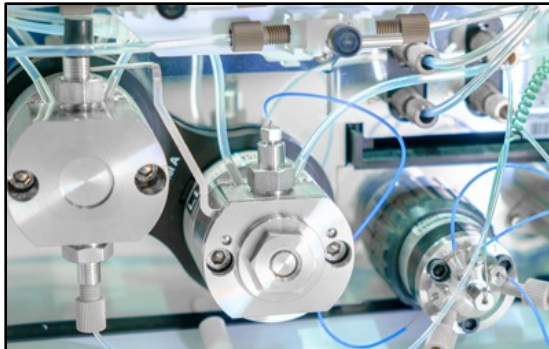


Challenge

Background

High Performance Liquid Chromatography (HPLC) is used to identify the individual components of mixture. It is used by multiple industries including medical, pharmaceutical, and food and beverage. The plunger pump plays a critical role in driving a solvent containing the HPLC mixture through a column. Sealing must take place over a small diameter sapphire plunger. Sealing challenges include pressure approaching 138 MPa (20000 psi), multiple reciprocating cycles, and aggressive solvent challenges.

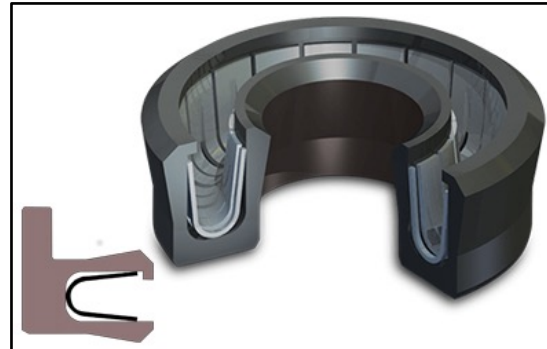


An HPLC pump presents sealing challenges.

Solution

Product

Chesterton Series 100 (105) – Cantilever Spring-Energized Seals were installed in the HPLC pump unit. The design included a flange for positive axial retention in the gland. Materials of construction consisted of a graphite-filled PTFE jacket and stainless steel spring. Materials were selected based on compatibility with a wide range of solvents, low friction, and excellent wear resistance.



Chesterton SES Series 105-Cantilever Spring-Energized Seal

Results

The seal's performance was validated in lab testing and subsequent field deployment of equipment. The Chesterton Series 100 (105) – Cantilever Spring-Energized Seals successfully sealed under a high-pressure and chemically aggressive environment.



HPLC packed column.