RADIAL SHAFT SEALS

Radial shaft seals are suited for use on rotating machine elements, such as shafts, hubs and axles. They are used to seal against a wide variety of media statically and dynamically. Typical fields of application include powertrain technology, agricultural and construction machinery, wind turbines, ship-building and other areas of application in the manufacture of machines and devices.

Radial shaft seals from the Dichtomatik brand are offered in various designs and materials. The selection of the right option depends on the application and the prevailing operating conditions (media, temperature, the shaft's circumferential speed, and pressure). The standard version consists of an elastomer part, a stiffening ring and a tension spring. Many designs are also available with a protective lip, which also seals off dirt from the exterior. Other configurations such as a double seal lip, seal lips with twist elements, a grooved outer sleeve, and all possible special designs are available on request.

The broad array of radial shaft seals can be provided in the standard elastomer materials NBR (black), FKM (brown), and PTFE. Besides standard steel for the spring and stiffening ring, various stainless steel grades are available on request.

DIMENSIONS

The currently available dimensions can be found on our website **dichtomatik.fst.com** or on our online ordering platform **EASY**.

SEALING MATERIALS

NBR (acrylonitrile butadiene rubber)
- Very good wear resistance
- Can be used in mineral oils and greases

FKM (fluororubber)
- Good resistance to aging and ozone
- Low gas permeability
- Can be used in mineral oils and greases
- For chemically aggressive media (acids, alkaline solutions, etc.)
- Suitable for high-temperature applications
- Suitable for high circumferential speeds
- Can be used in synthetic oils and greases

PTFE (Polytetrafluoroethylene)
- High resistance to ozone, weathering and age
- Very low coefficient of friction
- Broad chemical resistance
- Suited for defective lubrication and dry running
- Suited for a broad range of thermal applications

INSTALLATION SPACE AND ASSEMBLY

Contact surfaces of the shaft and the housing have an impact on sealing functions. As a result, they must meet certain requirements. The surface of the shaft should be ground to the point that it is free of twists and has a surface roughness of Rz = 1 to 4 µm and Rmax ≤6.3 µm. The roughness values Rz = 10 to 20 µm and Rmax ≤ 25 µm should be observed to ensure the shaft seal's secure seat in the housing bore. To avoid damage to the shaft seal during assembly, appropriate mounting devices must be used, e.g. mounting sleeves.

SPECIAL DESIGNS

- WAK
- WAG
- WAX
- WAD
- WBD

Profile	Type	Material	Hardness (Shore A)	Temperature (°C)*	Circumferential speed (m/s)	Pressure Mpa (bar)**	Characterisctics and adiitional designs
	WA	NBR	70	-40 to +80	≤ 10	≤ 0,05/0,5	• Outer sheath rubberized smooth • With spring • WAS: with protective lip (pl) • WAK: outer sheath grooved (without pl) • WAG: outer sheath grooved (pl)
		FKM	80	-25 to +150	≤ 34	≤ 0,05/0,5	
	WAO	NBR	70	-40 to +80	≤ 6	0/0	• Outer sheath rubberized smooth • Without spring • WAOK: outer sheath grooved
	WAY	NBR	80	-40 to +80	≤ 10	≤ 1/10	• Outer sheath rubberized smooth • With spring • Pressurizable design • WASY: with protective lip
		FKM	80	-25 to +150	≤ 10	≤ 1/10	
	WB	NBR	70	-40 to +80	≤ 10	≤ 0,05/0,5	• Outer sheath metallic • With spring • WBS: with protective lip
	WBO	NBR	70	-40 to +100	≤ 6	0/0	• Outer sheath metallic • Without spring • WBS: with protective lip
	WC	NBR	70	-40 to +100	≤ 12	≤ 0,05/0,5	• Outer sheath metallic • With Stiffening ring • With spring • WCS: with protective lip
	WCL	NBR	70	-40 to +100	≤ 12	≤ 1/10	• Outer sheath metallic • With stiffening ring • With spring • Clamped elastomer seal lip • Pressurizable design
		FKM	75	-30 to +200	≤ 15	≤ 1/10	
	WCP20	PTFE + carbon fiber FKM		-90 to +250	≤ 40	≤ 1/10	• Outer sheath metallic • With stiffening ring • With spring • Clamped elastomer seal lip • Pressurizable design

Profile	Type	Material	Hardness (Shore A)	Temperature (°C)*	Circumferential speed (m/s)	Pressure Mpa (bar)**	Characterisctics and adiitional designs
	WE5/6/7	NBR	80	-30 to +100	≤ 20	≤ 0,05/0,5	• Outer sheath fabric-reinforced • With spring
		FKM	80	-20 to +100	≤ 25	≤ 0,05/0,5	
	WEPO	PTFE+ carbon/ graphite		-50 to +205***	≤ 15	≤ 1/10	• With O-Ring made of FKM 80 as static housing seal • Various PTFE and elastomer compunds available

* without media influence
** depending on the number of revolutions
*** depending on the O-Ring material selected

All data are maximum data under ideal conditions and must not be applied simultaneously. These are dependent on the circumferential speed, as well as shaft Ø, material, temperature, pressure, medium and other factors. An individual test run in the application is recommended.