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OK, so what is the worst thing about deciding to build and to race a new class of car? It's not just the initial cost of the kit, and the time you invest in the build itself, but also the possibility of having to buy new cells due to new chassis configurations, and the constraints of space available.

Well, for anyone looking at getting into the 1/10th GT Pan car scene, the new X10 Link kit from Xray, has arrived to bring us a new level of

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both performance and the versatility in the components you can use to complete the build. It offers the option to run either 4/6-cell NiMH or 1/2-cell LiPo, depending upon where you race and the rules and different classes of the particular club or meeting you may attend.

Combine all this with Xray's renowned ability to produce cars that are capable of performing at the highest level, engineering excellence, a well designed and thoroughly tested chassis geometry, and you can't go far wrong!

QUALITY SHINES

On opening the very shiny new box, I was happy to see the renowned quality you expect with an Xray release. All components are offered in separate bags, and are numbered in order of build, something that other manufacturers could take note of! After sitting with a coffee and actually reading through the Instruction Manual, I can honestly say it has got to be the best I have come across in my fifteen years of building and racing R/C cars. High quality pictures talk you through the build pictorially, and nice glossy pages will help wipe the dribble of excitement off your face while you are building this kit.

A nice addition was the fact that Xray included a set-up book, although for the older X11 model, it gives you a good insight into understanding the best way to set-up your chassis, and how adjusting different things on the car will affect it in different ways. Again this is something more manufacturers could take note of, as not everyone has the same level of knowledge or ability in this area. Finally you get



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QUICK SPEC

Manufacturer XRAY
Type RTR 2WD Pan Car
Price £199.99 RRP
www.rcdisco.com

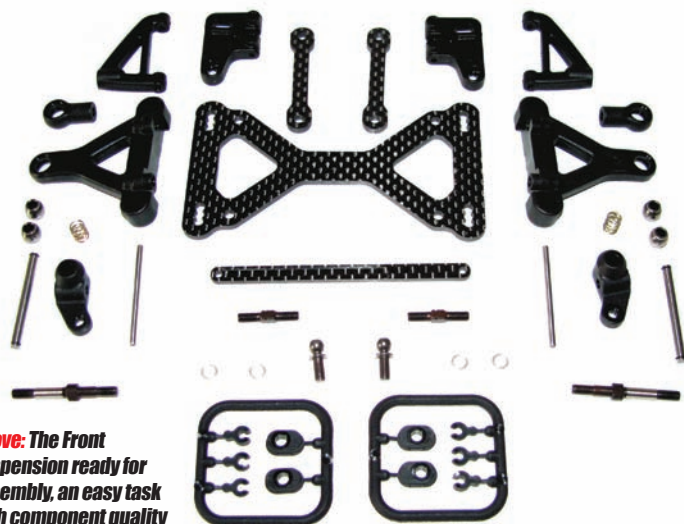
Scale 1/10th
Power Electric
Length 264 mm (varies depending on rear tyre size)
Wheelbase 255 +/- 3 mm
Width Adjustable 190 mm front,
 195 mm rear as kit set-up
Wheelbase 98mm

a X10 set-up sheet with a basic carpet set-up to aid you with a good starting point. But like most 'blokes' out there, I decided to go with the set-up suggested in the manual first, build the car, and then once I was at the track, adjust the set-up as needed.

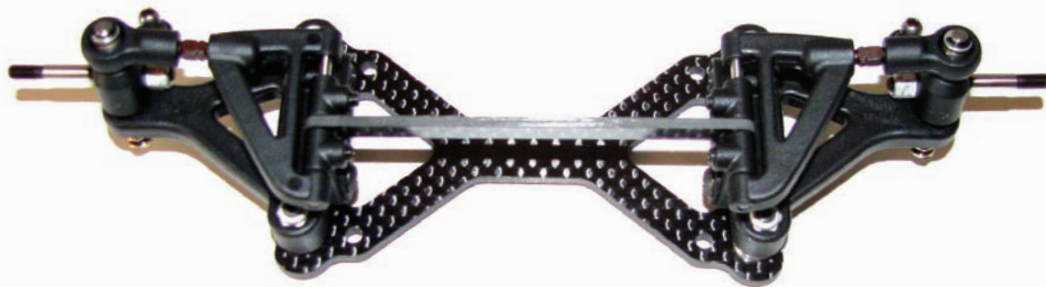
CF IS THERAPUTIC

With any carbon fibre chassis it's always best to round the edges of the chassis and seal it with CA glue. Xray even put this step into their instructions, so you know they also see this as vitally important. For those that have never done this before, it's to ensure a long life from your components, without the chance of splitting or de-lamination of weave in each plate in the event of a crash.

I always love this part of the build as I can sit there and get a nice rounded edge with some 800 grit wet 'n' dry. I then give each edge a couple of coats of CA glue, then after it's been left to set, I then get a polished finish with some 1200 grit wet 'n' dry. It's sad I know, but as the saying goes "it's the simple things in life" I decided to only do the front bumper, chassis and rear pod outer edges, as these are where the components are most likely to sustain any force in an impact. I also filed the edges of the battery slots, just in case I was to ever run NiMH cells, covering all the bases of powering the car!



Above: The front suspension ready for assembly, an easy task with component quality this good



Above: Front suspension and it's graphite brace offers so much set-up variation you'll never get bored of adjusting it

Below right: Rear pod with lightweight motor plates and easily adjustable ride height via interchangeable eccentric bushings

"The great thing about this new chassis is the variations of cells you can use, which means whatever you are already running can be (within reason!) slotted straight in this car"

CENTERLINE-DESIGN

The chassis is 2.5 mm thick custom manufactured carbon fibre specifically designed for carpet and tarmac racing. It's quite stiff as you would expect from CF, but has a small amount of flex in it to aid grip. The narrow design and longitudinal battery location is designed to keep weight close to the centreline, and in turn aiding to keep the car planted on the track.

The great thing about this new chassis is the variations of cells you can use, which means whatever you are already running can be (within reason!) slotted straight in this car. Xray have even gone to the extreme of designing different battery holders for NiMH and LiPo, so you know your battery will be held correctly, and not be sliding around. Set-up is aided by a centreline hole in the front of the chassis and also in the rear pod to help you get a perfect balance, and check for any tweak in the chassis once built, or more than likely after an off. The chassis also has three sets of holes to adjust wheelbase length, to further aid you and attain the 'Nirvana' of your perfect set-up.

TRIED AND TESTED

The front suspension design is identical to the X10 and X11, but when it comes down to it, why change something if it works perfectly as it is? A big plus to this, is that spares are already out and readily available if you do manage to break anything. With so much adjustability, it's hard to know where to start, but looking through the Instruction Manual and additional set-up sheet, I felt I would first go with the basic set-up as suggested in the build, and then go from there when it came to testing at Ardent Raceway.

Assembling the front end was simple, and showed just how much adjustment is available. From wheelbase to ride height (and everything in between), there are ways to set every variable you could ever wish for. One nice touch is the different places that you can adjust castor from, with an eccentric bush mounted in the upper arm mount which has two options of bushings. There are three ways to fit these, giving you 2.5°, 5° or 7.5° options. You then get three castor clips which go on the upper arm pivot pin, and these adjust the placement of the arm and come in 2 mm, 1 mm and 0.5 mm. These are placed in different locations to give you adjustment from 1° all the way up to 14.5°. I know it sounds really complicated, but once you grasp the basics of what each part does, and in turn what it will affect, it all

"The rear axle is made from lightweight, high-grade graphite rod, and has been ground to be perfectly round and straight, eliminating axle wobble"



Above: Front bumper, chassis and rear pod had some edges smoothed with wet 'n' dry and then sealed with thin CA glue

falls into place! This all adds up to one of the most adjustable front ends I have seen, and with the instructions in front of you, you can clearly get the set-up as you would like, rather than guessing trackside. Ride height can also be adjusted with shims mounted between the lower arm mount plate and the lower arms, and then also between upper arms, steering block and lower arms on the kingpin. There are optional springs, but in the kit you are supplied with the softest of the four spring rates at 3.5. Other springs available are 4.0 and 6.0. This kit is mind-blowing in its adjustability and with every screw I tightened up, I was getting more excited about getting it on the track.

POD RACER

The rear pod is very lightweight, and even though it's manufactured from aircraft grade Swiss 7075 aluminium, it still has holes drilled in it to make it even lighter, while still retaining structural integrity. With the rear bulkheads being so minimal, this means access for motor swaps is the easiest of any kit I have ever built. The pod also has the typical eccentric opening to adjust the ride height further with composite bushings offering adjustments from 0 to 2 mm in .5 mm steps. Of course ride height can be adjusted more with the size of the tyres used, but it's nice to be able to compensate for tyre wear using these spacers.

The rear axle is made from lightweight, high-grade graphite rod, and has been ground to be perfectly round and straight, thus eliminating axle wobble. The axle is joined by aluminium rear hubs, machined from the same 7075 aluminium as the pod

and again lightened to the limit, without sacrificing their strength.

The diff is again a quality affair, and includes 12 x 3.175 mm carbide diff balls and carbide thrust bearing, so a silky super smooth diff action is guaranteed. The diff is a breeze to put together and the supplied Hudy grease is a perfect viscosity when built, the whole assembly is super smooth. You can even add the supplied shims to widen the rear track width and help keep that rear end firmly planted to the black stuff (or grey carpet!).

LATERAL THINKING

The suspension and damping is perfectly taken care of by two shocks. The main damper is a scaled down version of its big brother taken directly from the T3 touring car. It offers a full range of adjustment for pre-load on the fine threaded aluminium shock body. When building dampers I always use AE 'Green Slime' on the O-rings to create a perfect seal and on this build it was no exception. The supplied O-rings are manufactured from a very soft silicone, so do their job perfectly well, but the GS always adds that extra lubricating layer to complete the seal.

The centralised damper is designed to control the side dampening that is normally controlled by the T-bar thickness. There are springs mounted between the chassis and a 2.5 mm lower rear brace, and that in turn holds the springs in place. At the time we were going to print I couldn't find any options on either of the rear springs but I'm sure Xray will have released something by the time you read this.

As with the rest of the kit, everything went together like a dream, not one issue came up when something didn't fit or the wrong screw/part was supplied.

GOING BALLISTIC

For the electrics I had heard good things about the new Novak Ballistic motors, and ease of maintenance combined with 're-buildability' ticked all the boxes, so I opted for a 13.5T. As I planned to run 2-cell LiPo in the car, I felt that this would give me a good balance between speed and 'useable' torque on track. To compliment this I chose a Novak Havoc 3S, as it's always better to run a higher spec ESC than you need, than run one right at its limits all the time, with all the possibilities of over-heating and frying the FET's.

The specs on the Havoc are 2-3 cell LiPo with automatic sensing of cell type and programmable LiPo protection/cutout, or 4-9 cells NiMH. It also has a built-in 6.0 V 1.6 A BEC, and this will supply enough juice to power most high spec servos without the fear of the drain in voltage causing issues with the receiver or ESC. An internal resistance of 0.0012Ω and a motor limit of 8.5T at 3-cell LiPo gives it a good all-round spec and is perfect for this build.

DUSTING OFF THE GLOVES

For radio gear I'm using a KO Propo Helios Special Edition, which I bought about two years ago and love the features and fine-control it offers. Since joining the 2.4 GHz revolution I have only used it several times, so with this kit build, I felt it was the perfect chance to dust the case off, and get this radio and receiver out.

Right: Spur gear and differential with 12 carbide balls, thrust-race and lightweight hubs, the Xray is all about performance

Left: Longitudinal and lateral dampers built and ready to go. Kit viscosity oils are a great starting point and worked well indoors

Almost everywhere I run now, on or off road everyone runs 2.4 GHz, so the old days of possible interference are now long gone, and I plan to add a 2.4 GHz module to the KO to bring it right up to date.

With the size of standard hard 2-cell LiPo pack, the space on the chassis for the servo is a little tight. A standard servo will fit, but leaves little room for routing the cable in a tidy manner without the fear of it rubbing on the pack itself. I opted to use a Savox low profile SC-1251MG servo. The Savox produces torque of 9 kg/cm and moves at a speed of 60° in 0.09 sec at 6 V, so sure to be fast enough for this car. If anything (with the direct steering), it may be a little too fast, but that can be tamed by adjusting the steering rate on the transmitter.

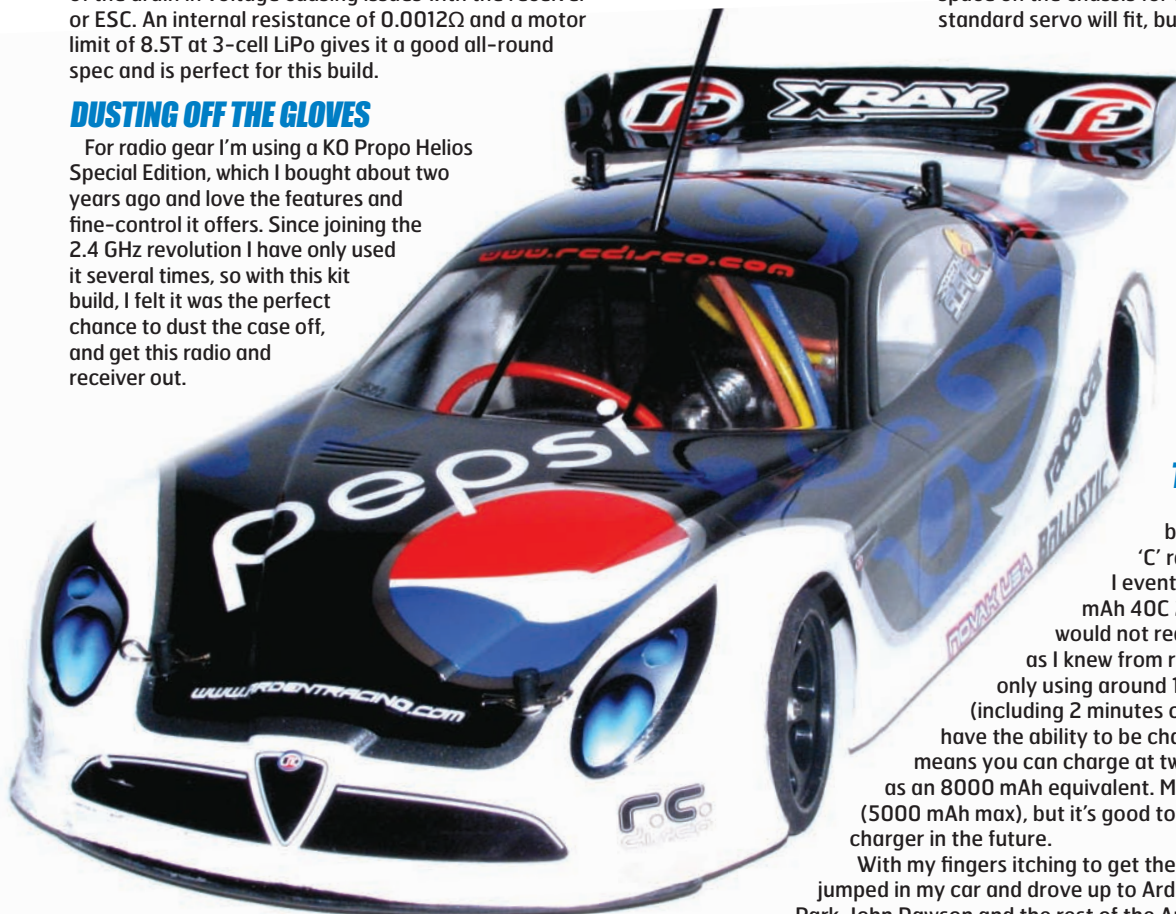
WE HAVE THE TECHNOLOGY

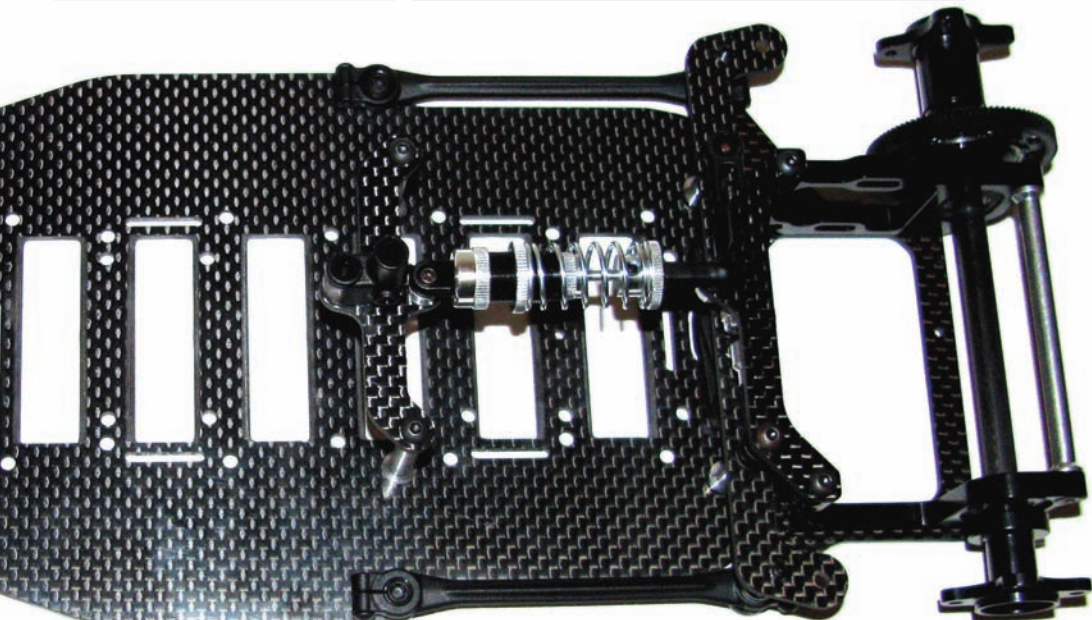
I had been looking at new LiPo batteries, and was after a higher 'C' rating than my current packs.

I eventually chose a Bionic 4000 mAh 40C 2S LiPo. Being only 4000 mAh would not really affect the X10's run time, as I knew from racing my F1 with a 13.5T, I was only using around 1000 mAh over a 5 minute race (including 2 minutes of warm up!). The Bionic cells have the ability to be charged at a rate of 2C, which means you can charge at twice the pack's capacity, so as an 8000 mAh equivalent. My charger didn't go this high (5000 mAh max), but it's good to know I can once I upgrade my charger in the future.

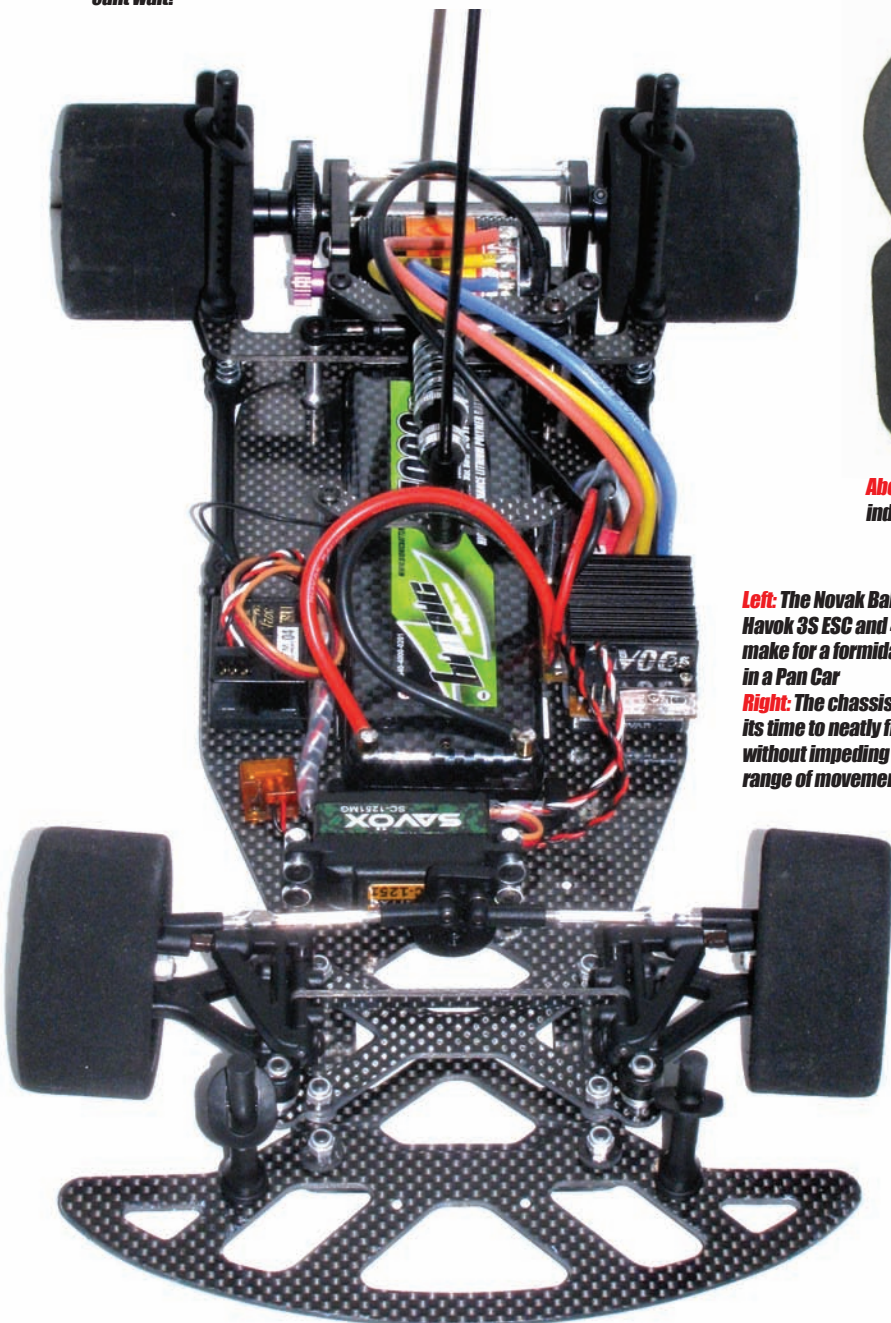
With my fingers itching to get the X10 Link out on the track, I jumped in my car and drove up to Ardent Racing near Donnington Park. John Dawson and the rest of the Ardent Racing crew have built an amazing indoor track facility, with even a shop, a café and room with sofas, TV and games console to keep the 'better halves' and younger

Above: To top it off a Protoform Sophia GT shell painted By TelsShells in Pepsi tribal theme. As ever Terry, it's a work of art!





Above: Rear axle and dampers mounted up, it's getting close to hitting the track, cant wait!

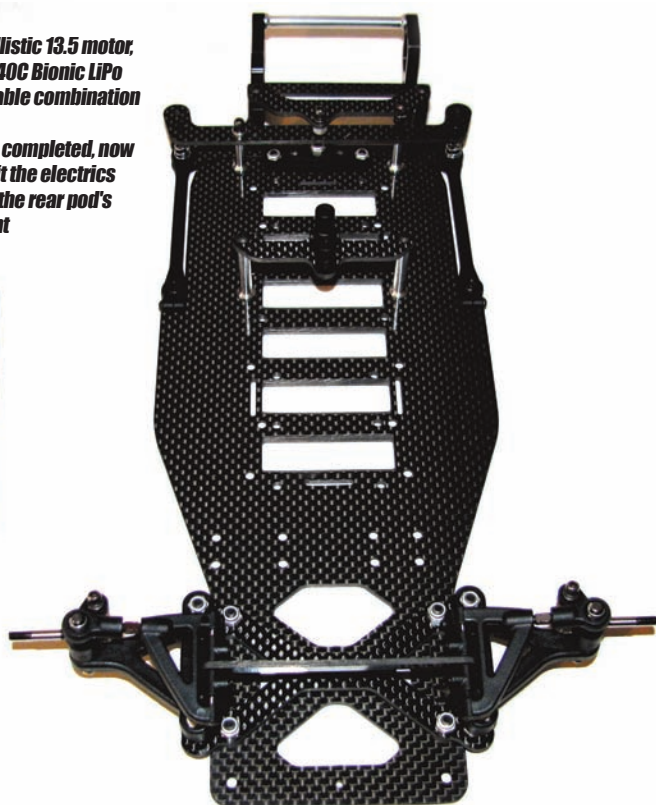


Left: The Novak Ballistic 13.5 motor, Havok 3S ESC and 40C Bionic LiPo make for a formidable combination in a Pan Car

Right: The chassis completed, now its time to neatly fit the electrics without impeding the rear pod's range of movement



Above: Jaco Pink fronts and Aqua rears generated too much grip at times indoors, but altering my driving style tamed grip roll



"WOW! The grip levels I was used to from my F1 were nothing compared to this..."



Above: Hitting the track at Ardent Racing, the grip here is amazing and so are the bacon butties!

kids occupied, if you do fancy making it a family outing. You can stay here all day if you wanted, with it only costing £5 for a half-day or £10 for all day. You can then get in all the practice and laps you want and believe me, with hot food and drink on tap, and a powered pitting area, I was in my element.

I'M READY TO TAKE THE CHALLENGE

With my freshly painted Protoform Sophia GT body painted by 'the airbrush master' Terry Atkinson with a Tribal Pepsi theme, it was time to get the car ready for the carpet. My first objective was to get the ride height down, so using a tyre truer, I took the tyres down to 60 mm. This gave me just under 6 mm of ground clearance. This may seem high, but I would rather be able to take more of the tyres than have to buy another set as they have worn too quickly. With the Bionic pack charged it was time to hit the carpet.

WOW! The grip levels I was used to from my F1 were nothing compared to this...

Although I think the choice of Jaco Pink fronts and Aqua rears may have been a little too soft, with grip roll rearing its ugly head after only a couple of laps (and this was without any additive!), the X10 is stunning to drive. I learnt to drive around it and take the worst corners with a little less speed. I soon got into the flow only clipping the trackside boards a few times!. After a couple of laps the differential was nicely bedded in and needed only the smallest of adjustment as you could hear it slipping just a little as I powered out of the corners, so with this adjusted it was back out on the track.

After 15 minutes of on-track time I thought I would check motor and ESC temps, and to my surprise I found they were only just getting warm. Now this was after 15 minutes of full-on race simulation, with a couple of touring cars also on track to mix it up with. I knew I could gear up a bit and still keep the motor and ESC within safe thermal limits.

I geared up 2 teeth from 22 to 24, and before you all start, I now this isn't a huge jump, but for my first outing with the Xray I didn't want to push my limits, until I was 100% 'at one' with the car. I was happy to see that I was able to keep firmly on the tail of a touring car with a 10.5 in and many hours working on its set-up. What time I lost on the first corner in an attempt to tame the grip roll, I would then be able to catch him back up through the infield and be right on his tail by the straight again.

FINE-TUNING

I decided not to gear up any more, but to have a little play with the suspension. With the castor being so easy to change, I took the 2 mm clip and moved it to the rear, giving me 12.5° of caster. Going back out on the track soon showed me that it had made the steering even faster, and just too much with the pink fronts. Another quick pit stop later and the castor was changed to 2° by moving the 2 mm and 1 mm clip to the front, just leaving the 0.5 mm at the rear, it's great when you can make this adjustment so quickly and easily. This made the car smoother through the corners, and so a little easier to push faster through the apexes with a little less snap if you come off the power too soon.

As the day progressed I was getting much more confident with the car and able to push it much harder. My nemesis as ever was grip roll, and I really wish I had gone for some harder foams, but it was a good starting point and gave me an idea of how well the car handled. By this time the Ardent crew had set the lap counter up for free practice and I could see how quick I was actually going.

With the Bionic LiPos recharged, I decided I would see how long it would last. But I wouldn't be driving slowly, I was going to try and stay at a race pace for the whole duration of the pack! To my shock, I got near 30 minutes out of this pack before the LiPo cut-out kicked in on the Havoc. I have been told that these LiPos get even better after twenty cycles, so I look forward to seeing if there is any improvement in the future.

LAPPING IT UP

Now anyone who thinks we don't test our cars fully, can be rest assured that I did over 150 recorded laps on Ardent's lap timer, and that was after over 100 just getting used to the car without the timing on! I was showing an average of 15.3 sec a lap, with a best of 14.68. The car was putting in very consistent laps all day, and for my first Pan Car I am really pleased with how easy it is to 'dial in'.

The Xray X10 Link handled far better than I expected, and the chassis took a few hard knocks with no sign of any damage to the carbon fibre. The Jaco tyres held together very well, with only a small chunk on a front caused by the shell when hitting a board (my bad!). I would easily be able to true these down and use them again.

The power from the Ballistic 13.5T and Havoc ESC was spot on and all in all I was very happy with the Xray, and think it has got me firmly hooked on GT racing! I look forward to hitting the track again against other GT's, and seeing how I fair! **RRCI**

TECHNICAL SPEC

PARTS USED TO COMPLETE

Jaco Pink front foams
Jaco Aqua rear foams
Novak Havoc 3S ESC
Novak Ballistic 13.5t Sensored brushless motor
Savox Low profile SC-1251MG servo
Ko Propo Helios EX10 C2 with RF-502H Super module
Ko Propo KR-302FS receiver

LIKES

High quality of materials and manufacture
Simple and easy to read instruction
Versatility of chassis with different battery options
Easy and quick to adjust set-up

DISLIKES

No tuning springs for the rear at current
Provided set-up book is for other models
Work required to prep CF plates

CONTACT

www.rcdisco.com