



There Is A Difference.



Genuine Cummins DPFs vs. Will-Fit DPFs.



The Genuine Difference.

When you're faced with a cracked Diesel Particulate Filter (DPF) or one that's plugged beyond the point of cleaning and needs to be replaced, it's important to know the difference between Genuine Cummins and will-fit DPFs. To keep trucks running at optimum levels – long-term or short-term, the best choice is Cummins. And we have the test data to prove it.

Cummins recently conducted a thorough technical analysis of a Genuine Cummins DPF for a 2007 ISX15 engine versus the competitor's "will-fit" DPFs.

Cummins has invested millions of dollars developing emissions expertise, from research and development to test cells and production facilities. Our aftertreatment units are designed to work with the engine as part of a totally integrated system. The Cummins genuine DPF is a critical element in our efforts to maximize performance and fuel economy, minimize downtime and maintenance costs and reduce active regenerations and emissions. "Will-fit" parts manufacturers simply don't have the resources or technology to deliver a comparable product, as shown in our real-world test data, and those parts can do more harm than good.

Note: There are other DPFs on the market, including counterfeit products and imitators. Those products should never be considered as a replacement. They can lead to engine damage and poor performance because they were not specified to integrate with a Cummins engine.

Harmful Effects Of Higher Backpressure.

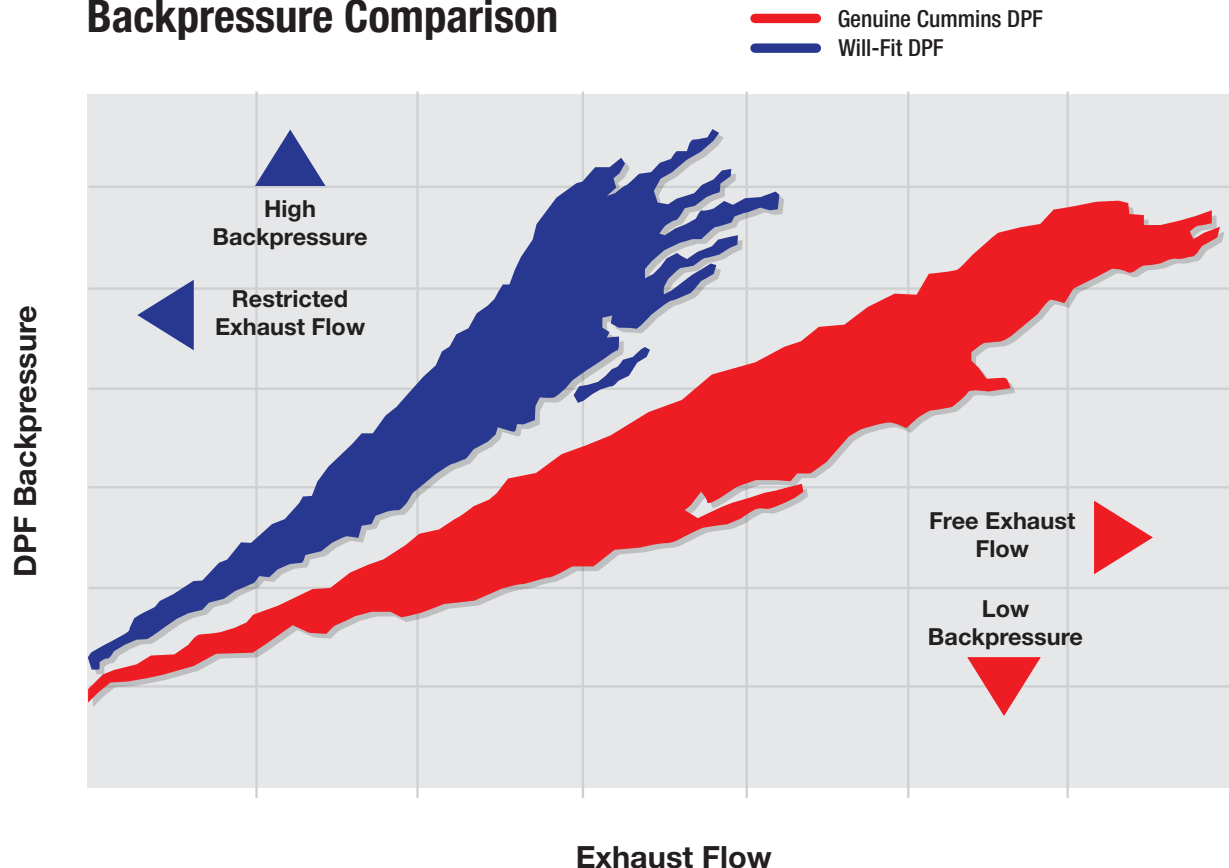
In real-world testing of a Class 8 truck, the will-fit DPF (data shown in blue) demonstrated a restricted exhaust flow through the filter and higher levels of backpressure, in part due to the size of the channels, but also due to rapid accumulation of soot. The chart below shows how the flow patterns differ between the Cummins (data shown in red) and will-fit products.

You may wonder what difference it makes. After all, don't exhaust brakes work on the basis of increasing backpressure? While that's true, continuous restriction can have a negative effect on the reliability and durability of upstream components, including the turbocharger, which uses exhaust gases to properly function. Higher backpressure can cause premature turbocharger wear and failure. It also can reduce an engine's fuel economy, increasing operating costs.



Higher backpressure may result in premature wear and failure of upstream engine components such as the turbocharger.

Backpressure Comparison



Actual Test Results:

The will-fit DPF, represented in blue, demonstrates higher backpressure and less exhaust flow during real-world operation when compared with the Genuine Cummins DPF, represented in red.

Critical Geometric Properties Of Genuine Cummins DPFs

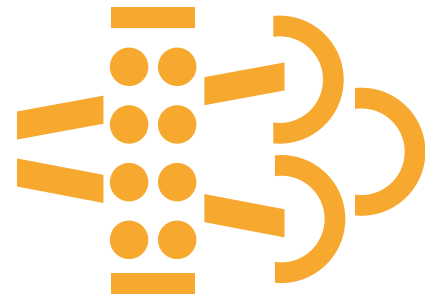
Property	Genuine Cummins	Will-Fit A	Will-Fit B
Cell Density (cpsi nominal+/-tolerance)	In spec	Out of spec	Marginally in spec
Wall Thickness (mil nominal+/-tolerance)	In spec	Out of spec	Out of spec
Median Pore Size (MPS range)	In spec	Out of spec	Out of spec
OFA Estimate*	Baseline	14% < baseline	7% < baseline

*OFA = Open Frontal Area; baseline for Genuine Cummins substrate material

This chart shows the difference between Genuine Cummins DPFs and will-fit DPFs in filter cell wall thickness, cell density and wall pore size, all of which can affect backpressure by limiting the Open Frontal Area (OFA) that exhaust gas flows through, causing poor fuel economy and possible turbo damage.

Precious Metal Content Is Critical.

The catalytic action (converting unburned hydrocarbons and raising temperatures) of the DPF is a critical function for maintaining an efficient exhaust system through passive regeneration. Having both the right amount of precious metal content and the correct distribution throughout the filter is critical. The will-fit DPFs tested did not meet Cummins standards. This could lead to significant consequences downstream in the Selective Catalytic Reduction (SCR) portion of the aftertreatment system, leading to increased service, resulting in downtime and a loss of revenue.

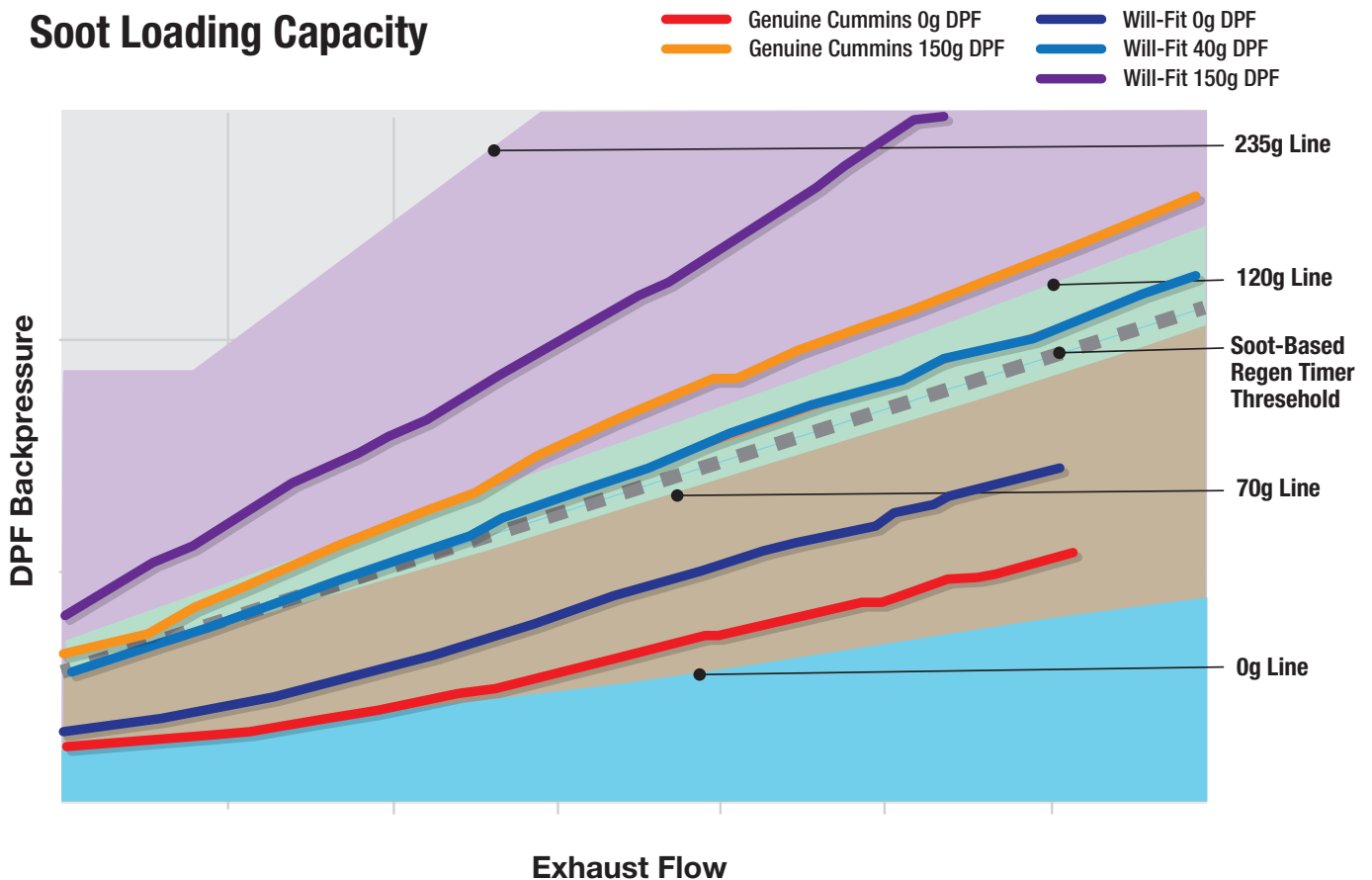


Will-fit DPFs aren't as efficient at converting hydrocarbons (HCs) and oxides of nitrogen (NOx). That has the potential to trigger fault code lamps and increased consumption of Diesel Exhaust Fluid (DEF) in the SCR portion of the aftertreatment system. It also results in lower fuel efficiency (due to overreliance on active regeneration) and reduced product life of various components that are exposed to greater thermal shock.



Using will-fit DPFs could lead to increased service of the SCR, resulting in increased downtime and loss of revenue.

Soot Loading Capacity

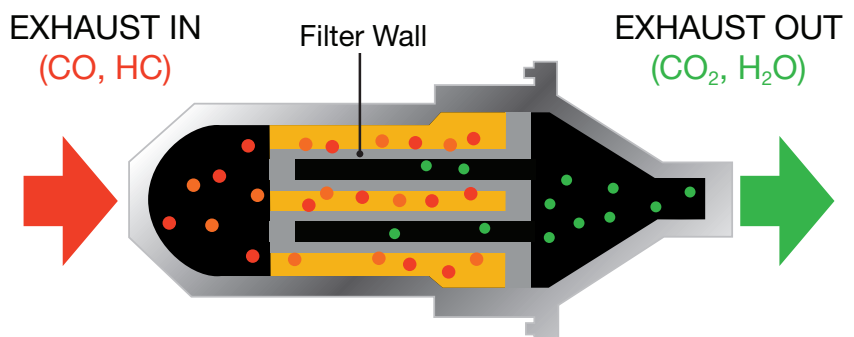


Why Higher Soot Capacity Matters.

To the naked eye, a will-fit DPF and Genuine Cummins DPF are roughly the same size, and look like they should hold the same amount of soot. Not true. The design and construction of the filter chambers are significantly different. At zero grams of soot loading, you can see that the will-fit DPF produced more engine backpressure than the Genuine Cummins DPF. More significantly, the will-fit product triggered regenerations at just 40 grams while the Genuine Cummins DPF held up to 150 grams of soot before an active regeneration took place. That's over 3.75 times the soot capacity. In the field test, a will-fit DPF nearly doubled the number of active regeneration events during normal operation. That is demonstrated in the chart above.

A will-fit DPF can create multiple issues in fluid consumption, performance and durability. First, since regenerations require fuel to convert the soot into ash, more frequent active regenerations can result in worse fuel efficiency. Second, regenerations raise exhaust temperatures higher than 1000°F or 600°C, and that can happen twice as often with a will-fit DPF. Those increased heat cycles can lead to both metal fatigue on the exhaust pipes and canister and increased risk of the DPF cracking and/or melting, not to mention additional wear on a number of other upstream engine components. All that can be avoided through the use of Genuine Cummins aftertreatment components, including DPFs, DOCs and SCRs.

The Genuine Cummins DPF has 3.75 times the soot capacity as will-fit DPFs.



Coming Clean: Where Will-Fit DPFs Fail. Again.

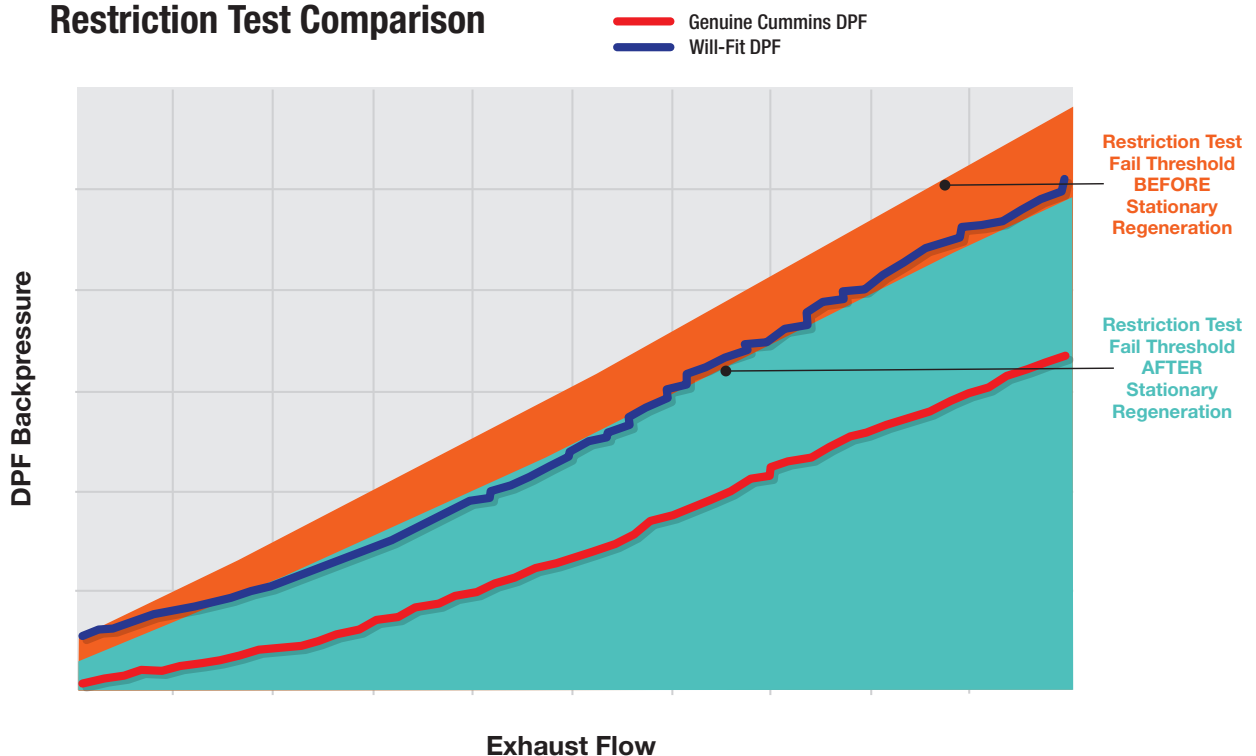
Soot/ash accumulation in the DPF is a function of engine operation. Over time, the accumulation of excessive soot/ash can cause frequent aftertreatment regenerations. When a DPF fault code is registered, a restriction test is required to determine whether the DPF needs to be cleaned. Before the test takes place, a stationary regeneration is conducted to remove soot present in the DPF. Our restriction test data, (see graph below) shows that after a stationary regeneration, the Genuine Cummins DPFs allows adequate exhaust flow, passing the restriction test and eliminating the need for a field cleaning service event.

As shown on this chart, that was not the case for the will-fit DPF. Even after a stationary regeneration, it was still over the threshold for failure, and a time-consuming, costly field cleaning event would have been required. Will-fit DPFs require more frequent cleanings because they have a lower capacity for ash storage. The result is a higher total cost of ownership with reduced fuel economy, more frequent regeneration events and greater downtime with a will-fit DPF.



When a DPF fault code is registered, a restriction test is required to determine whether the DPF needs to be cleaned.

Restriction Test Comparison



Making Every Dollar Count.

If you are thinking about installing a will-fit DPF in your Cummins-powered truck just to save a few hundred bucks, keep in mind that there's a genuine difference in terms of fuel use, DEF use, potential component damage and downtime for excessive cleanings. Not only can regeneration and High Exhaust System Temperature (HEST) lamps come on at twice the normal rate, but fuel efficiency can decline, and DEF usage may increase.

Based on the performance differences, owners can plan on buying two will-fit DPFs versus one Genuine Cummins DPF. At today's prices, that would cost about \$3,400 for two will-fit DPFs versus \$2,000 for one Genuine Cummins DPF. That's roughly \$1,400 extra for the DPFs alone. Downtime, missed deliveries, reduced fuel efficiency and labor all add even more to operating and maintenance costs.

2 Will-fit DPFs
\$3,400
VS
1 Genuine Cummins DPF
\$2,000

If an even more affordable solution is desired, consider a Cummins ReCon® DPF*. Cummins ReCon DPFs are rigorously cleaned and tested to meet Cummins specifications for soot capacity, proper exhaust flow, precious metal content and filter medium integrity at approximately 40 percent less than a new will-fit DPF (with core exchange). ReCon DPFs provide a highly effective and efficient solution that saves money while preserving Cummins performance and reliability. Cummins ReCon DPFs are available for vehicles equipped with EPA 2010 and EPA 2013 Cummins ISX and ISL engines, and will be offered for EPA 2010 and EPA 2013 ISB engines in 2018.

* Remanufactured DPFs are not for sale in California.



Better Built. Better Backed.

Cummins DPFs come with a full warranty backed by the largest, most capable parts and service network across North America, with over 3,500 authorized locations. There is 24/7/365 access to Cummins Care at 1-800-CUMMINS™ (1-800-286-6467) to get your questions answered and locate the facility nearest you.

Visit cumminsengines.com/genuineDPF to learn more about the difference between Genuine Cummins and will-fit DPFs.





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