

# Lagondaforum: 4.5 litre engine problems and upgrades

## 4.5 litre engine problems and upgrades

*Written by davidbracey at Jun 05, 2014 10:41 pm*

Despite being a relatively new Lagonda owner and being totally in love with my car I suspect I am about to offer views which are unpopular to many but which I feel are honest and will be helpful to future owners.

The restoration of my LG45 Saloon has been an enormous undertaking and rather than follow the usual path of changing the body to a tourer I was determined to go to whatever lengths were necessary to preserve this elegant Saloon. Photos of the restoration are available for club members to view on the club website and you can see that no attention to detail has been spared. Every single part has been removed, inspected, and repaired and only if the original part was beyond saving, replaced. The restoration was carried out by Adam Pointer and he and I scoured the earth for original parts. I should stress that this restoration wasn't purely an exercise in maintaining originality at all costs.

When completed my intention is to drive this car thousands of miles each year and so it is to be a real 'user' rather than an ornament. Originality is important but reliability is a necessity.

However, the car has so far turned out to be a big disappointment because, in my opinion, the original Meadows engine is fundamentally flawed. (I said it would be unpopular but please bear with me.) The original engine was completely stripped, cleaned, and examined. The crankshaft was re-ground and balanced and new bearings fitted. The original bores and pistons were within tolerance and only new rings were thought necessary. Waterways were properly flushed out and the water pump and oil pump were overhauled. Evans Vintage coolant was selected to minimise corrosion and the effect of any increased pressures due to overheating.

Looking through the original factory service records which I obtained from John Leo I knew that the original S2 engine had been replaced by Lagonda in 1947 with a S3 engine. The previous having only lasted 57,000 miles despite regular decarbonising. It is unclear whether the S3 engine was brand new or reconditioned but when I acquired the car with 64,000 miles on the clock the barrels had already been fitted with steel liners. All this suggests that this is an engine design that was not particularly reliable. My superb mechanic Adam Pointer and I trawled almost every page of the forum and every book we could find to research potential problems and also spoke to other owners but found nothing we should be wary of so were satisfied that we had done a good job.

After about 150 gentle, low rev, miles the car started to run hot despite coolant temperatures showing a steady 70 degrees. How do I know it was hot? Uneven running and melting HT leads - that's how! Plenty of advice was offered regarding ignition timing and possible fuel vaporising which was all sensible and for which I am very grateful. However, I don't think that was the problem. After about 500 miles the I stopped the car whilst going up a steep hill because running was so poor and I managed to pull into a convenient petrol station and immediately switched off. Coolant temp shot up to over 100 degrees and I began to suspect an air lock somehow on the bottom hose possibly caused by cavitation of the pump. There was a lot of frothing in the top of the radiator. After 25 mins it cooled down and I set off again. The car ran for another 150 miles but in truth it never really recovered and a week later at exactly the same point on the same hill the same thing happened. This time though, I was unable to pull into the petrol station so was forced to stop on the side of the road in a very dangerous position that ultimately caused the busy A249 to be closed by the police. They asked me to try and move the car but even after 30 mins it hadn't cooled down at all and was seized solid. The car was then recovered by the AA and shipped to my mechanic Adam Pointer in Norwich where investigations have taken place.

Number 1 piston was seized with the gudgeon pin having been so hot it was blue. Number 2 had also been hot and had also damaged the bore. Calls to Julian at LMB and David Ayre were very informative and I am eternally grateful to them for their advice and opinions. Both were of the same opinion as to what they surmised had probably happened.

Firstly, they pointed out that the bores of the Meadows 4.5 litre engine are arranged in 3 pairs which are extremely close together and cylinder head stud holes are also close to the bores which can result in minor but significant distortion when the normal studs are screwed down. Adjacent bores are just 3/16" apart which creates a hot spot between bores which is quite a distance from the coolant channels.

David Ayre specifically warned against cylinders with liners as the addition of a steel liner within the cast block introduces yet another barrier to heat dissipation. In fact on my engine we could see that it had become so hot that one of the liners had actually started to slip within the bore! This could have caused even more damage if it had fallen into the crank but thankfully it didn't get that far.

It is also noted that there are coolant transfer plates in the side and rear of the engine but not at the front. I presume that it was felt that any heat problems would be around the exhaust manifold and at the rear of the engine rather than next to the radiator fan. However, what we surmise had happened is that when travelling up a long steep hill the front cylinders became over hot because the majority of flowing coolant was directed to the rear of the engine leaving the front cylinders with insufficient cooling and the front of the engine cooked itself.

Here is the really frustrating thing. Both David Ayre and LMB tell me that this is quite a common problem and one which they both have had to overcome in the same way. How I wish we had spoken with them a year or two ago.

The remedy is apparently to have a new cylinder block cast from better material and with better waterways. New pistons made from alloys suited to the application and to a better design. New connecting rods - again specifically designed for this application. And cylinder head studs with shoulders that close up against the face of the block and which do not exert lateral forces. I now have all parts on order and hope to be able to report that the problem is completely sorted in due course. It has been a frustrating and eye watering expensive experience and I would not want anyone else to go

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through it so would be interested to hear from anyone else that has endured the same or similar problem. I feel that it is important that we get honest and accurate information 'out there' so that these fantastic cars can be enjoyed to their full potential and so that potential owners understand what to anticipate.

Best wishes, David

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### Re: 4.5 litre engine problems and upgrades

*Written by bruffsup at Jun 06, 2014 3:19 pm*

Sorry to hear of your grief and kudos for posting the info here. Sounds to me like someone miscalculated the required piston clearances. Distortion from head studs can be negated if the block is bored with a torque plate in place. Probably no one does this. What about extra cooling with a larger rad capacity auxiliary electric fan and better water pump? Thanks for the warnings! I wonder how much heavier is your sedan than my T7 bodied M45? Summers are getting hotter even here in Canada so this is valuable info.

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### Re: 4.5 litre engine problems and upgrades

*Written by davidbracey at Jun 06, 2014 8:23 pm*

I don't think any boost to cooling of that block with those liners would have prevented this problem. Coolant temp sat at a steady 70 degrees C so under the running conditions I described the heat wasn't getting away from the cylinders and into to coolant efficiently. I've spoken to another couple of owners who have had similar problems.

My car weighs about 2,000kg, possibly a bit more.

Best wishes,

David

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### Re: 4.5 litre engine problems and upgrades

*Written by M70 at Jun 07, 2014 10:29 pm*

I have enjoyed mostly very reliable mileages from my two LG45s, and racing my now sold 1936 Team Car with a engine that was very competitive. Unfortunately you have experienced a problem with these Meadows engines is that is almost common. The advice from LMB and David Ayre is spot-on, these are long stroke engines and insufficient cooling, poor pistons. liners moving and insuffucent bore clearances have been an issue for at least 20 years. There are some things you can do to improve the coolant flow for No1 and No6 piston. Ensuring the water jackets are clean and changing the "sock" or sludge filter in the header tank regularly is equally important. A good electric fan can help and a modern design water pump essential. I would also suggest that ignition timing is pretty important, 29 deg btdc with a 2 deg gap between the magnetos seems to work well with modern petrol. I am really sorry that you have had such an expensive experience but the meadows engine should be reliable and produce sufficient power to easily keep up with modern traffic. I wish you good luck.

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### Re: 4.5 litre engine problems and upgrades

*Written by davidbracey at Jun 08, 2014 1:44 am*

Thanks Stephen, it has been a disappointing experience but I am determined to get it sorted. Can you suggest a modern design water pump that I should look for?

David

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### Re: 4.5 litre engine problems and upgrades

*Written by M70 at Jun 08, 2014 6:55 pm*

I believe both LMB and David Ayre have these available. I fitted ones made by Wessex Workshop, Alun Jones is the man. If you have David Hine's Workshop Manual - available from the Club there is a very good description of the vagaries of the original design and sealing. Hope this helps.

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### Re: 4.5 litre engine problems and upgrades

*Written by bill at Jun 09, 2014 3:50 pm*

I think that the whole of the layout of the 4.5 litre cooling system is incredibly inefficient. The engine was after all originally designed as a marine engine (3 litre) I believe.

Putting the cooling water in the side of the block (with equal sized holes - therefore the front one takes the easiest route straight up to the top) just makes things worse.

With the 3 litre Lagonda engine (originally designed for thermo syphon) all the cooling water goes in at the back of the head. I modified my M45 engine to work in this way and cured all the problems. With this mod the block just thermo syphons and all the cooling water goes across the head just where it is all needed.

I would be interested to know if anyone else has tried this ?

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### Re: 4.5 litre engine problems and upgrades

*Written by bruffsup at Jun 10, 2014 2:42 am*

Well I can't afford a new block so am paying close attention here!

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### Re: 4.5 litre engine problems and upgrades

*Written by James Mann at Jun 16, 2014 10:41 am*

Dear David,

Sorry to hear of your problems with the liners. javascript&#058;InsertTagsMenu('%20:\'(%20',%20'',%20'bbsmileys') We have similar problems and have just wrecked another number 6 piston in exactly the same way as you describe. Our car is AXD 45 an M45.

We replaced the block about 30,000 miles ago and unknown to us a circlip holding the Gudgeon pin failed. The end of the pin slowly ground a groove in the side of the bore and the crankcase fumes got worse and worse.

Being a relatively new block we decided to sleeve each bore. This worked fine for about a year, but we did not do a lot of motorway miles or rally miles. Soon after (about a month) replacing normal coolant with Evans waterless coolant and going up this particular hill there was a loss of power and woft of fumes. Water temp 80 degrees.javascript&#058;InsertTagsMenu('%20:\'(%20',%20'',%20'bbsmileys')

We stripped down the engine, found that the No6 had ground itself into the sleeve. Luckily we could hone the sleeve back to an acceptable condition. The water pump bearings had gone and simply thought that this was the problem.

We took the opportunity to put new water pipes into the block at the front and rear of the engine even though we had previously got an extra pipe installed to the back of the head like you.

We run the transfer ports so that the front one is blanked off, the middle one half blanked and the rear one fully open. This effectively forces the coolant from the front of the block to the rear and up to the head and then back to the front of the engine.

Anyway we got the car going about two months ago, run her slowly for 500 miles, but on the way to Goodwood on June 1st on the same hill at 2000 revs, 65mph, 80 degrees c exactly the same thing happened.

So car is now in bits and having entered the 1000 mile trial next month we are somewhat under pressure to have it running at full capability by then. It seems that the piston that we put in just did not have the tolerance even though we had a new water pump and improved circulation with delivery direct to No6. I can see that the heat is not dissipated as fast with liners, and therefore a smaller piston is required. We had no signs of overheating at any stage.

I am also concerned that if I had been using a traditional coolant there would have been boiling around this cylinder, the temperature would have suddenly increased and I would have been able to reduce the power. I am not convinced by the waterless coolant and we have never had localised cooling issues before introducing this.

I think that localised boiling might agitate the water based coolant and remove heat faster from the outer edges of the sleeves, not slower as the bumpf says on the packet.

Hopefully we can get the new piston machined in the next couple of days and get back into action with more tolerance. We have decided not to use waterless coolant for the time being as these engines have always worked well on traditional coolants.

I will report back, as on the first day of the rally we are doing driving tests flat out on the top gear test track and the Prescott hill climb. If it can do that then I think we will have got around the problem! Fingers crossed.

I can see that getting a new block is the ideal solution, but it is somewhat pricey and cannot be done this week!

James Mann 07803716815

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### Re: 4.5 litre engine problems and upgrades

*Written by h14 at Jun 16, 2014 2:29 pm*

My LG6 has a S4 Meadows engine. The previous owner had the engine rebuilt with TRW pistons...after 500 miles, it seized. I gather the problem was that these (Volvo?) pistons were to the correct tolerance for the bores, but no allowance had been made for the much longer stroke on the Meadows compared with the Volvo application. Because of the longer stroke in the Meadows engine, the pistons would not be getting the quantities of lubricating AND COOLING oil, meaning they would run hotter than intended, expand more...and seize.

The rebuilder's remedy was to bore the bores out somewhat. To be honest, whilst the rebuilders were vintage engine specialists, they certainly weren't Meadows specialists, so the result is I have an engine that doesn't overheat or seize, but it's down on power and uses a lot of oil...yes, in other words a new worn out engine, in effect! I think the rebuilders were correct with their remedy, but overdosed! As far as I know, no modifications have been made to the engine cooling circuit, but the car is a special and a specially made sloping radiator has been fitted.

Laurence

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