

"Filters are the life of your engine."

I think everyone would agree with that statement. However, there are filters for oil, fuel, and air. Which one is more important? In radioactive ring wear analysis test conducted with Southwest Research Institute in the 1960's, it was discovered that the engine cannot tell the difference in where dirt enters the system. The wear rate is the same. So, all the filters are equally important.

The air cleaners provided on your chassis are heavy-duty dry type filter media. Paper has been the media of choice for over 40 years. Although there are some synthetic media available, the cost to benefit ratio is way too high except in special applications. But, the paper used today is a far cry from those of 40 years ago.

"The worst filter is a new filter." Say What!

That statement is also true. For air to flow through the fibers of the filter media, it has to have holes in it. Make sense? If the paper was made real tight, then the initial restriction to flow would be too high, and the filter would become "loaded" too quickly. So, the filter is made with "holes" so that air can flow through it. I've always said that the best filter is a solid wall. But, if you want air to flow through it, you have to poke holes in it. As the dirty air flows through, the dirt begins to build what is called a "dust cake" on the paper. The dirt actually starts to be a filter itself. To get a little technical, the filter starts at 99.0% efficiency (based on SAEJ726 Test Code), and increases to 99.9+% as the "dust cake" builds up.

Why is that high efficiency important? Ask Cummins and Cat. They will tell you that the main reason they can provide an engine with the extended warranties and long life is because of improved filtration, along with other technological advances. That's why they have a specification for filters.

Air filters have other enemies than just dirt. Soot is the worst and will cause the media to clog quickly. Water is a major problem and requires special consideration.

"I don't change my filters often enough."

That's probably what most of you think. ***The fact is most air filters are changed too frequently.*** How's that, you say? The filter on your chassis is designed and sized to provide long life under the worst conditions. With the rear engine chassis, the air intake will see more dust, water, snow, and ice. Therefore, the filters are oversized to compensate. For normal over the road service, your air filter should last 40-50,000 miles before it gets "dirty." **However, the most important factor for you would be the "shelf life" of the media.** Since it is cellulose, it has bonding agents that may over a period of time tend to dry out and become brittle, particularly in high humidity areas, coastal areas, and when you park the vehicle for long periods.

Although it is nothing to be alarmed about, we recommend the filter be changed after two years of service even though the restriction limit has not been reached. But, you also need to monitor the filter, and this is done by use of the Filter Minder indicator, a standard item on your chassis. The Filter Minder has a graduated scale, with a yellow bulb that locks up at the different restrictions as your filter gets dirty. Monitor it on a regular basis. Do Not let someone convince you to change your filter unless the indicator has reached the top 25" level. If someone tells you they can look at a filter and tell if it's dirty, I've got a job for them. I've been looking at them for 22 years and I can't tell.

Remember the "dust cake"? The filter restriction only goes up when the small "holes" start to become loaded with dirt. The dirt on the outside of the paper doesn't tell you anything. You'd have to look at the fibers with a microscope to tell if they are dirty. That's where the indicator comes in. It measures the restriction to flow or pressure drop in inches of water. The gauge used for absolute measurement is called a water manometer, but it's not practical to put one of those on your chassis.

The engine manufacturer specifies the restriction limits for your engine, both "clean" and "dirty." The "clean" limit is normally 12" and "dirty" is 25". Your owner's manual may specify a different number, so check it out. As a precaution, if you're driving in snow, I recommend you have a spare filter element with you. One situation that may cause a false warning from the indicator is if you drive in heavy rain or snow. The moisture may cause the restriction to read high while the media is wet. Reset the indicator, let the filter dry out, and monitor it to see if it goes back up. The media will be fine once it dries out. You can reset the indicator anytime you want - just push the button on the bottom.

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