

WORDS: SPEEDY STEVE ALLEN IMAGES: SPEEDY STEVE ALLEN

QUICK SPEC

Manufacturer Axial
Type MOA Comp Crawler
Price £299.99 RRP
www.cmltdistribution.co.uk

Scale 1/10th
Power 4WD Electric
Length 360 mm
Width Front 260 mm
Width Back 241 mm
Wheelbase 317 mm
Ground Clearance 133-172 mm

The XR10 is the newest release from Axial, the company that first brought crawling to the masses worldwide. Its long awaited release saw the crawling fraternity chomping at the bit to get hold of one of these kits, with a clever countdown on their website prior to the official announcement of its existence.

Whereas the AX10 predecessor had a centrally mounted gearbox with driveshafts running longitudinally to each axle, (nicknamed a 'Shafty') this new kit is Motor on Axle (MOA) and so each axle is driven independently. This greatly improves the rig's ability to crawl and the centre of gravity (C of G) is a lot lower, a prerequisite when it comes to competition rock crawling. Being a MOA you have to think about your electrics a little more than say an AX10, and you also have to consider the fact that you have two motors to power rather than just the one. As part of this review we were lucky enough to get hold of a sample of a new M2 ESC that Novak had first shown us a sneak preview of back in the late summer. The downside was that it took until late autumn to get all the programming completely sorted with many using the ESC in US competitions. I was lucky enough to be the first one outside of Novak's official test group to get one, and for that I feel very privileged, so a big thanks goes out to Charlie.S and all the Novak crew.

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AXIAL... THE NEXT GENERATION



Above and below: Note the intentionally narrower rear axle to help clear gates in use

Below: Front CVD's offer 45 degrees of competition steering deflection

2 INTO 1 DOES GO...

The new Novak M2 has a special trick up its sleeve; you can run both motors straight off it. OK, I know this isn't exactly special, as you can run two crawler motors on most ESC's. The special part is it has twin receiver inputs so with a 3-channel radio you can independently control each motor from one transmitter. Before this you would have had to either use two ESC's and a stick transmitter, a servo and two micro switches or one of the two manufacturers of dig switches. This ESC has a few advantages as everything is in one box, you don't have to mess about with mixing on the transmitter it can all be done on higher end 3-channel pistol radios.

For this review I was using my trusty old Spektrum DX3R. On this radio you can set the switches to do different functions, and for the M2 I would be having both a 3-position switch and also a linear switch for the auxiliary channel. With this set-up you can either completely stop all drive to an axle or reduce drive to either axle. This is the cool part as when climbing some steep climbs the equal drive can actually flip the truck as the rear will try and push the crawler even if the front axle doesn't have any grip. With the M2 you can reduce the drive to the front or rear and so pull with the front axle when it does get grip.

ANOTHER LEVEL

Now comes the fun part for me the build. The XR10 comes in a very nicely designed box with images that make you want to buy it without even looking inside. Each part of the build comes in its own bag, along with a bag with the main plastic parts trees. For the first part of the building process you start with the front gearbox. Unlike most other MOA axle crawlers each axle is different.

Putting the bearings in the motor plate showed a little play in the bearings with some Loctite 641 retaining compound which I had borrowed from my daytime job the bearings were held in place nicely. If you don't have some of this a trick I was once shown by a certain R/C F1 champion when I first started racing F1's was to use a Q-tip and some CA glue. Dip the Q-tip in the CA glue and run a small amount around the hole that the bearing will sit in, allow it to dry and then the bearing should have a snug fit. If a bearing has too much play in it will eat itself in little time and with the high strain that a crawler transmission comes under this would soon mean bye-bye

bearing or worse, chewed gears. The gears in the axles are 48dp and appear to be cast rather than machined, there are optional machined gears that will be much stronger, and take a lot more abuse, which with rock crawling is always a good thing.

RIMS FULL OF WEIGHT AND TWIN 45'S

The gearbox soon goes together and before long you are mounting the motor on the gearbox. Axial recommend 45-55 turn motors and with that in mind I opted for some Novak 45t crawler motors to go with the M2. Setting the gear mesh isn't too hard, but you must make sure that the pinion is far enough back that the grub screw doesn't catch the internal gears which isn't as easy as say on a buggy transmission.

Needless to say this is not a real issue and once set it's just a case of getting the gear mesh right. The axle cases easily mount onto the gearboxes and soon you have a built the front axle. The front axle runs CVD's or as Axial call them 'Universal Axle Shafts' which are nice and beefy and give a total steering deflection of 45°, and in turn plenty of steering. The steering link between the two knuckles is behind the axle and this means it has less chance of getting caught on rocks as you drive up them. Axial have also added 8° of caster to the front axle this is to reduce the stress on the steering servo during full throw.



"The front axle runs CVD's or as Axial call them 'Universal Axle Shafts' which are nice and beefy and give a total steering deflection of 45°, and in turn plenty of steering"

CUT BRAKES ANYONE?

The rear axle has a very similar gearbox but it all changes when you get to the axle casing. Axial have actually got their own trick up their own sleeve here... not yet officially released is the cut brake system that will fit directly in the casing. The idea of the cut brake is to not lock the whole axle



but to lock an individual wheel and drive the other three, this will make the turning circle even smaller as you are not having to drag a locked wheel around. What is nice is they have made the axle ready for this rather than making you go out and buy a whole new axle casing, so saving you money in the long run. The axle casing is 16 mm narrower which will help when turning through gates, with the narrower axle it gives you so much more space to be able to position the crawler closer to a gate and still be able to get a clear gate.

Next stage in the build is the links, the lowers are aluminium but with a nice plastic cover to help them slide on the rocks. Having alloy lower links is good as they are nice and strong, but the added bonus of having these sliders on just makes them so much better as over time the links would normally wear down and get caught up on rocks for easier. Optional bent links are available and are the same ones as used on the AX10 so a nice option that is already out there. The upper links are high clearance bent links but are made out of a rather flimsy plastic, this isn't a huge deal as again these are the same as the AX10 bent links so a worthwhile upgrade.

NO E-CLIPS AND NITRIDED

Building the shocks is the next stage, and I'm glad to say it's nice and easy. The main body is aluminium and is open ended with a plastic cap with a bladder on one end and a cartridge on the other with two O-rings inside with one sealing the cartridge to the main body. A nice touch is the titanium nitride coated shock shafts rather than using my most hated of items the E-clip, it uses an M3 nut to hold the piston. I don't know why but I still like this idea so much why doesn't everyone do this? The choice on pistons gets a little bit tough as included in the kit are some machined pistons along with some moulded ones with different rates. Finally, there are variable rate pistons, these are two-piece which depending on which way up you mount them you can either have slower rebound or slower compression, a nice little trick item but for the build. I went for the machined pistons just so I know I had the smoothest action.

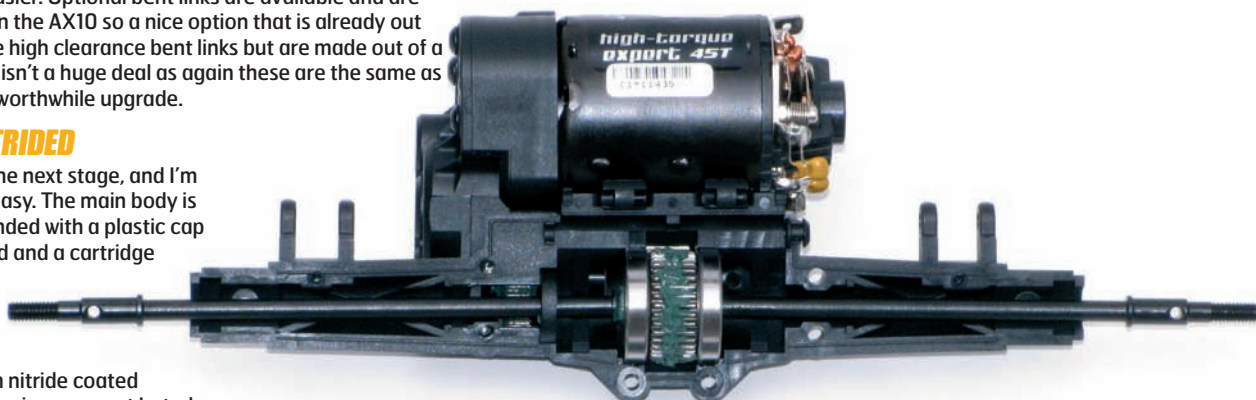
WITH MOA SOFTER = BETTER

The springs supplied in the kit are Axial's red super soft versions, and these are rated at 2.07 lb/in. This being their softest spring, it's the best option for an MOA rig. I find that a generally soft set-up works best for me in competition, but having the rear a little firmer can help in some situations. With this in mind I decided to fill the fronts with 30wt oil and the rears with 40wt just to get the desired feel. Once you've mounted the shocks and links to the axles the final step is to build the main chassis. This is a lot fancier than the old AX10 with fully adjustable pivoting shock mounting positions allowing you to fine-tune your ride height and shock firmness to your heart's content.

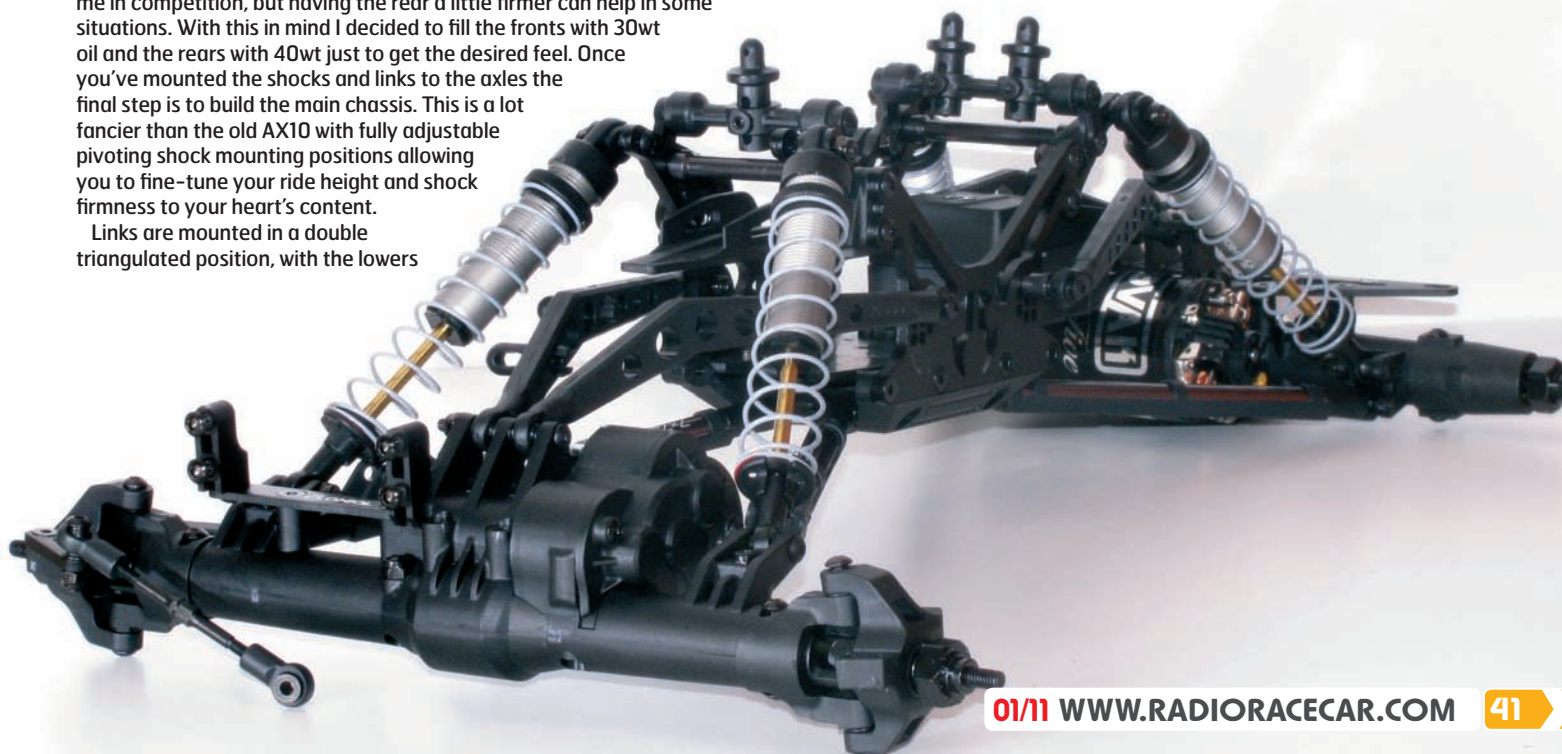
Links are mounted in a double triangulated position, with the lowers

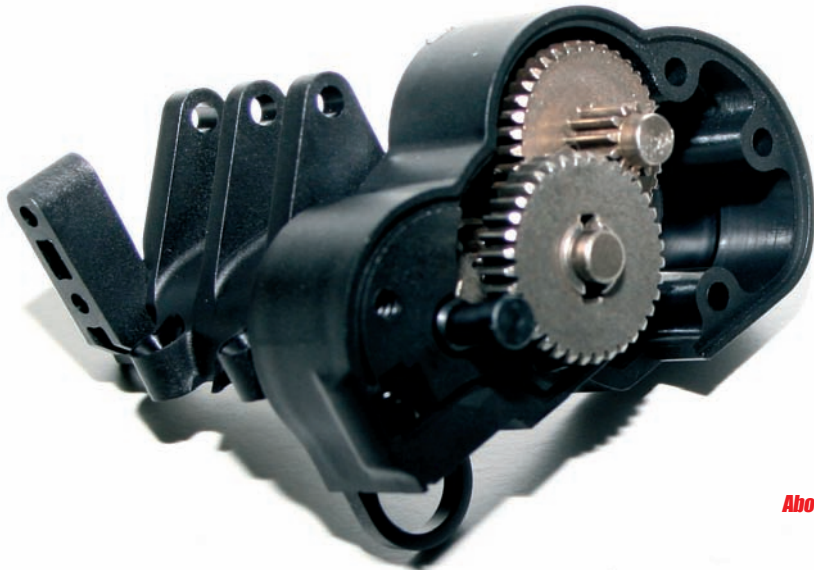


Above: Motor plate bearings held firmly in place



Above: The straight through rear axle and metal spool
Below: Years of Axial's development and knowledge rolled into just one rig..





Above: The transmission boasts a 37.9:1 gear ratio using the included 14T pinion

mounted to the centre of the skid plate and the uppers to the outside edge of the chassis plates. This helps eliminate axle steer, which is what can happen during the articulation cycle of a rock crawler's suspension. Again this rig shows how far Axial have progressed the design. Another nice design feature is the body mount posts and mounts, rather than coming out of the side as with the old AX10, they come out of the top, something we all tend to now do in competition. These are mounted to adjustable shock mount plates, so when you adjust the angle of these plates the angle of the body post would change. To compensate for this they have put a spline on the body post mounts so you can then adjust the angle of the body posts and get them back to vertical. Another nice touch is there are spares in the box that will allow you with a little trimming to run a single body post at the rear.

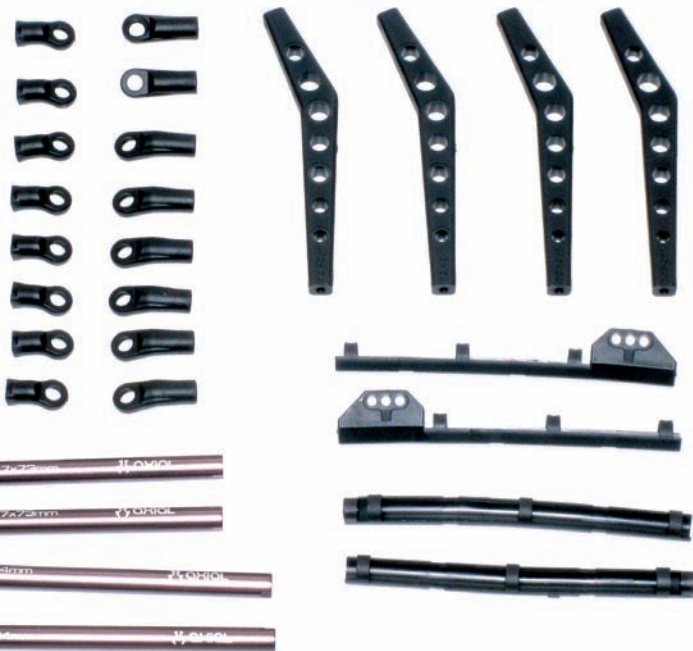
This can help if you get rolled you onto the roof, the body being able to wobble offers more chances of being able to get yourself back on the wheels.

SAFE FROM THE ELEMENTS

An electronics tray with sealed receiver box is mounted to the skid plate of the chassis, although I'm not really sure why a sealed box was incorporated, as I wouldn't want to get that deep in water to start with. But it's always nice to have it protected just in case! If you are running a nice small ESC included are two mounting brackets that screw to the electronics tray, the M2 will fit on one but I decided to mount mine flat on the tray to try and keep the C of G as low as possible.

Before getting to mount the electronics the last part was to build the wheels and mount the tyres. Vanquish Products, a company well known in the rock crawling fraternity and who have produced some of the best items out there, helped in the design of the wheels. With adding weight to wheels one of the most important parts when tuning your set-up, Axial have made an internal weight system that you can add initial weight to the wheels. To compliment this, Vanquish has a very nicely designed wheel that you can also add or remove weight to help fine-tune your set-up. Being incorporated in the design of the wheels has the advantage that it can be adjusted real-time when the tyres are mounted. These weights are held in with a three-pointed retaining plate that is held in place by the bead lock ring.

These are not included in the kit but I picked them up from Vanquish products direct in the States (by the time you read this they should hopefully be available in the UK). One nice thing I found out while building the wheels was this retaining plate could be removed without having to take the bead lock off. The wheel itself is two parts both made of plastic, with only one bead lock ring that pulls the two parts together and holds the tyre nice and tight. The tyre I decided to go for in this build is the new HB's Rover EX in pink compound. As ever with tyres compound choice is key, white compound being the preferred choice of a lot of crawlers out there. These new pinks are an even softer compound but with a reinforced tread pattern to hold the lugs better. With the softer compound it also felt as if the main carcass appears to be a little thicker to help maintain the correct profile. So are the pinks any good? Well the proof of the compound will be in the crawling, so all will be revealed a little later!



Above: Rod ends, upper and lower links and sliders...



Above: Silky smooth shocks offer a variety of pistons to choose from

MOUNT AND SET-UP

Mounting the electrics was now the objective of the day, and I started with the servo which mounts onto the axle on a fairly thin and small alloy plate. Having had a Hitec HS7955TG servo in my other comp rig (which I had never had any problems with) I decided to pick up another of these metal geared high torque servos. A short turnbuckle links the servo horn direct to the right steering knuckle and then as I stated before when building the front axle, the two knuckles are linked behind the axle for a true BTA set-up.

Mounting the ESC was nice and simple just double-sided tape close to the receiver box. The M2 came with two options of cable lengths to the receiver.

Choosing the shorter of the two gave me just enough length to reach the Spectrum SR3520 receiver that I had bought, I love the small size and the one advantage is that I could also fit the Castle Creations BEC in the box as well. Now the newest and probably one of the most anticipated part of the Novak M2 Dig is the 3S LiPo compatibility, which I have to say is a very smart move by Novak.

When I first started thinking about what electrics to run I had been contemplating two ESC's, one to drive each motor, but not wanting to go out and buy a new transmitter and receiver setup, the M2 is perfect. This ESC allows you to independently control each motor with a 3-channel radio. The DX3R has the option to select what switch has what function and also select two switches to do the same function. With this in mind I set one switch to a 3-position on the auxiliary channel and then another to a linear. With these then set-up you can either completely stop the drive to an axle or with the linear slow an axle down, This can be very handy in some positions when crawling although at first it's a little confusing but once you get into it will help no end.

IF IN DOUBT READ THE MANUAL!

At first setting up the ESC was a little confusing to me with all the flashing lights, as I had got used to using my laptop or a plug in setting box. Once reading the manual properly and getting to grips with it I soon got it all set up how I thought it would be best. The final job before going out on the rocks, was to trim and mount the bodyshell. Again RRCi sent it to Terry Atkinson who I have to say has done another amazing job. He does amaze me with his skills, I will one day have to get some lessons off this Jedi Airbrush Master.

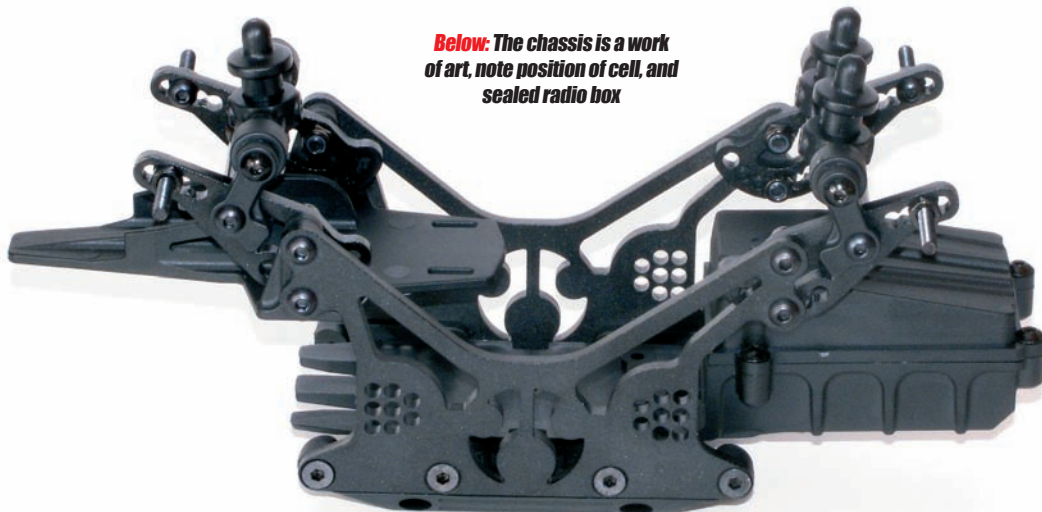
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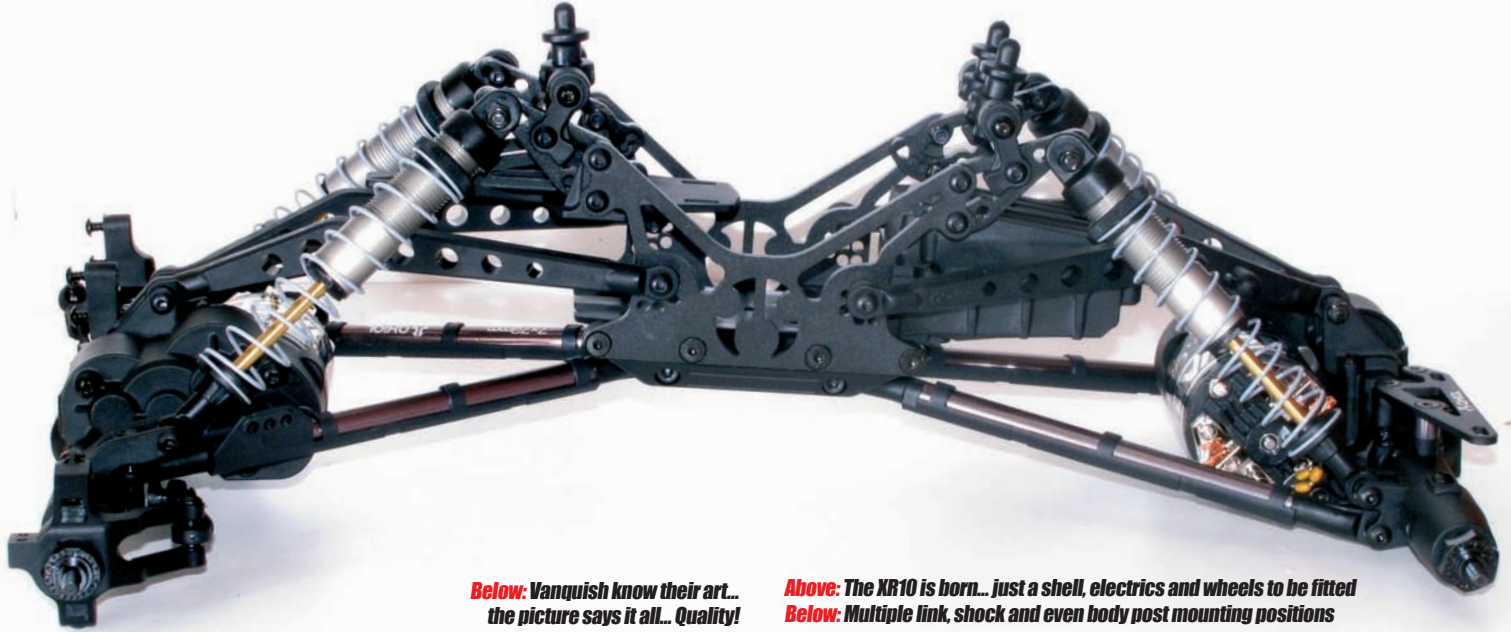


Above: Where's my TVP? Front and rear sub-assemblies ready to fit!
Right: Links fully build and ready to fit



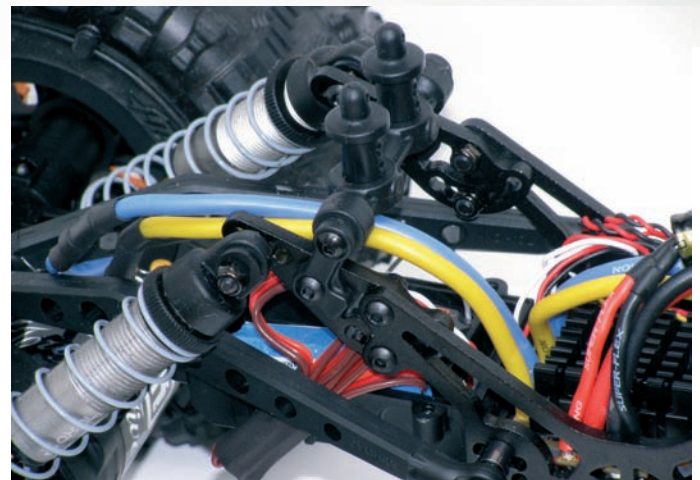
Below: The chassis is a work of art, note position of cell, and sealed radio box





Below: Vanquish know their art... the picture says it all... Quality!

Above: The XR10 is born... just a shell, electrics and wheels to be fitted
Below: Multiple link, shock and even body post mounting positions



"Plugging in a fresh 1000 mAh 3S LiPo I started on a 45° climb that was about 5 metres in height. I knew the lines to take from previously testing my comp rig here and I was amazed at how easy the crawler made it look"

LOVE ON THE ROCKS

Now the fun can begin, so lets hit the rocks! When I first got into crawling I had a lot of free time and spent many a day up at Bradgate Park in Leicestershire. It's got routes and crawls for all abilities and there are some challenging rock formations. To be honest it was my wonderful long-suffering girlfriend who had been there on a school trip that told me about them! Ever since it's been a regular haunt Pete and Dez even shot some of the Crawling DVD for RRCi there. It's great to practice and just have fun days with friends.

Although I haven't been in a while I just had to go to test out this new crawler. For a start I had the pre-loads on the shocks fully wound up to keep the crawler low to the ground. This can also be handy as there will be a nice bit of droop which when you are crawling over a ledge the skid plate can drag and the droop and help the wheels to generate grip. Plugging in a fresh 1000 mAh 3S LiPo I started on a 45° climb that was about 5 metres in height. I knew the lines to take from previously testing my comp rig here and I was amazed at how easy the crawler made it look. The Hot Bodies Rover EX tyres were gripping very well in the cold weather conditions and I was amazed at the difference when driving a MOA crawler to how I drive my Shafty rig. I didn't have to think about the lines I was driving, there was no torque twist to deal with and by altering the bias of drive from front to rear I could overdrive the axles independently and create grip when required.

STILL CLIMBING AND DIGGING EVERY MINUTE!

The XR10 would breeze up some of the climbs and ledges that I had struggled to get up normally, although I found the springs to be a little too firm as there was quite a lot of floating a wheel. A simple swap to some softer 1.4 lb/in springs that I had got rid of the floating wheel that would happen in certain positions and this just meant that the crawler was even more planted and predictable. With the XR10 driving nicely it was time to see just how good the Novak M2 Dig was and would it be up to the job. In a word yes, it powers the motors very nicely with a very nice slow start up speed so precise control could be kept of the crawler at all times. The drag brakes were just spot-on being able to hold the rig on nice steep descent without rolling.



Having being used to my shaft drive rig's dig function, I was used to the rear axle being solidly locked. With this combo, the brushed motors are not locked completely when in dig by being shorted across the terminals (as some add-on dig units do electronically). The Novak ESC uses just drag brakes, holding it - there were times that the rear wheels did move but knowing this I could then be prepared for it. I could then just use more wheel speed for short bursts when wanting to turn. Being able to slow down the rear axle made climbing steps and ledges a breeze compared to a shaft driven crawlers.

LESS FLEX PLEASE

The only negative feature that I can highlight on the whole rig is the links. The upper links being plastic flex a little when the crawler is under a fair bit of strain, and the lower links could do with being bent to get a little extra clearance. But hey, these are minor criticisms and with a couple of sets of bent alloy links or Axial's own machined alloy links, this crawler will go from a mere hunter to a killer crawler.

I competed in a rock crawling competition the week I finished the build, and it was an ideal opportunity to get the finished product thoroughly tested. It proved to be a very competitive rig out of the box and coped with everything my trusty (and UK National winning!) comp rig did. Gates on difficult inclines and side hilling sections were a breeze to traverse, and digging to take others set up at almost impossible looking angles were equally taken in the XR10's stride. I've never been a true fan of MOA's until now as they always seemed the most complicated option to run and took far more setting up than a more traditional shaft driven rig. I now truly appreciate the lack of torque twist, and the fact that the rig just goes where you put it without having to compensate for this. With simplified electrics like the new Novak twin dig ESC the MOA is now truly accessible and just as easy to build, set-up and run as my shaft driven rig.

I will be using the XR10 in another competition in the very near future and I cannot recommend this crawler enough for anyone just wanting to get into crawling or if your looking at upgrading from a shaft driven rig and getting more sophisticated with your approach to the hobby. Yes it's more expensive, but when you think of the future potential of the XR10 with its add-on cut brakes, it really is the next generation of rock crawler.

RRCI



Above: Shod with the new Rover Pink compounds... a formidable combination

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TECHNICAL SPEC

REQUIRED TO RUN

Suitable 2 or 3S LiPo cell
 Novak M2 Dig 3S Dual brush ESC
 2 x 45T Novak Brushed Crawler motors
 Spektrum DX3R transmitter
 Spektrum SR3520 receiver
 Optional Vanquish wheel weights
 HB Rover EX Pink compound tyres
 8 x AA batteries for transmitter
 Hitec HS7955TG High Torque servo

LIKES

No torque twist!
 Pro comp performance
 Ultimate for set-up and geometry
 Cool looking and functional body
 Clever Vanquish wheel weight system

DISLIKES

Upper links in plastic
 Straight lower links

CONTACT

www.cmltdistribution.co.uk
www.axialracing.com