

Corrosion Fighter Technology

Main Cause of Corrosion on Vehicles

Since the 1950s, rock salt (sodium chloride) has been used to lower the freeze point of ice and is often mixed with sand or cinders to increase traction. By the 1970s, passenger cars and light-duty vehicles were increasingly rusting. The auto industry responded with more non-corroding materials and improved coatings.

In the late 1990s, highway departments found they could reduce costs by taking advantage of more aggressive snow-fighting chemicals. By adding magnesium chloride, calcium chloride and various acetates, highway departments could change operations. Mixtures were spread in anticipation of snowfall, to remain in place until snow actually fell. The savings met and exceeded expectations – but the consequences were severe and unanticipated.

Why Corrosion in Brake Chambers

Metal components of commercial vehicles are constantly subjected to harsh corrosive environmental conditions, particularly in the winter months in the northern climates. Metal components are experiencing much higher rates of corrosion with the introduction of more aggressive deicing solutions, which literally “cling” to equipment. These new deicing solutions; magnesium chloride, calcium magnesium chloride, potassium acetates as well as other acetates, accelerate corrosion in brake chambers. Some of these chemicals are hygroscopic, pulling water out of the air corroding the brakes nearly year around once they have found their way inside the chamber. These chemicals enter the chamber, where they can corrode the springs in the chamber, resulting in spring failure. A fractured spring usually punctures a diaphragm resulting in an air leak requiring brake chamber replacement.



[Guide depicted in orange for visual purposes only]

The Design Fix

The key to extending the life of the spring brake is to prevent corrosion from attacking the spring. The spring is coated with a barrier that effectively prevents corrosion. Keeping the barrier intact is essential to preventing corrosion. One way to reduce the effects of this “corrosive attack” is to break the electrical conductivity between the parts by changing one of the existing components to a non-conductive material. This is what MGM Brakes engineering has done by designing a spring guide constructed from heavy duty, non-conductive composite material.

The composite guide material prevents metal to metal contact between the end of the power spring and the head of the brake, effectively “breaking the circuit”, therefore; slowing the corrosion process and reducing corrosion related brake failures.

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In addition to constructing the guide from composite material, MGM Brakes made other design changes that significantly improve power spring life by preventing damage to the power spring's protective coating. This was accomplished by eliminating contact between the active spring coils at all times. All this was done without increasing the overall size of the brake.

Improvements

Corrosion Fighter technology is a patented MGM Brakes exclusive design that increases power spring life by reducing the internal effects of electrolysis. The composite spring guide assures proper alignment of the piston. The composite guide is constructed of heavy-duty non-metallic composite material which slows the corrosion process and reduces corrosion related failure.



The polymer spring guide also ensures precise alignment of the power spring inside the brake. The accurate alignment of the head side of the power spring compliments the MGM Brakes patented Center Hole Diaphragm (CHD) design providing longer center seal and power spring life.

Summary

With the design updates and using Corrosion Fighter technology, brake chamber failure issues due to corrosion of the power spring have declined dramatically. This along with the MGM Brakes products that utilize corrosion resistant materials such as aluminum, epoxy coating and clear trivalent chromate makes these chambers the most durable chambers in the heavy duty commercial vehicle industry.

Corrosion Fighter technology is a standard feature on all TR-type 30 spring side model chambers.