



## Technical Service Bulletin

**Date:** 01/08/2008

**Product Description:** AMSOIL EaA728 Air Filter

**Subject:** 7.3-liter Ford OEM Air Filter Box Design Constraints

### OBJECTIVE:

Communicate a problem with the design of Ford air induction boxes on 7.3L-equipped diesel vehicles which leads to premature air filter restriction gauge warnings when using EaA728 Air Filters.

### ISSUES:

The life expectancy of the EaA728 Air Filter is less than the specified duration due to issues with Ford original equipment manufacturer (OEM) filter housing design.

### TECHNICAL DISCUSSION:

AMSOIL has documented problems with premature air restriction on EaA728 Air Filters installed on Ford vehicles equipped with 7.3L diesel engines. The problem appears via premature triggering of air filter restriction gauges. In some cases, the problem is severe enough to create performance issues, including lack of engine power.

A typical non-turbo-equipped 7.3L diesel engine requires roughly 280 CFM air flow to comfortably perform without combustion starving issues, including lack of engine power. A turbo-equipped diesel engine requires 466 CFM air flow to avoid similar issues.

Another way to predict air-flow-related performance issues is through a filter face velocity calculation. Donaldson Company Inc.(DCI), a well-respected filter manufacturer, uses this calculation to measure the amount of air an engine requires for optimum fuel combustion. A lower value in the face velocity represents better performance. A face velocity of 7-10 is optimal for diesel-fueled engines, whether turbo-charged or not. A Ford 7.3L OEM filter was tested with this predictive calculation under both turbo and non-turbo condi-

tions. The results for were 47 for turbo applications and 19.48 for non-turbo applications, both exceeding the optimal 7-10 design point. This data shows that the stock OEM filter design is too small, particularly in turbo-charged engines. As these filters become more restrictive when contaminated with dirt, air starvation issues will occur. The solution is to replace the stock, non-cleanable air filter at more frequent intervals. Ford now recommends that the air filter be replaced at every oil change.(1)

AMSOIL Ea Air Filters are produced according to the OEM specifications. Since these specifications are for a filter that is too small, the AMSOIL EaA728 Air Filter is limited in its performance capabilities, and its life expectancy is cut short.

AMSOIL INC., in conjunction with DCI, evaluated aftermarket air filters, along with OEM air filters for 1999-2003 7.3L Power Stroke diesel engines. The results of these tests showed a lack of filtering surface area required by this model to perform satisfactorily over the projected life of the filter.

### RECOMMENDATION:

AMSOIL recommends to continue using the EaA728 Air Filter and cleaning at 5,000 miles or per restriction gauge. AMSOIL also offers a WIX air filter (46728) but it cannot be cleaned and must be changed per restriction gauge or OEM recommendation.

As an alternative to the factory designed filter system, Ford introduced a retrofit air filter system called the Donaldson/Ford Air Induction System (AIS) part # 2U2Z-9K635-AA/Donaldson part number (X007953). AMSOIL offers this

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technology under part number (PCIS73). The retrofit system is available for 1999-2003 F-250 through F-550 Ford Power Stroke 7.3L diesel vehicles. The induction system is only recommended for trucks that have not been modified.

### REFERENCES:

1) Donaldson Filter Corporation, Personal Conversation with Field Service Engineer and Account Executive.

### ADDITIONAL SOURCES:

AMSOIL Filter Look-up Guide and Cross Reference Guide.  
[www.amsoil.com](http://www.amsoil.com)

Ford Motor Company, Service Advisor's Guide. "Selling the 7.3L AIS Severe Duty Kit"

WIX Filter Lookup and Application Guide  
[www.wixfilters.com](http://www.wixfilters.com).

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