Lagondaforum: 4.5 litre engine problems and upgrades

Re: 4.5 litre engine problems and upgrades

Written by davidbracey at Aug 21, 2014 12:55 pm

Time to provide and update on progress with my LG45 engine rebuild.

The new block has been machined to suit the new pistons. Unfortunately the conrods supplied are the wrong size so have been returned to LMB for them to investigate how that problem has arisen and so things have stalled somewhat.

Unfortunately this now means that the car will not be ready for the Lagonda Club AGM so I will have to come along in a modern car.

Anyone else doing better than me?

Re: 4.5 litre engine problems and upgrades

Written by bill at Nov 15, 2014 10:48 am

Just as a follow-up on the controversy about waterless coolants. I stand to be corrected perhaps but I have been informed on apparently very good authority (by someone who designs cooling systems on modern vehicles for a living) that "waterless coolants" are nothing more than neat antifreeze. I understand that nothing is better than water at dispersing heat and antifreeze does not do this anything like as well as water - therefore it is possible that there can be localised overheating in an engine with "waterless coolants". This overheating is not manifested as boiling or rising temperature as with water.

Maybe this is the reason why "waterless coolants" are not recommended for thermo-syphon systems ?

Take great care !

Re: 4.5 litre engine problems and upgrades

Written by bill at Nov 17, 2014 7:40 pm

Just in case you missed it on the VSCC Forum there was an answer about my thermo syphon system point above posted (by someone who seemed to know) as follows : -

"I suggest that the reason is because Glycol does not expand as much as water, does not absorb as much heat per pint, and is thicker (more viscous). All these factors make it less successful in a system which relies on expansion, etc to work, with no pump."

Of course if the coolant does not absorb as much heat (as water) then maybe this is the reason why you can get localised overheating in a system which is very inefficient in design (as I think we all know).

Anyone with more technical knowledge out there care to comment please ?

Re: 4.5 litre engine problems and upgrades

Written by Bill LG45 at Feb 20, 2015 11:53 pm

Ethylene Glycol plus inhibitors is the commonly used car antifreeze in older vehicles (usually blue or green) and the thermal conductivity is approx half or less than that of water.

In high concentration levels, as needed for winter protection, it will mean that the engine is more likely to boil as is not able to carry the heat away as well as fresh water.

Personally I run my old cars on a relatively high ethylene glycol concentration (30 to 50% in winter and dump the antifreeze in the Spring, retaining only about 5% to keep some corrosion protection. Dumping this ethylene glycol antifreeze annually also makes sense because it only has approx. 2 year life before the inhibitors are "used up".

When they are "used up" these silicate inhibitors tend to come out of solution and cause wear to water pump seals / bearings.

Nasty gels also form which bung up the system aside from the corrosive nature of gylcol when the corrosion inhibitor is used up.

From Google:

Fluid Thermal Conductivity at 300 K (+ 27 degrees C)

(W/m K)

Ethylene Glycol = 0.258 versus Water, Fresh = 0.609

I am not sure what chemical is actually in the "waterless" antifreeze either.
I tried a particular waterless type in a Mk VI Bentley we had which had been prone to overheating as they claimed that the thermal capacity was better than water but I found that it did two things:
1. It acted as a very good flushing agent and cleaned all the dirt out of the engine, depositing it in the radiator so it was just as well we needed to re-core the radiator anyway!
2. It was far more "searching" than ethylene glycol and found every possible place to leak out of!
so it might work well with systems that are totally clean and leak free but I would not introduce it to an older engine that had previously been used on water unless it had been meticulously cleaned inside ...
So, having cleaned the engine out I re-cored the rad, reverted to ethylene glycol and fitted a new water pump which solved the problem and was what we should have done in the first place!
Hope this helps
Bill

Re: 4.5 litre engine problems and upgrades
Written by bill at Feb 21, 2015 10:13 am

Thanks for all that information Bill as it rather confirms everything that I had come to believe about waterless coolants. I do however find it rather worrying that these expensive "waterless coolants" appear to being "pushed" quite strenuously at vintage and classic car owners - as if these products are the answer to all our problems !

Re: 4.5 litre engine problems and upgrades
Written by davidbracey at Feb 21, 2015 1:37 pm

Dear BillLG45

I think you've just about summed it up perfectly. Waterless it may be but better that water it isn't.

David

Re: 4.5 litre engine problems and upgrades
Written by Colin M34 at Feb 22, 2015 11:47 pm

Hi Chaps

I have been following this discussion with interest and have two points to make.

Firstly, I am a great fan of cutting oil (suds) which I use on my lathe and milling machine. It has interesting properties. Not only does the metal cut nicely with a great finish, but when you spill some on the floor the detergent properties show up as well.

In fact the only problem with using cutting oil is that it stinks and my wife complains that I "smell of garage" which I remedy with a few drops of Jasmine aroma therapy oil which makes the workshop smell lovely...

With cars, I am also an old fan of a product called " Bar's Leaks Radiator Stop Leak". When you add it to the cooling system the brown liquid goes white just like cutting oil. Has anybody any experience of using cutting oil in a car cooling system? I think it might work rather well.

Secondly, I have also been servicing my central heating system and used Fernox DS3 to de-scale the domestic hot water heat exchanger on my

combi boiler. I now have lovely hot baths again. As many of you know, DS3 is our old friend for de-scaling car radiators as well. I then started thinking about central heating treatments such as Fernox DS40 system cleaner, as well as MB-1 which is an all-round protector. DS40 is very good at flushing lime-scale and black sludge etc from a heating system. Surely, isn't this what we need for our cars? Opinions please?

If anyone thinks that I am barking up the wrong tree, please tell me.

If I meet any fellow readers in a pub and I smell of Jasmine, you will know what I have been doing...

Colin M34

Re: 4.5 litre engine problems and upgrades

Written by davidbracey at Mar 14, 2015 10:51 am

Ok, an update.

My engine is now back together and running very well (not that I've been out on the road yet.) But the ignition and valve timing has been set with both magnetos seemingly synchronised.

Before refitting the radiator we wanted to flush out the waterways and prove that we had good water pump flow throughout the rpm range so we connected up a water container and hoses so that we could see what was going on. The flow rate looked pretty good to me but I'm not sure what I was expecting. Personally, I was happy with the results.

I've posted a short video clip on youtube here: -

https://www.youtube.com/watch?v=erP9cdaj9bo&feature=youtu.be

The video is brief because I needed to keep the file size down but you can see the flow we are getting at about 1,300rpm

Once initial road testing has been carried out I will post a fuller description of what was done, problems encountered, and lessons learnt but if anyone has anything else to throw into the mix I would appreciate it.

Re: 4.5 litre engine problems and upgrades

Written by davidbracey at Apr 03, 2015 9:12 pm

Thank you for all the advice, suggestions and wishes of good luck that I received following the engine problems I encountered with my LG45. It really was a great help. Without wishing to tempt fate I believe I have now sorted those problems and have a car that will be reliable and which can be driven extensively as I had always hoped.

So, what have I learnt and what conclusions have I reached?

Following Julian’s advice, the new was machined with 0.006” clearances for the pistons. Unfortunately, fitting the new block, conrods and pistons was a much more involved process than it should have been. All were bought from the same source but there were problems fitting them. For instance, the block was not supplied fully machined and the conrods did not have the correct offset to suit the old crankshaft and neither did the big end fit the crank. It was necessary to machine the inside of the pistons to provide the offset necessary so that the conrods could be used. It was also necessary to machine clearance slots in the block so that the conrods didn’t foul. All this created unnecessary frustration, delay and expense and was very disappointing.

A new oil pump was also fitted.

Once assembled the engine was set up carefully and it fired into life without any difficulties at all. As reported previously I took Julian’s advice and ran the engine from a water tank so that we could flush out any crud before connecting it to the radiator. I used demineralised water and NOT Evans.

Using the water tank also gave an excellent opportunity to check the flow rate being achieved across the whole rpm range. This confirmed that everything was performing properly and so the car was completely reassembled.

Before road testing we attached adhesive temp sensors to the block, head, water transfer plates and radiator hoses so that I could see the maximum temperatures reached. Last week I did a 200 mile test over 4.5hrs and it performed perfectly. Good oil pressure throughout and a steady water temperature of about 65 degrees. The maximum temp recorded with the engine bay sensors was 73 degrees. I did another 50 miles and then the head was pulled down and oil changed. I've since covered another 250 miles and the car is running and sounding great.

Looking at the original block, conrods and pistons I think I could have probably re-used the block and conrods if it had been rebored to 0.006" clearance, fitted with new pistons and if I had used water instead of Evans. No1 piston had seized to the gudgeon pin which clearly implies excessive heat and possibly insufficient oil circulation.

Anyway, despite the obvious costs involved, and unnecessary problems with the new parts, I don't regret using new components. Having spent so much time and money already I really needed to take every option available to give me a truly sorted car and that is what I now have. Hindsight is wonderful but I needed as close to certainty as I could get.

I hope that this will all be useful to others and hope that the lessons learned will prevent anyone else having similar problems. If I can be of any help to anyone else please get in touch. Likewise I would be grateful to hear any comments or observations that may arise.

I hope to see you at the Lagonda Club AGM in October – I'll definitely be there!

Re: 4.5 litre engine problems and upgrades

Written by bill at Apr 04, 2015 9:25 am

Well done David. It looks as if your extreme persistence has been rewarded. Many others would probably have given up ! I hope you now have many happy trouble free miles.

Thanks very much for the conclusions which I am sure will be very useful to others.

As a matter of interest what oil are you using ?
