



The Impact of Dents on Canister Filters

Filter manufacturers often receive used filters involved in warranty investigations due to a crack in a filter canister. In many cases the crack is located within or near a dent in the canister. This evidence predominantly indicates that the dent caused the crack and that the failure was not within the control of the filter manufacturer. Once the steel canister is dented, a concentration of stress in the canister material is created, making the canister more susceptible to fatigue.

The fatigue to the material results from the pressure pulses within the system. The pressure is regulated by a pressure regulating valve. This valve is spring operated and intermittently opens and closes to regulate the pressure. Once the pressure exceeds the setting of the spring in the regulating valve, the valve will open and relieve pressure until the spring can expand and close the valve. This function is repeated continuously during the operation of the system, creating a pulsing effect. The canister of the filters is subjected to the same pulsation. However, unlike the spring in the pressure regulating valve, the canister material is susceptible to failure after such fatigue.

Filters are designed with a low carbon steel to resist fatigue and are formed so the stress created by the pulses in the system are equalized over the surface area of the canister. A dent provides an area of stress concentration from pressure pulses and can greatly shorten the fatigue life of the canister.

Filters that are dented prior to or during installation should not be used. Filters dented after installation should be replaced immediately. The cost of replacing a dented filter is much less than the cost of the damages that could result from a dented filter that fails during service. If you receive filters that were dented prior to your receipt, you should contact your filter supplier for corrective action.

For additional information, contact:

Filter Manufacturers Council
P.O. Box 13966
Research Triangle Park, NC 27709-3966
Phone: 919/406-8817 Fax: 919/406-1306
www.filtercouncil.org
Administered by Motor & Equipment Manufacturers Association