



ENGINEERING YOUR SUCCESS.

Composite Sealing System Division News

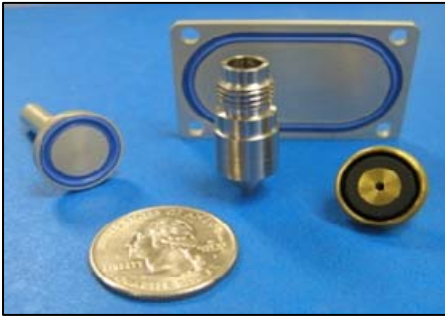
April 2010 | Issue 01

Dynamic Face Seals for Valve Service

Parker's Composite Sealing Systems Division engineers seals for use in valve applications. The Division has recently enjoyed a string of successes with valve applications in aerospace, automotive and semiconductor markets.

What is a Valve?

A valve is a device that regulates the flow of a fluid by opening, closing, or partially obstructing a passageway.



Valves, of one type or another, control everything from the flow of fuel in a rocket to the flow of blood in your body. There are many different styles of valves, but all share common features, one being a movable structure that restricts the flow of the passing fluid. In one valve type, this structure takes the form of a disc at the end of a stem. This disc mates with an interior surface of the valve body (the seat) blocking the passage of fluid. The Composite Sealing Systems Division molds a resilient elastomeric seal into the face of the disc providing the necessary sealing function.

Application Success

One particularly interesting application was a poppet valve seal designed and tested for use in a bypass valve on a major new military aircraft program. This valve is designed to open when backside pressure falls below specified limit.

The Parker designed Mark VII (single void) seal replaced a multi-component assembly with a single piece solution, reducing both

complexity and weight, while improving installation and maintenance issues.

Design Highlights

- Passed 10,000 cycle pressure test cycling between 250 psig and 2375 psig using PJ8 at 300°F
- Compound: Parker compound VM835-75 fluorocarbon per AMS-R-83485, Type 1
- Retainer: 15-5PH stainless steel



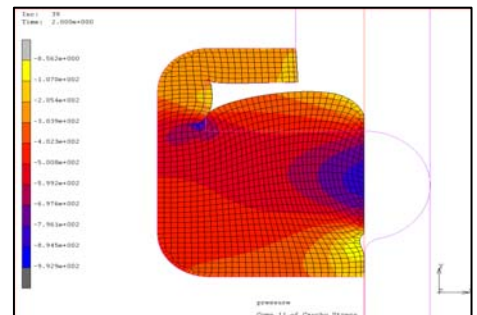
Markets Served

Poppet valves are used in applications across a wide variety of industries and can be manufactured in a full range of sizes using any of our current compounds.

- Fuel valve on major new commercial transport aircraft
- Fuel delivery system in liquid natural gas powered automobile
- Check valve on a semiconductor wafer processing machine
- Spring loaded valve used in a medical drug delivery system

Simulating Performance

Complete finite element analysis (FEA) is performed during the design phase. Pictured below is the stress distribution in the Mark VII seal under compression.



Contact Us

For more information, or to discuss a particular application, please contact the Composite Sealing Systems Division customer service department.

Parker Hannifin Corporation
Composite Sealing Systems Division

7664 Panasonic Way
San Diego, CA 92154
Phone: 619 661 7000