



Rok_Dr's Exceedingly Unofficial Ineos Grenadier Owner's Manual Supplement

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1. Introduction

The various Ineos Grenadier owner's manuals are missing lots of basic information and in parts, poorly worded and illustrated. Ineos customer support and dealers are still learning and getting answers to questions is often not possible or very difficult. This is further complicated by the delays in providing the long-promised workshop manual to owners. Recently though, it is pleasing to see that Ineos have released updated owners guides for several countries which address some of the deficiencies of the original documents.

This supplementary manual consolidates additional information from various sources into a single document that can be printed and stored in your glovebox. It has also evolved to include other more general information beneficial to Grenadier owners. It will be updated and corrected as new information becomes available and I find time to edit further.

I look forward to Ineos further improving their documentation, so that this manual will ultimately become irrelevant.

2. Warning and Disclaimer

The material and information contained this document are for general information purposes only. The author makes no representations or warranties of any kind, express or implied about the completeness, accuracy, reliability or suitability with respect to the document or the information and related graphics contained in the document for any purpose. Any reliance you place on such material is therefore strictly at your own risk and if in doubt refer directly to either Ineos or your dealer/agent.

3. Acknowledgements

The document has been compiled from many sources including my own research, the Ineos Grenadier Forum (<https://www.theineosforum.com/>), social media and communications with my dealer, Ineos Australia personnel and Ineos support. Information from external sources is acknowledged wherever possible, however some sources are confidential and as such can't be acknowledged.

As the manual develops, contributions from others have steadily increased. In particular, I would like to thank the many Ineos Grenadier Forum members who are acknowledged throughout the document, without your posts this document would be much less useful.

4. Scope and Terminology

This document is written and illustrated using an Australian specification MY23 RHD diesel Trialmaster. The vehicle has had all software updates released in Australia as of November 2024 applied. It is also being slowly extended to include other model years and country versions as information becomes available.

The document's target audience are new or potential owners who have limited knowledge and/or are getting to grips with their car. Experienced owners may well find it useful as well.

I have tried not to repeat the owner's manuals, rather only add additional information. To assist the reader at the start of each section I have referenced the page/s of the owner's manuals that can be read in conjunction. Ineos have recently updated their online owner's manuals with MY23 and MY24 manuals available for most countries along with MY25 for North America. Manuals can be downloaded from the Ineos Grenadier website by clicking on the documentation link in the footer of the home page. Note page numbers are for the Australian pdf manuals and will be different for manuals from other countries.

RHS and LHS are stated facing forward. Driver and passenger side are for a RHD vehicle. With few exceptions all measurements are in Metric SI units.

5. Overhead Switch Panel

Reference: Ineos Automotive (2023) and Ineos Automotive 2024 p22. Relevant page numbers are detailed in Table 1.

Ineos have now included a reference illustration in the MY24 owner's manual, but switch operation descriptions are still scattered throughout all manuals. The panel is shown in Figure 1. Switch operations are described in Table 1. Note the Australian Grenadier does not have the SOS E-call facility.

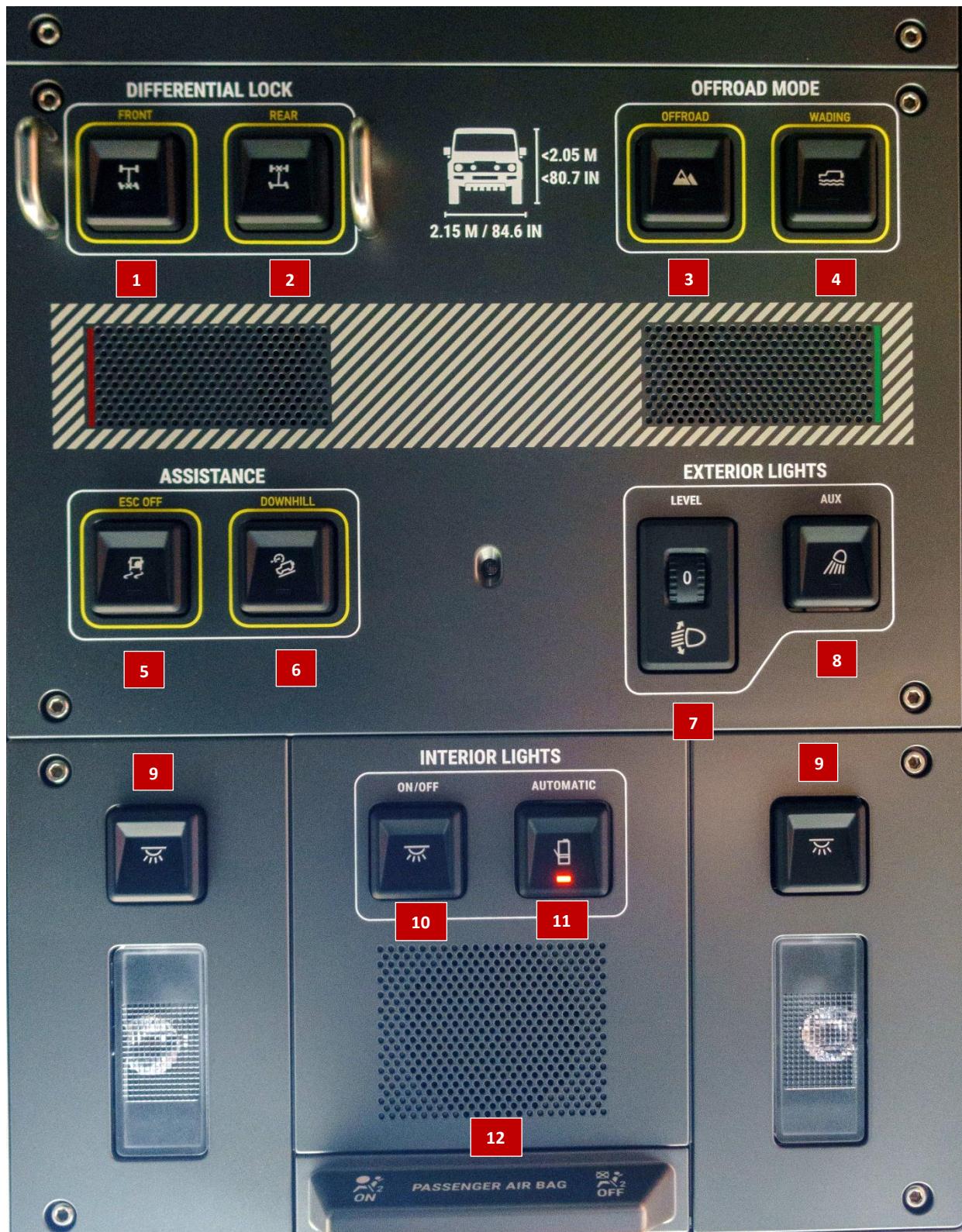


Figure 1 - Overhead Switch Panel Layout

Table 1 - Overhead Switch Panel Functions

No	Button Name	Operation
1	Front Diff Lock (Optional) p.84-88 (MY23) p.80-82 (MY24)	<ul style="list-style-type: none"> To engage the vehicle must be in LOW range with Centre Diff Locked and speed <15kph. The Rear Diff Lock must be engaged before the Front Diff Lock. Press and hold the relevant diff lock button for 1 second. The switch light & tell tail cluster diff light will flash. Move the vehicle within 60 seconds and the switch light and tell tail cluster diff light will turn solid to confirm engagement.
2	Rear Diff Lock (Optional) p.84-88 (MY23) p.80-82 (MY24)	<ul style="list-style-type: none"> Steering will be difficult with the front diff lock engaged. ESC and ABS will be turned off and warning lights will illuminate in the tell tail cluster. To disengage press and hold the relevant switch for 1 second. The lights will flash until the diff lock/s have disengaged. Making turns can assist with disengaging. Disengaging the rear diff lock will automatically disengage the front diff lock. Disengaging the centre diff lock will automatically disengage both the front and rear diff locks.
3	Offroad Mode p.98-99 (MY23) p.92-93 (MY24)	 <ul style="list-style-type: none"> To activate, the vehicle must be stationary with the engine running. Press and hold the switch for 1 second. The switch light will flash. <u>Press the switch again</u> within 15 sec to activate. The Off Road and ESC OFF lights will illuminate in the tell tail cluster. <ul style="list-style-type: none"> When active: ESC Off Road Mode will be enabled, Park distance control, door and seatbelt acoustic warnings will be disabled. To disengage press and hold the switch for 1 second. The lights will extinguish. Alternatively switch the vehicle off. Mode will automatically deactivate when the vehicle speed exceeds 70kph.
4	Wading Mode p.99-101 (MY23) p.93-95 (MY24)	 <ul style="list-style-type: none"> To activate, the vehicle must be stationary with the engine running, in low range and the centre diff locked. Press and hold the switch for 1 second. The switch light will flash slowly. <u>Press the switch again</u> within 15 sec to activate. The Off Road and ESC OFF lights will illuminate in the tell tail cluster. When active: <ul style="list-style-type: none"> Offroad Mode, air recirculation mode and 30kph speed limiter are activated. Engine fans, DPF regeneration, rear view camera and seat heating are deactivated. To disengage press and hold the switch for 1 second. The lights will extinguish. Alternatively switch the vehicle off.
5	ESC Off p.106 (MY23) p.100 (MY24)	 <ul style="list-style-type: none"> To deactivate the electronic stability control, press and hold the switch, until the ESC OFF light illuminates in the tell tail cluster (~3 seconds). To reactivate press and hold the switch until the ESC OFF light is extinguished. ESC automatically resumes if vehicle speed reaches 80km/h.
6	Down Hill Descent Control p.107-108 (MY23) p.101-102 (MY24)	 <ul style="list-style-type: none"> To activate press and hold the switch. Once activated the infotainment screen will display the HDC symbol. Speed can be adjusted using the Res+ and Set- buttons on the steering wheel. To deactivate press the switch. Alternatively switch the vehicle off. HDC automatically deactivates above 25kph or 10kph in reverse. Not available when ESC OFF is selected or when the rear +/- front diffs are locked.
7	Headlight Level Adjustment p.70-71 (MY23) p.65-66 (MY24)	<ul style="list-style-type: none"> Setting levels 0-3. Turn thumb wheel to adjust. 0 Highest level, vehicle unloaded, driver and front passenger only. 3 Lowest level, vehicle fully loaded.
8	Aux High Beam Headlights p.70 (MY23) p.65 (MY24)	<ul style="list-style-type: none"> Press switch to switch on. Car must be running. Lights will activate when high beam is selected. In addition, NAS vehicles also need offroad or wading mode activated. Press switch again to switch lights off.
9	L & R Reading Lights. p.64-65 (MY23) p.59-61 (MY24)	<ul style="list-style-type: none"> Press the switch above the relevant reading light to turn it on and off.
10	Interior Light switch p.64-65 (MY23) p.59-61 (MY24)	<ul style="list-style-type: none"> Press to switch all interior lights on and off.
11	Door Open Light Switch p.64-65 (MY23) p.59-61 (MY24))	<ul style="list-style-type: none"> Press to turn the interior lights on automatically when a door is opened. The switch light will illuminate when active.
12	Passenger Airbag Light p.155 (MY23) p.162 (MY24)	<ul style="list-style-type: none"> Indicates passenger airbag status, either on or off. Some countries allow the passenger airbag to be disabled in the vehicle functions menu.

A handy off-road functions guide, courtesy of Ineos Forum member @Michael H, is attached in Appendix 1 - Ineos Grenadier Off-Road Functions Quick Start Guide.

Journalist, Robert Pepper also had a handy Centre Diff Lock Operation Guide on his website (<https://l2sfbc.com/ineos-grenadier-high-low-and-locked/>).

6. Overhead Auxiliary and High Load Auxiliary Switch Panels

Reference: Ineos Automotive (2023), p185 and Ineos Automotive (2024) p198-199.

The panels (Figure 2) are found at the rear of the overhead console. The high load auxiliary switch panel is an optional fitment. Table 2 and Table 3 list further details including function, outlet and fuse locations. Further fuse details can be found in Appendix 2 - Fuse & Relay Listing.

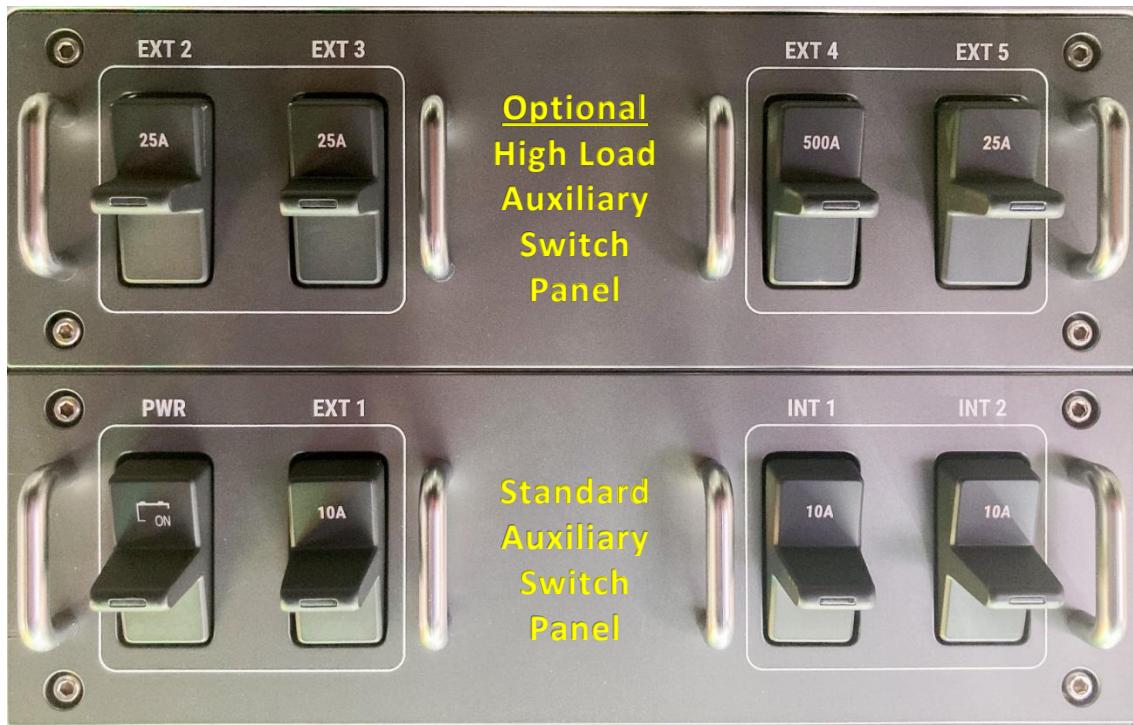


Figure 2 - Auxiliary Switch Panel Layout

Table 2 - Auxiliary Switch Panel Functions

Switch	Function	Outlet & Fuse Locations
PWR	Switches power on to the following outlets when the vehicle is not running. <ul style="list-style-type: none"> Optional USB ports on the rear of the centre console: Optional 12v socket in the cargo area. All internal and external switched outlets, except EXT4. 	Fuse FI28 - Interior Electrical Centre
EXT1	10 Amp Wiring Preparation	Engine Bay: (Bare wire ends taped to a wiring harness) <ul style="list-style-type: none"> RHD vehicle: RHS beside air filter (Figure 8) LHD vehicle: LHS near brake fluid reservoir (Figure 9) Fuse FI28 - Interior Electrical Centre
INT1	10 Amp Wiring Preparation	LHS passenger footwell (Bare wire ends). Fuse FI29 - Interior Electrical Centre
INT2	10 Amp Wiring Preparation	RHS driver footwell (Bare wire ends). Fuse FI30 - Interior Electrical Centre

Table 3 - High Load Auxiliary Switch Panel Functions

Switch	Function	Outlet & Fuse Locations
EXT2	25 Amp DTP socket (for LED light bar)	Front RHS roof. Fuse FL01 High Load Auxiliary Fuse Box
EXT3	25 Amp. Remaining 3 DTP roof sockets on one circuit.	Roof, rear RHS, front and rear LHS. Fuse FL02 High Load Auxiliary Fuse Box
EXT4	500 Amp. Rear NATO socket and winch (if fitted). This switch is only active when the engine is running, the transmission is in either D, N or R and the vehicle is travelling <80km/hr.	To LHS of rear Tow Hitch Fuse FL04 - High Load Auxiliary Fuse Box. (Switch Relay) Fuse 3 - Pre-Fuse Box Accessories,5 stud. (Load)
EXT5	25 Amp Wiring Preparation.	Engine Bay: (Bare wire ends taped to a wiring harness together with EXT1 ends). <ul style="list-style-type: none"> • RHD vehicle: RHS beside air filter (Figure 8) • LHD vehicle: LHS near brake fluid reservoir (Figure 9) Fuse FL03 - High Load Auxiliary Fuse Box

7. Additional Fuse Boxes

There are 5 additional fuse boxes which are not documented in the Owner's Manuals.

The following information is sourced from my personal research, confidential sources and posts (linked below) on the Ineos Forum (thank you @DCPU, @Jean Mercier and @TheDocAUS).

- <https://www.thelneosforum.com/threads/factory-fitted-auxiliary-battery-in-the-trialmaster.12413288/#post-1333219863>
- <https://www.thelneosforum.com/threads/main-fuses-used-in-ineos-grenadier.12411958/#post-1333181794>
- <https://www.thelneosforum.com/threads/continuous-current-for-the-internal-usb-connections.12412342/page-3#post-1333195028>

7.1. High Load Auxiliary Fuse Box

Fitted as part of the High Load Auxiliary Switch Panel & Electrical Preparation option.

The fuses for these circuits are found in a separate fuse box located next to the starter battery, between the Interior Electrical Centre fuse box and the Ctek Smartpass as illustrated in Figure 3. In the 5-seater wagon this is covered by a plastic panel.

The fuse box layout is shown in Figure 4. This has been confirmed as correct by Ineos Australia.

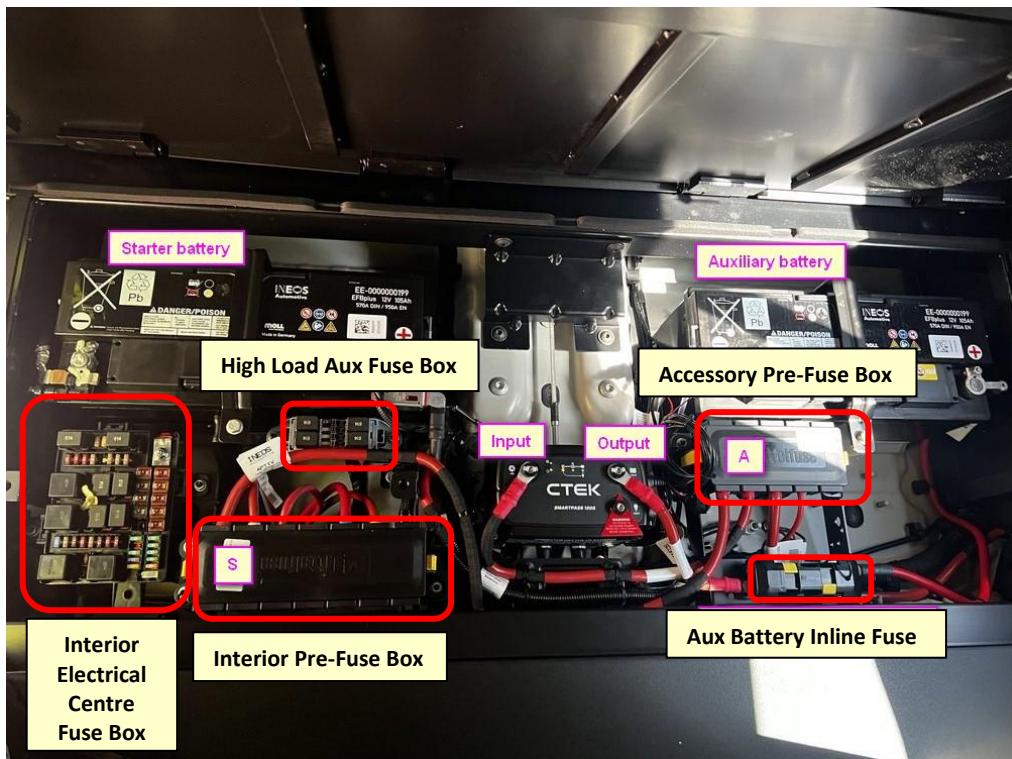


Figure 3 - Under Seat Electrics. High Load Aux Switch Panel and Auxiliary Battery Fuse Box Locations

Modified from: <https://www.theineosforum.com/threads/main-fuses-used-in-ineos-grenadier.12411958/#post-1333181796>

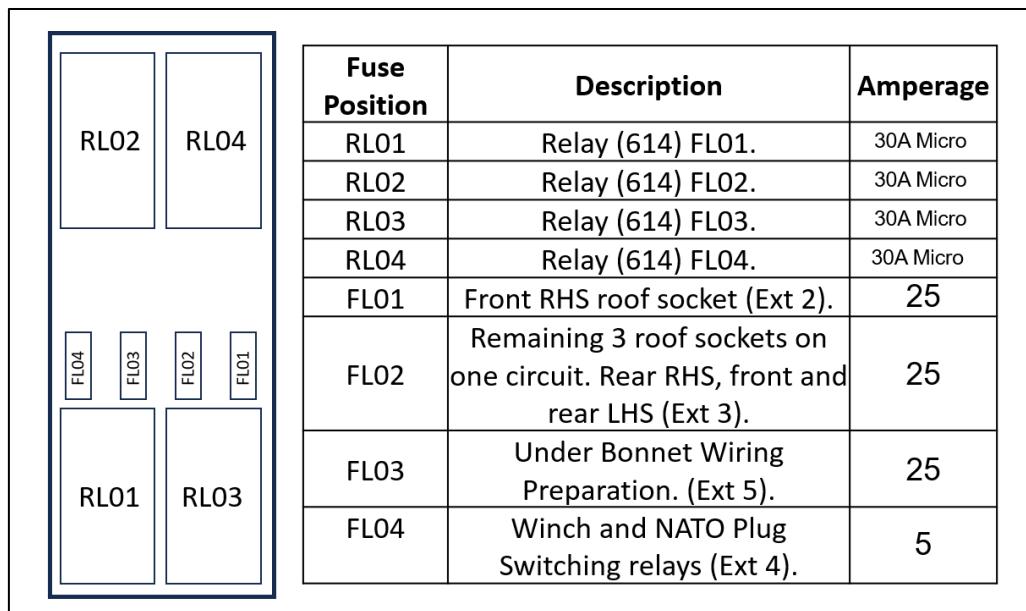


Figure 4 - High Load Auxiliary Fuse Box Schematic

7.2. Pre-Fuse Box Underhood

This fuse box (Figure 5) is located on the RHS side of the engine bay under the brake fluid reservoir in RHD vehicles (Figure 8) and beneath the air filter and front winch auto reset circuit breaker on LHD vehicles (Figure 9).

From my personal research and Ineos Forum posts, it contains 2, 125-amp Mega fuses (Table 6) for the:

- Power Steering Pump.
- Cooling Fan 1, Relay #3.



Figure 5 - Pre-Fuse Box Under Hood

From: <https://www.theineosforum.com/threads/main-fuses-used-in-Ineos-grenadier.12411958/post-1333198242>

7.3. Pre-Fuse Box Interior

A 7 stud, Littelfuse power distribution box, located between the Interior Electrical Centre fuse box and the Ctek Smartpass (if fitted) to the rear of the High Load Auxiliary Fuse Box (if fitted) and starter battery (Figure 3). In the 5-seater wagon this is covered by a plastic panel. The fuse layout is shown in Figure 6 (left). The fuses are Z-Case bolt down types (Table 6). Z-Case stud diameters are all M8.

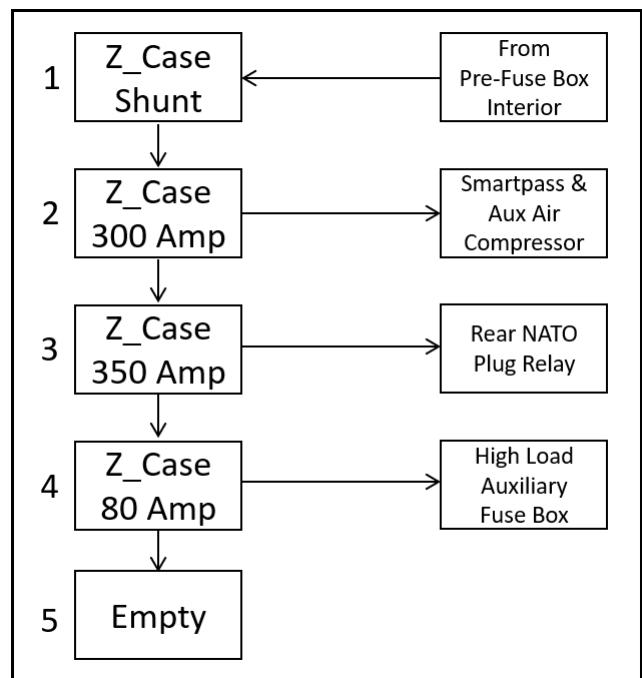
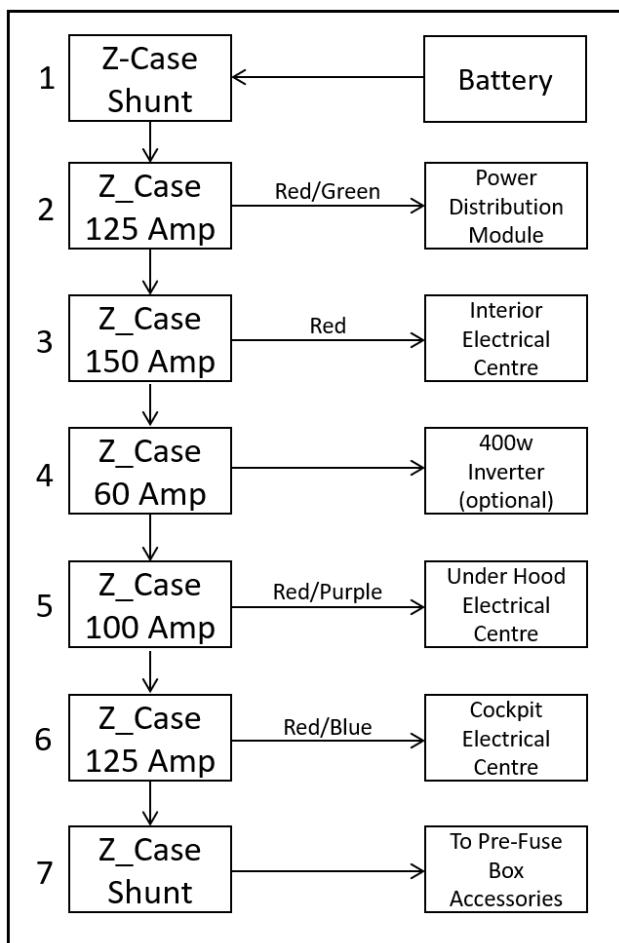


Figure 6 - Pre-Fuse Box Interior Schematic (left) and Pre-Fuse Box Accessories Schematic (right)

7.4. Pre-Fuse Box Accessories

Fitted as part of the High Load Auxiliary Switch Panel & Electrical Preparation and/or Dual Battery options.

A 5 stud, Littelfuse power distribution box, located behind the auxiliary battery next to the Ctek Smartpass (Figure 3). In the 5-seater wagon this is partially covered by a plastic panel. The fuse layout is shown in Figure 6 (right). The fuses are Z-Case bolt down types (Table 6). Z-Case stud diameters are M8 except for the 350-amp fuse which is M10 and the 80-amp fuse which is M6.

7.5. Auxiliary Battery Fuse

Fitted as part of the High Load Auxiliary Switch Panel & Electrical Preparation and Auxiliary Battery options.

This fuse is located on the positive cable which runs from the Smartpass to the positive terminal of the auxiliary battery (Figure 3). In the 5-seater wagon this is covered by a plastic panel. The fuse is a 300-amp mega type (Table 6).

8. Battery System

8.1. Battery Charging and Monitoring

Reference: Ineos Automotive (2023) p136 and p182-184. Ineos Automotive (2024) p147 and p191-193.

The starter (main) battery's state of charge (SOC), rates of charge and discharge, voltage and temperature can be monitored using the using the Electrical sub menu in the Offroad settings menu.

The Grenadier uses a BMW derived Battery Management System (BMS) to maintain the SOC. An Intelligent Battery Sensor (IBS) is attached to the negative terminal of the starter battery to measure these parameters and control the smart alternator. The auxiliary battery, if fitted, is not monitored by the BMS and its SOC is not displayed/included in the SOC % displayed in the Electrical sub-menu.

The BMW BMS is designed to maximise fuel efficiency and generally maintains a battery SOC around 80%, but this may vary according to electrical load and driving conditions. For those who are not familiar with smart alternators and battery management systems, it can be disconcerting not seeing the battery fully charge to 100% SOC, but this behaviour is perfectly normal.

The following post by @NQ94 on the Ineos forum has a BMW document attached that explains the operation of the charging system. This is an older BMW training document and there may be variation in the BMS implemented on Ineos vehicles.

- <https://www.theineosforum.com/threads/battery-charge-limitation.12415425/post-1333276455>

It is recommended that when charging the starter battery to connect the charger to the jumpstart post and earth points in the engine bay (Sect 13.3 Jump Starting), rather than directly to the battery terminals. If connecting directly to the starter battery do not connect to the battery negative terminal, instead connect to a body earth point. This will allow the BMS to register the charge going into the battery and correctly update the SOC. In my experience, when the battery is fully charged the SOC will be around 85%.

8.2. Auxiliary Battery and Ctek Smartpass Battery Manager

Reference: Ineos Automotive (2023) p136 and 182-185. Ineos Automotive (2024) p147 and p191-194.

For vehicles fitted with the dual battery option, Ineos fits a Ctek Smartpass 120S battery management system to manage the 2 batteries. Charging current sent to the auxiliary battery will be sensed by the BMS and the smart

alternator output will be adjusted accordingly. As previously noted, the auxiliary battery SOC is not displayed/included in the SOC % displayed on the Electrical sub-menu.

In the Grenadier, all auxiliary electrical loads (e.g. fridges, lights, winch etc) draw from the starter battery. The auxiliary (service) battery has no electrical loads connected and is purely used for emergency starting when the starter battery can't start the vehicle. Because of this the Smartpass fitted to the Grenadier has been modified to remove the consumer outlet which draws from the auxiliary (service) battery. Ineos also do not connect the smart alternator wire.

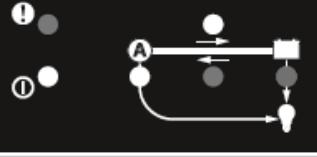
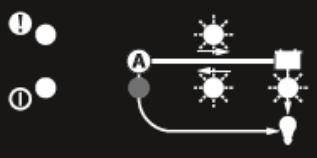
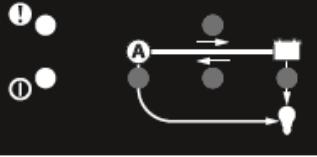
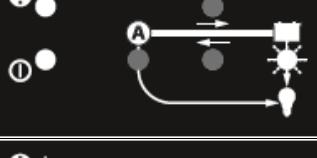
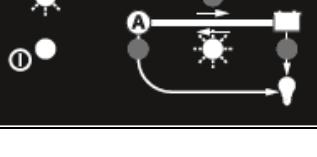
This setup is different to most dual battery systems where auxiliary loads are connected to the auxiliary battery and the starter battery is isolated when the vehicle is switched off.

The Smartpass operates as follows. This is summarised and modified from the Smartpass user manual (Ctek 2019) to reflect the Ineos installation.

- Charging auxiliary (service) battery from the alternator (constant charging voltage):
 - The SMARTPASS 120S charges the auxiliary (service) battery at up to 120A from the start battery when the alternator is running.
 - This function is switched off when the engine is not running.
- Start assistance:
 - SMARTPASS 120S automatically connects the auxiliary (service) battery to the starter battery for 10 sec to assist if the starter battery on its own is unable to start the engine.
 - After the start assistance function has been activated, SMARTPASS 120S will display a fault indication until starting has been achieved without using the start assistance function.
- Separation of the starter battery and the auxiliary (service) battery:
 - SMARTPASS 120S separates the starter battery from the auxiliary (service) battery when the engine is not running.
- Dynamic overcurrent protection:
 - SMARTPASS 120S has overcurrent protection to shield the product. Overcurrent protection permits up to 350A to be sent from the alternator temporarily so that charging will be accelerated.
- Battery temperature protection:
 - SMARTPASS 120S protects the battery by switching off charging if the auxiliary (service) battery temperature rises too high.
- Starter battery trickle charging:
 - The auxiliary (service) battery trickle charges the starter battery to compensate for the self-discharge of the starter battery.
 - The auxiliary (service) battery charges in periodic 3-second pulses when its voltage is higher than that of the starter battery and the voltage of the starter battery is low.
 - Note: I have had conversations with Ineos Support and their understanding from Ctek engineers is that the Smartpass will terminate this function when the Auxiliary battery charge drops to 50%. They were planning to undertake testing to confirm that this is the case, but I have had no further response despite following up.
- Auxiliary battery charging.
 - The SMARTPASS will start or stop charging the auxiliary (service) battery when the following voltages are seen by the unit. Note: INEOS do NOT connect the red smart alternator wire.
 - Cut In: >13.1v for 5 seconds (engine running, alternator charging).
 - Cut Out: <12.8v for 10seconds. (engine running, alternator not charging).

The Smartpass has an LED indicator panel which indicates its operation mode and any faults. LED indicator explanations are illustrated in Table 4 which is modified and summarised from the Smartpass user manual (Ctek 2019) to reflect the Ineos installation.

Table 4 - Smartpass LED Explanations

Symbol Explanations	
Flashing LED	Continuously Lit LED
Symbol	Explanation
	Current from alternator to auxiliary battery and consumers. Current from auxiliary battery to consumers
	Current from alternator to auxiliary battery and consumers
	Trickle charging of the starter battery from the service battery.
Fault Indication	Explanation
	Reason: Auxiliary battery is overheating. Recommendation: Check the auxiliary battery with a battery tester and/or check the installation.
	Reasons: Excessive current or internal temperature too high. Charging current too high to the auxiliary battery. Recommendation: Check the auxiliary battery with a battery tester. The auxiliary battery is too deeply discharged.
	Reasons: Excessive current or internal temperature too high. Current to the starter battery too high. Recommendation: Check the starter battery with a battery tester. Replace the starter battery if the warning repeats.
	Reasons: Excessive current or internal temperature too high. Battery guard activated; auxiliary battery not charged enough. Recommendation: Consider moving the apparatus to a cooler location. Charge the auxiliary battery
	Reason: Start assistance activated. Recommendation: Charge the starter battery. Replace the starter battery if the warning repeats.

9. Vehicle Specifications and Parts

9.1. Fluid Specifications

Reference: Service and Maintenance Section Ineos Automotive (2023) p167-179. Ineos Automotive (2024) p177-188.

The following is from a document provided to me by Ineos support. I have added to their table:

- An additional column with Australian retail equivalents that are commonly available from any auto parts and accessory store and meet the specifications stated by Ineos.
- Coolant spec updates.
- The brake fluid spec as noted on the reservoir cap.

Per Ineos Support:

"The following table outline the compliant products that can be used when conducting Service work on the Ineos Grenadier."

All the products in the tables have the same performance characteristics as those used in vehicle manufacture.

Only Products listed in the tables should be used when carrying out repairs/servicing to the Ineos Grenadier.

If any of the products listed in the tables are not available in the market in which you are located, then contact the product supplier to ascertain if there is a superseded product with the same performance and subsequently your Ineos Regional Technical Support Representative for guidance/assistance before continuing with any repair."

Table 5 - Fluid Specifications

Product Type	Supplier	Australian Equivalent	Specification	Quantity
Engine Oil Petrol	Titan EM BMW 4615E-0W	Penrite ENVIRO+ C5 0W-20	0W-20 ACEA C5 LL-17FE	6.5 litres (4)
Engine Oil Diesel	Petronas Syntium 0W30DG	Penrite ENVIRO+ C2 0W-30	0/5W-30 ACEA C2 LL-12FE	7.0 litres (4)
	SHELL 0W30 XSA10001JH		0W-30 ACEA C2 LL-12FE	7.0 litres (4)
Anti-Freeze (coolant high and low circuits)	BMW 83195A42DF3 (2)	(1) Nissan LT248 (3)	Lifetime coolant LC-18	HT 10.5 litres
	BMW 83195A42DF3 (2)	(1) Nissan LT248 (3)	Lifetime coolant LC-18	LT 2.4 litres
Transfer Case oil	Titan Sintopoid		75w-90	1.8 litres unit drain 2.64 litres unit and cooling circuit oil change*
			75w-85	Fully compatible
Axe oil Shelf life 3 years	Fuchs Titan super gear		SAE 80W-90 GL-5	Front Axle 2.1 litres
	Fuchs Titan super gear		SAE 80W-90 GL-5	Rear Axle 2.1 litres
Petrol 8HP51X	ZF		LifeGuard Fluid 8	10.15 Ltrs
Diesel 8HP76X	ZF		LifeGuard Fluid 8	9.35 Ltrs
Power Steering	Comma	Penrite LDAS	CHF 11S Pentosin Oil	2.5 (TBC)
AdBlue				17 Ltrs
Brakes			DOT4	??

1. I am unable to find an equivalent spec coolant, but the BMW spec coolant can be bought at any BMW Dealer's spares department at a reasonable price for a 1.5l bottle of concentrate. Dilute concentrate to 50% using distilled water only.
2. The coolant spec is actually BMW LC-18. The number in the Ineos document is the BMW part no. Also known by the brand name HT12.
3. @Skrambo on the Ineos Forum notes that his dealer advises that Nissan LT248 Coolant is also compliant.
(<https://www.theineosforum.com/threads/ineos-grenadier-fluids-and-specifications.12413939/post-1333281866>)
4. An additional 500ml can be added for offroad use.

9.2. Fuses

Most of Table 6 below is sourced from an Ineos Forum post (thank you @TheDocAUS) and my personal research.

- <https://www.theineosforum.com/threads/main-fuses-used-in-Ineos-grenadier.12411958/>

A more comprehensive table of fuses has also been compiled by @bnebenda on the Ineos Forum. An updated version can be found in Appendix 2 - Fuse & Relay Listing.

- <https://www.theineosforum.com/threads/main-fuses-used-in-Ineos-grenadier.12411958/post-1333255992>

Pictures are sourced from the following catalogue.

- https://www.swe-check.com.au/pdfs/auto_catalog_complete.pdf

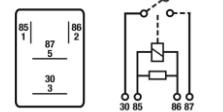
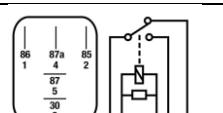
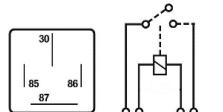
Table 6 - Fuse Types

Fuse Type	Amp Ratings Used	Number fitted
Mini Blade	5 Amp 7.5 Amp 10 Amp 15 Amp 20 Amp 25 Amp 30 Amp	12 7 10 6 3 8 6
JCase Fusible Link Low Profile (895/PAL Fuses).	30 Amp 40 Amp 60 Amp	5 3 2
JCase Fusible Link Long Profile (495/PAL Fuses)	30 Amp 40 Amp	3 5
Midi Fuse	60 Amp	1
Mega Fuse	125 Amp 300 amp	2 1
ZCASE® Starter Fuse	60 Amp M8 (optional) 80 Amp M6 100 Amp M8 125 Amp M8 150 Amp M8 300 Amp M8 350 Amp M10	1 1 1 2 1 1 1

9.3. Relays

The following table is based on my personal research. The Grenadier uses ISO standard mini and micro relays. There are also 3, (40 or 50? amp) power relays for the AC/heating system connected to fuses FC07, 08 and 09, located in a separate box near the Cockpit Electrical Centre. I have yet to locate them so can't currently provide any specs. Relay locations and functions are detailed in Appendix 2 - Fuse & Relay Listing.

Table 7 - Relay Specifications

Ineos Relay ID & Fuse Box Locations	Desc	Manufacturer Part No	Schematic
614 • Interior Electrical Centre • Under Hood Electrical Centre • High Load Auxiliary Fuse Box	30 Amp Micro Normal Open 4 Pin	TE (Tyco) V23074-A1001-A402	
615 • Interior Electrical Centre	20 Amp Micro Change Over 5 Pin	TE (Tyco) V23074-A1001-A403	
V23134-J52-D642 • Interior Electrical Centre • Under hood Electrical Centre	70 Amp Power Mini 4 Pin	TE (Tyco) V23134-J52-D642	

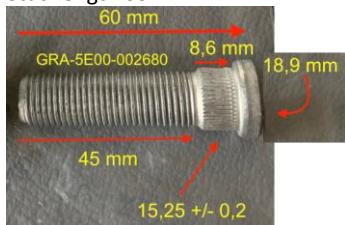
9.4. Part Numbers

The following list documents Ineos part numbers and third-party equivalents It's not a comprehensive listing and the focus is on service consumables, wear parts such as brake pads, field spares, etc.

It's heavily based on research undertaken by @TheDocAUS on the Ineos Forum, my limited research and posts by Ineos Forum members @ninetubes, @logsplitter, @globalgregors, @euroflo, @Greasemonkey and @tom D. @TheDocAUS's list of oil filters is very comprehensive and I've only listed a subset of the more commonly available Australian aftermarket brands. Part numbers may be quoted with or without hyphens. Part names are as per Ineos or as advised by Ineos forum members.

- <https://www.theineosforum.com/threads/Ineos-oil-filter-part-numbers-and-review-b57-b58-motor.12414616/>
- <https://www.theineosforum.com/threads/after-market-filters.12414073/post-1333244083>
- <https://www.theineosforum.com/threads/replacing-a-wheel-stud.12417484/>

Table 8 - Filter, Belt & Other Part Numbers

Part	Ineos Part No	Other Part Numbers & Comments
Engine Oil Filter	EGRA-1000-012600	BMW: 11 42 7 826 799 Coopers – Fiaam: FA6819ECO Mahle: OX 1254D Mann: HU6022Z Ryco: R2829P Tecnocar: OP1055 Toyota:04152-WAA03 Wesfil (Cooper): WC0226
Diesel Water Separator Filter	GRA-3E12-019770	
Diesel Fuel Filter	GRA-3E12 029520	
Engine Air filter	EI-0000008153	Mahle LX3985/1
Serpentine Belt Petrol	GRA-1A08-016920	Belt Size 6PK 1153 BMW 1128 8650740
Serpentine Belt Diesel	GRA-1B08-005670	Belt Size 8PK 1122
Cabin Air Filter	GRA-2G00-030270	Ryco RCA451M (Advised it's a tight fit as slightly thicker than the genuine part)
Remote Locking Fob Battery	CR2032	
Front Brake Pad Kit	GRA-6A70-021170	Brembo OEM
Rear Brake Pad Kit	GRA-6A80-020670	Brembo OEM
Closed Wheel Nut (Alloy Wheel, 21mm)	GRA-4E00-008170	Seat taper 60°, Nut length 37mm, Thread depth 34mm
Wheel Stud Rear 14mm.1.5mm (double threaded)	GRA- 5F00-021700	Stud Length 82mm, M14: 
Wheel Stud Front 14mm x 1.5mm (spline flat head)	GRA-5E00-002680	Stud length 60mm M14 
Front Wiper Blades	GRA-9A00-010400	
Rear Wiper Blade	GRA-9A03-010220	
Transfer Box Seal Kit	GRA-5C12-034180 S910	
Output Shaft Seal	GRA-5C12-034540 S910	
Propshaft Fixing Kit	GRA-5D00-019750 S910	
Roof Connector Base	GRA-9T13-029860	12v roof outlet box base
Roof Connector (Light Bar) Cover	GRA-9T13-006600	12v roof outlet box lid

9.5. Brake Disc Specifications

Specifications are as advised by Ineos Support.

Table 9 - Brake Disc Specifications

Brake Discs				
	Min Thickness	Max Thickness	Diameter	Internal Diameter
Front Disc	25mm	28mm	316mm	198mm
Rear Disc	10mm	12mm	305mm	200mm

9.6. Torque Settings

Torque settings are from the following Ineos Forum threads (thank you @TheDocAUS, @Guardian and other members).

<https://www.theineosforum.com/threads/torque-settings-various.1241309/>

<https://www.theineosforum.com/threads/eibach-springs-installation-reassembly-torque-specs-anyone-know-them-or-where-they-can-be-found.12416309/#post-1333291927>

Table 10 - Torque Settings

Torque Settings			
Oil Filter Cover	25Nm	Sump Plug	25Nm
Diff Plugs Front and Rear	31Nm	Transfer Case Fill Plug	15Nm
Smart Pass Terminal Screws	8Nm	Z Case Fuse M6 Stud (Pre-Fuse Box)	9.8Nm ± 1.4Nm
Mega Fuse (Aux Battery & Pre-Fuse Box Under Hood)	12-18nm	Z Case Fuse M8 Stud (Pre-Fuse Box)	14Nm ± 2Nm
Midi Fuse M5	4.5Nm ± 1Nm	Z Case Fuse M10 Stud (Pre-Fuse Box)	16Nm ± 2Nm
Midi Fuse M6	5Nm ± 1Nm	Rhino Platform and Cross Bar Gutter Straps	15-17Nm
Interior Electrical Centre M6 Feed Stud	7Nm ± 1Nm		
Steering and Suspension - Front			
Control Arm Front Lower Nut to Axle	110Nm Then through 180° or more	Control Arm Front Lower Nut to Chassis	110Nm Then through 180° or more
Control Arm Front Upper Nut to Axle	110Nm Then through 180° or more	Control Arm Front Upper Bolt to Chassis	110Nm Then through 180° or more
Panhard Rod Front Bolt to Axle	100Nm	Panhard Rod Front Nut to Bracket	190Nm
Stabiliser Bar Link Front, 2 Nuts that attach the Link to the Stabiliser Bar and Axle	110Nm	Tie Rod Front Nut to Swivel Housing	100Nm
Front Damper Bolt to Axle	275Nm	Front Calliper 2 New Bolts to the Swivel Housing	100nm Then through 90° or more
Suspension - Rear			
Control Arm Rear Lower Nut to Axle	110Nm Then through 180° or more	Control Arm Rear Lower Nut to Chassis	110Nm Then through 180° or more
Control Arm Rear Upper Nut to Axle	110Nm Then through 180° or more	Control Arm Rear Upper Bolt to Chassis	110Nm Then through 180° or more
Panhard Rod Rear Bolt to Axle	100Nm	Panhard Rod Rear Nut to Bracket	190Nm
Stabiliser Bar Link Rear, 2 Nuts that attach the Link to the Stabiliser Bar and Axle	110Nm	Rear Calliper 2 New Bolts to the Swivel Housing	60nm Then through 90° or more

9.7. Wheel, Tyre and Alignment Specifications

Wheel alignment, tyre pressures and wheel nut torque are as advised by Ineos Support. Wheel Rim specifications are compiled from various Ineos Forum posts. Updated Toe angles are from a Ineos Grenadier Owners Club Facebook post. <https://www.facebook.com/groups/754330368649291/permalink/1821190728629911>

Table 11 - Tyre and Wheel Rim Specifications

Tyres and Rims				
Rim	17"		18"	
Rim Width	7.5Jx17		8Jx18	
Offset (ET)	55mm		55mm	
Centre Bore	84.1mm		84.1mm	
Wheel Nut Torque	Alloy	160Nm	Stud size	14x1.5mm
	Steel	160Nm	Wheel Nut Size	21mm
Wheel Load Rating	Steel	1200kg	Alloy	1200kg
Tyre Pressures				
Front / Rear	2.5 / 2.5 Bar		250 / 250kPa	36 / 36 PSI
Front / Rear Loaded	3.0 / 3.4		300 / 340 kPa	43.5 / 49 PSI
Spare	3.4 Bar		340kPa	49 PSI

Table 12 - Wheel Alignment Specifications

Wheel Alignment				
Front Axle		Specification		
		Min	Nom	Max
Toe	Left	0'	+10'	+20'
	Right	0'	+10'	+20'
	Total	0'	+15'	+30'
Camber	Left	-40'	0'	+40'
	Right	-40'	0'	+40'
Caster	Left	1° 24'	2°00'	2°36'
	Right	1° 24'	2°00'	2°36'
Max. Inner Wheel Angle	Left Turn	32° 30'	33° 00'	33° 30'
	Right Turn	32° 30'	33° 00'	33° 30'
Rear Axle		Specification		
Toe	Left	-25'	+0'	+25'
	Right	-25'	+0'	+25'
	Total	-25'	+0'	+25'
Camber	Left	-30'	0'	+30'
	Right	-30'	0'	+30'
Thrust Angle	Total	-12'	0'	+12'

9.8. Off Road Tyre Pressures

I typically use tyre pressures shown in Table 13 when driving off road or on gravel. Green are my preferred settings within a possible range. On sand, I start out with a higher pressure and will drop further if it gets soft. Only drop your tyres below 15psi if you absolutely must and be very careful so as not to damage a rim or pop a tyre. If I am towing or heavily loaded, I will tend to set pressures at the higher end of my preferred range and watch my tyre temperatures.

In Section 16.2 there are also a couple of links to web pages that give additional tyre pressure information. The first is by the late Adam Plant who ran the iconic Oodnadatta Pink Roadhouse (<https://pinkroadhouse.com.au/>) until his death in 2012 and second by Cooper Tyres.

Monitor your tyre temperatures using the Offroad Temperature screen. Temperatures will vary depending on your load, ambient temperature and which side is facing the sun. Typically, I'm seeing tyre temperatures ≈20°C above ambient temperatures on long drives at recommended pressures. If your temperatures are significantly above this then consider increasing your tyre pressures.

Table 13 - Suggested Off Road Tyre Pressures

Tyre Pressure Guide		
kPa	PSI	Grenadier
30	4	4 psi rule
70	10	-----
75	11	↑
85	12	↑
90	13	↑
95	14	↑
100	15	↑
110	16	↑
120	17	↑
125	18	Sand Range
130	19	↓
140	20	↓
145	21	-----
150	22	↑
160	23	Rocky/ Corrugated
165	24	↓
170	25	-----
180	26	↑
185	27	↑
195	28	80kph Gravel
200	29	↓
205	30	↓
215	31	-----
250	36	Normal
300	44	Front Loaded
340	49	Rear Loaded

9.9. Fasteners

This section continues to be a work in progress. A thread by @TheDocAUS on the Ineos Forum provides a lot more detail of bolt types, including locations. <https://www.theineosforum.com/threads/grenadier-screw-bolt-head-types-sizes.12415421/>. @Greasemonkey has also provided annotated illustrations with measurements of the transfer case and differential plugs in <https://www.theineosforum.com/threads/transfer-case-oil-change-procedure.12417125/>.

Nuts, bolts and screws on the Grenadier are metric and comprise a mixture of hex, allen, torx, E torx (external), torx plus, phillips and pozidrive head types. Thread pitches are a mixture of coarse and fine. The following table provides further details of the types that I and others on the Ineos Forum have discovered. To avoid any ambiguity, I've also noted thread pitches. It is organised by diameter to assist you to find alternatives which may have a different head type.

Table 14 - Grenadier Fastener Types

Diameter	Thread Pitch	Torx	Torx Plus	E Torx	Hex Head	Hex Socket	Other	Lengths (mm)	Comment
M3								10	
M4	Coarse (0.7 mm)	T20						15 12	
M4	Screw Thread Rolling						Phillips PZ3	15	Air filter housing. Captive screw
M5	Coarse (0.8mm)	T25	TP25		8mm	4mm		15	
M6	Coarse (1.0mm)	T30		E8	10mm	5mm		16 25 40	
M6	Screw Thread Rolling								
M8	Coarse (1.25mm)	T40 T45		E12	13mm			15 25	
M10	Coarse (1.5mm)	T50			16mm			20	
M12	Fine (1.5mm)	T55			17mm 18mm? 19mm?				17mm Sump Plug Tow hitch face plate top bolts (4)
M14	Fine (1.5mm) Coarse (2.0mm)				21mm	8mm		10mm	Hex: Wheel Nuts Fine Socket: Transfer case plugs Wheel Stud Rear Hub Side: Coarse
M16	Fine (1.5mm)			E20	24mm 40mm				E torx: Chassis Engine Mounts Tow hitch face plate bottom bolts (2)
M22	Fine (1.5mm)					12mm			Socket: Diff Plugs
Others					30mm 32mm 36mm 46mm				Steering arms Oil filter housing Steering arms Steering arms

I recommend:

- Purchasing security Torx tools as they can be used on both standard and security Torx fixings.
- A set of low profile Torx bits that fit a ring spanner, as some fittings are difficult to get to. (e.g. battery trim panels under the rear seat).

9.10. Paint and Vehicle Specification Codes

The Grenadier has a sticker on the driver's door B pillar which has a list of 3 letter codes detailing the vehicle's trim, colour and build options. (Figure 7).



Figure 7 - Trim & Option Code Sticker Location

An explanatory listing of the codes can be found in Appendix 7 - Vehicle Specification Codes. Codes have been sourced from Ineos price lists and a thread on the Ineos Forum (thank you @paddy). Note:

- The list is not complete.
- Codes for dealer fitted accessories have not been included as they won't appear on the sticker.
- The sticker may not list all factory supplied options fitted to the vehicle.

Grenadier paint codes sourced from <https://coloronline.glasurit.com/index.php> are listed in Table 15 below. Thank you @Clark Kent from the Ineos Forum for finding this resource. They are also listed in Appendix 7 - Vehicle Specification Codes.

Table 15 - Grenadier Paint Codes

Colour Name	Colour Code	Year	Colour Class
BRITANNIA BLUE	FPI	2022 on	
DONNY GREY METALLIC	FPM	2022 on	
ELDORET BLUE	FPC	2022 on	
INKY BLACK	FPF	2022 on	
MAGIC MUSHROOM	FPL	2022 on	
QUEENS RED METALLIC	FPN	2022 on	
DEVIL RED	FPE	2024 on	
SCOTTISH WHITE	FPD	2022 on	
SELA GREEN	FPB	2022 on	
SHALE BLUE METALLIC	FPG	2022 on	
STIRLING SILVER METALLIC	FPP	2022 on	
CHASSIS BLACK	FQS	2022 on	
HALO RED	FQP	2022 on	
RHINO GREY	FQQ	2022 on	
WHEEL GREY METALLIC MATT	WBQ	2022 on	
WHEEL GREY METALLIC MATT	WBS	2022 on	
WHEEL MATT BLACK	WBP	2022 on	
WHEEL MATT BLACK	WBR	2022 on	

10. Engine Bay and Bonnet

10.1. Engine Bay

Engine Bay Components:

1. High temperature (HT) coolant reservoir.
2. Oil filler cap.
3. Oil dip stick location (Diesel only).
4. Low temperature (LT) coolant reservoir.
5. Under hood electrical centre fuse box. (On LHD vehicles it is located under the HT Coolant Reservoir).
6. Windscreen washer reservoir.
7. Power steering reservoir.
8. Front Winch auto reset circuit breaker. (On LHD vehicles, Pre-Fuse Box Under Hood (section 7.2) is beneath).
9. Jump start positive post.
10. EXT1 and EXT5 wiring preparation outlets approximate position.
11. Air filter.
12. Brake fluid reservoir. (On RHD vehicles, Pre-Fuse Box Under Hood (section 7.2) is beneath).
13. Engine lifting eye. (Diesel approximate position under engine cover).

Except for the lifting eye and oil filler, component positions are the same for LHD and RHD vehicles regardless of engine type.

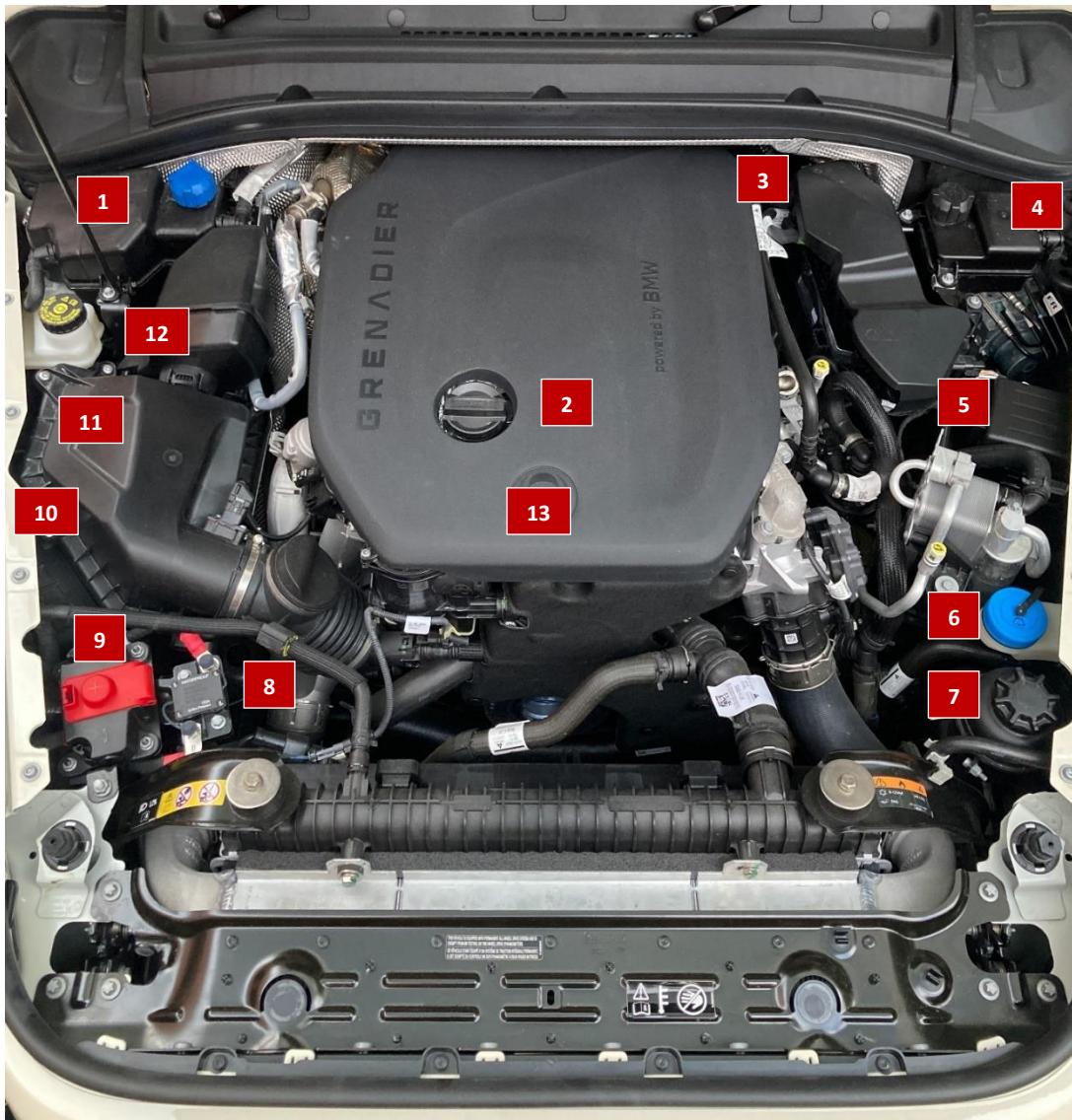


Figure 8 - Diesel RHD Engine Bay

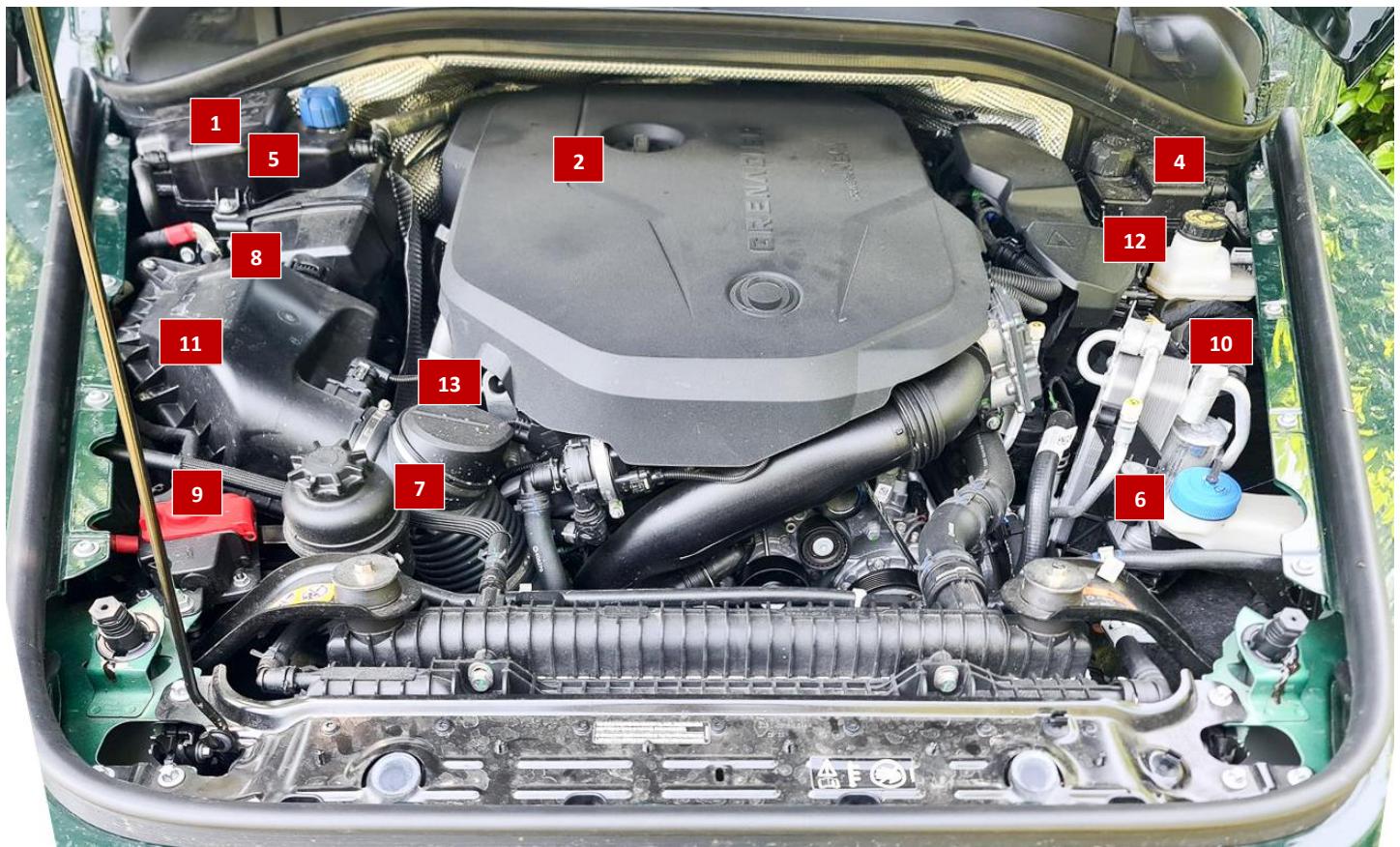


Figure 9 - Petrol LHD Engine Bay

Modified from @ Jean Mercier's Ineos Grenadier Forum post:

<https://www.theineosforum.com/threads/high-pressure-low-pressure-coolant-tanks.12412265/post-1333189171>

10.2. Bonnet Support Positions

Reference: Ineos Automotive (2023) p172 and Ineos Automotive (2024) p181-182.

The bonnet can be supported in 2 positions as illustrated in Figure 10 and Figure 11 below:



Figure 10 - Low Bonnet Support Position



Figure 11 - High "Maintenance" Support Position

To utilise the high maintenance position, the bonnet support arm needs to be removed from its front position and the bottom hook attached to the eyelet found to the front of the HT coolant reservoir. The top of the support arm slots into a bracket on the side of the bonnet above (Figure 12). The arm is orientated with the open end of the hook facing the engine.

For safety ensure that you have another person hold the bonnet when you relocate the support arm.



Figure 12 - High Support Bracket Position

11. Trailer Electrical Connectors

Thank you to @Clark Kent from the Ineos Forum for reviewing this section and providing additional detail.

In most countries, including Australia, the Grenadier is fitted with a 13 pin EU standard electrical trailer connector. Ineos use a modified implementation of the ISO 11446-2:2012 standard with the vehicle socket missing pins 10, 11 and 12. (<https://www.erich-jaeger.com/en/products/standards/iso-11446/iso-11446-scope-and-application>). For the North American market, a 7-pin round blade connector is fitted (Sect 11.2).

However, in Australia the 13 pin EU connector is rare and a variety of other connector types (flat 7 pin and 12 pin, large and small, round 7 pin) are used, which usually are wired to comply with Australian Standard AS4177.5-2004. Replacing the vehicle socket, using a wiring adaptor, or re-wiring equipment to match the vehicle socket may be required to electrically connect a trailer to the Grenadier.

The large round connector called 12N is also common in EU and UK but is wired to comply with ISO 1724. A variant of this connector (12S) with a different gender centre pin is used for supplementary electrical circuits and wired to comply with ISO 3732.

Appendix 3 - Trailer Electrical Connector Schematics provides further details of EU, NA and Australian connector wiring schematics and pin assignments.

11.1. Australian Wiring Considerations

The main electrical differences between the Australian and EU 13 pin connectors include:

- Rear tail lights including side and clearance lights. These are wired to one circuit (pin 7) on Australian connectors but are separated into left (pin 7) and right (pin 5) circuits on the EU connector.
- Electric brakes (service brakes) are wired to pin 5 on Australian connectors. No pin is allocated on the EU connector as electric brakes are not common in the EU and UK. However, the spare pin 12 is generally used if electric brakes are fitted. This pin is not fitted as standard to the Ineos EU 13 pin socket.
- Only the flat 12 pin Australian connector has provision for power and rear fog light connections to the trailer (pins 8-12). The EU 13 pin connector has provision for power (pins 9 & 13) and ignition-controlled power (pins 10 & 11).
- Anderson connectors (usually 50 amp) are also commonly used in Australia to run power to a trailer and supplement or replace the power pins in the main connector. Anderson connectors are independently wired to the vehicle's charging system using voltage sensitive or ignition switched relays.

To resolve these differences, either the socket on the Grenadier or the plug on the trailer can be replaced. Subject to the following comments, I prefer changing the vehicle socket. This allows other trailers to be towed by the Grenadier and your trailer to be towed by other vehicles in an emergency. I strongly recommend that an auto electrician undertake any wiring modifications as:

- Changing the connectors and wiring on the Grenadier may cause electrical issues and have warranty implications.
- Connecting the EU left and right tail lamp circuits together to feed into the single Australian circuit requires the use of diodes, wired in correct polarity, to stop signal errors and electrical feedback issues.
- Many trailers, particularly older ones, are wired differently to the Australian Standard. For example, my 2-year-old Cub camper trailer has power + wired to pin 2, rather than the reversing lights.
- The Grenadier uses a CAN bus system to monitor for correct operation of trailer lights. Adapting an older trailer to a CAN Bus-equipped vehicle can be problematic and particularly if the trailer is fitted with incandescent lamps (versus LED).

Alternatively, a simpler solution is to use a 13pin EU wiring adapter, provided your trailer is wired to Australian standards. Narva offers 7 pin flat (Part No 82285BL) and large 7 pin round (Part No 82290BL) adaptors. These are fitted with diodes on the tail lamp circuits and have a wire from pin 5 to pin 12 on the EU plug fitted for the trailer brakes. This is the option I am using and I've also modified an adaptor to match my camper trailer's wiring scheme.

An adaptor example and wiring schematics are shown in Appendix 3 - Trailer Electrical Connector Schematics. Be careful when buying adaptors, especially online as I have seen the following issues:

- Some overseas sourced adaptors (especially those with large round 7 pin connectors) may be wired to different standards than Australia.
- The trailer light blocking light diodes wired the wrong way around, resulting in the trailer tail lamps not working. The stripe or cathode end of the diodes should face the trailer side of the adaptor. Symbols are shown in Figure 13 below.

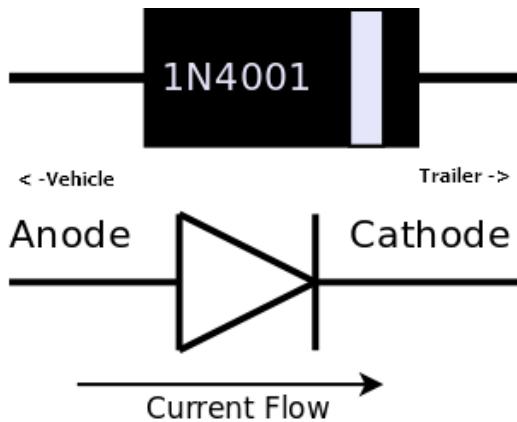


Figure 13 - Trailer Adaptor Diode Direction
Modified From: <https://pfNicholls.com/Electronics/diodes.html>

Finally, I strongly recommend that electric brake controllers are installed by an auto electrician. In Australia, Redarc make a controller kit (part No EDBK-030) for the Grenadier that can be purchased from Ineos dealers. This includes an additional pin which is fitted in position 12 on the socket. It has now been confirmed that all MY24 vehicles have the electric brake provision noted in the following section so the Redarc kit wiring may need to be modified to suit for MY24+ vehicles.

11.2. North American Specification Vehicles

For the North American market, the Grenadier is fitted with a 7-pin round blade connector, which unlike Australia is commonly used, making life a lot simpler. Wiring schematics and pin assignments can be found in Appendix 3 - Trailer Electrical Connector Schematics.

The NA spec vehicle wiring loom also includes provision for an electric brake controller. Thank you @ScottnAZ from the Ineos Forum (<https://www.theineosforum.com/threads/na-trailer-brake-controller-install.12414979/>). My understanding is that the wiring and instructions provided as part of the Australian Redarc Controller kit (part No EDBK-030) are not compatible with NAS Grenadiers due to the changed vehicle wiring loom and combination brake and turn signal lamps used in NA.

12. Refuelling Adaptors

12.1. Diesel

The diesel Grenadier is fitted with a mis-fuelling prevention flap in the fuel filler inlet. While this prevents costly misfuelling mistakes from happening, it only allows the car to be refuelled using a narrow diesel bowser nozzle. Outer diameters for Australian bowser nozzles are:

- Diesel, 1", 25mm.
- Petrol, 13/16", 20mm.
- High Flow Diesel, 1 1/4", 32mm.

You therefore can't easily refuel the car from a high flow diesel truck bowser or jerry can, which is a real limitation for remote travel. To solve the problem a refuelling adaptor nozzle is required (e.g. Figure 14).



Figure 14 - Emergency Fuel Filler Funnel

Other nozzle adaptor options include:

- 3d printed funnel by @Wakeo based on the design of @Aussie Battler on the Ineos Forum <https://www.theineosforum.com/threads/ineos-g-hi-flow-adaptor-courtesy-of-aussie-battlers-dimensions.12414940/#post-1333261852>
- Audi/VW also make one as a spare part (Part No 000072709).
- Pro-Quip in Australia make a jerry can spout with the right sized end. <https://www.proquip.com.au/accessories/metal-jerry-can-accessories/pourers-accessories/flexible-metal-pourer-for-diesel-with-diesel-nozzle/>
- Supercheap funnel with the end cut off (\approx 85mm from end) at the appropriate diameter. <https://www.supercheapauto.com.au/p/sca-sca-multi-purpose-funnel/618009.html>
- Similar adaptors can be found on E-bay, often for a Ford Focus.

12.2. AdBlue

Reference: Ineos Automotive (2023) p93-94 and Ineos Automotive (2024) p87-89.

AdBlue fluid can be purchased from most auto accessory shops and service stations. The price varies from \approx \$5/l for a 10l drum to->\$10 /l for a 1l bottle.

AdBlue is significantly cheaper at \approx \$2/l at service stations which have an AdBlue bowser. However, the AdBlue bowser nozzle has a special magnetic latch to prevent mis-fuelling or the filling of a container. To get around this an AdBlue magnetic filler adaptor is required which slips over the bowser nozzle, allowing containers to be refuelled.

<https://www.scintex.com.au/products/adblue-magnetic-tank-filler-adapter>.



Figure 15 - AdBlue Fuelling Adaptor

13. Maintenance

13.1. Service Schedules

Reference: Ineos Automotive (2023) p168 and Ineos Automotive (2024) p177.

The QR code links to the service schedules in the manuals are broken. Service schedules for Diesel and Petrol engines are attached in Appendix 5 - Grenadier Service Schedules. Note distances are halved when used in demanding environments. The diesel schedule was provided to me by Ineos. The petrol schedule was posted on the Ineos Grenadier Owners Facebook page, (<https://www.facebook.com/groups/3774825335877563/posts/8793653557328024/>). Both are for a Rest of World (ROW) spec Grenadier. A petrol schedule for an EU spec Grenadier can also be found on the Ineos Forum, thank you @Jean Mercier (<https://www.theineosforum.com/resources/petrol-20-000-km-%E2%80%93-12-month-service-intervals.27/>). Service intervals may be different for other countries.

13.2. Battery Disconnection Procedure

Reference: Ineos Automotive (2023) p183 and Ineos Automotive (2024). P192-194.

The following warning was advised to me by Ineos Australia.

- Allow the vehicle to enter 'Sleep' mode (vehicle switched off and systems inactive for at least 15 minutes). Failure to do this will result in:
 - Airbag system warnings being displayed and fault codes recorded in the airbag control module.
 - The passenger airbag will be automatically deactivated – no manual reactivation is possible.
 - Restoring the functions will require a visit to an Ineos service provider.

Leave a door or the bonnet open as well while the vehicle is going into sleep mode as opening a door will reawaken the vehicle. Some owners also turn off the automatic door open, light switch function as well. (Switch 11, Figure 2 and Table 2).

Note: There is some ambiguity as to the length of time that is needed for the vehicle to enter sleep mode with the sticker in Figure 16 stating 3 minutes. This sticker is found next to the starter battery on the plastic cover on recent production vehicles. I suggest erring on the side of caution and waiting at least 15 minutes.



Figure 16 - Battery Disconnection Warning Sticker

Once the vehicle has entered sleep mode follow the instructions below, to disconnect the Smartpass (combiner) & batteries. Instructions are copied from the MY24 owner's manual, (Ineos Automotive 2024, p. 194).

1. Disconnect the ground connection to the battery combiner (Smartpass).
2. Remove the negative (-) terminal on both the start and auxiliary battery. Never allow contact between the battery cables and conductive metal parts, for example, the vehicle body.
3. Perform the service work.
4. Re-assemble in the opposite order.
5. Check that there is no fault indication on the battery combiner (Smartpass) LEDs.

13.3. Jump Starting

Reference: Ineos Automotive (2023) p119-121 and Ineos Automotive (2024) p115-116.

Though the MY23 manual mentions the jump-starting posts under the bonnet it says to connect directly to the battery which requires a lot of trim removal. This is corrected in the MY24 manual.

The jump-starting connection points are found under the bonnet of the Grenadier (Figure 8) on the RHS to the front. The positive post is found under the red flap (Figure 17). The negative earth connection can be made using either:

- The bolt in front of the positive post box (Figure 17) or
- The engine lifting eye which is found at the front of the diesel engine under the engine acoustic cover (Figure 18) or on the front RHS of the petrol engine (Figure 9).

These connection points can also be used to jump start another vehicle from the Grenadier.

To access the lifting eye on the diesel engine, pull the engine cover up firmly upwards, on the sides, to disengage it from the mounting lugs. To reattach, place and centre the cover on the lugs and push down firmly until it engages on each lug.

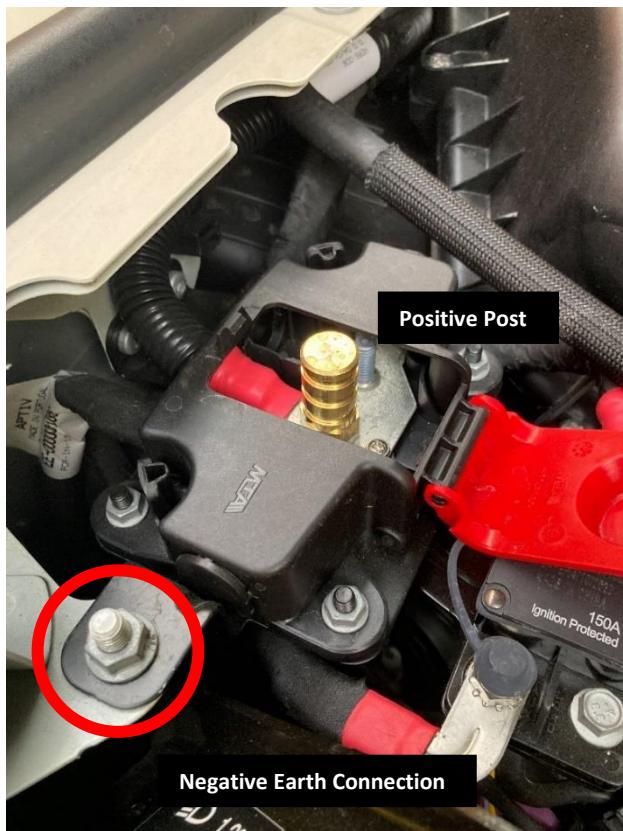


Figure 17 - Under Bonnet Jump Starting Connections

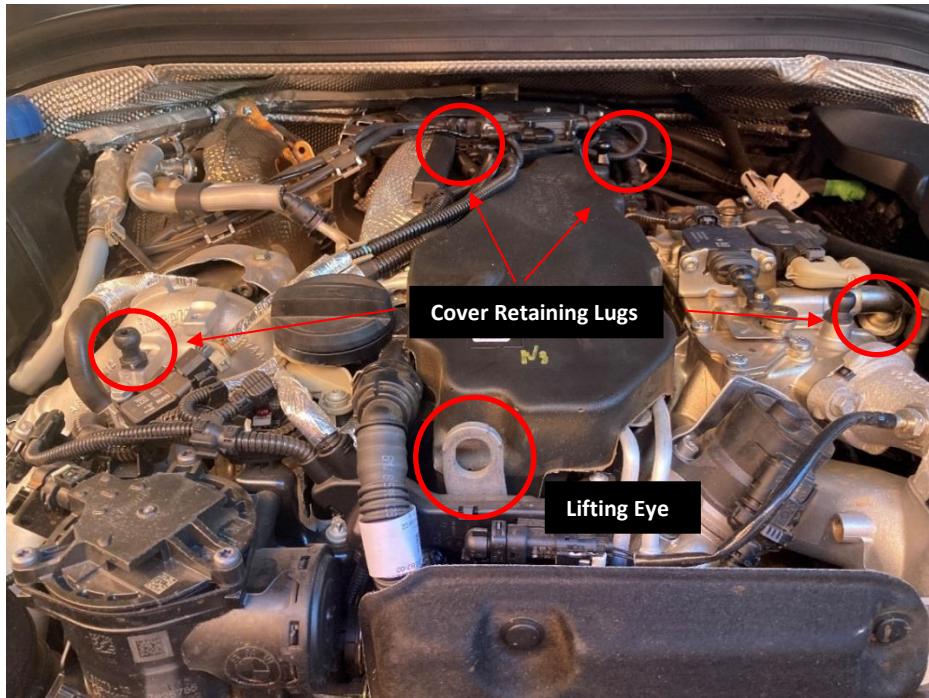


Figure 18 - Diesel Engine Lifting Eye Location

The following is the generally accepted procedure and clamp connection order to jump start a vehicle with a flat battery.

- Make sure both vehicles are turned off, transmissions in park (automatic) or neutral (manual) with handbrake applied. Wear eye protection.
- Connect the jumper cable clamps in the following order (Figure 19), ensuring that the negative and positive clamps don't touch each other and short:
 1. Connect one positive red clamp to the positive (+) terminal of the dead vehicle battery (Red on dead +).
 2. Connect other positive red clamp to the positive (+) terminal of donor vehicle battery (Red on donor +).
 3. Connect one negative black clamp to the negative (-) terminal of the donor vehicle battery (Black on donor -).
 4. Connect the other negative black clamp to a chassis earth point, away from the battery on the dead vehicle, to avoid any sparks which may ignite hydrogen gas (Black on dead chassis -).
- Start donor vehicle, wait a couple of minutes.
- Start flat vehicle. Let both vehicles run for a few minutes.
- Disconnect the jumper cable clamps in the reverse order **4 – 3 – 2 – 1**.
- Keep the dead vehicle running to charge the battery.

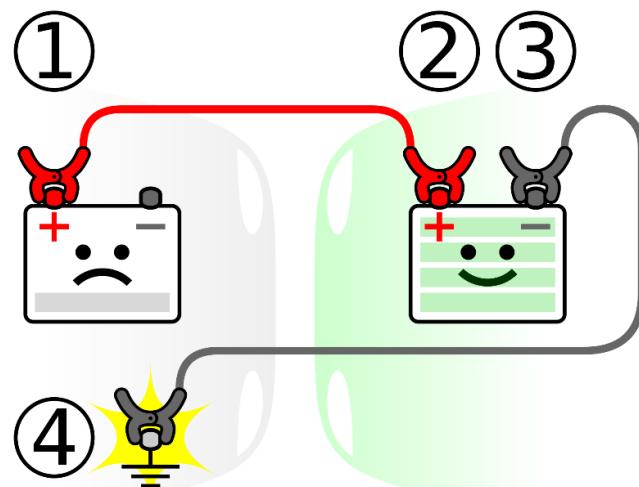


Figure 19 - Jump Starting Connection Procedure

Figure from: [https://en.wikipedia.org/wiki/Jump_start_\(vehicle\)](https://en.wikipedia.org/wiki/Jump_start_(vehicle))

13.4. Diesel Water Separator

Reference: Ineos Automotive (2023) p176-177 and Ineos Automotive (2024) p186-187.

The diesel water separator is located on the LHS of the vehicle in front of the rear spring, as illustrated in Figure 20 and Figure 21. This is fitted as standard on Australian specification vehicles.



Figure 20 - Diesel Water Separator Location



Figure 21 - Diesel Water Separator

Ineos advise the procedure for changing the diesel water separator filter as follows (Figure 22).

PROCEDURE

Remove

1.	Disconnect the Battery. Refer To: Battery (Disconnect and Connect)
2.	Lift the vehicle on a ramp. Refer To: Lift Vehicle On Ramp
3.	Put an applicable container under the Water Separator to catch the diesel and water mixture.
4.	Disconnect the electrical connector from the Water Separator.
5.	Move the connector aside.
6.	<p> WARNING: Fuel vapour is explosive. During the procedure, fuel lines will be open. Make sure that there is suitable ventilation and use all necessary precautions to prevent risk of fire.</p> <p> WARNING: Read and obey all fuel handling instructions before work is started on the fuel system. Clean up all spilled fuel immediately and discard all fuel contaminated materials safely.</p> <p> WARNING: You must disconnect the battery ground cable before any work is started on the fuel system.</p> <p> WARNING: Do not switch the ignition on until all of the work on the fuel system is complete. This will include when the area is cleared of fuel and fuel vapour contamination.</p> <p>Remove the Cap and Filter assembly.</p>
7.	<p> CAUTION: Discard of the Water Separator Filter correctly.</p> <p>Remove the Water Separator Filter from the Cap.</p>
8.	Remove the O-ring from the Cap.
9.	Drain all water and contaminants from the Cap.

Install

10.	Install the new O-ring to the Cap.
11.	Install the new Water-Separator Filter to the Cap.
12.	Apply a small quantity of oil to the two O-rings.
13.	Install and tighten the Cap and Filter assembly.
14.	Move the electrical connector into position.
15.	Connect the electrical connector to the Water Separator.
16.	Remove the container from under the Water Separator.
17.	Lower the vehicle off the ramp. Refer To: Lift Vehicle On Ramp
18.	Connect the Battery. Refer To: Battery (Disconnect and Connect)

Figure 22 - Water Separator Filter Replacement Procedure

13.5. Drive Belt Replacement

Ineos advise the procedure for changing the diesel engine drive belt as follows (Figure 23).

PROCEDURE

Remove

1.	 WARNING: The engine can be hot after operation of the engine. Let the engine cool for one hour before you do work. If you do not, personal injury can occur.
	Remove the Front Acoustic Cover. Refer To: Front Acoustic Cover (Remove for Access and Install)
2.	Use the applicable tool to rotate the Tensioner assembly into position.
3.	Install Special Service Tool 83 30 2 475 442 into the Tensioner assembly to hold it in position.
4.	 <i>NOTE: Part of the Drive Belt is hidden for illustration purposes.</i>  <i>NOTE: Make sure that the Tensioner moves smoothly. If the Tensioner does not move smoothly, replace the Tensioner.</i>  <i>NOTE: Make sure that the Tensioner returns to the correct position and applies tension to the Drive Belt when you check the Tensioner.</i> Rotate and hold the left Pulley Assembly clockwise to release the tension from the Drive Belt.
5.	Install Special Service Tool 83 30 2 475 444 to hold the Tensioner Pulley in position against the Water-Pump Pulley.
6.	Remove the Drive Belt.

Install

7.	Install a new Drive Belt.
8.	Rotate the left Pulley Assembly clockwise to release the tension on the Special Service Tool and hold it in position.
9.	Remove the Special Service Tool from between the Tensioner Pulley and the Water-Pump Pulley.
10.	Rotate the left Pulley Assembly counter-clockwise to apply tension to the Drive Belt.
11.	Remove the Special Service Tool from the Tensioner assembly.
12.	Use the applicable tool to rotate the Tensioner assembly to its initial position.
13.	Install the Front Acoustic Cover. Refer To: Front Acoustic Cover (Remove for Access and Install)

Figure 23 - Diesel Engine Drive Belt Remove and Install Procedure

13.6. HT and LT Coolant Reservoirs Purge Procedure

Many Ineos forum members have reported issues with the performance of the heater. The issue has often been resolved by purging air from the cooling system. (<https://www.theineosforum.com/threads/heater-output.12413338/>).

Ineos Forum member @alvan has advised a procedure to purge air from the coolant system of the B58 petrol engine.

- (https://www.theineosforum.com/threads/rok_dr%E2%80%99s-exceedingly-unofficial-owner%E2%80%99s-manual-supplement.12415655/post-1333277482)

This has been slightly modified based on the recent advice of Ineos Forum Member @TahoeGren.

- (https://www.theineosforum.com/threads/rok_dr%E2%80%99s-exceedingly-unofficial-owner%E2%80%99s-manual-supplement.12415655/post-133311120)

@DenisM also reminded me that a similar procedure is described in the BMW B57 tech training manual

- (<https://www.theineosforum.com/attachments/b57-engine-pdf.7795216/>)

Purge Procedure

- Cold engine (coolant <50° C) and levelled car.
- Open bonnet. Top up both reservoirs to max level, don't overfill.
- Close bonnet.
- Handbrake on.
- Gearbox in Park.
- Auto A/C off.
- Temperature knob to maximum and Fan to 1.
- Turn ignition to on position (engine still off).
- Press the accelerator pedal to 100% for at least 10 seconds.
- Release accelerator pedal and press the brake pedal.
- Start the engine within 30 seconds of releasing accelerator pedal.
- After a few seconds, "Service Started" appears on the display.
- Wait at least 11 minutes. The engine will automatically rev up and down a few times.
- After 11 minutes "Service Ended" appears on the display.
- If necessary, top up your coolant using the correct spec coolant concentrate diluted to 50% (Table 5).

Note: I haven't tested the procedure as my heater works. If you are at all unsure consult your agent.

13.7. Engine Oil Change

Ineos forum member @Ragman has posted an excellent video, on his Dickin' Around Outdoors YouTube channel, showing how to change the engine oil on a petrol Grenadier. (<https://www.youtube.com/watch?v=LzTYvVvp-s>).

Notes:

- The oil filter, filler cap and sump plug locations on the diesel engine are in similar positions to the petrol engine. Refer to section 10.1 for locations.
- The diesel engine has a greater oil capacity than the petrol engine. Refer to Table 5 - Fluid Specifications for oil quantities.
- Based on @Ragman's experience it's worth purchasing an extra litre of oil in case you have to top up further after checking the oil level.

13.8. Cabin Air Filter

The HVAC system air filter is in the dashboard, up behind the glovebox (Figure 24a), between the glove box and a plastic grill (Figure 24b). It orientated vertically and held in place by a rectangular plastic flap (≈200mm x40mm), at the bottom. The flap has 2 retaining clips, one on each side of the housing (Figure 24b).

Removal:

- Reach up either side of the housing and gently release the retaining flap side clips. The flap will then pivot down to expose the filter (Figure 24c).
- The filter has a little tag on the bottom (Figure 24c). Use it to pull the filter downwards to remove.

Replacement:

- The top side of the filter has airflow direction arrows (Figure 24d). Ensure that they are pointing toward glove box, away from the plastic grill and that the filter removal tag (Figure 24c) is at the bottom.
- Push the filter gently upwards into the housing until it is seated correctly.
- Clip the plastic retaining flap back into place.

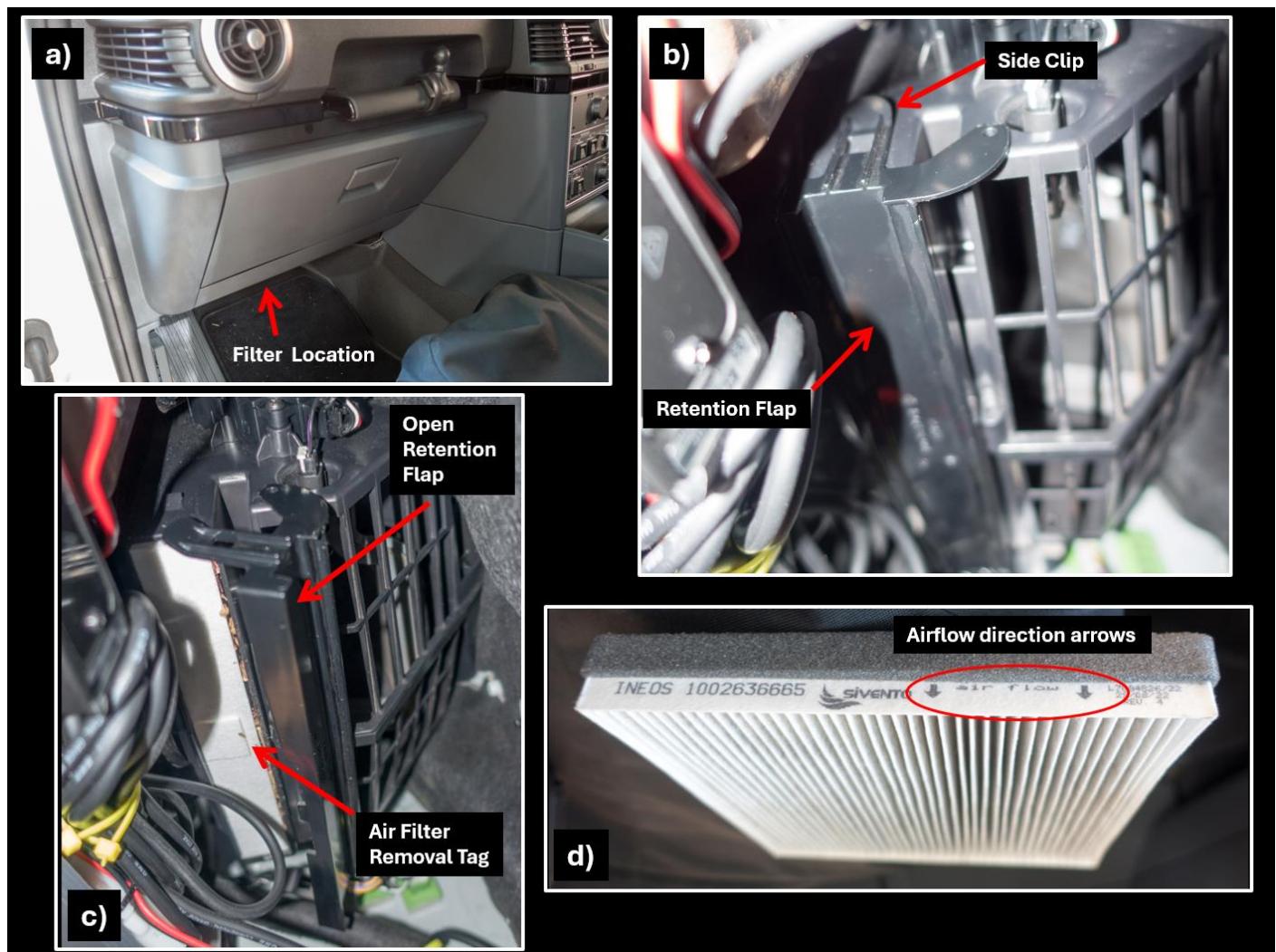


Figure 24 - Cabin Air Filter

a) Filter Location. b) Retention Flap & Side Clip Location. c) Opened Flap & Air Filter. d) Filter Airflow Arrows.

13.9. Long Term Vehicle Storage

The Ineos Body Builder Guide (Ineos 2024b, Section 3.10, pages 46-49) provides useful information on how to prepare the Grenadier for long term storage. It also details how to activate and deactivate Transport Mode (section 3.10.3 pages 48-49). When this mode is activated power consumers such as lights and window regulators are deactivated.

To activate the transport mode, pull the fuse **FC04 (5A)** in the Cockpit Electrical Centre fuse box. Deactivate transport mode before starting up the vehicle. To achieve that, simply put the fuse **FC04 (5A)** back in its place, in the Cockpit Fuse Box.

13.10. Tyre Rotation

Periodic rotation of tyres is recommended to maximise tyre life and prevent uneven wear.

The Grenadier has pressure sensors fitted to each tyre, with pressures and temperatures displayed on the Offroad Temperature screen. Unfortunately, the system only recognises when the spare tyre is fitted and changing the position of other tyres will result in them still appearing to be in their original positions in Offroad Temperature screen. To fix this the pressure sensors need to be reprogrammed by the dealer to their new positions on the vehicle.

@Stu9 from the Ineos Forum has posted a rather tedious manual method that he has used to successfully get the rotated tyres to register in their new positions. It has been slightly refined by @MurphyMurph who discovered the distance needed to drive for the sensors to recognise their new positions.

- <https://www.theineosforum.com/threads/tyre-rotation.12415178/post-1333306499>.
- <https://www.theineosforum.com/threads/tyre-rotation.12415178/post-1333317736>

The procedure is as follows:

1. The 5-tyre rotation as illustrated in Figure 25 should be used.

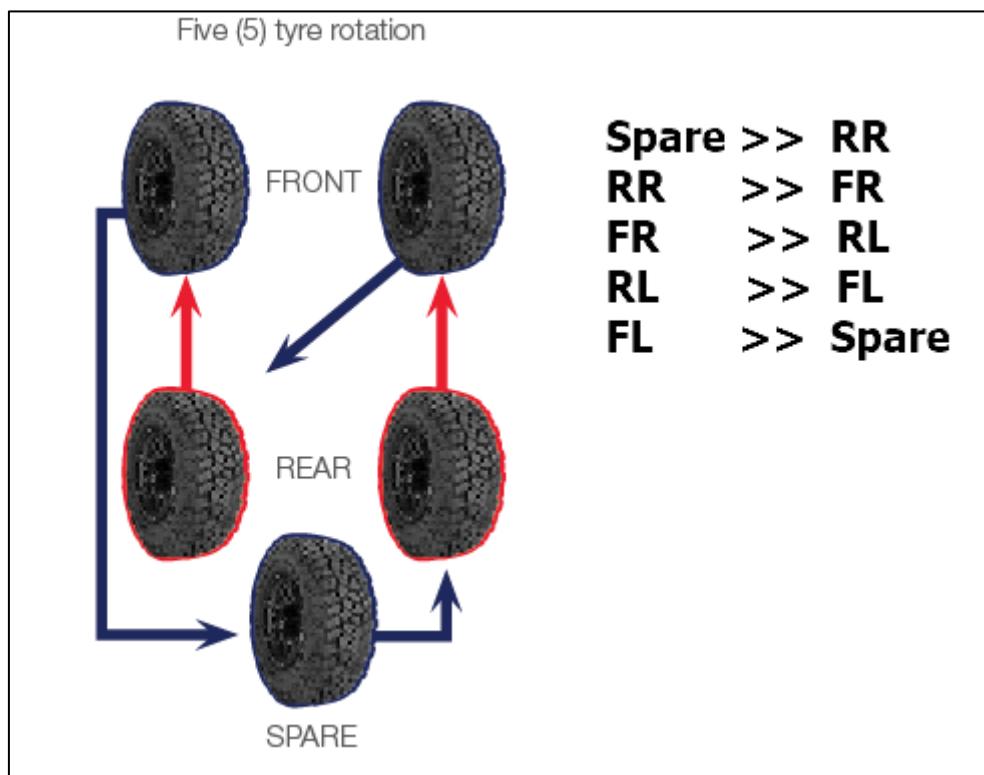


Figure 25 - 4wd 5 Tyre Rotation

Modified From <https://www.coopertires.com.au/tyres-explained/rotating-your-tyres/>

2. To help confirm that the wheel sensor is correctly registered to the new location, set noticeably different pressures for the spare, rear pair and front pair (eg, spare 340kpa, rear tyres 300kpa and front tyres 260kpa).
3. Fit the SPARE to the REAR RIGHT. Put the rear right tyre on the spare carrier. Drive the car for at least 8km. Have the Off Road Temperature screen on the display so you can see when the system recognises the spare is now at the rear right. The pressure display will change to the new tyre's pressure.
4. Fit the original REAR RIGHT wheel (ie new spare) to the FRONT RIGHT. Put the front right on the spare carrier. Repeat the 8km drive until the system recognises the change of tyre.
5. Fit the original FRONT RIGHT wheel (ie new spare) to the REAR LEFT. Put the rear left on the spare carrier. Repeat the 8km drive until the system recognises the change of tyre.
6. Fit the original REAR LEFT wheel (ie new spare) to the FRONT LEFT side. Mount the front left wheel on the spare carrier. Repeat the 8km drive until the system recognises the change of tyre.
7. Correctly inflate or deflate all tyres to the pressures you wish to run.

13.11. Interior Trim and Parts Removal

The interior trim is reasonably easy to remove provided you have a set of plastic trim removal tools and take your time. Generally, panels are retained using clips and/or torx head screws. If a particular panel hangs up on removal look closely as there will often be a “hidden” screw.

The following sections provide details on how to remove specific pieces or areas of trim in the Grenadier. I will add additional links as I find them or when they get published online. Ultimately this section will be replaced when the workshop manual is published.

13.11.1. Front Footwell, Passenger Dash and Door Frame Trims

John Canny provides some good advice on these in his YouTube channel Canny Outdoors, UHF radio install video.

- <https://www.youtube.com/watch?v=Ads375d1F3s> .

Ineos Forum member @Jean Mercier also gives good, illustrated descriptions in these threads:

- <https://www.theineosforum.com/threads/auxiliary-usb-charging-point-in-auxiliary-footwell-power-point.12412359/>
- <https://www.theineosforum.com/threads/removal-of-side-panels-driver-side-and-using-the-auxiliary-power-point.12412534/>

Ineos Forum member @ninetubes has a nice YouTube clip of removing the front passenger side dash panels to install a UHF radio.

- <https://www.youtube.com/watch?v=H7XzKCFylo0&t=1s> (thankyou @pedrogb).

13.11.2. Rear Cargo Area and Rear Under Seat Trims

Ineos Forum member @Tinki provides illustrated descriptions of how to remove trim in these areas as part of his 400w inverter installation.

- <https://www.theineosforum.com/threads/inverter-retrofit-to-oem-400-w.12415904/>

Stephen King in the Ineos Grenadier Owners Australia, Facebook group has also published a brief PDF covering parts of the rear load area, door frames, footwells and centre console.

- <https://www.facebook.com/groups/3774825335877563/permalink/8700497276643653>. Note this is a private Facebook group so you will have to join the group to access his document.

Ineos Forum member @Korg provides a very comprehensive PDF installation guide for the Wolfbox rear view mirror. It has some good tips and illustrations on removing trim.

- <https://www.theineosforum.com/threads/wolf-box.12414017/post-1333276814>.

13.11.3. Overhead Switch Panel

Ineos Grenadier Forum members @grnamin and @landmannnn provide some good illustrations and a website link on removing the overhead switch panel and rearranging the switches.

- <https://www.theineosforum.com/threads/overhead-switch-panel-moving-switches.12415930/#post-1333284793>
- <https://customgrenadier.com/interior/roof-switch-panel-removal/>

13.11.4. Door Trims

The Wrap Shack has a short YouTube video demonstrating how to remove the front and rear door trims.

- <https://www.youtube.com/watch?v=R0gxKoPgBW8>

13.11.5. Seat Removal

Goose Gear (<https://www.goose-gear.com/>) provides a comprehensive instruction document on how to install their second-row seat delete plate, which includes removing the rear seat. A link to the document can be found in Section 16.2. Thank you to @Loc Nar on the Ineos Forum for finding this.

Agile Offroad's twin compressor installation guide has comprehensive instructions on how to remove the front seats as well as the under-seat trims for the rear passenger seats.

- https://agileoffroad.com/wp-content/uploads/2024/11/AO-C1G-2-Grenadier-Twin-Compressor_Installation-Manual_v2-compressed.pdf

13.12. Exterior Parts Removal

13.12.1. Bumpers

Ineos Forum member @andremacd gives an illustrated description of how to remove the rear bumper in this post.

- <https://www.theineosforum.com/threads/rear-bumper-removal.12415287/post-1333312314>

Description of how to remove an EU front bumper by Ineos Forum member @RAS.

- <https://www.theineosforum.com/threads/error-message-tyre-pressure-sensor-lost.12414029/post-1333243615>

14. Emergency Procedures

When an emergency or breakdown occurs, having easily accessible, clearly written instructions can help reduce stress, avoid creating further problems and minimise further damage or injury. This section documents relevant emergency procedures applicable to the Grenadier. Some of these may also be found in the owner's manuals. Additional procedures will be incorporated in future editions.

Thank you to @Clark Kent from the Ineos Forum for his assistance with the writing of this section.

14.1. Setting the Drive Train in Neutral for Recovery and Towing.

In a breakdown or recovery situation the Grenadier drive train may need to be manually placed into a neutral position so that it can be safely moved without damage. Depending on the degree of disablement there are currently 3 ways of achieving this. These are detailed in the following sections in increasing order of disablement.

WARNINGS:

- Manually placing the vehicle in neutral should only be undertaken to move/tow it over short distances (<5km) at slow speeds (<50km/h) or to recover a disabled vehicle onto transport. Ineos do not recommend flat towing the Grenadier or towing with only 2 wheels on the ground.
- The handbrake must be engaged before the vehicle is placed in neutral. The park position of the automatic transmission has no effect when either the transfer case or the transmission is in neutral.
- Wheel chocks and the handbrake should be used anytime a person is working underneath the vehicle.
- A 2nd person is required to operate the steering and brakes when the vehicle is being moved. The handbrake must be reapplied when the vehicle is parked. Wheel chocks are also recommended.

CAUTION: Working underneath the vehicle creates an exposure hazard to hot surfaces and loose debris. The use of personal protective equipment including eyewear and gloves is recommended.

NOTE: It is recommended that a note is written and displayed in the vehicle to advise what actions were taken to move the vehicle so subsequent recovery and repair personnel are aware of the status of the transfer case or transmission.

14.1.1. Car Wash Function

Reference: Ineos Automotive (2023) p81 and p117-118. Ineos Automotive (2024) p74-75.

If the vehicle can be started normally the following process puts the vehicle into a state for safe rolling.

1. With the engine running put the transmission into **N** while pushing the brake pedal.
2. Turn the key to off to stop the engine, then immediately back to position 1 (on). This will keep the

transmission in neutral and unlock the steering column.

NOTE: If the transmission shifts back to the park position, repeat steps 1 and 2 ensuring you turn the key quickly back to position 1 after stopping the engine.

3. The "car wash function" is now engaged and the vehicle can be moved.

NOTE: The key must remain in position 1 (on) while the vehicle is being moved. If the key is turned off, the transmission will shift to park and the steering column lock will engage. Turn off the key only after the vehicle has been moved. Re-engage the car wash function to move the vehicle as necessary.

14.1.2. Placing The Transfer Case into Neutral

Reference: Ineos Automotive (2023) P83-85 and p116-118. Ineos Automotive (2024) p76-78 and 112-114.

The transfer case can be manually placed in neutral by the following procedure. The procedure is summarised from the MY24 owner's manual (Ineos 2024) which assumes that the car can select neutral in the automatic transmission and is electrically active.

1. If the engine is running, then select neutral in the automatic transmission.
2. Engage the handbrake.
3. Set the centre differential to the unlocked position.
 - Lift the collar on the transfer case selector and shift to a 'midpoint' between low and high range. NOTE that the selector will not lock into place.
 - Next, underneath the vehicle the 'neutral screw' can be found on the right-hand side of the Transfer Case. It is identified by the word 'NEUTRAL' and a directional arrow, on the Transfer Case housing (Figure 26). This will confirm the clockwise rotation, to achieve the neutral status of the vehicle. If you have a bash plate fitted this may need to be removed or loosened off to gain access to the neutral screw.
 - The neutral screw must be rotated clockwise, screwing inwards until it can't go any further. Once the screw has been screwed in as far as possible, the vehicle will be in a neutral state. Use the 13mm ring spanner from the vehicle tool kit to turn the screw. **Do not use power tools.**
 - If applicable tighten/refit the bash plate.

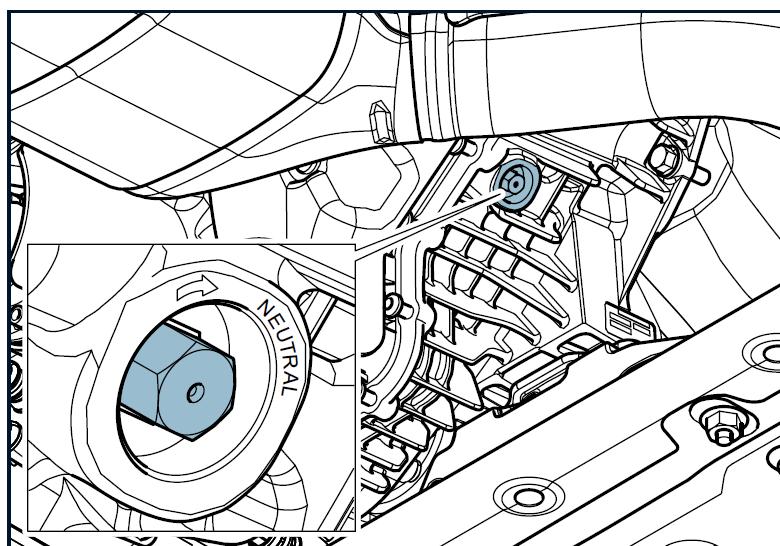


Figure 26 - Transfer Case Neutral Screw

Figure from INEOS (2024) p78

4. Turn the key in the ignition barrel to position 1 (on), this will then unlock the steering column. If the battery needs to be disconnected, unlock the steering column first before disconnecting. Release the handbrake. If the engine is on the automatic transmission must be in neutral.
5. **NOTE:** The key must remain in position 1 (on) while towing, do not try to change the position of the key in the ignition barrel, until towing has finished, and the vehicle is stationary.

CAUTION: Leaving the ignition on while towing will drain the battery and the vehicle lamps will activate for braking and directional indicating. Only drive short distances (<5km) when towing the vehicle.

6. After towing or transporting. It is important that the vehicle is removed from the neutral state before starting the vehicle to avoid damage to the transfer case.
 - Engage the hand brake and chock the wheels.
 - Rotate the Neutral Screw (Figure 26) anticlockwise to re-engage the transfer case, **but only until the screw head is flat and flush with the Transfer Case Housing**. Any more than this will result in severe damage to the transfer case.
 - Lift the collar on the transfer case selector and move the selector to either the high or low position.
 - Refit or tighten up the bash plate if applicable.

14.1.1. Manually Placing the Automatic Transmission into Neutral

On the ZF 8HP automatic transmission there is a spring-loaded lever on the left-hand side. This lever needs to be pulled down and secured to disengage the parking pawl, placing the automatic transmission into neutral. This feature is provided for use with other makes of vehicles fitted with the ZF 8HP transmission. **The only Ineos-approved method to place the Ineos drivetrain into emergency neutral is via the Transfer Case neutral screw.**

15. Infotainment System

15.1. Infotainment System Hard Reset

If the infotainment system becomes unresponsive then a hard reset can be performed as follows:

- Switch on the car.
- When the infotainment system wakes up press and hold the Mute button (at the bottom of the centre console) down.
- Keep holding the Mute button down. If you release it too early the system will not reboot.
- Once the **whole** screen has gone black then release the mute button. The system will restart after a minute.

15.2. Audio Menu

Reference: Ineos Automotive (2023) p146-152 and Ineos Automotive (2024) p155-160.

The Audio menu structure and options available for an MY23 Australian Diesel Trialmaster are detailed in Appendix 6 - Settings and Audio Menu Structure. The menu structure and options will be different for different countries and models.

15.3. Supported USB and Audio Formats

Reference: Ineos Automotive (2023) p150-152 and Ineos Automotive (2024) p158-159.

USB flash drives can be connected to either the USB A or C ports in the centre console. The system will recognise solid state SSD drives and I have been able to successfully connect NTFS formatted SSD drives up to 2tb in size. External mechanical hard disc drives are not supported. Both ports support USB2.0 data transfer speeds. They support the BC1.2 charging standard for compliant devices (up to 1.5 Amp)

Note: The optional USB ports installed on the rear of the centre console are for charging only, they have no data functionality. The USB A port has a 2.4-amp output. The USB C port has a 3-amp output.

Table 16 - Supported USB Flash Drive Formats

USB Format	Readable
Fat32	Yes
NTFS	Yes
exFat	No
HFS	Not tested

Table 17 - Supported Audio Formats

Audio File Format	Readable	Comments
.MP3	Yes	Artwork supported
.Flac	Yes	Artwork supported
.Wav	Yes	
.Ogg	Yes	
.Aac	No	
.Wma	No	
.M4a	No	

15.4. Settings Menu

Reference: Ineos Automotive (2023) p153-157 and Ineos Automotive (2024) p160-163.

The settings menu structure and options available for an MY23 Australian Diesel Trialmaster are detailed in Appendix 6 - Settings and Audio Menu Structure. The menu structure and options will be different for different countries and models.

15.4.1. Volume Settings Explanations

Reference: Ineos Automotive (2023) p155-156 and Ineos Automotive (2024) p162-163.

More detailed explanations of the volume settings found in the “Settings>Acoustic Settings>Volume Settings” Menu (Appendix 6 - Settings and Audio Menu Structure) as advised by Ineos support are:

- *Vehicle Start:*
 - *Explanation: This setting controls the sound or volume level that plays when the vehicle starts. It might be a chime, tone, or engine sound simulation. I've found it also sets the radio start volume as well.*
 - *High Setting: A louder, more noticeable sound when the vehicle starts.*
 - *Low Setting: A softer, less intrusive sound at startup.*
- *Increase Volume Notification:*
 - *Explanation: This setting determines whether you receive an audio notification when the volume is increased to a certain level.*
 - *High Setting: The notification sound is louder, making it clear that the volume has been increased.*
 - *Low Setting: The notification sound is softer, providing a more subtle indication of the volume change.*
- *Volume Minimisation:*
 - *Explanation: This setting likely refers to how much the volume is reduced when certain conditions are met, such as when receiving a phone call or when navigation instructions are being announced.*
 - *High Setting: A greater reduction in volume, making other sounds or announcements more prominent.*
 - *Low Setting: A smaller reduction in volume, keeping the background audio more audible.*
- *Speed Dependent Volume Control:*
 - *Explanation: This setting adjusts the audio system's volume based on the vehicle's speed. As the vehicle's speed increases, the volume automatically increases to compensate for road noise, and vice versa.*

- *High Setting: A more significant adjustment in volume with speed changes, providing a noticeable increase in volume at higher speeds.*
- *Low Setting: A more subtle adjustment in volume, with smaller changes as the vehicle's speed varies.*

15.4.2. Passenger Airbag

Reference: Ineos Automotive (2023) p155. and Ineos Automotive (2024) p162.

Depending on your jurisdiction the passenger airbag may be turned on or off as follows:

- Settings>Vehicle Functions>Passenger Airbag Off.
- Toggle the switch to either On or Off.
- A pop-up message will appear: "**Please press the brake pedal for 3 seconds**".
- An "**Operation successful**" message will then appear.

15.5. Trip Meters

Reference: Ineos Automotive (2023) p66

A button labelled TRIP is found on the end of the indicator stalk. Its operation is not explained in either the MY23 or MY24 Owner's manuals.

The Grenadier has 2 trip meters which record distance travelled, average fuel consumption and average speed, as follows:

- From Start: Current days travel which resets automatically each day.
- From Reset: Traditional tripmeter which records distance etc since it was last reset.

A **short push** of the TRIP button will highlight (white outline) the INFO1 area next to the ODO on the centre screen. While highlighted:

- Further **short pushes** will cycle through the INFO1 settings selected in the "Settings>Display Settings>Configure Info Areas" menu (Appendix 6 - Settings and Audio Menu Structure).
- Alternatively, a **short push** down on the Central Control Interface Rotary Controller (Ineos Automotive 2023, p126-127 and 2024, p135-136) will result in an up/down arrow symbol appearing next to the highlighted INFO1 area (Figure 27). Turning the rotary controller will cycle through the INFO1 settings. A further **short push** down on the Rotary Controller will leave the INFO1 area.



Figure 27 - Highlighted INFO1 Area. Rotary Controller Arrows to Left.

A **long push** of the TRIP button, after highlighting the INFO1 area, will bring up a selection window (Figure 28), where the trip meter to be displayed in the INFO1 area can be selected and also allow the selected trip meter to be reset. While the selection pop-up window is displayed:

- A **short push** of the trip button will toggle between each trip meter to select which one is displayed in the INFO1 area. Once selected the pop-up window will disappear after a few seconds.
- A **long push** will clear the highlighted trip meter and the pop-up window will disappear.

Tap anywhere on the main screen to leave the INFO1 area.

Trip meters can also be reset in the “Settings>Vehicle Functions> Trip Information” menu (Appendix 6 - Settings and Audio Menu Structure).

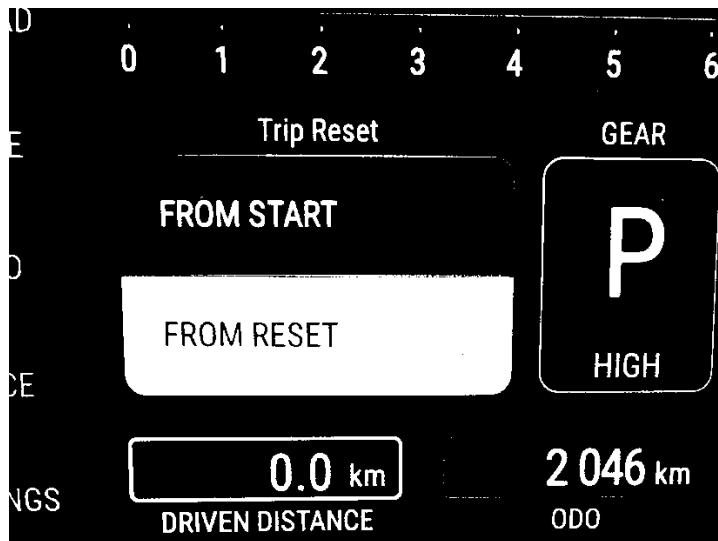


Figure 28 - Trip Reset Pop-up Dialogue

Alert warnings on the main screen (except critical red ones) can be temporarily hidden until you restart the car. When the alert is showing, a **short push** of the trip button will highlight the alert. A second **short push** will remove it. Tap anywhere on the main screen to exit. Thank you, Ineos Forum member, @Jean Mercier for working this out. <https://www.theineosforum.com/threads/how-to-disable-the-popping-up-of-the-service-interval-warning.12415690/post-1333281588>

15.6. Pathfinder Mode

Reference: Ineos Automotive (2023) p136-138 and Ineos Automotive (2024) p145-146.

The Pathfinder mode in the Offroad menu allows the user to record and follow a breadcrumb trail of waypoints. Ineos uses the common .gpx file format to capture these waypoints. Files can be saved and transferred using USB flash drives.

Pathfinder mode also has a roadbook function where tripometers are displayed to allow a navigator or passenger to follow a handheld rally/run roadbook.

Be aware of the following limitations:

- The Ineos Pathfinder app only recognises the waypoints in the GPX file. Tracks, routes and their subordinate segments and points are not recognised. The different data types captured in a GPX format data file are explained further in this Wikipedia article https://en.wikipedia.org/wiki/GPS_Exchange_Format.
- If you are creating a .gpx file using other software, it may not be readable by the Ineos Pathfinder app if it only contains tracks and routes.
- When recording a path there is a file size limit of 2000 waypoints (pers comm Ineos).

To enter Pathfinder mode, select Offroad mode and then select Pathfinder (Figure 29). Three options will then be displayed, Follow Path, Record Path and Roadbook (Figure 30).



Figure 29 - Offroad Screen



Figure 30 - Pathfinder Screen

15.6.1. Follow a Path

- Select Follow Path (Figure 30).
- Select Source on the next screen (Figure 31).
- In the source screen (Figure 32) select the file location (source), Local is the vehicle HDD. If you have a USB flash drive plugged in it will appear in this menu as either USB A or USB C.
- Select the file you wish to follow in the next screen (Figure 33).
- If you select a file on a USB flash drive it will be automatically copied to the local drive.
- In the next screen (Figure 34), select the order you wish to follow the file track, either recorded or reverse.
- To return to a previous screen tap the symbol at the top of the screen next to "Follow Pathfinder".



Figure 31 - Follow Pathfinder Menu



Figure 32 - Follow Pathfinder File Source Screen



Figure 33 - Follow Pathfinder File Selection Screen



Figure 34 - Follow Pathfinder Path Order Selection Screen

- The main navigation screen will now appear (Figure 35). The screen will show:
 1. The current location Latitude and Longitude (WGS84 decimal degrees).
 2. Number of satellites.
 3. The Compass Rose showing the direction of travel (yellow arrows) and distance to the next waypoint in the centre (yellow rectangle).
 4. Current and total waypoints in the file (e.g. 1/26) and a line graphic showing the current waypoint position relative to others in the file.
 5. Altitude and air pressure.

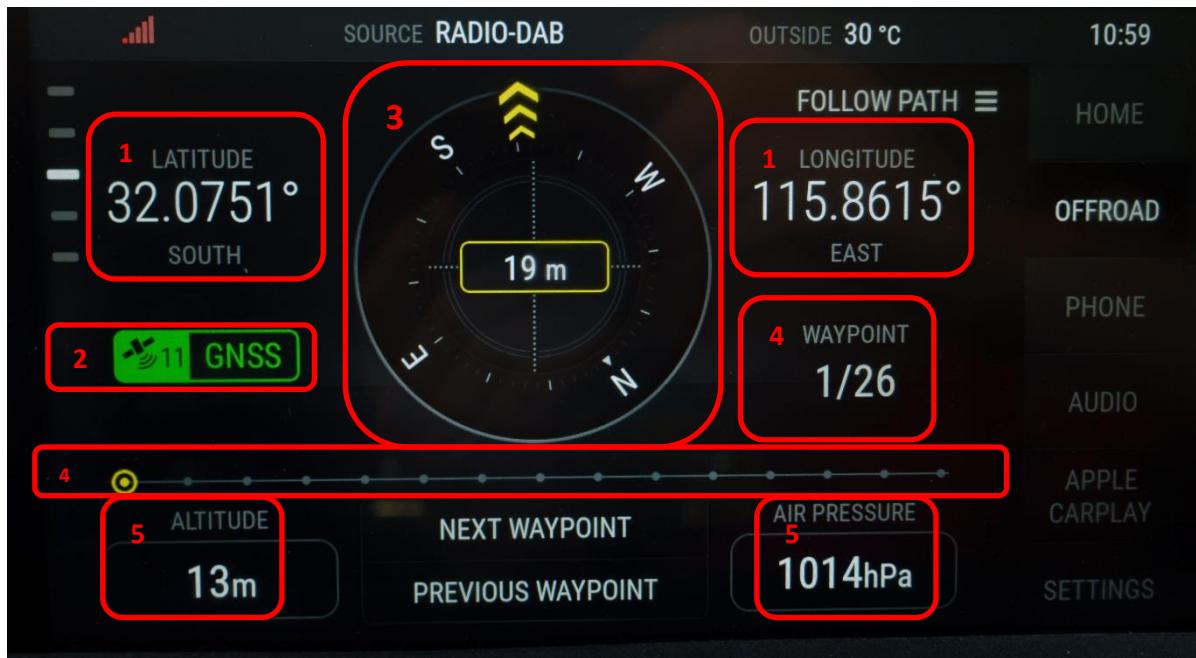


Figure 35 - Pathfinder Follow Path Screen

Following the path can be undertaken either Manually or Automatically.

Manual:

- To follow a path manually tap at the centre bottom of the screen (Figure 35). The compass will show the direction and distance to the waypoint. When you reach the waypoint tap “Next Waypoint” again to navigate to the next waypoint.
- If you wish to return to the previous waypoint tap “Previous Waypoint”.

Automatic:

- To navigate automatically, tap “Follow Path \equiv ” at the top right of the screen (Figure 35) and then “Automatic Next Point” (Figure 36)
- The alert distance options (Figure 37) will appear where you can set the distance. Set an appropriate distance that is less than the average distance between waypoints.
- Once this distance to the way point is reached the pathfinder app will automatically select and start navigating to the next waypoint.

Stop Following:

- Tap “Follow Path \equiv ” at the top right of the screen (Figure 35) and then “Stop Following” on the next screen (Figure 36).
- To return to a previous screen tap the \leftarrow symbol at the top of the screen next to “Follow Pathfinder”.



Figure 36 - Automatic Follow Path



Figure 37 - Set Automatic Next Point Distance

15.6.2. Record a Path

Note: When recording a path, the file size limit is 2000 waypoints. When this limit is reached the app will ask you to save the file (pers comm Ineos Australia).

To Record a Path:

- Select “Record Path” (Figure 30).
- The Record path navigation screen will be displayed (Figure 38), which has a similar layout to the Follow Path navigation screen.

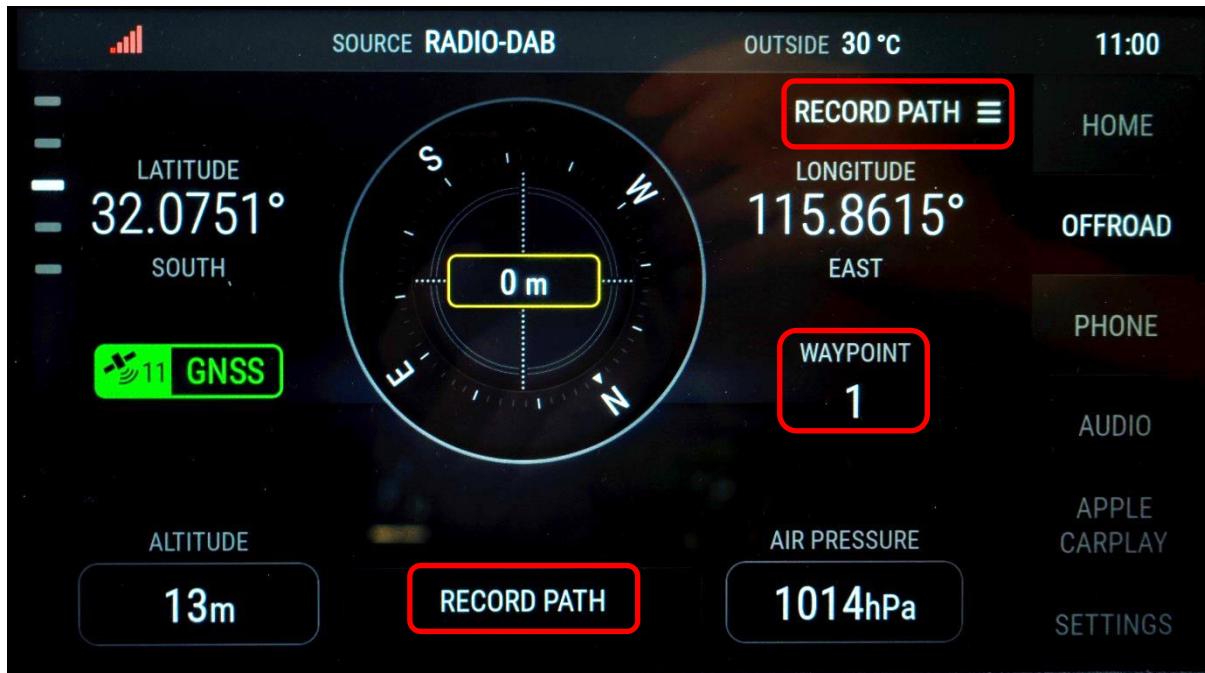


Figure 38 - Record Path Screen

Recording the path can be undertaken either Manually or Automatically.

Manual:

- To record a waypoint manually tap “Record Path” at the centre bottom of the screen (Figure 38). The waypoint number will increment by 1. When you reach next waypoint tap “Record Path” again and the waypoint number will again increment.

Automatic:

- To navigate automatically, tap “Record Path ≡” at the top right of the screen (Figure 38) and then tap “Automatic Storage Distance” to turn the function on (Figure 39).

- The automatic distance selection list (Figure 40) will appear where you can set the distance. Set an appropriate distance. For example, a longer distance for simple tracks and a shorter one for complex ones.
- The distance in the centre of the compass rose on the navigation screen will increase and when the set distance is reached the way point number will increment, the distance reset to zero and start incrementing again.
- Should you wish to insert an intermediate way point manually, tap “Record Path” at the bottom of the screen.
- To return to a previous screen tap the  symbol at the top of the screen next to “Record Pathfinder”.



Figure 39 - Record Pathfinder Automatic Storage and Stop Recording Settings



Figure 40 - Set Automatic Storage Distance

Pause Recording:

- If you are recording a track and switch the car off, the track recording will be paused.
- To restart recording when you start the car again, ensure you have navigated back to the record navigation screen before driving away. If you don't do this there will be a gap in the file until you navigate back to the screen.

Stop Recording:

- Tap “Record Path ” at the top right of the screen (Figure 38) and then “Stop Recording” on the next screen (Figure 39).
- The app will then prompt you to give the file a name (Figure 41). Either use the default name or type in a name using the touch screen keyboard.
 - Tap “123@!*” on either bottom corner to select the numeric and special character keyboard.
 - Tap “ABC” on either bottom corner to return the text keyboard.
 - Tap the globe symbol at the bottom right of the screen to bring up different language options.
 - When finished tap “YES” to the right of the file name. You will then return to the the pathfinder home screen (Figure 30).



Figure 41 - Record Path File Name Screen

15.6.3. Roadbook

The roadbook option is a rally style trip meter interface that allows the navigator or passenger to follow a handheld rally or run roadbook.

- Select “Roadbook” (Figure 30).
- The main Roadbook screen is displayed (Figure 42)
- The screen will show:
 - The Total trip distance.
 - The Partial (or intermediate) trip distance.
 - Trip distances are measured to 1/100 of the default distance unit.
 - Both trip meters can be individually reset by tapping “Reset” below each trip meter.
 - The compass rose showing the direction of travel facing up and actual bearing in the centre rectangle.
 - Number of satellites.
 - At the bottom centre of the screen tapping on either “–” or “+” will decrease or increase the trip meters values by 1/100 of a unit respectively.
- Tap “Roadbook \equiv ” at the top right of the screen (Figure 42) to enter the Roadbook options menu (Figure 43). Options are as follows:
 - Distance through: GNSS or Tyre. GNSS uses the GPS receiver to measure distance while Tyre uses tyre rotation.
 - Reset Trip: Resets both trip meters.
 - Set Trip to Value: Sets the trip meters to start at a specific value. Use the number screen that appears to enter the value. A decimal point is located at the bottom left if needed. Tap “Enter” to save the number (Figure 44).
 - Stop Roadbook. Stops the Roadbook and resets both trip meters to zero.

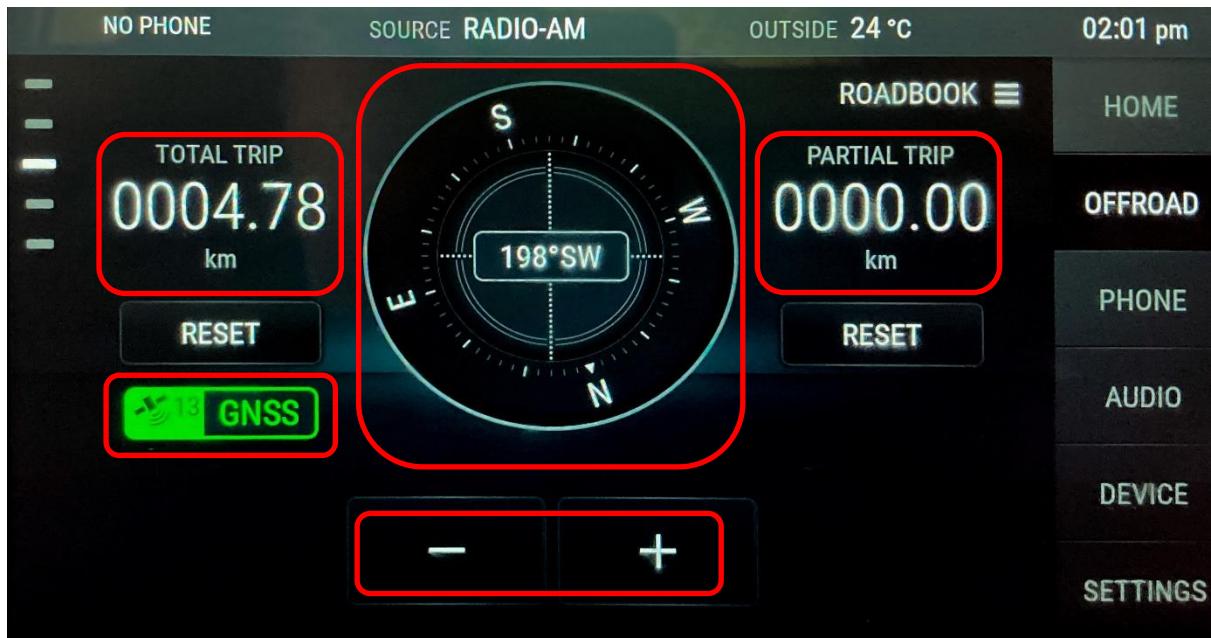


Figure 42 - Roadbook Screen



Figure 43 - Roadbook Options Menu



Figure 44 - Set Trip Value Keypad

15.6.4. Export/Import a Path

- To import or export a gpx file you must return to the home screen and select the settings menu (Figure 45).
- Scroll down to the bottom of the settings screen and select the last menu item “Pathfinder File Transfer” (Figure 46).

- On the next screen the storage options will be displayed. USB A and/or USB C will be highlighted when a flash drive is inserted and recognised. On this screen, HDD is the vehicle's local drive (Figure 47).
- Tap the drive name to select the source drive you wish to use.
 - If you select a USB flash drive a list of files and folders to IMPORT will be displayed.
 - If you select the local HDD a list of files and folders to EXPORT will be displayed.
- The list of files and folders on the drive will be displayed (Figure 47).
 - Files have a .gpx suffix.
 - Folders have no suffix. Tap on the folder name to open the folder.



Figure 45 - Home Screen



Figure 46 - Settings Screen



Figure 47 - Pathfinder Storage Selection Screen

File Import:

- If you select a USB Flash Drive the screen will show a list of files and folders that can be imported (Figure 48).
 - Tapping on the "V" icon next to the file name or folder will import the file or entire folder to the local HDD.

- Tapping on the “>” icon will open a submenu where you can import either just a file or folder or import all the files and folders on the USB flash drive (Figure 49).
- To return to a previous screen tap the  symbol at the top of the screen next to “Pathfinder File Transfer”.
- An “Operation Completed” popup will appear when the import has been completed.

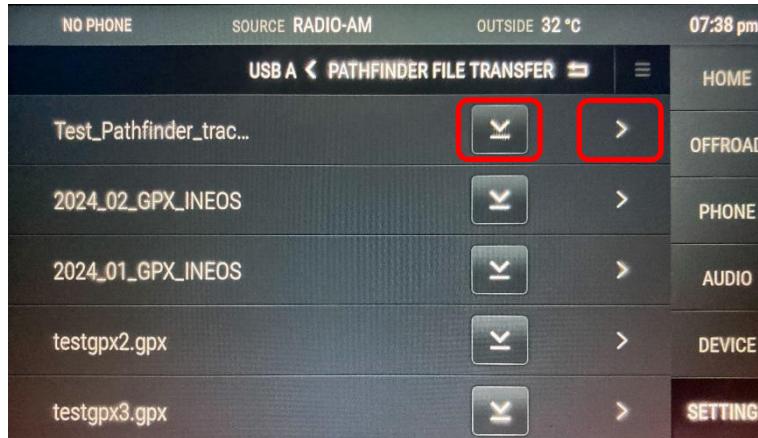


Figure 48 - Import File Selection



Figure 49 - Import Path Options

File Export:

- If you select the local HDD, the screen will show a list of files and folders that can be exported. (Figure 50).
 - Tapping on the “X” icon next to the file name or folder will delete the file or folder. A pop-up window will appear asking you to confirm the deletion (Figure 51).
 - Tapping on the “” icon will export the file or folder to the USB flash drive (Figure 50).
 - Tapping on the “>” icon (Figure 50) will open up a submenu with options for exporting, deleting or renaming files and folders (Figure 52).
 - An “Operation Completed” popup will appear when the operation has been completed.
 - To return to a previous screen tap the  symbol at the top of the screen next to “Pathfinder File Transfer”.



Figure 50 - Export File Selection

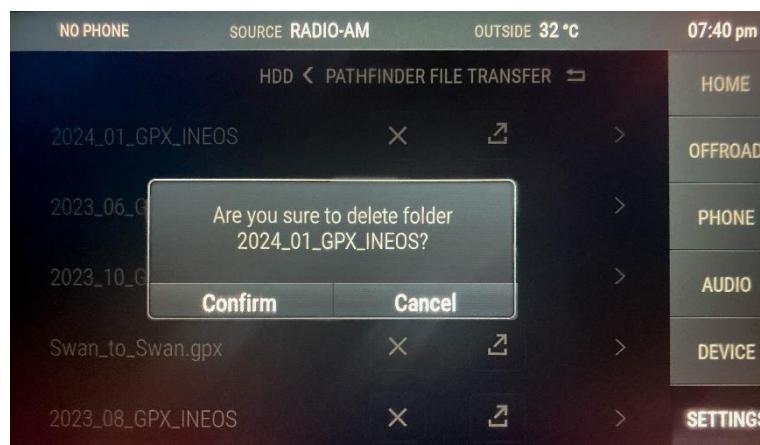


Figure 51 - Confirm Deletion Pop Up



Figure 52 - Export File Options

16. References and Useful Resources.

16.1. Ineos Documents, Links and Resources

Ineos Automotive (2023). Ineos Grenadier Owner's Manual MY23. *EI-0000021989_AUS_en_Owner's Manual MY23 Online.pdf*.
<https://ineosautomotive.stylelabs.cloud/api/public/content/f9b5a608e07d45a3a46cbd290d472743?v=e41a83f5>

Ineos Automotive (2024). Ineos Grenadier Owner's Manual MY24. *EI-0000034377_AUS_en_Owner's Manual MY24.3 Online.pdf*.
<https://ineosautomotive.stylelabs.cloud/api/public/content/b4f00ac7a6ce4911b6a54e1bc5c6d664?v=2f2a9e6f>

Ineos Automotive (2024). Ineos Grenadier Owner's Manual MY25. *EI-0000034396_USA_en_Owner's Manual MY25 Online.pdf*.
<https://ineosautomotive.stylelabs.cloud/api/public/content/75b0e8a68cd740faa34a09c32aa61426?v=48074c57>

Ineos Automotive (2023) Dismantling documentation Ineos Grenadier. *Dismantling.pdf* (Some very basic dismantling procedures from a recycling perspective) <https://ineosautomotive.stylelabs.cloud/api/public/content/609effcbc41a4d1b8e6e20384a8b0094>

Ineos Automotive (2024b) Body Builders Guide. *IneosIAL240628_X003105_BodyBuildersGuide_PDFOnline_Issue01_19_07_2024-compressed.pdf*. https://ineosautomotive.stylelabs.cloud/api/public/content/Body_Builders_Guide.

Ineos Accessory Fitting Instructions: <https://ineosgrenadier.com/en/gb/fitting-instructions>.

Ineos How-To Videos: <https://ineosgrenadier.com/en/au/grenadier-pro>.

16.2. Other Links and Resources

The Ineos Grenadier Forum: <https://www.theineosforum.com/>

BMW Engine Technical Overviews

<https://www.theineosforum.com/threads/bmw-b57-b58-usa-technical-training-introduction-brochures.12415623/>
https://bmwtechinfo.bmwgroup.com/tech_training_manual/ST1704%20B57%20Engine.pdf
https://bmwtechinfo.bmwgroup.com/tech_training_manual/ST1505%20B58%20Engine.pdf

BMW (2006) Aftersales Training Product Information. Intelligent alternator Control IGR BMW Service

Ctek (2019). User Manual Ctek Dc/Dc battery charger D250Se and 12v Power Management System SmartPass 120s. *SMARTPASS120S-manual-EN-EN.pdf*.
<https://www.ctek.com/storage/29A20F795B5813B2166F753405B968B55BE8659AC41B9C2C9852B39FB2315D23/9e1c91bc93c24ff891d81a2cc4bdb408/pdf/media/3b0b0e7a85224a8b901b1302b20ab802/SMARTPASS120S-manual-EN-EN.pdf>

Ctek (2023). Smartpass120/120s Manual Amendment. *SMARTPASS 120S MANUAL AMENDMENT.pdf*
<https://www.ctek.com/storage/6B098C69FAE0EA03E3A6A47356E71ECF586ECB313CCBE414875184115C8822F5/c626447cb1f942f08a5f444d68380253/pdf/media/94bfbddece274ecc9e6d8b1f428c93cf/SMARTPASS%20120S%20MANUAL%20AMENDMENT.pdf>

Custom Grenadier <https://customgrenadier.com/>

Oodnadatta Pink Roadhouse tyre pressure guide by the late Adam Plate. <http://www.l8ter.com/wp-content/uploads/2015/08/tyre-pressure-pdf.pdf>

Cooper Tyre pressure guide. <https://www.coopertires.com.au/tyres-explained/tyre-pressure-guide/>

Goose Gear second-row seat delete plate instructions. <https://www.dropbox.com/scl/fi/hp785qfyolbgbfc3q0cga/Ineos-Grenadier-Seat-Delete-Install-Instructions.pdf?rlkey=0rp7oyw63nt8mgjeblnr0qmd&dl=0>

ConsuLab Training Aids (2021). Relays, Version 2021-Rev 1 https://daktic.com/wp-content/uploads/2021/07/Relay-Handout-V2021_Rev-1.pdf

Blue Sea Systems Wiring selection information

https://www.bluesea.com/support/articles/Circuit_Protection/1437/Part_1%3A Choosing_the_Correct_Wire_Size_for_a_DC_Circuit

Blue Sea Systems Fuse type and holder selection information.

https://www.bluesea.com/support/articles/Circuit_Protection/1441/Part_2%3A_Select_a_Fuse_and_Fuse_Holder_For_Your_DC_Product_Installation

Blue Sea Systems wire and fuse selection summary chart
<http://assets.bluesea.com/files/resources/reference/20010.pdf>

Littelfuse Fuse selection chart

<https://www.littelfuse.com/assetdocs/fuse-selection-chart?assetguid=147d3349-97d3-4a12-be24-71af0d361be4>

16.3. YouTube Channels

Some channels I've found useful.

@ingemars Grenadier Exploring: https://www.youtube.com/@grenadier_exploring

John Canny's Canny Outdoors: <https://www.youtube.com/@cannyoutdoors>

L2S-FBC Robert Pepper: <https://www.youtube.com/@L2SFBC>

Ronny Dahl: https://www.youtube.com/@Ronny_Dahl

Ford BMS battery Monitoring System: How it works. https://www.youtube.com/watch?v=l_KmO-KaR4A&t=465s

17. Revisions

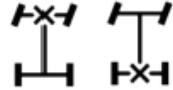
REV.	DATE	COMMENTS
V1.0	May 2024	First release.
V1.1	June 2024	<ul style="list-style-type: none"> Edits and corrections Add section - Overhead switch panel. Table 8 New part numbers Add Figure 16 - Battery Disconnection Warning Sticker Add section - Coolant purge procedure. Appendix 1 - Ineos Grenadier Off-Road Functions Quick Start Guide Appendix 5 - Grenadier Service Schedules Appendix 6 – Setting Menu Structure Additional reference links and resources
V2.0	July 2024	<ul style="list-style-type: none"> Edits and corrections Sect 9.5 and Appendix 6 Vehicle Specification Codes. Sect 11.1 RHD Petrol engine bay picture Sect 12.2 AdBlue Adaptor Sect 13.7 Interior Trim Removal Appendix 2 - Fuse Abbreviation Updates Appendix 3 – Add Petrol Service Schedule.
V3.0	July 2024	<ul style="list-style-type: none"> Edits and corrections Sect 11.1 Replaced RHD petrol engine bay picture with LHD petrol engine bay. Sect 14-3.1 Volume settings explanations. Sect 14.4 Trip Meter rewrite and update. Sect 13.7 Interior trim removal updates. Appendix 3 Replaced EU Petrol Service schedule with ROW schedule Appendix 5 Volume settings updated. Updated reference links and resources.
V4.0	August 2024	<ul style="list-style-type: none"> Edits, corrections, reformatting and section renumbering. Table 3 and Section 11.1 updated with LHD vehicle EXT1 and 5 positions. Fig 9 Update LHD EXT1 and 5 outlet positions. Sect 9.3 Relays. Rewritten and updated. New Section 12 and Appendix 3 – Trailer Electrical Connectors. New section 14.7 Cabin air filter replacement. New section 14.8 Long Term Storage. New section 14.9.4 Door Trim Removal. Sect 15.4 Trip Meter updated. Updated resources and links.
V5.0	October 2024	<ul style="list-style-type: none"> Edits, corrections, reformatting and section renumbering. Sect 9.6 Update torque settings. Sect 9.7. Merging wheel specifications with other specifications & breaking out to separate tables. Sect 15.2. New tyre pressure links. Sect 14.3.2. Passenger airbag switching on/off. Sect 8. Smartpass cut in/out charging voltages. Sect 11 and Appendix 3. Update trailer connectors. Sect 13.9.5 & 15.2. Rear seat removal link. Appendix 2. Update fuse table with NAS vehicle changes. Add relay listing.
V6.0	December 2024	<ul style="list-style-type: none"> Edits, corrections, reformatting and section renumbering. Table 1, Add Aux light high beam NAS operation. Table 7. Additional part numbers. Table 9. Wheel load ratings. Sect 7.4, 7.5 and Table 7. Corrected Z-Case fuse stud diameters. Sect 8.1 Battery charging and monitoring. Sect 11.1. Trailer electrical adaptor diode commentary. Sect 13.6. Coolant purge procedure updated/corrected. Sect 13.9 Tyre rotation link.

		<ul style="list-style-type: none"> • Updated references.
V7.0	February 2025	<ul style="list-style-type: none"> • Miscellaneous corrections and minor additions. • Update page referencing to online MY23 and MY24 pdf Australian owner's manuals. • Sect 6, Table 2 and Table 3 updated with fuse references. • Added Table 4 - Smartpass LED Explanations. • Table 8. Additional part numbers. • Table 12. Updated steering toe angles. • Sect 9.9 Fasteners updated. including adding Table 14 - Grenadier Fastener Types • Sect 13.7 Engine Oil change YouTube video link. • Sect 13.10 Update manual tyre rotation procedure. • Sect 14 Emergency Procedures • Sect 15.2 Audio Menu and Appendix 6 update. • Sect 16.2. Added links to Blue Sea and LittelFuse, wire and fuse information/selection web pages. • Sect 15.6 Update GPX file info and limitations. • Appendix 2 - Fuse & Relay Listing Corrections

Appendix 1 - Ineos Grenadier Off-Road Functions Quick Start Guide

Off-Road Functions Quick Start Guide Courtesy of @Michael H. from the Ineos Forum
(<https://www.theineosforum.com/threads/off-road-functions-quick-start-guide.12413605/post-1333230498>)

INEOS GRENADE OFF-ROAD FUNCTIONS QUICK START GUIDE

OFF-ROAD MODE	Overhead Panel Switch #	<p><i>Optimises vehicle for off-road use (eg turns park assist and start-stop off)</i></p> <p>To activate, the vehicle must be stationary, with the engine running Press the button for 1 sec, light will flash, then press again to confirm # Note that these functions are disengaged when vehicle is switched off</p>	
CENTRE DIFFERENTIAL LOCK	Transfer Case Lever	<p><i>Distributes torque evenly to the front and rear axles</i></p> <p>Lift collar on lever and shift across to LOCK May be engaged when stopped or moving slowly (under 40km/h) Only to be used on low traction surfaces (not on sealed roads).</p>	
LOW RANGE	Transfer Case Lever	<p><i>Provides lower gearing, better engine braking, and more usable gears for low speed work</i></p> <p>To engage, vehicle must be stationary, with transmission in NEUTRAL Lift collar on lever and shift down to engage LOW</p>	
REAR AND FRONT DIFFERENTIAL LOCKS	Overhead Panel Switches #	<p><i>Prevent all the torque going to a slipping wheel</i></p> <p>To engage, vehicle must be in LOW with the Centre differential locked May be engaged or disengaged when stopped or moving below 15km/h Rear must be locked before front. Front severely restricts steering.</p>	
WADING MODE	Overhead Panel Switch #	<p><i>Optimises vehicle for wading (eg disables engine fans and DPF regen.)</i></p> <p>To activate, vehicle must be in Off-road mode, with the Centre differential locked and the transfer case in LOW Press the button for 1 sec, light will flash, then press again to confirm</p>	
ESC OFF	Overhead Panel Switch #	<p><i>Prevents Electronic Stability Control from cutting power to wheels in situations such as sand driving where momentum is crucial</i></p> <p>ESC automatically resumes if vehicle speed reaches 80km/h Reduces driver assistance. Should not be used for dirt road driving.</p>	
DOWNHILL ASSIST	Overhead Panel Switch #	<p><i>Brakes individual wheels to maintain set speed downhill</i></p> <p>Vehicle speed can be adjusted using + and - buttons on steering wheel Not available with ESC OFF or with the Rear or Front differentials locked Only operates at speeds below 25km/h (or below 10km/h in reverse)</p>	

See Owner's Manual and *Getting to Grips With Your INEOS Grenadier* videos for more info. Also consider lowering tyre pressures and using Manual gearshift mode.

Appendix 2 - Fuse & Relay Listing

Fuse Listing compiled by @bnebenda on the Ineos Forum. I have made edits to match the terminology I've used. The table has also been updated to include MY24 (including NAS) differences.

Ref: <https://www.theineosforum.com/threads/main-fuses-used-in-Ineos-grenadier.12411958/post-1333255992>

The relay listing is compiled from my own research with assistance of Ineos Forum members.

Fuse Box	Position	Function	Fuse Type	Size	Color	Function MY24 Vehicles (incl NAS)	Size MY24	Color MY24
Cockpit Electrical Centre	FC01	Reserved	Mini Fuse 32V	Free	none	Gear Selector	5A	Tan
Cockpit Electrical Centre	FC02	Reserved	Mini Fuse 32V	Free	none	Cluster / Glove Box / Steering Wheel	7.5A	Brown
Cockpit Electrical Centre	FC03	HVAC Module	Mini Fuse 32V	7.5A	Brown			
Cockpit Electrical Centre	FC04	Clock / Theft Alarm / Logistics	Mini Fuse 32V	5A	Tan			
Cockpit Electrical Centre	FC05	Body Control Module 1	JCase 32V	40A	Green			
Cockpit Electrical Centre	FC06	Body Control Module 2	JCase 32V	30A	Pink			
Cockpit Electrical Centre	FC07	Additional Heater Step 3	JCase 32V	40A	Green			
Cockpit Electrical Centre	FC08	Additional Heater Step 2	JCase 32V	40A	Green			
Cockpit Electrical Centre	FC09	Additional Heater Step 1	JCase 32V	40A	Green			
Cockpit Electrical Centre	FC10	Reserved	Mini Fuse 32V	Free	none			
Cockpit Electrical Centre	FC11	HVAC Module	Mini Fuse 32V	7.5A	Brown			
Cockpit Electrical Centre	FC12	Head Unit	Mini Fuse 32V	20A	Yellow			
Cockpit Electrical Centre	FC13	Emergency Call	Mini Fuse 32V	5A	Tan			
Cockpit Electrical Centre	FC14	Ignition Switch / Steering Wheel	Mini Fuse 32V	10A	Red			
Cockpit Electrical Centre	FC15	Onboard Diagnostics (OBDII)	Mini Fuse 32V	10A	Red			
Cockpit Electrical Centre	FC16	Reserved	Mini Fuse 32V	Free	none			
Cockpit Electrical Centre	FC17	Reserved	Mini Fuse 32V	Free	none			
Cockpit Electrical Centre	FC18	Reserved (Diagnostics)	Mini Fuse 32V	Free	none			
Cockpit Electrical Centre	FC19	Reserved	Mini Fuse 32V	Free	none			
Cockpit Electrical Centre	FC20	Reserved	Mini Fuse 32V	Free	none			
Cockpit Electrical Centre	FC21	12V Front Outlet	Mini Fuse 32V	15A	Blue			
Cockpit Electrical Centre	FC22	USB Charging	Mini Fuse 32V	5A	Tan			
Cockpit Electrical Centre	FC23	12V Rear Outlet	Mini Fuse 32V	15A	Blue			
Aux Battery Inline	FC01	From SmartPass 120S Output to 2nd battery	Mega Fuse 32V	300A	Grey			
Underhood Electrical Centre	FU01	Reserved	Mini Fuse 32V	Free	none			
Underhood Electrical Centre	FU02	Transmission	Mini Fuse 32V	20A	Yellow			
Underhood Electrical Centre	FU03	Reserved	Mini Fuse 32V	Free	none			
Underhood Electrical Centre	FU04	A/C Compressor	Mini Fuse 32V	10A	Red			
Underhood Electrical Centre	FU05	Gateway Module (ETGW)	Mini Fuse 32V	5A	Tan			
Underhood Electrical Centre	FU06	Engine Cooling Fan	Mini Fuse 32V	15A	Blue			
Underhood Electrical Centre	FU07	Electronic Stability Control (Valves)	JCase 32V	40A	Green			
Underhood Electrical Centre	FU08	Washer Pump	JCase 32V	30A	Pink			
Underhood Electrical Centre	FU09	Starter Motor	JCase 32V	30A	Pink			
Underhood Electrical Centre	FU10	Reserved	Mini Fuse 32V	Free	none			
Underhood Electrical Centre	FU11	Reserved	Mini Fuse 32V	Free	none			
Underhood Electrical Centre	FU12	Reserved	Mini Fuse 32V	Free	none			
Underhood Electrical Centre	FU13	Horn - Toot	Mini Fuse 32V	7.5A	Brown			
Underhood Electrical Centre	FU14	Electronic Stability Control (Motor)	Midi Fuse 32V	60A	Yellow			
Pre Fuse Box Interior (7 Stud)	1 (left)	Main Battery Input	ZCase Starter Fuse 32V	Shunt	Black			
Pre Fuse Box Interior (7 Stud)	2	Power Distribution Module	ZCase Starter Fuse 32V	125A	Black			
Pre Fuse Box Interior (7 Stud)	3	Interior Electrical Centre	ZCase Starter Fuse 32V	150A	Black			
Pre Fuse Box Interior (7 Stud)	4	Optional 400w Inverter	ZCase Starter Fuse 32V	60A	Black			
Pre Fuse Box Interior (7 Stud)	5	Under Hood Centre	ZCase Starter Fuse 32V	100A	Black			
Pre Fuse Box Interior (7 Stud)	6	Cockpit Centre	ZCase Starter Fuse 32V	125A	Black			
Pre Fuse Box Interior (7 Stud)	7 (right)	To Pre Fuse Box Accessories (5 Stud)	ZCase Starter Fuse 32V	300A	Black			
Pre Fuse Box Accessories (5 Stud)	1 (left)	Pre Fuse Box Interior (7 Stud)	ZCase Starter Fuse 32V	Shunt	Black			
Pre Fuse Box Accessories (5 Stud)	2	SmartPass 120S Input	ZCase Starter Fuse 32V	300A	Black			
Pre Fuse Box Accessories (5 Stud)	3	Nato Plug and Winch	ZCase Starter Fuse 32V	350A	Black			
Pre Fuse Box Accessories (5 Stud)	4	High Load Switch Panel	ZCase Starter Fuse 32V	80A	Black			
Pre Fuse Box Accessories (5 Stud)	5 (right)	Spare	ZCase Starter Fuse 32V	Free	none			

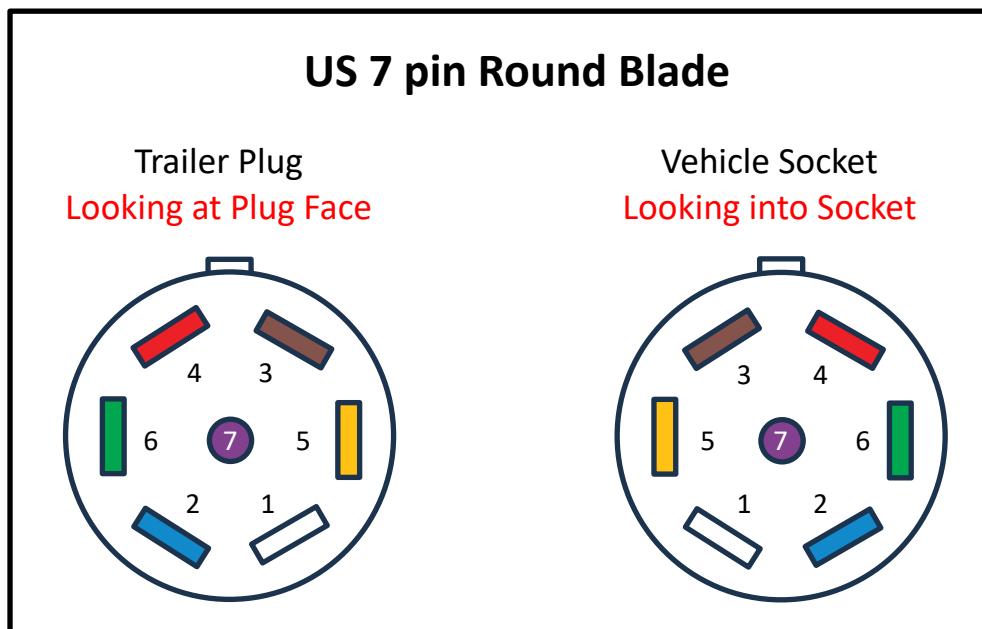
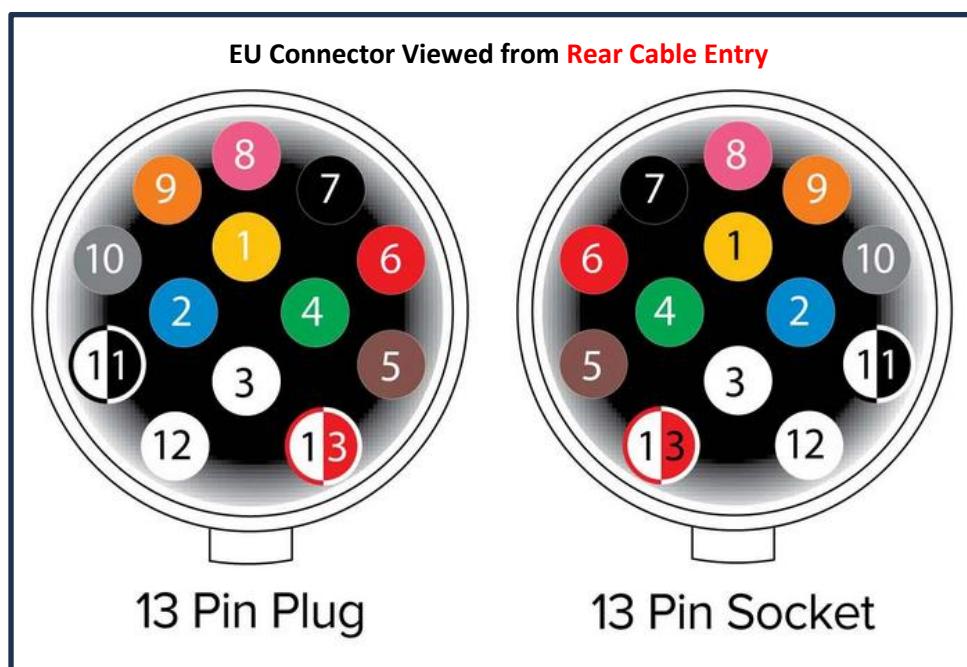
Fuse Box	Position	Function	Fuse Type	Size	Color	Function MY24 Vehicles (incl NAS)	Size MY24	Color MY24
High Load Aux Fuse Box	FL01	Front RHS Roof (Ext 2)	Mini Fuse 32V	25A	Natural			
High Load Aux Fuse Box	FL02	LHS and Rear RHS Roof (Ext 3)	Mini Fuse 32V	25A	Natural			
High Load Aux Fuse Box	FL03	Under Bonnet (Ext 5)	Mini Fuse 32V	25A	Natural			
High Load Aux Fuse Box	FL04	Winch and NATO Plug Relay	Mini Fuse 32V	5A	Tan			
High Load Aux Fuse Box	FL05	Spare	Mini Fuse 32V	Free	none			
High Load Aux Fuse Box	FL06	Spare	Mini Fuse 32V	Free	none			
High Load Aux Fuse Box	FL07	Spare	Mini Fuse 32V	Free	none			
High Load Aux Fuse Box	FL08	Spare	Mini Fuse 32V	Free	none			
Interior Electrical Centre	FI01	IGN Relay (CL15 - Electronics)	Low Profile JCase 58V	30A	Pink			
Interior Electrical Centre	FI02	IGN Relay (CL15 - Pumps/Heating)	Low Profile JCase 58V	60A	Yellow			
Interior Electrical Centre	FI03	Front Wiper Motor	Low Profile JCase 58V	30A	Pink			
Interior Electrical Centre	FI04	Accessory Relay (CL30ACC - RI03)	Low Profile JCase 58V	60A	Yellow			
Interior Electrical Centre	FI05	Horn (BCM)	Low Profile JCase 58V	30A	Pink			
Interior Electrical Centre	FI06	Window Lifter FL (BCM)	Mini Fuse 32V	30A	Green			
Interior Electrical Centre	FI07	Window Lifter FR (BCM)	Mini Fuse 32V	30A	Green			
Interior Electrical Centre	FI08	Window Lifter RL (BCM)	Mini Fuse 32V	30A	Green			
Interior Electrical Centre	FI09	Window Lifter RR (BCM)	Mini Fuse 32V	30A	Green			
Interior Electrical Centre	FI10	After Run Relay /CL305 - RI02)	Mini Fuse 32V	25A	Natural			
Interior Electrical Centre	FI11	Rear Defog	Low Profile JCase 58V	30A	Pink			
Interior Electrical Centre	FI12	HVAC (Blower)	Low Profile JCase 58V	40A	Green			
Interior Electrical Centre	FI13	Spare (Air Compressor / Dust Gun)	Low Profile JCase 58V	40A	Green	Amplifier/Trailer Brake Provision	40A	Green
Interior Electrical Centre	FI14	Trailer Module	Low Profile JCase 58V	40A	Green			
Interior Electrical Centre	FI15	SCR Module 1	Low Profile JCase 58V	30A	Pink			
Interior Electrical Centre	FI16	Gateway Module 1 (ETGW)	Mini Fuse 32V	30A	Green			
Interior Electrical Centre	FI17	Water Separator	Mini Fuse 32V	25A	Natural			
Interior Electrical Centre	FI18	Fuel Pump	Mini Fuse 32V	30A	Green			
Interior Electrical Centre	FI19	Gateway Module 2 (ETGW)	Mini Fuse 32V	15A	Blue			
Interior Electrical Centre	FI20	Door Lock	Mini Fuse 32V	20A	Yellow			
Interior Electrical Centre	FI21	Seat Heating Right	Mini Fuse 32V	25A	Natural			
Interior Electrical Centre	FI22	Seat Heating Left	Mini Fuse 32V	25A	Natural			
Interior Electrical Centre	FI23	Cooling Fan / AC Compressor	Mini Fuse 32V	5A	Tan			
Interior Electrical Centre	FI24	Gear Shifter	Mini Fuse 32V	5A	Tan	Amplifier, Subwoofer	20A	Yellow
Interior Electrical Centre	FI25	Cluster / Interior Lighting / Steering Wheel	Mini Fuse 32V	5A	Tan	Trailer Brake Provision	25A	Natural
Interior Electrical Centre	FI26	SCR Module 2	Mini Fuse 32V	15A	Blue			
Interior Electrical Centre	FI27	Brake Light Switch	Mini Fuse 32V	5A	Tan			
Interior Electrical Centre	FI28	Overhead Console Switch (EXT 1 Under bonnet and 2nd Row Accessory Switches)	Mini Fuse 32V	10A	Red			
Interior Electrical Centre	FI29	Customer Provision, LHS Footwell (Int 1)	Mini Fuse 32V	10A	Red			
Interior Electrical Centre	FI30	Customer Provision, RHS Footwell (Int 2)	Mini Fuse 32V	10A	Red			
Interior Electrical Centre	FI31	Trailer	Mini Fuse 32V	25A	Natural			
Interior Electrical Centre	FI32	Heated Mirror	Mini Fuse 32V	7.5A	Brown			
Interior Electrical Centre	FI33	Trunk Lamp / IBS / NVLD	Mini Fuse 32V	5A	Tan			
Interior Electrical Centre	FI34	Reserved /ADAS)	Mini Fuse 32V	Free	none	Front Camera (ADAS)	5A	Tan
Interior Electrical Centre	FI35	Run Crank - Steering / ESC / Brake Fluid Sensor	Mini Fuse 32V	7.5A	Brown			
Interior Electrical Centre	FI36	Airbag Control Module	Mini Fuse 32V	10A	Red			
Interior Electrical Centre	FI37	Run Crank - BCM /ETGW /Seat Mat / Park Assist / Rear View Camera / E-Call	Mini Fuse 32V	7.5A	Brown			
Interior Electrical Centre	FI38	Power Mirrors	Mini Fuse 32V	5A	Tan			
Interior Electrical Centre	FI39	Headlamp Levelling	Mini Fuse 32V	10A	Red			
Interior Electrical Centre	FI40	Run Crank - HVAC / Cluster /Steering	Mini Fuse 32V	7.5A	Brown			
Interior Electrical Centre	FI41	Fuel Pump Controller / Exhaust Flap / Water Seperator	Mini Fuse 32V	5A	Tan			
Interior Electrical Centre	FI42	Front Wiper / Rear Wiper	Mini Fuse 32V	15A	Blue			
Interior Electrical Centre	FI43	Water Pump	Mini Fuse 32V	10A	Red			
Interior Electrical Centre	FI44	Water Pump (Diesel Only)	Mini Fuse 32V	10A	Red	Not fitted	Free	none
Pre Fuse Box Underhood	FO01	Power Steering Pump	Mega Fuse 32V	125A	Green			
Pre Fuse Box Underhood	FO02	Cooling Fan 1 Relay #3	Mega Fuse 32V	125A	Green			

Fuse Box	Relay Position	Relay Function	Relay Type	Size	ID
Interior Electrical Centre	RIO1	Ignition Relay	Normal Open	Micro 30 Amp	614
Interior Electrical Centre	RIO2	Battery/After Run Relay	Normal Open	Micro 30 Amp	614
Interior Electrical Centre	RIO3	Accessory Relay	Normal Open	Mini 70amp	V23134-J52-D642
Interior Electrical Centre	RIO4	Wiper Relay 1	Change Over	Micro 20amp	615
Interior Electrical Centre	RIO5	Wiper Relay 2	Change Over	Micro 20amp	615
Interior Electrical Centre	RIO6	Rear Defrost	Normal Open	Mini 70amp	V23134-J52-D642
Interior Electrical Centre	RIO7	Ignition Relay	Normal Open	Mini 70amp	V23134-J52-D642
Interior Electrical Centre	RIO8	HVAC Blower	Normal Open	Mini 70amp	V23134-J52-D642
Interior Electrical Centre	ORI1	Fuel Pump	Normal Open	Micro 30 Amp	614
Interior Electrical Centre	ORI2	Diff Lock Rear	Normal Open	Micro 30 Amp	614
Underhood Electrical Centre	RU01	Crank Relay EGTW	Normal Open	Mini 70amp	V23134-J52-D642
Underhood Electrical Centre	RU02	A/C Compressor	Normal Open	Micro 30 Amp	614
Underhood Electrical Centre	RU03	Diff Lock Front	Normal Open	Micro 30 Amp	614
Underhood Electrical Centre	RU04	Crank Relay BCM	Normal Open	Mini 70amp	V23134-J52-D642
Underhood Electrical Centre	RU05	Cooling Fan 2	Normal Open	Micro 30 Amp	614
Underhood Electrical Centre	RU06	Toot Function	Normal Open	Micro 30 Amp	614
High Load Aux Fuse Box	RL01	Roof Light Front RHS (EXT2)	Normal Open	Micro 30 Amp	614
High Load Aux Fuse Box	RL02	Roof Lights x3 (EXT3)	Normal Open	Micro 30 Amp	614
High Load Aux Fuse Box	RL03	Under Bonnet 2 (EXT5)	Normal Open	Micro 30 Amp	614
High Load Aux Fuse Box	RL04	Pre Winch Relay (EXT4)	Normal Open	Micro 30 Amp	614
Cockpit Relay Box	RC1	HVAC PTC Relay 1	Normal Open	Mini 40 or 50 Amp??	??
Cockpit Relay Box	RC2	HVAC PTC Relay 2	Normal Open	Mini 40 or 50 Amp??	??
Cockpit Relay Box	RC3	HVAC PTC Relay 3	Normal Open	Mini 40 or 50 Amp??	??
??	RW1	WIF Heater Relay (Water in Fuel)	Normal Open	Micro 30 Amp	614

Appendix 3 - Trailer Electrical Connector Schematics

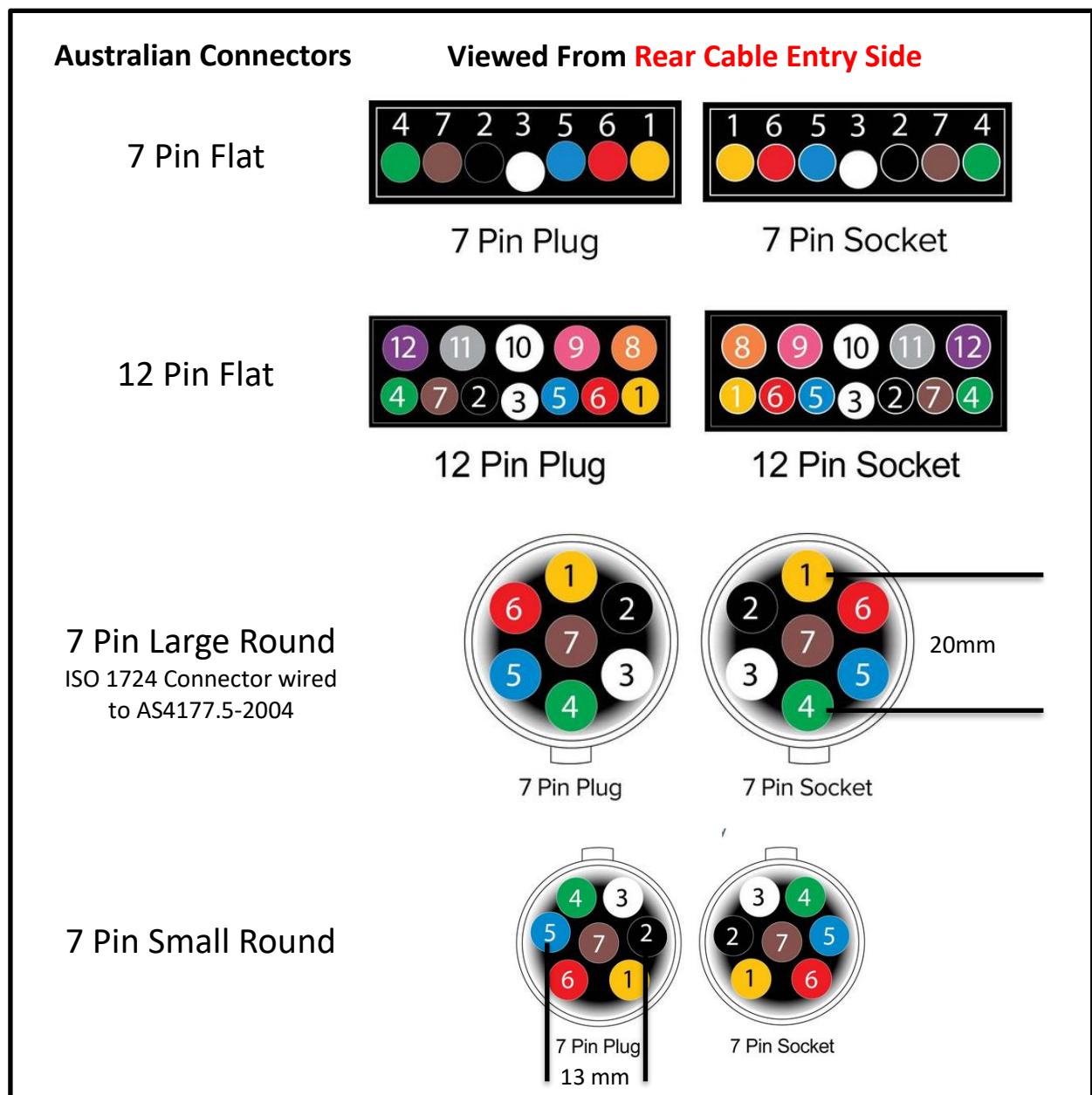
EU and Australian plug diagrams are modified from <https://www.narva.com.au/resources/trailer-plug-wiring-diagram>)

Pin No	13 pin EU (Round) ISO 11446-2:2012			NA 7 pin (Round Blade)		
	Circuit	Wire Colour		Circuit	Wire Colour	Alternative
1	Left Turn Indicator	Yellow		Ground	White	
2	Rear Fog Light	Blue		Trailer Electric Brakes	Blue	
3	Ground	White		Tail Lights	Brown	
4	Right Turn Indicator	Green		Power Supply Battery +	Red	Black
5	Tail Lights (Right) Clearance and Side Marker Lights	Brown		Left Turn/Brake Lights	Yellow	
6	Brake Lights	Red		Right Turn/Brake Lights	Green	
7	Tail Lights (Left) Clearance and Side Marker Lights	Black		Reversing Lights	Purple	Grey
8	Reversing Lights	Pink				
9	Power Supply Battery +	Orange				
10	Power Supply Ignition +	Grey				
11	Ground (Pin 10)	White/Black				
12	Spare	White				
13	Ground (Pin 9)	White/Red				



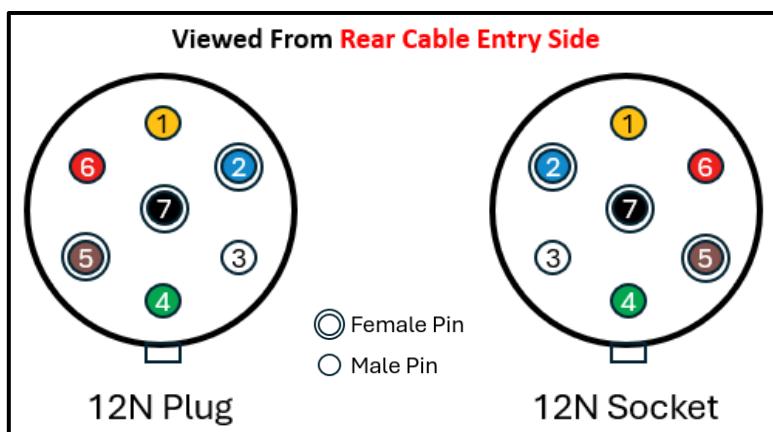
Australian Trailer Connectors (AS4177.5-2004)

Pin No	AU 7 pin (Flat, Small & Large Round)		AU 12 pin (Flat)	
	Circuit	Wire Colour	Circuit	Wire Colour
1	Left Turn Indicator	Yellow	Left Hand Turn	Yellow
2	Reversing Lights	Black	Reversing Lights	Black
3	Ground	White	Ground	White
4	Right Turn Indicator	Green	Right Hand Turn	Green
5	Trailer Electric Brakes	Blue	Trailer Electric Brakes	Blue
6	Brake Lights	Red	Brake Lights	Red
7	Tail Lights, Clearance and Side Marker Lights	Brown	Rear Lights Clearance and Side Marker Lamps	Brown
8			Power Supply Battery +	Orange
9			Power Supply Ignition +	Pink
10			Ground	White
11			Rear Fog Light	Grey
12			Spare	Purple
13				

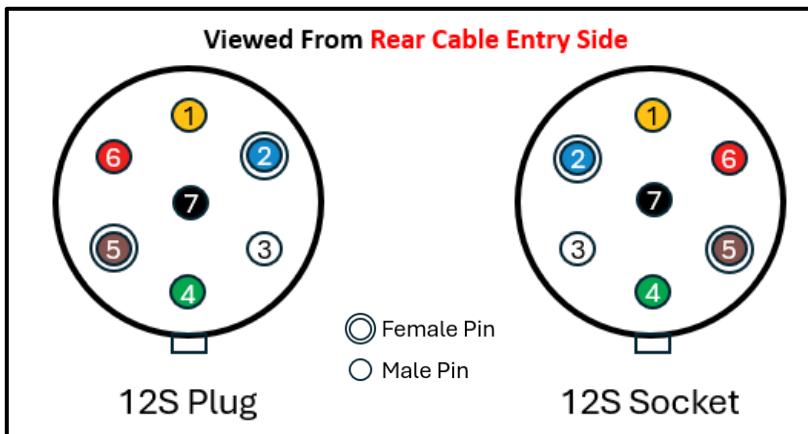


UK and EU Large Round 12N (ISO1724) & 12S
 (Note 12N and 12S combination replaced in 2008 by 13pin Eu connector ISO11446)

Pin No	UK/EU 12N (Normal, Black , Large Round, ISO1724)	
	Circuit	Wire Colour
1	Left Turn Indicator	Yellow
2	Rear Fog Light	Blue
3	Ground	White
4	Right Turn Indicator	Green
5	Tail Lights (Right) Clearance and Side Marker Lights	Brown
6	Brake Lights	Red
7	Tail Lights (Left) Clearance and Side Marker Lights	Black



Pin No	UK/EU 12S (Supplementary, White, Large Round, ISO 3732)	
	Circuit	Wire Colour
1	Reversing Lights	Yellow
2	Spare or Power Supply Ignition on +	Blue
3	Ground	White
4	Power Supply Battery +	Green
5	Spare or optional reverse sensor.	Brown
6	Power Supply Ignition on Fridge +	Red
7	Ground (for Pin 6)	Black



Narva Trailer Adaptor



NARVA
TRAILER CONNECTOR

WIRING DIAGRAM (Cable entry view)

13 Pin Euro Round Plug & Socket

PIN No.	CIRCUIT	COLOUR
1	Left-hand turn	Yellow
2	Rear fog light	Blue*
3	Earth return	White
4	Right-hand turn	Green
5	Rear lamps, clearance & side marker lamps (right)	Brown
6	Stop lamps	Red
7	Rear lamps, clearance & side marker lamps (left)	Brown (Black)
8	Reversing signal	Black (Pink)
9	Power supply (permanent)	Orange*
10	Power supply (switched with ignition)	Grey*
11	Earth (for 10 pin)	White/Black stripe*
12	Service brakes	Blue
13	Earth (for 9 pin)	White/Red stripe*

* Not connected

13 Pin Euro Plug 13 Pin Euro Socket

7 Pin Flat Plug & Socket

PIN No.	CIRCUIT	COLOUR
1	Left-hand turn	Yellow
2	Reversing signal	Black
3	Earth return	White
4	Right-hand turn	Green
5	Service brakes	Blue
6	Stop lamps	Red
7	Rear lamps, clearance & side marker lamps	Brown

7 Pin Plug 7 Pin Socket

NOTE: Always refer to the wiring specifications of trailer braking system before connection of service brakes.

<https://www.narva.com.au/products/82285BL/13-euro-rnd-skt--7-flat-plg-bl>

Appendix 4 - Electrical Wiring Colour Code Abbreviations

Ineos use the IEC 60757 wiring colour code abbreviations in the limited electrical documentation I have sighted.
Table from <https://kabelkonfektion.com/en/information-center/color-codes>

Color-Codes according to VDE and IEC

Color	German Code	Code according to IEC 60757
Black	SW	BK
Brown	BR	BN
Red	RT	RD
Orange	OR	OG
Yellow	GE	YE
Green	GN	GN
Blue	BL	BU
Purple	VI	VT
Grey	GR	GY
White	WS	WH
Pink	RS	PK
Turquoise	TK	TQ

Appendix 5 - Grenadier Service Schedules

Customer Name		VIN							
Date		Vehicle Reg			Mileage				
Key		Mileage	15,000	30,000	45,000	60,000	75,000	90,000	105,000
A= Adjust Top Up	I = Inspect	Mileage	12	24	36	48	60	72	84
R = Replace	IR = Inspect Replace	Months							
Initial Checks									
Check for Outstanding Campaigns or Recalls		I	I	I	I	I	I	I	I
Complete Body Inspection		I	I	I	I	I	I	I	I
Complete VHC		I	I	I	I	I	I	I	I
Vehicle Functionality (Prior to lift)									
Horn & Toot Function		I	I	I	I	I	I	I	I
Interior Lights		I	I	I	I	I	I	I	I
Exterior Light Function (lenses & glass condition)		I	I	I	I	I	I	I	I
Windscreen Wiper Blades (including rear)	IR	IR	IR	IR	IR	IR	IR	IR	IR
Seatbelt & Buckle Check	I	I	I	I	I	I	I	I	I
Warning Triangle & Aux Equip	I	I	I	I	I	I	I	I	I
First Aid Kit (check expiry date & record)	I	I	I	I	I	I	I	I	I
Door Hinge, Check Strap & Lock Barrels Clean & Lube	A	A	A	A	A	A	A	A	A
Read DTC's	I	I	I	I	I	I	I	I	I
Reset Service Indicator	A	A	A	A	A	A	A	A	A
Under Bonnet Checks									
Windscreen Washers Fluid & Spray Pattern (heated washer jet operation if fitted)	A	A	A	A	A	A	A	A	A
Headlight Adjustment (market specific)	A	A	A	A	A	A	A	A	A
Skuttle Chamber Clean Drain Channels	I	I	I	I	I	I	I	I	I
Brake Fluid Check (inc water content)	A	R	A	R	A	R	A	R	A
Coolant Check (level & anti-freeze content)*	A	A	A	A	A	A	A	R	R
Fuel Filter	R	R	R	R	R	R	R	R	R
Diesel Water Separator*	IR	R	IR	R	IR	R	R	R	R
Air Filter	IR	IR	IR	IR	IR	IR	IR	IR	IR
Aux Belt	IR	IR	IR	IR	IR	IR	IR	IR	IR
Power Steering Fluid	A	A	A	A	A	A	A	A	A
Air Conditioning Operation	I	I	I	I	I	I	I	I	I
Vehicle Raised on Lift									
Check Tyre Pressures	A	A	A	A	A	A	A	A	A
Remove & Rotate Road Wheels (torque wheel nuts to spec)	A	A	A	A	A	A	A	A	A
Record Tread Depths (including spare)	I	I	I	I	I	I	I	I	I
Check Front & Rear Brake Pad Thickness	I	I	I	I	I	I	I	I	I
Check Brake Disc Condition	I	I	I	I	I	I	I	I	I
Oil & Filter Change	R	R	R	R	R	R	R	R	R
Pipes & Hoses Condition	I	I	I	I	I	I	I	I	I
Vac Pipes & Breather Condition	IR	IR	IR	IR	IR	IR	IR	IR	IR
Transfer Box Oil*	A	A	A	A	R	A	A	A	A
Axle Oil*	R	A	A	A	A	A	A	A	R
Gearbox Oil*	A	A	A	A	A	A	A	A	R
Brake & Fuel Lines (condition & routing)	I	I	I	I	I	I	I	I	I
Exhaust System (condition & leaks)	I	I	I	I	I	I	I	I	I
All Front & Rear Suspension - Ball Joints - Hub Swivel Joints - Steering Linkages & Fasteners for Wear & Security	I	I	I	I	I	I	I	I	I
Inspect all Prop shafts for Wear & Security	I	I	I	I	I	I	I	I	I

Steering & Suspension Springs & Rubber Elements Boots Sleeves & Bushes for Wear & Security	I	I	I	I	I	I	I
Underbody & Frame inspection (corrosion & security)	I	I	I	I	I	I	I



Vehicle on Floor

Handbrake Travel & Footbrake Operation	IR						
Climate Filter	R	R	R	R	R	R	R
AdBlue*	IR						

Final Checks

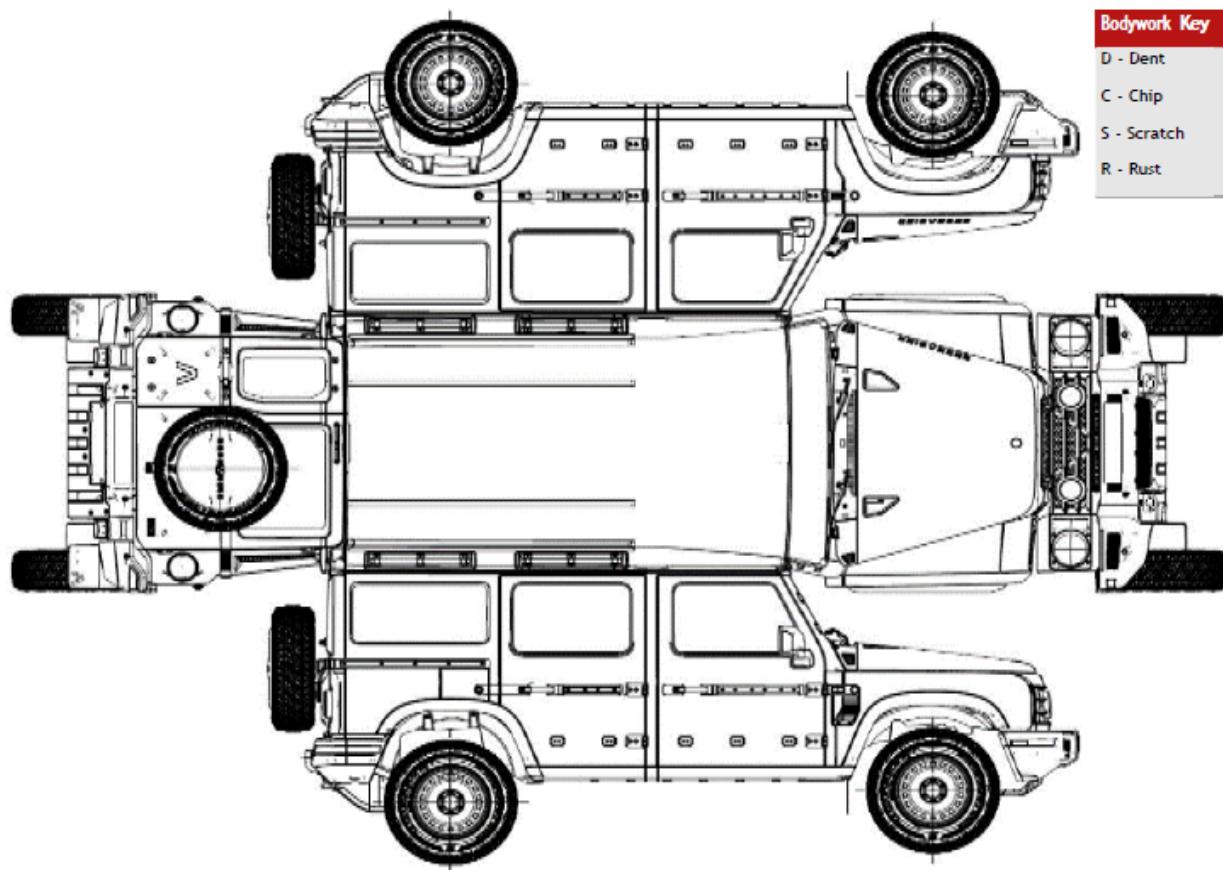
Road Test Vehicle - Check Gearbox & Transfer Box Operation							
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I confirm I have completed the above procedure in accordance with the recommended Grenadier service schedule.

Technician Name	Dealer Stamp
Technician Signature	
Quality Check - Road Test (minimum test 5 KM)	Distance Covered
Tester Name	
Tester Comments	

Bodywork Key

- D - Dent
- C - Chip
- S - Scratch
- R - Rust



*DWS market specific. *Gearbox oil change every 7 years or 105,000 KM. *Axle oil change at year 1 or 15,000 KM then at year 7 or 105,000 KM thereafter. *Coolant change every 7 years or 105,000 KM. Transfer box oil change every 5 years or 75,000 KM. *AdBlue customer liable - warning in cluster information display.

Customer Name	VIN	Vehicle Reg	Mileage						
Key		Mileage	15,000	30,000	45,000	60,000	75,000	90,000	105,000
A = Adjust Top Up	I = Inspect	Mileage	12	24	36	48	60	72	84
Initial Checks									
Check for Outstanding Campaigns or Recalls	I	I	I	I	I	I	I	I	I
Complete Body Inspection	I	I	I	I	I	I	I	I	I
Complete VHC	I	I	I	I	I	I	I	I	I
Vehicle Functionality (Prior to lift)									
Horn & Toot Function	I	I	I	I	I	I	I	I	I
Exterior Light Function (lenses & glass condition) Exterior	I	I	I	I	I	I	I	I	I
Light Function (lenses & glass condition)	I	I	I	I	I	I	I	I	I
Windscreen Wiper Blades (including rear)	IR	IR	IR	IR	IR	IR	IR	IR	IR
Seatbelt & Buckle Check	I	I	I	I	I	I	I	I	I
Warning Triangle & Aux Equip	I	I	I	I	I	I	I	I	I
First Aid Kit (check expiry date & record)	I	I	I	I	I	I	I	I	I
Door Hinge, Check Strap & Lock Barrels Clean & Lube	A	A	A	A	A	A	A	A	A
Read DTC's	I	I	I	I	I	I	I	I	I
Reset Service Indicator	A	A	A	A	A	A	A	A	A
Under Bonnet Checks									
Windscreen Washers Fluid & Spray Pattern (heated washer jet operation if fitted)	A	A	A	A	A	A	A	A	A
Headlight Adjustment (market specific)	A	A	A	A	A	A	A	A	A
Skuttle Chamber Clean Drain Channels	I	I	I	I	I	I	I	I	I
Brake Fluid Check (inc water content)	I	R	I	R	I	R	I	R	I
Coolant Check (level & anti-freeze content)*	I	I	I	I	I	I	I	R	R
Spark Plugs				R					
Air Filter & Clean Air Filter Box	IR	R	IR	R	IR	R	IR	R	IR
Aux Belt	IR	IR	IR	IR	IR	IR	IR	IR	IR
Power Steering Fluid	A	A	A	A	A	A	A	A	A
Air Conditioning Operation	I	I	I	I	I	I	I	I	I
Vehicle Raised on Lift									
Check Tyre Pressures (including spare)	A	A	A	A	A	A	A	A	A
Remove & Rotate Road Wheels (torque wheel nuts to spec)	A	A	A	A	A	A	A	A	A
Record Tread Depths (including spare)	I	I	I	I	I	I	I	I	I
Check Front & Rear Brake Pad Thickness	I	I	I	I	I	I	I	I	I
Check Brake Disc Condition	I	I	I	I	I	I	I	I	I
Oil & Filter Change	R	R	R	R	R	R	R	R	R
S1AKA Fuel Filter*	R	R	R	R	R	R	R	R	R
Pipes & Hoses Condition	I	I	I	I	I	I	I	I	I
Vac Pipes & Breather Condition	IR	IR	IR	IR	IR	IR	IR	IR	IR
Transfer Box Oil*	A	A	A	A	A	R	A	A	A
Axle Oil*	R	A	A	A	A	A	A	A	R
Gearbox Oil*	A	A	A	A	A	A	A	A	R
Brake & Fuel Lines (condition & routing)	I	I	I	I	I	I	I	I	I
Exhaust System (condition & leaks)	I	I	I	I	I	I	I	I	I
All Front & Rear Suspension - Ball Joints - Hub Swivel Joints - Steering Linkages & Fasteners for wear & security	I	I	I	I	I	I	I	I	I
Inspect All Prop shafts for Wear & Security	I	I	I	I	I	I	I	I	I



Steering & Suspension Springs & Rubber Elements Boots
Sleeves & Bushes for Wear & Security

Underbody & Frame inspection (corrosion & security)

Vehicle on Floor

Handbrake Travel & Footbrake Operation

Climate Filter

Final Checks

Road Test Vehicle

I confirm I have completed the above procedure in accordance with the recommended Grenadier service schedule.

Technician Name

Technician Signature

Dealer Stamp

Quality Check - Road Test (minimum test 5 KM)

Distance Covered

Tester Name

Tester Comments

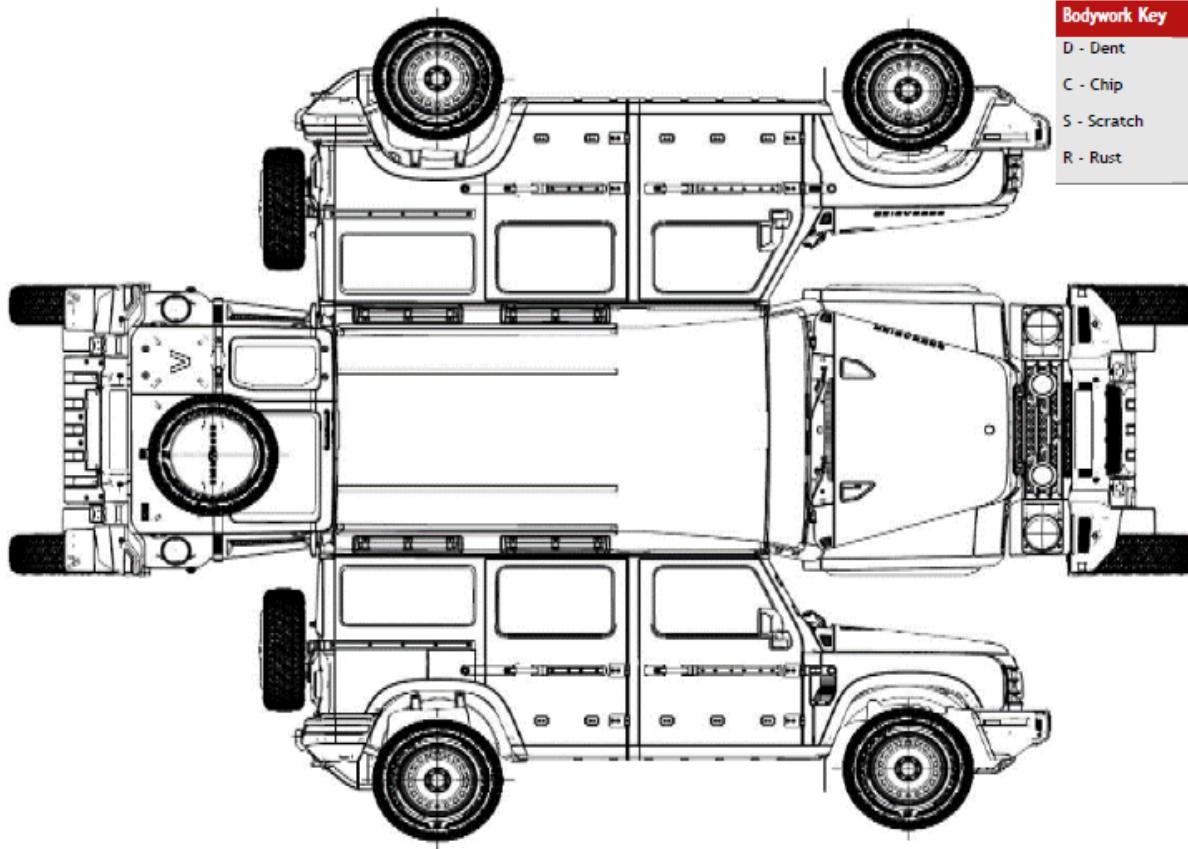
Bodywork Key

D - Dent

C - Chip

S - Scratch

R - Rust



*S1AKA option if fitted, *Gearbox oil change every 7 years or 105,000 KM. *Axle oil change year 1 or 15,000 KM then at year 7 or 105,000 KM thereafter.*Coolant change every 7 years or 105,000 KM. *Transfer box oil change every 5 years or 75,000 KM

Appendix 6 - Settings and Audio Menu Structures

This appendix does not include ADAS functions found on some MY24 vehicles.

Level 1	Level 2	Level 3	Level 4	Options	Comments
Settings	General	Language		English German French Spanish Portugese Italian Arabic	
	Unit	Temperature		°C, °F	
		Pressure		kPa, Bar, psi	
		Distance		km, miles	
		Fuel		L, UKGal, USGal	
	Date/Time	Auto		 On/Off Toggle	
		Date Format		DD.MM.YYYY YYYY.MM.DD MM.DD.YYYY	
		Time Format		12hr, 24hr	
		Time Zone		GMT Hours Offset GMT -12 to +14 hr in 1hr increments	
		Daylight Saving Time		 On/Off Toggle	
		Set Time		Greyed Out	
		Set Date		Greyed Out	
	Clockwise CCI Rotation			 On/Off Toggle	Rotary Controller rotation direction when rotating right
	Contact Name Order			Name Surname Surname Name	
	CCI Favourite			Off Road - Electrical Off Road - Temp Off Road - Attitude Off Road - Statistics Off Road - Pathfinder Phone - Favourites Phone - Recent Phone - Phone Book Phone - Search Phone - Numberpad Audio - BT Audio - USB Audio - AM Radio Audio - FM Radio Audio - DAB Device Settings	Sets the the Central Control Interface (CCI) FAV button function
	Reset General Settings				
	Reset All				

Settings	Display Settings	Display Brightness		0-100% in 10% increments	
		Configure Info Areas	Info 1	Average Fuel Average Speed Current Fuel Consumption Time Driven Distance Driven Remaining Ad Blue Range	
			Info3	Altitude Outside Air Temperature Audio Source Bearing Date Travel Time Odometer	
			Info 4	Same as Info 3	
		Reset Display Settings			

Level 1	Level 2	Level 3	Level 4	Options	Comments
Settings	Vehicle Functions	Instrument Illumination		0-100% in 10% increments	
		Central Locking System	Drive Away Locking	 On/Off Toggle	Locks doors when driving
			Selectiove Unlocking	Driver Door All Doors	
			Coming Hole Light Timeout	0- 80 Sec in 20 Sec Increments	
			Leaving Home Light Timeout	0- 80 Sec in 20 Sec Increments	
			Remote Locking Feedback	Off Lights & Horn Lights	
			Auto Door Unlock	 On/Off Toggle	Unlocks door when engine turned off
			Relock Remote Unlocked Door	 On/Off Toggle	Relocks door/s if not opened after 20 sec
		Front Park Distance Control		 On/Off Toggle	
		Vehicle Information	Engine Oil	Temperature Level On-Road Level Off-Road Start Measure	
			AdBlue	AdBlue Level % Top up Quantity L	
			Tyre Pressure	Reset	
			Battery	Voltage	
				Batery Charge Level %	
			Service Interval	Temperature Remaining Distance Km	
				Remaining Time Days	
				Remaining Engine Hours	
			VIN Number		
			Total Distance Driven		
			Software Version Number		
			Fuel Level %		
			Active Warning and Status Messages		
		Speed Warning		Off - 150kph in 5 kph increments	
		Passenger Airbag		 On/Off Toggle	Press Brake Pedal for 3 seconds to change
		Trip Information	From Start	Distance Driven Average Fuel Consumption Average Speed Reset	Current Day's Travel
			From Reset	Distance Driven Average Fuel Consumption Average Speed Reset	Since last manually reset
		Reset Vehicle Functions			
Settings	Acoustic Settings	Equalizer		Flat Pop Rock Jazz Classcial News Custom Equalizer> • -14 to +14 for • 63Hz, 400Hz, 1kHz, 2.5kHz & 6.3kHz • Save As Custom	
		Fader/Balance			
		Volume Settings	Vehicle Start	0 - 14	Sets volume level at vehicle start for alerts and radio
			Volume Minimisation	0 - 8	How much volume is minimised whern receiving a call or navigaiton instructions
			Increase Volume Notification	0 - 14	Adjusts Notification Volume
			Speed Dependent Volume Control	0 - 5	Adjusts volume to offset wind/engine noise
			PDC Sound	0 - 14	Parking Sensor volume level
			Input Sound	0 - 14	Adjusts button click sounds etc
			Warning Sound	High Middle Low	
		Reset Acoustic Settings			

Level 1	Level 2	Level 3	Level 4	Options	Comments
Settings	Communication	Device List	Connect New Phone Existing Phone	 Android Auto  Apple CarPlay  Bluetooth  Connect Bluetooth On/OffToggle *  Syncronize Contacts  Activate Apple CarPlay (Android Auto)  Hands Free Call *  Audio Streaming *  Rename  Delete Device	
					* Greyed out if connected using CarPlay or Android Auto
				 On/Off Toggle	
				 On/Off Toggle	
				 On/Off Toggle	
				 On/Off Toggle	
Settings	Pathfinder File Transfer	USB A *	Export Gpx		* Greyed out if not connected
		USB C *	Export All		
		HDD	Delete Gpx		
			Delete All		
			Rename Gpx		

Level 1	Level 2 (Top Right =)	Level 3	Level 4	Options	Comments
Audio	Apple CarPlay/Android Auto	Shuffle	Active		
			Inactive		Tap Menu Item to Toggle Option
		Repeat	Song		Tap Menu Item to Toggle Option
			Off		
			All		
		Device	List of Connected Devices		
Audio	Radio -AM	Source >	AM		
			FM		Tap Menu Item to Change Radio Band
			DAB		
		Auto Seek			
		Delete Current Station			
		Remove From Favourites			
	Radio FM	Source >	AM		Tap Menu Item to Change Radio Band
			FM		
			DAB		
		Auto Seek			
		Delete Current Station			
		Remove From Favourites			
		Traffic Announcement		 On/Off Toggle	
Radio DAB	Source >	AM			Tap Menu Item to Change Radio Band
			FM		
			DAB		
		Auto Seek			
		Delete Current Station			
		Traffic Announcement			
		Traffic Announcement		 On/Off Toggle	
Audio	USB	Input	USB C	Play Complete USB C	Greyed out if no USB connected
				Browse Folder	Lists all songs on USB Drive
				Sort By Artist	
				Sort By Album	
				Sort By Song	
		USB A	Play Complete USB A	Greyed out if no USB connected	
			Browse Folder	Lists all songs on USB Drive	
			Sort By Artist		
			Sort By Album		
			Sort By Song		
		Shuffle	Active		Tap Menu Item to Toggle Option
			Inactive		
		Repeat	All		Tap Menu Item to Toggle Option
			Song		
Audio	Bluetooth	Device List			Currently Connected Devices
		Shuffle	Active		
			Inactive		Tap Menu Item to Toggle Option
		Repeat	All		Tap Menu Item to Toggle Option
			Song		

Appendix 7 - Vehicle Specification Codes

The following list is not complete and excludes codes for dealer fitted accessories which will not appear on the door sticker. The sticker may not list all factory supplied options fitted to the vehicle.

Code	Description	Comment
CSC	Front Axle Spring Class 1, 1345 - 1417; 27N/mm	2 Green Dots
CSD	Front Axle Spring Class 2, 1417 - 1470 kg; 28,5N/mm	2 Red Dots
CSE	Front Axle Spring Class 3, 1470 - 1523 kg; 30N/mm	2 Blue Dots
CSF	Front Axle Spring Class 4, 1523 - 1576 kg; 32N/mm	2 Purple Dots
CSG	Rear Axle Spring Class 1, 1299 - 1355 kg; 26/35/68N/mm	2 Green Triangles
CSH	Rear Axle Spring Class 2, 1355 - 1411 kg; 27,5/38/71N/mm	2 Red Triangles
CSI	Rear Axle Spring Class 3, 1411 - 1467 kg; 29,5/40/74N/mm	2 Blue Triangles
CSJ	Front Axle Spring Class 5, 1523 - 1576 kg; 33,7N/mm	2 Black Dots
CSK	Rear Axle Spring Class 4, 1467 - 1523 kg; 31/42/74 N/mm	2 Black Triangles
CSL	Rear Axle Spring Class 5, 1187 - 1243 kg; 23/31/54N/mm	2 Purple Triangles
CSM	Rear Axle Spring Class 6, 1243 - 1299 kg; 24,5/33/58 N/mm	2 Open Blue Triangles
DDA	Front/Rear Diff Locks	
DDG	Diesel Water Separator	
DDH	Heated Blow-By Diesel Engine	
DDN	Petrol Fuel Filter	
EDC	Spare Wheel Cover (plastic clip-in solution)	
EHF	Load Bay Tub Quartermaster	
EMI	Power Heated Exterior Mirrors	
ETA	Vertical Towing Interface	
ETC	Fixed Towball and Electrics	
ETD	NATO Pintle Tow Hitch and Electrics	
ETH	Fire Extinguisher	
ETK	Class III 1-7/8" NAS Tow Hitch and Electrics	
ETN	Towing Plate Front	
ETS	Class III 2" NAS Tow Hitch and Electrics	
EWH	Heated Windscreen Washer Jets	
EWK	Safari Windows	
EWO	Heat Reflective Privacy Glass	
EYK	Exterior Utility Belt	
EYX	Load Bay Mounting Bar Quartermaster	
EYL	Bump Strips	
EZC	Light Bar Provision (EE); Package Protection	
FPB	Sela Green Paint	
FPC	Eldoret Blue Paint	
FPD	Scottish White Paint	
FPE	Devil Red Paint	
FPF	Inky Black Paint	
FPG	Shale Blue Paint	
FPI	Britannia Blue Paint	
FPJ	Inky Black Contrast Roof	
FPK	Scottish White Contrast Roof	
FPL	Magic Mushroom Paint	
FPM	Donny Grey Paint	
FPN	Queen's Red Paint	
FPP	Sterling Silver Paint	
FQP	Halo Red Chassis Finish/ Contrast Ladder Frame	
FQQ	Rhino Grey Chassis Finish/ Contrast Ladder Frame	
FQS	Black Chassis Finish/ Contrast Ladder Frame	
GBA	Rear Side Panels	
IAY	Central Storage Box, Lockable	
IBC	Seatbelt Reminder Rear Seats	
IHC	Rear passenger heating/cooling	

ILC	Premium Sound System
IOI	Compass With Altimeter
IPA	12V socket-outlet; centre console
IPH	USB Power Plugs; 2nd seat row
IPP	Power Inverter 400w
IPQ	12V socket in trunk
ISA	Utility Trim Fabric Seats
ISF	Heated Front Seats
ISI	Isofix & I-SIZE - Rear Seats
ISL	Leather Trim - Black
ISO	Leather Trim - Grey/Black
IWC	Napa Leather Drivers Pack
IWH	Saddle Leather Drivers Pack
JTA	Heavy Duty Flooring
JTC	Carpet Flooring
JTD	Interior Standard Trim
PPC	Aux Charge Points
PPP	Rough Pack
PPT	Trialmaster (EU)
PPW	400w Inverter
PPZ	Smooth Pack
S12	Rear Side Windows
SSN	Additional Second Warning Vest
SSO	Additional Second Warning Triangle
SSQ	Roadside Emergency Kit
SSR	Roadside Emergency Kit Plus
TTB	Advanced Anti-Theft Immobiliser
UAA	Park Assist Front (PDC)
UAE	Trailer Stability Assist / Trailer Sway Control (TSC)
UAG	Rear View Camera
UAL	High Load Aux Switch Panel and Elec Prep
UAO	ADAS 1
VAU	Access Ladder
VAV	Spare Wheel Lockable Storage Box
VCG	Under Seat Storage Compartment - Rear
VCH	Carpet Floor Mats
VDA	Aux Battery
VDN	Locking Wheel Nuts
VDP	Raised Air Intake
VED	Integrated Winch
VEJ	Rubber Floor Mats
VEM	National Flag Plaque - UK
VEN	Smokers Pack
VET	Skid plate Rear
VEV	National Flag Plaque USA
VFP	Interior Utility Rails
VGI	Load Bay Utility Rails Quartermaster
WBP	17" Steel Wheel
WBQ	17" Alloy Wheel, Grey Metallic Matt Finish
WBR	18" Steel Wheel
WBS	18" Alloy Wheel.
WBT	Bridgestone all terrain tyre
WBU	BF Goodrich KO2 All terrain tyre



The End