The Performance Advantages of a Quad-Ring™ Vs. An O-Ring

The difference between a Quad Ring (left) and an O-ring

We’ve spent the past few entries on this blog discussing O-rings. Now we’d like to talk about the design and performance differences between elastomeric O-rings and Quad-Rings™.

The O-ring is a doughnut-shaped circular cross section seal that can be used nearly anywhere in the sealing industry. The Quad-Ring™, a 100% retrofit option for any O-ring application, can and will outperform an O-ring in many technical areas.

The Quad-Ring™ has four definitive sealing advantages over an O-Ring:

1. **Hidden parting lines, or flash lines.** The flash lines (a line of excess material where the compression mold tool comes together) on an O-ring is always on the outer most diameter, which consequently is a sealing surface. On a Quad-Ring™, that flash line is on the inside of the two outer lobes; therefore, it does not effect the sealing lips.

2. **The Quad-Ring™ is more stable in dynamic applications.** It is also more resistant to rolling as it has a wider footprint and takes up the corners of the hardware groove. Spiral failure is common in dynamic O-ring applications in which torsion occurs and the ring can extrude or over-yield.

3. **The Quad-Ring™ has great lubrication retention.** The grooves on the inside and outside diameter of the ring retain lubricant, thereby lowering friction and extending packing/seal life.

4. **Less compression force to seal.** The multi-lobed design provides more sealing surfaces than an O-ring, all while using the same hardware (Quad-Rings™ are intended to be used in standard O-ring grooves). With these multiple seal points on one ring, less squeeze is required to provide an effective seal. Less friction and wear will ultimately increase service life and reduce downtime.

To recap, the Quad-Ring™ is a 100 percent retrofit design option for any current O-ring application. It follows the same standard sizing as O-rings as well. Gallagher Fluid Seals has in stock both Quad-Rings™ and O-rings in a variety of materials.

To learn more about applications where Quad-Rings™ and O-rings will perform, download our detailed guide to O-rings. This 36-page design guide deals with the technical performance characteristics, material properties, chemical and temperature compatibility,
hardware considerations and failure modes of elastomeric O-rings.