

## Lagondaforum: 2L engine problem

### 2L engine problem

*Written by oakley at Dec 18, 2007 9:53 am*

I have asked this before but, not yet being familiar with how to use this Forum, it was in the wrong place. Therefore, my question again in a new thread. The problem is that the downdraft SU carburettors (see image) on my 2L engine "spit back" quite a bit of petrol (in small clouds of very tiny droplets) through the air inlets when the engine is running, especially when the car accelerates. This creates a highly explosive atmosphere under the bonnet and a nasty petrol smell. As I am currently rebuilding the engine I would like to solve that problem - only I haven't a clue what causes it. The car ran very well in spite of this and the valve overlap was 15 degrees. Ideas anyone?

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#### Attachments:

[downdraught carbs.jpg](#) (filesize: 195.27 KB)

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### Re: 2L engine problem

*Written by Colin M34 at Dec 26, 2007 2:13 pm*

Hi there. Looks like a very tidy job you have done with your conversion. Mine was one of the first. It's wonderful and transforms the 2 Litre - I have been running on it for about 12 years. I would be happy to discuss your problems off-line and you can find my phone number in the register of club members, M 34.

Colin Mallett

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### Re: 2L engine problem

*Written by oakley at Dec 27, 2007 8:40 am*

I will contact you after new year Colin - many thanks!

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### Re: 2L engine problem

*Written by Roger Seabrook at Jan 21, 2008 7:17 pm*

Hello,

Have you cured the problem yet? It sounds like valves sticking or not seating properly.

Did you make your own inlet manifolds? If so, can you please advise where I can get some pipe, and get it bent to 60 degrees?

Best wishes,

Roger

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### Re: 2L engine problem

*Written by oakley at Jan 22, 2008 9:53 am*

Unfortunately I have had no more reactions with advise how to cure the problem. However, I have discovered that the engine has rather unusual camshafts with very flat cams which means that the valves stay open longer. This could very well be the reason for the petrol "spit-back" problem. I am now replacing them with new camshafts supplied by the club - they are quite different in shape with much more rounded lobes. I expect that this will take care of the problem.

As for downdraft carburettor inlet manifolds - they were done by Manifold in Salisbury - tel. 01722 335378. They know exactly how to make them and often work with Birlen (carburettor manufacturers).

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### Re: 2L engine problem

*Written by H 54 John at Jan 23, 2008 11:25 am*

Oakley, can you please keep us notified how you get on? I have the same symptoms with my 2L, though it has just a single SU in the normal place. The cams I've inherited have the flat-topped profile you describe and are timed symmetrically with about 40 degrees of overlap which seems OTT to

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me though it is, I understand, a recommended change to the very conservative Lagonda setup.

John

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### Re: 2L engine problem

*Written by Colin M34 at Jan 27, 2008 11:33 pm*

Thanks for the interesting post from Oakley. I completely agree with you observations....my car sparkles with the downdraft head!

Thanks Phil Ridout! To those who do not know the late Phil Ridout, he was a long term 2 Litre owner and telecommunications researcher. I used to work with. His retirement project was to design the downdraft 2 Litre head and we spent many happy hours over beer discussing the project. Wessex Workshops took his design into production and their product is a great credit to them. I have had one on my car since 1994. Phil passed away a few years ago aged about 83.

I agree with Oakley that 3100 revs in fourth gear gives wonderful relaxed cruising and you can belt along with all the law abiding drivers in the middle lane on the motorway. This is quite fast enough for me as well! In fact I get scared going much faster because fools cut you up and I feel very vulnerable with excellent but still 1920's brakes. Much more fun is that the car is GREAT at 2800 rpm because you can put your foot down and roar past lorries with plenty in reserve in top – up to 3500 rpm - and then relax back to 2800 rpm when the road is clear.

What makes the downdraft head spectacular is the effect it has on hills. The classic 2 Litre problem is that an unmodified car runs out of puff up a gradient. Not with mine; drop into third, snick into second - spin the engine to 3500 rpm - and as the car speeds up, go into third again when it will happily accelerate to 3500 rpm and maybe a touch more. While still going up the hill, having picked up speed, my car will want to go back into top and positively sparkles when it drops down to say 2500 rpm, and you say to yourself ... that was fun!

I agree with Oakley that sustained high engine revving on the road is generally unnecessary, though having more revs in reserve makes the car more useful in modern road conditions without straining it too badly. With valve timing, I have done the usual 15 degree overlap but have not got round to changing my camshafts. The main difference is that generally I only get 19 mpg which is a bit disappointing with the 25 mpg I used to get. I might change it back and see if I get back the MPG without loss of useability.

So why did Lagonda not put the downdraft head into production? Phil reckoned that in 1930 it was more fashionable to add a blower, and transforming the unblown car would have confused buyers. Then later it must have been very much cheaper to buy-in the Crossley engine than continue with making the 2 litre engine, and of course by 1932, 6 cylinder engines were more fashionable than 4 cylinder ones.

The 16/80 engine loves to rev but this should be a topic for a later posting.

Regards to all Colin Mallett M34

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### Re: 2L engine problem

*Written by oakley at Jan 26, 2008 6:44 pm*

As I said above, if the lobes are very flat the valves stay open longer. Especially with much valve overlap, this causes petrol to be pushed back through the inlet valves and then the air inlets of the carburetter; no matter if it is sidedraft or downdraft, although it would be worse in the latter case as the distance between valves and carburetters is shorter.

The solution is to buy camshafts from the club which have rounded lobes (see picture in my posting below). I could also recommend to reduce the overlap to about 24 degrees or so - more overlap is only useful at very high revving; at lower speeds it actually works counterproductive.

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### Re: 2L engine problem

*Written by Tim Wadsworth at Jan 26, 2008 11:32 pm*

I would be very surprised if, on it's own, the change of cam profile solved this problem. The square top cams go back to pre-war days and were

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standard for 2 litres for many years. I must have run them in my car for at least 30 years without a spit back problem. About 8 years ago I redesigned the cam profile from basic principles and came up with a more rounded top profile and a slightly concave flank. This was adopted by LMB (with my agreement) and subsequently the club produced new shafts with a similar shape. I run with 45 degrees of overlap. (IVO 20 BTDC EVC 25 ATDC) and the car is totally tractable, ticks over sweetly at 600 rpm. It is true that this amount of overlap does not enhance the performance below 2500 rpm, but after that she pulls strongly all the way up to 4500. I do think you need to rev the 2 litre engine to get the best out of it, strange for such a long stroke engine.

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### Re: 2L engine problem

*Written by oakley at Jan 27, 2008 10:44 am*

Well, the engine is now being rebuilt and we'll see if these new camshafts will solve the problem. Everyone who is working on it says it will. I too believe it is the logical answer. In the 1930's, flat-lobed camshafts would not have been a problem with side draft carburettors and the standard valve overlap for the 2 Litre engines being only 9 degrees. However, I'll keep the Forum posted. Meanwhile, here is a picture of the two types of camshafts - with flat and rounded lobes.

Personally, apart from the spit-back problem, I find much valve overlap and high engine revving on a long stroke Lagonda 2L when it is only used on the road quite unnecessary and it is not good for the engine. Also it makes the car less original and increases petrol consumption. I seldom rev my engine as high as 3500 and the car very nicely keeps up with modern traffic. At 3100 revs in forth gear (wonderful relaxed cruising) it does just over 70 MPH - quite fast enough for me! (And indeed the law).

If one races the car it's a different matter and these modifications make sense. Besides, everybody has his own idea how to use or alter his car - I respect that.

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### Attachments:

[camshafts.jpg](#) (filesize: 276.06 KB)

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