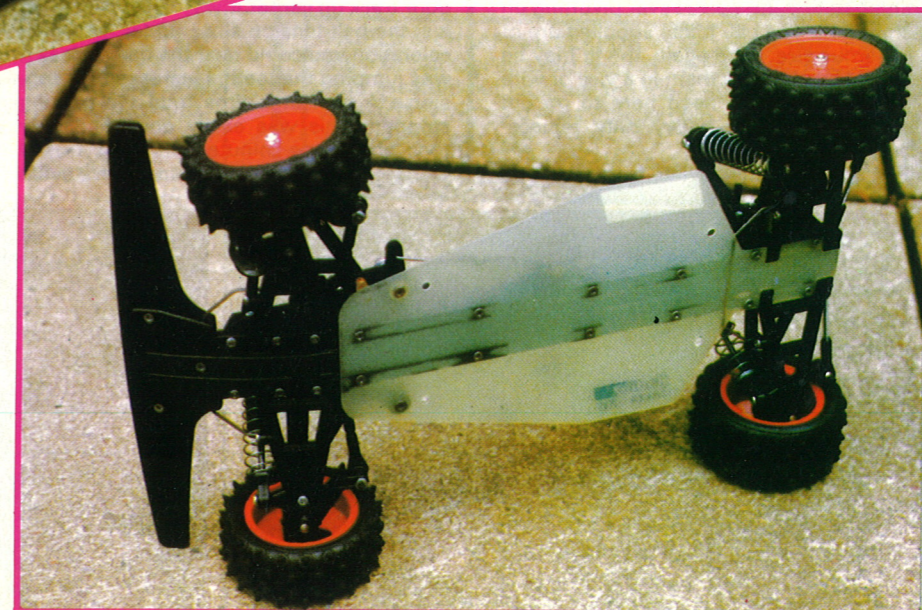
The wishbones are set into the Mustang's strong monocoque chassis

The Mini Mustang's two speed drive wheels can clearly seen in this photo

Front suspension set up is attractive and very efficient, note fixing system for anti roll bar.

The finished car, strong, light and very fast P.B.'s Mini Mustang

View of skid plate, held very firmly into place by no less than twelve self tapping screws.



relieves the plastic and also makes it more pliable by absorbing water. This technique is common practice on aeroplane propellers.

Assembly

Assembly commences with the two differentials. Both front and rear differentials are identical, being of the bevel gear type. As indicated in the instructions, I found it necessary to sand the rear of the plastic bevel gears. I used 280 grit wet and dry for this. Rather than remove too much plastic I chose to leave the differentials a little stiff as they will free up fairly quickly when used.

Next on the agenda are the axle blocks. The axles are hardened and ground steel which should ensure a long life. The ballraces are a good close fit and whilst it would have been possible to push it home I was concerned that removal in the future may have proved difficult. The remedy was easily accomplished by spinning the axle in a drill and holding some 280 wet and dry against the axle shaft for a few seconds. All four axles are identical as are the front and rear axle blocks.

The chassis consists of two glass filled nylon mouldings that house both differentials, belt tensioner and a drive pulley from the gear box. One glass reinforced tooth belt is used to transmit power to all the wheels. Precise belt tension is achieved via a screw adjuster.

The motor plate is next attached to the chassis. I found it necessary to remove a small amount of plastic from the bottom front mounting lug in order to clear the gearbox cover retaining pin nut.

All four upper wishbones are identical, as are the lower ones. In the past if these had been stiff on their pivot pins I would have drilled them out to obtain the desired fit. However, P.B. recommend pinching the assembly in a vice, and it works really well. A tip like this is well worth remembering for the future. The chassis plate is attached to the chassis spine with countersunk screws. To minimise bump steer, a servo saver and steering idler are used. The servo saver is of the familiar cam ramp design, as used by P.B. on their 1/8 cars. This is a very positive saver with no sponginess around neutral. The steering idler pivots on a steel post. I was, however, a little disappointed to find the servo saver pivoting on a 3mm bolt. The ball joints supplied are of a generous size, once again, the fit may be adjusted by pinching them in a vice or with pliers. Definitely no need here to go out and buy expensive heavy duty replacements.

P.B.'s drive shafts deviate from what has

become the 'norm'. They are fabricated out of what appears to be glass reinforced nylon with hardened and ground drive pins.

The drive pins should be inserted with either super glue or thread locking compound. I used super glue and inserted them quickly. Another novel idea from P.B. are the drive shaft retainers. These consist of a plastic fork attached to the lower front wishbone. If the drive shaft should try to pop out it will be retained in place. Definitely one of these "Why didn't I think of it" ideas that should prove invaluable in an accident.

The shock absorbers, once assembled, proved to be very smooth in operation with minimal static friction. They are fabricated out of a plastic alloy. An extremely useful feature is a bleed screw that can also be used for emptying and refilling with different grades of oil. The "Works" drivers are using these shockers on their 1/8th circuit cars, which should prove testimonial to their performance.

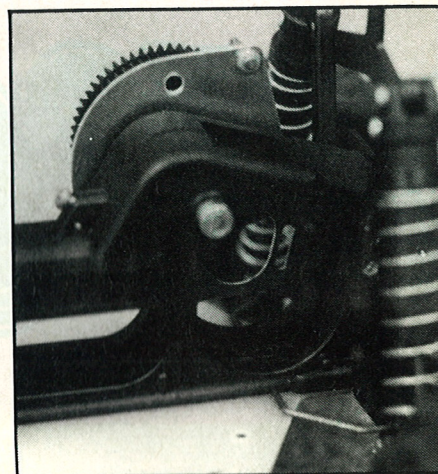
Yet another super idea is the battery retainer/connector. This takes the form of a clamp with two silver plated contacts held parallel to the nicads. The contacts are located in the chassis centre spine, which provides a positive means of holding the battery and also a connection to the speed controller.

As can be seen from the photograph, the 2-speed gearbox utilises two plastic gears. The larger is first and is connected to the layshaft via a one-way roller clutch. Between the two gears is a centrifugal clutch that connects second gear when the layshaft is turning fast enough. When second gear is engaged, the layshaft speeds up, thus disconnecting first gear. The clutch shoes are spring loaded. The change-up point can be adjusted by varying the spring tension.

Having painted the body shell, installed the radio and speed controller of one's choice, the car is now ready for the track.

On The Track

Unfortunately our local club does not run outside in the winter. On running the car in the garden I was very impressed with the way it negotiated the undulating terrain, the suspension really works well. I have however been able to run the car at our indoor track on carpet. It was necessary to adjust the belt tension since under heavy acceleration you could hear the belt click as it was jumping the teeth. I increased the tension a 1/4 turn at a time until the clicking stopped. This was easily done and only took about one minute. The tyres I used were Mardave 4 x 3's all round, these seem



The Mini Mustang's drive belt is well protected from the elements, running inside the monocoque chassis.

to give good grip on carpet. Not knowing what gear ratio to opt for I tried a 15 tooth on an old MG 27 turn (in fairness I have tried the com and ballraced it). It was more than a match for the RC10's with their double winds and there was plenty of power left at the end of the race. By now the turn of speed had gone to my head and I installed the two speed gearbox. The performance was now amazing, rapid acceleration coupled with high top speed and still the battery was lasting. It should be noted that at present there is no reverse with the two speed box, however, P.B. are developing the reverse facility.

The instruction manual recommends 3 in 1 oil in the shocks. I found this a bit light and will experiment with something a little more viscous next time out.

In Conclusion

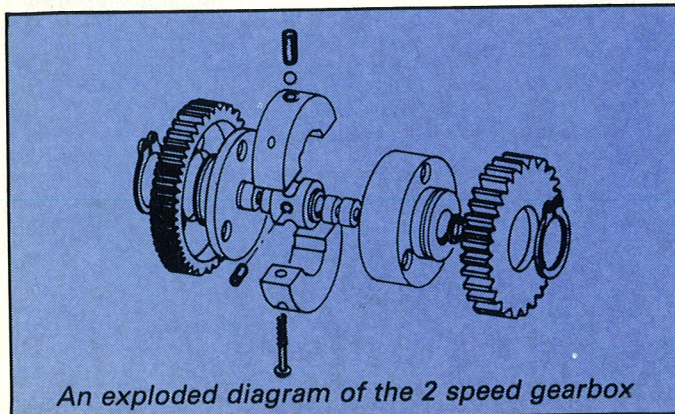
P.B. have produced a well thought out and engineered competition car. Points worthy of note are:-

All four corners utilise the same components thus minimising the number of spares that one must carry.

The car is competitive out of the box. There is no need to rush out and buy extras such as balljoints, ballraces etc.

Hotshot type wheels are used. The advantage being that there are numerous tyres on offer for these hubs. Incidentally Tamiya type motor pinions also fit.

There are an enormous number of gear ratios to choose from. Unfortunately due to a mix up at the printers, the gear ratio chart has been omitted from the manual. For the convenience of existing owners and future owners, the charts has been included with this article.



The Missing Gear Ratio Chart.

Motor Pinion Teeth	Overall Ratios			
11	54.00	56.00	58.00	60.00
12	11.45	11.88	12.30	12.73
13	10.50	10.89	11.28	11.67
14	9.69	10.05	10.41	10.77
15	9.00	9.33	9.67	10.00
16	8.40	8.71	9.02	9.33
17	7.87	8.17	8.46	8.75
18	7.41	7.69	7.96	8.23
19	7.00	7.26	7.52	7.78
20	6.63	6.88	7.12	7.37
21	6.30	6.53	6.77	7.00
22	6.00	6.22	6.44	6.67
22	5.73	5.94	6.15	6.36