

## **My plans for Grenadier (upgrades).**

Apologies for the length of this post, but the details are important for those of you who may be setting your vehicle up for touring for the first time.

I ordered a diesel Trialmaster in July 22, was hoping for delivery by June/July 23 but that is probably unrealistic now.

Colour selection: Scottish White, most of the other Grenadier colours are too dark for the Western Australian outback and climate. Extras include bull bar, front & rear diff lockers, side steps, tow bar, smooth pack, rough pack, auxiliary battery, high load switch panel, auxiliary charge points and a few other bits & pieces. Heated seats not ordered....hardly ever needed in our climate.

The Grenadier will be towing a small (5m, 16 ft) off-road hybrid caravan (pop-top) with independent coil suspension, >300mm clearance, rock sliders, slide out external kitchen with cold/hot water (Fogatti gas instantaneous) plus four burner gas stove. Has 65L Waeco/Dometic fridge/freezer, 200L fresh water storage, 100L grey water tank, toilet & shower. Sleeps 2 comfortably on queen size bed. Tare approx 1980 kg, probably weighs about 2400 kg fully loaded and on the road.

Caravan has 3 x 110Ah AGM lead acid batteries, 12v DC to DC charger, 300 Watt solar panels on roof, 2000 W inverter.

Most of the systems described below are currently installed on my 2020 Holden/GMC Trailblazer (formally known as Colorado 7) which will be replaced by the Grenadier.

### **Grenadier upgrades planned.**

**Driving lights:** I have refurbished a set of Hella Rallye 4000 spots (big lights!) with 100W halogen bulbs. If I can squeeze these in on the front bumper ahead of bull bar loops (not sure until I get a good chance to look at a production Grenadier) will upgrade to 75W Xenon HID. Powered by one of circuits to front of vehicle from overhead panel. If the Rallyes don't fit, I will buy a Stedi ST 4K (22" or 28") light bar from e-Bay Australia.

**UHF radio:** I have an Icom IC 450 UHF radio with all controls on handpiece. Will install the radio power unit under the glove box somewhere using front passenger floorwell power outlet (or under front passenger seat using redundant heated seat power supply?). Will hang handpiece on vacant passenger heated seat switch panel on main console. Aerial will go on bull bar with lead through floor rubber grommet or firewall grommet (plus black Sikaflex to seal it).

**GPS system:** I use Memory Map software installed on an android phone (Motorola) which I mount (suction cup bracket) on drivers side windscreen. The software is free, you pay for the maps and can be used on up to 10 different devices (PCs, laptops, i-phone, tablets, etc.) I use Hema Australia maps mainly and state government based topographical maps as well. I have also installed ExploreOz Traveller GPS software and maps as backup and I carry a second android phone with same software and maps as additional backup. Both the main and backup GPS setups work without a phone signal. Power will come from a newly installed double USB power point installed on RHS of main console somewhere (or drivers side footwell power supply from overhead switch panel?).

**Eclipse reversing camera.** This system (4 lead) has two cameras installed on back of caravan (one down low with reversing grid lines which switches on automatically when reverse gear is engaged). The other is high-up on rear of caravan and is always on when driving so I can see what's happening behind me at all times. I have tried the side mirror extensions for driving with the caravan and they are largely useless on corrugated (washboard) tracks due to constant (often violent) vibration. The

Eclipse camera screen (7") will be mounted just in front of (windscreen side) and to the right of Grenadier main display screen on a RAM mount. Power for the Eclipse camera system will come from one of the spare fuse positions on the Cockpit Electrical Centre (fusebox) or the Interior Electrical Centre (under the rear seat). I use a "Blade Fuse Wire Tap Adaptor" to connect to the vehicle electrical system at the fusebox. Google the description in parentheses if you don't know what I am talking about. Insert your own mini-blade fuse of "x" amps depending on the equipment specifications.

**Speed display:** A number of forum contributors have commented adversely on the absence of a speed display directly in front of the driver. I have an Engine Data Scan (EDS) digital gauge mounted in my current vehicle in front of the steering wheel on the dash (Velcro attachment). This unit plugs into the OBD2 interface and allows a number of readouts and other functions. In addition to fault finding and error code resets, the EDS can display a wide range of vehicle/engine parameters such as speed, RPM, alternator voltage, manifold inlet air temperature, mass air flow, etc. You can easily switch between parameters when driving by pressing the control buttons. I plan to set the EDS on the following four primary parameters when I set it up on the Grenadier:

- speed
- alternator voltage (or manifold inlet air temperature?)
- engine coolant temperature
- engine loading

The last one I try to keep below 50% when driving, but this is almost impossible when towing a caravan or accelerating up a hill! Of course all of this assumes my EDS will be compatible with the Grenadier OBD2 interface. If not, I will find an alternate scanner/digital gauge that is. The one I use currently cost me around AUD150 at Supa Cheap Auto a few years ago. The power for the EDS display is provided through the OBD2 interface. Of course you can always use your phone's GPS setup to display vehicle speed if you wish and mount the GPS somewhere in front of the steering wheel or buy a GPS based HUD unit.

**Auxiliary battery setup.** My current setup uses a CTEK D250SE DC/DC 20Amp dual input smart battery charger (approx AUD400 e-Bay) and a Baintech 110Ah lithium iron phosphate slimline battery (approx AUD1500) as the auxiliary. The dual input means the CTEK can accept input from the vehicle alternator and input from a solar panel at the same time. The charger works for both lead acid and lithium-ion batteries and acts as an MPPT controller to maximise input power to your auxiliary battery from the solar panel. I have a 180W folding solar panel which I use to charge the vehicle auxiliary battery if not driving for a few days or to charge the caravan batteries if the caravan roof solar panels are shaded by trees or whatever.

The main systems connected to my current vehicle auxiliary battery are a small car fridge (Waeco Dometic CFX 28 fridge/freezer), UHF radio, UBS power point in rear of vehicle and rear reversing lights/worklights for connecting caravan at night or other night time activities. The fridge will run for 4-7 days (depending on external temperatures) without recharging the auxiliary battery. I plan to transfer this fridge and the work/reversing lights to the Grenadier and install a new dual UBS charging point.

I plan to use the existing Grenadier auxiliary battery setup (CTEK Smartpass 120S battery 120A charger/voltage isolator) and Moll 105Ah EFB plus lead acid battery (similar to AGM) for a while to

assess the auxiliary battery system performance (the main starter battery in the Grenadier is also a Moll 105Ah EFB plus).

As I understand it, the 12v fridge socket in the rear of the Grenadier is connected to the Smartpass 120S rather than directly to the auxiliary battery. Under these circumstances, the fridge (and other consumers?) may not be powered at all times and I will look at an alternate power supply to the fridge directly from the auxiliary battery (same for UHF radio and reversing/rear work lights). It is also possible to link my CTEK DC/DC 20 Amp charger to the Grenadier CTEK Smartpass 120S to boost charging output from the alternator to 140A and enables the connection of a solar panel to the vehicle auxiliary battery charging system.

Until I have more experience with the existing Grenadier battery and charging system it is difficult to see the ultimate endpoint here. Although when the existing Moll 105Ah EFB plus auxiliary battery dies, I will definitely replace it with a lithium iron phosphate alternate (the existing charging system is more than adequate for a replacement lithium auxiliary battery).

**Rear reversing lights and work lights.** I have two dual LED (approx 200 lumens each) work lights which I plan to fix to the rear roof tie down bars (or perhaps the roof rack?) on the Grenadier. These will face backwards and be powered by the two existing rear roof outlets and controlled by a switch in the overhead console. Easy to actuate when reversing in poor light conditions and a useful light source for connecting the caravan or a trailer at night (or getting a beer out of the car fridge in the dark).

**Roof rack.** I have an existing Rhino Pioneer Tradie Rack (approx 1.90 x 1.25m) which I plan to use on the Grenadier. Since the existing Grenadier roof structure is rated at 450 kg static and 150 kg dynamic it appears strong enough to support the rack sitting on the existing rubber roof strips (I need to check this with our local Ineos agent). I plan to use 4 x 200kg tie down straps to attach the rack to the roof tie down bars and sort out some securing mechanism to the rear roof moulding indent above the rear doors to prevent rack forward movement when braking. The rack must be easily removable because I have two kayaks to transport on soft foam bars which will sit perfectly on the existing roof (without rack). At other times only light loads are intended for the roof rack when attached (4x Maxtrax sand ladders, a long handled shovel and possibly 2 x 20 L jerry cans for diesel fuel). All up weight, including rack about 80kg.

**Compressor.** I plan to transfer my ARB high output on-board single compressor to the Grenadier. Not exactly sure where it can be mounted: either somewhere under the bonnet or in the smallish rear compartment which holds the vehicle bottle jack and associated tools. Power for the compressor can be sourced from fuse position F113 (40 Amps) in the Interior Electrical Centre labelled "Air Compressor / Dust Gun". This compressor is fitted with an 8m pressure hose and tyre inflator trigger gun.

**Second spare tyre.** I plan on purchasing an additional Grenadier 17" steel wheel and BFG KO2 tyre as a second Grenadier spare (mounted on a rack on the caravan draw bar).

**Additional diesel storage.** Numerous contributors to the forum have commented on the 90L fuel tank and associated limitations. I have provision on the caravan for "in locker" storage of 2 x 20L jerry cans for diesel and an additional dual jerry can holder which can be mounted on the Rhino roof

rack (when fitted). This provides for an additional 40 or 80L of diesel which is more than enough for everywhere I plan to go.

I hope the jerry can solution is temporary. Presumably someone will come up with a long-range tank or extended range tank for the Grenadier within the next couple of years. Alternatively the storage racks on either side of the Grenadier could be used for jerry cans or Rotopax containers. Not perfect, but better than roof mounted jerry cans.

**Trailer (caravan) towing.** It is not clear to me what trailer plug will be fitted to the Grenadier when it arrives (probably 13 pin Euro trailer plug). Will just have to wait and see what plugs and sockets are needed. I currently have a Tekonsha P2 electric brake controller fitted to my tow vehicle which is just OK. I plan to fit a new brake controller to the caravan (rather than the Grenadier). This new Elec Brakes controller mounted on the caravan draw bar will need a brake light voltage signal to the trailer module to activate the trailer braking system. I can use either fuse 127 (5Amps) in the Interior Electrical Centre labelled "Brake Light Switch" or terminal 6 on the Euro trailer plug (brake/stop light).

**Fridge slide and drawer slide.** My current vehicle has a largish drawer on the RHS and a fridge slide on the LHS. I have NO plans to do the same for the Grenadier.

My smallish (28L) car fridge will sit on the LHS adjacent to the small rear door and will be held down by ties to the L tracks on the floor. Access by opening small door and lifting the lid....may need small set of steps depending on access height.

In stead of the sliding drawer on the rear RHS I will use tote boxes with lids for storing tool kits, gloves, cleaning rags, spare rope, compressor air lines, spare light bulbs & fuses, multimeter, snatch straps, recovery gear, wheel chocks and other assorted junk. When I am going on a longish trip I will load the stuff I need rather than carrying everything around all the time. The tote boxes I need will be held down by ties to the L track system.

That's more than enough for now.

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