WORKS RIDE

GPV-1 and the Venom Option Range

The 1/8th Venom GPV-1 RTR motorcycle has taken the scene by storm and injected a whole new enthusiasm into the two wheel arena, attracting new pilots from across all formulas; we've never seen so many closet bikers come out of the woodwork!

With the Venom range of options explored here, you can take your ride to the next level and select which parts you deem essential to let you push your limits just that little bit further!

Right: V18 Venom brushless combination designed with the GPV-1 in mind, a 5200 kV motor is more than fast enough!
Below: Clear body and plain rider figure ready for a custom paint job, showing how everything locates within it

FROM THE HORSES MOUTH

Designed by Chris Nicastro, Director of R&D for Venom Group International, who studied the real GP machines as closely as possible when designing the GPV, quotes one real race pilot (we don't call bike riders 'drivers' because bikes are nearer to flying than they are to driving) told him his GP tuning experience has been very helpful and that "the GPV responds to setting and geometry adjustments just like the real thing". Chris's influences and enthusiasm are obvious because the bike not only represents a true scale racing motorcycle but performs and adjusts just like the real thing too!

Above: The range of standard parts carried over from the donor RTR GPV-1

Below: The Race Chassis kit contains all the main plates, plus headstock and battery tray

Above: Race Chassis (lower) compared to the RTR (upper) showing extra geometry options

WE CAN REBUILD HIM!

Starting with the Race Chassis set **(VEN-0328)** which I weighed at 31 g, saving 10 g over the kit chassis, which might not sound a lot, but that's a quarter lighter! The two main frame plates, like the tail section and side frames are a blend of Carbon/GRP laminate for strength and flex control along the centre line of chassis, limiting twist under acceleration and braking loads. The two side plates look identical, but be sure to put the one with a pair of small holes on the left to be able to mount the brake kit properly, the right hand plate has a large oval hole to allow hex driver access to the two mounting screws for the cable terminal block. More over, the carbon race chassis incorporates many more rear shock angle locations and several new head stock rake angle and wheel base adjustments up front complimented by a new headstock featuring new and interesting orifices.

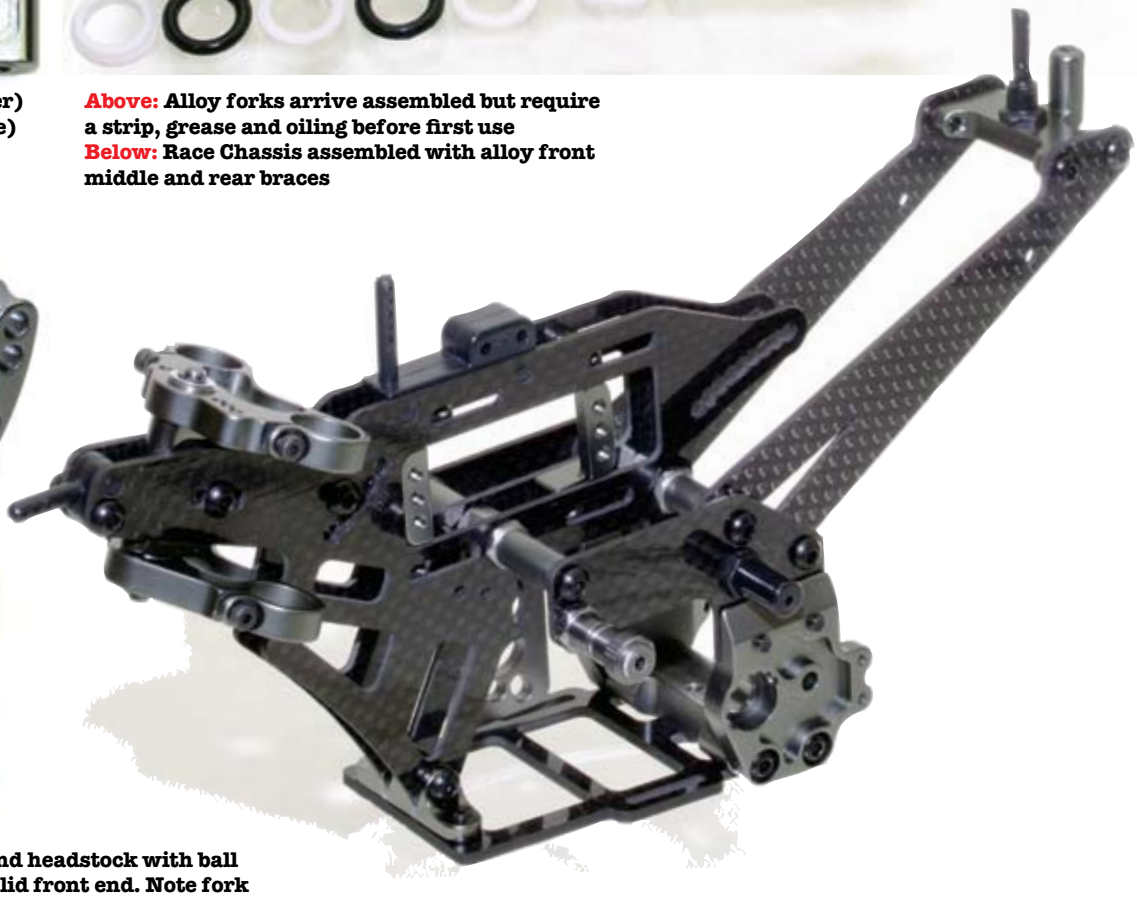
The alloy headstock **(VEN-0329)** comes supplied with an alloy rear seat brace/aerial mount for extra strength and reliability. The alloy headstock has the same set-up options as its plastic alternative but provides an unbreakable front end that will remain constant and predictable even with all the extra stresses placed upon it by the front brake kit and a faster brushless motor combo.

The new five-position rake adjustment ranges from a steep 18.5 degrees to an easy rider style 28.5 degrees, in 2.5 degree increments while maintaining a fixed front location around which it pivots, so the rake adjustments also incorporates a wheelbase length increment accordingly. Longer wheelbase and more rake means more stability, while inversely a steeper rake and shorter wheelbase makes for a nervous but faster steering chassis. The choice is yours, but if you

Above: **RTR headstock (upper) compared to the race (middle) and alloy (lower) options**

Above: **Alloy forks arrive assembled but require a strip, grease and oiling before first use**

Below: **Race Chassis assembled with alloy front middle and rear braces**



Above: **Alloy triple clamps and headstock with ball bearing headraces make a solid front end. Note fork spring preload adjuster screws!**

go steep and nervous you'd better be quick with your fingers, and be sure to move the fairing fully back on the front body post to avoid contact between the front tyre and belly pan. The RTR kit chassis rake adjustments do not change the wheelbase and these three positions are retained in the race chassis so you have the choice of adjusting rake with or without wheel base adjustment.

Some of the chassis weight saving is offset by adding the alloy frame spacer kit **(VEN-0336)**, but the increased chassis stiffness will be well worth the tiny weight penalty.

Similarly the swing arm and layshaft mounting blocks **(VEN-0330)** double in weight from 6 to 12 g but the extra stiffness and alignment they afford easily off sets the weight penalty. Because the tolerances of CNC cut alloy components can be controlled better than injection moulded parts, the kit eccentric bearing carriers push nicely into the new alloy parts and are retained better so they don't move when you remove the spur gear carrier and your chain tension remains as selected.

The alloy servo mounts **(VEN-0327)** and the retained RTR steering damper base (with integral fuel tank mount) are sandwiched between the frame plates so you need to make sure they are in position before you secure the two frame plates together with the central threaded spacers.

The frame is spaced at the lower edge by the alloy lower cross member at the front and battery tray mount at the rear **(VEN-0331)**, the extra weight of which is offset by the carbon battery tray supplied as part of the race chassis kit.

Top Tip *– When fitting the lower brace and replacing the M3 grub screw that determines rear suspension droop be sure to add a little thread lock (blue/non permanent) so that it stays in position between adjustments. Also, I re-cut the countersunk positions on the carbon battery tray to make sure the four countersunk screws were just slightly under flush, as they were slightly proud and could chafe into the battery insulation.*

To keep the forks perfectly in line with the headstock the new alloy triple clamps **(VEN-0300)** have been designed to maintain fork alignment and resist breakages when we start pushing the speed limits. To that end the alloy fork legs **(VEN-0352)** with integral pre-load adjusters make an excellent front end package. Having an adjuster screw working above the internal spring offering 5 mm of pre-load lets you perfect the ratio of front droop and sag. While the shocks were factory assembled they contained no oil, so I added just 30 drips of 20-weight oil to each leg, which gave a nice yet still very firm feel. On bumpier tracks removing one fork spring softened the forks nicely and allowed them to follow the contours of the road surface better, improving grip and cornering accuracy. A pair of softer fork springs would be a more ideal solution.

To give the front end as much support as possible and guarantee an accurate alignment with minimal drag and losses, the steering head bearing set **(VEN-0339)** is a must have, whether you have the kit triple clamps or the alloy option parts, these bearings will transform your bike, no contest. Remember to fit the two flanged bearings on the top and bottom faces of the triple clamps to retain them against the head pin circlips, while the two small ball races push in from the inside and sit against the headstock itself. If you didn't need to use the steering damper before, you might well find you need it once the steering is this free moving.

Now that the front end is all alloy it means there is very little flex or crash resilience so the head pin becomes the weakest link and you should consider it a sacrificial part. Check both the head pin and fork inner legs regularly for straightness, especially after a heavy crash. Fortunately like all Venom spares, the GPV-1 parts are amazingly economical so it's well worth carrying a basic repair kit with you to any race meeting.

To compliment the improved front suspension, we fitted the alloy bodied rear shock **(VEN-0353)**, which is very free moving with minimum stiction and once filled with 35-weight oil it feels beautifully damped. The machined bore running Teflon pistons and guide bushes give a lovely action, but a threaded alloy body and alloy spring retainer means there is slight weight penalty involved.

Top Tip *– I took the liberty of grinding 0.7 mm off one side of the fork caps to increase clearance to the front tyre, like I did with my RTR bike to stop it dragging if the tyre wobbles slightly, preventing contact that might unscrew the right hand fork cap.*

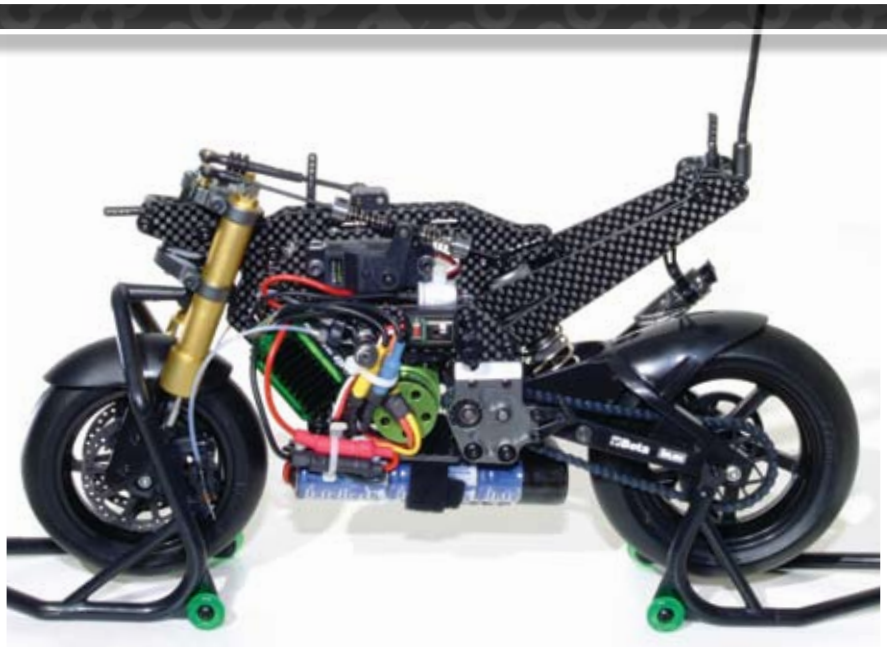
The front brake kit **(VEN-0355)** supplies the extra stopping power to enable you to stay on the throttle that little bit longer on the straights and overtake anyone without a front brake who will have to back off way earlier to pull the speed down.

In the brake set you get two brake hex adaptors, two steel brake discs, two callipers, levers, pivots, pads and pad linings. After applying a tiny amount of CA adhesive to the brake pads the liners were located and then pushed against a flat surface while they cured to ensure a flat finish. There are two brake cables, one longer than the other to give a perfect route through the chassis to the right hand calliper and I found no steering influence or excess cable to coil up when the forks compress. Spot on.

Within the brake kit the micro Venom brake servo **(VEN-8271)** even comes with a horn of exactly the right length and a balancing connector that gives the two brake cables a single pivot to help balance the bite point of the twin disc system. The whole assembly bolts to the kit bike like it was designed that way, and indeed it was. Even the RTR GPV-1 chassis already has the servo position location and cable guide mounting holes.

Above: Front brake kit even includes the extra micro servo and works beautifully once fully assembled and set-up
Below right: Extra brake servo installed and set-up. Note also Alloy frame spacers and optional rear shock
Below: Choose a wheel style, 5 6 and 7 spokes compared to the Y-spoke of the RTR, and then choose original V5 tyres or the medium V3 or soft V1 to suit your surface

Above: Assembled front calliper with cable secured with clench collet. Remove the callipers and mudguard to swap front tyres



Above: **Fully wired and ready for bodywork. Keep it neat and tucked in for maximum lean angles**
Above right: **Programming the controller is child's play with numerical LCD indicators**

Top Tip *– I ran a 7.0 mm drill down the brake hex adaptors and the rear bearing holders (chain sprocket and rear brake disc replica) and the wheels rotated better on their bearings so they must have been rubbing slightly on the 6.0 mm brass bearing spacers. Result! I did this with the RTR bike front brake disc simulators too, and the front wheel rotated much better once the axle was tight, try it, you'll like it! I then glued the hex adaptors to the wheel rim and the bearings into the hex adaptors to remove any slight play that might manifest itself as head shake in high speed corners.*

I wanted the brake discs to be fully floating but they were a little stiff on their hex mounts, so I cleaned the edges of the discs internal hex until the disc would just fall off the hex if the wheel was inverted. Now they were fully floating alright!

Next we came to the wheels and tyres on offer, with several spoke designs including a 5-spoke **(VEN-0332)**, 6-spoke **(VEN-0333)** and 7-spoke **(VEN-0334)**, plus the choice of softer tyres **(VEN-1167 Front, VEN-1168 Rears)** in either a V3 Medium or V1 Soft compound so you can change both the appearance and performance of your machine to suit yourself. The tyres do not come supplied with inserts, so when ordering be sure not to forget **(VEN-1176 Front, VEN-1177 Rear)**. We ran the kit bike V5 tyres on tarmac in sub zero temperatures, as well as indoors on carpet and they performed really well, so it's only when you upgrade to a faster motor that you will really need to go for softer rear rubber, and similarly a softer front will offer more braking effort so they are well worth having once you upgrade. How they perform in the wet has yet to be established as no one has fitted a waterproof speed control yet, but that day will arrive shortly I'm sure and it would be great to see the 1/8th Venom as capable of performing in all weathers as the 1/5th bikes currently are, wheeling in torrential conditions and revelling in the roosters they send up.

Gluing the tyres on requires patience and a fine tipped CA applicator. The tyres should be cleaned with solvent or lighter fluid, while the plastic rims can be squirted with motor cleaner to remove any mould release agent, then allowed to dry a while before mounting and applying CA adhesive once you have ensured the tyre bead is fully seated and the insert is positioned properly to keep the tyre running straight and as perfectly round as possible. Having chosen a set of the V3 medium tyres and the V1 Soft compounds I glued them to 5 and 6-spoke rims respectively so I could tell them apart at a glance.

That's the chassis side of things complete, but you should know that as I had early production samples of most components, some changes will occur before you get your hands on them, but all for the better. The rear shock will be gold anodised for that Ohlins style we all adore, and the little preload adjusters in the top of the alloy fork tubes will be bright red for that detail highlight sure to trip the trigger of any weekend road warrior.

I NEED MORE POWER CAPT'N!

When you have mastered the RTR bike and completed several races at your local club without requiring a marshal, you might consider a faster power plant.

Venom offer the V18 combo set **(VEN-1385)** which contains not just the 5200 kV motor **(VEN-1364)** and V18 Pro Series brushless speed controller **(VEN-1382)** but the programming interface **(VEN-1383)** too. All are available separately, and some higher kV motors besides, but at a much better price when bought as the combination set.

The 5200 kV motor end bell has a 23 mm finned body that helps dissipate heat build up, but reduces to a plain 20 mm diameter to clear the brake actuation arm like it was made for the job! Having figured out the tidiest wiring route, the best placement for the brushless combo and receiver I wired the electronics into the bike, plugged the three motor wires into the ESC and soldered on some 3.5 mm FTX gold tube connectors to allow maximum current flow with minimal losses. The V18 motor shaft is 2.3 mm diameter so you need the genuine Venom pinion sets as the 2.0 mm kit pinion will not fit, but the good news is that just two part numbers **(VEN-1440, 11/12T)** and **(VEN-1441, 13/14T)** contain all four pinions you will ever likely need. The pinion range goes right up to 20-tooth, but you'd be heading for some crazy top speeds by then, especially if mixed with the 62T **(VEN-0314)** or 60T **(VEN-0313)** spur gears to put the overall ratio through the roof.

The V18 ESC is fully programmable and capable of running up to 3s LiPo at 11.1 V for some extreme speed. With a 6 V BEC supply to the receiver and servos, their performance will be better than the kit ESC, which had a 5 V BEC supply, so your steering response will be faster as a result. I set the end points of the Venom V18 ESC and selected a set of parameters on the set up interface that I thought would make a good starting point. I wrote them down for a quick check using the on board lights system without removing the fairing and unplugging the ESC from the receiver to use the hand held programming module.

SPEED CALCS

Working out the gear ratios for a 5200 kV motor on a 7.4 V LiPo making around 38,500 rpm, on an overall ratio of 10.65:1 (14/64 primary, 12/28 chain drive) you'll be looking at around 3,600 rpm wheel speed and that calculates out for a nominal 87 mm diameter (273.3 mm circumference) tyre at 60 kmh (37.5 mph). At max gearing 20/60, a road speed of 90 kmh (56 mph) is theoretically possible before the tyre grows and raises the overall gear ratio accordingly! Run the V18 brushless on a 3s LiPo and you'd be hitting 135 kmh, that's over 80 mph, but unless you could control the ballooning at speed the tyres would grow to the extent that they rubbed on the suspension which would effectively limit your speed anyway, so there's no point going for crazy fast motors and high voltage batteries, but it's nice to know you could fit this speedo in a suitable 1/18th car perhaps and be doing record speed runs right off the bat!

YOUR TEAM COLOURS HERE!

Venom have made a clear fairing set **(VEN-0290-01)** and plain white rider figure **(VEN-0340-01)** available for anyone that wants to stand out from the crowd, so while I've been busy building the chassis and sorting the electrics, my good friend Mark Ashforth was painting his first bike, and found the confines of a 1/8th bike much more of a challenge than his more usual 1/8th off road buggies but he did me a grand job all the same, cheers Mark. Recognise the colours? I always wanted an RC30 and this is about as close as I'll ever get!

I attempted to replicate my old racing leathers on the plain white rider figure using CD marker pens of various colours and tip widths, and while it was a bit of fun it certainly wouldn't win any concours competitions, so I bought a standard Venom red rider **(VEN-0340-04)** because Mark's ace paint job was so good it was showing up my admittedly hurried rider figure. If you have time and a steady hand you can colour in your own rider figure, but when there is a red, green and black rider figure already available, I'd have to think twice before buying a little white man again. My hands are too shaky these days, must be getting old.

TRACK ATTACK

The weight of the RTR kit GPV-1 bike and 6-cell NiMH was 730 g while the brushless, carbon and alloy upgrade project bike had added just 30 g and yet offered all that extra strength, speed, and brakes, pretty amazing all up! If I switch to LiPo power it will save 50 g and put the power to weight ratio through the roof! I couldn't wait to hit the track. Using the kit Venom VR3T 3-channel FM transmitter, selecting the brake mix as 'On' and reversing the aux channel direction so it pulled the cables as I applied the brakes, we were all set to go.

We know we can get around the Bedworth track with a kit bike in just 26 seconds from our previous review of the GPV-1 RTR (Issue 302 January '09), so before we even hit the track with the fully kitted upgrade machine we knew the better suspension, softer tyres, improved chassis with extra geometry coupled with the V18 5200 kV brushless combo just had to be a step further towards the front of the grid! All we need is some track time to get it set-up to our liking.

We found the straight crash bars were limiting corner speed with a 40 degree lean angle, so cranking them up to allow a 35 degree lean angle knocked two seconds off my lap times and the softer compound tyres didn't mind the extra work load, but go any further over and you run clean off the edge of the tyre profile. The front brake was helping pull the speed down comfortably and predictably, and always in a straight line assisted by the drag brakes in the ESC to keep the rear end from overtaking the front.

Top Tip *– I inspected the rear wheel enclosure and tyre rub marks where it had touched the rear hugger and lower shock end, so I cut a flat on the shock lower ball joint to continue the same profile as the swing arm, then simply removed the hugger as a precaution.*

The droop adjusters actually made a difference to the ride height and droop of the front end and I experimented throughout the five turns of adjustment available and could feel a useful implication to each and every turn. Bliss. I now had a bike that felt like a real machine, set-up with just a little droop front and back and the adjustment could go either way from there. We have since attended demo races at the NEC and Alexandra Palace for races on carpet and been to a club meeting at Bedworth to use the proper tarmac circuit and the bike is certainly improved. Set-up data will be fed back to Venom who will no doubt post downloadable data sheets on their web site **www.venom-group.com** so you can all benefit from the keenest race pilot's experience.

With the summer ahead and hopefully warmer weather, we can only imagine the fun to be had with a bunch of likeminded two wheel enthusiasts, and their numbers are growing every day. The 1/8th bike scene will maintain a class for the stock bikes as well as an open class for people that want to push their limits, so whether you have the RTR bike or are looking to explore the range of upgrade options maybe we'll see you track side, real soon too!

Our thanks to CML in the UK, Andrew Bolton of Venom Australia and Chris Nicastro of Venom USA for their help and enthusiasm through this review. RRCi

BASIC V18 SET-UP PARAMETERS

1. 1 OF 2 (REV DISABLE)
2. 4 OF 8 (15% DRAG BRAKE)
3. 3 OF 6 (2.8 V/CELL CUT OFF)
4. 2 OF 4 (NORMAL PUNCH)
5. 1 OF 4 (25% BRAKES)
6. 1 OF 4 (25% REVERSE)
7. 1 OF 4 (INITIAL DRAG BRAKES)
8. 1 OF 3 (6% NEUTRAL RANGE)
9. 5 OF 8 (15 DEG TIMING)
10. 1 OF 3 (BRUSHLESS)
11. 1 OF 2 (OVER HEAT PROTECTED)

QUICK SPEC

Class: 1/8th On Road Motorcycle
Type: RTR Electric with Options
Manufacturer: Venom Racing

OPTIONS USED

Venom Numbers as highlighted

DISLIKES

Over sprung forks
No crash back protection
No replacement body pins yet
Brakes hinder wheel removal

LIKES

Tyre compound choice
Brakes work straight off
Alloy and carbon accuracy
Race chassis geometry
Improved suspension
Brushless and LiPo rules!
Programming range and ease
Unpainted body and rider
Scale details retained throughout

CONTACT

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