



Automotive Vents

FOR DRIVETRAIN & DRIVELINE COMPONENTS

Case History

Gore Delivers a Simple Solution to a Complex Problem

SITUATION

A global OEM encountered a significant quality issue with one of their light-duty truck lines: harsh environmental conditions in one region were creating an unacceptable level of quality issues – and corresponding warranty claims.

Specifically, end-users were returning vehicles due to rear-axle failures. In this regional market, vehicles are often exposed to operating conditions that include fine dust, dirt, and water fording. These contaminants – water, dust and dirt – were entering and damaging the rear axle. This created end-user complaints, and an unacceptably high level of vehicle returns for high-cost warranty repairs.

The OEM believed the problem involved venting, so they contacted Gore – a global leader in venting technologies – to request immediate assistance in resolving these issues

CHALLENGE

The OEM informed Gore that they believed the cause of these axle issues was contamination entering the component through the vent tube.

The vent tube, which was routed from the rear axle to the fuel filler area, was more than one meter long. It had multiple attachment points, and terminated with a plastic vent cap.

This traditional long-tube vent design had passed the initial qualification testing. However, that testing did not address this particular failure mode.

The OEM recognized that simply re-routing their existing vent tube would not address the issue; rather, they would require a more robust barrier to dirt/dust/water entry.



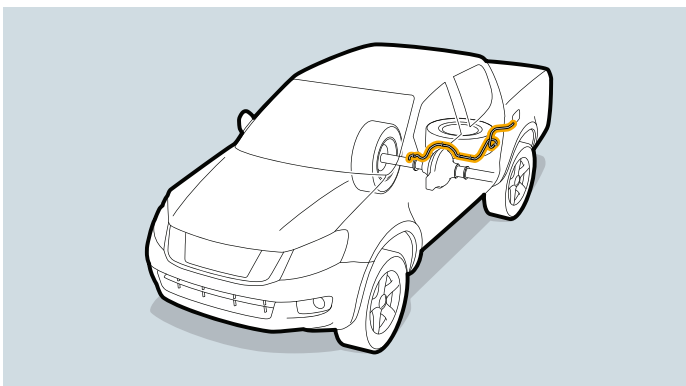
SOLUTION

The recommendation

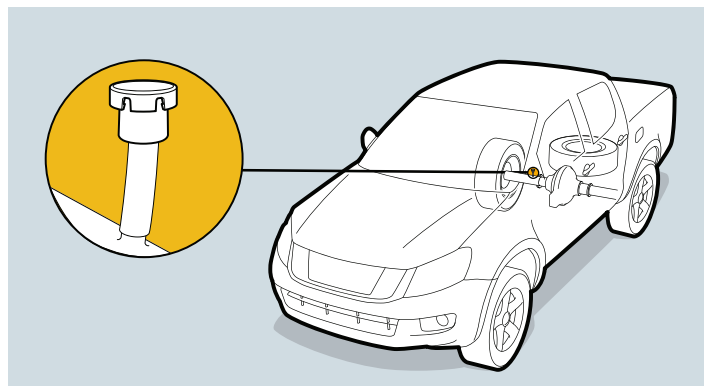
Gore recommended completely replacing the long, complex vent tube assembly with its water-, dust- and dirt-proof GORE® Automotive Vent, Part Number AVS 41/VE2048, mounted on a much shorter, straight tube.

Gore recommended this vent because it delivers high performance in an extremely compact design.

For the OEM, this solution would be much simpler, much more compact, and more streamlined: It would enable the OEM to replace its >1 meter-long tube with Gore's 100 mm-long tube, reducing the weight (and length) of the vent assembly by 90%. Because this vent assembly is so compact, it would require much less space for routing. As the Gore solution has fewer parts than the original vent tube assembly, it would also reduce the labor required for installation.



Light-Duty Truck: Traditional long-tube venting



Light-Duty Truck: GORE® Automotive Vent (AVS 41/VE2048)



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“This vent was engineered specifically for the challenges inherent in drivetrain and driveline applications,” said Steve Mayer, Gore’s Global Product Specialist for Drivetrain & Driveline Components. “But for the OEM, on-vehicle testing was critical: they needed to see how this vent would perform, and how reliably it could withstand the extreme environmental challenges of their market region.”

The validation

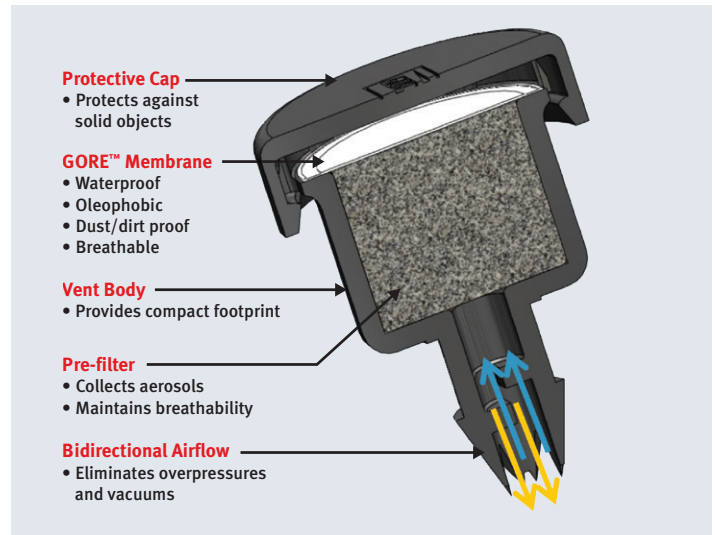
Testing demonstrated that this tube-mounted GORE® Vent offers a simple, reliable and cost-effective solution.

First, the OEM conducted a lifetime durability test: they installed this vent (mounted on a 100 mm tube) on the rear axle of a light duty truck, which was then subjected to 100,000 km of rough-road driving. Over the course of this seven-month test no axle failure occurred, and oil samples, taken every 15,000 km, showed no water intrusion. As a result, the OEM concluded that the performance of the GORE® Vent was “...very satisfying, with contaminant levels below [their proprietary threshold], and no water detected in oil over the life of the vehicle test.”

Next, the OEM returned the tested vent to Gore for analysis. After Gore performed visual inspections, Airflow Tests and Pre-Filter Loading Tests, the vent was rated “100% PASS.”

The airflow tests demonstrated that this “used” vent was still equalizing axle pressures to atmosphere, thus, was still fully capable of averting stress on seals. Based on these results, Gore confirmed to the OEM that this vent (AVS 41/VE2048) was indeed recommended for reliable service in this particular application.

The OEM endorsed Gore’s recommendation, as it offered an immediate response to the quality issues. Accordingly, the OEM adopted this GORE® Vent for the rear axles of these light-duty trucks. In addition, all light-duty trucks previously returned for rear-axle problems have since been retrofitted with this GORE® Vent for Drivetrain and Driveline Components.



For both the OEM and the end-user, this solution has delivered more robust and reliable protection from water, dust and dirt. By effectively blocking the contaminants that had previously degraded axle performance, this GORE® Vent has enabled the OEM to address the warranty claims issue.

FOR MORE INFORMATION

gore.com/products/gore-automotive-vents-for-drivetrain-and-driveline-components

ABOUT GORE

W. L. Gore & Associates is a global materials science company dedicated to transforming industries and improving lives. Since 1958, Gore has solved complex technical challenges in demanding environments — from outer space to the world’s highest peaks to the inner workings of the human body. With approximately 10,000 Associates and a strong, team-oriented culture, Gore generates annual revenues that exceed \$3 billion. www.gore.com

INTERNATIONAL CONTACTS

Australia	+61 2 9473 6800	Mexico	+52 81 8288 1281
Benelux	+49 89 4612 2211	Scandinavia	+46 31 706 7800
China	+86 21 5172 8299	Singapore	+65 6733 2882
France	+33 1 5695 6565	South America	+55 11 5502 7800
Germany	+49 89 4612 2211	Spain	+34 93 480 6900
India	+91 22 6768 7000	Taiwan	+886 2 2173 7799
Italy	+39 045 6209 240	United Kingdom	+44 1506 460123
Japan	+81 3 6746 2570	USA	+1 410 506 7812
Korea	+82 2 393 3411		

W. L. Gore & Associates, Inc.

401 Airport Road • Elkton, MD 21921 • USA
Phone: +1 410 506 7812 (USA) • Toll-free: +1 800 523 4673 (USA)
Fax: +1 410 506 8749 • Email: automotive.us@wlgore.com

gore.com/autovents

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