

# Face Seals-Seal Function and Motion

## Face Seals in Static Service

The OmniSeal 103A, face seal is generally the first choice for most static face seal applications. This series utilizes a moderate to high load spring, and is capable of sealing effectively over a wide temperature and pressure range.

Because of its very high spring loading, the OmniSeal RACO® 1100A, is particularly recommended for extreme sealing conditions, cryogenic temperatures, ultra-high vacuum and positive sealing of helium and other light gases.

The OmniSeal 400A, may also be used as a static face seal when light spring loading is essential. However, its sealing ability may not be as effective under extreme conditions as possible with the 103A or the RACO 1100A due to the relatively light spring load.

## Face Seals in Dynamic Service

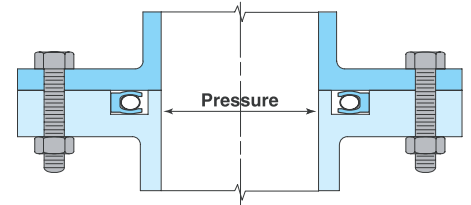
OmniSeal 400A, is recommended for rotary face seal applications at slow to moderate rotary speeds. Low spring loading keeps friction to a minimum. For ultra-low friction or high surface speed contact the factory.

The OmniSeal APS, is an ideal choice for use in dynamic reciprocating and rotary applications. Due to the flat load curve of the Advanced Pitch Spring (APS), it also provides excellent service in friction sensitive applications.

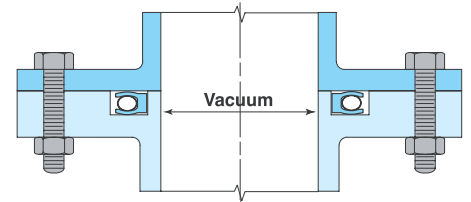
In oscillatory or slow, intermittent rotary applications where high rotational torques are available, the OmniSeal RACO 1100A, is recommended. Such applications include swivels and loading arm pivot joints. Because of its exceptionally high spring load, the OmniSeal

RACO 1100A is also an excellent choice when maximum sealability is mandatory in liquids and gases with a low specific gravity and sealing at cryogenic temperatures.

### Inside Face Seal



### Outside Face Seal



### Groove Sizes Part Number Designation See page 24-25

## Installation

Unlike Rubber O Rings, OmniSeal Seals do not stretch without damage. Therefore it is desirable to install OmniSeal spring energised seals in open groove designs. If closed (non-split) or half open grooves are inevitable then make sure that, even more than with open grooves, all parts in touch with the seal when assembled are free from scratches and sharp edges. Otherwise the seal may be damaged.

Assembling seals in closed grooves, located piston-wise will be easier than bore-wise assembling. Piston-wise assembling means the seal has to be

stretched. Depending on the diameter this stretching can be done by heating up the seal, so that natural expansion will reduce the elongation needed to bring the seal in the groove. When cooling down again the seal will shrink back to the nominal size.

Bore-wise assembling means the seal has to be deformed, and special care should be taken when pushing the seal in the groove.

OmniSeal 103A, 400A and APS type seals can be installed in closed grooves. It is not recommended to install small diameter type 400A (U-spring) seals in closed grooves.

Bigger diameter seals are typically easier to install in closed grooves than smaller sized seals. Consult factory for seals diameters smaller than 20 times the seal cross-section. Saint-Gobain Performance Plastics can assist you with special assembly tools.