

THUNDER TIGER

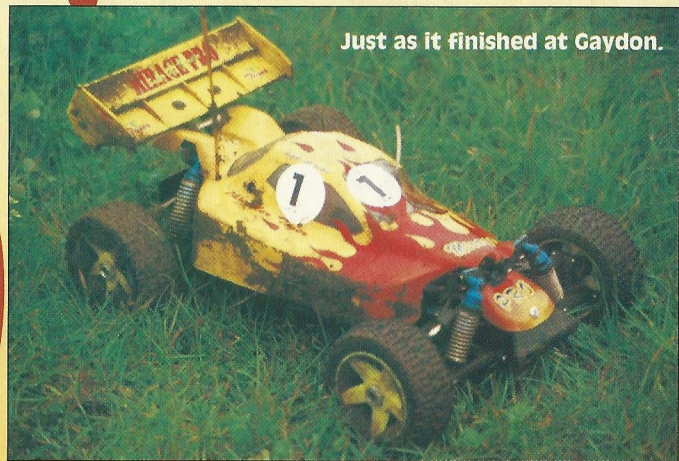
Mirage

Dez Chand Reviews

Most reviews are simple listings and duplications of the build instructions, with all the "A" bolts to "B" details which are all well illustrated and straightforward, so I thought for a change we would just discuss the design and functionality of this kit. After all you want to know what it is and what it can do rather than what shade of black the plastic bits are and how round the tyres are, right?

Not For Road Use!

This 1/8th rally crosser comes in a box bulging with so many bags of bits that it weighs a ton. The instructions make no bones about "Assembly Required", one look at all the metal work under the lid and I was off down Halfords for a Haynes manual and some tools. This is one serious kit you're looking at so lay out all the bags of bits and separate them into piles of metal, plastic, anodised blue aluminium and grey hardened steel. Sort your screws into three different types and lengths to speed things up a bit, several large labelled tubs will let you dip like a kid in a cookie jar instead of sitting there measuring each one. It sounds like overkill but there are 26 different types not including the two different sizes of grub screws, so now do you understand?



Just as it finished at Gaydon.

6200-A

This is kit 6200-A which comes with engine and tuned exhaust pipe, in fact everything you need except a glow plug and all the usuals like radio gear, for the same price as most of the rolling chassis available at the moment. The car comes with 18 major ballraces, enough for the entire rolling stock and drive line, so it looks like Thunder Tiger are serious about breaking into this illustrious market as no corners have been cut as far as I can tell. The fact that Thunder Tiger have been certified as the first model engine manufacturer to meet ISO-9001 for production and quality standards really shows throughout this kit, but is only modestly mentioned once in their main catalogue.

A rough sport

1/8th rally cross is a rough sport for heavy cars

capable of insane speeds over horrendous terrain that would see any other species beached or broken. The top suspension arms are sturdy tie bars with integral 5 mm turnbuckles to allow camber adjustments front and rear, while the range of 9 front and 15 rear mounting options offer camber change and roll centre configurations to tune in the handling to just about any surface you care to point it at. The only thing you cannot adjust is the amount of rear toe in for straight line stability, this is set by the angle of the 4 mm steel pivot pins mounted on the rear gearbox.

The huge blue hardened shocks with their Teflon pistons and cute rubber "overbooties" to protect the piston rod are longer at the rear and have more mounting points to change both angle of rising rate and ride height. 10 points at the back and 8 at the front should give you enough options to find just enough ride height whilst maintaining that all important amount of droop to help maintain contact between these huge tyres and the ground. Both front and rear lower arms have droop limit adjustment screws poking out of the bottom and acting on lugs sticking out from the main chassis so you can stop them drooping beyond the point of usefulness and into the region where the steering begins to bind and the drive shafts reach the end of their sockets. The front drive shafts have dog bones at the diff end and U.J's outboard with the outer section acting as the stub axle once it has

passed through large 16 mm ballraces in the knuckle joint and into a wheel adapter.

Do you know the difference between left & right

The hex drive hub and knuckle joint are two of the few aluminium pieces to escape the anodisers eye and the knuckle joint and the moulded nylon carrier are two of only three handed parts in the whole car, by virtue of the trailing castor generated by the angle of the bearings that join them together. The third non-symmetrical

component is the rear wheel bearing housing by virtue of its off centre top link mounting point so when you have opened the box and are still reeling from the sheer weight, just take the time to check out these three components and check carefully the differences between left and right hand components before beginning assembly. If you miss the subtle variations you will end up with a doodle bug instead of an Exocet.

A chunky transmission

The rear drive shafts are dog bone both ends and all four drive shafts are chunky looking items only dwarfed by their enormous cousins, connecting the

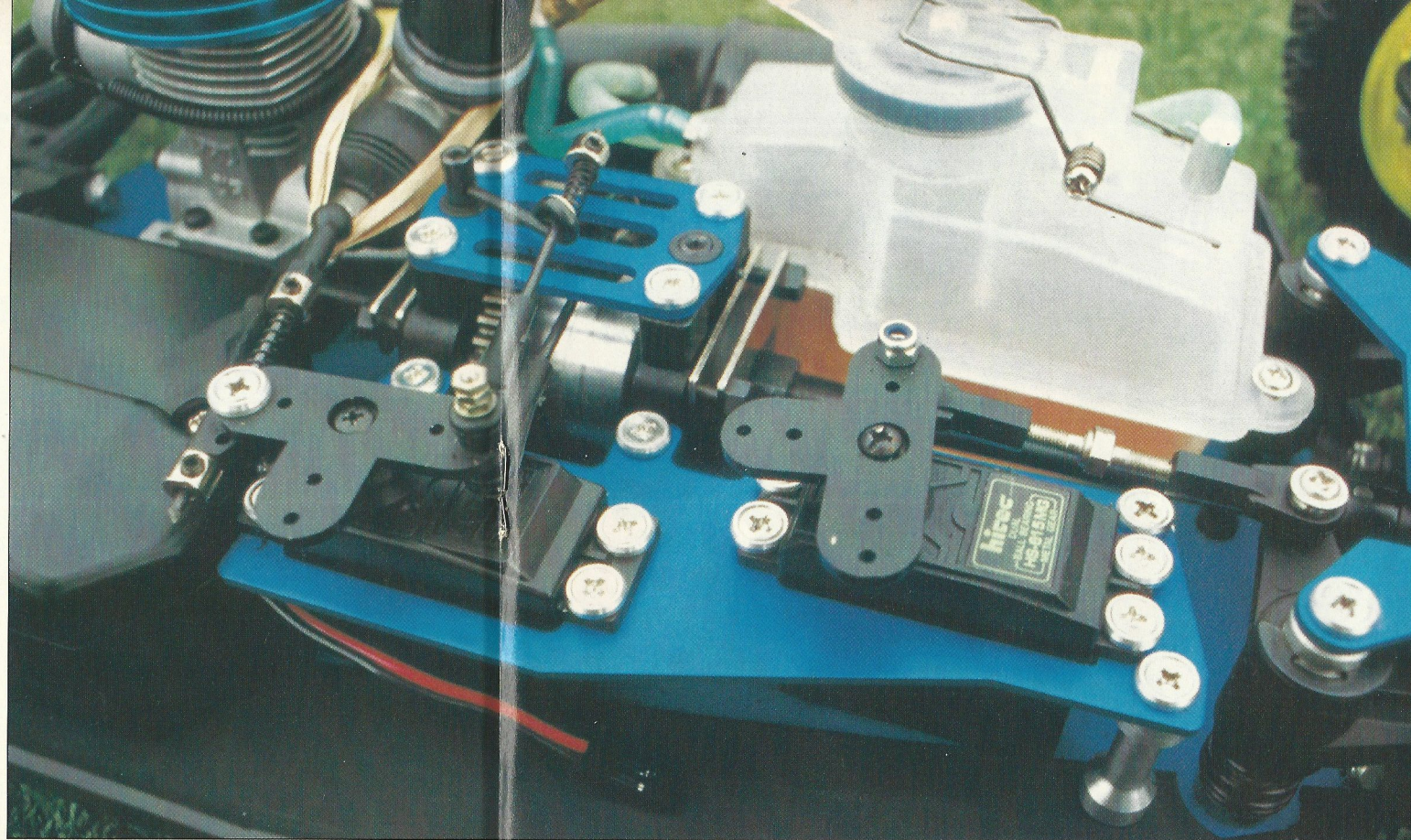
The radio gear all fits in very neatly.

front and rear gearboxes to the centre diff. All three diffs are identical steel gear diffs in aluminium casings but two are fixed to bevelled spurs while the third mounts to the straight cut main gear. The drive gears and their pinions are all hardened steel machined pieces running in ballraces and mesh beautifully. This reflects a quality engineering job from conception to manufacture, a theme that runs true throughout the entire car from the choice of materials to the quality of their machining.

PRO-21B-R(P)

The PRO-21B-R(P) engine with its slide carb, three shoe trailing clutch, air filter and exhaust pipe are all supplied and as a set they complement each other in both performance and by the way they fit together. The clutch bell housing has cooling slots in its front face and runs on twin sealed ballraces rather than open needle roller bearings for longer life and ease of replacement. The exhaust manifold is held to the cylinder head by a spring that wraps around the cylinder fins and pulls the header tightly onto its spout seal. A yellow silicon tube connects the exhaust silencer to the manifold and is held in place by two cable ties, while a wire support screwed to the chassis holds up the noisy end.

Unless you want an upward exiting exhaust you will have to cut away part of the side rails and similarly the body shell when you get around to it before rotating the silencer to its final position. The pressure take off nipple for the fuel tank needs inserting somewhere on the silencer so mark your desired position and drill a 7/64 hole, screw it in and seal it with silicone or a metal filled epoxy resin to prevent the underbody collecting a layer of exhaust mist and slime. The silencer has no markings but to race at the level it was intended it needs EFRA approval and a stamp to prove it. Either this or a race organiser with the sense to realise that it is quiet



IT'S HOT!



NOT FOR ROAD USE



Note how much the tyres balloon.

enough to overlook once or twice until you can get its decibel level measured. For club level it is not going to bother anyone as it is quiet enough to run almost anywhere. You could run it around your back garden if it's big enough but unless you intend to move next day the damage to the lawn and the grief from the neighbours (when they finally figure out you are not chopping wood) will soon make you wish you hadn't.

Take a brake

The centre diff sits between a twin disc set up where one disc acts on the forward output shaft and one on the rear. Each disc is sandwiched between steel plates squeezed together by a cam whose arm is pulled by a linkage back to the throttle servo horn. The two arms are individually adjustable for length which changes the mechanical advantage for each linkage (see "levers" in your encyclopaedia) so that you can bias the brakes forwards or backwards depending on the circuit quality and your individual driving style. These steel on carbon brakes work so well that even a standard servo can supply enough torque to stand the car on its nose and is quick enough to respond to your on off power requirements between corners.

High torque

The steering on the other hand needs quite a lot more torque, a bucketful indeed as these big wheels spin so fast and the cornering forces at



All the noisy bits.

speed are so great that anything less than 8 lbs of torque is just not going to do the rest of the car justice. Unfortunately you will need a quick and high torque, standard size servo which narrows down the choice a bit, but the HITEC range includes several that will suit your pocket. Simply select the one with the highest numbers all round that you can afford.

The aluminium wheel hubs that fit onto the

stub axles are retained by a small pin that passes through both parts and is retained by a thread locked grub screw up the end of each axle. This pin is only a little pin, but is interestingly almost identical to the pivot pins for the diff planetary gears. Identical in all but length so if you push one through a drive hex and it sticks out by a mere 1 mm do not file off the excess so that the wheel will fit onto the flats of the hex, you had

better open the diffs one at a time until you find one pivot pin that is shorter than all the others and is letting the gear it supports move about slightly.

Do a quick substitution and you are back on schedule but this will only happen if you take all the bits out of all the bags at once and fail to notice the tiny difference during assembly, so stick to the bag per build sequence and save quite a bit of "eany-meany-miney-mo catch a diff with a short pin in tow" I didn't fall for this one honest, I know better than thattttttttttt..... OOPS, sorry, my nose just touched the keyboard.

A.R.B.

Front and rear anti-roll bars are included in separate bags for you to fit at your discretion. They can be fitted at any time but they are very similar in shape size and attachment, so look for the bag that contains a pair of spacer blocks and this is the front bag. The bars pivot trapped by washers under the gearbox screws to hold the "sway bar" (why do the Americans insist on calling everything by the opposite of its function?) into a groove in the gearbox housing. Ball joints drop links down to the lower arms to produce a good looking installation that will put understeer or oversteer within your grasp.

Bumper to bumper

The chassis is afforded some protection by front and rear bumpers, while huge side rails fend off larger chunks of debris that are usually still attached to someone else's car. To mount the engine to this slab of a chassis that is so thick that it can offer the engine a huge heatsink, yet resist distorting from the locally raised temperature, blocks screw to the chassis from below and the engine crankcase from above. Once you have set the backlash in the gears tighten the lower four, not forgetting to add threadlock, the blue removable stuff, before torquing up properly. They are M5 countersunk so don't hold back, give them a good twist.

The four upper screws set the amount of lateral tooth contact but if you try to centralise the gears the flywheel just touches the rear brakes pad, so pull it back just far enough to maintain full width contact and lock them down into their captive nyloc nuts. Watch this gap between the flywheel and brake pads as it will give you a good indication should your engine ever move on its mounts.

Radio gear

At the rear of the chassis there is enough room for a copious radio box with an integral radio power switch in its lid, an upward entry for the servo leads and rearward aerial tube mount. So it should remain splash proof and is large enough to hold any receiver you care to hide away in its cavernous interior, yet still smuggle in a pack of four pen cells to power the radio gear. Not having to use balloons around everything makes crystal changes a quick and easy manoeuvre which is just one advantage of the generous proportions of a 1/8th scale car I guess. The servo tray, with two servos screwed to it, has six mounting points to find, two posts at the front, two holes in the centre diff housing and two on the radio box base. A very secure, unstressed installation that will prevent damage to the servo cases and their dense internals in any unforeseen dilemma yet remains easily removable for cleaning and maintenance.



Trim lines

After painting the body and following what turned out to be very comprehensive trim lines, you merely select and fit a glow plug, fill up the tank with 25% nitro and fire it up. The carb is supposed to be factory set but in case yours isn't, here are my current settings after running the engine in properly, several bedding in runs and shake down tests. Top end 1 3/4 rotations out, bottom 1 turn out. If you use these as a nominal setting only minor adjustments to suit the ambient air temperature should be required wherever you are going to use it. The overall gearing is 10.95:1 so with 112 mm diameter tyres and the engine at 38,000 rpm, yes THIRTY EIGHT THOUSAND, (power peaks at 2.1bhp around 30,000rpm) this should give this car a 73kph top speed across any track you care to point it at. Not bad for a 3.5kg vehicle on grass.



All mud the property of the Rover group.

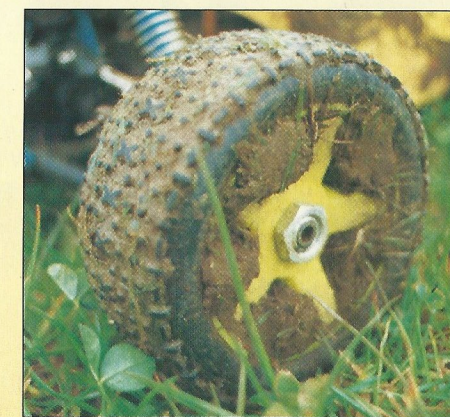
Is it fast mister

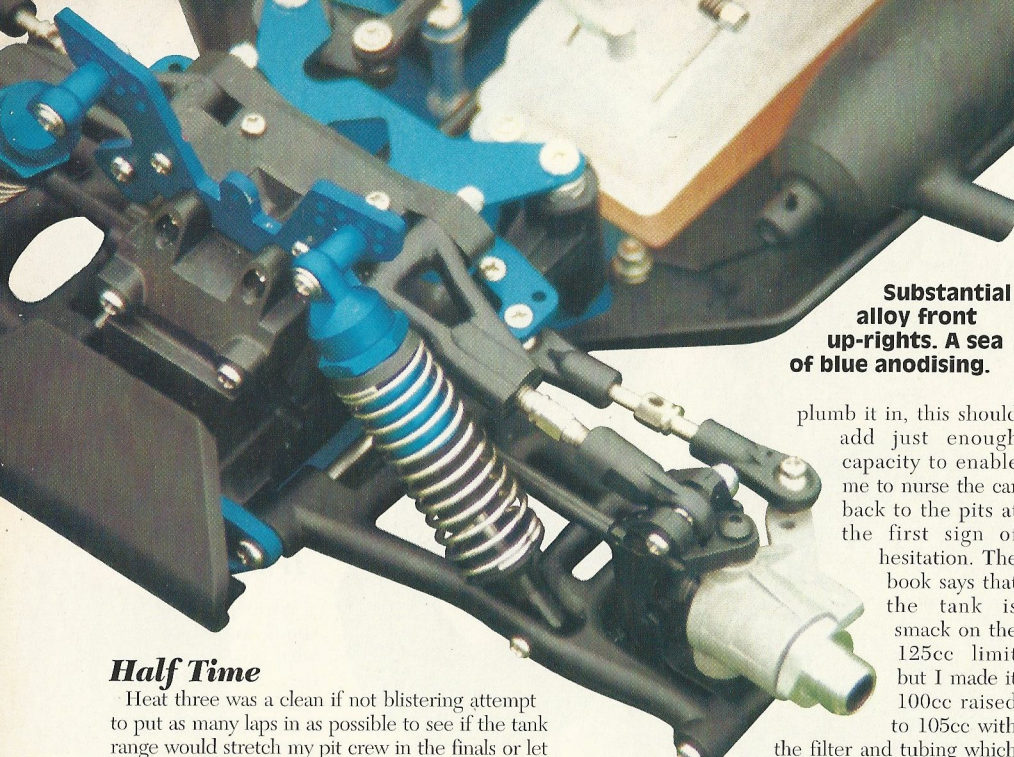
But what does it go like? Well there was only one way to find out so I booked into my first ever rally cross meeting. As the next national was scheduled to be at the Gaydon Motor Heritage centre near Warwick, it meant I could have a lie in on a Sunday then turn up for drivers briefing still eating my marmite on toast. Bliss.

Kick Off

After only five tanks of fuel during running in and shake down I went out for my allotted warm up practice and found the track layout to be far too tight for the amount of understeer present, but the gearing was spot on, while the regular runners were complaining of overgearing. Before going out for the first heat, front camber was changed to 4 degs, front toe in reduced to parallel. On the line it stalled when the glow plug blew, so I missed the first minute and still managed five laps. The rules say that if by the time the first car has completed a full lap your clock hasn't been started, you get classified as late. You are ranked within the late crews so being 51st of 69 proved only that several others were having a bad start to the day also.

The grade and quality of plug I had selected was deemed unsuitable so I paid a visit to Lovely Linda from Puma Racing and she recommended a number 3 (cool) plug, so with three in hand I headed for the line with a passing "...if your lying, I'll be back..." The heat was going swimmingly until, feeling confident, I took the very bumpy straight too fast and the resulting end-over-end (9 out of 10 for artistic merit) pulled a rod end off a rear shock and I was out of there. Three glorious laps on the computer but plenty of promise for heat 3.



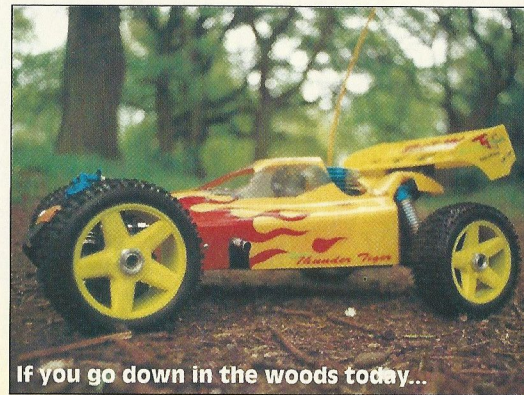


Substantial alloy front up-rights. A sea of blue anodising.

locked, so all drive was sent via the middle diff to the front wheels. It seems the fling from the front wheels crosses diagonally under the chassis and enters the rear hub until the spokes become blocked, and you are "clay bound". Then you may as well stick them in a kiln 'cos it's more use as an "object d'art". To avoid this in future a cure will be fashioned from Lexan sheet, to deflect the under fling allowing the axles to stay clean and the wheels free running.

The centre and front diffs need stiffer grease than the rear, because a diff will pass power to the easiest route and that will always be the front when the rear has grip, so it becomes a little like front wheel drive. Similarly mid corner the inside front spins real bad in tight corners limiting corner exit punch. For my next outing there will be 20,000 grade grease in the front and centre diffs and 5,000 grade in the rear. Really thick silicon grease is far better than your run-of-the-mill lube because it flows and will never fling and stick to the outer reaches of the casing where it is good to man nor beast. Thanks again LL.

The only thing missing after a whole days racing



If you go down in the woods today...



The nylon rear wing is fully adjustable.

was one screw from the bottom of a steering post which must have shook out during the final but everything else had stayed put.

The Final Score

The Mirage is ready and waiting for its next outing as an I. Despite the continual horizontal rain, the sheer determination of the car to drag me kicking and screaming into the world of mud, noise and nitro won me over and I really enjoyed the day with this friendly bunch of adrenaline junkies. You really do get a buzz when the car holds together perfectly and twenty minutes feels like twenty hours, so in a way I was glad it was raining because I couldn't blink and my mouth was dry.

In the right hands I can see this car going really far and at the price it is going to be in more hands than any other in its class.

Available from most muddy model shops r.r.p. £349

Half Time

Heat three was a clean if not blistering attempt to put as many laps in as possible to see if the tank range would stretch my pit crew in the finals or let me cruise confidently between refills. One lap after the fabulous sound of the five minute buzzer the lack of top end response meant that five minutes and IN NOW, was gonna be the refuelling format, if I scraped into a final. Your best two runs are averaged to prevent the lucky one race wonders from entering a final that may be beyond their abilities. They are pushed down and must finish in the top three in their respective final to climb the Christmas tree and claw their way back up to join the fast and consistent.

My best time was the 46th fastest of 69 but the combined score dragged me down to 49th and pole in the first final. I was just chuffed at making a final and having survived only one five minute run I was wondering if the rain would stay out of my eyes long enough to see whether the Mirage would make a twenty minute final with little old me at the helm.

Lovely Linda got it right

The same number three plug was going strong. Thanks Linda I knew you were right all along, and the handling was on the predictable side of oversteer, perfect for this tight point and squirt circuit so we left well alone and visited the excellent cafeteria to get out of the drizzle.

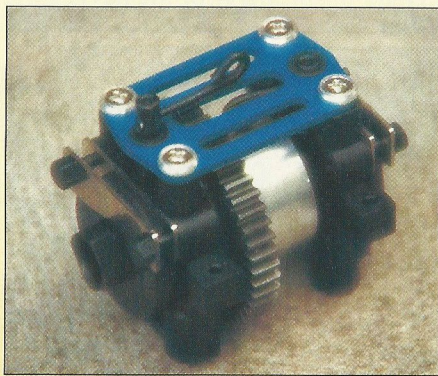
I bought a fuel filter from Lovely Linda as I noticed some residual contaminates in the fuel tank, presumably projectiles from the spinning wheels muck spreading during refuelling. With a good six inches of extra fuel hose purchased to

plumb it in, this should add just enough capacity to enable me to nurse the car back to the pits at the first sign of hesitation. The book says that the tank is smack on the 125cc limit but I made it 100cc raised to 105cc with the filter and tubing which does not sound a huge difference but every little helps when the circuit is almost a minute per lap.

Final Whistle

The final was going swimmingly considering it stalled at cars down. I had fought back up to third from last in only four laps before all rear grip vanished. It became clear that all was not well and I slipped down to fifth. Although I was chuffed at finishing the twenty minute final, knowing the pace I was on would have seen me move up a final, I was intrigued by the lack of rear drive??

Both rear wheels were full of mud and effectively



Centre diff and disc brakes.

A least the air filter stayed clean.

