V-Rings

Description

V-rings are rotary seals that can perform numerous jobs in their function of sealing rotating shafts:

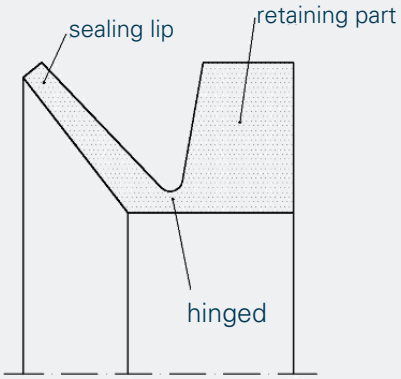
- sealing against the penetration of dirt, dust, water or watery pollutants,
- combination with other sealing elements, e.g. the protection of a radial shaft sealing ring against external contamination, or
- sealing against fat leaking from a housing.

Advantages of V-rings

- diverse fields of application
- no high requirements as regards the shaft and housing designs
- low friction
- high circumferential speeds are possible as a result of reduced friction
- relatively insusceptible to coaxiality and radial eccentricity
- long service life
- easy installation

Structure and function

V-rings consist completely of elastomer. Their V-shaped profile consists of a relative-ly solid retaining part and a flexible sealing lip that are „hinged“ together at the „V's“ vertex.

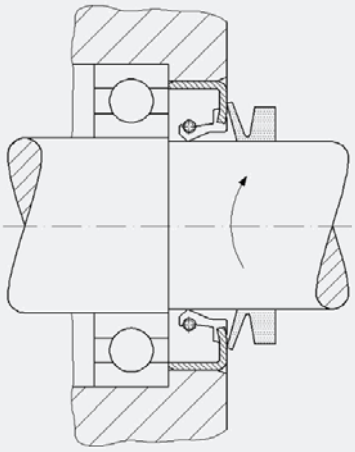


Profile of a V-ring, type VR-A10

V-rings will be expanded while being installed, moved into the intended position on the shaft and cling to the shaft surface as a result of their internal stress.

V-rings will rotate with the shaft and provide sealing in axial direction against a counter face that is positioned vertically to it. As a result of the diverse fields of application for V-rings the counter face can be formed by

- the housing itself,
- a housing cover,
- a pressed-in metal sheet,
- the face of a roller bearing's external ring,
- the metallic stiffening ring of a radial shaft sealing ring
- etc.



Protection of a radial shaft sealing ring against external contamination

During the shaft's standstill, the sealing lip clings to the counter face due to its initial contact pressure. Once the shaft starts rotating, the centrifugal force acts in radial direction on the sealing lip, while the contact pressure drops with the increasing cir-cumferential speed.

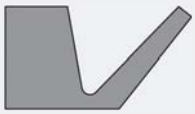
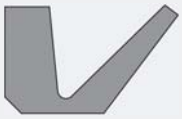
The sealing lip starts to lift off the counter face from a circumfer-ential speed of approx. 15-20 m/s and the contact pressure drops to almost nil. The friction losses will increase with the rising circumferential speed almost linearly up to approx. 10 m/s. The friction losses will decrease to 10 ... 12 m/s and drop almost to nil in the range between 15 and 20 m/s.

A V-ring's sealing effect is based on the contact between sealing lip and counter face and, additionally, on the centrifugal effect caused by the V-ring's rotation. Once the sealing lip takes off at a very high circumferential speed, the V-ring will act as gap ring and centrifugal disk.

V-Rings

Construction types/designs

In order to cover the wide range of possible applications, we have 3 standard designs in stock, made of 2 different materials each (NBR and FKM).

Profilskizze	Bauform	Dimensional range in stock [mm]	Remarks/comments
	**VR-A10**	3 - 1000 >1000 on request	most commonly used standard design with straight sealing back
	**VR-S10**	5 - 199	the same design as VR-A10 in the lip area, complemented by a conically extended retain-ing part, thus providing a better seat on the shaft
	**VR-L10**	110 - 600 >600 on request	small profile geometry for compact installation conditions uniform profile for all diameters

We can offer further construction types/designs on request, e.g.
VR-E10
VR-AX10