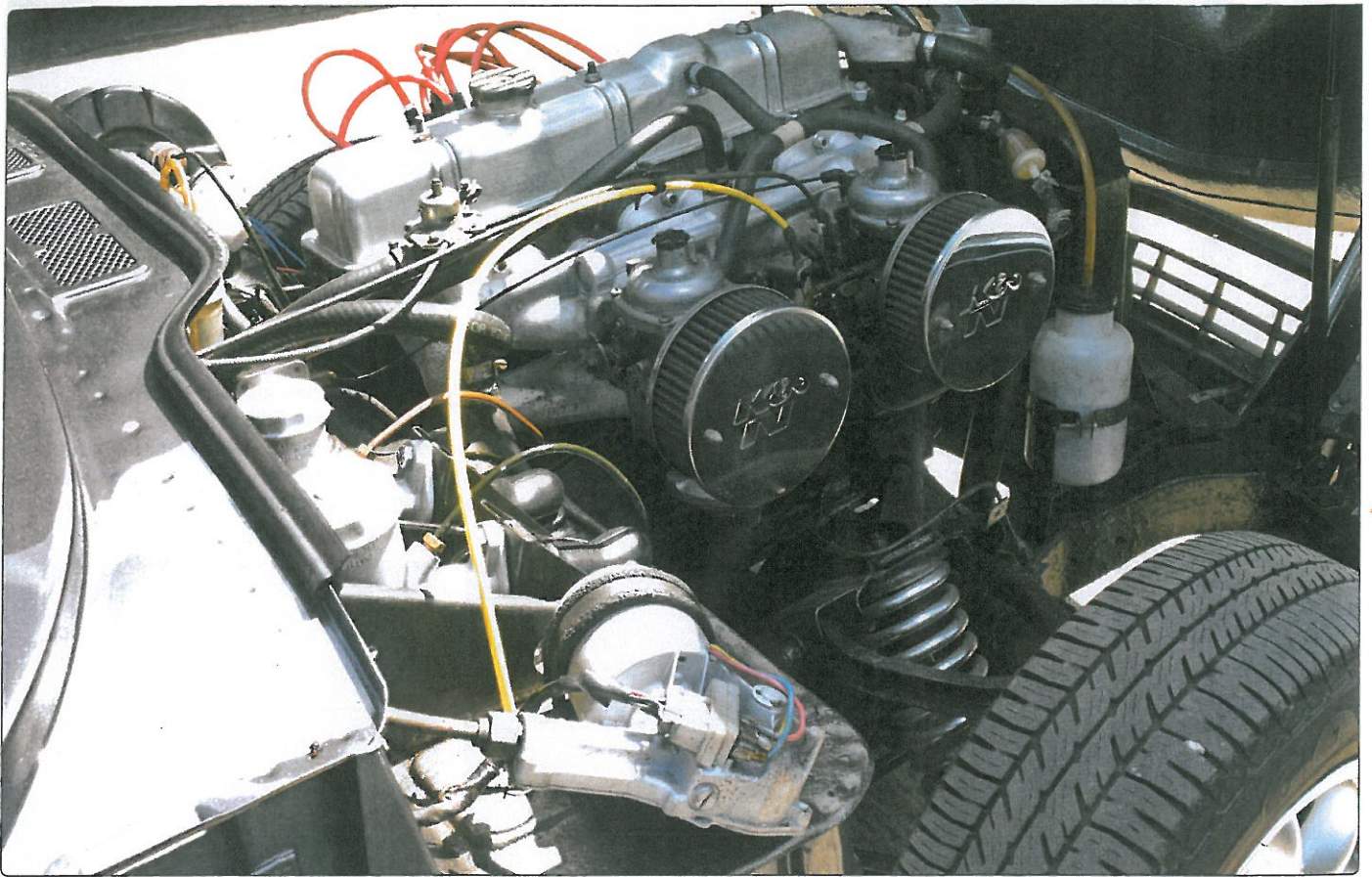


SERVICE BAY: TRIUMPH STRAIGHT-SIX



From humble four-cylinder roots sprang the six-cylinder powerplant that featured in a range of performance Triumphs over the years. We explain the background to this innovative powerplant

WORDS: PAUL GUINNESS

The launch of the Standard Vanguard Luxury Six in 1960 could easily have been seen as a relatively insignificant event. Not because this latest Standard wasn't an interesting addition to the four-door family saloon market of the time; but simply because, at first glance, it was just another update of a model that had already been around for a couple of years. And compared with the launch of Standard-Triumph's exciting new Herald range the year before, it arguably came a poor second in terms of importance.

But to underestimate the Vanguard Six is to miss one crucial point: it also marked the launch of Standard-Triumph's new straight-six powerplant, an engine that would go on to provide a range of iconic saloons and sports cars with superb performance over the next seventeen years.

The arrival of the company's new six-cylinder engine occurred at a difficult time for Standard-Triumph, an organisation that was in dire financial straits – just 15 years on from the rescue of Triumph by the

Standard Motor Company. Indeed, so bad was the situation it required a takeover by Leyland Motors in 1961 to prevent Standard-Triumph from going bankrupt. The fact that the six-cylinder engine debuted when it did was quite an achievement, given the lack of development funds available at the start of the '60s.

Yet it was this lack of funding that perhaps led to the sheer ingenuity behind the new engine. And even if the first model to receive it – the Vanguard Six – wasn't exactly a big seller, with just 9,953 cars produced by the time it was discontinued in 1963, it proved itself a capable and suitable powerplant for the crucial new Triumph 2000 that would arrive the same year.

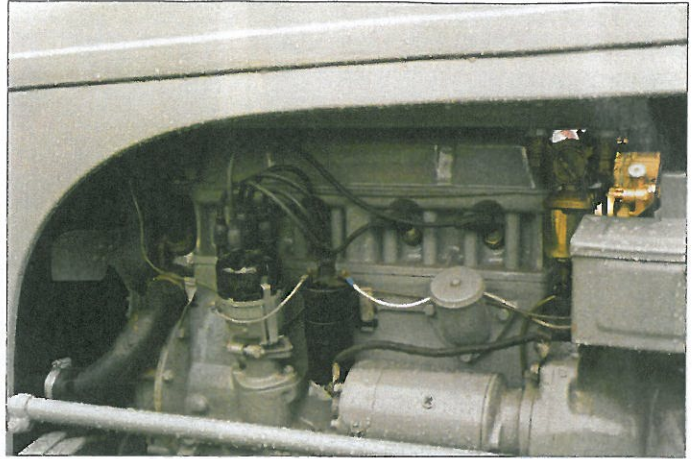
UP FROM FOUR

To understand exactly why a new engine was such a necessity, it's important to look at what the company had available prior to the launch of the straight-six. At the bottom of the pile (in terms of size and position in the market) were the 803cc and 948cc versions

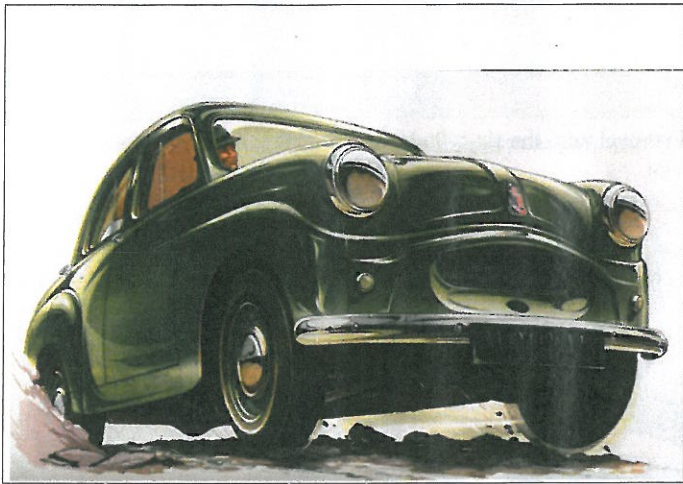
of Standard-Triumph's four-cylinder unit used in the Eight and Ten models of 1953 and 1954-on respectively. Further up the range, meanwhile, was more four-cylinder power, this time in the shape of the 2088cc unit fitted to the Vanguard, an engine that was similar in design to that used in the Ferguson tractors that Standard was contracted to produce.

It wasn't an ideal situation, given the increasingly upmarket aspirations of Standard with each new generation of Vanguard. The engine's ex-tractor connotations were unhelpful, whilst its hefty weight (the engine tipped the scales at around 200kg) was another drawback. If Standard-Triumph was to develop a new range of sporting saloons and increasingly competent TR sports cars in order to survive the '60s, it desperately needed a new engine as a starting point.

As if to prove the old adage that necessity is the mother of invention, Standard-Triumph knew that working with what it already had was a way to save money. And so the decision was made to develop its smallest



The use of a similar four-cylinder engine to the TR unit in Ferguson tractors did Triumph's sporting image no favours at all.



The six-cylinder engine was derived from the smaller four-cylinder unit in the Standard Eight.



The 803cc engine produced just 26 bhp in the Eight.

four-cylinder offering into a new six-cylinder engine for use in both the Vanguard and the next-generation of Triumph saloons and sportsters.

It's easy to see why a six-cylinder engine was decided upon, given the extra smoothness and refinement compared with a four-cylinder unit of similar size. It would also put Standard-Triumph on more of an even footing with Rover, whose P4-series models were at their best in six-cylinder guise. Interestingly though, Rover would revert predominantly to four-cylinder power (apart from in the larger 3-Litre model) once its crucial new 2000 arrived on the scene in 1963, giving Triumph's equally new six-cylinder 2000 saloon something of an advantage.

The enlargement to six cylinders of an engine that started out in life as a tiny four-pot was an interesting one, as author Bill Piggott explained in his 2009 book, *Triumph TR2 TR3 TR4 TR5 TR6 TR7 TR8*: "This six-cylinder engine had first been seen in the Standard Vanguard 'Vignale' Six of 1960 and was later fitted to the production Triumph 2000. Its origins lay in the Standard 8 four-cylinder economy saloon of 1953: by progressively stretching the bore size, adding two cylinders and finally increasing the



The six-cylinder first appeared in the Vanguard Six.

stroke, what had started as a 26bhp, 803cc engine became a 150bhp 2498cc unit!"

Close observers of the early six-cylinder engines could see the link for themselves by spotting the 'seam' on the cylinder block between the third and fourth cylinders, revealing to the world the new engine's humble beginnings.

SUCCESSFUL START

The arrival of the Vanguard Six was hailed as big news by Standard-Triumph: "Make a

point of seeing the new six-cylinder engine," the company suggested in one of its brochures. "2-litre... fitted with twin Solex carburettors." It was enough to transform the driving style of the Vanguard, even if it didn't improve its sales success by much.

But, of course, the biggest break for the new six-cylinder engine would be in the exciting new Triumph 2000 of 1963, which saw its compression ratio raised to 8.5:1 (from 8.0:1) and the fitment of twin Stromberg carbs. The end result



WORKSHOP

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JAG ENGINE SWAP

Q: I have a 1972 Daimler Sovereign 4.2 that I spent a fortune on bodywise, but the head gasket is poorly and the head is stuck on. I've recently bought a rusty 1984 XJ6 Series 3 with a superb engine - should I just drop that in, and would you keep the injection or revert to carbs?

A: Definitely keep the fuel injection. It is quite easy to plug into the car and it only really needs a 12v supply and an earth. You'll need the gearbox with it ideally, and of course the fuel pumps. All in all a very worthwhile improvement.



BACK AND FORTH

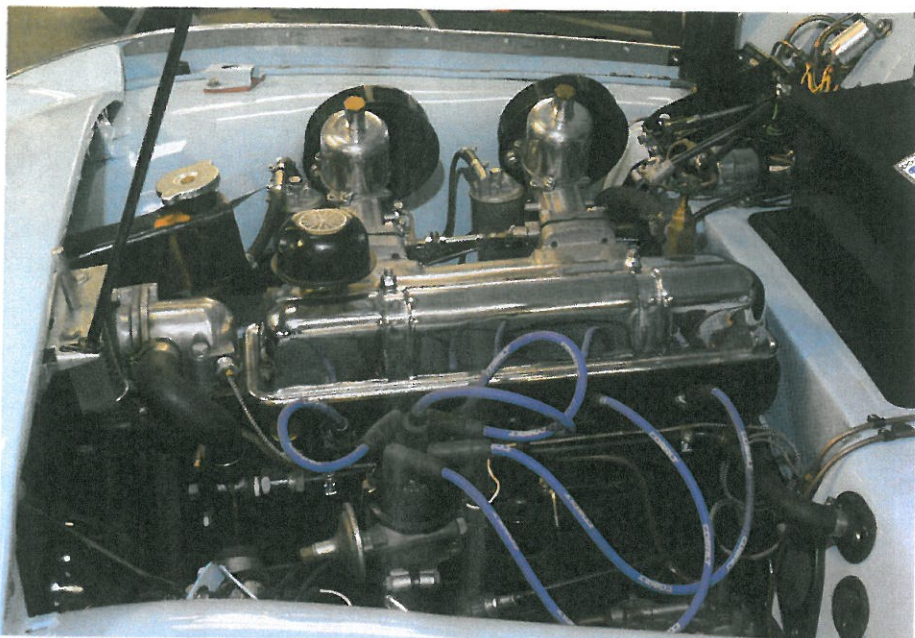
Q: I have a 1993 540i BMW that has a strange auto box problem - it goes forwards fine, but in reverse it really seems to struggle as if the gearbox is 'tight' inside. Any ideas?

A: Yes, the ceramic balls inside the valve block have worn oval and are sticking. What's happening is that the car is still partially in forward drive whilst trying to reverse. A good used valve block is the best idea.

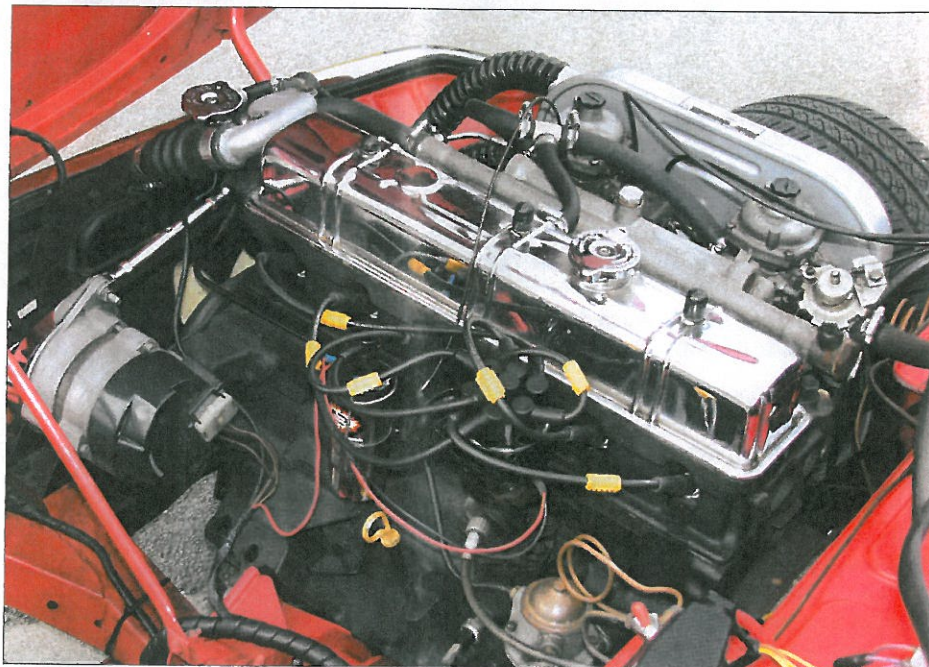
WEIRD BADGE

Q: What does the 'Decor' badge on the boot of my 1974 Cortina 1600 actually mean? It's a black and chrome shield not unlike the Ghia badge on later cars.

A: It was a limited run of upgraded L cars, most of which will be on the M registration. They had black loop pile carpets, a three-speed heater fan and heated rear window. Many also had a coachline down the sides and fabric trim as an option.



Compare the four-pot TR3 (above) with the six-cylinder GT6 engine (below) and there's still some similarity to the design.



Installing the engine in a coupe-bodied Spitfire chassis created the GT6: at one point it was Britain's cheapest six-cylinder sports car.





The 2000 saloon used the six-cylinder in carburetted form before injection appeared on the 2500.



was an increase in power of 10 bhp, taking the original 2000's output to a distinctly healthy 90 bhp.

The year before the arrival of the Triumph 2000, however, the engine also saw a reduction in capacity to 1596cc for the debut of the latest variation on the Herald theme: the Vitesse 6. With a smaller bore diameter of 66.75 mm, compared with the Vanguard's 74.7 mm, a 1.6-litre capacity was deemed to be plenty large enough for a saloon as compact as the Vitesse; and equipped with twin Solex semi-downdraught carburetors, it was a lively machine for the time, with a claimed output of 70 bhp. By 1966 however, the Vitesse 2-Litre was being launched, its engine now boosted to match that of the new Spitfire-derived GT6, which also employed the six-cylinder lump in 1998cc guise. This resulted in a boost to 96 bhp for the Vitesse, an impressive figure for any small sporting saloon of the time.

BIGGER CAPACITY

It was, however, the 2.5-litre version of the same engine that proved to be the ultimate incarnation of Triumph's straight-six,

appearing first in the TR5 of 1967 and endowing the TR family with a much-needed performance boost: "Unlike the wet-liner TR2-4A engine, the TR5/250/6 engine was equipped with a dry-liner and of very conventional construction," explained Bill Piggott again, in his 2009 book covering the TR story: "Both block and head were of cast iron with a high chrome content, and a new design of 12-port head was developed specially for the TR application. The crankshaft ran in four main bearings and the camshaft was driven by duplex chain from the crankshaft nose."

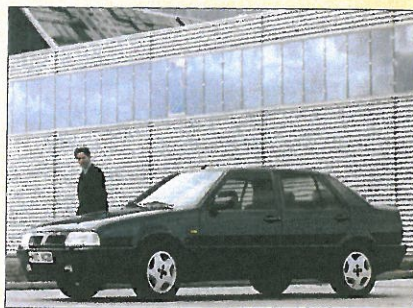
Featuring bore and stroke measurements of 74.7mm and 95mm respectively, this latest version of the six-cylinder engine was also adapted to take Lucas mechanical fuel-injection, a development that brought headline-grabbing modernity to the new TR5, even if US-market versions (badged as the TR250) had to make do with twin Stromberg carburetors and a reduced output of 105 bhp. The fuel-injected car's compression ratio was raised from 8.6:1 to 9.5:1, and the claimed output of 150 bhp (with a torque figure of 164 lb.ft. at

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STARTER FOR TEN

Q: My 1981 Escort 1300 (Mark 3 with the CVH engine) needs a new starter. I bought a new Bosch one for £35 but the terminals are different - my old one has two small terminals (one unused) with a round push fit plug and the new one has just one, a spade connector. Is it the right one?

A: Yes. Cut the old plug from the small wire and solder on a suitable female spade connector, bolt the new starter on and it'll be fine. The small wire is just the signal wire for the solenoid to engage.



RECROMA

Q: I have just found a very clean 1986 Fiat Croma in a garage and it is a CHT model. It's on a C registration so may be one of the first built. Do you have any info on these?

A: These came out in May 1986 and the first ones were indeed C registered. The first chassis number was 0026393 (0410 series) and the CHT was the basic carburettor model as opposed to the 2000ie Super with fuel injection. A rare find!



VIVA LAS VEGAS

Q: I'm going to look at a 1967 Viva HB as a restoration project and wondered - where are the worst rot areas for these?

A: The fronts of the front wings were always bad on these, along with sills and general underbody rust. A favourite area to rot was the rear arch tubs - open the boot and examine both rear arch housings where they meet the boot floor - we guarantee it will have some rust there.



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MARINA PROP

Q: I have a 1972 Marina 1300 with the single piece prop - is it true later cars had a two-piece version? Mine sets up a thrumming noise around 65 mph that can't be balanced out.

A: Yes, later ones (and certainly the facelifted 1978-onwards cars) had a two-piece prop. You'll need to cut the centre support brackets from a scrap car and weld it in though.

RARE CAPRI?

Q: I've been offered a 1982 Y registration Ford Capri LS by a work colleague. I've never heard of this one, just the L, GL etc. What is it exactly?

A: The LS was a 1.6L but with a few Capri S style bits - standard seats with tartan trim, widened Escort Mark 3 steel wheels and 6 instruments - it effectively replaced the 1.6 Capri S in '81 and early ones had a tailgate spoiler and red rings around the instruments. It was replaced in 1984 by the Capri Laser.



FIESTA WINGS

Q: I'm rebuilding a very early (A plate) Fiesta XR2 Mk2 and am in need of panels. I need a pair of front wings, rear arches and sills - the rest I can repair. Where can I get these parts (especially wings) at sensible prices?

A: Your best bet is Hadrian Panels (www.carpanels.com) who will do you a pair of wings at around £110 the pair including VAT. They do outer sills at £25 each and a complete front panel at just £77 all in - you'd be mad not to buy one as when the wings are off, the ends will be a right state.



The TR5 and TR6 took the capacity of the straight six up to 2.5 litres, good for 150 bhp on injection. Troublesome injection saw many TR6s converted to carbs which was a shame.



TRIUMPH STRAIGHT-SIX: THE CARS



1596cc

- Vitesse 6

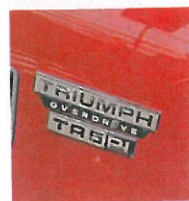
998cc

- Standard Vanguard Six
- Vitesse 2-Litre
- GT6
- 2000 MkI

2000 MkII

2498cc

- TR5 / TR250
- TR6
- MkI 2.5 PI
- MkII 2.5 PI
- MkII 2500

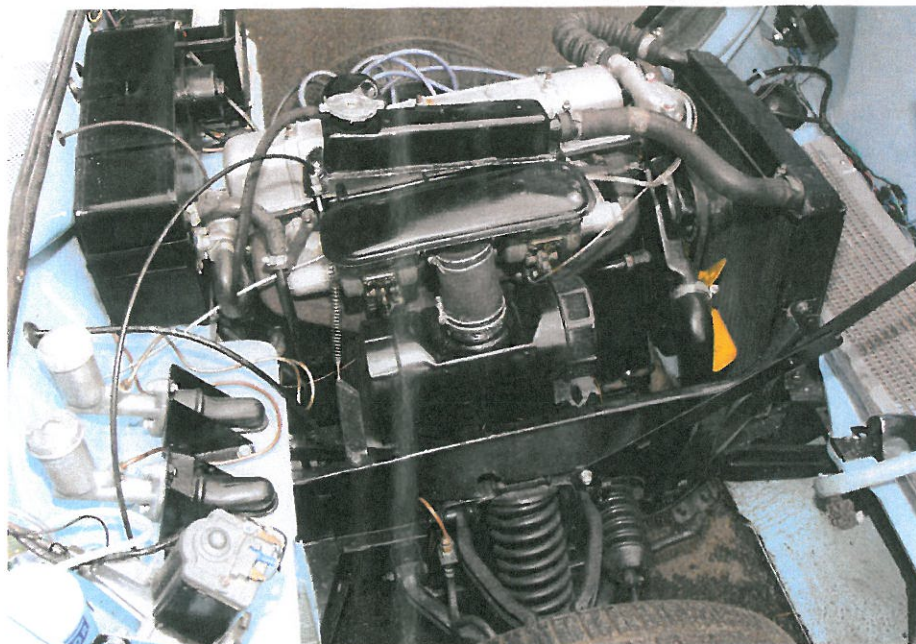


3000rpm) was enough to propel the TR5 to the top of its class in terms of power.

The fuel-injection system brought its own problems, however, with tales of unreliability. This was particularly the case with the new 2.5 PI saloon, launched in 1968 – five years after the original Triumph 2000, and just a year before it was replaced by the restyled MkII line-up. The PI was criticised for being uneconomical and difficult to keep in tune, while fuel vaporisation in warmer climes was an issue for export models. Perhaps inevitably, the PI would end up being replaced by a more conventional twin-

carburettor set-up, hence the arrival of the 2500TC.

By the time the MkII 2000/2500 range was firmly established as the six-cylinder executive saloon of choice, it offered an impressive line-up with which to compete with Rover – now an in-house rival, thanks to the coming together of BMC and Leyland Motors (owner of Triumph) at the end of the '60s to create British Leyland. From the entry-level Triumph 2000 with its 84 bhp output through to the eventual 2500s that arrived as late as 1975 (with a healthy 106 bhp at 4700rpm, and a useful 139 lb.ft. of



The Vitesse first used a 1.6-litre version of the six, later moving to the 2-litre version shared with the GT6.



torque at only 3000 rpm), the 2000/2500 had matured well. Where the PI had been a fragile device, the S was a good long-term proposition; but it wasn't to last long.

Product rationalisation during the 1970s saw a number of controversial decisions by British Leyland, including the move to replace both Triumph and Rover executive saloon ranges with a single line-up – badged as Rovers. The writing was on the wall for the Triumph 2000/2500, which would also mean the end of the road for the six-cylinder engine. Or would it?


FROM TRIUMPH TO ROVER

British Leyland's decision to allow Triumph to retain its sporting image via development of a new TR, while the latest upmarket saloon (okay, hatchback) would be sold as a Rover, resulted in the Triumph TR7 of 1975 and Rover SD1 of '76. But which engines would the new Rover use?

The 3.5-litre V8 was a given at the top of the range, but there was a need for smaller six-cylinder alternatives. October 1977 therefore saw the launch of the new Rover

2300 and 2600, their inline six-cylinder engines being very loosely based around the Triumph straight-six, albeit with changes to their cylinder heads, new cylinder blocks, crankshafts, carburation and just about everything else in an effort to bring them bang up to date. In fact, so extensive were the changes, British Leyland was insisting these were brand new units.

The marketing advantage was that buyers could opt for a six-cylinder Rover rather than a four-cylinder entry-level version of one of its rivals, giving even the cheapest SD1 something of an upmarket image. Of the 2300, Rover boasted "It is a six-cylinder power unit of completely new design, developing 123 bhp. At the same time, it is a refined, thoroughly tested engine that gives both a faster and smoother performance than its competitors, many of which have only four cylinders."

The Triumph 2000/2500 and six-cylinder TR models may have been killed off by then, but at least a development of their engine would live on into the '80s. The ex-Vanguard Six powerplant was yet to have its last hurrah. 

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CORRECT MINI ENGINE

Q: I've recently bought a Mini 1275GT registered in January 1981 so a very late one built 1980. It has an A Plus engine the vendor assured me was correct - I'm not really bothered as it runs so well, but is he correct?

A: No - the 1275GT used the A Series engine right to the very end. The first car to use the A Plus engine was in fact the Morris Ital launched in July 1980, and not the Metro.

POPULAR ENGINE SWAP

Q: The 1172cc side-valve engine in my 1957 Ford Popular has recently lost power and is obviously due an expensive overhaul. I did read somewhere that it's possible to fit an overhead valve engine and four-speed gearbox from a 105E Anglia into the 100E. How do I go about this and what extra parts will I need to carry out the conversion?

A: You're quite right, it's possible to fit a Kent overhead valve in the 100E's engine bay but you will need to source a suitable crossmember to correctly install the new power unit. What you ideally need is a crossmember from a 107E as this 'run-out' model featured the 100E's body and was fitted with the OHV engine. Best talk to a classic Ford parts specialist who will advise you how to proceed.

BIG-BORE V8

Q: I've just realised I've been priced out of the classic Range Rover market so I thought I'd get in on the action with the later model as they seem so cheap and I plan on keeping it for a while so hopefully values will rise. I've been told these used a BMW V8 engine though, so is it more expensive to live with than the Rover V8?

A: The so-called 'P38a' Range Rover (named after the number of the building the development team was housed in), used a 4-litre version of the Rover V8 in 4-litre, 190 bhp and 4.2-litre, 225 bhp form. It was the 2.5-litre straight six diesel in the 'DSE' model which was a BMW unit. P38a's are underrated right now and set to become a modern classic in time.