



# V-ring seals

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# V-ring seals

## General

V-ring seals (or V-rings) are unique all-rubber seals for rotating shafts and are used in an extremely wide range of applications. The V-ring can be used alone to protect a wide assortment of bearing types from contaminants. They are also often used as secondary seals to protect primary seals in highly contaminated environments.

V-rings are installed on shafts and their thin, tapered lip seals against a counterface perpendicular to the shaft (→ **fig. 1a**). V-rings have an interference fit on the shaft, rotate with it and act as flingers (→ **fig. 1b**). Angular misalignment of the shaft relative to the counterface can be tolerated (→ **fig. 1c**). V-rings provide reliable sealing even if the shaft is out-of-round or rotates eccentrically (→ **fig. 1d**). The amount by which the shaft can be displaced axially is governed by the permissible displacement of the V-ring relative to its counterface.

V-rings are made entirely of elastomers without fabric or metal reinforcement and are therefore easy to install. They can be stretched and, depending on size, pushed over other components like flanges, pulleys or even housings. This is a very valuable feature, especially when replacing a seal.

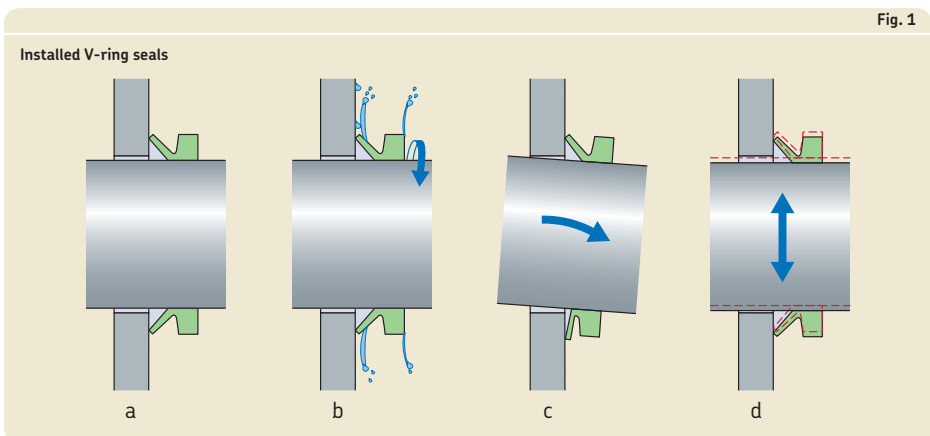
## Features

AV-ring consists of a seal body, a flexible, conical-shaped sealing lip and an integral, resilient "hinge" (→ **fig. 2**). It is stretched and installed directly on the shaft, where it is held in place by the inherent tension of the seal body. It rotates with the shaft and seals axially against a stationary counterface.

The counterface can be the end face of a bearing, a washer, stamping, bearing housing, or even the metal case of a radial shaft seal.

The flexible sealing lip applies contact pressure against the counterface that is relatively

Fig. 1



low but sufficient enough to maintain the sealing function. The light contact pressure even enables the seal to run dry in some low-speed applications resulting in insignificant torque drag or heat build-up. The contact pressure varies with the fitted width.

The flexible lip and hinge provide adequate sealing even in applications with considerable end play and shaft misalignment.

As a result of centrifugal force, the contact pressure of the lip decreases as speed increases. This means that friction losses and heat are kept to a minimum, resulting in improved wear resistance and extended service life.

## Materials

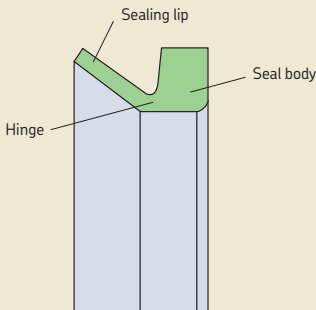
V-rings are normally made of nitrile rubber that features good chemical resistance, resistance to wear and can be used in applications with temperatures ranging from  $-40$  to  $+100$  °C ( $-40$  to  $+210$  °F). For applications with higher temperatures or where aggressive media are present, V-rings made of fluoro rubber can be supplied. The permissible operating conditions for V-rings made of nitrile or fluoro rubber are listed in **table 2** on **page 395**. In the product table under the heading *Lip code*, the letters R and V are used to identify nitrile rubber and fluoro rubber respectively.

### WARNING:

At temperatures above  $300$  °C ( $570$  °F), all fluoro rubber compounds give off dangerous fumes. For additional information, refer to **page 32**.

Fig. 2

#### V-ring design



## Standard designs

SKF offers five standard V-ring designs:

- VA/VR1, the most common type of V-ring, has a standard cross section and straight back sideface. VA/VR1 is typically used to protect bearing arrangements in gearboxes, electric motors and drives.
- VS/VR2, that has a standard low cross section, tapered back face and wide body, providing a firm hold on the shaft. VS/VR2 is commonly used in agricultural and automotive applications.
- VL/VR3, designed with a very compact axial cross section. VL/VR3 is commonly used in confined spaces to enhance labyrinth seals.
- VE/VR4, designed as secondary seals for heavy-duty applications where the primary seal has to be protected against water and/or solid contaminants. The design has the largest cross section of any V-ring designs and also permits the largest axial displacements. VE/VR4 is available in the diameter range 300 to 2 010 mm (11.811 to 79.134 in.).
- VRME/VR6, a heavy-duty, large diameter V-ring for applications with large axial displacements. VRME/VR6 can be located axially and radially on the shaft using a standard band clamp. VRME/VR6 is primarily designed to protect high-speed bearing arrangements in rolling mills, paper-making and other large machine applications. VRME/VR6 is available on a made-to-order basis.

V-rings from SKF are available for the shaft diameter ranges listed in **table 1**. If the shaft diameter lies in the appropriate range for two V-rings, the larger V-ring, referring to the Seal fitted with, should always be chosen (→ **fig. 9**). In addition, special sizes and designs, including split versions, can be made to order. Contact your SKF sales representative for sizes outside the standard range.

Table 1

### Standard V-ring designs and size ranges



Design, globally outside North America Design, North America	VA VR1	VS VR2	VL VR3	VE VR4	VRME VR6
–	mm (in.)				
min	2,7 0.106	4,5 0.177	105 4.134	300 11.811	300 11.811
max	2 020 79.257	210 8.268	2 025 79.724	2 010 79.134	1 995 78.543

## Main V-ring functions

V-rings are suitable for both grease and oil lubricated applications. For sealing grease lubricated bearing arrangements and protecting against contaminants, the V-ring should be arranged outside the housing cover or housing wall. Dust, water spray and other contaminants can be excluded in this position (→ **fig. 3**). The V-ring can also act as a grease valve, where used grease or excess new grease can escape between the counterface and the sealing lip (→ **fig. 4**). The installation of two opposing V-rings can be used in applications where lubricant retention and contaminant exclusion are of equal importance (→ **fig. 5**).

If V-rings are used to retain oil, they should always be located axially on the shaft on the lubricant side (→ **fig. 6**).

V-rings should not be submerged in the application medium.

Fig. 3

V-ring used as an excluder

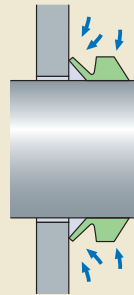


Fig. 4

V-ring used as a grease valve



Fig. 5

Two opposing V-rings

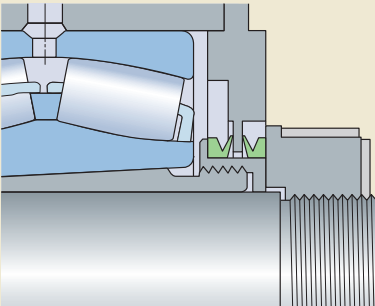
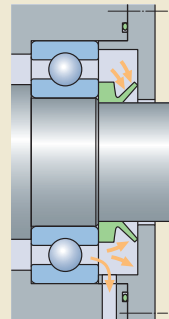


Fig. 6

V-ring located axially



### Other V-ring functions

V-rings can also be used as secondary seals (→ **fig. 7**), for example where it is necessary to protect the sealing lip and counterface of the primary seal against contaminants or corrosion and they can be used to enhance the efficiency of labyrinth seals (→ **fig. 8**).

Fig. 7

V-ring used as a secondary seal

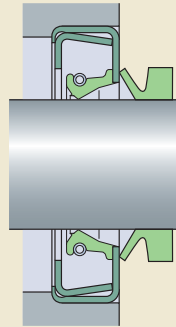
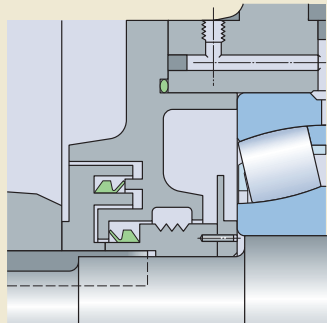


Fig. 8

V-rings in a labyrinth seal



# Sliding velocities

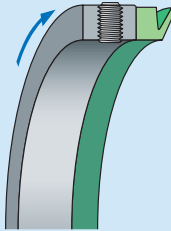
V-rings can operate under the conditions listed in **table 2**. In the speed range 15 to 20 m/s (2 900 to 3 900 ft/min), the sealing lip lifts from the counterface and the V-ring only acts as a gap-type seal.

Table 2

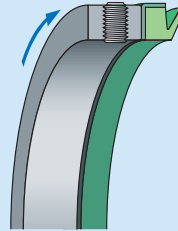
## Permissible operating conditions



1  
normal



2  
located axially<sup>1)</sup>



3  
axial and radial support<sup>1)</sup>

### Operating conditions

### Guideline values for V-rings of nitrile rubber

### fluoro rubber

Temperature, °C (°F)

-40 to +100 (-40 to +210)

-20 to +150 (-4 to +300)

Circumferential speed, m/s (ft/min)

normal (1)

up to 8 (1 575)

up to 6,5 (1 280)

located axially (2)

8 to 12 (1 575 to 2 360)

6,5 to 10 (1 280 to 1 970)

axial and radial support (3)

>12 (2 360)

>10 (1 970)

Pressure acting on seal, MPa (psi)

static sealing or very low

speed operation

up to 0,03 (4.35)

up to 0,03 (4.35)

<sup>1)</sup> Support ring by customer



## Coaxiality and runout

The total tolerance for the deviation from coaxiality and runout should not exceed the guideline values provided in **table 3**.

## Misalignment

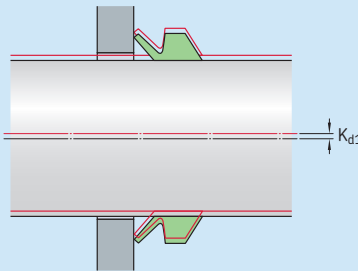
V-rings can tolerate misalignment between the shaft and housing, i.e. deviations from the perpendicularity between the shaft and counterface of the housing. Guideline values for the maximum permissible angular misalignment are provided in **diagram 1**. These values apply to the V-ring designs VA/VR1 and VS/VR2, provided they are supported axially on the shaft.

The permissible misalignment values for the very compact VL/VR3 design are appreciably lower than those for the VA/VR1 and VS/VR2 designs.

In applications where V-rings are not supported axially on the shaft, the maximum value in the diagram should be reduced.

Table 3

### Coaxiality and runout tolerances



Shaft diameter nominal				Total tolerance for coaxiality deviation and runout	
$d_1$ over	incl.	over	incl.	$K_{d_1}$ max	
mm		in.		mm	in.
<b>V-rings, VA/VR1 and VS/VR2 designs</b>					
	9,5		0.374	0,4	0.016
9,5	19,5	0.374	0.768	0,6	0.024
19,5	38	0.768	1.496	0,9	0.034
38	68	1.496	2.677	1,1	0.043
68	105	2.677	4.134	1,4	0.055
105	155	4.134	6.102	1,6	0.063
155	210	6.102	8.628	1,9	0.075
210	2 020	8.628	79.527	3,6	0.142
<b>V-rings, VL/VR3 designs</b>					
135	630	5.315	24.803	1,5	0.059
<b>V-rings, VE/VR4 designs</b>					
450	2 010	17.716	79.134	6	0.236

# Counterface

A fine-turned counterface is adequate for V-rings. The appropriate surface roughness values vary depending on the circumferential speed (→ **table 4** on **page 398**). SKF recommends buffing all turned surfaces with an emery cloth to remove any sharp peaks arising from the turning operation. The surface finish should be measured at approximately 90 degrees to the path of the groove to obtain a true reading of the surface.

## Counterface treatment

In the presence of grease, oil or dry lubricants, no special counterface treatment is required. Mild steel counterfaces that are exposed to water or other corrosives should be protected, for example by zinc- or chromium-plating or treated with an anti-corrosive spray.

## Additional counterface information

Aluminium surfaces should be free of scratch marks. Surface hardness should be > 100 HB in abrasive applications. Die cast aluminium can be used in the as-cast condition.

Steel and cast iron surfaces should be free from lead and sharp tool marks. Cold rolled steel stampings can be used without machining.

Plastic counterface materials are generally not acceptable due to poor heat dissipation.

Stainless steel should not be used in dry-running applications unless the speed is below 1 m/s (200 ft/min).

Diagram 1

Maximum permissible misalignment for V-rings of the VA/VR1 and VS/VR2 designs

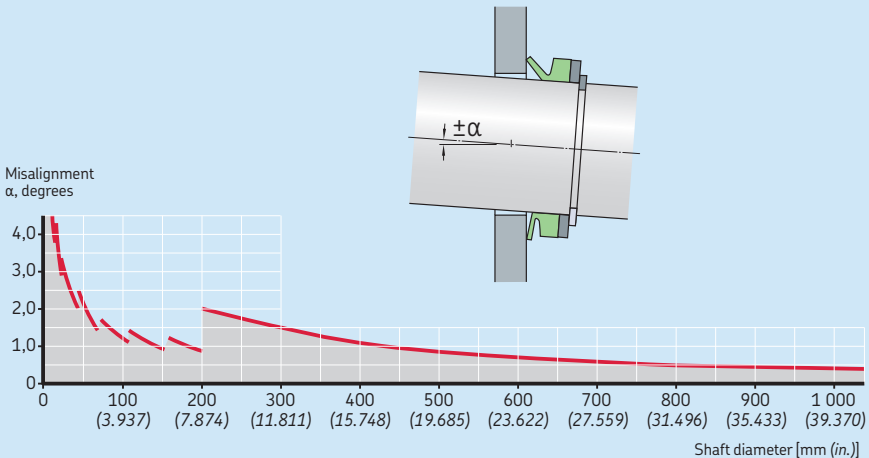


Table 4

Recommended counterface surface finish

Circumferential speed		Surface finish	
m/s	ft/min.	R <sub>a</sub> μm	R <sub>a</sub> μin.
> 10	> 1 969	0,4–0,8	16–32
5–10	984–1 969	0,8–1,6	32–64
1–5	199–984	1,6–2,0	64–80
< 1	< 199	2,0–2,5	80–100

The surface finish must not be lower than R<sub>a</sub> 0,05 μm (2 μin.).

## Product table sorting order

When searching for a suitable V-ring for a given shaft diameter, e.g. 930 mm, first identify the possible shaft diameter ranges ( $d_1$ ). In this case, there are three possible ranges (→ **fig. 9a**). Then look for the appropriate dimensions  $D_1$ ,  $D$  and  $B_1$  that are listed in ascending order (→ **fig. 9b**). Please note that this sorting order concept results in that the shaft diameter ranges do not always come in ascending order, e.g. here 925–975 mm is listed before 920–965 mm.

Fig. 9

Dimensions		Shaft diameter range $d_1$ over	incl.	Seal inside diameter, free state $d$	Seal seat width $b_1$	Nominal seal width $b$	Nominal seal height $c$	Clearance $D_1$ max	Counterface $D$ min	Seal fitted width $B_1$	Lip code	Designation
mm	mm											
851	861	824		824	32,5	65	30					
		824			32,5	65	21	$d_1 + 24$	$d_1 + 115$	$50 \pm 12$	R	
861	871	833		833	32,5	65	30	$d_1 + 24$	$d_1 + 115$	$50 \pm 12$	R	860 VE R
		833			32,5	65	21	$d_1 + 24$	$d_1 + 115$	$50 \pm 12$	R	860 VRME R
871	882	843		843	32,5	65	30	$d_1 + 24$	$d_1 + 115$	$50 \pm 12$	R	870 VE R
		843		843	32,5	65	21	$d_1 + 24$	$d_1 + 115$	$50 \pm 12$	R	870 VRME R
912	922	880		880	32,5	65	30	$d_1 + 24$	$d_1 + 115$	$50 \pm 12$	R	880 VE R
		880			32,5	65	21	$d_1 + 24$	$d_1 + 115$	$50 \pm 12$	R	880 VRME R
925	975	865		865	6	10,5	6,5	$d_1 + 5$	$d_1 + 20$	$8 \pm 1,5$	R	920 VE R
		865		865	6	10,5	6,5	$d_1 + 5$	$d_1 + 20$	$8 \pm 1,5$	R	920 VRME R
920	965	865		865	14,3	25	15	$d_1 + 10$	$d_1 + 45$	$20 \pm 4$	R	920 VE R
		865		865	14,3	25	15	$d_1 + 10$	$d_1 + 45$	$20 \pm 4$	R	920 VRME R
922	933	890		890	32,5	65	30	$d_1 + 24$	$d_1 + 115$	$50 \pm 12$	R	930 VE R
		890		890	32,5	65	21	$d_1 + 24$	$d_1 + 115$	$50 \pm 12$	R	930 VRME R
933	944	900		900	32,5	65	30	$d_1 + 24$	$d_1 + 115$	$50 \pm 12$	R	940 VE R
		900		900	32,5	65	21	$d_1 + 24$	$d_1 + 115$	$50 \pm 12$	R	940 VRME R
944	955	911		911	32,5	65	30	$d_1 + 24$	$d_1 + 115$	$50 \pm 12$	R	
		911		911	32,5	65	21	$d_1 + 24$	$d_1 + 115$	$50 \pm 12$	R	

## Shaft requirements

Sharp edges, nicks and burrs on the shaft must be avoided to prevent damage to the V-ring during installation.

V-rings rotate with the shaft and only require a moderate surface roughness value. As a general guideline, the value should not exceed  $R_a$  6,3  $\mu\text{m}$  (252  $\mu\text{in.}$ ). When sealing fluids or exposed to fine, solid contaminants, the V-ring requires a surface roughness value of maximum  $R_a$  3,2  $\mu\text{m}$  (128  $\mu\text{in.}$ ).

An V-ring is stretched when installed and fits all shaft diameters within the ranges listed in the product tables.

## Installing V-rings

V-rings are elastic and can be stretched and pushed over other components, which facilitates the installation (→ **fig. 10**). When several V-rings are to be installed, a simple tool (→ **fig. 11**) can be used to push the seals to their position at a predetermined distance from the counterface. V-rings can also be cut and rejoined in the field.

The general installation guidelines include the following:

- Clean the V-ring, counterface and shaft.
- Make sure that the shaft is dry and free from grease or oil, particularly when installing a V-ring without axial support.
- Lubricate the lip of the V-ring with a thin film of grease or silicone oil.
- In applications where friction must be reduced to a minimum, the counterface should be coated with a low-friction agent. Do not apply grease to the lip.
- Check that the V-ring is installed with a uniform stretch around the shaft.

Fig. 10

Installing a V-ring

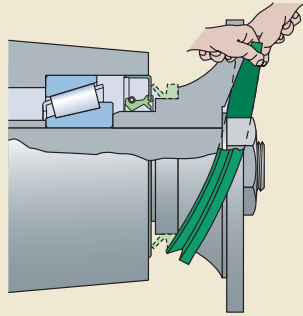
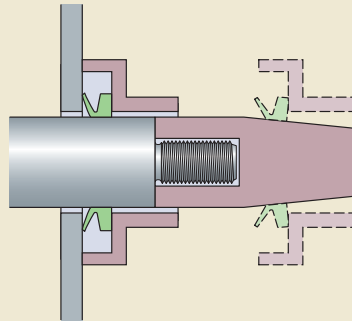


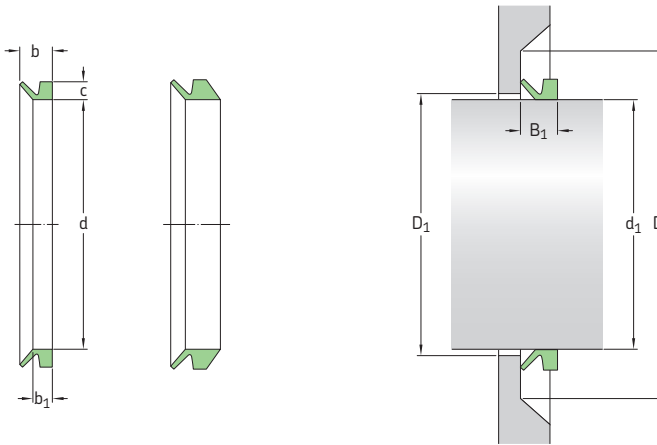
Fig. 11

Installation tool



# V-ring seals – metric dimensions, globally valid outside North American market

$d_1$  2,7 – 53 mm

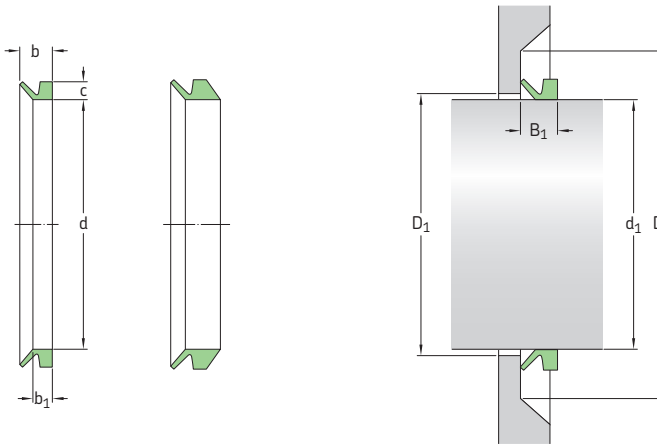


Dimensions		Seal inside diameter, free state d	Seal seat width $b_1$	Nominal seal width b	Nominal seal height c	Clearance $D_1$ max	Counterface D min	Seal fitted width $B_1$	Lip code	Designation
Shaft diameter range $d_1$ over	incl.									
mm										
2,7	3,5	2,5	2,1	3	1,5	$d_1 + 1$	$d_1 + 4$	$2,5 \pm 0,3$	R	3 VA R
		2,5	2,1	3	1,5	$d_1 + 1$	$d_1 + 4$	$2,5 \pm 0,3$	V	3 VA V
3,5	4,5	3,2	2,4	3,7	2	$d_1 + 1$	$d_1 + 6$	$3 \pm 0,4$	R	4 VA R
		3,2	2,4	3,7	2	$d_1 + 1$	$d_1 + 6$	$3 \pm 0,4$	V	4 VA V
4,5	5,5	4	2,4	3,7	2	$d_1 + 1$	$d_1 + 6$	$3 \pm 0,4$	R	5 VA R
		4	2,4	3,7	2	$d_1 + 1$	$d_1 + 6$	$3 \pm 0,4$	V	5 VA V
		4	3,9	5,2	2	$d_1 + 1$	$d_1 + 6$	$4,5 \pm 0,4$	R	5 VS R
		4	3,9	5,2	2	$d_1 + 1$	$d_1 + 6$	$4,5 \pm 0,4$	V	5 VS V
5,5	6,5	5	2,4	3,7	2	$d_1 + 1$	$d_1 + 6$	$3 \pm 0,4$	R	6 VA R
		5	2,4	3,7	2	$d_1 + 1$	$d_1 + 6$	$3 \pm 0,4$	V	6 VA V
		5	3,9	5,2	2	$d_1 + 1$	$d_1 + 6$	$4,5 \pm 0,4$	R	6 VS R
		5	3,9	5,2	2	$d_1 + 1$	$d_1 + 6$	$4,5 \pm 0,4$	V	6 VS V
6,5	8	6	2,4	3,7	2	$d_1 + 1$	$d_1 + 6$	$3 \pm 0,4$	R	7 VA R
		6	2,4	3,7	2	$d_1 + 1$	$d_1 + 6$	$3 \pm 0,4$	V	7 VA V
		6	3,9	5,2	2	$d_1 + 1$	$d_1 + 6$	$4,5 \pm 0,4$	R	7 VS R
		6	3,9	5,2	2	$d_1 + 1$	$d_1 + 6$	$4,5 \pm 0,4$	V	7 VS V
8	9,5	7	2,4	3,7	2	$d_1 + 1$	$d_1 + 6$	$3 \pm 0,4$	R	8 VA R
		7	2,4	3,7	2	$d_1 + 1$	$d_1 + 6$	$3 \pm 0,4$	V	8 VA V
		7	3,9	5,2	2	$d_1 + 1$	$d_1 + 6$	$4,5 \pm 0,4$	R	8 VS R
		7	3,9	5,2	2	$d_1 + 1$	$d_1 + 6$	$4,5 \pm 0,4$	V	8 VS V
9,5	11,5	9	3,4	5,5	3	$d_1 + 1$	$d_1 + 9$	$4,5 \pm 0,6$	R	10 VA R
		9	3,4	5,5	3	$d_1 + 1$	$d_1 + 9$	$4,5 \pm 0,6$	V	10 VA V
		9	5,6	7,7	3	$d_1 + 1$	$d_1 + 9$	$6,7 \pm 0,6$	R	10 VS R
		9	5,6	7,7	3	$d_1 + 1$	$d_1 + 9$	$6,7 \pm 0,6$	V	10 VS V
11,5	12,5	10,5	3,4	5,5	3	$d_1 + 1$	$d_1 + 9$	$4,5 \pm 0,6$	R	12 VA R
		10,5	3,4	5,5	3	$d_1 + 1$	$d_1 + 9$	$4,5 \pm 0,6$	V	12 VA V
11,5	13,5	10,5	5,6	7,7	3	$d_1 + 1$	$d_1 + 9$	$6,7 \pm 0,6$	R	12 VS R
		10,5	5,6	7,7	3	$d_1 + 1$	$d_1 + 9$	$6,7 \pm 0,6$	V	12 VS V
		11,7	3,4	5,5	3	$d_1 + 1$	$d_1 + 9$	$4,5 \pm 0,6$	R	13 VA R
		11,7	3,4	5,5	3	$d_1 + 1$	$d_1 + 9$	$4,5 \pm 0,6$	V	13 VA V
13,5	15,5	12,5	3,4	5,5	3	$d_1 + 1$	$d_1 + 9$	$4,5 \pm 0,6$	R	14 VA R
		12,5	3,4	5,5	3	$d_1 + 1$	$d_1 + 9$	$4,5 \pm 0,6$	V	14 VA V

Dimensions		Seal inside diameter, free state d	Seal seat width b <sub>1</sub>	Nominal seal width b	Nominal seal height c	Clearance D <sub>1</sub> max	Counterface D min	Seal fitted width B <sub>1</sub>	Lip code	Designation
Shaft diameter range d <sub>1</sub> over	incl.									
mm										
<b>13,5</b> cont.	<b>15,5</b>	12,5	5,6	7,7	3	d <sub>1</sub> +1	d <sub>1</sub> +9	6,7 ± 0,6	R	<b>14 VS R</b>
		12,5	5,6	7,7	3	d <sub>1</sub> +1	d <sub>1</sub> +9	6,7 ± 0,6	V	<b>14 VS V</b>
<b>15,5</b>	<b>17</b>	14	3,4	5,5	3	d <sub>1</sub> +1	d <sub>1</sub> +9	4,5 ± 0,6	R	<b>16 VA R</b>
		14	3,4	5,5	3	d <sub>1</sub> +1	d <sub>1</sub> +9	4,5 ± 0,6	V	<b>16 VA V</b>
<b>15,5</b>	<b>17,5</b>	14	5,6	7,7	3	d <sub>1</sub> +1	d <sub>1</sub> +9	6,7 ± 0,6	R	<b>16 VS R</b>
		14	5,6	7,7	3	d <sub>1</sub> +1	d <sub>1</sub> +9	6,7 ± 0,6	V	<b>16 VS V</b>
<b>17,5</b>	<b>19</b>	16	3,4	5,5	3	d <sub>1</sub> +1	d <sub>1</sub> +9	4,5 ± 0,6	R	<b>18 VA R</b>
		16	3,4	5,5	3	d <sub>1</sub> +1	d <sub>1</sub> +9	4,5 ± 0,6	V	<b>18 VA V</b>
		16	5,6	7,7	3	d <sub>1</sub> +1	d <sub>1</sub> +9	6,7 ± 0,6	R	<b>18 VS R</b>
		16	5,6	7,7	3	d <sub>1</sub> +1	d <sub>1</sub> +9	6,7 ± 0,6	V	<b>18 VS V</b>
<b>19</b>	<b>21</b>	18	4,7	7,5	4	d <sub>1</sub> +2	d <sub>1</sub> +12	6 ± 0,8	R	<b>20 VA R</b>
		18	4,7	7,5	4	d <sub>1</sub> +2	d <sub>1</sub> +12	6 ± 0,8	V	<b>20 VA V</b>
		18	7,9	10,5	4	d <sub>1</sub> +2	d <sub>1</sub> +12	9 ± 0,8	R	<b>20 VS R</b>
		18	7,9	10,5	4	d <sub>1</sub> +2	d <sub>1</sub> +12	9 ± 0,8	V	<b>20 VS V</b>
<b>21</b>	<b>24</b>	20	4,7	7,5	4	d <sub>1</sub> +2	d <sub>1</sub> +12	6 ± 0,8	R	<b>22 VA R</b>
		20	4,7	7,5	4	d <sub>1</sub> +2	d <sub>1</sub> +12	6 ± 0,8	V	<b>22 VA V</b>
		20	7,9	10,5	4	d <sub>1</sub> +2	d <sub>1</sub> +12	9 ± 0,8	R	<b>22 VS R</b>
		20	7,9	10,5	4	d <sub>1</sub> +2	d <sub>1</sub> +12	9 ± 0,8	V	<b>22 VS V</b>
<b>24</b>	<b>27</b>	22	4,7	7,5	4	d <sub>1</sub> +2	d <sub>1</sub> +12	6 ± 0,8	R	<b>25 VA R</b>
		22	4,7	7,5	4	d <sub>1</sub> +2	d <sub>1</sub> +12	6 ± 0,8	V	<b>25 VA V</b>
		22	7,9	10,5	4	d <sub>1</sub> +2	d <sub>1</sub> +12	9 ± 0,8	R	<b>25 VS R</b>
		22	7,9	10,5	4	d <sub>1</sub> +2	d <sub>1</sub> +12	9 ± 0,8	V	<b>25 VS V</b>
<b>27</b>	<b>29</b>	25	4,7	7,5	4	d <sub>1</sub> +2	d <sub>1</sub> +12	6 ± 0,8	R	<b>28 VA R</b>
		25	4,7	7,5	4	d <sub>1</sub> +2	d <sub>1</sub> +12	6 ± 0,8	V	<b>28 VA V</b>
		25	7,9	10,5	4	d <sub>1</sub> +2	d <sub>1</sub> +12	9 ± 0,8	R	<b>28 VS R</b>
		25	7,9	10,5	4	d <sub>1</sub> +2	d <sub>1</sub> +12	9 ± 0,8	V	<b>28 VS V</b>
<b>29</b>	<b>31</b>	27	4,7	7,5	4	d <sub>1</sub> +2	d <sub>1</sub> +12	6 ± 0,8	R	<b>30 VA R</b>
		27	4,7	7,5	4	d <sub>1</sub> +2	d <sub>1</sub> +12	6 ± 0,8	V	<b>30 VA V</b>
		27	7,9	10,5	4	d <sub>1</sub> +2	d <sub>1</sub> +12	9 ± 0,8	R	<b>30 VS R</b>
		27	7,9	10,5	4	d <sub>1</sub> +2	d <sub>1</sub> +12	9 ± 0,8	V	<b>30 VS V</b>
<b>31</b>	<b>33</b>	29	4,7	7,5	4	d <sub>1</sub> +2	d <sub>1</sub> +12	6 ± 0,8	R	<b>32 VA R</b>
		29	4,7	7,5	4	d <sub>1</sub> +2	d <sub>1</sub> +12	6 ± 0,8	V	<b>32 VA V</b>
		29	7,9	10,5	4	d <sub>1</sub> +2	d <sub>1</sub> +12	9 ± 0,8	R	<b>32 VS R</b>
		29	7,9	10,5	4	d <sub>1</sub> +2	d <sub>1</sub> +12	9 ± 0,8	V	<b>32 VS V</b>
<b>33</b>	<b>36</b>	31	4,7	7,5	4	d <sub>1</sub> +2	d <sub>1</sub> +12	6 ± 0,8	R	<b>35 VA R</b>
		31	4,7	7,5	4	d <sub>1</sub> +2	d <sub>1</sub> +12	6 ± 0,8	V	<b>35 VA V</b>
		31	7,9	10,5	4	d <sub>1</sub> +2	d <sub>1</sub> +12	9 ± 0,8	R	<b>35 VS R</b>
		31	7,9	10,5	4	d <sub>1</sub> +2	d <sub>1</sub> +12	9 ± 0,8	V	<b>35 VS V</b>
<b>36</b>	<b>38</b>	34	4,7	7,5	4	d <sub>1</sub> +2	d <sub>1</sub> +12	6 ± 0,8	R	<b>38 VA R</b>
		34	4,7	7,5	4	d <sub>1</sub> +2	d <sub>1</sub> +12	6 ± 0,8	V	<b>38 VA V</b>
		34	7,9	10,5	4	d <sub>1</sub> +2	d <sub>1</sub> +12	9 ± 0,8	R	<b>38 VS R</b>
		34	7,9	10,5	4	d <sub>1</sub> +2	d <sub>1</sub> +12	9 ± 0,8	V	<b>38 VS V</b>
<b>38</b>	<b>43</b>	36	5,5	9	5	d <sub>1</sub> +2	d <sub>1</sub> +15	7 ± 1	R	<b>40 VA R</b>
		36	5,5	9	5	d <sub>1</sub> +2	d <sub>1</sub> +15	7 ± 1	V	<b>40 VA V</b>
		36	9,5	13	5	d <sub>1</sub> +2	d <sub>1</sub> +15	11 ± 1	R	<b>40 VS R</b>
		36	9,5	13	5	d <sub>1</sub> +2	d <sub>1</sub> +15	11 ± 1	V	<b>40 VS V</b>
<b>43</b>	<b>48</b>	40	5,5	9	5	d <sub>1</sub> +2	d <sub>1</sub> +15	7 ± 1	R	<b>45 VA R</b>
		40	5,5	9	5	d <sub>1</sub> +2	d <sub>1</sub> +15	7 ± 1	V	<b>45 VA V</b>
		40	9,5	13	5	d <sub>1</sub> +2	d <sub>1</sub> +15	11 ± 1	R	<b>45 VS R</b>
		40	9,5	13	5	d <sub>1</sub> +2	d <sub>1</sub> +15	11 ± 1	V	<b>45 VS V</b>
<b>48</b>	<b>53</b>	45	5,5	9	5	d <sub>1</sub> +2	d <sub>1</sub> +15	7 ± 1	R	<b>50 VA R</b>
		45	5,5	9	5	d <sub>1</sub> +2	d <sub>1</sub> +15	7 ± 1	V	<b>50 VA V</b>
		45	9,5	13	5	d <sub>1</sub> +2	d <sub>1</sub> +15	11 ± 1	R	<b>50 VS R</b>
		45	9,5	13	5	d <sub>1</sub> +2	d <sub>1</sub> +15	11 ± 1	V	<b>50 VS V</b>

# V-ring seals – metric dimensions, globally valid outside North American market

d<sub>1</sub> 53 – 195 mm



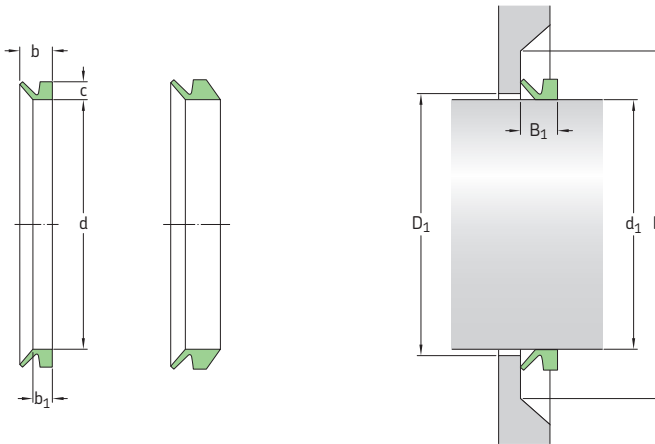
Dimensions		Seal inside diameter, free state d	Seal seat width b <sub>1</sub>	Nominal seal width b	Nominal seal height c	Clearance D <sub>1</sub> max	Counterface D min	Seal fitted width B <sub>1</sub>	Lip code	Designation
Shaft diameter range d <sub>1</sub> over	incl.									
mm										
53	58	49	5,5	9	5	d <sub>1</sub> + 2	d <sub>1</sub> + 15	7 ± 1	R	55 VA R
		49	5,5	9	5	d <sub>1</sub> + 2	d <sub>1</sub> + 15	7 ± 1	V	55 VA V
		49	9,5	13	5	d <sub>1</sub> + 2	d <sub>1</sub> + 15	11 ± 1	R	55 VS R
		49	9,5	13	5	d <sub>1</sub> + 2	d <sub>1</sub> + 15	11 ± 1	V	55 VS V
58	63	54	5,5	9	5	d <sub>1</sub> + 2	d <sub>1</sub> + 15	7 ± 1	R	60 VA R
		54	5,5	9	5	d <sub>1</sub> + 2	d <sub>1</sub> + 15	7 ± 1	V	60 VA V
		54	9,5	13	5	d <sub>1</sub> + 2	d <sub>1</sub> + 15	11 ± 1	R	60 VS R
		54	9,5	13	5	d <sub>1</sub> + 2	d <sub>1</sub> + 15	11 ± 1	V	60 VS V
63	68	58	5,5	9	5	d <sub>1</sub> + 2	d <sub>1</sub> + 15	7 ± 1	R	65 VA R
		58	5,5	9	5	d <sub>1</sub> + 2	d <sub>1</sub> + 15	7 ± 1	V	65 VA V
		58	9,5	13	5	d <sub>1</sub> + 2	d <sub>1</sub> + 15	11 ± 1	R	65 VS R
		58	9,5	13	5	d <sub>1</sub> + 2	d <sub>1</sub> + 15	11 ± 1	V	65 VS V
68	73	63	6,8	11	6	d <sub>1</sub> + 3	d <sub>1</sub> + 18	9 ± 1,2	R	70 VA R
		63	6,8	11	6	d <sub>1</sub> + 3	d <sub>1</sub> + 18	9 ± 1,2	V	70 VA V
		63	11,3	15,5	6	d <sub>1</sub> + 3	d <sub>1</sub> + 18	13,5 ± 1,2	R	70 VS R
		63	11,3	15,5	6	d <sub>1</sub> + 3	d <sub>1</sub> + 18	13,5 ± 1,2	V	70 VS V
73	78	67	6,8	11	6	d <sub>1</sub> + 3	d <sub>1</sub> + 18	9 ± 1,2	R	75 VA R
		67	6,8	11	6	d <sub>1</sub> + 3	d <sub>1</sub> + 18	13,5 ± 1,2	R	75 VS R
		67	11,3	15,5	6	d <sub>1</sub> + 3	d <sub>1</sub> + 18	13,5 ± 1,2	V	75 VS V
78	83	72	6,8	11	6	d <sub>1</sub> + 3	d <sub>1</sub> + 18	9 ± 1,2	R	80 VA R
		72	6,8	11	6	d <sub>1</sub> + 3	d <sub>1</sub> + 18	9 ± 1,2	V	80 VA V
		72	11,3	15,5	6	d <sub>1</sub> + 3	d <sub>1</sub> + 18	13,5 ± 1,2	R	80 VS R
		72	11,3	15,5	6	d <sub>1</sub> + 3	d <sub>1</sub> + 18	13,5 ± 1,2	V	80 VS V
83	88	76	6,8	11	6	d <sub>1</sub> + 3	d <sub>1</sub> + 18	9 ± 1,2	R	85 VA R
		76	6,8	11	6	d <sub>1</sub> + 3	d <sub>1</sub> + 18	9 ± 1,2	V	85 VA V
		76	11,3	15,5	6	d <sub>1</sub> + 3	d <sub>1</sub> + 18	13,5 ± 1,2	R	85 VS R
		76	11,3	15,5	6	d <sub>1</sub> + 3	d <sub>1</sub> + 18	13,5 ± 1,2	V	85 VS V
88	93	81	6,8	11	6	d <sub>1</sub> + 3	d <sub>1</sub> + 18	9 ± 1,2	R	90 VA R
		81	6,8	11	6	d <sub>1</sub> + 3	d <sub>1</sub> + 18	9 ± 1,2	V	90 VA V
		81	11,3	15,5	6	d <sub>1</sub> + 3	d <sub>1</sub> + 18	13,5 ± 1,2	R	90 VS R
		81	11,3	15,5	6	d <sub>1</sub> + 3	d <sub>1</sub> + 18	13,5 ± 1,2	V	90 VS V
93	98	85	6,8	11	6	d <sub>1</sub> + 3	d <sub>1</sub> + 18	9 ± 1,2	R	95 VA R
		85	6,8	11	6	d <sub>1</sub> + 3	d <sub>1</sub> + 18	9 ± 1,2	V	95 VA V
		85	11,3	15,5	6	d <sub>1</sub> + 3	d <sub>1</sub> + 18	13,5 ± 1,2	R	95 VS R
		85	11,3	15,5	6	d <sub>1</sub> + 3	d <sub>1</sub> + 18	13,5 ± 1,2	V	95 VS V

Dimensions		Seal inside diameter, free state d	Seal seat width b <sub>1</sub>	Nominal seal width b	Nominal seal height c	Clearance D <sub>1</sub> max	Counterface D min	Seal fitted width B <sub>1</sub>	Lip code	Designation
Shaft diameter range d <sub>1</sub> over	incl.									
mm										
<b>98</b>	<b>105</b>	90	6,8	11	6	d <sub>1</sub> +3	d <sub>1</sub> +18	9 ± 1,2	R	100 VA R
		90	6,8	11	6	d <sub>1</sub> +3	d <sub>1</sub> +18	9 ± 1,2	V	100 VA V
		90	11,3	15,5	6	d <sub>1</sub> +3	d <sub>1</sub> +18	13,5 ± 1,2	R	100 VS R
		90	11,3	15,5	6	d <sub>1</sub> +3	d <sub>1</sub> +18	13,5 ± 1,2	V	100 VS V
<b>105</b>	<b>115</b>	99	6	10,5	6,5	d <sub>1</sub> +5	d <sub>1</sub> +20	8 ± 1,5	R	110 VL R
		99	6	10,5	6,5	d <sub>1</sub> +5	d <sub>1</sub> +20	8 ± 1,5	V	110 VL V
		99	7,9	12,8	7	d <sub>1</sub> +4	d <sub>1</sub> +21	10,5 ± 1,5	R	110 VA R
		99	7,9	12,8	7	d <sub>1</sub> +4	d <sub>1</sub> +21	10,5 ± 1,5	V	110 VA V
		99	13,1	18	7	d <sub>1</sub> +4	d <sub>1</sub> +21	15,5 ± 1,5	R	110 VS R
		99	13,1	18	7	d <sub>1</sub> +4	d <sub>1</sub> +21	15,5 ± 1,5	V	110 VS V
<b>115</b>	<b>125</b>	108	6	10,5	6,5	d <sub>1</sub> +5	d <sub>1</sub> +20	8 ± 1,5	R	120 VL R
		108	6	10,5	6,5	d <sub>1</sub> +5	d <sub>1</sub> +20	8 ± 1,5	V	120 VL V
		108	7,9	12,8	7	d <sub>1</sub> +4	d <sub>1</sub> +21	10,5 ± 1,5	R	120 VA R
		108	7,9	12,8	7	d <sub>1</sub> +4	d <sub>1</sub> +21	10,5 ± 1,5	V	120 VA V
		108	13,1	18	7	d <sub>1</sub> +4	d <sub>1</sub> +21	15,5 ± 1,5	R	120 VS R
		108	13,1	18	7	d <sub>1</sub> +4	d <sub>1</sub> +21	15,5 ± 1,5	V	120 VS V
<b>125</b>	<b>135</b>	117	6	10,5	6,5	d <sub>1</sub> +5	d <sub>1</sub> +20	8 ± 1,5	R	130 VL R
		117	6	10,5	6,5	d <sub>1</sub> +5	d <sub>1</sub> +20	8 ± 1,5	V	130 VL V
		117	7,9	12,8	7	d <sub>1</sub> +4	d <sub>1</sub> +21	10,5 ± 1,5	R	130 VA R
		117	7,9	12,8	7	d <sub>1</sub> +4	d <sub>1</sub> +21	10,5 ± 1,5	V	130 VA V
		117	13,1	18	7	d <sub>1</sub> +4	d <sub>1</sub> +21	15,5 ± 1,5	R	130 VS R
		117	13,1	18	7	d <sub>1</sub> +4	d <sub>1</sub> +21	15,5 ± 1,5	V	130 VS V
<b>135</b>	<b>145</b>	126	6	10,5	6,5	d <sub>1</sub> +5	d <sub>1</sub> +20	8 ± 1,5	R	140 VL R
		126	6	10,5	6,5	d <sub>1</sub> +5	d <sub>1</sub> +20	8 ± 1,5	V	140 VL V
		126	7,9	12,8	7	d <sub>1</sub> +4	d <sub>1</sub> +21	10,5 ± 1,5	R	140 VA R
		126	7,9	12,8	7	d <sub>1</sub> +4	d <sub>1</sub> +21	10,5 ± 1,5	V	140 VA V
		126	13,1	18	7	d <sub>1</sub> +4	d <sub>1</sub> +21	15,5 ± 1,5	R	140 VS R
		126	13,1	18	7	d <sub>1</sub> +4	d <sub>1</sub> +21	15,5 ± 1,5	V	140 VS V
<b>145</b>	<b>155</b>	135	6	10,5	6,5	d <sub>1</sub> +5	d <sub>1</sub> +20	8 ± 1,5	R	150 VL R
		135	6	10,5	6,5	d <sub>1</sub> +5	d <sub>1</sub> +20	8 ± 1,5	V	150 VL V
		135	7,9	12,8	7	d <sub>1</sub> +4	d <sub>1</sub> +21	10,5 ± 1,5	R	150 VA R
		135	7,9	12,8	7	d <sub>1</sub> +4	d <sub>1</sub> +21	10,5 ± 1,5	V	150 VA V
		135	13,1	18	7	d <sub>1</sub> +4	d <sub>1</sub> +21	15,5 ± 1,5	R	150 VS R
		135	13,1	18	7	d <sub>1</sub> +4	d <sub>1</sub> +21	15,5 ± 1,5	V	150 VS V
<b>155</b>	<b>165</b>	144	6	10,5	6,5	d <sub>1</sub> +5	d <sub>1</sub> +20	8 ± 1,5	R	160 VL R
		144	6	10,5	6,5	d <sub>1</sub> +5	d <sub>1</sub> +20	8 ± 1,5	V	160 VL V
		144	9	14,5	8	d <sub>1</sub> +4	d <sub>1</sub> +24	12 ± 1,8	R	160 VA R
		144	9	14,5	8	d <sub>1</sub> +4	d <sub>1</sub> +24	12 ± 1,8	V	160 VA V
		144	15	20,5	8	d <sub>1</sub> +4	d <sub>1</sub> +24	18 ± 1,8	R	160 VS R
		144	15	20,5	8	d <sub>1</sub> +4	d <sub>1</sub> +24	18 ± 1,8	V	160 VS V
<b>165</b>	<b>175</b>	153	6	10,5	6,5	d <sub>1</sub> +5	d <sub>1</sub> +20	8 ± 1,5	R	170 VL R
		153	6	10,5	6,5	d <sub>1</sub> +5	d <sub>1</sub> +20	8 ± 1,5	V	170 VL V
		153	9	14,5	8	d <sub>1</sub> +4	d <sub>1</sub> +24	12 ± 1,8	R	170 VA R
		153	9	14,5	8	d <sub>1</sub> +4	d <sub>1</sub> +24	12 ± 1,8	V	170 VA V
		153	15	20,5	8	d <sub>1</sub> +4	d <sub>1</sub> +24	18 ± 1,8	R	170 VS R
		153	15	20,5	8	d <sub>1</sub> +4	d <sub>1</sub> +24	18 ± 1,8	V	170 VS V
<b>175</b>	<b>185</b>	162	6	10,5	6,5	d <sub>1</sub> +5	d <sub>1</sub> +20	8 ± 1,5	R	180 VL R
		162	6	10,5	6,5	d <sub>1</sub> +5	d <sub>1</sub> +20	8 ± 1,5	V	180 VL V
		162	9	14,5	8	d <sub>1</sub> +4	d <sub>1</sub> +24	12 ± 1,8	R	180 VA R
		162	9	14,5	8	d <sub>1</sub> +4	d <sub>1</sub> +24	12 ± 1,8	V	180 VA V
		162	15	20,5	8	d <sub>1</sub> +4	d <sub>1</sub> +24	18 ± 1,8	R	180 VS R
		162	15	20,5	8	d <sub>1</sub> +4	d <sub>1</sub> +24	18 ± 1,8	V	180 VS V
<b>185</b>	<b>195</b>	171	6	10,5	6,5	d <sub>1</sub> +5	d <sub>1</sub> +20	8 ± 1,5	R	190 VL R
		171	6	10,5	6,5	d <sub>1</sub> +5	d <sub>1</sub> +20	8 ± 1,5	V	190 VL V
		171	9	14,5	8	d <sub>1</sub> +4	d <sub>1</sub> +24	12 ± 1,8	R	190 VA R
		171	9	14,5	8	d <sub>1</sub> +4	d <sub>1</sub> +24	12 ± 1,8	V	190 VA V
		171	15	20,5	8	d <sub>1</sub> +4	d <sub>1</sub> +24	18 ± 1,8	R	190 VS R
		171	15	20,5	8	d <sub>1</sub> +4	d <sub>1</sub> +24	18 ± 1,8	V	190 VS V



# V-ring seals – metric dimensions, globally valid outside North American market

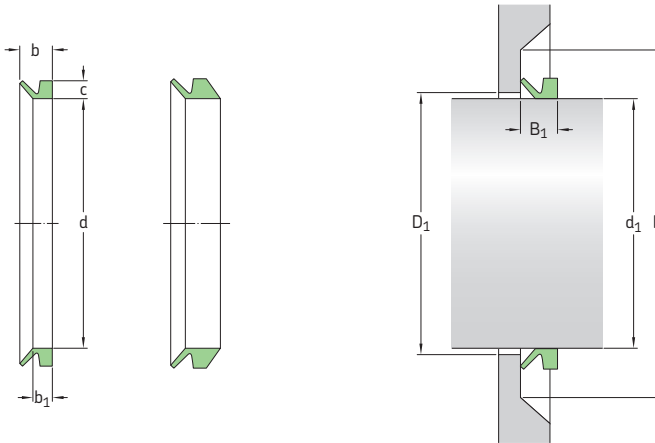
$d_1$  190 – 395 mm



Dimensions		Seal inside diameter, free state d	Seal seat width $b_1$	Nominal seal width b	Nominal seal height c	Clearance $D_1$ max	Counterface D min	Seal fitted width $B_1$	Lip code	Designation
Shaft diameter range $d_1$ over	incl.									
mm										
195	210	182	6	10,5	6,5	$d_1 + 5$	$d_1 + 20$	$8 \pm 1,5$	R	200 VL R
		182	6	10,5	6,5	$d_1 + 5$	$d_1 + 20$	$8 \pm 1,5$	V	200 VL V
		180	9	14,5	8	$d_1 + 4$	$d_1 + 24$	$12 \pm 1,8$	R	199 VA R
		180	9	14,5	8	$d_1 + 4$	$d_1 + 24$	$12 \pm 1,8$	V	199 VA V
		180	15	20,5	8	$d_1 + 4$	$d_1 + 24$	$18 \pm 1,8$	R	199 VS R
		180	15	20,5	8	$d_1 + 4$	$d_1 + 24$	$18 \pm 1,8$	V	199 VS V
190	210	180	14,3	25	15	$d_1 + 10$	$d_1 + 45$	$20 \pm 4$	R	200 VA R
		180	14,3	25	15	$d_1 + 10$	$d_1 + 45$	$20 \pm 4$	V	200 VA V
210	233	198	6	10,5	6,5	$d_1 + 5$	$d_1 + 20$	$8 \pm 1,5$	R	220 VL R
		198	6	10,5	6,5	$d_1 + 5$	$d_1 + 20$	$8 \pm 1,5$	V	220 VL V
		198	14,3	25	15	$d_1 + 10$	$d_1 + 45$	$20 \pm 4$	R	220 VA R
		198	14,3	25	15	$d_1 + 10$	$d_1 + 45$	$20 \pm 4$	V	220 VA V
233	260	225	6	10,5	6,5	$d_1 + 5$	$d_1 + 20$	$8 \pm 1,5$	R	250 VL R
		225	6	10,5	6,5	$d_1 + 5$	$d_1 + 20$	$8 \pm 1,5$	V	250 VL V
235	265	225	14,3	25	15	$d_1 + 10$	$d_1 + 45$	$20 \pm 4$	R	250 VA R
		225	14,3	25	15	$d_1 + 10$	$d_1 + 45$	$20 \pm 4$	V	250 VA V
260	285	247	6	10,5	6,5	$d_1 + 5$	$d_1 + 20$	$8 \pm 1,5$	R	275 VL R
		247	6	10,5	6,5	$d_1 + 5$	$d_1 + 20$	$8 \pm 1,5$	V	275 VL V
265	290	247	14,3	25	15	$d_1 + 10$	$d_1 + 45$	$20 \pm 4$	R	275 VA R
		247	14,3	25	15	$d_1 + 10$	$d_1 + 45$	$20 \pm 4$	V	275 VA V
285	310	270	6	10,5	6,5	$d_1 + 5$	$d_1 + 20$	$8 \pm 1,5$	R	300 VL R
		270	6	10,5	6,5	$d_1 + 5$	$d_1 + 20$	$8 \pm 1,5$	V	300 VL V
290	310	270	14,3	25	15	$d_1 + 10$	$d_1 + 45$	$20 \pm 4$	R	300 VA R
		270	14,3	25	15	$d_1 + 10$	$d_1 + 45$	$20 \pm 4$	V	300 VA V
300	305	294	32,5	65	30	$d_1 + 24$	$d_1 + 115$	$50 \pm 12$	R	300 VE R
		294	32,5	65	21	$d_1 + 24$	$d_1 + 115$	$50 \pm 12$	R	300 VRME R
305	310	299	32,5	65	30	$d_1 + 24$	$d_1 + 115$	$50 \pm 12$	R	305 VE R
		299	32,5	65	21	$d_1 + 24$	$d_1 + 115$	$50 \pm 12$	R	305 VRME R
310	335	292	6	10,5	6,5	$d_1 + 5$	$d_1 + 20$	$8 \pm 1,5$	R	325 VL R
		292	6	10,5	6,5	$d_1 + 5$	$d_1 + 20$	$8 \pm 1,5$	V	325 VL V

Dimensions		Seal inside diameter, free state d	Seal seat width b <sub>1</sub>	Nominal seal width b	Nominal seal height c	Clearance D <sub>1</sub> max	Counterface D min	Seal fitted width B <sub>1</sub>	Lip code	Designation
Shaft diameter range d <sub>1</sub> over	incl.									
mm										
<b>310</b> cont.	<b>335</b>	292 292	14,3 14,3	25 25	15 15	d <sub>1</sub> +10 d <sub>1</sub> +10	d <sub>1</sub> +45 d <sub>1</sub> +45	20 ± 4 20 ± 4	R V	<b>325 VA R</b> <b>325 VA V</b>
<b>310</b>	<b>315</b>	304 304	32,5 32,5	65 65	30 21	d <sub>1</sub> +24 d <sub>1</sub> +24	d <sub>1</sub> +115 d <sub>1</sub> +115	50 ± 12 50 ± 12	R R	<b>310 VE R</b> <b>310 VRME R</b>
<b>315</b>	<b>320</b>	309 309	32,5 32,5	65 65	30 21	d <sub>1</sub> +24 d <sub>1</sub> +24	d <sub>1</sub> +115 d <sub>1</sub> +115	50 ± 12 50 ± 12	R R	<b>315 VE R</b> <b>315 VRME R</b>
<b>320</b>	<b>325</b>	314 314	32,5 32,5	65 65	30 21	d <sub>1</sub> +24 d <sub>1</sub> +24	d <sub>1</sub> +115 d <sub>1</sub> +115	50 ± 12 50 ± 12	R R	<b>320 VE R</b> <b>320 VRME R</b>
<b>325</b>	<b>330</b>	319 319	32,5 32,5	65 65	30 21	d <sub>1</sub> +24 d <sub>1</sub> +24	d <sub>1</sub> +115 d <sub>1</sub> +115	50 ± 12 50 ± 12	R R	<b>325 VE R</b> <b>325 VRME R</b>
<b>330</b>	<b>335</b>	323 323	32,5 32,5	65 65	30 21	d <sub>1</sub> +24 d <sub>1</sub> +24	d <sub>1</sub> +115 d <sub>1</sub> +115	50 ± 12 50 ± 12	R R	<b>330 VE R</b> <b>330 VRME R</b>
<b>335</b>	<b>365</b>	315 315 315 315	6 6 14,3 14,3	10,5 10,5 25 25	6,5 6,5 15 15	d <sub>1</sub> +5 d <sub>1</sub> +5 d <sub>1</sub> +10 d <sub>1</sub> +10	d <sub>1</sub> +20 d <sub>1</sub> +20 d <sub>1</sub> +45 d <sub>1</sub> +45	8 ± 1,5 8 ± 1,5 20 ± 4 20 ± 4	R V R V	<b>350 VL R</b> <b>350 VL V</b> <b>350 VA R</b> <b>350 VA V</b>
<b>335</b>	<b>340</b>	328 328	32,5 32,5	65 65	30 21	d <sub>1</sub> +24 d <sub>1</sub> +24	d <sub>1</sub> +115 d <sub>1</sub> +115	50 ± 12 50 ± 12	R R	<b>335 VE R</b> <b>335 VRME R</b>
<b>340</b>	<b>345</b>	333 328	32,5 32,5	65 65	30 21	d <sub>1</sub> +24 d <sub>1</sub> +24	d <sub>1</sub> +115 d <sub>1</sub> +115	50 ± 12 50 ± 12	R R	<b>340 VE R</b> <b>340 VRME R</b>
<b>345</b>	<b>350</b>	338 338	32,5 32,5	65 65	30 21	d <sub>1</sub> +24 d <sub>1</sub> +24	d <sub>1</sub> +115 d <sub>1</sub> +115	50 ± 12 50 ± 12	R R	<b>345 VE R</b> <b>345 VRME R</b>
<b>350</b>	<b>355</b>	343 343	32,5 32,5	65 65	30 21	d <sub>1</sub> +24 d <sub>1</sub> +24	d <sub>1</sub> +115 d <sub>1</sub> +115	50 ± 12 50 ± 12	R R	<b>350 VE R</b> <b>350 VRME R</b>
<b>355</b>	<b>360</b>	347 347	32,5 32,5	65 65	30 21	d <sub>1</sub> +24 d <sub>1</sub> +24	d <sub>1</sub> +115 d <sub>1</sub> +115	50 ± 12 50 ± 12	R R	<b>355 VE R</b> <b>355 VRME R</b>
<b>360</b>	<b>365</b>	352 357	32,5 32,5	65 65	30 21	d <sub>1</sub> +24 d <sub>1</sub> +24	d <sub>1</sub> +115 d <sub>1</sub> +115	50 ± 12 50 ± 12	R R	<b>360 VE R</b> <b>360 VRME R</b>
<b>365</b>	<b>385</b>	337 337	6 6	10,5 10,5	6,5 6,5	d <sub>1</sub> +5 d <sub>1</sub> +5	d <sub>1</sub> +20 d <sub>1</sub> +20	8 ± 1,5 8 ± 1,5	R V	<b>375 VL R</b> <b>375 VL V</b>
<b>365</b>	<b>390</b>	337 337	14,3 14,3	25 25	15 15	d <sub>1</sub> +10 d <sub>1</sub> +10	d <sub>1</sub> +45 d <sub>1</sub> +45	20 ± 4 20 ± 4	R V	<b>375 VA R</b> <b>375 VA V</b>
<b>365</b>	<b>370</b>	357	32,5	65	30	d <sub>1</sub> +24	d <sub>1</sub> +115	50 ± 12	R	<b>365 VE R</b>
<b>370</b>	<b>375</b>	362 362	32,5 32,5	65 65	30 21	d <sub>1</sub> +24 d <sub>1</sub> +24	d <sub>1</sub> +115 d <sub>1</sub> +115	50 ± 12 50 ± 12	R R	<b>370 VE R</b> <b>370 VRME R</b>
<b>375</b>	<b>380</b>	367 367	32,5 32,5	65 65	30 21	d <sub>1</sub> +24 d <sub>1</sub> +24	d <sub>1</sub> +115 d <sub>1</sub> +115	50 ± 12 50 ± 12	R R	<b>375 VE R</b> <b>375 VRME R</b>
<b>380</b>	<b>385</b>	371 371	32,5 32,5	65 65	30 21	d <sub>1</sub> +24 d <sub>1</sub> +24	d <sub>1</sub> +115 d <sub>1</sub> +115	50 ± 12 50 ± 12	R R	<b>380 VE R</b> <b>380 VRME R</b>
<b>385</b>	<b>410</b>	360 360	6 6	10,5 10,5	6,5 6,5	d <sub>1</sub> +5 d <sub>1</sub> +5	d <sub>1</sub> +20 d <sub>1</sub> +20	8 ± 1,5 8 ± 1,5	R V	<b>400 VL R</b> <b>400 VL V</b>
<b>390</b>	<b>430</b>	360 360	14,3 14,3	25 25	15 15	d <sub>1</sub> +10 d <sub>1</sub> +10	d <sub>1</sub> +45 d <sub>1</sub> +45	20 ± 4 20 ± 4	R V	<b>400 VA R</b> <b>400 VA V</b>
<b>385</b>	<b>390</b>	376 376	32,5 32,5	65 65	30 21	d <sub>1</sub> +24 d <sub>1</sub> +24	d <sub>1</sub> +115 d <sub>1</sub> +115	50 ± 12 50 ± 12	R R	<b>385 VE R</b> <b>385 VRME R</b>
<b>390</b>	<b>395</b>	381 381	32,5 32,5	65 65	30 21	d <sub>1</sub> +24 d <sub>1</sub> +24	d <sub>1</sub> +115 d <sub>1</sub> +115	50 ± 12 50 ± 12	R R	<b>390 VE R</b> <b>390 VRME R</b>

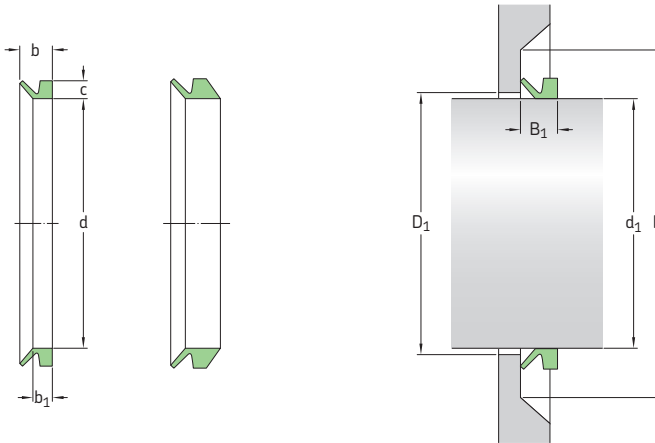
**V-ring seals – metric dimensions, globally valid outside North American market**  
 $d_1$  395 – 540 mm



Dimensions		Seal inside diameter, free state d	Seal seat width $b_1$	Nominal seal width b	Nominal seal height c	Clearance $D_1$ max	Counterface D min	Seal fitted width $B_1$	Lip code	Designation
Shaft diameter range $d_1$ over	incl.									
mm										
395	400	386	32,5	65	30	$d_1 + 24$	$d_1 + 115$	$50 \pm 12$	R	395 VE R 395 VRME R
		386	32,5	65	21	$d_1 + 24$	$d_1 + 115$	$50 \pm 12$	R	
400	405	391	32,5	65	30	$d_1 + 24$	$d_1 + 115$	$50 \pm 12$	R	400 VE R 400 VRME R
		391	32,5	65	21	$d_1 + 24$	$d_1 + 115$	$50 \pm 12$	R	
405	410	396	32,5	65	30	$d_1 + 24$	$d_1 + 115$	$50 \pm 12$	R	405 VE R 405 VRME R
		396	32,5	65	21	$d_1 + 24$	$d_1 + 115$	$50 \pm 12$	R	
410	415	401	32,5	65	30	$d_1 + 24$	$d_1 + 115$	$50 \pm 12$	R	410 VE R 410 VRME R
		401	32,5	65	21	$d_1 + 24$	$d_1 + 115$	$50 \pm 12$	R	
415	420	405	32,5	65	30	$d_1 + 24$	$d_1 + 115$	$50 \pm 12$	R	415 VE R 415 VRME R
		405	32,5	65	21	$d_1 + 24$	$d_1 + 115$	$50 \pm 12$	R	
420	425	410	32,5	65	30	$d_1 + 24$	$d_1 + 115$	$50 \pm 12$	R	420 VE R 420 VRME R
		410	32,5	65	21	$d_1 + 24$	$d_1 + 115$	$50 \pm 12$	R	
425	430	415	32,5	65	30	$d_1 + 24$	$d_1 + 115$	$50 \pm 12$	R	425 VE R 425 VRME R
		415	32,5	65	21	$d_1 + 24$	$d_1 + 115$	$50 \pm 12$	R	
410	440	382	6	10,5	6,5	$d_1 + 5$	$d_1 + 20$	$8 \pm 1,5$	R	425 VL R 425 VL V
		382	6	10,5	6,5	$d_1 + 5$	$d_1 + 20$	$8 \pm 1,5$	V	
440	475	405	6	10,5	6,5	$d_1 + 5$	$d_1 + 20$	$8 \pm 1,5$	R	450 VL R 450 VL V
		405	6	10,5	6,5	$d_1 + 5$	$d_1 + 20$	$8 \pm 1,5$	V	
430	480	405	14,3	25	15	$d_1 + 10$	$d_1 + 45$	$20 \pm 4$	R	450 VA R 450 VA V
		405	14,3	25	15	$d_1 + 10$	$d_1 + 45$	$20 \pm 4$	V	
430	435	420	32,5	65	30	$d_1 + 24$	$d_1 + 115$	$50 \pm 12$	R	430 VE R 430 VRME R
		420	32,5	65	21	$d_1 + 24$	$d_1 + 115$	$50 \pm 12$	R	
435	440	425	32,5	65	30	$d_1 + 24$	$d_1 + 115$	$50 \pm 12$	R	435 VE R 435 VRME R
		425	32,5	65	21	$d_1 + 24$	$d_1 + 115$	$50 \pm 12$	R	
440	445	429	32,5	65	30	$d_1 + 24$	$d_1 + 115$	$50 \pm 12$	R	440 VE R 440 VRME R
		429	32,5	65	21	$d_1 + 24$	$d_1 + 115$	$50 \pm 12$	R	
445	450	434	32,5	65	30	$d_1 + 24$	$d_1 + 115$	$50 \pm 12$	R	445 VE R 445 VRME R
		434	32,5	65	21	$d_1 + 24$	$d_1 + 115$	$50 \pm 12$	R	

Dimensions		Seal inside diameter, free state d	Seal seat width b <sub>1</sub>	Nominal seal width b	Nominal seal height c	Clearance D <sub>1</sub> max	Counterface D min	Seal fitted width B <sub>1</sub>	Lip code	Designation
Shaft diameter range d <sub>1</sub> over	incl.									
mm										
450	455	439	32,5	65	30	d <sub>1</sub> + 24	d <sub>1</sub> + 115	50 ± 12	R	450 VE R
		439	32,5	65	21	d <sub>1</sub> + 24	d <sub>1</sub> + 115	50 ± 12	R	450 VRME R
455	460	444	32,5	65	30	d <sub>1</sub> + 24	d <sub>1</sub> + 115	50 ± 12	R	455 VE R
		444	32,5	65	21	d <sub>1</sub> + 24	d <sub>1</sub> + 115	50 ± 12	R	455 VRME R
460	465	448	32,5	65	30	d <sub>1</sub> + 24	d <sub>1</sub> + 115	50 ± 12	R	460 VE R
		448	32,5	65	21	d <sub>1</sub> + 24	d <sub>1</sub> + 115	50 ± 12	R	460 VRME R
465	470	453	32,5	65	30	d <sub>1</sub> + 24	d <sub>1</sub> + 115	50 ± 12	R	465 VE R
		453	32,5	65	21	d <sub>1</sub> + 24	d <sub>1</sub> + 115	50 ± 12	R	465 VRME R
470	475	458	32,5	65	30	d <sub>1</sub> + 24	d <sub>1</sub> + 115	50 ± 12	R	470 VE R
		458	32,5	65	21	d <sub>1</sub> + 24	d <sub>1</sub> + 115	50 ± 12	R	470 VRME R
475	480	463	32,5	65	30	d <sub>1</sub> + 24	d <sub>1</sub> + 115	50 ± 12	R	475 VE R
		463	32,5	65	21	d <sub>1</sub> + 24	d <sub>1</sub> + 115	50 ± 12	R	475 VRME R
475	510	450	6	10,5	6,5	d <sub>1</sub> + 5	d <sub>1</sub> + 20	8 ± 1,5	R	500 VL R
		450	6	10,5	6,5	d <sub>1</sub> + 5	d <sub>1</sub> + 20	8 ± 1,5	V	500 VL V
510	540	472	6	10,5	6,5	d <sub>1</sub> + 5	d <sub>1</sub> + 20	8 ± 1,5	R	525 VL R
		472	6	10,5	6,5	d <sub>1</sub> + 5	d <sub>1</sub> + 20	8 ± 1,5	V	525 VL V
480	530	450	14,3	25	15	d <sub>1</sub> + 10	d <sub>1</sub> + 45	20 ± 4	R	500 VA R
		450	14,3	25	15	d <sub>1</sub> + 10	d <sub>1</sub> + 45	20 ± 4	V	500 VA V
480	485	468	32,5	65	30	d <sub>1</sub> + 24	d <sub>1</sub> + 115	50 ± 12	R	480 VE R
		468	32,5	65	21	d <sub>1</sub> + 24	d <sub>1</sub> + 115	50 ± 12	R	480 VRME R
485	490	473	32,5	65	30	d <sub>1</sub> + 24	d <sub>1</sub> + 115	50 ± 12	R	485 VE R
		473	32,5	65	21	d <sub>1</sub> + 24	d <sub>1</sub> + 115	50 ± 12	R	485 VRME R
490	495	478	32,5	65	30	d <sub>1</sub> + 24	d <sub>1</sub> + 115	50 ± 12	R	490 VE R
		478	32,5	65	21	d <sub>1</sub> + 24	d <sub>1</sub> + 115	50 ± 12	R	490 VRME R
495	500	483	32,5	65	30	d <sub>1</sub> + 24	d <sub>1</sub> + 115	50 ± 12	R	495 VE R
		483	32,5	65	21	d <sub>1</sub> + 24	d <sub>1</sub> + 115	50 ± 12	R	495 VRME R
500	505	488	32,5	65	30	d <sub>1</sub> + 24	d <sub>1</sub> + 115	50 ± 12	R	500 VE R
		488	32,5	65	21	d <sub>1</sub> + 24	d <sub>1</sub> + 115	50 ± 12	R	500 VRME R
505	510	493	32,5	65	30	d <sub>1</sub> + 24	d <sub>1</sub> + 115	50 ± 12	R	505 VE R
		493	32,5	65	21	d <sub>1</sub> + 24	d <sub>1</sub> + 115	50 ± 12	R	505 VRME R
510	515	497	32,5	65	30	d <sub>1</sub> + 24	d <sub>1</sub> + 115	50 ± 12	R	510 VE R
		497	32,5	65	21	d <sub>1</sub> + 24	d <sub>1</sub> + 115	50 ± 12	R	510 VRME R
515	520	502	32,5	65	30	d <sub>1</sub> + 24	d <sub>1</sub> + 115	50 ± 12	R	515 VE R
		502	32,5	65	21	d <sub>1</sub> + 24	d <sub>1</sub> + 115	50 ± 12	R	515 VRME R
520	525	507	32,5	65	30	d <sub>1</sub> + 24	d <sub>1</sub> + 115	50 ± 12	R	520 VE R
		507	32,5	65	21	d <sub>1</sub> + 24	d <sub>1</sub> + 115	50 ± 12	R	520 VRME R
525	530	512	32,5	65	30	d <sub>1</sub> + 24	d <sub>1</sub> + 115	50 ± 12	R	525 VE R
		512	32,5	65	21	d <sub>1</sub> + 24	d <sub>1</sub> + 115	50 ± 12	R	525 VRME R
540	575	495	6	10,5	6,5	d <sub>1</sub> + 5	d <sub>1</sub> + 20	8 ± 1,5	R	550 VL R
		495	6	10,5	6,5	d <sub>1</sub> + 5	d <sub>1</sub> + 20	8 ± 1,5	V	550 VL V
530	580	495	14,3	25	15	d <sub>1</sub> + 10	d <sub>1</sub> + 45	20 ± 4	R	550 VA R
		495	14,3	25	15	d <sub>1</sub> + 10	d <sub>1</sub> + 45	20 ± 4	V	550 VA V
530	535	517	32,5	65	30	d <sub>1</sub> + 24	d <sub>1</sub> + 115	50 ± 12	R	530 VE R
		517	32,5	65	21	d <sub>1</sub> + 24	d <sub>1</sub> + 115	50 ± 12	R	530 VRME R
535	540	521	32,5	65	30	d <sub>1</sub> + 24	d <sub>1</sub> + 115	50 ± 12	R	535 VE R
		521	32,5	65	21	d <sub>1</sub> + 24	d <sub>1</sub> + 115	50 ± 12	R	535 VRME R

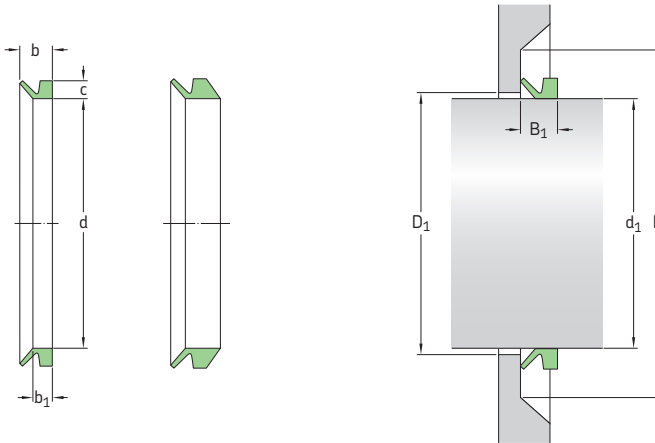
**V-ring seals – metric dimensions, globally valid outside North American market**  
 $d_1$  540 – 758 mm



Dimensions		Seal inside diameter, free state d	Seal seat width $b_1$	Nominal seal width b	Nominal seal height c	Clearance $D_1$ max	Counterface D min	Seal fitted width $B_1$	Lip code	Designation
Shaft diameter range $d_1$ over	incl.									
mm										
540	545	526	32,5	65	30	$d_1 + 24$	$d_1 + 115$	$50 \pm 12$	R	540 VE R
		526	32,5	65	21	$d_1 + 24$	$d_1 + 115$	$50 \pm 12$	R	540 VRME R
545	550	531	32,5	65	30	$d_1 + 24$	$d_1 + 115$	$50 \pm 12$	R	545 VE R
		531	32,5	65	21	$d_1 + 24$	$d_1 + 115$	$50 \pm 12$	R	545 VRME R
550	555	536	32,5	65	30	$d_1 + 24$	$d_1 + 115$	$50 \pm 12$	R	550 VE R
		536	32,5	65	21	$d_1 + 24$	$d_1 + 115$	$50 \pm 12$	R	550 VRME R
555	560	541	32,5	65	30	$d_1 + 24$	$d_1 + 115$	$50 \pm 12$	R	555 VE R
		541	32,5	65	21	$d_1 + 24$	$d_1 + 115$	$50 \pm 12$	R	555 VRME R
560	565	546	32,5	65	30	$d_1 + 24$	$d_1 + 115$	$50 \pm 12$	R	560 VE R
		546	32,5	65	21	$d_1 + 24$	$d_1 + 115$	$50 \pm 12$	R	560 VRME R
565	570	550	32,5	65	30	$d_1 + 24$	$d_1 + 115$	$50 \pm 12$	R	565 VE R
		550	32,5	65	21	$d_1 + 24$	$d_1 + 115$	$50 \pm 12$	R	565 VRME R
570	575	555	32,5	65	30	$d_1 + 24$	$d_1 + 115$	$50 \pm 12$	R	570 VE R
		555	32,5	65	21	$d_1 + 24$	$d_1 + 115$	$50 \pm 12$	R	570 VRME R
575	580	560	32,5	65	30	$d_1 + 24$	$d_1 + 115$	$50 \pm 12$	R	575 VE R
		560	32,5	65	21	$d_1 + 24$	$d_1 + 115$	$50 \pm 12$	R	575 VRME R
575	625	540	6	10,5	6,5	$d_1 + 5$	$d_1 + 20$	$8 \pm 1,5$	R	600 VL R
		540	6	10,5	6,5	$d_1 + 5$	$d_1 + 20$	$8 \pm 1,5$	V	600 VL V
580	630	540	14,3	25	15	$d_1 + 10$	$d_1 + 45$	$20 \pm 4$	R	600 VA R
		540	14,3	25	15	$d_1 + 10$	$d_1 + 45$	$20 \pm 4$	V	600 VA V
580	585	565	32,5	65	30	$d_1 + 24$	$d_1 + 115$	$50 \pm 12$	R	580 VE R
		565	32,5	65	21	$d_1 + 24$	$d_1 + 115$	$50 \pm 12$	R	580 VRME R
585	590	570	32,5	65	30	$d_1 + 24$	$d_1 + 115$	$50 \pm 12$	R	585 VE R
		570	32,5	65	21	$d_1 + 24$	$d_1 + 115$	$50 \pm 12$	R	585 VRME R
590	600	575	32,5	65	30	$d_1 + 24$	$d_1 + 115$	$50 \pm 12$	R	590 VE R
		575	32,5	65	21	$d_1 + 24$	$d_1 + 115$	$50 \pm 12$	R	590 VRME R
600	610	582	32,5	65	30	$d_1 + 24$	$d_1 + 115$	$50 \pm 12$	R	600 VE R
		582	32,5	65	21	$d_1 + 24$	$d_1 + 115$	$50 \pm 12$	R	600 VRME R

Dimensions		Seal inside diameter, free state d	Seal seat width b <sub>1</sub>	Nominal seal width b	Nominal seal height c	Clearance D <sub>1</sub> max	Counterface D min	Seal fitted width B <sub>1</sub>	Lip code	Designation
Shaft diameter range d <sub>1</sub> over	incl.									
mm										
610	620	592	32,5	65	30	d <sub>1</sub> + 24	d <sub>1</sub> + 115	50 ± 12	R	610 VE R
		592	32,5	65	21	d <sub>1</sub> + 24	d <sub>1</sub> + 115	50 ± 12	R	610 VRME R
620	630	602	32,5	65	30	d <sub>1</sub> + 24	d <sub>1</sub> + 115	50 ± 12	R	620 VE R
		602	32,5	65	21	d <sub>1</sub> + 24	d <sub>1</sub> + 115	50 ± 12	R	620 VRME R
615	675	600	6	10,5	6,5	d <sub>1</sub> + 5	d <sub>1</sub> + 20	8 ± 1,5	R	650 VL R
		600	6	10,5	6,5	d <sub>1</sub> + 5	d <sub>1</sub> + 20	8 ± 1,5	V	650 VL V
630	665	600	14,3	25	15	d <sub>1</sub> + 10	d <sub>1</sub> + 45	20 ± 4	R	650 VA R
		600	14,3	25	15	d <sub>1</sub> + 10	d <sub>1</sub> + 45	20 ± 4	V	650 VA V
630	640	612	32,5	65	30	d <sub>1</sub> + 24	d <sub>1</sub> + 115	50 ± 12	R	630 VE R
		612	32,5	65	21	d <sub>1</sub> + 24	d <sub>1</sub> + 115	50 ± 12	R	630 VRME R
640	650	621	32,5	65	30	d <sub>1</sub> + 24	d <sub>1</sub> + 115	50 ± 12	R	640 VE R
		621	32,5	65	21	d <sub>1</sub> + 24	d <sub>1</sub> + 115	50 ± 12	R	640 VRME R
650	660	631	32,5	65	30	d <sub>1</sub> + 24	d <sub>1</sub> + 115	50 ± 12	R	650 VE R
		631	32,5	65	21	d <sub>1</sub> + 24	d <sub>1</sub> + 115	50 ± 12	R	650 VRME R
660	670	640	32,5	65	30	d <sub>1</sub> + 24	d <sub>1</sub> + 115	50 ± 12	R	660 VE R
		640	32,5	65	21	d <sub>1</sub> + 24	d <sub>1</sub> + 115	50 ± 12	R	660 VRME R
675	710	630	6	10,5	6,5	d <sub>1</sub> + 5	d <sub>1</sub> + 20	8 ± 1,5	R	700 VL R
		630	6	10,5	6,5	d <sub>1</sub> + 5	d <sub>1</sub> + 20	8 ± 1,5	V	700 VL V
665	705	630	14,3	25	15	d <sub>1</sub> + 10	d <sub>1</sub> + 45	20 ± 4	R	700 VA R
		630	14,3	25	15	d <sub>1</sub> + 10	d <sub>1</sub> + 45	20 ± 4	V	700 VA V
670	680	650	32,5	65	30	d <sub>1</sub> + 24	d <sub>1</sub> + 115	50 ± 12	R	670 VE R
		650	32,5	65	21	d <sub>1</sub> + 24	d <sub>1</sub> + 115	50 ± 12	R	670 VRME R
680	690	660	32,5	65	30	d <sub>1</sub> + 24	d <sub>1</sub> + 115	50 ± 12	R	680 VE R
		660	32,5	65	21	d <sub>1</sub> + 24	d <sub>1</sub> + 115	50 ± 12	R	680 VRME R
690	700	670	32,5	65	30	d <sub>1</sub> + 24	d <sub>1</sub> + 115	50 ± 12	R	690 VE R
		670	32,5	65	21	d <sub>1</sub> + 24	d <sub>1</sub> + 115	50 ± 12	R	690 VRME R
700	710	680	32,5	65	30	d <sub>1</sub> + 24	d <sub>1</sub> + 115	50 ± 12	R	700 VE R
		680	32,5	65	21	d <sub>1</sub> + 24	d <sub>1</sub> + 115	50 ± 12	R	700 VRME R
710	740	670	6	10,5	6,5	d <sub>1</sub> + 5	d <sub>1</sub> + 20	8 ± 1,5	R	725 VL R
		670	6	10,5	6,5	d <sub>1</sub> + 5	d <sub>1</sub> + 20	8 ± 1,5	V	725 VL V
705	745	670	14,3	25	15	d <sub>1</sub> + 10	d <sub>1</sub> + 45	20 ± 4	R	725 VA R
		670	14,3	25	15	d <sub>1</sub> + 10	d <sub>1</sub> + 45	20 ± 4	V	725 VA V
710	720	689	32,5	65	30	d <sub>1</sub> + 24	d <sub>1</sub> + 115	50 ± 12	R	710 VE R
		689	32,5	65	21	d <sub>1</sub> + 24	d <sub>1</sub> + 115	50 ± 12	R	710 VRME R
720	730	699	32,5	65	30	d <sub>1</sub> + 24	d <sub>1</sub> + 115	50 ± 12	R	720 VE R
		699	32,5	65	21	d <sub>1</sub> + 24	d <sub>1</sub> + 115	50 ± 12	R	720 VRME R
730	740	709	32,5	65	30	d <sub>1</sub> + 24	d <sub>1</sub> + 115	50 ± 12	R	730 VE R
		709	32,5	65	21	d <sub>1</sub> + 24	d <sub>1</sub> + 115	50 ± 12	R	730 VRME R
740	750	718	32,5	65	30	d <sub>1</sub> + 24	d <sub>1</sub> + 115	50 ± 12	R	740 VE R
		718	32,5	65	21	d <sub>1</sub> + 24	d <sub>1</sub> + 115	50 ± 12	R	740 VRME R
740	775	705	6	10,5	6,5	d <sub>1</sub> + 5	d <sub>1</sub> + 20	8 ± 1,5	R	750 VL R
		705	6	10,5	6,5	d <sub>1</sub> + 5	d <sub>1</sub> + 20	8 ± 1,5	V	750 VL V
745	785	705	14,3	25	15	d <sub>1</sub> + 10	d <sub>1</sub> + 45	20 ± 4	R	750 VA R
		705	14,3	25	15	d <sub>1</sub> + 10	d <sub>1</sub> + 45	20 ± 4	V	750 VA V
750	758	728	32,5	65	30	d <sub>1</sub> + 24	d <sub>1</sub> + 115	50 ± 12	R	750 VE R
		728	32,5	65	21	d <sub>1</sub> + 24	d <sub>1</sub> + 115	50 ± 12	R	750 VRME R

**V-ring seals – metric dimensions, globally valid outside North American market**  
**d<sub>1</sub> 758 – 1 065 mm**

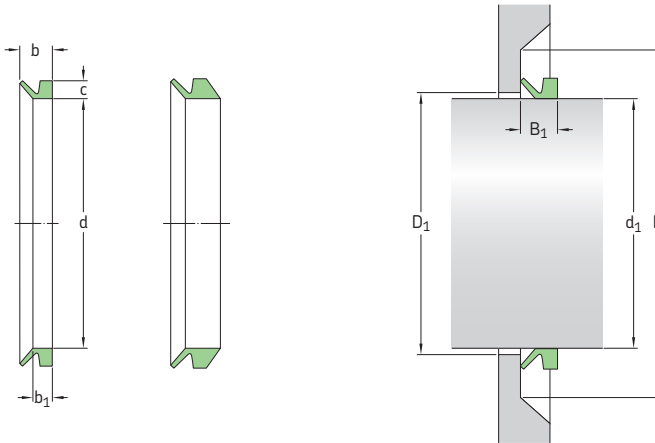


Dimensions		Seal inside diameter, free state d	Seal seat width b <sub>1</sub>	Nominal seal width b	Nominal seal height c	Clearance D <sub>1</sub> max	Counterface D min	Seal fitted width B <sub>1</sub>	Lip code	Designation
Shaft diameter range d <sub>1</sub> over	incl.									
mm										
<b>758</b>	<b>766</b>	735	32,5	65	30	d <sub>1</sub> + 24	d <sub>1</sub> + 115	50 ± 12	R	<b>760 VE R</b> <b>760 VRME R</b>
		735	32,5	65	21	d <sub>1</sub> + 24	d <sub>1</sub> + 115	50 ± 12	R	
<b>766</b>	<b>774</b>	743	32,5	65	30	d <sub>1</sub> + 24	d <sub>1</sub> + 115	50 ± 12	R	<b>770 VE R</b> <b>770 VRME R</b>
		743	32,5	65	21	d <sub>1</sub> + 24	d <sub>1</sub> + 115	50 ± 12	R	
<b>774</b>	<b>783</b>	751	32,5	65	30	d <sub>1</sub> + 24	d <sub>1</sub> + 115	50 ± 12	R	<b>780 VE R</b> <b>780 VRME R</b>
		751	32,5	65	21	d <sub>1</sub> + 24	d <sub>1</sub> + 115	50 ± 12	R	
<b>783</b>	<b>792</b>	759	32,5	65	30	d <sub>1</sub> + 24	d <sub>1</sub> + 115	50 ± 12	R	<b>790 VE R</b> <b>790 VRME R</b>
		759	32,5	65	21	d <sub>1</sub> + 24	d <sub>1</sub> + 115	50 ± 12	R	
<b>775</b>	<b>825</b>	745	6	10,5	6,5	d <sub>1</sub> + 5	d <sub>1</sub> + 20	8 ± 1,5	R	<b>800 VL R</b> <b>800 VL V</b>
		745	6	10,5	6,5	d <sub>1</sub> + 5	d <sub>1</sub> + 20	8 ± 1,5	V	
<b>785</b>	<b>830</b>	745	14,3	25	15	d <sub>1</sub> + 10	d <sub>1</sub> + 45	20 ± 4	R	<b>800 VA R</b> <b>800 VA V</b>
		745	14,3	25	15	d <sub>1</sub> + 10	d <sub>1</sub> + 45	20 ± 4	V	
<b>792</b>	<b>801</b>	768	32,5	65	30	d <sub>1</sub> + 24	d <sub>1</sub> + 115	50 ± 12	R	<b>800 VE R</b> <b>800 VRME R</b>
		768	32,5	65	21	d <sub>1</sub> + 24	d <sub>1</sub> + 115	50 ± 12	R	
<b>801</b>	<b>810</b>	777	32,5	65	30	d <sub>1</sub> + 24	d <sub>1</sub> + 115	50 ± 12	R	<b>810 VE R</b> <b>810 VRME R</b>
		777	32,5	65	21	d <sub>1</sub> + 24	d <sub>1</sub> + 115	50 ± 12	R	
<b>810</b>	<b>821</b>	786	32,5	65	30	d <sub>1</sub> + 24	d <sub>1</sub> + 115	50 ± 12	R	<b>820 VE R</b> <b>820 VRME R</b>
		786	32,5	65	21	d <sub>1</sub> + 24	d <sub>1</sub> + 115	50 ± 12	R	
<b>821</b>	<b>831</b>	796	32,5	65	30	d <sub>1</sub> + 24	d <sub>1</sub> + 115	50 ± 12	R	<b>830 VE R</b> <b>830 VRME R</b>
		796	32,5	65	21	d <sub>1</sub> + 24	d <sub>1</sub> + 115	50 ± 12	R	
<b>825</b>	<b>875</b>	785	6	10,5	6,5	d <sub>1</sub> + 5	d <sub>1</sub> + 20	8 ± 1,5	R	<b>850 VL R</b> <b>850 VL V</b>
		785	6	10,5	6,5	d <sub>1</sub> + 5	d <sub>1</sub> + 20	8 ± 1,5	V	
<b>830</b>	<b>875</b>	785	14,3	25	15	d <sub>1</sub> + 10	d <sub>1</sub> + 45	20 ± 4	R	<b>850 VA R</b> <b>850 VA V</b>
		785	14,3	25	15	d <sub>1</sub> + 10	d <sub>1</sub> + 45	20 ± 4	V	
<b>831</b>	<b>841</b>	805	32,5	65	30	d <sub>1</sub> + 24	d <sub>1</sub> + 115	50 ± 12	R	<b>840 VE R</b> <b>840 VRME R</b>
		805	32,5	65	21	d <sub>1</sub> + 24	d <sub>1</sub> + 115	50 ± 12	R	
<b>841</b>	<b>851</b>	814	32,5	65	30	d <sub>1</sub> + 24	d <sub>1</sub> + 115	50 ± 12	R	<b>850 VE R</b> <b>850 VRME R</b>
		814	32,5	65	21	d <sub>1</sub> + 24	d <sub>1</sub> + 115	50 ± 12	R	

Dimensions		Seal inside diameter, free state d	Seal seat width b <sub>1</sub>	Nominal seal width b	Nominal seal height c	Clearance D <sub>1</sub> max	Counterface D min	Seal fitted width B <sub>1</sub>	Lip code	Designation
Shaft diameter range d <sub>1</sub> over	incl.									
mm										
<b>851</b>	<b>861</b>	824 824	32,5 32,5	65 65	30 21	d <sub>1</sub> +24 d <sub>1</sub> +24	d <sub>1</sub> +115 d <sub>1</sub> +115	50 ± 12 50 ± 12	R R	<b>860 VE R</b> <b>860 VRME R</b>
<b>861</b>	<b>871</b>	833 833	32,5 32,5	65 65	30 21	d <sub>1</sub> +24 d <sub>1</sub> +24	d <sub>1</sub> +115 d <sub>1</sub> +115	50 ± 12 50 ± 12	R R	<b>870 VE R</b> <b>870 VRME R</b>
<b>871</b>	<b>882</b>	843 843	32,5 32,5	65 65	30 21	d <sub>1</sub> +24 d <sub>1</sub> +24	d <sub>1</sub> +115 d <sub>1</sub> +115	50 ± 12 50 ± 12	R R	<b>880 VE R</b> <b>880 VRME R</b>
<b>875</b>	<b>925</b>	825 825	6 6	10,5 10,5	6,5 6,5	d <sub>1</sub> +5 d <sub>1</sub> +5	d <sub>1</sub> +20 d <sub>1</sub> +20	8 ± 1,5 8 ± 1,5	R V	<b>900 VL R</b> <b>900 VL V</b>
<b>875</b>	<b>920</b>	825 825	14,3 14,3	25 25	15 15	d <sub>1</sub> +10 d <sub>1</sub> +10	d <sub>1</sub> +45 d <sub>1</sub> +45	20 ± 4 20 ± 4	R V	<b>900 VA R</b> <b>900 VA V</b>
<b>882</b>	<b>892</b>	853 853	32,5 32,5	65 65	30 21	d <sub>1</sub> +24 d <sub>1</sub> +24	d <sub>1</sub> +115 d <sub>1</sub> +115	50 ± 12 50 ± 12	R R	<b>890 VE R</b> <b>890 VRME R</b>
<b>892</b>	<b>912</b>	871 871	32,5 32,5	65 65	30 21	d <sub>1</sub> +24 d <sub>1</sub> +24	d <sub>1</sub> +115 d <sub>1</sub> +115	50 ± 12 50 ± 12	R R	<b>900 VE R</b> <b>900 VRME R</b>
<b>912</b>	<b>922</b>	880 880	32,5 32,5	65 65	30 21	d <sub>1</sub> +24 d <sub>1</sub> +24	d <sub>1</sub> +115 d <sub>1</sub> +115	50 ± 12 50 ± 12	R R	<b>920 VE R</b> <b>920 VRME R</b>
<b>925</b>	<b>975</b>	865 865	6 6	10,5 10,5	6,5 6,5	d <sub>1</sub> +5 d <sub>1</sub> +5	d <sub>1</sub> +20 d <sub>1</sub> +20	8 ± 1,5 8 ± 1,5	R V	<b>950 VL R</b> <b>950 VL V</b>
<b>920</b>	<b>965</b>	865 865	14,3 14,3	25 25	15 15	d <sub>1</sub> +10 d <sub>1</sub> +10	d <sub>1</sub> +45 d <sub>1</sub> +45	20 ± 4 20 ± 4	R V	<b>950 VA R</b> <b>950 VA V</b>
<b>922</b>	<b>933</b>	890 890	32,5 32,5	65 65	30 21	d <sub>1</sub> +24 d <sub>1</sub> +24	d <sub>1</sub> +115 d <sub>1</sub> +115	50 ± 12 50 ± 12	R R	<b>930 VE R</b> <b>930 VRME R</b>
<b>933</b>	<b>944</b>	900 900	32,5 32,5	65 65	30 21	d <sub>1</sub> +24 d <sub>1</sub> +24	d <sub>1</sub> +115 d <sub>1</sub> +115	50 ± 12 50 ± 12	R R	<b>940 VE R</b> <b>940 VRME R</b>
<b>944</b>	<b>955</b>	911 911	32,5 32,5	65 65	30 21	d <sub>1</sub> +24 d <sub>1</sub> +24	d <sub>1</sub> +115 d <sub>1</sub> +115	50 ± 12 50 ± 12	R R	<b>950 VE R</b> <b>950 VRME R</b>
<b>955</b>	<b>966</b>	921 921	32,5 32,5	65 65	30 21	d <sub>1</sub> +24 d <sub>1</sub> +24	d <sub>1</sub> +115 d <sub>1</sub> +115	50 ± 12 50 ± 12	R R	<b>960 VE R</b> <b>960 VRME R</b>
<b>975</b>	<b>1025</b>	910 910	6 6	10,5 10,5	6,5 6,5	d <sub>1</sub> +5 d <sub>1</sub> +5	d <sub>1</sub> +20 d <sub>1</sub> +20	8 ± 1,5 8 ± 1,5	R V	<b>1000 VL R</b> <b>1000 VL V</b>
<b>965</b>	<b>1015</b>	910 910	14,3 14,3	25 25	15 15	d <sub>1</sub> +10 d <sub>1</sub> +10	d <sub>1</sub> +45 d <sub>1</sub> +45	20 ± 4 20 ± 4	R V	<b>1000 VA R</b> <b>1000 VA V</b>
<b>966</b>	<b>977</b>	932 932	32,5 32,5	65 65	30 21	d <sub>1</sub> +24 d <sub>1</sub> +24	d <sub>1</sub> +115 d <sub>1</sub> +115	50 ± 12 50 ± 12	R R	<b>970 VE R</b> <b>970 VRME R</b>
<b>977</b>	<b>988</b>	942 942	32,5 32,5	65 65	30 21	d <sub>1</sub> +24 d <sub>1</sub> +24	d <sub>1</sub> +115 d <sub>1</sub> +115	50 ± 12 50 ± 12	R R	<b>980 VE R</b> <b>980 VRME R</b>
<b>988</b>	<b>999</b>	953 953	32,5 32,5	65 65	30 21	d <sub>1</sub> +24 d <sub>1</sub> +24	d <sub>1</sub> +115 d <sub>1</sub> +115	50 ± 12 50 ± 12	R R	<b>990 VE R</b> <b>990 VRME R</b>
<b>999</b>	<b>1 010</b>	963 963	32,5 32,5	65 65	30 21	d <sub>1</sub> +24 d <sub>1</sub> +24	d <sub>1</sub> +115 d <sub>1</sub> +115	50 ± 12 50 ± 12	R R	<b>1000 VE R</b> <b>1000 VRME R</b>
<b>1 010</b>	<b>1 025</b>	973 973	32,5 32,5	65 65	30 21	d <sub>1</sub> +24 d <sub>1</sub> +24	d <sub>1</sub> +115 d <sub>1</sub> +115	50 ± 12 50 ± 12	R R	<b>1020 VE R</b> <b>1020 VRME R</b>
<b>1 025</b>	<b>1 075</b>	955 955	6 6	10,5 10,5	6,5 6,5	d <sub>1</sub> +5 d <sub>1</sub> +5	d <sub>1</sub> +20 d <sub>1</sub> +20	8 ± 1,5 8 ± 1,5	R V	<b>1050 VL R</b> <b>1050 VL V</b>
<b>1 015</b>	<b>1 065</b>	955	14,3	25	15	d <sub>1</sub> +10	d <sub>1</sub> +45	20 ± 4	R	<b>1050 VA R</b>



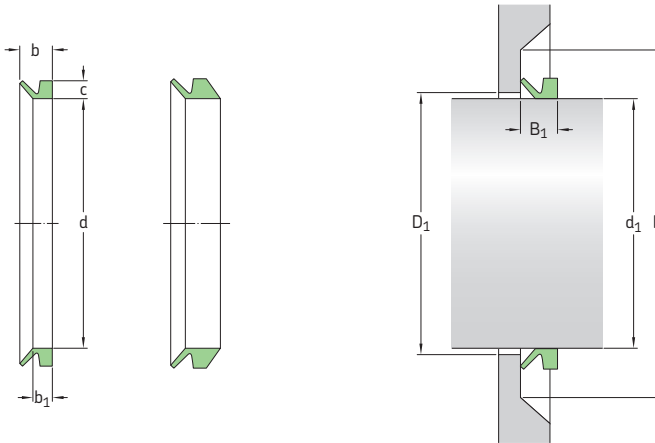
**V-ring seals – metric dimensions, globally valid outside North American market**  
**d<sub>1</sub> 1 025 – 1 515 mm**



Dimensions		Seal inside diameter, free state d	Seal seat width b <sub>1</sub>	Nominal seal width b	Nominal seal height c	Clearance D <sub>1</sub> max	Counterface D min	Seal fitted width B <sub>1</sub>	Lip code	Designation
Shaft diameter range d <sub>1</sub> over	incl.									
mm										
1 025	1 045	990	32,5	65	30	d <sub>1</sub> + 24	d <sub>1</sub> + 115	50 ± 12	R	1040 VE R
		990	32,5	65	21	d <sub>1</sub> + 24	d <sub>1</sub> + 115	50 ± 12	R	1040 VRME R
1 045	1 065	1 008	32,5	65	30	d <sub>1</sub> + 24	d <sub>1</sub> + 115	50 ± 12	R	1060 VE R
		1 008	32,5	65	21	d <sub>1</sub> + 24	d <sub>1</sub> + 115	50 ± 12	R	1060 VRME R
1 075	1 125	1 000	6	10,5	6,5	d <sub>1</sub> + 5	d <sub>1</sub> + 20	8 ± 1,5	R	1100 VL R
		1 000	6	10,5	6,5	d <sub>1</sub> + 5	d <sub>1</sub> + 20	8 ± 1,5	V	1100 VL V
1 065	1 115	1 000	14,3	25	15	d <sub>1</sub> + 10	d <sub>1</sub> + 45	20 ± 4	R	1100 VA R
1 065	1 085	1 027	32,5	65	30	d <sub>1</sub> + 24	d <sub>1</sub> + 115	50 ± 12	R	1080 VE R
		1 027	32,5	65	21	d <sub>1</sub> + 24	d <sub>1</sub> + 115	50 ± 12	R	1080 VRME R
1 085	1 105	1 045	32,5	65	30	d <sub>1</sub> + 24	d <sub>1</sub> + 115	50 ± 12	R	1100 VE R
		1 045	32,5	65	21	d <sub>1</sub> + 24	d <sub>1</sub> + 115	50 ± 12	R	1100 VRME R
1 105	1 125	1 065	32,5	65	30	d <sub>1</sub> + 24	d <sub>1</sub> + 115	50 ± 12	R	1120 VE R
		1 065	32,5	65	21	d <sub>1</sub> + 24	d <sub>1</sub> + 115	50 ± 12	R	1120 VRME R
1 125	1 175	1 045	6	10,5	6,5	d <sub>1</sub> + 5	d <sub>1</sub> + 20	8 ± 1,5	R	1150 VL R
		1 045	6	10,5	6,5	d <sub>1</sub> + 5	d <sub>1</sub> + 20	8 ± 1,5	V	1150 VL V
1 115	1 165	1 045	14,3	25	15	d <sub>1</sub> + 10	d <sub>1</sub> + 45	20 ± 4	R	1150 VA R
1 125	1 145	1 084	32,5	65	30	d <sub>1</sub> + 24	d <sub>1</sub> + 115	50 ± 12	R	1140 VE R
		1 084	32,5	65	21	d <sub>1</sub> + 24	d <sub>1</sub> + 115	50 ± 12	R	1140 VRME R
1 145	1 165	1 103	32,5	65	30	d <sub>1</sub> + 24	d <sub>1</sub> + 115	50 ± 12	R	1160 VE R
		1 103	32,5	65	21	d <sub>1</sub> + 24	d <sub>1</sub> + 115	50 ± 12	R	1160 VRME R
1 175	1 225	1 090	6	10,5	6,5	d <sub>1</sub> + 5	d <sub>1</sub> + 20	8 ± 1,5	R	1200 VL R
		1 090	6	10,5	6,5	d <sub>1</sub> + 5	d <sub>1</sub> + 20	8 ± 1,5	V	1200 VL V
1 165	1 215	1 090	14,3	25	15	d <sub>1</sub> + 10	d <sub>1</sub> + 45	20 ± 4	R	1200 VA R
1 165	1 185	1 121	32,5	65	30	d <sub>1</sub> + 24	d <sub>1</sub> + 115	50 ± 12	R	1180 VE R
		1 121	32,5	65	21	d <sub>1</sub> + 24	d <sub>1</sub> + 115	50 ± 12	R	1180 VRME R
1 185	1 205	1 139	32,5	65	30	d <sub>1</sub> + 24	d <sub>1</sub> + 115	50 ± 12	R	1200 VE R
		1 139	32,5	65	21	d <sub>1</sub> + 24	d <sub>1</sub> + 115	50 ± 12	R	1200 VRME R

Dimensions		Seal inside diameter, free state d	Seal seat width b <sub>1</sub>	Nominal seal width b	Nominal seal height c	Clearance D <sub>1</sub> max	Counterface D min	Seal fitted width B <sub>1</sub>	Lip code	Designation
Shaft diameter range d <sub>1</sub> over	incl.									
mm										
1 205	1 225	1 157 1 157	32,5 32,5	65 65	30 21	d <sub>1</sub> + 24 d <sub>1</sub> + 24	d <sub>1</sub> + 115 d <sub>1</sub> + 115	50 ± 12 50 ± 12	R R	1220 VE R 1220 VRME R
1 225	1 275	1 135 1 135	6 6	10,5 10,5	6,5 6,5	d <sub>1</sub> + 5 d <sub>1</sub> + 5	d <sub>1</sub> + 20 d <sub>1</sub> + 20	8 ± 1,5 8 ± 1,5	R V	1250 VL R 1250 VL V
1 215	1 270	1 135	14,3	25	15	d <sub>1</sub> + 10	d <sub>1</sub> + 45	20 ± 4	R	1250 VA R
1 225	1 245	1 176 1 176	32,5 32,5	65 65	30 21	d <sub>1</sub> + 24 d <sub>1</sub> + 24	d <sub>1</sub> + 115 d <sub>1</sub> + 115	50 ± 12 50 ± 12	R R	1240 VE R 1240 VRME R
1 245	1 270	1 195 1 195	32,5 32,5	65 65	30 21	d <sub>1</sub> + 24 d <sub>1</sub> + 24	d <sub>1</sub> + 115 d <sub>1</sub> + 115	50 ± 12 50 ± 12	R R	1260 VE R 1260 VRME R
1 270	1 295	1 218 1 218	32,5 32,5	65 65	30 21	d <sub>1</sub> + 24 d <sub>1</sub> + 24	d <sub>1</sub> + 115 d <sub>1</sub> + 115	50 ± 12 50 ± 12	R R	1280 VE R 1280 VRME R
1 275	1 325	1 180 1 180	6 6	10,5 10,5	6,5 6,5	d <sub>1</sub> + 5 d <sub>1</sub> + 5	d <sub>1</sub> + 20 d <sub>1</sub> + 20	8 ± 1,5 8 ± 1,5	R V	1300 VL R 1300 VL V
1 270	1 320	1 180	14,3	25	15	d <sub>1</sub> + 10	d <sub>1</sub> + 45	20 ± 4	R	1300 VA R
1 295	1 315	1 240 1 240	32,5 32,5	65 65	30 21	d <sub>1</sub> + 24 d <sub>1</sub> + 24	d <sub>1</sub> + 115 d <sub>1</sub> + 115	50 ± 12 50 ± 12	R R	1300 VE R 1300 VRME R
1 315	1 340	1 259 1 259	32,5 32,5	65 65	30 21	d <sub>1</sub> + 24 d <sub>1</sub> + 24	d <sub>1</sub> + 115 d <sub>1</sub> + 115	50 ± 12 50 ± 12	R R	1325 VE R 1325 VRME R
1 325	1 375	1 225 1 225	6 6	10,5 10,5	6,5 6,5	d <sub>1</sub> + 5 d <sub>1</sub> + 5	d <sub>1</sub> + 20 d <sub>1</sub> + 20	8 ± 1,5 8 ± 1,5	R V	1350 VL R 1350 VL V
1 320	1 370	1 225	14,3	25	15	d <sub>1</sub> + 10	d <sub>1</sub> + 45	20 ± 4	R	1350 VA R
1 340	1 365	1 281 1 281	32,5 32,5	65 65	30 21	d <sub>1</sub> + 24 d <sub>1</sub> + 24	d <sub>1</sub> + 115 d <sub>1</sub> + 115	50 ± 12 50 ± 12	R R	1350 VE R 1350 VRME R
1 365	1 390	1 305 1 305	32,5 32,5	65 65	30 21	d <sub>1</sub> + 24 d <sub>1</sub> + 24	d <sub>1</sub> + 115 d <sub>1</sub> + 115	50 ± 12 50 ± 12	R R	1375 VE R 1375 VRME R
1 375	1 425	1 270 1 270	6 6	10,5 10,5	6,5 6,5	d <sub>1</sub> + 5 d <sub>1</sub> + 5	d <sub>1</sub> + 20 d <sub>1</sub> + 20	8 ± 1,5 8 ± 1,5	R V	1400 VL R 1400 VL V
1 370	1 420	1 270	14,3	25	15	d <sub>1</sub> + 10	d <sub>1</sub> + 45	20 ± 4	R	1400 VA R
1 390	1 415	1 328 1 328	32,5 32,5	65 65	30 21	d <sub>1</sub> + 24 d <sub>1</sub> + 24	d <sub>1</sub> + 115 d <sub>1</sub> + 115	50 ± 12 50 ± 12	R R	1400 VE R 1400 VRME R
1 415	1 440	1 350 1 350	32,5 32,5	65 65	30 21	d <sub>1</sub> + 24 d <sub>1</sub> + 24	d <sub>1</sub> + 115 d <sub>1</sub> + 115	50 ± 12 50 ± 12	R R	1425 VE R 1425 VRME R
1 425	1 475	1 315 1 315	6 6	10,5 10,5	6,5 6,5	d <sub>1</sub> + 5 d <sub>1</sub> + 5	d <sub>1</sub> + 20 d <sub>1</sub> + 20	8 ± 1,5 8 ± 1,5	R V	1450 VL R 1450 VL V
1 420	1 470	1 315	14,3	25	15	d <sub>1</sub> + 10	d <sub>1</sub> + 45	20 ± 4	R	1450 VA R
1 440	1 465	1 374 1 374	32,5 32,5	65 65	30 21	d <sub>1</sub> + 24 d <sub>1</sub> + 24	d <sub>1</sub> + 115 d <sub>1</sub> + 115	50 ± 12 50 ± 12	R R	1450 VE R 1450 VRME R
1 465	1 490	1 397 1 397	32,5 32,5	65 65	30 21	d <sub>1</sub> + 24 d <sub>1</sub> + 24	d <sub>1</sub> + 115 d <sub>1</sub> + 115	50 ± 12 50 ± 12	R R	1475 VE R 1475 VRME R
1 475	1 525	1 360 1 360	6 6	10,5 10,5	6,5 6,5	d <sub>1</sub> + 5 d <sub>1</sub> + 5	d <sub>1</sub> + 20 d <sub>1</sub> + 20	8 ± 1,5 8 ± 1,5	R V	1500 VL R 1500 VL V
1 470	1 520	1 360	14,3	25	15	d <sub>1</sub> + 10	d <sub>1</sub> + 45	20 ± 4	R	1500 VA R
1 490	1 515	1 419 1 419	32,5 32,5	65 65	30 21	d <sub>1</sub> + 24 d <sub>1</sub> + 24	d <sub>1</sub> + 115 d <sub>1</sub> + 115	50 ± 12 50 ± 12	R R	1500 VE R 1500 VRME R

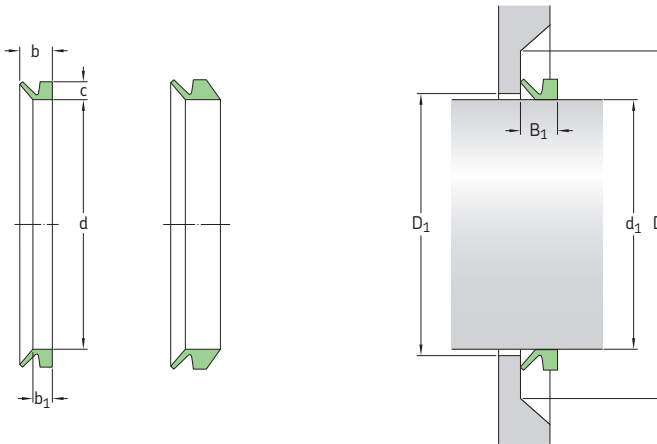
**V-ring seals – metric dimensions, globally valid outside North American market**  
**d<sub>1</sub> 1 515 – 2 020 mm**



Dimensions		Seal inside diameter, free state d	Seal seat width b <sub>1</sub>	Nominal seal width b	Nominal seal height c	Clearance D <sub>1</sub> max	Counterface D min	Seal fitted width B <sub>1</sub>	Lip code	Designation
Shaft diameter range d <sub>1</sub> over	incl.									
mm										
1515	1540	1443	32,5	65	30	d <sub>1</sub> + 24	d <sub>1</sub> + 115	50 ± 12	R	1525 VE R
		1443	32,5	65	21	d <sub>1</sub> + 24	d <sub>1</sub> + 115	50 ± 12	R	1525 VRME R
1525	1575	1405	6	10,5	6,5	d <sub>1</sub> + 5	d <sub>1</sub> + 20	8 ± 1,5	R	1550 VL R
		1405	6	10,5	6,5	d <sub>1</sub> + 5	d <sub>1</sub> + 20	8 ± 1,5	V	1550 VL V
1520	1570	1405	14,3	25	15	d <sub>1</sub> + 10	d <sub>1</sub> + 45	20 ± 4	R	1550 VA R
1540	1570	1467	32,5	65	30	d <sub>1</sub> + 24	d <sub>1</sub> + 115	50 ± 12	R	1550 VE R
		1467	32,5	65	21	d <sub>1</sub> + 24	d <sub>1</sub> + 115	50 ± 12	R	1550 VRME R
1570	1600	1495	32,5	65	30	d <sub>1</sub> + 24	d <sub>1</sub> + 115	50 ± 12	R	1575 VE R
		1495	32,5	65	21	d <sub>1</sub> + 24	d <sub>1</sub> + 115	50 ± 12	R	1575 VRME R
1575	1625	1450	6	10,5	6,5	d <sub>1</sub> + 5	d <sub>1</sub> + 20	8 ± 1,5	R	1600 VL R
		1450	6	10,5	6,5	d <sub>1</sub> + 5	d <sub>1</sub> + 20	8 ± 1,5	V	1600 VL V
1570	1620	1450	14,3	25	15	d <sub>1</sub> + 10	d <sub>1</sub> + 45	20 ± 4	R	1600 VA R
1600	1640	1524	32,5	65	30	d <sub>1</sub> + 24	d <sub>1</sub> + 115	50 ± 12	R	1600 VE R
		1524	32,5	65	21	d <sub>1</sub> + 24	d <sub>1</sub> + 115	50 ± 12	R	1600 VRME R
1625	1675	1495	6	10,5	6,5	d <sub>1</sub> + 5	d <sub>1</sub> + 20	8 ± 1,5	R	1650 VL R
		1495	6	10,5	6,5	d <sub>1</sub> + 5	d <sub>1</sub> + 20	8 ± 1,5	V	1650 VL V
1620	1670	1495	14,3	25	15	d <sub>1</sub> + 10	d <sub>1</sub> + 45	20 ± 4	R	1650 VA R
1640	1680	1559	32,5	65	30	d <sub>1</sub> + 24	d <sub>1</sub> + 115	50 ± 12	R	1650 VE R
		1559	32,5	65	21	d <sub>1</sub> + 24	d <sub>1</sub> + 115	50 ± 12	R	1650 VRME R
1675	1725	1540	6	10,5	6,5	d <sub>1</sub> + 5	d <sub>1</sub> + 20	8 ± 1,5	R	1700 VL R
		1540	6	10,5	6,5	d <sub>1</sub> + 5	d <sub>1</sub> + 20	8 ± 1,5	V	1700 VL V
1670	1720	1540	14,3	25	15	d <sub>1</sub> + 10	d <sub>1</sub> + 45	20 ± 4	R	1700 VA R
1680	1720	1596	32,5	65	30	d <sub>1</sub> + 24	d <sub>1</sub> + 115	50 ± 12	R	1700 VE R
		1596	32,5	65	21	d <sub>1</sub> + 24	d <sub>1</sub> + 115	50 ± 12	R	1700 VRME R
1725	1775	1585	6	10,5	6,5	d <sub>1</sub> + 5	d <sub>1</sub> + 20	8 ± 1,5	R	1750 VL R
		1585	6	10,5	6,5	d <sub>1</sub> + 5	d <sub>1</sub> + 20	8 ± 1,5	V	1750 VL V
1720	1770	1585	14,3	25	15	d <sub>1</sub> + 10	d <sub>1</sub> + 45	20 ± 4	R	1750 VA R

Dimensions		Seal inside diameter, free state d	Seal seat width b <sub>1</sub>	Nominal seal width b	Nominal seal height c	Clearance D <sub>1</sub> max	Counterface D min	Seal fitted width B <sub>1</sub>	Lip code	Designation
Shaft diameter range d <sub>1</sub> over	incl.									
mm										
1720	1765	1632	32,5	65	30	d <sub>1</sub> +24	d <sub>1</sub> +115	50 ± 12	R	1750 VE R
		1632	32,5	65	21	d <sub>1</sub> +24	d <sub>1</sub> +115	50 ± 12	R	1750 VRME R
1765	1810	1671	32,5	65	30	d <sub>1</sub> +24	d <sub>1</sub> +115	50 ± 12	R	1800 VE R
		1671	32,5	65	21	d <sub>1</sub> +24	d <sub>1</sub> +115	50 ± 12	R	1800 VRME R
1775	1825	1630	6	10,5	6,5	d <sub>1</sub> +5	d <sub>1</sub> +20	8 ± 1,5	R	1800 VL R
		1630	6	10,5	6,5	d <sub>1</sub> +5	d <sub>1</sub> +20	8 ± 1,5	V	1800 VL V
1770	1820	1630	14,3	25	15	d <sub>1</sub> +10	d <sub>1</sub> +45	20 ± 4	R	1800 VA R
1810	1855	1714	32,5	65	30	d <sub>1</sub> +24	d <sub>1</sub> +115	50 ± 12	R	1850 VE R
		1714	32,5	65	21	d <sub>1</sub> +24	d <sub>1</sub> +115	50 ± 12	R	1850 VRME R
1825	1875	1675	6	10,5	6,5	d <sub>1</sub> +5	d <sub>1</sub> +20	8 ± 1,5	R	1850 VL R
		1675	6	10,5	6,5	d <sub>1</sub> +5	d <sub>1</sub> +20	8 ± 1,5	V	1850 VL V
1820	1870	1675	14,3	25	15	d <sub>1</sub> +10	d <sub>1</sub> +45	20 ± 4	R	1850 VA R
1855	1905	1753	32,5	65	30	d <sub>1</sub> +24	d <sub>1</sub> +115	50 ± 12	R	1900 VE R
		1753	32,5	65	21	d <sub>1</sub> +24	d <sub>1</sub> +115	50 ± 12	R	1900 VRME R
1875	1925	1720	6	10,5	6,5	d <sub>1</sub> +5	d <sub>1</sub> +20	8 ± 1,5	R	1900 VL R
		1720	6	10,5	6,5	d <sub>1</sub> +5	d <sub>1</sub> +20	8 ± 1,5	V	1900 VL V
1870	1920	1720	14,3	25	15	d <sub>1</sub> +10	d <sub>1</sub> +45	20 ± 4	R	1900 VA R
1905	1955	1794	32,5	65	30	d <sub>1</sub> +24	d <sub>1</sub> +115	50 ± 12	R	1950 VE R
		1794	32,5	65	21	d <sub>1</sub> +24	d <sub>1</sub> +115	50 ± 12	R	1950 VRME R
1925	1975	1765	6	10,5	6,5	d <sub>1</sub> +5	d <sub>1</sub> +20	8 ± 1,5	R	1950 VL R
		1765	6	10,5	6,5	d <sub>1</sub> +5	d <sub>1</sub> +20	8 ± 1,5	V	1950 VL V
1920	1970	1765	14,3	25	15	d <sub>1</sub> +10	d <sub>1</sub> +45	20 ± 4	R	1950 VA R
1955	2010	1844	32,5	65	30	d <sub>1</sub> +24	d <sub>1</sub> +115	50 ± 12	R	2000 VE R
		1844	32,5	65	21	d <sub>1</sub> +24	d <sub>1</sub> +115	50 ± 12	R	2000 VRME R
1975	2025	1810	6	10,5	6,5	d <sub>1</sub> +5	d <sub>1</sub> +20	8 ± 1,5	R	2000 VL R
		1810	6	10,5	6,5	d <sub>1</sub> +5	d <sub>1</sub> +20	8 ± 1,5	V	2000 VL V
1970	2020	1810	14,3	25	15	d <sub>1</sub> +10	d <sub>1</sub> +45	20 ± 4	R	2000 VA R

**V-ring seals – inch dimensions, globally valid outside North American market**  
**d<sub>1</sub> 0.11 – 2.09 in.**

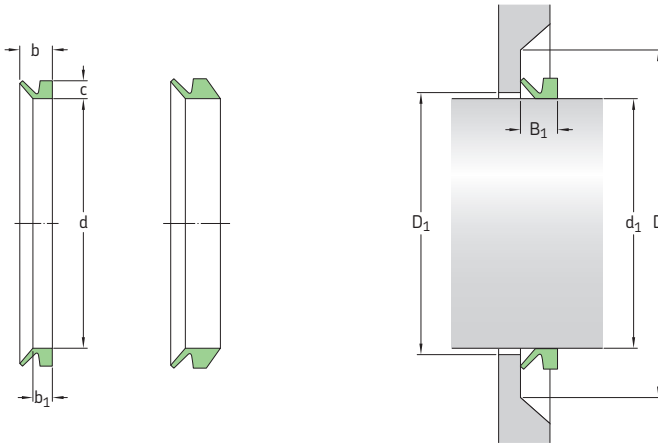


Dimensions		Seal inside diameter, free state d	Nominal seal height c	Seal seat width b <sub>1</sub>	Nominal seal width b	Clearance D <sub>1</sub> (= d <sub>1</sub> +) max	Counter-face D (= d <sub>1</sub> +) min	Seal fitted width B <sub>1</sub>	Lip code	Designation
Shaft diameter range d <sub>1</sub> over	incl.									
in.		in.							-	-
<b>0.11</b>	<b>0.14</b>	0.10	0.06	0.08	0.12	0.04	0.16	0.10 ± 0.012	R	<b>3 VA R</b>
		0.10	0.06	0.08	0.12	0.04	0.16	0.10 ± 0.012	V	<b>3 VA V</b>
<b>0.14</b>	<b>0.18</b>	0.13	0.08	0.09	0.15	0.04	0.24	0.12 ± 0.016	R	<b>4 VA R</b>
		0.13	0.08	0.09	0.15	0.04	0.24	0.12 ± 0.016	V	<b>4 VA V</b>
<b>0.18</b>	<b>0.22</b>	0.16	0.08	0.09	0.15	0.04	0.24	0.12 ± 0.016	R	<b>5 VA R</b>
		0.16	0.08	0.09	0.15	0.04	0.24	0.12 ± 0.016	V	<b>5 VA V</b>
		0.16	0.08	0.15	0.20	0.04	0.24	0.18 ± 0.016	R	<b>5 VS R</b>
		0.16	0.08	0.15	0.20	0.04	0.24	0.18 ± 0.016	V	<b>5 VS V</b>
<b>0.22</b>	<b>0.26</b>	0.20	0.08	0.09	0.15	0.04	0.24	0.12 ± 0.016	R	<b>6 VA R</b>
		0.20	0.08	0.09	0.15	0.04	0.24	0.12 ± 0.016	V	<b>6 VA V</b>
		0.20	0.08	0.15	0.20	0.04	0.24	0.18 ± 0.016	R	<b>6 VS R</b>
		0.20	0.08	0.15	0.20	0.04	0.24	0.18 ± 0.016	V	<b>6 VS V</b>
<b>0.26</b>	<b>0.31</b>	0.24	0.08	0.09	0.15	0.04	0.24	0.12 ± 0.016	R	<b>7 VA R</b>
		0.24	0.08	0.09	0.15	0.04	0.24	0.12 ± 0.016	V	<b>7 VA V</b>
		0.24	0.08	0.15	0.20	0.04	0.24	0.18 ± 0.016	R	<b>7 VS R</b>
		0.24	0.08	0.15	0.20	0.04	0.24	0.18 ± 0.016	V	<b>7 VS V</b>
<b>0.31</b>	<b>0.37</b>	0.28	0.08	0.09	0.15	0.04	0.24	0.12 ± 0.016	R	<b>8 VA R</b>
		0.28	0.08	0.09	0.15	0.04	0.24	0.12 ± 0.016	V	<b>8 VA V</b>
		0.28	0.08	0.15	0.20	0.04	0.24	0.18 ± 0.016	R	<b>8 VS R</b>
		0.28	0.08	0.15	0.20	0.04	0.24	0.18 ± 0.016	V	<b>8 VS V</b>
<b>0.37</b>	<b>0.45</b>	0.35	0.12	0.13	0.22	0.04	0.35	0.18 ± 0.02	R	<b>10 VA R</b>
		0.35	0.12	0.13	0.22	0.04	0.35	0.18 ± 0.02	V	<b>10 VA V</b>
		0.35	0.12	0.22	0.30	0.04	0.35	0.26 ± 0.02	R	<b>10 VS R</b>
		0.35	0.12	0.22	0.30	0.04	0.35	0.26 ± 0.02	V	<b>10 VS V</b>
<b>0.45</b>	<b>0.49</b>	0.41	0.12	0.13	0.22	0.04	0.35	0.18 ± 0.02	R	<b>12 VA R</b>
		0.41	0.12	0.13	0.22	0.04	0.35	0.18 ± 0.02	V	<b>12 VA V</b>
<b>0.45</b>	<b>0.53</b>	0.41	0.12	0.22	0.30	0.04	0.35	0.26 ± 0.02	R	<b>12 VS R</b>
		0.41	0.12	0.22	0.30	0.04	0.35	0.26 ± 0.02	V	<b>12 VS V</b>
<b>0.49</b>	<b>0.53</b>	0.46	0.12	0.13	0.22	0.04	0.35	0.18 ± 0.02	R	<b>13 VA R</b>
		0.46	0.12	0.13	0.22	0.04	0.35	0.18 ± 0.02	V	<b>13 VA V</b>
<b>0.53</b>	<b>0.61</b>	0.49	0.12	0.13	0.22	0.04	0.35	0.18 ± 0.02	R	<b>14 VA R</b>
		0.49	0.12	0.13	0.22	0.04	0.35	0.18 ± 0.02	V	<b>14 VA V</b>

Dimensions		Seal inside diameter, free state d	Nominal seal height c	Seal seat width b <sub>1</sub>	Nominal seal width b	Clearance D <sub>1</sub> (= d <sub>1</sub> +) max	Counter-face D (= d <sub>1</sub> +) min	Seal fitted width B <sub>1</sub>	Lip code	Designation
Shaft diameter range d <sub>1</sub> over	incl.									
in.		in.								
<b>0.53</b> cont.	<b>0.61</b>	0.49	0.12	0.22	0.30	0.04	0.35	0.26 ± 0.02	R	<b>14 VS R</b>
		0.49	0.12	0.22	0.30	0.04	0.35	0.26 ± 0.02	V	<b>14 VS V</b>
<b>0.61</b>	<b>0.67</b>	0.55	0.12	0.13	0.22	0.04	0.35	0.18 ± 0.02	R	<b>16 VA R</b>
		0.55	0.12	0.13	0.22	0.04	0.35	0.18 ± 0.02	V	<b>16 VA V</b>
<b>0.61</b>	<b>0.69</b>	0.55	0.12	0.22	0.30	0.04	0.35	0.26 ± 0.02	R	<b>16 VS R</b>
		0.55	0.12	0.22	0.30	0.04	0.35	0.26 ± 0.02	V	<b>16 VS V</b>
<b>0.69</b>	<b>0.75</b>	0.63	0.12	0.13	0.22	0.04	0.35	0.18 ± 0.02	R	<b>18 VA R</b>
		0.63	0.12	0.13	0.22	0.04	0.35	0.18 ± 0.02	V	<b>18 VA V</b>
		0.63	0.12	0.22	0.30	0.04	0.35	0.26 ± 0.02	R	<b>18 VS R</b>
		0.63	0.12	0.22	0.30	0.04	0.35	0.26 ± 0.02	V	<b>18 VS V</b>
<b>0.75</b>	<b>0.83</b>	0.71	0.16	0.19	0.30	0.08	0.47	0.24 ± 0.03	R	<b>20 VA R</b>
		0.71	0.16	0.19	0.30	0.08	0.47	0.24 ± 0.03	V	<b>20 VA V</b>
		0.71	0.16	0.31	0.41	0.08	0.47	0.35 ± 0.03	R	<b>20 VS R</b>
		0.71	0.16	0.31	0.41	0.08	0.47	0.35 ± 0.03	V	<b>20 VS V</b>
<b>0.83</b>	<b>0.94</b>	0.79	0.16	0.19	0.30	0.08	0.47	0.24 ± 0.03	R	<b>22 VA R</b>
		0.79	0.16	0.19	0.30	0.08	0.47	0.24 ± 0.03	V	<b>22 VA V</b>
		0.79	0.16	0.31	0.41	0.08	0.47	0.35 ± 0.03	R	<b>22 VS R</b>
		0.79	0.16	0.31	0.41	0.08	0.47	0.35 ± 0.03	V	<b>22 VS V</b>
<b>0.94</b>	<b>1.06</b>	0.87	0.16	0.19	0.30	0.08	0.47	0.24 ± 0.03	R	<b>25 VA R</b>
		0.87	0.16	0.19	0.30	0.08	0.47	0.24 ± 0.03	V	<b>25 VA V</b>
		0.87	0.16	0.31	0.41	0.08	0.47	0.35 ± 0.03	R	<b>25 VS R</b>
		0.87	0.16	0.31	0.41	0.08	0.47	0.35 ± 0.03	V	<b>25 VS V</b>
<b>1.06</b>	<b>1.14</b>	0.98	0.16	0.19	0.30	0.08	0.47	0.24 ± 0.03	R	<b>28 VA R</b>
		0.98	0.16	0.19	0.30	0.08	0.47	0.24 ± 0.03	V	<b>28 VA V</b>
		0.98	0.16	0.31	0.41	0.08	0.47	0.35 ± 0.03	R	<b>28 VS R</b>
		0.98	0.16	0.31	0.41	0.08	0.47	0.35 ± 0.03	V	<b>28 VS V</b>
<b>1.14</b>	<b>1.22</b>	1.06	0.16	0.19	0.30	0.08	0.47	0.24 ± 0.03	R	<b>30 VA R</b>
		1.06	0.16	0.19	0.30	0.08	0.47	0.24 ± 0.03	V	<b>30 VA V</b>
		1.06	0.16	0.31	0.41	0.08	0.47	0.35 ± 0.03	R	<b>30 VS R</b>
		1.06	0.16	0.31	0.41	0.08	0.47	0.35 ± 0.03	V	<b>30 VS V</b>
<b>1.22</b>	<b>1.30</b>	1.14	0.16	0.19	0.30	0.08	0.47	0.24 ± 0.03	R	<b>32 VA R</b>
		1.14	0.16	0.19	0.30	0.08	0.47	0.24 ± 0.03	V	<b>32 VA V</b>
		1.14	0.16	0.31	0.41	0.08	0.47	0.35 ± 0.03	R	<b>32 VS R</b>
		1.14	0.16	0.31	0.41	0.08	0.47	0.35 ± 0.03	V	<b>32 VS V</b>
<b>1.30</b>	<b>1.42</b>	1.22	0.16	0.19	0.30	0.08	0.47	0.24 ± 0.03	R	<b>35 VA R</b>
		1.22	0.16	0.19	0.30	0.08	0.47	0.24 ± 0.03	V	<b>35 VA V</b>
		1.22	0.16	0.31	0.41	0.08	0.47	0.35 ± 0.03	R	<b>35 VS R</b>
		1.22	0.16	0.31	0.41	0.08	0.47	0.35 ± 0.03	V	<b>35 VS V</b>
<b>1.42</b>	<b>1.50</b>	1.34	0.16	0.19	0.30	0.08	0.47	0.24 ± 0.03	R	<b>38 VA R</b>
		1.34	0.16	0.19	0.30	0.08	0.47	0.24 ± 0.03	V	<b>38 VA V</b>
		1.34	0.16	0.31	0.41	0.08	0.47	0.35 ± 0.03	R	<b>38 VS R</b>
		1.34	0.16	0.31	0.41	0.08	0.47	0.35 ± 0.03	V	<b>38 VS V</b>
<b>1.50</b>	<b>1.69</b>	1.42	0.20	0.22	0.35	0.08	0.59	0.28 ± 0.04	R	<b>40 VA R</b>
		1.42	0.20	0.22	0.35	0.08	0.59	0.28 ± 0.04	V	<b>40 VA V</b>
		1.42	0.20	0.37	0.51	0.08	0.59	0.43 ± 0.04	R	<b>40 VS R</b>
		1.42	0.20	0.37	0.51	0.08	0.59	0.43 ± 0.04	V	<b>40 VS V</b>
<b>1.69</b>	<b>1.89</b>	1.57	0.20	0.22	0.35	0.08	0.59	0.28 ± 0.04	R	<b>45 VA R</b>
		1.57	0.20	0.22	0.35	0.08	0.59	0.28 ± 0.04	V	<b>45 VA V</b>
		1.57	0.20	0.37	0.51	0.08	0.59	0.43 ± 0.04	R	<b>45 VS R</b>
		1.57	0.20	0.37	0.51	0.08	0.59	0.43 ± 0.04	V	<b>45 VS V</b>
<b>1.89</b>	<b>2.09</b>	1.77	0.20	0.22	0.35	0.08	0.59	0.28 ± 0.04	R	<b>50 VA R</b>
		1.77	0.20	0.22	0.35	0.08	0.59	0.28 ± 0.04	V	<b>50 VA V</b>
		1.77	0.20	0.37	0.51	0.08	0.59	0.43 ± 0.04	R	<b>50 VS R</b>
		1.77	0.20	0.37	0.51	0.08	0.59	0.43 ± 0.04	V	<b>50 VS V</b>

# V-ring seals – inch dimensions, globally valid outside North American market

$d_1$  2.09 – 7.68 in.

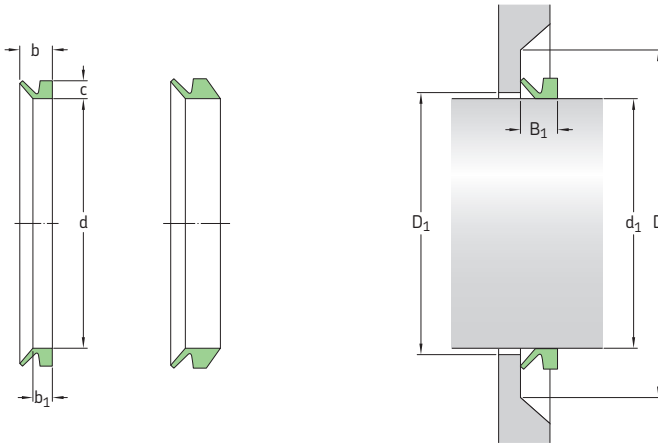


Dimensions		Seal inside diameter, free state $d$	Nominal seal height $c$	Seal seat width $b_1$	Nominal seal width $b$	Clearance $D_1 (= d_1 +)$ max	Counter-face $D (= d_1 +)$ min	Seal fitted width $B_1$	Lip code	Designation
Shaft diameter range $d_1$ over	incl.									
in.		in.							-	-
2.09	2.28	1.93	0.20	0.22	0.35	0.08	0.59	$0.28 \pm 0.04$	R	55 VA R
		1.93	0.20	0.22	0.35	0.08	0.59	$0.28 \pm 0.04$	V	55 VA V
		1.93	0.20	0.37	0.51	0.08	0.59	$0.43 \pm 0.04$	R	55 VS R
		1.93	0.20	0.37	0.51	0.08	0.59	$0.43 \pm 0.04$	V	55 VS V
2.28	2.48	2.13	0.20	0.22	0.35	0.08	0.59	$0.28 \pm 0.04$	R	60 VA R
		2.13	0.20	0.22	0.35	0.08	0.59	$0.28 \pm 0.04$	V	60 VA V
		2.13	0.20	0.37	0.51	0.08	0.59	$0.43 \pm 0.04$	R	60 VS R
		2.13	0.20	0.37	0.51	0.08	0.59	$0.43 \pm 0.04$	V	60 VS V
2.48	2.68	2.28	0.20	0.22	0.35	0.08	0.59	$0.28 \pm 0.04$	R	65 VA R
		2.28	0.20	0.22	0.35	0.08	0.59	$0.28 \pm 0.04$	V	65 VA V
		2.28	0.20	0.37	0.51	0.08	0.59	$0.43 \pm 0.04$	R	65 VS R
		2.28	0.20	0.37	0.51	0.08	0.59	$0.43 \pm 0.04$	V	65 VS V
2.68	2.87	2.48	0.24	0.27	0.43	0.12	0.71	$0.35 \pm 0.05$	R	70 VA R
		2.48	0.24	0.27	0.43	0.12	0.71	$0.35 \pm 0.05$	V	70 VA V
		2.48	0.24	0.44	0.61	0.12	0.71	$0.53 \pm 0.05$	R	70 VS R
		2.48	0.24	0.44	0.61	0.12	0.71	$0.53 \pm 0.05$	V	70 VS V
2.87	3.07	2.64	0.24	0.27	0.43	0.12	0.71	$0.35 \pm 0.05$	R	75 VA R
		2.64	0.24	0.27	0.43	0.12	0.71	$0.35 \pm 0.05$	V	75 VA V
		2.64	0.24	0.44	0.61	0.12	0.71	$0.53 \pm 0.05$	R	75 VS R
		2.64	0.24	0.44	0.61	0.12	0.71	$0.53 \pm 0.05$	V	75 VS V
3.07	3.27	2.83	0.24	0.27	0.43	0.12	0.71	$0.35 \pm 0.05$	R	80 VA R
		2.83	0.24	0.27	0.43	0.12	0.71	$0.35 \pm 0.05$	V	80 VA V
		2.83	0.24	0.44	0.61	0.12	0.71	$0.53 \pm 0.05$	R	80 VS R
		2.83	0.24	0.44	0.61	0.12	0.71	$0.53 \pm 0.05$	V	80 VS V
3.27	3.46	2.99	0.24	0.27	0.43	0.12	0.71	$0.35 \pm 0.05$	R	85 VA R
		2.99	0.24	0.27	0.43	0.12	0.71	$0.35 \pm 0.05$	V	85 VA V
		2.99	0.24	0.44	0.61	0.12	0.71	$0.53 \pm 0.05$	R	85 VS R
		2.99	0.24	0.44	0.61	0.12	0.71	$0.53 \pm 0.05$	V	85 VS V
3.46	3.66	3.19	0.24	0.27	0.43	0.12	0.71	$0.35 \pm 0.05$	R	90 VA R
		3.19	0.24	0.27	0.43	0.12	0.71	$0.35 \pm 0.05$	V	90 VA V
		3.19	0.24	0.44	0.61	0.12	0.71	$0.53 \pm 0.05$	R	90 VS R
		3.19	0.24	0.44	0.61	0.12	0.71	$0.53 \pm 0.05$	V	90 VS V
3.66	3.86	3.35	0.24	0.27	0.43	0.12	0.71	$0.35 \pm 0.05$	R	95 VA R
		3.35	0.24	0.27	0.43	0.12	0.71	$0.35 \pm 0.05$	V	95 VA V
		3.35	0.24	0.44	0.61	0.12	0.71	$0.53 \pm 0.05$	R	95 VS R
		3.35	0.24	0.44	0.61	0.12	0.71	$0.53 \pm 0.05$	V	95 VS V

Dimensions		Seal inside diameter, free state d	Nominal seal height c	Seal seat width b <sub>1</sub>	Nominal seal width b	Clearance D <sub>1</sub> (= d <sub>1</sub> + max)	Counter-face D (= d <sub>1</sub> + min)	Seal fitted width B <sub>1</sub>	Lip code	Designation
Shaft diameter range d <sub>1</sub> over	incl.									
in.		in.								
<b>3.86</b>	<b>4.13</b>	3.54	0.24	0.27	0.43	0.12	0.71	0.35 ± 0.05	R	<b>100 VA R</b>
		3.54	0.24	0.27	0.43	0.12	0.71	0.35 ± 0.05	V	<b>100 VA V</b>
		3.54	0.24	0.44	0.61	0.12	0.71	0.53 ± 0.05	R	<b>100 VS R</b>
		3.54	0.24	0.44	0.61	0.12	0.71	0.53 ± 0.05	V	<b>100 VS V</b>
<b>4.13</b>	<b>4.53</b>	3.90	0.26	0.24	0.41	0.20	0.79	0.31 ± 0.06	R	<b>110 VL R</b>
		3.90	0.26	0.24	0.41	0.20	0.79	0.31 ± 0.06	V	<b>110 VL V</b>
		3.90	0.28	0.31	0.50	0.16	0.83	0.41 ± 0.06	R	<b>110 VA R</b>
		3.90	0.28	0.31	0.50	0.16	0.83	0.41 ± 0.06	V	<b>110 VA V</b>
		3.90	0.28	0.52	0.71	0.16	0.83	0.61 ± 0.06	R	<b>110 VS R</b>
		3.90	0.28	0.52	0.71	0.16	0.83	0.61 ± 0.06	V	<b>110 VS V</b>
<b>4.53</b>	<b>4.92</b>	4.25	0.26	0.24	0.41	0.20	0.79	0.31 ± 0.06	R	<b>120 VL R</b>
		4.25	0.26	0.24	0.41	0.20	0.79	0.31 ± 0.06	V	<b>120 VL V</b>
		4.25	0.28	0.31	0.50	0.16	0.83	0.41 ± 0.06	R	<b>120 VA R</b>
		4.25	0.28	0.31	0.50	0.16	0.83	0.41 ± 0.06	V	<b>120 VA V</b>
		4.25	0.28	0.52	0.71	0.16	0.83	0.61 ± 0.06	R	<b>120 VS R</b>
		4.25	0.28	0.52	0.71	0.16	0.83	0.61 ± 0.06	V	<b>120 VS V</b>
<b>4.92</b>	<b>5.31</b>	4.61	0.26	0.24	0.41	0.20	0.79	0.31 ± 0.06	R	<b>130 VL R</b>
		4.61	0.26	0.24	0.41	0.20	0.79	0.31 ± 0.06	V	<b>130 VL V</b>
		4.61	0.28	0.31	0.50	0.16	0.83	0.41 ± 0.06	R	<b>130 VA R</b>
		4.61	0.28	0.31	0.50	0.16	0.83	0.41 ± 0.06	V	<b>130 VA V</b>
		4.61	0.28	0.52	0.71	0.16	0.83	0.61 ± 0.06	R	<b>130 VS R</b>
		4.61	0.28	0.52	0.71	0.16	0.83	0.61 ± 0.06	V	<b>130 VS V</b>
<b>5.31</b>	<b>5.71</b>	4.96	0.26	0.24	0.41	0.20	0.79	0.31 ± 0.06	R	<b>140 VL R</b>
		4.96	0.26	0.24	0.41	0.20	0.79	0.31 ± 0.06	V	<b>140 VL V</b>
		4.96	0.28	0.31	0.50	0.16	0.83	0.41 ± 0.06	R	<b>140 VA R</b>
		4.96	0.28	0.31	0.50	0.16	0.83	0.41 ± 0.06	V	<b>140 VA V</b>
		4.96	0.28	0.52	0.71	0.16	0.83	0.61 ± 0.06	R	<b>140 VS R</b>
		4.96	0.28	0.52	0.71	0.16	0.83	0.61 ± 0.06	V	<b>140 VS V</b>
<b>5.71</b>	<b>6.10</b>	5.31	0.26	0.24	0.41	0.20	0.79	0.31 ± 0.06	R	<b>150 VL R</b>
		5.31	0.26	0.24	0.41	0.20	0.79	0.31 ± 0.06	V	<b>150 VL V</b>
		5.31	0.28	0.31	0.50	0.16	0.83	0.41 ± 0.06	R	<b>150 VA R</b>
		5.31	0.28	0.31	0.50	0.16	0.83	0.41 ± 0.06	V	<b>150 VA V</b>
		5.31	0.28	0.52	0.71	0.16	0.83	0.61 ± 0.06	R	<b>150 VS R</b>
		5.31	0.28	0.52	0.71	0.16	0.83	0.61 ± 0.06	V	<b>150 VS V</b>
<b>6.10</b>	<b>6.50</b>	5.67	0.26	0.24	0.41	0.20	0.79	0.31 ± 0.06	R	<b>160 VL R</b>
		5.67	0.26	0.24	0.41	0.20	0.79	0.31 ± 0.06	V	<b>160 VL V</b>
		5.67	0.31	0.35	0.57	0.16	0.94	0.47 ± 0.07	R	<b>160 VA R</b>
		5.67	0.31	0.35	0.57	0.16	0.94	0.47 ± 0.07	V	<b>160 VA V</b>
		5.67	0.31	0.59	0.81	0.16	0.94	0.71 ± 0.07	R	<b>160 VS R</b>
		5.67	0.31	0.59	0.81	0.16	0.94	0.71 ± 0.07	V	<b>160 VS V</b>
<b>6.50</b>	<b>6.89</b>	6.02	0.26	0.24	0.41	0.20	0.79	0.31 ± 0.06	R	<b>170 VL R</b>
		6.02	0.26	0.24	0.41	0.20	0.79	0.31 ± 0.06	V	<b>170 VL V</b>
		6.02	0.31	0.35	0.57	0.16	0.94	0.47 ± 0.07	R	<b>170 VA R</b>
		6.02	0.31	0.35	0.57	0.16	0.94	0.47 ± 0.07	V	<b>170 VA V</b>
		6.02	0.31	0.59	0.81	0.16	0.94	0.71 ± 0.07	R	<b>170 VS R</b>
		6.02	0.31	0.59	0.81	0.16	0.94	0.71 ± 0.07	V	<b>170 VS V</b>
<b>6.89</b>	<b>7.28</b>	6.38	0.26	0.24	0.41	0.20	0.79	0.31 ± 0.06	R	<b>180 VL R</b>
		6.38	0.26	0.24	0.41	0.20	0.79	0.31 ± 0.06	V	<b>180 VL V</b>
		6.38	0.31	0.35	0.57	0.16	0.94	0.47 ± 0.07	R	<b>180 VA R</b>
		6.38	0.31	0.35	0.57	0.16	0.94	0.47 ± 0.07	V	<b>180 VA V</b>
		6.38	0.31	0.59	0.81	0.16	0.94	0.71 ± 0.07	R	<b>180 VS R</b>
		6.38	0.31	0.59	0.81	0.16	0.94	0.71 ± 0.07	V	<b>180 VS V</b>
<b>7.28</b>	<b>7.68</b>	6.73	0.26	0.24	0.41	0.20	0.79	0.31 ± 0.06	R	<b>190 VL R</b>
		6.73	0.26	0.24	0.41	0.20	0.79	0.31 ± 0.06	V	<b>190 VL V</b>
		6.73	0.31	0.35	0.57	0.16	0.94	0.47 ± 0.07	R	<b>190 VA R</b>
		6.73	0.31	0.35	0.57	0.16	0.94	0.47 ± 0.07	V	<b>190 VA V</b>
		6.73	0.31	0.59	0.81	0.16	0.94	0.71 ± 0.07	R	<b>190 VS R</b>
		6.73	0.31	0.59	0.81	0.16	0.94	0.71 ± 0.07	V	<b>190 VS V</b>



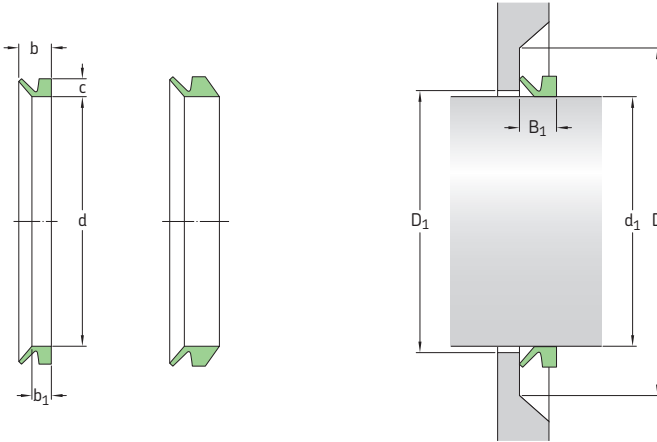
**V-ring seals – inch dimensions, globally valid outside North American market**  
**d<sub>1</sub> 7.48 – 15.55 in.**



Dimensions		Seal inside diameter, free state d	Nominal seal height c	Seal seat width b <sub>1</sub>	Nominal seal width b	Clearance D <sub>1</sub> (= d <sub>1</sub> +) max	Counter-face D (= d <sub>1</sub> +) min	Seal fitted width B <sub>1</sub>	Lip code	Designation
Shaft diameter range d <sub>1</sub> over	incl.									
in.		in.								
<b>7.68</b>	<b>8.27</b>	7.17	0.26	0.24	0.41	0.20	0.79	0.31 ± 0.06	R	<b>200 VL R</b>
		7.17	0.26	0.24	0.41	0.20	0.79	0.31 ± 0.06	V	<b>200 VL V</b>
		7.09	0.31	0.35	0.57	0.16	0.94	0.47 ± 0.07	R	<b>199 VA R</b>
		7.09	0.31	0.35	0.57	0.16	0.94	0.47 ± 0.07	V	<b>199 VA V</b>
		7.09	0.31	0.59	0.81	0.16	0.94	0.71 ± 0.07	R	<b>199 VS R</b>
		7.09	0.31	0.59	0.81	0.16	0.94	0.71 ± 0.07	V	<b>199 VS V</b>
<b>7.48</b>	<b>8.27</b>	7.09	0.59	0.56	0.98	0.39	1.77	0.79 ± 0.16	R	<b>200 VA R</b>
		7.09	0.59	0.56	0.98	0.39	1.77	0.79 ± 0.16	V	<b>200 VA V</b>
<b>8.27</b>	<b>9.17</b>	7.80	0.26	0.24	0.41	0.20	0.79	0.31 ± 0.06	R	<b>220 VL R</b>
		7.80	0.26	0.24	0.41	0.20	0.79	0.31 ± 0.06	V	<b>220 VL V</b>
		7.80	0.59	0.56	0.98	0.39	1.77	0.79 ± 0.16	R	<b>220 VA R</b>
		7.80	0.59	0.56	0.98	0.39	1.77	0.79 ± 0.16	V	<b>220 VA V</b>
<b>9.17</b>	<b>10.24</b>	8.86	0.26	0.24	0.41	0.20	0.79	0.31 ± 0.06	R	<b>250 VL R</b>
		8.86	0.26	0.24	0.41	0.20	0.79	0.31 ± 0.06	V	<b>250 VL V</b>
<b>9.25</b>	<b>10.43</b>	8.86	0.59	0.56	0.98	0.39	1.77	0.79 ± 0.16	R	<b>250 VA R</b>
		8.86	0.59	0.56	0.98	0.39	1.77	0.79 ± 0.16	V	<b>250 VA V</b>
<b>10.24</b>	<b>11.22</b>	9.72	0.26	0.24	0.41	0.20	0.79	0.31 ± 0.06	R	<b>275 VL R</b>
		9.72	0.26	0.24	0.41	0.20	0.79	0.31 ± 0.06	V	<b>275 VL V</b>
<b>10.43</b>	<b>11.42</b>	9.72	0.59	0.56	0.98	0.39	1.77	0.79 ± 0.16	R	<b>275 VA R</b>
		9.72	0.59	0.56	0.98	0.39	1.77	0.79 ± 0.16	V	<b>275 VA V</b>
<b>11.22</b>	<b>12.20</b>	10.63	0.26	0.24	0.41	0.20	0.79	0.31 ± 0.06	R	<b>300 VL R</b>
		10.63	0.26	0.24	0.41	0.20	0.79	0.31 ± 0.06	V	<b>300 VL V</b>
<b>11.42</b>	<b>12.20</b>	10.63	0.59	0.56	0.98	0.39	1.77	0.79 ± 0.16	R	<b>300 VA R</b>
		10.63	0.59	0.56	0.98	0.39	1.77	0.79 ± 0.16	V	<b>300 VA V</b>
<b>11.81</b>	<b>12.01</b>	11.57	1.18	1.28	2.56	0.94	4.53	1.97 ± 0.47	R	<b>300 VE R</b>
		11.57	0.83	1.28	2.56	0.94	4.53	1.97 ± 0.47	R	<b>300 VRME R</b>
<b>12.01</b>	<b>12.20</b>	11.77	1.18	1.28	2.56	0.94	4.53	1.97 ± 0.47	R	<b>305 VE R</b>
		11.77	0.83	1.28	2.56	0.94	4.53	1.97 ± 0.47	R	<b>305 VRME R</b>
<b>12.20</b>	<b>13.19</b>	11.50	0.26	0.24	0.41	0.20	0.79	0.31 ± 0.06	R	<b>325 VL R</b>
		11.50	0.26	0.24	0.41	0.20	0.79	0.31 ± 0.06	V	<b>325 VL V</b>
		11.50	0.59	0.56	0.98	0.39	1.77	0.79 ± 0.16	R	<b>325 VA R</b>

Dimensions		Seal inside diameter, free state d	Nominal seal height c	Seal seat width b <sub>1</sub>	Nominal seal width b	Clearance D <sub>1</sub> (= d <sub>1</sub> +) max	Counter-face D (= d <sub>1</sub> +) min	Seal fitted width B <sub>1</sub>	Lip code	Designation
Shaft diameter range d <sub>1</sub> over	incl.									
in.		in.							-	-
<b>12.20</b> cont.	<b>13.19</b>	11.50	0.59	0.56	0.98	0.39	1.77	0.79 ± 0.16	V	<b>325 VA V</b>
		11.97	1.18	1.28	2.56	0.94	4.53	1.97 ± 0.47	R	<b>310 VE R</b>
		11.97	0.83	1.28	2.56	0.94	4.53	1.97 ± 0.47	R	<b>310 VRME R</b>
<b>12.40</b>	<b>12.60</b>	12.17	1.18	1.28	2.56	0.94	4.53	1.97 ± 0.47	R	<b>315 VE R</b>
		12.17	0.83	1.28	2.56	0.94	4.53	1.97 ± 0.47	R	<b>315 VRME R</b>
<b>12.60</b>	<b>12.80</b>	12.36	1.18	1.28	2.56	0.94	4.53	1.97 ± 0.47	R	<b>320 VE R</b>
		12.36	0.83	1.28	2.56	0.94	4.53	1.97 ± 0.47	R	<b>320 VRME R</b>
<b>12.80</b>	<b>12.99</b>	12.56	1.18	1.28	2.56	0.94	4.53	1.97 ± 0.47	R	<b>325 VE R</b>
		12.56	0.83	1.28	2.56	0.94	4.53	1.97 ± 0.47	R	<b>325 VRME R</b>
<b>12.99</b>	<b>13.19</b>	12.72	1.18	1.28	2.56	0.94	4.53	1.97 ± 0.47	R	<b>330 VE R</b>
		12.72	0.83	1.28	2.56	0.94	4.53	1.97 ± 0.47	R	<b>330 VRME R</b>
<b>13.19</b>	<b>14.37</b>	12.40	0.26	0.24	0.41	0.20	0.79	0.31 ± 0.06	R	<b>350 VL R</b>
		12.40	0.26	0.24	0.41	0.20	0.79	0.31 ± 0.06	V	<b>350 VL V</b>
		12.40	0.59	0.56	0.98	0.39	1.77	0.79 ± 0.16	R	<b>350 VA R</b>
		12.40	0.59	0.56	0.98	0.39	1.77	0.79 ± 0.16	V	<b>350 VA V</b>
<b>13.19</b>	<b>13.39</b>	12.91	1.18	1.28	2.56	0.94	4.53	1.97 ± 0.47	R	<b>335 VE R</b>
		12.91	0.83	1.28	2.56	0.94	4.53	1.97 ± 0.47	R	<b>335 VRME R</b>
<b>13.39</b>	<b>13.58</b>	13.11	1.18	1.28	2.56	0.94	4.53	1.97 ± 0.47	R	<b>340 VE R</b>
		12.91	0.83	1.28	2.56	0.94	4.53	1.97 ± 0.47	R	<b>340 VRME R</b>
<b>13.58</b>	<b>13.78</b>	13.31	1.18	1.28	2.56	0.94	4.53	1.97 ± 0.47	R	<b>345 VE R</b>
		13.31	0.83	1.28	2.56	0.94	4.53	1.97 ± 0.47	R	<b>345 VRME R</b>
<b>13.78</b>	<b>13.98</b>	13.50	1.18	1.28	2.56	0.94	4.53	1.97 ± 0.47	R	<b>350 VE R</b>
		13.50	0.83	1.28	2.56	0.94	4.53	1.97 ± 0.47	R	<b>350 VRME R</b>
<b>13.98</b>	<b>14.17</b>	13.66	1.18	1.28	2.56	0.94	4.53	1.97 ± 0.47	R	<b>355 VE R</b>
		13.66	0.83	1.28	2.56	0.94	4.53	1.97 ± 0.47	R	<b>355 VRME R</b>
<b>14.17</b>	<b>14.37</b>	13.86	1.18	1.28	2.56	0.94	4.53	1.97 ± 0.47	R	<b>360 VE R</b>
		14.06	0.83	1.28	2.56	0.94	4.53	1.97 ± 0.47	R	<b>360 VRME R</b>
<b>14.37</b>	<b>15.16</b>	13.27	0.26	0.24	0.41	0.20	0.79	0.31 ± 0.06	R	<b>375 VL R</b>
		13.27	0.26	0.24	0.41	0.20	0.79	0.31 ± 0.06	V	<b>375 VL V</b>
<b>14.37</b>	<b>15.35</b>	13.27	0.59	0.56	0.98	0.39	1.77	0.79 ± 0.16	R	<b>375 VA R</b>
		13.27	0.59	0.56	0.98	0.39	1.77	0.79 ± 0.16	V	<b>375 VA V</b>
<b>14.37</b>	<b>14.57</b>	14.06	1.18	1.28	2.56	0.94	4.53	1.97 ± 0.47	R	<b>365 VE R</b>
<b>14.57</b>	<b>14.76</b>	14.25	1.18	1.28	2.56	0.94	4.53	1.97 ± 0.47	R	<b>370 VE R</b>
		14.25	0.83	1.28	2.56	0.94	4.53	1.97 ± 0.47	R	<b>370 VRME R</b>
<b>14.76</b>	<b>14.96</b>	14.45	1.18	1.28	2.56	0.94	4.53	1.97 ± 0.47	R	<b>375 VE R</b>
		14.45	0.83	1.28	2.56	0.94	4.53	1.97 ± 0.47	R	<b>375 VRME R</b>
<b>14.96</b>	<b>15.16</b>	14.61	1.18	1.28	2.56	0.94	4.53	1.97 ± 0.47	R	<b>380 VE R</b>
		14.61	0.83	1.28	2.56	0.94	4.53	1.97 ± 0.47	R	<b>380 VRME R</b>
<b>15.16</b>	<b>16.14</b>	14.17	0.26	0.24	0.41	0.20	0.79	0.31 ± 0.06	R	<b>400 VL R</b>
		14.17	0.26	0.24	0.41	0.20	0.79	0.31 ± 0.06	V	<b>400 VL V</b>
<b>15.35</b>	<b>16.93</b>	14.17	0.59	0.56	0.98	0.39	1.77	0.79 ± 0.16	R	<b>400 VA R</b>
		14.17	0.59	0.56	0.98	0.39	1.77	0.79 ± 0.16	V	<b>400 VA V</b>
<b>15.16</b>	<b>15.35</b>	14.80	1.18	1.28	2.56	0.94	4.53	1.97 ± 0.47	R	<b>385 VE R</b>
		14.80	0.83	1.28	2.56	0.94	4.53	1.97 ± 0.47	R	<b>385 VRME R</b>
<b>15.35</b>	<b>15.55</b>	15.00	1.18	1.28	2.56	0.94	4.53	1.97 ± 0.47	R	<b>390 VE R</b>
		15.00	0.83	1.28	2.56	0.94	4.53	1.97 ± 0.47	R	<b>390 VRME R</b>

**V-ring seals – inch dimensions, globally valid outside North American market**  
**d<sub>1</sub> 15.55 – 21.26 in.**

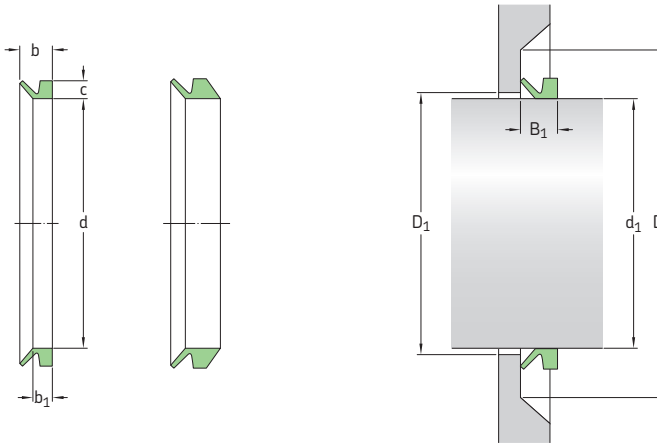


Dimensions		Seal inside diameter, free state d	Nominal seal height c	Seal seat width b <sub>1</sub>	Nominal seal width b	Clearance D <sub>1</sub> (= d <sub>1</sub> +) max	Counter-face D (= d <sub>1</sub> +) min	Seal fitted width B <sub>1</sub>	Lip code	Designation
Shaft diameter range d <sub>1</sub> over	incl.									
in.		in.								
15.55	15.75	15.20 15.20	1.18 0.83	1.28 1.28	2.56 2.56	0.94 0.94	4.53 4.53	1.97 ± 0.47 1.97 ± 0.47	R R	395 VE R 395 VRME R
15.75	15.94	15.39 15.39	1.18 0.83	1.28 1.28	2.56 2.56	0.94 0.94	4.53 4.53	1.97 ± 0.47 1.97 ± 0.47	R R	400 VE R 400 VRME R
15.94	16.14	15.59 15.59	1.18 0.83	1.28 1.28	2.56 2.56	0.94 0.94	4.53 4.53	1.97 ± 0.47 1.97 ± 0.47	R R	405 VE R 405 VRME R
16.14	16.34	15.79 15.79	1.18 0.83	1.28 1.28	2.56 2.56	0.94 0.94	4.53 4.53	1.97 ± 0.47 1.97 ± 0.47	R R	410 VE R 410 VRME R
16.34	16.54	15.94 15.94	1.18 0.83	1.28 1.28	2.56 2.56	0.94 0.94	4.53 4.53	1.97 ± 0.47 1.97 ± 0.47	R R	415 VE R 415 VRME R
16.54	16.73	16.14 16.14	1.18 0.83	1.28 1.28	2.56 2.56	0.94 0.94	4.53 4.53	1.97 ± 0.47 1.97 ± 0.47	R R	420 VE R 420 VRME R
16.73	16.93	16.34 16.34	1.18 0.83	1.28 1.28	2.56 2.56	0.94 0.94	4.53 4.53	1.97 ± 0.47 1.97 ± 0.47	R R	425 VE R 425 VRME R
16.14	17.32	15.04 15.04	0.26 0.26	0.24 0.24	0.41 0.41	0.20 0.20	0.79 0.79	0.31 ± 0.06 0.31 ± 0.06	R V	425 VL R 425 VL V
17.32	18.70	15.94 15.94	0.26 0.26	0.24 0.24	0.41 0.41	0.20 0.20	0.79 0.79	0.31 ± 0.06 0.31 ± 0.06	R V	450 VL R 450 VL V
16.93	18.90	15.94 15.94	0.59 0.59	0.56 0.56	0.98 0.98	0.39 0.39	1.77 1.77	0.79 ± 0.16 0.79 ± 0.16	R V	450 VA R 450 VA V
16.93	17.13	16.54 16.54	1.18 0.83	1.28 1.28	2.56 2.56	0.94 0.94	4.53 4.53	1.97 ± 0.47 1.97 ± 0.47	R R	430 VE R 430 VRME R
17.13	17.32	16.73 16.73	1.18 0.83	1.28 1.28	2.56 2.56	0.94 0.94	4.53 4.53	1.97 ± 0.47 1.97 ± 0.47	R R	435 VE R 435 VRME R
17.32	17.52	16.89 16.89	1.18 0.83	1.28 1.28	2.56 2.56	0.94 0.94	4.53 4.53	1.97 ± 0.47 1.97 ± 0.47	R R	440 VE R 440 VRME R
17.52	17.72	17.09 17.09	1.18 0.83	1.28 1.28	2.56 2.56	0.94 0.94	4.53 4.53	1.97 ± 0.47 1.97 ± 0.47	R R	445 VE R 445 VRME R

Dimensions		Seal inside diameter, free state d	Nominal seal height c	Seal seat width b <sub>1</sub>	Nominal seal width b	Clearance D <sub>1</sub> (= d <sub>1</sub> +) max	Counter-face D (= d <sub>1</sub> +) min	Seal fitted width B <sub>1</sub>	Lip code	Designation
Shaft diameter range d <sub>1</sub> over	incl.									
in.		in.							-	-
<b>17.72</b>	<b>17.91</b>	17.28 17.28	1.18 0.83	1.28 1.28	2.56 2.56	0.94 0.94	4.53 4.53	1.97 ± 0.47 1.97 ± 0.47	R R	<b>450 VE R</b> <b>450 VRME R</b>
<b>17.91</b>	<b>18.11</b>	17.48 17.48	1.18 0.83	1.28 1.28	2.56 2.56	0.94 0.94	4.53 4.53	1.97 ± 0.47 1.97 ± 0.47	R R	<b>455 VE R</b> <b>455 VRME R</b>
<b>18.11</b>	<b>18.31</b>	17.64 17.64	1.18 0.83	1.28 1.28	2.56 2.56	0.94 0.94	4.53 4.53	1.97 ± 0.47 1.97 ± 0.47	R R	<b>460 VE R</b> <b>460 VRME R</b>
<b>18.31</b>	<b>18.50</b>	17.83 17.83	1.18 0.83	1.28 1.28	2.56 2.56	0.94 0.94	4.53 4.53	1.97 ± 0.47 1.97 ± 0.47	R R	<b>465 VE R</b> <b>465 VRME R</b>
<b>18.50</b>	<b>18.70</b>	18.03 18.03	1.18 0.83	1.28 1.28	2.56 2.56	0.94 0.94	4.53 4.53	1.97 ± 0.47 1.97 ± 0.47	R R	<b>470 VE R</b> <b>470 VRME R</b>
<b>18.70</b>	<b>18.90</b>	18.23 18.23	1.18 0.83	1.28 1.28	2.56 2.56	0.94 0.94	4.53 4.53	1.97 ± 0.47 1.97 ± 0.47	R R	<b>475 VE R</b> <b>475 VRME R</b>
<b>18.70</b>	<b>20.08</b>	17.72 17.72	0.26 0.26	0.24 0.24	0.41 0.41	0.20 0.20	0.79 0.79	0.31 ± 0.06 0.31 ± 0.06	R V	<b>500 VL R</b> <b>500 VL V</b>
<b>20.08</b>	<b>21.26</b>	18.58 18.58	0.26 0.26	0.24 0.24	0.41 0.41	0.20 0.20	0.79 0.79	0.31 ± 0.06 0.31 ± 0.06	R V	<b>525 VL R</b> <b>525 VL V</b>
<b>18.90</b>	<b>20.87</b>	17.72 17.72	0.59 0.59	0.56 0.56	0.98 0.98	0.39 0.39	1.77 1.77	0.79 ± 0.16 0.79 ± 0.16	R V	<b>500 VA R</b> <b>500 VA V</b>
<b>18.90</b>	<b>19.09</b>	18.43 18.43	1.18 0.83	1.28 1.28	2.56 2.56	0.94 0.94	4.53 4.53	1.97 ± 0.47 1.97 ± 0.47	R R	<b>480 VE R</b> <b>480 VRME R</b>
<b>19.09</b>	<b>19.29</b>	18.62 18.62	1.18 0.83	1.28 1.28	2.56 2.56	0.94 0.94	4.53 4.53	1.97 ± 0.47 1.97 ± 0.47	R R	<b>485 VE R</b> <b>485 VRME R</b>
<b>19.29</b>	<b>19.49</b>	18.82 18.82	1.18 0.83	1.28 1.28	2.56 2.56	0.94 0.94	4.53 4.53	1.97 ± 0.47 1.97 ± 0.47	R R	<b>490 VE R</b> <b>490 VRME R</b>
<b>19.49</b>	<b>19.69</b>	19.02 19.02	1.18 0.83	1.28 1.28	2.56 2.56	0.94 0.94	4.53 4.53	1.97 ± 0.47 1.97 ± 0.47	R R	<b>495 VE R</b> <b>495 VRME R</b>
<b>19.69</b>	<b>19.88</b>	19.21 19.21	1.18 0.83	1.28 1.28	2.56 2.56	0.94 0.94	4.53 4.53	1.97 ± 0.47 1.97 ± 0.47	R R	<b>500 VE R</b> <b>500 VRME R</b>
<b>19.88</b>	<b>20.08</b>	19.41 19.41	1.18 0.83	1.28 1.28	2.56 2.56	0.94 0.94	4.53 4.53	1.97 ± 0.47 1.97 ± 0.47	R R	<b>505 VE R</b> <b>505 VRME R</b>
<b>20.08</b>	<b>20.28</b>	19.57 19.57	1.18 0.83	1.28 1.28	2.56 2.56	0.94 0.94	4.53 4.53	1.97 ± 0.47 1.97 ± 0.47	R R	<b>510 VE R</b> <b>510 VRME R</b>
<b>20.28</b>	<b>20.47</b>	19.76 19.76	1.18 0.83	1.28 1.28	2.56 2.56	0.94 0.94	4.53 4.53	1.97 ± 0.47 1.97 ± 0.47	R R	<b>515 VE R</b> <b>515 VRME R</b>
<b>20.47</b>	<b>20.67</b>	19.96 19.96	1.18 0.83	1.28 1.28	2.56 2.56	0.94 0.94	4.53 4.53	1.97 ± 0.47 1.97 ± 0.47	R R	<b>520 VE R</b> <b>520 VRME R</b>
<b>20.67</b>	<b>20.87</b>	20.16 20.16	1.18 0.83	1.28 1.28	2.56 2.56	0.94 0.94	4.53 4.53	1.97 ± 0.47 1.97 ± 0.47	R R	<b>525 VE R</b> <b>525 VRME R</b>
<b>21.26</b>	<b>22.64</b>	19.49 19.49	0.26 0.26	0.24 0.24	0.41 0.41	0.20 0.20	0.79 0.79	0.31 ± 0.06 0.31 ± 0.06	R V	<b>550 VL R</b> <b>550 VL V</b>
<b>20.87</b>	<b>22.83</b>	19.49 19.49	0.59 0.59	0.56 0.56	0.98 0.98	0.39 0.39	1.77 1.77	0.79 ± 0.16 0.79 ± 0.16	R V	<b>550 VA R</b> <b>550 VA V</b>
<b>20.87</b>	<b>21.06</b>	20.35 20.35	1.18 0.83	1.28 1.28	2.56 2.56	0.94 0.94	4.53 4.53	1.97 ± 0.47 1.97 ± 0.47	R R	<b>530 VE R</b> <b>530 VRME R</b>
<b>21.06</b>	<b>21.26</b>	20.51 20.51	1.18 0.83	1.28 1.28	2.56 2.56	0.94 0.94	4.53 4.53	1.97 ± 0.47 1.97 ± 0.47	R R	<b>535 VE R</b> <b>535 VRME R</b>

# V-ring seals – inch dimensions, globally valid outside North American market

$d_1$  21.26 – 29.84 in.

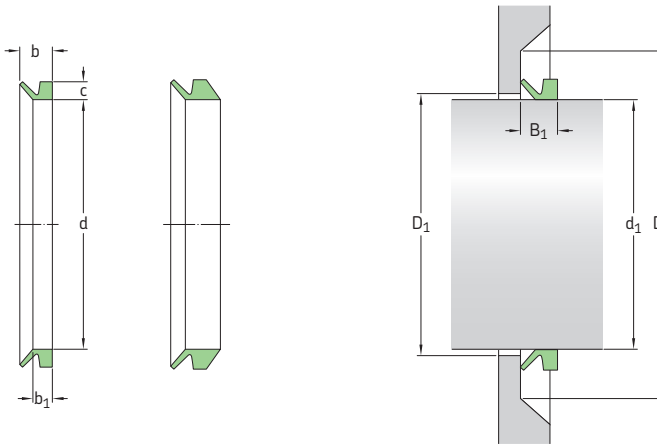


Dimensions		Seal inside diameter, free state $d$	Nominal seal height $c$	Seal seat width $b_1$	Nominal seal width $b$	Clearance $D_1 (= d_1 +)$ max	Counter-face $D (= d_1 +)$ min	Seal fitted width $B_1$	Lip code	Designation
Shaft diameter range $d_1$ over	incl.									
in.	in.	in.								
21.26	21.46	20.71 20.71	1.18 0.83	1.28 1.28	2.56 2.56	0.94 0.94	4.53 4.53	1.97 ± 0.47 1.97 ± 0.47	R R	540 VE R 540 VRME R
21.46	21.65	20.91 20.91	1.18 0.83	1.28 1.28	2.56 2.56	0.94 0.94	4.53 4.53	1.97 ± 0.47 1.97 ± 0.47	R R	545 VE R 545 VRME R
21.65	21.85	21.10 21.10	1.18 0.83	1.28 1.28	2.56 2.56	0.94 0.94	4.53 4.53	1.97 ± 0.47 1.97 ± 0.47	R R	550 VE R 550 VRME R
21.85	22.05	21.30 21.30	1.18 0.83	1.28 1.28	2.56 2.56	0.94 0.94	4.53 4.53	1.97 ± 0.47 1.97 ± 0.47	R R	555 VE R 555 VRME R
22.05	22.24	21.50 21.50	1.18 0.83	1.28 1.28	2.56 2.56	0.94 0.94	4.53 4.53	1.97 ± 0.47 1.97 ± 0.47	R R	560 VE R 560 VRME R
22.24	22.44	21.65 21.65	1.18 0.83	1.28 1.28	2.56 2.56	0.94 0.94	4.53 4.53	1.97 ± 0.47 1.97 ± 0.47	R R	565 VE R 565 VRME R
22.44	22.64	21.85 21.85	1.18 0.83	1.28 1.28	2.56 2.56	0.94 0.94	4.53 4.53	1.97 ± 0.47 1.97 ± 0.47	R R	570 VE R 570 VRME R
22.64	22.83	22.05 22.05	1.18 0.83	1.28 1.28	2.56 2.56	0.94 0.94	4.53 4.53	1.97 ± 0.47 1.97 ± 0.47	R R	575 VE R 575 VRME R
22.64	24.61	21.26 21.26	0.26 0.26	0.24 0.24	0.41 0.41	0.20 0.20	0.79 0.79	0.31 ± 0.06 0.31 ± 0.06	R V	600 VL R 600 VL V
22.83	24.80	21.26 21.26	0.59 0.59	0.56 0.56	0.98 0.98	0.39 0.39	1.77 1.77	0.79 ± 0.16 0.79 ± 0.16	R V	600 VA R 600 VA V
22.83	23.03	22.24 22.24	1.18 0.83	1.28 1.28	2.56 2.56	0.94 0.94	4.53 4.53	1.97 ± 0.47 1.97 ± 0.47	R R	580 VE R 580 VRME R
23.03	23.23	22.44 22.44	1.18 0.83	1.28 1.28	2.56 2.56	0.94 0.94	4.53 4.53	1.97 ± 0.47 1.97 ± 0.47	R R	585 VE R 585 VRME R
23.23	23.62	22.64 22.64	1.18 0.83	1.28 1.28	2.56 2.56	0.94 0.94	4.53 4.53	1.97 ± 0.47 1.97 ± 0.47	R R	590 VE R 590 VRME R
23.62	24.02	22.91 22.91	1.18 0.83	1.28 1.28	2.56 2.56	0.94 0.94	4.53 4.53	1.97 ± 0.47 1.97 ± 0.47	R R	600 VE R 600 VRME R

Dimensions		Seal inside diameter, free state d	Nominal seal height c	Seal seat width b <sub>1</sub>	Nominal seal width b	Clearance D <sub>1</sub> (= d <sub>1</sub> +) max	Counter-face D (= d <sub>1</sub> +) min	Seal fitted width B <sub>1</sub>	Lip code	Designation
Shaft diameter range d <sub>1</sub> over	incl.									
in.		in.								
24.02	24.41	23.31	1.18	1.28	2.56	0.94	4.53	1.97 ± 0.47	R	610 VE R
		23.31	0.83	1.28	2.56	0.94	4.53	1.97 ± 0.47	R	610 VRME R
24.41	24.80	23.70	1.18	1.28	2.56	0.94	4.53	1.97 ± 0.47	R	620 VE R
		23.70	0.83	1.28	2.56	0.94	4.53	1.97 ± 0.47	R	620 VRME R
24.21	26.57	23.62	0.26	0.24	0.41	0.20	0.79	0.31 ± 0.06	R	650 VL R
		23.62	0.26	0.24	0.41	0.20	0.79	0.31 ± 0.06	V	650 VL V
24.80	26.18	23.62	0.59	0.56	0.98	0.39	1.77	0.79 ± 0.16	R	650 VA R
		23.62	0.59	0.56	0.98	0.39	1.77	0.79 ± 0.16	V	650 VA V
24.80	25.20	24.09	1.18	1.28	2.56	0.94	4.53	1.97 ± 0.47	R	630 VE R
		24.09	0.83	1.28	2.56	0.94	4.53	1.97 ± 0.47	R	630 VRME R
25.20	25.59	24.45	1.18	1.28	2.56	0.94	4.53	1.97 ± 0.47	R	640 VE R
		24.45	0.83	1.28	2.56	0.94	4.53	1.97 ± 0.47	R	640 VRME R
25.59	25.98	24.84	1.18	1.28	2.56	0.94	4.53	1.97 ± 0.47	R	650 VE R
		24.84	0.83	1.28	2.56	0.94	4.53	1.97 ± 0.47	R	650 VRME R
25.98	26.38	25.20	1.18	1.28	2.56	0.94	4.53	1.97 ± 0.47	R	660 VE R
		25.20	0.83	1.28	2.56	0.94	4.53	1.97 ± 0.47	R	660 VRME R
26.57	27.95	24.80	0.26	0.24	0.41	0.20	0.79	0.31 ± 0.06	R	700 VL R
		24.80	0.26	0.24	0.41	0.20	0.79	0.31 ± 0.06	V	700 VL V
26.18	27.76	24.80	0.59	0.56	0.98	0.39	1.77	0.79 ± 0.16	R	700 VA R
		24.80	0.59	0.56	0.98	0.39	1.77	0.79 ± 0.16	V	700 VA V
26.38	26.77	25.59	1.18	1.28	2.56	0.94	4.53	1.97 ± 0.47	R	670 VE R
		25.59	0.83	1.28	2.56	0.94	4.53	1.97 ± 0.47	R	670 VRME R
26.77	27.17	25.98	1.18	1.28	2.56	0.94	4.53	1.97 ± 0.47	R	680 VE R
		25.98	0.83	1.28	2.56	0.94	4.53	1.97 ± 0.47	R	680 VRME R
27.17	27.56	26.38	1.18	1.28	2.56	0.94	4.53	1.97 ± 0.47	R	690 VE R
		26.38	0.83	1.28	2.56	0.94	4.53	1.97 ± 0.47	R	690 VRME R
27.56	27.95	26.77	1.18	1.28	2.56	0.94	4.53	1.97 ± 0.47	R	700 VE R
		26.77	0.83	1.28	2.56	0.94	4.53	1.97 ± 0.47	R	700 VRME R
27.95	29.13	26.38	0.26	0.24	0.41	0.20	0.79	0.31 ± 0.06	R	725 VL R
		26.38	0.26	0.24	0.41	0.20	0.79	0.31 ± 0.06	V	725 VL V
27.76	29.33	26.38	0.59	0.56	0.98	0.39	1.77	0.79 ± 0.16	R	725 VA R
		26.38	0.59	0.56	0.98	0.39	1.77	0.79 ± 0.16	V	725 VA V
27.95	28.35	27.13	1.18	1.28	2.56	0.94	4.53	1.97 ± 0.47	R	710 VE R
		27.13	0.83	1.28	2.56	0.94	4.53	1.97 ± 0.47	R	710 VRME R
28.35	28.74	27.52	1.18	1.28	2.56	0.94	4.53	1.97 ± 0.47	R	720 VE R
		27.52	0.83	1.28	2.56	0.94	4.53	1.97 ± 0.47	R	720 VRME R
28.74	29.13	27.91	1.18	1.28	2.56	0.94	4.53	1.97 ± 0.47	R	730 VE R
		27.91	0.83	1.28	2.56	0.94	4.53	1.97 ± 0.47	R	730 VRME R
29.13	29.53	28.27	1.18	1.28	2.56	0.94	4.53	1.97 ± 0.47	R	740 VE R
		28.27	0.83	1.28	2.56	0.94	4.53	1.97 ± 0.47	R	740 VRME R
29.13	30.51	27.76	0.26	0.24	0.41	0.20	0.79	0.31 ± 0.06	R	750 VL R
		27.76	0.26	0.24	0.41	0.20	0.79	0.31 ± 0.06	V	750 VL V
29.33	30.91	27.76	0.59	0.56	0.98	0.39	1.77	0.79 ± 0.16	R	750 VA R
		27.76	0.59	0.56	0.98	0.39	1.77	0.79 ± 0.16	V	750 VA V
29.53	29.84	28.66	1.18	1.28	2.56	0.94	4.53	1.97 ± 0.47	R	750 VE R
		28.66	0.83	1.28	2.56	0.94	4.53	1.97 ± 0.47	R	750 VRME R

# V-ring seals – inch dimensions, globally valid outside North American market

$d_1$  29.84 – 41.93 in.

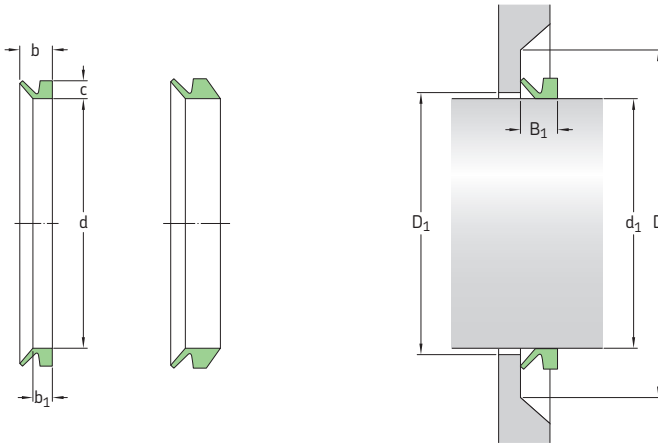


Dimensions		Seal inside diameter, free state d	Nominal seal height c	Seal seat width $b_1$	Nominal seal width b	Clearance $D_1 (= d_1 +)$ max	Counter-face $D (= d_1 +)$ min	Seal fitted width $B_1$	Lip code	Designation
Shaft diameter range $d_1$ over	incl.									
in.		in.								
29.84	30.16	28.94	1.18	1.28	2.56	0.94	4.53	1.97 ± 0.47	R	760 VE R
		28.94	0.83	1.28	2.56	0.94	4.53	1.97 ± 0.47	R	760 VRME R
30.16	30.47	29.25	1.18	1.28	2.56	0.94	4.53	1.97 ± 0.47	R	770 VE R
		29.25	0.83	1.28	2.56	0.94	4.53	1.97 ± 0.47	R	770 VRME R
30.47	30.83	29.57	1.18	1.28	2.56	0.94	4.53	1.97 ± 0.47	R	780 VE R
		29.57	0.83	1.28	2.56	0.94	4.53	1.97 ± 0.47	R	780 VRME R
30.83	31.18	29.88	1.18	1.28	2.56	0.94	4.53	1.97 ± 0.47	R	790 VE R
		29.88	0.83	1.28	2.56	0.94	4.53	1.97 ± 0.47	R	790 VRME R
30.51	32.48	29.33	0.26	0.24	0.41	0.20	0.79	0.31 ± 0.06	R	800 VL R
		29.33	0.26	0.24	0.41	0.20	0.79	0.31 ± 0.06	V	800 VL V
30.91	32.68	29.33	0.59	0.56	0.98	0.39	1.77	0.79 ± 0.16	R	800 VA R
		29.33	0.59	0.56	0.98	0.39	1.77	0.79 ± 0.16	V	800 VA V
31.18	31.54	30.24	1.18	1.28	2.56	0.94	4.53	1.97 ± 0.47	R	800 VE R
		30.24	0.83	1.28	2.56	0.94	4.53	1.97 ± 0.47	R	800 VRME R
31.54	31.89	30.59	1.18	1.28	2.56	0.94	4.53	1.97 ± 0.47	R	810 VE R
		30.59	0.83	1.28	2.56	0.94	4.53	1.97 ± 0.47	R	810 VRME R
31.89	32.32	30.94	1.18	1.28	2.56	0.94	4.53	1.97 ± 0.47	R	820 VE R
		30.94	0.83	1.28	2.56	0.94	4.53	1.97 ± 0.47	R	820 VRME R
32.32	32.72	31.34	1.18	1.28	2.56	0.94	4.53	1.97 ± 0.47	R	830 VE R
		31.34	0.83	1.28	2.56	0.94	4.53	1.97 ± 0.47	R	830 VRME R
32.48	34.45	30.91	0.26	0.24	0.41	0.20	0.79	0.31 ± 0.06	R	850 VL R
		30.91	0.26	0.24	0.41	0.20	0.79	0.31 ± 0.06	V	850 VL V
32.68	34.45	30.91	0.59	0.56	0.98	0.39	1.77	0.79 ± 0.16	R	850 VA R
		30.91	0.59	0.56	0.98	0.39	1.77	0.79 ± 0.16	V	850 VA V
32.72	33.11	31.69	1.18	1.28	2.56	0.94	4.53	1.97 ± 0.47	R	840 VE R
		31.69	0.83	1.28	2.56	0.94	4.53	1.97 ± 0.47	R	840 VRME R
33.11	33.50	32.05	1.18	1.28	2.56	0.94	4.53	1.97 ± 0.47	R	850 VE R
		32.05	0.83	1.28	2.56	0.94	4.53	1.97 ± 0.47	R	850 VRME R

Dimensions		Seal inside diameter, free state d	Nominal seal height c	Seal seat width b <sub>1</sub>	Nominal seal width b	Clearance D <sub>1</sub> (= d <sub>1</sub> +) max	Counter-face D (= d <sub>1</sub> +) min	Seal fitted width B <sub>1</sub>	Lip code	Designation
Shaft diameter range d <sub>1</sub> over	incl.									
in.		in.							-	-
33.50	33.90	32.44	1.18	1.28	2.56	0.94	4.53	1.97 ± 0.47	R	860 VE R
		32.44	0.83	1.28	2.56	0.94	4.53	1.97 ± 0.47	R	860 VRME R
33.90	34.29	32.80	1.18	1.28	2.56	0.94	4.53	1.97 ± 0.47	R	870 VE R
		32.80	0.83	1.28	2.56	0.94	4.53	1.97 ± 0.47	R	870 VRME R
34.29	34.72	33.19	1.18	1.28	2.56	0.94	4.53	1.97 ± 0.47	R	880 VE R
		33.19	0.83	1.28	2.56	0.94	4.53	1.97 ± 0.47	R	880 VRME R
34.45	36.42	32.48	0.26	0.24	0.41	0.20	0.79	0.31 ± 0.06	R	900 VL R
		32.48	0.26	0.24	0.41	0.20	0.79	0.31 ± 0.06	V	900 VL V
34.45	36.22	32.48	0.59	0.56	0.98	0.39	1.77	0.79 ± 0.16	R	900 VA R
		32.48	0.59	0.56	0.98	0.39	1.77	0.79 ± 0.16	V	900 VA V
34.72	35.12	33.58	1.18	1.28	2.56	0.94	4.53	1.97 ± 0.47	R	890 VE R
		33.58	0.83	1.28	2.56	0.94	4.53	1.97 ± 0.47	R	890 VRME R
35.12	35.91	34.29	1.18	1.28	2.56	0.94	4.53	1.97 ± 0.47	R	900 VE R
		34.29	0.83	1.28	2.56	0.94	4.53	1.97 ± 0.47	R	900 VRME R
35.91	36.30	34.65	1.18	1.28	2.56	0.94	4.53	1.97 ± 0.47	R	920 VE R
		34.65	0.83	1.28	2.56	0.94	4.53	1.97 ± 0.47	R	920 VRME R
36.42	38.39	34.06	0.26	0.24	0.41	0.20	0.79	0.31 ± 0.06	R	950 VL R
		34.06	0.26	0.24	0.41	0.20	0.79	0.31 ± 0.06	V	950 VL V
36.22	37.99	34.06	0.59	0.56	0.98	0.39	1.77	0.79 ± 0.16	R	950 VA R
		34.06	0.59	0.56	0.98	0.39	1.77	0.79 ± 0.16	V	950 VA V
36.30	36.73	35.04	1.18	1.28	2.56	0.94	4.53	1.97 ± 0.47	R	930 VE R
		35.04	0.83	1.28	2.56	0.94	4.53	1.97 ± 0.47	R	930 VRME R
36.73	37.17	35.43	1.18	1.28	2.56	0.94	4.53	1.97 ± 0.47	R	940 VE R
		35.43	0.83	1.28	2.56	0.94	4.53	1.97 ± 0.47	R	940 VRME R
37.17	37.60	35.87	1.18	1.28	2.56	0.94	4.53	1.97 ± 0.47	R	950 VE R
		35.87	0.83	1.28	2.56	0.94	4.53	1.97 ± 0.47	R	950 VRME R
37.60	38.03	36.26	1.18	1.28	2.56	0.94	4.53	1.97 ± 0.47	R	960 VE R
		36.26	0.83	1.28	2.56	0.94	4.53	1.97 ± 0.47	R	960 VRME R
38.39	40.35	35.83	0.26	0.24	0.41	0.20	0.79	0.31 ± 0.06	R	1000 VL R
		35.83	0.26	0.24	0.41	0.20	0.79	0.31 ± 0.06	V	1000 VL V
37.99	39.96	35.83	0.59	0.56	0.98	0.39	1.77	0.79 ± 0.16	R	1000 VA R
		35.83	0.59	0.56	0.98	0.39	1.77	0.79 ± 0.16	V	1000 VA V
38.03	38.46	36.69	1.18	1.28	2.56	0.94	4.53	1.97 ± 0.47	R	970 VE R
		36.69	0.83	1.28	2.56	0.94	4.53	1.97 ± 0.47	R	970 VRME R
38.46	38.90	37.09	1.18	1.28	2.56	0.94	4.53	1.97 ± 0.47	R	980 VE R
		37.09	0.83	1.28	2.56	0.94	4.53	1.97 ± 0.47	R	980 VRME R
38.90	39.33	37.52	1.18	1.28	2.56	0.94	4.53	1.97 ± 0.47	R	990 VE R
		37.52	0.83	1.28	2.56	0.94	4.53	1.97 ± 0.47	R	990 VRME R
39.33	39.76	37.91	1.18	1.28	2.56	0.94	4.53	1.97 ± 0.47	R	1000 VE R
		37.91	0.83	1.28	2.56	0.94	4.53	1.97 ± 0.47	R	1000 VRME R
39.76	40.35	38.31	1.18	1.28	2.56	0.94	4.53	1.97 ± 0.47	R	1020 VE R
		38.31	0.83	1.28	2.56	0.94	4.53	1.97 ± 0.47	R	1020 VRME R
40.35	42.32	37.60	0.26	0.24	0.41	0.20	0.79	0.31 ± 0.06	R	1050 VL R
		37.60	0.26	0.24	0.41	0.20	0.79	0.31 ± 0.06	V	1050 VL V
39.96	41.93	37.60	0.59	0.56	0.98	0.39	1.77	0.79 ± 0.16	R	1050 VA R



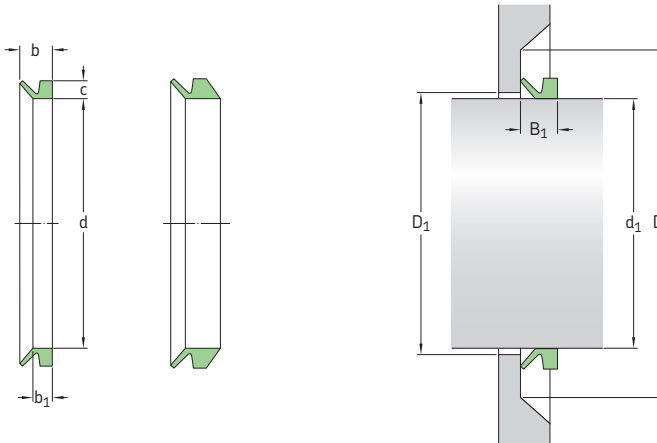
**V-ring seals – inch dimensions, globally valid outside North American market**  
 $d_1$  40.35 – 59.65 in.



Dimensions		Seal inside diameter, free state $d$	Nominal seal height $c$	Seal seat width $b_1$	Nominal seal width $b$	Clearance $D_1 (= d_1 +)$ max	Counter-face $D (= d_1 +)$ min	Seal fitted width $B_1$	Lip code	Designation
Shaft diameter range $d_1$ over	incl.									
in.		in.							-	-
40.35	41.14	38.98 38.98	1.18 0.83	1.28 1.28	2.56 2.56	0.94 0.94	4.53 4.53	1.97 ± 0.47 1.97 ± 0.47	R R	1040 VE R 1040 VRME R
41.14	41.93	39.69 39.69	1.18 0.83	1.28 1.28	2.56 2.56	0.94 0.94	4.53 4.53	1.97 ± 0.47 1.97 ± 0.47	R R	1060 VE R 1060 VRME R
42.32	44.29	39.37 39.37	0.26 0.26	0.24 0.24	0.41 0.41	0.20 0.20	0.79 0.79	0.31 ± 0.06 0.31 ± 0.06	R V	1100 VL R 1100 VL V
41.93	43.90	39.37 40.43	0.59 1.18	0.56 1.28	0.98 2.56	0.39 0.94	1.77 4.53	0.79 ± 0.16 1.97 ± 0.47	R R	1100 VA R 1080 VE R
41.93	42.72	40.43	0.83	1.28	2.56	0.94	4.53	1.97 ± 0.47	R	1080 VRME R
42.72	43.50	41.14 41.14	1.18 0.83	1.28 1.28	2.56 2.56	0.94 0.94	4.53 4.53	1.97 ± 0.47 1.97 ± 0.47	R R	1100 VE R 1100 VRME R
43.50	44.29	41.93 41.93	1.18 0.83	1.28 1.28	2.56 2.56	0.94 0.94	4.53 4.53	1.97 ± 0.47 1.97 ± 0.47	R R	1120 VE R 1120 VRME R
44.29	46.26	41.14 41.14	0.26 0.26	0.24 0.24	0.41 0.41	0.20 0.20	0.79 0.79	0.31 ± 0.06 0.31 ± 0.06	R V	1150 VL R 1150 VL V
43.90	45.87	41.14	0.59	0.56	0.98	0.39	1.77	0.79 ± 0.16	R	1150 VA R
44.29	45.08	42.68 42.68	1.18 0.83	1.28 1.28	2.56 2.56	0.94 0.94	4.53 4.53	1.97 ± 0.47 1.97 ± 0.47	R R	1140 VE R 1140 VRME R
45.08	45.87	43.43 43.43	1.18 0.83	1.28 1.28	2.56 2.56	0.94 0.94	4.53 4.53	1.97 ± 0.47 1.97 ± 0.47	R R	1160 VE R 1160 VRME R
46.26	48.23	42.91 42.91	0.26 0.26	0.24 0.24	0.41 0.41	0.20 0.20	0.79 0.79	0.31 ± 0.06 0.31 ± 0.06	R V	1200 VL R 1200 VL V
45.87	47.83	42.91	0.59	0.56	0.98	0.39	1.77	0.79 ± 0.16	R	1200 VA R
45.87	46.65	44.13 44.13	1.18 0.83	1.28 1.28	2.56 2.56	0.94 0.94	4.53 4.53	1.97 ± 0.47 1.97 ± 0.47	R R	1180 VE R 1180 VRME R
46.65	47.44	44.84 44.84	1.18 0.83	1.28 1.28	2.56 2.56	0.94 0.94	4.53 4.53	1.97 ± 0.47 1.97 ± 0.47	R R	1200 VE R 1200 VRME R

Dimensions		Seal inside diameter, free state d	Nominal seal height c	Seal seat width b <sub>1</sub>	Nominal seal width b	Clearance D <sub>1</sub> (= d <sub>1</sub> + max)	Counter-face D (= d <sub>1</sub> + min)	Seal fitted width B <sub>1</sub>	Lip code	Designation
Shaft diameter range d <sub>1</sub> over	incl.									
in.		in.							-	-
47.44	48.23	45.55	1.18	1.28	2.56	0.94	4.53	1.97 ± 0.47	R	1220 VE R
		45.55	0.83	1.28	2.56	0.94	4.53	1.97 ± 0.47	R	1220 VRME R
48.23	50.20	44.69	0.26	0.24	0.41	0.20	0.79	0.31 ± 0.06	R	1250 VL R
		44.69	0.26	0.24	0.41	0.20	0.79	0.31 ± 0.06	V	1250 VL V
47.83	50.00	44.69	0.59	0.56	0.98	0.39	1.77	0.79 ± 0.16	R	1250 VA R
48.23	49.02	46.30	1.18	1.28	2.56	0.94	4.53	1.97 ± 0.47	R	1240 VE R
		46.30	0.83	1.28	2.56	0.94	4.53	1.97 ± 0.47	R	1240 VRME R
49.02	50.00	47.05	1.18	1.28	2.56	0.94	4.53	1.97 ± 0.47	R	1260 VE R
		47.05	0.83	1.28	2.56	0.94	4.53	1.97 ± 0.47	R	1260 VRME R
50.00	50.98	47.95	1.18	1.28	2.56	0.94	4.53	1.97 ± 0.47	R	1280 VE R
		47.95	0.83	1.28	2.56	0.94	4.53	1.97 ± 0.47	R	1280 VRME R
50.20	52.17	46.46	0.26	0.24	0.41	0.20	0.79	0.31 ± 0.06	R	1300 VL R
		46.46	0.26	0.24	0.41	0.20	0.79	0.31 ± 0.06	V	1300 VL V
50.00	51.97	46.46	0.59	0.56	0.98	0.39	1.77	0.79 ± 0.16	R	1300 VA R
50.98	51.77	48.82	1.18	1.28	2.56	0.94	4.53	1.97 ± 0.47	R	1300 VE R
		48.82	0.83	1.28	2.56	0.94	4.53	1.97 ± 0.47	R	1300 VRME R
51.77	52.76	49.57	1.18	1.28	2.56	0.94	4.53	1.97 ± 0.47	R	1325 VE R
		49.57	0.83	1.28	2.56	0.94	4.53	1.97 ± 0.47	R	1325 VRME R
52.17	54.13	48.23	0.26	0.24	0.41	0.20	0.79	0.31 ± 0.06	R	1350 VL R
		48.23	0.26	0.24	0.41	0.20	0.79	0.31 ± 0.06	V	1350 VL V
51.97	53.94	48.23	0.59	0.56	0.98	0.39	1.77	0.79 ± 0.16	R	1350 VA R
52.76	53.74	50.43	1.18	1.28	2.56	0.94	4.53	1.97 ± 0.47	R	1350 VE R
		50.43	0.83	1.28	2.56	0.94	4.53	1.97 ± 0.47	R	1350 VRME R
53.74	54.72	51.38	1.18	1.28	2.56	0.94	4.53	1.97 ± 0.47	R	1375 VE R
		51.38	0.83	1.28	2.56	0.94	4.53	1.97 ± 0.47	R	1375 VRME R
54.13	56.10	50.00	0.26	0.24	0.41	0.20	0.79	0.31 ± 0.06	R	1400 VL R
		50.00	0.26	0.24	0.41	0.20	0.79	0.31 ± 0.06	V	1400 VL V
53.94	55.91	50.00	0.59	0.56	0.98	0.39	1.77	0.79 ± 0.16	R	1400 VA R
54.72	55.71	52.28	1.18	1.28	2.56	0.94	4.53	1.97 ± 0.47	R	1400 VE R
		52.28	0.83	1.28	2.56	0.94	4.53	1.97 ± 0.47	R	1400 VRME R
55.71	56.69	53.15	1.18	1.28	2.56	0.94	4.53	1.97 ± 0.47	R	1425 VE R
		53.15	0.83	1.28	2.56	0.94	4.53	1.97 ± 0.47	R	1425 VRME R
56.10	58.07	51.77	0.26	0.24	0.41	0.20	0.79	0.31 ± 0.06	R	1450 VL R
		51.77	0.26	0.24	0.41	0.20	0.79	0.31 ± 0.06	V	1450 VL V
55.91	57.87	51.77	0.59	0.56	0.98	0.39	1.77	0.79 ± 0.16	R	1450 VA R
56.69	57.68	54.09	1.18	1.28	2.56	0.94	4.53	1.97 ± 0.47	R	1450 VE R
		54.09	0.83	1.28	2.56	0.94	4.53	1.97 ± 0.47	R	1450 VRME R
57.68	58.66	55.00	1.18	1.28	2.56	0.94	4.53	1.97 ± 0.47	R	1475 VE R
		55.00	0.83	1.28	2.56	0.94	4.53	1.97 ± 0.47	R	1475 VRME R
58.07	60.04	53.54	0.26	0.24	0.41	0.20	0.79	0.31 ± 0.06	R	1500 VL R
		53.54	0.26	0.24	0.41	0.20	0.79	0.31 ± 0.06	V	1500 VL V
57.87	59.84	53.54	0.59	0.56	0.98	0.39	1.77	0.79 ± 0.16	R	1500 VA R
58.66	59.65	55.87	1.18	1.28	2.56	0.94	4.53	1.97 ± 0.47	R	1500 VE R
		55.87	0.83	1.28	2.56	0.94	4.53	1.97 ± 0.47	R	1500 VRME R

**V-ring seals – inch dimensions, globally valid outside North American market**  
**d<sub>1</sub> 59.65 – 79.53 in.**

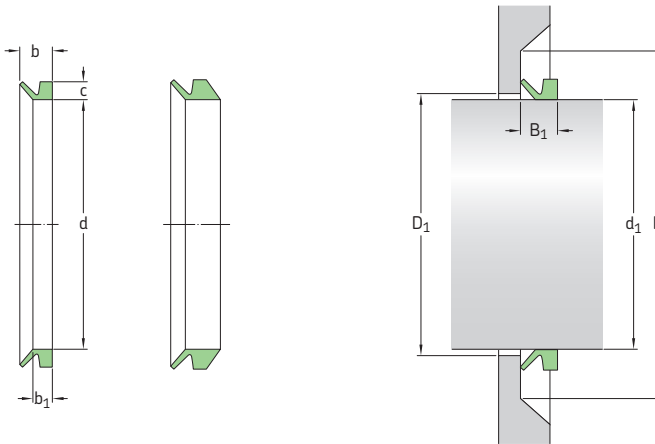


Dimensions		Seal inside diameter, free state d	Nominal seal height c	Seal seat width b <sub>1</sub>	Nominal seal width b	Clearance D <sub>1</sub> (= d <sub>1</sub> +) max	Counter-face D (= d <sub>1</sub> +) min	Seal fitted width B <sub>1</sub>	Lip code	Designation
Shaft diameter range d <sub>1</sub> over	incl.									
in.		in.								
59.65	60.63	56.81	1.18	1.28	2.56	0.94	4.53	1.97 ± 0.47	R	1525 VE R 1525 VRME R
		56.81	0.83	1.28	2.56	0.94	4.53	1.97 ± 0.47	R	
60.04	62.01	55.31	0.26	0.24	0.41	0.20	0.79	0.31 ± 0.06	R	1550 VL R 1550 VL V
		55.31	0.26	0.24	0.41	0.20	0.79	0.31 ± 0.06	V	
59.84	61.81	55.31	0.59	0.56	0.98	0.39	1.77	0.79 ± 0.16	R	1550 VA R
60.63	61.81	57.76	1.18	1.28	2.56	0.94	4.53	1.97 ± 0.47	R	1550 VE R 1550 VRME R
		57.76	0.83	1.28	2.56	0.94	4.53	1.97 ± 0.47	R	
61.81	62.99	58.86	1.18	1.28	2.56	0.94	4.53	1.97 ± 0.47	R	1575 VE R 1575 VRME R
		58.86	0.83	1.28	2.56	0.94	4.53	1.97 ± 0.47	R	
62.01	63.98	57.09	0.26	0.24	0.41	0.20	0.79	0.31 ± 0.06	R	1600 VL R 1600 VL V
		57.09	0.26	0.24	0.41	0.20	0.79	0.31 ± 0.06	V	
61.81	63.78	57.09	0.59	0.56	0.98	0.39	1.77	0.79 ± 0.16	R	1600 VA R
62.99	64.57	60.00	1.18	1.28	2.56	0.94	4.53	1.97 ± 0.47	R	1600 VE R 1600 VRME R
		60.00	0.83	1.28	2.56	0.94	4.53	1.97 ± 0.47	R	
63.98	65.94	58.86	0.26	0.24	0.41	0.20	0.79	0.31 ± 0.06	R	1650 VL R 1650 VL V
		58.86	0.26	0.24	0.41	0.20	0.79	0.31 ± 0.06	V	
63.78	65.75	58.86	0.59	0.56	0.98	0.39	1.77	0.79 ± 0.16	R	1650 VA R
64.57	66.14	61.38	1.18	1.28	2.56	0.94	4.53	1.97 ± 0.47	R	1650 VE R 1650 VRME R
		61.38	0.83	1.28	2.56	0.94	4.53	1.97 ± 0.47	R	
65.94	67.91	60.63	0.26	0.24	0.41	0.20	0.79	0.31 ± 0.06	R	1700 VL R 1700 VL V
		60.63	0.26	0.24	0.41	0.20	0.79	0.31 ± 0.06	V	
65.75	67.72	60.63	0.59	0.56	0.98	0.39	1.77	0.79 ± 0.16	R	1700 VA R
66.14	67.72	62.83	1.18	1.28	2.56	0.94	4.53	1.97 ± 0.47	R	1700 VE R 1700 VRME R
		62.83	0.83	1.28	2.56	0.94	4.53	1.97 ± 0.47	R	
67.91	69.88	62.40	0.26	0.24	0.41	0.20	0.79	0.31 ± 0.06	R	1750 VL R 1750 VL V
		62.40	0.26	0.24	0.41	0.20	0.79	0.31 ± 0.06	V	

Dimensions		Seal inside diameter, free state d	Nominal seal height c	Seal seat width b <sub>1</sub>	Nominal seal width b	Clearance D <sub>1</sub> (= d <sub>1</sub> +) max	Counter-face D (= d <sub>1</sub> +) min	Seal fitted width B <sub>1</sub>	Lip code	Designation
Shaft diameter range d <sub>1</sub> over	incl.									
in.		in.							-	-
<b>67.72</b>	<b>69.69</b>	62.40	0.59	0.56	0.98	0.39	1.77	0.79 ± 0.16	R	<b>1750 VA R</b>
<b>67.72</b>	<b>69.49</b>	64.25 64.25	1.18 0.83	1.28 1.28	2.56 2.56	0.94 0.94	4.53 4.53	1.97 ± 0.47 1.97 ± 0.47	R R	<b>1750 VE R</b> <b>1750 VRME R</b>
<b>69.49</b>	<b>71.26</b>	65.79 65.79	1.18 0.83	1.28 1.28	2.56 2.56	0.94 0.94	4.53 4.53	1.97 ± 0.47 1.97 ± 0.47	R R	<b>1800 VE R</b> <b>1800 VRME R</b>
<b>69.88</b>	<b>71.85</b>	64.17 64.17	0.26 0.26	0.24 0.24	0.41 0.41	0.20 0.20	0.79 0.79	0.31 ± 0.06 0.31 ± 0.06	R V	<b>1800 VL R</b> <b>1800 VL V</b>
<b>69.69</b>	<b>71.65</b>	64.17	0.59	0.56	0.98	0.39	1.77	0.79 ± 0.16	R	<b>1800 VA R</b>
<b>71.26</b>	<b>73.03</b>	67.48 67.48	1.18 0.83	1.28 1.28	2.56 2.56	0.94 0.94	4.53 4.53	1.97 ± 0.47 1.97 ± 0.47	R R	<b>1850 VE R</b> <b>1850 VRME R</b>
<b>71.85</b>	<b>73.82</b>	65.94 65.94	0.26 0.26	0.24 0.24	0.41 0.41	0.20 0.20	0.79 0.79	0.31 ± 0.06 0.31 ± 0.06	R V	<b>1850 VL R</b> <b>1850 VL V</b>
<b>71.65</b>	<b>73.62</b>	65.94	0.59	0.56	0.98	0.39	1.77	0.79 ± 0.16	R	<b>1850 VA R</b>
<b>73.03</b>	<b>75.00</b>	69.02 69.02	1.18 0.83	1.28 1.28	2.56 2.56	0.94 0.94	4.53 4.53	1.97 ± 0.47 1.97 ± 0.47	R R	<b>1900 VE R</b> <b>1900 VRME R</b>
<b>73.82</b>	<b>75.79</b>	67.72 67.72	0.26 0.26	0.24 0.24	0.41 0.41	0.20 0.20	0.79 0.79	0.31 ± 0.06 0.31 ± 0.06	R V	<b>1900 VL R</b> <b>1900 VL V</b>
<b>73.62</b>	<b>75.59</b>	67.72	0.59	0.56	0.98	0.39	1.77	0.79 ± 0.16	R	<b>1900 VA R</b>
<b>75.00</b>	<b>76.97</b>	70.63 70.63	1.18 0.83	1.28 1.28	2.56 2.56	0.94 0.94	4.53 4.53	1.97 ± 0.47 1.97 ± 0.47	R R	<b>1950 VE R</b> <b>1950 VRME R</b>
<b>75.79</b>	<b>77.76</b>	69.49	0.26	0.24	0.41	0.20	0.79	0.31 ± 0.06	R	<b>1950 VL R</b>
<b>75.79</b>	<b>77.76</b>	69.49 69.49	0.26 0.59	0.24 0.56	0.41 0.98	0.20 0.39	0.79 1.77	0.31 ± 0.06 0.79 ± 0.16	V R	<b>1950 VL V</b> <b>1950 VA R</b>
<b>76.97</b>	<b>79.13</b>	72.60 72.60	1.18 0.83	1.28 1.28	2.56 2.56	0.94 0.94	4.53 4.53	1.97 ± 0.47 1.97 ± 0.47	R R	<b>2000 VE R</b> <b>2000 VRME R</b>
<b>77.76</b>	<b>79.72</b>	71.26 71.26	0.26 0.26	0.24 0.24	0.41 0.41	0.20 0.20	0.79 0.79	0.31 ± 0.06 0.31 ± 0.06	R V	<b>2000 VL R</b> <b>2000 VL V</b>
<b>77.56</b>	<b>79.53</b>	71.26	0.59	0.56	0.98	0.39	1.77	0.79 ± 0.16	R	<b>2000 VA R</b>

# V-ring seals – metric dimensions, for North American market

$d_1$  2,7 – 53 mm

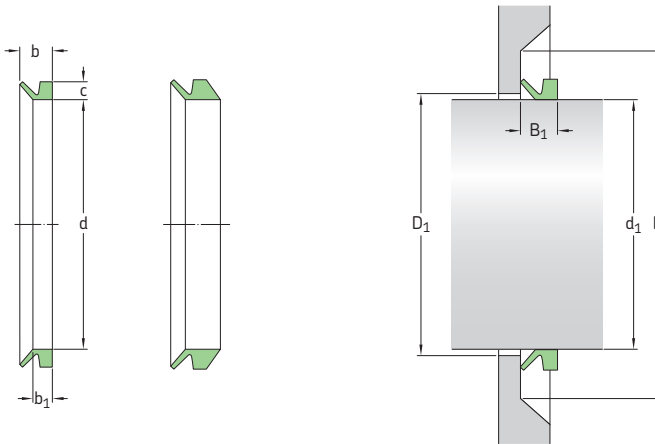


Dimensions		Seal inside diameter, free state $d$	Seal seat width $b_1$	Nominal seal width $b$	Nominal seal height $c$	Clearance $D_1$ max	Counterface $D$ min	Seal fitted width $B_1$	Design	Lip code	Designation code
Shaft diameter range $d_1$ over	incl.										
mm											
2,7	3,5	2,5	2,1	3	1,5	$d_1 + 1$	$d_1 + 4$	$2,5 \pm 0,3$	VR1	R	400030
		2,5	2,1	3	1,5	$d_1 + 1$	$d_1 + 4$	$2,5 \pm 0,3$	VR1	V	400034
3,5	4,5	3,2	2,4	3,7	2	$d_1 + 1$	$d_1 + 6$	$3 \pm 0,4$	VR1	R	400040
		3,2	2,4	3,7	2	$d_1 + 1$	$d_1 + 6$	$3 \pm 0,4$	VR1	V	400044
4,5	5,5	4	2,4	3,7	2	$d_1 + 1$	$d_1 + 6$	$3 \pm 0,4$	VR1	R	400050
		4	2,4	3,7	2	$d_1 + 1$	$d_1 + 6$	$3 \pm 0,4$	VR1	V	400054
		4	3,9	5,2	2	$d_1 + 1$	$d_1 + 6$	$4,5 \pm 0,4$	VR2	R	400051
		4	3,9	5,2	2	$d_1 + 1$	$d_1 + 6$	$4,5 \pm 0,4$	VR2	V	400055
5,5	6,5	5	2,4	3,7	2	$d_1 + 1$	$d_1 + 6$	$3 \pm 0,4$	VR1	R	400060
		5	2,4	3,7	2	$d_1 + 1$	$d_1 + 6$	$3 \pm 0,4$	VR1	V	400064
		5	3,9	5,2	2	$d_1 + 1$	$d_1 + 6$	$4,5 \pm 0,4$	VR2	R	400061
		5	3,9	5,2	2	$d_1 + 1$	$d_1 + 6$	$4,5 \pm 0,4$	VR2	V	400065
6,5	8	6	2,4	3,7	2	$d_1 + 1$	$d_1 + 6$	$3 \pm 0,4$	VR1	R	400070
		6	2,4	3,7	2	$d_1 + 1$	$d_1 + 6$	$3 \pm 0,4$	VR1	V	400074
		6	3,9	5,2	2	$d_1 + 1$	$d_1 + 6$	$4,5 \pm 0,4$	VR2	R	400071
		6	3,9	5,2	2	$d_1 + 1$	$d_1 + 6$	$4,5 \pm 0,4$	VR2	V	400075
8	9,5	7	2,4	3,7	2	$d_1 + 1$	$d_1 + 6$	$3 \pm 0,4$	VR1	R	400080
		7	2,4	3,7	2	$d_1 + 1$	$d_1 + 6$	$3 \pm 0,4$	VR1	V	400084
		7	3,9	5,2	2	$d_1 + 1$	$d_1 + 6$	$4,5 \pm 0,4$	VR2	R	400081
		7	3,9	5,2	2	$d_1 + 1$	$d_1 + 6$	$4,5 \pm 0,4$	VR2	V	400085
9,5	11,5	9	3,4	5,5	3	$d_1 + 1$	$d_1 + 9$	$4,5 \pm 0,6$	VR1	R	400100
		9	3,4	5,5	3	$d_1 + 1$	$d_1 + 9$	$4,5 \pm 0,6$	VR1	V	400104
		9	5,6	7,7	3	$d_1 + 1$	$d_1 + 9$	$6,7 \pm 0,6$	VR2	R	400101
		9	5,6	7,7	3	$d_1 + 1$	$d_1 + 9$	$6,7 \pm 0,6$	VR2	V	400105
11,5	12,5	10,5	3,4	5,5	3	$d_1 + 1$	$d_1 + 9$	$4,5 \pm 0,6$	VR1	R	400120
		10,5	3,4	5,5	3	$d_1 + 1$	$d_1 + 9$	$4,5 \pm 0,6$	VR1	V	400124
		10,5	5,6	7,7	3	$d_1 + 1$	$d_1 + 9$	$6,7 \pm 0,6$	VR2	R	400121
		10,5	5,6	7,7	3	$d_1 + 1$	$d_1 + 9$	$6,7 \pm 0,6$	VR2	V	400125
12,5	13,5	11,7	3,4	5,5	3	$d_1 + 1$	$d_1 + 9$	$4,5 \pm 0,6$	VR1	R	400130
		11,7	3,4	5,5	3	$d_1 + 1$	$d_1 + 9$	$4,5 \pm 0,6$	VR1	V	400134
13,5	15,5	12,5	3,4	5,5	3	$d_1 + 1$	$d_1 + 9$	$4,5 \pm 0,6$	VR1	R	400140
		12,5	3,4	5,5	3	$d_1 + 1$	$d_1 + 9$	$4,5 \pm 0,6$	VR1	V	400144

Dimensions		Seal inside diameter, free state d	Seal seat width b <sub>1</sub>	Nominal seal width b	Nominal seal height c	Clearance D <sub>1</sub> max	Counterface D min	Seal fitted width B <sub>1</sub>	Design	Lip code	Designation
Shaft diameter range d <sub>1</sub> over	incl.										
mm											
<b>13,5</b> cont.	<b>15,5</b>	12,5	5,6	7,7	3	d <sub>1</sub> +1	d <sub>1</sub> +9	6,7 ± 0,6	VR2	R	<b>400141</b>
		12,5	5,6	7,7	3	d <sub>1</sub> +1	d <sub>1</sub> +9	6,7 ± 0,6	VR2	V	<b>400145</b>
<b>15,5</b>	<b>17</b>	14	3,4	5,5	3	d <sub>1</sub> +1	d <sub>1</sub> +9	4,5 ± 0,6	VR1	R	<b>400160</b>
		14	3,4	5,5	3	d <sub>1</sub> +1	d <sub>1</sub> +9	4,5 ± 0,6	VR1	V	<b>400164</b>
<b>15,5</b>	<b>17,5</b>	14	5,6	7,7	3	d <sub>1</sub> +1	d <sub>1</sub> +9	6,7 ± 0,6	VR2	R	<b>400161</b>
		14	5,6	7,7	3	d <sub>1</sub> +1	d <sub>1</sub> +9	6,7 ± 0,6	VR2	V	<b>400165</b>
<b>17,5</b>	<b>19</b>	16	3,4	5,5	3	d <sub>1</sub> +1	d <sub>1</sub> +9	4,5 ± 0,6	VR1	R	<b>400180</b>
		16	3,4	5,5	3	d <sub>1</sub> +1	d <sub>1</sub> +9	4,5 ± 0,6	VR1	V	<b>400184</b>
		16	5,6	7,7	3	d <sub>1</sub> +1	d <sub>1</sub> +9	6,7 ± 0,6	VR2	R	<b>400181</b>
		16	5,6	7,7	3	d <sub>1</sub> +1	d <sub>1</sub> +9	6,7 ± 0,6	VR2	V	<b>400185</b>
<b>19</b>	<b>21</b>	18	4,7	7,5	4	d <sub>1</sub> +2	d <sub>1</sub> +12	6 ± 0,8	VR1	R	<b>400200</b>
		18	4,7	7,5	4	d <sub>1</sub> +2	d <sub>1</sub> +12	6 ± 0,8	VR1	V	<b>400204</b>
		18	7,9	10,5	4	d <sub>1</sub> +2	d <sub>1</sub> +12	9 ± 0,8	VR2	R	<b>400201</b>
		18	7,9	10,5	4	d <sub>1</sub> +2	d <sub>1</sub> +12	9 ± 0,8	VR2	V	<b>400205</b>
<b>21</b>	<b>24</b>	20	4,7	7,5	4	d <sub>1</sub> +2	d <sub>1</sub> +12	6 ± 0,8	VR1	R	<b>400220</b>
		20	4,7	7,5	4	d <sub>1</sub> +2	d <sub>1</sub> +12	6 ± 0,8	VR1	V	<b>400224</b>
		20	7,9	10,5	4	d <sub>1</sub> +2	d <sub>1</sub> +12	9 ± 0,8	VR2	R	<b>400221</b>
		20	7,9	10,5	4	d <sub>1</sub> +2	d <sub>1</sub> +12	9 ± 0,8	VR2	V	<b>400225</b>
<b>24</b>	<b>27</b>	22	4,7	7,5	4	d <sub>1</sub> +2	d <sub>1</sub> +12	6 ± 0,8	VR1	R	<b>400250</b>
		22	4,7	7,5	4	d <sub>1</sub> +2	d <sub>1</sub> +12	6 ± 0,8	VR1	V	<b>400254</b>
		22	7,9	10,5	4	d <sub>1</sub> +2	d <sub>1</sub> +12	9 ± 0,8	VR2	R	<b>400251</b>
		22	7,9	10,5	4	d <sub>1</sub> +2	d <sub>1</sub> +12	9 ± 0,8	VR2	V	<b>400255</b>
<b>27</b>	<b>29</b>	25	4,7	7,5	4	d <sub>1</sub> +2	12	6 ± 0,8	VR1	R	<b>400280</b>
		25	4,7	7,5	4	d <sub>1</sub> +2	d <sub>1</sub> +12	6 ± 0,8	VR1	V	<b>400284</b>
		25	7,9	10,5	4	d <sub>1</sub> +2	d <sub>1</sub> +12	9 ± 0,8	VR2	R	<b>400281</b>
		25	7,9	10,5	4	d <sub>1</sub> +2	d <sub>1</sub> +12	9 ± 0,8	VR2	V	<b>400285</b>
<b>29</b>	<b>31</b>	27	4,7	7,5	4	d <sub>1</sub> +2	d <sub>1</sub> +12	6 ± 0,8	VR1	R	<b>400300</b>
		27	4,7	7,5	4	d <sub>1</sub> +2	d <sub>1</sub> +12	6 ± 0,8	VR1	V	<b>400304</b>
		27	7,9	10,5	4	d <sub>1</sub> +2	d <sub>1</sub> +12	9 ± 0,8	VR2	R	<b>400301</b>
		27	7,9	10,5	4	d <sub>1</sub> +2	d <sub>1</sub> +12	9 ± 0,8	VR2	V	<b>400305</b>
<b>31</b>	<b>33</b>	29	4,7	7,5	4	d <sub>1</sub> +2	d <sub>1</sub> +12	6 ± 0,8	VR1	R	<b>400320</b>
		29	4,7	7,5	4	d <sub>1</sub> +2	d <sub>1</sub> +12	6 ± 0,8	VR1	V	<b>400324</b>
		29	7,9	10,5	4	d <sub>1</sub> +2	d <sub>1</sub> +12	9 ± 0,8	VR2	R	<b>400321</b>
		29	7,9	10,5	4	d <sub>1</sub> +2	d <sub>1</sub> +12	9 ± 0,8	VR2	V	<b>400325</b>
<b>33</b>	<b>36</b>	31	4,7	7,5	4	d <sub>1</sub> +2	d <sub>1</sub> +12	6 ± 0,8	VR1	R	<b>400350</b>
		31	4,7	7,5	4	d <sub>1</sub> +2	d <sub>1</sub> +12	6 ± 0,8	VR1	V	<b>400354</b>
		31	7,9	10,5	4	d <sub>1</sub> +2	d <sub>1</sub> +12	9 ± 0,8	VR2	R	<b>400351</b>
		31	7,9	10,5	4	d <sub>1</sub> +2	d <sub>1</sub> +12	9 ± 0,8	VR2	V	<b>400355</b>
<b>36</b>	<b>38</b>	34	4,7	7,5	4	d <sub>1</sub> +2	d <sub>1</sub> +12	6 ± 0,8	VR1	R	<b>400380</b>
		34	4,7	7,5	4	d <sub>1</sub> +2	d <sub>1</sub> +12	6 ± 0,8	VR1	V	<b>400384</b>
		34	7,9	10,5	4	d <sub>1</sub> +2	d <sub>1</sub> +12	9 ± 0,8	VR2	R	<b>400381</b>
		34	7,9	10,5	4	d <sub>1</sub> +2	d <sub>1</sub> +12	9 ± 0,8	VR2	V	<b>400385</b>
<b>38</b>	<b>43</b>	36	5,5	9	5	d <sub>1</sub> +2	d <sub>1</sub> +15	7 ± 1	VR1	R	<b>400400</b>
		36	5,5	9	5	d <sub>1</sub> +2	d <sub>1</sub> +15	7 ± 1	VR1	V	<b>400404</b>
		36	9,5	13	5	d <sub>1</sub> +2	d <sub>1</sub> +15	11 ± 1	VR2	R	<b>400401</b>
		36	9,5	13	5	d <sub>1</sub> +2	d <sub>1</sub> +15	11 ± 1	VR2	V	<b>400405</b>
<b>43</b>	<b>48</b>	40	5,5	9	5	d <sub>1</sub> +2	d <sub>1</sub> +15	7 ± 1	VR1	R	<b>400450</b>
		40	5,5	9	5	d <sub>1</sub> +2	d <sub>1</sub> +15	7 ± 1	VR1	V	<b>400454</b>
		40	9,5	13	5	d <sub>1</sub> +2	d <sub>1</sub> +15	11 ± 1	VR2	R	<b>400451</b>
		40	9,5	13	5	d <sub>1</sub> +2	d <sub>1</sub> +15	11 ± 1	VR2	V	<b>400455</b>
<b>48</b>	<b>53</b>	45	5,5	9	5	d <sub>1</sub> +2	d <sub>1</sub> +15	7 ± 1	VR1	R	<b>400500</b>
		45	5,5	9	5	d <sub>1</sub> +2	d <sub>1</sub> +15	7 ± 1	VR1	V	<b>400504</b>
		45	9,5	13	5	d <sub>1</sub> +2	d <sub>1</sub> +15	11 ± 1	VR2	R	<b>400501</b>
		45	9,5	13	5	d <sub>1</sub> +2	d <sub>1</sub> +15	11 ± 1	VR2	V	<b>400505</b>

# V-ring seals – metric dimensions, for North American market

$d_1$  53 – 195 mm



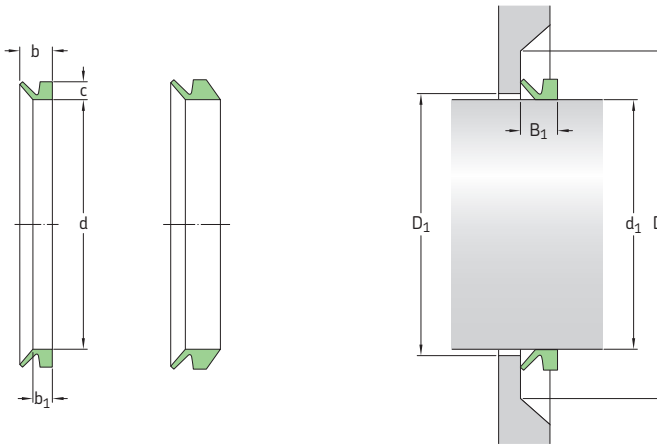
Dimensions		Seal inside diameter, free state $d$	Seal seat width $b_1$	Nominal seal width $b$	Nominal seal height $c$	Clearance $D_1$ max	Counterface $D$ min	Seal fitted width $B_1$	Design	Lip code	Designation
Shaft diameter range $d_1$ over	incl.										
mm											
53	58	49	5,5	9	5	$d_1 + 2$	$d_1 + 15$	$7 \pm 1$	VR1	R	400550
		49	5,5	9	5	$d_1 + 2$	$d_1 + 15$	$7 \pm 1$	VR1	V	400554
		49	9,5	13	5	$d_1 + 2$	$d_1 + 15$	$11 \pm 1$	VR2	R	400551
		49	9,5	13	5	$d_1 + 2$	$d_1 + 15$	$11 \pm 1$	VR2	V	400555
58	63	54	5,5	9	5	$d_1 + 2$	$d_1 + 15$	$7 \pm 1$	VR1	R	400600
		54	5,5	9	5	$d_1 + 2$	$d_1 + 15$	$7 \pm 1$	VR1	V	400604
		54	9,5	13	5	$d_1 + 2$	$d_1 + 15$	$11 \pm 1$	VR2	R	400601
		54	9,5	13	5	$d_1 + 2$	$d_1 + 15$	$11 \pm 1$	VR2	V	400605
63	68	58	5,5	9	5	$d_1 + 2$	$d_1 + 15$	$7 \pm 1$	VR1	R	400650
		58	5,5	9	5	$d_1 + 2$	$d_1 + 15$	$7 \pm 1$	VR1	V	400654
		58	9,5	13	5	$d_1 + 2$	$d_1 + 15$	$11 \pm 1$	VR2	R	400651
		58	9,5	13	5	$d_1 + 2$	$d_1 + 15$	$11 \pm 1$	VR2	V	400655
68	73	63	6,8	11	6	$d_1 + 3$	$d_1 + 18$	$9 \pm 1,2$	VR1	R	400700
		63	6,8	11	6	$d_1 + 3$	$d_1 + 18$	$9 \pm 1,2$	VR1	V	400704
		63	11,3	15,5	6	$d_1 + 3$	$d_1 + 18$	$13,5 \pm 1,2$	VR2	R	400701
		63	11,3	15,5	6	$d_1 + 3$	$d_1 + 18$	$13,5 \pm 1,2$	VR2	V	400705
73	78	67	6,8	11	6	$d_1 + 3$	$d_1 + 18$	$9 \pm 1,2$	VR1	R	400750
		67	6,8	11	6	$d_1 + 3$	$d_1 + 18$	$13,5 \pm 1,2$	VR2	R	400751
		67	11,3	15,5	6	$d_1 + 3$	$d_1 + 18$	$13,5 \pm 1,2$	VR2	V	400755
78	83	72	6,8	11	6	$d_1 + 3$	$d_1 + 18$	$9 \pm 1,2$	VR1	R	400800
		72	6,8	11	6	$d_1 + 3$	$d_1 + 18$	$9 \pm 1,2$	VR1	V	400804
		72	11,3	15,5	6	$d_1 + 3$	$d_1 + 18$	$13,5 \pm 1,2$	VR2	R	400801
		72	11,3	15,5	6	$d_1 + 3$	$d_1 + 18$	$13,5 \pm 1,2$	VR2	V	400805
83	88	76	6,8	11	6	$d_1 + 3$	$d_1 + 18$	$9 \pm 1,2$	VR1	R	400850
		76	6,8	11	6	$d_1 + 3$	$d_1 + 18$	$9 \pm 1,2$	VR1	V	400854
		76	11,3	15,5	6	$d_1 + 3$	$d_1 + 18$	$13,5 \pm 1,2$	VR2	R	400851
		76	11,3	15,5	6	$d_1 + 3$	$d_1 + 18$	$13,5 \pm 1,2$	VR2	V	400855
88	93	81	6,8	11	6	$d_1 + 3$	$d_1 + 18$	$9 \pm 1,2$	VR1	R	400900
		81	6,8	11	6	$d_1 + 3$	$d_1 + 18$	$9 \pm 1,2$	VR1	V	400904
		81	11,3	15,5	6	$d_1 + 3$	$d_1 + 18$	$13,5 \pm 1,2$	VR2	R	400901
		81	11,3	15,5	6	$d_1 + 3$	$d_1 + 18$	$13,5 \pm 1,2$	VR2	V	400905
93	98	85	6,8	11	6	$d_1 + 3$	$d_1 + 18$	$9 \pm 1,2$	VR1	R	400950
		85	6,8	11	6	$d_1 + 3$	$d_1 + 18$	$9 \pm 1,2$	VR1	V	400954
		85	11,3	15,5	6	$d_1 + 3$	$d_1 + 18$	$13,5 \pm 1,2$	VR2	R	400951
		85	11,3	15,5	6	$d_1 + 3$	$d_1 + 18$	$13,5 \pm 1,2$	VR2	V	400955

Dimensions		Seal inside diameter, free state d	Seal seat width b <sub>1</sub>	Nominal seal width b	Nominal seal height c	Clearance D <sub>1</sub> max	Counterface D min	Seal fitted width B <sub>1</sub>	Design	Lip code	Designation
Shaft diameter range d <sub>1</sub> over	incl.										
mm											
<b>98</b>	<b>105</b>	90	6,8	11	6	d <sub>1</sub> +3	d <sub>1</sub> +18	9 ± 1,2	VR1	R	401000
		90	6,8	11	6	d <sub>1</sub> +3	d <sub>1</sub> +18	9 ± 1,2	VR1	V	401004
		90	11,3	15,5	6	d <sub>1</sub> +3	d <sub>1</sub> +18	13,5 ± 1,2	VR2	R	401001
		90	11,3	15,5	6	d <sub>1</sub> +3	d <sub>1</sub> +18	13,5 ± 1,2	VR2	V	401005
<b>105</b>	<b>115</b>	99	6	10,5	6,5	d <sub>1</sub> +5	d <sub>1</sub> +20	8 ± 1,5	VR3	R	401102
		99	6	10,5	6,5	d <sub>1</sub> +5	d <sub>1</sub> +20	8 ± 1,5	VR3	V	401106
		99	7,9	12,8	7	d <sub>1</sub> +4	d <sub>1</sub> +21	10,5 ± 1,5	VR1	R	401100
		99	7,9	12,8	7	d <sub>1</sub> +4	d <sub>1</sub> +21	10,5 ± 1,5	VR1	V	401104
		99	13,1	18	7	d <sub>1</sub> +4	d <sub>1</sub> +21	15,5 ± 1,5	VR2	R	401101
		99	13,1	18	7	d <sub>1</sub> +4	d <sub>1</sub> +21	15,5 ± 1,5	VR2	V	401105
<b>115</b>	<b>125</b>	108	6	10,5	6,5	d <sub>1</sub> +5	d <sub>1</sub> +20	8 ± 1,5	VR3	R	401202
		108	6	10,5	6,5	d <sub>1</sub> +5	d <sub>1</sub> +20	8 ± 1,5	VR3	V	401206
		108	7,9	12,8	7	d <sub>1</sub> +4	d <sub>1</sub> +21	10,5 ± 1,5	VR1	R	401200
		108	7,9	12,8	7	d <sub>1</sub> +4	d <sub>1</sub> +21	10,5 ± 1,5	VR1	V	401204
		108	13,1	18	7	d <sub>1</sub> +4	d <sub>1</sub> +21	15,5 ± 1,5	VR2	R	401201
		108	13,1	18	7	d <sub>1</sub> +4	d <sub>1</sub> +21	15,5 ± 1,5	VR2	V	401205
<b>125</b>	<b>135</b>	117	6	10,5	6,5	d <sub>1</sub> +5	d <sub>1</sub> +20	8 ± 1,5	VR3	R	401302
		117	6	10,5	6,5	d <sub>1</sub> +5	d <sub>1</sub> +20	8 ± 1,5	VR3	V	401306
		117	7,9	12,8	7	d <sub>1</sub> +4	d <sub>1</sub> +21	10,5 ± 1,5	VR1	R	401300
		117	7,9	12,8	7	d <sub>1</sub> +4	d <sub>1</sub> +21	10,5 ± 1,5	VR1	V	401304
		117	13,1	18	7	d <sub>1</sub> +4	d <sub>1</sub> +21	15,5 ± 1,5	VR2	R	401301
		117	13,1	18	7	d <sub>1</sub> +4	d <sub>1</sub> +21	15,5 ± 1,5	VR2	V	401305
<b>135</b>	<b>145</b>	126	6	10,5	6,5	d <sub>1</sub> +5	d <sub>1</sub> +20	8 ± 1,5	VR3	R	401402
		126	6	10,5	6,5	d <sub>1</sub> +5	d <sub>1</sub> +20	8 ± 1,5	VR3	V	401406
		126	7,9	12,8	7	d <sub>1</sub> +4	d <sub>1</sub> +21	10,5 ± 1,5	VR1	R	401400
		126	7,9	12,8	7	d <sub>1</sub> +4	d <sub>1</sub> +21	10,5 ± 1,5	VR1	V	401404
		126	13,1	18	7	d <sub>1</sub> +4	d <sub>1</sub> +21	15,5 ± 1,5	VR2	R	401401
		126	13,1	18	7	d <sub>1</sub> +4	d <sub>1</sub> +21	15,5 ± 1,5	VR2	V	401405
<b>145</b>	<b>155</b>	135	6	10,5	6,5	d <sub>1</sub> +5	d <sub>1</sub> +20	8 ± 1,5	VR3	R	401502
		135	6	10,5	6,5	d <sub>1</sub> +5	d <sub>1</sub> +20	8 ± 1,5	VR3	V	401506
		135	7,9	12,8	7	d <sub>1</sub> +4	d <sub>1</sub> +21	10,5 ± 1,5	VR1	R	401500
		135	7,9	12,8	7	d <sub>1</sub> +4	d <sub>1</sub> +21	10,5 ± 1,5	VR1	V	401504
		135	13,1	18	7	d <sub>1</sub> +4	d <sub>1</sub> +21	15,5 ± 1,5	VR2	R	401501
		135	13,1	18	7	d <sub>1</sub> +4	d <sub>1</sub> +21	15,5 ± 1,5	VR2	V	401505
<b>155</b>	<b>165</b>	144	6	10,5	6,5	d <sub>1</sub> +5	d <sub>1</sub> +20	8 ± 1,5	VR3	R	401602
		144	6	10,5	6,5	d <sub>1</sub> +5	d <sub>1</sub> +20	8 ± 1,5	VR3	V	401606
		144	9	14,5	8	d <sub>1</sub> +4	d <sub>1</sub> +24	12 ± 1,8	VR1	R	401600
		144	9	14,5	8	d <sub>1</sub> +4	d <sub>1</sub> +24	12 ± 1,8	VR1	V	401604
		144	15	20,5	8	d <sub>1</sub> +4	d <sub>1</sub> +24	18 ± 1,8	VR2	R	401601
		144	15	20,5	8	d <sub>1</sub> +4	d <sub>1</sub> +24	18 ± 1,8	VR2	V	401605
<b>165</b>	<b>175</b>	153	6	10,5	6,5	d <sub>1</sub> +5	d <sub>1</sub> +20	8 ± 1,5	VR3	R	401702
		153	6	10,5	6,5	d <sub>1</sub> +5	d <sub>1</sub> +20	8 ± 1,5	VR3	V	401706
		153	9	14,5	8	d <sub>1</sub> +4	d <sub>1</sub> +24	12 ± 1,8	VR1	R	401700
		153	9	14,5	8	d <sub>1</sub> +4	d <sub>1</sub> +24	12 ± 1,8	VR1	V	401704
		153	15	20,5	8	d <sub>1</sub> +4	d <sub>1</sub> +24	18 ± 1,8	VR2	R	401701
		153	15	20,5	8	d <sub>1</sub> +4	d <sub>1</sub> +24	18 ± 1,8	VR2	V	401705
<b>175</b>	<b>185</b>	162	6	10,5	6,5	d <sub>1</sub> +5	d <sub>1</sub> +20	8 ± 1,5	VR3	R	401802
		162	6	10,5	6,5	d <sub>1</sub> +5	d <sub>1</sub> +20	8 ± 1,5	VR3	V	401806
		162	9	14,5	8	d <sub>1</sub> +4	d <sub>1</sub> +24	12 ± 1,8	VR1	R	401800
		162	9	14,5	8	d <sub>1</sub> +4	d <sub>1</sub> +24	12 ± 1,8	VR1	V	401804
		162	15	20,5	8	d <sub>1</sub> +4	d <sub>1</sub> +24	18 ± 1,8	VR2	R	401801
		162	15	20,5	8	d <sub>1</sub> +4	d <sub>1</sub> +24	18 ± 1,8	VR2	V	401805
<b>185</b>	<b>195</b>	171	6	10,5	6,5	d <sub>1</sub> +5	d <sub>1</sub> +20	8 ± 1,5	VR3	R	401902
		171	6	10,5	6,5	d <sub>1</sub> +5	d <sub>1</sub> +20	8 ± 1,5	VR3	V	401906
		171	9	14,5	8	d <sub>1</sub> +4	d <sub>1</sub> +24	12 ± 1,8	VR1	R	401900
		171	9	14,5	8	d <sub>1</sub> +4	d <sub>1</sub> +24	12 ± 1,8	VR1	V	401904
		171	15	20,5	8	d <sub>1</sub> +4	d <sub>1</sub> +24	18 ± 1,8	VR2	R	401901
		171	15	20,5	8	d <sub>1</sub> +4	d <sub>1</sub> +24	18 ± 1,8	VR2	V	401905



# V-ring seals – metric dimensions, for North American market

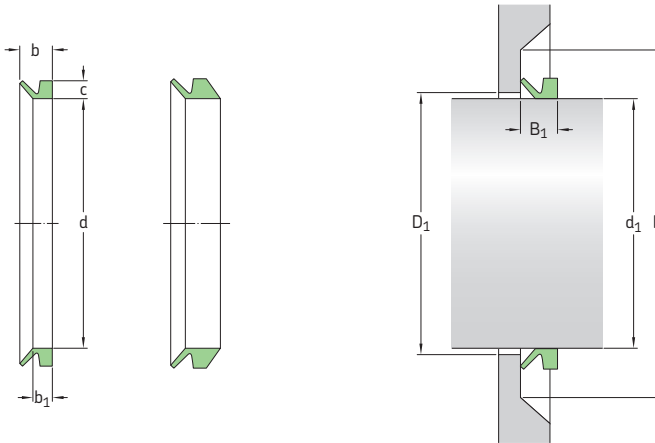
$d_1$  190 – 395 mm



Dimensions		Seal inside diameter, free state $d$	Seal seat width $b_1$	Nominal seal width $b$	Nominal seal height $c$	Clearance $D_1$ max	Counterface $D$ min	Seal fitted width $B_1$	Design	Lip code	Designation
Shaft diameter range $d_1$ over	incl.										
mm											
195	210	182	6	10,5	6,5	$d_1 + 5$	$d_1 + 20$	$8 \pm 1,5$	VR3	R	402002
		182	6	10,5	6,5	$d_1 + 5$	$d_1 + 20$	$8 \pm 1,5$	VR3	V	402006
		180	9	14,5	8	$d_1 + 4$	$d_1 + 24$	$12 \pm 1,8$	VR1	R	401990
		180	9	14,5	8	$d_1 + 4$	$d_1 + 24$	$12 \pm 1,8$	VR1	V	401994
		180	15	20,5	8	$d_1 + 4$	$d_1 + 24$	$18 \pm 1,8$	VR2	R	401991
		180	15	20,5	8	$d_1 + 4$	$d_1 + 24$	$18 \pm 1,8$	VR2	V	401995
190	210	180	14,3	25	15	$d_1 + 10$	$d_1 + 45$	$20 \pm 4$	VR1	R	402000
		180	14,3	25	15	$d_1 + 10$	$d_1 + 45$	$20 \pm 4$	VR1	V	402004
210	233	198	6	10,5	6,5	$d_1 + 5$	$d_1 + 20$	$8 \pm 1,5$	VR3	R	402202
		198	6	10,5	6,5	$d_1 + 5$	$d_1 + 20$	$8 \pm 1,5$	VR3	V	402206
		198	14,3	25	15	$d_1 + 10$	$d_1 + 45$	$20 \pm 4$	VR1	R	402200
		198	14,3	25	15	$d_1 + 10$	$d_1 + 45$	$20 \pm 4$	VR1	V	402204
233	260	225	6	10,5	6,5	$d_1 + 5$	$d_1 + 20$	$8 \pm 1,5$	VR3	R	402502
		225	6	10,5	6,5	$d_1 + 5$	$d_1 + 20$	$8 \pm 1,5$	VR3	V	402506
235	265	225	14,3	25	15	$d_1 + 10$	$d_1 + 45$	$20 \pm 4$	VR1	R	402500
		225	14,3	25	15	$d_1 + 10$	$d_1 + 45$	$20 \pm 4$	VR1	V	402504
260	285	247	6	10,5	6,5	$d_1 + 5$	$d_1 + 20$	$8 \pm 1,5$	VR3	R	402752
		247	6	10,5	6,5	$d_1 + 5$	$d_1 + 20$	$8 \pm 1,5$	VR3	V	402756
265	290	247	14,3	25	15	$d_1 + 10$	$d_1 + 45$	$20 \pm 4$	VR1	R	402750
		247	14,3	25	15	$d_1 + 10$	$d_1 + 45$	$20 \pm 4$	VR1	V	402754
285	310	270	6	10,5	6,5	$d_1 + 5$	$d_1 + 20$	$8 \pm 1,5$	VR3	R	403002
		270	6	10,5	6,5	$d_1 + 5$	$d_1 + 20$	$8 \pm 1,5$	VR3	V	403006
290	310	270	14,3	25	15	$d_1 + 10$	$d_1 + 45$	$20 \pm 4$	VR1	R	403000
		270	14,3	25	15	$d_1 + 10$	$d_1 + 45$	$20 \pm 4$	VR1	V	403004
300	305	294	32,5	65	30	$d_1 + 24$	$d_1 + 115$	$50 \pm 12$	VR4	R	403003
		294	32,5	65	21	$d_1 + 24$	$d_1 + 115$	$50 \pm 12$	VR6	R	403001
305	310	299	32,5	65	30	$d_1 + 24$	$d_1 + 115$	$50 \pm 12$	VR4	R	403053
		299	32,5	65	21	$d_1 + 24$	$d_1 + 115$	$50 \pm 12$	VR6	R	403006
310	335	292	6	10,5	6,5	$d_1 + 5$	$d_1 + 20$	$8 \pm 1,5$	VR3	R	403252
		292	6	10,5	6,5	$d_1 + 5$	$d_1 + 20$	$8 \pm 1,5$	VR3	V	403256

Dimensions		Seal inside diameter, free state d	Seal seat width b <sub>1</sub>	Nominal seal width b	Nominal seal height c	Clearance D <sub>1</sub> max	Counterface D min	Seal fitted width B <sub>1</sub>	Design	Lip code	Designation
Shaft diameter range d <sub>1</sub> over	incl.										
mm											
<b>310</b> cont.	<b>335</b>	292	14,3	25	15	d <sub>1</sub> + 10	d <sub>1</sub> + 45	20 ± 4	VR1	R	<b>403250</b>
		292	14,3	25	15	d <sub>1</sub> + 10	d <sub>1</sub> + 45	20 ± 4	VR1	V	<b>403254</b>
<b>310</b>	<b>315</b>	304	32,5	65	30	d <sub>1</sub> + 24	d <sub>1</sub> + 115	50 ± 12	VR4	R	<b>403103</b>
		304	32,5	65	21	d <sub>1</sub> + 24	d <sub>1</sub> + 115	50 ± 12	VR6	R	<b>470311</b>
<b>315</b>	<b>320</b>	309	32,5	65	30	d <sub>1</sub> + 24	d <sub>1</sub> + 115	50 ± 12	VR4	R	<b>403153</b>
		309	32,5	65	21	d <sub>1</sub> + 24	d <sub>1</sub> + 115	50 ± 12	VR6	R	<b>470316</b>
<b>320</b>	<b>325</b>	314	32,5	65	30	d <sub>1</sub> + 24	d <sub>1</sub> + 115	50 ± 12	VR4	R	<b>403203</b>
		314	32,5	65	21	d <sub>1</sub> + 24	d <sub>1</sub> + 115	50 ± 12	VR6	R	<b>470321</b>
<b>325</b>	<b>330</b>	319	32,5	65	30	d <sub>1</sub> + 24	d <sub>1</sub> + 115	50 ± 12	VR4	R	<b>403253</b>
		319	32,5	65	21	d <sub>1</sub> + 24	d <sub>1</sub> + 115	50 ± 12	VR6	R	<b>470326</b>
<b>330</b>	<b>335</b>	323	32,5	65	30	d <sub>1</sub> + 24	d <sub>1</sub> + 115	50 ± 12	VR4	R	<b>403303</b>
		323	32,5	65	21	d <sub>1</sub> + 24	d <sub>1</sub> + 115	50 ± 12	VR6	R	<b>470331</b>
<b>335</b>	<b>365</b>	315	6	10,5	6,5	d <sub>1</sub> + 5	d <sub>1</sub> + 20	8 ± 1,5	VR3	R	<b>403502</b>
		315	6	10,5	6,5	d <sub>1</sub> + 5	d <sub>1</sub> + 20	8 ± 1,5	VR3	V	<b>403506</b>
		315	14,3	25	15	d <sub>1</sub> + 10	d <sub>1</sub> + 45	20 ± 4	VR1	R	<b>403500</b>
		315	14,3	25	15	d <sub>1</sub> + 10	d <sub>1</sub> + 45	20 ± 4	VR1	V	<b>403504</b>
<b>335</b>	<b>340</b>	328	32,5	65	30	d <sub>1</sub> + 24	d <sub>1</sub> + 115	50 ± 12	VR4	R	<b>403353</b>
		328	32,5	65	21	d <sub>1</sub> + 24	d <sub>1</sub> + 115	50 ± 12	VR6	R	<b>470336</b>
<b>340</b>	<b>345</b>	333	32,5	65	30	d <sub>1</sub> + 24	d <sub>1</sub> + 115	50 ± 12	VR4	R	<b>403403</b>
		328	32,5	65	21	d <sub>1</sub> + 24	d <sub>1</sub> + 115	50 ± 12	VR6	R	<b>470341</b>
<b>345</b>	<b>350</b>	338	32,5	65	30	d <sub>1</sub> + 24	d <sub>1</sub> + 115	50 ± 12	VR4	R	<b>403453</b>
		338	32,5	65	21	d <sub>1</sub> + 24	d <sub>1</sub> + 115	50 ± 12	VR6	R	<b>470346</b>
<b>350</b>	<b>355</b>	343	32,5	65	30	d <sub>1</sub> + 24	d <sub>1</sub> + 115	50 ± 12	VR4	R	<b>403503</b>
		343	32,5	65	21	d <sub>1</sub> + 24	d <sub>1</sub> + 115	50 ± 12	VR6	R	<b>470351</b>
<b>355</b>	<b>360</b>	347	32,5	65	30	d <sub>1</sub> + 24	d <sub>1</sub> + 115	50 ± 12	VR4	R	<b>403553</b>
		347	32,5	65	21	d <sub>1</sub> + 24	d <sub>1</sub> + 115	50 ± 12	VR6	R	<b>470356</b>
<b>360</b>	<b>365</b>	352	32,5	65	30	d <sub>1</sub> + 24	d <sub>1</sub> + 115	50 ± 12	VR4	R	<b>403603</b>
		357	32,5	65	21	d <sub>1</sub> + 24	d <sub>1</sub> + 115	50 ± 12	VR6	R	<b>470361</b>
<b>365</b>	<b>385</b>	337	6	10,5	6,5	d <sub>1</sub> + 5	d <sub>1</sub> + 20	8 ± 1,5	VR3	R	<b>403752</b>
		337	6	10,5	6,5	d <sub>1</sub> + 5	d <sub>1</sub> + 20	8 ± 1,5	VR3	V	<b>403756</b>
<b>365</b>	<b>390</b>	337	14,3	25	15	d <sub>1</sub> + 10	d <sub>1</sub> + 45	20 ± 4	VR1	R	<b>403750</b>
		337	14,3	25	15	d <sub>1</sub> + 10	d <sub>1</sub> + 45	20 ± 4	VR1	V	<b>403754</b>
		357	32,5	65	30	d <sub>1</sub> + 24	d <sub>1</sub> + 115	50 ± 12	VR4	R	<b>403653</b>
<b>370</b>	<b>375</b>	362	32,5	65	30	d <sub>1</sub> + 24	d <sub>1</sub> + 115	50 ± 12	VR4	R	<b>403703</b>
		362	32,5	65	21	d <sub>1</sub> + 24	d <sub>1</sub> + 115	50 ± 12	VR6	R	<b>470371</b>
<b>375</b>	<b>380</b>	367	32,5	65	30	d <sub>1</sub> + 24	d <sub>1</sub> + 115	50 ± 12	VR4	R	<b>403753</b>
		367	32,5	65	21	d <sub>1</sub> + 24	d <sub>1</sub> + 115	50 ± 12	VR6	R	<b>470376</b>
<b>380</b>	<b>385</b>	371	32,5	65	30	d <sub>1</sub> + 24	d <sub>1</sub> + 115	50 ± 12	VR4	R	<b>403803</b>
		371	32,5	65	21	d <sub>1</sub> + 24	d <sub>1</sub> + 115	50 ± 12	VR6	R	<b>470381</b>
<b>385</b>	<b>410</b>	360	6	10,5	6,5	d <sub>1</sub> + 5	d <sub>1</sub> + 20	8 ± 1,5	VR3	R	<b>404002</b>
		360	6	10,5	6,5	d <sub>1</sub> + 5	d <sub>1</sub> + 20	8 ± 1,5	VR3	V	<b>404006</b>
<b>390</b>	<b>430</b>	360	14,3	25	15	d <sub>1</sub> + 10	d <sub>1</sub> + 45	20 ± 4	VR1	R	<b>404000</b>
		360	14,3	25	15	d <sub>1</sub> + 10	d <sub>1</sub> + 45	20 ± 4	VR1	V	<b>404004</b>
<b>385</b>	<b>390</b>	376	32,5	65	30	d <sub>1</sub> + 24	d <sub>1</sub> + 115	50 ± 12	VR4	R	<b>403853</b>
		376	32,5	65	21	d <sub>1</sub> + 24	d <sub>1</sub> + 115	50 ± 12	VR6	R	<b>470386</b>
<b>390</b>	<b>395</b>	381	32,5	65	30	d <sub>1</sub> + 24	d <sub>1</sub> + 115	50 ± 12	VR4	R	<b>403903</b>
		381	32,5	65	21	d <sub>1</sub> + 24	d <sub>1</sub> + 115	50 ± 12	VR6	R	<b>470391</b>

**V-ring seals – metric dimensions, for North American market**  
**d<sub>1</sub> 395 – 540 mm**

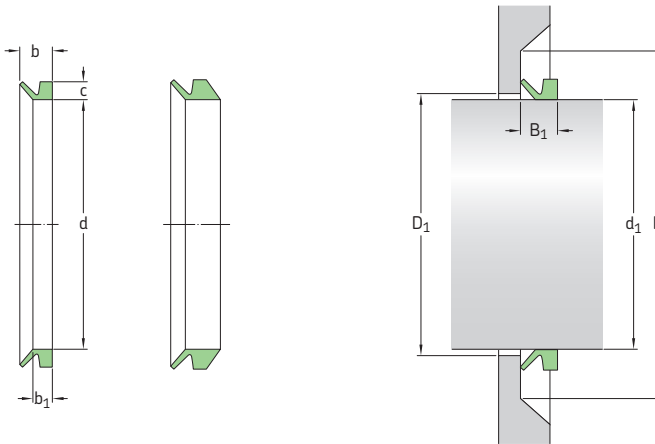


Dimensions		Seal inside diameter, free state d	Seal seat width b <sub>1</sub>	Nominal seal width b	Nominal seal height c	Clearance D <sub>1</sub> max	Counterface D min	Seal fitted width B <sub>1</sub>	Design	Lip code	Designation
Shaft diameter range d <sub>1</sub> over	incl.										
mm											
395	400	386	32,5	65	30	d <sub>1</sub> + 24	d <sub>1</sub> + 115	50 ± 12	VR4	R	403953
		386	32,5	65	21	d <sub>1</sub> + 24	d <sub>1</sub> + 115	50 ± 12	VR6	R	470396
400	405	391	32,5	65	30	d <sub>1</sub> + 24	d <sub>1</sub> + 115	50 ± 12	VR4	R	404003
		391	32,5	65	21	d <sub>1</sub> + 24	d <sub>1</sub> + 115	50 ± 12	VR6	R	470401
405	410	396	32,5	65	30	d <sub>1</sub> + 24	d <sub>1</sub> + 115	50 ± 12	VR4	R	404053
		396	32,5	65	21	d <sub>1</sub> + 24	d <sub>1</sub> + 115	50 ± 12	VR6	R	470406
410	415	401	32,5	65	30	d <sub>1</sub> + 24	d <sub>1</sub> + 115	50 ± 12	VR4	R	404103
		401	32,5	65	21	d <sub>1</sub> + 24	d <sub>1</sub> + 115	50 ± 12	VR6	R	470411
415	420	405	32,5	65	30	d <sub>1</sub> + 24	d <sub>1</sub> + 115	50 ± 12	VR4	R	404153
		405	32,5	65	21	d <sub>1</sub> + 24	d <sub>1</sub> + 115	50 ± 12	VR6	R	470416
420	425	410	32,5	65	30	d <sub>1</sub> + 24	d <sub>1</sub> + 115	50 ± 12	VR4	R	404203
		410	32,5	65	21	d <sub>1</sub> + 24	d <sub>1</sub> + 115	50 ± 12	VR6	R	470421
425	430	415	32,5	65	30	d <sub>1</sub> + 24	d <sub>1</sub> + 115	50 ± 12	VR4	R	404253
		415	32,5	65	21	d <sub>1</sub> + 24	d <sub>1</sub> + 115	50 ± 12	VR6	R	470426
410	440	382	6	10,5	6,5	d <sub>1</sub> + 5	d <sub>1</sub> + 20	8 ± 1,5	VR3	R	404252
		382	6	10,5	6,5	d <sub>1</sub> + 5	d <sub>1</sub> + 20	8 ± 1,5	VR3	V	404256
440	475	405	6	10,5	6,5	d <sub>1</sub> + 5	d <sub>1</sub> + 20	8 ± 1,5	VR3	R	404502
		405	6	10,5	6,5	d <sub>1</sub> + 5	d <sub>1</sub> + 20	8 ± 1,5	VR3	V	404506
430	480	405	14,3	25	15	d <sub>1</sub> + 10	d <sub>1</sub> + 45	20 ± 4	VR1	R	404500
		405	14,3	25	15	d <sub>1</sub> + 10	d <sub>1</sub> + 45	20 ± 4	VR1	V	404504
430	435	420	32,5	65	30	d <sub>1</sub> + 24	d <sub>1</sub> + 115	50 ± 12	VR4	R	404303
		420	32,5	65	21	d <sub>1</sub> + 24	d <sub>1</sub> + 115	50 ± 12	VR6	R	470431
435	440	425	32,5	65	30	d <sub>1</sub> + 24	d <sub>1</sub> + 115	50 ± 12	VR4	R	404353
		425	32,5	65	21	d <sub>1</sub> + 24	d <sub>1</sub> + 115	50 ± 12	VR6	R	470436
440	445	429	32,5	65	30	d <sub>1</sub> + 24	d <sub>1</sub> + 115	50 ± 12	VR4	R	404403
		429	32,5	65	21	d <sub>1</sub> + 24	d <sub>1</sub> + 115	50 ± 12	VR6	R	470441
445	450	434	32,5	65	30	d <sub>1</sub> + 24	d <sub>1</sub> + 115	50 ± 12	VR4	R	404453
		434	32,5	65	21	d <sub>1</sub> + 24	d <sub>1</sub> + 115	50 ± 12	VR6	R	470446

Dimensions		Seal inside diameter, free state d	Seal seat width b <sub>1</sub>	Nominal seal width b	Nominal seal height c	Clearance D <sub>1</sub> max	Counterface D min	Seal fitted width B <sub>1</sub>	Design	Lip code	Designation
Shaft diameter d <sub>1</sub> over	incl.										
mm											
450	455	439	32,5	65	30	d <sub>1</sub> + 24	d <sub>1</sub> + 115	50 ± 12	VR4	R	404503
		439	32,5	65	21	d <sub>1</sub> + 24	d <sub>1</sub> + 115	50 ± 12	VR6	R	470451
455	460	444	32,5	65	30	d <sub>1</sub> + 24	d <sub>1</sub> + 115	50 ± 12	VR4	R	404553
		444	32,5	65	21	d <sub>1</sub> + 24	d <sub>1</sub> + 115	50 ± 12	VR6	R	470456
460	465	448	32,5	65	30	d <sub>1</sub> + 24	d <sub>1</sub> + 115	50 ± 12	VR4	R	404603
		448	32,5	65	21	d <sub>1</sub> + 24	d <sub>1</sub> + 115	50 ± 12	VR6	R	470461
465	470	453	32,5	65	30	d <sub>1</sub> + 24	d <sub>1</sub> + 115	50 ± 12	VR4	R	404653
		453	32,5	65	21	d <sub>1</sub> + 24	d <sub>1</sub> + 115	50 ± 12	VR6	R	470466
470	475	458	32,5	65	30	d <sub>1</sub> + 24	d <sub>1</sub> + 115	50 ± 12	VR4	R	404703
		458	32,5	65	21	d <sub>1</sub> + 24	d <sub>1</sub> + 115	50 ± 12	VR6	R	470471
475	480	463	32,5	65	30	d <sub>1</sub> + 24	d <sub>1</sub> + 115	50 ± 12	VR4	R	404753
		463	32,5	65	21	d <sub>1</sub> + 24	d <sub>1</sub> + 115	50 ± 12	VR6	R	470476
475	510	450	6	10,5	6,5	d <sub>1</sub> + 5	d <sub>1</sub> + 20	8 ± 1,5	VR3	R	405002
		450	6	10,5	6,5	d <sub>1</sub> + 5	d <sub>1</sub> + 20	8 ± 1,5	VR3	V	405006
510	540	472	6	10,5	6,5	d <sub>1</sub> + 5	d <sub>1</sub> + 20	8 ± 1,5	VR3	R	405252
		472	6	10,5	6,5	d <sub>1</sub> + 5	d <sub>1</sub> + 20	8 ± 1,5	VR3	V	405256
480	530	450	14,3	25	15	d <sub>1</sub> + 10	d <sub>1</sub> + 45	20 ± 4	VR1	R	405000
		450	14,3	25	15	d <sub>1</sub> + 10	d <sub>1</sub> + 45	20 ± 4	VR1	V	405004
480	485	468	32,5	65	30	d <sub>1</sub> + 24	d <sub>1</sub> + 115	50 ± 12	VR4	R	404803
		468	32,5	65	21	d <sub>1</sub> + 24	d <sub>1</sub> + 115	50 ± 12	VR6	R	470481
485	490	473	32,5	65	30	d <sub>1</sub> + 24	d <sub>1</sub> + 115	50 ± 12	VR4	R	404853
		473	32,5	65	21	d <sub>1</sub> + 24	d <sub>1</sub> + 115	50 ± 12	VR6	R	470486
490	495	478	32,5	65	30	d <sub>1</sub> + 24	d <sub>1</sub> + 115	50 ± 12	VR4	R	404903
		478	32,5	65	21	d <sub>1</sub> + 24	d <sub>1</sub> + 115	50 ± 12	VR6	R	470491
495	500	483	32,5	65	30	d <sub>1</sub> + 24	d <sub>1</sub> + 115	50 ± 12	VR4	R	404953
		483	32,5	65	21	d <sub>1</sub> + 24	d <sub>1</sub> + 115	50 ± 12	VR6	R	470496
500	505	488	32,5	65	30	d <sub>1</sub> + 24	d <sub>1</sub> + 115	50 ± 12	VR4	R	405003
		488	32,5	65	21	d <sub>1</sub> + 24	d <sub>1</sub> + 115	50 ± 12	VR6	R	470501
505	510	493	32,5	65	30	d <sub>1</sub> + 24	d <sub>1</sub> + 115	50 ± 12	VR4	R	405053
		493	32,5	65	21	d <sub>1</sub> + 24	d <sub>1</sub> + 115	50 ± 12	VR6	R	470506
510	515	497	32,5	65	30	d <sub>1</sub> + 24	d <sub>1</sub> + 115	50 ± 12	VR4	R	405103
		497	32,5	65	21	d <sub>1</sub> + 24	d <sub>1</sub> + 115	50 ± 12	VR6	R	470511
515	520	502	32,5	65	30	d <sub>1</sub> + 24	d <sub>1</sub> + 115	50 ± 12	VR4	R	405153
		502	32,5	65	21	d <sub>1</sub> + 24	d <sub>1</sub> + 115	50 ± 12	VR6	R	470516
520	525	507	32,5	65	30	d <sub>1</sub> + 24	d <sub>1</sub> + 115	50 ± 12	VR4	R	405203
		507	32,5	65	21	d <sub>1</sub> + 24	d <sub>1</sub> + 115	50 ± 12	VR6	R	470521
525	530	512	32,5	65	30	d <sub>1</sub> + 24	d <sub>1</sub> + 115	50 ± 12	VR4	R	405253
		512	32,5	65	21	d <sub>1</sub> + 24	d <sub>1</sub> + 115	50 ± 12	VR6	R	470526
540	575	495	6	10,5	6,5	d <sub>1</sub> + 5	d <sub>1</sub> + 20	8 ± 1,5	VR3	R	405502
		495	6	10,5	6,5	d <sub>1</sub> + 5	d <sub>1</sub> + 20	8 ± 1,5	VR3	V	405506
530	580	495	14,3	25	15	d <sub>1</sub> + 10	d <sub>1</sub> + 45	20 ± 4	VR1	R	405500
		495	14,3	25	15	d <sub>1</sub> + 10	d <sub>1</sub> + 45	20 ± 4	VR1	V	405504
530	535	517	32,5	65	30	d <sub>1</sub> + 24	d <sub>1</sub> + 115	50 ± 12	VR4	R	405303
		517	32,5	65	21	d <sub>1</sub> + 24	d <sub>1</sub> + 115	50 ± 12	VR6	R	470531
535	540	521	32,5	65	30	d <sub>1</sub> + 24	d <sub>1</sub> + 115	50 ± 12	VR4	R	405353
		521	32,5	65	21	d <sub>1</sub> + 24	d <sub>1</sub> + 115	50 ± 12	VR6	R	470536

# V-ring seals – metric dimensions, for North American market

$d_1$  540 – 758 mm

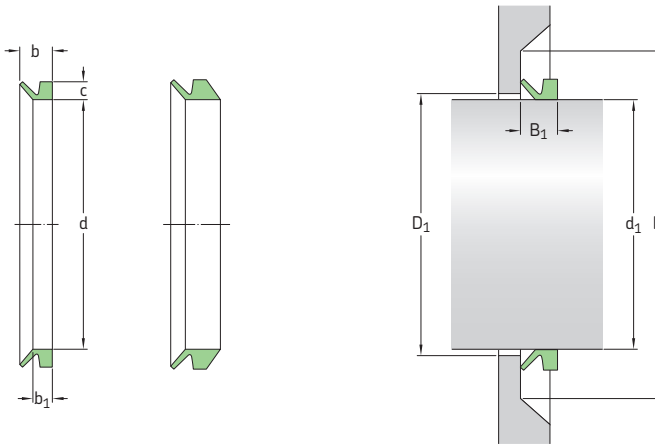


Dimensions		Seal inside diameter, free state $d$	Seal seat width $b_1$	Nominal seal width $b$	Nominal seal height $c$	Clearance $D_1$ max	Counterface $D$ min	Seal fitted width $B_1$	Design	Lip code	Designation
Shaft diameter range $d_1$ over	incl.										
mm											
540	545	526	32,5	65	30	$d_1 + 24$	$d_1 + 115$	$50 \pm 12$	VR4	R	405403
		526	32,5	65	21	$d_1 + 24$	$d_1 + 115$	$50 \pm 12$	VR6	R	470541
545	550	531	32,5	65	30	$d_1 + 24$	$d_1 + 115$	$50 \pm 12$	VR4	R	405453
		531	32,5	65	21	$d_1 + 24$	$d_1 + 115$	$50 \pm 12$	VR6	R	470546
550	555	536	32,5	65	30	$d_1 + 24$	$d_1 + 115$	$50 \pm 12$	VR4	R	405503
		536	32,5	65	21	$d_1 + 24$	$d_1 + 115$	$50 \pm 12$	VR6	R	470551
555	560	541	32,5	65	30	$d_1 + 24$	$d_1 + 115$	$50 \pm 12$	VR4	R	405553
		541	32,5	65	21	$d_1 + 24$	$d_1 + 115$	$50 \pm 12$	VR6	R	470556
560	565	546	32,5	65	30	$d_1 + 24$	$d_1 + 115$	$50 \pm 12$	VR4	R	405603
		546	32,5	65	21	$d_1 + 24$	$d_1 + 115$	$50 \pm 12$	VR6	R	470561
565	570	550	32,5	65	30	$d_1 + 24$	$d_1 + 115$	$50 \pm 12$	VR4	R	405653
		550	32,5	65	21	$d_1 + 24$	$d_1 + 115$	$50 \pm 12$	VR6	R	470566
570	575	555	32,5	65	30	$d_1 + 24$	$d_1 + 115$	$50 \pm 12$	VR4	R	405703
		555	32,5	65	21	$d_1 + 24$	$d_1 + 115$	$50 \pm 12$	VR6	R	470571
575	580	560	32,5	65	30	$d_1 + 24$	$d_1 + 115$	$50 \pm 12$	VR4	R	405753
		560	32,5	65	21	$d_1 + 24$	$d_1 + 115$	$50 \pm 12$	VR6	R	470576
575	625	540	6	10,5	6,5	$d_1 + 5$	$d_1 + 20$	$8 \pm 1,5$	VR3	R	406002
		540	6	10,5	6,5	$d_1 + 5$	$d_1 + 20$	$8 \pm 1,5$	VR3	V	406006
580	630	540	14,3	25	15	$d_1 + 10$	$d_1 + 45$	$20 \pm 4$	VR1	R	406000
		540	14,3	25	15	$d_1 + 10$	$d_1 + 45$	$20 \pm 4$	VR1	V	406004
580	585	565	32,5	65	30	$d_1 + 24$	$d_1 + 115$	$50 \pm 12$	VR4	R	405803
		565	32,5	65	21	$d_1 + 24$	$d_1 + 115$	$50 \pm 12$	VR6	R	470581
585	590	570	32,5	65	30	$d_1 + 24$	$d_1 + 115$	$50 \pm 12$	VR4	R	405853
		570	32,5	65	21	$d_1 + 24$	$d_1 + 115$	$50 \pm 12$	VR6	R	470586
590	600	575	32,5	65	30	$d_1 + 24$	$d_1 + 115$	$50 \pm 12$	VR4	R	405903
		575	32,5	65	21	$d_1 + 24$	$d_1 + 115$	$50 \pm 12$	VR6	R	470591
600	610	582	32,5	65	30	$d_1 + 24$	$d_1 + 115$	$50 \pm 12$	VR4	R	406003
		582	32,5	65	21	$d_1 + 24$	$d_1 + 115$	$50 \pm 12$	VR6	R	470601

Dimensions		Seal inside diameter, free state d	Seal seat width b <sub>1</sub>	Nominal seal width b	Nominal seal height c	Clearance D <sub>1</sub> max	Counterface D min	Seal fitted width B <sub>1</sub>	Design	Lip code	Designation
Shaft diameter d <sub>1</sub> over	incl.										
mm											
610	620	592	32,5	65	30	d <sub>1</sub> + 24	d <sub>1</sub> + 115	50 ± 12	VR4	R	406103
		592	32,5	65	21	d <sub>1</sub> + 24	d <sub>1</sub> + 115	50 ± 12	VR6	R	470611
620	630	602	32,5	65	30	d <sub>1</sub> + 24	d <sub>1</sub> + 115	50 ± 12	VR4	R	406203
		602	32,5	65	21	d <sub>1</sub> + 24	d <sub>1</sub> + 115	50 ± 12	VR6	R	470621
615	675	600	6	10,5	6,5	d <sub>1</sub> + 5	d <sub>1</sub> + 20	8 ± 1,5	VR3	R	406502
		600	6	10,5	6,5	d <sub>1</sub> + 5	d <sub>1</sub> + 20	8 ± 1,5	VR3	V	406506
630	665	600	14,3	25	15	d <sub>1</sub> + 10	d <sub>1</sub> + 45	20 ± 4	VR1	R	406500
		600	14,3	25	15	d <sub>1</sub> + 10	d <sub>1</sub> + 45	20 ± 4	VR1	V	406504
630	640	612	32,5	65	30	d <sub>1</sub> + 24	d <sub>1</sub> + 115	50 ± 12	VR4	R	406303
		612	32,5	65	21	d <sub>1</sub> + 24	d <sub>1</sub> + 115	50 ± 12	VR6	R	470631
640	650	621	32,5	65	30	d <sub>1</sub> + 24	d <sub>1</sub> + 115	50 ± 12	VR4	R	406403
		621	32,5	65	21	d <sub>1</sub> + 24	d <sub>1</sub> + 115	50 ± 12	VR6	R	470641
650	660	631	32,5	65	30	d <sub>1</sub> + 24	d <sub>1</sub> + 115	50 ± 12	VR4	R	406503
		631	32,5	65	21	d <sub>1</sub> + 24	d <sub>1</sub> + 115	50 ± 12	VR6	R	470651
660	670	640	32,5	65	30	d <sub>1</sub> + 24	d <sub>1</sub> + 115	50 ± 12	VR4	R	406603
		640	32,5	65	21	d <sub>1</sub> + 24	d <sub>1</sub> + 115	50 ± 12	VR6	R	470661
675	710	630	6	10,5	6,5	d <sub>1</sub> + 5	d <sub>1</sub> + 20	8 ± 1,5	VR3	R	407002
		630	6	10,5	6,5	d <sub>1</sub> + 5	d <sub>1</sub> + 20	8 ± 1,5	VR3	V	407006
665	705	630	14,3	25	15	d <sub>1</sub> + 10	d <sub>1</sub> + 45	20 ± 4	VR1	R	407000
		630	14,3	25	15	d <sub>1</sub> + 10	d <sub>1</sub> + 45	20 ± 4	VR1	V	407004
670	680	650	32,5	65	30	d <sub>1</sub> + 24	d <sub>1</sub> + 115	50 ± 12	VR4	R	406703
		650	32,5	65	21	d <sub>1</sub> + 24	d <sub>1</sub> + 115	50 ± 12	VR6	R	470671
680	690	660	32,5	65	30	d <sub>1</sub> + 24	d <sub>1</sub> + 115	50 ± 12	VR4	R	406803
		660	32,5	65	21	d <sub>1</sub> + 24	d <sub>1</sub> + 115	50 ± 12	VR6	R	470681
690	700	670	32,5	65	30	d <sub>1</sub> + 24	d <sub>1</sub> + 115	50 ± 12	VR4	R	406903
		670	32,5	65	21	d <sub>1</sub> + 24	d <sub>1</sub> + 115	50 ± 12	VR6	R	470691
700	710	680	32,5	65	30	d <sub>1</sub> + 24	d <sub>1</sub> + 115	50 ± 12	VR4	R	407003
		680	32,5	65	21	d <sub>1</sub> + 24	d <sub>1</sub> + 115	50 ± 12	VR6	R	470701
710	740	670	6	10,5	6,5	d <sub>1</sub> + 5	d <sub>1</sub> + 20	8 ± 1,5	VR3	R	407252
		670	6	10,5	6,5	d <sub>1</sub> + 5	d <sub>1</sub> + 20	8 ± 1,5	VR3	V	407256
705	745	670	14,3	25	15	d <sub>1</sub> + 10	d <sub>1</sub> + 45	20 ± 4	VR1	R	407250
		670	14,3	25	15	d <sub>1</sub> + 10	d <sub>1</sub> + 45	20 ± 4	VR1	V	407254
710	720	689	32,5	65	30	d <sub>1</sub> + 24	d <sub>1</sub> + 115	50 ± 12	VR4	R	407103
		689	32,5	65	21	d <sub>1</sub> + 24	d <sub>1</sub> + 115	50 ± 12	VR6	R	470711
720	730	699	32,5	65	30	d <sub>1</sub> + 24	d <sub>1</sub> + 115	50 ± 12	VR4	R	407203
		699	32,5	65	21	d <sub>1</sub> + 24	d <sub>1</sub> + 115	50 ± 12	VR6	R	470721
730	740	709	32,5	65	30	d <sub>1</sub> + 24	d <sub>1</sub> + 115	50 ± 12	VR4	R	407303
		709	32,5	65	21	d <sub>1</sub> + 24	d <sub>1</sub> + 115	50 ± 12	VR6	R	470731
740	750	718	32,5	65	30	d <sub>1</sub> + 24	d <sub>1</sub> + 115	50 ± 12	VR4	R	407403
		718	32,5	65	21	d <sub>1</sub> + 24	d <sub>1</sub> + 115	50 ± 12	VR6	R	470741
740	775	705	6	10,5	6,5	d <sub>1</sub> + 5	d <sub>1</sub> + 20	8 ± 1,5	VR3	R	407502
		705	6	10,5	6,5	d <sub>1</sub> + 5	d <sub>1</sub> + 20	8 ± 1,5	VR3	V	407506
745	785	705	14,3	25	15	d <sub>1</sub> + 10	d <sub>1</sub> + 45	20 ± 4	VR1	R	407500
		705	14,3	25	15	d <sub>1</sub> + 10	d <sub>1</sub> + 45	20 ± 4	VR1	V	407504
750	758	728	32,5	65	30	d <sub>1</sub> + 24	d <sub>1</sub> + 115	50 ± 12	VR4	R	407503
		728	32,5	65	21	d <sub>1</sub> + 24	d <sub>1</sub> + 115	50 ± 12	VR6	R	470751

# V-ring seals – metric dimensions, for North American market

## d<sub>1</sub> 758 – 1 045 mm

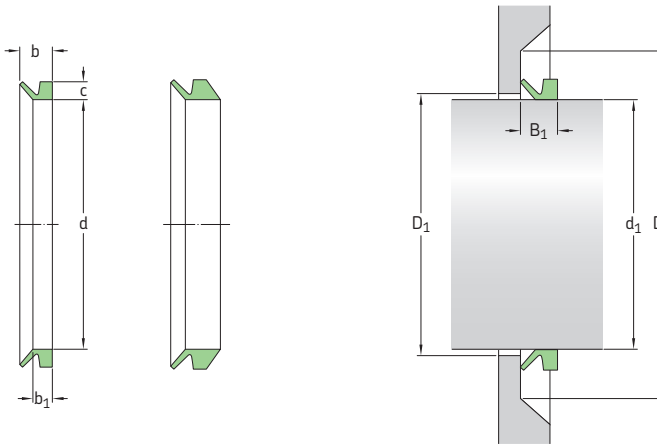


Dimensions		Seal inside diameter, free state d	Seal seat width b <sub>1</sub>	Nominal seal width b	Nominal seal height c	Clearance D <sub>1</sub> max	Counterface D min	Seal fitted width B <sub>1</sub>	Design	Lip code	Designation
Shaft diameter range d <sub>1</sub> over	incl.										
mm											
758	766	735	32,5	65	30	d <sub>1</sub> + 24	d <sub>1</sub> + 115	50 ± 12	VR4	R	407603
		735	32,5	65	21	d <sub>1</sub> + 24	d <sub>1</sub> + 115	50 ± 12	VR6	R	470761
766	774	743	32,5	65	30	d <sub>1</sub> + 24	d <sub>1</sub> + 115	50 ± 12	VR4	R	407703
		743	32,5	65	21	d <sub>1</sub> + 24	d <sub>1</sub> + 115	50 ± 12	VR6	R	470771
774	783	751	32,5	65	30	d <sub>1</sub> + 24	d <sub>1</sub> + 115	50 ± 12	VR4	R	407803
		751	32,5	65	21	d <sub>1</sub> + 24	d <sub>1</sub> + 115	50 ± 12	VR6	R	470781
783	792	759	32,5	65	30	d <sub>1</sub> + 24	d <sub>1</sub> + 115	50 ± 12	VR4	R	407903
		759	32,5	65	21	d <sub>1</sub> + 24	d <sub>1</sub> + 115	50 ± 12	VR6	R	470791
775	825	745	6	10,5	6,5	d <sub>1</sub> + 5	d <sub>1</sub> + 20	8 ± 1,5	VR3	R	408002
		745	6	10,5	6,5	d <sub>1</sub> + 5	d <sub>1</sub> + 20	8 ± 1,5	VR3	V	408006
785	830	745	14,3	25	15	d <sub>1</sub> + 10	d <sub>1</sub> + 45	20 ± 4	VR1	R	408000
		745	14,3	25	15	d <sub>1</sub> + 10	d <sub>1</sub> + 45	20 ± 4	VR1	V	408004
792	801	768	32,5	65	30	d <sub>1</sub> + 24	d <sub>1</sub> + 115	50 ± 12	VR4	R	408003
		768	32,5	65	21	d <sub>1</sub> + 24	d <sub>1</sub> + 115	50 ± 12	VR6	R	470801
801	810	777	32,5	65	30	d <sub>1</sub> + 24	d <sub>1</sub> + 115	50 ± 12	VR4	R	408103
		777	32,5	65	21	d <sub>1</sub> + 24	d <sub>1</sub> + 115	50 ± 12	VR6	R	470811
810	821	786	32,5	65	30	d <sub>1</sub> + 24	d <sub>1</sub> + 115	50 ± 12	VR4	R	408203
		786	32,5	65	21	d <sub>1</sub> + 24	d <sub>1</sub> + 115	50 ± 12	VR6	R	470821
821	831	796	32,5	65	30	d <sub>1</sub> + 24	d <sub>1</sub> + 115	50 ± 12	VR4	R	408303
		796	32,5	65	21	d <sub>1</sub> + 24	d <sub>1</sub> + 115	50 ± 12	VR6	R	470831
825	875	785	6	10,5	6,5	d <sub>1</sub> + 5	d <sub>1</sub> + 20	8 ± 1,5	VR3	R	408502
		785	6	10,5	6,5	d <sub>1</sub> + 5	d <sub>1</sub> + 20	8 ± 1,5	VR3	V	408506
830	875	785	14,3	25	15	d <sub>1</sub> + 10	d <sub>1</sub> + 45	20 ± 4	VR1	R	408500
		785	14,3	25	15	d <sub>1</sub> + 10	d <sub>1</sub> + 45	20 ± 4	VR1	V	408504
831	841	805	32,5	65	30	d <sub>1</sub> + 24	d <sub>1</sub> + 115	50 ± 12	VR4	R	408403
		805	32,5	65	21	d <sub>1</sub> + 24	d <sub>1</sub> + 115	50 ± 12	VR6	R	470841
841	851	814	32,5	65	30	d <sub>1</sub> + 24	d <sub>1</sub> + 115	50 ± 12	VR4	R	408503
		814	32,5	65	21	d <sub>1</sub> + 24	d <sub>1</sub> + 115	50 ± 12	VR6	R	470851

Dimensions		Seal inside diameter, free state d	Seal seat width b <sub>1</sub>	Nominal seal width b	Nominal seal height c	Clearance D <sub>1</sub> max	Counterface D min	Seal fitted width B <sub>1</sub>	Design	Lip code	Designation
Shaft diameter range d <sub>1</sub> over	incl.										
mm											
<b>851</b>	<b>861</b>	824	32,5	65	30	d <sub>1</sub> + 24	d <sub>1</sub> + 115	50 ± 12	VR4	R	<b>408603</b>
		824	32,5	65	21	d <sub>1</sub> + 24	d <sub>1</sub> + 115	50 ± 12	VR6	R	<b>470861</b>
<b>861</b>	<b>871</b>	833	32,5	65	30	d <sub>1</sub> + 24	d <sub>1</sub> + 115	50 ± 12	VR4	R	<b>408703</b>
		833	32,5	65	21	d <sub>1</sub> + 24	d <sub>1</sub> + 115	50 ± 12	VR6	R	<b>470871</b>
<b>871</b>	<b>882</b>	843	32,5	65	30	d <sub>1</sub> + 24	d <sub>1</sub> + 115	50 ± 12	VR4	R	<b>408803</b>
		843	32,5	65	21	d <sub>1</sub> + 24	d <sub>1</sub> + 115	50 ± 12	VR6	R	<b>470881</b>
<b>875</b>	<b>925</b>	825	6	10,5	6,5	d <sub>1</sub> + 5	d <sub>1</sub> + 20	8 ± 1,5	VR3	R	<b>409002</b>
		825	6	10,5	6,5	d <sub>1</sub> + 5	d <sub>1</sub> + 20	8 ± 1,5	VR3	V	<b>409006</b>
<b>875</b>	<b>920</b>	825	14,3	25	15	d <sub>1</sub> + 10	d <sub>1</sub> + 45	20 ± 4	VR1	R	<b>409000</b>
		825	14,3	25	15	d <sub>1</sub> + 10	d <sub>1</sub> + 45	20 ± 4	VR1	V	<b>409004</b>
<b>882</b>	<b>892</b>	853	32,5	65	30	d <sub>1</sub> + 24	d <sub>1</sub> + 115	50 ± 12	VR4	R	<b>408903</b>
		853	32,5	65	21	d <sub>1</sub> + 24	d <sub>1</sub> + 115	50 ± 12	VR6	R	<b>470891</b>
<b>892</b>	<b>912</b>	871	32,5	65	30	d <sub>1</sub> + 24	d <sub>1</sub> + 115	50 ± 12	VR4	R	<b>409003</b>
		871	32,5	65	21	d <sub>1</sub> + 24	d <sub>1</sub> + 115	50 ± 12	VR6	R	<b>470901</b>
<b>912</b>	<b>922</b>	880	32,5	65	30	d <sub>1</sub> + 24	d <sub>1</sub> + 115	50 ± 12	VR4	R	<b>409203</b>
		880	32,5	65	21	d <sub>1</sub> + 24	d <sub>1</sub> + 115	50 ± 12	VR6	R	<b>470921</b>
<b>925</b>	<b>975</b>	865	6	10,5	6,5	d <sub>1</sub> + 5	d <sub>1</sub> + 20	8 ± 1,5	VR3	R	<b>409502</b>
		865	6	10,5	6,5	d <sub>1</sub> + 5	d <sub>1</sub> + 20	8 ± 1,5	VR3	V	<b>409506</b>
<b>920</b>	<b>965</b>	865	14,3	25	15	d <sub>1</sub> + 10	d <sub>1</sub> + 45	20 ± 4	VR1	R	<b>409500</b>
		865	14,3	25	15	d <sub>1</sub> + 10	d <sub>1</sub> + 45	20 ± 4	VR1	V	<b>409504</b>
<b>922</b>	<b>933</b>	890	32,5	65	30	d <sub>1</sub> + 24	d <sub>1</sub> + 115	50 ± 12	VR4	R	<b>409303</b>
		890	32,5	65	21	d <sub>1</sub> + 24	d <sub>1</sub> + 115	50 ± 12	VR6	R	<b>470931</b>
<b>933</b>	<b>944</b>	900	32,5	65	30	d <sub>1</sub> + 24	d <sub>1</sub> + 115	50 ± 12	VR4	R	<b>409403</b>
		900	32,5	65	21	d <sub>1</sub> + 24	d <sub>1</sub> + 115	50 ± 12	VR6	R	<b>470941</b>
<b>944</b>	<b>955</b>	911	32,5	65	30	d <sub>1</sub> + 24	d <sub>1</sub> + 115	50 ± 12	VR4	R	<b>409503</b>
		911	32,5	65	21	d <sub>1</sub> + 24	d <sub>1</sub> + 115	50 ± 12	VR6	R	<b>470951</b>
<b>955</b>	<b>966</b>	921	32,5	65	30	d <sub>1</sub> + 24	d <sub>1</sub> + 115	50 ± 12	VR4	R	<b>409603</b>
		921	32,5	65	21	d <sub>1</sub> + 24	d <sub>1</sub> + 115	50 ± 12	VR6	R	<b>470961</b>
<b>975</b>	<b>1025</b>	910	6	10,5	6,5	d <sub>1</sub> + 5	d <sub>1</sub> + 20	8 ± 1,5	VR3	R	<b>410002</b>
		910	6	10,5	6,5	d <sub>1</sub> + 5	d <sub>1</sub> + 20	8 ± 1,5	VR3	V	<b>410006</b>
<b>965</b>	<b>1015</b>	910	14,3	25	15	d <sub>1</sub> + 10	d <sub>1</sub> + 45	20 ± 4	VR1	R	<b>410000</b>
		910	14,3	25	15	d <sub>1</sub> + 10	d <sub>1</sub> + 45	20 ± 4	VR1	V	<b>410004</b>
<b>966</b>	<b>977</b>	932	32,5	65	30	d <sub>1</sub> + 24	d <sub>1</sub> + 115	50 ± 12	VR4	R	<b>409703</b>
		932	32,5	65	21	d <sub>1</sub> + 24	d <sub>1</sub> + 115	50 ± 12	VR6	R	<b>470971</b>
<b>977</b>	<b>988</b>	942	32,5	65	30	d <sub>1</sub> + 24	d <sub>1</sub> + 115	50 ± 12	VR4	R	<b>409803</b>
		942	32,5	65	21	d <sub>1</sub> + 24	d <sub>1</sub> + 115	50 ± 12	VR6	R	<b>470981</b>
<b>988</b>	<b>999</b>	953	32,5	65	30	d <sub>1</sub> + 24	d <sub>1</sub> + 115	50 ± 12	VR4	R	<b>409903</b>
		953	32,5	65	21	d <sub>1</sub> + 24	d <sub>1</sub> + 115	50 ± 12	VR6	R	<b>470991</b>
<b>999</b>	<b>1010</b>	963	32,5	65	30	d <sub>1</sub> + 24	d <sub>1</sub> + 115	50 ± 12	VR4	R	<b>410003</b>
		963	32,5	65	21	d <sub>1</sub> + 24	d <sub>1</sub> + 115	50 ± 12	VR6	R	<b>471001</b>
<b>1010</b>	<b>1025</b>	973	32,5	65	30	d <sub>1</sub> + 24	d <sub>1</sub> + 115	50 ± 12	VR4	R	<b>410203</b>
		973	32,5	65	21	d <sub>1</sub> + 24	d <sub>1</sub> + 115	50 ± 12	VR6	R	<b>471021</b>
<b>1025</b>	<b>1075</b>	955	6	10,5	6,5	d <sub>1</sub> + 5	d <sub>1</sub> + 20	8 ± 1,5	VR3	R	<b>410502</b>
		955	6	10,5	6,5	d <sub>1</sub> + 5	d <sub>1</sub> + 20	8 ± 1,5	VR3	V	<b>410506</b>
<b>1015</b>	<b>1065</b>	955	14,3	25	15	d <sub>1</sub> + 10	d <sub>1</sub> + 45	20 ± 4	VR1	R	<b>410500</b>
<b>1025</b>	<b>1045</b>	990	32,5	65	30	d <sub>1</sub> + 24	d <sub>1</sub> + 115	50 ± 12	VR4	R	<b>410403</b>
		990	32,5	65	21	d <sub>1</sub> + 24	d <sub>1</sub> + 115	50 ± 12	VR6	R	<b>471041</b>



**V-ring seals – metric dimensions, for North American market**  
 $d_1$  1 045 – 1 540 mm

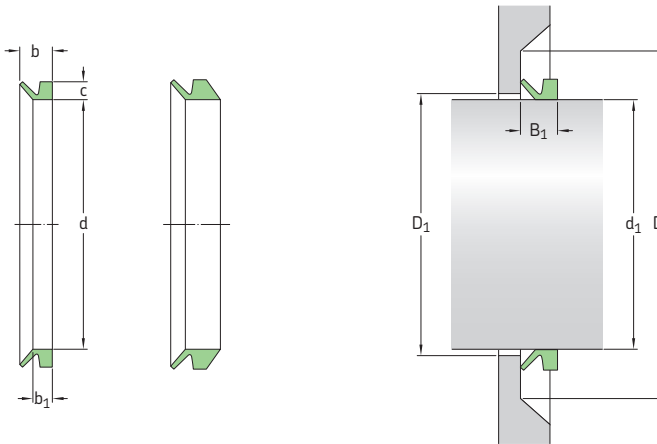


Dimensions		Seal inside diameter, free state $d$	Seal seat width $b_1$	Nominal seal width $b$	Nominal seal height $c$	Clearance $D_1$ max	Counterface $D$ min	Seal fitted width $B_1$	Design	Lip code	Designation
Shaft diameter range $d_1$ over	incl.										
mm											
1 045	1 065	1 008	32,5	65	30	$d_1 + 24$	$d_1 + 115$	$50 \pm 12$	VR4	R	4110603
	1 008	1 008	32,5	65	21	$d_1 + 24$	$d_1 + 115$	$50 \pm 12$	VR6	R	471061
1 075	1 125	1 000	6	10,5	6,5	$d_1 + 5$	$d_1 + 20$	$8 \pm 1,5$	VR3	R	411002
	1 000	1 000	6	10,5	6,5	$d_1 + 5$	$d_1 + 20$	$8 \pm 1,5$	VR3	V	411006
1 065	1 115	1 000	14,3	25	15	$d_1 + 10$	$d_1 + 45$	$20 \pm 4$	VR1	R	411000
	1 027	1 027	32,5	65	30	$d_1 + 24$	$d_1 + 115$	$50 \pm 12$	VR4	R	410803
	1 027	1 027	32,5	65	21	$d_1 + 24$	$d_1 + 115$	$50 \pm 12$	VR6	R	471081
1 085	1 105	1 045	32,5	65	30	$d_1 + 24$	$d_1 + 115$	$50 \pm 12$	VR4	R	411003
	1 045	1 045	32,5	65	21	$d_1 + 24$	$d_1 + 115$	$50 \pm 12$	VR6	R	471101
1 105	1 125	1 065	32,5	65	30	$d_1 + 24$	$d_1 + 115$	$50 \pm 12$	VR4	R	411203
	1 065	1 065	32,5	65	21	$d_1 + 24$	$d_1 + 115$	$50 \pm 12$	VR6	R	471121
1 125	1 175	1 045	6	10,5	6,5	$d_1 + 5$	$d_1 + 20$	$8 \pm 1,5$	VR3	R	411502
	1 045	1 045	6	10,5	6,5	$d_1 + 5$	$d_1 + 20$	$8 \pm 1,5$	VR3	V	411506
1 115	1 165	1 045	14,3	25	15	$d_1 + 10$	$d_1 + 45$	$20 \pm 4$	VR1	R	411500
1 125	1 145	1 084	32,5	65	30	$d_1 + 24$	$d_1 + 115$	$50 \pm 12$	VR4	R	411403
	1 084	1 084	32,5	65	21	$d_1 + 24$	$d_1 + 115$	$50 \pm 12$	VR6	R	471141
1 145	1 165	1 103	32,5	65	30	$d_1 + 24$	$d_1 + 115$	$50 \pm 12$	VR4	R	411603
	1 103	1 103	32,5	65	21	$d_1 + 24$	$d_1 + 115$	$50 \pm 12$	VR6	R	471161
1 175	1 225	1 090	6	10,5	6,5	$d_1 + 5$	$d_1 + 20$	$8 \pm 1,5$	VR3	R	412002
	1 090	1 090	6	10,5	6,5	$d_1 + 5$	$d_1 + 20$	$8 \pm 1,5$	VR3	V	412006
1 165	1 215	1 090	14,3	25	15	$d_1 + 10$	$d_1 + 45$	$20 \pm 4$	VR1	R	412000
1 165	1 185	1 121	32,5	65	30	$d_1 + 24$	$d_1 + 115$	$50 \pm 12$	VR4	R	411803
	1 121	1 121	32,5	65	21	$d_1 + 24$	$d_1 + 115$	$50 \pm 12$	VR6	R	471181
1 185	1 205	1 139	32,5	65	30	$d_1 + 24$	$d_1 + 115$	$50 \pm 12$	VR4	R	412003
	1 139	1 139	32,5	65	21	$d_1 + 24$	$d_1 + 115$	$50 \pm 12$	VR6	R	471201
1 205	1 225	1 157	32,5	65	30	$d_1 + 24$	$d_1 + 115$	$50 \pm 12$	VR4	R	412203
	1 157	1 157	32,5	65	21	$d_1 + 24$	$d_1 + 115$	$50 \pm 12$	VR6	R	471221

Dimensions		Seal inside diameter, free state d	Seal seat width b <sub>1</sub>	Nominal seal width b	Nominal seal height c	Clearance D <sub>1</sub> max	Counterface D min	Seal fitted width B <sub>1</sub>	Design	Lip code	Designation
Shaft diameter range d <sub>1</sub> over	incl.										
mm											
<b>1 225</b>	<b>1 275</b>	1 135 1 135	6 6	10,5 10,5	6,5 6,5	d <sub>1</sub> +5 d <sub>1</sub> +5	d <sub>1</sub> +20 d <sub>1</sub> +20	8 ± 1,5 8 ± 1,5	VR3 VR3	R V	<b>412502</b> <b>412506</b>
<b>1 215</b>	<b>1 270</b>	1 135	14,3	25	15	d <sub>1</sub> +10	d <sub>1</sub> +45	20 ± 4	VR1	R	<b>412500</b>
<b>1 225</b>	<b>1 245</b>	1 176 1 176	32,5 32,5	65 65	30 21	d <sub>1</sub> +24 d <sub>1</sub> +24	d <sub>1</sub> +115 d <sub>1</sub> +115	50 ± 12 50 ± 12	VR4 VR6	R R	<b>412403</b> <b>471241</b>
<b>1 245</b>	<b>1 270</b>	1 195 1 195	32,5 32,5	65 65	30 21	d <sub>1</sub> +24 d <sub>1</sub> +24	d <sub>1</sub> +115 d <sub>1</sub> +115	50 ± 12 50 ± 12	VR4 VR6	R R	<b>412603</b> <b>471261</b>
<b>1 270</b>	<b>1 295</b>	1 218 1 218	32,5 32,5	65 65	30 21	d <sub>1</sub> +24 d <sub>1</sub> +24	d <sub>1</sub> +115 d <sub>1</sub> +115	50 ± 12 50 ± 12	VR4 VR6	R R	<b>412803</b> <b>471281</b>
<b>1 275</b>	<b>1 325</b>	1 180 1 180	6 6	10,5 10,5	6,5 6,5	d <sub>1</sub> +5 d <sub>1</sub> +5	d <sub>1</sub> +20 d <sub>1</sub> +20	8 ± 1,5 8 ± 1,5	VR3 VR3	R V	<b>413002</b> <b>413006</b>
<b>1 270</b>	<b>1 320</b>	1 180	14,3	25	15	d <sub>1</sub> +10	d <sub>1</sub> +45	20 ± 4	VR1	R	<b>413000</b>
<b>1 295</b>	<b>1 315</b>	1 240 1 240	32,5 32,5	65 65	30 21	d <sub>1</sub> +24 d <sub>1</sub> +24	d <sub>1</sub> +115 d <sub>1</sub> +115	50 ± 12 50 ± 12	VR4 VR6	R R	<b>413003</b> <b>471301</b>
<b>1 315</b>	<b>1 340</b>	1 259 1 259	32,5 32,5	65 65	30 21	d <sub>1</sub> +24 d <sub>1</sub> +24	d <sub>1</sub> +115 d <sub>1</sub> +115	50 ± 12 50 ± 12	VR4 VR6	R R	<b>413253</b> <b>471326</b>
<b>1 325</b>	<b>1 375</b>	1 225 1 225	6 6	10,5 10,5	6,5 6,5	d <sub>1</sub> +5 d <sub>1</sub> +5	d <sub>1</sub> +20 d <sub>1</sub> +20	8 ± 1,5 8 ± 1,5	VR3 VR3	R V	<b>413502</b> <b>413506</b>
<b>1 320</b>	<b>1 370</b>	1 225	14,3	25	15	d <sub>1</sub> +10	d <sub>1</sub> +45	20 ± 4	VR1	R	<b>413500</b>
<b>1 340</b>	<b>1 365</b>	1 281 1 281	32,5 32,5	65 65	30 21	d <sub>1</sub> +24 d <sub>1</sub> +24	d <sub>1</sub> +115 d <sub>1</sub> +115	50 ± 12 50 ± 12	VR4 VR6	R R	<b>413503</b> <b>471351</b>
<b>1 365</b>	<b>1 390</b>	1 305 1 305	32,5 32,5	65 65	30 21	d <sub>1</sub> +24 d <sub>1</sub> +24	d <sub>1</sub> +115 d <sub>1</sub> +115	50 ± 12 50 ± 12	VR4 VR6	R R	<b>413753</b> <b>471376</b>
<b>1 375</b>	<b>1 425</b>	1 270 1 270	6 6	10,5 10,5	6,5 6,5	d <sub>1</sub> +5 d <sub>1</sub> +5	d <sub>1</sub> +20 d <sub>1</sub> +20	8 ± 1,5 8 ± 1,5	VR3 VR3	R V	<b>414002</b> <b>414006</b>
<b>1 370</b>	<b>1 420</b>	1 270	14,3	25	15	d <sub>1</sub> +10	d <sub>1</sub> +45	20 ± 4	VR1	R	<b>414000</b>
<b>1 390</b>	<b>1 415</b>	1 328 1 328	32,5 32,5	65 65	30 21	d <sub>1</sub> +24 d <sub>1</sub> +24	d <sub>1</sub> +115 d <sub>1</sub> +115	50 ± 12 50 ± 12	VR4 VR6	R R	<b>414003</b> <b>471401</b>
<b>1 415</b>	<b>1 440</b>	1 350 1 350	32,5 32,5	65 65	30 21	d <sub>1</sub> +24 d <sub>1</sub> +24	d <sub>1</sub> +115 d <sub>1</sub> +115	50 ± 12 50 ± 12	VR4 VR6	R R	<b>414253</b> <b>471426</b>
<b>1 425</b>	<b>1 475</b>	1 315 1 315	6 6	10,5 10,5	6,5 6,5	d <sub>1</sub> +5 d <sub>1</sub> +5	d <sub>1</sub> +20 d <sub>1</sub> +20	8 ± 1,5 8 ± 1,5	VR3 VR3	R V	<b>414502</b> <b>414506</b>
<b>1 420</b>	<b>1 470</b>	1 315	14,3	25	15	d <sub>1</sub> +10	d <sub>1</sub> +45	20 ± 4	VR1	R	<b>414500</b>
<b>1 440</b>	<b>1 465</b>	1 374 1 374	32,5 32,5	65 65	30 21	d <sub>1</sub> +24 d <sub>1</sub> +24	d <sub>1</sub> +115 d <sub>1</sub> +115	50 ± 12 50 ± 12	VR4 VR6	R R	<b>414503</b> <b>471451</b>
<b>1 465</b>	<b>1 490</b>	1 397 1 397	32,5 32,5	65 65	30 21	d <sub>1</sub> +24 d <sub>1</sub> +24	d <sub>1</sub> +115 d <sub>1</sub> +115	50 ± 12 50 ± 12	VR4 VR6	R R	<b>414753</b> <b>471476</b>
<b>1 475</b>	<b>1 525</b>	1 360 1 360	6 6	10,5 10,5	6,5 6,5	d <sub>1</sub> +5 d <sub>1</sub> +5	d <sub>1</sub> +20 d <sub>1</sub> +20	8 ± 1,5 8 ± 1,5	VR3 VR3	R V	<b>415002</b> <b>415006</b>
<b>1 470</b>	<b>1 520</b>	1 360	14,3	25	15	d <sub>1</sub> +10	d <sub>1</sub> +45	20 ± 4	VR1	R	<b>415000</b>
<b>1 490</b>	<b>1 515</b>	1 419 1 419	32,5 32,5	65 65	30 21	d <sub>1</sub> +24 d <sub>1</sub> +24	d <sub>1</sub> +115 d <sub>1</sub> +115	50 ± 12 50 ± 12	VR4 VR6	R R	<b>415003</b> <b>471501</b>
<b>1 515</b>	<b>1 540</b>	1 443 1 443	32,5 32,5	65 65	30 21	d <sub>1</sub> +24 d <sub>1</sub> +24	d <sub>1</sub> +115 d <sub>1</sub> +115	50 ± 12 50 ± 12	VR4 VR6	R R	<b>415253</b> <b>471526</b>

# V-ring seals – metric dimensions, for North American market

$d_1$  1 525 – 2 020 mm

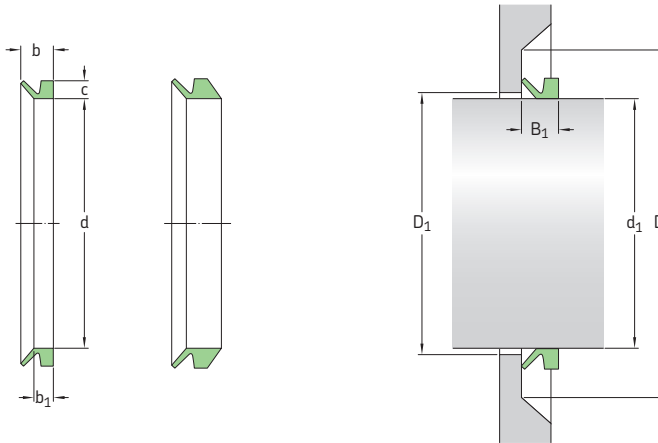


Dimensions		Seal inside diameter, free state $d$	Seal seat width $b_1$	Nominal seal width $b$	Nominal seal height $c$	Clearance $D_1$ max	Counterface $D$ min	Seal fitted width $B_1$	Design	Lip code	Designation
Shaft diameter range $d_1$ over	incl.										
mm											
1 525	1 575	1 405	6	10,5	6,5	$d_1 + 5$	$d_1 + 20$	$8 \pm 1,5$	VR3	R	415502
		1 405									
1 520	1 570	1 405	14,3	25	15	$d_1 + 10$	$d_1 + 45$	$20 \pm 4$	VR1	R	415500
1 540	1 570	1 467	32,5	65	30	$d_1 + 24$	$d_1 + 115$	$50 \pm 12$	VR4	R	415503
		1 467									
1 570	1 600	1 495	32,5	65	30	$d_1 + 24$	$d_1 + 115$	$50 \pm 12$	VR4	R	415753
		1 495									
1 575	1 625	1 450	6	10,5	6,5	$d_1 + 5$	$d_1 + 20$	$8 \pm 1,5$	VR3	R	416002
		1 450									
1 570	1 620	1 450	14,3	25	15	$d_1 + 10$	$d_1 + 45$	$20 \pm 4$	VR1	R	416000
1 600	1 640	1 524	32,5	65	30	$d_1 + 24$	$d_1 + 115$	$50 \pm 12$	VR4	R	416003
		1 524									
1 625	1 675	1 495	6	10,5	6,5	$d_1 + 5$	$d_1 + 20$	$8 \pm 1,5$	VR3	R	416502
		1 495									
1 620	1 670	1 495	14,3	25	15	$d_1 + 10$	$d_1 + 45$	$20 \pm 4$	VR1	R	416500
1 640	1 680	1 559	32,5	65	30	$d_1 + 24$	$d_1 + 115$	$50 \pm 12$	VR4	R	416503
		1 559									
1 675	1 725	1 540	6	10,5	6,5	$d_1 + 5$	$d_1 + 20$	$8 \pm 1,5$	VR3	R	417002
		1 540									
1 670	1 720	1 540	14,3	25	15	$d_1 + 10$	$d_1 + 45$	$20 \pm 4$	VR1	R	417000
1 680	1 720	1 596	32,5	65	30	$d_1 + 24$	$d_1 + 115$	$50 \pm 12$	VR4	R	417003
		1 596									
1 725	1 775	1 585	6	10,5	6,5	$d_1 + 5$	$d_1 + 20$	$8 \pm 1,5$	VR3	R	417502
		1 585									
1 720	1 770	1 585	14,3	25	15	$d_1 + 10$	$d_1 + 45$	$20 \pm 4$	VR1	R	417500
1 720	1 765	1 632	32,5	65	30	$d_1 + 24$	$d_1 + 115$	$50 \pm 12$	VR4	R	417503
		1 632									

Dimensions		Seal inside diameter, free state d	Seal seat width b <sub>1</sub>	Nominal seal width b	Nominal seal height c	Clearance D <sub>1</sub> max	Counterface D min	Seal fitted width B <sub>1</sub>	Design	Lip code	Designation
Shaft diameter range d <sub>1</sub> over	incl.										
mm											
<b>1765 1810</b>	1671	32,5	65	30	d <sub>1</sub> +24	d <sub>1</sub> +115	50 ± 12	VR4	R	<b>418003</b>	
	1671	32,5	65	21	d <sub>1</sub> +24	d <sub>1</sub> +115	50 ± 12	VR6	R	<b>471801</b>	
<b>1775 1825</b>	1630	6	10,5	6,5	d <sub>1</sub> +5	d <sub>1</sub> +20	8 ± 1,5	VR3	R	<b>418002</b>	
	1630	6	10,5	6,5	d <sub>1</sub> +5	d <sub>1</sub> +20	8 ± 1,5	VR3	V	<b>418006</b>	
<b>1770 1820</b>	1630	14,3	25	15	d <sub>1</sub> +10	d <sub>1</sub> +45	20 ± 4	VR1	R	<b>418000</b>	
<b>1810 1855</b>	1714	32,5	65	30	d <sub>1</sub> +24	d <sub>1</sub> +115	50 ± 12	VR4	R	<b>418503</b>	
	1714	32,5	65	21	d <sub>1</sub> +24	d <sub>1</sub> +115	50 ± 12	VR6	R	<b>471851</b>	
<b>1825 1875</b>	1675	6	10,5	6,5	d <sub>1</sub> +5	d <sub>1</sub> +20	8 ± 1,5	VR3	R	<b>418502</b>	
	1675	6	10,5	6,5	d <sub>1</sub> +5	d <sub>1</sub> +20	8 ± 1,5	VR3	V	<b>418506</b>	
<b>1820 1870</b>	1675	14,3	25	15	d <sub>1</sub> +10	d <sub>1</sub> +45	20 ± 4	VR1	R	<b>418500</b>	
<b>1855 1905</b>	1753	32,5	65	30	d <sub>1</sub> +24	d <sub>1</sub> +115	50 ± 12	VR4	R	<b>419003</b>	
	1753	32,5	65	21	d <sub>1</sub> +24	d <sub>1</sub> +115	50 ± 12	VR6	R	<b>471901</b>	
<b>1875 1925</b>	1720	6	10,5	6,5	d <sub>1</sub> +5	d <sub>1</sub> +20	8 ± 1,5	VR3	R	<b>419002</b>	
	1720	6	10,5	6,5	d <sub>1</sub> +5	d <sub>1</sub> +20	8 ± 1,5	VR3	V	<b>419006</b>	
<b>1870 1920</b>	1720	14,3	25	15	d <sub>1</sub> +10	d <sub>1</sub> +45	20 ± 4	VR1	R	<b>419000</b>	
<b>1905 1955</b>	1794	32,5	65	30	d <sub>1</sub> +24	d <sub>1</sub> +115	50 ± 12	VR4	R	<b>419503</b>	
	1794	32,5	65	21	d <sub>1</sub> +24	d <sub>1</sub> +115	50 ± 12	VR6	R	<b>471951</b>	
<b>1925 1975</b>	1765	6	10,5	6,5	d <sub>1</sub> +5	d <sub>1</sub> +20	8 ± 1,5	VR3	R	<b>419502</b>	
	1765	6	10,5	6,5	d <sub>1</sub> +5	d <sub>1</sub> +20	8 ± 1,5	VR3	V	<b>419506</b>	
<b>1920 1970</b>	1765	14,3	25	15	d <sub>1</sub> +10	d <sub>1</sub> +45	20 ± 4	VR1	R	<b>419500</b>	
<b>1955 2010</b>	1844	32,5	65	30	d <sub>1</sub> +24	d <sub>1</sub> +115	50 ± 12	VR4	R	<b>420003</b>	
	1844	32,5	65	21	d <sub>1</sub> +24	d <sub>1</sub> +115	50 ± 12	VR6	R	<b>472001</b>	
<b>1975 2025</b>	1810	6	10,5	6,5	d <sub>1</sub> +5	d <sub>1</sub> +20	8 ± 1,5	VR3	R	<b>420002</b>	
	1810	6	10,5	6,5	d <sub>1</sub> +5	d <sub>1</sub> +20	8 ± 1,5	VR3	V	<b>420006</b>	
<b>1970 2020</b>	1810	14,3	25	15	d <sub>1</sub> +10	d <sub>1</sub> +45	20 ± 4	VR1	R	<b>420000</b>	

# V-ring seals – inch dimensions, for North American market

$d_1$  0.11 – 2.09 in.

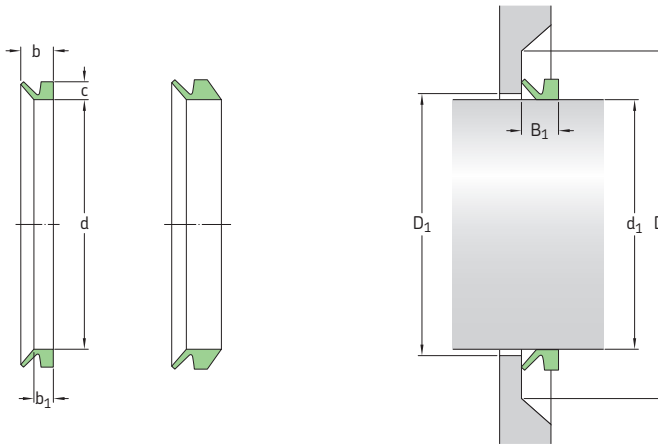


Dimensions		Seal inside diameter, free state $d$	Nominal seal height $c$	Seal seat width $b_1$	Nominal seal width $b$	Clearance $D_1 (=d_1 +)$ max	Counter-face $D (=d_1 +)$ min	Seal fitted width $B_1$	Design	Lip code	Designation
Shaft diameter range $d_1$ over	incl.										
in.		in.							-	-	-
0.11	0.14	0.10	0.06	0.08	0.12	0.04	0.16	$0.10 \pm 0.012$	VR1	R	400030
		0.10	0.06	0.08	0.12	0.04	0.16	$0.10 \pm 0.012$	VR1	V	400034
0.14	0.18	0.13	0.08	0.09	0.15	0.04	0.24	$0.12 \pm 0.016$	VR1	R	400040
		0.13	0.08	0.09	0.15	0.04	0.24	$0.12 \pm 0.016$	VR1	V	400044
0.18	0.22	0.16	0.08	0.09	0.15	0.04	0.24	$0.12 \pm 0.016$	VR1	R	400050
		0.16	0.08	0.09	0.15	0.04	0.24	$0.12 \pm 0.016$	VR1	V	400054
		0.16	0.08	0.15	0.20	0.04	0.24	$0.18 \pm 0.016$	VR2	R	400051
		0.16	0.08	0.15	0.20	0.04	0.24	$0.18 \pm 0.016$	VR2	V	400055
0.22	0.26	0.20	0.08	0.09	0.15	0.04	0.24	$0.12 \pm 0.016$	VR1	R	400060
		0.20	0.08	0.09	0.15	0.04	0.24	$0.12 \pm 0.016$	VR1	V	400064
		0.20	0.08	0.15	0.20	0.04	0.24	$0.18 \pm 0.016$	VR2	R	400061
		0.20	0.08	0.15	0.20	0.04	0.24	$0.18 \pm 0.016$	VR2	V	400065
0.26	0.31	0.24	0.08	0.09	0.15	0.04	0.24	$0.12 \pm 0.016$	VR1	R	400070
		0.24	0.08	0.09	0.15	0.04	0.24	$0.12 \pm 0.016$	VR1	V	400074
		0.24	0.08	0.15	0.20	0.04	0.24	$0.18 \pm 0.016$	VR2	R	400071
		0.24	0.08	0.15	0.20	0.04	0.24	$0.18 \pm 0.016$	VR2	V	400075
0.31	0.37	0.28	0.08	0.09	0.15	0.04	0.24	$0.12 \pm 0.016$	VR1	R	400080
		0.28	0.08	0.09	0.15	0.04	0.24	$0.12 \pm 0.016$	VR1	V	400084
		0.28	0.08	0.15	0.20	0.04	0.24	$0.18 \pm 0.016$	VR2	R	400081
		0.28	0.08	0.15	0.20	0.04	0.24	$0.18 \pm 0.016$	VR2	V	400085
0.37	0.45	0.35	0.12	0.13	0.22	0.04	0.35	$0.18 \pm 0.02$	VR1	R	400100
		0.35	0.12	0.13	0.22	0.04	0.35	$0.18 \pm 0.02$	VR1	V	400104
		0.35	0.12	0.22	0.30	0.04	0.35	$0.26 \pm 0.02$	VR2	R	400101
		0.35	0.12	0.22	0.30	0.04	0.35	$0.26 \pm 0.02$	VR2	V	400105
0.45	0.49	0.41	0.12	0.13	0.22	0.04	0.35	$0.18 \pm 0.02$	VR1	R	400120
		0.41	0.12	0.13	0.22	0.04	0.35	$0.18 \pm 0.02$	VR1	V	400124
		0.41	0.12	0.22	0.30	0.04	0.35	$0.26 \pm 0.02$	VR2	R	400121
		0.41	0.12	0.22	0.30	0.04	0.35	$0.26 \pm 0.02$	VR2	V	400125
0.49	0.53	0.46	0.12	0.13	0.22	0.04	0.35	$0.18 \pm 0.02$	VR1	R	400130
		0.46	0.12	0.13	0.22	0.04	0.35	$0.18 \pm 0.02$	VR1	V	400134
0.53	0.61	0.49	0.12	0.13	0.22	0.04	0.35	$0.18 \pm 0.02$	VR1	R	400140
		0.49	0.12	0.13	0.22	0.04	0.35	$0.18 \pm 0.02$	VR1	V	400144

Dimensions		Seal inside diameter, free state d	Nominal seal height c	Seal seat width b <sub>1</sub>	Nominal seal width b	Clearance D <sub>1</sub> (=d <sub>1</sub> +) max	Counter-face D(-d <sub>1</sub> +) min	Seal fitted width B <sub>1</sub>	Design	Lip code	Designation
Shaft diameter range d <sub>1</sub> over	incl.										
in.		in.							-	-	-
<b>0.53</b> cont.	<b>0.61</b>	0.49	0.12	0.22	0.30	0.04	0.35	0.26 ± 0.02	VR2	R	<b>400141</b>
		0.49	0.12	0.22	0.30	0.04	0.35	0.26 ± 0.02	VR2	V	<b>400145</b>
<b>0.61</b>	<b>0.67</b>	0.55	0.12	0.13	0.22	0.04	0.35	0.18 ± 0.02	VR1	R	<b>400160</b>
		0.55	0.12	0.13	0.22	0.04	0.35	0.18 ± 0.02	VR1	V	<b>400164</b>
<b>0.61</b>	<b>0.69</b>	0.55	0.12	0.22	0.30	0.04	0.35	0.26 ± 0.02	VR2	R	<b>400161</b>
		0.55	0.12	0.22	0.30	0.04	0.35	0.26 ± 0.02	VR2	V	<b>400165</b>
<b>0.69</b>	<b>0.75</b>	0.63	0.12	0.13	0.22	0.04	0.35	0.18 ± 0.02	VR1	R	<b>400180</b>
		0.63	0.12	0.13	0.22	0.04	0.35	0.18 ± 0.02	VR1	V	<b>400184</b>
		0.63	0.12	0.22	0.30	0.04	0.35	0.26 ± 0.02	VR2	R	<b>400181</b>
		0.63	0.12	0.22	0.30	0.04	0.35	0.26 ± 0.02	VR2	V	<b>400185</b>
<b>0.75</b>	<b>0.83</b>	0.71	0.16	0.19	0.30	0.08	0.47	0.24 ± 0.03	VR1	R	<b>400200</b>
		0.71	0.16	0.19	0.30	0.08	0.47	0.24 ± 0.03	VR1	V	<b>400204</b>
		0.71	0.16	0.31	0.41	0.08	0.47	0.35 ± 0.03	VR2	R	<b>400201</b>
		0.71	0.16	0.31	0.41	0.08	0.47	0.35 ± 0.03	VR2	V	<b>400205</b>
<b>0.83</b>	<b>0.94</b>	0.79	0.16	0.19	0.30	0.08	0.47	0.24 ± 0.03	VR1	R	<b>400220</b>
		0.79	0.16	0.19	0.30	0.08	0.47	0.24 ± 0.03	VR1	V	<b>400224</b>
		0.79	0.16	0.31	0.41	0.08	0.47	0.35 ± 0.03	VR2	R	<b>400221</b>
		0.79	0.16	0.31	0.41	0.08	0.47	0.35 ± 0.03	VR2	V	<b>400225</b>
<b>0.94</b>	<b>1.06</b>	0.87	0.16	0.19	0.30	0.08	0.47	0.24 ± 0.03	VR1	R	<b>400250</b>
		0.87	0.16	0.19	0.30	0.08	0.47	0.24 ± 0.03	VR1	V	<b>400254</b>
		0.87	0.16	0.31	0.41	0.08	0.47	0.35 ± 0.03	VR2	R	<b>400251</b>
		0.87	0.16	0.31	0.41	0.08	0.47	0.35 ± 0.03	VR2	V	<b>400255</b>
<b>1.06</b>	<b>1.14</b>	0.98	0.16	0.19	0.30	0.08	0.47	0.24 ± 0.03	VR1	R	<b>400280</b>
		0.98	0.16	0.19	0.30	0.08	0.47	0.24 ± 0.03	VR1	V	<b>400284</b>
		0.98	0.16	0.31	0.41	0.08	0.47	0.35 ± 0.03	VR2	R	<b>400281</b>
		0.98	0.16	0.31	0.41	0.08	0.47	0.35 ± 0.03	VR2	V	<b>400285</b>
<b>1.14</b>	<b>1.22</b>	1.06	0.16	0.19	0.30	0.08	0.47	0.24 ± 0.03	VR1	R	<b>400300</b>
		1.06	0.16	0.19	0.30	0.08	0.47	0.24 ± 0.03	VR1	V	<b>400304</b>
		1.06	0.16	0.31	0.41	0.08	0.47	0.35 ± 0.03	VR2	R	<b>400301</b>
		1.06	0.16	0.31	0.41	0.08	0.47	0.35 ± 0.03	VR2	V	<b>400305</b>
<b>1.22</b>	<b>1.30</b>	1.14	0.16	0.19	0.30	0.08	0.47	0.24 ± 0.03	VR1	R	<b>400320</b>
		1.14	0.16	0.19	0.30	0.08	0.47	0.24 ± 0.03	VR1	V	<b>400324</b>
		1.14	0.16	0.31	0.41	0.08	0.47	0.35 ± 0.03	VR2	R	<b>400321</b>
		1.14	0.16	0.31	0.41	0.08	0.47	0.35 ± 0.03	VR2	V	<b>400325</b>
<b>1.30</b>	<b>1.42</b>	1.22	0.16	0.19	0.30	0.08	0.47	0.24 ± 0.03	VR1	R	<b>400350</b>
		1.22	0.16	0.19	0.30	0.08	0.47	0.24 ± 0.03	VR1	V	<b>400354</b>
		1.22	0.16	0.31	0.41	0.08	0.47	0.35 ± 0.03	VR2	R	<b>400351</b>
		1.22	0.16	0.31	0.41	0.08	0.47	0.35 ± 0.03	VR2	V	<b>400355</b>
<b>1.42</b>	<b>1.50</b>	1.34	0.16	0.19	0.30	0.08	0.47	0.24 ± 0.03	VR1	R	<b>400380</b>
		1.34	0.16	0.19	0.30	0.08	0.47	0.24 ± 0.03	VR1	V	<b>400384</b>
		1.34	0.16	0.31	0.41	0.08	0.47	0.35 ± 0.03	VR2	R	<b>400381</b>
		1.34	0.16	0.31	0.41	0.08	0.47	0.35 ± 0.03	VR2	V	<b>400385</b>
<b>1.50</b>	<b>1.69</b>	1.42	0.20	0.22	0.35	0.08	0.59	0.28 ± 0.04	VR1	R	<b>400400</b>
		1.42	0.20	0.22	0.35	0.08	0.59	0.28 ± 0.04	VR1	V	<b>400404</b>
		1.42	0.20	0.37	0.51	0.08	0.59	0.43 ± 0.04	VR2	R	<b>400401</b>
		1.42	0.20	0.37	0.51	0.08	0.59	0.43 ± 0.04	VR2	V	<b>400405</b>
<b>1.69</b>	<b>1.89</b>	1.57	0.20	0.22	0.35	0.08	0.59	0.28 ± 0.04	VR1	R	<b>400450</b>
		1.57	0.20	0.22	0.35	0.08	0.59	0.28 ± 0.04	VR1	V	<b>400454</b>
		1.57	0.20	0.37	0.51	0.08	0.59	0.43 ± 0.04	VR2	R	<b>400451</b>
		1.57	0.20	0.37	0.51	0.08	0.59	0.43 ± 0.04	VR2	V	<b>400455</b>
<b>1.89</b>	<b>2.09</b>	1.77	0.20	0.22	0.35	0.08	0.59	0.28 ± 0.04	VR1	R	<b>400500</b>
		1.77	0.20	0.22	0.35	0.08	0.59	0.28 ± 0.04	VR1	V	<b>400504</b>
		1.77	0.20	0.37	0.51	0.08	0.59	0.43 ± 0.04	VR2	R	<b>400501</b>
		1.77	0.20	0.37	0.51	0.08	0.59	0.43 ± 0.04	VR2	V	<b>400505</b>

# V-ring seals – inch dimensions, for North American market

$d_1$  2.09 – 7.68 in.

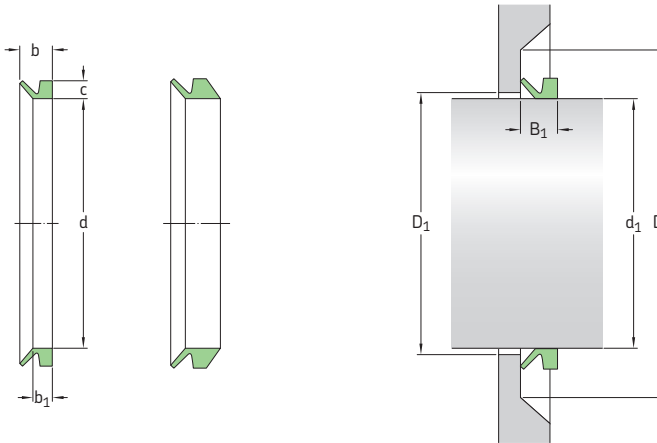


Dimensions		Seal inside diameter, free state $d$	Nominal seal height $c$	Seal seat width $b_1$	Nominal seal width $b$	Clearance $D_1 (= d_1 +)$ max	Counter-face $D (= d_1 +)$ min	Seal fitted width $B_1$	Design	Lip code	Designation
Shaft diameter range $d_1$ over	incl.										
in.		in.							-	-	-
2.09	2.28	1.93	0.20	0.22	0.35	0.08	0.59	0.28 ± 0.04	VR1	R	400550
		1.93	0.20	0.22	0.35	0.08	0.59	0.28 ± 0.04	VR1	V	400554
		1.93	0.20	0.37	0.51	0.08	0.59	0.43 ± 0.04	VR2	R	400551
		1.93	0.20	0.37	0.51	0.08	0.59	0.43 ± 0.04	VR2	V	400555
2.28	2.48	2.13	0.20	0.22	0.35	0.08	0.59	0.28 ± 0.04	VR1	R	400600
		2.13	0.20	0.22	0.35	0.08	0.59	0.28 ± 0.04	VR1	V	400604
		2.13	0.20	0.37	0.51	0.08	0.59	0.43 ± 0.04	VR2	R	400601
		2.13	0.20	0.37	0.51	0.08	0.59	0.43 ± 0.04	VR2	V	400605
2.48	2.68	2.28	0.20	0.22	0.35	0.08	0.59	0.28 ± 0.04	VR1	R	400650
		2.28	0.20	0.22	0.35	0.08	0.59	0.28 ± 0.04	VR1	V	400654
		2.28	0.20	0.37	0.51	0.08	0.59	0.43 ± 0.04	VR2	R	400651
		2.28	0.20	0.37	0.51	0.08	0.59	0.43 ± 0.04	VR2	V	400655
2.68	2.87	2.48	0.24	0.27	0.43	0.12	0.71	0.35 ± 0.05	VR1	R	400700
		2.48	0.24	0.27	0.43	0.12	0.71	0.35 ± 0.05	VR1	V	400704
		2.48	0.24	0.44	0.61	0.12	0.71	0.53 ± 0.05	VR2	R	400701
		2.48	0.24	0.44	0.61	0.12	0.71	0.53 ± 0.05	VR2	V	400705
2.87	3.07	2.64	0.24	0.27	0.43	0.12	0.71	0.35 ± 0.05	VR1	R	400750
		2.64	0.24	0.27	0.43	0.12	0.71	0.53 ± 0.05	VR2	R	400751
		2.64	0.24	0.44	0.61	0.12	0.71	0.53 ± 0.05	VR2	V	400755
3.07	3.27	2.83	0.24	0.27	0.43	0.12	0.71	0.35 ± 0.05	VR1	R	400800
		2.83	0.24	0.27	0.43	0.12	0.71	0.35 ± 0.05	VR1	V	400804
		2.83	0.24	0.44	0.61	0.12	0.71	0.53 ± 0.05	VR2	R	400801
		2.83	0.24	0.44	0.61	0.12	0.71	0.53 ± 0.05	VR2	V	400805
3.27	3.46	2.99	0.24	0.27	0.43	0.12	0.71	0.35 ± 0.05	VR1	R	400850
		2.99	0.24	0.27	0.43	0.12	0.71	0.35 ± 0.05	VR1	V	400854
		2.99	0.24	0.44	0.61	0.12	0.71	0.53 ± 0.05	VR2	R	400851
		2.99	0.24	0.44	0.61	0.12	0.71	0.53 ± 0.05	VR2	V	400855
3.46	3.66	3.19	0.24	0.27	0.43	0.12	0.71	0.35 ± 0.05	VR1	R	400900
		3.19	0.24	0.27	0.43	0.12	0.71	0.35 ± 0.05	VR1	V	400904
		3.19	0.24	0.44	0.61	0.12	0.71	0.53 ± 0.05	VR2	R	400901
		3.19	0.24	0.44	0.61	0.12	0.71	0.53 ± 0.05	VR2	V	400905
3.66	3.86	3.35	0.24	0.27	0.43	0.12	0.71	0.35 ± 0.05	VR1	R	400950
		3.35	0.24	0.27	0.43	0.12	0.71	0.35 ± 0.05	VR1	V	400954
		3.35	0.24	0.44	0.61	0.12	0.71	0.53 ± 0.05	VR2	R	400951
		3.35	0.24	0.44	0.61	0.12	0.71	0.53 ± 0.05	VR2	V	400955

Dimensions		Seal inside diameter, free state d	Nominal seal height c	Seal seat width b <sub>1</sub>	Nominal seal width b	Clearance D <sub>1</sub> (= d <sub>1</sub> +) max	Counter-face D (= d <sub>1</sub> +) min	Seal fitted width B <sub>1</sub>	Design	Lip code	Designation
Shaft diameter range d <sub>1</sub> over	incl.										
in.		in.							-	-	-
<b>3.86</b>	<b>4.13</b>	3.54	0.24	0.27	0.43	0.12	0.71	0.35 ± 0.05	VR1	R	<b>401000</b>
		3.54	0.24	0.27	0.43	0.12	0.71	0.35 ± 0.05	VR1	V	<b>401004</b>
		3.54	0.24	0.44	0.61	0.12	0.71	0.53 ± 0.05	VR2	R	<b>401001</b>
		3.54	0.24	0.44	0.61	0.12	0.71	0.53 ± 0.05	VR2	V	<b>401005</b>
<b>4.13</b>	<b>4.53</b>	3.90	0.26	0.24	0.41	0.20	0.79	0.31 ± 0.06	VR3	R	<b>401102</b>
		3.90	0.26	0.24	0.41	0.20	0.79	0.31 ± 0.06	VR3	V	<b>401106</b>
		3.90	0.28	0.31	0.50	0.16	0.83	0.41 ± 0.06	VR1	R	<b>401100</b>
		3.90	0.28	0.31	0.50	0.16	0.83	0.41 ± 0.06	VR1	V	<b>401104</b>
		3.90	0.28	0.52	0.71	0.16	0.83	0.61 ± 0.06	VR2	R	<b>401101</b>
		3.90	0.28	0.52	0.71	0.16	0.83	0.61 ± 0.06	VR2	V	<b>401105</b>
<b>4.53</b>	<b>4.92</b>	4.25	0.26	0.24	0.41	0.20	0.79	0.31 ± 0.06	VR3	R	<b>401202</b>
		4.25	0.26	0.24	0.41	0.20	0.79	0.31 ± 0.06	VR3	V	<b>401206</b>
		4.25	0.28	0.31	0.50	0.16	0.83	0.41 ± 0.06	VR1	R	<b>401200</b>
		4.25	0.28	0.31	0.50	0.16	0.83	0.41 ± 0.06	VR1	V	<b>401204</b>
		4.25	0.28	0.52	0.71	0.16	0.83	0.61 ± 0.06	VR2	R	<b>401201</b>
		4.25	0.28	0.52	0.71	0.16	0.83	0.61 ± 0.06	VR2	V	<b>401205</b>
<b>4.92</b>	<b>5.31</b>	4.61	0.26	0.24	0.41	0.20	0.79	0.31 ± 0.06	VR3	R	<b>401302</b>
		4.61	0.26	0.24	0.41	0.20	0.79	0.31 ± 0.06	VR3	V	<b>401306</b>
		4.61	0.28	0.31	0.50	0.16	0.83	0.41 ± 0.06	VR1	R	<b>401300</b>
		4.61	0.28	0.31	0.50	0.16	0.83	0.41 ± 0.06	VR1	V	<b>401304</b>
		4.61	0.28	0.52	0.71	0.16	0.83	0.61 ± 0.06	VR2	R	<b>401301</b>
		4.61	0.28	0.52	0.71	0.16	0.83	0.61 ± 0.06	VR2	V	<b>401305</b>
<b>5.31</b>	<b>5.71</b>	4.96	0.26	0.24	0.41	0.20	0.79	0.31 ± 0.06	VR3	R	<b>401402</b>
		4.96	0.26	0.24	0.41	0.20	0.79	0.31 ± 0.06	VR3	V	<b>401406</b>
		4.96	0.28	0.31	0.50	0.16	0.83	0.41 ± 0.06	VR1	R	<b>401400</b>
		4.96	0.28	0.31	0.50	0.16	0.83	0.41 ± 0.06	VR1	V	<b>401404</b>
		4.96	0.28	0.52	0.71	0.16	0.83	0.61 ± 0.06	VR2	R	<b>401401</b>
		4.96	0.28	0.52	0.71	0.16	0.83	0.61 ± 0.06	VR2	V	<b>401405</b>
<b>5.71</b>	<b>6.10</b>	5.31	0.26	0.24	0.41	0.20	0.79	0.31 ± 0.06	VR3	R	<b>401502</b>
		5.31	0.26	0.24	0.41	0.20	0.79	0.31 ± 0.06	VR3	V	<b>401506</b>
		5.31	0.28	0.31	0.50	0.16	0.83	0.41 ± 0.06	VR1	R	<b>401500</b>
		5.31	0.28	0.31	0.50	0.16	0.83	0.41 ± 0.06	VR1	V	<b>401504</b>
		5.31	0.28	0.52	0.71	0.16	0.83	0.61 ± 0.06	VR2	R	<b>401501</b>
		5.31	0.28	0.52	0.71	0.16	0.83	0.61 ± 0.06	VR2	V	<b>401505</b>
<b>6.10</b>	<b>6.50</b>	5.67	0.26	0.24	0.41	0.20	0.79	0.31 ± 0.06	VR3	R	<b>401602</b>
		5.67	0.26	0.24	0.41	0.20	0.79	0.31 ± 0.06	VR3	V	<b>401606</b>
		5.67	0.31	0.35	0.57	0.16	0.94	0.47 ± 0.07	VR1	R	<b>401600</b>
		5.67	0.31	0.35	0.57	0.16	0.94	0.47 ± 0.07	VR1	V	<b>401604</b>
		5.67	0.31	0.59	0.81	0.16	0.94	0.71 ± 0.07	VR2	R	<b>401601</b>
		5.67	0.31	0.59	0.81	0.16	0.94	0.71 ± 0.07	VR2	V	<b>401605</b>
<b>6.50</b>	<b>6.89</b>	6.02	0.26	0.24	0.41	0.20	0.79	0.31 ± 0.06	VR3	R	<b>401702</b>
		6.02	0.26	0.24	0.41	0.20	0.79	0.31 ± 0.06	VR3	V	<b>401706</b>
		6.02	0.31	0.35	0.57	0.16	0.94	0.47 ± 0.07	VR1	R	<b>401700</b>
		6.02	0.31	0.35	0.57	0.16	0.94	0.47 ± 0.07	VR1	V	<b>401704</b>
		6.02	0.31	0.59	0.81	0.16	0.94	0.71 ± 0.07	VR2	R	<b>401701</b>
		6.02	0.31	0.59	0.81	0.16	0.94	0.71 ± 0.07	VR2	V	<b>401705</b>
<b>6.89</b>	<b>7.28</b>	6.38	0.26	0.24	0.41	0.20	0.79	0.31 ± 0.06	VR3	R	<b>401802</b>
		6.38	0.26	0.24	0.41	0.20	0.79	0.31 ± 0.06	VR3	V	<b>401806</b>
		6.38	0.31	0.35	0.57	0.16	0.94	0.47 ± 0.07	VR1	R	<b>401800</b>
		6.38	0.31	0.35	0.57	0.16	0.94	0.47 ± 0.07	VR1	V	<b>401804</b>
		6.38	0.31	0.59	0.81	0.16	0.94	0.71 ± 0.07	VR2	R	<b>401801</b>
		6.38	0.31	0.59	0.81	0.16	0.94	0.71 ± 0.07	VR2	V	<b>401805</b>
<b>7.28</b>	<b>7.68</b>	6.73	0.26	0.24	0.41	0.20	0.79	0.31 ± 0.06	VR3	R	<b>401902</b>
		6.73	0.26	0.24	0.41	0.20	0.79	0.31 ± 0.06	VR3	V	<b>401906</b>
		6.73	0.31	0.35	0.57	0.16	0.94	0.47 ± 0.07	VR1	R	<b>401900</b>
		6.73	0.31	0.35	0.57	0.16	0.94	0.47 ± 0.07	VR1	V	<b>401904</b>
		6.73	0.31	0.59	0.81	0.16	0.94	0.71 ± 0.07	VR2	R	<b>401901</b>
		6.73	0.31	0.59	0.81	0.16	0.94	0.71 ± 0.07	VR2	V	<b>401905</b>



**V-ring seals – inch dimensions, for North American market**  
 $d_1$  7.48 – 15.35 in.

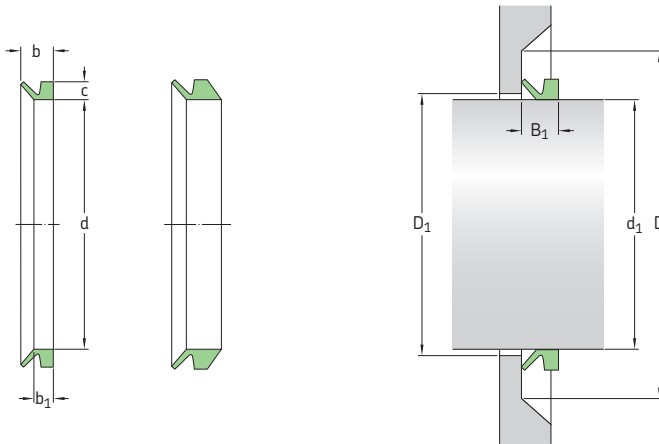


Dimensions		Seal inside diameter, free state $d$	Nominal seal height $c$	Seal seat width $b_1$	Nominal seal width $b$	Clearance $D_1 (= d_1 +)$ max	Counter-face $D (= d_1 +)$ min	Seal fitted width $B_1$	Design	Lip code	Designation
Shaft diameter range $d_1$ over	incl.										
in.	in.								-	-	-
7.68	8.27	7.17	0.26	0.24	0.41	0.20	0.79	$0.31 \pm 0.06$	VR3	R	402002
		7.17	0.26	0.24	0.41	0.20	0.79	$0.31 \pm 0.06$	VR3	V	402006
		7.09	0.31	0.35	0.57	0.16	0.94	$0.47 \pm 0.07$	VR1	R	401990
		7.09	0.31	0.35	0.57	0.16	0.94	$0.47 \pm 0.07$	VR1	V	401994
		7.09	0.31	0.59	0.81	0.16	0.94	$0.71 \pm 0.07$	VR2	R	401991
		7.09	0.31	0.59	0.81	0.16	0.94	$0.71 \pm 0.07$	VR2	V	401995
7.48	8.27	7.09	0.59	0.56	0.98	0.39	1.77	$0.79 \pm 0.16$	VR1	R	402000
		7.09	0.59	0.56	0.98	0.39	1.77	$0.79 \pm 0.16$	VR1	V	402004
8.27	9.17	7.80	0.26	0.24	0.41	0.20	0.79	$0.31 \pm 0.06$	VR3	R	402202
		7.80	0.26	0.24	0.41	0.20	0.79	$0.31 \pm 0.06$	VR3	V	402206
		7.80	0.59	0.56	0.98	0.39	1.77	$0.79 \pm 0.16$	VR1	R	402200
		7.80	0.59	0.56	0.98	0.39	1.77	$0.79 \pm 0.16$	VR1	V	402204
9.17	10.24	8.86	0.26	0.24	0.41	0.20	0.79	$0.31 \pm 0.06$	VR3	R	402502
		8.86	0.26	0.24	0.41	0.20	0.79	$0.31 \pm 0.06$	VR3	V	402506
9.25	10.43	8.86	0.59	0.56	0.98	0.39	1.77	$0.79 \pm 0.16$	VR1	R	402500
		8.86	0.59	0.56	0.98	0.39	1.77	$0.79 \pm 0.16$	VR1	V	402504
10.24	11.22	9.72	0.26	0.24	0.41	0.20	0.79	$0.31 \pm 0.06$	VR3	R	402752
		9.72	0.26	0.24	0.41	0.20	0.79	$0.31 \pm 0.06$	VR3	V	402756
10.43	11.42	9.72	0.59	0.56	0.98	0.39	1.77	$0.79 \pm 0.16$	VR1	R	402750
		9.72	0.59	0.56	0.98	0.39	1.77	$0.79 \pm 0.16$	VR1	V	402754
11.22	12.20	10.63	0.26	0.24	0.41	0.20	0.79	$0.31 \pm 0.06$	VR3	R	403002
		10.63	0.26	0.24	0.41	0.20	0.79	$0.31 \pm 0.06$	VR3	V	403006
11.42	12.20	10.63	0.59	0.56	0.98	0.39	1.77	$0.79 \pm 0.16$	VR1	R	403000
		10.63	0.59	0.56	0.98	0.39	1.77	$0.79 \pm 0.16$	VR1	V	403004
11.81	12.01	11.57	1.18	1.28	2.56	0.94	4.53	$1.97 \pm 0.47$	VR4	R	403003
		11.57	0.83	1.28	2.56	0.94	4.53	$1.97 \pm 0.47$	VR6	R	470301
12.01	12.20	11.77	1.18	1.28	2.56	0.94	4.53	$1.97 \pm 0.47$	VR4	R	403053
		11.77	0.83	1.28	2.56	0.94	4.53	$1.97 \pm 0.47$	VR6	R	470306
12.20	13.19	11.50	0.26	0.24	0.41	0.20	0.79	$0.31 \pm 0.06$	VR3	R	403252
		11.50	0.26	0.24	0.41	0.20	0.79	$0.31 \pm 0.06$	VR3	V	403256

Dimensions		Seal inside diameter, free state d	Nominal seal height c	Seal seat width b <sub>1</sub>	Nominal seal width b	Clearance D <sub>1</sub> (= d <sub>1+</sub> ) max	Counter-face D(= d <sub>1+</sub> ) min	Seal fitted width B <sub>1</sub>	Design	Lip code	Designation
Shaft diameter range d <sub>1</sub> over	incl.										
in.		in.							-	-	-
<b>12.20</b> cont.	<b>13.19</b>	11.50 11.50	0.59 0.59	0.56 0.56	0.98 0.98	0.39 0.39	1.77 1.77	0.79 ± 0.16 0.79 ± 0.16	VR1 VR1	R V	<b>403250</b> <b>403254</b>
<b>12.20</b>	<b>12.40</b>	11.97 11.97	1.18 0.83	1.28 1.28	2.56 2.56	0.94 0.94	4.53 4.53	1.97 ± 0.47 1.97 ± 0.47	VR4 VR6	R R	<b>403103</b> <b>470311</b>
<b>12.40</b>	<b>12.60</b>	12.17 12.17	1.18 0.83	1.28 1.28	2.56 2.56	0.94 0.94	4.53 4.53	1.97 ± 0.47 1.97 ± 0.47	VR4 VR6	R R	<b>403153</b> <b>470316</b>
<b>12.60</b>	<b>12.80</b>	12.36 12.36	1.18 0.83	1.28 1.28	2.56 2.56	0.94 0.94	4.53 4.53	1.97 ± 0.47 1.97 ± 0.47	VR4 VR6	R R	<b>403203</b> <b>470321</b>
<b>12.80</b>	<b>12.99</b>	12.56 12.56	1.18 0.83	1.28 1.28	2.56 2.56	0.94 0.94	4.53 4.53	1.97 ± 0.47 1.97 ± 0.47	VR4 VR6	R R	<b>403253</b> <b>470326</b>
<b>12.99</b>	<b>13.19</b>	12.72 12.72	1.18 0.83	1.28 1.28	2.56 2.56	0.94 0.94	4.53 4.53	1.97 ± 0.47 1.97 ± 0.47	VR4 VR6	R R	<b>403303</b> <b>470331</b>
<b>13.19</b>	<b>14.37</b>	12.40 12.40 12.40 12.40	0.26 0.26 0.59 0.59	0.24 0.24 0.56 0.56	0.41 0.41 0.98 0.98	0.20 0.20 0.39 0.39	0.79 0.79 1.77 1.77	0.31 ± 0.06 0.31 ± 0.06 0.79 ± 0.16 0.79 ± 0.16	VR3 VR3 VR1 VR1	R V R V	<b>403502</b> <b>403506</b> <b>403500</b> <b>403504</b>
<b>13.19</b>	<b>13.39</b>	12.91 12.91	1.18 0.83	1.28 1.28	2.56 2.56	0.94 0.94	4.53 4.53	1.97 ± 0.47 1.97 ± 0.47	VR4 VR6	R R	<b>403353</b> <b>470336</b>
<b>13.39</b>	<b>13.58</b>	13.11 12.91	1.18 0.83	1.28 1.28	2.56 2.56	0.94 0.94	4.53 4.53	1.97 ± 0.47 1.97 ± 0.47	VR4 VR6	R R	<b>403403</b> <b>470341</b>
<b>13.58</b>	<b>13.78</b>	13.31 13.31	1.18 0.83	1.28 1.28	2.56 2.56	0.94 0.94	4.53 4.53	1.97 ± 0.47 1.97 ± 0.47	VR4 VR6	R R	<b>403453</b> <b>470346</b>
<b>13.78</b>	<b>13.98</b>	13.50 13.50	1.18 0.83	1.28 1.28	2.56 2.56	0.94 0.94	4.53 4.53	1.97 ± 0.47 1.97 ± 0.47	VR4 VR6	R R	<b>403503</b> <b>470351</b>
<b>13.98</b>	<b>14.17</b>	13.66 13.66	1.18 0.83	1.28 1.28	2.56 2.56	0.94 0.94	4.53 4.53	1.97 ± 0.47 1.97 ± 0.47	VR4 VR6	R R	<b>403553</b> <b>470356</b>
<b>14.17</b>	<b>14.37</b>	13.86 14.06	1.18 0.83	1.28 1.28	2.56 2.56	0.94 0.94	4.53 4.53	1.97 ± 0.47 1.97 ± 0.47	VR4 VR6	R R	<b>403603</b> <b>470361</b>
<b>14.37</b>	<b>15.16</b>	13.27 13.27	0.26 0.26	0.24 0.24	0.41 0.41	0.20 0.20	0.79 0.79	0.31 ± 0.06 0.31 ± 0.06	VR3 VR3	R V	<b>403752</b> <b>403756</b>
<b>14.37</b>	<b>15.35</b>	13.27 13.27	0.59 0.59	0.56 0.56	0.98 0.98	0.39 0.39	1.77 1.77	0.79 ± 0.16 0.79 ± 0.16	VR1 VR1	R V	<b>403750</b> <b>403754</b>
<b>14.37</b>	<b>14.57</b>	14.06	1.18	1.28	2.56	0.94	4.53	1.97 ± 0.47	VR4	R	<b>403653</b>
<b>14.57</b>	<b>14.76</b>	14.25 14.25	1.18 0.83	1.28 1.28	2.56 2.56	0.94 0.94	4.53 4.53	1.97 ± 0.47 1.97 ± 0.47	VR4 VR6	R R	<b>403703</b> <b>470371</b>
<b>14.76</b>	<b>14.96</b>	14.45 14.45	1.18 0.83	1.28 1.28	2.56 2.56	0.94 0.94	4.53 4.53	1.97 ± 0.47 1.97 ± 0.47	VR4 VR6	R R	<b>403753</b> <b>470376</b>
<b>14.96</b>	<b>15.16</b>	14.61 14.61	1.18 0.83	1.28 1.28	2.56 2.56	0.94 0.94	4.53 4.53	1.97 ± 0.47 1.97 ± 0.47	VR4 VR6	R R	<b>403803</b> <b>470381</b>
<b>15.16</b>	<b>16.14</b>	14.17 14.17	0.26 0.26	0.24 0.24	0.41 0.41	0.20 0.20	0.79 0.79	0.31 ± 0.06 0.31 ± 0.06	VR3 VR3	R V	<b>404002</b> <b>404006</b>
<b>15.35</b>	<b>16.93</b>	14.17 14.17	0.59 0.59	0.56 0.56	0.98 0.98	0.39 0.39	1.77 1.77	0.79 ± 0.16 0.79 ± 0.16	VR1 VR1	R V	<b>404000</b> <b>404004</b>
<b>15.16</b>	<b>15.35</b>	14.80 14.80	1.18 0.83	1.28 1.28	2.56 2.56	0.94 0.94	4.53 4.53	1.97 ± 0.47 1.97 ± 0.47	VR4 VR6	R R	<b>403853</b> <b>470386</b>

## V-ring seals – inch dimensions, for North American market

$d_1$  15.35 – 22.64 in.

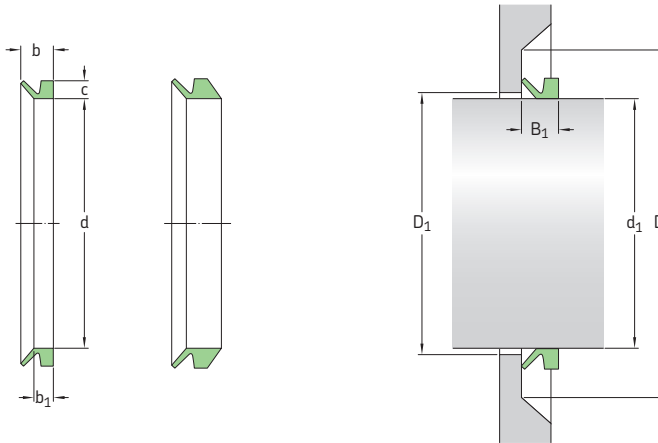


Dimensions		Seal inside diameter, free state $d$	Nominal seal height $c$	Seal seat width $b_1$	Nominal seal width $b$	Clearance $D_1 (= d_1 +)$ max	Counter-face $D (= d_1 +)$ min	Seal fitted width $B_1$	Design	Lip code	Designation
Shaft diameter range $d_1$	incl.										
in.	in.										
15.35	15.55	15.00	1.18	1.28	2.56	0.94	4.53	$1.97 \pm 0.47$	VR4	R	403903
		15.00	0.83	1.28	2.56	0.94	4.53	$1.97 \pm 0.47$	VR6	R	470391
15.55	15.75	15.20	1.18	1.28	2.56	0.94	4.53	$1.97 \pm 0.47$	VR4	R	403953
		15.20	0.83	1.28	2.56	0.94	4.53	$1.97 \pm 0.47$	VR6	R	470396
15.75	15.94	15.39	1.18	1.28	2.56	0.94	4.53	$1.97 \pm 0.47$	VR4	R	404003
		15.39	0.83	1.28	2.56	0.94	4.53	$1.97 \pm 0.47$	VR6	R	470401
15.94	16.14	15.59	1.18	1.28	2.56	0.94	4.53	$1.97 \pm 0.47$	VR4	R	404053
		15.59	0.83	1.28	2.56	0.94	4.53	$1.97 \pm 0.47$	VR6	R	470406
16.14	16.34	15.79	1.18	1.28	2.56	0.94	4.53	$1.97 \pm 0.47$	VR4	R	404103
		15.79	0.83	1.28	2.56	0.94	4.53	$1.97 \pm 0.47$	VR6	R	470411
16.34	16.54	15.94	1.18	1.28	2.56	0.94	4.53	$1.97 \pm 0.47$	VR4	R	404153
		15.94	0.83	1.28	2.56	0.94	4.53	$1.97 \pm 0.47$	VR6	R	470416
16.54	16.73	16.14	1.18	1.28	2.56	0.94	4.53	$1.97 \pm 0.47$	VR4	R	404203
		16.14	0.83	1.28	2.56	0.94	4.53	$1.97 \pm 0.47$	VR6	R	470421
16.73	16.93	16.34	1.18	1.28	2.56	0.94	4.53	$1.97 \pm 0.47$	VR4	R	404253
		16.34	0.83	1.28	2.56	0.94	4.53	$1.97 \pm 0.47$	VR6	R	470426
16.14	17.32	15.04	0.26	0.24	0.41	0.20	0.79	$0.31 \pm 0.06$	VR3	R	404252
		15.04	0.26	0.24	0.41	0.20	0.79	$0.31 \pm 0.06$	VR3	V	404256
17.32	18.70	15.94	0.26	0.24	0.41	0.20	0.79	$0.31 \pm 0.06$	VR3	R	404502
		15.94	0.26	0.24	0.41	0.20	0.79	$0.31 \pm 0.06$	VR3	V	404506
16.93	18.90	15.94	0.59	0.56	0.98	0.39	1.77	$0.79 \pm 0.16$	VR1	R	404500
		15.94	0.59	0.56	0.98	0.39	1.77	$0.79 \pm 0.16$	VR1	V	404504
16.93	17.13	16.54	1.18	1.28	2.56	0.94	4.53	$1.97 \pm 0.47$	VR4	R	404303
		16.54	0.83	1.28	2.56	0.94	4.53	$1.97 \pm 0.47$	VR6	R	470431
17.13	17.32	16.73	1.18	1.28	2.56	0.94	4.53	$1.97 \pm 0.47$	VR4	R	404353
		16.73	0.83	1.28	2.56	0.94	4.53	$1.97 \pm 0.47$	VR6	R	470436

Dimensions		Seal inside diameter, free state d	Nominal seal height c	Seal seat width b <sub>1</sub>	Nominal seal width b	Clearance D <sub>1</sub> (= d <sub>1</sub> +) max	Counter-face D <sub>1</sub> (= d <sub>1</sub> +) min	Seal fitted width B <sub>1</sub>	Design	Lip code	Designation
Shaft diameter range d <sub>1</sub> over	incl.										
in.		in.							-	-	-
<b>17.32</b>	<b>17.52</b>	16.89 16.89	1.18 0.83	1.28 1.28	2.56 2.56	0.94 0.94	4.53 4.53	1.97 ± 0.47 1.97 ± 0.47	VR4 VR6	R R	<b>404403</b> <b>470441</b>
<b>17.52</b>	<b>17.72</b>	17.09 17.09	1.18 0.83	1.28 1.28	2.56 2.56	0.94 0.94	4.53 4.53	1.97 ± 0.47 1.97 ± 0.47	VR4 VR6	R R	<b>404453</b> <b>470446</b>
<b>17.72</b>	<b>17.91</b>	17.28 17.28	1.18 0.83	1.28 1.28	2.56 2.56	0.94 0.94	4.53 4.53	1.97 ± 0.47 1.97 ± 0.47	VR4 VR6	R R	<b>404503</b> <b>470451</b>
<b>17.91</b>	<b>18.11</b>	17.48 17.48	1.18 0.83	1.28 1.28	2.56 2.56	0.94 0.94	4.53 4.53	1.97 ± 0.47 1.97 ± 0.47	VR4 VR6	R R	<b>404553</b> <b>470456</b>
<b>18.11</b>	<b>18.31</b>	17.64 17.64	1.18 0.83	1.28 1.28	2.56 2.56	0.94 0.94	4.53 4.53	1.97 ± 0.47 1.97 ± 0.47	VR4 VR6	R R	<b>404603</b> <b>470461</b>
<b>18.31</b>	<b>18.50</b>	17.83 17.83	1.18 0.83	1.28 1.28	2.56 2.56	0.94 0.94	4.53 4.53	1.97 ± 0.47 1.97 ± 0.47	VR4 VR6	R R	<b>404653</b> <b>470466</b>
<b>18.50</b>	<b>18.70</b>	18.03 18.03	1.18 0.83	1.28 1.28	2.56 2.56	0.94 0.94	4.53 4.53	1.97 ± 0.47 1.97 ± 0.47	VR4 VR6	R R	<b>404703</b> <b>470471</b>
<b>18.70</b>	<b>18.90</b>	18.23 18.23	1.18 0.83	1.28 1.28	2.56 2.56	0.94 0.94	4.53 4.53	1.97 ± 0.47 1.97 ± 0.47	VR4 VR6	R R	<b>404753</b> <b>470476</b>
<b>18.70</b>	<b>20.08</b>	17.72 17.72	0.26 0.26	0.24 0.24	0.41 0.41	0.20 0.20	0.79 0.79	0.31 ± 0.06 0.31 ± 0.06	VR3 VR3	R V	<b>405002</b> <b>405006</b>
<b>20.08</b>	<b>21.26</b>	18.58 18.58	0.26 0.26	0.24 0.24	0.41 0.41	0.20 0.20	0.79 0.79	0.31 ± 0.06 0.31 ± 0.06	VR3 VR3	R V	<b>405252</b> <b>405256</b>
<b>18.90</b>	<b>20.87</b>	17.72 17.72	0.59 0.59	0.56 0.56	0.98 0.98	0.39 0.39	1.77 1.77	0.79 ± 0.16 0.79 ± 0.16	VR1 VR1	R V	<b>405000</b> <b>405004</b>
<b>18.90</b>	<b>19.09</b>	18.43 18.43	1.18 0.83	1.28 1.28	2.56 2.56	0.94 0.94	4.53 4.53	1.97 ± 0.47 1.97 ± 0.47	VR4 VR6	R R	<b>404803</b> <b>470481</b>
<b>19.09</b>	<b>19.29</b>	18.62 18.62	1.18 0.83	1.28 1.28	2.56 2.56	0.94 0.94	4.53 4.53	1.97 ± 0.47 1.97 ± 0.47	VR4 VR6	R R	<b>404853</b> <b>470486</b>
<b>19.29</b>	<b>19.49</b>	18.82 18.82	1.18 0.83	1.28 1.28	2.56 2.56	0.94 0.94	4.53 4.53	1.97 ± 0.47 1.97 ± 0.47	VR4 VR6	R R	<b>404903</b> <b>470491</b>
<b>19.49</b>	<b>19.69</b>	19.02 19.02	1.18 0.83	1.28 1.28	2.56 2.56	0.94 0.94	4.53 4.53	1.97 ± 0.47 1.97 ± 0.47	VR4 VR6	R R	<b>404953</b> <b>470496</b>
<b>19.69</b>	<b>19.88</b>	19.21 19.21	1.18 0.83	1.28 1.28	2.56 2.56	0.94 0.94	4.53 4.53	1.97 ± 0.47 1.97 ± 0.47	VR4 VR6	R R	<b>405003</b> <b>470501</b>
<b>19.88</b>	<b>20.08</b>	19.41 19.41	1.18 0.83	1.28 1.28	2.56 2.56	0.94 0.94	4.53 4.53	1.97 ± 0.47 1.97 ± 0.47	VR4 VR6	R R	<b>405053</b> <b>470506</b>
<b>20.08</b>	<b>20.28</b>	19.57 19.57	1.18 0.83	1.28 1.28	2.56 2.56	0.94 0.94	4.53 4.53	1.97 ± 0.47 1.97 ± 0.47	VR4 VR6	R R	<b>405103</b> <b>470511</b>
<b>20.28</b>	<b>20.47</b>	19.76 19.76	1.18 0.83	1.28 1.28	2.56 2.56	0.94 0.94	4.53 4.53	1.97 ± 0.47 1.97 ± 0.47	VR4 VR6	R R	<b>405153</b> <b>470516</b>
<b>20.47</b>	<b>20.67</b>	19.96 19.96	1.18 0.83	1.28 1.28	2.56 2.56	0.94 0.94	4.53 4.53	1.97 ± 0.47 1.97 ± 0.47	VR4 VR6	R R	<b>405203</b> <b>470521</b>
<b>20.67</b>	<b>20.87</b>	20.16 20.16	1.18 0.83	1.28 1.28	2.56 2.56	0.94 0.94	4.53 4.53	1.97 ± 0.47 1.97 ± 0.47	VR4 VR6	R R	<b>405253</b> <b>470526</b>
<b>21.26</b>	<b>22.64</b>	19.49 19.49	0.26 0.26	0.24 0.24	0.41 0.41	0.20 0.20	0.79 0.79	0.31 ± 0.06 0.31 ± 0.06	VR3 VR3	R V	<b>405502</b> <b>405506</b>

## V-ring seals – inch dimensions, for North American market

$d_1$  20.87 – 28.74 in.

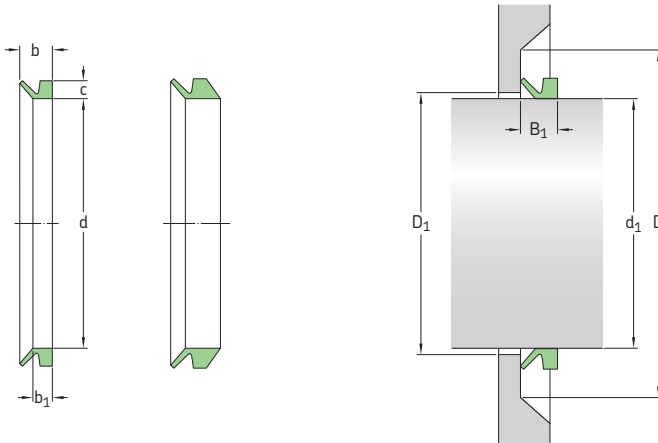


Dimensions		Seal inside diameter, free state $d$	Nominal seal height $c$	Seal seat width $b_1$	Nominal seal width $b$	Clearance $D_1 (= d_1 +)$ max	Counter-face $D (= d_1 +)$ min	Seal fitted width $B_1$	Design	Lip code	Designation
Shaft diameter range $d_1$	incl.										
in.	in.										
20.87	22.83	19.49	0.59	0.56	0.98	0.39	1.77	$0.79 \pm 0.16$	VR1	R	405500
		19.49	0.59	0.56	0.98	0.39	1.77	$0.79 \pm 0.16$			
20.87	21.06	20.35	1.18	1.28	2.56	0.94	4.53	$1.97 \pm 0.47$	VR4	R	405303
		20.35	0.83	1.28	2.56	0.94	4.53	$1.97 \pm 0.47$			
21.06	21.26	20.51	1.18	1.28	2.56	0.94	4.53	$1.97 \pm 0.47$	VR4	R	405353
		20.51	0.83	1.28	2.56	0.94	4.53	$1.97 \pm 0.47$			
21.26	21.46	20.71	1.18	1.28	2.56	0.94	4.53	$1.97 \pm 0.47$	VR4	R	405403
		20.71	0.83	1.28	2.56	0.94	4.53	$1.97 \pm 0.47$			
21.46	21.65	20.91	1.18	1.28	2.56	0.94	4.53	$1.97 \pm 0.47$	VR4	R	405453
		20.91	0.83	1.28	2.56	0.94	4.53	$1.97 \pm 0.47$			
21.65	21.85	21.10	1.18	1.28	2.56	0.94	4.53	$1.97 \pm 0.47$	VR4	R	405503
		21.10	0.83	1.28	2.56	0.94	4.53	$1.97 \pm 0.47$			
21.85	22.05	21.30	1.18	1.28	2.56	0.94	4.53	$1.97 \pm 0.47$	VR4	R	405553
		21.30	0.83	1.28	2.56	0.94	4.53	$1.97 \pm 0.47$			
22.05	22.24	21.50	1.18	1.28	2.56	0.94	4.53	$1.97 \pm 0.47$	VR4	R	405603
		21.50	0.83	1.28	2.56	0.94	4.53	$1.97 \pm 0.47$			
22.24	22.44	21.65	1.18	1.28	2.56	0.94	4.53	$1.97 \pm 0.47$	VR4	R	405653
		21.65	0.83	1.28	2.56	0.94	4.53	$1.97 \pm 0.47$			
22.44	22.64	21.85	1.18	1.28	2.56	0.94	4.53	$1.97 \pm 0.47$	VR4	R	405703
		21.85	0.83	1.28	2.56	0.94	4.53	$1.97 \pm 0.47$			
22.64	22.83	22.05	1.18	1.28	2.56	0.94	4.53	$1.97 \pm 0.47$	VR4	R	405753
		22.05	0.83	1.28	2.56	0.94	4.53	$1.97 \pm 0.47$			
22.64	24.61	21.26	0.26	0.24	0.41	0.20	0.79	$0.31 \pm 0.06$	VR3	R	406002
		21.26	0.26	0.24	0.41	0.20	0.79	$0.31 \pm 0.06$			
22.83	24.80	21.26	0.59	0.56	0.98	0.39	1.77	$0.79 \pm 0.16$	VR1	R	406000
		21.26	0.59	0.56	0.98	0.39	1.77	$0.79 \pm 0.16$			

Dimensions		Seal inside diameter, free state d	Nominal seal height c	Seal seat width b <sub>1</sub>	Nominal seal width b	Clearance D <sub>1</sub> (= d <sub>1+</sub> ) max	Counter-face D (= d <sub>1+</sub> ) min	Seal fitted width B <sub>1</sub>	Design	Lip code	Designation
Shaft diameter range d <sub>1</sub> over	incl.										
in.		in.							-	-	-
<b>22.83</b>	<b>23.03</b>	22.24	1.18	1.28	2.56	0.94	4.53	1.97 ± 0.47	VR4	R	<b>405803</b>
		22.24	0.83	1.28	2.56	0.94	4.53	1.97 ± 0.47	VR6	R	<b>470581</b>
<b>23.03</b>	<b>23.23</b>	22.44	1.18	1.28	2.56	0.94	4.53	1.97 ± 0.47	VR4	R	<b>405853</b>
		22.44	0.83	1.28	2.56	0.94	4.53	1.97 ± 0.47	VR6	R	<b>470586</b>
<b>23.23</b>	<b>23.62</b>	22.64	1.18	1.28	2.56	0.94	4.53	1.97 ± 0.47	VR4	R	<b>405903</b>
		22.64	0.83	1.28	2.56	0.94	4.53	1.97 ± 0.47	VR6	R	<b>470591</b>
<b>23.62</b>	<b>24.02</b>	22.91	1.18	1.28	2.56	0.94	4.53	1.97 ± 0.47	VR4	R	<b>406003</b>
		22.91	0.83	1.28	2.56	0.94	4.53	1.97 ± 0.47	VR6	R	<b>470601</b>
<b>24.02</b>	<b>24.41</b>	23.31	1.18	1.28	2.56	0.94	4.53	1.97 ± 0.47	VR4	R	<b>406103</b>
		23.31	0.83	1.28	2.56	0.94	4.53	1.97 ± 0.47	VR6	R	<b>470611</b>
<b>24.41</b>	<b>24.80</b>	23.70	1.18	1.28	2.56	0.94	4.53	1.97 ± 0.47	VR4	R	<b>406203</b>
		23.70	0.83	1.28	2.56	0.94	4.53	1.97 ± 0.47	VR6	R	<b>470621</b>
<b>24.21</b>	<b>26.57</b>	23.62	0.26	0.24	0.41	0.20	0.79	0.31 ± 0.06	VR3	R	<b>406502</b>
		23.62	0.26	0.24	0.41	0.20	0.79	0.31 ± 0.06	VR3	V	<b>406506</b>
<b>24.80</b>	<b>26.18</b>	23.62	0.59	0.56	0.98	0.39	1.77	0.79 ± 0.16	VR1	R	<b>406500</b>
		23.62	0.59	0.56	0.98	0.39	1.77	0.79 ± 0.16	VR1	V	<b>406504</b>
<b>24.80</b>	<b>25.20</b>	24.09	1.18	1.28	2.56	0.94	4.53	1.97 ± 0.47	VR4	R	<b>406303</b>
		24.09	0.83	1.28	2.56	0.94	4.53	1.97 ± 0.47	VR6	R	<b>470631</b>
<b>25.20</b>	<b>25.59</b>	24.45	1.18	1.28	2.56	0.94	4.53	1.97 ± 0.47	VR4	R	<b>406403</b>
		24.45	0.83	1.28	2.56	0.94	4.53	1.97 ± 0.47	VR6	R	<b>470641</b>
<b>25.59</b>	<b>25.98</b>	24.84	1.18	1.28	2.56	0.94	4.53	1.97 ± 0.47	VR4	R	<b>406503</b>
		24.84	0.83	1.28	2.56	0.94	4.53	1.97 ± 0.47	VR6	R	<b>470651</b>
<b>25.98</b>	<b>26.38</b>	25.20	1.18	1.28	2.56	0.94	4.53	1.97 ± 0.47	VR4	R	<b>406603</b>
		25.20	0.83	1.28	2.56	0.94	4.53	1.97 ± 0.47	VR6	R	<b>470661</b>
<b>26.57</b>	<b>27.95</b>	24.80	0.26	0.24	0.41	0.20	0.79	0.31 ± 0.06	VR3	R	<b>407002</b>
		24.80	0.26	0.24	0.41	0.20	0.79	0.31 ± 0.06	VR3	V	<b>407006</b>
<b>26.18</b>	<b>27.76</b>	24.80	0.59	0.56	0.98	0.39	1.77	0.79 ± 0.16	VR1	R	<b>407000</b>
		24.80	0.59	0.56	0.98	0.39	1.77	0.79 ± 0.16	VR1	V	<b>407004</b>
<b>26.38</b>	<b>26.77</b>	25.59	1.18	1.28	2.56	0.94	4.53	1.97 ± 0.47	VR4	R	<b>406703</b>
		25.59	0.83	1.28	2.56	0.94	4.53	1.97 ± 0.47	VR6	R	<b>470671</b>
<b>26.77</b>	<b>27.17</b>	25.98	1.18	1.28	2.56	0.94	4.53	1.97 ± 0.47	VR4	R	<b>406803</b>
		25.98	0.83	1.28	2.56	0.94	4.53	1.97 ± 0.47	VR6	R	<b>470681</b>
<b>27.17</b>	<b>27.56</b>	26.38	1.18	1.28	2.56	0.94	4.53	1.97 ± 0.47	VR4	R	<b>406903</b>
		26.38	0.83	1.28	2.56	0.94	4.53	1.97 ± 0.47	VR6	R	<b>470691</b>
<b>27.56</b>	<b>27.95</b>	26.77	1.18	1.28	2.56	0.94	4.53	1.97 ± 0.47	VR4	R	<b>407003</b>
		26.77	0.83	1.28	2.56	0.94	4.53	1.97 ± 0.47	VR6	R	<b>470701</b>
<b>27.95</b>	<b>29.13</b>	26.38	0.26	0.24	0.41	0.20	0.79	0.31 ± 0.06	VR3	R	<b>407252</b>
		26.38	0.26	0.24	0.41	0.20	0.79	0.31 ± 0.06	VR3	V	<b>407256</b>
<b>27.76</b>	<b>29.33</b>	26.38	0.59	0.56	0.98	0.39	1.77	0.79 ± 0.16	VR1	R	<b>407250</b>
		26.38	0.59	0.56	0.98	0.39	1.77	0.79 ± 0.16	VR1	V	<b>407254</b>
<b>27.95</b>	<b>28.35</b>	27.13	1.18	1.28	2.56	0.94	4.53	1.97 ± 0.47	VR4	R	<b>407103</b>
		27.13	0.83	1.28	2.56	0.94	4.53	1.97 ± 0.47	VR6	R	<b>470711</b>
<b>28.35</b>	<b>28.74</b>	27.52	1.18	1.28	2.56	0.94	4.53	1.97 ± 0.47	VR4	R	<b>407203</b>
		27.52	0.83	1.28	2.56	0.94	4.53	1.97 ± 0.47	VR6	R	<b>470721</b>

# V-ring seals – inch dimensions, for North American market

$d_1$  28.74 – 39.96 in.



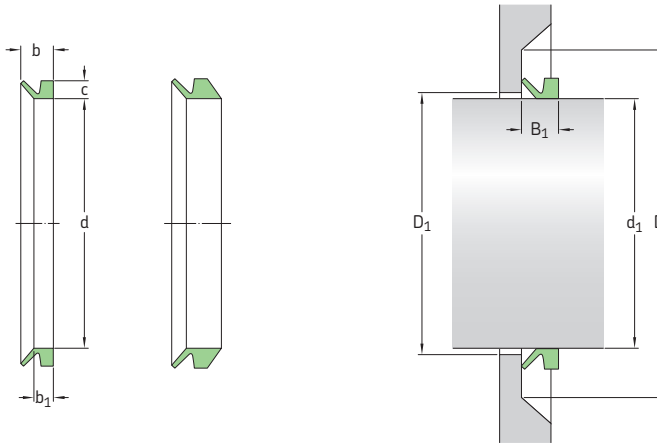
Dimensions		Seal inside diameter, free state $d$	Nominal seal height $c$	Seal seat width $b_1$	Nominal seal width $b$	Clearance $D_1 (= d_1 +)$ max	Counter-face $D (= d_1 +)$ min	Seal fitted width $B_1$	Design	Lip code	Designation
Shaft diameter range $d_1$	incl.										
in.	in.										
28.74	29.13	27.91	1.18	1.28	2.56	0.94	4.53	$1.97 \pm 0.47$	VR4	R	407303
		27.91	0.83	1.28	2.56	0.94	4.53	$1.97 \pm 0.47$			
29.13	29.53	28.27	1.18	1.28	2.56	0.94	4.53	$1.97 \pm 0.47$	VR4	R	407403
		28.27	0.83	1.28	2.56	0.94	4.53	$1.97 \pm 0.47$			
29.13	30.51	27.76	0.26	0.24	0.41	0.20	0.79	$0.31 \pm 0.06$	VR3	R	407502
		27.76	0.26	0.24	0.41	0.20	0.79	$0.31 \pm 0.06$			
29.33	30.91	27.76	0.59	0.56	0.98	0.39	1.77	$0.79 \pm 0.16$	VR1	R	407500
		27.76	0.59	0.56	0.98	0.39	1.77	$0.79 \pm 0.16$			
29.53	29.84	28.66	1.18	1.28	2.56	0.94	4.53	$1.97 \pm 0.47$	VR4	R	407503
		28.66	0.83	1.28	2.56	0.94	4.53	$1.97 \pm 0.47$			
29.84	30.16	28.94	1.18	1.28	2.56	0.94	4.53	$1.97 \pm 0.47$	VR4	R	407603
		28.94	0.83	1.28	2.56	0.94	4.53	$1.97 \pm 0.47$			
30.16	30.47	29.25	1.18	1.28	2.56	0.94	4.53	$1.97 \pm 0.47$	VR4	R	407703
		29.25	0.83	1.28	2.56	0.94	4.53	$1.97 \pm 0.47$			
30.47	30.83	29.57	1.18	1.28	2.56	0.94	4.53	$1.97 \pm 0.47$	VR4	R	407803
		29.57	0.83	1.28	2.56	0.94	4.53	$1.97 \pm 0.47$			
30.83	31.18	29.88	1.18	1.28	2.56	0.94	4.53	$1.97 \pm 0.47$	VR4	R	407903
		29.88	0.83	1.28	2.56	0.94	4.53	$1.97 \pm 0.47$			
30.51	32.48	29.33	0.26	0.24	0.41	0.20	0.79	$0.31 \pm 0.06$	VR3	R	408002
		29.33	0.26	0.24	0.41	0.20	0.79	$0.31 \pm 0.06$			
30.91	32.68	29.33	0.59	0.56	0.98	0.39	1.77	$0.79 \pm 0.16$	VR1	R	408000
		29.33	0.59	0.56	0.98	0.39	1.77	$0.79 \pm 0.16$			
31.18	31.54	30.24	1.18	1.28	2.56	0.94	4.53	$1.97 \pm 0.47$	VR4	R	408003
		30.24	0.83	1.28	2.56	0.94	4.53	$1.97 \pm 0.47$			
31.54	31.89	30.59	1.18	1.28	2.56	0.94	4.53	$1.97 \pm 0.47$	VR4	R	408103
		30.59	0.83	1.28	2.56	0.94	4.53	$1.97 \pm 0.47$			

Dimensions		Seal inside diameter, free state d	Nominal seal height c	Seal seat width b <sub>1</sub>	Nominal seal width b	Clearance D <sub>1</sub> (= d <sub>1+</sub> ) max	Counter-face D (= d <sub>1+</sub> ) min	Seal fitted width B <sub>1</sub>	Design	Lip code	Designation
Shaft diameter range d <sub>1</sub> over	incl.										
in.		in.							-	-	-
<b>31.89</b>	<b>32.32</b>	30.94	1.18	1.28	2.56	0.94	4.53	1.97 ± 0.47	VR4	R	<b>408203</b>
		30.94	0.83	1.28	2.56	0.94	4.53	1.97 ± 0.47	VR6	R	<b>470821</b>
<b>32.32</b>	<b>32.72</b>	31.34	1.18	1.28	2.56	0.94	4.53	1.97 ± 0.47	VR4	R	<b>408303</b>
		31.34	0.83	1.28	2.56	0.94	4.53	1.97 ± 0.47	VR6	R	<b>470831</b>
<b>32.48</b>	<b>34.45</b>	30.91	0.26	0.24	0.41	0.20	0.79	0.31 ± 0.06	VR3	R	<b>408502</b>
		30.91	0.26	0.24	0.41	0.20	0.79	0.31 ± 0.06	VR3	V	<b>408506</b>
<b>32.68</b>	<b>34.45</b>	30.91	0.59	0.56	0.98	0.39	1.77	0.79 ± 0.16	VR1	R	<b>408500</b>
		30.91	0.59	0.56	0.98	0.39	1.77	0.79 ± 0.16	VR1	V	<b>408504</b>
<b>32.72</b>	<b>33.11</b>	31.69	1.18	1.28	2.56	0.94	4.53	1.97 ± 0.47	VR4	R	<b>408403</b>
		31.69	0.83	1.28	2.56	0.94	4.53	1.97 ± 0.47	VR6	R	<b>470841</b>
<b>33.11</b>	<b>33.50</b>	32.05	1.18	1.28	2.56	0.94	4.53	1.97 ± 0.47	VR4	R	<b>408503</b>
		32.05	0.83	1.28	2.56	0.94	4.53	1.97 ± 0.47	VR6	R	<b>470851</b>
<b>33.50</b>	<b>33.90</b>	32.44	1.18	1.28	2.56	0.94	4.53	1.97 ± 0.47	VR4	R	<b>408603</b>
		32.44	0.83	1.28	2.56	0.94	4.53	1.97 ± 0.47	VR6	R	<b>470861</b>
<b>33.90</b>	<b>34.29</b>	32.80	1.18	1.28	2.56	0.94	4.53	1.97 ± 0.47	VR4	R	<b>408703</b>
		32.80	0.83	1.28	2.56	0.94	4.53	1.97 ± 0.47	VR6	R	<b>470871</b>
<b>34.29</b>	<b>34.72</b>	33.19	1.18	1.28	2.56	0.94	4.53	1.97 ± 0.47	VR4	R	<b>408803</b>
		33.19	0.83	1.28	2.56	0.94	4.53	1.97 ± 0.47	VR6	R	<b>470881</b>
<b>34.45</b>	<b>36.42</b>	32.48	0.26	0.24	0.41	0.20	0.79	0.31 ± 0.06	VR3	R	<b>409002</b>
		32.48	0.26	0.24	0.41	0.20	0.79	0.31 ± 0.06	VR3	V	<b>409006</b>
<b>34.45</b>	<b>36.22</b>	32.48	0.59	0.56	0.98	0.39	1.77	0.79 ± 0.16	VR1	R	<b>409000</b>
		32.48	0.59	0.56	0.98	0.39	1.77	0.79 ± 0.16	VR1	V	<b>409004</b>
<b>34.72</b>	<b>35.12</b>	33.58	1.18	1.28	2.56	0.94	4.53	1.97 ± 0.47	VR4	R	<b>408903</b>
		33.58	0.83	1.28	2.56	0.94	4.53	1.97 ± 0.47	VR6	R	<b>470891</b>
<b>35.12</b>	<b>35.91</b>	34.29	1.18	1.28	2.56	0.94	4.53	1.97 ± 0.47	VR4	R	<b>409003</b>
		34.29	0.83	1.28	2.56	0.94	4.53	1.97 ± 0.47	VR6	R	<b>470901</b>
<b>35.91</b>	<b>36.30</b>	34.65	1.18	1.28	2.56	0.94	4.53	1.97 ± 0.47	VR4	R	<b>409203</b>
		34.65	0.83	1.28	2.56	0.94	4.53	1.97 ± 0.47	VR6	R	<b>470921</b>
<b>36.42</b>	<b>38.39</b>	34.06	0.26	0.24	0.41	0.20	0.79	0.31 ± 0.06	VR3	R	<b>409502</b>
		34.06	0.26	0.24	0.41	0.20	0.79	0.31 ± 0.06	VR3	V	<b>409506</b>
<b>36.22</b>	<b>37.99</b>	34.06	0.59	0.56	0.98	0.39	1.77	0.79 ± 0.16	VR1	R	<b>409500</b>
		34.06	0.59	0.56	0.98	0.39	1.77	0.79 ± 0.16	VR1	V	<b>409504</b>
<b>36.30</b>	<b>36.73</b>	35.04	1.18	1.28	2.56	0.94	4.53	1.97 ± 0.47	VR4	R	<b>409303</b>
		35.04	0.83	1.28	2.56	0.94	4.53	1.97 ± 0.47	VR6	R	<b>470931</b>
<b>36.73</b>	<b>37.17</b>	35.43	1.18	1.28	2.56	0.94	4.53	1.97 ± 0.47	VR4	R	<b>409403</b>
		35.43	0.83	1.28	2.56	0.94	4.53	1.97 ± 0.47	VR6	R	<b>470941</b>
<b>37.17</b>	<b>37.60</b>	35.87	1.18	1.28	2.56	0.94	4.53	1.97 ± 0.47	VR4	R	<b>409503</b>
		35.87	0.83	1.28	2.56	0.94	4.53	1.97 ± 0.47	VR6	R	<b>470951</b>
<b>37.60</b>	<b>38.03</b>	36.26	1.18	1.28	2.56	0.94	4.53	1.97 ± 0.47	VR4	R	<b>409603</b>
		36.26	0.83	1.28	2.56	0.94	4.53	1.97 ± 0.47	VR6	R	<b>470961</b>
<b>38.39</b>	<b>40.35</b>	35.83	0.26	0.24	0.41	0.20	0.79	0.31 ± 0.06	VR3	R	<b>410002</b>
		35.83	0.26	0.24	0.41	0.20	0.79	0.31 ± 0.06	VR3	V	<b>410006</b>
<b>37.99</b>	<b>39.96</b>	35.83	0.59	0.56	0.98	0.39	1.77	0.79 ± 0.16	VR1	R	<b>410000</b>
		35.83	0.59	0.56	0.98	0.39	1.77	0.79 ± 0.16	VR1	V	<b>410004</b>



# V-ring seals – inch dimensions, for North American market

$d_1$  38.03 – 56.69 in.

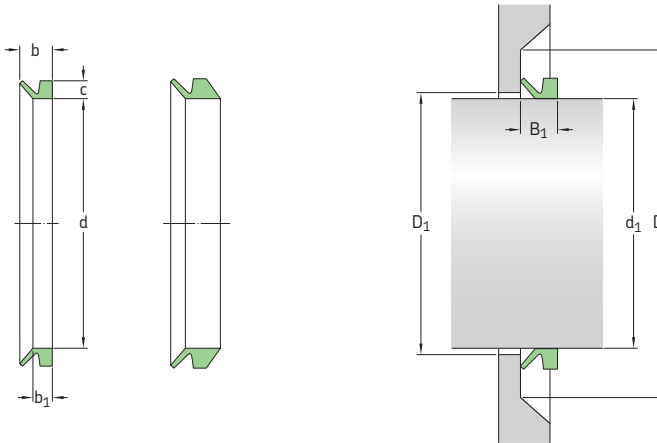


Dimensions		Seal inside diameter, free state $d$	Nominal seal height $c$	Seal seat width $b_1$	Nominal seal width $b$	Clearance $D_1 (= d_1 +)$ max	Counter-face $D (= d_1 +)$ min	Seal fitted width $B_1$	Design	Lip code	Designation
Shaft diameter range $d_1$ over	incl.										
in.	in.										
38.03	38.46	36.69	1.18	1.28	2.56	0.94	4.53	$1.97 \pm 0.47$	VR4	R	409703
		36.69	0.83	1.28	2.56	0.94	4.53	$1.97 \pm 0.47$	VR6	R	470971
38.46	38.90	37.09	1.18	1.28	2.56	0.94	4.53	$1.97 \pm 0.47$	VR4	R	409803
		37.09	0.83	1.28	2.56	0.94	4.53	$1.97 \pm 0.47$	VR6	R	470981
38.90	39.33	37.52	1.18	1.28	2.56	0.94	4.53	$1.97 \pm 0.47$	VR4	R	409903
		37.52	0.83	1.28	2.56	0.94	4.53	$1.97 \pm 0.47$	VR6	R	470991
39.33	39.76	37.91	1.18	1.28	2.56	0.94	4.53	$1.97 \pm 0.47$	VR4	R	410003
		37.91	0.83	1.28	2.56	0.94	4.53	$1.97 \pm 0.47$	VR6	R	471001
39.76	40.35	38.31	1.18	1.28	2.56	0.94	4.53	$1.97 \pm 0.47$	VR4	R	410203
		38.31	0.83	1.28	2.56	0.94	4.53	$1.97 \pm 0.47$	VR6	R	471021
40.35	42.32	37.60	0.26	0.24	0.41	0.20	0.79	$0.31 \pm 0.06$	VR3	R	410502
		37.60	0.26	0.24	0.41	0.20	0.79	$0.31 \pm 0.06$	VR3	V	410506
39.96	41.93	37.60	0.59	0.56	0.98	0.39	1.77	$0.79 \pm 0.16$	VR1	R	410500
40.35	41.14	38.98	1.18	1.28	2.56	0.94	4.53	$1.97 \pm 0.47$	VR4	R	410403
		38.98	0.83	1.28	2.56	0.94	4.53	$1.97 \pm 0.47$	VR6	R	471041
41.14	41.93	39.69	1.18	1.28	2.56	0.94	4.53	$1.97 \pm 0.47$	VR4	R	410603
		39.69	0.83	1.28	2.56	0.94	4.53	$1.97 \pm 0.47$	VR6	R	471061
42.32	44.29	39.37	0.26	0.24	0.41	0.20	0.79	$0.31 \pm 0.06$	VR3	R	411002
		39.37	0.26	0.24	0.41	0.20	0.79	$0.31 \pm 0.06$	VR3	V	411006
41.93	43.90	39.37	0.59	0.56	0.98	0.39	1.77	$0.79 \pm 0.16$	VR1	R	411000
41.93	42.72	40.43	1.18	1.28	2.56	0.94	4.53	$1.97 \pm 0.47$	VR4	R	410803
		40.43	0.83	1.28	2.56	0.94	4.53	$1.97 \pm 0.47$	VR6	R	471081
42.72	43.50	41.14	1.18	1.28	2.56	0.94	4.53	$1.97 \pm 0.47$	VR4	R	411003
		41.14	0.83	1.28	2.56	0.94	4.53	$1.97 \pm 0.47$	VR6	R	471101
43.50	44.29	41.93	1.18	1.28	2.56	0.94	4.53	$1.97 \pm 0.47$	VR4	R	411203
		41.93	0.83	1.28	2.56	0.94	4.53	$1.97 \pm 0.47$	VR6	R	471121
44.29	46.26	41.14	0.26	0.24	0.41	0.20	0.79	$0.31 \pm 0.06$	VR3	R	411502
		41.14	0.26	0.24	0.41	0.20	0.79	$0.31 \pm 0.06$	VR3	V	411506

Dimensions		Seal inside diameter, free state d	Nominal seal height c	Seal seat width b <sub>1</sub>	Nominal seal width b	Clearance D <sub>1</sub> (= d <sub>1+</sub> ) max	Counter-face D(= d <sub>1+</sub> ) min	Seal fitted width B <sub>1</sub>	Design	Lip code	Designation
Shaft diameter range d <sub>1</sub> over	incl.										
in.		in.							-	-	-
<b>43.90</b>	<b>45.87</b>	41.14	0.59	0.56	0.98	0.39	1.77	0.79 ± 0.16	VR1	R	<b>411500</b>
<b>44.29</b>	<b>45.08</b>	42.68 42.68	1.18 0.83	1.28 1.28	2.56 2.56	0.94 0.94	4.53 4.53	1.97 ± 0.47 1.97 ± 0.47	VR4 VR6	R R	<b>411403</b> <b>471141</b>
<b>45.08</b>	<b>45.87</b>	43.43 43.43	1.18 0.83	1.28 1.28	2.56 2.56	0.94 0.94	4.53 4.53	1.97 ± 0.47 1.97 ± 0.47	VR4 VR6	R R	<b>411603</b> <b>471161</b>
<b>46.26</b>	<b>48.23</b>	42.91 42.91	0.26 0.26	0.24 0.24	0.41 0.41	0.20 0.20	0.79 0.79	0.31 ± 0.06 0.31 ± 0.06	VR3 VR3	R V	<b>412002</b> <b>412006</b>
<b>45.87</b>	<b>47.83</b>	42.91	0.59	0.56	0.98	0.39	1.77	0.79 ± 0.16	VR1	R	<b>412000</b>
<b>45.87</b>	<b>46.65</b>	44.13 44.13	1.18 0.83	1.28 1.28	2.56 2.56	0.94 0.94	4.53 4.53	1.97 ± 0.47 1.97 ± 0.47	VR4 VR6	R R	<b>411803</b> <b>471181</b>
<b>46.65</b>	<b>47.44</b>	44.84 44.84	1.18 0.83	1.28 1.28	2.56 2.56	0.94 0.94	4.53 4.53	1.97 ± 0.47 1.97 ± 0.47	VR4 VR6	R R	<b>412003</b> <b>471201</b>
<b>47.44</b>	<b>48.23</b>	45.55 45.55	1.18 0.83	1.28 1.28	2.56 2.56	0.94 0.94	4.53 4.53	1.97 ± 0.47 1.97 ± 0.47	VR4 VR6	R R	<b>412203</b> <b>471221</b>
<b>48.23</b>	<b>50.20</b>	44.69 44.69	0.26 0.26	0.24 0.24	0.41 0.41	0.20 0.20	0.79 0.79	0.31 ± 0.06 0.31 ± 0.06	VR3 VR3	R V	<b>412502</b> <b>412506</b>
<b>47.83</b>	<b>50.00</b>	44.69	0.59	0.56	0.98	0.39	1.77	0.79 ± 0.16	VR1	R	<b>412500</b>
<b>48.23</b>	<b>49.02</b>	46.30 46.30	1.18 0.83	1.28 1.28	2.56 2.56	0.94 0.94	4.53 4.53	1.97 ± 0.47 1.97 ± 0.47	VR4 VR6	R R	<b>412403</b> <b>471241</b>
<b>49.02</b>	<b>50.00</b>	47.05 47.05	1.18 0.83	1.28 1.28	2.56 2.56	0.94 0.94	4.53 4.53	1.97 ± 0.47 1.97 ± 0.47	VR4 VR6	R R	<b>412603</b> <b>471261</b>
<b>50.00</b>	<b>50.98</b>	47.95 47.95	1.18 0.83	1.28 1.28	2.56 2.56	0.94 0.94	4.53 4.53	1.97 ± 0.47 1.97 ± 0.47	VR4 VR6	R R	<b>412803</b> <b>471281</b>
<b>50.20</b>	<b>52.17</b>	46.46 46.46	0.26 0.26	0.24 0.24	0.41 0.41	0.20 0.20	0.79 0.79	0.31 ± 0.06 0.31 ± 0.06	VR3 VR3	R V	<b>413002</b> <b>413006</b>
<b>50.00</b>	<b>51.97</b>	46.46	0.59	0.56	0.98	0.39	1.77	0.79 ± 0.16	VR1	R	<b>413000</b>
<b>50.98</b>	<b>51.77</b>	48.82 48.82	1.18 0.83	1.28 1.28	2.56 2.56	0.94 0.94	4.53 4.53	1.97 ± 0.47 1.97 ± 0.47	VR4 VR6	R R	<b>413003</b> <b>471301</b>
<b>51.77</b>	<b>52.76</b>	49.57 49.57	1.18 0.83	1.28 1.28	2.56 2.56	0.94 0.94	4.53 4.53	1.97 ± 0.47 1.97 ± 0.47	VR4 VR6	R R	<b>413253</b> <b>471326</b>
<b>52.17</b>	<b>54.13</b>	48.23 48.23	0.26 0.26	0.24 0.24	0.41 0.41	0.20 0.20	0.79 0.79	0.31 ± 0.06 0.31 ± 0.06	VR3 VR3	R V	<b>413502</b> <b>413506</b>
<b>51.97</b>	<b>53.94</b>	48.23	0.59	0.56	0.98	0.39	1.77	0.79 ± 0.16	VR1	R	<b>413500</b>
<b>52.76</b>	<b>53.74</b>	50.43 50.43	1.18 0.83	1.28 1.28	2.56 2.56	0.94 0.94	4.53 4.53	1.97 ± 0.47 1.97 ± 0.47	VR4 VR6	R R	<b>413503</b> <b>471351</b>
<b>53.74</b>	<b>54.72</b>	51.38 51.38	1.18 0.83	1.28 1.28	2.56 2.56	0.94 0.94	4.53 4.53	1.97 ± 0.47 1.97 ± 0.47	VR4 VR6	R R	<b>413753</b> <b>471376</b>
<b>54.13</b>	<b>56.10</b>	50.00 50.00	0.26 0.26	0.24 0.24	0.41 0.41	0.20 0.20	0.79 0.79	0.31 ± 0.06 0.31 ± 0.06	VR3 VR3	R V	<b>414002</b> <b>414006</b>
<b>53.94</b>	<b>55.91</b>	50.00	0.59	0.56	0.98	0.39	1.77	0.79 ± 0.16	VR1	R	<b>414000</b>
<b>54.72</b>	<b>55.71</b>	52.28 52.28	1.18 0.83	1.28 1.28	2.56 2.56	0.94 0.94	4.53 4.53	1.97 ± 0.47 1.97 ± 0.47	VR4 VR6	R R	<b>414003</b> <b>471401</b>
<b>55.71</b>	<b>56.69</b>	53.15 53.15	1.18 0.83	1.28 1.28	2.56 2.56	0.94 0.94	4.53 4.53	1.97 ± 0.47 1.97 ± 0.47	VR4 VR6	R R	<b>414253</b> <b>471426</b>

## V-ring seals – inch dimensions, for North American market

$d_1$  56.10 – 79.53 in.



Dimensions		Seal inside diameter, free state $d$	Nominal seal height $c$	Seal seat width $b_1$	Nominal seal width $b$	Clearance $D_1 (= d_1 +)$ max	Counter-face $D (= d_1 +)$ min	Seal fitted width $B_1$	Design	Lip code	Designation
Shaft diameter range $d_1$ over	incl.										
in.	in.								-	-	-
<b>56.10</b>	<b>58.07</b>	51.77	0.26	0.24	0.41	0.20	0.79	$0.31 \pm 0.06$	VR3	R	<b>414502</b>
		51.77	0.26	0.24	0.41	0.20	0.79	$0.31 \pm 0.06$	VR3	V	<b>414506</b>
<b>55.91</b>	<b>57.87</b>	51.77	0.59	0.56	0.98	0.39	1.77	$0.79 \pm 0.16$	VR1	R	<b>414500</b>
<b>56.69</b>	<b>57.68</b>	54.09	1.18	1.28	2.56	0.94	4.53	$1.97 \pm 0.47$	VR4	R	<b>414503</b>
		54.09	0.83	1.28	2.56	0.94	4.53	$1.97 \pm 0.47$	VR6	R	<b>471451</b>
<b>57.68</b>	<b>58.66</b>	55.00	1.18	1.28	2.56	0.94	4.53	$1.97 \pm 0.47$	VR4	R	<b>414753</b>
		55.00	0.83	1.28	2.56	0.94	4.53	$1.97 \pm 0.47$	VR6	R	<b>471476</b>
<b>58.07</b>	<b>60.04</b>	53.54	0.26	0.24	0.41	0.20	0.79	$0.31 \pm 0.06$	VR3	R	<b>415002</b>
		53.54	0.26	0.24	0.41	0.20	0.79	$0.31 \pm 0.06$	VR3	V	<b>415006</b>
<b>57.87</b>	<b>59.84</b>	53.54	0.59	0.56	0.98	0.39	1.77	$0.79 \pm 0.16$	VR1	R	<b>415000</b>
<b>58.66</b>	<b>59.65</b>	55.87	1.18	1.28	2.56	0.94	4.53	$1.97 \pm 0.47$	VR4	R	<b>415003</b>
		55.87	0.83	1.28	2.56	0.94	4.53	$1.97 \pm 0.47$	VR6	R	<b>471501</b>
<b>59.65</b>	<b>60.63</b>	56.81	1.18	1.28	2.56	0.94	4.53	$1.97 \pm 0.47$	VR4	R	<b>415253</b>
		56.81	0.83	1.28	2.56	0.94	4.53	$1.97 \pm 0.47$	VR6	R	<b>471526</b>
<b>60.04</b>	<b>62.01</b>	55.31	0.26	0.24	0.41	0.20	0.79	$0.31 \pm 0.06$	VR3	R	<b>415502</b>
		55.31	0.26	0.24	0.41	0.20	0.79	$0.31 \pm 0.06$	VR3	V	<b>415506</b>
<b>59.84</b>	<b>61.81</b>	55.31	0.59	0.56	0.98	0.39	1.77	$0.79 \pm 0.16$	VR1	R	<b>415500</b>
<b>60.63</b>	<b>61.81</b>	57.76	1.18	1.28	2.56	0.94	4.53	$1.97 \pm 0.47$	VR4	R	<b>415503</b>
		57.76	0.83	1.28	2.56	0.94	4.53	$1.97 \pm 0.47$	VR6	R	<b>471551</b>
<b>61.81</b>	<b>62.99</b>	58.86	1.18	1.28	2.56	0.94	4.53	$1.97 \pm 0.47$	VR4	R	<b>415753</b>
		58.86	0.83	1.28	2.56	0.94	4.53	$1.97 \pm 0.47$	VR6	R	<b>471576</b>
<b>62.01</b>	<b>63.98</b>	57.09	0.26	0.24	0.41	0.20	0.79	$0.31 \pm 0.06$	VR3	R	<b>416002</b>
		57.09	0.26	0.24	0.41	0.20	0.79	$0.31 \pm 0.06$	VR3	V	<b>416006</b>
<b>61.81</b>	<b>63.78</b>	57.09	0.59	0.56	0.98	0.39	1.77	$0.79 \pm 0.16$	VR1	R	<b>416000</b>
<b>62.99</b>	<b>64.57</b>	60.00	1.18	1.28	2.56	0.94	4.53	$1.97 \pm 0.47$	VR4	R	<b>416003</b>
		60.00	0.83	1.28	2.56	0.94	4.53	$1.97 \pm 0.47$	VR6	R	<b>471601</b>

Dimensions		Seal inside diameter, free state d	Nominal seal height c	Seal seat width b <sub>1</sub>	Nominal seal width b	Clearance D <sub>1</sub> (= d <sub>1+</sub> ) max	Counter-face D (= d <sub>1+</sub> ) min	Seal fitted width B <sub>1</sub>	Design	Lip code	Designation
Shaft diameter range d <sub>1</sub> over	incl.										
in.		in.							-	-	-
<b>63.98</b>	<b>65.94</b>	58.86	0.26	0.24	0.41	0.20	0.79	0.31 ± 0.06	VR3	R	<b>416502</b>
		58.86	0.26	0.24	0.41	0.20	0.79	0.31 ± 0.06	VR3	V	<b>416506</b>
<b>63.78</b>	<b>65.75</b>	58.86	0.59	0.56	0.98	0.39	1.77	0.79 ± 0.16	VR1	R	<b>416500</b>
<b>64.57</b>	<b>66.14</b>	61.38	1.18	1.28	2.56	0.94	4.53	1.97 ± 0.47	VR4	R	<b>416503</b>
		61.38	0.83	1.28	2.56	0.94	4.53	1.97 ± 0.47	VR6	R	<b>471651</b>
<b>65.94</b>	<b>67.91</b>	60.63	0.26	0.24	0.41	0.20	0.79	0.31 ± 0.06	VR3	R	<b>417002</b>
		60.63	0.26	0.24	0.41	0.20	0.79	0.31 ± 0.06	VR3	V	<b>417006</b>
<b>65.75</b>	<b>67.72</b>	60.63	0.59	0.56	0.98	0.39	1.77	0.79 ± 0.16	VR1	R	<b>417000</b>
<b>66.14</b>	<b>67.72</b>	62.83	1.18	1.28	2.56	0.94	4.53	1.97 ± 0.47	VR4	R	<b>417003</b>
		62.83	0.83	1.28	2.56	0.94	4.53	1.97 ± 0.47	VR6	R	<b>471701</b>
<b>67.91</b>	<b>69.88</b>	62.40	0.26	0.24	0.41	0.20	0.79	0.31 ± 0.06	VR3	R	<b>417502</b>
		62.40	0.26	0.24	0.41	0.20	0.79	0.31 ± 0.06	VR3	V	<b>417506</b>
<b>67.72</b>	<b>69.69</b>	62.40	0.59	0.56	0.98	0.39	1.77	0.79 ± 0.16	VR1	R	<b>417500</b>
<b>67.72</b>	<b>69.49</b>	64.25	1.18	1.28	2.56	0.94	4.53	1.97 ± 0.47	VR4	R	<b>417503</b>
		64.25	0.83	1.28	2.56	0.94	4.53	1.97 ± 0.47	VR6	R	<b>471751</b>
<b>69.49</b>	<b>71.26</b>	65.79	1.18	1.28	2.56	0.94	4.53	1.97 ± 0.47	VR4	R	<b>418003</b>
		65.79	0.83	1.28	2.56	0.94	4.53	1.97 ± 0.47	VR6	R	<b>471801</b>
<b>69.88</b>	<b>71.85</b>	64.17	0.26	0.24	0.41	0.20	0.79	0.31 ± 0.06	VR3	R	<b>418002</b>
		64.17	0.26	0.24	0.41	0.20	0.79	0.31 ± 0.06	VR3	V	<b>418006</b>
<b>69.69</b>	<b>71.65</b>	64.17	0.59	0.56	0.98	0.39	1.77	0.79 ± 0.16	VR1	R	<b>418000</b>
<b>71.26</b>	<b>73.03</b>	67.48	1.18	1.28	2.56	0.94	4.53	1.97 ± 0.47	VR4	R	<b>418503</b>
		67.48	0.83	1.28	2.56	0.94	4.53	1.97 ± 0.47	VR6	R	<b>471851</b>
<b>71.85</b>	<b>73.82</b>	65.94	0.26	0.24	0.41	0.20	0.79	0.31 ± 0.06	VR3	R	<b>418502</b>
		65.94	0.26	0.24	0.41	0.20	0.79	0.31 ± 0.06	VR3	V	<b>418506</b>
<b>71.65</b>	<b>73.62</b>	65.94	0.59	0.56	0.98	0.39	1.77	0.79 ± 0.16	VR1	R	<b>418500</b>
<b>73.03</b>	<b>75.00</b>	69.02	1.18	1.28	2.56	0.94	4.53	1.97 ± 0.47	VR4	R	<b>419003</b>
		69.02	0.83	1.28	2.56	0.94	4.53	1.97 ± 0.47	VR6	R	<b>471901</b>
<b>73.82</b>	<b>75.79</b>	67.72	0.26	0.24	0.41	0.20	0.79	0.31 ± 0.06	VR3	R	<b>419002</b>
		67.72	0.26	0.24	0.41	0.20	0.79	0.31 ± 0.06	VR3	V	<b>419006</b>
<b>73.62</b>	<b>75.59</b>	67.72	0.59	0.56	0.98	0.39	1.77	0.79 ± 0.16	VR1	R	<b>419000</b>
<b>75.00</b>	<b>76.97</b>	70.63	1.18	1.28	2.56	0.94	4.53	1.97 ± 0.47	VR4	R	<b>419503</b>
		70.63	0.83	1.28	2.56	0.94	4.53	1.97 ± 0.47	VR6	R	<b>471951</b>
<b>75.79</b>	<b>77.76</b>	69.49	0.26	0.24	0.41	0.20	0.79	0.31 ± 0.06	VR3	R	<b>419502</b>
		69.49	0.26	0.24	0.41	0.20	0.79	0.31 ± 0.06	VR3	V	<b>419506</b>
<b>75.59</b>	<b>77.56</b>	69.49	0.59	0.56	0.98	0.39	1.77	0.79 ± 0.16	VR1	R	<b>419500</b>
<b>76.97</b>	<b>79.13</b>	72.60	1.18	1.28	2.56	0.94	4.53	1.97 ± 0.47	VR4	R	<b>420003</b>
		72.60	0.83	1.28	2.56	0.94	4.53	1.97 ± 0.47	VR6	R	<b>472001</b>
<b>77.76</b>	<b>79.72</b>	71.26	0.26	0.24	0.41	0.20	0.79	0.31 ± 0.06	VR3	R	<b>420002</b>
		71.26	0.26	0.24	0.41	0.20	0.79	0.31 ± 0.06	VR3	V	<b>420006</b>
<b>77.56</b>	<b>79.53</b>	71.26	0.59	0.56	0.98	0.39	1.77	0.79 ± 0.16	VR1	R	<b>420000</b>

# MVR axial shaft seals

## General

For added protection in extremely contaminated applications, SKF also offers MVR seals. Like V-ring seals, MVR seals also seal axially and function by combining lip contact with centrifugal "flinging" action. MVR seals are, however, different from V-rings in that their rubber element is stretch fit into a metal case. The metal case is then press fit onto the shaft. The case provides excellent protection from heavy debris and enables the seal to accommodate high rotational speeds without requiring auxiliary clamping devices.

MVR seals are used in rotating shaft applications such as gearboxes, speed reducers, saws, lathes, motors, mixers, where high levels of contaminants reduce the service life of radial shaft seals and bearings. MVR seals can also serve as primary seals to retain high-viscosity lubricants or exclude contaminants in dry-running applications.

## Advantages and user benefits

- The metal case serves as a support and deflector, protecting the rubber body and lip from damage and displacement by external debris like rocks and aggressive media.
- The case also often functions as a holder that keeps the rubber lip in position in high-speed applications. No additional axial retention is required.
- Narrow installation widths are possible thanks to the compact design.
- Frictional heat build-up and torque drag are very low compared to those of contacting radial shaft seals. As rotational speed increases, the MVR sealing lip lifts off the counterface surface starting at about 12 m/s (2 360 ft/min) and drops to zero contact by 20 m/s (3 900 ft/min). The high rotational speed helps exclude contaminants while minimizing power loss.
- The service life of MVR seals is considerably higher than that of radial shaft seals in contaminated environments and can extend to thousands of hours.

## Design and material

The MVR seals are made of a nitrile rubber material with very good wear resistance. Other elastomers are also available on request.

The standard metal element is zinc-plated cold-rolled carbon steel. Acid-resistant steel, similar to SAE 316, is available on request.

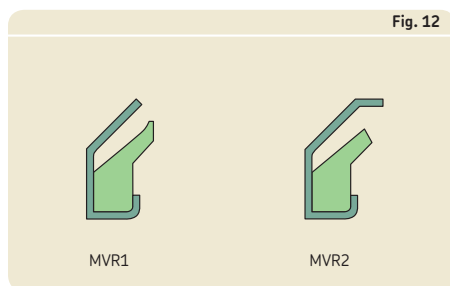
There are two different MVR seal designs: the basic MVR1 seal and the MVR2 seal with case extension (→ fig. 12).

## Temperature range

The permissible operating temperature range is between  $-30$  and  $+100$  °C ( $-20$  and  $+210$  °F).

## Sizes

MVR seals are available for shaft diameters ranging from 10 to 200 mm (0.394 to 7.874 in.). Contact your SKF sales representative for comprehensive information on available sizes.



## Installation

The inside diameter of MVR seals is machined for a press fit on the shaft (→ **figs. 13** and **14**). As with radial shaft seals, do not hit the metal case with a hammer.

The sealing lip face should be lightly greased prior to installation, but no grease should be applied between the lip and case. A shaft finish of  $R_a\ 4\ \mu\text{m}$  ( $160\ \mu\text{in.}$ ) is sufficient.

A lead-in chamfer should be provided. No splines or keyways are allowed.

Counterface surfaces for MVR seals should be prepared the same way as for V-rings. Avoid aluminium or soft metals in applications where there will be abrasive contaminants. Sharp peaks on turned surfaces should be removed.

Fig. 13

Installation tool for MVR1

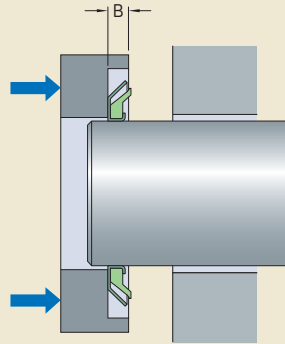
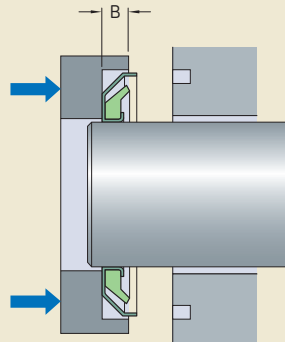


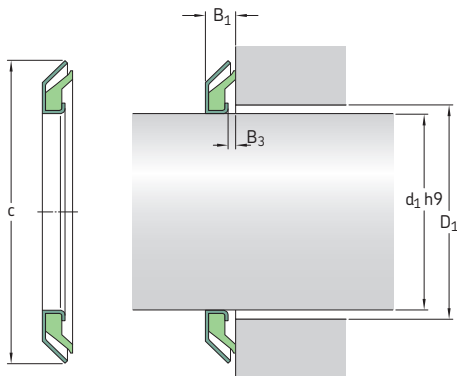
Fig. 14

Installation tool for MVR2



## Metal-cased V-ring seals – MVR1 – metric dimensions

$d_1$  10 – 135 mm



Dimensions					Designation
Shaft diameter $d_1$	Case outside diameter $c$	Seal fitted width $B_1$	Gap width $B_3$	Max. counterface hole diameter $D_1$	
mm					–
10	24	3,5	1,0	15	MVR1-10
12	26	3,5	1,0	17	MVR1-12
15	30	4,0	1,0	21	MVR1-15
16	32	4,0	1,0	23	MVR1-16
17	32	4,0	1,0	23	MVR1-17
18	33	4,0	1,0	24	MVR1-18
20	35	4,0	1,0	26	MVR1-20
22	40	4,0	1,0	28	MVR1-22
24	40	4,0	1,0	30	MVR1-24
25	40	4,0	1,0	31	MVR1-25
26	40	4,0	1,0	32	MVR1-26
28	43	4,0	1,0	34	MVR1-28
30	47	4,5	1,0	37	MVR1-30
32	49	4,5	1,0	39	MVR1-32
35	52	4,5	1,0	42	MVR1-35
40	57	4,5	1,0	47	MVR1-40
45	62	4,5	1,0	52	MVR1-45
48	65	4,5	1,0	55	MVR1-48
50	70	5,5	1,0	58	MVR1-50
52	72	5,5	1,0	60	MVR1-52
53	73	5,5	1,0	61	MVR1-53
55	75	5,5	1,0	63	MVR1-55
58	78	5,5	1,0	66	MVR1-58
60	80	5,5	1,0	68	MVR1-60
62	82	5,5	1,0	70	MVR1-62
65	85	5,5	1,0	73	MVR1-65
68	88	5,5	1,0	76	MVR1-68
70	90	5,5	1,0	78	MVR1-70
72	92	5,5	1,0	80	MVR1-72
75	95	5,5	1,0	83	MVR1-75

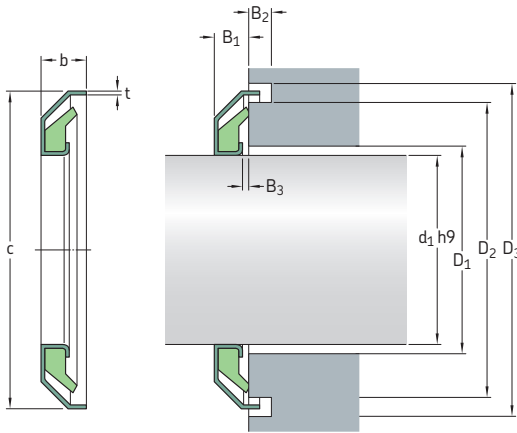
Special designs are available and new sizes are added gradually.

<b>Dimensions</b>					<b>Designation</b>
Shaft diameter $d_1$	Case outside diameter $c$	Seal fitted width $B_1$	Gap width $B_3$	Max. counterface hole diameter $D_1$	
mm					–
<b>78</b>	98	5,5	1,0	86	<b>MVR1-78</b>
<b>80</b>	100	5,5	1,0	88	<b>MVR1-80</b>
<b>85</b>	105	5,5	1,0	93	<b>MVR1-85</b>
<b>90</b>	110	5,5	1,0	98	<b>MVR1-90</b>
<b>95</b>	115	5,5	1,0	103	<b>MVR1-95</b>
<b>100</b>	120	5,5	1,0	108	<b>MVR1-100</b>
<b>105</b>	125	5,5	1,0	113	<b>MVR1-105</b>
<b>125</b>	148	6,5	1,0	133	<b>MVR1-125</b>
<b>135</b>	159	6,5	1,0	145	<b>MVR1-135</b>



## Metal-cased V-ring seals – MVR2 – metric dimensions

$d_1$  15 – 100 mm



### Dimensions

Shaft diameter $d_1$	Case outside diameter $c$	Seal fitted width $B_1$	Gap width $B_3$	Total seal case width $b$	Case groove width $B_2$	Seal counter-face hole $D_1$ max	Case groove diameter inside $D_2$	Case groove diameter outside $D_3$	Metal case thickness $t$	Designation
mm										
15	32	4,0	1,0	6,0	3	21	29	34	0,5	MVR2-15
17	34	4,0	1,0	6,0	3	23	31	36	0,5	MVR2-17
20	37	4,0	1,0	6,0	3	26	34	39	0,5	MVR2-20
25	42	4,0	1,0	6,0	3	31	39	44	0,5	MVR2-25
30	48	4,5	1,0	6,5	3	37	45	50	0,5	MVR2-30
35	53	4,5	1,0	6,5	3	42	50	55	0,5	MVR2-35
40	58	4,5	1,0	6,5	3	47	55	60	0,5	MVR2-40
45	63	4,5	1,0	6,5	3	52	60	65	0,5	MVR2-45
50	72	5,5	1,0	7,5	3	58	68,5	74	0,75	MVR2-50
55	77	5,5	1,0	7,5	3	63	73,5	79	0,75	MVR2-55
60	82	5,5	1,0	7,5	3	68	78,5	84	0,75	MVR2-60
65	87	5,5	1,0	7,5	3	73	83,5	89	0,75	MVR2-65
70	92	5,5	1,0	7,5	3	78	88,5	94	0,75	MVR2-70
75	95	5,5	1,0	7,5	3	83	93,5	99	0,75	MVR2-75
80	102	5,5	1,0	7,5	3	88	98,5	104	0,75	MVR2-80
85	107	5,5	1,0	7,5	3	93	103,5	109	0,75	MVR2-85
90	112	5,5	1,0	7,5	3	98	108,5	114	0,75	MVR2-90
95	117	5,5	1,0	7,5	3	103	113,5	119	0,75	MVR2-95
100	122	5,5	1,0	7,5	3	108	118,5	124	0,75	MVR2-100



