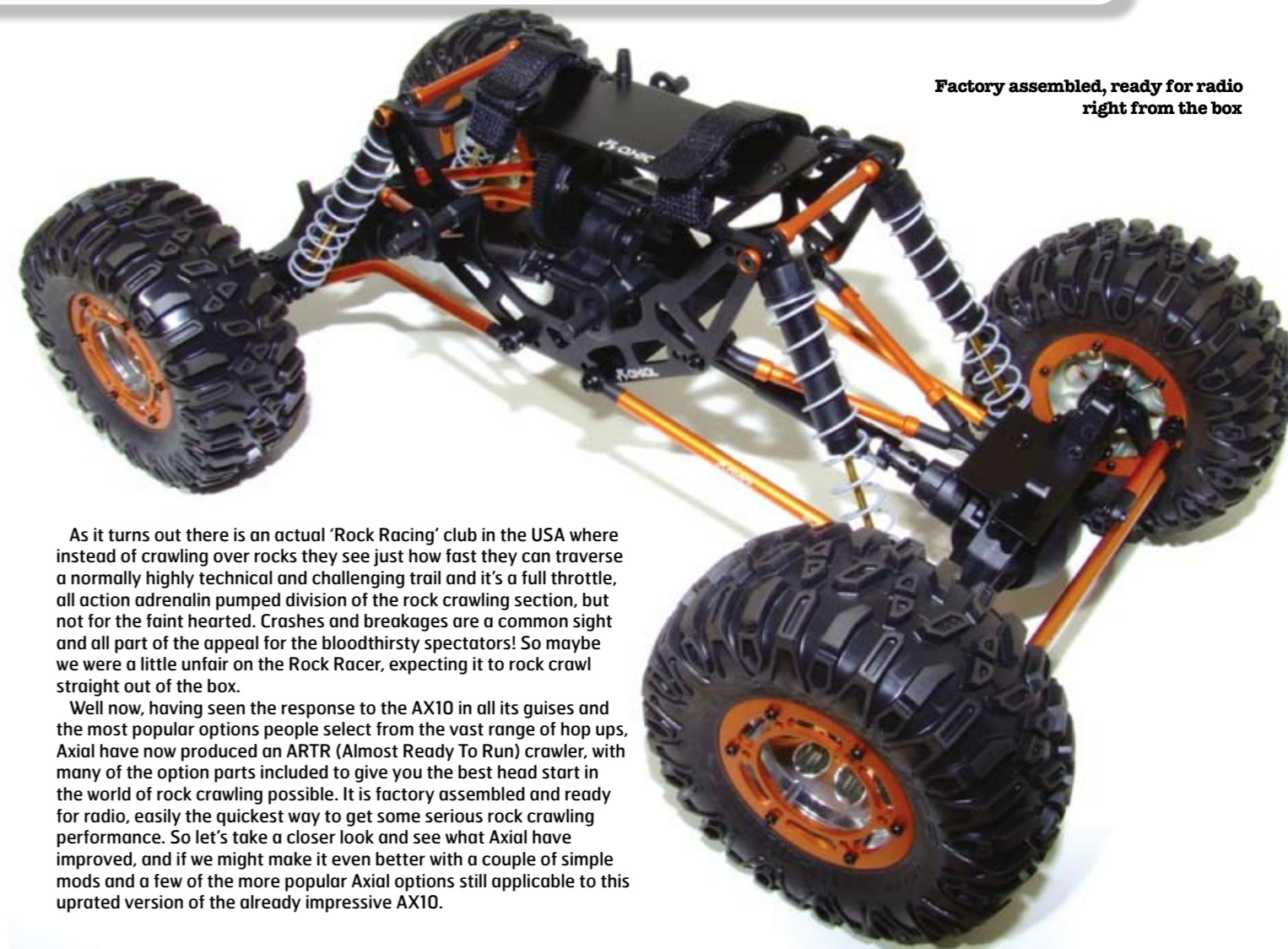


BY PETER GRAY



Factory assembled, ready for radio right from the box

As it turns out there is an actual 'Rock Racing' club in the USA where instead of crawling over rocks they see just how fast they can traverse a normally highly technical and challenging trail and it's a full throttle, all action adrenaline pumped division of the rock crawling section, but not for the faint hearted. Crashes and breakages are a common sight and all part of the appeal for the bloodthirsty spectators! So maybe we were a little unfair on the Rock Racer, expecting it to rock crawl straight out of the box.

Well now, having seen the response to the AX10 in all its guises and the most popular options people select from the vast range of hop ups, Axial have now produced an ARTR (Almost Ready To Run) crawler, with many of the option parts included to give you the best head start in the world of rock crawling possible. It is factory assembled and ready for radio, easily the quickest way to get some serious rock crawling performance. So let's take a closer look and see what Axial have improved, and if we might make it even better with a couple of simple mods and a few of the more popular Axial options still applicable to this uprated version of the already impressive AX10.

THE FUTURE IS ORANGE

The huge truck bodyshell is the biggest restriction to articulation and ground clearance, not to mention squeezing down tight ravines or side slipping a rock face, so the new RTR Pro version comes with a tight fitting bodyshell that represents the popular 'Tuber' design, where by a roll cage replaces the bodyshell for a rugged, no holds barred approach. The weight of these roll bars raises the centre of gravity and contradicts lots of the effort put into lowering

the C of G in the design, so the new Axial has a Lexan Tuber bodyshell, for maximum clearance, massive articulation and minimal weight penalty, keeping the C of G as low as possible, a smart move indeed.

The new body arrives pre-printed in a striking orange, black and silver paint scheme to compliment the Orange anodising used on all the alloy parts of the chassis construction. As all the kits are the same colour I think it won't be long before the pits are full of similarly coloured bodyshells, so it might have been an idea to leave it clear for a custom paint job, but if you want to strike out on a new tangent you can always buy the clear body separately and go to town on the paint scheme to make your Axial stand out from the crowd.

CHASSIS CHANGES

The rear linkages are now supplied with the 30 degree kinked links fitted as standard, for increased clearance and less chance of getting hung up when climbing a sharp edge or dropping off a cliff face.

The tyres fitted to the bead lock rims and held in place by the orange rim clamps, are now Proline 'Hammer' pattern in a very soft M2 compound for improved cling to all surfaces, and there is an even stickier (though faster wearing) M3 compound available for those looking for the ultimate grip from their rock crawling boots. The M2 Hammers supplied in this kit are now backed up with a very soft Pro-Line memory foam insert which helps the tyres conform to any shape and projection the tyres are asked to traverse, improving the climb rate by increasing the footprint.

The foams are a standard square cut profile which you can soften even further by cutting into a star pattern as preferred by most of the top competitors, or remove them completely and add 'BB' or lead shot to the tyre



Kinked rear links included for better clearance and less hang ups

ALMOST READY TO...
ROCK-N-ROLLA

Axial Racing AX10 Scorpion ARTR

History

The Axial AX10 Scorpion was a revelation in terms of rock crawling, the first commercially available rock crawling kit to bring this fast growing sport to the masses, previously the reserve of the scratch built home special, adapting parts from various kit modified for rock crawling duty, strapped to a home built chassis. Suddenly a proper crawler was available as a complete bolt together vehicle, all in one box, from one place, fantastic! Our prayers were answered!

Rock Crawling is the latest class to emerge from the back garden into the public eye, with a National series here in the UK and a massive following in the USA, it is sure to continue growing at an ever increasing rate as more manufacturers join the club every month and produce better and better kits for everyone to enjoy, the competition is getting hot!

We reviewed the AX10 Scorpion back in January 2008 (RRCi Issue 290), which was a self-build kit that had everything you needed to construct a capable rock crawler, ready to equip with crawler spec electronics, and they even offered it as two additional packages with speedo and motor combinations in a brushed or brushless configuration to make it even easier for you to get crawling. Then came the 'Rock Racer', a strange mix of race truck and crawler which initially didn't make a lot of sense, while it was equipped with radio and fully ready to run straight out of the box, to suit the

plug and play bridge it was expected to pull a whole new breed into the crawling fraternity.

We found that it didn't excel at crawling and needed many modifications to get it to really perform, as you can read about in last month's magazine (RRCi issue 299 October 2008) when we gave it the works and took it to the Nationals where it excelled itself even in a maiden outing for both driver and vehicle alike, showing that just about anyone could have a serious piece of kit if they put the time and effort into experimentation and practise.



Above: Straight rear axle keeps the rear wheels parallel under load

instead, for a really soft footprint that deforms extremely easily over the slightest undulation whilst moving the balance of weight distribution even further forwards.

The rear axle no longer has swivel hubs held in place by tie rods as per the AX10 Scorpion, but shares the straight rear axle from the RTR Rock Racer, for a dead parallel rear wheel alignment that cannot wander off, and there are no ball jointed link rods to pop off and leave the rear end wandering around if they get clipped when dropping off an outcrop. The downside of this is the chance to convert to 4WS has gone, but if that is your particular choice you can buy the optional hub carriers and diff case, driveshafts etc to convert to 4WS as you wish, but 4WS isn't legal for the '2.2' class so that puts you in the 'Super' class and you are up against some real monsters!

The vertical main chassis plates are the same as the AX10, anodised black to match the overall scheme of things, and the solid layshaft is retained from the AX10 rather than the slipper spur gear mount of the RTR Rock Racer, so I was surprised to see the propshafts were still lacking the over rings to prevent the plastic UJ opening under load and spitting the centre pin ball out. So this is the first modification I will make, adding the over rings (AX30493) to the plastic UJ joints while they are still new and strong, because the first time you get hooked up and pop a propshaft you will have weakened the joint and given it an easier exit next time, so it's best done from new.

The long travel shock absorbers keep the Titanium Nitrided shock shafts for minimal stiction and the smoothest transition for the best articulation, but still wear the super firm blue standard springs, which I would consider changing for the super soft red springs to help the axles swivel over extreme obstacles. There is a choice of five spring grades available so choose exactly what suits your style and terrain best, but bear in mind that the softer the springs get, the more torque reaction the chassis suffers and that can limit the angle of climb as the chassis tries to twist about its central axis. The 10 mm internal rubber droop stops allow the shocks to complete a full compression stroke, but limit the extension to 118 mm between centres. You can open the shocks and remove the rubber spacer if you require your shocks to droop to their full 128 mm potential but again that is left to your personal choice.



Above: Overall gearing ratio can be varied from 15:1 to 74:1 thanks to the 2.6:1 centre transmission getting it down in the first place



Above: Sintered diff lockers keep all four wheels working for you, permanently

Keeping the internal spacer pulls the truck lower to the ground, keeping the C of G low as a consequence, so removing the spacer will let the chassis ride higher and the shocks droop longer into cracks and dips, but can lead to the opposite rear wheel coming off the floor as the limit of articulation is found.

The plastic shock bodies can be upgraded to alloy bodies if you prefer, adding a serious competitive look to the whole suspension package, but neither set are threaded and rely on preload spacers. Having said that we have yet to find conditions where a higher ride height produces a better performance so we always leave them free to achieve their free length.

Below: A few favourite option parts we chose from Axial; propshaft reinforcing rings, long radio tray for lower battery mount, and Y-plates for radio gear and ESC



LOCK OUT

The diff boxes contain the bevel gears taking power from the propshaft and driving the rear axles round, these can be upgraded to the hardened steel gears for the extremely enthusiastic crawler, who is keen to run several hours per week and just might wear out the kit gears, but as standard they are good for many hours of use, enough to see your average user through a couple of years no doubt.

The front diff has a sintered diff locker fitted, but you could remove this if you felt a proper diff action was the better route, though not many would agree with you. The diff case includes the slots to accept a set of optional spare planetary gears and bevel cogs plates from the Rock Racer to complete a proper diff up front, but every serious competitor would encourage you to leave it locked solid as supplied. Likewise the centre diff is designed as a ball diff but locked out with side plates screwed through, you could adapt it to a ball diff quite easily but we wouldn't recommend it for serious agility over the most extreme landscapes. Leave it locked, get a grip.

The front axle cases carry the hub swivels, and the extreme amount of lock is enough to turn ever tighter, and that class leading steering angle can save you from accruing the points for a reverse in order to get round a very tight turn.

A FEW OF MY FAVOURITE THINGS

The central radio plate to carry the servo can be upgraded to the longer radio plate (AX30486) to accommodate a small battery pack by moving the servo over to the left side. Fitting a small battery up front instead of a relatively enormous stick pack high up on the top plate, is a good move as it puts weight forward where it's needed, and reduces the height of the C of G dramatically. Replacing a standard 7.2 V 6-cell Sub-C stick pack that weighs 380g with a smaller pack designed for micro racing (VEN 1511) that weighs just 125g reduces the overall weight of the truck, significantly improving it's climbing ability.

Fitting a decent servo is key to control in a tight situation, it may sound like overkill but a high torque digital XP 1015 that we would

usually select for steering duties in a high performance rallycross buggy is our only choice in a pro spec crawler. An all-metal gear train ensures reliability and the 14 kg of torque means you always have sufficient power to turn the steering even if the truck is stood entirely on one end with a wheel twisted into a crevice!

Another handy option is to fit the triangular plates (AX30497) to the upper Y links, to mount the speed controller up front and the receiver at the back, again pulling them down from the upper plate location, which can then be removed altogether to allow the vertical chassis plates to move independently, improving the articulation still further. I saw Mick Sager do this at the National and his truck had far better climb rate over the obstacles than my standard AX10 Scorpion, I was determined to do that ever since! Removing the cross link between shock tops and replacing them with a nut either side of the ball joint allows the vertical side plates to move independently, joined only the plastic lower skid plate which does a great job. Flexible yet tough.

WIRED

Now you could fit a standard Mabuchi 540 motor but I can tell you from experience it will be too fast for rock crawling. Likewise you could fit a standard forward and reverse speed controller but I can tell you that if it has a delay before selecting reverse you will roll over too often, and if there aren't hugely effective brakes at neutral throttle position you will have a constant juggling act on your hands, trying to control a decent whilst braking enough without engaging reverse and shoot back up the way you just came down. We have used the Novak brushless 'Goat' system to great effect over the past few months in our AX10 Scorpion and the neutral brakes are simply astounding, even set to just 50% of their capability the brakes will hold the truck on an incline beyond 45 degrees and the tyres usually give up the ghost before the brakes surrender to the forces of gravity!

Among the many great features of the 'Goat' system, is a special throttle programme with an exponential throttle curve so you have

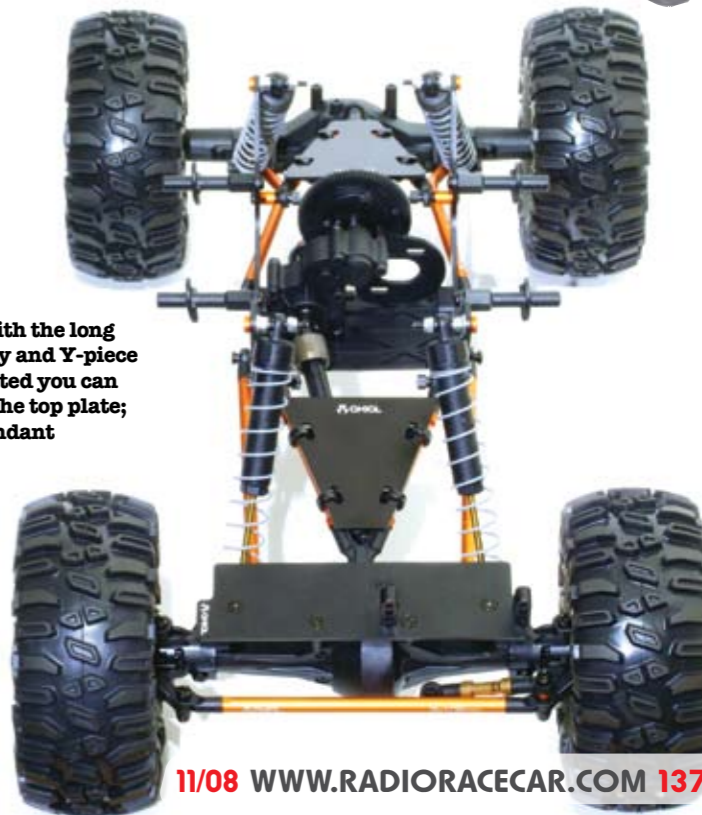


Above: Cutting the memory foams inside the M2 compound Hammer tyres increases traction still further

Below: Always drill a couple of holes in the rims to let the tyres breath



Right: The telescopic propshaft UJ's need the optional reinforcing rings adding to stop the plastic half popping off in a jam



Right: With the long radio tray and Y-piece plates fitted you can remove the top plate; it's redundant



Above: Mount a Novak brushless 'Goat' system on the Y piece plates, and the receiver at the back, wire it tidy past the primary drive

Right: The long radio tray moves the servo to make room for a small battery pack



One foot on the trophy, the Tuber style body gives it a purpose stance and extra clearance

very, very fine control at very low speeds, improving accurate progress when the going gets tricky, and when you need to get out of trouble fast it has a very high top speed. With absolutely no delay before selecting reverse, you can literally climb the walls and as the truck finally over centres and starts to tip backwards you can save it every time with a simple flick of reverse throttle, landing back on its wheels instead of the roof.

The brushed motor Novak 'Rooster' crawler system offers similarly instant response and neutral brakes but just lacks that ultimate top speed offered by the brushless 'Goat'. The efficiency of the brushless system not only means there are no brushes to maintain, but the run time is also extended as there is no high current draw at low revs.

You do however have to watch the brakes on the 'Goat', as they require power to hold the brushless rotor stationary, whereas the brushed system can rely on the drag of its magnets and brushes to hold a certain amount of neutral brake. Unlike the Rooster, whenever the 'Goat' is switched on some power is flowing through the motor to lock the rotor in place until you tell it to move, so you just need to be aware and not allow it to flatten your battery while it sits on your table, especially if you are using a LiPo battery pack. I have returned to my Crawler a few times and found my ESC very hot to the touch as I'd left it switched on by mistake, just sitting on the table while I rearrange the course over which we are testing each and every modification.

With the AX10 Scorpion ARTR fully equipped and modified, we measured our new rig at just 1.9 kg, with a 1.13 kg front axle weight compared to the rear at just 0.82 kg, giving a balance point just forward of the lower skid plate so it will drag itself up steep steps just as soon as the front wheels are over the crest.

LESSONS LEARNT

Having reviewed the two previous Axial crawlers, attended the Nationals and met many other Axial owners we have been able to gather a lot of experience and share all the best ideas to bring our latest crawler bang up to the mark. Even though we haven't gone for quite as much articulation as previous versions we modified in the search for the ultimate set up, we can confirm that too much articulation can be a bad thing in high grip situations, causing the chassis to torque react badly and limiting the climbing abilities, so we are content to leave the Axial Pro at 'just' 45 degrees and enjoy the drivability of it, without the 'skate boarding' as the axles diverge under load and limit the effectiveness of the left hand steering. A single wheel lift clearance of 160 mm, leaving the other three wheels still in contact with the floor is highly impressive.

Axial have produced their best crawler yet, in a factory assembled, almost ready to run version so you are even nearer to being ready to climb the walls as all the hard work has already been done for you; every bolt and grub screw has been thread locked for security and every link installed in perfect alignment. With a few favourite mods like cutting the tyre inserts in a star pattern and drilling a vent hole in the rims to let the tyres deform under their own weight, we have improved it further still. By fitting a couple of popular option parts like the long radio plate and Y-pieces and removing the top battery plate we have lowered the C of G significantly for even better climbing ability. The new Tuber style bodysell sets it apart from all previous versions and has a really purposeful posture, which coupled with the performance of our preferred Novak brushless 'Goat' system means we have an unstoppable mountain climber with real attitude.

RRCI

QUICK SPEC

Class: 1/10th 4WD Rock Crawler
Type: Factory Assembled Chassis
Manufacturer: Axial
Price: £224.99 RRP

REQUIRED TO COMPLETE

Radio: Spektrum DX3R
 Steering Servo: XP 1015 Hi Torque
 Battery: 7.2 V stick pack
 Charger: Pro
 Motor/ESC: Novak Goat Brushless

OPTIONS SELECTED

AX30486 – Long Servo Plate
 AX30497 – Upper Link Plate (x2)
 AX30493 – Propshaft Rings (x2)
 VEN 1511 – 1200 mAh 7 V Micro Pack

DISLIKES

Several essential upgrades required
 Plastic propshafts half CV joints

LIKES

New Tuber style Lexan shell
 Factory assembled kit saves time
 High clearance kinked rear links included
 Hammer M2 tyres and memory foam

CONTACT

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