

EXHAUST SYSTEM



The following can be negatively affected by not using the recommended API rated engine oil are:

- increased particulate matter in the aftertreatment system may cause more ash build up in the DPF
- more frequent DPF regenerations
- reduction of DPF service life
- engine oil system

Regeneration Process

As soot gathers in the aftertreatment system, the exhaust begins to become restricted. Regeneration is the process in which soot is burned off from the inside of the DPF. Regeneration can be commanded by the PCM or the scan tool.

The PCM starts regeneration of the DPF if the soot load exceeds a calibrated value. The PCM determines the load condition of the DPF, based on the exhaust gas pressure upstream of the DPF. The DPF pressure sensor provides the pressure input to the PCM.

This soot can be cleaned by passive, active, or manual regeneration. Manual regeneration is performed using the IDS.

Passive Regeneration

Passive regeneration takes place when exhaust temperatures exceed 300°C (572°F). This process does not affect engine performance and is transparent to the driver.

Active Regeneration

Active regeneration occurs when exhaust temperatures are insufficient to achieve passive regeneration and the DPF pressure sensor is indicating the need for regeneration.

The PCM automatically activates the left bank fuel injectors during the exhaust stroke to raise exhaust temperature to begin regeneration while the vehicle is in motion.

Engine performance is not affected by active regeneration, however the engine or exhaust tone may change.

Manual Regeneration

The IDS can be used to perform a manual regeneration of the DPF in the shop and set the ash value under stationary conditions to clean and calibrate the system. The Malfunction Indicator Lamp (MIL) may illuminate when service or maintenance of the DPF is necessary.

CAUTION: The manual regeneration of the DPF produces high temperatures in the exhaust system. Due to high exhaust gas temperatures, always follow the Workshop Manual Cautions, Warnings, and procedures when performing a manual DPF regeneration.

Frequency of Regeneration

The mileage between regenerations varies significantly, depending on vehicle usage.

Post Regeneration

After regeneration, the PCM reads the pressure at the DPF pressure sensor and compares it with a calibrated value. From this comparison, the PCM determines the ash quantity inside the DPF.

Non-Burnable Ash

Over time a slight amount of non-burnable ash builds up in the DPF which is not removed during the regeneration process. Ash comes from the fuel, oils and other materials that remain after the DPF regeneration process. The DPF may need to be removed for ash cleaning and replaced with a new or remanufactured part.

Handle the DPF with care. Dropping the DPF may cause internal damage.