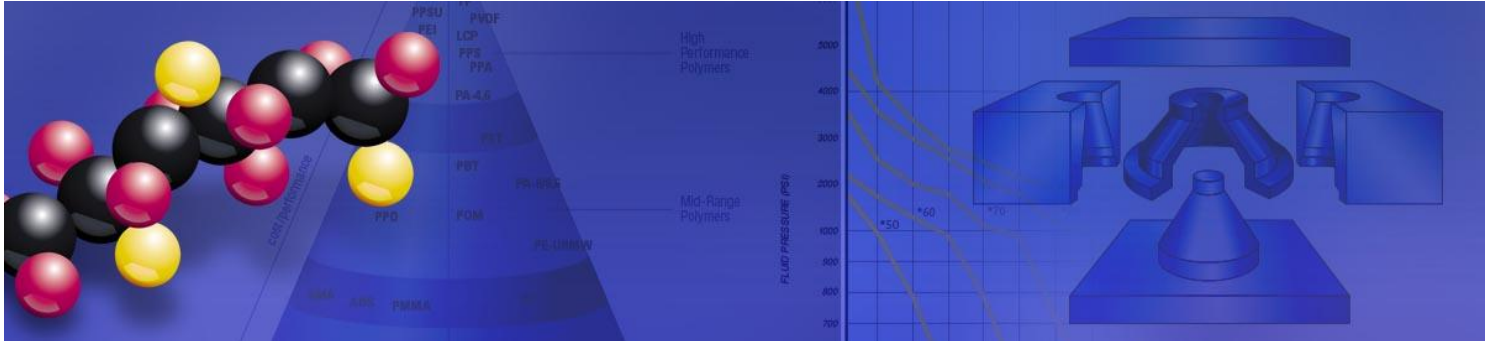


[\(../index.html\)](#)

## Design Guide (index.html)

[The Company Behind the Parts \(1.html\)](#)

[Designing Rubber Components \(2.html\)](#)

[Elastomers/Materials \(3.html\)](#)

[Designing Plastic Components \(4.html\)](#)

[Plastic & Thermoplastic Elastomer Materials \(5.html\)](#)

[Rubber / Standard Parts \(6.html\)](#)

- ▶ [The Quad® Brand Seal Family \(6-0.html\)](#)
- ▶ [Identifying A Sealing Application Type \(6-1.html\)](#)
- ▶ [Defining Factors in Sealing Applications \(6-2.html\)](#)
- ▶ [Quad-Ring® Brand Seals \(6-3.html\)](#)
- ▶ [Groove Design: Quad-Ring® Seals \(6-4.html\)](#)
- ▶ [Quad® Brand O-Ring Seals \(6-5.html\)](#)
- ▶ [Groove Design: O-Ring Seals \(6-6.html\)](#)
- ▶ [Piston Seal Application Example \(6-7.html\)](#)
- ▶ [Rod Seal Application Example \(6-8.html\)](#)

- ▶ [Quad-Ring® Brand and O-Ring Seals for Face Seal Applications \(6-9.html\)](#)

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- ▶ [Quad-Ring® Face Seal Application Example \(6-10.html\)](#)

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- ▶ [Rotary Seals \(6-11.html\)](#)

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- ▶ [Sealing Systems - Rotary Application \(6-12.html\)](#)

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- ▶ [Quad-Ring® Brand Seals for Rotary Applications With Oil \(6-13.html\)](#)

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- ▶ [Quad-Ring® Brand Rotary Seal Application \(6-14.html\)](#)

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- ▶ [Selection Guide/Standard Size Quad-Ring® Brand Seals and Quad® Brand O-Rings Seals \(6-15.html\)](#)

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- ▶ [Quad® Brand Ground Rubber Balls \(6-16.html\)](#)

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- ▶ [Equi-Flex™ Rod Wiper/ Scraper \(6-17.html\)](#)

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- ▶ [Quad® P.E. Plus Brand Plastic Exclusion Seals \(6-18.html\)](#)

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## [Glossary of Terms \(Glossary\\_of\\_Terms.html\)](#)

# Quad-Ring® Brand Seals

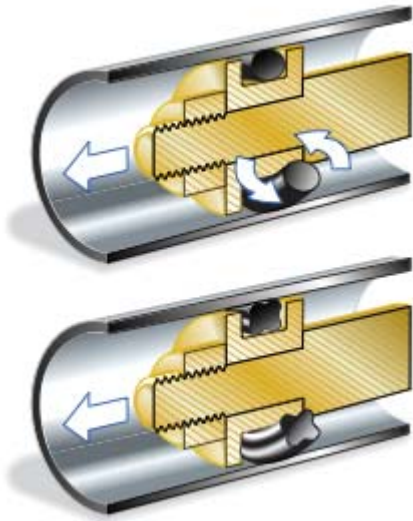
Minnesota Rubber and Plastics pioneered the design and production of four-lobed seals with the Quad-Ring® Brand seal design. These seals are used today around the world for a wide variety of static and dynamic sealing applications.



## Avoiding Spiral Twist

To minimize breakaway friction, an O-Ring groove must be wide enough to allow rolling or twisting of the seal. In the long stroke of a reciprocating seal application, this twisting action can strain and eventually tear the rubber, causing a failure mode known as spiral twist.

To prevent spiral twist, the Quad-Ring® Brand seal's four-lobed configuration is designed to withstand the distortion and extrusion often caused by high or pulsating pressure. To accommodate these forces, a Quad-Ring® Brand seal uses a narrower groove than a comparable O-Ring seal.

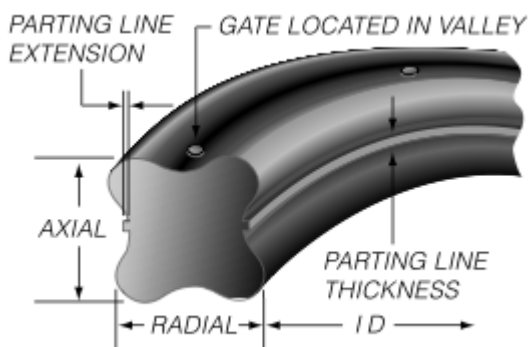


## Longer Seal Life

Because less squeeze means less friction with the four-lobe design, seals last longer. Therefore, equipment in which the Quad-Ring® Brand seal is installed will operate longer and require less maintenance.

## No Parting Line on Sealing Surface

Unlike O-Rings, where parting lines are on the sealing surface, Quad-Ring® Brand seals' parting lines lie between the lobes, away from the sealing surface. This design eliminates the problems of leakage resulting from a parting line's irregular surface.



◀ [Defining Factors in Sealing Applications \(6-2.html\)](#)

[Groove Design: Quad-Ring Seals ▶ \(6-4.html\)](#)