
V-Ring





■ V-RING

■ General

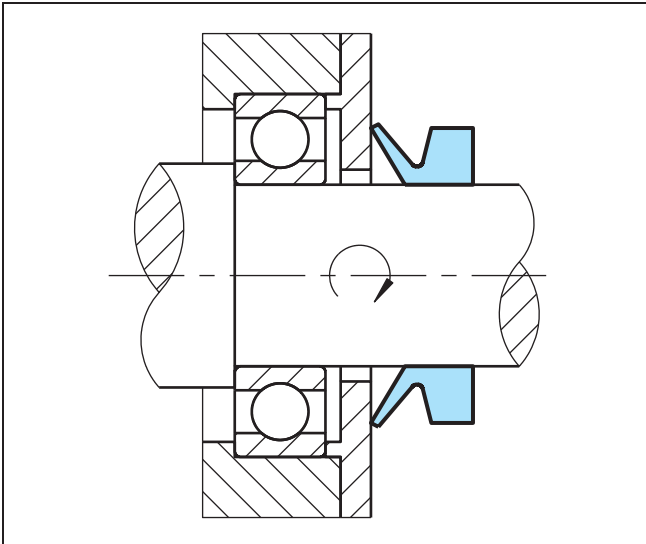


Figure 61 Method of operation of the V-Ring

The V-RING is a unique all-rubber seal for rotary shafts. Developed in the 1960's by FORSHEDA AB, it has been used successfully by OEMs and on the replacement market world wide in a broad range of applications.

The V-Ring is the perfect seal to prevent the ingress of dirt, dust, water or combinations of these media while positively retaining grease. With its unique design and performance the V-Ring can be used with a wide range of bearing types. It can also be used as a secondary seal to protect primary seals that do not perform well in hostile environments.

Description and advantages

The V-Ring is normally stretched and mounted directly on the shaft, where it is held in position by the inherent tension of the rubber body. It rotates with the shaft and seals axially against a stationary counterface, perpendicular to the shaft. The counterface can be the side wall of a bearing or a washer, stamping, bearing housing, or even the metal case of an oil seal. The sealing lip is flexible and applies only a relatively light contact pressure against the counter-face and yet is still sufficient to maintain the sealing function. The low contact pressure (that varies with the fitted width) allows the seal to run dry in many applications.

Due to influence of the centrifugal force, the contact pressure of the lip decreases with increased speed. This means that frictional losses and heat are kept to a minimum, resulting in excellent wear characteristics and

extended seal life. Once breakaway friction is overcome, the friction reduces steadily until around the 10 - 15 m/s range, when it reduces quite quickly. In the 15 - 20 m/s range the friction reduces to zero. The V-Ring then serves as a clearance seal and deflector. The power loss due to seal friction develops as shown in Fig. 62.

The flexible lip and hinge allow the V-Ring to function even in the presence of a certain amount of run-out, eccentricity and shaft misalignment. Contact our local Trelleborg Sealing Solutions marketing company for advice on these and other application issues.

V-Rings are made entirely of rubber without fabric or sheet metal reinforcement. They are, therefore, particularly easy to install. V-Rings can be stretched and, depending on size, installed over flanges, pulleys and bearing housings without costly dismantling. For larger sizes they can even be supplied as cut rings and joined by vulcanization on site.

Design

V-Rings are available in seven standard cross-sections to meet various space and application requirements.

The cross-sections of profiles A and S increase with the shaft diameter, whilst the other types have the same cross-section for the whole diameter range.

Profile A is the most common and available for shaft diameters from 2.7 to 2020 mm, inclusive.

Profile S is wide and tapered, which provides a very firm hold on the shaft. The rings are available for shaft diameters from 4.5 to 210 mm.

Profiles L and LX have narrow axial cross sections making them suitable for compact arrangements and are often used in combination with labyrinth seals. Available for shaft diameters from 105 (135 for LX) to 2025 mm.

Profiles RME, RM and AX are heavy duty V-Rings that are designed primarily for large high speed bearing arrangements, i.e. rolling mill and papermaking machine applications. Additionally they can be used as secondary seals for heavy duty applications where the primary seal has to be protected against water and or particulate contamination. The RME, RM and AX types can be axially and radially located on the shaft with specially designed clamping bands (see page 166). Available for shaft diameters from 300 mm and up.

Larger V-Ring sizes are available as spliced seals. For more details please contact your local Trelleborg Sealing Solutions marketing company.



■ Installation

Axial support

When used to retain oil and grease, an axial support for the V-Ring is always required. For applications with a lower degree of stretch than recommended in the dimension tables (e.g. for ease of assembly) or with a shaft speed exceeding 6-8 m/s (depending on the rubber compound selected) an axial support is also necessary.

An axial support can ensure that the correct installation width relative to the counter-face is maintained for blind assemblies.

The V-Ring must always be supported over its entire base. The axial support should be designed in accordance with Figure 64. The dimensions A, c, d₁, d₃ and B₁ are shown in the dimension tables.

Calculation of the axial support diameter d₅ is as follows;

V-Ring type	Diameter d ₅
A, S	$d_1 + 0.5 \times c$
L, LX	$d_1 + 3 \text{ mm}$
RM, RME	$d_1 + 10 \text{ mm}$
AX	$d_1 + 9 \text{ mm}$

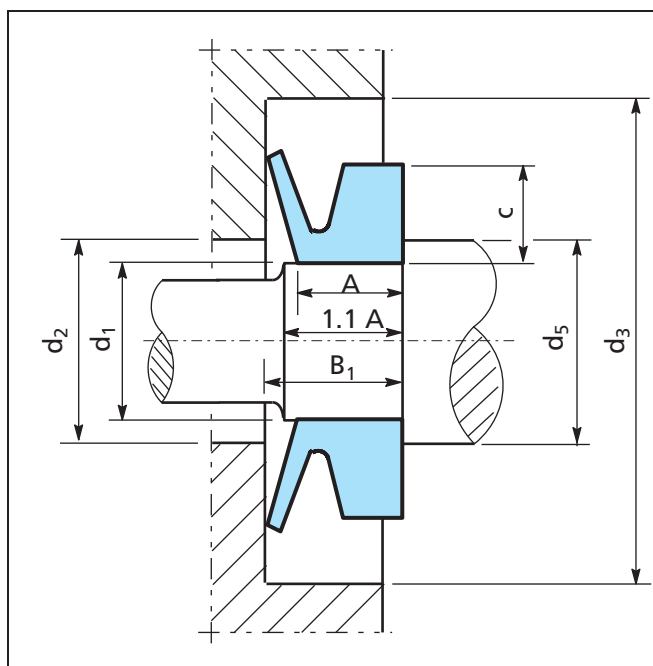


Figure 64 Axial support

Radial retention

When the V-Ring is fitted on the shaft, the body of the V-Ring is subject to a centrifugal force and tends to move or even lift off from the shaft at a certain speed.

At shaft speeds over 10-12 m/s, depending on the V-Ring material, the V-Ring in general requires radial retention.

The speed when radial retention is required is also dependent on the degree of stretch of the V-Ring. V-Rings larger than 2000 mm should always be fitted with radial retention, irrespective of the operating speed.

The radial retention can be designed as a recess, in which the V-Ring body fits, or consist of a number of separate clamping segments. Please contact your local Trelleborg Sealing Solutions marketing company for further guidance.

The clamping band type A or RM are other useful alternatives. See page 166.

Stationary assembly

In cases where the peripheral speed of the shaft exceeds 10-12 m/s an alternative method to radial clamping is to mount the V-Ring on a stationary component in the unit. The contact pressure of the lip will remain constant, as there will be no centrifugal force acting upon the lip.

In comparison to a rotating V-Ring, friction and power loss will be higher resulting in somewhat shorter service life. In order to compensate for this the following steps should be taken:

Counter-face surface finish:
machine to max. 0.8 μm Ra

V-Ring stretch:
maximum 4-6%

Axial interference:
keep to the minimum requirements for compensation of the axial movement within the assembly.

At higher peripheral speed adequate lubrication and heat transfer from the counter-face are required.

Torque

The torque, and consequently the power loss due to the friction of the seal, is often of such a magnitude that it should be taken into consideration when deciding seal type. This applies particularly in the case of small electrical motors, conveyor rollers or any unit where low friction is an important requirement.

The power losses are influenced by many factors such as the seal design and compound, surface finish of the counter-face, fitted width and stretch, speed, medium, lubricant, temperature etc.



■ Dimension table - V-Ring type A

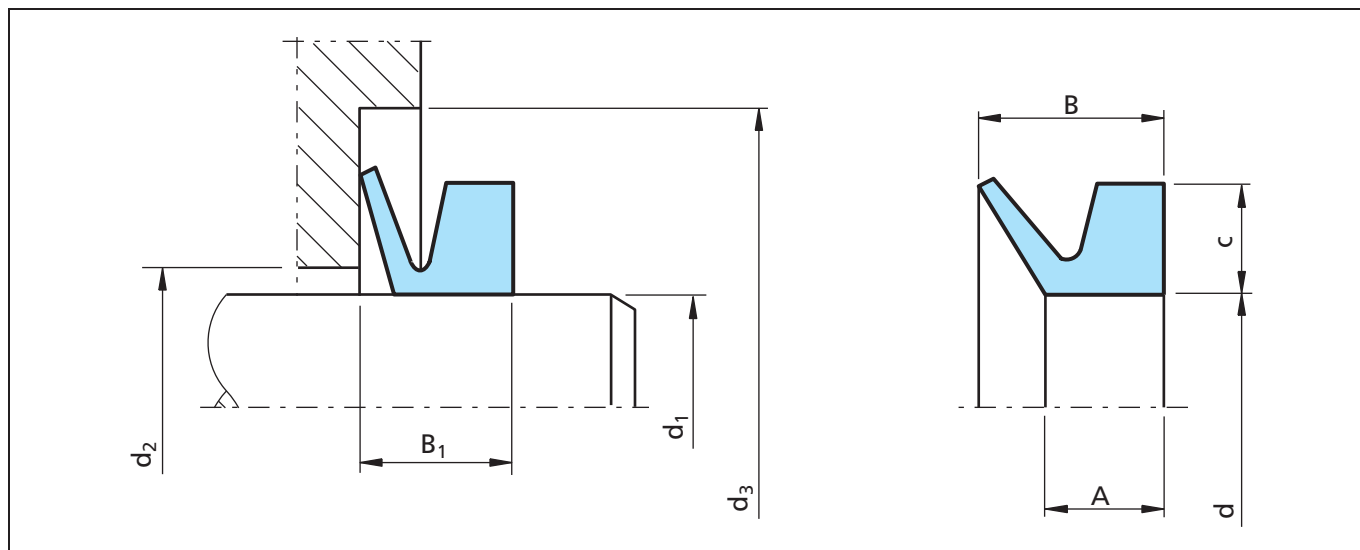


Figure 67 Installation drawing

When the shaft diameter d_1 is on the boundary between two sizes of V-Ring, select the larger V-Ring.
All dimensions in mm.

Ordering example

V-Ring, type A
for shaft diameter = 30.0 mm
Material: N6T50 (Nitrile Elastomer)

TSS Article No.	TWVA00300	-	N6T50
TSS Part No.			
Quality index (standard)			
Material no. (standard)			
Corresponding to FORSHEDA ref. V-30A NBR510			

Table XLV Profile dimensions - assembly dimensions

For shaft diameter d_1	Inside dia. d	Height of cross-section c	Dimension A	Free width B	Maximum d_2	Minimum d_3	Fitted width B_1	V-Ring FORSHEDA Ref.	TSS Part No.
2.7 - 3.5	2.5	1.5	2.1	3.0	$d_1 + 1$	$d_1 + 4$	2.5 ± 0.3	V-3A	TWVA00030
3.5 - 4.5	3.2	2	2.4	3.7	$d_1 + 1$	$d_1 + 6$	3.0 ± 0.4	V-4A	TWVA00040
4.5 - 5.5	4	2	2.4	3.7	$d_1 + 1$	$d_1 + 6$	3.0 ± 0.4	V-5A	TWVA00050
5.5 - 6.5	5	2	2.4	3.7	$d_1 + 1$	$d_1 + 6$	3.0 ± 0.4	V-6A	TWVA00060

V-Ring



For shaft diameter d ₁	Inside dia. d	Height of cross-section c	Dimension A	Free width B	Maximum d ₂	Minimum d ₃	Fitted width B ₁	V-Ring FORSHEDA Ref.	TSS Part No.
6.5 - 8.0	6	2	2.4	3.7	d1 + 1	d1 + 6	3.0 ±0.4	V-7A	TWVA00070
8.0 - 9.5	7	2	2.4	3.7	d1 + 1	d1 + 6	3.0 ±0.4	V-8A	TWVA00080
9.5 - 11.5	9	3	3.4	5.5	d1 + 1	d1 + 9	4.5 ±0.6	V-10A	TWVA00100
11.5 - 12.5	10.5	3	3.4	5.5	d1 + 1	d1 + 9	4.5 ±0.6	V-12A	TWVA00120
12.5 - 13.5	11.7	3	3.4	5.5	d1 + 1	d1 + 9	4.5 ±0.6	V-13A	TWVA00130
13.5 - 15.5	12.5	3	3.4	5.5	d1 + 1	d1 + 9	4.5 ±0.6	V-14A	TWVA00140
15.5 - 17	14	3	3.4	5.5	d1 + 1	d1 + 9	4.5 ±0.6	V-16A	TWVA00160
17.5 - 19	16	3	3.4	5.5	d1 + 1	d1 + 9	4.5 ±0.6	V-18A	TWVA00180
19 - 21	18	4	4.7	7.5	d1 + 2	d1 + 12	6.0 ±0.8	V-20A	TWVA00200
21 - 24	20	4	4.7	7.5	d1 + 2	d1 + 12	6.0 ±0.8	V-22A	TWVA00220
24 - 27	22	4	4.7	7.5	d1 + 2	d1 + 12	6.0 ±0.8	V-25A	TWVA00250
27 - 29	25	4	4.7	7.5	d1 + 2	d1 + 12	6.0 ±0.8	V-28A	TWVA00280
29 - 31	27	4	4.7	7.5	d1 + 2	d1 + 12	6.0 ±0.8	V-30A	TWVA00300
31 - 33	29	4	4.7	7.5	d1 + 2	d1 + 12	6.0 ±0.8	V-32A	TWVA00320
33 - 36	31	4	4.7	7.5	d1 + 2	d1 + 12	6.0 ±0.8	V-35A	TWVA00350
36 - 38	34	4	4.7	7.5	d1 + 2	d1 + 12	6.0 ±0.8	V-38A	TWVA00380
38 - 43	36	5	5.5	9.0	d1 + 2	d1 + 15	7.0 ±1.0	V-40A	TWVA00400
43 - 48	40	5	5.5	9.0	d1 + 2	d1 + 15	7.0 ±1.0	V-45A	TWVA00450
48 - 53	45	5	5.5	9.0	d1 + 2	d1 + 15	7.0 ±1.0	V-50A	TWVA00500
53 - 58	49	5	5.5	9.0	d1 + 2	d1 + 15	7.0 ±1.0	V-55A	TWVA00550
58 - 63	54	5	5.5	9.0	d1 + 2	d1 + 15	7.0 ±1.0	V-60A	TWVA00600
63 - 68	58	5	5.5	9.0	d1 + 2	d1 + 15	7.0 ±1.0	V-65A	TWVA00650
68 - 73	63	6	6.8	11.0	d1 + 3	d1 + 18	9.0 ±1.2	V-70A	TWVA00700
73 - 78	67	6	6.8	11.0	d1 + 3	d1 + 18	9.0 ±1.2	V-75A	TWVA00750
78 - 83	72	6	6.8	11.0	d1 + 3	d1 + 18	9.0 ±1.2	V-80A	TWVA00800
83 - 88	76	6	6.8	11.0	d1 + 3	d1 + 18	9.0 ±1.2	V-85A	TWVA00850
88 - 93	81	6	6.8	11.0	d1 + 3	d1 + 18	9.0 ±1.2	V-90A	TWVA00900
93 - 98	85	6	6.8	11.0	d1 + 3	d1 + 18	9.0 ±1.2	V-95A	TWVA00950
98 - 105	90	6	6.8	11.0	d1 + 3	d1 + 18	9.0 ±1.2	V-100A	TWVA01000
105 - 115	99	7	7.9	12.8	d1 + 4	d1 + 21	10.5 ±1.5	V-110A	TWVA01100
115 - 125	108	7	7.9	12.8	d1 + 4	d1 + 21	10.5 ±1.5	V-120A	TWVA01200
125 - 135	117	7	7.9	12.8	d1 + 4	d1 + 21	10.5 ±1.5	V-130A	TWVA01300
135 - 145	126	7	7.9	12.8	d1 + 4	d1 + 21	10.5 ±1.5	V-140A	TWVA01400



V-Ring

For shaft diameter d_1	Inside dia. d	Height of cross-section c	Dimension A	Free width B	Maximum d_2	Minimum d_3	Fitted width B_1	V-Ring FORSHEDA Ref.	TSS Part No.
145 - 155	135	7	7.9	12.8	$d_1 + 4$	$d_1 + 21$	10.5 ± 1.5	V-150A	TWVA01500
155 - 165	144	8	9.0	14.5	$d_1 + 4$	$d_1 + 24$	12.0 ± 1.8	V-160A	TWVA01600
165 - 175	153	8	9.0	14.5	$d_1 + 4$	$d_1 + 24$	12.0 ± 1.8	V-170A	TWVA01700
175 - 185	162	8	9.0	14.5	$d_1 + 4$	$d_1 + 24$	12.0 ± 1.8	V-180A	TWVA01800
185 - 195	171	8	9.0	14.5	$d_1 + 4$	$d_1 + 24$	12.0 ± 1.8	V-190A	TWVA01900
195 - 210	180	8	9.0	14.5	$d_1 + 4$	$d_1 + 24$	12.0 ± 1.8	V-199A	TWVA01990
190 - 210	180	15	14.3	25.0	$d_1 + 10$	$d_1 + 45$	20.0 ± 4.0	V-200A	TWVA02000
210 - 235	198	15	14.3	25.0	$d_1 + 10$	$d_1 + 45$	20.0 ± 4.0	V-220A	TWVA02200
235 - 265	225	15	14.3	25.0	$d_1 + 10$	$d_1 + 45$	20.0 ± 4.0	V-250A	TWVA02500
265 - 290	247	15	14.3	25.0	$d_1 + 10$	$d_1 + 45$	20.0 ± 4.0	V-275A	TWVA02750
290 - 310	270	15	14.3	25.0	$d_1 + 10$	$d_1 + 45$	20.0 ± 4.0	V-300A	TWVA03000
310 - 335	292	15	14.3	25.0	$d_1 + 10$	$d_1 + 45$	20.0 ± 4.0	V-325A	TWVA03250
335 - 365	315	15	14.3	25.0	$d_1 + 10$	$d_1 + 45$	20.0 ± 4.0	V-350A	TWVA03500
365 - 390	337	15	14.3	25.0	$d_1 + 10$	$d_1 + 45$	20.0 ± 4.0	V-375A	TWVA03750
390 - 430	360	15	14.3	25.0	$d_1 + 10$	$d_1 + 45$	20.0 ± 4.0	V-400A	TWVA04000
430 - 480	405	15	14.3	25.0	$d_1 + 10$	$d_1 + 45$	20.0 ± 4.0	V-450A	TWVA04500
480 - 530	450	15	14.3	25.0	$d_1 + 10$	$d_1 + 45$	20.0 ± 4.0	V-500A	TWVA05000
530 - 580	495	15	14.3	25.0	$d_1 + 10$	$d_1 + 45$	20.0 ± 4.0	V-550A	TWVA05500
580 - 630	540	15	14.3	25.0	$d_1 + 10$	$d_1 + 45$	20.0 ± 4.0	V-600A	TWVA06000
630 - 665	600	15	14.3	25.0	$d_1 + 10$	$d_1 + 45$	20.0 ± 4.0	V-650A	TWVA06500
665 - 705	630	15	14.3	25.0	$d_1 + 10$	$d_1 + 45$	20.0 ± 4.0	V-700A	TWVA07000
705 - 745	670	15	14.3	25.0	$d_1 + 10$	$d_1 + 45$	20.0 ± 4.0	V-725A	TWVA07250
745 - 785	705	15	14.3	25.0	$d_1 + 10$	$d_1 + 45$	20.0 ± 4.0	V-750A	TWVA07500
785 - 830	745	15	14.3	25.0	$d_1 + 10$	$d_1 + 45$	20.0 ± 4.0	V-800A	TWVA08000
830 - 875	785	15	14.3	25.0	$d_1 + 10$	$d_1 + 45$	20.0 ± 4.0	V-850A	TWVA08500
875 - 920	825	15	14.3	25.0	$d_1 + 10$	$d_1 + 45$	20.0 ± 4.0	V-900A	TWVA09000
920 - 965	865	15	14.3	25.0	$d_1 + 10$	$d_1 + 45$	20.0 ± 4.0	V-950A	TWVA09500
965 - 1015	910	15	14.3	25.0	$d_1 + 10$	$d_1 + 45$	20.0 ± 4.0	V-1000A	TWVAX1000
1015 - 1065	955	15	14.3	25.0	$d_1 + 10$	$d_1 + 45$	20.0 ± 4.0	V-1050A	TWVAX1050
1065 - 1115	1000	15	14.3	25.0	$d_1 + 10$	$d_1 + 45$	20.0 ± 4.0	V-1100A	TWVAW1100
1115 - 1165	1045	15	14.3	25.0	$d_1 + 10$	$d_1 + 45$	20.0 ± 4.0	V-1150A	TWVAW1150
1165 - 1215	1090	15	14.3	25.0	$d_1 + 10$	$d_1 + 45$	20.0 ± 4.0	V-1200A	TWVAW1200
1215 - 1270	1135	15	14.3	25.0	$d_1 + 10$	$d_1 + 45$	20.0 ± 4.0	V-1250A	TWVAW1250
1270 - 1320	1180	15	14.3	25.0	$d_1 + 10$	$d_1 + 45$	20.0 ± 4.0	V-1300A	TWVAW1300
1320 - 1370	1225	15	14.3	25.0	$d_1 + 10$	$d_1 + 45$	20.0 ± 4.0	V-1350A	TWVAW1350
1370 - 1420	1270	15	14.3	25.0	$d_1 + 10$	$d_1 + 45$	20.0 ± 4.0	V-1400A	TWVAW1400

V-Ring



For shaft diameter d_1	Inside dia. d	Height of cross-section c	Dimension A	Free width B	Maximum d_2	Minimum d_3	Fitted width B_1	V-Ring FORSHEDA Ref.	TSS Part No.
1420 - 1470	1315	15	14.3	25.0	$d_1 + 10$	$d_1 + 45$	20.0 ± 4.0	V-1450A	TWVAW1450
1470 - 1520	1360	15	14.3	25.0	$d_1 + 10$	$d_1 + 45$	20.0 ± 4.0	V-1500A	TWVAW1500
1520 - 1570	1405	15	14.3	25.0	$d_1 + 10$	$d_1 + 45$	20.0 ± 4.0	V-1550A	TWVAW1550
1570 - 1620	1450	15	14.3	25.0	$d_1 + 10$	$d_1 + 45$	20.0 ± 4.0	V-1600A	TWVAW1600
1620 - 1670	1495	15	14.3	25.0	$d_1 + 10$	$d_1 + 45$	20.0 ± 4.0	V-1650A	TWVAW1650
1670 - 1720	1540	15	14.3	25.0	$d_1 + 10$	$d_1 + 45$	20.0 ± 4.0	V-1700A	TWVAW1700
1720 - 1770	1585	15	14.3	25.0	$d_1 + 10$	$d_1 + 45$	20.0 ± 4.0	V-1750A	TWVAW1750
1770 - 1820	1630	15	14.3	25.0	$d_1 + 10$	$d_1 + 45$	20.0 ± 4.0	V-1800A	TWVAW1800
1820 - 1870	1675	15	14.3	25.0	$d_1 + 10$	$d_1 + 45$	20.0 ± 4.0	V-1850A	TWVAW1850
1870 - 1920	1720	15	14.3	25.0	$d_1 + 10$	$d_1 + 45$	20.0 ± 4.0	V-1900A	TWVAW1900
1920 - 1970	1765	15	14.3	25.0	$d_1 + 10$	$d_1 + 45$	20.0 ± 4.0	V-1950A	TWVAW1950
1970 - 2020	1810	15	14.3	25.0	$d_1 + 10$	$d_1 + 45$	20.0 ± 4.0	V-2000A	TWVAW2000



V-Ring

Dimension table - V-Ring type S

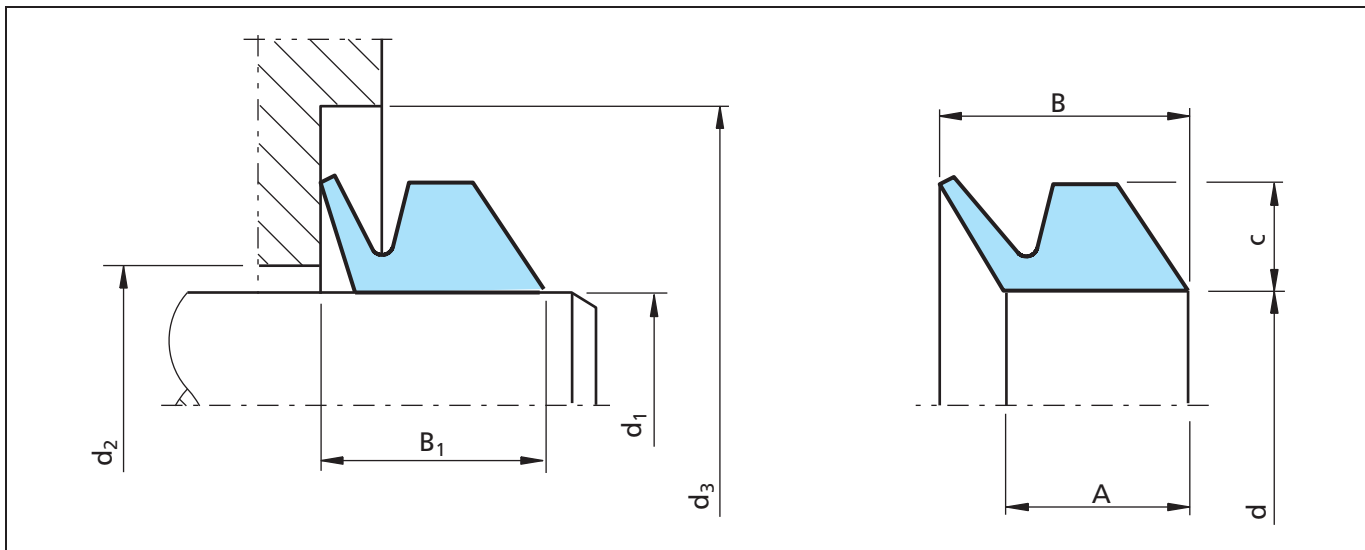


Figure 68 Installation drawing

When the dimension d_1 is on the boundary between two sizes of V-Ring, select the larger V-Ring. All dimensions in mm.

Ordering example

V-Ring, Type S
for shaft diameter = 30.0 mm
Material: N6T50 (Nitrile Elastomer)

TSS Article No.	TWVS00300	-	N6T50
TSS Part No.			
Quality index (standard)			
Material no. (standard)			
Corresponding to FORSHEDA ref. V-30S NBR510			

Table XLVI Profile dimensions - assembly dimensions

For shaft diameter d_1	Inside dia. d	Height of cross-section c	Dimension A	Free width B	Maximum d_2	Minimum d_3	Fitted width B_1	V-Ring FORSHEDA Ref.	TSS Part No.
4.5 - 5.5	4	2	3.9	5.2	$d_1 + 1$	$d_1 + 6$	4.5 ± 0.4	V-5S	TWVS00050
5.5 - 6.5	5	2	3.9	5.2	$d_1 + 1$	$d_1 + 6$	4.5 ± 0.4	V-6S	TWVS00060
6.5 - 8.0	6	2	3.9	5.2	$d_1 + 1$	$d_1 + 6$	4.5 ± 0.4	V-7S	TWVS00070
8.0 - 9.5	7	2	3.9	5.2	$d_1 + 1$	$d_1 + 6$	4.5 ± 0.4	V-8S	TWVS00080
9.5 - 11.5	9	3	5.6	7.7	$d_1 + 1$	$d_1 + 9$	6.7 ± 0.6	V-10S	TWVS00100
11.5 - 13.5	10.5	3	5.6	7.7	$d_1 + 1$	$d_1 + 9$	6.7 ± 0.6	V-12S	TWVS00120
13.5 - 15.5	12.5	3	5.6	7.7	$d_1 + 1$	$d_1 + 9$	6.7 ± 0.6	V-14S	TWVS00140

V-Ring



For shaft diameter d_1	Inside dia. d	Height of cross-section c	Dimension A	Free width B	Maximum d_2	Minimum d_3	Fitted width B_1	V-Ring FORSHEDA Ref.	TSS Part No.
15.5 - 17.5	14	3	5.6	7.7	$d_1 + 1$	$d_1 + 9$	6.7 ± 0.6	V-16S	TWVS00160
17.5 - 19	16	3	5.6	7.7	$d_1 + 1$	$d_1 + 9$	6.7 ± 0.6	V-18S	TWVS00180
19 - 21	18	4	7.9	10.5	$d_1 + 2$	$d_1 + 12$	9.0 ± 0.8	V-20S	TWVS00200
21 - 24	20	4	7.9	10.5	$d_1 + 2$	$d_1 + 12$	9.0 ± 0.8	V-22S	TWVS00220
24 - 27	22	4	7.9	10.5	$d_1 + 2$	$d_1 + 12$	9.0 ± 0.8	V-25S	TWVS00250
27 - 29	25	4	7.9	10.5	$d_1 + 2$	$d_1 + 12$	9.0 ± 0.8	V-28S	TWVS00280
29 - 31	27	4	7.9	10.5	$d_1 + 2$	$d_1 + 12$	9.0 ± 0.8	V-30S	TWVS00300
31 - 33	29	4	7.9	10.5	$d_1 + 2$	$d_1 + 12$	9.0 ± 0.8	V-32S	TWVS00320
33 - 36	31	4	7.9	10.5	$d_1 + 2$	$d_1 + 12$	9.0 ± 0.8	V-35S	TWVS00350
36 - 38	34	4	7.9	10.5	$d_1 + 2$	$d_1 + 12$	9.0 ± 0.8	V-38S	TWVS00380
38 - 43	36	5	9.5	13.0	$d_1 + 2$	$d_1 + 15$	11.0 ± 1.0	V-40S	TWVS00400
43 - 48	40	5	9.5	13.0	$d_1 + 2$	$d_1 + 15$	11.0 ± 1.0	V-45S	TWVS00450
48 - 53	45	5	9.5	13.0	$d_1 + 2$	$d_1 + 15$	11.0 ± 1.0	V-50S	TWVS00500
53 - 58	49	5	9.5	13.0	$d_1 + 2$	$d_1 + 15$	11.0 ± 1.0	V-55S	TWVS00550
58 - 63	54	5	9.5	13.0	$d_1 + 2$	$d_1 + 15$	11.0 ± 1.0	V-60S	TWVS00600
63 - 68	58	5	9.5	13.0	$d_1 + 2$	$d_1 + 15$	11.0 ± 1.0	V-65S	TWVS00650
68 - 73	63	6	11.3	15.5	$d_1 + 3$	$d_1 + 18$	13.5 ± 1.2	V-70S	TWVS00700
73 - 78	67	6	11.3	15.5	$d_1 + 3$	$d_1 + 18$	13.5 ± 1.2	V-75S	TWVS00750
78 - 83	72	6	11.3	15.5	$d_1 + 3$	$d_1 + 18$	13.5 ± 1.2	V-80S	TWVS00800
83 - 88	76	6	11.3	15.5	$d_1 + 3$	$d_1 + 18$	13.5 ± 1.2	V-85S	TWVS00850
88 - 93	81	6	11.3	15.5	$d_1 + 3$	$d_1 + 18$	13.5 ± 1.2	V-90S	TWVS00900
93 - 98	85	6	11.3	15.5	$d_1 + 3$	$d_1 + 18$	13.5 ± 1.2	V-95S	TWVS00950
98 - 105	90	6	11.3	15.5	$d_1 + 3$	$d_1 + 18$	13.5 ± 1.2	V-100S	TWVS01000
105 - 115	99	7	13.1	18.0	$d_1 + 4$	$d_1 + 21$	15.5 ± 1.5	V-110S	TWVS01100
115 - 125	108	7	13.1	18.0	$d_1 + 4$	$d_1 + 21$	15.5 ± 1.5	V-120S	TWVS01200
125 - 135	117	7	13.1	18.0	$d_1 + 4$	$d_1 + 21$	15.5 ± 1.5	V-130S	TWVS01300
135 - 145	126	7	13.1	18.0	$d_1 + 4$	$d_1 + 21$	15.5 ± 1.5	V-140S	TWVS01400
145 - 155	135	7	13.1	18.0	$d_1 + 4$	$d_1 + 21$	15.5 ± 1.5	V-150S	TWVS01500
155 - 165	144	8	15.0	20.5	$d_1 + 4$	$d_1 + 24$	18.0 ± 1.8	V-160S	TWVS01600
165 - 175	153	8	15.0	20.5	$d_1 + 4$	$d_1 + 24$	18.0 ± 1.8	V-170S	TWVS01700
175 - 185	162	8	15.0	20.5	$d_1 + 4$	$d_1 + 24$	18.0 ± 1.8	V-180S	TWVS01800
185 - 195	171	8	15.0	20.5	$d_1 + 4$	$d_1 + 24$	18.0 ± 1.8	V-190S	TWVS01900
195 - 210	180	8	15.0	20.5	$d_1 + 4$	$d_1 + 24$	18.0 ± 1.8	V-199S	TWVS01990



V-Ring

Dimension table - V-Ring type L / LX

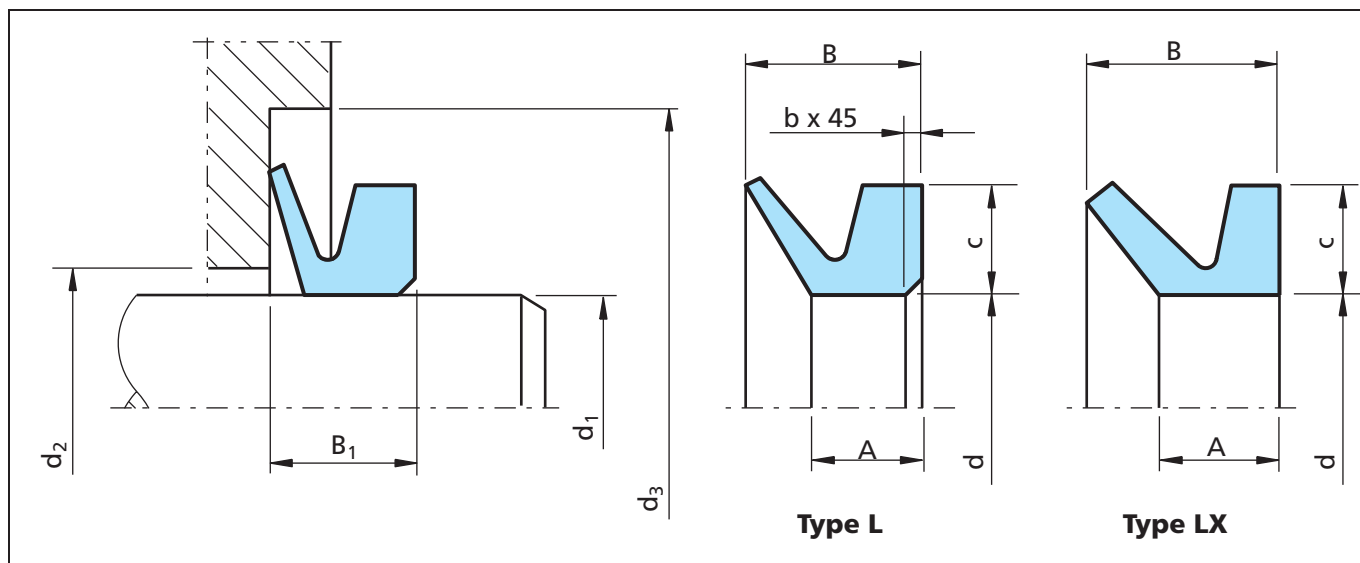


Figure 69 Installation drawing

When the dimension d_1 is on the boundary between two sizes of V-Ring, select the larger V-Ring. All dimensions in mm.

Table XLVII Installation dimensions

Type	c	A	B	b	B ₁	d _{3 min}	d _{2 max}
L	6.5	6	10.5	1	8 ± 1.5	d ₁ + 20	d ₁ + 5
LX	5	5.4	8.5	0	6.8 ± 1.1	d ₁ + 15	d ₁ + 4

Ordering example

V-Ring, Type L
for shaft diameter = 205 mm
Material: N6T50 (Nitrile Elastomer)

TSS Article No.	TWVL02000	-	N6T50
TSS Part No.			
Quality index (standard)			
Material no. (standard)			
Corresponding to FORSHEDA ref. V-200L NBR510			

Ordering example

V-Ring, Type LX
for shaft diameter = 205 mm
Material: N6T50 (Nitrile Elastomer)

TSS Article No.	TWLXV2000	-	N6T50
TSS Part No.			
Quality index (standard)			
Material no. (standard)			
Corresponding to FORSHEDA ref. V-200LX NBR510			



Table XLIX Profile dimensions - assembly dimensions

For shaft diameter d_1	Inside diameter d	V-Ring FORSHEDA Ref.	TSS Part No. Type L	TSS Part No. Type LX
105 - 115	99	V-110L	TWVL01100	
115 - 125	108	V-120L	TWVL01200	
125 - 135	117	V-130L	TWVL01300	
135 - 145	126	V-140L/LX	TWVL01400	TWLX01400
145 - 155	135	V-150L/LX	TWVL01500	TWLX01500
155 - 165	144	V-160L/LX	TWVL01600	TWLXV1600
165 - 175	153	V-170L/LX	TWVL01700	TWLXV1700
175 - 185	162	V-180L/LX	TWVL01800	TWLXV1800
185 - 195	171	V-190L/LX	TWVL01900	TWLXV1900
195 - 210	182	V-200L/LX	TWVL02000	TWLXV2000
210 - 233	198	V-220L/LX	TWVL02200	TWLXV2200
233 - 260	225	V-250L/LX	TWVL02500	TWLXV2500
260 - 285	247	V-275L/LX	TWVL02750	TWLXV2750
285 - 310	270	V-300L/LX	TWVL03000	TWLXV3000
310 - 335	292	V-325L/LX	TWVL03250	TWLXV3250
335 - 365	315	V-350L/LX	TWVL03500	TWLXV3500
365 - 385	337	V-375L/LX	TWVL03750	TWLXV3750
385 - 410	360	V-400L/LX	TWVL04000	TWLXV4000
410 - 440	382	V-425L/LX	TWVLV4250	TWLXV4250
440 - 475	405	V-450L/LX	TWVL04500	TWLXV4500
475 - 510	450	V-500L/LX	TWVLV5000	TWLXV5000
510 - 540	472	V-525L/LX	TWVLV5250	TWLXV5250
540 - 575	495	V-550L/LX	TWVLV5500	TWLXV5500
575 - 625	540	V-600L/LX	TWVLV6000	TWLXV6000
625 - 675	600	V-650L/LX	TWVLV6500	TWLXV6500
675 - 710	630	V-700L/LX	TWVLV7000	TWLXV7000
710 - 740	670	V-725L/LX	TWVLV7250	TWLXV7250
740 - 775	705	V-750L/LX	TWVLV7500	TWLXV7500
775 - 825	745	V-800L/LX	TWVL08000	TWLXV8000
825 - 875	785	V-850L/LX	TWVLV8500	TWLXV8500
875 - 925	825	V-900L/LX	TWVLV9000	TWLXV9000
925 - 975	865	V-950L/LX	TWVLV9500	TWLXV9500
975 - 1025	910	V-1000L/LX	TWVLW1000	TWLXW1000
1025 - 1075	955	V-1050L/LX	TWVLW1050	TWLXW1050
1075 - 1125	1000	V-1100L/LX	TWVLW1100	TWLXW1100
1125 - 1175	1045	V-1150L/LX	TWVLW1150	TWLXW1150



V-Ring

For shaft diameter d_1	Inside diameter d	V-Ring FORSHEDA Ref.	TSS Part No. Type L	TSS Part No. Type LX
1175 - 1225	1090	V-1200L/LX	TWVLW1200	TWLXW1200
1225 - 1275	1135	V-1250L/LX	TWVLW1250	TWLXW1250
1275 - 1325	1180	V-1300L/LX	TWVLW1300	TWLXW1300
1325 - 1375	1225	V-1350L/LX	TWVLW1350	TWLXW1350
1375 - 1425	1270	V-1400L/LX	TWVLW1400	TWLXW1400
1425 - 1475	1315	V-1450L/LX	TWVLW1450	TWLXW1450
1475 - 1525	1360	V-1500L/LX	TWVLW1500	TWLXW1500
1525 - 1575	1405	V-1550L/LX	TWVLW1550	TWLXW1550
1575 - 1625	1450	V-1600L/LX	TWVLW1600	TWLXW1600
1625 - 1675	1495	V-1650L/LX	TWVLW1650	TWLXW1650
1675 - 1725	1540	V-1700L/LX	TWVLW1700	TWLXW1700
1725 - 1775	1585	V-1750L/LX	TWVLW1750	TWLXW1750
1775 - 1825	1630	V-1800L/LX	TWVLW1800	TWLXW1800
1825 - 1875	1675	V-1850L/LX	TWVLW1850	TWLXW1850
1875 - 1925	1720	V-1900L/LX	TWVLW1900	TWLXW1900
1925 - 1975	1765	V-1950L/LX	TWVLW1950	TWLXW1950
1975 - 2025	1810	V-2000L/LX	TWVLW2000	TWLXW2000

V-Ring L or LX larger than 2000 made to special order