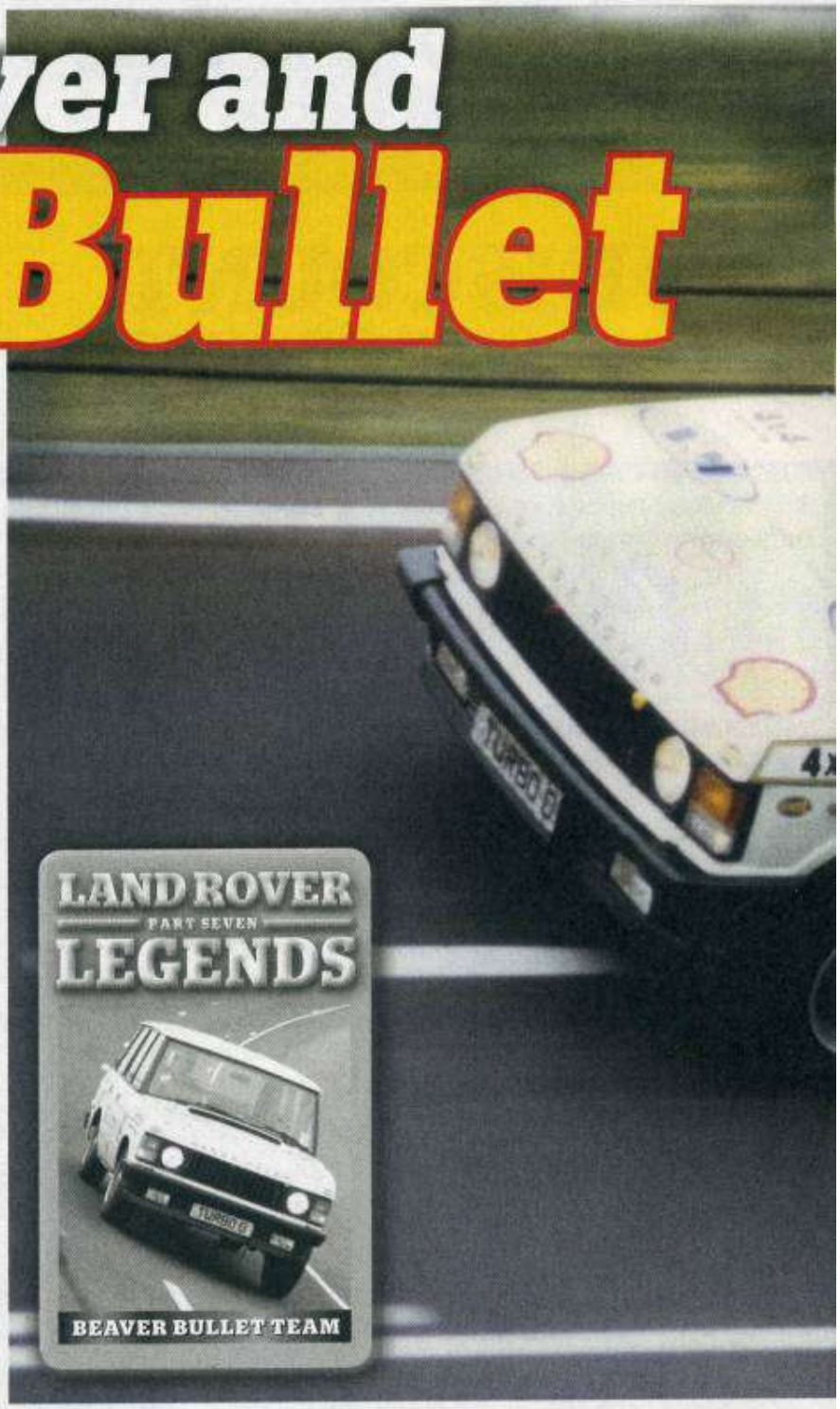
The Beaver and the Bullet



The first diesel Range Rover was famously slammed on Top Gear, but it broke 27 sprint and endurance records and was a huge success in the European markets it was designed for

The Range Rover Turbo D has always been seen in the UK as a bit of a lemon, the poor relation to its V8-powered brethren. This is still reflected today in typically lower values, even when immaculate and low-mileage examples come up for sale. But back in the day it was a significant sales success in continental Europe, and now it's time to reappraise the Turbo D and its contribution to the success of the first-generation Range Rover.

So here I am, piloting a 1987 Range Rover Turbo D that has recently been acquired by the Dunsfold Collection from its first and only owner in Somerset, driving to Solihull to meet many of the key players in what was at the time perhaps the most significant initiative taken by Land Rover in connection with the launch of a new vehicle. That it was done by a team who volunteered their time and energy, unpaid, makes it all the more remarkable.

Known as Project Bullet, it took place in 1986 to prove to the world that the new diesel Range Rover was just as accomplished and capable as its V8-powered ancestors.

I have to confess that this is the first time I've driven a Turbo D and I am therefore guilty-as-charged in terms of pre-judging its lemon status. But I regularly drive my 200Tdi Discovery and a 300Tdi-powered Range Rover is my daily driver, so I'm looking forward to the inevitable comparisons. Is the Turbo D really as unexciting as received wisdom suggests?

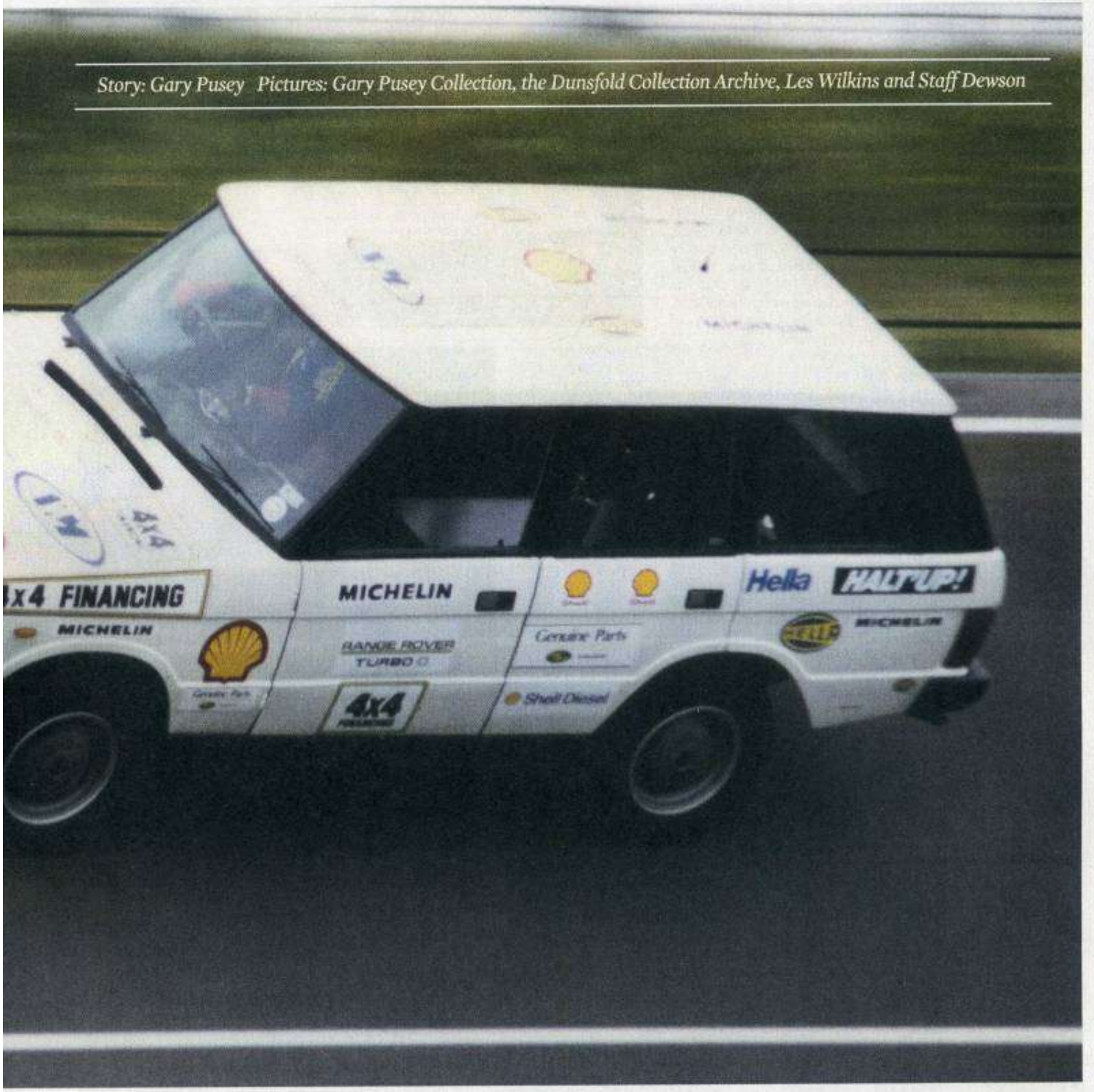
Land Rover had realised that it needed a decent diesel engine for the Range Rover as early as the late 1970s, when the company's European agents and dealers were pushing for an effective diesel-powered alternative to the 3.5-litre petrol V8. Some European governments imposed tax penalties on cars of over 2.5 litres, while the high fuel consumption of the V8 didn't help in countries where diesel was significantly cheaper than petrol, and where diesel-powered cars were considered far more acceptable than in the UK, where diesel cars were then unpopular.

The initial solution was to try to create a diesel version of the petrol V8, and in 1980 Land Rover began a collaboration with diesel specialists Perkins under the code name Project Iceberg. A prototype turbocharged diesel version was exhibited by Perkins at the Paris Motor Show in late 1982, with a claimed 125 bhp, but the project came to nothing in the end. Some commentators have suggested that the lightweight alloy block of the Buick-derived V8 meant the diesel version was intolerably noisy, while others have stated that the crankcase could not withstand the higher stresses inherent in the diesel.

Either way, the company's new boss, Tony Gilroy, was sufficiently convinced that the project was going nowhere

Project Bullet comes complete with a racing fuel system

Story: Gary Pusey Pictures: Gary Pusey Collection, the Dunsfold Collection Archive, Les Wilkins and Staff Dewson



and it was cancelled. Land Rover's engineers were told to find a commercially-available diesel engine that would do the job. The project to identify this new diesel engine for the Range Rover and build the Turbo D was code named Beaver and was led by the late Peter Armel (who sadly passed away in 2006). Whatever the outcome of the Beaver project, though, the result would be that the diesel Range Rover would be powered by an engine developed and built outside the factory.

Choosing the right engine for the job

According to James Taylor in his book *Range Rover: The Complete Story* several engines were considered by Land Rover including Peugeot's XDT 2.5, BMW's new six-cylinder 2.4, and VM of Italy's five-cylinder 3.0-litre. The final choice was an intercooled version of VM's turbocharged four-cylinder 2.4 engine, which was already being supplied to Rover for the 2400SD Turbo version of the SD1 saloon. A less powerful non-intercooled version of this engune had already been approved by Land Rover for Janspeed of Salisbury to install in the Range Rover as an aftermarket diesel conversion.

Bill Morris, who was Land Rover's Director of Engineering at the time, remembers that the VM installation in the SD1 had been a bit of a flop: "When Tony Gilroy went to the British Leyland board to put the proposal for the VM to go into the Range Rover he was given a hard time and warned that another failure would have consequences for him. The project was approved, though, and Tony made it clear to everyone involved that the new vehicle needed to be fully-proven before it could be introduced to the market.

"Our engineers developed a good rapport with the VM engineers and together several important modifications were developed. These extended the development programme and while Tony found this frustrating he stuck to his original policy statement that the vehicle was not to be launched until it was ready."

The chosen version of the VM engine was actually pretty cutting-edge by the standards of diesel engines at that time and Bill thought it offered "an excellent balance of pace and economy and acceptable bottom-end power." Bill was also responsible for Project Jay, which would eventually see the light of day as the game-changing Discovery, and the VM

The Bullet on the MIRA's banked test track during its record-breaking run

was also positioned as a fall-back option for the Discovery if Land Rover's in-house development of the 200Tdi engine could not be completed in time. In the event, of course, the 200Tdi was indeed ready to be installed in the Discovery, was a huge success and would eventually replace the VM in the Range Rover.

The VM developed 112 bhp at 4200 rpm and 183 lb-ft of torque at 2400 rpm, while the comparable figures for the carburettor versions of the 3.5 V8 were 125 bhp at 4000 rpm and 185 lb-ft at 2500 rpm. This meant that the acceleration provided by the VM was not massively different from that of the carburettor version of the 3.5 V8, although top speed was clearly lower. However, the four-cylinder VM was nowhere near as smooth and refined as the V8 and was undeniably noisier, suffering from pronounced diesel knock at low speeds. Part of the Turbo D's problem would be that the Range Rover had established its reputation with its powerful, relaxed and sublime 3.5 V8 and any diesel was going to fall short by comparison – and so it would prove.

Bad press doesn't mean the end

The new Range Rover Turbo D was launched in April 1986 at the Turin Motor Show – a logical location given both the VM's Italian origins and the fact that the Italian government imposed tax penalties on cars of over 2.5 litres, which made that market one of the most lucrative for the new diesel Range Rover.

Two things then came to conspire against the early fortunes of the VM. First, Land Rover had introduced the fuel-injected version of the 3.5 V8 for the 1986 Model Year version of the Range Rover Vogue, and this raised the bhp of the petrol engine from 125 to 165 and the torque from 185 to 206. The Turbo D was inevitably going to be compared with the new Lucas L-Jetronic injection V8 model. And, secondly, Top Gear had seen the Turbo D on the stand at Turin and wanted to test drive it for the TV show.

Roger Crathorne, who was head of Land Rover Experience at the time, remembers this well: "We had one vehicle on the exhibition stand at Turin which was for static display, but someone was keen to help the Top Gear guys and a Turbo D was offered to them for road testing and filming.

"It was a badly-prepared vehicle and did not perform well and when the show was aired the following week, presenter Chris Goffey gave the new Turbo D a hammering. Peter Armel was at home waiting to watch the programme and had a bottle of champagne ready to open. He was bitterly disappointed when he saw the review, and the bottle remained wired and corked."

Bill Morris takes up the story: "At the launch in Italy Tony Gilroy was approached by the BBC people to allocate them a vehicle to test for the show. Tony quite rightly refused because he knew it was not sensible to give the media a vehicle that had not been carefully checked. The BBC then went to the local distributor and, unwittingly aided and abetted by a well-meaning senior manager, they borrowed a showroom vehicle. This vehicle had not had any post-delivery checks and unfortunately had two faults.

"The first one, which really should have been picked up at the factory and by the distributor, was that the throttle cable was incorrectly set so that full power could not be achieved. This was a ten-minute job to correct.

"Secondly, the LDA turbo boost control device was incorrectly set by the manufacturer. This is a sensitive device that during acceleration has to balance between rich mixture

Above: Project lead Peter Armel with Signor Mingozi (VM Engineering Director) and Evo Maini (VM Diesel Chief Engineer) testing a prototype Turbo D at Eastnor

Right: John Faulkner with VM top brass at Eastnor

Dunsfold's recent acquisition. No mistaking it's a Turbo D

Methods Build prototype Turbo D during a shakedown in the Lake District

"The chosen version of the VM engine was cutting-edge by the standards of diesel engines at that time"

causing smoke and lean mixture resulting in what would be referred to on a petrol engine as a flat spot. On the vehicle in question the latter was the case."

Others were quick to criticise the new vehicle, and the Beaver-bashing soon became a popular pastime in the media. But if Peter Armel was not a happy man, Land Rover MD Tony Gilroy must have been incandescent! The Beaver project team shared their irritation and frustration, and there was a determination to find a way to set the record straight.

John Faulkner's Project Bullet

At that time John Faulkner was a Project Manager in Vehicle Engineering and also responsible for liaison between Land Rover and the Paris-Dakar event. "I was into motor sport," he recalls, "and I came up with the idea that we would prepare an attempt on some of the diesel-powered two- to three-litre national records using a pair of Turbo D vehicles.

"After some weeks of detailed consideration and assessment that led me to conclude that we could succeed, I discussed the idea with Peter Armel. Peter was keen to repair the damage to the project he had dedicated so many hours to so he went to Bill, who was his boss, and suggested that Bill take the idea to Tony Gilroy."

Bill remembers the discussion with Tony: "He was less than enthusiastic but he agreed we should carry on – and only on the basis that there should be no media involvement at any stage, and that it would not interfere with any official projects. Oh, and it wasn't to cost anything, either!"

Peter and John were determined to go ahead, and co-opted the help of David Butterworth from Marketing and John O'Donnell, who was head of Vehicle Operations. But here fate intervened, because Peugeot had had the same idea and had just raised the records beyond Range Rover's performance envelope.

Les Wilkins, Land Rover's Diesel Engineer, was invited to volunteer with the specific objective of boosting the VM's

How the Turbo D was launched in Italy

Land Rover's press release photo for the Turbo D on April 22, 1986

The Bullet vehicle as preserved today in the Dunsfold Collection

"Others were quick to criticise the new vehicle, and Beaver-bashing became a pastime in the media"

performance within the scope allowed by the regulations. With the enthusiastic co-operation of VM themselves a very significant improvement was achieved and the project really got rolling.

Les remembers: "I got involved with the Bullet project in order to coax a bit more performance out of the VM. I tweaked a current version of the engine by increasing the boost pressure and maximum fuel setting to allow the drivers to practise driving at high speed round the MIRA test track, which had three banked corners, but VM developed a special version of the engine with a modified turbocharger to give better rated speed performance. As things turned out, both specifications played a part in the record attempt."

Bill recalls: "By this time the team had expanded and covered all ranks at Land Rover, all unpaid and working long hours on the project in their own time. Bullet is a monument to the enthusiasm and commitment that was always present in Land Rover Engineering. This was not an isolated occurrence and it is a source of great pride for me."

Two VM-powered vehicles were carefully prepared under conditions of the utmost secrecy for an ambitious demonstration of the new diesel Range Rover's capabilities at the MIRA proving ground. John O'Donnell recollects: "The project was really officially-unofficial. Tony wanted it kept completely under wraps until we'd done it and had a success story to tell. Obviously he didn't want it known about in case it failed!

The 'Breadvan' sprint vehicle was provided by French Paris-Dakar specialist Halt'Up!

NEXT MONTH

We tell the inside story of the MIRA record-breaking runs. The Bullet will be on display at the Land Rover Legends show at Bicester Heritage on May 26-27 and members of the record-breaking team will be there to speak about their experiences.

"One vehicle was prepared for the attempts on the sprint records, and the other for the long-distance records. The sprint vehicle was a Paris-Dakar special built by French rally preparation specialist Halt'Up! which we nicknamed the 'Breadvan'. The endurance vehicle was a Methods-Build pre-production Turbo D from the Engineering Fleet which had started life in 1985 as a 3.5 V8.

"We increased the VM's turbo boost pressure and John Woodward came up with the idea of fitting twin racing filler caps on the lower tailgate, together with the associated plumbing: one to let the fuel in, and the other let the air out. It worked brilliantly and with the high-level fuel bowser mounted on our pit gantry we could fully-refuel the 18-gallon tank in around 14 seconds. We also added a quick-release bonnet catch, various additional instrument gauges, and a radio communications system.

"We had to fit Perspex side windows and an internal roll-cage and fire extinguishers to meet the MSA regulations. The roll-cage added a lot of weight, so we felt justified in removing the front passenger seat and the rear seats."

"I had been working with Halt'Up! on their Paris-Dakar vehicles," remembers John Faulkner. "We discovered that under the RAC regulations we could utilise one of their vehicles perfectly legitimately as the sprint vehicle so we borrowed one, removed the V8 and fitted a VM engine. There were obvious advantages in overall vehicle weight compared with the standard vehicle."

All private photography was banned at the event, and Land Rover themselves only issued photographs of the endurance vehicle. One crew member did take a few snaps, though, and it is him we have to thank for the photograph of the 'Breadvan', seen here in print for the very first time.

For the meeting today we've brought along the surviving Bullet vehicle, B378 TAC, which is the long-distance record-breaker and is today cared for by the Dunsfold Collection. For most of the team it's the first time they've been reunited with the car since the record-breaking runs at MIRA in 1986, and the recollections come thick and fast – as you'll discover in next month's LRM.