



ROBBO'S ON

Last month, we brought you the first stages of Off Road Armoury's XTC buggy build. Work has been continuing apace ever since – and not even a pre-Christmas shopping trip to California got in the way!

THIS IS THE second instalment in our month-by-month coverage of the Off Road Armoury's new Sgt Rock challenge buggy. Conceived by the company's owner, Rob Butler, this is being developed to compete in the AWDC's new XTC series, which blends the pace of comp safari racing with the extreme terrain of winch challenges.

Last month, we examined the build of the vehicle's frame, and left you with the workshop equivalent of a cliffhanger. At the time of writing, Rob was waiting for a visit from AWDC Chief Scrutineer Robbo Aliperti, who was due to give his verdict on the design.

Well, since then Robbo has paid a visit to the ORA workshop, and the news was all good. 'It was great being able to get this feedback from such an experienced scrutineer,' says Rob. 'First of all I don't think Robbo quite knew what to make of our buggy, as it was a totally different size and shape to anything he'd seen before.

But he was pretty open-minded, and after some serious head scratching and a few cups of tea he was happy with the chassis, subject to a few extra diagonals being added at strategic points. This was great news, meaning that we could crack on full steam ahead without fear of having to cut and redo anything.'

As you'll be able to see from the pictures on these pages, the guys in the ORA workshop certainly have been cracking on with it. This month, the axles have been coming together and the full hydraulic steering is being installed – and that's just for starters. Much of this is being done using Rob's own fabricated components, but he's also been shopping – at the time of writing, he'd just arrived home from a trip to San Francisco which saw him call in at Trail-Gear to pick up a variety of the company's ultra-cool kit for extreme off-road Toyotas.

Toyotas? Yes. As well as carrying ORA's assault on the 2010 XTC title, the buggy will

showcase the company's new T-8 axles. These feature custom housings designed to accept the Japanese manufacturer's 8" diffs and hubs, as found in the 70 and 78-Series Land Cruiser and solid-axled Hi-Lux. Massively strong for this kind of application, but without the weight penalty you'd associate with Toyota's bigger axles (as found on the 80-Series Cruiser, for example), these have the benefits of being relatively easy to source and, with Toyota being so popular in the US, bringing with them no shortage of tailor-made aftermarket kit intended for the most extreme off-road conversion work.

Also coming from the US are the guts of the steering system, which uses a 1650psi pump to turn 38.5-inch Super Swamper tyres. These are mounted using powder-coated beadlocks – another ORA product, as are the rose joints and rod ends used to locate the suspension. All round, then, it's coming together into a first-class way of illustrating what Rob can do in the workshop.



1] ORA is developing a new hydraulic steering system for the vehicle. This is the prototype; seen here is the ram itself, along with its associated clevis joints, rose joints, tube inserts and seamless tube

2] Here, the bracket for the hydraulic steering is being fabricated in place on the scuttle rail



3] With the bracket in place, the control valve is fitted. Often known as an orbital valve, this serves the same purpose as the steering box on a mechanical system – plumbed to the pump on one side and ram on the other, it interprets your steering inputs and turns them into action at the front wheels

4] Tailored for Toyota applications, the steering pump is a top-end unit from Trail-Gear in America with an all-steel housing and anodised aluminium pulley. Delivering 1650psi of hydraulic pressure and a fluid flow rate of 4.5 gallons per minute, you can safely say it won't be found wanting



5] No ordinary steering column, this; what you're looking at is a quick-release hub, which has been TIG-welded to the shaft

6] The steering wheel itself is an OMP unit, designed for use in racing karts, with a diameter of just 220mm

7] As the minuscule dimensions of the steering wheel illustrate, the vehicle is being designed with efficient use of space very much to the fore. Note the shape of the aluminium footwell here; the recess is for the driver's heels to sit in so his feet aren't all over the pedals at rest



8] Making their debut on the vehicle will be ORA's prototype T-8 axle housings. These are designed to accommodate all Toyota 8" diffs and hubs, as found in the Hi-Lux as well as 70 and 78-Series Land Cruisers

9] The height of the vehicle's suspension is ably illustrated by the size of the dimpled mounting towers for the panhard rods. Mounted using rose joints, these are left-hand threaded at one end and right-hand at the other to allow for quick and easy adjustment. Here, in Rob's words, 'there's a little sanding and grinding still required, but you get the idea'

10] Seen from another angle, the height of the panhard rod's axle bracket is equally apparent. This view also shows the geometry of the radius arms; again, these are mounted using rose joints throughout





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1) In situ and, inset, assembled ready for fitting, these are the rose joints and rod ends Off Road Armoury supplies and, naturally enough, is using throughout the vehicle. The joints used are high-grade Teflon-lined units with an 8500kg load rating, while the links are made from 1.75" seamless tube with a 0.25" wall thickness. As with the panhard rods, the axle links are left and right threaded at opposite ends for ease of adjustment

2) Being offered into place here, the brake master cylinder is a Tilton 74 Series unit. This is supplied in a kit with a choice of 10.7 and 4.2oz anti-spill cylinders, either of which can be fitted directly to the cylinder or mounted remotely; in this case, MSA regs require the latter

3) Front hubs, assembled here with vented discs, are a direct fit on the new T-8 axle

4) As well as knowing how to make stuff, ORA owner Rob Butler is pretty handy at going shopping, too. What you're looking at here is a set of Rock-Ring Knuckle Felt Protectors from Trail-Gear in the USA, designed as a straight swap for the standard inner plates on the Toyota front axle. The originals are 0.04" thick, making them vulnerable to damage in extreme use; these replacement units take it up to 0.125", providing more than three times as much protection

5) Another Trail-Gear product, these Creeper Flanges replace the standard freeheeling hubs – a notorious weak point on the Toyota axle. FWBs are only normally found on front axles, but Rob also needs to fit these flanges at the back – the reason being that the T-8's custom rear housing uses front Toyota hubs in order to make it a fully floating axle

6) Having already been cut to size and rolled into shape, the aluminium roof panel is seen here dry-fitted and clamped into place so that all the necessary mounting tabs can be welded on. At this stage, the vehicle's polycarbonate body panels will also be getting shaped and mounted

7) 38.5-inch Super Swamper Buggers are mounted to powder-coated steel rims and Off Road Armoury's own beadlocks



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