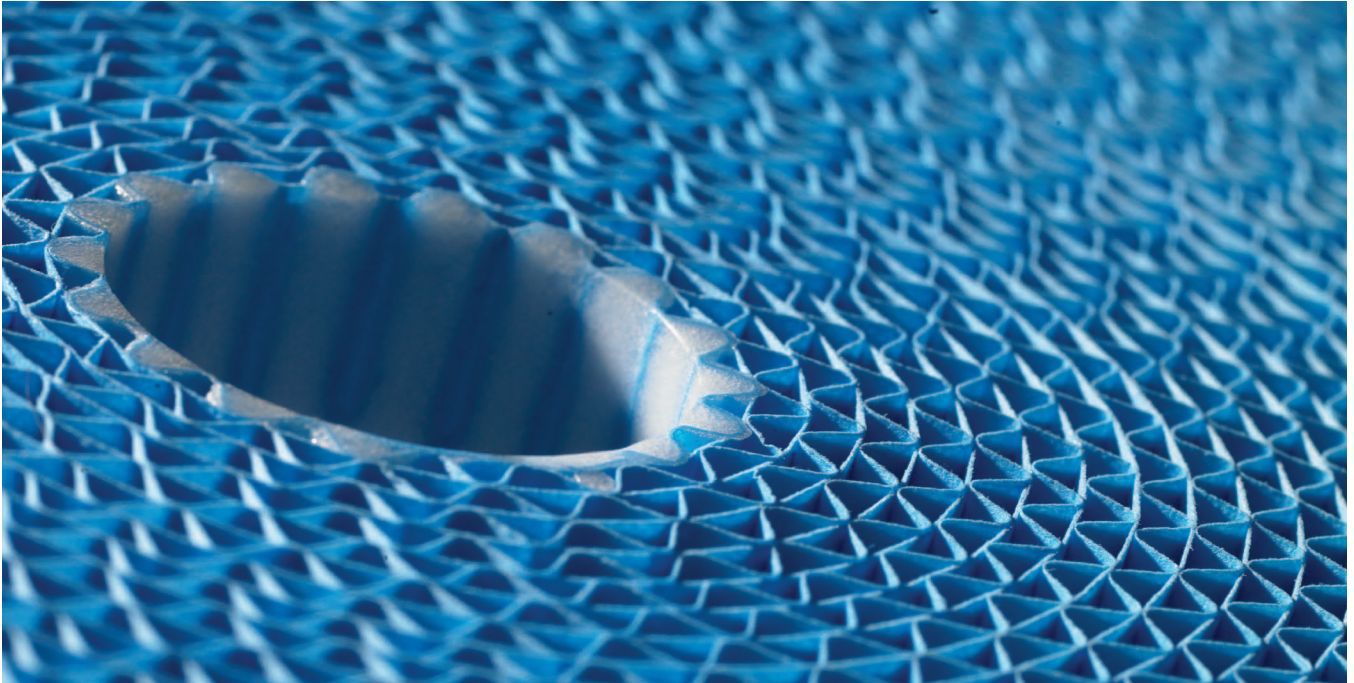




Donaldson Delivers

# **PowerCore® G2 and Ultra-Web® Filtration Technology**



**PowerCore® G2**  
with Ultra-Web® Filtration Technology

**Big Performance, Small Footprint**

# Innovative Filtration Solutions for Engines, Equipment and the People Who Use Them

## Quality You Expect

Relying on products and services that consistently delight you are fundamental to your business success. Donaldson works tirelessly to introduce industry shaping filtration products and technologies and to improve processes and services that ensure your complete satisfaction.

## Performance You Need

When you choose PowerCore® G2 filtration technology for your air intake systems, you can be confident that Donaldson will deliver a complete system that provides reliable engine protection during the life of your vehicle or engine.

## Support You Won't Find Anywhere Else

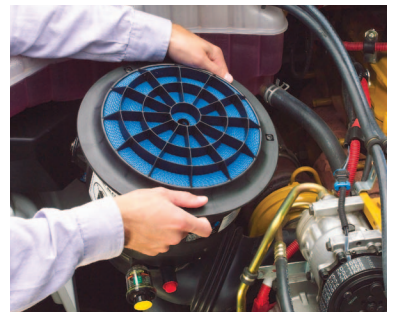
You need access to engineering and customer service at your convenience. Donaldson has established offices throughout the world to support you. We offer engineering and project management resources, a global sales team, marketing support, and manufacturing and distribution at regional locations. Our manufacturing facilities are ISO14001 and ISO/TS16949 certified.

## Donaldson Delivers



# Proven History

Donaldson PowerCore® Filtration Technology – over a decade of experience



Millions of units installed and in use around the world!

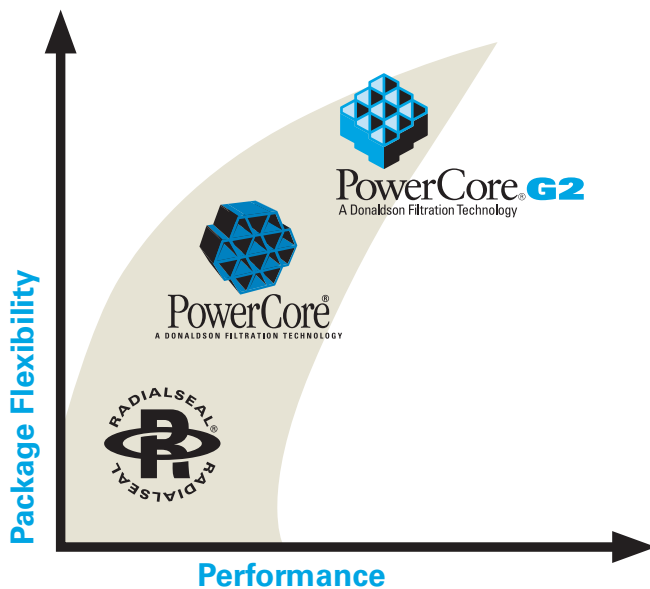
# Industry Shaping Technology



PowerCore® G2 Filtration Technology delivers *longer life* and/or *less restriction* in *less space* than our original PowerCore design.

- System design flexibility
- Metal-free, lightweight materials
- Rugged construction
- Straight-through airflow technology invented by Donaldson
- Advanced sealing technology
- Superior filtration performance

## PowerCore® Evolution



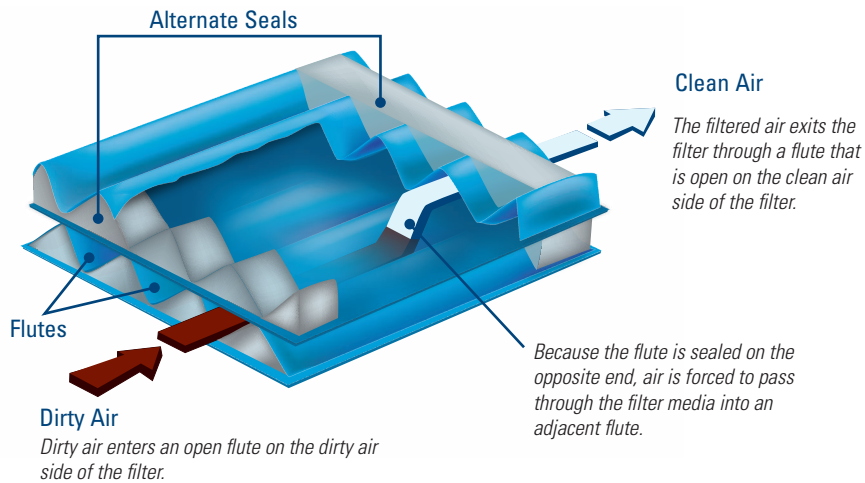
Continuous improvement and filtration innovation bring packaging flexibility and superior filtration solutions to OEMs.

PowerCore G2 Filtration Technology offers size reduction and geometric flexibility to overcome space constraints resulting from today's complex emissions systems.

*Over 11,000,000 PowerCore® Filters Sold*

## Straight-Through Airflow Reduces Pressure Loss Within the Intake System

- Reduced space needs
- Increased dust and soot holding capacity
- Dust is contained during servicing
- Reduced restriction across the filter



## Better Performance in a Smaller Package

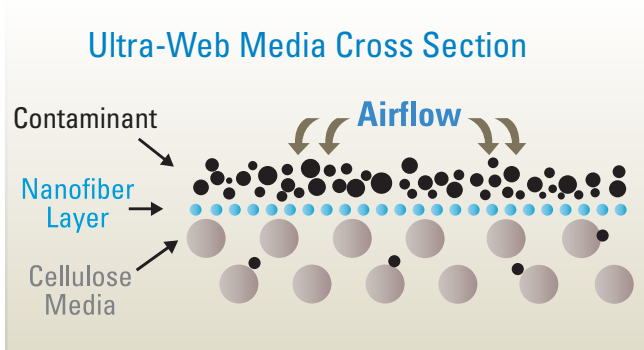
For given filter life and efficiency targets, PowerCore® G2 configurations can result in a 30% reduction in size from the first generation of PowerCore filters and a 60% reduction in size from pleated, cylindrical filters.



# Industry Shaping Technology

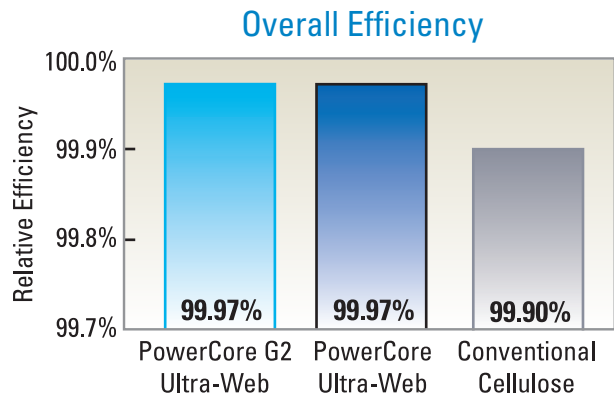
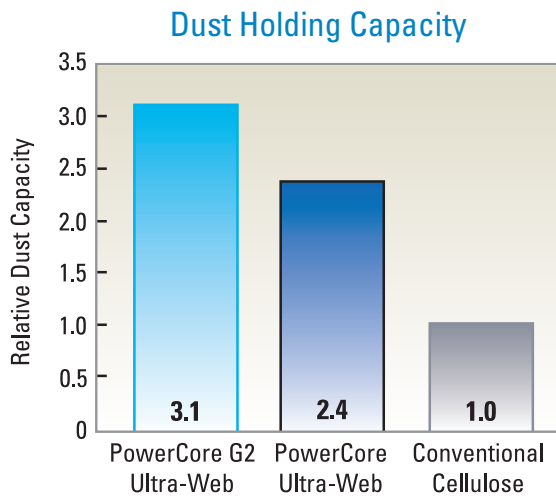
## ULTRA-WEB®

Nanofiber Filtration by Donaldson

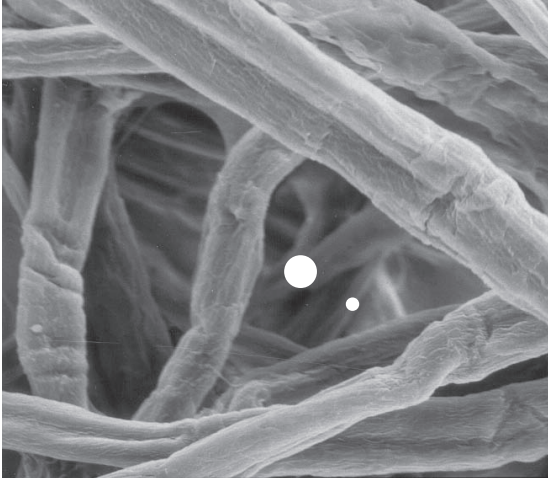


Ultra-Web nanofibers have submicron diameters and small interfiber spaces, which result in more contaminant being captured on the surface of the media and lower restriction.

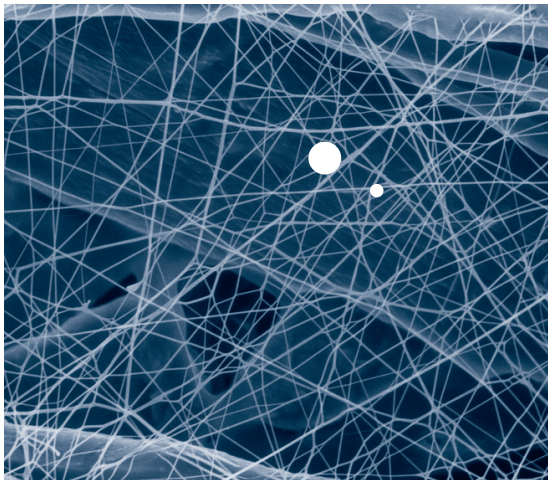
- Invented by Donaldson
- Engineered to perform in extreme temperature and humidity conditions, unlike ordinary nanofibers
- Optimized fiber structure and fiber diameter so it's stronger and lasts longer in all environmental conditions
- High efficiency – longer filter life
- High capacity – holds more contaminant
- Identifiable by the blue media color
- Proven – used in diesel engine market for nearly two decades



# Delivers 3x More Capacity and is up to 10x More Efficient



**Enlarged Top Views of Media**  
(at the same magnification)



## Cellulose Media

Conventional cellulose fibers are larger than Ultra-Web® nanofibers, and have larger spaces between the fibers, causing contaminant to load in the depth of the media and plug the airflow path; resulting in higher restriction and less capacity.

White circles represent the diameter of a 2 $\mu$  and a 5 $\mu$  particle.

## Ultra-Web Media

Ultra-Web nanofibers have submicron diameters and small interfiber spaces, which result in more contaminant being captured on the surface of the media and lower restriction.

**ULTRA-WEB®**  
Nanofiber Filtration by Donaldson

**Fact:** *Engine wear rates have been calculated to decrease by a factor of 10 when high efficiency air filters are used in place of standard efficiency filters. <sup>(1)</sup>*

1. Barris, Marty A., "Total Filtration™: The Influence of Filter Selection on Engine Wear, Emissions, and Performance", SAE 952557, SAE Fuels and Lubricants Meeting & Exposition, October 16-19, 1995.

# Industry Shaping Technology

## Sealing Technology Guarantees a Reliable, Sure-Fit



Close-up of RadialSeal endcap and gasket.

Donaldson pioneered the RadialSeal™ design for air filtration more than 20 years ago, creating a superior seal and vibration-resistant interface between the air cleaner and filter. This industry changing sealing technology combines two components into one – the end cap and sealing gasket. The flexible sealing material creates a sure-fit and simplifies filter maintenance. The reliable seal helps protect engines in extreme operating conditions and in challenging heavy-duty applications.

PowerCore systems use an advanced RadialSeal™ sealing technology applied to the straight-through airflow filtration configuration. The combination of these two industry changing technologies offer you best-in-class air intake system solutions for you and your customers.



**PowerCore<sup>®</sup> G2**  
with Ultra-Web<sup>®</sup> Filtration Technology





# Industry Shaping Technology

## PowerCore Pre-cleaning for Extreme Dust Conditions



Donaldson Strata™ Tubes can be arranged in various patterns, depending on the space and efficiency requirements of your application.



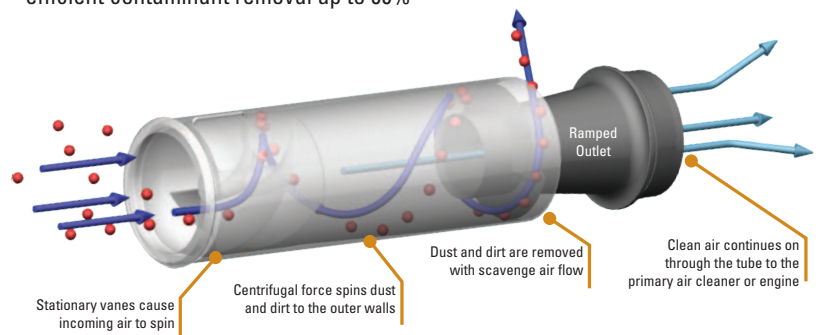
When under hood space is limited but pre-cleaning is still desired, add-on pre-cleaner styles and types can provide two-stage filtration.

Pre-cleaners expel dust and debris before it reaches your air cleaner – extending air cleaner life, extending maintenance intervals, boosting air intake system efficiency and extending engine life.

Donaldson inertial particle separation technology offers maintenance-free air filtration for turbines, diesel engines and environmental applications. Inertial separation technology is used extensively on ground vehicles, rotorcraft, off-road vehicles and other critical equipment exposed to harsh environments.

Our light-weight pre-cleaning tubes have no moving parts to wear out or break. They are self-cleaning and do not require regular maintenance.

Strata Tubes offer low airflow restriction with efficient contaminant removal up to 99%



**Fact:** Donaldson developed the first air particle separator system in the early 1960s to protect helicopter turbine engines from sand ingestion.

# A Standard Line, with Performance That's Anything But Standard

Custom designed intake systems require additional time and resources. When you don't have either, our premium two-stage, PSD PowerCore air cleaners fit a wide range of applications, are readily available and include a built-in pre-cleaner for maximum service life.

Donaldson PSD air cleaner can be applied to any diesel engine. The table on the right is an example of how Donaldson's two-stage PSD air cleaners can be easily and simply applied to Cummins Engines.



The PSD air cleaner line covers initial airflow range of 176 - 915 cfm. With mounting brackets on three sides of the housing and two separate drop tube orientations, the PSD series offers the greatest amount of flexibility for a wide variety of installations.

## PowerCore® Air Cleaners for Cummins® Engines

Engine Model	Horsepower Range		Engine Size (L)	Engine Size (CID)	Speed (RPM)	Est. Nom. Airflow CFM	Donaldson Air Cleaner
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### Agriculture, Construction/Industrial Equipment

B3.3	74	85	3.3	201	2600	242	PSD08
B3.3	60	65	3.3	201	2600	136	PSD08

### Agriculture, Construction/Industrial Equipment, Oil and Gas

QSB3.3	75	110	3.3	201	2200	237	PSD08
QSB4.5	110	160	4.5	275	2200	323	PSD09
QSB6.7	140	300	6.7	409	2200	481	PSD10
QSL9	240	400	9	549	2200	647	PSD10
QSX11.9	300	500	11.9	726	2200	855	PSD12
QSX15	400	600	15	915	2200	1078	Two PSD10
QSX	375	665	15	915	2000	980	Two PSD10
QSM	290	400	10.8	659	2000	705	PSD12
QSL	250	365	8.9	543	2000	581	PSD10
QSC	205	305	8.3	506	2100	569	PSD10

### Construction/Industrial Equipment, Oil and Gas, Mining

QSK19	506	700	19	1159	2000	1241	Two PSD10
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### Heavy-duty Truck, RV, Emergency Vehicle

ISX11.9	370	500	11.9	726	2100	816	PSD12
ISX15	455	600	15	915	2100	1029	Two PSD10

### Medium-duty Truck, Bus, Emergency Vehicle

ISB6.7	260	360	6.7	409	2600	569	PSD10
ISC8.3	270	380	8.3	506	2200	596	PSD10
ISL9	345	450	9	549	2200	647	PSD10

### On-highway, European, Euro II

ISMe	345	440	10.8	659	1900	670	PSD10
ISLe	350		8.9	543	2100	610	PSD10
ISBe - 6 Cylinder	275	285	6.7	409	2500	547	PSD10

### On-highway, European, Euro III

ISMe	335	420	10.8	659	1900	670	PSD10
ISLe	209	260	8.9	543	2100	610	PSD10
ISBe - 4 Cylinder	138	185	4.5	275	2500	367	PSD09
ISBe - 6 Cylinder	285	275	6.7	409	2500	547	PSD10

### On-highway, European, Euro IV

ISMe	350	445	10.8	659	1900	670	PSD10
ISLe	280	400	8.9	543	2100	610	PSD10
ISBe - 4 Cylinder	140	207	4.5	275	2500	367	PSD09
ISBe - 6 Cylinder	205	300	6.7	409	2500	547	PSD10

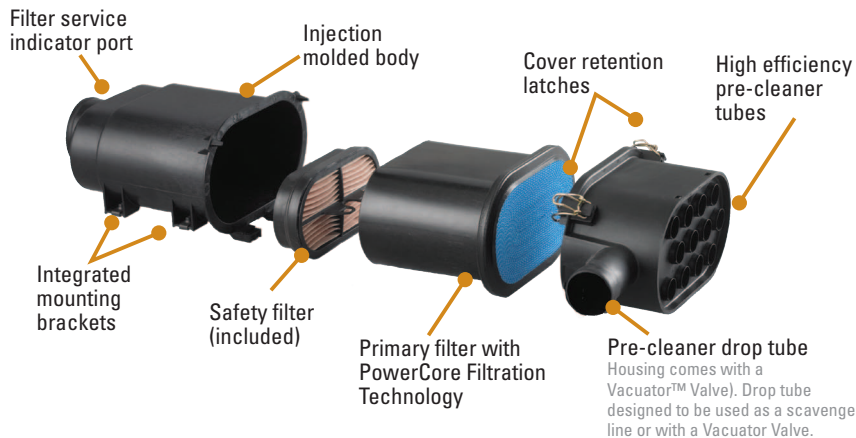
### On-highway, European, Euro V

ISMe	350	445	10.8	659	1900	670	PSD10
ISLe	280	400	8.9	543	2100	610	PSD10

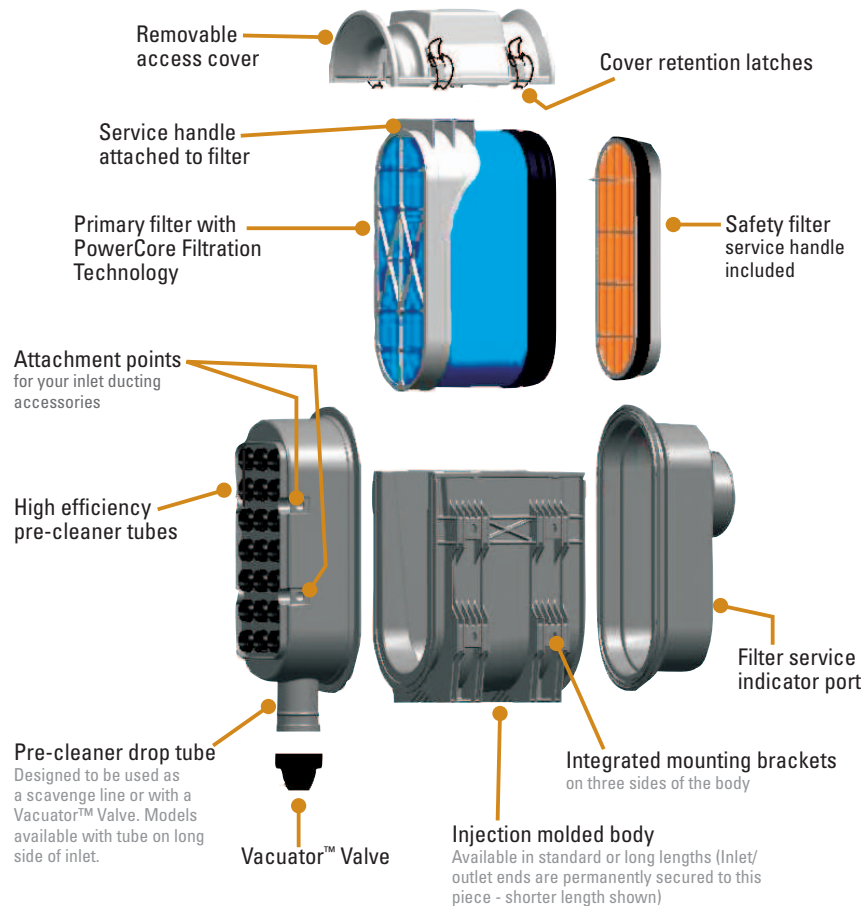
Cummins is a registered trademark of Cummins, Inc. Engine specifications/ratings in table from [www.CumminsEngine.com](http://www.CumminsEngine.com) (March 2011)

## Other Standard Line Intake Products

### Service Access on Inlet End - PSD08



### Service Access on Side - PSD08, PSD09, PSD10 and PSD12



### XRB & FKB Air Cleaners

These air cleaners are ideal for light-to medium-duty diesel engine trucks, agriculture, construction, mining and industrial engine applications.



New XRB Housings: left XRB12; middle XRB10; and right XRB08.



FKB Housings and Filters: top center, FKB06; bottom left, FKB05; and bottom right, FKB04

### Spiracle™ Crankcase Filtration

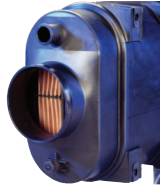
Our Spiracle™ Crankcase Filtration Systems for closed (CCV) or open (OCV) ventilation systems reduce or eliminate harmful and unwanted crankcase emissions.



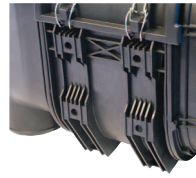
Small, small extended and mid-sized standard models are available for engine blow-by flow ranges up to 300 lpm / 10.6 cfm and with blow-by mass flow rates up to 15 gms/hr.

# Custom PowerCore® Intake System Options

Sensors & Sensor Ports



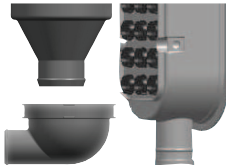
Built-in Mounting Brackets



Intake Ducts & Plenums



Built-in Scavenge Tubes & Adapters



Add-on Pre-cleaners



Service Indicators & Sensors



Filter Service Access



Branding



## Technical Paper

*"Methods for Diesel Engine Air Intake & Filtration System Size Reductions."*

Interested in knowing more about PowerCore® G2 advanced technological breakthrough?

Contact your nearest Donaldson location to request a copy or visit [www.donaldson.com](http://www.donaldson.com).



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