O-Ring grooves

Static sealing

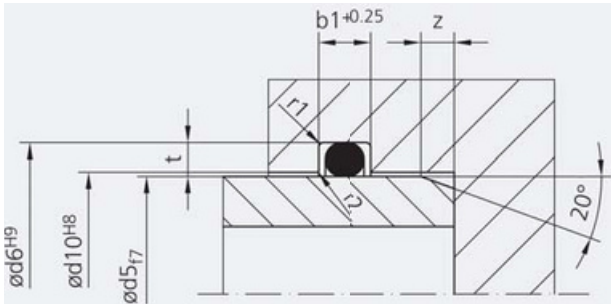
If the sealed machine parts do not move relative to each other, the seal is a static seal. O-rings are ideal for static sealing.

The recommended installation dimensions should be observed to ensure reliable sealing.

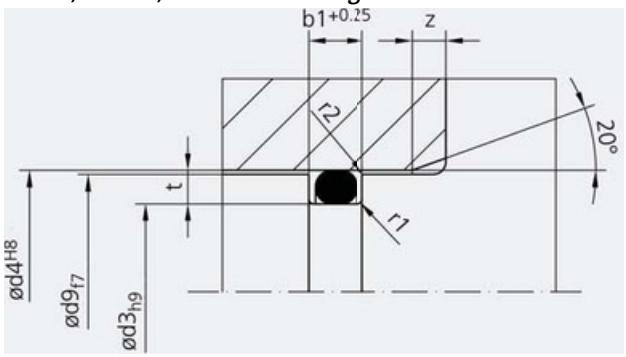
Static sealing, radial compression

With this type of installation, the cross section of the O-ring is compressed in radial direction. The O- ring groove is provided on the inner or outer compo- nent part.

static, radial, inside sealing



static, radial, outside sealing



d_2	$t^{+0.05}$	$b_{1+0.25}$	z	r_1	r_2
0.50	0.35	0.70	1.0	0.3	0.1
0.74	0.50	1.10	1.0	0.3	0.1
1.00	0.70	1.40	1.2	0.3	0.1
1.02	0.70	1.40	1.2	0.3	0.1
1.20	0.85	1.70	1.2	0.3	0.1
1.25	0.90	1.70	1.2	0.3	0.1
1.27	0.90	1.70	1.2	0.3	0.1
1.30	0.95	1.80	1.2	0.3	0.1
1.42	1.05	1.90	1.2	0.3	0.1
1.50	1.10	2.00	1.5	0.3	0.1
1.52	1.10	2.00	1.5	0.3	0.1
1.60	1.20	2.20	1.5	0.3	0.1
1.63	1.20	2.20	1.5	0.3	0.1
1.78	1.30	2.40	1.5	0.3	0.2
1.80	1.30	2.40	1.5	0.3	0.2
1.83	1.35	2.50	1.5	0.3	0.2
1.90	1.40	2.60	2.0	0.3	0.2
1.98	1.50	2.70	2.0	0.3	0.2
2.00	1.50	2.70	2.0	0.3	0.2
2.08	1.55	2.80	2.0	0.3	0.2
2.10	1.55	2.80	2.0	0.3	0.2
2.20	1.65	3.00	2.0	0.3	0.2
2.26	1.70	3.00	2.0	0.3	0.2
2.30	1.75	3.00	2.0	0.3	0.2
2.34	1.75	3.10	2.0	0.3	0.2
2.40	1.80	3.20	2.0	0.3	0.2
2.46	1.85	3.30	2.0	0.3	0.2
2.50	1.90	3.30	2.0	0.3	0.2
2.60	2.00	3.50	2.0	0.3	0.2
2.62	2.00	3.50	2.0	0.3	0.2
2.65	2.00	3.60	2.5	0.3	0.2
2.70	2.05	3.60	2.5	0.3	0.2
2.80	2.15	3.70	2.5	0.3	0.2
2.92	2.20	3.90	2.5	0.3	0.2
2.95	2.20	3.90	2.5	0.3	0.2
3.00	2.30	4.00	2.5	0.3	0.2
3.10	2.40	4.10	2.5	0.6	0.2
3.50	2.70	4.60	2.5	0.6	0.2
3.53	2.70	4.70	2.5	0.6	0.2
3.55	2.70	4.70	2.5	0.6	0.2
3.60	2.80	4.80	2.5	0.6	0.2
3.70	2.90	4.90	2.5	0.6	0.2
4.00	3.10	5.30	3.0	0.6	0.2
4.30	3.40	5.60	3.0	0.6	0.2

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d_2	$t^{+0.05}$	$b_{1+0.25}$	z	r_1	r_2
4.50	3.50	5.90	3.0	0.6	0.2
5.00	4.00	6.60	3.0	0.6	0.2
5.30	4.30	7.00	3.0	0.6	0.2
5.33	4.30	7.00	3.0	0.6	0.2
5.50	4.40	7.20	3.5	0.6	0.2
5.70	4.60	7.50	3.5	0.6	0.2
6.00	4.90	7.80	3.5	0.6	0.2
6.50	5.30	8.50	4.0	1.0	0.2
6.99	5.80	9.20	4.0	1.0	0.2
7.00	5.80	9.20	4.0	1.0	0.2
7.50	6.20	9.90	4.5	1.0	0.2
8.00	6.70	10.50	4.5	1.0	0.2
8.40	7.00	11.00	4.5	1.0	0.2
8.50	7.10	11.20	4.5	1.0	0.2
9.00	7.60	11.80	4.5	1.0	0.2
9.50	8.10	12.40	4.5	1.0	0.2
10.00	8.50	13.00	5.0	1.0	0.2
10.50	9.00	13.60	5.0	1.0	0.2
11.00	9.50	14.20	5.0	1.0	0.2
11.50	9.90	14.80	5.0	1.0	0.2
12.00	10.40	15.40	5.0	1.0	0.2
12.50	10.80	16.00	5.0	1.5	0.2
13.00	11.30	16.60	5.0	1.5	0.2
13.50	11.80	17.20	5.0	1.5	0.2
14.00	12.20	17.80	6.0	1.5	0.2
14.50	12.70	18.40	6.0	1.5	0.2
15.00	13.20	19.10	6.0	1.5	0.2

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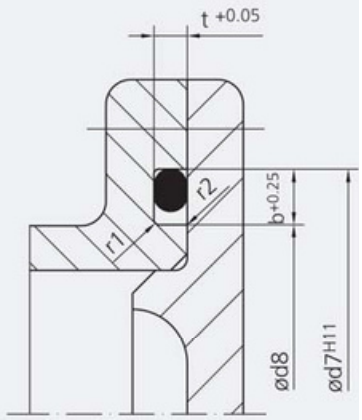
Static sealing, axial compression

With this type of installation, the cross section of the O-ring is compressed in axial direction.

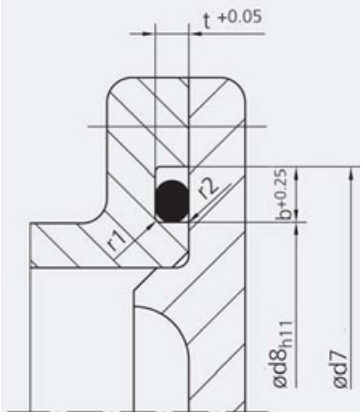
If pressure acts from inside, the O-ring should make contact at the outer diameter of the groove and be slightly compressed about 1% to maximum 3%.

If pressure acts from outside, the O-ring should make contact at the inner diameter of the groove and be stretched slightly (up to max. 6%).

static, axial pressure from inside



static, axial, pressure from outside



d_2	t +0.05	$b^{+0.25}$	r_1	r_2
0.50	0.35	0.70	0.3	0.1
0.74	0.50	1.10	0.3	0.1
1.00	0.70	1.40	0.3	0.1
1.02	0.75	1.40	0.3	0.1
1.20	0.85	1.70	0.3	0.1
1.25	0.90	1.70	0.3	0.1
1.27	0.90	1.80	0.3	0.1
1.30	0.95	1.80	0.3	0.1
1.42	1.05	1.90	0.3	0.1
1.50	1.10	2.10	0.3	0.1
1.52	1.10	2.10	0.3	0.1
1.60	1.20	2.20	0.3	0.1
1.63	1.20	2.20	0.3	0.1
1.78	1.30	2.60	0.3	0.2
1.80	1.30	2.60	0.3	0.2
1.83	1.35	2.60	0.3	0.2
1.90	1.40	2.70	0.3	0.2
1.98	1.50	2.80	0.3	0.2
2.00	1.50	2.80	0.3	0.2
2.08	1.55	2.90	0.3	0.2
2.10	1.55	2.90	0.3	0.2
2.20	1.60	3.10	0.3	0.2
2.26	1.70	3.10	0.3	0.2
2.30	1.75	3.10	0.3	0.2
2.34	1.75	3.10	0.3	0.2
2.40	1.80	3.30	0.3	0.2
2.46	1.85	3.40	0.3	0.2
2.50	1.90	3.40	0.3	0.2
2.60	2.00	3.50	0.3	0.2
2.62	2.00	3.60	0.3	0.2
2.65	2.00	3.70	0.3	0.2
2.70	2.05	3.70	0.3	0.2
2.80	2.10	3.90	0.3	0.2
2.92	2.20	4.00	0.3	0.2
2.95	2.20	4.00	0.3	0.2
3.00	2.30	4.00	0.3	0.2
3.10	2.40	4.10	0.6	0.2
3.50	2.70	4.80	0.6	0.2
3.53	2.70	4.80	0.6	0.2
3.55	2.70	4.90	0.6	0.2
3.60	2.80	5.00	0.6	0.2
3.70	2.90	5.10	0.6	0.2
4.00	3.10	5.40	0.6	0.2
4.30	3.40	5.80	0.6	0.2

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d_2	$t^{+0.05}$	$b^{+0.25}$	r_1	r_2
4.50	3.50	6.00	0.6	0.2
5.00	4.00	6.60	0.6	0.2
5.30	4.30	7.10	0.6	0.2
5.33	4.30	7.10	0.6	0.2
5.50	4.40	7.40	0.6	0.2
5.70	4.60	7.50	0.6	0.2
6.00	4.90	7.80	0.6	0.2
6.50	5.30	8.50	1.0	0.2
6.99	5.70	9.60	1.0	0.2
7.00	5.70	9.60	1.0	0.2
7.50	6.20	10.10	1.0	0.2
8.00	6.60	10.70	1.0	0.2
8.40	7.00	11.10	1.0	0.2
8.50	7.10	11.30	1.0	0.2
9.00	7.60	11.80	1.0	0.2
9.50	8.10	12.40	1.0	0.2
10.00	8.50	13.10	1.0	0.2
10.50	8.90	13.70	1.0	0.2
11.00	9.40	14.30	1.0	0.2
11.50	9.90	14.80	1.0	0.2
12.00	10.40	15.40	1.0	0.2
12.50	10.80	16.00	1.5	0.2
13.00	11.30	16.60	1.5	0.2
13.50	11.80	17.20	1.5	0.2
14.00	12.20	17.80	1.5	0.2
14.50	12.70	18.40	1.5	0.2
15.00	13.20	19.10	1.5	0.2
13.50	11.80	17.20	1.5	0.2
14.00	12.20	17.80	1.5	0.2
14.50	12.70	18.40	1.5	0.2
15.00	13.20	19.10	1.5	0.2

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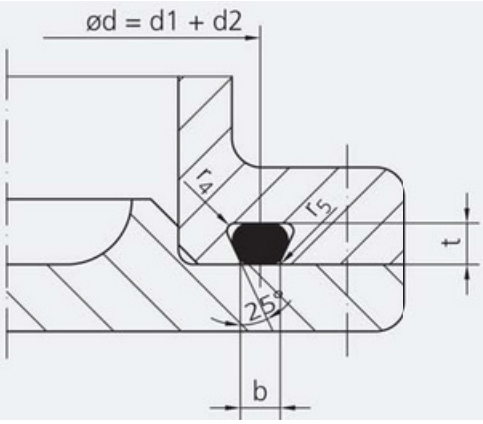
Static sealing, trapezoidal groove

The special geometry of the trapezoidal groove which is expensive to make makes it impossible for the O-ring to fall out after installation. For this rea- son, the trapezoidal groove is of advantage, e.g., for overhead installations or in machine parts that open and close regularly.

static, trapezoidal groove



d_2	t ±0.05	b ±005	r_4	r_5
2.50	2.00	2.00	0.40	0.25
2.60	2.10	2.10	0.40	0.25
2.62	2.10	2.10	0.40	0.25
2.65	2.10	2.20	0.40	0.25
2.70	2.20	2.20	0.40	0.25
2.80	2.25	2.25	0.40	0.25
3.00	2.40	2.40	0.40	0.25
3.10	2.50	2.50	0.40	0.25
3.50	2.80	2.90	0.80	0.25
3.53	2.80	2.90	0.80	0.25
3.55	2.80	2.90	0.80	0.25
3.60	2.90	2.90	0.80	0.25
3.70	2.95	3.00	0.80	0.25
4.00	3.20	3.30	0.80	0.25
4.30	3.40	3.50	0.80	0.25
4.50	3.70	3.70	0.80	0.25
5.00	4.15	4.00	0.80	0.25
5.30	4.40	4.30	0.80	0.40
5.33	4.40	4.30	0.80	0.40
5.50	4.60	4.40	0.80	0.40
5.70	4.80	4.60	0.80	0.40
6.00	5.00	4.80	0.80	0.40
6.50	5.50	5.20	0.80	0.40
6.99	5.90	5.60	1.60	0.40
7.00	5.90	5.60	1.60	0.40
7.50	6.40	6.10	1.60	0.40
8.00	6.85	6.50	1.60	0.40
8.40	7.20	6.80	1.60	0.40
8.50	7.30	6.90	1.60	0.50
9.00	7.80	7.30	1.60	0.50
9.50	8.20	7.70	1.60	0.50
10.00	8.70	8.10	1.60	0.50

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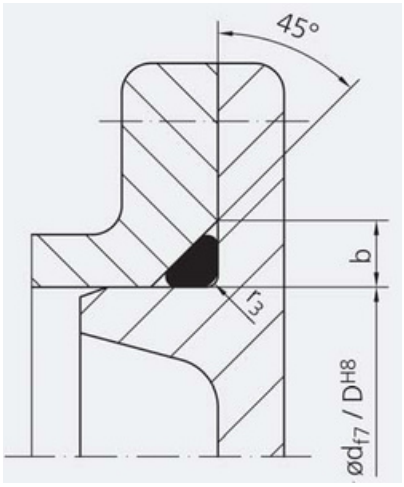
Static sealing, triangular groove

Normally, we recommend a rectangular groove for O-ring seals. Where coveres or fl anges must be sealed, design reasons may require a triangular groove. Strict keeping within tolerance is a precon- dition for the safe function in this case.

static, triangular groove



d_2	b	Tol.	r_3
1.50	2.05	+0.1	0.3
1.60	2.20	+0.1	0.3
1.78	2.40	+0.1	0.3
1.80	2.40	+0.1	0.3
1.90	2.60	+0.1	0.4
2.00	2.70	+0.1	0.4
2.20	3.00	+0.1	0.4
2.40	3.20	+0.15	0.4
2.50	3.40	+0.15	0.5
2.60	3.60	+0.15	0.5
2.62	3.60	+0.15	0.5
2.65	3.60	+0.15	0.5
2.70	3.70	+0.15	0.6
2.80	3.80	+0.15	0.6
3.00	4.10	+0.2	0.6
3.10	4.20	+0.2	0.6
3.50	4.80	+0.2	0.8
3.53	4.80	+0.2	0.8
3.55	4.80	+0.2	0.8
3.60	4.90	+0.2	0.9
3.70	5.00	+0.2	0.9
4.00	5.50	+0.2	1.2
4.30	5.90	+0.2	1.2
4.50	6.20	+0.2	1.2
5.00	6.80	+0.25	1.2
5.30	7.20	+0.25	1.4
5.33	7.30	+0.25	1.4
5.50	7.50	+0.25	1.5
5.70	7.80	+0.25	1.5
6.00	8.20	+0.3	1.5
6.50	8.80	+0.3	1.7
6.99	9.60	+0.3	2.0
7.00	9.60	+0.3	2.0
7.50	10.20	+0.3	2.0
8.00	10.90	+0.3	2.0
8.40	11.40	+0.3	2.0
8.50	11.60	+0.4	2.0
9.00	12.50	+0.4	2.5
9.50	13.10	+0.4	2.5
10.00	13.70	+0.4	2.5
10.50	14.30	+0.4	2.5
11.00	15.00	+0.4	2.5
12.00	16.50	+0.4	3.0
15.00	20.40	+0.4	3.0

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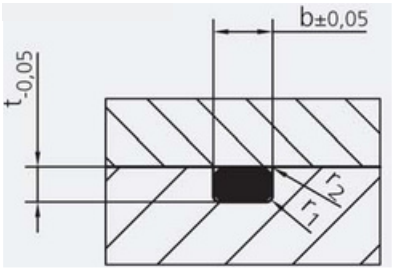
Static vacuum sealing

The recommendations for sealing vacuum are slightly diff erent than those for standard seals:

- The surface quality of all sealing faces must be distinctly better.
- Compliance with the recommended installation dimensions ensures a higher preload of the O-ring and the O-ring cross section fi lls the groove almost completely. The diff usion path of the gas through the elastomer becomes longer.
- The total leak rate can be reduced by using two O-rings one after the other and the application of vacuum grease.
- O-rings of fluoro rubber have shown to produce excellent results in many vacuum sealing applications.

static, vacuum



d_2	$t_{-0.05}$	b ±005	r_1	r_2
1.50	1.05	1.80	0.2	0.1
1.78	1.25	2.10	0.2	0.1
1.80	1.25	2.10	0.2	0.1
2.00	1.40	2.35	0.2	0.1
2.50	1.75	2.90	0.2	0.2
2.60	1.80	3.05	0.2	0.2
2.62	1.85	3.05	0.2	0.2
2.65	1.85	3.10	0.2	0.2
2.70	1.90	3.15	0.2	0.2
2.80	1.95	3.30	0.2	0.2
3.00	2.10	3.50	0.2	0.2
3.10	2.20	3.60	0.4	0.2
3.50	2.45	4.10	0.4	0.2
3.53	2.50	4.10	0.4	0.2
3.55	2.50	4.15	0.4	0.2
3.60	2.50	4.20	0.4	0.2
3.70	2.60	4.30	0.4	0.2
4.00	2.80	4.70	0.4	0.2
4.50	3.15	5.30	0.4	0.2
5.00	3.50	5.90	0.4	0.2
5.30	3.70	6.30	0.4	0.2
5.33	3.70	6.30	0.4	0.2
5.50	3.85	6.50	0.4	0.2
5.70	4.00	6.70	0.4	0.2
6.00	4.20	7.10	0.4	0.2
6.50	4.60	7.60	0.6	0.2
6.99	4.90	8.20	0.6	0.2
7.00	4.90	8.20	0.6	0.2
7.50	5.30	8.70	0.6	0.2
8.00	5.60	9.40	0.6	0.2
8.40	5.90	9.90	0.6	0.2
8.50	6.00	10.00	0.6	0.2
9.00	6.40	10.50	0.6	0.2
9.50	6.70	11.10	0.6	0.2
10.00	7.10	11.70	0.6	0.2

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Dynamic sealing

If the sealed machine parts move relative to each other, the seal is a dynamic seal.

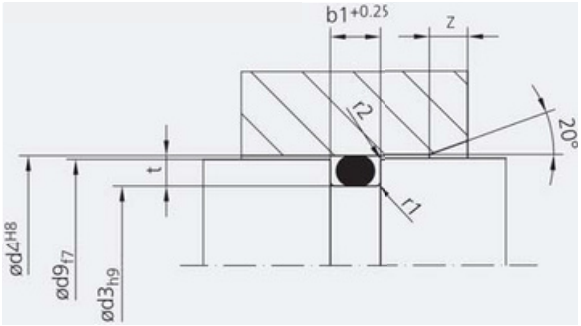
Due to friction, the compression of the O-ring cross- section is less in dynamic sealing than in a static sealing.

The recommended installation dimensions should be observed to ensure reliable sealing.

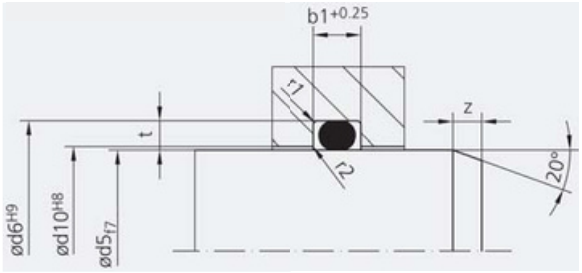
Dynamic sealing, radial compression, hydraulic

O-ring seals in hydraulic systems are used for reciprocating, sometimes also for helical movements. They are particularly suitable if only little installation space is available. When higher demands on the sealing and less friction are required it should be seen whether special piston or rod seals can be used.

dynamic, radial, outside sealing, hydraulic



dynamic, radial, inside sealing, hydraulic



d_2	$t^{+0.05}$	$b_{1+0.25}$	z	r_1	r_2
1.00	0.85	1.30	1.0	0.3	0.1
1.02	0.85	1.40	1.0	0.3	0.1
1.20	1.00	1.60	1.0	0.3	0.1
1.25	1.05	1.60	1.0	0.3	0.1
1.27	1.10	1.70	1.0	0.3	0.1
1.30	1.10	1.70	1.0	0.3	0.1
1.42	1.20	1.90	1.2	0.3	0.1
1.50	1.30	2.00	1.2	0.3	0.1
1.52	1.30	2.00	1.2	0.3	0.1
1.60	1.35	2.10	1.2	0.3	0.1
1.63	1.40	2.10	1.2	0.3	0.1
1.78	1.50	2.30	1.4	0.3	0.2
1.80	1.50	2.40	1.4	0.3	0.2
1.83	1.55	2.40	1.4	0.3	0.2
1.90	1.60	2.50	1.4	0.3	0.2
1.98	1.70	2.60	1.4	0.3	0.2
2.00	1.70	2.60	1.4	0.3	0.2
2.08	1.75	2.70	1.4	0.3	0.2
2.10	1.80	2.80	1.4	0.3	0.2
2.20	1.90	2.90	1.4	0.3	0.2
2.26	1.90	3.00	1.4	0.3	0.2
2.30	1.95	3.00	1.4	0.3	0.2
2.34	2.00	3.10	1.4	0.3	0.2
2.40	2.05	3.20	1.4	0.3	0.2
2.46	2.10	3.20	1.4	0.3	0.2
2.50	2.15	3.30	1.4	0.3	0.2
2.60	2.20	3.40	1.6	0.3	0.2
2.62	2.25	3.40	1.6	0.3	0.2
2.65	2.25	3.40	1.6	0.3	0.2
2.70	2.30	3.50	1.6	0.3	0.2
2.80	2.40	3.70	1.6	0.3	0.2
2.92	2.50	3.80	1.8	0.3	0.2
2.95	2.50	3.90	1.8	0.3	0.2
3.00	2.60	3.90	1.8	0.3	0.2
3.10	2.70	4.00	1.8	0.6	0.2
3.50	3.10	4.50	2.0	0.6	0.2
3.53	3.10	4.50	2.0	0.6	0.2
3.55	3.10	4.60	2.0	0.6	0.2
3.60	3.10	4.60	2.0	0.6	0.2
3.70	3.20	4.80	2.0	0.6	0.2
4.00	3.50	5.10	2.5	0.6	0.2
4.30	3.80	5.50	2.5	0.6	0.2
4.50	4.00	5.70	2.5	0.6	0.2
5.00	4.40	6.40	2.8	0.6	0.2

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d_2	$t^{+0.05}$	$b_{1+0.25}$	z	r_1	r_2
5.30	4.70	6.80	2.8	0.6	0.2
5.33	4.70	6.80	2.8	0.6	0.2
5.50	4.80	7.00	3.0	0.6	0.2
5.70	5.00	7.30	3.0	0.6	0.2
6.00	5.30	7.60	3.5	0.6	0.2
6.50	5.80	8.20	3.5	1.0	0.2
6.99	6.20	8.80	4.0	1.0	0.2
7.00	6.20	8.80	4.0	1.0	0.2
7.50	6.70	9.50	4.0	1.0	0.2
8.00	7.10	10.10	4.5	1.0	0.2
8.40	7.50	10.60	4.5	1.0	0.2
8.50	7.60	10.70	4.5	1.0	0.2
9.00	8.10	11.20	4.5	1.0	0.2
9.50	8.50	11.80	4.5	1.0	0.2
10.00	9.00	12.50	4.5	1.0	0.2
10.50	9.40	13.10	5.0	1.0	0.2
11.00	9.90	13.70	5.0	1.0	0.2
11.50	10.30	14.40	5.0	1.0	0.2
12.00	10.80	15.00	5.0	1.0	0.2
15.00	13.60	18.50	5.0	1.5	0.2

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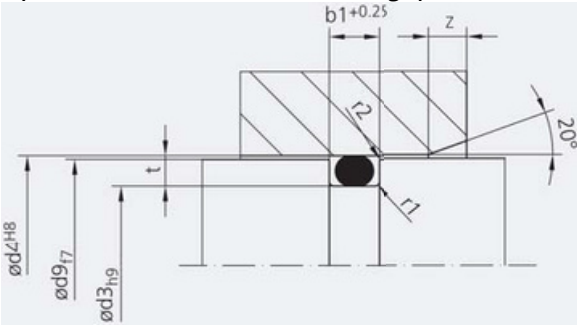
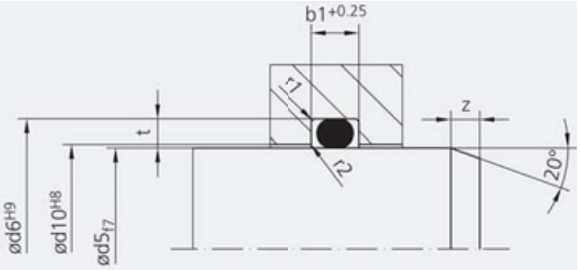
Dynamic sealing, radial compression, pneumatic

O-ring seals in pneumatic systems are used for reciprocating movements.
In comparison with hydraulic applications, the com- pression of the O-ring cross-section is slightly less to keep the friction level as low as possible.

dynamic, radial, outside sealing, pneumatic



dynamic, radial, inside sealing, pneumatic



d_2	$t^{+0.05}$	$b_{1+0.25}$	z	r_1	r_2
1.50	1.30	1.80	1.2	0.3	0.1
1.52	1.30	1.80	1.2	0.3	0.1
1.60	1.40	1.90	1.2	0.3	0.1
1.63	1.40	2.00	1.2	0.3	0.1
1.78	1.55	2.10	1.4	0.3	0.2
1.80	1.60	2.10	1.4	0.3	0.2
1.83	1.60	2.20	1.4	0.3	0.2
1.90	1.65	2.30	1.4	0.3	0.2
1.98	1.75	2.30	1.4	0.3	0.2
2.00	1.75	2.40	1.4	0.3	0.2
2.08	1.85	2.40	1.4	0.3	0.2
2.10	1.85	2.50	1.4	0.3	0.2
2.20	1.95	2.60	1.4	0.3	0.2
2.26	2.00	2.60	1.4	0.3	0.2
2.30	2.05	2.70	1.4	0.3	0.2
2.34	2.10	2.70	1.4	0.3	0.2
2.40	2.15	2.80	1.4	0.3	0.2
2.46	2.20	2.90	1.4	0.3	0.2
2.50	2.25	2.90	1.4	0.3	0.2
2.60	2.35	3.00	1.6	0.3	0.2
2.62	2.35	3.00	1.6	0.3	0.2
2.65	2.40	3.10	1.6	0.3	0.2
2.70	2.40	3.10	1.6	0.3	0.2
2.80	2.50	3.30	1.6	0.3	0.2
2.92	2.65	3.40	1.8	0.3	0.2
2.95	2.65	3.40	1.8	0.3	0.2
3.00	2.70	3.50	1.8	0.3	0.2
3.10	2.80	3.70	1.8	0.6	0.2
3.50	3.15	4.20	2.0	0.6	0.2
3.53	3.20	4.20	2.0	0.6	0.2
3.55	3.20	4.20	2.0	0.6	0.2
3.60	3.25	4.30	2.0	0.6	0.2
3.70	3.35	4.40	2.0	0.6	0.2
4.00	3.65	4.70	2.5	0.6	0.2
4.30	3.90	5.20	2.5	0.6	0.2
4.50	4.10	5.50	2.5	0.6	0.2
5.00	4.60	6.10	2.8	0.6	0.2
5.30	4.90	6.50	2.8	0.6	0.2
5.33	4.90	6.50	2.8	0.6	0.2
5.50	5.05	6.70	3.0	0.6	0.2
5.70	5.25	6.90	3.0	0.6	0.2
6.00	5.50	7.30	3.5	0.6	0.2
6.50	6.00	7.90	3.5	1.0	0.2
6.99	6.45	8.50	4.0	1.0	0.2

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d_2	$t^{+0.05}$	$b_{1+0.25}$	z	r_1	r_2
7.00	6.45	8.50	4.0	1.0	0.2
7.50	6.95	9.10	4.0	1.0	0.2
8.00	7.40	9.70	4.5	1.0	0.2
8.40	7.80	10.20	4.5	1.0	0.2
8.50	7.85	10.30	4.5	1.0	0.2
9.00	8.35	10.90	4.5	1.0	0.2
9.50	8.80	11.50	4.5	1.0	0.2
10.00	9.30	12.10	4.5	1.0	0.2
10.50	9.75	12.70	5.0	1.0	0.2
11.00	10.25	13.30	5.0	1.0	0.2
11.50	10.70	13.90	5.0	1.0	0.2
12.00	11.15	14.50	5.0	1.0	0.2

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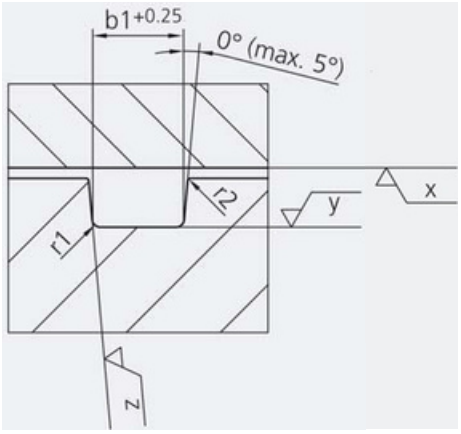
O-ring groove, design

The following parameters should be considered for the design of O-ring grooves:

Groove design

Normally, rectangular grooves are preferred for O-ring seals. If required for technological reasons, the groove fl anks can have bevels not exceeding 5 degrees.



d2	r1	r2
-3	0.3	0.2
3-6	0.6	
6-10	1.0	
12-15	1.5	

Surfaces

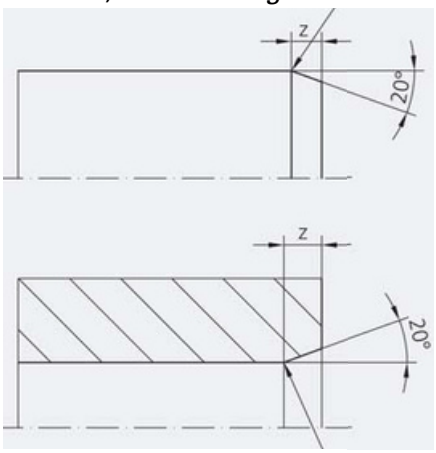
The correct surface roughness of the sealing surfaces is decisive for good and effi cient sealing. Dynamic seals must meet higher requirements than the surfaces of static seals. Generally, all surfaces in the area of the seal should be free from scratches, cavities or deep machining grooves.

Surface	Sealing type								
	dynamic			static			static pulsating pressure		
	Ra [µm]	Rz [µm]	Rmax [µm]	Ra [µm]	Rz [µm]	Rmax [µm]	Ra [µm]	Rz [µm]	Rmax [µm]
Sealing surface x ≤	0.4	1.2	1.6	1.6	6.3	10	0.8	1.6	3.2
Groove base y ≤	1.6	3.2	6.3	3.2	10	12.5	1.6	3.2	6.3
Groove fl anks z ≤	3.2	6.3	10	6.3	12.5	16	3.2	6.3	10

Lead-in chamfers

In relation to the installation space, O-rings are designed with some oversize and are compressed during installation between the machine parts.
To avoid damage (e.g., shearing of the O-ring) appropriate lead-in chamfers must be provided at
the parts. The angle of the lead-in chamfer should
be 15° – 20°. The length of the chamfer depends on the cross section and is specifi ed in the appropriate groove dimension tables.

burrfree, rounded edge



burrfree, rounded edge

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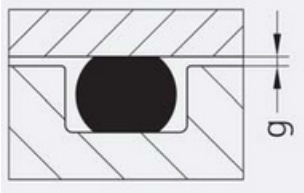
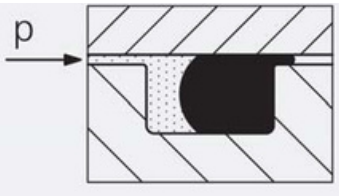
Gap dimensions

The gap dimension between the sealed machine parts should be small as required for the application. The gap is too wide, gap extrusion may occur. This means that the O-ring material is compressed into the gap at the side opposite the pressure and is destroyed.

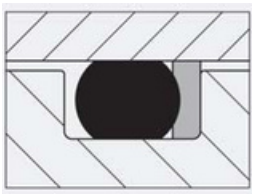




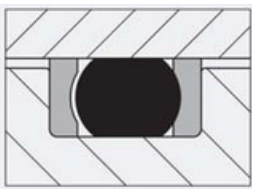
Type of sealing	Pressure [bar]	Hardness [Shore A] 70	80	90
static	≤ 63	0.2	0.25	0.3
	63 – 100	0.1	0.2	0.25
	100 – 160	0.05	0.1	0.2
	160 – 250	-	0.05	0.1
	250 – 350	-	-	0.05
dynamic	≤ 30	0.2	0.25	0.3
	30 – 63	0.1	0.15	0.2
	63 – 80	-	0.1	0.15
	80 – 100	-	-	0.1

Table: Permitted gap width g [mm] valid for temperatures up to 70°C.
For silicone materials the values for the gap sizes are to be halved

Where gaps are wider or pressures higher, we recommend back-up rings.



Pressure from one side



Pressure from both sides

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