Additions, Revisions, or Updates

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13400 Outer Drive, West, Detroit, Michigan 48239-4001
Telephone: 313-592-5000
www.demanddetroit.com
2 EPA10 Aftertreatment Regeneration Strategy

Regeneration of the Aftertreatment Device (ATD) is fundamental for the oxidation of soot. This process happens during the normal operation cycle of the vehicle; it can occur both passively and actively. The operator will see no difference in vehicle performance or vehicle control. There are three types of regeneration that can occur, Active, Passive, and Parked Regeneration.

EPA10 Zone Trigger

![Diagram showing EPA10 Zone Trigger with soot load, max g/L, and zone specific actions]

Zone Specific Actions:
- Soot Loading/Passive
- Low Temp Regen is active
- 25% Derate
- Parked Regen Allowed - High Temp

Time:
- + 13 Hrs
- + 3 Hrs

Max g/L

Soot Load (g/L)
EPA10 Regeneration Strategy

Figure 1. EPA10 Regeneration Strategy

<table>
<thead>
<tr>
<th>Engine &amp; Release Info.</th>
<th>Zone 1 Trigger (Auto Regen)</th>
<th>Zone 2 Trigger (Auto Regen)</th>
<th>Zone 3 Trigger (Auto Regen)</th>
<th>Zone 4 Trigger (Parked Regen)</th>
<th>Zone 5 Trigger (Parked Regen)</th>
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<tr>
<td>DD13</td>
<td>20-90 Hrs</td>
<td>+13 Hrs from Zone 1</td>
<td>+15 Hrs from Zone 1</td>
<td>+16 Hrs from Zone 1</td>
<td>+19 Hrs from Zone 1</td>
</tr>
<tr>
<td>DD15</td>
<td></td>
<td></td>
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<tr>
<td>DD16</td>
<td></td>
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3 Passive Regeneration

Passive regeneration occurs during normal operation when the engine is running at higher loads, which increases exhaust temperatures. This process happens automatically during the normal operation cycle of the vehicle. The operator will see no difference in vehicle performance or vehicle control.
4 Active Regeneration

Active regeneration mode is controlled by Detroit Diesel Electronic Controls (DDEC). Two systems are used to elevate the exhaust gas temperatures: the intake throttle valve, and the fuel dosing system. The intake throttle valve is actuated to increase exhaust temperatures high enough to start the regeneration process. Fuel is then injected into the exhaust by the fuel dosing system. The injected fuel is oxidized in the Diesel Oxidation Catalyst (DOC), elevating temperatures into the Diesel Particulate Filter (DPF) above passive mode operating temperatures. At these temperatures, soot is regenerated faster than in the passive regeneration mode. The High Exhaust System Temperature (HEST) Lamp, located on the dash display, will only illuminate if the vehicle speed drops below five miles per hour and the exhaust temperature is above 525°C (977°F).

Figure 2. High Exhaust System Temperature (HEST) Lamp
5 Parked Regeneration

When the parked regeneration request is accepted, the Diesel Particulate Filter (DPF) Regeneration lamp will turn ON one time for one second and then turn off for the remainder of the parked regeneration. The High Exhaust System Temperature (HEST) lamp will flash for one second every ten seconds and eventually become solid when the tailpipe temperature is above 525 °C (977 °F).

The engine speed will increase to 1100 RPM for all EPA10 DD Platform engines. The regeneration will take approximately 30-40 minutes. The regeneration is complete when the engine returns to low idle and the DPF lamp remains OFF. The HEST lamp will remain ON, but the vehicle may be driven.

A parked regeneration will STOP and the engine will return to low idle if any of the following happens:

- The key is turned to the OFF position
- The vehicle is put into gear
- The clutch is cycled
- The parking brake is released

The sequence of indicator lamp(s) is as follows:

1. The DPF Regeneration Lamp will be illuminated solid prior to any engine protection measures being taken. Once this lamp is illuminated, the vehicle should be brought to highway speeds for an Active Regeneration or a Parked Regeneration should be performed as soon as possible.

2. Once the DPF regeneration lamp illuminates flashing, the vehicle should be brought to highway speeds for an Active Regeneration or a Parked Regeneration should be performed as soon as possible. If the flashing DPF is ignored, the AWL/Check Engine, will illuminate. This will be accompanied by a 25% engine torque reduction. A Parked Regeneration is required to regenerate the DPF.

3. If a parked regeneration is still not initiated, the engine will shut down causing a standard 60 second shutdown sequence. All of the following instrument panel lamps will be present: flashing DPF Regeneration Lamp, solid AWL/Check Engine, and solid RSL/Stop Engine. Once this engine shutdown sequence is completed, a parked regeneration must occur to continue vehicle operation.
When the regeneration request is accepted, the Diesel Particulate Filter (DPF) Regeneration lamp will turn on one time for one second and then go off for the rest of the parked regeneration. The engine speed will increase to 1100 RPM for all EPA10 DD Platform engines.

The regeneration will take approximately 30-40 minutes. The regeneration is complete when the engine returns to low idle and the DPF lamp remains off. The HEST lamp will remain on, but the vehicle can be driven.