

The Material Importance of Fit, Form and Function

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Today's smaller and lighter automotive engines achieve greater speed than their predecessors while consuming less fuel. The simultaneous reduction of emissions and increased miles per gallon (MPG) figures testify to how truly efficient these engines have become. The downside of the more stringent performance requirements, however, results in a greater susceptibility for a buildup of deposits to occur in air induction and fuel systems, damaging the ratio between air and fuel.



PN 9290-200 22 oz. (650 mL) canister

Figure 1. The BG VIA supply tool relies on a custom valve engineered by Specialty Manufacturing Co. Source: BG Products Inc.

One solution, created by BG Products, a supplier of aftermarket automotive products and equipment, was to assist lubrication companies and car dealerships by designing a way to clean the fuel injection and air induction systems, eliminating the deposits. The company's [BG VIA® Vehicle Injection Apparatus](#), a supply tool pressurized by shop air, uses BG cleaners to remove deposits from combustion chambers, fuel injectors and other critical fuel components. The result is restored airflow and fuel efficiency, decreased emissions and improved engine performance.

The BG VIA® works by pouring the BG cleaner into the top of the device, increasing the pressure and then running the process until the system is clean.

What BG needed for its design was an easy way to release the pressure buildup in the BG VIA. By adding a pressure relief button, the operator can easily release air pressure after the cleaning procedure.

The Material Challenge

When the design engineers at BG Products approached their engineering counterparts at Specialty Manufacturing (SMC), they requested that SMC tap into its capabilities and insert unique functionality into their device.

An SMC 410 check valve was already designed into the device, so the BG team requested that SMC create a similar design with a small push button to release the built-up pressure. The challenge, however, would be to innovate a solution that could withstand the caustic media that the valve would come in contact with during the cleaning process.

SMC went through several material possibilities for O-rings that would seal the valve and also survive the caustic environment. Finally, they settled on a custom O-ring made of Aflas®, a unique material that would not break down over time.

After three months of research, design and testing, SMC delivered a solution that was within the budget constraints and made from a high-quality, durable material. It has worked so well that in the seven-plus years since the solution was adopted thousands of valves have been purchased for the BG VIA supply tool.

Why Specialty Manufacturing?

In the case of BG Products, value-added engineering meant customization, based on finding an application-specific material for a challenging application. The need for customization can be prompted to meet several diverse requirements, including:

- Fluid chemistries that will come in contact with a valve
- Flow rate: the amount of air, water or other liquid that will go through the device
- Pressure requirements, which are a common factor in valve design and modification

SMC does whatever is necessary to deliver an application-specific solution for all value-added engineering projects, and refrains from saying no to reasonable or complex requests.

The willingness to customize and the expertise to do it right, represent the value-added engineering culture at SMC.

This is apparent when visiting the [Specialty Manufacturing Online Configurator](#). Scroll through the vast number of options available for seals, pressure, temperature, flow and metal and plastic materials. The configurator offers a comprehensive overview of possibilities to match the most stringent specifications.

The heart of SMC's customization capabilities is its customers, those that design a device or equipment and then ask, "What if we do this?" At that point, Specialty Manufacturing partners to innovate, create and deliver solutions that make "this" the best possible experience.

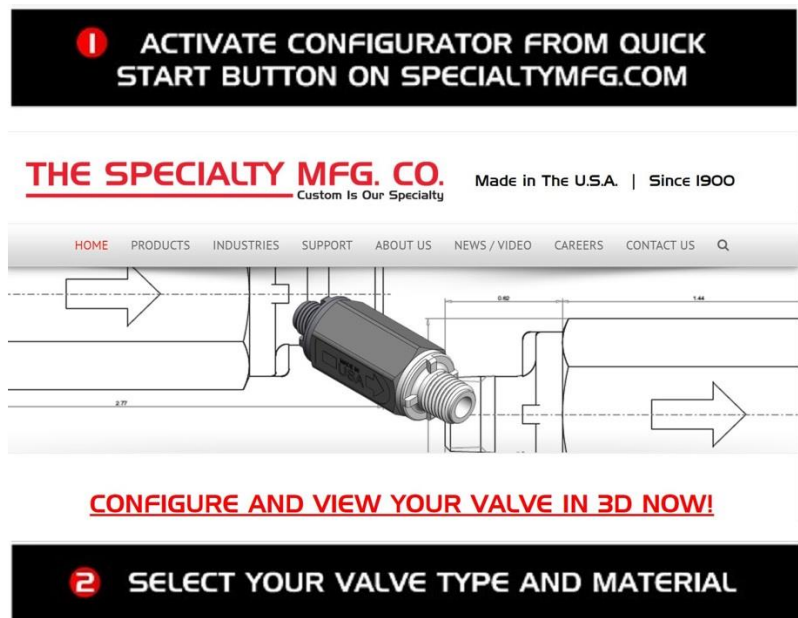


Figure 2. The configurator offers a comprehensive overview of possibilities to match the most stringent specifications. Source: Specialty Manufacturing Co.

Find the exact valve you need now! [Try the Specialty Valve configurator.](#)

