

HCS Brief

Hydraulic Cartridge Systems

Tech Brief
TB-0011

Parker “D”-Rings versus O-rings

In the early 2000's, Parker HCS Division (IHD at that time) developed the Winner's Circle product line to produce valves with a commonality of components to help keep costs down. At this time, we also introduced the D-ring seal to replace the standard O-ring and back-up rings used on the older product.

With the integration of Sterling Hydraulic product lines, HCS is working on updating, where possible, the Sterling valves with D-rings.

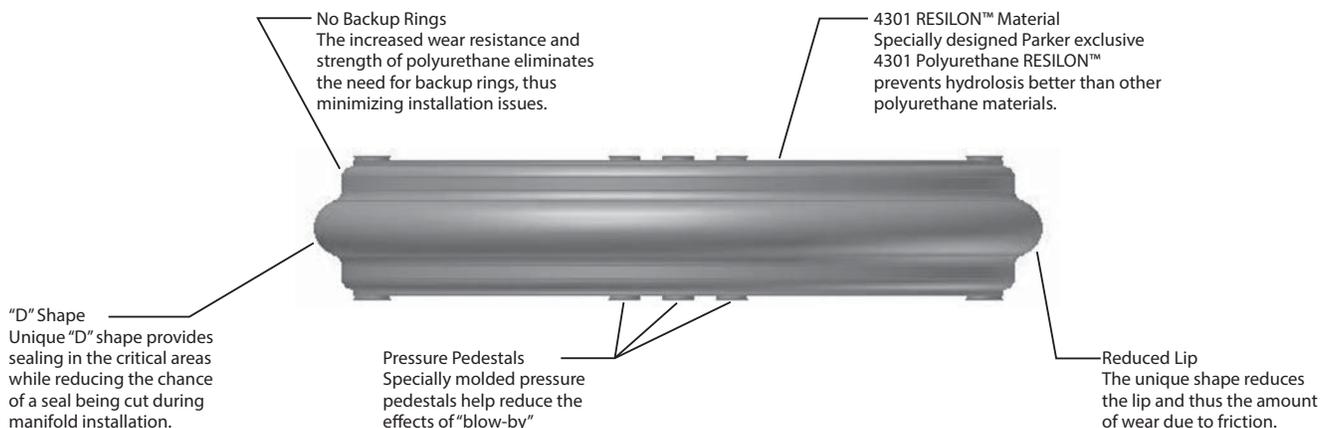
This brief should provide information to assist our customers with determining which seal would be most beneficial for their application.

D-Ring

This is the Parker HCS Division preferred seal. The material is a special 4301 Polyurethane Resilon™. This material exhibits better wear resistance and tensile strength than nitrile or fluorocarbon material. The D-ring also has an excellent resistance to compression set, which means that this increased strength eliminates the need for back up rings and thereby simplifies installation.

The 4301 compound is designed to prevent hydrolysis at high temperatures, thus outperforming standard polyurethane O-rings especially in high water content solutions at high temperatures. This means that the D-ring is compatible* with most water-glycol, water/oil emulsions, and high grade petroleum based hydraulic fluids at temperatures between -50°F to 200°F (-45°C to 93.3°C).

The drawing below depicts the shape and advantages of the D-ring:



Nitrile O-ring

Nitrile O-rings are also compatible* with most water-glycol, water/oil emulsions, and high grade petroleum based hydraulic fluids. The nitrile seals are recommended for use at temperatures between the following temperatures (based on material compound and durometer):

N0674-70	70 durometer	-30°F to 250°F (-34°C to 121°C)
N0552-90	90 durometer	-30°F to 250°F (-34°C to 121°C)

Nitrile O-rings require the use of either a full back up ring or two half back up rings.

Fluorocarbon O-ring

Fluorocarbon O-rings are compatible* with most phosphate ester fluids and phosphate ester blends. The Fluorocarbon seals are recommended for use at temperatures between the following temperatures (based on material compound and durometer):

V0884-75	75 durometer	-15°F to 400°F (-26°C to 204°C)
V0894-90	90 durometer	-15°F to 400°F (-26°C to 204°C)

Fluorocarbon O-rings require the use of either a full back up ring or two half back up rings.

* For further information pertaining to material compatibility with fluids, please refer to the Parker O-ring Handbook (ORD 5700/USA) that can be found at www.parker.com/ord under the Literature tab.

More Information

Parker Valves are available from the Hydraulic Cartridge Systems Division. Consult your HCS catalog or www.parker.com/hcs for more information. You can also contact a Product Manager or Technical Support Specialist for help at 847-955-5000 or HCSTechnical@parker.com.

