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Industrial V-ring products



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V-Ring seals

A versatile, cost-effective sealing solution



V-ring shaft seals utilize centrifugal slinger action to provide effective protection against dry and wet contamination. In combination with an SKF metal-cased radial seal, the V-ring reduces wear and extends the service life of the oil seal and bearings. The V-ring also performs well in dry running applications. Because it is all rubber and very elastic, it can be stretched over flanges or other components for easy installation with minimal unit disassembly. It has very low torque drag and heat build up, and does not require expensive countersurface preparation.

A unique sealing concept

The V-ring is an all-rubber seal available from SKF. It is mounted directly on the shaft by hand and seals against a counterface. This unique design has been extensively used on a broad range of applications.

Designed with a long, flexible lip, the V-ring can act as a face seal, a lip seal or slinger. The construction is three part: the body (a), the conical self-adjusting lip (b) and the hinge (c). The elastic body holds itself in place on the rotating shaft while dynamic sealing takes place where the lip is in axial contact with the counterface. The counterface should be metal and can be the end of a gearbox housing, a washer, a suitable steel stamping, even the back of an oil seal. Generally no seal bore is required and no shaft preparation is needed.

In addition to highly effective contaminant exclusion, V-rings can be used to retain grease lubricants. However, with proper countersurface preparation they can run dry with very low torque loss and good service life.

Because the V-ring is very elastic (smaller V-rings can be stretched up to 2 1/2 times their free diameter) it can often be easily fitted to shafts without disassembly of the unit—even over flanges, pillow blocks, or other assemblies.

One size V-ring can be used on a number of shaft sizes either English or metric dimension. Less than 142 sizes covers a wide range of shaft sizes from .110" (2.7mm) to 29" (900mm). Sizes up to 79.530" (2020mm) and beyond are available in nitrile or fluoroelastomer (Viton®) covering a wide variety of media compatibility in temperature ranges from -40°F to 212°F (nitrile) and -15°F to 392°F fluoroelastomer.

In addition, special constructions and sizes can be made to order including split versions.

There are six styles of V-rings.

VR1 The most common style available in the widest range of sizes from .110" (2.7mm) shaft to 79.530" (2020mm) nitrile and fluoroelastomer. Ideal for protecting gearboxes, electric motors and drives.

VR2 The original V-ring designed with a wide body and tapered heel to firmly hold the ring on the shaft. Available in sizes from .180" (4.5mm) shaft to 8.270" (210mm). Commonly used in agricultural and automotive applications.

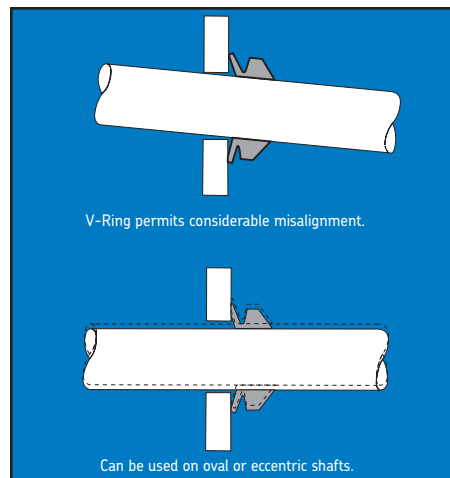
VR3 Very compact axial cross-section commonly used in confined spaces to replace labyrinth seals. Available in nitrile and fluoroelastomer for shaft sizes from 4.134" (105mm) shaft to 78.745" (2000mm) and beyond.

Note: Beyond the six primary V-ring styles and rubber compounds, options are available for special installation dimensions and operating conditions (ie. confined spaces, exposure to caustic fluids). Many V-ring profiles can be ordered for shaft diameters beyond 78.740" (2000mm). Contact SKF Sealing Solutions for details.

VR4 A heavy-duty large diameter style commonly used in rolling mills as a secondary seal for heavy duty applications where the primary seal has to be protected against water and or particulate contamination. VR4 is the preferred heavy duty V-ring in replacement applications. Selected sizes are in stock and others can be made to order. For new designs, the VR6 should be considered and has similar mounting dimensions. Available in both nitrile and fluoroelastomer for shafts from 11.811" (300mm) to over 78" (2000mm).

VR5 A heavy-duty large diameter style designed to operate in the severe conditions found in metals and paper mills. The unique body profile can accommodate radial and axial support in high shaft speeds applications. It has an extension that can be fitted into mechanical components or trimmed to length to meet existing space requirements (contact SKF for details). Available for shaft diameters from 11.811" (300mm) to over 78" (2000mm) in nitrile and fluoroelastomer on a made-to-order basis.

VR6 This heavy-duty profile is also designed primarily for protecting high speed bearing arrangements in rolling mills, papermaking and large machine applications. It should especially be considered for new equipment designs. The shape is similar to the VR5 except it does not have the extension to the rear of the body section, allowing a narrower B₁. It does retain the saddle feature for axial and radial location on the shaft with a specially designed clamping band. The key installation dimensions are the same as the VR4 except for the body height. Available on a made to order basis in both nitrile and fluoroelastomer for shafts from 11.811" (300mm) to over 78" (2000mm). Contact SKF Sealing Solutions for specific size and installation data.



For cross sectional drawings, please see page 4.

Forsheda V-rings

A product of Busak + Shamban

Division of Trelleborg

Sealing Solutions

Versatile, cost-effective sealing

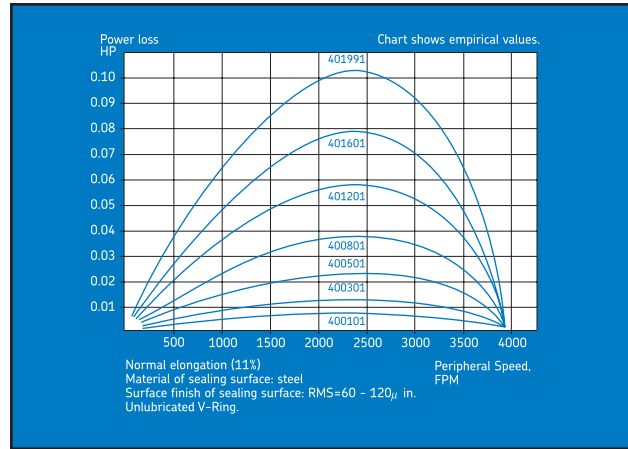
Technical simplicity—Low friction and minimal loss of power. In smaller power units this can be significant. The pressure of the lip against the counterface is very light.

Economical—Wide machining tolerances—little or no shaft finishing. No housing required. No shaft wear. Seals resist damage during installation. One size covers many shaft sizes.

Versatile—Works equally well on rotating or oscillating shafts and at speeds over 3000 FPM. At high speeds the lip lifts away from the counterface and acts as a clearance slinger.

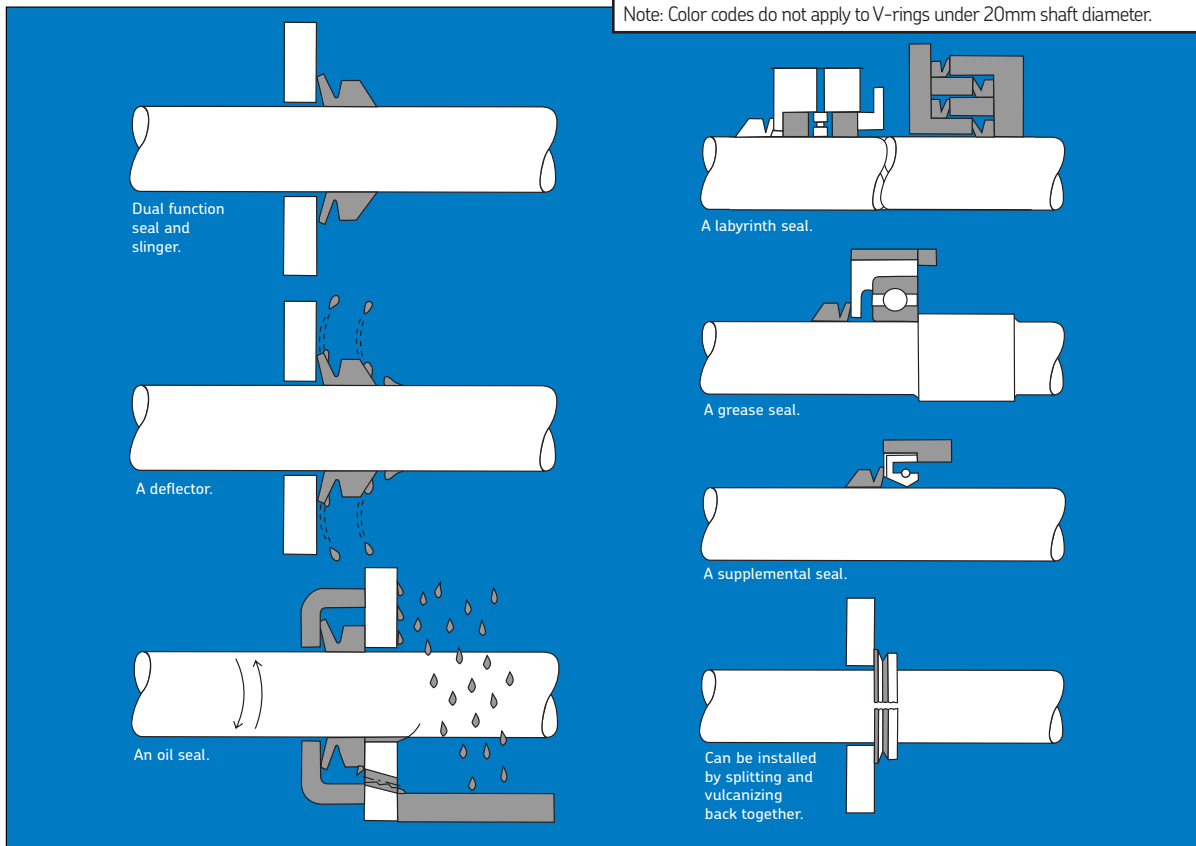
Compounds—Standard materials include nitrile and fluoroelastomer. Non-standard materials include hydrogenated nitrile, silicone, chloroprene and ethylene propylene. Parts in an FDA approved compound are available.

V-rings with special compounds are marked with a colored dot to indicate the compound used in manufacturing the V-ring. V-18 and smaller in fluoroelastomer are brown with no color dot.



Lip code	Dot color	Material	Purpose
V	Violet	Fluoroelastomer from V-20 & above	Higher temperatures and chemical resistance
V	No mark on brown	Fluoroelastomer from V-13 - V-18	Higher temperatures and chemical resistance
#	Green	Neoprene Chloroprene	Suitable for applications in the presence of ozone
M	Brown	EPDM	Used with special chemicals
R	(None)	(Nitrile) NBR	General purpose
H	White	Hydrogenated Nitrile (HNBR)	Higher temperature and wear resistance than standard Nitrile
D	Blue	Carboxylated Nitrile (XNBR)	Higher wear resistance than standard nitrile

Note: Color codes do not apply to V-rings under 20mm shaft diameter.



Operating conditions



Surface treatment: In presence of grease, oil, or dry lubricants, no special surface treatment is required. When the counterface is exposed to water or other corrosive elements, mild steel surfaces should be either zinc-plated and passivated; chromium plated or cadmium plated; treated with an anti-corrosive spray such as Molykote 106, or painted. The choice of treatment will depend on the overall running conditions.

Surface finish: The rate of abrasion of the V-ring is influenced by a number of factors, one of which is the surface finish of the counterface. It is recommended that turned surfaces be buffed with 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.

Guide to Recommended Surface Finish:

Surface finish		Speed FPM/ MPS	Exposure to:	Typical application
Ra Metric (μm)	Ra (Inch)			
0.4 To 0.8	16-32	1950/ < 10	Oil, Water, Scale, Fiber	Cold Rolling Mills Paper Machines Wire Mills
0.8 To 1.6	32-63	980-1950/ 5 To 10	Oil Splash Grease, Water Splash	Auto Gear Box Centrifugal Pump Earth Moving Eqpt.
1.6 To 2.3	63-90	195-980/ 1.0 To 5.0	Grease, Dust Water Splash, Scale	Wheel Hub, Mixers, Electric Motors, Hot Rolling Mills
2.3 To 3.0	90-120	195/ 1.0	Grease, Dust	Ball Mills, Suspension Units, Conveyor Rollers

Additional information: Aluminum surfaces should be free of scratch marks. Hardness should be $> 100 H_B$ in abrasive applications. Die cast aluminum can be used in the as-cast condition. Steel and cast iron surfaces should be free from lead and sharp tool marks. Cold roll steel stampings can be used without machining.

Plastic materials are generally not acceptable as counterface materials due to poor heat dissipation. Similarly, stainless steel should not be used in dry running applications unless the speed is $< 200 \text{ ft/min}$ (1 m/s).

Temperature range:	Nitrile (Lip Code R)	-40°F-212°F (-40°C-100°C)	
	Viton (Lip Code V)	-15°F-392°F (-26°C-200°C)	
Maximum pressure:	10 psi - under certain application conditions 0 psi - standard		
Surface Speeds:	Axial support required above*	Radial support required above	Lip leaves sealing surface at
Compound:			
Nitrile (Lip Code R)	1500 fpm 7.5 MPS	2400 fpm 12.0 MPS	3000 fpm 15.0 MPS
Viton (Lip Code V)	1300 fpm 6.5 MPS	2000 fpm 10.0 MPS	3000 fpm 15.0 MPS
Misalignment tolerance:	1° shaft to counterface misalignment @ 0-2400 FPM 0-12.0 MPS		

*Axial supports are available. Contact your SKF distributor or SKF for complete information.

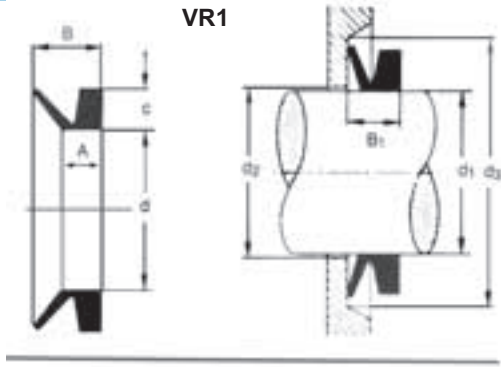
Installation: Where the V-ring is used as a grease seal/contaminant excluder, the V-ring is normally mounted on the outside of a bearing housing with axial support when required.

In the case of mass production, it is always advisable to use an assembly tool. Where small quantities are involved, the V-ring may be fitted by using a blunt instrument, such as a screw driver, to manipulate the seal into the correct position.

General rules:

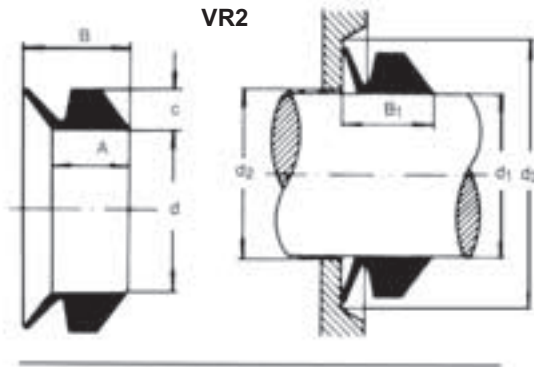
1. The V-ring, the counterface and the shaft should be clean.
2. The shaft should preferably be dry and free from grease or oil, particularly when the V-ring is mounted without axial support.
3. The lip of the V-ring should be lubricated with a thin film of grease or silicone oil.
4. In cases when friction must be reduced to a minimum, coat the counterface with a low friction agent, such as Molykote 7409, and do not apply grease to the lip.
5. Ensure that the V-ring is mounted with a uniform stretch around the shaft.
6. Confirm that the d_2 , d_3 and B_1 dimensions are correct.

Complete size listing



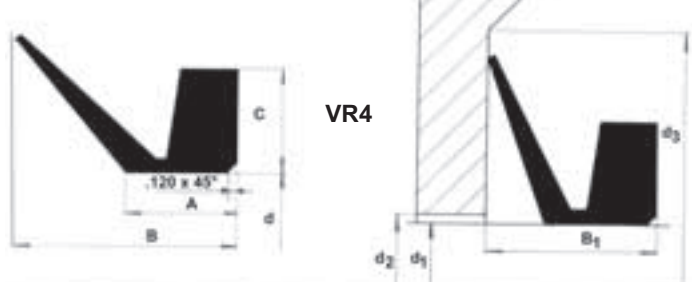
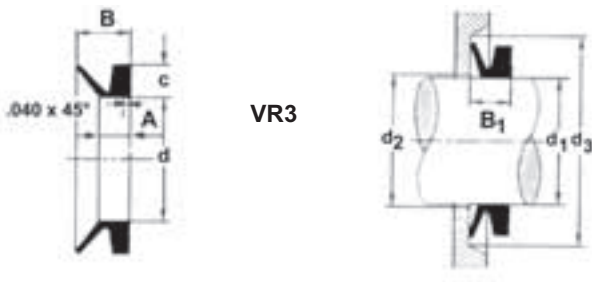
Profile dimensions

Assembly dimensions



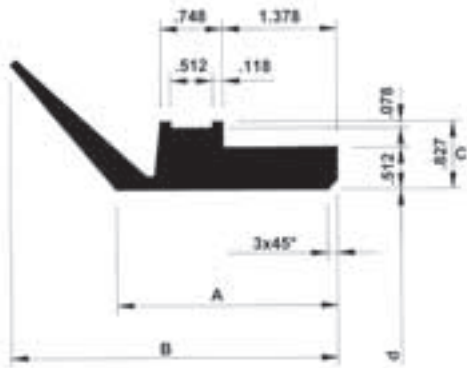
Profile dimensions

Assembly dimensions

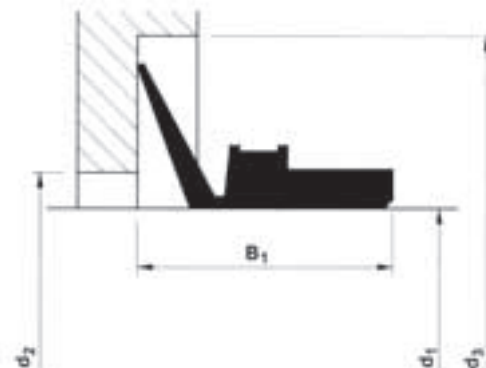


Profile dimensions

Assembly dimensions

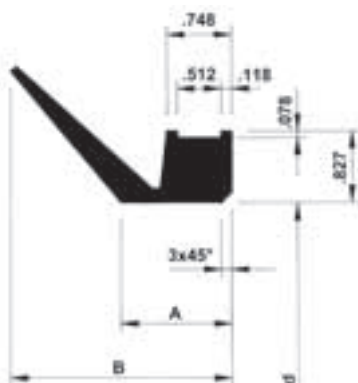


VR5



Profile dimensions

Assembly dimensions



VR6



Complete size listing

SKF stock no.	Shaft diameter d_1 (Range)	Inside diameter d	Height c	Dimension A	Free width B	Maximum $d_2 = (d_1 +)$	Minimum $d_3 = (d_1 +)$	Fitted width B_1	Construction	Lip code	Reference metric shaft size
400030	0.110-0.140	.100	.060	.080	.120	.040	.160	.100±012	VR1	R	3mm
400034	0.110-0.140	.100	.060	.080	.120	.040	.160	.100±012	VR1	V	3mm
400040	0.140-0.180	.130	.080	.090	.150	.040	.240	.120±016	VR1	R	4mm
400044	0.140-0.180	.130	.080	.090	.150	.040	.240	.120±016	VR1	V	4mm
400050	0.180-0.210	.160	.080	.090	.150	.040	.240	.120±016	VR1	R	5mm
400054	0.180-0.210	.160	.080	.090	.150	.040	.240	.120±016	VR1	V	5mm
400051	0.180-0.210	.160	.080	.150	.200	.040	.240	.180±016	VR2	R	5mm
400055	0.180-0.210	.160	.080	.150	.200	.040	.240	.180±016	VR2	V	5mm
400060	0.210-0.260	.200	.080	.090	.150	.040	.240	.120±016	VR1	R	6mm
400064	0.210-0.260	.200	.080	.090	.150	.040	.240	.120±016	VR1	V	6mm
400061	0.210-0.260	.200	.080	.150	.200	.040	.240	.180±016	VR2	R	6mm
400065	0.210-0.260	.200	.080	.150	.200	.040	.240	.180±016	VR2	V	6mm
400070	0.260-0.315	.240	.080	.090	.150	.040	.240	.120±016	VR1	R	7mm
400074	0.260-0.315	.240	.080	.090	.150	.040	.240	.120±016	VR1	V	7mm
400071	0.260-0.315	.240	.080	.150	.200	.040	.240	.180±016	VR2	R	7mm
400075	0.260-0.315	.240	.080	.150	.200	.040	.240	.180±016	VR2	V	7mm
400080	0.315-0.370	.280	.080	.090	.150	.040	.240	.120±016	VR1	R	8mm
400084	0.315-0.370	.280	.080	.090	.150	.040	.240	.120±016	VR1	V	8mm
400081	0.315-0.370	.280	.080	.150	.200	.040	.240	.180±016	VR2	R	8mm
400085	0.315-0.370	.280	.080	.150	.200	.040	.240	.180±016	VR2	V	8mm
400100	0.370-0.450	.350	.120	.130	.220	.080	.350	.180±020	VR1	R	10mm
400104	0.370-0.450	.350	.120	.130	.220	.080	.350	.180±020	VR1	V	10mm
400101	0.370-0.450	.350	.120	.220	.300	.080	.350	.260±020	VR2	R	10mm
400105	0.370-0.450	.350	.120	.220	.300	.080	.350	.260±020	VR2	V	10mm
400120	0.450-0.530	.410	.120	.130	.220	.080	.350	.180±020	VR1	R	12mm
400124	0.450-0.530	.410	.120	.130	.220	.080	.350	.180±020	VR1	V	12mm
400121	0.450-0.530	.410	.120	.220	.300	.080	.350	.260±020	VR2	R	12mm
400125	0.450-0.530	.410	.120	.220	.300	.080	.350	.260±020	VR2	V	12mm
400130	0.490-0.570	.450	.120	.130	.220	.080	.350	.180±020	VR1	R	13mm
400134	0.490-0.570	.450	.120	.130	.220	.080	.350	.180±020	VR1	V	13mm
400140	0.530-0.413	.490	.120	.130	.220	.080	.350	.180±020	VR1	R	14mm
400144	0.530-0.413	.490	.120	.130	.220	.080	.350	.180±020	VR1	V	14mm
400141	0.530-0.413	.490	.120	.220	.300	.080	.350	.260±020	VR2	R	14mm
400145	0.530-0.413	.490	.120	.220	.300	.080	.350	.260±020	VR2	V	14mm
400160	0.413-0.690	.550	.120	.130	.220	.080	.350	.180±020	VR1	R	16mm
400164	0.413-0.690	.550	.120	.130	.220	.080	.350	.180±020	VR1	V	16mm
400161	0.413-0.690	.550	.120	.220	.300	.080	.350	.260±020	VR2	R	16mm
400165	0.413-0.690	.550	.120	.220	.300	.080	.350	.260±020	VR2	V	16mm
400180	0.690-0.748	.630	.120	.130	.220	.080	.350	.180±020	VR1	R	18mm
400184	0.690-0.748	.630	.120	.130	.220	.080	.350	.180±020	VR1	V	18mm
400181	0.690-0.770	.630	.120	.220	.300	.080	.350	.260±020	VR2	R	18mm
400185	0.690-0.770	.630	.120	.220	.300	.080	.350	.260±020	VR2	V	18mm
400200	0.748-0.827	.710	.160	.190	.300	.080	.470	.240±030	VR1	R	20mm
400204	0.748-0.827	.710	.160	.190	.300	.080	.470	.240±030	VR1	V	20mm
400201	0.770-0.827	.710	.160	.310	.410	.080	.470	.354±030	VR2	R	20mm
400205	0.770-0.827	.710	.160	.310	.410	.080	.470	.354±030	VR2	V	20mm
400220	0.827-0.950	.790	.160	.190	.300	.080	.470	.240±030	VR1	R	22mm
400224	0.827-0.950	.790	.160	.190	.300	.080	.470	.240±030	VR1	V	22mm
400221	0.827-0.950	.790	.160	.310	.410	.080	.470	.354±030	VR2	R	22mm
400225	0.827-0.950	.790	.160	.310	.410	.080	.470	.354±030	VR2	V	22mm

Select the larger V-Ring when the dimension d_1 is on the boundary between two sizes of V-Ring.

Purple dot on V-Ring indicates LongLife material.

Sizes under .787 (20mm) shaft are brown with no dot.

* Check for availability & pricing

Indicates non-standard compounds for specific applications

Complete size listing

SKF stock no.	Shaft diameter d_1 (Range)	Inside diameter d	Height c	Dimension A	Free width B	Maximum $d_2 = (d_1 +)$	Minimum $d_3 = (d_1 +)$	Fitted width B_1	Construction	Lip code	Reference metric shaft size
400250	0.950-1.070	.788	.160	.190	.300	.080	.470	.240±030	VR1	R	25mm
400254	0.950-1.070	.788	.160	.190	.300	.080	.470	.240±030	VR1	V	25mm
400251	0.950-1.070	.788	.160	.310	.410	.080	.470	.354±030	VR2	R	25mm
400255	0.950-1.070	.788	.160	.310	.410	.080	.470	.354±030	VR2	V	25mm
400280	1.070-1.140	.980	.160	.190	.300	.120	.470	.240±030	VR1	R	28mm
400284	1.070-1.140	.980	.160	.190	.300	.120	.470	.240±030	VR1	V	28mm
400281	1.070-1.140	.980	.160	.310	.410	.120	.470	.354±030	VR2	R	28mm
400285	1.070-1.140	.980	.160	.310	.410	.120	.470	.354±030	VR2	V	28mm
400300	1.140-1.220	1.060	.160	.190	.300	.120	.470	.240±030	VR1	R	30mm
400304	1.140-1.220	1.060	.160	.190	.300	.120	.470	.240±030	VR1	V	30mm
400301	1.140-1.220	1.060	.160	.310	.410	.120	.470	.354±030	VR2	R	30mm
400305	1.140-1.220	1.060	.160	.310	.410	.120	.470	.354±030	VR2	V	30mm
400320	1.220-1.300	1.140	.160	.190	.300	.120	.470	.240±030	VR1	R	32mm
400324	1.220-1.300	1.140	.160	.190	.300	.120	.470	.240±030	VR1	V	32mm
400321	1.220-1.300	1.140	.160	.310	.410	.120	.470	.354±030	VR2	R	32mm
400325	1.220-1.300	1.140	.160	.310	.410	.120	.470	.354±030	VR2	V	32mm
400350	1.300-1.420	1.220	.160	.190	.300	.120	.470	.240±030	VR1	R	35mm
400354	1.300-1.420	1.220	.160	.190	.300	.120	.470	.240±030	VR1	V	35mm
400351	1.300-1.420	1.220	.160	.310	.410	.120	.470	.354±030	VR2	R	35mm
400355	1.300-1.420	1.220	.160	.310	.410	.120	.470	.354±030	VR2	V	35mm
400380	1.420-1.500	1.340	.160	.190	.300	.120	.470	.240±030	VR1	R	38mm
400384	1.420-1.500	1.340	.160	.190	.300	.120	.470	.240±030	VR1	V	38mm
400381	1.420-1.500	1.340	.160	.310	.410	.120	.470	.354±030	VR2	R	38mm
400385	1.420-1.500	1.340	.160	.310	.410	.120	.470	.354±030	VR2	V	38mm
400400	1.500-1.700	1.420	.200	.220	.350	.120	.590	.280±039	VR1	R	40mm
400404	1.500-1.700	1.420	.200	.220	.350	.120	.590	.280±039	VR1	V	40mm
400401	1.500-1.700	1.420	.200	.370	.510	.120	.590	.433±039	VR2	R	40mm
400405	1.500-1.700	1.420	.200	.370	.510	.120	.590	.433±039	VR2	V	40mm
400450	1.700-1.889	1.570	.200	.220	.350	.120	.590	.280±039	VR1	R	45mm
400454	1.700-1.889	1.570	.200	.220	.350	.120	.590	.280±039	VR1	V	45mm
400451	1.700-1.889	1.570	.200	.370	.510	.120	.590	.433±039	VR2	R	45mm
400455	1.700-1.889	1.570	.200	.370	.510	.120	.590	.433±039	VR2	V	45mm
400500	1.889-2.090	1.772	.200	.220	.350	.120	.590	.280±039	VR1	R	50mm
400504	1.889-2.090	1.772	.200	.220	.350	.120	.590	.280±039	VR1	V	50mm
400501	1.889-2.090	1.772	.200	.370	.510	.120	.590	.433±039	VR2	R	50mm
400505	1.889-2.090	1.772	.200	.370	.510	.120	.590	.433±039	VR2	V	50mm
400550	2.090-2.290	1.930	.200	.220	.350	.120	.590	.280±039	VR1	R	55mm
400554	2.090-2.290	1.930	.200	.220	.350	.120	.590	.280±039	VR1	V	55mm
400551	2.090-2.290	1.930	.200	.370	.510	.120	.590	.433±039	VR2	R	55mm
400555	2.090-2.290	1.930	.200	.370	.510	.120	.590	.433±039	VR2	V	55mm
400600	2.290-2.480	2.130	.200	.220	.350	.120	.590	.280±039	VR1	R	60mm
400604	2.290-2.480	2.130	.200	.220	.350	.120	.590	.280±039	VR1	V	60mm
400601	2.290-2.480	2.130	.200	.370	.510	.120	.590	.433±039	VR2	R	60mm
400605	2.290-2.480	2.130	.200	.370	.510	.120	.590	.433±039	VR2	V	60mm
400650	2.480-2.680	2.280	.200	.220	.350	.120	.590	.280±039	VR1	R	65mm
400654	2.480-2.680	2.280	.200	.220	.350	.120	.590	.280±039	VR1	V	65mm
400659	2.480-2.680	2.280	.200	.220	.350	.120	.590	.280±039	VR1-SPL	R	65mm
400651	2.480-2.680	2.280	.200	.370	.510	.120	.590	.433±039	VR2	R	65mm
400655	2.480-2.680	2.280	.200	.370	.510	.120	.590	.433±039	VR2	V	65mm
400700	2.680-2.874	2.480	.240	.270	.430	.160	.710	.354±047	VR1	R	70mm

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Indicates non-standard compounds for specific applications

Complete size listing

SKF stock no.	Shaft diameter d_1 (Range)	Inside diameter d	Height c	Dimension A	Free width B	Maximum $d_2 = (d_1 +)$	Minimum $d_3 = (d_1 +)$	Fitted width B_1	Construction	Lip code	Reference metric shaft size
400704	2.680-2.874	2.480	.240	.270	.430	.160	.710	.354±047	VR1	V	70mm
400701	2.680-2.874	2.480	.240	.440	.610	.160	.710	.530±047	VR2	R	70mm
400705	2.680-2.874	2.480	.240	.440	.610	.160	.710	.530±047	VR2	V	70mm
400750	2.874-3.070	2.640	.240	.270	.430	.160	.710	.354±047	VR1	R	75mm
400754	2.874-3.070	2.640	.240	.270	.430	.160	.710	.354±047	VR1	V	75mm
400751	2.874-3.070	2.640	.240	.440	.610	.160	.710	.530±047	VR2	R	75mm
400755	2.874-3.070	2.640	.240	.440	.610	.160	.710	.530±047	VR2	V	75mm
400800	3.070-3.270	2.787	.240	.270	.430	.160	.710	.354±047	VR1	R	80mm
400804	3.070-3.270	2.787	.240	.270	.430	.160	.710	.354±047	VR1	V	80mm
400801	3.070-3.270	2.787	.240	.440	.610	.160	.710	.530±047	VR2	R	80mm
400805	3.070-3.270	2.787	.240	.440	.610	.160	.710	.530±047	VR2	V	80mm
400851	3.270-3.472	2.940	.240	.440	.610	.160	.710	.530±047	VR2	R	85mm
400855	3.270-3.472	2.940	.240	.440	.610	.160	.710	.530±047	VR2	V	85mm
400850	3.270-3.472	2.990	.240	.270	.430	.160	.710	.354±047	VR1	R	85mm
400854	3.270-3.472	2.990	.240	.270	.430	.160	.710	.354±047	VR1	V	85mm
400900	3.472-3.660	3.190	.240	.270	.430	.160	.710	.354±047	VR1	R	90mm
400904	3.472-3.660	3.190	.240	.270	.430	.160	.710	.354±047	VR1	V	90mm
400901	3.472-3.660	3.190	.240	.440	.610	.160	.710	.530±047	VR2	R	90mm
400905	3.472-3.660	3.190	.240	.440	.610	.160	.710	.530±047	VR2	V	90mm
400950	3.660-3.787	3.350	.240	.270	.430	.160	.710	.354±047	VR1	R	95mm
400954	3.660-3.787	3.350	.240	.270	.430	.160	.710	.354±047	VR1	V	95mm
400951	3.660-3.787	3.350	.240	.440	.610	.160	.710	.530±047	VR2	R	95mm
400955	3.660-3.787	3.350	.240	.440	.610	.160	.710	.530±047	VR2	V	95mm
401000	3.787-4.140	3.540	.240	.270	.430	.160	.710	.354±047	VR1	R	100mm
401004	3.787-4.140	3.540	.240	.270	.430	.160	.710	.354±047	VR1	V	100mm
401001	3.787-4.140	3.540	.240	.440	.610	.160	.710	.530±047	VR2	R	100mm
401005	3.787-4.140	3.540	.240	.440	.610	.160	.710	.530±047	VR2	V	100mm
401100	4.140-4.528	3.900	.280	.310	.500	.160	.787	.413±059	VR1	R	110mm
401104	4.140-4.528	3.900	.280	.310	.500	.160	.787	.413±059	VR1	V	110mm
401101	4.140-4.528	3.900	.280	.520	.710	.160	.787	.610±059	VR2	R	110mm
401105	4.140-4.528	3.900	.280	.520	.710	.160	.787	.610±059	VR2	V	110mm
401200	4.528-4.920	4.250	.280	.310	.500	.160	.787	.413±059	VR1	R	120mm
401204	4.528-4.920	4.250	.280	.310	.500	.160	.787	.413±059	VR1	V	120mm
401208	4.528-4.917	4.250	.280	.310	.500	.160	.787	.413±059	VR1-SPL	#	120mm
401201	4.528-4.920	4.250	.280	.520	.710	.160	.787	.610±059	VR2	R	120mm
401205	4.528-4.920	4.250	.280	.520	.710	.160	.787	.610±059	VR2	V	120mm
401202*	4.528-4.920	4.250	.260	.240	.410	.200	.787	.315±059	VR3	R	120mm
401206*	4.528-4.920	4.250	.260	.240	.410	.200	.787	.315±059	VR3	V	120mm
401300	4.920-5.320	4.610	.280	.310	.500	.160	.787	.413±059	VR1	R	130mm
401304	4.920-5.320	4.610	.280	.310	.500	.160	.787	.413±059	VR1	V	130mm
401301	4.920-5.320	4.610	.280	.520	.710	.160	.787	.610±059	VR2	R	130mm
401305	4.920-5.320	4.610	.280	.520	.710	.160	.787	.610±059	VR2	V	130mm
401400	5.320-5.709	4.960	.280	.310	.500	.160	.787	.413±059	VR1	R	140mm
401404	5.320-5.709	4.960	.280	.310	.500	.160	.787	.413±059	VR1	V	140mm
401401	5.320-5.709	4.960	.280	.520	.710	.160	.787	.610±059	VR2	R	140mm
401405	5.320-5.709	4.960	.280	.520	.710	.160	.787	.610±059	VR2	V	140mm
401402	5.320-5.709	4.960	.260	.240	.410	.197	.787	.315±059	VR3	R	140mm
401406	5.320-5.709	4.960	.260	.240	.410	.197	.787	.315±059	VR3	V	140mm
401500	5.709-6.102	5.310	.280	.310	.500	.160	.787	.413±059	VR1	R	150mm
401504	5.709-6.102	5.310	.280	.310	.500	.160	.787	.413±059	VR1	V	150mm

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Complete size listing

SKF stock no.	Shaft diameter d_1 (Range)	Inside diameter d	Height c	Dimension A	Free width B	Maximum $d_2 = (d_1 +)$	Minimum $d_3 = (d_1 +)$	Fitted width B_1	Construction	Lip code	Reference metric shaft size
401501	5.709-6.102	5.310	.280	.520	.710	.160	.787	.610±059	VR2	R	150mm
401505	5.709-6.102	5.310	.280	.520	.710	.160	.787	.610±059	VR2	V	150mm
401502	5.709-6.102	5.310	.260	.240	.410	.197	.787	.315±059	VR3	R	150mm
401506	5.709-6.102	5.310	.260	.240	.410	.197	.787	.315±059	VR3	V	150mm
401600	6.102-6.496	5.670	.310	.350	.570	.157	.940	.472±070	VR1	R	160mm
401604	6.102-6.496	5.670	.310	.350	.570	.157	.940	.472±070	VR1	V	160mm
401608	6.102-6.496	5.670	.310	.350	.570	.157	.940	.472±070	VR1-SPL	#	160mm
401601	6.102-6.496	5.670	.310	.590	.787	.157	.940	.709±070	VR2	R	160mm
401605	6.102-6.496	5.670	.310	.590	.787	.157	.940	.709±070	VR2	V	160mm
401602	6.102-6.496	5.670	.260	.240	.410	.197	.787	.315±059	VR3	R	160mm
401606	6.102-6.496	5.670	.260	.240	.410	.197	.787	.315±059	VR3	V	160mm
401700	6.496-6.890	6.020	.310	.350	.570	.157	.940	.472±070	VR1	R	170mm
401704	6.496-6.890	6.020	.310	.350	.570	.157	.940	.472±070	VR1	V	170mm
401701	6.496-6.890	6.020	.310	.590	.787	.157	.940	.709±070	VR2	R	170mm
401705	6.496-6.890	6.020	.310	.590	.787	.157	.940	.709±070	VR2	V	170mm
401702	6.496-6.890	6.020	.260	.240	.410	.197	.787	.315±059	VR3	R	170mm
401706	6.496-6.890	6.020	.260	.240	.410	.197	.787	.315±059	VR3	V	170mm
401800	6.890-7.283	6.380	.310	.350	.570	.157	.940	.472±070	VR1	R	180mm
401804	6.890-7.283	6.380	.310	.350	.570	.157	.940	.472±070	VR1	V	180mm
401801	6.890-7.283	6.380	.310	.590	.787	.157	.940	.709±070	VR2	R	180mm
401805	6.890-7.283	6.380	.310	.590	.787	.157	.940	.709±070	VR2	V	180mm
401802	6.890-7.283	6.380	.260	.240	.410	.197	.787	.315±059	VR3	R	180mm
401806	6.890-7.283	6.380	.260	.240	.410	.197	.787	.315±059	VR3	V	180mm
401900	7.283-7.680	6.730	.310	.350	.570	.157	.940	.472±070	VR1	R	190mm
401904	7.283-7.680	6.730	.310	.350	.570	.157	.940	.472±070	VR1	V	190mm
401901	7.283-7.680	6.730	.310	.590	.787	.157	.940	.709±070	VR2	R	190mm
401905	7.283-7.680	6.730	.310	.590	.787	.157	.940	.709±070	VR2	V	190mm
401902	7.283-7.680	6.730	.260	.240	.410	.197	.787	.315±059	VR3	R	190mm
401906	7.283-7.680	6.730	.260	.240	.410	.197	.787	.315±059	VR3	V	190mm
401990	7.680-8.270	7.090	.310	.350	.570	.157	.940	.472±070	VR1	R	199mm
401994	7.680-8.270	7.090	.310	.350	.570	.157	.940	.472±070	VR1	V	199mm
402000	7.480-8.270	7.090	.590	.560	.980	.394	1.772	.787±157	VR1	R	200mm
402004	7.480-8.270	7.090	.590	.560	.980	.394	1.772	.787±157	VR1	V	200mm
401991	7.680-8.270	7.090	.310	.590	.787	.157	.940	.709±070	VR2	R	199mm
401995	7.680-8.270	7.090	.310	.590	.787	.157	.940	.709±070	VR2	V	199mm
402002	7.680-8.270	7.170	.260	.240	.410	.197	.787	.315±059	VR3	R	200mm
402006	7.680-8.270	7.170	.260	.240	.410	.197	.787	.315±059	VR3	V	200mm
402200	8.270-9.250	7.787	.590	.560	.980	.394	1.772	.787±157	VR1	R	220mm
402204	8.270-9.250	7.787	.590	.560	.980	.394	1.772	.787±157	VR1	V	220mm
402202	8.270-9.170	7.787	.260	.240	.410	.197	.787	.315±059	VR3	R	220mm
402206	8.270-9.170	7.787	.260	.240	.410	.197	.787	.315±059	VR3	V	220mm
402500	9.250-10.433	8.788	.590	.560	.980	.394	1.772	.787±157	VR1	R	250mm
402504	9.250-10.433	8.788	.590	.560	.980	.394	1.772	.787±157	VR1	V	250mm
402502	9.170-10.240	8.788	.260	.240	.410	.197	.787	.315±059	VR3	R	250mm
402506	9.170-10.240	8.788	.260	.240	.410	.197	.787	.315±059	VR3	V	250mm
402750	10.433-11.420	9.720	.590	.560	.980	.394	1.772	.787±157	VR1	R	275mm
402754	10.433-11.420	9.720	.590	.560	.980	.394	1.772	.787±157	VR1	V	275mm
402752	10.240-11.220	9.720	.260	.240	.410	.197	.787	.315±059	VR3	R	275mm
402756	10.240-11.220	9.720	.260	.240	.410	.197	.787	.315±059	VR3	V	275mm
403000	11.420-12.200	10.630	.590	.560	.980	.394	1.772	.787±157	VR1	R	300mm

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Complete size listing

SKF stock no.	Shaft diameter d_1 (Range)	Inside diameter d	Height c	Dimension A	Free width B	Maximum $d_2 = (d_1 +)$	Minimum $d_3 = (d_1 +)$	Fitted width B_1	Construction	Lip code	Reference metric shaft size
403004	11.420-12.200	10.630	.590	.560	.980	.394	1.772	.787±157	VR1	V	300mm
403002	11.220-12.200	10.630	.260	.240	.410	.197	.787	.315±059	VR3	R	300mm
403006	11.220-12.200	10.630	.260	.240	.410	.197	.787	.315±059	VR3	V	300mm
403250	12.200-13.189	11.500	.590	.560	.980	.394	1.772	.787±157	VR1	R	325mm
403254	12.200-13.189	11.500	.590	.560	.980	.394	1.772	.787±157	VR1	V	325mm
403252	12.200-13.189	11.500	.260	.240	.410	.197	.787	.315±059	VR3	R	325mm
403256	12.200-13.189	11.500	.260	.240	.410	.197	.787	.315±059	VR3	V	325mm
403003	11.811-12.008	11.575	1.181	1.280	2.559	.945	4.528	1.969 ±472	VR4	R	300mm
470300*	11.811-12.000	11.580	.787	2.660	3.930	.940	4.528	3.346±.472	VR5	R	300mm
403053	12.008-12.205	11.772	1.181	1.280	2.559	.945	4.528	1.969 ±472	VR4	R	305mm
403103	12.205-12.402	11.969	1.181	1.280	2.559	.945	4.528	1.969 ±472	VR4	R	310mm
403153	12.402-12.598	12.165	1.181	1.280	2.559	.945	4.528	1.969 ±472	VR4	R	315mm
403203	12.598-12.795	12.362	1.181	1.280	2.559	.945	4.528	1.969 ±472	VR4	R	320mm
403500	13.189-14.370	12.400	.590	.560	.980	.394	1.772	.787±157	VR1	R	350mm
403504	13.189-14.370	12.400	.590	.560	.980	.394	1.772	.787±157	VR1	V	350mm
403502	13.189-14.370	12.400	.260	.240	.410	.197	.787	.315±059	VR3	R	350mm
403506	13.189-14.370	12.400	.260	.240	.410	.197	.787	.315±059	VR3	V	350mm
403253	12.795-12.992	12.559	1.181	1.280	2.559	.945	4.528	1.969 ±472	VR4	R	325mm
403303	12.992-13.189	12.717	1.181	1.280	2.559	.945	4.528	1.969 ±472	VR4	R	330mm
403353	13.189-13.386	12.913	1.181	1.280	2.559	.945	4.528	1.969 ±472	VR4	R	335mm
403403	13.386-13.583	13.110	1.181	1.280	2.559	.945	4.528	1.969 ±472	VR4	R	340mm
403750	14.370-15.354	13.270	.590	.560	.980	.394	1.772	.787±157	VR1	R	375mm
403754	14.370-15.354	13.270	.590	.560	.980	.394	1.772	.787±157	VR1	V	375mm
403752	14.370-15.150	13.270	.260	.240	.410	.197	.787	.315±059	VR3	R	375mm
403756	14.370-15.150	13.270	.260	.240	.410	.197	.787	.315±059	VR3	V	375mm
403453	13.583-13.780	13.307	1.181	1.280	2.559	.945	4.528	1.969 ±472	VR4	R	345mm
403503	13.780-13.976	13.504	1.181	1.280	2.559	.945	4.528	1.969 ±472	VR4	R	350mm
403553	13.976-14.173	13.661	1.181	1.280	2.559	.945	4.528	1.969 ±472	VR4	R	355mm
403603	14.173-14.370	13.788	1.181	1.280	2.559	.945	4.528	1.969 ±472	VR4	R	360mm
403653	14.370-14.567	14.055	1.181	1.280	2.559	.945	4.528	1.969 ±472	VR4	R	365mm
404000	15.354-16.930	14.170	.590	.560	.980	.394	1.772	.787±157	VR1	R	400mm
404004	15.354-16.930	14.170	.590	.560	.980	.394	1.772	.787±157	VR1	V	400mm
404002	15.150-16.730	14.170	.260	.240	.410	.197	.787	.315±059	VR3	R	400mm
404006	15.150-16.930	14.170	.260	.240	.410	.197	.787	.315±059	VR3	V	400mm
403703	14.567-14.764	14.252	1.181	1.280	2.559	.945	4.528	1.969 ±472	VR4	R	370mm
403753	14.764-14.961	14.449	1.181	1.280	2.559	.945	4.528	1.969 ±472	VR4	R	375mm
403803	14.961-15.157	14.606	1.181	1.280	2.559	.945	4.528	1.969 ±472	VR4	R	380mm
470380*	14.961-15.157	14.610	.787	2.660	3.940	.940	4.528	3.346±472	VR5	R	380mm
470385*	15.354-19.685	14.787	.787	2.660	3.940	.940	4.528	3.346±472	VR5	R	385mm
403853	15.157-15.354	14.787	1.181	1.280	2.559	.945	4.528	1.969 ±472	VR4	R	385mm
403903	15.354-15.551	15.000	1.181	1.280	2.559	.945	4.528	1.969 ±472	VR4	R	390mm
404252*	16.142-17.322	15.040	.260	.240	.410	.200	.787	.315±059	VR3	R	425mm
403953	15.551-15.748	15.197	1.181	1.280	2.559	.945	4.528	1.969 ±472	VR4	R	395mm
404003	15.748-15.945	15.394	1.181	1.280	2.559	.945	4.528	1.969 ±472	VR4	R	400mm
404053	15.945-16.142	15.591	1.181	1.280	2.559	.945	4.528	1.969 ±472	VR4	R	405mm
404103	16.142-16.339	15.787	1.181	1.280	2.559	.945	4.528	1.969 ±472	VR4	R	410mm
404500	16.930-18.898	15.940	.590	.560	.980	.394	1.772	.787±157	VR1	R	450mm
404504	16.930-18.898	15.940	.590	.560	.980	.394	1.772	.787±157	VR1	V	450mm
404502	16.730-18.700	15.940	.260	.240	.410	.197	.787	.315±059	VR3	R	450mm
404506	16.730-18.700	15.940	.260	.240	.410	.197	.787	.315±059	VR3	V	450mm

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Complete size listing

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404153	16.339-16.535	15.945	1.181	1.280	2.559	.945	4.528	1.969 ±472	VR4	R	415mm
404203	16.535-16.732	16.142	1.181	1.280	2.559	.945	4.528	1.969 ±472	VR4	R	420mm
404253	16.732-16.929	16.339	1.181	1.280	2.559	.945	4.528	1.969 ±472	VR4	R	425mm
404303	16.929-17.126	16.535	1.181	1.280	2.559	.945	4.528	1.969 ±472	VR4	R	430mm
404353	17.126-17.323	16.732	1.181	1.280	2.559	.945	4.528	1.969 ±472	VR4	R	435mm
404403	17.323-17.520	16.788	1.181	1.280	2.559	.945	4.528	1.969 ±472	VR4	R	440mm
404453*	17.520-17.717	17.087	1.181	1.280	2.559	.945	4.528	1.969 ±472	VR4	R	445mm
404503	17.717-17.913	17.283	1.181	1.280	2.559	.945	4.528	1.969 ±472	VR4	R	450mm
404553	17.913-18.110	17.480	1.181	1.280	2.559	.945	4.528	1.969 ±472	VR4	R	455mm
404603	18.110-18.307	17.638	1.181	1.280	2.559	.945	4.528	1.969 ±472	VR4	R	460mm
405000	18.898-20.866	17.720	.590	.560	.980	.394	1.772	.787±157	VR1	R	500mm
405004	18.898-20.866	17.720	.590	.560	.980	.394	1.772	.787±157	VR1	V	500mm
405002	18.898-20.866	17.720	.260	.240	.410	.197	.787	.315±059	VR3	R	500mm
405006	18.700-20.080	17.720	.260	.240	.410	.197	.790	.315±059	VR3	R	500mm
404653	18.307-18.504	17.787	1.181	1.280	2.559	.945	4.528	1.969 ±472	VR4	R	465mm
404703	18.504-18.701	18.031	1.181	1.280	2.559	.945	4.528	1.969 ±472	VR4	R	470mm
404753*	18.701-18.898	18.228	1.181	1.280	2.559	.945	4.528	1.969 ±472	VR4	R	475mm
404757*	18.701-18.898	18.228	1.181	1.280	2.559	.945	4.528	1.969 ±472	VR4	V	475mm
404803	18.898-19.094	18.425	1.181	1.280	2.559	.945	4.528	1.969 ±472	VR4	R	480mm
404807*	18.898-19.094	18.425	1.181	1.280	2.559	.945	4.528	1.969 ±472	VR4	V	480mm
405252	20.080-21.260	18.580	.260	.240	.410	.197	.787	.315±059	VR3	R	525mm
404853	19.094-19.291	18.622	1.181	1.280	2.559	.945	4.528	1.969 ±472	VR4	R	485mm
404857*	19.094-19.291	18.622	1.181	1.280	2.559	.945	4.528	1.969 ±472	VR4	V	485mm
404903	19.291-19.488	18.787	1.181	1.280	2.559	.945	4.528	1.969 ±472	VR4	R	490mm
404953	19.488-19.685	19.016	1.181	1.280	2.559	.945	4.528	1.969 ±472	VR4	R	495mm
405003	19.685-19.881	19.213	1.181	1.280	2.559	.945	4.528	1.969 ±472	VR4	R	500mm
405007*	19.881-20.079	19.409	1.181	1.280	2.559	.945	4.528	1.969 ±472	VR4	V	505mm
405053	19.881-20.079	19.409	1.181	1.280	2.559	.945	4.528	1.969 ±472	VR4	R	505mm
405500	20.866-22.835	19.490	.590	.560	.980	.394	1.772	.787±157	VR1	R	550mm
405504	20.866-22.835	19.490	.590	.560	.980	.394	1.772	.787±157	VR1	V	550mm
405502	20-870-22.835	19.490	.260	.240	.410	.197	.787	.315±059	VR3	R	550mm
405506*	21.560-22.638	19.490	.260	.240	.410	.197	.787	.315±059	VR3	V	550mm
405103	20.079-20.276	19.567	1.181	1.280	2.559	.945	4.528	1.969 ±472	VR4	R	510mm
405153	20.276-20.472	19.764	1.181	1.280	2.559	.945	4.528	1.969 ±472	VR4	R	515mm
405203	20.472-20.669	19.961	1.181	1.280	2.559	.945	4.528	1.969 ±472	VR4	R	520mm
405253	20.669-20.866	20.157	1.181	1.280	2.559	.945	4.528	1.969 ±472	VR4	R	525mm
405303	20.866-21.063	20.354	1.181	1.280	2.559	.945	4.528	1.969 ±472	VR4	R	530mm
405353	21.063-21.260	20.512	1.181	1.280	2.559	.945	4.528	1.969 ±472	VR4	R	535mm
405403	21.260-21.457	20.709	1.181	1.280	2.559	.945	4.528	1.969 ±472	VR4	R	540mm
405453	21.457-21.654	20.906	1.181	1.280	2.559	.945	4.528	1.969 ±472	VR4	R	545mm
405503	21.654-21.850	21.102	1.181	1.280	2.559	.945	4.528	1.969 ±472	VR4	R	550mm
406000	22.835-24.803	21.260	.590	.560	.980	.394	1.772	.787±157	VR1	R	600mm
406004	22.835-24.803	21.260	.590	.560	.980	.394	1.772	.787±157	VR1	V	600mm
406002	22.835-24.803	21.260	.260	.240	.410	.197	.787	.315±059	VR3	R	600mm
406006*	22.638-24.606	21.260	.260	.240	.410	.197	.787	.315±059	VR3	V	600mm
405553	21.850-22.047	21.299	1.181	1.280	2.559	.945	4.528	1.969 ±472	VR4	R	555mm
405603	22.047-22.244	21.496	1.181	1.280	2.559	.945	4.528	1.969 ±472	VR4	R	560mm
405607*	22.047-22.244	21.496	1.181	1.280	2.559	.945	4.528	1.969 ±472	VR4	V	560mm
405653	22.244-22.441	21.654	1.181	1.280	2.559	.945	4.528	1.969 ±472	VR4	R	565mm
405703	22.441-22.638	21.850	1.181	1.280	2.559	.945	4.528	1.969 ±472	VR4	R	570mm

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Indicates non-standard compounds for specific applications

Complete size listing

SKF stock no.	Shaft diameter d_1 (Range)	Inside diameter d	Height c	Dimension A	Free width B	Maximum $d_2 = (d_1 +)$	Minimum $d_3 = (d_1 +)$	Fitted width B_1	Construction	Lip code	Reference metric shaft size
405753	22.638-22.835	22.047	1.181	1.280	2.559	.945	4.528	1.969 ±472	VR4	R	575mm
405757*	22.638-22.835	22.047	1.181	1.280	2.559	.945	4.528	1.969 ±472	VR4	V	575mm
405803	22.835-23.031	22.244	1.181	1.280	2.559	.945	4.528	1.969 ±472	VR4	R	580mm
405853	23.031-23.228	22.441	1.181	1.280	2.559	.945	4.528	1.969 ±472	VR4	R	585mm
405903	23.228-23.622	22.638	1.181	1.280	2.559	.945	4.528	1.969 ±472	VR4	R	590mm
406003	23.622-24.016	22.913	1.181	1.280	2.559	.945	4.528	1.969 ±472	VR4	R	600mm
406103	24.016-24.409	23.307	1.181	1.280	2.559	.945	4.528	1.969 ±472	VR4	R	610mm
406500	24.803-26.180	23.620	.590	.560	.980	.394	1.772	.787±157	VR1	R	650mm
406504*	24.787-26.187	23.620	.590	.560	.980	.394	1.772	.787±157	VR1	V	650mm
406203	24.409-24.803	23.701	1.181	1.280	2.559	.945	4.528	1.969 ±472	VR4	R	620mm
406303	24.803-25.197	24.094	1.181	1.280	2.559	.945	4.528	1.969 ±472	VR4	R	630mm
406403	25.197-25.591	24.449	1.181	1.280	2.559	.945	4.528	1.969 ±472	VR4	R	640mm
407000	26.180-27.760	24.787	.590	.560	.980	.394	1.772	.787±157	VR1	R	700mm
407004*	26.180-27.760	24.787	.590	.560	.980	.394	1.772	.787±157	VR1	V	700mm
406503	25.591-25.984	24.787	1.181	1.280	2.559	.945	4.528	1.969 ±472	VR4	R	650mm
406507*	25.591-25.984	24.787	1.181	1.280	2.559	.945	4.528	1.969 ±472	VR4	V	650mm
406603*	25.984-26.378	25.197	1.181	1.280	2.559	.945	4.528	1.969 ±472	VR4	R	660mm
406703*	26.378-26.772	25.591	1.181	1.280	2.559	.945	4.528	1.969 ±472	VR4	R	670mm
406803*	26.772-27.165	25.984	1.181	1.280	2.559	.945	4.528	1.969 ±472	VR4	R	680mm
406903	27.165-27.559	26.378	1.181	1.280	2.559	.945	4.528	1.969 ±472	VR4	R	690mm
406907*	27.165-27.559	26.378	1.181	1.280	2.559	.945	4.528	1.969 ±472	VR4	V	690mm
407250	27.760-29.330	26.380	.590	.560	.980	.394	1.772	.787±157	VR1	R	725mm
407003	27.559-27.953	26.772	1.181	1.280	2.559	.945	4.528	1.969 ±472	VR4	R	700mm
407103*	27.953-28.346	27.126	1.181	1.280	2.559	.945	4.528	1.969 ±472	VR4	R	710mm
407203*	28.346-28.740	27.520	1.181	1.280	2.559	.945	4.528	1.969 ±472	VR4	R	720mm
407500	29.330-30.910	27.760	.590	.560	.980	.394	1.772	.787±157	VR1	R	750mm
407504*	29.330-30.900	27.760	.590	.560	.980	.394	1.772	.787±157	VR1	V	750mm
407303	28.740-29.134	27.913	1.181	1.280	2.559	.945	4.528	1.969 ±472	VR4	R	730mm
407307*	28.740-29.134	27.913	1.181	1.280	2.559	.945	4.528	1.969 ±472	VR4	V	730mm
407403	29.134-29.528	28.268	1.181	1.280	2.559	.945	4.528	1.969 ±472	VR4	R	740mm
407503	29.528-29.843	28.661	1.181	1.280	2.559	.945	4.528	1.969 ±472	VR4	R	750mm
407603	29.843-30.157	28.937	1.181	1.280	2.559	.945	4.528	1.969 ±472	VR4	R	760mm
407703	30.157-30.472	29.252	1.181	1.280	2.559	.945	4.528	1.969 ±472	VR4	R	770mm
408000	30.910-32.680	29.330	.590	.560	.980	.394	1.772	.787±157	VR1	R	800mm
408004*	30.900-32.680	29.330	.590	.560	.980	.394	1.772	.787±157	VR1	V	800mm
407502*	29.134-30.512	29.530	.260	.240	.410	.197	.787	.315±059	VR3	R	750mm
407803	30.472-30.827	29.567	1.181	1.280	2.559	.945	4.528	1.969 ±472	VR4	R	780mm
407903	30.827-31.181	29.788	1.181	1.280	2.559	.945	4.528	1.969 ±472	VR4	R	790mm
408003	31.181-31.535	30.236	1.181	1.280	2.559	.945	4.528	1.969 ±472	VR4	R	800mm
408103	31.535-31.889	30.591	1.181	1.280	2.559	.945	4.528	1.969 ±472	VR4	R	810mm
408500	32.680-34.450	30.910	.590	.560	.980	.400	1.772	.787±157	VR1	R	850mm
408203	31.889-32.323	30.945	1.181	1.280	2.559	.945	4.528	1.969 ±472	VR4	R	820mm
408303	32.323-32.717	31.339	1.181	1.280	2.559	.945	4.528	1.969 ±472	VR4	R	830mm
408403	32.717-33.110	31.693	1.181	1.280	2.559	.945	4.528	1.969 ±472	VR4	R	840mm
408503	33.110-33.504	32.047	1.181	1.280	2.559	.945	4.528	1.969 ±472	VR4	R	850mm
408603	33.504-33.898	32.441	1.181	1.280	2.559	.945	4.528	1.969 ±472	VR4	R	860mm
409000	34.450-36.220	32.480	.590	.560	.980	.394	1.772	.787±157	VR1	R	900mm
409004*	34.450-36.220	32.480	.590	.560	.980	.394	1.772	.787±157	VR1	V	900mm
409002*	34.449-36.417	32.480	.260	.240	.410	.197	.787	.315±059	VR3	R	900mm
408703*	33.898-34.291	32.795	1.181	1.280	2.559	.945	4.528	1.969 ±472	VR4	R	870mm

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Complete size listing

SKF stock no.	Shaft diameter d_1 (Range)	Inside diameter d	Height c	Dimension A	Free width B	Maximum $d_2 = (d_1 +)$	Minimum $d_3 = (d_1 +)$	Fitted width B_1	Construction	Lip code	Reference metric shaft size
408803	34.291-34.724	33.189	1.181	1.280	2.559	.945	4.528	1.969 ±472	VR4	R	880mm
408807*	34.291-34.724	33.189	1.181	1.280	2.559	.945	4.528	1.969 ±472	VR4	V	880mm
408903	34.724-35.118	33.583	1.181	1.280	2.559	.945	4.528	1.969 ±472	VR4	R	890mm
408907*	34.724-35.118	33.583	1.181	1.280	2.559	.945	4.528	1.969 ±472	VR4	V	890mm
409500	36.220-37.990	34.060	.590	.560	.980	.394	1.772	.787±157	VR1	R	950mm
409504*	36.220-37.992	34.060	.590	.560	.980	.394	1.772	.787±157	VR1	V	950mm
470900*	35.118-35.905	34.290	.787	2.660	3.940	.940	4.528	3.346±472	VR5	R	900mm
409003	35.315-36.102	34.291	1.181	1.280	2.559	.945	4.528	1.969 ±472	VR4	R	900mm
409203	35.906-36.299	34.646	1.181	1.280	2.559	.945	4.528	1.969 ±472	VR4	R	920mm
409303	36.299-36.732	35.039	1.181	1.280	2.559	.945	4.528	1.969 ±472	VR4	R	930mm
470940*	36.730-31.170	35.430	.787	2.660	3.940	.940	4.528	3.346±472	VR5	R	940mm
409403	36.732-37.165	35.433	1.181	1.280	2.559	.945	4.528	1.969 ±472	VR4	R	940mm
410000	37.990-39.960	35.787	.590	.560	.980	.394	1.772	.787±157	VR1	R	1000mm
410004*	37.990-39.960	35.787	.590	.560	.980	.394	1.772	.787±157	VR1	V	1000mm
409503	37.165-37.598	35.788	1.181	1.280	2.559	.945	4.528	1.969 ±472	VR4	R	950mm
409603	37.598-38.031	36.260	1.181	1.280	2.559	.945	4.528	1.969 ±472	VR4	R	960mm
409703	38.031-38.465	36.693	1.181	1.280	2.559	.945	4.528	1.969 ±472	VR4	R	970mm
409808	38.465-38.898	37.087	1.181	1.280	2.559	.945	4.528	1.969 ±472	VR4	R	980mm
409903	38.898-39.331	37.520	1.181	1.280	2.559	.945	4.528	1.969 ±472	VR4	R	990mm
410500	39.960-41.930	37.600	.590	.560	.980	.394	1.772	.787±157	VR1	R	1050mm
410003	39.331-39.764	37.913	1.181	1.280	2.559	.945	4.528	1.969 ±472	VR4	R	1000mm
410203	39.764-40.354	38.307	1.181	1.280	2.559	.945	4.528	1.969 ±472	VR4	R	1020mm
410403	40.354-41.142	38.976	1.181	1.280	2.559	.945	4.528	1.969 ±472	VR4	R	1040mm
410503	40.748-41.535	39.340	1.181	1.280	2.559	.945	4.528	1.969 ±472	VR4	R	1050mm
411000	41.930-43.898	39.370	.590	.560	.980	.394	1.772	.787±157	VR1	R	1100mm
410603	41.142-41.929	40.433	1.181	1.280	2.559	.945	4.528	1.969 ±472	VR4	R	1060mm
411500	43.898-45.866	41.140	.590	.560	.980	.394	1.772	.787±157	VR1	R	1150mm
411502*	44.290-46.260	41.140	.260	.240	.410	.200	.787	.315±059	VR3	R	1150mm
410803*	41.929-42.717	41.142	1.181	1.280	2.559	.945	4.528	1.969 ±472	VR4	R	1080mm
411003	42.717-43.504	41.929	1.181	1.280	2.559	.945	4.528	1.969 ±472	VR4	R	1100mm
411203*	43.504-44.291	41.929	1.181	1.280	2.559	.945	4.528	1.969 ±472	VR4	R	1120mm
411403	44.291-45.079	42.677	1.181	1.280	2.559	.945	4.528	1.969 ±472	VR4	R	1140mm
471140*	44.291-45.079	42.680	.787	2.660	3.940	.940	4.528	3.346±472	VR5	R	1140mm
412000	45.866-47.835	42.910	.590	.560	.980	.394	1.772	.787±157	VR1	R	1200mm
412004*	45.866-47.835	42.910	.590	.560	.980	.394	1.772	.787±157	VR1	V	1200mm
412002*	46.259-48.238	42.910	.260	.240	.410	.197	.787	.315±059	VR3	R	1200mm
411503	44.685-45.472	43.060	1.181	1.280	2.559	.945	4.528	1.969 ±472	VR4	R	1150mm
411603	45.079-45.866	43.425	1.181	1.280	2.559	.945	4.528	1.969 ±472	VR4	R	1160mm
411803	45.866-46.654	44.134	1.181	1.280	2.559	.945	4.528	1.969 ±472	VR4	R	1180mm
412500	47.835-50.000	44.690	.590	.560	.980	.394	1.772	.787±157	VR1	R	1250mm
412504*	47.835-50.000	44.690	.590	.560	.980	.394	1.772	.787±157	VR1	V	1250mm
412003	46.654-47.441	44.787	1.181	1.280	2.559	.945	4.528	1.969 ±472	VR4	R	1200mm
412203	47.441-48.228	45.551	1.181	1.280	2.559	.945	4.528	1.969 ±472	VR4	R	1220mm
412403*	48.228-49.016	46.299	1.181	1.280	2.559	.945	4.528	1.969 ±472	VR4	R	1240mm
413000	50.000-51.970	46.460	.590	.560	.980	.394	1.772	.787±157	VR1	R	1300mm
412503	48.622-49.409	46.680	1.181	1.280	2.559	.945	4.528	1.969 ±472	VR4	R	1250mm
412603	49.016-50.000	47.047	1.181	1.280	2.559	.945	4.528	1.969 ±472	VR4	R	1260mm
412803*	50.000-50.984	47.953	1.181	1.280	2.559	.945	4.528	1.969 ±472	VR4	R	1280mm
413500	51.970-53.940	48.230	.590	.560	.980	.394	1.772	.787±157	VR1	R	1350mm
413502*	52.165-54.134	48.230	.260	.240	.410	.197	.787	.315±059	VR3	R	1350mm

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Complete size listing

SKF stock no.	Shaft diameter d_1 (Range)	Inside diameter d	Height c	Dimension A	Free width B	Maximum $d_2 = (d_1 +)$	Minimum $d_3 = (d_1 +)$	Fitted width B_1	Construction	Lip code	Reference metric shaft size
413003	50.984-51.772	48.787	1.181	1.280	2.559	.945	4.528	1.969 ±472	VR4	R	1300mm
413253*	51.772-52.756	49.567	1.181	1.280	2.559	.945	4.528	1.969 ±472	VR4	R	1325mm
414000	53.940-55.910	50.000	.590	.560	.980	.394	1.772	.787±157	VR1	R	1400mm
414006*	54.130-56.102	50.000	.260	.240	.410	.197	.787	.315±059	VR3	V	1400mm
413503	52.756-53.740	50.433	1.181	1.280	2.559	.945	4.528	1.969 ±472	VR4	R	1350mm
413753	53.740-54.724	51.378	1.181	1.280	2.559	.945	4.528	1.969 ±472	VR4	R	1375mm
414500	55.910-57.874	51.772	.590	.560	.980	.394	1.772	.787±157	VR1	R	1450mm
414504*	55.190-57.874	51.772	.590	.560	.980	.394	1.772	.787±157	VR1	V	1450mm
414003	54.724-55.709	52.283	1.181	1.280	2.559	.945	4.528	1.969 ±472	VR4	R	1400mm
414253	55.709-56.693	53.150	1.181	1.280	2.559	.945	4.528	1.969 ±472	VR4	R	1425mm
415000	57.874-59.843	53.540	.590	.560	.980	.394	1.772	.787±157	VR1	R	1500mm
414503	56.693-57.677	54.094	1.181	1.280	2.559	.945	4.528	1.969 ±472	VR4	R	1450mm
414753	57.677-58.661	55.000	1.181	1.280	2.559	.945	4.528	1.969 ±472	VR4	R	1475mm
415500	59.843-61.811	55.320	.590	.560	.980	.394	1.772	.787±157	VR1	R	1550mm
415003	58.661-59.646	55.788	1.181	1.280	2.559	.945	4.528	1.969 ±472	VR4	R	1500mm
415253	59.646-60.630	56.787	1.181	1.280	2.559	.945	4.528	1.969 ±472	VR4	R	1525mm
416000	61.811-63.780	57.090	.590	.560	.980	.394	1.772	.787±157	VR1	R	1600mm
415503	60.630-61.811	57.756	1.181	1.280	2.559	.945	4.528	1.969 ±472	VR4	R	1550mm
415753	61.811-62.992	58.788	1.181	1.280	2.559	.945	4.528	1.969 ±472	VR4	R	1575mm
416500	63.780-65.748	58.788	.590	.560	.980	.394	1.772	.787±157	VR1	R	1650mm
416003	62.992-64.567	60.000	1.181	1.280	2.559	.945	4.528	1.969 ±472	VR4	R	1600mm
417000	65.748-67.720	60.630	.590	.560	.980	.394	1.772	.787±157	VR1	R	1700mm
416503	64.567-66.142	61.378	1.181	1.280	2.559	.945	4.528	1.969 ±472	VR4	R	1650mm
417500	67.720-69.690	62.400	.590	.560	.980	.394	1.772	.787±157	VR1	R	1750mm
417003	66.142-67.717	62.787	1.181	1.280	2.559	.945	4.528	1.969 ±472	VR4	R	1700mm
418000	69.690-71.560	64.170	.590	.560	.980	.394	1.772	.787±157	VR1	R	1800mm
418006*	69.882-71.850	64.170	.260	.240	.410	.197	.787	.315±059	VR3	V	1800mm
417503	67.717-69.488	64.252	1.181	1.280	2.559	.945	4.528	1.969 ±472	VR4	R	1750mm
418003	69.488-71.260	65.787	1.181	1.280	2.559	.945	4.528	1.969 ±472	VR4	R	1800mm
418500	71.650-73.620	65.950	.590	.560	.980	.394	1.772	.787±157	VR1	R	1850mm
418503	71.260-73.031	67.480	1.181	1.280	2.559	.945	4.528	1.969 ±472	VR4	R	1850mm
419000	73.620-75.590	67.720	.590	.560	.980	.394	1.772	.787±157	VR1	R	1900mm
419003	73.031-75.000	69.016	1.181	1.280	2.559	.945	4.528	1.969 ±472	VR4	R	1900mm
419500	75.590-77.560	69.490	.590	.560	.980	.394	1.772	.787±157	VR1	R	1950mm
419503	75.000-76.969	70.630	1.181	1.280	2.559	.945	4.528	1.969 ±472	VR4	R	1950mm
419990	77.560-79.530	71.260	.590	.560	.980	.394	1.772	.787±157	VR1	R	2000mm
421000*	79.530-83.460	72.240	.590	.560	.980	.395	1.772	.787±157	VR1	R	2100mm
419993	76.969-79.134	72.598	1.181	1.280	2.559	.945	4.528	1.969 ±472	VR4	R	2000mm
420503	79.134-81.496	74.567	1.181	1.280	2.559	.945	4.528	1.969 ±472	VR4	R	2050mm
421503*	83.646-86.417	78.661	1.181	1.280	2.559	.945	4.528	1.969 ±472	VR4	R	2150mm
472201*	86.417-89.209	80.910	.787	2.660	3.940	.940	4.528	3.346±472	VR5	R	2200mm
425000*	97.358-99.543	86.020	.590	.560	.980	.400	1.772	.787±157	VR1	R	2500mm
425003*	96.063-100.000	89.567	1.181	1.280	2.559	.945	4.528	1.969 ±472	VR4	R	2500mm
432503*	126.260-129.670	113.740	1.180	1.280	2.560	.940	4.528	1.969 ±472	VR4	R	3250mm
433003*	127.953-131.889	115.394	1.181	1.280	2.559	.945	4.528	1.969 ±472	VR4	R	3300mm

Select the larger V-Ring when the dimension d_1 is on the boundary between two sizes of V-Ring.

Purple dot on V-Ring indicates LongLife material.

Sizes under .787 (20mm) shaft are brown with no dot.

* Check for availability & pricing

Indicates non-standard compounds for specific applications

MVR axial shaft seals

For added protection in extremely contaminated applications, in addition to our standard V-ring; SKF also offers the type MVR. The MVR seal also seals axially and functions by combining positive lip contact with centrifugal "slinging" action. However, the MVR seal is different in that the rubber element is stretch fitted into a metal shell. The metal shell is then press-fitted onto the shaft. This shell provides excellent protection from heavy debris and it automatically accommodates high rotating speeds without auxiliary clamping devices.

Advantages/user benefits:

- The metal shell serves as a support and deflector. The rubber body and lip are protected from damage and displacement by external debris (i.e. rocks, viscous media).
- In most cases, the shell also functions as a holder that keeps the rubber lip in position during high surface speeds. No additional axial or radial retention is required. Contact SKF regarding radial retention limits.
- Due to its compact design, narrow installation widths are possible.

- Frictional heat build-up and torque drag are very low compared to contacting radial shaft seals. As rotary speed increases, the MVR seal lip lifts off the countersurface starting at about 2362 FPM (12 M/S) and drops to zero contact by 3937 FPM (20 M/S). Like the V-ring, the high rotary speed prevents contamination ingress while minimizing power loss.
- Service life is considerably higher than radial seals in contaminated environments and can extend to thousands of hours.

Construction: The MVR seal lip is made from an 80 durometer nitrile rubber with very good wear resistance. Other elastomers are possible in production lot orders. There are two versions of the metal shell, the MVR1 and the MVR2 with shell extension. Please refer to the illustrations below for details. The stock metal element is zinc plated cold-rolled carbon steel. Acid resistant steel similar to SAE 316 is available by special order.

Temp-range: Generally the same as NBR V-rings or -40°C to 100°C (-40°F to 212°F).

MVR1

Stock no	Ø d	Ø D	B	B ₁	Ø d ₁	Stock no	Ø d	Ø D	B	B ₁	Ø d ₁
MVR1-10	10	24	3.5	1.0	15	MVR1-53	53	73	5.5	1.0	61
MVR1-12	12	26	3.5	1.0	17	MVR1-55	55	75	5.5	1.0	63
MVR1-15	15	30	4.0	1.0	21	MVR1-58	58	78	5.5	1.0	66
MVR1-16	16	32	4.0	1.0	23	MVR1-60	60	80	5.5	1.0	68
MVR1-17	17	32	4.0	1.0	23	MVR1-62	62	82	5.5	1.0	70
MVR1-18	18	33	4.0	1.0	24	MVR1-65	65	85	5.5	1.0	73
MVR1-20	20	35	4.0	1.0	26	MVR1-68	68	88	5.5	1.0	76
MVR1-22	22	40	4.0	1.0	28	MVR1-70	70	90	5.5	1.0	78
MVR1-24	24	40	4.0	1.0	30	MVR1-72	72	92	5.5	1.0	80
MVR1-25	25	40	4.0	1.0	31	MVR1-75	75	95	5.5	1.0	83
MVR1-26	26	40	4.0	1.0	32	MVR1-78	78	98	5.5	1.0	86
MVR1-28	28	43	4.0	1.0	34	MVR1-80	80	100	5.5	1.0	88
MVR1-30	30	47	4.5	1.0	37	MVR1-85	85	105	5.5	1.0	93
MVR1-32	32	49	4.5	1.0	39	MVR1-90	90	110	5.5	1.0	98
MVR1-35	35	52	4.5	1.0	42	MVR1-95	95	115	5.5	1.0	103
MVR1-40	40	57	4.5	1.0	47	MVR1-100	100	120	5.5	1.0	108
MVR1-45	45	62	4.5	1.0	52	MVR1-105	105	125	5.5	1.0	113
MVR1-48	48	65	4.5	1.0	55	MVR1-125	125	148	6.5	1.0	133
MVR1-50	50	70	5.5	1.0	58	MVR1-135	135	159	6.5	1.0	145
MVR1-52	52	72	5.5	1.0	60						

Special designs are available and new sizes are added gradually. At present sizes with outer diameters to 250mm are manufactured.

* Check for availability on all stock numbers listed above.

MVR2

Stock No	Ø d	Ø D	B	B ₁	B ₂	b	Ø d ₁	Ø D ₁	Ø D ₂	t
MVR2-15	15	32	4.0	1.0	6.0	3	21	29	34	0.5
MVR2-17	17	34	4.0	1.0	6.0	3	23	31	36	0.5
MVR2-20	20	37	4.0	1.0	6.0	3	26	34	39	0.5
MVR2-25	25	42	4.0	1.0	6.0	3	31	39	44	0.5
MVR2-30	30	48	4.5	1.0	6.5	3	37	45	50	0.5
MVR2-35	35	53	4.5	1.0	6.5	3	42	50	55	0.5
MVR2-40	40	58	4.5	1.0	6.5	3	47	55	60	0.5
MVR2-45	45	63	4.5	1.0	6.5	3	52	60	65	0.5
MVR2-50	50	72	5.5	1.0	7.5	3	58	68.5	74	0.75
MVR2-55	55	77	5.5	1.0	7.5	3	63	73.5	79	0.75
MVR2-60	60	82	5.5	1.0	7.5	3	68	78.5	84	0.75
MVR2-65	65	87	5.5	1.0	7.5	3	73	83.5	89	0.75
MVR2-70	70	92	5.5	1.0	7.5	3	78	88.5	94	0.75
MVR2-75	75	97	5.5	1.0	7.5	3	83	93.5	99	0.75
MVR2-80	80	102	5.5	1.0	7.5	3	88	98.5	104	0.75
MVR2-85	85	107	5.5	1.0	7.5	3	93	103.5	109	0.75
MVR2-90	90	112	5.5	1.0	7.5	3	98	108.5	114	0.75
MVR2-95	95	117	5.5	1.0	7.5	3	103	113.5	119	0.75
MVR2-100	100	122	5.5	1.0	7.5	3	108	118.5	124	0.75

Special designs are available and new sizes are added gradually. At present sizes with outer diameters to 250mm are manufactured.

* Check for availability on all stock numbers listed above.

MVR axial shaft seals

Principal uses: In gearboxes, speed reducers, saws, lathes, motors, mixers and any rotary shaft application where high contamination reduces the life of radial seals and bearings. Of course, the MVR seal can also serve as a primary seal to retain heavy lubricants or for dry running service.

Sizes:

- The standard size range is set for metric shaft sizes with ISO tolerances. Tooling inch sizes for quantities under 100 pieces is generally not practical due to die charges.

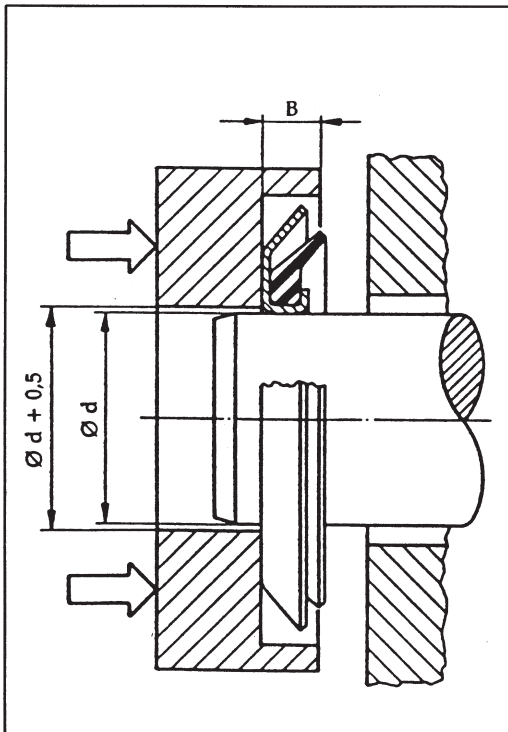
Availability: Five days to 4 weeks ARO from stock subject to prior sale or 12 weeks or more from production. New tooling will extend this longer.

Stock size ranges, tolerances and general drawings are shown in the charts on page 14. SKF's Product Management is available to assist with material or technical recommendations.

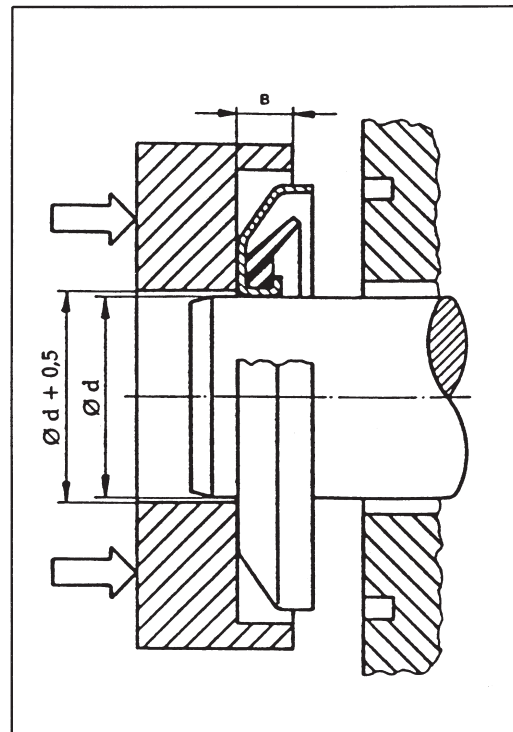
Installation:

- The machined I.D. of the MVR seal must be press-fitted to the shaft with a suitable tool. (See illustrations below for details.) As with radial seals, the metal case must not be struck with a hammer.
- The seal lip face should be lightly greased at assembly (but not between the lip and case).
- A shaft finish of $4\mu\text{m Ra}$ (160u inch) is sufficient. A lead-in chamfer should be provided. No splines or keyways allowed.
- Countersurfaces should be prepared the same way as for V-rings. Avoid aluminum or soft metals where abrasive contamination is expected. Sharp peaks on turned surfaces should be polished off.

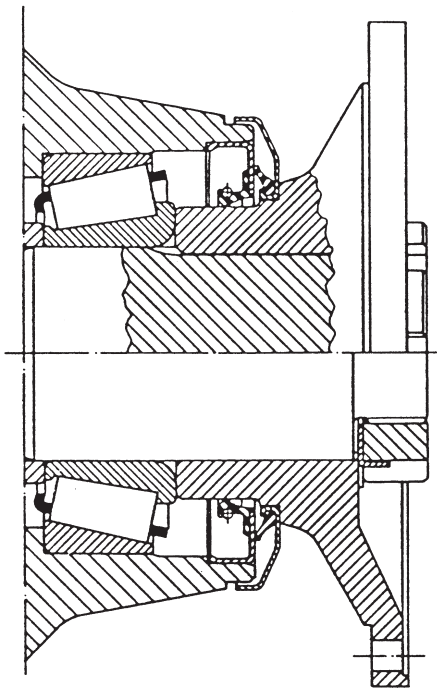
Assembly Tool MVR1



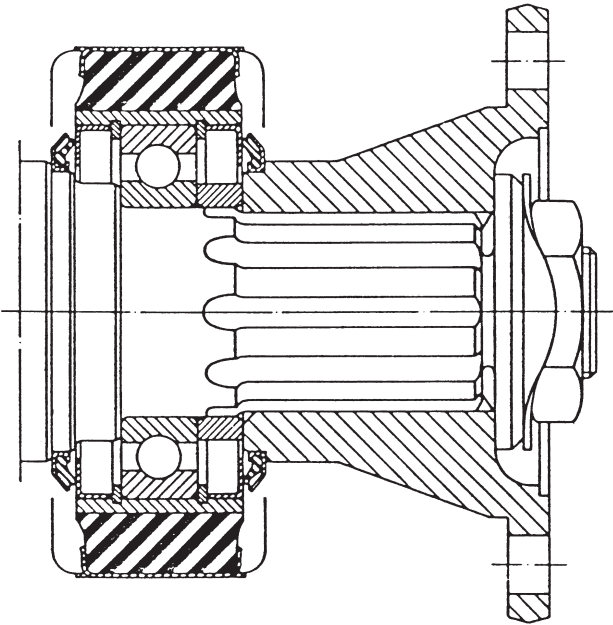
Assembly Tool MVR2



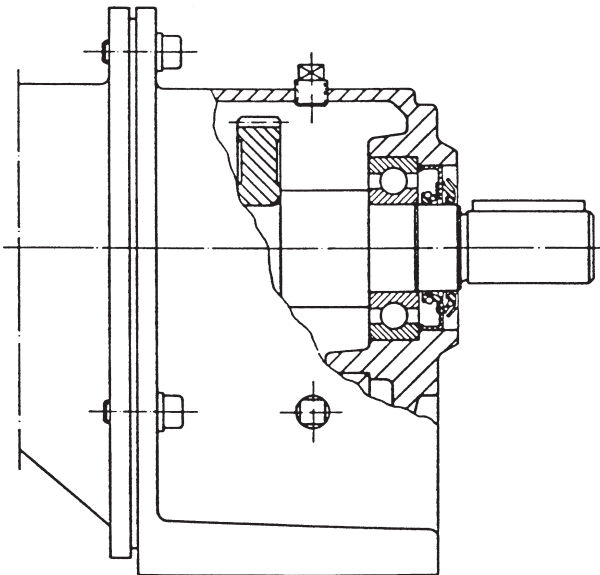
Application examples



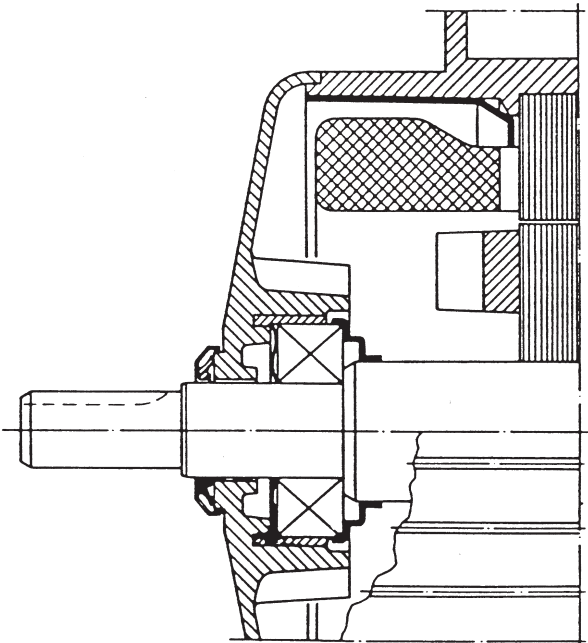
Bevel Pinion. MVR Type 2 is an effective protection against dirt. The outer case of the inner shaft lip seal acts as counterface for the MVR.



Supporting bearing for propeller shaft. MVR Type 1, fitted on each side of the bearing, seals both grease and dirt.



Gear transmission for electric motor. MVR Type 1 protects against dirt and liquid splash. The inner rotary shaft lip seal provides the counterface for the MVR seal.



Electric Motor. MVR Type 2 requires little space in axial direction and can easily be installed without increasing the overall length of the motor. The case protects the sealing member mechanically and creates a clearance seal as well.

E-commerce cuts handling costs, speeds deliveries, reduces human error

The following services are available to our Authorized Distributors to make it easier to conduct business and purchase SKF products. For more detailed information on any of the following services, visit www.skf.com or call **1-800-882-0008** and ask for "Electronic Commerce."

EDI Services (Electric Data Interchange)

Two-way communication allows the sending and receipt of transaction sets, including purchase orders, material releases, shipping schedules, advance ship notices, invoices, and remittance advice in the X.12 format.

Vendor Managed Inventory (VMI)

VMI reduces inventory investment, improves customer service, and lowers receiving costs. The system helps eliminate purchase order data errors, ensuring quick and accurate order processing.

Transnet®

With Transnet, purchase orders can be placed every day for SKF products at no more than the cost of a phone call. Orders are received every night, electronically scanned for errors and then automatically processed with no additional clerical input. This higher efficiency of order handling enhances customer service.

Direct System-to-System Connection

Real time EDI, Direct System-to-System Connection allows connection to the SKF inventory database through real time connection. Inventory inquiries and purchase orders can be sent and received and an electronic response generated in less time than it takes to make a phone call.



Customer Service

Orders can also be placed over the toll-free SKF Customer Service number 1-800-882-0008. This line provides access to order entry personnel who can answer most questions about order status and parts availability. They are also empowered to forward calls to product and technical specialists when necessary.

On-Line Pricing Information / Extranet

SKF is ideal for placing orders, reviewing the status of previous orders, checking inventory availability, and looking up parts on the electronic catalog. In addition, this new service will allow you to obtain future price files up to two months prior to new pricing taking effect. Also available through this site is a vast amount of data including UPC codes, weights, box dimensions and much more.

Applications for V-rings



Electric Motors



Automobile Industry



Cement Machines



Washing Machines



Agricultural Machinery



Gears



Fans



Pumps



Grinding Machines



Machine Tools



Conveyer Arrangements



Wood Working Machines



Marine Applications



Plummer Block



Rolling Mills



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