

4x4 – the INEOS way



INEOS Grenadier review

Doing things differently and getting things right are reputed to be the principles behind the newest entry to the 4WD market. *CPM* was invited to review the INEOS Grenadier at the recent Game Fair at Ragley Hall to establish whether it's more a workhorse or Chelsea tractor.

By Mike Watkins

When the Land Rover Defender was discontinued in 2016, some said it was the death of an icon. And while many lamented the loss of the legendary four-wheel drive after 70 years of production, others had a different idea.

In 2017, in the Grenadier pub in Belgravia, Sir Jim Ratcliffe — founder and chairman of chemical company INEOS, 4x4 enthusiast and experienced adventurer — announced the idea of building a stripped back, utilitarian, hard-working 4x4 that was fit for purpose. He believed there was a gap in the market for a true, no compromise, off-road vehicle rather than the modern 4x4s

currently available and INEOS Automotive was born. It could be that he was also thinking he may need a replacement for his own Landrover Defender...

When Sir Jim was asked how they went about designing something from scratch, he explained the process revolved around three key concepts — off road capability, reliability and looks. The aim was to be excellent at all three points of the triangle. Looks-wise, he wanted it to be inspired by the legends of the past but more modern.

Sporting pedigree

What did INEOS know about the automotive industry? Well, not much but according to the team, INEOS like doing things differently and getting things right — that's something it had already demonstrated with its significant involvement in some highly demanding sports teams where hi-tech engineering is tested to the limit.

Those interests include a third equal share in the Mercedes-AMG Petronas Formula One team, which has been the most successful F1 team of the last decade, and the INEOS Grenadiers — which had the highest team classification in the recent Tour de France, with Geraint Thomas finishing third.

In 2018, sailor Ben Ainslie was introduced to Sir Jim through a mutual friend and a new British Challenger, INEOS Team UK, was launched to campaign for the 36th America's Cup in Auckland in 2021 — a

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sport which means designing the fastest boat possible and pushing it to the limit.

Designing the Grenadier was going to be no different, it had to be fit for purpose, it had to work, and to achieve this INEOS partnered with the best in the industry to



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design it from the ground up, starting with the chassis and suspension. Providing the know-how was Austrian firm Magna-Steyr, with over 100 years of experience designing and building some of the toughest off-road vehicles made — such as the Mercedes G class.

Starting with the chassis, which took three years to finalise, it could only be one thing — a box section ladder frame. It's a classic 4x4 blueprint that has been used on iconic 4WDs, like the Willis Jeep, for over 70 years. Why a ladder frame? It's strong, stiff, tough and extra equipment can be bolted to it, such as strong underside protection, towbars and winches. The chassis on production vehicles will be electroplated, powder coated, waxed on the inside and has a 12-year anti-perforation warranty.

The designers matched the ladder frame to beam axles rather than independent suspension because these are the most robust design and more able to withstand tough conditions without getting damaged. INEOS has teamed with Carraro to supply the axles, an expert with over 50 years' experience making heavy-duty tractor axles for the likes of John Deere and Claas — they're strong, straightforward, and built to last.

With the chassis and axles sorted, a wheel in each corner keeps the Grenadier a true off-roader, allowing a short overhang front and back to avoid grounding out on steep inclines/declines. The suspension was the next design challenge. Again, no compromise was taken, there had to be good ground clearance, constant traction and high suspension travel.

To achieve this Magna took some of the best off-roaders, took them apart and benchmarked their suspension systems. They tested leaf springs, coils springs and air bags with a view to designing something better. The result was progressive coil springs made by Eibach, coupled with heavy duty dampers so the suspension can work effectively with different loads. There is 600mm of travel to maintain grip over extreme uneven ground. With reliability being one of the key points on the triangle, the suspension is 'old school' — no electronics and, to quote one of the design team, 'so it's robust and easy to maintain'.

To power the Grenadier, the proven BMW 3.0 litre straight six was chosen and will be available in petrol or diesel. One of the engineers explains they chose the BMW engine because it's proven and well known in terms of emissions, but they also knew they could retune it to have a lot of torque to suit the Grenadier.

The engine is paired with an eight-speed automatic gear box from industry leader ZF — the ZF8HP transmissions have an impressive track record and are widely used in the automotive industry. The key to excellent 4WD drive performance is the transfer case and this was designed from scratch by INEOS to give 'best in class' off road performance. It has permanent 4WD to keep things simple, with a manual rather than electronic high/low selection and diff-lock because it's more rugged and serviceable.

To connect this to the road, snow, rocks and mud, 17" steel wheels were chosen as standard, but why steel? Because it's tough and robust and if you're stuck it can be bashed back into serviceable shape to get you out of trouble. With proper attention to detail, the wheels are held on by six studs chosen because they are a size commonly found around the world and easy to replace if you lose one, explain the technical team.

Simple and effective

The exterior and interior were designed by Toby Ecuier, who had no automotive design experience but had designed super yachts. He explains how it was all about form and function and had to be super practical and really well built. The exterior is a nod to the classic off-road vehicles, simple and effective. As Toby explains, the interior is a balance between the spartan agricultural 4WDs and the luxurious SUVs, it gives comfort without complicating things. The seats are made by Recaro and are adjusted manually, no adjustment motors keep it simple and allows the interior to be hosed out.

One of the more interesting questions the technical team have been asked was: "Can I get three dead sheep in the back and wash it out?" Well actually yes, you can! The Grenadier interior is waterproof up to the wading depth of 800mm and has five interior drain valves so owners can hose out the floor without concerns about damaging interior materials — An IP54K rating for critical components in the cabin ensures the odd splash won't damage the switch gear or electronics.

The switch gear is cleverly split into two sections, the central stack controls the things like cabin temperature and has a big touch screen designed to connect to mobile phones. The Grenadier's overhead control panel keeps off-road switch gear out of the way and has built in switches to control external add-ons, like lights and winches. To complete the experience, it starts using a 'proper key'. No push button stuff.



The Grenadier has been designed to be a true off-road vehicle rather than a Chelsea tractor, with proper working credentials and practical design details.

It's been a long journey but five years later, one billion pounds spent and over one million miles of testing of the prototypes in tough off-road conditions, the first Grenadiers are being made in the INEOS state-of-the-art plant in Hambach on the French/German border. Acquired from Mercedes-Benz in 2021, half of the plant is making Smart cars for Mercedes and the other half is geared up for production of the Grenadier. Production has started and, according to the INEOS team, the lead time from placing an order to having the key in your hand is 7-8 months.

There are essentially five models. The commercially certified workhorses, the utility wagon with two seats and maximum load area in the back, plus the five-seat station wagon, also commercially certified and starting from £49,000 and £52,000 respectively.

The Belstaff edition station wagon has more comfort for passengers and less load space from £59,000. The Trailmaster edition is kitted out for extreme off-road conditions and starts at £59,000 and the Fieldmaster edition 'for exploration and escapism' has the same price point. All of the models can be configured to your choice.

In a video interview, Sir Jim explains how he had 'some cross words' with the commercial department after they had described the Grenadier as a great vehicle. He said: "It's not for you to tell people it's a great car. You can tell them what the car is, and they can make their minds up if it's a great car." A very refreshing approach in this era of self-aggrandisement.

In a few words, the ambition behind the Grenadier encompasses simple attributes: reliability; off road capability; looks; doing things differently; and getting it right.

Will history judge the INEOS Grenadier as a great car, up there with the iconic 4WDs? Only time will tell, but it's looking like a good bet. ■