

# Fuel Filters Require Regular Service

Fuel filters today appear significantly different from those used in the past, but their purpose remains the same: to protect the fuel system by removing contaminants such as rust, dirt and other foreign matter from the fuel. Stricter emissions legislation, higher injection pressures and ultra-low sulfur and biodiesel fuels have all contributed to the evolution of fuel system technology. The fuel filter is often overlooked in terms of regular maintenance.

## Purpose of Fuel Filters

Internal combustion engines consume a mixture of fuel and air to produce energy. The most commonly used fuels are gasoline and diesel fuel.

Older gasoline engines use a carburetor that mixes the fuel and air in exact proportions for efficient carburetion. It has many small passageways and delicate parts which can be damaged by dirt. A dirty carburetor can cause erratic performance or complete engine shutdown.

Carbureted engines have been replaced with electronic fuel injection (EFI) systems. Fuel injection is a much simpler, more precise way to deliver fuel to the cylinders.

Gasoline and diesel engines normally use a fuel injector for each cylinder. The injector meters the fuel under high pressure through small openings in the tip and into the combustion chamber. A supply pump supplies fuel to each injector. High operating pressures and tight clearances make the injectors vulnerable to damage and wear when exposed to dirt and contaminants. The key to keeping a fuel system operating at its best is cleanliness.

## Types and Sources of Contaminants

Contaminants may enter the fuel system when unfiltered fuel is pumped into the vehicle tank or through loose tank caps or faulty sealing gaskets. Fuel can also be compromised by contaminants or dirt particles left in the tanks or lines during the manufacturing and assembly process. The most common contaminants found in fuel are rust, dirt and water.

Rust usually comes from large storage tanks, but can also form in vehicle tanks if low fuel levels are left in the tanks over long periods of time. Rust is an abrasive and causes damage to the injection system components.

The most common source for water is condensation in the fuel tank. If the fuel tank is not kept filled, warm moisture-laden air condenses on the cooler inside metal wall of the fuel tank. Water can also enter the fuel in underground storage tanks, during vehicle tank filling on wet, rainy days, or through leakage past fuel tank filler caps and improperly-designed vent openings.

Dirt can find its way into the fuel through dirty caps, tank spouts and dispensing nozzles. Vent systems, tank caps and other seals should be checked frequently to ensure they are in good condition and none are missing. Another contaminant sometimes found in diesel fuel is bacteria.

## Types of Fuel Filters

There are numerous types of fuel filters for gasoline and diesel applications, including in-line, element/cartridge and spin-on.

In-line filters are located in the fuel line between the tank and injectors or carburetors.

Element/cartridge filters require installation into some type of housing in the vehicle fuel system. These filters are often neglected due to lack of consumer knowledge of the location and the inaccessibility of the filter.

Spin-on fuel filters are similar to oil filters. They are easy to replace and come in a variety of sizes.

Some automobiles and light trucks have two fuel filters. The first filter, usually located in the fuel tank, can be made of fine woven fabric or other filter mediums. This filter prevents large pieces of contaminant from damaging the fuel pump. The tank filter also prevents most water from going to the engine. Under normal conditions, the tank filter will not require service or replacement, however the second filter requires regular service.

Gasoline and diesel engines are very sensitive and will not tolerate dirty fuel. The most delicate part of a diesel engine is the fuel injection system. Injectors have moving parts with very close tolerances, and small particles of contaminant can damage them or cause erratic performance.

## Servicing Fuel Filters

Fuel filters should be changed at intervals recommended by the engine or equipment manufacturer. When operating under more adverse conditions or with very dirty fuel, the filters may need to be changed more frequently. Replacing fuel filters at the recommended intervals is the best assurance against engine problems and fuel starvation.

## Filters Available From AMSOIL

AMSOIL currently offers a full line of fuel filters from WIX, Mann-Filter and Donaldson.

