



TECHNICAL INFORMATION

Quad-Ring®

Description

Original Quad-Ring® Seals are four lipped seals with a specially developed sealing profile. A wide range of elastomer materials for both standard and special applications allows practically all liquid and gaseous media to be sealed. Quad-Ring® Seals are vulcanized as a continuous ring. They are characterized by their annular form with a four lipped profile. Their dimensions are specified with the inside diameter and the cross-section.

Quad-Ring® seals can be used in a variety of applications, such as:

For dynamic applications

- For sealing of reciprocating pistons, rods, plungers, etc.
- For sealing oscillating, rotating or spiral movements on shafts, spindles, rotary transmission leadthroughs, etc.

For static applications

- As a radial-static seal, e.g. for bushings, covers, pipes, etc.
- As an axial-static seal, e.g. for flanges, plates, caps, etc.
- As an energizer element for elastomer energized hydraulic seals where there is a risk of the O-Ring twisting.

Advantages

- Avoids twisting in the groove. Due to its special profile, the seal does not tend to roll in the groove during reciprocating movement.
- Low friction.
- Very good sealing efficiency. Due to an improved pressure profile over Quad-Ring® Seal cross-section, a high sealing effect is achieved.
- A lubricant reservoir formed between the sealing lips improves start up.
- Unlike an O-Ring, the mould line flash lies in the trough, between and away from the critical sealing lips.



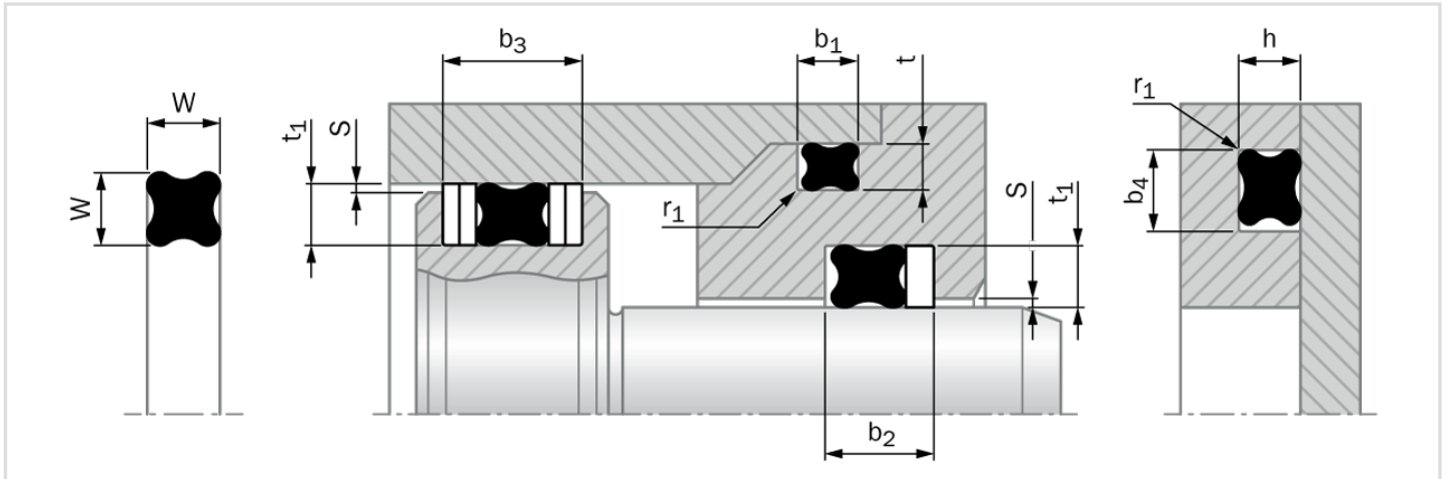
Technical Data

Pressure	: Reciprocating	: up to 5 MPa without Back-up Ring, 30 with Back-up Ring
	: Rotating	: up to 15 MPa with Back-up Ring
	: Static	: up to 5 MPa without Back-up Ring, 40 with Back-up Ring
Velocity	: Reciprocating	: up to 0.5 m/s
	: Rotating	: briefly up to 2 m/s
Temperature	: -30 °C to +100 °C	



TECHNICAL INFORMATION

Quad-Ring®



Installation dimensions - Standard recommendations

Cord Diameter W	Groove Dimensions					Radius ³⁾ r ₁	Radial Gap S _{max.}
	Groove Depth* ¹⁾		Groove Width**				
	Dynamic t ₁ +0.05	Static t/h +0.05	b ₁ , b ₄ +0.2	b ₂ +0.2	b ₃ +0.2		
1.02	0.80	0.75	1.20	²⁾	²⁾	0.10	0.03
1.27	1.00	0.90	1.40	²⁾	²⁾	0.10	0.03
1.52	1.25	1.15	1.70	²⁾	²⁾	0.22	0.04
1.78	1.50	1.40	2.00	²⁾	²⁾	0.22	0.05
2.62	2.30	2.25	3.00	²⁾	²⁾	0.30	0.08
3.53	3.20	3.10	4.00	²⁾	²⁾	0.40	0.08
5.33	4.90	4.75	6.00	²⁾	²⁾	0.40	0.10
7.00	6.40	6.20	8.00	²⁾	²⁾	0.60	0.10

* The values quoted for groove depth are average values and apply under medium load conditions in hydraulic applications. For eccentric piston positions or bending of the rod and in vacuum and low-pressure applications, the groove depth should be reduced and/or the initial squeeze increased.

** If a greater swelling of the seal material is anticipated, the groove width can be increased by up to approx. 20%.

¹⁾ Also O-Ring grooves can be generally used. Friction may be higher at dynamic application. Back-up Rings must be adapted.

²⁾ When using Back-up Rings the groove is to be increased by the Back-up Ring thickness.

³⁾ If a Back-up Ring is used the recommended radius should always be $r_1 = 0.25 \pm 0.2$ mm.

Important Note

The information in this datasheet is for reference purposes. Specific operating conditions like temperature or pressure depend on sealing material and can be looked up on the respective product detail pages. Due to the interaction of parameters, maximum values may not be achieved. It is therefore vital that customers test and verify suitability of product and material for each individual application.