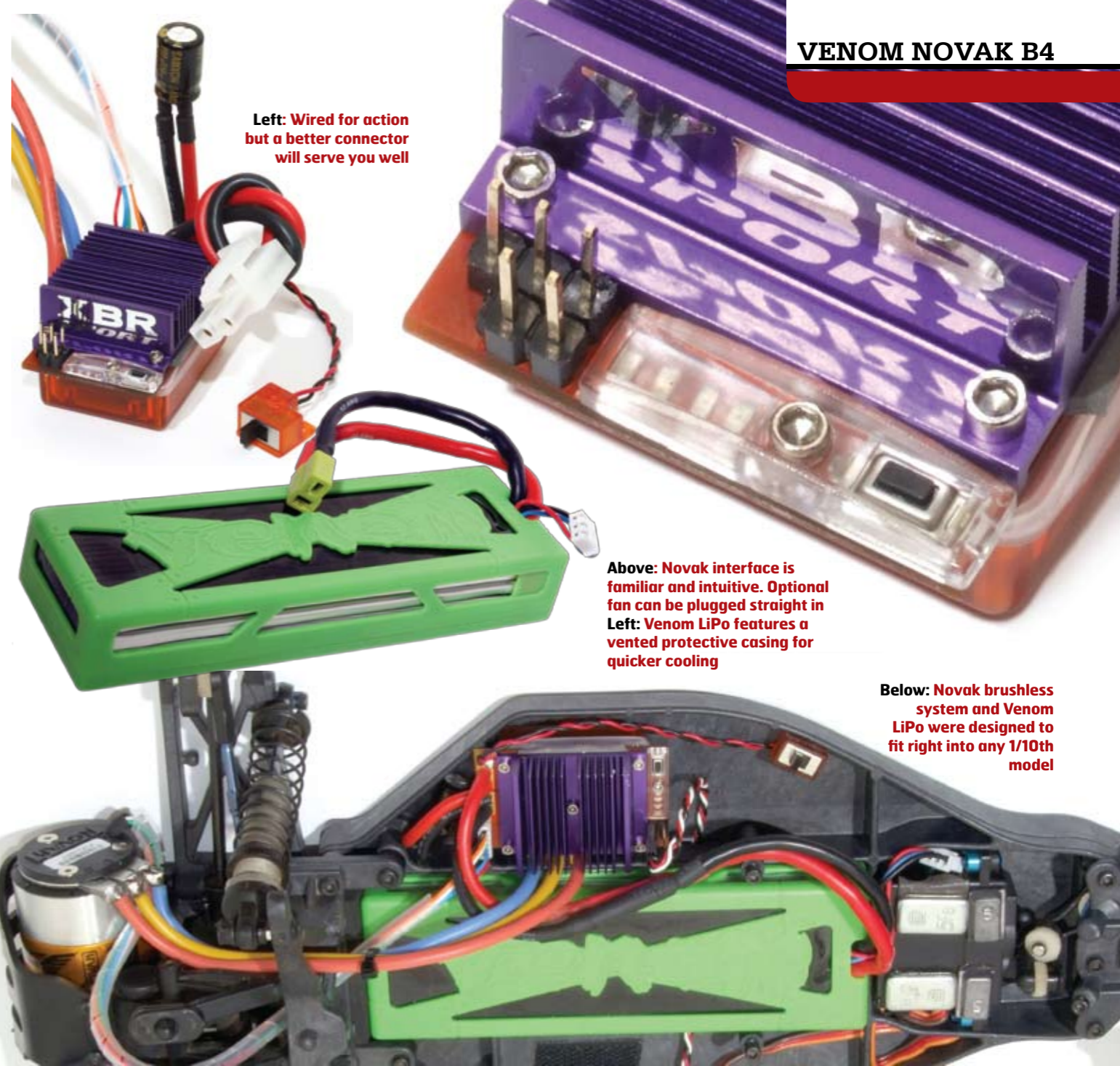




# B4

## THE REVOLUTION

### VENOM LIPO AND NOVAK BRUSHLESS IN 2WD



Left: Wired for action but a better connector will serve you well

Above: Novak interface is familiar and intuitive. Optional fan can be plugged straight in  
Left: Venom LiPo features a vented protective casing for quicker cooling

Below: Novak brushless system and Venom LiPo were designed to fit right into any 1/10th model

**M**any club racers are enjoying the benefits of the latest LiPo technology but one of the main reasons the BRCA 1/10th off road section have yet to adopt it for National Championships is that 2WD cars are already too fast with a 7.2 V, 6-cell NiMH battery pack and on a loose surface running just 5-cells makes it more driveable, but LiPo can deliver higher voltage under load and they weigh less which results in a definite victory of horse power over grip.

The alternatives are to add lots of lead weight ballast, or fit a higher wind motor without so much punch, which negates the attraction of 2WD off road in the first place. It's supposed to be hard, it's not a 'throttle jockey' sport but more of a drivers' formula, like F1 but off road!

My RCT10 B4 FT is probably the longest serving vehicle in my collection, a well built vehicle and amazingly robust, so it keeps delivering the performance without ever stopping to demand TLC, what better test bed could you ask for!

The new 7.4 V 2-cell 5000 mAh Venom LiPo, offers excessive amounts of power, and more capacity than you could ever use in 2WD, even in the highest grip conditions, so we balanced that by selecting the 8.5 turn Novak brushless motor, under the direction of the new Novak XBR Sport ESC to bring the beast under control without breaking the bank.

We fitted new Ballistic Buggy tyres suited to Astro turf and dialled in more down force by virtue of a rear wing set from Pro-Line and set of to find a whole new experience in 2WD off road. This class demands fast reactions and enormous skill to drive quickly, but can be highly rewarding when you get it just right.

#### FEEL THE STING

Venom have an ingenious twist on a LiPo hard case, choosing a green moulded case for protection, with stylish vents that not only make the Venom logo stand out but enable you to tell if the pack is nearing the end of its useful life by puffing up, in which case you shouldn't be putting it back on charge. This is a good safety point as a completely hard case enclosed LiPo pack will not reveal any stress until it starts to show a drop in performance. The vents in the Venom case also improve cooling to reduce the time you have to wait before recharging.

The 20C 2S 5000 mAh Venom 'X Pak' LiPo measures exactly 44 x 24 x 136 mm and weighs just 272 grams, roughly half that of an equivalent capacity NiMH battery. Rated at 20C means it can deliver 20 times the capacity as a maximum continuous current draw, so the Venom pack is comfortable at a whopping 100 Amp continuous load and is robust enough to withstand momentary surges much higher.

The 'X Pac' is supplied with heavy duty 12 AWG wire terminated by a Deans style power connector for minimum losses under load, plus an extra three wire balance lead for accurate, safe and effective balance charging of the individual cells within. One of the main benefits of LiPo power is being able to run on just one pack costing under £70, yet have the performance and cycle life time in excess of the equivalent NiMH battery packs of which you would need at least 2 but preferably 5 team spec matched packs around £65 each, to get through a race day with the same level of performance.

Also, LiPo's can be charged the day before a race meeting and not need re-peaking before your first race, as they lose nothing overnight and only a very slight capacity drop if left on the shelf for a week before you use them. You can recharge the same LiPo pack after each race, without degrading the performance and with a 5000 mAh capacity you will never get anywhere near dumping, especially in 2WD where the throttle determines direction just as much as the steering.

The performance difference between an 80% and a 100% charged LiPo is negligible so you don't need to worry about ensuring the ultimate charge before going out for the next race. Just pop the LiPo back on charge once it has cooled, then go out for your next race whether the charge cycle has finished or not and you can be sure it will

see you through the next five minutes in style.

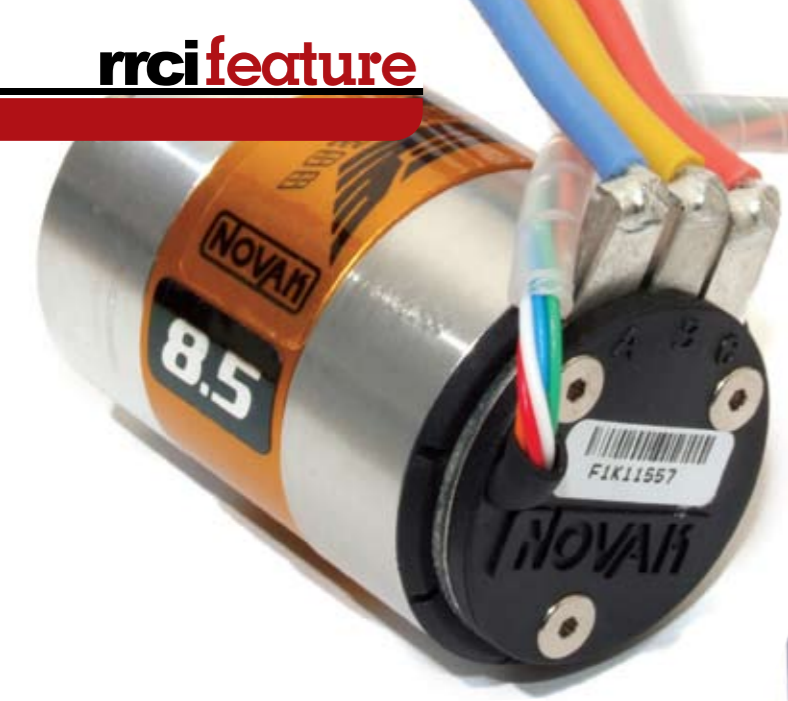
To fit the Venom LiPo in the B4 I had to wind out the battery strap mounts until the battery was not crushed in order to get the 'R' clips through their posts. The battery should be able to move very slightly to allow the chassis to do its job unhindered; held too tight a battery becomes a stressed member, affecting the stiffness of the chassis!

I mounted the Venom LiPo fully forwards in the chassis with the foam spacers, as the reduced weight means I will need as much weight up front as possible in order to keep some steering authority, and probably need to add some lead weights but at least I have the choice of where to put the ballast in order to meet the BRCA minimum weight limit.

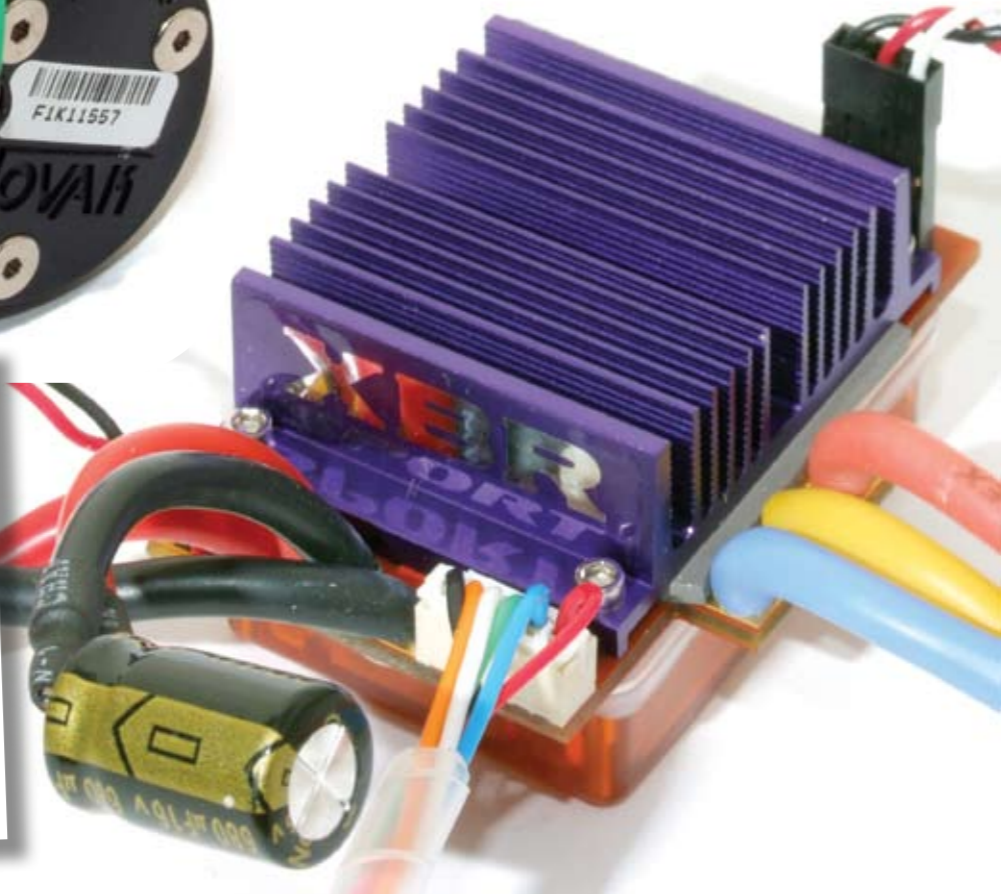
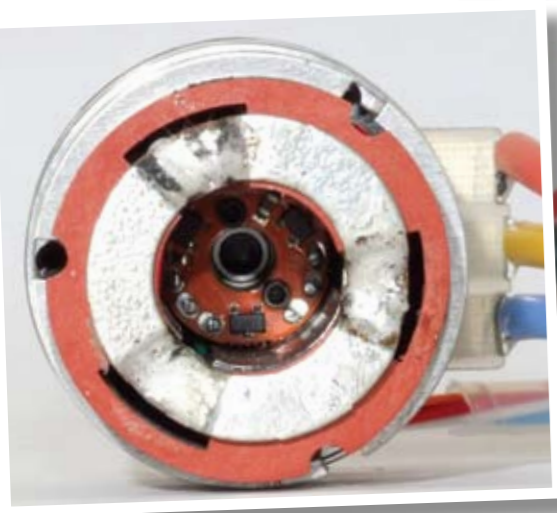
#### LIPO LOGIC

The Prolux Digi Charger 104 is a good all round charger for LiPo and NiMH race and receiver packs, glow starters and even the 12 V gel cell in your starter box, a flexible charger indeed. This compact unit runs on both mains and 12 V sources, so if your race venue has mains power on the pit benches you can leave that heavy 12 V leisure battery at home!

The Prolux 104 has readouts for capacity, charge rate, charge time etc. and can charge 1-10 NiMH cells at up to 5 amps. 1-4-cell LiPos can be charged at up to 4 amps, either directly via the two power leads or



left: New solder post design makes a tidy job much easier  
Below: Power Capacitor pre-installed next to the sensor cable socket  
Below left: Integrated sensor and suppression electronics



Above: Flexible Prolux charger and optional balance interface for safe LiPo balance charging up to 4 amps  
Right: Simply efficient, no brushes, no hassles



Above: 37 minutes at 4 amps = 2500 mAh, more than enough for a race already!



Above: From discharged to saturated in 117 minutes, but the last 33 minutes were worth just 200 mAh



using the additional Prolux multi port balance box to safely top up each cell individually.

We discharged the Venom LiPo to its 6 V threshold and put it on charge at 4 amps for one hour, and sure enough 4000 mAh capacity had been added after which the charge rate started to drop. Unlike NiMHs which use a constant current and delta peak detect method, LiPo cells charge by constant voltage and once the maximum threshold of 4.2 V/cell has been achieved it will gradually reduce the charge current until the pack is fully saturated.

By 84 minutes the charge had dropped to just 1 amp and 4800 mAh capacity had been added so I knew we were close to topping off. After 88 minutes 1 cell LED indicator on the balance box started to blink, followed shortly by the other, and it took 117 minutes before the LED's slowed to a casual flash to indicate saturation had been achieved, with a total of 5113 mAh capacity added. 117 minutes might seem like a long time to charge, but as the current flow reduced to keep the voltage constant, the last 33 minutes added very little in terms of capacity.

Unlike NiMH cells there is no need to discharge LiPos in order to balance the cells, as it is done on the charge cycle via the balance lead. There is no temperature rise to indicate a full charge, and you do not need to fully charge in order to achieve maximum performance.

### SELL YOUR COMM LATHE!

The new Novak 'XBR' is the new Extreme Sport Brushless range from the GTB family tree, and ideal for anyone keen to experience the incredible power and starting torque, minimal maintenance, and longer runtimes only brushless can offer. The XBR might be just two-thirds the price of the GTB but it isn't short of features...

Three brushless programmes allow you the choice of forward only for racing situations, or with reverse to save those long walks during for practise sessions, and a third option allows just 25% reverse to save you from overdoing it backwards, and the fourth mode offers brushed motor capability with no motor limit.

As well as built in LiPo voltage safety cut off protection, and all the usual excellent Novak features, the XBR is the first Novak ESC to include an idiot proof 'Auto-Detect Brush Mode' as well as a 'Motor Rotation Selector', for those vehicles where the motor needs to rotate backwards to push the vehicle forwards. The typical Novak LED programming interface indicates status and programme menus, so anyone familiar with Novak speed controllers could have it set-up without even glancing at the instructions.

The XBR arrives pre-wired with a Tamiya style connectors to suit the 'Ready to Run' brigade, but for performance gains with minimum losses I recommend replacing it with a high current connector like the popular Corally style gold tubes, or the new Venom Power Plugs (VEN-1597), which are idiot proof, fully housed opposite pairs of silver plated tubes to avoid any reverse connections that would mean an early bath!

The XBR has a tiny footprint, so it slots straight into the B4, the power capacitor and switch slotted neatly into local compartments, keeping everything neat and tidy. The Venom LiPo balance charge lead slotted down the side of the steering servo, giving it somewhere to live away from debris and moisture.

The height of the cooling fins meant it collided with the low level B4 bodysell but a gentle warming of the Lexan in the local area with a heat gun soon cured that. Attaching the optional cooling fan would be impossible under the buggy shell, but unlike 4WD the 2WD driving style

is all about refined throttle control so it will never stress the speed controller enough to warrant the extra cooling.

To suit the B4 installation I shortened the motor wires, taking the opportunity to route them tidily through the rear shock tower and found the new motor solder tags especially user friendly, far easier to solder than the usual holes through a PCB.

Driving the 8.5 motor with a 7.4 V LiPo the motor recorded an astonishing 43,300 rpm on my rev counter, so with a 22 pinion against the kit 81 spur and the famous 2.6:1 'Stealth' transmission that's a theoretical 68 kmh (42 mph), plenty fast enough for me but way too fast backwards, so I switched the Novak ESC into mode three for just 25% reverse to simply and gently reverse out of trouble.

### PRO-LINE WING SET

My B4 rear wing has taken a real pasting over the years, and looking around for a replacement we found the Pro-Line Performance Wing Pack which includes 2 high down force wings, 1 medium, 2 standard down force wings along with 3 front spoilers in a single .030 thickness Lexan moulding, all pre-marked with mounting holes and shock tower clearances to perfectly line up with the B4 design. This is the perfect upgrade for the aerodynamic package, with bigger wings for tight twisty circuits, and smaller wings for fast flowing circuits you can dial it into perfection.

### TO THE TRACK!

Weighing in at 1434 grams with a 5000 mAh Venom LiPo, the 8.5T motor and XBR Sport brushless system from Novak, a fast steering servo and Spektrum receiver, so the B4 is still under the minimum BRCA

limit despite some lead already stuck on the nose to aid steering and help reduce the wheelies, so we can add even more weights wherever we feel it would best suit the overall balance.

Having consulted the set-up pages of the CML website, the buggy was rebuilt and set-up. We chose the suggested Ballistic Buggy Green spikes, and custom fitted them by trimming the beads and inserts to fit to some new yellow rims. To bring the B4 right back up to racing spec after a very hard life, the shocks got a rebuild with 35/30 weight oil and the diff had a complete overhaul with all new plates, balls and output cups. With the power this Novak/Venom combination was going to deliver I was taking no chances with the driveline, and besides, it had seen a lot of action since the last rebuild, and thoroughly deserved some TLC!

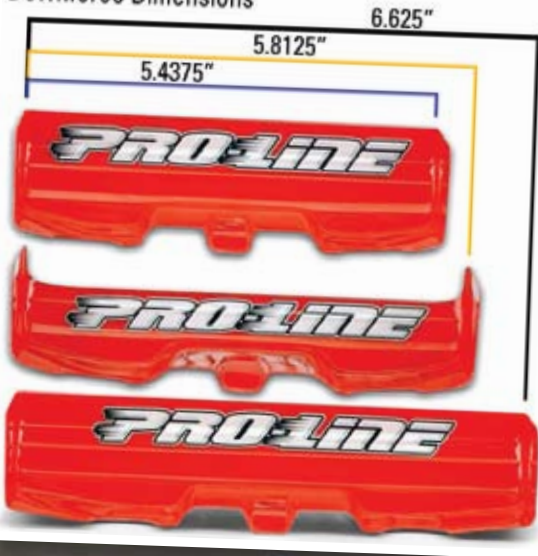
We chose a dry day to test at Baginton, home of the Coventry Model Car Club, before the next round of their electric division of the ever popular winter series, 'Midland Astro Masters', which I intended to join in with for a change from the usual Nitro series. While I got a few great action shots my good friend Russ enjoyed a few laps with the B4, getting right back into the groove after many years dedicated to 1/12th circuit racing and it brought back a lot of memories!

Handing the transmitter back to me he gladly held the stopwatch for a few 5 minute runs, to check the gearing by monitoring the temperature of the speedo and motor, but neither was getting remotely hot at 73°F so we swapped to a fully charged Venom LiPo and ran consistent 30 second laps, nicely on the pace for the full circuit, and kept running for as long as we dare before the LiPo safety kicked in.

What do you reckon, 8 minutes? 15? After an enthralling 20 minute session the cold, windy day got the better of my fingers; even I didn't ✨

Below: Pro-Line wing kit lets you choose the down force required

Downforce Dimensions



Above: Pre-marked and easily mounted Pro-Line wings, perfectly designed for the RC10 B4

Below: The B4 relished the brushless and LiPo conversion. Driving it was a challenge and a pleasure



## QUICK SPEC

**VEN1555HV** Venom X Pak  
20C 5000 mAh £69.99 RRP

**NE3030 XBR** Sport/EX8.5 Combo  
£159.99 RRP

**PX3712** Prolux Digi Charge  
104 Charger £89.99 RRP

**PX3837A** Prolux LiPo Balancer  
JST/XH £14.99 RRP

**PL6232-00** Wing Pack  
1/10th Buggy £15.99 RRP

**BBT13** 'Pin' Rear Tyre (Pair)  
– Green £7.99 RRP

**BBT15** 'Pin' Front Tyre (Pair)  
– Green £7.99 RRP

## CONTACT

More details from CML Distribution,  
Telephone 01527 575349 or  
[www.cmldistribution.co.uk](http://www.cmldistribution.co.uk)

expect to be on track long enough to need a tranny muff! The B4 drove beautifully. The power of the 8.5 turn motor was sufficient to thrill me without threatening to wheelie my B4 to destruction. My laps were consistent; the performance at the end of the run was indiscernible from the first lap, and the low voltage safety cut out still didn't have cause to kick in and save the LiPo from over discharging. Notably all this track time had come from one LiPo pack charged a week previous.

Throughout the day the Ballistic Buggy Green Spikes had done the equivalent of two whole race meetings and still looked like new. On race day the B4 took a good beating as always, and kept running regardless. Setting the slipper clutch was the only maintenance I needed to do all day, it was as close to plug and play performance as you could get, leaving me plenty of time in the paddock to mingle with friends and help new faces with any information or encouragement they needed.

The Venom LiPo left to cool while I marshalled then recharged after every race. I never saw the pack complete the charge cycle between rounds but even so I never felt a drop in performance, not even when the grip came up and allowed the use of a tighter slipper clutch setting and lots more throttle action, clearing the double jump every lap from a preceding tight corner.

## WATER OFF A DUCKS BACK

Once I got home I ran the Venom LiPo through a cycle on my CBA II Battery 'Dyno' and the discharge curve was as good if not even better than when it was new! Amazing after the performance this single LiPo pack had supplied over the last few days of testing and racing. If you by quality products and learn to treat them right, your investment will last a couple of seasons with minimum maintenance, so now I know why so many are turning to LiPo and brushless, it makes race day a pleasure again, with less maintenance, more performance and pound for pound cheaper racing. **RRCI**