



Days of Thunder

Thunder Tiger Camaro Review

by Des Chand

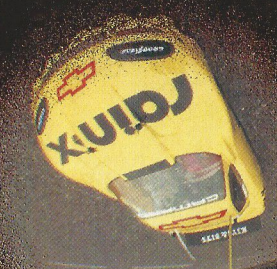
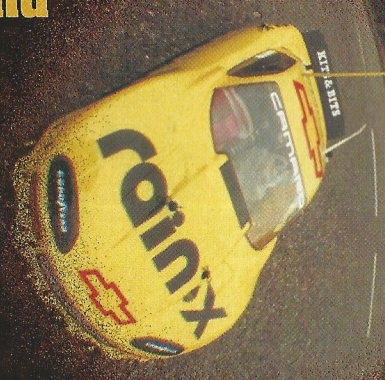
What's in the Box ?..

The Thunder Tiger Camaro is pitched squarely at the entry level i.c. market, it comes out of the box looking like it'll do one hundred miles per hour straight off. It claims to be 90% complete, which is about right, because apart from radio gear and linkages almost all that's required before it's up and running is to put the wheels on and spray the body a realistically gaudy NASCAR scheme (I didn't even have to do this thanks to my old pal Steve Brown in Coventry. excellent job, thanks).

The whole car is already ballraced, however I did disassemble the diff to see if any short cuts had been taken but no, it's totally friction free. even the crankshaft of this 0.12 cubic inch two stroke, glow plug, nitro-sniffer runs in ball races to let it rev like #! *?& !!!

Every thing you need to complete this car is supplied, with enough bits left over to make sure no matter how many parts are determined to find previously unknown crevices of the workshop floor, you won't be left on all fours looking for the last what's-it.

Radio gear is not included in the £189.99 retail price, but a two channel set like the Hitec "Ranger II" is more than adequate for the job, as one servo will be operating both the



With the ball races pushed into the front wheels, they are held onto the stub axles with large, tight fitting, "E" clips, not exactly "quick fit" but they are not going to

fall off in a hurry either!! The rear wheels are attached to their aluminium hubs with four screws a side, two would suffice if you are desperate to save a little weight, but if it was the difference between finishing a race and not, is it worth the risk? These hubs fix to the steel axle and it is worth setting the end float before applying thread lock to the clamping grub screws, for a season of trouble free operation.

Now you've got a rolling chassis because the engine, fuel tank and suspension are already fitted, waiting impatiently for you to pull your finger out and install the radio.

throttle linkage and brake lever via a second tie rod. Other things you will need are paint for the body, fuel for the engine, a glow plug spanner and a glow starter (Such as the Thunder Tiger "Red Glow" rechargeable).

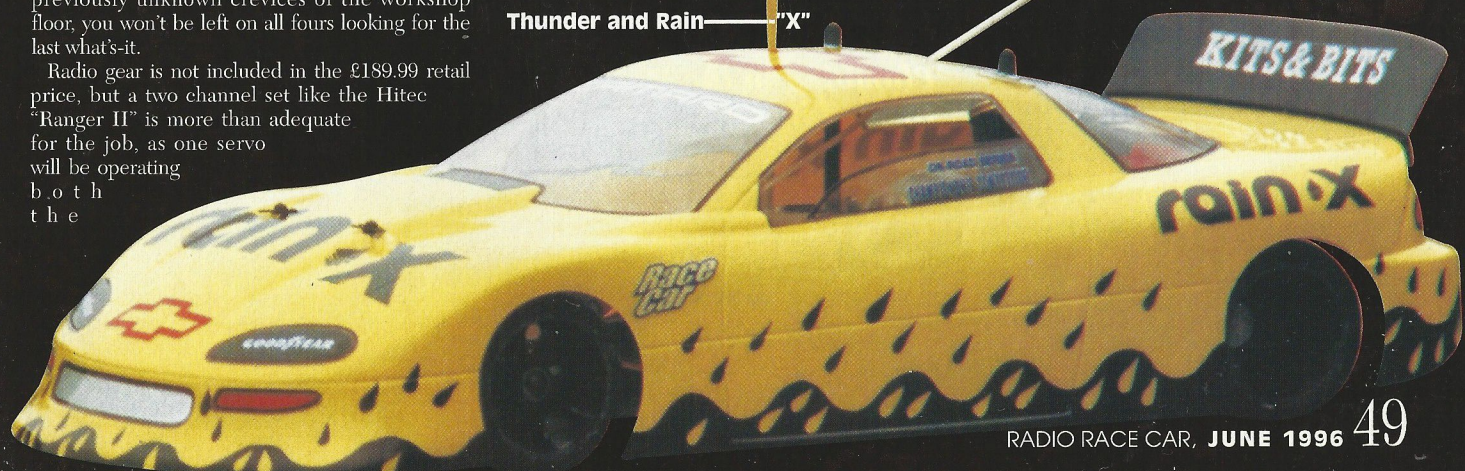
Suspension Layout.

This flat pan chassis has sprung king pin front suspension, a ball mounted "T" bar rear and either side of the "T" bar's front pivot ball are tweak screws to bias the suspension to suit oval racing or balance it for circuit use.

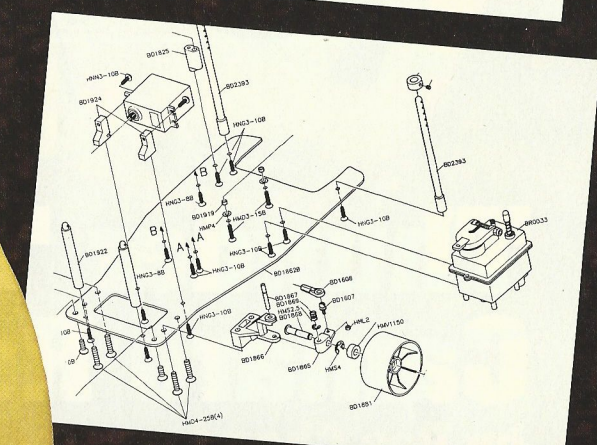
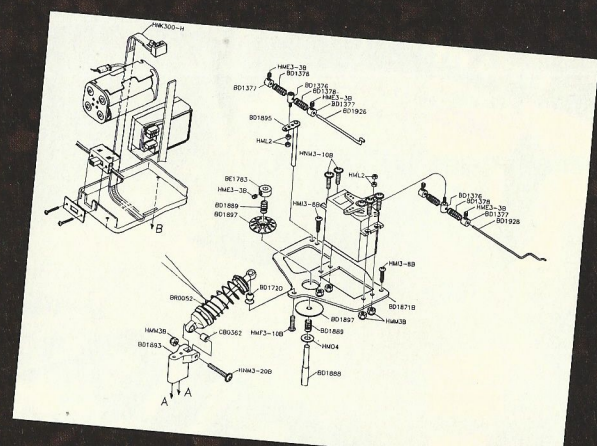
Thunder and Rain—"X"

Installing the Radio

The Hitec Ranger II is well suited to this kit and the servos slipped into place like they were on a mission. The hole in the top plate is a snug fit around the servo case such



This Camaro must have been styled by Europeans.



enough slack for the suspension movement. The air filter base connects to the carb, held in place with a grub screw just waiting for the paper element filter to be pushed tightly onto its spout. The exhaust screws directly to the crankcase which is a good idea because its' cooling ribs are locally relieved to clear the rear axle, and this packaging deems a solid fix imperative to prevent it adding to the braking efficiency. An angled rubber hose is a push fit in the rear of the exhaust can and directs the spent gasses down and rearwards which not only adds realism to the model, but keeps the body shell and rear wheels cleaner than on a side exiting system.

The brakes are a simple affair, where a shoe is pushed against the clutch bell housing by an actuating rod from the throttle servo. This needs to drag sufficiently to prevent the car creeping forwards on tickover but must release totally as the throttle is lifted for take off. To this end the spring system suggested in the instructions was ditched in favour of a solid stop on the positive side of both throttle and brake tie rods. One spring was used as instructed to take up the lost motion of the throttle linkage and hold the carb shut lightly, but positively, against the tickover set-screw during braking. Now any minor adjustments in these linkages must be made on the car, the only function of the throttle neutral trim is to set the level of idle brakes. Through this method the limiting factor of the braking system is, the servo torque not the arm travel distance.

The throttle ratio switch on the transmitter gives the option for a 70/30 split. More forward throw means more gradual throttle control while the reduced reverse suits my limited travel braking system. This is not difficult to set up but does take a little time and patience for someone more used to electronic speed controllers.

To make sure that the brakes stay as I have set them, I have filed a small flat onto any shaft that has a grub screw acting upon it, because there is nothing worse than losing your brakes half way through a race.

that, with only cable ties holding the servo in, it will resist the stresses of applying maximum brakes, and remain rattle proof.

The radio batteries and receiver went into their individual balloons and were secured by a large re-usable cable tie to a separate radio plate. A power switch is screwed to the allotted grooves and the assembly screws to the chassis in a no nonsense fashion. This installation should ensure that no water or fuel will enter the heart of the control system and make the Camaro a reliable winter contender. Heh, it should even make it through a whole summer season without condensation causing interference. What a concept!

The steering servo mounting posts screw to the front of the servo lugs but remain clear of both the servo saver and the steering tie rods, placing the output shaft squarely in the middle of the chassis to ensure that the steering geometry is symmetrical. Rose joints pop onto the balls already waiting on the steering blocks and offer a tight, slop free attachment, whilst easily removable for toe in adjustments. These rose

joints hit the front arm mounting points just before the tyre would touch the chassis, thus ensuring you cannot lock the inside wheel in a very tight turn. A steering rate pot is essential, as full lock is reached at only half throw resulting in very fast steering from a standard specification servo.

The aerial wire was inserted into its tube and mounted just behind the radio plate, so now I had a steerable rolling chassis, it was time for the power unit installation.

Plumbing in the Motor and Brake Linkages.

First thing to do, is connect the outlet on the side of the exhaust to the top point on the fuel tank to provide pressure when the engine is running. Another piece of silicon hose connects the bottom point of the tank with the carb, and both of these hoses run very close to the rear wheel. They need to be tidied out of the way with cable ties, without pinching or kinking either the pressure or fuel delivery lines whilst allowing

Body Mounting

After screwing the body mounting posts to the chassis, the body can be offered up and the wheel arches marked out. Other holes are necessary on an I.C. car that are often governed by strict rules in the bigger classes, but for the 0.12 class in this years Radio Race Car I.C. Championships, there are no such restrictions. Firstly the cylinder head is going to protrude through the rear window and will need clearance during suspension travel. The hole should also allow enough room for the pull start handle to be reached and if a longer than standard spacer is fitted under the handle, (about 2mm), the starting procedure is further simplified as the bodysell can be left on, to enable mid race refuelling, an access hole must be made in the drivers side window just big enough for the fuel bottle nozzle, but a section can be cut away to suggest that the window is half wound down instead. A long cable tie is attached to the fuel tank lid as a handle and this needs its own hole in the roof symmetrically opposite the one for the aerial tube, so that by lifting the car off the ground by the back window you can also pull the tank open via the cable tie, allowing the refuelling nozzle to enter through the "open" side window. This method should cost you no more than three seconds on a lap if your pit crew are on the ball and you can get in and out of the pit lane cleanly.

The Complete Car-Ready to Run.

At 3lb 2oz the car is lighter than a scale saloon, but heavier than a formula one which it almost matches in terms of overall geometry. Front track width is 196mm, there is 3mm of droop and a further 3mm of travel on the very lightly sprung front kingpins. This, combined with zero degrees camber and only one degree of castor, should make for a very positive front end with lots of turn in. The rear end is a Pro-10 type set-up, with 5mm of droop and 7mm of travel, controlled by a disc type, top deck damper and backed up by a coil over shock anchored to the chassis. Although there is no rear toe-in to offer straight line stability, the wide (214mm) track width and a very long (278mm) wheel base should more than make up for this, the weight distribution, exactly 2:1 rearwards, should tame the over eager front end and facilitate an early application of power whilst still on the apex of a turn.

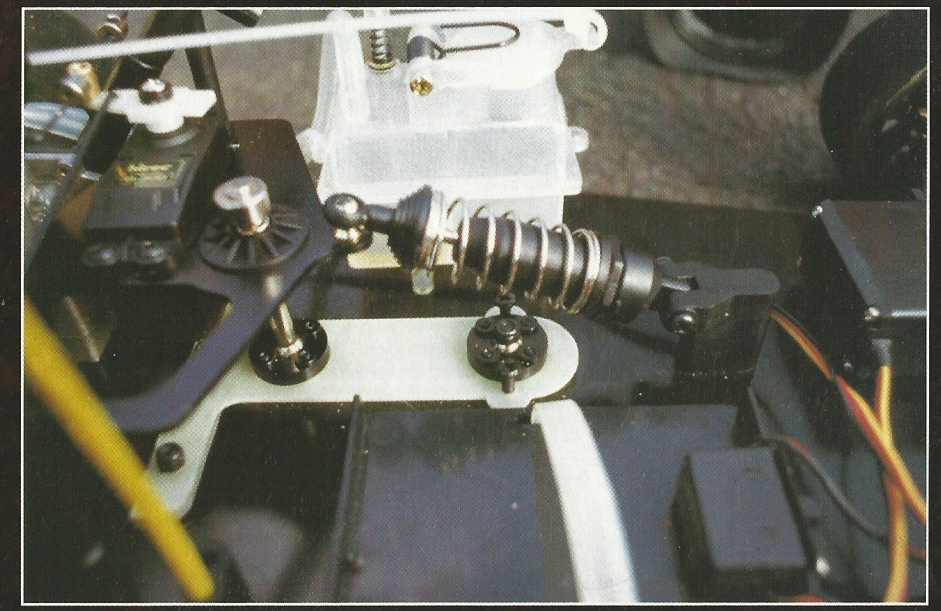
With a full fuel tank the fighting weight is 3lb 3.5oz.

Now the time has come to set the mixture screw for a rich running in period, attach the glow starter, prime the fuel pump and give an optimistic tug on the starting handle. To my utter amazement it burst straight into life, smoking a treat to signify the conrod bearings, piston and cylinder were getting their first generous helpings of lubrication. I set her down and trundled around our previously idyllic dead end road, and it struck me how "neighbourhood friendly" the exhaust note was; not a curtain twitch!

I ran through two tanks of fuel over the weekend running for around twelve minutes each, as I was intent on running the motor in gently. I went in search of a large deserted carpark where I began gradually leaning off the mixture over the next two tanks, until full revs were reached with a clean crisp tone. Making sure that blue smoke was still visible from the exhaust, (the noise at full bore is now nothing like quiet!) I figured this was lean enough as it was already way quicker than anything similar at last weekends round of the Ashby Winter Series. So fast, in fact, that I was forced to phone Paul at Kits and Bits, who pandered to my embarrassing needs and the replacement front arm was in the



The legend covers Engine & Car.

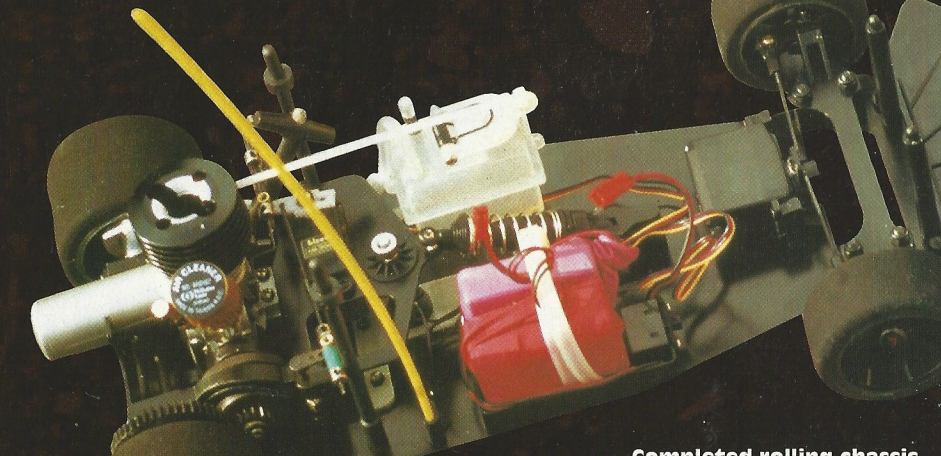


Pure Pro-ten—IC style. Note the "T" bar, roll-damper and the high volume shock-absorber.

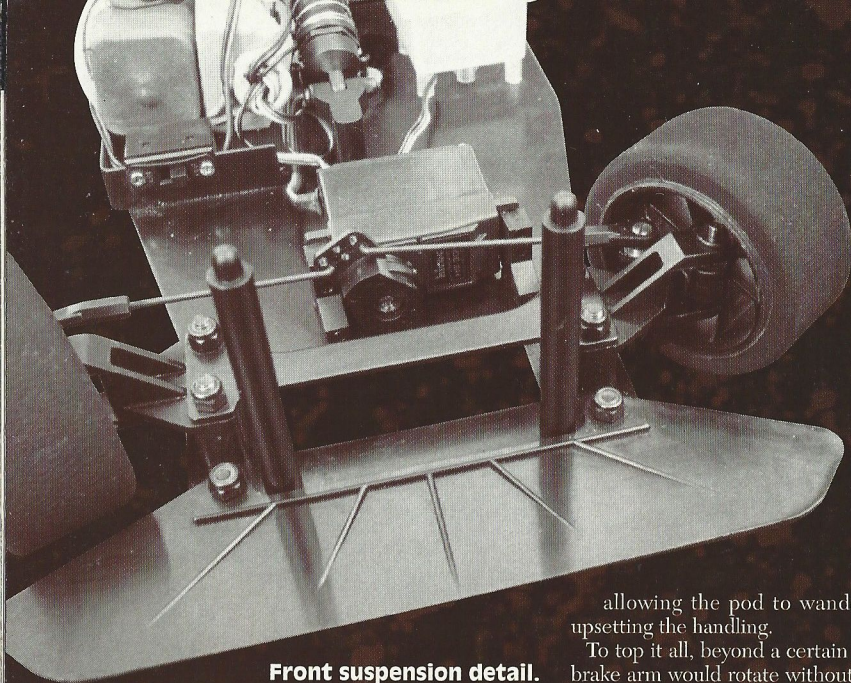
post before I'd hung up. I had been doing full bore fly-bys and became intoxicated by the speed (brain fade equals brake fade?).

With the front arm replaced I felt ready for my first race meeting, but I still wanted better brakes and felt I'd best make my debut somewhere

private if I wanted to give it a good long shake down. Hence I decided, the ultimate test would be the guys at work that have never raced but regularly enjoy thrashing their



Completed rolling chassis.



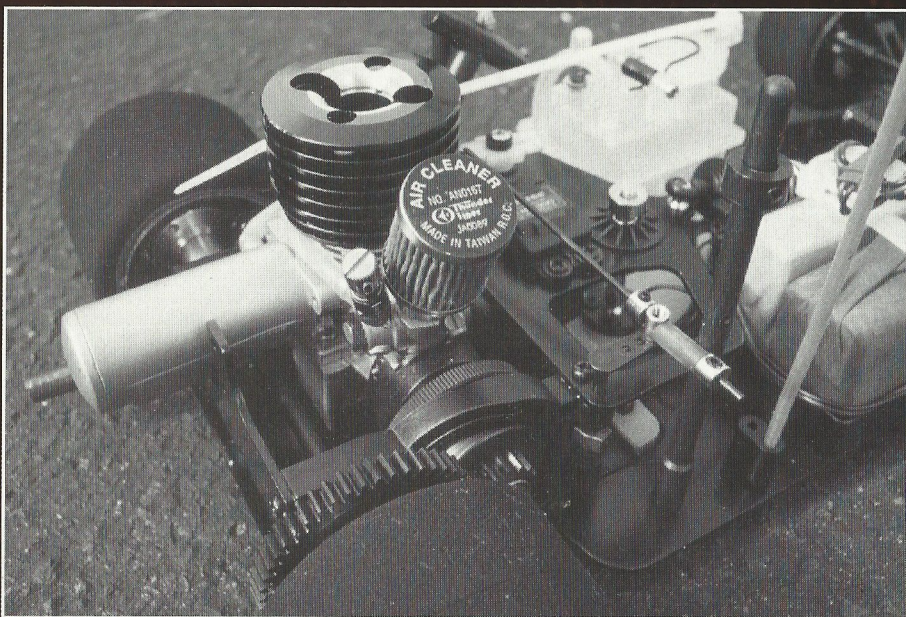
Front suspension detail.

2WD buggies around the car park at dinner time. They would make excellent novice guinea pigs.

At first sight the concept of an I.C. car seemed outrageous, yet intriguing:- no batteries, chargers, speed controllers, comparatively little torque yet confounding top end delivery at a price to match a basic electric set up such as theirs. Never had such a gadget been this close to such enthusiastic automotive engineers so after the initial poke and prod session, to explain how and why everything works, I warmed her up and let the bravest take the sticks.

We all learnt something that dinnertime (you can't use full throttle in a recently gritted carpark), and the session was halted by a strange rattling sound that was only evident at tickover. The drive gear idler bearing had been liberated by a circlip that had gone AWOL, and after a brief cause and effect discussion we apportioned the blame to the vibration evident from an anonymously bent rear axle (well, if you don't crash occasionally you aren't trying, right?). The axle was easily straightened but the aforementioned bearing, washer and circlip were half way to Mexico so it was pointless releasing the dogs. Several other screws, including the engine mountings, had also been encouraged to make a bid for independence by a "whole lot of shaking going on" and the "T" bar mountings were

The "noisy" bits.



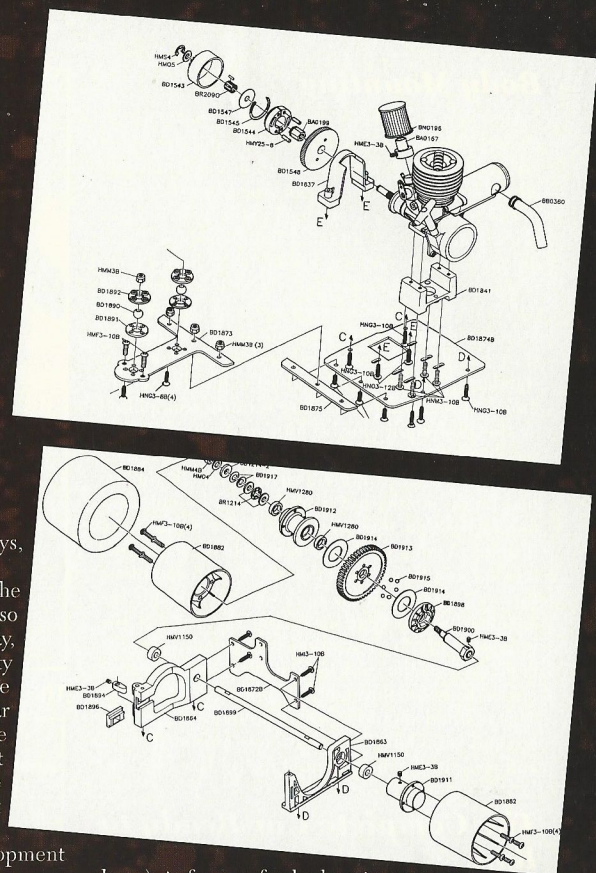
allowing the pod to wander sideways, upsetting the handling.

To top it all, beyond a certain pressure the brake arm would rotate without its pivot, so after the first major deceleration of the day, the idle drag had gone and braking ability severely diminished. This discovery made us all feel much better, as it became clear to us the reduced brakes had caused the initial impact, which bent the axle, that shook off the circlip thus releasing the bearing. Case solved, so I'd like to thank Andy H. Bob P. and Brian W. for helping compress a months running and development into one short dinner hour.

Taming of the Shrew.

Back at base I brazed the brake arm to its pivot bar and went over the whole car tightening and locking anything that had applied for, or contemplated, early parole and made sure the gears were back into mesh correctly before securing the engine mounting block in its slotted holes. I pondered gearing it down for there is enough adjustment here to alter the pinion by a couple of teeth and as it will be used on mainly short tracks, like Ashby and Stafford, this would make it much more usable. Standard gearing is more suited to longer tracks, like Mendip and Tibshelf, or oval racing as the exterior styling would suggest.

On all I.C. cars this missing bearing from inside the gear (come clutch bell housing, come brake



drum), is famous for harbouring contaminants and causing the engine to stall as the idle brakes overcome tickover (a tip I picked up whilst playing grease monkey for my mate Russ at last years Dutch 1/10th I.C. Grand Prix). The fix, is to replace the roller bearing with a couple of sealed ball races side by side, so it was back down to Kits and Bits for an identity parade of likely candidates. Voila! Three Tamiya F1 front wheel ball races, 5mm I/D 8mm O/D, fitted exactly and being three separate bearings maybe I will notice the lack of birds in the hand before they're all in the bush if the retaining circlip ever decides to go walkabout again.

Back at work the next available playtime, I ran through three tanks of fuel, in just over half an hour, to test my new improved assembly and to my extreme satisfaction nothing expired, relaxed or departed, and after a quick once over with a screw driver I could find no evidence to indicate any future misadventures. The brakes were much improved, stopping the car from speed controllably yet abruptly and the neutral drag settings stayed as intended.

Now I feel I could attend a race meeting with a chance to concentrate on the alternative driving style that an I.C. demands, as a pleasant alternative to running back and forth to the pits because my enthusiasm had truncated my development intentions.

As a first I.C. car the Camaro has an important message for you. You're here to learn and you'd better listen up because there's a lot to get through. The level of pre-assembly misleads you into believing that everything is, and always will be, as it should be so you rush head long into unforeseen dilemmas. It's called learning the hard way without it costing a packet and I have certainly learnt a lot about I.C. cars over the past week by taking this beginners car and turning it into (hopefully) a class leader. It has been a satisfying chance to fiddle and experiment that would benefit anyone who thinks they know everything about electric cars and that I.C.'s aren't so different.

They don't know diddly!!!
Available from your local Fun Factory Store (Or any good model shop)