

# Mini Mustang

## A WORTHY STEED INDEED

The Japanese have dominated the field, when it comes to buggies, for a long time now, but the Brits are certainly fighting back with cars like PB's *Mini Mustang*, a good 'horse for the course' (or track). The Mini Mustang is available in two basic formats: the single speed, and the two speed, which is the buggy under review.

by Paul H. Bird



### FEATURES

The two speed Mini Mustang features:

- \* an automatic two-speed gearbox which can be adjusted to alter the gear change point;
- \* belt drive with adjustable belt tension;
- \* lightweight, high strength drive shafts;
- \* oil-filled shocks inside coil springs;
- \* four-wheel drive;
- \* front and rear differentials;
- \* adjustable toe-in, castor and camber;
- \* centre mounted motor;
- \* fast change battery pack system.

A unique feature of the Mini Mustang is the fast change battery system. In the centre wishbone, just above the nicad position, is a plate fitted with two small springs which are wired through to the radio gear. These act as a housing for a pin and plastic arrangement, which is fitted to the nicad pack. The springs not only keep the pack firmly in place, but also act as the connectors, making all those fiddly plugs and sockets obsolete.

### OPENING THE BOX

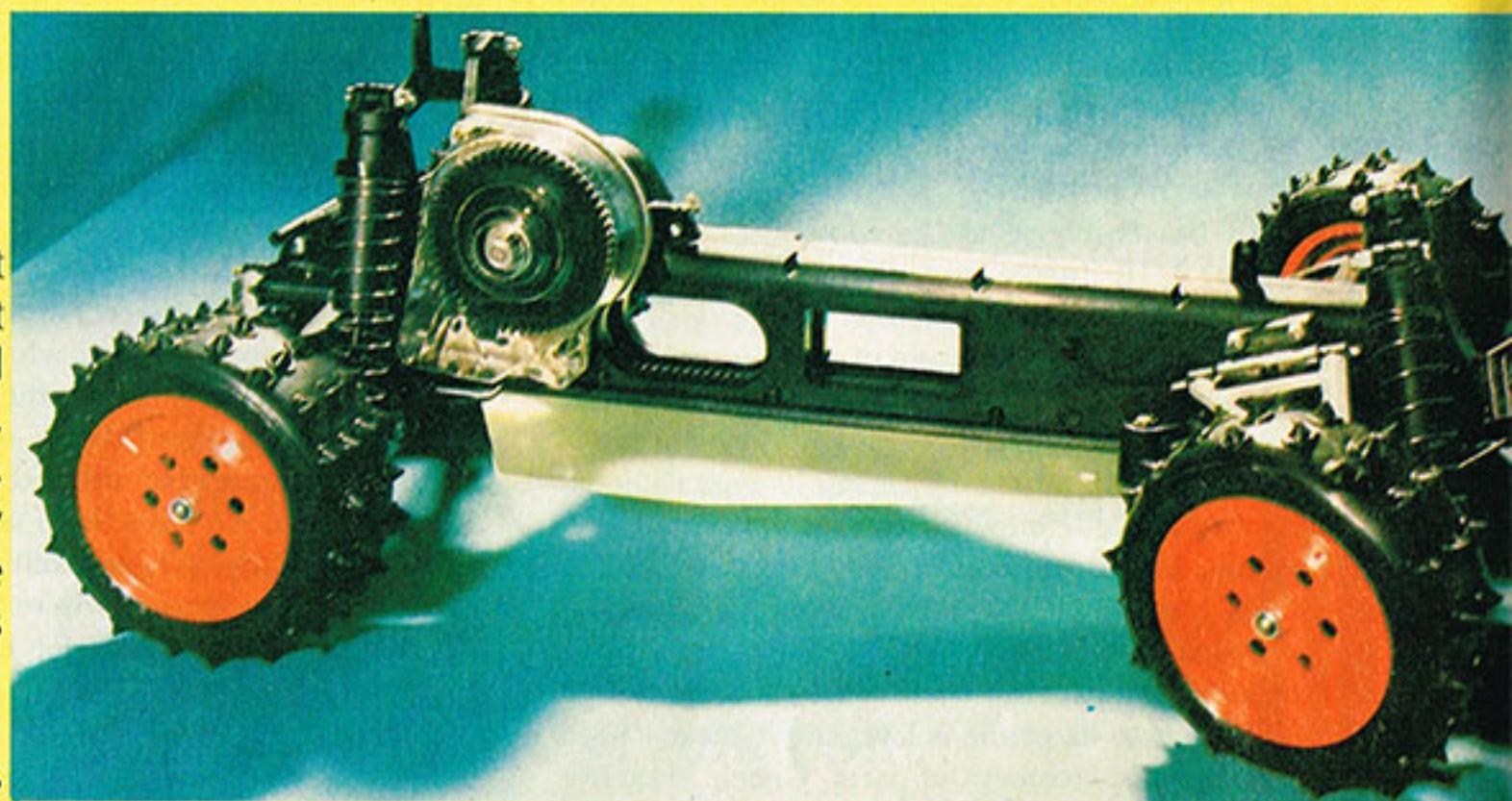
Kit presentation is good, with all the components neatly sealed in well-labelled bags so that they are easy to identify during assembly.

All components appear to be made from high strength, glass-filled nylon, ensuring that they will endure the rough and tumble of buggy racing with a minimum of damage.

The instruction manual is well laid out, with sharp, clear, black and white photos showing how everything goes together, and text passages which explain which

bags the necessary parts are packed in, and how to go about putting it all together.

Construction is straightforward, provided that you take your time and **read the instructions**. This is not a kit for the complete novice, however, it should not be hard to build and drive for someone with average buggy-building experience.

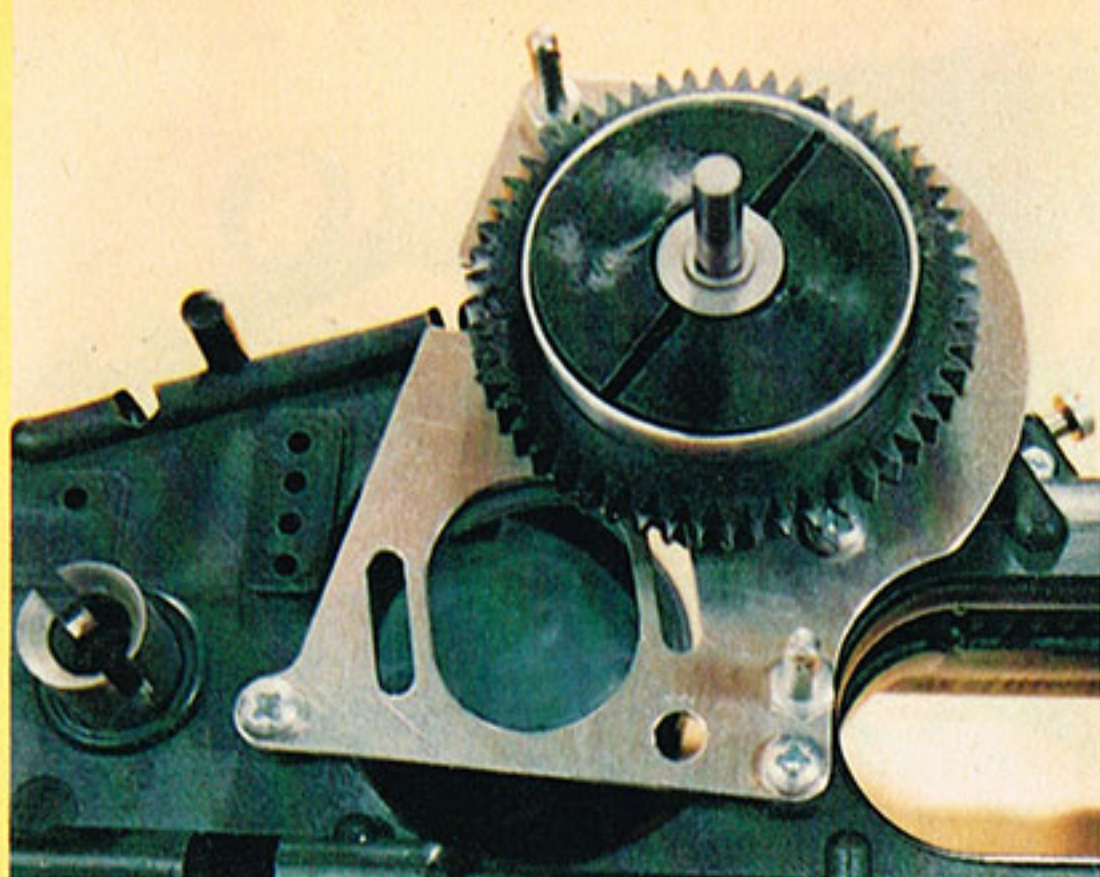


### PUTTING IT TOGETHER

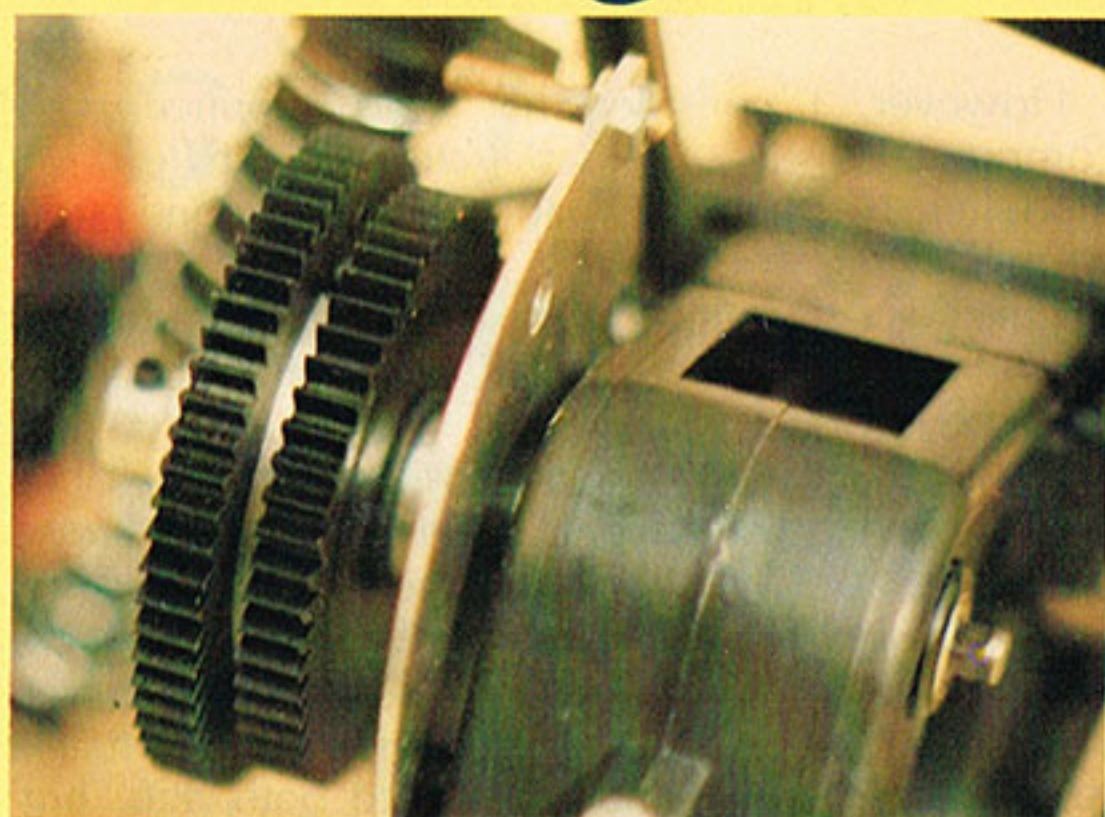
General construction is based around the central back-bone, which houses the front and rear differentials, the belt and the belt tensioner. The back-bone is strengthened by a fibreglass bottom plate, which also serves to secure the wishbone pivots.

The suspension assemblies are attached to the back-bone, which also acts as a housing for the radio gear, the motor and the nicad pack.





*Inside the two speed gearbox. Two centrifugal clutch plates spin outwards when the motor revs increase, locking up the outer casing, and allowing the second, high speed gear, to take over the power transfer.*



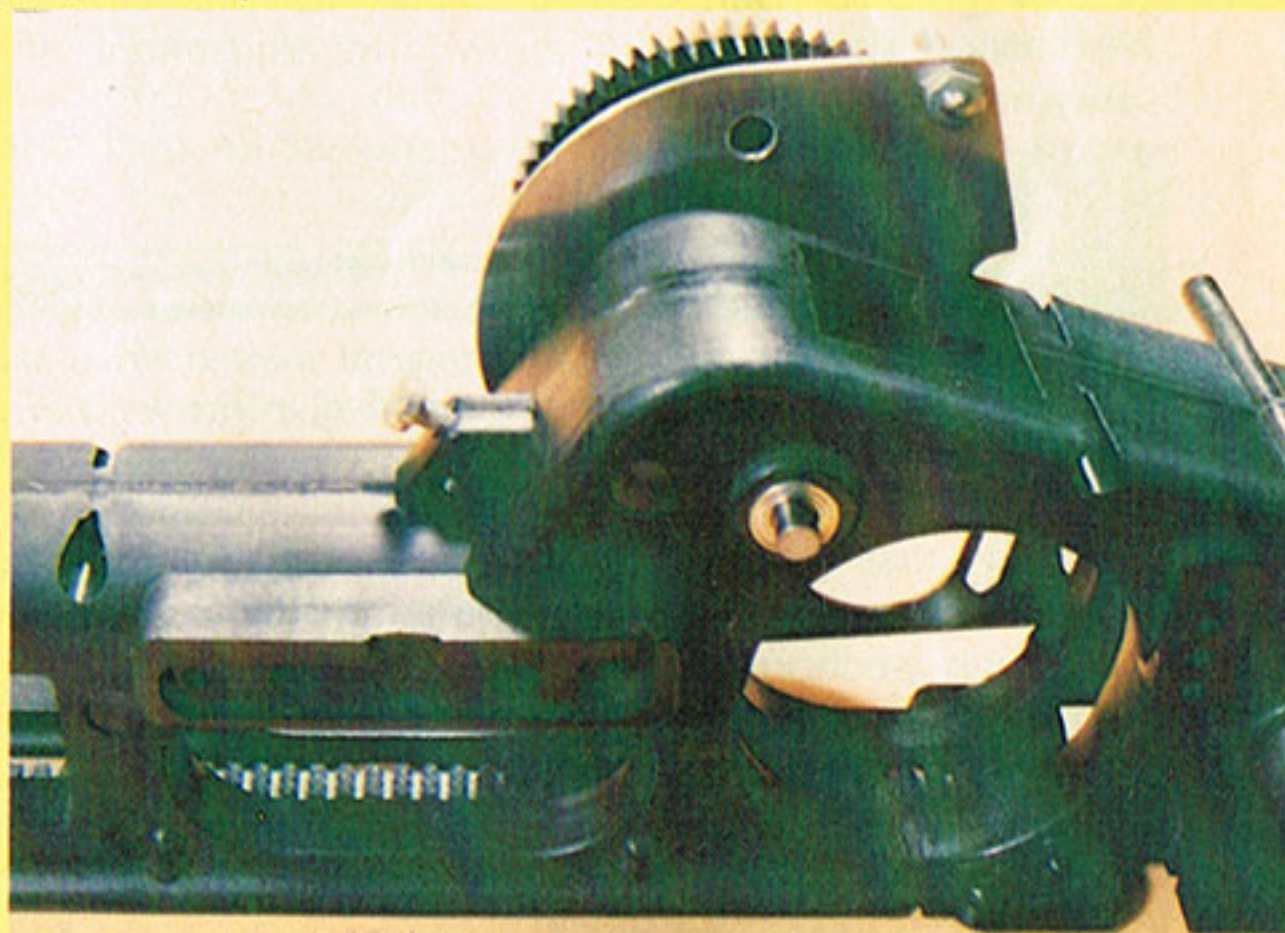
*The outer gear is first, or slow speed. It is fitted with a one-way clutch so that when the inner, or high speed gear engages, the outer gear free-wheels.*

## OPTIONS

The standard bushed belt tensioner can be replaced with a ball-raced version, which will help to reduce friction and provide for smoother running.

The standard drive shafts supplied with the kit appear to be carbon fibre, with a metal pin which you install in the ball at each end of the shaft and secure in place with cyano-acrylate adhesive. The front lower wishbone arms are fitted with a special block which serves to stop the front drive shafts from being thrown out of place during power turns on full lock.

The original drive shafts can be replaced with a full-length universal jointed metal shaft, which also replaces the axles. A one-way style shaft is available for the front drive shafts, and, as this shaft is a single unit, it cannot pop out of place.



*The front suspension, showing the ball jointing of the wheel hubs and the substantial servo saver.*

*Tension is put on the belt by the screw which is threaded into the backbone, just above the battery mounting.*

## CRITICISMS

One problem encountered during construction was that the hex drivers supplied were a dubious fit in some of the grub screws used, particularly in the two-speed gear box assembly. This meant finding some other drivers to use. I suspect that part of the problem was a combination of metric and imperial grub screws.

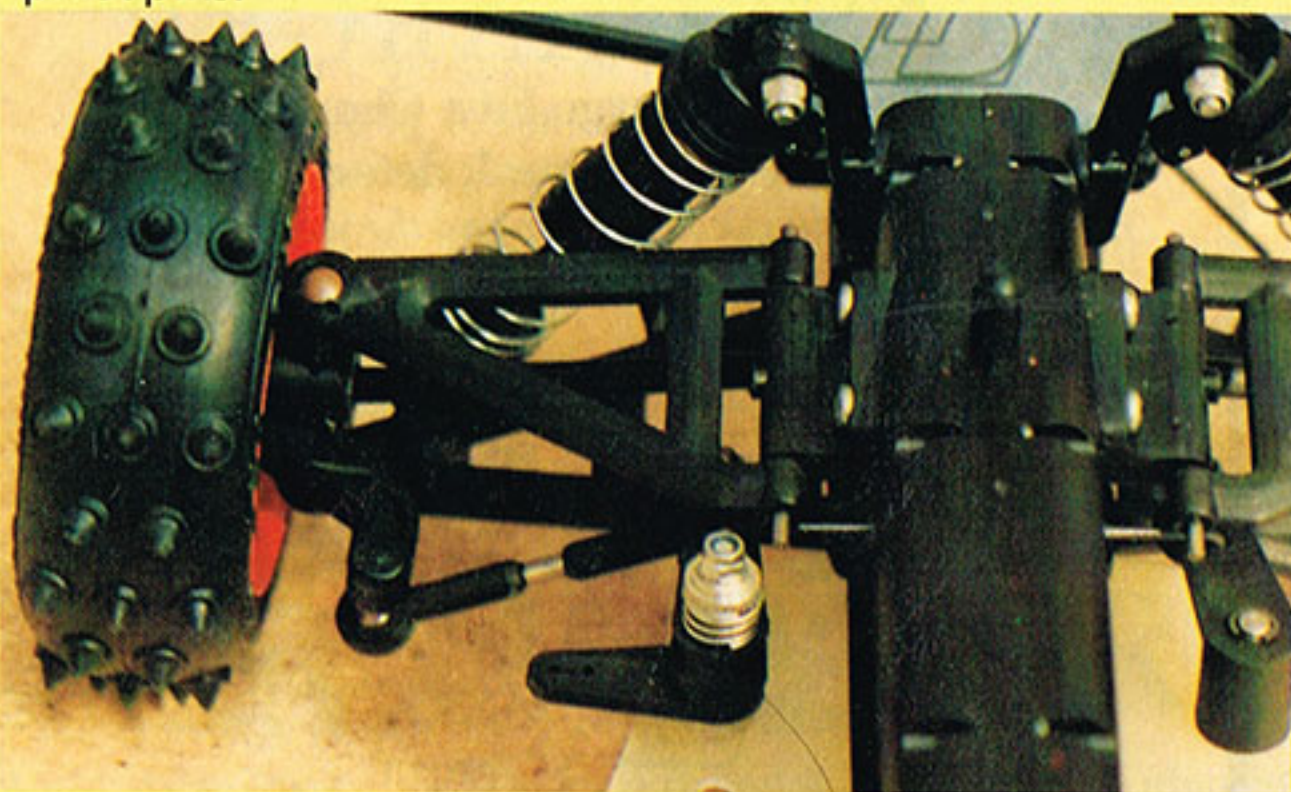
The combination of metric and imperial also flows through into the instructions. Just one example, and I quote; "47 mm long x 3/32 inch diameter wishbone pivot pins". While this isn't a serious problem, it can be a little confusing to chop and change between units of measurement.

The differentials are first up, with each unit housing three sun-gears or counter gears. These go together very easily, and are ball-raced at their mounting points in the backbone housings.

Assembling and fitting the belt tensioner is next. While this allows adjustment of the belt as it slowly stretches from wear, it also provides the drive from the motor to the belt itself, via a gear secured to a shaft with a grub screw.

The two backbone sections are closed up, and the steering servo is fitted into its mounting hole. Depending on the size of your servo, this hole may need to be enlarged.

Following the instructions, the suspension arms are made up and fitted next, and the bottom plate is attached. This also secures the lower wishbone arm pivot pins.



Be careful fitting the main ball joints into the wishbones. The instructions indicate that you need to use a vice to press the balls into place, and this must be done very gently, but it is not difficult.

Keep following the instructions and the Mini Mustang will be completed in next to no time!

Shocks and mountings are fitted towards the end of construction. The shock mounting positions can be altered to suit track conditions. The upper mounts are screwed to the backbone and can be set either high or low. This, coupled with changes in ride height via the spring positioning, means almost infinite adjustability in the ride height of the Mini Mustang, making it suitable for every type of track.



However, I consider that tools supplied not fitting components is a serious difficulty. It can lead you, the modeller, to believe that you have done something wrong, when you haven't. In turn, this can lead to a definite construction mistake, so, when building the Mini Mustang, double check both grub screws and the Allen keys.

I feel that the system of tensioning the belt could be improved. The system involves a screw through the backbone pressing against the tensioner arm. This screw thread in the backbone could be stripped quite easily, and if that happened, all belt tension would be lost. Belt tension does not provide a front-rear torque split, it only affects motor drive to both diffs, but without the tension you have no drive; just a slipping belt.

I was disappointed that no grease was supplied for use in assembly of the differentials, even though the instructions suggest greasing the gears. Also, the kit did not contain any oil for use in filling the shocks. I know that there are many different grades of oil which can be used, depending on track and weather conditions, but it is nice to be given a starting point.

The shock bodies are made from ABS resin, rather than metal. The end cap of the shock, which contains the seals, is held into the shock body by using two roll-pins which are squeezed into their holes using pliers. This makes oil changing a rather difficult operation, and, of course, the shock body is rather more at risk from distortion caused by the removal and insertion of the roll pins. However, the seals are good and the shocks work well and do not leak.

Sway bars are provided, but I wasn't impressed with the method of installation. The bar is attached to each wishbone by sliding a small nylon connector over the end of the sway bar, then screwing the connector to the wishbone. This does not allow any adjustment of the sway bar tension.



*One option is the full length universal jointed drive shaft, which replaces both the shafts supplied in the kit and the standard axles.*

#### ON THE TRACK

On its first test run the Mini Mustang handled quite well. It was predictable in corners, and very stable, even on rough sections of track. Set up according to the instructions, the two-speed gearbox changed well, allowing good torque at low speed out of corners, then changing to allow the motor to push out maximum revs and speed on the straight.

#### CONCLUSIONS

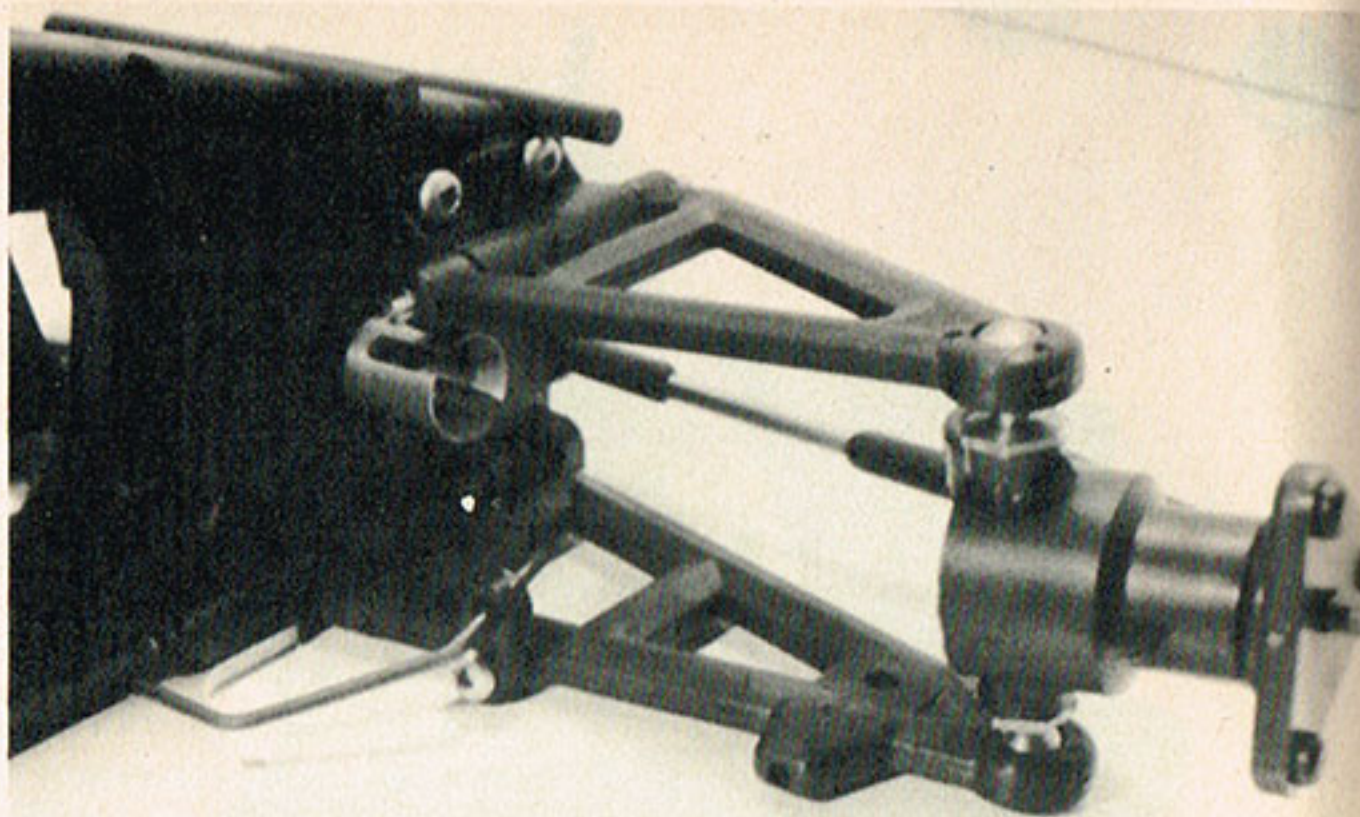
All in all, the PB Mini Mustang two-speed is good value for money, and is a good buggy for the serious racer. It can be set up for virtually any type of track, indoor or outdoor.

Providing that the instructions are read and followed, construction should not cause any major problems, and setting up is fairly straightforward.

The Mini Mustang should be a durable buggy, providing that it is looked after and properly maintained.

If you're a beginner, I'd suggest that the Mini Mustang is not for you; but if you have some experience, and are starting the chase for those elusive first place trophies, why not try riding with a two-speed PB Mini Mustang?

Review buggy and optional parts were supplied by Rob Reade of PB Model Cars Australia. Thanks Rob.



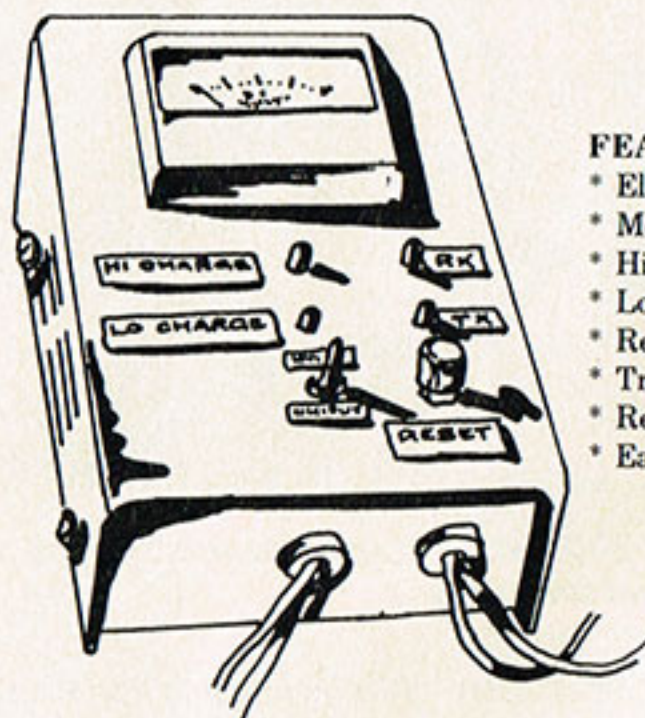
*The rear suspension, showing sway bar fitted to the bottom wishbone. The rear track rod allows toe-in and toe-out to be adjusted.*

#### REVIEW AT A GLANCE

Quality of Instructions:	★★★★★
Ease of Construction:	★★★★
Quality of Materials:	★★★★★
Motor Supplied?:	No.
Chassis Type:	Backbone.
Suspension Type:	
Shocks Type:	Oil filled coil over.
Sway Bars?:	Yes.
Ball Races Supplied?:	Yes.
Motor Accessibility:	★★★★★
Battery Accessibility:	
Speed Controller Supplied?:	No.
Steering Servo Saver:	★★★★★
Body Shell:	Lexan; you paint.
Balance of Car:	★★★★
Handling on Track (as tested):	★★★★
Ease of Setting Up:	★★★★

## FAST CHARGER

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