Lagondaforum: Meadows Engine Help

Meadows Engine Help

Written by ArmouredEngineering at Feb 02, 2017 9:50 am

Forgive me if I've posted in the wrong area.

I'm not a Lagonda owner, unfortunately, but I am rebuilding a Meadows engine to go into a Tank I'm restoring for the Tank Museum, Bovington.

Im trying to hunt down a manual for the 6 cylinder ESTE engine fitted to the Vickers MkIV Light Tank. It has the large flat sump, with a Simms magneto ignition system running one set of plugs, and a single Solex up draught carburettor. Im happy to share some photos if anyone is interested? Or you can follow my Facebook page, via my website which has a weekly blog.

I specifically need:

piston skirt to cylinder wall clearance
timing information for both ignition and camshaft
crankshaft main and big end bearing clearances
camshaft bearing clearances
valve clearances

Ideally I'm after a manual that I can purchase which contains this information.

Im also struggling to find a full set of piston rings.

Can anyone help?

Re: Meadows Engine Help

Written by bill at Feb 02, 2017 10:34 am

Can you post some photos and also what age is the engine ?
The Lagonda type meadows engine was apparently used for marine and military pre war but there were apparently differences.

Re: Meadows Engine Help

Written by M70 at Feb 02, 2017 6:31 pm

I am pretty certain you will find the "EMERs" for this at the REME Museum Lynham. In pre Lynham days the archive was in E Shed at Bordon.

Re: Meadows Engine Help

Written by hinedavid at Feb 11, 2017 12:19 pm

I would leave 6-8 thou" piston clearance because it is a long stroke engine which will seize up if too tight.
Valve timing is IVO 10 degrees before and EVC 20 degrees after TDC
Ignition timing fully advanced at 30 BTDC to start with.
Hope this helps
David

Re: Meadows Engine Help

Written by bruffsup at Feb 12, 2017 12:19 am

What does the stroke of an engine got to do with potential seizing? Piston speed may be accelerated per rpm with a comparatively long stroke but with proper oil and cooling I thought the coefficient of expansion of the piston's alloy and whether it is forged or cast and /or cam ground and manufacturer's specs are used to determine clearances.

Re: Meadows Engine Help

Written by h14 at Feb 12, 2017 11:58 am

Barry,

The previous owner had my LG6 (Meadows) engine rebuilt by vintage engine "engineers", who (correctly) used modern TWR Volvo pistons. However they assembled the engine using modern Volvo tolerances.

Result: the engine seized after 500 miles. Reason: although maximum RPM is relatively low, the piston speed is quite high. Oil thrown up from the crank doesn't just lubricate the piston, it cools it. That oil has to travel much higher than it would in a modern short stroke engine.

So: less lubrication, less cooling (and remember that with the lower compression ratios used, engines run hotter) and higher piston speed mean that Meadows engine pistons run much hotter than the same piston in modern engines. More heat means more expansion, hence the need to use wider tolerances than the Volvo piston manufacturers state, for Meadows application.

As an aside, the "engineers" correctly diagnosed the problem with my engine, and rebored the engine...this time going too far...so my engine lacks compression and blows out oil, despite being a fully "professionally" rebuilt engine.

Laurence

Re: Meadows Engine Help

Written by Rich5ltr at Feb 12, 2017 12:30 pm

Interesting comment that lower compression ratios lead to higher temperatures. Why is that?

Re: Meadows Engine Help

Written by davidbracey at Feb 12, 2017 10:20 pm

This is my understanding and please correct me if I'm wrong.

High compression engines burn fuel much more cleanly. An unclean burn is an inefficient burn - hence more wasted energy in the form of heat.

High compression engines need to be much more accurately set up for ignition timing and correct fuel/air mixture because under higher compression combustion can begin before a spark is generated giving a much narrower ignition timing window.

Incidentally, when I bought my car it had a decompression plate fitted - presumably so that it could run on poor quality fuel available during and after the war.

Re: Meadows Engine Help

Written by Julian at Feb 21, 2017 9:40 am

Hi all,

Some interesting comments here. May I add my peneth worth.

The lower the compression the slower the burn and generally a worse burn but not always if setup really well and a very well designed engine, there are reasons for running low compression even now but would go out of the realms of this thread.

The low compression and slow burn does as is already mentioned, give more time to heat pistons, bores and combustion chambers etc and can cause a hot engine.

Too high a compression ratio can do the same for different reasons, Detonation for example, this is when the fuel near the spark plug ignites, as the flame is progressing across the combustion chamber, the yet to be ignited gasses are getting very very hot, if they get too hot before the flame progresses correctly then they explode causing detonation and a severe load on pistons and bearings etc.

We have to remember that the combustion process is a carefully timed "burn" not an "explosion"

Now on to Volvo pistons,

These are ok pistons to use and do work, BUT you need to do three things to make them work ok.

1. Volvo pistons are made for floating piston pins, the Lagonda has a pinch bolt. So in order to let the pin work correctly you will need to loosen the clearance in the piston slightly, this should be set so that the pin does not go tight at any time, even with a cold piston. Otherwise bore/piston damage

will occur very quickly.
2. Run a piston to bore clearance of 0.004" minimum, Lagonda engines do not cool evenly on all bores and in order to keep things from seizing this is a strong recommendation.
3. The run in period and process. Piston speed is not an issue on this engine if running at sensible speeds, it's well inside std levels.
However the load of a heavy car running low RPM and relatively low compression ratios (even 8:1 is considered low) the probability for problems due to heat buildup is at its greatest. Maximum danger point is low rpm coupled with heavy load. So at 1500 rpm for instance and max throttle you will kill your new engine dead! Light load and more rpm are much better for running in.
I always always always run the following procedure.

A: With ignition off, turn engine to get oil pressure.
B: Run engine in car for 5 minutes at 2000 rpm with no load.
C: Turn off and check
D: Drive car at no more load than if you were driving on a flat road with the smallest throttle opening possible. RPM up to 2500 and no lower than 1800 is fine. 5hours engine running
E: Drive at similar conditions but using only slightly more throttle, really very little but again RPM is fine up to 2800 but no lower than 1500. 5 Hours
F: Drive as if on a very gentle drive with an egg under your foot. same rpm as E but no more than 1/3 throttle. 1 Day of good driving
G: Drive again in the 1500 to 2800 rpm range for another day of real driving using no more than 1/2 throttle, (my advice is to set max throttle to half position to make things easy) Again though imagine that egg under your foot.
H: Setup day, drive and use the car as if driving on a long trip in the gentle hills of the Berkshire downs (feeling home sick now) with the odd full power run on a flat road, rpm up to 3300, (tip here, if the engine goes well up to 3k but loses some power thereafter, richen it up, I find this a lot but nowadays do all these tests with a Lambda fitted and usually on a rolling road but not always)
I: Enjoy your car with very little to worry about.

Don't let your engine get above 90 degrees at any time during the running in period. Avoid like the plague! Some places will be over 100 when your gauge is reading 90. The gauge is an average meter remember and don't use a thermostat in a Meadows 6. You have been warned and would be amazed how poor the circulation is. Although if all is up to scratch, they generally don't overheat.

Hope this helps.
Julian

Re: Meadows Engine Help
Written by bill at Feb 21, 2017 6:13 pm

Thank you Julian very much for all that. Very nice to have it all recorded.
Interesting about not using a thermostat. I have never had any faith in the thermostatically operated shutters. They only seem to operate after the event when it is too late !. Did you mean this type of thermostat or dont put a modern one in the system ?
