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Automotive Cartridge Oil Filter Fires

Improperly installed cartridge oil filters in automotive applications can cause the total loss of the vehicle. The scenario proceeds as follows: the insured has the oil and filter changed in a vehicle and continues to drive. At some time after the oil filter change, a fire develops, typically in the engine compartment, and nearly complete destruction of the vehicle results.

Upon examination of the vehicle, the origin of the fire is in the vicinity of the oil filter. Figure 1 is an example of such a vehicle that sustained a fire as a result of an improperly installed oil filter.

What happened is that oil leakage occurs from the improperly installed cartridge oil filter. The oil sprays or migrates to a hot vehicle component, such as an exhaust manifold or turbocharger



Figure 1

housing. The oil is ignited, resulting in the total loss. Usually when the oil filter is changed, the technician uses a wrench to unscrew the cartridge oil filter. The technician then checks the oil filter housing to make sure the oil seal from the removed

filter is not attached to the housing. Then the replacement filter is screwed back onto the housing.

The problem generated by an improper installation is twofold. First, if the technician fails to check the oil filter seal area

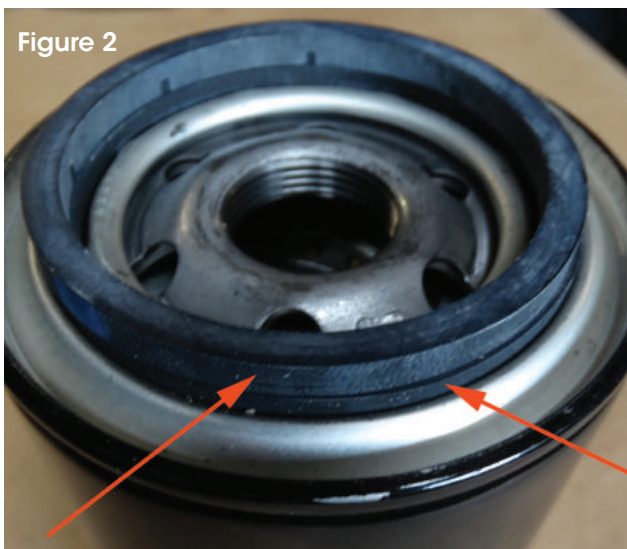
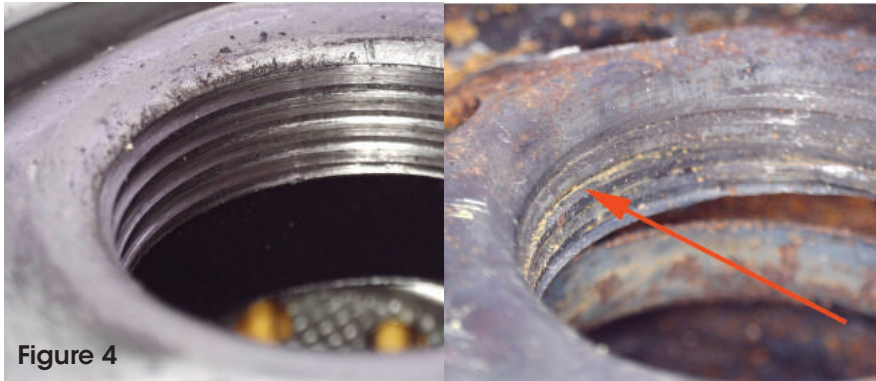


Figure 2



Figure 3



proper threading. In this case, the location of the oil filter housing in the vehicle was hard to reach. It is difficult to determine if the filter is threaded properly in tight locations. Consequently, when the installing torque of the filter increases, a technician may think that the filter is being seated properly when in fact the increased torque experienced is a result of cross-threading. Depending on the amount of oil seal compression, the seal may leak almost immediately or take some time to fail and leak.

When analyzing a vehicle fire with a fire origin near the oil filter housing, the cause may be a result of improper installation of the oil filter. 📌

on the housing and the previous seal remains, then two seals will be in place when the replacement filter is installed. This will usually result in oil leakage since the set up will not be able to sustain the engine oil pressure.

Figure 2 shows the filter with two seals in place. The left arrow points to the old seal and the right arrow points to the new seal. The two seals on top of one another usually do not resist the

oil pressure from the engine, resulting in leakage.

A second problem with oil filter installation is improper threading of the oil filter onto the housing. Figure 3 shows an oil filter to the right that was cross-threaded during installation.

Figure 4 is a close-up of the threads on the oil filter to the right as compared to a new oil filter. In Figure 4 the worn threads on the right (arrow) are a result of im-

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