Aeromotive, Inc. Technical Bulletin #102

Aeromotive Technical Department

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Re: Fuel Filtration: Protecting Your Engine and Fuel System with 2-Step Filtration.

STOP! If you are buying or installing a fuel filter for use on the outlet side of an Aeromotive fuel pump, avoid the mistake of buying a filter that causes more problems than it solves. When choosing a filter for use after the pump, Aeromotive recommends the use of 10-micron cellulose filter P/N's #12301 and #12310 for gasoline, 10-micron micro-glass P/N's #12340 and 12341 for ethanol and methanol, or 40-micron stainless filter P/N's #12335 and #12343 for use with any type of fuel and most carbureted and mechanical fuel injection applications.



Aeromotive advocates a two-step filtration approach in order to properly protect both the fuel pump and the engine, including injectors and carburetors. Technical Bulletin #101 specifies the requirements for selecting the correct pre-filter for use on the inlet side of the pump.

You may run any brand filter after the fuel pump, but that filter used must meet the following requirements: The filter assembly used on the outlet side of any Aeromotive fuel pump must have the appropriate micron rating to protect the engine. The correct filter will also feature sufficient port size and element surface area to support full pump flow without clogging over too short a period of time. AN-10 ports and 10-micron to 40-micron elements with 60 or more square inches of surface area are highly recommended.



WARNING:



Any filter element incapable by design of accepting 100% of an Aeromotive pump's flow capacity, or any filter allowed to become sufficiently obstructed with debris to become a major flow restriction to fuel pump flow, may result in fuel starvation of the engine. It will also harm the fuel pump sooner or later. Fuel pump failures caused by inadequate or poorly maintained filters are not covered under warranty! See the related case history file: "TB-102 Case File 01" for more detailed information.

SIZE DOES MATTER: Surface area (element size) and porosity (micron rating), together with the housing design (in-line or canister) and port size (AN-06, AN-08, AN-10, etc.), make up the key criteria that must be considered when determining whether a fuel filter is suitable for an application. Today's performance enthusiast is a smart consumer, aware of the importance of using the correct micron rating and port size/fuel line connections. However, there's more to know about post filters, including the housing design and element surface area. Armed with the right information you can buy the right filter the first time, ensuring good fuel delivery, drivability and pump service life.



Aeromotive fuel filters are engineered to meet all critical criteria for proper fuel system performance. Of course the desired filtration level (micron rating) and AN port size are integral to our filter designs. Beyond that, Aeromotive filters feature full flow housings which are larger and less restrictive, and come equipped with filter elements featuring significantly increased surface area when compared to "house brand" filters being sold that pretend to deliver equivalent performance but at a cheaper price. As the old saying goes: "you get what you pay for"!

In order to get the most from your fuel system investment, purchase and install Genuine Aeromotive Fuel Filters to go with your Aeromotive pump and regulator, for both before and after your fuel pump. It is wise to maintain them by cleaning the stainless elements and replacing cellulose or micro-glass elements at least once each year in the spring.



Choosing the correct Aeromotive filter after the pump is obviously important, but it's just the starting point for protecting the engine and fuel system over time. Monitoring filter condition is critical, but short of disassembling and inspecting constantly, how do you know what condition the filter is in? With the right equipment it's easy.



Starting with an Aeromotive inline gauge adapter and a suitable fuel pressure gauge, it's a snap to monitor the condition of the post filter in any fuel system with a bypass regulator. A dynamic fuel system using a bypass regulator creates fuel pressure by restricting return flow to the tank. With the post filter positioned between the pump and the regulator, all flow from the pump is through the fuel filter all the time. Restrictions in the filter will be visible on a gauge situated at the filter inlet port.



P/N 15694 with 15633 Gauge

The proper fuel filter, capable of flowing with the fuel pump, will not create significant back pressure until it is reaching the end of its service life, in other words when it's no longer able to flow with the pump. With the pressure gauge located in an appropriate inline gauge adapter and installed at the fuel filter inlet port, the pressure reading on the gauge will be very close to the pressure measured at the regulator when the pump is running and everything is OK.

As long as the filter flows freely enough to handle full pump flow, the gauge at the filter inlet will continue to read little difference between itself and the gauge in the regulator. However, as the filter becomes obstructed, back pressure will begin to build at the filter inlet, reflecting the deteriorating flow capacity of the element itself.



P/N 12301 10-M Filter P/N 15696 In-Line Gauge Adapter P/N 15633 Fuel pressure Gauge

Once pressure at the filter inlet is 5-PSI over the gauge at the regulator it's time to consider changing the element. Once it reaches 10-PSI over, flow may be compromised to the point the engine could lean out at high load. If left unattended, back pressure will continue to build, reducing flow and eventually compromising fuel pump service life. Again, see the addendum to this Tech Bulletin, "TB-102 Case History File 01" for a detailed example of this.

Your fuel system is exactly that, a system. It should be comprised of a series of components of which the post filter plays a key role. You can have confidence that a complete Aeromotive fuel system consists of individual components engineered to work together to deliver uncompromising fuel delivery. There is a better way to feed the beast and your investment in a complete Aeromotive system is the one sure way to go!