

## OIL PUMPS

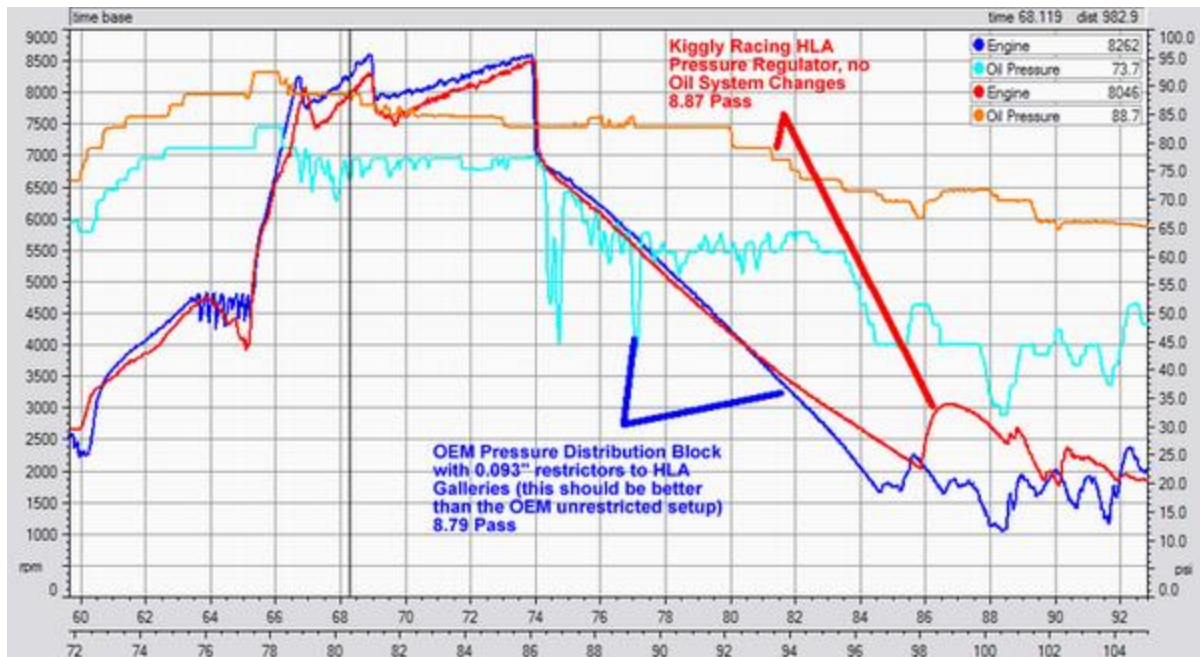
### 4G63 Engine Details

Oil pump failure is a common 4g63 ailment when combining high rpm, stock oil systems, and high acceleration.

**Oil Pickup and Starvation at Launch** - the normal root of the oil pump problems are oil starvation to the pump because the oil pickup tube gets uncovered during launch. This can start happening even in the 1.6-1.7 second 60' time range. Covering the leading edge of the oil pickup by tig welding on a simple piece of thin sheet metal like shown below can fix the oil starvation problem down into the mid-1.3's. Beyond this, a higher capacity pan is the next step. The best way to go is a deeper pan with the sump and pickup both extended down, put the pickup about 5mm from the bottom of the pan.



**Oil Starvation at Extended High RPM Use** - the 4g63 does a poor job of returning oil to the pan where it needs to be. The oil gets both stacked up in the head and suspended in a slurry in the crankcase. The longer the engine lives at high rpm, the worse the problem becomes. If you see pressure drop down off more than 20-30psi during any event (end of a 1/4mi pass for me), it is a time bomb toward destroying rod bearings and oil pumps. The more blowby an engine has, the worse this situation becomes. The [HLA Regulator](#) was developed to help with the cylinder head oil stackup situation. The wider bearing clearances that need to be run to keep bearings alive at high power levels (0.0035") also exaggerate this problem. Again, a deeper sump can help with this scenario as well as a windage tray (custom) or just simply decreasing blowby. If your oil pressure datalog looks like the worse of these below, you will eventually start having pump or bearing problems.



**Oil Type** - running a high zinc content oil is necessary to protect the oil pump during high performance usage. SAE specifications for SN and modern oils limit the street-legal zinc content to 1200ppm, which isn't optimum for protecting engine components. A specific racing oil will have higher zinc content plus potentially also add other protective oil additives like moly. I've had the best results with Pennzoil GT Racing 25w50. I've also run Royal Purple in a similar weight with good results. I did not have good oil pump life with Mobil 1 and even Brad Penn 20w50 didn't work well in my application. I know others have had great results with Brad Penn, but it didn't work well for me. In general, it is probably best to reference the oil type guide [Forced Performance](#) has on their website for turbocharger bearing durability. Everything applies the same for oil pumps. I have not run lighter weight oils in my setup due to the large bearing clearances I run, but they may be appropriate in other applications.