

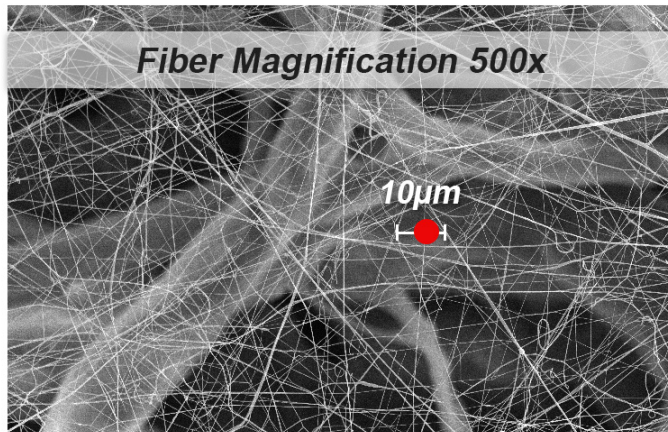


## NanoForce<sup>®</sup> Air Filters.

Expanded coverage in superior air filtration for heavy-duty diesel powered equipment.

### Better Protection.

- NanoForce<sup>®</sup> air filters deliver the cleanest combustion air possible for On & Off Highway engine applications. Nanofiber, when combined with our enhanced pleat design delivers optimal air filter performance for superior engine protection and lower equipment operating costs.
- In many heavy-duty applications, 75% of the contaminant particles that reach the air filter are less than 5 micron in size. If not stopped, these particles wreak havoc on critical engine parts such as pistons, rings and liners.



The red circle represents a dust/dirt particle of 10 micron size. Cummins Filtration proprietary NanoForce media provides a barrier to small, but harmful particles.

**DID YOU KNOW?** Human hair diameter is 3 times larger at 30 microns?

### Real World Testing.

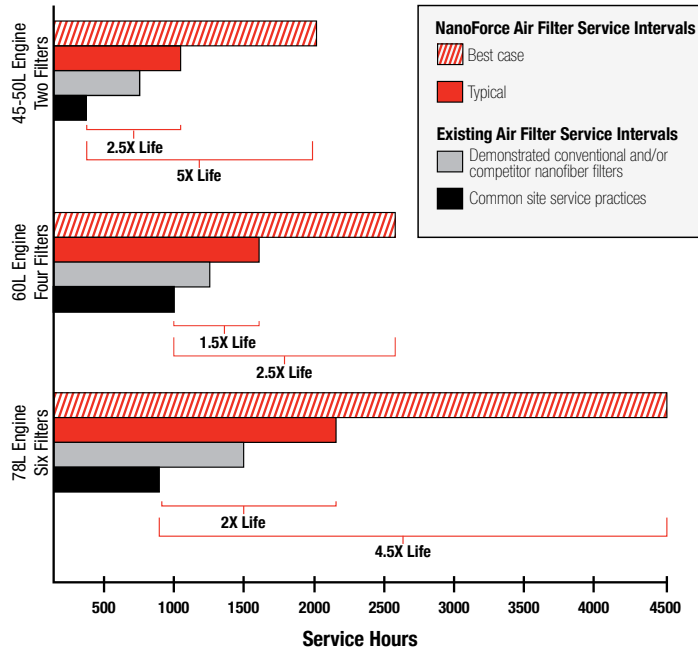
- NanoForce filters have been tested and proven in controlled laboratories using ISO 5011 and proprietary test methods to ensure an optimum balance of engine protection, performance and life.
- In addition to the laboratory tests, NanoForce filters have been extensively subjected to real world trials around the globe in a broad range of mining equipment. Even in the most severe environments in coal, copper, iron ore and platinum mines, with temperatures ranging from -45°C to +50°C, these filters have proven themselves time and again.

### Lower Total Cost.

- Up to **30%** lower annual air filter expenditure with NanoForce versus conventional filters = Lower operating cost.
- Reduced average air intake restriction during the service interval = Opportunity for lower fuel consumption.

## Increased Filter Service Life.

- NanoForce filters may extend filter service intervals more than **1.5X** the typical recommended service period. During field trials, up to **5X** the filter life was experienced. Service life can vary due to equipment type, air pre-cleaner, intake system design, site conditions, equipment duty cycle, etc.
- The chart below displays typical and best-case service interval improvements witnessed during real world NanoForce field trials.



### Notes:

- Chart shows typical results achieved in real world testing of competitive (cellulose or nanofiber) Vs. NanoForce filters in mine haul trucks.
- Service life assumes 6 - 10" H<sub>2</sub>O (1.5 - 2.5 kPa) clean filter restriction and a maximum of 25" H<sub>2</sub>O (6.2 kPa) filter restriction.

## Features & Benefits.

- 99.99%** filtration efficiency; the best air filtration protection available.
- Up to **5X** longer service interval versus conventional filters; less air filter changes.
- Robust design that provides reduced average air flow restriction over the service interval; reduced fuel consumption.



## Best Warranty in the Business.

The Cummins Filtration Warranty extends to our entire line of products, ensuring the same promise of performance and coverage beyond the competition. Cleaning nanofiber air filters will damage nanofiber filter media, thus compromising engine protection and voiding the filter warranty. Visit [cumminsfiltration.com](http://cumminsfiltration.com) to learn more about the competitive benefits of the Cummins Filtration Warranty.

## NanoForce Application Coverage.

- Air housing designs can vary; Cummins Filtration offers a range of filters suited to air housings of both axial seal and radial seal design.
- Primary air filters must be paired with the corresponding Fleetguard secondary filter to ensure optimum sealing and performance.

Conventional Fleetguard Part Number	NanoForce Upgrade Part Number	Secondary Filter	Typical Applications
AF27698	<b>AF25149NF*</b>	<b>AF25150**</b>	Haul Trucks: Caterpillar 789D, 794 AC, 797F, MT5300DAC and Liebherr T282
AF27696	<b>AF27993NF*</b>	<b>AF27994**</b>	Haul Trucks: Belaz, Caterpillar, Euclid, Komatsu Liebherr & Terex Excavators: Hitachi, Komatsu
AF879M	<b>AF879NF</b>	<b>AF857</b>	Haul Trucks: Belaz, Caterpillar, Euclid, Komatsu and Terex Excavators: Hitachi and Komatsu
AF899M	<b>AF899NF</b>	<b>AF880</b>	Haul Trucks: Caterpillar, Komatsu and Liebherr Excavators: Komatsu and Liebherr Drills: Atlas Copco (Pit Viper)
AF1605M	<b>AF1605NF</b>	<b>AF1604</b>	Hitachi Dumpers & Excavators Terex Loaders & Trucks
	<b>AF4216NF</b>	<b>N/A</b>	P&H Rope Shovels with Air Scrub System
AF979M	<b>AF979NF</b>	<b>AF987</b>	AG Chem / AGCO Equipment; Peterbilt & International Trucks
AF891M	<b>AF891NF</b>	<b>N/A</b>	Cranes, Drills, Backhoes, etc
AF888M	<b>AF888NF</b>	<b>N/A</b>	Peterbilt Trucks
AF928M	<b>AF928NF</b>	<b>AF26380M</b>	International Trucks
AF996M	<b>AF996NF</b>	<b>N/A</b>	Peterbilt Trucks
AF1817M	<b>AF1817NF</b>	<b>N/A</b>	Freightliner Trucks
AF1616M	<b>AF1616NF</b>	<b>N/A</b>	Western Star Trucks

\* Use with service cover SP1307 at time of conversion

\*\* Simplify service events, order primary and secondary filters together. AA2990NF includes AF27993NF + AF27994 and AA2998NF includes AF25149NF + AF25150

AK15524NF includes AF27993NF + AF27994 + SP1307 and AK15545NF includes AF25149NF + AF25150 + SP1307.



Typical 'Axial Seal' Design



Typical 'Radial Seal' Design with Service Cover