

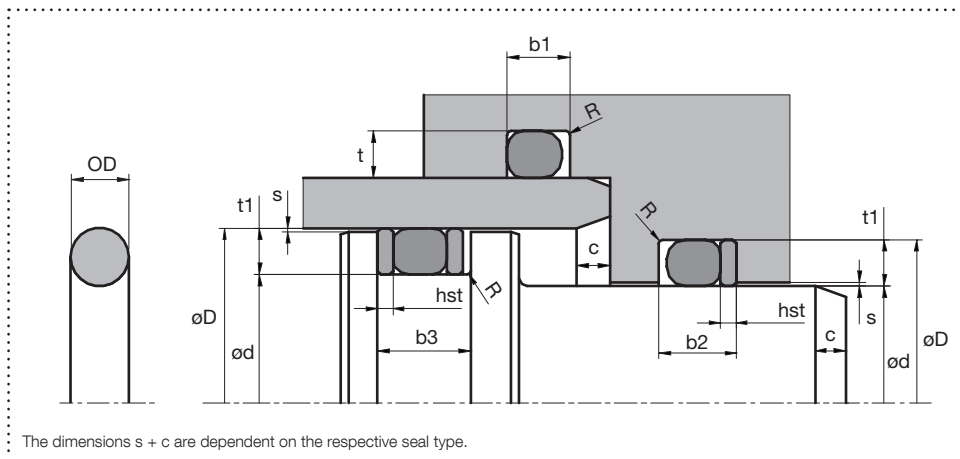


trygonal

Rotary seal TOR

O-ring, injection-moulded – single/double acting radial installation, static/dynamic

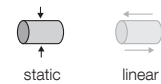
Housing design



Design

- O-ring in various dimensions and materials
- Resistant to chemical and thermal requirements
- Used as sealing or preload element
- Alternative seal types are suggested for dynamic applications

Application



Brightened symbols:
Seal only for limited use.
Please contact us.

Surface finish

Pressure Roughness (µm)	static installation				dynamic installation				Material portion
	constant		pulsating		constant		pulsating		
	Rtmax	Ra	Rtmax	Ra	Rtmax	Ra	Rtmax	Ra	
Sliding surface	12.5	3.2	6.3	1.6	1.6	0.4	1.6	0.4	Ratio contact area: 50 – 95% at a cutting depth of 0.5 x Rz starting from Cref = 0%
Groove base	12.5	3.2	6.3	1.6	6.3	1.6	6.3	1.6	
Groove flanks	12.5	3.2	6.3	1.6	12.5	3.2	6.3	1.6	

Standard dimensions

OD	static installation				dynamic installation							
	t (mm)	b1 (mm)	R (mm)	c (mm)	t1 (mm)	b2 (mm)	b3 (mm)	h _{st} (mm)	R (mm)	c (mm)	s (mm)	
1.0	0.7	1.4	0.2	1.2	–	–	–	–	–	–	–	–
1.5	1.1	2.0	0.3	1.5	1.25	3.0	4.0	1.0	0.3	1.1	f7/H8	
1.78	1.3	2.4	0.3	1.5	1.45	3.4	4.4	1.0	0.3	1.2	f7/H8	
2.0	1.5	2.7	0.3	2.0	1.65	3.7	4.7	1.0	0.3	1.2	f7/H8	
2.5	1.85	3.3	0.3	2.0	2.15	4.8	6.3	1.5	0.3	1.4	f7/H8	
2.62	2.0	3.6	0.3	2.0	2.25	5.1	6.6	1.5	0.3	1.5	f7/H8	
3.0	2.3	4.0	0.6	2.5	2.6	5.5	7.0	1.5	0.6	1.5	f7/H8	
3.5	2.65	4.6	0.6	2.5	3.05	6.1	7.6	1.5	0.6	1.8	f7/H8	
3.53	2.7	4.8	0.6	2.5	3.1	6.3	7.8	1.5	0.6	1.8	f7/H8	
4.0	3.1	5.2	0.6	3.0	3.5	6.7	8.2	1.5	0.6	2.0	f7/H8	
4.5	3.5	5.8	0.6	3.0	4.0	7.5	8.9	1.7	0.6	2.3	f7/H8	
5.0	4.0	6.6	0.6	3.0	4.4	8.3	10.0	1.7	0.6	2.3	f7/H8	
5.33	4.3	7.1	0.6	3.5	4.7	8.8	10.5	1.7	0.6	2.7	f7/H8	
5.5	4.5	7.1	0.6	3.5	4.8	8.8	10.5	1.7	0.6	2.8	f7/H8	
6.0	4.9	7.4	0.6	3.5	5.3	9.1	10.8	1.7	0.6	3.1	f7/H8	
6.5	5.4	8.0	1.0	4.0	5.7	10.0	11.4	1.7	1.0	3.3	f7/H8	
6.99	5.8	9.5	1.0	4.0	6.1	11.5	13.5	2.0	1.0	3.6	f7/H8	
7.0	5.8	9.5	1.0	4.0	6.1	11.5	13.5	2.0	1.0	3.6	f7/H8	
7.5	6.3	9.7	1.0	4.0	6.6	11.7	13.7	2.0	1.0	3.8	f7/H8	
8.0	6.7	9.8	1.0	4.0	7.1	11.8	13.9	2.0	1.0	4.0	f7/H8	
9.0	7.7	10.6	1.5	4.5	8.1	13.1	15.6	2.5	1.5	4.3	f7/H8	
9.5	8.2	11.0	1.5	4.5	8.6	13.5	16.0	2.5	1.5	4.3	f7/H8	
10.0	8.6	11.6	2.0	5.0	9.1	14.1	16.6	2.5	2.0	4.5	f7/H8	
12.0	10.6	13.5	2.0	5.0	11.0	16.5	19.5	3.0	2.0	5.5	f7/H8	



Material and application parameters

Sealing element ¹	Temp. (°C)	max. sliding speed (m/s)	max. pressure ²
NBR 70	-40 – +120	only recommended for static applications	< 150 bar
NBR 90	-40 – +120	only recommended for static applications	< 350 bar
FPM 70	-30 – +230	only recommended for static applications	< 150 bar
EPDM 70	-40 – +140	only recommended for static applications	< 200 bar
MVQ 70	-40 – +230	only recommended for static applications	< 150 bar

¹ Most frequently used sealing materials; alternative materials and Shore hardnesses on request.


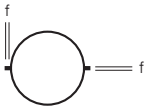
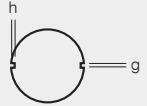

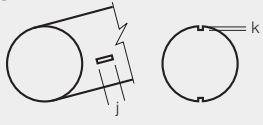

² From 100 bar for NBR we recommend the use of back-up rings.

The specified operating parameters are generally valid values and must not be used simultaneously. An order can be placed by specifying the profile type, material and specified installation dimensions.

Shape and surface deviations with variety characteristics N and S

The DIN ISO 3601-3 standard defines permissible shape and surface deviations of O-rings. Permissible defect sizes are differentiated according to type characteristics. O-rings with the grade level N are intended for general applications and meet the high demands on dynamic and static sealing. O-rings with the grade level S are intended for applications requiring a higher quality standard with regard to permissible deviations and surface qualities.

If no specific information on form and surface deviations is given in an enquiry/order, the O-rings are generally offered or supplied according to grade N.

Type of deviation	Dimension	Grade level N					Grade level S				
		1.8	2.65	3.55	5.3	7.0	1.8	2.65	3.55	5.3	7.0
Mismatch and form deviation 	e	0.08	0.10	0.13	0.15	0.15	0.08	0.08	0.10	0.12	0.13
Burr and offset, parting line 	f	0.10	0.12	0.14	0.16	0.18	0.10	0.10	0.13	0.15	0.15
Backrind 	g	0.18	0.27	0.36	0.53	0.70	0.10	0.15	0.20	0.20	0.30
	h	0.08	0.08	0.10	0.10	0.13	0.08	0.08	0.10	0.10	0.13
Excessive trimming 	–	Deviations of the round cross-section are permissible when the flattened area is seamlessly integrated into the rounding and the cross section still falls within the permissible tolerance.									
Flow lines 	j	0.05 x OD ³					0.03 x OD ³				
	k	1.5	1.5	6.5	6.5	6.5	1.5	1.5	5.0	5.0	5.0
Indentations and non-fills 	l	0.60	0.80	1.00	1.30	1.70	0.15	0.25	0.40	0.63	1.00
	m	0.08	0.08	0.10	0.10	0.13	0.08	0.08	0.10	0.10	0.13
Foreign material	–	not permissible									

³ Depending on which value is higher. All figures in mm.

Our applied technical advice, either oral, written or through tests is given according to our best knowledge. However, this information is to be considered as non-obligatory instruction, also in terms of any protective rights of a third party, and does not exempt you from testing our product in reference to its suitability for the intended process and purpose. Utilisation, application and processing of the products occur entirely outside of our control and are therefore exclusively your responsibility. However, should a case of liability come into question, it will be limited to all damages in the value of the product which we delivered and you used. By all means, we do warrant the impeccable quality of our products in accordance with our general sales and delivery conditions.

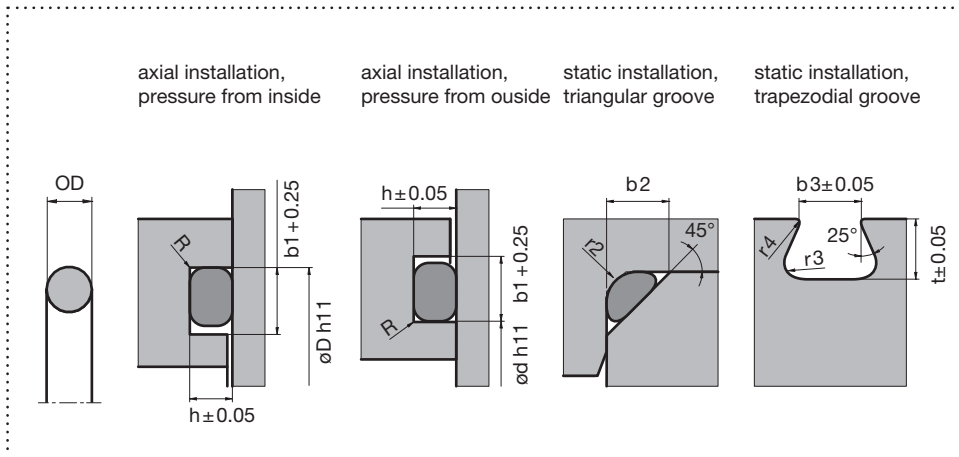


trygonal

Rotary seal TOR

O-ring, injection-moulded – single/double acting axial installation, static

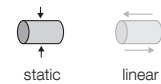
Housing design



Design

- O-ring in various dimensions and materials
- Resistant to chemical and thermal requirements
- Used as sealing or preload element
- Alternative seal types are suggested for dynamic applications

Application



Brightened symbols:
Seal only for limited use.
Please contact us.

Surface finish

Pressure	constant		pulsating		Material portion
	Rtmax	Ra	Rtmax	Ra	
Sliding surface	12.5	3.2	6.3	1.6	Ratio contact area: 50 – 95% at a cutting depth of 0.5 x Rz starting from Cref = 0%
Groove base	12.5	3.2	6.3	1.6	
Groove flanks	12.5	3.2	6.3	1.6	

Standard dimensions

OD	axial inst., pressure from inside/outside			axial inst., triangular groove		axial inst., trapezoidal groove			
	h (mm)	b1 (mm)	R (mm)	b2 (mm)	r2 (mm)	b3 (mm)	t (mm)	r3 (mm)	r4 (mm)
1.0	0.7	1.4	0.2	–	–	–	–	–	–
1.5	1.1	2.1	0.3	2.1 +0.1	0.3	–	–	–	–
1.78	1.3	2.6	0.3	2.4 +0.1	0.3	–	–	–	–
2.0	1.5	2.8	0.3	2.75 +0.1	0.4	1.6	1.5	0.4	0.25
2.5	1.85	3.4	0.3	3.4 +0.15	0.5	2.0	2.0	0.4	0.25
2.62	2.0	3.8	0.3	3.6 +0.15	0.5	2.1	2.1	0.4	0.25
3.0	2.3	4.0	0.6	4.1 +0.2	0.6	2.4	2.4	0.4	0.25
3.5	2.65	4.7	0.6	4.8 +0.2	0.6	2.9	2.8	0.8	0.25
3.53	2.7	5.0	0.6	4.8 +0.2	0.8	2.9	2.8	0.8	0.25
4.0	3.1	5.3	0.6	5.5 +0.2	1.2	3.3	3.2	0.8	0.25
4.5	3.5	5.9	0.6	6.15 +0.2	1.2	3.7	3.7	0.8	0.25
5.0	4.0	6.7	0.6	6.85 +0.25	1.2	4.0	4.2	0.8	0.25
5.33	4.3	7.3	0.6	7.3 +0.25	1.4	4.2	4.6	0.8	0.4
5.5	4.5	7.3	0.6	7.8 +0.25	1.5	4.5	4.9	0.8	0.4
6.0	4.9	7.6	0.6	8.2 +0.3	1.5	4.7	5.1	0.8	0.4
6.5	5.4	8.2	1.0	8.9 +0.3	1.7	5.1	5.6	0.8	0.4
6.99	5.8	9.7	1.0	9.6 +0.3	2.0	5.6	6.0	1.6	0.4
7.0	5.8	9.7	1.0	9.6 +0.3	2.0	5.6	6.0	1.6	0.4
7.5	6.3	9.9	1.0	10.3 +0.3	2.0	6.1	6.4	1.6	0.4
8.0	6.7	10.0	1.0	11.0 +0.4	2.0	6.3	6.9	1.6	0.4
9.0	7.7	10.9	1.5	12.4 +0.4	2.5	7.2	7.8	1.6	0.5
9.5	8.2	11.4	1.5	13.05 +0.4	2.5	7.7	8.2	1.6	0.5
10.0	8.6	12.0	2.0	13.7 +0.4	2.5	8.0	8.7	1.6	0.5
12.0	10.6	14.0	2.0	16.5 +0.5	3.0	9.6	10.4	1.6	0.5



Material and application parameters

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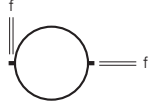


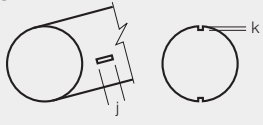

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Backrind	g	0.18	0.27	0.36	0.53	0.70	0.10	0.15	0.20	0.20	0.30
	h	0.08	0.08	0.10	0.10	0.13	0.08	0.08	0.10	0.10	0.13
											
Excessive trimming	–	Deviations of the round cross-section are permissible when the flattened area is seamlessly integrated into the rounding and the cross section still falls within the permissible tolerance.									
											
Flow lines	j	0.05 x OD ³					0.03 x OD ³				
	k	1.5	1.5	6.5	6.5	6.5	1.5	1.5	5.0	5.0	5.0
		0.08	0.08	0.08	0.08	0.08	0.05	0.05	0.05	0.05	
Indentations and non-fills	l	0.60	0.80	1.00	1.30	1.70	0.15	0.25	0.40	0.63	1.00
	m	0.08	0.08	0.10	0.10	0.13	0.08	0.08	0.10	0.10	0.13
											
Foreign material	–	not permissible									

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