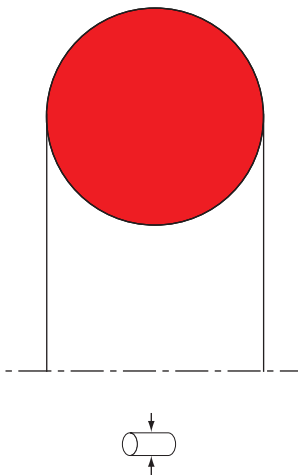


SEAL SPEC R13



description

O-ring most widely used as a sealing element. O-rings offer to the designers an efficient and economically advantageous sealing element for a wide range of various static and/or dynamic applications. Cost-effective way of production and easy usability made from the O-rings the most expanded sealing element. The wide range of elastomer materials for standard and special applications enables usage of the O-rings for sealing of practically all liquid and gaseous media. The O-rings are vulcanised in dies and are characterised by their ring shape with a round cross-section. The size of the O-ring is defined by internal diameter $\varnothing d$ and by cross-section H (thickness). The cross-sections from 0.35 to 15 mm and the internal diameters up to 5,000 mm are available.

- + it is inexpensive and enables cost-effective solutions;
- + it may be used as the single and double acting solutions due to its symmetrical diameter;
- + simple groove decreases costs for design and production;
- + compact shape enables lower built-up;
- + simple and reliable installation, incorrect assembly is not possible;

category of profile

machined or molded/standard/trade product

double acting

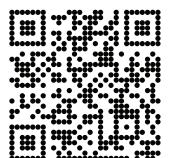
The R13 seal is designed for use as a double acting sealing element.

area of application

- usability for a wide range of static and dynamic sealing applications.
- wide choice of mixtures for compatibility with most of the liquids.
- with radial compression, e.g. for cocks, valves, hydraulic cylinders etc.
- with axial compression, e.g. flange joints, lids, hydraulic elements etc.

function

The O-ring is a double-acting sealing element. The sealing effect is achieved by deformation of the round profile of the O-ring. The size of the deformation is determined by the groove depth t . The deformation, which is sometimes called also depression or pre-tension, acts in radial or axial direction and provides the O-ring with the initial sealing ability. Under pressure, the O-ring behaves similarly as a liquid with high surface tension. The pressure is uniformly transferred in all directions. The force raised by the initial deformation of the O-ring is added to the force raised by the pressure in the system and they together create the resulting sealing force.



operating parameter & material

material	temperature	max surface speed	max pressure ¹	hydrolysis	dry running	wear resistance
PU	-30 °C ... +110 °C		600 bar (60 MPa)	-	+	++
HPU	-20 °C ... +110 °C		600 bar (60 MPa)	++	+	++
LTPU	-50 °C ... +110 °C		600 bar (60 MPa)	-	+	++
SPU	-20 °C ... +110 °C		600 bar (60 MPa)	++	++	++
GPU	-30 °C ... +110 °C		600 bar (60 MPa)	++	+	++
NBR	-30 °C ... +100 °C		160 bar (16 MPa)	-	-	o
FKM	-20 °C ... +200 °C		160 bar (16 MPa)	-	-	o
EPDM ²	-50 °C ... +150 °C		160 bar (16 MPa)	++	-	o
HNBR	-25 °C ... +150 °C		160 bar (16 MPa)	+	o	+
PTFE virgin	-200 °C ... +260 °C		160 bar (16 MPa)			

¹ pressure ratings are dependent on the size of the extrusion gap.

² attention: not suitable for mineral oils!

the stated operation conditions represent general indications. it is recommended not to use all maximum values simultaneously. surface speed limits apply only to the presence of adequate lubrication film.

++ particularly suitable

+ suitable

o conditional suitable

- not suitable

for detailed information regarding chemical resistance please refer to our "list of resistance". for increased chemical and thermal resistance rubber materials are to be preferred, polyurethan materials increase wear resistance.

tolerance

during vulcanising, the dimensional changes of the o-rings from elastomers may occur due to their shrinkage. the shrinkage level depends on material, die shape and vulcanising process.

following tables state the tolerances of thickness H and internal diameter Ød. the tables apply for all elastomer mixtures NBR of the hardness 70 shore A. other mixtures may feature different dimensional characteristics. in most cases the tolerance have no influence the sealing function. also the o-rings of high precision are available. if needed contact our technical department. the o-rings, whose dimensions are not stated in the tables, are produced in tolerances according to the ISO 3601/DIN 3771 standard.

o ring thickness H [mm]	tolerance ± [mm]
to 1,80	0,08
1,80 – 2,65	0,09
2,65 – 3,55	0,10
3,55 – 5,30	0,13
5,30 – 7,00	0,15
7,00 – 8,00	0,18
8,00 – 10,00	0,21
10,00 – 12,00	0,25

mode of installation

manual assembly

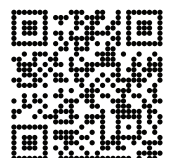
do not use sharp tools, make sure the ring is not twisted, use the assembly adds whenever possible, do not overload the o-rings, especially made by the sticking of the cord.

automatic assembly

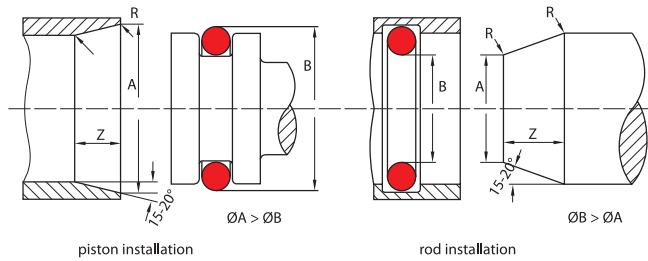
the automatic assembly requires the good and proper assembly. the surface of the o-rings is usually treated by molybdenum disulphide, graphite, talcum or PTFE coating. the treatment decreases the forces necessary for assembly, prevents the „sticking“ and make the removing easier. for detailed information contact our technical department.

leading chamfering length Z min		o ring thickness H	
15°	20°		
2,5	2,0	to 1,78	1,80
3,0	2,5	to 2.62	2,65
3,5	3,0	to 3.53	3,55
4,0	3,5	to 5,33	5,30
5,0	4,0	to 7,00	
6,0	4,5	upon 8,40	

the proper design may eliminate possible damage of the sealant at the beginning. regarding the initial compression of the o-ring thickness must have leading chamfering and its edges must be rounded. minimal lengths of the leading chamfering are stated in the table.

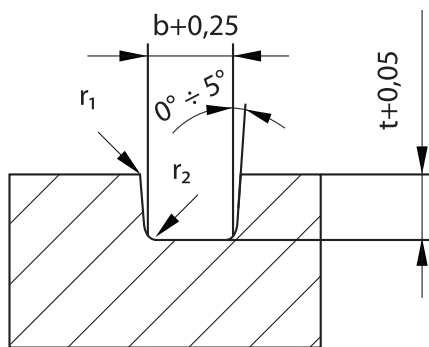


recommended mounting space



before the installation itself, check the assembly area of the sealing o-ring for any sharp edges, transverses, traces after machining, threads, traverse drilling, chips or foreign particles. verify, if the leading chamfering are made according to the drawings. make sure before lubricating by grease or oil on the compatibility of the lubricant with the elastomer material, and whether the lubricant does not contain solid particles such as molybdendisulphite or zincsulphite. check, whether the ring is not deformed by extensive twisting.

shape of groove



seal & housing recommendations

please note that we are able to produce those profiles to your specific need or any non standard housing. for detail measurements, please see seal-mart catalog...

