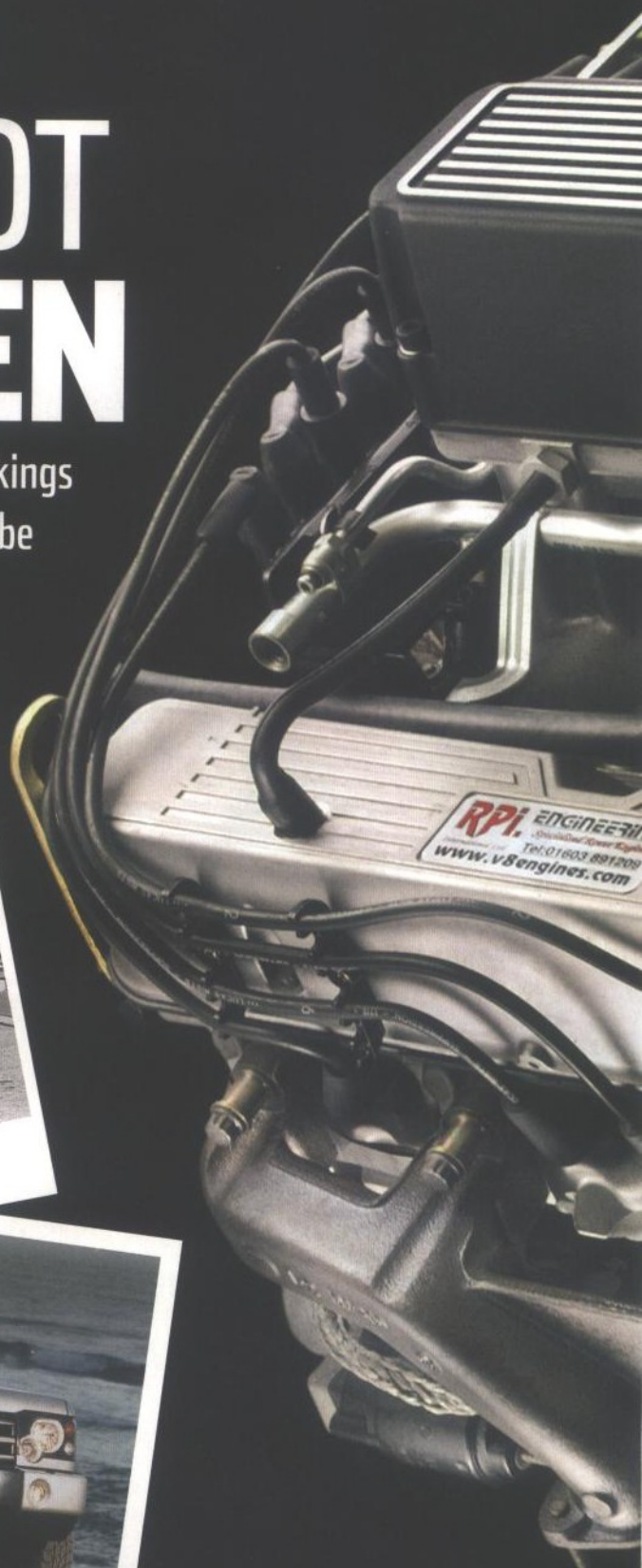
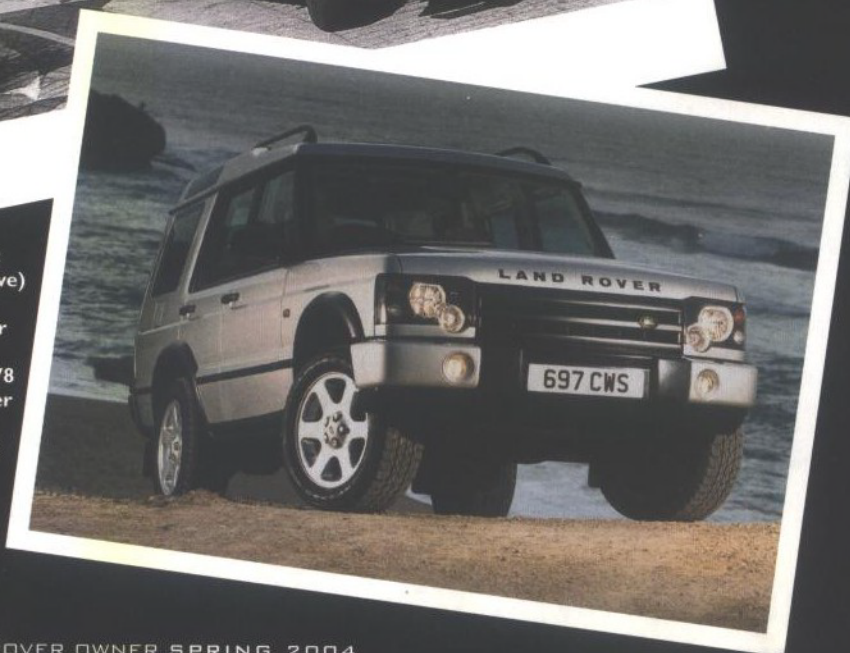


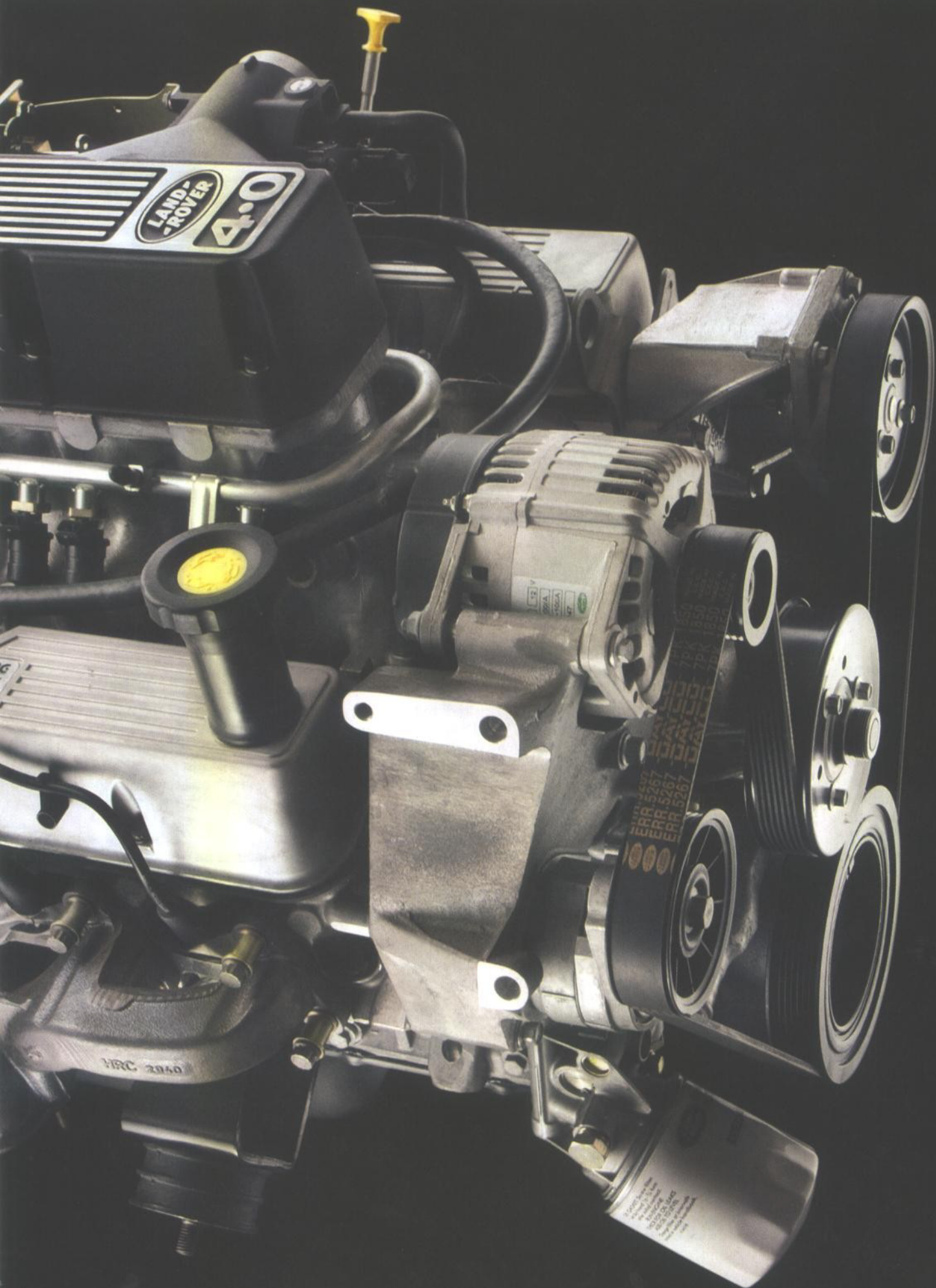
ROVER V8 GONE BUT NOT FORGOTTEN

Mark Saville delves into the history and inner workings of this celebrated power unit, which will no longer be used by Land Rover. It's got quite a tale to tell...



First and last: the P5B (above) was the very first Rover car to have the Buick-based V8 installed under the bonnet. And the 2003 Discovery (right) is the last







Crisp, clean lines of a 1980
Range Rover Classic three-door

THE LAUNCH OF THE new Discovery later this year will sound the death knell for Land Rover's much-loved and long-running V8 engine. But, even though the legendary unit's production line is closing, tens of thousands of V8 Range Rovers, Discoverys and Land Rovers will continue to burble their way around the planet for years to come. Add to these countless numbers of Rovers, MGs, TR8s, TVRs, LDV vans, Morgans and thousands of DIY specials, and it's clear what a huge legacy the Rover V8 engine is leaving behind.

With the closing chapter in sight, it's a good time to recall how the story started and some of the ripping yarns in between.

In the '60s, Rover wanted to increase its foothold in the big USA market, but the problem was that its somewhat restrained cars didn't appeal to American buyers, more used to whale-tail leviathans with vast V8 engines. Land Rover's cute little four-cylinder just didn't cut it on the freeway.

One possible solution was the arrival of the six-cylinder engine in the 109-inch Land Rover. But even this motor couldn't really provide the effortless, high-speed cruising that American car buyers wanted.

J Bruce McWilliams, the Rover Company's top man in North America at the time, wasn't satisfied with Rover's 2.6 engine. According to David Hardcastle in *The Rover V8 Engine*, McWilliams reckoned an American V8 was the only answer.

McWilliams persuaded William Martin-Hurst, Managing Director of Rover, to let him check out various US car giants to see if any of them would be interested in supplying engines. While in New York to woo Chrysler, Martin-Hurst called in on Karl Keikhæfer from Mercury Marine, whom he'd met while working on an previous project.

There just happened to be a Buick 215 V8 engine sitting quietly at the back of Keikhæfer's workshop. Martin-Hurst's interest was aroused.

General Motors had recently decided to stop production of the Buick 215 engine, which meant it might be possible for Land Rover to produce it under licence in Solihull. A deal was struck.

Interestingly, the design of the Buick 215 and Oldsmobile 215 engines took slightly different routes. The Buick-designed motors were considered superior as a result

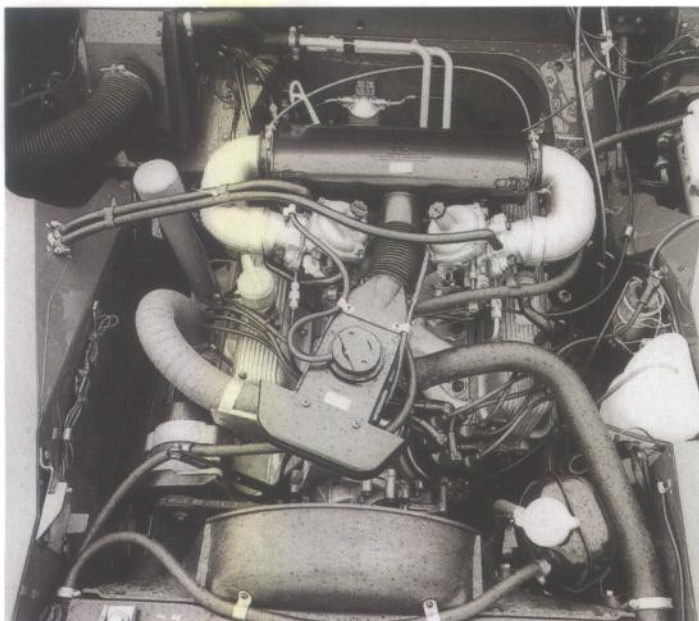
of the company's own design strategy and subsequent engineering comparison work. Fortunately for Rover and Land Rover, the Buick design features stood the test of time. GM took the obsolete 215 engine and converted it into cast iron, making it slightly larger in size and capacity, and produced a V8 and a V6. The basic design of these still exists today.

The British public had its first view of the all-aluminium, Buick-based V8 engine under the bonnet of a Rover P5B (B is for Buick – obvious when you know) at the Earls Court Motor Show in October 1967. There were other V8s, but nothing as light and as small as the Buick 215.

During the late 1960s, a prototype Series IIA fitted with a Rover V8 was created; the mythical-sounding Golden Rod. With a name like that, it could only have come from the USA. It was sent over here for evaluation, but didn't make it into production: Land Rover was too busy developing and refining the vehicle that would eventually become the Range Rover.

Land Rover buyers had to wait until the launch of the Range Rover in June 1970 before they, too, could experience V8

Tens of thousands of V8 Land Rovers will continue to



EIGHT INTO FOUR
(clockwise from above): 3.5 V8 fairly fills SIII Stage I's engine bay; V8 90s are still incredibly popular but rare; V8i automatic Discovery makes a fine alternative to a Range Rover; beautiful Rover P6B



power. By then, the next V8-engined Rover car, the P6B, was already making something of a name for itself.

The Range Rover's V8 engine and transmission were perfectly suited to the military 101-inch Forward Control, enabling it to haul its considerable bulk around. Bucketloads of pulling power and a squaddie-proof four-speed gearbox still make the 101 – which was launched at the Commercial Motor Show in 1972 – almost unstoppable.

The V8-powered Series III Land Rover – which is still known as the Stage I V8 – didn't make its appearance in the UK until 1980. Only 109-inch vehicles were officially available – although a small batch of 88-inch V8 IIIs were produced for a Caribbean Police force, at least one of which never made it out of the country. We'll be bringing you the full story of that astonishing vehicle in a later issue...

By 1983, V8 power and Land Rover strength was a well-proven combination. The coil-sprung One Ten launched that year was available with three engine options: 2.25 four-cylinder petrol, 2.25 four-cylinder diesel and 3.5 V8 petrol.

When the V8 Ninety was released to an expectant world two years later, complete with a new five-speed Santana gearbox from Spain, it was a huge success – and a genuine V8 Ninety, in good condition, is a highly sought-after vehicle nowadays.

And to think Land Rover had been dropping V8s into prototype short-wheelbase vehicles since the late 1960s... Perhaps the fuel crisis of the early 1970s put the brakes on Land Rover's plans to put the V8 into more of its products, because the Rover V8 engine can't exactly list miserly fuel consumption very high up the list of its attributes.

Those first Range Rover owners around the world were looking a bit pale under the mercury lighting at the pumps, as fuel prices rocketed in inverse proportion to their rapidly emptying wallets.

There was nothing else for it: Land Rover would have to develop a suitably smooth and capable diesel engine for its flagship vehicle. Enter the Iceberg, a turbodiesel version of the V8 engine.

Says Staff Dewson, Principal Engineer of Land Rover Development at the time: 'My team was responsible for building

STAGE I V8 SIII

The Stage I V8 first appeared in the UK in 1980. After years of financial constraints, Land Rover was at last able to meet the challenge of more powerful vehicles from other makers. Why Stage I? It was the first stage of a major investment plan in Land Rover, which eventually led to the Defender.

The SIII V8 had the Range Rover's LT95 gearbox and permanent four-wheel drive. So that the rest of the transmission and brakes could deal with the V8's power and torque, the engine was de-tuned.

Few Stage Is were made; fewer still are in original nick. James Parkin, from Derbyshire, has just completed a total rebuild of this lovely 1980 Stage I (below). After nine months, many hours' work and about £5000, it's now road-ready. The only non-standard items are the parabolic springs, gas shocks and K&N air filters – nothing that can't be reversed.



burble around the planet for years



WHAT THE EXPERT SAYS 'STICK A COUNTER ON THE DOOR HINGES...'



The Rover V8 is undoubtedly a terrific engine, but nothing's perfect. Chris Crane, from RPi Engineering in Norfolk, has been building and modifying the beasts for more than 20 years – so he has a wealth of knowledge to pass on about keeping all eight cylinders in perfect firing order.

The most important maintenance factor in any engine's life is the oil change: not just which oil you use, but how frequently you change it. The V8 is especially vulnerable to oil contamination.

According to Chris: 'The one thing that wrecks a Rover V8 is short journeys. They contaminate their oil very quickly. Couple that with oils with low detergents, or old oils where they've broken down, and you end up with a worn-out engine.'

'Take my own Range Rover, which is now on 170,000: I bought that with 93,000 miles on the clock. Because it had done 93,000 in just four years, the engine was like brand-new inside when I opened it up. It was still silver and was completely intact.'

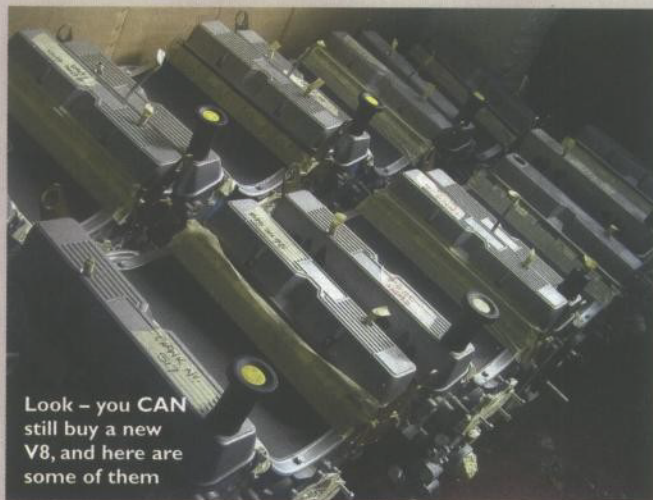
'With the V8 engine, the main issue is the length of

journey it's done, not how many miles it's done in total. If a Range Rover had a counter on the door hinges, that would be far more relevant than the speedometer.'

'You can always tell a Rover V8 engine's wear level by the amount of contamination showing inside,' reveals Chris. 'You can even get a good idea just by looking in the oil filler neck with a torch and checking out the colour. The RPi website explains what the colours mean: silver – brand-new; brown – very good; brown and black – getting a bit tired; black and tarnished – you've got to do something about this; black and sludge-like – dead on its feet.'

As for the best oil to use, that's a difficult one.

'The clearances and tolerances are exactly the same as on the original Buick Skylark engine: the tappets are still hydraulic, therefore they definitely do not want fully synthetic oil. The oil is too skinny when it's cold. When you start it up with a fully synthetic oil, you're going to have a lot more valve-train clearance during the initial, important start-up period.'



Look – you CAN still buy a new V8, and here are some of them

Semi-synthetics may be okay, but Chris's preference is for something like Valvoline 20/50, because the detergent quality is good. Other quality 20/50 oils should be fine, too.

'The other reason for using 20/50 is that it's what the engine was designed to run on, with its clearances and hydraulic tappets. There's no disadvantage with 20/50 oils for a road car, because it doesn't need the rapid warm-up period that a race car or a TVR would want,' says Chris.

The V8's thirst is why many people fit LPG conversions. Trouble is, many don't work as well as they could. The engine either runs smoothly on gas and roughly on petrol or vice versa. Another possible downside to LPG is the drop in performance.

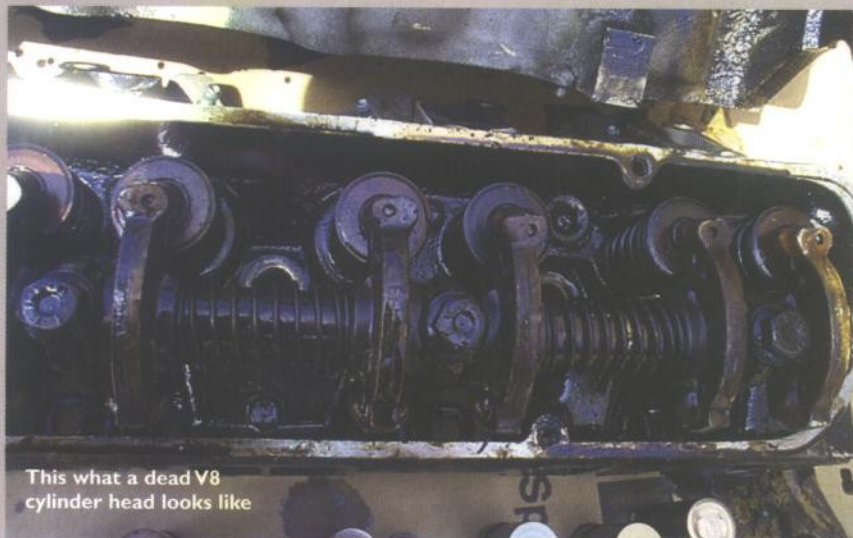
Chris's own 5.2 V8 Range Rover recently achieved 130mph on an autobahn while

running on gas. It pumps out 320bhp and hits 60mph from rest in about six seconds.

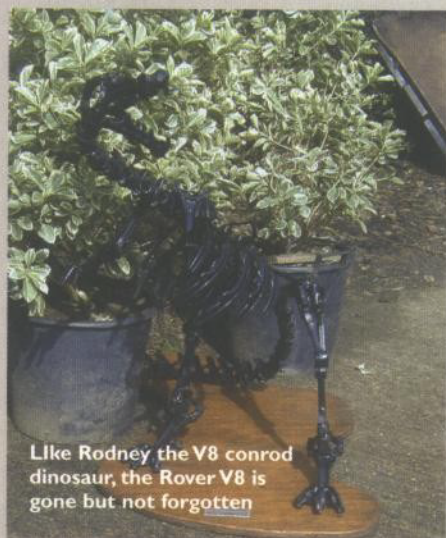
Chris attributes this top performance to RPi's remapping of the ECU and the amplifier, which boosts the strength of the spark. RPi also recommends Magnecore, spiral-wound leads. These allow more of the power to reach the plug.

Chris is a fully paid-up member of the 4.6 V8 Fan Club. 'The 4.6 is the best engine because of the torque, not just the horsepower. If you put a 4.6 in a 3.9 Range Rover, you lose a ton of weight off the back, in terms of torque. Because it's not bhp they drive on, but torque, you get an instant increase in performance.'

'The economy tends to be better, too, because you're driving at 2000rpm to get the same power that you used to need 4000rpm to get.'



This what a dead V8 cylinder head looks like



Like Rodney the V8 conrod dinosaur, the Rover V8 is gone but not forgotten

prototype vehicles. Iceberg was a joint project between Perkins Engines of Peterborough, Cambridgeshire, who did the engine development work, Land Rover and HM Government.'

Perkins unveiled the engine at the 1982 Paris Motor Show. However, although the prototype engine was designed to produce around 125bhp and 205 lb ft, both impressive figures at the time, Land Rover abandoned the project in 1984. 'They couldn't stop the blocks from cracking,' according to Dewson. The Range Rover Iceberg prototype is now part of the British Motor Industry Heritage Trust collection at Gaydon, Warwickshire.

Land Rover, lacking the funds to tool up for an in-house powerplant, decided to source engines from the Italian VM Motori concern. So, as well as the beautiful, effortless V8, you could now buy a Range Rover with the 2.4 four-cylinder intercooled turbodiesel. It was gutless, unless the turbo was really spinning; and even then it was only just about adequate. Not many chose it instead of the V8.

Land Rover continued to develop the V8 engine, despite all the anxiety caused by the fuel crisis of the 1970s and the recession in the 1980s. The P38A, which replaced the Range Rover Classic in 1994, was available with two engine options; a fuel-injected 3950cc pushing out 190bhp and the 4554cc, one whole litre bigger than the original Buick version. The 4.6 develops 225bhp and 277 lb ft of torque.

When you're driving a V8 off-road, you can trickle along at low engine speeds but have enough torque to twist the trunk off an elephant or climb a mountain. Instant throttle response makes a V8 Range Rover extremely forgiving on the rough. On tarmac, its muscular yet subtle power delivery encourages a relaxed style of driving. The engine's not bothered which gear it's in – it can still propel 2.5 tons of Solihull metal down the road as fast as you choose.

When the third generation Range Rover hove into view over

the horizon, it too had a V8 under its skin. But this 4398cc lump was an all-new engine from a new owner – BMW. In 1989, the original V8 Club had three members, Defender, Range Rover and the new Discovery. Now Discovery is signing off... last in, last out.

Over the past three decades, Land Rover has developed the V8's performance by increasing capacity and introducing fuel injection. Displacement has successively risen from 3.5, 3.9, 4.2 to 4.6. In the process, power has increased from 114bhp, for the detuned One Ten version, to 225bhp. Torque has ratcheted up from 185 lb ft to a stump-pulling 277 lb ft. But, now, it's the end of the road.

Just how good a piece of engineering design is it? Naturally, Land Rover is very proud of its engine – as this stirring eulogy from a company spokesman proves:

'This lightweight, versatile power unit is one of the longest-running engines still in production,' he told LRO.

'It's unsurpassed in the way it has become accepted by the automobile engine industry. When it was launched in the USA, 215 stood for 215 cubic inches. It soon set a benchmark for performance – 215bhp from 215 cubic inches. That's still a very respectable figure for a normally aspirated engine.

'We have a customer who tests and develops catalytic converters for the motor industry; and the only engine that can withstand the heavy-duty durability testing cycle on the dyno is our Rover V8.

'It's small, light and simple to assemble and work on, making it the favourite for many DIY mechanics and enthusiasts. It's been fitted in sports cars, boats, kit cars, off-road and military specials and retro-fitted to just about every single possible vehicle... even an aeroplane.'

ROLL OF HONOUR ROVER V8 ENGINES WENT IN THESE PRODUCTION VEHICLES:

- Range Rover Classic
- Land Rover SIII Stage 1 V8
- Land Rover 90
- Land Rover 110
- Land Rover 127 (military)
- 101 Forward Control
- Discovery
- Range Rover P38A
- Freight Rover/Sherpa vans
- Freight Rover ambulances
- Rover 3.5 Litre (P5B)
- Rover 3500 (P6B)
- Rover 3500 (SD1)
- Leyland P76 (Leyland Australia)
- Triumph TR8
- MGB GT V8
- MG RV8
- Morgan Plus 8
- Marcos Mantula V8
- Marcos Mantara
- Marcos LM500
- TVR Griffith
- TVR Chimaera
- TVR 350I
- TVR 390SE
- TVR 400SE
- TVR 450SEAC
- Ginetta G33
- Alvis mid-engined sports car

SOME OF THE MANY KIT CARS:

- Westfield
- NG TC V8
- Dakar 4x4

SOME OF THE ONE-OFFS AND SPECIALS:

- SIIA Golden Rod prototype
- MG Metro FG8R4
- Morris Minor V8 Turbo
- Marina Coupé rally car
- Janspeed Le Mans TR7 V8 Turbo
- GKN 47D (Lotus Europa-based)

V8 power provides superb control in tricky and potentially expensive moments





V8 AEROPLANE

One of the more bizarre applications for the V8 engine has to be bolting it into an aeroplane, as carried out by Joel Aubry from Villemardy in France.

He bought himself a brand-new 4.6 V8 engine with the intention of taking to the skies and competing in a race. Sadly, the ECU had other ideas. It refused to let him set the engine up for its new life above the clouds. Working closely with RPi Engineering, a solution was quickly found.

RPi was able to remap the ECU, programming a completely new set of fuelling parameters. The result? Total success. Here are the latest figures from a recent test session:

- Very slow cruising speed is 100 to 110 knots (1200rpm at engine);
- Very economical cruising speed is 130 knots (1950rpm at engine);
- Economical cruising speed is 150 knots (2200rpm at engine);
- Normal cruising speed is 160 knots (2950rpm at engine);
- Highest cruising speed, as tested, is 180 knots (3500rpm at engine);
- Stalling speed with landing legs out and maximum payload is 52 to 55 knots;
- Water temperature after take-off stabilises at 85°C in engine and 75°C in radiator.

These figures might mean more to Joel than to the average Land Rover driver, but what it boils down to is that he can fly along at 207mph at 3500rpm. Now, that's cruising...



Only a handful of US-spec V8 110 Defenders made it across the Pond, despite huge demand

So, if it's such a great engine, why is it being phased out? Quite simply, it's being strangled to death: the old V8 struggles to comply with emissions standards that are getting progressively tighter and tighter. Just like the Iceberg, making the V8 into the engine Land Rover now requires would cost too much. Land Rover's only option is to use other engines, from other vehicles within the Ford empire, that meet or exceed the stringent regulations.

After more than 30 years of production, then, the line is closing and being sold off. So, what of the future? If you drive a V8, where will you get your spares from? What if you've only recently discovered the joys of the V8 and want to modify it to get even more bangs for your bucks... where can you get advice and help?

Fortunately, there's no need to panic. There are sheds stuffed full of parts: manufacturers such as TVR and Morgan

can order an engine and still build one entirely from the parts bins. And for something *really* radical, how about a fire-breathing 5.2-litre version of the engine from RPi Engineering?

The Norfolk firm also has a gentlemen's agreement that it'll be supplied with brand-new V8s for at least two years.

Now is the ideal time to buy a new Rover V8 engine. Prices will inevitably climb as supply decreases. **LRO**

HOT LINKS

SUPPLIERS

- RPi Engineering: 01603 891209; www.rpiv8.com (specialised Rover V8 power units)
- The Rover V8 Engine by David Hardcastle ISBN 0 85429 961 0 (Haynes Publishing)