

PERFORMANCE BMW

E24 633CSi



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E9 3.5CSi

Restored E9 boasting a supercharged E34 M5 lump and T56 Dodge viper 'box

E36 328i



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How will the purists react to this 'charged 5.7 V8 LS1-engined E36?

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Whilst many E36 owners might dream of M3 straight-six or M5 V8 conversions, Ian Sutton has gone down a whole different route by fitting a supercharged LS1 V8...

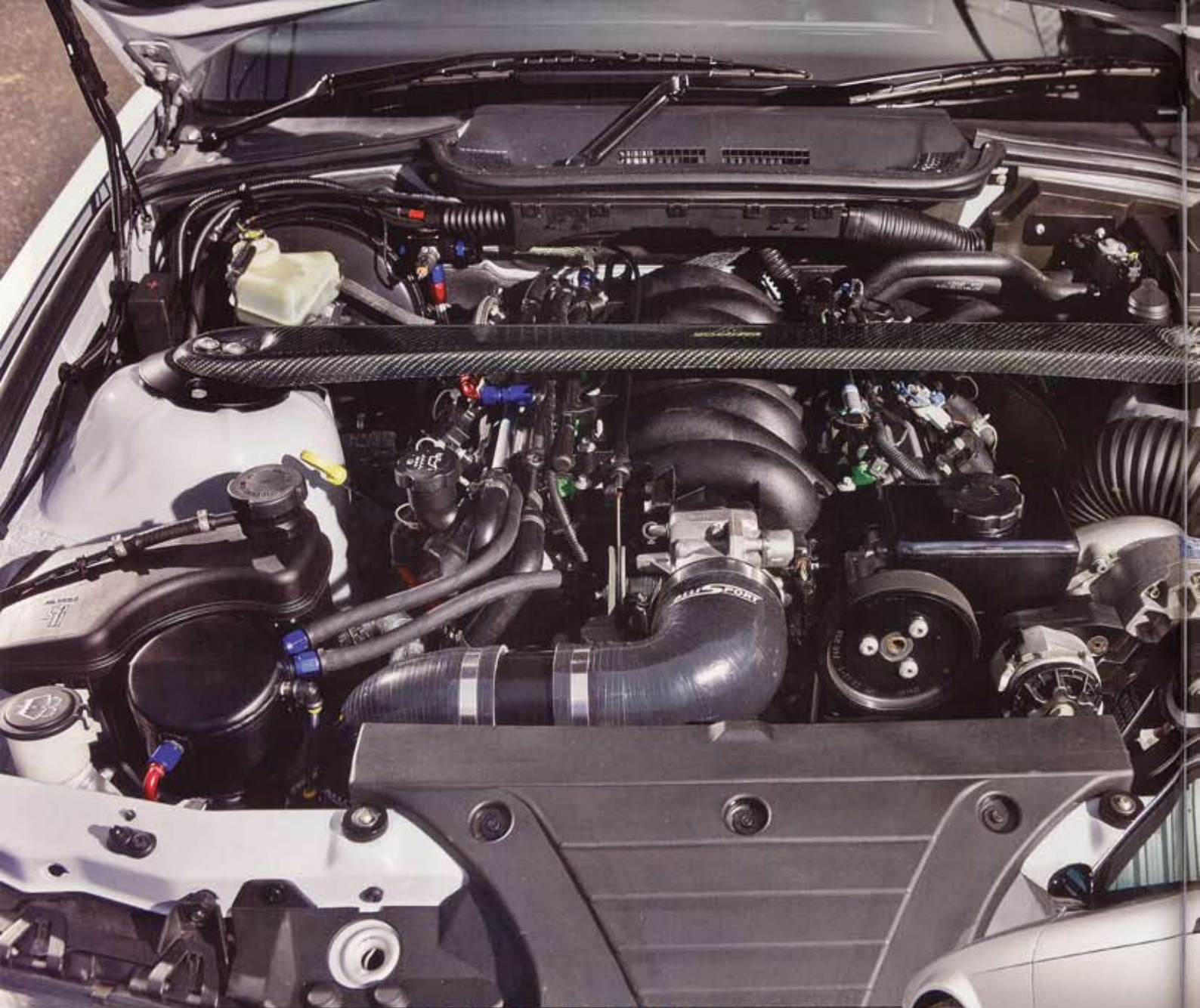
Words: Ben Koflach Photos: Gary Hawkins



American



n at Heart



Unshakeable power – 5.7 supercharged American litres worth of it in fact – oof!

Engine options on the E36 from the factory were fairly plentiful – from the 102bhp 1.6-litre M40 to the 321bhp 3.2-litre S50 M3 Evo powerplant, BMW had it pretty well covered. But for some people – especially once you start talking modified car owners – too much is never enough, and we're seeing E46 M3 straight-six, E39 M5 V8 and even some E60 M5 V10 conversions taking place more and more often. But while Bavarian horsepower is all well and good, why not think out of the box?

The General Motors LS-series of engines,

or Crate-V8s as they're often known, are a common choice for those wanting a simple, effective and proven way of reliable horsepower. There's simply no denying it – there's no replacement for displacement – and these engines are being seen fitted to all manner of cars, from Corvettes to Camaros, trucks to 4x4s, and (most importantly in this story) even the Holden Monaro, otherwise sold as the Vauxhall Monaro and Pontiac GTO. Far from the small block Chevrolet V8 many people seem to mix it up with, most LS engines have an all-aluminium construction, fuel injection, and are generally a far more

modern proposal than you might think. And considering their displacement, they're pretty compact units too.

Rewind just over five years, and you'd find BMW technician Ian Sutton thinking just the same – why doesn't someone put the well-proven LS engine into an E36? He had the first part of the recipe, an E36 328i Sport, already, which he'd bought when he finished his apprenticeship at Coventry BMW and used for a couple of years before the Yank engine idea came up. Ian is also lucky enough to have a good friend who specialises in breaking the aforementioned



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Holden/Vauxhall Monaro, so you can see where the inspiration came from.

Ian's engine of choice was the 5.7-litre LSI from early Monaros, his in fact coming from the US-spec Pontiac GTO. And once it was in his hands it was time to get to work. Not wanting to risk damaging his 328i in the process, he bought another one from work to use as a test shell for all the fabrication that would be involved. It was separated from its engine and the bay removed of all its clutter. Ian makes it sound so simple, but the next step was to hoist the GM V8 into the position he wanted it to sit and then

fabricate mounts on the E36's crossmember to suit – albeit after a bit of sump alteration to get it to fit behind the crossmember. At the same time it seemed the perfect opportunity to baffle it to avoid oil starvation during hard cornering. With the sump being off at that time, Ian decided to replace the standard con rod bolts with ARP items for added strength and durability. With that done and the engine positioning perfected, the gearbox mounts could be fabricated, and stage one of the build was complete. Of course, the engine and gearbox weren't hooked up to anything

other than each other, but at least they were positioned in the car.

A full M3 Evo rear axle was to be used, so as with any engine transplant of this kind, a custom propshaft had to be manufactured first. Custom gear linkage was also created so that the gearstick could remain in the original position in the cockpit while governing the Tremec T56 six-speed gearbox from the Pontiac. Not content with leaving it standard though, Ian fitted a lightweight Spec aluminium flywheel, LS7 clutch, XRP braided clutch line and a GMM Ripshifter for faster revving and shifting.

It doesn't lack in attention to detail – such was Ian's quest to make it all look as factory as possible



Around the same time, Ian's Monaro-breaking friend was over in Australia and had got talking to Scotty at Capa Superchargers, which is well known Down Under for offering forced induction for many different cars, including the Holden Monaro. It didn't take long for Ian to be convinced, and before he knew it, the Vortech-based 'charger kit was sitting on his doorstep.

Adding a whole new dimension to the build, it was soon discovered that the supercharger simply wasn't going to fit the E36's relatively narrow engine bay – not with the standard supercharger bracket anyway. With the help of good friend Gary,

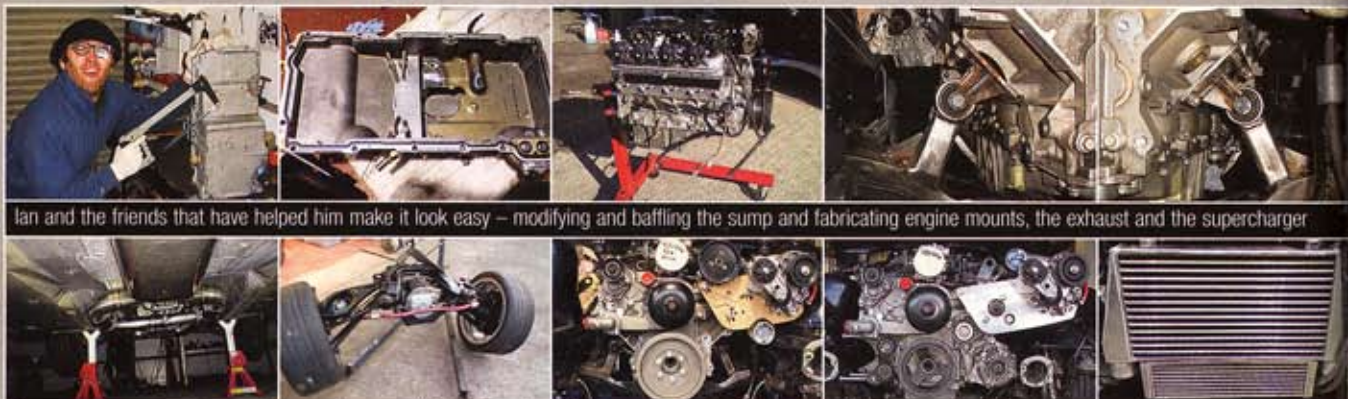
and with Ian having been part-trained as an engineer before becoming a mechanic, a plan was made, and the pair got straight on with measuring up the engine and bay (a painstaking process in itself, making sure all the pulleys lined up absolutely perfectly), then designing their own bracketry for a variety of the components and having a local engineer construct it from billet aluminium. To keep the whole lot cool, Ian had Allsport fabricate the radiator, intercooler and oil cooler to his specifications, which all sit just behind the front bumper.

The exhaust was yet another challenge, as not only did it need to take the gases from

the V8 as efficiently as possible, it was a pretty tight squeeze between the E36's chassis legs, too. The only solution was to go custom, and Wye Valley Garage – where the project spent much of its time – was able to help. A fully TIG-welded stainless steel exhaust system from the manifolds to the tailpipes is the result of their hard work, and we have to say it looks absolutely perfect, and the silencers are repackable too.

Finishing off the installation itself is an almost headache-inducingly well planned combination of parts. From the custom power steering fluid tank (with a BMW cap mind you), to the E46 M3 header tank, OEM

the build



Ian and the friends that have helped him make it look easy – modifying and baffling the sump and fabricating engine mounts, the exhaust and the supercharger

the supercharger and intercooler, and of course all the pipework and hoses, which all look OEM. A dimple had to be made in the inner wing to fit the 'charger too.



Other than the noise, the average passenger wouldn't know the difference



(but not necessarily 328i, in case you start thinking this is the easy bit) hoses that can be found all around the engine bay, to the XRP aeroquip fuel and oil lines used throughout, it doesn't lack in attention to detail. Such was Ian's quest to make it all look as factory as possible, he's even used OEM BMW hose clips rather than Jubilees!

When the time came to move the engine, gearbox, supercharger, exhaust, crossmember and gearbox mounts over to his prized E36 – he wasn't going to do it by halves either. They say a picture tells a thousand words, but let me tell you, even a thousand pictures couldn't tell the story of just how immaculate

this E36 is; Ian has rebuilt it bolt-for-bolt, using new components throughout, and powdercoating every part he could. You name it, it's been uprated, replaced, or painted. The M3 Evo rear subframe and axle, M3 Evo front wishbones and hubs and brakes all-round, all new bushes, balljoints, links, Bilstein PSS9 coilovers, Eibach anti-roll bars... the list goes on. And it's not just the underside that's better than new, the bodywork is too, thanks to a bare metal respray. It really is astonishing, and it perhaps is only justified by seeing it in the metal.

Fuelling and management was dealt with surprisingly simply – being an engine so

popular for transplants, especially over the Pond, management solutions are very well catered for. First, the ECU was sent over to Capa to be unlocked, having all of its security limitations taken off and being given a base map on HP Tuners software. To match the airflow that the supercharger was bringing to the table, a Walbro fuel pump rated to 255 litres per hour pushes the fuel through a Fuel Lab filter and adjustable fuel pressure regulator, before being flung into the engine by 42lb injectors. It's certainly a promising sounding combination.

Rolling stock duties are put to BBS LM replicas – Ian had originally wanted black



bracket as well as many other parts. There's also the tuning itself to consider, with the lightened flywheel and other uprated transmission components,



Combine that with practically rebuilding the entire car with everything renewed and powdercoated, and you can see what makes the car quite so amazing

A peak of
530.4bhp
is only half the story...



centres with a polished lip, but there were differences between the 8.5" and 9.5" wide variants, so he went for all black rims with a subtle red line around the edges, and measuring 19" in diameter. The rest of the styling is a very much OEM affair, with a combination of M3 GT components, AC Schnitzer mirrors and subtle rebadging; the front and rear roundels having been swapped for carbon items, while the side rub strip badges – which Ian had custom-made by a local signwriter – now read supercharged.

One of the final steps was the interior, which Ian wanted kept as stock as possible. Again, nothing but the best would do, so perfect black leather and as little clue as possible as to what engine lies beneath. M3 gauges are cleverly hooked up to work with the new engine, made possible by the HP Tuners software, and to keep a really close eye on what's going on underneath the bonnet, Ian's installed a trio of Autometer gauges in the centre console, monitoring oil pressure, fuel pressure and boost. Not only are they installed neatly, but Ian took a long time researching to find a range of gauges that matched the factory orange lighting so as not to look out of place – his attention to detail really is mind-blowing.

The car made its debut at Santa Pod last year with great success, and on the strip it managed a 12.7 quarter-mile at 110mph – impressive, especially considering it was on a base map, and Ian was taking it easy. Of course he was keen to have it fully mapped to see what it could do, though, and John Sleath Racing was put in charge of the mapping, and the results were mightily impressive. A peak of 530.4bhp is only half the story – 550lb ft of torque is the kind of figure hardly any tuned BMW engine can boast, and especially not delivered in the same effortless way as the 'charged LS1, making it the ideal road car.

While the engine may not be a traditional choice for an E36, Ian's more than proved it's a good one. With power and torque in abundance, as well as an incredible V8 soundtrack, an overall feel of OEM quality (and then some!) and increased driveability and performance, he's really shown that it doesn't have to be a BMW engine to feel original. So the purists may hate it, but there's no denying that it's incredible. If for some reason BMW had made its own LS1-powered E36, I can't help but think it would struggle to beat the perfection that Ian has struck upon. Thinking out of the box? Pah, he's blown it to bits ●

DATA FILE

ENGINE: 5.7-litre V8 LS1, Vortech V2 supercharger, ARP con rod bolts, custom ZF PAS pump and mounting bracket, custom billet aluminium supercharger bracket and auto tensioner, custom baffled oil pan, Earls Performance oil thermostat, Allisport custom front mount oil cooler, radiator, PAS tank with BMW cap, front mount intercooler and pipework and oil catch tank, E46 M3 header tank, Vortech Maxiflow blow-off valve, 42lb injectors, Walbro 255/h fuel pump, Fuel Lab fuel filter and adjustable fuel pressure regulator, XRP Aeroquip fuel and oil lines, custom front cross member and engine mounts, custom fully TIG-welded exhaust including manifolds and repackable silencers, custom engine wiring harness, GM ECU with 2bar map and fully remappable HP Tuners software

TRANSMISSION: Tremec T56 six-speed gearbox, custom gearbox mounts, Spec lightweight aluminium flywheel, LS7 clutch, custom propshaft, XRP clutch lines and remote bleeder, GMM Ripshifter with custom gear lever, full E36 M3 Evo rear axle

CHASSIS: 8.5x19" (front) and 9.5x19" (rear) BBS LM replicas shod in 225/40 and 265/30 Falken FK452s respectively. Bilstein PSS9 coilovers, Eibach anti-roll bars, M3 Evo front wishbones and hubs, AC Schnitzer carbon front strut brace, custom lower strut brace, Z3 M quick steering rack; full nut and bolt rebuild including all new bushes, balljoints and links with all new components powdercoated. E36 M3 Evo brakes all-round (315mm discs front, 312mm discs rear) with Performance Friction pads all-round and XRP braided lines

EXTERIOR: Full bare metal respray in original Arctic silver, face-lift nose cone, M3 Evo front splitter, M3 GT corner splitters and M3 bumper mesh, M3 GT two-piece rear spoiler, AC Schnitzer mirrors, carbon fibre front and rear roundels, supercharged badges in rubstrips

INTERIOR: OEM full black leather interior, AC Schnitzer short shift gear knob, E36 M3 clocks with oil temperature gauge, Autometer boost, fuel pressure and oil pressure gauges, Alpine CDA 105 Ri head unit

THANKS: www.wyevalleygarage.co.uk for the exhaust, fabrication, workspace and storage (01989 565001), www.lsxv8.co.uk for LS spares and conversions, Allisport (01452 751187), Scotty at Capa Superchargers (006 1885 823499), John Sleath Racing for the mapping (07976 751742), Nic J Racing (07970 192715), Gaz, Slim and Zip, Sytner BMW Birmingham Parts Department

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