PTFE Competence Center

Inside-sealing rotary seal

Type: RI

The inside-sealing rotary seal type RI is used for dual-flow sealing in rotary unions, axles, semi-rotary actuators and swing shafts. The operating media here range from mineral oil-based hydraulic fluids through to environment-friendly bio-oils, water, flame-resistant hydraulic fluids and air.

Either one or two radial notches depending on the profile cross section have been worked into the contact surface of the PTFE profile ring to act as a lubricant reservoir and to increase the surface pressure against the rod.

The rotary seal provides dynamic sealing between the PTFE profile ring and rod surface and static sealing via the elastic O-ring between profile ring and groove base.

Through various combinations of materials it can be used reliably across the whole pressure, speed and temperature range and moreover provides slip-stick free behavior.

Notches

To ensure that the preload of the seal is maintained under sudden changes of pressure and movement direction, it can be produced with radial notches on both sides.

Operating media

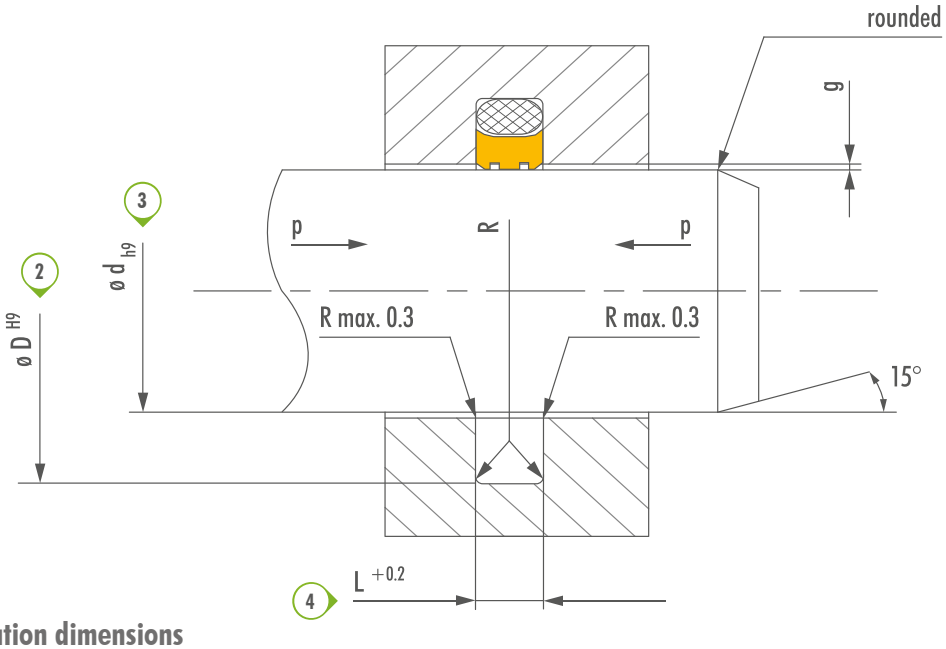
Mineral oil based hydraulic fluids	Environment-friendly bio-oils
Water	Flame-resistant hydraulic fluids
Air	Other media acc. to O-ring material

Operating range

Pressure	up to 30 MPa (300 bar)
Speed	up to 2 m/s
Temperature	– 30 °C to + 200 °C (acc. to O-ring material)

Surface quality

Roughness	Ra	Rt
Contact surface	≤ 0.3 µm	≤ 3.0 µm
Groove base	≤ 1.6 µm	≤ 16.0 µm
Groove flank	≤ 1.6 µm	≤ 16.0 µm



Installation dimensions

Rods ø d					Gap dimension g			
Standard version	Light-duty version	Groove base ø D	Groove width L +0.2	Radius R	10 MPa max.	30 MPa max.	Notches number	O-ring cross section ø
6.0 - 18.9	6.0 - 130.0	ø d + 4.9	2.2	0.4	0.15	0.1	0	1.78
19.0 - 37.9	10.0 - 245.0	ø d + 7.5	3.2	0.6	0.2	0.15	1	2.62
38.0 - 199.9	19.0 - 455.0	ø d + 11.0	4.2	1.0	0.25	0.2	1	3.53
200.0 - 255.9	38.0 - 655.0	ø d + 15.5	6.3	1.3	0.3	0.25	2	5.33
256.0 - 649.9	120.0 - 655.0	ø d + 21.0	8.1	1.8	0.3	0.25	2	7.0
650.0 - 900.0	650.0 - 900.0	ø d + 28.0	9.5	2.5	0.45	0.3	2	8.4

Material selection PTFE profile ring

PTFE + bronze	Standard for hydraulic applications, good sliding behavior, particularly pressure and abrasion resistant, not for use in aqueous media or acids
PTFE + glass-MoS_2	Particularly wear and abrasion resistant, can be used in media with poor lubricating properties, in water and also water-oil emulsions
PTFE + carbon	Exceptionally abrasion and extrusion resistant, can be used in water hydraulic systems

Find additional materials in our PTFE materials overview in the technical information section.

Selection of materials O-ring

Nitrile rubber NBR	Temperature range – 30 °C to + 120 °C
Fluorinated rubber FPM	Temperature range – 25 °C to + 200 °C

To place a quick order for the correct product, please use the order information system below.

SYSTEM: RI Groove base ø D x Rod diameter ø d x Groove width L » Material

(1) (2) (3) (4) (5)

EXAMPLE: RI 91 x 80 x 4.2 CCN-CAR25

(1) Inside sealing rotary seal (2) Groove base diameter ø D 91 mm

(3) Rod diameter ø d 80 mm (4) Groove width L 4.2 mm (5) Material PTFE + 25% carbon