BY PETER 'MAD PETE' GRAY

A 20 kg Savox servo is perfect for crawling, high torque, quick and tough!

Venom 'Creeper' 2.2" Competition Rock Crawler

WHY CRAWL,

WHEN YOU CAN CREEP?!

The days when Rock Crawling was a niche market and commercially produced kits were scarce are thankfully a thing of the past. With more choice than ever before, and most of the big names in the world of R/C throwing their hat in the ring, what do you buy if you want to own something truly innovative and, most of all, immediately competitive in a 2.2" rig?

With the birth of anything new there will always be teething pains, and over the last two years manufacturers have learnt the lessons of what makes a winning rig work. Locked diffs reduce the rig's turning capabilities and combined with traditional dogbones and drive cups you have a large turning circle. Many drivers have experimented with both sprung and droop shocks with the latter offering a slammed C of G and the ability to drop a wheel over an object to get precious grip. Beadlocks have improved greatly but still on occasion tyres pull out under extreme load, and worst of all the aggravation involved in weighting the wheels correctly with stick on strip weights to fine tune the grip, C of G and effectiveness of the shocks. Many manufacturers have offered aftermarket hop ups to rectify these problems, and can cost literally what your rig cost over again.

Venom Group International (VGI) was conceived by two friends, Andrew Bolton and Clint Bower. With dual headquarters in Sydney, Australia (Bolton) and Hayden, Idaho (Bower), VGI is in the business of creating product that doesn't just tick the boxes of design and performance, but actually pushes the boundaries of what's possible. It seems to be working!

Venom have just released the 'Creeper' 2.2 comp rig and looking at the impressive specification they have 'designed out' these issues and 'designed in' some truly inspired innovations as their first rock crawling kit, so this should be something special. VGI's company history is "An ever evolving entrepreneurial story of what can happen when creative minds meet, actions are taken and dreams are pursued". That's the mantra they work to and ethos behind the company, and the enthusiasm for the product and the belief in producing something that stands out from the crowd really comes through.

ARACHNOPHILIA

The Creeper build starts with its first innovation, the transmission itself. Designed to keep the driveline completely central it is a first on any crawler I've seen. In some way this is also a step to help alleviate excessive torque twist inherent on shaft driven rigs. Another plus is the fact that the motor also sits central and forward facing, giving perfect centreline balance, and the forward weight bias needed on a comp rig.

The transmission casing is a structural member and combined with the aluminium TVP chassis and top deck, bolts together to create a rigid and perfectly balanced backbone. The transmission uses five glass re-enforced 48dp gears rotating on no less than ten ball bearings. It has a stock 45t spur and 15t pinion and a wide range of gearing ratios are possible from 66/46 to 25/78 with optional 46, 47 and 48t spurs and 12 to 29t pinions. Match this with your chosen brushed or brushless motor and you have perfect slow speed with high torque at one extreme, or wheel speed and low torque at the other. This may look like overkill on paper, but it's always good to have too many choices!

The transmission casing is made of a re-enforced plastic and as such can be very tough to screw the hardware into. I used a screw tap set to pre-thread the holes to prevent stripping of the heads of the supplied fixings. I've learnt this lesson on past builds with this type of plastic, and a little prep work can stop all the aggravation of trying to remove stubborn bolts with stripped heads.

Another nice feature is a plate that holds the motor onto the transmission itself. It boasts a moveable sliding dust cover that protects the gears from dust and grit and is finned to aid motor cooling. The rear has a rubber seal big enough to gain access to the motor's mounting bolts allowing you to adjust gear mesh and check and lube the gears themselves. The side of the transmission also has a plate attached to fit your chosen ESC and there's enough room on the other side to fit a micro or even full size receiver at a push! This is a neat and effective solution and keeps all the electrics close together allowing shorter motor wires and battery leads.

TOP TIP – I made a Lexan receiver cover to protect it, a simple but effective solution that bolts straight onto spare holes in the chassis.

The supplied bodyshell is well designed to give wheel clearance even when fitted as low as possible on the rig. Made from tough Polycarbonate it is styled to reflect the design of a full size Rock Crawler. I opted to give it a reptile like scale effect and colour coded the main colour with Fastrax Fastfinish paint to match the links, shocks and beadlox.

SPIDER'S LEGS

My attention turned next to building the links. Take your time on this step as there are two types of bent rod ends used, and they start off in the same bag! Visually 12 deg and 20 deg rod ends look similar even when held against the 1:1 key in the instructions.

TOP TIP – A trick to identify them is that the 20 deg ends are slightly straighter hence longer so Vernier callipers in hand I measured each one lengthways to tell them apart.

The links themselves are innovation No.2: They bend twice along their length! Fitted as the build instructions with the bends on the vertical axis, they give extra ground clearance when using the supplied 'Ridge Line' tyres.

Two bends on the lower links allow ground clearance in one axis or wheel clearance for larger diameter tyres if put in the other

Above: Glass re-enforced gears spin on ten bearings and a huge range of ratio variations are possible

The transmission is a structural member and the backbone of the rig

Right: Wheel weights come in two sizes

Beadlox system clamps the oval tyre bead between unique rim and clamp rings

Ingenious weight attachment is secure and simple

TOP TIP – I then discovered that by fitting the links with the bends on the horizontal axis (laid flat), the bend nearest the front allows extra wheel and tyre clearance.

Extra clearance allowed me to use larger diameter tyres, ensuring the same turning circle and the same ground clearance, bonus! Either way the links are a neat and novel addition and offer even more versatility.

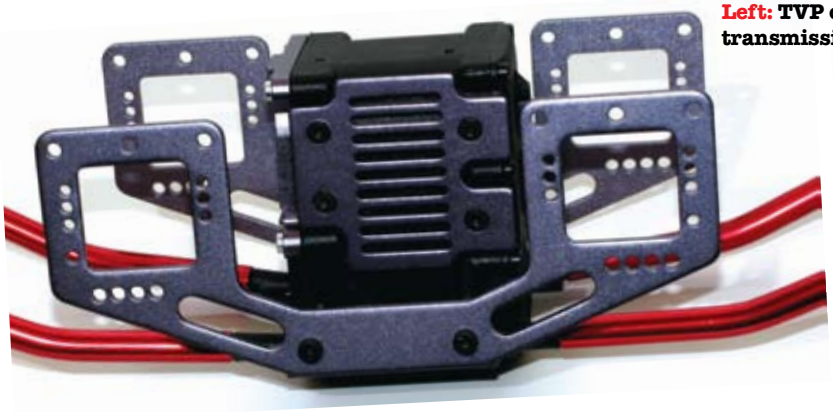
Once fitted to the transmission and held in place by the two halves of the 'V' shaped skid, the links can move freely and have a wide range of free movement giving clearance for the shocks and driveline. The TVP chassis is then bolted on each side and the top deck added. The deck is the 'normal' mounting point for your chosen stick pack. At first I fitted a 3700 mAh 2s LiPo and in use this gave amazing run-time of 45 min plus when combined with a 50T Venom Fireball motor and Novak Rooster Crawler ESC. With this combo the wheel speed seemed fine and allowed the rig to hop-up ledges with a good balance between torque and wheel speed. A 35t motor and stock gearing might also provide the extra 'oomph' for special occasions and challenges!

Fully built with the large battery fitted the rig would sit on its side without falling over, passing the easiest test of a good C of G. During the testing phase I placed a 1500 mAh 2s LiPo under the top deck at the rear, which not only gave ample run-time but lowered the C of G even further.

This leads to innovation No.3: The top deck is also the shocks' mounting point, but the neatest feature is just how close together they sit at the top! By laying the shocks at this angle, and having similarly angled bottom mounts moulded into the axle casings, they work more efficiently throughout their range of stroke, aiding articulation and giving better clearance for the steering components. The triangulated top links make this a true 4-link set-up, as the triangulation is going in the opposite direction to the bottom links, giving extra rigidity to stabilise the wheelbase geometry, and preventing the 'skateboarding effect' that 3-link rigs can suffer.

VCD, VC'S AND A 1ST FOR A 2.2

VCD is the name given by Venom to their propshafts. Manufactured from glass re-enforced Nylon they are both light, to keep rotational mass low, and strong to cope with the torque and stresses involved in competition crawling. All unions that attach the transmission to the diffs have VCD's made from hardened steel with a cup and ball design.



Left: TVP chassis bolts directly onto the transmission for a rigid backbone for the rig

With spider leg links attached you can see why it's called the 'Creeper'!

ABOVE: Dual link triangulation for stable geometry to inhibit rear steer 'skateboarding' of axles

Locking diff mechanism installed in diff case, greased for smooth selector operation

Diff internals mix tradition with innovation

Shock internals including droop and external springs is a first on a commercial kit

TOP TIP – Ensure you threadlock the retaining grub-screws before greasing the knuckles so as not to contaminate the area with grease.

They fit together well and, with a smear of grease, are a very smooth telescopic joint.

A nice feature of the design is how thin they are compared to most on the market, again offering that extra bit of clearance in use.

Venom use a similar steel ball and cup design in their drive shafts, transferring power from the diffs to the wheels. This is innovation No.4: They give the Creeper the most amazing steering lock. Unusually fitted to both front and rear, a rear steer conversion is a possibility for leisure crawling or if you want to enter your Creeper into the Super class comps against the big boys! This is another first; you get CV joints as standard and not as an expensive hop-up.

Next in the build came the diffs and their casings. There had been many rumours prior to the launch that it had diffs that could be manually or more importantly 'remotely' locked or unlocked in use! While this will never replace a traditional dig for that handbrake-turn effect, it would greatly reduce the turning circle and be the first 2.2 crawler on the market to boast this feature.

The cases themselves are designed to be chunky and tough, made from glass re-enforced nylon. The best way to describe the internal mechanism is that each axle contains a traditional hardened steel six gear planetary diff. When unlocked it acts just as a normal diff would, allowing the outside wheel to rotate quicker when cornering. If you try to crawl in this manner you wouldn't get too far, as once a wheel loses grip all the power will be transferred to it and the axle will 'diff-out'. In the locked position (here's the clever bit!) a selector fork inside the diff pushes an alloy ring set with three hardened steel pins and these lock into place on the back of one of the main gears to lock the diff solid and 'Hey Presto' you have proper crawling capabilities again! This locking can be either manually achieved simply by clicking the selector fork in the desired position via a plate fitted to the outside, or by using a third channel to control the optional remote diff locking kit from Venom.

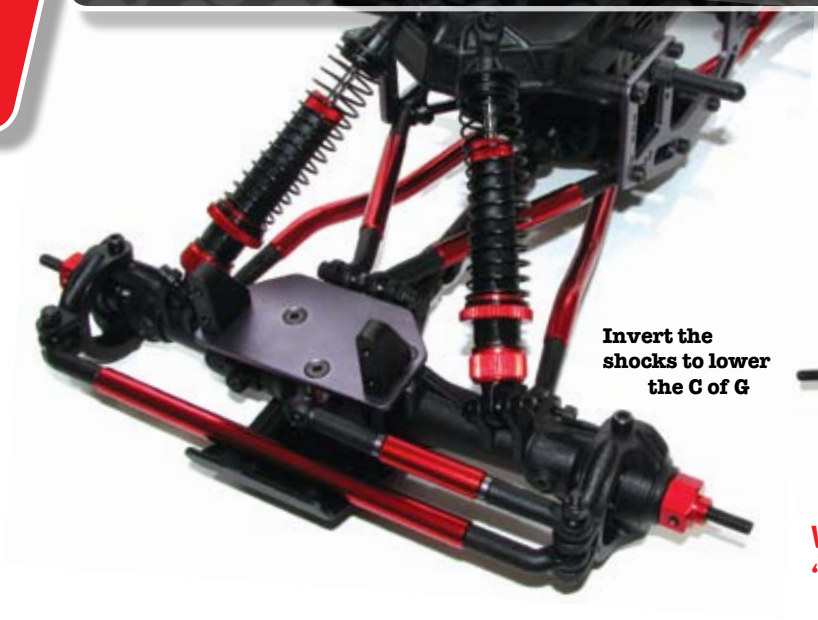
TOP TIP– When building the lock/unlocking mechanism ensure the selector works smoothly, that the locking ring slides on a thin film of grease and that the tension is correct on the outer selector plate screw. This should 'click' into place to lock and ensure they stay firmly locked!

TO BE CONTINUED...

For this review I will be manually locking and unlocking, as I want to compare the rig 'as is' to others I've run in the past. But watch out for an upcoming article on crawler dig units, where I will put this, and a soon to be released official Venom Creeper dig unit through their paces!

Back to the diff casings: The front casings have innovation No.5: They have clocked C-Hubs fitted as standard, allowing the diff out-drive to sit at the perfect angle for ground clearance and a smooth driveline even at maximum articulation. They keep the steering castor at zero degrees and combined with innovation No.5, the Creeper's amazing 40 degrees of steering deflection, gives the best bind free turning circle of any kit 2.2 rig I've ever seen.

The diff casings are fitted with skid plates that are designed to give protection to the steering linkages at the front, and at the rear as a mounting point for the rear linkages to keep the hubs locked into place. In use the front skid seemed fine, but did get hung up at times, the rear again offered protection but could get hung up when the rig was climbing a steep incline. This will be the first mod I will perform, to fit a Derlin steering linkage, relocate the rear linkages and remove the skids completely.



Invert the shocks to lower the C of G

The skids protect the steering at the front but can get hung up at the rear in use

The steering servo fits dead centre, keeping all the weight straight down the backbone. I opted to use my new servo of choice for crawling, the high torque 20 kg Savox SC1256, a servo that as yet I can't break, whatever crawler I've fitted it to! Once assembled the front and rear axles were mounted in place, attaching them to the links and chassis sub assembly. I carefully checked all rod ends for a smooth bind free movement and any that seemed a bit tight were worked until they moved freely.

WHAT DO YOU GET IF YOU CROSS 'SPRUNG' WITH 'DROOP'?

Answer...Innovation No.6: Anti roll springs. Venom's twist on a crawler shock design has threaded plastic bodied shocks with alloy pre-load collars and come with both external soft springs plus internal droop springs fitted under the piston. When set-up and filled with the supplied 25w shock oil, they work flawlessly. The advantage of this design is that you can tune re-bound, compression, ride height and articulation. Venom allows the builder to tailor the build as they see fit.

Once fitted, the shocks were smooth, letting the rig articulate to about 65 degrees smoothly, and the droop aspect is what stands out here. The shock moves to where a normal sprung set-up would just stop, then moves past that point and allows the wheel to drop further until the inner spring is fully compressed.

TOP TIP – I inverted the shocks during the build, putting the heavy end near the axles, lowering the C of G and doesn't affect the shocks' performance in any way!

By removing the inner spring it would gain a little more articulation, but the rig doesn't need it. I left the droop set-up as it was and my only tweak was to replace the outer springs themselves with slightly stiffer ones as I was using far too much pre-load to get the desired ride height. Venom obviously listen to feedback from the 'real world', and being pro-active have recently changed production to offer a stiffer spring as standard, so by the time you read this less pre-load will be required! Good to know.

RIDGELINE IN BEADLOX

Full size crawling tyres have an elliptical bead that literally gets trapped between the wheel rim and the locking rings. Venom have utilised this design and replicated it in a 2.2 'Ridgeline' tyre to suit their unique 'Beadlox' wheel rims. This leads me onto innovation No.7: It isn't just the elliptical bead that is new, it's the fact that Venom have designed wheels that can be fitted with pre-cast weights that simply bolt into place for tuning the weight bias with anything up to a full pound of weight in each wheel! The weights themselves come in 2.5 oz or 1.3 oz incarnations but I opted to go all out and put 1 lb of weight into each front rim before refitting the tyres.

The Ridgeline tyres come as standard with memory foam inserts, a nice touch and require either a breather hole drilled into the wheels themselves or as I did a small hole drilled directly in the tyre's sidewall to allow them to deform and recover freely. The tread looks more scale replica than all out competition orientated, and as with every kit 2.2" tyre I've tried so far I was a little disappointed with the compound used, just not soft and sticky enough for the cold UK climate. This is the only thing that I feel needs improvement, and guess what, yes Venom are again listening to feedback and are working on a new tyre design in a softer compound, so watch this space!

INJECT THE VENOM

The Venom VR3T three-channel radio comes with a four-channel receiver which slotted right into place, so with battery packs charged, and a variety of spare tyres and wheels in my hauler, I went with my regular crawler buddy 'Speedy' Steve and a crawler rookie, Branden, to run over twenty testing gates at Burton Dassett where over the past year of testing we now know certain features will push any rig to the full. There are areas we know we can crawl as benchmarks for inclines, drop-offs, side-hilling and most importantly, what defeats us repeatedly.

I had high hopes for the Creeper and from the first gate it reached we

Amazing 40 degrees steering angle by design

Angled lower shock mounts put the shocks at the perfect angle for smooth articulation

knew this was going to be good. Even on the stock tyres it managed to out crawl any stock crawler I've run stock here before. The brilliant shocks let the rig drop a wheel when required and get purchase to pull itself down or over any obstacle. By fine tuning the pre-load, any torque twist was minimised. Even with the heavy stick pack mounted up top the rig would just land on its front wheels when driven down steep drop-offs and if taken beyond its capabilities when side-hilling it would just roll and then land back on its wheels. This proved the C of G is very low and gives extra confidence when attempting tougher gates. The front weight bias and centre line weight distribution made the rig feel planted and totally stable. It certainly got the nod of approval from Steve and Branden when they managed to pry my transmitter from my grasp!

GET SOME ANTIDOTE QUICK, I'VE BEEN BITTEN...

I then went into 'serious-comp-mode' and changed the pack to the 1500 mAh 2s LiPo placed under the top deck. I replaced the kit tyres for the largest diameter, softest compound tyres on the market fitted to Pro-Line 'Eight Shooter' wheels and hit the same twenty gates. With bigger diameter tyres fitted I put the lower links horizontal to slam the rig slightly. The Venom Creeper managed to hit all the gates and completed transitions like no other, I was gob-smacked. This was easily the best 2.2 kit rig I've run in the last two years and it went everywhere Steve's custom rig would, and as my confidence grew, I attempted things that I shouldn't have and amazed me by even achieving a few of them!

All afternoon I kept running the Creeper, pack after pack and we broke nothing. The diff lockers stayed in place even under duress, and when unlocked the free diffs allowed the rig to turn tighter between gates. Having to flick them on and off manually isn't an issue, but you aren't allowed to touch your rig during competitions, so the remote diff lockers options are a must!

When the new Venom dig arrives I'm just going to run it combined with front and rear remote diffs, I don't know if my thumbs can co-ordinate all that at once, but I'm willing to try!

Thanks to Venom for their help and info during this review, we look forward to seeing how it stacks up at the 'Nats' later this year! RRCi

QUICK SPEC

Class: 2.2" Competition Rock Crawler
Type: Self-assembly Chassis Kit
Manufacturer:
Venom Group International
Price: £239 RRP

EQUIPMENT USED

50t Venom Fireball Motor
Novak Rooster Crawler ESC
1500 mAh 2-cell 7.4 V LiPo
Venom VR3T 3-channel radio
Savox SC1256 Steering Servo

DISLIKES

Kit tyres could be stickier

LIKES

Innovative and highly tuneable design
Central driveline and motor position
Remote lock/unlock diff mechanism
Sprung/droop shock design
Beadlox wheel system and weights
Wheel-speed enough to 'pop' climbs
Low and forward C of G
'Out of the box' performance

A Novak Rooster fitted perfectly on the side of the transmission, keeping wires tidy and short

ABOVE: A full sized receiver will fit, and Venom offers a VR3T 3-channel radio to suit options like remote diff lockers

CONTACT

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