Lagondaforum: 2ltr oil pump and pressure

2ltr oil pump and pressure

Written by Peter S30 at Nov 04, 2019 3:08 pm

Finally I take the time to post some experience with the oil pressure and pump on my 2ltr.

On our last continental rally I used my 2ltr (summer 2018) I first had a broken oil pipe driving to the meeting (repaired on the way), so check the soldering of your oil pipe if it is soldered.

During the rally and on the way back it was very hot and oil pressure reading dropped to something like 0-5psi in idle. Back home I was adviced by John Batt (sadly missed) to check especially the axial play of the oil pump. It was huge and I introduced 2 thin shimps to adjust it. Also the rotor circumference and static part of the pump is quite worn. Nevertheless when putting it back with reduced axial play, the oil pressure was back in normal range.

Then after a winter of not using the car, this spring when I started the car again, oil pressure was absolutely 0. Priming the oil pump did not help. So I started investigations using an external (peristaltic) pump. In the image you see it attached to the feeding point at the oil distributor part. And I cleaned the little pipe conecting the gauge with the point where the pressure is measured (camshaft). When I now pumped in 40ml/min of the 20/50 oil at 10°C I had 20psi directly after my external oil pump and 15psi on the gauge of the car.
I also measured the pumping capacity of the oil pump of the car: 1.6ml per revolution. That means it would deliver the same 40ml/min at 25 rpm. Rpm of the oil pump is the same as rpm of the engine. That means the oil pump of the car is delivering much much more than needed (as confirmed by John)

Putting the cars oil pump back and starting the car: plenty of oil pressure. Even with the pressure relief valve screwed out as far as possible I have 40psi. I also have put a second gauge at the inlet point to the main bearings, it reads about the same as the gauge on the dashboard now.

So my conclusions:
1. A bad oil pressure can be a faulty gauge. Check the gauge first and clean the pipe to the gauge (oil is not flowing through but only pressure is transmitted, so it will block with deposits over the years). This may avoid time consuming or expensive and unnecessary engine overhaul.
2. A worn oil pump will be impoved a lot simply by reducing axial play

Attachments:
external oil pump.jpg (filesize: 61.11 KB)

Re: 2ltr oil pump and pressure

Written by Tim Wadsworth at Nov 17, 2019 3:46 pm

I concur with everything Peter has said. My oil pressure varies between 25 (cold) to 15 (hot) with shell mains and big ends. Every 25,000 miles I add a dose of Slix 50 to the oil. I think this probably saved the engine when I lost all pressure in Athens (due to axial wear) and had to motor 1500 miles home with next to zero psi.

Another major improvement is to add a non-return valve to the oil suction pipe and get rid of all that gauze in the sump, replacing it with a in-line cartridge filter (discretly hidden) I now get almost instant pressure on the gauge when starting up. Good for one's peace of mind !

Re: 2ltr oil pump and pressure

Written by Colin M34 at Nov 20, 2019 10:49 am

Thanks Tim and Peter,

I concur with all of your remarks. I have a full-flow oil filter and have slightly revised the layout so all the oil goes through it on the way to the oil gallery.

Re: 2ltr oil pump and pressure

Written by Mark at Nov 20, 2019 2:57 pm

I have found the recent comments on oil pressure most interesting.

Our much missed friend John Batt rebuilt my 2 Litre engine around 10 years ago. It had new white metal mains and Arrow rods with shells. The oil supply from the pump goes through a discretely placed modern canister filter prior to entering the centre main. The oil pump was rebuilt a few years earlier,

About 5 or 6 years ago I took Tims advice and fitted a non return valve low down on the pick up pipe from the sump. This latter item has been a huge success. As Tim says, almost instant oil pressure on start up.

However, I still have very low oil pressure once hot and running at 40mph. On cold start up it is right up there at 40-60psi but settles down to 10-12psi at normal road speed once the engine is thoroughly warmed through and less than 5psi at idle. The relief valve is screwed fully down

Now I would welcome any thoughts on things to check in addition to the supply pipe to gauge mentioned by Peter.

One thing John said to me a few years ago was about the bronze oil distribution block. He hypothesised that the bore of the oil way to the timing chains within the bronze block might be a source of low oil pressure when hot?

John said he had never investigated this as a problem put wondered if reducing the bore of the oil way to the timing chains would overcome oil pressure loss if it were occurring at that point? If I recall correctly John said to me the timing chain oilway is the first call on oil from the pump.

I would be most interested in any comments on the above

Best regards

Mark

Re: 2ltr oil pump and pressure

Written by davidbracey at Nov 20, 2019 10:14 pm

Fluid pressure is directly related to flow rate and velocity. It’s flow rate you want rather than pressure so be careful when trying to artificially increase pressure. You may find that all you’re doing is reducing flow rate. (Shutting off all flow will increase pressure, and you don’t want that!)

I’ve not done any experiments but I suspect that modern oils with detergent additives may become more fluid at operating temperatures. This would reduce measured pressure, but increased bore or worn oilways will also reduce pressure. It’s a balancing act to ensure adequate quantities of oil go to all the right places. Increasing one may drastically reduce another.

The only sensible way to increase pressure is to improve pump output; flow and pressure. Start with your oil pump would be my thoughts, just as John suggested.

Re: 2ltr oil pump and pressure

Written by Mark at Nov 20, 2019 11:31 pm

Some years ago John Batt demonstrated to me the flow from a 2 Litre oil pump. Using two buckets, one with oil in it and an electric drill with a wire brush on the drive dog on the pump, the volume shifted within seconds was astonishing! However, Julian on this forum says the 2 Litre oil pump has a cavitation flaw and a few years ago he designed a replacement to overcome this. My pump since being fully rebuilt has covered around 7k miles but I will check it for wear.

Your comments about flow rate and velocity are interesting.

The design of the oil distribution block which takes the initial flow from the pump is such that neither flow nor velocity to the centre main bearing would be impacted negatively if you reduce the bore of the take off oil way to the timing chains. But as you say there is a risk that you could starve the chains!

It was only a hypothesis that John put forward trying to explain the differences in oil pressure between 2 Litre engines. It certainly wouldn't be the only reason as each engine will wear differently due to the type of use it has had and its maintenance regime.

At the end of the day I could overcome oil pressure concerns permanently via the Alan Brown Method... cut 2" diameter duct tape circle and apply to face of gauge!