

## Lagondaforum: 4.5 litre engine problems and upgrades

### Re: 4.5 litre engine problems and upgrades

*Written by davidbracey at Jun 16, 2014 2:57 pm*

Hi James,

Likewise, I am sorry to hear about your own problems.

The circumstances that you describe for your engine failure are almost identical to mine. 500 slow miles since rebuild, steep hill 2000 revs, 60mph, 75 degrees C, loss of power, etc... The only difference being that it was No1 piston on my car that seized. However, on my car we had not closed off, or partially closed off, any of the side transfer ports.

I am not sure I understand if the Evans could have made matters worse but am open to any explanation. I knew that something was wrong because I was almost expecting it and so stopped pretty promptly. I don't think I could have reacted sooner even if I had been using water rather than Evans.

I am pinning my hopes on the new block with matching pistons, rings, conrods, and oil pump all coming from LMB. However, there is clearly a need to improve circulation of coolant (Evans or water) so am really keen to understand whether there is a need to blank off ports or add a hose at the front of the engine etc.

David Hine's very helpful workshop manual suggest a possible problem with the water pump bearings possibly seizing if they get too hot but as the pump is mechanically driven from the engine we can't see how that could happen. I wouldn't be against fitting an electrical pump if I thought it would eliminate a potential problem. Any thoughts?

Your 1,000 mile trial sounds like the perfect test and if you manage to come through that I am sure you will survive anything so please let me know how you get on. You aren't going to be doing any running in by the sounds of it. Good luck – plenty of us wishing you luck and are waiting to hear!

David

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### Re: 4.5 litre engine problems and upgrades

*Written by davidbracey at Jun 17, 2014 12:45 am*

A brief observation about Evans waterless coolants. I was at Brooklands last weekend competing in the Double 12 and spent a short while looking at a stand selling oil and coolant. classic-oils.net are a retailer of Evans and I notice that their website says about it: -

" NB: Not for use in thermo-syphon systems (ie systems without a water pump), as the lower expansion coefficient of Evans will stop the coolant's circulation."

<http://www.classic-oils.net/Product-361/Coolants-and-anti-freezes-for-your-classic-vehicle/Next-Generation-Coolants/Evans-Vintage-Cool-180°>

Now, I appreciate that our engines have a water pump but I don't know that I would want to exclude any possible thermo-syphoning that might take place through a poorly designed circulation system.

Any comments?

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### Re: 4.5 litre engine problems and upgrades

*Written by alecbr at Jun 17, 2014 3:30 pm*

Interesting chain. I found this link that seems to provide more information on the waterless coolant. I would be concerned with the lower heat transfer rate.

Alec

<http://www.ffcars.com/forums/17-factory-five-roadsters/302124-you-using-evans-waterless-coolant.html>

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### Re: 4.5 litre engine problems and upgrades

*Written by davidbracey at Jun 17, 2014 3:56 pm*

My head is now starting to hurt.

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### Re: 4.5 litre engine problems and upgrades

*Written by ray sherratt at Jun 17, 2014 7:59 pm*

Hi David

You mentioned HT leads melting despite 70c temp reading.

I know the first suggestion will not help the over heating, but check your gauge by putting the capillary bulb in a electric kettle and bring to the boil, if you have a thermometer to check results the better.

My second is check the rad tubes, see if you can see the entry to the top of the tubes. After older engine re-bulds the rust and lime stone scale loosens and the pump flushes it out up the top hose, have a goodlook with a torch mirror on a stick/or inspection video camera. If the tubes look bad try reverse flushing the rad.

Ray.

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### Re: 4.5 litre engine problems and upgrades

*Written by alecra at Jun 18, 2014 6:22 am*

Dug out my old heat transfer book from school and ran some numbers with water and with ethylene glycol. For the situation I chose (steel 25mm pipe, 3 m long, flow 20mm/s, pipe at 80 degrees, inlet water at 60 degrees), the ethylene glycol only picked up 60% of the heat that the water did. The output temperature was lower too. Since our prewar engines were designed for water only (going by my 1933 manual), cooling with even standard antifreeze mix might start to be marginal in extreme conditions.

Alec

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### Re: 4.5 litre engine problems and upgrades

*Written by Julian at Jun 18, 2014 8:06 am*

Hi all,

sorry I missed this post, been extremely busy and feel terrible about saying "I forgot to clock in for a chat"

I just had a good chat with David on the phone last night and seem to be on track now thanks to all the good info here, of which I agree very much with.

Generally the Meadows 4.5 is a very good reliable and strong engine, however calcium, old designs, uprated engines, blocked rads and socks, corrosion in the head and block etc all reduce the capacity of the basic system to control things.

With a new block and head, engine fully rebuilt with all the right stuff and the later LG water passage addition in the back of the block/head, all fitted with a new water pump. A standard but fully re-cored and perfect M45/LG45 radiator can cope with a 200+bhp reliably and efficiently with no overheating, even in a hot climate. (obviously the full power is not used all of the time, or even part time on the road)

This does show us that we do need to keep the whole package in tip top condition, and if we do, it will look after us. We always use water with a little glycol to limit corrosion and/or freezing, depending on the month.

Blocks and pistons are and always will be a talking point and the use of liners especially.

I don't want to preach here but we have the following rule and we stick to it extremely rigorously.

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If the block needs more than one liner in any pair. ie. 1 and 2 3 and 4 5 and 6 then the block is scrapped. We will not build around it even if the customer insists. We know it will come back, usually within one year and we will have a warrantee case on our hands. (we don't like that ;o)

The reason is two fold. a. heat dissipation is limited, even if fitted very well. b. there is not enough material left between the bores and this thin area cracks extremely quickly, especially if the liner has a good "fit" the liner then loosens, and even if it has a "top hat" section at the top to stop it from slipping down, it can still spin and then the rod hits the cut-out and Bang! we have lots of these to rebuild so like other people who do it 😊 ) Not really, but we do see a lot of them. My only advice if you are forced to use a fully lined block is to pin the liner in place as well as press. and use a good modern piston with a good clearance. We use 0.005" for road and up to 0.010" for racing. but the clearance depends on the manufacturer also. Volvo pistons need 0.008" in my opinion and experience but we don't use these as they tend to be noisy at this setting and tight if set smaller.

Very interesting thread this though so thanks for posting David but sorry for the reasons behind it.

Julian

Maybe we should start a page especially formulated to be a problem reference page with a quick search function etc?

Very best regards to all.

Julian

PS.

Interesting maths Alec, I like it!

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### Re: 4.5 litre engine problems and upgrades

*Written by davidbracey at Jun 23, 2014 7:18 am*

Thanks everyone,

Julian, It is very useful to get your thoughts and suggestions. It is also quite reassuring to those of us with these problems to hear that you are so confident about the solutions. You have probably seen more of these cars frailties than the rest of us put together.

With my new block, conrods, pistons and oil pump and a proven working water pump it sounds like I have everything covered so fingers crossed. I will report back once all the new parts have been fitted and tested.

I will not be putting Evans waterless back in however.

David

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### Re: 4.5 litre engine problems and upgrades

*Written by Giralda fan at Jul 08, 2014 12:57 pm*

Very sorry to hear of your woes but very grateful to you for sharing them and I congratulate you for keeping your car as a saloon.

About 15/20 years ago we did have problems with that bottom hose, I discovered (eventually) that it would collapse when revs were up. The collapse was not obvious at first as the hose went back to its usual shape when the revs dropped and it wasn't easy to see through the blur of the fan – but sudden temp changes and boiling were the result. It is just starting to show signs of collapse again above 1500rpm but not so badly as to cause any noticeable cooling problems. On our car the exit from the rad and the entry to the pump are slightly misaligned which puts an extra stress on the hose distorting it very slightly and making this problem more likely to occur. The rad was re-cored before the problem first occurred and had been run with either a sock or stocking for most of the time since so I do not think rad blockage was an issue, its just that that section of connector/hose/connector presents one of the greater restrictions in the system I suspect, and in our particular case one which can easily accommodate the pressures on it by collapsing.

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Thank you both David and Alec for the links about Evans which are very helpful. In light of the above I think pressurisation is essential and consequently I would not choose to use Evans. However, I also have great doubts about replacing water with a coolant with lower specific heat capacity in a cooling system which is already compromised by a wide variation in coolant flow rates through the engine (or so it appears to me!), and crucially which lacks the ability to be as self circulating as water is when heat is applied to a motionless or very slow moving volume.

A cooling system oddity came to light in the late 80s when my father replaced the coolant manifold and discovered that the tank engine manifold was substantially obstructed between the two block connections by an irregularity in the internal diameter of the manifold. The result of this was that 4,5,6 would probably have been getting a lot less coolant than 1,2,3. The spares scheme replacement did not have any such obstruction/constriction, nor did the manifold that my father had removed from the car's original (blown up!) engine. We dismissed it at the time as a casting failure that we had been lucky not to be affected by. More recently I have begun to wonder if it might just have been intentional - your own case adds to my suspicions. However, it is also odd that historically 5 and 6 seem to be the problem bores (my father had no5 rod through the side of the original engine when the piston seized/broke up) but our tank engine had survived this manifold obstruction for 35 years before it was removed. This could be partly due to the fact that it is (now) a well worn engine and uses a lot of oil - so rings and pistons are kept cool by this as much as by anything else.

On the subject of a bigger waterpump: has anyone else ever had the experience of finding a central heating radiator very hot at the bottom and barely warm at the top, and not having any air to be bled? I found that normal flow through the radiator could be restored by further closing the return/exit valve (and not the flow/entry valve) until normality was restored. This happened after I turned up the pump speed during cold weather to improve flow to rads at the very end of the system. Too strong a pump and thermo circulation/turbulence in the extremities could be reduced perhaps? Its just a thought, I have no direct experience of this in a car engine!

The only time I have ever seen melted HT leads was on a modern with a head gasket leak that had been driven flat out on the motorway until all the coolant had gone and eventually it melted a hole in a piston. On our M45 the distributor side HT leads are perilously close to the exhaust downpipe but still they haven't melted.

It would be interesting to know what clearance Adam Pointer went for on the new rings, I will need to consider new rings very soon as oil consumption is not good, that is unless a more profound and expensive remedy is required.

Apologies for being late to the party on this topic - my first post too!

James

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### Re: 4.5 litre engine problems and upgrades

*Written by Peter S30 at Jul 14, 2014 12:58 pm*

I am not a very experienced long time Lagonda man (only ten years now) but engineer and I think much of these overheating problem (see also the M45 stuck in London traffic on the way to "the one show", equipped with electric fan) is due to restrictions in water circulation. I think this goes in line with most of the previous posts on this topic.

I had this on my V12. The car would boil at low revs e.g. driving on the highway and then get into stop and go in a traffic jamm or at the end of a mountain climb. The water temperature at this point still beeing acceptable. Electric fan or new radiator does not help much in this case because the water is still cooled well but does not reach the hot areas at sufficient rate. The reasons are:

1. Problems in the design at first (was still ok when the car was new)
2. Water pump with less performance due to corroded rotor
3. Corroded water passages plus lime deposit

The cure is: solve the above 3 problems, at least the last 2, especially if you do a complete engine overhaul. Or put an electric water pump as temporary cure for the problem. I did the last (in series to the existing water pump), I switch it on when I anticipate it will be needed (slowing down after strong going, traffic jams) and it works. And if I forget to switch it on then I have the boiling, quite reproducably.

Things would be different if the true water temperature (measured with a correctly reading device) goes to high, then I would go for radiator clean,

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electric fan, new radiator.

I prefer water as coolant, when it boils=evaporates it cools extremely well and this boiling indicates the problem early. I will not try waterless coolants.

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