

# Compressor Rod Ring Technologies

Pressure packing rings serve a critical role in reciprocating compressors, providing a dynamic, mechanical seal between the piston rod and cylinder head as the rod moves back and forth. Compressor reliability, efficiency, run times and operating cost-effectiveness can all be significantly improved by optimizing rod ring applications.

Cook Compression provides custom engineering of rod rings for maximum durability and performance.

## UNMATCHED ROD RING RESOURCES

Cook Compression is uniquely qualified to improve rod packing effectiveness with best-in-class product designs and materials, as well as expert technical support. As the inventor of floating mechanical packing and innovator of today's advanced designs, Cook Compression has applied more products in more applications than any other sealing products provider.

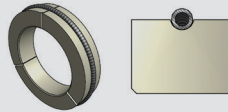
Following is a review of the most widely used pressure packing ring sets. Cook Compression also offers a number of high-performance products, including RTV oil wipers, LF Purge Pac® and LF Vent Pac® assemblies, Static-Pac® shutdown seals, solid ring technology and more.

## PRESSURE BREAKER RINGS

Pressure breakers do not seal gas, but instead act as an orifice to regulate gas flow. Their primary function is to slow the back flow of gas on the suction stroke to avoid damaging rings and disengaging them from the rod. Pressure breakers also reduce gas flow on the discharge stroke, decreasing the effective pressure on the remaining packing rings.

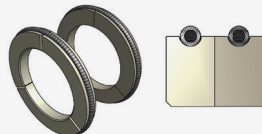
### *P Ring*

- Has zero clearance over the rod and uses three small end gaps to meter gas flow
- The most common type of pressure breaker



### *PR Ring*

- P ring combined with a backup ring
- Improves reliability and performance

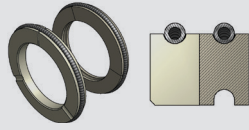


## ADVANTAGES

- The broadest line of sealing products
- TruTech™ high-performance non-metallic materials
- In-house laboratories and test compressors
- Extensive engineering and field support
- High-precision manufacturing
- In-house injection and compression molding

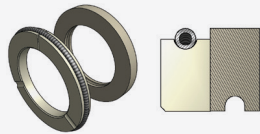
### P1R Ring

- P ring design with a radially cut backup ring
- Acts as a hybrid pressure breaker/seal ring, reducing the load on downstream packing rings by approximately 50%



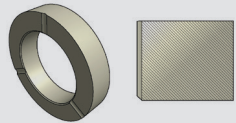
### P1U Ring

- Similar to P1R design, but with an uncut backup ring deployed individually in a ring groove
- Hybrid pressure breaker/seal ring that reduces the load on downstream packing rings



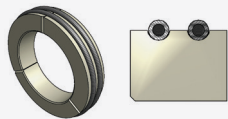
### UP Ring

- A solid pressure breaker with a small clearance over the rod
- Used primarily in high-pressure applications



### P2S Ring

- Similar to a standard P ring, but uses two garter springs
- Adds durability in high-pressure applications

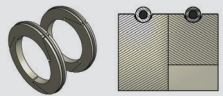


## VENT/PURGE RINGS

Vent rings seal at the low-pressure end of the packing assembly to ensure that gas leakage is forced out the vent connection rather than down the rod and into the distance piece. Purge rings allow the use of an inert gas (usually nitrogen) barrier for added protection against emissions.

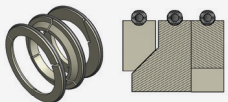
### BD Ring

- Double-acting ring
- Provides a basic seal



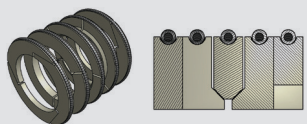
### WAT Ring

- Uses a side-loading wedge ring
- Keeps the ring engaged even at low pressures



### AL Ring

- Double-acting, side-loaded ring
- Contains purge pressure within the cup for an effective barrier

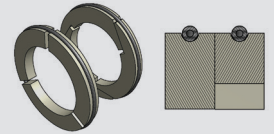


## SEAL RINGS

Seal rings stop or restrict the flow of gas out of the cylinder and into the vent or distance piece. Seal rings are designed to provide a complete seal, but all standard rings allow small amounts of leakage. Therefore, seal rings are typically arranged in series to sequentially reduce gas pressure across the packing case.

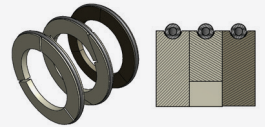
### BT Ring

- The most basic single-acting seal ring, consisting of a radial-cut ring and a step-tangent-cut ring
- Typically used in low-pressure applications



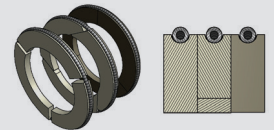
### BTR Ring

- Pairs a BT ring with an anti-extrusion backup ring
- Used in higher pressure and/or higher temperature applications



### CR Ring

- Uses a tangent-cut C ring to increase joint strength and a metallic, radial-cut anti-extrusion R ring
- Offers improved durability for pressures around 2,500 psi and higher



### TR Ring

- A full-tangent ring with a radially-cut backup ring
- Compact size for limited-space applications



## Low-Emissions Packing

For operations requiring near-zero leakage, patented Cook Low-Emissions packing incorporates gapless ring designs to eliminate leak paths and reduce fugitive emissions below measurable limits.

Low-Emissions packing runs cooler, lasts longer and is available in BTUU, BTRR, CUU and CRR ring designs to meet application requirements.