

DICHTOMATIK

V-Rings





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V-Rings

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DIN EN ISO 9001:2000

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Dichtomatik

Any seal. Any time.

Dichtomatik is known as a specialist in technical seals – and nothing but seals. The company's comprehensive range of products for industrial applications, its worldwide network of highly efficient production partners and its own developments make Dichtomatik a highly competent partner. Customers are guaranteed the best possible support in terms of speed, flexibility and application expertise.

To ensure fast and punctual delivery to all parts of the world, Dichtomatik has continuously expanded its network of subsidiaries, of which there are currently eight in Europe: in England, Sweden, the Netherlands, France, Austria, Hungary, Italy and the head office in Germany, as well as five locations in the USA and Canada. Carefully selected partners are responsible for Central and South America, Africa and Asia.

The Dichtomatik team is committed to living up to the corporate slogan "Any seal. Any time." It devotes all its attention to the customer – when dealing with everyday orders, obtaining a special seal or providing complex technical advice, we always want the work we do to set standards.

Advice on applications, designing installation housings, altering designs, adapting standard seals to changes in

ambient conditions – these are some of the daily demands we make of our application engineers. As highly experienced seal specialists they are familiar with all questions regarding applications and materials and they work closely with customers and suppliers. Application-specific developments and adaptations of constructions and materials are just as much part of the job as supervising product series until they are ready for production.

www.dichtomatik.de

The Dichtomatik website provides a virtual insight into the warehouse. Both the availability of all standard seals and technical information on the seal articles, including descriptions of materials and installation instructions, can be accessed at www.dichtomatik.de. Having been issued a personal password, customers can view prices, make enquiries and place orders around the clock.



V-Rings

V-Rings are axial seals with an elastomer sealing element vulcanised in the mould.

The typical design of a V-Ring is comprised of the body, the flexibe joint and the sealing lip.

Application areas

V-Rings are used mainly in combination with other types of seals such as rotary shaft seals and as pre-sealing elements for bearings and shafts.

V-Rings are often applied in drive technology, in general mechanical engineering and plant engineering. V-Rings are also found in electric engines, transmissions, agricultural machines, bearing pedestals and rolling mills.

They are used to seal against dust, dirt, lubricant, oil or water spray from the outside. For rougher locational conditions, extensive exposure to masses of earth or gravel, we recommend the sealing elements VRM01 and VRM02 metal case protected axial seals.

Function

The V-Ring serves as a lip seal but also as a centrifugal disc.

The V-Ring is stretched onto the shaft and must be installed at an accurately defined distance from the counter-rotating metal surface to guarantee axial preload of the seal lip. The end of a bearing, the bearing case or a shaft collar serve as counter-rotating surface.

The V-Ring rotates with the shaft and seals axially on the counter surface.

With increasing peripheral speed, the seal lip is pulled outwards by the

Designs

V-Rings are classified according to their various profile designs. The following designs are available:

VA
standard design

VS
with reinforced stiffening element

VL
with thin profile for reduced housing e.g. in labyrinth seals

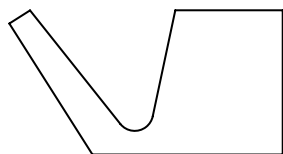
VE
for large diameters

The time-consuming removal of shafts and other components often results in the necessity of using divided V-Rings. These V-Rings are then vulcanised or glued on site.

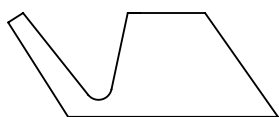
For special applications, V-Rings can also be produced with incorporated grooves including tightening straps.

Standard materials

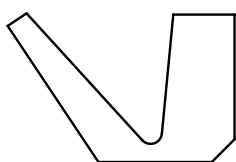
Elastomer seal:
NBR 60 black,
FKM 60 brown, (FKM 70)
other Elastomer materials are available on request.



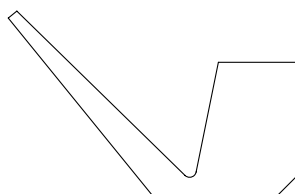
VA



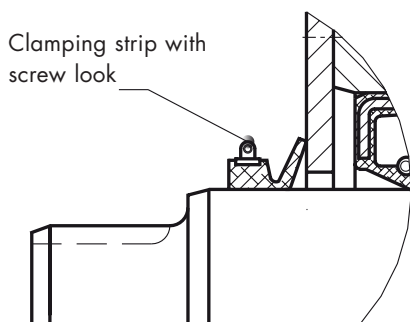
VS



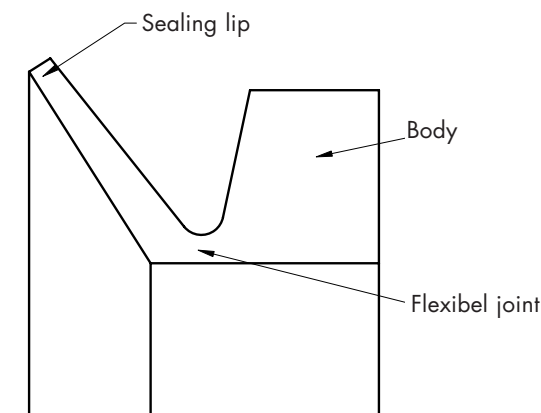
VL



VE



Clamping strip with screw lock



centrifugal force and the contact pressure is reduced.

At a certain peripheral speed, the seal lip lifts off the counter metal surface completely. The V-Ring then functions only as a gap seal and centrifugal disc.

Advantages of the V-Ring

- single function sealing element
- seals against dust, dirt, lubricant, oil or water spray
- works well in combination with rotary shaft seals
- low demands on the counter surface with regard to the surface quality
- simple installation – is stretched onto the shaft
- the dynamic friction reduces with increasing peripheral speed due to the centrifugal force
- good dynamic sealing effect
- balances light axial movements as well as angle and rotary settings
- protects rotary shaft seals from abrasive environmental conditions

Media

NBR: Good chemical resistance to many lubricants and mineral oils.

FKM: Mineral oils and lubricants, engine, gear and ATF oils, fuels, aromatic and chlorinated hydrocarbon, resistance to a wide range of chemicals.

Operational application limits

Pressure: designed for unpressurized operation

Temperature: NBR -40°C to +100°C

FKM -20°C to +200°C

Peripheral speed (m/s):

NBR ≤ 8 ; axial secure from ≥ 8 m;

radial secure from ≥ 12

FKM ≤ 6.5 ; axial secure from ≥ 6.5 ;

radial secure from ≥ 10

Design note

Counter surface

The V-Ring runs against a counter-rotating surface situated at right angles to the shaft e.g. the flange cap or the end wall of a bearing casing.

The counter surface should have a finely processed surface with a surface quality of max. Ra=2.0 (sufficient for many applications).

The counter-rotating surface need not be hardened. Under difficult locational conditions such as excessive dirt, masses of earth, fine-grained sand, a minimum hardness should be chosen. In this case, the hardness should be chosen in accordance with the medium to be sealed and the material used for the counter-rotating partner (see table).

Parts made of injection-moulded or cast light metal alloys and formed steel sheets can be used as counter-rotating surface without additional processing. However, they must not contain any surface variations or faults such as sharp edges, burrs, bubbles, waviness, buckles or other damage.

Material used for the counter-rotating partner

Material	Advised Hardness	Media
Carbon steel	125 - 150 HV	Sludge, dust
Cast iron	190 - 270 HV	Sludge, dust
Cast bronze	100 - 160 HV	Water, dust
Injection-moulded aluminium	90 - 160 HV	Water spray
Stainless steel	150 - 200 HV	Water

Shaft

There are no particular demands on the shaft as, for example, is the case for rotary shaft seals for example lead-in chamfers and special roughness values.

The sealing function remains intact to a shaft deviation of approx. 1°.

Dependent on the dimensions of the V-Ring, an eccentricity is permissible, see diagram (diagram eccentricity) which must be applied in order to enable correct installation of the V-Ring.

V-Ring shaft \varnothing	Eccentricity
5-8	0.2
10-18	0.3
20-38	0.4
40-65	0.5
70-100	0.7
110-150	1.2
160-199	2
>200	4

The seals must be stored stress-free, i.e. without tension, compression or other forms of deformation.

The seals should be protected from excessive ventilation, especially draughts. Storage in packaging, e.g. polyethylene bags or airtight containers, is recommended.

The storage location should be cool, dry, dust-free and moderately ventilated.

A constant storage temperature is optimal. It should be no lower than -10°C and no higher than +20°C.

Heaters in storage rooms should be screened and placed at a distance of at least 1 m from the stored goods.

Relative humidity should not exceed 65%. Strong light, especially UV radiation and direct sunlight should be avoided.

Electrical devices that produce ozone should not be placed in storage rooms for elastomers.

Remarks

The nominal dimensions mentioned on the following pages represent the standard dimensions.

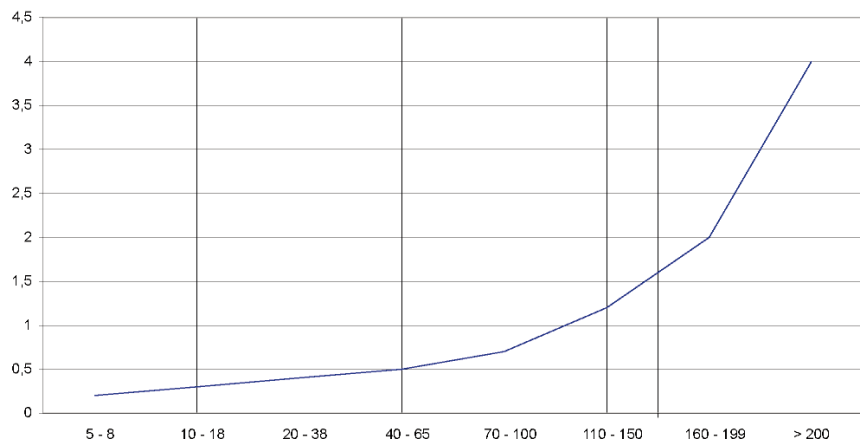
Installation

The V-Ring is simple to install. It can be stretched up to 20% onto the shaft. Precaution must be taken only against damage caused to the V-Ring by sharp edges, etc.

Storage

Generally speaking, elastomers are suitable for storage. They remain almost unchanged in their properties for years, provided that certain minimum requirements regarding storage conditions are observed. These are described in DIN 7716 and ISO 2230.

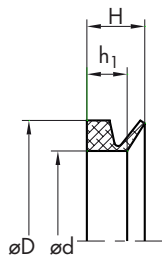
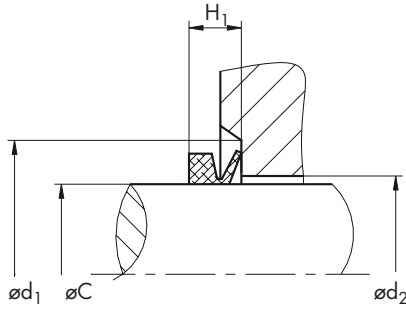
Admissible eccentricity mm



Shaft - \varnothing mm

VA 50 NBR

**Sizes
metric**



Part No.	Type	C	d	D	h1	H	d2	d1	H1
123483	VA50-3	2.7 - 3.5	2.5	5.5	2.1	3	C+1	C+4	2.5±0.3
123484	VA50-4	3.5 - 4.5	3.2	7.2	2.4	3.7	C+1	C+6	3±0.4
123485	VA50-5	4.5 - 5.5	4	8	2.4	3.7	C+1	C+6	3±0.4
123486	VA50-6	5.5 - 6.5	5	9	2.4	3.7	C+1	C+6	3±0.4
123487	VA50-7	6.5 - 8	6	10	2.4	3.7	C+1	C+6	3±0.4
123488	VA50-8	8 - 9.5	7	11	2.4	3.7	C+1	C+6	3±0.4
123489	VA50-10	9.5 - 11.5	9	15	3.4	5.5	C+2	C+9	4.5±0.6
123490	VA50-12	11.5 - 12.5	10.5	16.5	3.4	5.5	C+2	C+9	4.5±0.6
123491	VA50-14	13.5 - 15.5	12.5	18.5	3.4	5.5	C+2	C+9	4.5±0.6
123492	VA50-16	15.5 - 17.5	14	20	3.4	5.5	C+2	C+9	4.5±0.6
123493	VA50-18	17.5 - 19	16	22	3.4	5.5	C+2	C+9	4.5±0.6
123494	VA50-20	19 - 21	18	26	4.7	7.5	C+2	C+12	6±0.8
123495	VA50-22	21 - 24	20	28	4.7	7.5	C+2	C+12	6±0.8
126496	VA50-25	24 - 27	22	30	4.7	7.5	C+2	C+12	6±0.8
123497	VA50-28	27 - 29	25	33	4.7	7.5	C+3	C+12	6±0.8
123498	VA50-30	29 - 31	27	35	4.7	7.5	C+3	C+12	6±0.8
123499	VA50-32	31 - 33	29	37	4.7	7.5	C+3	C+12	6±0.8
123500	VA50-35	33 - 36	31	39	4.7	7.5	C+3	C+12	6±0.8
123501	VA50-38	36 - 38	34	42	4.7	7.5	C+3	C+12	6±0.8
123502	VA50-40	38 - 43	36	46	5.5	9	C+3	C+15	7±1
123503	VA50-45	43 - 48	40	50	5.5	9	C+3	C+15	7±1
123504	VA50-50	48 - 53	45	55	5.5	9	C+3	C+15	7±1
123505	VA50-55	53 - 58	49	59	5.5	9	C+3	C+15	7±1
123506	VA50-60	58 - 63	54	64	5.5	9	C+3	C+15	7±1
123507	VA50-65	63 - 68	58	68	5.5	9	C+3	C+15	7±1
123508	VA50-70	68 - 73	63	75	6.8	11	C+4	C+18	9±1.2
123509	VA50-75	73 - 78	67	79	6.8	11	C+4	C+18	9±1.2
123510	VA50-80	78 - 83	72	84	6.8	11	C+4	C+18	9±1.2
123511	VA50-85	83 - 88	76	88	6.8	11	C+4	C+18	9±1.2
123512	VA50-90	88 - 93	81	93	6.8	11	C+4	C+18	9±1.2
123513	VA50-95	93 - 98	85	97	6.8	11	C+4	C+18	9±1.2
123514	VA50-100	98 - 105	90	102	6.8	11	C+4	C+18	9±1.2
123515	VA50-110	105 - 115	99	113	7.9	12.8	C+4	C+21	10.5±1.5
123516	VA50-120	115 - 125	108	122	7.9	12.8	C+4	C+21	10.5±1.5
123517	VA50-130	125 - 135	117	131	7.9	12.8	C+4	C+21	10.5±1.5
123518	VA50-140	135 - 145	126	140	7.9	12.8	C+4	C+21	10.5±1.5
123519	VA50-150	145 - 155	135	149	7.9	12.8	C+4	C+21	10.5±1.5
123520	VA50-160	155 - 165	144	160	9	14.5	C+5	C+24	12±1.8
123521	VA50-170	165 - 175	153	169	9	14.5	C+5	C+24	12±1.8
123522	VA50-180	175 - 185	162	178	9	14.5	C+5	C+24	12±1.8
123523	VA50-190	185 - 195	171	187	9	14.5	C+5	C+24	12±1.8
123524	VA50-199	195 - 210	180	196	9	14.5	C+5	C+24	12±1.8
123525	VA50-200	190 - 210	180	210	14.3	25	C+10	C+45	20±4
123526	VA50-220	210 - 235	198	228	14.3	25	C+10	C+45	20±4
123527	VA50-250	235 - 265	225	255	14.3	25	C+10	C+45	20±4
123528	VA50-275	265 - 290	247	277	14.3	25	C+10	C+45	20±4
123529	VA50-300	290 - 310	270	300	14.3	25	C+10	C+45	20±4
123530	VA50-325	310 - 335	292	322	14.3	25	C+10	C+45	20±4
123531	VA50-350	335 - 365	315	345	14.3	25	C+10	C+45	20±4
123532	VA50-375	365 - 390	337	367	14.3	25	C+10	C+45	20±4
123533	VA50-400	390 - 430	360	390	14.3	25	C+10	C+45	20±4
123534	VA50-450	430 - 480	405	435	14.3	25	C+10	C+45	20±4
123535	VA50-500	480 - 530	450	480	14.3	25	C+10	C+45	20±4
123536	VA50-550	530 - 580	495	525	14.3	25	C+10	C+45	20±4
123537	VA50-600	580 - 630	540	570	14.3	25	C+10	C+45	20±4

VA 50 NBR

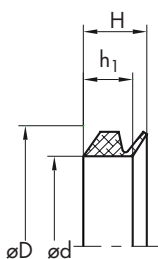
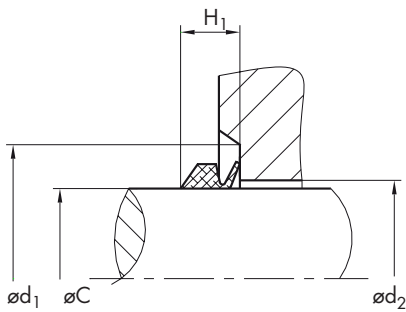
**Sizes
metric**

Part No.	Type	C	d	D	h1	H	d2	d1	H1
26264	VA50-650	630 - 665	600	630	14.3	25	C+10	C+45	20±4
27384	VA50-700	665 - 705	630	660	14.3	25	C+10	C+45	20±4
26265	VA50-725	705 - 745	670	700	14.3	25	C+10	C+45	20±4
41194	VA50-750	745 - 785	705	735	14.3	25	C+10	C+45	20±4
16684	VA50-800	785 - 830	745	775	14.3	25	C+10	C+45	20±4
16685	VA50-850	830 - 875	785	815	14.3	25	C+10	C+45	20±4
26266	VA50-900	875 - 920	825	855	14.3	25	C+10	C+45	20±4
35010	VA50-950	920 - 965	865	895	14.3	25	C+10	C+45	20±4
27473	VA50-1000	965 - 1015	910	940	14.3	25	C+10	C+45	20±4
71773	VA50-1050	1015 - 1065	955	985	14.3	25	C+10	C+45	20±4
35045	VA50-1100	1065 - 1115	1000	1030	14.3	25	C+10	C+45	20±4
36903	VA50-1150	1115 - 1165	1045	1075	14.3	25	C+10	C+45	20±4 *
69606	VA50-1200	1165 - 1215	1090	1120	14.3	25	C+10	C+45	20±4 *
27385	VA50-1250	1215 - 1270	1135	1165	14.3	25	C+10	C+45	20±4 *
56734	VA50-1300	1270 - 1320	1180	1210	14.3	25	C+10	C+45	20±4 *
71774	VA50-1350	1320 - 1370	1225	1255	14.3	25	C+10	C+45	20±4 *
71775	VA50-1400	1370 - 1420	1270	1300	14.3	25	C+10	C+45	20±4 *
71776	VA50-1450	1420 - 1470	1315	1345	14.3	25	C+10	C+45	20±4 *
71777	VA50-1500	1470 - 1520	1360	1390	14.3	25	C+10	C+45	20±4 *
71778	VA50-1550	1520 - 1570	1405	1435	14.3	25	C+10	C+45	20±4 *
35875	VA50-1600	1570 - 1620	1450	1480	14.3	25	C+10	C+45	20±4 *
71779	VA50-1650	1620 - 1670	1495	1525	14.3	25	C+10	C+45	20±4 *
71780	VA50-1700	1670 - 1720	1540	1570	14.3	25	C+10	C+45	20±4 *
71781	VA50-1750	1720 - 1770	1585	1615	14.3	25	C+10	C+45	20±4 *
71782	VA50-1800	1770 - 1820	1630	1660	14.3	25	C+10	C+45	20±4 *
71783	VA50-1850	1820 - 1870	1675	1705	14.3	25	C+10	C+45	20±4 *
71784	VA50-1900	1870 - 1920	1720	1750	14.3	25	C+10	C+45	20±4 *
71785	VA50-1950	1920 - 1970	1765	1795	14.3	25	C+10	C+45	20±4 *
27445	VA50-2000	1970 - 2020	1810	1840	14.3	25	C+10	C+45	20±4 *

VS 50 NBR

**Sizes
metric**

123597	VS50-5	4.5 - 5.5	4	8	3.9	5.2	C+1	C+6	4.5±0.4
123598	VS50-6	5.5 - 6.5	5	9	3.9	5.2	C+1	C+6	4.5±0.4
123599	VS50-7	6.5 - 8	6	10	3.9	5.2	C+1	C+6	4.5±0.4
123600	VS50-8	8 - 9.5	7	11	3.9	5.2	C+1	C+6	4.5±0.4
123601	VS50-10	9.5 - 11.5	9	15	5.6	7.7	C+2	C+9	6.7±0.6
123602	VS50-12	11.5 - 13.5	10.5	16.5	5.6	7.7	C+2	C+9	6.7±0.6
123603	VS50-14	13.5 - 15.5	12.5	18.5	5.6	7.7	C+2	C+9	6.7±0.6
123604	VS50-16	15.5 - 17.5	14	20	5.6	7.7	C+2	C+9	6.7±0.6
123605	VS50-18	17.5 - 19	16	22	5.6	7.7	C+2	C+9	6.7±0.6
123606	VS50-20	19 - 21	18	26	7.9	10.5	C+2	C+12	9±0.8
123607	VS50-22	21 - 24	20	28	7.9	10.5	C+2	C+12	9±0.8
123608	VS50-25	24 - 27	22	30	7.9	10.5	C+2	C+12	9±0.8
123609	VS50-28	27 - 29	25	33	7.9	10.5	C+3	C+12	9±0.8
123610	VS50-30	29 - 31	27	35	7.9	10.5	C+3	C+12	9±0.8
123611	VS50-32	31 - 33	29	37	7.9	10.5	C+3	C+12	9±0.8
123612	VS50-35	33 - 36	31	39	7.9	10.5	C+3	C+12	9±0.8
123613	VS50-38	36 - 38	34	42	7.9	10.5	C+3	C+12	9±0.8
123614	VS50-40	38 - 43	36	46	9.5	13	C+3	C+15	11±1
123615	VS50-45	43 - 48	40	50	9.5	13	C+3	C+15	11±1
123616	VS50-50	48 - 53	45	55	9.5	13	C+3	C+15	11±1
123617	VS50-55	53 - 58	49	59	9.5	13	C+3	C+15	11±1
123618	VS50-60	58 - 63	54	64	9.5	13	C+3	C+15	11±1
123619	VS50-65	63 - 68	58	68	9.5	13	C+3	C+15	11±1
123620	VS50-70	68 - 73	63	75	11.3	15.5	C+4	C+18	13.5±1.2
123621	VS50-75	73 - 78	67	79	11.3	15.5	C+4	C+18	13.5±1.2



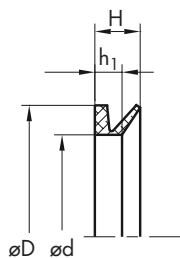
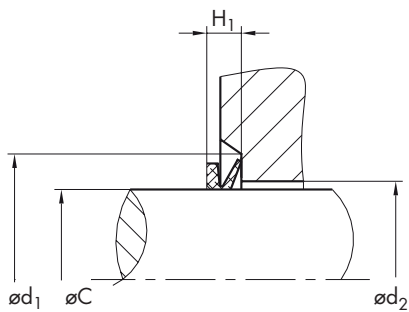
VS 50 NBR

Part No.	Type	C	d	D	h1	H	d2	d1	H1
123622	VS50-80	78 - 83	72	84	11.3	15.5	C+4	C+18	13.5±1.2
123623	VS50-85	83 - 88	76	88	11.3	15.5	C+4	C+18	13.5±1.2
123624	VS50-90	88 - 93	81	93	11.3	15.5	C+4	C+18	13.5±1.2
123625	VS50-95	93 - 98	85	97	11.3	15.5	C+4	C+18	13.5±1.2
123626	VS50-100	98 - 105	90	102	11.3	15.5	C+4	C+18	13.5±1.2
123627	VS50-110	105 - 115	99	113	13.1	18	C+4	C+21	15.5±1.5
123628	VS50-120	115 - 125	108	122	13.1	18	C+4	C+21	15.5±1.5
123629	VS50-130	125 - 135	117	131	13.1	18	C+4	C+21	15.5±1.5
123630	VS50-140	135 - 145	126	140	13.1	18	C+4	C+21	15.5±1.5
123631	VS50-150	145 - 155	135	149	13.1	18	C+4	C+21	15.5±1.5
123632	VS50-160	155 - 165	144	160	15	20.5	C+5	C+24	18±1.8
123633	VS50-170	165 - 175	153	169	15	20.5	C+5	C+24	18±1.8
123634	VS50-180	175 - 185	162	178	15	20.5	C+5	C+24	18±1.8
123635	VS50-190	185 - 195	171	187	15	20.5	C+5	C+24	18±1.8
123636	VS50-199	195 - 210	180	196	15	20.5	C+5	C+24	18±1.8

VL NBR

Sizes metric

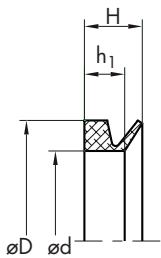
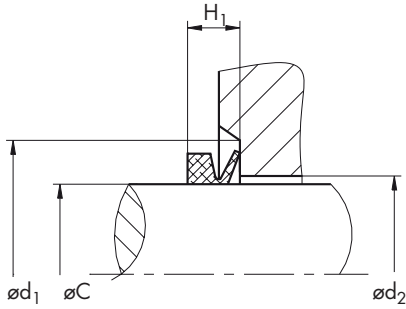
123568	VL50-110	105 - 115	99	105.5	6	10.5	C+5	C+20	8±1.5
123569	VL50-120	115 - 125	108	114.5	6	10.5	C+5	C+20	8±1.5
123570	VL50-130	125 - 135	117	123.5	6	10.5	C+5	C+20	8±1.5
123570	VL50-140	135 - 145	126	132.5	6	10.5	C+5	C+20	8±1.5
123572	VL50-150	145 - 155	135	141.5	6	10.5	C+5	C+20	8±1.5
123573	VL50-160	155 - 165	144	150.5	6	10.5	C+5	C+20	8±1.5
123574	VL50-170	165 - 175	153	159.5	6	10.5	C+5	C+20	8±1.5
123575	VL50-180	175 - 185	162	168.5	6	10.5	C+5	C+20	8±1.5
123576	VL50-190	185 - 195	171	177.5	6	10.5	C+5	C+20	8±1.5
123577	VL50-200	195 - 210	182	188.5	6	10.5	C+5	C+20	8±1.5
123578	VL50-220	210 - 233	198	204.5	6	10.5	C+5	C+20	8±1.5
123579	VL50-250	233 - 260	225	231.5	6	10.5	C+5	C+20	8±1.5
123580	VL50-275	260 - 285	247	253.5	6	10.5	C+5	C+20	8±1.5
123581	VL50-300	285 - 310	270	276.5	6	10.5	C+5	C+20	8±1.5
123582	VL50-325	310 - 335	292	298.5	6	10.5	C+5	C+20	8±1.5
123583	VL50-350	335 - 365	315	321.5	6	10.5	C+5	C+20	8±1.5
123584	VL50-375	365 - 385	337	343.5	6	10.5	C+5	C+20	8±1.5
123585	VL50-400	385 - 410	360	366.5	6	10.5	C+5	C+20	8±1.5
123586	VL50-425	410 - 440	382	388.5	6	10.5	C+5	C+20	8±1.5
123587	VL50-450	440 - 475	405	411.5	6	10.5	C+5	C+20	8±1.5
123588	VL50-500	475 - 510	450	456.5	6	10.5	C+5	C+20	8±1.5
46234	VL50-525	510 - 540	472	478.5	6	10.5	C+5	C+20	8±1.5
123589	VL50-550	540 - 575	495	501.5	6	10.5	C+5	C+20	8±1.5
123590	VL50-600	575 - 625	540	546.5	6	10.5	C+5	C+20	8±1.5
123591	VL50-650	625 - 675	600	606.5	6	10.5	C+5	C+20	8±1.5
123592	VL50-700	675 - 710	630	636.5	6	10.5	C+5	C+20	8±1.5
167544	VL50-725	710 - 740	670	676.5	6	10.5	C+5	C+20	8±1.5 *
123593	VL50-750	740 - 775	705	711.5	6	10.5	C+5	C+20	8±1.5
123594	VL50-800	775 - 825	745	751.5	6	10.5	C+5	C+20	8±1.5 *
123595	VL50-850	825 - 875	785	791.5	6	10.5	C+5	C+20	8±1.5
123596	VL50-900	875 - 925	825	831.5	6	10.5	C+5	C+20	8±1.5
165112	VL50-950	925 - 975	865	871.5	6	10.5	C+5	C+20	8±1.5 *
79420	VL50-1000	975 - 1025	910	916.5	6	10.5	C+5	C+20	8±1.5 *
166758	VL50-1050	1025 - 1075	955	961.5	6	10.5	C+5	C+20	8±1.5 *
167585	VL50-1100	1075 - 1125	1000	1006.5	6	10.5	C+5	C+20	8±1.5 *
76115	VL50-1200	1175 - 1225	1090	1096.5	6	10.5	C+5	C+20	8±1.5 *
69608	VL50-2000	1975 - 2025	1810	1816.5	6	10.5	C+5	C+20	8±1.5 *



* vulcanised

VA 50 FKM

**Sizes
metric**



Part No.	Type	C	d	D	h1	H	d2	d1	H1
62133	VA50-3	2.7 - 3.5	2.5	5.5	2.1	3	C+1	C+4	2.5±0.3
62134	VA50-4	3.5 - 4.5	3.2	7.2	2.4	3.7	C+1	C+6	3±0.4
44103	VA50-5	4.5 - 5.5	4	8	2.4	3.7	C+1	C+6	3±0.4
62135	VA50-6	5.5 - 6.5	5	9	2.4	3.7	C+1	C+6	3±0.4
62136	VA50-7	6.5 - 8	6	10	2.4	3.7	C+1	C+6	3±0.4
62137	VA50-8	8 - 9.5	7	11	2.4	3.7	C+1	C+6	3±0.4
37437	VA50-10	9.5 - 11.5	9	15	3.4	5.5	C+2	C+9	4.5±0.6
62138	VA50-12	11.5 - 12.5	10.5	16.5	3.4	5.5	C+2	C+9	4.5±0.6
62139	VA50-14	13.5 - 15.5	12.5	18.5	3.4	5.5	C+2	C+9	4.5±0.6
56127	VA50-16	15.5 - 17.5	14	20	3.4	5.5	C+2	C+9	4.5±0.6
36036	VA50-18	17.5 - 19	16	22	3.4	5.5	C+2	C+9	4.5±0.6
39208	VA50-20	19 - 21	18	26	4.7	7.5	C+2	C+12	6±0.8
62140	VA50-22	21 - 24	20	28	4.7	7.5	C+2	C+12	6±0.8
36553	VA50-25	24 - 27	22	30	4.7	7.5	C+2	C+12	6±0.8
37602	VA50-28	27 - 29	25	33	4.7	7.5	C+3	C+12	6±0.8
49455	VA50-30	29 - 31	27	35	4.7	7.5	C+3	C+12	6±0.8
62141	VA50-32	31 - 33	29	37	4.7	7.5	C+3	C+12	6±0.8
62142	VA50-35	33 - 36	31	39	4.7	7.5	C+3	C+12	6±0.8
62143	VA50-38	36 - 38	34	42	4.7	7.5	C+3	C+12	6±0.8
36931	VA50-40	38 - 43	36	46	5.5	9	C+3	C+15	7±1
44692	VA50-45	43 - 48	40	50	5.5	9	C+3	C+15	7±1
22379	VA50-50	48 - 53	45	55	5.5	9	C+3	C+15	7±1
56950	VA50-55	53 - 58	49	59	5.5	9	C+3	C+15	7±1
36555	VA50-60	58 - 63	54	64	5.5	9	C+3	C+15	7±1
37455	VA50-65	63 - 68	58	68	5.5	9	C+3	C+15	7±1
35344	VA50-70	68 - 73	63	75	6.8	11	C+4	C+18	9±1.2
35345	VA50-75	73 - 78	67	79	6.8	11	C+4	C+18	9±1.2
37260	VA50-80	78 - 83	72	84	6.8	11	C+4	C+18	9±1.2
35610	VA50-85	83 - 88	76	88	6.8	11	C+4	C+18	9±1.2
37459	VA50-90	88 - 93	81	93	6.8	11	C+4	C+18	9±1.2
35488	VA50-95	93 - 98	85	97	6.8	11	C+4	C+18	9±1.2
34854	VA50-100	98 - 105	90	102	6.8	11	C+4	C+18	9±1.2
36932	VA50-110	105 - 115	99	113	7.9	12.8	C+4	C+21	10.5±1.5
35613	VA50-120	115 - 125	108	122	7.9	12.8	C+4	C+21	10.5±1.5
37964	VA50-130	125 - 135	117	131	7.9	12.8	C+4	C+21	10.5±1.5
44693	VA50-140	135 - 145	126	140	7.9	12.8	C+4	C+21	10.5±1.5
22378	VA50-150	145 - 155	135	149	7.9	12.8	C+4	C+21	10.5±1.5
55879	VA50-160	155 - 165	144	160	9	14.5	C+5	C+24	12±1.8
24715	VA50-170	165 - 175	153	169	9	14.5	C+5	C+24	12±1.8
35109	VA50-180	175 - 185	162	178	9	14.5	C+5	C+24	12±1.8
37965	VA50-190	185 - 195	171	187	9	14.5	C+5	C+24	12±1.8
37427	VA50-199	195 - 210	180	196	9	14.5	C+5	C+24	12±1.8
36916	VA50-200	190 - 210	180	210	14.3	25	C+10	C+45	20±4
34919	VA50-220	210 - 235	198	228	14.3	25	C+10	C+45	20±4
36654	VA50-250	235 - 265	225	255	14.3	25	C+10	C+45	20±4
41577	VA50-275	265 - 290	247	277	14.3	25	C+10	C+45	20±4
36653	VA50-300	290 - 310	270	300	14.3	25	C+10	C+45	20±4
40235	VA50-325	310 - 335	292	322	14.3	25	C+10	C+45	20±4
70444	VA50-350	335 - 365	315	345	14.3	25	C+10	C+45	20±4
36917	VA50-375	365 - 390	337	367	14.3	25	C+10	C+45	20±4
34918	VA50-400	390 - 430	360	390	14.3	25	C+10	C+45	20±4
35883	VA50-450	430 - 480	405	435	14.3	25	C+10	C+45	20±4
40448	VA50-500	480 - 530	450	480	14.3	25	C+10	C+45	20±4
39580	VA50-550	530 - 580	495	525	14.3	25	C+10	C+45	20±4
40910	VA50-600	580 - 630	540	570	14.3	25	C+10	C+45	20±4

VA 50 FKM

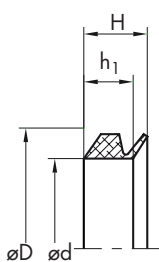
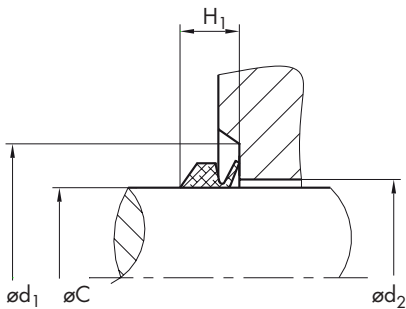
**Sizes
metric**

Part No.	Type	C	d	D	h1	H	d2	d1	H1
36676	VA50-650	630 - 665	600	630	14.3	25	C+10	C+45	20±4
64883	VA50-700	665 - 705	630	660	14.3	25	C+10	C+45	20±4
59558	VA50-725	705 - 745	670	700	14.3	25	C+10	C+45	20±4
56375	VA50-750	745 - 785	705	735	14.3	25	C+10	C+45	20±4
69327	VA50-800	785 - 830	745	775	14.3	25	C+10	C+45	20±4
69740	VA50-850	830 - 875	785	815	14.3	25	C+10	C+45	20±4
24280	VA50-900	875 - 920	825	855	14.3	25	C+10	C+45	20±4
24281	VA50-950	920 - 965	865	895	14.3	25	C+10	C+45	20±4
77761	VA50-1000	965 - 1015	910	940	14.3	25	C+10	C+45	20±4
45403	VA50-1050	1015 - 1065	955	985	14.3	25	C+10	C+45	20±4
38079	VA50-1100	1065 - 1115	1000	1030	14.3	25	C+10	C+45	20±4 *
35607	VA50-1150	1115 - 1165	1045	1075	14.3	25	C+10	C+45	20±4 *
36705	VA50-1200	1165 - 1215	1090	1120	14.3	25	C+10	C+45	20±4 *
46092	VA50-1250	1215 - 1270	1135	1165	14.3	25	C+10	C+45	20±4 *
56724	VA50-1300	1270 - 1320	1180	1210	14.3	25	C+10	C+45	20±4 *
45404	VA50-1350	1320 - 1370	1225	1255	14.3	25	C+10	C+45	20±4 *
45405	VA50-1400	1370 - 1420	1270	1300	14.3	25	C+10	C+45	20±4 *
6583	VA50-1450	1420 - 1470	1315	1345	14.3	25	C+10	C+45	20±4 *
161425	VA50-1500	1470 - 1520	1360	1390	14.3	25	C+10	C+45	20±4 *
28630	VA50-1550	1520 - 1570	1405	1435	14.3	25	C+10	C+45	20±4 *
45410	VA50-1600	1570 - 1620	1450	1480	14.3	25	C+10	C+45	20±4 *
28639	VA50-1650	1620 - 1670	1495	1525	14.3	25	C+10	C+45	20±4 *
45411	VA50-1700	1670 - 1720	1540	1570	14.3	25	C+10	C+45	20±4 *
45412	VA50-1750	1720 - 1770	1585	1615	14.3	25	C+10	C+45	20±4 *
45415	VA50-1800	1770 - 1820	1630	1660	14.3	25	C+10	C+45	20±4 *
45416	VA50-1850	1820 - 1870	1675	1705	14.3	25	C+10	C+45	20±4 *
45421	VA50-1900	1870 - 1920	1720	1750	14.3	25	C+10	C+45	20±4 *
28643	VA50-1950	1920 - 1970	1765	1795	14.3	25	C+10	C+45	20±4 *
45422	VA50-2000	1970 - 2020	1810	1840	14.3	25	C+10	C+45	20±4 *

VS 50 FKM

**Sizes
metric**

62146	VS50-5	4.5 - 5.5	4	8	3.9	5.2	C+1	C+6	4.5±0.4
62147	VS50-6	5.5 - 6.5	5	9	3.9	5.2	C+1	C+6	4.5±0.4
27704	VS50-7	6.5 - 8	6	10	3.9	5.2	C+1	C+6	4.5±0.4
62148	VS50-8	8 - 9.5	7	11	3.9	5.2	C+1	C+6	4.5±0.4
26256	VS50-10	9.5 - 11.5	9	15	5.6	7.7	C+2	C+9	6.7±0.6
62149	VS50-12	11.5 - 13.5	10.5	16.5	5.6	7.7	C+2	C+9	6.7±0.6
62150	VS50-14	13.5 - 15.5	12.5	18.5	5.6	7.7	C+2	C+9	6.7±0.6
62151	VS50-16	15.5 - 17.5	14	20	5.6	7.7	C+2	C+9	6.7±0.6
26255	VS50-18	17.5 - 19	16	22	5.6	7.7	C+2	C+9	6.7±0.6
37062	VS50-20	19 - 21	18	26	7.9	10.5	C+2	C+12	9±0.8
62152	VS50-22	21 - 24	20	28	7.9	10.5	C+2	C+12	9±0.8
36554	VS50-25	24 - 27	22	30	7.9	10.5	C+2	C+12	9±0.8
42591	VS50-28	27 - 29	25	33	7.9	10.5	C+3	C+12	9±0.8
38226	VS50-30	29 - 31	27	35	7.9	10.5	C+3	C+12	9±0.8
62153	VS50-32	31 - 33	29	37	7.9	10.5	C+3	C+12	9±0.8
34911	VS50-35	33 - 36	31	39	7.9	10.5	C+3	C+12	9±0.8
59658	VS50-38	36 - 38	34	42	7.9	10.5	C+3	C+12	9±0.8
21550	VS50-40	38 - 43	36	46	9.5	13	C+3	C+15	11±1
34912	VS50-45	43 - 48	40	50	9.5	13	C+3	C+15	11±1
34913	VS50-50	48 - 53	45	55	9.5	13	C+3	C+15	11±1
34917	VS50-55	53 - 58	49	59	9.5	13	C+3	C+15	11±1
36556	VS50-60	58 - 63	54	64	9.5	13	C+3	C+15	11±1
21552	VS50-65	63 - 68	58	68	9.5	13	C+3	C+15	11±1
34855	VS50-70	68 - 73	63	75	11.3	15.5	C+4	C+18	13.5±1.2
37456	VS50-75	73 - 78	67	79	11.3	15.5	C+4	C+18	13.5±1.2



* vulcanised

VS 50 FKM

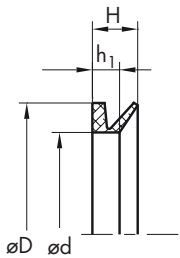
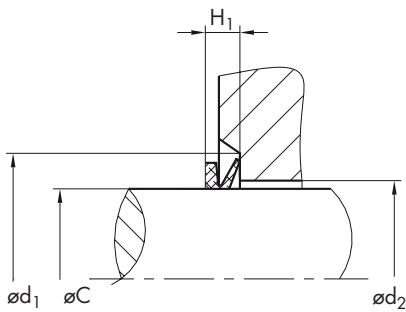
**Sizes
metric**

Part No.	Type	C	d	D	h1	H	d2	d1	H1
21551	VS50-80	78 - 83	72	84	11.3	15.5	C+4	C+18	13.5±1.2
37457	VS50-85	83 - 88	76	88	11.3	15.5	C+4	C+18	13.5±1.2
37458	VS50-90	88 - 93	81	93	11.3	15.5	C+4	C+18	13.5±1.2
37460	VS50-95	93 - 98	85	97	11.3	15.5	C+4	C+18	13.5±1.2
35611	VS50-100	98 - 105	90	102	11.3	15.5	C+4	C+18	13.5±1.2
21553	VS50-110	105 - 115	99	113	13.1	18	C+4	C+21	15.5±1.5
37461	VS50-120	115 - 125	108	122	13.1	18	C+4	C+21	15.5±1.5
37952	VS50-130	125 - 135	117	131	13.1	18	C+4	C+21	15.5±1.5
27482	VS50-140	135 - 145	126	140	13.1	18	C+4	C+21	15.5±1.5
57013	VS50-150	145 - 155	135	149	13.1	18	C+4	C+21	15.5±1.5
24376	VS50-160	155 - 165	144	160	15	20.5	C+5	C+24	18±1.8
36043	VS50-170	165 - 175	153	169	15	20.5	C+5	C+24	18±1.8
35952	VS50-180	175 - 185	162	178	15	20.5	C+5	C+24	18±1.8
37426	VS50-190	185 - 195	171	187	15	20.5	C+5	C+24	18±1.8
36044	VS50-199	195 - 210	180	196	15	20.5	C+5	C+24	18±1.8

VL 50 FKM

**Sizes
metric**

45809	VL50-110	105 - 115	99	105.5	6	10.5	C+5	C+20	8±1.5
29726	VL50-120	115 - 125	108	114.5	6	10.5	C+5	C+20	8±1.5
45815	VL50-130	125 - 135	117	123.5	6	10.5	C+5	C+20	8±1.5
44405	VL50-140	135 - 145	126	132.5	6	10.5	C+5	C+20	8±1.5
72420	VL50-150	145 - 155	135	141.5	6	10.5	C+5	C+20	8±1.5
81930	VL50-160	155 - 165	144	150.5	6	10.5	C+5	C+20	8±1.5
65690	VL50-170	165 - 175	153	159.5	6	10.5	C+5	C+20	8±1.5
78092	VL50-180	175 - 185	162	168.5	6	10.5	C+5	C+20	8±1.5
74006	VL50-190	185 - 195	171	177.5	6	10.5	C+5	C+20	8±1.5
81535	VL50-200	195 - 210	182	188.5	6	10.5	C+5	C+20	8±1.5
35519	VL50-220	210 - 233	198	204.5	6	10.5	C+5	C+20	8±1.5
35290	VL50-250	233 - 260	225	231.5	6	10.5	C+5	C+20	8±1.5
36369	VL50-275	260 - 285	247	253.5	6	10.5	C+5	C+20	8±1.5
37466	VL50-300	285 - 310	270	276.5	6	10.5	C+5	C+20	8±1.5
78093	VL50-325	310 - 335	292	298.5	6	10.5	C+5	C+20	8±1.5
74053	VL50-350	335 - 365	315	321.5	6	10.5	C+5	C+20	8±1.5
45816	VL50-375	365 - 385	337	343.5	6	10.5	C+5	C+20	8±1.5
37417	VL50-400	385 - 410	360	366.5	6	10.5	C+5	C+20	8±1.5
76766	VL50-425	410 - 440	382	388.5	6	10.5	C+5	C+20	8±1.5
37418	VL50-450	440 - 475	405	411.5	6	10.5	C+5	C+20	8±1.5
45817	VL50-500	475 - 510	450	456.5	6	10.5	C+5	C+20	8±1.5
46236	VL50-525	510 - 540	472	478.5	6	10.5	C+5	C+20	8±1.5
7597	VL50-550	540 - 575	495	501.5	6	10.5	C+5	C+20	8±1.5
45819	VL50-600	575 - 625	540	546.5	6	10.5	C+5	C+20	8±1.5 *
45820	VL50-650	625 - 675	600	606.5	6	10.5	C+5	C+20	8±1.5 *
6965	VL50-700	675 - 710	630	636.5	6	10.5	C+5	C+20	8±1.5 *
167543	VL50-725	710 - 740	670	676.5	6	10.5	C+5	C+20	8±1.5 *
45821	VL50-750	740 - 775	705	711.5	6	10.5	C+5	C+20	8±1.5 *
45822	VL50-800	775 - 825	745	751.5	6	10.5	C+5	C+20	8±1.5 *
45823	VL50-850	825 - 875	785	791.5	6	10.5	C+5	C+20	8±1.5



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