

4 PLAY

MARK SAVILLE HAS FUN GOING FASTER, LOWER AND HIGHER IN A TRULY STUNNING DISCOVERY 4 THAT FEATURES MODIFIED TUNING BY GERMAN COMPANY MATZKER

Higher, lower, faster neatly sums up what this superbly athletic Discovery 4 is all about. But it doesn't really explain exactly how it outclasses the standard vehicle in all three 'disciplines', nor do these words give any idea what it feels like behind the wheel. I've flown out to Cologne in Germany, home of Land Rover tuning and modifying firm Matzker, to answer precisely these questions – and have a barrel of fun into the bargain.

Last time I met Amadeus Matzker it was to get airborne in his brilliant Evoque Rallye concept (LRO, September 2012) but today my feet are firmly back on the ground – at least until Amadeus unleashes the tuned Discovery 4 on a loose-surfaced, dusty road between fields of maize. The



TECH SPEC

MODEL: TDV6 SE (?)
YEAR: 2012 (?)
ENGINE: 3.0-litre
POWER: 285bhp@4500rpm
TORQUE: 490lb ft@2000rpm
TOP SPEED: (?)
TRANSMISSION: Six-speed automatic
WHEELS: 19-inch Discovery 3
TYRES: 255/55 R19 General Grabber AT
WINCH: Warn M8000



'THE DISCOVERY COVERS THE GROUND WITH STARTLING SPEED, AND SUDDENLY THAT BEND IS RIGHT UNDER OUR FRONT WHEELS. SURELY WE'RE GOING TOO FAST TO KEEP THE DISCO OUT OF THE DITCHES?'

power and torque available from the standard 3.0 TDV6 Discovery 4 is plentiful but this one really is something else. It surges forward like a jet fighter on take-off, hurtling us towards a curve that tightens alarmingly as we approach.

The Discovery covers the ground with startling speed, and suddenly that bend is right under our front wheels. Surely we're going much too fast to keep the Disco between the hedges, let alone out of the ditches?

But instead of disappearing forwards through the vegetation with front wheels on full left lock in typical out-of-control 4x4 understeer, the modified suspension set-up allows the front wheels to hold on and dig in. They bite into the surface,

causing the heavy back end of this boxy giant to initiate a pendulous, tail-happy swing. Which is exactly the result Amadeus wants.

With expert precision, he catches this 'wayward' movement, and provokes the engine to deliver even more power and drive at exactly the right point, perfectly balancing weight and power to produce a cloudy power-slide.

The slide seamlessly blends into straight-ahead forward movement on to the short straight section of the minor road that leads back to the main drag. This is more like rallying than driving. And when it's time to bring it all to a swift conclusion, the enormous Matzker front brakes do just that. Stopping is not a problem, ever.

Clearly, the suspension, brakes and engine tune upgrades suit the Discovery perfectly when it comes to fast on-road handling, but what about hacking it in the rough?

I'm about to find out for myself – the keys have been handed to me. But first, I have a stack of questions I want to ask the man responsible for this astonishing vehicle, Amadeus Matzker.

WHAT'S IN A NAME?

I ask Amadeus why this Discovery 4 is now badged as a DC6.

He explains: 'DC stands for Discovery and 6 comes from the original vehicle's impressive 600Nm of torque, even though this vehicle now has more pulling power than that.'

Originally, the six-speed 3.0-litre TDV6 engine produced 245bhp at 4500rpm and 600Nm [442lb ft] at 2000rpm. It now produces 285bhp and 665Nm [490lb ft].

'It has our electronic handling and off-road kit fitted. We can lower and raise the car more than the standard system will allow and at different speeds than the factory spec allows – essentially, higher, lower, faster.'

So the Disco can run permanently at lower height settings at higher on-road speeds. This is useful if, say, you have the roof rack heavily loaded. In the standard car, the suspension raises itself automatically when travelling at normal road speeds, but the Matzker system is independent of this.

The handling kit also works at the other end of the scale, permitting driving at higher speeds with the suspension in the raised position, which makes it ideal for extended journeys along off-road tracks and routes, where the raised height prevents off-road damage.

'Our kit raises the vehicle an extra 30mm over the factory off-road mode height, so instead of the standard extra 55mm, we can get 85mm,' Amadeus explains.

This height is available up to 45kph [28mph] but then the vehicle will lower itself down by 55mm to what it thinks is the standard on-road height. The Matzker upgrades mean it remains 30mm higher than the standard on-road height, at any speed. This is achieved by Matzker's electronic control unit, operated by a switch on the steering column, which raises or lowers the vehicle, independently of the vehicle's standard controls.

TALL ORDER

'Some Discovery 3 and 4 owners modify their vehicles' suspension ride height sensors by fitting shorter control rods,' says Amadeus. 'These fool the system into raising the vehicle by up to 63.5mm [2.5 inches]. A simple and cheap solution to fitting bigger wheels and tyres, but he doesn't recommend it.'

According to Amadeus, if you go into the extreme limits of articulation with shorter



WHO IS AMADEUS MATZKER?

Since launching his company in 1987, Amadeus has earned a reputation for sophisticated engineering and craftsmanship with his Land Rover upgrades and vehicles. He has also gained a name at the Baja endurance event, racing his mid-engined V8 110 hard top. His treasured daily drive is a 300Tdi Range Rover Classic.

KEEPING PAGE WITH THE TDV6

In the space of just four years, Land Rover launched five versions of the 'same' TDV6 engine, each of which required a bespoke tuning set-up and 12,500 miles of testing by Matzker. Here's how the six-cylinder diesel has evolved.

2006 The 2.7-litre Euro 3 emission-law-compliant engine arrives.

2007 Launch of the 2.7-litre Euro 4 emission-law-compliant engine, with the same power but completely different software and engine control unit.

2008 introduction of a particle filter and retrofit particle filter for the earlier engines, necessitating adaptation of previous tunes to suit.

2009 The 3.0-litre 245bhp engine joins the line-up.

2011 Arrival of the uprated 3.0-litre engine producing 256bhp. Matzker has TÜV certification for its Euro 3 and Euro 4 engine tunes, including the Euro 4 with particle filter. The company is now working on the latest engine, although development has currently been suspended in anticipation of an eight-speed, uprated 245bhp version.

'THE TUNE UPGRADES SUIT THE DISCOVERY PERFECTLY WHEN IT COMES TO FAST ON-ROAD HANDLING, BUT WHAT ABOUT HACKING IT IN THE ROUGH?'



DISCO GOES UP...



1 Matzker switch Position 1: 25mm lower than standard on-road height. Not as low as access height. Perfectly designed for high-speed autobahn cruising, reducing effects of side winds.



2 Matzker switch Position 0: Standard on-road height. Even when the car is simply being used as everyday transport, the upgrades to the suspension and tyres result in a significantly superior ride.



3 Matzker switch Position 2: Standard on-road ride height +30mm for on-road speeds on rough desert tracks or wide open terrain – perfect for touring North Africa or Mongolia.



4 Matzker switch Position 2: Standard off-road height +30mm for maximum off-road clearance up to 45kph, at which point it will drop by 55mm but will still be 30mm higher than standard.



'THE SYSTEM 'LEARNS' YOUR DRIVING STYLE AND THE ROAD OR TRACK CONDITIONS YOU'RE DRIVING ON, AND CONTINUOUSLY TUNES ITSELF THOUSANDS OF TIMES A SECOND TO SUIT'

sensor connecting rods fitted, you get problems. On the standard vehicle, absolute travel is limited and understood by the electronics. If you go out of this range of travel – for example, if all the air comes out of the system on minimum height or if you belly out, the chassis and wheels hang down, extending the suspension beyond its normal maximum range. As a result, you risk creating faults with the self-leveling system because you're then able to get into positions that the system doesn't recognise.

'The height sensor is a small potentiometer, and it's not linear but exponential,' explains Amadeus. This means that each increment of movement signal it sends is double the previous one rather than being equal to it. 'This is why it's so easy to quickly get to a position the system can't understand. We've created a programmable calculator that means we can recalibrate the system to understand a wider range of signals, generated by the greater suspension movements.'

All of this explains how the Matzker set-up is able to achieve three completely different ride height settings set independently of the original system.

'It also allows us to tune the system to suit different wheel and tyre combinations,' says Amadeus. 'We have some customers who run bigger wheels and tyres. Our ride-height upgrades are ideal for them.'

Warn M8000 winch hidden behind the bumper, and a second spare wheel. This Disco 4 is now ready for a long overland trip and it can still be used every day. If you want, you can fit stronger wheels – but then that's about it.



WHAT'S THAT LIGHT?

'We've made a white xenon LED fog lamp that's also perfect for off-road driving,' says Amadeus. 'The light doesn't diffuse – it's pin-prick sharp and only illuminates the ground. Some high-mounted lamps light up the trees, which can be extremely distracting. The convex lens is very strong and is completely water-resistant.'

The EU-approved lamp fits Range Rover Sports up to 2010, all L322 Range Rovers, Discovery 4s and Freelander 2s up to 2006.

If you want to go further with modifications, you can also fit Matzker's adaptive shock absorbers, which give 90mm extra travel over standard. They alter their response depending on the type of terrain you're driving and your cornering speeds. 'The standard shocks are okay but they work more as mass dampers than shock absorbers,' says Amadeus.

The comfort of the Discovery comes mostly from its mass – 2.7 tonnes. Driving a bumpy track like this one at speed causes the wheels to bounce up and down a lot as the suspension tries to cope; ultimately, traction is reduced because the wheels spend less time in contact with the terrain. Matzker's adaptive shock absorbers have damping forces in both directions – impact and rebound. They actively push the wheels into the ground much more than standard shock absorbers, increasing traction.

'Anti-lock braking can't work properly on bumpy tracks because the vehicle's bouncing in the air so often, causing the brakes to lock prematurely and then release,' explains Amadeus. 'Effectively, the brakes aren't working. Even at just

SHOCK TREATMENT

'This car has standard shocks but we can fit our own adaptive suspension that works in a very similar way to Magnaride fitted to some Evoques,' says Amadeus. 'The system reacts and 'learns' your driving style and the road or track conditions you're driving on, and continuously tunes itself thousands of times a second to suit.'

The DC6 was created to demonstrate that you don't need to spend a fortune to improve the standard vehicle significantly. So Matzker have fitted an additional electronic control unit [ECU] to release more power and torque from the engine, with 6mm steel skid plates underneath to protect the engine and gearbox, a powerful

50kph [30mph] on a track like this it would take perhaps 50 metres to stop the car on standard shocks. With our adaptive shocks it will stop more quickly because of the better traction.'

Similarly, on a fast bend with standard shocks, most Land Rovers and other 4x4s will understeer and run wide or even continue straight on if uncorrected. 'I don't like this because it makes you a passenger; you have no control,' says Amadeus. 'But with a car that's oversteering, you have the chance to react – to correct and to drive out of the problem.'

GETTING IN TUNE

So how does Matzker tune the engine? Amadeus explains the tuning process: 'We leave the original engine ECU settings alone so that any future servicing and technical upgrades can be carried out without disturbing our tune. The gearbox ECU isn't affected. It's important for our customers to know that everything still works in a standard way as far as the servicing and service upgrades go.'

The new Matzker ECU fits between the original ECU and the injectors. It modifies the signals to the injectors, releasing extra power and torque, by only changing the signal at specific rev ranges, raising the turbo pressure a little and extending the injection period.

'We can programme that precisely,' says Amadeus. 'Our latest challenge was working with the particle filter system in the exhaust. It's really difficult. Our ECU monitors the rising



Robust 6mm steel belly plate incorporates strategically placed servicing 'holes'



Standard Disco 4 caliper (being held) looks small by comparison



Monster disc brakes and calipers are stunning

HOW MUCH?

Engine tune	€1695
Matzker electronic handling and off-road kit	€1485
Handling kit (shocks)	€1095
Front disc and calipers	€2685
Warn M8000 winch and tray	€3285
Engine and transmission protection plate	€1585
Swing away spare wheel carrier	€1685
Additional fuel tank	€2185
19 in wheels Grabber AT	€3585
TOTAL	€19,285

MODIFIED AND TUNED DISCOVERY 4



WHAT'S THAT SWITCH?

Position 2 = raised 30mm above whatever vehicle system set at
Position 0 = standard ride height – whatever the vehicle system is set at
Position 1 = lowered for high-speed road work.

Matzker's system can be fine-tuned to suit different wheels and tyres, to give different amounts of lift or lower. 'I have a customer who has Cooper STT 265/70R17, which is nearly Defender size,' explains Amadeus. 'He always has his car in Position 2, raising the car 20-25mm above standard, to give him enough height for the tyres to clear the arches; in standard height he can't steer. Then he can raise the car another 30-35mm to do off-road. He has on-road tyres but he never uses them because it looks so cool with the off-road tyres.'



This Discovery 4 handles full-bore driving brilliantly



Standard Discovery 4 is hardly spartan, but Matzker does offer a range of upgrades



Nothing here to worry a Land Rover technician – it looks standard

temperature in the particulate filter and then switches off, so that the filter works with the standard settings of the car. Once it's cleaned and the cycle is finished, then our ECU switches back on again.'

It's now my turn to get behind the wheel and find out for myself how the DC6 copes with a bumpy grass track at moderate speed. I raise the vehicle to its standard off-road height – 55mm higher than on-road height – then flick the Matzker suspension switch to Position 2, gaining another 30mm of clearance under the body sills.

Discovery 3s and 4s offer a supremely comfortable ride, but they can be a bit lively if they're driven too quickly along country tracks

and lanes. Right now, that's exactly what I'm doing – deliberately driving to within a whisker of the trigger speed that will automatically lower the suspension. Although I'm doing just under 30mph, it seems like I'm going faster, but it doesn't feel bouncy or on the limit of traction. The proof comes when I drive the track again in normal mode – the ride is much livelier. Apparently, the extra height available from the conversion also provides greater movement for the dampers to do their job.

Out on the smooth autobahn, the D4 assumes its other, darker side. Sitting 25mm (one inch) lower than standard doesn't sound dramatic, but it does completely alter the vehicle's

feel and poise. Once we're comfortably over 120mph and with the speedometer still on a steady upward arc, Amadeus demonstrates the massive front disc brake and caliper conversion. These brakes are not merely efficient, you could almost describe them as brutal.

This Discovery 4 has had only a few of the upgrades on offer from Matzker, none of which compromise the vehicle's reliability or driveability. Any Land Rover garage that can service a standard D4 can easily look after this one, too. This keeps it well within the reach of thousands of Disco 4 owners. If I had a D4, I'd be very tempted to nip over to Cologne for a weekend and get it Matzker'd. **LRO**