

OmniSeal Back-Up Rings

Back-Up Rings are used when sealing fluids or gases at high temperature and high pressure combinations. Careful attention is also required at high pressure and high speed reciprocation conditions. If the application parameters fall outside the limits set in the tables on page 10, we strongly advice to contact our technical support for further assistance.

Rectangular Back-Up (fig. 1)

In most applications with lower pressure and temperatures below 250° C, a rectangular backup will secure the seal for extrusion. Such backup rings are machined to fit exactly in the radial groove width. The material should be a compound with a higher extrusion resistance then the seal's material.

Triangular Back-Up (fig. 2)

In some cases where a high temperature precedes a high pressure it is recommended to use a triangular backup.

Double Triangular Back-Up closing the extrusion gap and preventing extrusion of the seal. (fig. 3)

For extreme high pressure and temperature combinations it is recommended to use a set of two triangular back up rings. It is very important to assemble the 90° corner of the backup ring towards the extrusion gap. This type of backup ring is often used when the radial groove dimension changes as a result of the system pressure.

L-shaped Back-Up (fig. 4)

The L-shaped backup ring is used for preventing extrusion at extreme high pressure and high temperature combinations. It is capable of securing PTFE seals up to + 300°C and extreme pressures, such as 20 MPa, with very large extrusions gaps.

Extrusion is a function off

- a) the size of the extrusion gap
- b) the temperature
- c) the system pressure
- d) surface speed (reciprocating movements)

Under pressure the PTFE tends to flow into the extrusion gap. Dynamic reciprocating movements increases extrusion. Under static conditions however and when pressure, temperature and extrusion are below certain limits, extrusion will stop as soon as the friction in the extrusion gap equals the pressure. Cycling conditions however can cause the extrusion to continue, resulting in premature failure of the seal.

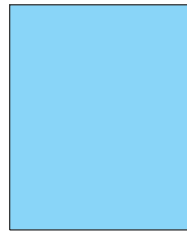


fig. 1

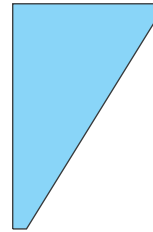


fig. 2

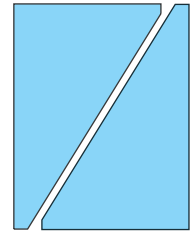


fig. 3

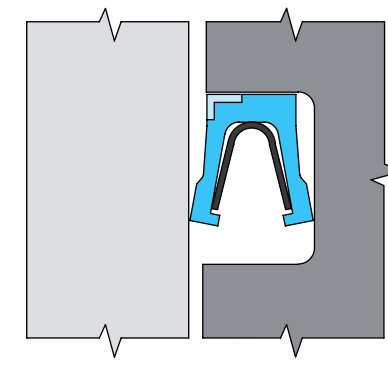
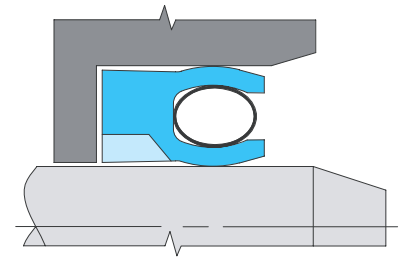
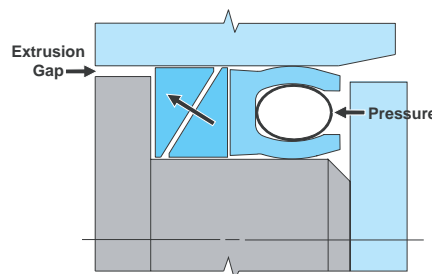


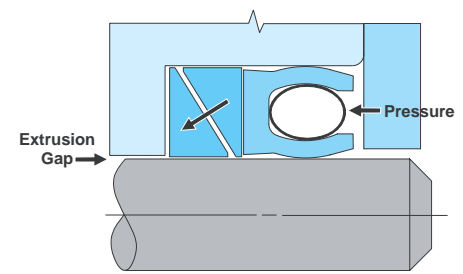
fig. 4



High modulus anti-extrusion/wear ring



Piston seal installation
with split back-up rings



Rod seal installation
with split back-up rings