



EPA '07

Update Bulletin

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Welcome to the Inaugural Edition of *EPA '07 Update Bulletin* from Detroit Diesel Corporation!

With EPA '07 just months away, we recognize there are an awful lot of questions pertaining to the new emissions standards and what it means for Detroit Diesel engines in 2007. The intent of this monthly newsletter is to help provide you with news and information relative to EPA '07 and Detroit Diesel's preparation efforts. Each month we will bring you news and details on our testing efforts, customer demonstration program, new oil and fuel requirements, engine enhancements and more. We hope you find the enclosed information useful and should you have additional questions, please feel free to contact the Detroit Diesel Marketing Department.

Top Five Things You Need to Know About EPA '07:

EPA Mandates NOx and Particulate Matter Levels be Reduced

Diesel engines manufactured after December 31, 2006, are required to meet the new EPA '07 emissions standard. This standard includes a reduction in nitrogen oxides (NOx) emissions to 1.1 g/bhp-hr (over 50% reduction) as well as a reduction of particulate matter emissions to .01 g/bhp-hr (90% reduction). The existing Exhaust Gas Recirculation (EGR) system will be optimized to meet the low NOx requirements. The particulate matter – which consists primarily of soot and ash – will be reduced through the use of an Aftertreatment System.

New Aftertreatment Device Replaces Muffler

A new Aftertreatment Device will be installed in place of the current muffler. The device includes a Diesel Oxidation Catalyst (DOC) and a Diesel Particulate Filter (DPF) used to remove particulate matter from the exhaust gas. Exhaust heat is used to burn-off the Particulate Matter collected in the DPF through a process called regeneration. A small amount of residual ash remains after regeneration that must be cleaned periodically. Detroit Diesel recommends that ash be cleaned from the DPF every 200,000 to 400,000 miles, depending on duty cycle and application.

Regeneration Process Eliminates Particulate Matter

There are three types of Regeneration – passive, active and stationary.

- Passive Regeneration takes place when exhaust temperatures exceed approx. 300-degrees Celsius. This process does not affect engine performance and is transparent to the driver.
- Active Regeneration takes place when exhaust temperature is insufficient to achieve passive regeneration. DDEC VI electronics automatically activate the intake throttle and/or the fuel doser to raise exhaust temperature and achieve successful regeneration while the vehicle is in motion.
- Stationary Regeneration – Expected to be necessary in very few customer applications. This process requires the vehicle to be parked while a driver or maintenance technician initiates the regeneration process.

New Fuels and Lubricants Required in 2007

Ultra Low Sulfur Diesel (ULSD) is required for use in all DDC 2007 heavy and medium-duty diesel engines. Further, DDC recommends that Low Ash Engine Oils be used as well. Available in October 2006, ULSD is 15-ppm diesel fuel that can be used in all diesel engines, has the same level of lubricity, but will have slightly less energy than fuel currently used. Low ash engine oils will also be usable in all diesel engines. Because burnt oil is the primary source of ash in the exhaust of a truck, low ash engine oils will contain less than 1% ash.

Aftertreatment System Technology to Change Exhaust Systems

The Aftertreatment System will only be available in a chassis mounted configuration. All of the piping will be stainless steel and a stainless steel bellow will replace strip-wound flex pipe between the turbocharger and the Aftertreatment System. The distance between the turbo and the ATD is important to maintain the exhaust temperatures required for a passive regeneration. This piping is part of the EPA certification and should not be altered or modified. Piping between the Aftertreatment System and the exhaust pipe is also critical due to higher exhaust gas temperatures and increased back-pressure and should only be modified using specific guidelines.

Top Questions About EPA '07:

Q: Will underhood temperatures run hotter due to the new Aftertreatment System?

A: No, the underhood temperatures will be no different than previous model year engines. In fact, the ATD is specifically designed to be no hotter than the muffler.

Q: What about fuel economy....how will it be impacted in 2007?

A: At Detroit Diesel, outstanding fuel economy has been our most significant product differentiator for our engines. We expect to retain this leadership position in the market with our 2007 products.

Q: What happens if I don't use ULSD?

A: Vehicles in the 2007 model year are being developed and engine control systems are being calibrated for the new fuel. Using the wrong fuel will impair the diesel particulate filter and could lead to failure of the engine's Aftertreatment System. For pre-2007 model year vehicles, there is an option of using either ULSD or higher sulfur fuel.

Q: What happens if I don't use the new CJ-4 oil?

A: CJ-4 contains less than 1% ash which is key to achieving maximum diesel particulate filter cleaning intervals. The higher ash content of current oils will increase the ash loading of the DPF and reduce cleaning intervals, however, testing on cleaning intervals is continuing. Also, it's important to note that CJ-4 is not designed to run with 500 PPM fuel.

This concludes the March 2006 edition of *EPA '07 Update Bulletin*, if you are not interested in receiving this newsletter in the future, please respond to this e-mail to have your name removed from the distribution list. Thank you!