

When four becomes two

Mugen Avance
K2x 2wd
Review



In the March edition of RRCi we took a look at a new kid on the Tenth IC block the Mugen Avance, in 4wd format. The Avance is also available in a 2wd specification. Constructed to rules approved for National and World class Championships. A lot of drivers feel this to be the 'premier' class. On the whole at most tracks the 2wd is expected to be faster than the 4wd car, but it can be a lot harder to drive, and will always give best to the 4wd car in wet or low grip conditions. At present, although we now have National class for 4wd, 2wd is top dog. As I already had the 4wd car it was a very simple job to convert it to 2wd, by adding a diff and removing the 4wd system. A job that took not much more than an hour including building the diff. The diff is available as a spare part and costs £45.00, pretty good value when you consider there are 39 parts and has lots of lovely ballraces. In fact I would recommend the route I have gone with the Avance to all, buying the 4wd car first

gives you a chance to get to grips with tenth IC using a car that gives so much grip and is really sweet to drive. Then for a small outlay you can convert to the faster (supposed) 2wd Championship class. Also you can change back to 4wd at any time for a little winter or damp racing.

Recap

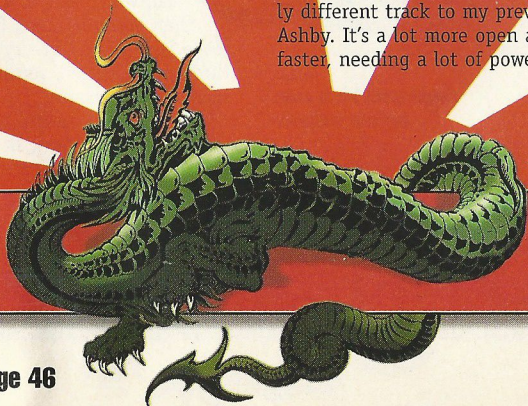
Just in case you didn't read the last ode I'll do a quick recap. The Avance is Mugen's second generation Tenth IC car. It follows a classic layout for this class of car. Thick aerospace alloy chassis, carbon radio plate, fully adjustable suspension, Kevlar drive belts, automatic clutch, quick release wheels, strength, look's in fact the whole nine yards. A total specification, no add-on's or Hop-ups, a real racer. It built well and after a few initial small problems has run very well. In fact since the last episode the car has had its competition debut at a Crystal Palace club meeting. On a dry but very dusty day, three rounds of qualifying and a 15 minute final were run. Crystal Palace is a totally different track to my previous test track at Ashby. It's a lot more open and quite a lot faster, needing a lot of power-on steering.

After practice a change to stiffer springs all round (yellow) rectified an excess of grip, I qualified third and finished second in the 15 minute 'A' final. Only a set of worn front tyres stopping me from taking the win. In retrospect if I had fitted larger diameter front tyres the handling would have stayed neutral, as it was the small fronts made the car understeer in the middle/exit of corners, due to the front tyres receiving more drive. Something you can't live with at the 'palace. After some three hours running the Avance has been totally reliable, the Maurio Rossi Rex is now well run in and really flies, doesn't it PeterE? Still on the same glow plug too. Got to be good.

Ed's comment - yes it really does shift, I had the pleasure of a quick blast on a slippery Ashby circuit and I was really impressed by the 'grunt' and drivability of the Rossi, nice.

Back to the plot

Having acquired the diff from Ted Longshaw it was a simple task to do the conversion. The Avance ball diff is quite a massive unit when you compare it to 1/10th electric types, but it does have a great deal of power to distribute. Fully ballraced, it has proper semi-circular tracks ground into the main drive washers. This



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'buying the 4wd car first gives you a chance to get to grips with tenth IC'



Serious wing on the Frewer shell

gives a great deal more surface area for the diffballs to run on, so you can run the diff looser. Also the thrust bearing and the adjuster are enclosed within the body of the diff, so the dirt and dust can't get to it. So it should run for a long time with out the need for a rebuild. Using a Chris Grainger grease the diff was very smooth in operation. Quite a range of adjustment was also available a very useful tool in the handling stakes (the stiffer you run the diff gives more drive and more power on steering, ideal for high grip, looser the opposite). As I was expecting a low grip day I set the diff as loose as I could. Prior to the track test I did a trial fit of the diff, then put the car back to 4wd spec, the only way to do a proper comparison. Also at this point I went through the set-up sheet for the two drive specs, very little was different, which I was surprised to find. The rear track width was 2mm wider for 2wd, this would help make the car a little more stable. Also there was a 3mm more droop at the rear again this would give more grip. The rest of the set-

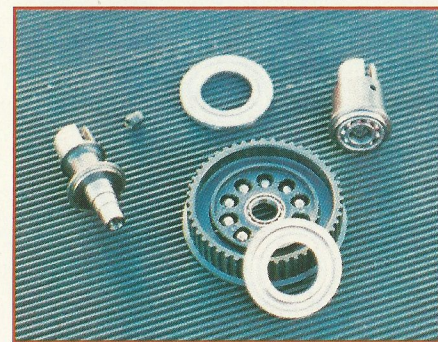
tings appeared to be the same. So Ashby was the next port of call.

Time for some head scratching

After what seemed an eternity the weather was kind and a dry day appeared. On arrival at the track I first ran the Avance in 4wd mode, this gave me a chance to feel the level of grip and clean a little of the dusty away (mostly from me). A timed run gave me a slow 17 lap per, not great but the track did feel very slippery.



out come the 4 WD bits....



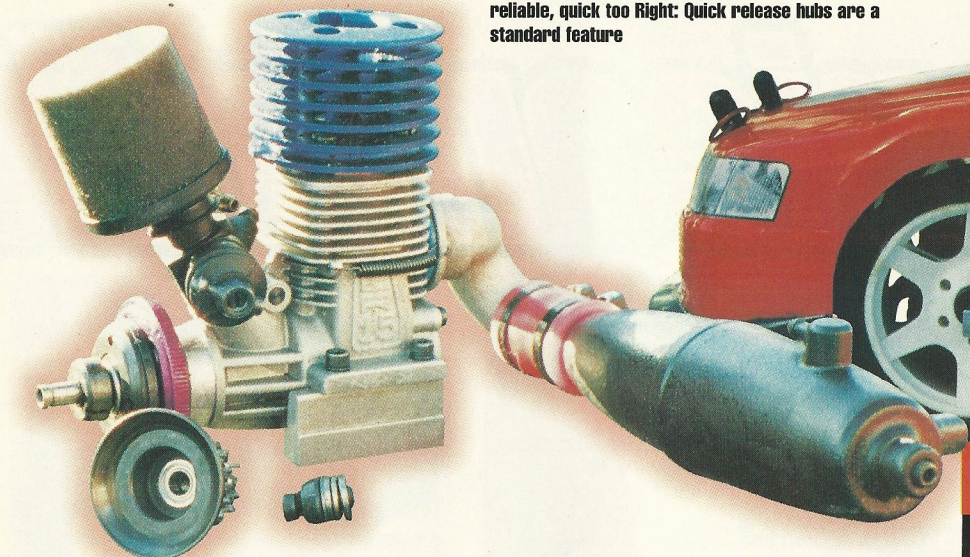
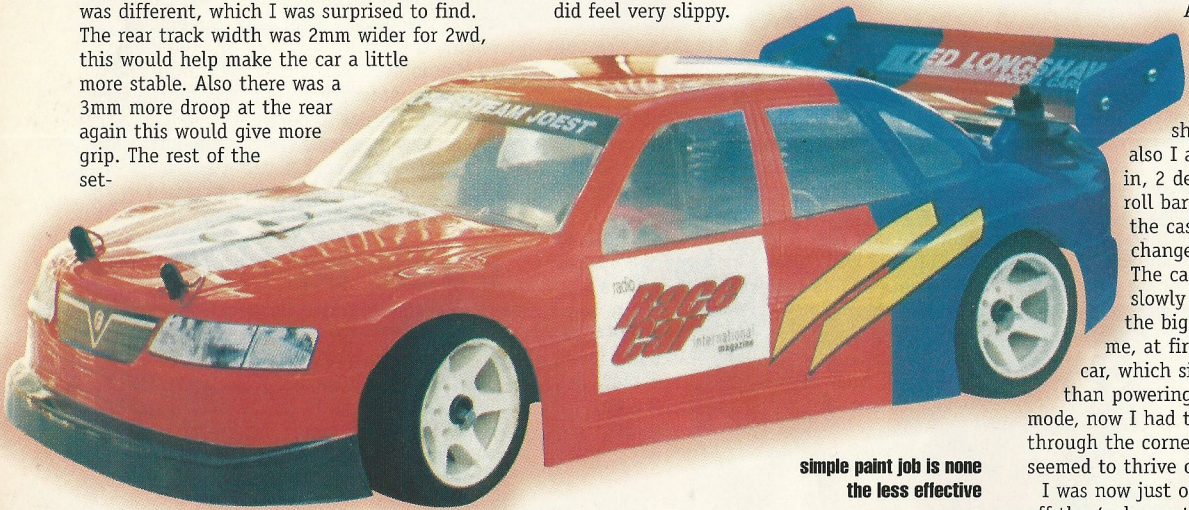
The rear diff ready for assembly

Not really a 2wd day at all. It took just 20 minutes to remove one front and rear bulkhead, and swap and remove the various drive parts. Just as a point of interest the 2wd was only 25gms lighter than the 4wd, this due mainly to the heavy diff, the 2wd car's total weight being 1825 grams (1700 gms is the impractical minimum weigh limit), but any extra weight would be good in the conditions. A few minutes on the set-up board made the final changes. The first 2wd run was done using the same tyres (40 fronts/35 rears) and the McLaren GTR bodyshell. What a shock, the Avance was totally different, the mild understeer had changed to major oversteer. Turn into the corners was much improved over the 4wd, but mid corner and exit was really wild. The rear lacked grip, which is what I expected. Now the beauty of this type of car came to the fore. With the amount of adjustability built into the

Avance it would just be a question of time and a little head scratching to get the car dialled. First I fitted the hardest front tyres I had (45 shore) softer rears (30 shore), also I added 1/2 degree of rear toe-in, 2 degrees total per side, front roll bar full stiff, lastly I reduced the castor to minimum. All these changes should give more rear grip. The car was now a great deal better, slowly my times came down. I think the biggest improvement came from me, at first I was trying to 4wd the car, which simply didn't work. Rather than powering away from a corner in 4wd mode, now I had to carry more speed into and through the corner, something the Avance seemed to thrive on.

I was now just on the 17 lap pace just a little off the 4wd spec time. Next I changed the front kit springs for a stiffer Mugen yellow one.

simple paint job is none the less effective



Left: The Mauro Rossi Rex motor has been very reliable, quick too Right: Quick release hubs are a standard feature

Quick Spec

2 or 4WD 1:10th Nitro. Alloy Chassis. Belt drive. Automatic clutch. 2 speed Gearbox. Differential or Solid axle. Alloy Oil filled Shock Absorbers. Fully adjustable Suspension. Carbon Radio Plate.

Tester Kit

Transmitter: KO Vahtage
Receiver: KO Mini
Servos - Throttle Futaba 3001, Steering : KO 713
Battery: Orion 6v 600 Mah
Engine: Mauro Rossi Rex (matching exhaust)
Plug: Rossi R6
Fuel: Penn Models Red Glow
Body: Frewer McLaren GTR, Frewer Vectra

Set Up

Set Up Sheet.	2WD	4WD
Front.		
Track width	223 mm	223 mm
Ride height	6 mm	6 mm
Camber	2 deg N	2 deg N.
Caster	0.(no spacers)	4 mm spacers
Toe	0	0
Spring	yellow	kit
Damper piston	kit	kit
Damper oil	40w	40w
Roll bar	full hard	full soft
Droop stop	1 mm up	1 mm up
Tyres	45 shore (63 mm)	40 shore (66 mm)
Rear		
Track width	235 mm	232 mm
Ride height	6 mm	8 mm
Camber	2 deg N.	2 deg N.
Toe	2 deg in	1.5 deg in
Spring	kit	kit
Damper piston	kit	kit
Damper oil	40w	40w
Roll bar	2.8	2.8
Droop stop	3 mm up	6 mm up
Tyres	28 shore (68 mm)	35 shore (70 mm)
Gearing		
Clutch housing	18/21	
Gearbox	43/47 (kit)	

Also a slightly softer rear tyre (28 shore). Again I hoped this would just give me a little more rear grip. Now I was cooking with gas, it was plain from the first corner I had found Kon Kazee's much talked of groove. A little more steering input was needed on entering the corner, but now mid corner the throttle could really be picked up, and the exit was almost rocket like. Straight away I was on an fast 18 lap pace, but funny enough the car really felt faster. The 2wd making the car feel freer and a lot more agile. But according to the watch not really any faster than in 4wd. In fact it was hard to see were I could make the car any faster. In the end I did equal the time of the 4wd car but it was a great deal harder to drive, the engine seemed just that bit too punchy. Then the penny dropped, I had adjusted the clutch to give as much power as the 4wd system could take. Far too much for the 2wd to handle. It took a couple of nano seconds to soften the clutch main tension spring and reduce the endfloat of the bell housing. These adjustments would make the motor much softer to drive, almost like adjusting a slipper clutch on an off-road car.

Job done, power control was really sweet, my lines were now much tighter, acceleration was smooth and the car could be driven round the bends. After a tank full of fuel to get use to my 'new' car, I tried a timed run 19 laps 312.97 being the result, wow what a car. It would appear that a quick 2wd really is the dogs. Even if it does live on the edge.

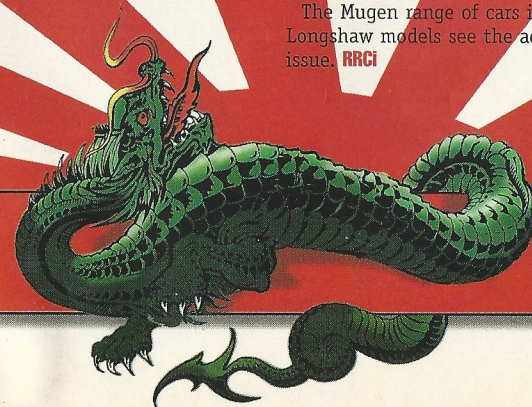
2wd Postscript

After the way the 2WD test had gone I decided to return to the warmer south and see if I could reproduce the previous results. This time

a really cold but dry day was forthcoming. A Frewer Vectra shell had been fitted prior to the race day, complete with mega barn door, sorry rear wing. Left in Ashby spec the Avance was very competitive 4th in qualifying behind three 4WD cars, not quite as fast as the 4WD Avance but it was encouraging. In the final I drove very badly, just trying too hard, I'll get you next time Greg! Fastest first five minutes and single lap being the only consolation. But the performance was there, even if I didn't use it properly.

Last lap

Well after a little head scratching the 2wd version did finally come out on top, just. Although I have done nearly the same time with the 4wd Avance. The lap time I set at Ashby with the 2wd would have put me in the top three at the last National held there. Which must prove something. I was surprised how much different the 2wd car drove, the 4wd had amazing traction and very mild understeer. This gave a slow in very fast out kind of driving style. The 2wd version was much faster in and through the corners needing this to keep up the speed down the straights, but on the whole both cars were just as good as one another, just different. With the adjustability of the Avance it can cope with any track thrown at it. But which to buy, well I still stick to my recommendation, a 4WD Avance and a diff. This covers you for any conditions. As winter continues I shall run the car 4WD as it is just that bit easier. Come the summer I will change back to 2WD and hope for some good weather. Either way the Mugen Avance has proved to be a very good car, it's real quality. I would like to thank Ted and Michael at Longshaws for all their help with both the reviews. Any chance of a 1:8th Sting?.....
The Mugen range of cars is available from Ted Longshaw models see the advertisement in this issue. RRCI



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