



Technical Bulletin

Diesel Oxidation Catalyst Installation, Operation, and Maintenance



National Clean Diesel Campaign

www.epa.gov/cleandiesel

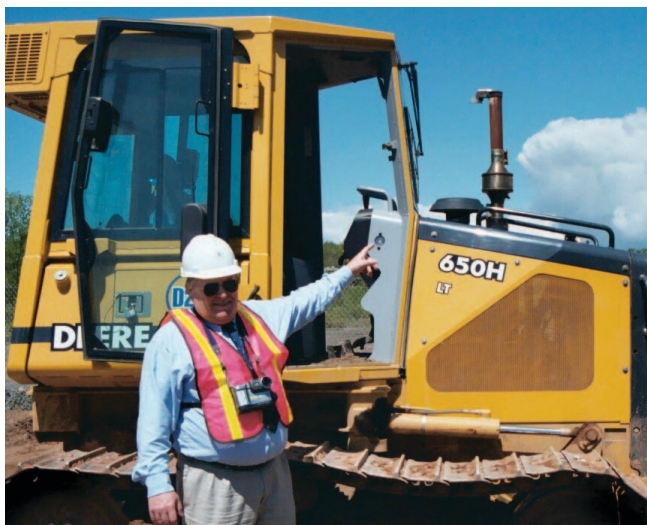
Pre-Installation

Prior to installing any retrofit device, it is important to perform a thorough engine inspection and review maintenance records to ensure proper engine operation. Vehicles with excessive fuel or lubrication oil consumption should be repaired prior to installing retrofit technologies. Excessive blowby emissions can be a sign of engine wear and further inspection of the engine may be necessary. Prior to installing a retrofit, the exhaust system integrity should also be confirmed.

Technology Selection

To select the best Diesel Oxidation Catalyst (DOC) for a specific vehicle, it is necessary to identify:

- Vehicle Type: Highway or Nonroad
- Vehicle Class: School Bus, Class 8A Tractor, Ferry, Locomotive, Forklift, etc
- Vehicle Specifications: Manufacturer, Model, Model Year
- Engine Specifications: Manufacturer, Model, Model Year, Displacement, Horsepower, Engine Location on Vehicle, Turbo-charge, Exhaust Gas Recirculation (EGR)
- EPA Engine Family Name: Can be found on the engine's emission label and contains 12 or 13 characters such as TCP7.2RZBDBRB or 3NVXHO466ANA



**Diesel Oxidation Catalyst (DOC)
on Track Dozer**

- Annual Miles Traveled (Highway) or Annual Hours of Operation (Nonroad)
- Engine-out PM emission levels
- Any unique vehicle, equipment or engine operation that may create unusual conditions on the exhaust system or DOC. Conditions such as high vibration or shock loading may warrant special consideration in DOC selection and/or mounting.

The United States Environmental Protection Agency (EPA) and the California Air Resources Board (CARB) maintain lists of verified diesel retrofit technologies that define the specific applications and engine operating criteria that must be met to successfully apply a particular retrofit technology (www.epa.gov/otaq/retrofit/verif-list.htm). When installed as described on the verified technologies list and within the verified scope of coverage, a device is expected to achieve the verified performance and durability.

Exhaust Temperature Data Logging

To achieve verified levels of emissions reductions DOCs typically require a minimum exhaust gas temperature of 150°C. This temperature requirement is met in normal operation with most duty cycles. Data logging is not typically necessary to evaluate acceptable exhaust gas temperatures prior to DOC installation.

Installation

Installation may be performed by the retrofit supplier, or the retrofit supplier may provide training to fleet personnel to perform installation.

In most applications, the DOC may be configured to match the dimensions of the conventional muffler and can be installed as a muffler replacement. In other cases the space available for DOC installation on the vehicle or equipment is very restricted and the DOC configuration must be custom-designed. Safety, visibility, and vibration issues may also need to be addressed by a custom

installation. The time required for DOC installation will vary depending on the situation and is generally one to three hours.

Since a DOC typically weighs more and may be larger than the muffler, stronger clamps and brackets are required in place of those used with the original muffler. Failure to utilize appropriate hardware and follow mounting instructions can result in a failure of support brackets and damage to the equipment or vehicle.

The DOC must be mounted within a set distance of the exhaust manifold, as specified by the manufacturer. While not normally necessary, exhaust pipe insulation may be used to retain heat when the DOC is mounted a long distance from the turbo charger.

Documentation should remain with the vehicle and/or in fleet records which lists installation and vehicle information such as mileage, date, device model number, installer, etc.

Operation and Maintenance

Once properly installed, DOCs require little maintenance. DOC manufacturers and product suppliers should provide vehicle service technicians with training on proper retrofit maintenance procedures. Periodic inspection and tightening of mounting hardware is typically appropriate.

Plugging is very rare, but it can occur in older, high-emitting or poorly maintained vehicles and/or if an engine has a mechanical failure. Long duration idling should also be avoided. If a DOC is overwhelmed with unburned fuel or lubricants (ash) it may need to be cleaned and the manufacturer's instructions should be followed.

It is important to properly maintain vehicles and monitor fuel and lubrication oil consumption. A bad fuel injector or increased oil consumption may be masked by a DOC. The DOC may be damaged by excessive fuel or oil consumption or a poorly maintained engine.