FILTERS

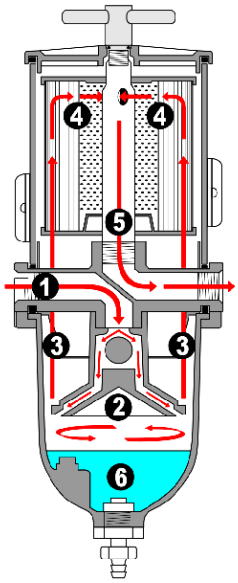
What is a fuel filter

Diesel fuel filter is a filter in the fuel line that is designed to screen out large foreign particles (even water) from the fuel, normally made into cartridges containing a filter paper.

Fuel filters serve a vital function in today's modern, tight-tolerance engine fuel systems. Unfiltered fuel may contain several kinds of contamination, for example paint chips and dirt that has been knocked into the tank while filling, or rust caused by moisture in a steel tank. If these substances are not removed before the fuel enters the system, they will cause rapid wear and failure of the fuel pump and injectors, due to the abrasive action of the particles on the high-precision components used in modern injection systems. Fuel filters also improve performance, as the fewer contaminants present in the fuel, the more efficiently it can be burnt.

How filters work

Diesel fuel filters are usually made in a bowl-like design which collect water in the bottom (as water is denser than diesel). The water can then be drained off by opening a valve in the bottom of the bowl and letting it run out, until the bowl contains only diesel. Many fuel filters contain a water sensor to signal to the engine control unit or directly to the driver (lamp on dashboard) if the water reach the warning level. It is especially undesirable for water in fuel to be drawn into a diesel engine fuel system, as the system relies on the diesel for lubrication of the moving parts, and if water gets into a moving part which requires constant lubrication (for example an injector valve), it will quickly cause overheating and unnecessary wear.



1) Unfiltered fuel enters the filter and travels straight down, past the back flow check ball valve, into the Turbine assembly.

2) Fuel exits the turbine assembly in a spinning motion, creating a centrifuge effect. Heavier particles and water droplets are separated from the fuel and fall into the collection bowl.

3) Fuel rises to fill the upper chamber of the filter and surround the outside of the element.

4) Fuel passes through the element as contaminants and water are filtered out. Water droplets form on the element surface, coalesce, and fall into the collection bowl for later removal.

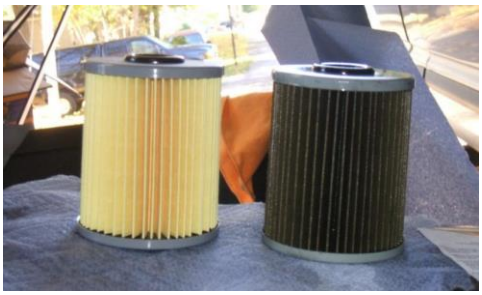
5) Filtered fuel enters the main fuel tube and travels straight down the filter and out to the fuel pump.

6) Contaminants not trapped in the element media and separated water gather in the collection bowl at the bottom of the filter. A drain valve at the bottom of the bowl can be opened to allow for their removal.

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Filter use and maintenance

Fuel filters need to be maintained at regular intervals. This is usually a case of simply disconnecting the filter from the fuel line and replacing it with a new one, although some specially designed filters can be cleaned and reused many times. If a filter is not replaced/maintained regularly it may become clogged with contaminants and cause a restriction in the fuel flow, causing an appreciable drop in engine performance as the engine struggles to draw enough fuel to continue running normally.



Clean and Dirty Filter



Dirty Filter

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