

GORE® Protective Vents

Case History



INCREASE PERFORMANCE OF PROTECTIVE CASES BY ELIMINATING VACUUM

Together, improving life



Situation

Pelican Products, Inc., is a global leader in designing and manufacturing protective cases that are virtually indestructible. These cases are used to transport high-end, sensitive equipment anywhere in the world without compromising performance and availability. With cases that carry anything from tablets and laptops to tools and large field equipment, Pelican engineers every case for a lifetime of reliable performance without breakage, even in extremely harsh environments.

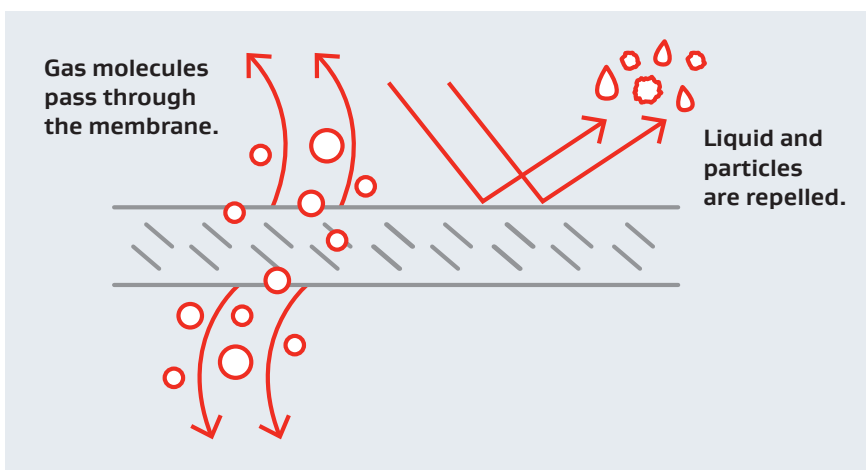
The Pelican 0450 Mobile Tool Chest is a large chest to house tools for maintenance and field engineers. Originally designed to serve as the United States Army's General Mechanics Tool Kit, this tool chest can be opened as soon as it hits the ground, even after being dropped from an aircraft. At the same time, the rugged construction of the case protects the tools so they arrive in full working order, organized and easy to access.

"We rely on Gore's commitment to delivering a quality product time and time again. Over ten years, we have incorporated more than 10 million vents in our products, and not one has failed."

Challenge

The harsh environments in which these tool chests are used mean that they need rugged seals to protect tools from contaminants such as water, dirt and sand. Pelican's engineering team integrated O-ring gaskets into the design to ensure a tight seal when the drawer compartment and the lid are closed.

These gaskets provide excellent protection; however, they can potentially cause pressure differentials inside the chest when altitude or temperature changes occur. With several decades of experience designing products for challenging applications, the Pelican engineers knew that they needed to account for pressure differentials. The 0450 Mobile Tool Chest would be transported around the world and often dropped from an airplane. Rapid altitude changes can cause pressure on the seals to increase from about 2 psi (140 mbar) to almost 16 psi (1,105 mbar) in the short period it takes to reach the ground. If not equalized, this rapid pressure change would create an internal vacuum. Eliminating that possibility would enable the case to be opened immediately upon arrival, regardless of the ambient temperature or pressure. The tool chest also needed to meet the IEC ingress protection standard 67. Therefore, an open hole or tortuous path could not be used for equalizing pressure in the case.





Solution

Having used GORE® Protective Vents in most of their other protective cases, the engineering team decided to incorporate over-molded O-ring vents into the 0450 Mobile Tool Chest — one in the top lid and one in the drawer compartment. These breathable vents allow air to flow in and out of the chest freely, quickly equalizing pressure. In addition, the expanded polytetrafluoroethylene (ePTFE) membrane used in the vent construction serves as a barrier to prevent liquid, dirt, salt and other contaminants from entering the chest and damaging the tools.

According to Scott Nicholson, Director of Worldwide Quality at Pelican Products, Inc., “Our reputation is based on the reliability of our products, and we cannot afford to have a case fail to open or allow the equipment to be damaged from water. We have incorporated GORE® Protective Vents into every case design because of the consistent performance of their venting technology. We rely on Gore’s commitment to delivering a quality product time and time again. Over ten years, we have incorporated more than 10 million vents in our products, and not one has failed.”

Diverse Product Line Engineered for Simple Integration

GORE® Protective Vents are manufactured in many different sizes and shapes, making it easy to choose the right vent for any application. With a diverse product portfolio, these vents are easy to integrate into new or existing designs to meet the needs of a broad range of applications and markets. The versatility of GORE® Protective Vents is apparent in both their range of protection and their ease of installation. For example, these vents:

- Tolerate temperatures ranging from –40°C to 125°C
- Perform to protection standards up to IP69K*
- Provide maximum protection for applications in harsh environments through molded plastic or metal vents
- Install easily by being adhered, threaded, snapped, bolted or heat/ultrasonic-welded to a variety of enclosure materials
- Adhere to the device with adhesive backing for applications with insufficient free space to install a vent inside

*IP ratings depend on the product housing’s design. Please contact a Gore representative for more information.

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 more than 11,000 Associates and a strong, team-oriented culture, Gore generates annual revenues of \$3.8 billion.

Gore develops products and technologies that address complex product and process challenges in a variety of markets and industries, including aerospace, automotive, pharmaceutical, mobile electronics and more. Through close collaboration with industry leaders across the globe, Gore enables customers to design their products and processes to be safer, cleaner, more productive, reliable, durable and efficient across a wide range of demanding environments.

Learn more at gore.com/protectivevents.



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