



# TECHNICAL BULLETIN

## GM LS AFM Deactivation Lifter Issues

We have noticed an increase in the issues surrounding the replacement of deactivation lifters in GM LS engines with Active Fuel Management or AFM. After installing new lifters the original issue may not have been corrected. Most lifters returned for analysis are found to be good. We have found that most lifter faults are caused by oil pressure issues, or control issues.

The AFM activation and deactivation is controlled by the Valve Lifter Oil Manifold or VLOM. The VLOM consists of 4 electronically operated solenoids and is bolted to the top of the engine block beneath the intake manifold assembly. Its job is to direct the flow of pressurized engine oil to the active fuel management intake and exhaust valve lifters. VLOM applies pressurized oil to the AFM lifters when cylinder deactivation is requested, and shuts off that supply of oil to reactivate those cylinders. Cylinder activation and deactivation are both supposed to occur on the base circle of the cam lobe, making the transition from four to eight cylinder mode unnoticeable to the driver. To control contamination a small replaceable oil filter (Melling part number MOF100) is located in the VLOM inlet oil passageway.

The AFM oil pressure relief valve regulates the oil supplied to the VLOM and is located in the oil pan near the oil filter housing. The AFM system has an operating range from 27 PSI to 66 PSI of oil pressure. At higher engine speeds the high side of this operating range is controlled by the AFM oil pressure relief valve. At low engine speeds the low side of the operating range will depend on the engines ability to produce oil pressure using the flow of oil from the oil pump.

The AFM lifter bores in these engines have a spec of .843-.844, and the deactivation lifters require 22 PSI of pressure to release the locking pins. Taking these two things into consideration a lifter bore that is even slightly worn could bleed off enough oil pressure to prevent the lifter from unlocking. In addition it has been reported that it is common to find the VLOM oil filter plugged and needing replacement on high mileage engines with miss-fire fault codes.

Melling has received AFM DEAC lifters back for analysis where the lifter has been stuck compressed, this condition can be caused by the VLOM commanding activation or deactivation at the wrong point in the cam's rotation, either in the ramp, or at the lobe peak.

Any time an engine has failed AFM lifters the lifter guides must be replaced, the lifter bores must be measured, and the VLOM must also be tested for proper operation, or replaced. In addition the VLOM oil filter (Melling part number MOF100) must be replaced as well. Melling also recommend the replacement of all 16 lifters anytime a failure has occurred.