# Industrial shaft seals

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**SI conversion table**

| Quantity | Unit | Conversion | | | |
|---|---|---|---|---|---|
| Length | inch | 1 mm | 0.039 in. | 1 in. | 25,40 mm |
| | foot | 1 m | 3.281 ft. | 1 ft. | 0,3048 m |
| | yard | 1 m | 1.094 yd. | 1 yd. | 0,9144 m |
| | mile | 1 km | 0.6214 mile | 1 mile | 1,609 km |
| Velocity, speed | foot per second | 1 m/s | 3.28 ft/s | 1 ft/s | 0,30480 m/s |
| | foot per minute | 1 m/s | 196.8504 ft/min | 1 ft/min | 0,00508 m/s |
| | mile per hour | 1 km/h | 0.6214 mile/h (mph) | 1 mile/h (mph) | 1,609 km/h |
| Force | pound-force | 1 N | 0.225 lbf. | 1 lbf. | 4,4482 N |
| Pressure, stress | pounds per square inch | 1 MPa | 145 psi | 1 psi | $6{,}8948 \times 10^3$ Pa |
| Temperature | ° (degree) | Celsius | $t_C = 0{,}555\ (t_F - 32)$ | Fahrenheit | $t_F = 1{,}8\ t_C + 32$ |

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The SKF brand now stands for more than ever before, and means more to you as a valued customer.

While SKF maintains its leadership as a high-quality bearing manufacturer throughout the world, new dimensions in technical advances, product support and services have evolved SKF into a truly solutions-oriented supplier, creating greater value for customers.

These solutions enable customers to improve productivity, not only with breakthrough application-specific products, but also through leading-edge design simulation tools and consultancy services, plant asset efficiency maintenance programmes, and the industry's most advanced supply management techniques.

The SKF brand still stands for the very best in rolling bearings, but it now stands for much more.

**SKF – the knowledge engineering company**

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# Foreword

This edition of the Industrial shaft seals catalogue supersedes the one published in 2006 (publication number 5300). For this new edition, numerous revisions, additions and enhancements have been made to provide an even more comprehensive guide. Though the aim of this catalogue is to cover a very wide seal assortment, it still only includes a selection of our complete assortment of shaft seals and accessories.

The data in this catalogue may differ from that provided in earlier catalogues because of redesign, technological developments or revised methods of calculation. SKF reserves the right to make continuing improvements to SKF products without prior notice with respect to materials, design and manufacturing methods, as well as changes necessitated by technological developments.

### Catalogue overview

In order to emphasize the importance of studying the operating conditions of each application before selecting a sealing solution, this catalogue outlines the most important factors to consider. These are provided in the chapter *Product data – general*, along with basic shaft and housing bore requirements.

SKF industrial shaft seals and accessories are divided into three main groups: radial shaft seals, axial shaft seals and wear sleeves. Different seal types within these groups are described with their respective design, materials and applications.

Product descriptions are followed by product tables. It should be noted, however, that these tables only cover a selection of available sizes. Always contact your SKF sales representative for complete and updated availability information.

### The SKF Interactive Engineering Catalogue

SKF provides this catalogue in electronic format, the SKF *Interactive Engineering Catalogue*, online at www.skf.com.

### Units

The units in this catalogue are in accordance with ISO (International Organization for Standardization) standard 1000:1992, and SI (Système International d'Unités).

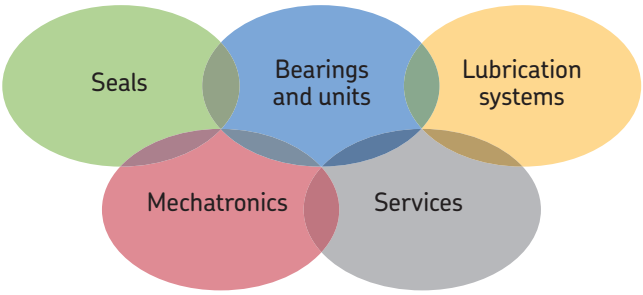
# SKF – the knowledge engineering company

From the company that invented the self-aligning ball bearing more than 100 years ago, SKF has evolved into a knowledge engineering company that is able to draw on five technology platforms to create unique solutions for its customers. These platforms include bearings, bearing units and seals, of course, but extend to other areas including: lubricants and lubrication systems, critical for long bearing life in many applications; mechatronics that combine mechanical and electronics knowledge into systems for more effective linear motion and sensorized solutions; and a full range of services, from design and logistics support to condition monitoring and reliability systems.

Though the scope has broadened, SKF continues to maintain the world's leadership in the design, manufacture and marketing of rolling bearings, as well as complementary products such as radial seals. SKF also holds an increasingly important position in the market for linear motion products, high-precision aerospace bearings, machine tool spindles and plant maintenance services.

The SKF Group is globally certified to ISO 14001, the international standard for environmental management, as well as OHSAS 18001, the health and safety management standard. Individual divisions have been approved for quality certification in accordance with ISO 9001 and other customer specific requirements.

With over 100 manufacturing sites worldwide and sales companies in 70 countries, SKF is a truly international corporation. In addition, our 15 000 distributors and dealers around the world, an e-business marketplace, and a global distribution system, put SKF closer to customers to enhance their ability to quickly supply both products and services. In essence, SKF solutions are available wherever and whenever customers need them. Overall, the SKF brand and the corporation are stronger than ever. As the knowledge engineering company, we stand ready to serve you with world-class product competencies, intellectual resources, and the vision to help you succeed.






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***Evolving by-wire technology***

*SKF has a unique expertise in the fast-growing by-wire technology, from fly-by-wire, to drive-by-wire, to work-by-wire. SKF pioneered practical fly-by-wire technology and is a close working partner with all aerospace industry leaders. As an example, virtually all aircraft of the Airbus design use SKF by-wire systems for cockpit flight control.*



*SKF is also a leader in automotive by-wire technology, and has partnered with automotive engineers to develop two concept cars, which employ SKF mechatronics for steering and braking. Further by-wire development has led SKF to produce an all-electric forklift truck, which uses mechatronics rather than hydraulics for all controls.*



***Harnessing wind power***
*The growing industry of wind-generated electric power provides a source of clean, green electricity. SKF is working closely with global industry leaders to develop efficient and trouble-free turbines, providing a wide range of large, highly specialized bearings and condition monitoring systems to extend equipment life of wind farms located in even the most remote and inhospitable environments.*



***Working in extreme environments***
*In frigid winters, especially in northern countries, extreme sub-zero temperatures can cause bearings in railway axleboxes to seize due to lubrication starvation. SKF created a new family of synthetic lubricants formulated to retain their lubrication viscosity even at these extreme temperatures. SKF knowledge enables manufacturers and end user customers to overcome the performance issues resulting from extreme temperatures, whether hot or cold. For example, SKF products are at work in diverse environments such as baking ovens and instant freezing in food processing plants.*



***Developing a cleaner cleaner***
*The electric motor and its bearings are the heart of many household appliances. SKF works closely with appliance manufacturers to improve their products' performance, cut costs, reduce weight, and reduce energy consumption. A recent example of this cooperation is a new generation of vacuum cleaners with substantially more suction. SKF knowledge in the area of small bearing technology is also applied to manufacturers of power tools and office equipment.*




***Maintaining a 350 km/h R&D lab***

*In addition to SKF's renowned research and development facilities in Europe and the United States, Formula One car racing provides a unique environment for SKF to push the limits of bearing technology. For over 60 years, SKF products, engineering and knowledge have helped make Scuderia Ferrari a formidable force in F1 racing. (The average racing Ferrari utilizes around 150 SKF components.) Lessons learned here are applied to the products we provide to automakers and the aftermarket worldwide.*



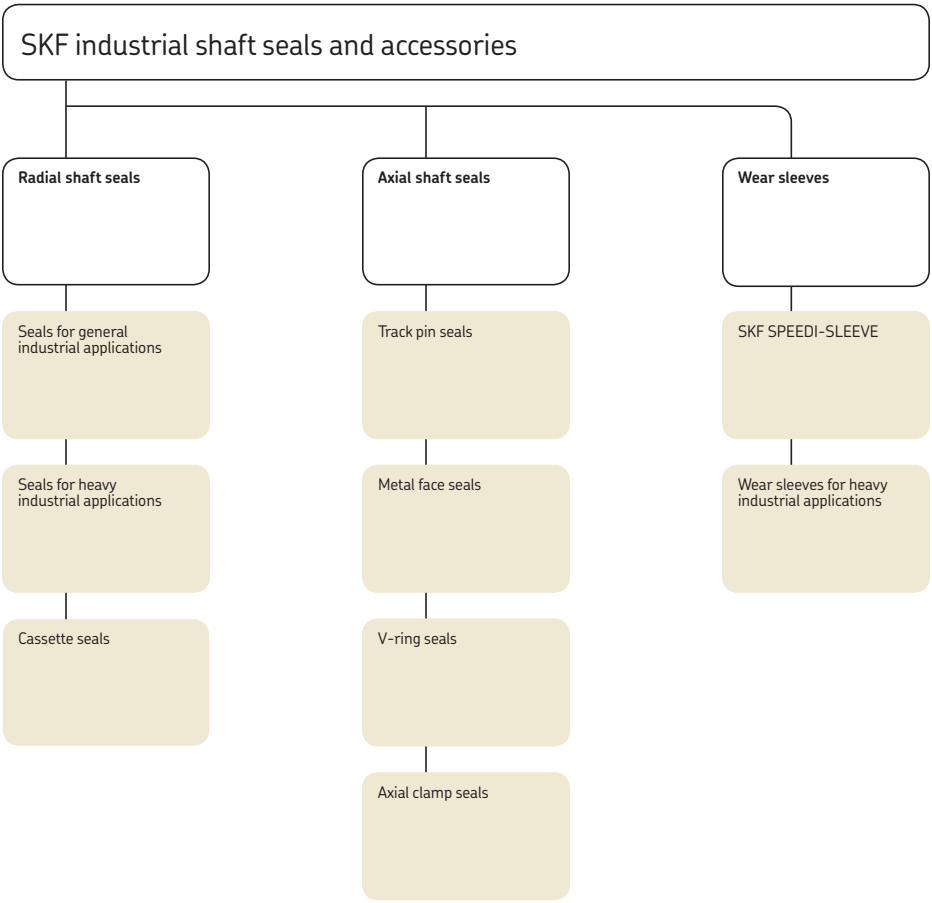
***Delivering Asset Efficiency Optimization***

*Through SKF Reliability Systems, SKF provides a comprehensive range of asset efficiency products and services, from condition monitoring hardware and software to maintenance strategies, engineering assistance and machine reliability programmes. To optimize efficiency and boost productivity, some industrial facilities opt for an Integrated Maintenance Solution, in which SKF delivers all services under one fixed-fee, performance-based contract.*



***Planning for sustainable growth***

*By their very nature, bearings make a positive contribution to the natural environment, enabling machinery to operate more efficiently, consume less power, and require less lubrication. By raising the performance bar for our own products, SKF is enabling a new generation of high-efficiency products and equipment. With an eye to the future and the world we will leave to our children, the SKF Group policy on environment, health and safety, as well as the manufacturing techniques, are planned and implemented to help protect and preserve the earth's limited natural resources. We remain committed to sustainable, environmentally responsible growth.*


SKF industrial shaft seals and accessories
Radial shaft seals
Seals for general industrial applications
Seals for heavy industrial applications
Cassette seals
Axial shaft seals
Track pin seals
Metal face seals
V-ring seals
Axial clamp seals
Wear sleeves
SKF SPEEDI-SLEEVE
Wear sleeves for heavy industrial applications

# Product data – general






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# Industrial shaft seals

Industrial shaft seals are used to seal the opening between a rotating and a stationary component, or between two components in relative motion. Primary seal functions include:

- Retain the lubricant
- Exclude contaminants
- Separate two different media
- Seal under pressure

To be effective, industrial shaft seals should operate with a minimum of friction and wear, even under unfavourable operating conditions. In order to meet the requirements of a variety of different applications and operating conditions, SKF industrial shaft seals for rotating machine components are manufactured from many different designs, materials and executions. Each of these designs and material combinations has specific properties, making them suitable for a particular application. The main groups of shaft seals and accessories are:

**Radial shaft seals**

- Seals for general industrial applications
- Seals for heavy industrial applications
- Cassette seals

**Axial shaft seals**

- Track pin seals
- Metal face seals
- V-ring seals
- Axial clamp seals

**Wear sleeves**

- SKF SPEEDI-SLEEVE
- Wear sleeves for heavy industrial applications

**Availability**

The SKF assortment of industrial shaft seals comprises hundreds of different designs and material combinations. The products shown in this catalogue and listed in the product tables are the more commonly used seal types and sizes.

**Guidance values**

Since several factors simultaneously affect the sealing system and seal performance, all stated values in graphs and tables in this publication should be considered as guidelines only and not as absolute values for practical applications.

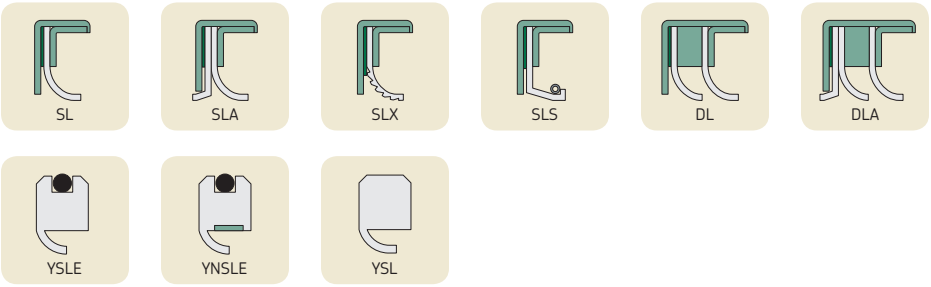
# Profile overview selection

## Radial shaft seals

### Seals for general industrial applications, elastomeric sealing lip(s)



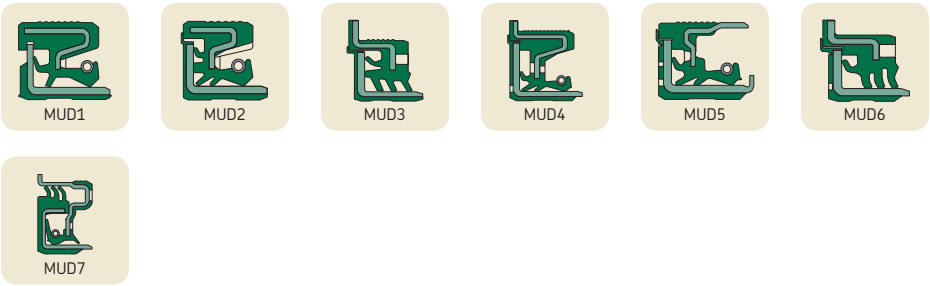

### Seals for general industrial applications, PTFE sealing lip(s)



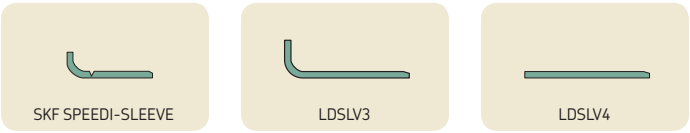
## Seals for heavy industrial applications



## Cassette seals, SKF Mudblock

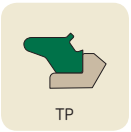



## Wear sleeves



## Axial shaft seals

### Track pin seals, SKF Trackstar


TP


TPM

### Metal face seals


HDDF

### V-ring seals


VR1/VA


VR2/VS


VR3/VL

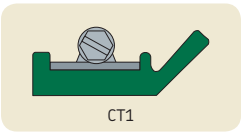

VR5/VRM


VR6/VRME


MVR1


MVR2

### Axial clamp seals


CT1

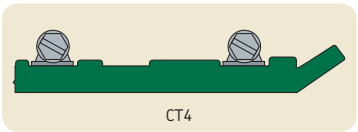

CT4

Fig. 1

V-ring

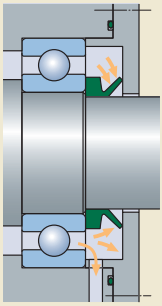


Fig. 2

HMS5 seal

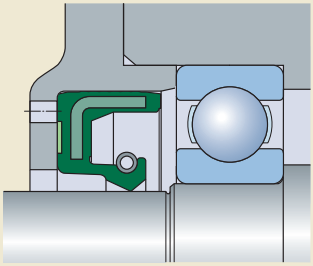
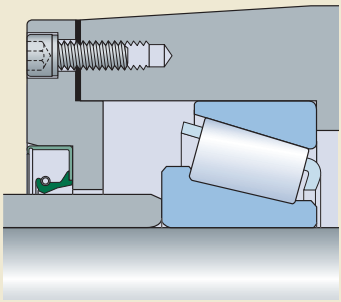


Fig. 3

CRW1 seal



# Selection of seal design and material

Selecting an appropriate seal design and material depends on the operating conditions of the application such as:

- temperature
- speed
- pressure differential
- type of lubricant
- vertical or horizontal orientation
- runout and shaft-to-bore misalignment

Because the influence of one operating condition typically dominates the seal selection process, there are no universal rules for determining the appropriate seal type or design for a given application. This section describes how operating conditions affect seal performance and service life and provides guidance on selecting the most appropriate seal for a given application.

**Matrix 1** and **2** on **pages 90** to **91** and **202** to **205** list the standard SKF radial shaft seals and their main features and permissible operating conditions.

## Grease retention

Greases have a relatively high viscosity and are relatively easy to retain in a bearing arrangement. In many grease lubricated applications, a non-spring-loaded sealing lip design or a V-ring can adequately retain the grease (→ **fig. 1**).

However, more demanding applications may require HMS5 or CWR1 spring-loaded radial shaft seals (→ **figs. 2** and **3**).

When frequent relubrication is required, the lip of at least one of the seals in the sealing arrangement should be directed toward the air side so that excess grease can escape via the sealing lip (→ **fig. 3**). This avoids grease build-up, which can retain heat and limit heat dissipation. For grease lubricated applications, SKF recommends calculating the permissible circumferential speed for oil and halving the result.

Fig. 4

HMS5 seal

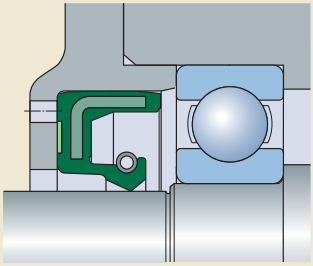
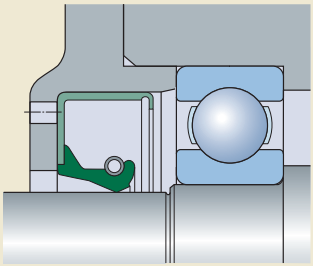


Fig. 5

CRW1 seal



## Oil retention

Lubricating oils, particularly relatively low-viscosity oils, are much more difficult to retain than greases. Therefore, HMS5 or CRW1 spring-loaded radial shaft seals (→ **figs. 4** and **5**) are recommended in order to achieve the necessary radial load and resistance to dynamic runout and shaft-to-bore misalignment for a satisfactory sealing performance.

Standard HMS5 seals have a straight lip while CRW1 seals are designed with SKF WAVE lips to provide improved pumping ability, regardless of the direction of shaft rotation (→ **fig. 6** on **page 57**). Another way of increasing a seal's pumping ability is to add a helix pattern, i.e. hydrodynamic features, to the sealing lip design.

The rubber outside diameter, like the one found on HMS5 seals, helps compensate for small imperfections in the housing bore surface and is therefore recommended when the required housing bore surface is questionable.

For very tough operating conditions, where circumferential speeds are relatively low, metal face seals, like the HDDF seal (→ **fig. 6**), can be used for both oil or grease retention.

V-rings (→ **fig. 7**) may also be used to retain oil, provided they are installed on the oil side and supported axially on the shaft.

Fig. 6

HDDF metal face seal

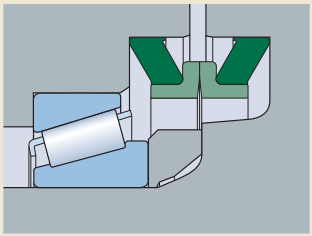


Fig. 7

V-ring

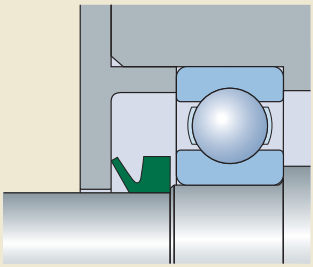


Fig. 8

CRW1 seal

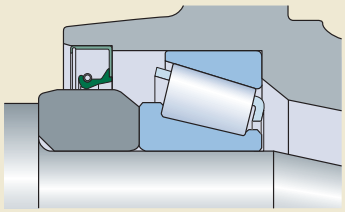
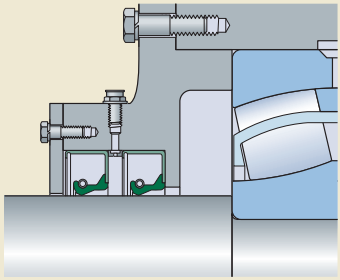


Fig. 9

CRW1 seals in tandem



## Contaminant exclusion

Radial shaft seals that are primarily used for contaminant exclusion should be installed with the lip pointing outward. When additional protection is needed, SKF recommends a seal design that incorporates an auxiliary lip, for example the HMSA10 or CRWA1 seals.

For tough operating conditions, SKF WAVE seals (→ **fig. 8**) with hydrodynamic features are recommended. To further enhance sealing efficiency, two single-lip seals can be arranged in tandem (→ **fig. 9**) or a double-lip seal, like the HDSE1 seal, can be used (→ **fig. 10**).

V-rings (→ **fig. 11**) are used primarily to exclude contaminants. These seals, which act as flingers, rotate with the shaft and seal against a surface that is perpendicular to the shaft.

V-rings and axial clamp seals are often used as secondary seals to protect the primary seals from coarse contaminants.

None of these seal arrangements are intended for oil retention.

Fig. 10

HDSE1 seal

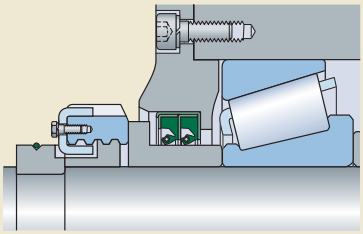


Fig. 11

V-ring

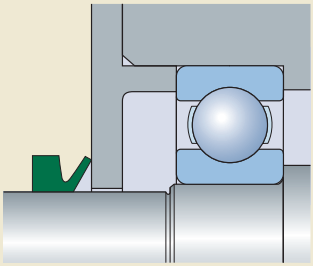
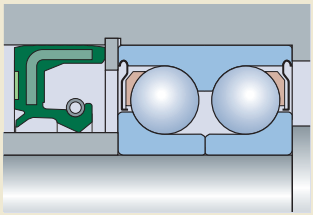


Fig. 12

HMSA10 seal



## Retention and exclusion

In many applications, the exclusion of contaminants is just as important as lubricant retention. Seals with an auxiliary lip, like the HMSA10 seals (→ **fig. 12**), are appropriate for these applications.

Another option is to use two seals installed in opposite directions (→ **figs. 13** and **14**) or two opposing V-rings (→ **fig. 15**) with a spacing washer.

Under extremely tough operating conditions, SKF recommends using HDDF metal face seals (→ **fig. 6** on **page 18**), provided that the sliding velocity of the mating surfaces lies within the permissible range.

Fig. 13

Two seals in opposite direction

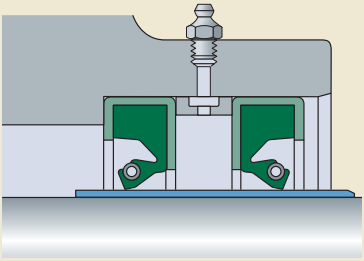


Fig. 14

Two seals in opposite direction

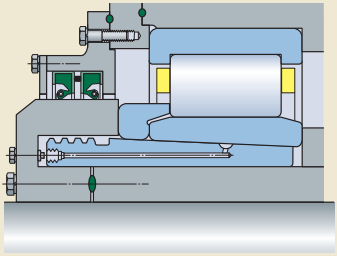


Fig. 15

V-ring

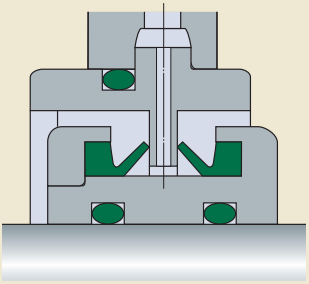


Fig. 16

CRW1 seals

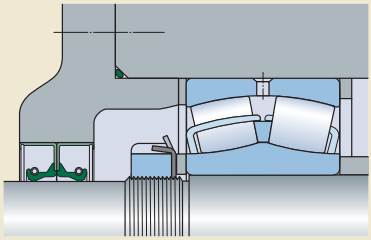


Fig. 17

HMS5 seals

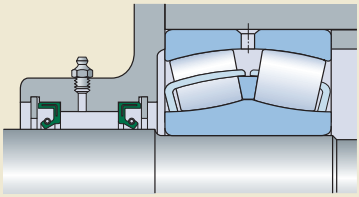
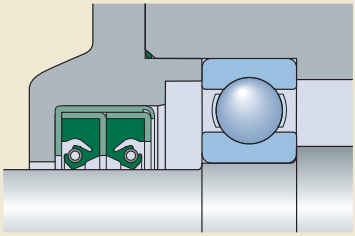


Fig. 18

HDSD1 seal



## Separating two liquids

When an application has to keep two liquids from coming into contact with each other, there are two suitable solutions. These solutions, which depend on the availability of space and required efficiency, include:

- the use of two separate seals (→ **figs. 16** and **17**), positioned with their lips facing in opposite directions
- the use of HDSD1 double-lip seals (→ **fig. 18**)

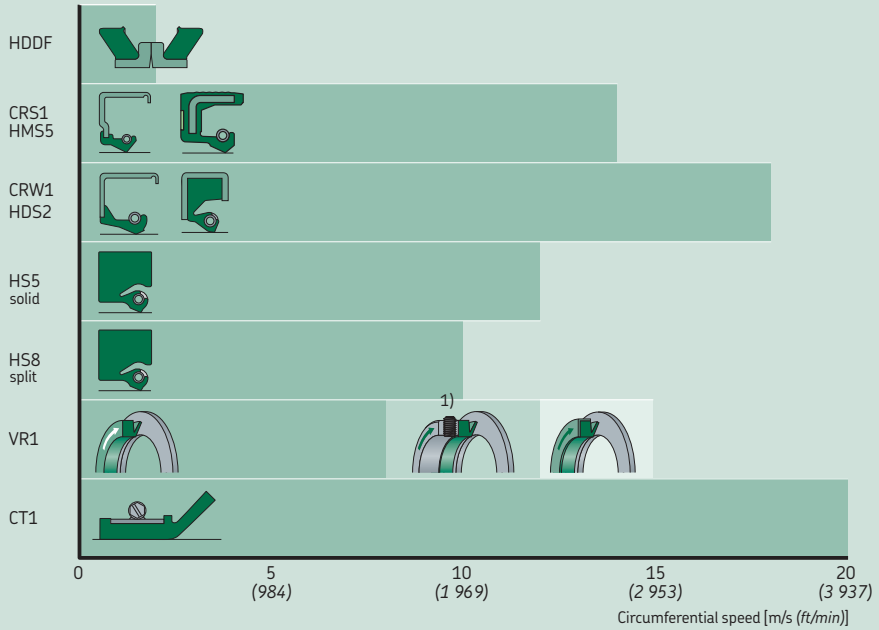
In both alternatives, the sealing lips must be spring-loaded. When using an HDSD seal, it is very important to provide a means to lubricate the sealing lips, i.e. the cavity between the sealing lips must be filled with grease prior to installation or during operation via lubrication holes drilled through the metal case into the cavity.

## Circumferential and rotational speed

The permissible speed of a seal is determined by its design and sealing lip material as well as the material and condition of the shaft. All of these factors influence the heat generation at the seal counterface. Lubrication of the sealing lip and the characteristics of the lubricant also have a direct influence on heat generation because they have a direct impact on heat dissipation.

**Diagram 1** compares the permissible circumferential speeds for various seal designs assuming normal seal operation, grease or oil retention and no pressure differential across the seal.

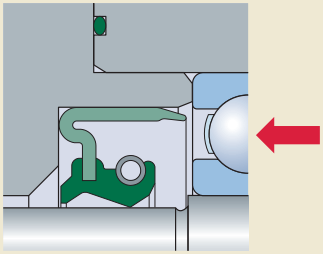
**Diagram 1**




1) Support ring by customer

Fig. 19

CRWA5 seal



## Pressure differentials

When subjected to a pressure differential, the seal must resist the additional radial load generated by the pressure. If the seal is not designed to resist the pressure, it will be forced against the shaft, increasing the radial load, underlip temperature, friction and wear of the seal and the counterface, resulting in shortened service life.

Standard seals are rated for no more than 0,07 MPa at 5 m/s *(10 psi at 1 000 ft/min)*, but SKF offers CRW5 and CRWA5 pressure profile seals that can accommodate 0,34 MPa at 5 m/s *(50 psi at 1 000 ft/min)*. Beyond 0,34 MPa *(50 psi)*, SKF offers a line of special order PTFE seals that can accommodate more than 3,5 MPa *(500 psi)*.

In applications with pressure differentials, shaft seals should be secured axially from the low-pressure side to prevent them from moving axially. This can be accomplished by installing the seal into a counterbore (→ **fig. 19**) or by using a retaining ring.

Fig. 20

Special seal design

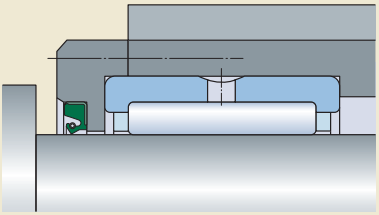


Fig. 21

V-ring seal

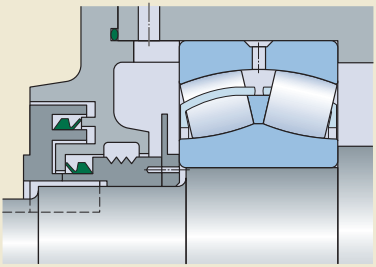
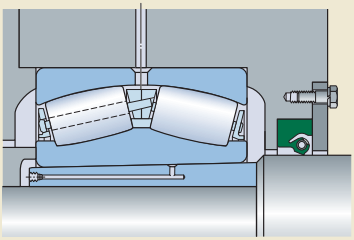


Fig. 22

HS8 seal



## Limited space

In many cases, the available space is insufficient for a radial shaft seal having dimensions in accordance with ISO 6194-1 or DIN 3670. In these situations, special radial shaft seal designs must be used (→ **fig. 20**).

V-rings (→ **fig. 21**) are also suitable for applications with limited space because they can be positioned outside the actual seal position. V-rings seal axially by exerting light pressure against the counterface that can be a stationary or rotating machine component.

In applications with large shaft diameters, HS8 seals are an appropriate choice when space is limited (→ **fig. 22**).

Fig. 23

V-ring seal

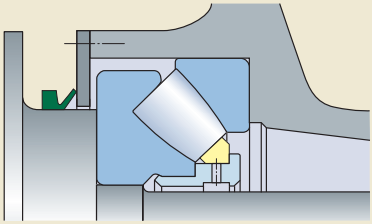
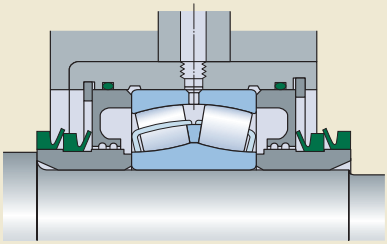


Fig. 24

V-ring seals



## Installation restrictions

In applications where the seal cannot be installed via the shaft end, a V-ring or any of the split HSF or HS designs can be used (→ **pages 212** to **214**).

After being positioned on the shaft, HS and HSF seals are held together by a spring and spring connector. These seals should be retained axially in the housing bore by a one-piece or split cover plate.

Split HS radial shaft seals are suitable for circumferential speeds up to 7,5 or 10 m/s *(1 480 or 1 970 ft/min)*, depending on their design, and are available for shaft diameters up to approximately 4 570 mm *(180 in.)*.

Since V-rings are elastic, they can be stretched and are therefore easy to install, even in applications where they have to be passed over other components (→ **fig. 23**). However, in the event that replacing a V-ring would require the time consuming removal of several components, it is advantageous to install one or two replacement V-rings on the shaft from the outset (→ **fig. 24**). When the time comes to replace a worn V-ring, it can be cut and removed and the replacement V-ring can be pushed into position.

Fig. 25

V-ring seal

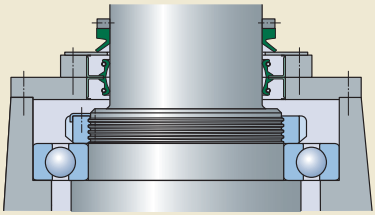
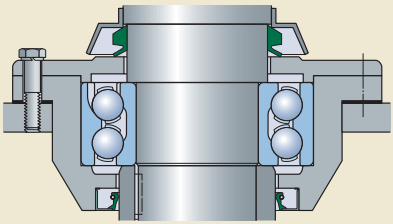


Fig. 26

V-ring seal



## Arrangement

Seals installed on vertical shafts are usually more exposed to contaminants like rain water than seals on horizontal shafts. Oil retention is also more challenging for seals installed on vertical shafts. In general, however, all seals listed in the product tables are suitable for use on both horizontal and vertical shafts.

V-rings (→ **figs. 25** and **26**) have an interference fit on the shaft and rotate with it. They act as flingers and are therefore particularly suitable as both primary and secondary seals on vertical shafts. Highly efficient sealing arrangements, like those found in submersible pumps, can be achieved using radial shaft seals in tandem with a V-ring for additional protection against contaminants (→ **fig. 27**).

At relatively low speeds, HDDF metal face seals (→ **fig. 28**) effectively retain grease or oil and prevent the ingress of contaminants on vertical shafts.

Fig. 27

CRW5 seals + V-ring seal

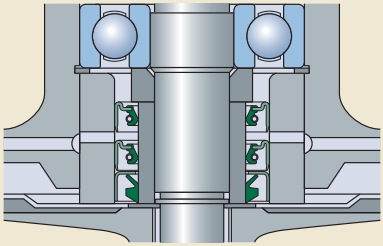
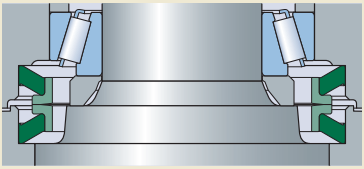


Fig. 28

HDDF metal face seal



## Counterface design

The service life and performance of a seal are largely influenced by:

- shaft material and hardness
- shaft surface finish and tolerance grade
- dynamic runout and shaft-to-bore misalignment

A shaft surface that is too smooth can lead to lubricant starvation, while a shaft surface that is too rough can accelerate sealing lip wear. The shaft surface should be machined without directionality as directionality can cause leakage depending on the direction of rotation. Dynamic runout and shaft-to-bore misalignment cause an uneven radial load on the circumference of the sealing lip. As a result, the sealing lip, particularly at high speeds, will not be able to follow the shaft. This, in turn, will result in a gap between the sealing lip and the shaft, causing reduced sealing ability.

Unlike radial shaft seals, V-rings and axial clamp seals are not affected by normal coaxiality deviations or runout.

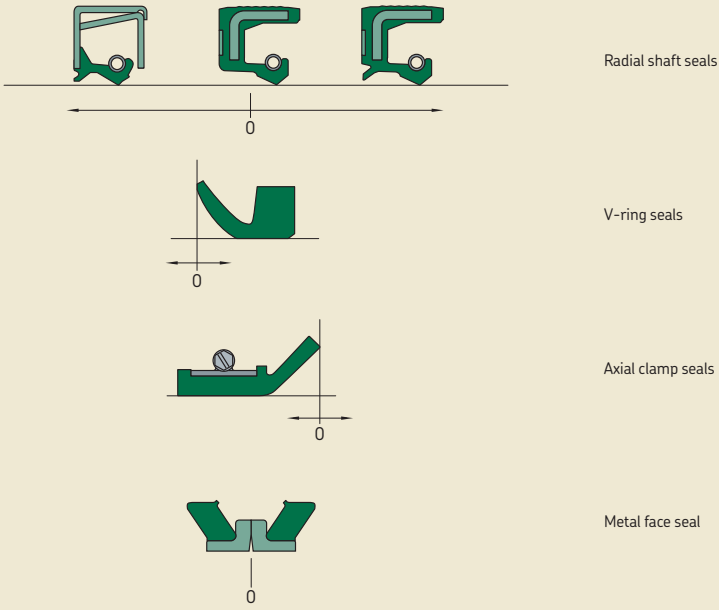
## Axial movement

Axial movement of the shaft relative to the housing bore does not detract from the sealing ability of radial shaft seals (→ **fig. 29**), provided that the total surface in contact with the lip has the same quality with respect to hardness and surface finish.

The amount of axial movement that can be accommodated by V-rings, axial clamp seals and HDDF seals is limited by the permissible displacement of the seal relative to its counterface.

**Fig. 29**

**Axial movement**



# Seal materials

## Cases and inserts

Metal cases and reinforcements for SKF radial shaft seals are manufactured standard from deep-drawn carbon sheet steel. The exposed surfaces are treated to protect them from corrosion during normal handling and storage.

SKF radial shaft seals that will be used in corrosive environments can also be designed with a stainless steel case on request.

## Garter springs

The garter springs on SKF radial shaft seals are manufactured standard from cold-drawn steel wire. Exceptions are the metal-cased HDS seals and the all-rubber HS seals that are designed with stainless steel garter springs.

## SKF Bore Tite Coating

SKF Bore Tite Coating is a water-based acrylic sealant available on most SKF metal-cased seals. The sealant is used as a coating on the outside diameter of the seal. SKF Bore Tite Coating is pliable with a thickness of 0,03 to 0,07 mm *(0.0012 to 0.0028 in.)* to compensate for small imperfections in the housing bore surface. The general guideline in Rubber Manufacturers Association (RMA) is, that if the bore surface texture is greater than 2,5 µm *(100 µin.)* $R_a$, a sealant should be used. This sealant can be used at temperatures up to 200 °C *(390 °F)* and is compatible with most oils, greases, aqueous acids and alkalis, alcohols and glycols. Please note that SKF Bore Tite Coating is not compatible with aromatics, ketones or esters. Contact with these substances will, however, have little or no effect if wiped off quickly.

## Adhesives and bonding agents

Adhesives and bonding agents are used to achieve static sealing ability and satisfactory bonding between metal and elastomers in seal designs. Both of them can be solvent or water based depending on the metal and elastomer to be bonded.

## Sealing lip materials

In addition to its design, the material of a sealing lip can have a significant impact on sealing performance and reliability. SKF, therefore, manufactures seals using a variety of sealing lip materials to meet the needs of different applications.

The sealing lips of SKF seals are generally made of elastomer materials. However, thermoplastics like polytetrafluoroethylene (PTFE) are gaining in importance. PTFE is mainly used for special seals intended for particular applications where improved thermal or chemical resistance is demanded.

SKF industrial shaft seals are generally manufactured from the materials listed in **table 1**. These materials have characteristics that make them particularly suitable for specific applications.

By changing the actual formulation and blending, it is possible to modify the characteristics of the elastomers relative to:

- resistance to swelling
- elasticity
- chemical resistance
- thermal resistance
- behaviour in the cold
- gas permeability

Details about the chemical resistance of sealing lip materials to various media encountered in operation are provided in the section *Chemical resistance*, **page 35**.

A code is used to identify the sealing lip material of SKF seals (**→ table 1**). The code also appears in the designations of metric radial shaft seals. For seals manufactured from a combination of materials, a combination of code letters is used, like RD (nitrile rubber and SKF Duralip).

**Table 1**

**SKF sealing lip materials**

| Composition of basic material | Designation according to SKF | ISO 1629<br>ISO 1043-1<br>DIN 7728 Part 1 | ASTM[1] D1418<br>ASTM D1600 |
|---|---|---|---|
| Acrylonitrile-butadiene rubber (nitrile rubber) | R, RG | NBR | NBR |
| Hydrogenated acrylonitrile-butadiene rubber (SKF Duratemp) | H | HNBR | HNBR |
| Carboxylated nitrile rubber (SKF Duralip) | D | XNBR | XNBR |
| Polyacrylate elastomer | P | ACM | ACM |
| Silicone rubber | S | MVQ | VMQ |
| Fluoro rubber (SKF Duralife[2]) | V | FPM | FKM |
| Polytetrafluoroethylene | T | PTFE | PTFE |

[1] American Society for Testing and Materials
[2] Previously named *LongLife*

### Nitrile rubber (R)

The term nitrile rubber is used in this publication for acrylonitrile-butadiene rubber (NBR). This material has very good engineering properties and is a general-purpose sealing lip material. It is a copolymer manufactured from acrylonitrile and butadiene that provides good resistance to the following media:

- Most mineral oils and greases with a mineral oil base
- Normal fuels like gasoline, diesel and light heating oils
- Animal and vegetable oils and fats and hot water

Nitrile rubber also tolerates short-term dry running of the sealing lip. The permissible operating temperature range of nitrile rubber is –40 to +100 °C *(–40 to +210 °F)*. For brief periods, temperatures of up to 120 °C *(250 °F)* can be tolerated.

SKF also offers a special nitrile rubber compound with a temperature range between –55 and +110 °C *(–65 and +230 °F)*.

### SKF Duralip (D)

SKF Duralip is a carboxylated nitrile rubber (XNBR) developed by SKF that combines the good technical properties of nitrile rubber with an increased resistance to wear (→ **diagram 2** on **page 33**). It is mainly used for seals for heavy industrial applications. Seals made of this material should be chosen when abrasive contaminants like sand, soil and scale could reach the seal counterface on the shaft.

### SKF Duratemp (H)

SKF Duratemp is a hydrogenated nitrile rubber (HNBR) developed by SKF that combines the wear resistance of SKF Duralip with increased high-temperature resistance (→ **diagram 3** on **page 34**). SKF Duratemp is also more resistant to chemical attack, weather, ageing and ozone. However, mixtures of oil in air may have a negative effect. The upper operating temperature limit is 150 °C *(300 °F)*, which is significantly higher than that of ordinary nitrile rubber. SKF Duratemp is mainly used for seals for heavy industrial applications or where extended service life is required.

### SKF Duralife[1] (V)

The fluoro rubber (FKM) compound, SKF Duralife, has been developed by SKF and is characterized by its very good wear, thermal and chemical resistance. Its resistance to weather and ageing from UV light and ozone is also very good and its gas permeability is very slight.

SKF Duralife has exceptional properties even under harsh environmental conditions and can withstand operating temperatures up to 200 °C *(390 °F)*. The material is also resistant to oils and hydraulic fluids, fuels and lubricants, mineral acids and aliphatics as well as aromatic hydrocarbons that would cause many other seal materials to fail. Seals made of SKF Duralife can also tolerate dry running of the lip for short periods. The seals should not be used in the presence of esters, ethers, ketones, certain amines and hot anhydrous hydrofluorides. Because of the compound's valuable properties, SKF manufactures seals with sealing lips made of SKF Duralife for all common shaft diameters.

### Polytetrafluoroethylene (PTFE)

PTFE is a thermoplastic polymer that is compatible with a wide assortment of lubricants and features chemical resistance that is far superior to that of any other sealing lip material. PTFE has a smooth, dirt-resistant surface. Seals with PTFE lips can accommodate high surface speeds while offering extended service life. The seals can tolerate dry running and are particularly valuable in highly contaminated applications because of their excellent exclusion ability. PTFE is used for auxiliary seal elements or for primary sealing lips for special applications. For optimum performance, PTFE seal elements require a high-quality seal counterface and extra care during installation. The normal operating temperature range extends from –70 to +200 °C *(–90 to +390 °F)*, but may go up to 250 °C *(480 °F)*.

**WARNING:**
At temperatures above 300 °C *(570 °F)*, all fluoro elastomers and PTFE compounds give off dangerous fumes. This can occur, for example, if a welding torch is used when removing a bearing. Although the fumes are only produced at such high temperatures, once heated, the seals will be dangerous to handle even when they have cooled down. If it is necessary to handle PTFE or fluoro elastomer seals that have been subjected to the high temperatures mentioned above, the following safety precautions should be observed:

- Protective goggles and gloves should always be worn.
- The remains of seals should be put in an airtight plastic container marked "Material will etch".
- Comply with the safety precautions included in the material safety data that can be provided upon request.

If there is contact with your skin, this should be washed with soap and plenty of water. Wash your eyes with plenty of water if these materials get into your eyes. A doctor should always be consulted. This also applies if the fumes have been inhaled.

[1] Previously named *LongLife*

### Polyacrylate elastomer

Polyacrylate elastomers are more heat resistant than nitrile rubber or SKF Duralip. The operating temperature range for polyacrylate elastomers lies between –40 and +150 °C *(–40 and +300 °F)* and in some fluids the upper limit may be extended to 175 °C *(345 °F)*. Seals of polyacrylate are resistant to ageing and ozone and are also suitable for use with lubricants containing EP additives. They should not be used to seal water, acids or alkalis etc. Dry running should be avoided.

### Silicone rubber

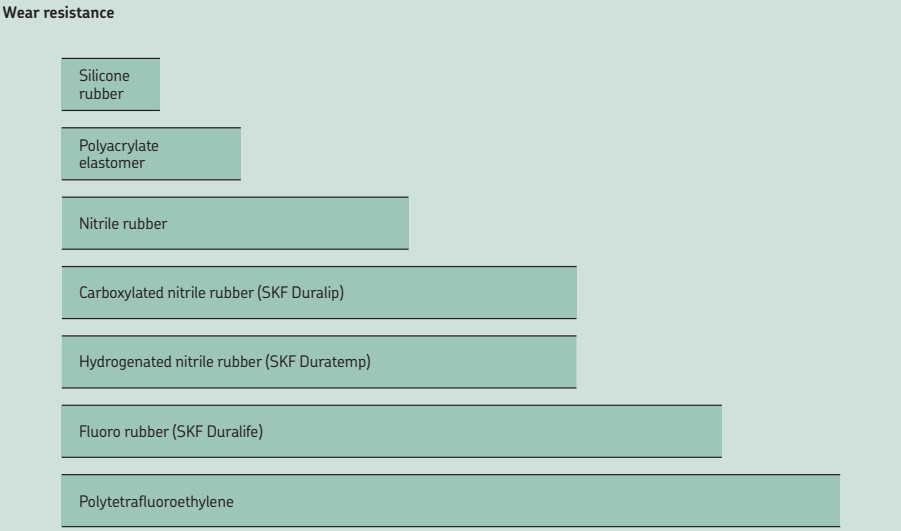
Silicone rubber is characterized by high thermal resistance and can withstand temperatures ranging from –70 to +160 °C *(–90 to +320 °F)*. Silicone rubber absorbs lubricants, thereby minimizing friction and wear. SKF silicone rubber seals are particularly suitable for applications with very low or very high temperatures and for low-friction sealing of bearing arrangements. They are not very resistant to oxidized oils or certain EP additives and should be protected against abrasive substances. Sealing lips made of silicone rubber should not be exposed to dry running.

## Wear resistance

The wear resistance of a seal depends largely on the sealing lip material, as well as on the shaft surface finish, type of lubricant, circumferential speed, temperature and pressure differentials.

A comparison of wear resistance for various sealing lip materials used by SKF is provided in **diagram 2**. It is valid for seals of the same size, operating under identical conditions.

**Diagram 2**



# Operating temperatures

Both low and high temperatures influence the sealing performance. At low temperatures, the sealing lip loses its elasticity and becomes hard and brittle. Sealing efficiency decreases and the seal becomes more susceptible to mechanical damage.

For applications where temperatures are continuously high, special high-temperature lip materials should be used, for example, PTFE or the SKF fluoro rubber material, SKF Duralife.

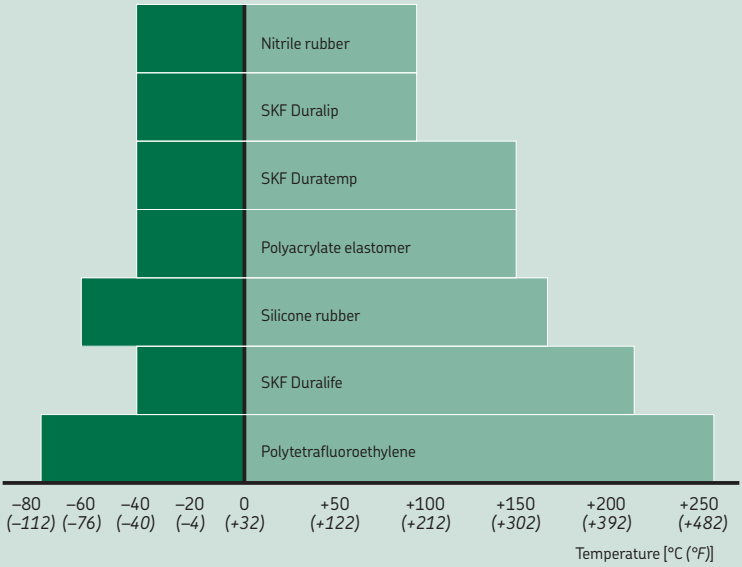
Friction, circumferential speed, viscosity of the medium being sealed as well as the specific heat transfer along the shaft influence the temperature at the sealing position and the temperature between the lip and lubricant film on the counterface. High temperatures generally lead to a breakdown of the lubricant film, resulting in insufficient lubrication, one of the most common causes of premature seal failure.

The static sealing ability between the outside diameter of the seal and the housing bore may also be affected if these components are made of different materials with significantly different coefficients of expansion and shrinkage.

Refer to **diagram 3** to view the permissible operating temperature ranges of sealing lip materials normally used by SKF.

**Diagram 3**

**Permissible operating temperatures**



# Chemical resistance

In **table 2**, *Chemical resistance* (→ **pages 36 to 43**), information is provided regarding the resistance of SKF sealing lip materials to most of the substances encountered in industrial applications. The information is based on in-house testing and the experience of users, as well as information from the suppliers of the various materials. Unless otherwise stated, the information is valid for media of commercial purity and quality.

The chemical resistance of a seal is influenced by temperature, pressure and the amount of media present. Other important factors to consider when selecting a suitable sealing lip material include:

- type of service (static or dynamic)
- circumferential speed of the sealing lip
- shaft and housing materials
- surface finish of the seal counterface

Because the above mentioned factors also influence the service life and performance of the seal, the information contained in the table *Chemical resistance* can only be considered as a rough guide.

### Explanation for table 2 (→ pages 36 to 43), Chemical resistance

**RT** = room temperature (20 °C *(70 °F)*)
**1** = minor effect
**2** = moderate effect
**3** = static only
**4** = not recommended
**5** = insufficient data, test before use

Table 2

**Chemical resistance**

| Medium | Temperature | Medium's effect on sealing lip material | | | |
|---|---|---|---|---|---|
| | | R, D, H | V | P | S |
| – | °C (°F) | – | | | |
| **A** | | | | | |
| Acetaldehycle | RT | 4 | 4 | 4 | 2 |
| Acetamide | RT | 1 | 2 | 4 | 2 |
| Acetic acid, 100% (glacial) | 60 (140) | 3 | 3 | 4 | 2 |
| Acetic acid, 30% | RT | 2 | 2 | 4 | 1 |
| Acetic acid, 3% (vinegar) | RT | 2 | 1 | 4 | 1 |
| Acetic anhydride | RT / 80 (175) | 3 | 4 | 4 | 3 |
| Acetone | RT | 4 | 4 | 4 | 3 |
| Acetophenone | RT | 4 | 4 | 4 | 4 |
| Acetylene | 60 (140) | 1 | 1 | 5 | 2 |
| Acrylonitrile | RT / 60 (140) | 4 | 3 | 4 | 4 |
| Adipic acid (aq) | RT | 1 | 1 | 5 | 5 |
| Alum (aq) | 100 (210) | 1 | 1 | 4 | 1 |
| Aluminium acetate (aq) | RT | 2 | 4 | 4 | 4 |
| Aluminium chloride (aq) | RT | 1 | 1 | 1 | 2 |
| Aluminium fluoride (aq) | RT | 1 | 1 | 5 | 2 |
| Aluminium nitrate (aq) | RT | 1 | 1 | 5 | 2 |
| Aluminium phosphate (aq) | RT | 1 | 1 | 5 | 1 |
| Aluminium sulphate (aq) | RT / 60 (140) | 1 | 1 | 4 | 1 |
| Ammonia (anhydrous) | RT | 2 | 4 | 4 | 3 |
| Ammonia gas | RT | 1 | 4 | 4 | 2 |
| Ammonia gas | 80 (175) / 100 (210) | 4 | 4 | 4 | 1 |
| Ammonium carbonate (aq) | RT / 60 (140) | 2 | 5 | 4 | 5 |
| Ammonium chloride (aq) | RT / 60 (140) | 1 | 1 | 5 | 5 |
| Ammonium chloride (dry) (sal ammoniac) | RT | 1 | 1 | 1 | 2 |
| Ammonium nitrate (aq) | RT | 1 | 5 | 2 | 5 |
| Ammonium persulphate (aq) | RT | 4 | 5 | 4 | 5 |
| Ammonium phosphate (aq) | RT / 60 (140) | 1 | 5 | 5 | 1 |
| Ammonium sulphate (aq) | 100 (210) | 1 | 4 | 4 | 5 |
| Amyl acetate | RT | 4 | 4 | 4 | 4 |
| Amyl alcohol | 60 (140) | 2 | 2 | 4 | 4 |
| Aniline | 60 (140) / 100 (210) | 4 | 3 | 4 | 4 |
| Aniline dyes | RT | 4 | 2 | 4 | 3 |
| Aniline hydrochloride | RT | 2 | 2 | 4 | 4 |
| Aniline hydrochloride | 100 (210) | 4 | 5 | 5 | 5 |
| Animal fats | 80 (175) | 1 | 1 | 1 | 2 |
| Aqua Regia | RT | 4 | 5 | 4 | 4 |
| Arsenic acid | RT / 60 (140) | 1 | 1 | 3 | 1 |
| Arsenic trichloride (aq) | RT | 1 | 5 | 5 | 5 |
| Asphalt (liquid) | 100 (210) | 2 | 2 | 4 | 4 |
| **B** | | | | | |
| Barium chloride (aq) | RT / 60 (140) | 1 | 1 | 1 | 1 |
| Barium hydroxide (aq) | RT / 60 (140) | 1 | 1 | 4 | 1 |
| Barium sulphate | RT / 60 (140) | 1 | 1 | 4 | 1 |
| Barium sulphide (aq) | RT / 60 (140) | 1 | 1 | 4 | 1 |
| Beer | RT | 1 | 1 | 4 | 1 |
| Benzaldehyde | RT / 60 (140) | 4 | 4 | 4 | 4 |
| Benzene | RT | 4 | 1 | 4 | 4 |
| Benzene sulphonic acid | RT | 4 | 1 | 4 | 4 |
| Benzoic acid | RT / 60 (140) | 4 | 1 | 4 | 4 |
| Benzoyl chloride | RT | 4 | 1 | 4 | 5 |
| Benzyl alcohol | RT / 60 (140) | 4 | 1 | 1 | 2 |
| Benzyl benzoate | 50 (120) / 60 (140) | 4 | 1 | 4 | 5 |
| Benzyl chloride | RT | 4 | 1 | 4 | 4 |
| Blast furnace gas | 100 (210) | 4 | 1 | 4 | 1 |
| Borax (aq) | RT / 60 (140) | 2 | 1 | 5 | 2 |
| Bordeaux mixture | RT | 2 | 1 | 4 | 2 |
| Boric acid | 60 (140) / 100 (210) | 1 | 1 | 4 | 1 |
| Brake fluid, ATE | 80 (175) | 4 | 4 | 4 | 1 |
| Brake fluid, glycol ether | 80 (175) | 4 | 5 | 4 | 1 |
| Brine (sodium chloride, aq) | RT / 50 (120) | 1 | 1 | 4 | 1 |
| Bromine, anhydrous (liquid/gaseous) | RT | 4 | 1 | 4 | 4 |
| Bromine trifluoride | RT | 4 | 4 | 4 | 4 |
| Bromine water | RT | 4 | 1 | 4 | 4 |
| Bromobenzene | RT | 4 | 1 | 4 | 4 |

cont. table 2

**Chemical resistance**

| Medium | Temperature | Medium's effect on sealing lip material | | | |
|---|---|---|---|---|---|
| | | R, D, H | V | P | S |
| – | °C (°F) | – | | | |
| Bunker oil | 60 (140) | 1 | 1 | 1 | 2 |
| Butadiene (gaseous or liquified) | RT | 4 | 1 | 4 | 4 |
| Butane (gaseous or liquified) | RT | 1 | 1 | 1 | 4 |
| Butter (animal fat) | RT / 80 (175) | 1 | 1 | 1 | 2 |
| Butyl acetate | RT | 4 | 4 | 4 | 4 |
| Butyl acrylate | RT | 4 | 4 | 4 | 5 |
| Butyl alcohol | RT | 2 | 1 | 4 | 2 |
| Butyl amines | RT | 3 | 4 | 4 | 4 |
| Butylene | RT | 2 | 1 | 4 | 4 |
| Butyl stearate | 50 (120) | 2 | 1 | 5 | 5 |
| Butyraldehyde | RT | 4 | 4 | 4 | 4 |
| **C** | | | | | |
| Calcium acetate (aq) | RT | 2 | 4 | 4 | 4 |
| Calcium bisulphite (aq) | RT | 1 | 1 | 4 | 1 |
| Calcium chloride (aq) | 60 (140) | 1 | 1 | 1 | 1 |
| Calcium hydroxide (aq) | RT | 1 | 1 | 4 | 1 |
| Calcium hypochlorite (aq) | RT / 60 (140) | 2 | 1 | 4 | 2 |
| Calcium nitrate (aq) | RT / 40 (105) | 1 | 1 | 1 | 2 |
| Cane sugar liquors | RT / 60 (140) | 1 | 1 | 4 | 1 |
| Carbon dioxide | RT | 1 | 1 | 5 | 2 |
| Carbon disulphide | RT | 3 | 1 | 3 | 4 |
| Carbonic acid | RT | 2 | 1 | 1 | 1 |
| Carbon monoxide | 60 (140) | 1 | 1 | 5 | 1 |
| Carbon tetrachloride | RT / 60 (140) | 3 | 1 | 4 | 4 |
| Castor oil | RT | 1 | 1 | 1 | 1 |
| Cellosolve (ethyl glycol) | RT | 4 | 3 | 4 | 4 |
| Cellosolve acetate (ethyl glycol acetate) | RT | 4 | 4 | 4 | 4 |
| Chlorine (dry) | RT | 4 | 1 | 4 | 4 |
| Chlorine (wet) | RT | 4 | 1 | 4 | 4 |
| Chlorine dioxide | RT | 4 | 1 | 4 | 5 |
| Chlorine trifluoride | RT | 4 | 4 | 4 | 4 |
| Chloroacetic acid | 60 (140) | 4 | 4 | 4 | 5 |
| Chloroacetone | RT | 4 | 4 | 4 | 4 |
| Chlorobenzene | RT | 4 | 1 | 4 | 4 |
| Chlorobromomethane | RT | 4 | 1 | 4 | 4 |
| Chlorobutadiene | RT | 4 | 1 | 4 | 4 |
| Chloroform | RT | 4 | 1 | 4 | 4 |
| Chlorosulphonic acid | RT | 4 | 4 | 4 | 4 |
| Chlorotoluene | RT | 4 | 1 | 4 | 4 |
| Chromic acid | 60 (140) | 4 | 1 | 4 | 3 |
| Citric acid | 60 (140) / 70 (160) | 1 | 1 | 5 | 1 |
| Cobalt chloride (aq) | RT | 1 | 1 | 4 | 2 |
| Coconut oil | 50 (120) / 80 (175) | 1 | 1 | 1 | 1 |
| Cod liver oil | RT | 1 | 1 | 1 | 2 |
| Coke oven gas | 80 (175) | 4 | 1 | 4 | 2 |
| Copper acetate (aq) | RT | 2 | 4 | 4 | 4 |
| Copper chloride (aq) | RT | 1 | 1 | 1 | 1 |
| Copper sulphate (aq) | 60 (140) | 1 | 1 | 4 | 1 |
| Corn oil | RT / 60 (140) | 1 | 1 | 1 | 1 |
| Cottonseed oil | RT / 70 (160) | 1 | 1 | 1 | 1 |
| Cresol | 50 (120) / 70 (160) | 4 | 1 | 4 | 4 |
| Cumene (isopropylbenzene) | RT | 4 | 1 | 4 | 4 |
| Cyclohexane | RT | 1 | 1 | 1 | 4 |
| Cyciohexanol | RT | 3 | 1 | 5 | 4 |
| Cyclohexanone | RT | 4 | 4 | 4 | 4 |
| p-Cymene | RT | 4 | 1 | 4 | 4 |
| **D** | | | | | |
| Decahydronaphthalene (decalin) | RT / 60 (140) | 4 | 1 | 5 | 4 |
| Detergent | RT | 1 | 1 | 4 | 1 |
| Developing fluids (photography) | RT | 1 | 1 | 5 | 1 |
| Diacetone alcohol | RT | 4 | 4 | 4 | 2 |
| Dibenzyl ether | RT | 4 | 4 | 5 | 5 |
| Dibutyl amine | RT | 4 | 4 | 4 | 3 |
| Dibutyl ether | RT | 4 | 3 | 3 | 4 |

cont. table 2

**Chemical resistance**

| Medium | Temperature | Medium's effect on sealing lip material | | | |
|---|---|---|---|---|---|
| | | R, D, H | V | P | S |
| – | °C (°F) | – | | | |
| Dibutyl phthalate | RT / 60 (140) | 4 | 3 | 4 | 2 |
| Dibutyl sebacate | RT / 60 (140) | 4 | 2 | 4 | 2 |
| o-Dichlorobenzene | RT | 4 | 1 | 4 | 4 |
| Dicyclohexylamine | RT | 3 | 4 | 4 | 5 |
| Diethyl amine | RT | 2 | 4 | 4 | 2 |
| Diethyl benzene | RT | 4 | 1 | 5 | 4 |
| Diethyl ether | RT | 4 | 4 | 3 | 4 |
| Diethyl sebacate | RT | 2 | 2 | 4 | 2 |
| Diisopropyl benzene | RT | 4 | 1 | 5 | 5 |
| Dimethyl aniline (Xylidine) | RT | 3 | 4 | 4 | 4 |
| Dimethyl ether | RT | 1 | 2 | 4 | 1 |
| Dimethyl formamide | RT / 60 (140) | 2 | 4 | 4 | 2 |
| Dimethyl phthalate | RT | 4 | 2 | 4 | 5 |
| Dioctyl phthalate | RT / 60 (140) | 3 | 2 | 4 | 3 |
| Dioctyl sebacate | RT / 60 (140) | 4 | 2 | 4 | 3 |
| Dioxane | RT / 60 (140) | 4 | 4 | 4 | 4 |
| Dioxolane | RT | 4 | 4 | 4 | 4 |
| Dipentene | RT | 2 | 1 | 4 | 4 |
| Diphenyl oxide | RT | 4 | 1 | 4 | 3 |
| Dowtherm oils | 100 (210) | 4 | 1 | 4 | 3 |
| Dry cleaning fluids | 40 (105) | 3 | 1 | 4 | 4 |
| **E** | | | | | |
| Epichlorohydrin | RT | 4 | 4 | 4 | 4 |
| Ethane | RT | 1 | 1 | 1 | 4 |
| Ethanol (denatured alcohol) | RT | 1 | 1 | 4 | 1 |
| Ethanolamine (monoethanolamine) | RT | 2 | 4 | 4 | 2 |
| Ethanolamine (di- and triethanolamine) | 50 (120) | 5 | 4 | 4 | 2 |
| Ethyl acetate | RT | 4 | 4 | 4 | 2 |
| Ethyl acrylate | RT | 4 | 4 | 4 | 2 |
| Ethyl benzene | RT | 4 | 1 | 4 | 4 |
| Ethyl benzoate | RT | 4 | 1 | 4 | 4 |
| Ethyl chloride | RT | 1 | 1 | 4 | 4 |
| Ethylene | RT | 1 | 1 | 5 | 5 |
| Ethylene chloride | RT | 4 | 2 | 4 | 4 |
| Ethylene chlorohydrin | RT | 4 | 1 | 4 | 3 |
| Ethylene diamine | RT | 1 | 4 | 4 | 1 |
| Ethylene glycol | RT | 1 | 1 | 2 | 1/2 |
| Ethylene glycol | 100 (210) | 1 | 1 | 3 | 1/2 |
| Ethylene oxide | RT | 4 | 4 | 4 | 4 |
| Ethylene trichloride | RT | 4 | 1 | 4 | 4 |
| Ethyl ether | RT | 3 | 4 | 4 | 4 |
| Ethyl formate | RT | 4 | 1 | 5 | 5 |
| Ethyl glycol (Cellosolve) | RT | 4 | 3 | 4 | 4 |
| Ethyl glycol acetate (Cellosolve acetate) | RT | 4 | 4 | 4 | 4 |
| Ethyl silicate | RT | 1 | 1 | 5 | 5 |
| **F** | | | | | |
| Fatty acids | 100 (210) | 2 | 1 | 5 | 3 |
| Ferric chloride (aq) | RT | 1 | 1 | 1 | 2 |
| Ferric nitrate (aq) | RT | 1 | 1 | 1 | 3 |
| Ferric sulphate (aq) | RT | 1 | 1 | 1 | 2 |
| Fish oil | RT | 1 | 1 | 5 | 1 |
| Fluorine (liquified) | RT | 4 | 2 | 4 | 4 |
| Fluorobenzene | RT | 4 | 1 | 4 | 4 |
| Fluorosilic acid | 60 (140) | 1 | 1 | 5 | 4 |
| Formaldehyde | RT | 3 | 1 | 4 | 2 |
| Formaldehyde, 37% | below 100 (210) | 2 | 1 | 4 | 2 |
| Formic acid | RT / 60 (140) | 2 | 3 | 5 | 2 |
| **Fuels** | | | | | |
| – Aero engine fuels JP: | | | | | |
| – JP3 (MIL-J-5624 G) | RT | 1 | 1 | 2 | 4 |
| – JP4 (MIL-J-5624 G) | RT | 1 | 1 | 2 | 4 |
| – JP5 (MIL-J-5624 G) | RT | 1 | 1 | 2 | 4 |
| – JP6 (MIL-F-25656 B) | RT / 60 (140) | 1 | 1 | 5 | 4 |

cont. table 2

**Chemical resistance**

| Medium | Temperature | Medium's effect on sealing lip material | | | |
|---|---|---|---|---|---|
| | | R, D, H | V | P | S |
| – | °C (°F) | – | | | |
| – ASTM reference fuels: | | | | | |
| – ASTM-A (MIL-S-3136 B Typ 1) | RT / 60 (140) | 1 | 1 | 2 | 4 |
| – ASTM-B (MIL-S-3136 B Typ 111) | RT / 60 (140) | 1 | 1 | 5 | 4 |
| – ASTM-C | RT / 60 (140) | 2 | 1 | 4 | 4 |
| – Diesel fuel | 60 (140) | 1 | 1 | 2 | 2 |
| – Fuel oil | 60 (140) | 1 | 1 | 1 | 4 |
| – Gasohol (10% ethanol or methanol) | RT | 2 | 3 | 4 | 4 |
| – Kerosene | RT | 1 | 1 | 1 | 4 |
| – Mineral oil | 100 (210) | 1 | 1 | 1 | 2 |
| – Petrol | RT | 1 | 1 | 4 | 4 |
| Fumaric acid | RT | 1 | 1 | 4 | 2 |
| Furan | RT | 4 | 5 | 4 | 5 |
| Furfural | RT | 4 | 4 | 4 | 4 |
| Furfuran | RT | 4 | 5 | 4 | 5 |
| **G** | | | | | |
| Gelatine (aq) | 40 (105) | 1 | 1 | 4 | 1 |
| Glucose | RT | 1 | 1 | 5 | 1 |
| Glue | RT | 1 | 1 | 5 | 1 |
| Glycerin | 100 (210) | 1 | 1 | 3 | 1 |
| Glycols | 100 (210) | 1 | 1 | 4 | 1/2 |
| **H** | | | | | |
| n-Hexaldehyde | RT | 4 | 4 | 5 | 2 |
| Hexane | RT / 60 (140) | 1 | 1 | 1 | 4 |
| 1-Hexene | RT | 2 | 1 | 1 | 4 |
| Hexyl alcohol | RT | 1 | 1 | 4 | 2 |
| Hydraulic fluids | | | | | |
| – Hydraulic oils (acc. to DIN 51524) | 80 (175) | 1 | 1 | 1 | 3 |
| – Hydraulic fluids (acc to DIN 51502): | | | | | |
| – HFA (oil in water emulsion) | 55 (130) | 1 | 1 | 5 | 5 |
| – HFB (water in oil emulsion) | 60 (140) | 1 | 1 | 5 | 5 |
| – HFC (aqueous Polymer solutions) | 60 (140) | 1 | 1 | 5 | 1 |
| – HFD (phosphoric esters) | 80 (175) | 4 | 2/4 | 4 | 4 |
| – Skydrol 500 | 80 (175) | 4 | 4 | 4 | 3 |
| – Skydrol 7000 | 80 (175) | 4 | 2 | 4 | 3 |
| Hydrazine | RT | 2 | 4 | 5 | 3 |
| Hydrobromic acid | RT / 60 (140) | 4 | 1 | 4 | 4 |
| Hydrochloric acid (conc.) | RT | 3 | 1 | 4 | 3 |
| Hydrochloric acid (conc.) | 80 (175) | 4 | 2 | 4 | 4 |
| Hydrocyanic acid (Prussic acid) | RT | 2 | 1 | 4 | 3 |
| Hydrofluoric acid (conc.) | RT | 4 | 1 | 4 | 4 |
| Hydrofluoric acid (conc.) | 100 (210) | 4 | 3 | 4 | 4 |
| Hydrofluoric acid (anhydrous) | 100 (210) | 4 | 4 | 4 | 4 |
| Hydrogen gas | RT | 1 | 1 | 2 | 3 |
| Hydrogen peroxide (90%) | RT | 4 | 2 | 4 | 2 |
| Hydrogen sulphide (wet) | RT / 100 (210) | 4 | 4 | 4 | 3 |
| Hydroquinone | RT | 4 | 2 | 4 | 5 |
| Hypochlorous acid | RT | 4 | 1 | 4 | 5 |
| **I** | | | | | |
| Iodine pentafluoride | RT | 4 | 4 | 4 | 4 |
| Isobutyl alcohol | RT | 2 | 1 | 4 | 1 |
| Isooctane | RT | 1 | 1 | 1 | 4 |
| Isophorone | RT | 4 | 4 | 4 | 4 |
| Isopropyl acetate | RT / 80 (175) | 4 | 4 | 4 | 4 |
| Isopropyl alcohol | RT / 60 (140) | 2 | 1 | 4 | 1 |
| Isopropyl chloride | RT | 4 | 1 | 4 | 4 |
| Isopropyl ether | RT / 60 (140) | 2 | 4 | 3 | 4 |
| **L** | | | | | |
| Lactic acid | RT | 1 | 1 | 4 | 1 |
| Lactic acid | 100 (210) | 4 | 1 | 4 | 2 |
| Lard | 80 (175) | 1 | 1 | 1 | 2 |
| Lavender oil | RT | 2 | 1 | 2 | 4 |
| Lead acetate (aq) | RT / 60 (140) | 2 | 2 | 4 | 4 |

cont. table 2

**Chemical resistance**

| Medium | Temperature | Medium's effect on sealing lip material | | | |
|---|---|---|---|---|---|
| | | R, D, H | V | P | S |
| – | °C (°F) | – | | | |
| Lead nitrate (aq) | RT | 1 | 5 | 5 | 2 |
| Linoleic acid | RT | 2 | 2 | 5 | 2 |
| Linseed oil | RT / 60 (140) | 1 | 1 | 1 | 1 |
| Lubricants | | | | | |
| – ASTM oil No. 1 | 100 (210) | 1 | 1 | 1 | 3 |
| – ASTM oil No. 2 | 100 (210) | 1 | 1 | 1 | 3 |
| – ASTM oil No. 3 | 100 (210) | 1 | 1 | 1 | 3 |
| – ATF oils, type A | 100 (210) | 1 | 1 | 1 | 4 |
| – ATF oils, type I | 100 (210) | 1 | 1 | 1 | 4 |
| – ATF oils, type II | 100 (210) | 1 | 1 | 1 | 4 |
| – ATF oils, type F | 100 (210) | 1 | 1 | 1 | 4 |
| – ATF oils, type Mercon | 100 (210) | 1 | 1 | 1 | 4 |
| – EP lubes | 100 (210) | 2 | 1 | 1 | 4 |
| – Fluorolube | 100 (210) | 1 | 2 | 5 | 1 |
| – Grease MIL-G-7118 A | 80 (175) | 1 | 1 | 3 | 3 |
| – Grease MIL-G-7711 A | 80 (175) | 1 | 1 | 1 | 3 |
| – Lubricating oils (petroleum) | 100 (210) | 1 | 1 | 1 | 4 |
| – Red oil (MIL-H-5606) | 100 (210) | 1 | 1 | 1 | 4 |
| – RJ-1 (MIL-F-25558 B) | 100 (210) | 1 | 1 | 1 | 4 |
| – RP-1 (MIL-F-25576 C) | 100 (210) | 1 | 1 | 1 | 4 |
| – Motor oil SAE 30 | 100 (210) | 1 | 1 | 1 | 1 |
| – Transmission oil SAE 90 | 100 (210) | 1 | 1 | 1 | 4 |
| – Transmission oil MIL-L-23699 A | 100 (210) | 1 | 1 | 3 | 3 |
| – Silicone greases | 120 (250) | 1 | 1 | 1 | 3 |
| – Silicone oils | 120 (250) | 1 | 1 | 1 | 3 |
| – Transformer oil (Pyranol) | 60 (140) | 4 | 1 | 5 | 4 |
| – Transformer oil | 60 (140) | 1 | 1 | 2 | 2 |
| – Transmission fluid type A | RT | 1 | 1 | 1 | 2 |
| – Turbine oil | 100 (210) | 2 | 1 | 1 | 4 |
| **M** | | | | | |
| Magnesium chloride (aq) | 100 (210) | 1 | 1 | 5 | 1 |
| Magnesium hydroxide (aq) | 100 (210) | 2 | 1 | 4 | 5 |
| Magnesium sulphate (aq) | 100 (210) | 1 | 1 | 4 | 1 |
| Maleic acid | 100 (210) | 4 | 1 | 4 | 5 |
| Maleic anhydride | 60 (140) | 4 | 4 | 4 | 5 |
| Malic acid | RT | 1 | 1 | 4 | 2 |
| Mercury | RT / 60 (140) | 1 | 1 | 5 | 5 |
| Mercury chloride (aq) | RT / 60 (140) | 1 | 1 | 5 | 5 |
| Mesityl oxide | RT | 4 | 4 | 4 | 4 |
| Methane | RT | 1 | 2 | 1 | 4 |
| Methanol (methyl alcohol) | 60 (140) | 1 | 4 | 4 | 1 |
| Methyl acetate | RT | 4 | 4 | 4 | 4 |
| Methyl acrylate | RT | 4 | 4 | 4 | 4 |
| Methyl aniline | RT | 4 | 2 | 4 | 5 |
| Methyl bromide | RT | 2 | 1 | 3 | 5 |
| Methyl cellosolve (methyl glycol) | RT | 3 | 4 | 4 | 4 |
| Methyl chloride | RT | 4 | 2 | 4 | 4 |
| Methyl cyclopentane | RT | 4 | 2 | 4 | 4 |
| Methylene chloride | RT | 4 | 2 | 4 | 4 |
| Methyl ethyl ketone | RT | 4 | 4 | 4 | 4 |
| Methyl formate | RT | 4 | 5 | 5 | 5 |
| Methyl glycol (Cellosolve) | RT | 3 | 4 | 4 | 4 |
| Methyl isobutyl ketone | RT | 4 | 4 | 4 | 4 |
| Methyl methacrylate | RT | 4 | 4 | 4 | 4 |
| Methyl salicylate | RT | 4 | 5 | 5 | 5 |
| Milk | RT | 1 | 1 | 4 | 1 |
| Mustard gas | RT | 5 | 5 | 5 | 1 |
| **N** | | | | | |
| Naphtha | RT | 2 | 1 | 2 | 4 |
| Naphthalene | 60 (140) | 4 | 1 | 5 | 4 |
| Naphthalenic acid | RT | 2 | 1 | 5 | 4 |
| Natural gas | RT | 1 | 1 | 2 | 1 |
| Neat-s-foot oil | RT / 60 (140) | 1 | 1 | 1 | 2 |
| Nickel acetate (aq) | RT | 2 | 4 | 4 | 4 |

**Chemical resistance**

| Medium | Temperature | Medium's effect on sealing lip material | | | |
|---|---|---|---|---|---|
| | | R, D, H | V | P | S |
| – | °C (°F) | – | | | |
| Nickel chloride | RT | 1 | 1 | 4 | 1 |
| Nickel sulphate (aq) | RT / 60 (140) | 1 | 1 | 4 | 1 |
| Nitric acid (conc.) | RT | 4 | 3 | 4 | 4 |
| Nitric acid (fuming) | RT | 4 | 4 | 4 | 4 |
| Nitric acid (dilute) | RT | 4 | 1 | 4 | 2 |
| Nitrobenzene | 50 (120) | 4 | 2 | 4 | 4 |
| Nitroethane | RT | 4 | 4 | 4 | 4 |
| Nitrogen | 20 (55) | 1 | 1 | 1 | 1 |
| Nitrogen tetroxide | RT | 4 | 4 | 4 | 4 |
| Nitromethane | RT | 4 | 4 | 4 | 4 |
| **O** | | | | | |
| Octadecane | RT / 50 (120) | 1 | 1 | 2 | 4 |
| n-Octane | RT | 2 | 1 | 4 | 4 |
| Octyl alcohol | RT | 2 | 1 | 4 | 2 |
| Oleic acid | 70 (160) | 1 | 2 | 2 | 4 |
| Olive oil | 60 (140) | 1 | 1 | 1 | 3 |
| Oxalic acid | 70 (160) | 2 | 1 | 5 | 4 |
| Oxygen | RT | 2 | 1 | 2 | 1 |
| Oxygen | > 100 (210) | 4 | 2 | 4 | 2 |
| Ozone | RT | 4 | 1 | 2 | 1 |
| **P** | | | | | |
| Palmitic acid | 60 (140) | 1 | 1 | 4 | 4 |
| Peanut oil | RT / 50 (120) | 1 | 1 | 1 | 1 |
| Perchloric acid | RT | 4 | 1 | 4 | 4 |
| Perchloroethylene | RT / 60 (140) | 2 | 1 | 4 | 4 |
| Petroleum | below 120 (250) | 1 | 1 | 2 | 2 |
| Petroleum | above 120 (250) | 4 | 2 | 4 | 4 |
| Petroleum ether | RT / 60 (140) | 1 | 1 | 1 | 4 |
| Petroleum gas (liquified) | RT | 1 | 1 | 3 | 3 |
| Phenol | 60 (140) / 100 (210) | 4 | 1 | 4 | 4 |
| Phenyl ethyl ether | RT | 4 | 4 | 4 | 4 |
| Phenyl hydrazine | RT / 60 (140) | 4 | 1 | 4 | 5 |
| Phoron (diisopropylidene acetone) | 60 (140) | 4 | 4 | 4 | 4 |
| Phosphoric acid, 20% | 50 (120) / 60 (140) | 2 | 1 | 5 | 2 |
| Phosphoric acid, 45% | 50 (120) / 60 (140) | 4 | 1 | 5 | 3 |
| Phosphorus trichloride | RT | 4 | 1 | 5 | 5 |
| Pickling solution | RT | 4 | 2 | 4 | 4 |
| Picric acid | RT | 4 | 1 | 5 | 4 |
| Pinene | RT | 2 | 1 | 4 | 4 |
| Pine oil | RT | 4 | 1 | 5 | 4 |
| Piperidine | RT | 4 | 4 | 4 | 4 |
| Potassium acetate (aq) | RT | 2 | 4 | 4 | 4 |
| Potassium chloride (aq) | RT / 60 (140) | 1 | 1 | 1 | 1 |
| Potassium cyanide (aq) | RT / 50 (120) | 1 | 1 | 1 | 1 |
| Potassium dichromate (aq) | RT | 1 | 1 | 1 | 1 |
| Potassium hydroxide (aq) | 60 (140) | 2 | 4 | 4 | 4 |
| Potassium nitrate (aq) | RT / 60 (140) | 1 | 1 | 1 | 1 |
| Potassium sulfate (aq) | RT / 60 (140) | 1 | 1 | 4 | 1 |
| Propane | RT | 1 | 1 | 1 | 4 |
| Propyl acetate | RT | 4 | 4 | 4 | 4 |
| Propyl alcohol | RT / 60 (140) | 1 | 1 | 4 | 1 |
| Propylene | RT | 4 | 1 | 4 | 4 |
| Propylene oxide | RT | 4 | 4 | 4 | 4 |
| Prussic acid (hydrocyanic acid) | RT | 2 | 1 | 4 | 3 |
| Pyridine | RT | 4 | 4 | 4 | 4 |
| Pyroligneous acid | RT | 4 | 4 | 4 | 5 |
| Pyrrole | RT | 4 | 4 | 4 | 2 |
| **R** | | | | | |
| Rapeseed oil | RT | 2 | 1 | 2 | 4 |
| Refrigerants (acc. to DIN 8962) | | | | | |
| – R 11 | RT | 2 | 1 | 5 | 4 |
| – R 12 | RT | 1 | 2 | 1 | 4 |
| – R 13 | RT | 1 | 1 | 5 | 4 |

cont. table 2

**Chemical resistance**

| Medium | Temperature | Medium's effect on sealing lip material | | | |
|---|---|---|---|---|---|
| | | R, D, H | V | P | S |
| – | °C (°F) | – | | | |
| – R 13 B1 | RT | 1 | 1 | 5 | 4 |
| – R 14 | RT | 1 | 1 | 5 | 4 |
| – R 21 | RT | 4 | 4 | 5 | 4 |
| – R 22 | RT | 4 | 4 | 2 | 4 |
| – R 31 | RT | 4 | 4 | 5 | 5 |
| – R 32 | RT | 1 | 4 | 5 | 5 |
| – R 112 | RT | 3 | 1 | 5 | 4 |
| – R 113 | RT | 1 | 2 | 5 | 4 |
| – R 114 | RT | 1 | 2 | 5 | 4 |
| – R 114 B2 | RT | 2 | 2 | 5 | 4 |
| – R 115 | RT | 1 | 2 | 5 | 5 |
| – R C 318 | RT | 1 | 2 | 5 | 5 |
| **S** | | | | | |
| Salicylic acid | RT | 2 | 1 | 5 | 5 |
| Sea water | RT | 1 | 1 | 4 | 1 |
| Silver nitrate (aq) | RT | 2 | 1 | 1 | 1 |
| Soap solution | RT | 1 | 1 | 4 | 1 |
| Sodium acetate (aq) | RT | 2 | 4 | 4 | 4 |
| Sodium bicarbonate (aq) | 60 (140) | 1 | 1 | 5 | 1 |
| Sodium bisulphite (aq) | 100 (210) | 1 | 1 | 4 | 1 |
| Sodium carbonate (soda) | RT / 60 (140) | 1 | 1 | 5 | 1 |
| Sodium chloride (aq) | RT / 100 (210) | 1 | 1 | 5 | 1 |
| Sodium cyanide (aq) | RT | 1 | 1 | 5 | 1 |
| Sodium hydroxide (aq) | RT | 2 | 2 | 3 | 2 |
| Sodium hypochlorite (aq) | RT / 50 (120) | 2 | 1 | 4 | 5 |
| Sodium metaphosphate | RT / 60 (140) | 1 | 1 | 5 | 2 |
| Sodium nitrate (aq) | RT / 60 (140) | 2 | 5 | 5 | 4 |
| Sodium phosphate (aq) | RT / 60 (140) | 1 | 1 | 4 | 4 |
| Sodium silicate (aq) | RT / 60 (140) | 1 | 1 | 5 | 5 |
| Sodium sulphate (aq) (Glauber's salt) | RT / 60 (140) | 1 | 1 | 4 | 1 |
| Sodium thiosulphate (aq) | RT / 50 (120) | 2 | 1 | 4 | 1 |
| Soyabean oil | RT | 1 | 1 | 1 | 1 |
| Stannic chloride (aq) | RT / 80 (175) | 1 | 1 | 5 | 2 |
| Stannous chloride (aq) | RT / 80 (175) | 1 | 1 | 5 | 2 |
| Steam | below 150 (300) | 4 | 4 | 4 | 3 |
| Steam | above 150 (300) | 4 | 4 | 4 | 4 |
| Stearic acid | 60 (140) | 2 | 2 | 4 | 2 |
| Stoddard solvent | RT | 1 | 1 | 1 | 4 |
| Styrene | RT | 4 | 2 | 4 | 4 |
| Sucrose solution | RT / 60 (140) | 1 | 1 | 4 | 1 |
| Sulphur | RT / 60 (140) | 4 | 1 | 4 | 3 |
| Sulphur chloride (aq) | RT | 3 | 1 | 4 | 3 |
| Sulphur dioxide (dry) | RT / 60 (140) | 4 | 1 | 4 | 2 |
| Sulphur dioxide (liquified) | RT / 60 (140) | 4 | 1 | 4 | 2 |
| Sulphur dioxide (wet) | RT / 60 (140) | 4 | 1 | 4 | 2 |
| Sulphur hexafluoride | RT | 2 | 1 | 4 | 2 |
| Sulphuric acid (conc.) | RT / 50 (120) | 4 | 1 | 4 | 4 |
| Sulphuric acid (20%) (battery acid) | 60 (140) | 4 | 1 | 4 | 4 |
| Sulphuric acid (dilute) | RT | 3 | 1 | 2 | 4 |
| Sulphurous acid | RT / 60 (140) | 4 | 1 | 4 | 4 |
| Sulphur trioxide | RT | 4 | 1 | 4 | 2 |
| **T** | | | | | |
| Tannic acid | RT / 60 (140) | 1 | 1 | 4 | 2 |
| Tar, bituminous | RT | 2 | 1 | 4 | 2 |
| Tartaric acid | 60 (140) | 1 | 1 | 5 | 1 |
| Tepineol | RT | 2 | 1 | 5 | 5 |
| Tetrabromoethane | RT | 4 | 1 | 4 | 4 |
| Tetrabromomethane | RT | 4 | 1 | 5 | 4 |
| Tetrabutyl titanate | RT | 2 | 1 | 5 | 5 |
| Tetrachloroethylene | 60 (140) | 4 | 2 | 4 | 4 |
| Tetraethyl lead | RT | 2 | 1 | 5 | 5 |
| Tetrahydrofuran | RT | 4 | 4 | 4 | 4 |
| Tetrahydronaphthalene (Tetralin) | RT | 4 | 1 | 5 | 4 |
| Thionyl chloride | RT | 4 | 2 | 4 | 5 |

cont. table 2

**Chemical resistance**

| Medium | Temperature | Medium's effect on sealing lip material | | | |
|---|---|---|---|---|---|
| | | R, D, H | V | P | S |
| – | °C (°F) | – | | | |
| Titanium tetrachloride | RT | 2 | 1 | 4 | 4 |
| Toluene | RT | 4 | 1 | 4 | 4 |
| Toluene diisocyanate | RT | 4 | 4 | 4 | 4 |
| Triacetin | RT | 2 | 1 | 4 | 5 |
| Tributoxy ethyl phosphate | RT | 4 | 1 | 4 | 5 |
| Tributyl phosphate | RT / 60 (140) | 4 | 4 | 4 | 4 |
| Trichloroacetic acid | 60 (140) | 5 | 4 | 4 | 4 |
| Trichloroethane | RT | 4 | 1 | 4 | 4 |
| Trichloroethylene | RT | 4 | 1 | 4 | 4 |
| Tricresyl phosphate | RT / 60 (140) | 4 | 1 | 4 | 3 |
| Triethanol amine | RT | 2 | 4 | 4 | 5 |
| Triethyl aluminium | RT | 4 | 2 | 4 | 5 |
| Triethyl borane | RT | 4 | 1 | 4 | 5 |
| Trinitrotoluene | RT | 4 | 2 | 4 | 5 |
| Trioctyl phosphate | RT / 60 (140) | 4 | 2 | 4 | 3 |
| Tung oil (China wood oil) | RT | 1 | 1 | 1 | 4 |
| Turpentine | RT | 1 | 1 | 2 | 4 |
| **V** | | | | | |
| Varnish | RT | 2 | 1 | 4 | 4 |
| Vegetable oil | 60 (140) | 1 | 1 | 1 | 2 |
| Vinyl acetylene | RT | 1 | 1 | 5 | 2 |
| Vinyl chloride | RT | 4 | 1 | 5 | 5 |
| **W** | | | | | |
| Water | 100 (210) | 1 | 1 | 4 | 1 |
| Whisky | RT | 1 | 1 | 4 | 1 |
| White oil | RT / 80 (175) | 1 | 1 | 1 | 4 |
| Wine | RT | 1 | 1 | 4 | 1 |
| Wood oil | RT | 1 | 1 | 1 | 4 |
| **X** | | | | | |
| Xylene | RT | 4 | 1 | 4 | 4 |
| Xylidine (di-methyl aniline) | RT | 3 | 4 | 4 | 4 |
| **Z** | | | | | |
| Zeolites | RT | 1 | 1 | 5 | 5 |
| Zinc acetate (aq) | RT | 1 | 1 | 4 | 4 |
| Zinc chloride (aq) | RT | 1 | 1 | 4 | 1 |
| Zinc sulphate (aq) | RT | 1 | 1 | 4 | 1 |

# Storage and handling of seals

## General

The following guidelines for the storage and cleaning of seals are valid for natural and synthetic elastomer materials and are in accordance with ISO 2230 and DIN 7716 standards. The storage guidelines set forth in DIN 7716 are valid for long-term storage.

Unfavourable storage conditions and improper handling can change the physical properties of most products made from natural or synthetic rubber. This can result in hardening or softening, permanent deformation, peeling or cracks, which can lead to a shortened service life or render the products altogether useless. These changes can be brought about by storing the products under stress or load or from the influence of oxygen, ozone, heat, light, moisture or solvents. When stored properly, elastomer products generally retain their properties for several years.

## Storage

The storage area should be cool, dry, moderately ventilated and there should be as little dust as possible. Outdoor storage without protection should be avoided.

The appropriate storage temperature depends on the elastomer. The most favourable storage temperature for synthetic rubber seals is 15 to 25 °C *(60 to 80 °F)*.

Elastomer products that have been subjected to low temperatures during transport or storage may become stiff. They should therefore be warmed and kept at a temperature of at least 20 °C *(70 °F)* before being unpacked and used in order to prevent exposure to condensation.

In heated storage rooms, the products should be shielded from the heat source. There should be at least 1 m *(3 ft.)* between the packages and the source of heat. In rooms where a heater with a fan is used, the distance should be greater. Storage in damp rooms should be avoided because of the risk of condensation. A storage facility with relative humidity below 65% is excellent.

Seals should be protected from light, particularly direct sunlight or artificial light with a high proportion of UV radiation. Any windows in the store should therefore be covered with a red or orange coating (never blue). Ordinary light bulbs are preferred for illumination.

Seals should be wrapped or stored in airtight containers, protecting them from atmospheric changes and particularly against drafts.

Because ozone is particularly damaging, steps must be taken to make sure that no ozone is produced in the storage facility as the result of using electric motors or other equipment that can produce sparks or other electric discharges. Combustion fumes and vapours that can produce ozone as the result of photochemical processes should be exhausted. For this reason, solvents, fuels, lubricants, chemicals, acids, disinfectants etc. should not be stored in the same room as the seals.

Elastomer products should not be subjected to tension, compression or other forms of load during storage as this can produce permanent deformations and cracks. Seals should therefore not be hung on hooks during storage. Certain metals, especially copper and manganese, damage elastomer products. Contact with these metals should therefore be avoided and the seals should be covered with layers of paper or polyethylene to prevent such contact.

In case it is necessary to repack the seals, packaging and covering materials should not contain substances such as copper or alloys containing copper, petroleum, oil etc. that can cause damage to the seals. The packaging materials should not contain softeners.

If the products are powdered, suitable powders are talcum, chalk, finely divided glimmer and rice starch.

Seals made of different materials should not be in contact with each other. This is particularly important when the seals are different in colour as this will avoid discolouration.

Seals should be stored for the shortest period of time possible. Where long-term storage is involved, care should be taken that newly arrived products are kept separate from those already in storage to enable use of seals on a first in, first out basis.

## Cleaning and maintenance

In the event that cleaning is necessary, elastomer products should be cleaned with warm, soapy water that does not exceed 30 °C *(85 °F)*, and air dried at room temperature.

Solvents such as trichloroethylene, carbon tetrachloride or hydrocarbons should not be used, nor should sharp-edged objects, wire brushes, emery cloth or sandpaper.

Elastomer/metal combinations can be cleaned using a 1:10 mixture of glycerine and alcohol.

BYC RODAMIENTOS Y SUMINISTROS



# Radial shaft seals

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# Radial shaft seals

## General

Radial shaft seals are used between rotating and stationary machine components (→ **fig. 1**) or between two components in relative motion and consist of two main parts:

- A cylindrical outer covering of sheet steel (case) or an elastomer that has the requisite interference fit to seal statically against the housing bore.
- A sealing lip made of an elastomeric or thermoplastic material that seals dynamically and statically against the shaft. The lip has a sealing edge that is formed by moulding, cutting or grinding. It is normally pressed against the counterface surface of the shaft, with a defined radial load, by a garter spring. The edge of the sealing lip and the shaft counterface surface form the most important functional area of a radial shaft seal. The sealing effect of the lip can be enhanced by designing the contact area of the lip with hydrodynamic features.

**Fig. 1**

**Radial shaft seal, HMS5**



Some radial shaft seal designs have an auxiliary lip that protects the primary sealing lip from dust and other contaminants. A suitable lubricant in the space between the primary sealing lip and the auxiliary lip can reduce wear and delay corrosion. Contaminants that have passed the auxiliary lip will eventually cause damage in the counterface surface area. A build-up of heat can also occur between the two lips, resulting in premature wear.

Radial shaft seals are used in a multitude of applications. Because of the importance of radial shaft seals for the operational reliability and service life of machines and equipment, both seal manufacturers and users are equally interested, to some degree, in standardization. This has led to the establishment of national and international standards and guidelines listed in **table 1** on **page 53**. These cover boundary dimensions, tolerances, material specifications, test methods and terminology as well as the basic outside diameter constructions and sealing lip arrangements.

See **figs. 2** and **3** on **page 52** for the terminology used in this publication.

Fig. 2

**Metal-cased seal with spring-loaded sealing lip**

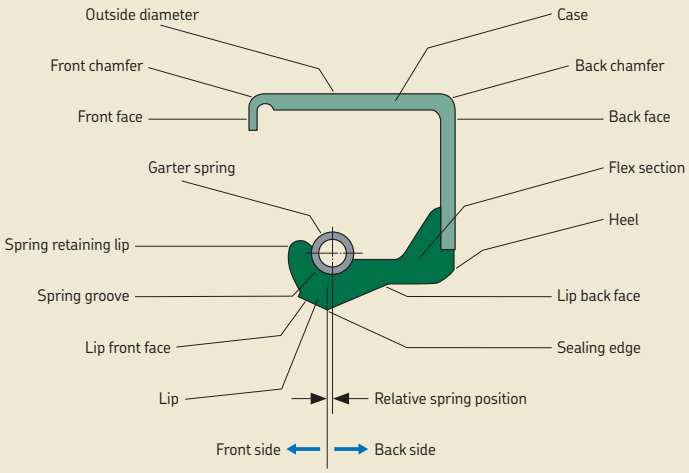



Fig. 3

**Rubber outside diameter seal with spring-loaded sealing lip and auxiliary lip**

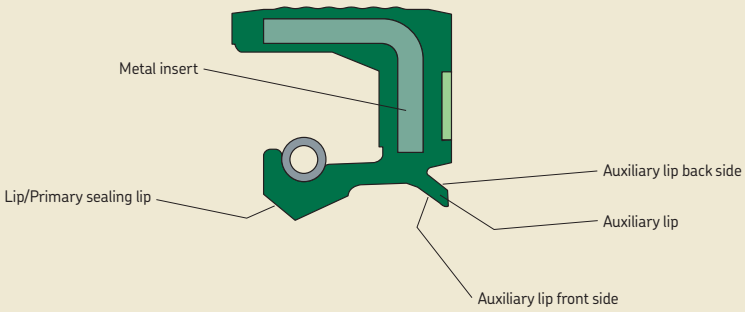


**Table 1**

**Standards and other documents relating to radial shaft seals**

| Document[1)] | Title |
|---|---|
| ISO 2230 | Rubber products – guidelines for storage |
| ISO 6194-1 | Rotary shaft lip-type seals – Nominal dimensions and tolerances |
| ISO 6194-2 | Rotary shaft lip-type seals – Vocabulary |
| ISO 6194-3 | Rotary shaft lip-type seals – Storage, handling and installation |
| ISO 6194-4 | Rotary shaft lip-type seals – Performance test procedures |
| ISO 6194-5 | Rotary shaft lip-type seals – Identification of visual imperfections |
| SAE J946 | Application guide to radial lip seals |
| RMA OS-1-1 | Shaft requirements for rotary shaft seals |
| RMA OS–4 | Application guide for radial lip type shaft seals |
| RMA OS–7 | Storage and handling guide for radial lip type shaft seals |
| RMA OS–8 | Visual variations guide for rotating shaft seals |
| DIN 3760 | Radial-Wellendichtringe (Radial shaft seals) |
| DIN 3761 | Radial-Wellendichtringe für Kraftfahrzeuge (Radial shaft seals for motor vehicles), Parts 1 to 15. This standard covers all aspects including vocabulary, material requirements and test methods. |
| DIN 7172 | Tolerances and limit deviations for sizes above 3 150 mm up to 10 000 mm. |
| DIN 7716 | Rubber products; requirements for storage, cleaning and maintenance. |

1) RMA = Rubber Manufacturers Association
SAE = Society of Automotive Engineers
ISO = International Organization for Standardization
DIN = Deutsches Institut für Normung

# Outside diameter design

The standard assortment of radial shaft seals manufactured by SKF for general industrial applications covers three different outside diameter executions (→ **figs. 4a** to **4c**).

Seals with a rubber outside diameter (→ **fig. 4a**) are used in a wide range of applications. They maintain a tight fit in the housing bore when the housing material has a higher coefficient of thermal expansion than steel and/or when the housing is split. They are also recommended in all applications where the housing bore surface finish requirements cannot be met.

Metal-cased seals (→ **fig. 4b**) are multi-purpose seals that can be used for most applications. They are relatively easy to install and, provided the housing bore meets the requirements, will fit tightly and centrically in the housing bore.

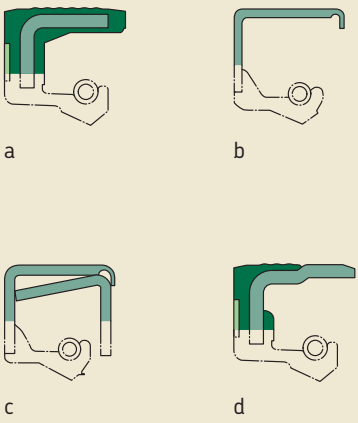
Radial shaft seals designed with a metal case and a secondary reinforcement in the side face (→ **fig. 4c**) offer advantages where operating conditions are severe. They have a higher radial stiffness and are available for shaft diameters ≥ 50 mm *(2 in.)*.

Besides these standard outside diameter designs, there is also a half rubber/half metal outside diameter design (→ **fig. 4d**) that is typically used in automotive applications.

In addition to the seal designs for general industrial applications described above, SKF also manufactures seals for heavy industrial applications with special features to meet specific requirements (→ **page 206**).

**Fig. 4**

**Outside diameter designs**




## SKF Bore Tite Coating

As the static sealing ability between a metal outside diameter and the housing bore is somewhat limited, particularly in the case of low-viscosity fluids and media that can “creep”, most SKF seals with a metal case feature SKF Bore Tite Coating, a water-based acrylic sealant. SKF Bore Tite Coating is green in colour, does not harden and serves to fill small imperfections in the housing bore. For additional details, refer to **page 29**.

## Garter springs

SKF radial shaft seals have garter springs made of drawn carbon steel or stainless steel spring wire. Carbon steel springs are standard unless otherwise specified.

## Dimensions

SKF radial shaft seals are manufactured for a wide range of shaft diameters, from 5 to 4 600 mm *(0.2 to 181 in.)*. The range also includes standard sizes in accordance with ISO 6194-1 and DIN 3760 for shafts ranging from 6 to 500 mm *(0.24 to 19.7 in.)*.

### Tolerances

SKF radial shaft seals are manufactured to the outside diameter tolerances listed in **table 2** on **page 56**, for metric seals, and **table 3** on **page 56** for inch-size seals. These are, where standardized, in accordance with ISO 6194-1, DIN 3760 and RMA OS-4.

Table 2

**Outside diameter tolerances for metric seals**

| Nominal seal outside diameter | | Seals with outside diameter of steel | | elastomer | |
|---|---|---|---|---|---|
| D | | Seal outside diameter tolerance | | Seal outside diameter tolerance | |
| over | incl. | high | low | high | low |
| mm | | mm | | mm | |
| | **50** | +0,20 | +0,08 | +0,30 | +0,15 |
| **50** | **80** | +0,23 | +0,09 | +0,35 | +0,20 |
| **80** | **120** | +0,25 | +0,10 | +0,35 | +0,20 |
| **120** | **180** | +0,28 | +0,12 | +0,45 | +0,25 |
| **180** | **300** | +0,35 | +0,15 | +0,45 | +0,25 |
| **300** | **500** | +0,45 | +0,20 | +0,55 | +0,30 |
| **500** | **630** | +0,50 | +0,22 | – | – |
| **630** | **800** | +0,50 | +0,24 | – | – |
| **800** | **1 000** | +0,55 | +0,25 | – | – |
| **1 000** | **1 250** | +0,60 | +0,27 | – | – |
| **1 250** | **1 600** | +0,65 | +0,30 | – | – |

Contact SKF for sizes outside the listed range.

Table 3

**Outside diameter tolerances for inch-size seals**

| Bore diameter[1)] | | | Seals with outside diameter of steel | | elastomer | |
|---|---|---|---|---|---|---|
| D | | | Nominal seal | Seal outside | Nominal seal | Seal outside |
| over | incl. | Tolerance | outside diameter | diameter tolerance | outside diameter | diameter tolerance |
| in. | | | in. | | in. | |
| | **2.000** | ±0.001 | +0.005 | ±0.002 | +0.008 | ±0.003 |
| **2.000** | **3.000** | ±0.001 | +0.0055 | ±0.0025 | +0.01 | ±0.003 |
| **3.000** | **4.000** | ±0.0015 | +0.0065 | ±0.003 | +0.0105 | ±0.003 |
| **4.000** | **5.000** | ±0.0015 | +0.0065 | ±0.003 | +0.0105 | ±0.003 |
| **5.000** | **7.000** | ±0.0015 | +0.007 | ±0.003 | +0.012 | ±0.004 |
| **7.000** | **9.000** | ±0.002 | +0.0085 | ±0.0035 | +0.0125 | ±0.004 |
| **9.000** | **10.000** | ±0.002 | +0.0085 | ±0.0035 | +0.0125 | ±0.004 |

1) Housing bores made of material other than steel may need a different nominal press-fit tolerance due to differences in thermal coefficients of expansion.
Contact SKF for sizes outside the listed range.

# Sealing lip design

The form and design of a sealing lip is based on knowledge gained through research and development activities as well as wide practical experience obtained by SKF in close cooperation with users. The distance between the lip and the seal back face, the strength of the flex section, the angle of the lip (→ **fig. 2** on **page 52**) and the tension in the spring are all balanced so that the pressure applied by the garter spring provides a satisfactory sealing performance between the sealing lip and counterface.

The sealing lips of SKF radial shaft seals are manufactured from several materials and two different main designs. The various materials are described on **pages 30** to **32**. There are two main sealing lip designs that differ in the execution of the sealing lip edge. The "conventional" sealing lip (→ **fig. 5**) has a straight edge, whereas the SKF WAVE lips (→ **fig. 6**) are moulded with
a hydrodynamic feature that results in the lip taking a sinusoidal path on its counterface surface.

SKF WAVE seals represent one of the most important developments in radial shaft seals. The sealing lip is moulded to a special form, producing a relative movement on the counterface, imparting hydrodynamic properties. SKF WAVE seals are suitable for rotation in both directions. They pump the lubricant back into the bearing arrangement and expel contaminants. The sinusoidal form of the sealing lip considerably extends the path (→ **fig. 6**) on the counterface surface and at the same time reduces the specific surface pressure at the sealing lip/counterface contact.

**Fig. 5**

**Conventional sealing lip with straight edge**

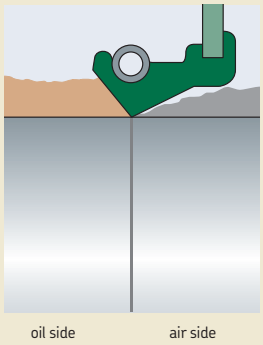
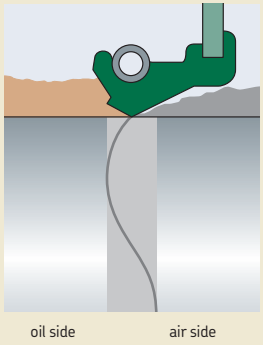



**Fig. 6**

**SKF WAVE sealing lip with sinusoidal sealing lip edge**



As a consequence, SKF WAVE seals produce up to 20% less friction resulting in up to 30% lower temperatures than conventional lip designs (→ **diagrams 1** and **2**). Reduced friction and the sinusoidal path of the sealing lips help prevent the formation of deep tracks in the counterface, resulting in significantly extended service life. SKF WAVE seals are recommended where demands for operational reliability and long service life for machines and equipment are high.

SKF seals with conventional spring-loaded sealing lips meet general demands because they are able to provide efficient sealing even under unfavourable operating conditions. To improve sealing performance, some SKF radial shaft seals are designed with hydrodynamic features on the sealing lip. These have either a right-hand twist for shafts that rotate clockwise, or a left-hand twist for shafts that rotate counterclockwise as seen from the air side. The degree to which the hydrodynamic feature improves the sealing ability depends on the form of the spiral flutes, the circumferential speed, the pressure conditions and the media being sealed. See also paragraph *Oil retention* on **page 18**.

## Auxiliary lips

SKF radial shaft seals can also be designed with an auxiliary lip for increased protection against contaminants (→ **fig. 3** on **page 52**). These auxiliary lips are either contacting or non-contacting. Seal designs that incorporate contacting auxiliary lips are used in heavily contaminated environments, with the drawback, however, of creating increased friction and elevated underlip temperatures. The auxiliary lip of HMSA10 and CRWA1/CRWHA1 seals is non-contacting, which means that these designs normally can be used at the same speeds as the single-lip designs HMS5 and CRW1/CRWH1.

**Diagram 1**

**Temperature rise at sealing lip/counterface contact for conventional and SKF WAVE lips as a function of rotational speed for a 76 mm diameter shaft with SAE 30 engine oil**

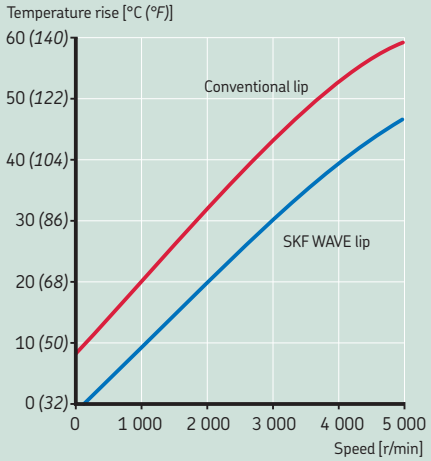
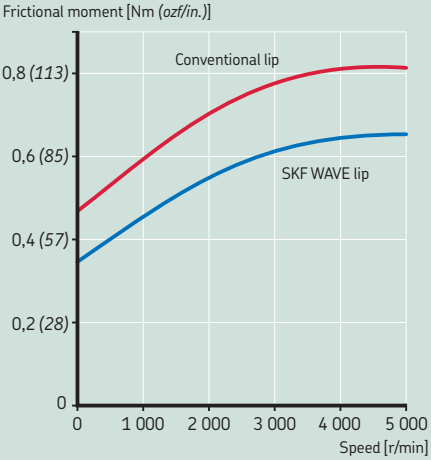



**Diagram 2**

**Frictional moment at sealing lip/counterface contact for conventional and SKF WAVE lips as a function of rotational speed for a 76 mm diameter shaft with SAE 30 engine oil**



# Coaxiality and runout

Deviation from coaxiality and dynamic runout of the shaft are two of many operating parameters that affect seal performance and service life. They should therefore be kept within narrow limits, particularly when there is a pressure differential across the seal. The total deviation should never exceed 1,3 times the value of the permissible deviation from coaxiality.

## Coaxiality

Deviations from coaxiality, i.e. the difference between the centre lines of the shaft and housing bore (shaft -to-bore misalignment, STBM), cause force to be distributed irregularly on the sealing lip (→ **fig. 7**). This means that one section of the sealing lip will be subjected to more force, causing an enlargement of the contact area between lip and counterface surface, whereas the opposite section will be correspondingly unloaded and its sealing effect reduced. Guideline values for the permissible coaxiality deviations for SKF seals can be obtained from **diagram 3** on **page 60**.



Fig. 7

**Coaxiality**

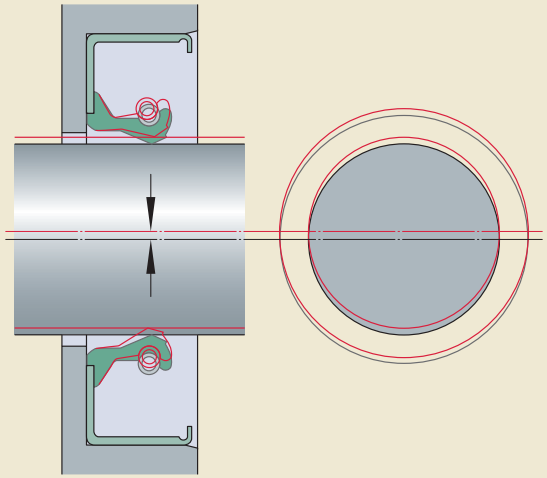
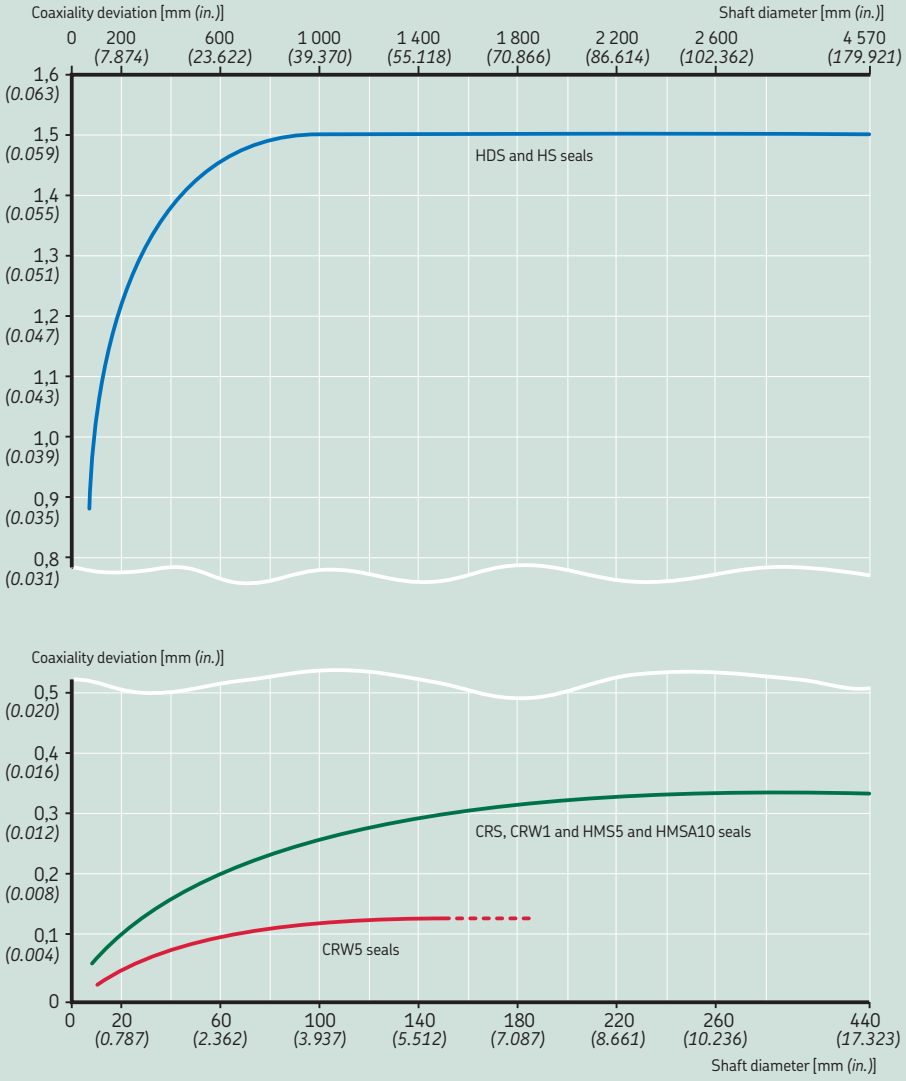


**Diagram 3**

**Maximum permissible deviation from coaxiality as a function of shaft diameter**



## Runout

Runout (or dynamic runout, DRO) describes the dynamic eccentricity of the shaft. Particularly at high speeds, there is a risk that the sealing lip, because of its inertia, will not be able to follow the shaft surface (→ **fig. 8**). If the eccentricity is such that the distance between the sealing lip and shaft becomes larger than that required to maintain a hydrodynamic lubricant film, the medium to be sealed will escape through the gap. It is therefore advisable to arrange the seal in close proximity to the bearing and to keep bearing operating clearance to a minimum. Permissible runout values can be obtained from **diagram 4** on **page 62**. These values are normally lower for narrow seals.



Fig. 8

**Runout**

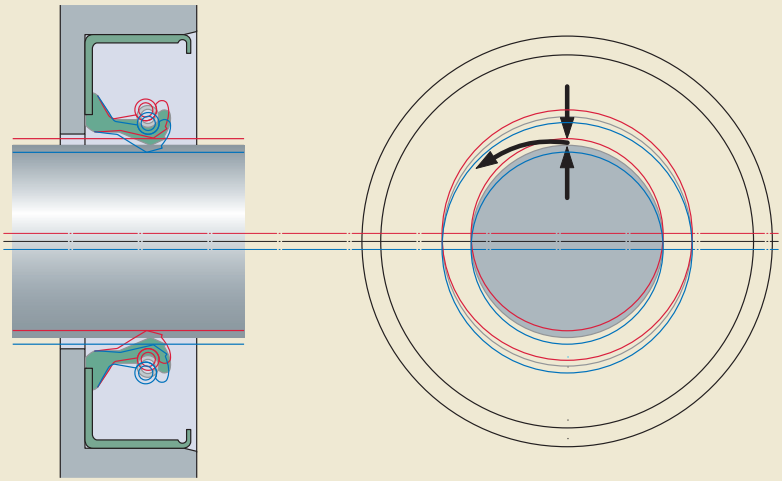
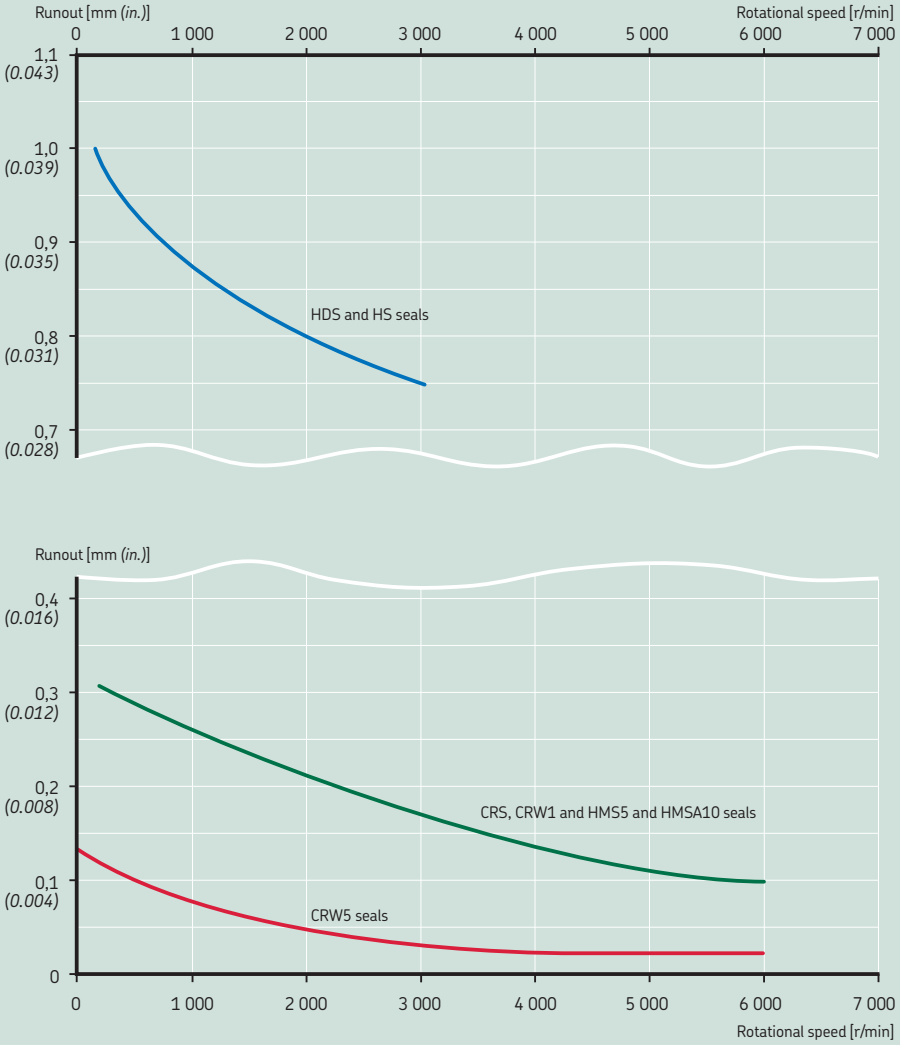


Diagram 4

**Maximum permissible runout as a function of rotational speed**



## Axial movement

Small movements of the shaft relative to the housing in the axial direction do not affect seal performance, provided that the total counterface surface meets the same demands relative to hardness, accuracy and surface finish.

## Permissible speeds

Guideline values for the permissible rotational and circumferential speeds for different seal designs are provided in the seal selection charts (**matrix 2** on **pages 202** to **205**). If the circumferential speeds provided in the matrix are not sufficient for a particular sealing position, **diagram 5** from DIN 3760 on **page 64** may be used. The diagram lists circumferential and rotational speeds related to the material of the sealing lip. The values are valid for spring-loaded sealing lips that are well-lubricated by a mineral oil, where adequate lubricant supply prevents heat build-up and where the pressure is the same on both sides of the seal (pressure differential = 0).

**Diagram 5** shows that large diameter shafts can accommodate higher circumferential speeds than shafts with smaller diameters. This is because the cross section of the shaft does not increase linearly with the increase in diameter but by the square of the increase in diameter. Therefore, the heat dissipation of a large shaft is much better than that of a small shaft.

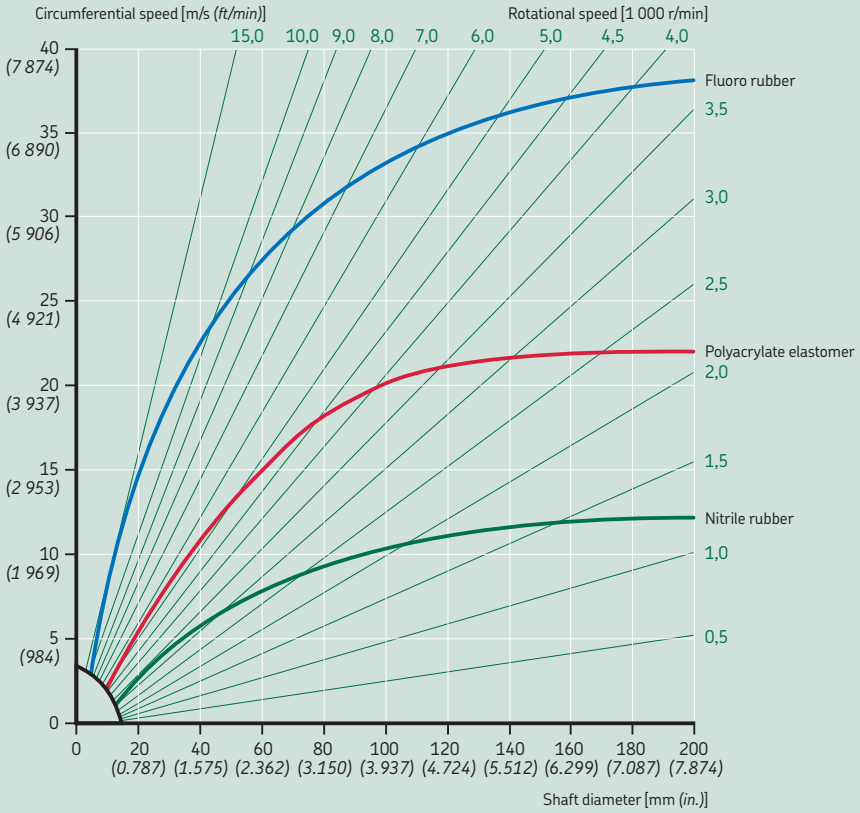
Generally, SKF WAVE seals can be operated at higher circumferential speeds than those obtained from **diagram 5** because of the hydrodynamic form of the lip.

The values obtained from **diagram 5** should be reduced if:

- radial shaft seals with an auxiliary, contacting lip are used
- lubrication is inadequate or grease lubrication is used, i.e. when underlip temperatures increase due to poor heat dissipation
- the counterface does not meet surface finish or running accuracy requirements
- there is a pressure differential across the seal

Diagram 5

**Permissible speeds for spring-loaded sealing lips where no pressure differential exists across seal in operation**
For permissible speeds for seals at shaft diameters > 200 mm, refer to seal selection chart starting on **page 92**.




Source: DIN standard 3760

# Lubrication

For a radial shaft seal to seal efficiently over a long period, the sealing lip must be lubricated. This reduces friction and wear to the sealing lip and shaft. Dry running of sealing lips made of standard materials should always be avoided. To prevent dry running, coat the counterface surface with a suitable lubricant prior to seal installation.

The lubricant must not only lubricate the sealing lip to reduce friction and wear, but also dissipate heat generated by the seal. To promote heat dissipation, a sufficient quantity of lubricant must be able to reach the sealing lip from start-up.

Some rolling bearings, such as angular contact ball bearings, tapered roller bearings and spherical roller thrust bearings, as well as gears, create a pumping action by virtue of their design. This means that the sealing lip can either be starved of lubricant, or subjected to excessive quantities of lubricant. In either case, steps must be taken during the design stage to make sure that the proper amount of lubricant reaches the sealing lip, as too much or too little can affect seal performance.

To prevent lubricant starvation, lubrication ducts can be provided. If the seal is subjected to excessive amounts of lubricant, a flinger can be installed between the bearing and seal.

In applications where the sealing lip is not exposed to a lubricant, for example when two seals are installed in tandem, grease or oil must be supplied separately to provide lip lubrication. In some cases, it may be sufficient to provide an initial grease fill between the two lips.

## Lubrication of paired arrangements

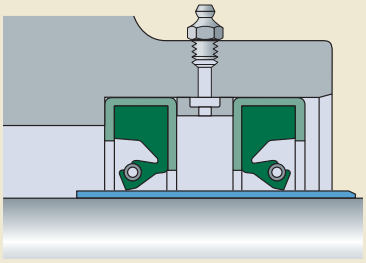
When two radial shaft seals are installed back-to-back or in tandem, the space between the seals should be filled with a suitable lubricant to eliminate the risk of the sealing lip running dry.

To further prevent dry running, a spacing washer between the seals can also be used. This spacing washer should be provided with lubrication holes or an annular groove and lubrication holes so that grease can be supplied to the space between the seals via a grease fitting (→ **fig. 9**).



**Fig. 9**

**Lubrication of a paired arrangement**



# Friction

To be effective, the lip of a radial shaft seal must always exert a certain radial load on the counterface. The friction resulting from this radial load is only part of the total contact friction and power loss at the sealing position. Other contributing factors include:

- type of medium being sealed
- pressure differential across the seal
- circumferential speed
- ambient temperature
- lubricant and lubrication method
- condition of the counterface

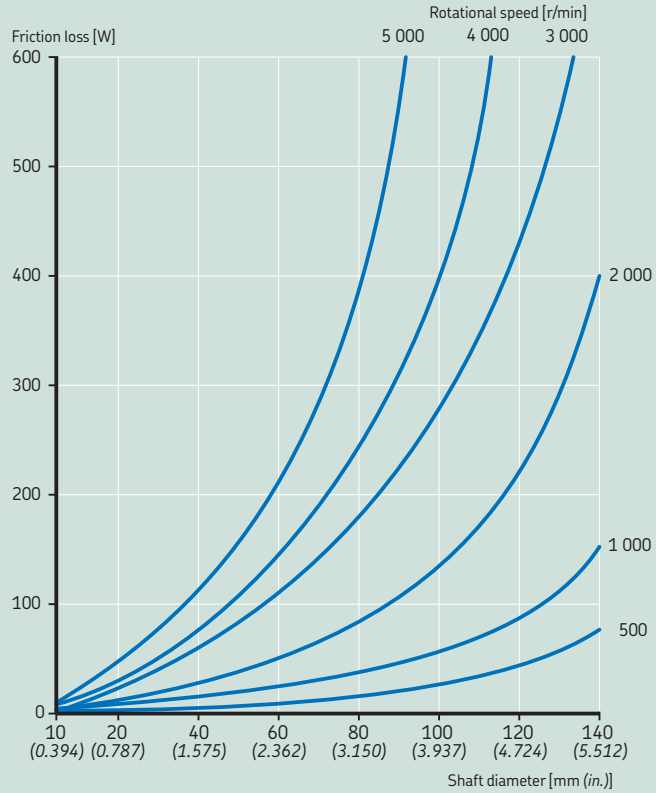
**Diagram 6** provides an indication of the friction losses that may be expected when a radial shaft seal with a conventional sealing lip is properly installed and fully lubricated.

The running-in phase of the sealing lip lasts a few hours. During this time, the friction losses are somewhat higher than during normal operation.

Seals intended for applications with high pressure differentials typically have greater losses than specified in the diagram. SKF WAVE seals, on the other hand, typically have losses lower than those indicated in the diagram.

**Diagram 6**

**Friction losses of radial shaft seals as a function of rotational speed and shaft diameter**



# Chemical and thermal resistance

The most important factor when selecting the appropriate elastomer for a radial shaft seal is its chemical resistance to the medium to be sealed or excluded. The operating temperature is another important factor. Heat accelerates ageing of the elastomer and increases the reactivity and aggressiveness of the sealed medium.

Radial shaft seals are mainly used to seal lubricating oils and greases as well as hydraulic fluids (including non-flammable fluids). Guideline values are provided in **table 4** on **page 68** for the permissible operating temperatures, i.e. temperatures at which the SKF seals are still chemically resistant. The temperature range stated for a group of media means that the sealing material is resistant when continuously operated within this particular range.

The □ means that, within the group, there are some media that are compatible with the elastomer, but also some that have a detrimental effect on the elastomer.

The ■ means that the seal material is not resistant to media belonging to this group.

For the resistance of seal materials to media not listed in **table 4** on **page 68**, refer to the section *Chemical resistance* (→ **page 35**) or contact SKF.

Table 4

**Chemical and thermal resistance, radial shaft seal lip materials**

| Medium to be sealed | | Permissible operating temperatures (continuous) for SKF radial shaft seal lip materials[1] | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|
| | | R (NBR) | | P (ACM) | | S (MVQ) | | V (FKM) | |
| – | | °C | *°F* | °C | *°F* | °C | *°F* | °C | *°F* |
| **Mineral oil based lubricants** | | | | | | | | | |
| Motor oils | | 100 | *210* | 130 | *270* | 150 | *300* | 170 | *340* |
| Gear oils | | 80 | *175* | 120 | *250* | 130 | *250* | 150 | *300* |
| Hypoid gear oils | | 80 | *175* | 120 | *250* | ■ | | 150 | *300* |
| Automatic transmission fluids (ATF oils) | | 100 | *210* | 130 | *270* | □ | | 170 | *340* |
| Greases | | 90 | *195* | □ | | □ | | □ | |
| Hydraulic fluids | | 90 | *195* | 120 | *250* | □ | | 150 | *300* |
| **Fire resistant hydraulic fluids** | | | | | | | | | |
| Oil in water emulsions and aqueous polymer solutions | | 70 | *160* | ■ | | 60 | *140* | □ | |
| Anhydrous fluids | | ■ | | ■ | | ■ | | 150 | *300* |
| **Other media** | | | | | | | | | |
| Fuel oils EL and L | | 90 | *195* | □ | | ■ | | □ | |
| Water | | 90 | *195* | ■ | | ■ | | 100 | *210* |
| Alkaline washing solutions | | 90 | *195* | ■ | | ■ | | 100 | *210* |
| **Permissible temperature range** | | | | | | | | | |
| for sealing lip | min: | –40 | *–40* | –40 | *–40* | –60 | *–75* | –40 | *–40* |
| | max: | +100 | *+210* | +150 | *+300* | +160 | *+320* | +200 | *+390* |

■ Lip material not resistant
□ Lip material not resistant to some media in this group

[1] R = nitrile rubber
P = polyacrylate elastomer
S = silicone rubber
V = fluoro rubber

# Seals under pressure

When a seal is exposed to pressure, the radial load of the sealing lip increases. This in turn increases the actual sealing lip/shaft contact area, resulting in additional friction and elevated underlip temperatures. Therefore, the guideline values for speeds provided in **diagram 5** on **page 64** do not apply.

**Diagram 7** shows an example of lip distortion of a conventional sealing lip design as sump pressure increases, resulting in reduced seal service life.

SKF CRW5 and CRWA5 pressure profile seals (→ **fig. 10**) are designed to withstand pressure differentials of 0,34 MPa *(50 psi)* at speeds up to 5 m/s *(1 000 ft/min)*.

When there is a pressure differential across the seal, a shoulder or retaining ring should be used at the low-pressure side of the seal to prevent it from being pressed out of the housing bore (→ **fig. 11**).

**Fig. 10**

**Pressure profile seals**

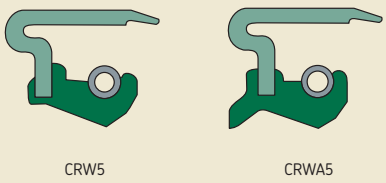



**Fig. 11**

**CRWA5 seal**

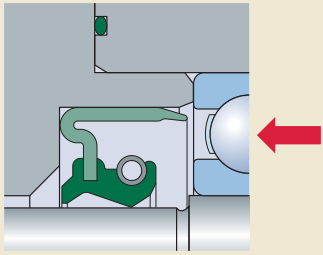
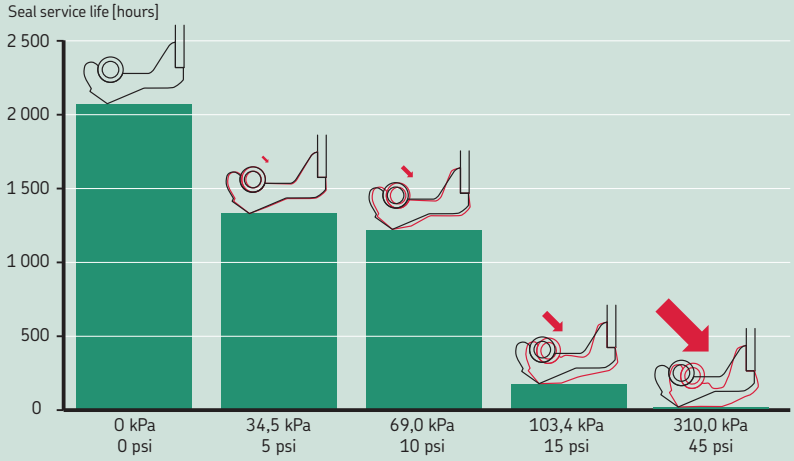


**Diagram 7**

**Seals under pressure**
Example of conventional sealing lip distortion as sump pressure increases, resulting in reduced seal service life.



# Shaft requirements

## General

To achieve reliable sealing performance and maximum service life, the counterface for a radial shaft seal should meet the requirements outlined below. The seal counterface must be able to accommodate all permissible deviations and movements – surface SL and an additional surface SL' – which may be required in the case of repairs or inspection (→ **fig. 12**).

In cases where a shaft cannot be machined to meet the requirements, SKF recommends the use of SKF SPEEDI-SLEEVE or a wear sleeve for heavy industrial applications (LDSLV). Detailed information about sleeves is provided in the chapter *Wear sleeves* starting on **page 331**.

## Tolerances

The diameter of the shaft $d_1$ at the counterface should be machined to the tolerances provided in **table 6** for metric shafts and **table 7** for inch-size shafts.

Out-of-roundness must be less than 0,005 mm *(0.0002 in.)* at a maximum of 2 lobes or less than 0,0025 mm *(0.0001 in.)* at a maximum of 7 lobes.

If components with an interference fit will pass over the counterface during installation, the shaft diameter should be reduced by 0,2 mm *(0.008 in.)*. The seal that was originally chosen can still be used without adversely affecting seal performance.

## Surface roughness

The surface roughness values of the counterface for radial shaft seals, calculated according to methods described in ISO 4288 (DIN 4768), should be kept within the limits specified in RMA OS-1-1 (→ **table 5**).

The lower value for $R_a$ is a minimum value. Using a lower value will adversely affect the lubricant supply to the sealing lip. The temperature rise caused by inadequate lubrication, particularly at high circumferential speeds, can lead to hardening and cracking of the sealing lip which will eventually lead to premature seal failure. If the counterface is too rough, there will be

Fig. 12

**Counterface for radial shaft seals**

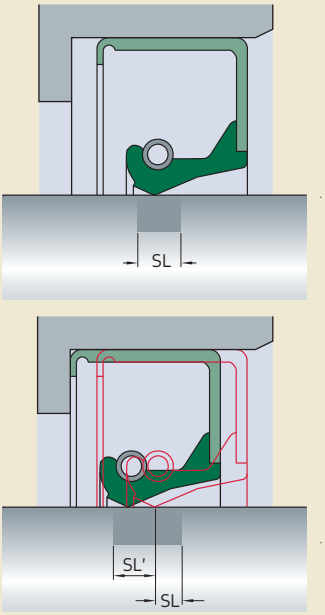



Table 5

**Recommended shaft surface roughness values**

| | ISO | | DIN | | RMA | |
|---|---|---|---|---|---|---|
| | µm | *µin.* | µm | *µin.* | µm | *µin.* |
| $R_a$ | 0,2–0,5 | *8–20* | 0,2–0,8 | *8–32* | 0,2–0,43 | *8–17* |
| $R_z$ | 1,2–3 | *48–120* | 1–5 | *40–200* | 1,65–2,9 | *65–115* |
| $R_{pm}$ | N/A | *N/A* | N/A | *N/A* | 0,5–1,5 | *20–50* |

Table 6

**Counterface tolerances for metric shafts**

| **Shaft diameter** Nominal $d_1$ over | incl. | **Diameter tolerance (ISO h11)**[1] Deviation high | low |
|---|---|---|---|
| mm | | µm | |
| **6** | **10** | 0 | –90 |
| **10** | **18** | 0 | –110 |
| **18** | **30** | 0 | –130 |
| **30** | **50** | 0 | –160 |
| **50** | **80** | 0 | –190 |
| **80** | **120** | 0 | –220 |
| **120** | **180** | 0 | –250 |
| **180** | **250** | 0 | –290 |
| **250** | **315** | 0 | –320 |
| **315** | **400** | 0 | –360 |
| **400** | **500** | 0 | –400 |
| **500** | **630** | 0 | –440 |
| **630** | **800** | 0 | –500 |
| **800** | **1 000** | 0 | –560 |
| **1 000** | **1 250** | 0 | –660 |
| **1 250** | **1 600** | 0 | –780 |
| **1 600** | **2 000** | 0 | –920 |
| **2 000** | **2 500** | 0 | –1 100 |
| **2 500** | **3 150** | 0 | –1 350 |
| **3 150** | **4 000** | 0 | –1 650 |
| **4 000** | **5 000** | 0 | –2 000 |

[1] For shaft diameters of 3 150 mm and above, refer to DIN 7172.

Table 7

**Counterface tolerances for inch-size shafts**

| **Shaft diameter** Nominal $d_1$ over | incl. | **Diameter tolerance (RMA 0S-4)** Deviation high | low |
|---|---|---|---|
| in. | | in. | |
| | **4** | +0.003 | –0.003 |
| **4** | **6** | +0.004 | –0.004 |
| **6** | **10** | +0.005 | –0.005 |
| **10** | | +0.006 | –0.006 |

excessive sealing lip wear and seal service life will be shortened. If the value $R_{pm}$ is exceeded, the seal will leak or excessive sealing lip wear may occur.

## Surface finish

Depending on the direction of rotation, directionality on the seal counterface may cause a seal to leak. Plunge grinding is the preferred machining method to minimize directionality (0±0,05°) on the seal counterface. When plunge grinding, whole number ratios of the grinding wheel speed to the work piece speed should be avoided. Run the grinding wheel until it "sparks out" completely, i.e. until there are no more sparks flying from the wheel, to ensure that all lead is removed. The grinding wheel should be dressed using a cluster head dressing tool and the smallest possible lateral feed, or a profile dressing roll without lateral feed. The negative influence of directionality in any particular case can only be ascertained by test running under conditions of alternating rotation.

The seal counterface surface should be free of any damage, scratches, cracks, rust or burrs and should be properly protected until final installation.

## Hardness and surface treatment

The surface hardness of the seal counterface should be at least 30 HRC (58 HRC for PTFE lip seals). If the counterface surface could be damaged during transport or installation, this value should be increased to 45 HRC (62 HRC for PTFE lip seals). Under certain conditions, where speeds are low, lubrication is good and contaminants are absent, counterface surfaces having a lower hardness may be suitable. Surfaces that are nitrided, phosphated or have a galvanized coating may also be suitable, but this must be determined for each specific case.

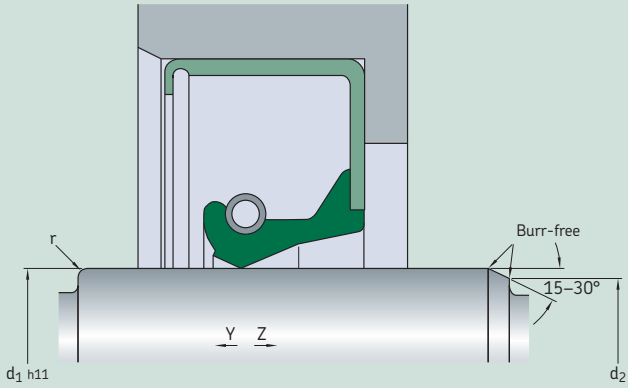
## Lead-in chamfers

To install radial shaft seals without damaging the sealing lip, SKF recommends chamfering or rounding the shaft ends or shoulders (→ **table 8**).

If the direction of installation is Z, the values provided in **table 8** should be adhered to. If the direction of installation is Y, the shaft end should be rounded or chamfered.

To install a seal over a shaft shoulder or end that has not been rounded or chamfered, SKF recommends using an installation sleeve. See section *Seal installation, heavy industrial applications* on **page 79**.

**Lead-in chamfers and radii**




| **Shaft diameter** Nominal $d_1$ over | incl. | over | incl. | **Diameter difference**[1] $d_1 - d_2$ min | | **Radii** Seal without auxiliary lip r min | | Seal with auxiliary lip r min | |
|---|---|---|---|---|---|---|---|---|---|
| mm | | *in.* | | mm | *in.* | mm | *in.* | mm | *in.* |
| | **10** | | *0.394* | 1,5 | *0.059* | 0,6 | *0.024* | 1 | *0.039* |
| **10** | **20** | *0.394* | *0.787* | 2 | *0.079* | 0,6 | *0.024* | 1 | *0.039* |
| **20** | **30** | *0.787* | *1.181* | 2,5 | *0.098* | 0,6 | *0.024* | 1 | *0.039* |
| **30** | **40** | *1.181* | *1.575* | 3 | *0.118* | 0,6 | *0.024* | 1 | *0.039* |
| **40** | **50** | *1.575* | *1.968* | 3,5 | *0.138* | 0,6 | *0.024* | 1 | *0.039* |
| **50** | **70** | *1.968* | *2.756* | 4 | *0.157* | 0,6 | *0.024* | 1 | *0.039* |
| **70** | **95** | *2.756* | *3.740* | 4,5 | *0.177* | 0,6 | *0.024* | 1 | *0.039* |
| **95** | **130** | *3.740* | *5.118* | 5,5 | *0.216* | 1 | *0.039* | 2 | *0.079* |
| **130** | **240** | *5.118* | *9.449* | 7 | *0.276* | 1 | *0.039* | 2 | *0.079* |
| **240** | **500** | *9.449* | *19.685* | 11 | *0.433* | 2 | *0.079* | 3 | *0.118* |
| **500** | | *19.685* | | 13 | *0.512* | 5 | *0.197* | 5 | *0.197* |

[1] If the corner is blended rather than chamfered, the blended section should not be smaller than the difference in diameters $d_1 - d_2$.

# Housing bore requirements

## General

To reduce the risk of seal damage during installation, the housing bore should have a 15 to 30° lead-in chamfer. The chamfer should be free of burrs and the transition radius r between the seal seat and shoulder should be in accordance with the recommendations in **table 9**.

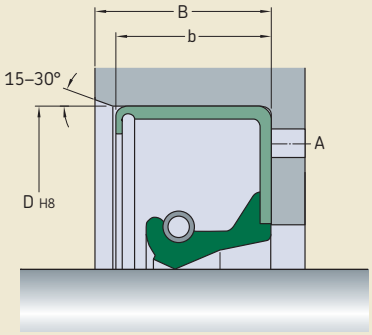
The depth of a metric housing bore B for metal-cased or metal-inserted seals should be at least 0,3 mm *(0.012 in.)* larger than the nominal seal width b (→ **fig. 13**). The corresponding values for an inch housing bore B are 0.016 in. *(0,4 mm)*.

Seals without metal reinforcement are manufactured oversized relative to the housing bore diameter and depth to enable proper compression and stability. The actual seal width is approximately 0,4 to 0,8 mm *(0.016 to 0.032 in.)* wider than the bore depth B. For all-rubber HS seals, the bore depth tolerance should be ±0,13 mm *(0.005 in.)* and ±0,10 mm *(0.004 in.)* for fabric-reinforced HSF seals.

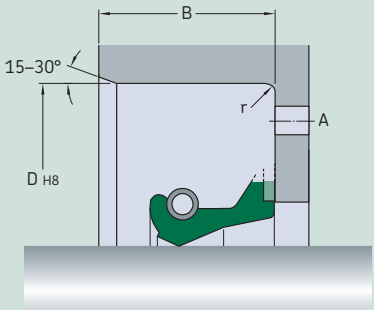
In order to facilitate seal removal, holes in the housing shoulder A can be incorporated during the design stage. See the illustration in **table 9**.

**Fig. 13**

**Housing bore requirements**



## Housing bore tolerances




### Housing bore for metric seals (ISO)

| Nominal diameter D over | incl. | Housing bore tolerance (ISO tolerance H8) high | low | Fillet radii r max |
|---|---|---|---|---|
| mm | | µm | | mm |
| | **3** | +14 | 0 | 0,3 |
| **3** | **6** | +18 | 0 | 0,3 |
| **6** | **10** | +22 | 0 | 0,3 |
| **10** | **18** | +27 | 0 | 0,3 |
| **18** | **30** | +33 | 0 | 0,3 |
| **30** | **50** | +39 | 0 | 0,3 |
| **50** | **80** | +46 | 0 | 0,4 |
| **80** | **120** | +54 | 0 | 0,8 |
| **120** | **180** | +63 | 0 | 0,8 |
| **180** | **250** | +72 | 0 | 0,8 |
| **250** | **315** | +81 | 0 | 0,8 |
| **315** | **400** | +89 | 0 | 0,8 |
| **400** | **500** | +97 | 0 | 0,8 |
| **500** | **630** | +110 | 0 | 0,8 |
| **630** | **800** | +125 | 0 | 0,8 |
| **800** | **1 000** | +140 | 0 | 0,8 |
| **1 000** | **1 250** | +165 | 0 | 0,8 |
| **1 250** | **1 600** | +195 | 0 | 0,8 |
| **1 600** | **2 000** | +230 | 0 | 0,8 |
| **2 000** | **2 500** | +280 | 0 | 0,8 |
| **2 500** | **3 150** | +330 | 0 | 0,8 |
| **3 150**[1] | **4 000** | +410 | 0 | 0,8 |
| **4 000**[1] | **5 000** | +500 | 0 | 0,8 |

### Housing bore for inch-size seals (RMA)

| Nominal diameter D over | incl. | Housing bore tolerance high | low | Fillet radii r max |
|---|---|---|---|---|
| in. | | in. | | in. |
| | **3.000** | +0.001 | –0.001 | 0.031 |
| **3.000** | **7.000** | +0.0015 | –0.0015 | 0.031 |
| **7.000** | **10.000** | +0.002 | –0.002 | 0.031 |
| **10.000**[2] | **12.000** | +0.002 | –0.002 | 0.031 |
| **12.000**[2] | **20.000** | +0.003 | –0.003 | 0.031 |
| **20.000**[2] | **40.000** | +0.004 | –0.004 | 0.031 |
| **40.000**[2] | **60.000** | +0.006 | –0.006 | 0.031 |

[1] SKF recommended bore specifications not covered in ISO 286-2
[2] SKF recommended bore specifications not covered in RMA OS-4

## Tolerances

The housing bore diameter D should be machined to tolerance H8 (→ **table 9** on **page 75**). Depending on the operating conditions, out-of-roundness should be 1 to 2 tolerance grades better than H8.

## Surface roughness

The surface roughness (to ISO 4288 or DIN 4768) of the housing bore should be kept within the limits specified in **table 10**.

**Table 10**

**Recommended housing bore surface roughness values**

| | **ISO**[1] | | **DIN** | | **RMA**[2][3] | |
|---|---|---|---|---|---|---|
| | µm | *µin.* | µm | *µin.* | µm | *µin.* |
| $R_a$ | 1,6–3,2 | *64–128* | 1,6–3,2 | *64–128* | 1–2,5 | *40–100* |
| $R_z$ | 6,3–12,5 | *252–500* | 10–20 | 400–800 | N/A | *N/A* |
| $R_{max}$ | N/A | *N/A* | 25 | *1 000* | N/A | *N/A* |

1) ISO – The housing bore surface roughness may require lower values when metal-cased seals are used, in which case they should be subject to agreement between the manufacturer and user.
2) RMA – If the bore surface texture is greater than 2,5 µm *(100 µin.)* $R_a$, a sealant should be used.
3) RMA – Turned bores, where a lubricant head of up to 0,20 bar *(3.0 psi)* is present at the seal. If this texture is maintained and tool removal marks or bore defects are present, no outside diameter leakage should occur.

# Seal installation, general industrial applications

## General

To provide effective sealing, radial shaft seals must be installed properly. An experienced installer with suitable tools, working in a clean environment, is recommended to provide proper installation. The shaft counterface surface and housing bore should meet the demands specified under *Shaft requirements* and *Housing bore requirements* on **pages 70** to**76**.

To facilitate seal installation and to achieve initial lubrication, prior to installation, SKF recommends wiping the shaft and seal with the lubricant that is going to be retained. While the outside diameter of metal-cased seals can be lightly lubricated to ease installation, the outside diameter of rubber covered seals should always be lubricated.

Seals with an auxiliary, contacting lip can also be filled with grease between the sealing lip and auxiliary lip to reduce frictional moment. This does not apply to silicone rubber seals and seals with hydrodynamic features, other than SKF WAVE lip designs.

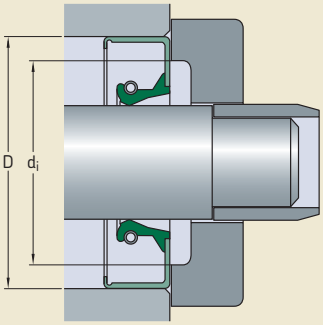
SKF also recommends using a hydraulic press, with suitable tools, to install a seal in its housing bore. Pressure should be applied as close as possible to the outside diameter of the seal.

Seals that are designed to sit flush with the wall of the housing bore must be installed perpendicular to the housing bore axis. The outside diameter of the tool should be larger than the housing bore diameter (→ **fig. 14**).

When pressing seals up against a shoulder or retaining ring, it is advisable to use tools of the type shown in **figs. 15** and **16**. The necessary ring dimensions can be supplied on request.

**Fig. 14**

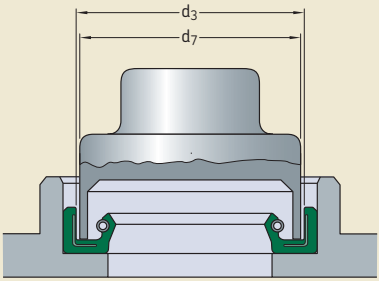
**Preferred installation method**




$d_i \approx D - 6$ mm

**Fig. 15**

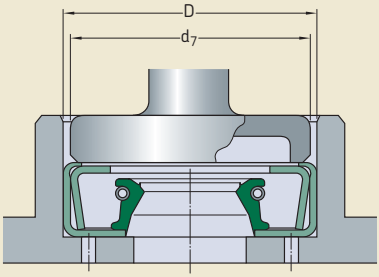
**Alternative installation method**




$d_7 = d_3 - 0{,}5$ mm

**Fig. 16**

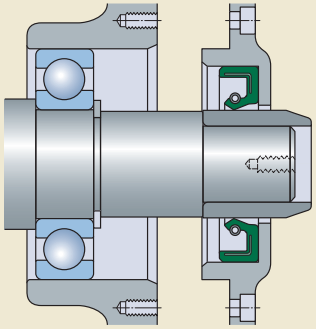
**Alternative installation method**




$d_7 = D - 0{,}5$ mm

Fig. 17

Installation sleeve



When installing seals on stepped shafts, where the shoulders do not have the recommended chamfer or rounded transition, an installation sleeve as shown in **fig. 17** must be used. If the sealing lip has to pass over grooves, threads or gearing, thin-walled installation sleeves, like those shown in **fig. 18**, can be used to prevent the lip from being damaged. The outside surface of the sleeve should be coated with the same lubricant that is used to lubricate the seal and counterface surface.

Radial shaft seals made of silicone rubber should always be installed using an installation sleeve.

The tools used to install a seal at a certain distance in a cylindrical opening in a housing are shown in **figs. 19** and **20**. Instructions for designing the tools can be supplied on request.

Fig. 18

Thin-walled installation sleeve

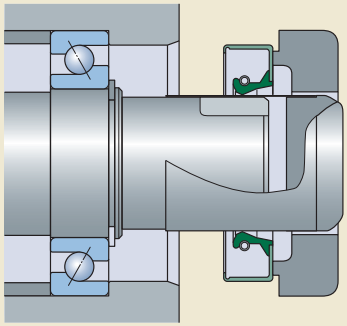
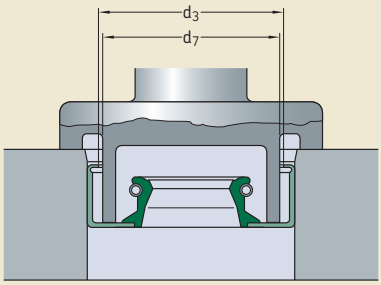





Fig. 19

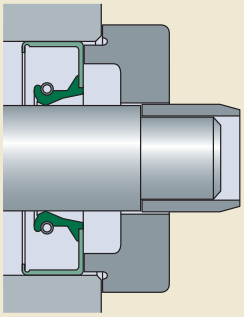
Installation in a cylindrical opening




$d_7 = d_3 - 0{,}5$ mm

Fig. 20

Installation in a cylindrical opening



# Seal installation, heavy industrial applications

## Metal-reinforced seals

When installing metal-reinforced seals, the first step is to check the shaft and housing bore for proper specifications and condition. Next, coat both the seal and bore lightly with a lubricant, preferably the same one that will be used to lubricate the application. For large diameter seals, a special installation tool may not be practical. In these cases, do not hit the seal or seal case directly. Instead, use a wooden block, long enough to span the seal's outside diameter. When using this method, it is important to apply hammer-blows evenly and sequentially to the wood piece around the seal circumference to prevent the seal from tilting or skewing. SKF also recommends the use of a dead blow hammer for full energy transfer with less impact (→ **fig. 21**).

In some applications, the housing is designed for two seals in tandem, or a seal might have to be recessed further into the bore depth. In those cases, first set the seal flush with the housing using the method described above. Then, use a shorter piece of wood to drive the seal deeper into the bore utilizing a sequential pattern (→ **fig. 22**).

**Fig. 21**

**Use a dead blow hammer**

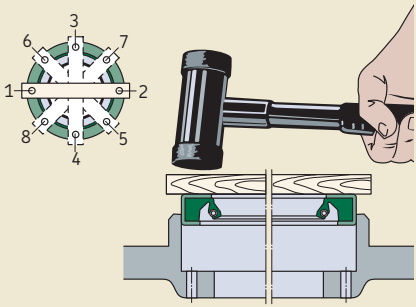
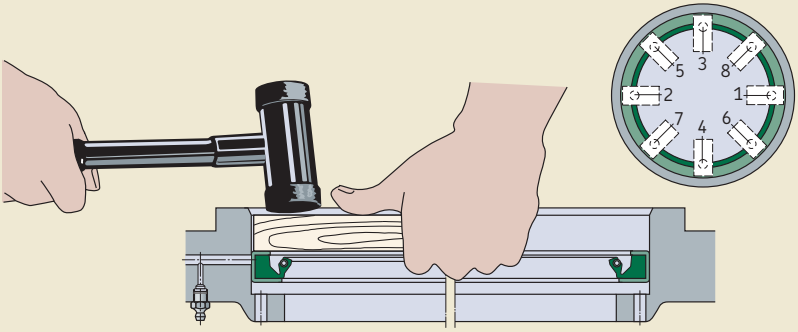



**Fig. 22**

**Installation deeper into the bore**



## Seals without metal reinforcement

Be sure that the shaft surface and housing bore are clean and that they meet the specifications listed in *Shaft requirements* and *Housing bore requirements* on **pages 70** to **76**. Special care must be taken to avoid nicks and burrs on the shaft and to make sure that the spring is retained in the spring groove.

HS seals are installed differently depending on whether their main purpose in a specific application is to retain lubricant or to exclude contaminants (→ **fig. 23**).

## Split seals

Where appropriate, insert the spring in the SKF Springlock groove and position the spring connection, so that it is displaced with regard to the seal joint (→ **A** in **fig. 24**). This is standard with all HS8 seals. Put the seal in the correct position on the shaft.

Lightly coat both the seal and counterface surface with a lubricant, preferably the same lubricant that will be used to lubricate the application (**B**).

Join the ends of the garter spring by using the spring connector (**C**).

For threaded connectors, back-wind the spring a couple of turns before the ends are brought together and allowed to thread into each other. When using a hook-and-eye connector, draw the ends of the spring together and insert the hook into the eye, taking care not to over-stretch the spring in the process, as this might impair seal performance. When using a control-wire connector, draw the seal ends together and insert the control wire into the centre of the spring coil.

Position the seal joint on the shaft so that it is at the 12 o'clock position and push both ends of the joint into the housing bore (**D**). Do not push only one joint and then work around the shaft as this will create an excess length, making installation difficult or impossible.

Continue at the 3 and 9 o'clock positions, push the rest of the seal into position (**E**) and finish simultaneously at the 6 and 12 o'clock positions. For shaft diameters ≥ 1 200 mm (*47 in.*), it is advisable to fix the seal at the 12, 3, 6 and 9 o'clock positions before locating the remaining sections of the seal.

Use a small block of wood to push the seal in the housing bore until it contacts the housing shoulder (**E**).

Check the seal condition, particularly at the joint, to make sure that it has been positioned properly.

Install the cover plate (see paragraph *Cover plates* on **page 82**) on the housing face. Tighten the bolts evenly until the end cover abuts the housing face (**F** and **G**).

Fig. 23

**Ways of installing HS seals**

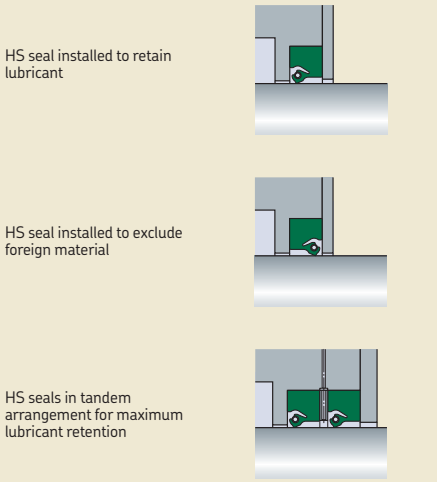
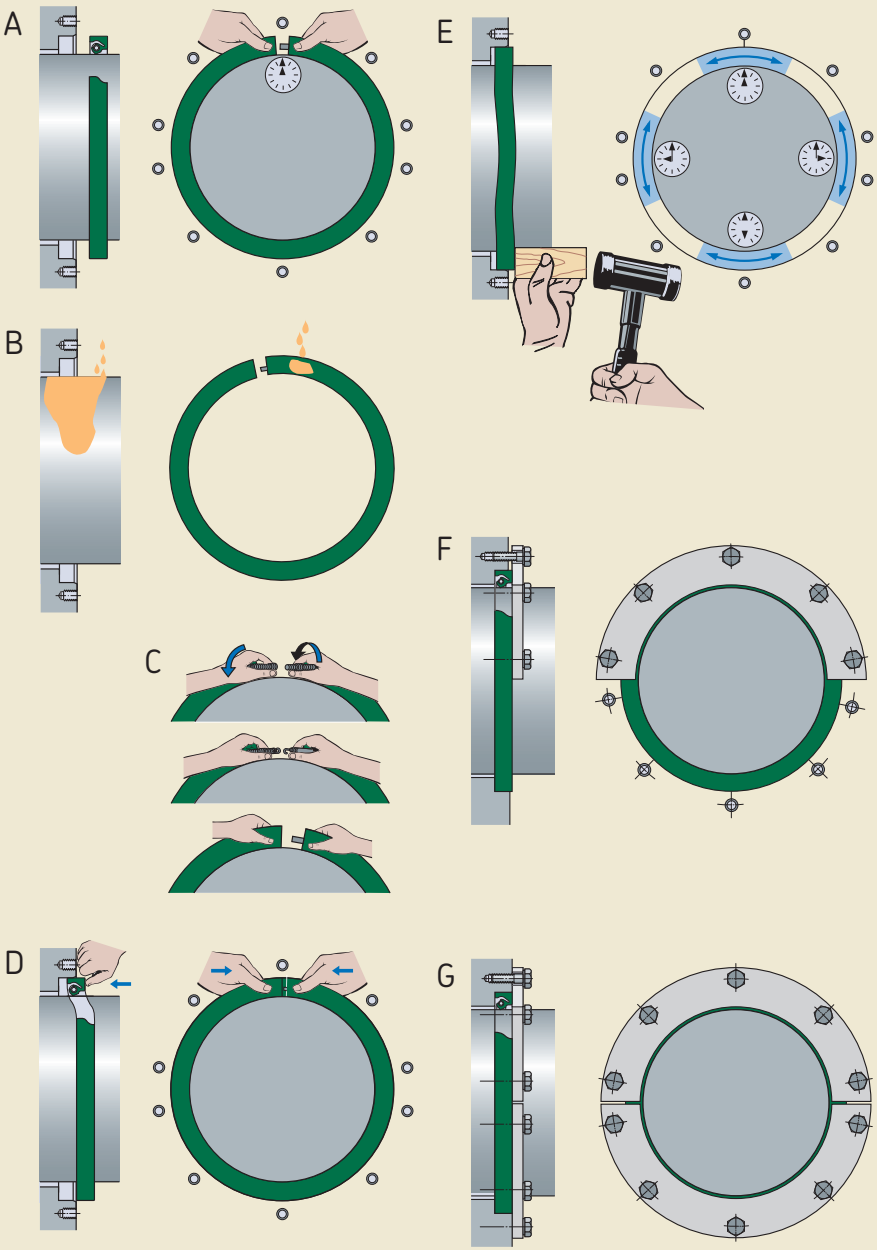


Fig. 24

**Installing a split seal**



## Cover plates

All HS and HSF seals, split and solid, are manufactured oversized relative to the housing bore diameter and depth to enable proper compression and stability. A cover plate (→ **fig. 25**) provides axial compression of the seal and stabilizes it in the housing bore to achieve maximum seal performance. The cover plate must be dimensioned properly to obtain the required fit. It should be thick enough not to bend or distort. Generally, a thickness of 6,35 to 12,7 mm *(0.25 to 0.50 in.)* is sufficient.

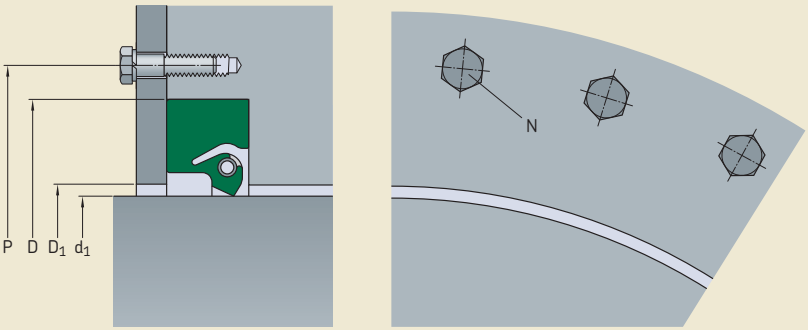
The plate should be fastened with bolts, no more than 150 mm *(6 in.)* apart, on a bolt circle located as close to the seal housing bore as practical. The cover plate should be flat and the housing bore depth uniform. Splitting the cover plate at 180° will make seal replacement easier, particularly in confined areas.

To block surges of lubricant toward the seal from the inside and to protect the seal from damage from the outside, SKF recommends dimensioning the inside diameter of the cover plate so that it is approximately 6,35 mm *(0.25 in.)* greater than the shaft diameter to accommodate shaft-to-bore misalignment and runout.

In applications where supplementary sealing is necessary, and it is impractical to machine the original housing to provide a seal cavity, a seal cavity can be incorporated into a new plate that is bolted into place as illustrated in **fig. 26**.

Fig. 25

**Cover plate recommendations**




| | |
|---|---|
| Inside diameter of cover: | $D_1 \approx d_1 + 6 .. 8$ [mm] |
| Pitch circle diameter of screws: | $P \approx 1{,}1\ D$ [mm] |
| No. of attachment screws: | $N \approx 0{,}02\ P$ |

## Multiple HS seal installations

When installing two split all-rubber HS seals in one cavity, the locations of the split joints should be staggered by 30° to 60° to minimize the risk of leakage through the joints. The splits should be located toward the top of the bore. Grease the cavity between the seals to provide lubricant to the outer sealing lip.

When two HS seals, split or solid, are installed in the same housing bore, a spacing washer must be placed between the two seals (→ **fig. 27**). Suitable washer dimensions can be determined based on the shaft and housing bore diameters, $d_1$ and D, respectively:

washer inside diameter
= $d_1$ + 6 to 10 mm *(0.25 to 0.4 in.)*

washer outside diameter
= D – 0,5 to 1,5 mm *(0.02 to 0.06 in.)*

The width of the washer is determined by the application conditions. There should, however, always be sufficient room for lubrication holes to be provided in the circumference, or lubrication grooves in one side face (→ **fig. 28**). These lubrication provisions must enable grease to be supplied from the housing to the sealing lips via a drilled passage or grease fitting (→ **fig. 29** on **page 84**). When determining what washer width is appropriate for the depth of a housing bore, it is necessary to consider the axial displacement required when clamping the seals.

**Fig. 26**

**Cover plate**

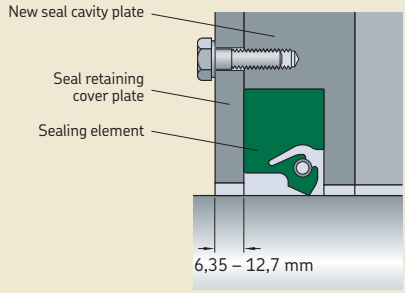



**Fig. 27**

**Spacing washer**

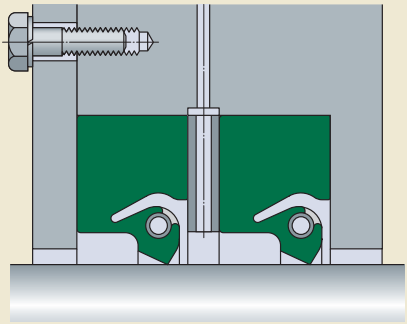
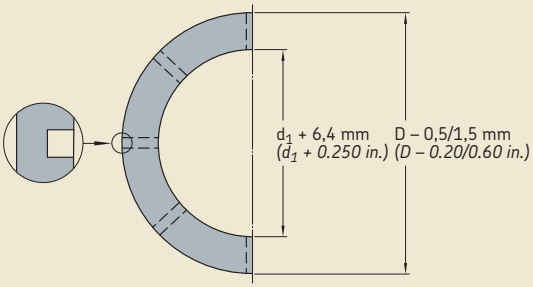


**Fig. 28**

**Details of spacing washer for central lubrication**
A separator between two seals can be a slotted washer to promote distribution of the lubricant.



## Multiple HDS seal installations

When installing two metal-cased radial shaft seals in the same housing bore, either in a tandem or back-to-back arrangement, care must be taken that neither of the sealing lips can run dry at any time. To reduce the risk of dry running, the space between the seals should be filled with a suitable grease.

To avoid dry running, SKF recommends using spacer lugs or a spacing washer between the two seals. The spacing washer should be provided with lubrication holes so that grease can be supplied to the space between the sealing lips via a grease fitting (→ **fig. 29**). No spacing washer is required when using seals that have spacer lugs built into the air side of the metal case (→ **fig. 30**). HDSD and HDSE seals can be supplied from SKF with holes pre-drilled in the metal case to mate with corresponding passages in the housing bore.

Fig. 29

Spacing washer and grease fitting

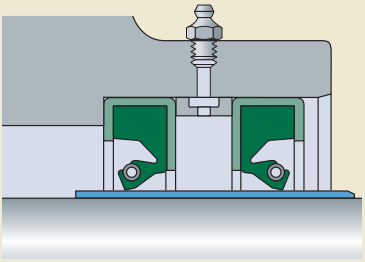
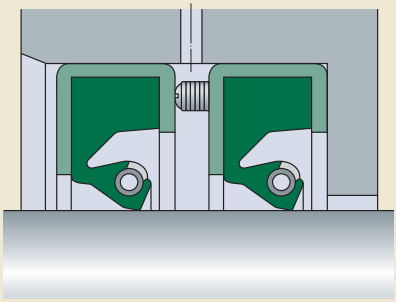


Fig. 30

Spacer lug



## PTFE seals

In most cases, small diameter PTFE seals are shipped on a tube that maintains a nominal seal inside diameter (smaller than shaft diameter) during storage. Therefore, they should not be removed from the shipping tube until immediately prior to installation. Also, if quality inspections must be done, SKF recommends that the shipping tube remains in place. The seal inside diameter cannot be accurately measured anyway after manufacturing as the PTFE lip configuration changes over time as it relaxes.

PTFE formulations used for radial lip seals are generally more aggressive and abrasive to the shaft than standard elastomeric materials. Therefore, PTFE sealing lips require a surface hardness value of 58 to 62 HRC. An alternative to a hardened shaft surface is the use of an SKF wear sleeve, manufactured to the same high standards such as the inner rings of SKF needle roller bearings, offering an excellent sealing surface.

In applications where PTFE seals will be retaining a lubricant or be fully flooded with a fluid, the seals should be installed dry. In applications that run dry or will be starved for lubrication, the sealing lip should be pre-lubricated with a grease appropriate for the temperature conditions of the application.

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

### Installation procedure

PTFE lips do not have the same elastic properties as rubber lips, which makes them more susceptible to damage. Therefore, special care must be taken during installation and handling to prevent damage and help ensure proper operation and function. Shaft features such as keyways and splines, as well as drill holes, ports and sharp-edged shaft steps have the potential to damage PTFE lips. Whenever possible, these obstructions can be covered by using thin-walled installation tools made from plastic or metal.

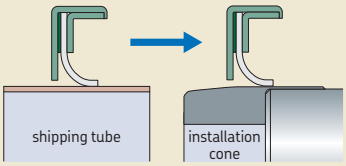
PTFE lip orientation during installation will determine the installation method. Installation is more difficult when the shaft is installed against the PTFE lip (→ **fig. 31**, **a** and **c**). This type of installation becomes even more complicated when the hardware is difficult to access or visually obstructed and may not be possible if an installation tool cannot be used. In any case, when the shaft is installed against the PTFE lip, SKF recommends the use of an installation cone or "bullet". SKF can quote and manufacture installation cones if detailed drawings of the shaft and sealing areas are provided. In lieu of installation cones, longer than normal lead-in chamfers on the shaft would be required. However, shaft features that could damage the seal (keyways, etc.) must still be covered, possibly with tape.

If the shaft is installed with the PTFE lip, a smooth, burr-free radius or chamfer on the shaft end is all that is required, provided that no damaging shaft features are present as noted above (→ **fig. 31**, **b** and **d**).

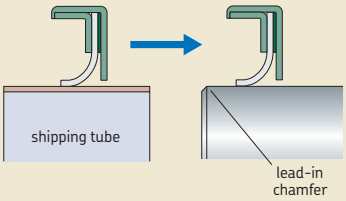
Some seals have two PTFE lips facing opposite directions. In this case, installation is always against one of the lips and an installation cone is recommended.

**Fig. 31**

**Seals with a PTFE sealing lip**

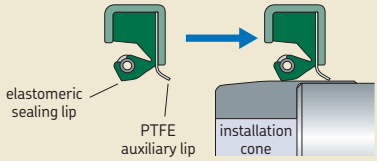



a) Installation against the PTFE lip

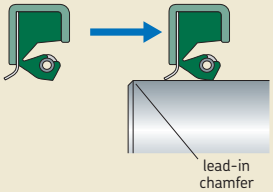



b) Installation with the PTFE lip

**Seals with an elastomeric sealing lip and a PTFE auxilary lip**




c) Installation against the PTFE lip




d) Installation with the PTFE lip

## Protecting the counterface surface against corrosion

The seal counterface surface should be protected from corrosion until the machine is operational. Be sure to use a rust inhibitor that will last for a year, whether or not the shaft is exposed.

The protective coating should be soluble in the medium to be retained and must not cause any chemical separation as this can impair the sealing performance.

When machines are transported, stored under unfavourable conditions, or out of service for extended periods, special rust inhibitors should be used. These rust inhibitors should form a tough, pliable waxy film that can be removed using neutral solvents that leave an oily residue.

## Removal

Because radial shaft seals should never be re-used, there is no need to worry about damaging the seal when removing it. However, prior to removal, it is advisable to note the direction in which the seal is installed so that the replacement seal can be installed in the same direction. Small seals can generally be removed using a screwdriver. The removal of large-size seals is made easier if holes have been provided in the housing shoulder (A), see picture in **table 9**, **page 75**, allowing access for a drift.

## Replacement

The lip of the replacement seal should not run on the same path as the lip of the old seal. There are several ways to achieve this:

- Rework or replace the counterface (this may entail removing the shaft).
- Install a wear sleeve.
- Install a spacing ring in the housing bore between the housing shoulder and the seal (→ **fig. 32**).
- Press the new seal to a different depth in a cylindrical opening in the housing, i.e. toward the medium to be sealed.

When choosing a replacement seal, be sure that its design and material correspond to the original seal. In case of doubt, select a seal that meets the operating conditions of the application, and that the seal materials are compatible with the lubricant.

Seals made from a different material should only be used when absolutely necessary. In these cases, the recommendations provided in **table 11** should be followed. The order in which the materials are listed is an indication of their suitability.

If a seal of the same design is not available in the same width as the original, then a somewhat narrower seal can be selected as the replacement.

**Fig. 32**

**Spacing ring**

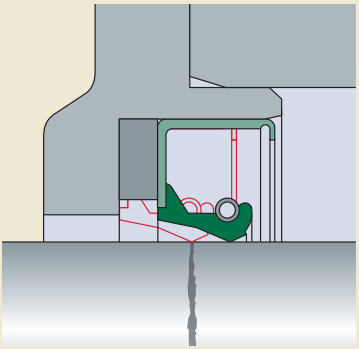


**Table 11**

**Replacement sealing lip materials**

| Original | Replacement |
|---|---|
| Felt | Nitrile rubber<br>Polyacrylate elastomer<br>Fluoro rubber |
| Leather | Nitrile rubber<br>Fluoro rubber |
| Nitrile rubber | Polyacrylate elastomer<br>Fluoro rubber<br>Silicone rubber |
| Polyacrylate elastomer | Fluoro rubber<br>Silicone rubber |
| Silicone rubber | Fluoro rubber |

# Designation system

## Metric radial shaft seals

Designations of all SKF metric radial shaft seals are prefixed by the letters CR, followed by the shaft diameter, housing bore diameter and nominal seal width (bore depth for HSF and HS seals) in millimetres, design and the code of the sealing lip material (→ **table 12**).

## Inch-size radial shaft seals

Inch-size SKF radial shaft seals are identified by their stock number that consists of four to seven digits, prefixed by the letters CR. The stock number provides an indication of seal size.

Four-figure numbers are used for radial shaft seals for

| | |
|---|---|
| shaft diameters: | $d_1 \leq 1$ in., e.g. |
| CR 3680 | $d_1 = 0.375$ in. |

Five-figure numbers are used for radial shaft seals for

| | |
|---|---|
| shaft diameters: | $d_1 \leq 10$ in., e.g. |
| CR 41287 | $d_1 = 4.125$ in. |
| CR 97545 | $d_1 = 9.750$ in. |

Six- and seven-figure numbers are used for radial shaft seals for

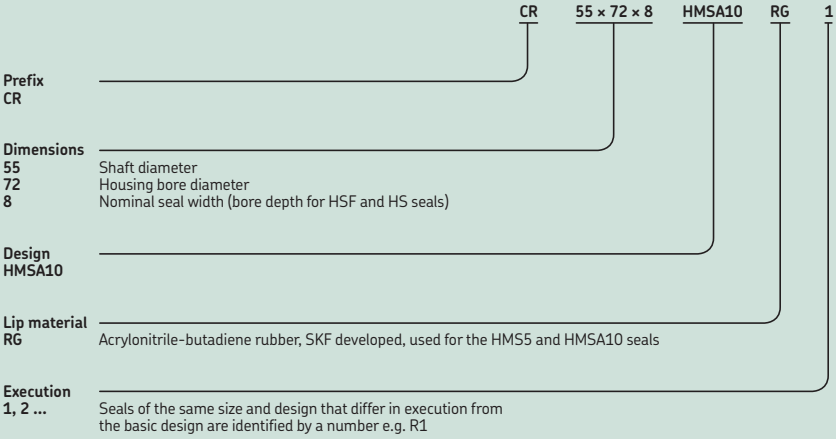
| | |
|---|---|
| shaft diameters: | $d_1 \geq 10$ in., e.g. |
| CR 120061 | $d_1 = 12$ in. |
| CR 1375242 | $d_1 = 13.75$ in. |

# Assortment and availability

The SKF assortment of radial shaft seals comprises some 200 designs and executions for applications within basically all industries. The radial shaft seals described in this publication belong to the standard range and most of them are available in both metric and inch sizes. New seal designs and sizes are continually added. For additional information, contact SKF.

Table 12

**Designation system for metric radial shaft seals**



**Seals for general industrial applications, selected main designs**

RG, R Nitrile rubber
V Fluoro rubber
T Polytetrafluoroethylene (PTFE)

| Seal designs | | | Design<br>Outside diameter<br>Configuration | Material code | Sealing lip<br>Configuration | Material code | Auxiliary lip<br>A = Contacting<br>B = Non-contacting |
|---|---|---|---|---|---|---|---|
| | | | – | | | | |
|  HMS5 |  HMSA10 | | Rubber | RG, V | Straight | RG<br>V | B (HMSA10) |
|  HMS4 |  HMSA7 | | Rubber | R, V | Straight | R<br>V | B (HMSA7) |
|  CRW1 |  CRWH1 | | Metal | N/A | SKF WAVE | R<br>V | N/A |
|  CRWA1 |  CRWHA1 | | Metal | N/A | SKF WAVE | R<br>V | B |
|  CRW5 |  CRWA5 | | Metal | N/A | SKF WAVE | R<br>V | A (CRWA5) |
|  CRS1 |  CRSH1 | | Metal | N/A | Straight | R<br>V | N/A |
|  CRSA1 |  CRSHA1 | | Metal | N/A | Straight | R<br>V | A |
|  HM14 | | | Metal | N/A | Straight | R<br>V | N/A |
|  X15 | | | Rubber | R | Special | R | N/A |
|  SL |  SLX |  SLS | Metal | N/A | Special | T | N/A |
|  SLA |  DL |  DLA | Metal | N/A | Special | T | A (SLA, DLA) |
|  YSLE |  YNSLE |  YSL | Fluoroplastic/<br>(rubber) | T (+ R, V) | Special | T | N/A |

* PTFE designs are made to order to handle temperatures, pressures and speeds that may exceed those stated for rubber sealing lip designs.

| Operating temperature range | | | | Shaft-to-bore misalignment (STBM) TIR | | Dynamic runout (DRO) TIR | | Pressure differential | | Maximum shaft surface speed | |
|---|---|---|---|---|---|---|---|---|---|---|---|
| from | to | from | to | | | | | | | | |
| °C | | *°F* | | mm | *in.* | mm | *in.* | MPa | *psi* | m/s | *ft/min* |
| –40<br>–40 | 100<br>200 | *–40*<br>*–40* | *210*<br>*390* | 0,38 | *0.015* | 0,51 | *0.020* | 0,03 | *5* | 14,00 | *2 755* |
| –40<br>–40 | 100<br>200 | *–40*<br>*–40* | *210*<br>*390* | 0,38 | *0.015* | 0,51 | *0.020* | 0,03 | *5* | 14,00 | *2 755* |
| –40<br>–40 | 100<br>200 | *–40*<br>*–40* | *210*<br>*390* | 0,38 | *0.015* | 0,51 | *0.020* | 0,07 | *10* | 18 | *3 600* |
| –40<br>–40 | 100<br>200 | *–40*<br>*–40* | *210*<br>*390* | 0,38 | *0.015* | 0,51 | *0.020* | 0,07 | *10* | 18 | *3 600* |
| –40<br>–40 | 100<br>200 | *–40*<br>*–40* | *210*<br>*390* | 0,13 | *0.005* | 0,13 | *0.005* | 0,35 | *50* | 10 | *2 000* |
| –40<br>–40 | 100<br>200 | *–40*<br>*–40* | *210*<br>*390* | 0,38 | *0.015* | 0,51 | *0.020* | 0,07 | *10* | 18 | *3 600* |
| –40<br>–40 | 100<br>200 | *–40*<br>*–40* | *210*<br>*390* | 0,38 | *0.015* | 0,51 | *0.020* | 0,07 | *10* | 18 | *3 600* |
| –40<br>–40 | 100<br>200 | *–40*<br>*–40* | *210*<br>*390* | 0,13 | *0.005* | 0,08 | *0.003* | 0,07 | *10* | 10 | *2 000* |
| –40 | 100 | *–40* | *210* | 0,38 | *0.015* | 0,25 | *0.010* | 0,02 | *3* | 2,54 | *500* |
| –70 | 250 | *–95* | *480* | * | * | * | * | * | * | * | * |
| –70 | 250 | *–95* | *480* | * | * | * | * | * | * | * | * |
| –70 | 250 | *–95* | *480* | * | * | * | * | * | * | * | * |

# Seals for general industrial applications







## HMS5 and HMSA10 seals

### Main features

SKF metric rubber outside diameter radial shaft seals, HMS5 and HMSA10, are designed in accordance with ISO 6194-1 and DIN 3760 for use in a wide range of industrial applications. The available size range of HMS5 and HMSA10 seals includes a full coverage of the ISO 6194-1 and DIN 3760 dimensions for shaft diameters up to 250 mm *(9.842 in.)* as well as an extensive range of dimensions commonly used in the market. New dimensions are continually added. Main features include:

- optimized sealing lip material
- spring-loaded sealing lip
- optimally balanced sealing lip and flex section
- beaded outside diameter
- auxiliary lip (HMSA10 seals only)

### Design

The rubber outside diameter provides optimized sealing ability in the housing, also at considerable surface roughness or in split housings. The beads on the outside diameter provide improved sealing ability and retention in the bore. They also prevent spring-back during installation.

The spring-loaded sealing lip contributes to a quick response in handling dynamic runout and maintaining the sealing performance, even when sealing lip wear is excessive.

Sealing lip and flex section are optimally balanced to withstand both high dynamic runout and shaft-to-bore misalignment.

The auxiliary lip on HMSA10 seals is non-contacting, which means that the seals normally can operate at the same speeds as the single-lip HMS5 seals.

### Material

The optimized nitrile rubber compound used for the HMS5 and HSMA10 seals has the designation suffix RG. The compound is the result of long experience and the latest findings from the SKF seal material developments. Advantages of this material include:

- good resistance to ageing
- very good compatibility with synthetic oils
- very good pumping ability
- good wear resistance

Pumping ability is defined as the time it takes for the seal to return a certain amount of oil from the air side to the oil side. The microstructure of SKF's RG nitrile rubber compound promotes rapid pumping of the oil, (→ **table 13**). In **diagram 8**, results from endurance tests show the extended service life of seals made of the optimized nitrile compound.

The complete range of HMS5 and HMSA10 seals is also available in a fluoro rubber compound with a stainless steel garter spring. This rubber compound has the designation suffix V and is used in applications where temperatures exceed the limits of nitrile rubber.

## Applications and operating conditions

HMS5 and HMSA10 seals are designed for oil or grease lubricated applications with operating temperatures ranging from –40 to +100 °C *(–40 to +210 °F)*, short-term up to 120 °C *(250 °F)*. These seals are also appropriate for sealing lubricants within a wide range of viscosities.

Circumferential speed: up to 14 m/s *(2 755 ft/min)*
Operating pressure: max 0,03 MPa *(5 psi)*

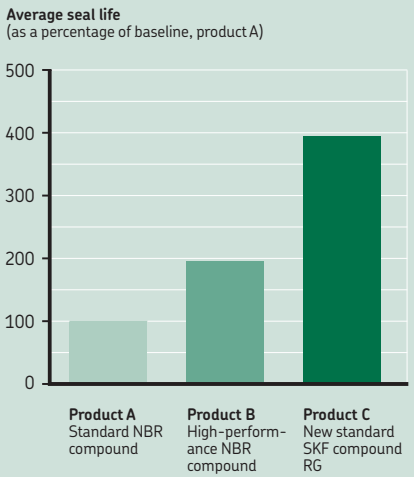
These values are the maximum value for each service condition and should not occur together. Consideration should be given as to how the operating conditions affect each other.

**Table 13**

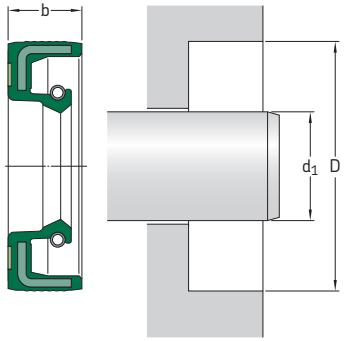
| **Speed** Rotating | Circum-ferential | **Pumping time** Standard NBR | SKF compound RG |
|---|---|---|---|
| r/min | m/s | s | |
| **1 000** | 3,1 | – | 117 |
| **1 500** | 4,7 | 280 | 69 |
| **2 000** | 6,3 | 186 | 50 |
| **2 500** | 7,9 | 130 | 40 |
| **3 000** | 9,4 | 102 | 31 |
| **3 500** | 11,0 | 82 | 25 |
| **4 000** | 12,6 | 68 | 21 |
| **4 500** | 14,1 | 57 | 18 |

Shaft diameter 60 mm, engine oil SAE 30

**Diagram 8**



## Radial shaft seals – HMS5 and HMSA10
$d_1$ **6 – 30** mm




[1] Designation to be followed by the design and material codes, indicating one of the four variants available for each dimension:

**HMS5 RG** without auxiliary lip, nitrile rubber
**HMS5 V** without auxiliary lip, fluoro rubber
**HMSA10 RG** with auxiliary lip, nitrile rubber
**HMSA10 V** with auxiliary lip, fluoro rubber
Example: **CR 6×16×5 HMSA10 RG**

[2] Design execution differs from the basic design and is indicated by a number, see also **page 89**.

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55 3291 5372

Please see **pages 74** to **76** for housing bore requirements.

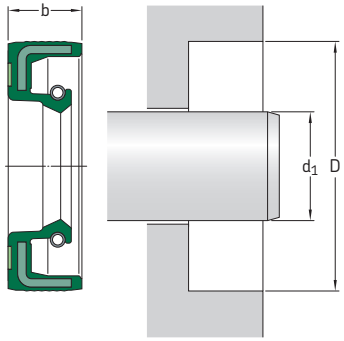
| Dimensions | | | Designation[1] | ISO/DIN |
|---|---|---|---|---|
| Shaft $d_1$ | Bore D | Nominal seal width b | | |
| mm | | | – | – |
| **6** | 16 | 5 | **CR 6×16×5** | |
| | 16 | 7 | **CR 6×16×7** | • |
| | 22 | 7 | **CR 6×22×7** | • |
| **7** | 16 | 7 | **CR 7×16×7**[2] | |
| | 22 | 7 | **CR 7×22×7** | • |
| **8** | 18 | 5 | **CR 8×18×5** | |
| | 18 | 7 | **CR 8×18×7** | |
| | 22 | 7 | **CR 8×22×7** | • |
| | 24 | 7 | **CR 8×24×7** | • |
| **9** | 22 | 7 | **CR 9×22×7** | • |
| **10** | 19 | 7 | **CR 10×19×7**[2] | |
| | 20 | 6 | **CR 10×20×6** | |
| | 20 | 7 | **CR 10×20×7** | |
| | 22 | 7 | **CR 10×22×7** | • |
| | 24 | 7 | **CR 10×24×7** | |
| | 25 | 7 | **CR 10×25×7** | • |
| | 26 | 7 | **CR 10×26×7** | • |
| **12** | 19 | 5 | **CR 12×19×5**[2] | |
| | 22 | 5 | **CR 12×22×5** | |
| | 22 | 6 | **CR 12×22×6** | |
| | 22 | 7 | **CR 12×22×7** | • |
| | 24 | 7 | **CR 12×24×7** | • |
| | 25 | 7 | **CR 12×25×7** | • |
| | 28 | 7 | **CR 12×28×7** | |
| | 30 | 7 | **CR 12×30×7** | • |
| | 32 | 7 | **CR 12×32×7** | |
| **13** | 26 | 7 | **CR 13×26×7** | |
| **14** | 24 | 7 | **CR 14×24×7** | • |
| | 25 | 5 | **CR 14×25×5** | |
| | 28 | 7 | **CR 14×28×7** | |
| | 30 | 7 | **CR 14×30×7** | • |

| Dimensions | | | Designation[1] | ISO/DIN |
|---|---|---|---|---|
| Shaft $d_1$ | Bore D | Nominal seal width b | | |
| mm | | | – | – |
| **15** | 24 | 7 | **CR 15×24×7**[2] | |
| | 25 | 5 | **CR 15×25×5** | |
| | 25 | 6 | **CR 15×25×6** | |
| | 26 | 7 | **CR 15×26×7** | • |
| | 30 | 7 | **CR 15×30×7** | • |
| | 32 | 7 | **CR 15×32×7** | |
| | 35 | 7 | **CR 15×35×7** | • |
| | 40 | 10 | **CR 15×40×10** | |
| **16** | 24 | 7 | **CR 16×24×7**[2] | |
| | 28 | 7 | **CR 16×28×7** | |
| | 30 | 7 | **CR 16×30×7** | • |
| | 32 | 7 | **CR 16×32×7** | |
| | 35 | 7 | **CR 16×35×7** | • |
| **17** | 28 | 7 | **CR 17×28×7** | |
| | 29 | 5 | **CR 17×29×5** | |
| | 30 | 7 | **CR 17×30×7** | |
| | 32 | 7 | **CR 17×32×7** | |
| | 35 | 7 | **CR 17×35×7** | |
| | 40 | 7 | **CR 17×40×7** | |
| | 40 | 10 | **CR 17×40×10** | |
| **18** | 28 | 7 | **CR 18×28×7** | |
| | 30 | 6 | **CR 18×30×6** | |
| | 30 | 7 | **CR 18×30×7** | • |
| | 32 | 7 | **CR 18×32×7** | |
| | 35 | 7 | **CR 18×35×7** | • |
| | 40 | 7 | **CR 18×40×7** | |
| **19** | 30 | 7 | **CR 19×30×7** | |
| | 30 | 8 | **CR 19×30×8** | |
| | 32 | 7 | **CR 19×32×7** | |
| | 42 | 6 | **CR 19×42×6** | |

| Dimensions | | | Designation[1] | ISO/DIN |
|---|---|---|---|---|
| Shaft | Bore | Nominal seal width | | |
| $d_1$ | D | b | | |
| mm | | | – | – |
| **20** | 30 | 5 | **CR 20×30×5** | |
| | 30 | 7 | **CR 20×30×7** | • |
| | 32 | 6 | **CR 20×32×6** | |
| | 32 | 7 | **CR 20×32×7** | |
| | 34 | 7 | **CR 20×34×7** | |
| | 35 | 6 | **CR 20×35×6** | |
| | 35 | 7 | **CR 20×35×7** | • |
| | 35 | 8 | **CR 20×35×8** | |
| | 35 | 10 | **CR 20×35×10** | |
| | 36 | 7 | **CR 20×36×7** | |
| | 38 | 7 | **CR 20×38×7** | |
| | 40 | 7 | **CR 20×40×7** | • |
| | 40 | 10 | **CR 20×40×10** | |
| | 42 | 7 | **CR 20×42×7** | |
| | 42 | 10 | **CR 20×42×10** | |
| | 47 | 7 | **CR 20×47×7** | |
| | 47 | 10 | **CR 20×47×10** | |
| | 52 | 7 | **CR 20×52×7** | |
| | 52 | 10 | **CR 20×52×10** | |
| **21** | 35 | 7 | **CR 21×35×7** | |
| | 40 | 7 | **CR 21×40×7** | |
| **22** | 32 | 7 | **CR 22×32×7** | |
| | 35 | 7 | **CR 22×35×7** | • |
| | 36 | 7 | **CR 22×36×7** | |
| | 38 | 8 | **CR 22×38×8** | |
| | 40 | 7 | **CR 22×40×7** | • |
| | 40 | 10 | **CR 22×40×10** | |
| | 42 | 10 | **CR 22×42×10** | |
| | 47 | 7 | **CR 22×47×7** | • |
| **23** | 40 | 10 | **CR 23×40×10** | |
| **24** | 35 | 7 | **CR 24×35×7** | |
| | 37 | 7 | **CR 24×37×7** | |
| | 40 | 7 | **CR 24×40×7** | |
| | 42 | 8 | **CR 24×42×8** | |
| | 47 | 7 | **CR 24×47×7** | |
| **25** | 35 | 6 | **CR 25×35×6** | |
| | 35 | 7 | **CR 25×35×7** | • |
| | 37 | 5 | **CR 25×37×5** | |
| | 37 | 6 | **CR 25×37×6** | |
| | 37 | 7 | **CR 25×37×7** | |
| | 38 | 7 | **CR 25×38×7** | |
| | 40 | 5 | **CR 25×40×5** | |
| | 40 | 7 | **CR 25×40×7** | • |
| | 40 | 8 | **CR 25×40×8** | |
| | 40 | 10 | **CR 25×40×10** | |
| | 42 | 6 | **CR 25×42×6** | |
| | 42 | 7 | **CR 25×42×7** | |
| | 42 | 10 | **CR 25×42×10** | |
| | 45 | 7 | **CR 25×45×7** | |
| | 45 | 8 | **CR 25×45×8** | |
| | 45 | 10 | **CR 25×45×10** | |

| Dimensions | | | Designation[1] | ISO/DIN |
|---|---|---|---|---|
| Shaft | Bore | Nominal seal width | | |
| $d_1$ | D | b | | |
| mm | | | – | – |
| **25** | 46 | 7 | **CR 25×46×7** | |
| cont. | 47 | 7 | **CR 25×47×7** | • |
| | 47 | 10 | **CR 25×47×10** | |
| | 50 | 10 | **CR 25×50×10** | |
| | 52 | 7 | **CR 25×52×7** | • |
| | 52 | 8 | **CR 25×52×8** | |
| | 52 | 10 | **CR 25×52×10** | |
| | 62 | 7 | **CR 25×62×7** | |
| | 62 | 8 | **CR 25×62×8** | |
| | 62 | 10 | **CR 25×62×10** | |
| | 72 | 7 | **CR 25×72×7** | |
| **26** | 37 | 7 | **CR 26×37×7** | |
| | 38 | 5 | **CR 26×38×5** | |
| | 38 | 7 | **CR 26×38×7** | |
| | 42 | 7 | **CR 26×42×7** | |
| | 47 | 7 | **CR 26×47×7** | |
| **27** | 37 | 7 | **CR 27×37×7** | |
| | 42 | 10 | **CR 27×42×10** | |
| | 43 | 7 | **CR 27×43×7** | |
| | 47 | 10 | **CR 27×47×10** | |
| **28** | 38 | 7 | **CR 28×38×7** | |
| | 38 | 8 | **CR 28×38×8** | |
| | 40 | 7 | **CR 28×40×7** | • |
| | 40 | 8 | **CR 28×40×8** | |
| | 42 | 7 | **CR 28×42×7** | |
| | 42 | 8 | **CR 28×42×8** | |
| | 44 | 6 | **CR 28×44×6** | |
| | 45 | 8 | **CR 28×45×8** | |
| | 47 | 7 | **CR 28×47×7** | • |
| | 47 | 10 | **CR 28×47×10** | |
| | 52 | 7 | **CR 28×52×7** | • |
| | 52 | 10 | **CR 28×52×10** | |
| **30** | 40 | 7 | **CR 30×40×7** | • |
| | 42 | 6 | **CR 30×42×6** | |
| | 42 | 7 | **CR 30×42×7** | • |
| | 42 | 8 | **CR 30×42×8** | |
| | 44 | 7 | **CR 30×44×7** | |
| | 45 | 7 | **CR 30×45×7** | |
| | 45 | 8 | **CR 30×45×8** | |
| | 46 | 7 | **CR 30×46×7** | |
| | 47 | 6 | **CR 30×47×6** | |
| | 47 | 7 | **CR 30×47×7** | • |
| | 47 | 8 | **CR 30×47×8** | |
| | 47 | 10 | **CR 30×47×10** | |
| | 48 | 8 | **CR 30×48×8** | |
| | 50 | 7 | **CR 30×50×7** | |
| | 50 | 8 | **CR 30×50×8** | |
| | 50 | 10 | **CR 30×50×10** | |
| | 52 | 7 | **CR 30×52×7** | • |
| | 52 | 8 | **CR 30×52×8** | |
| | 52 | 10 | **CR 30×52×10** | |
| | 55 | 7 | **CR 30×55×7** | |
| | 55 | 10 | **CR 30×55×10** | |

# Radial shaft seals – HMS5 and HMSA10
$d_1$ **30 – 52** mm




[1] Designation to be followed by the design and material codes, indicating one of the four variants available for each dimension:

**HMS5 RG** without auxiliary lip, nitrile rubber
**HMS5 V** without auxiliary lip, fluoro rubber
**HMSA10 RG** with auxiliary lip, nitrile rubber
**HMSA10 V** with auxiliary lip, fluoro rubber
Example: **CR 6×16×5 HMSA10 RG**






Please see **pages 74** to **76** for housing bore requirements.

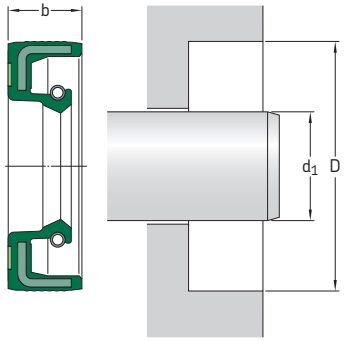
| Dimensions Shaft $d_1$ | Bore D | Nominal seal width b | Designation[1] | ISO/DIN |
|---|---|---|---|---|
| mm | | | – | – |
| **30** | 62 | 7 | **CR 30×62×7** | |
| cont. | 62 | 10 | **CR 30×62×10** | |
| | 72 | 10 | **CR 30×72×10** | |
| **32** | 42 | 7 | **CR 32×42×7** | |
| | 43 | 7 | **CR 32×43×7** | |
| | 44 | 7 | **CR 32×44×7** | |
| | 45 | 7 | **CR 32×45×7** | • |
| | 45 | 8 | **CR 32×45×8** | • |
| | 47 | 6 | **CR 32×47×6** | |
| | 47 | 7 | **CR 32×47×7** | • |
| | 47 | 8 | **CR 32×47×8** | • |
| | 47 | 10 | **CR 32×47×10** | |
| | 48 | 8 | **CR 32×48×8** | |
| | 50 | 8 | **CR 32×50×8** | |
| | 50 | 10 | **CR 32×50×10** | |
| | 52 | 7 | **CR 32×52×7** | • |
| | 52 | 8 | **CR 32×52×8** | • |
| | 55 | 10 | **CR 32×55×10** | |
| | 62 | 10 | **CR 32×62×10** | |
| | 72 | 7 | **CR 32×72×7** | |
| **33** | 45 | 7 | **CR 33×45×7** | |
| | 50 | 6 | **CR 33×50×6** | |
| **34** | 44 | 8 | **CR 34×44×8** | |
| | 48 | 8 | **CR 34×48×8** | |
| | 52 | 8 | **CR 34×52×8** | |
| | 62 | 10 | **CR 34×62×10** | |
| **35** | 45 | 7 | **CR 35×45×7** | |
| | 47 | 6 | **CR 35×47×6** | |
| | 47 | 7 | **CR 35×47×7** | • |
| | 47 | 8 | **CR 35×47×8** | • |
| | 48 | 8 | **CR 35×48×8** | |
| | 49 | 6 | **CR 35×49×6** | |

| Dimensions Shaft $d_1$ | Bore D | Nominal seal width b | Designation[1] | ISO/DIN |
|---|---|---|---|---|
| mm | | | – | – |
| **35** | 50 | 7 | **CR 35×50×7** | • |
| cont. | 50 | 8 | **CR 35×50×8** | • |
| | 50 | 10 | **CR 35×50×10** | |
| | 52 | 7 | **CR 35×52×7** | • |
| | 52 | 8 | **CR 35×52×8** | • |
| | 52 | 10 | **CR 35×52×10** | |
| | 55 | 7 | **CR 35×55×7** | • |
| | 55 | 8 | **CR 35×55×8** | • |
| | 55 | 10 | **CR 35×55×10** | |
| | 56 | 10 | **CR 35×56×10** | |
| | 58 | 10 | **CR 35×58×10** | |
| | 60 | 10 | **CR 35×60×10** | |
| | 62 | 7 | **CR 35×62×7** | |
| | 62 | 8 | **CR 35×62×8** | |
| | 62 | 10 | **CR 35×62×10** | |
| | 72 | 10 | **CR 35×72×10** | |
| | 72 | 12 | **CR 35×72×12** | |
| | 80 | 12 | **CR 35×80×12** | |
| **36** | 47 | 7 | **CR 36×47×7** | |
| | 50 | 7 | **CR 36×50×7** | |
| | 52 | 7 | **CR 36×52×7** | |
| | 58 | 10 | **CR 36×58×10** | |
| | 62 | 7 | **CR 36×62×7** | |
| **37** | 50 | 6 | **CR 37×50×6** | |
| **38** | 50 | 7 | **CR 38×50×7** | |
| | 52 | 7 | **CR 38×52×7** | |
| | 52 | 8 | **CR 38×52×8** | |
| | 54 | 10 | **CR 38×54×10** | |
| | 55 | 7 | **CR 38×55×7** | • |
| | 55 | 8 | **CR 38×55×8** | • |
| | 55 | 10 | **CR 38×55×10** | |

| Dimensions | | | Designation[1] | ISO/DIN |
|---|---|---|---|---|
| Shaft | Bore | Nominal seal width | | |
| $d_1$ | D | b | | |
| mm | | | – | – |
| **38** | 58 | 8 | **CR 38×58×8** | • |
| cont. | 58 | 10 | **CR 38×58×10** | |
| | 60 | 10 | **CR 38×60×10** | |
| | 62 | 7 | **CR 38×62×7** | • |
| | 62 | 8 | **CR 38×62×8** | • |
| | 62 | 10 | **CR 38×62×10** | |
| | 72 | 10 | **CR 38×72×10** | |
| **38,5** | 58 | 7 | **CR 38.5×58×7** | |
| **40** | 50 | 8 | **CR 40×50×8** | |
| | 52 | 6 | **CR 40×52×6** | |
| | 52 | 7 | **CR 40×52×7** | • |
| | 52 | 8 | **CR 40×52×8** | • |
| | 55 | 7 | **CR 40×55×7** | • |
| | 55 | 8 | **CR 40×55×8** | • |
| | 56 | 8 | **CR 40×56×8** | |
| | 58 | 7 | **CR 40×58×7** | |
| | 58 | 8 | **CR 40×58×8** | |
| | 58 | 10 | **CR 40×58×10** | |
| | 60 | 8 | **CR 40×60×8** | |
| | 60 | 10 | **CR 40×60×10** | |
| | 62 | 6 | **CR 40×62×6** | |
| | 62 | 7 | **CR 40×62×7** | • |
| | 62 | 8 | **CR 40×62×8** | • |
| | 62 | 10 | **CR 40×62×10** | |
| | 65 | 10 | **CR 40×65×10** | |
| | 65 | 12 | **CR 40×65×12** | |
| | 68 | 8 | **CR 40×68×8** | |
| | 68 | 10 | **CR 40×68×10** | |
| | 70 | 8 | **CR 40×70×8** | |
| | 72 | 7 | **CR 40×72×7** | |
| | 72 | 10 | **CR 40×72×10** | |
| | 80 | 10 | **CR 40×80×10** | |
| | 80 | 12 | **CR 40×80×12** | |
| | 90 | 10 | **CR 40×90×10** | |
| **41** | 56 | 7 | **CR 41×56×7** | |
| **42** | 55 | 7 | **CR 42×55×7** | |
| | 55 | 8 | **CR 42×55×8** | • |
| | 56 | 7 | **CR 42×56×7** | |
| | 60 | 7 | **CR 42×60×7** | |
| | 62 | 7 | **CR 42×62×7** | |
| | 62 | 8 | **CR 42×62×8** | • |
| | 62 | 10 | **CR 42×62×10** | |
| | 65 | 10 | **CR 42×65×10** | |
| | 65 | 12 | **CR 42×65×12** | |
| | 66 | 10 | **CR 42×66×10** | |
| | 67 | 10 | **CR 42×67×10** | |
| | 72 | 8 | **CR 42×72×8** | |
| | 72 | 10 | **CR 42×72×10** | |
| **43** | 62 | 8 | **CR 43×62×8** | |
| **44** | 60 | 10 | **CR 44×60×10** | |
| | 62 | 10 | **CR 44×62×10** | |
| | 65 | 10 | **CR 44×65×10** | |

| Dimensions | | | Designation[1] | ISO/DIN |
|---|---|---|---|---|
| Shaft | Bore | Nominal seal width | | |
| $d_1$ | D | b | | |
| mm | | | – | – |
| **45** | 55 | 7 | **CR 45×55×7** | |
| | 58 | 7 | **CR 45×58×7** | |
| | 60 | 7 | **CR 45×60×7** | |
| | 60 | 8 | **CR 45×60×8** | • |
| | 60 | 10 | **CR 45×60×10** | |
| | 62 | 7 | **CR 45×62×7** | |
| | 62 | 8 | **CR 45×62×8** | • |
| | 62 | 10 | **CR 45×62×10** | |
| | 65 | 8 | **CR 45×65×8** | • |
| | 65 | 10 | **CR 45×65×10** | |
| | 68 | 7 | **CR 45×68×7** | |
| | 68 | 10 | **CR 45×68×10** | |
| | 68 | 12 | **CR 45×68×12** | |
| | 72 | 8 | **CR 45×72×8** | |
| | 72 | 10 | **CR 45×72×10** | |
| | 75 | 8 | **CR 45×75×8** | |
| | 75 | 10 | **CR 45×75×10** | |
| | 80 | 10 | **CR 45×80×10** | |
| | 85 | 10 | **CR 45×85×10** | |
| | 100 | 10 | **CR 45×100×10** | |
| **46** | 59 | 12 | **CR 46×59×12** | |
| | 65 | 10 | **CR 46×65×10** | |
| **47** | 65 | 10 | **CR 47×65×10** | |
| | 70 | 10 | **CR 47×70×10** | |
| **48** | 62 | 8 | **CR 48×62×8** | • |
| | 65 | 10 | **CR 48×65×10** | |
| | 68 | 10 | **CR 48×68×10** | |
| | 70 | 10 | **CR 48×70×10** | |
| | 72 | 7 | **CR 48×72×7** | |
| | 72 | 8 | **CR 48×72×8** | |
| | 72 | 10 | **CR 48×72×10** | |
| **50** | 62 | 7 | **CR 50×62×7** | |
| | 64 | 6 | **CR 50×64×6** | |
| | 65 | 8 | **CR 50×65×8** | • |
| | 65 | 10 | **CR 50×65×10** | |
| | 68 | 7 | **CR 50×68×7** | |
| | 68 | 8 | **CR 50×68×8** | • |
| | 68 | 10 | **CR 50×68×10** | |
| | 70 | 10 | **CR 50×70×10** | |
| | 72 | 8 | **CR 50×72×8** | • |
| | 72 | 10 | **CR 50×72×10** | |
| | 72 | 12 | **CR 50×72×12** | |
| | 75 | 10 | **CR 50×75×10** | |
| | 80 | 8 | **CR 50×80×8** | |
| | 80 | 10 | **CR 50×80×10** | |
| | 85 | 10 | **CR 50×85×10** | |
| | 90 | 10 | **CR 50×90×10** | |
| **52** | 63 | 8 | **CR 52×63×8** | |
| | 65 | 8 | **CR 52×65×8** | |
| | 68 | 8 | **CR 52×68×8** | |
| | 72 | 8 | **CR 52×72×8** | |
| | 72 | 10 | **CR 52×72×10** | |

# Radial shaft seals – HMS5 and HMSA10
$d_1$ **52 – 250** mm




[1] Designation to be followed by the design and material codes, indicating one of the four variants available for each dimension:

**HMS5 RG** without auxiliary lip, nitrile rubber
**HMS5 V** without auxiliary lip, fluoro rubber
**HMSA10 RG** with auxiliary lip, nitrile rubber
**HMSA10 V** with auxiliary lip, fluoro rubber
Example: **CR 6×16×5 HMSA10 RG**






Please see **pages 74** to **76** for housing bore requirements.

| Dimensions Shaft $d_1$ | Bore D | Nominal seal width b | Designation[1] | ISO/DIN |
|---|---|---|---|---|
| mm | | | – | – |
| **52** | 80 | 10 | **CR 52×80×10** | |
| cont. | 85 | 10 | **CR 52×85×10** | |
| **55** | 68 | 8 | **CR 55×68×8** | |
| | 70 | 8 | **CR 55×70×8** | • |
| | 70 | 10 | **CR 55×70×10** | |
| | 72 | 8 | **CR 55×72×8** | • |
| | 72 | 10 | **CR 55×72×10** | |
| | 75 | 10 | **CR 55×75×10** | |
| | 78 | 10 | **CR 55×78×10** | |
| | 78 | 12 | **CR 55×78×12** | |
| | 80 | 8 | **CR 55×80×8** | • |
| | 80 | 10 | **CR 55×80×10** | |
| | 85 | 8 | **CR 55×85×8** | |
| | 85 | 10 | **CR 55×85×10** | |
| | 90 | 10 | **CR 55×90×10** | |
| | 100 | 12 | **CR 55×100×12** | |
| **56** | 72 | 8 | **CR 56×72×8** | |
| **57** | 67 | 7 | **CR 57×67×7** | |
| **58** | 72 | 8 | **CR 58×72×8** | |
| | 80 | 8 | **CR 58×80×8** | |
| | 80 | 10 | **CR 58×80×10** | |
| | 80 | 12 | **CR 58×80×12** | |
| **60** | 72 | 8 | **CR 60×72×8** | |
| | 75 | 8 | **CR 60×75×8** | • |
| | 80 | 8 | **CR 60×80×8** | • |
| | 80 | 10 | **CR 60×80×10** | |
| | 82 | 12 | **CR 60×82×12** | |
| | 85 | 8 | **CR 60×85×8** | • |
| | 85 | 10 | **CR 60×85×10** | |

| Dimensions Shaft $d_1$ | Bore D | Nominal seal width b | Designation[1] | ISO/DIN |
|---|---|---|---|---|
| mm | | | – | – |
| **60** | 90 | 8 | **CR 60×90×8** | |
| cont. | 90 | 10 | **CR 60×90×10** | |
| | 95 | 10 | **CR 60×95×10** | |
| | 100 | 10 | **CR 60×100×10** | |
| | 110 | 8 | **CR 60×110×8** | |
| **62** | 80 | 10 | **CR 62×80×10** | |
| | 85 | 10 | **CR 62×85×10** | |
| | 90 | 10 | **CR 62×90×10** | |
| **63** | 85 | 10 | **CR 63×85×10** | |
| | 90 | 10 | **CR 63×90×10** | |
| **64** | 80 | 8 | **CR 64×80×8** | |
| **65** | 80 | 8 | **CR 65×80×8** | |
| | 85 | 8 | **CR 65×85×8** | |
| | 85 | 10 | **CR 65×85×10** | • |
| | 85 | 12 | **CR 65×85×12** | |
| | 88 | 12 | **CR 65×88×12** | |
| | 90 | 10 | **CR 65×90×10** | • |
| | 95 | 10 | **CR 65×95×10** | |
| | 100 | 10 | **CR 65×100×10** | |
| **68** | 90 | 10 | **CR 68×90×10** | |
| **70** | 85 | 8 | **CR 70×85×8** | |
| | 90 | 10 | **CR 70×90×10** | • |
| | 90 | 12 | **CR 70×90×12** | |
| | 92 | 12 | **CR 70×92×12** | |
| | 95 | 10 | **CR 70×95×10** | • |
| | 100 | 10 | **CR 70×100×10** | |
| | 110 | 10 | **CR 70×110×10** | |
| | 110 | 12 | **CR 70×110×12** | |
| **72** | 90 | 10 | **CR 72×90×10** | |
| | 95 | 10 | **CR 72×95×10** | |
| | 100 | 10 | **CR 72×100×10** | |

| Dimensions | | | Designation[1] | ISO/DIN |
|---|---|---|---|---|
| Shaft | Bore | Nominal seal width | | |
| $d_1$ | D | b | | |
| mm | | | – | – |
| **75** | 90 | 10 | **CR 75×90×10** | |
| | 95 | 10 | **CR 75×95×10** | • |
| | 95 | 12 | **CR 75×95×12** | |
| | 100 | 10 | **CR 75×100×10** | • |
| | 100 | 12 | **CR 75×100×12** | |
| | 105 | 10 | **CR 75×105×10** | |
| | 110 | 12 | **CR 75×110×12** | |
| | 120 | 12 | **CR 75×120×12** | |
| **78** | 100 | 10 | **CR 78×100×10** | |
| **80** | 95 | 10 | **CR 80×95×10** | |
| | 100 | 10 | **CR 80×100×10** | • |
| | 100 | 12 | **CR 80×100×12** | |
| | 105 | 10 | **CR 80×105×10** | |
| | 110 | 10 | **CR 80×110×10** | • |
| | 110 | 12 | **CR 80×110×12** | |
| | 115 | 12 | **CR 80×115×12** | |
| **85** | 100 | 10 | **CR 85×100×10** | |
| | 105 | 12 | **CR 85×105×12** | |
| | 110 | 12 | **CR 85×110×12** | • |
| | 115 | 12 | **CR 85×115×12** | |
| | 120 | 12 | **CR 85×120×12** | • |
| | 130 | 12 | **CR 85×130×12** | |
| **90** | 110 | 10 | **CR 90×110×10** | |
| | 110 | 12 | **CR 90×110×12** | • |
| | 115 | 12 | **CR 90×115×12** | |
| | 120 | 12 | **CR 90×120×12** | • |
| **95** | 115 | 12 | **CR 95×115×12** | |
| | 120 | 12 | **CR 95×120×12** | • |
| | 125 | 12 | **CR 95×125×12** | • |
| **100** | 120 | 10 | **CR 100×120×10** | |
| | 120 | 12 | **CR 100×120×12** | • |
| | 125 | 12 | **CR 100×125×12** | • |
| | 130 | 12 | **CR 100×130×12** | • |
| | 140 | 12 | **CR 100×140×12** | |
| | 150 | 12 | **CR 100×150×12** | |
| **105** | 130 | 12 | **CR 105×130×12** | • |
| | 140 | 12 | **CR 105×140×12** | |
| **110** | 130 | 12 | **CR 110×130×12** | • |
| | 140 | 12 | **CR 110×140×12** | • |
| | 150 | 12 | **CR 110×150×12** | |
| **115** | 140 | 12 | **CR 115×140×12** | • |
| | 150 | 12 | **CR 115×150×12** | |
| **120** | 140 | 12 | **CR 120×140×12** | |
| | 150 | 12 | **CR 120×150×12** | |
| | 160 | 12 | **CR 120×160×12** | |
| **125** | 150 | 12 | **CR 125×150×12** | • |
| **130** | 160 | 12 | **CR 130×160×12** | • |
| | 160 | 15 | **CR 130×160×15** | |
| **135** | 170 | 12 | **CR 135×170×12** | • |

| Dimensions | | | Designation[1] | ISO/DIN |
|---|---|---|---|---|
| Shaft | Bore | Nominal seal width | | |
| $d_1$ | D | b | | |
| mm | | | – | – |
| **140** | 160 | 12 | **CR 140×160×12** | |
| | 170 | 12 | **CR 140×170×12** | • |
| | 170 | 15 | **CR 140×170×15** | |
| | 180 | 12 | **CR 140×180×12** | |
| **145** | 175 | 15 | **CR 145×175×15** | • |
| **148** | 170 | 15 | **CR 148×170×15** | |
| **150** | 180 | 12 | **CR 150×180×12** | |
| | 180 | 15 | **CR 150×180×15** | • |
| **155** | 180 | 15 | **CR 155×180×15** | |
| **160** | 185 | 15 | **CR 160×185×15** | |
| | 190 | 15 | **CR 160×190×15** | • |
| **165** | 190 | 15 | **CR 165×190×15** | |
| **170** | 200 | 15 | **CR 170×200×15** | • |
| **180** | 210 | 15 | **CR 180×210×15** | • |
| **190** | 220 | 15 | **CR 190×220×15** | • |
| | 225 | 15 | **CR 190×225×15** | |
| **200** | 230 | 15 | **CR 200×230×15** | • |
| **210** | 240 | 15 | **CR 210×240×15** | • |
| **220** | 250 | 15 | **CR 220×250×15** | • |
| **230** | 260 | 15 | **CR 230×260×15** | • |
| **240** | 270 | 15 | **CR 240×270×15** | • |
| **250** | 280 | 15 | **CR 250×280×15** | • |
| | 285 | 15 | **CR 250×285×15** | |



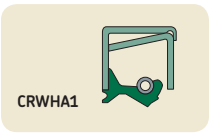
## CRW1, CRWA1, CRWH1 and CRWHA1 seals










These radial shaft seals are low-friction seals with SKF WAVE lip design for reduced heat generation. See pages 57 and 58 for more information on SKF WAVE lip design. They have a metal outside diameter for easy installation and a firm and accurate fit in the housing bore.

The seals feature SKF Bore Tite Coating on the outside diameter, a non-hardening, water-based acrylic sealant that helps fill small imperfections in the housing bore.

They are primarily designed to retain lubricants but are also suitable for contaminant exclusion, especially the CRWA1 and CRWHA1 seals designed with an auxiliary lip.

**CRW1**: Seal with a single steel case, SKF WAVE lip and a carbon steel garter spring.

**CRWH1**: Seal with a double steel case, SKF WAVE lip and a carbon steel garter spring.

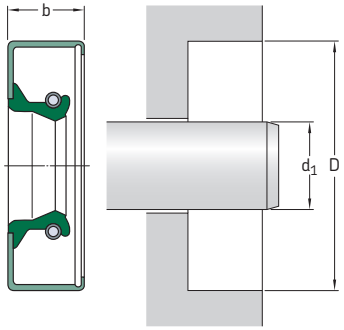
**CRWA1**: Seal with a single steel case, SKF WAVE lip, a carbon steel garter spring and an auxiliary, non-contacting lip.

**CRWHA1**: Seal with a double steel case, SKF WAVE lip, a carbon steel garter spring and an auxiliary, non-contacting lip.

All of these seals are available with sealing lips made of either nitrile rubber or the SKF developed fluoro rubber compound SKF Duralife. Other materials are also available on request.

See **matrix 1** on **pages 90** and **91** for permissible operating conditions.

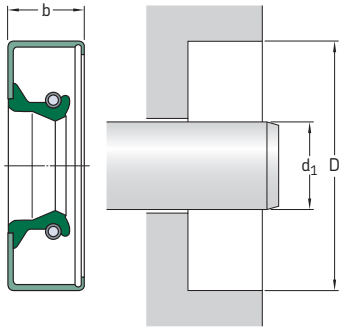
## Radial shaft seals – CRW1, CRWA1, CRWH1 and CRWHA1 – metric dimensions
$d_1$ **12 – 17** mm




Please see **pages 74** to **76** for housing bore requirements.

| **Dimensions** Shaft $d_1$ | Bore D | Nominal seal width b | **Design and lip material** | **Designation** |
|---|---|---|---|---|
| mm | | | – | – |
| **12** | 22 | 7 | CRW1 V | **CR 12×22×7 CRW1 V** |
| | 22 | 7 | CRW1 R | **CR 12×22×7 CRW1 R** |
| | 25 | 7 | CRW1 R | **CR 12×25×7 CRW1 R** |
| | 26 | 7 | CRW1 R | **CR 12×26×7 CRW1 R** |
| | 28 | 7 | CRW1 R | **CR 12×28×7 CRW1 R** |
| | 28 | 7 | CRW1 P | **CR 12×28×7 CRW1 P** |
| | 32 | 7 | CRW1 R | **CR 12×32×7 CRW1 R** |
| | 32 | 7 | CRW1 V | **CR 12×32×7 CRW1 V** |
| | 35 | 7 | CRW1 R | **CR 12×35×7 CRW1 R** |
| **14** | 26 | 7 | CRW1 V | **CR 14×26×7 CRW1 V** |
| | 32 | 7 | CRW1 R | **CR 14×32×7 CRW1 R** |
| **15** | 25 | 7 | CRW1 P | **CR 15×25×7 CRW1 P** |
| | 28 | 7 | CRW1 R | **CR 15×28×7 CRW1 R** |
| | 32 | 7 | CRW1 R | **CR 15×32×7 CRW1 R** |
| | 32 | 7 | CRW1 V | **CR 15×32×7 CRW1 V** |
| | 35 | 7 | CRW1 R | **CR 15×35×7 CRW1 R** |
| | 35 | 7 | CRW1 P | **CR 15×35×7 CRW1 P** |
| **16** | 28 | 7 | CRW1 R | **CR 16×28×7 CRW1 R** |
| | 30 | 7 | CRW1 R | **CR 16×30×7 CRW1 R** |
| | 32 | 7 | CRW1 R | **CR 16×32×7 CRW1 R** |
| | 35 | 7 | CRW1 R | **CR 16×35×7 CRW1 R** |
| | 40 | 7 | CRW1 R | **CR 16×40×7 CRW1 R** |
| | 40 | 7 | CRWA1 R | **CR 16×40×7 CRWA1 R** |
| **17** | 27 | 6,35 | CRW1 R | **CR 17×27×6 CRW1 R** |
| | 28 | 7 | CRW1 R | **CR 17×28×7 CRW1 R** |
| | 28 | 7 | CRW1 V | **CR 17×28×7 CRW1 V** |
| | 30 | 7 | CRW1 R | **CR 17×30×7 CRW1 R** |
| | 32 | 7 | CRW1 R | **CR 17×32×7 CRW1 R** |
| | 35 | 7 | CRW1 R | **CR 17×35×7 CRW1 R** |
| | 35 | 7 | CRW1 V | **CR 17×35×7 CRW1 V** |
| | 40 | 7 | CRW1 R | **CR 17×40×7 CRW1 R** |
| | 47 | 7 | CRW1 R | **CR 17×47×7 CRW1 R** |

## Radial shaft seals – CRW1, CRWA1, CRWH1 and CRWHA1 – metric dimensions
$d_1$ **18 – 28** mm



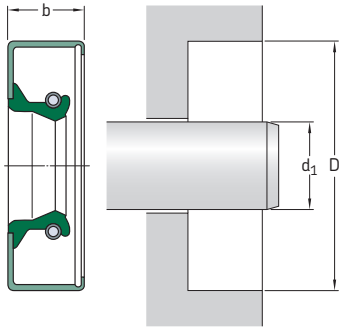

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Please see **pages 74** to **76** for housing bore requirements.

| **Dimensions** Shaft $d_1$ | Bore D | Nominal seal width b | **Design and lip material** | **Designation** |
|---|---|---|---|---|
| mm | | | – | – |
| **18** | 30 | 7 | CRW1 R | **CR 18×30×7 CRW1 R** |
| | 30 | 7 | CRW1 V | **CR 18×30×7 CRW1 V** |
| | 32 | 7 | CRW1 R | **CR 18×32×7 CRW1 R** |
| | 32 | 7 | CRW1 V | **CR 18×32×7 CRW1 V** |
| | 35 | 7 | CRW1 R | **CR 18×35×7 CRW1 R** |
| | 40 | 7 | CRW1 R | **CR 18×40×7 CRW1 R** |
| **19** | 35 | 7 | CRW1 R | **CR 19×35×7 CRW1 R** |
| **20** | 30 | 7 | CRW1 R | **CR 20×30×7 CRW1 R** |
| | 31 | 7 | CRW1 R | **CR 20×31×7 CRW1 R** |
| | 32 | 7 | CRW1 R | **CR 20×32×7 CRW1 R** |
| | 35 | 7 | CRW1 R | **CR 20×35×7 CRW1 R** |
| | 35 | 7 | CRW1 V | **CR 20×35×7 CRW1 V** |
| | 36 | 7 | CRW1 R | **CR 20×36×7 CRW1 R** |
| | 36 | 7 | CRW1 V | **CR 20×36×7 CRW1 V** |
| | 37 | 7 | CRW1 R | **CR 20×37×7 CRW1 R** |
| | 38 | 7 | CRW1 R | **CR 20×38×7 CRW1 R** |
| | 40 | 7 | CRW1 R | **CR 20×40×7 CRW1 R** |
| | 40 | 7 | CRW1 V | **CR 20×40×7 CRW1 V** |
| | 42 | 7 | CRW1 R | **CR 20×42×7 CRW1 R** |
| | 47 | 7 | CRW1 R | **CR 20×47×7 CRW1 R** |
| | 52 | 7 | CRW1 R | **CR 20×52×7 CRW1 R** |
| | 52 | 7 | CRW1 P | **CR 20×52×7 CRW1 P** |
| **21** | 35 | 7 | CRW1 R | **CR 21×35×7 CRW1 R** |
| | 35 | 7 | CRW1 V | **CR 21×35×7 CRW1 V** |
| | 40 | 8 | CRW1 R | **CR 21×40×8 CRW1 R** |

| Dimensions | | | Design and lip material | Designation |
|---|---|---|---|---|
| Shaft | Bore | Nominal seal width | | |
| $d_1$ | D | b | | |
| mm | | | – | – |
| **22** | 31 | 7 | CRW1 P | **CR 22×31×7 CRW1 P** |
| | 32 | 7 | CRW1 R | **CR 22×32×7 CRW1 R** |
| | 35 | 7 | CRW1 R | **CR 22×35×7 CRW1 R** |
| | 35 | 7 | CRW1 V | **CR 22×35×7 CRW1 V** |
| | 38 | 7 | CRW1 R | **CR 22×38×7 CRW1 R** |
| | 38 | 7 | CRW1 V | **CR 22×38×7 CRW1 V** |
| | 40 | 6,35 | CRW1 R | **CR 22×40×6 CRW1 R** |
| | 40 | 6,35 | CRW1 V | **CR 22×40×6 CRW1 V** |
| | 42 | 7 | CRW1 R | **CR 22×42×7 CRW1 R** |
| | 47 | 8 | CRW1 R | **CR 22×47×8 CRW1 R** |
| | 50 | 8 | CRW1 R | **CR 22×50×8 CRW1 R** |
| **24** | 36 | 7 | CRW1 V | **CR 24×36×7 CRW1 V** |
| | 38 | 7 | CRW1 V | **CR 24×38×7 CRW1 V** |
| | 47 | 8 | CRW1 R | **CR 24×47×8 CRW1 R** |
| **25** | 35 | 7 | CRW1 R | **CR 25×35×7 CRW1 R** |
| | 35 | 7 | CRW1 V | **CR 25×35×7 CRW1 V** |
| | 36 | 7 | CRW1 R | **CR 25×36×7 CRW1 R** |
| | 37 | 7 | CRW1 R | **CR 25×37×7 CRW1 R** |
| | 37 | 7 | CRW1 V | **CR 25×37×7 CRW1 V** |
| | 38 | 7 | CRW1 R | **CR 25×38×7 CRW1 R** |
| | 38 | 7 | CRW1 V | **CR 25×38×7 CRW1 V** |
| | 40 | 7 | CRW1 R | **CR 25×40×7 CRW1 R** |
| | 40 | 7 | CRW1 R | **CR 25×40×7 CRW1 R** |
| | 40 | 7 | CRW1 V | **CR 25×40×7 CRW1 V** |
| | 42 | 8 | CRW1 V | **CR 25×42×8 CRW1 V** |
| | 42 | 8 | CRW1 R | **CR 25×42×8 CRW1 R** |
| | 45 | 7 | CRW1 R | **CR 25×45×7 CRW1 R** |
| | 47 | 6,35 | CRW1 R | **CR 25×47×6 CRW1 R** |
| | 48 | 8 | CRW1 R | **CR 25×48×8 CRW1 R** |
| | 48 | 8 | CRW1 V | **CR 25×48×8 CRW1 V** |
| | 50 | 8 | CRW1 R | **CR 25×50×8 CRW1 R** |
| | 52 | 8 | CRW1 R | **CR 25×52×8 CRW1 R** |
| | 52 | 8 | CRW1 V | **CR 25×52×8 CRW1 V** |
| | 62 | 7 | CRW1 R | **CR 25×62×7 CRW1 R** |
| | 62 | 7 | CRW1 V | **CR 25×62×7 CRW1 V** |
| **27** | 42 | 7 | CRW1 R | **CR 27×42×7 CRW1 R** |
| | 42 | 7 | CRW1 V | **CR 27×42×7 CRW1 V** |
| | 43 | 8 | CRW1 V | **CR 27×43×8 CRW1 V** |
| | 45 | 8 | CRW1 V | **CR 27×45×8 CRW1 V** |
| | 52 | 8 | CRW1 R | **CR 27×52×8 CRW1 R** |
| **28** | 40 | 7 | CRW1 R | **CR 28×40×7 CRW1 R** |
| | 40 | 7 | CRW1 V | **CR 28×40×7 CRW1 V** |
| | 42 | 7 | CRW1 R | **CR 28×42×7 CRW1 R** |
| | 42 | 7 | CRW1 V | **CR 28×42×7 CRW1 V** |
| | 45 | 7 | CRW1 V | **CR 28×45×7 CRW1 V** |
| | 47 | 7 | CRW1 V | **CR 28×47×7 CRW1 V** |
| | 47 | 8 | CRW1 R | **CR 28×47×8 CRW1 R** |
| | 52 | 8 | CRW1 R | **CR 28×52×8 CRW1 R** |

## Radial shaft seals – CRW1, CRWA1, CRWH1 and CRWHA1 – metric dimensions
$d_1$ **30 – 36** mm




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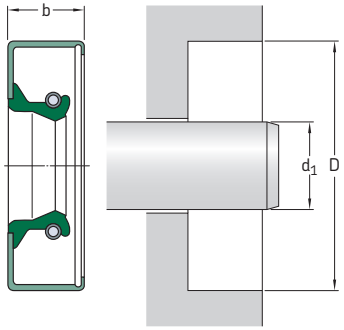
Please see **pages 74** to **76** for housing bore requirements.

| **Dimensions** Shaft $d_1$ | Bore D | Nominal seal width b | **Design and lip material** | **Designation** |
|---|---|---|---|---|
| mm | | | – | – |
| **30** | 40 | 7 | CRW1 R | **CR 30×40×7 CRW1 R** |
| | 40 | 7 | CRW1 V | **CR 30×40×7 CRW1 V** |
| | 42 | 7 | CRW1 R | **CR 30×42×7 CRW1 R** |
| | 42 | 7 | CRW1 V | **CR 30×42×7 CRW1 V** |
| | 45 | 8 | CRW1 R | **CR 30×45×8 CRW1 R** |
| | 45 | 8 | CRW1 P | **CR 30×45×8 CRW1 P** |
| | 47 | 7 | CRW1 R | **CR 30×47×7 CRW1 R** |
| | 47 | 8 | CRW1 V | **CR 30×47×8 CRW1 V** |
| | 48 | 8 | CRW1 R | **CR 30×48×8 CRW1 R** |
| | 50 | 8 | CRW1 R | **CR 30×50×8 CRW1 R** |
| | 50 | 8 | CRW1 V | **CR 30×50×8 CRW1 V** |
| | 52 | 8 | CRW1 R | **CR 30×52×8 CRW1 R** |
| | 55 | 7 | CRW1 R | **CR 30×55×7 CRW1 R** |
| | 56 | 8 | CRW1 R | **CR 30×56×8 CRW1 R** |
| | 58 | 8 | CRWA1 R | **CR 30×58×8 CRWA1 R** |
| | 60 | 8 | CRW1 R | **CR 30×60×8 CRW1 R** |
| | 62 | 7 | CRW1 R | **CR 30×62×7 CRW1 R** |
| | 62 | 7 | CRW1 V | **CR 30×62×7 CRW1 V** |
| | 72 | 8 | CRW1 R | **CR 30×72×8 CRW1 R** |
| | 72 | 12 | CRWA1 V | **CR 30×72×12 CRWA1 V** |
| **32** | 42 | 7 | CRW1 R | **CR 32×42×7 CRW1 R** |
| | 42 | 7 | CRW1 V | **CR 32×42×7 CRW1 V** |
| | 45 | 8 | CRW1 R | **CR 32×45×8 CRW1 R** |
| | 47 | 8 | CRW1 R | **CR 32×47×8 CRW1 R** |
| | 47 | 8 | CRW1 V | **CR 32×47×8 CRW1 V** |
| | 48 | 8 | CRW1 R | **CR 32×48×8 CRW1 R** |
| | 48 | 8 | CRW1 V | **CR 32×48×8 CRW1 V** |
| | 50 | 8 | CRW1 R | **CR 32×50×8 CRW1 R** |
| | 50 | 8 | CRW1 V | **CR 32×50×8 CRW1 V** |
| | 52 | 8 | CRW1 R | **CR 32×52×8 CRW1 R** |
| | 52 | 8 | CRW1 V | **CR 32×52×8 CRW1 V** |

| Dimensions Shaft $d_1$ | Bore D | Nominal seal width b | Design and lip material | Designation |
|---|---|---|---|---|
| mm | | | – | – |
| **32** | 56 | 8 | CRW1 R | **CR 32×56×8 CRW1 R** |
| cont. | 62 | 6,35 | CRW1 R | **CR 32×62×6 CRW1 R** |
| **34** | 48 | 8 | CRW1 R | **CR 34×48×8 CRW1 R** |
| | 48 | 8 | CRW1 V | **CR 34×48×8 CRW1 V** |
| | 55 | 8 | CRW1 R | **CR 34×55×8 CRW1 R** |
| | 56 | 8 | CRW1 R | **CR 34×56×8 CRW1 R** |
| | 56 | 8 | CRW1 V | **CR 34×56×8 CRW1 V** |
| | 62 | 8 | CRW1 R | **CR 34×62×8 CRW1 R** |
| **35** | 47 | 7 | CRW1 R | **CR 35×47×7 CRW1 R** |
| | 47 | 7 | CRW1 V | **CR 35×47×7 CRW1 V** |
| | 48 | 8 | CRW1 R | **CR 35×48×8 CRW1 R** |
| | 48 | 8 | CRW1 V | **CR 35×48×8 CRW1 V** |
| | 50 | 8 | CRW1 R | **CR 35×50×8 CRW1 R** |
| | 50 | 8 | CRW1 V | **CR 35×50×8 CRW1 V** |
| | 52 | 8 | CRWA1 P | **CR 35×52×8 CRWA1 P** |
| | 52 | 8 | CRW1 R | **CR 35×52×8 CRW1 R** |
| | 52 | 8 | CRWA1 R | **CR 35×52×8 CRWA1 R** |
| | 54 | 7 | CRW1 R | **CR 35×54×7 CRW1 R** |
| | 54 | 8 | CRW1 V | **CR 35×54×8 CRW1 V** |
| | 55 | 8 | CRW1 R | **CR 35×55×8 CRW1 R** |
| | 55 | 8 | CRW1 V | **CR 35×55×8 CRW1 V**[1)] |
| | 56 | 8 | CRW1 R | **CR 35×56×8 CRW1 R** |
| | 56 | 8 | CRW1 V | **CR 35×56×8 CRW1 V** |
| | 62 | 8 | CRW1 V | **CR 35×62×8 CRW1 V** |
| | 62 | 8 | CRW1 R | **CR 35×62×8 CRW1 R** |
| | 64 | 8 | CRW1 R | **CR 35×64×8 CRW1 R** |
| | 65 | 8 | CRW1 V | **CR 35×65×8 CRW1 V** |
| | 68 | 8 | CRW1 R | **CR 35×68×8 CRW1 R** |
| | 68 | 8 | CRW1 V | **CR 35×68×8 CRW1 V** |
| | 69 | 8 | CRW1 R | **CR 35×69×8 CRW1 R** |
| | 72 | 8 | CRW1 V | **CR 35×72×8 CRW1 V** |
| | 72 | 8 | CRW1 R | **CR 35×72×8 CRW1 R** |
| | 72 | 8 | CRWA1 R | **CR 35×72×8 CRWA1 R** |
| | 78 | 8 | CRW1 R | **CR 35×78×8 CRW1 R** |
| | 80 | 8 | CRW1 R | **CR 35×80×8 CRW1 R** |
| **36** | 50 | 7 | CRW1 R | **CR 36×50×7 CRW1 R** |
| | 50 | 8 | CRW1 R | **CR 36×50×8 CRW1 R** |
| | 52 | 8 | CRW1 R | **CR 36×52×8 CRW1 R** |
| | 52 | 8 | CRW1 V | **CR 36×52×8 CRW1 V** |
| | 54 | 8 | CRW1 R | **CR 36×54×8 CRW1 R** |
| | 54 | 8 | CRW1 V | **CR 36×54×8 CRW1 V** |
| | 58 | 8 | CRW1 R | **CR 36×58×8 CRW1 R** |
| | 60 | 8 | CRW1 R | **CR 36×60×8 CRW1 R** |
| | 60 | 8 | CRW1 V | **CR 36×60×8 CRW1 V** |
| | 62 | 8 | CRW1 R | **CR 36×62×8 CRW1 R** |
| | 65 | 8 | CRW1 R | **CR 36×65×8 CRW1 R** |
| | 68 | 8 | CRW1 R | **CR 36×68×8 CRW1 R** |

[1)] Without SKF Bore Tite Coating

## Radial shaft seals – CRW1, CRWA1, CRWH1 and CRWHA1 – metric dimensions
$d_1$ **38 – 43** mm




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Please see **pages 74** to **76** for housing bore requirements.

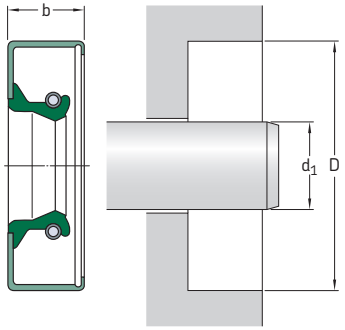
| **Dimensions** Shaft $d_1$ | Bore D | Nominal seal width b | **Design and lip material** | **Designation** |
|---|---|---|---|---|
| mm | | | – | – |
| **38** | 50 | 7 | CRW1 R | **CR 38×50×7 CRW1 R** |
| | 50 | 7 | CRW1 V | **CR 38×50×7 CRW1 V** |
| | 52 | 8 | CRW1 R | **CR 38×52×8 CRW1 R** |
| | 52 | 8 | CRWA1 R | **CR 38×52×8 CRWA1 R** |
| | 52 | 8 | CRW1 V | **CR 38×52×8 CRW1 V** |
| | 53 | 8 | CRW1 R | **CR 38×53×8 CRW1 R** |
| | 54 | 7 | CRW1 P | **CR 38×54×7 CRW1 P**[1)] |
| | 55 | 8 | CRW1 R | **CR 38×55×8 CRW1 R** |
| | 55 | 8 | CRW1 V | **CR 38×55×8 CRW1 V** |
| | 56 | 8 | CRW1 V | **CR 38×56×8 CRW1 V** |
| | 56 | 8 | CRW1 R | **CR 38×56×8 CRW1 R** |
| | 58 | 8 | CRW1 R | **CR 38×58×8 CRW1 R** |
| | 58 | 8 | CRW1 V | **CR 38×58×8 CRW1 V** |
| | 60 | 8 | CRW1 R | **CR 38×60×8 CRW1 R** |
| | 60 | 8 | CRW1 V | **CR 38×60×8 CRW1 V** |
| | 62 | 8 | CRW1 R | **CR 38×62×8 CRW1 R** |
| | 62 | 8 | CRWA1 R | **CR 38×62×8 CRWA1 R** |
| | 62 | 8 | CRW1 V | **CR 38×62×8 CRW1 V** |
| | 65 | 8 | CRW1 R | **CR 38×65×8 CRW1 R** |
| | 68 | 8 | CRW1 R | **CR 38×68×8 CRW1 R** |
| | 70 | 8 | CRW1 R | **CR 38×70×8 CRW1 R** |
| | 72 | 8 | CRW1 R | **CR 38×72×8 CRW1 R** |
| | 73 | 8 | CRW1 R | **CR 38×73×8 CRW1 R** |
| | 74 | 11 | CRWA1 R | **CR 38×74×11 CRWA1 R** |
| | 74 | 11 | CRW1 V | **CR 38×74×11 CRW1 V** |
| | 80 | 8 | CRW1 R | **CR 38×80×8 CRW1 R** |
| | 90 | 8 | CRWA1 R | **CR 38×90×8 CRWA1 R** |

1) Without SKF Bore Tite Coating

| Dimensions | | | Design and lip material | Designation |
|---|---|---|---|---|
| Shaft | Bore | Nominal seal width | | |
| $d_1$ | D | b | | |
| mm | | | – | – |
| **40** | 52 | 7 | CRW1 V | **CR 40×52×7 CRW1 V** |
| | 52 | 7 | CRW1 R | **CR 40×52×7 CRW1 R** |
| | 54 | 7 | CRW1 R | **CR 40×54×7 CRW1 R** |
| | 55 | 8 | CRW1 R | **CR 40×55×8 CRW1 R** |
| | 55 | 8 | CRW1 V | **CR 40×55×8 CRW1 V** |
| | 56 | 7 | CRW1 V | **CR 40×56×7 CRW1 V** |
| | 56 | 8 | CRW1 R | **CR 40×56×8 CRW1 R** |
| | 57 | 8 | CRW1 R | **CR 40×57×8 CRW1 R** |
| | 58 | 8 | CRW1 R | **CR 40×58×8 CRW1 R** |
| | 58 | 8 | CRW1 V | **CR 40×58×8 CRW1 V** |
| | 60 | 8 | CRW1 R | **CR 40×60×8 CRW1 R** |
| | 60 | 8 | CRW1 V | **CR 40×60×8 CRW1 V** |
| | 62 | 8 | CRW1 R | **CR 40×62×8 CRW1 R** |
| | 62 | 8 | CRW1 V | **CR 40×62×8 CRW1 V** |
| | 65 | 8 | CRW1 R | **CR 40×65×8 CRW1 R** |
| | 68 | 8 | CRW1 R | **CR 40×68×8 CRW1 R** |
| | 70 | 8 | CRW1 R | **CR 40×70×8 CRW1 R** |
| | 72 | 8 | CRW1 R | **CR 40×72×8 CRW1 R** |
| | 74 | 8 | CRW1 R | **CR 40×74×8 CRW1 R** |
| | 75 | 8 | CRW1 V | **CR 40×75×8 CRW1 V** |
| | 80 | 8 | CRW1 R | **CR 40×80×8 CRW1 R** |
| | 80 | 8 | CRW1 V | **CR 40×80×8 CRW1 V**[1)] |
| | 90 | 8 | CRW1 R | **CR 40×90×8 CRW1 R** |
| **41** | 53 | 7 | CRW1 R | **CR 41×53×7 CRW1 R** |
| | 55 | 8 | CRW1 R | **CR 41×55×8 CRW1 R** |
| | 62 | 8 | CRW1 R | **CR 41×62×8 CRW1 R** |
| **42** | 55 | 8 | CRW1 R | **CR 42×55×8 CRW1 R** |
| | 55 | 8 | CRW1 V | **CR 42×55×8 CRW1 V** |
| | 56 | 7 | CRW1 V | **CR 42×56×7 CRW1 V** |
| | 56 | 8 | CRW1 R | **CR 42×56×8 CRW1 R** |
| | 58 | 8 | CRW1 R | **CR 42×58×8 CRW1 R** |
| | 58 | 8 | CRW1 V | **CR 42×58×8 CRW1 V** |
| | 60 | 8 | CRW1 R | **CR 42×60×8 CRW1 R** |
| | 60 | 8 | CRW1 V | **CR 42×60×8 CRW1 V** |
| | 62 | 8 | CRW1 R | **CR 42×62×8 CRW1 R** |
| | 62 | 8 | CRW1 V | **CR 42×62×8 CRW1 V** |
| | 65 | 8 | CRW1 R | **CR 42×65×8 CRW1 R** |
| | 65 | 8 | CRW1 V | **CR 42×65×8 CRW1 V** |
| | 72 | 8 | CRW1 V | **CR 42×72×8 CRW1 V** |
| | 72 | 8 | CRW1 R | **CR 42×72×8 CRW1 R** |
| **43** | 57 | 8 | CRW1 R | **CR 43×57×8 CRW1 R** |
| | 60 | 8 | CRW1 R | **CR 43×60×8 CRW1 R** |
| | 69 | 8 | CRW1 R | **CR 43×69×8 CRW1 R** |
| | 73 | 8 | CRW1 R | **CR 43×73×8 CRW1 R** |

[1)] Without SKF Bore Tite Coating

## Radial shaft seals – CRW1, CRWA1, CRWH1 and CRWHA1 – metric dimensions
$d_1$ **44 – 54** mm



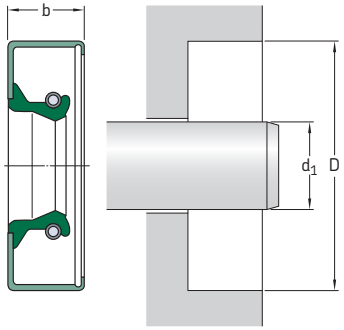

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Please see **pages 74** to **76** for housing bore requirements.

| **Dimensions** Shaft $d_1$ | Bore D | Nominal seal width b | **Design and lip material** | **Designation** |
|---|---|---|---|---|
| mm | | | – | – |
| **44** | 60 | 8 | CRW1 R | **CR 44×60×8 CRW1 R** |
| | 60 | 8 | CRW1 V | **CR 44×60×8 CRW1 V**[1)] |
| | 62 | 8 | CRW1 R | **CR 44×62×8 CRW1 R** |
| | 65 | 8 | CRW1 R | **CR 44×65×8 CRW1 R** |
| | 68 | 8 | CRW1 V | **CR 44×68×8 CRW1 V** |
| | 70 | 8 | CRW1 R | **CR 44×70×8 CRW1 R** |
| | 72 | 8 | CRW1 R | **CR 44×72×8 CRW1 R** |
| **45** | 60 | 8 | CRW1 R | **CR 45×60×8 CRW1 R** |
| | 60 | 8 | CRW1 V | **CR 45×60×8 CRW1 V** |
| | 62 | 8 | CRWA1 V | **CR 45×62×8 CRWA1 V** |
| | 62 | 8 | CRW1 R | **CR 45×62×8 CRW1 R** |
| | 65 | 8 | CRW1 R | **CR 45×65×8 CRW1 R** |
| | 65 | 8 | CRW1 V | **CR 45×65×8 CRW1 V** |
| | 68 | 8 | CRW1 R | **CR 45×68×8 CRW1 R** |
| | 68 | 8 | CRW1 V | **CR 45×68×8 CRW1 V** |
| | 68 | 8 | CRWA1 R | **CR 45×68×8 CRWA1 R** |
| | 72 | 8 | CRW1 V | **CR 45×72×8 CRW1 V** |
| | 72 | 8 | CRW1 R | **CR 45×72×8 CRW1 R** |
| | 75 | 8 | CRW1 R | **CR 45×75×8 CRW1 R** |
| | 75 | 8 | CRW1 V | **CR 45×75×8 CRW1 V** |
| | 80 | 8 | CRW1 R | **CR 45×80×8 CRW1 R** |
| | 85 | 8 | CRW1 R | **CR 45×85×8 CRW1 R** |
| **46** | 60 | 8 | CRW1 R | **CR 46×60×8 CRW1 R** |
| | 65 | 8 | CRW1 R | **CR 46×65×8 CRW1 R** |
| | 68 | 8 | CRW1 R | **CR 46×68×8 CRW1 R** |
| | 72 | 8 | CRW1 R | **CR 46×72×8 CRW1 R** |
| | 73 | 8 | CRW1 R | **CR 46×73×8 CRW1 R** |

| Dimensions | | | Design and lip material | Designation |
|---|---|---|---|---|
| Shaft | Bore | Nominal seal width | | |
| $d_1$ | D | b | | |
| mm | | | – | – |
| **47** | 60 | 7 | CRW1 R | **CR 47×60×7 CRW1 R** |
| | 62 | 8 | CRW1 R | **CR 47×62×8 CRW1 R** |
| | 72 | 8 | CRW1 R | **CR 47×72×8 CRW1 R** |
| **48** | 62 | 8 | CRW1 R | **CR 48×62×8 CRW1 R** |
| | 62 | 8 | CRW1 P | **CR 48×62×8 CRW1 P** |
| | 65 | 8 | CRW1 R | **CR 48×65×8 CRW1 R** |
| | 65 | 8 | CRW1 V | **CR 48×65×8 CRW1 V** |
| | 68 | 8 | CRW1 V | **CR 48×68×8 CRW1 V** |
| | 70 | 8 | CRW1 R | **CR 48×70×8 CRW1 R** |
| | 70 | 8 | CRW1 V | **CR 48×70×8 CRW1 V** |
| | 72 | 8 | CRW1 R | **CR 48×72×8 CRW1 R** |
| | 72 | 8 | CRW1 V | **CR 48×72×8 CRW1 V** |
| | 80 | 8 | CRW1 R | **CR 48×80×8 CRW1 R** |
| **50** | 65 | 8 | CRW1 R | **CR 50×65×8 CRW1 R** |
| | 65 | 8 | CRW1 V | **CR 50×65×8 CRW1 V** |
| | 68 | 8 | CRW1 R | **CR 50×68×8 CRW1 R** |
| | 68 | 8 | CRW1 V | **CR 50×68×8 CRW1 V** |
| | 70 | 8 | CRW1 R | **CR 50×70×8 CRW1 R** |
| | 70 | 8 | CRW1 V | **CR 50×70×8 CRW1 V** |
| | 72 | 8 | CRW1 R | **CR 50×72×8 CRW1 R** |
| | 72 | 8 | CRW1 V | **CR 50×72×8 CRW1 V** |
| | 75 | 8 | CRWA1 R | **CR 50×75×8 CRWA1 R** |
| | 80 | 8 | CRW1 R | **CR 50×80×8 CRW1 R** |
| | 80 | 8 | CRW1 V | **CR 50×80×8 CRW1 V** |
| | 82 | 8 | CRWA1 R | **CR 50×82×8 CRWA1 R** |
| | 85 | 8 | CRW1 R | **CR 50×85×8 CRW1 R** |
| | 90 | 8 | CRW1 R | **CR 50×90×8 CRW1 R** |
| | 90 | 8 | CRW1 V | **CR 50×90×8 CRW1 V** |
| **51** | 65 | 7 | CRWA1 R | **CR 51×65×7 CRWA1 R** |
| | 73 | 8 | CRW1 R | **CR 51×73×8 CRW1 R** |
| | 80 | 9,53 | CRW1 R | **CR 51×80×10 CRW1 R** |
| | 81 | 9,53 | CRWH1 R | **CR 51×81×10 CRWH1 R** |
| | 81 | 9,53 | CRWHA1 R | **CR 51×81×10 CRWHA1 R** |
| | 92 | 11,13 | CRWH1 R | **CR 51×92×11 CRWH1 R** |
| **52** | 68 | 8 | CRW1 R | **CR 52×68×8 CRW1 R** |
| | 68 | 8 | CRW1 V | **CR 52×68×8 CRW1 V** |
| | 70 | 8 | CRW1 R | **CR 52×70×8 CRW1 R** |
| | 72 | 8 | CRWA1 V | **CR 52×72×8 CRWA1 V** |
| | 72 | 8 | CRW1 R | **CR 52×72×8 CRW1 R** |
| | 72 | 8 | CRW1 V | **CR 52×72×8 CRW1 V** |
| | 85 | 8 | CRW1 R | **CR 52×85×8 CRW1 R** |
| **53** | 68 | 8 | CRW1 V | **CR 53×68×8 CRW1 V** |
| **54** | 65 | 8 | CRW1 R | **CR 54×65×8 CRW1 R** |
| | 65 | 8 | CRW1 V | **CR 54×65×8 CRW1 V** |
| | 73 | 11,13 | CRW1 R | **CR 54×73×11 CRW1 R** |
| | 73 | 11,13 | CRWA1 R | **CR 54×73×11 CRWA1 R** |
| | 81 | 9,53 | CRWA1 R | **CR 54×81×10 CRWA1 R** |

## Radial shaft seals – CRW1, CRWA1, CRWH1 and CRWHA1 – metric dimensions
$d_1$ **55 – 70** mm



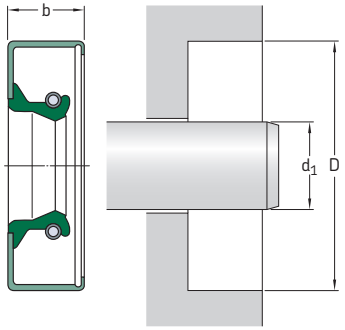

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Please see **pages 74** to **76** for housing bore requirements.

| **Dimensions** Shaft $d_1$ | Bore D | Nominal seal width b | **Design and lip material** | **Designation** |
|---|---|---|---|---|
| mm | | | – | – |
| **55** | 70 | 8 | CRW1 R | **CR 55×70×8 CRW1 R** |
| | 70 | 8 | CRW1 V | **CR 55×70×8 CRW1 V** |
| | 72 | 8 | CRW1 R | **CR 55×72×8 CRW1 R** |
| | 72 | 8 | CRW1 V | **CR 55×72×8 CRW1 V** |
| | 73 | 8 | CRW1 V | **CR 55×73×8 CRW1 V** |
| | 75 | 8 | CRW1 R | **CR 55×75×8 CRW1 R** |
| | 75 | 8 | CRW1 V | **CR 55×75×8 CRW1 V** |
| | 80 | 8 | CRW1 R | **CR 55×80×8 CRW1 R** |
| | 80 | 8 | CRW1 V | **CR 55×80×8 CRW1 V** |
| | 85 | 8 | CRW1 R | **CR 55×85×8 CRW1 R** |
| | 90 | 8 | CRW1 R | **CR 55×90×8 CRW1 R** |
| | 100 | 8 | CRW1 R | **CR 55×100×8 CRW1 R** |
| **56** | 75 | 8 | CRW1 R | **CR 56×75×8 CRW1 R** |
| **57** | 81 | 11 | CRW1 R | **CR 57×81×11 CRW1 R** |
| | 81 | 11 | CRWA1 P | **CR 57×81×11 CRWA1 P** |
| | 92 | 11 | CRWH1 R | **CR 57×92×11 CRWH1 R** |
| | 92 | 11 | CRWHA1 R | **CR 57×92×11 CRWHA1 R** |
| **58** | 72 | 8 | CRW1 R | **CR 58×72×8 CRW1 R** |
| | 72 | 8 | CRW1 S | **CR 58×72×8 CRW1 S** |
| | 75 | 8 | CRW1 R | **CR 58×75×8 CRW1 R** |
| | 80 | 8 | CRW1 R | **CR 58×80×8 CRW1 R** |
| | 80 | 8 | CRW1 V | **CR 58×80×8 CRW1 V** |
| | 85 | 8 | CRW1 R | **CR 58×85×8 CRW1 R** |
| | 90 | 8 | CRW1 R | **CR 58×90×8 CRW1 R** |

| Dimensions | | | Design and lip material | Designation |
|---|---|---|---|---|
| Shaft | Bore | Nominal seal width | | |
| $d_1$ | D | b | | |
| mm | | | – | – |
| **60** | 75 | 8 | CRW1 R | **CR 60×75×8 CRW1 R** |
| | 75 | 8 | CRW1 V | **CR 60×75×8 CRW1 V** |
| | 80 | 8 | CRW1 R | **CR 60×80×8 CRW1 R** |
| | 80 | 8 | CRW1 V | **CR 60×80×8 CRW1 V** |
| | 82 | 8 | CRWA1 R | **CR 60×82×8 CRWA1 R** |
| | 85 | 8 | CRW1 V | **CR 60×85×8 CRW1 V** |
| | 85 | 8 | CRW1 R | **CR 60×85×8 CRW1 R** |
| | 90 | 8 | CRW1 R | **CR 60×90×8 CRW1 R** |
| | 105 | 8 | CRW1 R | **CR 60×105×8 CRW1 R** |
| | 110 | 8 | CRW1 R | **CR 60×110×8 CRW1 R** |
| **62** | 80 | 8 | CRW1 V | **CR 62×80×8 CRW1 V** |
| | 85 | 8 | CRW1 R | **CR 62×85×8 CRW1 R** |
| | 90 | 8 | CRW1 R | **CR 62×90×8 CRW1 R** |
| | 90 | 11,13 | CRWH1 R | **CR 62×90×11 CRWH1 R** |
| **63** | 78 | 8 | CRW1 R | **CR 63×78×8 CRW1 R** |
| | 80 | 8 | CRW1 R | **CR 63×80×8 CRW1 R** |
| | 85 | 8 | CRW1 R | **CR 63×85×8 CRW1 R** |
| | 88 | 8 | CRW1 R | **CR 63×88×8 CRW1 R** |
| **65** | 80 | 8 | CRW1 R | **CR 65×80×8 CRW1 R** |
| | 80 | 8 | CRW1 V | **CR 65×80×8 CRW1 V** |
| | 85 | 8 | CRW1 R | **CR 65×85×8 CRW1 R** |
| | 85 | 8 | CRW1 V | **CR 65×85×8 CRW1 V** |
| | 88 | 8 | CRW1 R | **CR 65×88×8 CRW1 R** |
| | 90 | 8 | CRW1 R | **CR 65×90×8 CRW1 R** |
| | 90 | 8 | CRW1 V | **CR 65×90×8 CRW1 V** |
| | 92 | 11,13 | CRWH1 R | **CR 65×92×11 CRWH1 R** |
| | 100 | 8 | CRW1 R | **CR 65×100×8 CRW1 R** |
| | 100 | 8 | CRW1 V | **CR 65×100×8 CRW1 V** |
| | 110 | 10 | CRW1 R | **CR 65×110×10 CRW1 R** |
| | 120 | 8 | CRW1 R | **CR 65×120×8 CRW1 R** |
| **68** | 85 | 8 | CRW1 R | **CR 68×85×8 CRW1 R** |
| | 88 | 8 | CRW1 R | **CR 68×88×8 CRW1 R** |
| | 90 | 8 | CRW1 R | **CR 68×90×8 CRW1 R** |
| | 90 | 8 | CRW1 V | **CR 68×90×8 CRW1 V** |
| | 95 | 10 | CRW1 R | **CR 68×95×10 CRW1 R** |
| | 95 | 10 | CRW1 V | **CR 68×95×10 CRW1 V** |
| | 100 | 10 | CRW1 R | **CR 68×100×10 CRW1 R** |
| **70** | 85 | 8 | CRW1 R | **CR 70×85×8 CRW1 R** |
| | 88 | 8 | CRW1 R | **CR 70×88×8 CRW1 R** |
| | 88 | 8 | CRW1 V | **CR 70×88×8 CRW1 V** |
| | 90 | 8 | CRW1 R | **CR 70×90×8 CRW1 R** |
| | 90 | 10 | CRW1 V | **CR 70×90×10 CRW1 V** |
| | 90 | 10 | CRWHA1 P | **CR 70×90×10 CRWHA1 P** |
| | 92 | 11 | CRWH1 R | **CR 70×92×11 CRWH1 R** |
| | 92 | 11 | CRWH1 V | **CR 70×92×11 CRWH1 V** |
| | 95 | 10 | CRW1 R | **CR 70×95×10 CRW1 R** |
| | 100 | 10 | CRW1 R | **CR 70×100×10 CRW1 R** |
| | 105 | 10 | CRW1 R | **CR 70×105×10 CRW1 R** |

## Radial shaft seals – CRW1, CRWA1, CRWH1 and CRWHA1 – metric dimensions
$d_1$ **70 – 110** mm



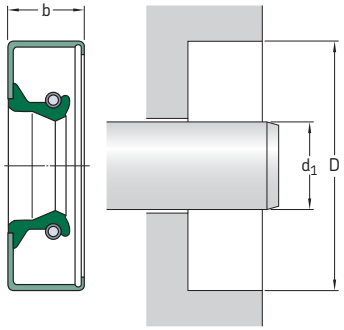

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Please see **pages 74** to **76** for housing bore requirements.

| **Dimensions** Shaft $d_1$ | Bore D | Nominal seal width b | **Design and lip material** | **Designation** |
|---|---|---|---|---|
| mm | | | – | – |
| **70** | 110 | 10 | CRW1 R | **CR 70×110×10 CRW1 R** |
| cont. | 110 | 12,70 | CRWHA1 R | **CR 70×110×13 CRWHA1 R**[1)] |
| **72** | 88 | 8 | CRW1 R | **CR 72×88×8 CRW1 R** |
| **73** | 92 | 11,13 | CRWH1 R | **CR 73×92×11 CRWH1 R** |
| | 110 | 11,13 | CRWA1 P | **CR 73×110×11 CRWA1 P** |
| **75** | 90 | 8 | CRW1 R | **CR 75×90×8 CRW1 R** |
| | 95 | 10 | CRW1 R | **CR 75×95×10 CRW1 R** |
| | 95 | 10 | CRW1 V | **CR 75×95×10 CRW1 V** |
| | 100 | 10 | CRW1 R | **CR 75×100×10 CRW1 R** |
| | 100 | 10 | CRW1 V | **CR 75×100×10 CRW1 V** |
| | 105 | 10 | CRW1 R | **CR 75×105×10 CRW1 R** |
| | 110 | 10 | CRW1 R | **CR 75×110×10 CRW1 R** |
| | 115 | 12 | CRW1 R | **CR 75×115×12 CRW1 R** |
| **80** | 100 | 10 | CRW1 R | **CR 80×100×10 CRW1 R** |
| | 100 | 10 | CRW1 V | **CR 80×100×10 CRW1 V** |
| | 105 | 10 | CRW1 R | **CR 80×105×10 CRW1 R** |
| | 105 | 10 | CRW1 V | **CR 80×105×10 CRW1 V** |
| | 110 | 10 | CRW1 R | **CR 80×110×10 CRW1 R** |
| | 125 | 10 | CRW1 R | **CR 80×125×10 CRW1 R** |
| | 125 | 10 | CRW1 V | **CR 80×125×10 CRW1 V** |
| | 130 | 12 | CRWA1 R | **CR 80×130×12 CRWA1 R** |
| | 140 | 12 | CRW1 R | **CR 80×140×12 CRW1 R** |
| **84** | 127 | 11 | CRWH1 R | **CR 84×127×11 CRWH1 R** |

| Dimensions | | | Design and lip material | Designation |
|---|---|---|---|---|
| Shaft | Bore | Nominal seal width | | |
| $d_1$ | D | b | | |
| mm | | | – | – |
| **85** | 105 | 10 | CRW1 R | **CR 85×105×10 CRW1 R** |
| | 105 | 10 | CRW1 V | **CR 85×105×10 CRW1 V** |
| | 110 | 10 | CRW1 R | **CR 85×110×10 CRW1 R** |
| | 110 | 10 | CRWA1 V | **CR 85×110×10 CRWA1 V** |
| | 120 | 12 | CRW1 R | **CR 85×120×12 CRW1 R** |
| | 130 | 12 | CRW1 R | **CR 85×130×12 CRW1 R** |
| **89** | 127 | 11,13 | CRWH1 R | **CR 89×127×11 CRWH1 R** |
| **90** | 110 | 12 | CRW1 R | **CR 90×110×12 CRW1 R** |
| | 110 | 12 | CRW1 V | **CR 90×110×12 CRW1 V** |
| | 115 | 12 | CRWA1 R | **CR 90×115×12 CRWA1 R** |
| | 120 | 12 | CRW1 R | **CR 90×120×12 CRW1 R** |
| | 120 | 12 | CRW1 V | **CR 90×120×12 CRW1 V** |
| | 125 | 12 | CRW1 R | **CR 90×125×12 CRW1 R** |
| | 125 | 12 | CRW1 V | **CR 90×125×12 CRW1 V** |
| | 130 | 12 | CRW1 R | **CR 90×130×12 CRW1 R** |
| | 140 | 12 | CRWA1 R | **CR 90×140×12 CRWA1 R** |
| **92** | 127 | 11 | CRWHA1 R | **CR 92×127×11 CRWHA1 R** |
| | 127 | 11,13 | CRWH1 R | **CR 92×127×11 CRWH1 R** |
| **95** | 110 | 10 | CRW1 R | **CR 95×110×10 CRW1 R** |
| | 115 | 12 | CRW1 R | **CR 95×115×12 CRW1 R** |
| | 115 | 12 | CRW1 V | **CR 95×115×12 CRW1 V** |
| | 120 | 12 | CRW1 R | **CR 95×120×12 CRW1 R** |
| | 120 | 12 | CRW1 V | **CR 95×120×12 CRW1 V** |
| | 120 | 12 | CRWA1 V | **CR 95×120×12 CRWA1 V** |
| | 125 | 12 | CRW1 R | **CR 95×125×12 CRW1 R** |
| | 130 | 12 | CRW1 R | **CR 95×130×12 CRW1 R** |
| | 130 | 12 | CRW1 V | **CR 95×130×12 CRW1 V** |
| **98** | 120 | 12 | CRW1 V | **CR 98×120×12 CRW1 V** |
| **100** | 120 | 12 | CRW1 R | **CR 100×120×12 CRW1 R** |
| | 120 | 12 | CRW1 V | **CR 100×120×12 CRW1 V** |
| | 125 | 12 | CRW1 R | **CR 100×125×12 CRW1 R** |
| | 125 | 12 | CRW1 V | **CR 100×125×12 CRW1 V** |
| | 127 | 11,13 | CRWH1 R | **CR 100×127×11 CRWH1 R** |
| | 130 | 12 | CRW1 R | **CR 100×130×12 CRW1 R** |
| | 135 | 12 | CRWA1 R | **CR 100×135×12 CRWA1 R** |
| | 140 | 12 | CRWA1 R | **CR 100×140×12 CRWA1 R** |
| **105** | 127 | 11,13 | CRWH1 R | **CR 105×127×11 CRWH1 R** |
| | 130 | 12 | CRW1 R | **CR 105×130×12 CRW1 R** |
| | 130 | 12 | CRW1 V | **CR 105×130×12 CRW1 V** |
| | 135 | 12 | CRWA1 R | **CR 105×135×12 CRWA1 R** |
| | 140 | 12 | CRWA1 R | **CR 105×140×12 CRWA1 R** |
| | 160 | 12 | CRW1 R | **CR 105×160×12 CRW1 R** |
| **110** | 130 | 12 | CRW1 R | **CR 110×130×12 CRW1 R** |
| | 130 | 12 | CRW1 V | **CR 110×130×12 CRW1 V** |
| | 135 | 12 | CRW1 V | **CR 110×135×12 CRW1 V** |
| | 140 | 12 | CRW1 V | **CR 110×140×12 CRW1 V** |
| | 140 | 12 | CRW1 R | **CR 110×140×12 CRW1 R** |
| | 145 | 12 | CRW1 R | **CR 110×145×12 CRW1 R** |
| | 160 | 12 | CRWH1 R | **CR 110×160×12 CRWH1 R** |

## Radial shaft seals – CRW1, CRWA1, CRWH1 and CRWHA1 – metric dimensions
$d_1$ **115 – 280** mm




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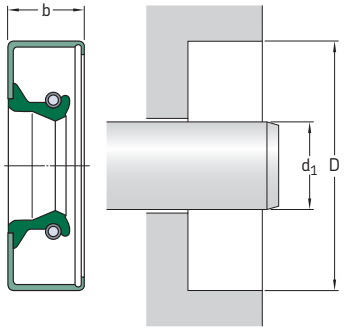
Please see **pages 74** to **76** for housing bore requirements.

| **Dimensions** Shaft $d_1$ | Bore D | Nominal seal width b | **Design and lip material** | **Designation** |
|---|---|---|---|---|
| mm | | | – | – |
| **115** | 135 | 12 | CRW1 R | **CR 115×135×12 CRW1 R** |
| | 140 | 12 | CRW1 R | **CR 115×140×12 CRW1 R** |
| | 140 | 12 | CRW1 R | **CR 115×140×12 CRW1 R** |
| | 140 | 12 | CRW1 V | **CR 115×140×12 CRW1 V** |
| | 145 | 12 | CRW1 R | **CR 115×145×12 CRW1 R** |
| | 150 | 12 | CRW1 R | **CR 115×150×12 CRW1 R** |
| | 160 | 12 | CRW1 R | **CR 115×160×12 CRW1 R** |
| **120** | 140 | 12 | CRWA1 R | **CR 120×140×12 CRWA1 R** |
| | 145 | 12 | CRW1 R | **CR 120×145×12 CRW1 R** |
| | 150 | 12 | CRW1 R | **CR 120×150×12 CRW1 R** |
| | 160 | 12 | CRWH1 R | **CR 120×160×12 CRWH1 R** |
| **125** | 150 | 12 | CRW1 R | **CR 125×150×12 CRW1 R** |
| | 150 | 12 | CRW1 V | **CR 125×150×12 CRW1 V** |
| | 160 | 12 | CRW1 R | **CR 125×160×12 CRW1 R** |
| **130** | 160 | 12 | CRW1 R | **CR 130×160×12 CRW1 R** |
| | 160 | 12 | CRW1 V | **CR 130×160×12 CRW1 V** |
| | 170 | 12 | CRW1 R | **CR 130×170×12 CRW1 R** |
| **140** | 160 | 12 | CRW1 R | **CR 140×160×12 CRW1 R** |
| | 170 | 12 | CRW1 R | **CR 140×170×12 CRW1 R** |
| | 170 | 12 | CRW1 V | **CR 140×170×12 CRW1 V**[1)] |
| **143** | 181 | 12,70 | CRWHA1 R | **CR 143×181×13 CRWHA1 R** |
| **160** | 190 | 15 | CRW1 V | **CR 160×190×15 CRW1 V** |
| **162** | 200 | 14,30 | CRWHA1 R | **CR 162×200×14 CRWHA1 R** |
| | 200 | 15,88 | CRWH1 R | **CR 162×200×16 CRWH1 R** |
| **188** | 215 | 16 | CRWH1 R | **CR 188×215×16 CRWH1 R** |
| **203** | 254 | 15,88 | CRWHA1 R | **CR 203×254×16 CRWHA1 R**[1)] |

[1)] Without SKF Bore Tite Coating

| Dimensions | | | Design and lip material | Designation |
|---|---|---|---|---|
| Shaft | Bore | Nominal seal width | | |
| $d_1$ | D | b | | |
| mm | | | – | – |
| **216** | 254 | 15,88 | CRWH1 R | **CR 216×254×16 CRWH1 R** |
| **220** | 250 | 16 | CRWH1 R | **CR 220×250×16 CRWH1 R** |
| **280** | 320 | 20 | CRWA1 R | **CR 280×320×20 CRWA1 R** |
| | 320 | 20 | CRWA1 V | **CR 280×320×20 CRWA1 V** |

## Radial shaft seals – CRW1, CRWA1, CRWH1 and CRWHA1 – inch dimensions
$d_1$ **0.250 – 0.669** in.




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Please see **pages 74** to **76** for housing bore requirements.

| **Dimensions** Shaft $d_1$ | Bore D | Nominal seal width b | **Design and lip material** | **Designation** |
|---|---|---|---|---|
| in. | | | – | – |
| **0.250** | 0.749 | 0.250 | CRW1 V | **CR 2513**[1] |
| | 0.749 | 0.250 | CRW1 R | **CR 2514** |
| **0.375** | 0.749 | 0.250 | CRW1 R | **CR 3687**[1] |
| | 0.749 | 0.250 | CRW1 V | **CR 3688** |
| | 0.750 | 0.250 | CRWA1 R | **CR 3680** |
| | 0.836 | 0.188 | CRW1 P | **CR 3719** |
| | 0.875 | 0.250 | CRW1 R | **CR 3725** |
| | 0.999 | 0.250 | CRW1 R | **CR 3751**[1] |
| | 0.999 | 0.250 | CRW1 V | **CR 3752** |
| | 1.124 | 0.250 | CRW1 R | **CR 3806**[1] |
| **0.438** | 0.875 | 0.250 | CRW1 P | **CR 4249** |
| | 0.875 | 0.250 | CRW1 R | **CR 4251**[1] |
| | 0.875 | 0.375 | CRWA1 R | **CR 4261**[1] |
| | 0.875 | 0.375 | CRWA1 V | **CR 4262** |
| | 0.999 | 0.250 | CRW1 V | **CR 4356** |
| | 0.999 | 0.375 | CRW1 P | **CR 4353** |
| | 0.999 | 0.375 | CRW1 R | **CR 4355** |
| | 1.124 | 0.250 | CRW1 R | **CR 4390** |
| **0.500** | 0.875 | 0.250 | CRW1 R | **CR 4931** |
| | 0.875 | 0.250 | CRW1 V | **CR 4932** |
| | 0.875 | 0.250 | CRWA1 V | **CR 4933** |
| | 0.875 | 0.250 | CRWA1 V | **CR 4935** |
| | 0.875 | 0.250 | CRW1 D | **CR 4936** |
| | 0.875 | 0.313 | CRWA1 R | **CR 4939** |
| | 0.987 | 0.250 | CRW1 R | **CR 4943** |
| | 0.999 | 0.250 | CRW1 V | **CR 4980** |
| | 0.999 | 0.250 | CRW1 R | **CR 4984** |
| | 0.999 | 0.250 | CRWA1 R | **CR 4985** |
| | 1.124 | 0.250 | CRW1 P | **CR 5045** |
| | 1.124 | 0.250 | CRWA1 R | **CR 5062** |
| | 1.124 | 0.250 | CRW1 V | **CR 5066** |

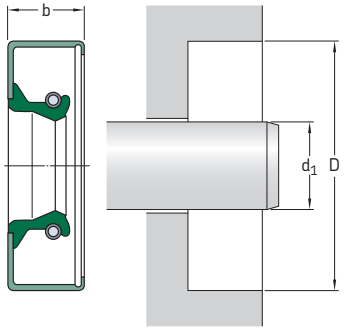
[1] Without SKF Bore Tite Coating

| Dimensions Shaft $d_1$ | Bore D | Nominal seal width b | Design and lip material | Designation |
|---|---|---|---|---|
| in. | | | – | – |
| **0.500** | 1.124 | 0.250 | CRWA1 V | **CR 5067** |
| cont. | 1.124 | 0.250 | CRW1 R | **CR 5068** |
| | 1.124 | 0.313 | CRW1 P | **CR 5046** |
| | 1.250 | 0.250 | CRW1 R | **CR 5133** |
| | 1.375 | 0.250 | CRW1 R | **CR 5150** |
| | 1.375 | 0.250 | CRW1 V | **CR 5151** |
| **0.531** | 0.999 | 0.250 | CRWA1 S | **CR 5321** |
| **0.546** | 0.875 | 0.250 | CRW1 P | **CR 5385**[1] |
| **0.554** | 0.999 | 0.250 | CRW1 R | **CR 5605** |
| **0.563** | 0.875 | 0.188 | CRW1 D | **CR 5523** |
| | 0.999 | 0.250 | CRW1 R | **CR 5541** |
| | 0.999 | 0.250 | CRW1 V | **CR 5542** |
| | 0.999 | 0.250 | CRW1 R | **CR 5543** |
| | 0.999 | 0.250 | CRWA1 R | **CR 5606** |
| | 1.124 | 0.250 | CRW1 V | **CR 5650** |
| | 1.124 | 0.250 | CRW1 R | **CR 5652** |
| | 1.124 | 0.250 | CRWA1 R | **CR 5662** |
| | 1.250 | 0.250 | CRW1 R | **CR 5707** |
| | 1.375 | 0.250 | CRW1 R | **CR 5756** |
| **0.594** | 1.124 | 0.313 | CRW1 R | **CR 5926** |
| | 1.124 | 0.313 | CRW1 V | **CR 5927** |
| **0.625** | 0.987 | 0.250 | CRW1 R | **CR 6134** |
| | 0.999 | 0.250 | CRWA1 V | **CR 6139** |
| | 0.999 | 0.250 | CRWA1 R | **CR 6141** |
| | 0.999 | 0.250 | CRW1 R | **CR 6143** |
| | 1.063 | 0.250 | CRW1 R | **CR 6157** |
| | 1.124 | 0.250 | CRW1 R | **CR 6903** |
| | 1.124 | 0.250 | CRWA1 R | **CR 6904** |
| | 1.124 | 0.250 | CRW1 V | **CR 6823** |
| | 1.124 | 0.250 | CRWA1 V | **CR 6825** |
| | 1.181 | 0.250 | CRWA1 R | **CR 6247** |
| | 1.181 | 0.256 | CRWA1 V | **CR 6248** |
| | 1.250 | 0.250 | CRW1 V | **CR 6909** |
| | 1.250 | 0.250 | CRW1 R | **CR 6925** |
| | 1.250 | 0.250 | CRWA1 R | **CR 6916** |
| | 1.375 | 0.250 | CRW1 R | **CR 6372** |
| | 1.375 | 0.250 | CRWA1 R | **CR 6373** |
| | 1.375 | 0.250 | CRW1 V | **CR 6379** |
| | 1.375 | 0.250 | CRWA1 V | **CR 6383** |
| | 1.377 | 0.250 | CRWHA1 R | **CR 6391** |
| | 1.499 | 0.250 | CRW1 R | **CR 6422** |
| **0.656** | 1.124 | 0.313 | CRW1 R | **CR 6521** |
| | 1.250 | 0.250 | CRW1 R | **CR 6541** |
| | 1.375 | 0.313 | CRW1 R | **CR 6556** |
| | 1.575 | 0.250 | CRW1 R | **CR 6582** |
| **0.669** | 0.999 | 0.188 | CRW1 R | **CR 6595** |
| | 1.064 | 0.250 | CRW1 R | **CR 6728** |
| | 1.064 | 0.250 | CRW1 R | **CR 6729** |
| | 1.573 | 0.281 | CRW1 V | **CR 6597**[1] |

[1] Without SKF Bore Tite Coating



## Radial shaft seals – CRW1, CRWA1, CRWH1 and CRWHA1 – inch dimensions
$d_1$ **0.688 – 0.875** in.




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Please see **pages 74** to **76** for housing bore requirements.

| **Dimensions** Shaft $d_1$ | Bore D | Nominal seal width b | **Design and lip material** | **Designation** |
|---|---|---|---|---|
| in. | | | – | – |
| **0.688** | 1.124 | 0.190 | CRW1 R | **CR 6738** |
| | 1.124 | 0.250 | CRW1 R | **CR 6741** |
| | 1.124 | 0.250 | CRW1 R | **CR 6743** |
| | 1.124 | 0.250 | CRW1 V | **CR 6745** |
| | 1.187 | 0.188 | CRW1 V | **CR 6770** |
| | 1.188 | 0.188 | CRW1 R | **CR 6763** |
| | 1.250 | 0.250 | CRWA1 R | **CR 6765** |
| | 1.250 | 0.256 | CRWHA1 V | **CR 6751** |
| | 1.250 | 0.313 | CRW1 R | **CR 6767** |
| | 1.250 | 0.313 | CRW1 V | **CR 6768** |
| | 1.252 | 0.220 | CRWH1 V | **CR 6769** |
| | 1.375 | 0.250 | CRWA1 R | **CR 6814** |
| | 1.375 | 0.313 | CRW1 R | **CR 6816** |
| | 1.375 | 0.313 | CRW1 V | **CR 6817** |
| | 1.499 | 0.250 | CRW1 R | **CR 6935** |
| | 1.624 | 0.250 | CRWA1 R | **CR 6990** |
| **0.750** | 1.124 | 0.188 | CRW1 R | **CR 7414** |
| | 1.124 | 0.188 | CRW1 V | **CR 7417** |
| | 1.249 | 0.188 | CRW1 V | **CR 7467**[1)] |
| | 1.250 | 0.188 | CRW1 R | **CR 7439** |
| | 1.250 | 0.188 | CRW1 R | **CR 7478**[1)] |
| | 1.250 | 0.250 | CRW1 R | **CR 7438** |
| | 1.250 | 0.250 | CRW1 R | **CR 7440** |
| | 1.250 | 0.250 | CRWA1 R | **CR 7443** |
| | 1.250 | 0.250 | CRW1 V | **CR 7450** |
| | 1.250 | 0.250 | CRWA1 V | **CR 7453** |
| | 1.250 | 0.250 | CRWA1 V | **CR 7455** |
| | 1.252 | 0.188 | CRW1 R | **CR 7469** |
| | 1.260 | 0.250 | CRW1 R | **CR 7473** |
| | 1.312 | 0.250 | CRW1 R | **CR 7474** |
| | 1.312 | 0.250 | CRWA1 R | **CR 7475** |
| | 1.375 | 0.250 | CRW1 R | **CR 7512** |

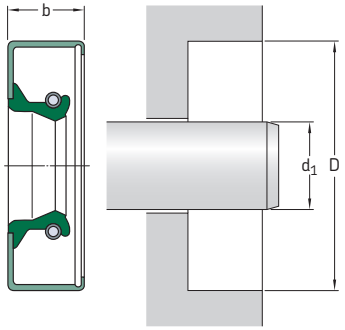
[1)] Without SKF Bore Tite Coating

| Dimensions Shaft $d_1$ | Bore D | Nominal seal width b | Design and lip material | Designation |
|---|---|---|---|---|
| in. | | | – | – |
| **0.750** | 1.375 | 0.250 | CRWA1 R | **CR 7513** |
| cont. | 1.375 | 0.250 | CRW1 V | **CR 7515** |
| | 1.375 | 0.250 | CRWA1 V | **CR 7517** |
| | 1.375 | 0.250 | CRWA1 P | **CR 7533** |
| | 1.499 | 0.250 | CRW1 V | **CR 7567** |
| | 1.499 | 0.250 | CRW1 R | **CR 7572**[1] |
| | 1.499 | 0.250 | CRWA1 R | **CR 7573** |
| | 1.575 | 0.250 | CRW1 R | **CR 7591** |
| | 1.624 | 0.250 | CRW1 V | **CR 7623** |
| | 1.624 | 0.250 | CRWA1 V | **CR 7624** |
| | 1.624 | 0.250 | CRW1 R | **CR 7627** |
| | 1.624 | 0.250 | CRWA1 R | **CR 7628** |
| | 1.752 | 0.250 | CRW1 R | **CR 7636** |
| | 1.752 | 0.250 | CRWA1 V | **CR 7638** |
| | 1.828 | 0.250 | CRW1 R | **CR 7661** |
| | 1.874 | 0.250 | CRW1 R | **CR 7690** |
| | 2.047 | 0.313 | CRW1 R | **CR 7693** |
| **0.781** | 1.375 | 0.313 | CRW1 V | **CR 7824** |
| | 1.375 | 0.313 | CRW1 R | **CR 7829**[1] |
| | 1.499 | 0.313 | CRW1 R | **CR 7849** |
| | 1.624 | 0.313 | CRW1 R | **CR 7872** |
| | 1.828 | 0.250 | CRW1 P | **CR 7889** |
| **0.787** | 1.124 | 0.188 | CRW1 R | **CR 7740** |
| **0.813** | 1.187 | 0.313 | CRWA1 V | **CR 8013** |
| | 1.250 | 0.188 | CRW1 R | **CR 8017**[1] |
| | 1.250 | 0.188 | CRW1 P | **CR 8018** |
| | 1.312 | 0.250 | CRW1 R | **CR 8027** |
| | 1.375 | 0.375 | CRW1 V | **CR 8053** |
| | 1.375 | 0.375 | CRW1 R | **CR 8060** |
| | 1.499 | 0.250 | CRW1 R | **CR 8088**[1] |
| | 1.624 | 0.250 | CRW1 V | **CR 8178** |
| | 1.752 | 0.375 | CRW1 R | **CR 8215** |
| **0.875** | 1.250 | 0.188 | CRW1 R | **CR 8624** |
| | 1.250 | 0.250 | CRW1 V | **CR 8621** |
| | 1.308 | 0.250 | CRW1 V | **CR 8649** |
| | 1.375 | 0.250 | CRW1 V | **CR 8646** |
| | 1.375 | 0.250 | CRW1 R | **CR 8648** |
| | 1.437 | 0.250 | CRW1 R | **CR 8691** |
| | 1.499 | 0.250 | CRW1 R | **CR 8700** |
| | 1.499 | 0.250 | CRWA1 R | **CR 8702** |
| | 1.499 | 0.250 | CRW1 V | **CR 8704** |
| | 1.499 | 0.250 | CRWA1 V | **CR 8707** |
| | 1.499 | 0.313 | CRW1 R | **CR 8703**[1] |
| | 1.502 | 0.313 | CRWA1 R | **CR 8748** |
| | 1.575 | 0.250 | CRW1 R | **CR 8763** |
| | 1.624 | 0.250 | CRWA1 R | **CR 8782** |
| | 1.624 | 0.250 | CRW1 V | **CR 8795** |
| | 1.624 | 0.250 | CRW1 R | **CR 8796** |
| | 1.752 | 0.250 | CRW1 R | **CR 8821** |
| | 1.828 | 0.250 | CRW1 R | **CR 8842** |
| | 1.874 | 0.250 | CRW1 R | **CR 8860** |

[1] Without SKF Bore Tite Coating



## Radial shaft seals – CRW1, CRWA1, CRWH1 and CRWHA1 – inch dimensions
$d_1$ **0.875 – 1.063** in.




Please see **pages 74** to **76** for housing bore requirements.

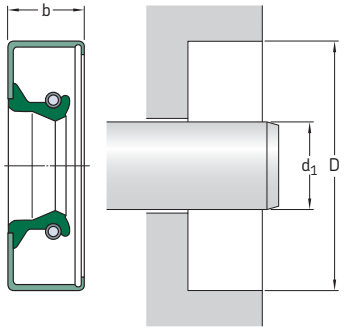
| **Dimensions** Shaft $d_1$ | Bore D | Nominal seal width b | **Design and lip material** | **Designation** |
|---|---|---|---|---|
| in. | | | – | – |
| **0.875** | 2.000 | 0.250 | CRW1 R | **CR 8870** |
| cont. | 2.050 | 0.375 | CRWH1 V | **CR 8871** |
| **0.882** | 2.088 | 0.313 | CRWHA1 R | **CR 9000** |
| **0.938** | 1.375 | 0.250 | CRWA1 R | **CR 9244** |
| | 1.500 | 0.250 | CRW1 R | **CR 9303** |
| | 1.500 | 0.250 | CRW1 V | **CR 9304** |
| | 1.624 | 0.250 | CRW1 R | **CR 9307** |
| | 1.624 | 0.250 | CRW1 V | **CR 9308** |
| | 1.752 | 0.250 | CRW1 R | **CR 9347** |
| | 1.828 | 0.250 | CRW1 R | **CR 9409** |
| **0.950** | 1.358 | 0.275 | CRW1 P | **CR 9520** |
| **0.969** | 1.406 | 0.250 | CRWA1 P | **CR 9604** |
| | 1.499 | 0.313 | CRW1 V | **CR 9611** |
| | 1.499 | 0.313 | CRW1 R | **CR 9613**[1] |
| | 1.624 | 0.250 | CRW1 R | **CR 9646** |
| | 1.624 | 0.250 | CRW1 V | **CR 9647** |
| | 1.686 | 0.313 | CRWA1 R | **CR 9663** |
| | 1.686 | 0.313 | CRW1 R | **CR 9664** |
| | 1.752 | 0.250 | CRW1 R | **CR 9667** |
| | 1.828 | 0.313 | CRW1 R | **CR 9681** |
| **0.981** | 1.376 | 0.313 | CRW1 V | **CR 9888**[1] |
| **0.984** | 1.499 | 0.250 | CRW1 V | **CR 9686** |
| | 1.749 | 0.375 | CRWA1 V | **CR 9803**[1] |
| **1.000** | 1.367 | 0.313 | CRW1 R | **CR 9822** |
| | 1.375 | 0.250 | CRW1 P | **CR 9826**[1] |
| | 1.375 | 0.250 | CRW1 V | **CR 9831** |

[1] Without SKF Bore Tite Coating

| Dimensions Shaft $d_1$ | Bore D | Nominal seal width b | Design and lip material | Designation |
|---|---|---|---|---|
| in. | | | – | – |
| **1.000** cont. | 1.437 | 0.250 | CRW1 V | **CR 9833** |
| | 1.437 | 0.250 | CRW1 R | **CR 9837** |
| | 1.437 | 0.250 | CRWA1 R | **CR 9838** |
| | 1.437 | 0.250 | CRWA1 V | **CR 9847** |
| | 1.496 | 0.390 | CRW1 R | **CR 9850** |
| | 1.499 | 0.250 | CRW1 R | **CR 9852** |
| | 1.499 | 0.250 | CRW1 V | **CR 9854** |
| | 1.499 | 0.250 | CRW1 R | **CR 9876** |
| | 1.499 | 0.250 | CRWA1 R | **CR 9878** |
| | 1.499 | 0.250 | CRWA1 V | **CR 9879** |
| | 1.499 | 0.315 | CRWA1 V | **CR 9862** |
| | 1.499 | 0.315 | CRW1 V | **CR 9892** |
| | 1.561 | 0.250 | CRW1 R | **CR 9894** |
| | 1.575 | 0.313 | CRWA1 R | **CR 9907** |
| | 1.624 | 0.250 | CRW1 R | **CR 9934** |
| | 1.624 | 0.250 | CRWA1 R | **CR 9935** |
| | 1.624 | 0.250 | CRW1 V | **CR 9937** |
| | 1.624 | 0.250 | CRWA1 V | **CR 9939** |
| | 1.686 | 0.250 | CRW1 R | **CR 9960** |
| | 1.752 | 0.250 | CRW1 V | **CR 9982** |
| | 1.752 | 0.250 | CRWA1 V | **CR 9983** |
| | 1.752 | 0.250 | CRW1 R | **CR 9997** |
| | 1.752 | 0.250 | CRWA1 R | **CR 9998** |
| | 1.828 | 0.250 | CRW1 V | **CR 10046** |
| | 1.828 | 0.250 | CRW1 P | **CR 10047** |
| | 1.828 | 0.250 | CRW1 R | **CR 10049** |
| | 1.828 | 0.250 | CRWA1 R | **CR 10050** |
| | 1.851 | 0.250 | CRW1 R | **CR 10071** |
| | 1.874 | 0.250 | CRW1 R | **CR 10075** |
| | 1.938 | 0.250 | CRW1 R | **CR 10104** |
| | 1.983 | 0.250 | CRWA1 V | **CR 10111** |
| | 1.983 | 0.313 | CRWA1 R | **CR 10114** |
| | 2.000 | 0.250 | CRW1 R | **CR 10123** |
| | 2.000 | 0.250 | CRWA1 R | **CR 10124** |
| | 2.000 | 0.250 | CRWA1 R | **CR 10127** |
| | 2.000 | 0.250 | CRW1 V | **CR 10128** |
| | 2.000 | 0.250 | CRWA1 V | **CR 10129** |
| | 2.047 | 0.250 | CRWA1 R | **CR 10157** |
| | 2.062 | 0.250 | CRW1 R | **CR 10158** |
| | 2.250 | 0.250 | CRW1 R | **CR 10169** |
| **1.063** | 1.499 | 0.250 | CRW1 R | **CR 10515** |
| | 1.499 | 0.250 | CRW1 V | **CR 10518** |
| | 1.512 | 0.256 | CRW1 P | **CR 532866** |
| | 1.561 | 0.250 | CRW1 R | **CR 10581** |
| | 1.577 | 0.250 | CRW1 R | **CR 10583** |
| | 1.624 | 0.250 | CRW1 R | **CR 10598** |
| | 1.686 | 0.250 | CRW1 R | **CR 10632** |
| | 1.752 | 0.250 | CRW1 R | **CR 10653** |
| | 1.828 | 0.250 | CRW1 R | **CR 10681** |
| | 1.828 | 0.250 | CRW1 V | **CR 10682** |
| | 1.874 | 0.250 | CRW1 R | **CR 10700** |
| | 1.979 | 0.250 | CRW1 R | **CR 10728** |
| | 1.983 | 0.250 | CRW1 R | **CR 10733** |



## Radial shaft seals – CRW1, CRWA1, CRWH1 and CRWHA1 – inch dimensions
$d_1$ **1.063 – 1.250** in.




Please see **pages 74** to **76** for housing bore requirements.

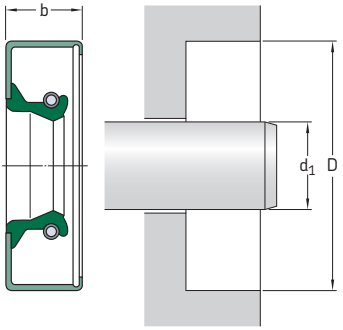
| **Dimensions** Shaft $d_1$ | Bore D | Nominal seal width b | **Design and lip material** | **Designation** |
|---|---|---|---|---|
| in. | | | – | – |
| **1.063** | 2.000 | 0.250 | CRW1 R | **CR 10740** |
| cont. | 2.062 | 0.250 | CRW1 R | **CR 10766** |
| **1.125** | 1.499 | 0.188 | CRW1 V | **CR 11059**[1] |
| | 1.499 | 0.188 | CRW1 R | **CR 11061**[1] |
| | 1.561 | 0.250 | CRW1 P | **CR 11066** |
| | 1.561 | 0.250 | CRW1 R | **CR 11067** |
| | 1.561 | 0.250 | CRW1 V | **CR 11071** |
| | 1.565 | 0.250 | CRW1 R | **CR 11082** |
| | 1.624 | 0.250 | CRW1 P | **CR 11111** |
| | 1.624 | 0.250 | CRW1 R | **CR 11123** |
| | 1.624 | 0.250 | CRWA1 R | **CR 11124** |
| | 1.624 | 0.250 | CRW1 V | **CR 11133** |
| | 1.624 | 0.250 | CRWA1 V | **CR 11134** |
| | 1.733 | 0.375 | CRW1 R | **CR 11137** |
| | 1.752 | 0.250 | CRW1 R | **CR 11138** |
| | 1.752 | 0.250 | CRW1 V | **CR 11144** |
| | 1.828 | 0.250 | CRW1 R | **CR 11170** |
| | 1.828 | 0.250 | CRWA1 R | **CR 11171** |
| | 1.828 | 0.250 | CRW1 V | **CR 11172** |
| | 1.828 | 0.250 | CRWA1 V | **CR 11175** |
| | 1.852 | 0.313 | CRWH1 R | **CR 11197** |
| | 1.852 | 0.313 | CRWHA1 R | **CR 11200** |
| | 1.874 | 0.250 | CRW1 V | **CR 11207** |
| | 1.874 | 0.250 | CRWA1 V | **CR 11218** |
| | 1.874 | 0.250 | CRW1 R | **CR 11209** |
| | 1.874 | 0.250 | CRWA1 R | **CR 11223** |
| | 1.983 | 0.250 | CRW1 R | **CR 11299** |
| | 2.000 | 0.250 | CRW1 R | **CR 11340** |
| | 2.000 | 0.250 | CRW1 V | **CR 11344** |
| | 2.000 | 0.374 | CRWA1 V | **CR 12138** |
| | 2.000 | 0.375 | CRWA1 R | **CR 11343** |

[1] Without SKF Bore Tite Coating

| Dimensions Shaft $d_1$ | Bore D | Nominal seal width b | Design and lip material | Designation |
|---|---|---|---|---|
| in. | | | – | – |
| **1.125** cont. | 2.047 | 0.313 | CRWA1 R | **CR 11353** |
| | 2.062 | 0.250 | CRWA1 V | **CR 11368** |
| | 2.062 | 0.313 | CRW1 R | **CR 11366** |
| | 2.125 | 0.313 | CRW1 R | **CR 11372** |
| | 2.125 | 0.313 | CRW1 V | **CR 11373** |
| | 2.250 | 0.250 | CRW1 R | **CR 11378** |
| | 2.441 | 0.250 | CRW1 R | **CR 11392** |
| **1.126** | 1.575 | 0.236 | CRWA1 R | **CR 11086** |
| **1.156** | 1.686 | 0.250 | CRWA1 R | **CR 11518** |
| | 1.752 | 0.250 | CRWA1 R | **CR 11514** |
| | 1.874 | 0.250 | CRW1 R | **CR 11524** |
| | 1.875 | 0.375 | CRWA1 R | **CR 11536**[1] |
| | 2.000 | 0.250 | CRW1 R | **CR 11544** |
| | 2.000 | 0.250 | CRWA1 R | **CR 11545** |
| | 2.000 | 0.250 | CRW1 V | **CR 11550** |
| | 2.062 | 0.313 | CRW1 R | **CR 11557** |
| **1.175** | 2.031 | 0.500 | CRW1 R | **CR 11553** |
| **1.178** | 2.073 | 0.335 | CRW1 S | **CR 11650** |
| **1.188** | 1.561 | 0.313 | CRW1 V | **CR 11710**[1] |
| | 1.686 | 0.250 | CRW1 P | **CR 11728** |
| | 1.687 | 0.250 | CRW1 R | **CR 11730** |
| | 1.752 | 0.250 | CRW1 R | **CR 11734** |
| | 1.752 | 0.250 | CRW1 V | **CR 11736** |
| | 1.828 | 0.375 | CRW1 R | **CR 11740** |
| | 1.875 | 0.250 | CRW1 P | **CR 11763** |
| | 1.875 | 0.375 | CRW1 R | **CR 11585** |
| | 1.983 | 0.250 | CRW1 R | **CR 11776** |
| | 1.983 | 0.250 | CRWA1 R | **CR 11777** |
| | 2.000 | 0.250 | CRW1 R | **CR 11800** |
| | 2.000 | 0.250 | CRWA1 R | **CR 11801** |
| | 2.000 | 0.250 | CRW1 V | **CR 11806** |
| | 2.062 | 0.250 | CRW1 R | **CR 11878** |
| | 2.062 | 0.250 | CRW1 P | **CR 11879** |
| | 2.125 | 0.313 | CRW1 R | **CR 11907** |
| | 2.165 | 0.250 | CRW1 R | **CR 11911** |
| | 2.250 | 0.250 | CRW1 R | **CR 11914** |
| | 2.437 | 0.250 | CRW1 R | **CR 11923** |
| | 2.441 | 0.250 | CRW1 R | **CR 11930** |
| **1.190** | 2.125 | 0.313 | CRWHA1 R | **CR 11908** |
| **1.234** | 2.250 | 0.250 | CRW1 R | **CR 12590** |
| **1.250** | 1.625 | 0.188 | CRW1 R | **CR 12329** |
| | 1.687 | 0.250 | CRW1 V | **CR 12335** |
| | 1.687 | 0.250 | CRW1 R | **CR 12336** |
| | 1.687 | 0.250 | CRWA1 V | **CR 12337** |
| | 1.687 | 0.313 | CRWA1 R | **CR 12350** |

[1] Without SKF Bore Tite Coating

## Radial shaft seals – CRW1, CRWA1, CRWH1 and CRWHA1 – inch dimensions
$d_1$ **1.250 – 1.375** in.




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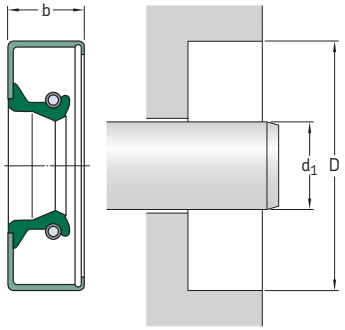
Please see **pages 74** to **76** for housing bore requirements.

| **Dimensions** Shaft $d_1$ | Bore D | Nominal seal width b | **Design and lip material** | **Designation** |
|---|---|---|---|---|
| in. | | | – | – |
| **1.250** cont. | 1.752 | 0.250 | CRW1 V | **CR 12340** |
| | 1.752 | 0.250 | CRWA1 V | **CR 12343** |
| | 1.752 | 0.250 | CRW1 R | **CR 12363** |
| | 1.752 | 0.250 | CRWA1 R | **CR 12364** |
| | 1.874 | 0.250 | CRW1 P | **CR 12382** |
| | 1.874 | 0.250 | CRWA1 V | **CR 12383** |
| | 1.874 | 0.250 | CRW1 R | **CR 12384** |
| | 1.874 | 0.250 | CRWA1 R | **CR 12386** |
| | 1.938 | 0.250 | CRW1 R | **CR 12391** |
| | 1.955 | 0.250 | CRWA1 R | **CR 12396** |
| | 1.983 | 0.250 | CRW1 R | **CR 12427** |
| | 1.983 | 0.250 | CRWA1 R | **CR 12428** |
| | 1.983 | 0.250 | CRW1 V | **CR 12432** |
| | 2.000 | 0.250 | CRW1 V | **CR 12445** |
| | 2.000 | 0.250 | CRWA1 V | **CR 12446** |
| | 2.000 | 0.250 | CRW1 R | **CR 12456** |
| | 2.000 | 0.250 | CRWA1 R | **CR 12458** |
| | 2.000 | 0.438 | CRW1 P | **CR 12483** |
| | 2.062 | 0.250 | CRWA1 V | **CR 12531** |
| | 2.062 | 0.433 | CRWHA1 V | **CR 12533** |
| | 2.062 | 0.438 | CRWH1 R | **CR 12530** |
| | 2.125 | 0.250 | CRW1 V | **CR 12544** |
| | 2.125 | 0.250 | CRW1 R | **CR 12545** |
| | 2.125 | 0.250 | CRWA1 R | **CR 12551** |
| | 2.250 | 0.250 | CRW1 R | **CR 12577** |
| | 2.327 | 0.500 | CRW1 R | **CR 12610** |
| | 2.374 | 0.313 | CRW1 R | **CR 12613** |
| | 2.374 | 0.313 | CRWA1 R | **CR 12614** |
| | 2.374 | 0.315 | CRW1 V | **CR 12612** |
| | 2.437 | 0.250 | CRW1 R | **CR 12621** |
| | 2.441 | 0.250 | CRW1 R | **CR 12631** |
| | 2.500 | 0.310 | CRW1 V | **CR 12638** |
| | 2.502 | 0.313 | CRW1 R | **CR 12637** |

| Dimensions | | | Design and lip material | Designation |
|---|---|---|---|---|
| Shaft | Bore | Nominal seal width | | |
| $d_1$ | D | b | | |
| in. | | | – | – |
| **1.301** | 2.046 | 0.492 | CRWA1 R | **CR 12907** |
| **1.313** | 1.828 | 0.375 | CRW1 P | **CR 13021** |
| | 2.062 | 0.313 | CRW1 R | **CR 13050** |
| | 2.062 | 0.313 | CRWA1 R | **CR 13052** |
| | 2.062 | 0.313 | CRW1 V | **CR 13054** |
| | 2.125 | 0.313 | CRW1 R | **CR 13092** |
| | 2.250 | 0.313 | CRW1 R | **CR 13112** |
| | 2.282 | 0.250 | CRWA1 R | **CR 13157** |
| **1.328** | 2.031 | 0.313 | CRW1 R | **CR 13415**[1] |
| | 2.061 | 0.313 | CRW1 R | **CR 13350** |
| | 2.227 | 0.313 | CRW1 R | **CR 13418** |
| **1.344** | 2.106 | 0.313 | CRW1 R | **CR 13421** |
| | 2.125 | 0.313 | CRW1 R | **CR 13437** |
| **1.365** | 1.956 | 0.438 | CRW1 R | **CR 13985** |
| | 2.081 | 0.313 | CRW1 R | **CR 13598** |
| | 2.261 | 0.313 | CRW1 R | **CR 13700** |
| **1.375** | 1.750 | 0.250 | CRW1 R | **CR 13514** |
| | 1.828 | 0.250 | CRWA1 V | **CR 13510** |
| | 1.828 | 0.313 | CRW1 R | **CR 13537** |
| | 1.835 | 0.250 | CRW1 R | **CR 13536** |
| | 1.873 | 0.313 | CRW1 V | **CR 13511** |
| | 1.874 | 0.250 | CRW1 P | **CR 13512** |
| | 1.874 | 0.250 | CRW1 R | **CR 13534** |
| | 1.874 | 0.250 | CRW1 V | **CR 13538** |
| | 1.874 | 0.313 | CRWA1 R | **CR 13535** |
| | 1.938 | 0.250 | CRWA1 R | **CR 13552** |
| | 1.955 | 0.433 | CRWA1 P | **CR 13527** |
| | 1.983 | 0.313 | CRW1 P | **CR 13557** |
| | 2.000 | 0.313 | CRWA1 P | **CR 13562** |
| | 2.000 | 0.313 | CRW1 R | **CR 13568** |
| | 2.000 | 0.313 | CRWA1 R | **CR 13569** |
| | 2.000 | 0.313 | CRWH1 R | **CR 13571** |
| | 2.000 | 0.313 | CRW1 V | **CR 13579** |
| | 2.000 | 0.313 | CRWA1 V | **CR 13581** |
| | 2.062 | 0.313 | CRW1 V | **CR 13582** |
| | 2.062 | 0.313 | CRW1 R | **CR 13585**[1] |
| | 2.062 | 0.313 | CRWA1 P | **CR 13588** |
| | 2.062 | 0.315 | CRWA1 V | **CR 13607** |
| | 2.106 | 0.313 | CRWA1 R | **CR 13602**[1] |
| | 2.106 | 0.313 | CRW1 P | **CR 13614** |
| | 2.125 | 0.313 | CRW1 R | **CR 13649** |
| | 2.125 | 0.313 | CRWA1 R | **CR 13650** |
| | 2.125 | 0.313 | CRWA1 V | **CR 13661** |
| | 2.125 | 0.313 | CRW1 V | **CR 13663** |
| | 2.250 | 0.250 | CRWA1 R | **CR 13698** |
| | 2.250 | 0.313 | CRW1 R | **CR 13671** |
| | 2.250 | 0.313 | CRWA1 R | **CR 13676** |
| | 2.250 | 0.313 | CRW1 V | **CR 13688** |
| | 2.250 | 0.313 | CRWA1 V | **CR 13691** |
| | 2.250 | 0.313 | CRW1 P | **CR 13869** |

[1] Without SKF Bore Tite Coating

## Radial shaft seals – CRW1, CRWA1, CRWH1 and CRWHA1 – inch dimensions
$d_1$ **1.375 – 1.500** in.




Please see **pages 74** to **76** for housing bore requirements.

| **Dimensions** Shaft $d_1$ | Bore D | Nominal seal width b | **Design and lip material** | **Designation** |
|---|---|---|---|---|
| in. | | | – | – |
| **1.375** | 2.374 | 0.313 | CRW1 V | **CR 13734** |
| cont. | 2.374 | 0.313 | CRW1 R | **CR 13738** |
| | 2.374 | 0.313 | CRWA1 R | **CR 13739** |
| | 2.437 | 0.250 | CRW1 R | **CR 13797** |
| | 2.441 | 0.313 | CRW1 R | **CR 13810** |
| | 2.441 | 0.313 | CRWA1 R | **CR 13812** |
| | 2.502 | 0.313 | CRW1 R | **CR 13865** |
| | 2.502 | 0.313 | CRW1 V | **CR 13867** |
| | 2.502 | 0.374 | CRWA1 V | **CR 13856** |
| | 2.562 | 0.375 | CRW1 R | **CR 13875** |
| | 2.562 | 0.375 | CRWA1 R | **CR 13876** |
| | 2.562 | 0.375 | CRWA1 V | **CR 13878** |
| | 2.623 | 0.313 | CRWA1 V | **CR 13882** |
| | 2.686 | 0.500 | CRW1 R | **CR 13892** |
| | 2.716 | 0.313 | CRW1 R | **CR 13900** |
| | 2.812 | 0.375 | CRWHA1 R | **CR 13912** |
| | 2.835 | 0.313 | CRWA1 R | **CR 13918** |
| | 2.835 | 0.313 | CRW1 R | **CR 13920** |
| | 2.835 | 0.313 | CRWA1 P | **CR 13925** |
| | 2.875 | 0.313 | CRWA1 P | **CR 13929** |
| **1.378** | 2.835 | 0.313 | CRWA1 V | **CR 13926** |
| **1.417** | 2.616 | 0.313 | CRW1 R | **CR 14092** |
| **1.438** | 2.062 | 0.313 | CRW1 V | **CR 14212**[1] |
| | 2.062 | 0.313 | CRWA1 R | **CR 14214** |
| | 2.125 | 0.313 | CRW1 R | **CR 14223** |
| | 2.125 | 0.313 | CRWA1 V | **CR 14225** |
| | 2.250 | 0.313 | CRWA1 R | **CR 14247** |
| | 2.250 | 0.313 | CRWA1 V | **CR 14259** |
| | 2.250 | 0.313 | CRW1 V | **CR 14260** |
| | 2.250 | 0.313 | CRW1 R | **CR 14262** |

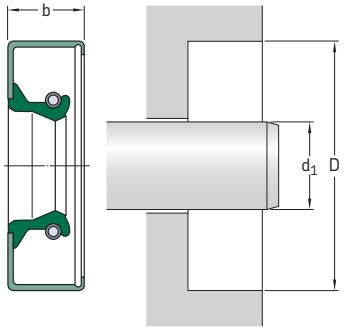
[1] Without SKF Bore Tite Coating



| Dimensions Shaft $d_1$ | Bore D | Nominal seal width b | Design and lip material | Designation |
|---|---|---|---|---|
| in. | | | – | – |
| **1.438** | 2.374 | 0.313 | CRW1 R | **CR 14282** |
| cont. | 2.374 | 0.313 | CRWA1 R | **CR 14283** |
| | 2.437 | 0.313 | CRW1 R | **CR 14363** |
| | 2.502 | 0.313 | CRW1 R | **CR 14383** |
| | 2.623 | 0.313 | CRW1 R | **CR 14404** |
| | 2.686 | 0.313 | CRW1 R | **CR 14423** |
| | 2.750 | 0.313 | CRW1 R | **CR 14458** |
| **1.484** | 2.254 | 0.313 | CRW1 R | **CR 14907** |
| **1.494** | 2.060 | 0.270 | CRW1 R | **CR 14789** |
| **1.496** | 2.165 | 0.315 | CRWA1 R | **CR 550250** |
| **1.500** | 1.874 | 0.250 | CRW1 R | **CR 14807**[1] |
| | 1.918 | 0.250 | CRW1 V | **CR 14809**[1] |
| | 1.983 | 0.250 | CRW1 V | **CR 14821** |
| | 1.983 | 0.250 | CRWA1 R | **CR 14824** |
| | 1.983 | 0.313 | CRW1 R | **CR 14832** |
| | 2.000 | 0.313 | CRWA1 R | **CR 14846** |
| | 2.000 | 0.313 | CRW1 R | **CR 14855** |
| | 2.000 | 0.313 | CRW1 V | **CR 14861** |
| | 2.048 | 0.313 | CRWA1 R | **CR 14858** |
| | 2.062 | 0.313 | CRW1 R | **CR 14864** |
| | 2.062 | 0.313 | CRW1 V | **CR 14867** |
| | 2.125 | 0.313 | CRW1 R | **CR 14875** |
| | 2.125 | 0.313 | CRWA1 R | **CR 14876** |
| | 2.125 | 0.313 | CRW1 V | **CR 14886** |
| | 2.125 | 0.313 | CRWA1 V | **CR 14887** |
| | 2.222 | 0.313 | CRW1 R | **CR 14903** |
| | 2.250 | 0.313 | CRW1 S | **CR 14935** |
| | 2.250 | 0.313 | CRW1 R | **CR 14938** |
| | 2.250 | 0.313 | CRWA1 R | **CR 14939** |
| | 2.250 | 0.313 | CRW1 V | **CR 14940** |
| | 2.250 | 0.313 | CRWA1 V | **CR 14942** |
| | 2.260 | 0.406 | CRW1 R | **CR 14968** |
| | 2.374 | 0.313 | CRW1 V | **CR 14992** |
| | 2.374 | 0.313 | CRWA1 V | **CR 14994** |
| | 2.374 | 0.313 | CRW1 R | **CR 15004** |
| | 2.374 | 0.313 | CRWA1 R | **CR 15005** |
| | 2.374 | 0.500 | CRWH1 R | **CR 15039** |
| | 2.377 | 0.453 | CRWA1 R | **CR 15041** |
| | 2.437 | 0.313 | CRW1 R | **CR 15076** |
| | 2.441 | 0.313 | CRW1 R | **CR 15092**[1] |
| | 2.441 | 0.313 | CRWA1 R | **CR 15093** |
| | 2.441 | 0.313 | CRW1 V | **CR 15097** |
| | 2.502 | 0.313 | CRW1 V | **CR 15138** |
| | 2.502 | 0.313 | CRW1 R | **CR 15141** |
| | 2.502 | 0.313 | CRWA1 R | **CR 15142** |
| | 2.561 | 0.313 | CRW1 R | **CR 15176** |
| | 2.623 | 0.313 | CRW1 R | **CR 15194** |
| | 2.686 | 0.500 | CRW1 R | **CR 15207** |

[1] Without SKF Bore Tite Coating

## Radial shaft seals – CRW1, CRWA1, CRWH1 and CRWHA1 – inch dimensions
## $d_1$ **1.500 – 1.645** in.




Please see **pages 74** to **76** for housing bore requirements.

| **Dimensions** Shaft $d_1$ | Bore D | Nominal seal width b | **Design and lip material** | **Designation** |
|---|---|---|---|---|
| in. | | | – | – |
| **1.500** | 2.716 | 0.438 | CRW1 R | **CR 15204** |
| cont. | 2.750 | 0.313 | CRW1 R | **CR 15214** |
| | 2.758 | 0.313 | CRW1 R | **CR 15230** |
| | 2.835 | 0.313 | CRW1 R | **CR 15234** |
| | 2.875 | 0.313 | CRW1 R | **CR 15235** |
| **1.552** | 2.502 | 0.500 | CRWA1 R | **CR 15450** |
| | 2.686 | 0.500 | CRW1 R | **CR 15460** |
| | 2.750 | 0.500 | CRWHA1 P | **CR 15462** |
| **1.563** | 2.062 | 0.250 | CRW1 V | **CR 15506** |
| | 2.062 | 0.250 | CRW1 R | **CR 15508** |
| | 2.125 | 0.313 | CRW1 R | **CR 15517**[1] |
| | 2.125 | 0.313 | CRWA1 P | **CR 15518** |
| | 2.250 | 0.313 | CRW1 R | **CR 15522** |
| | 2.374 | 0.313 | CRW1 P | **CR 15540**[1] |
| | 2.374 | 0.313 | CRW1 R | **CR 15542** |
| | 2.374 | 0.313 | CRWA1 R | **CR 15543** |
| | 2.374 | 0.313 | CRWA1 V | **CR 15549** |
| | 2.437 | 0.313 | CRW1 R | **CR 15592**[1] |
| | 2.441 | 0.500 | CRWA1 R | **CR 15620** |
| | 2.465 | 0.374 | CRWA1 P | **CR 15624** |
| | 2.502 | 0.313 | CRWA1 R | **CR 15635** |
| | 2.502 | 0.313 | CRW1 R | **CR 15655** |
| | 2.502 | 0.313 | CRW1 V | **CR 15656** |
| | 2.561 | 0.313 | CRW1 R | **CR 15677** |
| | 2.623 | 0.313 | CRW1 R | **CR 15699** |
| | 2.686 | 0.313 | CRW1 R | **CR 15707** |
| | 2.750 | 0.500 | CRWH1 R | **CR 15761** |
| | 2.875 | 0.313 | CRW1 R | **CR 15773** |
| | 2.875 | 0.313 | CRWA1 P | **CR 15779** |

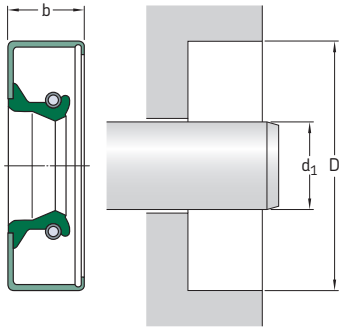
[1] Without SKF Bore Tite Coating

| Dimensions Shaft $d_1$ | Bore D | Nominal seal width b | Design and lip material | Designation |
|---|---|---|---|---|
| in. | | | – | – |
| **1.578** | 2.082 | 0.250 | CRW1 R | **CR 15510** |
| | 2.408 | 0.313 | CRWHA1 R | **CR 15557** |
| **1.594** | 2.125 | 0.313 | CRW1 P | **CR 15915** |
| | 2.437 | 0.313 | CRW1 P | **CR 15940** |
| | 2.437 | 0.313 | CRW1 R | **CR 15955** |
| | 2.502 | 0.313 | CRW1 R | **CR 15960** |
| | 2.623 | 0.313 | CRW1 R | **CR 15968** |
| | 2.758 | 0.313 | CRW1 R | **CR 15975** |
| **1.618** | 2.531 | 0.438 | CRWA1 R | **CR 16449** |
| **1.625** | 2.000 | 0.250 | CRW1 V | **CR 16039** |
| | 2.000 | 0.250 | CRW1 R | **CR 16046**[1] |
| | 2.116 | 0.313 | CRWA1 R | **CR 16047** |
| | 2.125 | 0.250 | CRW1 V | **CR 16048** |
| | 2.125 | 0.250 | CRW1 R | **CR 16054** |
| | 2.248 | 0.313 | CRWA1 R | **CR 16062** |
| | 2.250 | 0.313 | CRW1 R | **CR 16061** |
| | 2.250 | 0.313 | CRW1 V | **CR 16078**[1] |
| | 2.250 | 0.375 | CRW1 P | **CR 16049** |
| | 2.282 | 0.313 | CRW1 R | **CR 16083** |
| | 2.374 | 0.250 | CRW1 R | **CR 16094**[1] |
| | 2.374 | 0.313 | CRWH1 R | **CR 16072** |
| | 2.374 | 0.313 | CRW1 V | **CR 16077** |
| | 2.374 | 0.313 | CRW1 R | **CR 16084** |
| | 2.374 | 0.313 | CRWA1 R | **CR 16085** |
| | 2.374 | 0.313 | CRWA1 P | **CR 16091**[1] |
| | 2.374 | 0.500 | CRWH1 R | **CR 16079** |
| | 2.437 | 0.313 | CRW1 R | **CR 16117** |
| | 2.437 | 0.313 | CRWA1 R | **CR 16128** |
| | 2.437 | 0.313 | CRW1 V | **CR 16119** |
| | 2.437 | 0.313 | CRWA1 V | **CR 16120** |
| | 2.441 | 0.313 | CRW1 R | **CR 16180** |
| | 2.441 | 0.313 | CRWA1 R | **CR 16201** |
| | 2.502 | 0.313 | CRWA1 V | **CR 16243** |
| | 2.502 | 0.313 | CRW1 R | **CR 16245** |
| | 2.502 | 0.313 | CRWA1 R | **CR 16246** |
| | 2.502 | 0.313 | CRWA1 P | **CR 16247**[1] |
| | 2.502 | 0.374 | CRWHA1 V | **CR 16257** |
| | 2.502 | 0.375 | CRWHA1 R | **CR 16254** |
| | 2.562 | 0.313 | CRWA1 V | **CR 16290** |
| | 2.623 | 0.313 | CRW1 R | **CR 16314** |
| | 2.623 | 0.313 | CRWA1 R | **CR 16315** |
| | 2.623 | 0.313 | CRW1 V | **CR 16316** |
| | 2.686 | 0.313 | CRW1 R | **CR 16337** |
| | 2.686 | 0.313 | CRW1 V | **CR 16338** |
| | 2.750 | 0.250 | CRW1 R | **CR 16364** |
| | 2.750 | 0.313 | CRWH1 R | **CR 16368** |
| | 2.758 | 0.313 | CRW1 R | **CR 16374** |
| | 2.875 | 0.313 | CRW1 R | **CR 16406** |
| | 3.000 | 0.313 | CRWH1 R | **CR 16422** |
| **1.645** | 2.656 | 0.313 | CRWA1 P | **CR 16500** |

[1] Without SKF Bore Tite Coating



## Radial shaft seals – CRW1, CRWA1, CRWH1 and CRWHA1 – inch dimensions
$d_1$ **1.656 – 1.813** in.




Please see **pages 74** to **76** for housing bore requirements.

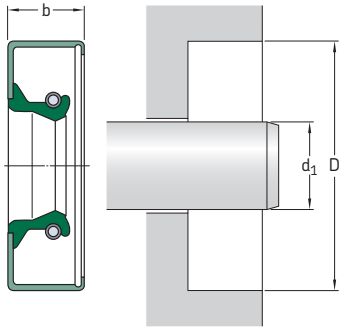
| **Dimensions** Shaft $d_1$ | Bore D | Nominal seal width b | **Design and lip material** | **Designation** |
|---|---|---|---|---|
| in. | | | – | – |
| **1.656** | 2.623 | 0.375 | CRWA1 P | **CR 16545** |
| | 2.686 | 0.313 | CRW1 R | **CR 16556** |
| **1.688** | 2.279 | 0.500 | CRWH1 R | **CR 16650** |
| | 2.328 | 0.313 | CRWA1 R | **CR 16657** |
| | 2.437 | 0.250 | CRW1 S | **CR 16692** |
| | 2.437 | 0.313 | CRW1 R | **CR 16679** |
| | 2.437 | 0.313 | CRWA1 R | **CR 16680** |
| | 2.437 | 0.469 | CRW1 S | **CR 16696** |
| | 2.502 | 0.313 | CRW1 R | **CR 16719** |
| | 2.623 | 0.313 | CRWA1 R | **CR 16814** |
| | 2.623 | 0.500 | CRW1 R | **CR 16816** |
| | 2.623 | 0.500 | CRWA1 V | **CR 16817** |
| | 2.686 | 0.313 | CRW1 R | **CR 16842** |
| | 2.716 | 0.313 | CRW1 R | **CR 16854** |
| | 2.750 | 0.313 | CRW1 R | **CR 16900**[1)] |
| | 2.750 | 0.375 | CRWA1 R | **CR 16903** |
| | 2.875 | 0.313 | CRW1 R | **CR 16999** |
| | 3.061 | 0.375 | CRW1 R | **CR 17035** |
| | 3.125 | 0.375 | CRWA1 R | **CR 17038** |
| **1.704** | 3.034 | 0.500 | CRWA1 R | **CR 17100** |
| **1.719** | 2.561 | 0.315 | CRWA1 R | **CR 17144** |
| **1.750** | 2.250 | 0.313 | CRW1 R | **CR 17231** |
| | 2.250 | 0.313 | CRW1 V | **CR 17234** |
| | 2.374 | 0.313 | CRWA1 V | **CR 17261** |
| | 2.374 | 0.313 | CRW1 R | **CR 17270** |
| | 2.374 | 0.313 | CRWA1 R | **CR 17271** |
| | 2.411 | 0.375 | CRW1 P | **CR 17280** |
| | 2.437 | 0.313 | CRW1 R | **CR 17283** |
| | 2.437 | 0.313 | CRW1 R | **CR 17284** |

[1)] Without SKF Bore Tite Coating

| Dimensions Shaft $d_1$ | Bore D | Nominal seal width b | Design and lip material | Designation |
|---|---|---|---|---|
| in. | | | – | – |
| **1.750** cont. | 2.437 | 0.313 | CRWA1 R | **CR 17285** |
| | 2.437 | 0.313 | CRW1 V | **CR 17292** |
| | 2.437 | 0.313 | CRWA1 V | **CR 17293** |
| | 2.441 | 0.313 | CRW1 R | **CR 17315** |
| | 2.441 | 0.313 | CRWA1 R | **CR 550154** |
| | 2.441 | 0.375 | CRWA1 V | **CR 17320** |
| | 2.502 | 0.313 | CRW1 V | **CR 17379** |
| | 2.502 | 0.313 | CRWA1 V | **CR 17381** |
| | 2.502 | 0.313 | CRW1 R | **CR 17386** |
| | 2.502 | 0.313 | CRWA1 R | **CR 17387** |
| | 2.502 | 0.375 | CRWHA1 V | **CR 17395** |
| | 2.502 | 0.375 | CRW1 S | **CR 17399** |
| | 2.561 | 0.313 | CRW1 R | **CR 17404** |
| | 2.565 | 0.313 | CRWA1 R | **CR 17413** |
| | 2.623 | 0.313 | CRW1 R | **CR 17442** |
| | 2.623 | 0.313 | CRWA1 R | **CR 17443** |
| | 2.623 | 0.313 | CRW1 S | **CR 17444** |
| | 2.623 | 0.313 | CRWA1 V | **CR 17448** |
| | 2.623 | 0.375 | CRWH1 R | **CR 17456** |
| | 2.686 | 0.313 | CRW1 R | **CR 17484**[1] |
| | 2.717 | 0.438 | CRWA1 R | **CR 17607** |
| | 2.750 | 0.313 | CRWA1 R | **CR 17523** |
| | 2.750 | 0.313 | CRW1 R | **CR 17557** |
| | 2.750 | 0.313 | CRW1 V | **CR 17558** |
| | 2.758 | 0.313 | CRW1 R | **CR 17605** |
| | 2.810 | 0.313 | CRWA1 R | **CR 17624**[1] |
| | 2.810 | 0.313 | CRWA1 V | **CR 17627** |
| | 2.875 | 0.313 | CRW1 R | **CR 17653** |
| | 2.875 | 0.313 | CRW1 V | **CR 17657** |
| | 2.875 | 0.375 | CRWHA1 R | **CR 17645** |
| | 2.981 | 0.438 | CRWHA1 R | **CR 17675**[1] |
| | 2.997 | 0.313 | CRWHA1 R | **CR 17678** |
| | 2.997 | 0.313 | CRW1 R | **CR 17695** |
| | 3.000 | 0.313 | CRWA1 R | **CR 17699** |
| | 3.000 | 0.313 | CRW1 R | **CR 17707** |
| | 3.000 | 0.313 | CRW1 V | **CR 17709** |
| | 3.061 | 0.313 | CRW1 R | **CR 17716** |
| | 3.061 | 0.375 | CRWA1 R | **CR 17718** |
| | 3.189 | 0.313 | CRW1 R | **CR 17746** |
| | 3.543 | 0.438 | CRW1 R | **CR 17756** |
| | 3.625 | 0.438 | CRW1 R | **CR 17761** |
| **1.768** | 2.363 | 0.313 | CRWHA1 V | **CR 17780** |
| **1.781** | 2.252 | 0.313 | CRWA1 R | **CR 17806** |
| | 2.502 | 0.313 | CRWH1 R | **CR 17810** |
| | 2.502 | 0.313 | CRWH1 V | **CR 17811** |
| | 2.623 | 0.313 | CRW1 R | **CR 17821** |
| | 2.686 | 0.313 | CRW1 R | **CR 17832**[1] |
| **1.812** | 2.623 | 0.374 | CRWA1 V | **CR 17949** |
| **1.813** | 2.279 | 0.313 | CRW1 R | **CR 18025** |
| | 2.437 | 0.313 | CRW1 R | **CR 18039** |
| | 2.562 | 0.313 | CRWA1 V | **CR 18049** |

[1] Without SKF Bore Tite Coating

## Radial shaft seals – CRW1, CRWA1, CRWH1 and CRWHA1 – inch dimensions
$d_1$ **1.813 – 1.938** in.




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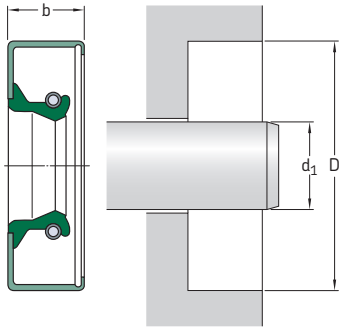
Please see **pages 74** to **76** for housing bore requirements.

| **Dimensions** Shaft $d_1$ | Bore D | Nominal seal width b | **Design and lip material** | **Designation** |
|---|---|---|---|---|
| in. | | | – | – |
| **1.813** | 2.623 | 0.313 | CRW1 R | **CR 18104** |
| cont. | 2.686 | 0.313 | CRWA1 P | **CR 18114** |
| | 2.750 | 0.313 | CRW1 R | **CR 18159** |
| | 2.875 | 0.313 | CRW1 R | **CR 18242** |
| | 3.000 | 0.375 | CRWA1 P | **CR 18264** |
| **1.844** | 2.623 | 0.313 | CRW1 R | **CR 18425** |
| | 2.750 | 0.313 | CRW1 P | **CR 18444** |
| **1.868** | 2.518 | 0.315 | CRWA1 P | **CR 18492** |
| **1.875** | 2.398 | 0.250 | CRW1 R | **CR 18549** |
| | 2.471 | 0.313 | CRWA1 R | **CR 18545** |
| | 2.500 | 0.313 | CRW1 P | **CR 18555** |
| | 2.502 | 0.313 | CRW1 R | **CR 18565** |
| | 2.562 | 0.313 | CRWA1 V | **CR 18546** |
| | 2.562 | 0.313 | CRW1 P | **CR 18562** |
| | 2.623 | 0.313 | CRW1 R | **CR 18580** |
| | 2.623 | 0.313 | CRWA1 R | **CR 18581** |
| | 2.623 | 0.313 | CRW1 V | **CR 18582** |
| | 2.623 | 0.313 | CRWA1 V | **CR 18584** |
| | 2.623 | 0.374 | CRW1 S | **CR 18592** |
| | 2.686 | 0.313 | CRW1 R | **CR 18626** |
| | 2.750 | 0.313 | CRW1 V | **CR 18652** |
| | 2.750 | 0.313 | CRW1 R | **CR 18657** |
| | 2.750 | 0.313 | CRWA1 R | **CR 18658** |
| | 2.750 | 0.313 | CRW1 P | **CR 18666** |
| | 2.758 | 0.313 | CRW1 P | **CR 18671** |
| | 2.758 | 0.313 | CRW1 S | **CR 18679** |
| | 2.782 | 0.438 | CRWH1 R | **CR 18693** |
| | 2.782 | 0.438 | CRWHA1 R | **CR 18695** |
| | 2.875 | 0.313 | CRW1 V | **CR 18732** |
| | 2.875 | 0.313 | CRW1 R | **CR 18733** |
| | 2.875 | 0.313 | CRWA1 R | **CR 18734** |

| Dimensions Shaft $d_1$ | Bore D | Nominal seal width b | Design and lip material | Designation |
|---|---|---|---|---|
| in. | | | – | – |
| **1.875** cont. | 2.875 | 0.313 | CRWA1 V | **CR 18737** |
| | 2.997 | 0.313 | CRW1 R | **CR 18785** |
| | 3.000 | 0.313 | CRW1 R | **CR 18817** |
| | 3.000 | 0.313 | CRW1 V | **CR 18818** |
| | 3.061 | 0.313 | CRWA1 R | **CR 18872** |
| | 3.105 | 0.500 | CRWA1 R | **CR 18880** |
| | 3.189 | 0.469 | CRWH1 R | **CR 18899** |
| | 3.249 | 0.484 | CRWA1 R | **CR 18922** |
| | 3.371 | 0.438 | CRWH1 R | **CR 18916** |
| | 3.496 | 0.438 | CRWA1 R | **CR 18924** |
| | 3.500 | 0.438 | CRW1 R | **CR 18926** |
| **1.893** | 2.434 | 0.250 | CRW1 R | **CR 19000**[1] |
| **1.906** | 2.752 | 0.375 | CRWA1 P | **CR 19017** |
| **1.915** | 2.533 | 0.250 | CRW1 R | **CR 19010** |
| **1.938** | 2.412 | 0.313 | CRW1 R | **CR 19215** |
| | 2.437 | 0.250 | CRW1 R | **CR 19210** |
| | 2.437 | 0.250 | CRW1 R | **CR 19212** |
| | 2.502 | 0.375 | CRWA1 R | **CR 19220** |
| | 2.563 | 0.313 | CRW1 R | **CR 19211** |
| | 2.623 | 0.313 | CRW1 R | **CR 19226** |
| | 2.623 | 0.313 | CRWA1 V | **CR 19227** |
| | 2.623 | 0.313 | CRWA1 R | **CR 19229** |
| | 2.686 | 0.300 | CRW1 P | **CR 19244** |
| | 2.686 | 0.313 | CRWA1 P | **CR 19234** |
| | 2.686 | 0.313 | CRW1 R | **CR 19236** |
| | 2.686 | 0.313 | CRWA1 R | **CR 19237** |
| | 2.686 | 0.313 | CRWA1 V | **CR 19243** |
| | 2.686 | 0.375 | CRW1 S | **CR 19240** |
| | 2.750 | 0.313 | CRW1 R | **CR 19264** |
| | 2.750 | 0.313 | CRW1 V | **CR 19267** |
| | 2.875 | 0.313 | CRW1 R | **CR 19300** |
| | 2.875 | 0.313 | CRWA1 R | **CR 19301** |
| | 2.875 | 0.313 | CRWH1 V | **CR 19304** |
| | 2.884 | 0.313 | CRWA1 P | **CR 19310** |
| | 2.997 | 0.313 | CRW1 R | **CR 19350** |
| | 3.000 | 0.313 | CRW1 R | **CR 19359** |
| | 3.000 | 0.313 | CRWA1 R | **CR 19360**[1] |
| | 3.000 | 0.313 | CRWA1 V | **CR 19368** |
| | 3.061 | 0.313 | CRW1 R | **CR 19380** |
| | 3.062 | 0.500 | CRW1 S | **CR 19438** |
| | 3.125 | 0.500 | CRW1 R | **CR 19400** |
| | 3.189 | 0.313 | CRW1 R | **CR 19407** |
| | 3.251 | 0.313 | CRWA1 V | **CR 19433** |
| | 3.251 | 0.313 | CRW1 R | **CR 19434** |
| | 3.350 | 0.469 | CRWHA1 R | **CR 19445** |
| | 3.543 | 0.313 | CRW1 R | **CR 19449** |

[1] Without SKF Bore Tite Coating

## Radial shaft seals – CRW1, CRWA1, CRWH1 and CRWHA1 – inch dimensions
$d_1$ **1.969 – 2.125** in.




Please see **pages 74** to **76** for housing bore requirements.

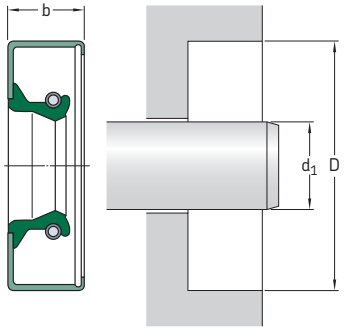
| **Dimensions** Shaft $d_1$ | Bore D | Nominal seal width b | **Design and lip material** | **Designation** |
|---|---|---|---|---|
| in. | | | – | – |
| **1.969** | 2.623 | 0.313 | CRWA1 R | **CR 19607** |
| **2.000** | 2.500 | 0.438 | CRW1 S | **CR 19739** |
| | 2.502 | 0.313 | CRW1 P | **CR 19745** |
| | 2.623 | 0.313 | CRW1 R | **CR 19760** |
| | 2.623 | 0.313 | CRWA1 R | **CR 19762** |
| | 2.623 | 0.313 | CRWA1 V | **CR 19777** |
| | 2.623 | 0.313 | CRWA1 V | **CR 19782** |
| | 2.686 | 0.375 | CRW1 R | **CR 19778** |
| | 2.716 | 0.375 | CRW1 R | **CR 19785** |
| | 2.716 | 0.375 | CRWA1 R | **CR 19786** |
| | 2.746 | 0.375 | CRW1 S | **CR 19807** |
| | 2.750 | 0.313 | CRW1 V | **CR 19823** |
| | 2.750 | 0.313 | CRW1 R | **CR 19831** |
| | 2.750 | 0.313 | CRWA1 R | **CR 19832** |
| | 2.750 | 0.313 | CRWA1 V | **CR 19839** |
| | 2.750 | 0.313 | CRW1 V | **CR 19840** |
| | 2.835 | 0.469 | CRWH1 R | **CR 19848** |
| | 2.875 | 0.313 | CRW1 V | **CR 19884** |
| | 2.875 | 0.313 | CRW1 R | **CR 19886** |
| | 2.875 | 0.313 | CRWA1 R | **CR 19887** |
| | 2.875 | 0.375 | CRWHA1 R | **CR 19896** |
| | 2.875 | 0.500 | CRWH1 R | **CR 19900** |
| | 2.880 | 0.375 | CRWA1 R | **CR 19922** |
| | 2.880 | 0.375 | CRWA1 P | **CR 19923** |
| | 2.997 | 0.375 | CRWH1 R | **CR 19969** |
| | 2.997 | 0.375 | CRWHA1 R | **CR 19970** |
| | 2.997 | 0.375 | CRWH1 V | **CR 19979** |
| | 3.000 | 0.313 | CRW1 R | **CR 19992** |
| | 3.000 | 0.313 | CRWA1 R | **CR 19993** |
| | 3.000 | 0.313 | CRWA1 V | **CR 19995** |

| Dimensions Shaft $d_1$ | Bore D | Nominal seal width b | Design and lip material | Designation |
|---|---|---|---|---|
| in. | | | – | – |
| **2.000** | 3.000 | 0.375 | CRWH1 V | **CR 20002** |
| cont. | 3.000 | 0.375 | CRWH1 R | **CR 20004** |
| | 3.000 | 0.375 | CRWHA1 R | **CR 20005** |
| | 3.061 | 0.375 | CRW1 R | **CR 20045** |
| | 3.061 | 0.500 | CRWH1 R | **CR 20053** |
| | 3.061 | 0.500 | CRWHA1 R | **CR 20054** |
| | 3.125 | 0.375 | CRW1 R | **CR 20070** |
| | 3.150 | 0.375 | CRW1 R | **CR 20079** |
| | 3.189 | 0.469 | CRWH1 R | **CR 20098** |
| | 3.189 | 0.469 | CRWHA1 R | **CR 20100** |
| | 3.251 | 0.438 | CRWH1 R | **CR 20109** |
| | 3.371 | 0.438 | CRW1 V | **CR 20122** |
| | 3.371 | 0.438 | CRWH1 R | **CR 20124** |
| | 3.371 | 0.438 | CRWHA1 R | **CR 20125** |
| | 3.371 | 0.438 | CRWH1 V | **CR 20127**[1] |
| | 3.543 | 0.438 | CRWH1 R | **CR 20140** |
| | 3.623 | 0.438 | CRWH1 R | **CR 20144** |
| | 4.003 | 0.438 | CRWH1 R | **CR 20158** |
| **2.047** | 2.561 | 0.315 | CRW1 R | **CR 20420** |
| **2.063** | 2.561 | 0.313 | CRW1 V | **CR 20520** |
| | 2.750 | 0.313 | CRWH1 R | **CR 20530**[1] |
| | 2.842 | 0.438 | CRWH1 R | **CR 20538** |
| | 2.875 | 0.438 | CRWH1 R | **CR 20554** |
| | 2.997 | 0.438 | CRWH1 R | **CR 20586** |
| | 3.000 | 0.375 | CRW1 R | **CR 20594** |
| | 3.000 | 0.375 | CRWA1 V | **CR 20599** |
| | 3.061 | 0.313 | CRWH1 R | **CR 20643** |
| | 3.125 | 0.375 | CRW1 R | **CR 20659** |
| | 3.189 | 0.375 | CRW1 R | **CR 20702** |
| | 3.251 | 0.438 | CRWHA1 R | **CR 20747** |
| | 3.251 | 0.438 | CRWH1 R | **CR 20749** |
| **2.125** | 2.750 | 0.375 | CRW1 V | **CR 21063**[1] |
| | 2.750 | 0.500 | CRWA1 R | **CR 21061** |
| | 2.763 | 0.250 | CRW1 R | **CR 21069** |
| | 2.875 | 0.375 | CRW1 S | **CR 21103** |
| | 2.875 | 0.438 | CRW1 V | **CR 21091** |
| | 2.875 | 0.438 | CRW1 R | **CR 21098** |
| | 2.875 | 0.438 | CRWA1 R | **CR 21100** |
| | 2.875 | 0.438 | CRWHA1 R | **CR 21108** |
| | 2.997 | 0.438 | CRWH1 R | **CR 21134** |
| | 2.997 | 0.438 | CRWHA1 R | **CR 21136** |
| | 3.000 | 0.313 | CRWHA1 V | **CR 21167** |
| | 3.000 | 0.375 | CRW1 R | **CR 21163** |
| | 3.000 | 0.375 | CRWA1 R | **CR 21164** |
| | 3.000 | 0.438 | CRWH1 V | **CR 21171** |
| | 3.000 | 0.438 | CRWH1 R | **CR 21172** |
| | 3.000 | 0.438 | CRWHA1 R | **CR 21173** |




[1] Without SKF Bore Tite Coating

## Radial shaft seals – CRW1, CRWA1, CRWH1 and CRWHA1 – inch dimensions
$d_1$ **2.125 – 2.328** in.




Please see **pages 74** to **76** for housing bore requirements.

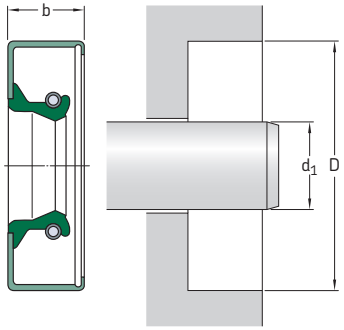
| **Dimensions** Shaft $d_1$ | Bore D | Nominal seal width b | **Design and lip material** | **Designation** |
|---|---|---|---|---|
| in. | | | – | – |
| **2.125** | 3.061 | 0.438 | CRWH1 V | **CR 21203** |
| cont. | 3.061 | 0.500 | CRW1 R | **CR 21210** |
| | 3.061 | 0.500 | CRWA1 R | **CR 21211**[1] |
| | 3.061 | 0.500 | CRWHA1 R | **CR 21213** |
| | 3.125 | 0.438 | CRWH1 R | **CR 21234** |
| | 3.125 | 0.438 | CRWHA1 P | **CR 21245** |
| | 3.189 | 0.375 | CRWA1 R | **CR 21267** |
| | 3.189 | 0.375 | CRWA1 V | **CR 21269** |
| | 3.189 | 0.469 | CRWHA1 S | **CR 21270** |
| | 3.251 | 0.438 | CRWH1 R | **CR 21302** |
| | 3.350 | 0.438 | CRWH1 R | **CR 21336** |
| | 3.371 | 0.375 | CRWA1 R | **CR 21352** |
| | 3.371 | 0.438 | CRWH1 R | **CR 21353** |
| | 3.543 | 0.438 | CRWH1 R | **CR 21358** |
| **2.188** | 2.875 | 0.438 | CRWH1 R | **CR 21736** |
| | 2.997 | 0.438 | CRWH1 R | **CR 21749** |
| | 3.000 | 0.375 | CRWA1 R | **CR 21759** |
| | 3.000 | 0.375 | CRWA1 V | **CR 21763** |
| | 3.000 | 0.500 | CRWH1 R | **CR 21764** |
| | 3.061 | 0.500 | CRWH1 R | **CR 21775** |
| | 3.251 | 0.438 | CRWH1 R | **CR 21840** |
| | 3.350 | 0.438 | CRWH1 R | **CR 21890** |
| | 3.371 | 0.438 | CRWH1 R | **CR 21910** |
| **2.250** | 2.875 | 0.313 | CRWA1 R | **CR 22328** |
| | 2.891 | 0.563 | CRWA1 R | **CR 22319** |
| | 2.997 | 0.438 | CRWH1 R | **CR 22338** |
| | 2.997 | 0.438 | CRWHA1 R | **CR 22340** |
| | 3.000 | 0.375 | CRW1 R | **CR 22353** |
| | 3.000 | 0.375 | CRWA1 R | **CR 22354** |
| | 3.000 | 0.375 | CRWA1 V | **CR 22361** |
| | 3.000 | 0.375 | CRW1 V | **CR 22363** |

[1] Without SKF Bore Tite Coating

| Dimensions Shaft $d_1$ | Bore D | Nominal seal width b | Design and lip material | Designation |
|---|---|---|---|---|
| in. | | | – | – |
| **2.250** cont. | 3.000 | 0.438 | CRWH1 R | **CR 22358** |
| | 3.000 | 0.438 | CRWHA1 R | **CR 22359** |
| | 3.000 | 0.438 | CRWH1 V | **CR 22367** |
| | 3.061 | 0.375 | CRW1 R | **CR 22382** |
| | 3.061 | 0.438 | CRWH1 R | **CR 22390** |
| | 3.061 | 0.438 | CRWHA1 R | **CR 22391** |
| | 3.061 | 0.438 | CRWHA1 S | **CR 22394** |
| | 3.125 | 0.375 | CRWA1 R | **CR 22400** |
| | 3.125 | 0.375 | CRWA1 V | **CR 22405** |
| | 3.125 | 0.500 | CRWH1 R | **CR 22407**[1] |
| | 3.189 | 0.438 | CRW1 R | **CR 22424** |
| | 3.189 | 0.438 | CRWA1 P | **CR 22425** |
| | 3.251 | 0.375 | CRW1 R | **CR 22440** |
| | 3.251 | 0.375 | CRWA1 R | **CR 22441** |
| | 3.251 | 0.438 | CRWH1 R | **CR 22446** |
| | 3.251 | 0.438 | CRWHA1 R | **CR 22448** |
| | 3.251 | 0.438 | CRWH1 V | **CR 22449** |
| | 3.350 | 0.375 | CRW1 P | **CR 22484** |
| | 3.350 | 0.438 | CRWH1 R | **CR 22492**[1] |
| | 3.350 | 0.438 | CRWHA1 R | **CR 22493** |
| | 3.350 | 0.438 | CRWH1 V | **CR 22495** |
| | 3.371 | 0.438 | CRWHA1 R | **CR 22532** |
| | 3.371 | 0.438 | CRWH1 R | **CR 22558** |
| | 3.371 | 0.438 | CRWH1 V | **CR 22561** |
| | 3.500 | 0.438 | CRWHA1 R | **CR 22582** |
| | 3.500 | 0.438 | CRWH1 R | **CR 22583** |
| | 3.500 | 0.438 | CRWHA1 V | **CR 22590** |
| | 3.565 | 0.438 | CRWA1 R | **CR 22610** |
| | 3.623 | 0.438 | CRWH1 R | **CR 22618** |
| | 3.623 | 0.438 | CRWHA1 R | **CR 22619** |
| | 3.751 | 0.438 | CRWH1 R | **CR 22626** |
| | 3.876 | 0.438 | CRWH1 R | **CR 22644** |
| | 4.003 | 0.438 | CRWH1 R | **CR 22647** |
| **2.313** | 2.997 | 0.375 | CRW1 R | **CR 23030** |
| | 3.000 | 0.438 | CRWH1 V | **CR 23040** |
| | 3.061 | 0.313 | CRW1 R | **CR 23046** |
| | 3.125 | 0.375 | CRW1 R | **CR 23061** |
| | 3.125 | 0.375 | CRWA1 V | **CR 23063** |
| | 3.251 | 0.438 | CRWH1 R | **CR 23093** |
| | 3.251 | 0.438 | CRWHA1 V | **CR 23099**[1] |
| | 3.350 | 0.438 | CRWH1 R | **CR 23152** |
| | 3.371 | 0.438 | CRW1 R | **CR 23167** |
| | 3.374 | 0.438 | CRWHA1 R | **CR 23169** |
| | 3.500 | 0.313 | CRW1 R | **CR 23184**[1] |
| | 3.751 | 0.500 | CRW1 R | **CR 23277** |
| **2.328** | 3.000 | 0.395 | CRW1 P | **CR 23300** |

[1] Without SKF Bore Tite Coating

## Radial shaft seals – CRW1, CRWA1, CRWH1 and CRWHA1 – inch dimensions
$d_1$ **2.375 – 2.500** in.




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Please see **pages 74** to **76** for housing bore requirements.

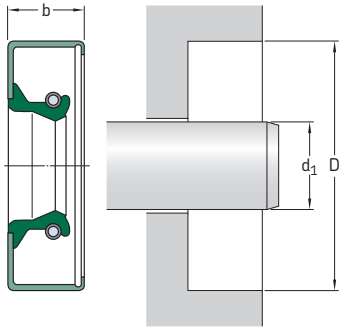
| **Dimensions** Shaft $d_1$ | Bore D | Nominal seal width b | **Design and lip material** | **Designation** |
|---|---|---|---|---|
| in. | | | – | – |
| **2.375** cont. | 2.997 | 0.438 | CRWH1 R | **CR 23632** |
| | 3.000 | 0.375 | CRW1 V | **CR 23641** |
| | 3.061 | 0.438 | CRWH1 R | **CR 23644** |
| | 3.061 | 0.438 | CRWH1 P | **CR 23645** |
| | 3.061 | 0.438 | CRWH1 V | **CR 23655** |
| | 3.125 | 0.375 | CRW1 R | **CR 23646** |
| | 3.125 | 0.438 | CRWH1 R | **CR 23652** |
| | 3.125 | 0.438 | CRWHA1 R | **CR 23654** |
| | 3.125 | 0.438 | CRWHA1 V | **CR 23656** |
| | 3.189 | 0.438 | CRWH1 R | **CR 23666** |
| | 3.251 | 0.438 | CRWHA1 V | **CR 23678** |
| | 3.251 | 0.453 | CRW1 P | **CR 23685** |
| | 3.350 | 0.375 | CRW1 R | **CR 23701** |
| | 3.350 | 0.375 | CRWA1 R | **CR 23702** |
| | 3.350 | 0.375 | CRW1 P | **CR 23703** |
| | 3.350 | 0.375 | CRW1 S | **CR 23706** |
| | 3.350 | 0.438 | CRWH1 R | **CR 23708** |
| | 3.350 | 0.438 | CRWHA1 R | **CR 23710** |
| | 3.371 | 0.438 | CRWH1 R | **CR 23742** |
| | 3.371 | 0.438 | CRWH1 V | **CR 23746** |
| | 3.481 | 0.438 | CRWH1 R | **CR 23755** |
| | 3.481 | 0.438 | CRWHA1 R | **CR 23756**[1)] |
| | 3.500 | 0.375 | CRWA1 P | **CR 23770** |
| | 3.500 | 0.375 | CRWH1 V | **CR 23771** |
| | 3.500 | 0.375 | CRWH1 R | **CR 23779** |
| | 3.500 | 0.438 | CRWHA1 R | **CR 23782** |
| | 3.543 | 0.438 | CRWH1 R | **CR 23808** |
| | 3.543 | 0.438 | CRWHA1 V | **CR 23809** |
| | 3.601 | 0.438 | CRW1 R | **CR 23820** |
| | 3.623 | 0.438 | CRWH1 R | **CR 23839** |

[1)] Without SKF Bore Tite Coating

| Dimensions Shaft $d_1$ | Bore D | Nominal seal width b | Design and lip material | Designation |
|---|---|---|---|---|
| in. | | | – | – |
| **2.375** | 3.623 | 0.438 | CRWHA1 P | **CR 23841** |
| cont. | 3.623 | 0.438 | CRWHA1 V | **CR 23843** |
| | 3.876 | 0.438 | CRWH1 R | **CR 23844** |
| **2.438** | 3.125 | 0.500 | CRWH1 R | **CR 24255** |
| | 3.251 | 0.438 | CRWH1 R | **CR 24263** |
| | 3.350 | 0.375 | CRW1 R | **CR 24286** |
| | 3.350 | 0.375 | CRWA1 R | **CR 24287** |
| | 3.371 | 0.438 | CRWH1 R | **CR 24320** |
| | 3.481 | 0.438 | CRWH1 R | **CR 24340** |
| | 3.500 | 0.438 | CRWH1 R | **CR 24370** |
| | 3.500 | 0.438 | CRWH1 V | **CR 24372** |
| | 3.543 | 0.438 | CRWH1 R | **CR 24445** |
| **2.500** | 3.189 | 0.438 | CRWH1 R | **CR 24881** |
| | 3.189 | 0.438 | CRWH1 V | **CR 24883** |
| | 3.245 | 0.438 | CRWH1 R | **CR 24889** |
| | 3.251 | 0.375 | CRW1 R | **CR 24897** |
| | 3.251 | 0.375 | CRWA1 R | **CR 24898** |
| | 3.251 | 0.375 | CRWA1 V | **CR 24899** |
| | 3.251 | 0.438 | CRWH1 R | **CR 24910** |
| | 3.251 | 0.438 | CRWHA1 R | **CR 24911** |
| | 3.251 | 0.438 | CRWH1 V | **CR 24914** |
| | 3.251 | 0.438 | CRWHA1 V | **CR 24916** |
| | 3.251 | 0.500 | CRW1 V | **CR 24913** |
| | 3.350 | 0.438 | CRWH1 R | **CR 24931** |
| | 3.350 | 0.438 | CRWHA1 R | **CR 24932** |
| | 3.371 | 0.375 | CRWHA1 R | **CR 24934**[1] |
| | 3.371 | 0.438 | CRWHA1 V | **CR 24936** |
| | 3.371 | 0.438 | CRWH1 R | **CR 24954** |
| | 3.428 | 0.375 | CRWA1 P | **CR 24949** |
| | 3.428 | 0.375 | CRWA1 R | **CR 24951** |
| | 3.500 | 0.375 | CRWA1 V | **CR 24971** |
| | 3.500 | 0.438 | CRW1 R | **CR 24980** |
| | 3.500 | 0.438 | CRWA1 R | **CR 24982** |
| | 3.500 | 0.438 | CRWH1 V | **CR 24984** |
| | 3.500 | 0.438 | CRWH1 R | **CR 24986** |
| | 3.500 | 0.438 | CRWHA1 R | **CR 24988** |
| | 3.500 | 0.438 | CRWH1 P | **CR 24989** |
| | 3.500 | 0.438 | CRWHA1 V | **CR 24990** |
| | 3.502 | 0.406 | CRW1 S | **CR 25082** |
| | 3.543 | 0.438 | CRWH1 R | **CR 25043** |
| | 3.543 | 0.438 | CRWHA1 P | **CR 25065**[1] |
| | 3.544 | 0.433 | CRWA1 V | **CR 25037** |
| | 3.623 | 0.375 | CRW1 R | **CR 25074** |
| | 3.623 | 0.375 | CRWA1 R | **CR 25075** |
| | 3.623 | 0.375 | CRWA1 V | **CR 25076** |
| | 3.623 | 0.438 | CRWH1 R | **CR 25071**[1] |
| | 3.751 | 0.438 | CRWH1 R | **CR 25091**[1] |
| | 3.876 | 0.438 | CRWH1 R | **CR 25100** |
| | 3.876 | 0.469 | CRWHA1 P | **CR 25102** |
| | 4.003 | 0.375 | CRWA1 R | **CR 25108** |
| | 4.003 | 0.375 | CRWA1 V | **CR 25110** |

[1] Without SKF Bore Tite Coating

## Radial shaft seals – CRW1, CRWA1, CRWH1 and CRWHA1 – inch dimensions
$d_1$ **2.563 – 2.750** in.




Please see **pages 74** to **76** for housing bore requirements.

| **Dimensions** Shaft $d_1$ | Bore D | Nominal seal width b | **Design and lip material** | **Designation** |
|---|---|---|---|---|
| in. | | | – | – |
| **2.563** | 3.481 | 0.500 | CRWHA1 R | **CR 25561** |
| | 3.500 | 0.438 | CRWH1 R | **CR 25577** |
| | 3.623 | 0.438 | CRWH1 R | **CR 25641** |
| | 3.623 | 0.469 | CRWA1 P | **CR 25661** |
| | 3.751 | 0.438 | CRWH1 R | **CR 25713** |
| | 3.751 | 0.438 | CRWHA1 R | **CR 25714** |
| | 3.751 | 0.438 | CRWH1 V | **CR 25725** |
| | 3.873 | 0.438 | CRWHA1 R | **CR 25745**[1] |
| | 3.876 | 0.438 | CRWH1 R | **CR 25748** |
| **2.598** | 3.481 | 0.438 | CRWHA1 P | **CR 25970** |
| **2.607** | 3.350 | 0.375 | CRWH1 P | **CR 25950** |
| **2.625** | 3.251 | 0.438 | CRWH1 R | **CR 26110** |
| | 3.350 | 0.375 | CRW1 V | **CR 26122** |
| | 3.350 | 0.375 | CRW1 R | **CR 26123** |
| | 3.350 | 0.375 | CRWA1 R | **CR 26124** |
| | 3.350 | 0.438 | CRW1 R | **CR 26128**[1] |
| | 3.371 | 0.438 | CRWHA1 R | **CR 26153** |
| | 3.374 | 0.438 | CRWHA1 R | **CR 26141** |
| | 3.481 | 0.438 | CRWH1 R | **CR 26163** |
| | 3.500 | 0.375 | CRW1 V | **CR 26177** |
| | 3.500 | 0.375 | CRWA1 R | **CR 26186** |
| | 3.500 | 0.438 | CRWH1 R | **CR 26189** |
| | 3.500 | 0.438 | CRWHA1 R | **CR 26190** |
| | 3.500 | 0.438 | CRWA1 P | **CR 26191** |
| | 3.543 | 0.438 | CRWH1 R | **CR 26194** |
| | 3.623 | 0.375 | CRW1 V | **CR 26204** |
| | 3.623 | 0.375 | CRWA1 P | **CR 26220** |
| | 3.623 | 0.375 | CRW1 R | **CR 26237** |

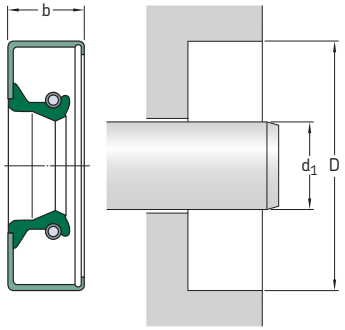
[1] Without SKF Bore Tite Coating

| Dimensions Shaft $d_1$ | Bore D | Nominal seal width b | Design and lip material | Designation |
|---|---|---|---|---|
| in. | | | – | – |
| **2.625** cont. | 3.623 | 0.375 | CRWA1 R | **CR 26238** |
| | 3.623 | 0.438 | CRWH1 V | **CR 26208** |
| | 3.623 | 0.438 | CRWH1 R | **CR 26209** |
| | 3.623 | 0.438 | CRWHA1 R | **CR 26211** |
| | 3.751 | 0.375 | CRWA1 R | **CR 26284** |
| | 3.751 | 0.438 | CRWH1 R | **CR 26297** |
| | 3.751 | 0.438 | CRWHA1 R | **CR 26298** |
| | 3.751 | 0.438 | CRWHA1 V | **CR 26299** |
| | 3.876 | 0.438 | CRWH1 R | **CR 26328** |
| | 3.936 | 0.438 | CRWH1 R | **CR 26346** |
| | 4.003 | 0.375 | CRWA1 R | **CR 26354** |
| | 4.003 | 0.438 | CRWH1 R | **CR 26356** |
| | 4.370 | 0.438 | CRWHA1 R | **CR 26359** |
| | 4.438 | 0.438 | CRWH1 R | **CR 26368** |
| **2.688** | 3.751 | 0.438 | CRWH1 R | **CR 26761** |
| | 3.876 | 0.438 | CRWH1 R | **CR 26921** |
| | 4.003 | 0.469 | CRWH1 R | **CR 26975** |
| **2.750** | 3.481 | 0.438 | CRW1 R | **CR 27251**[1] |
| | 3.500 | 0.375 | CRW1 R | **CR 27268** |
| | 3.500 | 0.375 | CRWA1 R | **CR 27269** |
| | 3.500 | 0.375 | CRWA1 V | **CR 27272** |
| | 3.500 | 0.438 | CRWH1 R | **CR 27280** |
| | 3.538 | 0.438 | CRWH1 R | **CR 27284** |
| | 3.543 | 0.438 | CRWH1 P | **CR 27292** |
| | 3.543 | 0.438 | CRWH1 V | **CR 27293** |
| | 3.543 | 0.438 | CRWHA1 P | **CR 27295** |
| | 3.623 | 0.438 | CRWH1 V | **CR 27324** |
| | 3.623 | 0.438 | CRWH1 R | **CR 27334** |
| | 3.751 | 0.438 | CRW1 R | **CR 27361** |
| | 3.751 | 0.438 | CRWA1 R | **CR 27362** |
| | 3.751 | 0.438 | CRWH1 V | **CR 27365** |
| | 3.751 | 0.438 | CRWH1 R | **CR 27368** |
| | 3.751 | 0.438 | CRWHA1 R | **CR 27370** |
| | 3.751 | 0.438 | CRWA1 P | **CR 27377** |
| | 3.765 | 0.438 | CRWH1 R | **CR 27426** |
| | 3.876 | 0.433 | CRWHA1 P | **CR 27452** |
| | 3.876 | 0.438 | CRWA1 R | **CR 27467** |
| | 3.876 | 0.438 | CRWH1 R | **CR 27470** |
| | 3.876 | 0.438 | CRWHA1 R | **CR 27471** |
| | 3.936 | 0.438 | CRWH1 R | **CR 27525** |
| | 3.937 | 0.438 | CRWA1 P | **CR 27526** |
| | 4.003 | 0.375 | CRWA1 V | **CR 27539** |
| | 4.003 | 0.438 | CRWH1 R | **CR 27541** |
| | 4.003 | 0.438 | CRWHA1 P | **CR 27565**[1] |
| | 4.249 | 0.438 | CRWH1 R | **CR 27600** |
| | 4.249 | 0.438 | CRWHA1 P | **CR 27601** |
| | 4.331 | 0.500 | CRWHA1 R | **CR 27625** |
| | 4.500 | 0.469 | CRWH1 R | **CR 28848** |




[1] Without SKF Bore Tite Coating

## Radial shaft seals – CRW1, CRWA1, CRWH1 and CRWHA1 – inch dimensions
$d_1$ **2.813 – 3.125** in.



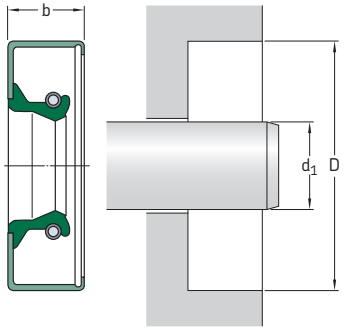

Please see **pages 74** to **76** for housing bore requirements.

| **Dimensions** Shaft $d_1$ | Bore D | Nominal seal width b | **Design and lip material** | **Designation** |
|---|---|---|---|---|
| in. | | | – | – |
| **2.813** | 3.751 | 0.438 | CRWH1 R | **CR 28035** |
| | 3.876 | 0.438 | CRWH1 R | **CR 28116** |
| | 4.003 | 0.438 | CRWH1 R | **CR 28175** |
| | 4.249 | 0.313 | CRW1 R | **CR 28270** |
| | 4.249 | 0.438 | CRWH1 R | **CR 28275** |
| | 4.250 | 0.438 | CRWH1 P | **CR 28276** |
| **2.844** | 3.939 | 0.500 | CRWA1 R | **CR 28425** |
| | 3.939 | 0.550 | CRWHA1 R | **CR 28426** |
| | 4.003 | 0.438 | CRWH1 R | **CR 28464** |
| | 4.003 | 0.500 | CRWH1 V | **CR 28474** |
| **2.875** | 3.623 | 0.438 | CRWH1 R | **CR 28654** |
| | 3.623 | 0.438 | CRWHA1 R | **CR 28655** |
| | 3.751 | 0.375 | CRWA1 R | **CR 28669** |
| | 3.751 | 0.375 | CRWA1 V | **CR 28670** |
| | 3.751 | 0.438 | CRWH1 R | **CR 28686** |
| | 3.751 | 0.438 | CRWHA1 R | **CR 28687** |
| | 3.751 | 0.438 | CRWH1 P | **CR 28697** |
| | 3.751 | 0.438 | CRWH1 V | **CR 28698** |
| | 3.751 | 0.438 | CRWHA1 V | **CR 28699** |
| | 3.876 | 0.438 | CRWH1 R | **CR 28745** |
| | 3.876 | 0.438 | CRWHA1 R | **CR 28746** |
| | 3.876 | 0.438 | CRWHA1 V | **CR 28748** |
| | 4.003 | 0.375 | CRWA1 R | **CR 28778** |
| | 4.003 | 0.375 | CRWA1 V | **CR 28779** |
| | 4.003 | 0.438 | CRWH1 R | **CR 28760** |
| | 4.003 | 0.438 | CRWHA1 R | **CR 28761** |
| | 4.125 | 0.375 | CRWH1 R | **CR 28817** |
| | 4.331 | 0.438 | CRWA1 P | **CR 28841** |

| Dimensions | | | Design and | Designation |
|---|---|---|---|---|
| Shaft | Bore | Nominal seal width | lip material | |
| $d_1$ | D | b | | |
| in. | | | – | – |
| **2.938** | 3.623 | 0.375 | CRW1 R | **CR 29218** |
| | 3.751 | 0.375 | CRW1 R | **CR 29223** |
| | 3.751 | 0.375 | CRWA1 R | **CR 29224** |
| | 3.751 | 0.375 | CRWA1 V | **CR 29226** |
| | 3.876 | 0.375 | CRWHA1 R | **CR 29263**[1] |
| | 3.876 | 0.375 | CRWHA1 V | **CR 29262** |
| | 3.937 | 0.438 | CRWA1 P | **CR 29273** |
| | 4.003 | 0.438 | CRWH1 R | **CR 29316** |
| | 4.003 | 0.438 | CRWHA1 R | **CR 29317**[1] |
| | 4.003 | 0.438 | CRWA1 P | **CR 29322** |
| | 4.004 | 0.433 | CRWHA1 V | **CR 29383** |
| | 4.125 | 0.375 | CRWH1 R | **CR 29184** |
| | 4.125 | 0.375 | CRWHA1 R | **CR 29385** |
| | 4.501 | 0.438 | CRWH1 R | **CR 29465** |
| **3.000** | 3.500 | 0.375 | CRW1 V | **CR 29841** |
| | 3.751 | 0.375 | CRW1 R | **CR 29865**[1] |
| | 3.751 | 0.375 | CRWA1 R | **CR 29866** |
| | 3.751 | 0.375 | CRWA1 P | **CR 29867** |
| | 3.751 | 0.375 | CRW1 V | **CR 29868** |
| | 3.751 | 0.375 | CRWA1 V | **CR 29870** |
| | 3.751 | 0.438 | CRWH1 R | **CR 29871** |
| | 3.751 | 0.438 | CRWHA1 R | **CR 29872** |
| | 3.876 | 0.313 | CRW1 V | **CR 29877** |
| | 3.876 | 0.438 | CRWH1 R | **CR 29887** |
| | 3.876 | 0.469 | CRWH1 V | **CR 29891** |
| | 4.003 | 0.375 | CRW1 R | **CR 29906** |
| | 4.003 | 0.375 | CRWA1 R | **CR 29907** |
| | 4.003 | 0.375 | CRWA1 V | **CR 29912** |
| | 4.003 | 0.375 | CRWH1 P | **CR 29950** |
| | 4.003 | 0.438 | CRWHA1 P | **CR 29925**[1] |
| | 4.003 | 0.438 | CRWH1 R | **CR 29951**[1] |
| | 4.003 | 0.438 | CRWHA1 R | **CR 29952** |
| | 4.003 | 0.438 | CRWH1 V | **CR 29958** |
| | 4.125 | 0.438 | CRWH1 R | **CR 30000** |
| | 4.125 | 0.438 | CRWH1 V | **CR 30003** |
| | 4.249 | 0.438 | CRWH1 R | **CR 30033**[1] |
| | 4.249 | 0.438 | CRWHA1 P | **CR 30055** |
| | 4.331 | 0.438 | CRWH1 R | **CR 30060** |
| | 4.376 | 0.438 | CRWH1 R | **CR 30070** |
| | 4.500 | 0.438 | CRWH1 R | **CR 30087** |
| | 4.500 | 0.438 | CRWHA1 R | **CR 30095** |
| | 4.501 | 0.438 | CRWH1 V | **CR 30098** |
| | 4.999 | 0.438 | CRWH1 R | **CR 30125** |
| **3.125** | 3.811 | 0.355 | CRW1 V | **CR 31132** |
| | 3.811 | 0.355 | CRW1 R | **CR 31135** |
| | 4.003 | 0.375 | CRWA1 R | **CR 31139** |
| | 4.003 | 0.375 | CRWHA1 V | **CR 31152** |
| | 4.003 | 0.438 | CRWH1 R | **CR 31147** |
| | 4.003 | 0.438 | CRWHA1 R | **CR 31148** |

[1] Without SKF Bore Tite Coating

## Radial shaft seals – CRW1, CRWA1, CRWH1 and CRWHA1 – inch dimensions
$d_1$ **3.125 – 3.500** in.




Please see **pages 74** to **76** for housing bore requirements.

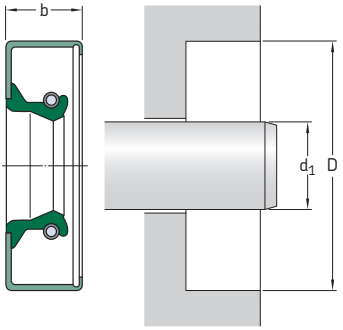
| **Dimensions** Shaft $d_1$ | Bore D | Nominal seal width b | **Design and lip material** | **Designation** |
|---|---|---|---|---|
| in. | | | – | – |
| **3.125** | 4.125 | 0.375 | CRW1 R | **CR 31177** |
| cont. | 4.125 | 0.375 | CRWA1 V | **CR 31179** |
| | 4.125 | 0.438 | CRWHA1 P | **CR 31173** |
| | 4.125 | 0.438 | CRWHA1 S | **CR 31185** |
| | 4.125 | 0.438 | CRWH1 R | **CR 31189**[1] |
| | 4.249 | 0.438 | CRWH1 R | **CR 31227** |
| | 4.249 | 0.438 | CRWHA1 R | **CR 31228** |
| | 4.249 | 0.438 | CRWHA1 V | **CR 31237** |
| | 4.376 | 0.438 | CRWH1 R | **CR 31250** |
| | 4.376 | 0.438 | CRWHA1 P | **CR 31261** |
| | 4.501 | 0.438 | CRWH1 R | **CR 31269** |
| | 4.626 | 0.438 | CRWH1 R | **CR 31299** |
| | 4.751 | 0.438 | CRWH1 R | **CR 31316** |
| | 4.999 | 0.438 | CRWH1 R | **CR 31333** |
| | 5.251 | 0.438 | CRWH1 R | **CR 31353** |
| **3.150** | 3.946 | 0.394 | CRW1 V | **CR 31511** |
| **3.188** | 4.249 | 0.438 | CRWH1 R | **CR 31758** |
| | 4.376 | 0.438 | CRWH1 R | **CR 31825** |
| | 4.501 | 0.438 | CRWH1 R | **CR 31855** |
| | 4.626 | 0.438 | CRWH1 R | **CR 31870** |
| | 4.999 | 0.438 | CRWH1 R | **CR 31955** |
| **3.250** | 3.876 | 0.375 | CRW1 P | **CR 32330** |
| | 4.003 | 0.375 | CRW1 R | **CR 32344** |
| | 4.003 | 0.375 | CRWA1 P | **CR 32347** |
| | 4.249 | 0.375 | CRWA1 V | **CR 32392** |
| | 4.249 | 0.375 | CRW1 R | **CR 32393** |
| | 4.249 | 0.375 | CRWA1 R | **CR 32395** |
| | 4.249 | 0.438 | CRWH1 P | **CR 32380**[1] |
| | 4.249 | 0.438 | CRWHA1 P | **CR 32385** |
| | 4.249 | 0.438 | CRWH1 R | **CR 32396** |
| | 4.249 | 0.438 | CRWHA1 R | **CR 32397** |
| | 4.249 | 0.438 | CRWH1 V | **CR 32403** |

[1] Without SKF Bore Tite Coating

| Dimensions | | | Design and lip material | Designation |
|---|---|---|---|---|
| Shaft | Bore | Nominal seal width | | |
| $d_1$ | D | b | | |
| in. | | | – | – |
| **3.250** | 4.376 | 0.438 | CRWH1 R | **CR 32424** |
| cont. | 4.500 | 0.438 | CRWA1 P | **CR 32448** |
| | 4.501 | 0.375 | CRW1 R | **CR 32477** |
| | 4.501 | 0.438 | CRWH1 R | **CR 32501** |
| | 4.501 | 0.438 | CRWHA1 R | **CR 32502** |
| | 4.626 | 0.433 | CRWHA1 R | **CR 32514**[1] |
| | 4.626 | 0.438 | CRWH1 R | **CR 32540** |
| | 4.718 | 0.438 | CRWH1 R | **CR 32555** |
| | 4.751 | 0.438 | CRWH1 R | **CR 32560** |
| | 4.999 | 0.438 | CRWH1 R | **CR 32582** |
| | 4.999 | 0.438 | CRWHA1 R | **CR 32583** |
| **3.313** | 4.125 | 0.438 | CRWH1 R | **CR 33033** |
| | 4.249 | 0.438 | CRWH1 R | **CR 33073** |
| | 4.500 | 0.438 | CRWH1 R | **CR 33136** |
| | 4.999 | 0.438 | CRWH1 R | **CR 33306** |
| **3.375** | 4.125 | 0.375 | CRW1 R | **CR 33645** |
| | 4.125 | 0.375 | CRWA1 V | **CR 34647** |
| | 4.249 | 0.438 | CRWHA1 R | **CR 33665** |
| | 4.280 | 0.406 | CRWA1 S | **CR 33654** |
| | 4.376 | 0.375 | CRWA1 V | **CR 33699** |
| | 4.376 | 0.375 | CRW1 R | **CR 33700** |
| | 4.376 | 0.375 | CRWA1 R | **CR 33701** |
| | 4.376 | 0.438 | CRWH1 R | **CR 33711** |
| | 4.376 | 0.438 | CRWHA1 R | **CR 33712** |
| | 4.501 | 0.438 | CRWA1 V | **CR 33733** |
| | 4.501 | 0.438 | CRWH1 R | **CR 33735** |
| | 4.626 | 0.438 | CRWH1 R | **CR 33772** |
| | 4.626 | 0.438 | CRWHA1 R | **CR 33773** |
| | 4.626 | 0.438 | CRWHA1 V | **CR 33775** |
| | 4.686 | 0.438 | CRWH1 R | **CR 33807**[1] |
| | 4.999 | 0.438 | CRWH1 R | **CR 33837**[1] |
| | 5.251 | 0.438 | CRWHA1 R | **CR 33866** |
| **3.438** | 4.249 | 0.375 | CRW1 R | **CR 34256** |
| | 4.501 | 0.375 | CRWA1 R | **CR 34279** |
| | 4.501 | 0.438 | CRWH1 R | **CR 34282** |
| | 4.501 | 0.438 | CRWHA1 R | **CR 34283** |
| | 4.626 | 0.438 | CRWH1 R | **CR 34336** |
| | 4.626 | 0.438 | CRWHA1 R | **CR 34338** |
| | 4.751 | 0.438 | CRWA1 R | **CR 34379** |
| | 4.756 | 0.438 | CRWH1 R | **CR 34383** |
| | 4.876 | 0.438 | CRWH1 R | **CR 34398** |
| | 4.999 | 0.438 | CRWH1 R | **CR 34407** |
| | 4.999 | 0.438 | CRWHA1 R | **CR 34408** |
| **3.500** | 4.249 | 0.438 | CRWHA1 V | **CR 34857** |
| | 4.376 | 0.375 | CRW1 R | **CR 34860** |
| | 4.376 | 0.375 | CRWA1 R | **CR 34861** |
| | 4.376 | 0.375 | CRWA1 V | **CR 34866** |
| | 4.376 | 0.433 | CRWHA1 V | **CR 34869** |
| | 4.376 | 0.438 | CRWH1 R | **CR 34867** |
| | 4.376 | 0.438 | CRWHA1 R | **CR 34868** |

[1] Without SKF Bore Tite Coating

## Radial shaft seals – CRW1, CRWA1, CRWH1 and CRWHA1 – inch dimensions
$d_1$ **3.500 – 3.875** in.




BYC
RODAMIENTOS Y SUMINISTROS
55 5576 5785 • 55 5359 4287
55 8955 7108 • 55 5576 5786
bycventas@hotmail.com
55 3291 5372

Please see **pages 74** to **76** for housing bore requirements.

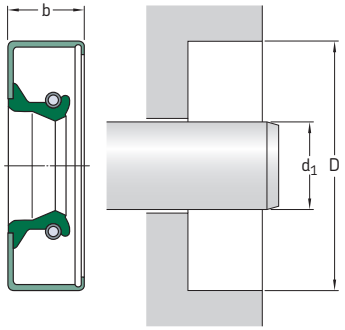
| **Dimensions** Shaft $d_1$ | Bore D | Nominal seal width b | **Design and lip material** | **Designation** |
|---|---|---|---|---|
| in. | | | – | – |
| **3.500** | 4.501 | 0.375 | CRWA1 V | **CR 34883** |
| cont. | 4.501 | 0.375 | CRW1 R | **CR 34886** |
| | 4.501 | 0.375 | CRWA1 R | **CR 34887** |
| | 4.501 | 0.438 | CRWH1 R | **CR 34888** |
| | 4.501 | 0.438 | CRWHA1 R | **CR 34889** |
| | 4.501 | 0.438 | CRWHA1 P | **CR 34891**[1] |
| | 4.501 | 0.438 | CRWH1 V | **CR 34892** |
| | 4.626 | 0.438 | CRWH1 R | **CR 34985** |
| | 4.751 | 0.375 | CRWA1 V | **CR 35039** |
| | 4.751 | 0.375 | CRWA1 P | **CR 35040** |
| | 4.751 | 0.438 | CRWH1 R | **CR 35012** |
| | 4.751 | 0.438 | CRWHA1 R | **CR 35020** |
| | 4.751 | 0.625 | CRWH1 R | **CR 35029** |
| | 4.999 | 0.438 | CRWA1 V | **CR 35080** |
| | 4.999 | 0.438 | CRWH1 R | **CR 35082** |
| | 4.999 | 0.438 | CRWHA1 P | **CR 35083** |
| | 5.126 | 0.438 | CRWH1 R | **CR 35086** |
| | 5.126 | 0.438 | CRWHA1 R | **CR 35095** |
| | 5.251 | 0.438 | CRWH1 R | **CR 35096** |
| | 5.251 | 0.750 | CRWHA11 P | **CR 35098** |
| **3.563** | 4.501 | 0.438 | CRWH1 R | **CR 35556** |
| | 4.626 | 0.438 | CRWH1 R | **CR 35593** |
| | 4.751 | 0.438 | CRWH1 R | **CR 35649** |
| | 4.876 | 0.438 | CRWH1 R | **CR 35676** |
| | 4.999 | 0.438 | CRWH1 R | **CR 35716** |
| **3.625** | 4.376 | 0.375 | CRWA1 V | **CR 36153** |
| | 4.376 | 0.375 | CRWA1 R | **CR 36155** |
| | 4.376 | 0.375 | CRWH1 R | **CR 36157** |
| | 4.376 | 0.375 | CRWH1 P | **CR 36158** |
| | 4.501 | 0.375 | CRW1 R | **CR 36166** |

[1] Without SKF Bore Tite Coating

| Dimensions Shaft $d_1$ | Bore D | Nominal seal width b | Design and lip material | Designation |
|---|---|---|---|---|
| in. | | | – | – |
| **3.625** | 4.626 | 0.375 | CRW1 R | **CR 36177** |
| cont. | 4.626 | 0.375 | CRWA1 V | **CR 36179** |
| | 4.626 | 0.438 | CRWH1 R | **CR 36185** |
| | 4.626 | 0.438 | CRWHA1 R | **CR 36186** |
| | 4.751 | 0.438 | CRWH1 R | **CR 36220** |
| | 4.751 | 0.500 | CRWA1 S | **CR 36234** |
| | 4.876 | 0.438 | CRWH1 R | **CR 36314** |
| | 4.999 | 0.375 | CRWA1 V | **CR 36359** |
| | 4.999 | 0.375 | CRWA1 R | **CR 36361** |
| | 4.999 | 0.438 | CRWH1 R | **CR 36363** |
| | 4.999 | 0.438 | CRWHA1 R | **CR 36364** |
| | 5.251 | 0.375 | CRWA1 R | **CR 36382** |
| | 5.375 | 0.438 | CRWHA1 R | **CR 36391** |
| **3.688** | 4.501 | 0.438 | CRWHA1 R | **CR 36740** |
| | 4.751 | 0.438 | CRWH1 R | **CR 36770** |
| | 4.999 | 0.438 | CRWH1 R | **CR 36880** |
| | 5.126 | 0.438 | CRWA1 R | **CR 36895** |
| | 5.626 | 0.438 | CRWA1 R | **CR 36910** |
| **3.750** | 4.501 | 0.375 | CRW1 R | **CR 37327**[1] |
| | 4.501 | 0.375 | CRW1 V | **CR 37328** |
| | 4.501 | 0.469 | CRWHA1 P | **CR 37330** |
| | 4.502 | 0.469 | CRWHA1 V | **CR 37332** |
| | 4.750 | 0.438 | CRWHA1 P | **CR 37403** |
| | 4.751 | 0.375 | CRW1 P | **CR 37387** |
| | 4.751 | 0.375 | CRW1 R | **CR 37388** |
| | 4.751 | 0.375 | CRWA1 R | **CR 37389** |
| | 4.751 | 0.438 | CRWA1 P | **CR 37390** |
| | 4.751 | 0.438 | CRWHA1 S | **CR 37395** |
| | 4.751 | 0.438 | CRWH1 R | **CR 37396** |
| | 4.751 | 0.438 | CRWH1 V | **CR 37405** |
| | 4.876 | 0.438 | CRWH1 R | **CR 37433** |
| | 4.999 | 0.375 | CRW1 V | **CR 37524** |
| | 4.999 | 0.375 | CRW1 R | **CR 37525** |
| | 4.999 | 0.375 | CRWA1 R | **CR 37526** |
| | 4.999 | 0.438 | CRWH1 R | **CR 37532** |
| | 4.999 | 0.438 | CRWHA1 R | **CR 37533** |
| | 5.251 | 0.438 | CRWH1 R | **CR 37574** |
| | 5.251 | 0.438 | CRWH1 V | **CR 37577** |
| **3.875** | 4.751 | 0.375 | CRW1 R | **CR 38646** |
| | 4.751 | 0.375 | CRWA1 R | **CR 38647** |
| | 4.751 | 0.375 | CRWA1 V | **CR 38649** |
| | 4.751 | 0.438 | CRWH1 R | **CR 38653** |
| | 4.876 | 0.438 | CRWHA1 R | **CR 38673** |
| | 4.876 | 0.500 | CRWH1 R | **CR 38669** |
| | 4.876 | 0.500 | CRWHA1 V | **CR 38678** |
| | 4.999 | 0.375 | CRW1 R | **CR 38691** |
| | 4.999 | 0.375 | CRWA1 R | **CR 38692** |
| | 4.999 | 0.375 | CRWA1 V | **CR 38694** |
| | 5.126 | 0.438 | CRWHA1 V | **CR 38702** |
| | 5.126 | 0.438 | CRWH1 R | **CR 38703** |
| | 5.126 | 0.438 | CRWHA1 R | **CR 38713** |

[1] Without SKF Bore Tite Coating

## Radial shaft seals – CRW1, CRWA1, CRWH1 and CRWHA1 – inch dimensions
$d_1$ **3.875 – 4.477** in.




Please see **pages 74** to **76** for housing bore requirements.

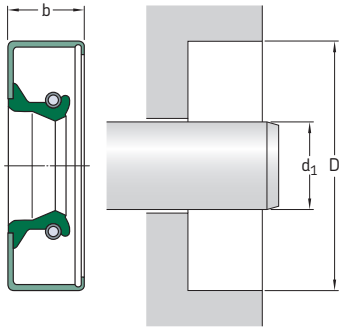
| **Dimensions** Shaft $d_1$ | Bore D | Nominal seal width b | **Design and lip material** | **Designation** |
|---|---|---|---|---|
| in. | | | – | – |
| **3.875** | 5.251 | 0.438 | CRWH1 R | **CR 38730** |
| cont. | 5.251 | 0.438 | CRWHA1 R | **CR 38731** |
| | 5.251 | 0.438 | CRWHA1 P | **CR 38739** |
| | 5.376 | 0.438 | CRWH1 R | **CR 38745** |
| | 5.626 | 0.433 | CRWHA1 R | **CR 38758** |
| | 5.690 | 0.500 | CRWH1 R | **CR 38774** |
| **3.938** | 4.876 | 0.438 | CRWH1 R | **CR 39245** |
| | 4.999 | 0.438 | CRWH1 R | **CR 39275** |
| | 4.999 | 0.438 | CRWH1 V | **CR 39276** |
| | 4.999 | 0.438 | CRWH1 R | **CR 39277** |
| | 5.126 | 0.472 | CRWHA1 V | **CR 39304** |
| | 5.251 | 0.438 | CRWH1 R | **CR 39320** |
| | 5.375 | 0.438 | CRWH1 R | **CR 39350** |
| | 5.501 | 0.438 | CRWH1 R | **CR 39423** |
| **4.000** | 4.876 | 0.438 | CRW1 R | **CR 39851** |
| | 4.999 | 0.375 | CRW1 P | **CR 39895** |
| | 4.999 | 0.375 | CRWA1 V | **CR 39921** |
| | 4.999 | 0.375 | CRW1 R | **CR 39922** |
| | 4.999 | 0.375 | CRWA1 R | **CR 39923** |
| | 4.999 | 0.438 | CRWHA1 P | **CR 39930** |
| | 4.999 | 0.438 | CRWH1 V | **CR 39932** |
| | 4.999 | 0.438 | CRWH1 R | **CR 39933** |
| | 4.999 | 0.438 | CRWHA1 R | **CR 39934** |
| | 4.999 | 0.438 | CRWH1 S | **CR 39935** |
| | 5.126 | 0.438 | CRWH1 R | **CR 39975** |
| | 5.251 | 0.438 | CRWH1 V | **CR 39996** |
| | 5.251 | 0.438 | CRWH1 R | **CR 39997** |
| | 5.251 | 0.438 | CRWA1 R | **CR 40000** |
| | 5.310 | 0.500 | CRWHA1 R | **CR 40020** |
| | 5.376 | 0.438 | CRWH1 R | **CR 40036** |
| | 5.501 | 0.438 | CRWH1 R | **CR 40049** |

| Dimensions Shaft $d_1$ | Bore D | Nominal seal width b | Design and lip material | Designation |
|---|---|---|---|---|
| in. | | | – | – |
| **4.000** cont. | 5.626 | 0.375 | CRWA1 R | **CR 40077** |
| | 5.626 | 0.438 | CRWH1 R | **CR 40078** |
| | 5.751 | 0.438 | CRWH1 R | **CR 40108** |
| | 6.001 | 0.500 | CRWH1 R | **CR 40138** |
| | 6.250 | 0.500 | CRWH1 R | **CR 40158** |
| **4.125** | 4.999 | 0.438 | CRWH1 R | **CR 41125** |
| | 4.999 | 0.438 | CRWH1 V | **CR 41126**[1] |
| | 5.126 | 0.438 | CRWH1 R | **CR 41170** |
| | 5.126 | 0.438 | CRWH1 V | **CR 41171** |
| | 5.251 | 0.438 | CRWH1 R | **CR 41185** |
| | 5.251 | 0.438 | CRWH1 V | **CR 41186** |
| | 5.501 | 0.438 | CRWH1 R | **CR 41265** |
| | 5.501 | 0.438 | CRWH1 V | **CR 41266** |
| | 5.751 | 0.438 | CRWH1 R | **CR 41287** |
| | 6.001 | 0.438 | CRWH1 R | **CR 41305** |
| | 6.001 | 0.438 | CRWH1 V | **CR 41307** |
| **4.250** | 5.251 | 0.375 | CRWA1 R | **CR 42419** |
| | 5.251 | 0.375 | CRW1 S | **CR 42422** |
| | 5.251 | 0.438 | CRWH1 R | **CR 42426** |
| | 5.251 | 0.438 | CRWHA1 R | **CR 42427** |
| | 5.251 | 0.438 | CRWH1 V | **CR 42433** |
| | 5.373 | 0.438 | CRWA1 V | **CR 42474** |
| | 5.376 | 0.438 | CRWH1 R | **CR 42475** |
| | 5.501 | 0.438 | CRWH1 R | **CR 42528** |
| | 5.626 | 0.438 | CRWA1 R | **CR 42557** |
| | 5.751 | 0.438 | CRWH1 R | **CR 42573** |
| | 5.876 | 0.500 | CRWH1 V | **CR 42592** |
| | 6.001 | 0.500 | CRWH1 R | **CR 42616** |
| | 6.126 | 0.500 | CRWH1 R | **CR 42635** |
| | 6.250 | 0.500 | CRWH1 R | **CR 42644** |
| **4.313** | 5.501 | 0.433 | CRWHA1 P | **CR 43072** |
| | 5.501 | 0.438 | CRWHA1 R | **CR 43073** |
| **4.331** | 5.626 | 0.472 | CRWHA1 V | **CR 43345** |
| **4.375** | 5.376 | 0.438 | CRWH1 R | **CR 43650** |
| | 5.501 | 0.438 | CRWH1 R | **CR 43691** |
| | 5.751 | 0.438 | CRWH1 R | **CR 43751** |
| | 6.001 | 0.500 | CRWH1 R | **CR 43771** |
| | 6.063 | 0.500 | CRWH1 R | **CR 541974**[1] |
| | 6.250 | 0.500 | CRWH1 R | **CR 43820** |
| **4.438** | 5.501 | 0.500 | CRWH1 R | **CR 44275** |
| | 5.501 | 0.500 | CRWH1 V | **CR 44276** |
| | 5.751 | 0.500 | CRWH1 R | **CR 44295** |
| | 6.001 | 0.500 | CRWH1 R | **CR 44320** |
| | 6.250 | 0.500 | CRWH1 R | **CR 44350** |
| **4.477** | 6.250 | 0.500 | CRWH1 R | **CR 44630** |




[1] Without SKF Bore Tite Coating

## Radial shaft seals – CRW1, CRWA1, CRWH1 and CRWHA1 – inch dimensions
$d_1$ **4.500 – 5.125** in.



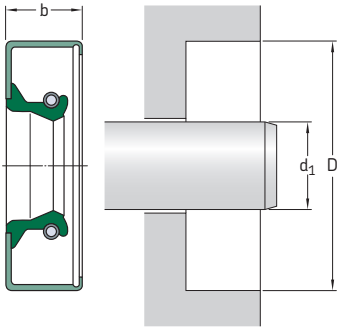

Please see **pages 74** to **76** for housing bore requirements.

| **Dimensions** Shaft $d_1$ | Bore D | Nominal seal width b | **Design and lip material** | **Designation** |
|---|---|---|---|---|
| in. | | | – | – |
| **4.500** | 5.251 | 0.438 | CRWH1 R | **CR 44913** |
| | 5.251 | 0.438 | CRWHA1 V | **CR 44917** |
| | 5.376 | 0.438 | CRWH1 R | **CR 44920** |
| | 5.376 | 0.438 | CRWHA1 V | **CR 44926** |
| | 5.501 | 0.375 | CRW1 R | **CR 44959** |
| | 5.501 | 0.375 | CRWA1 R | **CR 44960** |
| | 5.501 | 0.435 | CRWH1 V | **CR 44980** |
| | 5.501 | 0.438 | CRWH1 R | **CR 44967** |
| | 5.501 | 0.438 | CRWHA1 R | **CR 44968** |
| | 5.501 | 0.438 | CRWH1 V | **CR 44973** |
| | 5.626 | 0.438 | CRWH1 R | **CR 45032** |
| | 5.626 | 0.438 | CRWHA1 V | **CR 45033** |
| | 5.751 | 0.375 | CRWA1 V | **CR 45064** |
| | 5.751 | 0.438 | CRWH1 R | **CR 45069** |
| | 5.751 | 0.438 | CRWHA1 R | **CR 45070** |
| | 6.001 | 0.500 | CRWH1 R | **CR 45110** |
| | 6.001 | 0.500 | CRWHA1 R | **CR 45111** |
| | 6.001 | 0.500 | CRWHA1 V | **CR 45112** |
| | 6.126 | 0.563 | CRWH1 R | **CR 45140** |
| | 6.250 | 0.500 | CRWH1 R | **CR 45150** |
| **4.625** | 5.626 | 0.500 | CRWH1 R | **CR 46144** |
| | 5.626 | 0.500 | CRWH1 V | **CR 46155** |
| | 5.751 | 0.500 | CRWH1 R | **CR 46200** |
| | 5.751 | 0.500 | CRWH1 S | **CR 46208** |
| | 6.001 | 0.500 | CRWH1 R | **CR 46285** |
| | 6.250 | 0.500 | CRWH1 R | **CR 46324** |
| **4.688** | 5.751 | 0.512 | CRWH1 S | **CR 46790** |
| | 5.751 | 0.512 | CRWH1 R | **CR 46800** |
| | 6.250 | 0.500 | CRWH1 R | **CR 46950** |

| Dimensions Shaft $d_1$ | Bore D | Nominal seal width b | Design and lip material | Designation |
|---|---|---|---|---|
| in. | | | – | – |
| **4.750** | 5.749 | 0.438 | CRW1 P | **CR 47375** |
| | 5.751 | 0.500 | CRW1 V | **CR 47379** |
| | 5.751 | 0.500 | CRWA1 V | **CR 47382** |
| | 5.751 | 0.500 | CRW1 R | **CR 47383** |
| | 5.751 | 0.500 | CRWH1 R | **CR 47394** |
| | 5.751 | 0.500 | CRWHA1 R | **CR 47395** |
| | 5.875 | 0.500 | CRWH1 R | **CR 47441** |
| | 6.001 | 0.500 | CRWH1 R | **CR 47474** |
| | 6.001 | 0.500 | CRWHA1 R | **CR 47475** |
| | 6.001 | 0.500 | CRW1 V | **CR 47481** |
| | 6.250 | 0.500 | CRWH1 R | **CR 47583** |
| | 6.250 | 0.500 | CRWHA1 V | **CR 47586** |
| **4.813** | 5.751 | 0.563 | CRWH1 P | **CR 48060** |
| | 5.751 | 0.563 | CRWH1 V | **CR 48062** |
| | 5.751 | 0.563 | CRWH1 S | **CR 48065** |
| **4.875** | 6.001 | 0.500 | CRWH1 V | **CR 48692** |
| | 6.001 | 0.500 | CRWH1 R | **CR 48693** |
| | 6.126 | 0.500 | CRWH1 R | **CR 48726** |
| | 6.250 | 0.500 | CRWHA1 R | **CR 48768** |
| | 6.250 | 0.500 | CRWH1 R | **CR 48769** |
| | 6.250 | 0.500 | CRWH1 V | **CR 48772** |
| **4.921** | 6.375 | 0.500 | CRWHA1 V | **CR 49274** |
| **4.938** | 6.001 | 0.500 | CRWH1 R | **CR 49251** |
| | 6.250 | 0.500 | CRWH1 R | **CR 49301** |
| **5.000** | 6.001 | 0.500 | CRWHA1 V | **CR 49927** |
| | 6.001 | 0.500 | CRWH1 R | **CR 49928** |
| | 6.001 | 0.500 | CRWHA1 R | **CR 49929** |
| | 6.126 | 0.500 | CRW1 V | **CR 49960** |
| | 6.250 | 0.500 | CRWH1 R | **CR 49966** |
| | 6.250 | 0.500 | CRW1 R | **CR 49984** |
| | 6.250 | 0.500 | CRWA1 R | **CR 49985** |
| | 6.250 | 0.500 | CRWH1 P | **CR 49990**[1] |
| | 6.250 | 0.500 | CRWH1 V | **CR 49991** |
| | 6.250 | 0.500 | CRWHA1 R | **CR 49998** |
| | 6.375 | 0.500 | CRWH1 R | **CR 50130** |
| | 6.375 | 0.500 | CRWHA1 R | **CR 50138** |
| | 6.500 | 0.500 | CRWH1 R | **CR 50148** |
| | 6.500 | 0.500 | CRWH1 V | **CR 50151** |
| | 6.750 | 0.500 | CRWH1 R | **CR 50168** |
| | 6.750 | 0.500 | CRWHA1 R | **CR 50172** |
| **5.063** | 6.126 | 0.500 | CRWH1 R | **CR 50618** |
| | 6.375 | 0.500 | CRWH1 R | **CR 50650** |
| **5.125** | 6.126 | 0.500 | CRWHA1 R | **CR 51240** |
| | 6.126 | 0.500 | CRW1 V | **CR 51243** |
| | 6.126 | 0.500 | CRW1 R | **CR 51247** |
| | 6.250 | 0.500 | CRWHA1 R | **CR 51252** |
| | 6.250 | 0.500 | CRWA1 V | **CR 51253** |
| | 6.375 | 0.500 | CRWH1 R | **CR 51248**[1] |
| | 6.375 | 0.500 | CRWH1 V | **CR 51255** |

[1] Without SKF Bore Tite Coating

## Radial shaft seals – CRW1, CRWA1, CRWH1 and CRWHA1 – inch dimensions
$d_1$ **5.188 – 7.000** in.




BYC
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55 8955 7108 • 55 5576 5786
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55 3291 5372

Please see **pages 74** to **76** for housing bore requirements.

| **Dimensions** Shaft $d_1$ | Bore D | Nominal seal width b | **Design and lip material** | **Designation** |
|---|---|---|---|---|
| in. | | | – | – |
| **5.188** | 6.501 | 0.625 | CRWH1 V | **CR 51852** |
| **5.250** | 6.001 | 0.375 | CRW1 R | **CR 52440** |
| | 6.001 | 0.500 | CRWH1 V | **CR 52443** |
| | 6.250 | 0.500 | CRWH1 R | **CR 52445** |
| | 6.250 | 0.500 | CRWH1 V | **CR 52447** |
| | 6.500 | 0.500 | CRWH1 R | **CR 52488** |
| | 6.500 | 0.500 | CRWH1 V | **CR 52489** |
| | 6.750 | 0.500 | CRWH1 R | **CR 52648** |
| | 6.750 | 0.500 | CRWH1 V | **CR 52649** |
| **5.375** | 6.625 | 0.500 | CRWH1 R | **CR 53701** |
| | 6.625 | 0.500 | CRWH1 V | **CR 53702** |
| | 6.750 | 0.500 | CRWH1 V | **CR 53771** |
| | 6.750 | 0.500 | CRWH1 R | **CR 53775** |
| **5.500** | 6.250 | 0.500 | CRWA1 R | **CR 54925** |
| | 6.500 | 0.500 | CRWH1 R | **CR 54931** |
| | 6.500 | 0.500 | CRWH1 V | **CR 54934** |
| | 6.500 | 0.500 | CRWH1 P | **CR 54936** |
| | 6.750 | 0.500 | CRW1 R | **CR 54959** |
| | 6.750 | 0.500 | CRWA1 R | **CR 54960** |
| | 6.750 | 0.500 | CRWHA1 R | **CR 54971** |
| | 6.750 | 0.500 | CRWH1 R | **CR 54972** |
| | 6.750 | 0.500 | CRWH1 V | **CR 54974** |
| **5.512** | 6.693 | 0.472 | CRWH1 V | **CR 546747**[1)] |
| **5.625** | 6.625 | 0.500 | CRWH1 R | **CR 56101** |
| | 6.625 | 0.500 | CRWH1 V | **CR 56102** |
| | 6.875 | 0.500 | CRWH1 R | **CR 56136** |
| | 6.875 | 0.500 | CRWH1 V | **CR 56137** |

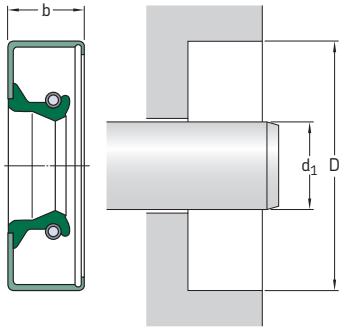
[1)] Without SKF Bore Tite Coating

| Dimensions Shaft $d_1$ | Bore D | Nominal seal width b | Design and lip material | Designation |
|---|---|---|---|---|
| in. | | | – | – |
| **5.625** | 7.125 | 0.500 | CRWHA1 R | **CR 56160** |
| cont. | 7.125 | 0.500 | CRWHA1 V | **CR 56161** |
| **5.750** | 6.625 | 0.500 | CRWH1 R | **CR 57505** |
| | 6.625 | 0.500 | CRW1 V | **CR 57506** |
| | 6.750 | 0.500 | CRWH1 R | **CR 57510** |
| | 6.750 | 0.500 | CRWH1 V | **CR 57522** |
| | 6.751 | 0.500 | CRWHA1 R | **CR 57509**[1] |
| | 7.000 | 0.500 | CRWH1 R | **CR 57521** |
| | 7.000 | 0.500 | CRWH1 V | **CR 57523** |
| | 7.000 | 0.500 | CRWHA1 R | **CR 57531** |
| **5.875** | 7.125 | 0.500 | CRWH1 R | **CR 58716** |
| | 7.125 | 0.500 | CRWH1 V | **CR 58717** |
| | 7.125 | 0.500 | CRWHA1 R | **CR 58741** |
| | 7.500 | 0.500 | CRWH1 R | **CR 58760** |
| **6.000** | 6.750 | 0.500 | CRWA1 V | **CR 59999** |
| | 6.750 | 0.500 | CRW1 V | **CR 60000** |
| | 7.500 | 0.500 | CRWA1 R | **CR 60016** |
| | 7.500 | 0.500 | CRWHA1 V | **CR 60026** |
| | 7.500 | 0.500 | CRWHA1 R | **CR 60028** |
| **6.125** | 7.125 | 0.625 | CRWH1 R | **CR 61210**[1] |
| | 7.625 | 0.625 | CRWH1 R | **CR 61255**[1] |
| | 7.625 | 0.625 | CRWH1 P | **CR 61256**[1] |
| **6.250** | 7.252 | 0.500 | CRWH1 R | **CR 62482**[1] |
| | 7.500 | 0.500 | CRWH1 R | **CR 62495**[1] |
| | 7.500 | 0.500 | CRWH1 V | **CR 62497** |
| | 7.750 | 0.500 | CRWH1 R | **CR 62535** |
| | 7.875 | 0.625 | CRWH1 R | **CR 62572** |
| **6.375** | 7.375 | 0.625 | CRWH1 R | **CR 63700** |
| | 7.875 | 0.563 | CRWHA1 R | **CR 63734** |
| | 7.875 | 0.625 | CRWH1 R | **CR 63733**[1] |
| **6.500** | 7.500 | 0.500 | CRWA1 R | **CR 64993** |
| | 7.500 | 0.500 | CRWH1 R | **CR 64994**[1] |
| | 7.500 | 0.500 | CRWH1 V | **CR 64998** |
| | 8.000 | 0.500 | CRW1 R | **CR 65021** |
| | 8.000 | 0.500 | CRWHA1 R | **CR 65037**[1] |
| **6.625** | 8.125 | 0.500 | CRWH1 R | **CR 66241**[1] |
| **6.750** | 8.000 | 0.500 | CRWH1 R | **CR 67515** |
| | 8.250 | 0.500 | CRWH1 R | **CR 67533**[1] |
| **6.875** | 8.375 | 0.500 | CRWH1 R | **CR 68745**[1] |
| **7.000** | 8.000 | 0.630 | CRWH1 R | **CR 70016** |
| | 8.250 | 0.625 | CRWH1 R | **CR 70028**[1] |
| | 8.500 | 0.500 | CRWA1 R | **CR 70080** |
| | 8.500 | 0.625 | CRWH1 R | **CR 70052** |
| | 8.500 | 0.625 | CRWHA1 R | **CR 70053** |
| | 8.500 | 0.625 | CRWHA1 V | **CR 70054** |




[1] Without SKF Bore Tite Coating

## Radial shaft seals – CRW1, CRWA1, CRWH1 and CRWHA1 – inch dimensions
$d_1$ **7.125 – 12.250** in.




Please see **pages 74** to **76** for housing bore requirements.

| **Dimensions** Shaft $d_1$ | Bore D | Nominal seal width b | **Design and lip material** | **Designation** |
|---|---|---|---|---|
| in. | | | – | – |
| **7.125** | 8.625 | 0.625 | CRWH1 R | **CR 71245**[1] |
| **7.250** | 8.250 | 0.625 | CRW1 R | **CR 72515**[1] |
| | 8.750 | 0.625 | CRWHA1 R | **CR 72539** |
| | 8.750 | 0.750 | CRWH1 P | **CR 72542**[1] |
| | 9.055 | 0.625 | CRWHA1 R | **CR 72570** |
| **7.375** | 8.875 | 0.625 | CRWH1 R | **CR 73745**[1] |
| **7.500** | 8.500 | 0.625 | CRWH1 R | **CR 75030**[1] |
| | 9.000 | 0.625 | CRWH1 R | **CR 75050** |
| | 9.000 | 0.625 | CRWHA1 P | **CR 75052** |
| **7.625** | 8.625 | 0.563 | CRWH1 R | **CR 76215**[1] |
| | 9.125 | 0.625 | CRWH1 R | **CR 76255**[1] |
| **7.750** | 9.250 | 0.625 | CRWH1 R | **CR 77540**[1] |
| **7.875** | 9.250 | 1.000 | CRWHA1 R | **CR 78725**[1] |
| | 9.375 | 0.625 | CRWH1 R | **CR 78738**[1] |
| **8.000** | 9.000 | 0.625 | CRWH1 R | **CR 79960**[1] |
| | 9.000 | 0.625 | CRWHA1 R | **CR 79961**[1] |
| | 9.250 | 0.625 | CRWH1 R | **CR 79997**[1] |
| | 9.250 | 0.625 | CRWHA1 R | **CR 79998** |
| | 9.500 | 0.625 | CRWH1 R | **CR 80010** |
| | 10.000 | 0.625 | CRWHA1 R | **CR 80038**[1] |
| **8.125** | 10.125 | 0.625 | CRWH1 R | **CR 81245**[1] |
| | 10.125 | 0.625 | CRWHA1 R | **CR 81246**[1] |
| **8.250** | 9.250 | 0.625 | CRWH1 R | **CR 82510**[1] |
| | 9.252 | 0.500 | CRWH1 R | **CR 82512** |
| | 9.500 | 0.578 | CRW1 R | **CR 82521**[1] |
| | 10.250 | 0.625 | CRWH1 R | **CR 82560**[1] |

[1] Without SKF Bore Tite Coating

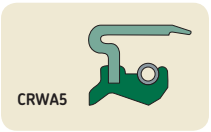
| Dimensions Shaft $d_1$ | Bore D | Nominal seal width b | Design and lip material | Designation |
|---|---|---|---|---|
| in. | | | – | – |
| **8.500** | 9.750 | 0.625 | CRWH1 R | **CR 85002** |
| | 10.000 | 0.625 | CRWH1 R | **CR 85009**[1] |
| | 10.500 | 0.625 | CRWH1 R | **CR 85015**[1] |
| | 10.625 | 0.625 | CRWHA1 R | **CR 85085**[1] |
| **8.625** | 10.625 | 0.625 | CRWH1 R | **CR 86260**[1] |
| **8.750** | 10.750 | 0.625 | CRWH1 R | **CR 87541**[1] |
| **8.875** | 10.125 | 0.625 | CRWH1 R | **CR 88710**[1] |
| | 10.875 | 0.625 | CRWH1 R | **CR 88760**[1] |
| **9.000** | 10.000 | 0.625 | CRWH1 R | **CR 90006**[1] |
| | 11.000 | 0.625 | CRWH1 R | **CR 90036**[1] |
| **9.250** | 11.250 | 0.625 | CRWHA1 R | **CR 92536** |
| | 12.750 | 0.625 | CRWHA1 R | **CR 92570**[1] |
| | 12.750 | 1.250 | CRWHA1 R | **CR 92574**[1] |
| **9.500** | 10.500 | 0.438 | CRW1 R | **CR 95048** |
| | 11.500 | 0.625 | CRW1 R | **CR 95062** |
| **9.625** | 11.625 | 0.625 | CRWH1 R | **CR 96245**[1] |
| | 11.125 | 0.625 | CRWH1 R | **CR 97542**[1] |
| | 11.250 | 0.625 | CRWH1 R | **CR 97545**[1] |
| | 11.750 | 0.625 | CRWH1 R | **CR 97550**[1] |
| **10.000** | 11.252 | 0.625 | CRWHA1 R | **CR 100044**[1] |
| | 12.000 | 0.625 | CRWH1 R | **CR 100051**[1] |
| | 12.000 | 0.625 | CRWA1 R | **CR 100075** |
| **10.250** | 11.250 | 0.563 | CRWH1 R | **CR 102520**[1] |
| | 12.250 | 0.625 | CRWH1 R | **CR 102540**[1] |
| **10.500** | 11.750 | 0.625 | CRWH1 R | **CR 105010**[1] |
| | 12.500 | 0.625 | CRWH1 R | **CR 105051**[1] |
| **10.750** | 12.750 | 0.625 | CRWH1 R | **CR 107551**[1] |
| **11.000** | 12.250 | 0.625 | CRWHA1 R | **CR 110030**[1] |
| | 13.000 | 0.625 | CRWH1 R | **CR 110051**[1] |
| **11.375** | 13.000 | 0.625 | CRW1 R | **CR 113740**[1] |
| **11.500** | 13.000 | 0.625 | CRWH1 R | **CR 115021**[1] |
| | 13.500 | 0.625 | CRWH1 R | **CR 115041**[1] |
| **12.000** | 14.000 | 0.625 | CRW1 R | **CR 120060**[1] |
| **12.250** | 13.375 | 0.625 | CRWH1 R | **CR 122555**[1] |
| | 13.813 | 0.625 | CRW1 R | **CR 122580**[1] |
| | 14.250 | 1.000 | CRWHA1 R | **CR 122590**[1] |




[1] Without SKF Bore Tite Coating

## CRW5 and CRWA5 seals




CRW5 and CRWA5 seals are designed to withstand moderate pressure differentials. They have an SKF WAVE lip to reduce heat generation and a metal outside diameter for easy installation and a firm and accurate fit in the housing bore. See **pages 57** and **58** for more information on SKF WAVE lip design. Most of them have SKF Bore Tite Coating on the outside diameter. The CRWA5 seals have an auxiliary lip, providing additional contaminant exclusion ability. A shoulder or retaining ring should be used at the low-pressure side of the seal to prevent it from being pressed out of the housing bore.

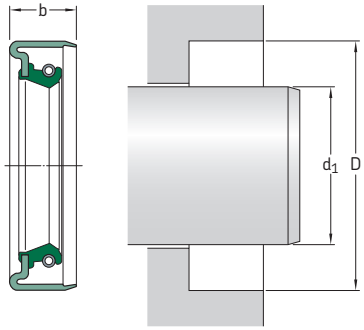
**CRW5**: Seal with one steel case, SKF WAVE lip and a carbon steel garter spring.

**CRWA5**: Seal with one steel case, SKF WAVE lip, a carbon steel garter spring and an auxiliary, contacting lip.

The CRW5 and CRWA5 seals are available in inch sizes with sealing lips made of either nitrile rubber or the SKF fluoro rubber compound SKF Duralife. Other materials are also available on request.

See **matrix 1** on **pages 90** and **91** for permissible operating conditions.

## Radial shaft seals – CRW5 and CRWA5 – inch dimensions
$d_1$ **0.313 – 0.875** in.



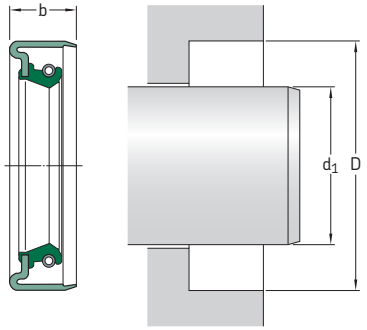



Please see **pages 74** to **76** for housing bore requirements.

| **Dimensions** Shaft $d_1$ | Bore D | Nominal seal width b | **Design and lip material** | **Designation** |
|---|---|---|---|---|
| in. | | | – | – |
| **0.313** | 0.686 | 0.313 | CRWA5 R | **CR 3094**[1)] |
| | 0.749 | 0.250 | CRWA5 R | **CR 3101**[1)] |
| | 0.749 | 0.250 | CRWA5 V | **CR 3103**[1)] |
| | 0.999 | 0.313 | CRWA5 R | **CR 3171**[1)] |
| **0.375** | 0.749 | 0.250 | CRW5 R | **CR 3689**[1)] |
| | 1.124 | 0.375 | CRW5 V | **CR 3807** |
| **0.500** | 0.875 | 0.313 | CRWA5 R | **CR 4940** |
| | 0.875 | 0.313 | CRWA5 V | **CR 4941** |
| | 0.999 | 0.250 | CRWA5 V | **CR 4991** |
| | 0.999 | 0.313 | CRWA5 R | **CR 4996** |
| | 1.124 | 0.250 | CRWA5 R | **CR 5069** |
| | 1.124 | 0.250 | CRWA5 V | **CR 5072** |
| **0.625** | 0.999 | 0.250 | CRWA5 R | **CR 6151** |
| | 1.124 | 0.250 | CRW5 R | **CR 6191** |
| | 1.124 | 0.374 | CRWA5 V | **CR 6231** |
| | 1.124 | 0.375 | CRWA5 R | **CR 6229** |
| | 1.126 | 0.250 | CRW5 R | **CR 6232** |
| | 1.250 | 0.313 | CRWA5 R | **CR 6280**[1)] |
| | 1.250 | 0.313 | CRWA5 V | **CR 6285**[1)] |
| | 1.375 | 0.250 | CRW5 P | **CR 6371** |
| | 1.375 | 0.375 | CRWA5 R | **CR 6388** |
| | 1.500 | 0.313 | CRW5 V | **CR 6393** |
| **0.750** | 1.250 | 0.250 | CRWA5 R | **CR 7434** |
| | 1.250 | 0.375 | CRWA5 R | **CR 7449** |
| | 1.375 | 0.250 | CRWA5 V | **CR 7509** |
| **0.875** | 1.250 | 0.250 | CRWA5 V | **CR 8634** |
| | 1.375 | 0.250 | CRWA5 R | **CR 8660** |
| | 1.375 | 0.250 | CRWA5 V | **CR 8665** |
| | 1.497 | 0.313 | CRWA5 V | **CR 8694** |

[1)] Without SKF Bore Tite Coating

## Radial shaft seals – CRW5 and CRWA5 – inch dimensions
$d_1$ **0.984 – 2.500** in.




Please see **pages 74** to **76** for housing bore requirements.

| **Dimensions** Shaft $d_1$ | Bore D | Nominal seal width b | **Design and lip material** | **Designation** |
|---|---|---|---|---|
| in. | | | – | – |
| **0.984** | 1.596 | 0.250 | CRWA5 R | **CR 9700** |
| | 1.752 | 0.313 | CRWA5 V | **CR 9805** |
| **1.000** | 1.375 | 0.250 | CRWA5 R | **CR 9814** |
| | 1.499 | 0.250 | CRWA5 R | **CR 9843** |
| | 1.499 | 0.250 | CRW5 R | **CR 9855**[1] |
| | 1.499 | 0.250 | CRWA5 V | **CR 9858** |
| | 1.500 | 0.250 | CRWA5 R | **CR 9863** |
| | 1.752 | 0.313 | CRWA5 R | **CR 9967** |
| | 2.000 | 0.313 | CRWA5 R | **CR 10131** |
| **1.125** | 1.626 | 0.250 | CRWA5 V | **CR 11139** |
| **1.250** | 1.687 | 0.313 | CRWA5 R | **CR 12333** |
| | 1.750 | 0.250 | CRWA5 V | **CR 12339** |
| | 1.750 | 0.250 | CRWA5 R | **CR 12360** |
| | 1.997 | 0.438 | CRWA5 V | **CR 12438** |
| | 2.328 | 0.500 | CRWA5 R | **CR 12609** |
| | 2.502 | 0.500 | CRWA5 R | **CR 12640** |
| **1.500** | 1.997 | 0.250 | CRWA5 V | **CR 14844** |
| | 2.064 | 0.375 | CRWA5 V | **CR 14868** |
| | 2.311 | 0.500 | CRWA5 V | **CR 14979** |
| | 2.328 | 0.500 | CRWA5 R | **CR 14977** |
| **1.750** | 2.502 | 0.500 | CRWA5 R | **CR 17374** |
| **1.938** | 2.675 | 0.250 | CRWA5 R | **CR 19213** |
| | 2.835 | 0.250 | CRWA5 R | **CR 19278** |
| **2.500** | 3.251 | 0.350 | CRWA5 R | **CR 24892** |

[1] Without SKF Bore Tite Coating

## HDW1 seals

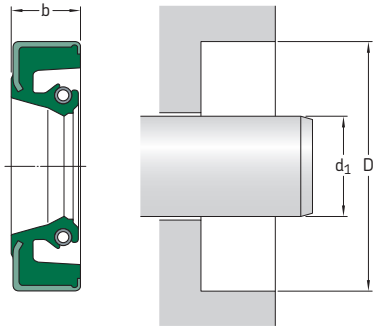



HDW1 seals are heavy-duty SKF WAVE lip seals, designed for use in grease or oil lubricated applications. The seals are produced standard with a heavy-duty seal body, SKF Bore Tite Coating on the metal outside diameter, SKF WAVE lip in nitrile rubber, and a carbon steel garter spring.

The rigid seal body can withstand operating pressures up to 0,24 MPa *(35 psi)*, dynamic, and 0,34 MPa *(50 psi)*, static, while withstanding shaft speeds up to 25 m/s *(4 900 ft/min)* at shaft diameters < 203 mm *(8 in.)*.

The HDW1 seals are available in inch sizes.

## Radial shaft seals – HDW1 – inch dimensions
$d_1$ **5.000 – 7.938** in.




Please see **pages 74** to **76** for housing bore requirements.

| Dimensions | | | Design and lip material | Designation |
|---|---|---|---|---|
| Shaft | Bore | Nominal seal width | | |
| $d_1$ | D | b | | |
| in. | | | – | – |
| **5.000** | 6.125 | 0.500 | HDW1 R | **CR 49951** |
| | 7.125 | 0.500 | HDW1 R | **CR 50186** |
| **5.063** | 6.125 | 0.500 | HDW1 R | **CR 50620** |
| **5.125** | 6.625 | 0.500 | HDW1 R | **CR 51277** |
| | 7.000 | 0.500 | HDW1 R | **CR 51330** |
| **5.188** | 6.250 | 0.500 | HDW1 R | **CR 51800** |
| **5.250** | 6.750 | 0.500 | HDW1 R | **CR 52651** |
| | 7.125 | 0.500 | HDW1 R | **CR 52655** |
| **5.313** | 6.375 | 0.500 | HDW1 R | **CR 53100** |
| **5.438** | 6.625 | 0.500 | HDW1 R | **CR 54300** |
| **5.875** | 6.875 | 0.500 | HDW1 R | **CR 58709**[1] |
| | 7.000 | 0.500 | HDW1 R | **CR 58710** |
| **5.938** | 7.000 | 0.500 | HDW1 R | **CR 59300** |
| **6,000** | 7.250 | 0.500 | HDW1 R | **CR 60009** |
| **6.063** | 7.500 | 0.500 | HDW1 R | **CR 60650** |
| **6.125** | 7.125 | 0.500 | HDW1 R | **CR 61215** |
| | 7.250 | 0.500 | HDW1 R | **CR 61230** |
| | 7.375 | 0.500 | HDW1 R | **CR 61235** |
| **6.250** | 7.250 | 0.500 | HDW1 R | **CR 62480** |
| **6.375** | 7.500 | 0.500 | HDW1 R | **CR 63717** |
| **6.438** | 7.500 | 0.500 | HDW1 R | **CR 64330** |

| Dimensions | | | Design and lip material | Designation |
|---|---|---|---|---|
| Shaft | Bore | Nominal seal width | | |
| $d_1$ | D | b | | |
| in. | | | – | – |
| **6.625** | 7.625 | 0.500 | HDW1 R | **CR 66217** |
| | 7.750 | 0.500 | HDW1 R | **CR 66219** |
| | 7.875 | 0.500 | HDW1 R | **CR 66222** |
| | 8.000 | 0.500 | HDW1 R | **CR 66230** |
| **6.750** | 7.750 | 0.500 | HDW1 R | **CR 67510** |
| | 8.750 | 0.500 | HDW1 R | **CR 67600** |
| **6.875** | 8.250 | 0.500 | HDW1 R | **CR 68730** |
| | 8.500 | 0.500 | HDW1 R | **CR 68760** |
| **7.125** | 8.250 | 0.500 | HDW1 R | **CR 71220** |
| **7.375** | 8.375 | 0.500 | HDW1 R | **CR 73720** |
| | 8.500 | 0.500 | HDW1 R | **CR 73730** |
| **7.500** | 8.750 | 0.500 | HDW1 R | **CR 75046** |
| | 9.250 | 0.500 | HDW1 R | **CR 75069** |
| **7.625** | 8.875 | 0.500 | HDW1 R | **CR 76225** |
| **7.750** | 8.750 | 0.500 | HDW1 R | **CR 77506** |
| **7.875** | 8.875 | 0.500 | HDW1 R | **CR 78710** |
| **7.938** | 9.125 | 0.500 | HDW1 R | **CR 79620** |

[1] Stainless steel garter spring

## HMS4 and HMSA7 seals

HMS4 and HMSA7 seals are primarily available in inch sizes but are also available in a very limited number of metric sizes that are in the process of being replaced by the HMS5 and HMSA10 seals. Contact your SKF representative for updated information on availability of metric sizes.







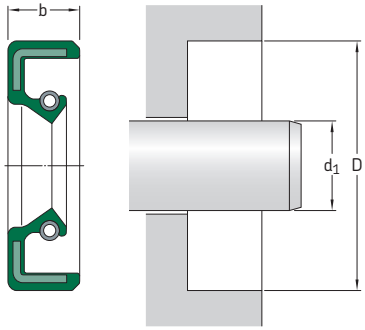
**HMS4**: Seal with rubber outside diameter, a carbon steel reinforcement ring and either a carbon or stainless steel garter spring.

**HMSA7**: Seal with rubber outside diameter, a carbon steel reinforcement ring, an auxiliary, contacting lip and either a carbon or stainless steel garter spring.

HMS4 and HMSA7 seals are available in nitrile rubber for general-purpose applications and in fluoro rubber, providing improved high-temperature and chemical resistance.

See **matrix 1** on **pages 90** and **91** for permissible operating conditions.

## Radial shaft seals – HMS4 and HMSA7 seals – metric dimensions
$d_1$ **10 – 230** mm

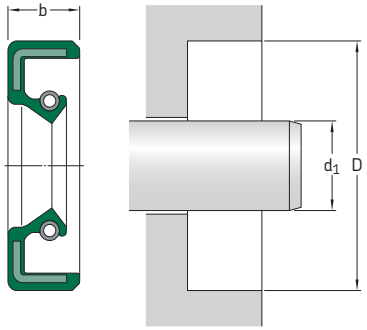



Please see **pages 74** to **76** for housing bore requirements.

| **Dimensions** Shaft $d_1$ | Bore D | Nominal seal width b | **Design and lip material** | **Designation** |
|---|---|---|---|---|
| mm | | | – | – |
| **10** | 24 | 7 | HMS4 R | **CR 10×24×7 HMS4 R** |
| | 26 | 7 | HMS4 R | **CR 10×26×7 HMS4 R** |
| **12** | 24 | 7 | HMS4 R | **CR 12×24×7 HMS4 R** |
| **17** | 28 | 7 | HMS4 R | **CR 17×28×7 HMS4 R** |
| | 40 | 10 | HMS4 R | **CR 17×40×10 HMS4 R** |
| **19** | 32 | 7 | HMS4 R | **CR 19×32×7 HMS4 R** |
| **25** | 52 | 8 | HMS4 R | **CR 25×52×8 HMS4 R** |
| | 52 | 10 | HMS4 R | **CR 25×52×10 HMS4 R** |
| **27** | 42 | 10 | HMS4 R | **CR 27×42×10 HMS4 R** |
| **28** | 40 | 7 | HMS4 R | **CR 28×40×7 HMS4 R** |
| **30** | 47 | 7 | HMSA7 V | **CR 30×47×7 HMSA7 V** |
| | 62 | 10 | HMS4 R | **CR 30×62×10 HMS4 R** |
| **33** | 50 | 6 | HMSA7 R | **CR 33×50×6 HMSA7 R** |
| **42** | 72 | 8 | HMS4 R | **CR 42×72×8 HMS4 R** |
| **45** | 85 | 10 | HMS4 R | **CR 45×85×10 HMS4 R** |
| **65** | 95 | 10 | HMS4 R | **CR 65×95×10 HMS4 R** |
| **80** | 110 | 12 | HMS4 R | **CR 80×110×12 HMS4 R** |
| **85** | 110 | 12 | HMS4 R | **CR 85×110×12 HMS4 R** |
| **120** | 150 | 12 | HMS4 V | **CR 120×150×12 HMS4 V** |
| **140** | 160 | 13 | HMS4 R | **CR 140×160×13 HMS4 R** |
| **230** | 260 | 15 | HMS4 R | **CR 230×260×15 HMS4 R** |

The metric range of HMS4 and HMSA7 seals are in the process of being replaced by the HMS5 and HSMA10 seals.
Contact your SKF representative for updated information on availability of metric sizes.

## Radial shaft seals – HMS4 and HMSA7 seals – inch dimensions
$d_1$ **0.370 – 1.594** in.



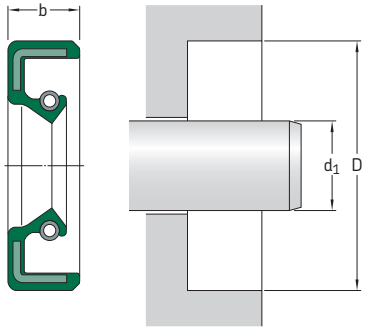

Please see **pages 74** to **76** for housing bore requirements.

| **Dimensions** Shaft $d_1$ | Bore D | Nominal seal width b | **Design and lip material** | **Designation** |
|---|---|---|---|---|
| in. | | | – | – |
| **0.370** | 0.606 | 0.310 | HMSA76 R | **CR 3626** |
| **0.500** | 1.010 | 0.204 | HMSA7 V | **CR 5008** |
| **0.685** | 1.181 | 0.276 | HMSA7 R | **CR 6757** |
| **0.736** | 1.378 | 0.276 | HMSA7 R | **CR 7400** |
| **0.748** | 1.496 | 0.300 | HMSA7 R | **CR 7251** |
| **0.813** | 1.250 | 0.375 | HMS4 R | **CR 8019** |
| **0.906** | 1.338 | 0.315 | HMSA7 R | **CR 9065** |
| | 1.339 | 0.256 | HMS4 R | **CR 9006** |
| | 1.383 | 0.250 | HMS4 P | **CR 9010** |
| | 1.575 | 0.276 | HMSA7 P | **CR 9068** |
| **0.984** | 1.496 | 0.236 | HMSA7 V | **CR 9701** |
| **1.000** | 2.441 | 0.375 | HMSA7 R | **CR 10178** |
| **1.063** | 1.575 | 0.315 | HMSA7 V | **CR 10584** |
| | 1.693 | 0.355 | HMSA7 P | **CR 10634** |
| **1.102** | 1.614 | 0.276 | HMSA7 P | **CR 10944** |
| | 1.693 | 0.276 | HMSA7 P | **CR 10494** |
| | 1.693 | 0.315 | HMSA7 R | **CR 10927** |
| **1.125** | 1.630 | 0.313 | HMS4N R | **CR 11143** |
| **1.142** | 1.693 | 0.315 | HMSA7 P | **CR 11422** |
| | 1.772 | 0.315 | HMSA7 V | **CR 11429** |
| | 2.047 | 0.433 | HMSA7 R | **CR 14116** |
| **1.181** | 1.693 | 0.315 | HMSA7 V | **CR 11672** |
| | 1.732 | 0.276 | HMSA7 P | **CR 11612** |
| | 1.772 | 0.276 | HMS47 R | **CR 11691** |
| | 1.772 | 0.276 | HMSA7 P | **CR 11589** |
| | 2.126 | 0.354 | HMSA7 P | **CR 11673** |
| | 2.126 | 0.354 | HMSA7 R | **CR 11674** |

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| Dimensions | | | Design and lip material | Designation |
|---|---|---|---|---|
| Shaft | Bore | Nominal seal width | | |
| $d_1$ | D | b | | |
| in. | | | – | – |
| **1.221** | 1.811 | 0.315 | HMSA7 S | **CR 12301** |
| **1.250** | 1.752 | 0.313 | HMS4 R | **CR 12371** |
| | 1.752 | 0.391 | HMSA7 R | **CR 12355** |
| | 2.835 | 0.375 | HMSA7 R | **CR 12668** |
| **1.260** | 1.732 | 0.236 | HMSA7 P | **CR 12706** |
| | 1.811 | 0.236 | HMSA7SP P | **CR 12718** |
| | 2.087 | 0.276 | HMSA7 P | **CR 12747** |
| **1.281** | 2.000 | 0.375 | HMSA7 R | **CR 12830** |
| **1.299** | 1.810 | 0.276 | HMSA7 R | **CR 12812** |
| | 1.850 | 0.313 | HMSA7 P | **CR 12886** |
| **1.301** | 1.969 | 0.469 | HMSA7 R | **CR 12900** |
| **1.339** | 1.929 | 0.315 | HMSA7 P | **CR 13427** |
| | 2.087 | 0.315 | HMSA7 R | **CR 13435** |
| **1.375** | 2.063 | 0.374 | HMS4 R | **CR 13596** |
| **1.378** | 1.614 | 0.359 | HMS41 R | **CR 13911** |
| | 1.851 | 0.276 | HMSA7 R | **CR 555364** |
| | 1.929 | 0.236 | HMSA7 R | **CR 13857** |
| | 1.969 | 0.275 | HMS4 S | **CR 13943** |
| | 2.097 | 0.313 | HMSA7 P | **CR 13953** |
| | 2.165 | 0.433 | HMSA7 R | **CR 550233** |
| **1.417** | 1.732 | 0.197 | HMSA7 R | **CR 14058** |
| | 1.811 | 0.394 | HMSA7 P | **CR 14033** |
| | 1.929 | 0.276 | HMSA7 P | **CR 14008** |
| | 3.543 | 0.394 | HMSA7SP R | **CR 14087** |
| **1.418** | 2.521 | 0.512 | HMSA7 R | **CR 550218** |
| **1.437** | 2.012 | 0.312 | HMSA7SP V | **CR 14215** |
| **1.457** | 1.987 | 0.276 | HMSA7 P | **CR 14477** |
| | 2.000 | 0.276 | HMSA7 R | **CR 14601** |
| | 2.205 | 0.354 | HMS4 R | **CR 14566** |
| | 3.071 | 0.472 | HMS4SPL R | **CR 14484** |
| **1.496** | 1.969 | 0.315 | HMSA7 S | **CR 14713** |
| | 2.087 | 0.304 | HMSA7 V | **CR 14759** |
| | 2.362 | 0.433 | HMSA7SP S | **CR 14756** |
| **1.504** | 1.937 | 0.475 | HMSA76 P | **CR 15270** |
| **1.515** | 2.087 | 0.315 | HMSA7 P | **CR 15500** |
| **1.535** | 1.969 | 0.276 | HMSA7 V | **CR 15451** |
| | 2.047 | 0.276 | HMSA7 P | **CR 15300** |
| **1.552** | 2.447 | 0.500 | HMSA78 RT | **CR 15440** |
| **1.575** | 2.047 | 0.276 | HMSA7 V | **CR 15800** |
| | 2.126 | 0.394 | HMSA7 P | **CR 15881** |
| | 2.165 | 0.236 | HMSA7 V | **CR 15818** |
| | 2.205 | 0.276 | HMS4 R | **CR 550259** |
| | 2.283 | 0.236 | HMSA7 P | **CR 15736** |
| | 2.461 | 0.433 | HMSA7 R | **CR 15558** |
| **1.594** | 2.067 | 0.236 | HMSA7 P | **CR 15910** |
| | 2.283 | 0.315 | HMSA7 P | **CR 15920** |

## Radial shaft seals – HMS4 and HMSA7 seals – inch dimensions
$d_1$ **1.614 – 3.465** in.

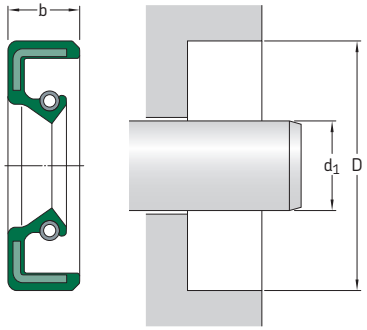



Please see **pages 74** to **76** for housing bore requirements.

| Dimensions | | | Design and lip material | Designation |
|---|---|---|---|---|
| Shaft $d_1$ | Bore D | Nominal seal width b | | |
| in. | | | – | – |
| **1.614** | 2.126 | 0.236 | HMSA7 P | **CR 16003** |
| | 2.323 | 0.315 | HMS4 R | **CR 16023** |
| **1.654** | 2.323 | 0.303 | HMS4 R | **CR 16536** |
| | 2.362 | 0.335 | HMSA7 V | **CR 16533** |
| | 2.480 | 0.276 | HMS4 R | **CR 550253** |
| **1.685** | 2.165 | 0.433 | HMSA7 R | **CR 16620** |
| **1.688** | 2.551 | 0.470 | HMSA7 R | **CR 16735** |
| **1.693** | 2.146 | 0.236 | HMSA7 V | **CR 16889** |
| | 2.165 | 0.315 | HMSA7 V | **CR 16893** |
| **1.732** | 2.165 | 0.236 | HMSA7 P | **CR 17122** |
| | 2.320 | 0.260 | HMS4 R | **CR 17134** |
| | 2.362 | 0.394 | HMSA7 V | **CR 17330** |
| | 3.622 | 0.748 | HMSA7SP R | **CR 17193** |
| **1.772** | 2.638 | 0.315 | HMSA7 V | **CR 17907** |
| | 2.638 | 0.394 | HMSA7 V | **CR 17921** |
| | 2.638 | 0.472 | HMSA7S V | **CR 17916** |
| | 3.130 | 0.571 | HMSA7S V | **CR 17683** |
| **1.811** | 2.283 | 0.276 | HMSA7 R | **CR 17897** |
| | 2.480 | 0.300 | HMS4 P | **CR 18014** |
| | 3.543 | 0.630 | HMSA7SP P | **CR 18000** |
| **1.875** | 2.716 | 0.394 | HMSA7 P | **CR 18623** |
| | 2.830 | 0.391 | HMS4 R | **CR 550185** |
| **1.890** | 2.362 | 0.276 | HMSA7 P | **CR 18897** |
| | 2.624 | 0.315 | HMS4 S | **CR 18895** |
| **1.929** | 2.441 | 0.441 | HMSA7 P | **CR 19097** |
| **2.045** | 2.835 | 0.618 | HMSA7SP P | **CR 20445** |
| **2.047** | 2.677 | 0.512 | HMSA7SP R | **CR 20428** |
| **2.063** | 2.661 | 0.188 | HMS4 R | **CR 20525** |

| Dimensions | | | Design and lip material | Designation |
|---|---|---|---|---|
| Shaft | Bore | Nominal seal width | | |
| $d_1$ | D | b | | |
| in. | | | – | – |
| **2.086** | 2.685 | 0.276 | HMSA7 R | **CR 20906** |
| **2.125** | 2.953 | 0.472 | HMSA7 P | **CR 21128** |
| **2.205** | 2.843 | 0.315 | HMS4SPL P | **CR 22024** |
| | 2.953 | 0.433 | HMSA7SP R | **CR 22031** |
| **2.244** | 2.638 | 0.236 | HMSA7 R | **CR 22225** |
| **2.283** | 2.910 | 0.390 | HMSA7 P | **CR 22842** |
| | 2.953 | 0.276 | HMS4SPL P | **CR 22840** |
| | 3.197 | 0.197 | HMS4 S | **CR 22837** |
| **2.323** | 3.937 | 0.394 | HMSA7SP P | **CR 23286** |
| **2.362** | 3.228 | 0.472 | HMSA7 S | **CR 23446** |
| **2.519** | 5.236 | 0.511 | HMSA7SP R | **CR 25190** |
| **2.520** | 3.150 | 0.315 | HMS4 S | **CR 25171** |
| **2.559** | 3.189 | 0.276 | HMSA7 P | **CR 25518** |
| | 3.307 | 0.354 | HMSA7 S | **CR 25419** |
| **2.638** | 3.503 | 0.354 | HMSA7 P | **CR 26387** |
| **2.677** | 3.307 | 0.335 | HMSA7 S | **CR 26625** |
| **2.717** | 3.380 | 0.310 | HMSA7 V | **CR 26749** |
| | 3.386 | 0.315 | HMSA7 P | **CR 26748** |
| **2.756** | 3.425 | 0.335 | HMSA7 S | **CR 27723** |
| | 3.844 | 0.315 | HMSA7 R | **CR 27764** |
| **2.832** | 3.622 | 0.374 | HMSA7 V | **CR 28332** |
| **2.835** | 3.780 | 0.354 | HMSA7 P | **CR 28308** |
| **2.913** | 3.858 | 0.472 | HMSA7 P | **CR 29112** |
| **2.992** | 3.623 | 0.385 | HMSA7 V | **CR 29862** |
| | 3.858 | 0.472 | HMSA7 S | **CR 29685** |
| **3.040** | 3.937 | 0.250 | HMS4 R | **CR 30360** |
| **3.071** | 6.417 | 0.630 | HMSA7SP R | **CR 30771** |
| **3.150** | 3.780 | 0.354 | HMSA7 V | **CR 31506** |
| | 3.858 | 0.393 | HMSA7 V | **CR 31507** |
| **3.228** | 3.791 | 0.315 | HMSA7 P | **CR 32283** |
| | 3.920 | 0.500 | HMSA7 V | **CR 32289** |
| | 3.937 | 0.354 | HMSA7 V | **CR 32715** |
| **3.307** | 4.094 | 0.433 | HMSA7 R | **CR 33405** |
| **3.346** | 4.094 | 0.354 | HMSA7 P | **CR 33454** |
| **3.375** | 3.948 | 0.375 | HMSA7 P | **CR 33628** |
| **3.386** | 4.055 | 0.315 | HMSA7 V | **CR 33861** |
| **3.425** | 3.937 | 0.295 | HMSA7 V | **CR 34115** |
| | 3.937 | 0.315 | HMSA7 S | **CR 34120** |
| **3.465** | 4.252 | 0.427 | HMS4 V | **CR 34611** |
| | 4.252 | 0.453 | HMSA7 V | **CR 34116** |

## Radial shaft seals – HMS4 and HMSA7 seals – inch dimensions
$d_1$ **3.543 – 12.750** in.




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Please see **pages 74** to **76** for housing bore requirements.

| **Dimensions** Shaft $d_1$ | Bore D | Nominal seal width b | **Design and lip material** | **Designation** |
|---|---|---|---|---|
| in. | | | – | – |
| **3.543** | 4.134 | 0.394 | HMSA7 V | **CR 35405** |
| | 4.331 | 0.354 | HMSA7 S | **CR 35409** |
| | 4.528 | 0.512 | HMSA7 P | **CR 35422** |
| **3.583** | 4.370 | 0.410 | HMSA7 V | **CR 35910** |
| **3.622** | 4.331 | 0.374 | HMSA7 V | **CR 36005** |
| **3.625** | 4.240 | 0.380 | HMSA7 V | **CR 36147** |
| **3.661** | 4.252 | 0.394 | HMSA7 P | **CR 36660** |
| | 4.331 | 0.276 | HMSA7 V | **CR 36658** |
| | 4.488 | 0.551 | HMSA7 V | **CR 36601** |
| **3.740** | 4.646 | 0.394 | HMSA7 S | **CR 37030** |
| **3.750** | 4.500 | 0.381 | HMSA7 P | **CR 37338** |
| | 4.501 | 0.376 | HMS4 V | **CR 37341** |
| | 4.501 | 0.380 | HMS4 S | **CR 37340** |
| | 4.501 | 0.380 | HMSA7 V | **CR 37342** |
| **3.778** | 4.567 | 0.354 | HMSA7 V | **CR 37570** |
| **3.780** | 4.606 | 0.472 | HMSA7 S | **CR 37825** |
| **3.898** | 4.331 | 0.276 | HMSA7 V | **CR 38883** |
| **4.134** | 4.724 | 0.433 | HMSA7 V | **CR 41401** |
| **4.400** | 5.230 | 0.375 | HMSA7 P | **CR 44000** |
| **4.811** | 5.543 | 0.472 | HMSA7 V | **CR 48046** |
| **10.000** | 11.000 | 0.375 | HMS4 R | **CR 100042** |
| **12.750** | 13.625 | 0.563 | HMSA7 R | **CR 127540** |

## CRS1, CRSH1, CRSA1 and CRSHA1 seals

All CRS seals are designed with a metal case and a conventional spring-loaded sealing lip. Some of them have a sealant on the outside diameter to compensate for imperfections in the housing bore.

**CRS1**: Seal with a single steel case, a conventional sealing lip and a carbon steel garter spring.

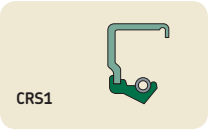
**CRSA1**: Seal with a single steel case, a conventional sealing lip, a carbon steel garter spring and an auxiliary, contacting lip.

**CRSH1**: Seal with a double steel case, a conventional sealing lip and a carbon steel garter spring.

**CRSHA1**: Seal with a double steel case, a conventional sealing lip, a carbon steel garter spring and an auxiliary, contacting lip.

CRS seals are available with sealing lips made of nitrile rubber for general-purpose applications and of fluoro rubber, providing improved high temperature and chemical resistance.

See **matrix 1** on **pages 90** and **91** for permissible operating conditions.



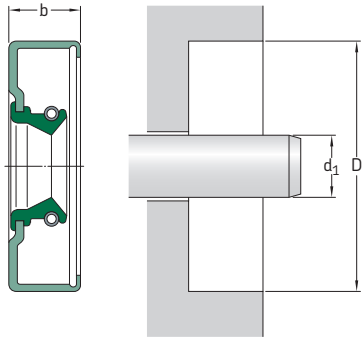








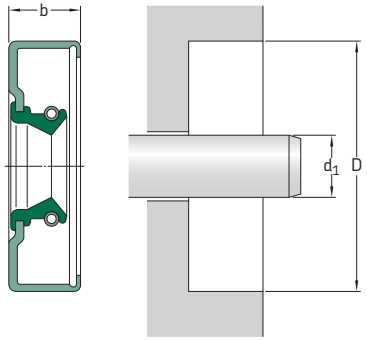

## Radial shaft seals – CRS1, CRSH1, CRSA1 and CRSHA1 – metric dimensions
$d_1$ **12 – 37** mm




Please see **pages 74** to **76** for housing bore requirements.

| **Dimensions** Shaft $d_1$ | Bore D | Nominal seal width b | **Design and lip material** | **Designation** |
|---|---|---|---|---|
| mm. | | | – | – |
| **12** | 20 | 5 | CRSA1 R | **CR 12×20×5 CRSA1 R** |
| **13** | 28 | 7 | CRS1 R | **CR 13×28×7 CRS1 R** |
| **19** | 37 | 10 | CRS1 V | **CR 19×37×10 CRS1 V** |
| **20** | 30 | 5 | CRS1 R | **CR 20×30×5 CRS1 R** |
| | 30 | 7 | CRS1 V | **CR 20×30×7 CRS1 V** |
| | 32 | 7 | CRS1 V | **CR 20×32×7 CRS1 V** |
| | 42 | 7 | CRS1 V | **CR 20×42×7 CRS1 V** |
| **22** | 32 | 7 | CRS1 V | **CR 22×32×7 CRS1 V** |
| **24** | 38 | 10 | CRS1 R | **CR 24×38×10 CRS1 R** |
| **25** | 32 | 7 | CRSA1 R | **CR 25×32×7 CRSA1 R** |
| | 47 | 10 | CRSA1 V | **CR 25×47×10 CRSA1 V** |
| | 52 | 7 | CRS1 R | **CR 25×52×7 CRS1 R** |
| **26** | 35 | 7 | CRS1 R | **CR 26×35×7 CRS1 R** |
| | 42 | 8 | CRS1 R | **CR 26×42×8 CRS1 R** |
| **27** | 37 | 7 | CRS1 V | **CR 27×37×7 CRS1 V** |
| | 41 | 10 | CRSH1 R | **CR 27×41×10 CRSH1 R** |
| **28** | 62 | 12 | CRSH1 R | **CR 28×62×12 CRSH1 R** |
| **30** | 45 | 8 | CRS1 V | **CR 30×45×8 CRS1 V** |
| | 52 | 9 | CRSH1 R | **CR 30×52×9 CRSH1 R** |
| **32** | 46 | 8 | CRS1 R | **CR 32×46×8 CRS1 R** |
| **34** | 52 | 10 | CRS1 R | **CR 34×52×10 CRS1 R** |
| | 54 | 11 | CRS1 R | **CR 34×54×11 CRS1 R** |
| **35** | 64 | 8 | CRSA1 P | **CR 35×64×8 CRSA1 P** |
| | 65 | 12 | CRSA1 R | **CR 35×65×12 CRSA1 R** |
| **36** | 46 | 9 | CRS1 R | **CR 36×46×9 CRS1 R** |
| | 56 | 10 | CRS1 R | **CR 36×56×10 CRS1 R** |
| **37** | 55 | 10 | CRSH1 R | **CR 37×55×10 CRSH1 R** |

## Radial shaft seals – CRS1, CRSH1, CRSA1 and CRSHA1 – metric dimensions
$d_1$ **40 – 260** mm




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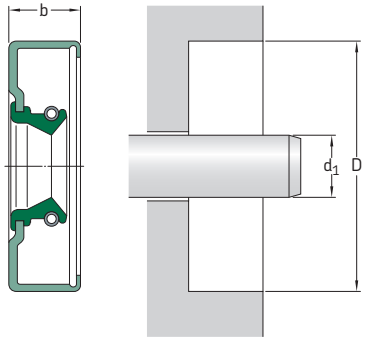
Please see **pages 74** to **76** for housing bore requirements.

| **Dimensions** Shaft $d_1$ | Bore D | Nominal seal width b | **Design and lip material** | **Designation** |
|---|---|---|---|---|
| mm | | | – | – |
| **40** | 55 | 10 | CRS1 R | **CR 40×55×10 CRS1 R** |
| | 60 | 10 | CRSA1 R | **CR 40×60×10 CRSA1 R** |
| **42** | 62 | 10 | CRS1 R | **CR 42×62×10 CRS1 R** |
| **43** | 62 | 10 | CRSH1 R | **CR 43×62×10 CRSH1 R** |
| **45** | 58 | 9 | CRSA1 R | **CR 45×58×9 CRSA1 R** |
| | 62 | 7 | CRSA1 R | **CR 45×62×7 CRSA1 R** |
| **48** | 70 | 9 | CRSA1 R | **CR 48×70×9 CRSA1 R** |
| **50** | 62 | 7 | CRS1 R | **CR 50×62×7 CRS1 R** |
| | 62 | 10 | CRS1 R | **CR 50×62×10 CRS1 R** |
| | 85 | 13 | CRSH1 R | **CR 50×85×13 CRSH1 R** |
| **54** | 72 | 10 | CRSA1 R | **CR 54×72×10 CRSA1 R** |
| | 80 | 10 | CRSH1 R | **CR 54×80×10 CRSH1 R** |
| **57** | 72 | 10 | CRSH1 R | **CR 57×72×10 CRSH1 R** |
| **58** | 85 | 13 | CRSH1 R | **CR 58×85×13 CRSH1 R** |
| **59** | 75 | 10 | CRSA1 R | **CR 59×75×10 CRSA1 R** |
| **60** | 70 | 7 | CRS1 R | **CR 60×70×7 CRS1 R** |
| | 78 | 9 | CRS1 R | **CR 60×78×9 CRS1 R**[1)] |
| | 80 | 10 | CRSHA1 R | **CR 60×80×10 CRSHA1 R** |
| | 90 | 10 | CRSH1 R | **CR 60×90×10 CRSH1 R** |
| **62** | 75 | 10 | CRS1 R | **CR 62×75×10 CRS1 R** |
| **66** | 80 | 8,9 | CRSHA1 R | **CR 66×80×9 CRSHA1 R** |
| | 85 | 10 | CRSHA1 R | **CR 66×85×10 CRSHA1 R** |
| | 90 | 13 | CRSH1 R | **CR 66×90×13 CRSH1 R** |
| **68** | 85 | 10 | CRS1 R | **CR 68×85×10 CRS1 R** |
| **74** | 100 | 13 | CRSH1 R | **CR 74×100×13 CRSH1 R** |

[1)] Sealant on outside diameter

| Dimensions | | | Design and lip material | Designation |
|---|---|---|---|---|
| Shaft | Bore | Nominal seal width | | |
| $d_1$ | D | b | | |
| mm | | | – | – |
| **75** | 115 | 13 | CRSH1 R | **CR 75×115×13 CRSH1 R** |
| **80** | 100 | 13 | CRSA1 R | **CR 80×100×13 CRSA1 R** |
| | 125 | 13 | CRSH1 R | **CR 80×125×13 CRSH1 R** |
| **85** | 100 | 9 | CRS1 R | **CR 85×100×9 CRS1 R** |
| **88** | 110 | 13 | CRSH1 R | **CR 88×110×13 CRSH1 R** |
| **90** | 125 | 13 | CRSH1 R | **CR 90×125×13 CRSH1 R** |
| **95** | 110 | 9 | CRS1 R | **CR 95×110×9 CRS1 R** |
| **100** | 120 | 13 | CRSH1 R | **CR 100×120×13 CRSH1 R** |
| **105** | 125 | 12 | CRS1 R | **CR 105×125×12 CRS1 R** |
| **107** | 123 | 11 | CRSA1 R | **CR 107×123×11 CRSA1 R** |
| **108** | 130 | 13 | CRSH1 R | **CR 108×130×13 CRSH1 R** |
| **113** | 140 | 13 | CRSH1 R | **CR 113×140×13 CRSH1 R** |
| **115** | 160 | 15 | CRSH1 R | **CR 115×160×15 CRSH1 R** |
| **120** | 150 | 15 | CRSH1 R | **CR 120×150×15 CRSH1 R** |
| **125** | 146 | 14 | CRSA1 P | **CR 125×146×14 CRSA1 P** |
| **126** | 147 | 11 | CRSA1 R | **CR 126×147×11 CRSA1 R** |
| **130** | 150 | 10 | CRSA1 R | **CR 130×150×10 CRSA1 R** |
| | 150 | 14 | CRSA1 R | **CR 130×150×14 CRSA1 R** |
| | 155 | 10 | CRSH1 R | **CR 130×155×10 CRSH1 R** |
| | 160 | 13 | CRS1 R | **CR 130×160×13 CRS1 R** |
| | 160 | 13 | CRSA1 R | **CR 130×160×13 CRSA1 R** |
| | 165 | 13 | CRSH1 R | **CR 130×165×13 CRSH1 R** |
| **135** | 160 | 13 | CRSH1 R | **CR 135×160×13 CRSH1 R** |
| | 170 | 15 | CRSH1 R | **CR 135×170×15 CRSH1 R** |
| **138** | 152 | 12 | CRSA1 R | **CR 138×152×12 CRSA1 R** |
| **145** | 164 | 14 | CRSA1 R | **CR 145×164×14 CRSA1 R** |
| | 175 | 14 | CRS1 R | **CR 145×175×14 CRS1 R** |
| **150** | 170 | 15 | CRSH1 R | **CR 150×170×15 CRSH1 R** |
| | 180 | 13 | CRSH1 R | **CR 150×180×13 CRSH1 R** |
| | 200 | 15 | CRSH1 R | **CR 150×200×15 CRSH1 R** |
| **154** | 175 | 13 | CRSA1 R | **CR 154×175×13 CRSA1 R** |
| **160** | 185 | 13 | CRSA1 V | **CR 160×185×13 CRSA1 V** |
| **168** | 200 | 15 | CRSH1 R | **CR 168×200×15 CRSH1 R** |
| **170** | 190 | 15 | CRSH1 R | **CR 170×190×15 CRSH1 R** |
| **180** | 200 | 12 | CRS1 R | **CR 180×200×12 CRS1 R** |
| | 215 | 16 | CRS1 R | **CR 180×215×16 CRS1 R** |
| | 220 | 16 | CRSA1 R | **CR 180×220×16 CRSA1 R** |
| **190** | 215 | 16 | CRSH1 R | **CR 190×215×16 CRSH1 R** |
| **195** | 230 | 15 | CRSH1 R | **CR 195×230×15 CRSH1 R** |
| **200** | 250 | 15 | CRSH1 R | **CR 200×250×15 CRSH1 R** |
| **260** | 300 | 20 | CRS1 R | **CR 260×300×20 CRS1 R** |

## Radial shaft seals – CRS1, CRSH1, CRSA1 and CRSHA1 – inch dimensions
$d_1$ **0.531 – 2.008** in.




Please see **pages 74** to **76** for housing bore requirements.

| **Dimensions** Shaft $d_1$ | Bore D | Nominal seal width b | **Design and lip material** | **Designation** |
|---|---|---|---|---|
| in. | | | – | – |
| **0.531** | 1.124 | 0.313 | CRSA1 R | **CR 5334** |
| **0.594** | 1.250 | 0.313 | CRSA1 R | **CR 5950** |
| | 1.375 | 0.313 | CRSA1 R | **CR 5966**[1] |
| **0.669** | 1.339 | 0.311 | CRSA1 P | **CR 6992** |
| **0.709** | 1.339 | 0.315 | CRSA1 P | **CR 7089** |
| **0.781** | 1.752 | 0.313 | CRSHA1 R | **CR 8213** |
| **0.844** | 1.828 | 0.313 | CRSA1 R | **CR 8485** |
| **0.945** | 1.575 | 0.315 | CRS1 R | **CR 9515** |
| **0.969** | 2.048 | 0.375 | CRS1 R | **CR 9688**[1] |
| **1.125** | 2.835 | 0.375 | CRSA1 R | **CR 11405**[1] |
| | 2.875 | 0.469 | CRSH1 R | **CR 11410**[1] |
| **1.156** | 2.125 | 0.438 | CRSH1 R | **CR 11566**[1] |
| **1.219** | 2.000 | 0.438 | CRSH1 R | **CR 12131**[1] |
| **1.250** | 2.561 | 0.500 | CRSH1 R | **CR 12655** |
| | 2.713 | 0.469 | CRSH1 R | **CR 12660**[1] |
| | 3.156 | 0.500 | CRSH1 R | **CR 12678** |
| **1.301** | 2.000 | 0.438 | CRSA1 P | **CR 12905** |
| **1.313** | 1.874 | 0.375 | CRSA1 R | **CR 13027**[1] |
| | 2.000 | 0.313 | CRSA1 R | **CR 13037**[1] |
| | 2.106 | 0.375 | CRSA1 R | **CR 13084**[1] |
| | 2.996 | 0.500 | CRSH1 R | **CR 13275**[1] |
| **1.328** | 2.312 | 0.433 | CRS1 R | **CR 13419**[1] |
| **1.362** | 2.191 | 0.250 | CRS1 P | **CR 13500** |

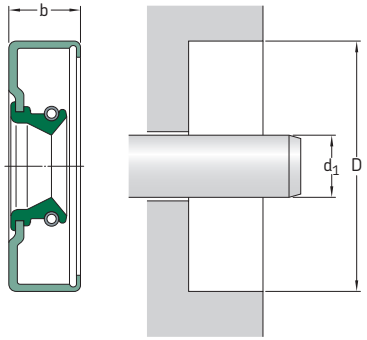
[1] Sealant on outside diameter

| Dimensions Shaft $d_1$ | Bore D | Nominal seal width b | Design and lip material | Designation |
|---|---|---|---|---|
| in. | | | – | – |
| **1.375** | 2.750 | 0.500 | CRSH1 R | **CR 13906**[1] |
| | 3.000 | 0.500 | CRSHA1 R | **CR 13937** |
| | 3.125 | 0.500 | CRSH1 R | **CR 13936** |
| | 3.350 | 0.469 | CRSH1 R | **CR 13934**[1] |
| **1.399** | 2.292 | 0.469 | CRSA1 R | **CR 13992**[1] |
| | 2.292 | 0.500 | CRSA1 R | **CR 13990**[1] |
| **1.414** | 2.250 | 0.250 | CRSHA1 R | **CR 14035**[1] |
| **1.469** | 2.374 | 0.375 | CRSA1 R | **CR 14641**[1] |
| **1.491** | 2.191 | 0.250 | CRSA1 R | **CR 14780** |
| **1.500** | 2.996 | 0.500 | CRSH1 R | **CR 15240** |
| | 3.000 | 0.375 | CRSA1 R | **CR 15241** |
| **1.524** | 2.374 | 0.500 | CRSH1 R | **CR 15343** |
| **1.563** | 2.716 | 0.469 | CRSH1 R | **CR 15748**[1] |
| **1.618** | 2.575 | 0.500 | CRSA1 R | **CR 16404**[1] |
| **1.625** | 2.437 | 0.469 | CRSHA1 R | **CR 16121** |
| | 2.835 | 0.469 | CRSH1 R | **CR 16386** |
| | 3.062 | 0.500 | CRSH1 R | **CR 16431**[1] |
| | 3.251 | 0.500 | CRSH1 R | **CR 16440**[1] |
| **1.656** | 2.502 | 0.500 | CRSH1 R | **CR 16532**[1] |
| **1.688** | 2.374 | 0.313 | CRSA1 R | **CR 16669** |
| | 2.835 | 0.469 | CRSA1 R | **CR 16960** |
| **1.705** | 3.084 | 0.500 | CRS1 R | **CR 17053** |
| **1.719** | 2.623 | 0.500 | CRSH1 R | **CR 17136**[1] |
| **1.750** | 2.328 | 0.438 | CRS1 R | **CR 17257** |
| | 3.154 | 0.313 | CRS1 R | **CR 17726** |
| | 3.937 | 0.313 | CRSA1 R | **CR 17771**[1] |
| **1.781** | 2.750 | 0.500 | CRSH1 R | **CR 17847** |
| | 2.758 | 0.500 | CRSH1 R | **CR 17851**[1] |
| **1.844** | 2.502 | 0.375 | CRSA1 R | **CR 18412**[1] |
| | 2.750 | 0.375 | CRSA1 R | **CR 18446**[1] |
| **1.875** | 3.125 | 0.313 | CRSA1 R | **CR 18879**[1] |
| **1.889** | 3.110 | 0.688 | CRSA1 P | **CR 18983** |
| **1.890** | 2.874 | 0.276 | CRSA1 P | **CR 18979** |
| **1.906** | 3.189 | 0.313 | CRSA1 P | **CR 19062** |
| **1.938** | 2.762 | 0.500 | CRSA1 R | **CR 19273**[1] |
| | 2.825 | 0.500 | CRSH1 P | **CR 19274** |
| | 3.751 | 0.500 | CRSH1 R | **CR 19466**[1] |
| **1.969** | 2.638 | 0.354 | CRSA1 R | **CR 19628** |
| | 2.686 | 0.500 | CRSH1 R | **CR 19615** |
| | 2.742 | 0.500 | CRSH1 P | **CR 19620** |
| | 2.875 | 0.469 | CRSH1 R | **CR 19643** |
| **2.008** | 2.953 | 0.354 | CRSA1 P | **CR 20012** |

[1] Sealant on outside diameter



## Radial shaft seals – CRS1, CRSH1, CRSA1 and CRSHA1 – inch dimensions
$d_1$ **2.063 – 7.000** in.




Please see **pages 74** to **76** for housing bore requirements.

| **Dimensions** Shaft $d_1$ | Bore D | Nominal seal width b | **Design and lip material** | **Designation** |
|---|---|---|---|---|
| in. | | | – | – |
| **2.063** | 2.875 | 0.375 | CRSA1 R | **CR 550085**[1] |
| **2.125** | 3.623 | 0.469 | CRSA1 P | **CR 21379** |
| **2.145** | 3.188 | 0.469 | CRSH1 R | **CR 21538** |
| **2.188** | 3.623 | 0.500 | CRSHA1 R | **CR 21950** |
| **2.432** | 3.070 | 0.227 | CRSA1 P | **CR 24110** |
| **2.563** | 3.500 | 0.500 | CRSHA1 P | **CR 25587** |
| **2.648** | 3.812 | 0.500 | CRS1 R | **CR 26877** |
| **2.750** | 4.125<br>4.125 | 0.438<br>0.563 | CRS1 P<br>CRSA1 R | **CR 27576**[1]<br>**CR 27577** |
| **2.875** | 3.434 | 0.294 | CRSA1 R | **CR 28646**[1] |
| **2.913** | 3.543 | 0.394 | CRS1 P | **CR 29105** |
| **3.125** | 3.936 | 0.512 | CRSA1 V | **CR 31144**[1] |
| **3.250** | 3.876<br>4.125 | 0.375<br>0.563 | CRSA1 V<br>CRSH1 R | **CR 32332**[1]<br>**CR 32362**[1] |
| **3.298** | 4.125 | 0.563 | CRSA1 R | **CR 32815**[1] |
| **3.469** | 4.626 | 0.625 | CRSA1 R | **CR 34700** |
| **3.500** | 5.751 | 0.563 | CRSH1 R | **CR 35111**[1] |
| **3.504** | 4.173 | 0.354 | CRSA1 V | **CR 35120** |
| **3.813** | 4.999<br>5.251 | 0.469<br>0.469 | CRSH1 R<br>CRSH1 R | **CR 38160**<br>**CR 38220**[1] |
| **3.875** | 5.501<br>5.751 | 0.500<br>0.563 | CRSHA1 R<br>CRSH1 R | **CR 38749**[1]<br>**CR 38810** |

[1] Sealant on outside diameter

| Dimensions | | | Design and lip material | Designation |
|---|---|---|---|---|
| Shaft | Bore | Nominal seal width | | |
| $d_1$ | D | b | | |
| in. | | | – | – |
| **3.898** | 4.680 | 0.370 | CRSA1 VR | **CR 38880** |
| **4.188** | 4.999 | 0.469 | CRSHA1 R | **CR 41751** |
| | 5.251 | 0.469 | CRSH1 R | **CR 41761** |
| | 5.751 | 0.500 | CRSHA1 R | **CR 41833** |
| **4.313** | 5.751 | 0.500 | CRSH1 R | **CR 43231** |
| **4.563** | 5.751 | 0.500 | CRSHA1 R | **CR 45550** |
| | 6.250 | 0.500 | CRSH1 R | **CR 45560** |
| **5.000** | 7.000 | 0.500 | CRSHA1 R | **CR 50185** |
| | 7.500 | 0.500 | CRSHA1 R | **CR 50195** |
| **5.125** | 6.500 | 0.500 | CRSHA1 R | **CR 51276** |
| **5.313** | 6.500 | 0.500 | CRSHA1 R | **CR 53151** |
| **5.375** | 6.374 | 0.500 | CRSHA1 R | **CR 53688**[1] |
| | 6.499 | 0.563 | CRSH1 R | **CR 53692** |
| **5.500** | 6.626 | 0.563 | CRSHA1 R | **CR 54949** |
| | 6.876 | 0.563 | CRSHA1 R | **CR 55157** |
| | 7.501 | 0.563 | CRSH1 R | **CR 55179** |
| **5.750** | 6.876 | 0.563 | CRSHA1 R | **CR 57519** |
| | 7.126 | 0.563 | CRSHA1 R | **CR 57578** |
| | 7.502 | 0.563 | CRSHA1 R | **CR 57584** |
| **6.000** | 7.002 | 0.500 | CRSHA1 R | **CR 60006**[1] |
| **6.062** | 6.772 | 0.551 | CRSA1 R | **CR 60620** |
| **6.125** | 7.502 | 0.563 | CRSHA1 R | **CR 61248**[1] |
| **6.188** | 7.500 | 0.563 | CRSH1 P | **CR 61740** |
| **7.000** | 8.375 | 0.625 | CRSHA1 R | **CR 70034** |




[1] Sealant on outside diameter

## PTFE radial shaft seals

Radial shaft seals with one or more PTFE sealing lip(s) are designed to withstand aggressive environments, high temperatures, high pressures and dry running that traditional radial shaft seals made of elastomeric sealing lip materials cannot withstand. Many of the PTFE compounds are FDA approved. Main advantages of PTFE seals include:

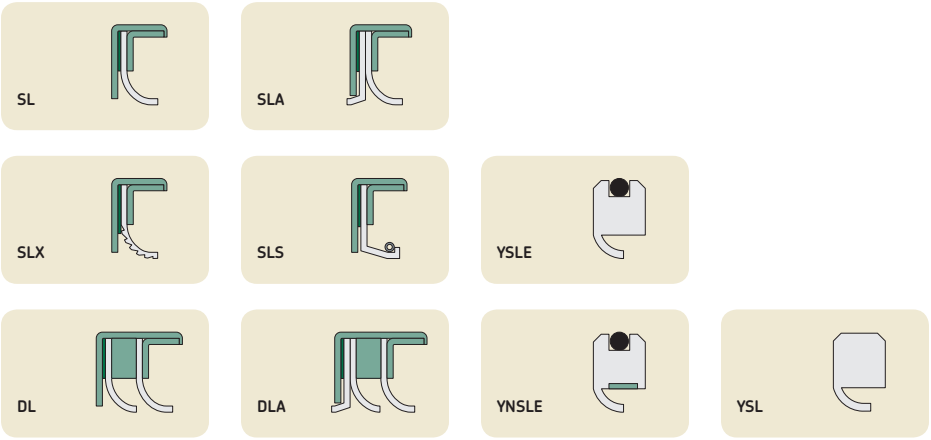
- High chemical resistance
- Withstand speeds up to 30 m/s *(5 900 ft/min)*
- Wide operating temperature range, –70 to +250 °C *(–95 to +480 °F)*
- Withstand pressures up to 3,5 MPa *(500 psi)*
- Withstand dry running

### Assortment

The profiles shown below are a selection of the most commonly used SKF seal designs with sealing lips made of PTFE. They can be installed in existing housing grooves where traditional radial seals are used, provided that the grooves are manufactured in accordance with international standards.

There are two main executions of PTFE seals: those with a metal case and those without a metal case. The metal case can be made of steel, aluminium or any of the stainless steel materials SS 304, SS 316 and SS 316 TI. The PTFE material should be selected based on the needs of the application.

PTFE seals without a metal case can be designed with an O-ring in the outside diameter groove to provide static sealing ability. Both the PTFE and O-ring material can be selected to meet the demands of different operating conditions, e.g. in the food industry to enable disassembly of the equipment for cleaning.



### PTFE materials

The selection of seal materials typically requires a compromise between advantages and disadvantages. There are hundreds of different PTFE materials with a variety of fillers. Common fillers include glass fibre, carbon, graphite, molybdenum disulphide, metal oxides and various polymers. Each possesses different properties, appropriate for different applications and service conditions. Common to all filled PTFE materials are their improved resistance to wear and deformation.

Unfilled PTFE provides, in most cases, a lower coefficient of friction than a filled PTFE material and the lowest degree of wear of the seal counterface. However, a sealing lip made of an unfilled PTFE material has limited resistance to wear and deformation under load.

The PTFE materials that SKF most often recommends are listed in **table 14** on **page 180**. In addition to PTFE-based compounds, SKF also offers radial shaft seals in other modified plastics, some of which are listed in **table 15** on **page 181**.

Selecting the appropriate material for the metal case and the O-ring(s) is also of significant importance to achieving satisfactory sealing performance. Contact SKF for more information.

### Installation

Special care must be taken during handling and installation of PTFE seals. For more information, refer to **pages 85** and **86**.

### Size range and availability

The majority of PTFE radial shaft seals from SKF are made to order to meet the demands of each application. There are, however, certain standard sizes within the ranges of approximately 6 to 200 mm *(0.250 to 8 in.)* shaft diameter and approximately 16 to 230 mm *(0.630 to 9 in.)* bore diameter. Contact SKF for more information regarding designs and sizes.

Table 14

| Material family | Description | Shaft hardness recommended[1] |
|---|---|---|
| **PTFE, unfilled** | "Virgin" PTFE. FDA approved. Low-friction material. Used for general non-pressure applications on shafts with low hardness value. Excellent for cryogenics. | A |
| **PTFE + glass** | FDA approved. Glass can be in the form of beads or fibres. Glass is exceptionally strong and prolongs the life of the base PTFE. Due to its inherent hardness, it also adds an abrasive property and is not recommended on low-hardness shafts. | C |
| **PTFE + $MoS_2$** | Molybdenum disulphide ($MoS_2$) adds wear resistance to the base PTFE. Not as abrasive as glass. | C |
| **PTFE + glass + $MoS_2$** | Improved elongation characteristics and less abrasive to running surfaces compared to PTFE + glass. | C |
| **PTFE + carbon** | Carbon can be in the form of various grades of fibres or graphite powder, either natural or synthetic. Carbon is an excellent natural lubricant and provides wear resistance to enhance the low-friction base PTFE material. Increased percentage of carbon will increase the wear, creep, and extrusion resistance and improve performance in steam and chemical service at elevated temperatures and pressures. | A, B, C |
| **PTFE + carbon + $MoS_2$** | Excellent wear rate in non-lubricated services at high temperatures. | B, C |
| **PTFE + bronze** | Suitable for high-speed dynamic sealing of hydraulic media. Should not be used in chemical service, which could attack the bronze. | |
| **PTFE + bronze + $MoS_2$** | High degree of wear and extrusion resistance in high-pressure applications. | |
| **PTFE + polymer** | Polymers, such as polyoxybenzoate, polyimide and many others improve creep and wear resistance. | A, B, C |
| **PTFE + organic pigment** | FDA and/or USDA 3A approved. | |

[1] Material selection recommendations for counterface hardness ratings (Rockwell C scale) combined with surface speed. For material selection, please see **table 16**

**Table 15**

**Modified plastic materials**

| | |
|---|---|
| **UHMWPE** | Ultra-high molecular weight polyethylene. Significantly improved wear and abrasion resistance over PTFE-based materials in non-lubricated or abrasive media. FDA and USDA 3A approved. Fair media compatibility, limited to approximately 90 °C *(195 °F)*. |
| **Nylon** | Improved strength, limited media compatibility and temperature resistance. Hydroscopic. Used for plain bearings, bushings, back-up rings and some seals. |
| **POM** | Polyoxymethylene (a.k.a. polyacetal or just acetal). Similar to nylon but with significantly reduced water-absorption properties. Some grades are FDA and USDA 3A compliant. Typically used for plain bearings, bushings, and back-up rings. |
| **Ertalyte** | Similar to POM but offers improved media compatibility and improved wear resistance. |
| **PEEK** | Polyetheretherketone. Similar strength properties as nylon and POM but with very good media compatibility and significantly better temperature properties. Some grades are FDA and USDA 3A compliant. Used for plain bearings, bushings, back-up rings and some seals. |
| **PPS** | Polyphenylene sulphide. Similar strength properties and chemical compatibility as PEEK-based compounds but offers improved wear resistance. Has better temperature capabilities than nylon or POM materials but not as good as PEEK. Adding fillers can create a "bearing-grade" PPS for high-performance applications. |
| **PA** | Polyamide. Exceptional mechanical, thermal and chemical resistance properties. |

**Table 16**

**Material selection with shaft hardness + velocity**

| Surface speed | < 30 HRC | 45 HRC | ≥ 58 HRC |
|---|---|---|---|
| **Low** | A or B | A, B, C | A, B, C |
| **Medium** | A | A, B | A, B, C |
| **High** | A | A, B | A, B |

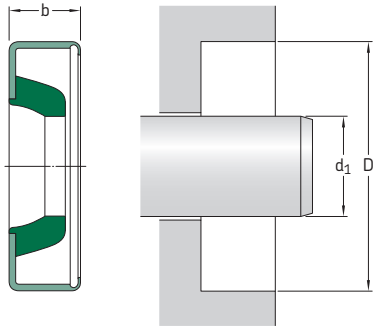
## HM and TL seals for grease lubricated applications

SKF offers an extensive assortment of radial shaft seals for less demanding grease lubricated applications operating at moderate speeds. The majority of these seals are designed without a spring. The seals are generally installed with the sealing lip facing outward to provide maximum exclusion ability. Typical applications are grease lubricated agriculture machinery. The illustrations below show the most commonly used designs within this assortment from SKF. Contact SKF for more information on available designs.

See **matrix 1** on **pages 90** and **91** for permissible operating conditions, valid for both HM and TL seals.



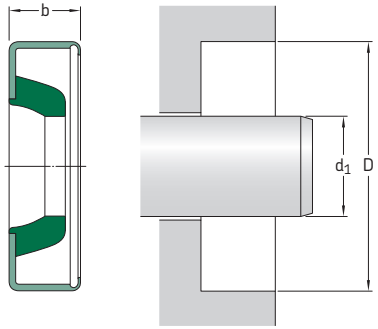
## Radial shaft seals – HM and TL seals – metric dimensions
$d_1$ **6 – 22** mm




Please see **pages 74** to **76** for housing bore requirements.

| **Dimensions** Shaft $d_1$ | Bore D | Nominal seal width b | **Design and lip material** | **Designation** |
|---|---|---|---|---|
| mm | | | – | – |
| **6** | 12 | 2 | HM3 R | **CR 6×12×2 HM3 R** |
| **8** | 12 | 3 | HM4 R | **CR 8×12×3 HM4 R** |
| **9** | 13 | 3 | HM4 R | **CR 9×13×3 HM4 R** |
| **10** | 14 | 3 | HM4 R | **CR 10×14×3 HM4 R** |
| | 16 | 4 | HM102 R | **CR 10×16×4 HM102 R** |
| **12** | 16 | 3 | HM4 R | **CR 12×16×3 HM4 R** |
| | 18 | 3 | HM4 R | **CR 12×18×3 HM4 R** |
| | 19 | 3 | HM4 R | **CR 12×19×3 HM4 R** |
| | 22 | 4 | HM4 R | **CR 12×22×4 HM4 R** |
| **14** | 20 | 3 | HM4 R | **CR 14×20×3 HM4 R** |
| | 22 | 3 | HM4 R | **CR 14×22×3 HM4 R** |
| **15** | 21 | 3 | HM4 R | **CR 15×21×3 HM4 R** |
| | 23 | 3 | HM4 R | **CR 15×23×3 HM4 R** |
| | 25 | 5 | HMA10 R | **CR 15×25×5 HMA10 R** |
| **16** | 22 | 3 | HM4 R | **CR 16×22×3 HM4 R** |
| | 22 | 4 | HM4 R | **CR 16×22×4 HM4 R** |
| | 24 | 4 | HM102 R | **CR 16×24×4 HM102 R** |
| **17** | 23 | 3 | HM4 R | **CR 17×23×3 HM4 R** |
| **18** | 24 | 3 | HM4 R | **CR 18×24×3 HM4 R** |
| | 26 | 4 | HMA1 R | **CR 18×26×4 HMA1 R** |
| **19** | 27 | 4 | HM4 R | **CR 19×27×4 HM4 R** |
| **20** | 26 | 4 | HM4 R | **CR 20×26×4 HM4 R** |
| | 28 | 4 | HM4 R | **CR 20×28×4 HM4 R** |
| **22** | 28 | 4 | HM1 R | **CR 22×28×4 HM1 R** |
| | 28 | 4 | HMA10 R | **CR 22×28×4 HM10 R** |
| | 30 | 4 | HM4 R | **CR 22×30×4 HM4 R** |
| | 35 | 5 | HM14 R | **CR 22×35×5 HM14 R** |

## Radial shaft seals – HM and TL seals – metric dimensions
$d_1$ **23 – 65** mm

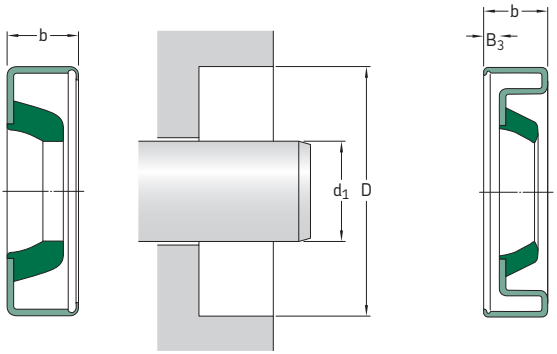



Please see **pages 74** to **76** for housing bore requirements.

| **Dimensions** Shaft $d_1$ | Bore D | Nominal seal width b | **Design and lip material** | **Designation** |
|---|---|---|---|---|
| mm | | | – | – |
| **23** | 32 | 5,50 | HM1 R | **CR 23×32×6 HM1 R** |
| | 35 | 6 | HMA10 R | **CR 23×35×6 HMA10 R** |
| **24** | 32 | 4 | HM4 R | **CR 24×32×4 HM4 R** |
| **25** | 32 | 4 | HM4 R | **CR 25×32×4 HM4 R** |
| | 33 | 4 | HM4 R | **CR 25×33×4 HM4 R** |
| | 35 | 4 | HM4 R | **CR 25×35×4 HM4 R** |
| **26** | 34 | 4 | HM4 R | **CR 26×34×4 HM4 R** |
| **28** | 35 | 4 | HM4 R | **CR 28×35×4 HM4 R** |
| | 35 | 6 | HM102 R | **CR 28×35×6 HM102 R** |
| | 37 | 4 | HM4 R | **CR 28×37×4 HM4 R** |
| **30** | 37 | 4 | HM4 R | **CR 30×37×4 HM4 R** |
| | 40 | 4 | HM4 R | **CR 30×40×4 HM4 R** |
| **32** | 42 | 4 | HM4 R | **CR 32×42×4 HM4 R** |
| **35** | 42 | 4 | HM4 R | **CR 35×42×4 HM4 R** |
| | 45 | 4 | HM4 R | **CR 35×45×4 HM4 R** |
| | 47 | 5 | HM4 R | **CR 35×47×5 HM4 R** |
| **37** | 47 | 4 | HM4 R | **CR 37×47×4 HM4 R** |
| **38** | 48 | 4 | HM4 R | **CR 38×48×4 HM4 R** |
| **40** | 47 | 4 | HM4 R | **CR 40×47×4 HM4 R** |
| | 50 | 4 | HM4 R | **CR 40×50×4 HM4 R** |
| | 52 | 5 | HM4 R | **CR 40×52×5 HM4 R** |
| | 53 | 5 | HMA76 R | **CR 40×53×5 HMA76 R** |
| | 62 | 10 | HMA10 R | **CR 40×62×10 HMA10 R** |
| **42** | 52 | 4 | HM4 R | **CR 42×52×4 HM4 R** |
| | 55 | 6 | HM1 R | **CR 42×55×6 HM1 R** |
| | 64 | 6 | HMA1 R | **CR 42×64×6 HMA1 R** |

| Dimensions | | | Design and lip material | Designation |
|---|---|---|---|---|
| Shaft | Bore | Nominal seal width | | |
| $d_1$ | D | b | | |
| mm | | | – | – |
| **45** | 52 | 4 | HM4 R | **CR 45×52×4 HM4 R** |
| | 55 | 4 | HM4 R | **CR 45×55×4 HM4 R** |
| | 72 | 8 | HMA22 R | **CR 45×72×8 HMA22 R** |
| **47** | 72 | 6 | HMA85 R | **CR 47×72×6 HMA85 R** |
| **48** | 58 | 4 | HM4 R | **CR 48×58×4 HM4 R** |
| **50** | 60 | 6 | HMA10 R | **CR 50×60×6 HMA10 R** |
| | 62 | 5 | HM4 R | **CR 50×62×5 HM4 R** |
| **62** | 78 | 7 | HMA8 R | **CR 62×78×7 HMA8 R** |
| **65** | 75 | 8 | HM102 R | **CR 65×75×8 HM102 R** |

## Radial shaft seals – HM and TL seals – inch dimensions
$d_1$ **0.188 – 0.750** in.




Please see **pages 74** to **76** for housing bore requirements.

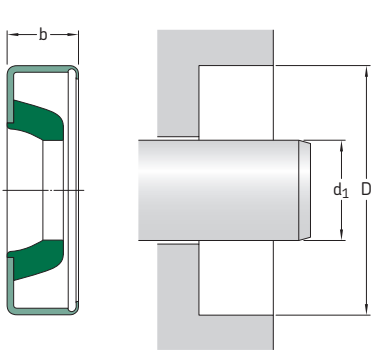
| **Dimensions** Shaft $d_1$ | Bore D | Nominal seal width b | Clearance $B_3$ | **Design and lip material** | **Designation** |
|---|---|---|---|---|---|
| in. | | | | – | – |
| **0.188** | 0.500 | 0.125 | | HM1 R | **CR 1850** |
| **0.250** | 0.499 | 0.188 | | HM14 R | **CR 2450** |
| | 0.499 | 0.188 | | HMA14 V | **CR 2452** |
| | 0.562 | 0.188 | | HM14 R | **CR 2470**[1] |
| | 0.626 | 0.250 | | HM14 R | **CR 2490** |
| | 0.749 | 0.188 | | HM14 R | **CR 2560** |
| **0.313** | 0.500 | 0.125 | | HM4 R | **CR 3044** |
| | 0.626 | 0.156 | | HM14 R | **CR 3060**[1] |
| | 0.626 | 0.156 | | HM14 V | **CR 3061** |
| | 0.626 | 0.203 | | HM1 R | **CR 3050**[1] |
| | 0.633 | 0.141 | | HM14 R | **CR 3080** |
| | 0.749 | 0.250 | | HM14 R | **CR 3140** |
| | 0.750 | 0.250 | | HM3 R | **CR 3141** |
| | 0.862 | 0.250 | | HM14 R | **CR 3086** |
| **0.375** | 0.562 | 0.093 | | HM3 V | **CR 535835** |
| | 0.563 | 0.094 | | HM3 R | **CR 3621** |
| | 0.628 | 0.197 | | HMA10 P | **CR 3632** |
| | 0.687 | 0.156 | | HM14 R | **CR 3645**[1] |
| | 0.749 | 0.250 | | HM14 R | **CR 3683** |
| | 0.875 | 0.250 | | HM14 R | **CR 3727** |
| **0.404** | 0.620 | 0.188 | | HM14 R | **CR 4010** |
| | 0.862 | 0.250 | | HM14 R | **CR 4012** |
| **0.438** | 0.836 | 0.188 | | HM14 R | **CR 4231** |
| | 0.879 | 0.180 | | HM8 R | **CR 4256** |
| | 0.999 | 0.250 | | HM14 R | **CR 4340** |
| **0.469** | 0.836 | 0.188 | | HM14 P | **CR 4623** |
| | 0.875 | 0.219 | | HM14 R | **CR 4628** |
| **0.500** | 0.687 | 0.093 | | HM3 V | **CR 538545** |
| | 0.688 | 0.094 | | HM3 R | **CR 4911** |
| | 0.750 | 0.125 | | HM14 R | **CR 4912**[1] |

[1] SKF Bore Tite Coating

| Dimensions | | | | Design and lip material | Designation |
|---|---|---|---|---|---|
| Shaft | Bore | Nominal seal width | Clearance | | |
| $d_1$ | D | b | $B_3$ | | |
| in. | | | | – | – |
| **0.500** | 0.820 | 0.156 | | HM14 R | **CR 4914**[1] |
| cont. | 0.843 | 0.250 | | HM14 R | **CR 4923**[1] |
| | 0.875 | 0.125 | | HM14 R | **CR 4925** |
| | 0.875 | 0.250 | | HM14 R | **CR 4938** |
| | 0.999 | 0.188 | | HM14 R | **CR 4950**[1] |
| | 0.999 | 0.250 | | HM14 R | **CR 4990**[1] |
| | 1.124 | 0.250 | | HM14 R | **CR 5085**[1] |
| **0.551** | 1.124 | 0.203 | | HM21 R | **CR 5399**[1] |
| **0.563** | 0.750 | 0.094 | | HM3 R | **CR 5500** |
| | 0.875 | 0.188 | | HM14 R | **CR 5522**[1] |
| | 0.999 | 0.219 | | HM14 R | **CR 5569**[1] |
| | 1.124 | 0.250 | | HM14 R | **CR 5685** |
| **0.594** | 1.124 | 0.250 | | HM14 R | **CR 5946**[1] |
| **0.624** | 1.131 | 0.188 | | HM14 R | **CR 6243**[1] |
| **0.625** | 0.812 | 0.094 | | HM3 R | **CR 6105** |
| | 0.813 | 0.094 | | HM3 V | **CR 6106** |
| | 0.875 | 0.125 | | HM R | **CR 532444** |
| | 0.933 | 0.188 | | HM14 R | **CR 6125**[1] |
| | 0.933 | 0.188 | | HM14 V | **CR 6126**[1] |
| | 0.937 | 0.188 | | HM14 R | **CR 6130**[1] |
| | 1.000 | 0.125 | | HM14 P | **CR 6152**[1] |
| | 1.000 | 0.125 | | HM14 R | **CR 6153** |
| | 1.063 | 0.250 | | HM14 R | **CR 6158**[1] |
| | 1.124 | 0.250 | | HM14 R | **CR 6225**[1] |
| | 1.125 | 0.250 | | HM14 R | **CR 531074**[2] |
| | 1.250 | 0.250 | | HM14 R | **CR 6323**[1] |
| | 1.259 | 0.250 | | HM14 R | **CR 6330**[1] |
| | 1.375 | 0.250 | | HM14 R | **CR 6370**[1] |
| **0.669** | 1.250 | 0.250 | | HM14 R | **CR 6806**[1] |
| **0.688** | 0.999 | 0.188 | | HM14 R | **CR 6720**[1] |
| | 1.124 | 0.250 | | HM14 R | **CR 6759**[1] |
| | 1.187 | 0.125 | | HM14 R | **CR 6762**[1] |
| | 1.375 | 0.125 | | HM14 R | **CR 6915**[1] |
| | 1.375 | 0.250 | | HM14 R | **CR 6920**[1] |
| **0.750** | 0.999 | 0.125 | | HM14 R | **CR 7410** |
| | 1.000 | 0.125 | | HM14 D | **CR 7408**[1] |
| | 1.000 | 0.125 | | HM3 V | **CR 535909** |
| | 1.004 | 0.156 | | HM8 R | **CR 7409** |
| | 1.006 | 0.125 | | HM14 R | **CR 7411**[1] |
| | 1.012 | 0.226 | | HMA3SPL R | **CR 7535** |
| | 1.031 | 0.313 | | HMA6 R | **CR 7412** |
| | 1.062 | 0.188 | | HM14 R | **CR 7413** |
| | 1.124 | 0.156 | | HM14 R | **CR 7415**[1] |
| | 1.187 | 0.156 | | HM14 R | **CR 7421** |
| | 1.249 | 0.250 | | HM14 R | **CR 530716**[3] |
| | 1.250 | 0.250 | | HM14 R | **CR 7464**[1] |
| | 1.259 | 0.250 | | HM14 R | **CR 7477**[1] |

[1] SKF Bore Tite Coating
[2] Stainless steel spring
[3] Stainless steel case

## Radial shaft seals – HM and TL seals – inch dimensions
$d_1$ **0.750 – 1.250** in.




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Please see **pages 74** to **76** for housing bore requirements.

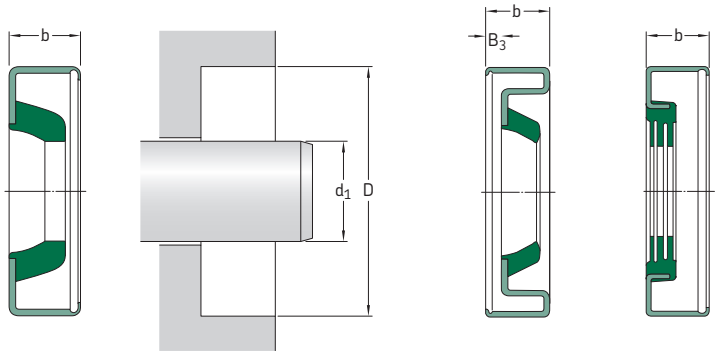
| Dimensions Shaft $d_1$ | Bore D | Nominal seal width b | Clearance $B_3$ | Design and lip material | Designation |
|---|---|---|---|---|---|
| in. | | | | – | – |
| **0.750** | 1.375 | 0.250 | | HM14 R | **CR 7536** |
| cont. | 1.375 | 0.250 | | HM14 P | **CR 7537** |
| | 1.437 | 0.250 | | HM14 R | **CR 7550**[1] |
| | 1.499 | 0.250 | | HM14 R | **CR 7571**[1] |
| **0.781** | 1.375 | 0.197 | | HM14 R | **CR 7831**[1] |
| **0.813** | 1.063 | 0.125 | | HM3 R | **CR 8009** |
| **0.875** | 1.125 | 0.125 | | HM14 R | **CR 8620** |
| | 1.125 | 0.125 | | HM14 V | **CR 8619**[1] |
| | 1.246 | 0.188 | | HM14 R | **CR 8625**[1] |
| | 1.251 | 0.188 | | HM14 R | **CR 8627** |
| | 1.251 | 0.188 | | HM3 R | **CR 8631**[2] |
| | 1.255 | 0.188 | | HM14 R | **CR 8632**[1] |
| | 1.308 | 0.250 | | HM14 R | **CR 8637**[1] |
| | 1.312 | 0.250 | | HM14 R | **CR 8645**[1] |
| | 1.375 | 0.188 | | HM14 R | **CR 8677**[1] |
| | 1.437 | 0.250 | | HM14 R | **CR 8690**[1] |
| | 1.499 | 0.250 | | HM21 R | **CR 8741**[1] |
| | 1.562 | 0.250 | | HM14 R | **CR 8761** |
| | 1.575 | 0.250 | | HM14 R | **CR 8772** |
| | 1.624 | 0.188 | | HM8 R | **CR 8802** |
| **0.938** | 1.375 | 0.250 | | HM14 R | **CR 9243**[1] |
| | 1.499 | 0.250 | | HM14 R | **CR 9298**[1] |
| | 1.734 | 0.250 | | HM14 R | **CR 9354**[1] |
| **1.000** | 1.250 | 0.125 | | HM14 R | **CR 9815**[1] |
| | 1.312 | 0.125 | | HM14 R | **CR 9818**[1] |
| | 1.375 | 0.188 | | HM14 R | **CR 9820**[1] |
| | 1.437 | 0.250 | | HM14 R | **CR 9835**[1] |
| | 1.499 | 0.188 | | HM14 R | **CR 9859**[1] |

[1] SKF Bore Tite Coating
[2] Stainless steel case

| Dimensions | | | | Design and lip material | Designation |
|---|---|---|---|---|---|
| Shaft | Bore | Nominal seal width | Clearance | | |
| $d_1$ | D | b | $B_3$ | | |
| in. | | | | – | – |
| **1.000** | 1.510 | 0.219 | | HM21 R | **CR 9853**[1] |
| cont. | 1.561 | 0.250 | | HM14 R | **CR 9900**[1] |
| | 1.575 | 0.250 | | HM14 R | **CR 9903**[1] |
| | 1.624 | 0.250 | | HM14 R | **CR 9932**[1] |
| | 1.752 | 0.250 | | HM21 R | **CR 9995**[1] |
| | 1.781 | 0.250 | | HM21 R | **CR 530484** |
| | 1.781 | 0.469 | | HM14 R | **CR 10034**[1] |
| | 1.781 | 0.469 | 0.265 | HM18 R | **CR 10035**[1] |
| | 1.851 | 0.250 | | HM14 R | **CR 10074**[1] |
| | 1.938 | 0.250 | | HM14 R | **CR 10112**[1] |
| | 2.000 | 0.250 | | HM21 R | **CR 10153**[1] |
| | 2.250 | 0.250 | | HM14 R | **CR 10172**[1] |
| **1.125** | 1.375 | 0.125 | | HM14 R | **CR 11050** |
| | 1.375 | 0.125 | | HM14 V | **CR 11052**[1] |
| | 1.438 | 0.203 | | HM14 R | **CR 11055**[1] |
| | 1.499 | 0.188 | | HM14 R | **CR 11060**[1] |
| | 1.562 | 0.188 | | HM8 R | **CR 11065** |
| | 1.562 | 0.250 | | HM14 R | **CR 11081** |
| | 1.624 | 0.250 | | HM21 R | **CR 11130**[1] |
| | 1.750 | 0.250 | | HM14 R | **CR 11150**[1] |
| | 1.781 | 0.250 | | HM21 R | **CR 11161**[1] |
| | 1.781 | 0.469 | 0.265 | HM18 R | **CR 11164** |
| | 1.828 | 0.250 | | HM21 R | **CR 11191** |
| | 1.938 | 0.343 | 0.352 | HM14 R | **CR 11269** |
| | 2.000 | 0.250 | | HM21 R | **CR 11334**[1] |
| | 2.047 | 0.250 | | HM21 R | **CR 11352**[1] |
| **1.188** | 2.000 | 0.250 | | HM1 R | **CR 11836** |
| **1.190** | 1.996 | 0.250 | | HM1 R | **CR 11846**[1] |
| **1.250** | 1.500 | 0.125 | | HM14 R | **CR 12330**[1] |
| | 1.624 | 0.250 | | HM14 R | **CR 12325**[1] |
| | 1.625 | 0.188 | | HM14 R | **CR 11096** |
| | 1.686 | 0.188 | | HM14 R | **CR 12334**[1] |
| | 1.752 | 0.188 | | HM21 R | **CR 12361**[1] |
| | 1.752 | 0.250 | | HM21 R | **CR 12369** |
| | 1.828 | 0.188 | | HM8 R | **CR 12375** |
| | 1.874 | 0.250 | | HM21 R | **CR 12379**[1] |
| | 1.968 | 0.438 | | HM14 R | **CR 12398**[1] |
| | 1.968 | 0.469 | 0.254 | HM18 R | **CR 12399**[1] |
| | 1.979 | 0.250 | | HM21 R | **CR 12407**[1] |
| | 1.979 | 0.406 | 0.200 | HM18 R | **CR 12411** |
| | 1.980 | 0.406 | | HMA22 R | **CR 12506**[1] |
| | 1.983 | 0.250 | | HM21 R | **CR 12437** |
| | 2.000 | 0.250 | | HM21 R | **CR 12481**[1] |
| | 2.062 | 0.250 | | HM21 R | **CR 12508**[1] |
| | 2.125 | 0.250 | | HM21 R | **CR 12565**[1] |
| | 2.250 | 0.250 | | HM14 R | **CR 12582**[1] |
| | 2.328 | 0.500 | 0.286 | HM18 R | **CR 12611**[1] |

[1] SKF Bore Tite Coating

## Radial shaft seals – HM and TL seals – inch dimensions
$d_1$ **1.375 – 1.750** in.




Please see **pages 74** to **76** for housing bore requirements.

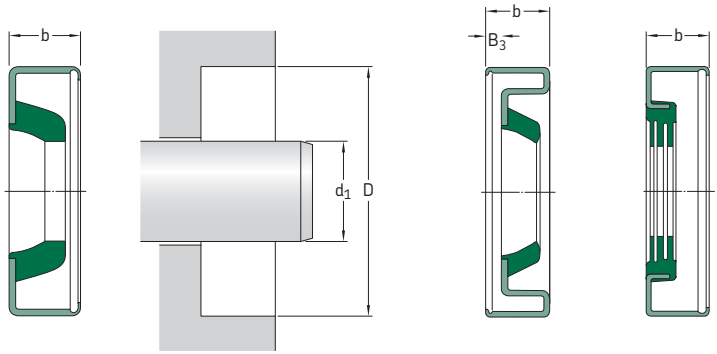
| Dimensions | | | | Design and lip material | Designation |
|---|---|---|---|---|---|
| Shaft | Bore | Nominal seal width | Clearance | | |
| $d_1$ | D | b | $B_3$ | | |
| in. | | | | – | – |
| **1.375** | 1.750 | 0.197 | | HM14 R | **CR 13529** |
| | 1.750 | 0.197 | | HM14 V | **CR 13509**[1] |
| | 1.834 | 0.188 | | HM8 R | **CR 13533**[1] |
| | 1.874 | 0.188 | | HM14 R | **CR 13543** |
| | 1.874 | 0.250 | | HM14 R | **CR 13548**[1] |
| | 1.874 | 0.250 | | HM14 P | **CR 13545**[1] |
| | 1.938 | 0.250 | | HM14 R | **CR 13556**[1] |
| | 2.000 | 0.250 | | HM21 R | **CR 13573**[1] |
| | 2.106 | 0.250 | | HM21 R | **CR 13612**[1] |
| | 2.125 | 0.250 | | HM21 R | **CR 13662**[1] |
| | 2.250 | 0.250 | | HM14 R | **CR 13689**[1] |
| | 2.282 | 0.250 | | HM14 R | **CR 13710**[1] |
| | 2.328 | 0.406 | 0.188 | HM18 R | **CR 13711** |
| | 2.374 | 0.250 | | HM21 R | **CR 13758**[1] |
| | 2.437 | 0.250 | | HM21 R | **CR 13796**[1] |
| | 2.502 | 0.250 | | HM21 R | **CR 13862**[1] |
| | 2.835 | 0.594 | | TL8 R | **CR 13916**[1] |
| **1.438** | 2.000 | 0.125 | | HM4 R | **CR 14209** |
| | 2.250 | 0.250 | | HM14 R | **CR 14257**[1] |
| | 2.437 | 0.250 | | HM21 R | **CR 14359**[1] |
| | 2.437 | 0.250 | | HM21 V | **CR 564365**[1] |
| **1.457** | 2.047 | 0.328 | | HMA11 R | **CR 14600**[2] |
| **1.473** | 1.971 | 0.563 | | HMA10 R | **CR 14631** |
| **1.500** | 1.874 | 0.188 | | HM14 R | **CR 14804** |
| | 1.874 | 0.188 | | HM14 V | **CR 14808**[1] |
| | 1.874 | 0.250 | | HM14 R | **CR 14810**[1] |
| | 1.938 | 0.250 | | HM14 R | **CR 14816**[1] |
| | 1.983 | 0.188 | | HM14 R | **CR 14840** |
| | 1.989 | 0.250 | | HMA22 R | **CR 14848**[1] |

[1] SKF Bore Tite Coating
[2] Press-fit width 0.288 in., axial auxiliary lip

| Dimensions | | | | Design and lip material | Designation |
|---|---|---|---|---|---|
| Shaft | Bore | Nominal seal width | Clearance | | |
| $d_1$ | D | b | $B_3$ | | |
| in. | | | | – | – |
| **1.500** | 2.000 | 0.188 | | HM8 R | **CR 14869** |
| cont. | 2.000 | 0.250 | | HM14 R | **CR 14857**[1] |
| | 2.250 | 0.250 | | HM21 R | **CR 14960** |
| | 2.254 | 0.250 | | HM21 R | **CR 14966**[1] |
| | 2.328 | 0.390 | 0.188 | HM18 R | **CR 14975** |
| | 2.328 | 0.500 | 0.286 | HM18 R | **CR 14974** |
| | 2.374 | 0.250 | | HM21 R | **CR 15032**[1] |
| | 2.437 | 0.250 | | HM14 R | **CR 15080**[1] |
| | 2.502 | 0.250 | | HM21 R | **CR 15160**[1] |
| | 2.623 | 0.250 | | HM21 R | **CR 15190** |
| | 2.716 | 0.250 | | HM21 R | **CR 15209**[1] |
| **1.563** | 2.250 | 0.250 | | HM14 R | **CR 15532**[1] |
| | 2.374 | 0.250 | | HM21 R | **CR 15544**[1] |
| | 2.502 | 0.250 | | HM21 R | **CR 15649**[1] |
| | 2.687 | 0.250 | | HM21 R | **CR 15719**[1] |
| **1.609** | 1.906 | 0.250 | | HM3 R | **CR 16430**[2] |
| **1.625** | 2.125 | 0.250 | | HM14 R | **CR 16055**[1] |
| | 2.250 | 0.250 | | HM21 R | **CR 16065**[1] |
| | 2.328 | 0.438 | 0.235 | HM18 R | **CR 16069**[1] |
| | 2.328 | 0.438 | | TL7 R | **CR 16064** |
| | 2.374 | 0.250 | | HM21 R | **CR 16092**[1] |
| | 2.375 | 0.250 | | HM14 R | **CR 16095** |
| | 2.437 | 0.250 | | HM21 R | **CR 16168**[1] |
| | 2.502 | 0.250 | | HM21 R | **CR 16270**[1] |
| | 2.562 | 0.250 | | HM21 R | **CR 16284**[1] |
| | 2.562 | 0.438 | 0.210 | HM18 R | **CR 16289**[1] |
| | 2.623 | 0.250 | | HM21 R | **CR 16322**[1] |
| | 2.750 | 0.250 | | HM21 R | **CR 16362**[1] |
| | 2.781 | 0.313 | | HM14 R | **CR 16384**[1] |
| **1.660** | 2.440 | 0.594 | | HM11 R | **CR 16520** |
| **1.688** | 2.328 | 0.500 | 0.286 | HM18 R | **CR 16667** |
| | 2.502 | 0.281 | | HM21 R | **CR 16743**[1] |
| | 2.562 | 0.250 | | HM21 R | **CR 16754**[1] |
| **1.750** | 2.250 | 0.188 | | HM14 R | **CR 17240**[1] |
| | 2.374 | 0.250 | | HM21 R | **CR 17277** |
| | 2.437 | 0.250 | | HM21 R | **CR 17310** |
| | 2.441 | 0.250 | | HM21 R | **CR 17340**[1] |
| | 2.441 | 0.250 | | HM21 R | **CR 17341**[1][2] |
| | 2.441 | 0.469 | 0.254 | HM18 R | **CR 17359**[1] |
| | 2.502 | 0.250 | | HM21 R | **CR 17392**[1] |
| | 2.561 | 0.250 | | HM21 R | **CR 17415**[1] |
| | 2.562 | 0.500 | 0.286 | HM18 R | **CR 17406**[1] |
| | 2.623 | 0.250 | | HM21 R | **CR 17461** |
| | 2.716 | 0.250 | | HM21 R | **CR 17488**[1] |
| | 2.718 | 0.359 | 0.160 | HM18 R | **CR 17617**[1] |
| | 2.718 | 0.359 | | TL7 R | **CR 17618** |
| | 2.750 | 0.250 | | HM21 R | **CR 17544**[1] |
| | 2.830 | 0.375 | | HM21 R | **CR 17633**[1] |
| | 2.875 | 0.250 | | HM21 R | **CR 17671**[1] |
| | 2.875 | 0.500 | | TL7 R | **CR 17674** |

[1] SKF Bore Tite Coating
[2] Stainless steel case

## Radial shaft seals – HM and TL seals – inch dimensions
$d_1$ **1.750 – 2.500** in.




Please see **pages 74** to **76** for housing bore requirements.

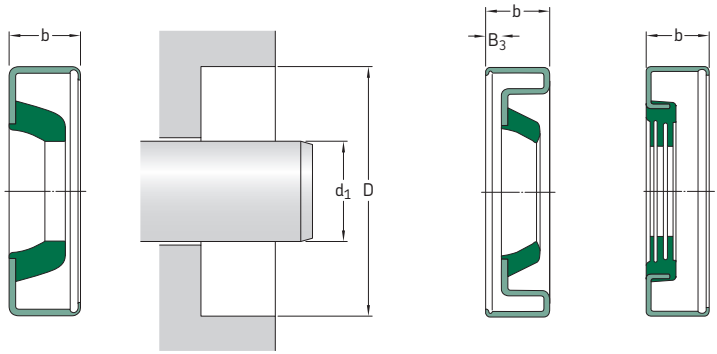
| Dimensions | | | | Design and lip material | Designation |
|---|---|---|---|---|---|
| Shaft | Bore | Nominal seal width | Clearance | | |
| $d_1$ | D | b | $B_3$ | | |
| in. | | | | – | – |
| **1.750** | 3.000 | 0.250 | | HM21 R | **CR 17702**[1] |
| cont. | 3.149 | 0.290 | | TL6 R | **CR 17724** |
| **1.781** | 2.126 | 0.250 | | HM14 R | **CR 17802**[2] |
| **1.811** | 2.697 | 0.295 | | HMA8 R | **CR 17955** |
| **1.813** | 2.562 | 0.438 | 0.224 | HM18 R | **CR 18050**[1] |
| | 2.719 | 0.270 | | TL7 R | **CR 18127** |
| | 2.965 | 0.250 | | HM1 R | **CR 18258** |
| **1.875** | 2.502 | 0.250 | | HM21 R | **CR 18558**[1] |
| | 2.623 | 0.250 | | HM21 R | **CR 18591**[1] |
| | 2.750 | 0.250 | | HM21 R | **CR 18659**[1] |
| | 2.780 | 0.250 | | HM21 R | **CR 18704**[1] |
| | 2.875 | 0.250 | | HM21 R | **CR 18750**[1] |
| | 2.997 | 0.250 | | HM14 R | **CR 18808**[1] |
| | 3.000 | 0.250 | | HM21 R | **CR 18823**[1] |
| | 3.150 | 0.250 | | HM21 R | **CR 18889**[1] |
| **1.938** | 2.502 | 0.281 | | HM14 R | **CR 19219**[1] |
| | 2.875 | 0.250 | | HM21 R | **CR 19306**[1] |
| | 2.686 | 0.594 | | TL8 R | **CR 19251**[1] |
| **1.945** | 2.892 | 0.294 | | TL6 R | **CR 19510**[1] |
| **1.970** | 2.362 | 0.158 | | HM14 D | **CR 532627** |
| **2.000** | 2.371 | 0.250 | | HM14 R | **CR 19737**[1] |
| | 2.375 | 0.188 | | HM14 R | **CR 19733** |
| | 2.500 | 0.250 | | HM1 R | **CR 19748** |
| | 2.502 | 0.250 | | HM14 R | **CR 19754**[1] |

[1] SKF Bore Tite Coating
[2] Stainless steel case

| Dimensions | | | | Design and lip material | Designation |
|---|---|---|---|---|---|
| Shaft | Bore | Nominal seal width | Clearance | | |
| $d_1$ | D | b | $B_3$ | | |
| in. | | | | – | – |
| **2.000** | 2.623 | 0.250 | | HM21 R | **CR 19763**[1] |
| cont. | 2.623 | 0.250 | | HM21 V | **CR 19746**[1] |
| | 2.631 | 0.272 | | HMA94 R | **CR 20016**[2] |
| | 2.635 | 0.234 | | HM14 R | **CR 19770**[1] |
| | 2.686 | 0.250 | | HM21 R | **CR 19783**[1] |
| | 2.750 | 0.250 | | HM21 R | **CR 19834**[1] |
| | 2.752 | 0.188 | | HM14 R | **CR 19820**[1] |
| | 2.875 | 0.250 | | HM21 R | **CR 19880**[1] |
| | 2.965 | 0.313 | | HM14 R | **CR 19940**[1] |
| | 2.965 | 0.500 | 0.275 | HM14 R | **CR 19938**[1] |
| | 2.997 | 0.250 | | HM21 R | **CR 19965** |
| | 3.000 | 0.250 | | HM21 R | **CR 20006**[1] |
| | 3.061 | 0.250 | | HM21 R | **CR 20044**[1] |
| | 3.148 | 0.250 | | HM14 R | **CR 20078** |
| | 3.623 | 0.250 | | HM21 R | **CR 20148** |
| **2.063** | 3.149 | 0.500 | | TL6 D | **CR 20672**[1][3] |
| | 3.150 | 0.266 | | TL7 R | **CR 20674** |
| **2.094** | 2.718 | 0.359 | 0.160 | HM18 R | **CR 20952**[1] |
| | 2.750 | 0.250 | | HM21 R | **CR 20920**[1] |
| **2.125** | 2.750 | 0.250 | | HM21 R | **CR 21059**[1] |
| | 2.875 | 0.250 | | HM14 R | **CR 21101**[1] |
| | 2.891 | 0.250 | | HM14 R | **CR 21121**[1] |
| | 3.000 | 0.250 | | HM21 R | **CR 21159**[1] |
| | 3.061 | 0.250 | | HM21 R | **CR 21208**[1] |
| | 3.189 | 0.250 | | HM21 R | **CR 21265**[1] |
| **2.240** | 3.189 | 0.610 | | HM14 R | **CR 22614**[1] |
| **2.250** | 2.625 | 0.188 | | HM14 R | **CR 22306**[1] |
| | 2.875 | 0.250 | | HM21 R | **CR 22325** |
| | 3.000 | 0.250 | | HM21 R | **CR 22368**[1] |
| | 3.061 | 0.250 | | HM21 R | **CR 22392** |
| | 3.125 | 0.563 | 0.214 | HM18 R | **CR 22411** |
| | 3.251 | 0.250 | | HM21 R | **CR 22468** |
| | 3.440 | 0.250 | | HM14 R | **CR 22565**[1] |
| **2.297** | 3.148 | 0.359 | 0.185 | HM18 R | **CR 22870** |
| **2.313** | 3.000 | 0.250 | | HM14 R | **CR 23035**[1] |
| | 3.065 | 0.281 | | HM1 R | **CR 23050** |
| | 3.500 | 0.250 | | HM21 R | **CR 23240**[1] |
| **2.375** | 2.997 | 0.250 | | HM21 R | **CR 23630**[1] |
| | 3.000 | 0.250 | | HM21 R | **CR 23640** |
| | 3.350 | 0.250 | | HM21 R | **CR 23725**[1] |
| | 3.543 | 0.250 | | HM21 R | **CR 23815**[1] |
| **2.500** | 3.000 | 0.313 | | HM1 R | **CR 24865** |
| | 3.000 | 0.250 | | HM14 R | **CR 24863**[1] |
| | 3.125 | 0.250 | | HM21 R | **CR 24875**[1] |
| | 3.150 | 0.250 | | HM21 R | **CR 24880**[1] |
| | 3.251 | 0.250 | | HM21 R | **CR 24904**[1] |
| | 3.500 | 0.250 | | HM21 R | **CR 25007**[1] |

[1] SKF Bore Tite Coating
[2] Press-fit width 0.257 in.
[3] Press-fit width 0.395 in.

## Radial shaft seals – HM and TL seals – inch dimensions
$d_1$ **2.625 – 9.500** in.




Please see **pages 74** to **76** for housing bore requirements.

| Dimensions Shaft $d_1$ | Bore D | Nominal seal width b | Clearance $B_3$ | Design and lip material | Designation |
|---|---|---|---|---|---|
| in. | | | | – | – |
| **2.625** | 3.371 | 0.250 | | HM14 R | **CR 26144**[1] |
| | 3.623 | 0.250 | | HM21 R | **CR 26260**[1] |
| | 3.751 | 0.715 | | TL4 RR | **CR 26289**[2] |
| | 3.813 | 0.415 | | TL5 R | **CR 26310**[3] |
| **2.748** | 3.543 | 0.591 | | HM-SPL P | **CR 27486** |
| **2.750** | 3.125 | 0.188 | | HM1 R | **CR 27210** |
| | 3.250 | 0.313 | | HM1 R | **CR 27225** |
| | 3.500 | 0.250 | | HM14 R | **CR 27271**[1] |
| | 3.500 | 0.250 | | HM14 V | **CR 546751**[1] |
| | 3.751 | 0.250 | | HM21 R | **CR 27394**[1] |
| **2.875** | 3.751 | 0.250 | | HM21 R | **CR 28700**[1] |
| | 3.876 | 0.188 | | HM1 R | **CR 28725**[1] |
| | 3.876 | 0.250 | | HM21 R | **CR 28751**[1] |
| | 4.003 | 0.250 | | HM21 R | **CR 28800**[1] |
| **2.953** | 4.724 | 0.320 | | TL1 R | **CR 29590**[1] |
| **3.000** | 3.500 | 0.313 | | HM1 R | **CR 29840** |
| | 3.623 | 0.250 | | HM14 R | **CR 29850** |
| | 3.751 | 0.250 | | HM21 R | **CR 29863**[1] |
| | 4.000 | 0.250 | | HM21 V | **CR 539075** |
| | 4.003 | 0.250 | | HM21 R | **CR 29968** |
| | 4.249 | 0.250 | | HM21 R | **CR 30049**[1] |
| **3.125** | 3.751 | 0.250 | | HMA1 R | **CR 31129**[1] |
| | 4.125 | 0.250 | | HMA1 R | **CR 31192** |
| **3.250** | 3.750 | 0.250 | | HMA1 R | **CR 32325**[1] |
| | 4.249 | 0.250 | | HM14 R | **CR 32412**[1] |
| | 4.501 | 0.250 | | HM21 R | **CR 32510**[1] |

[1] SKF Bore Tite Coating
[2] Press-fit width 0.640 in.
[3] Press-fit width 0.300 in.

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| Dimensions Shaft $d_1$ | Bore D | Nominal seal width b | Clearance $B_3$ | Design and lip material | Designation |
|---|---|---|---|---|---|
| in. | | | | – | – |
| **3.500** | 4.000 | 0.300 | | HM1 R | **CR 34835** |
| | 4.003 | 0.250 | | HM14 R | **CR 34840**[1] |
| | 4.125 | 0.250 | | HM14 R | **CR 34848** |
| | 4.125 | 0.250 | | HM14 V | **CR 546770**[1] |
| | 4.450 | 0.531 | | HM12 R | **CR 34885** |
| | 4.501 | 0.250 | | HM21 R | **CR 34967** |
| | 4.751 | 0.250 | | HM21 R | **CR 35042**[1] |
| **3.750** | 4.376 | 0.250 | | HM14 R | **CR 37320**[1] |
| | 4.376 | 0.250 | | HM14 V | **CR 37325**[1] |
| **4.000** | 4.501 | 0.250 | | HM14 R | **CR 39835**[1] |
| | 4.501 | 0.250 | | HM14 V | **CR 546387**[1] |
| | 4.876 | 0.250 | | HM21 R | **CR 39860**[1] |
| | 4.999 | 0.250 | | HM21 R | **CR 39961**[1] |
| **4.250** | 4.813 | 0.313 | | HM14 R | **CR 42340** |
| | 5.126 | 0.250 | | HM21 R | **CR 42380**[1] |
| | 5.251 | 0.250 | | HM21 R | **CR 42470**[1] |
| **4.500** | 5.501 | 0.250 | | HM14 R | **CR 45025** |
| **4.750** | 5.375 | 0.313 | | HM14 R | **CR 47378**[1] |
| **4.875** | 5.501 | 0.250 | | HM14 R | **CR 48650** |
| **5.000** | 6.250 | 0.250 | | HM21 R | **CR 50070**[1] |
| **5.250** | 6.250 | 0.250 | | HM4 R | **CR 52475** |
| **5.750** | 6.375 | 0.250 | | HMA1 R | **CR 57502** |
| | 7.003 | 0.250 | | HMA21 R | **CR 57571** |
| **6.000** | 7.500 | 0.250 | | HM4 R | **CR 60075** |
| **6.374** | 8.749 | 0.421 | | HMA96 R | **CR 181948** |
| **7.938** | 8.750 | 0.344 | | HM14 R | **CR 79302** |
| **9.500** | 10.750 | 0.313 | | HM21 R | **CR 95052** |




[1] SKF Bore Tite Coating

## X seals, sealing against housing bore

SKF offers an assortment of radial shaft seals that have a press fit on the shaft and with sealing lip(s) that contact the housing bore. These seals are generally installed with the sealing lip(s) facing outward to provide optimum exclusion. Main applications are greased lubricated agriculture machinery. The selection to the right shows the most commonly used SKF designs. Contact SKF for more information on available designs.

See **matrix 1** on **pages 90** and **91** for general permissible operating conditions.

X1



X2



X4



X12



X13



X14



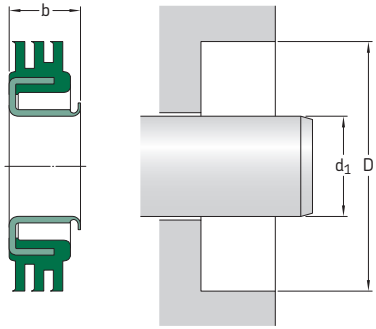
X15



XH15



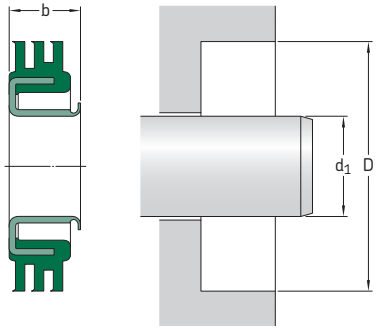
## Radial shaft seals – X seals – metric dimensions
$d_1$ **25,40 – 82,55** mm




Please see **pages 74** to **76** for housing bore requirements.

| **Dimensions** Shaft $d_1$ | Bore D | Nominal seal width b | **Design and lip material** | **Designation** |
|---|---|---|---|---|
| mm | | | – | – |
| **25,40** | 59,84 | 6,86 | X15 R | **CR 538266** |
| **38,10** | 55,55 | 12,70 | X1 L | **CR 14896** |
| | 58,06 | 6,86 | X15 R | **CR 14970** |
| | 58,06 | 10,67 | XH15 R | **CR 14971** |
| | 62,53 | 7,37 | X13 R | **CR 15174** |
| **39,70** | 56,82 | 7,37 | X4 R | **CR 15530** |
| | 64,29 | 7,24 | X15 R | **CR 15660** |
| | 69,85 | 11,13 | X R | **CR 15702** |
| **41,28** | 62,53 | 6,35 | X15 R | **CR 16286** |
| **42,88** | 67,31 | 7,37 | X4 R | **CR 16818** |
| **44,45** | 69,04 | 7,47 | X4 R | **CR 17485** |
| | 70,76 | 7,47 | X15 R | **CR 17620** |
| **46,05** | 61,16 | 7,62 | X15 R | **CR 18030** |
| **47,57** | 68,99 | 7,14 | X13 R | **CR 18630** |
| **50,57** | 73,66 | 7,37 | X4 R | **CR 19720** |
| **50,80** | 71,17 | 6,35 | X15 D | **CR 19844** |
| | 73,03 | 6,50 | XHM R | **CR 19882** |
| **53,98** | 82,55 | 6,86 | X15 R | **CR 21298** |
| **57,15** | 86,36 | 7,47 | X15 R | **CR 22563** |
| **63,40** | 93,27 | 7,95 | X15 R | **CR 25078** |
| **76,20** | 101,60 | 12,70 | X2 L | **CR 29900** |
| | 114,94 | 9,53 | X12 R | **CR 30108** |
| **80,00** | 101,45 | 15,00 | X15 R | **CR 31514** |
| **82,55** | 113,49 | 8,00 | X4 R | **CR 32437** |
| | 114,30 | 7,95 | X15 R | **CR 32441** |

## Radial shaft seals – X seals – metric dimensions
$d_1$ **86,36 – 158,75** mm



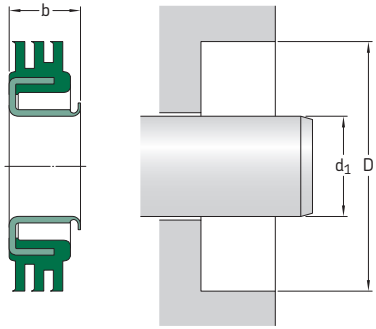

Please see **pages 74** to **76** for housing bore requirements.

| **Dimensions** Shaft $d_1$ | Bore D | Nominal seal width b | **Design and lip material** | **Designation** |
|---|---|---|---|---|
| mm | | | – | – |
| **86,36** | 114,30 | 7,14 | X14 V | **CR 34000**[1] |
| **92,08** | 114,30 | 7,47 | X15 R | **CR 36172** |
| **98,43** | 136,91 | 9,53 | X12 R | **CR 38590** |
| **101,60** | 147,65 | 12,70 | X R | **CR 40131** |
| **111,13** | 136,47 | 14,48 | X1 P | **CR 44269** |
| **114,30** | 152,78<br>162,79 | 13,97<br>10,54 | X12 R<br>X12 D | **CR 44892**<br>**CR 45161** |
| **120,65** | 152,45 | 7,62 | X15 R | **CR 47455** |
| **139,70** | 172,21 | 9,65 | X R | **CR 55152** |
| **158,75** | 196,85 | 8,89 | X R | **CR 62530** |

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[1] SKF Bore Tite Coating on inside diameter
Shaft tolerance should conform to bore requirements specified on **pages 74** to **76** to maintain proper press fit.

## Radial shaft seals – X seals – inch dimensions
$d_1$ **1.000 – 3.250** in.

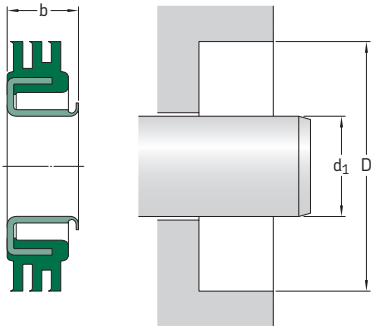



Please see **pages 74** to **76** for housing bore requirements.

| **Dimensions** Shaft $d_1$ | Bore D | Nominal seal width b | **Design and lip material** | **Designation** |
|---|---|---|---|---|
| in. | | | – | – |
| **1.000** | 2.356 | 0.270 | X15 R | **CR 538266** |
| **1.500** | 2.187 | 0.500 | X1 L | **CR 14896** |
| | 2.286 | 0.270 | X15 R | **CR 14970** |
| | 2.286 | 0.420 | XH15 R | **CR 14971** |
| | 2.462 | 0.290 | X13 R | **CR 15174** |
| **1.563** | 2.237 | 0.290 | X4 R | **CR 15530** |
| | 2.531 | 0.285 | X15 R | **CR 15660** |
| | 2.684 | 0.438 | X R | **CR 15702** |
| **1.625** | 2.462 | 0.250 | X15 R | **CR 16286** |
| **1.688** | 2.650 | 0.290 | X4 R | **CR 16818** |
| **1.750** | 2.718 | 0.294 | X4 R | **CR 17485** |
| | 2.786 | 0.294 | X15 R | **CR 17620** |
| **1.813** | 2.408 | 0.300 | X15 R | **CR 18030** |
| **1.873** | 2.716 | 0.281 | X13 R | **CR 18630** |
| **1.991** | 2.900 | 0.290 | X4 R | **CR 19720** |
| **2.000** | 2.802 | 0.250 | X15 D | **CR 19844** |
| | 2.875 | 0.256 | XHM R | **CR 19882** |
| **2.125** | 3.250 | 0.270 | X15 R | **CR 21298** |
| **2.250** | 3.400 | 0.294 | X15 R | **CR 22563** |
| **2.496** | 3.672 | 0.313 | X15 R | **CR 25078** |
| **3.000** | 4.000 | 0.500 | X2 L | **CR 29900** |
| | 4.525 | 0.375 | X12 R | **CR 30108** |
| **3.150** | 3.994 | 0.591 | X15 R | **CR 31514** |
| **3.250** | 4.468 | 0.315 | X4 R | **CR 32437** |
| | 4.500 | 0.313 | X15 R | **CR 32441** |

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## Radial shaft seals – X seals – inch dimensions
$d_1$ **3.400 – 6.250** in.




Please see **pages 74** to **76** for housing bore requirements.

| **Dimensions** Shaft $d_1$ | Bore D | Nominal seal width b | **Design and lip material** | **Designation** |
|---|---|---|---|---|
| in. | | | – | – |
| **3.400** | 4.500 | 0.281 | X14 V | **CR 34000**[1] |
| **3.625** | 4.500 | 0.294 | X15 R | **CR 36172** |
| **3.875** | 5.390 | 0.375 | X12 R | **CR 38590** |
| **4.000** | 5.813 | 0.500 | X R | **CR 40131** |
| **4.375** | 5.373 | 0.570 | X1 P | **CR 44269** |
| **4.500** | 6.015<br>6.409 | 0.550<br>0.415 | X12 R<br>X12 D | **CR 44892**<br>**CR 45161** |
| **4.750** | 6.002 | 0.300 | X15 R | **CR 47455** |
| **5.500** | 6.780 | 0.380 | X R | **CR 55152** |
| **6.250** | 7.750 | 0.350 | X R | **CR 62530** |

[1] SKF Bore Tite Coating on inside diameter
Shaft tolerance should conform to bore requirements specified on **pages 74** to **76** to maintain proper press fit.

**Seals for heavy industrial applications, selected main designs**

| Standard design (preferred design) | Other basic designs | Material code | Operating temperature range | | | | Pressure differential |
|---|---|---|---|---|---|---|---|
| | | | from | to | from | to | |
| | | – | °C | | °F | | MPa *(psi)* |
|  HDS7 |  HDS6 | R<br>D<br>H<br>V (HDS6 only) | –40<br>–40<br>–40<br>–40 | +100<br>+100<br>+150<br>+200 | *–40*<br>*–40*<br>*–40*<br>*–40* | *+210*<br>*+210*<br>*+300*<br>*+390* | 0 |
|  HDL |  HDLA | R<br>H<br>V | –40<br>–40<br>–40 | +100<br>+150<br>+200 | *–40*<br>*–40*<br>*–40* | *+210*<br>*+300*<br>*+390* | 0,1<br>*(15)* |
|  SBF | | R<br>V | –40<br>–40 | +100<br>+200 | *–40*<br>*–40* | *+210*<br>*+390* | 0,1<br>*(15)* |
|  HDS2 |  HDS1  HDS4 | R<br>D<br>H<br>V | –40<br>–40<br>–40<br>–40 | +100<br>+100<br>+150<br>+200 | *–40*<br>*–40*<br>*–40*<br>*–40* | *+210*<br>*+210*<br>*+300*<br>*+390* | 0,1<br>*(15)* |
|  HDSA2 |  HDSA1  HDSB2  HDSB1  HDSC2  HDSC1 | R<br>D<br>H<br>V | –40<br>–40<br>–40<br>–40 | +100<br>+100<br>+150<br>+200 | *–40*<br>*–40*<br>*–40*<br>–40 | *+210*<br>*+210*<br>*+300*<br>*+390* | 0,1<br>*(15)* |
|  HDSE2 |  HDSE1  HDSD2  HDSD1 | R<br>D<br>H<br>V | –40<br>–40<br>–40<br>–40 | +100<br>+100<br>+150<br>+200 | *–40*<br>*–40*<br>*–40*<br>*–40* | *+210*<br>*+210*<br>*+300*<br>*+390* | 0,1<br>*(15)* |

| **Shaft-to-bore misalignment** (STBM) TIR | **Dynamic runout** (DRO) TIR | **Maximum shaft surface speed** | **Ease of installation** | **Retention and exclusion ability** |
|---|---|---|---|---|
| mm *(in.)* | mm *(in.)* | m/s *(ft/min)* | – | – |
| 1,6<br>*(0.062)* | 2,4<br>*(0.093)* | 25<br>*(4 900)* | Excellent | Highly effective exclusion of water and solid contaminants and excellent retention of grease |
| 2,5<br>*(0.1)* | 2,4<br>*(0.093)* | 24<br>*(4 700)*<br>25<br>*(4 900)*<br>35<br>*(6 900)* | Good | Excellent retention of light oils, even at high surface speeds and misalignment |
| 1,5<br>*(0.06)* | 2,4<br>*(0.093)* | 25<br>*(4 900)* | Excellent | Excellent oil or grease retention |
| 1,6<br>*(0.062)* | 2,4<br>*(0.093)* | 25<br>*(4 900)* | HDS2, HDS4:<br>Excellent<br><br>HDS1:<br>Good | Excellent oil or grease retention |
| 1,6<br>*(0.062)* | 2,4<br>*(0.093)* | 25<br>*(4 900)* | Excellent to good, varies with equipment design | HDSA/B: Excellent oil or grease retention and exclusion of light to moderate contaminants<br><br>HDSC: Good grease retention, increased protection against contaminants |
| 1,6<br>*(0.062)* | 2,4<br>*(0.093)* | 25<br>*(4 900)* | HDSD2/HDSE2:<br>Excellent<br><br>HDSD1/HDSE1:<br>Good | Excellent oil or grease retention and exclusion of light to moderate contaminants or separation of two media<br><br>Good grease retention, increased protection against contaminants |

Continued →

**Seals for heavy industrial applications, selected main designs**

| Standard design (preferred design) | Other basic designs | Material code | Operating temperature range | | | | Pressure differential |
|---|---|---|---|---|---|---|---|
| | | | from | to | from | to | |
| | | – | °C | | °F | | MPa *(psi)* |
|  HS5 |  HS4 | R<br>D<br>H<br>V | –40<br>–40<br>–40<br>–40 | +100<br>+100<br>+150<br>+200 | *–40*<br>*–40*<br>*–40*<br>*–40* | *+210*<br>*+210*<br>*+300*<br>*+390* | 0,07<br>*(11)* |
|  HS8 |  HS6 |  HS7 | R<br>D<br>H<br>V | –40<br>–40<br>–40<br>–40 | +100<br>+100<br>+150<br>+200 | *–40*<br>*–40*<br>*–40*<br>*–40* | *+210*<br>*+210*<br>*+300*<br>*+390* | 0 |
|  HSF5 |  HSF6 |  HSF7 | R<br>V | –40<br>–40 | +100<br>+100 | *–40*<br>*–40* | *+210*<br>*+390* | 0,03<br>*(5)* |
| |  HSF8 |  HSF9 | | | | | | |
|  HSF1 |  HSF2 |  HSF3 | R<br>V | –40<br>–40 | +100<br>+200 | *–40*<br>*–40* | *+210*<br>*+390* | 0 |
| |  HSF4 | | | | | | | |

| **Shaft-to-bore misalignment** (STBM) TIR | **Dynamic runout** (DRO) TIR | **Maximum shaft surface speed** | **Ease of installation** | **Retention and exclusion ability** |
|---|---|---|---|---|
| mm *(in.)* | mm *(in.)* | m/s *(ft/min)* | – | – |
| 1,6<br>*(0.062)* | 2,4<br>*(0.093)* | HS4: 15 *(2 950)*<br>HS5: 13 *(2 560)* | Good | HS4, HS5: Good oil retention |
| 1,6<br>*(0.062)* | 2,4<br>*(0.093)* | HS6: 10 *(1 970)*<br>HS7: 7,5 *(1 480)*<br>HS8: 10 *(1 970)* | HS6: Fair<br>HS7: Excellent<br>HS8: Good | HS6, HS8: Good to excellent oil or grease retention<br>HS7: Good (grease retention only) |
| 1,5<br>*(0.06)* | 2,4<br>*(0.093)* | 15 *(2 950)*<br>depending on the operating conditions | Good to excellent | Excellent oil retention |
| 1,5<br>*(0.06)* | 2,4<br>*(0.093)* | 15 *(2 950)*<br>depending on the operating conditions | Fair to good depending on the available space for installation | Good to excellent oil retention |

# Seals for heavy industrial applications

## General

Heavy industries like metal, construction, wind energy, forestry, mining and pulp and paper provide a challenging environment for radial shaft seals. Operating within a wide range of speeds, temperatures and environmental conditions, these seals need to reliably retain lubricants while preventing harsh contaminants from entering the system.

SKF seals for heavy industrial applications are available in a wide assortment of designs and materials to meet the varying demands of each challenging application. The assortment includes heavy-duty metal-cased seals, rubber outside diameter seals with metal inserts or fabric-reinforcement and all-rubber seals. To simplify seal selection, **table 18** on **page 217** can be used for general guidance. See also **matrix 2** on **pages 202** to **205**.

## Metal-cased seals

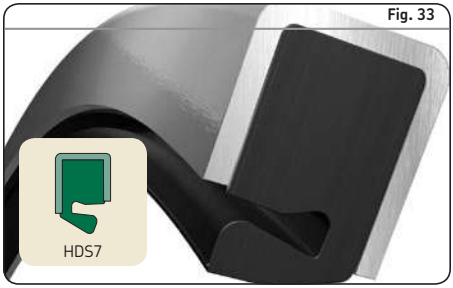
### General

SKF metal-cased seals are specially designed to withstand the extreme conditions encountered in heavy-duty applications. The designs include the highly engineered HDS7, the high-performance HDL seals and the commonly used HDS1 and HDS2 seals as well as the HDSA, B, C, D and E seals. These seals perform exceptionally well in the very contaminated environment of metal rolling mills, the high-speed and high-temperature environment of paper mills, as well as more universal applications like industrial gearboxes.

### HDS7

The ingress of water and solid contaminants is a common cause of bearing failures. To solve this, SKF developed the HDS7 seal with enhanced exclusion capabilities (→ **fig. 33**). It was originally designed for grease lubricated bearings in rolling mill stands, where water and scale are a constant threat to bearing service life. The HDS7 is also recommended for use in large gearboxes, coal pulverizers and cement grinders. Customers have reported that the HDS7 seal is easier to install and provides longer service life than similar seal designs.

Fig. 33




The HDS7 seal features an optimized non-spring-loaded lip profile, designed to retain grease and aggressively pump contaminants away from the lip. The lip concept of HDS7 seals also reduces radial loads, which otherwise can lead to elevated underlip temperatures and increased seal wear.

HDS7 seals can also be equipped with a PTFE auxiliary lip positioned and directed as shown in **fig. 43** on **page 210** and/or with an elastomer applied to the metal outside diameter (→ **fig. 44** on **page 210**).

The HDS7 seal is available with a nitrile sealing lip for general use, SKF Duralip for increased wear resistance in abrasive environments and SKF Duratemp that combines improved wear resistance with increased temperature capability. For certain applications, SKF Duralife can also be specified. See **page 30** for additional information about different sealing lip materials.

Spacer lugs are available as an option. See **page 215** for additional information.

HDS7 seals are available for all shaft diameters within the ranges listed in **table 19** on **page 218**. The product tables, starting on **page 220**, list a selection of available sizes. Contact your SKF sales representative for additional information regarding availability.

### HDL seals

HDL seals (→ **fig. 34**) are premium metal-cased radial shaft seals for oil lubricated applications. They are specially designed for tough operating conditions including high speeds and temperatures, considerable runout and/or misalignment. The high-speed performance characteristics of HDL seals make them an excellent choice for the severe operating conditions encountered in the rolls of paper-making machines.

HDL seals feature the combination of a stainless steel garter spring and individual stainless steel finger springs around the entire circumference of the seal. This spring combination enables the seal to work effectively and provides long service life, even under severe operating conditions.

HDLA seals are designed with an elastomeric auxiliary lip for added protection against contaminants.

Both HDL and HDLA seals are available with a sealing lip made of either nitrile rubber, hydrogenated nitrile rubber or fluoro rubber (→ **page 31**). These materials enable the seals to perform well under a variety of operating speeds and temperatures. Fixed-width spacer lugs are available for both HDL and HDLA seals on a quotation basis.

A selection of available sizes is listed in the product tables starting on **page 230**. Contact your SKF sales representative for additional information regarding availability.

### HDS1 and HDS2

The most commonly used metal-cased seals are the HDS1 and HDS2 seals, designed for general-purpose applications. They are equipped with a heavy-duty metal case and a stainless steel garter spring.

The HDS1 seal (→ **fig. 35**) has a spring installed in the SKF Springlock groove (→ **fig. 57** on **page 216**). For blind installations, where spring displacement may go undetected, HDS2 seals (→ **fig. 36**) have an SKF Springcover (→ **fig. 58** on **page 216**) that retains the spring in the groove. The HDS1 and HDS2 seals are available with adjustable or fixed-width spacer lugs (→ **page 215**).

The HDS1 and HDS2 seals can be designed with a PTFE auxiliary lip, positioned and directed in either of the two ways shown in **figs. 42** and **43** and/or with an elastomer applied to the metal outside diameter (→ **fig. 44** on **page 210**).

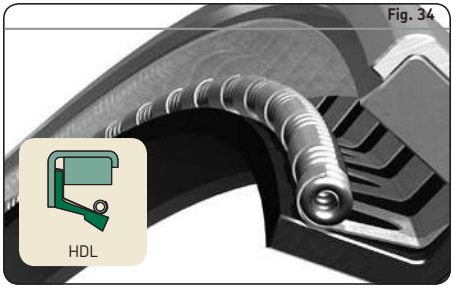


Fig. 34

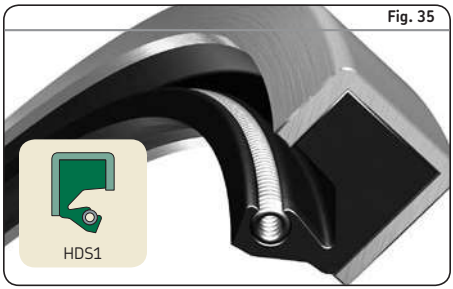


Fig. 35

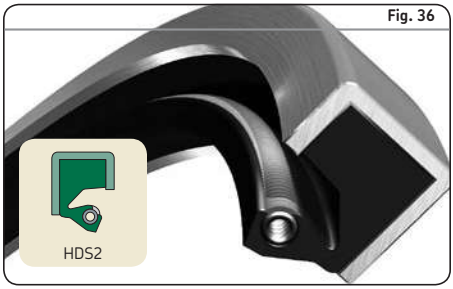


Fig. 36

Nitrile rubber is standard for these seal designs, but both of them are also available in SKF Duralip, SKF Duratemp and SKF Duralife.

The HDS1 and HDS2 seals are available for all shaft diameters within the ranges listed in **table 19** on **page 218**. The product tables starting on **page 246** list a selection of available sizes. Contact your SKF sales representative for additional information regarding availability.

### HDSA, HDSB and HDSC seals

HDSA, HDSB and HDSC seals are designed with an elastomeric auxiliary lip in addition to the sealing lip (→ **figs. 37** to **39**). They are generally used where additional protection from contaminants is needed and where there is insufficient space for more than one seal.

The chamfer on the auxiliary lip of an HDSA seal faces the sealing lip, enabling easier shaft installation from the sealing lip direction. The chamfer of the auxiliary lip of HDSB seals faces away from the sealing lip, enabling easier shaft installation from the other direction. The disadvantage is, however, a slightly reduced exclusion ability. The auxiliary lip of HDSC seals is located in front of the sealing lip with its chamfer facing the sealing lip to provide maximum exclusion ability.

HDSA2, HDSB2 and HDSC2 seals are designed with an SKF Springcover, while HDSA1, HDSB1, HDSC1 seals are designed without an SKF Springcover (→ **fig. 58** on **page 216**).

HDSA, HDSB and HDSC seals can also be designed with an elastomer applied to the metal outside diameter (→ **fig. 44** on **page 210**).

HDSA, HDSB and HDSC seals are available with sealing lips made of nitrile rubber, SKF Duralip, SKF Duratemp or SKF Duralife. For shaft diameters up to 1 200 mm *(47 in.)*, the standard auxiliary lip is made of SKF Duralip.

These seals are available for all shaft diameters within the ranges listed in **table 19** on **page 218**. Also, see the product tables starting on **page 268** for a selection of available sizes. Contact your SKF sales representative for additional information regarding availability.

**Fig. 37**




**Fig. 38**




**Fig. 39**



### HDSD and HDSE seals

HDSD seals (→ **fig. 40**) are designed with two sealing lips facing opposite directions. These seals are typically used in applications where two fluids must be kept separated. When using an HDSD seal, it is very important to provide a means to lubricate the sealing lips. To do this, the cavity between the sealing lips must be filled with grease prior to installation and/or during operation via lubrication holes drilled through the metal case into the cavity.

HDSE seals (→ **fig. 41**) feature two sealing lips facing the same direction. They are typically used when a back-up seal would otherwise be needed for retention or exclusion purposes. Like HDSD seals, HDSE seals must be equipped with a means to lubricate the sealing lips so that the seal functions properly.

HDSD and HDSE seals are available with an SKF Springcover (HDSD2, HDSE2) or without an SKF Springcover (HDSD1, HDSE1) (→ **fig. 58** on **page 216**). All of them are available in nitrile rubber, SKF Duralip, SKF Duratemp or SKF Duralife.

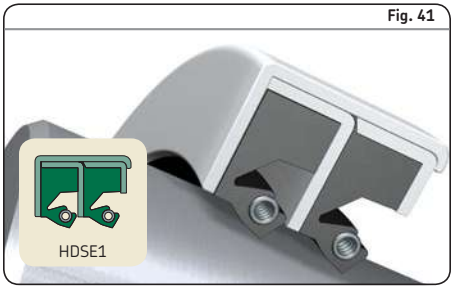
HDSE seals can also be designed with a PTFE auxiliary lip positioned and directed in either of the two ways shown in **figs. 42** and **43** on **page 210**.

HDSD and HDSE seals are available for all shaft diameters within the ranges listed in **table 19** on **page 218**. The product tables starting on **page 274** list a selection of available sizes. Contact your SKF sales representative for additional information regarding availability.

**Fig. 40**




**Fig. 41**



### Additional design options

HDS1, HDS2, HDS7 and HDSE seals can be designed with an auxiliary PTFE lip to further protect the bearing and sealing lip(s) from dust particles in heavily contaminated environments, for example mining and cement industries. The PTFE lip is then positioned and directed as shown in **fig. 42**.

The PTFE lip can also be positioned and directed to provide additional lubricant retention (→ **fig. 43**).

The PTFE lip is clamped between the metal case and the rubber seal body without significantly increasing the total seal width. It has very good chemical and wear resistance, can withstand dry running and contributes to improved sealing performance while only generating a minimal friction torque. The combination of a PTFE auxiliary lip and a sealing lip made of the fluoro rubber compound SKF Duralife, developed by SKF, creates a particularly effective sealing solution.

Special care must be taken to prevent damaging the PTFE lip during installation. Refer to instructions in paragraph *PTFE seals* on **page 85**.

The letters F and H in the product name indicate a PTFE auxiliary lip design including the lip's position and direction; see for example the HDSF2 (→ **fig. 42**) and HDSH2 (→ **fig. 43**).

HDS1, HDS2 and HDS7 seals (with or without an auxiliary PTFE lip) as well as the HDSA, HDSB and HDSC seals are available with an elastomer applied to the outside diameter for use in applications where bore temperatures reach maximum 100 °C *(210 °F)* (→ **fig. 44**). This design feature has several important advantages:

- Compensates for imperfections in the housing bore surface, improving the sealing performance by minimizing bypass leakage.
- Prevents contaminants from entering through gaps between housing bore and the seal outside diameter at, for example, out-of-round conditions.
- Minimizes the risk of damage to the housing bore during installation and removal.

This design option is indicated by the letter K in the product name; see for example the HDS2K (→ **fig. 44**).

Fig. 42




Fig. 43




Fig. 44



## Rubber outside diameter seals

### General

The assortment of SKF rubber outside diameter seals includes metal-inserted, fabric-reinforced and all-rubber designs. The fabric-reinforced and all-rubber seals are available in solid and split designs.

Rubber outside diameter seals offer a number of important operating and installation benefits and are especially suitable for split housings. The rubber prevents damage to the housing bore during installation, which otherwise can cause bypass leakage. Compared to metal-cased seals, rubber outside diameter seals can tolerate higher surface roughness in the housing bore. They also resist corrosion and do not seize in the bore, even years after installation.

As a result of lower press-in forces, rubber outside diameter seals are often easier to install than metal-cased seals. They can be installed by hand or with simple tools even when the diameters are very large. This is especially true of the fabric-reinforced and all-rubber designs. Furthermore, in the case of split seals, there is no need to remove the shaft or other machine components when replacing the seal.

### SBF metal-inserted seals

SBF seals (→ **fig. 45**) are spring-loaded and designed with a flexible metal stiffening ring that enables the seal to be installed without the use of a cover plate. SBF seals can be used as an upgrade to fabric-reinforced seals in many applications that are either grease or oil lubricated. SBF seals are available in both nitrile and fluoro rubber. A selection of available sizes is listed in the product tables starting on **page 278**. Contact your SKF sales representative for additional information regarding availability.

### HDS4 and HDS6 metal-inserted seals

HDS4 seals (→ **fig. 46**) feature a patented moulded-in garter spring that cannot be displaced during installation. They also provide very good oil retention while minimizing wear on the shaft. HDS4 seals are typically used in the high-speed applications found in the pulp and paper industry. HDS6 seals (→ **fig. 47**) are similar in design to HDS4 seals but do not contain a garter spring. HDS6 seals are designed for grease retention.

**Fig. 45**

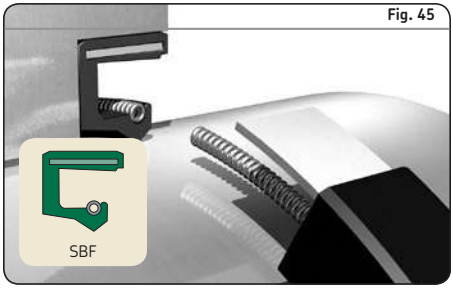



**Fig. 46**

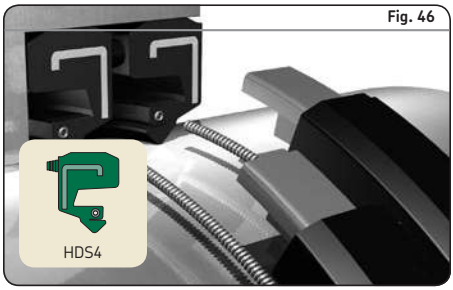
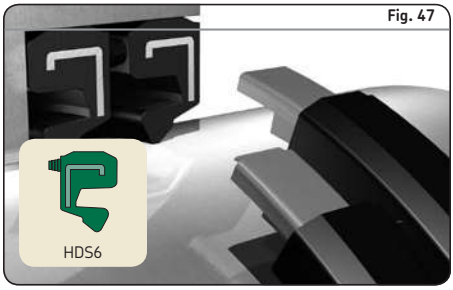



**Fig. 47**




Both types are made standard of nitrile rubber. They are also available in any of the sealing lip materials used for the metal-cased HDS seals. Both HDS4 and HDS6 seals are equipped with moulded 12,7 mm *(0.5 in.)* spacer lugs that can be trimmed or removed if necessary.

Contact your SKF sales representative for information regarding availability.

### HSF fabric-reinforced seals

The spring-loaded HSF seal assortment consists of the HSF5, HSF6, HSF7 and HSF8 solid seals and their split versions, HSF1, HSF2, HSF3 and HSF4 seals (→ **figs. 48** to **50**). There is also a pressure profile seal, HSF9, available in the solid version only. These seals are mainly used in heavy-duty applications like gear drives, propeller shafts, cold and hot mill work rolls, pumps, paper machinery, etc.

HSF5, HSF6 and HSF7 seals have a strong, flexible, fabric-reinforced rubber back instead of a metal case. HSF5 seals have a basic single-lip design. HSF6 seals are equipped with radial lubrication grooves in the back of the seal and HSF7 seals include a circumferential lubrication groove. HSF4 and HSF8 seals are designed with an auxiliary lip for additional protection against contaminants.

Threaded spring connections are standard for all HSF seals (→ **fig. 55a** on **page 215**). For the split versions, a hook-and-eye connection can also be specified (→ **fig. 55b** on **page 215**).

All HSF seals are manufactured oversized relative to the housing bore diameter and depth to enable proper compression and stability. A cover plate is required to properly install and apply all HSF seals (→ **figs. 25** and **26** on **pages 82** and **83**). The plate creates an axial preload to provide reliable static sealing performance. The plate should also avoid seal distortion during installation. HSF seals are available in nitrile rubber, hydrogenated nitrile rubber and fluoro rubber materials.

A selection of available HSF seal sizes is listed in the product tables starting on **page 280**. Contact your SKF sales representative for additional information regarding availability.



Fig. 48

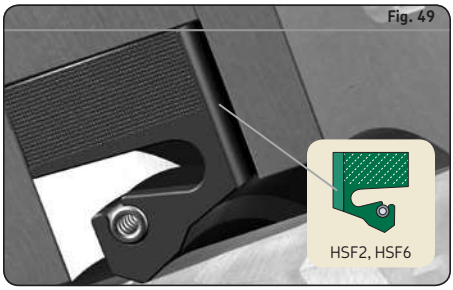


Fig. 49



Fig. 50

### HS all-rubber seals

HS seals, available in solid and split executions, are all-rubber seals, designed without any reinforcement. They are manufactured oversized relative to the housing bore diameter and depth to enable proper compression and stability. A cover plate (→ **figs. 25** and **26** on **pages 82** and **83**) is required to compress the seal axially, helping to stabilize the seal in the housing bore.

A stainless steel garter spring located in the SKF Springlock groove (→ **fig. 57** on **page 216**) provides the appropriate radial load against the shaft.

For certain applications, HS seals are also available with an auxiliary lip and/or band clamp. Contact SKF for more information.

HS seals are available in nitrile rubber, SKF Duralip, SKF Duratemp or SKF Duralife for all shaft diameters within the ranges listed in **table 20** on **page 219**. Also, see the product tables starting on **page 306** for a selection of available sizes. Contact your SKF sales representative for additional information regarding availability.

#### HS solid seals

Standard solid HS seals can accommodate shaft diameters starting at 165 mm *(6.5 in.)* but basically do not have an upper size limit.

HS4 seals (→ **fig. 51**) have a solid, all-rubber design and incorporate a spring-loaded sealing lip. They feature an SKF Springlock groove (→ **fig. 57** on **page 216**) and are suitable for both vertical and horizontal shafts. For a proper fit in the housing bore, a cover plate is required (→ **figs. 25** and **26** on **pages 82** and **83**).

HS5 seals (→ **fig. 52**) have the same basic design as HS4 seals with the addition of an SKF Springcover (→ **fig. 58** on **page 216**) to hold the spring in place during installation and protect it from contaminants.

Both designs have a threaded spring connection (→ **fig. 55a** on **page 215**).

**Fig. 51**




**Fig. 52**



### HS split seals

In applications where shaft removal is impractical, HS all-rubber split seals are an excellent choice. They are simply placed around the shaft and pushed into the housing bore with the split at the 12 o'clock position. A cover plate must be used to compress the seal axially to stabilize it in the housing bore.

HS split seals perform best with grease or high-viscosity lubricants. However, low-viscosity lubricants are also suitable if the level of lubricant is kept below the shaft centre line, which is particularly important at considerable surface speeds. Split seals are preferably used on horizontal shafts, but can also be used on vertical shafts in grease lubricated applications.

HS6 seals (→ **fig. 53**) are designed with a spring-loaded sealing lip and an SKF Springlock (→ **fig. 57** on **page 216**). They feature a separate loose spring and a hook-and-eye spring connection for shaft diameters > 455 mm *(18 in.)* unless otherwise specified (→ **fig. 55b** on **page 215**). Smaller sizes of HS6 seals come with a threaded spring connection. For a proper fit in the housing bore, a cover plate is required (→ **figs. 25** and **26**, on **pages 82** and **83**).

HS7 seals (→ **fig. 54**), designed for grease lubricated applications only, have a spring-loaded sealing lip and are designed with both an SKF Springlock and SKF Springcover (→ **figs. 57** and **58** on **page 216**). All HS7 seals feature a control-wire spring connection (→ **fig. 55c** on **page 215**). The spring is completely enclosed and the connection is made by running the control wire into the centre of the spring coil across the split (butt joint). A built-in spring tension holds the sealing lip on the shaft. For a proper fit, a cover plate is required. Due to the unique design that enables easier installation, a gap may occur at the joint even after the cover plate is installed. It is necessary that the split be placed at the 12 o'clock position during installation. HS7 seals do not have the high-performance characteristics of other HS seals, but are the easiest to install.

HS8 seals (→ **fig. 54**) are designed with a spring-loaded sealing lip, SKF Springlock, SKF Springcover (→ **figs. 57** and **58** on **page 216**) and a hook-and-eye spring connection (→ **fig. 55b** on **page 215**) for shaft diameters above 455 mm *(18 in.)*. Smaller sizes of HS8 seals come with a threaded spring connection. The spring is entirely enclosed except for a small portion on either side of the split. HS8 seals provide the most effective sealing performance of all split HS seals and are the preferred design for retaining low-viscosity lubricants and for water exclusion. HS8 seals perform best on horizontal shafts, but can also be used on vertical shafts provided they are not flooded with lubricant. For a proper fit, a cover plate is required.

Fig. 53




Fig. 54



## Additional design features

### Spring connections

There are different ways to connect the stainless steel garter springs of HS and HSF seals. A threaded spring connection (→ **fig. 55a**) is used for all HSF seals unless otherwise specified and for the solid HS4 and HS5 seals as well as the split HS6 and HS8 seals for shaft diameters ≤ 455 mm *(18 in.)*. A hook-and-eye spring connection (→ **fig. 55b**) is used for HS6 and HS8 seals for shaft diameters > 455 mm *(18 in.)*. All HS7 seals feature the special control-wire connection (→ **fig. 55c**), available only for these seals.

### Spacer lugs

Spacer lugs are available for all metal-cased designs to separate seals in tandem or back-to-back arrangements to provide space for sealing lip lubrication (→ **fig. 56**).

Traditional fixed-width lugs for metal-cased HDS seals are 9,5 mm *(0.375 in.)* in diameter and are available in widths from 3,2 mm *(0.125 in.)* to 12,7 mm *(0.5 in.)* in increments of 1,6 mm *(0.063 in.)*. The fixed-width lug is an available option for all metal-cased seals.

All standard adjustable lugs are 9,5 mm *(0.375 in.)* in diameter and 9,5 mm *(0.375 in.)* in width. They can be adjusted to smaller widths in 1,6 mm *(0.063 in.)* increments by removing the steel washers. The lugs may also be removed entirely. Longer, adjustable lugs, with a width of 12,7 mm *(0.5 in.)*, are available on request, however, it can be more difficult to reduce their width.

Certain small seal cross sections may require special small diameter lugs, 5,3 mm *(0.210 in.)*, with a width range of 1,6 to 3,2 mm *(0.063 to 0.125 in.)*.

The lugs are placed around the heel of the seal in four, six or eight equally spaced locations, depending on the seal outside diameter (→ **table 17**).

Fixed-width lugs are available for HDL seals on request.

**Fig. 55**

**Spring connections**

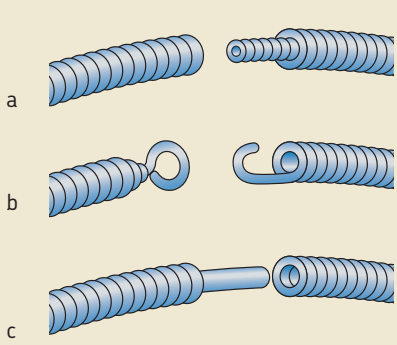



**Fig. 56**

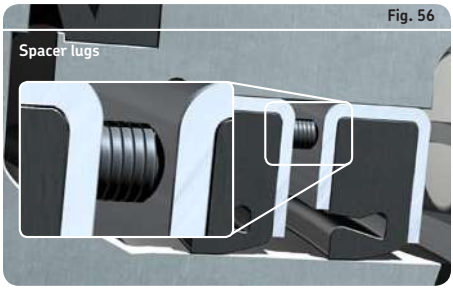



**Table 17**

**Number of spacer lugs needed**

| Spacer lugs | Housing bore diameter | | | |
|---|---|---|---|---|
| | from | incl. | from | incl. |
| – | mm | | *in.* | |
| **4** | | 762 | | *30* |
| **6** | 762 | 1 143 | *30* | *45* |
| **8** | 1 143 | | *45* | |

### SKF Springlock

The SKF Springlock is a sealing lip feature that surrounds 270° of the garter spring diameter (→ **fig. 57**). It helps hold the spring in position during installation and is standard on all HS seals and spring-loaded, metal-cased HDS seals.

### SKF Springcover

For blind installations, where spring displacement may go undetected, the SKF Springcover can be specified. It also protects the spring from dirt, water and other contaminants. SKF Springcover is flexible and covers the exposed portion of the stainless steel garter spring without adversely affecting the spring's capability.

### SKF Bore Tite Coating

SKF Bore Tite Coating is a water-based acrylic sealant available on most SKF metal-cased seals. The sealant is used as a coating on the outside diameter of the seal (→ **fig. 59**). SKF Bore Tite Coating is pliable with a thickness of 0,03 to 0,07 mm *(0.0012 to 0.0028 in.)* to help accommodate small imperfections in the housing bore surface. It can be used at temperatures up to 200 °C *(390 °F)* and is compatible with most oils, greases, aqueous acids and alkalis, alcohols and glycols. Note that SKF Bore Tite Coating is not compatible with aromatics, ketones or esters. Contact with these substances will, however, have little or no effect if wiped off quickly.

**Fig. 57**

**SKF Springlock**



**Fig. 58**

**SKF Springcover**



**Fig. 59**

**SKF Bore Tite Coating**

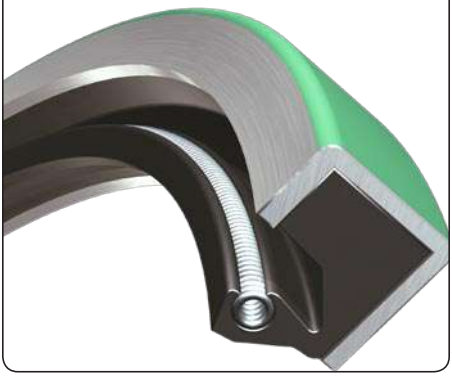


Table 18

**Seals for heavy industrial applications, selection guide per application**

| Application | General machinery<br>Industrial gearboxes | Rolling mills, metals<br>Hot strip mills<br>Cold rolled plate mills<br>Industrial gearboxes | Industrial gearboxes<br>General machinery<br>Rolling mills, paper mills | Special machinery<br>Crushers, shredders, bailers, etc. |
|---|---|---|---|---|
| **Type** | **General purpose** | **Water/scale exclusion** | **High speed** | **High Dynamic Runout (DRO) or Shaft-To-Bore Misalignment (STBM)** |
| **HDS1-2, HDSD-E** | 3 | 2 | 1 | 2 |
| **HDS4, 6** | 3 | 2 | 3 | 2 |
| **HDS7** | 2 | 3 | 1 | 2 |
| **HDSA-C** | 3 | 2 | 1 | 2 |
| **HDL** | 2 | 2 | 3 | 3 |
| **HS4-8** | 2 | 1 | 1 | 2 |
| **SBF, HSF1-9** | 3 | 2 | 1 | 2 |

1 = Good solution 2 = Better solution 3 = Best solution

Table 19

**Standard sections for metal-cased HDS seal designs**

| Designs with metal outside diameter | Shaft diameter | | Bore diameter | | Nominal seal width | | Difference between bore and shaft diameter | |
|---|---|---|---|---|---|---|---|---|
| | from | to | from | to | from | to | from | to |
| – | mm/*in.* | | mm/*in.* | | mm/*in.* | | mm/*in.* | |
| **HDS7** | 165,10<br>*6.500* | 1 606,55<br>*63.250* | 196,85<br>*7.750* | 1 638,30<br>*64.500* | 15,88<br>*0.625* | 31,75<br>*1.250* | 31,75<br>*1.250* | 63,50<br>*2.500* |
| **HDSH7** | 165,10<br>*6.500* | 1 606,55<br>*63.250* | 196,85<br>*7.750* | 1 638,30<br>*64.500* | 19,99<br>*0.787* | 31,75<br>*1.250* | 31,75<br>*1.250* | 63,50<br>*2.500* |
| **HDS1–3, HDSF1–3** | 165,10<br>*6.500* | 1 606,55<br>*63.250* | 196,85<br>*7.750* | 1 638,30<br>*64.500* | 15,88<br>*0.625* | 31,75<br>*1.250* | 31,75<br>*1.250* | 76,20<br>*3.000* |
| **HDSH1-3** | 165,10<br>*6.500* | 1 606,55<br>*63.250* | 196,85<br>*7.750* | 1 638,30<br>*64.500* | 19,99<br>*0.787* | 31,75<br>*1.250* | 31,75<br>*1.250* | 76,20<br>*3.000* |
| **HDSA1–2, HDSB1–2, HDSC1–2** | 165,10<br>*6.500* | 1 189,74<br>*46.840* | 196,85<br>*7.750* | 1 219,20<br>*48.000* | 21,36<br>*0.841* | 38,10<br>*1.500* | 31,75<br>*1.250* | 76,20<br>*3.000* |
| **HDSD1–2, HDSE1–2, HDSEF1–2** | 165,10<br>*6.500* | 1 603,50<br>*63.130* | 202,18<br>*7.960* | 1 638,30<br>*64.500* | 30,89<br>*1.216* | 50,80<br>*2.000* | 37,08<br>*1.460* | 76,20<br>*3.000* |
| **HDSEH1–2** | 165,10<br>*6.500* | 1 603,50<br>*63.130* | 202,18<br>*7.960* | 1 638,30<br>*64.500* | 39,98<br>*1.574* | 50,80<br>*2.000* | 37,08<br>*1.460* | 76,20<br>*3.000* |

| Designs with an elastomer applied to the outside diameter | Shaft diameter | | Bore diameter | | Nominal seal width | | Difference between bore and shaft diameter | |
|---|---|---|---|---|---|---|---|---|
| | from | to | from | to | from | to | from | to |
| – | mm/*in.* | | mm/*in.* | | mm/*in.* | | mm/*in.* | |
| **HDS7K** | 165,10<br>*6.500* | 1 606,55<br>*63.250* | 201,62<br>*7.938* | 1.643,08<br>*64.688* | 15,88<br>*0.625* | 31,75<br>*1.250* | 36,52<br>*1.438* | 76,20<br>*3.000* |
| **HDSH7K** | 165,10<br>*6.500* | 1 606,55<br>*63.250* | 201,62<br>*7.938* | 1.643,08<br>*64.688* | 19,99<br>*0.787* | 31,75<br>*1.250* | 36,52<br>*1.438* | 76,20<br>*3.000* |
| **HDS1–3K, HDSF1–3K** | 165,10<br>*6.500* | 1 606,55<br>*63.250* | 201,62<br>*7.938* | 1.643,08<br>*64.688* | 15,88<br>*0.625* | 31,75<br>*1.250* | 36,52<br>*1.438* | 76,20<br>*3.000* |
| **HDSH1–3K** | 165,10<br>*6.500* | 1 606,55<br>*63.250* | 201,62<br>*7.938* | 1.643,08<br>*64.688* | 19,99<br>*0.787* | 31,75<br>*1.250* | 36,52<br>*1.438* | 76,20<br>*3.000* |
| **HDSA1–2K, HDSB1–2K, HDSC1–2K** | 165,10<br>*6.500* | 1 606,55<br>*63.250* | 201,62<br>*7.938* | 1.643,08<br>*64.688* | 15,88<br>*0.841* | 31,75<br>*1.250* | 36,52<br>*1.438* | 76,20<br>*3.000* |

Not all cross sections and widths are possible with every shaft diameter. Contact SKF for availability on dimensions at the extreme limits or for sizes outside the standard range.

## Size options of metal-cased HDS seals and all-rubber HS seals

All SKF metal-cased HDS seals and all-rubber HS seals are made upon order in any inch or metric size within the ranges listed in **tables 19** and **20**. Since new sizes are manufactured without additional tooling, they can be supplied without extended lead times. The product tables starting on **page 220** and **306**, respectively, list a selection of available sizes. For any size that is not listed in the product tables, contact your SKF distributor or SKF sales representative.





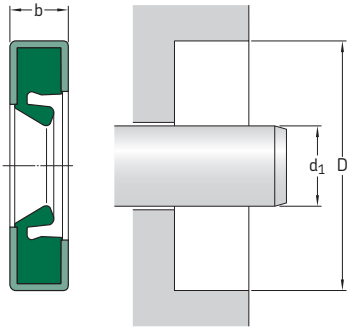

**Table 20**

**Standard size options of HS seals**

| Shaft diameter[1] | | Bore diameter[2] | | Bore depth[3] | | Difference between bore and shaft diameter | |
|---|---|---|---|---|---|---|---|
| from | to | from | to | from | to | from | to |
| mm/*in.* | | mm/*in.* | | mm/*in.* | | mm/*in.* | |
| 165,10<br>*6.500* | 4 572,00<br>*180.000* | 190,50<br>*7.500* | 4 597,40<br>*181.000* | 12,70<br>*0.500* | | 25,40<br>*1.000* | |
| 165,10<br>*6.500* | 4 572,00<br>*180.000* | 195,10<br>*7.681* | 4 602,00<br>*181.181* | 12,70<br>*0.500* | 19,99<br>*0.787* | 30,00<br>*1.181* | 50,80<br>*2.000* |
| 330,20<br>*13.000* | 4 572,00<br>*180.000* | 368,30<br>*14.500* | 4 610,10<br>*181.500* | 16,51<br>*0.650* | 25,40<br>*1.000* | 38,10<br>*1.500* | 63,50<br>*2.500* |

[1] Tolerance h11
[2] Tolerance H8
[3] Tolerance ±0,1 mm *(0.004 in.)*
Not all cross sections and widths are possible with every shaft diameter. Contact SKF for availability on dimensions at the extreme limits or on sizes outside the standard range.

## Radial shaft seals – HDS7 – metric dimensions
$d_1$ **200 – 1 250** mm




The table includes only a selection of available sizes. Contact your SKF sales representative for more information.

Please see **pages 74** to **76** for housing bore requirements.

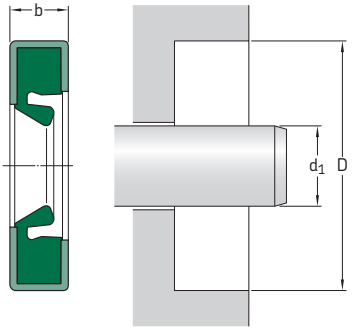
| **Dimensions** Shaft $d_1$ | Bore D | Nominal seal width b | **Design** | **Lip material** | **Designation** |
|---|---|---|---|---|---|
| mm | | | – | – | – |
| **200** | 230 | 15 | HDS7 | R | **CR 200×230×15 HDS7 R** |
| **210** | 240 | 18 | HDS7 | D | **CR 210×240×18 HDS7 D**[1] |
| **220** | 250 | 15 | HDS7 | R | **CR 220×250×15 HDS7 R** |
| **230** | 260 | 15 | HDS7 | R | **CR 230×260×15 HDS7 R** |
| **235** | 270 | 15 | HDS7 | H | **CR 235×270×15 HDS7 H** |
| | 270 | 16 | HDS7 | H | **CR 235×270×16 HDS7 H** |
| **260** | 300 | 16 | HDS7 | R | **CR 260×300×16 HDS7 R** |
| **290** | 350 | 25 | HDS7 | R | **CR 290×350×25 HDS7 R** |
| **300** | 340 | 18 | HDS7 | R | **CR 300×340×18 HDS7 R** |
| | 340 | 20 | HDS7 | R | **CR 300×340×20 HDS7 R** |
| | 344 | 20 | HDS7 | R | **CR 300×344×20 HDS7 R** |
| **310** | 350 | 20 | HDS7 | R | **CR 310×350×20 HDS7 R** |
| **320** | 380 | 28 | HDS7 | R | **CR 320×380×28 HDS7 R** |
| **330** | 370 | 20 | HDS7 | R | **CR 330×370×20 HDS7 R** |
| **346** | 375 | 15 | HDS7 | R | **CR 346×375×15 HDS7 R** |
| **360** | 404 | 20 | HDS7 | R | **CR 360×404×20 HDS7 R** |
| **364** | 406 | 17 | HDS7 | D | **CR 364×406×17 HDS7 D** |
| **400** | 444 | 20 | HDS7 | R | **CR 400×444×20 HDS7 R** |
| **432** | 463 | 17 | HDS7 | R | **CR 432×463×17 HDS7 R** |
| **440** | 480 | 20 | HDS7 | R | **CR 440×480×20 HDS7 R** |
| **450** | 510 | 25 | HDS7 | R | **CR 450×510×25 HDS7 R** |

[1] 12,7 mm adjustable spacer lugs (4)

| Dimensions Shaft $d_1$ | Bore D | Nominal seal width b | Design | Lip material | Designation |
|---|---|---|---|---|---|
| mm | | | – | – | – |
| **461** | 495 | 20 | HDS7 | H | **CR 461×495×20 HDS7 H** |
| **470** | 530 | 25 | HDS7 | R | **CR 470×530×25 HDS7 R** |
| | 530 | 28 | HDS7 | R | **CR 470×530×28 HDS7 R** |
| **500** | 550 | 20 | HDS7 | D | **CR 500×550×20 HDS7 D**[2] |
| **515** | 555 | 20 | HDS7 | R | **CR 515×555×20 HDS7 R** |
| **520** | 570 | 22 | HDS7 | R | **CR 520×570×22 HDS7 R** |
| **530** | 580 | 20 | HDS7 | D | **CR 530×580×20 HDS7 D**[2] |
| | 580 | 22 | HDS7 | R | **CR 530×580×22 HDS7 R** |
| **542** | 578 | 16 | HDS7 | D | **CR 542×578×16 HDS7 D**[1] |
| **560** | 604 | 20 | HDS7 | R | **CR 560×604×20 HDS7 R** |
| | 610 | 20 | HDS7 | R | **CR 560×610×20 HDS7 R** |
| | 610 | 22 | HDS7 | R | **CR 560×610×22 HDS7 R** |
| | 620 | 29,34 | HDS7 | R | **CR 560×620×29 HDS7 R** |
| **590** | 630 | 20 | HDS7 | D | **CR 590×630×20 HDS7 D**[2] |
| | 640 | 20 | HDS7 | R | **CR 590×640×20 HDS7 R** |
| **610** | 660 | 25 | HDS7 | R | **CR 610×660×25 HDS7 R** |
| **640** | 690 | 25 | HDS7 | R | **CR 640×690×25 HDS7 R** |
| **647** | 700 | 25 | HDS7 | H | **CR 647×700×25 HDS7 H** |
| **720** | 784 | 23 | HDS7 | R | **CR 720×784×23 HDS7 R** |
| **760** | 810 | 25 | HDS7 | R | **CR 760×810×25 HDS7 R** |
| **1 250** | 1 314 | 21,54 | HDS7 | R | **CR 1250×1314×22 HDS7 R** |

[1] 12,7 mm adjustable spacer lugs (4)
[2] 12,7 mm adjustable spacer lugs (6)

## Radial shaft seals – HDS7 – inch dimensions
$d_1$ **6.750 – 15.359** in.



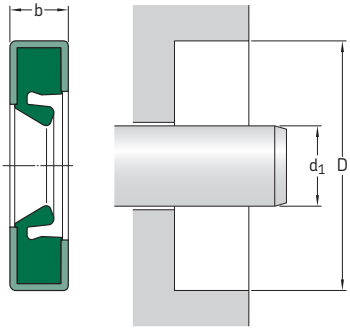

The table includes only a selection of available sizes. Contact your SKF sales representative for more information.

Please see **pages 74** to **76** for housing bore requirements.

| **Dimensions** Shaft $d_1$ | Bore D | Nominal seal width b | **Design** | **Lip material** | **Designation** |
|---|---|---|---|---|---|
| in./*mm* | | | – | – | – |
| **6.750** *171,45* | 8.000 *203,20* | 0.750 *19,05* | HDS7 | R | **CR 597627** |
| **8.000** *203,20* | 9.500 *241,30* | 0.625 *15,88* | HDS7 | H | **CR 596567** |
| **8.375** *212,73* | 9.750 *247,65* | 0.750 *19,05* | HDS7 | R | **CR 596198** |
| **8.500** *215,90* | 10.000 *254,00* | 0.625 *15,88* | HDS7 | R | **CR 596415** |
| **9.000** *228,60* | 10.498 *266,65* | 0.750 *19,05* | HDS7 | R | **CR 596200** |
| | 10.500 *266,70* | 0.625 *15,88* | HDS7 | R | **CR 597535** |
| **9.125** *231,78* | 11.125 *282,58* | 0.813 *20,65* | HDS7 | R | **CR 597472** |
| **9.375** *238,13* | 11.500 *292,10* | 0.590 *14,99* | HDS7 | R | **CR 597408** |
| **9.500** *241,30* | 11.000 *279,40* | 0.625 *15,88* | HDS7 | H | **CR 596566** |
| **9.750** *247,65* | 11.000 *279,40* | 0.625 *15,88* | HDS7 | R | **CR 596561** |
| **10.000** *254,00* | 11.250 *285,75* | 0.625 *15,88* | HDS7 | R | **CR 1000129** |
| **10.500** *266,70* | 12.000 *304,80* | 0.688 *17,48* | HDS7 | H | **CR 1050211** |
| **10.750** *273,05* | 11.750 *298,45* | 0.591 *15,01* | HDS7 | R | **CR 1075020** |
| | 12.750 *323,85* | 0.625 *15,88* | HDS7 | R | **CR 596171** |
| | 12.750 *323,85* | 0.813 *20,65* | HDS7 | R | **CR 1075559** |

| Dimensions<br>Shaft<br>$d_1$ | Bore<br>D | Nominal seal width<br>b | Design | Lip material | Designation |
|---|---|---|---|---|---|
| in./*mm* | | | – | – | – |
| **11.000**<br>*279,40* | 12.250<br>*311,15* | 0.625<br>*15,88* | HDS7 | R | **CR 1100120** |
| | 13.000<br>*330,20* | 0.813<br>*20,65* | HDS7 | R | **CR 1100519** |
| **11.250**<br>*285,75* | 12.750<br>*323,85* | 0.625<br>*15,88* | HDS7 | H | **CR 1125219** |
| **11.500**<br>*292,10* | 13.000<br>*330,20* | 0.688<br>*17,48* | HDS7 | R | **CR 1150229** |
| **11.750**<br>*298,45* | 13.250<br>*336,55* | 0.688<br>*17,48* | HDS7 | R | **CR 1175219** |
| **12.000**<br>*304,80* | 13.500<br>*342,90* | 0.625<br>*15,88* | HDS7 | R | **CR 1213210** |
| | 13.938<br>*354,03* | 0.688<br>*17,48* | HDS7 | R | **CR 1200500** |
| | 14.000<br>*355,60* | 0.813<br>*20,65* | HDS7 | R | **CR 1200521** |
| **12.250**<br>*311,15* | 13.750<br>*349,25* | 0.750<br>*19,05* | HDS7 | D | **CR 1225259** |
| | 14.000<br>*355,60* | 0.688<br>*17,48* | HDS7 | R | **CR 1225379** |
| | 14.250<br>*361,95* | 0.750<br>*19,05* | HDS7 | R | **CR 1225549** |
| | 14.250<br>*361,95* | 0.813<br>*20,65* | HDS7 | R | **CR 1225370** |
| | 14.250<br>*361,95* | 1.250<br>*31,75* | HDS7 | R | **CR 1225589** |
| **12.500**<br>*317,50* | 14.000<br>*355,60* | 0.688<br>*17,48* | HDS7 | R | **CR 1250239** |
| **12.750**<br>*323,85* | 14.250<br>*361,95* | 0.625<br>*15,88* | HDS7 | H | **CR 1275219** |
| **13.000**<br>*330,20* | 15.000<br>*381,00* | 1.000<br>*25,40* | HDS7 | R | **CR 1300600** |
| **13.250**<br>*336,55* | 15.250<br>*387,35* | 0.750<br>*19,05* | HDS7 | R | **CR 1325569** |
| **13.500**<br>*342,90* | 15.500<br>*393,70* | 0.813<br>*20,65* | HDS7 | R | **CR 1350520** |
| **13.750**<br>*349,25* | 15.250<br>*387,35* | 0.625<br>*15,88* | HDS7 | H | **CR 1375719** |
| **13.875**<br>*352,43* | 16.000<br>*406,40* | 1.000<br>*25,40* | HDS7 | R | **CR 1387610** |
| **14.500**<br>*368,30* | 16.000<br>*406,40* | 0.688<br>*17,48* | HDS7 | R | **CR 1450220** |
| **14.750**<br>*374,65* | 16.500<br>*419,10* | 0.688<br>*17,48* | HDS7 | R | **CR 1475430** |
| **15.000**<br>*381,00* | 17.000<br>*431,80* | 0.813<br>*20,65* | HDS7 | R | **CR 1500510** |
| **15.250**<br>*387,35* | 17.250<br>*438,15* | 0.625<br>*15,88* | HDS7 | R | **CR 1525511** |
| **15.359**<br>*390,12* | 17.709<br>*449,81* | 0.906<br>*23,01* | HDS7 | R | **CR 1536691** |

## Radial shaft seals – HDS7 – inch dimensions
$d_1$ **15.500 – 63.250** in.



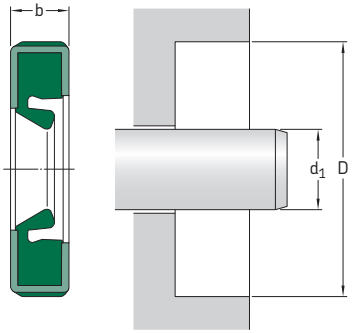

The table includes only a selection of available sizes. Contact your SKF sales representative for more information.

Please see **pages 74** to **76** for housing bore requirements.

| **Dimensions** Shaft $d_1$ | Bore D | Nominal seal width b | **Design** | **Lip material** | **Designation** |
|---|---|---|---|---|---|
| in./*mm* | | | – | – | – |
| **15.500** | 17.500 | 0.813 | HDS7 | R | **CR 1550559** |
| *393,70* | *444,50* | *20,65* | | | |
| **15.750** | 17.250 | 0.750 | HDS7 | H | **CR 1575210** |
| *400,05* | *438,15* | *19,05* | | | |
| **15.875** | 17.500 | 0.750 | HDS7 | H | **CR 1587330** |
| *403,23* | *444,50* | *19,05* | | | |
| **16.000** | 17.500 | 0.625 | HDS7 | H | **CR 1600211** |
| *406,40* | *444,50* | *15,88* | | | |
| | 18.000 | 0.813 | HDS7 | H | **CR 1600519** |
| | *457,20* | *20,65* | | | |
| **16.250** | 17.750 | 0.688 | HDS7 | R | **CR 1625210** |
| *412,75* | *450,85* | *17,48* | | | |
| **16.500** | 18.000 | 0.750 | HDS7 | R | **CR 1650280** |
| *419,10* | *457,20* | *19,05* | | | |
| **17.000** | 18.500 | 0.625 | HDS7 | R | **CR 1700280** |
| *431,80* | *469,90* | *15,88* | | | |
| | 19.000 | 0.813 | HDS7 | R | **CR 1700579** |
| | *482,60* | *20,65* | | | |
| **17.375** | 18.875 | 0.750 | HDS7 | R | **CR 1737219** |
| *441,33* | *479,43* | *19,05* | | | |
| **17.500** | 19.000 | 0.688 | HDS7 | H | **CR 1750220** |
| *444,50* | *482,60* | *17,48* | | | |
| | 19.000 | 0.688 | HDS7 | R | **CR 1750221** |
| | *482,60* | *17,48* | | | |
| **17.875** | 19.875 | 0.750 | HDS7 | R | **CR 1787540** |
| *454,03* | *504,83* | *19,05* | | | |
| **19.000** | 20.500 | 0.750 | HDS7 | R | **CR 1900211** |
| *482,60* | *520,70* | *19,05* | | | |
| **19.250** | 20.750 | 0.625 | HDS7 | R | **CR 596180** |
| *488,95* | *527,05* | *15,88* | | | |

| Dimensions Shaft $d_1$ | Bore D | Nominal seal width b | Design | Lip material | Designation |
|---|---|---|---|---|---|
| in./*mm* | | | – | – | – |
| **19.500** | 21.500 | 0.750 | HDS7 | R | **CR 1950211** |
| *495,30* | *546,10* | *19,05* | | | |
| **20.000** | 21.500 | 0.750 | HDS7 | R | **CR 2000240** |
| *508,00* | *546,10* | *19,05* | | | |
| **20.750** | 22.750 | 0.875 | HDS7 | D | **CR 2075569** |
| *527,05* | *577,85* | *22,23* | | | |
| **21.260** | 23.228 | 0.984 | HDS7 | R | **CR 2126510** |
| *540,00* | *590,00* | *25,00* | | | |
| **21.750** | 23.750 | 0.875 | HDS7 | R | **CR 2175569** |
| *552,45* | *603,25* | *22,23* | | | |
| **22.250** | 24.250 | 0.875 | HDS7 | H | **CR 2225511** |
| *565,15* | *615,95* | *22,23* | | | |
| **24.250** | 26.000 | 1.000 | HDS7 | H | **CR 2425419** |
| *615,95* | *660,40* | *25,40* | | | |
| **25.000** | 26.500 | 0.750 | HDS7 | R | **CR 2500210** |
| *635,00* | *673,10* | *19,05* | | | |
| **26.500** | 28.000 | 0.750 | HDS7 | R | **CR 2650240** |
| *673,10* | *711,20* | *19,05* | | | |
| **27.000** | 29.000 | 0.875 | HDS7 | R | **CR 2700519** |
| *685,80* | *736,60* | *22,23* | | | |
| **27.500** | 29.500 | 0.875 | HDS7 | R | **CR 2750510** |
| *698,50* | *749,30* | *22,23* | | | |
| **27.875** | 29.815 | 0.875 | HDS7 | R | **CR 2788600** |
| *708,03* | *757,30* | *22,23* | | | |
| **28.000** | 29.500 | 0.750 | HDS7 | R | **CR 2800240** |
| *711,20* | *749,30* | *19,05* | | | |
| | 30.000 | 0.875 | HDS7 | R | **CR 2800590** |
| | *762,00* | *22,23* | | | |
| | 30.500 | 1.000 | HDS7 | H | **CR 2800650** |
| | *774,70* | *25,40* | | | |
| **28.500** | 30.500 | 0.875 | HDS7 | H | **CR 2850211** |
| *723,90* | *774,70* | *22,23* | | | |
| **29.000** | 31.000 | 0.875 | HDS7 | R | **CR 2900579** |
| *736,60* | *787,40* | *22,23* | | | |
| **30.500** | 32.500 | 0.875 | HDS7 | H | **CR 3050511** |
| *774,70* | *825,50* | *22,23* | | | |
| **30.615** | 33.268 | 1.094 | HDS7 | R | **CR 3061721** |
| *777,62* | *845,01* | *27,79* | | | |
| **31.496** | 33.465 | 0.984 | HDS7 | R | **CR 3149470** |
| *800,00* | *850,01* | *24,99* | | | |
| **40.500** | 41.750 | 0.750 | HDS7 | H | **CR 4050061** |
| *1 028,70* | *1 060,45* | *19,05* | | | |
| **47.000** | 49.000 | 0.875 | HDS7 | H | **CR 4700511** |
| *1 193,80* | *1 244,60* | *22,23* | | | |
| **57.875** | 60.000 | 0.938 | HDS7 | R | **CR 5787611** |
| *1 470,03* | *1 524,00* | *23,83* | | | |
| **63.250** | 64.500 | 1.188 | HDS7 | R | **CR 6325100** |
| *1 606,55* | *1 638,30* | *31,75* | | | |

## Radial shaft seals – HDS7K – metric dimensions
$d_1$ **200 – 810** mm




The table includes only a selection of available sizes. Contact your SKF sales representative for more information.

Please see **pages 74** to **76** for housing bore requirements.

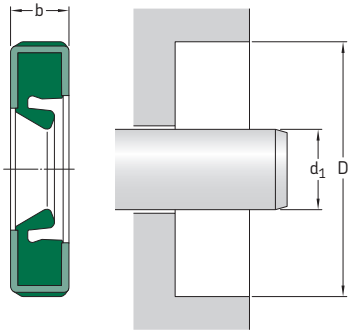
| **Dimensions** Shaft $d_1$ | Bore D | Nominal seal width b | **Design** | **Lip material** | **Designation** |
|---|---|---|---|---|---|
| mm | | | – | – | – |
| **200** | 230 | 15 | HDS7K | R | **CR 200×230×15 HDS7K R** |
| **230** | 260 | 15 | HDS7K | R | **CR 230×260×15 HDS7K R** |
| **280** | 310 | 15 | HDS7K | R | **CR 280×310×15 HDS7K R** |
| | 320 | 18 | HDS7K | R | **CR 280×320×18 HDS7K R**[1] |
| | 320 | 20 | HDS7K | R | **CR 280×320×20 HDS7K R** |
| **310** | 350 | 20 | HDS7K | R | **CR 310×350×20 HDS7K R** |
| **320** | 360 | 25 | HDS7K | R | **CR 320×360×25 HDS7K R**[2] |
| **360** | 404 | 20 | HDS7K | R | **CR 360×404×20 HDS7K R** |
| **400** | 450 | 18 | HDS7K | R | **CR 400×450×18 HDS7K R** |
| | 450 | 22 | HDS7K | R | **CR 400×450×22 HDS7K R** |
| **446** | 496 | 22 | HDS7K | R | **CR 446×496×22 HDS7K R** |
| **450** | 500 | 18 | HDS7K | R | **CR 450×500×18 HDS7K R** |
| | 500 | 22 | HDS7K | R | **CR 450×500×22 HDS7K R** |
| **485** | 535 | 22 | HDS7K | R | **CR 485×535×22 HDS7K R** |
| **520** | 570 | 18 | HDS7K | H | **CR 520×570×18 HDS7K H** |
| | 570 | 18 | HDS7K | H | **CR 520×570×18 HDS7K H**[3] |
| **530** | 580 | 22 | HDS7K | R | **CR 530×580×22 HDS7K R** |
| | 580 | 20 | HDS7K | R | **CR 530×580×20 HDS7K R**[1] |
| **540** | 590 | 18 | HDS7K | R | **CR 540×590×18 HDS7K R** |
| **560** | 610 | 20 | HDS7K | R | **CR 560×610×20 HDS7K R**[1] |

[1] 3,18 mm lugs (4)
[2] 4,77 mm lugs (4)
[3] 7,95 mm lugs (6)

| Dimensions | | | Design | Lip material | Designation |
|---|---|---|---|---|---|
| Shaft | Bore | Nominal seal width | | | |
| $d_1$ | D | b | | | |
| mm | | | – | – | – |
| **570** | 610 | 18 | HDS7K | H | **CR 570×610×18 HDS7K H** |
| | 610 | 18 | HDS7K | H | **CR 570×610×18 HDS7K H**[4] |
| | 620 | 22 | HDS7K | R | **CR 570×620×22 HDS7K R** |
| **760** | 824 | 25 | HDS7K | R | **CR 760×824×25 HDS7K R** |
| **810** | 874 | 25 | HDS7K | R | **CR 810×874×25 HDS7K R** |

[4] 1,60 mm lugs (6)

## Radial shaft seals – HDS7K – inch dimensions
$d_1$ **15.750 – 16.500** in.

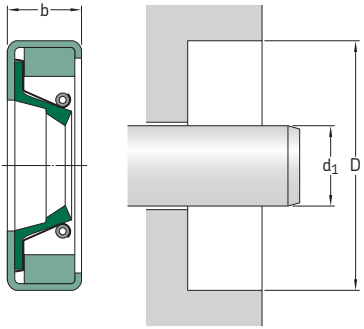



The table includes only a selection of available sizes. Contact your SKF sales representative for more information.

Please see **pages 74** to **76** for housing bore requirements.

| **Dimensions** Shaft $d_1$ | Bore D | Nominal seal width b | **Design** | **Lip material** | **Designation** |
|---|---|---|---|---|---|
| in./*mm* | | | – | – | – |
| **15.750**<br>*400,05* | 17.250<br>*438,15* | 0.688<br>*17,48* | HDS7K | R | **CR 1575241** |
| **16.000**<br>*406,40* | 18.000<br>*457,20* | 0.807<br>*20,50* | HDS7K | R | **CR 1600562** |
| **16.500**<br>*419,10* | 18.000<br>*457,20* | 0.750<br>*19,05* | HDS7K | R | **CR 1650248** |

## Radial shaft seals – HDL – metric dimensions
$d_1$ **200 – 1 380** mm



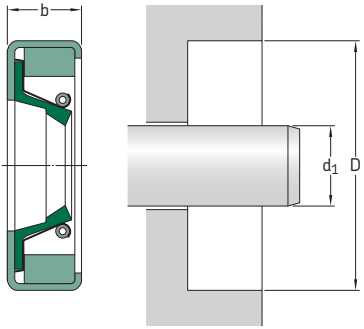

The table includes only a selection of available sizes. Contact your SKF sales representative for more information.

Please see **pages 74** to **76** for housing bore requirements.

| **Dimensions** | | | **Designations** | |
|---|---|---|---|---|
| Shaft | Bore | Nominal seal width | Lip material | |
| $d_1$ | D | b | R | V |
| mm | | | – | |
| **200** | 240 | 20 | **CR 200×240×20 HDL R** | **CR 200×240×20 HDL V** |
| **220** | 250 | 18 | **CR 220×250×18 HDL R** | **CR 220×250×18 HDL V** |
| **232** | 269,87 | 17,45 | **CR 232×270×17 HDL R** | **CR 232×270×17 HDL V** |
| **240** | 270 | 15 | **CR 240×270×15 HDL R** | **CR 240×270×15 HDL V** |
| | 280 | 20 | **CR 240×280×20 HDL R** | **CR 240×280×20 HDL V** |
| **270** | 308 | 17,45 | **CR 270×308×17 HDL R** | **CR 270×308×17 HDL V** |
| **280** | 320 | 19,98 | **CR 280×320×20 HDL R** | **CR 280×320×20 HDL V** |
| | 340 | 20,62 | **CR 280×340×21 HDL R** | **CR 280×340×21 HDL V** |
| **330** | 370 | 18 | **CR 330×370×18 HDL R** | **CR 330×370×18 HDL V** |
| **360** | 404 | 17,45 | **CR 360×404×17 HDL R** | **CR 360×404×17 HDL V** |
| **390** | 430 | 16 | **CR 390×430×16 HDL R** | **CR 390×430×16 HDL V** |
| **400** | 440 | 20 | **CR 400×440×20 HDL R** | **CR 400×440×20 HDL V** |
| | 450 | 17,45 | **CR 400×450×17 HDL R** | **CR 400×450×17 HDL V** |
| **420** | 460 | 17,45 | **CR 420×460×17 HDL R** | **CR 420×460×17 HDL V** |
| | 460 | 20 | **CR 420×460×20 HDL R** | **CR 420×460×20 HDL V** |
| | 470 | 17,45 | **CR 420×470×17 HDL R** | **CR 420×470×17 HDL V** |
| **440** | 480 | 20 | **CR 440×480×20 HDL R** | **CR 440×480×20 HDL V** |
| **470** | 520 | 22 | **CR 470×520×22 HDL R** | **CR 470×520×22 HDL V** |
| **480** | 520 | 20 | **CR 480×520×20 HDL R** | **CR 480×520×20 HDL V** |
| **485** | 535 | 19 | **CR 485×535×19 HDL R** | **CR 485×535×19 HDL V** |
| **500** | 550 | 19 | **CR 500×550×19 HDL R** | **CR 500×550×19 HDL V** |
| **508** | 560 | 25 | **CR 508×560×25 HDL R** | **CR 508×560×25 HDL V** |
| **513** | 543 | 16 | **CR 513×543×16 HDL R** | **CR 513×543×16 HDL V** |

| Dimensions | | | Designation | |
|---|---|---|---|---|
| Shaft | Bore | Nominal seal width | Lip material | |
| $d_1$ | D | b | R | V |
| mm | | | – | |
| **520** | 560 | 18 | **CR 520×560×18 HDL R** | **CR 520×560×18 HDL V** |
| | 570 | 22 | **CR 520×570×22 HDL R** | **CR 520×570×22 HDL V** |
| **530** | 580 | 20,62 | **CR 530×580×21 HDL R** | **CR 530×580×21 HDL V** |
| **540** | 590 | 24,98 | **CR 540×590×25 HDL R** | **CR 540×590×25 HDL V** |
| **560** | 610 | 20 | **CR 560×610×20 HDL R** | **CR 560×610×20 HDL V** |
| **565** | 601 | 20 | **CR 565×601×20 HDL R** | **CR 565×601×20 HDL V** |
| **600** | 640 | 20 | **CR 600×640×20 HDL R** | **CR 600×640×20 HDL V** |
| **630** | 670 | 20 | **CR 630×670×20 HDL R** | **CR 630×670×20 HDL V** |
| **640** | 680 | 20 | **CR 640×680×20 HDL R** | **CR 640×680×20 HDL V** |
| **650** | 714 | 25 | **CR 650×714×25 HDL R** | **CR 650×714×25 HDL V** |
| **668** | 706 | 25,40 | **CR 668×706×25 HDL R** | **CR 668×706×25 HDL V** |
| **750** | 814 | 25 | **CR 750×814×25 HDL R** | **CR 750×814×25 HDL V** |
| **760** | 804 | 18 | **CR 760×804×18 HDL R** | **CR 760×804×18 HDL V** |
| **780** | 844 | 25 | **CR 780×844×25 HDL R** | **CR 780×844×25 HDL V** |
| **790** | 854 | 25 | **CR 790×854×25 HDL R** | **CR 790×854×25 HDL V** |
| **837** | 889 | 22,22 | **CR 837×889×22 HDL R** | **CR 837×889×22 HDL V** |
| **838,10** | 881 | 20 | **CR 838×881×20 HDL R** | **CR 838×881×20 HDL V** |
| **840** | 904 | 25 | **CR 840×904×25 HDL R** | **CR 840×904×25 HDL V** |
| **920** | 958,01 | 19,05 | **CR 920×958×19 HDL R** | **CR 920×958×19 HDL V** |
| **930** | 980 | 22,22 | **CR 930×980×22 HDL R** | **CR 930×980×22 HDL V** |
| **990** | 1 040 | 25 | **CR 990×1040×25 HDL R** | **CR 990×1040×25 HDL V** |
| **1000** | 1 050 | 22,22 | **CR 1000×1050×22 HDL R** | **CR 1000×1050×22 HDL V** |
| **1 055** | 1 100 | 25 | **CR 1055×1100×25 HDL R** | **CR 1055×1100×25 HDL V** |
| **1 105** | 1 160 | 22 | **CR 1105×1160×22 HDL R** | **CR 1105×1160×22 HDL V** |
| **1 350** | 1 414 | 22 | **CR 1350×1414×22 HDL R** | **CR 1350×1414×22 HDL V** |
| | 1 415 | 25 | **CR 1350×1415×25 HDL R** | **CR 1350×1415×25 HDL V** |
| **1 380** | 1 440 | 25 | **CR 1380×1440×25 HDL R** | **CR 1380×1440×25 HDL V** |

## Radial shaft seals – HDL – inch dimensions
$d_1$ **6.125 – 11.750** in.



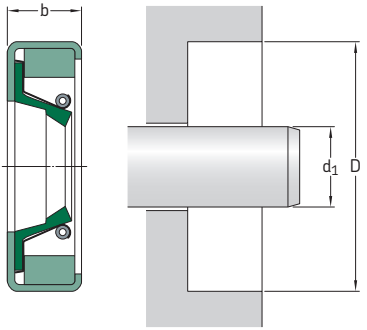

The table includes only a selection of available sizes. Contact your SKF sales representative for more information.

Please see **pages 74** to **76** for housing bore requirements.

| **Dimensions** Shaft $d_1$ | Bore D | Nominal seal width b | **Designations** Lip material R | V |
|---|---|---|---|---|
| in./*mm* | | | – | |
| **6.125** | 7.625 | 0.687 | **CR HDL 1299 R** | **CR HDL 1299 V** |
| *155,58* | *193,68* | *17,45* | | |
| **7.125** | 8.250 | 0.750 | **CR HDL 3011 R** | **CR HDL 3011 V** |
| *180,98* | *209,55* | *19,05* | | |
| **7.875** | 9.375 | 0.687 | **CR HDL 9176 R** | **CR HDL 9176 V** |
| *200,03* | *238,13* | *17,45* | | |
| **8.000** | 9.500 | 0.687 | **CR HDL 3921 R** | **CR HDL 3921 V** |
| *203,20* | *241,30* | *17,45* | | |
| **8.125** | 10.125 | 0.687 | **CR HDL 9712 R** | **CR HDL 9712 V** |
| *206,38* | *257,18* | *17,45* | | |
| **8.250** | 10.250 | 0.813 | **CR HDL 4499 R** | **CR HDL 4499 V** |
| *209,55* | *260,35* | *20,65* | | |
| **8.375** | 9.875 | 0.687 | **CR HDL 3933 R** | **CR HDL 3933 V** |
| *212,73* | *250,83* | *17,45* | | |
| | 10.375 | 0.813 | **CR HDL 4500 R** | **CR HDL 4500 V** |
| | *263,53* | *20,65* | | |
| **8.500** | 9.750 | 0.562 | **CR HDL 1705 R** | **CR HDL 1705 V** |
| *215,90* | *247,65* | *14,28* | | |
| | 10.000 | 0.687 | **CR HDL 8453 R** | **CR HDL 8453 V** |
| | *254,00* | *17,45* | | |
| **8.625** | 10.125 | 0.687 | **CR HDL 3939 R** | **CR HDL 3939 V** |
| *219,08* | *257,18* | *17,45* | | |
| | 10.750 | 0.813 | **CR HDL 7718 R** | **CR HDL 7718 V** |
| | *273,05* | *20,65* | | |
| **8.750** | 10.250 | 0.687 | **CR HDL 3946 R** | **CR HDL 3946 V** |
| *222,25* | *260,35* | *17,45* | | |
| | 10.750 | 0.813 | **CR HDL 3952 R** | **CR HDL 3952 V** |
| | *273,05* | *20,65* | | |
| **8.875** | 10.875 | 0.813 | **CR HDL 3953 R** | **CR HDL 3953 V** |
| *225,43* | *276,23* | *20,65* | | |

| Dimensions | | | Designations | |
|---|---|---|---|---|
| Shaft | Bore | Nominal seal width | Lip material | |
| $d_1$ | D | b | R | V |
| in./*mm* | | | – | |
| **9.000**<br>*228,60* | 10.500<br>*266,70* | 0.688<br>*17,45* | **CR HDL 3954 R** | **CR HDL 3954 V** |
| **9.125**<br>*231,78* | 10.625<br>*269,88* | 0.687<br>*17,45* | **CR HDL 3957 R** | **CR HDL 3957 V** |
| **9.250**<br>*234,95* | 10.750<br>*273,05* | 0.687<br>*17,45* | **CR HDL 3963 R** | **CR HDL 3963 V** |
| **9.375**<br>*238,13* | 11.375<br>*288,93* | 0.813<br>*20,65* | **CR HDL 4610 R** | **CR HDL 4610 V** |
| **9.500**<br>*241,30* | 10.750<br>*273,05* | 0.562<br>*14,28* | **CR HDL 3145 R** | **CR HDL 3145 V** |
| | 11.500<br>*292,10* | 0.813<br>*20,65* | **CR HDL 3984 R** | **CR HDL 3984 V** |
| **9.750**<br>*247,65* | 11.125<br>*282,58* | 0.562<br>*14,28* | **CR HDL 1692 R** | **CR HDL 1692 V** |
| | 11.750<br>*298,45* | 0.687<br>*17,45* | **CR HDL 9425 R** | **CR HDL 9425 V** |
| **10.000**<br>*254,00* | 11.500<br>*292,10* | 0.687<br>*17,45* | **CR HDL 3992 R** | **CR HDL 3992 V** |
| | 12.000<br>*304,80* | 0.813<br>*20,65* | **CR HDL 3997 R** | **CR HDL 3997 V** |
| **10.125**<br>*257,18* | 11.625<br>*295,28* | 0.687<br>*17,45* | **CR HDL 3999 R** | **CR HDL 3999 V** |
| **10.250**<br>*260,35* | 11.750<br>*298,45* | 0.687<br>*17,45* | **CR HDL 4004 R** | **CR HDL 4004 V** |
| **10.500**<br>*266,70* | 12.000<br>*304,80* | 0.687<br>*17,45* | **CR HDL 4011 R** | **CR HDL 4011 V** |
| **10.750**<br>*273,05* | 12.250<br>*311,15* | 0.687<br>*17,45* | **CR HDL 4023 R** | **CR HDL 4023 V** |
| | 12.750<br>*323,85* | 0.625<br>*15,88* | **CR HDL 3014 R** | **CR HDL 3014 V** |
| **10.875**<br>*276,23* | 12.375<br>*314,33* | 0.687<br>*17,45* | **CR HDL 4027 R** | **CR HDL 4027 V** |
| **11.000**<br>*279,40* | 12.250<br>*311,15* | 0.562<br>*14,28* | **CR HDL 3135 R** | **CR HDL 3135 V** |
| | 13.000<br>*330,20* | 0.688<br>*17,45* | **CR HDL 6034 R** | **CR HDL 6034 V** |
| **11.125**<br>*282,58* | 13.000<br>*330,20* | 0.687<br>*17,45* | **CR HDL 3699 R** | **CR HDL 3699 V** |
| **11.250**<br>*285,75* | 12.750<br>*323,85* | 0.687<br>*17,45* | **CR HDL 4527 R** | **CR HDL 4527 V** |
| | 13.250<br>*336,55* | 0.813<br>*20,65* | **CR HDL 4047 R** | **CR HDL 4047 V** |
| **11.375**<br>*288,93* | 13.375<br>*339,73* | 0.813<br>*20,65* | **CR HDL 4052 R** | **CR HDL 4052 V** |
| **11.500**<br>*292,10* | 13.000<br>*330,20* | 0.687<br>*17,45* | **CR HDL 4057 R** | **CR HDL 4057 V** |
| **11.750**<br>*298,45* | 13.250<br>*336,55* | 0.687<br>*17,45* | **CR HDL 4064 R** | **CR HDL 4064 V** |

## Radial shaft seals – HDL – inch dimensions
$d_1$ **12.000 – 15.125** in.



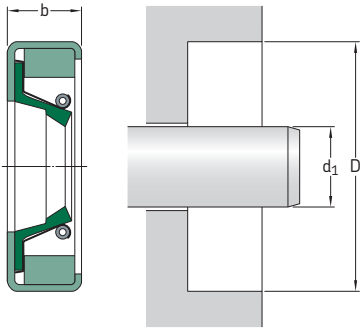

The table includes only a selection of available sizes. Contact your SKF sales representative for more information.

Please see **pages 74** to **76** for housing bore requirements.

| **Dimensions** Shaft $d_1$ | Bore D | Nominal seal width b | **Designations** Lip material R | V |
|---|---|---|---|---|
| in./*mm* | | | – | |
| **12.000** | 13.500 | 0.687 | **CR HDL 4612 R** | **CR HDL 4612 V** |
| *304,80* | *342,90* | *17,45* | | |
| | 13.750 | 0.687 | **CR HDL 3701 R** | **CR HDL 3701 V** |
| | *349,25* | *17,45* | | |
| **12.125** | 13.875 | 0.687 | **CR HDL 4053 R** | **CR HDL 4053 V** |
| *307,98* | *352,43* | *17,45* | | |
| **12.250** | 13.750 | 0.687 | **CR HDL 4613 R** | **CR HDL 4613 V** |
| *311,15* | *349,25* | *17,45* | | |
| | 14.000 | 0.687 | **CR HDL 4055 R** | **CR HDL 4055 V** |
| | *355,60* | *17,45* | | |
| **12.375** | 13.875 | 0.687 | **CR HDL 4076 R** | **CR HDL 4076 V** |
| *314,33* | *352,43* | *17,45* | | |
| | 14.375 | 0.687 | **CR HDL 4097 R** | **CR HDL 4097 V** |
| | *365,13* | *17,45* | | |
| **12.500** | 14.000 | 0.687 | **CR HDL 4079 R** | **CR HDL 4079 V** |
| *317,50* | *355,60* | *17,45* | | |
| **12.625** | 14.125 | 0.687 | **CR HDL 4081 R** | **CR HDL 4081 V** |
| *320,68* | *358,78* | *17,45* | | |
| **12.687** | 14.750 | 0.813 | **CR HDL 9766 R** | **CR HDL 9766 V** |
| *322,24* | *374,65* | *20,65* | | |
| **12.750** | 14.250 | 0.687 | **CR HDL 4089 R** | **CR HDL 4089 V** |
| *323,85* | *361,95* | *17,45* | | |
| | 15.000 | 0.813 | **CR HDL 4092 R** | **CR HDL 4092 V** |
| | *381,00* | *20,65* | | |
| **12.875** | 15.000 | 0.813 | **CR HDL 5404 R** | **CR HDL 5404 V** |
| *327,03* | *381,00* | *20,65* | | |
| **13.000** | 14.500 | 0.687 | **CR HDL 4093 R** | **CR HDL 4093 V** |
| *330,20* | *368,30* | *17,45* | | |

| Dimensions | | | Designations | |
|---|---|---|---|---|
| Shaft | Bore | Nominal seal width | Lip material | |
| $d_1$ | D | b | R | V |
| in./*mm* | | | – | |
| **13.250** | 14.750 | 0.687 | **CR HDL 4101 R** | **CR HDL 4101 V** |
| *336,55* | *374,65* | *17,45* | | |
| | 15.000 | 0.687 | **CR HDL 7169 R** | **CR HDL 7169 V** |
| | *381,00* | *17,45* | | |
| **13.500** | 15.000 | 0.687 | **CR HDL 4121 R** | **CR HDL 4121 V** |
| *342,90* | *381,00* | *17,45* | | |
| | 15.750 | 0.813 | **CR HDL 4123 R** | **CR HDL 4123 V** |
| | *400,05* | *20,65* | | |
| **13.625** | 15.500 | 0.687 | **CR HDL 4120 R** | **CR HDL 4120 V** |
| *346,08* | *393,70* | *17,45* | | |
| **13.750** | 15.250 | 0.687 | **CR HDL 4529 R** | **CR HDL 4529 V** |
| *349,25* | *387,35* | *17,45* | | |
| **13.813** | 16.000 | 0.813 | **CR HDL 4108 R** | **CR HDL 4108 V** |
| *350,85* | *406,40* | *20,65* | | |
| **13.875** | 16.000 | 0.813 | **CR HDL 4110 R** | **CR HDL 4110 V** |
| *352,43* | *406,40* | *20,65* | | |
| **13.937** | 15.437 | 0.687 | **CR HDL 4130 R** | **CR HDL 4130 V** |
| *354,00* | *392,10* | *17,45* | | |
| | 15.500 | 0.687 | **CR HDL 4111 R** | **CR HDL 4111 V** |
| | *393,70* | *17,45* | | |
| **14.000** | 15.500 | 0.687 | **CR HDL 4131 R** | **CR HDL 4131 V** |
| *355,60* | *393,70* | *17,45* | | |
| | 15.750 | 0.750 | **CR HDL 4134 R** | **CR HDL 4134 V** |
| | *400,05* | *19,05* | | |
| **14.187** | 16.732 | 0.813 | **CR HDL 9280 R** | **CR HDL 9280 V** |
| *360,34* | *424,99* | *20,65* | | |
| **14.250** | 15.750 | 0.687 | **CR HDL 4118 R** | **CR HDL 4118 V** |
| *361,95* | *400,05* | *17,45* | | |
| **14.375** | 16.000 | 0.687 | **CR HDL 5481 R** | **CR HDL 5481 V** |
| *365,13* | *406,40* | *17,45* | | |
| **14.500** | 16.000 | 0.687 | **CR HDL 4142 R** | **CR HDL 4142 V** |
| *368,30* | *406,40* | *17,45* | | |
| **14.625** | 16.250 | 0.687 | **CR HDL 3856 R** | **CR HDL 3856 V** |
| *371,48* | *412,75* | *17,45* | | |
| **14.750** | 16.250 | 0.687 | **CR HDL 4147 R** | **CR HDL 4147 V** |
| *374,65* | *412,75* | *17,45* | | |
| | 16.500 | 0.687 | **CR HDL 5990 R** | **CR HDL 5990 V** |
| | *419,10* | *17,45* | | |
| **14.875** | 16.500 | 0.687 | **CR HDL 3858 R** | **CR HDL 3858 V** |
| *377,83* | *419,10* | *17,45* | | |
| | 16.875 | 0.937 | **CR HDL 2622 R** | **CR HDL 2622 V** |
| | *428,63* | *23,80* | | |
| **14.906** | 17.000 | 0.813 | **CR HDL 3861 R** | **CR HDL 3861 V** |
| *378,61* | *431,80* | *20,65* | | |
| **15.000** | 16.500 | 0.687 | **CR HDL 4151 R** | **CR HDL 4151 V** |
| *381,00* | *419,10* | *17,45* | | |
| **15.125** | 16.750 | 0.687 | **CR HDL 4165 R** | **CR HDL 4165 V** |
| *384,18* | *425,45* | *17,45* | | |

## Radial shaft seals – HDL – inch dimensions
$d_1$ **15.250 – 19.250** in.



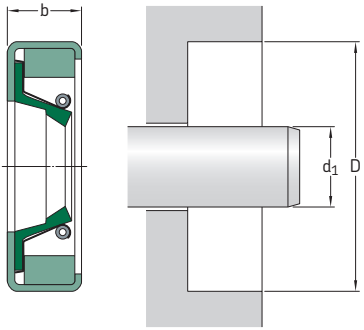

The table includes only a selection of available sizes. Contact your SKF sales representative for more information.

Please see **pages 74** to **76** for housing bore requirements.

| **Dimensions** Shaft | Bore | Nominal seal width | **Designations** Lip material | |
|---|---|---|---|---|
| $d_1$ | D | b | R | V |
| in./*mm* | | | – | |
| **15.250** | 16.750 | 0.687 | **CR HDL 4615 R** | **CR HDL 4615 V** |
| *387,35* | *425,45* | *17,45* | | |
| | 17.250 | 0.875 | **CR HDL 3030 R** | **CR HDL 3030 V** |
| | *438,15* | *22,23* | | |
| **15.313** | 16.875 | 0.687 | **CR HDL 4158 R** | **CR HDL 4158 V** |
| *388,95* | *428,63* | *17,45* | | |
| **15.359** | 17.717 | 0.687 | **CR HDL 4166 R** | **CR HDL 4166 V** |
| *390,11* | *450,01* | *17,45* | | |
| **15.375** | 17.250 | 0.687 | **CR HDL 4167 R** | **CR HDL 4167 V** |
| *390,53* | *438,15* | *17,45* | | |
| **15.500** | 17.496 | 0.813 | **CR HDL 4163 R** | **CR HDL 4163 V** |
| *393,70* | *444,40* | *20,65* | | |
| **15.750** | 17.165 | 0.687 | **CR HDL 9986 R** | **CR HDL 9986 V** |
| *400,05* | *436,00* | *17,45* | | |
| | 17.312 | 0.687 | **CR HDL 9271 R** | **CR HDL 9271 V** |
| | *439,72* | *17,45* | | |
| **15.875** | 17.875 | 0.813 | **CR HDL 4176 R** | **CR HDL 4176 V** |
| *403,23* | *454,03* | *20,65* | | |
| **16.000** | 17.500 | 0.687 | **CR HDL 4177 R** | **CR HDL 4177 V** |
| *406,40* | *444,50* | *17,45* | | |
| | 18.000 | 0.813 | **CR HDL 4180 R** | **CR HDL 4180 V** |
| | *457,20* | *20,65* | | |
| **16.250** | 17.750 | 0.687 | **CR HDL 4181 R** | **CR HDL 4181 V** |
| *412,75* | *450,85* | *17,45* | | |
| | 18.000 | 0.750 | **CR HDL 4184 R** | **CR HDL 4184 V** |
| | *457,20* | *19,05* | | |
| **16.375** | 17.875 | 0.687 | **CR HDL 4179 R** | **CR HDL 4179 V** |
| *415,93* | *454,03* | *17,45* | | |
| **16.500** | 18.000 | 0.687 | **CR HDL 9863 R** | **CR HDL 9863 V** |
| *419,10* | *457,20* | *17,45* | | |
| | 18.500 | 0.813 | **CR HDL 4186 R** | **CR HDL 4186 V** |
| | *469,90* | *20,65* | | |

| Dimensions | | | Designations | |
|---|---|---|---|---|
| Shaft | Bore | Nominal seal width | Lip material | |
| $d_1$ | D | b | R | V |
| in./*mm* | | | – | |
| **16.535**<br>*419,98* | 18.504<br>*470,00* | 0.875<br>*22,23* | **CR HDL 1929 R** | **CR HDL 1929 V** |
| **16.750**<br>*425,45* | 18.250<br>*463,55* | 0.687<br>*17,45* | **CR HDL 3744 R** | **CR HDL 3744 V** |
| | 19.000<br>*482,60* | 0.813<br>*20,65* | **CR HDL 3748 R** | **CR HDL 3748 V** |
| **16.937**<br>*430,19* | 19.291<br>*489,99* | 0.813<br>*20,65* | **CR HDL 9695 R** | **CR HDL 9695 V** |
| **17.000**<br>*431,80* | 18.500<br>*469,90* | 0.687<br>*17,45* | **CR HDL 4188 R** | **CR HDL 4188 V** |
| | 19.250<br>*488,95* | 0.813<br>*20,65* | **CR HDL 4191 R** | **CR HDL 4191 V** |
| **17.250**<br>*438,15* | 18.750<br>*476,25* | 0.687<br>*17,45* | **CR HDL 3751 R** | **CR HDL 3751 V** |
| **17.500**<br>*444,50* | 19.000<br>*482,60* | 0.687<br>*17,45* | **CR HDL 4194 R** | **CR HDL 4194 V** |
| | 19.250<br>*488,95* | 1.000<br>*25,40* | **CR HDL 3005 R** | **CR HDL 3005 V** |
| **17.625**<br>*447,68* | 19.250<br>*488,95* | 0.687<br>*17,45* | **CR HDL 4199 R** | **CR HDL 4199 V** |
| | 19.625<br>*498,48* | 0.687<br>*17,45* | **CR HDL 6850 R** | **CR HDL 6850 V** |
| **17.750**<br>*450,85* | 19.750<br>*501,65* | 0.813<br>*20,65* | **CR HDL 4200 R** | **CR HDL 4200 V** |
| | 20.078<br>*509,98* | 0.875<br>*22,23* | **CR HDL 9084 R** | **CR HDL 9084 V** |
| **17.875**<br>*454,03* | 19.875<br>*504,83* | 0.813<br>*20,65* | **CR HDL 4204 R** | **CR HDL 4204 V** |
| **18.000**<br>*457,20* | 19.500<br>*495,30* | 0.687<br>*17,45* | **CR HDL 4206 R** | **CR HDL 4206 V** |
| | 19.750<br>*501,65* | 0.687<br>*17,45* | **CR HDL 5728 R** | **CR HDL 5728 V** |
| **18.120**<br>*460,25* | 20.500<br>*520,70* | 0.875<br>*22,23* | **CR HDL 3754 R** | **CR HDL 3754 V** |
| **18.125**<br>*460,38* | 20.500<br>*520,70* | 0.875<br>*22,23* | **CR HDL 3756 R** | **CR HDL 3756 V** |
| **18.250**<br>*463,55* | 19.750<br>*501,65* | 0.687<br>*17,45* | **CR HDL 3757 R** | **CR HDL 3757 V** |
| **18.375**<br>*466,73* | 19.875<br>*504,83* | 0.687<br>*17,45* | **CR HDL 4213 R** | **CR HDL 4213 V** |
| | 19.937<br>*506,39* | 0.687<br>*17,45* | **CR HDL 7103 R** | **CR HDL 7103 V** |
| **18.500**<br>*469,90* | 20.000<br>*508,00* | 0.687<br>*17,45* | **CR HDL 3768 R** | **CR HDL 3768 V** |
| | 20.250<br>*514,35* | 0.687<br>*17,45* | **CR HDL 3772 R** | **CR HDL 3772 V** |
| **19.000**<br>*482,60* | 20.500<br>*520,70* | 0.750<br>*19,05* | **CR HDL 4218 R** | **CR HDL 4218 V** |
| | 21.000<br>*533,40* | 0.875<br>*22,23* | **CR HDL 4219 R** | **CR HDL 4219 V** |
| **19.250**<br>*488,95* | 20.750<br>*527,05* | 0.750<br>*19,05* | **CR HDL 4617 R** | **CR HDL 4617 V** |

## Radial shaft seals – HDL – inch dimensions
$d_1$ **19.375 – 23.375** in.



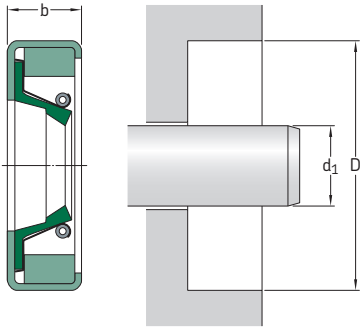

The table includes only a selection of available sizes. Contact your SKF sales representative for more information.

Please see **pages 74** to **76** for housing bore requirements.

| **Dimensions** Shaft $d_1$ | Bore D | Nominal seal width b | **Designations** Lip material R | V |
|---|---|---|---|---|
| in./*mm* | | | – | |
| **19.375** | 21.000 | 0.750 | **CR HDL 3778 R** | **CR HDL 3778 V** |
| *492,13* | *533,40* | *19,05* | | |
| **19.500** | 21.000 | 0.750 | **CR HDL 3779 R** | **CR HDL 3779 V** |
| *495,30* | *533,40* | *19,05* | | |
| | 21.500 | 0.875 | **CR HDL 4221 R** | **CR HDL 4221 V** |
| | *546,10* | *22,23* | | |
| **19.750** | 21.750 | 0.875 | **CR HDL 4228 R** | **CR HDL 4228 V** |
| *501,65* | *552,45* | *22,23* | | |
| | 22.125 | 0.875 | **CR HDL 7400 R** | **CR HDL 7400 V** |
| | *561,98* | *22,23* | | |
| **19.875** | 22.000 | 0.875 | **CR HDL 3788 R** | **CR HDL 3788 V** |
| *504,83* | *558,80* | *22,23* | | |
| **19.937** | 21.687 | 0.625 | **CR HDL 4233 R** | **CR HDL 4233 V** |
| *506,40* | *550,84* | *15,88* | | |
| | 21.500 | 0.750 | **CR HDL 3789 R** | **CR HDL 3789 V** |
| | *546,10* | *19,05* | | |
| **20.000** | 21.500 | 0.750 | **CR HDL 4235 R** | **CR HDL 4235 V** |
| *508,00* | *546,10* | *19,05* | | |
| **20.143** | 22.250 | 0.875 | **CR HDL 3792 R** | **CR HDL 3792 V** |
| *511,63* | *565,15* | *22,23* | | |
| **20.250** | 21.750 | 0.750 | **CR HDL 4239 R** | **CR HDL 4239 V** |
| *514,35* | *552,45* | *19,05* | | |
| | 22.250 | 0.875 | **CR HDL 4240 R** | **CR HDL 4240 V** |
| | *565,15* | *22,23* | | |
| **20.438** | 22.500 | 0.813 | **CR HDL 4242 R** | **CR HDL 4242 V** |
| *519,13* | *571,50* | *20,65* | | |
| **20.500** | 22.000 | 0.750 | **CR HDL 4619 R** | **CR HDL 4619 V** |
| *520,70* | *558,80* | *19,05* | | |
| **20.625** | 22.625 | 0.813 | **CR HDL 9893 R** | **CR HDL 9893 V** |
| *523,88* | *574,68* | *20,65* | | |

| Dimensions | | | Designations | |
|---|---|---|---|---|
| Shaft | Bore | Nominal seal width | Lip material | |
| $d_1$ | D | b | R | V |
| in./*mm* | | | – | |
| **20.750** | 22.750 | 0.875 | **CR HDL 4248 R** | **CR HDL 4248 V** |
| *527,05* | *577,85* | *22,23* | | |
| **20.875** | 22.875 | 0.875 | **CR HDL 4250 R** | **CR HDL 4250 V** |
| *530,23* | *581,03* | *22,23* | | |
| **21.000** | 22.500 | 0.750 | **CR HDL 5259 R** | **CR HDL 5259 V** |
| *533,40* | *571,50* | *19,05* | | |
| | 23.000 | 0.813 | **CR HDL 6535 R** | **CR HDL 6535 V** |
| | *584,20* | *20,65* | | |
| **21.250** | 23.000 | 0.750 | **CR HDL 4255 R** | **CR HDL 4255 V** |
| *539,75* | *584,20* | *19,05* | | |
| **21.437** | 23.187 | 0.750 | **CR HDL 4256 R** | **CR HDL 4256 V** |
| *544,49* | *588,94* | *19,05* | | |
| **21.500** | 23.250 | 0.750 | **CR HDL 4257 R** | **CR HDL 4257 V** |
| *546,10* | *590,55* | *19,05* | | |
| | 23.500 | 0.875 | **CR HDL 4259 R** | **CR HDL 4259 V** |
| | *596,90* | *22,23* | | |
| **21.625** | 23.375 | 0.750 | **CR HDL 4261 R** | **CR HDL 4261 V** |
| *549,28* | *593,73* | *19,05* | | |
| **21.750** | 23.250 | 0.750 | **CR HDL 4621 R** | **CR HDL 4621 V** |
| *552,45* | *590,55* | *19,05* | | |
| | 24.750 | 0.875 | **CR HDL 4262 R** | **CR HDL 4262 V** |
| | *628,65* | *22,23* | | |
| **22.000** | 23.500 | 0.750 | **CR HDL 4269 R** | **CR HDL 4269 V** |
| *558,80* | *596,90* | *19,05* | | |
| | 24.250 | 0.813 | **CR HDL 9082 R** | **CR HDL 9082 V** |
| | *615,95* | *20,65* | | |
| **22.250** | 24.250 | 0.875 | **CR HDL 3764 R** | **CR HDL 3764 V** |
| *565,15* | *615,95* | *22,23* | | |
| **22.375** | 24.250 | 0.750 | **CR HDL 4268 R** | **CR HDL 4268 V** |
| *568,33* | *615,95* | *19,05* | | |
| | 24.375 | 0.875 | **CR HDL 2576 R** | **CR HDL 2576 V** |
| | *619,13* | *22,23* | | |
| **22.437** | 24.000 | 0.750 | **CR HDL 4275 R** | **CR HDL 4275 V** |
| *569,89* | *609,60* | *19,05* | | |
| **22.500** | 24.000 | 0.750 | **CR HDL 4271 R** | **CR HDL 4271 V** |
| *571,50* | *609,60* | *19,05* | | |
| | 24.500 | 0.875 | **CR HDL 4279 R** | **CR HDL 4279 V** |
| | *622,30* | *22,23* | | |
| | 24.750 | 0.875 | **CR HDL 4273 R** | **CR HDL 4273 V** |
| | *628,65* | *22,23* | | |
| **22.750** | 24.750 | 0.875 | **CR HDL 4281 R** | **CR HDL 4281 V** |
| *577,85* | *628,65* | *22,23* | | |
| **23.000** | 24.500 | 0.750 | **CR HDL 4283 R** | **CR HDL 4283 V** |
| *584,20* | *622,30* | *19,05* | | |
| | 24.750 | 0.750 | **CR HDL 5421 R** | **CR HDL 5421 V** |
| | *628,65* | *19,05* | | |
| **23.250** | 25.000 | 0.750 | **CR HDL 4286 R** | **CR HDL 4286 V** |
| *590,55* | *635,00* | *19,05* | | |
| | 25.250 | 0.750 | **CR HDL 9371 R** | **CR HDL 9371 V** |
| | *641,35* | *19,05* | | |
| **23.375** | 25.375 | 0.875 | **CR HDL 4287 R** | **CR HDL 4287 V** |
| *593,73* | *644,53* | *22,23* | | |

## Radial shaft seals – HDL – inch dimensions
$d_1$ **23.500 – 29.500** in.



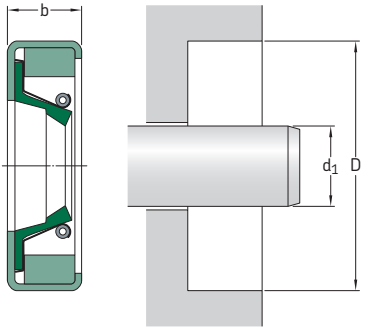

The table includes only a selection of available sizes. Contact your SKF sales representative for more information.

Please see **pages 74** to **76** for housing bore requirements.

| **Dimensions** Shaft | Bore | Nominal seal width | **Designations** Lip material | |
|---|---|---|---|---|
| $d_1$ | D | b | R | V |
| in./*mm* | | | – | |
| **23.500** | 24.681 | 0.591 | **CR HDL 3033 R** | **CR HDL 3033 V** |
| *596,90* | *626,90* | *15,00* | | |
| **23.562** | 25.250 | 0.750 | **CR HDL 4290 R** | **CR HDL 4290 V** |
| *598,47* | *641,35* | *19,05* | | |
| | 25.375 | 0.750 | **CR HDL 4291 R** | **CR HDL 4291 V** |
| | *644,53* | *19,05* | | |
| **23.625** | 26.000 | 0.875 | **CR HDL 4292 R** | **CR HDL 4292 V** |
| *600,08* | *660,40* | *22,23* | | |
| **23.750** | 25.250 | 1.000 | **CR HDL 6239 R** | **CR HDL 6239 V** |
| *603,25* | *641,35* | *25,40* | | |
| **23.875** | 26.000 | 0.875 | **CR HDL 4293 R** | **CR HDL 4293 V** |
| *606,43* | *660,40* | *22,23* | | |
| **24.000** | 25.500 | 0.750 | **CR HDL 4623 R** | **CR HDL 4623 V** |
| *609,60* | *647,70* | *19,05* | | |
| | 26.000 | 0.813 | **CR HDL 4295 R** | **CR HDL 4295 V** |
| | *660,40* | *20,65* | | |
| **24.250** | 26.250 | 0.875 | **CR HDL 4301 R** | **CR HDL 4301 V** |
| *615,95* | *666,75* | *22,23* | | |
| **24.437** | 26.000 | 0.750 | **CR HDL 4302 R** | **CR HDL 4302 V** |
| *620,69* | *660,40* | *19,05* | | |
| | 26.935 | 1.000 | **CR HDL 9990 R** | **CR HDL 9990 V** |
| | *684,15* | *25,40* | | |
| **24.500** | 26.500 | 0.875 | **CR HDL 4305 R** | **CR HDL 4305 V** |
| *622,30* | *673,10* | *22,23* | | |
| **25.000** | 26.500 | 0.750 | **CR HDL 4308 R** | **CR HDL 4308 V** |
| *635,00* | *673,10* | *19,05* | | |
| **25.187** | 26.875 | 0.750 | **CR HDL 4311 R** | **CR HDL 4311 V** |
| *639,74* | *682,63* | *19,05* | | |
| **25.250** | 27.250 | 0.750 | **CR HDL 4299 R** | **CR HDL 4299 V** |
| *641,35* | *692,15* | *19,05* | | |

| Dimensions | | | Designations | |
|---|---|---|---|---|
| Shaft | Bore | Nominal seal width | Lip material | |
| $d_1$ | D | b | R | V |
| in./*mm* | | | – | |
| **25.500** | 26.750 | 0.750 | **CR HDL 3022 R** | **CR HDL 3022 V** |
| *647,70* | *679,45* | *19,05* | | |
| | 27.500 | 0.875 | **CR HDL 4318 R** | **CR HDL 4318 V** |
| | *698,50* | *22,23* | | |
| **25.750** | 27.500 | 0.750 | **CR HDL 6998 R** | **CR HDL 6998 V** |
| *654,05* | *698,50* | *19,05* | | |
| **25.875** | 28.000 | 0.875 | **CR HDL 4303 R** | **CR HDL 4303 V** |
| *657,23* | *711,20* | *22,23* | | |
| **25.988** | 27.625 | 0.750 | **CR HDL 4306 R** | **CR HDL 4306 V** |
| *660,09* | *701,68* | *19,05* | | |
| **26.000** | 27.625 | 0.750 | **CR HDL 5921 R** | **CR HDL 5921 V** |
| *660,40* | *701,68* | *19,05* | | |
| **26.125** | 27.625 | 0.750 | **CR HDL 4329 R** | **CR HDL 4329 V** |
| *663,58* | *701,68* | *19,05* | | |
| **26.375** | 28.188 | 0.875 | **CR HDL 4307 R** | **CR HDL 4307 V** |
| *669,93* | *715,98* | *22,23* | | |
| **26.500** | 28.000 | 0.750 | **CR HDL 4533 R** | **CR HDL 4533 V** |
| *673,10* | *711,20* | *19,05* | | |
| **27.000** | 29.000 | 0.875 | **CR HDL 4333 R** | **CR HDL 4333 V** |
| *685,80* | *736,60* | *22,23* | | |
| **27.250** | 29.250 | 0.875 | **CR HDL 4626 R** | **CR HDL 4626 V** |
| *692,15* | *742,95* | *22,23* | | |
| **27.500** | 29.000 | 0.750 | **CR HDL 4315 R** | **CR HDL 4315 V** |
| *698,50* | *736,60* | *19,05* | | |
| **27.625** | 29.625 | 0.750 | **CR HDL 5001 R** | **CR HDL 5001 V** |
| *701,68* | *752,48* | *19,05* | | |
| **27.875** | 29.813 | 0.875 | **CR HDL 4341 R** | **CR HDL 4341 V** |
| *708,03* | *757,25* | *22,23* | | |
| **28.000** | 29.500 | 0.750 | **CR HDL 4343 R** | **CR HDL 4343 V** |
| *711,20* | *749,30* | *19,05* | | |
| | 29.813 | 0.750 | **CR HDL 4316 R** | **CR HDL 4316 V** |
| | *757,25* | *19,05* | | |
| **28.438** | 31.000 | 0.875 | **CR HDL 4321 R** | **CR HDL 4321 V** |
| *722,33* | *787,40* | *22,23* | | |
| **28.500** | 30.500 | 0.875 | **CR HDL 4346 R** | **CR HDL 4346 V** |
| *723,90* | *774,70* | *22,23* | | |
| **28.750** | 30.750 | 0.875 | **CR HDL 4628 R** | **CR HDL 4628 V** |
| *730,25* | *781,05* | *22,23* | | |
| **29.000** | 30.500 | 0.750 | **CR HDL 4347 R** | **CR HDL 4347 V** |
| *736,60* | *774,70* | *19,05* | | |
| | 31.500 | 1.000 | **CR HDL 8793 R** | **CR HDL 8793 V** |
| | *800,10* | *25,40* | | |
| **29.500** | 31.500 | 0.875 | **CR HDL 4352 R** | **CR HDL 4352 V** |
| *749,30* | *800,10* | *22,23* | | |
| | 32.000 | 0.875 | **CR HDL 4538 R** | **CR HDL 4538 V** |
| | *812,80* | *22,23* | | |

## Radial shaft seals – HDL – inch dimensions
$d_1$ **30.000 – 37.000** in.



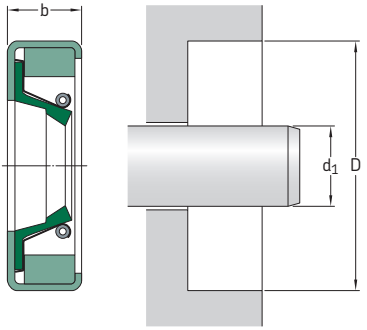

The table includes only a selection of available sizes. Contact your SKF sales representative for more information.

Please see **pages 74** to **76** for housing bore requirements.

| **Dimensions** Shaft $d_1$ | Bore D | Nominal seal width b | **Designations** Lip material R | V |
|---|---|---|---|---|
| in./*mm* | | | – | |
| **30.000** | 31.500 | 0.750 | **CR HDL 4356 R** | **CR HDL 4356 V** |
| *762,00* | *800,10* | *19,05* | | |
| | 31.625 | 0.750 | **CR HDL 7870 R** | **CR HDL 7870 V** |
| | *803,28* | *19,05* | | |
| | 32.500 | 0.875 | **CR HDL 4358 R** | **CR HDL 4358 V** |
| | *825,50* | *22,23* | | |
| | 32.750 | 0.875 | **CR HDL 4359 R** | **CR HDL 4359 V** |
| | *831,85* | *22,23* | | |
| **30.250** | 32.500 | 0.875 | **CR HDL 4906 R** | **CR HDL 4906 V** |
| *768,35* | *825,50* | *22,23* | | |
| **30.313** | 32.375 | 0.875 | **CR HDL 4361 R** | **CR HDL 4361 V** |
| *769,95* | *822,33* | *22,23* | | |
| **30.500** | 32.500 | 0.875 | **CR HDL 4365 R** | **CR HDL 4365 V** |
| *774,70* | *825,50* | *22,23* | | |
| **31.000** | 32.500 | 0.750 | **CR HDL 5739 R** | **CR HDL 5739 V** |
| *787,40* | *825,50* | *19,05* | | |
| | 33.500 | 0.875 | **CR HDL 4540 R** | **CR HDL 4540 V** |
| | *850,90* | *22,23* | | |
| **31.250** | 32.750 | 0.750 | **CR HDL 4631 R** | **CR HDL 4631 V** |
| *793,75* | *831,85* | *19,05* | | |
| **31.750** | 33.750 | 0.875 | **CR HDL 5016 R** | **CR HDL 5016 V** |
| *806,45* | *857,25* | *22,23* | | |
| **32.000** | 33.500 | 0.750 | **CR HDL 3023 R** | **CR HDL 3023 V** |
| *812,80* | *850,90* | *19,05* | | |
| **32.125** | 34.125 | 0.875 | **CR HDL 4371 R** | **CR HDL 4371 V** |
| *815,98* | *866,78* | *22,23* | | |
| | 34.125 | 0.750 | **CR HDL 3002 R** | **CR HDL 3002 V** |
| | *866,78* | *19,05* | | |
| **32.313** | 34.500 | 0.875 | **CR HDL 4373 R** | **CR HDL 4373 V** |
| *820,75* | *876,30* | *22,23* | | |
| **32.500** | 34.500 | 0.875 | **CR HDL 4377 R** | **CR HDL 4377 V** |
| *825,50* | *876,30* | *22,22* | | |

| Dimensions | | | Designations | |
|---|---|---|---|---|
| Shaft | Bore | Nominal seal width | Lip material | |
| $d_1$ | D | b | R | V |
| in./*mm* | | | – | |
| **32.750** | 34.250 | 0.750 | **CR HDL 4542 R** | **CR HDL 4542 V** |
| *831,85* | *869,95* | *19,05* | | |
| **33.000** | 34.500 | 0.750 | **CR HDL 4381 R** | **CR HDL 4381 V** |
| *838,20* | *876,30* | *19,05* | | |
| | 34.650 | 0.787 | **CR HDL 4634 R** | **CR HDL 4634 V** |
| | *880,10* | *20,00* | | |
| | 35.000 | 0.875 | **CR HDL 4382 R** | **CR HDL 4382 V** |
| | *889,00* | *22,23* | | |
| **33.500** | 35.000 | 0.875 | **CR HDL 9504 R** | **CR HDL 9504 V** |
| *850,90* | *889,00* | *22,23* | | |
| | 35.625 | 0.875 | **CR HDL 4548 R** | **CR HDL 4548 V** |
| | *904,88* | *22,23* | | |
| **33.625** | 35.625 | 0.875 | **CR HDL 4328 R** | **CR HDL 4328 V** |
| *854,08* | *904,88* | *22,23* | | |
| **34.000** | 35.625 | 0.875 | **CR HDL 4331 R** | **CR HDL 4331 V** |
| *863,60* | *904,88* | *22,23* | | |
| **34.250** | 36.000 | 0.750 | **CR HDL 3017 R** | **CR HDL 3017 V** |
| *869,95* | *914,40* | *19,05* | | |
| | 36.750 | 0.875 | **CR HDL 4335 R** | **CR HDL 4335 V** |
| | *933,45* | *22,23* | | |
| **34.500** | 36.000 | 0.750 | **CR HDL 6908 R** | **CR HDL 6908 V** |
| *876,30* | *914,40* | *19,05* | | |
| | 36.500 | 1.000 | **CR HDL 3021 R** | **CR HDL 3021 V** |
| | *927,10* | *25,40* | | |
| **34.750** | 36.750 | 0.875 | **CR HDL 3831 R** | **CR HDL 3831 V** |
| *882,65* | *933,45* | *22,23* | | |
| **35.000** | 37.000 | 0.875 | **CR HDL 3835 R** | **CR HDL 3835 V** |
| *889,00* | *939,80* | *22,23* | | |
| **35.250** | 37.250 | 0.875 | **CR HDL 4416 R** | **CR HDL 4416 V** |
| *895,35* | *946,15* | *22,23* | | |
| **35.375** | 37.375 | 0.875 | **CR HDL 4417 R** | **CR HDL 4417 V** |
| *898,53* | *949,33* | *22,23* | | |
| **35.437** | 38.583 | 0.875 | **CR HDL 9079 R** | **CR HDL 9079 V** |
| *900,09* | *980,00* | *22,23* | | |
| **35.496** | 37.996 | 0.984 | **CR HDL 3001 R** | **CR HDL 3001 V** |
| *901,60* | *965,10* | *25,00* | | |
| **35.500** | 37.500 | 0.875 | **CR HDL 4553 R** | **CR HDL 4553 V** |
| *901,70* | *952,50* | *22,23* | | |
| **35.827** | 38.077 | 0.687 | **CR HDL 3003 R** | **CR HDL 3003 V** |
| *910,00* | *967,15* | *17,45* | | |
| **36.000** | 38.000 | 0.875 | **CR HDL 4421 R** | **CR HDL 4421 V** |
| *914,40* | *965,20* | *22,23* | | |
| **36.500** | 38.000 | 0.750 | **CR HDL 4429 R** | **CR HDL 4429 V** |
| *927,10* | *965,20* | *19,05* | | |
| **36.750** | 38.750 | 0.875 | **CR HDL 4432 R** | **CR HDL 4432 V** |
| *933,45* | *984,25* | *22,23* | | |
| **37.000** | 39.000 | 0.875 | **CR HDL 4434 R** | **CR HDL 4434 V** |
| *939,80* | *990,60* | *22,23* | | |

## Radial shaft seals – HDL – inch dimensions
## $d_1$ **37.250 – 51.250** in.



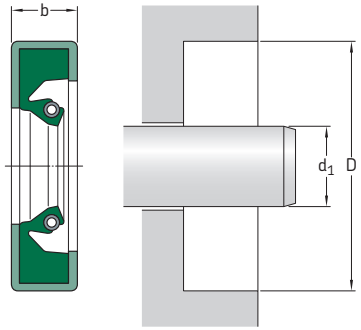

The table includes only a selection of available sizes. Contact your SKF sales representative for more information.

Please see **pages 74** to **76** for housing bore requirements.

| **Dimensions** Shaft $d_1$ | Bore D | Nominal seal width b | **Designations** Lip material R | V |
|---|---|---|---|---|
| in./*mm* | | | – | |
| **37.250** *946,15* | 39.250 *996,95* | 0.875 *22,23* | **CR HDL 4436 R** | **CR HDL 4436 V** |
| **37.374** *949,30* | 39.500 *1 003,30* | 0.875 *22,23* | **CR HDL 4425 R** | **CR HDL 4425 V** |
| **37.437** *950,89* | 39.500 *1 003,30* | 0.875 *22,23* | **CR HDL 3847 R** | **CR HDL 3847 V** |
| **37.500** *952,50* | 39.000 *990,60* | 0.750 *19,05* | **CR HDL 9411 R** | **CR HDL 9411 V** |
| **38.000** *965,20* | 39.500 *1 003,30* | 0.750 *19,05* | **CR HDL 3004 R** | **CR HDL 3004 V** |
| | 41.000 *1 041,40* | 0.875 *22,23* | **CR HDL 4340 R** | **CR HDL 4340 V** |
| **38.250** *971,55* | 40.250 *1 022,35* | 0.875 *22,23* | **CR HDL 4454 R** | **CR HDL 4454 V** |
| **38.258** *971,75* | 40.750 *1 035,05* | 0.875 *22,23* | **CR HDL 4342 R** | **CR HDL 4342 V** |
| **38.500** *977,90* | 41.000 *1 041,40* | 0.875 *22,23* | **CR HDL 4349 R** | **CR HDL 4349 V** |
| **38.750** *984,25* | 40.750 *1 035,05* | 0.875 *22,23* | **CR HDL 4456 R** | **CR HDL 4456 V** |
| **38.937** *988,99* | 41.000 *1 041,40* | 0.875 *22,23* | **CR HDL 4462 R** | **CR HDL 4462 V** |
| **39.000** *990,60* | 41.000 *1 041,40* | 0.875 *22,23* | **CR HDL 4465 R** | **CR HDL 4465 V** |
| | 42.250 *1 073,15* | 0.875 *22,23* | **CR HDL 4577 R** | **CR HDL 4577 V** |
| **39.750** *1 009,65* | 42.250 *1 073,15* | 0.875 *22,23* | **CR HDL 7538 R** | **CR HDL 7538 V** |
| **40.000** *1 016,00* | 42.000 *1 066,80* | 0.875 *22,23* | **CR HDL 4467 R** | **CR HDL 4467 V** |

| Dimensions | | | Designations | |
|---|---|---|---|---|
| Shaft | Bore | Nominal seal width | Lip material | |
| $d_1$ | D | b | R | V |
| in./*mm* | | | – | |
| **40.500**<br>*1 028,70* | 42.500<br>*1 079,50* | 0.875<br>*22,23* | **CR HDL 4468 R** | **CR HDL 4468 V** |
| | 43.020<br>*1 092,70* | 0.875<br>*22,23* | **CR HDL 1964 R** | **CR HDL 1964 V** |
| **41.500**<br>*1 054,10* | 43.500<br>*1 104,90* | 0.875<br>*22,23* | **CR HDL 4635 R** | **CR HDL 4635 V** |
| **41.875**<br>*1 063,63* | 43.500<br>*1 104,90* | 1.000<br>*25,40* | **CR HDL 8628 R** | **CR HDL 8628 V** |
| **42.248**<br>*1 073,10* | 44.248<br>*1 123,90* | 1.000<br>*25,40* | **CR HDL 4470 R** | **CR HDL 4470 V** |
| **42.500**<br>*1 079,50* | 44.250<br>*1 123,95* | 0.875<br>*22,23* | **CR HDL 5555 R** | **CR HDL 5555 V** |
| **43.000**<br>*1 092,20* | 45.500<br>*1 155,70* | 0.875<br>*22,23* | **CR HDL 7189 R** | **CR HDL 7189 V** |
| **43.500**<br>*1 104,90* | 45.500<br>*1 155,70* | 0.875<br>*22,23* | **CR HDL 4637 R** | **CR HDL 4637 V** |
| **43.750**<br>*1 111,25* | 45.750<br>*1 162,05* | 0.875<br>*22,23* | **CR HDL 4638 R** | **CR HDL 4638 V** |
| **44.000**<br>*1 117,60* | 46.000<br>*1 168,40* | 0.875<br>*22,23* | **CR HDL 7087 R** | **CR HDL 7087 V** |
| **44.500**<br>*1 130,30* | 46.000<br>*1 168,40* | 0.750<br>*19,05* | **CR HDL 4563 R** | **CR HDL 4563 V** |
| **46.004**<br>*1 168,50* | 47.500<br>*1 206,50* | 0.750<br>*19,05* | **CR HDL 3006 R** | **CR HDL 3006 V** |
| **46.500**<br>*1 181,10* | 48.500<br>*1 231,90* | 0.875<br>*22,23* | **CR HDL 4578 R** | **CR HDL 4578 V** |
| **46.850**<br>*1 189,99* | 48.819<br>*1 240,00* | 0.875<br>*22,23* | **CR HDL 8317 R** | **CR HDL 8317 V** |
| **48.000**<br>*1 219,20* | 50.000<br>*1 270,00* | 0.875<br>*22,23* | **CR HDL 8579 R** | **CR HDL 8579 V** |
| **48.250**<br>*1 225,55* | 50.250<br>*1 276,35* | 0.875<br>*22,23* | **CR HDL 4639 R** | **CR HDL 4639 V** |
| **51.248**<br>*1 301,71* | 53.289<br>*1 353,55* | 0.875<br>*22,23* | **CR HDL 6747 R** | **CR HDL 6747 V** |
| **51.250**<br>*1 301,75* | 53.300<br>*1 353,82* | 0.875<br>*22,23* | **CR HDL 1914 R** | **CR HDL 1914 V** |

## Radial shaft seals – HDS1, HDS2 and HDS3 – metric dimensions
$d_1$ **170 – 380** mm




The table includes only a selection of available sizes. Contact your SKF sales representative for more information.

Please see **pages 74** to **76** for housing bore requirements.

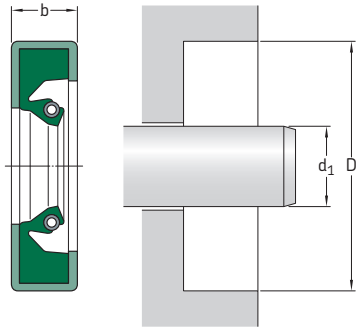
| **Dimensions** Shaft $d_1$ | Bore D | Nominal seal width b | **Design** | **Lip material** | **Designation** |
|---|---|---|---|---|---|
| mm | | | – | – | – |
| **170** | 210 | 16 | HDS1 | R | **CR 170×210×16 HDS1 R** |
| **200** | 230 | 15,87 | HDS1 | R | **CR 200×230×16 HDS1 R** |
| | 238 | 19 | HDS1 | V | **CR 200×238×19 HDS1 V** |
| | 240 | 20 | HDS2 | R | **CR 200×240×20 HDS2 R** |
| **210** | 245 | 16 | HDS1 | R | **CR 210×245×16 HDS1 R** |
| | 250 | 20 | HDS1 | V | **CR 210×250×20 HDS1 V** |
| **215** | 270 | 23 | HDS2 | R | **CR 215×270×23 HDS2 R** |
| **220** | 255 | 16 | HDS1 | R | **CR 220×255×16 HDS1 R**[1)] |
| | 260 | 16 | HDS1 | R | **CR 220×260×16 HDS1 R** |
| | 260 | 20 | HDS1 | R | **CR 220×260×20 HDS1 R** |
| **225** | 257 | 16 | HDS1 | R | **CR 225×257×16 HDS1 R** |
| **230** | 270 | 16 | HDS2 | V | **CR 230×270×16 HDS2 V** |
| **235** | 270 | 16 | HDS2 | R | **CR 235×270×16 HDS2 R** |
| **240** | 280 | 16 | HDS2 | R | **CR 240×280×16 HDS2 R** |
| | 280 | 16 | HDS2 | D | **CR 240×280×16 HDS2 D** |
| **245** | 305 | 28 | HDS2 | R | **CR 245×305×28 HDS2 R** |
| **250** | 280 | 16 | HDS2 | R | **CR 250×280×16 HDS2 R** |
| | 280 | 16 | HDS1 | D | **CR 250×280×16 HDS1 D** |
| | 285 | 16 | HDS2 | D | **CR 250×285×16 HDS2 D** |
| | 310 | 25 | HDS1 | R | **CR 250×310×25 HDS1 R** |
| **260** | 290 | 16 | HDS2 | D | **CR 260×290×16 HDS2 D** |
| | 290 | 16 | HDS2 | V | **CR 260×290×16 HDS2 V** |
| | 300 | 16 | HDS2 | R | **CR 260×300×16 HDS2 R** |
| | 300 | 20 | HDS2 | D | **CR 260×300×20 HDS2 D** |
| **265** | 310 | 16 | HDS1 | R | **CR 265×310×16 HDS1 R** |

[1)] 12,7 mm adjustable spacer lugs (4)

| Dimensions | | | Design | Lip material | Designation |
|---|---|---|---|---|---|
| Shaft | Bore | Nominal seal width | | | |
| $d_1$ | D | b | | | |
| mm | | | – | – | – |
| **270** | 310 | 16 | HDS3 | V | **CR 270×310×16 HDS3 V**[2] |
| | 310 | 20 | HDS2 | V | **CR 270×310×20 HDS2 V** |
| | 330 | 25 | HDS2 | V | **CR 270×330×25 HDS2 V** |
| **275** | 310 | 16 | HDS1 | R | **CR 275×310×16 HDS1 R** |
| **280** | 310 | 16 | HDS1 | R | **CR 280×310×16 HDS1 R** |
| | 320 | 16 | HDS1 | R | **CR 280×320×16 HDS1 R** |
| | 320 | 20 | HDS1 | R | **CR 280×320×20 HDS1 R** |
| | 340 | 25 | HDS1 | R | **CR 280×340×25 HDS1 R** |
| **285** | 320 | 16 | HDS2 | R | **CR 285×320×16 HDS2 R** |
| | 325 | 16 | HDS1 | R | **CR 285×325×16 HDS1 R** |
| **290** | 330 | 18 | HDS2 | R | **CR 290×330×18 HDS2 R** |
| | 350 | 25 | HDS2 | R | **CR 290×350×25 HDS2 R** |
| **295** | 335 | 18 | HDS1 | R | **CR 295×335×18 HDS1 R** |
| **300** | 332 | 16 | HDS2 | R | **CR 300×332×16 HDS2 R** |
| | 335 | 18 | HDS2 | R | **CR 300×335×18 HDS2 R** |
| | 340 | 18 | HDS1 | V | **CR 300×340×18 HDS1 V** |
| | 340 | 18 | HDS1 | D | **CR 300×340×18 HDS1 D** |
| | 340 | 20 | HDS1 | V | **CR 300×340×20 HDS1 V** |
| | 345 | 22 | HDS1 | R | **CR 300×345×22 HDS1 R** |
| | 360 | 25 | HDS2 | V | **CR 300×360×25 HDS2 V** |
| **310** | 350 | 18 | HDS2 | V | **CR 310×350×18 HDS2 V** |
| | 350 | 20 | HDS2 | D | **CR 310×350×20 HDS2 D** |
| | 370 | 25 | HDS2 | D | **CR 310×370×25 HDS2 D** |
| **315** | 355 | 18 | HDS1 | V | **CR 315×355×18 HDS1 V** |
| **318** | 360 | 20 | HDS2 | R | **CR 318×360×20 HDS2 R** |
| **320** | 350 | 18 | HDS1 | R | **CR 320×350×18 HDS1 R** |
| | 360 | 18 | HDS1 | R | **CR 320×360×18 HDS1 R** |
| | 360 | 18 | HDS2 | V | **CR 320×360×18 HDS2 V** |
| | 380 | 25 | HDS1 | R | **CR 320×380×25 HDS1 R** |
| **330** | 370 | 18 | HDS1 | R | **CR 330×370×18 HDS1 R** |
| | 390 | 25 | HDS1 | R | **CR 330×390×25 HDS1 R** |
| **335** | 375 | 18 | HDS3 | D | **CR 335×375×18 HDS3 D**[2] |
| **340** | 380 | 18 | HDS2 | V | **CR 340×380×18 HDS2 V** |
| | 380 | 18 | HDS2 | D | **CR 340×380×18 HDS2 D** |
| | 380 | 20 | HDS2 | H | **CR 340×380×20 HDS2 H** |
| | 380 | 20 | HDS2 | R | **CR 340×380×20 HDS2 R** |
| **350** | 380 | 16 | HDS2 | R | **CR 350×380×16 HDS2 R** |
| | 390 | 18 | HDS2 | D | **CR 350×390×18 HDS2 D** |
| **360** | 400 | 18 | HDS1 | R | **CR 360×400×18 HDS1 R** |
| | 400 | 20 | HDS1 | V | **CR 360×400×20 HDS1 V** |
| | 410 | 17 | HDS1 | R | **CR 360×410×17 HDS1 R** |
| **365** | 405 | 18 | HDS2 | R | **CR 365×405×18 HDS2 R** |
| **370** | 410 | 16 | HDS2 | R | **CR 370×410×16 HDS2 R** |
| **375** | 420 | 18 | HDS2 | R | **CR 375×420×18 HDS2 R** |
| **380** | 420 | 20 | HDS2 | R | **CR 380×420×20 HDS2 R** |
| | 420 | 20 | HDS2 | V | **CR 380×420×20 HDS2 V** |
| | 440 | 25 | HDS2 | R | **CR 380×440×25 HDS2 R** |

[2] 12,7 mm adjustable spacer lugs (6)

## Radial shaft seals – HDS1, HDS2 and HDS3 – metric dimensions
$d_1$ **390 – 700** mm




The table includes only a selection of available sizes. Contact your SKF sales representative for more information.

Please see **pages 74** to **76** for housing bore requirements.

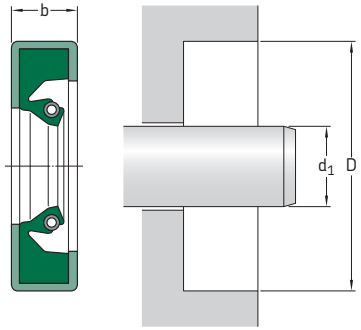
| **Dimensions** Shaft $d_1$ | Bore D | Nominal seal width b | **Design** | **Lip material** | **Designation** |
|---|---|---|---|---|---|
| mm | | | – | – | – |
| **390** | 430 | 16 | HDS2 | R | **CR 390×430×16 HDS2 R** |
| **395** | 430 | 18 | HDS2 | R | **CR 395×430×18 HDS2 R**[2] |
| **400** | 440 | 20 | HDS1 | R | **CR 400×440×20 HDS1 R** |
| | 440 | 20 | HDS2 | R | **CR 400×440×20 HDS2 R** |
| | 460 | 25 | HDS1 | R | **CR 400×460×25 HDS1 R** |
| **410** | 450 | 20 | HDS2 | R | **CR 410×450×20 HDS2 R** |
| | 460 | 22 | HDS2 | R | **CR 410×460×22 HDS2 R** |
| **420** | 460 | 20 | HDS2 | R | **CR 420×460×20 HDS2 R** |
| | 470 | 22 | HDS1 | R | **CR 420×470×22 HDS1 R**[1] |
| **430** | 480 | 22 | HDS1 | V | **CR 430×480×22 HDS1 V** |
| | 480 | 25 | HDS2 | R | **CR 430×480×25 HDS2 R** |
| **435** | 485 | 18 | HDS2 | R | **CR 435×485×18 HDS2 R**[2] |
| **440** | 470 | 20 | HDS1 | R | **CR 440×470×20 HDS1 R** |
| | 480 | 20 | HDS1 | R | **CR 440×480×20 HDS1 R** |
| **445** | 485 | 20 | HDS1 | R | **CR 445×485×20 HDS1 R** |
| **450** | 490 | 20 | HDS1 | R | **CR 450×490×20 HDS1 R** |
| **448** | 480 | 16 | HDS2 | R | **CR 448×480×16 HDS2 R** |
| **460** | 500 | 20 | HDS1 | R | **CR 460×500×20 HDS1 R** |
| | 500 | 20 | HDS1 | V | **CR 460×500×20 HDS1 V** |
| | 510 | 22 | HDS2 | V | **CR 460×510×22 HDS2 V** |
| | 520 | 25 | HDS2 | R | **CR 460×520×25 HDS2 R** |
| **470** | 510 | 20 | HDS1 | R | **CR 470×510×20 HDS1 R** |
| | 530 | 26 | HDS2 | R | **CR 470×530×26 HDS2 R** |
| **480** | 520 | 20 | HDS1 | R | **CR 480×520×20 HDS1 R** |

[1] 12,7 mm adjustable spacer lugs (4)
[2] 12,7 mm adjustable spacer lugs (6)

| Dimensions Shaft $d_1$ | Bore D | Nominal seal width b | Design | Lip material | Designation |
|---|---|---|---|---|---|
| mm | | | – | – | – |
| **485** | 535 | 22 | HDS1 | R | **CR 485×535×22 HDS1 R** |
| **490** | 530 | 20 | HDS1 | R | **CR 490×530×20 HDS1 R** |
| **500** | 540 | 20 | HDS1 | R | **CR 500×540×20 HDS1 R** |
| | 550 | 18 | HDS1 | R | **CR 500×550×18 HDS1 R**[2] |
| **505** | 555 | 20,62 | HDS2 | R | **CR 505×555×21 HDS2 R** |
| **510** | 554 | 20 | HDS1 | D | **CR 510×554×20 HDS1 D** |
| **515** | 555 | 20 | HDS2 | R | **CR 515×555×20 HDS2 R** |
| **520** | 560 | 20 | HDS1 | R | **CR 520×560×20 HDS1 R** |
| **525** | 575 | 20 | HDS3 | D | **CR 525×575×20 HDS3 D**[1] |
| **530** | 580 | 20 | HDS1 | V | **CR 530×580×20 HDS1 V** |
| | 580 | 22 | HDS1 | R | **CR 530×580×22 HDS1 R** |
| **535** | 580 | 20 | HDS3 | D | **CR 535×580×20 HDS3 D**[2] |
| **540** | 590 | 20 | HDS2 | V | **CR 540×590×20 HDS2 V** |
| **545** | 595 | 22 | HDS1 | R | **CR 545×595×22 HDS1 R** |
| **550** | 590 | 20 | HDS1 | R | **CR 550×590×20 HDS1 R** |
| **560** | 610 | 20 | HDS1 | V | **CR 560×610×20 HDS1 V** |
| **570** | 620 | 22 | HDS2 | R | **CR 570×620×22 HDS2 R**[2] |
| **580** | 620 | 20 | HDS3 | D | **CR 580×620×20 HDS3 D**[2] |
| **585** | 620 | 20 | HDS2 | R | **CR 585×620×20 HDS2 R** |
| **590** | 630 | 20 | HDS1 | R | **CR 590×630×20 HDS1 R** |
| **600** | 640 | 20 | HDS1 | R | **CR 600×640×20 HDS1 R** |
| | 650 | 22 | HDS2 | R | **CR 600×650×22 HDS2 R** |
| | 650 | 25 | HDS1 | V | **CR 600×650×25 HDS1 V** |
| **610** | 660 | 20 | HDS2 | R | **CR 610×660×20 HDS2 R** |
| **630** | 670 | 20 | HDS3 | D | **CR 630×670×20 HDS3 D**[1] |
| **640** | 690 | 25 | HDS1 | R | **CR 640×690×25 HDS1 R** |
| **650** | 700 | 22 | HDS2 | V | **CR 650×700×22 HDS2 V** |
| | 710 | 25 | HDS2 | R | **CR 650×710×25 HDS2 R** |
| **660** | 700 | 18 | HDS1 | R | **CR 660×700×18 HDS1 R** |
| **670** | 714 | 20 | HDS3 | D | **CR 670×714×20 HDS3 D**[2] |
| **680** | 730 | 20 | HDS2 | R | **CR 680×730×20 HDS2 R** |
| **685** | 720 | 20 | HDS2 | R | **CR 685×720×20 HDS2 R** |
| **690** | 730 | 20 | HDS2 | R | **CR 690×730×20 HDS2 R** |
| **695** | 770 | 30 | HDS1 | R | **CR 695×770×30 HDS1 R** |
| **700** | 740 | 20 | HDS1 | R | **CR 700×740×20 HDS1 R** |

[1] 12,7 mm adjustable spacer lugs (4)
[2] 12,7 mm adjustable spacer lugs (6)

## Radial shaft seals – HDS1, HDS2 and HDS3 – metric dimensions
$d_1$ **710 – 1 550** mm




The table includes only a selection of available sizes. Contact your SKF sales representative for more information.

Please see **pages 74** to **76** for housing bore requirements.

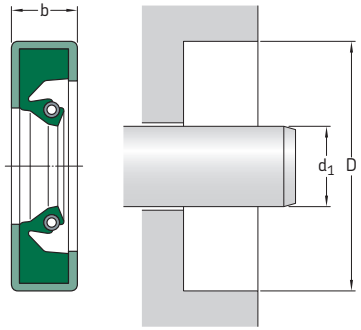
| **Dimensions** Shaft $d_1$ | Bore D | Nominal seal width b | **Design** | **Lip material** | **Designation** |
|---|---|---|---|---|---|
| mm | | | – | – | – |
| **710** | 760 | 20 | HDS1 | V | **CR 710×760×20 HDS1 V** |
| **720** | 770 | 25 | HDS2 | R | **CR 720×770×25 HDS2 R** |
| **740** | 780 | 16,50 | HDS1 | R | **CR 740×780×17 HDS1 R** |
| **750** | 780 | 18 | HDS1 | R | **CR 750×780×18 HDS1 R** |
| | 790 | 23 | HDS1 | V | **CR 750×790×23 HDS1 V** |
| | 800 | 25 | HDS2 | R | **CR 750×800×25 HDS2 R** |
| | 814 | 25 | HDS1 | R | **CR 750×814×25 HDS1 R**[2] |
| **760** | 800 | 20 | HDS1 | V | **CR 760×800×20 HDS1 V** |
| | 810 | 25 | HDS1 | R | **CR 760×810×25 HDS1 R** |
| **770** | 810 | 20 | HDS1 | V | **CR 770×810×20 HDS1 V** |
| | 845 | 27,79 | HDS1 | R | **CR 770×845×28 HDS1 R** |
| **780** | 820 | 19,05 | HDS2 | R | **CR 780×820×19 HDS2 R** |
| **790** | 850 | 25 | HDS1 | V | **CR 790×850×25 HDS1 V** |
| **800** | 840 | 20 | HDS1 | R | **CR 800×840×20 HDS1 R** |
| **810** | 860 | 25 | HDS2 | R | **CR 810×860×25 HDS2 R** |
| **825** | 860 | 20 | HDS2 | R | **CR 825×860×20 HDS2 R** |
| **850** | 914 | 25 | HDS1 | R | **CR 850×914×25 HDS1 R** |
| **860** | 920 | 25 | HDS1 | R | **CR 860×920×25 HDS1 R** |
| **880** | 940 | 25 | HDS2 | R | **CR 880×940×25 HDS2 R**[2] |
| | 944 | 25 | HDS3 | D | **CR 880×944×25 HDS3 D**[2] |
| **893** | 925 | 20 | HDS2 | H | **CR 893×925×20 HDS2 H** |
| **900** | 960 | 25 | HDS1 | R | **CR 900×960×25 HDS1 R**[2] |

[1] 12,7 mm adjustable spacer lugs (4)

| Dimensions | | | Design | Lip material | Designation |
|---|---|---|---|---|---|
| Shaft | Bore | Nominal seal width | | | |
| $d_1$ | D | b | | | |
| mm | | | – | – | – |
| **910** | 974 | 22 | HDS1 | R | **CR 910×974×22 HDS1 R**[2] |
| **920** | 984 | 25 | HDS2 | V | **CR 920×984×25 HDS2 V** |
| **927** | 978 | 22 | HDS2 | D | **CR 927×978×22 HDS2 D** |
| **939** | 971 | 15,88 | HDS3 | H | **CR 939×971×16 HDS3 H**[2] |
| **940** | 1 000 | 25 | HDS1 | R | **CR 940×1000×25 HDS1 R**[1] |
| **950** | 1 006 | 20 | HDS2 | R | **CR 950×1006×20 HDS2 R** |
| **960** | 1 020 | 25 | HDS2 | H | **CR 960×1020×25 HDS2 H** |
| | 1 040 | 23 | HDS2 | V | **CR 960×1040×23 HDS2 V** |
| **990** | 1 045 | 25 | HDS1 | R | **CR 990×1045×25 HDS1 R** |
| **1 000** | 1 035 | 20 | HDS2 | R | **CR 1000×1035×20 HDS2 R** |
| **1 020** | 1 084 | 25 | HDS1 | R | **CR 1020×1084×25 HDS1 R** |
| **1 055** | 1 100 | 25 | HDS2 | D | **CR 1055×1100×25 HDS2 D** |
| **1 105** | 1 160 | 25 | HDS1 | R | **CR 1105×1160×25 HDS1 R** |
| **1 120** | 1 184 | 25 | HDS2 | R | **CR 1120×1184×25 HDS2 R**[2] |
| **1 140** | 1 180 | 20 | HDS1 | V | **CR 1140×1180×20 HDS1 V** |
| **1 220** | 1 255 | 20 | HDS2 | R | **CR 1220×1255×20 HDS2 R** |
| **1 250** | 1 314 | 25 | HDS2 | R | **CR 1250×1314×25 HDS2 R** |
| **1 260** | 1 300 | 18 | HDS1 | R | **CR 1260×1300×18 HDS1 R** |
| **1 370** | 1 420 | 19,05 | HDS2 | H | **CR 1370×1420×19 HDS2 H** |
| | 1 420 | 20 | HDS1 | R | **CR 1370×1420×20 HDS1 R** |
| **1 530** | 1 580 | 20 | HDS1 | R | **CR 1530×1580×20 HDS1 R** |
| **1 550** | 1 610 | 25 | HDS2 | V | **CR 1550×1610×25 HDS2 V** |

[1] 12,7 mm adjustable spacer lugs (4)
[2] 12,7 mm adjustable spacer lugs (6)

## Radial shaft seals – HDS1, HDS2 and HDS3 – inch dimensions
$d_1$ **6.000 – 9.750** in.




The table includes only a selection of available sizes. Contact your SKF sales representative for more information.

Please see **pages 74** to **76** for housing bore requirements.

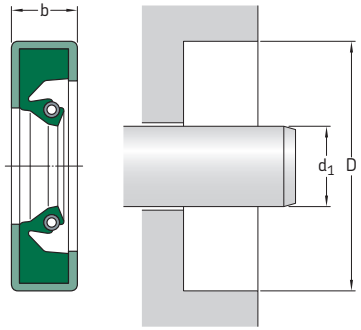
| **Dimensions** Shaft $d_1$ | Bore D | Nominal seal width b | **Design** | **Lip material** | **Lug**[1] | **Designation** |
|---|---|---|---|---|---|---|
| in./*mm* | | | – | – | – | – |
| **6.000** | 7.500 | 0.625 | HDS1 | R | | **CR 597623** |
| *152,40* | *190,50* | *15,88* | | | | |
| **6.750** | 7.750 | 0.625 | HDS1 | V | | **CR 67512** |
| *171,45* | *196,85* | *15,88* | | | | |
| **7.250** | 8.750 | 0.625 | HDS2 | V | | **CR 72510** |
| *184,15* | *222,25* | *15,88* | | | | |
| **7.500** | 8.750 | 0.625 | HDS1 | V | | **CR 75048** |
| *190,50* | *222,25* | *15,88* | | | | |
| **7.750** | 9.000 | 0.625 | HDS1 | R | | **CR 77531** |
| *196,85* | *228,60* | *15,88* | | | | |
| | 9.250 | 0.625 | HDS1 | V | | **CR 77539** |
| | *234,95* | *15,88* | | | | |
| **8.000** | 9.250 | 0.625 | HDS1 | V | | **CR 77996** |
| *203,20* | *234,95* | *15,88* | | | | |
| | 9.500 | 0.687 | HDS2 | V | | **CR 80009** |
| | *241,30* | *17,45* | | | | |
| | 10.000 | 1.000 | HDS1 | R | | **CR 80088** |
| | *254,00* | *25,40* | | | | |
| **8.125** | 9.378 | 0.625 | HDS1 | R | | **CR 593198** |
| *206,38* | *238,20* | *15,88* | | | | |
| | 10.125 | 1.000 | HDS1 | R | | **CR 81253** |
| | *257,18* | *25,40* | | | | |
| **8.250** | 9.500 | 0.625 | HDS2 | V | | **CR 82526** |
| *209,55* | *241,30* | *15,88* | | | | |
| | 10.250 | 0.625 | HDS2 | V | | **CR 82559** |
| | *260,35* | *15,88* | | | | |
| **8.345** | 10.750 | 1.250 | HDS1 | R | | **CR 594186** |
| *211,96* | *273,05* | *31,75* | | | | |
| **8.375** | 9.750 | 0.625 | HDS3 | D | 4 | **CR 83702** |
| *212,73* | *247,65* | *15,88* | | | | |

[1] Number of 0,5 in. adjustable spacer lugs

| Dimensions Shaft $d_1$ | Bore D | Nominal seal width b | Design | Lip material | Lug[1] | Designation |
|---|---|---|---|---|---|---|
| in./*mm* | | | – | – | – | – |
| **8.500** | 9.750 | 0.625 | HDS2 | D | | **CR 593768** |
| *215,90* | *247,65* | *15,88* | | | | |
| | 10.500 | 0.625 | HDS1 | V | | **CR 85018** |
| | *266,70* | *15,88* | | | | |
| **8.540** | 9.750 | 0.625 | HDS2 | D | | **CR 593855** |
| *215,90* | *247,65* | *15,88* | | | | |
| **8.625** | 10.500 | 0.750 | HDS1 | R | | **CR 590758** |
| *219,08* | *266,70* | *19,05* | | | | |
| | 10.625 | 0.750 | HDS1 | V | | **CR 86240** |
| | *269,88* | *19,05* | | | | |
| **8.750** | 10.000 | 0.625 | HDS2 | R | | **CR 592626** |
| *222,25* | *254,00* | *15,88* | | | | |
| **8.875** | 10.125 | 0.625 | HDS2 | D | | **CR 593779** |
| *225,43* | *257,18* | *15,88* | | | | |
| **9.000** | 10.250 | 0.750 | HDS1 | R | | **CR 90017** |
| *228,60* | *260,35* | *19,05* | | | | |
| | 10.500 | 0.625 | HDS3 | D | 4 | **CR 90027** |
| | *266,70* | *15,88* | | | | |
| | 11.000 | 0.750 | HDS2 | R | | **CR 590787** |
| | *279,40* | *19,05* | | | | |
| **9.125** | 10.375 | 0.625 | HDS1 | R | | **CR 592653** |
| *231,78* | *263,53* | *15,88* | | | | |
| | 10.625 | 0.688 | HDS1 | R | | **CR 590270** |
| | *269,88* | *17,48* | | | | |
| | 11.125 | 0.688 | HDS1 | R | | **CR 590174** |
| | *282,58* | *17,48* | | | | |
| | 11.125 | 0.813 | HDS2 | R | | **CR 91202** |
| | *282,50* | *20,65* | | | | |
| **9.250** | 10.750 | 0.750 | HDS1 | R | | **CR 590093** |
| *234,95* | *273,05* | *19,05* | | | | |
| | 11.250 | 0.813 | HDS2 | V | | **CR 92544** |
| | *285,75* | *20,65* | | | | |
| | 11.250 | 1.000 | HDS1 | R | | **CR 590798** |
| | *285,75* | *25,40* | | | | |
| **9.375** | 11.375 | 0.875 | HDS1 | R | | **CR 93751** |
| *238,13* | *288,93* | *22,23* | | | | |
| **9.438** | 10.635 | 0.750 | HDS1 | R | | **CR 593894** |
| *239,73* | *270,13* | *19,05* | | | | |
| **9.500** | 10.750 | 0.625 | HDS2 | R | | **CR 95045** |
| *241,30* | *273,05* | *15,88* | | | | |
| | 11.000 | 0.625 | HDS1 | R | | **CR 590653** |
| | *279,40* | *15,88* | | | | |
| | 11.500 | 0.813 | HDS1 | V | | **CR 95068** |
| | *292,10* | *20,65* | | | | |
| | 11.500 | 1.000 | HDS1 | R | | **CR 590820** |
| | *292,10* | *25,40* | | | | |
| **9.688** | 10.875 | 0.625 | HDS1 | R | | **CR 594080** |
| *246,08* | *276,23* | *15,88* | | | | |
| **9.750** | 11.000 | 0.625 | HDS3 | D | 4 | **CR 97527** |
| *247,65* | *279,40* | *15,88* | | | | |
| | 11.750 | 1.000 | HDS1 | R | | **CR 97548** |
| | *298,45* | *25,40* | | | | |

[1] Number of 0,5 in. adjustable spacer lugs

## Radial shaft seals – HDS1, HDS2 and HDS3 – inch dimensions
$d_1$ **9.844 – 11.813** in.




The table includes only a selection of available sizes. Contact your SKF sales representative for more information.

Please see **pages 74** to **76** for housing bore requirements.

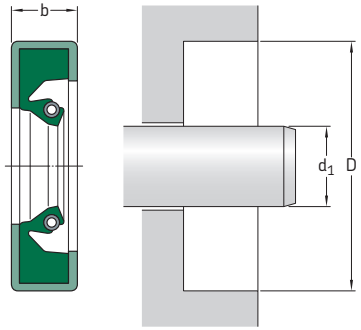
| **Dimensions** Shaft $d_1$ | Bore D | Nominal seal width b | **Design** | **Lip material** | **Lug**[1] | **Designation** |
|---|---|---|---|---|---|---|
| in./*mm* | | | – | – | – | – |
| **9.844** | 11.409 | 0.625 | HDS2 | R | | **CR 98444** |
| *250,04* | *289,79* | *15,88* | | | | |
| **9.875** | 11.375 | 0.750 | HDS2 | R | | **CR 592763** |
| *250,83* | *288,93* | *19,05* | | | | |
| | 11.500 | 0.750 | HDS1 | R | | **CR 592727** |
| | *292,10* | *19,05* | | | | |
| **9.938** | 12.000 | 1.000 | HDS2 | R | | **CR 529752** |
| *252,43* | *304,80* | *25,40* | | | | |
| **10.000** | 11.250 | 0.625 | HDS1 | R | | **CR 1000110** |
| *254,00* | *285,75* | *15,88* | | | | |
| | 11.250 | 0.625 | HDS2 | R | | **CR 1000111** |
| | *285,75* | *15,88* | | | | |
| | 11.500 | 0.625 | HDS3 | D | 4 | **CR 1000239** |
| | *292,10* | *15,88* | | | | |
| | 11.750 | 0.625 | HDS1 | R | | **CR 1000360** |
| | *298,45* | *15,88* | | | | |
| **10.125** | 11.625 | 0.688 | HDS1 | R | | **CR 1013240** |
| *257,18* | *295,28* | *17,48* | | | | |
| | 11.625 | 0.688 | HDS2 | R | | **CR 1013242** |
| | *295,28* | *17,48* | | | | |
| **10.236** | 12.590 | 0.984 | HDS1 | R | | **CR 1024690** |
| *259,99* | *319,79* | *24,99* | | | | |
| **10.250** | 11.500 | 0.625 | HDS2 | D | | **CR 1025112** |
| *260,35* | *292,10* | *15,88* | | | | |
| | 11.750 | 0.688 | HDS3 | D | 4 | **CR 1025249** |
| | *298,45* | *17,48* | | | | |
| | 11.750 | 0.750 | HDS2 | R | | **CR 1025252** |
| | *298,45* | *19,05* | | | | |
| **10.375** | 11.625 | 0.875 | HDS1 | R | | **CR 1038140** |
| *263,53* | *295,28* | *22,23* | | | | |

[1] Number of 0,5 in. adjustable spacer lugs

| Dimensions Shaft $d_1$ | Bore D | Nominal seal width b | Design | Lip material | Lug[1] | Designation |
|---|---|---|---|---|---|---|
| in./*mm* | | | – | – | – | – |
| **10.438** | 12.438 | 0.875 | HDS1 | R | | **CR 1044560** |
| *265,13* | *315,93* | *22,23* | | | | |
| **10.500** | 11.750 | 0.625 | HDS1 | V | | **CR 1050113** |
| *266,70* | *298,45* | *15,88* | | | | |
| | 12.000 | 0.625 | HDS3 | D | 4 | **CR 1050239** |
| | *304,80* | *15,88* | | | | |
| | 12.000 | 0.750 | HDS2 | V | | **CR 1050251** |
| | *304,80* | *19,05* | | | | |
| **10.688** | 12.500 | 0.625 | HDS1 | V | | **CR 1068456** |
| *271,48* | *317,50* | *15,88* | | | | |
| | 13.000 | 0.688 | HDS2 | V | | **CR 1068693** |
| | *330,20* | *17,48* | | | | |
| **10.750** | 12.000 | 0.625 | HDS2 | R | | **CR 1075112** |
| *273,05* | *304,80* | *15,88* | | | | |
| | 12.000 | 0.625 | HDS1 | R | | **CR 1075110** |
| | *304,80* | *15,88* | | | | |
| | 12.250 | 0.625 | HDS1 | R | | **CR 1075230** |
| | *311,15* | *15,88* | | | | |
| **10.938** | 12.750 | 0.625 | HDS1 | R | | **CR 1093440** |
| *277,83* | *323,85* | *15,88* | | | | |
| **11.000** | 12.250 | 0.625 | HDS2 | D | | **CR 1100113** |
| *279,40* | *311,15* | *15,88* | | | | |
| | 12.250 | 0.625 | HDS2 | V | | **CR 1100104** |
| | *311,15* | *15,88* | | | | |
| | 12.500 | 0.750 | HDS1 | R | | **CR 1100250** |
| | *317,50* | *19,05* | | | | |
| | 13.000 | 0.813 | HDS2 | R | | **CR 1100553** |
| | *330,20* | *20,65* | | | | |
| **11.250** | 12.500 | 0.625 | HDS2 | R | | **CR 1125111** |
| *285,75* | *317,50* | *15,88* | | | | |
| | 12.500 | 0.625 | HDS1 | R | | **CR 1125110** |
| | *317,50* | *15,88* | | | | |
| **11.375** | 13.000 | 0.750 | HDS1 | R | | **CR 1138330** |
| *288,93* | *330,20* | *19,05* | | | | |
| **11.500** | 13.000 | 0.750 | HDS2 | R | | **CR 1150253** |
| *292,10* | *330,20* | *19,05* | | | | |
| | 13.500 | 0.813 | HDS1 | R | | **CR 1150550** |
| | *342,90* | *20,65* | | | | |
| | 13.500 | 1.000 | HDS1 | R | | **CR 1150580** |
| | *342,90* | *25,40* | | | | |
| **11.688** | 12.938 | 0.625 | HDS1 | R | | **CR 1169110** |
| *296,88* | *328,63* | *15,88* | | | | |
| **11.750** | 13.250 | 0.688 | HDS2 | V | | **CR 1175224** |
| *298,45* | *336,55* | *17,48* | | | | |
| | 13.250 | 0.750 | HDS2 | R | | **CR 1175252** |
| | *336,55* | *19,05* | | | | |
| **11.811** | 13.378 | 0.709 | HDS1 | R | | **CR 1181300** |
| *300,00* | *339,80* | *18,01* | | | | |
| **11.813** | 13.812 | 0.875 | HDS1 | R | | **CR 1181560** |
| *300,05* | *350,82* | *22,23* | | | | |

[1] Number of 0,5 in. adjustable spacer lugs

## Radial shaft seals – HDS1, HDS2 and HDS3 – inch dimensions
$d_1$ **12.000 – 15.250** in.




The table includes only a selection of available sizes. Contact your SKF sales representative for more information.

Please see **pages 74** to **76** for housing bore requirements.

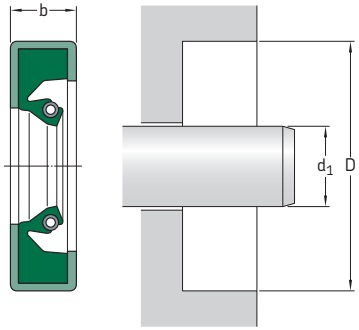
| **Dimensions** Shaft $d_1$ | Bore D | Nominal seal width b | **Design** | **Lip material** | **Lug**[1] | **Designation** |
|---|---|---|---|---|---|---|
| in./*mm* | | | – | – | – | – |
| **12.000** | 13.500 | 0.625 | HDS2 | R | | **CR 1200231** |
| *304,80* | *342,90* | *15,88* | | | | |
| | 13.500 | 0.625 | HDS1 | R | | **CR 1200230** |
| | *342,90* | *15,88* | | | | |
| | 13.500 | 0.625 | HDS3 | D | 4 | **CR 1200239** |
| | *342,90* | *15,88* | | | | |
| | 13.500 | 0.688 | HDS1 | R | | **CR 1200240** |
| | *342,90* | *17,48* | | | | |
| | 13.500 | 0.750 | HDS2 | R | | **CR 1200255** |
| | *342,90* | *19,05* | | | | |
| | 14.000 | 0.625 | HDS1 | V | | **CR 1200523** |
| | *355,60* | *15,88* | | | | |
| | 14.000 | 1.000 | HDS2 | R | | **CR 1200585** |
| | *355,60* | *25,40* | | | | |
| **12.250** | 13.750 | 0.625 | HDS3 | D | 4 | **CR 1225239** |
| *311,15* | *349,25* | *15,88* | | | | |
| **12.500** | 13.750 | 0.625 | HDS1 | R | | **CR 1250110** |
| *317,50* | *349,25* | *15,88* | | | | |
| | 14.000 | 0.688 | HDS3 | D | 4 | **CR 1250249** |
| | *355,60* | *17,48* | | | | |
| | 14.500 | 0.750 | HDS1 | R | | **CR 1250540** |
| | *368,30* | *19,05* | | | | |
| | 14.500 | 0.813 | HDS2 | V | | **CR 1250554** |
| | *368,30* | *20,65* | | | | |
| **12.750** | 14.250 | 0.688 | HDS2 | V | | **CR 1275243** |
| *323,85* | *361,95* | *17,48* | | | | |
| | 14.250 | 0.750 | HDS2 | R | | **CR 1275252** |
| | *361,95* | *19,05* | | | | |
| **13.000** | 14.500 | 0.688 | HDS2 | R | | **CR 1300244** |
| *330,20* | *368,30* | *17,48* | | | | |
| | 14.500 | 0.688 | HDS2 | V | | **CR 1300283** |
| | *368,30* | *17,48* | | | | |
| | 15.000 | 0.750 | HDS2 | R | | **CR 1300542** |
| | *381,00* | *19,05* | | | | |

[1] Number of 0,5 in. adjustable spacer lugs

| Dimensions Shaft $d_1$ | Bore D | Nominal seal width b | Design | Lip material | Lug[1] | Designation |
|---|---|---|---|---|---|---|
| in./*mm* | | | – | – | – | – |
| **13.250** | 14.750 | 0.625 | HDS3 | D | 4 | **CR 1325239** |
| *336,55* | *374,65* | *15,88* | | | | |
| | 14.750 | 0.688 | HDS2 | R | | **CR 1325242** |
| | *374,65* | *17,48* | | | | |
| **13.500** | 15.250 | 0.750 | HDS1 | R | | **CR 1350380** |
| *342,90* | *387,35* | *19,05* | | | | |
| | 15.500 | 0.813 | HDS2 | V | | **CR 1350564** |
| | *393,70* | *20,65* | | | | |
| **13.750** | 15.000 | 0.750 | HDS1 | R | | **CR 1375130** |
| *349,25* | *381,00* | *19,05* | | | | |
| | 15.250 | 0.625 | HDS1 | R | | **CR 1375230** |
| | *387,35* | *15,88* | | | | |
| | 15.250 | 0.688 | HDS1 | R | | **CR 1375240** |
| | *387,35* | *17,48* | | | | |
| | 15.500 | 0.750 | HDS1 | R | | **CR 1375380** |
| | *393,70* | *19,05* | | | | |
| | 15.750 | 0.813 | HDS2 | V | | **CR 1375553** |
| | *400,05* | *20,65* | | | | |
| **14.000** | 15.500 | 0.625 | HDS2 | V | | **CR 1400234** |
| *355,60* | *393,70* | *15,88* | | | | |
| | 15.500 | 0.625 | HDS2 | R | | **CR 1400232** |
| | *393,70* | *15,88* | | | | |
| | 15.500 | 0.750 | HDS1 | R | | **CR 1400250** |
| | *393,70* | *19,05* | | | | |
| | 15.750 | 0.688 | HDS1 | R | | **CR 1400370** |
| | *400,05* | *17,48* | | | | |
| | 16.000 | 1.000 | HDS1 | R | | **CR 1400580** |
| | *406,40* | *25,40* | | | | |
| **14.250** | 15.750 | 0.750 | HDS2 | R | | **CR 1425252** |
| *361,95* | *400,05* | *19,05* | | | | |
| | 16.250 | 0.813 | HDS2 | R | | **CR 1425552** |
| | *412,75* | *20,65* | | | | |
| **14.375** | 16.000 | 0.688 | HDS2 | D | | **CR 1438321** |
| *365,13* | *406,40* | *17,48* | | | | |
| **14.500** | 16.000 | 0.688 | HDS2 | R | | **CR 1450242** |
| *368,30* | *406,40* | *17,48* | | | | |
| | 16.500 | 0.750 | HDS2 | R | | **CR 1450542** |
| | *419,10* | *19,05* | | | | |
| **14.750** | 16.500 | 0.875 | HDS2 | R | | **CR 1475411** |
| *374,65* | *419,10* | *22,23* | | | | |
| **15.000** | 16.500 | 0.688 | HDS1 | R | | **CR 1500240** |
| *381,00* | *419,10* | *17,48* | | | | |
| | 16.500 | 0.750 | HDS1 | R | | **CR 1500250** |
| | *419,10* | *19,05* | | | | |
| | 16.750 | 0.750 | HDS1 | R | | **CR 1500380** |
| | *425,45* | *19,05* | | | | |
| | 17.000 | 0.750 | HDS3 | D | 4 | **CR 1500549** |
| | *431,80* | *19,05* | | | | |
| **15.250** | 16.750 | 0.750 | HDS2 | R | | **CR 1525252** |
| *387,35* | *425,45* | *19,05* | | | | |
| | 17.250 | 0.750 | HDS2 | R | | **CR 1525542** |
| | *438,15* | *19,05* | | | | |
| | 17.250 | 0.875 | HDS1 | R | | **CR 1525560** |
| | *438,15* | *22,23* | | | | |

[1] Number of 0,5 in. adjustable spacer lugs

## Radial shaft seals – HDS1, HDS2 and HDS3 – inch dimensions
$d_1$ **15.500 – 22.250** in.




The table includes only a selection of available sizes. Contact your SKF sales representative for more information.

BYC
RODAMIENTOS Y SUMINISTROS
55 5576 5785 • 55 5359 4287
55 8955 7108 • 55 5576 5786
bycventas@hotmail.com
55 3291 5372

Please see **pages 74** to **76** for housing bore requirements.

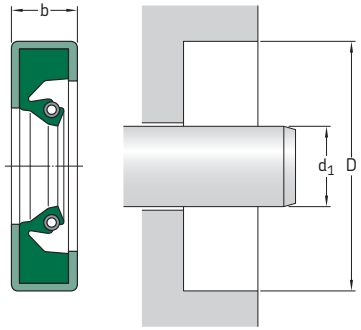
| **Dimensions** Shaft $d_1$ | Bore D | Nominal seal width b | **Design** | **Lip material** | **Lug**[1] | **Designation** |
|---|---|---|---|---|---|---|
| in./*mm* | | | – | – | – | – |
| **15.500** | 16.875 | 0.625 | HDS1 | R | | **CR 1550160** |
| *393,70* | *428,63* | *15,88* | | | | |
| | 17.500 | 0.750 | HDS2 | R | | **CR 1550542** |
| | *444,50* | *19,05* | | | | |
| | 17.500 | 0.813 | HDS1 | R | | **CR 1550550** |
| | *444,50* | *20,65* | | | | |
| **15.625** | 17.625 | 0.875 | HDS1 | R | | **CR 1563560** |
| *396,88* | *447,68* | *22,23* | | | | |
| **15.750** | 17.250 | 0.688 | HDS3 | D | 4 | **CR 1575249** |
| *400,05* | *438,15* | *17,48* | | | | |
| **16.000** | 17.500 | 0.750 | HDS1 | R | | **CR 1600250** |
| *406,40* | *444,50* | *19,05* | | | | |
| | 18.000 | 1.000 | HDS2 | R | | **CR 1600585** |
| | *457,20* | *25,40* | | | | |
| **16.250** | 17.750 | 0.688 | HDS1 | R | | **CR 1625240** |
| *412,75* | *450,85* | *17,48* | | | | |
| **16.500** | 18.000 | 0.750 | HDS2 | R | | **CR 1650252** |
| *419,10* | *457,20* | *19,05* | | | | |
| **16.750** | 18.500 | 0.875 | HDS1 | V | | **CR 1675413** |
| *425,45* | *469,90* | *22,23* | | | | |
| **17.000** | 18.500 | 0.688 | HDS2 | R | | **CR 1700245** |
| *431,80* | *469,90* | *17,48* | | | | |
| | 18.500 | 0.750 | HDS2 | D | | **CR 1700251** |
| | *469,90* | *19,05* | | | | |
| | 19.000 | 0.750 | HDS2 | R | | **CR 1700541** |
| | *482,60* | *19,05* | | | | |
| **17.250** | 18.750 | 0.750 | HDS2 | R | | **CR 1725255** |
| *438,15* | *476,25* | *19,05* | | | | |

[1] Number of 0,5 in. adjustable spacer lugs

| Dimensions Shaft $d_1$ | Bore D | Nominal seal width b | Design | Lip material | Lug[1] | Designation |
|---|---|---|---|---|---|---|
| in./*mm* | | | – | – | – | – |
| **17.500** | 19.000 | 0.625 | HDS1 | R | | **CR 1750230** |
| *444,50* | *482,60* | *15,88* | | | | |
| | 19.250 | 0.688 | HDS1 | R | | **CR 1750370** |
| | *488,95* | *17,48* | | | | |
| | 19.500 | 0.688 | HDS1 | R | | **CR 1750530** |
| | *495,30* | *17,48* | | | | |
| **17.625** | 19.250 | 0.688 | HDS1 | R | | **CR 1763320** |
| *447,68* | *488,95* | *17,48* | | | | |
| **18.000** | 19.500 | 0.688 | HDS3 | D | 4 | **CR 1800249** |
| *457,20* | *495,30* | *17,48* | | | | |
| | 19.750 | 0.750 | HDS2 | R | | **CR 1800382** |
| | *501,65* | *19,05* | | | | |
| **18.250** | 19.750 | 0.750 | HDS2 | R | | **CR 1825252** |
| *463,55* | *501,65* | *19,05* | | | | |
| **18.500** | 20.500 | 0.875 | HDS1 | R | | **CR 1850560** |
| *469,90* | *520,70* | *22,23* | | | | |
| **18.750** | 20.750 | 0.813 | HDS2 | R | | **CR 1875553** |
| *476,25* | *527,05* | *20,65* | | | | |
| **19.000** | 20.500 | 0.750 | HDS1 | R | | **CR 1900250** |
| *482,60* | *520,70* | *19,05* | | | | |
| | 21.000 | 0.875 | HDS2 | V | | **CR 1900562** |
| | *533,40* | *22,23* | | | | |
| **19.250** | 21.250 | 0.938 | HDS1 | R | | **CR 1925570** |
| *488,95* | *539,75* | *23,24* | | | | |
| **19.500** | 21.500 | 0.875 | HDS1 | R | | **CR 1950560** |
| *495,30* | *546,10* | *22,23* | | | | |
| **20.000** | 21.500 | 0.625 | HDS3 | D | 4 | **CR 2000239** |
| *508,00* | *546,10* | *15,88* | | | | |
| **20.250** | 21.750 | 0.750 | HDS1 | R | | **CR 2025250** |
| *514,35* | *552,45* | *19,05* | | | | |
| **20.500** | 22.500 | 0.750 | HDS2 | R | | **CR 2050542** |
| *520,70* | *571,50* | *19,05* | | | | |
| | 22.500 | 0.875 | HDS1 | R | | **CR 2050560** |
| | *571,50* | *22,23* | | | | |
| **20.750** | 22.750 | 0.875 | HDS2 | D | | **CR 2075562** |
| *527,05* | *577,85* | *22,23* | | | | |
| **21.000** | 22.750 | 0.813 | HDS1 | R | | **CR 2100390** |
| *533,40* | *577,85* | *20,65* | | | | |
| | 23.000 | 0.625 | HDS3 | D | 4 | **CR 2100529** |
| | *584,20* | *15,87* | | | | |
| **21.500** | 23.500 | 0.813 | HDS1 | R | | **CR 2150550** |
| *546,10* | *596,90* | *20,65* | | | | |
| **22.000** | 23.500 | 0.750 | HDS2 | V | | **CR 2200213** |
| *558,80* | *596,90* | *15,88* | | | | |
| | 24.000 | 0.875 | HDS2 | R | | **CR 2200565** |
| | *609,60* | *22,23* | | | | |
| | 24.000 | 1.250 | HDS1 | D | | **CR 526339** |
| | *609,60* | *31,75* | | | | |
| **22.250** | 24.250 | 0.875 | HDS3 | H | 4 | **CR 2225568** |
| *565,15* | *615,95* | *22,23* | | | | |

[1] Number of 0,5 in. adjustable spacer lugs

## Radial shaft seals – HDS1, HDS2 and HDS3 – inch dimensions
$d_1$ **23.000 – 63.340** in.




The table includes only a selection of available sizes. Contact your SKF sales representative for more information.

Please see **pages 74** to **76** for housing bore requirements.

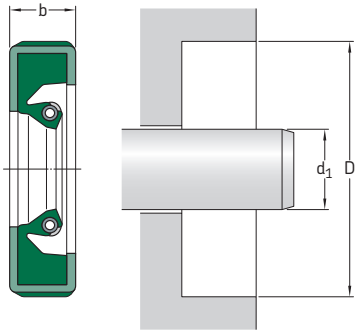
| **Dimensions** Shaft $d_1$ | Bore D | Nominal seal width b | **Design** | **Lip material** | **Lug**[1] | **Designation** |
|---|---|---|---|---|---|---|
| in./*mm* | | | – | – | – | – |
| **23.000** | 24.750 | 0.750 | HDS2 | V | | **CR 2300384** |
| *584,20* | *628,65* | *19,05* | | | | |
| **23.500** | 25.500 | 0.875 | HDS1 | R | | **CR 2350560** |
| *596,90* | *647,70* | *22,23* | | | | |
| **24.000** | 25.500 | 0.750 | HDS1 | R | | **CR 2400250** |
| *609,60* | *647,70* | *19,05* | | | | |
| | 26.000 | 0.875 | HDS2 | R | | **CR 2400559** |
| | *660,40* | *22,23* | | | | |
| **24.250** | 26.250 | 0.875 | HDS2 | V | | **CR 2425562** |
| *615,95* | *666,75* | *22,23* | | | | |
| **25.000** | 27.000 | 1.000 | HDS1 | R | | **CR 2500580** |
| *635,00* | *685,80* | *25,40* | | | | |
| **25.500** | 27.500 | 1.000 | HDS2 | R | | **CR 2550585** |
| *647,70* | *698,50* | *25,40* | | | | |
| **26.000** | 27.625 | 0.750 | HDS2 | R | | **CR 2600332** |
| *660,40* | *701,68* | *19,05* | | | | |
| | 28.500 | 0.875 | HDS1 | R | | **CR 2600760** |
| | *723,90* | *22,23* | | | | |
| **26.500** | 28.500 | 0.875 | HDS1 | R | | **CR 2650560** |
| *673,10* | *723,90* | *22,23* | | | | |
| **28.000** | 29.625 | 0.750 | HDS2 | R | | **CR 2800331** |
| *711,20* | *752,48* | *19,05* | | | | |
| | 30.000 | 0.875 | HDS2 | R | | **CR 2800565** |
| | *762,00* | *22,23* | | | | |
| **29.000** | 31.000 | 0.875 | HDS2 | R | | **CR 2900563** |
| *736,60* | *787,40* | *22,23* | | | | |
| **29.500** | 31.500 | 0.875 | HDS2 | D | | **CR 2950564** |
| *749,30* | *800,10* | *22,23* | | | | |

[1] Number of 0,5 in. adjustable spacer lugs

| Dimensions<br>Shaft<br>$d_1$ | Bore<br>D | Nominal seal width<br>b | Design | Lip material | Lug[1] | Designation |
|---|---|---|---|---|---|---|
| in./*mm* | | | – | – | – | – |
| **30.250**<br>*768,35* | 32.500<br>*825,50* | 0.875<br>*22,23* | HDS1 | R | | **CR 3025660** |
| **30.500**<br>*774,70* | 32.500<br>*825,50* | 0.875<br>*22,23* | HDS2 | V | | **CR 3050514** |
| | 33.000<br>*838,20* | 1.000<br>*25,40* | HDS2 | R | | **CR 3050785** |
| **31.000**<br>*787,40* | 33.000<br>*838,20* | 0.813<br>*20,65* | HDS1 | R | | **CR 3100550** |
| **32.500**<br>*825,50* | 34.500<br>*876,30* | 0.875<br>*22,23* | HDS1 | R | | **CR 3250560** |
| **33.000**<br>*838,20* | 34.688<br>*881,08* | 0.750<br>*19,05* | HDS2 | R | | **CR 3300351** |
| **33.500**<br>*850,90* | 36.000<br>*914,40* | 0.875<br>*22,23* | HDS1 | R | | **CR 3350760** |
| **34.000**<br>*863,60* | 36.000<br>*914,40* | 0.875<br>*22,23* | HDS1 | R | | **CR 3400560** |
| **34.500**<br>*876,30* | 36.500<br>*927,10* | 0.875<br>*22,23* | HDS2 | D | | **CR 3450563** |
| **37.500**<br>*952,50* | 39.000<br>*990,60* | 0.875<br>*22,23* | HDS2 | R | | **CR 3750272** |
| | 39.500<br>*1 003,30* | 0.875<br>*22,23* | HDS1 | D | | **CR 3750561** |
| **38.000**<br>*965,20* | 40.000<br>*1 016,00* | 0.875<br>*22,23* | HDS2 | R | | **CR 3800565** |
| **40.500**<br>*1 028,70* | 43.000<br>*1 092,20* | 0.875<br>*22,23* | HDS2 | V | | **CR 4050774** |
| **43.500**<br>*1 104,90* | 45.500<br>*1 155,70* | 0.875<br>*22,23* | HDS2 | R | | **CR 4350565** |
| | 45.500<br>*1 155,70* | 0.875<br>*22,23* | HDS1 | R | | **CR 4350560** |
| **45.000**<br>*1 143,00* | 47.000<br>*1 193,80* | 0.875<br>*22,23* | HDS1 | R | | **CR 4500560** |
| **46.000**<br>*1 168,40* | 47.500<br>*1 206,50* | 0.750<br>*19,05* | HDS2 | H | | **CR 4600252** |
| **49.000**<br>*1 244,60* | 50.625<br>*1 285,88* | 0.813<br>*20,65* | HDS1 | R | | **CR 4900340** |
| **51.500**<br>*1 308,10* | 53.500<br>*1 358,90* | 1.500<br>*38,10* | HDS1 | R | | **CR 5150590** |
| **54.750**<br>*1 390,65* | 56.375<br>*1 431,93* | 0.875<br>*22,23* | HDS1 | R | | **CR 5475340** |
| **62.500**<br>*1 587,50* | 64.000<br>*1 625,60* | 0.875<br>*22,23* | HDS1 | R | | **CR 6250270** |
| **63.340**<br>*1 608,84* | 64.500<br>*1 638,30* | 0.750<br>*19,05* | HDS2 | D | | **CR 6334342** |

[1] Number of 0,5 in. adjustable spacer lugs

## Radial shaft seals – HDS1K – inch dimensions
$d_1$ **7.939** in.

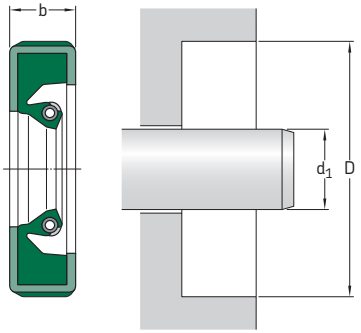



The table includes only a selection of available sizes. Contact your SKF sales representative for more information.

Please see **pages 74** to **76** for housing bore requirements.

| **Dimensions** | | | **Design** | **Lip material** | **Designation** |
|---|---|---|---|---|---|
| Shaft<br>$d_1$ | Bore<br>D | Nominal seal width<br>b | | | |
| in./*mm* | | | – | – | – |
| **7.939**<br>*201,65* | 10.125<br>*257,18* | 0.688<br>*17,48* | HDS1K | H | **CR 597606** |

## Radial shaft seals – HDS2K – metric dimensions
$d_1$ **340 – 810** mm

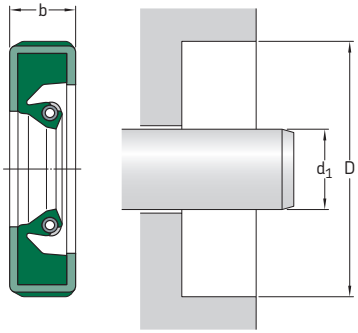



The table includes only a selection of available sizes. Contact your SKF sales representative for more information.

Please see **pages 74** to **76** for housing bore requirements.

| **Dimensions** Shaft $d_1$ | Bore D | Nominal seal width b | **Design** | **Lip material** | **Designation** |
|---|---|---|---|---|---|
| mm | | | – | – | – |
| **340** | 380 | 18 | HDS2K | V | **CR 340×380×18 HDS2K V** |
| **360** | 404 | 20 | HDS2K | R | **CR 360×404×20 HDS2K R** |
| **400** | 450 | 18 | HDS2K | R | **CR 400×450×18 HDS2K R** |
| **810** | 874 | 25 | HDS2K | R | **CR 810×874×25 HDS2K R** |

## Radial shaft seals – HDS2K – inch dimensions
$d_1$ **16.500** in.



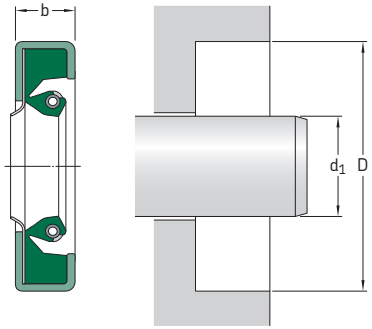

The table includes only a selection of available sizes. Contact your SKF sales representative for more information.



Please see **pages 74** to **76** for housing bore requirements.

| **Dimensions** Shaft $d_1$ | Bore D | Nominal seal width b | **Design** | **Lip material** | **Designation** |
|---|---|---|---|---|---|
| in./*mm* | | | – | – | – |
| **16.500**<br>*419,10* | 18,000<br>*457,20* | 0.750<br>*19,05* | HDS2K | R | **CR 1650230** |

## Radial shaft seals – HDSF and HDSH seals – metric dimensions
$d_1$ **440 – 760** mm

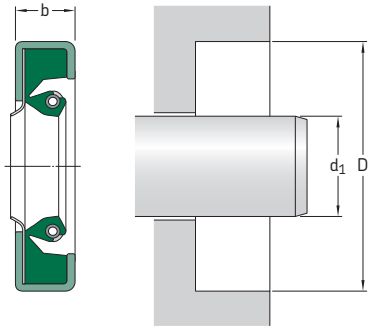



The table includes only a selection of available sizes. Contact your SKF sales representative for more information.

Please see **pages 74** to **76** for housing bore requirements.

| **Dimensions** | | | **Design** | **Lip material** | **Designation** |
|---|---|---|---|---|---|
| Shaft | Bore | Nominal seal width | | | |
| $d_1$ | D | b | | | |
| mm | | | – | – | – |
| **440** | 490 | 20,40 | HDSF2 | VT | **CR 440×490×20 HDSF2 VT** |
| | 490 | 20,40 | HDSH7 | HT | **CR 440×490×20 HDSH7 HT** |
| **500** | 540 | 20 | HDSF2 | RT | **CR 500×540×20 HDSF2 RT** |
| **760** | 800 | 20 | HDSF2 | HT | **CR 760×800×20 HDSF2 HT** |
| | 800 | 20 | HDSF7 | HT | **CR 760×800×20 HDSF7 HT** |

## Radial shaft seals – HDSF and HDSH seals – inch dimensions
$d_1$ **10.500 – 31.890** in.




The table includes only a selection of available sizes. Contact your SKF sales representative for more information.

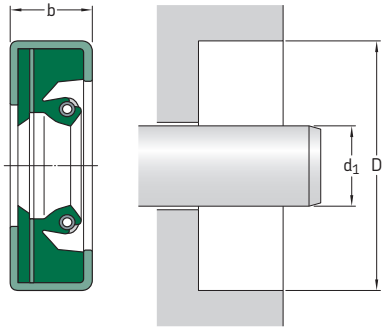


Please see **pages 74** to **76** for housing bore requirements.

| **Dimensions** Shaft $d_1$ | Bore D | Nominal seal width b | **Design** | **Lip material** | **Designation** |
|---|---|---|---|---|---|
| in./*mm* | | | – | – | – |
| **10.500** | 12.500 | 1.000 | HDSF1 | VT | **CR 1050966** |
| *266,70* | *317,50* | *25,40* | | | |
| **14.000** | 16.000 | 1.000 | HDSF1 | VT | **CR 1400957** |
| *355,60* | *406,40* | *25,40* | | | |
| **15.500** | 17.500 | 0.750 | HDSH7 | RT | **CR 1550951** |
| *393,70* | *444,50* | *19,05* | | | |
| | 17.500 | 0.750 | HDSF2 | HT | **CR 1550952** |
| | *444,50* | *19,05* | | | |
| **16.000** | 18.000 | 0.875 | HDSF2 | HT | **CR 1600510** |
| *406,40* | *457,20* | *22,23* | | | |
| **18.500** | 20.500 | 0.875 | HDSF2 | DT | **CR 1850953** |
| *469,90* | *520,70* | *22,23* | | | |
| **19.000** | 21.000 | 0.870 | HDSF2 | VT | **CR 1900954** |
| *482,60* | *533,40* | *22,10* | | | |
| **31.890** | 34.409 | 0.921 | HDSF2 | VT | **CR 3189981** |
| *810,01* | *873,99* | *23,39* | | | |
| | 34.409 | 0.921 | HDSH7 | HT | **CR 3189988** |
| | *873,99* | *23,39* | | | |

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## Radial shaft seals – HDSA, HDSB and HDSC seals – metric dimensions
$d_1$ **240 – 790** mm

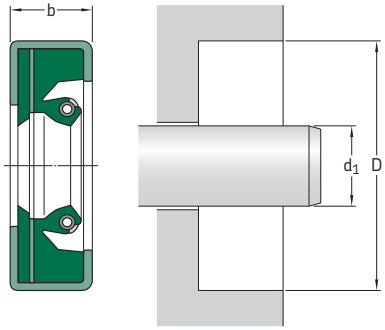



The table includes only a selection of available sizes. Contact your SKF sales representative for more information.

Please see **pages 74** to **76** for housing bore requirements.

| **Dimensions** Shaft $d_1$ | Bore D | Nominal seal width b | **Design** | **Lip material** | **Designation** |
|---|---|---|---|---|---|
| mm | | | – | – | – |
| **240** | 280 | 23 | HDSA1 | RD | **CR 240×280×23 HDSA1 RD** |
| **270** | 330 | 25,40 | HDSA1 | RD | **CR 270×330×25 HDSA1 RD** |
| **310** | 370 | 25,40 | HDSA1 | RD | **CR 310×370×25 HDSA1 RD** |
| **317** | 352 | 23 | HDSA1 | RD | **CR 317×352×23 HDSA1 RD** |
| **320** | 360 | 22,23 | HDSC1 | VD | **CR 320×360×22 HDSC1 VD** |
| | 360 | 25 | HDSB2 | RD | **CR 320×360×25 HDSB2 RD** |
| | 380 | 28 | HDSA2 | RD | **CR 320×360×28 HDSA2 RD** |
| **364** | 420 | 25 | HDSA2 | RD | **CR 364×420×25 HDSA2 RD** |
| **380** | 420 | 22,20 | HDSA2 | VD | **CR 380×420×22 HDSA2 VD** |
| | 440 | 28 | HDSA2 | RD | **CR 380×440×28 HDSA2 RD** |
| **390** | 434 | 22 | HDSA2 | VD | **CR 390×434×22 HDSA2 VD** |
| **400** | 460 | 28 | HDSA2 | RD | **CR 400×460×28 HDSA2 RD** |
| **420** | 460 | 22,23 | HDSC1 | VD | **CR 420×460×22 HDSC1 VD** |
| **430** | 470 | 20 | HDSB1 | RD | **CR 430×470×20 HDSB1 RD** |
| **440** | 480 | 22,23 | HDSA2 | VD | **CR 440×480×22 HDSA2 VD** |
| **560** | 620 | 30 | HDSA2 | RD | **CR 560×620×30 HDSA2 RD** |
| **580** | 640 | 30 | HDSA2 | RD | **CR 580×640×30 HDSA2 RD** |
| | 640 | 30 | HDSB1 | RD | **CR 580×640×30 HDSB1 RD** |
| **790** | 850 | 25 | HDSA1 | RD | **CR 790×850×25 HDSA1 RD** |

## Radial shaft seals – HDSA, HDSB and HDSC seals – inch dimensions
$d_1$ **6.000 – 9.625** in.

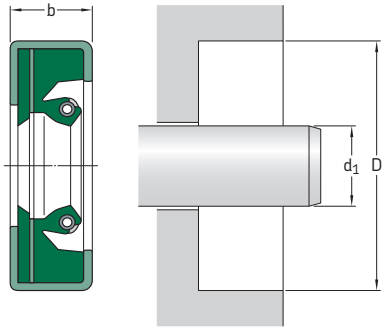



The table includes only a selection of available sizes. Contact your SKF sales representative for more information.

Please see **pages 74** to **76** for housing bore requirements.

| Dimensions | | | Design | Lip material | Designation |
|---|---|---|---|---|---|
| Shaft | Bore | Nominal seal width | | | |
| $d_1$ | D | b | | | |
| in./*mm* | | | – | – | – |
| **6.000** | 7.500 | 0.750 | HDSA1 | RD | **CR 597625** |
| *152,40* | *190,50* | *19,05* | | | |
| **6.625** | 8.125 | 0.875 | HDSA2 | VD | **CR 594828** |
| *168,28* | *206,38* | *22,23* | | | |
| **7.250** | 8.750 | 0.875 | HDSA2 | VD | **CR 72594** |
| *184,15* | *222,25* | *22,23* | | | |
| **8.000** | 10.000 | 1.000 | HDSB1 | RD | **CR 592328** |
| *203,20* | *254,00* | *25,40* | | | |
| | 10.000 | 1.250 | HDSC1 | RD | **CR 590727** |
| | *254,00* | *31,75* | | | |
| | 10.000 | 1.250 | HDSA1 | RD | **CR 592336** |
| | *254,00* | *31,75* | | | |
| | 10.125 | 1.250 | HDSB1 | RD | **CR 80092** |
| | *257,18* | *31,75* | | | |
| **8.250** | 10.250 | 0.875 | HDSB1 | RD | **CR 591921** |
| *209,55* | *260,35* | *22,23* | | | |
| | 10.250 | 1.250 | HDSB1 | RD | **CR 590357** |
| | *260,35* | *31,75* | | | |
| **8.500** | 9.750 | 0.870 | HDSA2 | DD | **CR 595513** |
| *215,90* | *247,65* | *22,10* | | | |
| | 10.000 | 0.875 | HDSA1 | VD | **CR 596196** |
| | *254,00* | *22,23* | | | |
| | 10.000 | 1.000 | HDSA1 | RD | **CR 590731** |
| | *254,00* | *25,40* | | | |
| | 10.500 | 0.875 | HDSA1 | VD | **CR 592798** |
| | *266,70* | *22,23* | | | |
| | 10.500 | 1.000 | HDSB1 | RD | **CR 592149** |
| | *266,70* | *25,40* | | | |
| | 10.500 | 1.000 | HDSA2 | VD | **CR 594902** |
| | *266,70* | *25,40* | | | |
| | 10.500 | 1.250 | HDSA1 | RD | **CR 590245** |
| | *266,70* | *31,75* | | | |
| **8.750** | 10.250 | 0.875 | HDSC1 | RD | **CR 594333** |
| *222,25* | *260,35* | *22,23* | | | |
| | 10.750 | 0.875 | HDSA1 | RD | **CR 592492** |
| | *273,05* | *22,23* | | | |
| **8.875** | 10.125 | 0.875 | HDSA2 | DD | **CR 595127** |
| *225,43* | *257,18* | *22,23* | | | |
| | 10.875 | 0.875 | HDSA1 | RD | **CR 591984** |
| | *276,23* | *22,23* | | | |
| | 11.250 | 0.875 | HDSA1 | RD | **CR 592464** |
| | *285,75* | *22,23* | | | |
| **9.000** | 10.250 | 0.875 | HDSA2 | VD | **CR 90054** |
| *228,60* | *260,35* | *22,23* | | | |
| | 10.500 | 0.875 | HDSA1 | RD | **CR 597343** |
| | *266,70* | *22,23* | | | |
| | 11.000 | 1.000 | HDSA2 | VD | **CR 594903** |
| | *279,40* | *25,40* | | | |
| **9.250** | 10.438 | 0.875 | HDSA1 | RD | **CR 92591** |
| *234,95* | *265,13* | *22,23* | | | |
| | 11.000 | 1.375 | HDSA1 | RD | **CR 592452** |
| | *279,40* | *34,93* | | | |
| | 11.250 | 0.875 | HDSA1 | VD | **CR 593312** |
| | *285,75* | *22,23* | | | |
| **9.375** | 12.750 | 1.250 | HDSB1 | RD | **CR 590688** |
| *238,13* | *323,85* | *31,75* | | | |
| **9.500** | 11.500 | 1.250 | HDSA2 | RD | **CR 590375** |
| *241,30* | *292,10* | *31,75* | | | |
| | 11.500 | 1.250 | HDSC1 | DD | **CR 591960** |
| | *292,10* | *31,75* | | | |
| | 11.500 | 1.250 | HDSA2 | DD | **CR 593667** |
| | *292,10* | *31,75* | | | |
| **9.620** | 12.750 | 1.250 | HDSA1 | RD | **CR 96290** |
| *244,35* | *323,85* | *31,75* | | | |
| **9.625** | 11.625 | 1.000 | HDSC1 | RD | **CR 593659** |
| *244,48* | *295,28* | *25,40* | | | |

## Radial shaft seals – HDSA, HDSB and HDSC seals – inch dimensions
$d_1$ **9.750 – 14.500** in.




The table includes only a selection of available sizes. Contact your SKF sales representative for more information.

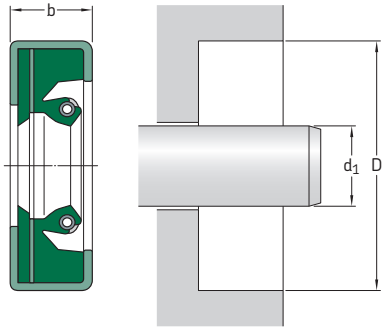
| Dimensions | | | Design | Lip material | Designation |
|---|---|---|---|---|---|
| Shaft $d_1$ | Bore D | Nominal seal width b | | | |
| in./*mm* | | | – | – | – |
| **9.750** | 11.000 | 0.875 | HDSA1 | RD | **CR 593053** |
| *247,65* | *279,40* | *22,23* | | | |
| | 11.000 | 1.000 | HDSA1 | DD | **CR 593428** |
| | *279,40* | *25,40* | | | |
| | 11.125 | 0.875 | HDSA2 | DD | **CR 594974** |
| | *282,58* | *22,23* | | | |
| | 11.250 | 0.875 | HDSA2 | DD | **CR 595514** |
| | *285,75* | *22,23* | | | |
| | 11.750 | 1.000 | HDSA1 | DD | **CR 595568** |
| | *298,45* | *25,40* | | | |
| **9.844** | 11.409 | 0.875 | HDSC2 | RD | **CR 595219** |
| *250,04* | *289,79* | *22,23* | | | |
| **9.875** | 11.875 | 1.000 | HDSA2 | RD | **CR 592847** |
| *250,83* | *301,63* | *25,40* | | | |
| **10.000** | 11.250 | 0.875 | HDSA1 | RD | **CR 1000910** |
| *254,00* | *285,75* | *22,23* | | | |
| | 11.250 | 0.875 | HDSA2 | VD | **CR 1000914** |
| | *285,75* | *22,23* | | | |
| | 11.500 | 1.250 | HDSA1 | RD | **CR 1000920** |
| | *292,10* | *31,75* | | | |
| | 11.750 | 0.938 | HDSC2 | DD | **CR 1000943** |
| | *298,45* | *23,83* | | | |
| | 11.750 | 1.000 | HDSC1 | RD | **CR 1000941** |
| | *298,45* | *25,40* | | | |
| | 12.000 | 0.875 | HDSA1 | RD | **CR 1000950** |
| | *304,80* | *22,23* | | | |
| | 12.000 | 1.250 | HDSA1 | RD | **CR 1000952** |
| | *304,80* | *31,75* | | | |
| | 12.000 | 1.250 | HDSB1 | RD | **CR 1000953** |
| | *304,80* | *31,75* | | | |
| | 12.000 | 1.500 | HDSA1 | RD | **CR 1000954** |
| | *304,80* | *38,10* | | | |
| | 12.500 | 1.000 | HDSA1 | RD | **CR 1000971** |
| | *317,50* | *25,40* | | | |
| **10.125** | 11.750 | 0.938 | HDSC1 | RD | **CR 1013930** |
| *257,18* | *298,45* | *23,83* | | | |

| Dimensions | | | Design | Lip material | Designation |
|---|---|---|---|---|---|
| Shaft $d_1$ | Bore D | Nominal seal width b | | | |
| in./*mm* | | | – | – | – |
| **10.250** | 12.250 | 1.250 | HDSC1 | RD | **CR 1025951** |
| *260,35* | *311,15* | *31,75* | | | |
| **10.375** | 11.625 | 0.875 | HDSA2 | DD | **CR 1037912** |
| *263,53* | *295,28* | *22,23* | | | |
| **10.500** | 12.000 | 0.875 | HDSC1 | RD | **CR 1050916** |
| *266,70* | *304,80* | *22,23* | | | |
| | 12.500 | 1.000 | HDSA1 | RD | **CR 1050956** |
| | *317,50* | *25,40* | | | |
| | 12.500 | 1.000 | HDSB1 | RD | **CR 1050958** |
| | *317,50* | *25,40* | | | |
| | 12.500 | 1.000 | HDSA1 | VT | **CR 1050966** |
| | *317,50* | *25,40* | | | |
| **10.625** | 12.500 | 0.969 | HDSA1 | RD | **CR 1062945** |
| *269,88* | *317,50* | *24,61* | | | |
| | 13.000 | 1.000 | HDSB1 | RD | **CR 1063971** |
| | *330,20* | *25,40* | | | |
| **10.688** | 12.500 | 1.000 | HDSA1 | RD | **CR 1068940** |
| *271,48* | *317,50* | *25,40* | | | |
| **10.750** | 12.250 | 0.875 | HDSC1 | RD | **CR 1075928** |
| *273,05* | *311,15* | *22,23* | | | |
| | 12.250 | 1.025 | HDSC1 | RD | **CR 1075910** |
| | *311,15* | *26,04* | | | |
| | 12.500 | 0.875 | HDSA2 | RD | **CR 1075942** |
| | *317,50* | *22,23* | | | |
| | 13.371 | 1.250 | HDSB1 | RD | **CR 107591** |
| | *339,62* | *31,75* | | | |

| Dimensions | | | Design | Lip material | Designation |
|---|---|---|---|---|---|
| Shaft | Bore | Nominal seal width | | | |
| $d_1$ | D | b | | | |
| in./*mm* | | | – | – | – |
| **11.000** | 12.500 | 1.250 | HDSA1 | RD | **CR 1100918** |
| *279,40* | *317,50* | *31,75* | | | |
| | 13.000 | 0.875 | HDSA1 | RD | **CR 1100950** |
| | *330,20* | *22,23* | | | |
| | 13.000 | 1.000 | HDSA1 | RD | **CR 1100951** |
| | *330,20* | *25,40* | | | |
| | 13.000 | 1.250 | HDSA1 | RD | **CR 1100952** |
| | *330,20* | *31,75* | | | |
| | 13.000 | 1.250 | HDSB1 | RD | **CR 1100953** |
| | *330,20* | *31,75* | | | |
| | 13.000 | 1.250 | HDSC1 | RD | **CR 1100954** |
| | *330,20* | *31,75* | | | |
| | 13.500 | 1.250 | HDSA1 | RD | **CR 1100971** |
| | *342,90* | *31,75* | | | |
| **11.417** | 12.994 | 0.875 | HDSA1 | VD | **CR 1141937** |
| *290,00* | *330,00* | *22,23* | | | |
| | 13.000 | 0.875 | HDSA2 | VD | **CR 1141273** |
| | *330,20* | *22,23* | | | |
| **11.500** | 13.000 | 0.750 | HDSA1 | RD | **CR 115025** |
| *292,10* | *330,20* | *19,05* | | | |
| | 13.000 | 0.875 | HDSA1 | DD | **CR 1150925** |
| | *330,20* | *22,23* | | | |
| | 13.000 | 1.063 | HDSA1 | RD | **CR 1150920** |
| | *330,20* | *27,00* | | | |
| **11.750** | 13.250 | 0.875 | HDSC1 | RD | **CR 1175920** |
| *298,45* | *336,55* | *22,23* | | | |
| | 13.250 | 0.875 | HDSA2 | VD | **CR 1175924** |
| | *336,55* | *22,23* | | | |
| | 13.250 | 0.875 | HDSA2 | RD | **CR 527709** |
| | *336,55* | *22,23* | | | |
| | 13.750 | 1.250 | HDSB1 | RD | **CR 1175952** |
| | *349,25* | *31,75* | | | |
| **12.000** | 13.500 | 0.875 | HDSA1 | RD | **CR 1200920** |
| *304,80* | *342,90* | *22,23* | | | |
| | 14.000 | 0.844 | HDSA2 | VD | **CR 1200962** |
| | *355,60* | *21,44* | | | |
| | 14.000 | 1.000 | HDSB1 | RD | **CR 1200958** |
| | *355,60* | *25,40* | | | |
| | 14.000 | 1.250 | HDSB1 | RD | **CR 1200952** |
| | *355,60* | *31,75* | | | |
| **12.250** | 13.750 | 0.875 | HDSC1 | RD | **CR 1225928** |
| *311,15* | *349,25* | *22,23* | | | |
| | 13.750 | 1.105 | HDSC1 | RD | **CR 1225920** |
| | *349,25* | *28,07* | | | |
| | 14.250 | 1.250 | HDSA2 | RD | **CR 1225588** |
| | *361,95* | *20,65* | | | |
| | 14.250 | 1.250 | HDSA1 | RD | **CR 1225960** |
| | *361,95* | *31,75* | | | |
| **12.500** | 13.750 | 0.906 | HDSA2 | RD | **CR 1250912** |
| *317,50* | *349,25* | *23,00* | | | |
| | 14.000 | 0.875 | HDSA2 | DD | **CR 1250272** |
| | *356,60* | *22,23* | | | |
| | 14.000 | 0.875 | HDSA2 | DD | **CR 1250922** |
| | *355,60* | *22,23* | | | |
| | 14.500 | 1.250 | HDSA1 | RD | **CR 1250950** |
| | *368,30* | *31,75* | | | |
| **12.750** | 14.750 | 1.250 | HDSB1 | RD | **CR 1275950** |
| *323,85* | *374,65* | *31,75* | | | |
| **12.875** | 14.125 | 0.875 | HDSA2 | RD | **CR 1287912** |
| *327,03* | *358,78* | *22,23* | | | |

| Dimensions | | | Design | Lip material | Designation |
|---|---|---|---|---|---|
| Shaft | Bore | Nominal seal width | | | |
| $d_1$ | D | b | | | |
| in./*mm* | | | – | – | – |
| **13.000** | 14.500 | 0.875 | HDSA1 | RD | **CR 1300900** |
| *330,20* | *368,30* | *22,23* | | | |
| | 14.500 | 0.875 | HDSB1 | RD | **CR 1300929** |
| | *368,30* | *22,23* | | | |
| | 14.500 | 1.000 | HDSA1 | RD | **CR 1300920** |
| | *368,30* | *25,40* | | | |
| **13.250** | 14.750 | 0.906 | HDSA2 | DD | **CR 1325922** |
| *336,55* | *374,65* | *23,00* | | | |
| | 14.750 | 0.906 | HDSA2 | VD | **CR 1325928** |
| | *374,65* | *23,00* | | | |
| | 14.875 | 1.000 | HDSA2 | DD | **CR 1325932** |
| | *377,83* | *25,40* | | | |
| | 15.000 | 1.250 | HDSA1 | RD | **CR 1325940** |
| | *381,00* | *31,75* | | | |
| | 15.250 | 1.000 | HDSA1 | RD | **CR 1325950** |
| | *387,35* | *25,40* | | | |
| **13.386** | 15.000 | 0.875 | HDSA2 | VD | **CR 1338273** |
| *340,00* | *381,00* | *22,23* | | | |
| **13.500** | 15.500 | 0.875 | HDSA2 | RD | **CR 1350954** |
| *342,90* | *393,70* | *22,23* | | | |
| | 15.500 | 1.250 | HDSB1 | RD | **CR 1350970** |
| | *393,70* | *31,75* | | | |
| | 15.500 | 1.250 | HDSB1 | VD | **CR 593517** |
| | *393,70* | *31,75* | | | |
| **13.750** | 15.500 | 0.875 | HDSA1 | VD | **CR 1375418** |
| *349,25* | *393,70* | *22,23* | | | |
| **13.875** | 15.125 | 0.875 | HDSA2 | RD | **CR 1387912** |
| *352,43* | *384,18* | *22,23* | | | |
| **13.938** | 15.744 | 1.250 | HDSA2 | RD | **CR 1394942** |
| *354,03* | *399,90* | *31,75* | | | |
| **14.000** | 15.500 | 0.875 | HDSC1 | RD | **CR 1400928** |
| *355,60* | *393,70* | *22,23* | | | |
| | 15.500 | 0.985 | HDSC1 | RD | **CR 1400910** |
| | *393,70* | *25,02* | | | |
| | 15.500 | 1.000 | HDSA1 | RD | **CR 1400925** |
| | *393,90* | *25,40* | | | |
| | 16.000 | 1.000 | HDSA1 | VT | **CR 1400957** |
| | *406,40* | *25,40* | | | |
| | 16.000 | 1.375 | HDSA1 | RD | **CR 1400950** |
| | *406,40* | *34,93* | | | |
| | 16.250 | 1.000 | HDSA2 | RD | **CR 1400965** |
| | *412,75* | *25,40* | | | |
| | 16.250 | 1.000 | HDSA2 | VD | **CR 528307** |
| | *412,75* | *25,40* | | | |
| | 16.750 | 0.968 | HDSB2 | RD | **CR 1400981** |
| | *425,45* | *24,59* | | | |
| **14.250** | 15.750 | 1.000 | HDSA1 | RD | **CR 1425920** |
| *361,95* | *400,05* | *25,40* | | | |
| | 16.250 | 1.000 | HDSB1 | RD | **CR 1425950** |
| | *412,75* | *25,40* | | | |
| **14.400** | 15.587 | 0.875 | HDSB1 | RD | **CR 1440901** |
| *365,76* | *395,91* | *22,23* | | | |
| **14.500** | 16.000 | 0.870 | HDSC2 | DD | **CR 1450922** |
| *368,30* | *406,40* | *22,10* | | | |

# Radial shaft seals – HDSA, HDSB and HDSC seals – inch dimensions
## $d_1$ 15.000 – 46.840 in.




The table includes only a selection of available sizes. Contact your SKF sales representative for more information.

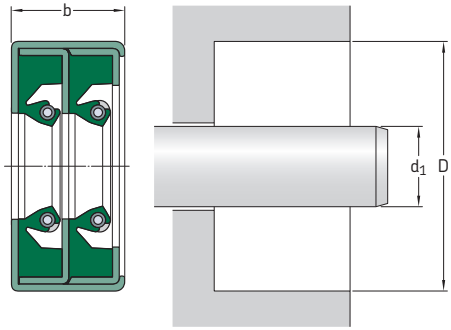
Please see **pages 74** to **76** for housing bore requirements.

| Dimensions | | | Design | Lip material | Designation |
|---|---|---|---|---|---|
| Shaft | Bore | Nominal seal width | | | |
| $d_1$ | D | b | | | |
| in./*mm* | | | – | – | – |
| **15.000** | 17.000 | 0.875 | HDSA1 | RD | **CR 1500951** |
| *381,00* | *431,80* | *22,23* | | | |
| | 17.000 | 1.250 | HDSA1 | RD | **CR 1500950** |
| | *431,80* | *31,75* | | | |
| | 17.500 | 1.000 | HDSA1 | RD | **CR 1500973** |
| | *444,50* | *25,40* | | | |
| **15.125** | 16.375 | 0.875 | HDSA2 | RD | **CR 1512912** |
| *384,18* | *415,93* | *22,23* | | | |
| **15.313** | 17.313 | 0.813 | HDSA2 | RD | **CR 592865** |
| *388,95* | *439,75* | *20,65* | | | |
| | 17.313 | 0.875 | HDSA1 | RD | **CR 1531950** |
| | *439,75* | *22,23* | | | |
| **15.375** | 16.625 | 0.875 | HDSA2 | RD | **CR 1537142** |
| *390,53* | *422,28* | *22,23* | | | |
| **15.750** | 17.750 | 1.250 | HDSA1 | RD | **CR 1575910** |
| *400,05* | *450,85* | *31,75* | | | |
| **16.000** | 18.000 | 0.875 | HDSA1 | RD | **CR 1600951** |
| *406,40* | *457,20* | *22,23* | | | |
| | 18.000 | 1.000 | HDSA2 | RD | **CR 1600955** |
| | *457,20* | *25,40* | | | |
| | 18.000 | 1.125 | HDSB1 | RD | **CR 1600940** |
| | *457,20* | *28,58* | | | |
| | 18.000 | 1.125 | HDSA1 | RD | **CR 1600941** |
| | *457,20* | *28,58* | | | |
| **16.375** | 17.562 | 1.000 | HDSA1 | RD | **CR 1637901** |
| *415,93* | *446,07* | *25,40* | | | |
| **17.000** | 18.250 | 0.875 | HDSA2 | RD | **CR 1700142** |
| *431,80* | *463,55* | *22,23* | | | |
| | 19.000 | 1.250 | HDSA1 | RD | **CR 1700950** |
| | *482,60* | *31,75* | | | |

| Dimensions | | | Design | Lip material | Designation |
|---|---|---|---|---|---|
| Shaft | Bore | Nominal seal width | | | |
| $d_1$ | D | b | | | |
| in./*mm* | | | – | – | – |
| **17.500** | 19.000 | 1.250 | HDSA1 | RD | **CR 1750920** |
| *444,50* | *482,60* | *31,75* | | | |
| | 19.500 | 1.000 | HDSA2 | RD | **CR 1750958** |
| | *495,30* | *25,40* | | | |
| | 19.500 | 1.250 | HDSA1 | RD | **CR 1750952** |
| | *495,30* | *31,75* | | | |
| **18.000** | 20.000 | 1.500 | HDSA1 | RD | **CR 1800950** |
| *457,20* | *508,00* | *38,10* | | | |
| | 20.250 | 1.000 | HDSA2 | RD | **CR 1800965** |
| | *514,35* | *25,40* | | | |
| | 20.250 | 1.000 | HDSA2 | VD | **CR 528308** |
| | *514,35* | *25,40* | | | |
| **18.500** | 20.500 | 0.968 | HDSA2 | VD | **CR 1850952** |
| *469,90* | *520,70* | *24,59* | | | |
| **19.000** | 21.000 | 1.250 | HDSC1 | RD | **CR 1900950** |
| *482,60* | *533,40* | *31,75* | | | |
| **19.250** | 20.750 | 0.875 | HDSA1 | RD | **CR 1925920** |
| *488,95* | *527,05* | *22,23* | | | |
| **19.500** | 21.500 | 1.250 | HDSA1 | RD | **CR 1950950** |
| *495,30* | *546,10* | *31,75* | | | |
| **19.750** | 22.125 | 1.000 | HDSA1 | RD | **CR 1975972** |
| *501,65* | *561,98* | *25,40* | | | |
| **20.000** | 21.250 | 1.375 | HDSA1 | RD | **CR 2000913** |
| *508,00* | *539,75* | *34,93* | | | |
| | 21.500 | 0.875 | HDSA1 | VD | **CR 593789** |
| | *546,10* | *22,23* | | | |
| **20.438** | 22.500 | 1.000 | HDSA1 | RD | **CR 2044580** |
| *519,13* | *571,50* | *25,40* | | | |
| **20.500** | 22.000 | 1.500 | HDSA2 | RD | **CR 2050282** |
| *520,70* | *558,80* | *38,10* | | | |
| | 22.500 | 0.875 | HDSA2 | VD | **CR 2050954** |
| | *571,50* | *22,23* | | | |

| Dimensions | | | Design | Lip material | Designation |
|---|---|---|---|---|---|
| Shaft | Bore | Nominal seal width | | | |
| $d_1$ | D | b | | | |
| in./*mm* | | | – | – | – |
| **20.750** | 22.750 | 1.250 | HDSA1 | RD | **CR 2075950** |
| *527,05* | *577,85* | *31,75* | | | |
| **21.000** | 22.250 | 1.375 | HDSA1 | RD | **CR 2100913** |
| *533,40* | *565,15* | *34,93* | | | |
| | 23.000 | 0.875 | HDSC2 | RD | **CR 2100955** |
| | *584,20* | *22,23* | | | |
| **21.250** | 23.000 | 0.875 | HDSA1 | RD | **CR 2125940** |
| *539,75* | *584,20* | *22,23* | | | |
| **21.500** | 23.500 | 1.000 | HDSA1 | RD | **CR 594356** |
| *546,10* | *596,90* | *25,40* | | | |
| **22.000** | 23.500 | 0.875 | HDSA1 | RD | **CR 2200920** |
| *558,80* | *596,90* | *22,23* | | | |
| **23.000** | 24.500 | 0.875 | HDSB1 | RD | **CR 2300921** |
| *584,20* | *622,30* | *22,23* | | | |
| **24.000** | 26.250 | 0.875 | HDSA2 | RD | **CR 2400962** |
| *609,60* | *666,75* | *22,23* | | | |
| **24.250** | 26.250 | 0.875 | HDSA1 | VD | **CR 2425950** |
| *615,95* | *666,75* | *22,23* | | | |
| **25.000** | 27.500 | 1.000 | HDSB1 | RD | **CR 2500971** |
| | *698,50* | *25,40* | | | |
| **32.000** | 34.000 | 0.875 | HDSA2 | DD | **CR 3200958** |
| *812,80* | *863,60* | *22,23* | | | |
| **45.000** | 46.627 | 1.000 | HDSB2 | RD | **CR 4500930** |
| *1 143,00* | *1 184,33* | *25,40* | | | |
| **46.840** | 48.000 | 1.188 | HDSA2 | RD | **CR 4684912** |
| *1 189,74* | *1 219,20* | *30,18* | | | |

## Radial shaft seals – HDSE1 – metric dimensions
$d_1$ **850** mm

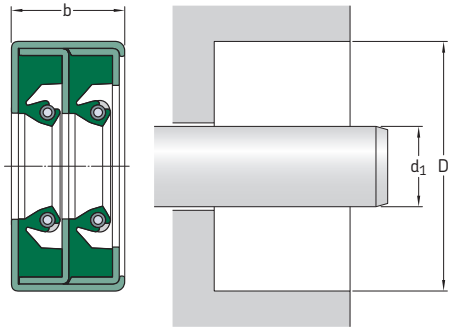



The table includes only a selection of available sizes. Contact your SKF sales representative for more information.

Please see **pages 74** to **76** for housing bore requirements.

| **Dimensions** Shaft $d_1$ | Bore D | Nominal seal width b | **Design** | **Lip material** | **Designation** |
|---|---|---|---|---|---|
| mm | | | – | – | – |
| **850** | 910 | 50 | HDSE1 | RR | **CR 850×910×50 HDSE1 RR** |

## Radial shaft seals – HDSD and HDSE seals – inch dimensions
$d_1$ **18.000 – 63.130** in.




The table includes only a selection of available sizes. Contact your SKF sales representative for more information.

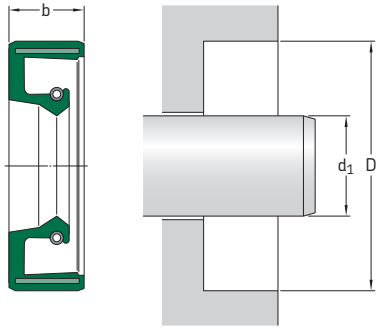
Please see **pages 74** to **76** for housing bore requirements.

| **Dimensions** Shaft $d_1$ | Bore D | Nominal seal width b | **Design** | **Lip material** | **Designation** |
|---|---|---|---|---|---|
| in./*mm* | | | – | – | – |
| **18.000** | 20.000 | 1.250 | HDSD2 | RR | **CR 1800570** |
| *457,20* | *508,00* | *31,75* | | | |
| | 20.000 | 1.500 | HDSD1 | RR | **CR 1800956** |
| | *508,00* | *38,10* | | | |
| | 20.250 | 1.250 | HDSE2 | RR | **CR 1800966** |
| | *514,35* | *31,75* | | | |
| **18.500** | 20.000 | 1.250 | HDSD2 | RR | **CR 1850922** |
| *469,90* | *508,00* | *31,75* | | | |
| **19.125** | 21.250 | 1.750 | HDSD1 | RR | **CR 1913960** |
| *485,78* | *539,75* | *44,45* | | | |
| **20.000** | 22.000 | 1.813 | HDSE1 | RR | **CR 2000951** |
| *508,00* | *558,80* | *46,05* | | | |
| **21.750** | 24.750 | 1.500 | HDSD1 | RR | **CR 2175920** |
| *552,45* | *628,65* | *38,10* | | | |
| | 24.750 | 1.500 | HDSD2 | VV | **CR 2175992** |
| | *628,65* | *38,10* | | | |
| | 24.750 | 1.500 | HDSD1 | VV | **CR 2175997** |
| | *628,65* | *38,10* | | | |
| | 24.750 | 1.500 | HDSE1 | VV | **CR 2175998** |
| | *628,65* | *38,10* | | | |
| **22.000** | 24.000 | 1.250 | HDSD1 | RR | **CR 2200953** |
| *558,80* | *609,60* | *31,75* | | | |
| | 24.000 | 1.250 | HDSE2 | DD | **CR 2200958** |
| | *609,60* | *31,75* | | | |
| | 24.000 | 1.250 | HDSD2 | DD | **CR 2200962** |
| | *609,60* | *31,75* | | | |
| **23.000** | 24.750 | 1.250 | HDSE1 | VV | **CR 2300983** |
| *584,20* | *628,65* | *31,75* | | | |
| **23.500** | 25.500 | 1.250 | HDSD2 | RR | **CR 2350955** |
| *596,90* | *647,70* | *31,75* | | | |
| **25.500** | 28.500 | 1.250 | HDSD2 | RR | **CR 2550912** |
| *647,70* | *723,90* | *31,75* | | | |

| Dimensions Shaft $d_1$ | Bore D | Nominal seal width b | Design | Lip material | Designation |
|---|---|---|---|---|---|
| in./*mm* | | | – | – | – |
| **27.000** | 29.000 | 1.875 | HDSE2 | DD | **CR 2700953** |
| *685,80* | *736,60* | *47,63* | | | |
| **27.688** | 29.812 | 1.250 | HDSE2 | RR | **CR 2769915** |
| *703,28* | *757,23* | *31,75* | | | |
| **28.000** | 31.000 | 1.250 | HDSD2 | DD | **CR 2800998** |
| *711,20* | *787,40* | *31,75* | | | |
| **29.000** | 31.000 | 1.750 | HDSD1 | RR | **CR 2900954** |
| *736,60* | *787,40* | *44,45* | | | |
| **31.000** | 34.000 | 1.250 | HDSD2 | RR | **CR 3100992** |
| *787,40* | *863,60* | *31,75* | | | |
| **33.000** | 34.500 | 1.250 | HDSD1 | RR | **CR 3300920** |
| *838,20* | *876,30* | *31,75* | | | |
| | 34.500 | 1.250 | HDSE1 | RR | **CR 3300921** |
| | *876,30* | *31,75* | | | |
| **33.500** | 35.500 | 1.750 | HDSE1 | RR | **CR 3350950** |
| *850,90* | *901,70* | *44,45* | | | |
| **35.500** | 38.000 | 1.250 | HDSE2 | VV | **CR 3550974** |
| *901,70* | *965,20* | *31,75* | | | |
| **36.000** | 38.000 | 1.500 | HDSE2 | RR | **CR 3600954** |
| *914,40* | *965,20* | *38,10* | | | |
| **38.000** | 40.000 | 1.313 | HDSE1 | RR | **CR 3800950** |
| *965,20* | *1 016,00* | *33,35* | | | |
| **63.130** | 64.625 | 1.375 | HDSD1 | RD | **CR 6313922** |
| *1 603,50* | *1 641,48* | *34,93* | | | |



## Radial shaft seals – SBF – metric dimensions
$d_1$ **175 – 900** mm

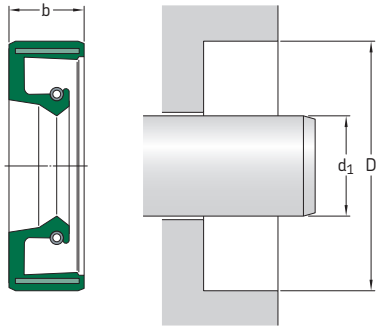



The table includes only a selection of available sizes. Contact your SKF sales representative for more information.

Please see **pages 74** to **76** for housing bore requirements.

| **Dimensions** | | | **Designations** | |
|---|---|---|---|---|
| Shaft | Bore | Nominal seal width | Lip material | |
| | | | R | V |
| $d_1$ | D | b | | |
| mm | | | – | |
| **175** | 205 | 15 | **CR 175×205×15 SBF R** | **CR 175×205×15 SBF V** |
| **230** | 260 | 15 | **CR 230×260×15 SBF R** | **CR 230×260×15 SBF V** |
| **240** | 270 | 15 | **CR 240×270×15 SBF R** | **CR 240×270×15 SBF V** |
| | 280 | 16 | **CR 240×280×16 SBF R** | **CR 240×280×16 SBF V** |
| **245** | 275 | 16 | **CR 245×275×16 SBF R** | **CR 245×275×16 SBF V** |
| **260** | 290 | 16 | **CR 260×290×16 SBF R** | **CR 260×290×16 SBF V** |
| | 310 | 16 | **CR 260×310×16 SBF R** | **CR 260×310×16 SBF V** |
| **270** | 235 | 16 | **CR 270×235×16 SBF R** | **CR 270×235×16 SBF V** |
| **290** | 330 | 18 | **CR 290×330×18 SBF R** | **CR 290×330×18 SBF V** |
| | 334 | 20 | **CR 290×334×20 SBF R** | **CR 290×334×20 SBF V** |
| **300** | 344 | 20 | **CR 300×344×20 SBF R** | **CR 300×344×20 SBF V** |
| **316** | 360 | 20 | **CR 316×360×20 SBF R** | **CR 316×360×20 SBF V** |
| **325** | 365 | 16 | **CR 325×365×16 SBF R** | **CR 325×365×16 SBF V** |
| **340** | 380 | 20 | **CR 340×380×20 SBF R** | **CR 340×380×20 SBF V** |
| **360** | 400 | 20 | **CR 360×400×20 SBF R** | **CR 360×400×20 SBF V** |
| **385** | 430 | 25 | **CR 385×430×25 SBF R** | **CR 385×430×25 SBF V** |
| **390** | 430 | 20 | **CR 390×430×20 SBF R** | **CR 390×430×20 SBF V** |
| **400** | 440 | 20 | **CR 400×440×20 SBF R** | **CR 400×440×20 SBF V** |
| **430** | 480 | 22 | **CR 430×480×22 SBF R** | **CR 430×480×22 SBF V** |
| **440** | 490 | 25 | **CR 440×490×25 SBF R** | **CR 440×490×25 SBF V** |
| **450** | 500 | 25 | **CR 450×500×25 SBF R** | **CR 450×500×25 SBF V** |
| **900** | 960 | 27 | **CR 900×960×27 SBF R** | **CR 900×960×27 SBF V** |

## Radial shaft seals – SBF – inch dimensions
$d_1$ **11.000 – 27.500** in.



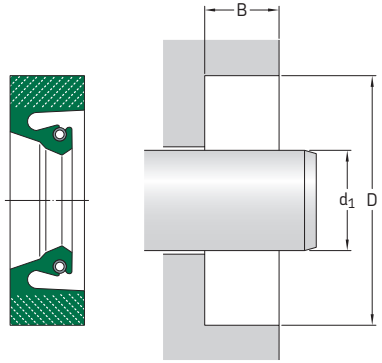

The table includes only a selection of available sizes. Contact your SKF sales representative for more information.



Please see **pages 74** to **76** for housing bore requirements.

| **Dimensions** | | | **Designations** | |
|---|---|---|---|---|
| Shaft | Bore | Nominal seal width | Lip material | |
| | | | R | V |
| $d_1$ | D | b | | |
| in./*mm* | | | – | |
| **11.000**<br>*279,40* | 12.500<br>*317,50* | 0.625<br>*15,88* | **CR SBF 5809 R** | **CR SBF 5809 V** |
| **20.500**<br>*520,70* | 22.500<br>*571,50* | 0.875<br>*22,23* | **CR SBF 7083 R** | **CR SBF 7083 V** |
| **21.500**<br>*546,10* | 23.469<br>*596,10* | 0.875<br>*22,23* | **CR SBF 7175 R** | **CR SBF 7175 V** |
| **23.000**<br>*584,20* | 24.500<br>*622,30* | 0.750<br>*19,05* | **CR SBF 7270 R** | **CR SBF 7270 V** |
| **27.500**<br>*698,50* | 29.500<br>*749,30* | 1.000<br>*25,40* | **CR SBF 7406 R** | **CR SBF 7406 V** |

## Radial shaft seals – HSF1 (split) and HSF5 (solid) – metric dimensions
$d_1$ **40 – 215** mm



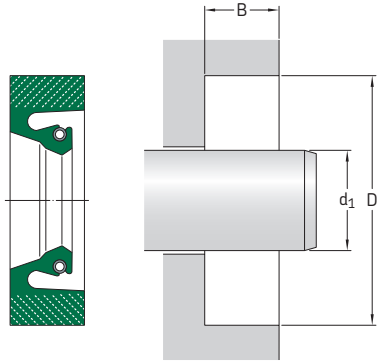

The table includes only a selection of available sizes. Contact your SKF sales representative for more information.

Please see **pages 74** to **76** for housing bore requirements.

| **Dimensions** Shaft diameter $d_1$ | Bore diameter D | Bore depth B | **Designations** Split version (HSF1) Lip material R, V | Solid version (HSF5) Lip material R, V |
|---|---|---|---|---|
| mm | | | – | |
| **40** | 60 | 10 | **CR 40×60×10 HSF1 R**<br>**CR 40×60×10 HSF1 V** | **CR 40×60×10 HSF5 R**<br>**CR 40×60×10 HSF5 V** |
| **55** | 80 | 12,20 | **CR 55×80×12 HSF1 R**<br>**CR 55×80×12 HSF1 V** | **CR 55×80×12 HSF5 R**<br>**CR 55×80×12 HSF5 V** |
| **60** | 80 | 10 | **CR 60×80×10 HSF1 R**<br>**CR 60×80×10 HSF1 V** | **CR 60×80×10 HSF5 R**<br>**CR 60×80×10 HSF5 V** |
| **70** | 102 | 12,50 | **CR 70×102×13 HSF1 R**<br>**CR 70×102×13 HSF1 V** | **CR 70×102×13 HSF5 R**<br>**CR 70×102×13 HSF5 V** |
| **80** | 100 | 8 | **CR 80×100×8 HSF1 R**<br>**CR 80×100×8 HSF1 V** | **CR 80×100×8 HSF5 R**<br>**CR 80×100×8 HSF5 V** |
| | 112 | 12,50 | **CR 80×112×13 HSF1 R**<br>**CR 80×112×13 HSF1 V** | **CR 80×112×13 HSF5 R**<br>**CR 80×112×13 HSF5 V** |
| **84** | 100 | 8 | **CR 84×100×8 HSF1 R**<br>**CR 84×100×8 HSF1 V** | **CR 84×100×8 HSF5 R**<br>**CR 84×100×8 HSF5 V** |
| **85** | 101 | 8 | **CR 85×101×8 HSF1 R**<br>**CR 85×101×8 HSF1 V** | **CR 85×101×8 HSF5 R**<br>**CR 85×101×8 HSF5 V** |
| | 120 | 12 | **CR 85×120×12 HSF1 R**<br>**CR 85×120×12 HSF1 V** | **CR 85×120×12 HSF5 R**<br>**CR 85×120×12 HSF5 V** |
| **90** | 110 | 12 | **CR 90×110×12 HSF1 R**<br>**CR 90×110×12 HSF1 V** | **CR 90×110×12 HSF5 R**<br>**CR 90×110×12 HSF5 V** |
| **100** | 116 | 8 | **CR 100×116×8 HSF1 R**<br>**CR 100×116×8 HSF1 V** | **CR 100×116×8 HSF5 R**<br>**CR 100×116×8 HSF5 V** |
| | 130 | 10 | **CR 100×130×10 HSF1 R**<br>**CR 100×130×10 HSF1 V** | **CR 100×130×10 HSF5 R**<br>**CR 100×130×10 HSF5 V** |
| **110** | 130 | 12 | **CR 110×130×12 HSF1 R**<br>**CR 110×130×12 HSF1 V** | **CR 110×130×12 HSF5 R**<br>**CR 110×130×12 HSF5 V** |
| **120** | 150 | 13 | **CR 120×150×13 HSF1 R**<br>**CR 120×150×13 HSF1 V** | **CR 120×150×13 HSF5 R**<br>**CR 120×150×13 HSF5 V** |

| Dimensions | | | Designations | |
|---|---|---|---|---|
| Shaft diameter $d_1$ | Bore diameter D | Bore depth B | Split version (HSF1) Lip material R, V | Solid version (HSF5) Lip material R, V |
| mm | | | – | |
| **125** | 155 | 12,50 | **CR 125×155×13 HSF1 R** | **CR 125×155×13 HSF5 R** |
| | | | **CR 125×155×13 HSF1 V** | **CR 125×155×13 HSF5 V** |
| | 160 | 12 | **CR 125×160×12 HSF1 R** | **CR 125×160×12 HSF5 R** |
| | | | **CR 125×160×12 HSF1 V** | **CR 125×160×12 HSF5 V** |
| **127** | 165 | 16 | **CR 127×165×16 HSF1 R** | **CR 127×165×16 HSF5 R** |
| | | | **CR 127×165×16 HSF1 V** | **CR 127×165×16 HSF5 V** |
| **135** | 160 | 12 | **CR 135×160×12 HSF1 R** | **CR 135×160×12 HSF5 R** |
| | | | **CR 135×160×12 HSF1 V** | **CR 135×160×12 HSF5 V** |
| **140** | 170 | 12 | **CR 140×170×12 HSF1 R** | **CR 140×170×12 HSF5 R** |
| | | | **CR 140×170×12 HSF1 V** | **CR 140×170×12 HSF5 V** |
| **145** | 180 | 14 | **CR 145×180×14 HSF1 R** | **CR 145×180×14 HSF5 R** |
| | | | **CR 145×180×14 HSF1 V** | **CR 145×180×14 HSF5 V** |
| **150** | 180 | 12 | **CR 150×180×12 HSF1 R** | **CR 150×180×12 HSF5 R** |
| | | | **CR 150×180×12 HSF1 V** | **CR 150×180×12 HSF5 V** |
| **160** | 190 | 15 | **CR 160×190×15 HSF1 R** | **CR 160×190×15 HSF5 R** |
| | | | **CR 160×190×15 HSF1 V** | **CR 160×190×15 HSF5 V** |
| | 200 | 10 | **CR 160×200×10 HSF1 R** | **CR 160×200×10 HSF5 R** |
| | | | **CR 160×200×10 HSF1 V** | **CR 160×200×10 HSF5 V** |
| **170** | 200 | 12 | **CR 170×200×12 HSF1 R** | **CR 170×200×12 HSF5 R** |
| | | | **CR 170×200×12 HSF1 V** | **CR 170×200×12 HSF5 V** |
| | 200 | 16 | **CR 170×200×16 HSF1 R** | **CR 170×200×16 HSF5 R** |
| | | | **CR 170×200×16 HSF1 V** | **CR 170×200×16 HSF5 V** |
| | 211 | 16 | **CR 170×211×16 HSF1 R** | **CR 170×211×16 HSF5 R** |
| | | | **CR 170×211×16 HSF1 V** | **CR 170×211×16 HSF5 V** |
| **175** | 200 | 15 | **CR 175×200×15 HSF1 R** | **CR 175×200×15 HSF5 R** |
| | | | **CR 175×200×15 HSF1 V** | **CR 175×200×15 HSF5 V** |
| **180** | 200 | 15 | **CR 180×200×15 HSF1 R** | **CR 180×200×15 HSF5 R** |
| | | | **CR 180×200×15 HSF1 V** | **CR 180×200×15 HSF5 V** |
| | 222 | 16 | **CR 180×222×16 HSF1 R** | **CR 180×222×16 HSF5 R** |
| | | | **CR 180×222×16 HSF1 V** | **CR 180×222×16 HSF5 V** |
| **185** | 225 | 16 | **CR 185×225×16 HSF1 R** | **CR 185×225×16 HSF5 R** |
| | | | **CR 185×225×16 HSF1 V** | **CR 185×225×16 HSF5 V** |
| **190** | 220 | 15 | **CR 190×220×15 HSF1 R** | **CR 190×220×15 HSF5 R** |
| | | | **CR 190×220×15 HSF1 V** | **CR 190×220×15 HSF5 V** |
| | 225 | 18 | **CR 190×225×18 HSF1 R** | **CR 190×225×18 HSF5 R** |
| | | | **CR 190×225×18 HSF1 V** | **CR 190×225×18 HSF5 V** |
| | 230 | 16 | **CR 190×230×16 HSF1 R** | **CR 190×230×16 HSF5 R** |
| | | | **CR 190×230×16 HSF1 V** | **CR 190×230×16 HSF5 V** |
| **200** | 240 | 16 | **CR 200×240×16 HSF1 R** | **CR 200×240×16 HSF5 R** |
| | | | **CR 200×240×16 HSF1 V** | **CR 200×240×16 HSF5 V** |
| | 250 | 18 | **CR 200×250×18 HSF1 R** | **CR 200×250×18 HSF5 R** |
| | | | **CR 200×250×18 HSF1 V** | **CR 200×250×18 HSF5 V** |
| **210** | 240 | 12 | **CR 210×240×12 HSF1 R** | **CR 210×240×12 HSF5 R** |
| | | | **CR 210×240×12 HSF1 V** | **CR 210×240×12 HSF5 V** |
| | 250 | 16 | **CR 210×250×16 HSF1 R** | **CR 210×250×16 HSF5 R** |
| | | | **CR 210×250×16 HSF1 V** | **CR 210×250×16 HSF5 V** |
| **215** | 248 | 15 | **CR 215×248×15 HSF1 R** | **CR 215×248×15 HSF5 R** |
| | | | **CR 215×248×15 HSF1 V** | **CR 215×248×15 HSF5 V** |
| | 250 | 16 | **CR 215×250×16 HSF1 R** | **CR 215×250×16 HSF5 R** |
| | | | **CR 215×250×16 HSF1 V** | **CR 215×250×16 HSF5 V** |

## Radial shaft seals – HSF1 (split) and HSF5 (solid) – metric dimensions
$d_1$ **220 – 335** mm



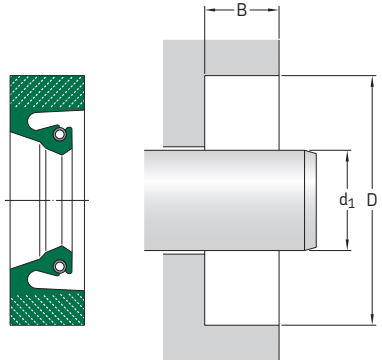

The table includes only a selection of available sizes. Contact your SKF sales representative for more information.

Please see **pages 74** to **76** for housing bore requirements.

| **Dimensions** | | | **Designations** | |
|---|---|---|---|---|
| Shaft diameter $d_1$ | Bore diameter D | Bore depth B | Split version (HSF1) Lip material R, V | Solid version (HSF5) Lip material R, V |
| mm | | | – | |
| **220** | 180 | 16 | **CR 220×180×16 HSF1 R** | **CR 220×180×16 HSF5 R** |
| | | | **CR 220×180×16 HSF1 V** | **CR 220×180×16 HSF5 V** |
| | 260 | 16 | **CR 220×260×16 HSF1 R** | **CR 220×260×16 HSF5 R** |
| | | | **CR 220×260×16 HSF1 V** | **CR 220×260×16 HSF5 V** |
| **226** | 276 | 22,22 | **CR 226×276×22 HSF1 R** | **CR 226×276×22 HSF5 R** |
| | | | **CR 226×276×22 HSF1 V** | **CR 226×276×22 HSF5 V** |
| **230** | 260 | 15 | **CR 230×260×15 HSF1 R** | **CR 230×260×15 HSF5 R** |
| | | | **CR 230×260×15 HSF1 V** | **CR 230×260×15 HSF5 V** |
| | 270 | 16 | **CR 230×270×16 HSF1 R** | **CR 230×270×16 HSF5 R** |
| | | | **CR 230×270×16 HSF1 V** | **CR 230×270×16 HSF5 V** |
| **235** | 265 | 15 | **CR 235×265×15 HSF1 R** | **CR 235×265×15 HSF5 R** |
| | | | **CR 235×265×15 HSF1 V** | **CR 235×265×15 HSF5 V** |
| | 275 | 20 | **CR 235×275×20 HSF1 R** | **CR 235×275×20 HSF5 R** |
| | | | **CR 235×275×20 HSF1 V** | **CR 235×275×20 HSF5 V** |
| **236** | 276 | 16 | **CR 236×276×16 HSF1 R** | **CR 236×276×16 HSF5 R** |
| | | | **CR 236×276×16 HSF1 V** | **CR 236×276×16 HSF5 V** |
| **240** | 275 | 18 | **CR 240×275×18 HSF1 R** | **CR 240×275×18 HSF5 R** |
| | | | **CR 240×275×18 HSF1 V** | **CR 240×275×18 HSF5 V** |
| | 280 | 18 | **CR 240×280×18 HSF1 R** | **CR 240×280×18 HSF5 R** |
| | | | **CR 240×280×18 HSF1 V** | **CR 240×280×18 HSF5 V** |
| | 290 | 25 | **CR 240×290×25 HSF1 R** | **CR 240×290×25 HSF5 R** |
| | | | **CR 240×290×25 HSF1 V** | **CR 240×290×25 HSF5 V** |
| **250** | 280 | 15 | **CR 250×280×15 HSF1 R** | **CR 250×280×15 HSF5 R** |
| | | | **CR 250×280×15 HSF1 V** | **CR 250×280×15 HSF5 V** |
| | 290 | 16,50 | **CR 250×290×17 HSF1 R** | **CR 250×290×17 HSF5 R** |
| | | | **CR 250×290×17 HSF1 V** | **CR 250×290×17 HSF5 V** |
| **260** | 290 | 16 | **CR 260×290×16 HSF1 R** | **CR 260×290×16 HSF5 R** |
| | | | **CR 260×290×16 HSF1 V** | **CR 260×290×16 HSF5 V** |
| | 304 | 20 | **CR 260×304×20 HSF1 R** | **CR 260×304×20 HSF5 R** |
| | | | **CR 260×304×20 HSF1 V** | **CR 260×304×20 HSF5 V** |
| **270** | 310 | 15 | **CR 270×310×15 HSF1 R** | **CR 270×310×15 HSF5 R** |
| | | | **CR 270×310×15 HSF1 V** | **CR 270×310×15 HSF5 V** |
| | 314 | 20 | **CR 270×314×20 HSF1 R** | **CR 270×314×20 HSF5 R** |
| | | | **CR 270×314×20 HSF1 V** | **CR 270×314×20 HSF5 V** |

| Dimensions | | | Designations | |
|---|---|---|---|---|
| Shaft diameter $d_1$ | Bore diameter D | Bore depth B | Split version (HSF1) Lip material R, V | Solid version (HSF5) Lip material R, V |
| mm | | | – | |
| **275** | 315 | 20 | **CR 275×315×20 HSF1 R** | **CR 275×315×20 HSF5 R** |
| | | | **CR 275×315×20 HSF1 V** | **CR 275×315×20 HSF5 V** |
| **280** | 320 | 16 | **CR 280×320×16 HSF1 R** | **CR 280×320×16 HSF5 R** |
| | | | **CR 280×320×16 HSF1 V** | **CR 280×320×16 HSF5 V** |
| | 320 | 20 | **CR 280×320×20 HSF1 R** | **CR 280×320×20 HSF5 R** |
| | | | **CR 280×320×20 HSF1 V** | **CR 280×320×20 HSF5 V** |
| | 324 | 20 | **CR 280×324×20 HSF1 R** | **CR 280×324×20 HSF5 R** |
| | | | **CR 280×324×20 HSF1 V** | **CR 280×324×20 HSF5 V** |
| **285** | 310 | 15 | **CR 285×310×15 HSF1 R** | **CR 285×310×15 HSF5 R** |
| | | | **CR 285×310×15 HSF1 V** | **CR 285×310×15 HSF5 V** |
| **289** | 327 | 19 | **CR 289×327×19 HSF1 R** | **CR 289×327×19 HSF5 R** |
| | | | **CR 289×327×19 HSF1 V** | **CR 289×327×19 HSF5 V** |
| **290** | 330 | 20 | **CR 290×330×20 HSF1 R** | **CR 290×330×20 HSF5 R** |
| | | | **CR 290×330×20 HSF1 V** | **CR 290×330×20 HSF5 V** |
| | 334 | 20 | **CR 290×334×20 HSF1 R** | **CR 290×334×20 HSF5 R** |
| | | | **CR 290×334×20 HSF1 V** | **CR 290×334×20 HSF5 V** |
| **292** | 330 | 15,87 | **CR 292×330×16 HSF1 R** | **CR 292×330×16 HSF5 R** |
| | | | **CR 292×330×16 HSF1 V** | **CR 292×330×16 HSF5 V** |
| **300** | 340 | 16,50 | **CR 300×340×17 HSF1 R** | **CR 300×340×17 HSF5 R** |
| | | | **CR 300×340×17 HSF1 V** | **CR 300×340×17 HSF5 V** |
| | 340 | 20 | **CR 300×340×20 HSF1 R** | **CR 300×340×20 HSF5 R** |
| | | | **CR 300×340×20 HSF1 V** | **CR 300×340×20 HSF5 V** |
| **304** | 348 | 20 | **CR 304×348×20 HSF1 R** | **CR 304×348×20 HSF5 R** |
| | | | **CR 304×348×20 HSF1 V** | **CR 304×348×20 HSF5 V** |
| **308** | 352 | 20 | **CR 308×352×20 HSF1 R** | **CR 308×352×20 HSF5 R** |
| | | | **CR 308×352×20 HSF1 V** | **CR 308×352×20 HSF5 V** |
| **310** | 345 | 18 | **CR 310×345×18 HSF1 R** | **CR 310×345×18 HSF5 R** |
| | | | **CR 310×345×18 HSF1 V** | **CR 310×345×18 HSF5 V** |
| | 354 | 20,50 | **CR 310×354×21 HSF1 R** | **CR 310×354×21 HSF5 R** |
| | | | **CR 310×354×21 HSF1 V** | **CR 310×354×21 HSF5 V** |
| **311** | 345 | 18,30 | **CR 311×345×18 HSF1 R** | **CR 311×345×18 HSF5 R** |
| | | | **CR 311×345×18 HSF1 V** | **CR 311×345×18 HSF5 V** |
| **314** | 355 | 20 | **CR 314×355×20 HSF1 R** | **CR 314×355×20 HSF5 R** |
| | | | **CR 314×355×20 HSF1 V** | **CR 314×355×20 HSF5 V** |
| **316** | 360 | 20 | **CR 316×360×20 HSF1 R** | **CR 316×360×20 HSF5 R** |
| | | | **CR 316×360×20 HSF1 V** | **CR 316×360×20 HSF5 V** |
| **320** | 350 | 15 | **CR 320×350×15 HSF1 R** | **CR 320×350×15 HSF5 R** |
| | | | **CR 320×350×15 HSF1 V** | **CR 320×350×15 HSF5 V** |
| | 360 | 18 | **CR 320×360×18 HSF1 R** | **CR 320×360×18 HSF5 R** |
| | | | **CR 320×360×18 HSF1 V** | **CR 320×360×18 HSF5 V** |
| **328** | 372 | 20,20 | **CR 328×372×20 HSF1 R** | **CR 328×372×20 HSF5 R** |
| | | | **CR 328×372×20 HSF1 V** | **CR 328×372×20 HSF5 V** |
| **330** | 370 | 18 | **CR 330×370×18 HSF1 R** | **CR 330×370×18 HSF5 R** |
| | | | **CR 330×370×18 HSF1 V** | **CR 330×370×18 HSF5 V** |
| | 374 | 20 | **CR 330×374×20 HSF1 R** | **CR 330×374×20 HSF5 R** |
| | | | **CR 330×374×20 HSF1 V** | **CR 330×374×20 HSF5 V** |
| **335** | 373 | 19 | **CR 335×373×19 HSF1 R** | **CR 335×373×19 HSF5 R** |
| | | | **CR 335×373×19 HSF1 V** | **CR 335×373×19 HSF5 V** |

## Radial shaft seals – HSF1 (split) and HSF5 (solid) – metric dimensions
$d_1$ **340 – 530** mm



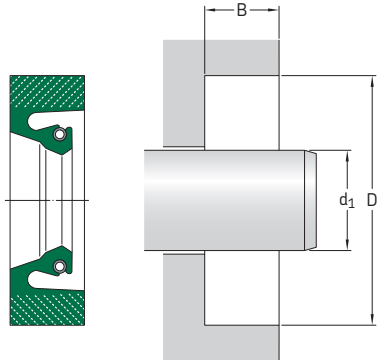

The table includes only a selection of available sizes. Contact your SKF sales representative for more information.

Please see **pages 74** to **76** for housing bore requirements.

| **Dimensions** | | | **Designations** | |
|---|---|---|---|---|
| Shaft diameter $d_1$ | Bore diameter D | Bore depth B | Split version (HSF1) Lip material R, V | Solid version (HSF5) Lip material R, V |
| mm | | | – | |
| **340** | 380 | 16 | **CR340×380×16 HSF1 R** | **CR 340×380×16 HSF5 R** |
| | | | **CR 340×380×16 HSF1 V** | **CR 340×380×16 HSF5 V** |
| | 380 | 20 | **CR 340×380×20 HSF1 R** | **CR 340×380×20 HSF5 R** |
| | | | **CR 340×380×20 HSF1 V** | **CR 340×380×20 HSF5 V** |
| **350** | 380 | 17,70 | **CR 350×380×18 HSF1 R** | **CR 350×380×18 HSF5 R** |
| | | | **CR 350×380×18 HSF1 V** | **CR 350×380×18 HSF5 V** |
| | 394 | 20 | **CR 350×394×20 HSF1 R** | **CR 350×394×20 HSF5 R** |
| | | | **CR 350×394×20 HSF1 V** | **CR 350×394×20 HSF5 V** |
| **360** | 404 | 20 | **CR 360×404×20 HSF1 R** | **CR 360×404×20 HSF5 R** |
| | | | **CR 360×404×20 HSF1 V** | **CR 360×404×20 HSF5 V** |
| | 410 | 20 | **CR 360×410×20 HSF1 R** | **CR 360×410×20 HSF5 R** |
| | | | **CR 360×410×20 HSF1 V** | **CR 360×410×20 HSF5 V** |
| **362** | 400 | 20 | **CR 362×400×20 HSF1 R** | **CR 362×400×20 HSF5 R** |
| | | | **CR 362×400×20 HSF1 V** | **CR 362×400×20 HSF5 V** |
| | 406 | 22 | **CR 362×406×22 HSF1 R** | **CR 362×406×22 HSF5 R** |
| | | | **CR 362×406×22 HSF1 V** | **CR 362×406×22 HSF5 V** |
| **370** | 410 | 20 | **CR 370×410×20 HSF1 R** | **CR 370×410×20 HSF5 R** |
| | | | **CR 370×410×20 HSF1 V** | **CR 370×410×20 HSF5 V** |
| | 414 | 20 | **CR 370×414×20 HSF1 R** | **CR 370×414×20 HSF5 R** |
| | | | **CR 370×414×20 HSF1 V** | **CR 370×414×20 HSF5 V** |
| **380** | 420 | 20 | **CR 380×420×20 HSF1 R** | **CR 380×420×20 HSF5 R** |
| | | | **CR 380×420×20 HSF1 V** | **CR 380×420×20 HSF5 V** |
| **387** | 431 | 22,50 | **CR 387×431×23 HSF1 R** | **CR 387×431×23 HSF5 R** |
| | | | **CR 387×431×23 HSF1 V** | **CR 387×431×23 HSF5 V** |
| | 438 | 25,40 | **CR 387×438×25 HSF1 R** | **CR 387×438×25 HSF5 R** |
| | | | **CR 387×438×25 HSF1 V** | **CR 387×438×25 HSF5 V** |
| **390** | 430 | 20 | **CR 390×430×20 HSF1 R** | **CR 390×430×20 HSF5 R** |
| | | | **CR 390×430×20 HSF1 V** | **CR 390×430×20 HSF5 V** |
| **395** | 439 | 20 | **CR 395×439×20 HSF1 R** | **CR 395×439×20 HSF5 R** |
| | | | **CR 395×439×20 HSF1 V** | **CR 395×439×20 HSF5 V** |
| | 439 | 20,50 | **CR 395×439×21 HSF1 R** | **CR 395×439×21 HSF5 R** |
| | | | **CR 395×439×21 HSF1 V** | **CR 395×439×21 HSF5 V** |

| Dimensions | | | Designations | |
|---|---|---|---|---|
| Shaft diameter $d_1$ | Bore diameter D | Bore depth B | Split version (HSF1) Lip material R, V | Solid version (HSF5) Lip material R, V |
| mm | | | – | |
| **400** | 440 | 20 | **CR 400×440×20 HSF1 R** | **CR 400×440×20 HSF5 R** |
| | | | **CR 400×440×20 HSF1 V** | **CR 400×440×20 HSF5 V** |
| | 450 | 22 | **CR 400×450×22 HSF1 R** | **CR 400×450×22 HSF5 R** |
| | | | **CR 400×450×22 HSF1 V** | **CR 400×450×22 HSF5 V** |
| **420** | 460 | 20 | **CR 420×460×20 HSF1 R** | **CR 420×460×20 HSF5 R** |
| | | | **CR 420×460×20 HSF1 V** | **CR 420×460×20 HSF5 V** |
| | 470 | 25 | **CR 420×470×25 HSF1 R** | **CR 420×470×25 HSF5 R** |
| | | | **CR 420×470×25 HSF1 V** | **CR 420×470×25 HSF5 V** |
| **430** | 480 | 25 | **CR 430×480×25 HSF1 R** | **CR 430×480×25 HSF5 R** |
| | | | **CR 430×480×25 HSF1 V** | **CR 430×480×25 HSF5 V** |
| **435** | 485 | 22 | **CR 435×485×22 HSF1 R** | **CR 435×485×22 HSF5 R** |
| | | | **CR 435×485×22 HSF1 V** | **CR 435×485×22 HSF5 V** |
| **438** | 476 | 24 | **CR 438×476×24 HSF1 R** | **CR 438×476×24 HSF5 R** |
| | | | **CR 438×476×24 HSF1 V** | **CR 438×476×24 HSF5 V** |
| **440** | 480 | 20 | **CR 440×480×20 HSF1 R** | **CR 440×480×20 HSF5 R** |
| | | | **CR 440×480×20 HSF1 V** | **CR 440×480×20 HSF5 V** |
| | 490 | 20 | **CR 440×490×20 HSF1 R** | **CR 440×490×20 HSF5 R** |
| | | | **CR 440×490×20 HSF1 V** | **CR 440×490×20 HSF5 V** |
| **446** | 486 | 16,50 | **CR 446×486×17 HSF1 R** | **CR 446×486×17 HSF5 R** |
| | | | **CR 446×486×17 HSF1 V** | **CR 446×486×17 HSF5 V** |
| **450** | 490 | 18 | **CR 450×490×18 HSF1 R** | **CR 450×490×18 HSF5 R** |
| | | | **CR 450×490×18 HSF1 V** | **CR 450×490×18 HSF5 V** |
| | 500 | 22 | **CR 450×500×22 HSF1 R** | **CR 450×500×22 HSF5 R** |
| | | | **CR 450×500×22 HSF1 V** | **CR 450×500×22 HSF5 V** |
| **460** | 510 | 22 | **CR 460×510×22 HSF1 R** | **CR 460×510×22 HSF5 R** |
| | | | **CR 460×510×22 HSF1 V** | **CR 460×510×22 HSF5 V** |
| | 510 | 25 | **CR 460×510×25 HSF1 R** | **CR 460×510×25 HSF5 R** |
| | | | **CR 460×510×25 HSF1 V** | **CR 460×510×25 HSF5 V** |
| **470** | 520 | 25 | **CR 470×520×25 HSF1 R** | **CR 470×520×25 HSF5 R** |
| | | | **CR 470×520×25 HSF1 V** | **CR 470×520×25 HSF5 V** |
| **480** | 520 | 18 | **CR 480×520×18 HSF1 R** | **CR 480×520×18 HSF5 R** |
| | | | **CR 480×520×18 HSF1 V** | **CR 480×520×18 HSF5 V** |
| | 530 | 22 | **CR 480×530×22 HSF1 R** | **CR 480×530×22 HSF5 R** |
| | | | **CR 480×530×22 HSF1 V** | **CR 480×530×22 HSF5 V** |
| | 550 | 25 | **CR 480×550×25 HSF1 R** | **CR 480×550×25 HSF5 R** |
| | | | **CR 480×550×25 HSF1 V** | **CR 480×550×25 HSF5 V** |
| **495** | 545 | 22 | **CR 495×545×22 HSF1 R** | **CR 495×545×22 HSF5 R** |
| | | | **CR 495×545×22 HSF1 V** | **CR 495×545×22 HSF5 V** |
| **500** | 540 | 10 | **CR 500×540×10 HSF1 R** | **CR 500×540×10 HSF5 R** |
| | | | **CR 500×540×10 HSF1 V** | **CR 500×540×10 HSF5 V** |
| | 550 | 20 | **CR 500×550×20 HSF1 R** | **CR 500×550×20 HSF5 R** |
| | | | **CR 500×550×20 HSF1 V** | **CR 500×550×20 HSF5 V** |
| **520** | 560 | 18 | **CR 520×560×18 HSF1 R** | **CR 520×560×18 HSF5 R** |
| | | | **CR 520×560×18 HSF1 V** | **CR 520×560×18 HSF5 V** |
| | 560 | 20 | **CR 520×560×20 HSF1 R** | **CR 520×560×20 HSF5 R** |
| | | | **CR 520×560×20 HSF1 V** | **CR 520×560×20 HSF5 V** |
| **525** | 575 | 22 | **CR 525×575×22 HSF1 R** | **CR 525×575×22 HSF5 R** |
| | | | **CR 525×575×22 HSF1 V** | **CR 525×575×22 HSF5 V** |
| **530** | 580 | 22 | **CR 530×580×22 HSF1 R** | **CR 530×580×22 HSF5 R** |
| | | | **CR 530×580×22 HSF1 V** | **CR 530×580×22 HSF5 V** |
| | 580 | 25 | **CR 530×580×25 HSF1 R** | **CR 530×580×25 HSF5 R** |
| | | | **CR 530×580×25 HSF1 V** | **CR 530×580×25 HSF5 V** |

## Radial shaft seals – HSF1 (split) and HSF5 (solid) – metric dimensions
$d_1$ **535 – 840** mm



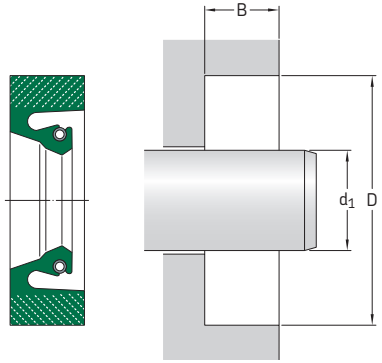

The table includes only a selection of available sizes. Contact your SKF sales representative for more information.

Please see **pages 74** to **76** for housing bore requirements.

| **Dimensions** Shaft diameter $d_1$ | Bore diameter D | Bore depth B | **Designations** Split version (HSF1) Lip material R, V | Solid version (HSF5) Lip material R, V |
|---|---|---|---|---|
| mm | | | – | |
| **535** | 585 | 22 | **CR 535×585×22 HSF1 R** | **CR 535×585×22 HSF5 R** |
| | | | **CR 535×585×22 HSF1 V** | **CR 535×585×22 HSF5 V** |
| **540** | 590 | 22 | **CR 540×590×22 HSF1 R** | **CR 540×590×22 HSF5 R** |
| | | | **CR 540×590×22 HSF1 V** | **CR 540×590×22 HSF5 V** |
| | 590 | 30 | **CR 540×590×30 HSF1 R** | **CR 540×590×30 HSF5 R** |
| | | | **CR 540×590×30 HSF1 V** | **CR 540×590×30 HSF5 V** |
| **550** | 600 | 22,30 | **CR 550×600×22 HSF1 R** | **CR 550×600×22 HSF5 R** |
| | | | **CR 550×600×22 HSF1 V** | **CR 550×600×22 HSF5 V** |
| **560** | 604 | 20 | **CR 560×604×20 HSF1 R** | **CR 560×604×20 HSF5 R** |
| | | | **CR 560×604×20 HSF1 V** | **CR 560×604×20 HSF5 V** |
| | 610 | 22,30 | **CR 560×610×22 HSF1 R** | **CR 560×610×22 HSF5 R** |
| | | | **CR 560×610×22 HSF1 V** | **CR 560×610×22 HSF5 V** |
| **570** | 616 | 19 | **CR 570×616×19 HSF1 R** | **CR 570×616×19 HSF5 R** |
| | | | **CR 570×616×19 HSF1 V** | **CR 570×616×19 HSF5 V** |
| | 620 | 25 | **CR 570×620×25 HSF1 R** | **CR 570×620×25 HSF5 R** |
| | | | **CR 570×620×25 HSF1 V** | **CR 570×620×25 HSF5 V** |
| **575** | 625 | 22 | **CR 575×625×22 HSF1 R** | **CR 575×625×22 HSF5 R** |
| | | | **CR 575×625×22 HSF1 V** | **CR 575×625×22 HSF5 V** |
| **580** | 630 | 22 | **CR 580×630×22 HSF1 R** | **CR 580×630×22 HSF5 R** |
| | | | **CR 580×630×22 HSF1 V** | **CR 580×630×22 HSF5 V** |
| **600** | 650 | 22 | **CR 600×650×22 HSF1 R** | **CR 600×650×22 HSF5 R** |
| | | | **CR 600×650×22 HSF1 V** | **CR 600×650×22 HSF5 V** |
| **620** | 670 | 22 | **CR 620×670×22 HSF1 R** | **CR 620×670×22 HSF5 R** |
| | | | **CR 620×670×22 HSF1 V** | **CR 620×670×22 HSF5 V** |
| | 684 | 25 | **CR 620×684×25 HSF1 R** | **CR 620×684×25 HSF5 R** |
| | | | **CR 620×684×25 HSF1 V** | **CR 620×684×25 HSF5 V** |
| **625** | 689 | 25 | **CR 625×689×25 HSF1 R** | **CR 625×689×25 HSF5 R** |
| | | | **CR 625×689×25 HSF1 V** | **CR 625×689×25 HSF5 V** |
| **630** | 690 | 30 | **CR 630×690×30 HSF1 R** | **CR 630×690×30 HSF5 R** |
| | | | **CR 630×690×30 HSF1 V** | **CR 630×690×30 HSF5 V** |

| Dimensions | | | Designations | |
|---|---|---|---|---|
| Shaft diameter $d_1$ | Bore diameter D | Bore depth B | Split version (HSF1) Lip material R, V | Solid version (HSF5) Lip material R, V |
| mm | | | – | |
| **635** | 705 | 30 | **CR 635×705×30 HSF1 R**<br>**CR 635×705×30 HSF1 V** | **CR 635×705×30 HSF5 R**<br>**CR 635×705×30 HSF5 V** |
| **650** | 690 | 18 | **CR 650×690×18 HSF1 R**<br>**CR 650×690×18 HSF1 V** | **CR 650×690×18 HSF5 R**<br>**CR 650×690×18 HSF5 V** |
| **660** | 724 | 25 | **CR 660×724×25 HSF1 R**<br>**CR 660×724×25 HSF1 V** | **CR 660×724×25 HSF5 R**<br>**CR 660×724×25 HSF5 V** |
| **670** | 734 | 25 | **CR 670×734×25 HSF1 R**<br>**CR 670×734×25 HSF1 V** | **CR 670×734×25 HSF5 R**<br>**CR 670×734×25 HSF5 V** |
| **685** | 749 | 25 | **CR 685×749×25 HSF1 R**<br>**CR 685×749×25 HSF1 V** | **CR 685×749×25 HSF5 R**<br>**CR 685×749×25 HSF5 V** |
| **700** | 760 | 30 | **CR 700×760×30 HSF1 R**<br>**CR 700×760×30 HSF1 V** | **CR 700×760×30 HSF5 R**<br>**CR 700×760×30 HSF5 V** |
| **710** | 770 | 30 | **CR 710×770×30 HSF1 R**<br>**CR 710×770×30 HSF1 V** | **CR 710×770×30 HSF5 R**<br>**CR 710×770×30 HSF5 V** |
| | 774 | 25 | **CR 710×774×25 HSF1 R**<br>**CR 710×774×25 HSF1 V** | **CR 710×774×25 HSF5 R**<br>**CR 710×774×25 HSF5 V** |
| **730** | 794 | 25 | **CR 730×794×25 HSF1 R**<br>**CR 730×794×25 HSF1 V** | **CR 730×794×25 HSF5 R**<br>**CR 730×794×25 HSF5 V** |
| **736** | 800 | 25 | **CR 736×800×25 HSF1 R**<br>**CR 736×800×25 HSF1 V** | **CR 736×800×25 HSF5 R**<br>**CR 736×800×25 HSF5 V** |
| **740** | 785 | 18 | **CR 740×785×18 HSF1 R**<br>**CR 740×785×18 HSF1 V** | **CR 740×785×18 HSF5 R**<br>**CR 740×785×18 HSF5 V** |
| **744** | 808 | 25 | **CR 744×808×25 HSF1 R**<br>**CR 744×808×25 HSF1 V** | **CR 744×808×25 HSF5 R**<br>**CR 744×808×25 HSF5 V** |
| **750** | 810 | 30 | **CR 750×810×30 HSF1 R**<br>**CR 750×810×30 HSF1 V** | **CR 750×810×30 HSF5 R**<br>**CR 750×810×30 HSF5 V** |
| | 814 | 25 | **CR 750×814×25 HSF1 R**<br>**CR 750×814×25 HSF1 V** | **CR 750×814×25 HSF5 R**<br>**CR 750×814×25 HSF5 V** |
| **760** | 820 | 30 | **CR 760×820×30 HSF1 R**<br>**CR 760×820×30 HSF1 V** | **CR 760×820×30 HSF5 R**<br>**CR 760×820×30 HSF5 V** |
| **770** | 834 | 25 | **CR 770×834×25 HSF1 R**<br>**CR 770×834×25 HSF1 V** | **CR 770×834×25 HSF5 R**<br>**CR 770×834×25 HSF5 V** |
| **780** | 844 | 25 | **CR 780×844×25 HSF1 R**<br>**CR 780×844×25 HSF1 V** | **CR 780×844×25 HSF5 R**<br>**CR 780×844×25 HSF5 V** |
| **790** | 850 | 30 | **CR 790×850×30 HSF1 R**<br>**CR 790×850×30 HSF1 V** | **CR 790×850×30 HSF5 R**<br>**CR 790×850×30 HSF5 V** |
| **800** | 860 | 30 | **CR 800×860×30 HSF1 R**<br>**CR 800×860×30 HSF1 V** | **CR 800×860×30 HSF5 R**<br>**CR 800×860×30 HSF5 V** |
| | 865 | 25 | **CR 800×865×25 HSF1 R**<br>**CR 800×865×25 HSF1 V** | **CR 800×865×25 HSF5 R**<br>**CR 800×865×25 HSF5 V** |
| **810** | 860 | 25 | **CR 810×860×25 HSF1 R**<br>**CR 810×860×25 HSF1 V** | **CR 810×860×25 HSF5 R**<br>**CR 810×860×25 HSF5 V** |
| | 874 | 22 | **CR 810×874×22 HSF1 R**<br>**CR 810×874×22 HSF1 V** | **CR 810×874×22 HSF5 R**<br>**CR 810×874×22 HSF5 V** |
| **840** | 904 | 25 | **CR 840×904×25 HSF1 R**<br>**CR 840×904×25 HSF1 V** | **CR 840×904×25 HSF5 R**<br>**CR 840×904×25 HSF5 V** |

## Radial shaft seals – HSF1 (split) and HSF5 (solid) – metric dimensions
$d_1$ **850 – 1 110** mm

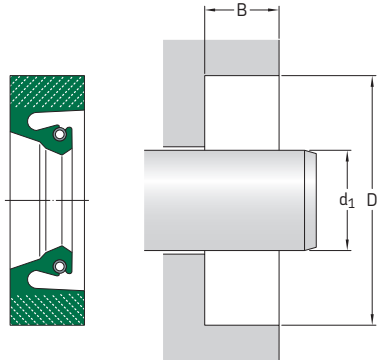



The table includes only a selection of available sizes. Contact your SKF sales representative for more information.

Please see **pages 74** to **76** for housing bore requirements.

| **Dimensions** | | | **Designations** | |
|---|---|---|---|---|
| Shaft diameter $d_1$ | Bore diameter D | Bore depth B | Split version (HSF1) Lip material R, V | Solid version (HSF5) Lip material R, V |
| mm | | | – | |
| **850** | 900 | 22 | **CR 850×900×22 HSF1 R** | **CR 850×900×22 HSF5 R** |
| | | | **CR 850×900×22 HSF1 V** | **CR 850×900×22 HSF5 V** |
| | 904 | 25 | **CR 850×904×25 HSF1 R** | **CR 850×904×25 HSF5 R** |
| | | | **CR 850×904×25 HSF1 V** | **CR 850×904×25 HSF5 V** |
| | 910 | 30 | **CR 850×910×30 HSF1 R** | **CR 850×910×30 HSF5 R** |
| | | | **CR 850×910×30 HSF1 V** | **CR 850×910×30 HSF5 V** |
| **900** | 960 | 30 | **CR 900×960×30 HSF1 R** | **CR 900×960×30 HSF5 R** |
| | | | **CR 900×960×30 HSF1 V** | **CR 900×960×30 HSF5 V** |
| | 964 | 32 | **CR 900×964×32 HSF1 R** | **CR 900×964×32 HSF5 R** |
| | | | **CR 900×964×32 HSF1 V** | **CR 900×964×32 HSF5 V** |
| **910** | 974 | 25 | **CR 910×974×25 HSF1 R** | **CR 910×974×25 HSF5 R** |
| | | | **CR 910×974×25 HSF1 V** | **CR 910×974×25 HSF5 V** |
| | 974 | 25,40 | **CR 910×974×25 HSF1 R** | **CR 910×974×25 HSF5 R** |
| | | | **CR 910×974×25 HSF1 V** | **CR 910×974×25 HSF5 V** |
| **920** | 984 | 25 | **CR 920×984×25 HSF1 R** | **CR 920×984×25 HSF5 R** |
| | | | **CR 920×984×25 HSF1 V** | **CR 920×984×25 HSF5 V** |
| **950** | 1 000 | 25 | **CR 950×1000×25 HSF1 R** | **CR 950×1000×25 HSF5 R** |
| | | | **CR 950×1000×25 HSF1 V** | **CR 950×1000×25 HSF5 V** |
| | 1 010 | 30 | **CR 950×1010×30 HSF1 R** | **CR 950×1010×30 HSF5 R** |
| | | | **CR 950×1010×30 HSF1 V** | **CR 950×1010×30 HSF5 V** |
| **960** | 1 024 | 25 | **CR 960×1024×25 HSF1 R** | **CR 960×1024×25 HSF5 R** |
| | | | **CR 960×1024×25 HSF1 V** | **CR 960×1024×25 HSF5 V** |
| **970** | 1 020 | 25 | **CR 970×1020×25 HSF1 R** | **CR 970×1020×25 HSF5 R** |
| | | | **CR 970×1020×25 HSF1 V** | **CR 970×1020×25 HSF5 V** |
| | 1 034 | 25 | **CR 970×1034×25 HSF1 R** | **CR 970×1034×25 HSF5 R** |
| | | | **CR 970×1034×25 HSF1 V** | **CR 970×1034×25 HSF5 V** |
| **1 000** | 1 064 | 25 | **CR 1000×1064×25 HSF1 R** | **CR 1000×1064×25 HSF5 R** |
| | | | **CR 1000×1064×25 HSF1 V** | **CR 1000×1064×25 HSF5 V** |
| **1 016** | 1 043,10 | 13,70 | **CR 1016×1043×14 HSF1 R** | **CR 1016×1043×14 HSF5 R** |
| | | | **CR 1016×1043×14 HSF1 V** | **CR 1016×1043×14 HSF5 V** |
| **1 110** | 1 174 | 25 | **CR 1110×1174×25 HSF1 R** | **CR 1110×1174×25 HSF5 R** |
| | | | **CR 1110×1174×25 HSF1 V** | **CR 1110×1174×25 HSF5 V** |

## Radial shaft seals – HSF1 (split) and HSF5 (solid) – inch dimensions
$d_1$ **1.000 – 5.874** in.



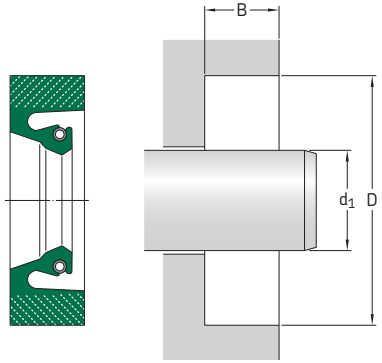

The table includes only a selection of available sizes. Contact your SKF sales representative for more information.



Please see **pages 74** to **76** for housing bore requirements.

| **Dimensions** | | | **Designations** | | | |
|---|---|---|---|---|---|---|
| Shaft diameter $d_1$ | Bore diameter D | Bore depth B | Split version (HSF1) Lip material R | V | Solid version (HSF5) Lip material R | V |
| in./*mm* | | | – | | | |
| **1.000**<br>*25,40* | 1.874<br>*47,60* | 0.375<br>*9,53* | **CR HSF1 5001 R** | **CR HSF1 5001 V** | **CR HSF5 5001 R** | **CR HSF5 5001 V** |
| **2.750**<br>*69,85* | 3.375<br>*85,73* | 0.313<br>*7,95* | **CR HSF1 5156 R** | **CR HSF1 5156 V** | **CR HSF5 5156 R** | **CR HSF5 5156 V** |
| **3.248**<br>*82,50* | 4.500<br>*114,30* | 0.500<br>*12,70* | **CR HSF1 5225 R** | **CR HSF1 5225 V** | **CR HSF5 5225 R** | **CR HSF5 5225 V** |
| **3.500**<br>*88,90* | 4.500<br>*114,30* | 0.500<br>*12,70* | **CR HSF1 5252 R** | **CR HSF1 5252 V** | **CR HSF5 5252 R** | **CR HSF5 5252 V** |
| **3.874**<br>*98,40* | 4.878<br>*123,90* | 0.500<br>*12,70* | **CR HSF1 5265 R** | **CR HSF1 5265 V** | **CR HSF5 5265 R** | **CR HSF5 5265 V** |
| **4.000**<br>*101,60* | 5.000<br>*127,00* | 0.500<br>*12,70* | **CR HSF1 5310 R** | **CR HSF1 5310 V** | **CR HSF5 5310 R** | **CR HSF5 5310 V** |
| **4.425**<br>*112,40* | 5.500<br>*139,70* | 0.562<br>*14,27* | **CR HSF1 5353 R** | **CR HSF1 5353 V** | **CR HSF5 5353 R** | **CR HSF5 5353 V** |
| **4.437**<br>*112,70* | 5.465<br>*138,81* | 0.583<br>*14,81* | **CR HSF1 5351 R** | **CR HSF1 5351 V** | **CR HSF5 5351 R** | **CR HSF5 5351 V** |
| **4.874**<br>*123,80* | 5.874<br>*149,20* | 0.500<br>*12,70* | **CR HSF1 5391 R** | **CR HSF1 5391 V** | **CR HSF5 5391 R** | **CR HSF5 5391 V** |
| **5.205**<br>*132,21* | 6.504<br>*165,20* | 0.591<br>*15,01* | **CR HSF1 5431 R** | **CR HSF1 5431 V** | **CR HSF5 5431 R** | **CR HSF5 5431 V** |
| **5.622**<br>*142,80* | 6.622<br>*168,20* | 0.625<br>*15,88* | **CR HSF1 5471 R** | **CR HSF1 5471 V** | **CR HSF5 5471 R** | **CR HSF5 5471 V** |
| **5.750**<br>*146,05* | 7.000<br>*177,80* | 0.625<br>*15,88* | **CR HSF1 5489 R** | **CR HSF1 5489 V** | **CR HSF5 5489 R** | **CR HSF5 5489 V** |
| **5.874**<br>*149,20* | 7.000<br>*177,80* | 0.492<br>*12,50* | **CR HSF1 5498 R** | **CR HSF1 5498 V** | **CR HSF5 5498 R** | **CR HSF5 5498 V** |

## Radial shaft seals – HSF1 (split) and HSF5 (solid) – inch dimensions
$d_1$ **6.000 – 17.000** in.



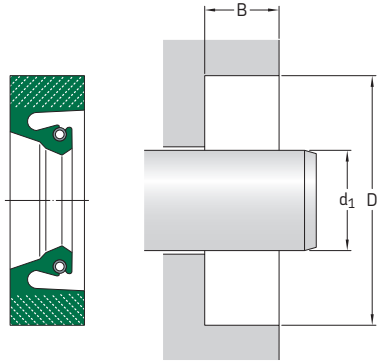

The table includes only a selection of available sizes. Contact your SKF sales representative for more information.

Please see **pages 74** to **76** for housing bore requirements.

| **Dimensions** | | | **Designations** | | | |
|---|---|---|---|---|---|---|
| Shaft diameter $d_1$ | Bore diameter D | Bore depth B | Split version (HSF1) Lip material R | V | Solid version (HSF5) Lip material R | V |
| in./*mm* | | | – | | | |
| **6.000** | 7.126 | 0.630 | **CR HSF1 5509 R** | **CR HSF1 5509 V** | **CR HSF5 5509 R** | **CR HSF5 5509 V** |
| *152,40* | *181,00* | *16,00* | | | | |
| | 7.500 | 0.625 | **CR HSF1 5510 R** | **CR HSF1 5510 V** | **CR HSF5 5510 R** | **CR HSF5 5510 V** |
| | *190,50* | *15,88* | | | | |
| **6.500** | 8.000 | 0.750 | **CR HSF1 5570 R** | **CR HSF1 5570 V** | **CR HSF5 5570 R** | **CR HSF5 5570 V** |
| *165,10* | *203,20* | *19,05* | | | | |
| **6.748** | 7.750 | 0.750 | **CR HSF1 5585 R** | **CR HSF1 5585 V** | **CR HSF5 5585 R** | **CR HSF5 5585 V** |
| *171,40* | *196,85* | *19,05* | | | | |
| **7.000** | 8.000 | 0.437 | **CR HSF1 5587 R** | **CR HSF1 5587 V** | **CR HSF5 5587 R** | **CR HSF5 5587 V** |
| *177,80* | *203,20* | *11,10* | | | | |
| | 8.250 | 0.750 | **CR HSF1 5600 R** | **CR HSF1 5600 V** | **CR HSF5 5600 R** | **CR HSF5 5600 V** |
| | *209,55* | *19,05* | | | | |
| **7.250** | 8.500 | 0.625 | **CR HSF1 5624 R** | **CR HSF1 5624 V** | **CR HSF5 5624 R** | **CR HSF5 5624 V** |
| *184,15* | *215,90* | *15,88* | | | | |
| **7.500** | 8.500 | 0.625 | **CR HSF1 5662 R** | **CR HSF1 5662 V** | **CR HSF5 5662 R** | **CR HSF5 5662 V** |
| *190,50* | *215,90* | *15,88* | | | | |
| **7.677** | 8.677 | 0.500 | **CR HSF1 5667 R** | **CR HSF1 5667 V** | **CR HSF5 5667 R** | **CR HSF5 5667 V** |
| *195,00* | *220,40* | *12,70* | | | | |
| **8.598** | 9.843 | 0.591 | **CR HSF1 5764 R** | **CR HSF1 5764 V** | **CR HSF5 5764 R** | **CR HSF5 5764 V** |
| *218,39* | *250,01* | *15,01* | | | | |
| **8.750** | 10.000 | 0.625 | **CR HSF1 5790 R** | **CR HSF1 5790 V** | **CR HSF5 5790 R** | **CR HSF5 5790 V** |
| *222,25* | *254,00* | *15,88* | | | | |
| **9.625** | 11.635 | 1.000 | **CR HSF1 5878 R** | **CR HSF1 5878 V** | **CR HSF5 5878 R** | **CR HSF5 5878 V** |
| *244,48* | *295,53* | *25,40* | | | | |
| **9.843** | 10.843 | 0.500 | **CR HSF1 5885 R** | **CR HSF1 5885 V** | **CR HSF5 5885 R** | **CR HSF5 5885 V** |
| *250,01* | *275,41* | *12,70* | | | | |
| **10.000** | 11.250 | 0.625 | **CR HSF1 5910 R** | **CR HSF1 5910 V** | **CR HSF5 5910 R** | **CR HSF5 5910 V** |
| *254,00* | *285,75* | *15,88* | | | | |
| **10.250** | 12.250 | 0.750 | **CR HSF1 5950 R** | **CR HSF1 5950 V** | **CR HSF5 5950 R** | **CR HSF5 5950 V** |
| *260,35* | *311,15* | *19,05* | | | | |

| Dimensions | | | Designations | | | |
|---|---|---|---|---|---|---|
| Shaft diameter $d_1$ | Bore diameter D | Bore depth B | Split version (HSF1) Lip material R | V | Solid version (HSF5) Lip material R | V |
| in./*mm* | | | – | | | |
| **11.000**<br>*279,40* | 12.181<br>*309,40* | 0.591<br>*15,01* | **CR HSF1 6000 R** | **CR HSF1 6000 V** | **CR HSF5 6000 R** | **CR HSF5 6000 V** |
| **11.250**<br>*285,75* | 12.500<br>*317,50* | 0.625<br>*15,88* | **CR HSF1 6040 R** | **CR HSF1 6040 V** | **CR HSF5 6040 R** | **CR HSF5 6040 V** |
| **11.260**<br>*286,00* | 13.250<br>*336,55* | 0.591<br>*15,01* | **CR HSF1 6049 R** | **CR HSF1 6049 V** | **CR HSF5 6049 R** | **CR HSF5 6049 V** |
| **11.417**<br>*289,99* | 12.417<br>*315,39* | 0.500<br>*12,70* | **CR HSF1 6055 R** | **CR HSF1 6055 V** | **CR HSF5 6055 R** | **CR HSF5 6055 V** |
| **12.250**<br>*311,15* | 14.250<br>*361,95* | 0.813<br>*20,65* | **CR HSF1 6150 R** | **CR HSF1 6150 V** | **CR HSF5 6150 R** | **CR HSF5 6150 V** |
| **12.484**<br>*317,09* | 14.000<br>*355,60* | 0.630<br>*16,00* | **CR HSF1 6172 R** | **CR HSF1 6172 V** | **CR HSF5 6172 R** | **CR HSF5 6172 V** |
| **12.500**<br>*317,50* | 14.000<br>*355,60* | 0.750<br>*19,05* | **CR HSF1 6173 R** | **CR HSF1 6173 V** | **CR HSF5 6173 R** | **CR HSF5 6173 V** |
| **12.504**<br>*317,60* | 14.000<br>*355,60* | 0.687<br>*17,45* | **CR HSF1 6175 R** | **CR HSF1 6175 V** | **CR HSF5 6175 R** | **CR HSF5 6175 V** |
| **12.746**<br>*323,75* | 14.248<br>*361,90* | 0.687<br>*17,45* | **CR HSF1 6192 R** | **CR HSF1 6192 V** | **CR HSF5 6192 R** | **CR HSF5 6192 V** |
| | 14.750<br>*374,65* | 1.000<br>*25,40* | **CR HSF1 6195 R** | **CR HSF1 6195 V** | **CR HSF5 6195 R** | **CR HSF5 6195 V** |
| **13.000**<br>*330,20* | 14.500<br>*368,30* | 0.687<br>*17,45* | **CR HSF1 6230 R** | **CR HSF1 6230 V** | **CR HSF5 6230 R** | **CR HSF5 6230 V** |
| | 14.500<br>*368,30* | 0.687<br>*17,45* | **CR HSF1 6230 R** | **CR HSF1 6230 V** | **CR HSF5 6230 R** | **CR HSF5 6230 V** |
| **13.500**<br>*342,90* | 15.000<br>*381,00* | 0.750<br>*19,05* | **CR HSF1 6271 R** | **CR HSF1 6271 V** | **CR HSF5 6271 R** | **CR HSF5 6271 V** |
| **14.370**<br>*365,00* | 16.118<br>*409,40* | 0.750<br>*19,05* | **CR HSF1 6350 R** | **CR HSF1 6350 V** | **CR HSF5 6350 R** | **CR HSF5 6350 V** |
| **14.500**<br>*368,30* | 16.250<br>*412,75* | 0.625<br>*15,88* | **CR HSF1 6370 R** | **CR HSF1 6370 V** | **CR HSF5 6370 R** | **CR HSF5 6370 V** |
| **14.961**<br>*380,01* | 16.961<br>*430,81* | 0.813<br>*20,65* | **CR HSF1 6425 R** | **CR HSF1 6425 V** | **CR HSF5 6425 R** | **CR HSF5 6425 V** |
| **15.250**<br>*387,35* | 17.250<br>*438,15* | 0.875<br>*22,23* | **CR HSF1 6460 R** | **CR HSF1 6460 V** | **CR HSF5 6460 R** | **CR HSF5 6460 V** |
| **15.992**<br>*406,20* | 17.500<br>*444,50* | 0.687<br>*17,45* | **CR HSF1 6550 R** | **CR HSF1 6550 V** | **CR HSF5 6550 R** | **CR HSF5 6550 V** |
| **16.000**<br>*406,40* | 18.000<br>*457,20* | 0.750<br>*19,05* | **CR HSF1 6560 R** | **CR HSF1 6560 V** | **CR HSF5 6560 R** | **CR HSF5 6560 V** |
| | 18.000<br>*457,20* | 0.813<br>*20,65* | **CR HSF1 6565 R** | **CR HSF1 6565 V** | **CR HSF5 6565 R** | **CR HSF5 6565 V** |
| | 18.000<br>*457,20* | 0.906<br>*23,01* | **CR HSF1 6575 R** | **CR HSF1 6575 V** | **CR HSF5 6575 R** | **CR HSF5 6575 V** |
| **16.226**<br>*412,14* | 17.750<br>*450,85* | 0.687<br>*17,45* | **CR HSF1 6590 R** | **CR HSF1 6590 V** | **CR HSF5 6590 R** | **CR HSF5 6590 V** |
| **16.500**<br>*419,10* | 17.750<br>*450,85* | 0.750<br>*19,05* | **CR HSF1 6600 R** | **CR HSF1 6600 V** | **CR HSF5 6600 R** | **CR HSF5 6600 V** |
| **17.000**<br>*431,80* | 19.000<br>*482,60* | 0.813<br>*20,65* | **CR HSF1 6645 R** | **CR HSF1 6645 V** | **CR HSF5 6645 R** | **CR HSF5 6645 V** |

## Radial shaft seals – HSF1 (split) and HSF5 (solid) – inch dimensions
$d_1$ **17.248 – 48.000** in.



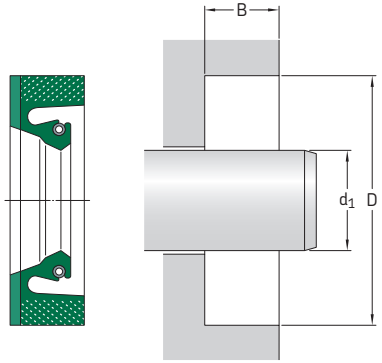

The table includes only a selection of available sizes. Contact your SKF sales representative for more information.

Please see **pages 74** to **76** for housing bore requirements.

| **Dimensions** | | | **Designations** | | | |
|---|---|---|---|---|---|---|
| Shaft diameter $d_1$ | Bore diameter D | Bore depth B | Split version (HSF1) Lip material R | V | Solid version (HSF5) Lip material R | V |
| in./*mm* | | | – | | | |
| **17.248**<br>*438,10* | 18.748<br>*476,20* | 0.750<br>*19,05* | **CR HSF1 6656 R** | **CR HSF1 6656 V** | **CR HSF5 6656 R** | **CR HSF5 6656 V** |
| **18.169**<br>*461,49* | 21.260<br>*540,00* | 1.220<br>*30,99* | **CR HSF1 6734 R** | **CR HSF1 6734 V** | **CR HSF5 6734 R** | **CR HSF5 6734 V** |
| **20.500**<br>*520,70* | 22.500<br>*571,50* | 1.000<br>*25,40* | **CR HSF1 6890 R** | **CR HSF1 6890 V** | **CR HSF5 6890 R** | **CR HSF5 6890 V** |
| **21.000**<br>*533,40* | 23.000<br>*584,20* | 0.875<br>*22,23* | **CR HSF1 6930 R** | **CR HSF1 6930 V** | **CR HSF5 6930 R** | **CR HSF5 6930 V** |
| **22.000**<br>*558,80* | 24.000<br>*609,60* | 0.875<br>*22,23* | **CR HSF1 7000 R** | **CR HSF1 7000 V** | **CR HSF5 7000 R** | **CR HSF5 7000 V** |
| **23.248**<br>*590,50* | 25.250<br>*641,35* | 0.813<br>*20,65* | **CR HSF1 7100 R** | **CR HSF1 7100 V** | **CR HSF5 7100 R** | **CR HSF5 7100 V** |
| **23.501**<br>*596,93* | 22.001<br>*558,83* | 0.750<br>*19,05* | **CR HSF1 6990 R** | **CR HSF1 6990 V** | **CR HSF5 6990 R** | **CR HSF5 6990 V** |
| **30.000**<br>*762,00* | 32.500<br>*825,50* | 1.000<br>*25,40* | **CR HSF1 7520 R** | **CR HSF1 7520 V** | **CR HSF5 7520 R** | **CR HSF5 7520 V** |
| **30.461**<br>*773,71* | 32.500<br>*825,50* | 0.906<br>*23,01* | **CR HSF1 7525 R** | **CR HSF1 7525 V** | **CR HSF5 7525 R** | **CR HSF5 7525 V** |
| **31.000**<br>*787,40* | 33.000<br>*838,20* | 0.906<br>*23,01* | **CR HSF1 7570 R** | **CR HSF1 7570 V** | **CR HSF5 7570 R** | **CR HSF5 7570 V** |
| **31.250**<br>*793,75* | 33.250<br>*844,55* | 0.750<br>*19,05* | **CR HSF1 7580 R** | **CR HSF1 7580 V** | **CR HSF5 7580 R** | **CR HSF5 7580 V** |
| **32.500**<br>*825,50* | 34.500<br>*876,30* | 0.875<br>*22,23* | **CR HSF1 7700 R** | **CR HSF1 7700 V** | **CR HSF5 7700 R** | **CR HSF5 7700 V** |
| | 34.500<br>*876,30* | 1.000<br>*25,40* | **CR HSF1 7710 R** | **CR HSF1 7710 V** | **CR HSF5 7710 R** | **CR HSF5 7710 V** |
| **33.000**<br>*838,20* | 35.000<br>*889,00* | 0.906<br>*23,01* | **CR HSF1 7730 R** | **CR HSF1 7730 V** | **CR HSF5 7730 R** | **CR HSF5 7730 V** |

| Dimensions | | | Designations | | | |
|---|---|---|---|---|---|---|
| Shaft diameter $d_1$ | Bore diameter D | Bore depth B | Split version (HSF1) Lip material R | V | Solid version (HSF5) Lip material R | V |
| in./*mm* | | | – | | | |
| **34.375**<br>*873,13* | 36.875<br>*936,63* | 1.250<br>*31,75* | **CR HSF1 7810 R** | **CR HSF1 7810 V** | **CR HSF5 7810 R** | **CR HSF5 7810 V** |
| **36.500**<br>*927,10* | 39.000<br>*990,60* | 1.250<br>*31,75* | **CR HSF1 7895 R** | **CR HSF1 7895 V** | **CR HSF5 7895 R** | **CR HSF5 7895 V** |
| **36.748**<br>*933,40* | 38.749<br>*984,22* | 0.875<br>*22,23* | **CR HSF1 7900 R** | **CR HSF1 7900 V** | **CR HSF5 7900 R** | **CR HSF5 7900 V** |
| **38.000**<br>*965,20* | 40.000<br>*1016,00* | 0.875<br>*22,23* | **CR HSF1 7990 R** | **CR HSF1 7990 V** | **CR HSF5 7990 R** | **CR HSF5 7990 V** |
| **39.118**<br>*993,60* | 40.000<br>*1016,00* | 0.500<br>*12,70* | **CR HSF1 8170 R** | **CR HSF1 8170 V** | **CR HSF5 8170 R** | **CR HSF5 8170 V** |
| **48.000**<br>*1219,20* | 49.000<br>*1244,60* | 1.260<br>*32,00* | **CR HSF1 8400 R** | **CR HSF1 8400 V** | **CR HSF5 8400 R** | **CR HSF5 8400 V** |

## Radial shaft seals – HSF2 (split) and HSF6 (solid) – metric dimensions
$d_1$ **127 – 800** mm



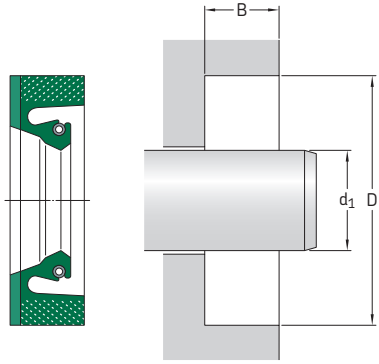

The table includes only a selection of available sizes. Contact your SKF sales representative for more information.

Please see **pages 74** to **76** for housing bore requirements.

| **Dimensions** Shaft diameter $d_1$ | Bore diameter D | Bore depth B | **Designations** Split version (HSF2) Lip material R, V | Solid version (HSF6) Lip material R, V |
|---|---|---|---|---|
| mm | | | – | |
| **127** | 158,80 | 12,30 | **CR 127×159×12 HSF2 R**<br>**CR 127×159×12 HSF2 V** | **CR 127×159×12 HSF6 R**<br>**CR 127×159×12 HSF6 V** |
| **275** | 319,50 | 19 | **CR 275×320×19 HSF2 R**<br>**CR 275×320×19 HSF2 V** | **CR 275×320×19 HSF6 R**<br>**CR 275×320×19 HSF6 V** |
| **320** | 364 | 18 | **CR 320×364×18 HSF2 R**<br>**CR 320×364×18 HSF2 V** | **CR 320×364×18 HSF6 R**<br>**CR 320×364×18 HSF6 V** |
| **800** | 864 | 21,60 | **CR 800×864×22 HSF2 R**<br>**CR 800×864×22 HSF2 V** | **CR 800×864×22 HSF6 R**<br>**CR 800×864×22 HSF6 V** |

## Radial shaft seals – HSF2 (split) and HSF6 (solid) – inch dimensions

$d_1$ **21.000** in.



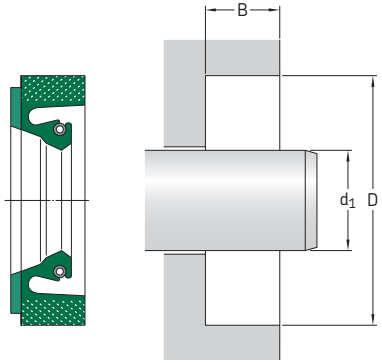

The table includes only a selection of available sizes. Contact your SKF sales representative for more information.



Please see **pages 74** to **76** for housing bore requirements.

| **Dimensions** | | | **Designations** | | | |
|---|---|---|---|---|---|---|
| Shaft diameter $d_1$ | Bore diameter D | Bore depth B | Split version (HSF2) Lip material R | V | Solid version (HSF6) Lip material R | V |
| in./*mm* | | | – | | | |
| **21.000** *533,40* | 23.000 *584,20* | 0.875 *22,23* | **CR HSF2 6930 R** | **CR HSF2 6930 V** | **CR HSF6 6930 R** | **CR HSF6 6930 V** |

## Radial shaft seals – HSF3 (split) and HSF7 (solid) – metric dimensions
$d_1$ **80 – 380** mm




The table includes only a selection of available sizes. Contact your SKF sales representative for more information.



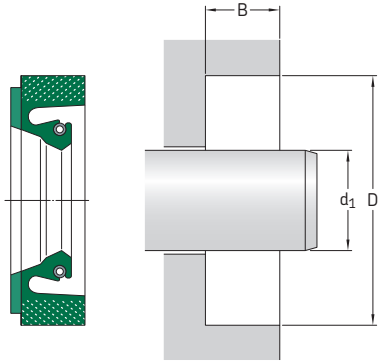



Please see **pages 74** to **76** for housing bore requirements.

| **Dimensions** Shaft diameter $d_1$ | Bore diameter D | Bore depth B | **Designations** Split version (HSF3) Lip material R, V | Solid version (HSF7) Lip material R, V |
|---|---|---|---|---|
| mm | | | – | |
| **80** | 95 | 10 | **CR 80×95×10 HSF3 R**<br>**CR 80×95×10 HSF3 V** | **CR 80×95×10 HSF7 R**<br>**CR 80×95×10 HSF7 V** |
| **100** | 130 | 12,50 | **CR 100×130×13 HSF3 R**<br>**CR 100×130×13 HSF3 V** | **CR 100×130×13 HSF7 R**<br>**CR 100×130×13 HSF7 V** |
| **140** | 180 | 16 | **CR 140×180×16 HSF3 R**<br>**CR 140×180×16 HSF3 V** | **CR 140×180×16 HSF7 R**<br>**CR 140×180×16 HSF7 V** |
| **150** | 190 | 16 | **CR 150×190×16 HSF3 R**<br>**CR 150×190×16 HSF3 V** | **CR 150×190×16 HSF7 R**<br>**CR 150×190×16 HSF7 V** |
| **160** | 200 | 16 | **CR 160×200×16 HSF3 R**<br>**CR 160×200×16 HSF3 V** | **CR 160×200×16 HSF7 R**<br>**CR 160×200×16 HSF7 V** |
| **165** | 195 | 15 | **CR 165×195×15 HSF3 R**<br>**CR 165×195×15 HSF3 V** | **CR 165×195×15 HSF7 R**<br>**CR 165×195×15 HSF7 V** |
| **220** | 250 | 15 | **CR 220×250×15 HSF3 R**<br>**CR 220×250×15 HSF3 V** | **CR 220×250×15 HSF7 R**<br>**CR 220×250×15 HSF7 V** |
| | 260 | 18 | **CR 220×260×18 HSF3 R**<br>**CR 220×260×18 HSF3 V** | **CR 220×260×18 HSF7 R**<br>**CR 220×260×18 HSF7 V** |
| **230** | 270 | 16 | **CR 230×270×16 HSF3 R**<br>**CR 230×270×16 HSF3 V** | **CR 230×270×16 HSF7 R**<br>**CR 230×270×16 HSF7 V** |
| **235** | 265 | 15,30 | **CR 235×265×15 HSF3 R**<br>**CR 235×265×15 HSF3 V** | **CR 235×265×15 HSF7 R**<br>**CR 235×265×15 HSF7 V** |
| **240** | 280 | 18 | **CR 240×280×18 HSF3 R**<br>**CR 240×280×18 HSF3 V** | **CR 240×280×18 HSF7 R**<br>**CR 240×280×18 HSF7 V** |
| | 290 | 25 | **CR 240×290×25 HSF3 R**<br>**CR 240×290×25 HSF3 V** | **CR 240×290×25 HSF7 R**<br>**CR 240×290×25 HSF7 V** |
| **245** | 285 | 16 | **CR 245×285×16 HSF3 R**<br>**CR 245×285×16 HSF3 V** | **CR 245×285×16 HSF7 R**<br>**CR 245×285×16 HSF7 V** |
| **250** | 280 | 16 | **CR 250×280×16 HSF3 R**<br>**CR 250×280×16 HSF3 V** | **CR 250×280×16 HSF7 R**<br>**CR 250×280×16 HSF7 V** |
| | 290 | 16,50 | **CR 250×290×17 HSF3 R**<br>**CR 250×290×17 HSF3 V** | **CR 250×290×17 HSF7 R**<br>**CR 250×290×17 HSF7 V** |

| Dimensions | | | Designations | |
|---|---|---|---|---|
| Shaft diameter $d_1$ | Bore diameter D | Bore depth B | Split version (HSF3) Lip material R, V | Solid version (HSF7) Lip material R, V |
| mm | | | – | |
| **270** | 310 | 18 | **CR 270×310×18 HSF3 R** | **CR 270×310×18 HSF7 R** |
| | | | **CR 270×310×18 HSF3 V** | **CR 270×310×18 HSF7 V** |
| **280** | 320 | 18 | **CR 280×320×18 HSF3 R** | **CR 280×320×18 HSF7 R** |
| | | | **CR 280×320×18 HSF3 V** | **CR 280×320×18 HSF7 V** |
| **285** | 325 | 18 | **CR 285×325×18 HSF3 R** | **CR 285×325×18 HSF7 R** |
| | | | **CR 285×325×18 HSF3 V** | **CR 285×325×18 HSF7 V** |
| **290** | 334 | 20,30 | **CR 290×334×20 HSF3 R** | **CR 290×334×20 HSF7 R** |
| | | | **CR 290×334×20 HSF3 V** | **CR 290×334×20 HSF7 V** |
| **300** | 340 | 16,50 | **CR 300×340×17 HSF3 R** | **CR 300×340×17 HSF7 R** |
| | | | **CR 300×340×17 HSF3 V** | **CR 300×340×17 HSF7 V** |
| | 340 | 18 | **CR 300×340×18 HSF3 R** | **CR 300×340×18 HSF7 R** |
| | | | **CR 300×340×18 HSF3 V** | **CR 300×340×18 HSF7 V** |
| | 344 | 20 | **CR 300×344×20 HSF3 R** | **CR 300×344×20 HSF7 R** |
| | | | **CR 300×344×20 HSF3 V** | **CR 300×344×20 HSF7 V** |
| **310** | 353 | 20 | **CR 310×353×20 HSF3 R** | **CR 310×353×20 HSF7 R** |
| | | | **CR 310×353×20 HSF3 V** | **CR 310×353×20 HSF7 V** |
| | 354 | 20 | **CR 310×354×20 HSF3 R** | **CR 310×354×20 HSF7 R** |
| | | | **CR 310×354×20 HSF3 V** | **CR 310×354×20 HSF7 V** |
| **315** | 360 | 20 | **CR 315×360×20 HSF3 R** | **CR 315×360×20 HSF7 R** |
| | | | **CR 315×360×20 HSF3 V** | **CR 315×360×20 HSF7 V** |
| **320** | 350 | 15 | **CR 320×350×15 HSF3 R** | **CR 320×350×15 HSF7 R** |
| | | | **CR 320×350×15 HSF3 V** | **CR 320×350×15 HSF7 V** |
| | 360 | 17,70 | **CR 320×360×18 HSF3 R** | **CR 320×360×18 HSF7 R** |
| | | | **CR 320×360×18 HSF3 V** | **CR 320×360×18 HSF7 V** |
| **325** | 365 | 16 | **CR 325×365×16 HSF3 R** | **CR 325×365×16 HSF7 R** |
| | | | **CR 325×365×16 HSF3 V** | **CR 325×365×16 HSF7 V** |
| **330** | 370 | 20 | **CR 330×370×20 HSF3 R** | **CR 330×370×20 HSF7 R** |
| | | | **CR 330×370×20 HSF3 V** | **CR 330×370×20 HSF7 V** |
| | 374 | 20 | **CR 330×374×20 HSF3 R** | **CR 330×374×20 HSF7 R** |
| | | | **CR 330×374×20 HSF3 V** | **CR 330×374×20 HSF7 V** |
| **340** | 372 | 16 | **CR 340×372×16 HSF3 R** | **CR 340×372×16 HSF7 R** |
| | | | **CR 340×372×16 HSF3 V** | **CR 340×372×16 HSF7 V** |
| **345** | 389 | 20 | **CR 345×389×20 HSF3 R** | **CR 345×389×20 HSF7 R** |
| | | | **CR 345×389×20 HSF3 V** | **CR 345×389×20 HSF7 V** |
| **350** | 390 | 18 | **CR 350×390×18 HSF3 R** | **CR 350×390×18 HSF7 R** |
| | | | **CR 350×390×18 HSF3 V** | **CR 350×390×18 HSF7 V** |
| | 394 | 20 | **CR 350×394×20 HSF3 R** | **CR 350×394×20 HSF7 R** |
| | | | **CR 350×394×20 HSF3 V** | **CR 350×394×20 HSF7 V** |
| | 394 | 22 | **CR 350×394×22 HSF3 R** | **CR 350×394×22 HSF7 R** |
| | | | **CR 350×394×22 HSF3 V** | **CR 350×394×22 HSF7 V** |
| **360** | 404 | 20 | **CR 360×404×20 HSF3 R** | **CR 360×404×20 HSF7 R** |
| | | | **CR 360×404×20 HSF3 V** | **CR 360×404×20 HSF7 V** |
| **365** | 409,40 | 19,05 | **CR 365×409×19 HSF3 R** | **CR 365×409×19 HSF7 R** |
| | | | **CR 365×409×19 HSF3 V** | **CR 365×409×19 HSF7 V** |
| **366** | 410 | 20 | **CR 366×410×20 HSF3 R** | **CR 366×410×20 HSF7 R** |
| | | | **CR 366×410×20 HSF3 V** | **CR 366×410×20 HSF7 V** |
| **370** | 410 | 18 | **CR 370×410×18 HSF3 R** | **CR 370×410×18 HSF7 R** |
| | | | **CR 370×410×18 HSF3 V** | **CR 370×410×18 HSF7 V** |
| **380** | 419 | 24 | **CR 380×419×24 HSF3 R** | **CR 380×419×24 HSF7 R** |
| | | | **CR 380×419×24 HSF3 V** | **CR 380×419×24 HSF7 V** |
| | 424 | 20 | **CR 380×424×20 HSF3 R** | **CR 380×424×20 HSF7 R** |
| | | | **CR 380×424×20 HSF3 V** | **CR 380×424×20 HSF7 V** |

## Radial shaft seals – HSF3 (split) and HSF7 (solid) – metric dimensions
$d_1$ **385 – 750** mm



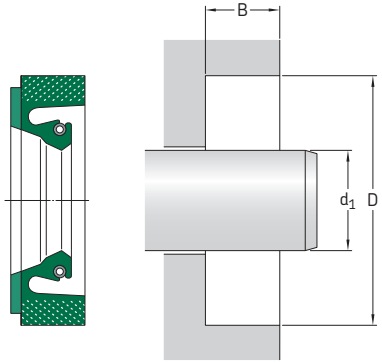

The table includes only a selection of available sizes. Contact your SKF sales representative for more information.

Please see **pages 74** to **76** for housing bore requirements.

| **Dimensions** Shaft diameter $d_1$ | Bore diameter D | Bore depth B | **Designations** Split version (HSF3) Lip material R, V | Solid version (HSF7) Lip material R, V |
|---|---|---|---|---|
| mm | | | – | |
| **385** | 425 | 18,30 | **CR 385×425×18 HSF3 R** | **CR 385×425×18 HSF7 R** |
| | | | **CR 385×425×18 HSF3 V** | **CR 385×425×18 HSF7 V** |
| **387** | 431 | 22,50 | **CR 387×431×23 HSF3 R** | **CR 387×431×23 HSF7 R** |
| | | | **CR 387×431×23 HSF3 V** | **CR 387×431×23 HSF7 V** |
| **390** | 430 | 18 | **CR 390×430×18 HSF3 R** | **CR 390×430×18 HSF7 R** |
| | | | **CR 390×430×18 HSF3 V** | **CR 390×430×18 HSF7 V** |
| **400** | 440 | 18 | **CR 400×440×18 HSF3 R** | **CR 400×440×18 HSF7 R** |
| | | | **CR 400×440×18 HSF3 V** | **CR 400×440×18 HSF7 V** |
| | 440 | 22 | **CR 400×440×22 HSF3 R** | **CR 400×440×22 HSF7 R** |
| | | | **CR 400×440×22 HSF3 V** | **CR 400×440×22 HSF7 V** |
| | 444 | 20 | **CR 400×444×20 HSF3 R** | **CR 400×444×20 HSF7 R** |
| | | | **CR 400×444×20 HSF3 V** | **CR 400×444×20 HSF7 V** |
| | 450 | 22 | **CR 400×450×22 HSF3 R** | **CR 400×450×22 HSF7 R** |
| | | | **CR 400×450×22 HSF3 V** | **CR 400×450×22 HSF7 V** |
| **420** | 470 | 22 | **CR 420×470×22 HSF3 R** | **CR 420×470×22 HSF7 R** |
| | | | **CR 420×470×22 HSF3 V** | **CR 420×470×22 HSF7 V** |
| **430** | 480 | 22 | **CR 430×480×22 HSF3 R** | **CR 430×480×22 HSF7 R** |
| | | | **CR 430×480×22 HSF3 V** | **CR 430×480×22 HSF7 V** |
| **440** | 490 | 22 | **CR 440×490×22 HSF3 R** | **CR 440×490×22 HSF7 R** |
| | | | **CR 440×490×22 HSF3 V** | **CR 440×490×22 HSF7 V** |
| **450** | 494 | 20 | **CR 450×494×20 HSF3 R** | **CR 450×494×20 HSF7 R** |
| | | | **CR 450×494×20 HSF3 V** | **CR 450×494×20 HSF7 V** |
| **460** | 510 | 22 | **CR 460×510×22 HSF3 R** | **CR 460×510×22 HSF7 R** |
| | | | **CR 460×510×22 HSF3 V** | **CR 460×510×22 HSF7 V** |
| **480** | 530 | 22 | **CR 480×530×22 HSF3 R** | **CR 480×530×22 HSF7 R** |
| | | | **CR 480×530×22 HSF3 V** | **CR 480×530×22 HSF7 V** |
| **500** | 544 | 20 | **CR 500×544×20 HSF3 R** | **CR 500×544×20 HSF7 R** |
| | | | **CR 500×544×20 HSF3 V** | **CR 500×544×20 HSF7 V** |
| **515** | 555 | 20 | **CR 515×555×20 HSF3 R** | **CR 515×555×20 HSF7 R** |
| | | | **CR 515×555×20 HSF3 V** | **CR 515×555×20 HSF7 V** |

| Dimensions | | | Designations | |
|---|---|---|---|---|
| Shaft diameter $d_1$ | Bore diameter D | Bore depth B | Split version (HSF3) Lip material R, V | Solid version (HSF7) Lip material R, V |
| mm | | | – | |
| **520** | 564 | 20 | **CR 520×564×20 HSF3 R**<br>**CR 520×564×20 HSF3 V** | **CR 520×564×20 HSF7 R**<br>**CR 520×564×20 HSF7 V** |
| | 570 | 22 | **CR 520×570×22 HSF3 R**<br>**CR 520×570×22 HSF3 V** | **CR 520×570×22 HSF7 R**<br>**CR 520×570×22 HSF7 V** |
| **530** | 580 | 22 | **CR 530×580×22 HSF3 R**<br>**CR 530×580×22 HSF3 V** | **CR 530×580×22 HSF7 R**<br>**CR 530×580×22 HSF7 V** |
| **540** | 590 | 22 | **CR 540×590×22 HSF3 R**<br>**CR 540×590×22 HSF3 V** | **CR 540×590×22 HSF7 R**<br>**CR 540×590×22 HSF7 V** |
| | 590 | 25 | **CR 540×590×25 HSF3 R**<br>**CR 540×590×25 HSF3 V** | **CR 540×590×25 HSF7 R**<br>**CR 540×590×25 HSF7 V** |
| **545** | 596,90 | 19,05 | **CR 545×597×19 HSF3 R**<br>**CR 545×597×19 HSF3 V** | **CR 545×597×19 HSF7 R**<br>**CR 545×597×19 HSF7 V** |
| **550** | 600 | 22 | **CR 550×600×22 HSF3 R**<br>**CR 550×600×22 HSF3 V** | **CR 550×600×22 HSF7 R**<br>**CR 550×600×22 HSF7 V** |
| **560** | 603 | 20 | **CR 560×603×20 HSF3 R**<br>**CR 560×603×20 HSF3 V** | **CR 560×603×20 HSF7 R**<br>**CR 560×603×20 HSF7 V** |
| | 604 | 20 | **CR 560×604×20 HSF3 R**<br>**CR 560×604×20 HSF3 V** | **CR 560×604×20 HSF7 R**<br>**CR 560×604×20 HSF7 V** |
| **580** | 630 | 22 | **CR 580×630×22 HSF3 R**<br>**CR 580×630×22 HSF3 V** | **CR 580×630×22 HSF7 R**<br>**CR 580×630×22 HSF7 V** |
| **590** | 640 | 22 | **CR 590×640×22 HSF3 R**<br>**CR 590×640×22 HSF3 V** | **CR 590×640×22 HSF7 R**<br>**CR 590×640×22 HSF7 V** |
| **600** | 640 | 18 | **CR 600×640×18 HSF3 R**<br>**CR 600×640×18 HSF3 V** | **CR 600×640×18 HSF7 R**<br>**CR 600×640×18 HSF7 V** |
| **614** | 658 | 20 | **CR 614×658×20 HSF3 R**<br>**CR 614×658×20 HSF3 V** | **CR 614×658×20 HSF7 R**<br>**CR 614×658×20 HSF7 V** |
| **620** | 670 | 22 | **CR 620×670×22 HSF3 R**<br>**CR 620×670×22 HSF3 V** | **CR 620×670×22 HSF7 R**<br>**CR 620×670×22 HSF7 V** |
| **640** | 680 | 20 | **CR 640×680×20 HSF3 R**<br>**CR 640×680×20 HSF3 V** | **CR 640×680×20 HSF7 R**<br>**CR 640×680×20 HSF7 V** |
| **650** | 700 | 22 | **CR 650×700×22 HSF3 R**<br>**CR 650×700×22 HSF3 V** | **CR 650×700×22 HSF7 R**<br>**CR 650×700×22 HSF7 V** |
| **660** | 700 | 18 | **CR 660×700×18 HSF3 R**<br>**CR 660×700×18 HSF3 V** | **CR 660×700×18 HSF7 R**<br>**CR 660×700×18 HSF7 V** |
| **665** | 715 | 22 | **CR 665×715×22 HSF3 R**<br>**CR 665×715×22 HSF3 V** | **CR 665×715×22 HSF7 R**<br>**CR 665×715×22 HSF7 V** |
| **670** | 714 | 22 | **CR 670×714×22 HSF3 R**<br>**CR 670×714×22 HSF3 V** | **CR 670×714×22 HSF7 R**<br>**CR 670×714×22 HSF7 V** |
| **700** | 764 | 25 | **CR 700×764×25 HSF3 R**<br>**CR 700×764×25 HSF3 V** | **CR 700×764×25 HSF7 R**<br>**CR 700×764×25 HSF7 V** |
| **710** | 774 | 25 | **CR 710×774×25 HSF3 R**<br>**CR 710×774×25 HSF3 V** | **CR 710×774×25 HSF7 R**<br>**CR 710×774×25 HSF7 V** |
| **724** | 775 | 22 | **CR 724×775×22 HSF3 R**<br>**CR 724×775×22 HSF3 V** | **CR 724×775×22 HSF7 R**<br>**CR 724×775×22 HSF7 V** |
| **740** | 780 | 16,50 | **CR 740×780×17 HSF3 R**<br>**CR 740×780×17 HSF3 V** | **CR 740×780×17 HSF7 R**<br>**CR 740×780×17 HSF7 V** |
| **750** | 814 | 28 | **CR 750×814×28 HSF3 R**<br>**CR 750×814×28 HSF3 V** | **CR 750×814×28 HSF7 R**<br>**CR 750×814×28 HSF7 V** |

## Radial shaft seals – HSF3 (split) and HSF7 (solid) – metric dimensions
$d_1$ **775 – 985** mm

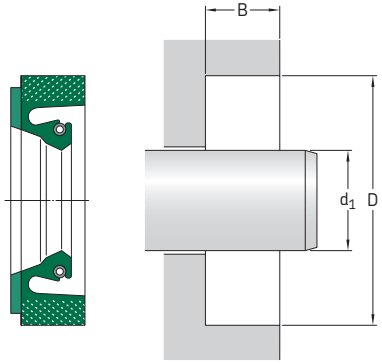



The table includes only a selection of available sizes. Contact your SKF sales representative for more information.

Please see **pages 74** to **76** for housing bore requirements.

| **Dimensions** | | | **Designations** | |
|---|---|---|---|---|
| Shaft diameter $d_1$ | Bore diameter D | Bore depth B | Split version (HSF3) Lip material R, V | Solid version (HSF7) Lip material R, V |
| mm | | | – | |
| **775** | 839 | 25 | **CR 775×839×25 HSF3 R**<br>**CR 775×839×25 HSF3 V** | **CR 775×839×25 HSF7 R**<br>**CR 775×839×25 HSF7 V** |
| **790** | 834 | 25 | **CR 790×834×25 HSF3 R**<br>**CR 790×834×25 HSF3 V** | **CR 790×834×25 HSF7 R**<br>**CR 790×834×25 HSF7 V** |
| | 854 | 25 | **CR 790×854×25 HSF3 R**<br>**CR 790×854×25 HSF3 V** | **CR 790×854×25 HSF7 R**<br>**CR 790×854×25 HSF7 V** |
| **800** | 864 | 25 | **CR 800×864×25 HSF3 R**<br>**CR 800×864×25 HSF3 V** | **CR 800×864×25 HSF7 R**<br>**CR 800×864×25 HSF7 V** |
| **840** | 880 | 18 | **CR 840×880×18 HSF3 R**<br>**CR 840×880×18 HSF3 V** | **CR 840×880×18 HSF7 R**<br>**CR 840×880×18 HSF7 V** |
| **880** | 944 | 25,40 | **CR 880×944×25.4 HSF3 R**<br>**CR 880×944×25.4 HSF3 V** | **CR 880×944×25.4 HSF7 R**<br>**CR 880×944×25.4 HSF7 V** |
| **890** | 930 | 18 | **CR 890×930×18 HSF3 R**<br>**CR 890×930×18 HSF3 V** | **CR 890×930×18 HSF7 R**<br>**CR 890×930×18 HSF7 V** |
| **910** | 974 | 25 | **CR 910×974×25 HSF3 R**<br>**CR 910×974×25 HSF3 V** | **CR 910×974×25 HSF7 R**<br>**CR 910×974×25 HSF7 V** |
| **970** | 1 034 | 25 | **CR 970×1034×25 HSF3 R**<br>**CR 970×1034×25 HSF3 V** | **CR 970×1034×25 HSF7 R**<br>**CR 970×1034×25 HSF7 V** |
| **985** | 1 045 | 25 | **CR 985×1045×25 HSF3 R**<br>**CR 985×1045×25 HSF3 V** | **CR 985×1045×25 HSF7 R**<br>**CR 985×1045×25 HSF7 V** |

## Radial shaft seals – HSF3 (split) and HSF7 (solid) – inch dimensions
$d_1$ **8.500 – 45.500** in.



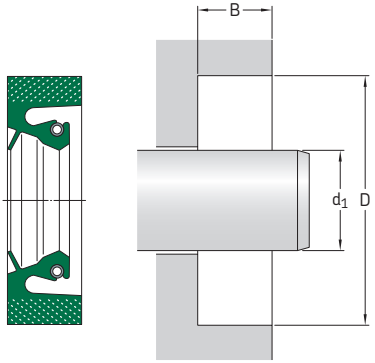

The table includes only a selection of available sizes. Contact your SKF sales representative for more information.



Please see **pages 74** to **76** for housing bore requirements.

| **Dimensions** | | | **Designations** | | | |
|---|---|---|---|---|---|---|
| Shaft diameter $d_1$ | Bore diameter D | Bore depth B | Split version (HSF3) Lip material R | V | Solid version (HSF7) Lip material R | V |
| in./*mm* | | | – | | | |
| **8.500**<br>*215,90* | 9.750<br>*247,65* | 0.813<br>*20,65* | **CR HSF3 5766 R** | **CR HSF3 5766 V** | **CR HSF7 5766 R** | **CR HSF7 5766 V** |
| **10.000**<br>*254,00* | 11.500<br>*292,10* | 0.630<br>*16,00* | **CR HSF3 5920 R** | **CR HSF3 5920 V** | **CR HSF7 5920 R** | **CR HSF7 5920 V** |
| **11.500**<br>*292,10* | 13.780<br>*350,01* | 0.630<br>*16,00* | **CR HSF3 6075 R** | **CR HSF3 6075 V** | **CR HSF7 6075 R** | **CR HSF7 6075 V** |
| **12.250**<br>*311,15* | 14.250<br>*361,95* | 0.813<br>*20,65* | **CR HSF3 6150 R** | **CR HSF3 6150 V** | **CR HSF7 6150 R** | **CR HSF7 6150 V** |
| **14.500**<br>*368,30* | 16.500<br>*419,10* | 0.813<br>*20,65* | **CR HSF3 6370 R** | **CR HSF3 6370 V** | **CR HSF7 6370 R** | **CR HSF7 6370 V** |
| | 16.500<br>*419,10* | 1.152<br>*29,26* | **CR HSF3 6375 R** | **CR HSF3 6375 V** | **CR HSF7 6375 R** | **CR HSF7 6375 V** |
| **14.750**<br>*374,65* | 16.500<br>*419,10* | 0.875<br>*22,23* | **CR HSF3 6395 R** | **CR HSF3 6395 V** | **CR HSF7 6395 R** | **CR HSF7 6395 V** |
| **15.250**<br>*387,35* | 17.250<br>*438,15* | 1.000<br>*25,40* | **CR HSF3 6465 R** | **CR HSF3 6465 V** | **CR HSF7 6465 R** | **CR HSF7 6465 V** |
| **16.500**<br>*419,10* | 18.000<br>*457,20* | 0.750<br>*19,05* | **CR HSF3 6611 R** | **CR HSF3 6611 V** | **CR HSF7 6611 R** | **CR HSF7 6611 V** |
| **35.500**<br>*901,70* | 37.500<br>*952,50* | 0.875<br>*22,23* | **CR HSF3 7860 R** | **CR HSF3 7860 V** | **CR HSF7 7860 R** | **CR HSF7 7860 V** |
| **36.000**<br>*914,40* | 38.500<br>*977,90* | 0.875<br>*22,23* | **CR HSF3 7890 R** | **CR HSF3 7890 V** | **CR HSF7 7890 R** | **CR HSF7 7890 V** |
| **45.500**<br>*1 155,70* | 47.000<br>*1 193,80* | 0.813<br>*20,65* | **CR HSF3 9000 R** | **CR HSF3 9000 V** | **CR HSF7 9000 R** | **CR HSF7 9000 V** |

## Radial shaft seals – HSF4 (split) and HSF8 (solid) – metric dimensions
$d_1$ **75 – 660** mm



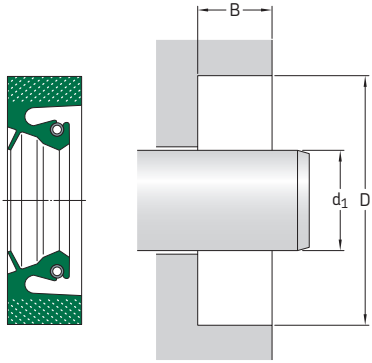

The table includes only a selection of available sizes. Contact your SKF sales representative for more information.

Please see **pages 74** to **76** for housing bore requirements.

| **Dimensions** Shaft diameter $d_1$ | Bore diameter D | Bore depth B | **Designations** Split version (HSF4) Lip material R, V | Solid version (HSF8) Lip material R, V |
|---|---|---|---|---|
| mm | | | – | |
| **75** | 107 | 12,50 | **CR 75×107×13 HSF4 R**<br>**CR 75×107×13 HSF4 V** | **CR 75×107×13 HSF8 R**<br>**CR 75×107×13 HSF8 V** |
| **105** | 145 | 16 | **CR 105×145×16 HSF4 R**<br>**CR 105×145×16 HSF4 V** | **CR 105×145×16 HSF8 R**<br>**CR 105×145×16 HSF8 V** |
| **215** | 250 | 16 | **CR 215×250×16 HSF4 R**<br>**CR 215×250×16 HSF4 V** | **CR 215×250×16 HSF8 R**<br>**CR 215×250×16 HSF8 V** |
| **300** | 340 | 16 | **CR 300×340×16 HSF4 R**<br>**CR 300×340×16 HSF4 V** | **CR 300×340×16 HSF8 R**<br>**CR 300×340×16 HSF8 V** |
| **330** | 374 | 20 | **CR 330×374×20 HSF4 R**<br>**CR 330×374×20 HSF4 V** | **CR 330×374×20 HSF8 R**<br>**CR 330×374×20 HSF8 V** |
| **370** | 410 | 15 | **CR 370×410×15 HSF4 R**<br>**CR 370×410×15 HSF4 V** | **CR 370×410×15 HSF8 R**<br>**CR 370×410×15 HSF8 V** |
| | 420 | 20 | **CR 380×420×20 HSF4 R**<br>**CR 380×420×20 HSF4 V** | **CR 380×420×20 HSF8 R**<br>**CR 380×420×20 HSF8 V** |
| **380** | 420 | 22 | **CR 380×420×22 HSF4 R**<br>**CR 380×420×22 HSF4 V** | **CR 380×420×22 HSF8 R**<br>**CR 380×420×22 HSF8 V** |
| | 490 | 20 | **CR 440×490×20 HSF4 R**<br>**CR 440×490×20 HSF4 V** | **CR 440×490×20 HSF8 R**<br>**CR 440×490×20 HSF8 V** |
| **440** | 490 | 22 | **CR 440×490×22 HSF4 R**<br>**CR 440×490×22 HSF4 V** | **CR 440×490×22 HSF8 R**<br>**CR 440×490×22 HSF8 V** |
| **450** | 500 | 22 | **CR 450×500×22 HSF4 R**<br>**CR 450×500×22 HSF4 V** | **CR 450×500×22 HSF8 R**<br>**CR 450×500×22 HSF8 V** |
| **460** | 500 | 16 | **CR 460×500×16 HSF4 R**<br>**CR 460×500×16 HSF4 V** | **CR 460×500×16 HSF8 R**<br>**CR 460×500×16 HSF8 V** |
| **500** | 540 | 22 | **CR 500×540×22 HSF4 R**<br>**CR 500×540×22 HSF4 V** | **CR 500×540×22 HSF8 R**<br>**CR 500×540×22 HSF8 V** |
| **660** | 704 | 20 | **CR 660×704×20 HSF4 R**<br>**CR 660×704×20 HSF4 V** | **CR 660×704×20 HSF8 R**<br>**CR 660×704×20 HSF8 V** |

## Radial shaft seals – HSF4 (split) and HSF8 (solid) – inch dimensions

$d_1$ **38.000** in.



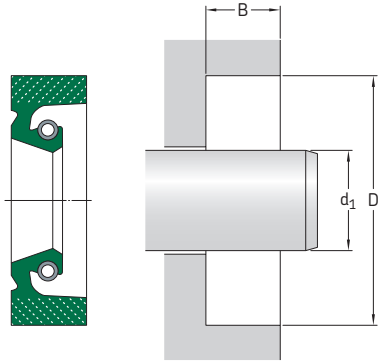

The table includes only a selection of available sizes. Contact your SKF sales representative for more information.



Please see **pages 74** to **76** for housing bore requirements.

| **Dimensions** | | | **Designations** | | | |
|---|---|---|---|---|---|---|
| Shaft diameter $d_1$ | Bore diameter D | Bore depth B | Split version (HSF4) Lip material R | V | Solid version (HSF8) Lip material R | V |
| in./*mm* | | | – | | | |
| **38.000** *965,20* | 40.000 *1 016,00* | 0.875 *22,23* | **CR HSF4 7990 R** | **CR HSF4 7990 V** | **CR HSF8 7990 R** | **CR HSF8 7990 V** |

## Radial shaft seals – HSF9 – metric dimensions
$d_1$ **200 – 860** mm

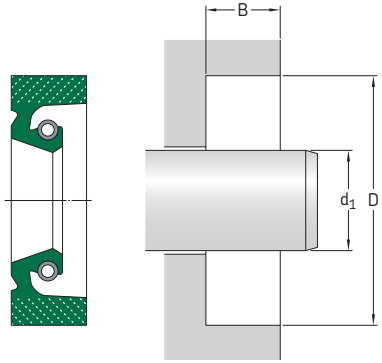



The table includes only a selection of available sizes. Contact your SKF sales representative for more information.

Please see **pages 74** to **76** for housing bore requirements.

| **Dimensions** | | | **Designations** | |
|---|---|---|---|---|
| Shaft diameter $d_1$ | Bore diameter D | Bore depth B | Lip material R | V |
| mm | | | – | |
| **200** | 240 | 16,50 | **CR 200×240×17 HSF9 R** | **CR 200×240×17 HSF9 V** |
| **335** | 379 | 20 | **CR 335×379×20 HSF9 R** | **CR 335×379×20 HSF9 V** |
| **346** | 390 | 18 | **CR 346×390×18 HSF9 R** | **CR 346×390×18 HSF9 V** |
| **360** | 404 | 17,45 | **CR 360×404×17 HSF9 R** | **CR 360×404×17 HSF9 V** |
| **480** | 530 | 22 | **CR 480×530×22 HSF9 R** | **CR 480×530×22 HSF9 V** |
| **500** | 540 | 20 | **CR 500×540×20 HSF9 R** | **CR 500×540×20 HSF9 V** |
| **515** | 555 | 20 | **CR 515×555×20 HSF9 R** | **CR 515×555×20 HSF9 V** |
| **600** | 644 | 20 | **CR 600×644×20 HSF9 R** | **CR 600×644×20 HSF9 V** |
| **700** | 750 | 25 | **CR 700×750×25 HSF9 R** | **CR 700×750×25 HSF9 V** |
| **751** | 814 | 25,40 | **CR 751×814×25 HSF9 R** | **CR 751×814×25 HSF9 V** |
| **840** | 904 | 25 | **CR 840×904×25 HSF9 R** | **CR 840×904×25 HSF9 V** |
| **860** | 924 | 25 | **CR 860×924×25 HSF9 R** | **CR 860×924×25 HSF9 V** |

## Radial shaft seals – HSF9 – inch dimensions
$d_1$ **17.875 – 25.996** in.



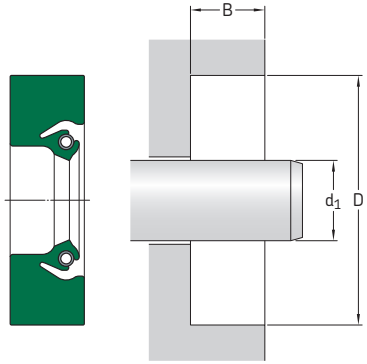

The table includes only a selection of available sizes. Contact your SKF sales representative for more information.



Please see **pages 74** to **76** for housing bore requirements.

| **Dimensions** | | | **Designations** | |
|---|---|---|---|---|
| Shaft diameter $d_1$ | Bore diameter D | Bore depth B | Lip material R | V |
| in./*mm* | | | – | |
| **17.875**<br>*454,03* | 19.850<br>*504,19* | 0.813<br>*20,65* | **CR HSF9 6715 R** | **CR HSF9 6715 V** |
| **25.996**<br>*660,30* | 28.000<br>*711,20* | 1.000<br>*25,40* | **CR HSF9 7233 R** | **CR HSF9 7233 V** |

## Radial shaft seals – HS4 and HS5 – metric dimensions
$d_1$ **230 – 1 055** mm




The table includes only a selection of available sizes. Contact your SKF sales representative for more information.

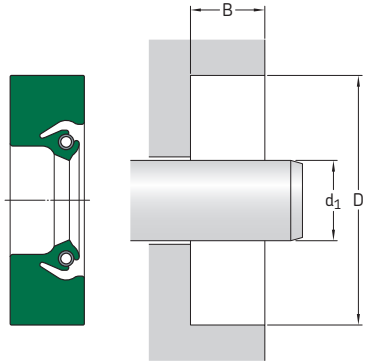
Please see **pages 74** to **76** for housing bore requirements.

| **Dimensions** Shaft diameter $d_1$ | Bore diameter D | Bore depth B | **Design** | **Lip material** | **Designation** |
|---|---|---|---|---|---|
| mm | | | – | – | – |
| **230** | 269 | 22 | HS5 | R | **CR 230×269×22 HS5 R** |
| **240** | 279 | 22 | HS5 | R | **CR 240×279×22 HS5 R** |
| **245** | 290 | 15 | HS4 | V | **CR 245×290×15 HS4 V** |
| **260** | 285,40 | 12,70 | HS5 | R | **CR 260×285×13 HS5 R** |
| **280** | 325 | 24 | HS5 | R | **CR 280×325×24 HS5 R** |
| **310** | 354 | 20 | HS5 | R | **CR 310×354×20 HS5 R** |
| **315** | 355 | 16 | HS4 | V | **CR 315×355×16 HS4 V** |
| **325** | 368 | 20 | HS5 | R | **CR 325×368×20 HS5 R** |
| **350** | 400 | 25,40 | HS5 | R | **CR 350×400×25 HS5 R** |
| **360** | 390 | 18 | HS5 | H | **CR 360×390×18 HS5 H** |
| **390** | 434 | 20 | HS5 | R | **CR 390×434×20 HS5 R** |
| **400** | 444 | 20 | HS5 | R | **CR 400×444×20 HS5 R** |
| | 447 | 20 | HS5 | R | **CR 400×447×20 HS5 R** |
| | 450 | 25 | HS5 | R | **CR 400×450×25 HS5 R** |
| **410** | 454 | 20 | HS5 | R | **CR 410×454×20 HS5 R** |
| **470** | 520 | 20,70 | HS4 | R | **CR 470×520×21 HS4 R** |
| **475** | 525 | 25 | HS4 | R | **CR 475×525×25 HS4 R** |
| **480** | 530 | 25 | HS5 | R | **CR 480×530×25 HS5 R** |
| **490** | 530 | 20,50 | HS5 | D | **CR 490×530×21 HS5 D** |
| **515** | 555 | 20 | HS5 | R | **CR 515×555×20 HS5 R** |
| **519** | 560 | 25 | HS5 | D | **CR 519×560×25 HS5 D** |
| **520** | 570 | 24 | HS5 | R | **CR 520×570×24 HS5 R** |

| Dimensions<br>Shaft diameter<br>$d_1$ | Bore diameter<br>D | Bore depth<br>B | Design | Lip material | Designation |
|---|---|---|---|---|---|
| mm | | | – | – | – |
| **525** | 575 | 20,70 | HS4 | R | **CR 525×575×21 HS4 R** |
| **530** | 575 | 20 | HS5 | R | **CR 530×575×20 HS5 R** |
| **540** | 584 | 20 | HS4 | R | **CR 540×584×20 HS4 R** |
| **700** | 740 | 20 | HS5 | D | **CR 700×740×20 HS5 D** |
| **710** | 760 | 25 | HS5 | D | **CR 710×760×25 HS5 D** |
| **712** | 757 | 20,50 | HS5 | D | **CR 712×757×21 HS5 D** |
| **778** | 818 | 20,50 | HS5 | D | **CR 778×818×21 HS5 D** |
| **780** | 830 | 22 | HS5 | R | **CR 780×830×22 HS5 R** |
| **910** | 966 | 17,86 | HS5 | R | **CR 910×966×18 HS5 R** |
| **978** | 1 018 | 18 | HS5 | R | **CR 978×1018×18 HS5 R** |
| **1 055** | 1 100<br>1 100 | 25<br>25 | HS5<br>HS5 | R<br>D | **CR 1055×1100×25 HS5 R**<br>**CR 1055×1100×25 HS5 D** |

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55 3291 5372

## Radial shaft seals – HS4 and HS5 – inch dimensions
$d_1$ **6.438– 72.750** in.



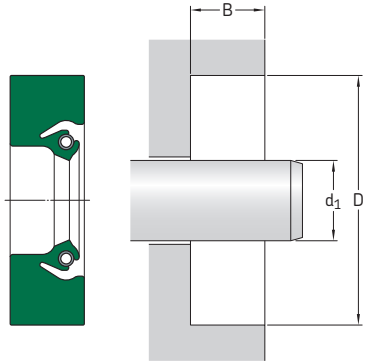

The table includes only a selection of available sizes. Contact your SKF sales representative for more information.

Please see **pages 74** to **76** for housing bore requirements.

| **Dimensions** Shaft diameter $d_1$ | Bore diameter D | Bore depth B | **Design** | **Lip material** | **Designation** |
|---|---|---|---|---|---|
| in./*mm* | | | – | – | – |
| **6.438** *163,53* | 7.688 *195,28* | 0.625 *15,88* | HS5 | R | **CR 596043** |
| **7.125** *180,98* | 8.125 *206,38* | 0.500 *12,70* | HS5 | R | **CR 595761** |
| **7.188** *182,58* | 8.640 *219,46* | 0.625 *15,88* | HS5 | R | **CR 595643** |
| **7.500** *190,50* | 8.750 *222,25* | 0.625 *15,88* | HS5 | D | **CR 595822** |
| **7.750** *196,85* | 8.750 *222,25* | 0.625 *15,88* | HS5 | D | **CR 595813** |
| **8.000** *203,20* | 9.500 *241,30* | 0.625 *15,88* | HS5 | R | **CR 595404** |
| **8.625** *219,08* | 10.125 *257,18* | 0.609 *15,47* | HS5 | R | **CR 595566** |
| **9.000** *228,60* | 10.500 *266,70* | 0.625 *15,88* | HS5 | R | **CR 594641** |
| **10.250** *260,35* | 12.017 *305,23* | 0.750 *19,05* | HS5 | R | **CR 1025435** |
| **11.250** *285,75* | 12.750 *323,85* | 0.625 *15,88* | HS5 | R | **CR 1125235** |
| **11.500** *292,10* | 13.250 *336,55* | 0.750 *19,05* | HS5 | R | **CR 594850** |
| **12.000** *304,80* | 13.000 *330,20* | 0.500 *12,70* | HS5 | R | **CR 1200015** |
| **12.250** *311,15* | 13.750 *349,25* | 0.750 *19,05* | HS5 | R | **CR 1225125** |
| **13.375** *339,73* | 14.875 *377,83* | 0.625 *15,88* | HS5 | R | **CR 1338235** |

| Dimensions | | | Design | Lip material | Designation |
|---|---|---|---|---|---|
| Shaft diameter $d_1$ | Bore diameter D | Bore depth B | | | |
| in./*mm* | | | – | – | – |
| **13.500**<br>*342,90* | 15.000<br>*381,00* | 0.625<br>*15,88* | HS5 | D | **CR 1350235** |
| **13.985**<br>*355,22* | 15.500<br>*393,70* | 0.625<br>*15,88* | HS4 | R | **CR 526447** |
| **14.361**<br>*364,77* | 15.748<br>*400,00* | 0.709<br>*18,01* | HS4 | R | **CR 595175** |
| **15.748**<br>*400,00* | 17.717<br>*450,01* | 0.890<br>*22,61* | HS4 | R | **CR 1574443** |
| **16.000**<br>*406,40* | 17.000<br>*431,80* | 0.500<br>*12,70* | HS4 | R | **CR 1600014** |
| **20.000**<br>*508,00* | 22.000<br>*558,80* | 0.500<br>*12,70* | HS5 | R | **CR 595044** |
| **21.000**<br>*533,40* | 23.000<br>*584,20* | 0.813<br>*20,65* | HS4 | R | **CR 526719** |
| **21.750**<br>*552,45* | 23.250<br>*590,55* | 0.625<br>*15,88* | HS5 | R | **CR 593520** |
| **24.000**<br>*609,60* | 25.500<br>*647,70* | 0.750<br>*19,05* | HS5 | R | **CR 593519** |
| **25.000**<br>*635,00* | 27.000<br>*685,80* | 0.875<br>*22,23* | HS5 | R | **CR 593183** |
| **27.000**<br>*685,80* | 29.000<br>*736,60* | 0.813<br>*20,65* | HS5 | R | **CR 2700555** |
| **33.000**<br>*838,20* | 34.250<br>*869,95* | 0.625<br>*15,88* | HS5 | D | **CR 530414** |
| **53.000**<br>*1346,20* | 54.875<br>*1393,83* | 0.813<br>*20,65* | HS4 | R | **CR 595881** |
| **72.750**<br>*1847.85* | 74.000<br>*1879.60* | 0.719<br>*18.26* | HS5 | R | **CR 7275135** |

## Radial shaft seals – HS6, HS7 and HS8 – metric dimensions
$d_1$ **145 – 460** mm



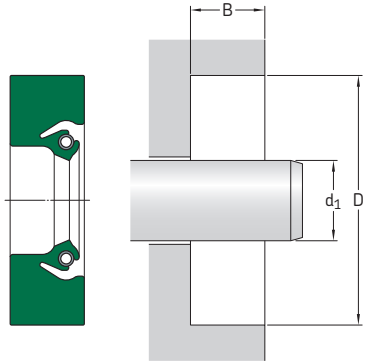

The table includes only a selection of available sizes. Contact your SKF sales representative for more information.

Please see **pages 74** to **76** for housing bore requirements.

| **Dimensions** Shaft diameter $d_1$ | Bore diameter D | Bore depth B | **Design** | **Lip material** | **Designation** |
|---|---|---|---|---|---|
| mm | | | – | – | – |
| **145** | 175 | 14 | HS8 | R | **CR 145×175×14 HS8 R** |
| **150** | 180 | 15,88 | HS8 | R | **CR 150×180×16 HS8 R** |
| **160** | 200 | 15,88 | HS8 | D | **CR 160×200×16 HS8 D** |
| **170** | 200 | 16 | HS8 | V | **CR 170×200×16 HS8 V** |
| **180** | 222 | 16 | HS7 | R | **CR 180×222×16 HS7 R** |
| **185** | 220 | 12,70 | HS8 | R | **CR 185×220×13 HS8 R** |
| **186** | 226 | 16 | HS8 | R | **CR 186×226×16 HS8 R** |
| **190** | 220 | 16 | HS8 | R | **CR 190×220×16 HS8 R** |
| | 230 | 16 | HS8 | R | **CR 190×230×16 HS8 R** |
| **200** | 238 | 19 | HS6 | R | **CR 200×238×19 HS6 R** |
| | 238,10 | 19,10 | HS8 | R | **CR 200×238×19 HS8 R** |
| **220** | 250 | 15 | HS8 | R | **CR 220×250×15 HS8 R** |
| | 250 | 16 | HS8 | D | **CR 220×250×16 HS8 D** |
| | 260 | 14,27 | HS8 | R | **CR 220×260×14 HS8 R** |
| | 260 | 15 | HS8 | R | **CR 220×260×15 HS8 R** |
| | 260 | 16 | HS8 | R | **CR 220×260×16 HS8 R** |
| **230** | 260 | 15 | HS8 | R | **CR 230×260×15 HS8 R** |
| **240** | 270 | 15 | HS8 | R | **CR 240×270×15 HS8 R** |
| | 275 | 15 | HS8 | R | **CR 240×275×15 HS8 R** |
| | 280 | 20 | HS7 | R | **CR 240×280×20 HS7 R** |
| **250** | 280 | 15 | HS8 | R | **CR 250×280×15 HS8 R** |
| | 290 | 15,88 | HS8 | R | **CR 250×290×16 HS8 R** |
| **260** | 290 | 16 | HS8 | R | **CR 260×290×16 HS8 R** |
| | 300 | 20 | HS8 | R | **CR 260×300×20 HS8 R** |
| | 304 | 20 | HS8 | R | **CR 260×304×20 HS8 R** |
| **265** | 310 | 22 | HS7 | R | **CR 265×310×22 HS7 R** |

| Dimensions | | | Design | Lip material | Designation |
|---|---|---|---|---|---|
| Shaft diameter $d_1$ | Bore diameter D | Bore depth B | | | |
| mm | | | – | – | – |
| **266** | 310 | 20 | HS8 | R | **CR 266×310×20 HS8 R** |
| **270** | 310 | 20 | HS8 | R | **CR 270×310×20 HS8 R** |
| **280** | 310 | 15 | HS8 | R | **CR 280×310×15 HS8 R** |
| | 310 | 16 | HS8 | R | **CR 280×310×16 HS8 R** |
| | 320 | 19,05 | HS8 | R | **CR 280×320×19 HS8 R** |
| | 324 | 20 | HS8 | R | **CR 280×324×20 HS8 R** |
| | 325 | 22 | HS8 | H | **CR 280×325×22 HS8 H** |
| **290** | 330 | 20 | HS8 | R | **CR 290×330×20 HS8 R** |
| | 335 | 24 | HS7 | R | **CR 290×335×24 HS7 R** |
| **300** | 340 | 20 | HS8 | R | **CR 300×340×20 HS8 R** |
| | 345 | 22 | HS7 | R | **CR 300×345×22 HS7 R** |
| **310** | 340 | 15 | HS8 | V | **CR 310×340×15 HS8 V** |
| | 340 | 15 | HS8 | R | **CR 310×340×15 HS8 R** |
| | 350 | 20 | HS8 | D | **CR 310×350×20 HS8 D** |
| **320** | 360 | 20 | HS8 | R | **CR 320×360×20 HS8 R** |
| | 368,10 | 19,05 | HS6 | R | **CR 320×368×19 HS6 R** |
| **330** | 380 | 22 | HS8 | H | **CR 330×380×22 HS8 H** |
| **340** | 372 | 18 | HS8 | R | **CR 340×372×18 HS8 R** |
| | 380 | 20 | HS8 | R | **CR 340×380×20 HS8 R** |
| **345** | 390 | 25 | HS8 | R | **CR 345×390×25 HS8 R** |
| **350** | 390 | 18 | HS8 | R | **CR 350×390×18 HS8 R** |
| **355** | 393 | 20 | HS8 | R | **CR 355×393×20 HS8 R** |
| **360** | 400 | 18 | HS8 | R | **CR 360×400×18 HS8 R** |
| | 405 | 25 | HS8 | H | **CR 360×405×25 HS8 H** |
| | 410,80 | 22,26 | HS8 | R | **CR 360×411×22 HS8 R** |
| **380** | 418 | 19 | HS7 | R | **CR 380×418×19 HS7 R** |
| | 418 | 19 | HS8 | R | **CR 380×418×19 HS8 R** |
| | 420 | 19,05 | HS8 | V | **CR 380×420×19 HS8 V** |
| | 420 | 20 | HS8 | D | **CR 380×420×20 HS8 D** |
| | 420 | 20 | HS7 | R | **CR 380×420×20 HS7 R** |
| | 420 | 20 | HS8 | H | **CR 380×420×20 HS8 H** |
| | 420 | 20 | HS8 | D | **CR 380×420×20 HS8 D** |
| | 430 | 20 | HS8 | R | **CR 380×430×20 HS8 R** |
| **400** | 440 | 20 | HS7 | R | **CR 400×440×20 HS7 R** |
| | 444 | 13,50 | HS8 | R | **CR 400×444×14 HS8 R** |
| | 450 | 25 | HS8 | R | **CR 400×450×25 HS8 R** |
| | 451 | 22,23 | HS8 | R | **CR 400×451×22 HS8 R** |
| **410** | 454 | 19 | HS8 | R | **CR 410×454×19 HS8 R** |
| **420** | 460 | 20 | HS7 | R | **CR 420×460×20 HS7 R** |
| **430** | 480 | 22 | HS8 | R | **CR 430×480×22 HS8 R** |
| **440** | 480 | 20 | HS8 | R | **CR 440×480×20 HS8 R** |
| | 480 | 21 | HS8 | H | **CR 440×480×21 HS8 H** |
| **450** | 500 | 25 | HS8 | R | **CR 450×500×25 HS8 R** |
| **452** | 503 | 20,65 | HS8 | R | **CR 452×503×21 HS8 R** |
| **460** | 510 | 22 | HS8 | R | **CR 460×510×22 HS8 R** |

## Radial shaft seals – HS6, HS7 and HS8 – metric dimensions
$d_1$ **480 – 3 000** mm



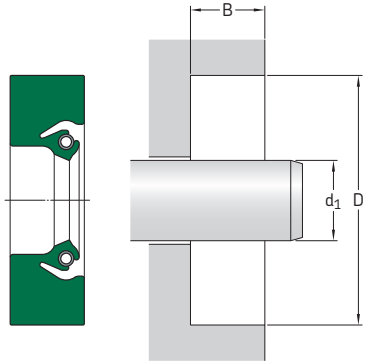

The table includes only a selection of available sizes. Contact your SKF sales representative for more information.

Please see **pages 74** to **76** for housing bore requirements.

| **Dimensions** Shaft diameter $d_1$ | Bore diameter D | Bore depth B | **Design** | **Lip material** | **Designation** |
|---|---|---|---|---|---|
| mm | | | – | – | – |
| **480** | 530 | 20 | HS8 | R | **CR 480×530×20 HS8 R** |
| **490** | 530 | 20 | HS8 | R | **CR 490×530×20 HS8 R** |
| | 540 | 25 | HS8 | R | **CR 490×540×25 HS8 R** |
| | 541 | 20,70 | HS6 | R | **CR 490×541×21 HS6 R** |
| **500** | 550 | 25 | HS8 | R | **CR 500×550×25 HS8 R** |
| **510** | 548 | 24,50 | HS8 | R | **CR 510×548×25 HS8 R** |
| **515** | 555 | 20 | HS8 | R | **CR 515×555×20 HS8 R** |
| **519** | 560 | 25 | HS8 | D | **CR 519×560×25 HS8 D** |
| **530** | 576 | 21 | HS8 | R | **CR 530×576×21 HS8 R** |
| | 580 | 20 | HS8 | R | **CR 530×580×20 HS8 R** |
| | 580 | 22 | HS8 | R | **CR 530×580×22 HS8 R** |
| | 580 | 25 | HS8 | R | **CR 530×580×25 HS8 R** |
| **550** | 590 | 20 | HS8 | R | **CR 550×590×20 HS8 R** |
| **556** | 610 | 25,40 | HS7 | R | **CR 556×610×25 HS7 R** |
| **560** | 604 | 20 | HS8 | R | **CR 560×604×20 HS8 R** |
| **590** | 640 | 25 | HS8 | R | **CR 590×640×25 HS8 R** |
| **600** | 640 | 20 | HS8 | R | **CR 600×640×20 HS8 R** |
| **615** | 665 | 24 | HS8 | R | **CR 615×665×24 HS8 R** |
| **620** | 670 | 22 | HS8 | D | **CR 620×670×22 HS8 D** |
| **625** | 676 | 19 | HS8 | D | **CR 625×676×19 HS8 D** |
| **630** | 670 | 20 | HS8 | R | **CR 630×670×20 HS8 R** |
| **650** | 700 | 20 | HS8 | R | **CR 650×700×20 HS8 R** |
| **690** | 730 | 20 | HS8 | R | **CR 690×730×20 HS8 R** |

| Dimensions | | | Design | Lip material | Designation |
|---|---|---|---|---|---|
| Shaft diameter $d_1$ | Bore diameter D | Bore depth B | | | |
| mm | | | – | – | – |
| **700** | 750 | 20 | HS8 | R | **CR 700×750×20 HS8 R** |
| | 765 | 25 | HS8 | R | **CR 700×765×25 HS8 R** |
| **720** | 771,10 | 21 | HS8 | D | **CR 720×771×21 HS8 D** |
| **737** | 790 | 15,88 | HS6 | R | **CR 737×790×16 HS6 R** |
| **740** | 790 | 15,88 | HS8 | R | **CR 740×790×16 HS8 R** |
| | 790 | 25 | HS8 | R | **CR 740×790×25 HS8 R** |
| **760** | 800 | 20,60 | HS8 | R | **CR 760×800×21 HS8 R** |
| | 810 | 20,60 | HS8 | R | **CR 760×810×21 HS8 R** |
| | 820 | 17,50 | HS8 | R | **CR 760×820×18 HS8 R** |
| **780** | 820 | 18 | HS8 | R | **CR 780×820×18 HS8 R** |
| **800** | 850 | 25,40 | HS8 | R | **CR 800×850×25 HS8 R** |
| **810** | 860 | 20,65 | HS7 | R | **CR 810×860×21 HS7 R** |
| **840** | 892 | 18 | HS6 | R | **CR 840×892×18 HS6 R** |
| **850** | 900 | 22 | HS8 | R | **CR 850×900×22 HS8 R** |
| **865** | 911 | 18 | HS8 | R | **CR 865×911×18 HS8 R** |
| **867** | 920 | 15,88 | HS6 | R | **CR 867×920×16 HS6 R** |
| **870** | 920 | 15,88 | HS8 | R | **CR 870×920×16 HS8 R** |
| **910** | 966 | 17,86 | HS6 | R | **CR 910×966×18 HS6 R** |
| **925** | 975 | 22 | HS8 | D | **CR 925×975×22 HS8 D** |
| **930** | 982 | 22,23 | HS6 | R | **CR 930×982×22 HS6 R** |
| **1 055** | 1 100 | 25 | HS8 | D | **CR 1055×1100×25 HS8 D** |
| **1 070** | 1 120 | 20 | HS6 | R | **CR 1070×1120×20 HS6 R** |
| **1 105** | 1 151 | 17,50 | HS8 | R | **CR 1105×1151×18 HS8 R** |
| **1 180** | 1 230 | 20 | HS6 | R | **CR 1180×1230×20 HS6 R** |
| **1 248** | 1 298 | 20,70 | HS8 | R | **CR 1248×1298×21 HS8 R** |
| **1 370** | 1 420 | 19,83 | HS8 | H | **CR 1370×1420×20 HS8 H** |
| **1 380** | 1 420 | 18 | HS8 | R | **CR 1380×1420×18 HS8 R** |
| **1 675** | 1 725 | 20 | HS8 | R | **CR 1675×1725×20 HS8 R** |
| | 1 725 | 20,62 | HS8 | D | **CR 1675×1725×21 HS8 D** |
| **1 810** | 1 860 | 20 | HS8 | R | **CR 1810×1860×20 HS8 R** |
| | 1 860 | 20,62 | HS8 | D | **CR 1810×1860×21 HS8 D** |
| **2 850** | 2 900 | 20,63 | HS8 | D | **CR 2850×2900×21 HS8 D** |
| **2 900** | 2 959 | 17,33 | HS6 | R | **CR 2900×2959×17 HS6 R** |
| **3 000** | 3 050 | 20,63 | HS8 | D | **CR 3000×3050×21 HS8 D** |

## Radial shaft seals – HS6, HS7 and HS8 – inch dimensions
$d_1$ **5.500 – 10.250** in.



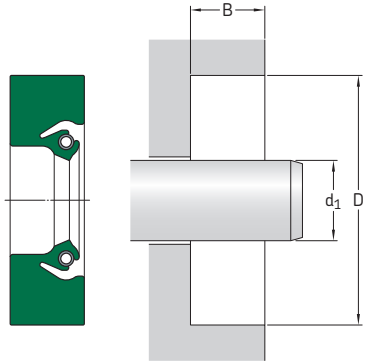

The table includes only a selection of available sizes. Contact your SKF sales representative for more information.

Please see **pages 74** to **76** for housing bore requirements.

| **Dimensions** Shaft diameter $d_1$ | Bore diameter D | Bore depth B | **Design** | **Lip material** | **Designation** |
|---|---|---|---|---|---|
| in./*mm* | | | – | – | – |
| **5.500** | 6.500 | 0.500 | HS8 | V | **CR 597548** |
| *139,70* | *165,10* | *12,70* | | | |
| **6.000** | 7.250 | 0.625 | HS8 | R | **CR 592986** |
| *152,40* | *184,15* | *15,88* | | | |
| | 7.500 | 0.535 | HS8 | R | **CR 60037** |
| | *190,50* | *13,59* | | | |
| **6.300** | 7.874 | 0.596 | HS8 | D | **CR 595052** |
| *160,00* | *200,00* | *15,14* | | | |
| **6.438** | 7.688 | 0.625 | HS7 | R | **CR 594760** |
| *163,53* | *195,28* | *15,88* | | | |
| **7.000** | 8.000 | 0.500 | HS8 | D | **CR 70008** |
| *177,80* | *203,20* | *12,70* | | | |
| **7.250** | 8.250 | 0.500 | HS8 | R | **CR 595012** |
| *184,15* | *209,55* | *12,70* | | | |
| | 8.250 | 0.500 | HS7 | R | **CR 528377** |
| | *209,55* | *12,70* | | | |
| **7.625** | 8.875 | 0.625 | HS8 | R | **CR 595207** |
| *193,68* | *225,43* | *15,88* | | | |
| **7.750** | 8.750 | 0.500 | HS8 | R | **CR 529601** |
| *196,85* | *222,25* | *12,70* | | | |
| **8.000** | 9.000 | 0.625 | HS8 | V | **CR 594935** |
| *203,20* | *228,60* | *15,88* | | | |
| | 9.250 | 0.625 | HS8 | R | **CR 592376** |
| | *234,95* | *15,88* | | | |
| | 10.000 | 0.750 | HS7 | R | **CR 590326** |
| | *254,00* | *19,05* | | | |
| **8.250** | 9.500 | 0.625 | HS7 | R | **CR 592180** |
| *209,55* | *241,30* | *15,88* | | | |
| | 10.250 | 0.750 | HS7 | R | **CR 591929** |
| | *260,35* | *19,05* | | | |

| Dimensions | | | Design | Lip material | Designation |
|---|---|---|---|---|---|
| Shaft diameter $d_1$ | Bore diameter D | Bore depth B | | | |
| in./*mm* | | | – | – | – |
| **8.500** | 9.500 | 0.500 | HS8 | V | **CR 594745** |
| *215,90* | *241,30* | *12,70* | | | |
| | 10.000 | 0.625 | HS8 | R | **CR 594318** |
| | *254,00* | *15,88* | | | |
| **8.750** | 9.750 | 0.500 | HS8 | V | **CR 87440** |
| *222,25* | *247,65* | *12,70* | | | |
| | 10.000 | 0.625 | HS8 | R | **CR 592627** |
| | *254,00* | *15,88* | | | |
| | 10.750 | 0.750 | HS7 | R | **CR 597553** |
| | *273,05* | *19,05* | | | |
| **8.938** | 9.938 | 0.625 | HS7 | R | **CR 595004** |
| *227,03* | *254,43* | *15,88* | | | |
| **9.000** | 10.250 | 0.625 | HS7 | R | **CR 592581** |
| *228,60* | *260,35* | *15,88* | | | |
| | 10.500 | 0.750 | HS8 | R | **CR 592600** |
| | *266,70* | *19,05* | | | |
| | 10.674 | 0.703 | HS8 | R | **CR 592779** |
| | *271,12* | *17,86* | | | |
| **9.250** | 11.250 | 0.625 | HS7 | R | **CR 593625** |
| *234,95* | *285,75* | *15,88* | | | |
| | 11.250 | 0.750 | HS8 | R | **CR 592858** |
| | *285,75* | *19,05* | | | |
| **9.438** | 10.688 | 0.625 | HS7 | R | **CR 592126** |
| *239,73* | *271,48* | *15,88* | | | |
| **9.500** | 11.000 | 0.625 | HS8 | R | **CR 531331** |
| *241,30* | *279,40* | *15,88* | | | |
| | 11.500 | 0.625 | HS8 | R | **CR 597507** |
| | *292,10* | *15,88* | | | |
| **9.750** | 10.750 | 0.500 | HS7 | R | **CR 592988** |
| *247,65* | *273,05* | *12,70* | | | |
| | 11.250 | 0.625 | HS7 | R | **CR 593385** |
| | *285,75* | *15,88* | | | |
| **9.938** | 11.188 | 0.625 | HS8 | R | **CR 594753** |
| *252,43* | *284,18* | *15,88* | | | |
| | 11.438 | 0.750 | HS8 | R | **CR 592731** |
| | *290,53* | *19,05* | | | |
| **10.000** | 11.000 | 0.562 | HS8 | R | **CR 1000018** |
| *254,00* | *279,40* | *14,28* | | | |
| | 11.250 | 0.625 | HS7 | R | **CR 1000117** |
| | *285,75* | *15,88* | | | |
| | 11.500 | 0.750 | HS7 | R | **CR 1000257** |
| | *292,10* | *19,05* | | | |
| | 12.000 | 0.625 | HS7 | R | **CR 1000527** |
| | *304,80* | *15,88* | | | |
| | 12.000 | 0.625 | HS7 | V | **CR 1000025** |
| | *304,80* | *15,88* | | | |
| **10.125** | 11.750 | 0.750 | HS8 | R | **CR 1012338** |
| *257,18* | *298,45* | *19,05* | | | |
| **10.188** | 11.188 | 0.500 | HS7 | R | **CR 1019017** |
| *258,78* | *284,18* | *12,70* | | | |
| **10.250** | 11.250 | 0.625 | HS7 | R | **CR 1025017** |
| *260,35* | *285,75* | *15,88* | | | |
| | 12.000 | 0.625 | HS8 | R | **CR 1025368** |
| | *304,80* | *15,88* | | | |

## Radial shaft seals – HS6, HS7 and HS8 – inch dimensions
$d_1$ **10.438 – 14.000** in.



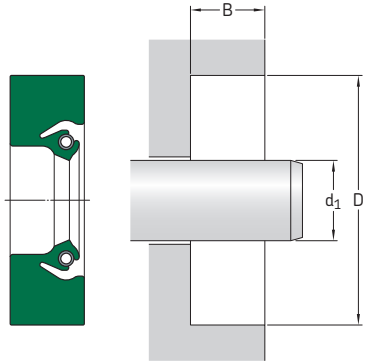

The table includes only a selection of available sizes. Contact your SKF sales representative for more information.

Please see **pages 74** to **76** for housing bore requirements.

| **Dimensions** Shaft diameter $d_1$ | Bore diameter D | Bore depth B | **Design** | **Lip material** | **Designation** |
|---|---|---|---|---|---|
| in./*mm* | | | – | – | – |
| **10.438** | 11.688 | 0.875 | HS8 | R | **CR 1043148** |
| *265,13* | *296,88* | *22,23* | | | |
| **10.500** | 11.500 | 0.500 | HS8 | R | **CR 1050018** |
| *266,70* | *292,10* | *12,70* | | | |
| | 12.000 | 0.750 | HS8 | R | **CR 1050258** |
| | *304,80* | *19,05* | | | |
| | 12.000 | 0.750 | HS7 | R | **CR 1050257** |
| | *304,80* | *19,05* | | | |
| **10.710** | 12.511 | 0.625 | HS8 | R | **CR 1071448** |
| *272,03* | *317,78* | *15,88* | | | |
| **10.875** | 12.875 | 0.578 | HS6 | R | **CR 527099** |
| *276,23* | *327,03* | *14,68* | | | |
| **11.000** | 12.000 | 0.625 | HS7 | R | **CR 1100027** |
| *279,40* | *304,80* | *15,88* | | | |
| | 12.500 | 0.750 | HS8 | R | **CR 1100258** |
| | *317,50* | *19,05* | | | |
| | 12.500 | 0.750 | HS7 | R | **CR 1100257** |
| | *317,50* | *19,05* | | | |
| | 13.000 | 0.750 | HS8 | R | **CR 1100538** |
| | *330,20* | *19,05* | | | |
| **11.125** | 12.375 | 0.625 | HS8 | R | **CR 1113118** |
| *282,58* | *314,33* | *15,88* | | | |
| **11.250** | 12.750 | 0.750 | HS7 | R | **CR 1125257** |
| *285,75* | *323,85* | *19,05* | | | |
| **11.375** | 12.375 | 0.500 | HS7 | R | **CR 1138017** |
| *288,93* | *314,33* | *12,70* | | | |
| **11.422** | 12.922 | 0.750 | HS7 | R | **CR 1142257** |
| *290,12* | *328,22* | *19,05* | | | |
| **11.500** | 12.500 | 0.500 | HS8 | R | **CR 1150018** |
| *292,10* | *317,50* | *12,70* | | | |
| | 13.000 | 0.750 | HS8 | R | **CR 1150258** |
| | *330,20* | *19,05* | | | |

| **Dimensions** Shaft diameter $d_1$ | Bore diameter D | Bore depth B | **Design** | **Lip material** | **Designation** |
|---|---|---|---|---|---|
| in./*mm* | | | – | – | – |
| **11.750** *298,45* | 13.250 *336,55* | 0.750 *19,05* | HS7 | R | **CR 1175257** |
| **11.875** *301,63* | 13.125 *333,38* | 0.625 *15,88* | HS8 | R | **CR 1188118** |
| **12.000** *304,80* | 13.000 *330,20* | 0.500 *12,70* | HS8 | D | **CR 1200028** |
| | 13.500 *342,90* | 0.750 *19,05* | HS8 | R | **CR 1200258** |
| | 14.000 *355,60* | 0.813 *20,65* | HS8 | R | **CR 1200558** |
| **12.375** *314,33* | 13.875 *352,43* | 0.750 *19,05* | HS7 | R | **CR 1238257** |
| **12.500** *317,50* | 13.500 *342,90* | 0.500 *12,70* | HS8 | R | **CR 1250018** |
| | 14.000 *355,60* | 0.750 *19,05* | HS7 | R | **CR 1250257** |
| **12.625** *320,68* | 14.125 *358,78* | 0.750 *19,05* | HS7 | R | **CR 1263237** |
| **12.750** *323,85* | 14.250 *361,95* | 0.625 *15,88* | HS8 | R | **CR 1275238** |
| | 14.250 *361,95* | 0.750 *19,05* | HS7 | R | **CR 1275257** |
| **13.000** *330,20* | 14.500 *368,30* | 0.625 *15,88* | HS7 | R | **CR 1300237** |
| | 14.500 *368,30* | 0.750 *19,05* | HS8 | R | **CR 1300258** |
| | 15.000 *381,00* | 0.750 *19,05* | HS8 | R | **CR 1300548** |
| **13.125** *333,38* | 15.125 *384,18* | 0.750 *19,05* | HS8 | R | **CR 592920** |
| **13.250** *336,55* | 14.750 *374,65* | 0.625 *15,88* | HS7 | R | **CR 1325237** |
| **13.375** *339,73* | 14.875 *377,83* | 0.625 *15,88* | HS8 | R | **CR 594057** |
| **13.500** *342,90* | 15.000 *381,00* | 0.750 *19,05* | HS8 | R | **CR 1350258** |
| | 15.500 *393,70* | 0.625 *15,88* | HS7 | R | **CR 1350527** |
| **13.750** *349,25* | 15.250 *387,35* | 0.750 *19,05* | HS7 | R | **CR 1375257** |
| **13.875** *352,43* | 15.375 *390,53* | 0.750 *19,05* | HS7 | R | **CR 1388257** |
| **14.000** *355,60* | 15.000 *381,00* | 0.500 *12,70* | HS8 | R | **CR 1400018** |
| | 15.500 *393,70* | 0.750 *19,05* | HS8 | R | **CR 1400258** |
| | 15.500 *393,70* | 0.750 *19,05* | HS7 | R | **CR 1400257** |
| | 15.500 *393,70* | 0.750 *19,05* | HS8 | V | **CR 594261** |
| | 16.000 *406,40* | 0.813 *20,65* | HS7 | R | **CR 1400557** |
| | 16.000 *406,40* | 1.000 *25,40* | HS8 | R | **CR 1400588** |

## Radial shaft seals – HS6, HS7 and HS8 – inch dimensions
$d_1$ **14.250 – 20.000** in.



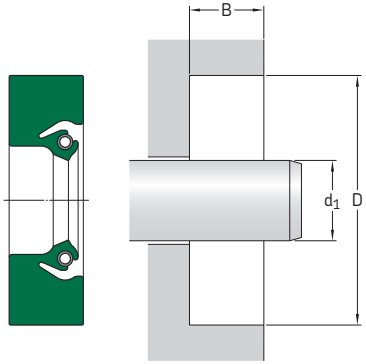

The table includes only a selection of available sizes. Contact your SKF sales representative for more information.

Please see **pages 74** to **76** for housing bore requirements.

| **Dimensions** Shaft diameter $d_1$ | Bore diameter D | Bore depth B | **Design** | **Lip material** | **Designation** |
|---|---|---|---|---|---|
| in./*mm* | | | – | – | – |
| **14.250** | 16.250 | 1.000 | HS7 | R | **CR 1425587** |
| *361,95* | *412,75* | *25,40* | | | |
| **14.500** | 15.500 | 0.500 | HS8 | R | **CR 1450018** |
| *368,30* | *393,70* | *12,70* | | | |
| **14.625** | 16.125 | 0.750 | HS7 | R | **CR 1463257** |
| *371,48* | *409,58* | *19,05* | | | |
| **15.000** | 16.500 | 0.750 | HS7 | R | **CR 1500257** |
| *381,00* | *419,10* | *19,05* | | | |
| | 17.000 | 0.813 | HS8 | R | **CR 1500558** |
| | *431,80* | *20,65* | | | |
| **15.250** | 16.625 | 0.500 | HS8 | R | **CR 1525158** |
| *387,35* | *422,28* | *12,70* | | | |
| | 16.750 | 0.750 | HS7 | R | **CR 1525257** |
| | *425,45* | *19,05* | | | |
| **15.500** | 17.000 | 0.750 | HS7 | R | **CR 1550257** |
| *393,70* | *431,80* | *19,05* | | | |
| | 17.500 | 0.813 | HS7 | R | **CR 1550557** |
| | *444,50* | *20,65* | | | |
| **15.750** | 17.250 | 0.685 | HS8 | R | **CR 1575248** |
| *400,05* | *438,15* | *19,05* | | | |
| **16.000** | 17.000 | 0.500 | HS8 | R | **CR 1600018** |
| *406,40* | *431,80* | *12,70* | | | |
| | 17.000 | 0.500 | HS8 | D | **CR 1600019** |
| | *431,80* | *12,70* | | | |
| | 17.500 | 0.750 | HS8 | R | **CR 1600258** |
| | *444,50* | *19,05* | | | |
| | 18.000 | 0.750 | HS8 | R | **CR 1600578** |
| | *457,20* | *19,05* | | | |
| | 18.000 | 0.813 | HS8 | R | **CR 1600558** |
| | *457,20* | *20,65* | | | |
| **16.500** | 17.500 | 0.500 | HS7 | R | **CR 1650017** |
| *419,10* | *444,50* | *12,70* | | | |
| | 18.500 | 0.813 | HS7 | R | **CR 1650557** |
| | *469,90* | *20,65* | | | |

| Dimensions | | | Design | Lip material | Designation |
|---|---|---|---|---|---|
| Shaft diameter $d_1$ | Bore diameter D | Bore depth B | | | |
| in./*mm* | | | – | – | – |
| **16.750** | 18.250 | 0.750 | HS7 | R | **CR 1675257** |
| *425,45* | *463,55* | *19,05* | | | |
| **16.875** | 18.375 | 0.500 | HS7 | R | **CR 1688217** |
| *428,63* | *466,73* | *12,70* | | | |
| **17.500** | 19.500 | 1.000 | HS7 | R | **CR 1750587** |
| *444,50* | *495,30* | *25,40* | | | |
| **17.716** | 19.716 | 0.813 | HS7 | R | **CR 1771557** |
| *449,99* | *500,79* | *20,65* | | | |
| **17.750** | 19.750 | 0.813 | HS7 | R | **CR 1775557** |
| *450,85* | *501,65* | *20,65* | | | |
| **18.000** | 19.000 | 0.500 | HS8 | R | **CR 1800018** |
| *457,20* | *482,60* | *12,70* | | | |
| | 19.500 | 0.750 | HS7 | R | **CR 1800257** |
| | *495,30* | *19,05* | | | |
| | 20.000 | 0.813 | HS8 | R | **CR 1800558** |
| | *508,00* | *20,65* | | | |
| **18.250** | 19.750 | 0.750 | HS7 | R | **CR 1825257** |
| *463,55* | *501,65* | *19,05* | | | |
| | 20.250 | 0.813 | HS7 | R | **CR 1825557** |
| | *514,35* | *20,65* | | | |
| **18.375** | 20.375 | 0.813 | HS8 | R | **CR 1838558** |
| *466,73* | *517,53* | *20,65* | | | |
| | 20.500 | 0.875 | HS8 | R | **CR 1837608** |
| | *520,70* | *22,23* | | | |
| **18.500** | 20.000 | 0.750 | HS8 | D | **CR 1850248** |
| *469,90* | *508,00* | *19,05* | | | |
| | 20.500 | 1.000 | HS7 | R | **CR 1850587** |
| | *520,70* | *25,40* | | | |
| **18.750** | 20.250 | 0.750 | HS7 | R | **CR 1875257** |
| *476,25* | *514,35* | *19,05* | | | |
| **18.937** | 20.937 | 0.813 | HS7 | R | **CR 1894557** |
| *481,00* | *531,80* | *20,65* | | | |
| **19.000** | 20.500 | 0.750 | HS8 | R | **CR 1900258** |
| *482,60* | *520,70* | *19,05* | | | |
| | 21.000 | 0.813 | HS7 | R | **CR 1900557** |
| | *533,40* | *20,65* | | | |
| **19.500** | 21.500 | 0.813 | HS7 | R | **CR 1950557** |
| *495,30* | *546,10* | *20,65* | | | |
| | 21.500 | 0.813 | HS8 | R | **CR 1950518** |
| | *546,10* | *20,65* | | | |
| **19.750** | 21.750 | 0.625 | HS8 | R | **CR 1975528** |
| *501,65* | *552,45* | *15,88* | | | |
| **20.000** | 21.500 | 0.625 | HS8 | R | **CR 2000238** |
| *508,00* | *546,10* | *15,88* | | | |
| | 21.500 | 0.750 | HS8 | R | **CR 2000258** |
| | *546,10* | *19,05* | | | |
| | 22.000 | 0.625 | HS7 | R | **CR 2000527** |
| | *558,80* | *15,88* | | | |
| | 22.000 | 1.000 | HS7 | R | **CR 2000587** |
| | *558,80* | *25,40* | | | |
| | 22.125 | 0.916 | HS8 | R | **CR 2000648** |
| | *561,98* | *23,27* | | | |
| | 22.125 | 0.916 | HS8 | D | **CR 2000649** |
| | *561,98* | *23,27* | | | |

## Radial shaft seals – HS6, HS7 and HS8 – inch dimensions
$d_1$ **20.500 – 33.125** in.




The table includes only a selection of available sizes. Contact your SKF sales representative for more information.

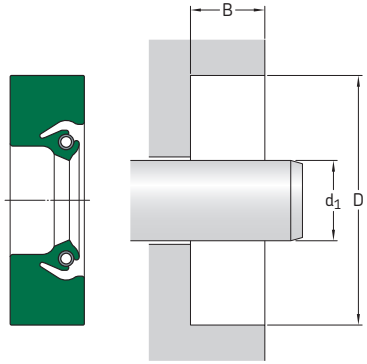
BYC
RODAMIENTOS Y SUMINISTROS
55 5576 5785 • 55 5359 4287
55 8955 7108 • 55 5576 5786
bycventas@hotmail.com
55 3291 5372

Please see **pages 74** to **76** for housing bore requirements.

| **Dimensions** Shaft diameter $d_1$ | Bore diameter D | Bore depth B | **Design** | **Lip material** | **Designation** |
|---|---|---|---|---|---|
| in./*mm* | | | – | – | – |
| **20.500** | 22.500 | 0.875 | HS8 | R | **CR 2050568** |
| *520,70* | *571,50* | *22,23* | | | |
| **20.625** | 22.625 | 0.813 | HS7 | R | **CR 2063557** |
| *523,88* | *574,68* | *20,65* | | | |
| **21.000** | 22.580 | 0.578 | HS8 | R | **CR 2100228** |
| *533,40* | *573,53* | *14,68* | | | |
| | 23.000 | 0.750 | HS8 | R | **CR 2100518** |
| | *584,20* | *19,05* | | | |
| | 23.000 | 0.813 | HS8 | V | **CR 594201** |
| | *584,20* | *20,65* | | | |
| | 23.000 | 0.813 | HS7 | R | **CR 2100557** |
| | *584,20* | *20,65* | | | |
| **22.000** | 23.500 | 0.750 | HS7 | R | **CR 2200257** |
| *558,80* | *596,90* | *19,05* | | | |
| | 23.500 | 0.750 | HS8 | R | **CR 2200218** |
| | *596,90* | *19,05* | | | |
| | 24.000 | 0.813 | HS8 | V | **CR 2200555** |
| | *609,60* | *20,65* | | | |
| | 24.000 | 0.813 | HS8 | D | **CR 2200558** |
| | *609,60* | *20,65* | | | |
| | 24.000 | 0.813 | HS7 | R | **CR 2200557** |
| | *609,60* | *20,65* | | | |
| **22.250** | 24.250 | 0.813 | HS7 | R | **CR 2225557** |
| *565,15* | *615,95* | *20,65* | | | |
| **22.500** | 24.500 | 0.813 | HS7 | R | **CR 2250557** |
| *571,50* | *622,30* | *20,65* | | | |
| **22.638** | 24.638 | 0.750 | HS8 | D | **CR 2263548** |
| *575,00* | *625,80* | *19,00* | | | |
| **22.750** | 24.750 | 0.813 | HS7 | R | **CR 2275557** |
| *577,85* | *628,65* | *20,65* | | | |
| **22.875** | 24.875 | 0.813 | HS7 | R | **CR 2288557** |
| *581,03* | *631,83* | *20,65* | | | |

| Dimensions<br>Shaft diameter $d_1$ | Bore diameter D | Bore depth B | Design | Lip material | Designation |
|---|---|---|---|---|---|
| in./*mm* | | | – | – | – |
| **23.000**<br>*584,20* | 25.000<br>*635,00* | 0.813<br>*20,65* | HS8 | R | **CR 2300558** |
| | 25.000<br>*635,00* | 0.813<br>*20,65* | HS8 | D | **CR 2300559** |
| **23.208**<br>*589,48* | 25.208<br>*640,28* | 0.813<br>*20,65* | HS8 | R | **CR 2320558** |
| **23.750**<br>*603,25* | 25.750<br>*654,05* | 0.813<br>*20,65* | HS8 | R | **CR 2575558** |
| **24.000**<br>*609,60* | 25.500<br>*647,70* | 0.750<br>*19,05* | HS8 | R | **CR 2400258** |
| | 25.500<br>*647,70* | 0.750<br>*19,05* | HS7 | R | **CR 2400257** |
| | 26.000<br>*660,40* | 1.000<br>*25,40* | HS8 | D | **CR 2400598** |
| **24.500**<br>*622,30* | 26.000<br>*660,40* | 0.750<br>*19,05* | HS7 | R | **CR 2450257** |
| **25.000**<br>*635,00* | 26.500<br>*673,10* | 0.750<br>*19,05* | HS7 | D | **CR 2500247** |
| | 27.000<br>*685,80* | 0.813<br>*20,65* | HS7 | R | **CR 2500557** |
| **26.000**<br>*660,40* | 28.125<br>*714,38* | 0.916<br>*23,27* | HS8 | R | **CR 2600648** |
| **26.375**<br>*669,93* | 27.627<br>*701,73* | 0.625<br>*15,88* | HS8 | R | **CR 2637118** |
| **27.000**<br>*685,80* | 29.000<br>*736,60* | 0.813<br>*20,65* | HS8 | R | **CR 2700558** |
| **27.500**<br>*698,50* | 28.750<br>*730,25* | 0.625<br>*15,88* | HS7 | R | **CR 2750117** |
| **28.000**<br>*711,20* | 30.000<br>*762,00* | 0.813<br>*20,65* | HS8 | R | **CR 2800558** |
| **28.875**<br>*733,43* | 30.875<br>*784,23* | 0.813<br>*20,65* | HS7 | R | **CR 2888557** |
| **29.000**<br>*736,60* | 31.000<br>*787,40* | 0.813<br>*20,65* | HS7 | V | **CR 2900556** |
| **29.750**<br>*755,65* | 31.750<br>*806,45* | 0.813<br>*20,65* | HS8 | R | **CR 2975558** |
| **30.000**<br>*762,00* | 31.250<br>*793,75* | 0.625<br>*15,88* | HS8 | R | **CR 3000118** |
| | 32.000<br>*812,80* | 1.000<br>*25,40* | HS8 | H | **CR 3000519** |
| **30.750**<br>*781,05* | 31.750<br>*806,45* | 0.500<br>*12,70* | HS7 | R | **CR 3075017** |
| **32.375**<br>*822,33* | 34.375<br>*873,13* | 1.000<br>*25,40* | HS8 | H | **CR 3237519** |
| **32.500**<br>*825,50* | 34.500<br>*876,30* | 0.916<br>*23,27* | HS7 | R | **CR 3250577** |
| **33.125**<br>*841,38* | 35.125<br>*892,18* | 0.813<br>*20,65* | HS8 | R | **CR 3312558** |

## Radial shaft seals – HS6, HS7 and HS8 – inch dimensions
$d_1$ **34.500 – 171.900** in.




The table includes only a selection of available sizes. Contact your SKF sales representative for more information.

Please see **pages 74** to **76** for housing bore requirements.

| **Dimensions** Shaft diameter $d_1$ | Bore diameter D | Bore depth B | **Design** | **Lip material** | **Designation** |
|---|---|---|---|---|---|
| in./*mm* | | | – | – | – |
| **34.500** *876,30* | 36.500 *927,10* | 0.813 *20,65* | HS7 | R | **CR 3450557** |
| **38.000** *965,20* | 40.000 *1 016,00* | 0.813 *20,65* | HS7 | R | **CR 3800557** |
| **38.500** *977,90* | 40.500 *1 028,70* | 0.813 *20,65* | HS7 | R | **CR 3850557** |
| **40.250** *1 022,35* | 41.750 *1 060,45* | 0.750 *19,05* | HS8 | R | **CR 4025258** |
| **48.000** *1 219,20* | 50.000 *1 270,00* | 0.813 *20,65* | HS8 | R | **CR 4800518** |
| **51.000** *1 295,40* | 53.000 *1 346,20* | 0.813 *20,65* | HS8 | R | **CR 5100558** |
| **53.000** *1 346,20* | 54.875 *1 393,83* | 0.813 *20,65* | HS8 | R | **CR 5300488** |
| **54.000** *1 371,60* | 56.000 *1 422,40* | 0.813 *20,65* | HS7 | R | **CR 5400557** |
| **58.500** *1 485,90* | 60.500 *1 536,70* | 0.813 *20,65* | HS8 | R | **CR 5850518** |
| **60.250** *1 530,35* | 62.313 *1 582,75* | 0.750 *19,05* | HS8 | R | **CR 531572** |
| **62.598** *1 589,99* | 64.598 *1 640,79* | 0.813 *20,65* | HS7 | R | **CR 6259557** |
| **69.000** *1 752,60* | 71.000 *1 803,40* | 0.813 *20,65* | HS8 | R | **CR 6900558** |
| **72.500** *1 841,50* | 74.500 *1 892,30* | 0.813 *20,65* | HS8 | R | **CR 7250558** |
| **75.000** *1 905,00* | 77.000 *1 955,80* | 0.815 *20,70* | HS8 | R | **CR 7500518** |

| Dimensions<br>Shaft diameter<br>$d_1$ | Bore diameter<br>D | Bore depth<br>B | Design | Lip material | Designation |
|---|---|---|---|---|---|
| in./*mm* | | | – | – | – |
| **76.000**<br>*1 930,40* | 78.000<br>*1 981,20* | 0.813<br>*20,65* | HS8 | R | **CR 594316** |
| **81.000**<br>*2 057,40* | 83.000<br>*2 108,20* | 0.813<br>*20,65* | HS8 | R | **CR 8100558** |
| **87.750**<br>*2 228,85* | 89.750<br>*2 279,65* | 0.813<br>*20,65* | HS8 | R | **CR 8775558** |
| **94.750**<br>*2 406,65* | 97.000<br>*2 463,80* | 0.688<br>*17,48* | HS8 | R | **CR 9475658** |
| **98.625**<br>*2 505,08* | 100.625<br>*2 555,88* | 0.813<br>*20,65* | HS8 | R | **CR 9862568** |
| **106.000**<br>*2 692,40* | 107.000<br>*2 717,80* | 0.500<br>*12,70* | HS8 | R | **CR 594926** |
| **125.000**<br>*3 175,00* | 126.250<br>*3 206,75* | 0.625<br>*15,88* | HS8 | R | **CR 595208** |
| **171.900**<br>*4 366,26* | 173.876<br>*4 416,45* | 0.813<br>*20,65* | HS8 | R | **CR 595214** |

BYC RODAMIENTOS Y SUMINISTROS



# Cassette seals


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# Cassette seals

## General

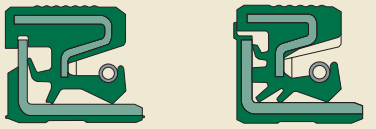
The design of SKF Mudblock cassette seals has been optimized to provide excellent retention of either grease or oil and maximum protection against liquid or solid contaminants (→ **fig. 1**). The seals are made to order to meet the demands of each specific application.

SKF Mudblock seals are widely used in wheel-end applications such as the front and rear axles of, for example:

- tractors
- agricultural machinery
- construction equipment
- forestry equipment
- off-highway trucks

**Fig. 1**

**SKF Mudblock designs for oil lubricated applications**



MUD1 MUD2



MUD4 MUD5

**SKF Mudblock designs for grease lubricated applications**



MUD3 MUD6



MUD7

## Design features

All SKF Mudblock seals are designed with an integrated wear sleeve and a rubber inside diameter, but can have any one of a number of sealing lip and auxiliary lip configurations. The elastomeric material is normally nitrile rubber, but the seals are also available in other compounds including fluoro rubber, hydrogenated nitrile rubber or polyacrylate to meet the demands of different operating conditions. For more information, please refer to paragraph *Sealing lip materials*, starting on **page 30**.

## Testing

SKF conducts tests in climatic cells of the SKF Mudblock seals at global testing facilities in USA, Europe and Asia. The tests include both our own tests and tests according to customer specifications. SKF Mudblock seals are engineered using Finite Element Analysis (FEA) to obtain optimum design solutions. FEA evaluates:

- stress/strain behavior of the sealing lip in deformed condition
- lip contact forces
- lip opening pressure
- displacement of the lips
- assembly simulation of seal and sleeve

## Installation

Proper installation of SKF Mudblock seals is important for optimal functioning of the seals. Please contact SKF for information and support regarding the design of installation tools for SKF Mudblock seals.

# SKF Mudblock seal designs MUD5 and MUD7

SKF Mudblock seal designs MUD5 and MUD7 are a new generation of radial shaft sealing units, specifically developed for heavy-duty applications in harsh environments and tough operating conditions.

SKF Mudblock seals MUD5 (→ **fig. 2**) are designed for oil lubricated applications and provide features including:

- half metal/half rubber outside diameter for reliable seal retention in the bore as well as improved sealing performance
- spring-loaded main lip with SKF WAVE lip design for bi-directional pumping action
- axial and auxiliary radial lips for contaminant exclusion
- integrated wear sleeve, curled for a reliable unitized solution to facilitate installation and prevent damage to the lips during transportation, handling and installation.
- centrifugal flap for exclusion of contaminants
- bumper maintaining the relative position between the seal and the sleeve as well as acting as a barrier against contaminants
- rubber covered inside diameter for high sealing ability and easy installation

SKF Mudblock seals MUD7 (→ **fig. 3**) are designed for use in grease lubricated applications and provide features including:

- half metal/half rubber outside diameter for reliable seal retention in the bore as well as improved sealing performance
- rubber covered inside diameter for improved sealing performance and easy installation
- integrated wear sleeve
- SKF patented lip design for extended bearing service life
- bumper maintaining the relative position between the seal and the sleeve as well as acting as a barrier against contaminants
- auxiliary radial lips for contaminant exclusion

The SKF patented lip design has a special geometry combining both a spring-loaded radial lip and an axial lip. This design enables excess pressure inside the bearing chamber to pass the lip. Thus, the bearing can run cooler, resulting in extended service life.

Fig. 2

**SKF Mudblock seal MUD5**

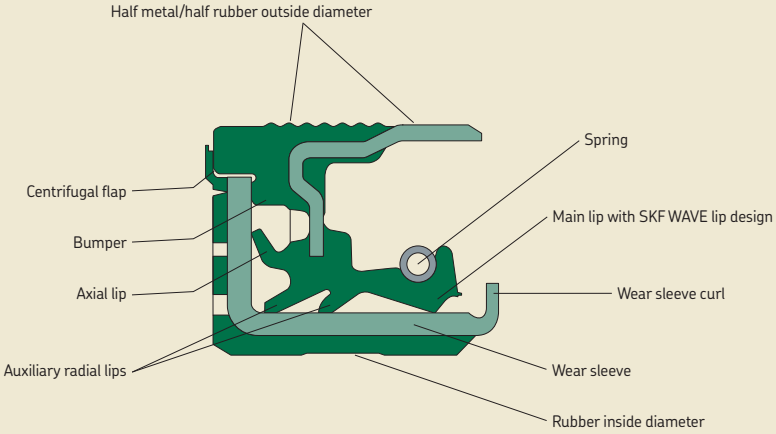
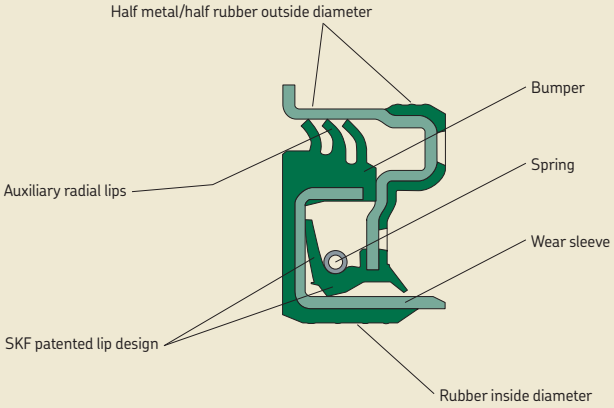



Fig. 3

**SKF Mudblock seal MUD7**





# Wear sleeves

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# Wear sleeves

## General

To seal efficiently, radial shaft seals must run against a smooth, round counterface. If the counterface becomes worn, the seals will no longer be able to fulfil their function, which is to retain lubricant and exclude contaminants.

Typically, the counterface becomes scored when a contaminant particle is caught under the sealing lip and abrades a track as the shaft rotates. As this continues, the seal will enable more particles to pass or get stuck, and seal efficiency deteriorates, eventually leading to malfunction of the component that the seal is meant to protect. To rectify the situation, it is necessary to repair the shaft surface since a seal replacement will not be sufficient. To repair the shaft, it is usually necessary to disassemble the machine in order to either replace the shaft or grind down the counterface until it is again within specification.

SKF SPEEDI-SLEEVE (→ **fig. 1**) is a well-proven solution to overcome problems with worn shafts without having to disassemble the shaft or changing the seal dimensions, while offering an excellent sealing surface. Now, SKF has developed a new generation SKF SPEEDI-SLEEVE with features providing an even further enhanced sealing system performance. Using SKF SPEEDI-SLEEVE, combined with an SKF radial shaft seal, customers will benefit from a more consistent and increased durability of the sealing system. This will enable a more stable maintenance planning with improved predictability of the system service life. SKF SPEEDI-SLEEVE is available for shaft diameters up to approximately 203 mm *(8 in.)*. For larger shaft diameters, SKF offers wear sleeves for heavy industrial applications, LDSLV3 and LDSLV4 (→ **figs. 2** and **3**). See **page 360** for information regarding LDSLV designs.

**Fig. 1**

**SKF SPEEDI-SLEEVE**

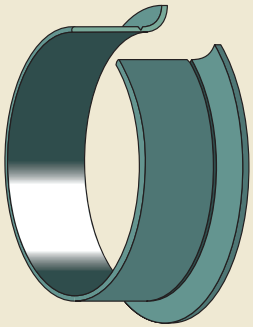
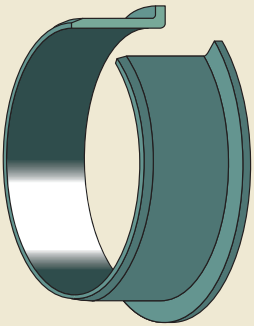


**Fig. 2**

**LDSLV3 wear sleeve**



# SKF SPEEDI-SLEEVE

This thin-walled sleeve [0,28 mm *(0.011 in.)*], developed by SKF, is simply pushed in position over the worn area, providing a counterface surface that is optimized for radial shaft seals.

There is no shaft disassembly or machining involved and costly downtime is minimized. Since the same sized seal as the original can be used, there is no need to search for other seals, or keep a stock of different sizes.

No special equipment is required since the installation tool is supplied with the sleeve. A mallet and a pair of pliers are all that is needed for the installation.

## Features

The new generation SKF SPEEDI-SLEEVE uses a proprietary stainless steel material and manufacturing process, resulting in an optimized seal counterface surface that minimizes wear on both sleeve and sealing lip. The proprietary material provides increased strength and excellent ductility properties of the sleeve. Imperceptible lubricant pockets enable the lubricant to reside on the sleeve and thereby prevent dry running of the sealing lip that otherwise can create excessive wear. The contact surface is wear resistant and machined to minimize directionality (0° ±0,05) with a finish of $R_a$ 0,25 to 0,5 µm *(10 to 20 µin.)*. This is, in fact, a better counterface surface than can often be achieved on a shaft.

SKF SPEEDI-SLEEVE has a removable flange to simplify installation (**→ fig. 4**). The flange can most often be left intact, but in applications where the flange will interfere with other system components, it should be removed so as not to cause friction heat and wear debris. The flange should also be removed in applications where it may reduce the supply of lubricant to the seal. This would reduce the cooling effect of the lubricant, resulting in elevated underlip temperatures and premature ageing of the seal material.

If the flange is to be removed, it should be cut from the outside diameter into the radius in one location prior to installation. The flange can then be twisted and raised up after installation and grasped with a pair of long-nosed pliers and twisted into a coil.

## Size range

The standard size range covers sleeves for shaft diameters from 11,99 to 203,33 mm *(0.472 to 8 in.)*. Depending on production quantities, non-standard sizes can be manufactured. Each sleeve is designed to fit a specific shaft diameter range, usually above and below the nominal shaft diameter. This permits some flexibility to accommodate variations in the actual shaft diameter.



Fig. 3

**LDSLV4 wear sleeve**

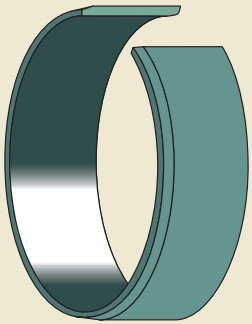
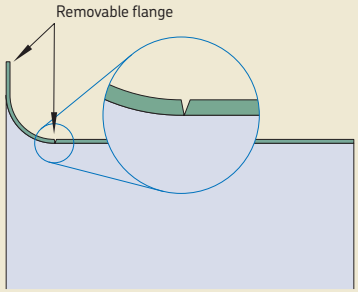


Fig. 4

**SKF SPEEDI-SLEEVE removable flange**



## SKF SPEEDI-SLEEVE Gold

SKF SPEEDI-SLEEVE Gold is an enhanced version of standard SKF SPEEDI-SLEEVE, offering improved resistance to abrasive wear. Designed for applications where extended sealing system life is needed, SKF SPEEDI-SLEEVE Gold bridges the performance gap between the standard sleeve and expensive custom shaft treatments. A thin, metallic coating applied to the base stainless steel imparts a gold colour and significantly increases durability. SKF SPEEDI-SLEEVE Gold is particularly effective in environments where there are abrasive contaminants, especially when combined with a seal manufactured from the SKF fluoro rubber material, SKF Duralife.

The installation procedure is identical to that of standard SKF SPEEDI-SLEEVE and the original seal size can still be used.

### Test results

SKF SPEEDI-SLEEVE Gold has been thoroughly tested to establish its level of abrasion resistance in severely contaminated environments using both coarse and fine sand. The tests were carried out at temperatures up to 110 °C *(225 °F)* and at shaft speeds up to 8,6 m/s *(1 700 ft/min)*. Under these conditions, seals on SKF SPEEDI-SLEEVE Gold ran for an average of 2 500 hours.

In other tests, it was found that continuous salt spray at 35 °C *(95 °F)* produced no trace of corrosion even after 600 hours.

### Size range and availability

SKF SPEEDI-SLEEVE Gold is available in the same sizes as standard SKF SPEEDI-SLEEVE.

## Choosing the right size

To determine the appropriate sleeve size, it is first necessary to clean the shaft carefully. The diameter of an undamaged section of the seal counterface should then be measured on at least three different planes. The arithmetical mean of these measurements determines the size of SKF SPEEDI-SLEEVE. If the value lies within the permissible range listed in the product table for the shaft diameter $d_1$, SKF SPEEDI-SLEEVE will have an adequate tight fit on the shaft and will not require an adhesive.

If no suitable size is listed in the product table, it will be necessary to rework the shaft to an appropriate dimension. This also means that a new seal size will be required. If production quantities are sufficient enough, SKF can provide specially dimensioned SKF SPEEDI-SLEEVE or other wear sleeve solution.

## Installing SKF SPEEDI-SLEEVE

Although installation is simple, it should be done carefully to achieve the best results. As the thin-walled sleeve has an interference fit, any disturbances on the shaft surface may create a similar pattern on the sleeve surface and cause the seal to leak. Therefore, the seal counterface surface of the shaft should be carefully cleaned and any burrs or rough spots filed down prior to installation. Deep wear grooves, scratches or very rough surfaces should be treated with a suitable powdered metal epoxy-type filler. The sleeve must be positioned on the shaft before the filler has hardened.

SKF SPEEDI-SLEEVE must not be installed over keyways, cross holes, splines or threads since this will result in deformation of the sleeve, making it difficult for the seal to follow its new counterface surface as it rotates.

SKF SPEEDI-SLEEVE should never be heated prior to installation. Using heat will cause the sleeve to expand, but when it cools, it may not contract back to its original size, resulting in a loose fit on the shaft.

See **fig. 5** for different SKF SPEEDI-SLEEVE installations.

Fig. 5

**SKF SPEEDI-SLEEVE installations**

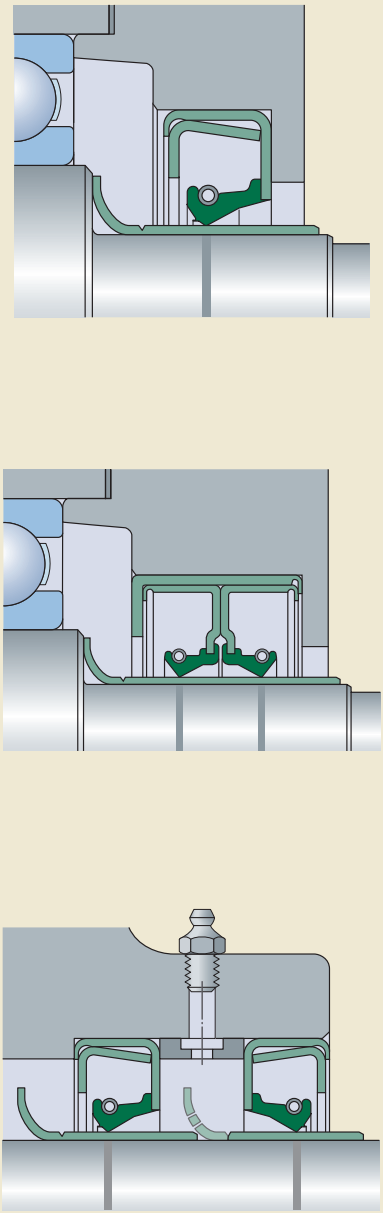


Fig. 6

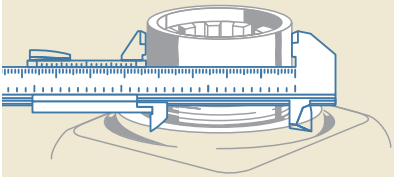


Fig. 7

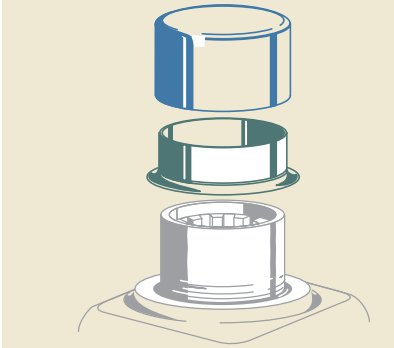
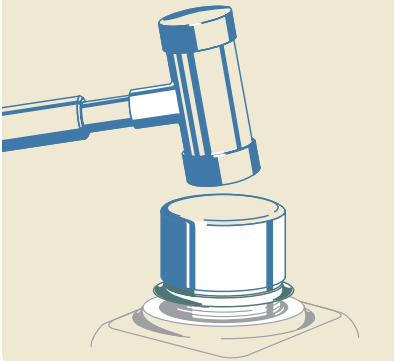


Fig. 8



### Installation procedure

1. Clean the seal counterface surface on the shaft. File down any burrs or rough spots and make sure that the sleeve will not be installed over keyways, cross holes, splines or similar.
2. Measure the diameter on an unworn portion of the shaft where the sleeve will be positioned (→ **fig. 6**). Measure in three positions and average the readings to make sure the shaft is within recommended specifications. If the average diameter is within the range for a given sleeve size, there is sufficient press fit built into the sleeve to prevent it from sliding or spinning without using an adhesive.
3. Determine where the sleeve must be positioned to cover the worn area. Measure to the exact point, or mark directly on the surface. The sleeve must be placed over the worn area, not just bottomed or left flush with the end of the shaft.
4. Shallow wear grooves do not require filling. Optionally, a light layer of a non-hardening sealant can be applied to the inside diameter surface of the sleeve. Clean away sealant that migrates to the shaft or sleeve outside diameter surface.
5. If the shaft is deeply scored, fill the groove with a powdered metal epoxy-type filler. Install the sleeve before the filler hardens, enabling the sleeve to wipe off any excess filler. Clean away any remaining filler from the sleeve outside diameter surface.
6. It should be repeated that heat should never be used to install SKF SPEEDI-SLEEVE.
7. If the flange should be removed after installation, cut it from the outside diameter into the radius in one location. The flange end of the sleeve goes on the shaft first. Then, place the installation tool over the sleeve (→ **fig. 7**).
8. Gently tap the centre of the installation tool until the sleeve covers the worn shaft surface (→ **fig. 8**). If the installation tool is too short, a length of pipe or tubing with a squared-off, burr-free end can be used. Be sure that the inside diameter of the pipe is the same as that of the installation tool. Use care not to scratch the precision ground sleeve's outside diameter.

9 SKF SPEEDI-SLEEVE should always be installed so that the outside edge of the sleeve is seated on the full shaft diameter. It must not rest in or outside the chamfer area since the sharp edge will likely cut the sealing lip during seal installation.
10 If the flange was cut for removal, use a pair of long-nosed pliers to grasp the flange away from the sleeve and twist it into a coil, being careful not to lift the end of the sleeve off the shaft or it will leave a jagged edge. Flange removal must be done with care to avoid damage to the outside diameter of the sleeve.
11 After the sleeve is installed, check again for burrs that could damage the seal.
12 Lubricate the sleeve with the system medium before installing the seal.
13 Proceed with seal installation.

## Removing SKF SPEEDI-SLEEVE

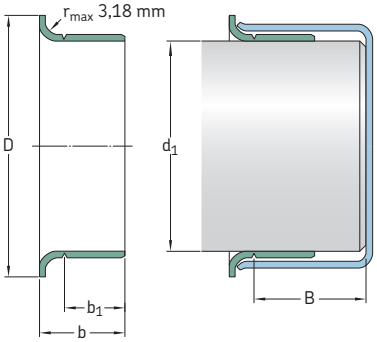
SKF SPEEDI-SLEEVE can be removed by applying heat to the sleeve with an electric heat blower, which will expand it enough to let it slide off the shaft without causing any damage to the shaft.

Alternatively, the sleeve can be removed in any of the following ways, always using care not to damage the shaft surface:

- by relieving the press-fit tension using a small hammer to peen across the full width of the sleeve
- by using a cold chisel to cut through the sleeve
- by using a pair of wire cutters starting at or near the flange and applying a twisting motion

Please note that SKF SPEEDI-SLEEVE cannot be reused.

## SKF SPEEDI-SLEEVE – metric (converted from inch dimensions)
## $d_1$ 11,99 – 35,99 mm




BYC
RODAMIENTOS Y SUMINISTROS
55 5576 5785 • 55 5359 4287
55 8955 7108 • 55 5576 5786
bycventas@hotmail.com
55 3291 5372

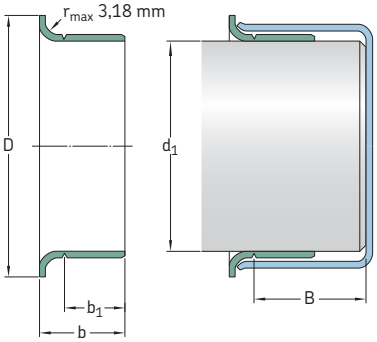
| Shaft diameter range | | Nominal dimensions | | | | | Designation |
|---|---|---|---|---|---|---|---|
| $d_1$ min | max | $d_1$ | D ±1,6 | $b_1$ ±0,8 | b ±0,8 | B[1] | |
| mm | | mm | | | | | – |
| **11,99** | **12,07** | 11,99 | 15,49 | 5,99 | 8,41 | 47,63 | **CR 99049** |
| **12,65** | **12,75** | 12,70 | 15,49 | 6,35 | 8,74 | 50,80 | **CR 99050** |
| **13,89** | **14,00** | 14,00 | 19,05 | 6,35 | 9,93 | 46,51 | **CR 99055** |
| **14,22** | **14,38** | 14,30 | 19,05 | 6,35 | 9,93 | 46,51 | **CR 99056** |
| **14,96** | **15,06** | 15,01 | 19,05 | 5,00 | 8,99 | 47,29 | **CR 99059** |
| **15,82** | **15,93** | 15,88<br>15,88 | 19,05<br>19,05 | 7,95<br>7,95 | 10,31<br>10,31 | 50,80<br>50,80 | **CR 99810**[2]<br>**CR 99062** |
| **15,90** | **16,00** | 16,00 | 18,24 | 7,95 | 11,13 | 50,80 | **CR 99058** |
| **16,94** | **17,04** | 16,99 | 22,23 | 8,00 | 11,00 | 50,80 | **CR 99068** |
| **17,32** | **17,42** | 17,37 | 22,86 | 7,95 | 11,13 | 50,80 | **CR 99060** |
| **17,88** | **18,01** | 18,01 | 24,43 | 8,00 | 11,00 | 46,00 | **CR 99082** |
| **19,00** | **19,10** | 19,05<br>19,05 | 24,00<br>24,00 | 7,95<br>7,95 | 11,13<br>11,13 | 50,80<br>50,80 | **CR 99811**[2]<br>**CR 99076** |
| **19,28** | **19,33** | 19,30 | 23,83 | 7,95 | 11,13 | 50,80 | **CR 99081** |
| **19,81** | **19,91** | 19,84 | 23,75 | 7,95 | 11,13 | 50,80 | **CR 99080** |
| **19,94** | **20,04** | 19,99 | 23,62 | 8,00 | 11,00 | 50,80 | **CR 99078** |
| **20,62** | **20,70** | 20,65 | 30,18 | 9,53 | 14,30 | 76,20 | **CR 99083** |
| **21,77** | **21,87** | 21,82 | 29,34 | 6,35 | 9,53 | 50,80 | **CR 99086** |
| **21,87** | **22,00** | 22,00<br>22,00 | 30,18<br>30,18 | 6,58<br>8,00 | 9,12<br>11,99 | 47,14<br>46,02 | **CR 99084**<br>**CR 99085** |
| **22,17** | **22,28** | 22,23<br>22,23 | 27,79<br>27,79 | 7,95<br>7,95 | 11,13<br>11,13 | 50,80<br>50,80 | **CR 99812**[2]<br>**CR 99087** |

[1] Possible max. distance of the rear groove from the shaft end when the installation tool supplied with the sleeve is used
[2] SKF SPEEDI-SLEEVE Gold

| Shaft diameter range | | Nominal dimensions | | | | | Designation |
|---|---|---|---|---|---|---|---|
| $d_1$ min | max | $d_1$ | D ±1,6 | $b_1$ ±0,8 | b ±0,8 | B[1] | |
| mm | | mm | | | | | – |
| **23,06** | **23,16** | 23,11 | 30,94 | 7,95 | 11,13 | 46,91 | **CR 99860** [2] |
| | | 23,11 | 30,94 | 7,95 | 11,13 | 46,91 | **CR 99091** |
| **23,88** | **24,00** | 24,00 | 28,70 | 7,95 | 11,13 | 50,80 | **CR 99092** |
| **24,54** | **24,64** | 24,61 | 28,70 | 7,95 | 11,13 | 50,80 | **CR 99094** |
| | | 24,61 | 28,70 | 15,88 | 18,26 | 50,80 | **CR 99096** |
| **24,94** | **25,04** | 24,99 | 33,02 | 7,95 | 11,00 | 50,80 | **CR 99813**[2] |
| | | 24,99 | 33,02 | 7,95 | 11,00 | 50,80 | **CR 99098** |
| **25,35** | **25,45** | 25,40 | 30,96 | 7,95 | 11,13 | 50,80 | **CR 99814**[2] |
| | | 25,40 | 30,96 | 7,95 | 11,13 | 50,80 | **CR 99100** |
| **25,88** | **26,01** | 26,01 | 33,35 | 8,00 | 11,99 | 46,05 | **CR 99103** |
| **26,92** | **27,03** | 27,00 | 33,53 | 7,95 | 11,13 | 46,81 | **CR 99815**[2] |
| | | 27,00 | 33,53 | 7,95 | 11,13 | 46,81 | **CR 99106** |
| **27,61** | **27,71** | 27,66 | 35,71 | 7,95 | 11,13 | 15,88 | **CR 99108** |
| **27,94** | **28,04** | 27,99 | 34,93 | 9,53 | 12,70 | 46,81 | **CR 99866**[3] |
| | | 27,99 | 34,93 | 9,53 | 12,70 | 46,81 | **CR 99111** |
| **28,52** | **28,63** | 28,58 | 38,10 | 7,95 | 11,13 | 17,48 | **CR 99816**[2] |
| | | 28,58 | 38,10 | 7,95 | 11,13 | 17,48 | **CR 99112** |
| | | 28,58 | 38,10 | 9,53 | 12,70 | 17,48 | **CR 99116** |
| **29,31** | **29,41** | 29,36 | 34,29 | 9,53 | 12,70 | 17,48 | **CR 99865**[3] |
| | | 29,36 | 34,29 | 9,53 | 12,70 | 17,48 | **CR 99120** |
| **29,79** | **29,92** | 29,85 | 35,56 | 7,95 | 11,13 | 17,48 | **CR 99122** |
| **29,95** | **30,07** | 30,00 | 35,56 | 8,00 | 11,00 | 17,48 | **CR 99114** |
| **30,10** | **30,23** | 30,18 | 35,56 | 7,95 | 11,13 | 17,48 | **CR 99118** |
| **30,89** | **31,04** | 30,96 | 39,70 | 7,95 | 11,00 | 15,88 | **CR 99123** |
| **31,42** | **31,57** | 31,50 | 39,12 | 8,00 | 11,13 | 17,48 | **CR 99141** |
| **31,67** | **31,83** | 31,75 | 38,10 | 7,95 | 11,13 | 17,48 | **CR 99817**[2] |
| | | 31,75 | 38,10 | 7,95 | 11,13 | 17,48 | **CR 99125** |
| **31,93** | **32,08** | 32,00 | 38,10 | 8,00 | 11,13 | 17,48 | **CR 99128** |
| **32,94** | **33,05** | 32,99 | 40,49 | 15,01 | 18,01 | 25,40 | **CR 99121** |
| **33,22** | **33,38** | 33,35 | 40,64 | 6,35 | 9,53 | 20,65 | **CR 99129** |
| **33,27** | **33,43** | 33,35 | 40,49 | 12,70 | 15,88 | 20,65 | **CR 99818**[3] |
| | | 33,35 | 40,49 | 12,70 | 15,88 | 20,65 | **CR 99131** |
| **33,86** | **34,01** | 34,01 | 41,28 | 12,70 | 15,88 | 20,65 | **CR 99134** |
| **34,82** | **34,98** | 34,93 | 41,61 | 7,95 | 11,13 | 20,65 | **CR 99133** |
| | | 34,93 | 41,61 | 12,70 | 15,88 | 20,65 | **CR 99819**[2] |
| | | 34,93 | 41,61 | 12,70 | 15,88 | 20,65 | **CR 99138** |
| **34,93** | **35,08** | 34,93 | 41,61 | 13,00 | 16,00 | 20,65 | **CR 99820** [2] |
| | | 34,93 | 41,61 | 13,00 | 16,00 | 20,65 | **CR 99139** |
| **35,84** | **35,99** | 35,99 | 45,24 | 13,00 | 16,99 | 24,99 | **CR 99146** |

[1] Possible max. distance of the rear groove from the shaft end when the installation tool supplied with the sleeve is used
[2] SKF SPEEDI-SLEEVE Gold
[3] SKF SPEEDI-SLEEVE Gold – contact SKF for availability

## SKF SPEEDI-SLEEVE – metric (converted from inch dimensions)
## $d_1$ 36,37 – 54,10 mm



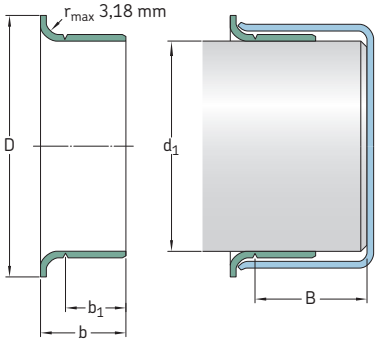

| Shaft diameter range | | Nominal dimensions | | | | | Designation |
|---|---|---|---|---|---|---|---|
| $d_1$ min | max | $d_1$ | D ±1,6 | $b_1$ ±0,8 | b ±0,8 | B[1] | |
| mm | | mm | | | | | – |
| **36,37** | **36,53** | 36,53 | 45,24 | 14,30 | 17,48 | 25,81 | **CR 99821**[2] |
| | | 36,53 | 45,24 | 14,30 | 17,48 | 25,81 | **CR 99143** |
| **36,45** | **36,60** | 36,53 | 45,24 | 9,53 | 12,70 | 25,81 | **CR 99144** |
| **37,85** | **38,00** | 38,00 | 45,24 | 13,00 | 16,99 | 24,99 | **CR 99147** |
| **38,02** | **38,18** | 38,10 | 45,24 | 9,53 | 12,70 | 25,81 | **CR 99823**[2] |
| | | 38,10 | 45,24 | 9,53 | 12,70 | 25,81 | **CR 99150** |
| | | 38,10 | 45,24 | 14,30 | 17,48 | 25,81 | **CR 99822**[2] |
| | | 38,10 | 45,24 | 14,30 | 17,48 | 25,81 | **CR 99149** |
| **38,61** | **38,76** | 38,68 | 47,22 | 11,13 | 14,30 | 25,81 | **CR 99152** |
| **39,34** | **39,50** | 39,42 | 47,22 | 11,13 | 14,30 | 25,81 | **CR 99155** |
| **39,60** | **39,75** | 39,67 | 47,22 | 14,30 | 17,48 | 25,81 | **CR 99824**[2] |
| | | 39,67 | 47,22 | 14,30 | 17,48 | 25,81 | **CR 99156** |
| **39,78** | **39,93** | 39,85 | 47,22 | 15,88 | 19,05 | 25,81 | **CR 99159** |
| **39,85** | **40,01** | 40,01 | 46,99 | 9,91 | 12,93 | 25,40 | **CR 99153** |
| **39,93** | **40,08** | 40,08 | 46,99 | 13,00 | 16,00 | 25,98 | **CR 99825**[2] |
| | | 40,08 | 46,99 | 13,00 | 16,00 | 25,98 | **CR 99157** |
| **40,69** | **40,84** | 40,77 | 49,23 | 12,70 | 16,28 | 25,40 | **CR 99160** |
| **40,84** | **41,00** | 41,00 | 49,23 | 12,70 | 15,88 | 25,81 | **CR 99163** |
| **41,20** | **41,35** | 41,28 | 47,63 | 7,95 | 11,13 | 25,81 | **CR 99161** |
| | | 41,28 | 47,63 | 14,30 | 17,48 | 20,65 | **CR 99826**[2] |
| | | 41,28 | 47,63 | 14,30 | 17,48 | 20,65 | **CR 99162** |
| **41,83** | **42,01** | 41,91 | 53,01 | 11,30 | 14,50 | 21,49 | **CR 99166** |
| | | 41,91 | 53,01 | 14,30 | 17,50 | 21,01 | **CR 99169** |
| | | 42,01 | 53,01 | 14,30 | 17,50 | 21,01 | **CR 99873**[3] |

[1] Possible max. distance of the rear groove from the shaft end when the installation tool supplied with the sleeve is used
[2] SKF SPEEDI-SLEEVE Gold
[3] SKF SPEEDI-SLEEVE Gold – contact SKF for availability

| Shaft diameter range | | Nominal dimensions | | | | | Designation |
|---|---|---|---|---|---|---|---|
| $d_1$ min | max | $d_1$ | D ±1,6 | $b_1$ ±0,8 | b ±0,8 | B[1] | |
| mm | | mm | | | | | – |
| **41,99** | **42,14** | 42,06 | 53,01 | 13,97 | 17,50 | 21,01 | **CR 99165** |
| **42,77** | **42,93** | 42,88 | 48,41 | 14,30 | 17,48 | 22,23 | **CR 99168** |
| **42,80** | **42,95** | 42,88 | 48,41 | 7,95 | 11,13 | 22,23 | **CR 99167** |
| **42,85** | **43,00** | 43,00 | 48,41 | 12,70 | 15,88 | 21,44 | **CR 99182** |
| **43,56** | **43,71** | 43,66 | 51,59 | 14,30 | 17,48 | 20,65 | **CR 99171** |
| **44,09** | **44,25** | 44,17 | 52,40 | 9,53 | 12,70 | 20,65 | **CR 99170** |
| **44,37** | **44,53** | 44,45 | 52,20 | 9,53 | 12,70 | 20,65 | **CR 99172** |
| | | 44,45 | 52,40 | 13,49 | 15,88 | 22,30 | **CR 99180** |
| | | 44,45 | 52,40 | 14,30 | 17,48 | 20,65 | **CR 99827**[2] |
| | | 44,45 | 52,40 | 14,30 | 17,48 | 20,65 | **CR 99174** |
| | | 44,45 | 52,40 | 19,05 | 22,23 | 20,65 | **CR 99828**[2] |
| | | 44,45 | 52,40 | 19,05 | 22,23 | 20,65 | **CR 99175** |
| **44,73** | **44,88** | 44,86 | 52,40 | 14,30 | 17,48 | 20,65 | **CR 99829**[2] |
| | | 44,86 | 52,40 | 14,30 | 17,48 | 20,65 | **CR 99176** |
| **44,93** | **45,09** | 45,01 | 53,01 | 14,00 | 16,99 | 20,62 | **CR 99830**[2] |
| | | 45,01 | 53,01 | 14,00 | 16,99 | 20,62 | **CR 99177** |
| **45,16** | **45,31** | 45,24 | 53,98 | 16,94 | 20,32 | 26,97 | **CR 99179** |
| **45,95** | **46,10** | 46,05 | 53,09 | 14,30 | 17,48 | 25,40 | **CR 99831**[3] |
| | | 46,05 | 53,09 | 14,30 | 17,48 | 25,40 | **CR 99181** |
| **47,17** | **47,32** | 47,22 | 54,76 | 14,30 | 17,48 | 25,40 | **CR 99185** |
| **47,40** | **47,55** | 47,45 | 55,58 | 22,58 | 26,04 | 25,40 | **CR 99186** |
| **47,55** | **47,70** | 47,63 | 55,96 | 4,45 | 7,49 | 18,90 | **CR 99190** |
| | | 47,63 | 55,96 | 7,49 | 10,54 | 18,90 | **CR 99188** |
| | | 47,63 | 55,96 | 9,53 | 13,11 | 26,67 | **CR 99184** |
| | | 47,63 | 55,96 | 14,30 | 17,48 | 25,40 | **CR 99832**[2] |
| | | 47,63 | 55,96 | 14,30 | 17,48 | 25,40 | **CR 99187** |
| **47,93** | **48,08** | 48,03 | 56,01 | 14,00 | 16,97 | 24,99 | **CR 99189** |
| **48,49** | **48,64** | 48,56 | 56,36 | 9,53 | 12,70 | 25,40 | **CR 99192** |
| **49,12** | **49,28** | 49,23 | 56,36 | 14,30 | 17,48 | 25,40 | **CR 99833**[2] |
| | | 49,23 | 56,36 | 14,30 | 17,48 | 25,40 | **CR 99193** |
| **49,91** | **50,06** | 50,01 | 57,00 | 14,00 | 16,97 | 24,99 | **CR 99196** |
| **50,22** | **50,37** | 50,29 | 58,75 | 14,30 | 17,88 | 26,67 | **CR 99198** |
| **50,72** | **50,88** | 50,80 | 61,11 | 14,30 | 17,48 | 25,55 | **CR 99834**[2] |
| | | 50,80 | 61,11 | 14,30 | 17,48 | 25,40 | **CR 99199** |
| | | 50,80 | 61,11 | 22,23 | 25,40 | 25,40 | **CR 99835**[2] |
| | | 50,80 | 61,11 | 22,23 | 25,40 | 25,40 | **CR 99200** |
| **51,82** | **51,99** | 51,99 | 62,71 | 12,70 | 15,88 | 34,52 | **CR 99204** |
| **52,25** | **52,40** | 52,40 | 62,71 | 19,84 | 23,83 | 34,93 | **CR 99205** |
| **53,92** | **54,05** | 53,98 | 61,52 | 12,70 | 19,05 | 32,54 | **CR 99210** |
| **53,95** | **54,10** | 53,98 | 61,52 | 19,84 | 23,83 | 34,93 | **CR 99836**[2] |
| | | 53,98 | 61,52 | 19,84 | 23,83 | 34,93 | **CR 99212** |

[1] Possible max. distance of the rear groove from the shaft end when the installation tool supplied with the sleeve is used
[2] SKF SPEEDI-SLEEVE Gold
[3] SKF SPEEDI-SLEEVE Gold – contact SKF for availability

## SKF SPEEDI-SLEEVE – metric (converted from inch dimensions)
## $d_1$ 54,91 – 74,75 mm



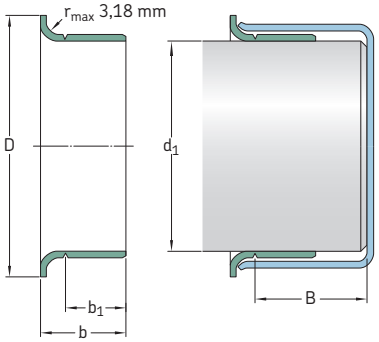

| Shaft diameter range | | Nominal dimensions | | | | | Designation |
|---|---|---|---|---|---|---|---|
| $d_1$ min | max | $d_1$ | D ±1,6 | $b_1$ ±0,8 | b ±0,8 | B[1] | |
| mm | | mm | | | | | – |
| **54,91** | **55,07** | 54,99 | 62,00 | 19,99 | 22,99 | 31,75 | **CR 99863**[2] |
| | | 54,99 | 62,00 | 19,99 | 22,99 | 31,75 | **CR 99215** |
| **55,52** | **55,68** | 55,58 | 63,50 | 19,84 | 23,83 | 33,35 | **CR 99218** |
| **55,83** | **56,01** | 56,01 | 64,29 | 12,70 | 15,88 | 33,35 | **CR 99220** |
| | | 56,01 | 64,29 | 19,79 | 23,77 | 80,01 | **CR 99224** |
| **56,57** | **56,72** | 56,64 | 64,29 | 12,70 | 15,88 | 33,35 | **CR 99861**[3] |
| | | 56,64 | 64,29 | 12,70 | 15,88 | 33,35 | **CR 99229** |
| | | 56,64 | 64,29 | 19,84 | 23,01 | 31,75 | **CR 99230** |
| **56,82** | **56,97** | 56,90 | 65,10 | 19,41 | 22,86 | 31,75 | **CR 99226** |
| **57,12** | **57,28** | 57,15 | 64,29 | 7,95 | 11,13 | 33,35 | **CR 99838**[3] |
| | | 57,15 | 64,29 | 7,95 | 11,13 | 33,35 | **CR 99227** |
| | | 57,15 | 64,29 | 19,84 | 23,83 | 33,35 | **CR 99837**[2] |
| | | 57,15 | 64,29 | 19,84 | 23,83 | 33,35 | **CR 99225** |
| **57,91** | **58,06** | 57,99 | 65,99 | 19,99 | 23,83 | 34,93 | **CR 99219** |
| **58,65** | **58,80** | 58,75 | 68,28 | 19,84 | 23,83 | 34,93 | **CR 99231** |
| **59,11** | **59,26** | 59,13 | 69,85 | 19,05 | 22,23 | 38,10 | **CR 99233** |
| **59,92** | **60,07** | 59,99 | 70,74 | 9,40 | 11,43 | 37,36 | **CR 99241** |
| | | 59,99 | 70,74 | 19,99 | 22,99 | 34,93 | **CR 99869**[3] |
| | | 59,99 | 70,74 | 19,99 | 22,99 | 34,93 | **CR 99235** |
| **60,25** | **60,40** | 60,33 | 69,85 | 15,09 | 19,05 | 34,93 | **CR 99238** |
| **60,30** | **60,45** | 60,33 | 69,85 | 13,36 | 17,35 | 34,93 | **CR 99240** |
| | | 60,33 | 69,85 | 19,84 | 23,83 | 34,93 | **CR 99839**[2] |
| | | 60,33 | 69,85 | 19,84 | 23,83 | 34,93 | **CR 99237** |
| **61,82** | **62,00** | 61,93 | 71,83 | 19,84 | 23,83 | 35,38 | **CR 99243** |
| | | 62,00 | 71,83 | 12,70 | 15,88 | 36,20 | **CR 99244** |

[1] Possible max. distance of the rear groove from the shaft end when the installation tool supplied with the sleeve is used
[2] SKF SPEEDI-SLEEVE Gold
[3] SKF SPEEDI-SLEEVE Gold – contact SKF for availability

| Shaft diameter range | | Nominal dimensions | | | | | Designation |
|---|---|---|---|---|---|---|---|
| $d_1$ min | max | $d_1$ | D ±1,6 | $b_1$ ±0,8 | b ±0,8 | B[1] | |
| mm | | mm | | | | | – |
| **61,85** | **62,00** | 61,93 | 71,83 | 12,70 | 15,88 | 36,20 | **CR 99242** |
| **63,22** | **63,37** | 63,30 | 73,03 | 19,84 | 23,83 | 35,38 | **CR 99249** |
| **63,42** | **63,58** | 63,50 | 71,63 | 14,10 | 16,51 | 22,61 | **CR 99253** |
| **63,50** | **63,65** | 63,50 | 71,83 | 12,70 | 16,66 | 35,38 | **CR 99248** |
| | | 63,50 | 71,63 | 19,84 | 23,83 | 34,93 | **CR 99840**[2] |
| | | 63,50 | 71,63 | 19,84 | 23,83 | 34,93 | **CR 99250** |
| **63,75** | **63,91** | 63,91 | 71,83 | 19,84 | 23,01 | 36,53 | **CR 99251** |
| **64,92** | **65,07** | 65,00 | 72,39 | 19,99 | 22,99 | 34,93 | **CR 99841**[2] |
| | | 65,00 | 72,39 | 19,99 | 22,99 | 34,93 | **CR 99254** |
| **65,02** | **65,18** | 65,10 | 73,43 | 19,84 | 23,83 | 34,93 | **CR 99256** |
| **65,91** | **66,07** | 65,99 | 75,95 | 19,84 | 23,83 | 31,75 | **CR 99259** |
| **66,50** | **66,65** | 66,57 | 77,39 | 19,84 | 23,83 | 34,93 | **CR 99261** |
| **66,57** | **66,73** | 66,68 | 77,39 | 19,84 | 23,01 | 34,93 | **CR 99264** |
| **66,60** | **66,75** | 66,68 | 77,39 | 12,70 | 15,88 | 34,93 | **CR 99260** |
| **66,68** | **66,83** | 66,68 | 77,39 | 19,84 | 23,83 | 34,93 | **CR 99842**[2] |
| | | 66,68 | 77,39 | 19,84 | 23,83 | 34,93 | **CR 99262** |
| **67,82** | **68,00** | 68,00 | 79,38 | 19,05 | 22,23 | 42,88 | **CR 99266** |
| **69,27** | **69,42** | 69,34 | 79,38 | 19,84 | 23,01 | 33,35 | **CR 99268** |
| **69,60** | **69,75** | 69,67 | 77,85 | 19,84 | 23,83 | 31,75 | **CR 99273** |
| **69,72** | **69,88** | 69,85 | 79,38 | 19,84 | 23,83 | 31,75 | **CR 99843**[2] |
| | | 69,85 | 79,38 | 19,84 | 23,83 | 31,75 | **CR 99274** |
| **69,77** | **69,93** | 69,85 | 78,11 | 36,53 | 41,28 | 41,28 | **CR 99267** |
| **69,85** | **70,00** | 69,85 | 79,38 | 10,31 | 14,30 | 31,75 | **CR 99272** |
| | | 69,85 | 79,38 | 19,84 | 23,83 | 31,75 | **CR 99844**[2] |
| | | 69,85 | 79,38 | 19,84 | 23,83 | 31,75 | **CR 99275** |
| | | 69,85 | 79,38 | 28,58 | 31,75 | 33,32 | **CR 99269** |
| **69,93** | **70,08** | 70,00 | 79,38 | 19,99 | 24,00 | 31,75 | **CR 99276** |
| **71,35** | **71,50** | 71,45 | 80,98 | 15,09 | 17,48 | 31,75 | **CR 99281** |
| **71,83** | **72,01** | 72,01 | 81,92 | 19,05 | 22,23 | 34,11 | **CR 99870**[3] |
| | | 72,01 | 81,92 | 19,05 | 22,23 | 34,11 | **CR 99284** |
| **72,09** | **72,24** | 72,09 | 81,92 | 12,70 | 16,66 | 31,75 | **CR 99845**[2] |
| | | 72,09 | 81,92 | 12,70 | 16,66 | 31,75 | **CR 99282** |
| **72,80** | **72,95** | 72,87 | 80,98 | 19,84 | 23,83 | 31,75 | **CR 99286** |
| **72,97** | **73,13** | 73,03 | 81,76 | 19,84 | 23,83 | 31,75 | **CR 99846**[2] |
| | | 73,03 | 81,76 | 19,84 | 23,83 | 31,75 | **CR 99287** |
| **74,60** | **74,75** | 74,63 | 84,94 | 12,70 | 16,28 | 33,81 | **CR 99290** |
| | | 74,63 | 84,94 | 19,84 | 23,83 | 33,35 | **CR 99847**[2] |
| | | 74,68 | 84,94 | 19,84 | 23,83 | 33,35 | **CR 99293** |

[1] Possible max. distance of the rear groove from the shaft end when the installation tool supplied with the sleeve is used
[2] SKF SPEEDI-SLEEVE Gold
[3] SKF SPEEDI-SLEEVE Gold – contact SKF for availability

## **SKF SPEEDI-SLEEVE – metric** (converted from inch dimensions)
## $d_1$ **74,93 – 98,53** mm



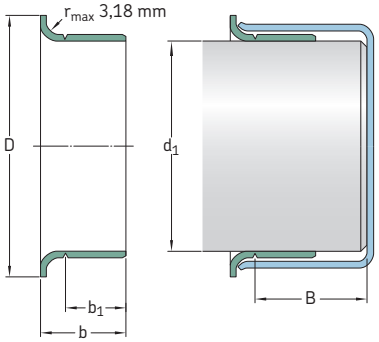

| Shaft diameter range | | Nominal dimensions | | | | | Designation |
|---|---|---|---|---|---|---|---|
| $d_1$ min | max | $d_1$ | D ±1,6 | $b_1$ ±0,8 | b ±0,8 | B[1] | |
| mm | | mm | | | | | – |
| **74,93** | **75,08** | 75,01 | 83,13 | 15,09 | 17,53 | 27,51 | **CR 99289** |
| | | 75,01 | 83,95 | 22,00 | 26,01 | 33,35 | **CR 99875**[3] |
| | | 75,01 | 83,95 | 22,00 | 26,01 | 33,35 | **CR 99294** |
| **75,49** | **75,59** | 75,54 | 82,17 | 20,65 | 25,40 | 31,75 | **CR 99292** |
| **75,95** | **76,10** | 76,02 | 85,32 | 12,29 | 15,88 | 33,81 | **CR 99291** |
| | | 76,02 | 85,32 | 14,30 | 17,48 | 34,93 | **CR 99298** |
| | | 76,02 | 85,09 | 20,65 | 25,40 | 32,54 | **CR 99299** |
| **76,12** | **76,28** | 76,20 | 82,30 | 20,65 | 23,83 | 34,93 | **CR 99296** |
| **76,20** | **76,35** | 76,20 | 84,96 | 15,88 | 20,65 | 32,51 | **CR 99303** |
| | | 76,20 | 82,17 | 20,65 | 25,40 | 32,54 | **CR 99848**[2] |
| | | 76,20 | 82,17 | 20,65 | 25,40 | 32,54 | **CR 99300** |
| **76,40** | **76,56** | 76,48 | 85,22 | 12,70 | 15,88 | 50,80 | **CR 99301** |
| **77,83** | **78,00** | 78,00 | 88,09 | 19,05 | 22,23 | 52,22 | **CR 99306** |
| **79,25** | **79,40** | 79,38 | 89,69 | 17,48 | 20,65 | 50,80 | **CR 99311** |
| | | 79,38 | 89,69 | 20,65 | 25,40 | 50,80 | **CR 99849**[2] |
| | | 79,38 | 89,69 | 20,65 | 25,40 | 50,80 | **CR 99312** |
| **79,35** | **79,55** | 79,38 | 89,54 | 14,00 | 18,01 | 51,59 | **CR 99307** |
| **79,81** | **80,01** | 80,01 | 89,92 | 19,05 | 22,50 | 34,93 | **CR 99313** |
| **79,91** | **80,09** | 80,01 | 89,99 | 11,00 | 15,01 | 34,93 | **CR 99317** |
| | | 80,01 | 89,99 | 21,01 | 24,00 | 34,93 | **CR 99315** |
| **81,92** | **82,07** | 81,99 | 91,06 | 16,76 | 21,54 | 44,45 | **CR 99328** |
| **82,47** | **82,63** | 82,55 | 91,29 | 20,65 | 25,40 | 34,93 | **CR 99322** |

[1] Possible max. distance of the rear groove from the shaft end when the installation tool supplied with the sleeve is used
[2] SKF SPEEDI-SLEEVE Gold
[3] SKF SPEEDI-SLEEVE Gold – contact SKF for availability

| Shaft diameter range | | Nominal dimensions | | | | | Designation |
|---|---|---|---|---|---|---|---|
| $d_1$ min | max | $d_1$ | D ±1,6 | $b_1$ ±0,8 | b ±0,8 | B[1] | |
| mm | | mm | | | | | – |
| **82,55** | **82,70** | 82,55 | 90,81 | 15,11 | 18,26 | 34,93 | **CR 99850**[2] |
| | | 82,55 | 90,81 | 15,11 | 18,26 | 34,93 | **CR 99324** |
| | | 82,55 | 91,06 | 17,48 | 22,23 | 31,75 | **CR 99326** |
| | | 82,55 | 91,06 | 20,65 | 25,40 | 34,93 | **CR 99851**[2] |
| | | 82,55 | 91,06 | 20,65 | 25,40 | 34,93 | **CR 99325** |
| **84,00** | **84,15** | 84,07 | 93,68 | 20,65 | 25,40 | 34,93 | **CR 99331** |
| **84,76** | **85,01** | 84,89 | 93,98 | 16,99 | 21,01 | 35,00 | **CR 99332** |
| | | 84,89 | 93,98 | 21,01 | 24,99 | 35,00 | **CR 99872**[2] |
| | | 84,89 | 93,98 | 21,01 | 24,99 | 35,00 | **CR 99333** |
| **84,79** | **85,01** | 85,01 | 90,93 | 10,13 | 12,67 | 36,35 | **CR 99334** |
| **85,67** | **85,83** | 85,73 | 93,68 | 9,53 | 12,70 | 35,81 | **CR 99338** |
| | | 85,73 | 93,85 | 20,65 | 25,40 | 34,93 | **CR 99337** |
| **87,25** | **87,40** | 87,33 | 97,64 | 19,84 | 23,01 | 35,71 | **CR 99339** |
| **87,80** | **88,00** | 88,00 | 95,28 | 29,21 | 34,27 | 42,50 | **CR 99481** |
| **88,32** | **88,47** | 88,39 | 97,41 | 19,84 | 23,01 | 35,71 | **CR 99340** |
| **88,82** | **88,98** | 88,90 | 97,64 | 15,88 | 20,65 | 34,21 | **CR 99346** |
| **88,90** | **89,05** | 88,90 | 97,16 | 7,95 | 12,70 | 34,21 | **CR 99347** |
| | | 88,90 | 97,64 | 20,65 | 25,40 | 34,21 | **CR 99852**[2] |
| | | 88,90 | 97,64 | 20,65 | 25,40 | 34,21 | **CR 99350** |
| **88,93** | **89,08** | 89,00 | 97,64 | 15,88 | 20,65 | 34,24 | **CR 99349** |
| **89,92** | **90,07** | 89,99 | 101,60 | 11,13 | 13,67 | 46,05 | **CR 99352** |
| | | 89,99 | 101,60 | 13,36 | 16,94 | 44,45 | **CR 99353** |
| | | 89,99 | 101,60 | 18,03 | 23,01 | 46,05 | **CR 99351** |
| | | 89,99 | 101,60 | 23,01 | 27,99 | 44,45 | **CR 99354** |
| **90,42** | **90,58** | 90,50 | 99,06 | 20,65 | 25,40 | 44,45 | **CR 99356** |
| **91,90** | **92,05** | 91,97 | 102,39 | 20,65 | 25,40 | 44,45 | **CR 99360** |
| **92,02** | **92,18** | 92,08 | 102,24 | 12,70 | 15,88 | 44,45 | **CR 99363** |
| | | 92,08 | 102,39 | 20,65 | 25,40 | 44,45 | **CR 99362** |
| **93,57** | **93,73** | 93,68 | 102,39 | 7,95 | 11,13 | 22,23 | **CR 99368** |
| **93,60** | **93,75** | 93,68 | 102,24 | 20,65 | 23,83 | 45,72 | **CR 99365** |
| **94,67** | **94,82** | 94,74 | 102,01 | 11,91 | 15,09 | 45,72 | **CR 99359** |
| | | 94,74 | 102,24 | 19,84 | 23,01 | 45,72 | **CR 99366** |
| **94,92** | **95,07** | 95,00 | 102,24 | 21,01 | 24,00 | 45,72 | **CR 99369** |
| **95,00** | **95,15** | 95,07 | 102,39 | 8,74 | 12,70 | 45,72 | **CR 99374** |
| | | 95,07 | 102,49 | 11,91 | 15,09 | 45,72 | **CR 99364** |
| **95,15** | **95,30** | 95,22 | 102,24 | 14,30 | 17,48 | 45,72 | **CR 99376** |
| **95,25** | **95,40** | 95,25 | 102,11 | 17,48 | 22,23 | 45,72 | **CR 99853**[2][3] |
| | | 95,33 | 102,24 | 8,74 | 12,70 | 45,72 | **CR 99367** |
| | | 95,33 | 102,11 | 17,48 | 22,23 | 45,72 | **CR 99372**[2] |
| **98,25** | **98,40** | 98,32 | 106,30 | 20,65 | 25,40 | 47,63 | **CR 99386** |
| **98,37** | **98,53** | 98,43 | 107,16 | 20,65 | 25,40 | 47,63 | **CR 99387** |

[1] Possible max. distance of the rear groove from the shaft end when the installation tool supplied with the sleeve is used
[2] SKF SPEEDI-SLEEVE Gold
[3] Renamed CR 99372

## **SKF SPEEDI-SLEEVE – metric** (converted from inch dimensions)
## $d_1$ **99,95 – 152,48** mm



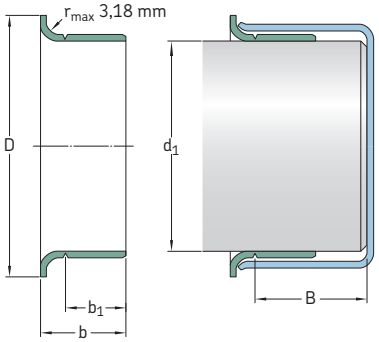

| Shaft diameter range | | Nominal dimensions | | | | | Designation |
|---|---|---|---|---|---|---|---|
| $d_1$ min | max | $d_1$ | D ±1,6 | $b_1$ ±0,8 | b ±0,8 | B[1] | |
| mm | | mm | | | | | – |
| **99,95** | **100,10** | 100,03 | 109,55 | 20,65 | 25,40 | 52,07 | **CR 99854**[2] |
| | | 100,03 | 109,55 | 20,65 | 25,40 | 52,07 | **CR 99393** |
| **101,55** | **101,75** | 101,60 | 111,13 | 12,70 | 15,88 | 52,48 | **CR 99401** |
| | | 101,60 | 111,13 | 15,24 | 18,42 | 52,07 | **CR 99395** |
| | | 101,60 | 111,13 | 16,51 | 19,69 | 34,93 | **CR 99400** |
| | | 101,60 | 111,13 | 20,65 | 25,40 | 52,07 | **CR 99855**[2] |
| | | 101,60 | 111,13 | 20,65 | 25,40 | 52,07 | **CR 99399** |
| **103,89** | **104,09** | 103,99 | 112,73 | 19,99 | 24,00 | 35,99 | **CR 99409** |
| **104,70** | **104,90** | 104,78 | 113,54 | 20,65 | 25,40 | 34,93 | **CR 99412** |
| **104,90** | **105,11** | 105,00 | 113,54 | 19,99 | 23,19 | 35,00 | **CR 99413** |
| **106,25** | **106,45** | 106,38 | 114,30 | 20,65 | 25,40 | 34,93 | **CR 99418** |
| **107,34** | **107,54** | 107,54 | 117,09 | 19,84 | 23,01 | 36,53 | **CR 99423** |
| **107,90** | **108,10** | 107,95 | 117,09 | 20,65 | 25,40 | 36,53 | **CR 99424** |
| **109,78** | **110,01** | 110,01 | 124,99 | 11,38 | 14,96 | 32,94 | **CR 99434** |
| **109,91** | **110,11** | 109,93 | 124,99 | 12,93 | 16,51 | 31,75 | **CR 99435** |
| **111,00** | **111,20** | 111,13 | 120,65 | 20,65 | 25,40 | 41,91 | **CR 99437** |
| **111,79** | **111,99** | 111,99 | 120,65 | 19,05 | 22,50 | 33,02 | **CR 99438** |
| **112,62** | **112,83** | 112,73 | 122,25 | 25,40 | 29,01 | 33,35 | **CR 99439** |
| **114,20** | **114,40** | 114,30 | 123,19 | 20,65 | 25,40 | 31,75 | **CR 99856**[2] |
| | | 114,30 | 124,46 | 20,65 | 25,40 | 31,75 | **CR 99450** |
| **114,88** | **115,09** | 115,01 | 127,00 | 20,65 | 23,83 | 31,75 | **CR 99452** |
| **117,37** | **117,58** | 117,48 | 127,00 | 11,13 | 15,88 | 34,93 | **CR 99465** |
| | | 117,48 | 128,60 | 25,40 | 31,75 | 34,93 | **CR 99463** |

[1] Possible max. distance of the rear groove from the shaft end when the installation tool supplied with the sleeve is used
[2] SKF SPEEDI-SLEEVE Gold

| Shaft diameter range | | Nominal dimensions | | | | | Designation |
|---|---|---|---|---|---|---|---|
| $d_1$ min | max | $d_1$ | D ±1,6 | $b_1$ ±0,8 | b ±0,8 | B[1] | |
| mm | | mm | | | | | – |
| **119,00** | **119,20** | 119,08 | 128,60 | 20,65 | 25,40 | 34,93 | **CR 99468** |
| **119,89** | **120,09** | 119,99 | 129,79 | 8,00 | 11,00 | 33,60 | **CR 99471** |
| | | 119,99 | 129,79 | 19,99 | 24,99 | 32,00 | **CR 99473** |
| **120,55** | **120,75** | 120,65 | 127,00 | 12,70 | 19,05 | 38,10 | **CR 99475** |
| **121,89** | **122,10** | 122,00 | 131,50 | 19,99 | 24,00 | 32,00 | **CR 99472** |
| **122,91** | **123,11** | 123,01 | 132,82 | 19,99 | 24,99 | 31,60 | **CR 99484** |
| **123,72** | **123,93** | 123,83 | 133,35 | 15,88 | 19,05 | 36,53 | **CR 99487** |
| **124,89** | **125,10** | 124,99 | 137,16 | 10,01 | 14,00 | 36,53 | **CR 99490** |
| | | 124,99 | 137,16 | 26,01 | 32,00 | 36,53 | **CR 99492** |
| **126,95** | **127,15** | 127,00 | 137,16 | 13,72 | 17,30 | 36,53 | **CR 99501** |
| | | 127,00 | 137,16 | 17,48 | 22,23 | 36,53 | **CR 99857**[2] |
| | | 127,00 | 137,16 | 17,48 | 22,23 | 36,53 | **CR 99498** |
| | | 127,00 | 136,91 | 20,65 | 25,40 | 36,53 | **CR 99858**[2] |
| | | 127,00 | 136,91 | 20,65 | 25,40 | 36,53 | **CR 99499** |
| **127,80** | **128,00** | 128,00 | 135,26 | 29,21 | 34,27 | 40,30 | **CR 99482** |
| **129,79** | **130,00** | 129,90 | 139,52 | 19,05 | 23,83 | 30,00 | **CR 99494** |
| **129,97** | **130,18** | 130,00 | 139,52 | 22,00 | 25,30 | 32,51 | **CR 99874**[3] |
| | | 130,18 | 139,52 | 22,00 | 25,30 | 32,51 | **CR 99491** |
| **130,05** | **130,25** | 130,18 | 139,70 | 20,65 | 25,40 | 31,75 | **CR 99513** |
| **133,25** | **133,45** | 133,35 | 141,22 | 20,65 | 25,40 | 31,75 | **CR 99525** |
| **134,80** | **135,00** | 134,90 | 145,67 | 20,50 | 25,40 | 31,75 | **CR 99533** |
| **136,42** | **136,63** | 136,53 | 149,23 | 20,65 | 25,40 | 31,75 | **CR 99537** |
| **138,02** | **138,23** | 138,13 | 146,05 | 38,10 | 42,88 | 47,63 | **CR 99548** |
| **138,99** | **139,19** | 139,09 | 149,86 | 14,30 | 19,05 | 31,34 | **CR 99547** |
| **139,65** | **139,85** | 139,70 | 150,83 | 13,16 | 17,91 | 31,75 | **CR 99550** |
| | | 139,70 | 150,83 | 20,65 | 25,40 | 31,75 | **CR 99859**[3] |
| | | 139,70 | 150,83 | 20,65 | 25,40 | 31,75 | **CR 99549** |
| **139,90** | **140,11** | 140,00 | 151,00 | 20,50 | 25,40 | 31,75 | **CR 99552** |
| **142,77** | **142,98** | 142,88 | 157,18 | 22,23 | 25,40 | 46,02 | **CR 99560** |
| **144,75** | **145,01** | 145,01 | 154,94 | 19,05 | 22,23 | 46,02 | **CR 99571** |
| **145,44** | **145,64** | 145,64 | 154,94 | 14,30 | 19,05 | 49,23 | **CR 99562** |
| **145,95** | **146,15** | 146,05 | 156,97 | 20,65 | 25,40 | 44,45 | **CR 99575** |
| **149,12** | **149,33** | 149,23 | 157,18 | 25,40 | 31,75 | 33,35 | **CR 99862**[2] |
| | | 149,23 | 157,18 | 25,40 | 31,75 | 33,35 | **CR 99587** |
| **149,76** | **150,01** | 149,99 | 159,00 | 26,01 | 30,00 | 32,51 | **CR 99595** |
| **150,72** | **150,93** | 150,83 | 161,93 | 25,40 | 28,58 | 47,63 | **CR 99596** |
| **152,27** | **152,48** | 152,40 | 161,54 | 12,70 | 19,05 | 44,45 | **CR 99601** |
| | | 152,40 | 161,93 | 25,40 | 31,75 | 44,45 | **CR 99599** |

[1] Possible max. distance of the rear groove from the shaft end when the installation tool supplied with the sleeve is used
[2] SKF SPEEDI-SLEEVE Gold
[3] SKF SPEEDI-SLEEVE Gold – contact SKF for availability

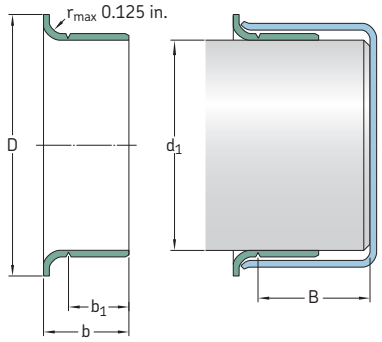
## **SKF SPEEDI-SLEEVE – metric** (converted from inch dimensions)
## $d_1$ **153,87 – 203,33** mm




| **Shaft diameter range** | | **Nominal dimensions** | | | | | **Designation** |
|---|---|---|---|---|---|---|---|
| $d_1$ min | max | $d_1$ | D ±1,6 | $b_1$ ±0,8 | b ±0,8 | B[1] | |
| mm | | mm | | | | | – |
| **153,87** | **154,13** | 154,00 | 161,93 | 26,01 | 30,00 | 32,99 | **CR 99605** |
| **154,74** | **154,99** | 154,86 | 167,01 | 26,01 | 30,00 | 32,99 | **CR 99606** |
| **157,43** | **157,68** | 157,56 | 168,28 | 20,65 | 27,00 | 44,45 | **CR 99620** |
| **158,62** | **158,88** | 158,75 | 168,28 | 26,19 | 31,75 | 44,45 | **CR 99625** |
| **159,74** | **159,99** | 159,99 | 171,45 | 25,40 | 31,75 | 34,93 | **CR 99630** |
| **164,97** | **165,23** | 165,10 | 177,80 | 25,40 | 31,75 | 34,93 | **CR 99650** |
| **169,75** | **170,00** | 169,88 | 182,58 | 31,75 | 38,00 | 44,45 | **CR 99640** |
| **171,32** | **171,58** | 171,45 | 180,98 | 20,65 | 27,00 | 44,45 | **CR 99675** |
| **174,75** | **175,01** | 175,01 | 186,99 | 27,99 | 32,00 | 35,00 | **CR 99687** |
| **177,67** | **177,93** | 177,80<br>177,80 | 189,87<br>189,87 | 25,40<br>25,40 | 31,75<br>31,75 | 42,88<br>42,88 | **CR 99864**[2]<br>**CR 99700** |
| **179,76** | **180,01** | 180,01 | 190,50 | 32,99 | 38,00 | 44,50 | **CR 99721** |
| **184,00** | **184,25** | 184,15 | 197,10 | 31,75 | 38,10 | 55,25 | **CR 99725** |
| **184,73** | **184,99** | 184,86 | 197,10 | 32,00 | 38,00 | 54,99 | **CR 99726** |
| **189,08** | **189,33** | 189,31 | 199,64 | 20,65 | 25,40 | 31,75 | **CR 99745** |
| **190,37** | **190,63** | 190,50 | 200,03 | 20,65 | 25,40 | 31,75 | **CR 99750** |
| **196,72** | **196,98** | 196,85 | 210,06 | 25,40 | 33,35 | 47,63 | **CR 99775** |
| **199,87** | **200,13** | 200,03 | 212,73 | 34,52 | 38,10 | 44,45 | **CR 99787** |
| **201,50** | **201,75** | 201,63 | 212,73 | 25,40 | 31,75 | 44,45 | **CR 99799** |
| **203,07** | **203,33** | 203,20 | 212,73 | 25,40 | 31,75 | 44,45 | **CR 99800** |

[1] Possible max. distance of the rear groove from the shaft end when the installation tool supplied with the sleeve is used
[2] SKF SPEEDI-SLEEVE Gold – contact SKF for availability

## SKF SPEEDI-SLEEVE – inch dimensions
$d_1$ **0.472 – 0.877** in.

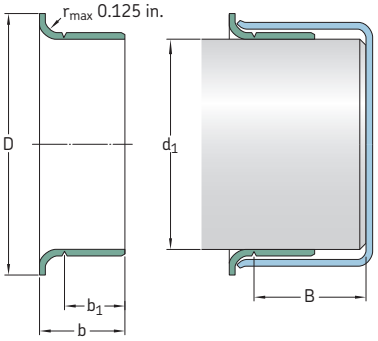





| Shaft diameter range | | Nominal dimensions | | | | | Designation |
|---|---|---|---|---|---|---|---|
| $d_1$ min | max | $d_1$ | D ±0.063 | $b_1$ ±0.031 | b ±0.031 | B[1] | |
| in. | | in. | | | | | – |
| **0.472** | **0.475** | 0.472 | 0.610 | 0.236 | 0.331 | 1.875 | **CR 99049** |
| **0.498** | **0.502** | 0.500 | 0.610 | 0.250 | 0.344 | 2.000 | **CR 99050** |
| **0.547** | **0.551** | 0.551 | 0.750 | 0.250 | 0.391 | 1.831 | **CR 99055** |
| **0.560** | **0.566** | 0.563 | 0.750 | 0.250 | 0.391 | 1.831 | **CR 99056** |
| **0.589** | **0.593** | 0.591 | 0.750 | 0.197 | 0.354 | 1.862 | **CR 99059** |
| **0.623** | **0.627** | 0.625<br>0.625 | 0.750<br>0.750 | 0.313<br>0.313 | 0.406<br>0.406 | 2.000<br>2.000 | **CR 99810**[2]<br>**CR 99062** |
| **0.626** | **0.630** | 0.630 | 0.718 | 0.313 | 0.438 | 2.000 | **CR 99058** |
| **0.667** | **0.671** | 0.669 | 0.875 | 0.315 | 0.433 | 2.000 | **CR 99068** |
| **0.682** | **0.686** | 0.684 | 0.900 | 0.313 | 0.438 | 2.000 | **CR 99060** |
| **0.704** | **0.709** | 0.709 | 0.962 | 0.315 | 0.433 | 1.811 | **CR 99082** |
| **0.748** | **0.752** | 0.750<br>0.750 | 0.945<br>0.945 | 0.313<br>0.313 | 0.438<br>0.438 | 2.000<br>2.000 | **CR 99811**[2]<br>**CR 99076** |
| **0.759** | **0.761** | 0.760 | 0.938 | 0.313 | 0.438 | 2.000 | **CR 99081** |
| **0.780** | **0.784** | 0.781 | 0.935 | 0.313 | 0.438 | 2.000 | **CR 99080** |
| **0.785** | **0.789** | 0.787 | 0.930 | 0.315 | 0.433 | 2.000 | **CR 99078** |
| **0.812** | **0.815** | 0.813 | 1.188 | 0.375 | 0.563 | 3.000 | **CR 99083** |
| **0.857** | **0.861** | 0.859 | 1.155 | 0.250 | 0.375 | 2.000 | **CR 99086** |
| **0.861** | **0.866** | 0.866<br>0.866 | 1.188<br>1.188 | 0.259<br>0.315 | 0.359<br>0.472 | 1.856<br>1.812 | **CR 99084**<br>**CR 99085** |
| **0.873** | **0.877** | 0.875<br>0.875 | 1.094<br>1.094 | 0.313<br>0.313 | 0.438<br>0.438 | 2.000<br>2.000 | **CR 99812**[2]<br>**CR 99087** |

[1] Possible max. distance of the rear groove from the shaft end when the installation tool supplied with the sleeve is used
[2] SKF SPEEDI-SLEEVE Gold

## SKF SPEEDI-SLEEVE – inch dimensions
$d_1$ **0.908 – 1.659** in.



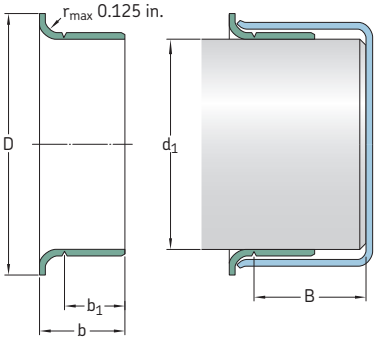

| Shaft diameter range | | Nominal dimensions | | | | | Designation |
|---|---|---|---|---|---|---|---|
| $d_1$ min | max | $d_1$ | D ±0.063 | $b_1$ ±0.031 | b ±0.031 | B[1] | |
| in. | | in. | | | | | – |
| **0.908** | **0.912** | 0.910 | 1.218 | 0.313 | 0.438 | 1.847 | **CR 99860**[2] |
| | | 0.910 | 1.218 | 0.313 | 0.438 | 1.847 | **CR 99091** |
| **0.940** | **0.945** | 0.945 | 1.130 | 0.313 | 0.438 | 2.000 | **CR 99092** |
| **0.966** | **0.970** | 0.969 | 1.130 | 0.313 | 0.438 | 2.000 | **CR 99094** |
| | | 0.969 | 1.130 | 0.625 | 0.719 | 2.000 | **CR 99096** |
| **0.982** | **0.986** | 0.984 | 1.300 | 0.313 | 0.433 | 2.000 | **CR 99813**[2] |
| | | 0.984 | 1.300 | 0.313 | 0.433 | 2.000 | **CR 99098** |
| **0.998** | **1.002** | 1.000 | 1.219 | 0.313 | 0.438 | 2.000 | **CR 99814**[2] |
| | | 1.000 | 1.219 | 0.313 | 0.438 | 2.000 | **CR 99100** |
| **1.019** | **1.024** | 1.024 | 1.313 | 0.315 | 0.472 | 1.813 | **CR 99103** |
| **1.060** | **1.064** | 1.063 | 1.320 | 0.313 | 0.438 | 1.843 | **CR 99815**[2] |
| | | 1.063 | 1.320 | 0.313 | 0.438 | 1.843 | **CR 99106** |
| **1.087** | **1.091** | 1.089 | 1.406 | 0.313 | 0.438 | 0.625 | **CR 99108** |
| **1.100** | **1.104** | 1.102 | 1.375 | 0.375 | 0.500 | 1.843 | **CR 99866**[3] |
| | | 1.102 | 1.375 | 0.375 | 0.500 | 1.843 | **CR 99111** |
| **1.123** | **1.127** | 1.125 | 1.500 | 0.313 | 0.438 | 0.688 | **CR 99816**[2] |
| | | 1.125 | 1.500 | 0.313 | 0.438 | 0.688 | **CR 99112** |
| | | 1.125 | 1.500 | 0.375 | 0.500 | 0.688 | **CR 99116** |
| **1.154** | **1.158** | 1.156 | 1.350 | 0.375 | 0.500 | 0.688 | **CR 99865**[3] |
| | | 1.156 | 1.350 | 0.375 | 0.500 | 0.688 | **CR 99120** |
| **1.173** | **1.178** | 1.175 | 1.400 | 0.313 | 0.438 | 0.688 | **CR 99122** |
| **1.179** | **1.184** | 1.181 | 1.400 | 0.315 | 0.433 | 0.688 | **CR 99114** |
| **1.185** | **1.190** | 1.188 | 1.400 | 0.313 | 0.438 | 0.688 | **CR 99118** |
| **1.216** | **1.222** | 1.219 | 1.563 | 0.313 | 0.433 | 0.625 | **CR 99123** |

[1] Possible max. distance of the rear groove from the shaft end when the installation tool supplied with the sleeve is used
[2] SKF SPEEDI-SLEEVE Gold
[3] SKF SPEEDI-SLEEVE Gold – contact SKF for availability

| Shaft diameter range | | Nominal dimensions | | | | | Designation |
|---|---|---|---|---|---|---|---|
| $d_1$ min | max | $d_1$ | D ±0.063 | $b_1$ ±0.031 | b ±0.031 | B[1] | |
| in. | | in. | | | | | – |
| **1.237** | **1.243** | 1.240 | 1.540 | 0.315 | 0.438 | 0.688 | **CR 99141** |
| **1.247** | **1.253** | 1.250 | 1.500 | 0.313 | 0.438 | 0.688 | **CR 99817**[2] |
| | | 1.250 | 1.500 | 0.313 | 0.438 | 0.688 | **CR 99125** |
| **1.257** | **1.263** | 1.260 | 1.500 | 0.315 | 0.438 | 0.688 | **CR 99128** |
| **1.297** | **1.301** | 1.299 | 1.594 | 0.591 | 0.709 | 1.000 | **CR 99121** |
| **1.308** | **1.314** | 1.313 | 1.600 | 0.250 | 0.375 | 0.813 | **CR 99129** |
| **1.310** | **1.316** | 1.313 | 1.594 | 0.500 | 0.625 | 0.813 | **CR 99818**[3] |
| | | 1.313 | 1.594 | 0.500 | 0.625 | 0.813 | **CR 99131** |
| **1.333** | **1.339** | 1.339 | 1.625 | 0.500 | 0.625 | 0.813 | **CR 99134** |
| **1.371** | **1.377** | 1.375 | 1.638 | 0.313 | 0.438 | 0.813 | **CR 99133** |
| | | 1.375 | 1.638 | 0.500 | 0.625 | 0.813 | **CR 99819**[2] |
| | | 1.375 | 1.638 | 0.500 | 0.625 | 0.813 | **CR 99138** |
| **1.375** | **1.381** | 1.375 | 1.638 | 0.512 | 0.630 | 0.813 | **CR 99820**[2] |
| | | 1.375 | 1.638 | 0.512 | 0.630 | 0.813 | **CR 99139** |
| **1.411** | **1.417** | 1.417 | 1.781 | 0.512 | 0.669 | 0.984 | **CR 99146** |
| **1.432** | **1.438** | 1.438 | 1.781 | 0.563 | 0.688 | 1.016 | **CR 99821**[2] |
| | | 1.438 | 1.781 | 0.563 | 0.688 | 1.016 | **CR 99143** |
| **1.435** | **1.441** | 1.438 | 1.781 | 0.375 | 0.500 | 1.016 | **CR 99144** |
| **1.490** | **1.496** | 1.496 | 1.781 | 0.512 | 0.669 | 0.984 | **CR 99147** |
| **1.497** | **1.503** | 1.500 | 1.781 | 0.375 | 0.500 | 1.016 | **CR 99823**[2] |
| | | 1.500 | 1.781 | 0.375 | 0.500 | 1.016 | **CR 99150** |
| | | 1.500 | 1.781 | 0.563 | 0.688 | 1.016 | **CR 99822**[2] |
| | | 1.500 | 1.781 | 0.563 | 0.688 | 1.016 | **CR 99149** |
| **1.520** | **1.526** | 1.523 | 1.859 | 0.438 | 0.563 | 1.016 | **CR 99152** |
| **1.549** | **1.555** | 1.552 | 1.859 | 0.438 | 0.563 | 1.016 | **CR 99155** |
| **1.559** | **1.565** | 1.562 | 1.859 | 0.563 | 0.688 | 1.016 | **CR 99824**[2] |
| | | 1.562 | 1.859 | 0.563 | 0.688 | 1.016 | **CR 99156** |
| **1.566** | **1.572** | 1.569 | 1.859 | 0.625 | 0.750 | 1.016 | **CR 99159** |
| **1.569** | **1.575** | 1.575 | 1.850 | 0.390 | 0.509 | 1.000 | **CR 99153** |
| **1.572** | **1.578** | 1.578 | 1.850 | 0.512 | 0.630 | 1.023 | **CR 99825**[2] |
| | | 1.578 | 1.850 | 0.512 | 0.630 | 1.023 | **CR 99157** |
| **1.602** | **1.608** | 1.605 | 1.938 | 0.500 | 0.641 | 1.000 | **CR 99160** |
| **1.608** | **1.614** | 1.614 | 1.938 | 0.500 | 0.625 | 1.016 | **CR 99163** |
| **1.622** | **1.628** | 1.625 | 1.875 | 0.313 | 0.438 | 1.016 | **CR 99161** |
| | | 1.625 | 1.875 | 0.563 | 0.688 | 0.813 | **CR 99826**[2] |
| | | 1.625 | 1.875 | 0.563 | 0.688 | 0.813 | **CR 99162** |
| **1.647** | **1.654** | 1.650 | 2.087 | 0.445 | 0.571 | 0.846 | **CR 99166** |
| | | 1.650 | 2.087 | 0.563 | 0.689 | 0.827 | **CR 99169** |
| | | 1.654 | 2.087 | 0.563 | 0.689 | 0.827 | **CR 99873**[3] |
| **1.653** | **1.659** | 1.656 | 2.087 | 0.550 | 0.689 | 0.827 | **CR 99165** |

[1] Possible max. distance of the rear groove from the shaft end when the installation tool supplied with the sleeve is used
[2] SKF SPEEDI-SLEEVE Gold
[3] SKF SPEEDI-SLEEVE Gold – contact SKF for availability

## SKF SPEEDI-SLEEVE – inch dimensions
$d_1$ **1.684 – 2.441** in.




BYC
RODAMIENTOS Y SUMINISTROS
55 5576 5785 • 55 5359 4287
55 8955 7108 • 55 5576 5786
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55 3291 5372

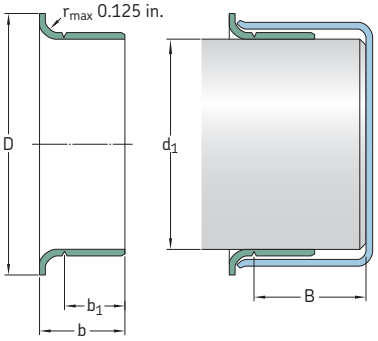
| Shaft diameter range | | Nominal dimensions | | | | | Designation |
|---|---|---|---|---|---|---|---|
| $d_1$ min | max | $d_1$ | D ±0.063 | $b_1$ ±0.031 | b ±0.031 | B[1] | |
| in. | | in. | | | | | – |
| **1.684** | **1.690** | 1.688 | 1.906 | 0.563 | 0.688 | 0.875 | **CR 99168** |
| **1.685** | **1.691** | 1.688 | 1.906 | 0.313 | 0.438 | 0.875 | **CR 99167** |
| **1.687** | **1.693** | 1.693 | 1.906 | 0.500 | 0.625 | 0.844 | **CR 99182** |
| **1.715** | **1.721** | 1.719 | 2.031 | 0.563 | 0.688 | 0.813 | **CR 99171** |
| **1.736** | **1.742** | 1.739 | 2.063 | 0.375 | 0.500 | 0.813 | **CR 99170** |
| **1.747** | **1.753** | 1.750 | 2.055 | 0.375 | 0.500 | 0.813 | **CR 99172** |
| | | 1.750 | 2.063 | 0.531 | 0.625 | 0.878 | **CR 99180** |
| | | 1.750 | 2.063 | 0.563 | 0.688 | 0.813 | **CR 99827**[2] |
| | | 1.750 | 2.063 | 0.563 | 0.688 | 0.813 | **CR 99174** |
| | | 1.750 | 2.063 | 0.750 | 0.875 | 0.813 | **CR 99828**[2] |
| | | 1.750 | 2.063 | 0.750 | 0.875 | 0.813 | **CR 99175** |
| **1.761** | **1.767** | 1.766 | 2.063 | 0.563 | 0.688 | 0.813 | **CR 99829**[2] |
| | | 1.766 | 2.063 | 0.563 | 0.688 | 0.813 | **CR 99176** |
| **1.769** | **1.775** | 1.772 | 2.087 | 0.551 | 0.669 | 0.812 | **CR 99830**[2] |
| | | 1.772 | 2.087 | 0.551 | 0.669 | 0.812 | **CR 99177** |
| **1.778** | **1.784** | 1.781 | 2.125 | 0.667 | 0.800 | 1.062 | **CR 99179** |
| **1.809** | **1.815** | 1.813 | 2.090 | 0.563 | 0.688 | 1.000 | **CR 99831**[3] |
| | | 1.813 | 2.090 | 0.563 | 0.688 | 1.000 | **CR 99181** |
| **1.857** | **1.863** | 1.859 | 2.156 | 0.563 | 0.688 | 1.000 | **CR 99185** |
| **1.866** | **1.872** | 1.868 | 2.188 | 0.889 | 1.025 | 1.000 | **CR 99186** |
| **1.872** | **1.878** | 1.875 | 2.203 | 0.175 | 0.295 | 0.744 | **CR 99190** |
| | | 1.875 | 2.203 | 0.295 | 0.415 | 0.744 | **CR 99188** |
| | | 1.875 | 2.203 | 0.375 | 0.516 | 1.050 | **CR 99184** |
| | | 1.875 | 2.203 | 0.563 | 0.688 | 1.000 | **CR 99832**[2] |
| | | 1.875 | 2.203 | 0.563 | 0.688 | 1.000 | **CR 99187** |

[1] Possible max. distance of the rear groove from the shaft end when the installation tool supplied with the sleeve is used
[2] SKF SPEEDI-SLEEVE Gold
[3] SKF SPEEDI-SLEEVE Gold – contact SKF for availability

| Shaft diameter range | | Nominal dimensions | | | | | Designation |
|---|---|---|---|---|---|---|---|
| $d_1$ min | max | $d_1$ | D ±0.063 | $b_1$ ±0.031 | b ±0.031 | B[1] | |
| in. | | in. | | | | | – |
| **1.887** | **1.893** | 1.891 | 2.205 | 0.551 | 0.668 | 0.984 | **CR 99189** |
| **1.909** | **1.915** | 1.912 | 2.219 | 0.375 | 0.500 | 1.000 | **CR 99192** |
| **1.934** | **1.940** | 1.938 | 2.219 | 0.563 | 0.688 | 1.000 | **CR 99833**[2] |
| | | 1.938 | 2.219 | 0.563 | 0.688 | 1.000 | **CR 99193** |
| **1.965** | **1.971** | 1.969 | 2.244 | 0.551 | 0.668 | 0.984 | **CR 99196** |
| **1.977** | **1.983** | 1.980 | 2.313 | 0.563 | 0.704 | 1.050 | **CR 99198** |
| **1.997** | **2.003** | 2.000 | 2.406 | 0.563 | 0.688 | 1.006 | **CR 99834**[2] |
| | | 2.000 | 2.406 | 0.563 | 0.688 | 1.000 | **CR 99199** |
| | | 2.000 | 2.406 | 0.875 | 1.000 | 1.000 | **CR 99835**[2] |
| | | 2.000 | 2.406 | 0.875 | 1.000 | 1.000 | **CR 99200** |
| **2.040** | **2.047** | 2.047 | 2.469 | 0.500 | 0.625 | 1.359 | **CR 99204** |
| **2.057** | **2.063** | 2.063 | 2.469 | 0.781 | 0.938 | 1.375 | **CR 99205** |
| **2.123** | **2.128** | 2.125 | 2.422 | 0.500 | 0.750 | 1.281 | **CR 99210** |
| **2.124** | **2.130** | 2.125 | 2.422 | 0.781 | 0.938 | 1.375 | **CR 99836**[2] |
| | | 2.125 | 2.422 | 0.781 | 0.938 | 1.375 | **CR 99212** |
| **2.162** | **2.168** | 2.165 | 2.441 | 0.787 | 0.905 | 1.250 | **CR 99863**[2] |
| | | 2.165 | 2.441 | 0.787 | 0.905 | 1.250 | **CR 99215** |
| **2.186** | **2.192** | 2.188 | 2.500 | 0.781 | 0.938 | 1.313 | **CR 99218** |
| **2.198** | **2.205** | 2.205 | 2.531 | 0.500 | 0.625 | 1.313 | **CR 99220** |
| | | 2.205 | 2.531 | 0.779 | 0.936 | 3.150 | **CR 99224** |
| **2.227** | **2.233** | 2.230 | 2.531 | 0.500 | 0.625 | 1.313 | **CR 99861**[3] |
| | | 2.230 | 2.531 | 0.500 | 0.625 | 1.313 | **CR 99229** |
| | | 2.230 | 2.531 | 0.781 | 0.906 | 1.250 | **CR 99230** |
| **2.237** | **2.243** | 2.240 | 2.563 | 0.764 | 0.900 | 1.250 | **CR 99226** |
| **2.249** | **2.255** | 2.250 | 2.531 | 0.313 | 0.438 | 1.313 | **CR 99838**[3] |
| | | 2.250 | 2.531 | 0.313 | 0.438 | 1.313 | **CR 99227** |
| | | 2.250 | 2.531 | 0.781 | 0.938 | 1.313 | **CR 99837**[2] |
| | | 2.250 | 2.531 | 0.781 | 0.938 | 1.313 | **CR 99225** |
| **2.280** | **2.286** | 2.283 | 2.598 | 0.787 | 0.938 | 1.375 | **CR 99219** |
| **2.309** | **2.315** | 2.313 | 2.688 | 0.781 | 0.938 | 1.375 | **CR 99231** |
| **2.327** | **2.333** | 2.328 | 2.750 | 0.750 | 0.875 | 1.500 | **CR 99233** |
| **2.359** | **2.365** | 2.362 | 2.785 | 0.370 | 0.450 | 1.471 | **CR 99241** |
| | | 2.362 | 2.785 | 0.787 | 0.905 | 1.375 | **CR 99869**[3] |
| | | 2.362 | 2.785 | 0.787 | 0.905 | 1.375 | **CR 99235** |
| **2.372** | **2.378** | 2.375 | 2.750 | 0.594 | 0.750 | 1.375 | **CR 99238** |
| **2.374** | **2.380** | 2.375 | 2.750 | 0.526 | 0.683 | 1.375 | **CR 99240** |
| | | 2.375 | 2.750 | 0.781 | 0.938 | 1.375 | **CR 99839**[2] |
| | | 2.375 | 2.750 | 0.781 | 0.938 | 1.375 | **CR 99237** |
| **2.434** | **2.441** | 2.438 | 2.828 | 0.781 | 0.938 | 1.393 | **CR 99243** |
| | | 2.441 | 2.828 | 0.500 | 0.625 | 1.425 | **CR 99244** |
| **2.435** | **2.441** | 2.438 | 2.828 | 0.500 | 0.625 | 1.425 | **CR 99242** |

[1] Possible max. distance of the rear groove from the shaft end when the installation tool supplied with the sleeve is used
[2] SKF SPEEDI-SLEEVE Gold
[3] SKF SPEEDI-SLEEVE Gold – contact SKF for availability

## SKF SPEEDI-SLEEVE – inch dimensions
$d_1$ **2.489 – 3.256** in.



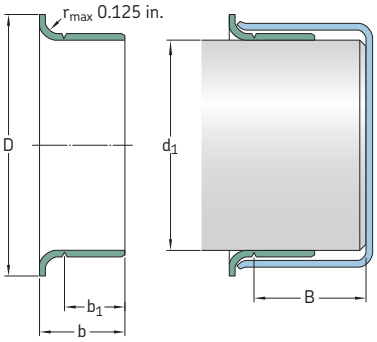

| Shaft diameter range | | Nominal dimensions | | | | | Designation |
|---|---|---|---|---|---|---|---|
| $d_1$ min | max | $d_1$ | D ±0.063 | $b_1$ ±0.031 | b ±0.031 | B[1] | |
| in. | | in. | | | | | – |
| **2.489** | **2.495** | 2.492 | 2.875 | 0.781 | 0.938 | 1.393 | **CR 99249** |
| **2.497** | **2.503** | 2.500 | 2.820 | 0.555 | 0.650 | 0.890 | **CR 99253** |
| **2.500** | **2.506** | 2.500 | 2.828 | 0.500 | 0.656 | 1.393 | **CR 99248** |
| | | 2.500 | 2.820 | 0.781 | 0.938 | 1.375 | **CR 99840**[2] |
| | | 2.500 | 2.820 | 0.781 | 0.938 | 1.375 | **CR 99250** |
| **2.510** | **2.516** | 2.516 | 2.828 | 0.781 | 0.906 | 1.438 | **CR 99251** |
| **2.556** | **2.562** | 2.559 | 2.850 | 0.787 | 0.905 | 1.375 | **CR 99841**[2] |
| | | 2.559 | 2.850 | 0.787 | 0.905 | 1.375 | **CR 99254** |
| **2.560** | **2.566** | 2.563 | 2.891 | 0.781 | 0.938 | 1.375 | **CR 99256** |
| **2.595** | **2.601** | 2.598 | 2.990 | 0.781 | 0.938 | 1.250 | **CR 99259** |
| **2.618** | **2.624** | 2.621 | 3.047 | 0.781 | 0.938 | 1.375 | **CR 99261** |
| **2.621** | **2.627** | 2.625 | 3.047 | 0.781 | 0.906 | 1.375 | **CR 99264** |
| **2.622** | **2.628** | 2.625 | 3.047 | 0.500 | 0.625 | 1.375 | **CR 99260** |
| **2.625** | **2.631** | 2.625 | 3.047 | 0.781 | 0.938 | 1.375 | **CR 99842**[2] |
| | | 2.625 | 3.047 | 0.781 | 0.938 | 1.375 | **CR 99262** |
| **2.670** | **2.677** | 2.677 | 3.125 | 0.750 | 0.875 | 1.688 | **CR 99266** |
| **2.727** | **2.733** | 2.730 | 3.125 | 0.781 | 0.906 | 1.313 | **CR 99268** |
| **2.740** | **2.746** | 2.743 | 3.065 | 0.781 | 0.938 | 1.250 | **CR 99273** |
| **2.745** | **2.751** | 2.750 | 3.125 | 0.781 | 0.938 | 1.250 | **CR 99843**[2] |
| | | 2.750 | 3.125 | 0.781 | 0.938 | 1.250 | **CR 99274** |
| **2.747** | **2.753** | 2.750 | 3.075 | 1.438 | 1.625 | 1.625 | **CR 99267** |

[1] Possible max. distance of the rear groove from the shaft end when the installation tool supplied with the sleeve is used
[2] SKF SPEEDI-SLEEVE Gold

| Shaft diameter range | | Nominal dimensions | | | | | Designation |
|---|---|---|---|---|---|---|---|
| $d_1$ min | max | $d_1$ | D ±0.063 | $b_1$ ±0.031 | b ±0.031 | B[1] | |
| in. | | in. | | | | | – |
| **2.750** | **2.756** | 2.750 | 3.125 | 0.406 | 0.563 | 1.250 | **CR 99272** |
| | | 2.750 | 3.125 | 0.781 | 0.938 | 1.250 | **CR 99844**[2] |
| | | 2.750 | 3.125 | 0.781 | 0.938 | 1.250 | **CR 99275** |
| | | 2.750 | 3.125 | 1.125 | 1.250 | 1.312 | **CR 99269** |
| **2.753** | **2.759** | 2.756 | 3.125 | 0.787 | 0.945 | 1.250 | **CR 99276** |
| **2.809** | **2.815** | 2.813 | 3.188 | 0.594 | 0.688 | 1.250 | **CR 99281** |
| **2.828** | **2.835** | 2.835 | 3.225 | 0.750 | 0.875 | 1.343 | **CR 99870**[3] |
| | | 2.835 | 3.225 | 0.750 | 0.875 | 1.343 | **CR 99284** |
| **2.838** | **2.844** | 2.838 | 3.225 | 0.500 | 0.656 | 1.250 | **CR 99845**[2] |
| | | 2.838 | 3.225 | 0.500 | 0.656 | 1.250 | **CR 99282** |
| **2.866** | **2.872** | 2.869 | 3.188 | 0.781 | 0.938 | 1.250 | **CR 99286** |
| **2.873** | **2.879** | 2.875 | 3.219 | 0.781 | 0.938 | 1.250 | **CR 99846**[2] |
| | | 2.875 | 3.219 | 0.781 | 0.938 | 1.250 | **CR 99287** |
| **2.937** | **2.943** | 2.938 | 3.344 | 0.500 | 0.641 | 1.331 | **CR 99290** |
| | | 2.938 | 3.344 | 0.781 | 0.938 | 1.313 | **CR 99847**[2] |
| | | 2.940 | 3.344 | 0.781 | 0.938 | 1.313 | **CR 99293** |
| **2.950** | **2.956** | 2.953 | 3.273 | 0.594 | 0.690 | 1.083 | **CR 99289** |
| | | 2.953 | 3.305 | 0.866 | 1.024 | 1.313 | **CR 99875**[3] |
| | | 2.953 | 3.305 | 0.866 | 1.024 | 1.313 | **CR 99294** |
| **2.972** | **2.976** | 2.974 | 3.235 | 0.813 | 1.000 | 1.250 | **CR 99292** |
| **2.990** | **2.996** | 2.993 | 3.359 | 0.484 | 0.625 | 1.331 | **CR 99291** |
| | | 2.993 | 3.359 | 0.563 | 0.688 | 1.375 | **CR 99298** |
| | | 2.993 | 3.350 | 0.813 | 1.000 | 1.281 | **CR 99299** |
| **2.997** | **3.003** | 3.000 | 3.240 | 0.813 | 0.938 | 1.375 | **CR 99296** |
| **3.000** | **3.006** | 3.000 | 3.345 | 0.625 | 0.813 | 1.280 | **CR 99303** |
| | | 3.000 | 3.235 | 0.813 | 1.000 | 1.281 | **CR 99848**[2] |
| | | 3.000 | 3.235 | 0.813 | 1.000 | 1.281 | **CR 99300** |
| **3.008** | **3.014** | 3.011 | 3.355 | 0.500 | 0.625 | 2.000 | **CR 99301** |
| **3.064** | **3.071** | 3.071 | 3.468 | 0.750 | 0.875 | 2.056 | **CR 99306** |
| **3.120** | **3.126** | 3.125 | 3.531 | 0.688 | 0.813 | 2.000 | **CR 99311** |
| | | 3.125 | 3.531 | 0.813 | 1.000 | 2.000 | **CR 99849**[2] |
| | | 3.125 | 3.531 | 0.813 | 1.000 | 2.000 | **CR 99312** |
| **3.124** | **3.132** | 3.125 | 3.525 | 0.551 | 0.709 | 2.031 | **CR 99307** |
| **3.142** | **3.150** | 3.150 | 3.540 | 0.750 | 0.886 | 1.375 | **CR 99313** |
| **3.146** | **3.153** | 3.150 | 3.543 | 0.433 | 0.591 | 1.375 | **CR 99317** |
| | | 3.150 | 3.543 | 0.827 | 0.945 | 1.375 | **CR 99315** |
| **3.225** | **3.231** | 3.228 | 3.585 | 0.660 | 0.848 | 1.750 | **CR 99328** |
| **3.247** | **3.253** | 3.250 | 3.594 | 0.813 | 1.000 | 1.375 | **CR 99322** |
| **3.250** | **3.256** | 3.250 | 3.575 | 0.595 | 0.719 | 1.375 | **CR 99850**[2] |
| | | 3.250 | 3.575 | 0.595 | 0.719 | 1.375 | **CR 99324** |
| | | 3.250 | 3.585 | 0.688 | 0.875 | 1.250 | **CR 99326** |
| | | 3.250 | 3.585 | 0.813 | 1.000 | 1.375 | **CR 99851**[2] |
| | | 3.250 | 3.585 | 0.813 | 1.000 | 1.375 | **CR 99325** |

[1] Possible max. distance of the rear groove from the shaft end when the installation tool supplied with the sleeve is used
[2] SKF SPEEDI-SLEEVE Gold
[3] SKF SPEEDI-SLEEVE Gold – contact SKF for availability

## SKF SPEEDI-SLEEVE – inch dimensions
$d_1$ **3.307 – 4.728** in.



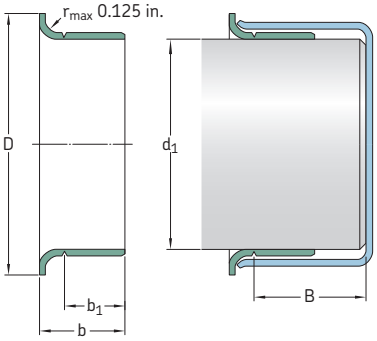

| Shaft diameter range | | Nominal dimensions | | | | | Designation |
|---|---|---|---|---|---|---|---|
| $d_1$ min | max | $d_1$ | D ±0.063 | $b_1$ ±0.031 | b ±0.031 | B[1] | |
| in. | | in. | | | | | – |
| **3.307** | **3.313** | 3.310 | 3.688 | 0.813 | 1.000 | 1.375 | **CR 99331** |
| **3.337** | **3.347** | 3.342 | 3.700 | 0.669 | 0.827 | 1.378 | **CR 99332** |
| | | 3.342 | 3.700 | 0.827 | 0.984 | 1.378 | **CR 99872**[2] |
| | | 3.342 | 3.700 | 0.827 | 0.984 | 1.378 | **CR 99333** |
| **3.338** | **3.347** | 3.347 | 3.580 | 0.399 | 0.499 | 1.431 | **CR 99334** |
| **3.373** | **3.379** | 3.375 | 3.688 | 0.375 | 0.500 | 1.410 | **CR 99338** |
| | | 3.375 | 3.695 | 0.813 | 1.000 | 1.375 | **CR 99337** |
| **3.435** | **3.441** | 3.438 | 3.844 | 0.781 | 0.906 | 1.406 | **CR 99339** |
| **3.457** | **3.465** | 3.465 | 3.751 | 1.150 | 1.349 | 1.673 | **CR 99481** |
| **3.477** | **3.483** | 3.480 | 3.835 | 0.781 | 0.906 | 1.406 | **CR 99340** |
| **3.497** | **3.503** | 3.500 | 3.844 | 0.625 | 0.813 | 1.347 | **CR 99346** |
| **3.500** | **3.506** | 3.500 | 3.825 | 0.313 | 0.500 | 1.347 | **CR 99347** |
| | | 3.500 | 3.844 | 0.813 | 1.000 | 1.347 | **CR 99852**[2] |
| | | 3.500 | 3.844 | 0.813 | 1.000 | 1.347 | **CR 99350** |
| **3.501** | **3.507** | 3.504 | 3.844 | 0.625 | 0.813 | 1.348 | **CR 99349** |
| **3.540** | **3.546** | 3.543 | 4.000 | 0.438 | 0.538 | 1.813 | **CR 99352** |
| | | 3.543 | 4.000 | 0.526 | 0.667 | 1.750 | **CR 99353** |
| | | 3.543 | 4.000 | 0.710 | 0.906 | 1.813 | **CR 99351** |
| | | 3.543 | 4.000 | 0.906 | 1.102 | 1.750 | **CR 99354** |
| **3.560** | **3.566** | 3.563 | 3.900 | 0.813 | 1.000 | 1.750 | **CR 99356** |
| **3.618** | **3.624** | 3.621 | 4.031 | 0.813 | 1.000 | 1.750 | **CR 99360** |
| **3.623** | **3.629** | 3.625 | 4.025 | 0.500 | 0.625 | 1.750 | **CR 99363** |
| | | 3.625 | 4.031 | 0.813 | 1.000 | 1.750 | **CR 99362** |
| **3.684** | **3.690** | 3.688 | 4.031 | 0.313 | 0.438 | 0.875 | **CR 99368** |

[1] Possible max. distance of the rear groove from the shaft end when the installation tool supplied with the sleeve is used
[2] SKF SPEEDI-SLEEVE Gold – contact SKF for availability

| Shaft diameter range | | Nominal dimensions | | | | | Designation |
|---|---|---|---|---|---|---|---|
| $d_1$ min | max | $d_1$ | D ±0.063 | $b_1$ ±0.031 | b ±0.031 | B[1] | |
| in. | | in. | | | | | – |
| **3.685** | **3.691** | 3.688 | 4.025 | 0.813 | 0.938 | 1.800 | **CR 99365** |
| **3.727** | **3.733** | 3.730 | 4.016 | 0.469 | 0.594 | 1.800 | **CR 99359** |
| | | 3.730 | 4.025 | 0.781 | 0.906 | 1.800 | **CR 99366** |
| **3.737** | **3.743** | 3.740 | 4.025 | 0.827 | 0.945 | 1.800 | **CR 99369** |
| **3.740** | **3.746** | 3.743 | 4.031 | 0.344 | 0.500 | 1.800 | **CR 99374** |
| | | 3.743 | 4.035 | 0.469 | 0.594 | 1.800 | **CR 99364** |
| **3.746** | **3.752** | 3.749 | 4.025 | 0.563 | 0.688 | 1.800 | **CR 99376** |
| **3.750** | **3.756** | 3.750 | 4.020 | 0.688 | 0.875 | 1.800 | **CR 99853**[2)3)] |
| | | 3.753 | 4.025 | 0.344 | 0.500 | 1.800 | **CR 99367** |
| | | 3.753 | 4.020 | 0.688 | 0.875 | 1.800 | **CR 99372**[2)] |
| **3.868** | **3.874** | 3.871 | 4.185 | 0.813 | 1.000 | 1.875 | **CR 99386** |
| **3.873** | **3.879** | 3.875 | 4.219 | 0.813 | 1.000 | 1.875 | **CR 99387** |
| **3.935** | **3.941** | 3.938 | 4.313 | 0.813 | 1.000 | 2.050 | **CR 99854**[2)] |
| | | 3.938 | 4.313 | 0.813 | 1.000 | 2.050 | **CR 99393** |
| **3.998** | **4.006** | 4.000 | 4.375 | 0.500 | 0.625 | 2.066 | **CR 99401** |
| | | 4.000 | 4.375 | 0.600 | 0.725 | 2.050 | **CR 99395** |
| | | 4.000 | 4.375 | 0.650 | 0.775 | 1.375 | **CR 99400** |
| | | 4.000 | 4.375 | 0.813 | 1.000 | 2.050 | **CR 99855**[2)] |
| | | 4.000 | 4.375 | 0.813 | 1.000 | 2.050 | **CR 99399** |
| **4.090** | **4.098** | 4.094 | 4.438 | 0.787 | 0.945 | 1.417 | **CR 99409** |
| **4.122** | **4.130** | 4.125 | 4.470 | 0.813 | 1.000 | 1.375 | **CR 99412** |
| **4.130** | **4.138** | 4.134 | 4.470 | 0.787 | 0.913 | 1.378 | **CR 99413** |
| **4.183** | **4.191** | 4.188 | 4.500 | 0.813 | 1.000 | 1.375 | **CR 99418** |
| **4.226** | **4.234** | 4.234 | 4.610 | 0.781 | 0.906 | 1.438 | **CR 99423** |
| **4.248** | **4.256** | 4.250 | 4.610 | 0.813 | 1.000 | 1.438 | **CR 99424** |
| **4.322** | **4.331** | 4.331 | 4.921 | 0.448 | 0.589 | 1.297 | **CR 99434** |
| **4.327** | **4.335** | 4.328 | 4.921 | 0.509 | 0.650 | 1.250 | **CR 99435** |
| **4.370** | **4.378** | 4.375 | 4.750 | 0.813 | 1.000 | 1.650 | **CR 99437** |
| **4.401** | **4.409** | 4.409 | 4.750 | 0.750 | 0.886 | 1.300 | **CR 99438** |
| **4.434** | **4.442** | 4.438 | 4.813 | 1.000 | 1.142 | 1.313 | **CR 99439** |
| **4.496** | **4.504** | 4.500 | 4.850 | 0.813 | 1.000 | 1.250 | **CR 99856**[2)] |
| | | 4.500 | 4.900 | 0.813 | 1.000 | 1.250 | **CR 99450** |
| **4.523** | **4.531** | 4.528 | 5.000 | 0.813 | 0.938 | 1.250 | **CR 99452** |
| **4.621** | **4.629** | 4.625 | 5.000 | 0.438 | 0.625 | 1.375 | **CR 99465** |
| | | 4.625 | 5.063 | 1.000 | 1.250 | 1.375 | **CR 99463** |
| **4.685** | **4.693** | 4.688 | 5.063 | 0.813 | 1.000 | 1.375 | **CR 99468** |
| **4.720** | **4.728** | 4.724 | 5.110 | 0.315 | 0.433 | 1.323 | **CR 99471** |
| | | 4.724 | 5.110 | 0.787 | 0.984 | 1.260 | **CR 99473** |

[1)] Possible max. distance of the rear groove from the shaft end when the installation tool supplied with the sleeve is used
[2)] SKF SPEEDI-SLEEVE Gold
[3)] Renamed CR 99372

## SKF SPEEDI-SLEEVE – inch dimensions
$d_1$ **4.746 – 8.005** in.




BYC
RODAMIENTOS Y SUMINISTROS
55 5576 5785 • 55 5359 4287
55 8955 7108 • 55 5576 5786
bycventas@hotmail.com
55 3291 5372

| Shaft diameter range | | Nominal dimensions | | | | | Designation |
|---|---|---|---|---|---|---|---|
| $d_1$ min | max | $d_1$ | D ±0.063 | $b_1$ ±0.031 | b ±0.031 | B[1] | |
| in. | | in. | | | | | – |
| **4.746** | **4.754** | 4.750 | 5.000 | 0.500 | 0.750 | 1.500 | **CR 99475** |
| **4.799** | **4.807** | 4.803 | 5.177 | 0.787 | 0.945 | 1.260 | **CR 99472** |
| **4.839** | **4.847** | 4.843 | 5.229 | 0.787 | 0.984 | 1.244 | **CR 99484** |
| **4.871** | **4.879** | 4.875 | 5.250 | 0.625 | 0.750 | 1.438 | **CR 99487** |
| **4.917** | **4.925** | 4.921 | 5.400 | 0.394 | 0.551 | 1.438 | **CR 99490** |
| | | 4.921 | 5.400 | 1.024 | 1.260 | 1.438 | **CR 99492** |
| **4.998** | **5.006** | 5.000 | 5.400 | 0.540 | 0.681 | 1.438 | **CR 99501** |
| | | 5.000 | 5.400 | 0.688 | 0.875 | 1.438 | **CR 99857**[2] |
| | | 5.000 | 5.400 | 0.688 | 0.875 | 1.438 | **CR 99498** |
| | | 5.000 | 5.390 | 0.813 | 1.000 | 1.438 | **CR 99858**[2] |
| | | 5.000 | 5.390 | 0.813 | 1.000 | 1.438 | **CR 99499** |
| **5.032** | **5.039** | 5.039 | 5.325 | 1.150 | 1.349 | 1.587 | **CR 99482** |
| **5.110** | **5.118** | 5.114 | 5.493 | 0.750 | 0.938 | 1.181 | **CR 99494** |
| **5.117** | **5.125** | 5.118 | 5.493 | 0.866 | 0.996 | 1.280 | **CR 99874**[3] |
| | | 5.125 | 5.493 | 0.866 | 0.996 | 1.280 | **CR 99491** |
| **5.120** | **5.128** | 5.125 | 5.500 | 0.813 | 1.000 | 1.250 | **CR 99513** |
| **5.246** | **5.254** | 5.250 | 5.560 | 0.813 | 1.000 | 1.250 | **CR 99525** |
| **5.307** | **5.315** | 5.311 | 5.735 | 0.807 | 1.000 | 1.250 | **CR 99533** |
| **5.371** | **5.379** | 5.375 | 5.875 | 0.813 | 1.000 | 1.250 | **CR 99537** |
| **5.434** | **5.442** | 5.438 | 5.750 | 1.500 | 1.688 | 1.875 | **CR 99548** |
| **5.472** | **5.480** | 5.476 | 5.900 | 0.563 | 0.750 | 1.234 | **CR 99547** |

[1] Possible max. distance of the rear groove from the shaft end when the installation tool supplied with the sleeve is used
[2] SKF SPEEDI-SLEEVE Gold
[3] SKF SPEEDI-SLEEVE Gold – contact SKF for availability

| Shaft diameter range | | Nominal dimensions | | | | | Designation |
|---|---|---|---|---|---|---|---|
| $d_1$ min | max | $d_1$ | D ±0.063 | $b_1$ ±0.031 | b ±0.031 | B[1] | |
| in. | | in. | | | | | – |
| **5.498** | **5.506** | 5.500 | 5.938 | 0.518 | 0.705 | 1.250 | **CR 99550** |
| | | 5.500 | 5.938 | 0.813 | 1.000 | 1.250 | **CR 99859**[3] |
| | | 5.500 | 5.938 | 0.813 | 1.000 | 1.250 | **CR 99549** |
| **5.508** | **5.516** | 5.512 | 5.945 | 0.807 | 1.000 | 1.250 | **CR 99552** |
| **5.621** | **5.629** | 5.625 | 6.188 | 0.875 | 1.000 | 1.812 | **CR 99560** |
| **5.699** | **5.709** | 5.709 | 6.100 | 0.750 | 0.875 | 1.812 | **CR 99571** |
| **5.726** | **5.734** | 5.734 | 6.100 | 0.563 | 0.750 | 1.938 | **CR 99562** |
| **5.746** | **5.754** | 5.750 | 6.180 | 0.813 | 1.000 | 1.750 | **CR 99575** |
| **5.871** | **5.879** | 5.875 | 6.188 | 1.000 | 1.250 | 1.313 | **CR 99862**[2] |
| | | 5.875 | 6.188 | 1.000 | 1.250 | 1.313 | **CR 99587** |
| **5.896** | **5.906** | 5.905 | 6.260 | 1.024 | 1.181 | 1.280 | **CR 99595** |
| **5.934** | **5.942** | 5.938 | 6.375 | 1.000 | 1.125 | 1.875 | **CR 99596** |
| **5.995** | **6.003** | 6.000 | 6.360 | 0.500 | 0.750 | 1.750 | **CR 99601** |
| | | 6.000 | 6.375 | 1.000 | 1.250 | 1.750 | **CR 99599** |
| **6.058** | **6.068** | 6.063 | 6.375 | 1.024 | 1.181 | 1.299 | **CR 99605** |
| **6.092** | **6.102** | 6.097 | 6.575 | 1.024 | 1.181 | 1.299 | **CR 99606** |
| **6.198** | **6.208** | 6.203 | 6.625 | 0.813 | 1.063 | 1.750 | **CR 99620** |
| **6.245** | **6.255** | 6.250 | 6.625 | 1.031 | 1.250 | 1.750 | **CR 99625** |
| **6.289** | **6.299** | 6.299 | 6.750 | 1.000 | 1.250 | 1.375 | **CR 99630** |
| **6.495** | **6.505** | 6.500 | 7.000 | 1.000 | 1.250 | 1.375 | **CR 99650** |
| **6.683** | **6.693** | 6.688 | 7.188 | 1.250 | 1.496 | 1.750 | **CR 99640** |
| **6.745** | **6.755** | 6.750 | 7.125 | 0.813 | 1.063 | 1.750 | **CR 99675** |
| **6.880** | **6.890** | 6.890 | 7.362 | 1.102 | 1.260 | 1.378 | **CR 99687** |
| **6.995** | **7.005** | 7.000 | 7.475 | 1.000 | 1.250 | 1.688 | **CR 99864**[3] |
| | | 7.000 | 7.475 | 1.000 | 1.250 | 1.688 | **CR 99700** |
| **7.077** | **7.087** | 7.087 | 7.500 | 1.299 | 1.496 | 1.752 | **CR 99721** |
| **7.244** | **7.254** | 7.250 | 7.760 | 1.250 | 1.500 | 2.175 | **CR 99725** |
| **7.273** | **7.283** | 7.278 | 7.760 | 1.260 | 1.496 | 2.165 | **CR 99726** |
| **7.444** | **7.454** | 7.453 | 7.860 | 0.813 | 1.000 | 1.250 | **CR 99745** |
| **7.495** | **7.505** | 7.500 | 7.875 | 0.813 | 1.000 | 1.250 | **CR 99750** |
| **7.745** | **7.755** | 7.750 | 8.270 | 1.000 | 1.313 | 1.875 | **CR 99775** |
| **7.869** | **7.879** | 7.875 | 8.375 | 1.359 | 1.500 | 1.750 | **CR 99787** |
| **7.933** | **7.943** | 7.938 | 8.375 | 1.000 | 1.250 | 1.750 | **CR 99799** |
| **7.995** | **8.005** | 8.000 | 8.375 | 1.000 | 1.250 | 1.750 | **CR 99800** |

[1] Possible max. distance of the rear groove from the shaft end when the installation tool supplied with the sleeve is used
[2] SKF SPEEDI-SLEEVE Gold
[3] SKF SPEEDI-SLEEVE Gold – contact SKF for availability

# Wear sleeves for heavy industrial applications (LDSLV)

## General

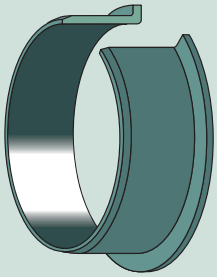
Outside contamination particles and polishing friction between a rotating shaft and a seal can, over time, result in severe shaft damage. Instead of repairing or replacing the damaged shaft, SKF recommends using wear sleeves for heavy industrial applications (LDSLV) for shaft diameters ranging from 211,15 to 1 143 mm *(8.313 to 45 in.)*. The sleeves are made to order for shaft diameters within the primary ranges listed in **tables 1** and **2**. A selection of sizes is listed in the product tables starting on **page 364**.

LDSLV3 and LDSLV4 are recommended for applications where operating conditions for the seals are difficult, particularly where solid contaminants can reach the seals, like in rolling mills, primary metal plants and in chemical and mineral plants.

In applications where seal wear and shaft damage can be expected, SKF recommends installing the sleeves before the machine is operational. By installing them from the outset, it will not be necessary to rework the shaft before installing a replacement sleeve and the original seal size can be used as the replacement.

**Table 1**

**Primary dimension range of LDSLV3**



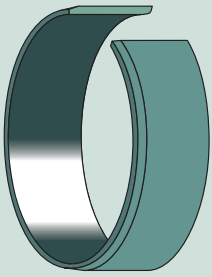
| Shaft range over | incl. | Width[1] min | max |
|---|---|---|---|
| mm/*in.* | | mm/*in.* | |
| 211,15<br>*8.313* | 736,60<br>*29.000* | 17,48<br>*0.688* | 63,50<br>*2.500* |
| 736,60<br>*29.000* | 1 143,00<br>*45.000* | 25,40<br>*1.000* | 63,50<br>*2.500* |

[1] Total width (b), 38,10 to 50,80 mm *(1.5 to 2 in.)* at 1 143,00 mm *(45 in.)* shaft diameter

Contact SKF for LDSLV3 designs outside the primary size range.

**Table 2**

**Primary dimension range of LDSLV4**



| Shaft range over | incl. | Width[1] min | max |
|---|---|---|---|
| mm/*in.* | | mm/*in.* | |
| 211,15<br>*8.313* | 736,60<br>*29.000* | 12,70<br>*0.500* | 63,50<br>*2.500* |
| 736,60<br>*29.000* | 1 143,00<br>*45.000* | 19,05<br>*0.750* | 63,50<br>*2.500* |

[1] Total width (b), 38,10 to 50,80 mm *(1.5 to 2 in.)* at 1 143,00 mm *(45 in.)* shaft diameter

Contact SKF for LDSLV4 designs outside the primary size range.

## Designs and features

SKF wear sleeves for heavy industrial applications are available in two designs: the LDSLV3 with a flange (→ **fig. 9**) and the LDSLV4 without a flange (→ **fig. 10**). Both designs are made of SAE 1008 chromium-plated carbon steel to enhance wear and corrosion resistance. Other sleeve materials can be provided to meet the application's specific demands. The sleeve outside diameter is specially ground to provide a precision counterface surface for the seal. The wall thickness of the standard sleeves is 2,39 mm *(0.094 in.)*.

LDSLV3 is designed with a flange to simplify final positioning of the sleeve. The width of the counterface surface for the seal is 6,35 mm *(0.25 in.)* narrower than the total width of the sleeve. The flange adds a nominal 25,4 mm *(1 in.)* over the shaft diameter. The flange height is 12,7 mm *(0.5 in.)* for all sizes. Note that force should never be applied directly to the flange when installing an LDSLV3.

LDSLV4 has the same features as LDSLV3 but has no flange. LDSLV4 is intended for applications where a flange could interfere with other components during installation, or where a wider seal counterface surface is required.



Fig. 9

LDSLV3

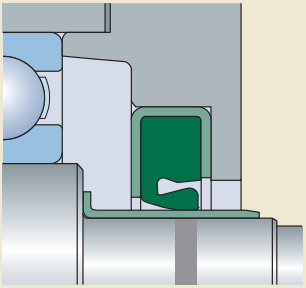
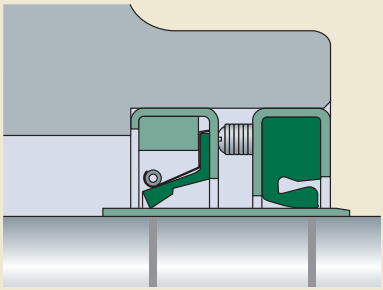


Fig. 10

LDSLV4



## Using LDSLV designs

There are two alternative ways of using SKF wear sleeves for heavy industrial applications (→ **fig. 11**):

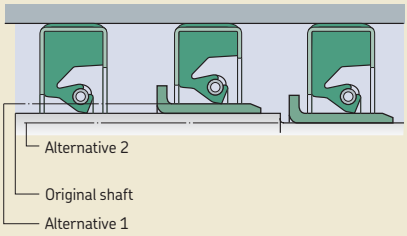
1. The sleeve is positioned on the shaft until it covers the damaged part and a new seal, designed for a 4,78 mm *(0.188 in.)* larger shaft diameter, is used.
2. The shaft is machined down by 4,78 mm *(0.188 in.)* in diameter, the sleeve is installed and the original seal size is used.

The reworked shaft surface for the sleeve should have a surface roughness between $R_a$ 2,5 and 3,2 µm *(100 to 125 µin.)*.

**NOTE:** The shaft tolerances for LDSLV designs, due to their heated slip-fit installation, are different from those for radial shaft seals. Contact SKF for assistance if the sleeves are to be used in systems with sustained temperatures higher than 75 °C *(165 °F)* and surface speeds in excess of 20 m/s *(3 900 ft/min)*.

**Fig. 11**

**Using LDSLV designs**




## Installation

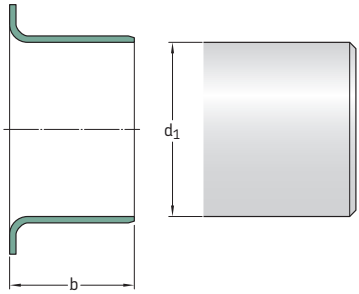
SKF wear sleeves for heavy industrial applications are designed for a heated slip-fit installation and must therefore be uniformly heated prior to installation. The sleeve temperature should be approximately 180 °C *(355 °F)*. Under no circumstances should the sleeve be heated to above 200 °C *(390 °F)*. Any heating techniques normally used for bearings are suitable, such as induction heaters or heating cabinets.

The sleeves should be installed immediately after heating since they cool rapidly and could seize on the shaft before the correct position is achieved. If repositioning is necessary, use a soft faced hammer and a wooden block. After the sleeve is in the desired position, check the lead-in chamfer for any damage during installation.

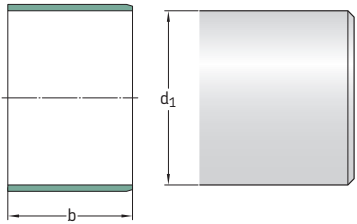
## Removal

The wear sleeves can be removed either by heating them or expanding them by light hammer blows. Prior to removal, the flange of the LDSLV3 should be cut at one point, taking care not to damage the shaft surface.

## Wear sleeves for heavy industrial applications – LDSLV3 and LDSLV4 – metric dimensions
$d_1$ **215,00 – 1 100,23** mm




LDSLV3

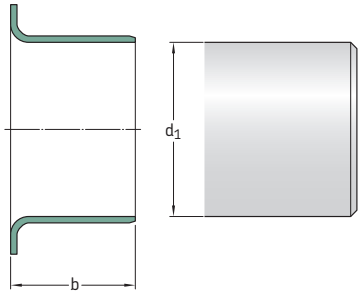



LDSLV4

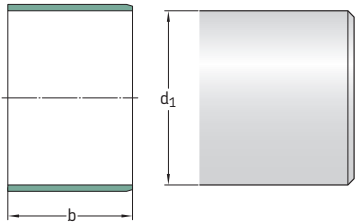
| Shaft diameter<br>$d_1$ | Sleeve width<br>b | Reference sleeve installed outside diameter | Design | Designation |
|---|---|---|---|---|
| mm | mm | mm | – | – |
| **215,00** | 25,40 | 220 | LDSLV3 | **CR 90179** |
| **215,20** | 35 | 220 | LDSLV3 | **CR 87831** |
| **220,00** | 25 | 225 | LDSLV3 | **CR 90806** |
| | 40 | 225 | LDSLV3 | **CR 87914** |
| | 50,80 | 225 | LDSLV3 | **CR 87915** |
| **235,23** | 18 | 240 | LDSLV4 | **CR 90952** |
| **240,00** | 17,50 | 250 | LDSLV3 | **CR 90156** |
| **240,21** | 44 | 245 | LDSLV4 | **CR 87911** |
| **245,20** | 63,50 | 250 | LDSLV3 | **CR 90766** |
| **275,00** | 22 | 280 | LDSLV4 | **CR 90546** |
| **280,00** | 45 | 285 | LDSLV4 | **CR 90437** |
| **285,22** | 63,50 | 290 | LDSLV4 | **CR 90238** |
| **295,20** | 32 | 300 | LDSLV3 | **CR 90114** |
| **315,19** | 63,50 | 320 | LDSLV4 | **CR 90155** |
| **320,00** | 63,50 | 325 | LDSLV4 | **CR 90198** |
| **325,22** | 63,50 | 330 | LDSLV4 | **CR 90239** |
| **335,22** | 39 | 340 | LDSLV4 | **CR 90777** |
| | 50 | 340 | LDSLV4 | **CR 90792** |
| **340,00** | 18 | 340 | LDSLV4 | **CR 87901** |
| | 50 | 340 | LDSLV4 | **CR 90801** |
| | 50 | 345 | LDSLV3 | **CR 90113** |
| **355,20** | 25,40 | 360 | LDSLV4 | **CR 90778** |
| | 50 | 360 | LDSLV4 | **CR 90785** |
| **360,00** | 44 | 365 | LDSLV4 | **CR 87500** |

| Shaft diameter<br>$d_1$ | Sleeve width<br>b | Reference sleeve installed outside diameter | Design | Designation |
|---|---|---|---|---|
| mm | mm | mm | – | – |
| **360,22** | 45 | 365 | LDSLV4 | **CR 90788** |
| **365,20** | 20 | 370 | LDSLV4 | **CR 87531** |
| **395,22** | 63,50 | 400 | LDSLV4 | **CR 87461** |
| **405,23** | 50 | 410 | LDSLV4 | **CR 90042** |
| **419,99** | 63,50 | 425 | LDSLV3 | **CR 97064** |
| **435,20** | 63,50 | 440 | LDSLV4 | **CR 87916** |
| **455,00** | 30 | 460 | LDSLV4 | **CR 90347** |
| **455,20** | 50 | 460 | LDSLV4 | **CR 87504** |
| **475,18** | 20 | 480 | LDSLV4 | **CR 87921** |
| **494,44** | 24 | 500 | LDSLV4 | **CR 90259** |
| **495,20** | 30 | 500 | LDSLV4 | **CR 87503** |
| **503,25** | 24 | 508 | LDSLV4 | **CR 90149** |
| **530,00** | 20 | 535 | LDSLV4 | **CR 87783** |
| **535,23** | 63 | 540 | LDSLV4 | **CR 90802** |
| **555,20** | 63,50 | 560 | LDSLV4 | **CR 90075** |
| **575,23** | 63,50 | 580 | LDSLV4 | **CR 90951** |
| **585,22** | 55 | 590 | LDSLV4 | **CR 90292** |
| **595,20** | 58,20<br>63,50 | 600<br>600 | LDSLV3<br>LDSLV4 | **CR 90120**<br>**CR 89997** |
| **595,22** | 50 | 600 | LDSLV3 | **CR 90241** |
| **645,20** | 64 | 650 | LDSLV4 | **CR 90004** |
| **645,24** | 63,50 | 650 | LDSLV3 | **CR 87817** |
| **665,20** | 45 | 670 | LDSLV4 | **CR 90799** |
| **685,22** | 63,50 | 690 | LDSLV4 | **CR 90953** |
| **714,81** | 50 | 720 | LDSLV4 | **CR 87820** |
| **735,23** | 63 | 740 | LDSLV4 | **CR 89949** |
| **755,19** | 63,50 | 760 | LDSLV3 | **CR 87981** |
| **865,23** | 63,50 | 870 | LDSLV4 | **CR 90221** |
| **875,18** | 63,50 | 880 | LDSLV4 | **CR 90103** |
| **1 015,20** | 25 | 1 020 | LDSLV4 | **CR 90786** |
| **1 049,33** | 60 | 1 054 | LDSLV4 | **CR 89947** |
| **1 100,23** | 63 | 1 105 | LDSLV4 | **CR 89946** |

## Wear sleeves for heavy industrial applications – LDSLV3 and LDSLV4 – inch dimensions
$d_1$ **8.313 – 10.441** in.




LDSLV3

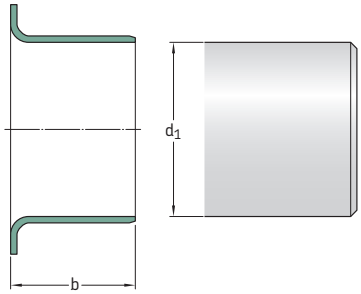



LDSLV4

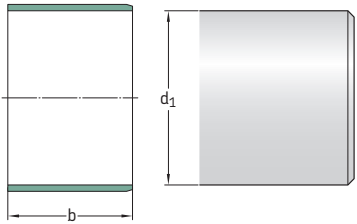
| Shaft diameter<br>$d_1$ | Sleeve width<br>b | Reference sleeve installed outside diameter | Design | Designation |
|---|---|---|---|---|
| in./*mm* | in./*mm* | in./*mm* | – | – |
| **8.313**<br>*211,15* | 1.250<br>*31,75* | 8.501<br>*215,93* | LDSLV4 | **CR 85885** |
| **8.353**<br>*212,17* | 1.500<br>*38,10* | 8.541<br>*216,94* | LDSLV4 | **CR 86907** |
| **8.500**<br>*215,90* | 1.000<br>*25,40* | 8.688<br>*220,68* | LDSLV3 | **CR 85158** |
| **8.625**<br>*219,08* | 2.750<br>*69,85* | 8.813<br>*223,85* | LDSLV3 | **CR 85643** |
| **8.661**<br>*220,00* | 1.000<br>*25,40* | 8.849<br>*224,76* | LDSLV4 | **CR 87319** |
| **8.687**<br>*220,65* | 2.250<br>*57,15* | 8.875<br>*225,43* | LDSLV3 | **CR 86543** |
| **8.750**<br>*222,25* | 1.500<br>*38,10* | 8.938<br>*227,03* | LDSLV3 | **CR 87196** |
| **8.812**<br>*223,82* | 2.000<br>*50,80* | 9.000<br>*228,60* | LDSLV4 | **CR 86551** |
| **8.813**<br>*223,85* | 1.000<br>*25,40* | 9.001<br>*228,63* | LDSLV3 | **CR 85688** |
| **8.866**<br>*225,20* | 2.500<br>*63,50* | 9.054<br>*229,97* | LDSLV4 | **CR 87166** |
| **8.867**<br>*225,22* | 1.000<br>*25,40* | 9.055<br>*230,00* | LDSLV4 | **CR 87462** |
| **8.875**<br>*225,43* | 1.250<br>*31,75*<br>1.250<br>*31,75* | 9.063<br>*230,20*<br>9.063<br>*230,20* | LDSLV3<br><br>LDSLV4 | **CR 85973**<br><br>**CR 87526** |
| **8.938**<br>*227,03* | 2.500<br>*63,50* | 9.126<br>*231,80* | LDSLV4 | **CR 86546** |

| Shaft diameter<br>$d_1$ | Sleeve width<br>b | Reference sleeve installed outside diameter | Design | Designation |
|---|---|---|---|---|
| in./*mm* | in./*mm* | in./*mm* | – | – |
| **9.000**<br>*228,60* | 1.000<br>*25,40* | 9.188<br>*233,38* | LDSLV3 | **CR 87555** |
| **9.055**<br>*230,00* | 1.000<br>*25,40* | 9.243<br>*234,77* | LDSLV3 | **CR 89943** |
| **9.063**<br>*230,20* | 1.500<br>*38,10* | 9.251<br>*234,98* | LDSLV4 | **CR 85931** |
| **9.125**<br>*231,78* | 1.000<br>*25,40* | 9.313<br>*236,55* | LDSLV4 | **CR 86547** |
| | 1.500<br>*38,10* | 9.313<br>*236,55* | LDSLV4 | **CR 90130** |
| **9.250**<br>*234,95* | 0.875<br>*22,23* | 9.438<br>*239,73* | LDSLV4 | **CR 84643** |
| **9.260**<br>*235,20* | 1.102<br>*27,99* | 9.448<br>*239,98* | LDSLV4 | **CR 87789** |
| **9.313**<br>*236,55* | 1.500<br>*38,10* | 9.501<br>*241,33* | LDSLV3 | **CR 85377** |
| **9.449**<br>*240,00* | 1.181<br>*30,00* | 9.637<br>*244,78* | LDSLV4 | **CR 87144** |
| **9.500**<br>*241,30* | 2.500<br>*63,50* | 9.688<br>*246,08* | LDSLV4 | **CR 86562** |
| | 1.000<br>*25,40* | 9.688<br>*246,08* | LDSLV3 | **CR 86633** |
| **9.563**<br>*242,90* | 1.000<br>*25,40* | 9.751<br>*247,68* | LDSLV4 | **CR 85073** |
| | 2.000<br>*50,80* | 9.751<br>*247,68* | LDSLV4 | **CR 85397** |
| **9.750**<br>*247,65* | 1.438<br>*36,53* | 9.938<br>*252,43* | LDSLV4 | **CR 84965** |
| | 2.250<br>*57,15* | 9.938<br>*252,43* | LDSLV4 | **CR 85045** |
| **9.813**<br>*249,25* | 1.125<br>*28,58* | 10.001<br>*254,03* | LDSLV4 | **CR 86413** |
| | 2.000<br>*50,80* | 10.001<br>*254,03* | LDSLV3 | **CR 84156** |
| **9.835**<br>*249,81* | 1.575<br>*40,01* | 10.023<br>*254,58* | LDSLV4 | **CR 90773** |
| **10.000**<br>*254,00* | 1.000<br>*25,40* | 10.188<br>*258,78* | LDSLV3 | **CR 90070** |
| **10.063**<br>*255,60* | 2.250<br>*57,15* | 10.251<br>*260,38* | LDSLV4 | **CR 86000** |
| **10.188**<br>*258,78* | 1.125<br>*28,58* | 10.376<br>*263,55* | LDSLV4 | **CR 84962** |
| **10.240**<br>*260,00* | 1.970<br>*50,00* | 10.424<br>*264,77* | LDSLV3 | **CR 87738** |
| **10.313**<br>*261,95* | 2.000<br>*50,80* | 10.501<br>*266,73* | LDSLV4 | **CR 85629** |
| | 2.250<br>*57,15* | 10.501<br>*266,73* | LDSLV3 | **CR 85191** |
| **10.441**<br>*265,20* | 2.165<br>*54,99* | 10.629<br>*269,98* | LDSLV4 | **CR 86798** |

## Wear sleeves for heavy industrial applications – LDSLV3 and LDSLV4 – inch dimensions
## $d_1$ **10.500 – 12.598** in.




LDSLV3

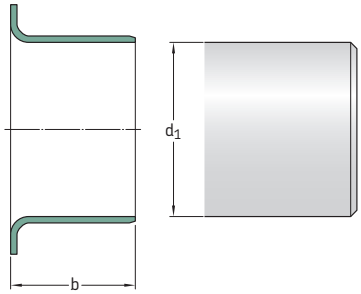



LDSLV4

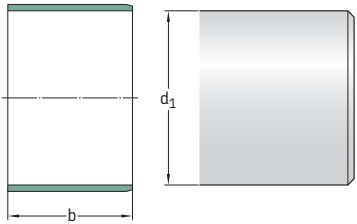
| **Shaft diameter** $d_1$ | **Sleeve width** b | **Reference sleeve installed outside diameter** | **Design** | **Designation** |
|---|---|---|---|---|
| in./*mm* | in./*mm* | in./*mm* | – | – |
| **10.500**<br>*266,70* | 2.750<br>*69,85* | 10.688<br>*271,48* | LDSLV4 | **CR 86013** |
| **10.557**<br>*268,15* | 2.250<br>*57,15* | 10.745<br>*272,92* | LDSLV4 | **CR 85491** |
| **10.562**<br>*268,27* | 0.984<br>*24,99* | 10.750<br>*273,05* | LDSLV4 | **CR 90800** |
| | 1.750<br>*44,45* | 10.750<br>*273,05* | LDSLV4 | **CR 86468** |
| | 1.813<br>*46,05* | 10.750<br>*273,05* | LDSLV4 | **CR 86544** |
| **10.563**<br>*268,30* | 1.500<br>*38,10* | 10.751<br>*273,08* | LDSLV4 | **CR 87768** |
| **10.750**<br>*273,05* | 2.500<br>*63,50* | 10.938<br>*277,83* | LDSLV4 | **CR 86435** |
| **10.813**<br>*274,65* | 1.000<br>*25,40* | 11.001<br>*279,43* | LDSLV3 | **CR 81389** |
| | 2.000<br>*50,80* | 11.001<br>*279,43* | LDSLV4 | **CR 85033** |
| **10.846**<br>*275,49* | 0.709<br>*18,01* | 11.034<br>*280,26* | LDSLV4 | **CR 86601** |
| **10.875**<br>*276,23* | 2.000<br>*50,80* | 11.063<br>*281,00* | LDSLV4 | **CR 84510** |
| **11.000**<br>*279,40* | 1.500<br>*38,10* | 11.188<br>*284,18* | LDSLV4 | **CR 86486** |
| | 2.500<br>*63,50* | 11.188<br>*284,18* | LDSLV4 | **CR 86454** |
| **11.024**<br>*280,00* | 1.181<br>*30,00* | 11.212<br>*284,78* | LDSLV4 | **CR 87142** |
| **11.031**<br>*280,19* | 1.260<br>*32,00* | 11.219<br>*284,96* | LDSLV4 | **CR 87525** |

| Shaft diameter<br>$d_1$ | Sleeve width<br>b | Reference sleeve installed outside diameter | Design | Designation |
|---|---|---|---|---|
| in./*mm* | in./*mm* | in./*mm* | – | – |
| **11.062**<br>*280,97* | 1.750<br>*44,45* | 11.250<br>*285,75* | LDSLV4 | **CR 85469** |
| **11.187**<br>*284,15* | 1.250<br>*31,75* | 11.375<br>*288,93* | LDSLV4 | **CR 86269** |
| **11.188**<br>*284,18* | 2.250<br>*57,15* | 11.376<br>*288,95* | LDSLV4 | **CR 85212** |
| **11.190**<br>*284,23* | 2.250<br>*57,15* | 11.378<br>*289,00* | LDSLV4 | **CR 87566** |
| **11.313**<br>*287,35* | 1.500<br>*38,10* | 11.501<br>*292,13* | LDSLV4 | **CR 84094** |
| **11.375**<br>*288,93* | 2.250<br>*57,15* | 11.563<br>*293,70* | LDSLV4 | **CR 86145** |
| **11.417**<br>*290,00* | 1.750<br>*44,45* | 11.605<br>*294,77* | LDSLV4 | **CR 86441** |
| **11.500**<br>*292,10* | 0.750<br>*19,05* | 11.688<br>*296,88* | LDSLV4 | **CR 90761** |
| **11.562**<br>*293,67* | 1.000<br>*25,40* | 11.750<br>*298,45* | LDSLV4 | **CR 90333** |
| **11.623**<br>*295,22* | 1.417<br>*35,99* | 11.811<br>*300,00* | LDSLV3 | **CR 87875** |
| **11.750**<br>*298,45* | 2.375<br>*60,33* | 11.938<br>*303,23* | LDSLV3 | **CR 87872** |
| **11.812**<br>*300,02* | 1.125<br>*28,58* | 12.000<br>*304,80* | LDSLV4 | **CR 86687** |
| **11.813**<br>*300,05* | 1.500<br>*38,10* | 12.001<br>*304,83* | LDSLV4 | **CR 85979** |
| | 2.250<br>*57,15* | 12.001<br>*304,83* | LDSLV3 | **CR 84819** |
| | 2.750<br>*69,85* | 12.001<br>*304,83* | LDSLV4 | **CR 85844** |
| **11.969**<br>*304,00* | 0.709<br>*18,00* | 12.157<br>*308,79* | LDSLV4 | **CR 86600** |
| **12.000**<br>*304,80* | 2.250<br>*57,15* | 12.188<br>*309,58* | LDSLV4 | **CR 85577** |
| | 2.250<br>*57,15* | 12.188<br>*309,58* | LDSLV3 | **CR 87406** |
| **12.063**<br>*306,40* | 0.625<br>*15,88* | 12.251<br>*311,18* | LDSLV4 | **CR 85418** |
| | 2.500<br>*63,50* | 12.251<br>*311,18* | LDSLV3 | **CR 86404** |
| **12.312**<br>*312,72* | 1.500<br>*38,10* | 12.500<br>*317,50* | LDSLV4 | **CR 90174** |
| **12.313**<br>*312,75* | 0.750<br>*19,05* | 12.501<br>*317,53* | LDSLV4 | **CR 83760** |
| **12.500**<br>*317,50* | 2.125<br>*53,98* | 12.688<br>*322,28* | LDSLV3 | **CR 86169** |
| **12.598**<br>*320,00* | 0.984<br>*25,00* | 12.786<br>*324,76* | LDSLV3 | **CR 87434** |

## Wear sleeves for heavy industrial applications – LDSLV3 and LDSLV4 – inch dimensions
$d_1$ **12.750 – 16.813** in.




LDSLV3

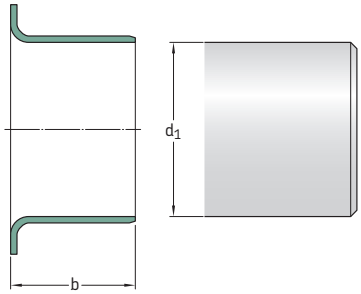



LDSLV4

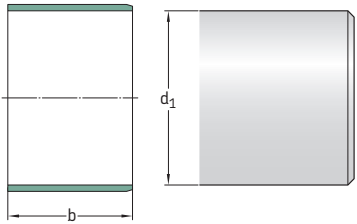
| Shaft diameter<br>$d_1$ | Sleeve width<br>b | Reference sleeve installed outside diameter | Design | Designation |
|---|---|---|---|---|
| in./*mm* | in./*mm* | in./*mm* | – | – |
| **12.750**<br>*323,85* | 0.688<br>*17,48* | 12.938<br>*328,63* | LDSLV4 | **CR 87513** |
| | 1.125<br>*28,58* | 12.938<br>*328,63* | LDSLV3 | **CR 82099** |
| | 1.500<br>*38,10* | 12.938<br>*328,63* | LDSLV3 | **CR 90143** |
| **12.813**<br>*325,45* | 1.000<br>*25,40* | 13.001<br>*330,23* | LDSLV4 | **CR 86258** |
| | 1.375<br>*34,93* | 13.001<br>*330,23* | LDSLV4 | **CR 84263** |
| | 2.000<br>*50,80* | 13.001<br>*330,23* | LDSLV3 | **CR 84390** |
| | 2.500<br>*63,50* | 13.001<br>*330,23* | LDSLV4 | **CR 86722** |
| **13.000**<br>*330,20* | 1.750<br>*44,45* | 13.188<br>*334,98* | LDSLV4 | **CR 85535** |
| **13.063**<br>*331,80* | 1.125<br>*28,58* | 13.251<br>*336,53* | LDSLV4 | **CR 84963** |
| **13.313**<br>*338,15* | 0.813<br>*20,65* | 13.501<br>*342,93* | LDSLV4 | **CR 86688** |
| | 1.500<br>*38,10* | 13.501<br>*342,93* | LDSLV4 | **CR 87463** |
| | 2.000<br>*50,80* | 13.501<br>*342,93* | LDSLV3 | **CR 85852** |
| **13.813**<br>*350,85* | 1.500<br>*38,10* | 14.001<br>*355,63* | LDSLV3 | **CR 81390** |
| | 2.000<br>*50,80* | 14.001<br>*355,63* | LDSLV4 | **CR 85179** |
| **14.000**<br>*355,60* | 1.375<br>*34,93* | 14.188<br>*360,38* | LDSLV3 | **CR 89951** |
| | 1.500<br>*38,10* | 14.188<br>*360,38* | LDSLV3 | **CR 81352** |
| **14.173**<br>*359,99* | 1.000<br>*25,40* | 14.361<br>*364,77* | LDSLV4 | **CR 87445** |

| Shaft diameter<br>$d_1$ | Sleeve width<br>b | Reference sleeve installed outside diameter | Design | Designation |
|---|---|---|---|---|
| in./*mm* | in./*mm* | in./*mm* | – | – |
| **14.313**<br>*363,55* | 1.500<br>*38,10* | 14.501<br>*368,33* | LDSLV4 | **CR 86429** |
| **14.438**<br>*366,73* | 2.500<br>*63,50* | 14.626<br>*371,50* | LDSLV3 | **CR 86403** |
| **14.500**<br>*368,30* | 1.000<br>*25,40* | 14.688<br>*373,08* | LDSLV4 | **CR 85914** |
| **14.813**<br>*376,25* | 1.500<br>*38,10* | 15.001<br>*381,03* | LDSLV4 | **CR 87723** |
| | 2.125<br>*53,98* | 15.001<br>*381,03* | LDSLV3 | **CR 81391** |
| **15.000**<br>*381,00* | 1.000<br>*25,40* | 15.188<br>*385,78* | LDSLV4 | **CR 87247** |
| **15.062**<br>*382,57* | 0.750<br>*19,05* | 15.250<br>*387,35* | LDSLV4 | **CR 90272** |
| **15.066**<br>*382,68* | 1.000<br>*25,40* | 15.254<br>*387,45* | LDSLV3 | **CR 87871** |
| **15.188**<br>*385,78* | 2.500<br>*63,50* | 15.376<br>*390,55* | LDSLV4 | **CR 87569** |
| **15.250**<br>*387,35* | 0.750<br>*19,05* | 15.438<br>*392,13* | LDSLV3 | **CR 84964** |
| **15.560**<br>*395,22* | 0.906<br>*23,01* | 15.748<br>*400,00* | LDSLV4 | **CR 85582** |
| **15.812**<br>*401,62* | 2.500<br>*63,50* | 16.000<br>*406,40* | LDSLV3 | **CR 87634** |
| **15.813**<br>*401,65* | 2.000<br>*50,80* | 16.001<br>*406,43* | LDSLV4 | **CR 85181** |
| | 2.000<br>*50,80* | 16.001<br>*406,43* | LDSLV3 | **CR 87446** |
| | 2.500<br>*63,50* | 16.001<br>*406,43* | LDSLV4 | **CR 86407** |
| **15.998**<br>*406,35* | 2.250<br>*57,15* | 16.186<br>*411,12* | LDSLV3 | **CR 85908** |
| **16.000**<br>*406,40* | 2.000<br>*50,80* | 16.188<br>*411,18* | LDSLV3 | **CR 81354** |
| **16.063**<br>*408,00* | 0.500<br>*12,70* | 16.251<br>*412,78* | LDSLV4 | **CR 87613** |
| | 1.250<br>*31,75* | 16.251<br>*412,78* | LDSLV4 | **CR 86175** |
| | 1.300<br>*33,02* | 16.251<br>*412,78* | LDSLV4 | **CR 86426** |
| | 2.000<br>*50,80* | 16.251<br>*412,78* | LDSLV4 | **CR 86575** |
| **16.313**<br>*414,35* | 2.000<br>*50,80* | 16.501<br>*419,13* | LDSLV4 | **CR 84697** |
| **16.750**<br>*425,45* | 1.500<br>*38,10* | 16.938<br>*430,23* | LDSLV4 | **CR 87585** |
| **16.812**<br>*427,02* | 1.000<br>*25,40* | 17.000<br>*431,80* | LDSLV4 | **CR 86737** |
| **16.813**<br>*427,05* | 2.250<br>*57,15* | 17.001<br>*431,83* | LDSLV4 | **CR 84616** |

## Wear sleeves for heavy industrial applications – LDSLV3 and LDSLV4 – inch dimensions
$d_1$ **17.250 – 25.000** in.




LDSLV3

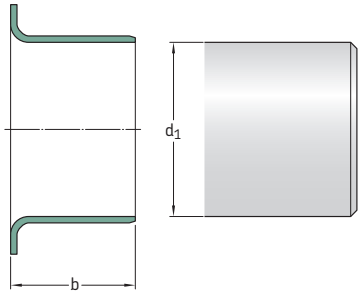



LDSLV4

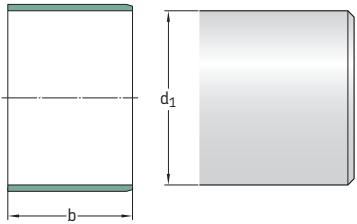
| **Shaft diameter** $d_1$ | **Sleeve width** b | **Reference sleeve installed outside diameter** | **Design** | **Designation** |
|---|---|---|---|---|
| in./*mm* | in./*mm* | in./*mm* | – | – |
| **17.250** | 1.000 | 17.438 | LDSLV4 | **CR 90779** |
| *438,15* | *25,40* | *442,93* | | |
| | 2.000 | 17.438 | LDSLV4 | **CR 84576** |
| | *50,80* | *442,93* | | |
| **17.313** | 1.500 | 17.501 | LDSLV4 | **CR 86430** |
| *439,75* | *38,10* | *444,53* | | |
| **17.449** | 2.000 | 17.637 | LDSLV4 | **CR 85762** |
| *443,20* | *50,80* | *447,98* | | |
| **17.500** | 1.250 | 17.688 | LDSLV4 | **CR 90770** |
| *444,50* | *31,75* | *449,28* | | |
| **17.543** | 2.362 | 17.731 | LDSLV4 | **CR 86799** |
| *445,59* | *59,99* | *450,37* | | |
| **17.750** | 1.250 | 17.938 | LDSLV4 | **CR 90774** |
| *450,85* | *31,75* | *455,63* | | |
| | 2.500 | 17.938 | LDSLV3 | **CR 86631** |
| | *63,50* | *455,63* | | |
| **17.812** | 2.125 | 18.000 | LDSLV4 | **CR 87271** |
| *452,42* | *53,98* | *457,20* | | |
| **17.813** | 2.500 | 18.001 | LDSLV3 | **CR 86405** |
| *452,45* | *63,50* | *457,23* | | |
| **18.163** | 2.000 | 18.351 | LDSLV4 | **CR 86343** |
| *461,34* | *50,80* | *466,12* | | |
| **18.312** | 1.191 | 18.500 | LDSLV4 | **CR 90790** |
| *465,12* | *30,25* | *469,90* | | |
| **18.813** | 1.750 | 19.001 | LDSLV4 | **CR 86563** |
| *477,85* | *44,45* | *482,63* | | |
| | 2.250 | 19.001 | LDSLV4 | **CR 87015** |
| | *57,15* | *482,63* | | |
| | 2.500 | 19.001 | LDSLV4 | **CR 86716** |
| | *63,50* | *482,63* | | |

| Shaft diameter<br>$d_1$ | Sleeve width<br>b | Reference sleeve installed outside diameter | Design | Designation |
|---|---|---|---|---|
| in./*mm* | in./*mm* | in./*mm* | – | – |
| **19.496**<br>*495,20* | 2.362<br>*59,99* | 19.684<br>*499,97* | LDSLV4 | **CR 87631** |
| **19.497**<br>*495,22* | 1.575<br>*40,01* | 19.685<br>*500,00* | LDSLV4 | **CR 87785** |
| **19.500**<br>*495,30* | 1.250<br>*31,75* | 19.688<br>*500,08* | LDSLV4 | **CR 90769** |
| **19.563**<br>*496,90* | 2.750<br>*69,85* | 19.751<br>*501,68* | LDSLV4 | **CR 85654** |
| **19.813**<br>*503,25* | 1.250<br>*31,75* | 20.001<br>*508,03* | LDSLV4 | **CR 84781** |
| **20.312**<br>*515,92* | 1.000<br>*25,40* | 20.500<br>*520,70* | LDSLV4 | **CR 86739** |
| **20.813**<br>*528,65* | 1.250<br>*31,75* | 21.001<br>*533,43* | LDSLV3 | **CR 85800** |
| | 2.125<br>*53,98* | 21.001<br>*533,43* | LDSLV4 | **CR 85367** |
| | 2.500<br>*63,50* | 21.001<br>*533,43* | LDSLV4 | **CR 87298** |
| **20.865**<br>*529,97* | 2.250<br>*57,15* | 21.053<br>*534,75* | LDSLV4 | **CR 90805** |
| **20.990**<br>*533,15* | 2.250<br>*57,15* | 21.178<br>*537,92* | LDSLV3 | **CR 84579** |
| **21.000**<br>*533,40* | 2.250<br>*57,15* | 21.188<br>*538,18* | LDSLV4 | **CR 87090** |
| **21.803**<br>*553,80* | 2.362<br>*59,99* | 21.991<br>*558,57* | LDSLV4 | **CR 87069** |
| **21.813**<br>*554,05* | 2.250<br>*57,15* | 22.001<br>*558,83* | LDSLV4 | **CR 84590** |
| **22.250**<br>*565,15* | 1.000<br>*25,40* | 22.438<br>*569,93* | LDSLV3 | **CR 85691** |
| **22.303**<br>*566,50* | 2.362<br>*59,99* | 22.491<br>*571,27* | LDSLV4 | **CR 87070** |
| **22.313**<br>*566,75* | 1.250<br>*31,75* | 22.501<br>*571,53* | LDSLV4 | **CR 85907** |
| **22.812**<br>*579,42* | 2.000<br>*50,80* | 23.000<br>*584,20* | LDSLV4 | **CR 90163** |
| **23.000**<br>*584,20* | 2.000<br>*50,80* | 23.188<br>*588,98* | LDSLV4 | **CR 90146** |
| **23.434**<br>*595,22* | 0.984<br>*24,99* | 23.622<br>*600,00* | LDSLV4 | **CR 87777** |
| **23.687**<br>*601,65* | 1.950<br>*49,53* | 23.875<br>*606,43* | LDSLV4 | **CR 87907** |
| **23.812**<br>*604,82* | 0.750<br>*19,05* | 24.000<br>*609,60* | LDSLV4 | **CR 87922** |
| | 2.500<br>*63,50* | 24.000<br>*609,60* | LDSLV4 | **CR 87960** |
| **25.000**<br>*635,00* | 2.500<br>*63,50* | 25.188<br>*639,78* | LDSLV4 | **CR 86567** |

## Wear sleeves for heavy industrial applications – LDSLV3 and LDSLV4 – inch dimensions
$d_1$ **25.312 – 42.500** in.




LDSLV3

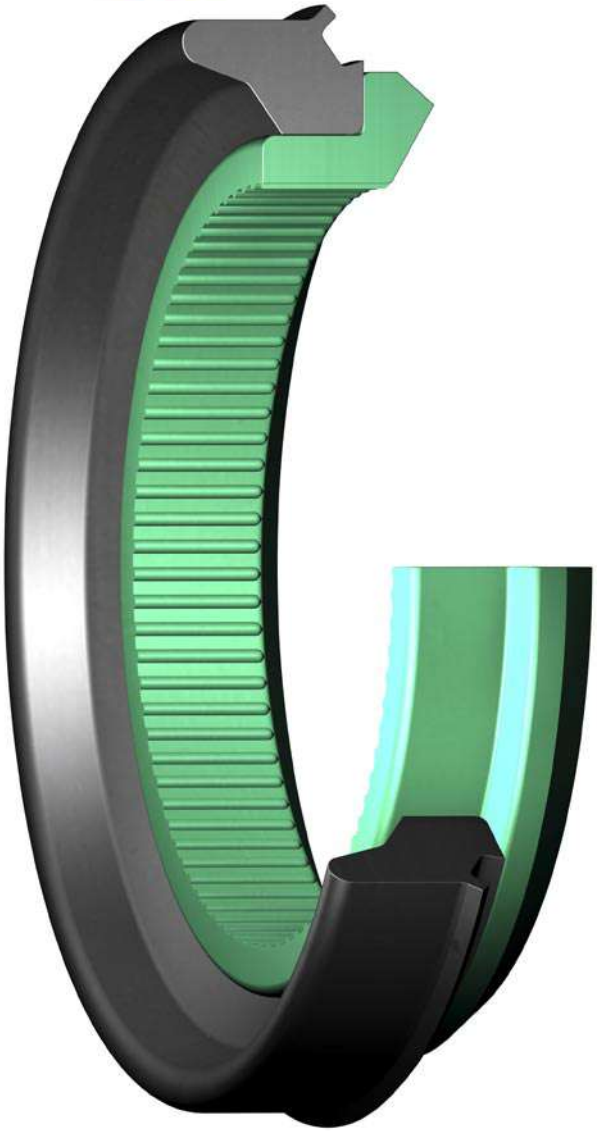



LDSLV4

| Shaft diameter<br>$d_1$ | Sleeve width<br>b | Reference sleeve installed outside diameter | Design | Designation |
|---|---|---|---|---|
| in./*mm* | in./*mm* | in./*mm* | – | – |
| **25.312**<br>*642,92* | 2.000<br>*50,80* | 25.500<br>*647,70* | LDSLV4 | **CR 86091** |
| **25.313**<br>*642,95* | 2.500<br>*63,50* | 25.501<br>*647,73* | LDSLV4 | **CR 87802** |
| **26.000**<br>*660,40* | 2.250<br>*57,15* | 26.188<br>*665,18* | LDSLV3 | **CR 86640** |
| **26.312**<br>*668,32* | 1.375<br>*34,93* | 26.500<br>*673,10* | LDSLV4 | **CR 90809** |
| **26.813**<br>*681,05* | 1.250<br>*31,75*<br>2.250<br>*57,15* | 27.001<br>*685,83*<br>27.001<br>*685,83* | LDSLV4<br><br>LDSLV4 | **CR 85384**<br><br>**CR 85531** |
| **27.000**<br>*685,80* | 2.000<br>*50,80* | 27.188<br>*690,58* | LDSLV4 | **CR 86841** |
| **27.063**<br>*687,40* | 2.250<br>*57,15* | 27.251<br>*692,18* | LDSLV4 | **CR 84764** |
| **27.313**<br>*693,75* | 2.250<br>*57,15* | 27.501<br>*698,53* | LDSLV4 | **CR 85011** |
| **27.500**<br>*698,50* | 2.250<br>*57,15* | 27.688<br>*703,28* | LDSLV4 | **CR 84711** |
| **27.812**<br>*706,42* | 2.500<br>*63,50* | 28.000<br>*711,20* | LDSLV4 | **CR 87421** |
| **28.312**<br>*719,12* | 2.313<br>*58,75* | 28.500<br>*723,90* | LDSLV3 | **CR 87623** |
| **28.813**<br>*731,85* | 2.250<br>*57,15* | 29.001<br>*736,63* | LDSLV4 | **CR 84641** |
| **29.813**<br>*757,25* | 2.250<br>*57,15* | 30.001<br>*762,03* | LDSLV4 | **CR 84642** |

| Shaft diameter<br>$d_1$ | Sleeve width<br>b | Reference sleeve installed outside diameter | Design | Designation |
|---|---|---|---|---|
| in./*mm* | in./*mm* | in./*mm* | – | – |
| **30.000**<br>*762,00* | 2.500<br>*63,50* | 30.188<br>*766,78* | LDSLV3 | **CR 86641** |
| **30.309**<br>*769,85* | 1.375<br>*34,93* | 30.497<br>*774,62* | LDSLV4 | **CR 87530** |
| **30.312**<br>*769,92* | 2.500<br>*63,50* | 30.500<br>*774,70* | LDSLV3 | **CR 87842** |
| **30.813**<br>*782,65* | 2.000<br>*50,80* | 31.001<br>*787,43* | LDSLV4 | **CR 85039** |
| **31.812**<br>*808,02* | 2.500<br>*63,50* | 32.000<br>*812,80* | LDSLV4 | **CR 90810** |
| **32.313**<br>*820,75* | 2.000<br>*50,80* | 32.501<br>*825,53* | LDSLV4 | **CR 86090** |
| **32.812**<br>*833,42* | 2.220<br>*56,39* | 33.000<br>*838,20* | LDSLV4 | **CR 87850** |
| **33.313**<br>*846,15* | 2.625<br>*66,68* | 33.501<br>*850,93* | LDSLV4 | **CR 84730** |
| **34.312**<br>*871,52* | 1.750<br>*44,45* | 34.500<br>*876,30* | LDSLV4 | **CR 87529** |
| **35.313**<br>*896,95* | 2.500<br>*63,50* | 35.501<br>*901,73* | LDSLV4 | **CR 85814** |
| **35.812**<br>*909,62* | 1.500<br>*38,10* | 36.000<br>*914,40* | LDSLV4 | **CR 90332** |
| **36.375**<br>*923,93* | 2.500<br>*63,50* | 36.563<br>*928,70* | LDSLV4 | **CR 86111** |
| **36.813**<br>*935,05* | 2.500<br>*63,50* | 37.001<br>*939,83* | LDSLV4 | **CR 86458** |
| **37.813**<br>*960,45* | 1.500<br>*38,10* | 38.001<br>*965,23* | LDSLV4 | **CR 86973** |
| **38.000**<br>*965,20* | 1.500<br>*38,10* | 38.188<br>*969,98* | LDSLV4 | **CR 86840** |
| **38.500**<br>*977,90* | 1.500<br>*38,10* | 38.688<br>*982,68* | LDSLV4 | **CR 81753** |
| **38.813**<br>*985,85* | 2.125<br>*53,98* | 39.001<br>*990,63* | LDSLV4 | **CR 85123** |
| **39.813**<br>*1011,25* | 2.125<br>*53,98* | 40.001<br>*1016,03* | LDSLV4 | **CR 81826** |
| **41.312**<br>*1049,32* | 1.968<br>*49,99* | 41.500<br>*1054,10* | LDSLV4 | **CR 89948** |
| **42.063**<br>*1068,40* | 2.125<br>*53,98* | 42.251<br>*1073,18* | LDSLV4 | **CR 85038** |
| **42.125**<br>*1069,98* | 2.125<br>*53,98* | 42.313<br>*1074,75* | LDSLV4 | **CR 87054** |
| **42.312**<br>*1074,72* | 1.250<br>*31,75* | 42.500<br>*1079,50* | LDSLV4 | **CR 87379** |
| **42.500**<br>*1079,50* | 1.250<br>*31,75* | 42.688<br>*1084,28* | LDSLV4 | **CR 87392** |

BYC RODAMIENTOS Y SUMINISTROS



# Track pin seals

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**Features and benefits** . . . . . **378**
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5

# Track pin seals

## General

The SKF track pin seals, SKF Trackstar, are specifically designed for oil lubricated track chains in off-highway applications. The seals are installed on the pin that connects a pair of links in the chain (→ **fig. 1**).

## Features and benefits

The basic SKF Trackstar seal design features a polyurethane sealing ring and a nitrile rubber energizer (→ **fig. 2**). The sealing ring retains the oil between the pin and the bushing and excludes contaminants. The energizer provides the static sealing ability. Ribs on the seal inside diameter enable oil to pass to provide the necessary lubrication.

There is also a heavy-duty version designed with a metal reinforcement ring moulded into the polyurethane sealing ring, providing additional rigidity for severe operating conditions (→ **fig. 3**).

Both SKF Trackstar designs are installed on a spacer ring provided by the undercarriage manufacturer. The function of the spacer ring is to ensure that the required space for the seal exists when squeezed between the link and the bushing. The spacer is designed with oil galleys that enable oil to pass for optimal lubrication of the main sealing lip.

**Fig. 1**

**SKF Trackstar seal installation**

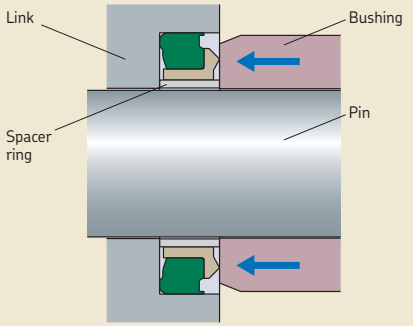
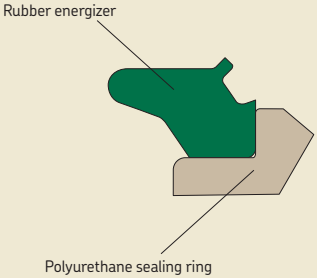



**Fig. 2**

**SKF Trackstar seal design TP**



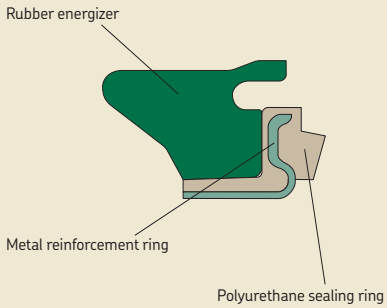
SKF Trackstar seals provide several important benefits including:

- extended service life of the undercarriage
- reduced internal bushing and pin wear
- easy installation
- interchangeability with the most commonly used sealed and lubricated track pin seals

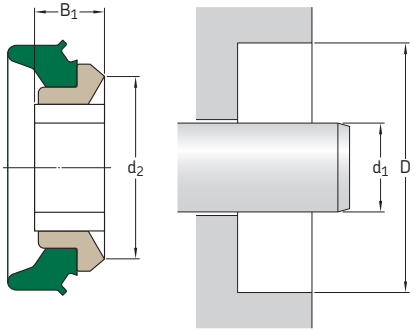


Fig. 3

**SKF Trackstar seal design TPM**



## SKF Trackstar seals –TP and TPM – metric dimensions
$d_1$ **33,22 – 80,72** mm




| **Dimensions** Spacer ring outside diameter $d_1$ max | Bore diameter, nominal D | | Operating width $B_1$ | | Lip diameter $d_2$ max | **Designation** |
|---|---|---|---|---|---|---|
| mm/*in.* | | | | | | – |
| **33,22**<br>*1.308* | 47,88<br>*1.885* | ± 0,25<br>*± 0.010* | 8,38<br>*0.330* | ± 0,25<br>*± 0.010* | 40,01<br>*1.575* | **CR 33.2×47.3×11.8 TP** |
| **36,47**<br>*1.436* | 51,99<br>*2.047* | ± 0,25<br>*± 0.010* | 8,31<br>*0.327* | ± 0,25<br>*± 0.010* | 44,45<br>*1.750* | **CR 36.5×51.4×11.7 TP** |
| **38,05**<br>*1.498* | 55,04<br>*2.167* | ± 0,25<br>*± 0.010* | 9,60<br>*0.378* | ± 0,25<br>*± 0.010* | 46,99<br>*1.850* | **CR 38.1×54.4×12.8 TP** |
| **41,86**<br>*1.648* | 59,77<br>*2.353* | ± 0,25<br>*± 0.010* | 9,25<br>*0.364* | ± 0,25<br>*± 0.010* | 50,04<br>*1.970* | **CR 42.0×59.1×12.8 TP** |
| **42,52**<br>*1.674* | 59,79<br>*2.354* | ± 0,03<br>*± 0.001* | 10,69<br>*0.421* | ± 0,25<br>*± 0.010* | 51,05<br>*2.010* | **CR 43.1×59.4×14.3 TPM** |
| **44,60**<br>*1.756* | 63,04<br>*2.482* | ± 0,25<br>*± 0.010* | 10,69<br>*0.421* | ± 0,25<br>*± 0.010* | 53,70<br>*2.114* | **CR 44.7×62.7×14.2 TP** |
| **46,20**<br>*1.819* | 64,64<br>*2.545* | ± 0,15<br>*± 0.006* | 10,80<br>*0.425* | ± 0,25<br>*± 0.010* | 56,41<br>*2.221* | **CR 46.1×64.1×14.1 TP** |
| **45,69**<br>*1.799* | 62,99<br>*2.480* | ± 0,03<br>*± 0.001* | 10,69<br>*0.421* | ± 0,25<br>*± 0.010* | 54,71<br>*2.154* | **CR 46.3×62.3×14.3 TPM** |
| **50,29**<br>*1.980* | 67,59<br>*2.661* | ± 0,25<br>*± 0.010* | 10,80<br>*0.425* | ± 0,25<br>*± 0.010* | 58,42<br>*2.300* | **CR 50.3×67.0×14.7 TP** |
| **52,60**<br>*2.071* | 70,79<br>*2.787* | ± 0,25<br>*± 0.010* | 10,80<br>*0.425* | ± 0,25<br>*± 0.010* | 61,34<br>*2.415* | **CR 52.7×70.5×14.2 TP** |
| **52,43**<br>*2.064* | 70,10<br>*2.760* | ± 0,03<br>*± 0.001* | 10,80<br>*0.425* | ± 0,25<br>*± 0.010* | 61,11<br>*2.406* | **CR 53.0×69.3×14.2 TPM** |
| **54,99**<br>*2.165* | 72,75<br>*2.864* | ± 0,25<br>*± 0.010* | 10,80<br>*0.425* | ± 0,25<br>*± 0.010* | 64,19<br>*2.527* | **CR 54.9×72.4×14.8 TP** |
| **58,19**<br>*2.291* | 75,54<br>*2.974* | ± 0,25<br>*± 0.010* | 10,67<br>*0.420* | ± 0,25<br>*± 0.010* | 67,03<br>*2.639* | **CR 58.1×75.0×14.7 TP** |
| **58,90**<br>*2.319* | 77,65<br>*3.057* | ± 0,25<br>*± 0.010* | 11,10<br>*0.437* | ± 0,25<br>*± 0.010* | 67,59<br>*2.661* | **CR 58.8×77.1×15.2 TP** |

| **Dimensions** | | | | | | **Designation** |
|---|---|---|---|---|---|---|
| Spacer ring outside diameter $d_1$ max | Bore diameter, nominal D | | Operating width $B_1$ | | Lip diameter $d_2$ max | |
| mm/*in.* | | | | | | – |
| **61,09** | 82,55 | ± 0,13 | 11,10 | ± 0,25 | 70,00 | **CR 61.1×82.0×16.0 TP** |
| *2.405* | *3.250* | *± 0.005* | *0.437* | *± 0.010* | *2.756* | |
| **63,14** | 83,74 | ± 0,25 | 15,49 | ± 0,25 | 73,66 | **CR 63.2×83.1×19.3 TP** |
| *2.486* | *3.297* | *± 0.010* | *0.610* | *± 0.010* | *2.900* | |
| **63,60** | 83,49 | ± 0,25 | 11,13 | ± 0,25 | 74,22 | **CR 63.6×82.5×15.0 TP** |
| *2.504* | *3.287* | *± 0.010* | *0.438* | *± 0.010* | *2.922* | |
| **67,21** | 87,25 | ± 0,25 | 11,13 | ± 0,25 | 77,14 | **CR 67.1×86.7×15.4 TP** |
| *2.646* | *3.435* | *± 0.010* | *0.438* | *± 0.010* | *3.037* | |
| **76,71** | 99,80 | ± 0,13 | 11,10 | ± 0,25 | 89,08 | **CR 76.7×99.3×15.1 TP** |
| *3.020* | *3.929* | *± 0.005* | *0.437* | *± 0.010* | *3.507* | |
| **80,72** | 106,20 | ± 0,13 | 11,10 | ± 0,25 | 92,53 | **CR 80.8×105.8×15.9 TP** |
| *3.178* | *4.181* | *± 0.005* | *0.437* | *± 0.010* | *3.643* | |



# Metal face seals

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6

# Metal face seals

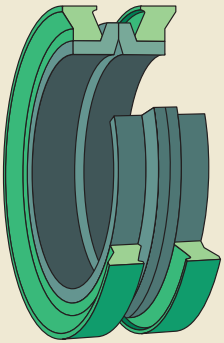
## General

SKF metal face seals type HDDF (→ **fig. 1**) are designed for use under severe service conditions at relatively low circumferential speeds. They offer reliable protection against solid and liquid contaminants as well as leak-proof retention of lubricants. The seals were originally developed for off-road and tracked vehicles, but have been found to be equally suitable for a range of other applications where effective protection is required against sand, soil, mud, water etc. (→ **fig. 2**). These applications include:

- all types of mixers
- sand treatment equipment
- conveyors and other construction equipment
- agricultural machinery
- washing equipment
- grinding mills and other pulverizing equipment
- ore dressing equipment
- mining equipment

**Fig. 1**

**HDDF seal**



## Design features

HDDF seals consist of two identical metal sealing rings and two similar Belleville washers (cup springs) made of nitrile or fluoro rubber compounds, specifically developed for these seals (→ **fig. 3** on **page 387**). The sealing rings are made of wear- and corrosion-resistant cast alloy and have finely finished sliding and sealing surfaces.

The Belleville washers of nitrile or fluoro rubber provide the necessary uniform face loading and effective sealing at the bore and outside diameters. The outside diameter of the washers adapts to the form of the bore in which they are installed. It is critical that the bore diameter and bore depth are in accordance with the dimensions listed in the product table on **pages 388** to **391**. Adequate tolerances between the seal assembly and its mating component are critical to ensure a proper sealing performance.

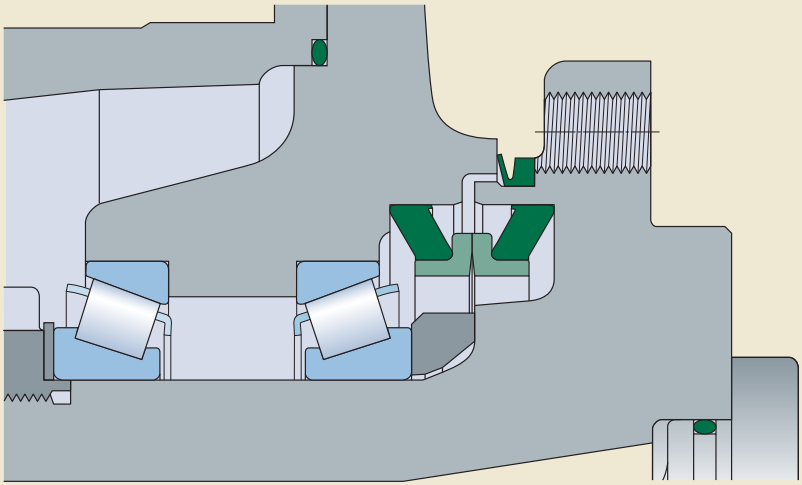
# Lubricant requirements

A lubricant should be applied on the dynamic sealing surfaces of a metal face seal to prevent scoring and cover at least 30% of the sealing surface to properly lubricate and cool the sealing rings. The lubricant can be either a detergent like SAE 10W-40 or a mineral based oil ranging from 10 WT to 90 WT, depending on the ambient temperature. It should be noted that some oils contain additives that make them incompatible with elastomers, which can cause degradation of the Belleville washers, especially when exposed to elevated temperatures.

Although mineral oils are always the recommended lubricant, a grease lubricant can also be used in some slowly rotating or oscillating applications, where the seal face surface speed does not exceed 0,5 m/s (*100 ft/min*). At higher speeds, an oil lubricant is required, not only to provide lubrication to the sealing faces, but also to cool the sealing rings.

Fig. 2

**HDDF application**



## Permissible operating conditions

Depending on their design, metal face seals can withstand different amounts of internal pressure. It should, however, generally be maintained below 0,25 MPa *(35 psi)*. Other recommendations regarding operating conditions for the metal face seals, like temperature and speed, are provided in **table 1**.

The chemical resistance of the nitrile and fluoro rubber in general is dealt with in the section *Chemical resistance* on **page 35**.

**Table 1**

**Permissible operating conditions**

| Operating condition | Recommended value | |
|---|---|---|
| **Temperature, max** | | |
| Continuous operation | | |
| Nitrile rubber (NBR) | –25 to +100 °C | *(–15 to +210 °F)* |
| Fluoro rubber (FKM) | –10 to +190 °C | *(15 to 375 °F)* |
| **Circumferential speed, max** | | |
| Continuous operation | 1,8 m/s | *(350 ft/min)* |
| Brief periods | 3,8 m/s | *(750 ft/min)* |
| **Pressure, max** | | |
| Continuous operation | 0,25 MPa | *(35 psi)* |
| Brief periods | 0,35 MPa | *(50 psi)* |

## Contaminants

Metal face seals are often used in heavily contaminated environments, where mud packing in the cavity between the housing, sealing rings and Belleville washers can occur. Eventually, the mud packing can cause the Belleville washers to be pushed out of position, resulting in improper face loads or mud being pumped past the Belleville washers.

Contaminants can also cause abrasion to the Belleville washers, which in turn causes deterioration of the elastomer. To minimize the risk of seal failure due to this deterioriation, it is critical to select a proper Belleville washer material for the application in question.

## Installing HDDF seals

### General

Careful handling and installation of a metal face seal is critical to avoid cutting or tearing of the elastomeric Belleville washers or breaking the metal sealing rings, both which can cause premature seal failure and immediate leakage. It is also vital to keep the sealing faces free from contaminants like dirt or lint. Always carefully observe installation instructions provided on **page 387**.

### Housing and seal preparation

All housing components contacting the Belleville washers must be free from contaminants (oil, grease, dust, lint particles etc.) when installing the seal. SKF recommends using a non-petroleum based solvent and a clean, lint-free wipe to clean these components prior to installation.

All seal parts must be handled with care to avoid damage or scoring.

## Installation procedure

1 Install the Belleville washers seated against the inside shoulder of the metal sealing rings (→ **fig. 4a**).
2 Carefully push each seal half (Belleville washer and metal sealing ring) into the housing until it is fully seated. Check that the seal is not cocked and that the washers are seated evenly at the bottom of the housing bore. Improper seal installation can result in uneven face loads around the circumference of the seal faces, causing scoring or the sealing rings to separate and allow oil to leak.
3 Clean both metal sealing ring faces with a lint-free wipe and apply a thin film of oil. Ensure that no oil is applied to any surface but the sealing ring faces (→ **fig. 4b**).
4 Check that both housings are concentric and in correct alignment. The Belleville washers must not unseat from the bottom of the housing.
5 Carefully bring the two housings together, avoiding high impact that can scratch or break the seal components.
6 Finally, hold one half of the assembly stationary while rotating the other half at least ten complete revolutions.
**NOTE:** This procedure enables the installer to check that the housing and the Belleville washers are aligned. If the seal assembly wobbles, it is necessary to disassemble it and make sure that the Belleville washers are properly seated in the housing.

**Fig. 3**

**Design features**

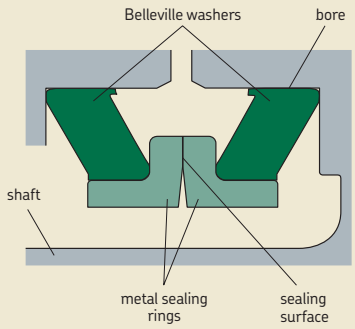
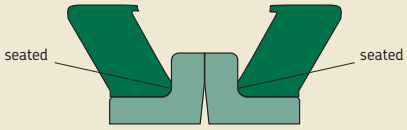
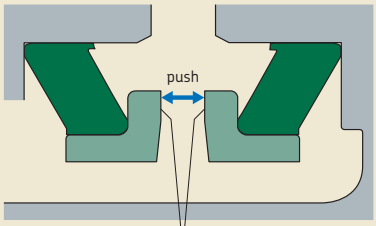



**Fig. 4**

**Installation proceudre**




a

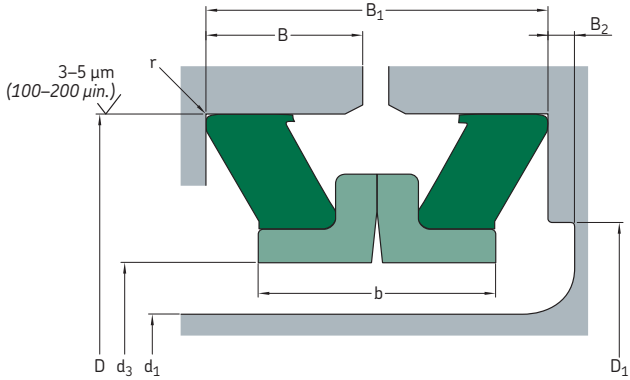



b

6

## Metal face seals – HDDF – inch and metric dimensions

$d_1$ **1.688 – 7.800** in.
$d_1$ **42,88 – 198,12** mm




| Designation | Lip material | Inch dimensions Shaft diameter $d_1$ max | Bore diameter D | Operating width $B_1$ | Seal inside diameter[1] $d_3$ min | Bore depth B | Recommended shoulder diameter $D_1$ max | min[2] | Undercut $B_2$ min | Sealing ring width b max | Radius r max |
|---|---|---|---|---|---|---|---|---|---|---|---|
| – | – | in. | | | | | | | | | |
| **CR 16904** | R | **1.688** | 2.760 ±0.002 | 0.974 ±0.038 | 1.760 | 0.453 | 2.282 | - | - | 0.846 | 0.037 |
| **CR 18259** | R | **1.812** | 3.003 ±0.002 | 0.892 ±0.031 | 1.910 | 0.416 | 2.475 | - | - | 0.790 | 0.042 |
| **CR 21306** | R | **2.125** | 3.250 ±0.002 | 0.900 ±0.033 | 2.215 | 0.418 | 2.759 | - | - | 0.812 | 0.045 |
| **CR 25096** | R | **2.500** | 3.762 ±0.002 | 0.907 ±0.033 | 2.580 | 0.422 | 3.188 | - | - | 0.840 | 0.042 |
| **CR 27536** | R | **2.750** | 4.030 ±0.002 | 0.918 ±0.035 | 2.830 | 0.426 | 3.480 | - | - | 0.810 | 0.042 |
| **CR 30651** | R | **3.063** | 4.500 ±0.002 | 1.016 ±0.035 | 3.170 | 0.475 | 3.833 | - | - | 0.912 | 0.042 |
| **CR 35076** | R | **3.500** | 4.953 ±0.002 | 1.096 ±0.043 | 3.620 | 0.511 | 4.296 | - | - | 0.962 | 0.035 |
| **CR 38740** | R | **3.875** | 5.312 ±0.003 | 1.102 ±0.024 | 4.040 | 0.524 | 4.750 | - | - | 1.002 | 0.042 |
| **CR 38751** | R | **3.875** | 5.562 ±0.003 | 1.267 ±0.050 | 4.040 | 0.594 | 4.791 | - | - | 1.110 | 0.051 |
| **CR 43135** | R | **4.312** | 5.823 ±0.003 | 1.102 ±0.024 | 4.420 | 0.524 | 5.125 | - | - | 1.002 | 0.042 |
| **CR 43150** | R | **4.312** | 6.000 ±0.003 | 1.320 ±0.040 | 4.420 | 0.625 | 5.173 | - | - | 1.090 | 0.051 |
| **CR 46975** | R | **4.688** | 6.400 ±0.003 | 1.525 ±0.050 | 4.795 | 0.722 | 5.583 | - | - | 1.254 | 0.047 |
| **CR 50655** | R | **5.062** | 6.750 ±0.003 | 1.280 ±0.040 | 5.170 | 0.605 | 5.975 | - | - | 1.150 | 0.057 |
| **CR 54000** | R | **5.400** | 6.990 ±0.003 | 1.310 ±0.030 | 5.625 | 0.625 | 6.625 | - | - | 1.182 | 0.057 |
| **CR 56170** | R | **5.625** | 7.250 ±0.003 | 1.366 ±0.031 | 5.825 | 0.650 | 6.486 | 6.174 | 0.032 | 1.300 | 0.057 |
| **CR 58775** | R | **5.875** | 7.641 ±0.003 | 1.510 ±0.031 | 6.000 | 0.724 | 6.868 | 6.548 | 0.056 | 1.490 | 0.073 |
| **CR 63796** | R | **6.375** | 8.120 ±0.003 | 1.265 ±0.040 | 6.570 | 0.598 | 7.555 | 7.505 | 0.125 | 1.350 | 0.042 |
| **CR 67560** | R | **6.750** | 8.620 ±0.004 | 1.375 ±0.030 | 6.920 | 0.656 | 7.750 | - | - | 1.260 | 0.042 |
| **CR 74310** | R | **7.438** | 9.400 ±0.004 | 1.656 ±0.040 | 7.540 | 0.793 | 8.431 | - | - | 1.344 | 0.073 |
| **CR 78020** | R | **7.800** | 10.000 ±0.004 | 1.750 ±0.050 | 7.940 | 0.835 | 8.910 | - | - | 1.500 | 0.058 |

[1] Reference dimension
[2] Applicable when b is greater than B, requiring an undercut $B_2$

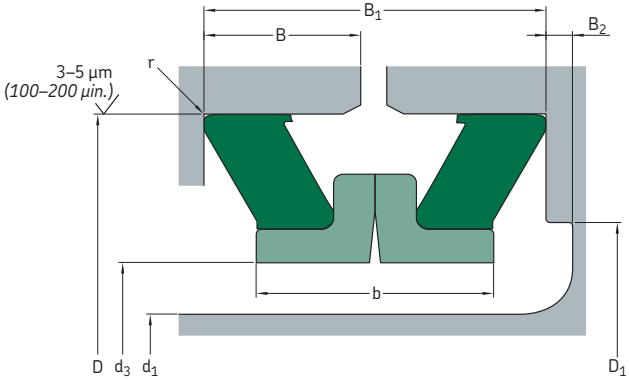
| Designation | Lip material | Metric dimensions Shaft diameter $d_1$ max | Bore diameter D | Operating width $B_1$ | Seal inside diameter[1] $d_3$ min | Bore depth B | Recommended shoulder diameter $D_1$ max | min[2] | Undercut $B_2$ min | Sealing ring width b max | Radius r max |
|---|---|---|---|---|---|---|---|---|---|---|---|
| – | – | mm | | | | | | | | | |
| **CR 16904** | R | **42,88** | 70,10 ±0,06 | 24,74 ±0,97 | 44,70 | 11,51 | 57,96 | - | - | 21,49 | 0,94 |
| **CR 18259** | R | **46,03** | 76,28 ±0,06 | 22,66 ±0,79 | 48,51 | 10,57 | 62,87 | - | - | 20,07 | 1,07 |
| **CR 21306** | R | **53,98** | 82,55 ±0,06 | 22,86 ±0,84 | 56,26 | 10,62 | 70,08 | - | - | 20,62 | 1,14 |
| **CR 25096** | R | **63,50** | 95,54 ±0,06 | 23,04 ±0,84 | 65,53 | 10,72 | 80,98 | - | - | 21,34 | 1,07 |
| **CR 27536** | R | **69,85** | 102,36 ±0,06 | 23,32 ±0,89 | 71,88 | 10,82 | 88,39 | - | - | 20,57 | 1,07 |
| **CR 30651** | R | **77,80** | 114,30 ±0,06 | 25,81 ±0,89 | 80,52 | 12,07 | 97,36 | - | - | 23,16 | 1,07 |
| **CR 35076** | R | **88,90** | 125,81 ±0,06 | 27,84 ±1,09 | 91,95 | 12,98 | 109,12 | - | - | 24,43 | 0,89 |
| **CR 38740** | R | **98,43** | 134,92 ±0,08 | 27,99 ±0,61 | 102,62 | 13,31 | 120,65 | - | - | 25,45 | 1,07 |
| **CR 38751** | R | **98,43** | 141,27 ±0,08 | 32,18 ±1,27 | 102,62 | 15,09 | 121,69 | - | - | 28,19 | 1,30 |
| **CR 43135** | R | **109,52** | 147,90 ±0,08 | 27,99 ±0,61 | 112,27 | 13,31 | 130,18 | - | - | 25,45 | 1,07 |
| **CR 43150** | R | **109,52** | 152,40 ±0,08 | 33,53 ±1,02 | 112,27 | 15,88 | 131,39 | - | - | 27,69 | 1,30 |
| **CR 46975** | R | **119,08** | 162,56 ±0,08 | 38,74 ±1,27 | 121,79 | 18,34 | 141,81 | - | - | 31,85 | 1,19 |
| **CR 50655** | R | **128,57** | 171,45 ±0,08 | 32,51 ±1,02 | 131,32 | 15,37 | 151,77 | - | - | 29,21 | 1,45 |
| **CR 54000** | R | **137,16** | 177,55 ±0,08 | 33,27 ±0,76 | 142,88 | 15,88 | 168,28 | - | - | 30,02 | 1,45 |
| **CR 56170** | R | **142,88** | 184,15 ±0,08 | 34,70 ±0,79 | 147,96 | 16,51 | 164,74 | 156,82 | 0,81 | 33,02 | 1,45 |
| **CR 58775** | R | **149,23** | 194,08 ±0,08 | 38,35 ±0,79 | 152,40 | 18,39 | 174,45 | 166,32 | 1,42 | 37,85 | 1,85 |
| **CR 63796** | R | **161,93** | 206,25 ±0,08 | 32,13 ±1,02 | 166,88 | 15,19 | 191,90 | 190,63 | 3,18 | 34,29 | 1,07 |
| **CR 67560** | R | **171,45** | 218,95 ±0,10 | 34,93 ±0,76 | 175,77 | 16,66 | 196,85 | - | - | 32,00 | 1,07 |
| **CR 74310** | R | **188,93** | 238,76 ±0,10 | 42,06 ±1,02 | 191,52 | 20,14 | 214,15 | - | - | 34,14 | 1,85 |
| **CR 78020** | R | **198,12** | 254,00 ±0,10 | 44,45 ±1,27 | 201,68 | 21,21 | 226,31 | - | - | 38,10 | 1,47 |

[1] Reference dimension
[2] Applicable when b is greater than B, requiring an undercut $B_2$

## Metal face seals – HDDF – inch and metric dimensions

$d_1$ **8.250 – 29.000** in.

$d_1$ **209,55 – 736,60** mm




| Designation | Lip material | Inch dimensions Shaft diameter $d_1$ max | Bore diameter D | Operating width $B_1$ | Seal inside diameter[1] $d_3$ min | Bore depth B | Recommended shoulder diameter $D_1$ max | min[2] | Undercut $B_2$ min | Sealing ring width b max | Radius r max |
|---|---|---|---|---|---|---|---|---|---|---|---|
| – | – | in. | | | | | | | | | |
| **CR 82540** | R | **8.250** | 10.062 ±0.004 | 1.560 ±0.040 | 8.358 | 0.745 | 9.280 | 9.220 | 0.071 | 1.562 | 0.058 |
| **CR 86850** | R | **8.688** | 10.911 ±0.005 | 1.924 ±0.030 | 8.790 | 0.932 | 9.754 | - | - | 1.642 | 0.058 |
| **CR 93115** | R | **9.312** | 11.000 ±0.005 | 1.437 ±0.032 | 9.410 | 0.687 | 10.360 | 10.260 | 0.090 | 1.510 | 0.050 |
| **CR 93125** | R | **9.312** | 11.625 ±0.005 | 1.754 ±0.050 | 9.410 | 0.837 | 10.750 | - | - | 1.510 | 0.089 |
| **CR 95620** | R | **9.562** | 11.859 ±0.005 | 1.949 ±0.069 | 9.660 | 0.925 | 10.703 | - | - | 1.700 | 0.074 |
| **CR 108710** | R | **10.875** | 12.969 ±0.005 | 1.540 ±0.050 | 11.060 | 0.730 | 12.100 | 12.000 | 0.143 | 1.670 | 0.043 |
| **CR 116500** | R | **11.625** | 13.250 ±0.005 | 1.290 ±0.030 | 11.780 | 0.615 | 12.780 | - | - | 1.210 | 0.450 |
| **CR 124020** | R | **12.400** | 14.375 ±0.005 | 1.656 ±0.050 | 12.500 | 0.788 | 13.530 | 13.470 | 0.060 | 1.610 | 0.057 |
| **CR 137570** | R | **13.750** | 15.817 ±0.005 | 1.875 ±0.032 | 13.910 | 0.906 | 14.985 | - | - | 1.670 | 0.089 |
| **CR 806715** | R | **14.750** | 16.695 ±0.005 | 1.875 ±0.032 | 14.950 | 0.906 | 15.863 | - | - | 1.670 | 0.620 |
| **CR 807115** | V | **14.750** | 16.695 ±0.005 | 1.875 ±0.032 | 14.950 | 0.906 | 15.863 | - | - | 1.670 | 0.062 |
| **CR 171025** | R | **17.125** | 19.240 ±0.006 | 1.531 ±0.053 | 17.280 | 0.724 | 18.400 | 18.300 | 0.140 | 1.659 | 0.043 |
| **CR 191022** | R | **19.125** | 21.500 ±0.006 | 1.640 ±0.042 | 19.250 | 0.784 | 20.950 | 20.850 | 0.175 | 1.832 | 0.057 |
| **CR 238020** | R | **23.875** | 26.875 ±0.006 | 2.125 ±0.040 | 24.280 | 1.018 | 25.550 | - | - | 1.851 | 0.089 |
| **CR 807199** | V | **23.875** | 26.875 ±0.006 | 2.125 ±0.040 | 24.280 | 1.018 | 25.550 | - | - | 1.851 | 0.089 |
| **CR 807149** | V | **29.000** | 32.000 ±0.006 | 2.125 ±0.040 | 29.512 | 1.028 | 30.672 | - | - | 1.851 | 0.089 |

[1] Reference dimension

[2] Applicable when b is greater than B, requiring an undercut $B_2$




| Designation | Lip material | Metric dimensions Shaft diameter $d_1$ max | Bore diameter D | Operating width $B_1$ | Seal inside diameter[1] $d_3$ min | Bore depth B | Recommended shoulder diameter $D_1$ max | min[2] | Undercut $B_2$ min | Sealing ring width b max | Radius r max |
|---|---|---|---|---|---|---|---|---|---|---|---|
| – | – | mm | | | | | | | | | |
| **CR 82540** | R | **209,55** | 255,57 ±0,10 | 39,62 ±1,02 | 212,29 | 18,92 | 235,71 | 234,19 | 1,80 | 39,67 | 1,47 |
| **CR 86850** | R | **220,68** | 277,14 ±0,13 | 48,87 ±0,76 | 223,27 | 23,67 | 247,75 | - | - | 41,71 | 1,47 |
| **CR 93115** | R | **236,52** | 279,40 ±0,13 | 36,50 ±0,81 | 239,01 | 17,45 | 263,14 | 260,60 | 2,29 | 38,35 | 1,27 |
| **CR 93125** | R | **236,52** | 295,28 ±0,13 | 44,55 ±1,27 | 239,01 | 21,26 | 273,05 | - | - | 38,35 | 2,26 |
| **CR 95620** | R | **242,87** | 301,22 ±0,13 | 49,50 ±1,75 | 245,36 | 23,50 | 271,86 | - | - | 43,18 | 1,88 |
| **CR 108710** | R | **276,23** | 329,41 ±0,13 | 39,12 ±1,27 | 280,92 | 18,54 | 307,34 | 304,80 | 3,63 | 42,42 | 1,09 |
| **CR 116500** | R | **295,28** | 336,55 ±0,13 | 32,77 ±0,76 | 299,21 | 15,62 | 324,61 | - | - | 30,73 | 11,43 |
| **CR 124020** | R | **314,96** | 365,13 ±0,13 | 42,06 ±1,27 | 317,50 | 20,02 | 343,66 | 342,14 | 1,52 | 40,89 | 1,45 |
| **CR 137570** | R | **349,25** | 401,75 ±0,13 | 47,63 ±0,81 | 353,31 | 23,01 | 380,62 | - | - | 42,42 | 2,26 |
| **CR 806715** | R | **374,65** | 424,05 ±0,13 | 47,63 ±0,81 | 379,73 | 23,01 | 402,92 | - | - | 42,42 | 15,75 |
| **CR 807115** | V | **374,65** | 424,05 ±0,13 | 47,63 ±0,81 | 379,73 | 23,01 | 402,92 | - | - | 42,42 | 1,57 |
| **CR 171025** | R | **434,98** | 488,70 ±0,15 | 38,89 ±1,35 | 438,91 | 18,39 | 467,36 | 464,82 | 3,56 | 42,14 | 1,09 |
| **CR 191022** | R | **485,78** | 546,10 ±0,15 | 41,66 ±1,07 | 488,95 | 19,91 | 532,13 | 529,59 | 4,45 | 46,53 | 1,45 |
| **CR 238020** | R | **606,43** | 682,63 ±0,15 | 53,98 ±1,02 | 616,71 | 25,86 | 648,97 | - | - | 47,02 | 2,26 |
| **CR 807199** | V | **606,43** | 682,63 ±0,15 | 53,98 ±1,02 | 616,71 | 25,86 | 648,97 | - | - | 47,02 | 2,26 |
| **CR 807149** | V | **736,60** | 812,80 ±0,15 | 53,98 ±1,02 | 749,60 | 26,11 | 779,07 | - | - | 47,02 | 2,26 |

[1] Reference dimension
[2] Applicable when b is greater than B, requiring an undercut $B_2$

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# 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 while reliably retaining the lubricant. 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

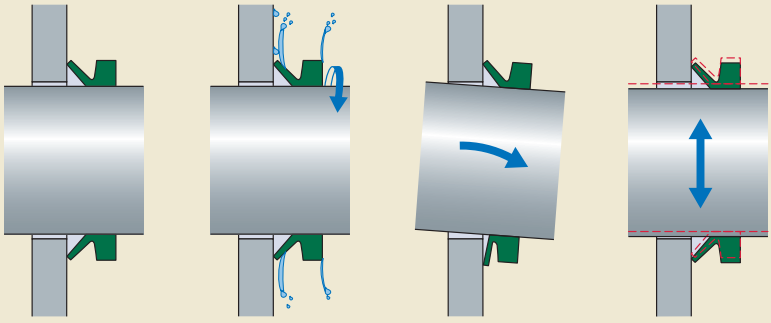
A V-ring consists of a seal body (→ **fig. 2a**), a flexible, conical-shaped sealing lip (→ **fig. 2b**) and an integral, resilient "hinge" (→ **fig. 2c**). It is stretched and installed directly on the shaft, where it is held in place by the inherent tension of the seal body. It rotates with the shaft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

**Installed V-ring seals**



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.

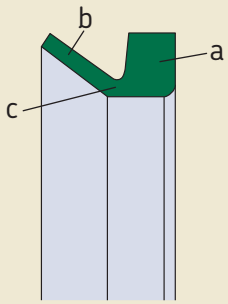
As a result of centrifugal force, the contact pressure of the lip decreases as speed increases. This means that friction losses and heat are kept to a minimum, resulting in improved wear resistance and extended service life. The power loss reaches its maximum at a shaft speed of approximately 12 m/s *(2 360 ft/min)* and is thereafter gradually reduced up to 20 m/s *(3 900 ft/min)*, where it will decrease to zero. The V-ring then serves as a clearance seal and deflector.

## Materials

V-rings are normally made of nitrile rubber that features good chemical resistance, resistance to wear and can be used in applications with normal operating temperatures. 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 399**. In the product table under the heading *Lip code*, the letters R and V are used to identify nitrile rubber and fluoro rubber respectively.

**Fig. 2**

**V-ring design**



# Standard designs

SKF offers five standard V-ring designs:

- VR1/VA, the most common type of V-ring, has a standard cross section and straight back sideface. VR1/VA is typically used to protect bearing arrangements in gearboxes, electric motors and drives.
- VR2/VS, that has a standard low cross section, tapered back face and wide body, providing a firm hold on the shaft. VR2/VS is commonly used in agricultural and automotive applications.
- VR3/VL, designed with a very compact axial cross section. VR3/VL is commonly used in confined spaces to replace labyrinth seals.
- VR5/VRM, a wide, large diameter V-ring with low cross section. VR5/VRM can be located axially and radially on the shaft using a standard band clamp. VR5/VRM has an extension that can be fitted into mechanical components or trimmed to length to meet existing space requirements. VR5/VRM is primarily intended for large, high-speed applications, like rolling mills and paper mills.
- VR6/VRME, a heavy-duty, large diameter V-ring for applications with large axial displacements. VR6/VRME can be located axially and radially on the shaft using a standard band clamp. VR6/VRME is primarily designed to protect high-speed bearing arrangements in rolling mills, paper-making and other large machine applications. The VR6/VRME is similar in shape to the VR5/VRME, except that it does not have the extension to the rear of the body section. It retains the saddle feature for axial and radial location on the shaft with a band clamp. VR6/VRME 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 should always be chosen. 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, North America<br>Design, elsewhere | VR1<br>VA | VR2<br>VS | VR3<br>VL | VR5<br>VRM | VR6<br>VRME |
|---|---|---|---|---|---|
| – | mm *(in.)* | | | | |
| min | 2,7<br>*0.106* | 4,5<br>*0.177* | 105<br>*4.134* | 450<br>*17.716* | 300<br>*11.811* |
| max | 2 020<br>*79.257* | 210<br>*8.268* | 2 025<br>*79.724* | 2 010<br>*79.134* | 1 995<br>*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**

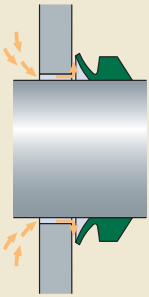


Fig. 5

**Two opposing V-rings**

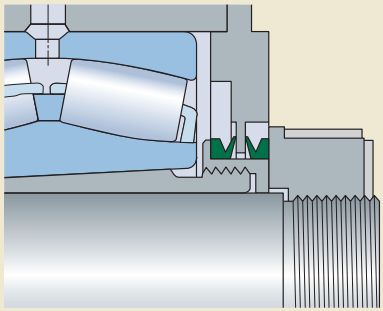
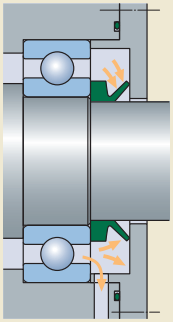


Fig. 6

**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**

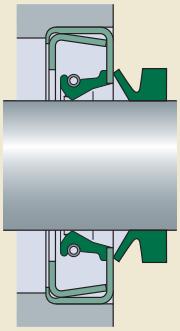
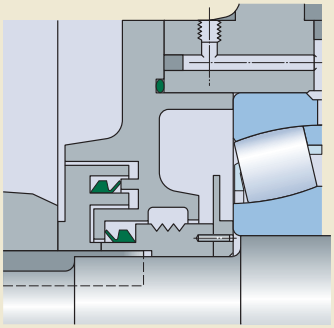


Fig. 8

**V-rings in a labyrinth seal**

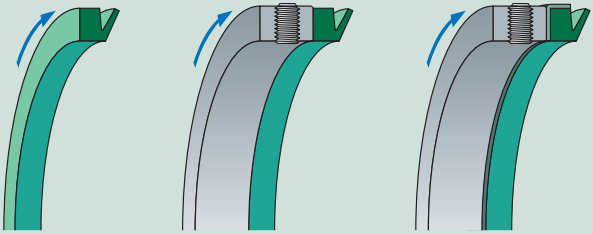


# Sliding velocities

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[1)]

3
axial and radial support[1)]

| **Operating conditions** | **Guideline values for V-rings of** nitrile rubber | fluoro rubber |
|---|---|---|
| **Temperature,** °C *(°F)* | | |
| dynamic sealing | –40 to + 100 *(–40 to +210)* | –20 to + 150 *(–4 to +300)* |
| static sealing | –40 to + 120 *(–40 to +250)* | –40 to + 230 *(–40 to +445)* |
| **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)* |

[1)] Support ring by customer

7

# Coaxiality and runout

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

# Misalignment

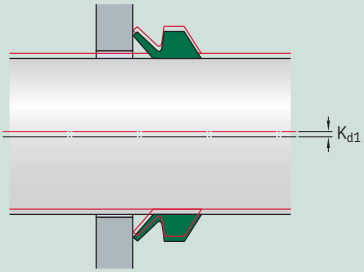
V-rings can tolerate misalignment between the shaft and housing, i.e. deviations from the perpendicularity between the shaft and counterface of the housing. Guideline values for the maximum permissible angular misalignment are provided in **diagram 1**. These values apply to the V-ring designs VR1/VA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

The permissible misalignment values for the very compact VR3/VL design are appreciably lower than those for the VR1/VA and VR2/VS 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. | $K_{d1}$ max | |
| mm | | *in.* | | mm | *in.* |
| **V-rings, VR1/VA and VR2/VS designs** | | | | | |
| | **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* |
| **V-rings, VR3/VL designs** | | | | | |
| **135** | **630** | *5.315* | *24.803* | 1,5 | *0.059* |

# 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 402**). 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 either zinc-plated or passivated. Chromium- or cadmium-plated shafts should be painted 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 roll 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 VR1/VA and VR2/VS designs**

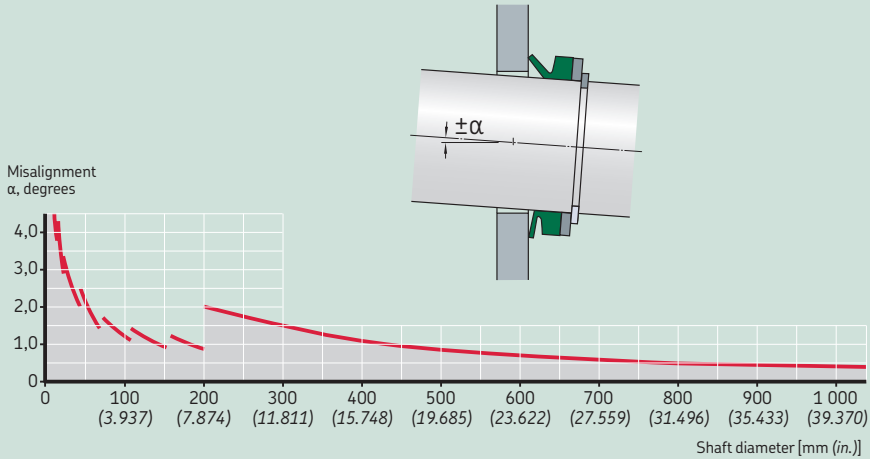


**Table 4**

**Recommended counterface surface finish**

| Circumferential speed | | Surface finish | |
|---|---|---|---|
| m/s | *ft/min.* | $R_a$ µm | *$R_a$ 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 $R_a$ 0,05 µm *(2 µin.)*.

## 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 µm *(252 µin.)*. When sealing fluids or exposed to fine, solid contaminants, the V-ring requires a surface roughness value of maximum $R_a$ 3,2 µm *(128 µin.)*.

A 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. 9**). When several V-rings are to be installed, a simple tool (→ **fig. 10**) 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. 9**

**Installing a V-ring**

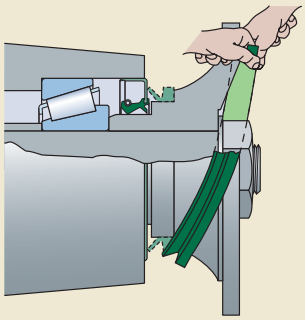
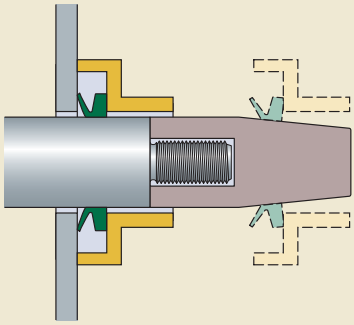


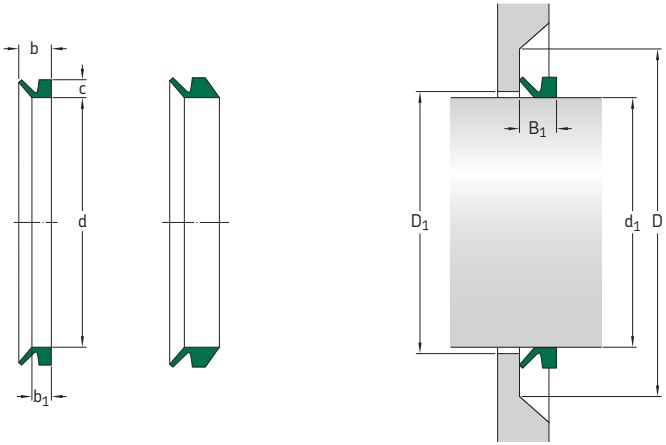
**Fig. 10**

**Installation tool**



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

$d_1$ **2,7 – 48** mm



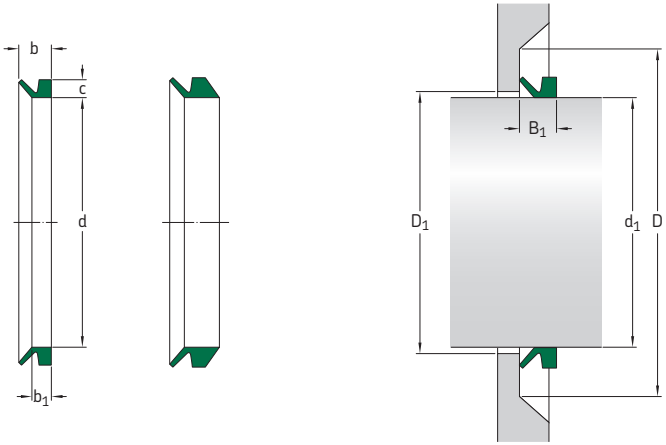

| Dimensions | | | | | | | | | Design | Lip code | Designation |
|---|---|---|---|---|---|---|---|---|---|---|---|
| Shaft diameter range $d_1$ | | Seal inside diameter, free state d | Seal seat width $b_1$ | Nominal seal width b | Nominal seal height c | Clearance $D_1$ max | Counterface D min | Seal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

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

| Dimensions | | | | | | | | | Design | Lip code | Designation |
|---|---|---|---|---|---|---|---|---|---|---|---|
| Shaft diameter range | | Seal inside diameter, free state | Seal seat width | Nominal seal width | Nominal seal height | Clearance | Counterface | Seal fitted width | | | |
| $d_1$ over | incl. | d | $b_1$ | b | c | $D_1$ max | D min | $B_1$ | | | |
| mm | | | | | | | | | – | – | – |
| **13,5** | **15,5** | 12,5 | 3,4 | 5,5 | 3 | $d_1+1$ | $d_1+9$ | 4,5 ± 0,6 | VR1 | R | **CR 400140** |
| | | 12,5 | 3,4 | 5,5 | 3 | $d_1+1$ | $d_1+9$ | 4,5 ± 0,6 | VR1 | V | **CR 400144** |
| | | 12,5 | 5,6 | 7,7 | 3 | $d_1+1$ | $d_1+9$ | 6,7 ± 0,6 | VR2 | R | **CR 400141** |
| | | 12,5 | 5,6 | 7,7 | 3 | $d_1+1$ | $d_1+9$ | 6,7 ± 0,6 | VR2 | V | **CR 400145** |
| **15,5** | **17** | 14 | 3,4 | 5,5 | 3 | $d_1+1$ | $d_1+9$ | 4,5 ± 0,6 | VR1 | R | **CR 400160** |
| | | 14 | 3,4 | 5,5 | 3 | $d_1+1$ | $d_1+9$ | 4,5 ± 0,6 | VR1 | V | **CR 400164** |
| **15,5** | **17,5** | 14 | 5,6 | 7,7 | 3 | $d_1+1$ | $d_1+9$ | 6,7 ± 0,6 | VR2 | R | **CR 400161** |
| | | 14 | 5,6 | 7,7 | 3 | $d_1+1$ | $d_1+9$ | 6,7 ± 0,6 | VR2 | V | **CR 400165** |
| **17,5** | **19** | 16 | 3,4 | 5,5 | 3 | $d_1+1$ | $d_1+9$ | 4,5 ± 0,6 | VR1 | R | **CR 400180** |
| | | 16 | 3,4 | 5,5 | 3 | $d_1+1$ | $d_1+9$ | 4,5 ± 0,6 | VR1 | V | **CR 400184** |
| | | 16 | 5,6 | 7,7 | 3 | $d_1+1$ | $d_1+9$ | 6,7 ± 0,6 | VR2 | R | **CR 400181** |
| | | 16 | 5,6 | 7,7 | 3 | $d_1+1$ | $d_1+9$ | 6,7 ± 0,6 | VR2 | V | **CR 400185** |
| **19** | **21** | 18 | 4,7 | 7,5 | 4 | $d_1+2$ | $d_1+12$ | 6,0 ± 0,8 | VR1 | R | **CR 400200** |
| | | 18 | 4,7 | 7,5 | 4 | $d_1+2$ | $d_1+12$ | 6,0 ± 0,8 | VR1 | V | **CR 400204** |
| | | 18 | 7,9 | 10,5 | 4 | $d_1+2$ | $d_1+12$ | 9,0 ± 0,8 | VR2 | R | **CR 400201** |
| | | 18 | 7,9 | 10,5 | 4 | $d_1+2$ | $d_1+12$ | 9,0 ± 0,8 | VR2 | V | **CR 400205** |
| **21** | **24** | 20 | 4,7 | 7,5 | 4 | $d_1+2$ | $d_1+12$ | 6,0 ± 0,8 | VR1 | R | **CR 400220** |
| | | 20 | 4,7 | 7,5 | 4 | $d_1+2$ | $d_1+12$ | 6,0 ± 0,8 | VR1 | V | **CR 400224** |
| | | 20 | 7,9 | 10,5 | 4 | $d_1+2$ | $d_1+12$ | 9,0 ± 0,8 | VR2 | R | **CR 400221** |
| | | 20 | 7,9 | 10,5 | 4 | $d_1+2$ | $d_1+12$ | 9,0 ± 0,8 | VR2 | V | **CR 400225** |
| **24** | **27** | 22 | 4,7 | 7,5 | 4 | $d_1+2$ | $d_1+12$ | 6,0 ± 0,8 | VR1 | R | **CR 400250** |
| | | 22 | 4,7 | 7,5 | 4 | $d_1+2$ | $d_1+12$ | 6,0 ± 0,8 | VR1 | V | **CR 400254** |
| | | 22 | 7,9 | 10,5 | 4 | $d_1+2$ | $d_1+12$ | 9,0 ± 0,8 | VR2 | R | **CR 400251** |
| | | 22 | 7,9 | 10,5 | 4 | $d_1+2$ | $d_1+12$ | 9,0 ± 0,8 | VR2 | V | **CR 400255** |
| **27** | **29** | 25 | 4,7 | 7,5 | 4 | $d_1+2$ | $d_1+12$ | 6,0 ± 0,8 | VR1 | R | **CR 400280** |
| | | 25 | 4,7 | 7,5 | 4 | $d_1+2$ | $d_1+12$ | 6,0 ± 0,8 | VR1 | V | **CR 400284** |
| | | 25 | 7,9 | 10,5 | 4 | $d_1+2$ | $d_1+12$ | 9,0 ± 0,8 | VR2 | R | **CR 400281** |
| | | 25 | 7,9 | 10,5 | 4 | $d_1+2$ | $d_1+12$ | 9,0 ± 0,8 | VR2 | V | **CR 400285** |
| **29** | **31** | 27 | 4,7 | 7,5 | 4 | $d_1+2$ | $d_1+12$ | 6,0 ± 0,8 | VR1 | R | **CR 400300** |
| | | 27 | 4,7 | 7,5 | 4 | $d_1+2$ | $d_1+12$ | 6,0 ± 0,8 | VR1 | V | **CR 400304** |
| | | 27 | 7,9 | 10,5 | 4 | $d_1+2$ | $d_1+12$ | 9,0 ± 0,8 | VR2 | R | **CR 400301** |
| | | 27 | 7,9 | 10,5 | 4 | $d_1+2$ | $d_1+12$ | 9,0 ± 0,8 | VR2 | V | **CR 400305** |
| **31** | **33** | 29 | 4,7 | 7,5 | 4 | $d_1+2$ | $d_1+12$ | 6,0 ± 0,8 | VR1 | R | **CR 400320** |
| | | 29 | 4,7 | 7,5 | 4 | $d_1+2$ | $d_1+12$ | 6,0 ± 0,8 | VR1 | V | **CR 400324** |
| | | 29 | 7,9 | 10,5 | 4 | $d_1+2$ | $d_1+12$ | 9,0 ± 0,8 | VR2 | R | **CR 400321** |
| | | 29 | 7,9 | 10,5 | 4 | $d_1+2$ | $d_1+12$ | 9,0 ± 0,8 | VR2 | V | **CR 400325** |
| **33** | **36** | 31 | 4,7 | 7,5 | 4 | $d_1+2$ | $d_1+12$ | 6,0 ± 0,8 | VR1 | R | **CR 400350** |
| | | 31 | 4,7 | 7,5 | 4 | $d_1+2$ | $d_1+12$ | 6,0 ± 0,8 | VR1 | V | **CR 400354** |
| | | 31 | 7,9 | 10,5 | 4 | $d_1+2$ | $d_1+12$ | 9,0 ± 0,8 | VR2 | R | **CR 400351** |
| | | 31 | 7,9 | 10,5 | 4 | $d_1+2$ | $d_1+12$ | 9,0 ± 0,8 | VR2 | V | **CR 400355** |
| **36** | **38** | 34 | 4,7 | 7,5 | 4 | $d_1+2$ | $d_1+12$ | 6,0 ± 0,8 | VR1 | R | **CR 400380** |
| | | 34 | 4,7 | 7,5 | 4 | $d_1+2$ | $d_1+12$ | 6,0 ± 0,8 | VR1 | V | **CR 400384** |
| | | 34 | 7,9 | 10,5 | 4 | $d_1+2$ | $d_1+12$ | 9,0 ± 0,8 | VR2 | R | **CR 400381** |
| | | 34 | 7,9 | 10,5 | 4 | $d_1+2$ | $d_1+12$ | 9,0 ± 0,8 | VR2 | V | **CR 400385** |
| **38** | **43** | 36 | 5,5 | 9 | 5 | $d_1+2$ | $d_1+15$ | 7,0 ± 1 | VR1 | R | **CR 400400** |
| | | 36 | 5,5 | 9 | 5 | $d_1+2$ | $d_1+15$ | 7,0 ± 1 | VR1 | V | **CR 400404** |
| | | 36 | 9,5 | 13 | 5 | $d_1+2$ | $d_1+15$ | 11,0 ± 1 | VR2 | R | **CR 400401** |
| | | 36 | 9,5 | 13 | 5 | $d_1+2$ | $d_1+15$ | 11,0 ± 1 | VR2 | V | **CR 400405** |
| **43** | **48** | 40 | 5,5 | 9 | 5 | $d_1+2$ | $d_1+15$ | 7,0 ± 1 | VR1 | R | **CR 400450** |
| | | 40 | 5,5 | 9 | 5 | $d_1+2$ | $d_1+15$ | 7,0 ± 1 | VR1 | V | **CR 400454** |
| | | 40 | 9,5 | 13 | 5 | $d_1+2$ | $d_1+15$ | 11,0 ± 1 | VR2 | R | **CR 400451** |
| | | 40 | 9,5 | 13 | 5 | $d_1+2$ | $d_1+15$ | 11,0 ± 1 | VR2 | V | **CR 400455** |

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

$d_1$ **48 – 175** mm



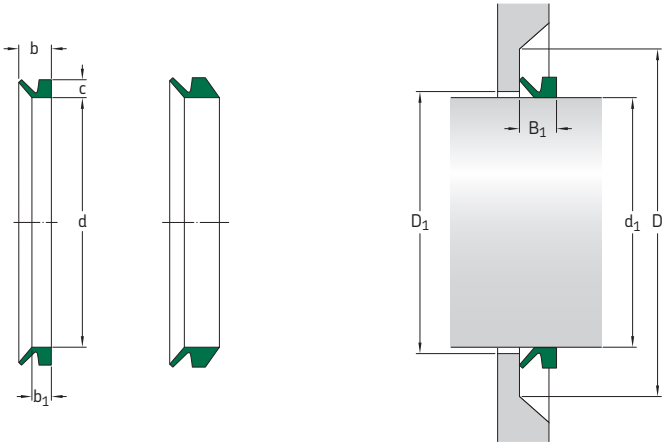

| Dimensions | | | | | | | | | Design | Lip code | Designation |
|---|---|---|---|---|---|---|---|---|---|---|---|
| Shaft diameter range $d_1$ over | incl. | Seal inside diameter, free state d | Seal seat width $b_1$ | Nominal seal width b | Nominal seal height c | Clearance $D_1$ max | Counterface D min | Seal fitted width $B_1$ | | | |
| mm | | | | | | | | | – | – | – |
| **48** | **53** | 45 | 5,5 | 9 | 5 | $d_1+2$ | $d_1+15$ | 7,0 ± 1 | VR1 | R | **CR 400500** |
| | | 45 | 5,5 | 9 | 5 | $d_1+2$ | $d_1+15$ | 7,0 ± 1 | VR1 | V | **CR 400504** |
| | | 45 | 9,5 | 13 | 5 | $d_1+2$ | $d_1+15$ | 11,0 ± 1 | VR2 | R | **CR 400501** |
| | | 45 | 9,5 | 13 | 5 | $d_1+2$ | $d_1+15$ | 11,0 ± 1 | VR2 | V | **CR 400505** |
| **53** | **58** | 49 | 5,5 | 9 | 5 | $d_1+2$ | $d_1+15$ | 7,0 ± 1 | VR1 | R | **CR 400550** |
| | | 49 | 5,5 | 9 | 5 | $d_1+2$ | $d_1+15$ | 7,0 ± 1 | VR1 | V | **CR 400554** |
| | | 49 | 9,5 | 13 | 5 | $d_1+2$ | $d_1+15$ | 11,0 ± 1 | VR2 | R | **CR 400551** |
| | | 49 | 9,5 | 13 | 5 | $d_1+2$ | $d_1+15$ | 11,0 ± 1 | VR2 | V | **CR 400555** |
| **58** | **63** | 54 | 5,5 | 9 | 5 | $d_1+2$ | $d_1+15$ | 7,0 ± 1 | VR1 | R | **CR 400600** |
| | | 54 | 5,5 | 9 | 5 | $d_1+2$ | $d_1+15$ | 7,0 ± 1 | VR1 | V | **CR 400604** |
| | | 54 | 9,5 | 13 | 5 | $d_1+2$ | $d_1+15$ | 11,0 ± 1 | VR2 | R | **CR 400601** |
| | | 54 | 9,5 | 13 | 5 | $d_1+2$ | $d_1+15$ | 11,0 ± 1 | VR2 | V | **CR 400605** |
| **63** | **68** | 58 | 5,5 | 9 | 5 | $d_1+2$ | $d_1+15$ | 7,0 ± 1 | VR1 | R | **CR 400650** |
| | | 58 | 5,5 | 9 | 5 | $d_1+2$ | $d_1+15$ | 7,0 ± 1 | VR1 | V | **CR 400654** |
| | | 58 | 9,5 | 13 | 5 | $d_1+2$ | $d_1+15$ | 11,0 ± 1 | VR2 | R | **CR 400651** |
| | | 58 | 9,5 | 13 | 5 | $d_1+2$ | $d_1+15$ | 11,0 ± 1 | VR2 | V | **CR 400655** |
| **68** | **73** | 63 | 6,8 | 11 | 6 | $d_1+3$ | $d_1+18$ | 9,0 ± 1,2 | VR1 | R | **CR 400700** |
| | | 63 | 6,8 | 11 | 6 | $d_1+3$ | $d_1+18$ | 9,0 ± 1,2 | VR1 | V | **CR 400704** |
| | | 63 | 11,3 | 15,5 | 6 | $d_1+3$ | $d_1+18$ | 13,5 ± 1,2 | VR2 | R | **CR 400701** |
| | | 63 | 11,3 | 15,5 | 6 | $d_1+3$ | $d_1+18$ | 13,5 ± 1,2 | VR2 | V | **CR 400705** |
| **73** | **78** | 67 | 6,8 | 11 | 6 | $d_1+3$ | $d_1+18$ | 9,0 ± 1,2 | VR1 | R | **CR 400750** |
| | | 67 | 6,8 | 11 | 6 | $d_1+3$ | $d_1+18$ | 13,5 ± 1,2 | VR2 | R | **CR 400751** |
| | | 67 | 11,3 | 15,5 | 6 | $d_1+3$ | $d_1+18$ | 13,5 ± 1,2 | VR2 | V | **CR 400755** |
| **78** | **83** | 72 | 6,8 | 11 | 6 | $d_1+3$ | $d_1+18$ | 9,0 ± 1,2 | VR1 | R | **CR 400800** |
| | | 72 | 6,8 | 11 | 6 | $d_1+3$ | $d_1+18$ | 9,0 ± 1,2 | VR1 | V | **CR 400804** |
| | | 72 | 11,3 | 15,5 | 6 | $d_1+3$ | $d_1+18$ | 13,5 ± 1,2 | VR2 | R | **CR 400801** |
| | | 72 | 11,3 | 15,5 | 6 | $d_1+3$ | $d_1+18$ | 13,5 ± 1,2 | VR2 | V | **CR 400805** |
| **83** | **88** | 76 | 6,8 | 11 | 6 | $d_1+3$ | $d_1+18$ | 9,0 ± 1,2 | VR1 | R | **CR 400850** |
| | | 76 | 6,8 | 11 | 6 | $d_1+3$ | $d_1+18$ | 9,0 ± 1,2 | VR1 | V | **CR 400854** |
| | | 76 | 11,3 | 15,5 | 6 | $d_1+3$ | $d_1+18$ | 13,5 ± 1,2 | VR2 | R | **CR 400851** |
| | | 76 | 11,3 | 15,5 | 6 | $d_1+3$ | $d_1+18$ | 13,5 ± 1,2 | VR2 | V | **CR 400855** |

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

| Dimensions | | | | | | | | | Design | Lip code | Designation |
|---|---|---|---|---|---|---|---|---|---|---|---|
| Shaft diameter range | | Seal inside diameter, free state | Seal seat width | Nominal seal width | Nominal seal height | Clearance | Counterface | Seal fitted width | | | |
| $d_1$ over | incl. | d | $b_1$ | b | c | $D_1$ max | D min | $B_1$ | | | |
| mm | | | | | | | | | – | – | – |
| **88** | **93** | 81 | 6,8 | 11 | 6 | $d_1+3$ | $d_1+18$ | 9,0±1,2 | VR1 | R | **CR 400900** |
| | | 81 | 6,8 | 11 | 6 | $d_1+3$ | $d_1+18$ | 9,0±1,2 | VR1 | V | **CR 400904** |
| | | 81 | 11,3 | 15,5 | 6 | $d_1+3$ | $d_1+18$ | 13,5±1,2 | VR2 | R | **CR 400901** |
| | | 81 | 11,3 | 15,5 | 6 | $d_1+3$ | $d_1+18$ | 13,5±1,2 | VR2 | V | **CR 400905** |
| **93** | **98** | 85 | 6,8 | 11 | 6 | $d_1+3$ | $d_1+18$ | 9,0±1,2 | VR1 | R | **CR 400950** |
| | | 85 | 6,8 | 11 | 6 | $d_1+3$ | $d_1+18$ | 9,0±1,2 | VR1 | V | **CR 400954** |
| | | 85 | 11,3 | 15,5 | 6 | $d_1+3$ | $d_1+18$ | 13,5±1,2 | VR2 | R | **CR 400951** |
| | | 85 | 11,3 | 15,5 | 6 | $d_1+3$ | $d_1+18$ | 13,5±1,2 | VR2 | V | **CR 400955** |
| **98** | **105** | 90 | 6,8 | 11 | 6 | $d_1+3$ | $d_1+18$ | 9,0±1,2 | VR1 | R | **CR 401000** |
| | | 90 | 6,8 | 11 | 6 | $d_1+3$ | $d_1+18$ | 9,0±1,2 | VR1 | V | **CR 401004** |
| | | 90 | 11,3 | 15,5 | 6 | $d_1+3$ | $d_1+18$ | 13,5±1,2 | VR2 | R | **CR 401001** |
| | | 90 | 11,3 | 15,5 | 6 | $d_1+3$ | $d_1+18$ | 13,5±1,2 | VR2 | V | **CR 401005** |
| **105** | **115** | 99 | 6 | 10,5 | 6,5 | $d_1+5$ | $d_1+20$ | 8,0±1,5 | VR3 | R | **CR 401102** |
| | | 99 | 6 | 10,5 | 6,5 | $d_1+5$ | $d_1+20$ | 8,0±1,5 | VR3 | V | **CR 401106** |
| | | 99 | 7,9 | 12,8 | 7 | $d_1+4$ | $d_1+21$ | 10,5±1,5 | VR1 | R | **CR 401100** |
| | | 99 | 7,9 | 12,8 | 7 | $d_1+4$ | $d_1+21$ | 10,5±1,5 | VR1 | V | **CR 401104** |
| | | 99 | 13,1 | 18 | 7 | $d_1+4$ | $d_1+21$ | 15,5±1,5 | VR2 | R | **CR 401101** |
| | | 99 | 13,1 | 18 | 7 | $d_1+4$ | $d_1+21$ | 15,5±1,5 | VR2 | V | **CR 401105** |
| **115** | **125** | 108 | 6 | 10,5 | 6,5 | $d_1+5$ | $d_1+20$ | 8,0±1,5 | VR3 | R | **CR 401202** |
| | | 108 | 6 | 10,5 | 6,5 | $d_1+5$ | $d_1+20$ | 8,0±1,5 | VR3 | V | **CR 401206** |
| | | 108 | 7,9 | 12,8 | 7 | $d_1+4$ | $d_1+21$ | 10,5±1,5 | VR1 | R | **CR 401200** |
| | | 108 | 7,9 | 12,8 | 7 | $d_1+4$ | $d_1+21$ | 10,5±1,5 | VR1 | V | **CR 401204** |
| | | 108 | 13,1 | 18 | 7 | $d_1+4$ | $d_1+21$ | 15,5±1,5 | VR2 | R | **CR 401201** |
| | | 108 | 13,1 | 18 | 7 | $d_1+4$ | $d_1+21$ | 15,5±1,5 | VR2 | V | **CR 401205** |
| **125** | **135** | 117 | 6 | 10,5 | 6,5 | $d_1+5$ | $d_1+20$ | 8,0±1,5 | VR3 | R | **CR 401302** |
| | | 117 | 6 | 10,5 | 6,5 | $d_1+5$ | $d_1+20$ | 8,0±1,5 | VR3 | V | **CR 401306** |
| | | 117 | 7,9 | 12,8 | 7 | $d_1+4$ | $d_1+21$ | 10,5±1,5 | VR1 | R | **CR 401300** |
| | | 117 | 7,9 | 12,8 | 7 | $d_1+4$ | $d_1+21$ | 10,5±1,5 | VR1 | V | **CR 401304** |
| | | 117 | 13,1 | 18 | 7 | $d_1+4$ | $d_1+21$ | 15,5±1,5 | VR2 | R | **CR 401301** |
| | | 117 | 13,1 | 18 | 7 | $d_1+4$ | $d_1+21$ | 15,5±1,5 | VR2 | V | **CR 401305** |
| **135** | **145** | 126 | 6 | 10,5 | 6,5 | $d_1+5$ | $d_1+20$ | 8,0±1,5 | VR3 | R | **CR 401402** |
| | | 126 | 6 | 10,5 | 6,5 | $d_1+5$ | $d_1+20$ | 8,0±1,5 | VR3 | V | **CR 401406** |
| | | 126 | 7,9 | 12,8 | 7 | $d_1+4$ | $d_1+21$ | 10,5±1,5 | VR1 | R | **CR 401400** |
| | | 126 | 7,9 | 12,8 | 7 | $d_1+4$ | $d_1+21$ | 10,5±1,5 | VR1 | V | **CR 401404** |
| | | 126 | 13,1 | 18 | 7 | $d_1+4$ | $d_1+21$ | 15,5±1,5 | VR2 | R | **CR 401401** |
| | | 126 | 13,1 | 18 | 7 | $d_1+4$ | $d_1+21$ | 15,5±1,5 | VR2 | V | **CR 401405** |
| **145** | **155** | 135 | 6 | 10,5 | 6,5 | $d_1+5$ | $d_1+20$ | 8,0±1,5 | VR3 | R | **CR 401502** |
| | | 135 | 6 | 10,5 | 6,5 | $d_1+5$ | $d_1+20$ | 8,0±1,5 | VR3 | V | **CR 401506** |
| | | 135 | 7,9 | 12,8 | 7 | $d_1+4$ | $d_1+21$ | 10,5±1,5 | VR1 | R | **CR 401500** |
| | | 135 | 7,9 | 12,8 | 7 | $d_1+4$ | $d_1+21$ | 10,5±1,5 | VR1 | V | **CR 401504** |
| | | 135 | 13,1 | 18 | 7 | $d_1+4$ | $d_1+21$ | 15,5±1,5 | VR2 | R | **CR 401501** |
| | | 135 | 13,1 | 18 | 7 | $d_1+4$ | $d_1+21$ | 15,5±1,5 | VR2 | V | **CR 401505** |
| **155** | **165** | 144 | 6 | 10,5 | 6,5 | $d_1+5$ | $d_1+20$ | 8,0±1,5 | VR3 | R | **CR 401602** |
| | | 144 | 6 | 10,5 | 6,5 | $d_1+5$ | $d_1+20$ | 8,0±1,5 | VR3 | V | **CR 401606** |
| | | 144 | 9 | 14,5 | 8 | $d_1+4$ | $d_1+24$ | 12,0±1,8 | VR1 | R | **CR 401600** |
| | | 144 | 9 | 14,5 | 8 | $d_1+4$ | $d_1+24$ | 12,0±1,8 | VR1 | V | **CR 401604** |
| | | 144 | 15 | 20,5 | 8 | $d_1+4$ | $d_1+24$ | 18,0±1,8 | VR2 | R | **CR 401601** |
| | | 144 | 15 | 20,5 | 8 | $d_1+4$ | $d_1+24$ | 18,0±1,8 | VR2 | V | **CR 401605** |
| **165** | **175** | 153 | 6 | 10,5 | 6,5 | $d_1+5$ | $d_1+20$ | 8,0±1,5 | VR3 | R | **CR 401702** |
| | | 153 | 6 | 10,5 | 6,5 | $d_1+5$ | $d_1+20$ | 8,0±1,5 | VR3 | V | **CR 401706** |
| | | 153 | 9 | 14,5 | 8 | $d_1+4$ | $d_1+24$ | 12,0±1,8 | VR1 | R | **CR 401700** |
| | | 153 | 9 | 14,5 | 8 | $d_1+4$ | $d_1+24$ | 12,0±1,8 | VR1 | V | **CR 401704** |
| | | 153 | 15 | 20,5 | 8 | $d_1+4$ | $d_1+24$ | 18,0±1,8 | VR2 | R | **CR 401701** |
| | | 153 | 15 | 20,5 | 8 | $d_1+4$ | $d_1+24$ | 18,0±1,8 | VR2 | V | **CR 401705** |

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

$d_1$ **175 – 375** mm



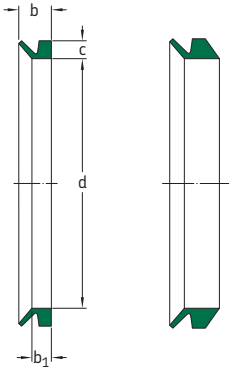

| Dimensions | | | | | | | | | Design | Lip code | Designation |
|---|---|---|---|---|---|---|---|---|---|---|---|
| Shaft diameter range $d_1$ over | incl. | Seal inside diameter, free state d | Seal seat width $b_1$ | Nominal seal width b | Nominal seal height c | Clearance $D_1$ max | Counterface D min | Seal fitted width $B_1$ | | | |
| mm | | | | | | | | | – | – | – |
| **175** | **185** | 162 | 6 | 10,5 | 6,5 | $d_1+5$ | $d_1+20$ | 8,0 ± 1,5 | VR3 | R | **CR 401802** |
| | | 162 | 6 | 10,5 | 6,5 | $d_1+5$ | $d_1+20$ | 8,0 ± 1,5 | VR3 | V | **CR 401806** |
| | | 162 | 9 | 14,5 | 8 | $d_1+4$ | $d_1+24$ | 12,0 ± 1,8 | VR1 | R | **CR 401800** |
| | | 162 | 9 | 14,5 | 8 | $d_1+4$ | $d_1+24$ | 12,0 ± 1,8 | VR1 | V | **CR 401804** |
| | | 162 | 15 | 20,5 | 8 | $d_1+4$ | $d_1+24$ | 18,0 ± 1,8 | VR2 | R | **CR 401801** |
| | | 162 | 15 | 20,5 | 8 | $d_1+4$ | $d_1+24$ | 18,0 ± 1,8 | VR2 | V | **CR 401805** |
| **185** | **195** | 171 | 6 | 10,5 | 6,5 | $d_1+5$ | $d_1+20$ | 8,0 ± 1,5 | VR3 | R | **CR 401902** |
| | | 171 | 6 | 10,5 | 6,5 | $d_1+5$ | $d_1+20$ | 8,0 ± 1,5 | VR3 | V | **CR 401906** |
| | | 171 | 9 | 14,5 | 8 | $d_1+4$ | $d_1+24$ | 12,0 ± 1,8 | VR1 | R | **CR 401900** |
| | | 171 | 9 | 14,5 | 8 | $d_1+4$ | $d_1+24$ | 12,0 ± 1,8 | VR1 | V | **CR 401904** |
| | | 171 | 15 | 20,5 | 8 | $d_1+4$ | $d_1+24$ | 18,0 ± 1,8 | VR2 | R | **CR 401901** |
| | | 171 | 15 | 20,5 | 8 | $d_1+4$ | $d_1+24$ | 18,0 ± 1,8 | VR2 | V | **CR 401905** |
| **195** | **210** | 180 | 9 | 14,5 | 8 | $d_1+4$ | $d_1+24$ | 12,0 ± 1,8 | VR1 | R | **CR 401990** |
| | | 180 | 9 | 14,5 | 8 | $d_1+4$ | $d_1+24$ | 12,0 ± 1,8 | VR1 | V | **CR 401994** |
| **190** | **210** | 180 | 14,3 | 25 | 15 | $d_1+10$ | $d_1+45$ | 20,0 ± 4 | VR1 | R | **CR 402000** |
| | | 180 | 14,3 | 25 | 15 | $d_1+10$ | $d_1+45$ | 20,0 ± 4 | VR1 | V | **CR 402004** |
| **195** | **210** | 180 | 15 | 20,5 | 8 | $d_1+4$ | $d_1+24$ | 18,0 ± 1,8 | VR2 | R | **CR 401991** |
| | | 180 | 15 | 20,5 | 8 | $d_1+4$ | $d_1+24$ | 18,0 ± 1,8 | VR2 | V | **CR 401995** |
| | | 182 | 6 | 10,5 | 6,5 | $d_1+5$ | $d_1+20$ | 8,0 ± 1,5 | VR3 | R | **CR 402002** |
| | | 182 | 6 | 10,5 | 6,5 | $d_1+5$ | $d_1+20$ | 8,0 ± 1,5 | VR3 | V | **CR 402006** |
| **210** | **233** | 198 | 6 | 10,5 | 6,5 | $d_1+5$ | $d_1+20$ | 8,0 ± 1,5 | VR3 | R | **CR 402202** |
| | | 198 | 6 | 10,5 | 6,5 | $d_1+5$ | $d_1+20$ | 8,0 ± 1,5 | VR3 | V | **CR 402206** |
| **210** | **235** | 198 | 14,3 | 25 | 15 | $d_1+10$ | $d_1+45$ | 20,0 ± 4 | VR1 | R | **CR 402200** |
| | | 198 | 14,3 | 25 | 15 | $d_1+10$ | $d_1+45$ | 20,0 ± 4 | VR1 | V | **CR 402204** |
| **233** | **260** | 225 | 6 | 10,5 | 6,5 | $d_1+5$ | $d_1+20$ | 8,0 ± 1,5 | VR3 | R | **CR 402502** |
| | | 225 | 6 | 10,5 | 6,5 | $d_1+5$ | $d_1+20$ | 8,0 ± 1,5 | VR3 | V | **CR 402506** |
| **235** | **265** | 225 | 14,3 | 25 | 15 | $d_1+10$ | $d_1+45$ | 20,0 ± 4 | VR1 | R | **CR 402500** |
| | | 225 | 14,3 | 25 | 15 | $d_1+10$ | $d_1+45$ | 20,0 ± 4 | VR1 | V | **CR 402504** |
| **260** | **285** | 247 | 6 | 10,5 | 6,5 | $d_1+5$ | $d_1+20$ | 8,0 ± 1,5 | VR3 | R | **CR 402752** |
| | | 247 | 6 | 10,5 | 6,5 | $d_1+5$ | $d_1+20$ | 8,0 ± 1,5 | VR3 | V | **CR 402756** |

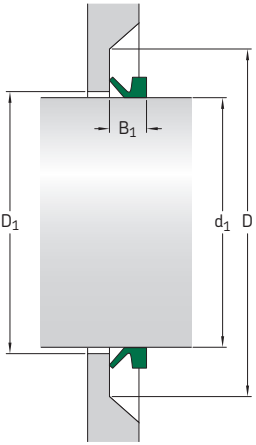
Select the larger V-ring when the dimension $d_1$ is on the boundary between two sizes of V-ring.

| Dimensions | | | | | | | | | Design | Lip code | Designation |
|---|---|---|---|---|---|---|---|---|---|---|---|
| Shaft diameter range | | Seal inside diameter, free state | Seal seat width | Nominal seal width | Nominal seal height | Clearance | Counterface | Seal fitted width | | | |
| $d_1$ | | d | $b_1$ | b | c | $D_1$ | D | $B_1$ | | | |
| over | incl. | | | | | max | min | | | | |
| mm | | | | | | | | | – | – | – |
| **265** | **290** | 247 | 14,3 | 25 | 15 | $d_1$ + 10 | $d_1$ + 45 | 20,0 ± 4 | VR1 | R | **CR 402750** |
| | | 247 | 14,3 | 25 | 15 | $d_1$ + 10 | $d_1$ + 45 | 20,0 ± 4 | VR1 | V | **CR 402754** |
| **285** | **310** | 270 | 6 | 10,5 | 6,5 | $d_1$ + 5 | $d_1$ + 20 | 8,0 ± 1,5 | VR3 | R | **CR 403002** |
| | | 270 | 6 | 10,5 | 6,5 | $d_1$ + 5 | $d_1$ + 20 | 8,0 ± 1,5 | VR3 | V | **CR 403006** |
| **290** | **310** | 270 | 14,3 | 25 | 15 | $d_1$ + 10 | $d_1$ + 45 | 20,0 ± 4 | VR1 | R | **CR 403000** |
| | | 270 | 14,3 | 25 | 15 | $d_1$ + 10 | $d_1$ + 45 | 20,0 ± 4 | VR1 | V | **CR 403004** |
| **310** | **335** | 292 | 6 | 10,5 | 6,5 | $d_1$ + 5 | $d_1$ + 20 | 8,0 ± 1,5 | VR3 | R | **CR 403252** |
| | | 292 | 6 | 10,5 | 6,5 | $d_1$ + 5 | $d_1$ + 20 | 8,0 ± 1,5 | VR3 | V | **CR 403256** |
| | | 292 | 14,3 | 25 | 15 | $d_1$ + 10 | $d_1$ + 45 | 20,0 ± 4 | VR1 | R | **CR 403250** |
| | | 292 | 14,3 | 25 | 15 | $d_1$ + 10 | $d_1$ + 45 | 20,0 ± 4 | VR1 | V | **CR 403254** |
| **300** | **305** | 294 | 32,5 | 65 | 21 | $d_1$ + 24 | $d_1$ + 115 | 50 ± 12 | VR6 | R | **CR 470301** |
| | | 294 | 32,5 | 65 | 30 | $d_1$ + 24 | $d_1$ + 115 | 50 ± 12 | VR4 | R | **CR 403003** |
| **305** | **310** | 299 | 32,5 | 65 | 30 | $d_1$ + 24 | $d_1$ + 115 | 50 ± 12 | VR4 | R | **CR 403053** |
| **310** | **315** | 304 | 32,5 | 65 | 21 | $d_1$ + 24 | $d_1$ + 115 | 50 ± 12 | VR6 | R | **CR 470311** |
| | | 304 | 32,5 | 65 | 30 | $d_1$ + 24 | $d_1$ + 115 | 50 ± 12 | VR4 | R | **CR 403103** |
| **315** | **320** | 309 | 32,5 | 65 | 30 | $d_1$ + 24 | $d_1$ + 115 | 50 ± 12 | VR4 | R | **CR 403153** |
| **320** | **325** | 314 | 32,5 | 65 | 30 | $d_1$ + 24 | $d_1$ + 115 | 50 ± 12 | VR4 | R | **CR 403203** |
| **335** | **365** | 315 | 6 | 10,5 | 6,5 | $d_1$ + 5 | $d_1$ + 20 | 8,0 ± 1,5 | VR3 | R | **CR 403502** |
| | | 315 | 6 | 10,5 | 6,5 | $d_1$ + 5 | $d_1$ + 20 | 8,0 ± 1,5 | VR3 | V | **CR 403506** |
| | | 315 | 14,3 | 25 | 15 | $d_1$ + 10 | $d_1$ + 45 | 20,0 ± 4 | VR1 | R | **CR 403500** |
| | | 315 | 14,3 | 25 | 15 | $d_1$ + 10 | $d_1$ + 45 | 20,0 ± 4 | VR1 | V | **CR 403504** |
| **325** | **330** | 319 | 32,5 | 65 | 21 | $d_1$ + 24 | $d_1$ + 115 | 50 ± 12 | VR6 | R | **CR 470326** |
| | | 319 | 32,5 | 65 | 30 | $d_1$ + 24 | $d_1$ + 115 | 50 ± 12 | VR4 | R | **CR 403253** |
| **330** | **335** | 323 | 32,5 | 65 | 30 | $d_1$ + 24 | $d_1$ + 115 | 50 ± 12 | VR4 | R | **CR 403303** |
| **335** | **340** | 328 | 32,5 | 65 | 30 | $d_1$ + 24 | $d_1$ + 115 | 50 ± 12 | VR4 | R | **CR 403353** |
| **340** | **345** | 333 | 32,5 | 65 | 21 | $d_1$ + 24 | $d_1$ + 115 | 50 ± 12 | VR6 | R | **CR 470341** |
| | | 333 | 32,5 | 65 | 30 | $d_1$ + 24 | $d_1$ + 115 | 50 ± 12 | VR4 | R | **CR 403403** |
| **365** | **385** | 337 | 6 | 10,5 | 6,5 | $d_1$ + 5 | $d_1$ + 20 | 8,0 ± 1,5 | VR3 | R | **CR 403752** |
| | | 337 | 6 | 10,5 | 6,5 | $d_1$ + 5 | $d_1$ + 20 | 8,0 ± 1,5 | VR3 | V | **CR 403756** |
| **365** | **390** | 337 | 14,3 | 25 | 15 | $d_1$ + 10 | $d_1$ + 45 | 20,0 ± 4 | VR1 | R | **CR 403750** |
| | | 337 | 14,3 | 25 | 15 | $d_1$ + 10 | $d_1$ + 45 | 20,0 ± 4 | VR1 | V | **CR 403754** |
| **345** | **350** | 338 | 32,5 | 65 | 30 | $d_1$ + 24 | $d_1$ + 115 | 50 ± 12 | VR4 | R | **CR 403453** |
| **350** | **355** | 343 | 32,5 | 65 | 21 | $d_1$ + 24 | $d_1$ + 115 | 50 ± 12 | VR6 | R | **CR 470351** |
| | | 343 | 32,5 | 65 | 30 | $d_1$ + 24 | $d_1$ + 115 | 50 ± 12 | VR4 | R | **CR 403503** |
| **355** | **360** | 347 | 32,5 | 65 | 21 | $d_1$ + 24 | $d_1$ + 115 | 50 ± 12 | VR6 | R | **CR 470356** |
| | | 347 | 32,5 | 65 | 30 | $d_1$ + 24 | $d_1$ + 115 | 50 ± 12 | VR4 | R | **CR 403553** |
| **360** | **365** | 352 | 32,5 | 65 | 30 | $d_1$ + 24 | $d_1$ + 115 | 50 ± 12 | VR4 | R | **CR 403603** |
| **365** | **370** | 357 | 32,5 | 65 | 30 | $d_1$ + 24 | $d_1$ + 115 | 50 ± 12 | VR4 | R | **CR 403653** |
| **385** | **410** | 360 | 6 | 10,5 | 6,5 | $d_1$ + 5 | $d_1$ + 20 | 8,0 ± 1,5 | VR3 | R | **CR 404002** |
| | | 360 | 6 | 10,5 | 6,5 | $d_1$ + 5 | $d_1$ + 20 | 8,0 ± 1,5 | VR3 | V | **CR 404006** |
| **390** | **430** | 360 | 14,3 | 25 | 15 | $d_1$ + 10 | $d_1$ + 45 | 20,0 ± 4 | VR1 | R | **CR 404000** |
| | | 360 | 14,3 | 25 | 15 | $d_1$ + 10 | $d_1$ + 45 | 20,0 ± 4 | VR1 | V | **CR 404004** |
| **370** | **375** | 362 | 32,5 | 65 | 21 | $d_1$ + 24 | $d_1$ + 115 | 50 ± 12 | VR6 | R | **CR 470371** |
| | | 362 | 32,5 | 65 | 30 | $d_1$ + 24 | $d_1$ + 115 | 50 ± 12 | VR4 | R | **CR 403703** |

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

$d_1$ **375 – 550** mm




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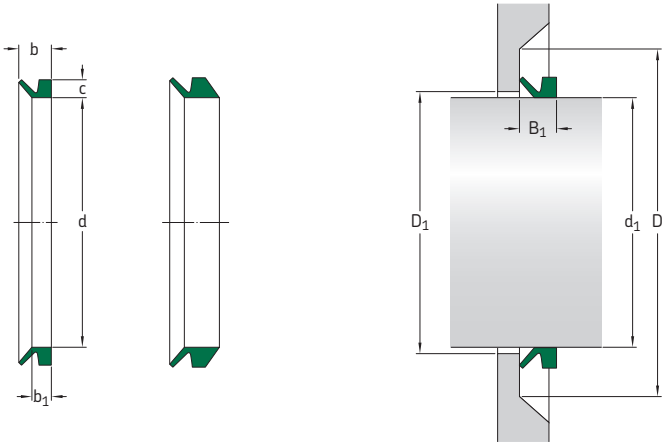
| Dimensions | | | | | | | | | Design | Lip code | Designation |
|---|---|---|---|---|---|---|---|---|---|---|---|
| Shaft diameter range $d_1$ over | incl. | Seal inside diameter, free state d | Seal seat width $b_1$ | Nominal seal width b | Nominal seal height c | Clearance $D_1$ max | Counterface D min | Seal fitted width $B_1$ | | | |
| mm | | | | | | | | | – | – | – |
| **375** | **380** | 367 | 32,5 | 65 | 21 | $d_1+24$ | $d_1+115$ | 50±12 | VR6 | R | **CR 470376** |
| | | 367 | 32,5 | 65 | 30 | $d_1+24$ | $d_1+115$ | 50±12 | VR4 | R | **CR 403753** |
| **380** | **385** | 371 | 32,5 | 65 | 21 | $d_1+24$ | $d_1+115$ | 50±12 | VR6 | R | **CR 470381** |
| | | 371 | 32,5 | 65 | 30 | $d_1+24$ | $d_1+115$ | 50±12 | VR4 | R | **CR 403803** |
| **385** | **390** | 376 | 32,5 | 65 | 30 | $d_1+24$ | $d_1+115$ | 50±12 | VR4 | R | **CR 403853** |
| **390** | **395** | 381 | 32,5 | 65 | 21 | $d_1+24$ | $d_1+115$ | 50±12 | VR6 | R | **CR 470391** |
| | | 381 | 32,5 | 65 | 30 | $d_1+24$ | $d_1+115$ | 50±12 | VR4 | R | **CR 403903** |
| **410** | **440** | 382 | 6 | 10,5 | 6,5 | $d_1+5$ | $d_1+20$ | 8,0±1,5 | VR3 | R | **CR 404252** |
| | | 382 | 6 | 10,5 | 6,5 | $d_1+5$ | $d_1+20$ | 8,0±1,5 | VR3 | V | **CR 404256** |
| **395** | **400** | 386 | 32,5 | 65 | 30 | $d_1+24$ | $d_1+115$ | 50±12 | VR4 | R | **CR 403953** |
| **400** | **405** | 391 | 32,5 | 65 | 21 | $d_1+24$ | $d_1+115$ | 50±12 | VR6 | R | **CR 470401** |
| | | 391 | 32,5 | 65 | 30 | $d_1+24$ | $d_1+115$ | 50±12 | VR4 | R | **CR 404003** |
| **405** | **410** | 396 | 32,5 | 65 | 30 | $d_1+24$ | $d_1+115$ | 50±12 | VR4 | R | **CR 404053** |
| **410** | **415** | 401 | 32,5 | 65 | 21 | $d_1+24$ | $d_1+115$ | 50±12 | VR6 | R | **CR 470411** |
| | | 401 | 32,5 | 65 | 30 | $d_1+24$ | $d_1+115$ | 50±12 | VR4 | R | **CR 404103** |
| **440** | **475** | 405 | 6 | 10,5 | 6,5 | $d_1+5$ | $d_1+20$ | 8,0±1,5 | VR3 | R | **CR 404502** |
| | | 405 | 6 | 10,5 | 6,5 | $d_1+5$ | $d_1+20$ | 8,0±1,5 | VR3 | V | **CR 404506** |
| **430** | **480** | 405 | 14,3 | 25 | 15 | $d_1+10$ | $d_1+45$ | 20,0±4 | VR1 | R | **CR 404500** |
| | | 405 | 14,3 | 25 | 15 | $d_1+10$ | $d_1+45$ | 20,0±4 | VR1 | V | **CR 404504** |
| **415** | **420** | 405 | 32,5 | 65 | 30 | $d_1+24$ | $d_1+115$ | 50±12 | VR4 | R | **CR 404153** |
| **420** | **425** | 410 | 32,5 | 65 | 21 | $d_1+24$ | $d_1+115$ | 50±12 | VR6 | R | **CR 470421** |
| | | 410 | 32,5 | 65 | 30 | $d_1+24$ | $d_1+115$ | 50±12 | VR4 | R | **CR 404203** |
| **425** | **430** | 415 | 32,5 | 65 | 30 | $d_1+24$ | $d_1+115$ | 50±12 | VR4 | R | **CR 404253** |
| **430** | **435** | 420 | 32,5 | 65 | 21 | $d_1+24$ | $d_1+115$ | 50±12 | VR6 | R | **CR 470431** |
| | | 420 | 32,5 | 65 | 30 | $d_1+24$ | $d_1+115$ | 50±12 | VR4 | R | **CR 404303** |

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

| Dimensions | | | | | | | | | Design | Lip code | Designation |
|---|---|---|---|---|---|---|---|---|---|---|---|
| Shaft diameter range | | Seal inside diameter, free state | Seal seat width | Nominal seal width | Nominal seal height | Clearance | Counterface | Seal fitted width | | | |
| $d_1$ | | d | $b_1$ | b | c | $D_1$ | D | $B_1$ | | | |
| over | incl. | | | | | max | min | | | | |
| mm | | | | | | | | | – | – | – |
| **435** | **440** | 425 | 32,5 | 65 | 30 | $d_1$ + 24 | $d_1$ + 115 | 50 ± 12 | VR4 | R | **CR 404353** |
| **440** | **445** | 429 | 32,5 | 65 | 30 | $d_1$ + 24 | $d_1$ + 115 | 50 ± 12 | VR4 | R | **CR 404403** |
| **445** | **450** | 434 | 32,5 | 65 | 30 | $d_1$ + 24 | $d_1$ + 115 | 50 ± 12 | VR4 | R | **CR 404453** |
| **450** | **455** | 439 | 32,5 | 65 | 30 | $d_1$ + 24 | $d_1$ + 115 | 50 ± 12 | VR4 | R | **CR 404503** |
| | | 439 | 67,5 | 100 | 13 | $d_1$ + 24 | $d_1$ + 115 | 85 ± 12 | VR5 | R | **CR 470450** |
| **455** | **460** | 444 | 32,5 | 65 | 30 | $d_1$ + 24 | $d_1$ + 115 | 50 ± 12 | VR4 | R | **CR 404553** |
| **460** | **465** | 448 | 32,5 | 65 | 21 | $d_1$ + 24 | $d_1$ + 115 | 50 ± 12 | VR6 | R | **CR 470461** |
| | | 448 | 32,5 | 65 | 30 | $d_1$ + 24 | $d_1$ + 115 | 50 ± 12 | VR4 | R | **CR 404603** |
| **475** | **510** | 450 | 6 | 10,5 | 6,5 | $d_1$ + 5 | $d_1$ + 20 | 8,0 ± 1,5 | VR3 | R | **CR 405002** |
| | | 450 | 6 | 10,5 | 6,5 | $d_1$ + 5 | $d_1$ + 20 | 8,0 ± 1,5 | VR3 | V | **CR 405006** |
| **480** | **530** | 450 | 14,3 | 25 | 15 | $d_1$ + 10 | $d_1$ + 45 | 20,0 ± 4 | VR1 | R | **CR 405000** |
| | | 450 | 14,3 | 25 | 15 | $d_1$ + 10 | $d_1$ + 45 | 20,0 ± 4 | VR1 | V | **CR 405004** |
| **465** | **470** | 453 | 32,5 | 65 | 30 | $d_1$ + 24 | $d_1$ + 115 | 50 ± 12 | VR4 | R | **CR 404653** |
| **470** | **475** | 458 | 32,5 | 65 | 30 | $d_1$ + 24 | $d_1$ + 115 | 50 ± 12 | VR4 | R | **CR 404703** |
| **475** | **480** | 463 | 32,5 | 65 | 21 | $d_1$ + 24 | $d_1$ + 115 | 50 ± 12 | VR6 | R | **CR 470476** |
| | | 463 | 32,5 | 65 | 30 | $d_1$ + 24 | $d_1$ + 115 | 50 ± 12 | VR4 | R | **CR 404753** |
| **480** | **485** | 468 | 32,5 | 65 | 30 | $d_1$ + 24 | $d_1$ + 115 | 50 ± 12 | VR4 | R | **CR 404803** |
| **510** | **540** | 472 | 6 | 10,5 | 6,5 | $d_1$ + 5 | $d_1$ + 20 | 8,0 ± 1,5 | VR3 | R | **CR 405252** |
| | | 472 | 6 | 10,5 | 6,5 | $d_1$ + 5 | $d_1$ + 20 | 8,0 ± 1,5 | VR3 | V | **CR 405256** |
| **485** | **490** | 473 | 32,5 | 65 | 30 | $d_1$ + 24 | $d_1$ + 115 | 50 ± 12 | VR4 | R | **CR 404853** |
| **490** | **495** | 478 | 32,5 | 65 | 30 | $d_1$ + 24 | $d_1$ + 115 | 50 ± 12 | VR4 | R | **CR 404903** |
| **495** | **500** | 483 | 32,5 | 65 | 21 | $d_1$ + 24 | $d_1$ + 115 | 50 ± 12 | VR6 | R | **CR 470496** |
| | | 483 | 32,5 | 65 | 30 | $d_1$ + 24 | $d_1$ + 115 | 50 ± 12 | VR4 | R | **CR 404953** |
| **500** | **505** | 488 | 32,5 | 65 | 30 | $d_1$ + 24 | $d_1$ + 115 | 50 ± 12 | VR4 | R | **CR 405003** |
| | | 488 | 67,5 | 100 | 13 | $d_1$ + 24 | $d_1$ + 115 | 85 ± 12 | VR5 | R | **CR 470500** |
| **505** | **510** | 493 | 32,5 | 65 | 30 | $d_1$ + 24 | $d_1$ + 115 | 50 ± 12 | VR4 | R | **CR 405053** |
| **540** | **575** | 495 | 6 | 10,5 | 6,5 | $d_1$ + 5 | $d_1$ + 20 | 8,0 ± 1,5 | VR3 | R | **CR 405502** |
| | | 495 | 6 | 10,5 | 6,5 | $d_1$ + 5 | $d_1$ + 20 | 8,0 ± 1,5 | VR3 | V | **CR 405506** |
| **530** | **580** | 495 | 14,3 | 25 | 15 | $d_1$ + 10 | $d_1$ + 45 | 20,0 ± 4 | VR1 | R | **CR 405500** |
| | | 495 | 14,3 | 25 | 15 | $d_1$ + 10 | $d_1$ + 45 | 20,0 ± 4 | VR1 | V | **CR 405504** |
| **510** | **515** | 497 | 32,5 | 65 | 30 | $d_1$ + 24 | $d_1$ + 115 | 50 ± 12 | VR4 | R | **CR 405103** |
| **515** | **520** | 502 | 32,5 | 65 | 30 | $d_1$ + 24 | $d_1$ + 115 | 50 ± 12 | VR4 | R | **CR 405153** |
| **520** | **525** | 507 | 32,5 | 65 | 30 | $d_1$ + 24 | $d_1$ + 115 | 50 ± 12 | VR4 | R | **CR 405203** |
| **525** | **530** | 512 | 32,5 | 65 | 21 | $d_1$ + 24 | $d_1$ + 115 | 50 ± 12 | VR6 | R | **CR 470526** |
| | | 512 | 32,5 | 65 | 30 | $d_1$ + 24 | $d_1$ + 115 | 50 ± 12 | VR4 | R | **CR 405253** |
| **530** | **535** | 517 | 32,5 | 65 | 30 | $d_1$ + 24 | $d_1$ + 115 | 50 ± 12 | VR4 | R | **CR 405303** |
| **535** | **540** | 521 | 32,5 | 65 | 30 | $d_1$ + 24 | $d_1$ + 115 | 50 ± 12 | VR4 | R | **CR 405353** |
| **540** | **545** | 526 | 32,5 | 65 | 30 | $d_1$ + 24 | $d_1$ + 115 | 50 ± 12 | VR4 | R | **CR 405403** |
| **545** | **550** | 531 | 32,5 | 65 | 30 | $d_1$ + 24 | $d_1$ + 115 | 50 ± 12 | VR4 | R | **CR 405453** |

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

$d_1$ **550 – 792** mm



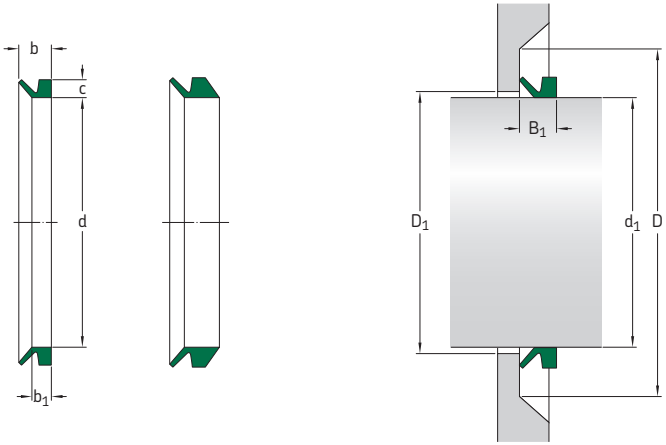

| Dimensions | | | | | | | | | Design | Lip code | Designation |
|---|---|---|---|---|---|---|---|---|---|---|---|
| Shaft diameter range $d_1$ | | Seal inside diameter, free state d | Seal seat width $b_1$ | Nominal seal width b | Nominal seal height c | Clearance $D_1$ max | Counterface D min | Seal fitted width $B_1$ | | | |
| over | incl. | | | | | | | | | | |
| mm | | | | | | | | | – | – | – |
| **550** | **555** | 536 | 32,5 | 65 | 30 | $d_1$ + 24 | $d_1$ + 115 | 50 ± 12 | VR4 | R | **CR 405503** |
| | | 536 | 67,5 | 100 | 13 | $d_1$ + 24 | $d_1$ + 115 | 85 ± 12 | VR5 | R | **CR 470550** |
| **575** | **625** | 540 | 6 | 10,5 | 6,5 | $d_1$ + 5 | $d_1$ + 20 | 8,0 ± 1,5 | VR3 | R | **CR 406002** |
| | | 540 | 6 | 10,5 | 6,5 | $d_1$ + 5 | $d_1$ + 20 | 8,0 ± 1,5 | VR3 | V | **CR 406006** |
| **580** | **630** | 540 | 14,3 | 25 | 15 | $d_1$ + 10 | $d_1$ + 45 | 20,0 ± 4 | VR1 | R | **CR 406000** |
| | | 540 | 14,3 | 25 | 15 | $d_1$ + 10 | $d_1$ + 45 | 20,0 ± 4 | VR1 | V | **CR 406004** |
| **555** | **560** | 541 | 32,5 | 65 | 30 | $d_1$ + 24 | $d_1$ + 115 | 50 ± 12 | VR4 | R | **CR 405553** |
| **560** | **565** | 546 | 32,5 | 65 | 30 | $d_1$ + 24 | $d_1$ + 115 | 50 ± 12 | VR4 | R | **CR 405603** |
| **565** | **570** | 550 | 32,5 | 65 | 30 | $d_1$ + 24 | $d_1$ + 115 | 50 ± 12 | VR4 | R | **CR 405653** |
| **570** | **575** | 555 | 32,5 | 65 | 30 | $d_1$ + 24 | $d_1$ + 115 | 50 ± 12 | VR4 | R | **CR 405703** |
| **575** | **580** | 560 | 32,5 | 65 | 30 | $d_1$ + 24 | $d_1$ + 115 | 50 ± 12 | VR4 | R | **CR 405753** |
| **580** | **585** | 565 | 32,5 | 65 | 30 | $d_1$ + 24 | $d_1$ + 115 | 50 ± 12 | VR4 | R | **CR 405803** |
| **585** | **590** | 570 | 32,5 | 65 | 30 | $d_1$ + 24 | $d_1$ + 115 | 50 ± 12 | VR4 | R | **CR 405853** |
| **590** | **600** | 575 | 32,5 | 65 | 30 | $d_1$ + 24 | $d_1$ + 115 | 50 ± 12 | VR4 | R | **CR 405903** |
| **600** | **610** | 582 | 32,5 | 65 | 30 | $d_1$ + 24 | $d_1$ + 115 | 50 ± 12 | VR4 | R | **CR 406003** |
| | | 582 | 67,5 | 100 | 13 | $d_1$ + 24 | $d_1$ + 115 | 85 ± 12 | VR5 | R | **CR 470600** |
| **610** | **620** | 592 | 32,5 | 65 | 30 | $d_1$ + 24 | $d_1$ + 115 | 50 ± 12 | VR4 | R | **CR 406103** |
| **615** | **675** | 600 | 6 | 10,5 | 6,5 | $d_1$ + 5 | $d_1$ + 20 | 8,0 ± 1,5 | VR3 | R | **CR 406502** |
| | | 600 | 6 | 10,5 | 6,5 | $d_1$ + 5 | $d_1$ + 20 | 8,0 ± 1,5 | VR3 | V | **CR 406506** |
| **630** | **665** | 600 | 14,3 | 25 | 15 | $d_1$ + 10 | $d_1$ + 45 | 20,0 ± 4 | VR1 | R | **CR 406500** |
| | | 600 | 14,3 | 25 | 15 | $d_1$ + 10 | $d_1$ + 45 | 20,0 ± 4 | VR1 | V | **CR 406504** |
| **620** | **630** | 602 | 32,5 | 65 | 30 | $d_1$ + 24 | $d_1$ + 115 | 50 ± 12 | VR4 | R | **CR 406203** |
| **630** | **640** | 612 | 32,5 | 65 | 30 | $d_1$ + 24 | $d_1$ + 115 | 50 ± 12 | VR4 | R | **CR 406303** |

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

| Dimensions | | | | | | | | | Design | Lip code | Designation |
|---|---|---|---|---|---|---|---|---|---|---|---|
| Shaft diameter range | | Seal inside diameter, free state | Seal seat width | Nominal seal width | Nominal seal height | Clearance | Counterface | Seal fitted width | | | |
| $d_1$ over | incl. | d | $b_1$ | b | c | $D_1$ max | D min | $B_1$ | | | |
| mm | | | | | | | | | – | – | – |
| **640** | **650** | 621 | 32,5 | 65 | 30 | $d_1 + 24$ | $d_1 + 115$ | 50 ± 12 | VR4 | R | **CR 406403** |
| **675** | **710** | 630 | 6 | 10,5 | 6,5 | $d_1 + 5$ | $d_1 + 20$ | 8,0 ± 1,5 | VR3 | R | **CR 407002** |
| | | 630 | 6 | 10,5 | 6,5 | $d_1 + 5$ | $d_1 + 20$ | 8,0 ± 1,5 | VR3 | V | **CR 407006** |
| **665** | **705** | 630 | 14,3 | 25 | 15 | $d_1 + 10$ | $d_1 + 45$ | 20,0 ± 4 | VR1 | R | **CR 407000** |
| | | 630 | 14,3 | 25 | 15 | $d_1 + 10$ | $d_1 + 45$ | 20,0 ± 4 | VR1 | V | **CR 407004** |
| **650** | **660** | 631 | 32,5 | 65 | 21 | $d_1 + 24$ | $d_1 + 115$ | 50 ± 12 | VR6 | R | **CR 470651** |
| | | 631 | 32,5 | 65 | 30 | $d_1 + 24$ | $d_1 + 115$ | 50 ± 12 | VR4 | R | **CR 406503** |
| | | 631 | 67,5 | 100 | 13 | $d_1 + 24$ | $d_1 + 115$ | 85 ± 12 | VR5 | R | **CR 470650** |
| **660** | **670** | 640 | 32,5 | 65 | 21 | $d_1 + 24$ | $d_1 + 115$ | 50 ± 12 | VR6 | R | **CR 470661** |
| | | 640 | 32,5 | 65 | 30 | $d_1 + 24$ | $d_1 + 115$ | 50 ± 12 | VR4 | R | **CR 406603** |
| **670** | **680** | 650 | 32,5 | 65 | 21 | $d_1 + 24$ | $d_1 + 115$ | 50 ± 12 | VR6 | R | **CR 470671** |
| | | 650 | 32,5 | 65 | 30 | $d_1 + 24$ | $d_1 + 115$ | 50 ± 12 | VR4 | R | **CR 406703** |
| **680** | **690** | 660 | 32,5 | 65 | 21 | $d_1 + 24$ | $d_1 + 115$ | 50 ± 12 | VR6 | R | **CR 470681** |
| | | 660 | 32,5 | 65 | 30 | $d_1 + 24$ | $d_1 + 115$ | 50 ± 12 | VR4 | R | **CR 406803** |
| **710** | **740** | 670 | 6 | 10,5 | 6,5 | $d_1 + 5$ | $d_1 + 20$ | 8,0 ± 1,5 | VR3 | R | **CR 407252** |
| | | 670 | 6 | 10,5 | 6,5 | $d_1 + 5$ | $d_1 + 20$ | 8,0 ± 1,5 | VR3 | V | **CR 407256** |
| **705** | **745** | 670 | 14,3 | 25 | 15 | $d_1 + 10$ | $d_1 + 45$ | 20,0 ± 4 | VR1 | R | **CR 407250** |
| | | 670 | 14,3 | 25 | 15 | $d_1 + 10$ | $d_1 + 45$ | 20,0 ± 4 | VR1 | V | **CR 407254** |
| **690** | **700** | 670 | 32,5 | 65 | 21 | $d_1 + 24$ | $d_1 + 115$ | 50 ± 12 | VR6 | R | **CR 470691** |
| | | 670 | 32,5 | 65 | 30 | $d_1 + 24$ | $d_1 + 115$ | 50 ± 12 | VR4 | R | **CR 406903** |
| **700** | **710** | 680 | 32,5 | 65 | 30 | $d_1 + 24$ | $d_1 + 115$ | 50 ± 12 | VR4 | R | **CR 407003** |
| | | 680 | 67,5 | 100 | 13 | $d_1 + 24$ | $d_1 + 115$ | 85 ± 12 | VR5 | R | **CR 470700** |
| **710** | **720** | 689 | 32,5 | 65 | 30 | $d_1 + 24$ | $d_1 + 115$ | 50 ± 12 | VR4 | R | **CR 407103** |
| **720** | **730** | 699 | 32,5 | 65 | 30 | $d_1 + 24$ | $d_1 + 115$ | 50 ± 12 | VR4 | R | **CR 407203** |
| **740** | **775** | 705 | 6 | 10,5 | 6,5 | $d_1 + 5$ | $d_1 + 20$ | 8,0 ± 1,5 | VR3 | R | **CR 407502** |
| | | 705 | 6 | 10,5 | 6,5 | $d_1 + 5$ | $d_1 + 20$ | 8,0 ± 1,5 | VR3 | V | **CR 407506** |
| **745** | **785** | 705 | 14,3 | 25 | 15 | $d_1 + 10$ | $d_1 + 45$ | 20,0 ± 4 | VR1 | R | **CR 407500** |
| | | 705 | 14,3 | 25 | 15 | $d_1 + 10$ | $d_1 + 45$ | 20,0 ± 4 | VR1 | V | **CR 407504** |
| **730** | **740** | 709 | 32,5 | 65 | 30 | $d_1 + 24$ | $d_1 + 115$ | 50 ± 12 | VR4 | R | **CR 407303** |
| **740** | **750** | 718 | 32,5 | 65 | 30 | $d_1 + 24$ | $d_1 + 115$ | 50 ± 12 | VR4 | R | **CR 407403** |
| **750** | **758** | 728 | 32,5 | 65 | 21 | $d_1 + 24$ | $d_1 + 115$ | 50 ± 12 | VR6 | R | **CR 470751** |
| | | 728 | 32,5 | 65 | 30 | $d_1 + 24$ | $d_1 + 115$ | 50 ± 12 | VR4 | R | **CR 407503** |
| | | 728 | 67,5 | 100 | 13 | $d_1 + 24$ | $d_1 + 115$ | 85 ± 12 | VR5 | R | **CR 470750** |
| **758** | **766** | 735 | 32,5 | 65 | 21 | $d_1 + 24$ | $d_1 + 115$ | 50 ± 12 | VR6 | R | **CR 470761** |
| | | 735 | 32,5 | 65 | 30 | $d_1 + 24$ | $d_1 + 115$ | 50 ± 12 | VR4 | R | **CR 407603** |
| **766** | **774** | 743 | 32,5 | 65 | 30 | $d_1 + 24$ | $d_1 + 115$ | 50 ± 12 | VR4 | R | **CR 407703** |
| **775** | **825** | 745 | 6 | 10,5 | 6,5 | $d_1 + 5$ | $d_1 + 20$ | 8,0 ± 1,5 | VR3 | R | **CR 408002** |
| | | 745 | 6 | 10,5 | 6,5 | $d_1 + 5$ | $d_1 + 20$ | 8,0 ± 1,5 | VR3 | V | **CR 408006** |
| **785** | **830** | 745 | 14,3 | 25 | 15 | $d_1 + 10$ | $d_1 + 45$ | 20,0 ± 4 | VR1 | R | **CR 408000** |
| | | 745 | 14,3 | 25 | 15 | $d_1 + 10$ | $d_1 + 45$ | 20,0 ± 4 | VR1 | V | **CR 408004** |
| **774** | **783** | 751 | 32,5 | 65 | 30 | $d_1 + 24$ | $d_1 + 115$ | 50 ± 12 | VR4 | R | **CR 407803** |
| **783** | **792** | 759 | 32,5 | 65 | 21 | $d_1 + 24$ | $d_1 + 115$ | 50 ± 12 | VR6 | R | **CR 470791** |
| | | 759 | 32,5 | 65 | 30 | $d_1 + 24$ | $d_1 + 115$ | 50 ± 12 | VR4 | R | **CR 407903** |

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

$d_1$ **792 – 1 165** mm



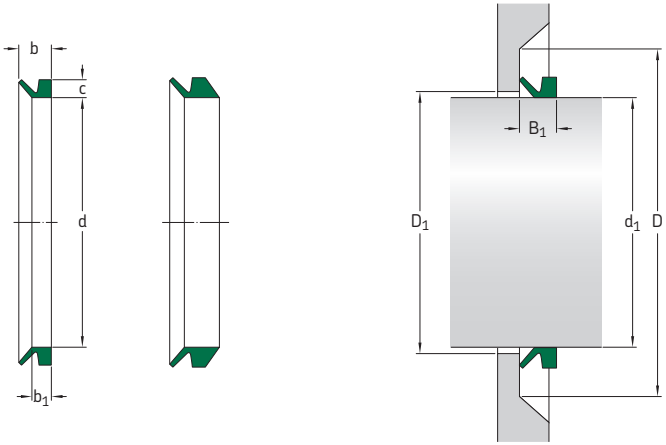

| Dimensions | | | | | | | | | Design | Lip code | Designation |
|---|---|---|---|---|---|---|---|---|---|---|---|
| Shaft diameter range $d_1$ | | Seal inside diameter, free state d | Seal seat width $b_1$ | Nominal seal width b | Nominal seal height c | Clearance $D_1$ | Counterface D | Seal fitted width $B_1$ | | | |
| over | incl. | | | | | max | min | | | | |
| mm | | | | | | | | | – | – | – |
| **792** | **801** | 768 | 32,5 | 65 | 21 | $d_1$ + 24 | $d_1$ + 115 | 50 ± 12 | VR6 | R | **CR 470801** |
| | | 768 | 32,5 | 65 | 30 | $d_1$ + 24 | $d_1$ + 115 | 50 ± 12 | VR4 | R | **CR 408003** |
| | | 768 | 67,5 | 100 | 13 | $d_1$ + 24 | $d_1$ + 115 | 85 ± 12 | VR5 | R | **CR 470800** |
| **801** | **810** | 777 | 32,5 | 65 | 30 | $d_1$ + 24 | $d_1$ + 115 | 50 ± 12 | VR4 | R | **CR 408103** |
| **825** | **875** | 785 | 6 | 10,5 | 6,5 | $d_1$ + 5 | $d_1$ + 20 | 8,0 ± 1,5 | VR3 | R | **CR 408502** |
| | | 785 | 6 | 10,5 | 6,5 | $d_1$ + 5 | $d_1$ + 20 | 8,0 ± 1,5 | VR3 | V | **CR 408506** |
| **830** | **875** | 785 | 14,3 | 25 | 15 | $d_1$ + 10 | $d_1$ + 45 | 20,0 ± 4 | VR1 | R | **CR 408500** |
| | | 785 | 14,3 | 25 | 15 | $d_1$ + 10 | $d_1$ + 45 | 20,0 ± 4 | VR1 | V | **CR 408504** |
| **810** | **821** | 786 | 32,5 | 65 | 30 | $d_1$ + 24 | $d_1$ + 115 | 50 ± 12 | VR4 | R | **CR 408203** |
| **821** | **831** | 796 | 32,5 | 65 | 21 | $d_1$ + 24 | $d_1$ + 115 | 50 ± 12 | VR6 | R | **CR 470831** |
| | | 796 | 32,5 | 65 | 30 | $d_1$ + 24 | $d_1$ + 115 | 50 ± 12 | VR4 | R | **CR 408303** |
| **831** | **841** | 805 | 32,5 | 65 | 30 | $d_1$ + 24 | $d_1$ + 115 | 50 ± 12 | VR4 | R | **CR 408403** |
| **841** | **851** | 814 | 32,5 | 65 | 30 | $d_1$ + 24 | $d_1$ + 115 | 50 ± 12 | VR4 | R | **CR 408503** |
| | | 814 | 67,5 | 100 | 13 | $d_1$ + 24 | $d_1$ + 115 | 85 ± 12 | VR5 | R | **CR 470850** |
| **851** | **861** | 824 | 32,5 | 65 | 30 | $d_1$ + 24 | $d_1$ + 115 | 50 ± 12 | VR4 | R | **CR 408603** |
| **875** | **925** | 825 | 6 | 10,5 | 6,5 | $d_1$ + 5 | $d_1$ + 20 | 8,0 ± 1,5 | VR3 | R | **CR 409002** |
| | | 825 | 6 | 10,5 | 6,5 | $d_1$ + 5 | $d_1$ + 20 | 8,0 ± 1,5 | VR3 | V | **CR 409006** |
| **875** | **920** | 825 | 14,3 | 25 | 15 | $d_1$ + 10 | $d_1$ + 45 | 20,0 ± 4 | VR1 | R | **CR 409000** |
| | | 825 | 14,3 | 25 | 15 | $d_1$ + 10 | $d_1$ + 45 | 20,0 ± 4 | VR1 | V | **CR 409004** |
| **861** | **871** | 833 | 32,5 | 65 | 30 | $d_1$ + 24 | $d_1$ + 115 | 50 ± 12 | VR4 | R | **CR 408703** |
| **871** | **882** | 843 | 32,5 | 65 | 21 | $d_1$ + 24 | $d_1$ + 115 | 50 ± 12 | VR6 | R | **CR 470881** |
| | | 843 | 32,5 | 65 | 30 | $d_1$ + 24 | $d_1$ + 115 | 50 ± 12 | VR4 | R | **CR 408803** |
| **882** | **892** | 853 | 32,5 | 65 | 30 | $d_1$ + 24 | $d_1$ + 115 | 50 ± 12 | VR4 | R | **CR 408903** |
| **925** | **975** | 865 | 6 | 10,5 | 6,5 | $d_1$ + 5 | $d_1$ + 20 | 8,0 ± 1,5 | VR3 | R | **CR 409502** |
| | | 865 | 6 | 10,5 | 6,5 | $d_1$ + 5 | $d_1$ + 20 | 8,0 ± 1,5 | VR3 | V | **CR 409506** |

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

| Dimensions | | | | | | | | | Design | Lip code | Designation |
|---|---|---|---|---|---|---|---|---|---|---|---|
| Shaft diameter range | | Seal inside diameter, free state | Seal seat width | Nominal seal width | Nominal seal height | Clearance | Counterface | Seal fitted width | | | |
| $d_1$ | | d | $b_1$ | b | c | $D_1$ | D | $B_1$ | | | |
| over | incl. | | | | | max | min | | | | |
| mm | | | | | | | | | – | – | – |
| **920** | **965** | 865 | 14,3 | 25 | 15 | $d_1$ + 10 | $d_1$ + 45 | 20,0 ± 4 | VR1 | R | **CR 409500** |
| | | 865 | 14,3 | 25 | 15 | $d_1$ + 10 | $d_1$ + 45 | 20,0 ± 4 | VR1 | V | **CR 409504** |
| **892** | **912** | 871 | 32,5 | 65 | 21 | $d_1$ + 24 | $d_1$ + 115 | 50 ± 12 | VR6 | R | **CR 470901** |
| | | 871 | 32,5 | 65 | 30 | $d_1$ + 24 | $d_1$ + 115 | 50 ± 12 | VR4 | R | **CR 409003** |
| | | 871 | 67,5 | 100 | 13 | $d_1$ + 24 | $d_1$ + 115 | 85 ± 12 | VR5 | R | **CR 470900** |
| **912** | **922** | 880 | 32,5 | 65 | 30 | $d_1$ + 24 | $d_1$ + 115 | 50 ± 12 | VR4 | R | **CR 409203** |
| **922** | **933** | 890 | 32,5 | 65 | 30 | $d_1$ + 24 | $d_1$ + 115 | 50 ± 12 | VR4 | R | **CR 409303** |
| **933** | **944** | 900 | 32,5 | 65 | 30 | $d_1$ + 24 | $d_1$ + 115 | 50 ± 12 | VR4 | R | **CR 409403** |
| **975** | **1025** | 910 | 6 | 10,5 | 6,5 | $d_1$ + 5 | $d_1$ + 20 | 8,0 ± 1,5 | VR3 | R | **CR 410002** |
| | | 910 | 6 | 10,5 | 6,5 | $d_1$ + 5 | $d_1$ + 20 | 8,0 ± 1,5 | VR3 | V | **CR 410006** |
| **944** | **955** | 911 | 32,5 | 65 | 30 | $d_1$ + 24 | $d_1$ + 115 | 50 ± 12 | VR4 | R | **CR 409503** |
| | | 911 | 67,5 | 100 | 13 | $d_1$ + 24 | $d_1$ + 115 | 85 ± 12 | VR5 | R | **CR 470950** |
| **955** | **966** | 921 | 32,5 | 65 | 30 | $d_1$ + 24 | $d_1$ + 115 | 50 ± 12 | VR4 | R | **CR 409603** |
| **966** | **977** | 932 | 32,5 | 65 | 30 | $d_1$ + 24 | $d_1$ + 115 | 50 ± 12 | VR4 | R | **CR 409703** |
| **977** | **988** | 942 | 32,5 | 65 | 21 | $d_1$ + 24 | $d_1$ + 115 | 50 ± 12 | VR6 | R | **CR 470981** |
| | | 942 | 32,5 | 65 | 30 | $d_1$ + 24 | $d_1$ + 115 | 50 ± 12 | VR4 | R | **CR 409803** |
| **988** | **999** | 953 | 32,5 | 65 | 30 | $d_1$ + 24 | $d_1$ + 115 | 50 ± 12 | VR4 | R | **CR 409903** |
| **1 025** | **1 075** | 955 | 6 | 10,5 | 6,5 | $d_1$ + 5 | $d_1$ + 20 | 8,0 ± 1,5 | VR3 | R | **CR 410502** |
| | | 955 | 6 | 10,5 | 6,5 | $d_1$ + 5 | $d_1$ + 20 | 8,0 ± 1,5 | VR3 | V | **CR 410506** |
| **1 015** | **1 065** | 955 | 14,3 | 25 | 15 | $d_1$ + 10 | $d_1$ + 45 | 20,0 ± 4 | VR1 | R | **CR 410500** |
| **999** | **1 010** | 963 | 32,5 | 65 | 30 | $d_1$ + 24 | $d_1$ + 115 | 50 ± 12 | VR4 | R | **CR 410003** |
| | | 963 | 67,5 | 100 | 13 | $d_1$ + 24 | $d_1$ + 115 | 85 ± 12 | VR5 | R | **CR 471000** |
| **1 010** | **1 025** | 973 | 32,5 | 65 | 30 | $d_1$ + 24 | $d_1$ + 115 | 50 ± 12 | VR4 | R | **CR 410203** |
| **1 025** | **1 045** | 990 | 32,5 | 65 | 21 | $d_1$ + 24 | $d_1$ + 115 | 50 ± 12 | VR6 | R | **CR 471041** |
| | | 990 | 32,5 | 65 | 30 | $d_1$ + 24 | $d_1$ + 115 | 50 ± 12 | VR4 | R | **CR 410403** |
| **1 075** | **1 125** | 1 000 | 6 | 10,5 | 6,5 | $d_1$ + 5 | $d_1$ + 20 | 8,0 ± 1,5 | VR3 | R | **CR 411002** |
| | | 1 000 | 6 | 10,5 | 6,5 | $d_1$ + 5 | $d_1$ + 20 | 8,0 ± 1,5 | VR3 | V | **CR 411006** |
| **1 065** | **1 115** | 1 000 | 14,3 | 25 | 15 | $d_1$ + 10 | $d_1$ + 45 | 20,0 ± 4 | VR1 | R | **CR 411000** |
| **1 045** | **1 065** | 1 008 | 32,5 | 65 | 30 | $d_1$ + 24 | $d_1$ + 115 | 50 ± 12 | VR4 | R | **CR 410603** |
| **1 065** | **1 085** | 1 027 | 32,5 | 65 | 30 | $d_1$ + 24 | $d_1$ + 115 | 50 ± 12 | VR4 | R | **CR 410803** |
| **1 125** | **1 175** | 1 045 | 6 | 10,5 | 6,5 | $d_1$ + 5 | $d_1$ + 20 | 8,0 ± 1,5 | VR3 | R | **CR 411502** |
| | | 1 045 | 6 | 10,5 | 6,5 | $d_1$ + 5 | $d_1$ + 20 | 8,0 ± 1,5 | VR3 | V | **CR 411506** |
| **1 115** | **1 165** | 1 045 | 14,3 | 25 | 15 | $d_1$ + 10 | $d_1$ + 45 | 20,0 ± 4 | VR1 | R | **CR 411500** |
| **1 085** | **1 105** | 1 045 | 32,5 | 65 | 30 | $d_1$ + 24 | $d_1$ + 115 | 50 ± 12 | VR4 | R | **CR 411003** |
| | | 1 045 | 67,5 | 100 | 13 | $d_1$ + 24 | $d_1$ + 115 | 85 ± 12 | VR5 | R | **CR 471100** |
| **1 105** | **1 125** | 1 065 | 32,5 | 65 | 30 | $d_1$ + 24 | $d_1$ + 115 | 50 ± 12 | VR4 | R | **CR 411203** |
| **1 125** | **1 145** | 1 084 | 32,5 | 65 | 30 | $d_1$ + 24 | $d_1$ + 115 | 50 ± 12 | VR4 | R | **CR 411403** |
| **1 175** | **1 225** | 1 090 | 6 | 10,5 | 6,5 | $d_1$ + 5 | $d_1$ + 20 | 8,0 ± 1,5 | VR3 | R | **CR 412002** |
| **1 165** | **1 215** | 1 090 | 14,3 | 25 | 15 | $d_1$ + 10 | $d_1$ + 45 | 20,0 ± 4 | VR1 | R | **CR 412000** |
| **1 145** | **1 165** | 1 103 | 32,5 | 65 | 30 | $d_1$ + 24 | $d_1$ + 115 | 50 ± 12 | VR4 | R | **CR 411603** |

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

$d_1$ **1 165 – 1 775** mm



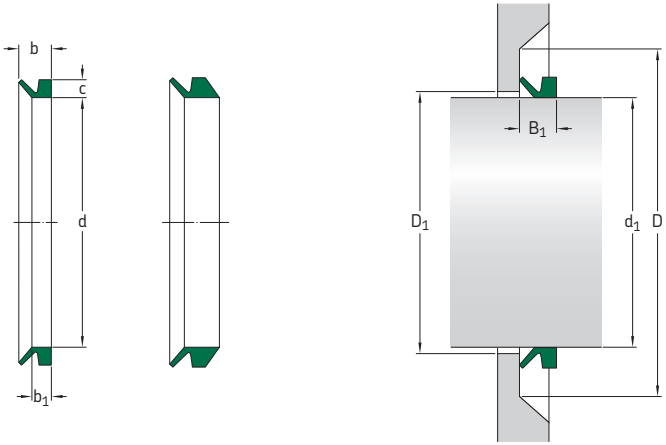

| Dimensions Shaft diameter range $d_1$ over | incl. | Seal inside diameter, free state d | Seal seat width $b_1$ | Nominal seal width b | Nominal seal height c | Clearance $D_1$ max | Counterface D min | Seal fitted width $B_1$ | Design | Lip code | Designation |
|---|---|---|---|---|---|---|---|---|---|---|---|
| mm | | | | | | | | | – | – | – |
| **1 165** | **1 185** | 1 121 | 32,5 | 65 | 30 | $d_1$ + 24 | $d_1$ + 115 | 50 ± 12 | VR4 | R | **CR 411803** |
| **1 225** | **1 275** | 1 135 | 6 | 10,5 | 6,5 | $d_1$ + 5 | $d_1$ + 20 | 8,0 ± 1,5 | VR3 | R | **CR 412502** |
| | | 1 135 | 6 | 10,5 | 6,5 | $d_1$ + 5 | $d_1$ + 20 | 8,0 ± 1,5 | VR3 | V | **CR 412506** |
| **1 215** | **1 270** | 1 135 | 14,3 | 25 | 15 | $d_1$ + 10 | $d_1$ + 45 | 20,0 ± 4 | VR1 | R | **CR 412500** |
| **1 185** | **1 205** | 1 139 | 32,5 | 65 | 21 | $d_1$ + 24 | $d_1$ + 115 | 50 ± 12 | VR6 | R | **CR 471201** |
| | | 1 139 | 32,5 | 65 | 30 | $d_1$ + 24 | $d_1$ + 115 | 50 ± 12 | VR4 | R | **CR 412003** |
| | | 1 139 | 67,5 | 100 | 13 | $d_1$ + 24 | $d_1$ + 115 | 85 ± 12 | VR5 | R | **CR 471200** |
| **1 205** | **1 225** | 1 157 | 32,5 | 65 | 30 | $d_1$ + 24 | $d_1$ + 115 | 50 ± 12 | VR4 | R | **CR 412203** |
| **1 225** | **1 245** | 1 176 | 32,5 | 65 | 30 | $d_1$ + 24 | $d_1$ + 115 | 50 ± 12 | VR4 | R | **CR 412403** |
| **1 275** | **1 325** | 1 180 | 6 | 10,5 | 6,5 | $d_1$ + 5 | $d_1$ + 20 | 8,0 ± 1,5 | VR3 | R | **CR 413002** |
| | | 1 180 | 6 | 10,5 | 6,5 | $d_1$ + 5 | $d_1$ + 20 | 8,0 ± 1,5 | VR3 | V | **CR 413006** |
| **1 270** | **1 320** | 1 180 | 14,3 | 25 | 15 | $d_1$ + 10 | $d_1$ + 45 | 20,0 ± 4 | VR1 | R | **CR 413000** |
| **1 245** | **1 270** | 1 195 | 32,5 | 65 | 30 | $d_1$ + 24 | $d_1$ + 115 | 50 ± 12 | VR4 | R | **CR 412603** |
| **1 270** | **1 295** | 1 218 | 32,5 | 65 | 30 | $d_1$ + 24 | $d_1$ + 115 | 50 ± 12 | VR4 | R | **CR 412803** |
| **1 325** | **1 375** | 1 225 | 6 | 10,5 | 6,5 | $d_1$ + 5 | $d_1$ + 20 | 8,0 ± 1,5 | VR3 | R | **CR 413502** |
| | | 1 225 | 6 | 10,5 | 6,5 | $d_1$ + 5 | $d_1$ + 20 | 8,0 ± 1,5 | VR3 | V | **CR 413506** |
| **1 320** | **1 370** | 1 225 | 14,3 | 25 | 15 | $d_1$ + 10 | $d_1$ + 45 | 20,0 ± 4 | VR1 | R | **CR 413500** |
| **1 295** | **1 315** | 1 240 | 32,5 | 65 | 30 | $d_1$ + 24 | $d_1$ + 115 | 50 ± 12 | VR4 | R | **CR 413003** |
| | | 1 240 | 67,5 | 100 | 13 | $d_1$ + 24 | $d_1$ + 115 | 85 ± 12 | VR5 | R | **CR 471300** |
| **1 315** | **1 340** | 1 259 | 32,5 | 65 | 30 | $d_1$ + 24 | $d_1$ + 115 | 50 ± 12 | VR4 | R | **CR 413253** |
| **1 375** | **1 425** | 1 270 | 6 | 10,5 | 6,5 | $d_1$ + 5 | $d_1$ + 20 | 8,0 ± 1,5 | VR3 | R | **CR 414002** |
| **1 375** | **1 425** | 1 270 | 6 | 10,5 | 6,5 | $d_1$ + 5 | $d_1$ + 20 | 8,0 ± 1,5 | VR3 | V | **CR 414006** |
| **1 370** | **1 420** | 1 270 | 14,3 | 25 | 15 | d1 + 10 | $d_1$ + 45 | 20,0 ± 4 | VR1 | R | **CR 414000** |

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

| Dimensions | | | | | | | | | Design | Lip code | Designation |
|---|---|---|---|---|---|---|---|---|---|---|---|
| Shaft diameter range | | Seal inside diameter, free state | Seal seat width | Nominal seal width | Nominal seal height | Clearance | Counterface | Seal fitted width | | | |
| $d_1$ | | d | $b_1$ | b | c | $D_1$ | D | $B_1$ | | | |
| over | incl. | | | | | max | min | | | | |
| mm | | | | | | | | | – | – | – |
| **1 340** | **1 365** | 1 281 | 32,5 | 65 | 30 | d1 + 24 | $d_1$ + 115 | 50 ± 12 | VR4 | R | **CR 413503** |
| | | 1 281 | 67,5 | 100 | 13 | $d_1$ + 24 | $d_1$ + 115 | 85 ± 12 | VR5 | R | **CR 471350** |
| **1 365** | **1 390** | 1 305 | 32,5 | 65 | 30 | $d_1$ + 24 | $d_1$ + 115 | 50 ± 12 | VR4 | R | **CR 413753** |
| **1 425** | **1 475** | 1 315 | 6 | 10,5 | 6,5 | $d_1$ + 5 | $d_1$ + 20 | 8,0 ± 1,5 | VR3 | R | **CR 414502** |
| | | 1 315 | 6 | 10,5 | 6,5 | $d_1$ + 5 | $d_1$ + 20 | 8,0 ± 1,5 | VR3 | V | **CR 414506** |
| **1 420** | **1 470** | 1 315 | 14,3 | 25 | 15 | $d_1$ + 10 | $d_1$ + 45 | 20,0 ± 4 | VR1 | R | **CR 414500** |
| **1 390** | **1 415** | 1 328 | 32,5 | 65 | 30 | $d_1$ + 24 | $d_1$ + 115 | 50 ± 12 | VR4 | R | **CR 414003** |
| | | 1 328 | 67,5 | 100 | 13 | $d_1$ + 24 | $d_1$ + 115 | 85 ± 12 | VR5 | R | **CR 471400** |
| **1 415** | **1 440** | 1 350 | 32,5 | 65 | 21 | $d_1$ + 24 | $d_1$ + 115 | 50 ± 12 | VR6 | R | **CR 471426** |
| | | 1 350 | 32,5 | 65 | 30 | $d_1$ + 24 | $d_1$ + 115 | 50 ± 12 | VR4 | R | **CR 414253** |
| **1 475** | **1 525** | 1 360 | 6 | 10,5 | 6,5 | $d_1$ + 5 | $d_1$ + 20 | 8,0 ± 1,5 | VR3 | R | **CR 415002** |
| | | 1 360 | 6 | 10,5 | 6,5 | $d_1$ + 5 | $d_1$ + 20 | 8,0 ± 1,5 | VR3 | V | **CR 415006** |
| **1 470** | **1 520** | 1 360 | 14,3 | 25 | 15 | $d_1$ + 10 | $d_1$ + 45 | 20,0 ± 4 | VR1 | R | **CR 415000** |
| **1 440** | **1 465** | 1 374 | 32,5 | 65 | 21 | $d_1$ + 24 | $d_1$ + 115 | 50 ± 12 | VR6 | R | **CR 471451** |
| | | 1 374 | 32,5 | 65 | 30 | $d_1$ + 24 | $d_1$ + 115 | 50 ± 12 | VR4 | R | **CR 414503** |
| | | 1 374 | 67,5 | 100 | 13 | $d_1$ + 24 | $d_1$ + 115 | 85 ± 12 | VR5 | R | **CR 471450** |
| **1 465** | **1 490** | 1 397 | 32,5 | 65 | 30 | $d_1$ + 24 | $d_1$ + 115 | 50 ± 12 | VR4 | R | **CR 414753** |
| **1 525** | **1 575** | 1 405 | 6 | 10,5 | 6,5 | $d_1$ + 5 | $d_1$ + 20 | 8,0 ± 1,5 | VR3 | R | **CR 415502** |
| | | 1 405 | 6 | 10,5 | 6,5 | $d_1$ + 5 | $d_1$ + 20 | 8,0 ± 1,5 | VR3 | V | **CR 415506** |
| **1 520** | **1 570** | 1 405 | 14,3 | 25 | 15 | $d_1$ + 10 | $d_1$ + 45 | 20,0 ± 4 | VR1 | R | **CR 415500** |
| **1 490** | **1 515** | 1 419 | 32,5 | 65 | 21 | $d_1$ + 24 | $d_1$ + 115 | 50 ± 12 | VR6 | R | **CR 471501** |
| | | 1 419 | 32,5 | 65 | 30 | $d_1$ + 24 | $d_1$ + 115 | 50 ± 12 | VR4 | R | **CR 415003** |
| | | 1 419 | 67,5 | 100 | 13 | $d_1$ + 24 | $d_1$ + 115 | 85 ± 12 | VR5 | R | **CR 471500** |
| **1 515** | **1 540** | 1 443 | 32,5 | 65 | 30 | $d_1$ + 24 | $d_1$ + 115 | 50 ± 12 | VR4 | R | **CR 415253** |
| **1 575** | **1 625** | 1 450 | 6 | 10,5 | 6,5 | $d_1$ + 5 | $d_1$ + 20 | 8,0 ± 1,5 | VR3 | R | **CR 416002** |
| | | 1 450 | 6 | 10,5 | 6,5 | $d_1$ + 5 | $d_1$ + 20 | 8,0 ± 1,5 | VR3 | V | **CR 416006** |
| **1 570** | **1 620** | 1 450 | 14,3 | 25 | 15 | $d_1$ + 10 | $d_1$ + 45 | 20,0 ± 4 | VR1 | R | **CR 416000** |
| **1 540** | **1 570** | 1 467 | 32,5 | 65 | 21 | $d_1$ + 24 | $d_1$ + 115 | 50 ± 12 | VR6 | R | **CR 471551** |
| | | 1 467 | 32,5 | 65 | 30 | $d_1$ + 24 | $d_1$ + 115 | 50 ± 12 | VR4 | R | **CR 415503** |
| | | 1 467 | 67,5 | 100 | 13 | $d_1$ + 24 | $d_1$ + 115 | 85 ± 12 | VR5 | R | **CR 471550** |
| **1 625** | **1 675** | 1 495 | 6 | 10,5 | 6,5 | $d_1$ + 5 | $d_1$ + 20 | 8,0 ± 1,5 | VR3 | R | **CR 416502** |
| | | 1 495 | 6 | 10,5 | 6,5 | $d_1$ + 5 | $d_1$ + 20 | 8,0 ± 1,5 | VR3 | V | **CR 416506** |
| **1 620** | **1 670** | 1 495 | 14,3 | 25 | 15 | $d_1$ + 10 | $d_1$ + 45 | 20,0 ± 4 | VR1 | R | **CR 416500** |
| **1 570** | **1 600** | 1 495 | 32,5 | 65 | 30 | $d_1$ + 24 | $d_1$ + 115 | 50 ± 12 | VR4 | R | **CR 415753** |
| **1 600** | **1 640** | 1 524 | 32,5 | 65 | 30 | $d_1$ + 24 | $d_1$ + 115 | 50 ± 12 | VR4 | R | **CR 416003** |
| | | 1 524 | 67,5 | 100 | 13 | $d_1$ + 24 | $d_1$ + 115 | 85 ± 12 | VR5 | R | **CR 471600** |
| **1 675** | **1 725** | 1 540 | 6 | 10,5 | 6,5 | $d_1$ + 5 | $d_1$ + 20 | 8,0 ± 1,5 | VR3 | R | **CR 417002** |
| | | 1 540 | 6 | 10,5 | 6,5 | $d_1$ + 5 | $d_1$ + 20 | 8,0 ± 1,5 | VR3 | V | **CR 417006** |
| **1 670** | **1 720** | 1 540 | 14,3 | 25 | 15 | $d_1$ + 10 | $d_1$ + 45 | 20,0 ± 4 | VR1 | R | **CR 417000** |
| **1 640** | **1 680** | 1 559 | 32,5 | 65 | 30 | $d_1$ + 24 | $d_1$ + 115 | 50 ± 12 | VR4 | R | **CR 416503** |
| | | 1 559 | 67,5 | 100 | 13 | $d_1$ + 24 | $d_1$ + 115 | 85 ± 12 | VR5 | R | **CR 471650** |
| **1 725** | **1 775** | 1 585 | 6 | 10,5 | 6,5 | $d_1$ + 5 | $d_1$ + 20 | 8,0 ± 1,5 | VR3 | R | **CR 417502** |
| | | 1 585 | 6 | 10,5 | 6,5 | $d_1$ + 5 | $d_1$ + 20 | 8,0 ± 1,5 | VR3 | V | **CR 417506** |

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

$d_1$ **1 720 – 2 010** mm




| Dimensions | | | | | | | | | Design | Lip code | Designation |
|---|---|---|---|---|---|---|---|---|---|---|---|
| Shaft diameter range $d_1$ | | 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 $B_1$ | | | |
| over | incl. | | | | | | | | | | |
| mm | | | | | | | | | – | – | – |
| **1 720** | **1 770** | 1 585 | 14,3 | 25 | 15 | $d_1$ + 10 | $d_1$ + 45 | 20,0 ± 4 | VR1 | R | **CR 417500** |
| **1 680** | **1 720** | 1 596 | 32,5 | 65 | 21 | $d_1$ + 24 | $d_1$ + 115 | 50 ± 12 | VR6 | R | **CR 471701** |
| | | 1 596 | 32,5 | 65 | 30 | $d_1$ + 24 | $d_1$ + 115 | 50 ± 12 | VR4 | R | **CR 417003** |
| | | 1 596 | 67,5 | 100 | 13 | $d_1$ + 24 | $d_1$ + 115 | 85 ± 12 | VR5 | R | **CR 471700** |
| **1 775** | **1 825** | 1 630 | 6 | 10,5 | 6,5 | $d_1$ + 5 | $d_1$ + 20 | 8,0 ± 1,5 | VR3 | R | **CR 418002** |
| | | 1 630 | 6 | 10,5 | 6,5 | $d_1$ + 5 | $d_1$ + 20 | 8,0 ± 1,5 | VR3 | V | **CR 418006** |
| **1 770** | **1 820** | 1 630 | 14,3 | 25 | 15 | $d_1$ + 10 | $d_1$ + 45 | 20,0 ± 4 | VR1 | R | **CR 418000** |
| **1 720** | **1 765** | 1 632 | 32,5 | 65 | 21 | $d_1$ + 24 | $d_1$ + 115 | 50 ± 12 | VR6 | R | **CR 471751** |
| | | 1 632 | 32,5 | 65 | 30 | $d_1$ + 24 | $d_1$ + 115 | 50 ± 12 | VR4 | R | **CR 417503** |
| | | 1 632 | 67,5 | 100 | 13 | $d_1$ + 24 | $d_1$ + 115 | 85 ± 12 | VR5 | R | **CR 471750** |
| **1 765** | **1 810** | 1 671 | 32,5 | 65 | 30 | $d_1$ + 24 | $d_1$ + 115 | 50 ± 12 | VR4 | R | **CR 418003** |
| | | 1 671 | 67,5 | 100 | 13 | $d_1$ + 24 | $d_1$ + 115 | 85 ± 12 | VR5 | R | **CR 471800** |
| **1 825** | **1 875** | 1 675 | 6 | 10,5 | 6,5 | $d_1$ + 5 | $d_1$ + 20 | 8,0 ± 1,5 | VR3 | R | **CR 418502** |
| | | 1 675 | 6 | 10,5 | 6,5 | $d_1$ + 5 | $d_1$ + 20 | 8,0 ± 1,5 | VR3 | V | **CR 418506** |
| **1 820** | **1 870** | 1 675 | 14,3 | 25 | 15 | $d_1$ + 10 | $d_1$ + 45 | 20,0 ± 4 | VR1 | R | **CR 418500** |
| **1 810** | **1 855** | 1 714 | 32,5 | 65 | 21 | $d_1$ + 24 | $d_1$ + 115 | 50 ± 12 | VR6 | R | **CR 471851** |
| | | 1 714 | 32,5 | 65 | 30 | $d_1$ + 24 | $d_1$ + 115 | 50 ± 12 | VR4 | R | **CR 418503** |
| | | 1 714 | 67,5 | 100 | 13 | $d_1$ + 24 | $d_1$ + 115 | 85 ± 12 | VR5 | R | **CR 471850** |
| **1 875** | **1 925** | 1 720 | 6 | 10,5 | 6,5 | $d_1$ + 5 | $d_1$ + 20 | 8,0 ± 1,5 | VR3 | R | **CR 419002** |
| | | 1 720 | 6 | 10,5 | 6,5 | $d_1$ + 5 | $d_1$ + 20 | 8,0 ± 1,5 | VR3 | V | **CR 419006** |
| **1 870** | **1 920** | 1 720 | 14,3 | 25 | 15 | $d_1$ + 10 | $d_1$ + 45 | 20,0 ± 4 | VR1 | R | **CR 419000** |
| **1 855** | **1 905** | 1 753 | 32,5 | 65 | 21 | $d_1$ + 24 | $d_1$ + 115 | 50 ± 12 | VR6 | R | **CR 471901** |
| | | 1 753 | 32,5 | 65 | 30 | $d_1$ + 24 | $d_1$ + 115 | 50 ± 12 | VR4 | R | **CR 419003** |
| | | 1 753 | 67,5 | 100 | 13 | $d_1$ + 24 | $d_1$ + 115 | 85 ± 12 | VR5 | R | **CR 471900** |
| **1 925** | **1 975** | 1 765 | 6 | 10,5 | 6,5 | $d_1$ + 5 | $d_1$ + 20 | 8,0 ± 1,5 | VR3 | R | **CR 419502** |
| | | 1 765 | 6 | 10,5 | 6,5 | $d_1$ + 5 | $d_1$ + 20 | 8,0 ± 1,5 | VR3 | V | **CR 419506** |
| **1 920** | **1 970** | 1 765 | 14,3 | 25 | 15 | $d_1$ + 10 | $d_1$ + 45 | 20,0 ± 4 | VR1 | R | **CR 419500** |

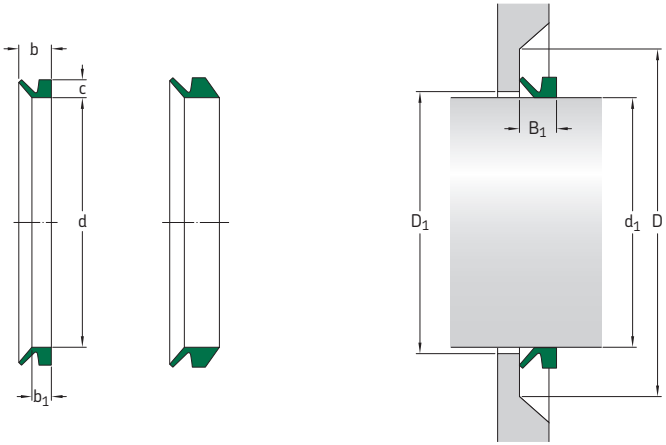
Select the larger V-ring when the dimension $d_1$ is on the boundary between two sizes of V-ring.

| Dimensions | | | | | | | | | Design | Lip code | Designation |
|---|---|---|---|---|---|---|---|---|---|---|---|
| Shaft diameter range | | Seal inside diameter, free state | Seal seat width | Nominal seal width | Nominal seal height | Clearance | Counterface | Seal fitted width | | | |
| $d_1$ | | d | $b_1$ | b | c | $D_1$ | D | $B_1$ | | | |
| over | incl. | | | | | max | min | | | | |
| mm | | | | | | | | | – | – | – |
| **1 905** | **1 955** | 1 794 | 32,5 | 65 | 21 | $d_1 + 24$ | $d_1 + 115$ | 50 ± 12 | VR6 | R | **CR 471951** |
| | | 1 794 | 32,5 | 65 | 30 | $d_1 + 24$ | $d_1 + 115$ | 50 ± 12 | VR4 | R | **CR 419503** |
| | | 1 794 | 67,5 | 100 | 13 | $d_1 + 24$ | $d_1 + 115$ | 85 ± 12 | VR5 | R | **CR 471950** |
| **1 975** | **2 025** | 1 810 | 6 | 10,5 | 6,5 | $d_1 + 5$ | $d_1 + 20$ | 8,0 ± 1,5 | VR3 | R | **CR 420002** |
| | | 1 810 | 6 | 10,5 | 6,5 | $d_1 + 5$ | $d_1 + 20$ | 8,0 ± 1,5 | VR3 | V | **CR 420006** |
| **1 970** | **2 020** | 1 810 | 14,3 | 25 | 15 | $d_1 + 10$ | $d_1 + 45$ | 20,0 ± 4 | VR1 | R | **CR 420000** |
| **1 955** | **2 010** | 1 844 | 32,5 | 65 | 30 | $d_1 + 24$ | $d_1 + 115$ | 50 ± 12 | VR4 | R | **CR 420003** |
| | | 1 844 | 67,5 | 100 | 13 | $d_1 + 24$ | $d_1 + 115$ | 85 ± 12 | VR5 | R | **CR 472000** |




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

$d_1$ **0.110 – 1.890** in.



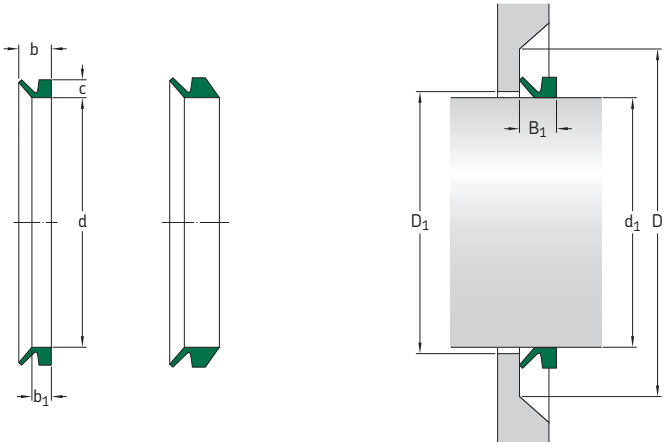

| Dimensions | | | | | | | | | | Design | Lip code | Designation |
|---|---|---|---|---|---|---|---|---|---|---|---|---|
| Shaft diameter range $d_1$ over | incl. | Ref. metric dim. | Seal inside diameter, free state d | Seal seat width $b_1$ | Nominal seal width b | Nominal seal height c | Clearance $D_1$ max | Counterface D min | Seal fitted width $B_1$ | | | |
| in. | | mm | in. | | | | | | | – | – | – |
| **0.110** | **0.140** | 3 | 0.100 | 0.060 | 0.080 | 0.120 | 0.040 | 0.160 | 0.100 ± 0.012 | VR1 | R | **CR 400030** |
| | | 3 | 0.100 | 0.060 | 0.080 | 0.120 | 0.040 | 0.160 | 0.100 ± 0.012 | VR1 | V | **CR 400034** |
| **0.140** | **0.180** | 4 | 0.130 | 0.080 | 0.090 | 0.150 | 0.040 | 0.240 | 0.120 ± 0.016 | VR1 | R | **CR 400040** |
| | | 4 | 0.130 | 0.080 | 0.090 | 0.150 | 0.040 | 0.240 | 0.120 ± 0.016 | VR1 | V | **CR 400044** |
| **0.180** | **0.210** | 5 | 0.160 | 0.080 | 0.090 | 0.150 | 0.040 | 0.240 | 0.120 ± 0.016 | VR1 | R | **CR 400050** |
| | | 5 | 0.160 | 0.080 | 0.150 | 0.200 | 0.040 | 0.240 | 0.180 ± 0.016 | VR2 | R | **CR 400051** |
| | | 5 | 0.160 | 0.080 | 0.090 | 0.150 | 0.040 | 0.240 | 0.120 ± 0.016 | VR1 | V | **CR 400054** |
| | | 5 | 0.160 | 0.080 | 0.150 | 0.200 | 0.040 | 0.240 | 0.180 ± 0.016 | VR2 | V | **CR 400055** |
| **0.210** | **0.260** | 6 | 0.200 | 0.080 | 0.090 | 0.150 | 0.040 | 0.240 | 0.120 ± 0.016 | VR1 | R | **CR 400060** |
| | | 6 | 0.200 | 0.080 | 0.150 | 0.200 | 0.040 | 0.240 | 0.180 ± 0.016 | VR2 | R | **CR 400061** |
| | | 6 | 0.200 | 0.080 | 0.090 | 0.150 | 0.040 | 0.240 | 0.120 ± 0.016 | VR1 | V | **CR 400064** |
| | | 6 | 0.200 | 0.080 | 0.150 | 0.200 | 0.040 | 0.240 | 0.180 ± 0.016 | VR2 | V | **CR 400065** |
| **0.260** | **0.310** | 7 | 0.240 | 0.080 | 0.090 | 0.150 | 0.040 | 0.240 | 0.120 ± 0.016 | VR1 | R | **CR 400070** |
| | | 7 | 0.240 | 0.080 | 0.150 | 0.200 | 0.040 | 0.240 | 0.180 ± 0.016 | VR2 | R | **CR 400071** |
| | | 7 | 0.240 | 0.080 | 0.090 | 0.150 | 0.040 | 0.240 | 0.120 ± 0.016 | VR1 | V | **CR 400074** |
| | | 7 | 0.240 | 0.080 | 0.150 | 0.200 | 0.040 | 0.240 | 0.180 ± 0.016 | VR2 | V | **CR 400075** |
| **0.310** | **0.370** | 8 | 0.280 | 0.080 | 0.090 | 0.150 | 0.040 | 0.240 | 0.120 ± 0.016 | VR1 | R | **CR 400080** |
| | | 8 | 0.280 | 0.080 | 0.150 | 0.200 | 0.040 | 0.240 | 0.180 ± 0.016 | VR2 | R | **CR 400081** |
| | | 8 | 0.280 | 0.080 | 0.090 | 0.150 | 0.040 | 0.240 | 0.120 ± 0.016 | VR1 | V | **CR 400084** |
| | | 8 | 0.280 | 0.080 | 0.150 | 0.200 | 0.040 | 0.240 | 0.180 ± 0.016 | VR2 | V | **CR 400085** |
| **0.370** | **0.450** | 10 | 0.350 | 0.120 | 0.130 | 0.220 | 0.080 | 0.350 | 0.180 ± 0.020 | VR1 | R | **CR 400100** |
| | | 10 | 0.350 | 0.120 | 0.220 | 0.300 | 0.080 | 0.350 | 0.260 ± 0.020 | VR2 | R | **CR 400101** |
| | | 10 | 0.350 | 0.120 | 0.130 | 0.220 | 0.080 | 0.350 | 0.180 ± 0.020 | VR1 | V | **CR 400104** |
| | | 10 | 0.350 | 0.120 | 0.220 | 0.300 | 0.080 | 0.350 | 0.260 ± 0.020 | VR2 | V | **CR 400105** |
| **0.450** | **0.530** | 12 | 0.410 | 0.120 | 0.130 | 0.220 | 0.080 | 0.350 | 0.180 ± 0.020 | VR1 | R | **CR 400120** |
| | | 12 | 0.410 | 0.120 | 0.220 | 0.300 | 0.080 | 0.350 | 0.260 ± 0.020 | VR2 | R | **CR 400121** |
| | | 12 | 0.410 | 0.120 | 0.130 | 0.220 | 0.080 | 0.350 | 0.180 ± 0.020 | VR1 | V | **CR 400124** |
| | | 12 | 0.410 | 0.120 | 0.220 | 0.300 | 0.080 | 0.350 | 0.260 ± 0.020 | VR2 | V | **CR 400125** |
| **0.490** | **0.570** | 13 | 0.450 | 0.120 | 0.130 | 0.220 | 0.080 | 0.350 | 0.180 ± 0.020 | VR1 | R | **CR 400130** |
| | | 13 | 0.450 | 0.120 | 0.130 | 0.220 | 0.080 | 0.350 | 0.180 ± 0.020 | VR1 | V | **CR 400134** |

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

| Dimensions | | | | | | | | | | Design | Lip code | Designation |
|---|---|---|---|---|---|---|---|---|---|---|---|---|
| Shaft diameter range $d_1$ over | incl. | Ref. metric dim. | 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 $B_1$ | | | |
| in. | | mm | in. | | | | | | | – | – | – |
| **0.530** | **0.610** | 14 | 0.490 | 0.120 | 0.130 | 0.220 | 0.080 | 0.350 | 0.180 ± 0.020 | VR1 | R | **CR 400140** |
| | | 14 | 0.490 | 0.120 | 0.220 | 0.300 | 0.080 | 0.350 | 0.260 ± 0.020 | VR2 | R | **CR 400141** |
| | | 14 | 0.490 | 0.120 | 0.130 | 0.220 | 0.080 | 0.350 | 0.180 ± 0.020 | VR1 | V | **CR 400144** |
| | | 14 | 0.490 | 0.120 | 0.220 | 0.300 | 0.080 | 0.350 | 0.260 ± 0.020 | VR2 | V | **CR 400145** |
| **0.610** | **0.690** | 16 | 0.550 | 0.120 | 0.130 | 0.220 | 0.080 | 0.350 | 0.180 ± 0.020 | VR1 | R | **CR 400160** |
| | | 16 | 0.550 | 0.120 | 0.220 | 0.300 | 0.080 | 0.350 | 0.260 ± 0.020 | VR2 | R | **CR 400161** |
| | | 16 | 0.550 | 0.120 | 0.130 | 0.220 | 0.080 | 0.350 | 0.180 ± 0.020 | VR1 | V | **CR 400164** |
| | | 16 | 0.550 | 0.120 | 0.220 | 0.300 | 0.080 | 0.350 | 0.260 ± 0.020 | VR2 | V | **CR 400165** |
| **0.690** | **0.750** | 18 | 0.630 | 0.120 | 0.130 | 0.220 | 0.080 | 0.350 | 0.180 ± 0.020 | VR1 | R | **CR 400180** |
| | | 18 | 0.630 | 0.120 | 0.130 | 0.220 | 0.080 | 0.350 | 0.180 ± 0.020 | VR1 | V | **CR 400184** |
| **0.690** | **0.770** | 18 | 0.630 | 0.120 | 0.220 | 0.300 | 0.080 | 0.350 | 0.260 ± 0.020 | VR2 | R | **CR 400181** |
| | | 18 | 0.630 | 0.120 | 0.220 | 0.300 | 0.080 | 0.350 | 0.260 ± 0.020 | VR2 | V | **CR 400185** |
| **0.750** | **0.830** | 20 | 0.710 | 0.160 | 0.190 | 0.300 | 0.080 | 0.470 | 0.240 ± 0.030 | VR1 | R | **CR 400200** |
| | | 20 | 0.710 | 0.160 | 0.190 | 0.300 | 0.080 | 0.470 | 0.240 ± 0.030 | VR1 | V | **CR 400204** |
| **0.770** | **0.830** | 20 | 0.710 | 0.160 | 0.310 | 0.410 | 0.080 | 0.470 | 0.350 ± 0.030 | VR2 | R | **CR 400201** |
| | | 20 | 0.710 | 0.160 | 0.310 | 0.410 | 0.080 | 0.470 | 0.350 ± 0.030 | VR2 | V | **CR 400205** |
| **0.830** | **0.950** | 22 | 0.790 | 0.160 | 0.190 | 0.300 | 0.080 | 0.470 | 0.240 ± 0.030 | VR1 | R | **CR 400220** |
| | | 22 | 0.790 | 0.160 | 0.310 | 0.410 | 0.080 | 0.470 | 0.350 ± 0.030 | VR2 | R | **CR 400221** |
| | | 22 | 0.790 | 0.160 | 0.190 | 0.300 | 0.080 | 0.470 | 0.240 ± 0.030 | VR1 | V | **CR 400224** |
| | | 22 | 0.790 | 0.160 | 0.310 | 0.410 | 0.080 | 0.470 | 0.350 ± 0.030 | VR2 | V | **CR 400225** |
| **0.950** | **1.070** | 25 | 0.870 | 0.160 | 0.190 | 0.300 | 0.080 | 0.470 | 0.240 ± 0.030 | VR1 | R | **CR 400250** |
| | | 25 | 0.870 | 0.160 | 0.310 | 0.410 | 0.080 | 0.470 | 0.350 ± 0.030 | VR2 | R | **CR 400251** |
| | | 25 | 0.870 | 0.160 | 0.190 | 0.300 | 0.080 | 0.470 | 0.240 ± 0.030 | VR1 | V | **CR 400254** |
| | | 25 | 0.870 | 0.160 | 0.310 | 0.410 | 0.080 | 0.470 | 0.350 ± 0.030 | VR2 | V | **CR 400255** |
| **1.070** | **1.140** | 28 | 0.980 | 0.160 | 0.190 | 0.300 | 0.120 | 0.470 | 0.240 ± 0.030 | VR1 | R | **CR 400280** |
| | | 28 | 0.980 | 0.160 | 0.310 | 0.410 | 0.120 | 0.470 | 0.350 ± 0.030 | VR2 | R | **CR 400281** |
| | | 28 | 0.980 | 0.160 | 0.190 | 0.300 | 0.120 | 0.470 | 0.240 ± 0.030 | VR1 | V | **CR 400284** |
| | | 28 | 0.980 | 0.160 | 0.310 | 0.410 | 0.120 | 0.470 | 0.350 ± 0.030 | VR2 | V | **CR 400285** |
| **1.140** | **1.220** | 30 | 1.060 | 0.160 | 0.190 | 0.300 | 0.120 | 0.470 | 0.240 ± 0.030 | VR1 | R | **CR 400300** |
| | | 30 | 1.060 | 0.160 | 0.310 | 0.410 | 0.120 | 0.470 | 0.350 ± 0.030 | VR2 | R | **CR 400301** |
| | | 30 | 1.060 | 0.160 | 0.190 | 0.300 | 0.120 | 0.470 | 0.240 ± 0.030 | VR1 | V | **CR 400304** |
| | | 30 | 1.060 | 0.160 | 0.310 | 0.410 | 0.120 | 0.470 | 0.350 ± 0.030 | VR2 | V | **CR 400305** |
| **1.220** | **1.300** | 32 | 1.140 | 0.160 | 0.190 | 0.300 | 0.120 | 0.470 | 0.240 ± 0.030 | VR1 | R | **CR 400320** |
| | | 32 | 1.140 | 0.160 | 0.310 | 0.410 | 0.120 | 0.470 | 0.350 ± 0.030 | VR2 | R | **CR 400321** |
| | | 32 | 1.140 | 0.160 | 0.190 | 0.300 | 0.120 | 0.470 | 0.240 ± 0.030 | VR1 | V | **CR 400324** |
| | | 32 | 1.140 | 0.160 | 0.310 | 0.410 | 0.120 | 0.470 | 0.350 ± 0.030 | VR2 | V | **CR 400325** |
| **1.300** | **1.420** | 35 | 1.220 | 0.160 | 0.190 | 0.300 | 0.120 | 0.470 | 0.240 ± 0.030 | VR1 | R | **CR 400350** |
| | | 35 | 1.220 | 0.160 | 0.310 | 0.410 | 0.120 | 0.470 | 0.350 ± 0.030 | VR2 | R | **CR 400351** |
| | | 35 | 1.220 | 0.160 | 0.190 | 0.300 | 0.120 | 0.470 | 0.240 ± 0.030 | VR1 | V | **CR 400354** |
| | | 35 | 1.220 | 0.160 | 0.310 | 0.410 | 0.120 | 0.470 | 0.350 ± 0.030 | VR2 | V | **CR 400355** |
| **1.420** | **1.500** | 38 | 1.340 | 0.160 | 0.190 | 0.300 | 0.120 | 0.470 | 0.240 ± 0.030 | VR1 | R | **CR 400380** |
| | | 38 | 1.340 | 0.160 | 0.310 | 0.410 | 0.120 | 0.470 | 0.350 ± 0.030 | VR2 | R | **CR 400381** |
| | | 38 | 1.340 | 0.160 | 0.190 | 0.300 | 0.120 | 0.470 | 0.240 ± 0.030 | VR1 | V | **CR 400384** |
| | | 38 | 1.340 | 0.160 | 0.310 | 0.410 | 0.120 | 0.470 | 0.350 ± 0.030 | VR2 | V | **CR 400385** |
| **1.500** | **1.700** | 40 | 1.420 | 0.200 | 0.220 | 0.350 | 0.120 | 0.590 | 0.280 ± 0.040 | VR1 | R | **CR 400400** |
| | | 40 | 1.420 | 0.200 | 0.370 | 0.510 | 0.120 | 0.590 | 0.430 ± 0.040 | VR2 | R | **CR 400401** |
| | | 40 | 1.420 | 0.200 | 0.220 | 0.350 | 0.120 | 0.590 | 0.280 ± 0.040 | VR1 | V | **CR 400404** |
| | | 40 | 1.420 | 0.200 | 0.370 | 0.510 | 0.120 | 0.590 | 0.430 ± 0.040 | VR2 | V | **CR 400405** |
| **1.700** | **1.890** | 45 | 1.570 | 0.200 | 0.220 | 0.350 | 0.120 | 0.590 | 0.280 ± 0.040 | VR1 | R | **CR 400450** |
| | | 45 | 1.570 | 0.200 | 0.370 | 0.510 | 0.120 | 0.590 | 0.430 ± 0.040 | VR2 | R | **CR 400451** |
| | | 45 | 1.570 | 0.200 | 0.220 | 0.350 | 0.120 | 0.590 | 0.280 ± 0.040 | VR1 | V | **CR 400454** |
| | | 45 | 1.570 | 0.200 | 0.370 | 0.510 | 0.120 | 0.590 | 0.430 ± 0.040 | VR2 | V | **CR 400455** |

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

$d_1$ **1.890 – 6.890** in.



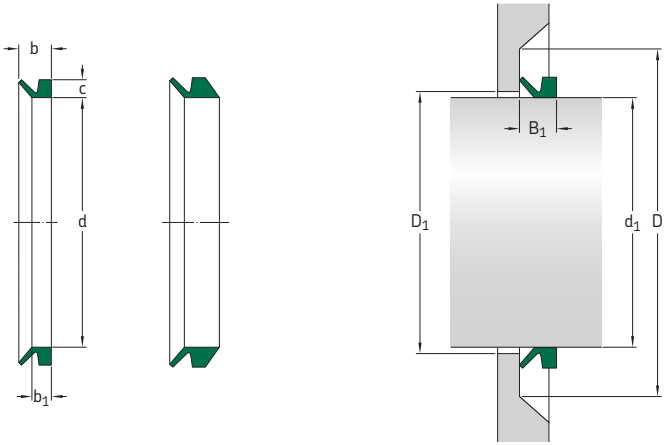

| Dimensions | | | | | | | | | | Design | Lip code | Designation |
|---|---|---|---|---|---|---|---|---|---|---|---|---|
| Shaft diameter range $d_1$ over | incl. | Ref. metric dim. | Seal inside diameter, free state d | Seal seat width $b_1$ | Nominal seal width b | Nominal seal height c | Clearance $D_1$ max | Counterface D min | Seal fitted width $B_1$ | | | |
| in. | | mm | in. | | | | | | | – | – | – |
| **1.890** | **2.090** | 50 | 1.770 | 0.200 | 0.220 | 0.350 | 0.120 | 0.590 | 0.280 ± 0.040 | VR1 | R | **CR 400500** |
| | | 50 | 1.770 | 0.200 | 0.370 | 0.510 | 0.120 | 0.590 | 0.430 ± 0.040 | VR2 | R | **CR 400501** |
| | | 50 | 1.770 | 0.200 | 0.220 | 0.350 | 0.120 | 0.590 | 0.280 ± 0.040 | VR1 | V | **CR 400504** |
| | | 50 | 1.770 | 0.200 | 0.370 | 0.510 | 0.120 | 0.590 | 0.430 ± 0.040 | VR2 | V | **CR 400505** |
| **2.090** | **2.290** | 55 | 1.930 | 0.200 | 0.220 | 0.350 | 0.120 | 0.590 | 0.280 ± 0.040 | VR1 | R | **CR 400550** |
| | | 55 | 1.930 | 0.200 | 0.370 | 0.510 | 0.120 | 0.590 | 0.430 ± 0.040 | VR2 | R | **CR 400551** |
| | | 55 | 1.930 | 0.200 | 0.220 | 0.350 | 0.120 | 0.590 | 0.280 ± 0.040 | VR1 | V | **CR 400554** |
| | | 55 | 1.930 | 0.200 | 0.370 | 0.510 | 0.120 | 0.590 | 0.430 ± 0.040 | VR2 | V | **CR 400555** |
| **2.290** | **2.480** | 60 | 2.130 | 0.200 | 0.220 | 0.350 | 0.120 | 0.590 | 0.280 ± 0.040 | VR1 | R | **CR 400600** |
| | | 60 | 2.130 | 0.200 | 0.370 | 0.510 | 0.120 | 0.590 | 0.430 ± 0.040 | VR2 | R | **CR 400601** |
| | | 60 | 2.130 | 0.200 | 0.220 | 0.350 | 0.120 | 0.590 | 0.280 ± 0.040 | VR1 | V | **CR 400604** |
| | | 60 | 2.130 | 0.200 | 0.370 | 0.510 | 0.120 | 0.590 | 0.430 ± 0.040 | VR2 | V | **CR 400605** |
| **2.480** | **2.680** | 65 | 2.280 | 0.200 | 0.220 | 0.350 | 0.120 | 0.590 | 0.280 ± 0.040 | VR1 | R | **CR 400650** |
| | | 65 | 2.280 | 0.200 | 0.370 | 0.510 | 0.120 | 0.590 | 0.430 ± 0.040 | VR2 | R | **CR 400651** |
| | | 65 | 2.280 | 0.200 | 0.220 | 0.350 | 0.120 | 0.590 | 0.280 ± 0.040 | VR1 | V | **CR 400654** |
| | | 65 | 2.280 | 0.200 | 0.370 | 0.510 | 0.120 | 0.590 | 0.430 ± 0.040 | VR2 | V | **CR 400655** |
| | | 65 | 2.280 | 0.200 | 0.220 | 0.350 | 0.120 | 0.590 | 0.280 ± 0.040 | VR1 | R | **CR 400659** |
| **2.680** | **2.880** | 70 | 2.480 | 0.240 | 0.270 | 0.430 | 0.160 | 0.710 | 0.350 ± 0.050 | VR1 | R | **CR 400700** |
| | | 70 | 2.480 | 0.240 | 0.440 | 0.610 | 0.160 | 0.710 | 0.530 ± 0.050 | VR2 | R | **CR 400701** |
| | | 70 | 2.480 | 0.240 | 0.270 | 0.430 | 0.160 | 0.710 | 0.350 ± 0.050 | VR1 | V | **CR 400704** |
| | | 70 | 2.480 | 0.240 | 0.440 | 0.610 | 0.160 | 0.710 | 0.530 ± 0.050 | VR2 | V | **CR 400705** |
| **2.880** | **3.070** | 75 | 2.640 | 0.240 | 0.270 | 0.430 | 0.160 | 0.710 | 0.350 ± 0.050 | VR1 | R | **CR 400750** |
| | | 75 | 2.640 | 0.240 | 0.440 | 0.610 | 0.160 | 0.710 | 0.530 ± 0.050 | VR2 | R | **CR 400751** |
| | | 75 | 2.640 | 0.240 | 0.270 | 0.430 | 0.160 | 0.710 | 0.350 ± 0.050 | VR1 | V | **CR 400754** |
| | | 75 | 2.640 | 0.240 | 0.440 | 0.610 | 0.160 | 0.710 | 0.530 ± 0.050 | VR2 | V | **CR 400755** |
| **3.070** | **3.270** | 80 | 2.830 | 0.240 | 0.270 | 0.430 | 0.160 | 0.710 | 0.350 ± 0.050 | VR1 | R | **CR 400800** |
| | | 80 | 2.830 | 0.240 | 0.440 | 0.610 | 0.160 | 0.710 | 0.530 ± 0.050 | VR2 | R | **CR 400801** |
| | | 80 | 2.830 | 0.240 | 0.270 | 0.430 | 0.160 | 0.710 | 0.350 ± 0.050 | VR1 | V | **CR 400804** |
| | | 80 | 2.830 | 0.240 | 0.440 | 0.610 | 0.160 | 0.710 | 0.530 ± 0.050 | VR2 | V | **CR 400805** |

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

| Dimensions | | | | | | | | | | Design | Lip code | Desig-nation |
|---|---|---|---|---|---|---|---|---|---|---|---|---|
| Shaft diameter range $d_1$ over | incl. | Ref. metric dim. | Seal inside dia-meter, free state d | Seal seat width $b_1$ | Nominal seal width b | Nominal seal height c | Clear-ance $D_1$ max | Counter-face D min | Seal fitted width $B_1$ | | | |
| in. | | mm | in. | | | | | | | – | – | – |
| **3.270** | **3.470** | 85 | 2.990 | 0.240 | 0.270 | 0.430 | 0.160 | 0.710 | 0.350 ± 0.050 | VR1 | R | **CR 400850** |
| | | 85 | 2.940 | 0.240 | 0.440 | 0.610 | 0.160 | 0.710 | 0.530 ± 0.050 | VR2 | R | **CR 400851** |
| | | 85 | 2.990 | 0.240 | 0.270 | 0.430 | 0.160 | 0.710 | 0.350 ± 0.050 | VR1 | V | **CR 400854** |
| | | 85 | 2.940 | 0.240 | 0.440 | 0.610 | 0.160 | 0.710 | 0.530 ± 0.050 | VR2 | V | **CR 400855** |
| **3.470** | **3.660** | 90 | 3.190 | 0.240 | 0.270 | 0.430 | 0.160 | 0.710 | 0.350 ± 0.050 | VR1 | R | **CR 400900** |
| | | 90 | 3.190 | 0.240 | 0.440 | 0.610 | 0.160 | 0.710 | 0.530 ± 0.050 | VR2 | R | **CR 400901** |
| | | 90 | 3.190 | 0.240 | 0.270 | 0.430 | 0.160 | 0.710 | 0.350 ± 0.050 | VR1 | V | **CR 400904** |
| | | 90 | 3.190 | 0.240 | 0.440 | 0.610 | 0.160 | 0.710 | 0.530 ± 0.050 | VR2 | V | **CR 400905** |
| **3.660** | **3.860** | 95 | 3.350 | 0.240 | 0.270 | 0.430 | 0.160 | 0.710 | 0.350 ± 0.050 | VR1 | R | **CR 400950** |
| | | 95 | 3.350 | 0.240 | 0.440 | 0.610 | 0.160 | 0.710 | 0.530 ± 0.050 | VR2 | R | **CR 400951** |
| | | 95 | 3.350 | 0.240 | 0.270 | 0.430 | 0.160 | 0.710 | 0.350 ± 0.050 | VR1 | V | **CR 400954** |
| | | 95 | 3.350 | 0.240 | 0.440 | 0.610 | 0.160 | 0.710 | 0.530 ± 0.050 | VR2 | V | **CR 400955** |
| **3.860** | **4.140** | 100 | 3.540 | 0.240 | 0.270 | 0.430 | 0.160 | 0.710 | 0.350 ± 0.050 | VR1 | R | **CR 401000** |
| | | 100 | 3.540 | 0.240 | 0.440 | 0.610 | 0.160 | 0.710 | 0.530 ± 0.050 | VR2 | R | **CR 401001** |
| | | 100 | 3.540 | 0.240 | 0.270 | 0.430 | 0.160 | 0.710 | 0.350 ± 0.050 | VR1 | V | **CR 401004** |
| | | 100 | 3.540 | 0.240 | 0.440 | 0.610 | 0.160 | 0.710 | 0.530 ± 0.050 | VR2 | V | **CR 401005** |
| **4.140** | **4.530** | 110 | 3.900 | 0.280 | 0.310 | 0.500 | 0.160 | 0.830 | 0.410 ± 0.060 | VR1 | R | **CR 401100** |
| | | 110 | 3.900 | 0.280 | 0.520 | 0.710 | 0.160 | 0.830 | 0.610 ± 0.060 | VR2 | R | **CR 401101** |
| | | 110 | 3.900 | 0.280 | 0.310 | 0.500 | 0.160 | 0.830 | 0.410 ± 0.060 | VR1 | V | **CR 401104** |
| | | 110 | 3.900 | 0.280 | 0.520 | 0.710 | 0.160 | 0.830 | 0.610 ± 0.060 | VR2 | V | **CR 401105** |
| **4.530** | **4.920** | 120 | 4.250 | 0.280 | 0.310 | 0.500 | 0.160 | 0.830 | 0.410 ± 0.060 | VR1 | R | **CR 401200** |
| | | 120 | 4.250 | 0.280 | 0.520 | 0.710 | 0.160 | 0.830 | 0.610 ± 0.060 | VR2 | R | **CR 401201** |
| | | 120 | 4.250 | 0.260 | 0.240 | 0.410 | 0.200 | 0.800 | 0.315 ± 0.060 | VR3 | V | **CR 401202**[1)] |
| | | 120 | 4.250 | 0.280 | 0.310 | 0.500 | 0.160 | 0.830 | 0.410 ± 0.060 | VR1 | V | **CR 401204** |
| | | 120 | 4.250 | 0.280 | 0.520 | 0.710 | 0.160 | 0.830 | 0.610 ± 0.060 | VR2 | V | **CR 401205** |
| **4.531** | **4.917** | 120 | 4.250 | 0.280 | 0.310 | 0.500 | 0.160 | 0.830 | 0.410 ± 0.060 | VR1 | R | **CR 401208** |
| **4.920** | **5.320** | 130 | 4.610 | 0.280 | 0.310 | 0.500 | 0.160 | 0.830 | 0.410 ± 0.060 | VR1 | R | **CR 401300** |
| | | 130 | 4.610 | 0.280 | 0.520 | 0.710 | 0.160 | 0.830 | 0.610 ± 0.060 | VR2 | R | **CR 401301** |
| | | 130 | 4.610 | 0.280 | 0.310 | 0.500 | 0.160 | 0.830 | 0.410 ± 0.060 | VR1 | V | **CR 401304** |
| | | 130 | 4.610 | 0.280 | 0.520 | 0.710 | 0.160 | 0.830 | 0.610 ± 0.060 | VR2 | V | **CR 401305** |
| **5.320** | **5.710** | 140 | 4.960 | 0.280 | 0.310 | 0.500 | 0.160 | 0.830 | 0.410 ± 0.060 | VR1 | R | **CR 401400** |
| | | 140 | 4.960 | 0.280 | 0.520 | 0.710 | 0.160 | 0.830 | 0.610 ± 0.060 | VR2 | R | **CR 401401** |
| | | 140 | 4.960 | 0.260 | 0.240 | 0.410 | 0.200 | 0.800 | 0.310 ± 0.060 | VR3 | R | **CR 401402** |
| | | 140 | 4.960 | 0.280 | 0.310 | 0.500 | 0.160 | 0.830 | 0.410 ± 0.060 | VR1 | V | **CR 401404** |
| | | 140 | 4.960 | 0.280 | 0.520 | 0.710 | 0.160 | 0.830 | 0.610 ± 0.060 | VR2 | V | **CR 401405** |
| | | 140 | 4.960 | 0.260 | 0.240 | 0.410 | 0.200 | 0.800 | 0.310 ± 0.060 | VR3 | V | **CR 401406** |
| **5.710** | **6.100** | 150 | 5.310 | 0.280 | 0.310 | 0.500 | 0.160 | 0.830 | 0.410 ± 0.060 | VR1 | R | **CR 401500** |
| | | 150 | 5.310 | 0.280 | 0.520 | 0.710 | 0.160 | 0.830 | 0.610 ± 0.060 | VR2 | R | **CR 401501** |
| | | 150 | 5.310 | 0.260 | 0.240 | 0.410 | 0.200 | 0.800 | 0.310 ± 0.060 | VR3 | R | **CR 401502** |
| | | 150 | 5.310 | 0.280 | 0.310 | 0.500 | 0.160 | 0.830 | 0.410 ± 0.060 | VR1 | V | **CR 401504** |
| | | 150 | 5.310 | 0.280 | 0.520 | 0.710 | 0.160 | 0.830 | 0.610 ± 0.060 | VR2 | V | **CR 401505** |
| | | 150 | 5.310 | 0.260 | 0.240 | 0.410 | 0.200 | 0.800 | 0.310 ± 0.060 | VR3 | V | **CR 401506** |
| **6.100** | **6.500** | 160 | 5.670 | 0.310 | 0.350 | 0.570 | 0.200 | 0.940 | 0.470 ± 0.070 | VR1 | R | **CR 401600** |
| | | 160 | 5.670 | 0.310 | 0.590 | 0.810 | 0.200 | 0.940 | 0.710 ± 0.070 | VR2 | R | **CR 401601** |
| | | 160 | 5.670 | 0.260 | 0.240 | 0.410 | 0.200 | 0.800 | 0.310 ± 0.060 | VR3 | R | **CR 401602** |
| | | 160 | 5.670 | 0.310 | 0.350 | 0.570 | 0.200 | 0.940 | 0.470 ± 0.070 | VR1 | V | **CR 401604** |
| | | 160 | 5.670 | 0.310 | 0.590 | 0.810 | 0.200 | 0.940 | 0.710 ± 0.070 | VR2 | V | **CR 401605** |
| | | 160 | 5.670 | 0.260 | 0.240 | 0.410 | 0.200 | 0.800 | 0.310 ± 0.060 | VR3 | V | **CR 401606** |
| | | 160 | 5.670 | 0.310 | 0.350 | 0.570 | 0.200 | 0.940 | 0.470 ± 0.070 | VR1 | R | **CR 401608** |
| **6.500** | **6.890** | 170 | 6.020 | 0.310 | 0.350 | 0.570 | 0.200 | 0.940 | 0.470 ± 0.070 | VR1 | R | **CR 401700** |
| | | 170 | 6.020 | 0.310 | 0.590 | 0.810 | 0.200 | 0.940 | 0.710 ± 0.070 | VR2 | R | **CR 401701** |
| | | 170 | 6.020 | 0.260 | 0.240 | 0.410 | 0.200 | 0.800 | 0.310 ± 0.060 | VR3 | R | **CR 401702** |
| | | 170 | 6.020 | 0.310 | 0.350 | 0.570 | 0.200 | 0.940 | 0.470 ± 0.070 | VR1 | V | **CR 401704** |
| | | 170 | 6.020 | 0.310 | 0.590 | 0.810 | 0.200 | 0.940 | 0.710 ± 0.070 | VR2 | V | **CR 401705** |
| | | 170 | 6.020 | 0.260 | 0.240 | 0.410 | 0.200 | 0.800 | 0.310 ± 0.060 | VR3 | V | **CR 401706** |

[1)] Check for availability and pricing

## V-ring seals – inch dimensions, for North American market
$d_1$ **6.890 – 18.700** in.



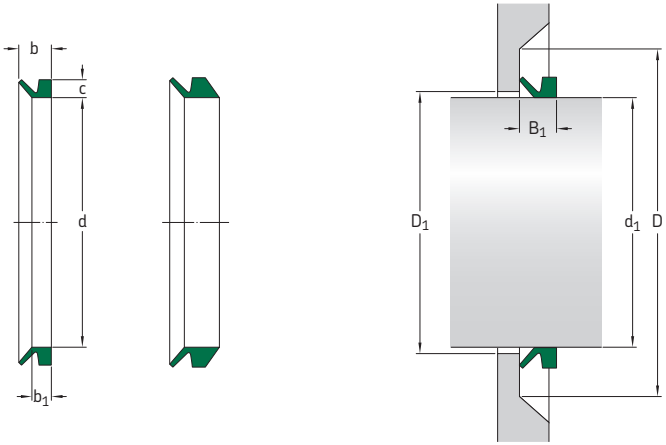

| Dimensions | | | | | | | | | | Design | Lip code | Designation |
|---|---|---|---|---|---|---|---|---|---|---|---|---|
| Shaft diameter range $d_1$ over | incl. | Ref. metric dim. | Seal inside diameter, free state d | Seal seat width $b_1$ | Nominal seal width b | Nominal seal height c | Clearance $D_1$ max | Counterface D min | Seal fitted width $B_1$ | | | |
| in. | | mm | in. | | | | | | | – | – | – |
| **6.890** | **7.290** | 180 | 6.380 | 0.310 | 0.350 | 0.570 | 0.200 | 0.940 | 0.470 ± 0.070 | VR1 | R | **CR 401800** |
| | | 180 | 6.380 | 0.310 | 0.590 | 0.810 | 0.200 | 0.940 | 0.710 ± 0.070 | VR2 | R | **CR 401801** |
| | | 180 | 6.380 | 0.260 | 0.240 | 0.410 | 0.200 | 0.800 | 0.310 ± 0.060 | VR3 | R | **CR 401802** |
| | | 180 | 6.380 | 0.310 | 0.350 | 0.570 | 0.200 | 0.940 | 0.470 ± 0.070 | VR1 | V | **CR 401804** |
| | | 180 | 6.380 | 0.310 | 0.590 | 0.810 | 0.200 | 0.940 | 0.710 ± 0.070 | VR2 | V | **CR 401805** |
| | | 180 | 6.380 | 0.260 | 0.240 | 0.410 | 0.200 | 0.800 | 0.310 ± 0.060 | VR3 | V | **CR 401806** |
| **7.290** | **7.680** | 190 | 6.730 | 0.310 | 0.350 | 0.570 | 0.200 | 0.940 | 0.470 ± 0.070 | VR1 | R | **CR 401900** |
| | | 190 | 6.730 | 0.310 | 0.590 | 0.810 | 0.200 | 0.940 | 0.710 ± 0.070 | VR2 | R | **CR 401901** |
| | | 190 | 6.730 | 0.260 | 0.240 | 0.410 | 0.200 | 0.800 | 0.310 ± 0.060 | VR3 | R | **CR 401902** |
| | | 190 | 6.730 | 0.310 | 0.350 | 0.570 | 0.200 | 0.940 | 0.470 ± 0.070 | VR1 | V | **CR 401904** |
| | | 190 | 6.730 | 0.310 | 0.590 | 0.810 | 0.200 | 0.940 | 0.710 ± 0.070 | VR2 | V | **CR 401905** |
| | | 190 | 6.730 | 0.260 | 0.240 | 0.410 | 0.200 | 0.800 | 0.310 ± 0.060 | VR3 | V | **CR 401906** |
| **7.480** | **8.270** | 200 | 7.090 | 0.590 | 0.560 | 0.980 | 0.400 | 1.770 | 0.790 ± 0.160 | VR1 | R | **CR 402000** |
| | | 200 | 7.090 | 0.590 | 0.560 | 0.980 | 0.400 | 1.770 | 0.790 ± 0.160 | VR1 | V | **CR 402004** |
| **7.680** | **8.270** | 199 | 7.090 | 0.310 | 0.350 | 0.570 | 0.200 | 0.940 | 0.470 ± 0.070 | VR1 | R | **CR 401990** |
| | | 199 | 7.090 | 0.310 | 0.590 | 0.810 | 0.200 | 0.940 | 0.710 ± 0.070 | VR2 | R | **CR 401991** |
| | | 199 | 7.090 | 0.310 | 0.350 | 0.570 | 0.200 | 0.940 | 0.470 ± 0.070 | VR1 | V | **CR 401994** |
| | | 199 | 7.090 | 0.310 | 0.590 | 0.810 | 0.200 | 0.940 | 0.710 ± 0.070 | VR2 | V | **CR 401995** |
| | | 200 | 7.170 | 0.260 | 0.240 | 0.410 | 0.200 | 0.800 | 0.310 ± 0.060 | VR3 | R | **CR 402002** |
| | | 200 | 7.170 | 0.260 | 0.240 | 0.410 | 0.200 | 0.800 | 0.310 ± 0.060 | VR3 | V | **CR 402006** |
| **8.270** | **9.170** | 220 | 7.800 | 0.260 | 0.240 | 0.410 | 0.200 | 0.800 | 0.310 ± 0.060 | VR3 | R | **CR 402202** |
| | | 220 | 7.800 | 0.260 | 0.240 | 0.410 | 0.200 | 0.800 | 0.310 ± 0.060 | VR3 | V | **CR 402206** |
| **8.270** | **9.250** | 220 | 7.800 | 0.590 | 0.560 | 0.980 | 0.400 | 1.770 | 0.790 ± 0.160 | VR1 | R | **CR 402200** |
| | | 220 | 7.800 | 0.590 | 0.560 | 0.980 | 0.400 | 1.770 | 0.790 ± 0.160 | VR1 | V | **CR 402204** |
| **9.170** | **10.240** | 250 | 8.860 | 0.260 | 0.240 | 0.410 | 0.200 | 0.800 | 0.310 ± 0.606 | VR3 | R | **CR 402502** |
| | | 250 | 8.860 | 0.260 | 0.240 | 0.410 | 0.200 | 0.800 | 0.310 ± 0.060 | VR3 | V | **CR 402506** |
| **9.250** | **10.430** | 250 | 8.860 | 0.590 | 0.560 | 0.980 | 0.400 | 1.770 | 0.790 ± 0.160 | VR1 | R | **CR 402500** |
| | | 250 | 8.860 | 0.590 | 0.560 | 0.980 | 0.400 | 1.770 | 0.790 ± 0.160 | VR1 | V | **CR 402504** |
| **10.240** | **11.220** | 275 | 9.720 | 0.260 | 0.240 | 0.410 | 0.200 | 0.800 | 0.310 ± 0.060 | VR3 | R | **CR 402752** |
| | | 275 | 9.720 | 0.260 | 0.240 | 0.410 | 0.200 | 0.800 | 0.310 ± 0.060 | VR3 | V | **CR 402756** |

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

| Dimensions | | | | | | | | | | Design | Lip code | Designation |
|---|---|---|---|---|---|---|---|---|---|---|---|---|
| Shaft diameter range $d_1$ over | incl. | Ref. metric dim. | 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 $B_1$ | | | |
| in. | | mm | in. | | | | | | | – | – | – |
| **10.430** | **11.420** | 275 | 9.720 | 0.590 | 0.560 | 0.980 | 0.400 | 1.770 | 0.790 ± 0.160 | VR1 | R | **CR 402750** |
| | | 275 | 9.720 | 0.590 | 0.560 | 0.980 | 0.400 | 1.770 | 0.790 ± 0.160 | VR1 | V | **CR 402754** |
| **11.220** | **12.200** | 300 | 10.630 | 0.260 | 0.240 | 0.410 | 0.200 | 0.800 | 0.310 ± 0.060 | VR3 | R | **CR 403002** |
| | | 300 | 10.630 | 0.260 | 0.240 | 0.410 | 0.200 | 0.800 | 0.310 ± 0.060 | VR3 | V | **CR 403006** |
| **11.420** | **12.200** | 300 | 10.630 | 0.590 | 0.560 | 0.980 | 0.400 | 1.770 | 0.790 ± 0.160 | VR1 | R | **CR 403000** |
| | | 300 | 10.630 | 0.590 | 0.560 | 0.980 | 0.400 | 1.770 | 0.790 ± 0.160 | VR1 | V | **CR 403004** |
| **11.811** | **12.000** | 300 | 11.575 | 0.827 | 2.657 | 3.931 | 0.940 | 4.530 | 3.350 ± 0.500 | VR5 | R | **CR 470300**[1] |
| **12.200** | **13.190** | 325 | 11.500 | 0.590 | 0.560 | 0.980 | 0.400 | 1.770 | 0.790 ± 0.160 | VR1 | R | **CR 403250** |
| | | 325 | 11.500 | 0.260 | 0.240 | 0.410 | 0.200 | 0.800 | 0.310 ± 0.060 | VR3 | R | **CR 403252** |
| | | 325 | 11.500 | 0.590 | 0.560 | 0.980 | 0.400 | 1.770 | 0.790 ± 0.160 | VR1 | V | **CR 403254** |
| | | 325 | 11.500 | 0.260 | 0.240 | 0.410 | 0.200 | 0.800 | 0.310 ± 0.060 | VR3 | V | **CR 403256** |
| **12.400** | **12.600** | 315 | 12.170 | 1.180 | 1.280 | 2.560 | 0.940 | 4.530 | 2.000 ± 0.500 | VR4 | R | **CR 403153**[1] |
| **13.190** | **14.370** | 350 | 12.400 | 0.590 | 0.560 | 0.980 | 0.400 | 1.770 | 0.790 ± 0.160 | VR1 | R | **CR 403500** |
| | | 350 | 12.400 | 0.260 | 0.240 | 0.410 | 0.200 | 0.800 | 0.310 ± 0.060 | VR3 | R | **CR 403502** |
| | | 350 | 12.400 | 0.590 | 0.560 | 0.980 | 0.400 | 1.770 | 0.790 ± 0.160 | VR1 | V | **CR 403504** |
| | | 350 | 12.400 | 0.260 | 0.240 | 0.410 | 0.200 | 0.800 | 0.310 ± 0.060 | VR3 | V | **CR 403506** |
| **14.170** | **14.370** | 360 | 13.858 | 1.181 | 1.280 | 2.559 | 0.945 | 4.528 | 1.969 ± 0.472 | VR4 | R | **CR 403603** |
| | | 360 | 13.858 | 1.180 | 1.280 | 2.560 | 0.940 | 4.530 | 2.000 ± 0.500 | VR4 | V | **CR 403607**[1] |
| **14.350** | **15.550** | 390 | 15.000 | 1.180 | 1.280 | 2.560 | 0.940 | 4.530 | 2.000 ± 0.500 | VR4 | R | **CR 403903**[1] |
| **14.370** | **15.150** | 375 | 13.270 | 0.260 | 0.240 | 0.410 | 0.200 | 0.800 | 0.310 ± 0.060 | VR3 | R | **CR 403752** |
| | | 375 | 13.270 | 0.260 | 0.240 | 0.410 | 0.200 | 0.800 | 0.310 ± 0.060 | VR3 | V | **CR 403756** |
| **14.370** | **15.350** | 375 | 13.270 | 0.590 | 0.560 | 0.980 | 0.400 | 1.770 | 0.790 ± 0.160 | VR1 | R | **CR 403750** |
| | | 375 | 13.270 | 0.590 | 0.560 | 0.980 | 0.400 | 1.770 | 0.790 ± 0.160 | VR1 | V | **CR 403754** |
| **14.567** | **14.764** | 370 | 14.252 | 1.180 | 1.280 | 2.560 | 0.940 | 4.530 | 2.000 ± 0.500 | VR4 | R | **CR 403703**[1] |
| **14.764** | **14.961** | 375 | 14.449 | 1.180 | 1.280 | 2.560 | 0.940 | 4.530 | 2.000 ± 0.500 | VR4 | R | **CR 403753**[1] |
| **14.961** | **15.157** | 380 | 14.606 | 0.827 | 2.657 | 3.937 | 0.940 | 4.530 | 3.350 ± 0.500 | VR5 | R | **CR 470380**[1] |
| **15.150** | **16.730** | 400 | 14.170 | 0.260 | 0.240 | 0.410 | 0.200 | 0.800 | 0.310 ± 0.060 | VR3 | R | **CR 404002** |
| **15.150** | **16.930** | 400 | 14.170 | 0.260 | 0.240 | 0.410 | 0.200 | 0.800 | 0.310 ± 0.060 | VR3 | V | **CR 404006** |
| **15.350** | **16.930** | 400 | 14.170 | 0.590 | 0.560 | 0.980 | 0.400 | 1.770 | 0.790 ± 0.160 | VR1 | R | **CR 404000** |
| | | 400 | 14.170 | 0.590 | 0.560 | 0.980 | 0.400 | 1.770 | 0.790 ± 0.160 | VR1 | V | **CR 404004** |
| **15.354** | **19.685** | 385 | 14.803 | 0.827 | 2.657 | 3.937 | 0.940 | 4.530 | 3.350 ± 0.500 | VR5 | R | **CR 470385**[1] |
| **15.750** | **15.940** | 400 | 15.394 | 1.181 | 1.280 | 2.559 | 0.945 | 4.528 | 1.969 ± 0.472 | VR4 | R | **CR 404003** |
| **16.142** | **17.322** | 425 | 15.039 | 0.260 | 0.240 | 0.410 | 0.200 | 0.800 | 0.315 ± 0.060 | VR3 | R | **CR 404252**[1] |
| **16.730** | **18.700** | 450 | 15.940 | 0.260 | 0.240 | 0.410 | 0.200 | 0.800 | 0.310 ± 0.060 | VR3 | R | **CR 404502** |
| | | 450 | 15.940 | 0.260 | 0.240 | 0.410 | 0.200 | 0.800 | 0.310 ± 0.060 | VR3 | V | **CR 404506** |
| **16.930** | **17.120** | 430 | 16.490 | 1.180 | 1.280 | 2.560 | 0.940 | 4.530 | 2.000 ± 0.500 | VR4 | R | **CR 404303** |
| **16.930** | **18.900** | 450 | 15.940 | 0.590 | 0.560 | 0.980 | 0.400 | 1.770 | 0.790 ± 0.160 | VR1 | R | **CR 404500** |
| | | 450 | 15.940 | 0.590 | 0.560 | 0.980 | 0.400 | 1.770 | 0.790 ± 0.160 | VR1 | V | **CR 404504** |
| **17.720** | **17.910** | 450 | 17.280 | 1.180 | 1.280 | 2.560 | 0.940 | 4.530 | 2.000 ± 0.500 | VR4 | R | **CR 404503** |
| **18.110** | **18.310** | 460 | 17.640 | 1.180 | 1.280 | 2.560 | 0.940 | 4.530 | 5.000 ± 0.500 | VR4 | R | **CR 404603** |
| **18.500** | **18.700** | 470 | 18.030 | 1.180 | 1.280 | 2.560 | 0.940 | 4.530 | 2.000 ± 0.500 | VR4 | R | **CR 404703** |

[1] Check for availability and pricing

## V-ring seals – inch dimensions, for North American market
$d_1$ **18.700 – 30.512** in.



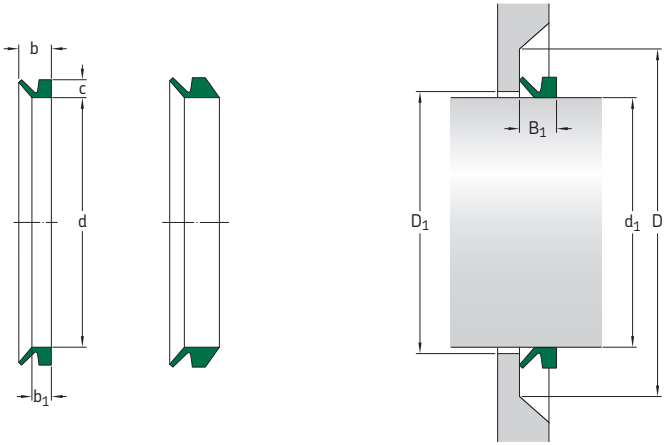

| Dimensions | | | | | | | | | | Design | Lip code | Designation |
|---|---|---|---|---|---|---|---|---|---|---|---|---|
| Shaft diameter range $d_1$ over | incl. | Ref. metric dim. | Seal inside diameter, free state d | Seal seat width $b_1$ | Nominal seal width b | Nominal seal height c | Clearance $D_1$ max | Counterface D min | Seal fitted width $B_1$ | | | |
| in. | | mm | in. | | | | | | | – | – | – |
| **18.700** | **18.900** | 475 | 18.228 | 1.180 | 1.280 | 2.560 | 0.940 | 4.530 | 2.000 ± 0.500 | VR4 | R | **CR 404753**[1] |
| | | 475 | 18.228 | 1.180 | 1.280 | 2.560 | 0.940 | 4.530 | 2.000 ± 0.500 | VR4 | V | **CR 404757**[1] |
| **18.700** | **20.080** | 500 | 17.717 | 0.255 | 0.236 | 0.413 | 0.196 | 0.787 | 0.315 ± 0.060 | VR3 | R | **CR 405006** |
| **18.900** | **19.090** | 480 | 18.430 | 1.180 | 1.280 | 2.560 | 0.940 | 4.530 | 2.000 ± 0.500 | VR4 | R | **CR 404803** |
| | | 480 | 18.430 | 1.180 | 1.280 | 2.560 | 0.940 | 4.530 | 2.000 ± 0.500 | VR4 | V | **CR 404807**[1] |
| **18.900** | **20.870** | 500 | 17.720 | 0.590 | 0.560 | 0.980 | 0.400 | 1.770 | 0.790 ± 0.160 | VR1 | R | **CR 405000** |
| | | 500 | 17.720 | 0.260 | 0.240 | 0.410 | 0.200 | 0.800 | 0.310 ± 0.060 | VR3 | R | **CR 405002** |
| | | 500 | 17.720 | 0.590 | 0.560 | 0.980 | 0.400 | 1.770 | 0.790 ± 0.160 | VR1 | V | **CR 405004** |
| **19.090** | **19.290** | 485 | 18.622 | 1.181 | 1.280 | 2.559 | 0.945 | 4.528 | 1.969 ± 0.472 | VR4 | R | **CR 404853** |
| **19.100** | **19.290** | 485 | 19.094 | 1.180 | 1.280 | 2.560 | 0.940 | 4.530 | 2.000 ± 0.500 | VR4 | V | **CR 404857**[1] |
| **19.290** | **19.490** | 490 | 18.820 | 1.180 | 1.280 | 2.560 | 0.940 | 4.530 | 2.000 ± 0.500 | VR4 | R | **CR 404903** |
| **19.690** | **19.880** | 500 | 19.210 | 1.180 | 1.280 | 2.560 | 0.940 | 4.530 | 2.000 ± 0.500 | VR4 | R | **CR 405003** |
| | | 500 | 19.213 | 1.180 | 1.280 | 2.560 | 0.940 | 4.530 | 2.000 ± 0.500 | VR4 | V | **CR 405007**[1] |
| **19.910** | **18.110** | 455 | 17.480 | 1.180 | 1.280 | 2.560 | 0.940 | 4.530 | 2.000 ± 0.500 | VR4 | R | **CR 404553** |
| **20.010** | **20.280** | 510 | 19.570 | 1.180 | 1.280 | 2.560 | 0.940 | 4.530 | 2.000 ± 0.500 | VR4 | R | **CR 405103** |
| **20.080** | **21.260** | 525 | 18.580 | 0.260 | 0.240 | 0.410 | 0.200 | 0.800 | 0.310 ± 0.060 | VR3 | R | **CR 405252** |
| **20.470** | **20.670** | 520 | 19.960 | 1.180 | 1.280 | 2.560 | 0.940 | 4.530 | 2.000 ± 0.500 | VR4 | R | **CR 405203** |
| **20.870** | **21.060** | 530 | 20.350 | 1.180 | 1.280 | 2.560 | 0.940 | 4.530 | 2.000 ± 0.500 | VR4 | R | **CR 405303** |
| **20.870** | **22.830** | 550 | 19.490 | 0.590 | 0.560 | 0.980 | 0.400 | 1.770 | 0.790 ± 0.160 | VR1 | R | **CR 405500** |
| | | 550 | 19.490 | 0.260 | 0.240 | 0.410 | 0.200 | 0.800 | 0.310 ± 0.060 | VR3 | R | **CR 405502** |
| | | 550 | 19.490 | 0.590 | 0.560 | 0.980 | 0.400 | 1.770 | 0.790 ± 0.160 | VR1 | V | **CR 405504** |
| **21.260** | **21.460** | 540 | 20.709 | 1.180 | 1.280 | 2.560 | 0.940 | 4.530 | 2.000 ± 0.500 | VR4 | R | **CR 405403**[1] |
| **21.560** | **22.638** | 550 | 19.488 | 0.260 | 0.240 | 0.410 | 0.200 | 0.800 | 0.315 ± 0.060 | VR3 | V | **CR 405506**[1] |

Select the larger V-ring when the dimension $d_1$ is on the boundary between two sizes of V-ring.
[1] Check for availability and pricing

| Dimensions | | | | | | | | | | Design | Lip code | Designation |
|---|---|---|---|---|---|---|---|---|---|---|---|---|
| Shaft diameter range $d_1$ over | incl. | Ref. metric dim. | 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 $B_1$ | | | |
| in. | | mm | in. | | | | | | | – | – | – |
| **21.650** | **21.850** | 550 | 21.100 | 1.180 | 1.280 | 2.560 | 0.940 | 4.530 | 2.000 ± 0.500 | VR4 | R | **CR 405503** |
| **22.050** | **22.240** | 560 | 21.496 | 1.181 | 1.280 | 2.559 | 0.945 | 4.528 | 1.969 ± 0.472 | VR4 | R | **CR 405603** |
| | | 560 | 21.496 | 1.180 | 1.280 | 2.560 | 0.940 | 4.530 | 2.000 ± 0.500 | VR4 | V | **CR 405607**[1] |
| **22.440** | **22.640** | 570 | 21.850 | 1.180 | 1.280 | 2.560 | 0.940 | 4.530 | 2.000 ± 0.500 | VR4 | R | **CR 405703** |
| **22.638** | **22.835** | 575 | 22.047 | 1.180 | 1.280 | 2.560 | 0.940 | 4.530 | 2.000 ± 0.500 | VR4 | V | **CR 405757**[1] |
| **22.638** | **24.606** | 600 | 21.260 | 0.260 | 0.240 | 0.410 | 0.200 | 0.800 | 0.315 ± 0.060 | VR3 | V | **CR 406006**[1] |
| **22.640** | **22.830** | 575 | 22.050 | 1.180 | 1.280 | 2.560 | 0.940 | 4.530 | 2.000 ± 0.500 | VR4 | R | **CR 405753** |
| **22.830** | **23.030** | 580 | 22.240 | 1.180 | 1.280 | 2.560 | 0.940 | 4.530 | 2.000 ± 0.500 | VR4 | R | **CR 405803** |
| **22.830** | **24.800** | 600 | 21.260 | 0.590 | 0.560 | 0.980 | 0.400 | 1.770 | 0.790 ± 0.160 | VR1 | R | **CR 406000** |
| | | 600 | 21.260 | 0.260 | 0.240 | 0.410 | 0.200 | 0.800 | 0.310 ± 0.060 | VR3 | R | **CR 406002** |
| | | 600 | 21.260 | 0.590 | 0.560 | 0.980 | 0.400 | 1.770 | 0.790 ± 0.160 | VR1 | V | **CR 406004** |
| **23.230** | **23.620** | 590 | 22.640 | 1.180 | 1.280 | 2.560 | 0.940 | 4.530 | 2.000 ± 0.500 | VR4 | R | **CR 405903** |
| **23.620** | **24.020** | 600 | 22.910 | 1.180 | 1.280 | 2.560 | 0.940 | 4.530 | 2.000 ± 0.500 | VR4 | R | **CR 406003** |
| **24.020** | **24.410** | 610 | 23.310 | 1.180 | 1.280 | 2.560 | 0.940 | 4.530 | 2.000 ± 0.500 | VR4 | R | **CR 406103** |
| **24.410** | **24.800** | 620 | 23.700 | 1.180 | 1.280 | 2.560 | 0.940 | 4.530 | 2.000 ± 0.500 | VR4 | R | **CR 406203** |
| **24.790** | **26.187** | 650 | 23.622 | 0.590 | 0.560 | 0.980 | 0.400 | 1.770 | 0.790 ± 0.160 | VR1 | V | **CR 406504**[1] |
| **24.800** | **25.200** | 630 | 24.090 | 1.180 | 1.280 | 2.560 | 0.940 | 4.530 | 2.000 ± 0.500 | VR4 | R | **CR 406303** |
| **24.800** | **26.180** | 650 | 23.620 | 0.590 | 0.560 | 0.980 | 0.400 | 1.770 | 0.790 ± 0.160 | VR1 | R | **CR 406500** |
| **25.200** | **25.590** | 640 | 24.450 | 1.180 | 1.280 | 2.560 | 0.940 | 4.530 | 2.000 ± 0.500 | VR4 | R | **CR 406403** |
| **25.590** | **25.980** | 650 | 24.840 | 1.180 | 1.280 | 2.560 | 0.940 | 4.530 | 2.000 ± 0.500 | VR4 | R | **CR 406503** |
| | | 650 | 24.842 | 1.180 | 1.280 | 2.560 | 0.940 | 4.530 | 2.000 ± 0.500 | VR4 | V | **CR 406507**[1] |
| **25.980** | **26.380** | 660 | 25.197 | 1.180 | 1.280 | 2.560 | 0.940 | 4.530 | 2.000 ± 0.500 | VR4 | R | **CR 406603**[1] |
| **26.180** | **27.760** | 700 | 24.800 | 0.590 | 0.560 | 0.980 | 0.400 | 1.770 | 0.790 ± 0.160 | VR1 | R | **CR 407000** |
| | | 700 | 24.803 | 0.590 | 0.560 | 0.980 | 0.400 | 1.770 | 0.790 ± 0.160 | VR1 | V | **CR 407004**[1] |
| **26.380** | **26.770** | 670 | 25.591 | 1.180 | 1.280 | 2.560 | 0.940 | 4.530 | 2.000 ± 0.500 | VR4 | N | **CR 406703**[1] |
| **26.770** | **27.170** | 680 | 25.984 | 1.180 | 1.280 | 2.560 | 0.940 | 4.530 | 2.000 ± 0.500 | VR4 | N | **CR 406803**[1] |
| **27.170** | **27.560** | 690 | 26.380 | 1.180 | 1.280 | 2.560 | 0.940 | 4.530 | 2.000 ± 0.500 | VR4 | R | **CR 406903** |
| | | 690 | 26.378 | 1.180 | 1.280 | 2.560 | 0.940 | 4.530 | 2.000 ± 0.500 | VR4 | V | **CR 406907**[1] |
| **27.560** | **27.950** | 700 | 26.780 | 1.180 | 1.280 | 2.560 | 0.940 | 4.530 | 2.000 ± 0.500 | VR4 | R | **CR 407003** |
| **27.760** | **29.330** | 725 | 26.380 | 0.590 | 0.560 | 0.980 | 0.400 | 1.770 | 0.790 ± 0.160 | VR1 | R | **CR 407250** |
| **27.953** | **28.346** | 710 | 27.126 | 1.180 | 1.280 | 2.560 | 0.940 | 4.530 | 2.000 ± 0.500 | VR4 | R | **CR 407103**[1] |
| **28.350** | **28.740** | 720 | 27.520 | 1.180 | 1.280 | 2.560 | 0.940 | 4.530 | 2.000 ± 0.500 | VR4 | R | **CR 407203**[1] |
| **28.740** | **29.134** | 730 | 27.910 | 1.180 | 1.280 | 2.560 | 0.940 | 4.530 | 2.000 ± 0.500 | VR4 | R | **CR 407303** |
| | | 730 | 27.913 | 1.180 | 1.280 | 2.560 | 0.940 | 4.530 | 2.500 ± 0.500 | VR4 | V | **CR 407307**[1] |
| **29.130** | **29.530** | 740 | 28.270 | 1.180 | 1.280 | 2.560 | 0.940 | 4.530 | 2.000 ± 0.500 | VR4 | R | **CR 407403** |
| **29.134** | **30.512** | 750 | 29.528 | 0.260 | 0.240 | 0.410 | 0.200 | 0.800 | 0.315 ± 0.060 | VR3 | R | **CR 407502**[1] |

[1] Check for availability and pricing

## V-ring seals – inch dimensions, for North American market
$d_1$ **29.330 – 52.760** in.



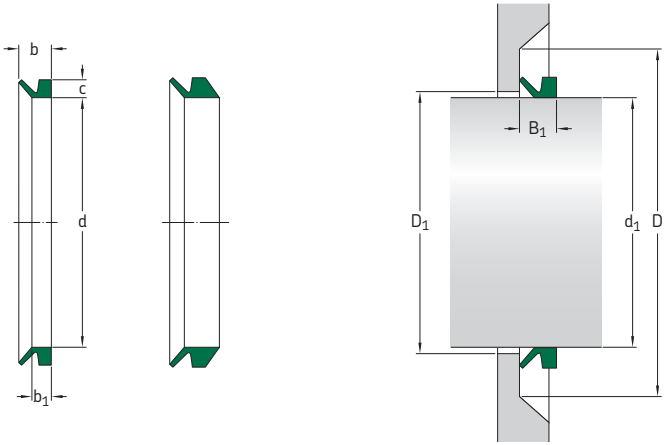

| Dimensions Shaft diameter range $d_1$ over | incl. | Ref. metric dim. | Seal inside diameter, free state d | Seal seat width $b_1$ | Nominal seal width b | Nominal seal height c | Clearance $D_1$ max | Counterface D min | Seal fitted width $B_1$ | Design | Lip code | Designation |
|---|---|---|---|---|---|---|---|---|---|---|---|---|
| in. | | mm | in. | | | | | | | – | – | – |
| **29.330** | **30.900** | 750 | 27.756 | 0.590 | 0.560 | 0.980 | 0.400 | 1.770 | 0.790 ± 0.160 | VR1 | V | **CR 407504**[1] |
| **29.330** | **30.910** | 750 | 27.760 | 0.590 | 0.560 | 0.980 | 0.400 | 1.770 | 0.790 ± 0.160 | VR1 | R | **CR 407500** |
| **29.530** | **29.840** | 750 | 28.660 | 1.180 | 1.280 | 2.560 | 0.940 | 4.530 | 2.000 ± 0.500 | VR4 | R | **CR 407503** |
| **29.845** | **30.157** | 760 | 28.937 | 1.181 | 1.280 | 2.559 | 0.945 | 4.528 | 1.969 ± 0.472 | VR4 | R | **CR 407603** |
| **30.157** | **30.472** | 770 | 29.250 | 1.181 | 1.280 | 2.559 | 0.945 | 4.528 | 1.969 ± 0.472 | VR4 | R | **CR 407703** |
| **30.470** | **30.830** | 780 | 29.570 | 1.180 | 1.280 | 2.560 | 0.940 | 4.530 | 2.000 ± 0.500 | VR4 | R | **CR 407803** |
| **30.900** | **32.680** | 800 | 29.330 | 0.590 | 0.560 | 0.980 | 0.400 | 1.770 | 0.790 ± 0.160 | VR1 | V | **CR 408004**[1] |
| **30.910** | **32.680** | 800 | 29.330 | 0.590 | 0.560 | 0.980 | 0.400 | 1.770 | 0.790 ± 0.160 | VR1 | R | **CR 408000** |
| **31.180** | **31.540** | 800 | 30.240 | 1.180 | 1.280 | 2.560 | 0.940 | 4.530 | 2.000 ± 0.500 | VR4 | R | **CR 408003** |
| **32.680** | **34.450** | 850 | 30.910 | 0.590 | 0.560 | 0.980 | 0.400 | 1.770 | 0.790 ± 0.160 | VR1 | R | **CR 408500** |
| **32.720** | **33.110** | 840 | 31.693 | 1.181 | 1.280 | 2.560 | 0.940 | 4.530 | 2.500 ± 0.500 | VR4 | R | **CR 408403**[1] |
| **33.110** | **33.500** | 850 | 32.050 | 1.180 | 1.280 | 2.560 | 0.940 | 4.530 | 2.000 ± 0.500 | VR4 | R | **CR 408503** |
| **33.900** | **34.290** | 870 | 32.795 | 1.180 | 1.280 | 2.560 | 0.940 | 4.530 | 2.000 ± 0.500 | VR4 | R | **CR 408703**[1] |
| **34.290** | **34.720** | 880 | 33.189 | 1.180 | 1.280 | 2.560 | 0.940 | 4.530 | 2.000 ± 0.500 | VR4 | R | **CR 408803**[1] |
| | | 880 | 33.189 | 1.180 | 1.280 | 2.560 | 0.940 | 4.530 | 2.000 ± 0.500 | VR4 | V | **CR 408807**[1] |
| **34.449** | **36.417** | 900 | 32.480 | 0.260 | 0.240 | 0.410 | 0.200 | 0.800 | 0.315 ± 0.060 | VR3 | R | **CR 409002**[1] |
| **34.450** | **36.220** | 890 | 33.583 | 1.180 | 1.280 | 2.560 | 0.940 | 4.530 | 2.000 ± 0.500 | VR4 | V | **CR 408907**[1] |
| | | 900 | 32.480 | 0.590 | 0.560 | 0.980 | 0.400 | 1.770 | 0.790 ± 0.160 | VR1 | R | **CR 409000** |
| | | 900 | 32.480 | 0.590 | 0.560 | 0.980 | 0.400 | 1.770 | 0.790 ± 0.160 | VR1 | V | **CR 409004**[1] |
| **34.720** | **35.310** | 890 | 33.580 | 1.180 | 1.280 | 2.560 | 0.940 | 4.530 | 2.000 ± 0.500 | VR4 | R | **CR 408903** |
| **35.118** | **35.905** | 900 | 34.291 | 0.827 | 2.657 | 3.937 | 0.940 | 4.530 | 3.350 ± 0.500 | VR5 | R | **CR 470900**[1] |

Select the larger V-ring when the dimension $d_1$ is on the boundary between two sizes of V-ring.
[1] Check for availability and pricing

| Dimensions | | | | | | | | | | Design | Lip code | Designation |
|---|---|---|---|---|---|---|---|---|---|---|---|---|
| Shaft diameter range $d_1$ over | incl. | Ref. metric dim. | 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 $B_1$ | | | |
| in. | | mm | in. | | | | | | | – | – | – |
| **35.310** | **35.910** | 900 | 34.290 | 1.180 | 1.280 | 2.560 | 0.940 | 4.530 | 2.000 ± 0.500 | VR4 | R | **CR 409003** |
| **36.220** | **37.990** | 950 | 34.060 | 0.590 | 0.560 | 0.980 | 0.400 | 1.770 | 0.790 ± 0.160 | VR1 | R | **CR 409500** |
| **36.220** | **37.992** | 950 | 34.055 | 0.590 | 0.560 | 0.980 | 0.400 | 1.770 | 0.790 ± 0.160 | VR1 | V | **CR 409504**[1] |
| **36.730** | **31.170** | 940 | 35.433 | 0.827 | 2.657 | 3.937 | 0.940 | 4.530 | 3.350 ± 0.500 | VR5 | R | **CR 470940**[1] |
| **36.732** | **37.165** | 940 | 35.433 | 1.180 | 1.280 | 2.560 | 0.940 | 4.530 | 2.000 ± 0.500 | VR4 | R | **CR 409403**[1] |
| **37.170** | **37.600** | 950 | 35.870 | 1.180 | 1.280 | 2.560 | 0.940 | 4.530 | 2.000 ± 0.500 | VR4 | R | **CR 409503** |
| **37.990** | **39.960** | 1 000 | 35.830 | 0.590 | 0.560 | 0.980 | 0.400 | 1.770 | 0.790 ± 0.160 | VR1 | R | **CR 410000** |
| | | 1 000 | 35.827 | 0.590 | 0.560 | 0.980 | 0.400 | 1.770 | 0.790 ± 0.160 | VR1 | V | **CR 410004**[1] |
| **38.898** | **39.331** | 990 | 37.520 | 1.180 | 1.280 | 2.560 | 0.940 | 4.530 | 2.000 ± 0.500 | VR4 | R | **CR 409903**[1] |
| **39.330** | **39.760** | 1 000 | 37.910 | 1.180 | 1.280 | 2.560 | 0.940 | 4.530 | 2.000 ± 0.500 | VR4 | R | **CR 410003** |
| **39.960** | **41.930** | 1 050 | 37.600 | 0.590 | 0.560 | 0.980 | 0.400 | 1.770 | 0.790 ± 0.160 | VR1 | R | **CR 410500** |
| **40.550** | **41.350** | 1 050 | 39.340 | 1.180 | 1.280 | 2.560 | 0.940 | 4.530 | 2.000 ± 0.500 | VR4 | R | **CR 410503** |
| **41.140** | **41.930** | 1 060 | 39.690 | 1.180 | 1.280 | 2.560 | 0.940 | 4.530 | 2.000 ± 0.500 | VR4 | R | **CR 410603** |
| **41.930** | **42.720** | 1 080 | 40.433 | 1.180 | 1.280 | 2.560 | 0.940 | 4.530 | 2.000 ± 0.500 | VR4 | R | **CR 410803**[1] |
| **41.930** | **43.900** | 1 100 | 39.370 | 0.590 | 0.560 | 0.980 | 0.400 | 1.770 | 0.790 ± 0.160 | VR1 | R | **CR 411000** |
| **42.720** | **43.500** | 1 100 | 41.140 | 1.180 | 1.280 | 2.560 | 0.940 | 4.530 | 2.000 ± 0.500 | VR4 | R | **CR 411003** |
| **43.500** | **44.290** | 1 120 | 41.929 | 1.180 | 1.280 | 2.560 | 0.940 | 4.530 | 2.000 ± 0.500 | VR4 | R | **CR 411203**[1] |
| **43.900** | **45.870** | 1 150 | 41.140 | 0.590 | 0.560 | 0.980 | 0.400 | 1.770 | 0.790 ± 0.160 | VR1 | R | **CR 411500** |
| **44.290** | **46.260** | 1 150 | 41.142 | 0.260 | 0.240 | 0.410 | 0.200 | 0.800 | 0.315 ± 0.060 | VR3 | R | **CR 411502**[1] |
| **44.291** | **45.079** | 1 140 | 42.677 | 0.827 | 2.657 | 3.937 | 0.940 | 4.530 | 3.350 ± 0.500 | VR5 | R | **CR 471140**[1] |
| **44.490** | **45.290** | 1 150 | 43.060 | 1.180 | 1.280 | 2.560 | 0.940 | 4.530 | 2.000 ± 0.500 | VR4 | R | **CR 411503** |
| **45.870** | **46.650** | 1 180 | 44.134 | 1.180 | 1.280 | 2.560 | 0.940 | 4.530 | 2.000 ± 0.500 | VR4 | R | **CR 411803**[1] |
| **45.870** | **47.840** | 1 200 | 42.910 | 0.590 | 0.560 | 0.980 | 0.400 | 1.770 | 0.790 ± 0.160 | VR1 | R | **CR 412000** |
| **45.875** | **47.840** | 1 200 | 42.913 | 0.590 | 0.560 | 0.980 | 0.400 | 1.770 | 0.790 ± 0.160 | VR1 | V | **CR 412004**[1] |
| **46.259** | **48.238** | 1 200 | 42.913 | 0.260 | 0.240 | 0.410 | 0.200 | 0.800 | 0.315 ± 0.060 | VR3 | R | **CR 412002**[1] |
| **46.650** | **47.440** | 1 200 | 44.840 | 1.180 | 1.280 | 2.560 | 0.940 | 4.530 | 2.000 ± 0.500 | VR4 | R | **CR 412003** |
| **47.840** | **50.000** | 1 250 | 44.690 | 0.590 | 0.560 | 0.980 | 0.400 | 1.770 | 0.790 ± 0.160 | VR1 | R | **CR 412500** |
| | | 1 250 | 44.685 | 0.590 | 0.560 | 0.980 | 0.400 | 1.770 | 0.790 ± 0.160 | VR1 | V | **CR 412504**[1] |
| **48.230** | **49.020** | 1 240 | 46.299 | 1.180 | 1.280 | 2.560 | 0.940 | 4.530 | 2.000 ± 0.500 | VR4 | R | **CR 412403**[1] |
| **48.520** | **49.320** | 1 250 | 46.680 | 1.180 | 1.280 | 2.560 | 0.940 | 4.530 | 2.000 ± 0.500 | VR4 | R | **CR 412503** |
| **50.000** | **50.890** | 1 250 | 47.953 | 1.180 | 1.280 | 2.560 | 0.940 | 4.530 | 2.000 ± 0.500 | VR4 | R | **CR 412803**[1] |
| **50.000** | **51.970** | 1 300 | 46.460 | 0.590 | 0.560 | 0.980 | 0.400 | 1.770 | 0.790 ± 0.160 | VR1 | R | **CR 413000** |
| **50.980** | **51.770** | 1 300 | 48.820 | 1.180 | 1.280 | 2.560 | 0.940 | 4.530 | 2.000 ± 0.500 | VR4 | R | **CR 413003** |
| **51.770** | **52.760** | 1 325 | 49.567 | 1.180 | 1.280 | 2.560 | 0.940 | 4.530 | 2.000 ± 0.500 | VR4 | R | **CR 413253**[1] |

[1] Check for availability and pricing

## V-ring seals – inch dimensions, for North American market
$d_1$ **51.970 – 131.890** in.




| Dimensions | | | | | | | | | | Design | Lip code | Designation |
|---|---|---|---|---|---|---|---|---|---|---|---|---|
| Shaft diameter range $d_1$ over | incl. | Ref. metric dim. | 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 $B_1$ | | | |
| in. | | mm | in. | | | | | | | – | – | – |
| **51.970** | **53.940** | 1 350 | 48.230 | 0.590 | 0.560 | 0.980 | 0.400 | 1.770 | 0.790 ± 0.160 | VR1 | R | **CR 413500** |
| **52.165** | **54.134** | 1 350 | 48.228 | 0.260 | 0.240 | 0.410 | 0.200 | 0.800 | 0.315 ± 0.060 | VR3 | R | **CR 413502**[1)] |
| **52.760** | **53.740** | 1 350 | 50.430 | 1.180 | 1.280 | 2.560 | 0.940 | 4.530 | 2.000 ± 0.500 | VR4 | R | **CR 413503** |
| **53.940** | **55.910** | 1 400 | 50.000 | 0.590 | 0.560 | 0.980 | 0.400 | 1.770 | 0.790 ± 0.160 | VR1 | R | **CR 414000** |
| **54.130** | **56.100** | 1 400 | 50.000 | 0.260 | 0.240 | 0.410 | 0.200 | 0.800 | 0.315 ± 0.060 | VR3 | V | **CR 414006**[1)] |
| **54.720** | **55.710** | 1 400 | 52.280 | 1.180 | 1.280 | 2.560 | 0.940 | 4.530 | 2.000 ± 0.500 | VR4 | R | **CR 414003** |
| **55.190** | **57.870** | 1 450 | 51.772 | 0.590 | 0.560 | 0.980 | 0.400 | 1.770 | 0.790 ± 0.160 | VR1 | V | **CR 414504**[1)] |
| **55.910** | **57.870** | 1 450 | 51.770 | 0.590 | 0.560 | 0.980 | 0.400 | 1.770 | 0.790 ± 0.160 | VR1 | R | **CR 414500** |
| **56.690** | **57.680** | 1 450 | 54.090 | 1.180 | 1.280 | 2.560 | 0.940 | 4.530 | 2.000 ± 0.500 | VR4 | R | **CR 414503** |
| **57.870** | **59.840** | 1 500 | 53.540 | 0.590 | 0.560 | 0.980 | 0.400 | 1.770 | 0.790 ± 0.160 | VR1 | R | **CR 415000** |
| **58.660** | **59.650** | 1 500 | 55.870 | 1.180 | 1.280 | 2.560 | 0.940 | 4.530 | 2.000 ± 0.500 | VR4 | R | **CR 415003** |
| **59.840** | **61.810** | 1 550 | 55.320 | 0.590 | 0.560 | 0.980 | 0.400 | 1.770 | 0.790 ± 0.160 | VR1 | R | **CR 415500** |
| **60.630** | **61.810** | 1 550 | 57.760 | 1.180 | 1.280 | 2.560 | 0.940 | 4.530 | 2.000 ± 0.500 | VR4 | R | **CR 415503** |
| **61.810** | **63.780** | 1 600 | 57.090 | 0.590 | 0.560 | 0.980 | 0.400 | 1.770 | 0.790 ± 0.160 | VR1 | R | **CR 416000** |
| **62.990** | **64.570** | 1 600 | 60.000 | 1.180 | 1.280 | 2.560 | 0.940 | 4.530 | 2.000 ± 0.500 | VR4 | R | **CR 416003** |
| **63.780** | **65.750** | 1 650 | 58.860 | 0.590 | 0.560 | 0.980 | 0.400 | 1.770 | 0.790 ± 0.160 | VR1 | R | **CR 416500** |
| **64.570** | **66.140** | 1 650 | 61.380 | 1.180 | 1.280 | 2.560 | 0.940 | 4.530 | 2.000 ± 0.500 | VR4 | R | **CR 416503** |
| **65.750** | **67.720** | 1 700 | 60.630 | 0.590 | 0.560 | 0.980 | 0.400 | 1.770 | 0.790 ± 0.160 | VR1 | R | **CR 417000** |
| **66.140** | **67.720** | 1 700 | 62.830 | 1.180 | 1.280 | 2.560 | 0.940 | 4.530 | 2.000 ± 0.500 | VR4 | R | **CR 417003** |

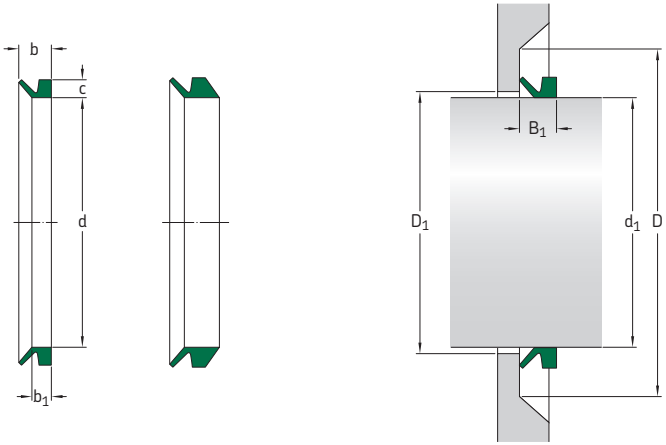
Select the larger V-ring when the dimension $d_1$ is on the boundary between two sizes of V-ring.
[1)] Check for availability and pricing

| Dimensions | | | | | | | | | | Design | Lip code | Designation |
|---|---|---|---|---|---|---|---|---|---|---|---|---|
| Shaft diameter range $d_1$ over | incl. | Ref. metric dim. | 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 $B_1$ | | | |
| in. | | mm | in. | | | | | | | – | – | – |
| **67.720** | **69.490** | 1 750 | 64.250 | 1.180 | 1.280 | 2.560 | 0.940 | 4.530 | 2.000 ± 0.500 | VR4 | R | **CR 417503** |
| **67.720** | **69.690** | 1 750 | 62.400 | 0.590 | 0.560 | 0.980 | 0.400 | 1.770 | 0.790 ± 0.160 | VR1 | R | **CR 417500** |
| **69.490** | **71.260** | 1 800 | 65.790 | 1.180 | 1.280 | 2.560 | 0.940 | 4.530 | 2.000 ± 0.500 | VR4 | R | **CR 418003** |
| **69.690** | **71.560** | 1 800 | 64.170 | 0.590 | 0.560 | 0.980 | 0.400 | 1.770 | 0.790 ± 0.160 | VR1 | R | **CR 418000** |
| **69.880** | **71.850** | 1 800 | 64.173 | 0.260 | 0.240 | 0.410 | 0.200 | 0.800 | 0.315 ± 0.060 | VR3 | V | **CR 418006**[1] |
| **71.260** | **73.030** | 1 850 | 67.480 | 1.180 | 1.280 | 2.560 | 0.940 | 4.530 | 2.000 ± 0.500 | VR4 | R | **CR 418503** |
| **71.650** | **73.620** | 1 850 | 65.950 | 0.590 | 0.560 | 0.980 | 0.400 | 1.770 | 0.790 ± 0.160 | VR1 | R | **CR 418500** |
| **73.030** | **75.000** | 1 900 | 69.020 | 1.180 | 1.280 | 2.560 | 0.940 | 4.530 | 2.000 ± 0.500 | VR4 | R | **CR 419003** |
| **73.620** | **75.590** | 1 900 | 67.720 | 0.590 | 0.560 | 0.980 | 0.400 | 1.770 | 0.790 ± 0.160 | VR1 | R | **CR 419000** |
| **75.000** | **76.970** | 1 950 | 70.630 | 1.180 | 1.280 | 2.560 | 0.940 | 4.530 | 2.000 ± 0.500 | VR4 | R | **CR 419503** |
| **75.590** | **77.560** | 1 950 | 69.490 | 0.590 | 0.560 | 0.980 | 0.400 | 1.770 | 0.790 ± 0.160 | VR1 | R | **CR 419500** |
| **76.970** | **79.130** | 2 000 | 72.600 | 1.180 | 1.280 | 2.560 | 0.940 | 4.530 | 2.000 ± 0.500 | VR4 | R | **CR 419993** |
| **77.560** | **79.530** | 2 000 | 71.260 | 0.590 | 0.560 | 0.980 | 0.400 | 1.770 | 0.790 ± 0.160 | VR1 | R | **CR 419990** |
| **79.530** | **83.460** | 2 100 | 72.240 | 0.590 | 0.560 | 0.980 | 0.400 | 1.770 | 0.790 ± 0.160 | VR1 | R | **CR 421000**[1] |
| **83.360** | **86.420** | 2 150 | 78.660 | 1.180 | 1.280 | 2.560 | 0.940 | 4.530 | 2.000 ± 0.520 | VR4 | R | **CR 421503**[1] |
| **86.419** | **89.209** | 2 200 | 80.905 | 0.827 | 2.657 | 3.937 | 0.940 | 4.530 | 3.350 ± 0.500 | VR5 | R | **CR 472201**[1] |
| **96.063** | **100.000** | 2 500 | 89.520 | 1.180 | 1.280 | 2.560 | 0.940 | 4.530 | 2.000 ± 0.500 | VR4 | R | **CR 425003**[1] |
| **97.358** | **99.543** | 2 500 | 86.020 | 0.590 | 0.560 | 0.980 | 0.400 | 1.770 | 0.790 ± 0.160 | VR1 | R | **CR 425000**[1] |
| **126.260** | **129.670** | 3 250 | 113.740 | 1.180 | 1.280 | 2.560 | 0.940 | 4.530 | 2.00 ± 0.500 | VR4 | R | **CR 432503**[1] |
| **127.950** | **131.890** | 3 300 | 115.390 | 1.180 | 1.280 | 2.560 | 0.940 | 4.530 | 2.00 ± 0.500 | VR4 | R | **CR 433003**[1] |

[1] Check for availability and pricing

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

$d_1$ **2,7 – 48** mm



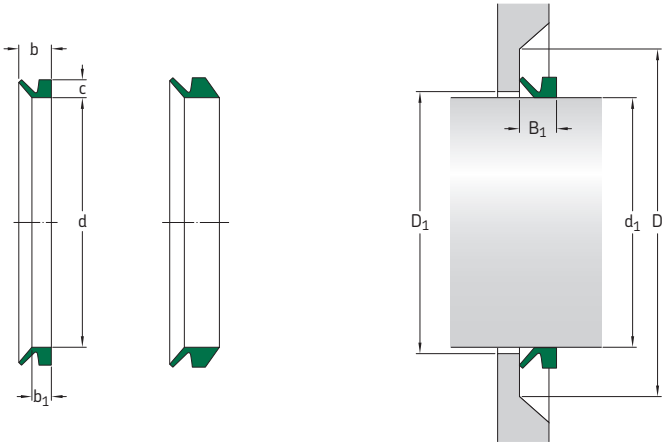

| Dimensions | | | | | | | | | Lip code | Designation |
|---|---|---|---|---|---|---|---|---|---|---|
| Shaft diameter range | | Seal inside diameter, free state | Seal seat width | Nominal seal width | Nominal seal height | Clearance | Counterface | Seal fitted width | | |
| $d_1$ over | incl. | d |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

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

| Dimensions | | | | | | | | | Lip code | Designation |
|---|---|---|---|---|---|---|---|---|---|---|
| Shaft diameter range | | Seal inside diameter, free state | Seal seat width | Nominal seal width | Nominal seal height | Clearance | Counterface | Seal fitted width | | |
| $d_1$ | | d | $b_1$ | b | c | $D_1$ | D | $B_1$ | | |
| over | incl. | | | | | max | min | | | |
| mm | | | | | | | | | – | – |
| **13,5** | **15,5** | 12,5 | 3,4 | 5,5 | 3 | $d_1$ + 1 | $d_1$ + 9 | 4,5 ± 0,6 | R | **14 VA R** |
| | | 12,5 | 3,4 | 5,5 | 3 | $d_1$ + 1 | $d_1$ + 9 | 4,5 ± 0,6 | V | **14 VA V** |
| | | 12,5 | 5,6 | 7,7 | 3 | $d_1$ + 1 | $d_1$ + 9 | 6,7 ± 0,6 | R | **14 VS R** |
| | | 12,5 | 5,6 | 7,7 | 3 | $d_1$ + 1 | $d_1$ + 9 | 6,7 ± 0,6 | V | **14 VS V** |
| **15,5** | **17** | 14 | 3,4 | 5,5 | 3 | $d_1$ + 1 | $d_1$ + 9 | 4,5 ± 0,6 | R | **16 VA R** |
| | | 14 | 3,4 | 5,5 | 3 | $d_1$ + 1 | $d_1$ + 9 | 4,5 ± 0,6 | V | **16 VA V** |
| **15,5** | **17,5** | 14 | 5,6 | 7,7 | 3 | $d_1$ + 1 | $d_1$ + 9 | 6,7 ± 0,6 | R | **16 VS R** |
| | | 14 | 5,6 | 7,7 | 3 | $d_1$ + 1 | $d_1$ + 9 | 6,7 ± 0,6 | V | **16 VS V** |
| **17,5** | **19** | 16 | 3,4 | 5,5 | 3 | $d_1$ + 1 | $d_1$ + 9 | 4,5 ± 0,6 | R | **18 VA R** |
| | | 16 | 3,4 | 5,5 | 3 | $d_1$ + 1 | $d_1$ + 9 | 4,5 ± 0,6 | V | **18 VA V** |
| | | 16 | 5,6 | 7,7 | 3 | $d_1$ + 1 | $d_1$ + 9 | 6,7 ± 0,6 | R | **18 VS R** |
| | | 16 | 5,6 | 7,7 | 3 | $d_1$ + 1 | $d_1$ + 9 | 6,7 ± 0,6 | V | **18 VS V** |
| **19** | **21** | 18 | 4,7 | 7,5 | 4 | $d_1$ + 2 | $d_1$ + 12 | 6,0 ± 0,8 | R | **20 VA R** |
| | | 18 | 4,7 | 7,5 | 4 | $d_1$ + 2 | $d_1$ + 12 | 6,0 ± 0,8 | V | **20 VA V** |
| | | 18 | 7,9 | 10,5 | 4 | $d_1$ + 2 | $d_1$ + 12 | 9,0 ± 0,8 | R | **20 VS R** |
| | | 18 | 7,9 | 10,5 | 4 | $d_1$ + 2 | $d_1$ + 12 | 9,0 ± 0,8 | V | **20 VS V** |
| **21** | **24** | 20 | 4,7 | 7,5 | 4 | $d_1$ + 2 | $d_1$ + 12 | 6,0 ± 0,8 | R | **22 VA R** |
| | | 20 | 4,7 | 7,5 | 4 | $d_1$ + 2 | $d_1$ + 12 | 6,0 ± 0,8 | V | **22 VA V** |
| | | 20 | 7,9 | 10,5 | 4 | $d_1$ + 2 | $d_1$ + 12 | 9,0 ± 0,8 | R | **22 VS R** |
| | | 20 | 7,9 | 10,5 | 4 | $d_1$ + 2 | $d_1$ + 12 | 9,0 ± 0,8 | V | **22 VS V** |
| **24** | **27** | 22 | 4,7 | 7,5 | 4 | $d_1$ + 2 | $d_1$ + 12 | 6,0 ± 0,8 | R | **25 VA R** |
| | | 22 | 4,7 | 7,5 | 4 | $d_1$ + 2 | $d_1$ + 12 | 6,0 ± 0,8 | V | **25 VA V** |
| | | 22 | 7,9 | 10,5 | 4 | $d_1$ + 2 | $d_1$ + 12 | 9,0 ± 0,8 | R | **25 VS R** |
| | | 22 | 7,9 | 10,5 | 4 | $d_1$ + 2 | $d_1$ + 12 | 9,0 ± 0,8 | V | **25 VS V** |
| **27** | **29** | 25 | 4,7 | 7,5 | 4 | $d_1$ + 2 | $d_1$ + 12 | 6,0 ± 0,8 | R | **28 VA R** |
| | | 25 | 4,7 | 7,5 | 4 | $d_1$ + 2 | $d_1$ + 12 | 6,0 ± 0,8 | V | **28 VA V** |
| | | 25 | 7,9 | 10,5 | 4 | $d_1$ + 2 | $d_1$ + 12 | 9,0 ± 0,8 | R | **28 VS R** |
| | | 25 | 7,9 | 10,5 | 4 | $d_1$ + 2 | $d_1$ + 12 | 9,0 ± 0,8 | V | **28 VS V** |
| **29** | **31** | 27 | 4,7 | 7,5 | 4 | $d_1$ + 2 | $d_1$ + 12 | 6,0 ± 0,8 | R | **30 VA R** |
| | | 27 | 4,7 | 7,5 | 4 | $d_1$ + 2 | $d_1$ + 12 | 6,0 ± 0,8 | V | |
| | | 27 | 7,9 | 10,5 | 4 | $d_1$ + 2 | $d_1$ + 12 | 9,0 ± 0,8 | R | **30 VS R** |
| | | 27 | 7,9 | 10,5 | 4 | $d_1$ + 2 | $d_1$ + 12 | 9,0 ± 0,8 | V | **30 VS V** |
| **31** | **33** | 29 | 4,7 | 7,5 | 4 | $d_1$ + 2 | $d_1$ + 12 | 6,0 ± 0,8 | R | **32 VA R** |
| | | 29 | 4,7 | 7,5 | 4 | $d_1$ + 2 | $d_1$ + 12 | 6,0 ± 0,8 | V | **32 VA V** |
| | | 29 | 7,9 | 10,5 | 4 | $d_1$ + 2 | $d_1$ + 12 | 9,0 ± 0,8 | R | **32 VS R** |
| | | 29 | 7,9 | 10,5 | 4 | $d_1$ + 2 | $d_1$ + 12 | 9,0 ± 0,8 | V | **32 VS V** |
| **33** | **36** | 31 | 4,7 | 7,5 | 4 | $d_1$ + 2 | $d_1$ + 12 | 6,0 ± 0,8 | R | **35 VA R** |
| | | 31 | 4,7 | 7,5 | 4 | $d_1$ + 2 | $d_1$ + 12 | 6,0 ± 0,8 | V | |
| | | 31 | 7,9 | 10,5 | 4 | $d_1$ + 2 | $d_1$ + 12 | 9,0 ± 0,8 | R | **35 VS R** |
| | | 31 | 7,9 | 10,5 | 4 | $d_1$ + 2 | $d_1$ + 12 | 9,0 ± 0,8 | V | **35 VS V** |
| **36** | **38** | 34 | 4,7 | 7,5 | 4 | $d_1$ + 2 | $d_1$ + 12 | 6,0 ± 0,8 | R | **38 VA R** |
| | | 34 | 4,7 | 7,5 | 4 | $d_1$ + 2 | $d_1$ + 12 | 6,0 ± 0,8 | V | **38 VA V** |
| | | 34 | 7,9 | 10,5 | 4 | $d_1$ + 2 | $d_1$ + 12 | 9,0 ± 0,8 | R | **38 VS R** |
| | | 34 | 7,9 | 10,5 | 4 | $d_1$ + 2 | $d_1$ + 12 | 9,0 ± 0,8 | V | **38 VS V** |
| **38** | **43** | 36 | 5,5 | 9 | 5 | $d_1$ + 2 | $d_1$ + 15 | 7,0 ± 1 | R | **40 VA R** |
| | | 36 | 5,5 | 9 | 5 | $d_1$ + 2 | $d_1$ + 15 | 7,0 ± 1 | V | **40 VA V** |
| | | 36 | 9,5 | 13 | 5 | $d_1$ + 2 | $d_1$ + 15 | 11,0 ± 1 | R | **40 VS R** |
| | | 36 | 9,5 | 13 | 5 | $d_1$ + 2 | $d_1$ + 15 | 11,0 ± 1 | V | **40 VS V** |
| **43** | **48** | 40 | 5,5 | 9 | 5 | $d_1$ + 2 | $d_1$ + 15 | 7,0 ± 1 | R | **45 VA R** |
| | | 40 | 5,5 | 9 | 5 | $d_1$ + 2 | $d_1$ + 15 | 7,0 ± 1 | V | **45 VA V** |
| | | 40 | 9,5 | 13 | 5 | $d_1$ + 2 | $d_1$ + 15 | 11,0 ± 1 | R | **45 VS R** |
| | | 40 | 9,5 | 13 | 5 | $d_1$ + 2 | $d_1$ + 15 | 11,0 ± 1 | V | **45 VS V** |

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

$d_1$ **48 – 175** mm



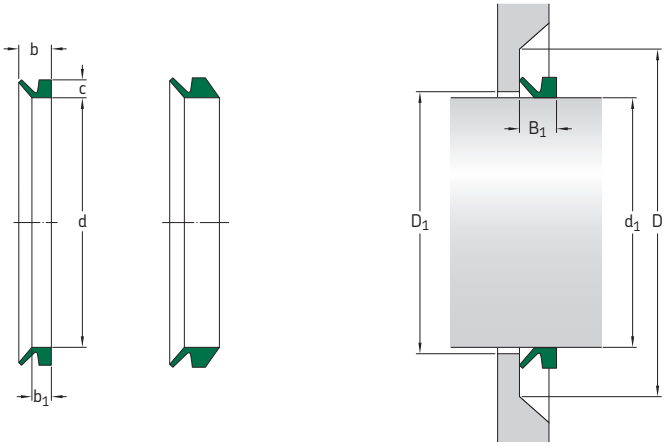

| Dimensions Shaft diameter range $d_1$ over | incl. | Seal inside diameter, free state d | Seal seat width $b_1$ | Nominal seal width b | Nominal seal height c | Clearance $D_1$ max | Counterface D min | Seal fitted width $B_1$ | Lip code | Designation |
|---|---|---|---|---|---|---|---|---|---|---|
| mm | | | | | | | | | – | – |
| **48** | **53** | 45 | 5,5 | 9 | 5 | $d_1+2$ | $d_1+15$ | 7,0 ± 1 | R | **50 VA R** |
| | | 45 | 5,5 | 9 | 5 | $d_1+2$ | $d_1+15$ | 7,0 ± 1 | V | **50 VA V** |
| | | 45 | 9,5 | 13 | 5 | $d_1+2$ | $d_1+15$ | 11,0 ± 1 | R | **50 VS R** |
| | | 45 | 9,5 | 13 | 5 | $d_1+2$ | $d_1+15$ | 11,0 ± 1 | V | **50 VS V** |
| **53** | **58** | 49 | 5,5 | 9 | 5 | $d_1+2$ | $d_1+15$ | 7,0 ± 1 | R | **55 VA R** |
| | | 49 | 5,5 | 9 | 5 | $d_1+2$ | $d_1+15$ | 7,0 ± 1 | V | **55 VA V** |
| | | 49 | 9,5 | 13 | 5 | $d_1+2$ | $d_1+15$ | 11,0 ± 1 | R | **55 VS R** |
| | | 49 | 9,5 | 13 | 5 | $d_1+2$ | $d_1+15$ | 11,0 ± 1 | V | **55 VS V** |
| **58** | **63** | 54 | 5,5 | 9 | 5 | $d_1+2$ | $d_1+15$ | 7,0 ± 1 | R | **60 VA R** |
| | | 54 | 5,5 | 9 | 5 | $d_1+2$ | $d_1+15$ | 7,0 ± 1 | V | **60 VA V** |
| | | 54 | 9,5 | 13 | 5 | $d_1+2$ | $d_1+15$ | 11,0 ± 1 | R | **60 VS R** |
| | | 54 | 9,5 | 13 | 5 | $d_1+2$ | $d_1+15$ | 11,0 ± 1 | V | **60 VS V** |
| **63** | **68** | 58 | 5,5 | 9 | 5 | $d_1+2$ | $d_1+15$ | 7,0 ± 1 | R | **65 VA R** |
| | | 58 | 5,5 | 9 | 5 | $d_1+2$ | $d_1+15$ | 7,0 ± 1 | V | **65 VA V** |
| | | 58 | 9,5 | 13 | 5 | $d_1+2$ | $d_1+15$ | 11,0 ± 1 | R | **65 VS R** |
| | | 58 | 9,5 | 13 | 5 | $d_1+2$ | $d_1+15$ | 11,0 ± 1 | V | **65 VS V** |
| **68** | **73** | 63 | 6,8 | 11 | 6 | $d_1+3$ | $d_1+18$ | 9,0 ± 1,2 | R | **70 VA R** |
| | | 63 | 6,8 | 11 | 6 | $d_1+3$ | $d_1+18$ | 9,0 ± 1,2 | V | **70 VA V** |
| | | 63 | 11,3 | 15,5 | 6 | $d_1+3$ | $d_1+18$ | 13,5 ± 1,2 | R | **70 VS R** |
| | | 63 | 11,3 | 15,5 | 6 | $d_1+3$ | $d_1+18$ | 13,5 ± 1,2 | V | **70 VS V** |
| **73** | **78** | 67 | 6,8 | 11 | 6 | $d_1+3$ | $d_1+18$ | 9,0 ± 1,2 | R | **75 VA R** |
| | | 67 | 6,8 | 11 | 6 | $d_1+3$ | $d_1+18$ | 13,5 ± 1,2 | R | **75 VS R** |
| | | 67 | 11,3 | 15,5 | 6 | $d_1+3$ | $d_1+18$ | 13,5 ± 1,2 | V | **75 VS V** |
| **78** | **83** | 72 | 6,8 | 11 | 6 | $d_1+3$ | $d_1+18$ | 9,0 ± 1,2 | R | **80 VA R** |
| | | 72 | 6,8 | 11 | 6 | $d_1+3$ | $d_1+18$ | 9,0 ± 1,2 | V | **80 VA V** |
| | | 72 | 11,3 | 15,5 | 6 | $d_1+3$ | $d_1+18$ | 13,5 ± 1,2 | R | **80 VS R** |
| | | 72 | 11,3 | 15,5 | 6 | $d_1+3$ | $d_1+18$ | 13,5 ± 1,2 | V | **80 VS V** |
| **83** | **88** | 76 | 6,8 | 11 | 6 | $d_1+3$ | $d_1+18$ | 9,0 ± 1,2 | R | **85 VA R** |
| | | 76 | 6,8 | 11 | 6 | $d_1+3$ | $d_1+18$ | 9,0 ± 1,2 | V | **85 VA V** |
| | | 76 | 11,3 | 15,5 | 6 | $d_1+3$ | $d_1+18$ | 13,5 ± 1,2 | R | **85 VS R** |
| | | 76 | 11,3 | 15,5 | 6 | $d_1+3$ | $d_1+18$ | 13,5 ± 1,2 | V | **85 VS V** |

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

| Dimensions | | | | | | | | | Lip code | Designation |
|---|---|---|---|---|---|---|---|---|---|---|
| Shaft diameter range | | Seal inside diameter, free state | Seal seat width | Nominal seal width | Nominal seal height | Clearance | Counterface | Seal fitted width | | |
| $d_1$ over | incl. | d | $b_1$ | b | c | $D_1$ max | D min | $B_1$ | | |
| mm | | | | | | | | | – | – |
| **88** | **93** | 81 | 6,8 | 11 | 6 | $d_1 + 3$ | $d_1 + 18$ | 9,0 ± 1,2 | R | **90 VA R** |
| | | 81 | 6,8 | 11 | 6 | $d_1 + 3$ | $d_1 + 18$ | 9,0 ± 1,2 | V | **90 VA V** |
| | | 81 | 11,3 | 15,5 | 6 | $d_1 + 3$ | $d_1 + 18$ | 13,5 ± 1,2 | R | **90 VS R** |
| | | 81 | 11,3 | 15,5 | 6 | $d_1 + 3$ | $d_1 + 18$ | 13,5 ± 1,2 | V | **90 VS V** |
| **93** | **98** | 85 | 6,8 | 11 | 6 | $d_1 + 3$ | $d_1 + 18$ | 9,0 ± 1,2 | R | **95 VA R** |
| | | 85 | 6,8 | 11 | 6 | $d_1 + 3$ | $d_1 + 18$ | 9,0 ± 1,2 | V | |
| | | 85 | 11,3 | 15,5 | 6 | $d_1 + 3$ | $d_1 + 18$ | 13,5 ± 1,2 | R | **95 VS R** |
| | | 85 | 11,3 | 15,5 | 6 | $d_1 + 3$ | $d_1 + 18$ | 13,5 ± 1,2 | V | **95 VS V** |
| **98** | **105** | 90 | 6,8 | 11 | 6 | $d_1 + 3$ | $d_1 + 18$ | 9,0 ± 1,2 | R | **100 VA R** |
| | | 90 | 6,8 | 11 | 6 | $d_1 + 3$ | $d_1 + 18$ | 9,0 ± 1,2 | V | **100 VA V** |
| | | 90 | 11,3 | 15,5 | 6 | $d_1 + 3$ | $d_1 + 18$ | 13,5 ± 1,2 | R | **100 VS R** |
| | | 90 | 11,3 | 15,5 | 6 | $d_1 + 3$ | $d_1 + 18$ | 13,5 ± 1,2 | V | **100 VS V** |
| **105** | **115** | 99 | 6 | 10,5 | 6,5 | $d_1 + 5$ | $d_1 + 20$ | 8,0 ± 1,5 | R | **110 VL R** |
| | | 99 | 6 | 10,5 | 6,5 | $d_1 + 5$ | $d_1 + 20$ | 8,0 ± 1,5 | V | **110 VL V** |
| | | 99 | 7,9 | 12,8 | 7 | $d_1 + 4$ | $d_1 + 21$ | 10,5 ± 1,5 | R | **110 VA R** |
| | | 99 | 7,9 | 12,8 | 7 | $d_1 + 4$ | $d_1 + 21$ | 10,5 ± 1,5 | V | **110 VA V** |
| | | 99 | 13,1 | 18 | 7 | $d_1 + 4$ | $d_1 + 21$ | 15,5 ± 1,5 | R | **110 VS R** |
| | | 99 | 13,1 | 18 | 7 | $d_1 + 4$ | $d_1 + 21$ | 15,5 ± 1,5 | V | **110 VS V** |
| **115** | **125** | 108 | 6 | 10,5 | 6,5 | $d_1 + 5$ | $d_1 + 20$ | 8,0 ± 1,5 | R | **120 VL R** |
| | | 108 | 6 | 10,5 | 6,5 | $d_1 + 5$ | $d_1 + 20$ | 8,0 ± 1,5 | V | **120 VL V** |
| | | 108 | 7,9 | 12,8 | 7 | $d_1 + 4$ | $d_1 + 21$ | 10,5 ± 1,5 | R | **120 VA R** |
| | | 108 | 7,9 | 12,8 | 7 | $d_1 + 4$ | $d_1 + 21$ | 10,5 ± 1,5 | V | **120 VA V** |
| | | 108 | 13,1 | 18 | 7 | $d_1 + 4$ | $d_1 + 21$ | 15,5 ± 1,5 | R | **120 VS R** |
| | | 108 | 13,1 | 18 | 7 | $d_1 + 4$ | $d_1 + 21$ | 15,5 ± 1,5 | V | **120 VS V** |
| **125** | **135** | 117 | 6 | 10,5 | 6,5 | $d_1 + 5$ | $d_1 + 20$ | 8,0 ± 1,5 | R | **130 VL R** |
| | | 117 | 6 | 10,5 | 6,5 | $d_1 + 5$ | $d_1 + 20$ | 8,0 ± 1,5 | V | **130 VL V** |
| | | 117 | 7,9 | 12,8 | 7 | $d_1 + 4$ | $d_1 + 21$ | 10,5 ± 1,5 | R | **130 VA R** |
| | | 117 | 7,9 | 12,8 | 7 | $d_1 + 4$ | $d_1 + 21$ | 10,5 ± 1,5 | V | **130 VA V** |
| | | 117 | 13,1 | 18 | 7 | $d_1 + 4$ | $d_1 + 21$ | 15,5 ± 1,5 | R | **130 VS R** |
| | | 117 | 13,1 | 18 | 7 | $d_1 + 4$ | $d_1 + 21$ | 15,5 ± 1,5 | V | **130 VS V** |
| **135** | **145** | 126 | 6 | 10,5 | 6,5 | $d_1 + 5$ | $d_1 + 20$ | 8,0 ± 1,5 | R | **140 VL R** |
| | | 126 | 6 | 10,5 | 6,5 | $d_1 + 5$ | $d_1 + 20$ | 8,0 ± 1,5 | V | **140 VL V** |
| | | 126 | 7,9 | 12,8 | 7 | $d_1 + 4$ | $d_1 + 21$ | 10,5 ± 1,5 | R | **140 VA R** |
| | | 126 | 7,9 | 12,8 | 7 | $d_1 + 4$ | $d_1 + 21$ | 10,5 ± 1,5 | V | **140 VA V** |
| | | 126 | 13,1 | 18 | 7 | $d_1 + 4$ | $d_1 + 21$ | 15,5 ± 1,5 | R | **140 VS R** |
| | | 126 | 13,1 | 18 | 7 | $d_1 + 4$ | $d_1 + 21$ | 15,5 ± 1,5 | V | **140 VS V** |
| **145** | **155** | 135 | 6 | 10,5 | 6,5 | $d_1 + 5$ | $d_1 + 20$ | 8,0 ± 1,5 | R | **150 VL R** |
| | | 135 | 6 | 10,5 | 6,5 | $d_1 + 5$ | $d_1 + 20$ | 8,0 ± 1,5 | V | **150 VL V** |
| | | 135 | 7,9 | 12,8 | 7 | $d_1 + 4$ | $d_1 + 21$ | 10,5 ± 1,5 | R | **150 VA R** |
| | | 135 | 7,9 | 12,8 | 7 | $d_1 + 4$ | $d_1 + 21$ | 10,5 ± 1,5 | V | **150 VA V** |
| | | 135 | 13,1 | 18 | 7 | $d_1 + 4$ | $d_1 + 21$ | 15,5 ± 1,5 | R | **150 VS R** |
| | | 135 | 13,1 | 18 | 7 | $d_1 + 4$ | $d_1 + 21$ | 15,5 ± 1,5 | V | **150 VS V** |
| **155** | **165** | 144 | 6 | 10,5 | 6,5 | $d_1 + 5$ | $d_1 + 20$ | 8,0 ± 1,5 | R | **160 VL R** |
| | | 144 | 6 | 10,5 | 6,5 | $d_1 + 5$ | $d_1 + 20$ | 8,0 ± 1,5 | V | **160 VL V** |
| | | 144 | 9 | 14,5 | 8 | $d_1 + 4$ | $d_1 + 24$ | 12,0 ± 1,8 | R | **160 VA R** |
| | | 144 | 9 | 14,5 | 8 | $d_1 + 4$ | $d_1 + 24$ | 12,0 ± 1,8 | V | |
| | | 144 | 15 | 20,5 | 8 | $d_1 + 4$ | $d_1 + 24$ | 18,0 ± 1,8 | R | **160 VS R** |
| | | 144 | 15 | 20,5 | 8 | $d_1 + 4$ | $d_1 + 24$ | 18,0 ± 1,8 | V | **160 VS V** |
| **165** | **175** | 153 | 6 | 10,5 | 6,5 | $d_1 + 5$ | $d_1 + 20$ | 8,0 ± 1,5 | R | **170 VL R** |
| | | 153 | 6 | 10,5 | 6,5 | $d_1 + 5$ | $d_1 + 20$ | 8,0 ± 1,5 | V | **170 VL V** |
| | | 153 | 9 | 14,5 | 8 | $d_1 + 4$ | $d_1 + 24$ | 12,0 ± 1,8 | R | **170 VA R** |
| | | 153 | 9 | 14,5 | 8 | $d_1 + 4$ | $d_1 + 24$ | 12,0 ± 1,8 | V | **170 VA V** |
| | | 153 | 15 | 20,5 | 8 | $d_1 + 4$ | $d_1 + 24$ | 18,0 ± 1,8 | R | **170 VS R** |
| | | 153 | 15 | 20,5 | 8 | $d_1 + 4$ | $d_1 + 24$ | 18,0 ± 1,8 | V | **170 VS V** |

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

$d_1$ **175 – 375** mm



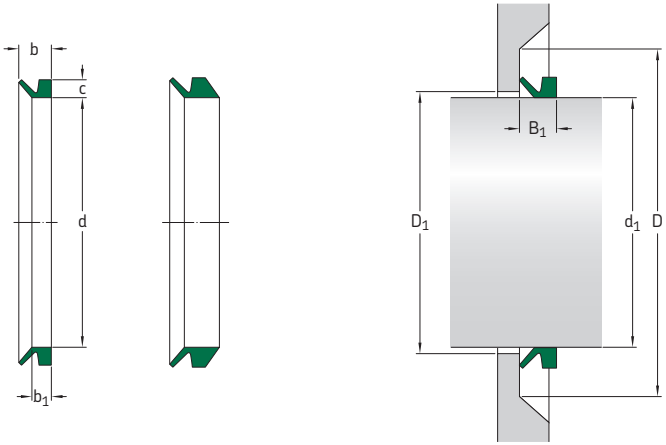

| Dimensions | | | | | | | | | Lip code | Designation |
|---|---|---|---|---|---|---|---|---|---|---|
| Shaft diameter range | | Seal inside diameter, free state | Seal seat width | Nominal seal width | Nominal seal height | Clearance | Counterface | Seal fitted width | | |
| $d_1$ over | incl. | d | $b_1$ | b | c | $D_1$ max | D min | $B_1$ | | |
| mm | | | | | | | | | – | – |
| **175** | **185** | 162 | 6 | 10,5 | 6,5 | $d_1$ + 5 | $d_1$ + 20 | 8,0 ± 1,5 | R | **180 VL R** |
| | | 162 | 6 | 10,5 | 6,5 | $d_1$ + 5 | $d_1$ + 20 | 8,0 ± 1,5 | V | **180 VL V** |
| | | 162 | 9 | 14,5 | 8 | $d_1$ + 4 | $d_1$ + 24 | 12,0 ± 1,8 | R | **180 VA R** |
| | | 162 | 9 | 14,5 | 8 | $d_1$ + 4 | $d_1$ + 24 | 12,0 ± 1,8 | V | **180 VA V** |
| | | 162 | 15 | 20,5 | 8 | $d_1$ + 4 | $d_1$ + 24 | 18,0 ± 1,8 | R | **180 VS R** |
| | | 162 | 15 | 20,5 | 8 | $d_1$ + 4 | $d_1$ + 24 | 18,0 ± 1,8 | V | **180 VS V** |
| **185** | **195** | 171 | 6 | 10,5 | 6,5 | $d_1$ + 5 | $d_1$ + 20 | 8,0 ± 1,5 | R | **190 VL R** |
| | | 171 | 6 | 10,5 | 6,5 | $d_1$ + 5 | $d_1$ + 20 | 8,0 ± 1,5 | V | **190 VL V** |
| | | 171 | 9 | 14,5 | 8 | $d_1$ + 4 | $d_1$ + 24 | 12,0 ± 1,8 | R | **190 VA R** |
| | | 171 | 9 | 14,5 | 8 | $d_1$ + 4 | $d_1$ + 24 | 12,0 ± 1,8 | V | **190 VA V** |
| | | 171 | 15 | 20,5 | 8 | $d_1$ + 4 | $d_1$ + 24 | 18,0 ± 1,8 | R | **190 VS R** |
| | | 171 | 15 | 20,5 | 8 | $d_1$ + 4 | $d_1$ + 24 | 18,0 ± 1,8 | V | **190 VS V** |
| **195** | **210** | 180 | 9 | 14,5 | 8 | $d_1$ + 4 | $d_1$ + 24 | 12,0 ± 1,8 | R | **199 VA R** |
| | | 180 | 9 | 14,5 | 8 | $d_1$ + 4 | $d_1$ + 24 | 12,0 ± 1,8 | V | **199 VA V** |
| **190** | **210** | 180 | 14,3 | 25 | 15 | $d_1$ + 10 | $d_1$ + 45 | 20,0 ± 4 | R | **200 VA R** |
| | | 180 | 14,3 | 25 | 15 | $d_1$ + 10 | $d_1$ + 45 | 20,0 ± 4 | V | **200 VA V** |
| **195** | **210** | 180 | 15 | 20,5 | 8 | $d_1$ + 4 | $d_1$ + 24 | 18,0 ± 1,8 | R | **199 VS R** |
| | | 180 | 15 | 20,5 | 8 | $d_1$ + 4 | $d_1$ + 24 | 18,0 ± 1,8 | V | **199 VS V** |
| | | 182 | 6 | 10,5 | 6,5 | $d_1$ + 5 | $d_1$ + 20 | 8,0 ± 1,5 | R | **200 VL R** |
| | | 182 | 6 | 10,5 | 6,5 | $d_1$ + 5 | $d_1$ + 20 | 8,0 ± 1,5 | V | **200 VL V** |
| **210** | **233** | 198 | 6 | 10,5 | 6,5 | $d_1$ + 5 | $d_1$ + 20 | 8,0 ± 1,5 | R | **220 VL R** |
| | | 198 | 6 | 10,5 | 6,5 | $d_1$ + 5 | $d_1$ + 20 | 8,0 ± 1,5 | V | **220 VL V** |
| **210** | **235** | 198 | 14,3 | 25 | 15 | $d_1$ + 10 | $d_1$ + 45 | 20,0 ± 4 | R | **220 VA R** |
| | | 198 | 14,3 | 25 | 15 | $d_1$ + 10 | $d_1$ + 45 | 20,0 ± 4 | V | **220 VA V** |
| **233** | **260** | 225 | 6 | 10,5 | 6,5 | $d_1$ + 5 | $d_1$ + 20 | 8,0 ± 1,5 | R | **250 VL R** |
| | | 225 | 6 | 10,5 | 6,5 | $d_1$ + 5 | $d_1$ + 20 | 8,0 ± 1,5 | V | **250 VL V** |
| **235** | **265** | 225 | 14,3 | 25 | 15 | $d_1$ + 10 | $d_1$ + 45 | 20,0 ± 4 | R | **250 VA R** |
| | | 225 | 14,3 | 25 | 15 | $d_1$ + 10 | $d_1$ + 45 | 20,0 ± 4 | V | **250 VA V** |
| **260** | **285** | 247 | 6 | 10,5 | 6,5 | $d_1$ + 5 | $d_1$ + 20 | 8,0 ± 1,5 | R | **275 VL R** |
| | | 247 | 6 | 10,5 | 6,5 | $d_1$ + 5 | $d_1$ + 20 | 8,0 ± 1,5 | V | **275 VL V** |

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

| Dimensions | | | | | | | | | Lip code | Designation |
|---|---|---|---|---|---|---|---|---|---|---|
| Shaft diameter range | | Seal inside diameter, free state | Seal seat width | Nominal seal width | Nominal seal height | Clearance | Counterface | Seal fitted width | | |
| $d_1$ over | incl. | d | $b_1$ | b | c | $D_1$ max | D min | $B_1$ | | |
| mm | | | | | | | | | – | – |
| **265** | **290** | 247 | 14,3 | 25 | 15 | $d_1$ + 10 | $d_1$ + 45 | 20,0 ± 4 | R | **275 VA R** |
| | | 247 | 14,3 | 25 | 15 | $d_1$ + 10 | $d_1$ + 45 | 20,0 ± 4 | V | **275 VA V** |
| **285** | **310** | 270 | 6 | 10,5 | 6,5 | $d_1$ + 5 | $d_1$ + 20 | 8,0 ± 1,5 | R | **300 VL R** |
| | | 270 | 6 | 10,5 | 6,5 | $d_1$ + 5 | $d_1$ + 20 | 8,0 ± 1,5 | V | **300 VL V** |
| **290** | **310** | 270 | 14,3 | 25 | 15 | $d_1$ + 10 | $d_1$ + 45 | 20,0 ± 4 | R | **300 VA R** |
| | | 270 | 14,3 | 25 | 15 | $d_1$ + 10 | $d_1$ + 45 | 20,0 ± 4 | V | **300 VA V** |
| **310** | **335** | 292 | 6 | 10,5 | 6,5 | $d_1$ + 5 | $d_1$ + 20 | 8,0 ± 1,5 | R | **325 VL R** |
| | | 292 | 6 | 10,5 | 6,5 | $d_1$ + 5 | $d_1$ + 20 | 8,0 ± 1,5 | V | **325 VL V** |
| | | 292 | 14,3 | 25 | 15 | $d_1$ + 10 | $d_1$ + 45 | 20,0 ± 4 | R | **325 VA R** |
| | | 292 | 14,3 | 25 | 15 | $d_1$ + 10 | $d_1$ + 45 | 20,0 ± 4 | V | **325 VA V** |
| **300** | **305** | 294 | 32,5 | 65 | 21 | $d_1$ + 24 | $d_1$ + 115 | 50 ± 12 | R | **300 VRME R** |
| | | 294 | 32,5 | 65 | 30 | $d_1$ + 24 | $d_1$ + 115 | 50 ± 12 | R | **300 VE R** |
| **305** | **310** | 299 | 32,5 | 65 | 30 | $d_1$ + 24 | $d_1$ + 115 | 50 ± 12 | R | **305 VE R** |
| **310** | **315** | 304 | 32,5 | 65 | 21 | $d_1$ + 24 | $d_1$ + 115 | 50 ± 12 | R | **310 VRME R** |
| | | 304 | 32,5 | 65 | 30 | $d_1$ + 24 | $d_1$ + 115 | 50 ± 12 | R | **310 VE R** |
| **315** | **320** | 309 | 32,5 | 65 | 30 | $d_1$ + 24 | $d_1$ + 115 | 50 ± 12 | R | **315 VE R** |
| **320** | **325** | 314 | 32,5 | 65 | 30 | $d_1$ + 24 | $d_1$ + 115 | 50 ± 12 | R | **320 VE R** |
| **335** | **365** | 315 | 6 | 10,5 | 6,5 | $d_1$ + 5 | $d_1$ + 20 | 8,0 ± 1,5 | R | **350 VL R** |
| | | 315 | 6 | 10,5 | 6,5 | $d_1$ + 5 | $d_1$ + 20 | 8,0 ± 1,5 | V | **350 VL V** |
| | | 315 | 14,3 | 25 | 15 | $d_1$ + 10 | $d_1$ + 45 | 20,0 ± 4 | R | **350 VA R** |
| | | 315 | 14,3 | 25 | 15 | $d_1$ + 10 | $d_1$ + 45 | 20,0 ± 4 | V | **350 VA V** |
| **325** | **330** | 319 | 32,5 | 65 | 21 | $d_1$ + 24 | $d_1$ + 115 | 50 ± 12 | R | **325 VRME R** |
| | | 319 | 32,5 | 65 | 30 | $d_1$ + 24 | $d_1$ + 115 | 50 ± 12 | R | **325 VE R** |
| **330** | **335** | 323 | 32,5 | 65 | 30 | $d_1$ + 24 | $d_1$ + 115 | 50 ± 12 | R | **330 VE R** |
| **335** | **340** | 328 | 32,5 | 65 | 30 | $d_1$ + 24 | $d_1$ + 115 | 50 ± 12 | R | **335 VE R** |
| **340** | **345** | 333 | 32,5 | 65 | 21 | $d_1$ + 24 | $d_1$ + 115 | 50 ± 12 | R | **340 VRME R** |
| | | 333 | 32,5 | 65 | 30 | $d_1$ + 24 | $d_1$ + 115 | 50 ± 12 | R | **340 VE R** |
| **365** | **385** | 337 | 6 | 10,5 | 6,5 | $d_1$ + 5 | $d_1$ + 20 | 8,0 ± 1,5 | R | **375 VL R** |
| | | 337 | 6 | 10,5 | 6,5 | $d_1$ + 5 | $d_1$ + 20 | 8,0 ± 1,5 | V | **375 VL V** |
| **365** | **390** | 337 | 14,3 | 25 | 15 | $d_1$ + 10 | $d_1$ + 45 | 20,0 ± 4 | R | **375 VA R** |
| | | 337 | 14,3 | 25 | 15 | $d_1$ + 10 | $d_1$ + 45 | 20,0 ± 4 | V | **375 VA V** |
| **345** | **350** | 338 | 32,5 | 65 | 30 | $d_1$ + 24 | $d_1$ + 115 | 50 ± 12 | R | **345 VE R** |
| **350** | **355** | 343 | 32,5 | 65 | 21 | $d_1$ + 24 | $d_1$ + 115 | 50 ± 12 | R | **350 VRME R** |
| | | 343 | 32,5 | 65 | 30 | $d_1$ + 24 | $d_1$ + 115 | 50 ± 12 | R | **350 VE R** |
| **355** | **360** | 347 | 32,5 | 65 | 21 | $d_1$ + 24 | $d_1$ + 115 | 50 ± 12 | R | **355 VRME R** |
| | | 347 | 32,5 | 65 | 30 | $d_1$ + 24 | $d_1$ + 115 | 50 ± 12 | R | **355 VE R** |
| **360** | **365** | 352 | 32,5 | 65 | 30 | $d_1$ + 24 | $d_1$ + 115 | 50 ± 12 | R | **360 VE R** |
| **365** | **370** | 357 | 32,5 | 65 | 30 | $d_1$ + 24 | $d_1$ + 115 | 50 ± 12 | R | **365 VE R** |
| **385** | **410** | 360 | 6 | 10,5 | 6,5 | $d_1$ + 5 | $d_1$ + 20 | 8,0 ± 1,5 | R | **400 VL R** |
| | | 360 | 6 | 10,5 | 6,5 | $d_1$ + 5 | $d_1$ + 20 | 8,0 ± 1,5 | V | **400 VL V** |
| **390** | **430** | 360 | 14,3 | 25 | 15 | $d_1$ + 10 | $d_1$ + 45 | 20,0 ± 4 | R | **400 VA R** |
| | | 360 | 14,3 | 25 | 15 | $d_1$ + 10 | $d_1$ + 45 | 20,0 ± 4 | V | **400 VA V** |
| **370** | **375** | 362 | 32,5 | 65 | 21 | $d_1$ + 24 | $d_1$ + 115 | 50 ± 12 | R | **370 VRME R** |
| | | 362 | 32,5 | 65 | 30 | $d_1$ + 24 | $d_1$ + 115 | 50 ± 12 | R | **370 VE R** |

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

$d_1$ **375 – 550** mm



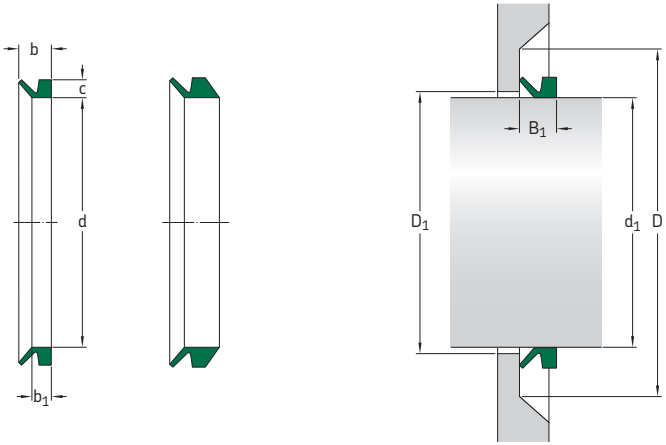

| Dimensions Shaft diameter range $d_1$ over | incl. | Seal inside diameter, free state d | Seal seat width $b_1$ | Nominal seal width b | Nominal seal height c | Clearance $D_1$ max | Counterface D min | Seal fitted width $B_1$ | Lip code | Designation |
|---|---|---|---|---|---|---|---|---|---|---|
| mm | | | | | | | | | – | – |
| **375** | **380** | 367 | 32,5 | 65 | 21 | $d_1$ + 24 | $d_1$ + 115 | 50 ± 12 | R | **375 VRME R** |
| | | 367 | 32,5 | 65 | 30 | $d_1$ + 24 | $d_1$ + 115 | 50 ± 12 | R | **375 VE R** |
| **380** | **385** | 371 | 32,5 | 65 | 21 | $d_1$ + 24 | $d_1$ + 115 | 50 ± 12 | R | **380 VRME R** |
| | | 371 | 32,5 | 65 | 30 | $d_1$ + 24 | $d_1$ + 115 | 50 ± 12 | R | **380 VE R** |
| **385** | **390** | 376 | 32,5 | 65 | 30 | $d_1$ + 24 | $d_1$ + 115 | 50 ± 12 | R | **385 VE R** |
| **390** | **395** | 381 | 32,5 | 65 | 21 | $d_1$ + 24 | $d_1$ + 115 | 50 ± 12 | R | **390 VRME R** |
| | | 381 | 32,5 | 65 | 30 | $d_1$ + 24 | $d_1$ + 115 | 50 ± 12 | R | **390 VE R** |
| **410** | **440** | 382 | 6 | 10,5 | 6,5 | $d_1$ + 5 | $d_1$ + 20 | 8,0 ± 1,5 | R | **425 VL R** |
| | | 382 | 6 | 10,5 | 6,5 | $d_1$ + 5 | $d_1$ + 20 | 8,0 ± 1,5 | V | **425 VL V** |
| **395** | **400** | 386 | 32,5 | 65 | 30 | $d_1$ + 24 | $d_1$ + 115 | 50 ± 12 | R | **395 VE R** |
| **400** | **405** | 391 | 32,5 | 65 | 21 | $d_1$ + 24 | $d_1$ + 115 | 50 ± 12 | R | **400 VRME R** |
| | | 391 | 32,5 | 65 | 30 | $d_1$ + 24 | $d_1$ + 115 | 50 ± 12 | R | **400 VE R** |
| **405** | **410** | 396 | 32,5 | 65 | 30 | $d_1$ + 24 | $d_1$ + 115 | 50 ± 12 | R | **405 VE R** |
| **410** | **415** | 401 | 32,5 | 65 | 21 | $d_1$ + 24 | $d_1$ + 115 | 50 ± 12 | R | **410 VRME R** |
| | | 401 | 32,5 | 65 | 30 | $d_1$ + 24 | $d_1$ + 115 | 50 ± 12 | R | **410 VE R** |
| **440** | **475** | 405 | 6 | 10,5 | 6,5 | $d_1$ + 5 | $d_1$ + 20 | 8,0 ± 1,5 | R | **450 VL R** |
| | | 405 | 6 | 10,5 | 6,5 | $d_1$ + 5 | $d_1$ + 20 | 8,0 ± 1,5 | V | **450 VL V** |
| **430** | **480** | 405 | 14,3 | 25 | 15 | $d_1$ + 10 | $d_1$ + 45 | 20,0 ± 4 | R | **450 VA R** |
| | | 405 | 14,3 | 25 | 15 | $d_1$ + 10 | $d_1$ + 45 | 20,0 ± 4 | V | **450 VA V** |
| **415** | **420** | 405 | 32,5 | 65 | 30 | $d_1$ + 24 | $d_1$ + 115 | 50 ± 12 | R | **415 VE R** |
| **420** | **425** | 410 | 32,5 | 65 | 21 | $d_1$ + 24 | $d_1$ + 115 | 50 ± 12 | R | **420 VRME R** |
| | | 410 | 32,5 | 65 | 30 | $d_1$ + 24 | $d_1$ + 115 | 50 ± 12 | R | **420 VE R** |
| **425** | **430** | 415 | 32,5 | 65 | 30 | $d_1$ + 24 | $d_1$ + 115 | 50 ± 12 | R | **425 VE R** |
| **430** | **435** | 420 | 32,5 | 65 | 21 | $d_1$ + 24 | $d_1$ + 115 | 50 ± 12 | R | **430 VRME R** |
| | | 420 | 32,5 | 65 | 30 | $d_1$ + 24 | $d_1$ + 115 | 50 ± 12 | R | **430 VE R** |

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

| Dimensions | | | | | | | | | Lip code | Designation |
|---|---|---|---|---|---|---|---|---|---|---|
| Shaft diameter range | | Seal inside diameter, free state | Seal seat width | Nominal seal width | Nominal seal height | Clearance | Counterface | Seal fitted width | | |
| $d_1$ over | incl. | d | $b_1$ | b | c | $D_1$ max | D min | $B_1$ | | |
| mm | | | | | | | | | – | – |
| **435** | **440** | 425 | 32,5 | 65 | 30 | $d_1$ + 24 | $d_1$ + 115 | 50 ± 12 | R | **435 VE R** |
| **440** | **445** | 429 | 32,5 | 65 | 30 | $d_1$ + 24 | $d_1$ + 115 | 50 ± 12 | R | **440 VE R** |
| **445** | **450** | 434 | 32,5 | 65 | 30 | $d_1$ + 24 | $d_1$ + 115 | 50 ± 12 | R | **445 VE R** |
| **450** | **455** | 439 | 32,5 | 65 | 30 | $d_1$ + 24 | $d_1$ + 115 | 50 ± 12 | R | **450 VE R** |
| | | 439 | 67,5 | 100 | 13 | $d_1$ + 24 | $d_1$ + 115 | 85 ± 12 | R | **450 VRM R** |
| **455** | **460** | 444 | 32,5 | 65 | 30 | $d_1$ + 24 | $d_1$ + 115 | 50 ± 12 | R | **455 VE R** |
| **460** | **465** | 448 | 32,5 | 65 | 21 | $d_1$ + 24 | $d_1$ + 115 | 50 ± 12 | R | **460 VRME R** |
| | | 448 | 32,5 | 65 | 30 | $d_1$ + 24 | $d_1$ + 115 | 50 ± 12 | R | **460 VE R** |
| **475** | **510** | 450 | 6 | 10,5 | 6,5 | $d_1$ + 5 | $d_1$ + 20 | 8,0 ± 1,5 | R | **500 VL R** |
| | | 450 | 6 | 10,5 | 6,5 | $d_1$ + 5 | $d_1$ + 20 | 8,0 ± 1,5 | V | **500 VL V** |
| **480** | **530** | 450 | 14,3 | 25 | 15 | $d_1$ + 10 | $d_1$ + 45 | 20,0 ± 4 | R | **500 VA R** |
| | | 450 | 14,3 | 25 | 15 | $d_1$ + 10 | $d_1$ + 45 | 20,0 ± 4 | V | **500 VA V** |
| **465** | **470** | 453 | 32,5 | 65 | 30 | $d_1$ + 24 | $d_1$ + 115 | 50 ± 12 | R | **465 VE R** |
| **470** | **475** | 458 | 32,5 | 65 | 30 | $d_1$ + 24 | $d_1$ + 115 | 50 ± 12 | R | **470 VE R** |
| **475** | **480** | 463 | 32,5 | 65 | 21 | $d_1$ + 24 | $d_1$ + 115 | 50 ± 12 | R | **475 VRME R** |
| | | 463 | 32,5 | 65 | 30 | $d_1$ + 24 | $d_1$ + 115 | 50 ± 12 | R | **475 VE R** |
| **480** | **485** | 468 | 32,5 | 65 | 30 | $d_1$ + 24 | $d_1$ + 115 | 50 ± 12 | R | **480 VE R** |
| **510** | **540** | 472 | 6 | 10,5 | 6,5 | $d_1$ + 5 | $d_1$ + 20 | 8,0 ± 1,5 | R | **525 VL R** |
| | | 472 | 6 | 10,5 | 6,5 | $d_1$ + 5 | $d_1$ + 20 | 8,0 ± 1,5 | V | **525 VL V** |
| **485** | **490** | 473 | 32,5 | 65 | 30 | $d_1$ + 24 | $d_1$ + 115 | 50 ± 12 | R | **485 VE R** |
| **490** | **495** | 478 | 32,5 | 65 | 30 | $d_1$ + 24 | $d_1$ + 115 | 50 ± 12 | R | **490 VE R** |
| **495** | **500** | 483 | 32,5 | 65 | 21 | $d_1$ + 24 | $d_1$ + 115 | 50 ± 12 | R | **495 VRME R** |
| | | 483 | 32,5 | 65 | 30 | $d_1$ + 24 | $d_1$ + 115 | 50 ± 12 | R | **495 VE R** |
| **500** | **505** | 488 | 32,5 | 65 | 30 | $d_1$ + 24 | $d_1$ + 115 | 50 ± 12 | R | **500 VE R** |
| | | 488 | 67,5 | 100 | 13 | $d_1$ + 24 | $d_1$ + 115 | 85 ± 12 | R | **500 VRM R** |
| **505** | **510** | 493 | 32,5 | 65 | 30 | $d_1$ + 24 | $d_1$ + 115 | 50 ± 12 | R | **505 VE R** |
| **540** | **575** | 495 | 6 | 10,5 | 6,5 | $d_1$ + 5 | $d_1$ + 20 | 8,0 ± 1,5 | R | **550 VL R** |
| | | 495 | 6 | 10,5 | 6,5 | $d_1$ + 5 | $d_1$ + 20 | 8,0 ± 1,5 | V | **550 VL V** |
| **530** | **580** | 495 | 14,3 | 25 | 15 | $d_1$ + 10 | $d_1$ + 45 | 20,0 ± 4 | R | **550 VA R** |
| | | 495 | 14,3 | 25 | 15 | $d_1$ + 10 | $d_1$ + 45 | 20,0 ± 4 | V | **550 VA V** |
| **510** | **515** | 497 | 32,5 | 65 | 30 | $d_1$ + 24 | $d_1$ + 115 | 50 ± 12 | R | **510 VE R** |
| **515** | **520** | 502 | 32,5 | 65 | 30 | $d_1$ + 24 | $d_1$ + 115 | 50 ± 12 | R | **515 VE R** |
| **520** | **525** | 507 | 32,5 | 65 | 30 | $d_1$ + 24 | $d_1$ + 115 | 50 ± 12 | R | **520 VE R** |
| **525** | **530** | 512 | 32,5 | 65 | 21 | $d_1$ + 24 | $d_1$ + 115 | 50 ± 12 | R | **525 VRME R** |
| | | 512 | 32,5 | 65 | 30 | $d_1$ + 24 | $d_1$ + 115 | 50 ± 12 | R | **525 VE R** |
| **530** | **535** | 517 | 32,5 | 65 | 30 | $d_1$ + 24 | $d_1$ + 115 | 50 ± 12 | R | **530 VE R** |
| **535** | **540** | 521 | 32,5 | 65 | 30 | $d_1$ + 24 | $d_1$ + 115 | 50 ± 12 | R | **535 VE R** |
| **540** | **545** | 526 | 32,5 | 65 | 30 | $d_1$ + 24 | $d_1$ + 115 | 50 ± 12 | R | **540 VE R** |
| **545** | **550** | 531 | 32,5 | 65 | 30 | $d_1$ + 24 | $d_1$ + 115 | 50 ± 12 | R | **545 VE R** |

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

$d_1$ **550 – 792** mm



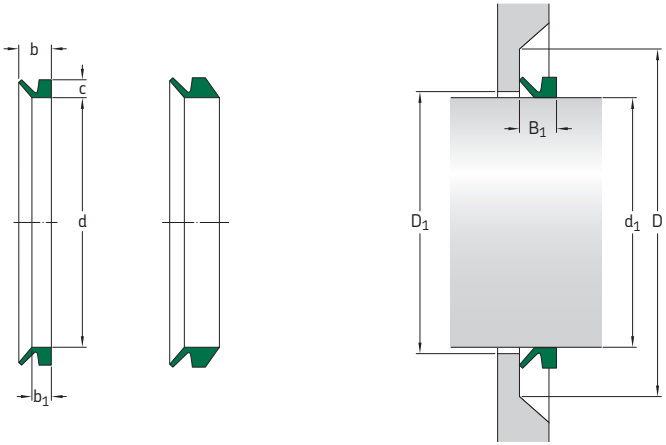

| Dimensions Shaft diameter range $d_1$ over | incl. | Seal inside diameter, free state d | Seal seat width $b_1$ | Nominal seal width b | Nominal seal height c | Clearance $D_1$ max | Counterface D min | Seal fitted width $B_1$ | Lip code | Designation |
|---|---|---|---|---|---|---|---|---|---|---|
| mm | | | | | | | | | – | – |
| **550** | **555** | 536 | 32,5 | 65 | 30 | $d_1 + 24$ | $d_1 + 115$ | 50 ± 12 | R | **550 VE R** |
| | | 536 | 67,5 | 100 | 13 | $d_1 + 24$ | $d_1 + 115$ | 85 ± 12 | R | **550 VRM R** |
| **575** | **625** | 540 | 6 | 10,5 | 6,5 | $d_1 + 5$ | $d_1 + 20$ | 8,0 ± 1,5 | R | **600 VL R** |
| | | 540 | 6 | 10,5 | 6,5 | $d_1 + 5$ | $d_1 + 20$ | 8,0 ± 1,5 | V | **600 VL V** |
| **580** | **630** | 540 | 14,3 | 25 | 15 | $d_1 + 10$ | $d_1 + 45$ | 20,0 ± 4 | R | **600 VA R** |
| | | 540 | 14,3 | 25 | 15 | $d_1 + 10$ | $d_1 + 45$ | 20,0 ± 4 | V | **600 VA V** |
| **555** | **560** | 541 | 32,5 | 65 | 30 | $d_1 + 24$ | $d_1 + 115$ | 50 ± 12 | R | **555 VE R** |
| **560** | **565** | 546 | 32,5 | 65 | 30 | $d_1 + 24$ | $d_1 + 115$ | 50 ± 12 | R | **560 VE R** |
| **565** | **570** | 550 | 32,5 | 65 | 30 | $d_1 + 24$ | $d_1 + 115$ | 50 ± 12 | R | **565 VE R** |
| **570** | **575** | 555 | 32,5 | 65 | 30 | $d_1 + 24$ | $d_1 + 115$ | 50 ± 12 | R | **570 VE R** |
| **575** | **580** | 560 | 32,5 | 65 | 30 | $d_1 + 24$ | $d_1 + 115$ | 50 ± 12 | R | **575 VE R** |
| **580** | **585** | 565 | 32,5 | 65 | 30 | $d_1 + 24$ | $d_1 + 115$ | 50 ± 12 | R | **580 VE R** |
| **585** | **590** | 570 | 32,5 | 65 | 30 | $d_1 + 24$ | $d_1 + 115$ | 50 ± 12 | R | **585 VE R** |
| **590** | **600** | 575 | 32,5 | 65 | 30 | $d_1 + 24$ | $d_1 + 115$ | 50 ± 12 | R | **590 VE R** |
| **600** | **610** | 582 | 32,5 | 65 | 30 | $d_1 + 24$ | $d_1 + 115$ | 50 ± 12 | R | **600 VE R** |
| | | 582 | 67,5 | 100 | 13 | $d_1 + 24$ | $d_1 + 115$ | 85 ± 12 | R | **600 VRM R** |
| **610** | **620** | 592 | 32,5 | 65 | 30 | $d_1 + 24$ | $d_1 + 115$ | 50 ± 12 | R | **610 VE R** |
| **615** | **675** | 600 | 6 | 10,5 | 6,5 | $d_1 + 5$ | $d_1 + 20$ | 8,0 ± 1,5 | R | **650 VL R** |
| | | 600 | 6 | 10,5 | 6,5 | $d_1 + 5$ | $d_1 + 20$ | 8,0 ± 1,5 | V | **650 VL V** |
| **630** | **665** | 600 | 14,3 | 25 | 15 | $d_1 + 10$ | $d_1 + 45$ | 20,0 ± 4 | R | **650 VA R** |
| | | 600 | 14,3 | 25 | 15 | $d_1 + 10$ | $d_1 + 45$ | 20,0 ± 4 | V | **650 VA V** |
| **620** | **630** | 602 | 32,5 | 65 | 30 | $d_1 + 24$ | $d_1 + 115$ | 50 ± 12 | R | **620 VE R** |
| **630** | **640** | 612 | 32,5 | 65 | 30 | $d_1 + 24$ | $d_1 + 115$ | 50 ± 12 | R | **630 VE R** |

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

| Dimensions | | | | | | | | | Lip code | Designation |
|---|---|---|---|---|---|---|---|---|---|---|
| Shaft diameter range | | Seal inside diameter, free state | Seal seat width | Nominal seal width | Nominal seal height | Clearance | Counterface | Seal fitted width | | |
| $d_1$ | | d | $b_1$ | b | c | $D_1$ | D | $B_1$ | | |
| over | incl. | | | | | max | min | | | |
| mm | | | | | | | | | – | – |
| **640** | **650** | 621 | 32,5 | 65 | 30 | $d_1$ + 24 | $d_1$ + 115 | 50 ± 12 | R | **640 VE R** |
| **675** | **710** | 630 | 6 | 10,5 | 6,5 | $d_1$ + 5 | $d_1$ + 20 | 8,0 ± 1,5 | R | **700 VL R** |
| | | 630 | 6 | 10,5 | 6,5 | $d_1$ + 5 | $d_1$ + 20 | 8,0 ± 1,5 | V | **700 VL V** |
| **665** | **705** | 630 | 14,3 | 25 | 15 | $d_1$ + 10 | $d_1$ + 45 | 20,0 ± 4 | R | **700 VA R** |
| | | 630 | 14,3 | 25 | 15 | $d_1$ + 10 | $d_1$ + 45 | 20,0 ± 4 | V | **700 VA V** |
| **650** | **660** | 631 | 32,5 | 65 | 21 | $d_1$ + 24 | $d_1$ + 115 | 50 ± 12 | R | **650 VRME R** |
| | | 631 | 32,5 | 65 | 30 | $d_1$ + 24 | $d_1$ + 115 | 50 ± 12 | R | **650 VE R** |
| | | 631 | 67,5 | 100 | 13 | $d_1$ + 24 | $d_1$ + 115 | 85 ± 12 | R | **650 VRM R** |
| **660** | **670** | 640 | 32,5 | 65 | 21 | $d_1$ + 24 | $d_1$ + 115 | 50 ± 12 | R | **660 VRME R** |
| | | 640 | 32,5 | 65 | 30 | $d_1$ + 24 | $d_1$ + 115 | 50 ± 12 | R | **660 VE R** |
| **670** | **680** | 650 | 32,5 | 65 | 21 | $d_1$ + 24 | $d_1$ + 115 | 50 ± 12 | R | **670 VRME R** |
| | | 650 | 32,5 | 65 | 30 | $d_1$ + 24 | $d_1$ + 115 | 50 ± 12 | R | **670 VE R** |
| **680** | **690** | 660 | 32,5 | 65 | 21 | $d_1$ + 24 | $d_1$ + 115 | 50 ± 12 | R | **680 VRME R** |
| | | 660 | 32,5 | 65 | 30 | $d_1$ + 24 | $d_1$ + 115 | 50 ± 12 | R | **680 VE R** |
| **710** | **740** | 670 | 6 | 10,5 | 6,5 | $d_1$ + 5 | $d_1$ + 20 | 8,0 ± 1,5 | R | **725 VL R** |
| | | 670 | 6 | 10,5 | 6,5 | $d_1$ + 5 | $d_1$ + 20 | 8,0 ± 1,5 | V | **725 VL V** |
| **705** | **745** | 670 | 14,3 | 25 | 15 | $d_1$ + 10 | $d_1$ + 45 | 20,0 ± 4 | R | **725 VA R** |
| | | 670 | 14,3 | 25 | 15 | $d_1$ + 10 | $d_1$ + 45 | 20,0 ± 4 | V | **725 VA V** |
| **690** | **700** | 670 | 32,5 | 65 | 21 | $d_1$ + 24 | $d_1$ + 115 | 50 ± 12 | R | **690 VRME R** |
| | | 670 | 32,5 | 65 | 30 | $d_1$ + 24 | $d_1$ + 115 | 50 ± 12 | R | **690 VE R** |
| **700** | **710** | 680 | 32,5 | 65 | 30 | $d_1$ + 24 | $d_1$ + 115 | 50 ± 12 | R | **700 VE R** |
| | | 680 | 67,5 | 100 | 13 | $d_1$ + 24 | $d_1$ + 115 | 85 ± 12 | R | **700 VRM R** |
| **710** | **720** | 689 | 32,5 | 65 | 30 | $d_1$ + 24 | $d_1$ + 115 | 50 ± 12 | R | **710 VE R** |
| **720** | **730** | 699 | 32,5 | 65 | 30 | $d_1$ + 24 | $d_1$ + 115 | 50 ± 12 | R | **720 VE R** |
| **740** | **775** | 705 | 6 | 10,5 | 6,5 | $d_1$ + 5 | $d_1$ + 20 | 8,0 ± 1,5 | R | **750 VL R** |
| | | 705 | 6 | 10,5 | 6,5 | $d_1$ + 5 | $d_1$ + 20 | 8,0 ± 1,5 | V | **750 VL V** |
| **745** | **785** | 705 | 14,3 | 25 | 15 | $d_1$ + 10 | $d_1$ + 45 | 20,0 ± 4 | R | **750 VA R** |
| | | 705 | 14,3 | 25 | 15 | $d_1$ + 10 | $d_1$ + 45 | 20,0 ± 4 | V | **750 VA V** |
| **730** | **740** | 709 | 32,5 | 65 | 30 | $d_1$ + 24 | $d_1$ + 115 | 50 ± 12 | R | **730 VE R** |
| **740** | **750** | 718 | 32,5 | 65 | 30 | $d_1$ + 24 | $d_1$ + 115 | 50 ± 12 | R | **740 VE R** |
| **750** | **758** | 728 | 32,5 | 65 | 21 | $d_1$ + 24 | $d_1$ + 115 | 50 ± 12 | R | **750 VRME R** |
| | | 728 | 32,5 | 65 | 30 | $d_1$ + 24 | $d_1$ + 115 | 50 ± 12 | R | **750 VE R** |
| | | 728 | 67,5 | 100 | 13 | $d_1$ + 24 | $d_1$ + 115 | 85 ± 12 | R | **750 VRM R** |
| **758** | **766** | 735 | 32,5 | 65 | 21 | $d_1$ + 24 | $d_1$ + 115 | 50 ± 12 | R | **760 VRME R** |
| | | 735 | 32,5 | 65 | 30 | $d_1$ + 24 | $d_1$ + 115 | 50 ± 12 | R | **760 VE R** |
| **766** | **774** | 743 | 32,5 | 65 | 30 | $d_1$ + 24 | $d_1$ + 115 | 50 ± 12 | R | **770 VE R** |
| **775** | **825** | 745 | 6 | 10,5 | 6,5 | $d_1$ + 5 | $d_1$ + 20 | 8,0 ± 1,5 | R | **800 VL R** |
| | | 745 | 6 | 10,5 | 6,5 | $d_1$ + 5 | $d_1$ + 20 | 8,0 ± 1,5 | V | **800 VL V** |
| **785** | **830** | 745 | 14,3 | 25 | 15 | $d_1$ + 10 | $d_1$ + 45 | 20,0 ± 4 | R | **800 VA R** |
| | | 745 | 14,3 | 25 | 15 | $d_1$ + 10 | $d_1$ + 45 | 20,0 ± 4 | V | **800 VA V** |
| **774** | **783** | 751 | 32,5 | 65 | 30 | $d_1$ + 24 | $d_1$ + 115 | 50 ± 12 | R | **780 VE R** |
| **783** | **792** | 759 | 32,5 | 65 | 21 | $d_1$ + 24 | $d_1$ + 115 | 50 ± 12 | R | **790 VRME R** |
| | | 759 | 32,5 | 65 | 30 | $d_1$ + 24 | $d_1$ + 115 | 50 ± 12 | R | **790 VE R** |

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

$d_1$ **792 – 1 165** mm



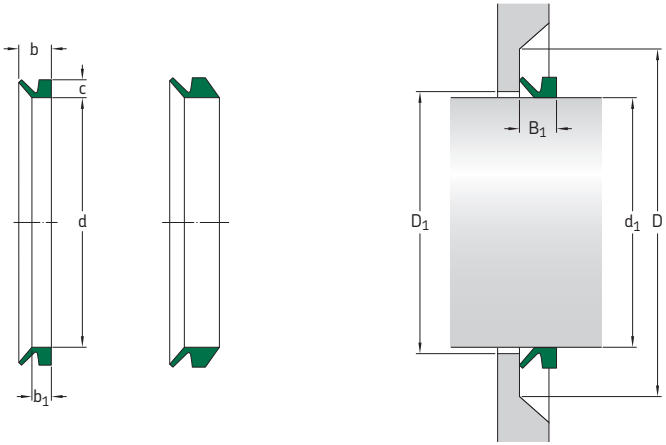

| Dimensions Shaft diameter range $d_1$ over | incl. | Seal inside diameter, free state d | Seal seat width $b_1$ | Nominal seal width b | Nominal seal height c | Clearance $D_1$ max | Counterface D min | Seal fitted width $B_1$ | Lip code | Designation |
|---|---|---|---|---|---|---|---|---|---|---|
| mm | | | | | | | | | – | – |
| **792** | **801** | 768 | 32,5 | 65 | 21 | $d_1 + 24$ | $d_1 + 115$ | 50 ± 12 | R | **800 VRME R** |
| | | 768 | 32,5 | 65 | 30 | $d_1 + 24$ | $d_1 + 115$ | 50 ± 12 | R | **800 VE R** |
| | | 768 | 67,5 | 100 | 13 | $d_1 + 24$ | $d_1 + 115$ | 85 ± 12 | R | **800 VRM R** |
| **801** | **810** | 777 | 32,5 | 65 | 30 | $d_1 + 24$ | $d_1 + 115$ | 50 ± 12 | R | **810 VE R** |
| **825** | **875** | 785 | 6 | 10,5 | 6,5 | $d_1 + 5$ | $d_1 + 20$ | 8,0 ± 1,5 | R | **850 VL R** |
| | | 785 | 6 | 10,5 | 6,5 | $d_1 + 5$ | $d_1 + 20$ | 8,0 ± 1,5 | V | **850 VL V** |
| **830** | **875** | 785 | 14,3 | 25 | 15 | $d_1 + 10$ | $d_1 + 45$ | 20,0 ± 4 | R | **850 VA R** |
| | | 785 | 14,3 | 25 | 15 | $d_1 + 10$ | $d_1 + 45$ | 20,0 ± 4 | V | **850 VA V** |
| **810** | **821** | 786 | 32,5 | 65 | 30 | $d_1 + 24$ | $d_1 + 115$ | 50 ± 12 | R | **820 VE R** |
| **821** | **831** | 796 | 32,5 | 65 | 21 | $d_1 + 24$ | $d_1 + 115$ | 50 ± 12 | R | **830 VRME R** |
| | | 796 | 32,5 | 65 | 30 | $d_1 + 24$ | $d_1 + 115$ | 50 ± 12 | R | **830 VE R** |
| **831** | **841** | 805 | 32,5 | 65 | 30 | $d_1 + 24$ | $d_1 + 115$ | 50 ± 12 | R | **840 VE R** |
| **841** | **851** | 814 | 32,5 | 65 | 30 | $d_1 + 24$ | $d_1 + 115$ | 50 ± 12 | R | **850 VE R** |
| | | 814 | 67,5 | 100 | 13 | $d_1 + 24$ | $d_1 + 115$ | 85 ± 12 | R | **850 VRM R** |
| **851** | **861** | 824 | 32,5 | 65 | 30 | $d_1 + 24$ | $d_1 + 115$ | 50 ± 12 | R | **860 VE R** |
| **875** | **925** | 825 | 6 | 10,5 | 6,5 | $d_1 + 5$ | $d_1 + 20$ | 8,0 ± 1,5 | R | **900 VL R** |
| | | 825 | 6 | 10,5 | 6,5 | $d_1 + 5$ | $d_1 + 20$ | 8,0 ± 1,5 | V | **900 VL V** |
| **875** | **920** | 825 | 14,3 | 25 | 15 | $d_1 + 10$ | $d_1 + 45$ | 20,0 ± 4 | R | **900 VA R** |
| | | 825 | 14,3 | 25 | 15 | $d_1 + 10$ | $d_1 + 45$ | 20,0 ± 4 | V | **900 VA V** |
| **861** | **871** | 833 | 32,5 | 65 | 30 | $d_1 + 24$ | $d_1 + 115$ | 50 ± 12 | R | **870 VE R** |
| **871** | **882** | 843 | 32,5 | 65 | 21 | $d_1 + 24$ | $d_1 + 115$ | 50 ± 12 | R | **880 VRME R** |
| | | 843 | 32,5 | 65 | 30 | $d_1 + 24$ | $d_1 + 115$ | 50 ± 12 | R | **880 VE R** |
| **882** | **892** | 853 | 32,5 | 65 | 30 | $d_1 + 24$ | $d_1 + 115$ | 50 ± 12 | R | **890 VE R** |
| **925** | **975** | 865 | 6 | 10,5 | 6,5 | $d_1 + 5$ | $d_1 + 20$ | 8,0 ± 1,5 | R | **950 VL R** |
| | | 865 | 6 | 10,5 | 6,5 | $d_1 + 5$ | $d_1 + 20$ | 8,0 ± 1,5 | V | **950 VL V** |

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

| Dimensions | | | | | | | | | Lip code | Designation |
|---|---|---|---|---|---|---|---|---|---|---|
| Shaft diameter range | | Seal inside diameter, free state | Seal seat width | Nominal seal width | Nominal seal height | Clearance | Counterface | Seal fitted width | | |
| $d_1$ | | d | $b_1$ | b | c | $D_1$ | D | $B_1$ | | |
| over | incl. | | | | | max | min | | | |
| mm | | | | | | | | | – | – |
| **920** | **965** | 865 | 14,3 | 25 | 15 | $d_1$ + 10 | $d_1$ + 45 | 20,0 ± 4 | R | **950 VA R** |
| | | 865 | 14,3 | 25 | 15 | $d_1$ + 10 | $d_1$ + 45 | 20,0 ± 4 | V | **950 VA V** |
| **892** | **912** | 871 | 32,5 | 65 | 21 | $d_1$ + 24 | $d_1$ + 115 | 50 ± 12 | R | **900 VRME R** |
| | | 871 | 32,5 | 65 | 30 | $d_1$ + 24 | $d_1$ + 115 | 50 ± 12 | R | **900 VE R** |
| | | 871 | 67,5 | 100 | 13 | $d_1$ + 24 | $d_1$ + 115 | 85 ± 12 | R | **900 VRM R** |
| **912** | **922** | 880 | 32,5 | 65 | 30 | $d_1$ + 24 | $d_1$ + 115 | 50 ± 12 | R | **920 VE R** |
| **922** | **933** | 890 | 32,5 | 65 | 30 | $d_1$ + 24 | $d_1$ + 115 | 50 ± 12 | R | **930 VE R** |
| **933** | **944** | 900 | 32,5 | 65 | 30 | $d_1$ + 24 | $d_1$ + 115 | 50 ± 12 | R | **940 VE R** |
| **975** | **1 025** | 910 | 6 | 10,5 | 6,5 | $d_1$ + 5 | $d_1$ + 20 | 8,0 ± 1,5 | R | **1000 VL R** |
| | | 910 | 6 | 10,5 | 6,5 | $d_1$ + 5 | $d_1$ + 20 | 8,0 ± 1,5 | V | **1000 VL V** |
| **944** | **955** | 911 | 32,5 | 65 | 30 | $d_1$ + 24 | $d_1$ + 115 | 50 ± 12 | R | **950 VE R** |
| | | 911 | 67,5 | 100 | 13 | $d_1$ + 24 | $d_1$ + 115 | 85 ± 12 | R | **950 VRM R** |
| **955** | **966** | 921 | 32,5 | 65 | 30 | $d_1$ + 24 | $d_1$ + 115 | 50 ± 12 | R | **960 VE R** |
| **966** | **977** | 932 | 32,5 | 65 | 30 | $d_1$ + 24 | $d_1$ + 115 | 50 ± 12 | R | **970 VE R** |
| **977** | **988** | 942 | 32,5 | 65 | 21 | $d_1$ + 24 | $d_1$ + 115 | 50 ± 12 | R | **980 VRME R** |
| | | 942 | 32,5 | 65 | 30 | $d_1$ + 24 | $d_1$ + 115 | 50 ± 12 | R | **980 VE R** |
| **988** | **999** | 953 | 32,5 | 65 | 30 | $d_1$ + 24 | $d_1$ + 115 | 50 ± 12 | R | **990 VE R** |
| **1 025** | **1 075** | 955 | 6 | 10,5 | 6,5 | $d_1$ + 5 | $d_1$ + 20 | 8,0 ± 1,5 | R | **1050 VL R** |
| | | 955 | 6 | 10,5 | 6,5 | $d_1$ + 5 | $d_1$ + 20 | 8,0 ± 1,5 | V | **1050 VL V** |
| **1 015** | **1 065** | 955 | 14,3 | 25 | 15 | $d_1$ + 10 | $d_1$ + 45 | 20,0 ± 4 | R | **1050 VA R** |
| **999** | **1 010** | 963 | 32,5 | 65 | 30 | $d_1$ + 24 | $d_1$ + 115 | 50 ± 12 | R | **1000 VE R** |
| | | 963 | 67,5 | 100 | 13 | $d_1$ + 24 | $d_1$ + 115 | 85 ± 12 | R | **1000 VRM R** |
| **1 010** | **1 025** | 973 | 32,5 | 65 | 30 | $d_1$ + 24 | $d_1$ + 115 | 50 ± 12 | R | **1020 VE R** |
| **1 025** | **1 045** | 990 | 32,5 | 65 | 21 | $d_1$ + 24 | $d_1$ + 115 | 50 ± 12 | R | **1040 VRME R** |
| | | 990 | 32,5 | 65 | 30 | $d_1$ + 24 | $d_1$ + 115 | 50 ± 12 | R | **1040 VE R** |
| **1 075** | **1 125** | 1 000 | 6 | 10,5 | 6,5 | $d_1$ + 5 | $d_1$ + 20 | 8,0 ± 1,5 | R | **1100 VL R** |
| | | 1 000 | 6 | 10,5 | 6,5 | $d_1$ + 5 | $d_1$ + 20 | 8,0 ± 1,5 | V | **1100 VL V** |
| **1 065** | **1 115** | 1 000 | 14,3 | 25 | 15 | $d_1$ + 10 | $d_1$ + 45 | 20,0 ± 4 | R | **1100 VA R** |
| **1 045** | **1 065** | 1 008 | 32,5 | 65 | 30 | $d_1$ + 24 | $d_1$ + 115 | 50 ± 12 | R | **1060 VE R** |
| **1 065** | **1 085** | 1 027 | 32,5 | 65 | 30 | $d_1$ + 24 | $d_1$ + 115 | 50 ± 12 | R | **1080 VE R** |
| **1 125** | **1 175** | 1 045 | 6 | 10,5 | 6,5 | $d_1$ + 5 | $d_1$ + 20 | 8,0 ± 1,5 | R | **1150 VL R** |
| | | 1 045 | 6 | 10,5 | 6,5 | $d_1$ + 5 | $d_1$ + 20 | 8,0 ± 1,5 | V | **1150 VL V** |
| **1 115** | **1 165** | 1 045 | 14,3 | 25 | 15 | $d_1$ + 10 | $d_1$ + 45 | 20,0 ± 4 | R | **1150 VA R** |
| **1 085** | **1 105** | 1 045 | 32,5 | 65 | 30 | $d_1$ + 24 | $d_1$ + 115 | 50 ± 12 | R | **1100 VE R** |
| | | 1 045 | 67,5 | 100 | 13 | $d_1$ + 24 | $d_1$ + 115 | 85 ± 12 | R | **1100 VRM R** |
| **1 105** | **1 125** | 1 065 | 32,5 | 65 | 30 | $d_1$ + 24 | $d_1$ + 115 | 50 ± 12 | R | **1120 VE R** |
| **1 125** | **1 145** | 1 084 | 32,5 | 65 | 30 | $d_1$ + 24 | $d_1$ + 115 | 50 ± 12 | R | **1140 VE R** |
| **1 175** | **1 225** | 1 090 | 6 | 10,5 | 6,5 | $d_1$ + 5 | $d_1$ + 20 | 8,0 ± 1,5 | R | **1200 VL R** |
| **1 165** | **1 215** | 1 090 | 14,3 | 25 | 15 | $d_1$ + 10 | $d_1$ + 45 | 20,0 ± 4 | R | **1200 VA R** |
| **1 145** | **1 165** | 1 103 | 32,5 | 65 | 30 | $d_1$ + 24 | $d_1$ + 115 | 50 ± 12 | R | **1160 VE R** |

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

$d_1$ **1 165 – 1 775** mm



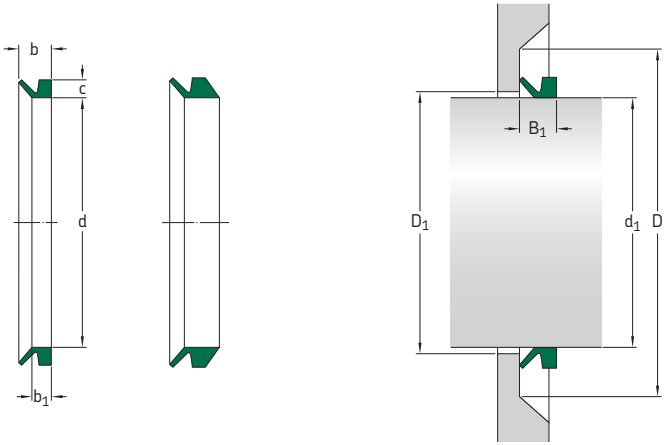

| Dimensions Shaft diameter range $d_1$ over | incl. | Seal inside diameter, free state d | Seal seat width $b_1$ | Nominal seal width b | Nominal seal height c | Clearance $D_1$ max | Counterface D min | Seal fitted width $B_1$ | Lip code | Designation |
|---|---|---|---|---|---|---|---|---|---|---|
| mm | | | | | | | | | – | – |
| **1 165** | **1 185** | 1 121 | 32,5 | 65 | 30 | $d_1$ + 24 | $d_1$ + 115 | 50 ± 12 | R | **1180 VE R** |
| **1 225** | **1 275** | 1 135 | 6 | 10,5 | 6,5 | $d_1$ + 5 | $d_1$ + 20 | 8,0 ± 1,5 | R | **1250 VL R** |
| | | 1 135 | 6 | 10,5 | 6,5 | $d_1$ + 5 | $d_1$ + 20 | 8,0 ± 1,5 | V | **1250 VL V** |
| **1 215** | **1 270** | 1 135 | 14,3 | 25 | 15 | $d_1$ + 10 | $d_1$ + 45 | 20,0 ± 4 | R | **1250 VA R** |
| **1 185** | **1 205** | 1 139 | 32,5 | 65 | 21 | $d_1$ + 24 | $d_1$ + 115 | 50 ± 12 | R | **1200 VRME R** |
| | | 1 139 | 32,5 | 65 | 30 | $d_1$ + 24 | $d_1$ + 115 | 50 ± 12 | R | **1200 VE R** |
| | | 1 139 | 67,5 | 100 | 13 | $d_1$ + 24 | $d_1$ + 115 | 85 ± 12 | R | **1200 VRM R** |
| **1 205** | **1 225** | 1 157 | 32,5 | 65 | 30 | $d_1$ + 24 | $d_1$ + 115 | 50 ± 12 | R | **1220 VE R** |
| **1 225** | **1 245** | 1 176 | 32,5 | 65 | 30 | $d_1$ + 24 | $d_1$ + 115 | 50 ± 12 | R | **1240 VE R** |
| **1 275** | **1 325** | 1 180 | 6 | 10,5 | 6,5 | $d_1$ + 5 | $d_1$ + 20 | 8,0 ± 1,5 | R | **1300 VL R** |
| | | 1 180 | 6 | 10,5 | 6,5 | $d_1$ + 5 | $d_1$ + 20 | 8,0 ± 1,5 | V | **1300 VL V** |
| **1 270** | **1 320** | 1 180 | 14,3 | 25 | 15 | $d_1$ + 10 | $d_1$ + 45 | 20,0 ± 4 | R | **1300 VA R** |
| **1 245** | **1 270** | 1 195 | 32,5 | 65 | 30 | $d_1$ + 24 | $d_1$ + 115 | 50 ± 12 | R | **1260 VE R** |
| **1 270** | **1 295** | 1 218 | 32,5 | 65 | 30 | $d_1$ + 24 | $d_1$ + 115 | 50 ± 12 | R | **1280 VE R** |
| **1 325** | **1 375** | 1 225 | 6 | 10,5 | 6,5 | $d_1$ + 5 | $d_1$ + 20 | 8,0 ± 1,5 | R | **1350 VL R** |
| | | 1 225 | 6 | 10,5 | 6,5 | $d_1$ + 5 | $d_1$ + 20 | 8,0 ± 1,5 | V | **1350 VL V** |
| **1 320** | **1 370** | 1 225 | 14,3 | 25 | 15 | $d_1$ + 10 | $d_1$ + 45 | 20,0 ± 4 | R | **1350 VA R** |
| **1 295** | **1 315** | 1 240 | 32,5 | 65 | 30 | $d_1$ + 24 | $d_1$ + 115 | 50 ± 12 | R | **1300 VE R** |
| | | 1 240 | 67,5 | 100 | 13 | $d_1$ + 24 | $d_1$ + 115 | 85 ± 12 | R | **1300 VRM R** |
| **1 315** | **1 340** | 1 259 | 32,5 | 65 | 30 | $d_1$ + 24 | $d_1$ + 115 | 50 ± 12 | R | **1325 VE R** |
| **1 375** | **1 425** | 1 270 | 6 | 10,5 | 6,5 | $d_1$ + 5 | $d_1$ + 20 | 8,0 ± 1,5 | R | **1400 VL R** |
| | | 1 270 | 6 | 10,5 | 6,5 | $d_1$ + 5 | $d_1$ + 20 | 8,0 ± 1,5 | V | **1400 VL V** |
| **1 370** | **1 420** | 1 270 | 14,3 | 25 | 15 | $d_1$ + 10 | $d_1$ + 45 | 20,0 ± 4 | R | **1400 VA R** |

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

| Dimensions | | | | | | | | | Lip code | Designation |
|---|---|---|---|---|---|---|---|---|---|---|
| Shaft diameter range | | Seal inside diameter, free state | Seal seat width | Nominal seal width | Nominal seal height | Clearance | Counterface | Seal fitted width | | |
| $d_1$ | | d | $b_1$ | b | c | $D_1$ | D | $B_1$ | | |
| over | incl. | | | | | max | min | | | |
| mm | | | | | | | | | – | – |
| **1 340** | **1 365** | 1 281 | 32,5 | 65 | 30 | $d_1$ + 24 | $d_1$ + 115 | 50 ± 12 | R | **1350 VE R** |
| | | 1 281 | 67,5 | 100 | 13 | $d_1$ + 24 | d1 + 115 | 85 ± 12 | R | **1350 VRM R** |
| **1 365** | **1 390** | 1 305 | 32,5 | 65 | 30 | $d_1$ + 24 | $d_1$ + 115 | 50 ± 12 | R | **1375 VE R** |
| **1 425** | **1 475** | 1 315 | 6 | 10,5 | 6,5 | $d_1$ + 5 | $d_1$ + 20 | 8,0 ± 1,5 | R | **1450 VL R** |
| | | 1 315 | 6 | 10,5 | 6,5 | $d_1$ + 5 | $d_1$ + 20 | 8,0 ± 1,5 | V | **1450 VL V** |
| **1 420** | **1 470** | 1 315 | 14,3 | 25 | 15 | $d_1$ + 10 | $d_1$ + 45 | 20,0 ± 4 | R | **1450 VA R** |
| **1 390** | **1 415** | 1 328 | 32,5 | 65 | 30 | $d_1$ + 24 | $d_1$ + 115 | 50 ± 12 | R | **1400 VE R** |
| | | 1 328 | 67,5 | 100 | 13 | $d_1$ + 24 | $d_1$ + 115 | 85 ± 12 | R | **1400 VRM R** |
| **1 415** | **1 440** | 1 350 | 32,5 | 65 | 21 | $d_1$ + 24 | $d_1$ + 115 | 50 ± 12 | R | **1425 VRME R** |
| | | 1 350 | 32,5 | 65 | 30 | $d_1$ + 24 | $d_1$ + 115 | 50 ± 12 | R | **1425 VE R** |
| **1 475** | **1 525** | 1 360 | 6 | 10,5 | 6,5 | $d_1$ + 5 | $d_1$ + 20 | 8,0 ± 1,5 | R | **1500 VL R** |
| | | 1 360 | 6 | 10,5 | 6,5 | $d_1$ + 5 | $d_1$ + 20 | 8,0 ± 1,5 | V | **1500 VL V** |
| **1 470** | **1 520** | 1 360 | 14,3 | 25 | 15 | $d_1$ + 10 | $d_1$ + 45 | 20,0 ± 4 | R | **1500 VA R** |
| **1 440** | **1 465** | 1 374 | 32,5 | 65 | 21 | $d_1$ + 24 | $d_1$ + 115 | 50 ± 12 | R | **1450 VRME R** |
| | | 1 374 | 32,5 | 65 | 30 | $d_1$ + 24 | $d_1$ + 115 | 50 ± 12 | R | **1450 VE R** |
| | | 1 374 | 67,5 | 100 | 13 | $d_1$ + 24 | $d_1$ + 115 | 85 ± 12 | R | **1450 VRM R** |
| **1 465** | **1 490** | 1 397 | 32,5 | 65 | 30 | $d_1$ + 24 | $d_1$ + 115 | 50 ± 12 | R | **1475 VE R** |
| **1 525** | **1 575** | 1 405 | 6 | 10,5 | 6,5 | $d_1$ + 5 | $d_1$ + 20 | 8,0 ± 1,5 | R | **1550 VL R** |
| | | 1 405 | 6 | 10,5 | 6,5 | $d_1$ + 5 | $d_1$ + 20 | 8,0 ± 1,5 | V | **1550 VL V** |
| **1 520** | **1 570** | 1 405 | 14,3 | 25 | 15 | $d_1$ + 10 | $d_1$ + 45 | 20,0 ± 4 | R | **1550 VA R** |
| **1 490** | **1 515** | 1 419 | 32,5 | 65 | 21 | $d_1$ + 24 | $d_1$ + 115 | 50 ± 12 | R | **1500 VRME R** |
| | | 1 419 | 32,5 | 65 | 30 | $d_1$ + 24 | $d_1$ + 115 | 50 ± 12 | R | **1500 VE R** |
| | | 1 419 | 67,5 | 100 | 13 | $d_1$ + 24 | $d_1$ + 115 | 85 ± 12 | R | **1500 VRM R** |
| **1 515** | **1 540** | 1 443 | 32,5 | 65 | 30 | $d_1$ + 24 | $d_1$ + 115 | 50 ± 12 | R | **1525 VE R** |
| **1 575** | **1 625** | 1 450 | 6 | 10,5 | 6,5 | $d_1$ + 5 | $d_1$ + 20 | 8,0 ± 1,5 | R | **1600 VL R** |
| | | 1 450 | 6 | 10,5 | 6,5 | $d_1$ + 5 | $d_1$ + 20 | 8,0 ± 1,5 | V | **1600 VL V** |
| **1 570** | **1 620** | 1 450 | 14,3 | 25 | 15 | $d_1$ + 10 | $d_1$ + 45 | 20,0 ± 4 | R | **1600 VA R** |
| **1 540** | **1 570** | 1 467 | 32,5 | 65 | 21 | $d_1$ + 24 | $d_1$ + 115 | 50 ± 12 | R | **1550 VRME R** |
| | | 1 467 | 32,5 | 65 | 30 | $d_1$ + 24 | $d_1$ + 115 | 50 ± 12 | R | **1550 VE R** |
| | | 1 467 | 67,5 | 100 | 13 | $d_1$ + 24 | $d_1$ + 115 | 85 ± 12 | R | **1550 VRM R** |
| **1 625** | **1 675** | 1 495 | 6 | 10,5 | 6,5 | $d_1$ + 5 | $d_1$ + 20 | 8,0 ± 1,5 | R | **1650 VL R** |
| | | 1 495 | 6 | 10,5 | 6,5 | $d_1$ + 5 | $d_1$ + 20 | 8,0 ± 1,5 | V | **1650 VL V** |
| **1 620** | **1 670** | 1 495 | 14,3 | 25 | 15 | $d_1$ + 10 | $d_1$ + 45 | 20,0 ± 4 | R | **1650 VA R** |
| **1 570** | **1 600** | 1 495 | 32,5 | 65 | 30 | $d_1$ + 24 | $d_1$ + 115 | 50 ± 12 | R | **1575 VE R** |
| **1 600** | **1 640** | 1 524 | 32,5 | 65 | 30 | $d_1$ + 24 | $d_1$ + 115 | 50 ± 12 | R | **1600 VE R** |
| | | 1 524 | 67,5 | 100 | 13 | $d_1$ + 24 | $d_1$ + 115 | 85 ± 12 | R | **1600 VRM R** |
| **1 675** | **1 725** | 1 540 | 6 | 10,5 | 6,5 | $d_1$ + 5 | $d_1$ + 20 | 8,0 ± 1,5 | R | **1700 VL R** |
| | | 1 540 | 6 | 10,5 | 6,5 | $d_1$ + 5 | $d_1$ + 20 | 8,0 ± 1,5 | V | **1700 VL V** |
| **1 670** | **1 720** | 1 540 | 14,3 | 25 | 15 | $d_1$ + 10 | $d_1$ + 45 | 20,0 ± 4 | R | **1700 VA R** |
| **1 640** | **1 680** | 1 559 | 32,5 | 65 | 30 | $d_1$ + 24 | $d_1$ + 115 | 50 ± 12 | R | **1650 VE R** |
| | | 1 559 | 67,5 | 100 | 13 | $d_1$ + 24 | $d_1$ + 115 | 85 ± 12 | R | **1650 VRM R** |
| **1 725** | **1 775** | 1 585 | 6 | 10,5 | 6,5 | $d_1$ + 5 | $d_1$ + 20 | 8,0 ± 1,5 | R | **1750 VL R** |
| | | 1 585 | 6 | 10,5 | 6,5 | $d_1$ + 5 | $d_1$ + 20 | 8,0 ± 1,5 | V | **1750 VL V** |

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

$d_1$ **1 720 – 2 010** mm



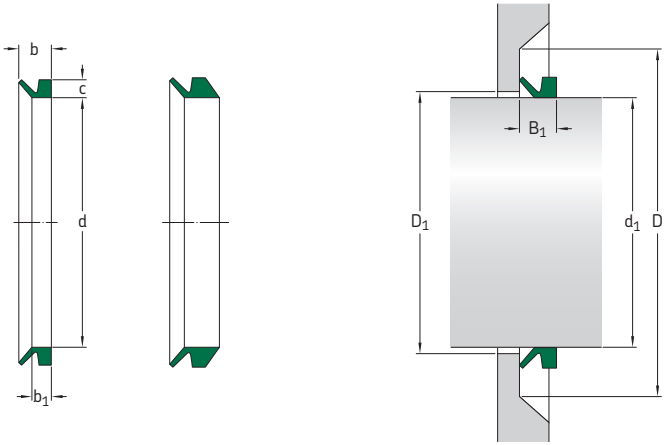

| Dimensions Shaft diameter range $d_1$ over | incl. | Seal inside diameter, free state d | Seal seat width $b_1$ | Nominal seal width b | Nominal seal height c | Clearance $D_1$ max | Counterface D min | Seal fitted width $B_1$ | Lip code | Designation |
|---|---|---|---|---|---|---|---|---|---|---|
| mm | | | | | | | | | – | – |
| **1 720** | **1 770** | 1 585 | 14,3 | 25 | 15 | $d_1$ + 10 | $d_1$ + 45 | 20,0 ± 4 | R | **1750 VA R** |
| **1 680** | **1 720** | 1 596 | 32,5 | 65 | 21 | $d_1$ + 24 | $d_1$ + 115 | 50 ± 12 | R | **1700 VRME R** |
| | | 1 596 | 32,5 | 65 | 30 | $d_1$ + 24 | $d_1$ + 115 | 50 ± 12 | R | **1700 VE R** |
| | | 1 596 | 67,5 | 100 | 13 | $d_1$ + 24 | $d_1$ + 115 | 85 ± 12 | R | **1700 VRM R** |
| **1 775** | **1 825** | 1 630 | 6 | 10,5 | 6,5 | $d_1$ + 5 | $d_1$ + 20 | 8,0 ± 1,5 | R | **1800 VL R** |
| | | 1 630 | 6 | 10,5 | 6,5 | $d_1$ + 5 | $d_1$ + 20 | 8,0 ± 1,5 | V | **1800 VL V** |
| **1 770** | **1 820** | 1 630 | 14,3 | 25 | 15 | $d_1$ + 10 | $d_1$ + 45 | 20,0 ± 4 | R | **1800 VA R** |
| **1 720** | **1 765** | 1 632 | 32,5 | 65 | 21 | $d_1$ + 24 | $d_1$ + 115 | 50 ± 12 | R | **1750 VRME R** |
| | | 1 632 | 32,5 | 65 | 30 | $d_1$ + 24 | $d_1$ + 115 | 50 ± 12 | R | **1750 VE R** |
| | | 1 632 | 67,5 | 100 | 13 | $d_1$ + 24 | $d_1$ + 115 | 85 ± 12 | R | **1750 VRM R** |
| **1 765** | **1 810** | 1 671 | 32,5 | 65 | 30 | $d_1$ + 24 | $d_1$ + 115 | 50 ± 12 | R | **1800 VE R** |
| | | 1 671 | 67,5 | 100 | 13 | $d_1$ + 24 | $d_1$ + 115 | 85 ± 12 | R | **1800 VRM R** |
| **1 825** | **1 875** | 1 675 | 6 | 10,5 | 6,5 | $d_1$ + 5 | $d_1$ + 20 | 8,0 ± 1,5 | R | **1850 VL R** |
| | | 1 675 | 6 | 10,5 | 6,5 | $d_1$ + 5 | $d_1$ + 20 | 8,0 ± 1,5 | V | **1850 VL V** |
| **1 820** | **1 870** | 1 675 | 14,3 | 25 | 15 | $d_1$ + 10 | $d_1$ + 45 | 20,0 ± 4 | R | **1850 VA R** |
| **1 810** | **1 855** | 1 714 | 32,5 | 65 | 21 | $d_1$ + 24 | $d_1$ + 115 | 50 ± 12 | R | **1800 VRME R** |
| | | 1 714 | 32,5 | 65 | 30 | $d_1$ + 24 | $d_1$ + 115 | 50 ± 12 | R | **1850 VE R** |
| | | 1 714 | 67,5 | 100 | 13 | $d_1$ + 24 | $d_1$ + 115 | 85 ± 12 | R | **1850 VRM R** |
| **1 875** | **1 925** | 1 720 | 6 | 10,5 | 6,5 | $d_1$ + 5 | $d_1$ + 20 | 8,0 ± 1,5 | R | **1900 VL R** |
| | | 1 720 | 6 | 10,5 | 6,5 | $d_1$ + 5 | $d_1$ + 20 | 8,0 ± 1,5 | V | **1900 VL V** |
| **1 870** | **1 920** | 1 720 | 14,3 | 25 | 15 | $d_1$ + 10 | $d_1$ + 45 | 20,0 ± 4 | R | **1900 VA R** |
| **1 855** | **1 905** | 1 753 | 32,5 | 65 | 21 | $d_1$ + 24 | $d_1$ + 115 | 50 ± 12 | R | **1900 VRME R** |
| | | 1 753 | 32,5 | 65 | 30 | $d_1$ + 24 | $d_1$ + 115 | 50 ± 12 | R | **1900 VE R** |
| | | 1 753 | 67,5 | 100 | 13 | $d_1$ + 24 | $d_1$ + 115 | 85 ± 12 | R | **1900 VRM R** |
| **1 925** | **1 975** | 1 765 | 6 | 10,5 | 6,5 | $d_1$ + 5 | $d_1$ + 20 | 8,0 ± 1,5 | R | **1950 VL R** |
| | | 1 765 | 6 | 10,5 | 6,5 | $d_1$ + 5 | $d_1$ + 20 | 8,0 ± 1,5 | V | **1950 VL V** |

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

| Dimensions | | | | | | | | | Lip code | Designation |
|---|---|---|---|---|---|---|---|---|---|---|
| Shaft diameter range | | Seal inside diameter, free state | Seal seat width | Nominal seal width | Nominal seal height | Clearance | Counterface | Seal fitted width | | |
| $d_1$ | | d | $b_1$ | b | c | $D_1$ | D | $B_1$ | | |
| over | incl. | | | | | max | min | | | |
| mm | | | | | | | | | – | – |
| **1 920** | **1 970** | 1 765 | 14,3 | 25 | 15 | $d_1$ + 10 | $d_1$ + 45 | 20,0 ± 4 | R | **1950 VA R** |
| **1 905** | **1 955** | 1 794 | 32,5 | 65 | 21 | $d_1$ + 24 | $d_1$ + 115 | 50 ± 12 | R | **1950 VRME R** |
| | | 1 794 | 32,5 | 65 | 30 | $d_1$ + 24 | $d_1$ + 115 | 50 ± 12 | R | **1950 VE R** |
| | | 1 794 | 67,5 | 100 | 13 | $d_1$ + 24 | $d_1$ + 115 | 85 ± 12 | R | **1950 VRM R** |
| **1 975** | **2 025** | 1 810 | 6 | 10,5 | 6,5 | $d_1$ + 5 | $d_1$ + 20 | 8,0 ± 1,5 | R | **2000 VL R** |
| | | 1 810 | 6 | 10,5 | 6,5 | $d_1$ + 5 | $d_1$ + 20 | 8,0 ± 1,5 | V | **2000 VL V** |
| **1 970** | **2 020** | 1 810 | 14,3 | 25 | 15 | $d_1$ + 10 | $d_1$ + 45 | 20,0 ± 4 | R | **2000 VA R** |
| **1 955** | **2 010** | 1 844 | 32,5 | 65 | 30 | $d_1$ + 24 | $d_1$ + 115 | 50 ± 12 | R | **2000 VE R** |
| | | 1 844 | 67,5 | 100 | 13 | $d_1$ + 24 | $d_1$ + 115 | 85 ± 12 | R | **2000 VRM R** |

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

$d_1$ **0.110 – 1.890** in.



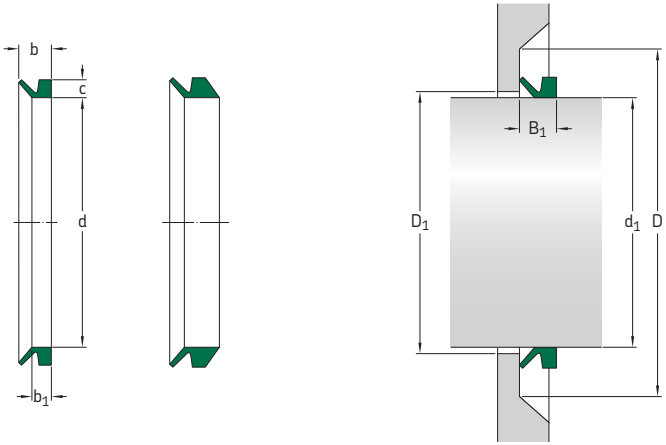

| Dimensions Shaft diameter range $d_1$ over | incl. | Ref. metric dim. | Seal inside diameter, free state d | Seal seat width $b_1$ | Nominal seal width b | Nominal seal height c | Clearance $D_1$ max | Counterface D min | Seal fitted width $B_1$ | Lip code | Designation |
|---|---|---|---|---|---|---|---|---|---|---|---|
| in. | | mm | in. | | | | | | | – | – |
| **0.110** | **0.140** | 3 | 0.100 | 0.060 | 0.080 | 0.120 | 0.040 | 0.160 | 0.100 ± 0.012 | R | **3 VA R** |
| | | 3 | 0.100 | 0.060 | 0.080 | 0.120 | 0.040 | 0.160 | 0.100 ± 0.012 | V | **3 VA V** |
| **0.140** | **0.180** | 4 | 0.130 | 0.080 | 0.090 | 0.150 | 0.040 | 0.240 | 0.120 ± 0.016 | R | **4 VA R** |
| | | 4 | 0.130 | 0.080 | 0.090 | 0.150 | 0.040 | 0.240 | 0.120 ± 0.016 | V | **4 VA V** |
| **0.180** | **0.210** | 5 | 0.160 | 0.080 | 0.090 | 0.150 | 0.040 | 0.240 | 0.120 ± 0.016 | R | **5 VA R** |
| | | 5 | 0.160 | 0.080 | 0.150 | 0.200 | 0.040 | 0.240 | 0.180 ± 0.016 | R | **5 VS R** |
| | | 5 | 0.160 | 0.080 | 0.090 | 0.150 | 0.040 | 0.240 | 0.120 ± 0.016 | V | **5 VA V** |
| | | 5 | 0.160 | 0.080 | 0.150 | 0.200 | 0.040 | 0.240 | 0.180 ± 0.016 | V | **5 VS V** |
| **0.210** | **0.260** | 6 | 0.200 | 0.080 | 0.090 | 0.150 | 0.040 | 0.240 | 0.120 ± 0.016 | R | **6 VA R** |
| | | 6 | 0.200 | 0.080 | 0.150 | 0.200 | 0.040 | 0.240 | 0.180 ± 0.016 | R | **6 VS R** |
| | | 6 | 0.200 | 0.080 | 0.090 | 0.150 | 0.040 | 0.240 | 0.120 ± 0.016 | V | **6 VA V** |
| | | 6 | 0.200 | 0.080 | 0.150 | 0.200 | 0.040 | 0.240 | 0.180 ± 0.016 | V | **6 VS V** |
| **0.260** | **0.310** | 7 | 0.240 | 0.080 | 0.090 | 0.150 | 0.040 | 0.240 | 0.120 ± 0.016 | R | **7 VA R** |
| | | 7 | 0.240 | 0.080 | 0.150 | 0.200 | 0.040 | 0.240 | 0.180 ± 0.016 | R | **7 VS R** |
| | | 7 | 0.240 | 0.080 | 0.090 | 0.150 | 0.040 | 0.240 | 0.120 ± 0.016 | V | **7 VA V** |
| | | 7 | 0.240 | 0.080 | 0.150 | 0.200 | 0.040 | 0.240 | 0.180 ± 0.016 | V | **7 VS V** |
| **0.310** | **0.370** | 8 | 0.280 | 0.080 | 0.090 | 0.150 | 0.040 | 0.240 | 0.120 ± 0.016 | R | **8 VA R** |
| | | 8 | 0.280 | 0.080 | 0.150 | 0.200 | 0.040 | 0.240 | 0.180 ± 0.016 | R | **8 VS R** |
| | | 8 | 0.280 | 0.080 | 0.090 | 0.150 | 0.040 | 0.240 | 0.120 ± 0.016 | V | **8 VA V** |
| | | 8 | 0.280 | 0.080 | 0.150 | 0.200 | 0.040 | 0.240 | 0.180 ± 0.016 | V | **8 VS V** |
| **0.370** | **0.450** | 10 | 0.350 | 0.120 | 0.130 | 0.220 | 0.080 | 0.350 | 0.180 ± 0.020 | R | **10 VA R** |
| | | 10 | 0.350 | 0.120 | 0.220 | 0.300 | 0.080 | 0.350 | 0.260 ± 0.020 | R | **10 VS R** |
| | | 10 | 0.350 | 0.120 | 0.130 | 0.220 | 0.080 | 0.350 | 0.180 ± 0.020 | V | **10 VA V** |
| | | 10 | 0.350 | 0.120 | 0.220 | 0.300 | 0.080 | 0.350 | 0.260 ± 0.020 | V | **10 VS V** |
| **0.450** | **0.530** | 12 | 0.410 | 0.120 | 0.130 | 0.220 | 0.080 | 0.350 | 0.180 ± 0.020 | R | **12 VA R** |
| | | 12 | 0.410 | 0.120 | 0.220 | 0.300 | 0.080 | 0.350 | 0.260 ± 0.020 | R | **12 VS R** |
| | | 12 | 0.410 | 0.120 | 0.130 | 0.220 | 0.080 | 0.350 | 0.180 ± 0.020 | V | **12 VA V** |
| | | 12 | 0.410 | 0.120 | 0.220 | 0.300 | 0.080 | 0.350 | 0.260 ± 0.020 | V | **12 VS V** |
| **0.490** | **0.570** | 13 | 0.450 | 0.120 | 0.130 | 0.220 | 0.080 | 0.350 | 0.180 ± 0.020 | R | **13 VA R** |
| | | 13 | 0.450 | 0.120 | 0.130 | 0.220 | 0.080 | 0.350 | 0.180 ± 0.020 | V | **13 VA V** |

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

| Dimensions Shaft diameter range $d_1$ over | incl. | Ref. metric dim. | 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 |
|---|---|---|---|---|---|---|---|---|---|---|---|
| in. | | mm | in. | | | | | | | – | – |
| **0.530** | **0.610** | 14 | 0.490 | 0.120 | 0.130 | 0.220 | 0.080 | 0.350 | 0.180 ± 0.020 | R | **14 VA R** |
| | | 14 | 0.490 | 0.120 | 0.220 | 0.300 | 0.080 | 0.350 | 0.260 ± 0.020 | R | **14 VS R** |
| | | 14 | 0.490 | 0.120 | 0.130 | 0.220 | 0.080 | 0.350 | 0.180 ± 0.020 | V | **14 VA V** |
| | | 14 | 0.490 | 0.120 | 0.220 | 0.300 | 0.080 | 0.350 | 0.260 ± 0.020 | V | **14 VS V** |
| **0.610** | **0.690** | 16 | 0.550 | 0.120 | 0.130 | 0.220 | 0.080 | 0.350 | 0.180 ± 0.020 | R | **16 VA R** |
| | | 16 | 0.550 | 0.120 | 0.220 | 0.300 | 0.080 | 0.350 | 0.260 ± 0.020 | R | **16 VS R** |
| | | 16 | 0.550 | 0.120 | 0.130 | 0.220 | 0.080 | 0.350 | 0.180 ± 0.020 | V | **16 VA V** |
| | | 16 | 0.550 | 0.120 | 0.220 | 0.300 | 0.080 | 0.350 | 0.260 ± 0.020 | V | **16 VS V** |
| **0.690** | **0.750** | 18 | 0.630 | 0.120 | 0.130 | 0.220 | 0.080 | 0.350 | 0.180 ± 0.020 | R | **18 VA R** |
| | | 18 | 0.630 | 0.120 | 0.130 | 0.220 | 0.080 | 0.350 | 0.180 ± 0.020 | V | **18 VA V** |
| **0.690** | **0.770** | 18 | 0.630 | 0.120 | 0.220 | 0.300 | 0.080 | 0.350 | 0.260 ± 0.020 | R | **18 VS R** |
| | | 18 | 0.630 | 0.120 | 0.220 | 0.300 | 0.080 | 0.350 | 0.260 ± 0.020 | V | **18 VS V** |
| **0.750** | **0.830** | 20 | 0.710 | 0.160 | 0.190 | 0.300 | 0.080 | 0.470 | 0.240 ± 0.030 | R | **20 VA R** |
| | | 20 | 0.710 | 0.160 | 0.190 | 0.300 | 0.080 | 0.470 | 0.240 ± 0.030 | V | **20 VA V** |
| **0.770** | **0.830** | 20 | 0.710 | 0.160 | 0.310 | 0.410 | 0.080 | 0.470 | 0.350 ± 0.030 | R | **20 VS R** |
| | | 20 | 0.710 | 0.160 | 0.310 | 0.410 | 0.080 | 0.470 | 0.350 ± 0.030 | V | **20 VS V** |
| **0.830** | **0.950** | 22 | 0.790 | 0.160 | 0.190 | 0.300 | 0.080 | 0.470 | 0.240 ± 0.030 | R | **22 VA R** |
| | | 22 | 0.790 | 0.160 | 0.310 | 0.410 | 0.080 | 0.470 | 0.350 ± 0.030 | R | **22 VS R** |
| | | 22 | 0.790 | 0.160 | 0.190 | 0.300 | 0.080 | 0.470 | 0.240 ± 0.030 | V | **22 VA V** |
| | | 22 | 0.790 | 0.160 | 0.310 | 0.410 | 0.080 | 0.470 | 0.350 ± 0.030 | V | **22 VS V** |
| **0.950** | **1.070** | 25 | 0.870 | 0.160 | 0.190 | 0.300 | 0.080 | 0.470 | 0.240 ± 0.030 | R | **25 VA R** |
| | | 25 | 0.870 | 0.160 | 0.310 | 0.410 | 0.080 | 0.470 | 0.350 ± 0.030 | R | **25 VS R** |
| | | 25 | 0.870 | 0.160 | 0.190 | 0.300 | 0.080 | 0.470 | 0.240 ± 0.030 | V | **25 VA V** |
| | | 25 | 0.870 | 0.160 | 0.310 | 0.410 | 0.080 | 0.470 | 0.350 ± 0.030 | V | **25 VS V** |
| **1.070** | **1.140** | 28 | 0.980 | 0.160 | 0.190 | 0.300 | 0.120 | 0.470 | 0.240 ± 0.030 | R | **28 VA R** |
| | | 28 | 0.980 | 0.160 | 0.310 | 0.410 | 0.120 | 0.470 | 0.350 ± 0.030 | R | **28 VS R** |
| | | 28 | 0.980 | 0.160 | 0.190 | 0.300 | 0.120 | 0.470 | 0.240 ± 0.030 | V | **28 VA V** |
| | | 28 | 0.980 | 0.160 | 0.310 | 0.410 | 0.120 | 0.470 | 0.350 ± 0.030 | V | **28 VS V** |
| **1.140** | **1.220** | 30 | 1.060 | 0.160 | 0.190 | 0.300 | 0.120 | 0.470 | 0.240 ± 0.030 | R | **30 VA R** |
| | | 30 | 1.060 | 0.160 | 0.310 | 0.410 | 0.120 | 0.470 | 0.350 ± 0.030 | R | **30 VS R** |
| | | 30 | 1.060 | 0.160 | 0.190 | 0.300 | 0.120 | 0.470 | 0.240 ± 0.030 | V | **30 VA V** |
| | | 30 | 1.060 | 0.160 | 0.310 | 0.410 | 0.120 | 0.470 | 0.350 ± 0.030 | V | **30 VS V** |
| **1.220** | **1.300** | 32 | 1.140 | 0.160 | 0.190 | 0.300 | 0.120 | 0.470 | 0.240 ± 0.030 | R | **32 VA R** |
| | | 32 | 1.140 | 0.160 | 0.310 | 0.410 | 0.120 | 0.470 | 0.350 ± 0.030 | R | **32 VS R** |
| | | 32 | 1.140 | 0.160 | 0.190 | 0.300 | 0.120 | 0.470 | 0.240 ± 0.030 | V | **32 VA V** |
| | | 32 | 1.140 | 0.160 | 0.310 | 0.410 | 0.120 | 0.470 | 0.350 ± 0.030 | V | **32 VS V** |
| **1.300** | **1.420** | 35 | 1.220 | 0.160 | 0.190 | 0.300 | 0.120 | 0.470 | 0.240 ± 0.030 | R | **35 VA R** |
| | | 35 | 1.220 | 0.160 | 0.310 | 0.410 | 0.120 | 0.470 | 0.350 ± 0.030 | R | **35 VS R** |
| | | 35 | 1.220 | 0.160 | 0.190 | 0.300 | 0.120 | 0.470 | 0.240 ± 0.030 | V | **35 VA V** |
| | | 35 | 1.220 | 0.160 | 0.310 | 0.410 | 0.120 | 0.470 | 0.350 ± 0.030 | V | **35 VS V** |
| **1.420** | **1.500** | 38 | 1.340 | 0.160 | 0.190 | 0.300 | 0.120 | 0.470 | 0.240 ± 0.030 | R | **38 VA R** |
| | | 38 | 1.340 | 0.160 | 0.310 | 0.410 | 0.120 | 0.470 | 0.350 ± 0.030 | R | **38 VS R** |
| | | 38 | 1.340 | 0.160 | 0.190 | 0.300 | 0.120 | 0.470 | 0.240 ± 0.030 | V | **38 VA V** |
| | | 38 | 1.340 | 0.160 | 0.310 | 0.410 | 0.120 | 0.470 | 0.350 ± 0.030 | V | **38 VS V** |
| **1.500** | **1.700** | 40 | 1.420 | 0.200 | 0.220 | 0.350 | 0.120 | 0.590 | 0.280 ± 0.040 | R | **40 VA R** |
| | | 40 | 1.420 | 0.200 | 0.370 | 0.510 | 0.120 | 0.590 | 0.430 ± 0.040 | R | **40 VS R** |
| | | 40 | 1.420 | 0.200 | 0.220 | 0.350 | 0.120 | 0.590 | 0.280 ± 0.040 | V | **40 VA V** |
| | | 40 | 1.420 | 0.200 | 0.370 | 0.510 | 0.120 | 0.590 | 0.430 ± 0.040 | V | **40 VS V** |
| **1.700** | **1.890** | 45 | 1.570 | 0.200 | 0.220 | 0.350 | 0.120 | 0.590 | 0.280 ± 0.040 | R | **45 VA R** |
| | | 45 | 1.570 | 0.200 | 0.370 | 0.510 | 0.120 | 0.590 | 0.430 ± 0.040 | R | **45 VS R** |
| | | 45 | 1.570 | 0.200 | 0.220 | 0.350 | 0.120 | 0.590 | 0.280 ± 0.040 | V | **45 VA V** |
| | | 45 | 1.570 | 0.200 | 0.370 | 0.510 | 0.120 | 0.590 | 0.430 ± 0.040 | V | **45 VS V** |

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

$d_1$ **1.890 – 7.290** in.



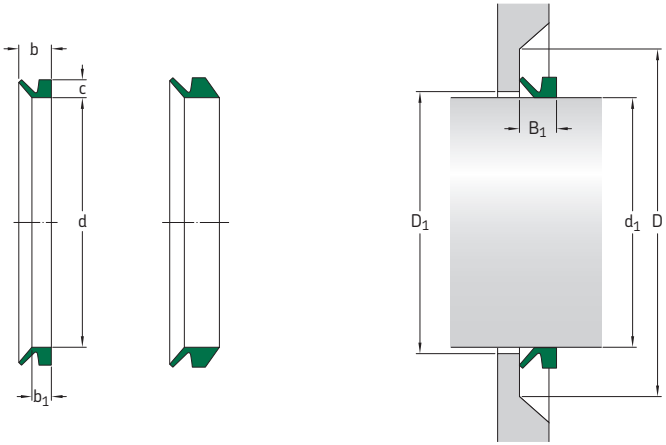

| Dimensions Shaft diameter range $d_1$ over | incl. | Ref. metric dim. | Seal inside diameter, free state d | Seal seat width $b_1$ | Nominal seal width b | Nominal seal height c | Clearance $D_1$ max | Counterface D min | Seal fitted width $B_1$ | Lip code | Designation |
|---|---|---|---|---|---|---|---|---|---|---|---|
| in. | | mm | in. | | | | | | | – | – |
| **1.890** | **2.090** | 50 | 1.770 | 0.200 | 0.220 | 0.350 | 0.120 | 0.590 | 0.280 ± 0.040 | R | **50 VA R** |
| | | 50 | 1.770 | 0.200 | 0.370 | 0.510 | 0.120 | 0.590 | 0.430 ± 0.040 | R | **50 VS R** |
| | | 50 | 1.770 | 0.200 | 0.220 | 0.350 | 0.120 | 0.590 | 0.280 ± 0.040 | V | **50 VA V** |
| | | 50 | 1.770 | 0.200 | 0.370 | 0.510 | 0.120 | 0.590 | 0.430 ± 0.040 | V | **50 VS V** |
| **2.090** | **2.290** | 55 | 1.930 | 0.200 | 0.220 | 0.350 | 0.120 | 0.590 | 0.280 ± 0.040 | R | **55 VA R** |
| | | 55 | 1.930 | 0.200 | 0.370 | 0.510 | 0.120 | 0.590 | 0.430 ± 0.040 | R | **55 VS R** |
| | | 55 | 1.930 | 0.200 | 0.220 | 0.350 | 0.120 | 0.590 | 0.280 ± 0.040 | V | **55 VA V** |
| | | 55 | 1.930 | 0.200 | 0.370 | 0.510 | 0.120 | 0.590 | 0.430 ± 0.040 | V | **55 VS V** |
| **2.290** | **2.480** | 60 | 2.130 | 0.200 | 0.220 | 0.350 | 0.120 | 0.590 | 0.280 ± 0.040 | R | **60 VA R** |
| | | 60 | 2.130 | 0.200 | 0.370 | 0.510 | 0.120 | 0.590 | 0.430 ± 0.040 | R | **60 VS R** |
| | | 60 | 2.130 | 0.200 | 0.220 | 0.350 | 0.120 | 0.590 | 0.280 ± 0.040 | V | **60 VA V** |
| | | 60 | 2.130 | 0.200 | 0.370 | 0.510 | 0.120 | 0.590 | 0.430 ± 0.040 | V | **60 VS V** |
| **2.480** | **2.680** | 65 | 2.280 | 0.200 | 0.220 | 0.350 | 0.120 | 0.590 | 0.280 ± 0.040 | R | **65 VA R** |
| | | 65 | 2.280 | 0.200 | 0.370 | 0.510 | 0.120 | 0.590 | 0.430 ± 0.040 | R | **65 VS R** |
| | | 65 | 2.280 | 0.200 | 0.220 | 0.350 | 0.120 | 0.590 | 0.280 ± 0.040 | V | **65 VA V** |
| | | 65 | 2.280 | 0.200 | 0.370 | 0.510 | 0.120 | 0.590 | 0.430 ± 0.040 | V | **65 VS V** |
| **2.680** | **2.880** | 70 | 2.480 | 0.240 | 0.270 | 0.430 | 0.160 | 0.710 | 0.350 ± 0.050 | R | **70 VA R** |
| | | 70 | 2.480 | 0.240 | 0.440 | 0.610 | 0.160 | 0.710 | 0.530 ± 0.050 | R | **70 VS R** |
| | | 70 | 2.480 | 0.240 | 0.270 | 0.430 | 0.160 | 0.710 | 0.350 ± 0.050 | V | **70 VA V** |
| | | 70 | 2.480 | 0.240 | 0.440 | 0.610 | 0.160 | 0.710 | 0.530 ± 0.050 | V | **70 VS V** |
| **2.880** | **3.070** | 75 | 2.640 | 0.240 | 0.270 | 0.430 | 0.160 | 0.710 | 0.350 ± 0.050 | R | **75 VA R** |
| | | 75 | 2.640 | 0.240 | 0.440 | 0.610 | 0.160 | 0.710 | 0.530 ± 0.050 | R | **75 VS R** |
| | | 75 | 2.640 | 0.240 | 0.270 | 0.430 | 0.160 | 0.710 | 0.350 ± 0.050 | V | **75 VA V** |
| | | 75 | 2.640 | 0.240 | 0.440 | 0.610 | 0.160 | 0.710 | 0.530 ± 0.050 | V | **75 VS V** |
| **3.070** | **3.270** | 80 | 2.830 | 0.240 | 0.270 | 0.430 | 0.160 | 0.710 | 0.350 ± 0.050 | R | **80 VA R** |
| | | 80 | 2.830 | 0.240 | 0.440 | 0.610 | 0.160 | 0.710 | 0.530 ± 0.050 | R | **80 VS R** |
| | | 80 | 2.830 | 0.240 | 0.270 | 0.430 | 0.160 | 0.710 | 0.350 ± 0.050 | V | **80 VA V** |
| | | 80 | 2.830 | 0.240 | 0.440 | 0.610 | 0.160 | 0.710 | 0.530 ± 0.050 | V | **80 VS V** |
| **3.270** | **3.470** | 85 | 2.990 | 0.240 | 0.270 | 0.430 | 0.160 | 0.710 | 0.350 ± 0.050 | R | **85 VA R** |
| | | 85 | 2.940 | 0.240 | 0.440 | 0.610 | 0.160 | 0.710 | 0.530 ± 0.050 | R | **85 VS R** |
| | | 85 | 2.990 | 0.240 | 0.270 | 0.430 | 0.160 | 0.710 | 0.350 ± 0.050 | V | **85 VA V** |
| | | 85 | 2.940 | 0.240 | 0.440 | 0.610 | 0.160 | 0.710 | 0.530 ± 0.050 | V | **85 VS V** |

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

| Dimensions Shaft diameter range $d_1$ over | incl. | Ref. metric dim. | 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 |
|---|---|---|---|---|---|---|---|---|---|---|---|
| in. | | mm | in. | | | | | | | – | – |
| **3.470** | **3.660** | 90 | 3.190 | 0.240 | 0.270 | 0.430 | 0.160 | 0.710 | 0.350 ± 0.050 | R | **90 VA R** |
| | | 90 | 3.190 | 0.240 | 0.440 | 0.610 | 0.160 | 0.710 | 0.530 ± 0.050 | R | **90 VS R** |
| | | 90 | 3.190 | 0.240 | 0.270 | 0.430 | 0.160 | 0.710 | 0.350 ± 0.050 | V | **90 VA V** |
| | | 90 | 3.190 | 0.240 | 0.440 | 0.610 | 0.160 | 0.710 | 0.530 ± 0.050 | V | **90 VS V** |
| **3.660** | **3.860** | 95 | 3.350 | 0.240 | 0.270 | 0.430 | 0.160 | 0.710 | 0.350 ± 0.050 | R | **95 VA R** |
| | | 95 | 3.350 | 0.240 | 0.440 | 0.610 | 0.160 | 0.710 | 0.530 ± 0.050 | R | **95 VS R** |
| | | 95 | 3.350 | 0.240 | 0.270 | 0.430 | 0.160 | 0.710 | 0.350 ± 0.050 | V | **95 VA V** |
| | | 95 | 3.350 | 0.240 | 0.440 | 0.610 | 0.160 | 0.710 | 0.530 ± 0.050 | V | **95 VS V** |
| **3.860** | **4.140** | 100 | 3.540 | 0.240 | 0.270 | 0.430 | 0.160 | 0.710 | 0.350 ± 0.050 | R | **100 VA R** |
| | | 100 | 3.540 | 0.240 | 0.440 | 0.610 | 0.160 | 0.710 | 0.530 ± 0.050 | R | **100 VS R** |
| | | 100 | 3.540 | 0.240 | 0.270 | 0.430 | 0.160 | 0.710 | 0.350 ± 0.050 | V | **100 VA V** |
| | | 100 | 3.540 | 0.240 | 0.440 | 0.610 | 0.160 | 0.710 | 0.530 ± 0.050 | V | **100 VS V** |
| **4.140** | **4.530** | 110 | 3.900 | 0.280 | 0.310 | 0.500 | 0.160 | 0.830 | 0.410 ± 0.060 | R | **110 VA R** |
| | | 110 | 3.900 | 0.280 | 0.520 | 0.710 | 0.160 | 0.830 | 0.610 ± 0.060 | R | **110 VS R** |
| | | 110 | 3.900 | 0.280 | 0.310 | 0.500 | 0.160 | 0.830 | 0.410 ± 0.060 | V | **110 VA V** |
| | | 110 | 3.900 | 0.280 | 0.520 | 0.710 | 0.160 | 0.830 | 0.610 ± 0.060 | V | **110 VS V** |
| **4.530** | **4.920** | 120 | 4.250 | 0.280 | 0.310 | 0.500 | 0.160 | 0.830 | 0.410 ± 0.060 | R | **120 VA R** |
| | | 120 | 4.250 | 0.280 | 0.520 | 0.710 | 0.160 | 0.830 | 0.610 ± 0.060 | R | **120 VS R** |
| | | 120 | 4.250 | 0.260 | 0.240 | 0.410 | 0.200 | 0.800 | 0.315 ± 0.060 | V | **120 VL R** |
| | | 120 | 4.250 | 0.280 | 0.310 | 0.500 | 0.160 | 0.830 | 0.410 ± 0.060 | V | **120 VA V** |
| | | 120 | 4.250 | 0.280 | 0.520 | 0.710 | 0.160 | 0.830 | 0.610 ± 0.060 | V | **120 VS V** |
| **4.920** | **5.320** | 130 | 4.610 | 0.280 | 0.310 | 0.500 | 0.160 | 0.830 | 0.410 ± 0.060 | R | **130 VA R** |
| | | 130 | 4.610 | 0.280 | 0.520 | 0.710 | 0.160 | 0.830 | 0.610 ± 0.060 | R | **130 VS R** |
| | | 130 | 4.610 | 0.280 | 0.310 | 0.500 | 0.160 | 0.830 | 0.410 ± 0.060 | V | **130 VA V** |
| | | 130 | 4.610 | 0.280 | 0.520 | 0.710 | 0.160 | 0.830 | 0.610 ± 0.060 | V | **130 VS V** |
| **5.320** | **5.710** | 140 | 4.960 | 0.280 | 0.310 | 0.500 | 0.160 | 0.830 | 0.410 ± 0.060 | R | **140 VA R** |
| | | 140 | 4.960 | 0.280 | 0.520 | 0.710 | 0.160 | 0.830 | 0.610 ± 0.060 | R | **140 VS R** |
| | | 140 | 4.960 | 0.260 | 0.240 | 0.410 | 0.200 | 0.800 | 0.310 ± 0.060 | R | **140 VL R** |
| | | 140 | 4.960 | 0.280 | 0.310 | 0.500 | 0.160 | 0.830 | 0.410 ± 0.060 | V | **140 VA V** |
| | | 140 | 4.960 | 0.280 | 0.520 | 0.710 | 0.160 | 0.830 | 0.610 ± 0.060 | V | **140 VS V** |
| | | 140 | 4.960 | 0.260 | 0.240 | 0.410 | 0.200 | 0.800 | 0.310 ± 0.060 | V | **140 VL V** |
| **5.710** | **6.100** | 150 | 5.310 | 0.280 | 0.310 | 0.500 | 0.160 | 0.830 | 0.410 ± 0.060 | R | **150 VA R** |
| | | 150 | 5.310 | 0.280 | 0.520 | 0.710 | 0.160 | 0.830 | 0.610 ± 0.060 | R | **150 VS R** |
| | | 150 | 5.310 | 0.260 | 0.240 | 0.410 | 0.200 | 0.800 | 0.310 ± 0.060 | R | **150 VL R** |
| | | 150 | 5.310 | 0.280 | 0.310 | 0.500 | 0.160 | 0.830 | 0.410 ± 0.060 | V | **150 VA V** |
| | | 150 | 5.310 | 0.280 | 0.520 | 0.710 | 0.160 | 0.830 | 0.610 ± 0.060 | V | **150 VS V** |
| | | 150 | 5.310 | 0.260 | 0.240 | 0.410 | 0.200 | 0.800 | 0.310 ± 0.060 | V | **150 VL V** |
| **6.100** | **6.500** | 160 | 5.670 | 0.310 | 0.350 | 0.570 | 0.200 | 0.940 | 0.470 ± 0.070 | R | **160 VA R** |
| | | 160 | 5.670 | 0.310 | 0.590 | 0.810 | 0.200 | 0.940 | 0.710 ± 0.070 | R | **160 VS R** |
| | | 160 | 5.670 | 0.260 | 0.240 | 0.410 | 0.200 | 0.800 | 0.310 ± 0.060 | R | **160 VL R** |
| | | 160 | 5.670 | 0.310 | 0.350 | 0.570 | 0.200 | 0.940 | 0.470 ± 0.070 | V | **160 VA V** |
| | | 160 | 5.670 | 0.310 | 0.590 | 0.810 | 0.200 | 0.940 | 0.710 ± 0.070 | V | **160 VS V** |
| | | 160 | 5.670 | 0.260 | 0.240 | 0.410 | 0.200 | 0.800 | 0.310 ± 0.060 | V | **160 VL V** |
| **6.500** | **6.890** | 170 | 6.020 | 0.310 | 0.350 | 0.570 | 0.200 | 0.940 | 0.470 ± 0.070 | R | **170 VA R** |
| | | 170 | 6.020 | 0.310 | 0.590 | 0.810 | 0.200 | 0.940 | 0.710 ± 0.070 | R | **170 VS R** |
| | | 170 | 6.020 | 0.260 | 0.240 | 0.410 | 0.200 | 0.800 | 0.310 ± 0.060 | R | **170 VL R** |
| | | 170 | 6.020 | 0.310 | 0.350 | 0.570 | 0.200 | 0.940 | 0.470 ± 0.070 | V | **170 VA V** |
| | | 170 | 6.020 | 0.310 | 0.590 | 0.810 | 0.200 | 0.940 | 0.710 ± 0.070 | V | **170 VS V** |
| | | 170 | 6.020 | 0.260 | 0.240 | 0.410 | 0.200 | 0.800 | 0.310 ± 0.060 | V | **170 VL V** |
| **6.890** | **7.290** | 180 | 6.380 | 0.310 | 0.350 | 0.570 | 0.200 | 0.940 | 0.470 ± 0.070 | R | **180 VA R** |
| | | 180 | 6.380 | 0.310 | 0.590 | 0.810 | 0.200 | 0.940 | 0.710 ± 0.070 | R | **180 VS R** |
| | | 180 | 6.380 | 0.260 | 0.240 | 0.410 | 0.200 | 0.800 | 0.310 ± 0.060 | R | **180 VL R** |
| | | 180 | 6.380 | 0.310 | 0.350 | 0.570 | 0.200 | 0.940 | 0.470 ± 0.070 | V | **180 VA V** |
| | | 180 | 6.380 | 0.310 | 0.590 | 0.810 | 0.200 | 0.940 | 0.710 ± 0.070 | V | **180 VS V** |
| | | 180 | 6.380 | 0.260 | 0.240 | 0.410 | 0.200 | 0.800 | 0.310 ± 0.060 | V | **180 VL V** |

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

$d_1$ **7.290 – 19.090** in.



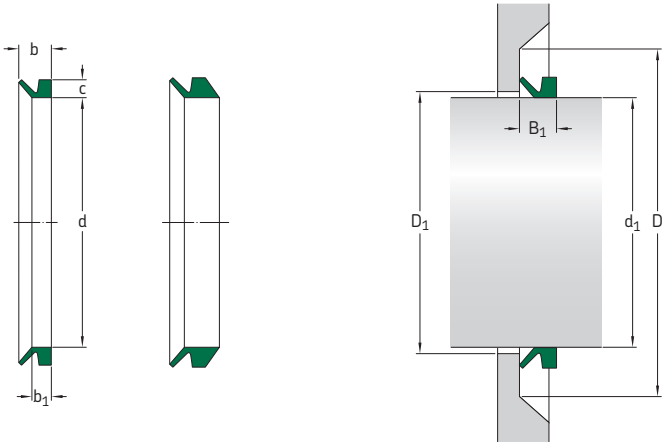

| Dimensions Shaft diameter range $d_1$ over | incl. | Ref. metric dim. | Seal inside diameter, free state d | Seal seat width $b_1$ | Nominal seal width b | Nominal seal height c | Clearance $D_1$ max | Counterface D min | Seal fitted width $B_1$ | Lip code | Designation |
|---|---|---|---|---|---|---|---|---|---|---|---|
| in. | | mm | in. | | | | | | | – | – |
| **7.290** | **7.680** | 190 | 6.730 | 0.310 | 0.350 | 0.570 | 0.200 | 0.940 | 0.470 ± 0.070 | R | **190 VA R** |
| | | 190 | 6.730 | 0.310 | 0.590 | 0.810 | 0.200 | 0.940 | 0.710 ± 0.070 | R | **190 VS R** |
| | | 190 | 6.730 | 0.260 | 0.240 | 0.410 | 0.200 | 0.800 | 0.310 ± 0.060 | R | **190 VL R** |
| | | 190 | 6.730 | 0.310 | 0.350 | 0.570 | 0.200 | 0.940 | 0.470 ± 0.070 | V | **190 VA V** |
| | | 190 | 6.730 | 0.310 | 0.590 | 0.810 | 0.200 | 0.940 | 0.710 ± 0.070 | V | **190 VS V** |
| | | 190 | 6.730 | 0.260 | 0.240 | 0.410 | 0.200 | 0.800 | 0.310 ± 0.060 | V | **190 VL V** |
| **7.480** | **8.270** | 200 | 7.090 | 0.590 | 0.560 | 0.980 | 0.400 | 1.770 | 0.790 ± 0.160 | R | **200 VA R** |
| | | 200 | 7.090 | 0.590 | 0.560 | 0.980 | 0.400 | 1.770 | 0.790 ± 0.160 | V | **200 VA V** |
| **7.680** | **8.270** | 199 | 7.090 | 0.310 | 0.350 | 0.570 | 0.200 | 0.940 | 0.470 ± 0.070 | R | **199 VA R** |
| | | 199 | 7.090 | 0.310 | 0.590 | 0.810 | 0.200 | 0.940 | 0.710 ± 0.070 | R | **199 VS R** |
| | | 199 | 7.090 | 0.310 | 0.350 | 0.570 | 0.200 | 0.940 | 0.470 ± 0.070 | V | **199 VA V** |
| | | 199 | 7.090 | 0.310 | 0.590 | 0.810 | 0.200 | 0.940 | 0.710 ± 0.070 | V | **199 VS V** |
| | | 200 | 7.170 | 0.260 | 0.240 | 0.410 | 0.200 | 0.800 | 0.310 ± 0.060 | R | **200 VL R** |
| | | 200 | 7.170 | 0.260 | 0.240 | 0.410 | 0.200 | 0.800 | 0.310 ± 0.060 | V | **200 VL V** |
| **8.270** | **9.170** | 220 | 7.800 | 0.260 | 0.240 | 0.410 | 0.200 | 0.800 | 0.310 ± 0.060 | R | **220 VL R** |
| | | 220 | 7.800 | 0.260 | 0.240 | 0.410 | 0.200 | 0.800 | 0.310 ± 0.060 | V | **220 VL V** |
| **8.270** | **9.250** | 220 | 7.800 | 0.590 | 0.560 | 0.980 | 0.400 | 1.770 | 0.790 ± 0.160 | R | **220 VA R** |
| | | 220 | 7.800 | 0.590 | 0.560 | 0.980 | 0.400 | 1.770 | 0.790 ± 0.160 | V | **220 VA V** |
| **9.170** | **10.240** | 250 | 8.860 | 0.260 | 0.240 | 0.410 | 0.200 | 0.800 | 0.310 ± 0.606 | R | **250 VL R** |
| | | 250 | 8.860 | 0.260 | 0.240 | 0.410 | 0.200 | 0.800 | 0.310 ± 0.060 | V | **250 VL V** |
| **9.250** | **10.430** | 250 | 8.860 | 0.590 | 0.560 | 0.980 | 0.400 | 1.770 | 0.790 ± 0.160 | R | **250 VA R** |
| | | 250 | 8.860 | 0.590 | 0.560 | 0.980 | 0.400 | 1.770 | 0.790 ± 0.160 | V | **250 VA V** |
| **10.240** | **11.220** | 275 | 9.720 | 0.260 | 0.240 | 0.410 | 0.200 | 0.800 | 0.310 ± 0.060 | R | **275 VL R** |
| | | 275 | 9.720 | 0.260 | 0.240 | 0.410 | 0.200 | 0.800 | 0.310 ± 0.060 | V | **275 VL V** |
| **10.430** | **11.420** | 275 | 9.720 | 0.590 | 0.560 | 0.980 | 0.400 | 1.770 | 0.790 ± 0.160 | R | **275 VA R** |
| | | 275 | 9.720 | 0.590 | 0.560 | 0.980 | 0.400 | 1.770 | 0.790 ± 0.160 | V | **275 VA V** |
| **11.220** | **12.200** | 300 | 10.630 | 0.260 | 0.240 | 0.410 | 0.200 | 0.800 | 0.310 ± 0.060 | R | **300 VL R** |
| | | 300 | 10.630 | 0.260 | 0.240 | 0.410 | 0.200 | 0.800 | 0.310 ± 0.060 | V | **300 VL V** |
| **11.420** | **12.200** | 300 | 10.630 | 0.590 | 0.560 | 0.980 | 0.400 | 1.770 | 0.790 ± 0.160 | R | **300 VA R** |
| | | 300 | 10.630 | 0.590 | 0.560 | 0.980 | 0.400 | 1.770 | 0.790 ± 0.160 | V | **300 VA V** |

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

| Dimensions Shaft diameter range $d_1$ over | incl. | Ref. metric dim. | 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 |
|---|---|---|---|---|---|---|---|---|---|---|---|
| in. | | mm | in. | | | | | | | – | – |
| **11.811** | **12.000** | 300 | 11.575 | 0.827 | 2.657 | 3.931 | 0.940 | 4.530 | 3.350 ± 0.500 | R | **300 VRM R** |
| **12.200** | **13.190** | 325 | 11.500 | 0.590 | 0.560 | 0.980 | 0.400 | 1.770 | 0.790 ± 0.160 | R | **325 VA R** |
| | | 325 | 11.500 | 0.260 | 0.240 | 0.410 | 0.200 | 0.800 | 0.310 ± 0.060 | R | **325 VL R** |
| | | 325 | 11.500 | 0.590 | 0.560 | 0.980 | 0.400 | 1.770 | 0.790 ± 0.160 | V | **325 VA V** |
| | | 325 | 11.500 | 0.260 | 0.240 | 0.410 | 0.200 | 0.800 | 0.310 ± 0.060 | V | **325 VL V** |
| **12.400** | **12.600** | 315 | 12.170 | 1.180 | 1.280 | 2.560 | 0.940 | 4.530 | 2.000 ± 0.500 | R | **315 VE R** |
| **13.190** | **14.370** | 350 | 12.400 | 0.590 | 0.560 | 0.980 | 0.400 | 1.770 | 0.790 ± 0.160 | R | **350 VA R** |
| | | 350 | 12.400 | 0.260 | 0.240 | 0.410 | 0.200 | 0.800 | 0.310 ± 0.060 | R | **350 VL R** |
| | | 350 | 12.400 | 0.590 | 0.560 | 0.980 | 0.400 | 1.770 | 0.790 ± 0.160 | V | **350 VA V** |
| | | 350 | 12.400 | 0.260 | 0.240 | 0.410 | 0.200 | 0.800 | 0.310 ± 0.060 | V | **350 VL V** |
| **14.170** | **14.370** | 360 | 13.858 | 1.181 | 1.280 | 2.559 | 0.945 | 4.528 | 1.969 ± 0.472 | R | **360 VE R** |
| | | 360 | 13.858 | 1.180 | 1.280 | 2.560 | 0.940 | 4.530 | 2.000 ± 0.500 | V | **360 VE V** |
| **14.350** | **15.550** | 390 | 15.000 | 1.180 | 1.280 | 2.560 | 0.940 | 4.530 | 2.000 ± 0.500 | R | **390 VE R** |
| **14.370** | **15.150** | 375 | 13.270 | 0.260 | 0.240 | 0.410 | 0.200 | 0.800 | 0.310 ± 0.060 | R | **375 VL R** |
| | | 375 | 13.270 | 0.260 | 0.240 | 0.410 | 0.200 | 0.800 | 0.310 ± 0.060 | V | **375 VL V** |
| **14.370** | **15.350** | 375 | 13.270 | 0.590 | 0.560 | 0.980 | 0.400 | 1.770 | 0.790 ± 0.160 | R | **375 VA R** |
| | | 375 | 13.270 | 0.590 | 0.560 | 0.980 | 0.400 | 1.770 | 0.790 ± 0.160 | V | **375 VA V** |
| **14.567** | **14.764** | 370 | 14.252 | 1.180 | 1.280 | 2.560 | 0.940 | 4.530 | 2.000 ± 0.500 | R | **370 VE R** |
| **14.764** | **14.961** | 375 | 14.449 | 1.180 | 1.280 | 2.560 | 0.940 | 4.530 | 2.000 ± 0.500 | R | **375 VE R** |
| **14.961** | **15.157** | 380 | 14.606 | 0.827 | 2.657 | 3.937 | 0.940 | 4.530 | 3.350 ± 0.500 | R | **380 VRM R** |
| **15.150** | **16.730** | 400 | 14.170 | 0.260 | 0.240 | 0.410 | 0.200 | 0.800 | 0.310 ± 0.060 | R | **400 VL R** |
| **15.150** | **16.930** | 400 | 14.170 | 0.260 | 0.240 | 0.410 | 0.200 | 0.800 | 0.310 ± 0.060 | V | **400 VL V** |
| **15.350** | **16.930** | 400 | 14.170 | 0.590 | 0.560 | 0.980 | 0.400 | 1.770 | 0.790 ± 0.160 | R | **400 VA R** |
| | | 400 | 14.170 | 0.590 | 0.560 | 0.980 | 0.400 | 1.770 | 0.790 ± 0.160 | V | **400 VA V** |
| **15.354** | **19.685** | 385 | 14.803 | 0.827 | 2.657 | 3.937 | 0.940 | 4.530 | 3.350 ± 0.500 | R | **385 VRM R** |
| **15.750** | **15.940** | 400 | 15.394 | 1.181 | 1.280 | 2.559 | 0.945 | 4.528 | 1.969 ± 0.472 | R | **400 VE R** |
| **16.142** | **17.322** | 425 | 15.039 | 0.260 | 0.240 | 0.410 | 0.200 | 0.800 | 0.315 ± 0.060 | R | **425 VL R** |
| **16.730** | **18.700** | 450 | 15.940 | 0.260 | 0.240 | 0.410 | 0.200 | 0.800 | 0.310 ± 0.060 | R | **450 VL R** |
| | | 450 | 15.940 | 0.260 | 0.240 | 0.410 | 0.200 | 0.800 | 0.310 ± 0.060 | V | **450 VL V** |
| **16.930** | **17.120** | 430 | 16.490 | 1.180 | 1.280 | 2.560 | 0.940 | 4.530 | 2.000 ± 0.500 | R | **430 VE R** |
| **16.930** | **18.900** | 450 | 15.940 | 0.590 | 0.560 | 0.980 | 0.400 | 1.770 | 0.790 ± 0.160 | R | **450 VA R** |
| | | 450 | 15.940 | 0.590 | 0.560 | 0.980 | 0.400 | 1.770 | 0.790 ± 0.160 | V | **450 VA V** |
| **17.720** | **17.910** | 450 | 17.280 | 1.180 | 1.280 | 2.560 | 0.940 | 4.530 | 2.000 ± 0.500 | R | **450 VE R** |
| **18.110** | **18.310** | 460 | 17.640 | 1.180 | 1.280 | 2.560 | 0.940 | 4.530 | 5.000 ± 0.500 | R | **460 VE R** |
| **18.500** | **18.700** | 470 | 18.030 | 1.180 | 1.280 | 2.560 | 0.940 | 4.530 | 2.000 ± 0.500 | R | **470 VE R** |
| **18.700** | **18.900** | 475 | 18.228 | 1.180 | 1.280 | 2.560 | 0.940 | 4.530 | 2.000 ± 0.500 | R | **475 VE R** |
| | | 475 | 18.228 | 1.180 | 1.280 | 2.560 | 0.940 | 4.530 | 2.000 ± 0.500 | V | **475 VE V** |
| **18.700** | **20.080** | 500 | 17.717 | 0.255 | 0.236 | 0.413 | 0.196 | 0.787 | 0.315 ± 0.060 | R | **500 VL V** |
| **18.900** | **19.090** | 480 | 18.430 | 1.180 | 1.280 | 2.560 | 0.940 | 4.530 | 2.000 ± 0.500 | R | **480 VE R** |
| | | 480 | 18.430 | 1.180 | 1.280 | 2.560 | 0.940 | 4.530 | 2.000 ± 0.500 | V | **480 VE V** |

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

$d_1$ **18.900 – 30.830** in.



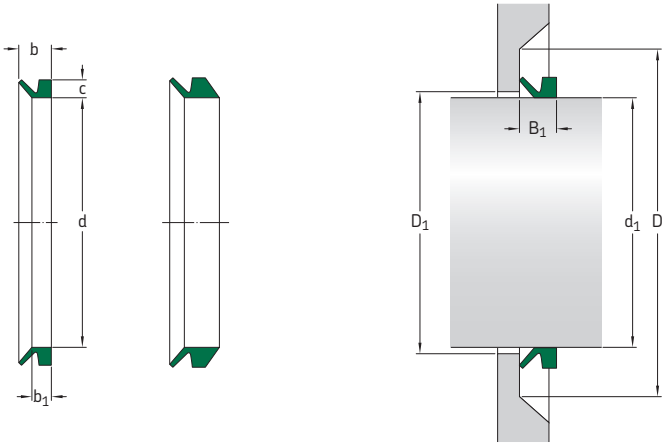

| Dimensions Shaft diameter range $d_1$ over | incl. | Ref. metric dim. | Seal inside diameter, free state d | Seal seat width $b_1$ | Nominal seal width b | Nominal seal height c | Clearance $D_1$ max | Counterface D min | Seal fitted width $B_1$ | Lip code | Designation |
|---|---|---|---|---|---|---|---|---|---|---|---|
| in. | | mm | in. | | | | | | | – | – |
| **18.900** | **20.870** | 500 | 17.720 | 0.590 | 0.560 | 0.980 | 0.400 | 1.770 | 0.790 ± 0.160 | R | **500 VA R** |
| | | 500 | 17.720 | 0.260 | 0.240 | 0.410 | 0.200 | 0.800 | 0.310 ± 0.060 | R | **500 VL R** |
| | | 500 | 17.720 | 0.590 | 0.560 | 0.980 | 0.400 | 1.770 | 0.790 ± 0.160 | V | **500 VA V** |
| **19.090** | **19.290** | 485 | 18.622 | 1.181 | 1.280 | 2.559 | 0.945 | 4.528 | 1.969 ± 0.472 | R | **485 VE R** |
| **19.100** | **19.290** | 485 | 19.094 | 1.180 | 1.280 | 2.560 | 0.940 | 4.530 | 2.000 ± 0.500 | V | **485 VE V** |
| **19.290** | **19.490** | 490 | 18.820 | 1.180 | 1.280 | 2.560 | 0.940 | 4.530 | 2.000 ± 0.500 | R | **490 VE R** |
| **19.690** | **19.880** | 500 | 19.210 | 1.180 | 1.280 | 2.560 | 0.940 | 4.530 | 2.000 ± 0.500 | R | **500 VE R** |
| | | 500 | 19.213 | 1.180 | 1.280 | 2.560 | 0.940 | 4.530 | 2.000 ± 0.500 | V | **500 VE V** |
| **19.910** | **18.110** | 455 | 17.480 | 1.180 | 1.280 | 2.560 | 0.940 | 4.530 | 2.000 ± 0.500 | R | **455 VE R** |
| **20.010** | **20.280** | 510 | 19.570 | 1.180 | 1.280 | 2.560 | 0.940 | 4.530 | 2.000 ± 0.500 | R | **510 VE R** |
| **20.080** | **21.260** | 525 | 18.580 | 0.260 | 0.240 | 0.410 | 0.200 | 0.800 | 0.310 ± 0.060 | R | **525 VL R** |
| **20.470** | **20.670** | 520 | 19.960 | 1.180 | 1.280 | 2.560 | 0.940 | 4.530 | 2.000 ± 0.500 | R | **520 VE R** |
| **20.870** | **21.060** | 530 | 20.350 | 1.180 | 1.280 | 2.560 | 0.940 | 4.530 | 2.000 ± 0.500 | R | **530 VE R** |
| **20.870** | **22.830** | 550 | 19.490 | 0.590 | 0.560 | 0.980 | 0.400 | 1.770 | 0.790 ± 0.160 | R | **550 VA R** |
| | | 550 | 19.490 | 0.260 | 0.240 | 0.410 | 0.200 | 0.800 | 0.310 ± 0.060 | R | **550 VL R** |
| | | 550 | 19.490 | 0.590 | 0.560 | 0.980 | 0.400 | 1.770 | 0.790 ± 0.160 | V | **550 VA V** |
| **21.260** | **21.460** | 540 | 20.709 | 1.180 | 1.280 | 2.560 | 0.940 | 4.530 | 2.000 ± 0.500 | R | **540 VE R** |
| **21.560** | **22.638** | 550 | 19.488 | 0.260 | 0.240 | 0.410 | 0.200 | 0.800 | 0.315 ± 0.060 | V | **550 VL V** |
| **21.650** | **21.850** | 550 | 21.100 | 1.180 | 1.280 | 2.560 | 0.940 | 4.530 | 2.000 ± 0.500 | R | **550 VE R** |
| **22.050** | **22.240** | 560 | 21.496 | 1.181 | 1.280 | 2.559 | 0.945 | 4.528 | 1.969 ± 0.472 | R | **560 VE R** |
| | | 560 | 21.496 | 1.180 | 1.280 | 2.560 | 0.940 | 4.530 | 2.000 ± 0.500 | V | **560 VE V** |
| **22.440** | **22.640** | 570 | 21.850 | 1.180 | 1.280 | 2.560 | 0.940 | 4.530 | 2.000 ± 0.500 | R | **570 VE R** |
| **22.638** | **22.835** | 575 | 22.047 | 1.180 | 1.280 | 2.560 | 0.940 | 4.530 | 2.000 ± 0.500 | V | **575 VE V** |

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

| Dimensions Shaft diameter range $d_1$ over | incl. | Ref. metric dim. | 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 |
|---|---|---|---|---|---|---|---|---|---|---|---|
| in. | | mm | in. | | | | | | | – | – |
| **22.638** | **24.606** | 600 | 21.260 | 0.260 | 0.240 | 0.410 | 0.200 | 0.800 | 0.315 ± 0.060 | V | **600 VL V** |
| **22.640** | **22.830** | 575 | 22.050 | 1.180 | 1.280 | 2.560 | 0.940 | 4.530 | 2.000 ± 0.500 | R | **575 VE R** |
| **22.830** | **23.030** | 580 | 22.240 | 1.180 | 1.280 | 2.560 | 0.940 | 4.530 | 2.000 ± 0.500 | R | **580 VE R** |
| **22.830** | **24.800** | 600 | 21.260 | 0.590 | 0.560 | 0.980 | 0.400 | 1.770 | 0.790 ± 0.160 | R | **600 VA R** |
| | | 600 | 21.260 | 0.260 | 0.240 | 0.410 | 0.200 | 0.800 | 0.310 ± 0.060 | R | **600 VL R** |
| | | 600 | 21.260 | 0.590 | 0.560 | 0.980 | 0.400 | 1.770 | 0.790 ± 0.160 | V | **600 VA V** |
| **23.230** | **23.620** | 590 | 22.640 | 1.180 | 1.280 | 2.560 | 0.940 | 4.530 | 2.000 ± 0.500 | R | **590 VE R** |
| **23.620** | **24.020** | 600 | 22.910 | 1.180 | 1.280 | 2.560 | 0.940 | 4.530 | 2.000 ± 0.500 | R | **600 VE R** |
| **24.020** | **24.410** | 610 | 23.310 | 1.180 | 1.280 | 2.560 | 0.940 | 4.530 | 2.000 ± 0.500 | R | **610 VE R** |
| **24.410** | **24.800** | 620 | 23.700 | 1.180 | 1.280 | 2.560 | 0.940 | 4.530 | 2.000 ± 0.500 | R | **620 VE R** |
| **24.790** | **26.187** | 650 | 23.622 | 0.590 | 0.560 | 0.980 | 0.400 | 1.770 | 0.790 ± 0.160 | V | **650 VA V** |
| **24.800** | **25.200** | 630 | 24.090 | 1.180 | 1.280 | 2.560 | 0.940 | 4.530 | 2.000 ± 0.500 | R | **630 VE R** |
| **24.800** | **26.180** | 650 | 23.620 | 0.590 | 0.560 | 0.980 | 0.400 | 1.770 | 0.790 ± 0.160 | R | **650 VA R** |
| **25.200** | **25.590** | 640 | 24.450 | 1.180 | 1.280 | 2.560 | 0.940 | 4.530 | 2.000 ± 0.500 | R | **640 VE R** |
| **25.590** | **25.980** | 650 | 24.840 | 1.180 | 1.280 | 2.560 | 0.940 | 4.530 | 2.000 ± 0.500 | R | **650 VE R** |
| | | 650 | 24.842 | 1.180 | 1.280 | 2.560 | 0.940 | 4.530 | 2.000 ± 0.500 | V | **650 VE V** |
| **25.980** | **26.380** | 660 | 25.197 | 1.180 | 1.280 | 2.560 | 0.940 | 4.530 | 2.000 ± 0.500 | R | **660 VE R** |
| **26.180** | **27.760** | 700 | 24.800 | 0.590 | 0.560 | 0.980 | 0.400 | 1.770 | 0.790 ± 0.160 | R | **700 VA R** |
| | | 700 | 24.803 | 0.590 | 0.560 | 0.980 | 0.400 | 1.770 | 0.790 ± 0.160 | V | **700 VA V** |
| **26.380** | **26.770** | 670 | 25.591 | 1.180 | 1.280 | 2.560 | 0.940 | 4.530 | 2.000 ± 0.500 | N | **670 VE R** |
| **26.770** | **27.170** | 680 | 25.984 | 1.180 | 1.280 | 2.560 | 0.940 | 4.530 | 2.000 ± 0.500 | N | **680 VE R** |
| **27.170** | **27.560** | 690 | 26.380 | 1.180 | 1.280 | 2.560 | 0.940 | 4.530 | 2.000 ± 0.500 | R | **690 VE R** |
| | | 690 | 26.378 | 1.180 | 1.280 | 2.560 | 0.940 | 4.530 | 2.000 ± 0.500 | V | **690 VE V** |
| **27.560** | **27.950** | 700 | 26.780 | 1.180 | 1.280 | 2.560 | 0.940 | 4.530 | 2.000 ± 0.500 | R | **700 VE R** |
| **27.760** | **29.330** | 725 | 26.380 | 0.590 | 0.560 | 0.980 | 0.400 | 1.770 | 0.790 ± 0.160 | R | **725 VA R** |
| **27.953** | **28.346** | 710 | 27.126 | 1.180 | 1.280 | 2.560 | 0.940 | 4.530 | 2.000 ± 0.500 | R | **710 VE R** |
| **28.350** | **28.740** | 720 | 27.520 | 1.180 | 1.280 | 2.560 | 0.940 | 4.530 | 2.000 ± 0.500 | R | **720 VE R** |
| **28.740** | **29.134** | 730 | 27.910 | 1.180 | 1.280 | 2.560 | 0.940 | 4.530 | 2.000 ± 0.500 | R | **730 VE R** |
| | | 730 | 27.913 | 1.180 | 1.280 | 2.560 | 0.940 | 4.530 | 2.500 ± 0.500 | V | **730 VE V** |
| **29.130** | **29.530** | 740 | 28.270 | 1.180 | 1.280 | 2.560 | 0.940 | 4.530 | 2.000 ± 0.500 | R | **740 VE R** |
| **29.134** | **30.512** | 750 | 29.528 | 0.260 | 0.240 | 0.410 | 0.200 | 0.800 | 0.315 ± 0.060 | R | **750 VL R** |
| **29.330** | **30.900** | 750 | 27.756 | 0.590 | 0.560 | 0.980 | 0.400 | 1.770 | 0.790 ± 0.160 | V | **750 VA V** |
| **29.330** | **30.910** | 750 | 27.760 | 0.590 | 0.560 | 0.980 | 0.400 | 1.770 | 0.790 ± 0.160 | R | **750 VA R** |
| **29.530** | **29.840** | 750 | 28.660 | 1.180 | 1.280 | 2.560 | 0.940 | 4.530 | 2.000 ± 0.500 | R | **750 VE R** |
| **29.845** | **30.157** | 760 | 28.937 | 1.181 | 1.280 | 2.559 | 0.945 | 4.528 | 1.969 ± 0.472 | R | **760 VE R** |
| **30.157** | **30.472** | 770 | 29.250 | 1.181 | 1.280 | 2.559 | 0.945 | 4.528 | 1.969 ± 0.472 | R | **770 VE R** |
| **30.470** | **30.830** | 780 | 29.570 | 1.180 | 1.280 | 2.560 | 0.940 | 4.530 | 2.000 ± 0.500 | R | **780 VE R** |

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

$d_1$ **30.900 – 57.870** in.



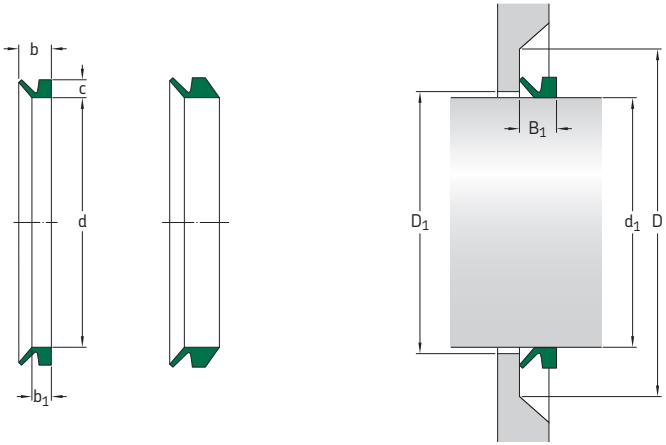

| Dimensions<br>Shaft diameter range $d_1$<br>over | incl. | Ref. metric dim. | Seal inside diameter, free state d | Seal seat width $b_1$ | Nominal seal width b | Nominal seal height c | Clearance $D_1$ max | Counterface D min | Seal fitted width $B_1$ | Lip code | Designation |
|---|---|---|---|---|---|---|---|---|---|---|---|
| in. | | mm | in. | | | | | | | – | – |
| **30.900** | **32.680** | 800 | 29.330 | 0.590 | 0.560 | 0.980 | 0.400 | 1.770 | 0.790 ± 0.160 | V | **800 VA V** |
| **30.910** | **32.680** | 800 | 29.330 | 0.590 | 0.560 | 0.980 | 0.400 | 1.770 | 0.790 ± 0.160 | R | **800 VA R** |
| **31.180** | **31.540** | 800 | 30.240 | 1.180 | 1.280 | 2.560 | 0.940 | 4.530 | 2.000 ± 0.500 | R | **800 VE R** |
| **32.680** | **34.450** | 850 | 30.910 | 0.590 | 0.560 | 0.980 | 0.400 | 1.770 | 0.790 ± 0.160 | R | **850 VA R** |
| **32.720** | **33.110** | 840 | 31.693 | 1.181 | 1.280 | 2.560 | 0.940 | 4.530 | 2.500 ± 0.500 | R | **840 VE R** |
| **33.110** | **33.500** | 850 | 32.050 | 1.180 | 1.280 | 2.560 | 0.940 | 4.530 | 2.000 ± 0.500 | R | **850 VE R** |
| **33.900** | **34.290** | 870 | 32.795 | 1.180 | 1.280 | 2.560 | 0.940 | 4.530 | 2.000 ± 0.500 | R | **870 VE R** |
| **34.290** | **34.720** | 880<br>880 | 33.189<br>33.189 | 1.180<br>1.180 | 1.280<br>1.280 | 2.560<br>2.560 | 0.940<br>0.940 | 4.530<br>4.530 | 2.000 ± 0.500<br>2.000 ± 0.500 | R<br>V | **880 VE R**<br>**880 VE V** |
| **34.449** | **36.417** | 900 | 32.480 | 0.260 | 0.240 | 0.410 | 0.200 | 0.800 | 0.315 ± 0.060 | R | **900 VL R** |
| **34.450** | **36.220** | 890<br>900<br>900 | 33.583<br>32.480<br>32.480 | 1.180<br>0.590<br>0.590 | 1.280<br>0.560<br>0.560 | 2.560<br>0.980<br>0.980 | 0.940<br>0.400<br>0.400 | 4.530<br>1.770<br>1.770 | 2.000 ± 0.500<br>0.790 ± 0.160<br>0.790 ± 0.160 | V<br>R<br>V | **890 VE V**<br>**900 VA R**<br>**900 VA V** |
| **34.720** | **35.310** | 890 | 33.580 | 1.180 | 1.280 | 2.560 | 0.940 | 4.530 | 2.000 ± 0.500 | R | **890 VE R** |
| **35.118** | **35.905** | 900 | 34.291 | 0.827 | 2.657 | 3.937 | 0.940 | 4.530 | 3.350 ± 0.500 | R | **900 VRM R** |
| **35.310** | **35.910** | 900 | 34.290 | 1.180 | 1.280 | 2.560 | 0.940 | 4.530 | 2.000 ± 0.500 | R | **900 VE R** |
| **36.220** | **37.990** | 950 | 34.060 | 0.590 | 0.560 | 0.980 | 0.400 | 1.770 | 0.790 ± 0.160 | R | **950 VA R** |
| **36.220** | **37.992** | 950 | 34.055 | 0.590 | 0.560 | 0.980 | 0.400 | 1.770 | 0.790 ± 0.160 | V | **950 VA V** |
| **36.730** | **31.170** | 940 | 35.433 | 0.827 | 2.657 | 3.937 | 0.940 | 4.530 | 3.350 ± 0.500 | R | **940 VRM R** |
| **36.732** | **37.165** | 940 | 35.433 | 1.180 | 1.280 | 2.560 | 0.940 | 4.530 | 2.000 ± 0.500 | R | **940 VE R** |
| **37.170** | **37.600** | 950 | 35.870 | 1.180 | 1.280 | 2.560 | 0.940 | 4.530 | 2.000 ± 0.500 | R | **950 VE R** |

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

| Dimensions Shaft diameter range $d_1$ over | incl. | Ref. metric dim. | 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 |
|---|---|---|---|---|---|---|---|---|---|---|---|
| in. | | mm | in. | | | | | | | – | – |
| **37.990** | **39.960** | 1 000 | 35.830 | 0.590 | 0.560 | 0.980 | 0.400 | 1.770 | 0.790 ± 0.160 | R | **1000 VA R** |
| | | 1 000 | 35.827 | 0.590 | 0.560 | 0.980 | 0.400 | 1.770 | 0.790 ± 0.160 | V | **1000 VA V** |
| **38.898** | **39.331** | 990 | 37.520 | 1.180 | 1.280 | 2.560 | 0.940 | 4.530 | 2.000 ± 0.500 | R | **990 VE R** |
| **39.330** | **39.760** | 1 000 | 37.910 | 1.180 | 1.280 | 2.560 | 0.940 | 4.530 | 2.000 ± 0.500 | R | **1000 VE R** |
| **39.960** | **41.930** | 1 050 | 37.600 | 0.590 | 0.560 | 0.980 | 0.400 | 1.770 | 0.790 ± 0.160 | R | **1050 VA R** |
| **40.550** | **41.350** | 1 050 | 39.340 | 1.180 | 1.280 | 2.560 | 0.940 | 4.530 | 2.000 ± 0.500 | R | **1050 VE R** |
| **41.140** | **41.930** | 1 060 | 39.690 | 1.180 | 1.280 | 2.560 | 0.940 | 4.530 | 2.000 ± 0.500 | R | **1060 VE R** |
| **41.930** | **42.720** | 1 080 | 40.433 | 1.180 | 1.280 | 2.560 | 0.940 | 4.530 | 2.000 ± 0.500 | R | **1080 VE R** |
| **41.930** | **43.900** | 1 100 | 39.370 | 0.590 | 0.560 | 0.980 | 0.400 | 1.770 | 0.790 ± 0.160 | R | **1100 VA R** |
| **42.720** | **43.500** | 1 100 | 41.140 | 1.180 | 1.280 | 2.560 | 0.940 | 4.530 | 2.000 ± 0.500 | R | **1100 VE R** |
| **43.500** | **44.290** | 1 120 | 41.929 | 1.180 | 1.280 | 2.560 | 0.940 | 4.530 | 2.000 ± 0.500 | R | **1120 VE R** |
| **43.900** | **45.870** | 1 150 | 41.140 | 0.590 | 0.560 | 0.980 | 0.400 | 1.770 | 0.790 ± 0.160 | R | **1150 VA R** |
| **44.290** | **46.260** | 1 150 | 41.142 | 0.260 | 0.240 | 0.410 | 0.200 | 0.800 | 0.315 ± 0.060 | R | **1150 VL R** |
| **44.291** | **45.079** | 1 140 | 42.677 | 0.827 | 2.657 | 3.937 | 0.940 | 4.530 | 3.350 ± 0.500 | R | **1140 VRM R** |
| **44.490** | **45.290** | 1 150 | 43.060 | 1.180 | 1.280 | 2.560 | 0.940 | 4.530 | 2.000 ± 0.500 | R | **1150 VE R** |
| **45.870** | **46.650** | 1 180 | 44.134 | 1.180 | 1.280 | 2.560 | 0.940 | 4.530 | 2.000 ± 0.500 | R | **1180 VE R** |
| **45.870** | **47.840** | 1 200 | 42.910 | 0.590 | 0.560 | 0.980 | 0.400 | 1.770 | 0.790 ± 0.160 | R | **1200 VA R** |
| **45.875** | **47.840** | 1 200 | 42.913 | 0.590 | 0.560 | 0.980 | 0.400 | 1.770 | 0.790 ± 0.160 | V | **1200 VA V** |
| **46.259** | **48.238** | 1 200 | 42.913 | 0.260 | 0.240 | 0.410 | 0.200 | 0.800 | 0.315 ± 0.060 | R | **1200 VL R** |
| **46.650** | **47.440** | 1 200 | 44.840 | 1.180 | 1.280 | 2.560 | 0.940 | 4.530 | 2.000 ± 0.500 | R | **1200 VE R** |
| **47.840** | **50.000** | 1 250 | 44.690 | 0.590 | 0.560 | 0.980 | 0.400 | 1.770 | 0.790 ± 0.160 | R | **1250 VA R** |
| | | 1 250 | 44.685 | 0.590 | 0.560 | 0.980 | 0.400 | 1.770 | 0.790 ± 0.160 | V | **1250 VA V** |
| **48.230** | **49.020** | 1 240 | 46.299 | 1.180 | 1.280 | 2.560 | 0.940 | 4.530 | 2.000 ± 0.500 | R | **1240 VE R** |
| **48.520** | **49.320** | 1 250 | 46.680 | 1.180 | 1.280 | 2.560 | 0.940 | 4.530 | 2.000 ± 0.500 | R | **1250 VE R** |
| **50.000** | **50.890** | 1 250 | 47.953 | 1.180 | 1.280 | 2.560 | 0.940 | 4.530 | 2.000 ± 0.500 | R | **1280 VE R** |
| **50.000** | **51.970** | 1 300 | 46.460 | 0.590 | 0.560 | 0.980 | 0.400 | 1.770 | 0.790 ± 0.160 | R | **1300 VA R** |
| **50.980** | **51.770** | 1 300 | 48.820 | 1.180 | 1.280 | 2.560 | 0.940 | 4.530 | 2.000 ± 0.500 | R | **1300 VE R** |
| **51.770** | **52.760** | 1 325 | 49.567 | 1.180 | 1.280 | 2.560 | 0.940 | 4.530 | 2.000 ± 0.500 | R | **1325 VE R** |
| **51.970** | **53.940** | 1 350 | 48.230 | 0.590 | 0.560 | 0.980 | 0.400 | 1.770 | 0.790 ± 0.160 | R | **1350 VA R** |
| **52.165** | **54.134** | 1 350 | 48.228 | 0.260 | 0.240 | 0.410 | 0.200 | 0.800 | 0.315 ± 0.060 | R | **1350 VL R** |
| **52.760** | **53.740** | 1 350 | 50.430 | 1.180 | 1.280 | 2.560 | 0.940 | 4.530 | 2.000 ± 0.500 | R | **1350 VE R** |
| **53.940** | **55.910** | 1 400 | 50.000 | 0.590 | 0.560 | 0.980 | 0.400 | 1.770 | 0.790 ± 0.160 | R | **1400 VA R** |
| **54.130** | **56.100** | 1 400 | 50.000 | 0.260 | 0.240 | 0.410 | 0.200 | 0.800 | 0.315 ± 0.060 | V | **1400 VL V** |
| **54.720** | **55.710** | 1 400 | 52.280 | 1.180 | 1.280 | 2.560 | 0.940 | 4.530 | 2.000 ± 0.500 | R | **1400 VE R** |
| **55.190** | **57.870** | 1 450 | 51.772 | 0.590 | 0.560 | 0.980 | 0.400 | 1.770 | 0.790 ± 0.160 | V | **1450 VA V** |

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

$d_1$ **55.910 – 131.890** in.




| Dimensions Shaft diameter range $d_1$ over | incl. | Ref. metric dim. | 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 |
|---|---|---|---|---|---|---|---|---|---|---|---|
| in. | | mm | in. | | | | | | | – | – |
| **55.910** | **57.870** | 1 450 | 51.770 | 0.590 | 0.560 | 0.980 | 0.400 | 1.770 | 0.790 ± 0.160 | R | **1450 VA R** |
| **56.690** | **57.680** | 1 450 | 54.090 | 1.180 | 1.280 | 2.560 | 0.940 | 4.530 | 2.000 ± 0.500 | R | **1450 VE R** |
| **57.870** | **59.840** | 1 500 | 53.540 | 0.590 | 0.560 | 0.980 | 0.400 | 1.770 | 0.790 ± 0.160 | R | **1500 VA R** |
| **58.660** | **59.650** | 1 500 | 55.870 | 1.180 | 1.280 | 2.560 | 0.940 | 4.530 | 2.000 ± 0.500 | R | **1500 VE R** |
| **59.840** | **61.810** | 1 550 | 55.320 | 0.590 | 0.560 | 0.980 | 0.400 | 1.770 | 0.790 ± 0.160 | R | **1550 VA R** |
| **60.630** | **61.810** | 1 550 | 57.760 | 1.180 | 1.280 | 2.560 | 0.940 | 4.530 | 2.000 ± 0.500 | R | **1550 VE R** |
| **61.810** | **63.780** | 1 600 | 57.090 | 0.590 | 0.560 | 0.980 | 0.400 | 1.770 | 0.790 ± 0.160 | R | **1600 VA R** |
| **62.990** | **64.570** | 1 600 | 60.000 | 1.180 | 1.280 | 2.560 | 0.940 | 4.530 | 2.000 ± 0.500 | R | **1600 VE R** |
| **63.780** | **65.750** | 1 650 | 58.860 | 0.590 | 0.560 | 0.980 | 0.400 | 1.770 | 0.790 ± 0.160 | R | **1650 VA R** |
| **64.570** | **66.140** | 1 650 | 61.380 | 1.180 | 1.280 | 2.560 | 0.940 | 4.530 | 2.000 ± 0.500 | R | **1650 VE R** |
| **65.750** | **67.720** | 1 700 | 60.630 | 0.590 | 0.560 | 0.980 | 0.400 | 1.770 | 0.790 ± 0.160 | R | **1700 VA R** |
| **66.140** | **67.720** | 1 700 | 62.830 | 1.180 | 1.280 | 2.560 | 0.940 | 4.530 | 2.000 ± 0.500 | R | **1700 VE R** |
| **67.720** | **69.490** | 1 750 | 64.250 | 1.180 | 1.280 | 2.560 | 0.940 | 4.530 | 2.000 ± 0.500 | R | **1750 VE R** |
| **67.720** | **69.690** | 1 750 | 62.400 | 0.590 | 0.560 | 0.980 | 0.400 | 1.770 | 0.790 ± 0.160 | R | **1750 VA R** |
| **69.490** | **71.260** | 1 800 | 65.790 | 1.180 | 1.280 | 2.560 | 0.940 | 4.530 | 2.000 ± 0.500 | R | **1800 VE R** |
| **69.690** | **71.560** | 1 800 | 64.170 | 0.590 | 0.560 | 0.980 | 0.400 | 1.770 | 0.790 ± 0.160 | R | **1800 VA R** |
| **69.880** | **71.850** | 1 800 | 64.173 | 0.260 | 0.240 | 0.410 | 0.200 | 0.800 | 0.315 ± 0.060 | V | **1800 VL V** |
| **71.260** | **73.030** | 1 850 | 67.480 | 1.180 | 1.280 | 2.560 | 0.940 | 4.530 | 2.000 ± 0.500 | R | **1850 VE R** |
| **71.650** | **73.620** | 1 850 | 65.950 | 0.590 | 0.560 | 0.980 | 0.400 | 1.770 | 0.790 ± 0.160 | R | **1850 VA R** |
| **73.030** | **75.000** | 1 900 | 69.020 | 1.180 | 1.280 | 2.560 | 0.940 | 4.530 | 2.000 ± 0.500 | R | **1900 VE R** |

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

| Dimensions Shaft diameter range $d_1$ over | incl. | Ref. metric dim. | 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 |
|---|---|---|---|---|---|---|---|---|---|---|---|
| in. | | mm | in. | | | | | | | – | – |
| **73.620** | **75.590** | 1 900 | 67.720 | 0.590 | 0.560 | 0.980 | 0.400 | 1.770 | 0.790 ± 0.160 | R | **1900 VA R** |
| **75.000** | **76.970** | 1 950 | 70.630 | 1.180 | 1.280 | 2.560 | 0.940 | 4.530 | 2.000 ± 0.500 | R | **1950 VE R** |
| **75.590** | **77.560** | 1 950 | 69.490 | 0.590 | 0.560 | 0.980 | 0.400 | 1.770 | 0.790 ± 0.160 | R | **1950 VA R** |
| **76.970** | **79.130** | 2 000 | 72.600 | 1.180 | 1.280 | 2.560 | 0.940 | 4.530 | 2.000 ± 0.500 | R | **2000 VE R** |
| **77.560** | **79.530** | 2 000 | 71.260 | 0.590 | 0.560 | 0.980 | 0.400 | 1.770 | 0.790 ± 0.160 | R | **2000 VA R** |
| **79.530** | **83.460** | 2 100 | 72.240 | 0.590 | 0.560 | 0.980 | 0.400 | 1.770 | 0.790 ± 0.160 | R | **2100 VA R** |
| **83.360** | **86.420** | 2 150 | 78.660 | 1.180 | 1.280 | 2.560 | 0.940 | 4.530 | 2.000 ± 0.520 | R | **2150 VE R** |
| **86.419** | **89.209** | 2 200 | 80.905 | 0.827 | 2.657 | 3.937 | 0.940 | 4.530 | 3.350 ± 0.500 | R | **2200 VRM R** |
| **96.063** | **100.000** | 2 500 | 89.520 | 1.180 | 1.280 | 2.560 | 0.940 | 4.530 | 2.000 ± 0.500 | R | **2500 VE R** |
| **97.358** | **99.543** | 2 500 | 86.020 | 0.590 | 0.560 | 0.980 | 0.400 | 1.770 | 0.790 ± 0.160 | R | **2500 VA R** |
| **126.260** | **129.670** | 3 250 | 113.740 | 1.180 | 1.280 | 2.560 | 0.940 | 4.530 | 2.00 ± 0.500 | R | **3250 VE R** |
| **127.950** | **131.890** | 3 300 | 115.390 | 1.180 | 1.280 | 2.560 | 0.940 | 4.530 | 2.00 ± 0.500 | R | **3300 VE R** |



# 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. 11**).

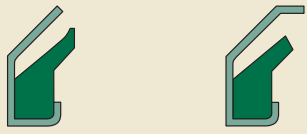
## Temperature range

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.

**Fig. 11**



## Installation

The inside diameter of MVR seals is machined for a press fit on the shaft (→ **figs. 12** and **13**). 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 µm *(160 µin.)* 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. 12**

**Installation tool for MVR1**

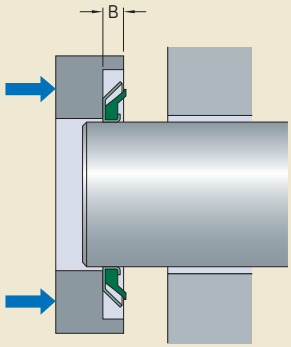
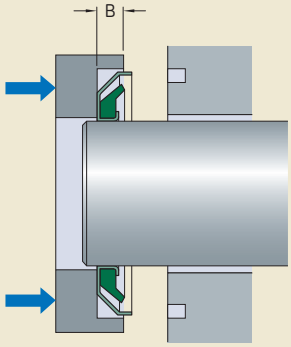
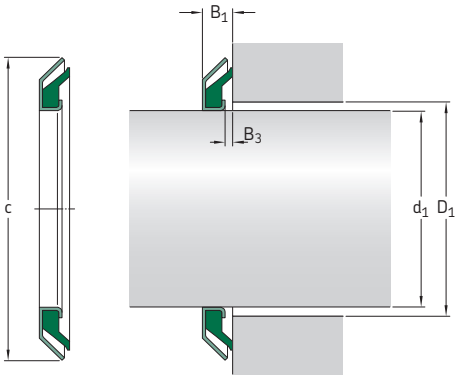



**Fig. 13**

**Installation tool for MVR2**



## Metal-cased V-ring seals – MVR1 – metric dimensions
$d_1$ **10 – 135** mm

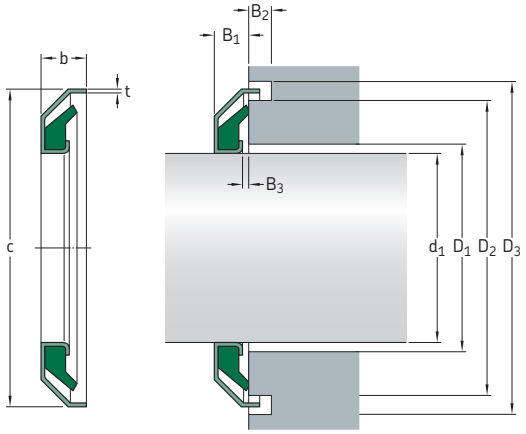



| **Dimensions** | | | | | **Designation** |
|---|---|---|---|---|---|
| Shaft diameter $d_1$ | Case outside diameter c | Seal fitted width $B_1$ | Gap width $B_3$ | Max. counterface hole diameter $D_1$ | |
| mm | | | | | – |
| **10** | 24 | 3,5 | 1,0 | 15 | **CR MVR1-10** |
| **12** | 26 | 3,5 | 1,0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

Special designs are available and new sizes are added gradually.

| 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 | | | | | – |
| **78** | 98 | 5,5 | 1,0 | 86 | **CR MVR1-78** |
| **80** | 100 | 5,5 | 1,0 | 88 | **CR MVR1-80** |
| **85** | 105 | 5,5 | 1,0 | 93 | **CR MVR1-85** |
| **90** | 110 | 5,5 | 1,0 | 98 | **CR MVR1-90** |
| **95** | 115 | 5,5 | 1,0 | 103 | **CR MVR1-95** |
| **100** | 120 | 5,5 | 1,0 | 108 | **CR MVR1-100** |
| **105** | 125 | 5,5 | 1,0 | 113 | **CR MVR1-105** |
| **125** | 148 | 6,5 | 1,0 | 133 | **CR MVR1-125** |
| **135** | 159 | 6,5 | 1,0 | 145 | **CR MVR1-135** |

## Metal-cased V-ring seals – MVR2 – metric dimensions
$d_1$ **15 – 100** mm




| Dimensions | | | | | | | | | | Designation |
|---|---|---|---|---|---|---|---|---|---|---|
| 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 | |
| mm | | | | | | | | | | – |
| **15** | 32 | 4,0 | 1,0 | 6,0 | 3 | 21 | 29 | 34 | 0,5 | **CR MVR2-15** |
| **17** | 34 | 4,0 | 1,0 | 6,0 | 3 | 23 | 31 | 36 | 0,5 | **CR MVR2-17** |
| **20** | 37 | 4,0 | 1,0 | 6,0 | 3 | 26 | 34 | 39 | 0,5 | **CR MVR2-20** |
| **25** | 42 | 4,0 | 1,0 | 6,0 | 3 | 31 | 39 | 44 | 0,5 | **CR MVR2-25** |
| **30** | 48 | 4,5 | 1,0 | 6,5 | 3 | 37 | 45 | 50 | 0,5 | **CR MVR2-30** |
| **35** | 53 | 4,5 | 1,0 | 6,5 | 3 | 42 | 50 | 55 | 0,5 | **CR MVR2-35** |
| **40** | 58 | 4,5 | 1,0 | 6,5 | 3 | 47 | 55 | 60 | 0,5 | **CR MVR2-40** |
| **45** | 63 | 4,5 | 1,0 | 6,5 | 3 | 52 | 60 | 65 | 0,5 | **CR MVR2-45** |
| **50** | 72 | 5,5 | 1,0 | 7,5 | 3 | 58 | 68,5 | 74 | 0,75 | **CR MVR2-50** |
| **55** | 77 | 5,5 | 1,0 | 7,5 | 3 | 63 | 73,5 | 79 | 0,75 | **CR MVR2-55** |
| **60** | 82 | 5,5 | 1,0 | 7,5 | 3 | 68 | 78,5 | 84 | 0,75 | **CR MVR2-60** |
| **65** | 87 | 5,5 | 1,0 | 7,5 | 3 | 73 | 83,5 | 89 | 0,75 | **CR MVR2-65** |
| **70** | 92 | 5,5 | 1,0 | 7,5 | 3 | 78 | 88,5 | 94 | 0,75 | **CR MVR2-70** |
| **75** | 95 | 5,5 | 1,0 | 7,5 | 3 | 83 | 93,5 | 99 | 0,75 | **CR MVR2-75** |
| **80** | 102 | 5,5 | 1,0 | 7,5 | 3 | 88 | 98,5 | 104 | 0,75 | **CR MVR2-80** |
| **85** | 107 | 5,5 | 1,0 | 7,5 | 3 | 93 | 103,5 | 109 | 0,75 | **CR MVR2-85** |
| **90** | 112 | 5,5 | 1,0 | 7,5 | 3 | 98 | 108,5 | 114 | 0,75 | **CR MVR2-90** |
| **95** | 117 | 5,5 | 1,0 | 7,5 | 3 | 103 | 113,5 | 119 | 0,75 | **CR MVR2-95** |
| **100** | 122 | 5,5 | 1,0 | 7,5 | 3 | 108 | 118,5 | 124 | 0,75 | **CR MVR2-100** |

BYC RODAMIENTOS Y SUMINISTROS



# Axial clamp seals

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**Installation instructions** . . . . . **470**
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8

# Axial clamp seals

## General

SKF axial clamp seals are designed for large and very large shaft diameters. They are suitable for use as primary seals or as secondary seals in applications where the primary seals are subjected to excessive solid or fluid contaminants. Axial clamp seals do not rotate but seal axially against a rotating counterface.

SKF axial clamp seals are made of profiled strips of non-reinforced nitrile rubber and are held firmly in position by stainless steel band clamps. They are available for shaft diameters ranging from 150 to 4 600 mm *(5.9 to 181 in.)*.

The standard range of SKF axial clamp seals is intended for inch-size shaft diameters. Because axial clamp seals are typically installed with an approximate 25 mm *(0.984 in.)* gap between the ends, they may also be used for metric shaft diameters.

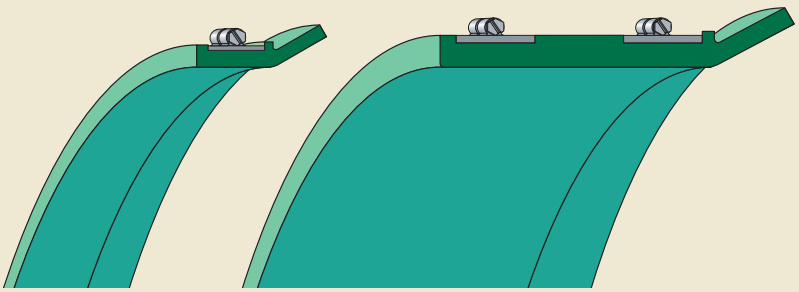
## Designs

SKF axial clamp seals are manufactured in two different designs:

- CT1 seals (→ **fig. 1**) have the basic design and are held in position by a band clamp. The maximum permissible axial displacement relative to the counterface is +2,4 mm *(0.094 in.)*.
- CT4 seals (→ **fig. 1**) are extra wide and are designed with two band clamps. The maximum axial displacement relative to the counterface is +4,8 mm *(0.189 in.)*.

**Fig. 1**

**Axial clamp seal designs**



# Design of the sealing arrangement

To obtain reliable sealing performance, the seal seat diameter ($d_1$), seal seat width ($b_1$) and the operating width ($B_1$) should meet the requirements listed in **table 1**. SKF also recommends that the seal should abut a shoulder to simplify alignment.

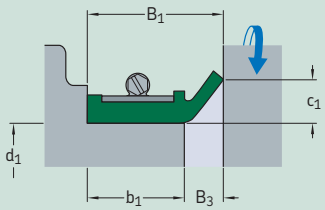
Finely turned counterfaces are adequate for axial clamp seals. The appropriate surface roughness values are $R_a$ 2,5 µm *(115 µin.)* and $R_t$ 12 µm *(480 µin.)*.

Typically, after installation, CT axial clamp seals have an approximate 25 mm *(1 in.)* gap between the ends. This should be arranged at the 6 o'clock position (→ **fig. 2** on **page 470**) to facilitate installation and drainage of contaminants.

Butt-joint seals are also available for certain applications.

**Table 1**

**Application tolerances**



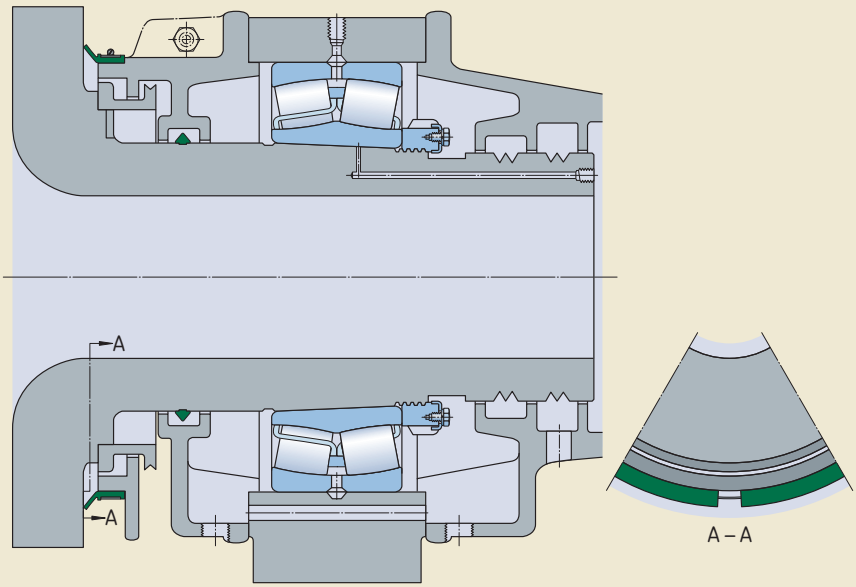

| Dimension | | Tolerance | Axial clamp seals CT1 | CT4 |
|---|---|---|---|---|
| Seal seat diameter, $d_1$ | mm | ±1,6 | 152,40 – 4 572 | 304,80 – 1 143 |
| | *in.* | *± 0.063* | *6.000 – 180.000* | *12.000 – 45.000* |
| Seal fitted width, $B_1$ | mm | ±0,8 | 28,60 – 38,10 | 38,10 – 92,20 |
| | *in.* | *± 0.031* | *1.125 – 1.500* | *1.500 – 3.750* |
| Seal seat width, $b_1$ | mm | ±3,2 | 17,50 – 27 | 27 – 84 |
| | *in.* | *± 0.125* | *0.688 – 1.063* | *1.063 – 3.313* |
| Lip height, $c_1$ | mm | ±0,8 | 12,70 | 12,70 |
| | *in.* | *± 0.031* | *0.500* | *0.500* |
| Gap width, $B_3$ (max) | mm | | 11,10 | 11,10 |
| | *in.* | | *0.437* | *0.437* |

# Installation instructions

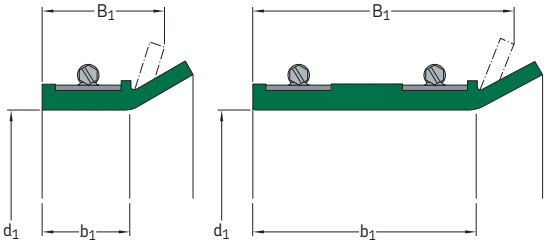
Axial clamp seals are supplied as rolled-up coils. They are placed in position on their seat in the housing and bolted lightly together. They are then pushed forward toward the counterface and the gap (or joint) between the two ends is arranged at the 6 o'clock position (→ **fig. 2**). The clamps are finally tightened. The torque applied to the clamp screws should not exceed 7 Nm.

Fig. 2

**Sealing arrangement and installation**



## Axial clamp seals – CT1 and CT4 – metric dimensions
$d_1$ **168 – 1 080** mm




CT1 CT4

See **table 1**, **page 469** for application tolerances.

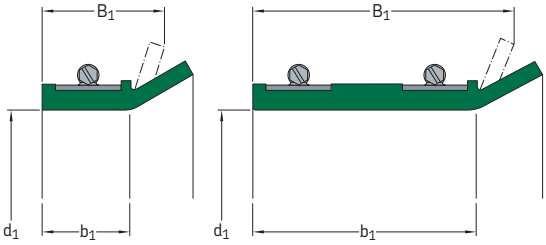
| Dimensions Seal seat diameter $d_1$ | Seal fitted width $B_1$ | Seal seat width $b_1$ | Design | Designation |
|---|---|---|---|---|
| mm | | | – | – |
| **168** | 28,60 | 17,50 | CT1 | **CR 594334** |
| **168,30** | 28,60 | 17,50 | CT1 | **CR 529489** |
| **178** | 38,10 | 27 | CT1 | **CR 523586** |
| **185** | 30 | 18,90 | CT1 | **CR 593637** |
| **209,60** | 28,60 | 17,50 | CT1 | **CR 527820** |
| **219** | 28,60 | 17,50 | CT1 | **CR 529490** |
| **227** | 28,60 | 17,50 | CT1 | **CR 531635** |
| **228,60** | 28,60 | 17,50 | CT1 | **CR 524204** |
| | 28,60 | 17,50 | CT1 | **CR 527819** |
| **229** | 29 | 17,90 | CT1 | **CR 528631** |
| **254** | 28,60 | 17,50 | CT1 | **CR 524205** |
| | 28,60 | 17,50 | CT1 | **CR 527806** |
| **273** | 28,60 | 17,50 | CT1 | **CR 594369** |
| **280** | 28,60 | 17,50 | CT1 | **CR 524206** |
| | 31,80 | 20,70 | CT1 | **CR 524928** |
| **298,40** | 28,60 | 17,50 | CT1 | **CR 593629** |
| **305** | 31,80 | 20,70 | CT1 | **CR 524208** |
| | 38,10 | 27 | CT1 | **CR 525582** |
| **330** | 28,60 | 17,50 | CT1 | **CR 524209** |
| | 38,10 | 27 | CT1 | **CR 523587** |
| **350,80** | 38,10 | 27 | CT1 | **CR 594110** |
| **355,60** | 38,10 | 27 | CT1 | **CR 530733** |
| | 34,90 | 23,80 | CT1 | **CR 593037** |
| **380** | 38,10 | 27 | CT1 | **CR 593171** |

| Dimensions Seal seat diameter $d_1$ | Seal fitted width $B_1$ | Seal seat width $b_1$ | Design | Designation |
|---|---|---|---|---|
| mm | | | – | – |
| **381** | 28,60 | 17,50 | CT1 | **CR 594025** |
| **387** | 28,60 | 17,50 | CT1 | **CR 594954** |
| **410** | 23,80 | 12,70 | CT1 | **CR 595110** |
| **413** | 88,90 | 77,80 | CT4 | **CR 592934** |
| **425** | 31,80 | 20,70 | CT1 | **CR 523826** |
| | 33,40 | 22,30 | CT1 | **CR 524815** |
| **432** | 38,10 | 27 | CT1 | **CR 528535** |
| **444,50** | 34,90 | 23,80 | CT1 | **CR 525737** |
| **445** | 31,80 | 20,70 | CT1 | **CR 522679** |
| | 34,90 | 23,80 | CT1 | **CR 523547** |
| **449,30** | 95,30 | 84,20 | CT4 | **CR 528070** |
| **470** | 28,60 | 17,50 | CT1 | **CR 525708** |
| | 31,80 | 20,70 | CT1 | **CR 526192** |
| **495** | 28,60 | 17,50 | CT1 | **CR 594181** |
| **508** | 31,80 | 20,70 | CT1 | **CR 524587** |
| **533** | 32 | 20,90 | CT1 | **CR 594241** |
| **546** | 31,80 | 20,70 | CT1 | **CR 524599** |
| | 95,30 | 84,20 | CT4 | **CR 526741** |
| **554** | 31,80 | 20,70 | CT1 | **CR 524210** |
| **557** | 28,60 | 17,50 | CT1 | **CR 524211** |
| **559** | 31,80 | 20,70 | CT1 | **CR 524347** |
| **571,50** | 31,80 | 20,70 | CT1 | **CR 524212** |
| **578** | 34,90 | 23,80 | CT1 | **CR 524657** |

| Dimensions | | | Design | Designation |
|---|---|---|---|---|
| Seal seat diameter $d_1$ | Seal fitted width $B_1$ | Seal seat width $b_1$ | | |
| mm | | | – | – |
| **594** | 34,90 | 23,80 | CT1 | **CR 525627** |
| **595** | 28,60 | 17,50 | CT1 | **CR 525031** |
| **597** | 34,90 | 23,80 | CT1 | **CR 524364** |
| **600** | 30 | 18,90 | CT1 | **CR 594431** |
| **603** | 31,80 | 20,70 | CT1 | **CR 524365** |
| | 34,90 | 23,80 | CT1 | **CR 523184** |
| | 46 | 34,90 | CT4 | **CR 528651** |
| **603,30** | 34,90 | 23,80 | CT1 | **CR 525637** |
| | 46 | 34,90 | CT4 | **CR 528267** |
| **616** | 47,60 | 36,50 | CT4 | **CR 529276** |
| **629** | 31,80 | 20,70 | CT1 | **CR 524213** |
| **638** | 34,90 | 23,80 | CT1 | **CR 524214** |
| **655** | 40 | 28,90 | CT4 | **CR 594784** |
| **660** | 34,90 | 23,80 | CT1 | **CR 524591** |
| **684** | 28,60 | 17,50 | CT1 | **CR 524215** |
| | 73 | 61,90 | CT4 | **CR 593604** |
| **692** | 34,90 | 23,80 | CT1 | **CR 524592** |
| **705** | 34,90 | 23,80 | CT1 | **CR 524216** |
| | 60,30 | 49,20 | CT4 | **CR 528268** |
| **711** | 31,80 | 20,70 | CT1 | **CR 527232** |
| **732** | 28,60 | 17,50 | CT1 | **CR 525032** |
| **737** | 38,10 | 27 | CT1 | **CR 524940** |
| | 44,50 | 33,40 | CT4 | **CR 528269** |
| **746** | 38,10 | 27 | CT1 | **CR 524853** |
| | 39,70 | 28,60 | CT4 | **CR 528270** |
| **755** | 34,90 | 23,80 | CT1 | **CR 524217** |
| | 38,10 | 27 | CT1 | **CR 524218** |
| **755,70** | 38,10 | 27 | CT1 | **CR 524973** |
| **764** | 28,60 | 17,50 | CT1 | **CR 525033** |
| **787** | 31,80 | 20,70 | CT1 | **CR 525212** |
| **800** | 31,80 | 20,70 | CT1 | **CR 528210** |
| **806** | 31,80 | 20,70 | CT1 | **CR 526715** |
| **818** | 31,80 | 20,70 | CT1 | **CR 525034** |
| **819,20** | 31,80 | 20,70 | CT1 | **CR 524294** |
| **822,30** | 31,80 | 20,70 | CT1 | **CR 593949** |
| **825** | 28,60 | 17,50 | CT1 | **CR 594785** |
| | 31,80 | 20,70 | CT1 | **CR 524367** |
| **840** | 31,80 | 20,70 | CT1 | **CR 526867** |
| **856** | 31,80 | 20,70 | CT1 | **CR 524219** |

| Dimensions | | | Design | Designation |
|---|---|---|---|---|
| Seal seat diameter $d_1$ | Seal fitted width $B_1$ | Seal seat width $b_1$ | | |
| mm | | | – | – |
| **876** | 38,10 | 27 | CT1 | **CR 523063** |
| **889** | 31,80 | 20,70 | CT1 | **CR 524220** |
| **900** | 31,80 | 20,70 | CT1 | **CR 524221** |
| **902** | 38,10 | 27 | CT1 | **CR 524222** |
| **914** | 28,60 | 17,50 | CT1 | **CR 528416** |
| | 30,20 | 19,10 | CT1 | **CR 524223** |
| | 38,10 | 27 | CT1 | **CR 524224** |
| **914,40** | 28,60 | 17,50 | CT1 | **CR 593606** |
| | 31,80 | 20,70 | CT1 | **CR 530466** |
| **929** | 28,60 | 17,50 | CT1 | **CR 593285** |
| | 75,20 | 64,10 | CT4 | **CR 594202** |
| **937** | 34,90 | 23,80 | CT1 | **CR 523154** |
| **940** | 38,10 | 27 | CT1 | **CR 525320** |
| **943** | 31,80 | 20,70 | CT1 | **CR 524768** |
| **946** | 31,80 | 20,70 | CT1 | **CR 524368** |
| **949** | 31,80 | 20,70 | CT1 | **CR 526246** |
| **952** | 31,80 | 20,70 | CT1 | **CR 526582** |
| **962** | 31,80 | 20,70 | CT1 | **CR 524225** |
| **965** | 31,80 | 20,70 | CT1 | **CR 524226** |
| **1 003** | 28,60 | 17,50 | CT1 | **CR 529452** |
| | 31,80 | 20,70 | CT1 | **CR 526806** |
| **1 013** | 34,90 | 23,80 | CT1 | **CR 523584** |
| | 36,50 | 25,40 | CT1 | **CR 529379** |
| **1 016** | 36,50 | 25,40 | CT1 | **CR 525035** |
| | 38,10 | 27 | CT1 | **CR 527903** |
| **1 018** | 54,80 | 43,70 | CT4 | **CR 530396** |
| **1 022** | 31,80 | 20,70 | CT1 | **CR 525426** |
| **1 029** | 38,10 | 27 | CT1 | **CR 528532** |
| **1 038** | 38,10 | 27 | CT1 | **CR 525633** |
| **1 041** | 38,10 | 27 | CT1 | **CR 524227** |
| **1 045** | 38,10 | 27 | CT1 | **CR 525036** |
| **1 051** | 33,40 | 22,30 | CT1 | **CR 530448** |
| **1 054** | 31,80 | 20,70 | CT1 | **CR 527474** |
| | 38,10 | 27 | CT1 | **CR 524228** |
| **1 064** | 41,30 | 30,20 | CT4 | **CR 528272** |
| **1 066** | 63,50 | 52,40 | CT4 | **CR 528271** |
| **1 066,90** | 38,10 | 27 | CT4 | **CR 594494** |
| **1 080** | 28,60 | 17,50 | CT1 | **CR 523133** |

## Axial clamp seals – CT1 and CT4 – metric dimensions
$d_1$ **1 101,70 – 4 142** mm



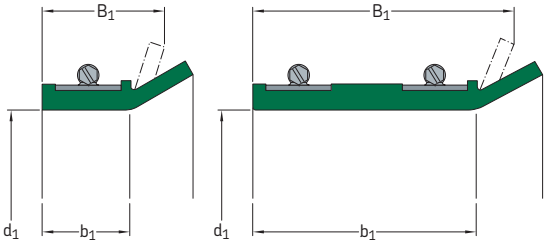

CT1 CT4

See **table 1**, **page 469** for application tolerances.

| Dimensions | | | Design | Designation |
|---|---|---|---|---|
| Seal seat diameter $d_1$ | Seal fitted width $B_1$ | Seal seat width $b_1$ | | |
| mm | | | – | – |
| **1 101,70** | 31,80 | 20,70 | CT1 | **CR 524909** |
| **1 105** | 38,10 | 27 | CT1 | **CR 524369** |
| **1 118** | 31,80 | 20,70 | CT1 | **CR 524370** |
| | 34,90 | 23,80 | CT1 | **CR 528415** |
| | 38,10 | 27 | CT1 | **CR 524229** |
| | 38,10 | 27 | CT1 | **CR 593180** |
| | 44,50 | 33,40 | CT4 | **CR 528002** |
| | 44,50 | 33,40 | CT4 | **CR 528273** |
| **1 140** | 38,10 | 27 | CT1 | **CR 522676** |
| **1 181** | 31,80 | 20,70 | CT1 | **CR 529086** |
| **1 193,80** | 38,10 | 27 | CT1 | **CR 527211** |
| **1 206** | 31,80 | 27 | CT1 | **CR 525091** |
| | 34,90 | 23,80 | CT1 | **CR 526021** |
| | 38,10 | 27 | CT1 | **CR 524230** |
| **1 206,50** | 30,20 | 19,10 | CT1 | **CR 530606** |
| **1 210** | 38,10 | 27 | CT1 | **CR 522677** |
| **1 225** | 38,10 | 27 | CT1 | **CR 524231** |
| **1 241** | 38,10 | 27 | CT1 | **CR 524371** |
| **1 245** | 31,80 | 20,70 | CT1 | **CR 522828** |
| **1 270** | 34,90 | 23,80 | CT1 | **CR 529129** |
| **1 286** | 31,80 | 20,70 | CT1 | **CR 525953** |
| **1 302** | 34,90 | 23,80 | CT1 | **CR 529130** |
| **1 308** | 31,80 | 20,70 | CT1 | **CR 524372** |
| | 34,90 | 23,80 | CT1 | **CR 530661** |
| | 38,10 | 27 | CT1 | **CR 524232** |

| Dimensions | | | Design | Designation |
|---|---|---|---|---|
| Seal seat diameter $d_1$ | Seal fitted width $B_1$ | Seal seat width $b_1$ | | |
| mm | | | – | – |
| **1 321** | 38,10 | 27 | CT1 | **CR 528927** |
| **1 346** | 31,80 | 20,70 | CT1 | **CR 528526** |
| **1 397** | 31,80 | 20,70 | CT1 | **CR 526807** |
| **1 448** | 31,80 | 20,70 | CT1 | **CR 528525** |
| **1 497,60** | 41,30 | 30,20 | CT4 | **CR 594163** |
| **1 613** | 31,80 | 20,70 | CT1 | **CR 526808** |
| **1 721** | 31,80 | 20,70 | CT1 | **CR 528975** |
| **1 778** | 31,80 | 20,70 | CT1 | **CR 526809** |
| **1 803** | 31,80 | 20,70 | CT1 | **CR 524373** |
| **1 854** | 38,10 | 27 | CT1 | **CR 531456** |
| **1 924** | 31,80 | 20,70 | CT1 | **CR 525092** |
| **1 968** | 31,80 | 20,70 | CT1 | **CR 529517** |
| **2 540** | 38,10 | 27 | CT1 | **CR 522856** |
| **2 616** | 31,80 | 20,70 | CT1 | **CR 594083** |
| **4 142** | 31,80 | 20,70 | CT1 | **CR 594682** |

## Axial clamp seals – CT1 and CT4 – inch dimensions
$d_1$ **6.614 – 29.016** in.

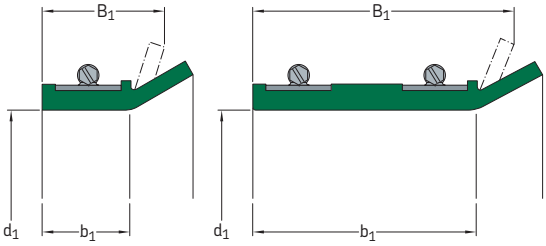



See **table 1**, **page 469** for application tolerances.

| Dimensions | | | Design | Designation |
|---|---|---|---|---|
| Seal seat diameter $d_1$ | Seal fitted width $B_1$ | Seal seat width $b_1$ | | |
| in. | | | – | – |
| **6.614** | 1.126 | 0.689 | CT1 | **CR 594334** |
| **6.626** | 1.126 | 0.689 | CT1 | **CR 529489** |
| **7.008** | 1.500 | 1.063 | CT1 | **CR 523586** |
| **7.284** | 1.181 | 0.744 | CT1 | **CR 593637** |
| **8.252** | 1.126 | 0.689 | CT1 | **CR 527820** |
| **8.622** | 1.126 | 0.689 | CT1 | **CR 529490** |
| **8.937** | 1.126 | 0.689 | CT1 | **CR 531635** |
| **9.000** | 1.126 | 0.689 | CT1 | **CR 524204** |
| **9.000** | 1.126 | 0.689 | CT1 | **CR 527819** |
| **9.016** | 1.142 | 0.705 | CT1 | **CR 528631** |
| **10.000** | 1.126 | 0.689 | CT1 | **CR 524205** |
| **10.000** | 1.126 | 0.689 | CT1 | **CR 527806** |
| **10.748** | 1.126 | 0.689 | CT1 | **CR 594369** |
| **11.024** | 1.126 | 0.689 | CT1 | **CR 524206** |
| **11.024** | 1.252 | 0.815 | CT1 | **CR 524928** |
| **11.748** | 1.126 | 0.689 | CT1 | **CR 593629** |
| **12.008** | 1.252 | 0.815 | CT1 | **CR 524208** |
| **12.008** | 1.500 | 1.063 | CT1 | **CR 525582** |
| **12.992** | 1.126 | 0.689 | CT1 | **CR 524209** |
| **12.992** | 1.500 | 1.063 | CT1 | **CR 523587** |
| **13.811** | 1.500 | 1.063 | CT1 | **CR 594110** |
| **14.000** | 1.500 | 1.063 | CT1 | **CR 530733** |
| **14.000** | 1.374 | 0.937 | CT1 | **CR 593037** |
| **14.961** | 1.500 | 1.063 | CT1 | **CR 593171** |
| **15.000** | 1.126 | 0.689 | CT1 | **CR 594025** |
| **15.236** | 1.126 | 0.689 | CT1 | **CR 594954** |
| **16.142** | 0.937 | 0.500 | CT1 | **CR 595110** |
| **16.260** | 3.500 | 3.063 | CT4 | **CR 592934** |
| **16.732** | 1.252 | 0.815 | CT1 | **CR 523826** |
| **16.732** | 1.315 | 0.878 | CT1 | **CR 524815** |
| **17.008** | 1.500 | 1.063 | CT1 | **CR 528535** |
| **17.500** | 1.374 | 0.937 | CT1 | **CR 525737** |
| **17.520** | 1.252 | 0.815 | CT1 | **CR 522679** |
| **17.520** | 1.374 | 0.937 | CT1 | **CR 523547** |
| **17.689** | 3.752 | 3.315 | CT4 | **CR 528070** |

| Dimensions | | | Design | Designation |
|---|---|---|---|---|
| Seal seat diameter $d_1$ | Seal fitted width $B_1$ | Seal seat width $b_1$ | | |
| in. | | | – | – |
| **18.504** | 1.126 | 0.689 | CT1 | **CR 525708** |
| **18.504** | 1.252 | 0.815 | CT1 | **CR 526192** |
| **19.488** | 1.126 | 0.689 | CT1 | **CR 594181** |
| **20.000** | 1.252 | 0.815 | CT1 | **CR 524587** |
| **20.984** | 1.260 | 0.823 | CT1 | **CR 594241** |
| **21.496** | 1.252 | 0.815 | CT1 | **CR 524599** |
| **21.496** | 3.752 | 3.315 | CT4 | **CR 526741** |
| **21.811** | 1.252 | 0.815 | CT1 | **CR 524210** |
| **21.929** | 1.126 | 0.689 | CT1 | **CR 524211** |
| **22.008** | 1.252 | 0.815 | CT1 | **CR 524347** |
| **22.500** | 1.252 | 0.815 | CT1 | **CR 524212** |
| **22.756** | 1.374 | 0.937 | CT1 | **CR 524657** |
| **23.386** | 1.374 | 0.937 | CT1 | **CR 525627** |
| **23.426** | 1.126 | 0.689 | CT1 | **CR 525031** |
| **23.504** | 1.374 | 0.937 | CT1 | **CR 524364** |
| **23.622** | 1.181 | 0.744 | CT1 | **CR 594431** |
| **23.740** | 1.252 | 0.815 | CT1 | **CR 524365** |
| **23.740** | 1.374 | 0.937 | CT1 | **CR 523184** |
| **23.740** | 1.811 | 1.374 | CT4 | **CR 528651** |
| **23.752** | 1.374 | 0.937 | CT1 | **CR 525637** |
| **23.752** | 1.811 | 1.374 | CT4 | **CR 528267** |
| **24.252** | 1.874 | 1.437 | CT4 | **CR 529276** |
| **24.764** | 1.252 | 0.815 | CT1 | **CR 524213** |
| **25.118** | 1.374 | 0.937 | CT1 | **CR 524214** |
| **25.787** | 1.575 | 1.138 | CT4 | **CR 594784** |
| **25.984** | 1.374 | 0.937 | CT1 | **CR 524591** |
| **26.929** | 1.126 | 0.689 | CT1 | **CR 524215** |
| **26.929** | 2.874 | 2.437 | CT4 | **CR 593604** |
| **27.244** | 1.374 | 0.937 | CT1 | **CR 524592** |
| **27.756** | 1.374 | 0.937 | CT1 | **CR 524216** |
| **27.756** | 2.374 | 1.937 | CT4 | **CR 528268** |
| **27.992** | 1.252 | 0.815 | CT1 | **CR 527232** |
| **28.819** | 1.126 | 0.689 | CT1 | **CR 525032** |
| **29.016** | 1.500 | 1.063 | CT1 | **CR 524940** |
| **29.016** | 1.752 | 1.315 | CT4 | **CR 528269** |

## Axial clamp seals – CT1 and CT4 – inch dimensions
$d_1$ **29.370 – 163.071** in.




See **table 1**, **page 469** for application tolerances.

| Dimensions | | | Design | Designation |
|---|---|---|---|---|
| Seal seat diameter $d_1$ | Seal fitted width $B_1$ | Seal seat width $b_1$ | | |
| in. | | | – | – |
| **29.370** | 1.500 | 1.063 | CT1 | **CR 524853** |
| **29.370** | 1.563 | 1.126 | CT4 | **CR 528270** |
| **29.724** | 1.374 | 0.937 | CT1 | **CR 524217** |
| **29.724** | 1.500 | 1.063 | CT1 | **CR 524218** |
| **29.752** | 1.500 | 1.063 | CT1 | **CR 524973** |
| **30.079** | 1.126 | 0.689 | CT1 | **CR 525033** |
| **30.984** | 1.252 | 0.815 | CT1 | **CR 525212** |
| **31.496** | 1.252 | 0.815 | CT1 | **CR 528210** |
| **31.732** | 1.252 | 0.815 | CT1 | **CR 526715** |
| **32.205** | 1.252 | 0.815 | CT1 | **CR 525034** |
| **32.252** | 1.252 | 0.815 | CT1 | **CR 524294** |
| **32.374** | 1.252 | 0.815 | CT1 | **CR 593949** |
| **32.480** | 1.126 | 0.689 | CT1 | **CR 594785** |
| **32.480** | 1.252 | 0.815 | CT1 | **CR 524367** |
| **33.071** | 1.252 | 0.815 | CT1 | **CR 526867** |
| **33.701** | 1.252 | 0.815 | CT1 | **CR 524219** |
| **34.488** | 1.500 | 1.063 | CT1 | **CR 523063** |
| **35.000** | 1.252 | 0.815 | CT1 | **CR 524220** |
| **35.433** | 1.252 | 0.815 | CT1 | **CR 524221** |
| **35.512** | 1.500 | 1.063 | CT1 | **CR 524222** |
| **35.984** | 1.126 | 0.689 | CT1 | **CR 528416** |
| **35.984** | 1.189 | 0.752 | CT1 | **CR 524223** |
| **35.984** | 1.500 | 1.063 | CT1 | **CR 524224** |
| **36.000** | 1.126 | 0.689 | CT1 | **CR 593606** |
| **36.000** | 1.252 | 0.815 | CT1 | **CR 530466** |
| **36.575** | 1.126 | 0.689 | CT1 | **CR 593285** |
| **36.575** | 2.961 | 2.524 | CT4 | **CR 594202** |
| **36.890** | 1.374 | 0.937 | CT1 | **CR 523154** |
| **37.008** | 1.252 | 0.815 | CT1 | **CR 526246** |
| **37.008** | 1.500 | 1.063 | CT1 | **CR 525320** |
| **37.126** | 1.252 | 0.815 | CT1 | **CR 524768** |
| **37.244** | 1.252 | 0.815 | CT1 | **CR 524368** |
| **37.480** | 1.252 | 0.815 | CT1 | **CR 526582** |
| **37.874** | 1.252 | 0.815 | CT1 | **CR 524225** |
| **37.992** | 1.252 | 0.815 | CT1 | **CR 524226** |

| Dimensions | | | Design | Designation |
|---|---|---|---|---|
| Seal seat diameter $d_1$ | Seal fitted width $B_1$ | Seal seat width $b_1$ | | |
| in. | | | – | – |
| **39.488** | 1.126 | 0.689 | CT1 | **CR 529452** |
| **39.488** | 1.252 | 0.815 | CT1 | **CR 526806** |
| **39.882** | 1.374 | 0.937 | CT1 | **CR 523584** |
| **39.882** | 1.437 | 1.000 | CT1 | **CR 529379** |
| **40.000** | 1.437 | 1.000 | CT1 | **CR 525035** |
| **40.000** | 1.500 | 1.063 | CT1 | **CR 527903** |
| **40.079** | 2.156 | 1.721 | CT4 | **CR 530396** |
| **40.236** | 1.252 | 0.815 | CT1 | **CR 525426** |
| **40.512** | 1.500 | 1.063 | CT1 | **CR 528532** |
| **40.866** | 1.500 | 1.063 | CT1 | **CR 525633** |
| **40.984** | 1.500 | 1.063 | CT1 | **CR 524227** |
| **41.142** | 1.500 | 1.063 | CT1 | **CR 525036** |
| **41.378** | 1.315 | 0.878 | CT1 | **CR 530448** |
| **41.496** | 1.252 | 0.815 | CT1 | **CR 527474** |
| **41.496** | 1.500 | 1.063 | CT1 | **CR 524228** |
| **41.890** | 1.626 | 1.189 | CT4 | **CR 528272** |
| **41.968** | 2.500 | 2.063 | CT4 | **CR 528271** |
| **42.004** | 1.500 | 1.063 | CT4 | **CR 594494** |
| **42.520** | 1.126 | 0.689 | CT1 | **CR 523133** |
| **43.374** | 1.252 | 0.815 | CT1 | **CR 524909** |
| **43.504** | 1.500 | 1.063 | CT1 | **CR 524369** |
| **44.016** | 1.252 | 0.815 | CT1 | **CR 524370** |
| **44.016** | 1.374 | 0.937 | CT1 | **CR 528415** |
| **44.016** | 1.500 | 1.063 | CT1 | **CR 524229** |
| **44.016** | 1.500 | 1.063 | CT1 | **CR 593180** |
| **44.016** | 1.752 | 1.315 | CT4 | **CR 528002** |
| **44.016** | 1.752 | 1.315 | CT4 | **CR 528273** |
| **44.882** | 1.500 | 1.063 | CT1 | **CR 522676** |
| **46.496** | 1.252 | 0.815 | CT1 | **CR 529086** |
| **47.000** | 1.500 | 1.063 | CT1 | **CR 527211** |
| **47.480** | 1.252 | 1.063 | CT1 | **CR 525091** |
| **47.480** | 1.374 | 0.937 | CT1 | **CR 526021** |
| **47.480** | 1.500 | 1.063 | CT1 | **CR 524230** |
| **47.500** | 1.189 | 0.752 | CT1 | **CR 530606** |
| **47.638** | 1.500 | 1.063 | CT1 | **CR 522677** |

| Dimensions | | | Design | Designation |
|---|---|---|---|---|
| Seal seat diameter $d_1$ | Seal fitted width $B_1$ | Seal seat width $b_1$ | | |
| in. | | | – | – |
| **48.228** | 1.500 | 1.063 | CT1 | **CR 524231** |
| **48.858** | 1.500 | 1.063 | CT1 | **CR 524371** |
| **49.016** | 1.252 | 0.815 | CT1 | **CR 522828** |
| **50.000** | 1.374 | 0.937 | CT1 | **CR 529129** |
| **50.630** | 1.252 | 0.815 | CT1 | **CR 525953** |
| **51.260** | 1.374 | 0.937 | CT1 | **CR 529130** |
| **51.496** | 1.252 | 0.815 | CT1 | **CR 524372** |
| **51.496** | 1.374 | 0.937 | CT1 | **CR 530661** |
| **51.496** | 1.500 | 1.063 | CT1 | **CR 524232** |
| **52.008** | 1.500 | 1.063 | CT1 | **CR 528927** |
| **52.992** | 1.252 | 0.815 | CT1 | **CR 528526** |
| **55.000** | 1.252 | 0.815 | CT1 | **CR 526807** |
| **57.008** | 1.252 | 0.815 | CT1 | **CR 528525** |
| **58.606** | 1.626 | 1.189 | CT4 | **CR 594163** |
| **63.504** | 1.252 | 0.815 | CT1 | **CR 526808** |
| **67.756** | 1.252 | 0.815 | CT1 | **CR 528975** |
| **70.000** | 1.252 | 0.815 | CT1 | **CR 526809** |
| **70.984** | 1.252 | 0.815 | CT1 | **CR 524373** |
| **72.992** | 1.500 | 1.063 | CT1 | **CR 531456** |
| **75.748** | 1.252 | 0.815 | CT1 | **CR 525092** |
| **77.480** | 1.252 | 0.815 | CT1 | **CR 529517** |
| **100.00** | 1.500 | 1.063 | CT1 | **CR 522856** |
| **102.992** | 1.252 | 0.815 | CT1 | **CR 594083** |
| **163.071** | 1.252 | 0.815 | CT1 | **CR 594082** |
| **163.071** | 1.252 | 0.815 | CT1 | **CR 594082** |

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