

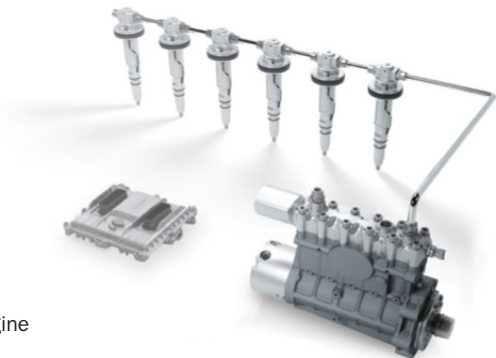
# Tech Tips - Emission Standards

## EMISSION STANDARDS CREATE NEED FOR HIGH EFFICIENCY FILTERS

The goal of emission standards, such as EPA 10 and Tier IV, is to reduce the amount of harmful substances released into the environment by engines. In order to meet increasingly stricter regulations, manufacturers have developed the High Pressure Common Rail (HPCR) fuel injection system with a highly efficient fuel combustion process that decreases pollution from exhaust fumes.

The HPCR engine operates at extreme pressure, up to 30,000 psi. The sophisticated fuel system requires tight tolerances and microscopic clearances in order to maintain this high pressure. Even the smallest 1-2 micron dirt particles will cause wear that can eventually cause the engine to fail. Injectors are especially sensitive to damage, as these pressures create a virtual sandblaster in the fuel system.

The HPCR engine also operates at increased temperatures. These temperatures can turn some of the unburned fuel into hard carbon particles, which must then be filtered out.



High Pressure Common Rail Engine  
Source: Bosch

## CARQUEST HEAVY DUTY FILTERS PROTECT ENGINES AND MEET SERVICE INTERVALS

- High efficiency at even the smallest particle size
- More dirt holding capacity in the same size filter

In order to adequately protect modern engines, filters must remove smaller and smaller contaminants in larger quantities while still meeting service intervals.

High efficiency filtration is required to remove the microscopic particles.



**Carquest 96498**  
Fuel Spin-on for High Pressure Common Rail Engines

Carquest provides single source coverage for on-highway and off-highway fleets. Carquest filters are designed and manufactured by Baldwin Filters®, America's leading heavy duty filter company for over 80 years.

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