How long will it take to install a DOC Muffler?

Since DOC Mufflers are like a muffler replacement, installation typically takes the same amount of time as a muffler replacement – typically 1- 1.5 hours. Donaldson offers a wide range of generic and custom mounting hardware kits to facilitate installation.

Can I re-use the hardware from my existing muffler to install the DOC Muffler?

DOC Mufflers weigh approximately 50% more than the standard OEM mufflers. Donaldson recommends that new heavy duty hardware be used for installation. Inspect any hardware you intend to reuse to ensure it is in good condition and can support the added weight. Do not use hardware with signs of rust, corrosion or fatigue. Replace all questionable components with heavy duty components.

Can a DOC Muffler plug?

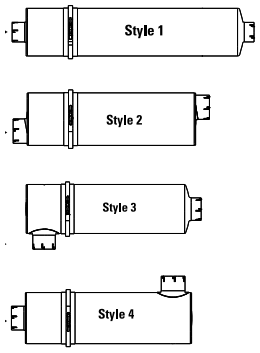
Under normal operation, a DOC would not be expected to plug. However, poorly maintained engines or operation in extreme cold may cause face plugging. Engines should always be maintained in accordance with the manufacturer's recommendations to maintain proper operation and minimize problems.

DOC's Mufflers may also plug due to engine failure. The two most common engine failures that can plug a DOC are fuel injector or turbocharger failures that result in fuel or lube oil being fed into the exhaust system.

Can a plugged DOC Muffler be cleaned?

Face-plugged DOC Mufflers and ICC's can often be cleaned by operating the vehicle under full load for 20-30 minutes. For example, taking a fully loaded vehicle onto the freeway or driving through hills can often provide sufficient heat to clean the face.

Face plugging caused by engine failures may not respond favorably to this approach. In those cases, the DOC Muffler or ICC may need to be replaced. Donaldson also offers take-apart DOC models that can be purchased that allow catalyst cleaning in the event of an engine failure. In this case, the DOC can be removed from the muffler body and baked clean. Contact Donaldson for more information on take-apart DOC Mufflers and cleaning information.



Shoptalk

Maintenance tips, cost reduction ideas and product features and benefits from the filtration and emissions experts – simple facts every diesel engine owner can use!

www.shoptalk.donaldson.com

Donaldson

Donaldson Company, Inc.
Minneapolis, MN
55440-1299

www.donaldson.com/emissions

Brochure No. F115189 (09/06)

Diesel Oxidation Catalyst (DOC) for Emission Retrofits

A Cost-effective Approach for Diesel Emissions Control

A DOC Mufflers are an extremely reliable and cost-effective retrofit solution for in-use diesel powered vehicles and have been successfully applied to a variety of markets or applications

This document has been prepared to answer common questions about this cost-effective retrofit solution and it's maintenance impact.

What is a DOC Muffler?

A DOC Muffler is an integrated catalytic converter and muffler that replaces your existing muffler and reduces unwanted tailpipe emissions from diesel engines. They are an extremely reliable and cost-effective product, and have been applied broadly on school and urban buses, as well as refuse trucks and municipal vehicles. Donaldson DOC Mufflers are CARB and US EPA-verified for 1988-2006 model year engines rated from 150-600 hp.

DOC Mufflers incorporate flow distribution and noise reduction elements, and a diesel oxidation catalyst (DOC). DOC's are typically extruded ceramic substrates coated with a platinum-based precious metal catalyst. The catalyst allows a flameless burning or oxidation of diesel exhaust pollutants. A DOC typically removes between 15-30% of particulate matter (PM) emissions, and a portion of the carbon monoxide (40%) and hydrocarbon (60%) emissions.

Donaldson also offers independent catalytic converters (ICC's) for retrofit installations where converter mufflers are not available or won't fit. The compact ICC contains an inlet, outlet and DOC only to minimize package size. It is typically installed in front of the standard OE muffler.

Are Donaldson DOC Mufflers verified?

Yes, Donaldson's DOC's Mufflers are verified by the U.S. EPA and CARB by themselves or for use in combination with the Spiracle crankcase filter.

How do DOC Muffler costs compare with other products?

DOC's are the most cost-effective diesel emission reduction technology when considering 'cost per percent reduction'. Based on current market pricing show, DOC Mufflers cost ½-to-2/3 of the 'cost per percent reduction' compared to DPF's or partial filters.

Their effectiveness can be enhanced further with the application of Donaldson Spiracle™ crankcase filter system to provide a "total emissions approach" and even greater reductions (and lower cost per percent reduction). The main drawback of DOC Muffler technology is that they do not achieve the high PM reductions sought in some of the programs, like California's Diesel Risk Reduction Program.

Can DOC Mufflers be applied to any vehicle?

DOC Mufflers can be applied to nearly all vehicles. They are extremely reliable and will perform well with nearly any duty cycle and hp range. They have been used significantly in retrofit, but also first-fit applications. For example, DOC converter mufflers came standard on many Caterpillar and Cummins medium duty engines from 1994-1997, as well as on Caterpillar ACERT engines since 2001.

How long does a DOC Muffler last?

DOC Mufflers are designed to last 8-10 years. They are constructed of aluminized-409 stainless steel for strength and corrosion resistance. Donaldson warrants this product in accordance with the California ARB and U.S. EPA retrofit program requirements.

Is there an increase in maintenance associated with DOC Muffler use?

No. DOC Mufflers are extremely reliable and maintenance free with normal operation. There are no minimum temperature requirements and they can be applied on a wide range of engine horsepowers (150-600 hp), model years (1988-2006) and duty cycles. Expanded use of the DOC technology on a retrofit basis is expected during the next decade.

Are there minimum temperature requirements for a DOC Muffler to operate effectively?

No. DOC's become activated above 150°C, compared to diesel particulate filters (DPF's) which require 200-240°C. The DOC activation temperature is normally reached during engine idling or even light duty cycles.

Are there any special fuel requirements for DOC Mufflers?

No. DOC's are very reliable and flexible. They can be used with on-road fuel (500 ppm sulfur), ultra low sulfur diesel (ULSD) fuel (15 ppm sulfur) and biofuels/petrol blends, like biodiesel and ethanol.

Please note that all catalytic systems provide higher reductions and have a longer life when operated with the lowest fuel sulfur level available. Please consider this when evaluating fuel choices for your engines and aftertreatment. Do not use with off-road fuel (3000 ppm sulfur).

Can biodiesel fuel be used with DOC Mufflers?

Yes. Donaldson DOC Muffler and ICC's can be used with biodiesel/petrol blends of up to B20 (20% biodiesel; 80% regular petrol diesel). Please check with your engine manufacturer to ensure the engine can be operated with biodiesel before making fuel conversions as some engine seals and gasket materials may be adversely impacted by biodiesel.

How do I select a DOC Muffler for my application?

Donaldson has developed many standard DOC Muffler designs for on-road and off-road engines. It is important to select the right style (inlet/outlet configuration), dimensions and hp ratings for the given engine. Please see the Donaldson DOC Muffler brochure on our web site for available choices.

What if I cannot find a direct match?

You should select the model that is the closest match to minimize installation efforts. It is not uncommon to have some rerouting of piping for a retrofit.

Application of an ICC is another alternative if sufficient space exists. Existing mufflers should be left in tact when using an ICC.

How do I maximize the DOC Muffler performance?

The engine must be well maintained and inspected regularly by a qualified mechanic to verify the engine is operating within the engines OEM's specifications. If the engine does not meet specifications, necessary repairs must be made to maximize the DOC Muffler.