

Phillips Plastics Corporation®

INTERFACE

Metal Injection Molding's Many Benefits Come Through For Firearm Manufacturer



Law enforcement agencies and military personnel require primary and backup pistols that are easy to operate, lightweight, and reliable. These traits are also ideal for personal protection and practical shooting among civilian users. Diamondback Firearms, Inc. partnered with Phillips to meet market demand for a high-quality, concealed-carry backup firearm with the DB380.

About Diamondback Firearms, Inc.

Headquartered in Cocoa, Florida, Diamondback Firearms, Inc. is a subsidiary of Diamondback Manufacturing, Inc., founded in 1989. Diamondback Firearms produces, assembles, and tests firearms and accessories. The organization's arsenal of employees have more than 40 years of accumulated firearms-manufacturing experience in production systems engineering and product development, CNC machining and programming, and computer-aided design.

Diamondback Manufacturing has established a hard-earned respect from the general public, multiple government and military agencies, law enforcement, and international organizations. These agencies include U.S. Fish and Wildlife, U.S. Department of the Interior, U.S. Border Patrol, Department of Homeland Security, and the Naval Air Warfare Center Weapons Division.

Diamondback and Phillips

In 2008, Diamondback Firearms sought to meet market demand for a high-quality, concealed-carry backup .380 ACP (Automatic Colt Pistol). To achieve the highest level of repeatable, reliable performance, Diamondback Firearms designed the DB380 with tight tolerances.

"We designed the parts for the DB380 with tight tolerances under the assumption we could actually get them made. Phillips Plastics was the only manufacturing firm we evaluated that agreed to the tolerances we had to achieve the part quality and standards we required," says Bobby Horan, President, Diamondback Firearms.

The DB380 is a lock-breech, double action only .380 ACP semi-automatic, small-caliber handgun designed and manufactured by Diamondback Firearms. The frame is made of polymer with stainless steel inserts, and the slide and barrel are steel. It is among the lightest .380 ACP pistols in the world, weighing only 8.8 ounces without magazine. It is also the thinnest .380 ACP at .750 inches. The DB380 cartridge capacity is 6+1, and trigger pull is 5 lbs. These attributes make the DB380 suitable for civilians with concealed carry permits and with law enforcement as a back-up or off-duty pistol.





Horan was also impressed by the level of knowledge and expertise Phillips Plastics demonstrated. Ultimately, he chose Phillips Plastics to manufacture four parts for the DB380: magazine catch, cam block, rear rail, and trigger.

All parts are made of stainless steel and metal injection molded within the Phillips Plastics International Traffic in Arms Regulations (ITAR) compliant Metal Injection Molding (MIM) facility in Menomonie, Wisconsin.

Early Collaboration Reaps Rewards

Early on in the project, Horan and Brad Thomas, Engineer, Diamondback Firearms, collaborated with Phillips Plastics to create design parameters around what could be metal injection molded at the level of quality they required.

“Phillips Plastics was instrumental in telling us what could and couldn’t be achieved during the MIM process. Our part design specifications were almost unmachinable from a production standpoint. Phillips Plastics helped make our high-quality, lightweight parts not only capable of manufacturing, but also able to be produced in large quantities. As a result, we were able to create one of the lightest .380 ACP firearms available in the market today,” says Horan.

He explains, “The way we designed our metal injection molded parts helps keep mass low in the areas where you don’t want the weight. This allowed us to put the weight in the barrel and slide areas, where they matter most for achieving less felt recoil and stronger, longer-lasting parts.

“Together, we optimized part designs for the MIM process, reducing the number of tight tolerances, decreasing secondary machining requirements, adding radii, and increasing or

decreasing wall sections in various areas. This early collaboration helped reduce manufacturing costs, while facilitating the overall project success," says Tony Pelke, Engineering Manager, Phillips Plastics.

A Force to Be Reckoned With

"We're trying to hold our gun to the standards of top name brands," says Horan. As a result, the DB380 is poised to be among the most high-performing, reliable concealed-carry backup firearms available in the marketplace.

"When selecting a part-manufacturing partner, we didn't shop vendors outside the United States. We didn't pick our parts based on price. We chose who we thought would be most capable of making the best parts. Throughout our entire partnership, Phillips Plastics has met and exceeded our expectations," says Horan.

"At the onset of any potential application for the MIM process, early involvement between the customer and the supplier is crucial to ensure success. The end result of our early collaboration with Diamondback Firearms was a very successful project launch," says Pelke.

