Greg Halliday gives the 'low down' on how to convert your Astute to be like Jamie Booth's.

BUILD A WORKS R ASTUTE

Many people have looked at the Tamiya Astute (and, of course, the Egress!) and wondered if this car could be a world championship contender. When Jamie Booth was engaged by Tamiya as their works driver there was little doubt in many people's minds that his driving ability and competition knowledge of radio model cars, when coupled with Tamiya's engineering skills, would eventually produce top level competition cars. In this article we have been given the opportunity (and the knowledge!) on how to convert the Astute to be almost the same as Jamie Booth's own car. Of course, we have to remember that Tamiya have made slightly different front and rear wishbones which are still not commercially available, plus one or two other small modifications not in

Neat, tidy wiring is a must.

EPLICA

Rear end detail showing Madcap wishbones, stub axle carriers, new top link (note particularly the spacer behind the inner ball joint) and square section spring on short Hi-Cap shock absorber.

For interest, here are a few of the car's major competition 'A' final results in 1990:

April

Hatfield Peveril BRCA meeting — 1st overall.

Reedy International, France — qualified 5th, 9th overall.

June

Eden Park BRCA meeting — qualified 2nd, 8th overall.

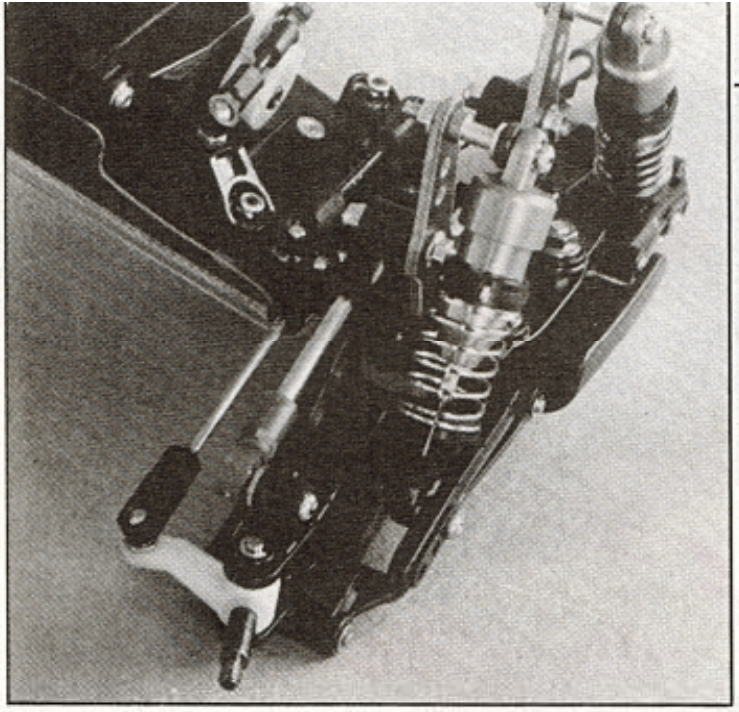
August

Eurochamps, Belgium — 7th overall.

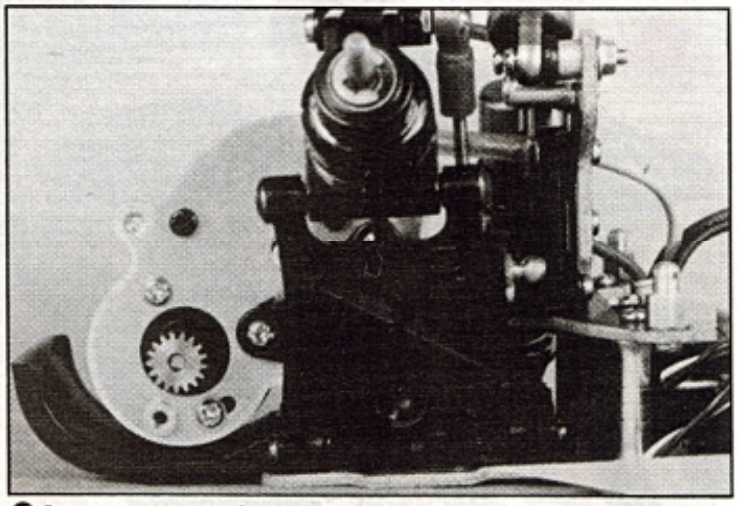
production, but if you convert your car as per this article you will have the satisfaction of knowing that your Astute will be almost the same as Jamie's and the Japanese works car shown in Racing Round-Up in the October issue.

IYA ASTUTE

Ready to go!



Front end clearly showing square section springs fitted to short Hi-Cap shock absorber, modified top shock mounting, top link and Madcap wishbone, upright and centre point axle block.



Insert a washer here between the wishbone carrier and chassis to give an amount of 'anti-squat'.

October

Dutch Grand Prix — 3rd overall.

There seems little doubt that the car is steadily progressing to be one of the top contenders in world class two wheel drive racing.

What's the Difference?

Quite literally, one of the first things that happened in the development of the modified Astute was to make it more simple! This was done by using quite a number of components from their Madcap two wheel drive car, such as front and rear wishbones, rear uprights, front uprights and steering arms. Naturally, Tamiya would incorporate their 'Hi-cap' range of shock absorbers, a ball bearing race upgrade kit (including the steering bell cranks, a la Egress), and some bigger front wheels to get it round the corners!

Where Do I Start?

Let me take you through the construction as if building a car for the first time. It will help assembly if you have your Astute manual on hand to help identify the parts I refer to.

The chassis and plastic front suspension mount remain unchanged, including the use of the BM3 metal bearings for the hinge pins. Next, the original front damper stay is fastened as per the Astute to the plastic suspension support and the BL5 upper link pins are also fitted in the normal manner.

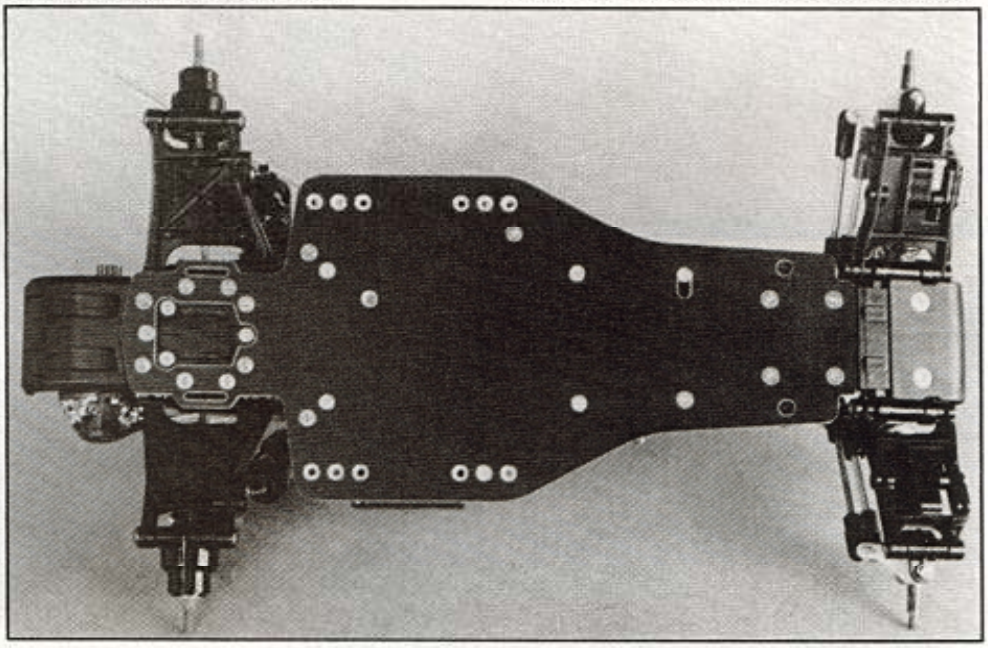
Make-up the upper wishbone links utilising the original B4 inner pivots together with the Astute threaded shaft. The first change occurs at this point by substituting 6mm Tamiya blue coloured plastic ball links on the outer ends. These will need to be drilled out to accommodate the large sized threaded rod. The works cars also have these 6mm ball links fitted on the inner end, but we retained the originals.

Now we come to the more dramatic changes where the Astute front steering uprights, steering arms, wishbones and anti-roll bar are discarded! (Well, put them in your box, you might find a future use for them!) The steering arms on the Madcap are pre-assembled in white nylon and are of the centre point axle type. Centre point mounted axles is something that seems to be creeping in on some of the newer models but in fact was quite standard at the outset of R/C model cars.

It is usually considered that this system gives more positive steering. The steering arm is fixed to the Madcap C4 steering uprights using hinge pins from the Astute. You will probably need a few small washers to take out the excess play in the length of the pin.

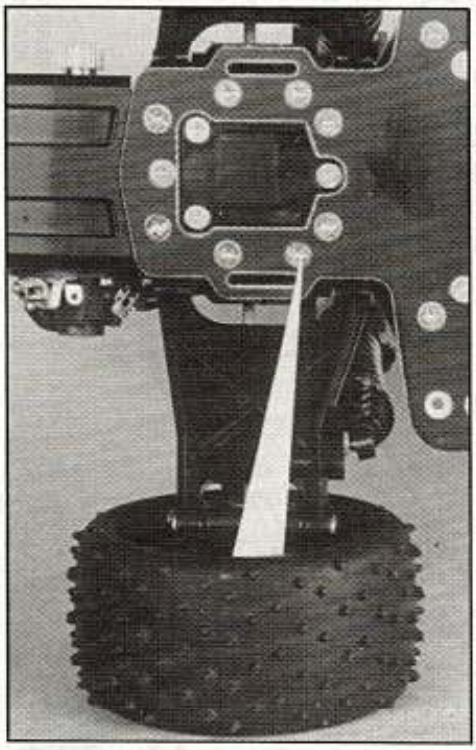
The upright is fastened to the B1 wishbone by using the Astute outer hinge pins and this, in turn, is fitted to the Astute front suspension mount with the original inner hinge pin. Apart from inserting four BM3 size ball bearings (number 730) in the steering bell cranks the steering

Underside clearly shows major changes by fitting the different wishbones.



assembly remains virtually the same, reusing all the rods and links with the exception of the connection at the steering arm.

At this point the blue 6mm ball links (or adjusters as Tamiya call them), are replaced by the Astute BT4 5mm type which you should find left over from this conversion, and these are fixed to the brass ball joints as used on the steering arms of the Egress. Purchasing a Tamiya pack no. 9405510 will give you these brass ball joints, plus a few of the other ones needed during the conversion.



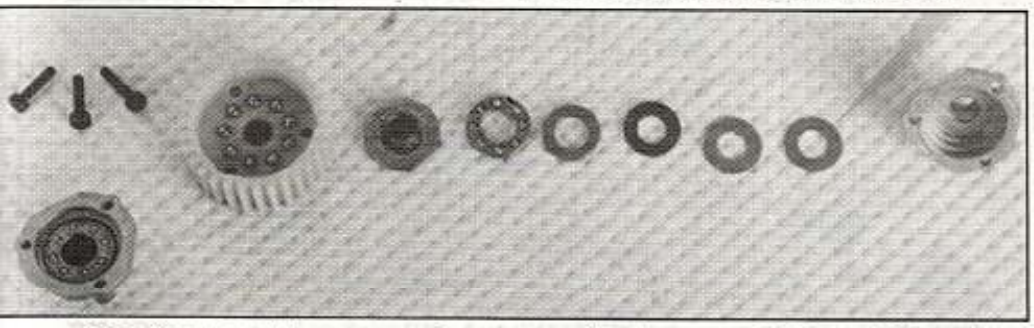
serrated flange nut. By doing this the shock absorber is moved further away from the mount allowing the bottom fixing in the Madcap wishbone to be parallel with the top fixing. Use one of the spare screws in the shock absorber kit for the lower mounting and utilise some form of ball or sleeve on the bottom fixing to prevent the shock absorber from floating about too much. I will cover the shock absorber spring/oil/piston set-up at the end of the article.

Apart from the acquisition of a pair of 50303 larger diameter front wheels (they come with tyres) and four BM2 size ball bearing races (1150) the front end is finished!

Now we move to the rear. Working our way through the Astute manual you should now be on page 7. Omit the centre aluminium chassis stay and insert a washer or two under the front end of the D1 rear wishbone pivot mountings. This will give some rear castor or 'anti-squat'. The next major move is to discard the Astute rear wishbones and replace these with Madcap B5 items using the Astute hinge pin on the inner pivot.

The gearbox is assembled in the normal manner with the exception

If in all the excitement of modifying your Astute you forget to fit the extra differential spacer washers, don't worry. Just remove the access plate and lift out the diff. Assemble as shown.



The front end is now nearing completion, but of course, shock absorbers need to be added. A pair of 53036 Mini High-Cap shock absorbers are fitted on the front end but the top mounting needs to be adapted as follows. Use a longer 25mm bolt found in the shock absorber kit, fit the ball to this bolt and insert it through the top of the shock absorber. Next add the black rubber 'O' ring and aluminium ferrule, fit one of the 9mm length brass spacers (also in the shock kit) and fix this to the shock absorber top mounting with the normal

of using two 0.05mm differential spacer washers to prevent differential slip, and if you are converting a car that has already been used look very carefully at the black plastic semi-circular transfer gear support which bolts to the aluminium plate. These break occasionally and are often not noticed by the owner before damage occurs to the gear set, you have been warned! The gearbox mounting is carried out in the normal way, together with motor guard, glassfibre sub-chassis, plastic D4 rear damper stay support and the glassfibre rear damper stay.

Making reference again to the Astute manual, all of the components shown on diagrams 17, 18 and 19 in the manual are discarded, and the Madcap C5 rear stub axle carriers are used as a replacement. These are then fitted with another four 1150 sealed ball bearings. The driveshafts and stub axles of the Astute are retained but don't forget to put the rubber 'O' rings inside the drive cups.

At this point a little ingenuity is needed because you will have to make your own top links from threaded rod utilising some of the blue 6mm Tamiya links, or you can use any others you have in your pit box, and the chrome ball connectors SB6. You will need to ensure that the ball connector at the back of the rear damper stay support is moved rearwards by the insertion of a nut or spacer to ensure that the shock absorber spring does not foul the link during upward and downward movement.

A pair of 53037 Short Hi-Cap shock absorbers are fitted to the rear in the normal manner, using a short spacer and brass ball screwed into the wishbone at the lower end. The standard kit rear wheels are used, and also the rear wing and support are retained. The next major change to the car is that the nicad pack is mounted longitudinally on the chassis. To do this it will be necessary to use some sort of battery holder. Tamiya do not produce a suitable alternative yet, so we used a pair of the Schumacher Cougar type (as does J.B.!). Apart from fitting the undertray, bodyshell, wheels and RC equipment, that completes the conversion!

Some of you may place the Astute wishbones alongside the Madcap ones and wonder why the Astute items are not retained as the proportions appear very similar. Well, if you attach the Madcap steering upright you will find that it does not permit any downward movement of the wishbone! The Madcap wishbones also seem to be a bit more rigid.

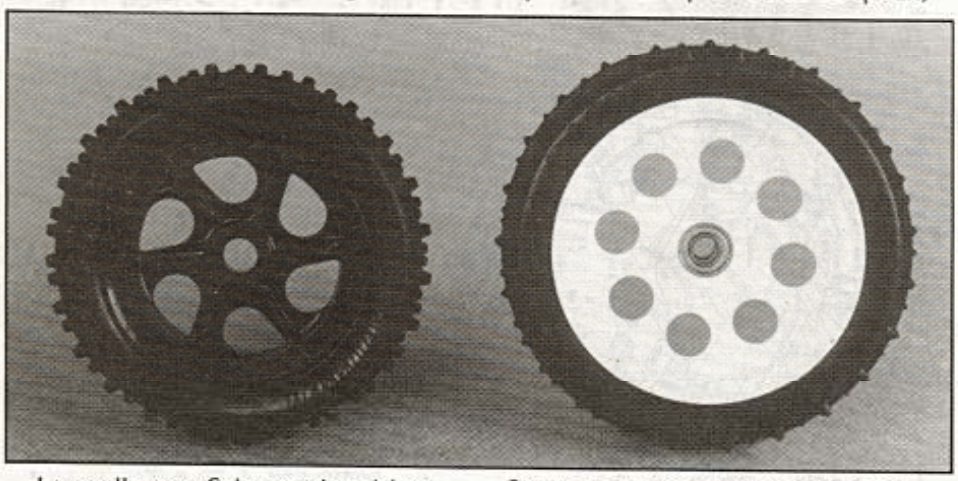
OK Jamie, We've Built It, Now What?.....

Having carried out the conversion with helpful advice from Colin Spinner of Richard Kohnstam, the Tamiya importers, I was intrigued to

know how Jamie Booth set his car up.

So what better than asking the Tamiya 'guru' for his advice: "Many people ask me how to set up various cars which I have raced in the past and at present, but I vary the adjustments to suit the track conditions. I can certainly help by giving a basic set up for drivers to try out which is the point that I usually start from on my Astute.

I use the two holed piston in both the front and rear shock absorbers and usually use between 300wt and 400wt Tamiya damper oil in both. I have found the new square section medium rate springs to be a little better than the round section types. Although some people think it's hype I really do think they are slightly better — apart from improving the looks of the car! I don't use camber on the front or rear wheels, as I believe the car handles better without any.



The original wheel and tyre next to the new larger item.

I usually use Schumacher blue mini spike rear tyres and vary the front between rib spikes or two row stud. On hard dirt I use either Losi 'X' pattern rears with Losi ribbed, or staggered ribbed on the front. I have the front wheels parallel — no toe-in. My own car has got some new experimental rear wishbone blocks which give an amount of anti-squat and a small amount of rear toe-in, but these are not yet available." (I wonder who will be the first specialist company to manufacture some of these?!)

"With regards to the motor, this is dependant upon track conditions, I usually use an LRP pink — which gives good torque and is very battery efficient, or an LRP orange HE which gives a higher top speed and is best suited with good nicads on a 17/77 gearing".

I thanked Jamie for his help and advice to those of you who intend carrying out the conversion, and concluded the interview by asking him for any additional advice to drivers:

"There is no magic way of setting up a car. You can use my ideas as a basis but you will have to set the car up to suit your style of driving. At the end of the day preparation and good equipment are essential".

I think I would like to add to that Jamie — and a certain amount of driving skill!!!

The Test

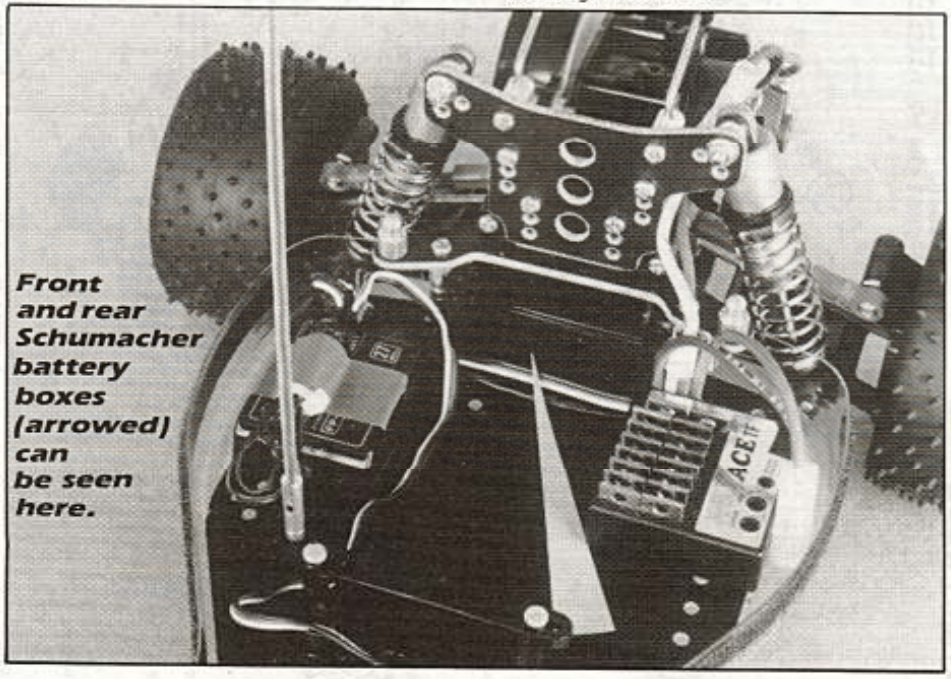
How did our car go? We installed a Demon Ace 16 FET speed controller and 16 triple turn motor, together with Futaba radio gear and their S4061 high speed servo.

Unfortunately, we had little time left to get the track testing done before our printing deadline and this, coupled with bad weather, only enabled us to carry out a short trial run on wet grass. The 'Works Replica' Astute proved to be quick, the transmission obviously being very efficient, and it rode the bumps well. For me the most surprising thing was how positively it steered without being over 'twitchy' or losing rear end grip; in this version Tamiya seemed to have overcome the understeer problems which occur on a lot of other rear wheel driven cars. Perhaps the centre point axle blocks help? In summary, I would say I can see why Jamie Booth really enjoys driving his Astute!

My thanks to Richard Hopkins for his efforts in producing the subtle bodyshell paint job.

Tamiya Parts Needed For Conversion

2 x 0005363 — Madcap wishbones, etc.
2 x 0005364 — Madcap rear stub axle carriers and steering uprights.
2 x 0445128 — Madcap steering arms.
1 x 51381 — Adjuster set (track rod ends).
1 x 53036 — Mini Hi-Cap shock absorbers.
1 x 53037 — Short Hi-Cap shock absorbers.
1 x 50303 — Front wheels and tyres.
1 x 53053 — Mini Hi-Cap damper spring set.
1 x 53054 — Short Hi-Cap damper spring set.
1 x 9405510 — Ball connectors.
plus
2 x Schumacher Cougar (or similar) battery holders.



Front and rear Schumacher battery boxes (arrowed) can be seen here.

Parts Breakdown

MADCAP

ITEM 58082

★Refer to the instruction manual for the 7 digit parts numbers.

★ USE PARTS ON ASTUTE CONVERSION.

TAMIYA

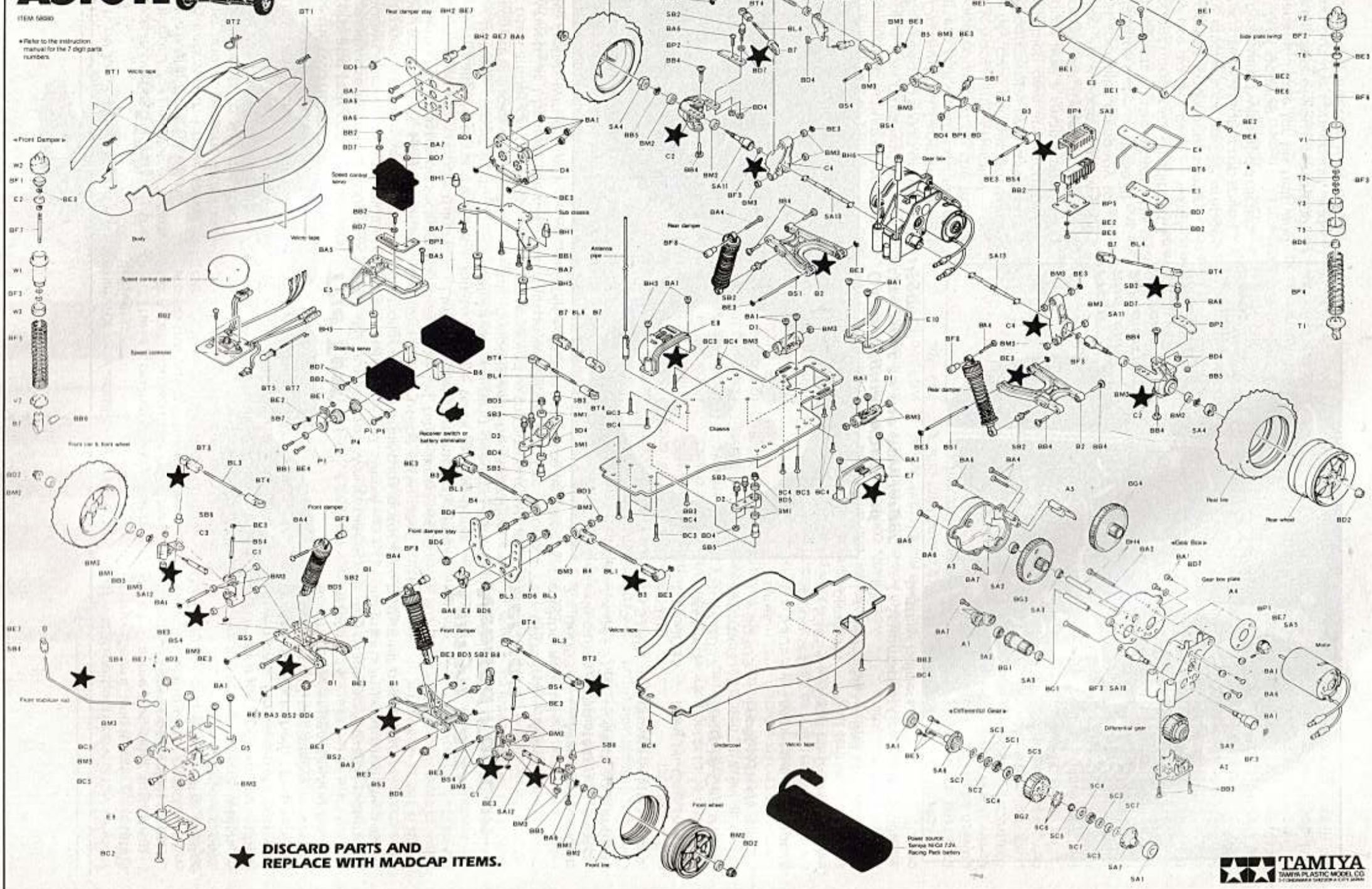
TAMIYA PLASTIC MODEL CO.
3-1 ONEIWAKA SHIZUOKA-CITY, JAPAN

Parts Breakdown

ASTUTE

ITEM 58080

★Refer to the instruction manual for the 7 digit parts numbers.



★ **DISCARD PARTS AND REPLACE WITH MADCAP ITEMS.**

TAMIYA
TAMIYA PLASTIC MODEL CO.