

WHEN CLEAN IS TOO CLEAN

A Customer Concern

Recently, a service dealer called his CARDONE sales representative, concerned that his steering warranties were around 20-25%. The issue was escalated and the customer was contacted in order to learn more and possibly eliminate the root causes of the problems. It was found that the technician uses a reliable, national brand of power steering fluid that meets CARDONE criteria (see article "Not all power steering fluids are created equal"), while also flushing with new fluid and bleeding the system every time. However, the technician also mentioned that he uses brake cleaner to wash out all the debris and build-up from the inside of the power steering lines/hoses. This off-the-cuff statement led to further investigation into common automotive cleaning chemicals and the potential effects they could have on the steering system.

Brake Cleaner, Carburetor Cleaner & Engine Degreaser

Brake cleaner was specifically mentioned above, but carburetor cleaner and engine degreaser were additionally explored, as all three are common cleaning chemicals that are found in all parts stores or on a shop shelf. Rubber components in a steering system are either Viton or BUNA material; therefore seals of both compositions were spray tested at 100% concentration. Both the brake cleaner and carburetor cleaner began to swell 15 minutes after exposure; however the engine degreaser had no visual change. The seals were then soak tested for 24 hours in 100% concentration, and further degradation occurred (see pictures at right). The results of the brake cleaner and carburetor cleaner are both undeniable, but the engine degreaser did not cause damage, as significant, to the rubber.

Testing continued with the presumption that the chemicals will not remain at full strength when power steering fluid is added to the system, as in the case where the hoses are sprayed out. Therefore new seals were soak tested for 72 hours in a 10% chemical to 90% power steering fluid mixture. Results were not as dramatic as shown in the swelling and tearing above, but the hardness of the rubber did degrade. In a power steering system, where dynamic function is key to retain the fluid during all ranges of heat, flow and pressure, even small changes in the rubber integrity will cause leaking and premature failure.

The Aftermath

The seals seemed to react well against the engine degreaser, but visual appearance is not a viable analysis method, so additional testing will be performed to analyze if any long-term effects occur.

It is understandable that technicians would use brake cleaner and/or carburetor cleaner as a method to clean the system, as both are sold in every parts store across the country, and are known to remove grease and grime better than anything else. However in an attempt to "do some good" the end result is the exact opposite. Therefore, the best advice is avoid all chemicals completely and simply use the old-fashioned power steering flushing method to remove contaminants from the system, as it will avoid introducing foreign elements into the system.

RESULTS FROM SEAL TESTING

