

**A High Efficiency
Emissions Retrofit Solution with
Minimal Maintenance -
The Diesel Multi-stage Filter (DMF) Muffler**



The **patented**¹ Donaldson DMF Muffler offers a new level of emission reduction for 1994-2002 model year diesel-powered engines. As a tailpipe solution, this product will reduce your diesel PM emissions up to 60%!

Reduce your total vehicle emissions even more with our **patented**² combination - the DMF Muffler and Spiracle™ Crankcase Filtration System.

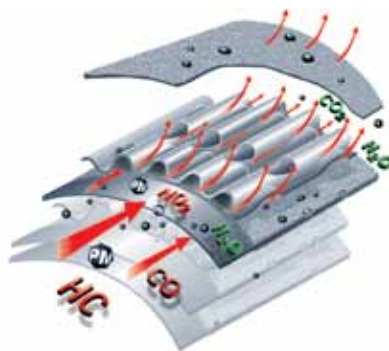
1 U.S. Pat. No. 7,340,888

2 U.S. Pat No. 7,278,259; 7,257,942

Donaldson®

High Efficiency Filtration with Minimal Maintenance

... our DMF Mufflers DO NOT require routine ash cleaning



Partial Flow Through Filter
The DMF Muffler uses a two-stage metallic filter to trap and reduce diesel particulate matter (PM). Each filter stage consists of alternating layers of a corrugated metal and a porous sintered metal fleece. The unique catalyst coating reduces PM, HC and CO, while minimizing NO₂ emissions (<20% increase).

Cut-away view of a Donaldson DMF Muffler

Take-apart design allows easy filter access in the event of an engine failure

Two Corrugated Metal Filter Stages



Broad Engine Coverage

- Approved for four-stroke on-road diesel engine applications with engine horsepower ranges of 150-600 hp
 - 1994-2002 model engines (0.10 g/bhp-hr PM or less) with exhaust temperatures of 210° C for 40% of time and average exhaust temperature of 210° C or above
- For even more emission reductions, consider ordering a kit that includes the Donaldson closed crankcase filtration system - Spiracle™ and DMF Muffler.

Low Maintenance

- Designed to be maintenance-free, the DMF Muffler does not require ash cleaning.
- Take-apart design allows easy removal of the centerbody (filter) section in the event of an engine failure. Centerbody section is "keyed" to insure proper orientation when reinstalling.
- Normal engine PM required.

Compliant

- Verified by CARB to meet Level 2+ (>50% reduction) for the Diesel Risk Reduction Program (DRRP); the '+' designation indicates compliance with CARB and EPA NO₂/NO_x limits (<20% increase)
- Reduces diesel particulate matter (PM) up to 60% (and more with the addition of a Spiracle CFS)
- Meets U.S. Federal noise regulations
- Meets engine manufacturer backpressure limits

Acceptable Fuel Types

- Ultra Low Sulfur Diesel (ULSD - < 15 ppm sulfur)
- BioULSD – maximum B20 blend (20% biodiesel/80% ULSD diesel). Biodiesel blend stock must meet ASTM D 6751 and blend with ASTM D 975 (1-D or 2-D)

Durable and Warranted

- Meets U.S. EPA and CARB DRRP warranty requirements
- Constructed of aluminized-409 grade stainless steel for strength and corrosion resistance

Engineered for Performance

- Includes Emissions Device Monitor (EDM) with every DMF Muffler. The EDM detects excessive soot loading caused by insufficient temperature, poor maintenance, or engine component failure
- Patented flow distribution devices¹ enhance catalyst performance, deliver uniform airflow and temperatures across the catalyst, and reduce exhaust backpressure



Pre-Selection Requirement

Data logging a vehicle under normal operating duty cycle is the key to reliable DMF Muffler operation.

The Donaldson data logger is a device temporarily installed on a vehicle to collect vehicle/engine exhaust temperature data.

The collected data is reviewed by Donaldson engineers who will determine if a DMF Muffler is the right solution for the vehicle.



Donaldson data logger kit X007947. Software and link-up cable, X007948)

Need a School Bus Retrofit Kit?



We offer DMF Muffler kits (with mounting hardware) for popular school bus makes including: AmTran, Bluebird, Carpenter, Ford (vans), International and ThomasBuilt.

Call your local emissions dealer or go to the product literature section of our Emissions+Exhaust web site search for Doc. No. F111150.

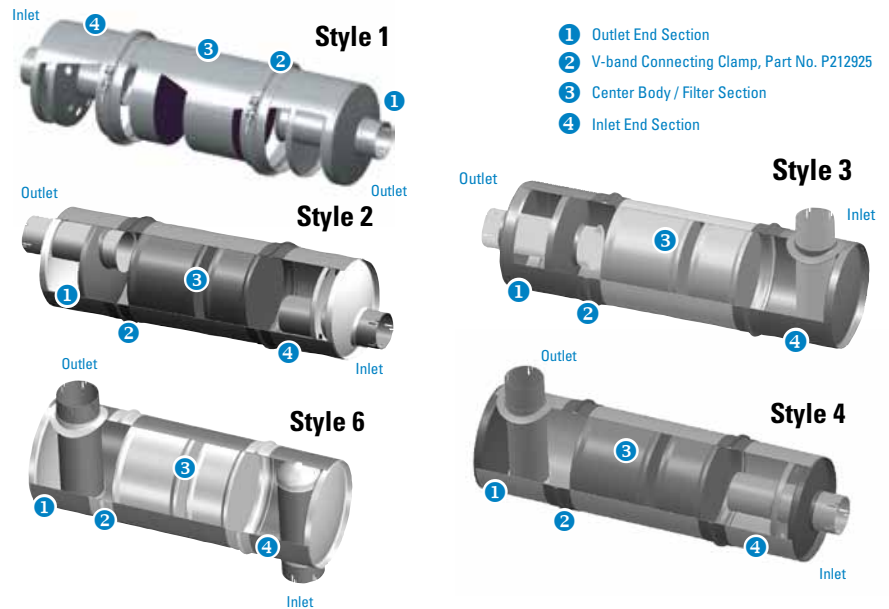
Pursuing designs for low NO_x and off-road applications!



DEVICES FOR VEHICLES OPERATING OUTSIDE OF CALIFORNIA

DMF MUFFLER KITS

The DMF Muffler Kits include metal tags with the following Diesel Emission Control Strategy identification: CA/DON/2005/BART2/ON/DOC01



Product selection is based on exhaust flow and current muffler style.

Inlet I.D.	Outlet I.D.	Body Length	Overall Length	Body Dia.	DMF Muffler Kits	DMF Muffler Service Parts		
						Inlet Section	Outlet Section	Center Body
< 1600 CFM (~300 HP)								
Style 1								
4.0"	4.0"	36.0"	42.5"	11.0"	X010151	P226335	P229002	P228434
	5.0"	36.0"	42.5"	11.0"	X010152	P226335	P229006	P228434
5.0"	5.0"	36.0"	42.5"	11.0"	X010153	P226336	P229006	P228434
Style 2								
3.5"	4.0"	36.0"	42.5"	11.0"	X010154	P227630	P229032	P228434
4.0"	4.0"	36.0"	42.5"	11.0"	X010155	P227240	P229032	P228434
5.0"	5.0"	36.0"	42.5"	11.0"	X010156	P229007	P230861	P228434
Style 3								
4.0"	4.0"	36.0"	39.5"	11.0"	X010157	P226339	P229002	P228434
	5.0"	36.0"	39.5"	11.0"	X010159	P226339	P229006	P228434
5.0"	5.0"	36.0"	39.5"	11.0"	X010160	P229003	P229006	P228434
Style 4								
3.5"	4.0"	36.0"	39.0"	11.0"	X010161 ⁽³⁾	P227630	P229033	P228434
4.0"	4.0"	36.0"	39.0"	11.0"	X010162	P226335	P229033	P228434
5.0"	5.0"	36.0"	39.0"	11.0"	X010754	P226336	P232412	P228434
Style 6								
4.0"	4.0"	36.0"	36.0"	11.0"	X010755	P226339	P229033	P228434
5.0"	5.0"	36.0"	36.0"	11.0"	X010756	P229003	P232412	P228434
1600-2700 cfm (300-450 hp)								
Style 1								
5.0"	5.0"	36.0"	42.5"	13.0"	X010163	P229849	P231731	P231727
Style 2								
5.0"	5.0"	36.0"	42.5"	13.0"	X010164	P231928	P232018	P231727
Style 3								
5.0"	5.0"	36.0"	39.5"	13.0"	X010165	P229852	P231731	P231727
Style 4								
5.0"	5.0"	36.0"	39.0"	13.0"	X010166	P229849	P232014	P231727
Style 6								
5.0"	5.0"	36.0"	36.0"	13.0"	X010167	P229852	P232014	P231727

Each kit will include an Emission Device Monitor (EDM).

3 Inlet offset from center position

DMF Muffler Mounting Hardware

A Donaldson Emissions Hardware and Mounting Accessories brochure is viewable from www.donaldsonexhaust.com. See the Product Literature or search for document F111200.

Donaldson recommends replacing any original mounting hardware with new, heavy-duty versions. The addition of catalyzed substrate increases the overall weight and requires heavier-duty mounting bands and clamps. Donaldson recommends using two new mounting brackets and SealClamps™ for a DMF Muffler installation.

- Reuse existing frame mounting bolts
- Materials are either zinc-plated or aluminized mild steel.
- Emissions accessories are more durable compared to standard OE exhaust system components on pre-2007 vehicles.

Spiracle™ Crankcase Filtration System

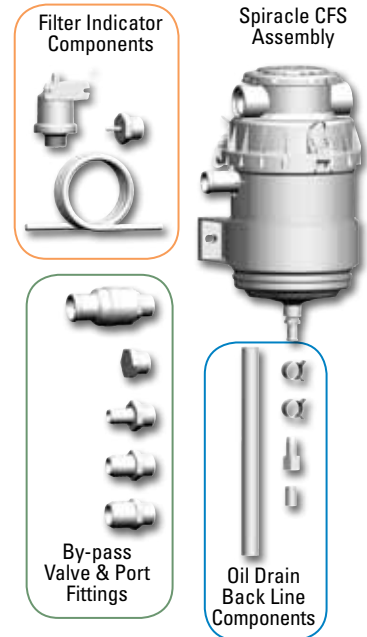
The Donaldson Spiracle Crankcase Filtration System eliminates 100% of engine crankcase emissions and is a great solution to reduce emissions caused by idling. Independent studies have also found Spiracle CFS improves in-cabin air quality.⁴

Spiracle CFS requires a routine filter maintenance change.

Donaldson Spiracle™ Crankcase Filtration System is protected internationally by patents, both issued and pending.



Generic Spiracle CFS Retrofit Kit



4 - The complete published report, *A Safer Ride to School: How to Clean Up School Buses and Protect Our Children's Health*, is at <http://www.catf.us/publications/view/82>. A separate report, *A Case for the Healthy School Buses*, by The Southern Alliance of Clean Energy, which was based on data from the CATF study is at www.cleanenergy.org/schoolbusreport.com



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