AFTERTREATMENT SYSTEM 2007 EMISSIONS

DETROIT DIESEI



WE'RE DRIVING TECHNOLOGY.

HERE'S WHAT'S INCLUDED IN THE DDC 2007 EXHAUST AFTERTREATMENT SYSTEM.

The Detroit Diesel Corporation (DDC) system is composed of several interacting components functioning as an integrated system to reduce engine exhaust emissions. Our Aftertreatment System relies on the history of a great controller – Detroit Diesel Electronic Control (DDEC). In 2007 DDEC VI will provide operations management of both the engine and Aftertreatment System.

THE AFTERTREATMENT DEVICE (ATD)



The workhorse behind our clean emissions technology is an exhaust Aftertreatment Device (ATD) which replaces today's muffler. The device's

primary function is to capture and burn off (regenerate) the particulate matter (soot) in the engine exhaust gas. The ATD is split into two main sections. The exhaust gas first enters the Diesel Oxidation Catalyst (DOC) and then flows through the Diesel Particulate Filter (DPF); together they capture and regenerate the soot on a regular or passive basis. Through constant monitoring of the exhaust gas temperature and the system back pressure, DDEC VI is able to manage regeneration.

ACTIVE REGENERATION

When required, DDEC VI activates two key upstream systems that assist in a process we call "active" regeneration. The first is an Intake Throttle Valve which can be actuated to help increase the Aftertreatment Device temperature which speeds the regeneration. The second system is the Dosing System, which injects a mist of diesel fuel into the exhaust system to increase and maintain the Aftertreatment Device temperature. This process of "active" regeneration takes place during the normal operation cycle of the vehicle without changes in performance or control for the operator.

STATIONARY REGENERATION

In a small number of specific engine duty cycles DDEC VI may not be capable of completing an active regeneration. In these situations the operator will be notified that a "stationary" regeneration may be required. A DPF dash lamp will illuminate indicating the need for user interaction. The lamp gives the operator a grace period to allow this process to take place at a time when most convenient for the operator. Once initiated by the operator, the stationary regeneration process will be complete in about 20 minutes.

This same system and all of the functions described will be applied to the entire line up of environmentally friendly 2007 Detroit Diesel engines.



OPERATING REQUIREMENTS AND MAINTENANCE

ULTRA LOW SULFUR DIESEL (ULSD) FUEL

Just as catalytic converters were added to passenger cars in the 1970's, fuel requirements were changed to protect the device by removing lead from gasoline. In 2007 a similar change is required for diesel fuel, to protect the Aftertreatment System by lowering the sulfur content below 15 parts per million. The higher sulfur content in today's fuel will cause damage to your Aftertreatment Device. Throughout 2006, the fuel industry will introduce Ultra Low Sulfur Diesel Fuel to pumps across the nation. ULSD is also reverse compatible for use with older engines.

CJ-4 OIL



To ensure your engine and Aftertreatment System achieve the most desirable maintenance intervals, a

modified engine oil formulation was released. The oil manufacturers will produce a new oil formulation (CJ-4) with less than 1.0 wt. % sulfated ash to help extend the ash maintenance cycles for the Diesel Particulate Filter. The Diesel Particulate Filter regenerates the combustible soot, but the ash (a product of the oil lubricant package) slowly accumulates in the channels of the Diesel Particulate Filter.

DIESEL PARTICULATE FILTER MAINTENANCE

How often is Diesel Particulate Filter maintenance required? The ash that accumulates in the filter will eventually cause an increase in exhaust back pressure. DDEC VI will constantly monitor the ash accumulation and forecast the approximate time until DPF ash cleaning is required. This information is stored in DDEC VI and will be accessible by using the Detroit Diesel Diagnostic Link. This allows you the opportunity to plan for the DPF ash cleaning interval. If ash cleaning is not performed proactively, and the back pressure increases beyond the system limit, DDEC VI will flag the Amber Warning Lamp (AWL) on the dash, notifying the operator an ash cleaning is required. For most vehicle applications and duty cycles, this will occur after approximately 200,000 - 400,000 miles of operation.

Detroit Diesel Corporation, with the support of the DaimlerChrysler network of research and development partners, has worked to ensure you the comfort of having a proven maintenance strategy. In fact, our experience servicing and cleaning Diesel Particulate Filters started after we sold the first retrofit filters in 2000. Since that time, our organization has emphasized the importance of integrating maintenance and product design for our 2007 Diesel Particulate Filter.

Our Aftertreatment Device has been designed for easy removal of the Diesel Particulate Filter section. Studies have shown the best cleaning results and the lowest overall service time was gained by removal of the Diesel Particulate Filter from the vehicle. DPF removal and replacement for most vehicle applications takes only about 30 minutes.



AFTERTREATMENT System

OUR MAINTENANCE PROCESS PROVIDES 2 STAGES OF DPF CLEANING.

STAGE 1 - COMPRESSED AIR ASH REMOVAL

This cleaning can be performed at a service shop in combination with other scheduled maintenance. The process requires the DPF to be regenerated on the vehicle prior to its removal. This regeneration burns off any combustible soot remaining in the filter, helping to improve the cleaning efficiency. After regeneration, the DPF is cooled and removed from the vehicle. The DPF can now be connected to a pressurized air cleaning system that flushes out loose ash particles from the DPF. We estimate the total service time for a Stage 1 cleaning to take about 2 to 3 hours.

STAGE 2 - REMAN EXCHANGE PROGRAM

Utilizing a more rigorous cleaning process that offers superior ash cleaning efficiency compared to the Stage 1 process described above may sometimes be required. Stage 2 cleaning is a proprietary washing process which is only available with Detroit Diesel Particulate Filters. This is due to our product design which allows the removal of ash using a liquid washing process. Because of the necessary time, equipment and facilities required to complete this type of cleaning, it will be made available as a Remanufactured Product. This provides you with all the benefits of a genuine Detroit Diesel remanufactured part.

PARTS AND SERVICE

Parts and service are available at more than 800 Detroit Diesel authorized service locations throughout North America. Factory certified technicians know both your engine and Aftertreatment System inside and out and are ready to help. For roadside assistance, technical support or locating the nearest service center, contact the Detroit Diesel Hotline at 1-800-445-1980.

BOO DETROIT DIESEL AUTHORIZED SERVICE LOCATIONS





AFTERTREATMENT SYSTEM



WWW.DETROITDIESEL.COM



For more information, call 1-800-445-1980. www.detroitdiesel.com PT 3M, 6SA2004 (0603).

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