

# Radial Seals - Seal Function & Motion

## Radial Seals in Static Service

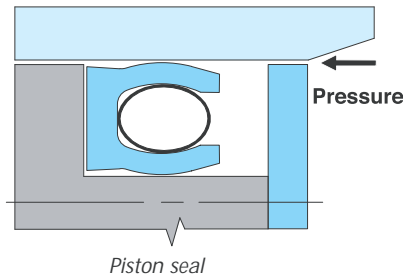
While most of the OmniSeal designs can be used as static radial seals, the OmniSeal 103A, Page 16, is generally recommended for this service. Its moderate to high spring load provides positive sealing under most static sealing conditions.

## Radial Seals in Reciprocating Motion

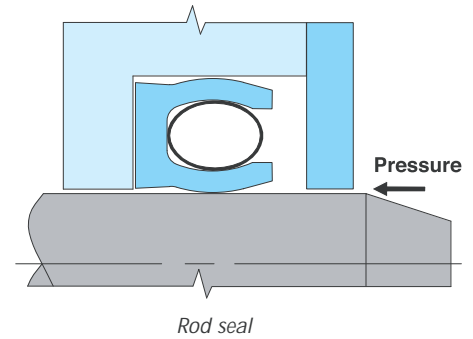
Reciprocating radial seals are the most common OmniSeal applications. For rod and piston sealing and similar applications, the OmniSeal 400A, Page 18, is recommended for general purpose sealing at low to moderate pressures. This series has a low load, high deflection spring which provides low friction sealing, long wear life, and compensates for minor hardware eccentricity or misalignment.

OmniSeal APS (Advanced Pitch Spring), Page 20, uses a unique design of a round wire spring energiser which has the advantage of producing an almost constant spring load over a wide deflection range. This type of seal accommodates variation in hardware dimensions (tolerances) and/or provides effective sealing loads over a large seal wear allowance. Also, it can be wound in very small coil diameters, which makes it particularly suitable for miniature seals and seals requiring low friction values.

For better sealing at low speeds, the OmniSeal 103A, Page 16, is recommended. The higher spring load provides positive sealing with some increase in seal friction. Particularly suitable for medium to high pressure service, the 103A is also an excellent rod seal for positive sealing.



*Piston seal*



*Rod seal*

The OmniSeal RP II, Page 22, is a very rugged design for severe operating conditions. This seal utilizes a unique wrapped and formed stainless steel ribbon spring which is highly resilient with wide deflection capabilities. Its durable spring and rugged jacket design makes the OmniSeal RP II an excellent choice for heavy-duty sealing applications and long wear life.

The Spring Ring II, is an economical alternative to the OmniSeal 400A for high production applications requiring low cost, small size seals. It is manufactured by automated methods and is offered only in a limited number of sizes 3 to 25 mm I.D. Design and sealing characteristics are similar to the OmniSeal 400A.

## Radial Seals in Rotary Motion

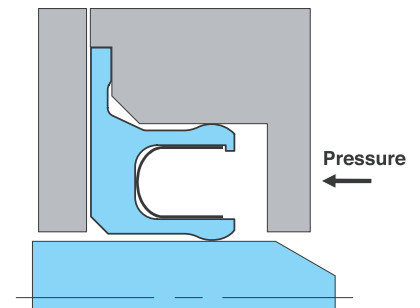
All of the OmniSeal designs can be used in slow to moderate speed rotary or oscillatory applications at low pressure.

In rotary shaft applications the flanged design is preferred. The flange is clamped in the hardware to prevent the seal from turning with the shaft. This can sometimes occur with the standard designs due to thermal and other effects. The flange provides positive hardware retention.

The flanged OmniSeal 400A, page 18, and the flanged OmniSeal APS on page 15 are recommended for most rotary/oscillatory applications. The light spring load minimizes friction, at pressures under 1,5 MPa, with surface speeds in the range of 1-1,5 m/s. At higher pressures, reduced surface speeds are required to prolong seal wear life. The resilient 400A and APS spring allows for minor shaft runout or misalignment.

For very slow speeds, under 0,5 m/s. and intermittent rotary/oscillatory motion at higher pressures, the flanged OmniSeal 103A, Page 16 and OmniSeal RP II, Page 22, are recommended. The OmniSeal RP II has a very resilient spring that can tolerate above normal shaft run-out and misalignment.

For applications requiring ultra-low friction, high pressures or high surface speeds we suggest that you contact our Technical Support. (See inside back cover for complete information.)



*Flanged 400A,  
typical flanged jacket*