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Eric Goes Toyota

(AND GETS A NEW ENGINE PART 2)

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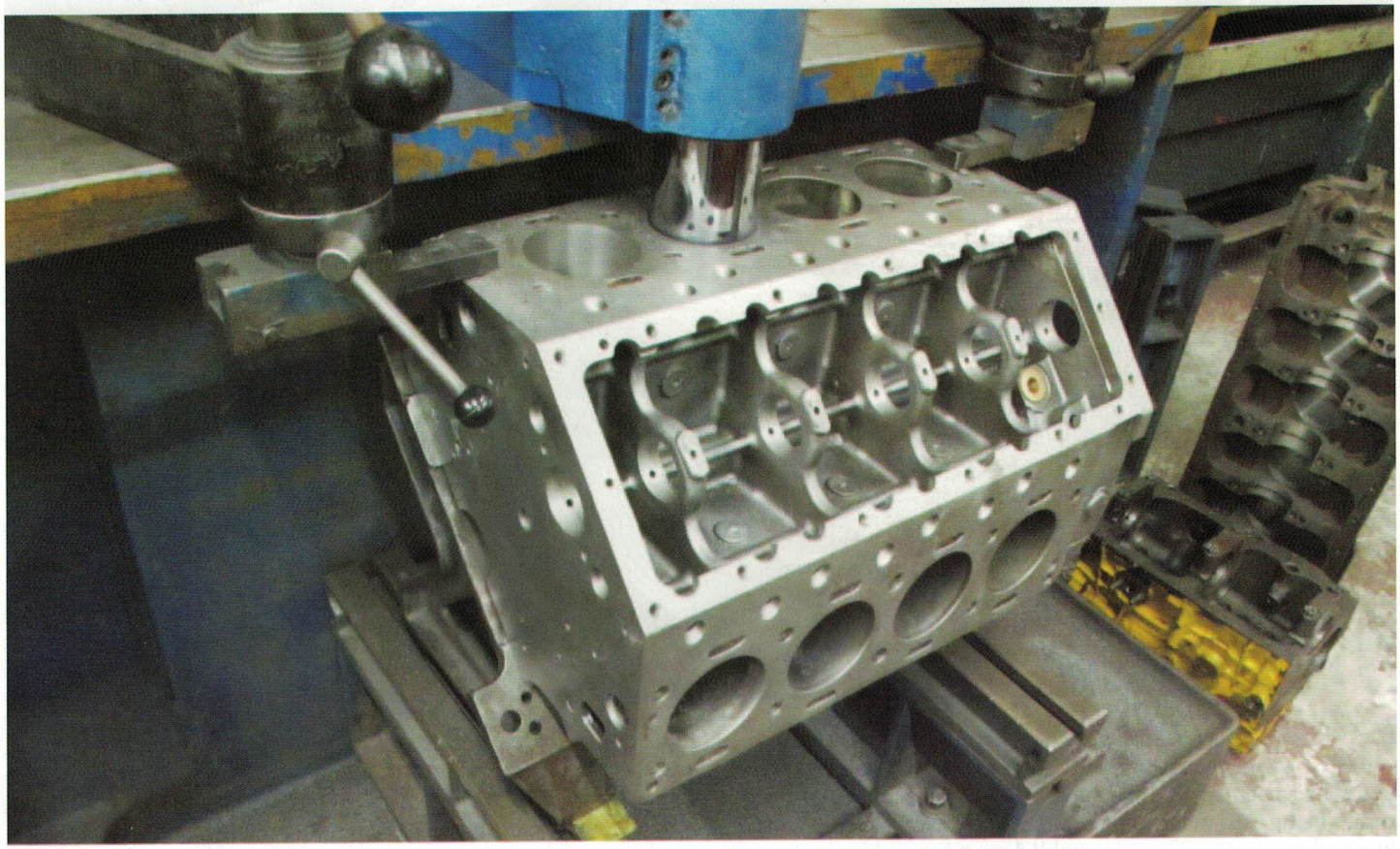


Can you believe it. My Daimler conversion project blocked, by a cracked block – somewhat poetic, in a surreal kind of way !!

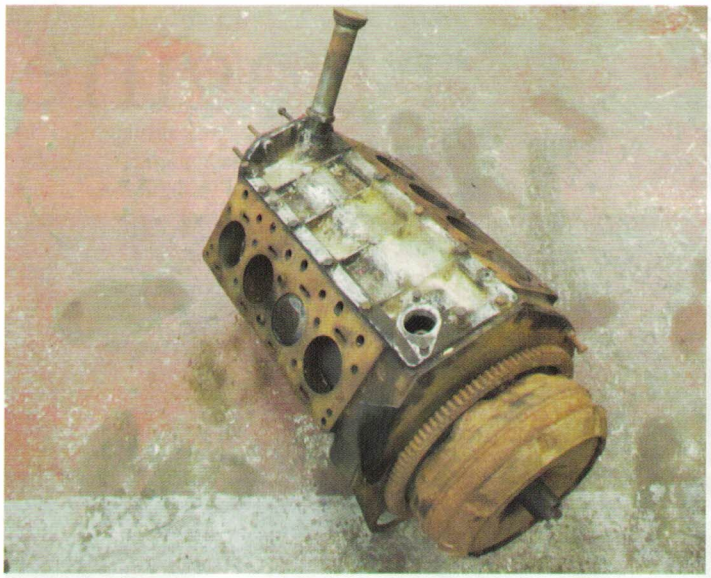
What does one do in this sort of situation: call International Rescue, nope a bit too dramatic or go to the next best option – put a call out to the DLOC community. It was a distress call that was soon answered when Graham Emmett advised me that Matthew Waterhouse probably had a spare block or two that could save the day. It so happened that this was indeed the case and Matthew was able to offer me a post-67 saloon half engine. Suddenly things were starting to look up again and Eric's "little" project was back in the green. We agreed terms and as an added bonus Matthew and Graham offered to take the engine to Jonathan at J&E Engineering Services, being only an hours drive apart. I said I'd meet them at the workshop and thus engaged on another there-and-back-in-a-day East Sussex to Lancashire journey. How I must love driving !!

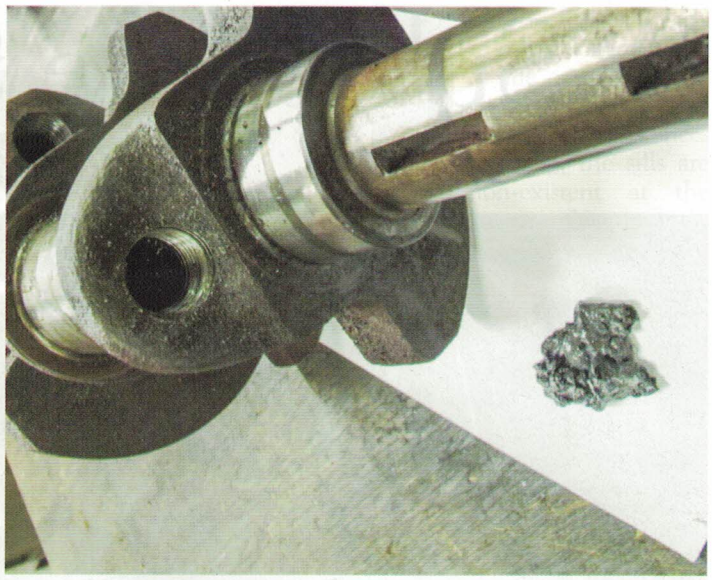
In addition to delivering the engine, Graham and Matthew wanted to have a tour around Jonathan's workshops – both I hasten to add were very suitably impressed; even more so by Matthew with his marque engineering background. The replacement engine was duly delivered and it certainly looked a little forlorn. It was then disclosed that the engine was actually seized – ah right, did not recall reading that in the small print !! However, that said, the engine did have some positives namely in tact, good waterways, not being the subject to any previous reconditioning work and pistons marked grade A – thus the engine was a very decent candidate. Therefore despite its current disability the engine was showing initial promise, but of course all this was subject to being stripped down and the block pressure & crack tested. It is worth pointing out at this stage, that my original stripped out engine components were now with Jonathan. Once this replacement engine had been stripped, the best of all useable components from each engine could be identified. That being said, useable does not necessarily mean they are suitable.

With the replacement engine stripped, seized element issue sorted and block cleaned Jonathan was able to assess what parts could be used now and what could be kept as future spares. Anything that fell short was binned. First job was to ascertain if the block was worthy of being used – it goes without saying that the pressure & crack testing is rigorous. Only a 100% pass mark is acceptable, whereas a 99.9% pass mark just does not cut it - certainly not in Jonathan's workplace. The machine used for this testing is of an advanced nature, that being a Newclear 150; which allows for even greater accuracy compared to other types being commonly used. Most pressure testing is carried out with compressed air at room temperature, whereas this new machine allows castings to be internally hydraulically tested up to 90°C @ 8 Bar. Taking that on board, I was grateful to hear that my replacement block had passed this stringent test. Now it really was game on for an engine rebuild !!

Upon examination, the replacement block crank was in better condition than mine and required less work. This meant that my original crank would be a useful spare for someone and the replacement crank would be the one to be worked on. You may have noticed on crankshafts {certainly V8's} that many have sludge traps with a fitted plug – these are located on the side of each crank pin. During any type of lower end rebuild these plugs must be removed, to gain access to the sludge traps. What is contained inside is a thick mass of solidified oil contaminated with engine detritus – it has to be cleared out and the crank thoroughly cleaned before any further work can be contemplated. An engineering company that does not do this, is not doing a proper job and the engine rebuild becomes a pointless exercise – it really is that critical. You can see from the photos of my replacement crank, how much muck accumulates – it's an engine destroyer in the making and you can see why it needs to be addressed. Be warned though, these plugs are not easy to remove but it simply has to be done.

The replacement crank was checked for straightness, this is a principal aspect and it has to be arrow straight. Bearing journals





are measured and checked for ovality, taper and wear. Once the replacement shaft was found to be within limits it was cleaned, micro polished and the sludge trap plugs replaced.

Attention returned to the block, the next stage being a seriously deep clean by means of a process called Aqua Blasting / Vapour Honing. The machine uses fine media, high pressure water and air to achieve impressive cleaning results on ferrous and non-ferrous engine parts. Therefore it is possible wet blast cylinder heads including aluminium heads & alloy covers, valve train, crankshafts, camshafts, pistons and even cylinder blocks. Special corrosion inhibitors, in the machine, prevent flash rusting and in essence returns the component to "as new" condition without altering critical surface dimensions & finishes. I have to say throughout the engine rebuild this cleaning system was used, where appropriate, to great effect and I am glad it was available as it produces a top class finish.

With the block fully cleansed it was time to assess and decide on the re-bore size. There were a number of sound options but in the end it was decided to go +40, this came about based upon piston quality and availability. With that decided upon, the block was then re-bored; J&E Engineering Services use an interesting set-up whereby the boring head actually floats on an air cushion which allows for the most accurate centralisation in the cylinder bore. A pneumatic clamp then holds the boring head in position while machining. Once complete the boring head is simply floated over the next cylinder to be bored. This process eliminates the need for constant tool adjustments between cylinders which ensures that all cylinders are bored with the same setting therefore same size. It is these little touches that define excellent machine shop practices compared to adequate practices. With all the above going on, I shall come back to the engine rebuild progress later on.

Needless to say it was not all happening in Lancashire !! Back home, in East Sussex, I had some of my own conversion work to carry out, such as the pedal box, electric fan fitting and associated wiring. I was fortunate to pick up a couple of manual pedal boxes at a Jaguar Spares Day for not may pounds. On arriving at such shows, try not to buy anything from a stand located at the show door entrance – have a look around first, as the further away you get from the door the more sensible the prices become !! The two pedal boxes needed a bit of work but this was purely freeing up very stiff pedal arms and swapping a few worn & missing studs on the various housings. With a bit of mix 'n' match between the two manual housings, I finished with a manual pedal box in perfect working order. The other manual box has been set aside as a someday spare.

With the auto pedal box removed from the bulkhead and replacement seating gaskets cut from a sheet, these are no longer available to purchase separately, it was time to fit the new clutch master cylinder. The pedal box conversion went very well and after ensuring everything moved either freely or with the required resistance such as the pedals it was a simple case of bolting the assembly to the bulkhead. The clutch master to slave cylinder hydraulic pipe would be fitted once the engine and gearbox were fully bolted down in the car.

With the radiator removed, I took it along to Bryan & Son Radiator Repairs in Tunbridge Wells; my default rad, heater matrix and fuel tank specialist. The rad flows without issue, having had a new core not so long ago but I now needed a thermal switch boss fitted, as I wanted to fit an electric fan. In addition to the engine bay strip down, I removed the heater matrix from its housing. The car has never delivered warm air let alone hot air and on looking at the heater matrix it was obvious as to why this was the case; the matrix was clogged solid, thus another job for Bryan !!

To be continued.....



