

AUTOMOTIVE | AEROSPACE | FOOD & BEVERAGE | FLUID TECHNOLOGIES | MOBILE MACHINERY

FRANCEJOINT

SEALING SYSTEMS



HYDRAULIC
SEALS





FRANCEJOINT

SEALING SYSTEMS

Contents

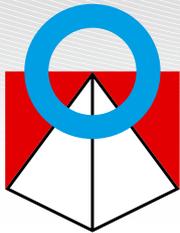
○ HYDRAULIC SEALS

1	Introduction.....	6
2	Environment.....	7
2.1	Friction/lubricant relationship.....	7
2.2	Temperature.....	7
2.3	Operating and drag pressure.....	8
2.4	Speed.....	8
2.5	Hydraulic fluids.....	9
2.6	Viscosity.....	10
3	Examples of applications.....	11
4	Assembly recommendations.....	18
4.1	Assembly 1.A - Rod composite seal - Closed groove.....	18
4.2	Assembly 1.B - Lip seal, rod compo-compact seal - Closed groove.....	19
4.3	Assembly 1.C - Rod seals - Open groove.....	20
4.4	Assembly 2.B - Lip seal, piston compact seal - Closed groove.....	21
4.5	Assembly 2.C - Piston seal - Open groove.....	22
4.6	Assembly 3.A - Wiper seals - Open groove.....	22
4.7	Assembly 3.B - Wiper seals - Closed groove.....	23
4.8	Assembly 3.C - Wiper seals - Closed groove.....	23
5	Storage recommendations and lifespan.....	24
6	Rod seals.....	26
7	Piston seals.....	106
8	Piston/rod seals.....	186
9	Wiper seals.....	216
10	Guiding components.....	274
11	Other profiles.....	304



Site n°1: Compression Molding – Injection Molding
– Water Jet Cutting – Finition – Quality Control – Logistics

Site N°2: Administrative Area – Research & Development – Machining – Tooling



FRANCEJOINT
SEALING SYSTEMS

Since 1981, FRANCE JOINT – SEALING SYSTEMS has been designing, manufacturing and distributing seals and precision rubber parts for its customers for whom quality is a determining factor.

Faced with tough competition among the big decision-makers of the industrial world, FRANCE JOINT has responded with innovation, research and development, experience in Best-Cost manufacturing, and a consistently high level of quality, thanks to certificates ISO 9001 and ISO/TS 16949.

Today, FRANCE JOINT is working in close collaboration with its customers, meeting challenges head on with success. Automotive, Aeronautics, Mobile hydraulics, Beverages & Foods, Fluid engineering industries... every solution emerges from a uniquely individual partnership, constantly fostered and renewed.

Our prime objective, based on unrivalled quality, is to find

the most suitable solutions for ensuring that you will stand out in what has become an extremely competitive domain. Our position of excellence has led us since the birth of our company to acquire the tools necessary to anticipate and prevent risks and maximize our service; the ultimate objective being of course to help you keep ahead of developments in this more and more technological market.



AUTOMOTIVE



AERONAUTICS



BEVERAGES & FOODS



FLUID ENGINEERING



MOBILE HYDRAULICS



Compression molding



Injection molding



Machining / Tooling



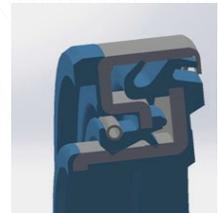
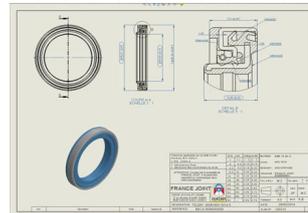
Logistics / Packaging

RESEARCH & DEVELOPMENT

Innovation, reliability, safety, minimization of risk: your expectations are our daily concern. To get from the idea to the finished product demands firm managerial control over a wide range of projects in addition to expertise in manufacturing.

FRANCE JOINT's contributors, who are as much inventors as technicians, get the best of fully automated, state-of-the-art technology that takes them from drawing-board to prototype and finally to assembly line. From writing specifications to putting on a major technical event through designing (3D Solidwrks software) and testing for validation and compliance, FRANCE JOINT engineering works hand in hand with you to find the best solutions guaranteeing the level of expected performance.

More than 1000 compounds integrating elastomers, PTFE materials, Polyurethane, or even thermoplastics, as many solutions vis-a-vis the new most complex requirements which will put you in pole position today so that we can all be winners tomorrow. FRANCE JOINT puts in place qualifications in order to examine the behavior of its seals according to various parameters intervening on frictions, pressures, temperatures, speeds, strokes, leakages...



QUALITY IN OUR CONCERNS

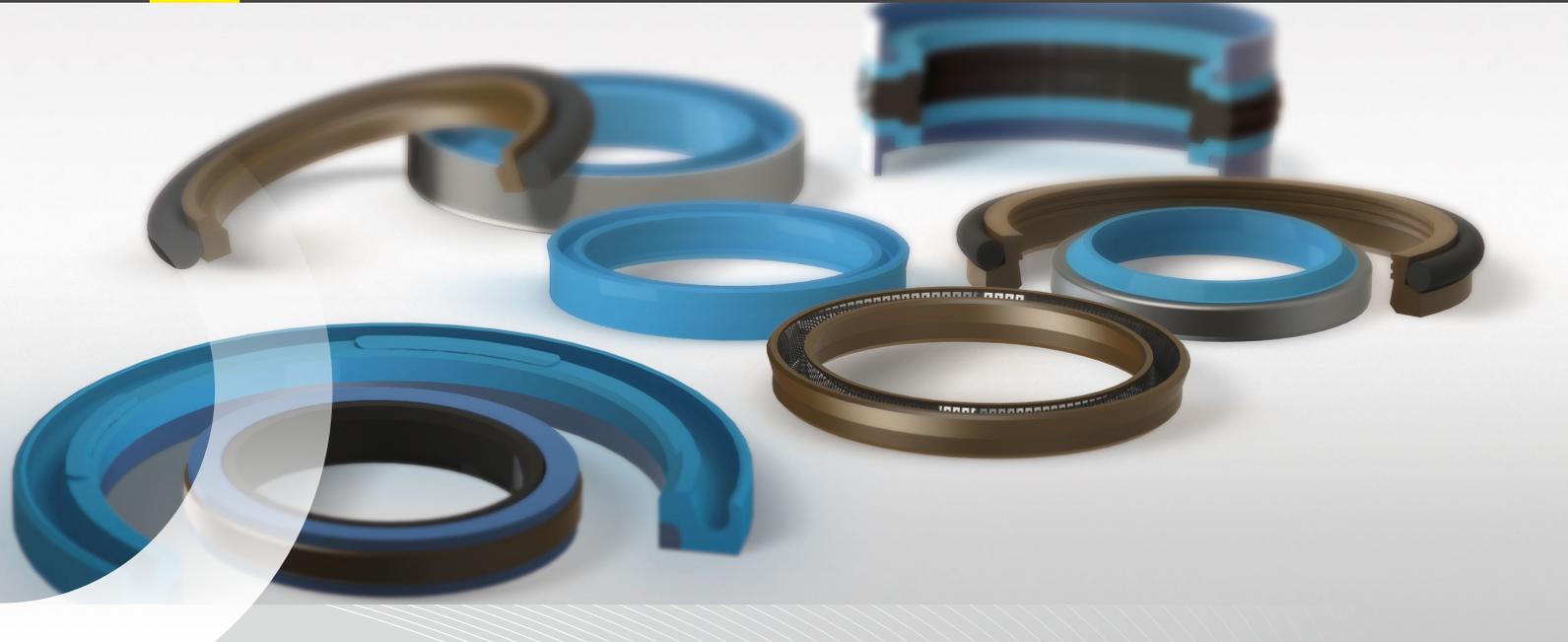
Several certificates obtained, ISO 9001, and ISO/TS16949, testify to the quality department's commitment to constant progress at every level of the company, at all stages of the realization, particularly where continual improvement is what has made FRANCE JOINT the name it is today.

Ambitious with customer satisfaction a priority, FRANCE JOINT has thus obtained the most powerful methods (PPAP, AMDEC, value analysis, Audits, MRP, 8D analysis, SPC, R&R ...) in order to optimize simultaneously the capacity of machines and processes, operational manpower performances, organizational methods, and finally, product and financial results.

FRANCE JOINT guarantees the best technology and pursues its daily objectives of a "Zero defects" production, through physico chemical controls (rheometer, spectrometer, durometer...), through dimensional and final aspects (unit controlling equipment, 3D camera ...). This is because the search for competitiveness is as important as the search for continuous improvement.



3D test device



○ HYDRAULIC SEALS

1. Introduction

There are a number of sealing systems designed for all types of machines, ranging from the simplest to the most complex and depending on field of application. Correctly defining the functional parameters is an essential step in the choice of sealing system and the materials that should be prioritised; each profile and material is designed to meet the specific and varied stresses of different hydraulic systems, including hydraulic cylinders. Working closely with its customers, FRANCE JOINT actively participates in development projects, using its expertise and recommendations to select sealing components.

As critical elements in the correct operation of hydraulic machinery, sealing systems must meet increasingly specialist technical requirements:

- wear resistance
- compatibility with media
- resistance to the effects of temperatures
- resistance to pressure
- resistance to speed
- reduced friction loads

In certain fields of application, typically in heavy-duty mobile machinery where requirements are very important, a single seal is not compatible with all types of stress; that's why FRANCE JOINT offers a wide range of sealing systems. All of these sealing systems are designed for heavy-duty rod applications, and are configured as follows: a buffer seal, secondary seal, wiper seal and guiding components; for the piston part: a piston seal and guiding components.

Hydraulic seals must contain the fluids and maintain the hydraulic pressure (piston seals, rod seals, static seals), to stop the inlet of impurities and to maintain the lubricating film on the rod (wiper seals), and to resist any deformation under a radial load by guiding the piston and rod (wear rings and guide strips).

2. Environment

2.1 FRICTION/LUBRICANT RELATIONSHIP

When hydraulic machinery is in operation, there are different phases of friction until a lubricating film is formed. The thickness of the lubricant film, which is located between the seal and the contact sliding face, greatly influences the nature of the friction. There are different phases of friction as the hydraulic system reaches its operating speed.

The first is a dry friction between the seal and the contact mechanical part, which has a significant force called adhesive friction, and which takes shape during system start-up.

As the system accelerates, a lubricating film forms little by little between the seal and the contact mechanical part, which considerably reduces friction. This is a mixed friction located between the seal and the lubricated mechanical part.

Finally, as the speed continues to increase, so does the force of the friction, transforming it into a viscous friction between two bodies with a hydrodynamic lubrication.

These different phases remain similar for all types of operation, but at different levels for each material used.

The diagram below indicates that PTFE is recommended for lower pressures and speeds, as it reaches the viscous friction phase more quickly.

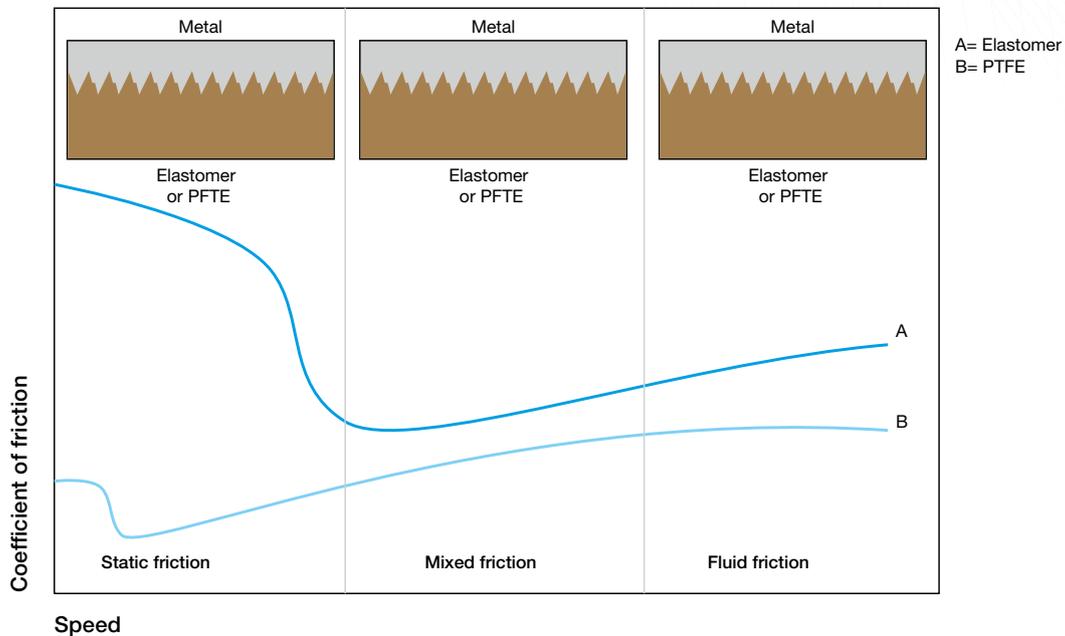


Diagram 2.1-1

2.2 TEMPERATURE

The temperature of the hydraulic fluid as well as the surrounding temperature plays a determining role in the choice of material. The ideal temperature for optimal seal operation is between +30°C and +60°C. However, the choice of material must also be determined, taking into account the heat created at the point of contact on the sealing lip under friction. When using hydraulic cylinders, the temperature usually reached is +80°C and, in extreme cases, +110°C.

When the temperature increases, the seal's material becomes more elastic and its resistance to deformation is reduced. That's why we have developed seal profiles in which the sealing lips are pre-stressed by the inclusion of a metal spring or O'Ring. For temperatures that exceed +100°C, FRANCE JOINT offers special materials, including HNBR – FKM – high-temperature PU – PTFE, among others.

On the other hand, when the temperature is reduced to negative values, the seal's material has a tendency to harden and become less elastic. However, the seal's operational safety is not really influenced by the increase in fluid viscosity. For temperatures that could go lower than -40°C, FRANCE JOINT offers special materials, including NBR – FKM – HNBR – PU – PTFE.

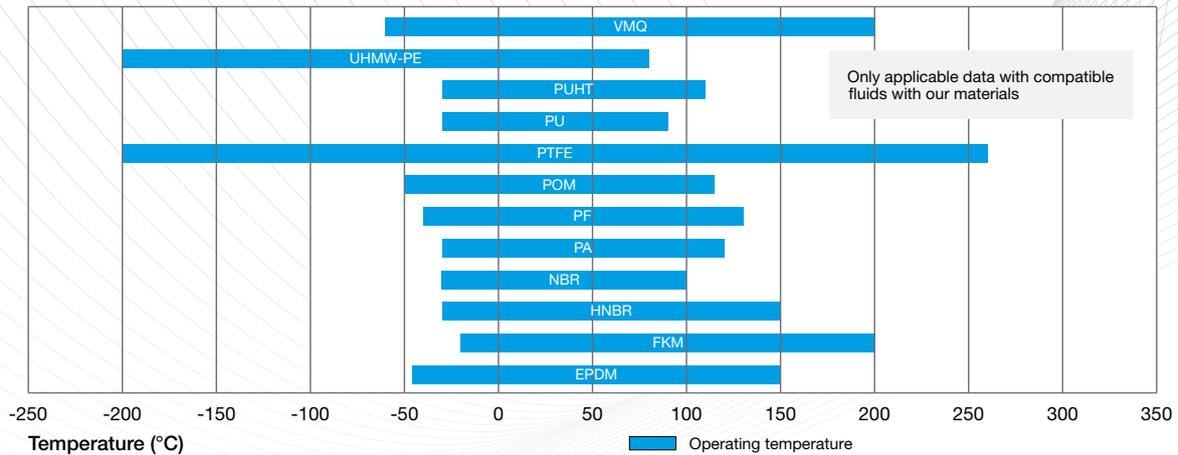


Table 2.2-1

2.3 OPERATING AND DRAG PRESSURE

Pressure is a determining factor to be taken into account when choosing the seal and material hardness. Along with the cylinder size, the pressure of the hydraulic system determines the thrust. From one application to another, we consider the pressure exerted to be defined as:

- **Machine tools:** 8 – 16 MPa
- **Material handling - Lifting:** 16 – 25 MPa
- **Hydraulic presses:** 16 – 28 MPa
- **Construction – Mining – Heavy industry:** 28 – 40 MPa

In certain applications, fluctuations in very high point pressures can appear – mechanical impacts, water hammer – particularly in mobile machinery. FRANCE JOINT offers strong seals designed to efficiently cope with such stresses.

Moreover, when gaps are very tight at the guide in a fitting such as a hydraulic cylinder, hydrodynamic pressures, also called drag pressures, may be generated. With a much smaller gap between the guide and the rod, and a constant flow rate, additional pressures (which can reach up to several dozen MPa) can appear in front of the seal, causing it to deteriorate.

**THIS PRESSURE INCREASE
IS EXPRESSED BY THE FOLLOWING FORMULA:**

$$\Delta P = p_1 - p = \frac{6 \times \eta \times v \times L}{Hs^2}$$

P: pressure
 η : dynamic viscosity of the fluid
v: speed
L: length of the guide
Hs: radial extrusion gap

There are ways to prevent the formation of such drag pressures. Helicoidal grooves are provided with a section that is larger than that of the seal; this is in order to prevent the premature destruction of the seal and certain mechanical parts. For BECA 005 – 006 – 007 wear rings, an opening has already been created, preventing the creation of return ducts.

2.4 SPEED

The choice of material is also determined by the system's operation speed. The rubbers and polyurethanes in friction against the moving surface can withstand speeds between 0.1 m/s and 0.5 m/s. For PTFE materials, speeds up to 5 m/s, or even greater, are permitted. For particularly low stresses, the speed can be limited to up to 0.05 m/s, increasing the friction and limiting the formation of lubricating film.

In such conditions, "stick-slip effects" may appear, which are defined as jerking movements caused by a succession of slipping phases followed by sticking phases.

To guard against such effects, FRANCE JOINT has developed a suitable range of seals, where the parts subject to friction are made from PTFE with optimised geometries. Other special materials are also available, such as PE-UHMW.

2.5 HYDRAULIC FLUIDS

a. Introduction to oils

Fluid holds a prominent place in the hydraulics field. It encourages:

- the transmission of power to different working components (transmission of energy as pressure)
- the lubrication of mechanical parts to limit the amount of wear on moving parts
- the protection of the entire hydraulic system
- the removal of heat

The hydraulic fluid most commonly used is mineral oil. Water is the ideal hydraulic fluid (low compressibility, non-flammable, negligible cost) if it does not present serious drawbacks (corrosion, lubrication fault, etc.) to the operation of machinery. A significant number of fluids are used to meet specific requirements. There are:

- mineral oils
- fire-resistant oils
- biodegradable oils

b. Oil classification

Mineral oils

ISO Classification	Properties	Applications
HH	Additive-free mineral oil	This oil only ensures energy transmission and is rarely used today
HL	Oil + additives with antioxidant and anti-corrosion properties to combat ageing	This oil is used for low-stress environments and works very well with water
HM	It has the same features as HL coupled with anti-wear properties to encourage resistance to wear and loads	This oil is heavily used for significant pressures
HLPD	It has the same features as HM coupled with detergent additives	This oil is heavily used for significant pressures with water intake
HR	It has the same features as HL coupled with an improved tolerance to viscosity/temperature	This oil is used during major temperature fluctuations
HV	It has the same features as HM coupled with an improved tolerance to viscosity/temperature	This oil is used during major temperature fluctuations and at low temperatures
HS	Synthetic oil without special fire resistance properties	Special properties
HG	It has the same features as HM coupled with additives to improve its anti-stick-slip properties	This oil is used for machines where lubrication is common to hydraulic parts, rails and joints
HD	Oil + additives for antioxidant, anti-wear and detergent properties	This oil is heavily used in mobile hydraulic systems and in engines

Fire-resistant oils

Group	Temperature	Properties	Applications
Aqueous fluids			
HFAE	+5°C to +60°C	Oil-in-water emulsion with more than 80% water (generally 95 - 98%)	These oils are used in hydraulic presses and in systems where leaks are significant
HFAS		Synthetic oils in aqueous solution with more than 80% water (generally 95 - 98%)	
HFB		Oil-in-water emulsion with more than 40% water	This oil is little used today aside from in the United Kingdom
HFC	-30°C to +60°C	Polymer solution (polyethylene glycol or polypropylene glycol) with more than 35% water (less than 80% water)	This oil is used in industrial environments with a maximum temperature of +60°C and average stresses

Group	Temperature	Properties	Applications
Non-aqueous fluids			
HFDR	-30°C to +150°C	Phosphoric ester base, free from water	This oil is used for significant stresses and for very high temperatures
HFDU		Synthetic fluid with specific composition	
HFDS		Chlorinated hydrocarbon base, free from water	
HFDT		HFDR and HFDS mixture	

Biodegradable oils

ISO Classification	Properties	Applications
HETG	Vegetable oil	This oil is used in the agriculture and forestry sectors
HEPG	Polyglycol	This oil is used in water protection areas
HEEG	Synthetic ester	This oil is mainly used in construction machinery

c. Impurities and air in oil

A fluid's cleanliness is an important factor in optimising the operation of a hydraulic system. Limited hydraulic filtration will lead to a disruption in the mechanism, which is caused by impurities. These impurities have multiple guises, such as metal shavings and other abrasive particles, silica, external dusts, oxidised products (rust), etc. and can lead to premature seal deterioration. It is therefore essential to perform regular checks and reconditioning on filtration systems.

Moreover, the air in the oil can lead to a breakdown of the seal through a phenomenon known as micro explosions. Hydraulic fluids actually contain air particles dissolved in the oil, which will compress and connect as the pressure increases and will tend to relax and escape when the pressure lessens. These particles are always positioned between the seal and the spaces in the groove and closest to the gaps formed by them.

This simultaneous compression and relaxation of air particles in the oil will heat up their epicentre, suddenly increasing the temperature and provoking self-ignition, also known as the "diesel effect".

If this occurs regularly enough, it can lead to the destruction of the back of the seal and even the destruction of mechanical parts and guides as they are blasted and burned. To prevent such risks, it is imperative to bleed the hydraulic systems to limit these micro explosions.

2.6 VISCOSITY

The viscosity determines a hydraulic fluid's capacity to flow. It is, essentially, the resistance that the fluid's molecules encounter, and they move by sliding between each other. The term used today is "fluidity".

Factors that will influence viscosity are essentially temperature and pressure. ISO standard 3448 classes all industrial oils according to their viscosity, expressed in mm²/s at a reference temperature of +40°C.

As the temperature increases, the viscosity has a tendency to decrease. On the other hand, the viscosity can increase when the temperature decreases. A continually increasing pressure can also lead to a continually increased viscosity. Generally speaking, we consider that at a consistent temperature, the viscosity follows a very marginally exponential curve, depending on the pressure.

IT CAN BE EXPRESSED USING THE FOLLOWING FORMULA:

$$\Delta V = 0.003 \times p \times VO$$

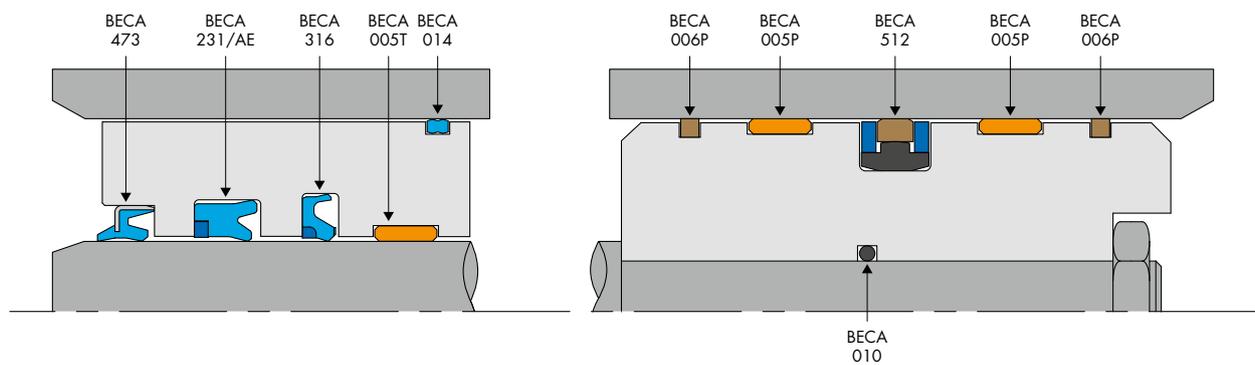
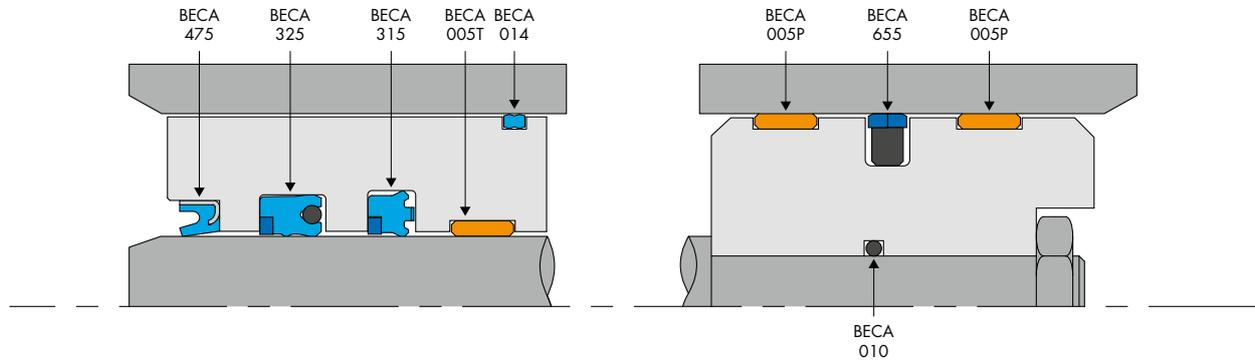
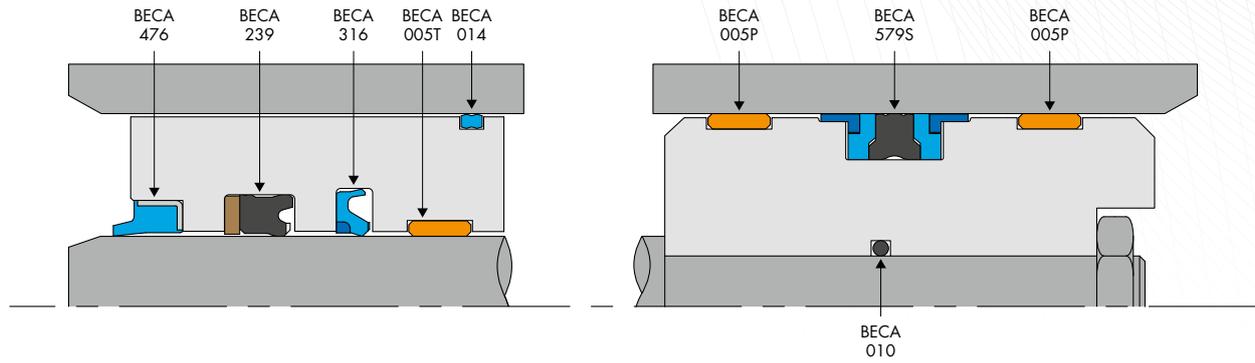
p: pressure in MPa
VO: viscosity at atmospheric pressure

The Viscosity Index (VI) measures the viscosity fluctuation with the temperature. Oils with high viscosity indexes are less dependent on temperature.

3. Examples of applications

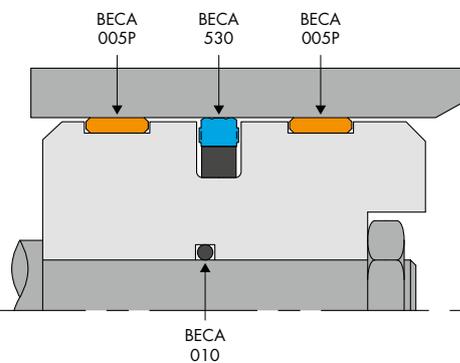
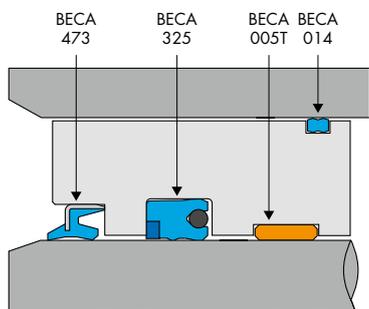
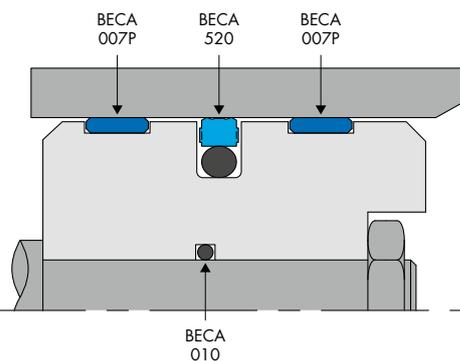
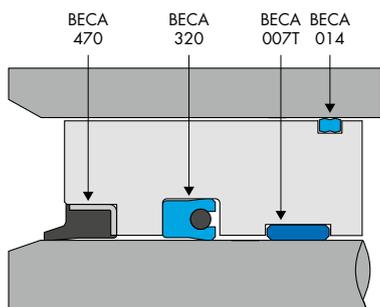
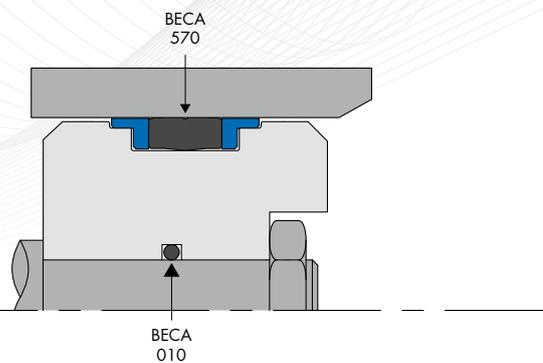
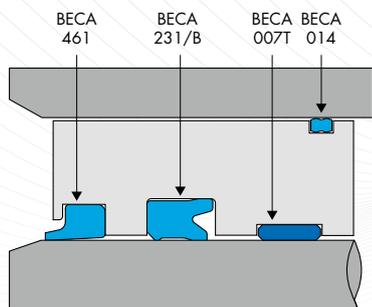


CONSTRUCTION



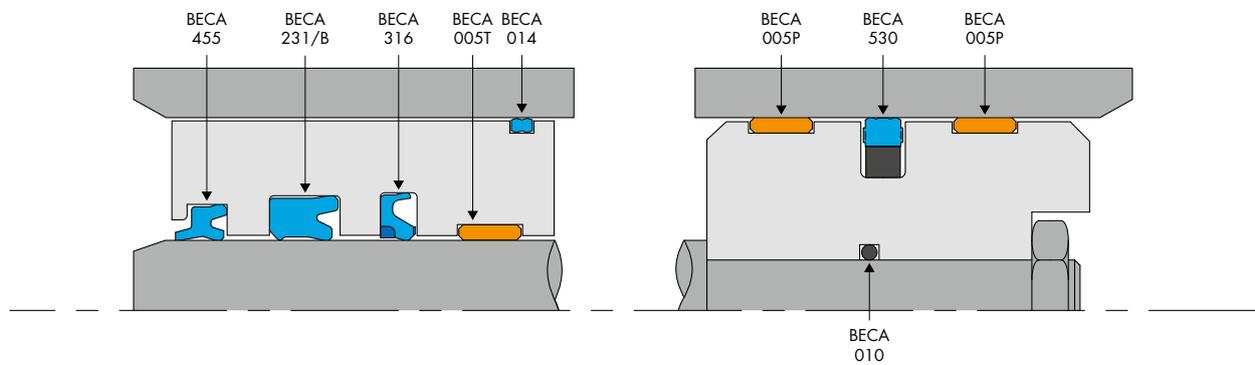
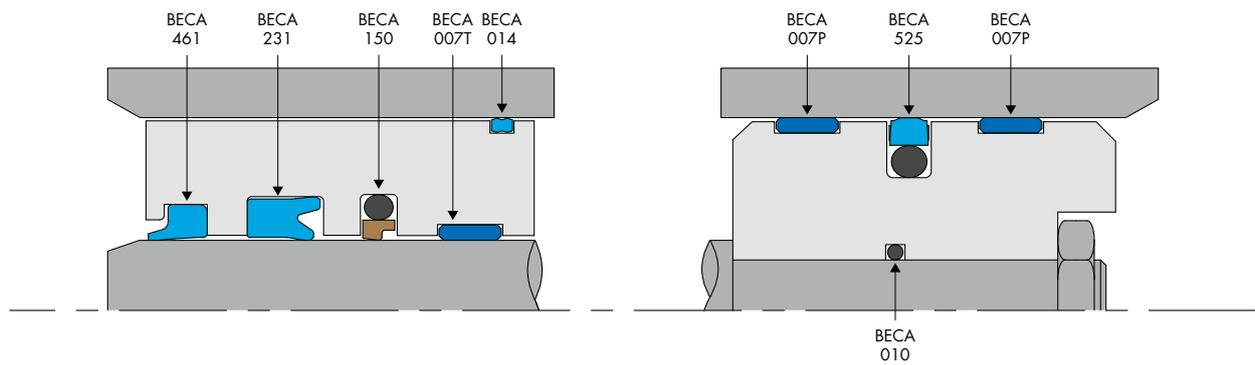
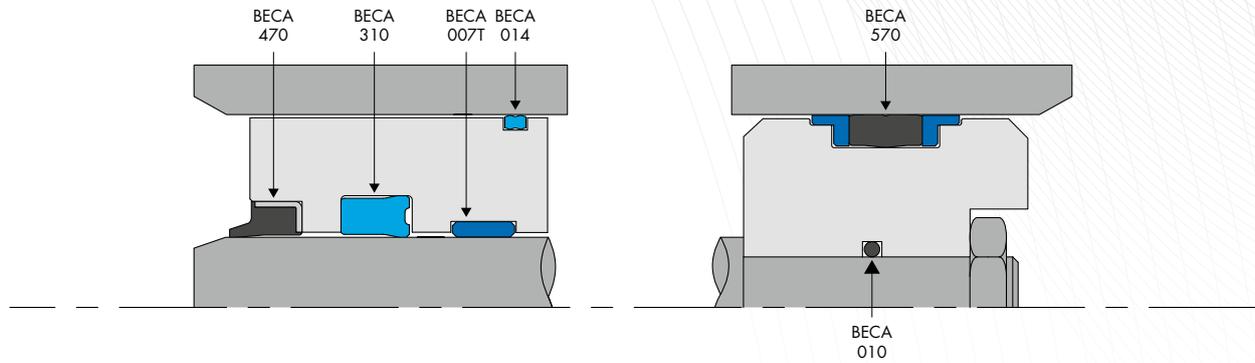


AGRICULTURE



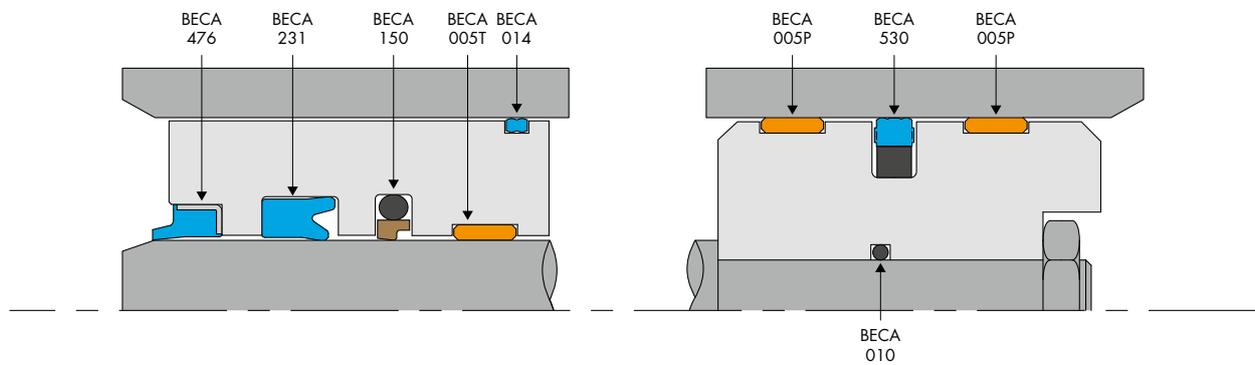
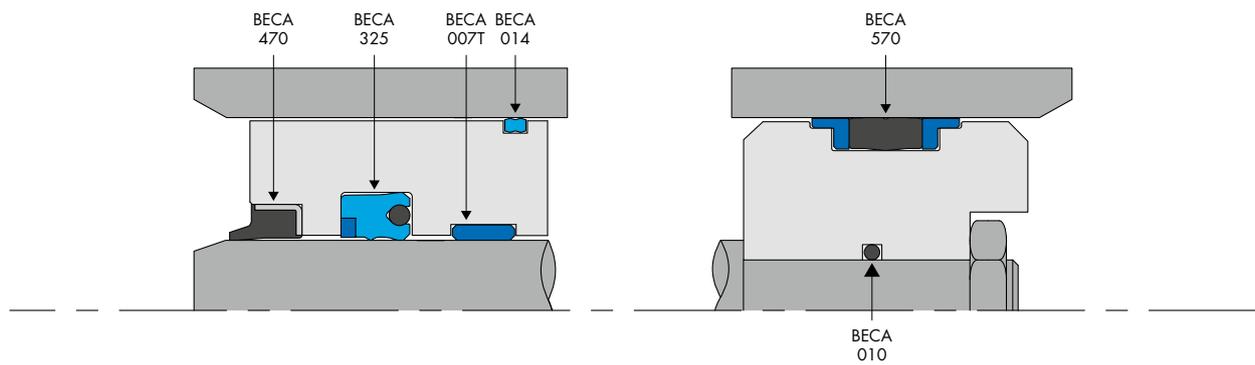
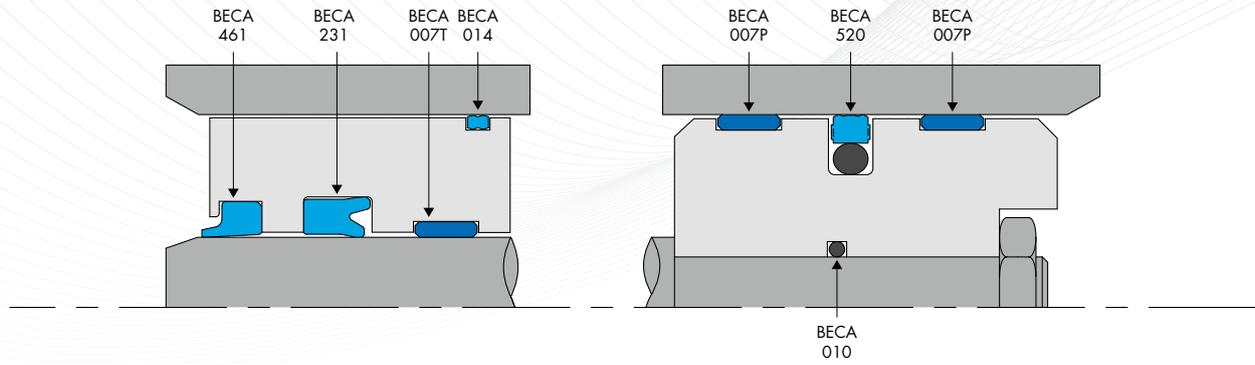


MATERIAL HANDLING



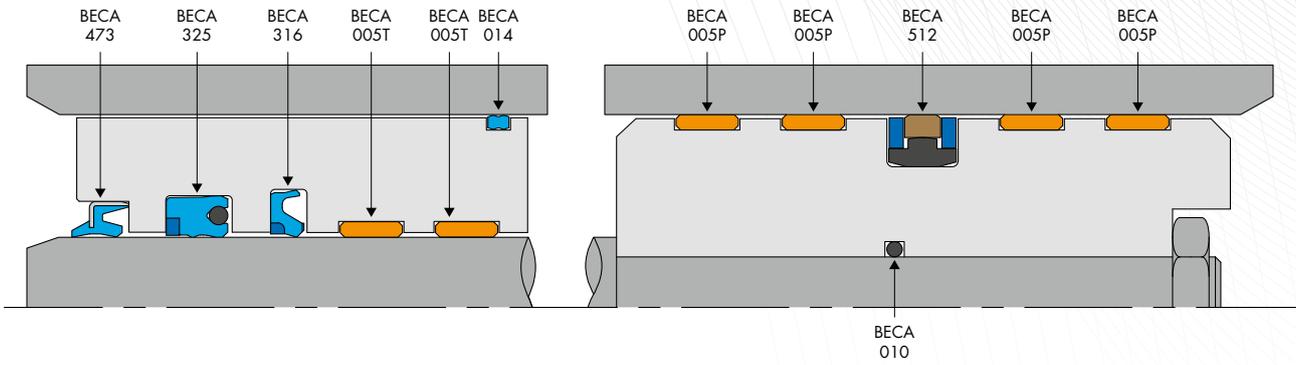


LIFTING

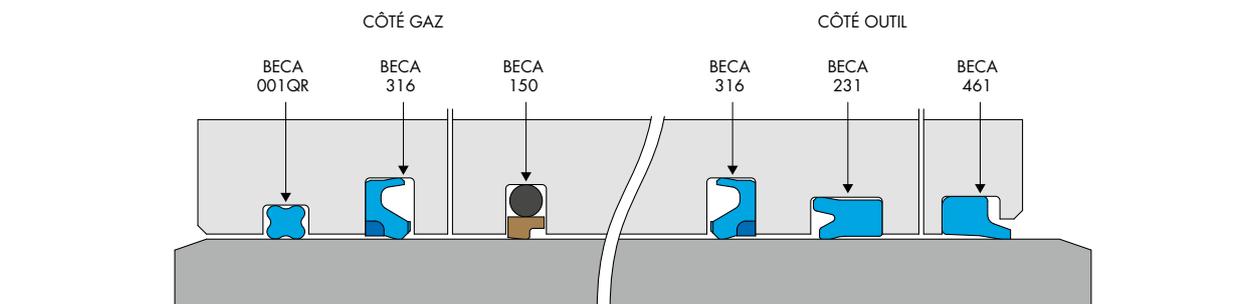
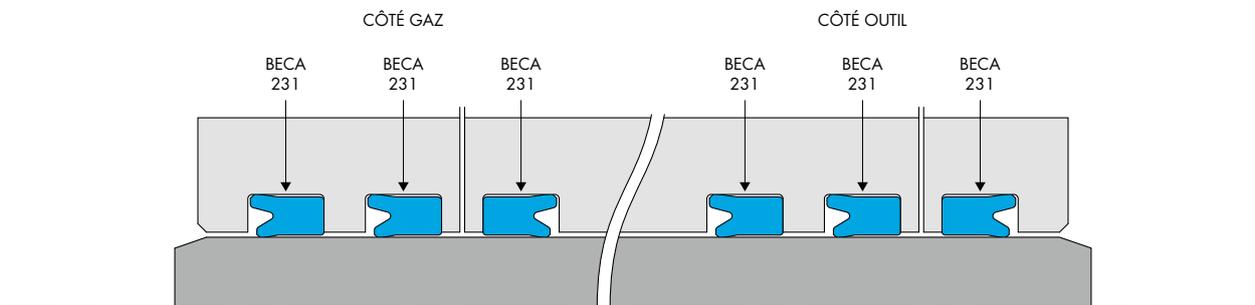




MINING

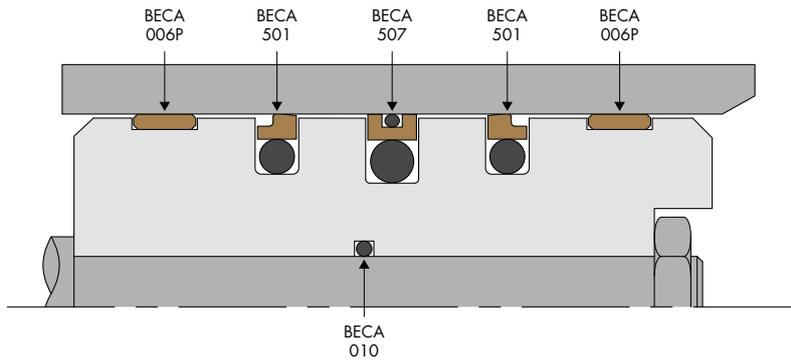
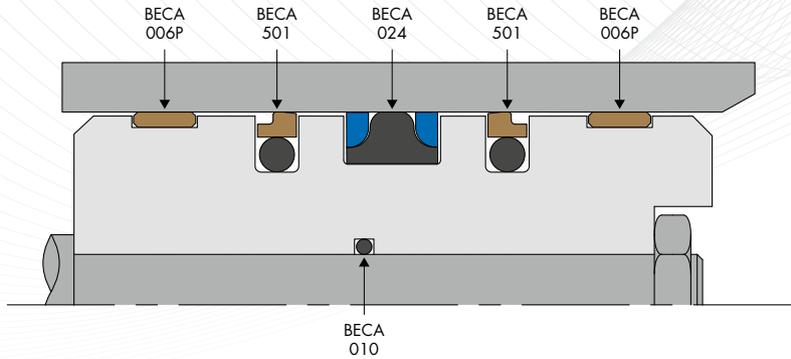


HYDRAULIC BREAKER

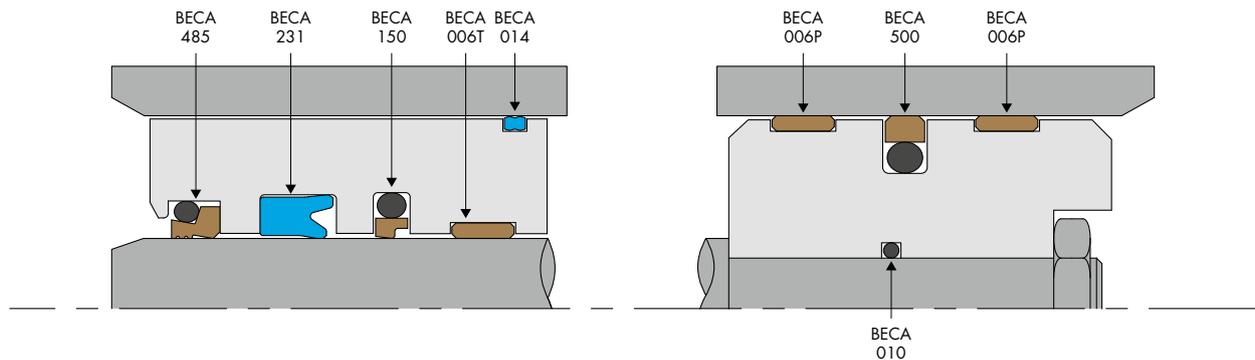




PISTON ACCUMULATORS

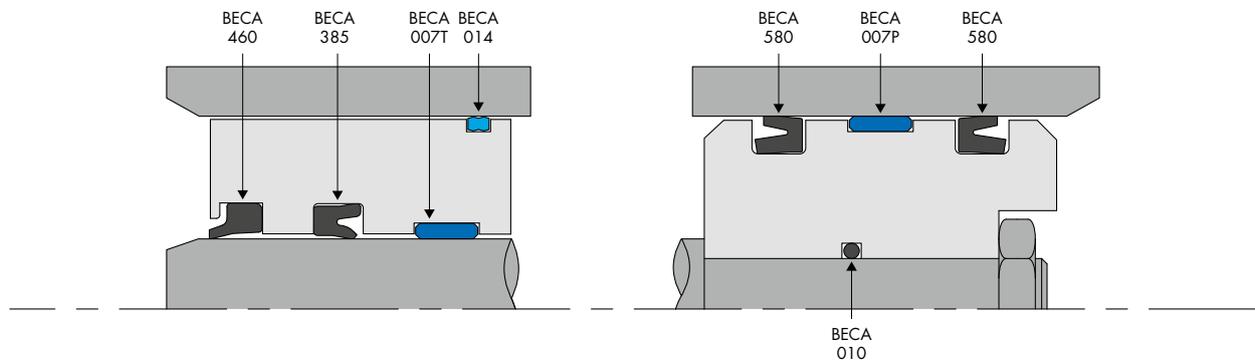
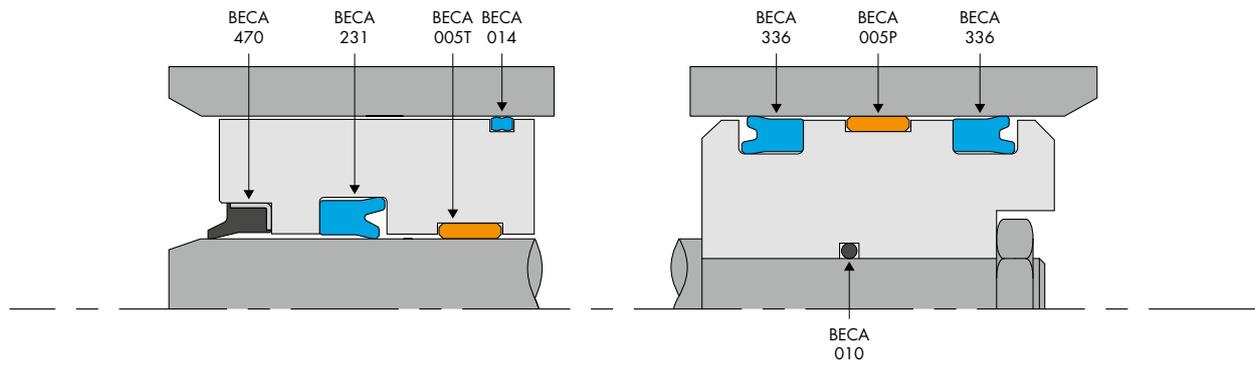
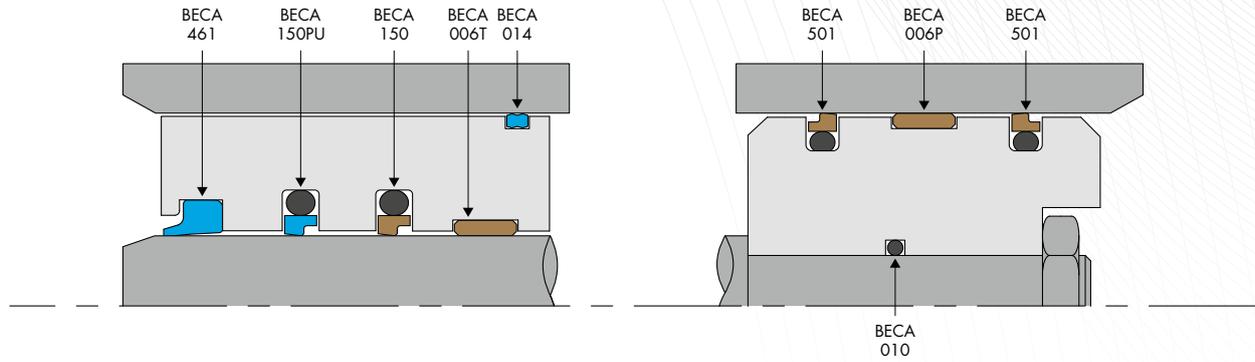


INDUSTRIAL APPLICATIONS





INDUSTRIAL APPLICATIONS (CONT.)



4. Assembly recommendations

Several essential rules must be followed before fitting the seals.

- Check that the mechanical parts (rods and bore parts) have an inlet chamfer. If not, a suitable sleeve must be used.
- Flash and chamfer or round off the sharp edges; cover the threaded parts.
- Remove the machining shavings and all impurities and other foreign bodies. Clean all mechanical parts carefully.
- Grease or oil the seal and mechanical parts to facilitate assembly. To do this, ensure beforehand that the lubricants are compatible with the seal materials. Avoid greases containing solid additives (molybdenum disulphide or zinc sulphide).
- If using installation tools, check that they are clean and do not have sharp edges.
- Soak the seal in oil heated to around +80°C / +100°C (in the water heated for the EPDM) to give the material a greater elasticity. Effective for textile fibre seals and for harder seals.
- Create assembly tools (mandrels, correction tubes, push-in tools, slide tools, plugs, etc.) using a polymer (Polyamide - PA6 or Polyoxymethylene - POM), taking into account characteristics such as sliding, and generally having excellent surface roughness so that the friction ring does not deteriorate.

Fitting methods differ depending on the type of groove (open or closed) as well as the seal's profile. The table below sets out all of the methods used to correctly fit seals from our range.

Type of seal	Rod seal		Piston seal		Wiper seal	
	Closed groove	Open groove	Closed groove	Open groove	Closed groove	Open groove
Composite seal	Assembly 1.A	Assembly 1.C	Assembly 2.A	Assembly 2.C	-	-
Lip seal	Assembly 1.B		Assembly 2.B		-	-
Compo-compact seal	Assembly 1.B		-		-	-
Compact seal	-		Assembly 2.B		-	-
Flexible wiper seal	-	-	-	-	-	Assembly 3.A
Rigid wiper seal	-	-	-	-	Assembly 3.B	-
Composite wiper seal	-	-	-	-	Assembly 3.C	-

4.1 ASSEMBLY 1.A - ROD COMPOSITE SEAL - CLOSED GROOVE

Applicable for the following product families: BECA 150-152-154, BECA 151-153-155, BECA 157-158, BECA 161-163-165, BECA 170-179, BECA 640.

Using assembly tools:

- Insert the O'Ring into the groove.
- Prepare a push-in rod and a plug adapted to your application's dimensions.
- Clip one side of the friction ring into the groove and push it into place using the push-in tool (see diagram 4.1-1 opposite).
- Prevent any of the sealing components from twisting.

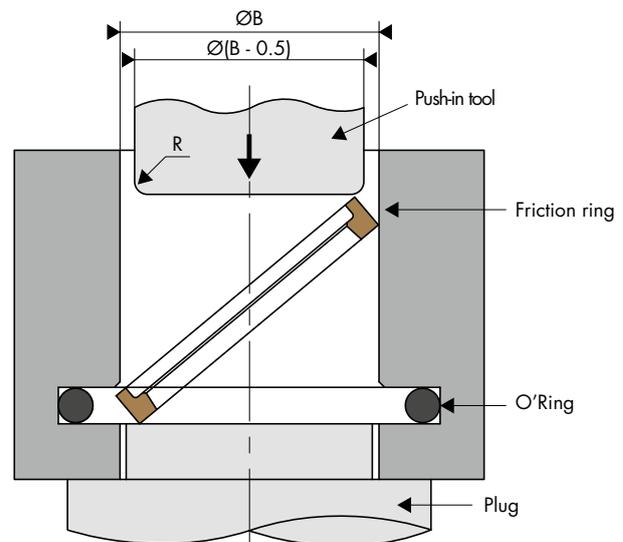
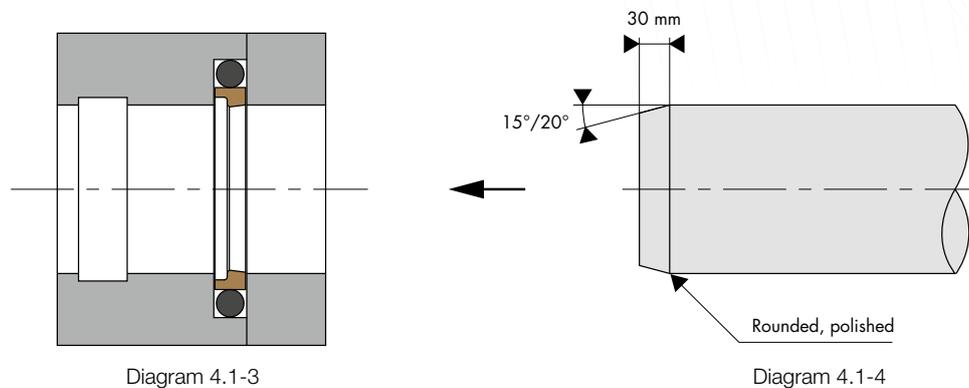
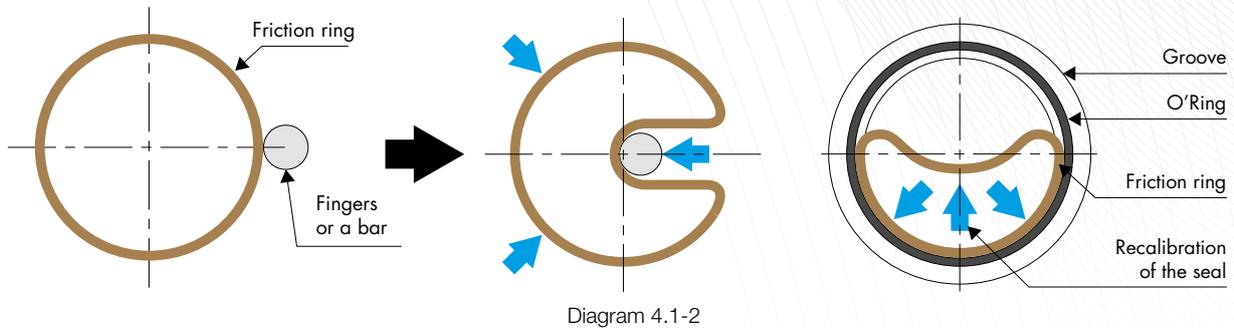


Diagram 4.1-1

If assembly tools fail:

- Fit the O'Ring into the groove.
- Distort the friction ring by shaping it like a bean without creating a sharp angle (see diagram 4.1-2).
- Position the friction ring in the groove and restore its shape by pushing it against the O'Ring.
- Calibrate the friction ring using a mandrel chamfered between 15° and 20° along a length of 30.00 mm.



4.2 ASSEMBLY 1.B - LIP SEAL, ROD COMPO-COMPACT SEAL - CLOSED GROOVE

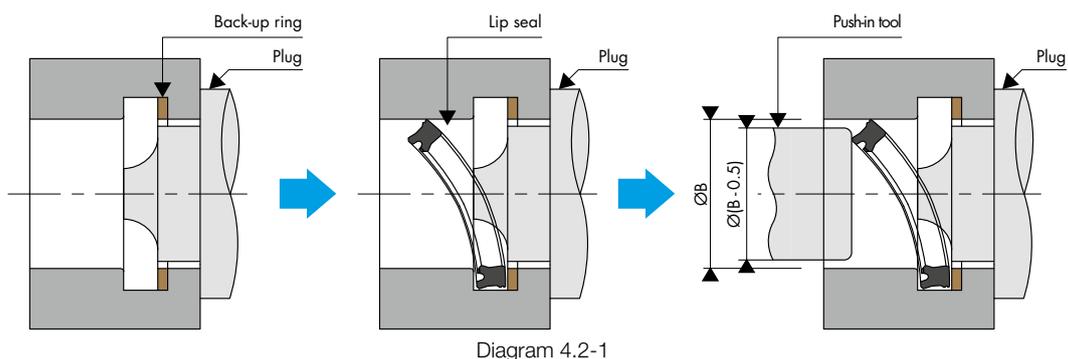
Applicable for the following product families: BECA 230, BECA 231, BECA 301, BECA 301/AE, BECA 320, BECA 322, BECA 325.

Using assembly tools:

- Prepare a push-in tool and a plug adapted to your application's dimensions.
- Clip one side of the lip seal into the groove and push the other part of the seal into place using the push-in tool (see diagram 4.2-1 opposite).
- Perform the entire operation without interruption to prevent the seal from becoming permanently warped.

If assembly tools fail:

- For seals with a back-up ring, first fit the seal in the groove followed by the back-up ring.
- Distort the lip seal by shaping it like a bean without creating a sharp angle (see diagram 4.1-2).
- Fit the lip seal into the groove.
- Calibrate the lip seal using a mandrel (see diagram 4.1-4).



4.3 ASSEMBLY 1.C – ROD SEALS - OPEN GROOVE

Applicable to all rod seals.

- The open groove assembly is simple and does not require any specific tools.
- For composite seals, prevent the seal's parts from becoming twisted and, for the final assembly (passing the rod through the seal), use the rod to calibrate the friction ring, provided the inlet chamfer is long enough. A calibration mandrel can also be used (see diagram 4.1-4).
- For lip seals, compo-compact and compact seals, use a push-in plug to push the seal onto its groove diameter. If the chamfer does not work at the bore, a bushing for assembly, chamfered 15° - 20° along a length of 30 mm, can be used positioned against the bore. (see diagram 4.3-1).

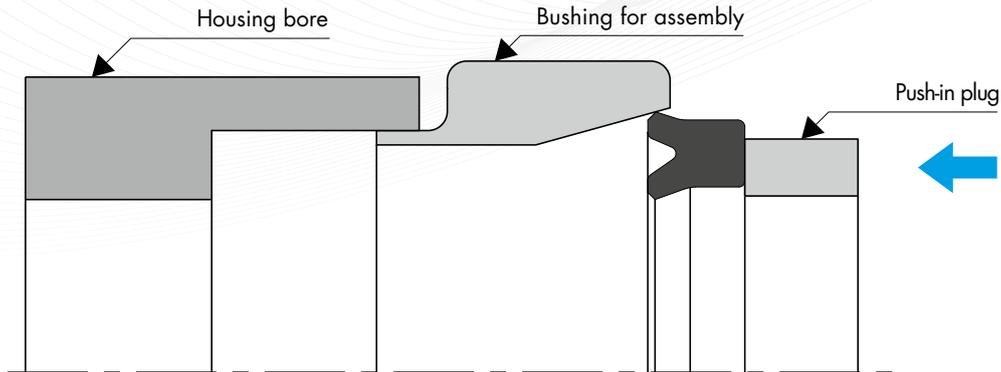


Diagram 4.3-1

ASSEMBLY 2.A - PISTON COMPOSITE SEAL - CLOSED GROOVE

Applicable for the following product families: BECA 500 - 502 - 504, BECA 501 - 503 - 505, BECA 507 - 508, BECA 550 - 559, BECA 520, BECA 525, BECA 530, BECA 535, BECA 650, BECA 655.

Using assembly tools:

- Fit by expanding the O'Ring in the groove.
- Fit the expanding mandrel (see diagram 4.4-1) onto the piston.
- Fit the friction ring onto the expanding mandrel and push it into its groove using a pusher (see diagram 4.4-2).
- Calibrate the friction ring using a calibration mandrel, or using the bore if it has a chamfer between 15° and 20° over a length of 30.00 mm (see diagram below).

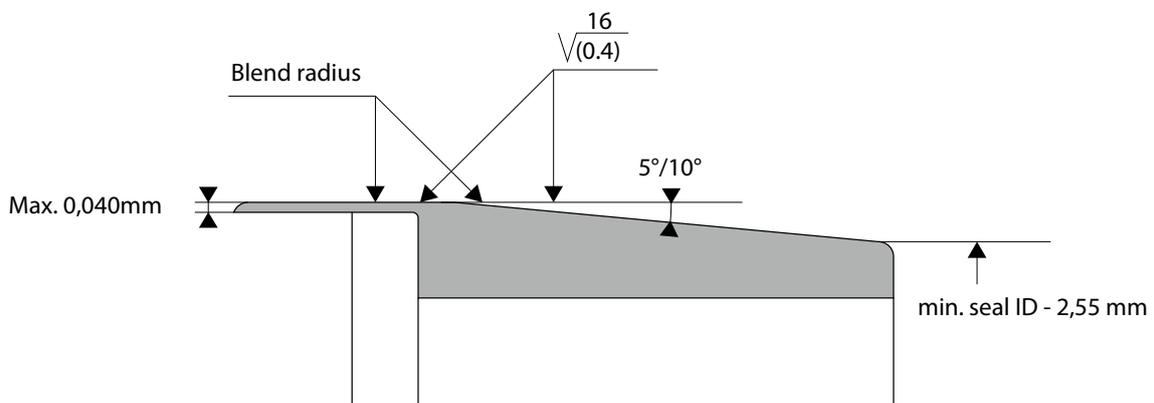


Diagram 4.4-1

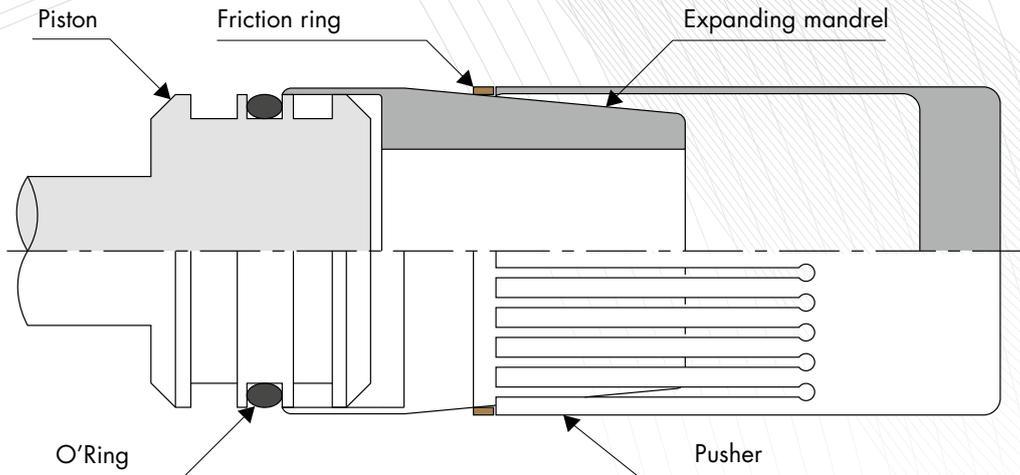


Diagram 4.4-2

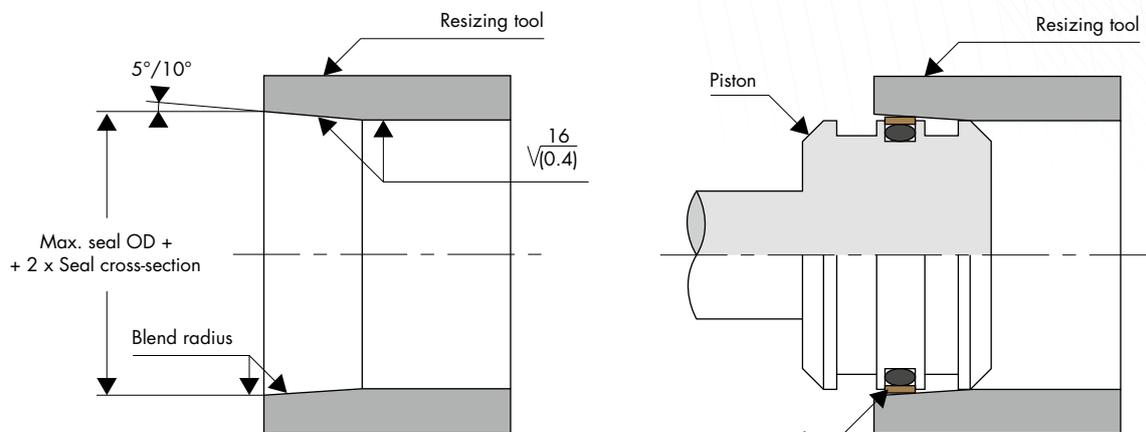


Diagram 4.4-3

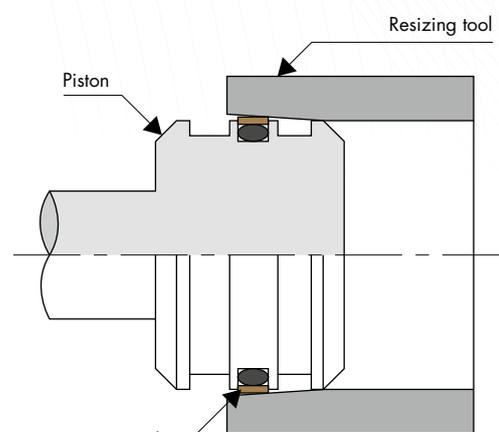


Diagram 4.4-4

If assembly tools fail:

- Fit the O'Ring by expanding it into the groove.
- Heat the friction ring to +80°C / +100°C in the oil (water for the EPDMs) to make it easier to elongate (it then returns to its original shape).
- Position the friction ring in the groove, avoiding any sharp edges.
- Calibrate the friction ring using a calibration mandrel, or using the bore if it has a chamfer between 15° and 20° over a length of 30.00 mm (see diagram 4.4-3).

4.4 ASSEMBLY 2.B - LIP SEAL, PISTON COMPACT SEAL - CLOSED GROOVE

Applicable for the following product families: BECA 336, BECA 580

Using assembly tools:

- For seals with a back-up ring or L-shaped rings, first fit the seal in the groove followed by the other parts (note 1).
- Clip one side of the piston seal into the piston groove.
- Insert a rod with a pivoting arm, which slots in at the piston rod.
- Fit the piston seal until its slots fully into place by pivoting the arm of the assembly tool (see diagram 4.5-1).



Diagram 4.5-1

If assembly tools fail:

- For seals with a back-up ring or L-shaped rings, first fit the seal in the groove followed by the other parts (note 1).
- Clip one side of the piston seal into the piston groove.
- Manually twist the piston seal by expanding it and slide it over the pre-oiled piston body until its slots fully into the groove (see diagram 4.5-2).

Note 1: Assembly order for BECA 579
5-part seals.

Step 1: 1st PU back-up ring

Step 2: NBR profiled seal

Step 3: 2nd PU back-up ring

Step 4: 1st POM L-shaped ring

Step 5: 2nd POM L-shaped ring

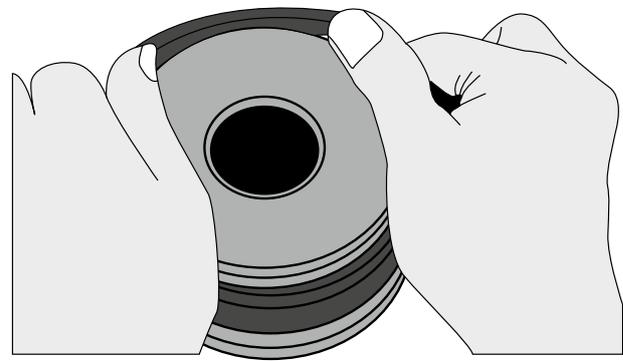


Diagram 4.5-2

4.5 ASSEMBLY 2.C – PISTON SEAL - OPEN GROOVE

Applicable to all piston seals.

The open groove assembly is simple and does not require any specific tools.

- For composite seals, prevent the seal's parts from becoming twisted and, for the final assembly (fitting the piston into the cylinder body), use the cylinder body to calibrate the friction ring, provided the inlet chamfer is long enough. A calibration mandrel can also be used (see diagram 4.4-1).
- For lip seals and compo-compact seals, use a push-in tool to push the seal onto its groove diameter. If the chamfer does not work at the bottom of the groove, a bushing for assembly, chamfered 15° - 20° along a length of 30 mm, can be positioned against the groove diameter (see diagram 4.3-1 but reversed).

4.6 ASSEMBLY 3.A – WIPER SEALS - OPEN GROOVE

Applicable for the following product families: BECA 470, BECA 471, BECA 472, BECA 473, BECA 475, BECA 476, BECA 477, BECA 478

Wiper seals composed of a metal casing are press-fitted into their groove using an assembly tool.

- Position the wiper seal horizontal in relation to the bore
- Insert the seal using a press, ensuring that the thrusting forces are well distributed to prevent the seal from sloping and becoming permanently misshapen (see diagrams 4.7-1 and 4.7-2).

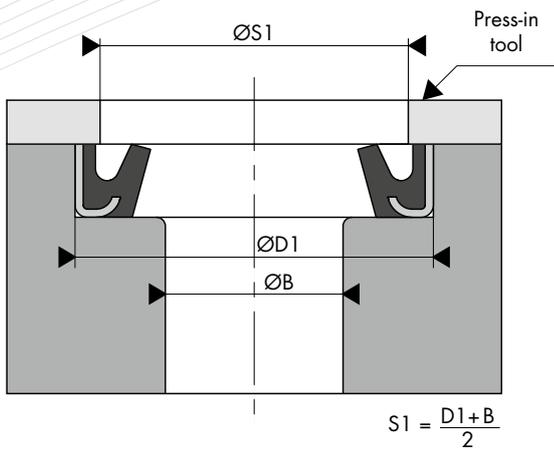


Diagram 4.7-1

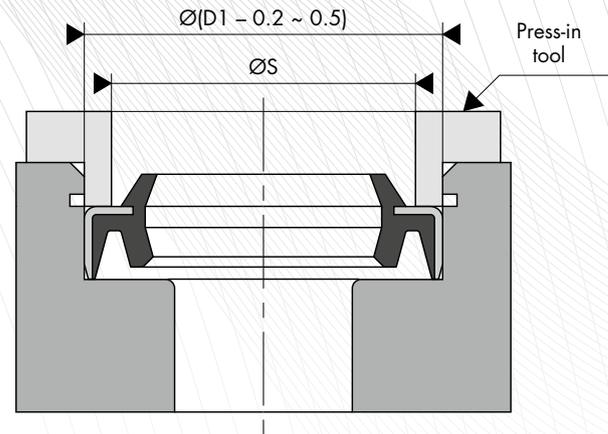


Diagram 4.7-2

4.7 ASSEMBLY 3.B – WIPER SEALS - CLOSED GROOVE

Applicable for the following product families: BECA 382, BECA 417, BECA 455, BECA 460, BECA 461, BECA 464, BECA 465, BECA 466, BECA 468

Flexible rubber or polyurethane wiper seals composed of a metal casing are press-fitted into their groove using an assembly tool.

- Distort the wiper seal by shaping it like a bean without creating a sharp angle.
- Fit the wiper seal into the groove.
- Calibrate the wiper seal using a mandrel

4.8 ASSEMBLY 3.C – WIPER SEALS - CLOSED GROOVE

Applicable for the following product families: BECA 480, BECA 482, BECA 483, BECA 485, BECA 486

- Fit the O'Ring into the groove.
- Distort the friction ring by shaping it like a bean without creating a sharp angle.
- Position the friction ring in the groove and restore its shape by pushing it against the O'Ring.
- Calibrate the friction ring using a mandrel chamfered between 15° and 20° along a length of 30.00 mm.

5. Storage recommendations and lifespan

Seals, which are regularly used as spare parts, can be stored over a long-term period. During storage, rubbers are subject to physical alterations, meaning that they can sometimes become unusable due to deformation, hardening, softening or cracking when they are exposed to oxygen and ozone, light, heat, moisture, oils and solvents.

ISO Standard 2230: 2002 "Rubber Products - Guidelines for Storage" sets out the storage recommendations and length of storage for rubbers depending on material classification, in order to ensure optimal preservation of the physical and chemical features of parts.

Temperature

The temperature in the storage area must preferably be between +5°C and +25°C. If the temperature exceeds +25°C, the rubber seals may undergo physical changes, no longer retaining their original technical features, and may break down prematurely. All heat sources (radiators, lamps, sunlight, etc.) must be controlled so that the temperature does not exceed +25°C.

On the other hand, if the temperature in the storage area is below +5°C, the seals may become more rigid, which will not necessarily alter their chemical and physical features. Returning them to +20°C is advised before putting them into operation.

Humidity

Generally speaking, the relative humidity of the storage area should not exceed 70% for rubber seals (65% for polyurethane seals). Avoid humid areas, as well as areas that are prone to condensation.

Light

Rubber seals must not come into contact with sunlight or artificial light with a high UV ray content. Using normal incandescent lighting is recommended, as is covering windows in the storage area with a protective red or orange paint. Using special anti-UV bags will ensure that seals are better protected.

Radiation

Precautions must be taken to protect stored parts from all sources of ionising radiation.

Ozone

As ozone is very damaging to rubber seals, the storage area must not contain ozone-producing equipment, such as mercury-vapour lamps, high-voltage electrical equipment, electric motors or other products likely to produce soundless electrical charges or sparks. No combustible gases or organic vapours must be present, as their photochemical processes may lead to ozone production.

Distortion

Seals must preferably be stored where they are not subjected to constraints, pressures or any other force that could cause them to become misshapen. Seals should be kept in their original packaging as far as possible.

Contact with liquids and semi-liquids

Seals must not be stored in contact with liquids (acids, disinfectants, oils, greases, etc.) or other semi-liquid materials, unless packaged in this way by the manufacturer.

Contact with metals

Certain metals, such as manganese, iron, copper, brass and other compounds are damaging to rubbers. Seals must not be stored in contact with such metals unless the rubber parts are affixed to them, in which case a rolled packaging would be preferable.

Contact with other materials

Rubber seals must not be stored in contact with PVC due to the risk of potentially transferring plasticiser or other ingredients. Rubbers with different compositions must be separated from one another.

Cleaning

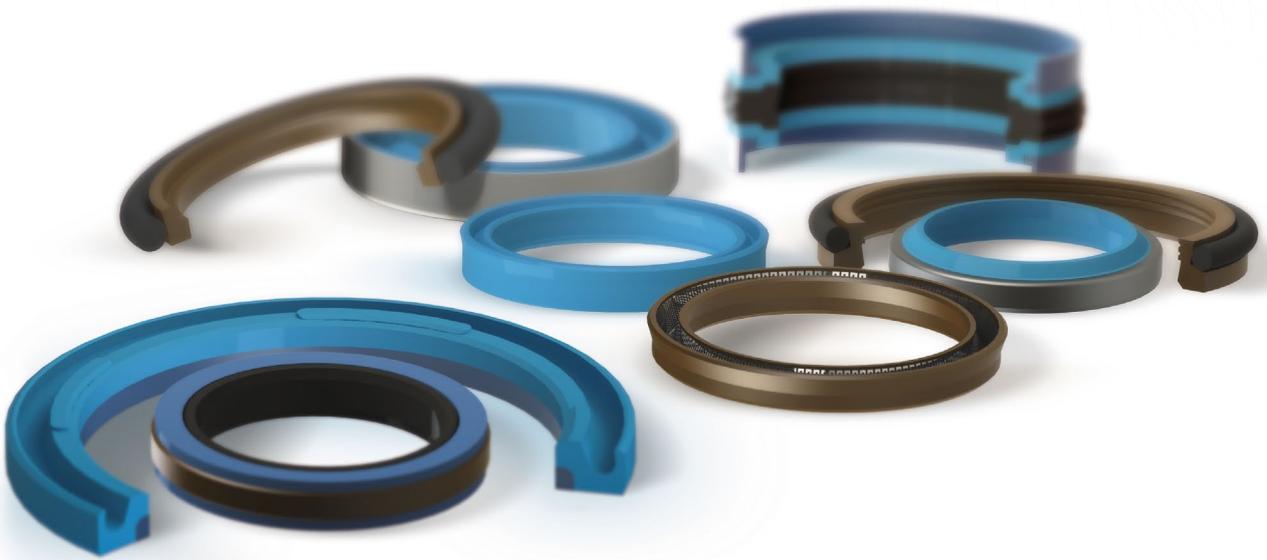
If necessary, clean seals with soap and water, or denatured alcohol. Cleaning with water should particularly be avoided for seals with textile fibre, and steel-rubber (corrosion problems) or polyurethane seals. Parts must be dried at ambient temperature and not near a heat source. Seals must not come into contact with wire brushes or sharp objects.

Storage and control

Storage duration largely depends on the type of material, rubbers being particularly sensitive to storage. The table below sets out the initial storage period.

Type of materials	Initial storage period	Extension period
NR - PU	5 years	2 years
ACM - AEM - CR - HNBR - NBR	7 years	3 years
EPDM - FFKM - FKM - FVMQ - VMQ	10 years	5 years
PTFE - PA6 - POM	Unlimited	-

Quality control is carried out at the end of this period. An extension may be possible, depending on the results.





6. Rod seals

The rod seals, mainly used in hydraulic cylinders, must ensure the sealing of fluids while meeting the conditions for extreme use. Whatever their form, whether it be a composite seal, a compact seal or a lip seal (also called a U-seal), we will assist you in selecting a seal whilst considering the different variables such as pressure, temperature, type of media, speed, frequency, surface roughness and other specific parameters.

IMPORTANT

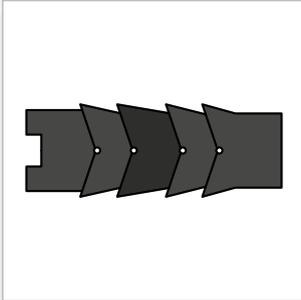
The pressures, speeds and temperatures indicate the maximum values and may not be cumulated. Moreover, they may be developed depending on the materials used.

For specific orders (temperature, pressure, speed, etc.), please contact our technical team so that they can direct you towards the appropriate choice of material and seal profile.

The dimensions shown in the catalogue are usually in stock and can be sent quickly. However, we reserve the right to modify our delivery schedule. Please contact our sales team to find out our availabilities.

Contents

	BECA 002 Materials: NBR + fabric NBR + TPE Temperature: -30°C / +110°C Pressure: 40 MPa Speed: 0.5 m/sec	P. 28		BECA 231/AE Materials: PU + POM Temperature: -30°C / +110°C Pressure: 45 MPa Speed: 0.5 m/sec	P. 76
	BECA 150 - 152 - 154 Materials: PTFE + Rubber Temperature: -30°C / +200°C Pressure: 50 MPa Speed: 5 m/s	P. 34		BECA 235T/AE Materials: Rubber + POM/PTFE Temperature: -30°C / +200°C Pressure: 25 MPa Speed: 0.5 m/sec	P. 306
	BECA 151 - 153 - 155 Materials: PTFE + Rubber Temperature: -30°C / +200°C Pressure: 50 MPa Speed: 5 m/s	P. 40		BECA 239 Materials: Rubber + PTFE Temperature: -30°C / +200°C Pressure: 25 MPa Speed: 0.5 m/sec	P. 78
	BECA 157 - 158 Materials: PTFE + Rubber Temperature: -30°C / +200°C Pressure: 50 MPa Speed: 2 m/s	P. 46		BECA 300 Materials: Rubber + POM/PTFE Temperature: -30°C / +200°C Pressure: 27.5 MPa Speed: 0.5 m/sec	P. 80
	BECA 161 - 163 - 165 Materials: PU + Rubber Temperature: -30°C / +100°C Pressure: 25 MPa Speed: 0.5 m/sec	P. 50		BECA 301/AE Materials: Fabric NBR + POM Temperature: -30°C / +110°C Pressure: 35 MPa Speed: 0.5 m/sec	P. 82
	BECA 170 - 179 Materials: PTFE + Rubber Temperature: -30°C / +200°C Pressure: 35 MPa Speed: 5 m/s	P. 56		BECA 302/AE Materials: FKM + PTFE Temperature: -20°C / +200°C Pressure: 35 MPa Speed: 0.5 m/sec	P. 84
	BECA 190 Materials: NBR + POM Temperature: -30°C / +200°C Pressure: 50 MPa Speed: 0.5 m/sec	P. 60		BECA 310/B Materials: PU Temperature: -30°C / +110°C Pressure: 40 MPa Speed: 0.5 m/sec	P. 307
	BECA 200 Materials: NBR + POM Temperature: -30°C / +100°C Pressure: 70 MPa Speed: 0.5 m/sec	P. 62		BECA 312 Materials: PU + POM Temperature: -30°C / +110°C Pressure: 50 MPa Speed: 0.5 m/sec	P. 86
	BECA 201 Materials: Rubber + POM/PTFE Temperature: -30°C / +200°C Pressure: 70 MPa Speed: 0.5 m/sec	P. 64		BECA 315 Materials: PU + POM Temperature: -30°C / +110°C Pressure: 40 MPa (peak at 60 MPa) Speed: 0.5 m/sec	P. 88
	BECA 202 Materials: NBR + POM + TPE Temperature: -30°C / +110°C Pressure: 70 MPa Speed: 0.5 m/sec	P. 66		BECA 316 Materials: PU + POM Temperature: -30°C / +110°C Pressure: 40 MPa (peak at 60 MPa) Speed: 1 m/s	P. 90
	BECA 230 Materials: Rubber Temperature: -30°C / +200°C Pressure: 15 MPa Speed: 0.5 m/sec	P. 68		BECA 322 Materials: PU + NBR + POM Temperature: -30°C / +100°C Pressure: 45 MPa Speed: 0.5 m/sec	P. 92
	BECA 230/AE Materials: Rubber + POM/PTFE Temperature: -30°C / +200°C Pressure: 25 MPa Speed: 0.5 m/sec	P. 305		BECA 325 Materials: PU + NBR + POM Temperature: -30°C / +100°C Pressure: 45 MPa Speed: 0.5 m/sec	P. 94
	BECA 230/B Materials: Rubber Temperature: -30°C / +200°C Pressure: 40 MPa Speed: 0.5 m/sec	P. 70		BECA 335T/AE Materials: PU + POM Temperature: -30°C / +110°C Pressure: 45 MPa Speed: 0.5 m/sec	P. 308
	BECA 231 Materials: PU Temperature: -30°C / +110°C Pressure: 40 MPa Speed: 0.5 m/sec	P. 72		BECA 340 - 349 Materials: PTFE + Stainless steel Temperature: -200°C / +260°C Pressure: 40 MPa Speed: 15 m/s	P. 96
	BECA 231/B Materials: PU Temperature: -30°C / +110°C Pressure: 40 MPa Speed: 0.5 m/sec	P. 74		BECA 385 Materials: Rubber Temperature: -30°C / +200°C Pressure: 8 MPa Speed: 0.5 m/sec	P. 100
				BECA 640 Materials: PA6 + NBR Temperature: -30°C / +100°C Pressure: 40 MPa Speed: 0.5 m/sec	P. 102



ROD SEALS

BECA 002/5



DESCRIPTION

The BECA 002/5 profile is a 5-part chevron seal. This sealing system is composed of 2 textile-reinforced rubber shaft seals and 1 rubber ring. Its geometry means that it is encapsulated between a head nut and a locking ring.

ADVANTAGES

Strong sealing, tolerant to surface roughness defects (impacts on the rod, carbon deposits, etc.)

The tightness can be adjusted depending on the application

Excellent resistance to pressure

APPLICATIONS

Cylinders for extreme demands

Presses

Steel industry

Mining machines

Installations in corrosive and abrasive environments

MATERIALS

POM + NBR + fabric NBR + TPE

TECHNICAL DATA

Temperature	-30°C / +110°C
Pressure	40 MPa
Speed	0.5 m/s
Media	Mineral oils

The figures above indicate the maximum values and may not be cumulated. They may be developed, depending on the materials used.

EXTRUSION GAPS

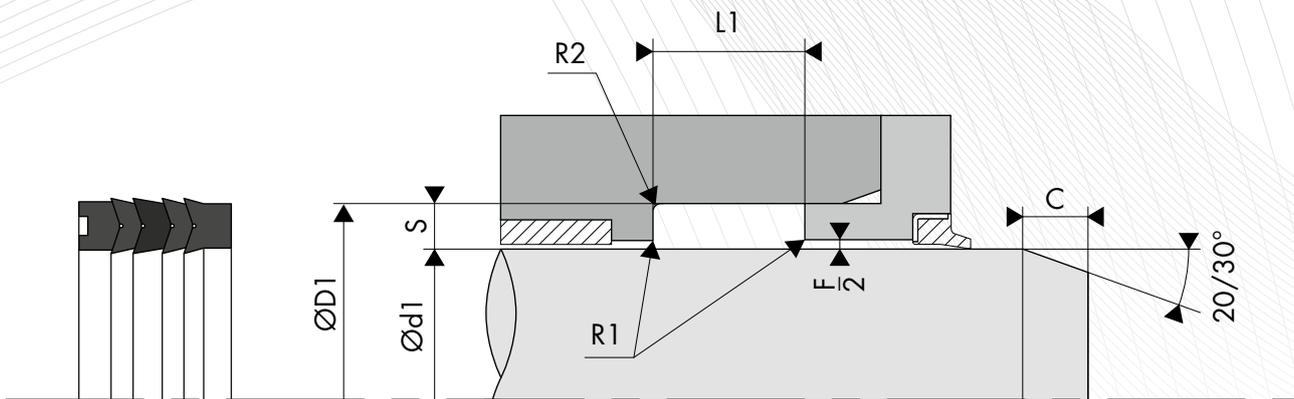
Radial section S	Radial gap F/2			
	16 MPa	26 MPa	32 MPa	40 MPa
≤ 5.00	0.50	0.40	0.35	-
≤ 7.50	0.55	0.45	0.40	0.35
≤ 12.50	0.60	0.50	0.45	0.40
≤ 15.00	0.65	0.55	0.45	0.40

SURFACE ROUGHNESS

Roughness	Dynamic surface area	Static surface area	Groove flanks
Ra	0.1 - 0.4 µm	≤1.6 µm	≤3.2 µm
Rz	0.63 - 2.5 µm	≤6.3 µm	≤10.0 µm
Rmax	1.0 - 4.0 µm	≤10.0 µm	≤16.0 µm

CHAMFERS AND RADIUS

Inside diameter Ød1	Radius R1	Radius R2	Chamfer C
≤ 50.00	0.30	0.40	2.50
> 50.00	0.30	0.80	4.00

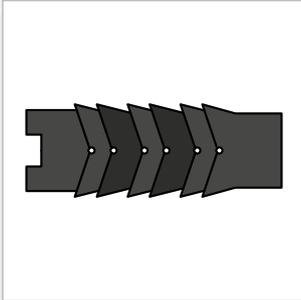


DIMENSIONS

Part number	Rod diameter Ød1 f8	Groove diameter ØD1 H9	Groove width L1 0/+0.25
002.502011	10.00	20.00	11.00
002.502514	12.00	25.00	14.35
002.502914	16.00	29.00	14.35
002.503114	18.00	31.00	14.32
002.503222	18.00	32.00	22.50
002.503021	20.00	30.00	21.50
002.531517	20.00	31.50	17.50
002.503217	20.00	32.00	17.50
002.503314	20.00	33.00	14.35
002.503624	20.00	36.00	24.00
002.503218	22.00	32.00	18.15
002.503826	22.00	38.00	26.00
002.503517	25.00	35.00	17.30
002.504019	25.00	40.00	19.85
002.504225	25.00	42.00	25.40
002.504525	25.00	45.00	25.40
002.504529	26.00	45.00	29.40
002.504017	28.00	40.00	17.00
002.504417	28.00	44.00	17.65
002.504021	30.00	40.00	21.80
002.504220	30.00	42.00	20.00
002.504522	30.00	45.00	22.20
002.505029	30.00	50.00	29.37
002.504217	32.00	42.00	17.30
002.504521	35.00	45.00	21.78
002.504717	35.00	47.00	17.50
002.505022	35.00	50.00	22.50
002.505217	36.00	52.00	17.60
002.505528	38.00	55.00	28.00
002.505525	39.00	55.00	25.40
002.505017	40.00	50.00	17.30
002.505522	40.00	55.00	22.60
002.505617	40.00	56.00	17.63
002.506030	40.00	60.00	30.00
002.506535	40.00	65.00	35.75
002.505517	45.00	55.00	17.50
002.506022	45.00	60.00	22.20
002.506129	45.00	61.00	29.00
002.506528	45.00	65.00	28.00
002.506025	48.00	60.00	25.00
002.506222	48.00	62.00	22.22
002.506524	50.00	65.00	24.60
002.507021	50.00	70.00	21.95
002.507030	50.00	70.00	30.00
002.506928	51.00	69.00	28.00
002.507617	51.00	76.00	17.50
002.507238	52.00	72.00	38.50
002.506725	55.00	67.00	25.00
002.507026	55.00	70.00	26.50
002.507538	55.00	75.00	38.50
002.507621	56.00	76.00	21.94
002.507519	60.00	75.00	19.00
002.507629	60.00	76.00	29.00
002.507727	60.00	77.00	27.00
002.508022	60.00	80.00	22.00
002.508032	60.00	80.00	32.15
002.508321	63.00	83.00	21.94
002.508532	63.00	85.00	32.00
002.508028	63.50	80.00	28.00

Part number	Rod diameter Ød1 f8	Groove diameter ØD1 H9	Groove width L1 0/+0.25
002.508025	64.00	80.00	25.80
002.507721	65.00	77.00	21.00
002.508026	65.00	80.00	26.00
002.508529	65.00	85.00	29.00
002.508528	70.00	85.00	28.00
002.509022	70.00	90.00	22.00
002.509030	70.00	90.00	30.00
002.509530	75.00	95.00	30.00
002.510037	75.00	100.00	37.50
002.509517	80.00	95.00	17.50
002.510030	80.00	100.00	30.00
002.510527	80.00	105.00	27.40
002.510530	85.00	105.00	30.00
002.511540	85.00	115.00	40.00
002.510531	90.00	105.00	31.75
002.511025	90.00	110.00	25.00
002.511026	90.00	110.00	26.90
002.511030	90.00	110.00	30.00
002.511527	90.00	115.00	27.41
002.512042	90.00	120.00	42.00
002.511024	95.00	110.00	24.00
002.511532	95.00	115.00	32.15
002.512540	95.00	125.00	40.00
002.511525	100.00	115.00	25.30
002.512028	100.00	120.00	28.00
002.512527	100.00	125.00	27.40
002.512536	100.00	125.00	36.90
002.513037	104.00	130.00	37.00
002.512025	105.00	120.00	25.00
002.512529	105.00	125.00	29.76
002.513030	110.00	130.00	30.00
002.513236	110.00	132.00	36.50
002.513541	110.00	135.00	41.50
002.513025	114.00	130.00	25.80
002.514037	115.00	140.00	37.12
002.514030	120.00	140.00	30.00
002.514539	120.00	145.00	39.50
002.515044	120.00	150.00	44.00
002.513317	125.00	133.00	17.50
002.514529	125.00	145.00	29.60
002.515027	125.00	150.00	27.40
002.515541	125.00	155.00	41.00
002.514530	130.00	145.00	30.00
002.515029	130.00	150.00	29.76
002.515540	130.00	155.00	40.00
002.516041	130.00	160.00	41.50
002.515530	135.00	155.00	30.55
002.516028	140.00	160.00	28.50
002.516541	140.00	165.00	41.95
002.517039	140.00	170.00	39.00
002.517038	145.00	170.00	38.10
002.517030	150.00	170.00	30.55
002.518040	150.00	180.00	40.00
002.518045	152.30	180.00	45.00
002.518535	153.00	185.00	35.50
002.517529	154.00	175.00	29.44
002.517530	155.00	175.00	30.00
002.518547	155.00	185.00	47.00
002.518060	156.00	180.00	60.00
002.518230	157.00	182.00	30.25
002.517325	158.00	173.00	25.00
002.517526	160.00	175.00	26.00
002.518030	160.00	180.00	30.00
002.518540	160.00	185.00	40.00
002.519033	160.00	190.00	33.00
002.517322	165.00	173.00	22.50
002.518035	165.00	180.00	35.00
002.519034	165.00	190.00	34.00
002.519540	165.00	195.00	40.46
002.519537	170.00	195.00	37.50
002.520042	175.00	200.00	42.00
002.520030	180.00	200.00	30.00
002.521033	180.00	210.00	33.00
002.520528	185.00	205.00	28.00
002.521024	185.00	210.00	24.00
002.521542	185.00	215.00	42.50
002.520021	187.13	200.00	21.74
002.521536	190.00	215.00	36.00
002.520323	193.00	203.00	23.00
002.522549	195.00	225.00	49.00
002.522030	200.00	220.00	30.00
002.523032	200.00	230.00	32.97
002.524060	200.00	240.00	60.00
002.523457	203.20	234.95	57.20
002.522519	205.00	225.00	19.50
002.524042	210.00	240.00	42.10

Part number	Rod diameter Ød1 f8	Groove diameter ØD1 H9	Groove width L1 0/+0.25
002.524545	215.00	245.00	45.00
002.525550	215.00	255.00	50.00
002.524030	220.00	240.00	30.00
002.525052	220.00	250.00	52.00
002.526060	220.00	260.00	60.00
002.525432	224.00	254.00	32.97
002.525545	225.00	255.00	45.00
002.525438	228.60	254.00	38.10
002.526045	230.00	260.00	45.00
002.527060	230.00	270.00	60.00
002.527045	240.00	270.00	45.00
002.528060	240.00	280.00	60.00
002.527546	245.00	275.00	46.00
002.527027	250.00	270.00	27.00
002.528033	250.00	280.00	33.00
002.528043	250.00	280.00	43.00
002.529060	250.00	290.00	60.00
002.527530	255.00	275.00	30.00
002.528544	255.00	285.00	44.00
002.528040	260.00	280.00	40.00
002.529040	260.00	290.00	40.50
002.530054	260.00	300.00	54.00
002.528529	265.00	285.00	29.00
002.529037	265.00	290.00	37.50
002.529540	265.00	295.00	40.00
002.530046	270.00	300.00	46.00
002.531060	270.00	310.00	60.00
002.530546	275.00	305.00	46.00
002.531050	280.00	310.00	50.50
002.531538	280.00	315.00	38.45
002.532057	280.00	320.00	57.00
002.531540	285.00	315.00	40.00
002.532560	285.00	325.00	60.00
002.530728	288.92	307.97	28.57
002.532050	290.00	320.00	50.80
002.533054	290.00	330.00	54.00
002.532546	295.00	325.00	46.00
002.532032	300.00	320.00	32.00
002.533044	300.00	330.00	44.00
002.534054	300.00	340.00	54.00
002.533030	310.00	330.00	30.00
002.534046	310.00	340.00	46.00
002.535060	310.00	350.00	60.00
002.535046	313.00	350.00	46.00
002.534552	315.00	345.00	52.00
002.535038	315.00	350.00	38.45
002.535550	315.00	355.00	50.00
002.535050	320.00	350.00	50.80
002.536054	320.00	360.00	54.00
002.536555	320.00	365.00	55.00
002.535546	325.00	355.00	46.00
002.536556	325.00	365.00	56.00
002.537060	330.00	370.00	60.00
002.537046	340.00	370.00	46.00
002.538060	340.00	380.00	60.00
002.538046	350.00	380.00	46.00
002.539060	350.00	390.00	60.00
002.538142	355.00	381.00	42.00
002.539050	360.00	390.00	50.80
002.540060	360.00	400.00	60.00
002.540045	369.00	400.00	45.00
002.540546	375.00	405.00	46.00
002.542060	380.00	420.00	60.00
002.544085	380.00	440.00	85.00
002.542051	384.00	420.00	51.00
002.542050	390.00	420.00	50.00
002.543060	390.00	430.00	60.00
002.543048	400.00	430.00	48.00
002.544054	400.00	440.00	54.00
002.545075	400.00	450.00	75.00
002.545060	410.00	450.00	60.00
002.545050	416.00	450.00	50.00
002.545046	420.00	450.00	46.00
002.546052	420.00	460.00	52.00
002.546560	425.00	465.00	60.00
002.546449	430.00	464.00	49.00
002.548059	440.00	480.00	59.00
002.547546	445.00	475.00	46.00
002.548550	446.00	485.00	50.00
002.549060	450.00	490.00	60.00
002.550075	450.00	500.00	75.00
002.549250	460.00	492.00	50.00
002.550060	460.00	500.00	60.00
002.550055	463.00	500.00	55.00
002.550046	470.00	500.00	46.00



ROD SEALS

BECA 002/7



DESCRIPTION

The BECA 002/7 profile is a 7-part chevron ring and is composed of 3 textile-reinforced rubber shaft seals and 2 rubber rings. Its geometry means that it is encapsulated between a head nut and a locking ring.

ADVANTAGES

Strong sealing, tolerant to surface roughness defects (impacts on the rod, carbon deposits, etc.)

The tightness can be adjusted depending on the application

Excellent resistance to pressure

APPLICATIONS

Cylinders for extreme demands

Presses

Steel industry

Mining machines

Installations in corrosive and abrasive environments

MATERIALS

POM + NBR + fabric NBR + TPE

TECHNICAL DATA

Temperature	-30°C / +110°C
Pressure	40 MPa
Speed	0.5 m/s
Media	Mineral oils

The figures above indicate the maximum values and may not be cumulated. They may be developed, depending on the materials used.

EXTRUSION GAPS

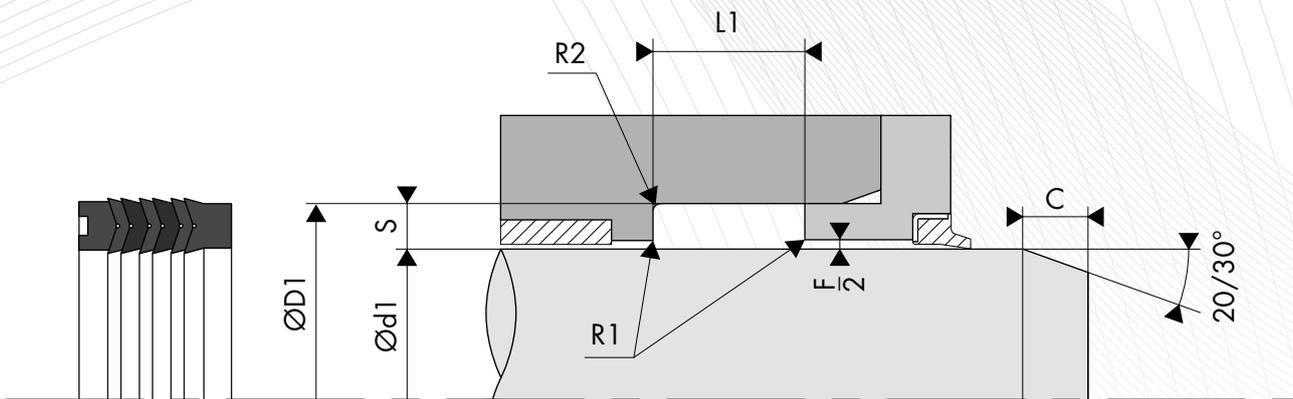
Radial section S	Radial gap F/2			
	16 MPa	26 MPa	32 MPa	40 MPa
≤ 5.00	0.50	0.40	0.35	-
≤ 7.50	0.55	0.45	0.40	0.35
≤ 12.50	0.60	0.50	0.45	0.40
≤ 15.00	0.65	0.55	0.45	0.40

SURFACE ROUGHNESS

Roughness	Dynamic surface area	Static surface area	Groove flanks
Ra	0.1 - 0.4 µm	≤1.6 µm	≤3.2 µm
Rz	0.63 - 2.5 µm	≤6.3 µm	≤10.0 µm
Rmax	1.0 - 4.0 µm	≤10.0 µm	≤16.0 µm

CHAMFERS AND RADIUS

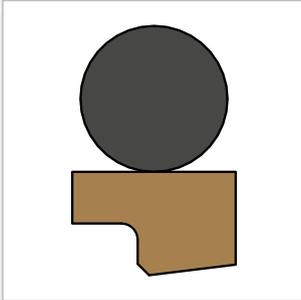
Inside diameter Ød1	Radius R1	Radius R2	Chamfer C
≤ 50.00	0.30	0.40	2.50
> 50.00	0.30	0.80	4.00



DIMENSIONS

Part number	Rod diameter Ød1 f8	Groove diameter ØD1 H9	Groove width L1 0/+0.25
002.701818	8.00	18.00	18.50
002.702018	10.00	20.00	18.50
002.702218	12.00	22.00	18.50
002.702418	14.00	24.00	18.50
002.702518	14.00	25.00	18.50
002.702618	16.00	26.00	18.50
002.702818	18.00	28.00	18.50
002.703018	20.00	30.00	18.50
002.703222	20.00	32.00	22.50
002.703218	22.00	32.00	18.50
002.703422	22.00	34.00	22.50
002.703722	25.00	37.00	22.50
002.704022	25.00	40.00	22.50
002.704322	28.00	43.00	22.50
002.704222	30.00	42.00	22.50
002.704522	30.00	45.00	22.50
002.704422	32.00	44.00	22.50
002.704722	32.00	47.00	22.50
002.704822	36.00	48.00	22.50
002.705122	36.00	51.00	22.50
002.705222	40.00	52.00	22.50
002.705522	40.00	55.00	22.50
002.705422	42.00	54.00	22.50
002.705722	42.00	57.00	22.50
002.706022	45.00	60.00	22.50
002.706527	45.00	65.00	27.50
002.706522	50.00	65.00	22.50
002.706529	50.00	65.00	29.00
002.707030	50.00	70.00	30.00
002.707022	55.00	70.00	22.50
002.707530	55.00	75.00	30.00
002.707122	56.00	71.00	22.50
002.707637	56.00	76.00	37.00
002.707522	60.00	75.00	22.50
002.708037	60.00	80.00	37.00
002.707822	63.00	78.00	22.50
002.708337	63.00	83.00	37.00
002.707722	65.00	77.00	22.50
002.708022	65.00	80.00	22.50

Part number	Rod diameter Ød1 f8	Groove diameter ØD1 H9	Groove width L1 0/+0.25
002.708029	65.00	80.00	29.00
002.708541	65.00	85.00	41.00
002.708522	70.00	85.00	22.50
002.709041	70.00	90.00	41.00
002.709022	75.00	90.00	22.50
002.709541	75.00	95.00	41.00
002.709522	80.00	95.00	22.50
002.710041	80.00	100.00	41.00
002.710022	85.00	100.00	22.50
002.710541	85.00	105.00	41.00
002.710522	90.00	105.00	22.50
002.711041	90.00	110.00	41.00
002.711036	95.00	110.00	36.50
002.711530	100.00	115.00	30.00
002.712041	100.00	120.00	41.00
002.712530	110.00	125.00	30.00
002.713041	110.00	130.00	41.00
002.713030	115.00	130.00	30.00
002.714046	115.00	140.00	46.00
002.714034	125.00	140.00	34.00
002.715046	125.00	150.00	46.00
002.715534	140.00	155.00	34.00
002.716546	140.00	165.00	46.00
002.717041	150.00	170.00	41.00
002.718060	150.00	180.00	60.00
002.718040	160.00	180.00	40.00
002.719060	160.00	190.00	60.00
002.720060	170.00	200.00	60.00
002.720041	180.00	200.00	41.00
002.721060	180.00	210.00	60.00
002.722060	190.00	220.00	60.00
002.722041	200.00	220.00	41.00
002.723060	200.00	230.00	60.00
002.725060	220.00	250.00	60.00
002.726060	230.00	260.00	60.00
002.726565	235.00	265.00	65.00
002.727064	240.00	270.00	64.00
002.728060	250.00	280.00	60.00
002.731060	280.00	310.00	60.00



ROD SEALS

BECA

150-152-154



DESCRIPTION

The BECA 150 - 152 - 154 profiles are single acting composite rod seals composed of a filled PTFE friction ring and pre-tightened rubber O'Ring. They can be assembled in grooves according to standard ISO 7425/2. Option of connecting the seal to a back-up ring.

ADVANTAGES

Optimal sealing in static and dynamic applications

Low friction coefficient;
no stick-slip effect

Excellent abrasion and
extrusion resistance

Wide temperature range and excellent
chemical resistance, depending on
the material selected for the O'Ring

APPLICATIONS

Mobile hydraulics
Injection presses
Machine tools
Presses
Standard cylinders

MATERIALS

Friction ring

Bronze-filled PTFE
Carbon-filled PTFE
Blue GL PTFE

O'Ring

NBR 70 Shore A
FKM 70 Shore A

Other grades of materials are
available. Please refer to the
materials table on the next page.

TECHNICAL DATA

Temperature	-30°C / +200°C
Pressure	50 MPa
Speed	5 m/s
Media	Mineral hydraulic oils Fire-resistant liquids Biocompatible fluids Water Others (contact our experts)

The figures above indicate the maximum values and may not be cumulated. They may be developed, depending on the materials used.

EXTRUSION GAPS

Radial section S	Radial gap F/2		
	10 MPa	20 MPa	40 MPa
2.45	0.30	0.20	0.15
3.65	0.40	0.25	0.15
5.35	0.50	0.30	0.20
7.55	0.70	0.40	0.25
10.25	0.80	0.60	0.35
12.00	0.90	0.70	0.40
13.65	1.00	0.80	0.50
19.00	1.20	0.90	0.60

SURFACE ROUGHNESS

Roughness	Dynamic surface area	Static surface area	Groove flanks
Ra	0.05 - 0.2 µm	≤1.6 µm	≤3.2 µm
Rz	0.4 - 1.6 µm	≤6.3 µm	≤10.0 µm
Rmax	0.63 - 2.5 µm	≤10.0 µm	≤16.0 µm

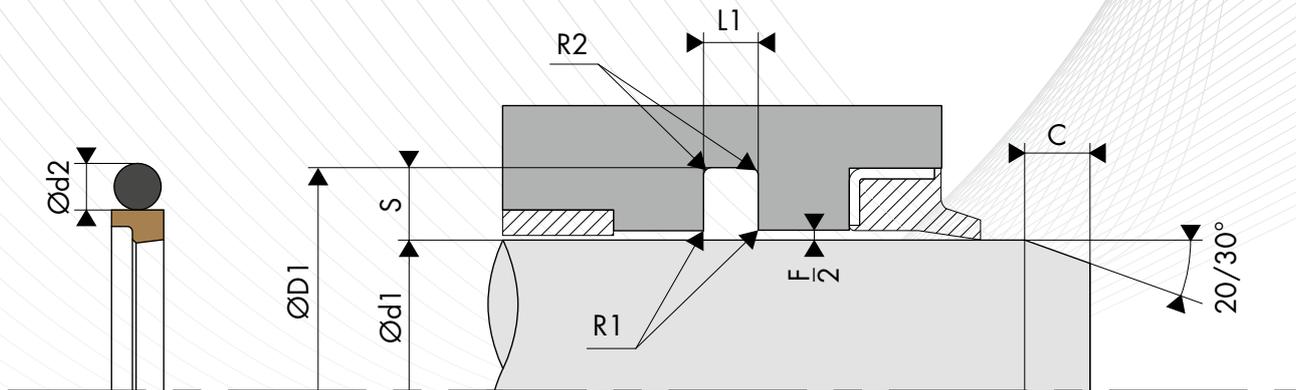
CHAMFERS AND RADIUS

Radial section S	Radius R1	Radius R2	Chamfer C
2.45	0.30	0.40	3.00
3.65	0.30	0.60	3.00
5.35	0.30	1.00	3.00
7.55	0.30	1.30	5.00
10.25	0.30	1.80	6.00
12.00	0.30	1.80	8.00
13.65	0.30	2.50	10.00
19.00	0.30	3.00	12.00

TABLE MATERIALS

Friction ring					O'Ring			Mating surface material	
Standard code	ISO code	Material	Colour	Characteristics	Code	Type of material	Service temperature		
DP	P	Virgin PTFE	White	Resistance to chemical products Impermeability Dielectric Non-stick Low friction coefficient Food industry	K6	NBR 70 Shore A	-30°C/+100°C	Steel Stainless steel Chrome steel Aluminium Bronze Cast iron Treated surface	
					G6	FKM 70 Shore A	-20°C/+200°C		
					C6	EPDM 70 Shore A	-45°C/+150°C		
					F6	VMQ 70 Shore A	-60°C/+200°C		
DC	C	PTFE + 25% Carbon	Grey	Improvements • Wear properties • Compression set Good resistance to chemical products Thermal and electrical conductivity Anti-static	K6	NBR 70 Shore A	-30°C/+100°C		
					G6	FKM 70 Shore A	-20°C/+200°C		
					C6	EPDM 70 Shore A	-45°C/+150°C		
CG	C	PTFE + 23% Carbon + 2% Graphite	Black	High-performing in compression-based dynamic applications	K6	NBR 70 Shore A	-30°C/+100°C		
					G6	FKM 70 Shore A	-20°C/+200°C		
					C6	EPDM 70 Shore A	-45°C/+150°C		
DV	V	PTFE + 25 % Glass	Blue	Improvements • Wear properties • Mechanical strength Slightly more abrasive, however, this is corrected by adding MOS2	K6	NBR 70 Shore A	-30°C/+100°C		Steel Chrome steel Cast iron
					G6	FKM 70 Shore A	-20°C/+200°C		
VM	M	PTFE + 15 % Glass + 5% MOS2	Grey	Maintains its chemical and dielectric properties Well-suited to applications with rotational and simultaneous alternating movements	K6	NBR 70 Shore A	-30°C/+100°C		
					G6	FKM 70 Shore A	-20°C/+200°C		
DX	X	PTFE GL Blue + Glass + Metal oxides	Turquoise blue	Resistance to compression Resistance to wear Excellent chemical stability Good thermal conductivity	K6	NBR 70 Shore A	-30°C/+100°C		
					G6	FKM 70 Shore A	-20°C/+200°C		
DG	G	PTFE + 15% Graphite	Black	Improvements • Wear properties Reduced wear on metal parts Self-lubricating Thermal and electrical conductivity Low permeability Good friction coefficient Anti-static High performing in dynamic self-lubricating applications	K6	NBR 70 Shore A	-30°C/+100°C	Steel Stainless steel Chrome steel Aluminium Bronze Cast iron Treated surface	
					G6	FKM 70 Shore A	-20°C/+200°C		
					C6	EPDM 70 Shore A	-45°C/+150°C		
K1	K	PTFE + 10% Ekonol	Light brown	Improvements • Better abrasion resistance • Better dimensional stability at high temperatures Use up to +300°C	K6	NBR 70 Shore A	-30°C/+100°C		
					G6	FKM 70 Shore A	-20°C/+200°C		
					C6	EPDM 70 Shore A	-45°C/+150°C		
K2	K	PTFE + 20% Ekonol	Light brown	Good friction coefficient and low permeability	K6	NBR 70 Shore A	-30°C/+100°C		
					G6	FKM 70 Shore A	-20°C/+200°C		
					C6	EPDM 70 Shore A	-45°C/+150°C		
DB	B	PTFE + 60% Bronze	Dark brown	Improvements • Wear properties • Warping resistance and creep strength • Compression resistance Self-lubricating	K6	NBR 70 Shore A	-30°C/+100°C	Steel Chrome steel Cast iron	
					G6	FKM 70 Shore A	-20°C/+200°C		
B4	B	PTFE + 40% Bronze	Dark brown	Electrical and thermal conductivity Does not alter the metal parts Reduced hold with certain chemical products Used for high-compression dynamic seals and has a low level of wear	K6	NBR 70 Shore A	-30°C/+100°C		
					G6	FKM 70 Shore A	-20°C/+200°C		
HG	HG	PE-UHMW	White or off-white	Excellent wear resistance on contact with water and air	K6	NBR 70 Shore A	-30°C/+80°C	Steel Stainless steel Chrome steel Aluminium Bronze Cast iron Treated surface	
PU	U	Polyurethane	Blue	Strong mechanical resistance Good resistance to wear and abrasion High elasticity modulus	K6	NBR 70 Shore A	-30°C/+90°C		
PUHT	U	High-temperature polyurethane	White or off-white	Good flexibility Very good resistance to ozone and oxidation	K6	NBR 70 Shore A	-30°C/+100°C		

Other grades of materials are available depending on your specificities.



○ INSTALLATION DIMENSIONS

Rod diameter Ød1 f8/h9			Groove diameter	Groove width	Radial section	O'Ring cross-section
BECA 150 Standard range	BECA 152 Light range	BECA 154 Heavy-duty range	ØD1 H9	L1 0/+0.20	S	Ød2
3.0 - 7.9	8.0 - 18.9	---	d1 + 4.90	2.20	2.45	1.78
8.0 - 18.9	19.0 - 37.9	---	d1 + 7.30	3.20	3.65	2.62
19.0 - 37.9	38.0 - 199.9	8.0 - 18.9	d1 + 10.70	4.20	5.35	3.53
38.0 - 199.9	200.0 - 255.9	19.0 - 37.9	d1 + 15.10	6.30	7.55	5.33
200.0 - 255.9	256.0 - 649.9	38.0 - 199.9	d1 + 20.50	8.10	10.25	6.99
256.0 - 649.9	650.0 - 999.9	200.0 - 255.9	d1 + 24.00	8.10	12.00	6.99
650.0 - 999.9	1000.0 - 1200.0	256.0 - 649.9	d1 + 27.30	9.50	13.65	8.40
1000.0 - **	---	650.0 - 999.9	d1 + 38.00	13.80	19.00	12.00

For special applications > 40 MPa, we recommend using an H8/f8 tolerance (groove/rod) or selecting other, more suitable materials. Please contact our experts.

○ EXAMPLE OF CODIFICATION

STANDARD CODIFICATION

Materials _____ : Friction ring, PTFE + 60% Bronze - Code DB
 _____ : NBR 70 Shore A O'Ring - Code K6
Rod diameter _____ : Ød1 = 50.00 mm
Groove diameter _____ : ØD1 = 65.10 mm
Part number _____ : 150.050DBK6

Part number - **150.** **050** **DB** **K6**

Family _____
 Rod diameter _____
 Friction ring material* _____
 O'Ring material* _____

* The codes that define the materials are set out in the materials table on the previous page.

DIMENSIONS

Part number	Rod diameter Ød1 f8/h9	Groove diameter ØD1 H9	Groove width L1 0/+0.20
150.003	3.00	7.90	2.20
150.004	4.00	8.90	2.20
150.005	5.00	9.90	2.20
150.006	6.00	10.90	2.20
150.007	7.00	11.90	2.20
152.008	8.00	12.90	2.20
150.008	8.00	15.30	3.20
154.008	8.00	18.70	4.20
152.009	9.00	13.90	2.20
150.009	9.00	16.30	3.20
154.009	9.00	19.70	4.20
152.010	10.00	14.90	2.20
150.010	10.00	17.30	3.20
154.010	10.00	20.70	4.20
152.011	11.00	15.90	2.20
150.011	11.00	18.30	3.20
154.011	11.00	21.70	4.20
152.012	12.00	16.90	2.20
150.012	12.00	19.30	3.20
154.012	12.00	22.70	4.20
152.013	13.00	17.90	2.20
150.013	13.00	20.30	3.20
154.013	13.00	23.70	4.20
152.014	14.00	18.90	2.20
150.014	14.00	21.30	3.20
154.014	14.00	24.70	4.20
152.015	15.00	19.90	2.20
150.015	15.00	22.30	3.20
154.015	15.00	25.70	4.20
152.016	16.00	20.90	2.20
150.016	16.00	23.30	3.20
154.016	16.00	26.70	4.20
152.017	17.00	21.90	2.20
150.017	17.00	24.30	3.20
154.017	17.00	27.70	4.20
152.018	18.00	22.90	2.20
150.018	18.00	25.30	3.20
154.018	18.00	28.70	4.20
152.019	19.00	26.30	3.20
150.019	19.00	29.70	4.20
154.019	19.00	34.10	6.30
152.020	20.00	27.30	3.20
150.020	20.00	30.70	4.20
154.020	20.00	35.10	6.30
152.021	21.00	28.30	3.20
150.021	21.00	31.70	4.20
154.021	21.00	36.10	6.30
152.022	22.00	29.30	3.20
150.022	22.00	32.70	4.20
154.022	22.00	37.10	6.30
152.024	24.00	31.30	3.20
150.024	24.00	34.70	4.20
154.024	24.00	39.10	6.30
152.025	25.00	32.30	3.20
150.025	25.00	35.70	4.20
154.025	25.00	40.10	6.30
152.026	26.00	33.30	3.20
150.026	26.00	36.70	4.20
154.026	26.00	41.10	6.30
152.027	27.00	34.30	3.20
150.027	27.00	37.70	4.20
154.027	27.00	42.10	6.30
152.028	28.00	35.30	3.20
150.028	28.00	38.70	4.20

Part number	Rod diameter Ød1 f8/h9	Groove diameter ØD1 H9	Groove width L1 0/+0.20
154.028	28.00	43.10	6.30
152.029	29.00	36.30	3.20
150.029	29.00	39.70	4.20
154.029	29.00	44.10	6.30
152.030	30.00	37.30	3.20
150.030	30.00	40.70	4.20
154.030	30.00	45.10	6.30
152.032	32.00	39.30	3.20
150.032	32.00	42.70	4.20
154.032	32.00	47.10	6.30
152.034	34.00	41.30	3.20
150.034	34.00	44.70	4.20
154.034	34.00	49.10	6.30
152.035	35.00	42.30	3.20
150.035	35.00	45.70	4.20
154.035	35.00	50.10	6.30
152.036	36.00	43.30	3.20
150.036	36.00	46.70	4.20
154.036	36.00	51.10	6.30
152.038	38.00	48.70	4.20
150.038	38.00	53.10	6.30
154.038	38.00	58.50	8.10
152.039	39.00	49.70	4.20
150.039	39.00	54.10	6.30
154.039	39.00	59.50	8.10
152.040	40.00	50.70	4.20
150.040	40.00	55.10	6.30
154.040	40.00	60.50	8.10
152.041	41.00	51.70	4.20
150.041	41.00	56.10	6.30
154.041	41.00	61.50	8.10
152.042	42.00	52.70	4.20
150.042	42.00	57.10	6.30
154.042	42.00	62.50	8.10
152.044	44.00	54.70	4.20
150.044	44.00	59.10	6.30
154.044	44.00	64.50	8.10
152.045	45.00	55.70	4.20
150.045	45.00	60.10	6.30
154.045	45.00	65.50	8.10
152.046	46.00	56.70	4.20
150.046	46.00	61.10	6.30
154.046	46.00	66.50	8.10
152.047	47.00	57.70	4.20
150.047	47.00	62.10	6.30
154.047	47.00	67.50	8.10
152.048	48.00	58.70	4.20
150.048	48.00	63.10	6.30
154.048	48.00	68.50	8.10
152.050	50.00	60.70	4.20
150.050	50.00	65.10	6.30
154.050	50.00	70.50	8.10
152.051	51.00	61.70	4.20
150.051	51.00	66.10	6.30
154.051	51.00	71.50	8.10
152.052	52.00	62.70	4.20
150.052	52.00	67.10	6.30
154.052	52.00	72.50	8.10
152.055	55.00	65.70	4.20
150.055	55.00	70.10	6.30
154.055	55.00	75.50	8.10
152.056	56.00	66.70	4.20
150.056	56.00	71.10	6.30
154.056	56.00	76.50	8.10

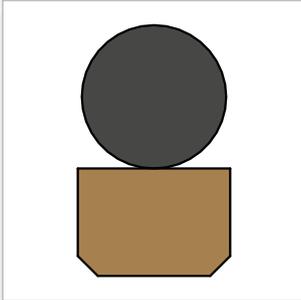
Part number	Rod diameter Ød1 f8/h9	Groove diameter ØD1 H9	Groove width L1 0/+0.20
152.058	58.00	68.70	4.20
150.058	58.00	73.10	6.30
154.058	58.00	78.50	8.10
152.060	60.00	70.70	4.20
150.060	60.00	75.10	6.30
154.060	60.00	80.50	8.10
152.061	61.00	71.70	4.20
150.061	61.00	76.10	6.30
154.061	61.00	81.50	8.10
152.062	62.00	72.70	4.20
150.062	62.00	77.10	6.30
154.062	62.00	82.50	8.10
152.063	63.00	73.70	4.20
150.063	63.00	78.10	6.30
154.063	63.00	83.50	8.10
152.065	65.00	75.70	4.20
150.065	65.00	80.10	6.30
154.065	65.00	85.50	8.10
152.067	67.00	77.70	4.20
150.067	67.00	82.10	6.30
154.067	67.00	87.50	8.10
152.068	68.00	78.70	4.20
150.068	68.00	83.10	6.30
154.068	68.00	88.50	8.10
152.070	70.00	80.70	4.20
150.070	70.00	85.10	6.30
154.070	70.00	90.50	8.10
152.072	72.00	82.70	4.20
150.072	72.00	87.10	6.30
154.072	72.00	92.50	8.10
152.075	75.00	85.70	4.20
150.075	75.00	90.10	6.30
154.075	75.00	95.50	8.10
152.078	78.00	88.70	4.20
150.078	78.00	93.10	6.30
154.078	78.00	98.50	8.10
152.079	79.00	89.70	4.20
150.079	79.00	94.10	6.30
154.079	79.00	99.50	8.10
152.080	80.00	90.70	4.20
150.080	80.00	95.10	6.30
154.080	80.00	100.50	8.10
152.081	81.00	91.70	4.20
150.081	81.00	96.10	6.30
154.081	81.00	101.50	8.10
152.082	82.00	92.70	4.20
150.082	82.00	97.10	6.30
154.082	82.00	102.50	8.10
152.083	83.00	93.70	4.20
150.083	83.00	98.10	6.30
154.083	83.00	103.50	8.10
152.084	84.00	94.70	4.20
150.084	84.00	99.10	6.30
154.084	84.00	104.50	8.10
152.085	85.00	95.70	4.20
150.085	85.00	100.10	6.30
154.085	85.00	105.50	8.10
152.086	86.00	96.70	4.20
150.086	86.00	101.10	6.30
154.086	86.00	106.50	8.10
152.088	88.00	98.70	4.20
150.088	88.00	103.10	6.30
154.088	88.00	108.50	8.10
152.090	90.00	100.70	4.20
150.090	90.00	105.10	6.30

Part number	Rod diameter Ød1 f8/h9	Groove diameter ØD1 H9	Groove width L1 0/+0.20
154.090	90.00	110.50	8.10
152.092	92.00	102.70	4.20
150.092	92.00	107.10	6.30
154.092	92.00	112.50	8.10
152.095	95.00	105.70	4.20
150.095	95.00	110.10	6.30
154.095	95.00	115.50	8.10
152.098	98.00	108.70	4.20
150.098	98.00	113.10	6.30
154.098	98.00	118.50	8.10
152.100	100.00	110.70	4.20
150.100	100.00	115.10	6.30
154.100	100.00	120.50	8.10
152.105	105.00	115.70	4.20
150.105	105.00	120.10	6.30
154.105	105.00	125.50	8.10
152.108	108.00	118.70	4.20
150.108	108.00	123.10	6.30
154.108	108.00	128.50	8.10
152.110	110.00	120.70	4.20
150.110	110.00	125.10	6.30
154.110	110.00	130.50	8.10
152.115	115.00	125.70	4.20
150.115	115.00	130.10	6.30
154.115	115.00	135.50	8.10
152.120	120.00	130.70	4.20
150.120	120.00	135.10	6.30
154.120	120.00	140.50	8.10
152.125	125.00	135.70	4.20
150.125	125.00	140.10	6.30
154.125	125.00	145.50	8.10
152.127	127.00	137.70	4.20
150.127	127.00	142.10	6.30
154.127	127.00	147.50	8.10
152.130	130.00	140.70	4.20
150.130	130.00	145.10	6.30
154.130	130.00	150.50	8.10
152.135	135.00	145.70	4.20
150.135	135.00	150.10	6.30
154.135	135.00	155.50	8.10
152.138	138.00	148.70	4.20
150.138	138.00	153.10	6.30
154.138	138.00	158.50	8.10
152.140	140.00	150.70	4.20
150.140	140.00	155.10	6.30
154.140	140.00	160.50	8.10
152.145	145.00	155.70	4.20
150.145	145.00	160.10	6.30
154.145	145.00	165.50	8.10
152.150	150.00	160.70	4.20
150.150	150.00	165.10	6.30
154.150	150.00	170.50	8.10
152.155	155.00	165.70	4.20
150.155	155.00	170.10	6.30
154.155	155.00	175.50	8.10
152.160	160.00	170.70	4.20
150.160	160.00	175.10	6.30
154.160	160.00	180.50	8.10
152.165	165.00	175.70	4.20
150.165	165.00	180.10	6.30
154.165	165.00	185.50	8.10
152.170	170.00	180.70	4.20
150.170	170.00	185.10	6.30
154.170	170.00	190.50	8.10
152.175	175.00	185.70	4.20

Part number	Rod diameter Ød1 f8/h9	Groove diameter ØD1 H9	Groove width L1 0/+0.20
150.175	175.00	190.10	6.30
154.175	175.00	195.50	8.10
152.180	180.00	190.70	4.20
150.180	180.00	195.10	6.30
154.180	180.00	200.50	8.10
152.185	185.00	195.70	4.20
150.185	185.00	200.10	6.30
154.185	185.00	205.50	8.10
152.190	190.00	200.70	4.20
150.190	190.00	205.10	6.30
154.190	190.00	210.50	8.10
152.195	195.00	205.70	4.20
150.195	195.00	210.10	6.30
154.195	195.00	215.50	8.10
152.200	200.00	215.10	6.30
150.200	200.00	220.50	8.10
154.200	200.00	224.00	8.10
152.210	210.00	225.10	6.30
150.210	210.00	230.50	8.10
154.210	210.00	234.00	8.10
152.215	215.00	230.10	6.30
150.215	215.00	235.50	8.10
154.215	215.00	239.00	8.10
152.220	220.00	235.10	6.30
150.220	220.00	240.50	8.10
154.220	220.00	244.00	8.10
152.230	230.00	245.10	6.30
150.230	230.00	250.50	8.10
154.230	230.00	254.00	8.10
152.240	240.00	255.10	6.30
150.240	240.00	260.50	8.10
154.240	240.00	264.00	8.10
152.250	250.00	265.10	6.30
150.250	250.00	270.50	8.10
154.250	250.00	274.00	8.10
152.260	260.00	280.50	8.10
150.260	260.00	284.00	8.10
154.260	260.00	287.30	9.50
152.270	270.00	290.50	8.10
150.270	270.00	294.00	8.10
154.270	270.00	297.30	9.50
152.275	275.00	295.50	8.10
150.275	275.00	299.00	8.10
154.275	275.00	302.30	9.50
152.280	280.00	300.50	8.10
150.280	280.00	304.00	8.10
154.280	280.00	307.30	9.50
152.285	285.00	305.50	8.10
150.285	285.00	309.00	8.10
154.285	285.00	312.30	9.50
152.290	290.00	310.50	8.10
150.290	290.00	314.00	8.10
154.290	290.00	317.30	9.50
152.295	295.00	315.50	8.10
150.295	295.00	319.00	8.10
154.295	295.00	322.30	9.50
152.300	300.00	320.50	8.10
150.300	300.00	324.00	8.10
154.300	300.00	327.30	9.50
152.305	305.00	325.50	8.10
150.305	305.00	329.00	8.10

Part number	Rod diameter Ød1 f8/h9	Groove diameter ØD1 H9	Groove width L1 0/+0.20
154.305	305.00	332.30	9.50
152.310	310.00	330.50	8.10
150.310	310.00	334.00	8.10
154.310	310.00	337.30	9.50
152.320	320.00	340.50	8.10
150.320	320.00	344.00	8.10
154.320	320.00	347.30	9.50
152.330	330.00	350.50	8.10
150.330	330.00	354.00	8.10
154.330	330.00	357.30	9.50
152.340	340.00	360.50	8.10
150.340	340.00	364.00	8.10
154.340	340.00	367.30	9.50
152.350	350.00	370.50	8.10
150.350	350.00	374.00	8.10
154.350	350.00	377.30	9.50
152.360	360.00	380.50	8.10
150.360	360.00	384.00	8.10
154.360	360.00	387.30	9.50
152.370	370.00	390.50	8.10
150.370	370.00	394.00	8.10
154.370	370.00	397.30	9.50
152.380	380.00	400.50	8.10
150.380	380.00	404.00	8.10
154.380	380.00	407.30	9.50
152.390	390.00	410.50	8.10
150.390	390.00	414.00	8.10
154.390	390.00	417.30	9.50
152.400	400.00	420.50	8.10
150.400	400.00	424.00	8.10
154.400	400.00	427.30	9.50
152.410	410.00	430.50	8.10
150.410	410.00	434.00	8.10
154.410	410.00	437.30	9.50
152.420	420.00	440.50	8.10
150.420	420.00	444.00	8.10
154.420	420.00	447.30	9.50
152.430	430.00	450.50	8.10
150.430	430.00	454.00	8.10
154.430	430.00	457.30	9.50
152.440	440.00	460.50	8.10
150.440	440.00	464.00	8.10
154.440	440.00	467.30	9.50
152.450	450.00	470.50	8.10
150.450	450.00	474.00	8.10
154.450	450.00	477.30	9.50
152.460	460.00	480.50	8.10
150.460	460.00	484.00	8.10
154.460	460.00	487.30	9.50
152.470	470.00	490.50	8.10
150.470	470.00	494.00	8.10
154.470	470.00	497.30	9.50
152.480	480.00	500.50	8.10
150.480	480.00	504.00	8.10
154.480	480.00	507.30	9.50
152.490	490.00	510.50	8.10
150.490	490.00	514.00	8.10
154.490	490.00	517.30	9.50
152.500	500.00	520.50	8.10
150.500	500.00	524.00	8.10
154.500	500.00	527.30	9.50

The figures highlighted in bold correspond to the rod diameters that are recommended by standard ISO 3320. Other intermediate sizes can be provided.



ROD SEALS

BECA

151-153-155



DESCRIPTION

The BECA 151 - 153 - 155 profiles are double acting composite rod seals composed of a filled PTFE friction ring and pre-tightened rubber O'Ring. They can be assembled in grooves according to standard ISO 7425/2. Option of connecting the seal to 1 or 2 back-up rings.

ADVANTAGES

Optimal sealing in static and dynamic applications

Low friction coefficient;
no stick-slip effect

Excellent abrasion and extrusion resistance

Wide temperature range and excellent chemical resistance, depending on the material selected for the O'Ring

APPLICATIONS

Mobile hydraulics

Injection presses

Machine tools

Presses

Standard cylinders

MATERIALS

Friction ring

Bronze-filled PTFE

Carbon-filled PTFE

Blue GL PTFE

O'Ring

NBR 70 Shore A

FKM 70 Shore A

Other grades of materials are available. Please refer to the materials table on the next page.

TECHNICAL DATA

Temperature	-30°C / +200°C
Pressure	50 MPa
Speed	5 m/s
Media	Mineral hydraulic oils Fire-resistant liquids Biocompatible fluids Water Others (contact our experts)

The figures above indicate the maximum values and may not be cumulated. They may be developed, depending on the materials used.

EXTRUSION GAPS

Radial section S	Radial gap F/2		
	10 MPa	20 MPa	40 MPa
2.45	0.30	0.20	0.15
3.65	0.40	0.25	0.15
5.35	0.40	0.25	0.20
7.55	0.50	0.30	0.20
10.25	0.60	0.35	0.25
12.00	0.60	0.35	0.25
13.65	0.70	0.50	0.30
19.00	1.00	0.70	0.60

SURFACE ROUGHNESS

Roughness	Dynamic surface area	Static surface area	Groove flanks
Ra	0.05 - 0.2 µm	≤1.6 µm	≤3.2 µm
Rz	0.4 - 1.6 µm	≤6.3 µm	≤10.0 µm
Rmax	0.63 - 2.5 µm	≤10.0 µm	≤16.0 µm

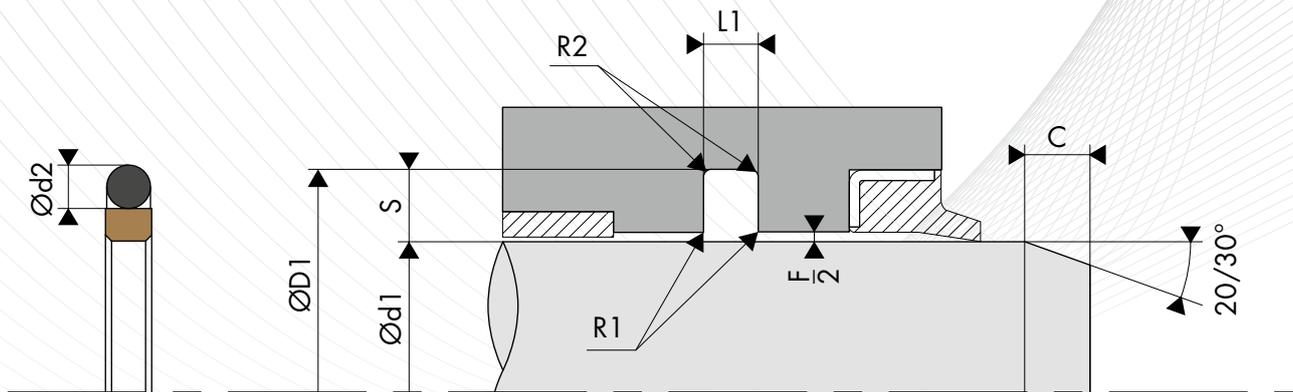
CHAMFERS AND RADIUS

Radial section S	Radius R1	Radius R2	Chamfer C
2.45	0.30	0.40	3.00
3.65	0.30	0.60	3.00
5.35	0.30	1.00	3.00
7.55	0.30	1.30	5.00
10.25	0.30	1.80	6.00
12.00	0.30	1.80	8.00
13.65	0.30	2.50	10.00
19.00	0.30	3.00	12.00

TABLE MATERIALS

Friction ring					O'Ring			Mating surface material	
Standard code	ISO code	Material	Colour	Characteristics	Code	Type of material	Service temperature		
DP	P	Virgin PTFE	White	Resistance to chemical products Impermeability Dielectric Non-stick Low friction coefficient Food industry	K6	NBR 70 Shore A	-30°C/+100°C	Steel Stainless steel Chrome steel Aluminium Bronze Cast iron Treated surface	
					G6	FKM 70 Shore A	-20°C/+200°C		
					C6	EPDM 70 Shore A	-45°C/+150°C		
					F6	VMQ 70 Shore A	-60°C/+200°C		
DC	C	PTFE + 25% Carbon	Grey	Improvements • Wear properties • Compression set Good resistance to chemical products Thermal and electrical conductivity Anti-static	K6	NBR 70 Shore A	-30°C/+100°C		
					G6	FKM 70 Shore A	-20°C/+200°C		
					C6	EPDM 70 Shore A	-45°C/+150°C		
CG	C	PTFE + 23% Carbon + 2% Graphite	Black	High-performing in compression-based dynamic applications	K6	NBR 70 Shore A	-30°C/+100°C		
					G6	FKM 70 Shore A	-20°C/+200°C		
					C6	EPDM 70 Shore A	-45°C/+150°C		
DV	V	PTFE + 25 % Glass	Blue	Improvements • Wear properties • Mechanical strength Slightly more abrasive, however, this is corrected by adding MOS2	K6	NBR 70 Shore A	-30°C/+100°C		Steel Chrome steel Cast iron
					G6	FKM 70 Shore A	-20°C/+200°C		
VM	M	PTFE + 15 % Glass + 5% MOS2	Grey	Maintains its chemical and dielectric properties Well-suited to applications with rotational and simultaneous alternating movements	K6	NBR 70 Shore A	-30°C/+100°C		
					G6	FKM 70 Shore A	-20°C/+200°C		
DX	X	PTFE GL Blue + Glass + Metal oxides	Turquoise blue	Resistance to compression Resistance to wear Excellent chemical stability Good thermal conductivity	K6	NBR 70 Shore A	-30°C/+100°C		
					G6	FKM 70 Shore A	-20°C/+200°C		
DG	G	PTFE + 15% Graphite	Black	Improvements • Wear properties Reduced wear on metal parts Self-lubricating Thermal and electrical conductivity Low permeability Good friction coefficient Anti-static High performing in dynamic self-lubricating applications	K6	NBR 70 Shore A	-30°C/+100°C	Steel Stainless steel Chrome steel Aluminium Bronze Cast iron Treated surface	
					G6	FKM 70 Shore A	-20°C/+200°C		
					C6	EPDM 70 Shore A	-45°C/+150°C		
K1	K	PTFE + 10% Ekonol	Light brown	Improvements • Better abrasion resistance • Better dimensional stability at high temperatures Use up to +300°C	K6	NBR 70 Shore A	-30°C/+100°C		
					G6	FKM 70 Shore A	-20°C/+200°C		
					C6	EPDM 70 Shore A	-45°C/+150°C		
K2	K	PTFE + 20% Ekonol	Light brown	Good friction coefficient and low permeability	K6	NBR 70 Shore A	-30°C/+100°C		
					G6	FKM 70 Shore A	-20°C/+200°C		
					C6	EPDM 70 Shore A	-45°C/+150°C		
DB	B	PTFE + 60% Bronze	Dark brown	Improvements • Wear properties • Warping resistance and creep strength • Compression resistance Self-lubricating	K6	NBR 70 Shore A	-30°C/+100°C		Steel Chrome steel Cast iron
					G6	FKM 70 Shore A	-20°C/+200°C		
B4	B	PTFE + 40% Bronze	Dark brown	Electrical and thermal conductivity Does not alter the metal parts Reduced hold with certain chemical products Used for high-compression dynamic seals and has a low level of wear	K6	NBR 70 Shore A	-30°C/+100°C		
					G6	FKM 70 Shore A	-20°C/+200°C		
HG	HG	PE-UHMW	White or off-white	Excellent wear resistance on contact with water and air	K6	NBR 70 Shore A	-30°C/+80°C	Steel Stainless steel Chrome steel Aluminium Bronze Cast iron Treated surface	
PU	U	Polyurethane	Blue	Strong mechanical resistance Good resistance to wear and abrasion High elasticity modulus	K6	NBR 70 Shore A	-30°C/+90°C		
PUHT	U	High-temperature polyurethane	White or off-white	Good flexibility Very good resistance to ozone and oxidation	K6	NBR 70 Shore A	-30°C/+100°C		

Other grades of materials are available depending on your specificities.



○ INSTALLATION DIMENSIONS

Rod diameter Ød1 f8/h9			Groove diameter	Groove width	Radial section	O'Ring cross-section
BECA 151 Standard range	BECA 153 Light range	BECA 155 Heavy-duty range	ØD1 H9	L1 0/+0.20	S	Ød2
3.0 - 7.9	8.0 - 18.9	---	d1 + 4.90	2.20	2.45	1.78
8.0 - 18.9	19.0 - 37.9	---	d1 + 7.30	3.20	3.65	2.62
19.0 - 37.9	38.0 - 199.9	8.0 - 18.9	d1 + 10.70	4.20	5.35	3.53
38.0 - 199.9	200.0 - 255.9	19.0 - 37.9	d1 + 15.10	6.30	7.55	5.33
200.0 - 255.9	256.0 - 649.9	38.0 - 199.9	d1 + 20.50	8.10	10.25	6.99
256.0 - 649.9	650.0 - 999.9	200.0 - 255.9	d1 + 24.00	8.10	12.00	6.99
650.0 - 999.9	1000.0 - 1200.0	256.0 - 649.9	d1 + 27.30	9.50	13.65	8.40
1000.0 - **	---	650.0 - 999.9	d1 + 38.00	13.80	19.00	12.00

For special applications > 40 MPa, we recommend using an H8/f8 tolerance (groove/rod) or selecting other, more suitable materials. Please contact our experts.

○ EXAMPLE OF CODIFICATION

STANDARD CODIFICATION

Materials _____ : Friction ring, PTFE + 60% Bronze - Code DB
 _____ : NBR 70 Shore A O'Ring - Code K6
Rod diameter _____ : Ød1 = 50.00 mm
Groove diameter _____ : ØD1 = 65.10 mm
Part number _____ : 151. 050DBK6

Part number - **151.** **050** **DB** **K6**

Family _____
 Rod diameter _____
 Friction ring material* _____
 O'Ring material* _____

* The codes that define the materials are set out in the materials table on the previous page.

DIMENSIONS

Part number	Rod diameter Ød1 f8/h9	Groove diameter ØD1 H9	Groove width L1 0/+0.20
151.003	3.00	7.90	2.20
151.004	4.00	8.90	2.20
151.005	5.00	9.90	2.20
151.006	6.00	10.90	2.20
151.007	7.00	11.90	2.20
153.008	8.00	12.90	2.20
151.008	8.00	15.30	3.20
155.008	8.00	18.70	4.20
153.009	9.00	13.90	2.20
151.009	9.00	16.30	3.20
155.009	9.00	19.70	4.20
153.010	10.00	14.90	2.20
151.010	10.00	17.30	3.20
155.010	10.00	20.70	4.20
153.011	11.00	15.90	2.20
151.011	11.00	18.30	3.20
155.011	11.00	21.70	4.20
153.012	12.00	16.90	2.20
151.012	12.00	19.30	3.20
155.012	12.00	22.70	4.20
153.013	13.00	17.90	2.20
151.013	13.00	20.30	3.20
155.013	13.00	23.70	4.20
153.014	14.00	18.90	2.20
151.014	14.00	21.30	3.20
155.014	14.00	24.70	4.20
153.015	15.00	19.90	2.20
151.015	15.00	22.30	3.20
155.015	15.00	25.70	4.20
153.016	16.00	20.90	2.20
151.016	16.00	23.30	3.20
155.016	16.00	26.70	4.20
153.017	17.00	21.90	2.20
151.017	17.00	24.30	3.20
155.017	17.00	27.70	4.20
153.018	18.00	22.90	2.20
151.018	18.00	25.30	3.20
155.018	18.00	28.70	4.20
153.019	19.00	26.30	3.20
151.019	19.00	29.70	4.20
155.019	19.00	34.10	6.30
153.020	20.00	27.30	3.20
151.020	20.00	30.70	4.20
155.020	20.00	35.10	6.30
153.021	21.00	28.30	3.20
151.021	21.00	31.70	4.20
155.021	21.00	36.10	6.30
153.022	22.00	29.30	3.20
151.022	22.00	32.70	4.20
155.022	22.00	37.10	6.30
153.024	24.00	31.30	3.20
151.024	24.00	34.70	4.20
155.024	24.00	39.10	6.30
153.025	25.00	32.30	3.20
151.025	25.00	35.70	4.20
155.025	25.00	40.10	6.30
153.026	26.00	33.30	3.20
151.026	26.00	36.70	4.20
155.026	26.00	41.10	6.30
153.027	27.00	34.30	3.20
151.027	27.00	37.70	4.20
155.027	27.00	42.10	6.30
153.028	28.00	35.30	3.20
151.028	28.00	38.70	4.20

Part number	Rod diameter Ød1 f8/h9	Groove diameter ØD1 H9	Groove width L1 0/+0.20
155.028	28.00	43.10	6.30
153.029	29.00	36.30	3.20
151.029	29.00	39.70	4.20
155.029	29.00	44.10	6.30
153.030	30.00	37.30	3.20
151.030	30.00	40.70	4.20
155.030	30.00	45.10	6.30
153.032	32.00	39.30	3.20
151.032	32.00	42.70	4.20
155.032	32.00	47.10	6.30
153.034	34.00	41.30	3.20
151.034	34.00	44.70	4.20
155.034	34.00	49.10	6.30
153.035	35.00	42.30	3.20
151.035	35.00	45.70	4.20
155.035	35.00	50.10	6.30
153.036	36.00	43.30	3.20
151.036	36.00	46.70	4.20
155.036	36.00	51.10	6.30
153.038	38.00	48.70	4.20
151.038	38.00	53.10	6.30
155.038	38.00	58.50	8.10
153.039	39.00	49.70	4.20
151.039	39.00	54.10	6.30
155.039	39.00	59.50	8.10
153.040	40.00	50.70	4.20
151.040	40.00	55.10	6.30
155.040	40.00	60.50	8.10
153.041	41.00	51.70	4.20
151.041	41.00	56.10	6.30
155.041	41.00	61.50	8.10
153.042	42.00	52.70	4.20
151.042	42.00	57.10	6.30
155.042	42.00	62.50	8.10
153.044	44.00	54.70	4.20
151.044	44.00	59.10	6.30
155.044	44.00	64.50	8.10
153.045	45.00	55.70	4.20
151.045	45.00	60.10	6.30
155.045	45.00	65.50	8.10
153.046	46.00	56.70	4.20
151.046	46.00	61.10	6.30
155.046	46.00	66.50	8.10
153.047	47.00	57.70	4.20
151.047	47.00	62.10	6.30
155.047	47.00	67.50	8.10
153.048	48.00	58.70	4.20
151.048	48.00	63.10	6.30
155.048	48.00	68.50	8.10
153.050	50.00	60.70	4.20
151.050	50.00	65.10	6.30
155.050	50.00	70.50	8.10
153.051	51.00	61.70	4.20
151.051	51.00	66.10	6.30
155.051	51.00	71.50	8.10
153.052	52.00	62.70	4.20
151.052	52.00	67.10	6.30
155.052	52.00	72.50	8.10
153.055	55.00	65.70	4.20
151.055	55.00	70.10	6.30
155.055	55.00	75.50	8.10
153.056	56.00	66.70	4.20
151.056	56.00	71.10	6.30
155.056	56.00	76.50	8.10

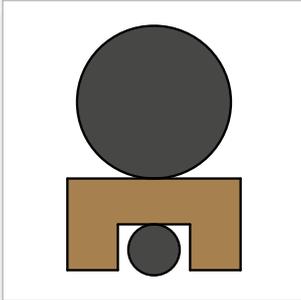
Part number	Rod diameter Ød1 f8/h9	Groove diameter ØD1 H9	Groove width L1 0/+0.20
153.058	58.00	68.70	4.20
151.058	58.00	73.10	6.30
155.058	58.00	78.50	8.10
153.060	60.00	70.70	4.20
151.060	60.00	75.10	6.30
155.060	60.00	80.50	8.10
153.061	61.00	71.70	4.20
151.061	61.00	76.10	6.30
155.061	61.00	81.50	8.10
153.062	62.00	72.70	4.20
151.062	62.00	77.10	6.30
155.062	62.00	82.50	8.10
153.063	63.00	73.70	4.20
151.063	63.00	78.10	6.30
155.063	63.00	83.50	8.10
153.065	65.00	75.70	4.20
151.065	65.00	80.10	6.30
155.065	65.00	85.50	8.10
153.067	67.00	77.70	4.20
151.067	67.00	82.10	6.30
155.067	67.00	87.50	8.10
153.068	68.00	78.70	4.20
151.068	68.00	83.10	6.30
155.068	68.00	88.50	8.10
153.070	70.00	80.70	4.20
151.070	70.00	85.10	6.30
155.070	70.00	90.50	8.10
153.072	72.00	82.70	4.20
151.072	72.00	87.10	6.30
155.072	72.00	92.50	8.10
153.075	75.00	85.70	4.20
151.075	75.00	90.10	6.30
155.075	75.00	95.50	8.10
153.078	78.00	88.70	4.20
151.078	78.00	93.10	6.30
155.078	78.00	98.50	8.10
153.079	79.00	89.70	4.20
151.079	79.00	94.10	6.30
155.079	79.00	99.50	8.10
153.080	80.00	90.70	4.20
151.080	80.00	95.10	6.30
155.080	80.00	100.50	8.10
153.081	81.00	91.70	4.20
151.081	81.00	96.10	6.30
155.081	81.00	101.50	8.10
153.082	82.00	92.70	4.20
151.082	82.00	97.10	6.30
155.082	82.00	102.50	8.10
153.083	83.00	93.70	4.20
151.083	83.00	98.10	6.30
155.083	83.00	103.50	8.10
153.084	84.00	94.70	4.20
151.084	84.00	99.10	6.30
155.084	84.00	104.50	8.10
153.085	85.00	95.70	4.20
151.085	85.00	100.10	6.30
155.085	85.00	105.50	8.10
153.086	86.00	96.70	4.20
151.086	86.00	101.10	6.30
155.086	86.00	106.50	8.10
153.088	88.00	98.70	4.20
151.088	88.00	103.10	6.30
155.088	88.00	108.50	8.10
153.090	90.00	100.70	4.20
151.090	90.00	105.10	6.30

Part number	Rod diameter Ød1 f8/h9	Groove diameter ØD1 H9	Groove width L1 0/+0.20
155.090	90.00	110.50	8.10
153.092	92.00	102.70	4.20
151.092	92.00	107.10	6.30
155.092	92.00	112.50	8.10
153.095	95.00	105.70	4.20
151.095	95.00	110.10	6.30
155.095	95.00	115.50	8.10
153.098	98.00	108.70	4.20
151.098	98.00	113.10	6.30
155.098	98.00	118.50	8.10
153.100	100.00	110.70	4.20
151.100	100.00	115.10	6.30
155.100	100.00	120.50	8.10
153.105	105.00	115.70	4.20
151.105	105.00	120.10	6.30
155.105	105.00	125.50	8.10
153.108	108.00	118.70	4.20
151.108	108.00	123.10	6.30
155.108	108.00	128.50	8.10
153.110	110.00	120.70	4.20
151.110	110.00	125.10	6.30
155.110	110.00	130.50	8.10
153.115	115.00	125.70	4.20
151.115	115.00	130.10	6.30
155.115	115.00	135.50	8.10
153.120	120.00	130.70	4.20
151.120	120.00	135.10	6.30
155.120	120.00	140.50	8.10
153.125	125.00	135.70	4.20
151.125	125.00	140.10	6.30
155.125	125.00	145.50	8.10
153.127	127.00	137.70	4.20
151.127	127.00	142.10	6.30
155.127	127.00	147.50	8.10
153.130	130.00	140.70	4.20
151.130	130.00	145.10	6.30
155.130	130.00	150.50	8.10
153.135	135.00	145.70	4.20
151.135	135.00	150.10	6.30
155.135	135.00	155.50	8.10
153.138	138.00	148.70	4.20
151.138	138.00	153.10	6.30
155.138	138.00	158.50	8.10
153.140	140.00	150.70	4.20
151.140	140.00	155.10	6.30
155.140	140.00	160.50	8.10
153.145	145.00	155.70	4.20
151.145	145.00	160.10	6.30
155.145	145.00	165.50	8.10
153.150	150.00	160.70	4.20
151.150	150.00	165.10	6.30
155.150	150.00	170.50	8.10
153.155	155.00	165.70	4.20
151.155	155.00	170.10	6.30
155.155	155.00	175.50	8.10
153.160	160.00	170.70	4.20
151.160	160.00	175.10	6.30
155.160	160.00	180.50	8.10
153.165	165.00	175.70	4.20
151.165	165.00	180.10	6.30
155.165	165.00	185.50	8.10
153.170	170.00	180.70	4.20
151.170	170.00	185.10	6.30
155.170	170.00	190.50	8.10
153.175	175.00	185.70	4.20

Part number	Rod diameter Ød1 f8/h9	Groove diameter ØD1 H9	Groove width L1 0/+0.20
151.175	175.00	190.10	6.30
155.175	175.00	195.50	8.10
153.180	180.00	190.70	4.20
151.180	180.00	195.10	6.30
155.180	180.00	200.50	8.10
153.185	185.00	195.70	4.20
151.185	185.00	200.10	6.30
155.185	185.00	205.50	8.10
153.190	190.00	200.70	4.20
151.190	190.00	205.10	6.30
155.190	190.00	210.50	8.10
153.195	195.00	205.70	4.20
151.195	195.00	210.10	6.30
155.195	195.00	215.50	8.10
153.200	200.00	215.10	6.30
151.200	200.00	220.50	8.10
155.200	200.00	224.00	8.10
153.210	210.00	225.10	6.30
151.210	210.00	230.50	8.10
155.210	210.00	234.00	8.10
153.215	215.00	230.10	6.30
151.215	215.00	235.50	8.10
155.215	215.00	239.00	8.10
153.220	220.00	235.10	6.30
151.220	220.00	240.50	8.10
155.220	220.00	244.00	8.10
153.230	230.00	245.10	6.30
151.230	230.00	250.50	8.10
155.230	230.00	254.00	8.10
153.240	240.00	255.10	6.30
151.240	240.00	260.50	8.10
155.240	240.00	264.00	8.10
153.250	250.00	265.10	6.30
151.250	250.00	270.50	8.10
155.250	250.00	274.00	8.10
153.260	260.00	280.50	8.10
151.260	260.00	284.00	8.10
155.260	260.00	287.30	9.50
153.270	270.00	290.50	8.10
151.270	270.00	294.00	8.10
155.270	270.00	297.30	9.50
153.275	275.00	295.50	8.10
151.275	275.00	299.00	8.10
155.275	275.00	302.30	9.50
153.280	280.00	300.50	8.10
151.280	280.00	304.00	8.10
155.280	280.00	307.30	9.50
153.285	285.00	305.50	8.10
151.285	285.00	309.00	8.10
155.285	285.00	312.30	9.50
153.290	290.00	310.50	8.10
151.290	290.00	314.00	8.10
155.290	290.00	317.30	9.50
153.295	295.00	315.50	8.10
151.295	295.00	319.00	8.10
155.295	295.00	322.30	9.50
153.300	300.00	320.50	8.10
151.300	300.00	324.00	8.10
155.300	300.00	327.30	9.50
153.305	305.00	325.50	8.10
151.305	305.00	329.00	8.10

Part number	Rod diameter Ød1 f8/h9	Groove diameter ØD1 H9	Groove width L1 0/+0.20
155.305	305.00	332.30	9.50
153.310	310.00	330.50	8.10
151.310	310.00	334.00	8.10
155.310	310.00	337.30	9.50
153.320	320.00	340.50	8.10
151.320	320.00	344.00	8.10
155.320	320.00	347.30	9.50
153.330	330.00	350.50	8.10
151.330	330.00	354.00	8.10
155.330	330.00	357.30	9.50
153.340	340.00	360.50	8.10
151.340	340.00	364.00	8.10
155.340	340.00	367.30	9.50
153.350	350.00	370.50	8.10
151.350	350.00	374.00	8.10
155.350	350.00	377.30	9.50
153.360	360.00	380.50	8.10
151.360	360.00	384.00	8.10
155.360	360.00	387.30	9.50
153.370	370.00	390.50	8.10
151.370	370.00	394.00	8.10
155.370	370.00	397.30	9.50
153.380	380.00	400.50	8.10
151.380	380.00	404.00	8.10
155.380	380.00	407.30	9.50
153.390	390.00	410.50	8.10
151.390	390.00	414.00	8.10
155.390	390.00	417.30	9.50
153.400	400.00	420.50	8.10
151.400	400.00	424.00	8.10
155.400	400.00	427.30	9.50
153.410	410.00	430.50	8.10
151.410	410.00	434.00	8.10
155.410	410.00	437.30	9.50
153.420	420.00	440.50	8.10
151.420	420.00	444.00	8.10
155.420	420.00	447.30	9.50
153.430	430.00	450.50	8.10
151.430	430.00	454.00	8.10
155.430	430.00	457.30	9.50
153.440	440.00	460.50	8.10
151.440	440.00	464.00	8.10
155.440	440.00	467.30	9.50
153.450	450.00	470.50	8.10
151.450	450.00	474.00	8.10
155.450	450.00	477.30	9.50
153.460	460.00	480.50	8.10
151.460	460.00	484.00	8.10
155.460	460.00	487.30	9.50
153.470	470.00	490.50	8.10
151.470	470.00	494.00	8.10
155.470	470.00	497.30	9.50
153.480	480.00	500.50	8.10
151.480	480.00	504.00	8.10
155.480	480.00	507.30	9.50
153.490	490.00	510.50	8.10
151.490	490.00	514.00	8.10
155.490	490.00	517.30	9.50
153.500	500.00	520.50	8.10
151.500	500.00	524.00	8.10
155.500	500.00	527.30	9.50

The figures highlighted in bold correspond to the rod diameters that are recommended by standard ISO 3320. Other intermediate sizes can be provided.



ROD SEALS

BECA 157-158



DESCRIPTION

The BECA 157 - 158 profile is a double acting rod composite seal composed of a filled PTFE friction ring and two pre-tightened rubber O'Rings. It can be assembled in a groove according to standard ISO 7425/2. Option of connecting the seal to 1 or 2 back-up rings.

ADVANTAGES

Optimal sealing for separating two fluids
 Low friction coefficient;
 no stick-slip effect
 Excellent abrasion resistance
 Wide temperature range and excellent chemical resistance, depending on the material selected for the O'Ring

APPLICATIONS

Mobile hydraulics
 Machine tools
 Presses
 Hydro-pneumatic suspension systems

MATERIALS

Friction ring

Bronze-filled PTFE

O'Rings

NBR 70 Shore A

Other grades of materials are available. Please refer to the materials table on the next page.

TECHNICAL DATA

Temperature	-30°C / +200°C
Pressure	50 MPa
Speed	2 m/s
Media	Mineral hydraulic oils Fire-resistant liquids Biocompatible fluids Water Gas Others (contact our experts)

The figures above indicate the maximum values and may not be cumulated. They may be developed, depending on the materials used.

EXTRUSION GAPS

Radial section S	Radial gap F/2		
	10 MPa	20 MPa	40 MPa
5.50	0.25	0.15	0.10
7.75	0.30	0.20	0.15
10.50	0.30	0.20	0.15
12.25	0.30	0.20	0.15
14.00	0.45	0.30	0.25
19.00	0.55	0.40	0.35

SURFACE ROUGHNESS

Roughness	Dynamic surface area	Static surface area	Groove flanks
Ra	0.05 - 0.2 µm	≤1.6 µm	≤3.2 µm
Rz	0.4 - 1.6 µm	≤6.3 µm	≤10.0 µm
Rmax	0.63 - 2.5 µm	≤10.0 µm	≤16.0 µm

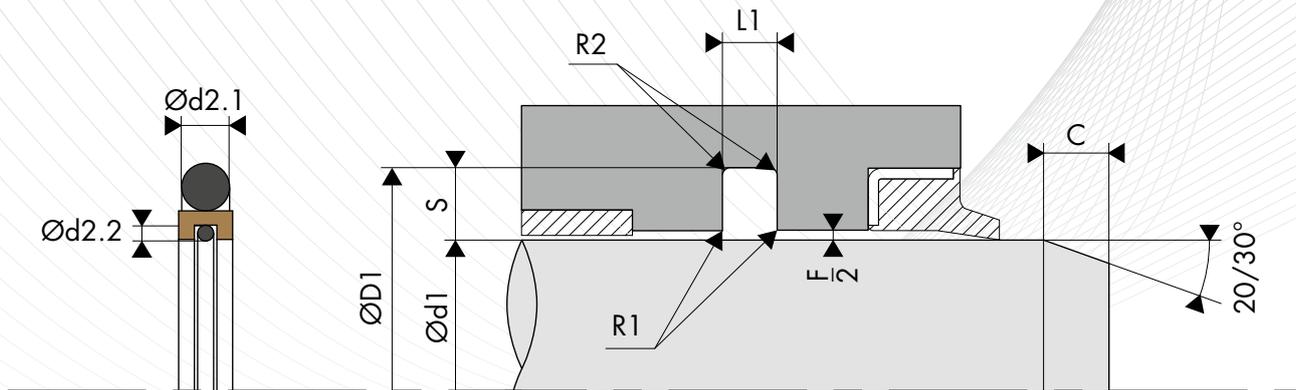
CHAMFERS AND RADIUS

Radial section S	Radius R1	Radius R2	Chamfer C
5.50	0.30	1.00	3.00
7.75	0.30	1.30	3.00
10.50	0.30	1.80	5.00
12.25	0.30	1.80	6.00
14.00	0.30	2.50	8.00
19.00	0.30	3.00	10.00

TABLE MATERIALS

Friction ring					O'Rings			Mating surface material	
Standard code	ISO code	Material	Colour	Characteristics	Code	Type of material	Service temperature		
DP	P	Virgin PTFE	White	Resistance to chemical products Impermeability Dielectric Non-stick Low friction coefficient Food industry	K6	NBR 70 Shore A	-30°C/+100°C	Steel Stainless steel Chrome steel Aluminium Bronze Cast iron Treated surface	
					G6	FKM 70 Shore A	-20°C/+200°C		
					C6	EPDM 70 Shore A	-45°C/+150°C		
					F6	VMQ 70 Shore A	-60°C/+200°C		
DC	C	PTFE + 25% Carbon	Grey	Improvements • Wear properties • Compression set Good resistance to chemical products Thermal and electrical conductivity Anti-static	K6	NBR 70 Shore A	-30°C/+100°C		
					G6	FKM 70 Shore A	-20°C/+200°C		
					C6	EPDM 70 Shore A	-45°C/+150°C		
CG	C	PTFE + 23% Carbon + 2% Graphite	Black	High-performing in compression-based dynamic applications	K6	NBR 70 Shore A	-30°C/+100°C		
					G6	FKM 70 Shore A	-20°C/+200°C		
					C6	EPDM 70 Shore A	-45°C/+150°C		
DV	V	PTFE + 25 % Glass	Blue	Improvements • Wear properties • Mechanical strength Slightly more abrasive, however, this is corrected by adding MOS2	K6	NBR 70 Shore A	-30°C/+100°C		Steel Chrome steel Cast iron
					G6	FKM 70 Shore A	-20°C/+200°C		
VM	M	PTFE + 15 % Glass + 5% MOS2	Grey	Maintains its chemical and dielectric properties Well-suited to applications with rotational and simultaneous alternating movements	K6	NBR 70 Shore A	-30°C/+100°C		
					G6	FKM 70 Shore A	-20°C/+200°C		
DX	X	PTFE GL Blue + Glass + Metal oxides	Turquoise blue	Resistance to compression Resistance to wear Excellent chemical stability Good thermal conductivity	K6	NBR 70 Shore A	-30°C/+100°C		
					G6	FKM 70 Shore A	-20°C/+200°C		
DG	G	PTFE + 15% Graphite	Black	Improvements • Wear properties Reduced wear on metal parts Self-lubricating Thermal and electrical conductivity Low permeability Good friction coefficient Anti-static High performing in dynamic self-lubricating applications	K6	NBR 70 Shore A	-30°C/+100°C	Steel Stainless steel Chrome steel Aluminium Bronze Cast iron Treated surface	
					G6	FKM 70 Shore A	-20°C/+200°C		
					C6	EPDM 70 Shore A	-45°C/+150°C		
K1	K	PTFE + 10% Ekonol	Light brown	Improvements • Better abrasion resistance • Better dimensional stability at high temperatures Use up to +300°C	K6	NBR 70 Shore A	-30°C/+100°C		
					G6	FKM 70 Shore A	-20°C/+200°C		
					C6	EPDM 70 Shore A	-45°C/+150°C		
K2	K	PTFE + 20% Ekonol	Light brown	Good friction coefficient and low permeability	K6	NBR 70 Shore A	-30°C/+100°C		
					G6	FKM 70 Shore A	-20°C/+200°C		
DB	B	PTFE + 60% Bronze	Dark brown	Improvements • Wear properties • Warping resistance and creep strength • Compression resistance Self-lubricating	K6	NBR 70 Shore A	-30°C/+100°C		Steel Chrome steel Cast iron
					G6	FKM 70 Shore A	-20°C/+200°C		
B4	B	PTFE + 40% Bronze	Dark brown	Electrical and thermal conductivity Does not alter the metal parts Reduced hold with certain chemical products Used for high-compression dynamic seals and has a low level of wear	K6	NBR 70 Shore A	-30°C/+100°C		
					G6	FKM 70 Shore A	-20°C/+200°C		

Other grades of materials are available depending on your specificities.



○ INSTALLATION DIMENSIONS

Rod diameter Ød1 f8/h9		Groove diameter	Groove width	Radial section	O'Ring cross-section	O'Ring / X'Ring cross-section
BECA 157 Standard range	BECA 158 Extended range	ØD1 H9	L1 0/+0.20	S	Ød2.1	Ød2.2
19.0 - 37.9	18.0 - 450.0	d1 + 11.00	4.20	5.50	3.53	1.78
38.0 - 199.9	30.0 - 650.0	d1 + 15.50	6.30	7.75	5.33	1.78
200.0 - 255.9	105.0 - 999.9	d1 + 21.00	8.10	10.50	6.99	2.62
256.0 - 649.9	120.0 - 999.9	d1 + 24.50	8.10	12.25	6.99	2.62
650.0 - 999.9	285.0 - 999.9	d1 + 28.00	9.50	14.00	8.40	3.53
---	650.0 - 999.9	d1 + 38.00	13.80	19.00	12.00	5.33

For special applications > 40 MPa, we recommend using an H8/f8 tolerance (groove/rod) or selecting other, more suitable materials. Please contact our experts.

○ EXAMPLE OF CODIFICATION

STANDARD CODIFICATION

Materials _____ : Friction ring, PTFE + 60% Bronze - Code DB
 _____ : NBR 70 Shore A O'Rings - Code K6
Rod diameter _____ : Ød1 = 50.00 mm
Groove diameter _____ : ØD1 = 65.50 mm
Part number _____ : 157. 050DBK6

Part number - **157. 050 DB K6**

Family _____
 Rod diameter _____
 Friction ring material* _____
 O'Ring materials* _____

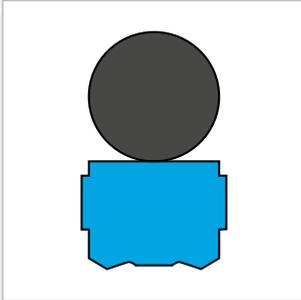
* The codes that define the materials are set out in the materials table on the previous page.

DIMENSIONS

Part number	Rod diameter Ød1 f8/h9	Groove diameter ØD1 H9	Groove width L1 0/+0.20
157.018	18.00	29.00	4.20
157.020	20.00	31.00	4.20
157.022	22.00	33.00	4.20
157.025	25.00	36.00	4.20
157.028	28.00	39.00	4.20
157.030	30.00	41.00	4.20
157.032	32.00	43.00	4.20
157.035	35.00	46.00	4.20
157.036	36.00	47.00	4.20
157.038	38.00	53.50	6.30
157.040	40.00	55.50	6.30
157.042	42.00	57.50	6.30
157.045	45.00	60.50	6.30
157.048	48.00	63.50	6.30
157.050	50.00	65.50	6.30
157.052	52.00	67.50	6.30
157.055	55.00	70.50	6.30
157.056	56.00	71.50	6.30
157.058	58.00	73.50	6.30
157.060	60.00	75.50	6.30
157.062	62.00	77.50	6.30
157.063	63.00	78.50	6.30
157.065	65.00	80.50	6.30
157.068	68.00	83.50	6.30
157.070	70.00	85.50	6.30
157.075	75.00	90.50	6.30
157.080	80.00	95.50	6.30
157.085	85.00	100.50	6.30
157.090	90.00	105.50	6.30
157.095	95.00	110.50	6.30
157.100	100.00	115.50	6.30
157.105	105.00	120.50	6.30
157.110	110.00	125.50	6.30
157.115	115.00	130.50	6.30
157.120	120.00	135.50	6.30
157.125	125.00	140.50	6.30
157.130	130.00	145.50	6.30
157.135	135.00	150.50	6.30

Part number	Rod diameter Ød1 f8/h9	Groove diameter ØD1 H9	Groove width L1 0/+0.20
157.140	140.00	155.50	6.30
157.145	145.00	160.50	6.30
157.150	150.00	165.50	6.30
157.155	155.00	170.50	6.30
157.160	160.00	175.50	6.30
157.165	165.00	180.50	6.30
157.170	170.00	185.50	6.30
157.175	175.00	190.50	6.30
157.180	180.00	195.50	6.30
157.185	185.00	200.50	6.30
157.190	190.00	205.50	6.30
157.195	195.00	210.50	6.30
157.200	200.00	221.00	8.10
157.205	205.00	226.00	8.10
157.210	210.00	231.00	8.10
157.215	215.00	236.00	8.10
157.220	220.00	241.00	8.10
157.230	230.00	251.00	8.10
157.240	240.00	261.00	8.10
157.250	250.00	271.00	8.10
157.260	260.00	284.50	8.10
157.270	270.00	294.50	8.10
157.280	280.00	304.50	8.10
157.290	290.00	314.50	8.10
157.300	300.00	324.50	8.10
157.310	310.00	334.50	8.10
157.320	320.00	344.50	8.10
157.330	330.00	354.50	8.10
157.340	340.00	364.50	8.10
157.350	350.00	374.50	8.10
157.360	360.00	384.50	8.10
157.370	370.00	394.50	8.10
157.380	380.00	404.50	8.10
157.390	390.00	414.50	8.10
157.400	400.00	424.50	8.10
157.450	450.00	474.50	8.10
157.500	500.00	524.50	8.10

The figures highlighted in bold correspond to the dimensions for standard ISO 7425/2, with the rod diameters in line with standard ISO 3320. Other intermediate sizes can be provided.



ROD SEALS

BECA

161-163-165



DESCRIPTION

The BECA 161-163-165 profiles are double acting composite rod seals composed of a pre-tightened rubber O'Ring and a custom-made polyurethane friction ring.

ADVANTAGES

Optimal sealing in static and dynamic applications
Excellent abrasion and wear resistance

APPLICATIONS

Agriculture
Light and medium-sized industry
Machine tools
Material handling/Lifting

MATERIALS

Friction ring

PU 93 Shore A - Blue
PU 96 Shore A - Blue
High temp. PU 96 Shore A - Beige

O'Ring

NBR 70 Shore A

Other grades of materials are available. Please refer to the materials table on the next page.

TECHNICAL DATA

Temperature	-30°C / +100°C
Pressure	25 MPa
Speed	0.5 m/sec
Media	Mineral hydraulic oils

The figures above indicate the maximum values and may not be cumulated. They may be developed, depending on the materials used.

EXTRUSION GAPS

Radial section S	Radial gap F/2
2.45	0.20
3.65	0.25
5.35	0.25
7.55	0.30
10.25	0.30
12.00	0.35
13.65	0.35
19.00	0.40

SURFACE ROUGHNESS

Roughness	Dynamic surface area	Static surface area	Groove flanks
Ra	0.1 - 0.4 µm	≤1.6 µm	≤3.2 µm
Rz	0.63 - 2.5 µm	≤6.3 µm	≤10.0 µm
Rmax	1.0 - 4.0 µm	≤10.0 µm	≤16.0 µm

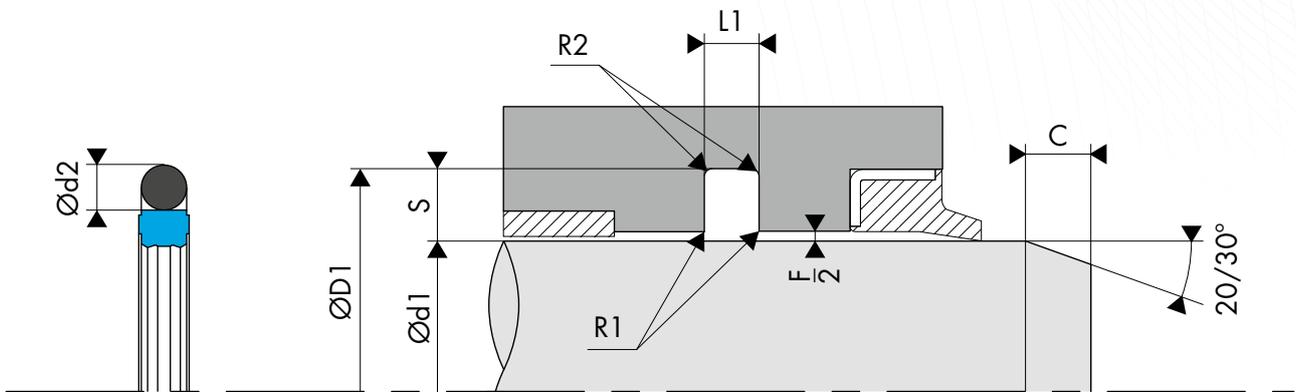
CHAMFERS AND RADIUS

Radial section S	Radius R1	Radius R2	Chamfer C
2.45	0.30	0.40	0.55
3.65	0.30	0.60	0.70
5.35	0.30	1.00	0.95
7.55	0.30	1.30	1.35
10.25	0.30	1.80	1.75
12.00	0.30	1.80	1.75
13.65	0.30	2.50	10.00
19.00	0.30	3.00	12.00

○ TABLE MATERIALS

Friction ring					O'Ring			Mating surface material
Standard code	ISO code	Material	Colour	Characteristics	Code	Type of material	Service temperature	
HG	HG	PE-UHMW	White or off-white	Excellent wear resistance on contact with water and air	K6	NBR 70 Shore A	-30°C/+80°C	Steel Stainless steel Chrome steel Aluminium Bronze Cast iron Treated surface
PU	U	Polyurethane	Blue	Strong mechanical resistance Good resistance to wear and abrasion High elasticity modulus	K6	NBR 70 Shore A	-30°C/+90°C	
PUHT	U	High-temperature polyurethane	White or off-white	Good flexibility Very good resistance to ozone and oxidation	K6	NBR 70 Shore A	-30°C/+100°C	

Other grades of materials are available depending on your specificities.



○ INSTALLATION DIMENSIONS

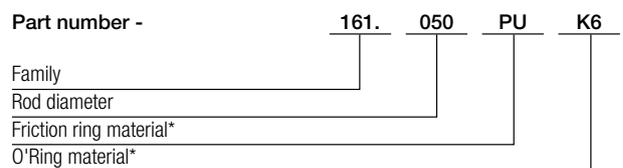
Rod diameter Ød1 f8/h9			Groove diameter	Groove width	Radial section	O'Ring cross-section
BECA 161 Standard range	BECA 163 Light range	BECA 165 Heavy-duty range	ØD1 H9	L1 0/+0.20	S	Ød2
3.0 - 7.9	8.0 - 18.9	---	d1 + 4.90	2.20	2.45	1.78
8.0 - 18.9	19.0 - 37.9	---	d1 + 7.30	3.20	3.65	2.62
19.0 - 37.9	38.0 - 199.9	8.0 - 18.9	d1 + 10.70	4.20	5.35	3.53
38.0 - 199.9	200.0 - 255.9	19.0 - 37.9	d1 + 15.10	6.30	7.55	5.33
200.0 - 255.9	256.0 - 649.9	38.0 - 199.9	d1 + 20.50	8.10	10.25	6.99
256.0 - 649.9	650.0 - 999.9	200.0 - 255.9	d1 + 24.00	8.10	12.00	6.99
650.0 - 999.9	1000.0 - 1200.0	256.0 - 649.9	d1 + 27.30	9.50	13.65	8.40
1000.0 - 1200.0	---	650.0 - 999.9	d1 + 38.00	13.80	19.00	12.00

For special applications > 40 MPa, we recommend using an H8/f8 tolerance (groove/rod) or selecting other, more suitable materials. Please contact our experts.

○ EXAMPLE OF CODIFICATION

STANDARD CODIFICATION

Materials _____ : Polyurethane friction ring - Code PU
 _____ : NBR 70 Shore A O'Ring - Code K6
Rod diameter _____ : Ød1 = 50.00 mm
Groove diameter _____ : ØD1 = 65.10 mm
Part number _____ : 161. 050PUK6



* The codes that define the materials are set out in the materials table on the previous page.

DIMENSIONS

Part number	Rod diameter Ød1 f8/h9	Groove diameter ØD1 H9	Groove width L1 0/+0.20
161.003	3.00	7.90	2.20
161.004	4.00	8.90	2.20
161.005	5.00	9.90	2.20
161.006	6.00	10.90	2.20
161.007	7.00	11.90	2.20
163.008	8.00	12.90	2.20
161.008	8.00	15.30	3.20
165.008	8.00	18.70	4.20
163.009	9.00	13.90	2.20
161.009	9.00	16.30	3.20
165.009	9.00	19.70	4.20
163.010	10.00	14.90	2.20
161.010	10.00	17.30	3.20
165.010	10.00	20.70	4.20
163.011	11.00	15.90	2.20
161.011	11.00	18.30	3.20
165.011	11.00	21.70	4.20
163.012	12.00	16.90	2.20
161.012	12.00	19.30	3.20
165.012	12.00	22.70	4.20
163.013	13.00	17.90	2.20
161.013	13.00	20.30	3.20
165.013	13.00	23.70	4.20
163.014	14.00	18.90	2.20
161.014	14.00	21.30	3.20
165.014	14.00	24.70	4.20
163.015	15.00	19.90	2.20
161.015	15.00	22.30	3.20
165.015	15.00	25.70	4.20
163.016	16.00	20.90	2.20
161.016	16.00	23.30	3.20
165.016	16.00	26.70	4.20
163.017	17.00	21.90	2.20
161.017	17.00	24.30	3.20
165.017	17.00	27.70	4.20
163.018	18.00	22.90	2.20
161.018	18.00	25.30	3.20
165.018	18.00	28.70	4.20
163.019	19.00	26.30	3.20
161.019	19.00	29.70	4.20
165.019	19.00	34.10	6.30
163.020	20.00	27.30	3.20
161.020	20.00	30.70	4.20
165.020	20.00	35.10	6.30
163.021	21.00	28.30	3.20
161.021	21.00	31.70	4.20
165.021	21.00	36.10	6.30
163.022	22.00	29.30	3.20
161.022	22.00	32.70	4.20
165.022	22.00	37.10	6.30
163.024	24.00	31.30	3.20
161.024	24.00	34.70	4.20
165.024	24.00	39.10	6.30
163.025	25.00	32.30	3.20
161.025	25.00	35.70	4.20

Part number	Rod diameter Ød1 f8/h9	Groove diameter ØD1 H9	Groove width L1 0/+0.20
165.025	25.00	40.10	6.30
163.026	26.00	33.30	3.20
161.026	26.00	36.70	4.20
165.026	26.00	41.10	6.30
163.027	27.00	34.30	3.20
161.027	27.00	37.70	4.20
165.027	27.00	42.10	6.30
163.028	28.00	35.30	3.20
161.028	28.00	38.70	4.20
165.028	28.00	43.10	6.30
163.029	29.00	36.30	3.20
161.029	29.00	39.70	4.20
165.029	29.00	44.10	6.30
163.030	30.00	37.30	3.20
161.030	30.00	40.70	4.20
165.030	30.00	45.10	6.30
163.032	32.00	39.30	3.20
161.032	32.00	42.70	4.20
165.032	32.00	47.10	6.30
163.034	34.00	41.30	3.20
161.034	34.00	44.70	4.20
165.034	34.00	49.10	6.30
163.035	35.00	42.30	3.20
161.035	35.00	45.70	4.20
165.035	35.00	50.10	6.30
163.036	36.00	43.30	3.20
161.036	36.00	46.70	4.20
165.036	36.00	51.10	6.30
163.038	38.00	48.70	4.20
161.038	38.00	53.10	6.30
165.038	38.00	58.50	8.10
163.039	39.00	49.70	4.20
161.039	39.00	54.10	6.30
165.039	39.00	59.50	8.10
163.040	40.00	50.70	4.20
161.040	40.00	55.10	6.30
165.040	40.00	60.50	8.10
163.041	41.00	51.70	4.20
161.041	41.00	56.10	6.30
165.041	41.00	61.50	8.10
163.042	42.00	52.70	4.20
161.042	42.00	57.10	6.30
165.042	42.00	62.50	8.10
163.044	44.00	54.70	4.20
161.044	44.00	59.10	6.30
165.044	44.00	64.50	8.10
163.045	45.00	55.70	4.20
161.045	45.00	60.10	6.30
165.045	45.00	65.50	8.10
163.046	46.00	56.70	4.20
161.046	46.00	61.10	6.30
165.046	46.00	66.50	8.10
163.047	47.00	57.70	4.20
161.047	47.00	62.10	6.30
165.047	47.00	67.50	8.10

Part number	Rod diameter Ød1 f8/h9	Groove diameter ØD1 H9	Groove width L1 0/+0.20
163.048	48.00	58.70	4.20
161.048	48.00	63.10	6.30
165.048	48.00	68.50	8.10
163.050	50.00	60.70	4.20
161.050	50.00	65.10	6.30
165.050	50.00	70.50	8.10
163.051	51.00	61.70	4.20
161.051	51.00	66.10	6.30
165.051	51.00	71.50	8.10
163.052	52.00	62.70	4.20
161.052	52.00	67.10	6.30
165.052	52.00	72.50	8.10
163.055	55.00	65.70	4.20
161.055	55.00	70.10	6.30
165.055	55.00	75.50	8.10
163.056	56.00	66.70	4.20
161.056	56.00	71.10	6.30
165.056	56.00	76.50	8.10
163.058	58.00	68.70	4.20
161.058	58.00	73.10	6.30
165.058	58.00	78.50	8.10
163.060	60.00	70.70	4.20
161.060	60.00	75.10	6.30
165.060	60.00	80.50	8.10
163.061	61.00	71.70	4.20
161.061	61.00	76.10	6.30
165.061	61.00	81.50	8.10
163.062	62.00	72.70	4.20
161.062	62.00	77.10	6.30
165.062	62.00	82.50	8.10
163.063	63.00	73.70	4.20
161.063	63.00	78.10	6.30
165.063	63.00	83.50	8.10
163.065	65.00	75.70	4.20
161.065	65.00	80.10	6.30
165.065	65.00	85.50	8.10
163.067	67.00	77.70	4.20
161.067	67.00	82.10	6.30
165.067	67.00	87.50	8.10
163.068	68.00	78.70	4.20
161.068	68.00	83.10	6.30
165.068	68.00	88.50	8.10
163.070	70.00	80.70	4.20
161.070	70.00	85.10	6.30
165.070	70.00	90.50	8.10
163.072	72.00	82.70	4.20
161.072	72.00	87.10	6.30
165.072	72.00	92.50	8.10
163.075	75.00	85.70	4.20
161.075	75.00	90.10	6.30
165.075	75.00	95.50	8.10
163.078	78.00	88.70	4.20
161.078	78.00	93.10	6.30
165.078	78.00	98.50	8.10
163.079	79.00	89.70	4.20

Part number	Rod diameter Ød1 f8/h9	Groove diameter ØD1 H9	Groove width L1 0/+0.20
161.079	79.00	94.10	6.30
165.079	79.00	99.50	8.10
163.080	80.00	90.70	4.20
161.080	80.00	95.10	6.30
165.080	80.00	100.50	8.10
163.081	81.00	91.70	4.20
161.081	81.00	96.10	6.30
165.081	81.00	101.50	8.10
163.082	82.00	92.70	4.20
161.082	82.00	97.10	6.30
165.082	82.00	102.50	8.10
163.083	83.00	93.70	4.20
161.083	83.00	98.10	6.30
165.083	83.00	103.50	8.10
163.084	84.00	94.70	4.20
161.084	84.00	99.10	6.30
165.084	84.00	104.50	8.10
163.085	85.00	95.70	4.20
161.085	85.00	100.10	6.30
165.085	85.00	105.50	8.10
163.086	86.00	96.70	4.20
161.086	86.00	101.10	6.30
165.086	86.00	106.50	8.10
163.088	88.00	98.70	4.20
161.088	88.00	103.10	6.30
165.088	88.00	108.50	8.10
163.090	90.00	100.70	4.20
161.090	90.00	105.10	6.30
165.090	90.00	110.50	8.10
163.092	92.00	102.70	4.20
161.092	92.00	107.10	6.30
165.092	92.00	112.50	8.10
163.095	95.00	105.70	4.20
161.095	95.00	110.10	6.30
165.095	95.00	115.50	8.10
163.098	98.00	108.70	4.20
161.098	98.00	113.10	6.30
165.098	98.00	118.50	8.10
163.100	100.00	110.70	4.20
161.100	100.00	115.10	6.30
165.100	100.00	120.50	8.10
163.105	105.00	115.70	4.20
161.105	105.00	120.10	6.30
165.105	105.00	125.50	8.10
163.108	108.00	118.70	4.20
161.108	108.00	123.10	6.30
165.108	108.00	128.50	8.10
163.110	110.00	120.70	4.20
161.110	110.00	125.10	6.30
165.110	110.00	130.50	8.10
163.115	115.00	125.70	4.20
161.115	115.00	130.10	6.30
165.115	115.00	135.50	8.10
163.120	120.00	130.70	4.20
161.120	120.00	135.10	6.30

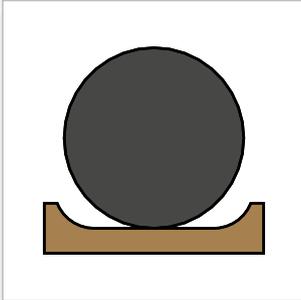
Part number	Rod diameter Ød1 f8/h9	Groove diameter ØD1 H9	Groove width L1 0/+0.20
165.120	120.00	140.50	8.10
163.125	125.00	135.70	4.20
161.125	125.00	140.10	6.30
165.125	125.00	145.50	8.10
163.127	127.00	137.70	4.20
161.127	127.00	142.10	6.30
165.127	127.00	147.50	8.10
163.130	130.00	140.70	4.20
161.130	130.00	145.10	6.30
165.130	130.00	150.50	8.10
163.135	135.00	145.70	4.20
161.135	135.00	150.10	6.30
165.135	135.00	155.50	8.10
163.138	138.00	148.70	4.20
161.138	138.00	153.10	6.30
165.138	138.00	158.50	8.10
163.140	140.00	150.70	4.20
161.140	140.00	155.10	6.30
165.140	140.00	160.50	8.10
163.145	145.00	155.70	4.20
161.145	145.00	160.10	6.30
165.145	145.00	165.50	8.10
163.150	150.00	160.70	4.20
161.150	150.00	165.10	6.30
165.150	150.00	170.50	8.10
163.155	155.00	165.70	4.20
161.155	155.00	170.10	6.30
165.155	155.00	175.50	8.10
163.160	160.00	170.70	4.20
161.160	160.00	175.10	6.30
165.160	160.00	180.50	8.10
163.165	165.00	175.70	4.20
161.165	165.00	180.10	6.30
165.165	165.00	185.50	8.10
163.170	170.00	180.70	4.20
161.170	170.00	185.10	6.30
165.170	170.00	190.50	8.10
163.175	175.00	185.70	4.20
161.175	175.00	190.10	6.30
165.175	175.00	195.50	8.10
163.180	180.00	190.70	4.20
161.180	180.00	195.10	6.30
165.180	180.00	200.50	8.10
163.185	185.00	195.70	4.20
161.185	185.00	200.10	6.30
165.185	185.00	205.50	8.10
163.190	190.00	200.70	4.20
161.190	190.00	205.10	6.30
165.190	190.00	210.50	8.10
163.195	195.00	205.70	4.20
161.195	195.00	210.10	6.30
165.195	195.00	215.50	8.10
163.200	200.00	215.10	6.30
161.200	200.00	220.50	8.10
165.200	200.00	224.00	8.10

Part number	Rod diameter Ød1 f8/h9	Groove diameter ØD1 H9	Groove width L1 0/+0.20
163.210	210.00	225.10	6.30
161.210	210.00	230.50	8.10
165.210	210.00	234.00	8.10
163.215	215.00	230.10	6.30
161.215	215.00	235.50	8.10
165.215	215.00	239.00	8.10
163.220	220.00	235.10	6.30
161.220	220.00	240.50	8.10
165.220	220.00	244.00	8.10
163.230	230.00	245.10	6.30
161.230	230.00	250.50	8.10
165.230	230.00	254.00	8.10
163.240	240.00	255.10	6.30
161.240	240.00	260.50	8.10
165.240	240.00	264.00	8.10
163.250	250.00	265.10	6.30
161.250	250.00	270.50	8.10
165.250	250.00	274.00	8.10
163.260	260.00	280.50	8.10
161.260	260.00	284.00	8.10
165.260	260.00	287.30	9.50
163.270	270.00	290.50	8.10
161.270	270.00	294.00	8.10
165.270	270.00	297.30	9.50
163.275	275.00	295.50	8.10
161.275	275.00	299.00	8.10
165.275	275.00	302.30	9.50
163.280	280.00	300.50	8.10
161.280	280.00	304.00	8.10
165.280	280.00	307.30	9.50
163.285	285.00	305.50	8.10
161.285	285.00	309.00	8.10
165.285	285.00	312.30	9.50
163.290	290.00	310.50	8.10
161.290	290.00	314.00	8.10
165.290	290.00	317.30	9.50
163.295	295.00	315.50	8.10
161.295	295.00	319.00	8.10
165.295	295.00	322.30	9.50
163.300	300.00	320.50	8.10
161.300	300.00	324.00	8.10
165.300	300.00	327.30	9.50
163.305	305.00	325.50	8.10
161.305	305.00	329.00	8.10
165.305	305.00	332.30	9.50
163.310	310.00	330.50	8.10
161.310	310.00	334.00	8.10
165.310	310.00	337.30	9.50
163.320	320.00	340.50	8.10
161.320	320.00	344.00	8.10
165.320	320.00	347.30	9.50
163.330	330.00	350.50	8.10
161.330	330.00	354.00	8.10
165.330	330.00	357.30	9.50
163.340	340.00	360.50	8.10

Part number	Rod diameter Ød1 f8/h9	Groove diameter ØD1 H9	Groove width L1 0/+0.20
161.340	340.00	364.00	8.10
165.340	340.00	367.30	9.50
163.350	350.00	370.50	8.10
161.350	350.00	374.00	8.10
165.350	350.00	377.30	9.50
163.360	360.00	380.50	8.10
161.360	360.00	384.00	8.10
165.360	360.00	387.30	9.50
163.370	370.00	390.50	8.10
161.370	370.00	394.00	8.10
165.370	370.00	397.30	9.50
163.380	380.00	400.50	8.10
161.380	380.00	404.00	8.10
165.380	380.00	407.30	9.50
163.390	390.00	410.50	8.10
161.390	390.00	414.00	8.10
165.390	390.00	417.30	9.50
163.400	400.00	420.50	8.10
161.400	400.00	424.00	8.10
165.400	400.00	427.30	9.50
163.410	410.00	430.50	8.10
161.410	410.00	434.00	8.10
165.410	410.00	437.30	9.50
163.420	420.00	440.50	8.10
161.420	420.00	444.00	8.10

Part number	Rod diameter Ød1 f8/h9	Groove diameter ØD1 H9	Groove width L1 0/+0.20
165.420	420.00	447.30	9.50
163.430	430.00	450.50	8.10
161.430	430.00	454.00	8.10
165.430	430.00	457.30	9.50
163.440	440.00	460.50	8.10
161.440	440.00	464.00	8.10
165.440	440.00	467.30	9.50
163.450	450.00	470.50	8.10
161.450	450.00	474.00	8.10
165.450	450.00	477.30	9.50
163.460	460.00	480.50	8.10
161.460	460.00	484.00	8.10
165.460	460.00	487.30	9.50
163.470	470.00	490.50	8.10
161.470	470.00	494.00	8.10
165.470	470.00	497.30	9.50
163.480	480.00	500.50	8.10
161.480	480.00	504.00	8.10
165.480	480.00	507.30	9.50
163.490	490.00	510.50	8.10
161.490	490.00	514.00	8.10
165.490	490.00	517.30	9.50
163.500	500.00	520.50	8.10
161.500	500.00	524.00	8.10
165.500	500.00	527.30	9.50

The figures highlighted in bold correspond to the rod diameters that are recommended by standard ISO 3320. Other intermediate sizes can be provided.



ROD SEALS

BECA

170-179



DESCRIPTION

The BECA 170 - 179 profiles are double acting composite rod seals composed of a filled PTFE friction ring and pre-tightened rubber O'Ring. They can be mounted in the grooves of the O'Rings. Option of connecting the seal to 1 or 2 back-up rings.

ADVANTAGES

Suitable for a reduced size

Low friction coefficient;
no stick-slip effect

Excellent extrusion and wear resistance

Wide temperature range and excellent chemical resistance, depending on the material selected for the O'Ring

APPLICATIONS

Machine tools

Lifting systems

Valves

MATERIALS

Friction ring

Bronze-filled PTFE

Carbon-filled PTFE

Virgin PTFE

O'Ring

NBR 70 Shore A

FKM 70 Shore A

VMQ 70 Shore A

Other grades of materials are available. Please refer to the materials table on the next page.

TECHNICAL DATA

Temperature	-30°C / +200°C
Pressure	35 MPa
Speed	5 m/s
Media	Mineral hydraulic oils Fire-resistant liquids Biocompatible fluids Others (contact our experts)

The figures above indicate the maximum values and may not be cumulated. They may be developed, depending on the materials used.

EXTRUSION GAPS

Radial section S	Radial gap F/2			
	2 MPa	10 MPa	20 MPa	35 MPa
1.45	0.10	0.10	0.08	0.05
2.25	0.15	0.15	0.10	0.07
3.10	0.25	0.20	0.15	0.08
4.70	0.35	0.25	0.20	0.10
6.10	0.50	0.30	0.25	0.15
7.50	0.60	0.40	0.30	0.20

SURFACE ROUGHNESS

Roughness	Dynamic surface area	Static surface area	Groove flanks
Ra	0.05 - 0.2 µm	≤1.6 µm	≤3.2 µm
Rz	0.4 - 1.6 µm	≤6.3 µm	≤10.0 µm
Rmax	0.63 - 2.5 µm	≤10.0 µm	≤16.0 µm

CHAMFERS AND RADIUS

Radial section S	Radius R1	Radius R2	Chamfer C
1.45	0.30	0.40	3.00
2.25	0.30	0.40	3.00
3.10	0.30	0.60	3.00
4.70	0.30	0.80	3.00
6.10	0.30	0.80	5.00
7.50	0.30	1.00	6.00

TABLE MATERIALS

Friction ring					O'Ring			Mating surface material	
Standard code	ISO code	Material	Colour	Characteristics	Code	Type of material	Service temperature		
DP	P	Virgin PTFE	White	Resistance to chemical products Impermeability Dielectric Non-stick Low friction coefficient Food industry	K6	NBR 70 Shore A	-30°C/+100°C	Steel Stainless steel Chrome steel Aluminium Bronze Cast iron Treated surface	
					G6	FKM 70 Shore A	-20°C/+200°C		
					C6	EPDM 70 Shore A	-45°C/+150°C		
					F6	VMQ 70 Shore A	-60°C/+200°C		
DC	C	PTFE + 25% Carbon	Grey	Improvements • Wear properties • Compression set Good resistance to chemical products Thermal and electrical conductivity Anti-static	K6	NBR 70 Shore A	-30°C/+100°C		
					G6	FKM 70 Shore A	-20°C/+200°C		
					C6	EPDM 70 Shore A	-45°C/+150°C		
CG	C	PTFE + 23% Carbon + 2% Graphite	Black	High-performing in compression-based dynamic applications	K6	NBR 70 Shore A	-30°C/+100°C		
					G6	FKM 70 Shore A	-20°C/+200°C		
					C6	EPDM 70 Shore A	-45°C/+150°C		
DV	V	PTFE + 25 % Glass	Blue	Improvements • Wear properties • Mechanical strength Slightly more abrasive, however, this is corrected by adding MOS2	K6	NBR 70 Shore A	-30°C/+100°C		Steel Chrome steel Cast iron
					G6	FKM 70 Shore A	-20°C/+200°C		
VM	M	PTFE + 15 % Glass + 5% MOS2	Grey	Maintains its chemical and dielectric properties Well-suited to applications with rotational and simultaneous alternating movements	K6	NBR 70 Shore A	-30°C/+100°C		
					G6	FKM 70 Shore A	-20°C/+200°C		
DX	X	PTFE GL Blue + Glass + Metal oxides	Turquoise blue	Resistance to compression Resistance to wear Excellent chemical stability Good thermal conductivity	K6	NBR 70 Shore A	-30°C/+100°C		
					G6	FKM 70 Shore A	-20°C/+200°C		
DG	G	PTFE + 15% Graphite	Black	Improvements • Wear properties Reduced wear on metal parts Self-lubricating Thermal and electrical conductivity Low permeability Good friction coefficient Anti-static High performing in dynamic self-lubricating applications	K6	NBR 70 Shore A	-30°C/+100°C	Steel Stainless steel Chrome steel Aluminium Bronze Cast iron Treated surface	
					G6	FKM 70 Shore A	-20°C/+200°C		
					C6	EPDM 70 Shore A	-45°C/+150°C		
K1	K	PTFE + 10% Ekonol	Light brown	Improvements • Better abrasion resistance • Better dimensional stability at high temperatures	K6	NBR 70 Shore A	-30°C/+100°C		
					G6	FKM 70 Shore A	-20°C/+200°C		
					C6	EPDM 70 Shore A	-45°C/+150°C		
K2	K	PTFE + 20% Ekonol	Light brown	Use up to +300°C Good friction coefficient and low permeability	K6	NBR 70 Shore A	-30°C/+100°C		
					G6	FKM 70 Shore A	-20°C/+200°C		
					C6	EPDM 70 Shore A	-45°C/+150°C		
DB	B	PTFE + 60% Bronze	Dark brown	Improvements • Wear properties • Warping resistance and creep strength • Compression resistance Self-lubricating	K6	NBR 70 Shore A	-30°C/+100°C	Steel Chrome steel Cast iron	
					G6	FKM 70 Shore A	-20°C/+200°C		
B4	B	PTFE + 40% Bronze	Dark brown	Electrical and thermal conductivity Does not alter the metal parts Reduced hold with certain chemical products Used for high-compression dynamic seals and has a low level of wear	K6	NBR 70 Shore A	-30°C/+100°C		
					G6	FKM 70 Shore A	-20°C/+200°C		
HG	HG	PE-UHMW	White or off-white	Excellent wear resistance on contact with water and air	K6	NBR 70 Shore A	-30°C/+80°C		Steel Stainless steel Chrome steel Aluminium Bronze Cast iron Treated surface

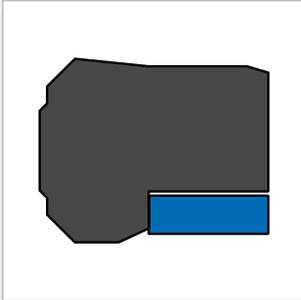
Other grades of materials are available depending on your specificities.

DIMENSIONS

Part number	Diameter of the rod Ød1 f8/h9	Diameter of the groove ØD1 H9	Width of the groove L1 0/+0.20
170.003	3.00	5.90	2.40
170.004	4.00	6.90	2.40
170.005	5.00	7.90	2.40
170.006	6.00	8.90	2.40
170.007	7.00	9.90	2.40
170.008	8.00	10.90	2.40
170.009	9.00	11.90	2.40
170.010	10.00	14.50	3.60
170.012	12.00	16.50	3.60
170.014	14.00	18.50	3.60
170.015	15.00	19.50	3.60
170.016	16.00	20.50	3.60
170.018	18.00	22.50	3.60
170.020	20.00	26.20	4.80
170.022	22.00	28.20	4.80
170.025	25.00	31.20	4.80
170.028	28.00	34.20	4.80
170.030	30.00	36.20	4.80
170.032	32.00	38.20	4.80
170.035	35.00	41.20	4.80
170.036	36.00	42.20	4.80
170.038	38.00	44.20	4.80
170.040	40.00	49.40	7.10
170.042	42.00	51.40	7.10
170.045	45.00	54.40	7.10
170.048	48.00	57.40	7.10
170.050	50.00	59.40	7.10
170.052	52.00	61.40	7.10
170.055	55.00	64.40	7.10
170.056	56.00	65.40	7.10
170.058	58.00	67.40	7.10
170.060	60.00	69.40	7.10
170.062	62.00	71.40	7.10
170.063	63.00	72.40	7.10
170.065	65.00	74.40	7.10
170.068	68.00	77.40	7.10
170.070	70.00	79.40	7.10
170.075	75.00	84.40	7.10
170.080	80.00	89.40	7.10
170.085	85.00	94.40	7.10
170.090	90.00	99.40	7.10
170.095	95.00	104.40	7.10
170.100	100.00	109.40	7.10
170.105	105.00	114.40	7.10

Part number	Diameter of the rod Ød1 f8/h9	Diameter of the groove ØD1 H9	Width of the groove L1 0/+0.20
170.110	110.00	119.40	7.10
170.115	115.00	124.40	7.10
170.120	120.00	132.20	9.50
170.125	125.00	137.20	9.50
170.130	130.00	142.20	9.50
170.135	135.00	147.20	9.50
170.140	140.00	152.20	9.50
170.145	145.00	157.20	9.50
170.150	150.00	162.20	9.50
170.155	155.00	167.20	9.50
170.160	160.00	172.20	9.50
170.165	165.00	177.20	9.50
170.170	170.00	182.20	9.50
170.175	175.00	187.20	9.50
170.180	180.00	192.20	9.50
170.185	185.00	197.20	9.50
170.190	190.00	202.20	9.50
170.195	195.00	207.20	9.50
170.200	200.00	212.20	9.50
170.205	205.00	217.20	9.50
170.210	210.00	222.20	9.50
170.215	215.00	227.20	9.50
170.220	220.00	232.20	9.50
170.230	230.00	242.20	9.50
170.240	240.00	252.20	9.50
170.250	250.00	262.20	9.50
170.260	260.00	272.20	9.50
170.270	270.00	282.20	9.50
170.280	280.00	292.20	9.50
170.290	290.00	302.20	9.50
170.300	300.00	312.20	9.50
170.310	310.00	322.20	9.50
170.320	320.00	332.20	9.50
170.330	330.00	342.20	9.50
170.340	340.00	352.20	9.50
170.350	350.00	362.20	9.50
170.360	360.00	372.20	9.50
170.370	370.00	382.20	9.50
170.380	380.00	392.20	9.50
170.390	390.00	402.20	9.50
170.400	400.00	412.20	9.50
170.450	450.00	462.20	9.50
170.500	500.00	512.20	9.50

The figures highlighted in bold correspond to the rod diameters that are recommended by standard ISO 3320. Other intermediate sizes can be provided.



ROD SEALS

BECA 190



DESCRIPTION

The BECA 190 profile is a compact rod seal composed of a profiled rubber ring and a POM back-up ring on the back as standard. It can be assembled in a groove according to standard ISO 5597.

ADVANTAGES

Excellent wear resistance
Good chemical resistance
Can be assembled in a closed groove for $\varnothing d1 \geq 30.00$ mm

APPLICATIONS

Mobile hydraulics
Presses
Aftermarket
Standard cylinders

MATERIALS

Profiled seal

NBR 80 Shore A
FKM 80 Shore A

Back-up ring

Polyoxymethylene - POM
Bronze-filled PTFE

Other grades of materials are available.
Please contact our experts.

TECHNICAL DATA

Temperature	-30°C / +200°C
Pressure	50 MPa
Speed	0.5 m/sec
Media	Mineral hydraulic oils Fire-resistant liquids Biocompatible fluids Water Others (contact our experts)

The figures above indicate the maximum values and may not be cumulated. They may be developed, depending on the materials used.

EXTRUSION GAPS

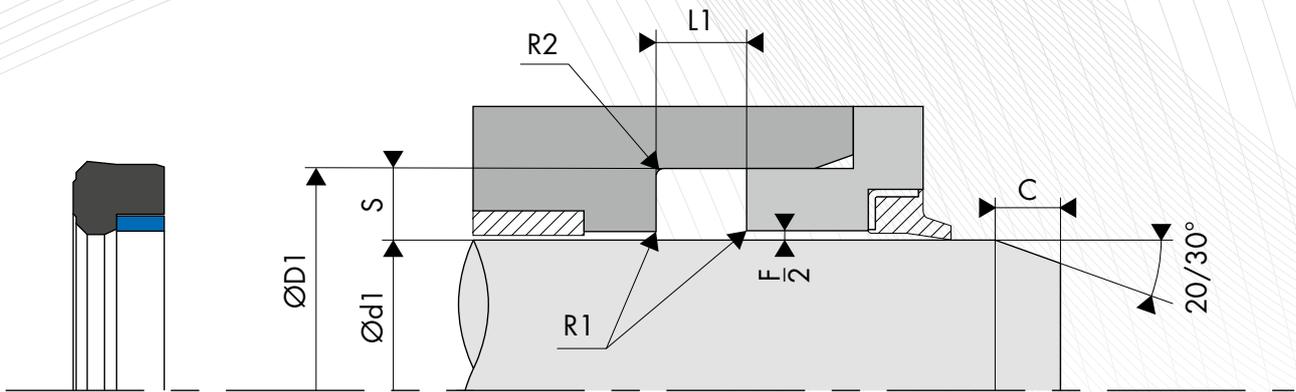
Pressure MPa	Radial gap F/2
10 MPa	0.65
20 MPa	0.55
35 MPa	0.45
50 MPa	0.35

SURFACE ROUGHNESS

Roughness	Dynamic surface area	Static surface area	Groove flanks
Ra	0.1 - 0.4 μm	$\leq 1.6 \mu\text{m}$	$\leq 3.2 \mu\text{m}$
Rz	0.63 - 2.5 μm	$\leq 6.3 \mu\text{m}$	$\leq 10.0 \mu\text{m}$
Rmax	1.0 - 4.0 μm	$\leq 10.0 \mu\text{m}$	$\leq 16.0 \mu\text{m}$

CHAMFERS AND RADIUS

Radial section S	Radius R1	Radius R2	Chamfer C
5.00	0.40	0.60	2.50
7.50	0.80	1.00	4.00
10.00	0.80	1.00	5.00
12.50	1.00	1.20	6.50

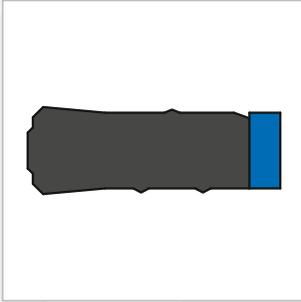


○ DIMENSIONS

Part number	Rod diameter Ød1 f8	Groove diameter ØD1 H11	Groove width L1 0/+0.20
190.0006014	6.00	14.00	6.30
190.0008016	8.00	16.00	6.30
190.0010018	10.00	18.00	6.30
190.0010020	10.00	20.00	8.00
190.0012020	12.00	20.00	6.30
190.0012022	12.00	22.00	8.00
190.0014022	14.00	22.00	6.30
190.0014024	14.00	24.00	8.00
190.0016024	16.00	24.00	6.30
190.0016026	16.00	26.00	8.00
190.0018026	18.00	26.00	6.30
190.0018028	18.00	28.00	8.00
190.0020028	20.00	28.00	6.30
190.0020030	20.00	30.00	8.00
190.0022030	22.00	30.00	6.30
190.0022032	22.00	32.00	8.00
190.0025033	25.00	33.00	6.30
190.0025035	25.00	35.00	8.00
190.0028038	28.00	38.00	8.00
190.0028043	28.00	43.00	12.50
190.1030040	30.00	40.00	8.00
190.0032042	32.00	42.00	8.00
190.0032047	32.00	47.00	12.50
190.2033045	33.00	45.00	10.00
190.0035045	35.00	45.00	8.00
190.0036046	36.00	46.00	8.00
190.0036051	36.00	51.00	12.50
190.0040050	40.00	50.00	8.00
190.0040055	40.00	55.00	12.50

Part number	Rod diameter Ød1 f8	Groove diameter ØD1 H11	Groove width L1 0/+0.20
190.0045055	45.00	55.00	8.00
190.0045060	45.00	60.00	12.50
190.0050060	50.00	60.00	8.00
190.0050065	50.00	65.00	12.50
190.0055070	55.00	70.00	12.50
190.0056071	56.00	71.00	12.50
190.0056076	56.00	76.00	16.00
190.0060075	60.00	75.00	12.50
190.0063078	63.00	78.00	12.50
190.0063083	63.00	83.00	16.00
190.0065080	65.00	80.00	12.50
190.0070085	70.00	85.00	12.50
190.0070090	70.00	90.00	16.00
190.0080095	80.00	95.00	12.50
190.0080100	80.00	100.00	16.00
190.0090105	90.00	105.00	12.50
190.0090110	90.00	110.00	16.00
190.0100120	100.00	120.00	16.00
190.0100125	100.00	125.00	20.00
190.0110130	110.00	130.00	16.00
190.0110135	110.00	135.00	20.00
190.0125145	125.00	145.00	16.00
190.0125150	125.00	150.00	20.00
190.2140160	140.00	160.00	12.00
190.0140160	140.00	160.00	16.00
190.0140165	140.00	165.00	20.00
190.0160185	160.00	185.00	20.00
190.0180205	180.00	205.00	20.00
190.0200225	200.00	225.00	20.00

The figures highlighted in bold correspond to the dimensions for standard ISO 5597, with the rod diameters in line with standard ISO 3320. Other intermediate sizes can be provided.



ROD SEALS

BECA 200



DESCRIPTION

The BECA 200 profile is a compact rod seal composed of a fabric part, a rubber part and a POM back-up ring as standard. It can be assembled in a groove according to standard ISO 5597.

ADVANTAGES

Excellent wear resistance
 Excellent resistance to high pressures
 Good chemical resistance
 Can be assembled in a closed groove for $\varnothing d1 \geq 35.00$ mm

APPLICATIONS

Mobile hydraulics
 Presses
 Aftermarket
 Standard cylinders

MATERIALS

Profiled seal

NBR 80 Shore A

FKM 80 Shore A

Back-up ring

Polyoxymethylene - POM

Bronze-filled PTFE

Other grades of materials are available.
 Please contact our experts.

TECHNICAL DATA

Temperature	-30°C / +200°C
Pressure	70 MPa
Speed	0.5 m/sec
Media	Mineral hydraulic oils Fire-resistant liquids Biocompatible fluids Water Others (contact our experts)

The figures above indicate the maximum values and may not be cumulated. They may be developed, depending on the materials used.

EXTRUSION GAPS

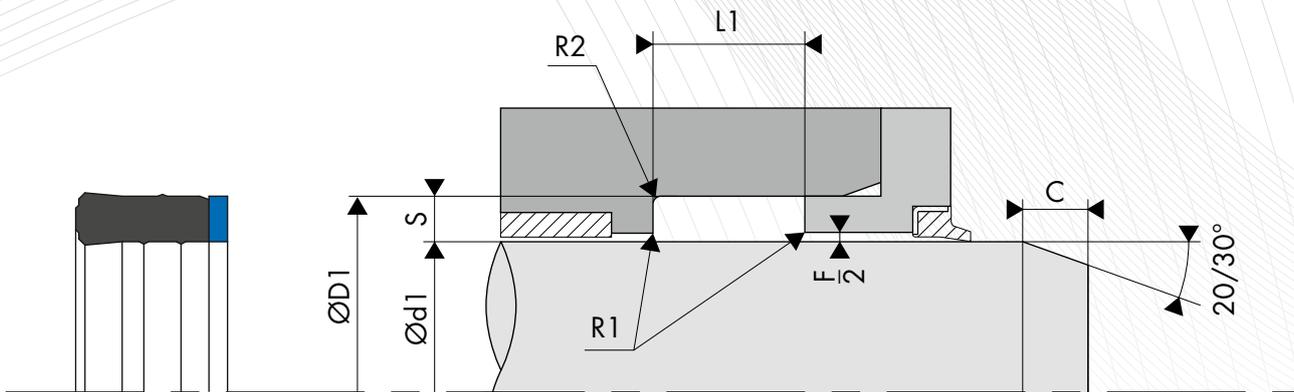
Pressure MPa	Radial gap F/2
25 MPa	0.80
30 MPa	0.70
50 MPa	0.50
70 MPa	0.35

SURFACE ROUGHNESS

Roughness	Dynamic surface area	Static surface area	Groove flanks
Ra	0.1 - 0.4 μm	≤ 1.6 μm	≤ 3.2 μm
Rz	0.63 - 2.5 μm	≤ 6.3 μm	≤ 10.0 μm
Rmax	1.0 - 4.0 μm	≤ 10.0 μm	≤ 16.0 μm

CHAMFERS AND RADIUS

Radial section S	Radius R1	Radius R2	Chamfer C
5.00	0.40	0.60	2.50
7.50	0.80	1.00	4.00
10.00	0.80	1.00	5.00
12.50	1.00	1.20	6.50

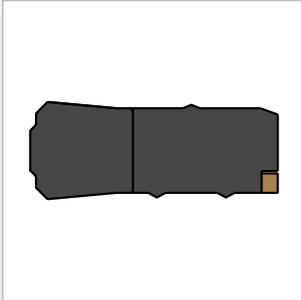


○ DIMENSIONS

Part number	Diameter of the rod Ød1 f8	Diameter of the groove ØD1 H11	Width of the groove L1 0/+0.20
200.0028038	28.00	38.00	16.00
200.0030040	30.00	40.00	16.00
200.0032042	32.00	42.00	16.00
200.0035045	35.00	45.00	16.00
200.0036046	36.00	46.00	16.00
200.0040050	40.00	50.00	16.00
200.0045055	45.00	55.00	16.00
200.0045060	45.00	60.00	22.50
200.0046061	46.00	61.00	22.50
200.0050060	50.00	60.00	16.00
200.0051071	51.00	71.00	30.00
200.0055070	55.00	70.00	25.00
200.0056071	56.00	71.00	25.00
200.0060080	60.00	80.00	30.00
200.0061081	61.00	81.00	30.00

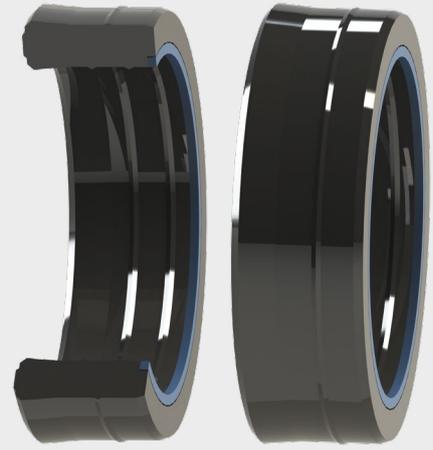
Part number	Diameter of the rod Ød1 f8	Diameter of the groove ØD1 H11	Width of the groove L1 0/+0.20
200.0063078	63.00	78.00	25.00
200.0065080	65.00	80.00	25.00
200.0070085	70.00	85.00	25.00
200.0070090	70.00	90.00	30.00
200.0071091	71.00	91.00	30.00
200.0080095	80.00	95.00	25.00
200.0080100	80.00	100.00	30.00
200.0081101	81.00	101.00	30.00
200.0090105	90.00	105.00	25.00
200.0090110	90.00	110.00	30.00
200.0091111	91.00	111.00	30.00
200.0100120	100.00	120.00	32.00
200.0110130	110.00	130.00	32.00
200.0125145	125.00	145.00	32.00
200.0140160	140.00	160.00	32.00

The figures highlighted in bold correspond to the dimensions for standard ISO 5597, with the rod diameters in line with standard ISO 3320. Other intermediate sizes can be provided.



ROD SEALS

BECA 201



DESCRIPTION

The BECA 201 profile is a compact rod seal composed of a rubber part and a POM or bronze-filled PTFE back-up ring as standard. It can be assembled in a groove according to standard ISO 5597.

ADVANTAGES

- Excellent wear resistance
- Excellent resistance to high pressures
- Good chemical resistance
- Can be assembled in a closed groove for $\varnothing d1 \geq 35.00$ mm

APPLICATIONS

- Mobile hydraulics
- Presses
- Aftermarket
- Standard cylinders

MATERIALS

Profiled seal

NBR 80 Shore A

FKM 80 Shore A

Back-up ring

Polyoxymethylene - POM

Bronze-filled PTFE

Other grades of materials are available.
Please contact our experts.

TECHNICAL DATA

Temperature	-30°C / +200°C
Pressure	70 MPa
Speed	0.5 m/sec
Media	Mineral hydraulic oils Fire-resistant liquids Biocompatible fluids Water Others (contact our experts)

The figures above indicate the maximum values and may not be cumulated. They may be developed, depending on the materials used.

EXTRUSION GAPS

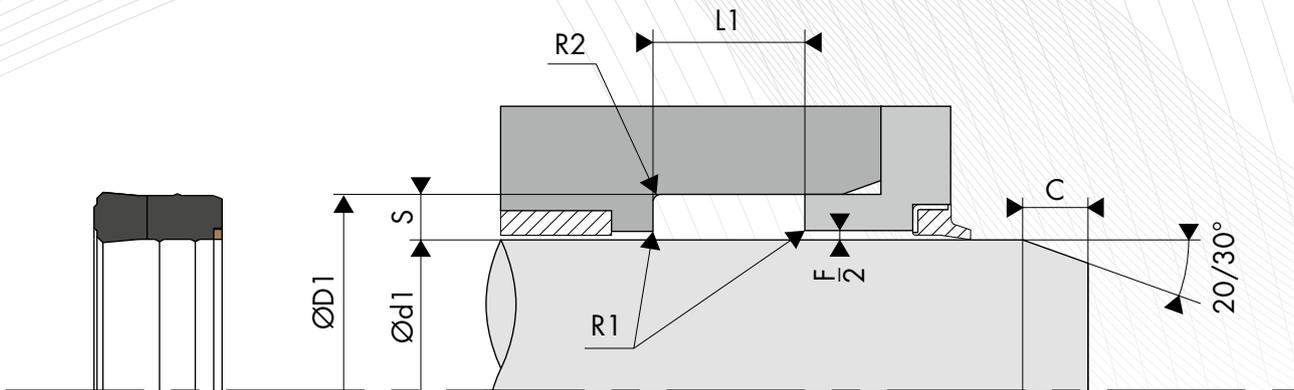
Pressure MPa	Radial gap F/2
25 MPa	0.80
30 MPa	0.70
50 MPa	0.50
70 MPa	0.35

SURFACE ROUGHNESS

Roughness	Dynamic surface area	Static surface area	Groove flanks
Ra	0.1 - 0.4 μm	≤ 1.6 μm	≤ 3.2 μm
Rz	0.63 - 2.5 μm	≤ 6.3 μm	≤ 10.0 μm
Rmax	1.0 - 4.0 μm	≤ 10.0 μm	≤ 16.0 μm

CHAMFERS AND RADIUS

Radial section S	Radius R1	Radius R2	Chamfer C
5.00	0.40	0.60	2.50
7.50	0.80	1.00	4.00
10.00	0.80	1.00	5.00
12.50	1.00	1.20	6.50

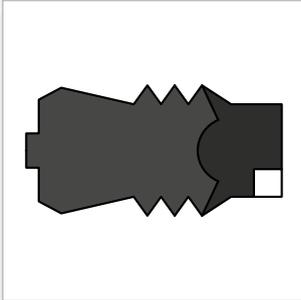


○ DIMENSIONS

Part number	Diameter of the rod Ød1 f8	Diameter of the groove ØD1 H11	Width of the groove L1 0/+0.20
201.0028038	28.00	38.00	16.00
201.0030040	30.00	40.00	16.00
201.0032042	32.00	42.00	16.00
201.0035045	35.00	45.00	16.00
201.0036046	36.00	46.00	16.00
201.0040050	40.00	50.00	16.00
201.0045055	45.00	55.00	16.00
201.0045060	45.00	60.00	22.50
201.0046061	46.00	61.00	22.50
201.0050060	50.00	60.00	16.00
201.0051071	51.00	71.00	30.00
201.0055070	55.00	70.00	25.00
201.0056071	56.00	71.00	25.00
201.0060080	60.00	80.00	30.00
201.0061081	61.00	81.00	30.00

Part number	Diameter of the rod Ød1 f8	Diameter of the groove ØD1 H11	Width of the groove L1 0/+0.20
201.0063078	63.00	78.00	25.00
201.0065080	65.00	80.00	25.00
201.0070085	70.00	85.00	25.00
201.0070090	70.00	90.00	30.00
201.0071091	71.00	91.00	30.00
201.0080095	80.00	95.00	25.00
201.0080100	80.00	100.00	30.00
201.0081101	81.00	101.00	30.00
201.0090105	90.00	105.00	25.00
201.0090110	90.00	110.00	30.00
201.0091111	91.00	111.00	30.00
201.0100120	100.00	120.00	32.00
201.0110130	110.00	130.00	32.00
201.0125145	125.00	145.00	32.00
201.0140160	140.00	160.00	32.00

The figures highlighted in bold correspond to the dimensions for standard ISO 5597, with the rod diameters in line with standard ISO 3320. Other intermediate sizes can be provided.



ROD SEALS

BECA 202



DESCRIPTION

The BECA 202 is a compo-compact rod seal composed of a flexible NBR ring, a fabric NBR support on the back and a polyoxymethylene back-up ring.

ADVANTAGES

Excellent sealing under high pressure
Good extrusion resistance
Good sealing in difficult environments

APPLICATIONS

Hydraulic cylinders
Earth-moving machinery
Mining machinery

MATERIALS

NBR 90 Shore A + POM + TPE

TECHNICAL DATA

Temperature	-30°C / +100°C
Pressure	70 MPa
Speed	0.5 m/sec
Media	Mineral oils HFA, HFB and HFC hydraulic fluids

The figures above indicate the maximum values and may not be cumulated. They may be developed, depending on the materials used.

EXTRUSION GAPS

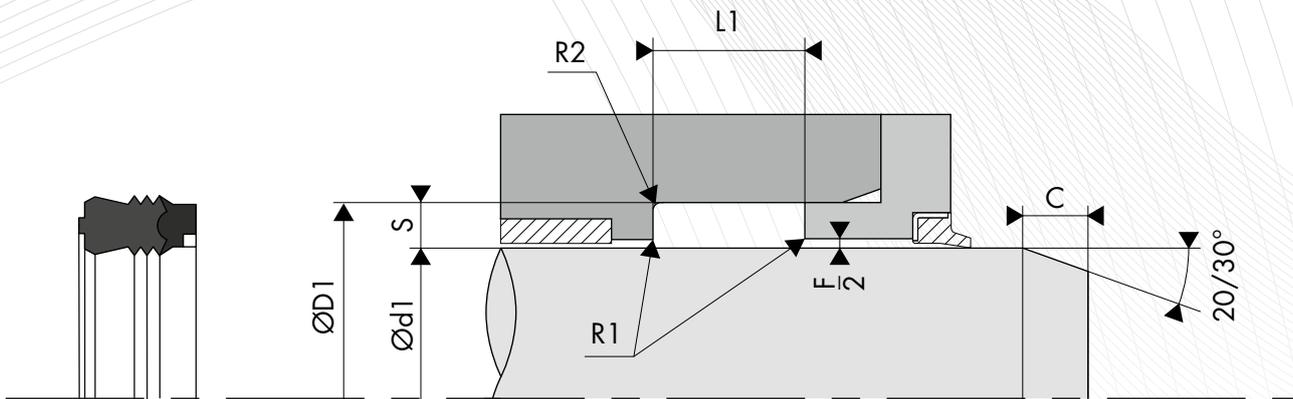
Radial section S	Radial gap F/2			
	16 MPa	26 MPa	32 MPa	40 MPa
≤ 5.00	0.50	0.40	0.35	-
≤ 7.50	0.55	0.45	0.40	0.35
≤ 12.50	0.60	0.50	0.45	0.40
≤ 15.00	0.65	0.55	0.45	0.40

SURFACE ROUGHNESS

Roughness	Dynamic surface area	Static surface area	Groove flanks
Ra	0.1 - 0.4 μm	≤1.6 μm	≤3.2 μm
Rz	0.63 - 2.5 μm	≤6.3 μm	≤10.0 μm
Rmax	1.0 - 4.0 μm	≤10.0 μm	≤16.0 μm

CHAMFERS AND RADIUS

Inside diameter d1	Radius R1	Radius R2	Chamfer C
≤ 50.00	0.30	0.40	2.50
≤ 100.00	0.30	0.80	4.00
≤ 150.00	0.30	0.80	5.00
> 150.00	0.30	1.00	6.50

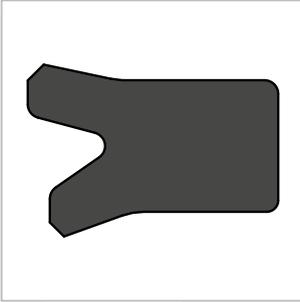


DIMENSIONS

Part number	Diameter of the rod Ød1 f8	Diameter of the groove ØD1 H9	Width of the groove L1 0/+0.25
202.015020	15.00	27.00	20.00
202.020020	20.00	33.00	20.00
202.022020	22.00	35.00	20.00
202.025020	25.00	38.00	20.00
202.028020	28.00	41.00	20.00
202.030020	30.00	43.00	20.00
202.032022	32.00	47.00	22.50
202.035025	35.00	45.00	25.59
202.035022	35.00	47.00	22.50
202.035225	35.00	50.00	22.50
202.036022	36.00	51.00	22.50
202.040017	40.00	50.00	17.50
202.040022	40.00	52.00	22.50
202.040226	40.00	55.00	22.62
202.040030	40.00	60.00	30.00
202.045022	45.00	60.00	22.50
202.045028	45.00	65.00	28.00
202.050020	50.00	63.00	20.00
202.050022	50.00	65.00	22.50
202.050024	50.00	65.00	24.50
202.050030	50.00	70.00	30.00
202.050031	50.00	70.00	31.90
202.055022	55.00	70.00	22.50
202.055025	55.00	70.00	25.00
202.055030	55.00	75.00	30.00
202.055032	55.00	75.00	32.00
202.056022	56.00	71.00	22.50
202.056025	56.00	71.00	25.00
202.056028	56.00	76.00	28.00
202.060022	60.00	75.00	22.50
202.060025	60.00	75.00	25.00
202.060027	60.00	80.00	27.00
202.060030	60.00	80.00	30.00
202.060032	60.00	80.00	32.00
202.060034	60.00	80.00	34.90
202.063027	63.00	83.00	27.00
202.063029	63.00	83.00	29.00
202.063030	63.00	83.00	30.00
202.065029	65.00	85.00	29.00
202.070022	70.00	85.00	22.50
202.070025	70.00	85.00	25.00
202.070030	70.00	90.00	30.00
202.070031	70.00	90.00	31.90
202.075028	75.00	95.00	28.00
202.075030	75.00	95.00	30.00
202.765032	76.50	96.50	32.50
202.080030	80.00	100.00	30.00
202.085022	85.00	105.00	22.00

Part number	Diameter of the rod Ød1 f8	Diameter of the groove ØD1 H9	Width of the groove L1 0/+0.25
202.085030	85.00	105.00	30.00
202.090022	90.00	105.00	22.50
202.090025	90.00	105.00	25.00
202.090033	90.00	105.00	33.53
202.090030	90.00	110.00	30.00
202.090032	90.00	110.00	32.50
202.095028	95.00	115.00	28.00
202.100024	100.00	114.30	24.21
202.100030	100.00	120.00	30.00
202.105025	105.00	118.00	25.00
202.105034	105.00	120.00	34.00
202.105030	105.00	125.00	30.00
202.110032	110.00	130.00	32.50
202.110036	110.00	132.00	36.50
202.115030	115.00	130.00	30.00
202.120030	120.00	140.00	30.00
202.125029	125.00	145.00	29.62
202.130028	130.00	150.00	28.00
202.135028	135.00	155.00	28.00
202.140019	140.00	160.00	19.00
202.140028	140.00	160.00	28.00
202.140030	140.00	160.00	30.00
202.150028	150.00	170.00	28.00
202.155028	155.00	175.00	28.00
202.160028	160.00	180.00	28.00
202.165030	165.00	185.00	30.00
202.170035	170.00	195.00	35.00
202.175035	175.00	200.00	35.00
202.180035	180.00	205.00	35.00
202.185035	185.00	210.00	35.00
202.190035	190.00	215.00	35.00
202.195035	195.00	220.00	35.00
202.200035	200.00	225.00	35.00
202.210030	210.00	235.00	30.00
202.215035	215.00	240.00	35.00
202.220035	220.00	245.00	35.00
202.225035	225.00	250.00	35.00
202.230035	230.00	255.00	35.00
202.240035	240.00	265.00	35.00
202.250035	250.00	275.00	35.00
202.260030	260.00	280.00	30.00
202.265035	265.00	290.00	35.00
202.275035	275.00	300.00	35.00
202.280035	280.00	300.00	35.00
202.300035	300.00	325.00	35.00
202.335035	335.00	360.00	35.00

The figures highlighted in bold correspond to the rod diameters that are recommended by standard ISO 3320. Other intermediate sizes can be provided.



ROD SEALS

BECA 230



DESCRIPTION

The BECA 230 profile is a U-ring type single acting rod seal with offset rubber lips.

ADVANTAGES

Optimised sealing effect
Excellent resistance to high temperatures depending on the type of material chosen
Assembly by deformation in closed groove

APPLICATIONS

Mobile hydraulics
Machine tools
Presses
Standard cylinders

MATERIALS

NBR 70 Shore A
NBR 85 Shore A
FKM 85 Shore A

Other grades of materials are available.
Please contact our experts.

TECHNICAL DATA

Temperature	-30°C / +200°C
Pressure	15 MPa
Speed	0.5 m/sec
Media	Mineral hydraulic oils Fire-resistant liquids Biocompatible fluids Water Others (contact our experts)

The figures above indicate the maximum values and may not be cumulated. They may be developed, depending on the materials used.

EXTRUSION GAPS

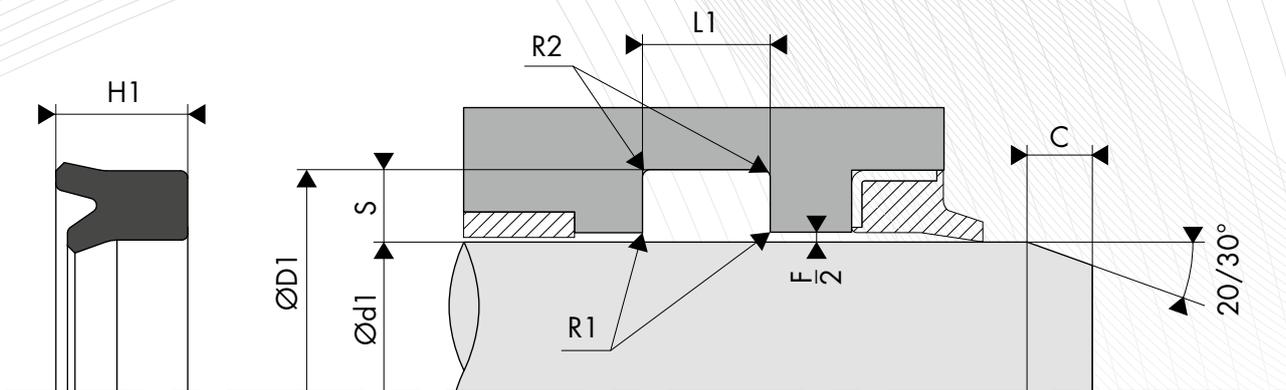
Pressure MPa	Radial gap F/2
2.5 MPa	0.45
5.0 MPa	0.35
7.5 MPa	0.30
10.0 MPa	0.25
15.0 MPa	0.20

SURFACE ROUGHNESS

Roughness	Dynamic surface area	Static surface area	Groove flanks
Ra	0.1 - 0.4 µm	≤1.6 µm	≤3.2 µm
Rz	0.63 - 2.5 µm	≤6.3 µm	≤10.0 µm
Rmax	1.0 - 4.0 µm	≤10.0 µm	≤16.0 µm

CHAMFERS AND RADIUS

Radial section S	Radius R1	Radius R2	Chamfer C
3.50	0.20	0.40	2.00
5.00	0.40	0.60	2.50
7.50	0.80	1.00	4.00
10.00	0.80	1.00	5.00

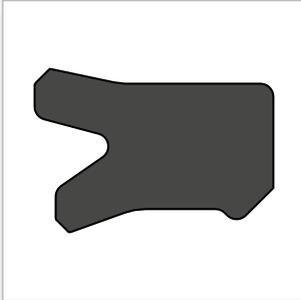


DIMENSIONS

Part number	Rod diameter Ød1 f8	Groove diameter ØD1 H10	Height of the seal H1	Groove width L1 -0.50/+1.00
230.1006014	6.00	14.00	5.70	6.30
230.0651254	6.50	12.50	3.90	4.00
230.0701304	7.00	13.00	3.90	4.00
230.0081284	8.00	12.80	4.00	5.00
230.1008014	8.00	14.00	3.90	4.00
230.0008016	8.00	16.00	5.70	6.30
230.1008016	8.00	16.00	6.00	6.70
230.1013623	10.00	13.60	2.30	2.70
230.1010018	10.00	18.00	5.70	6.30
230.1010020	10.00	20.00	7.30	8.00
230.1012020	12.00	20.00	5.70	6.30
230.0012022	12.00	22.00	7.30	8.00
230.1012022	12.00	22.00	8.00	9.00
230.0132326	13.00	23.20	5.20	5.80
230.1014022	14.00	22.00	5.70	6.30
230.1014024	14.00	24.00	7.30	8.00
230.1016024	16.00	24.00	5.70	6.30
230.1016026	16.00	26.00	7.30	8.00
230.1018025	18.00	25.00	5.00	5.60
230.1018026	18.00	26.00	5.70	6.30
230.1018028	18.00	28.00	7.30	8.00
230.0190255	19.00	25.00	4.70	5.30
230.0020654	20.00	26.50	3.70	4.00
230.1020027	20.00	27.00	6.00	6.50
230.1020028	20.00	28.00	5.70	6.30
230.1020030	20.00	30.00	7.30	8.00
230.2022030	22.00	30.00	5.70	6.30
230.1022032	22.00	32.00	7.30	8.00
230.1025032	25.00	32.00	5.00	5.60
230.1025033	25.00	33.00	5.70	6.30
230.5025035	25.00	35.00	5.50	6.00
230.7025035	25.00	35.00	7.30	8.00
230.1025035	25.00	35.00	8.00	9.00
230.0289454	28.00	34.50	3.70	4.00
230.1028038	28.00	38.00	7.30	8.00
230.1028043	28.00	43.00	11.50	12.50
230.1030040	30.00	40.00	10.00	11.00
230.1031041	31.00	41.00	10.00	11.00
230.1032040	32.00	40.00	5.70	6.30
230.1032042	32.00	42.00	7.30	8.00
230.1032047	32.00	47.00	11.50	12.50
230.2035045	35.00	45.00	9.00	10.00
230.1035045	35.00	45.00	10.00	11.00
230.1035055	35.00	55.00	11.00	12.00
230.1036046	36.00	46.00	7.30	8.00
230.1036051	36.00	51.00	11.50	12.50
230.2040050	40.00	50.00	9.00	10.00
230.1040050	40.00	50.00	10.00	11.00
230.1040055	40.00	55.00	11.50	12.50
230.1042050	42.00	50.00	5.70	6.30
230.7045055	45.00	55.00	7.00	7.50
230.2045055	45.00	55.00	7.30	8.00

Part number	Rod diameter Ød1 f8	Groove diameter ØD1 H10	Height of the seal H1	Groove width L1 -0.50/+1.00
230.1045055	45.00	55.00	10.00	11.00
230.1045060	45.00	60.00	11.50	12.50
230.7050060	50.00	60.00	7.00	8.00
230.2050060	50.00	60.00	7.30	8.00
230.1050060	50.00	60.00	10.00	11.00
230.1050065	50.00	65.00	11.50	12.50
230.1054064	54.00	64.00	7.00	8.00
230.1055063	55.00	63.00	5.70	6.30
230.1055065	55.00	65.00	10.00	11.00
230.1056071	56.00	71.00	11.50	12.50
230.1056076	56.00	76.00	15.00	16.00
230.1060070	60.00	70.00	10.00	11.00
230.2060070	60.00	70.00	12.00	13.00
230.1063078	63.00	78.00	11.50	12.50
230.1063083	63.00	83.00	15.00	16.00
230.0065075	65.00	75.00	12.00	13.00
230.1067077	67.00	77.00	10.00	11.00
230.2070080	70.00	80.00	6.50	7.50
230.1070080	70.00	80.00	12.00	13.00
230.1070085	70.00	85.00	11.50	12.50
230.1070090	70.00	90.00	15.00	16.00
230.2080090	80.00	90.00	10.00	11.00
230.1080090	80.00	90.00	12.00	13.00
230.1080095	80.00	95.00	11.50	12.50
230.1080100	80.00	100.00	15.00	16.00
230.2090100	90.00	100.00	6.50	7.50
230.1090100	90.00	100.00	12.00	13.00
230.1090105	90.00	105.00	11.50	12.50
230.1090110	90.00	110.00	15.00	16.00
230.1100120	100.00	120.00	15.00	16.00
230.1100125	100.00	125.00	19.00	20.00
230.1110125	110.00	125.00	9.60	10.60
230.1110130	110.00	130.00	15.00	16.00
230.1110135	110.00	135.00	19.00	20.00
230.1125145	125.00	145.00	15.00	16.00
230.1125150	125.00	150.00	19.00	20.00
230.1140160	140.00	160.00	15.00	16.00
230.1140165	140.00	165.00	19.00	20.00
230.1145160	145.00	160.00	9.60	10.60
230.1160185	160.00	185.00	19.00	20.00
230.1160190	160.00	190.00	24.00	25.00
230.1180205	180.00	205.00	19.00	20.00
230.1180210	180.00	210.00	24.00	25.00
230.1185200	185.00	200.00	9.60	10.60
230.1200225	200.00	225.00	19.00	20.00
230.1200230	200.00	230.00	24.00	25.00
230.1220250	220.00	250.00	24.00	25.00
230.1250280	250.00	280.00	24.00	25.00
230.1280310	280.00	310.00	24.00	25.00
230.1320360	320.00	360.00	31.00	32.00
230.1360400	360.00	400.00	31.00	32.00

The figures highlighted in bold correspond to the dimensions for standard ISO 5597, with the rod diameters in line with standard ISO 3320. Other intermediate sizes can be provided.



ROD SEALS

BECA 230/B



DESCRIPTION

The BECA 230/B profile is a rubber single acting rod seal with symmetrical lips and a second sealing lip. It can be assembled in a groove according to standard ISO 5597.

ADVANTAGES

Optimised sealing effect at both high and low pressures

Excellent abrasion and wear resistance

Assembly by deformation in closed groove

APPLICATIONS

Mobile hydraulics

Injection presses

Machine tools

Presses

Hydraulic cylinders

MATERIALS

PU 93 Shore A - Blue

PU 96 Shore A - Blue

High temp. PU 96 Shore A - Beige

Other grades of materials are available. Please contact our experts.

TECHNICAL DATA

Temperature	-30°C / +200°C
Pressure	15 MPa
Speed	0.5 m/sec
Media	Mineral hydraulic oils

The figures above indicate the maximum values and may not be cumulated. They may be developed, depending on the materials used.

EXTRUSION GAPS

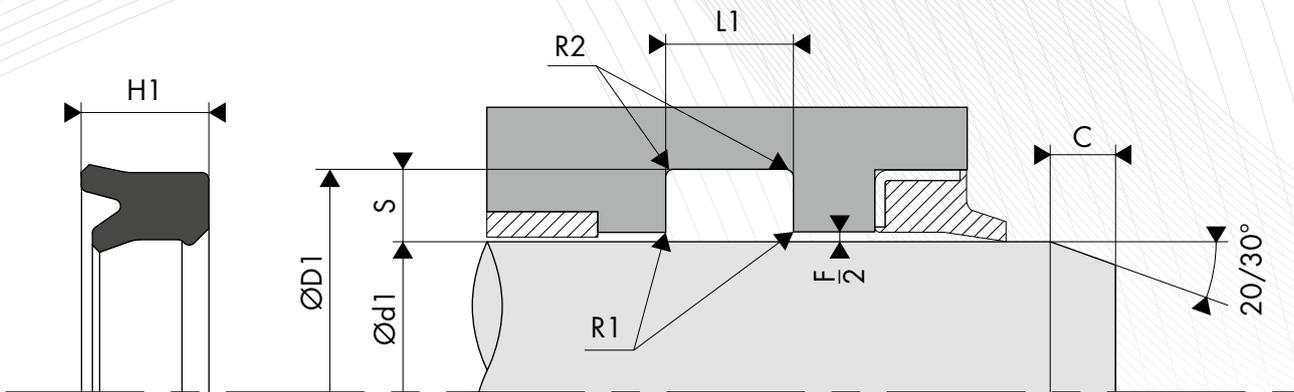
Pressure MPa	Radial gap F/2
2.5 MPa	0.45
5.0 MPa	0.35
7.5 MPa	0.30
10.0 MPa	0.25
15.0 MPa	0.20

SURFACE ROUGHNESS

Roughness	Dynamic surface area	Static surface area	Groove flanks
Ra	0.1 - 0.4 µm	≤1.6 µm	≤3.2 µm
Rz	0.63 - 2.5 µm	≤6.3 µm	≤10.0 µm
Rmax	1.0 - 4.0 µm	≤10.0 µm	≤16.0 µm

CHAMFERS AND RADIUS

Radial section S	Radius R1	Radius R2	Chamfer C
3.50	0.20	0.40	2.00
5.00	0.40	0.60	2.50
7.50	0.80	1.00	4.00
10.00	0.80	1.00	5.00

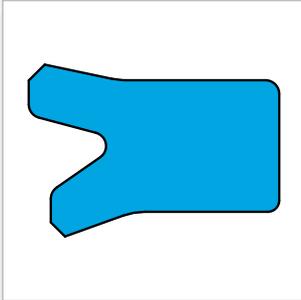


○ DIMENSIONS

Part number	Rod diameter Ød1 f8	Groove diameter ØD1 H10	Height of the seal H1	Width of the groove L1 0/+0.5
230.0121673	12.00	16.70	2.70	3.00
230.121673S	12.00	16.70	2.70	3.00
230.0141873	14.00	18.70	2.70	3.00
230.141873S	14.00	18.70	2.70	3.00
230.0151973	15.00	19.70	2.70	3.00
230.0162073	16.00	20.70	2.70	3.00
230.16203K8	16.00	20.70	2.70	3.00
230.162073S	16.00	20.70	2.70	3.00
230.0160226	16.00	22.00	5.50	6.00

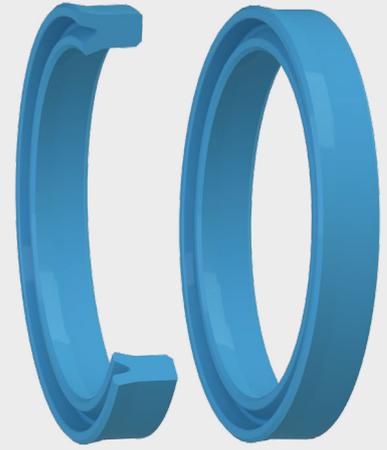
Part number	Rod diameter Ød1 f8	Groove diameter ØD1 H10	Height of the seal H1	Width of the groove L1 0/+0.5
230.0202654	20.00	26.50	3.70	4.00
230.202654S	20.00	26.50	3.70	4.00
230.0232954	23.00	29.50	3.70	4.00
230.0283454	28.00	34.50	3.70	4.00
230.0300406	30.00	40.00	6.00	6.50
230.6030040	30.00	40.00	6.00	7.00
230.7030040	30.00	40.00	7.00	8.00
230.0450557	45.00	55.00	7.00	7.50
230.0891029	89.00	102.00	8.56	9.56

The figures highlighted in bold correspond to the dimensions for standard ISO 5597, with the rod diameters in line with standard ISO 3320. Other intermediate sizes can be provided.



ROD SEALS

BECA 231



DESCRIPTION

The BECA 231 profile is a U-ring type single acting rod seal with offset polyurethane lips. It can be assembled in a groove according to standard ISO 5597.

ADVANTAGES

Optimised sealing effect at both high and low pressures

Excellent abrasion and extrusion resistance

Assembly by deformation in closed groove

APPLICATIONS

Mobile hydraulics

Injection presses

Machine tools

Presses

Hydraulic cylinders

MATERIALS

PU 93 Shore A - Blue

PU 96 Shore A - Blue

High temp. PU 96 Shore A - Beige

Other grades of materials are available. Please contact our experts.

TECHNICAL DATA

Temperature	-30°C / +110°C
Pressure	40 MPa
Speed	0.5 m/sec
Media	Mineral hydraulic oils

The figures above indicate the maximum values and may not be cumulated. They may be developed, depending on the materials used.

EXTRUSION GAPS

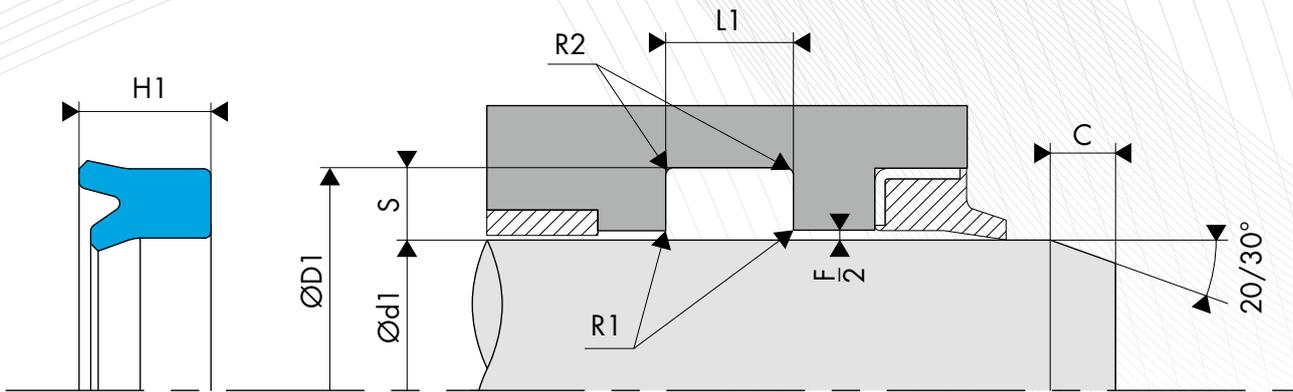
Diameter of the rod $\varnothing d1$	Radial gap F/2				
	≤ 5 MPa	≤ 10 MPa	≤ 20 MPa	≤ 30 MPa	≤ 40 MPa
≤ 60 mm	0.40	0.30	0.20	0.15	0.10
> 60 mm	0.50	0.40	0.30	0.20	0.15

SURFACE ROUGHNESS

Roughness	Dynamic surface area	Static surface area	Groove flanks
Ra	0.1 - 0.4 μm	≤1.6 μm	≤3.2 μm
Rz	0.63 - 2.5 μm	≤6.3 μm	≤10.0 μm
Rmax	1.0 - 4.0 μm	≤10.0 μm	≤16.0 μm

CHAMFERS AND RADIUS

Radial section S	Radius R1	Radius R2	Chamfer C
3.50	0.20	0.40	2.00
4.00	0.20	0.60	2.50
5.00	0.20	1.00	2.50
7.50	0.20	1.00	4.00
12.50	0.20	1.30	6.00
20.00	0.20	1.80	8.00

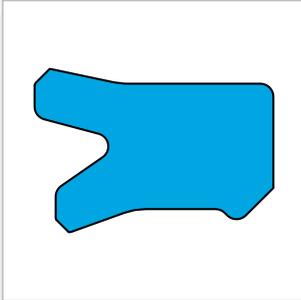


DIMENSIONS

Part number	Rod diameter Ød1 f8	Groove diameter ØD1 H10	Height of the seal H1	Width of the groove L1 0/+0.5
231.0060146	6.00	14.00	5.70	6.30
231.0080166	8.00	16.00	5.70	6.30
231.0100186	10.00	18.00	5.70	6.30
231.0100208	10.00	20.00	7.30	8.00
231.0120206	12.00	20.00	5.70	6.30
231.0120228	12.00	22.00	7.30	8.00
231.0140226	14.00	22.00	5.70	6.30
231.0140248	14.00	24.00	7.30	8.00
231.0160268	16.00	26.00	7.30	8.00
231.0200307	20.00	30.00	7.30	8.00
231.0200308	20.00	30.00	8.00	9.00
231.0220285	22.00	28.00	4.50	5.00
231.0220307	22.00	30.00	7.00	8.00
231.0220326	22.00	32.00	5.70	6.30
231.0220328	22.00	32.00	7.30	8.00
231.0250338	25.00	33.00	8.00	9.00
231.0250358	25.00	35.00	7.30	8.00
231.0280431	28.00	43.00	11.50	12.50
231.0300451	30.00	45.00	10.00	11.00
231.0350437	35.00	43.00	6.30	7.00
231.0350457	35.00	45.00	7.00	8.00
231.0360512	36.00	51.00	11.50	12.50
231.0400551	40.00	55.00	11.50	12.50
231.0420506	42.00	50.00	5.70	6.30
231.0450556	45.00	55.00	6.00	7.00
231.0450601	45.00	60.00	11.50	12.50
231.0500606	50.00	60.00	6.00	7.00
231.0500631	50.00	63.00	10.00	11.00
231.0500650	50.00	65.00	10.00	11.00
231.0500651	50.00	65.00	11.50	12.50
231.0550636	55.00	63.00	5.70	6.30
231.0560711	56.00	71.00	11.50	12.50
231.0560761	56.00	76.00	15.00	16.00
231.0630781	63.00	78.00	11.50	12.50
231.0630831	63.00	83.00	15.00	16.00
231.0650781	65.00	78.00	10.00	11.00
231.0650801	65.00	80.00	12.00	13.00
231.0700831	70.00	83.00	10.00	11.00
231.0700851	70.00	85.00	11.50	12.50

Part number	Rod diameter Ød1 f8	Groove diameter ØD1 H10	Height of the seal H1	Width of the groove L1 0/+0.5
231.0700901	70.00	90.00	15.00	16.00
231.0750881	75.00	88.00	10.00	11.00
231.0750900	75.00	90.00	10.00	11.00
231.0750901	75.00	90.00	11.50	12.50
231.0800951	80.00	95.00	11.50	12.50
231.0801005	80.00	100.00	15.00	16.00
231.0851009	85.00	100.00	9.00	10.00
231.0901007	90.00	100.00	6.50	7.50
231.0901051	90.00	105.00	11.50	12.50
231.0901101	90.00	110.00	15.00	16.00
231.0951109	95.00	110.00	9.00	10.00
231.0961061	96.00	106.00	12.00	13.00
231.1001081	100.00	108.00	11.50	12.50
231.1001151	100.00	115.00	10.00	11.00
231.1001201	100.00	120.00	15.00	16.00
231.1001251	100.00	125.00	19.00	20.00
231.1101251	110.00	125.00	9.60	10.60
231.1101301	110.00	130.00	15.00	16.00
231.1101351	110.00	135.00	19.00	20.00
231.1251451	125.00	145.00	15.00	16.00
231.1251501	125.00	150.00	19.00	20.00
231.1301501	130.00	150.00	13.00	14.00
231.1401601	140.00	160.00	15.00	16.00
231.1401651	140.00	165.00	19.00	20.00
231.1451601	145.00	160.00	9.60	10.60
231.1601851	160.00	185.00	19.00	20.00
231.1601902	160.00	190.00	24.00	25.00
231.1701901	170.00	190.00	16.00	17.00
231.1802051	180.00	205.00	19.00	20.00
231.1802102	180.00	210.00	24.00	25.00
231.1852001	185.00	200.00	9.60	10.60
231.2002256	200.00	225.00	16.00	17.00
231.2002259	200.00	225.00	19.00	20.00
231.2002302	200.00	230.00	24.00	25.00
231.2202502	220.00	250.00	24.00	25.00
231.2502802	250.00	280.00	24.00	25.00
231.2803102	280.00	310.00	24.00	25.00
231.3203603	320.00	360.00	31.00	32.00
231.3604003	360.00	400.00	31.00	32.00

The figures highlighted in bold correspond to the dimensions for standard ISO 5597, with the rod diameters in line with standard ISO 3320. Other intermediate sizes can be provided.



ROD SEALS

BECA 231/B



DESCRIPTION

The BECA 231/B profile is a polyurethane U-ring type single acting rod seal with offset lips, symmetrical lips and a second sealing lip. It can be assembled in a groove according to standard ISO 5597.

ADVANTAGES

Optimised sealing effect at both high and low pressures

Excellent abrasion and wear resistance

Assembly by deformation in closed groove

APPLICATIONS

Mobile hydraulics

Injection presses

Machine tools

Presses

Hydraulic cylinders

MATERIALS

PU 93 Shore A - Blue

PU 96 Shore A - Blue

High temp. PU 96 Shore A - Beige

Other grades of materials are available. Please contact our experts.

TECHNICAL DATA

Temperature	-30°C / +110°C
Pressure	40 MPa
Speed	0.5 m/sec
Media	Mineral hydraulic oils

The figures above indicate the maximum values and may not be cumulated. They may be developed, depending on the materials used.

EXTRUSION GAPS

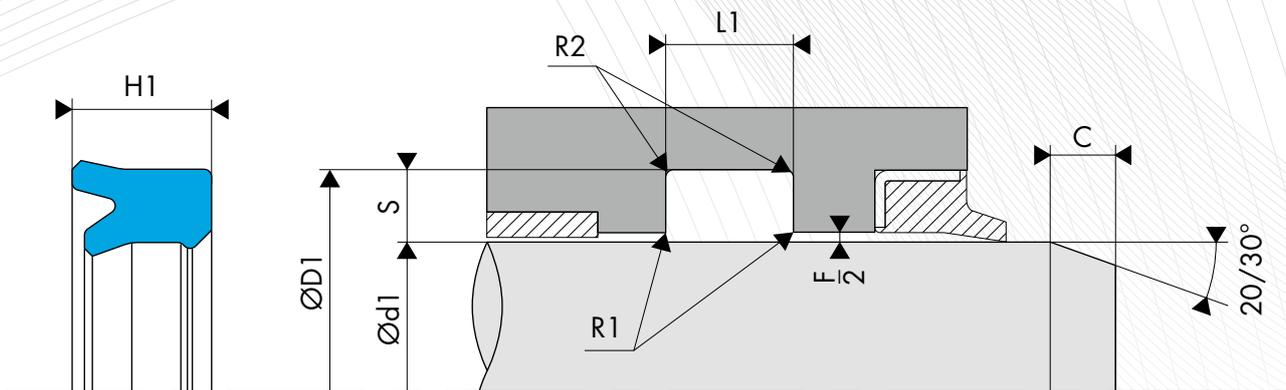
Diameter of the rod $\varnothing d1$	Radial gap F/2				
	≤ 5 MPa	≤ 10 MPa	≤ 20 MPa	≤ 30 MPa	≤ 40 MPa
≤ 60 mm	0.40	0.30	0.20	0.15	0.10
> 60 mm	0.50	0.40	0.30	0.20	0.15

SURFACE ROUGHNESS

Roughness	Dynamic surface area	Static surface area	Groove flanks
Ra	0.1 - 0.4 μm	≤1.6 μm	≤3.2 μm
Rz	0.63 - 2.5 μm	≤6.3 μm	≤10.0 μm
Rmax	1.0 - 4.0 μm	≤10.0 μm	≤16.0 μm

CHAMFERS AND RADIUS

Radial section S	Radius R1	Radius R2	Chamfer C
3.50	0.20	0.40	2.00
4.00	0.20	0.60	2.50
5.00	0.20	1.00	2.50
7.50	0.20	1.00	4.00
12.50	0.20	1.30	6.00
20.00	0.20	1.80	8.00

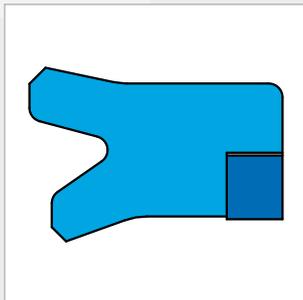


DIMENSIONS

Part number	Rod diameter Ød1 f8	Groove diameter ØD1 H10	Height of the seal H1	Width of the groove L1 0/+0.5
231.0120184	12.00	18.00	4.00	4.50
231.0120185	12.00	18.00	5.00	6.00
231.0150215	15.00	21.00	4.50	5.00
231.0160226	16.00	22.00	5.00	6.00
231.0160235	16.00	23.00	5.00	5.60
231.0160246	16.00	24.00	5.70	6.30
231.0180255	18.00	25.00	5.00	5.60
231.0180266	18.00	26.00	5.70	6.30
231.0180288	18.00	28.00	8.00	9.00
231.0200265	20.00	26.00	5.00	5.50
231.0200275	20.00	27.00	5.00	5.60
231.0200286	20.00	28.00	5.70	6.30
231.0220295	22.00	29.00	5.00	5.60
231.0220306	22.00	30.00	5.70	6.30
231.0220309	22.00	30.00	8.00	9.00
231.0240305	24.00	30.00	4.50	5.00
231.0250321	25.00	32.00	10.00	11.00
231.0250325	25.00	32.00	5.00	5.60
231.0250336	25.00	33.00	5.70	6.30
231.0250339	25.00	33.00	8.00	9.00
231.0260361	26.00	36.00	10.00	11.00
231.0280366	28.00	36.00	5.70	6.30
231.0280388	28.00	38.00	7.00	8.00
231.0300367	30.00	36.00	6.30	7.00
231.0300386	30.00	38.00	5.70	6.30
231.0300387	30.00	38.00	6.30	7.00
231.0300407	30.00	40.00	7.00	8.00
231.0300431	30.00	43.00	10.00	11.00
231.0300461	30.00	46.00	9.00	10.00
231.0320406	32.00	40.00	5.70	6.30
231.0320428	32.00	42.00	7.00	8.00
231.0320471	32.00	47.00	10.00	11.00
231.0320481	32.00	48.00	10.00	11.00
231.0350436	35.00	43.00	5.70	6.30
231.0350519	35.00	51.00	9.00	10.00
231.0360446	36.00	44.00	5.70	6.30
231.0360461	36.00	46.00	10.00	11.00
231.0360468	36.00	46.00	7.00	8.00
231.0370471	37.00	47.00	10.00	11.00
231.0370478	37.00	47.00	8.00	9.00
231.0380482	38.00	48.00	12.00	13.00
231.0380487	38.00	48.00	6.60	7.20
231.0400486	40.00	48.00	5.70	6.30
231.0400489	40.00	48.00	8.00	9.00
231.0400506	40.00	50.00	6.00	7.00
231.0400508	40.00	50.00	7.00	8.00
231.0400528	40.00	52.00	8.00	9.00
231.0400550	40.00	55.00	10.00	11.00
231.0445571	44.45	57.15	8.00	9.00
231.0450536	45.00	53.00	5.70	6.30
231.0450539	45.00	53.00	8.00	9.00
231.0450558	45.00	55.00	7.00	8.00
231.0450612	45.00	61.00	12.00	13.00
231.0470561	47.00	56.30	9.00	10.00
231.0470569	47.00	56.30	8.00	9.00
231.0500582	50.00	58.00	10.90	12.00
231.0500586	50.00	58.00	5.70	6.30
231.0500608	50.00	60.00	7.00	8.00
231.0520621	52.00	62.00	10.00	11.00
231.0550638	55.00	63.00	7.30	8.00

Part number	Rod diameter Ød1 f8	Groove diameter ØD1 H10	Height of the seal H1	Width of the groove L1 0/+0.5
231.0550639	55.00	63.00	8.00	9.00
231.0550652	55.00	65.00	12.00	13.00
231.0550656	55.00	65.00	6.00	7.00
231.0550701	55.00	70.00	10.00	11.00
231.0550709	55.00	70.00	9.00	10.00
231.0550752	55.00	75.00	12.00	13.00
231.0560667	56.00	66.00	6.80	7.50
231.0560712	56.00	71.00	11.50	12.50
231.0570669	57.16	66.70	9.50	10.50
231.0600719	60.00	71.00	8.00	9.00
231.0600751	60.00	75.00	11.50	12.50
231.0600752	60.00	75.00	12.00	13.00
231.0630737	63.00	73.00	6.80	7.50
231.0650802	65.00	80.00	12.00	13.00
231.0700781	70.00	78.00	10.90	12.00
231.0700807	70.00	80.00	6.80	7.50
231.0700852	70.00	85.00	11.50	12.50
231.0770872	77.00	87.00	12.00	13.00
231.0800907	80.00	90.00	6.80	7.50
231.0800952	80.00	95.00	11.50	12.50
231.0850944	85.00	94.00	14.00	15.00
231.0900981	90.00	98.00	10.90	12.00
231.0961062	96.00	106.00	12.00	13.00
231.1001082	100.00	108.00	11.50	12.50
231.1030040	30.00	40.00	10.00	11.00
231.1030045	30.00	45.00	10.00	11.00
231.1035045	35.00	45.00	10.00	11.00
231.1040050	40.00	50.00	10.00	11.00
231.1040055	40.00	55.00	11.50	12.50
231.1045053	45.00	53.00	10.00	11.00
231.1050057	50.00	57.00	10.00	11.00
231.1050060	50.00	60.00	10.00	11.00
231.1050065	50.00	65.00	10.00	11.00
231.1055065	55.00	65.00	10.00	11.00
231.1058068	58.00	68.00	10.00	11.00
231.1060070	60.00	70.00	10.00	11.00
231.1060075	60.00	75.00	10.00	11.00
231.1080090	80.00	90.00	10.00	11.00
231.1151231	115.00	123.00	10.90	12.00
231.1601805	160.00	180.00	15.00	16.00
231.2055063	55.00	63.00	12.00	13.00
231.2060070	60.00	70.00	12.00	13.00
231.2063073	63.00	73.00	12.00	13.00
231.2063078	63.00	78.00	11.50	12.50
231.2070080	70.00	80.00	12.00	13.00
231.2075085	75.00	85.00	12.00	13.00
231.2080090	80.00	90.00	12.00	13.00
231.2090105	90.00	105.00	11.50	12.50
231.2203257	22.00	32.00	5.70	6.30
231.4513020	13.00	20.00	4.00	4.50
231.7035043	35.00	43.00	6.30	7.00
231.7035045	35.00	45.00	7.00	8.00
231.7509011	75.00	90.00	11.50	12.50
231.8020030	20.00	30.00	8.00	9.00
231.8022032	22.00	32.00	8.00	9.00
231.8025035	25.00	35.00	8.00	9.00
231.8028038	28.00	38.00	8.00	9.00
231.8030040	30.00	40.00	8.00	9.00

The figures highlighted in bold correspond to the dimensions for standard ISO 5597, with the rod diameters in line with standard ISO 3320. Other intermediate sizes can be provided.



ROD SEALS

BECA 231/AE



DESCRIPTION

The BECA 231/AE profile is a polyurethane U-ring type single acting rod seal with offset lips, with a POM back-up ring integrated into the back. It can be assembled in a groove according to standard ISO 5597.

ADVANTAGES

Optimised sealing effect at both high and low pressures

Excellent abrasion and wear resistance

Assembly by deformation in closed groove

APPLICATIONS

Mobile hydraulics

Injection presses

Machine tools

Presses

Hydraulic cylinders

MATERIALS

Profiled seal

PU 93 Shore A - Blue

PU 96 Shore A - Blue

High temp. PU 96 Shore A - Beige

Back-up ring

Polyoxymethylene - POM

Other grades of materials are available. Please contact our experts.

TECHNICAL DATA

Temperature	-30°C / +110°C
Pressure	45 MPa
Speed	0.5 m/sec
Media	Mineral hydraulic oils

The figures above indicate the maximum values and may not be cumulated. They may be developed, depending on the materials used.

EXTRUSION GAPS

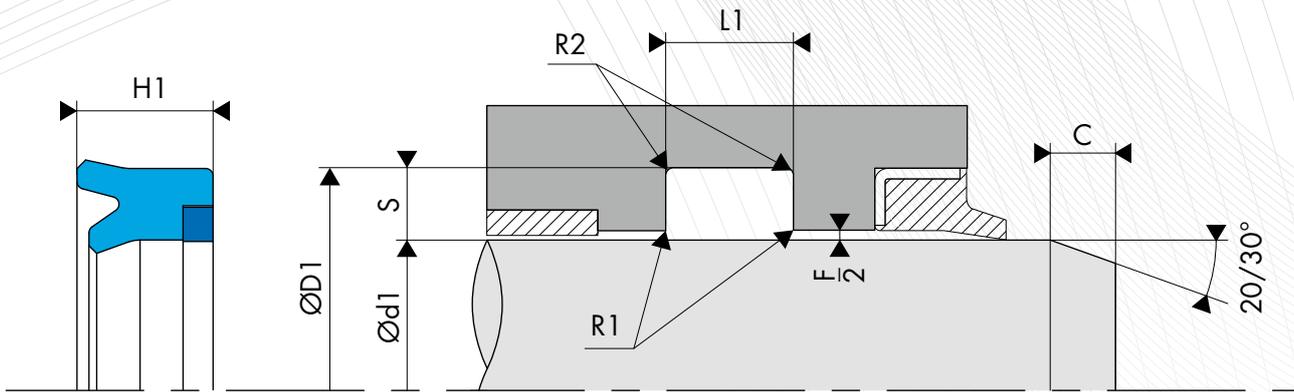
Rod diameter Ød1	Radial gap F/2					
	≤ 5 MPa	≤ 10 MPa	≤ 20 MPa	≤ 30 MPa	≤ 40 MPa	≤ 45 MPa
≤ 60 mm	0.40	0.30	0.20	0.15	0.10	0.07
> 60 mm	0.50	0.40	0.30	0.20	0.15	0.10

SURFACE ROUGHNESS

Roughness	Dynamic surface area	Static surface area	Groove flanks
Ra	0.1 - 0.4 µm	≤1.6 µm	≤3.2 µm
Rz	0.63 - 2.5 µm	≤6.3 µm	≤10.0 µm
Rmax	1.0 - 4.0 µm	≤10.0 µm	≤16.0 µm

CHAMFERS AND RADIUS

Radial section S	Radius R1	Radius R2	Chamfer C
3.50	0.20	0.40	2.00
4.00	0.20	0.60	2.50
5.00	0.20	1.00	2.50
7.50	0.20	1.00	4.00
12.50	0.20	1.30	6.00
20.00	0.20	1.80	8.00

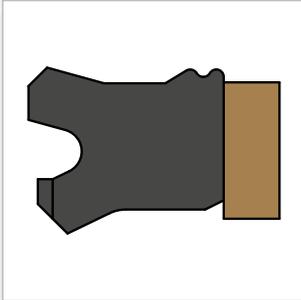


○ DIMENSIONS

Part number	Rod diameter Ød1 f8	Groove diameter ØD1 H10	Seal height H1	Groove width L1 0/+0.5
231.1828AEG	18.00	28.00	8.00	9.00
231.R103004	30.00	40.00	10.00	11.00
231.350456E	35.00	45.00	6.50	7.50
231.R703504	35.00	45.00	6.50	7.50
231.035045E	35.00	45.00	10.00	11.00
231.R035045	35.00	45.00	10.00	11.00
231.04555AE	45.00	55.00	7.00	8.00
231.04658AE	46.00	58.00	12.00	13.00

Part number	Rod diameter Ød1 f8	Groove diameter ØD1 H10	Seal height H1	Groove width L1 0/+0.5
231.2055065	55.00	65.00	12.00	13.00
231.E070083	70.00	83.00	13.00	14.00
231.1001154	100.00	115.00	13.00	14.00
231.0105BAE	105.00	125.00	12.00	13.00
231.105125E	105.00	125.00	15.00	16.00
231.E130150	130.00	150.00	16.00	17.00
231.200225E	200.00	225.00	15.00	16.00
231.E200225	200.00	225.00	20.00	21.00

Other intermediate sizes can be provided.



ROD SEALS

BECA 239



DESCRIPTION

The BECA 239 profile is a U-ring type single acting rod seal with offset lips composed of a profiled rubber seal and a bronze-filled PTFE back-up ring on the back.

ADVANTAGES

Optimised sealing effect at average and higher pressures
Good extrusion resistance

APPLICATIONS

Mobile hydraulics
Material handling - Lifting
Hydraulic cylinders

MATERIALS

Profiled seal

NBR 85 Shore A

Back-up ring

Bronze-filled PTFE

Other grades of materials are available.
Please contact our experts.

TECHNICAL DATA

Temperature	-30°C / +200°C
Pressure	25 MPa
Speed	0.5 m/sec
Media	Mineral hydraulic oils Fire-resistant liquids Biocompatible fluids Water Others (contact our experts)

The figures above indicate the maximum values and may not be cumulated. They may be developed, depending on the materials used.

EXTRUSION GAPS

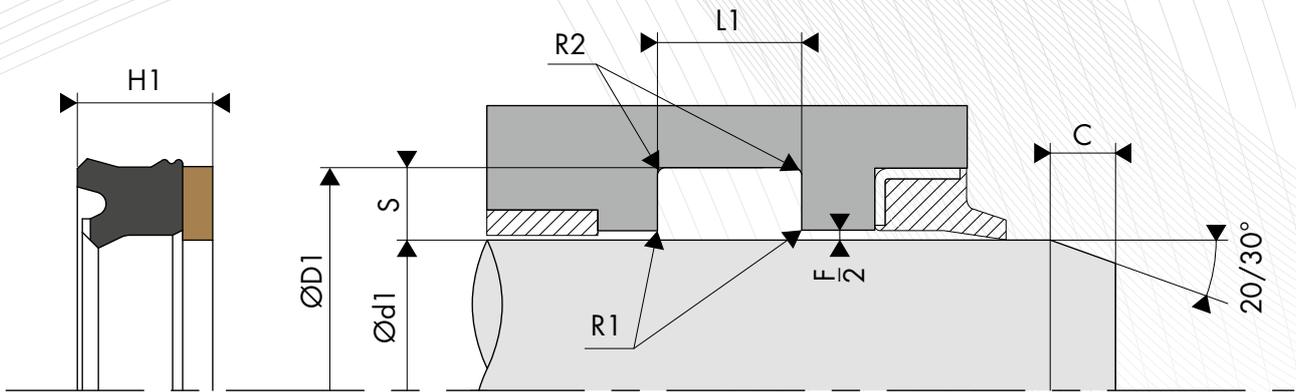
Pressure MPa	Radial gap F/2
10 MPa	0.25
15 MPa	0.20
20 MPa	0.15
25 MPa	0.10

SURFACE ROUGHNESS

Roughness	Dynamic surface area	Static surface area	Groove flanks
Ra	0.1 - 0.4 µm	≤1.6 µm	≤3.2 µm
Rz	0.63 - 2.5 µm	≤6.3 µm	≤10.0 µm
Rmax	1.0 - 4.0 µm	≤10.0 µm	≤16.0 µm

CHAMFERS AND RADIUS

Radial section S	Radius R1	Radius R2	Chamfer C
4.00	0.20	0.40	2.00
5.00	0.40	0.70	2.50
6.00	0.70	1.10	3.00
7.50	0.80	1.10	4.00
10.00	1.00	1.10	5.00

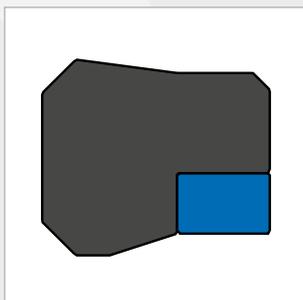


DIMENSIONS

Part number	Rod diameter Ød1 f8	Groove diameter ØD1 H10	Height of the seal H1	Width of the groove L1 0/+0.20
239.0300401	30.00	40.00	10.00	11.00
239.0350605	35.00	60.00	15.50	17.00
239.0400501	40.00	50.00	10.00	11.00
239.0450551	45.00	55.00	10.00	11.00
239.0450705	45.00	70.00	15.50	17.00
239.0500634	50.00	63.00	13.00	14.00
239.0550684	55.00	68.00	13.00	14.00
239.0600734	60.00	73.00	13.00	14.00
239.0650784	65.00	78.00	13.00	14.00
239.0650902	65.00	90.00	18.00	20.00
239.0700831	70.00	83.00	13.00	14.00

Part number	Rod diameter Ød1 f8	Groove diameter ØD1 H10	Height of the seal H1	Width of the groove L1 0/+0.20
239.0750883	75.00	88.00	13.00	14.00
239.0800933	80.00	93.00	13.00	14.00
239.0851004	85.00	100.00	13.00	14.00
239.0901054	90.00	105.00	13.00	14.00
239.0951103	95.00	110.00	13.50	14.50
239.1001153	100.00	115.00	13.00	14.00
239.1101303	110.00	130.00	13.00	14.00
239.1201403	120.00	140.00	13.00	14.00
239.1301506	130.00	150.00	16.00	17.00
239.1401607	140.00	160.00	16.00	17.00
239.1601806	160.00	180.00	16.00	17.00

The figures highlighted in bold correspond to the rod diameters that are recommended by standard ISO 3320. Other intermediate sizes can be provided.



ROD SEALS

BECA 300



DESCRIPTION

The BECA 300 profile is a single acting compo-compact rod seal composed of a profiled rubber seal and a filled PTFE or POM back-up ring on the back depending on the type of application.

ADVANTAGES

Optimised sealing effect
 Good chemical compatibility, depending on the material chosen
 Excellent wear resistance
 Excellent extrusion resistance

APPLICATIONS

Mobile hydraulics
 Material handling - Lifting
 Presses
 Hydraulic cylinders

MATERIALS

Profiled seal

NBR 80 Shore A
 FKM 80 Shore A

Back-up ring

Polyoxymethylene - POM
 Bronze-filled PTFE

Other grades of materials are available.
 Please contact our experts.

TECHNICAL DATA

Temperature	-30°C / +200°C
Pressure	27.5 MPa
Speed	0.5 m/sec
Media	Mineral hydraulic oils Fire-resistant liquids Biocompatible fluids Water Others (contact our experts)

The figures above indicate the maximum values and may not be cumulated. They may be developed, depending on the materials used.

EXTRUSION GAPS

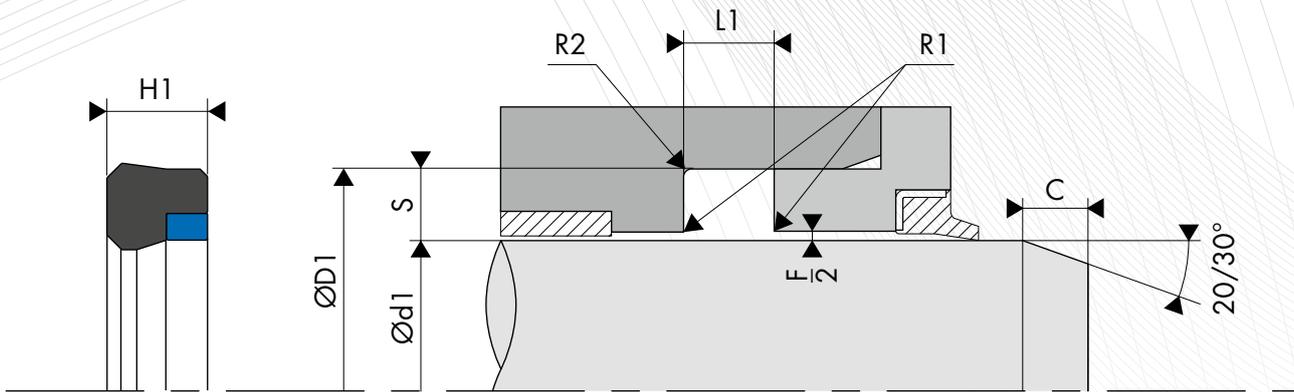
Pressure MPa	Radial gap F/2
15 MPa	0.30
20 MPa	0.25
25 MPa	0.20
27.5 MPa	0.15

SURFACE ROUGHNESS

Roughness	Dynamic surface area	Static surface area	Groove flanks
Ra	0.1 - 0.4 µm	≤1.6 µm	≤3.2 µm
Rz	0.63 - 2.5 µm	≤6.3 µm	≤10.0 µm
Rmax	1.0 - 4.0 µm	≤10.0 µm	≤16.0 µm

CHAMFERS AND RADIUS

Radial section S	Radius R1	Radius R2	Chamfer C
3.50	0.20	0.40	2.00
4.00	0.30	0.50	2.00
5.00	0.40	0.60	2.50
7.50	0.80	1.00	4.00

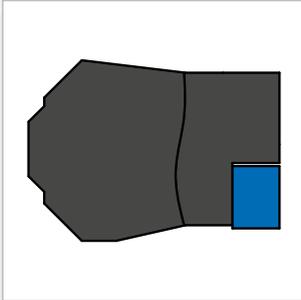


DIMENSIONS

Part number	Rod diameter Ød1 f8	Groove diameter ØD1 H10	Seal height H1	Groove width L1 0/+0.25
300.0012019	12.00	19.00	5.00	5.60
300.0014021	14.00	21.00	5.00	5.60
300.0016023	16.00	23.00	5.00	5.60
300.0018025	18.00	25.00	5.00	5.60
300.0020027	20.00	27.00	5.00	5.60
300.0022029	22.00	29.00	5.00	5.60
300.0028036	28.00	36.00	5.70	6.30
300.0032040	32.00	40.00	5.70	6.30
300.0035043	35.00	43.00	5.70	6.30
300.0036044	36.00	44.00	5.70	6.30
300.0038046	38.00	46.00	5.70	6.30
300.0040048	40.00	48.00	5.70	6.30

Part number	Rod diameter Ød1 f8	Groove diameter ØD1 H10	Seal height H1	Groove width L1 0/+0.25
300.0045053	45.00	53.00	5.70	6.30
300.0055065	55.00	65.00	6.75	7.50
300.0056066	56.00	66.00	6.75	7.50
300.0063073	63.00	73.00	6.75	7.50
300.0070080	70.00	80.00	6.75	7.50
300.0080090	80.00	90.00	6.75	7.50
300.0090100	90.00	100.00	6.75	7.50
300.0100115	100.00	115.00	9.50	10.50
300.0110125	110.00	125.00	9.50	10.50
300.0125140	125.00	140.00	9.50	10.50
300.0130155	130.00	155.00	9.50	10.50

The figures highlighted in bold correspond to the rod diameters that are recommended by standard ISO 3320. Other intermediate sizes can be provided.



ROD SEALS

BECA 301/AE



DESCRIPTION

The BECA 301/AE profile is a single acting compact rod seal composed of a profiled fabric NBR seal and a POM back-up ring on the back. It can be assembled in a groove according to standard ISO 5597.

ADVANTAGES

- Optimised sealing effect
- Good chemical compatibility, depending on the material chosen
- Excellent wear resistance
- Excellent extrusion resistance

APPLICATIONS

- Mobile hydraulics
- Material handling - Lifting
- Presses
- Hydraulic cylinders

MATERIALS

Profiled seal

Fabric NBR

Back-up ring

Polyoxymethylene - POM

TECHNICAL DATA

Temperature	-30°C / +110°C
Pressure	35 MPa
Speed	0.5 m/sec
Media	Mineral hydraulic oils Fire-resistant liquids Biocompatible fluids Water Others (contact our experts)

The figures above indicate the maximum values and may not be cumulated. They may be developed, depending on the materials used.

EXTRUSION GAPS

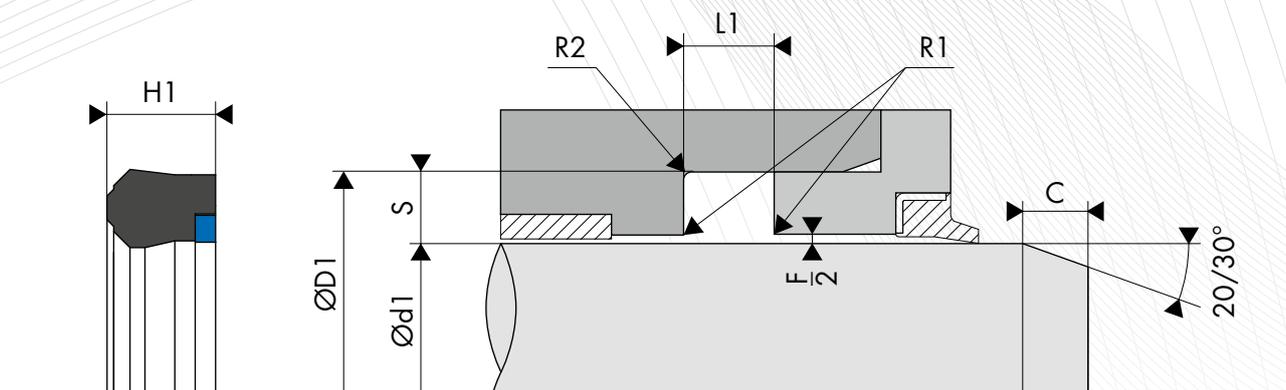
Pressure MPa	Radial gap F/2
15 MPa	0.20
25 MPa	0.10
35 MPa	0.10

SURFACE ROUGHNESS

Roughness	Dynamic surface area	Static surface area	Groove flanks
Ra	0.1 - 0.4 µm	≤1.6 µm	≤3.2 µm
Rz	0.63 - 2.5 µm	≤6.3 µm	≤10.0 µm
Rmax	1.0 - 4.0 µm	≤10.0 µm	≤16.0 µm

CHAMFERS AND RADIUS

Radial section S	Radius R1	Radius R2	Chamfer C
4.00	0.20	0.40	2.00
5.00	0.40	0.70	2.50
6.00	0.70	1.10	3.00
7.50	0.70	1.10	4.00
10.00	1.00	1.10	5.00

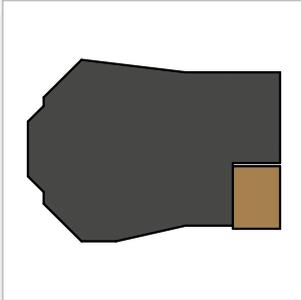


DIMENSIONS

Part number	Rod diameter Ød1 f9	Groove diameter ØD1 H10	Seal height H1	Groove width L1 0/+0.25
301.012019E	12.00	19.00	6.30	7.00
301.016028E	16.00	28.00	7.20	7.50
301.318028E	18.00	28.00	7.20	8.00
301.320028E	20.00	28.00	5.70	6.30
301.020030E	20.00	30.00	8.00	9.00
301.322030E	22.00	30.00	5.70	6.30
301.022035E	22.00	35.00	9.50	10.00
301.325033E	25.00	33.00	5.70	6.30
301.328036E	28.00	36.00	5.70	6.30
301.028040E	28.00	40.00	8.00	9.00
301.332040E	32.00	40.00	5.70	6.30
301.032045E	32.00	45.00	10.00	11.00
301.032047E	32.00	47.00	10.00	11.00
301.035043E	35.00	43.00	5.70	6.30
301.035045E	35.00	45.00	11.00	12.00
301.336044E	36.00	44.00	5.70	6.30
301.0360468	36.00	46.00	8.00	8.50
301.340048E	40.00	48.00	5.70	6.30
301.340050E	40.00	50.00	7.20	8.00
301.040050E	40.00	50.00	10.00	11.00
301.S40050E	40.00	50.00	10.00	11.00
301.040055E	40.00	55.00	10.00	11.00
301.345053E	45.00	53.00	5.70	6.30
301.345055E	45.00	55.00	7.20	8.00
301.045057E	45.00	57.00	10.00	11.00
301.350060E	50.00	60.00	7.20	8.00
301.950060E	50.00	60.00	9.30	10.00
301.050060E	50.00	60.00	10.00	11.00
301.050065E	50.00	65.00	10.00	11.00
301.055065E	55.00	65.00	7.20	8.00
301.356066E	56.00	66.00	6.80	7.50
301.060072E	60.00	72.00	9.00	10.00
301.060075E	60.00	75.00	12.00	13.00
301.363073E	63.00	73.00	6.80	7.50

Part number	Rod diameter Ød1 f9	Groove diameter ØD1 H10	Seal height H1	Groove width L1 0/+0.25
301.063075E	63.00	75.00	10.50	11.50
301.070082E	70.00	82.00	10.00	11.00
301.070084E	70.00	84.00	11.50	12.50
301.370085E	70.00	85.00	11.50	12.50
301.070090E	70.00	90.00	15.00	16.00
301.075085E	75.00	85.00	10.50	11.50
301.075090E	75.00	90.00	11.00	12.00
301.075095E	75.00	95.00	13.50	14.50
301.080901E	80.00	90.00	10.00	11.00
301.080911E	80.00	91.00	9.50	10.50
301.380095E	80.00	95.00	11.50	12.50
301.080096E	80.00	96.00	9.50	10.50
301.080100E	80.00	100.00	13.50	14.50
301.085100E	85.00	100.00	13.00	14.00
301.090100E	90.00	100.00	10.50	11.50
301.390105E	90.00	105.00	11.50	12.50
301.090105E	90.00	105.00	12.50	13.50
301.090110E	90.00	110.00	11.50	12.50
301.110113E	100.00	113.00	12.50	13.00
301.100120E	100.00	120.00	13.50	14.50
301.105125E	105.00	125.00	12.50	13.50
301.110125E	110.00	125.00	11.00	12.00
301.110130E	110.00	130.00	12.00	13.00
301.100133E	120.00	132.70	10.00	11.00
301.120133E	120.00	132.70	10.00	11.00
301.135120I	120.00	135.00	12.50	13.50
301.120140E	120.00	140.00	11.50	12.50
301.130145E	130.00	145.00	13.00	14.00
301.130150E	130.00	150.00	13.50	14.50
301.140160E	140.00	160.00	12.00	13.00
301.160175E	160.00	175.00	15.00	16.00
301.160185E	160.00	185.00	15.00	16.00
301.175200E	175.00	200.00	22.00	23.00

The figures highlighted in bold correspond to the dimensions for standard ISO 5597, with the rod diameters in line with standard ISO 3320. Other intermediate sizes can be provided.



ROD SEALS

BECA 302/AE



DESCRIPTION

The BECA 302/AE profile is a single acting compact rod seal composed of a profiled FKM seal and a bronze-filled PTFE back-up ring on the back. It can be assembled in a groove according to standard ISO 5597.

ADVANTAGES

Optimised sealing effect

Good chemical compatibility and wide temperature range, depending on the material chosen

Excellent wear resistance

Excellent extrusion resistance

APPLICATIONS

Mobile hydraulics

Material handling - Lifting

Presses

Hydraulic cylinders

MATERIALS

Profiled seal

FKM 80 Shore A

Back-up ring

Bronze-filled PTFE

TECHNICAL DATA

Temperature	-20°C / +200°C
Pressure	35 MPa
Speed	0.5 m/sec
Media	Mineral hydraulic oils Fire-resistant liquids Biocompatible fluids Water Others (contact our experts)

The figures above indicate the maximum values and may not be cumulated. They may be developed, depending on the materials used.

EXTRUSION GAPS

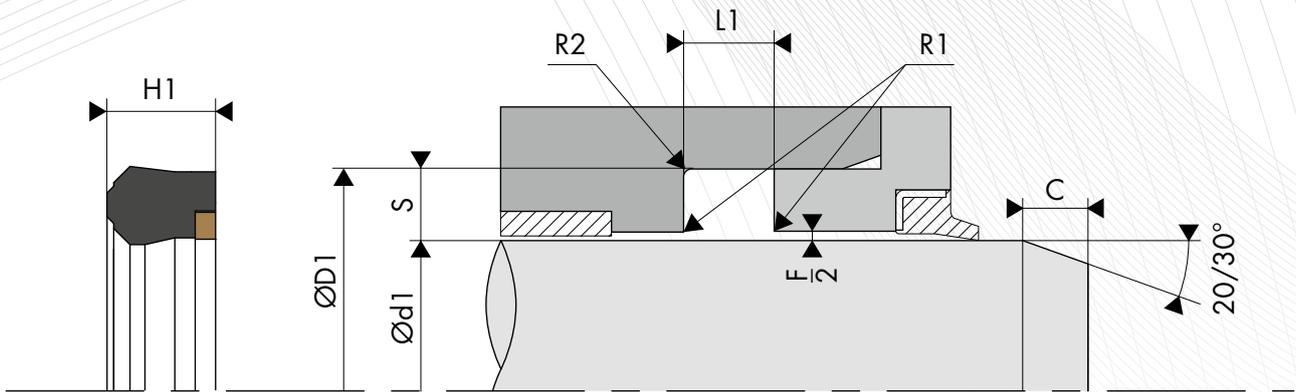
Pressure MPa	Radial gap F/2
15 MPa	0.20
25 MPa	0.10
35 MPa	0.10

SURFACE ROUGHNESS

Roughness	Dynamic surface area	Static surface area	Groove flanks
Ra	0.1 - 0.4 µm	≤1.6 µm	≤3.2 µm
Rz	0.63 - 2.5 µm	≤6.3 µm	≤10.0 µm
Rmax	1.0 - 4.0 µm	≤10.0 µm	≤16.0 µm

CHAMFERS AND RADIUS

Radial section S	Radius R1	Radius R2	Chamfer C
4.00	0.20	0.40	2.00
5.00	0.40	0.70	2.50
6.00	0.70	1.10	3.00
7.50	0.70	1.10	4.00
10.00	1.00	1.10	5.00

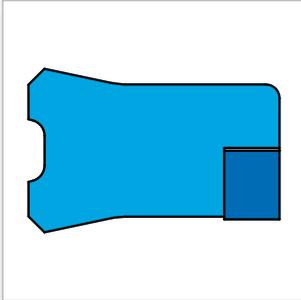


DIMENSIONS

Part number	Rod diameter Ød1 f9	Groove diameter ØD1 H10	Seal height H1	Groove width L1 0/+0.25
302.016AG6E	16.00	26.00	8.00	9.00
302.018025E	18.00	25.00	5.60	6.30
302.018AG6E	18.00	26.00	5.70	6.30
302.022029E	22.00	29.00	5.00	5.60
302.022BG6E	22.00	30.00	5.70	6.30
302.022AG6E	22.00	32.00	8.00	9.00
302.025BG6E	25.00	33.00	6.40	7.00
302.028BG6E	28.00	36.00	5.70	6.30
302.028CG6E	28.00	38.00	7.20	8.00
302.028AG6E	28.00	40.00	8.00	9.00
302.036BG6E	36.00	46.00	7.20	8.00

Part number	Rod diameter Ød1 f9	Groove diameter ØD1 H10	Seal height H1	Groove width L1 0/+0.25
302.036AG6E	36.00	48.00	8.00	9.00
302.040050E	40.00	50.00	10.00	11.00
302.045053E	45.00	53.00	5.70	6.30
302.045055E	45.00	55.00	7.20	8.00
302.045BG6E	45.00	55.00	7.20	8.00
302.045AG6E	45.00	60.00	12.50	13.50
302.350060E	50.00	60.00	7.20	8.00
302.356066E	56.00	66.00	6.80	7.50
302.056AG6E	56.00	71.00	12.50	13.50
302.070AG6E	70.00	85.00	12.50	13.50
302.390105E	90.00	105.00	11.50	12.50

The figures highlighted in bold correspond to the dimensions for standard ISO 5597, with the rod diameters in line with standard ISO 3320. Other intermediate sizes can be provided.



ROD SEALS

BECA 312



DESCRIPTION

The BECA 312 profile is a U-ring type single acting compact rod seal with matching lips and made of a very dense polyurethane body and a POM back-up ring on the back.

ADVANTAGES

Good sealing at both high and low pressures
Excellent abrasion resistance
Excellent extrusion resistance

APPLICATIONS

Mobile hydraulics
Material handling - Lifting
Presses
Hydraulic cylinders

MATERIALS

Profiled seal

PU 93 Shore A - Blue
PU 96 Shore A - Blue
High temp. PU 96 Shore A - Beige

Back-up ring

Polyoxymethylene - POM

Other grades of materials are available.
Please contact our experts.

TECHNICAL DATA

Temperature	-30°C / +110°C
Pressure	50 MPa
Speed	0.5 m/sec
Media	Mineral hydraulic oils

The figures above indicate the maximum values and may not be cumulated. They may be developed, depending on the materials used.

EXTRUSION GAPS

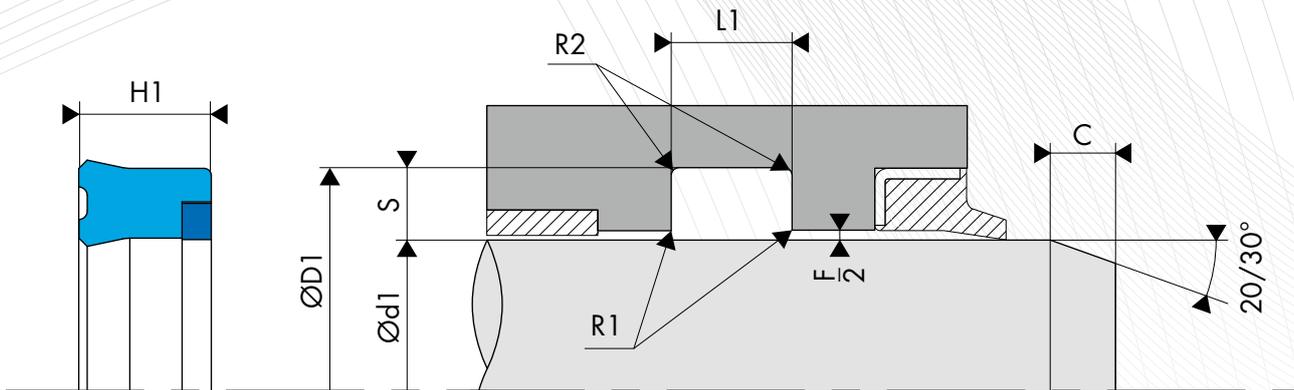
Rod diameter Ød1	Radial gap F/2					
	≤ 5 MPa	≤ 10 MPa	≤ 20 MPa	≤ 30 MPa	≤ 40 MPa	≤ 50 MPa
≤ 60 mm	0.40	0.30	0.20	0.15	0.10	0.07
> 60 mm	0.50	0.40	0.30	0.20	0.15	0.10

SURFACE ROUGHNESS

Roughness	Dynamic surface area	Static surface area	Groove flanks
Ra	0.1 - 0.4 µm	≤1.6 µm	≤3.2 µm
Rz	0.63 - 2.5 µm	≤6.3 µm	≤10.0 µm
Rmax	1.0 - 4.0 µm	≤10.0 µm	≤16.0 µm

CHAMFERS AND RADIUS

Radial section S	Radius R1	Radius R2	Chamfer C
3.00	0.40	0.60	2.50
4.00	0.40	0.60	2.50
5.00	0.40	0.60	2.50
7.50	0.80	1.00	4.00

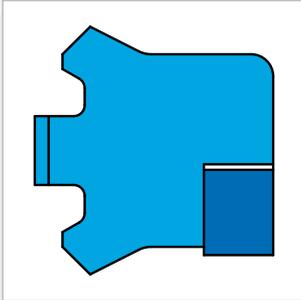


○ DIMENSIONS

Part number	Rod diameter Ød1 f8	Groove diameter ØD1 H10	Seal height H1	Groove width L1 0/+0.25
312.0200286	20.00	28.00	6.00	7.00
312.0250336	25.00	33.00	6.00	7.00
312.0300386	30.00	38.00	6.00	7.00
312.0360436	36.00	43.00	5.50	6.50
312.0400486	40.00	48.00	6.00	7.00
312.0400501	40.00	50.00	10.00	11.00
312.0450551	45.00	55.00	10.00	11.00
312.0450558	45.00	55.00	7.00	8.00

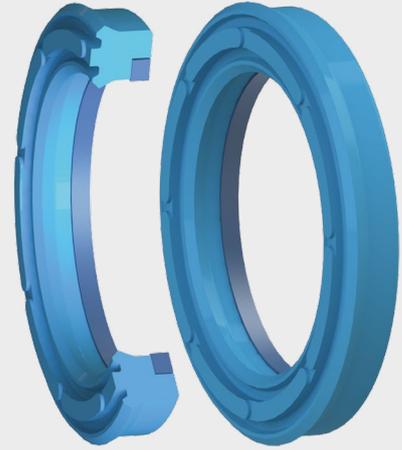
Part number	Rod diameter Ød1 f8	Groove diameter ØD1 H10	Seal height H1	Groove width L1 0/+0.25
312.0500601	50.00	60.00	10.00	11.00
312.0500609	50.00	60.00	9.00	10.00
312.0550651	55.00	65.00	10.00	11.00
312.0600702	60.00	70.00	12.00	13.00
312.1045055	45.00	55.00	10.00	11.00
312.1521622	152.00	162.00	12.20	13.00
312.1882032	188.00	203.00	12.20	13.00
312.1982082	198.00	208.00	12.00	13.00

The figures highlighted in bold correspond to the rod diameters that are recommended by standard ISO 3320. Other intermediate sizes can be provided.



ROD SEALS

BECA 315



DESCRIPTION

The BECA 315 profile is a single acting buffer rod seal composed of a profiled polyurethane triple lip seal and a POM back-up ring on the back.

ADVANTAGES

- Primary seal
- Low friction coefficient
- Excellent abrasion resistance
- Excellent extrusion resistance

APPLICATIONS

- Agriculture
- Mobile machinery
- Injection presses
- Hydraulic cylinders

MATERIALS

Profiled seal

- PU 93 Shore A - Blue
- PU 96 Shore A - Blue
- High temp. PU 96 Shore A - Beige

Back-up ring

- Polyoxymethylene - POM

Other grades of materials are available.
Please contact our experts.

TECHNICAL DATA

Temperature	-30°C / +110°C
Pressure	40 MPa (peak at 60 MPa)
Speed	0.5 m/sec
Media	Mineral hydraulic oils

The figures above indicate the maximum values and may not be cumulated. They may be developed, depending on the materials used.

EXTRUSION GAPS

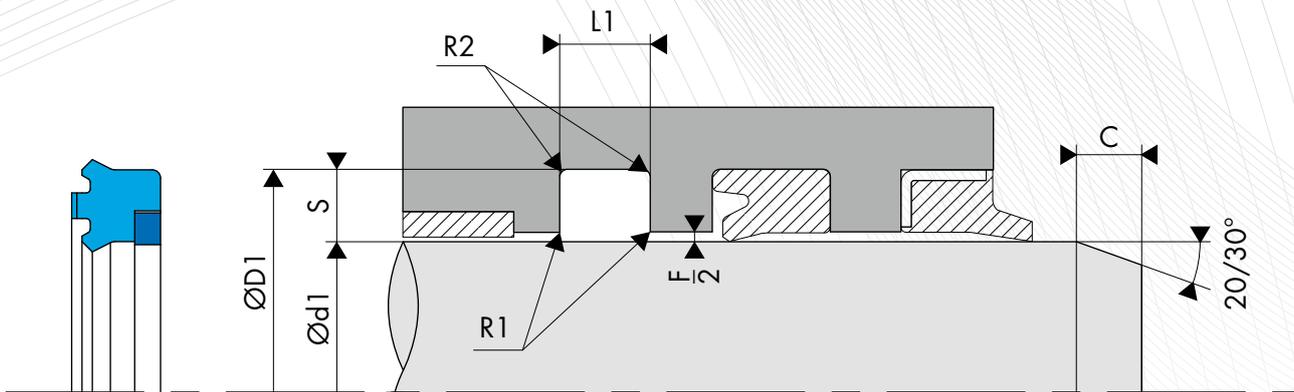
Radial section S	Radial gap F/2			
	15 MPa	25 MPa	30 MPa	40 MPa
≤ 7.75	0.60	0.50	0.40	0.35
≤ 10.00	0.70	0.60	0.50	0.40

SURFACE ROUGHNESS

Roughness	Dynamic surface area	Static surface area	Groove flanks
Ra	0.1 - 0.4 µm	≤1.6 µm	≤3.2 µm
Rz	0.63 - 2.5 µm	≤6.3 µm	≤10.0 µm
Rmax	1.0 - 4.0 µm	≤10.0 µm	≤16.0 µm

CHAMFERS AND RADIUS

Radial section S	Radius R1	Radius R2	Chamfer C
7.50 - 7.75	0.80	1.00	4.00
10.00	0.80	1.00	5.00

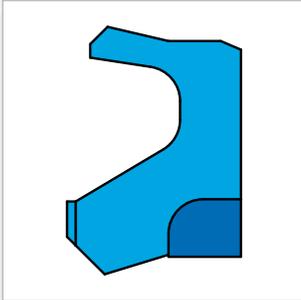


○ DIMENSIONS

Part number	Rod diameter Ød1 f8	Groove diameter ØD1 H10	Seal height H1	Groove width L1 0/+0.25
315.0560719	56.00	71.00	8.50	9.50
315.0650806	65.00	80.50	6.00	6.30
315.0700852	70.00	85.00	12.50	13.50
315.0700859	70.00	85.00	8.50	9.50
315.0750906	75.00	90.50	6.00	6.30
315.0750909	75.00	90.00	9.50	10.50

Part number	Rod diameter Ød1 f8	Groove diameter ØD1 H10	Seal height H1	Groove width L1 0/+0.25
315.0800953	80.00	95.00	12.50	13.50
315.0800956	80.00	95.00	6.00	6.30
315.0800959	80.00	95.00	8.50	9.50
315.0901059	90.00	105.00	8.50	9.50
315.0951107	95.00	110.00	6.00	7.00
315.1001201	100.00	120.00	11.50	12.50

The figures highlighted in bold correspond to the dimensions for standard ISO 5597, with the rod diameters in line with standard ISO 3320. Other intermediate sizes can be provided.



ROD SEALS

BECA 316



DESCRIPTION

The BECA 316 profile is a single acting buffer rod seal with offset lips composed of a profiled polyurethane seal and a POM back-up ring on the back.

ADVANTAGES

- Primary seal
- Low friction coefficient
- Excellent abrasion resistance
- Excellent extrusion resistance

APPLICATIONS

- Agriculture
- Mobile machinery
- Injection presses
- Hydraulic cylinders

MATERIALS

Profiled seal

- PU 96 Shore A - Blue
- High temp. PU 96 Shore A - Beige

Back-up ring

- Polyoxymethylene - POM

Other grades of materials are available.
Please contact our experts.

TECHNICAL DATA

Temperature	-30°C / +110°C
Pressure	40 MPa (peak at 60 MPa)
Speed	1 m/s
Media	Mineral hydraulic oils

The figures above indicate the maximum values and may not be cumulated. They may be developed, depending on the materials used.

EXTRUSION GAPS

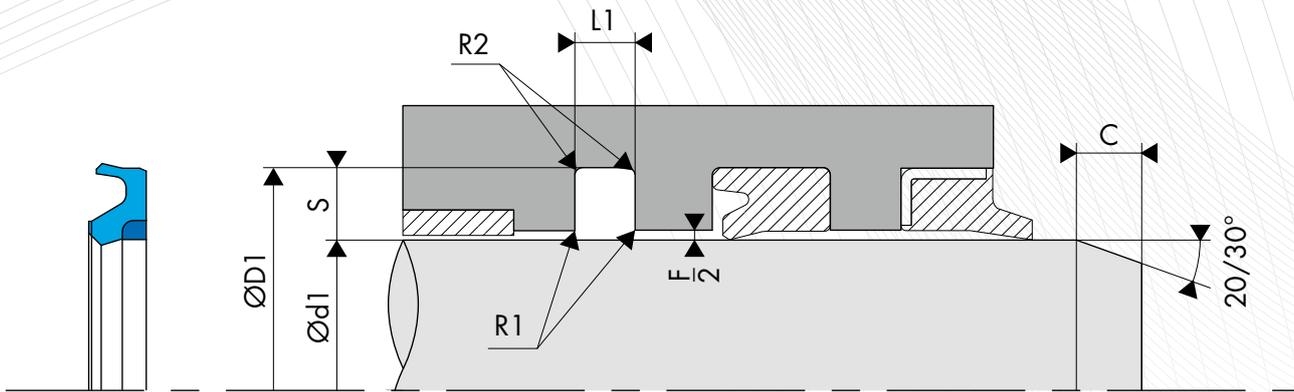
Radial section S	Radial gap F/2			
	15 MPa	25 MPa	30 MPa	40 MPa
≤ 7.75	0.60	0.50	0.40	0.35
≤ 10.50	0.70	0.60	0.50	0.40

SURFACE ROUGHNESS

Roughness	Dynamic surface area	Static surface area	Groove flanks
Ra	0.1 - 0.4 µm	≤1.6 µm	≤3.2 µm
Rz	0.63 - 2.5 µm	≤6.3 µm	≤10.0 µm
Rmax	1.0 - 4.0 µm	≤10.0 µm	≤16.0 µm

CHAMFERS AND RADIUS

Radial section S	Radius R1	Radius R2	Chamfer C
7.75	0.20	0.40	4.00
10.50	0.20	0.50	5.00

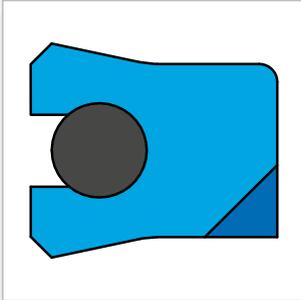


○ DIMENSIONS

Part number	Rod diameter Ød1 f8	Groove diameter ØD1 H9	Seal height H1	Groove width L1 0/+0.25
316.5570HPU	55.00	70.50	6.00	6.30
316.5671HPU	56.00	71.10	6.00	6.30
316.0650806	65.00	80.50	6.00	6.30
316.0700856	70.00	85.50	6.00	6.30
316.0750906	75.00	90.50	6.00	6.30
316.0800956	80.00	95.50	6.00	6.30
316.0851006	85.00	100.50	6.00	6.30
316.0901056	90.00	105.50	6.00	6.30
316.0951106	95.00	110.50	6.00	6.30
316.1001156	100.00	115.50	6.00	6.30
316.1051206	105.00	120.50	6.00	6.30
316.1101256	110.00	125.50	6.00	6.30
316.1151306	115.00	130.50	6.00	6.30

Part number	Rod diameter Ød1 f8	Groove diameter ØD1 H9	Seal height H1	Groove width L1 0/+0.25
316.1201356	120.00	135.50	6.00	6.30
316.1251406	125.00	140.50	6.00	6.30
316.1301456	130.00	145.50	6.00	6.30
316.1231476	132.00	147.50	6.00	6.30
316.1351506	135.00	150.50	6.00	6.30
316.1401556	140.00	155.50	6.00	6.30
316.1501656	150.00	165.50	6.00	6.30
316.1601756	160.00	175.50	6.00	6.30
316.1701856	170.00	185.50	6.00	6.30
316.1801956	180.00	195.50	6.00	6.30
316.1902056	190.00	205.50	6.00	6.30
316.2002217	200.00	221.00	7.70	8.00
316.2102317	210.00	231.00	7.70	8.00

The figures highlighted in bold correspond to the dimensions for standard ISO 7425/2, with the rod diameters in line with standard ISO 3320. Other intermediate sizes can be provided.



ROD SEALS

BECA 322



DESCRIPTION

The BECA 322 profile is a U-ring type single acting rod seal with matching lips, composed of a profiled polyurethane seal, a NBR O'Ring to preserve its elastic memory and a triangular POM back-up ring on the back. It can be assembled in a groove according to standard ISO 5597.

ADVANTAGES

- Very good sealing at low pressures
- Elastic memory preserved using the O'Ring
- Excellent abrasion resistance
- Very good extrusion resistance

APPLICATIONS

- Agriculture
- Mobile machinery
- Lifting systems
- Injection presses
- Hydraulic cylinders

MATERIALS

Profiled seal

- PU 93 Shore A - Blue
- PU 96 Shore A - Blue
- High temp. PU 96 Shore A - Beige

O'Ring

- NBR 70 Shore A

Back-up ring

- Polyoxymethylene - POM

Other grades of materials are available. Please contact our experts.

TECHNICAL DATA

Temperature	-30°C / +100°C
Pressure	45 MPa
Speed	0.5 m/sec
Media	Mineral hydraulic oils

The figures above indicate the maximum values and may not be cumulated. They may be developed, depending on the materials used.

EXTRUSION GAPS

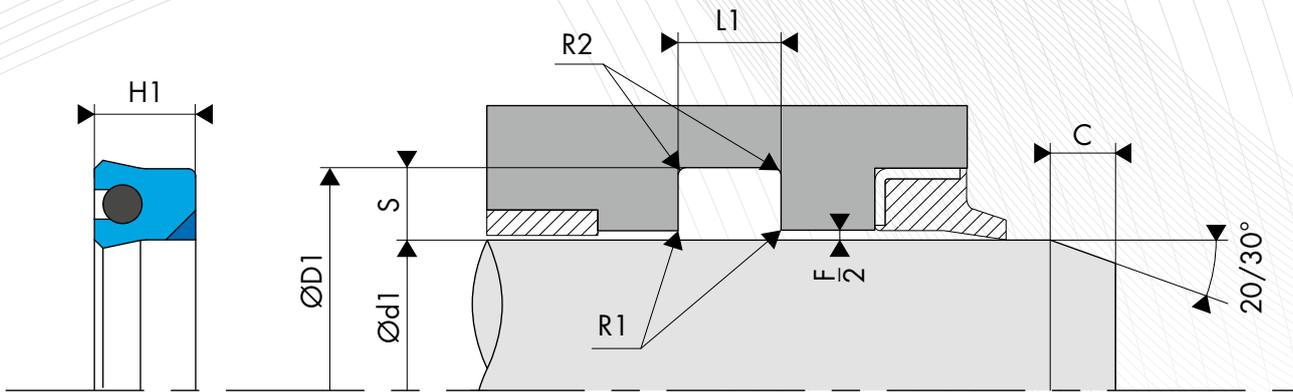
Pressure MPa	Radial gap F/2
20 MPa	0.30
25 MPa	0.25
35 MPa	0.15
40 MPa	0.10
45 MPa	0.07

SURFACE ROUGHNESS

Roughness	Dynamic surface area	Static surface area	Groove flanks
Ra	0.1 - 0.4 µm	≤1.6 µm	≤3.2 µm
Rz	0.63 - 2.5 µm	≤6.3 µm	≤10.0 µm
Rmax	1.0 - 4.0 µm	≤10.0 µm	≤16.0 µm

CHAMFERS AND RADIUS

Radial section S	Radius R1	Radius R2	Chamfer C
3.00	0.20	0.40	2.00
4.00	0.40	0.60	2.50
5.00	0.80	1.00	2.50
7.50	0.80	1.00	4.00
10.00	0.80	1.00	5.00

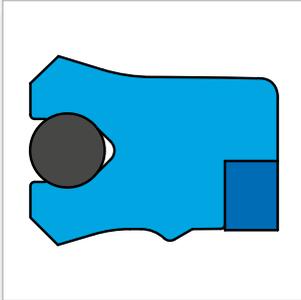


DIMENSIONS

Part number	Rod diameter Ød1 f8	Groove diameter ØD1 H10	Seal height H1	Groove width L1 0/+0.25
322.0060146	6.00	14.00	5.70	6.30
322.0080166	8.00	16.00	5.70	6.30
322.0100186	10.00	18.00	5.70	6.30
322.0100208	10.00	20.00	7.30	8.00
322.0120206	12.00	20.00	5.70	6.30
322.0120228	12.00	22.00	7.30	8.00
322.0140226	14.00	22.00	5.70	6.30
322.0140248	14.00	24.00	7.30	8.00
322.0160246	16.00	24.00	5.70	6.30
322.0160268	16.00	26.00	7.30	8.00
322.0180255	18.00	25.00	5.00	5.60
322.0180266	18.00	26.00	5.70	6.30
322.0180288	18.00	28.00	7.30	8.00
322.0200275	20.00	27.00	5.20	5.60
322.0200281	20.00	28.00	5.70	6.30
322.0200308	20.00	30.00	7.30	8.00
322.0220301	22.00	30.00	5.70	6.30
322.0220328	22.00	32.00	7.30	8.00
322.0250325	25.00	32.00	5.00	5.60
322.0250331	25.00	33.00	5.70	6.30
322.0250358	25.00	35.00	7.30	8.00
322.0280361	28.00	36.00	5.70	6.30
322.0280381	28.00	38.00	7.20	8.00
322.0280388	28.00	38.00	7.30	8.00
322.0280432	28.00	43.00	11.50	12.50
322.0300386	30.00	38.00	5.70	6.30
322.0320401	32.00	40.00	5.70	6.30
322.0320421	32.00	42.00	7.20	8.00
322.0320428	32.00	42.00	7.30	8.00
322.0320472	32.00	47.00	11.50	12.50
322.0350436	35.00	43.00	5.70	6.30
322.0360441	36.00	44.00	5.70	6.30
322.0360461	36.00	46.00	7.20	8.00
322.0360468	36.00	46.00	7.30	8.00
322.0360481	36.00	48.00	9.00	10.00
322.0360512	36.00	51.00	11.50	12.50
322.0400501	40.00	50.00	7.20	8.00
322.0400508	40.00	50.00	7.30	8.00
322.0400552	40.00	55.00	11.50	12.50
322.0420506	42.00	50.00	5.70	6.30
322.0450551	45.00	55.00	7.20	8.00
322.0450558	45.00	55.00	7.30	8.00
322.0450601	45.00	60.00	10.00	11.00
322.0450602	45.00	60.00	11.50	12.50
322.0500601	50.00	60.00	7.20	8.00
322.0500608	50.00	60.00	7.30	8.00
322.0500609	50.00	60.00	8.00	9.00
322.0500621	50.00	62.00	9.00	10.00
322.0500652	50.00	65.00	11.50	12.50
322.0550636	55.00	63.00	5.70	6.30
322.0560719	56.00	71.00	9.50	10.50
322.0560711	56.00	71.00	10.00	11.00
322.0560711	56.00	71.00	11.50	12.50
322.0560766	56.00	76.00	15.00	16.00
322.0600703	60.00	70.00	12.00	13.00
322.0600750	60.00	75.00	10.00	11.00
322.0600753	60.00	75.00	11.50	12.50
322.0630788	63.00	78.00	7.50	8.00
322.0630781	63.00	78.00	11.50	12.50
322.0630836	63.00	83.00	15.00	16.00

Part number	Rod diameter Ød1 f8	Groove diameter ØD1 H10	Seal height H1	Groove width L1 0/+0.25
322.8650802	65.00	80.00	8.00	9.00
322.0650802	65.00	80.00	11.50	12.50
322.0700807	70.00	80.00	6.50	7.50
322.0700851	70.00	85.00	10.00	11.00
322.0700851	70.00	85.00	11.50	12.50
322.0700902	70.00	90.00	12.00	13.00
322.0700903	70.00	90.00	13.50	14.50
322.0700906	70.00	90.00	15.00	16.00
322.0750952	75.00	95.00	12.00	13.00
322.0750953	75.00	95.00	13.50	14.50
322.0800951	80.00	95.00	10.50	11.50
322.0800952	80.00	95.00	11.00	12.00
322.0800951	80.00	95.00	11.50	12.50
322.0801002	80.00	100.00	11.50	12.50
322.0801003	80.00	100.00	13.50	14.50
322.0801006	80.00	100.00	15.00	16.00
322.0851002	85.00	100.00	12.00	
322.0901007	90.00	100.00	6.50	7.50
322.0901051	90.00	105.00	11.50	12.50
322.0901052	90.00	105.00	12.50	13.50
322.0901109	90.00	110.00	9.50	10.00
322.0901102	90.00	110.00	11.40	12.50
322.0901101	90.00	110.00	11.50	12.50
322.0901106	90.00	110.00	15.00	16.00
322.0951153	95.00	115.00	13.50	14.50
322.0961042	96.00	104.00	11.10	12.00
322.1001203	100.00	120.00	13.50	14.50
322.1001201	100.00	120.00	15.00	16.00
322.1001250	100.00	125.00	19.00	20.00
322.1101250	110.00	125.00	9.60	10.60
322.1101302	110.00	130.00	12.00	13.00
322.1101303	110.00	130.00	13.50	14.50
322.1101301	110.00	130.00	15.00	16.00
322.1101350	110.00	135.00	19.00	20.00
322.1201402	120.00	140.00	11.50	12.50
322.1241322	124.00	132.00	11.10	12.00
322.1251456	125.00	145.00	15.00	16.00
322.1251500	125.00	150.00	19.00	20.00
322.1301504	130.00	150.00	13.50	14.50
322.1401606	140.00	160.00	15.00	16.00
322.1401650	140.00	165.00	19.00	20.00
322.1451600	145.00	160.00	9.60	10.60
322.1581662	158.00	166.00	11.10	12.00
322.1601850	160.00	185.00	19.00	20.00
322.1601905	160.00	190.00	24.00	25.00
322.1802050	180.00	205.00	19.00	20.00
322.1802105	180.00	210.00	24.00	25.00
322.1852000	185.00	200.00	9.60	10.60
322.1982062	198.00	206.00	11.10	12.00
322.1982082	198.00	208.00	11.20	12.00
322.2002250	200.00	225.00	19.00	20.00
322.2002305	200.00	230.00	24.00	25.00
322.2182304	218.00	230.00	13.00	14.00
322.2202505	220.00	250.00	24.00	25.00
322.2502805	250.00	280.00	24.00	25.00
322.2803105	280.00	310.00	24.00	25.00
322.3203602	320.00	360.00	31.00	32.00
322.3604002	360.00	400.00	31.00	32.00

The figures highlighted in bold correspond to the dimensions for standard ISO 5597, with the rod diameters in line with standard ISO 3320. Other intermediate sizes can be provided.



ROD SEALS

BECA 325



DESCRIPTION

The BECA 325 profile is a U-ring type single acting rod seal with matching lips, composed of a profiled polyurethane seal, a NBR O'Ring to preserve its elastic memory and a POM back-up ring on the back. It can be assembled in a groove according to standard ISO 5597.

ADVANTAGES

- Very good sealing at low pressures
- Elastic memory preserved using the O'Ring
- Excellent abrasion resistance
- Very good extrusion resistance

APPLICATIONS

- Agriculture
- Mobile machinery
- Lifting systems
- Injection presses
- Hydraulic cylinders

MATERIALS

Profiled seal

- PU 93 Shore A - Blue
- PU 96 Shore A - Blue
- High temp. PU 96 Shore A - Beige

O'Ring

- NBR 70 Shore A

Back-up ring

- Polyoxymethylene - POM

Other grades of materials are available. Please contact our experts.

TECHNICAL DATA

Temperature	-30°C / +100°C
Pressure	45 MPa
Speed	0.5 m/sec
Media	Mineral hydraulic oils

The figures above indicate the maximum values and may not be cumulated. They may be developed, depending on the materials used.

EXTRUSION GAPS

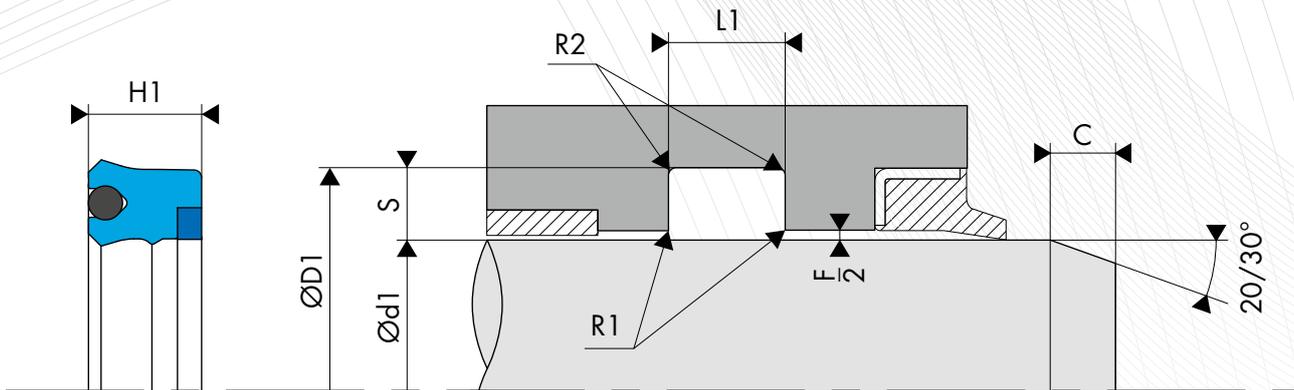
Pressure MPa	Radial gap F/2
25 MPa	0.35
35 MPa	0.30
40 MPa	0.25
45 MPa	0.20

SURFACE ROUGHNESS

Roughness	Dynamic surface area	Static surface area	Groove flanks
Ra	0.1 - 0.4 µm	≤1.6 µm	≤3.2 µm
Rz	0.63 - 2.5 µm	≤6.3 µm	≤10.0 µm
Rmax	1.0 - 4.0 µm	≤10.0 µm	≤16.0 µm

CHAMFERS AND RADIUS

Radial section S	Radius R1	Radius R2	Chamfer C
3.00	0.20	0.40	2.00
4.00	0.40	0.60	2.50
5.00	0.80	1.00	2.50
7.50	0.80	1.00	4.00
10.00	0.80	1.00	5.00

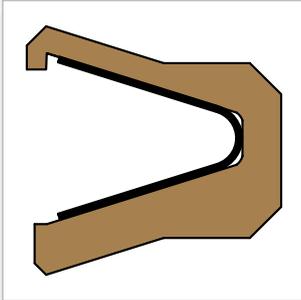


DIMENSIONS

Part number	Rod diameter Ød1 f8	Groove diameter ØD1 H10	Seal height H1	Groove width L1 0/+0.25
325.006014I	6.00	14.00	5.70	6.30
325.008016I	8.00	16.00	5.70	6.30
325.010018I	10.00	18.00	5.70	6.30
325.010020I	10.00	20.00	7.30	8.00
325.012020I	12.00	20.00	5.70	6.30
325.012022I	12.00	22.00	7.30	8.00
325.014022I	14.00	22.00	5.70	6.30
325.014024I	14.00	24.00	7.30	8.00
325.016024I	16.00	24.00	5.70	6.30
325.016026I	16.00	26.00	7.30	8.00
325.018025I	18.00	25.00	5.00	5.60
325.018026I	18.00	26.00	5.70	6.30
325.018028I	18.00	28.00	7.30	8.00
325.020028I	20.00	28.00	5.70	6.30
325.020030I	20.00	30.00	7.30	8.00
325.022030I	22.00	30.00	5.70	6.30
325.022032I	22.00	32.00	7.30	8.00
325.025032I	25.00	32.00	5.00	5.60
325.025033I	25.00	33.00	5.70	6.30
325.025035I	25.00	35.00	7.30	8.00
325.028038I	28.00	38.00	7.30	8.00
325.028043I	28.00	43.00	11.50	12.50
325.032040I	32.00	40.00	5.70	6.30
325.032042I	32.00	42.00	7.30	8.00
325.032047I	32.00	47.00	11.50	12.50
325.036046I	36.00	46.00	7.30	8.00
325.036051I	36.00	51.00	11.50	12.50
325.040050I	40.00	50.00	7.30	8.00
325.040055I	40.00	55.00	11.50	12.50
325.042050I	42.00	50.00	5.70	6.30
325.045055I	45.00	55.00	7.30	8.00
325.045060I	45.00	60.00	11.50	12.50
325.050060I	50.00	60.00	7.30	8.00
325.050065I	50.00	65.00	11.50	12.50
325.055063I	55.00	63.00	5.70	6.30
325.056071I	56.00	71.00	11.50	12.50

Part number	Rod diameter Ød1 f8	Groove diameter ØD1 H10	Seal height H1	Groove width L1 0/+0.25
325.056076I	56.00	76.00	15.00	16.00
325.063078I	63.00	78.00	11.50	12.50
325.063083I	63.00	83.00	15.00	16.00
325.070080I	70.00	80.00	6.50	7.50
325.070085I	70.00	85.00	11.50	12.50
325.070085I	70.00	85.00	11.70	12.50
325.070090I	70.00	90.00	15.00	16.00
325.080095I	80.00	95.00	11.50	12.50
325.080095I	80.00	95.00	11.70	12.50
325.080100I	80.00	100.00	15.00	16.00
325.090100I	90.00	100.00	6.50	7.50
325.090105I	90.00	105.00	11.50	12.50
325.090105I	90.00	105.00	11.70	12.50
325.090110I	90.00	110.00	15.00	16.00
325.100120I	100.00	120.00	14.50	16.00
325.1001205	100.00	120.00	15.00	16.00
325.100125I	100.00	125.00	19.00	20.00
325.110130I	110.00	130.00	15.00	16.00
325.110135I	110.00	135.00	19.00	20.00
325.125145I	125.00	145.00	15.00	16.00
325.125150I	125.00	150.00	19.00	20.00
325.140160I	140.00	160.00	15.00	16.00
325.140165I	140.00	165.00	19.00	20.00
325.145160I	145.00	160.00	9.60	10.60
325.160185I	160.00	185.00	19.00	20.00
325.160190I	160.00	190.00	24.00	25.00
325.180205I	180.00	205.00	19.00	20.00
325.180210I	180.00	210.00	24.00	25.00
325.200225I	200.00	225.00	19.00	20.00
325.200230I	200.00	230.00	24.00	25.00
325.220250I	220.00	250.00	24.00	25.00
325.250280I	250.00	280.00	24.00	25.00
325.280310I	280.00	310.00	24.00	25.00
325.320360I	320.00	360.00	31.00	32.00
325.360400I	360.00	400.00	31.00	32.00

The figures highlighted in bold correspond to the dimensions for standard ISO 5597, with the rod diameters in line with standard ISO 3320. Other intermediate sizes can be provided.



ROD SEALS

BECA

340-349



DESCRIPTION

The BECA 340 profile is a single acting rod seal composed of a profiled, filled PTFE U-ring type seal and a V-spring that is resistant to corrosion.

The BECA 349 profile is specially designed for applications where the seal is in contact with food products. It is characterised by a silicone overmoulding on the inside of the seal, which completely hides the V-spring, thus preventing impurities from accumulating in this hard-to-clean area.

ADVANTAGES

- Wide temperature range and excellent chemical resistance
- Low friction coefficient; no stick-slip effect
- Excellent abrasion resistance
- Good dimensional stability
- Non-toxic material

APPLICATIONS

- Food & Beverage
- Medical
- Pharmaceutical
- Static hydraulics

MATERIALS

Profiled seal

- Carbon-filled PTFE
- Blue GL PTFE
- PE-UHMW

V-Shaped spring

- Stainless steel

Other grades of materials are available. Please refer to the materials table on the next page.

TECHNICAL DATA

Temperature	-200°C / +260°C
Pressure	40 MPa
Speed	15 m/s
Media	Practically all types of fluids, and chemical and gas products

The figures above indicate the maximum values and may not be cumulated. They may be developed, depending on the materials used.

EXTRUSION GAPS

Radial section S	Radial gap F/2			
	2 MPa	10 MPa	20 MPa	40 MPa
1.45	0.20	0.10	0.08	0.05
2.25	0.25	0.15	0.10	0.07
3.10	0.35	0.20	0.15	0.08
4.70	0.50	0.25	0.20	0.10
6.10	0.60	0.30	0.25	0.12
9.50	0.90	0.50	0.40	0.20

SURFACE ROUGHNESS

Roughness	Dynamic surface area	Static surface area	Groove flanks
Ra	0.05 - 0.2 µm	≤1.6 µm	≤3.2 µm
Rz	0.4 - 1.6 µm	≤6.3 µm	≤10.0 µm
Rmax	0.63 - 2.5 µm	≤10.0 µm	≤16.0 µm

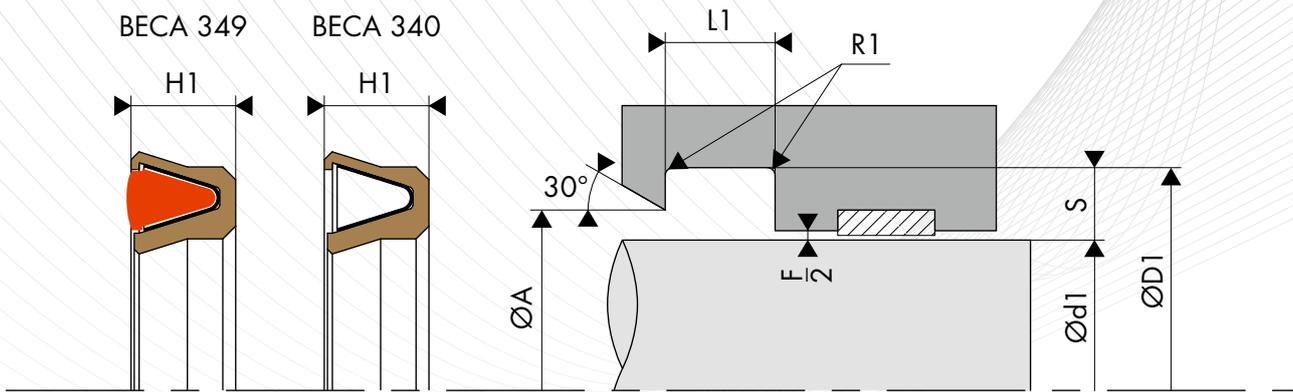
CHAMFERS AND RADIUS

Radial section S	Radius R1	Chamfer C
1.45	0.40	3.00
2.25	0.40	3.00
3.10	0.60	3.00
4.70	0.80	3.00
6.10	0.80	3.50
9.50	0.80	6.50

TABLE MATERIALS

Profiled seal					V-spring			Mating surface material
Standard code	ISO code	Material	Colour	Characteristics	Code	Type of material	Service temperature	
DP	P	Virgin PTFE	White	Resistance to chemical products Impermeability Dielectric Non-stick Low friction coefficient Food industry	I	X10 Cr Ni 18-8	-200°C/+260°C	Steel Stainless steel Chrome steel Aluminium Bronze Cast iron Treated surface
DC	C	PTFE + 25% Carbon	Grey	Improvements • Wear properties • Compression set Good resistance to chemical products Thermal and electrical conductivity Anti-static High-performing in compression-based dynamic applications	I	X10 Cr Ni 18-8	-200°C/+260°C	
CG	C	PTFE + 23% Carbon + 2% Graphite	Black	Good resistance to chemical products Thermal and electrical conductivity Anti-static High-performing in compression-based dynamic applications	I	X10 Cr Ni 18-8	-200°C/+260°C	Steel Chrome steel Cast iron
DV	V	PTFE + 25 % Glass	Blue	Improvements • Wear properties • Mechanical strength Slightly more abrasive, however, this is corrected by adding MOS2 Maintains its chemical and dielectric properties Well-suited to applications with rotational and simultaneous alternating movements	I	X10 Cr Ni 18-8	-200°C/+260°C	
VM	M	PTFE + 15 % Glass + 5% MOS2	Grey	Resistance to compression Resistance to wear Excellent chemical stability Good thermal conductivity	I	X10 Cr Ni 18-8	-200°C/+260°C	Steel Stainless steel Chrome steel Aluminium Bronze Cast iron Treated surface
DX	X	PTFE GL Blue + Glass + Metal oxides	Turquoise blue	Improvements • Wear properties Reduced wear on metal parts Self-lubricating Thermal and electrical conductivity Low permeability Good friction coefficient Anti-static High performing in dynamic self-lubricating applications	I	X10 Cr Ni 18-8	-200°C/+260°C	
DG	G	PTFE + 15% Graphite	Black	Improvements • Better abrasion resistance • Better dimensional stability at high temperatures Use up to +300°C Good friction coefficient and low permeability	I	X10 Cr Ni 18-8	-200°C/+260°C	Steel Stainless steel Chrome steel Aluminium Bronze Cast iron Treated surface
K1	K	PTFE + 10% Ekonol	Light brown	Improvements • Wear properties • Warping resistance and creep strength • Compression resistance Self-lubricating Electrical and thermal conductivity Does not alter the metal parts Reduced hold with certain chemical products Used for high-compression dynamic seals and has a low level of wear	I	X10 Cr Ni 18-8	-200°C/+260°C	
K2	K	PTFE + 20% Ekonol	Light brown	Use up to +300°C Good friction coefficient and low permeability	I	X10 Cr Ni 18-8	-200°C/+260°C	Steel Chrome steel Cast iron
DB	B	PTFE + 60% Bronze	Dark brown	Improvements • Wear properties • Warping resistance and creep strength • Compression resistance Self-lubricating Electrical and thermal conductivity Does not alter the metal parts Reduced hold with certain chemical products Used for high-compression dynamic seals and has a low level of wear	I	X10 Cr Ni 18-8	-200°C/+260°C	
B4	B	PTFE + 40% Bronze	Dark brown	Excellent wear resistance on contact with water and air	I	X10 Cr Ni 18-8	-200°C/+260°C	Steel Stainless steel Chrome steel Aluminium Bronze Cast iron Treated surface
HG	HG	PE-UHMW	White or off-white	Excellent wear resistance on contact with water and air	I	X10 Cr Ni 18-8	-70°C/+80°C	

Other grades of materials are available depending on your specificities.



○ INSTALLATION DIMENSIONS

Series	Rod diameter Ød1 h9		Groove diameter	Groove width	Radial section	Step height
	Standard range	Extended range	ØD1 H9	L1 0/+0.20	S	ØD1 - A
340.0*	3.0 - 9.9	3.0 - 40.0	d1 + 2.90	2.40	1.45	0.4
340.1	10.0 - 19.9	6.0 - 200.0	d1 + 4.50	3.60	2.25	0.6
340.2	20.0 - 39.9	10.0 - 400.0	d1 + 6.20	4.80	3.10	0.7
340.3	40.0 - 119.9	20.0 - 700.0	d1 + 9.40	7.10	4.70	0.8
340.4	120.0 - 629.9	35.0 - 999.9	d1 + 12.20	9.50	6.10	0.9
340.5	630.0 - 999.9	80.0 - 999.9	d1 + 19.00	15.00	9.50	0.9

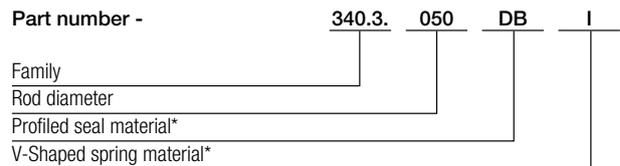
For special applications > 40 MPa, we recommend using an H8/f8 tolerance (groove/rod) or selecting other, more suitable materials. Please contact our experts.

*Only BECA 340.0 profiles are fitted with an O'Ring instead of a V-spring.

○ EXAMPLE OF CODIFICATION

STANDARD CODIFICATION

Materials _____ : 60% Bronze-filled PTFE profiled seal- Code DB
 _____ : Stainless steel V-Shaped spring - Code I
Rod diameter _____ : Ød1 = 50.00 mm
Groove diameter _____ : ØD1 = 59.40 mm
Part number _____ : 340. 3050DBI



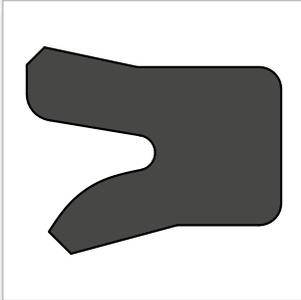
* The codes that define the materials are set out in the materials table on the previous page.

DIMENSIONS

Part number	Rod diameter Ød1 h9	Groove diameter ØD1 H9	Seal height H1	Groove width L1 0/+0.20
340.0004	4.00	6.90	2.10	2.40
340.0005	5.00	7.90	2.10	2.40
340.0006	6.00	8.90	2.10	2.40
340.0007	7.00	9.90	2.10	2.40
340.0008	8.00	10.90	2.10	2.40
340.1010	10.00	14.50	3.30	3.60
340.1011	11.00	15.50	3.30	3.60
340.1012	12.00	16.50	3.30	3.60
340.1014	14.00	18.50	3.30	3.60
340.1015	15.00	19.50	3.30	3.60
340.1016	16.00	20.50	3.30	3.60
340.1018	18.00	22.50	3.30	3.60
340.2020	20.00	26.20	4.40	4.80
340.2022	22.00	28.20	4.40	4.80
340.2025	25.00	31.20	4.40	4.80
340.2028	28.00	34.20	4.40	4.80
340.2030	30.00	36.20	4.40	4.80
340.2032	32.00	38.20	4.40	4.80
340.2033	33.00	39.20	4.40	4.80
340.2035	35.00	41.20	4.40	4.80
340.2036	36.00	42.20	4.40	4.80
340.2038	38.00	44.20	4.40	4.80
340.3040	40.00	49.40	6.50	7.10
340.3042	42.00	51.40	6.50	7.10
340.3045	45.00	54.40	6.50	7.10
340.3048	48.00	57.40	6.50	7.10
340.3050	50.00	59.40	6.50	7.10
340.3052	52.00	61.40	6.50	7.10
340.3055	55.00	64.40	6.50	7.10
340.3056	56.00	65.40	6.50	7.10
340.3060	60.00	69.40	6.50	7.10
340.3063	63.00	72.40	6.50	7.10
340.3065	65.00	74.40	6.50	7.10
340.3070	70.00	79.40	6.50	7.10
340.3072	72.00	81.40	6.50	7.10

Part number	Rod diameter Ød1 h9	Groove diameter ØD1 H9	Seal height H1	Groove width L1 0/+0.20
340.3075	75.00	84.40	6.50	7.10
340.3080	80.00	89.40	6.50	7.10
340.3085	85.00	94.40	6.50	7.10
340.3090	90.00	99.40	6.50	7.10
340.3095	95.00	104.40	6.50	7.10
340.3100	100.00	109.40	6.50	7.10
340.3105	105.00	114.40	6.50	7.10
340.3110	110.00	119.40	6.50	7.10
340.3115	115.00	124.40	6.50	7.10
340.3116	116.00	125.40	6.50	7.10
340.4120	120.00	132.20	8.80	9.50
340.4125	125.00	137.20	8.80	9.50
340.4130	130.00	142.20	8.80	9.50
340.4135	135.00	147.20	8.80	9.50
340.4140	140.00	152.20	8.80	9.50
340.4150	150.00	162.20	8.80	9.50
340.4160	160.00	172.20	8.80	9.50
340.4165	165.00	177.20	8.80	9.50
340.4170	170.00	182.20	8.80	9.50
340.4180	180.00	192.20	8.80	9.50
340.4190	190.00	202.20	8.80	9.50
340.4200	200.00	212.20	8.80	9.50
340.4210	210.00	222.20	8.80	9.50
340.4220	220.00	232.20	8.80	9.50
340.4230	230.00	242.20	8.80	9.50
340.4238	238.00	250.20	8.80	9.50
340.4240	240.00	252.20	8.80	9.50
340.4250	250.00	262.20	8.80	9.50
340.4280	280.00	292.20	8.80	9.50
340.4300	300.00	312.20	8.80	9.50
340.4315	315.00	327.20	8.80	9.50
340.4320	320.00	332.20	8.80	9.50
340.4350	350.00	362.20	8.80	9.50
340.4360	360.00	372.20	8.80	9.50
340.4400	400.00	412.20	8.80	9.50

The figures highlighted in bold correspond to the rod diameters that are recommended by standard ISO 3320. Other intermediate sizes can be provided.



ROD SEALS

BECA 385



DESCRIPTION

The BECA 385 profile is a U-ring type single acting rod seal with asymmetrical rubber lips for low-pressure applications.

ADVANTAGES

Very good sealing at low pressures
Excellent wear resistance
Reduced size

APPLICATIONS

Material handling - Lifting
Presses
Hydraulic cylinders

MATERIALS

NBR 80 Shore A
FKM 80 Shore A

Other grades of materials are available.
Please contact our experts.

TECHNICAL DATA

Temperature	-30°C / +200°C
Pressure	8 MPa
Speed	0.5 m/sec
Media	Mineral hydraulic oils Fire-resistant liquids Biocompatible fluids Water Others (contact our experts)

The figures above indicate the maximum values and may not be cumulated. They may be developed, depending on the materials used.

EXTRUSION GAPS

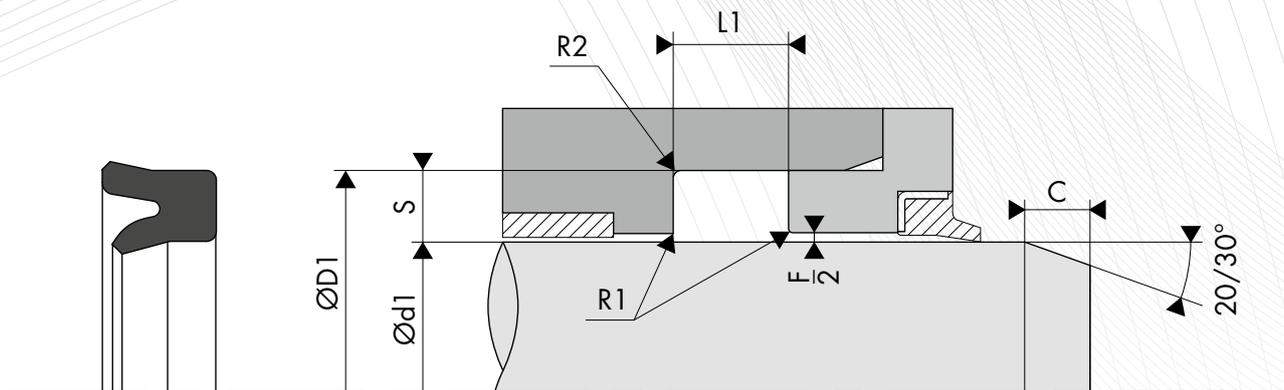
Pressure MPa	Radial gap F/2
1.0 MPa	0.25
1.2 MPa	0.20
6.5 MPa	0.10
8.0 MPa	0.05

SURFACE ROUGHNESS

Roughness	Dynamic surface area	Static surface area	Groove flanks
Ra	0.1 - 0.4 µm	≤1.6 µm	≤3.2 µm
Rz	0.63 - 2.5 µm	≤6.3 µm	≤10.0 µm
Rmax	1.0 - 4.0 µm	≤10.0 µm	≤16.0 µm

CHAMFERS AND RADIUS

Radial section S	Radius R1	Radius R2	Chamfer C
3.00	0.30	0.50	2.00
4.00	0.30	0.50	2.00
5.00	0.40	0.60	2.50
6.00	0.50	0.70	3.00
7.50	0.80	1.00	4.00
10.00	0.80	1.00	5.00

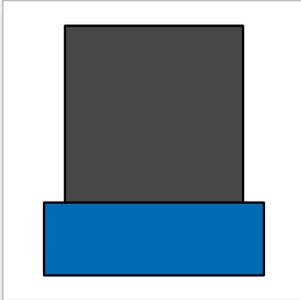


DIMENSIONS

Part number	Rod diameter Ød1 f8	Groove diameter ØD1 H8	Seal height H1	Groove width L1 0/+0.25
385.1003008	3.17	8.75	3.96	5.50
385.1004011	4.76	11.11	3.96	5.50
385.1006012	6.00	12.00	4.00	5.50
385.2006012	6.35	12.70	3.96	5.50
385.1007014	7.93	14.28	3.96	5.50
385.008014E	8.00	14.00	4.00	4.80
385.08014F6	8.00	14.00	4.00	5.50
385.1008014	8.00	14.00	4.00	5.50
385.1008016	8.00	16.00	5.50	7.00
385.1009016	9.52	16.50	3.96	5.50
385.0100184	10.00	18.00	4.00	5.00
385.1010018	10.00	18.00	5.50	7.00
385.1011019	11.11	19.05	3.96	5.50
385.1012020	12.00	20.00	5.50	7.00
385.1012021	12.70	21.00	5.10	7.00
385.14018K6	14.00	18.00	2.90	3.00
385.1014022	14.00	22.00	5.50	7.00
385.1014020	14.28	20.63	4.76	6.00
385.1015022	15.87	22.22	4.76	6.00
385.15224C0	15.87	22.22	4.76	6.00
385.1016024	16.00	24.00	5.50	7.00
385.1017023	17.46	23.81	4.60	6.00
385.1018025	18.00	25.00	4.50	6.00
385.1825SP9	18.00	25.00	4.50	6.00
385.1018026	18.00	26.00	5.50	6.00
385.0180305	18.00	30.00	5.50	6.00
385.1019025	19.08	25.40	4.76	6.00
385.1020028	20.00	28.00	5.50	7.00
385.2020028	20.63	28.58	4.76	6.00
385.1022030	22.00	30.00	5.50	6.00
385.1022-22	22.22	31.75	4.76	6.00
385.1023036	23.81	36.51	6.35	8.00
385.1025035	25.00	35.00	7.00	8.50
385.1025038	25.40	38.10	6.35	8.00
385.1026036	26.99	36.51	6.35	8.00
385.1028036	28.00	36.00	5.50	7.00
385.1028038	28.00	38.00	7.00	7.50
385.1028041	28.58	41.28	7.93	9.50
385.1030038	30.16	38.10	6.35	8.00
385.1031044	31.75	44.45	6.35	8.00
385.32040CA	32.00	40.00	5.00	6.00
385.1032042	32.00	42.00	7.00	8.50
385.1032045	32.00	45.00	10.00	11.00
385.0330416	33.00	40.87	4.50	6.00
385.1033040	33.34	40.63	4.60	6.00
385.1034050	34.93	50.80	7.93	9.50
385.1036046	36.00	46.00	7.00	7.50
385.1036050	36.51	50.80	7.93	9.50
385.1038050	38.10	50.80	9.52	11.00
385.1039055	39.69	55.96	9.52	11.00
385.1040046	40.00	46.00	3.60	4.40
385.1040050	40.00	50.00	7.00	8.50
385.041050G	41.28	50.80	5.55	7.00
385.1041050	41.28	50.80	5.55	7.00
385.1042050	42.00	50.00	5.50	7.00
385.1042053	42.86	53.98	9.52	11.00
385.1044057	44.45	57.15	7.93	9.50
385.1045055	45.00	55.00	7.00	7.50

Part number	Rod diameter Ød1 f8	Groove diameter ØD1 H8	Seal height H1	Groove width L1 0/+0.25
385.1046060	46.04	60.33	9.52	11.00
385.1047063	47.63	63.50	9.52	11.00
385.1049066	49.21	66.68	9.52	11.00
385.1050060	50.00	60.00	7.00	7.50
385.1050073	50.80	73.03	11.11	12.50
385.1053069	53.98	69.85	9.52	11.00
385.1056068	56.00	68.00	7.00	7.50
385.2056068	56.00	68.00	8.50	10.00
385.1057069	57.15	69.85	7.93	9.50
385.1060072	60.00	72.00	8.50	10.00
385.1060076	60.33	76.20	7.93	9.50
385.1063075	63.00	75.00	8.50	10.00
385.1063076	63.50	76.20	7.93	9.50
385.1065077	65.00	77.00	8.50	10.00
385.1066079	66.68	79.38	9.52	11.00
385.1069090	69.85	90.90	9.52	11.00
385.1070082	70.00	82.00	8.50	9.50
385.1073082	73.03	82.55	9.52	11.00
385.1076088	76.20	88.90	9.52	11.00
385.1079098	79.38	98.43	9.52	11.00
385.1080092	80.00	92.00	8.50	10.00
385.1082095	82.55	95.25	7.93	9.50
385.1085098	85.73	98.43	9.52	11.00
385.1088101	88.90	101.60	9.52	11.00
385.1090102	90.00	102.00	8.50	9.50
385.1092106	92.08	106.40	7.93	9.50
385.1095111	95.25	111.10	9.52	11.00
385.1098107	98.43	107.95	9.52	11.00
385.1100112	100.00	112.00	8.50	10.00
385.1100115	100.00	115.00	10.00	11.50
385.1101111	101.60	111.10	5.75	7.00
385.1061177	106.30	117.20	7.20	7.60
385.1107127	107.95	127.00	9.52	11.00
385.1110130	110.00	130.00	14.00	15.50
385.1114146	114.30	146.05	12.70	14.00
385.1120136	120.65	136.50	7.14	8.50
385.1125145	125.00	145.00	14.00	15.50
385.1127146	127.00	146.05	12.70	14.00
385.1133152	133.35	152.40	12.70	14.00
385.1139157	139.70	157.52	7.14	8.50
385.1140160	140.00	160.00	14.00	15.50
385.1146165	146.05	165.10	12.70	14.00
385.1152171	152.40	171.45	9.52	11.00
385.1158177	158.80	177.80	12.70	14.00
385.1160180	160.00	180.00	14.00	17.00
385.1165184	165.10	184.15	12.70	14.00
385.1171190	171.45	190.50	12.70	14.00
385.1177190	177.80	190.50	7.14	8.50
385.1180200	180.00	200.00	14.00	17.00
385.1184203	184.15	203.20	9.52	11.00
385.1190209	190.55	209.55	12.70	14.00
385.1196215	196.90	215.90	12.70	14.00
385.1203222	203.20	222.30	12.70	14.00
385.1209228	209.55	228.60	12.70	14.00
385.1215235	215.90	235.00	12.70	14.00
385.1222241	222.30	241.30	9.52	11.00
385.1228247	228.60	247.70	12.70	14.00

The figures highlighted in bold correspond to the rod diameters that are recommended by standard ISO 3320. Other intermediate sizes can be provided.



ROD SEALS

BECA 640



DESCRIPTION

The BECA 640 profile is a double acting composite rod seal composed of a rubber O'Ring or square ring and a polyamide friction ring.

ADVANTAGES

The square ring does not twist
Low friction coefficient
Excellent extrusion resistance
Compatible with hydraulic oils

APPLICATIONS

Agriculture
Mobile machinery
Hydraulic cylinders

MATERIALS

Friction ring

Polyamide PA6

O'Ring or square ring

NBR 70 Shore A

Other grades of materials are available.
Please contact our experts.

TECHNICAL DATA

Temperature	-30°C / +100°C
Pressure	40 MPa
Speed	0.5 m/sec
Media	Mineral hydraulic oils Fire-resistant liquids Biocompatible fluids Water Others (contact our experts)

The figures above indicate the maximum values and may not be cumulated. They may be developed, depending on the materials used.

EXTRUSION GAPS

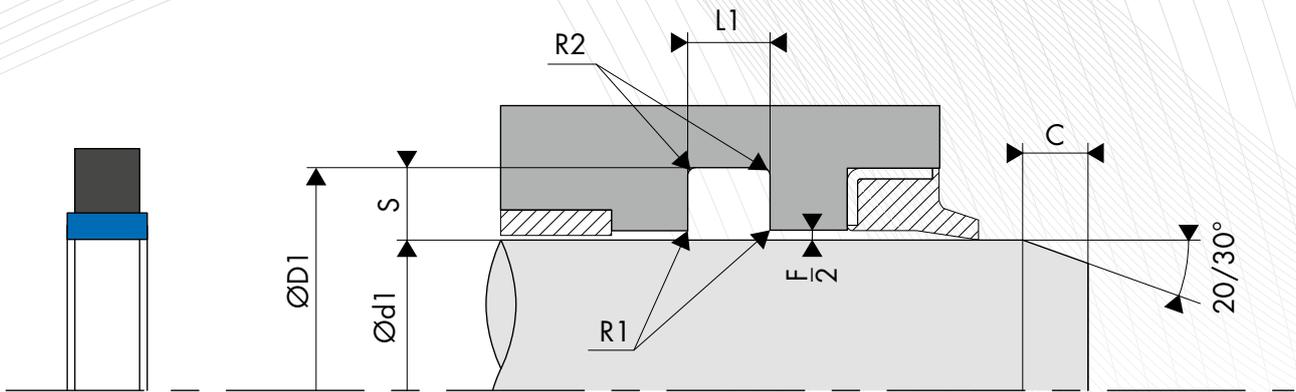
Pressure MPa	Radial gap F/2
20 MPa	0.25
35 MPa	0.20
40 MPa	0.15

SURFACE ROUGHNESS

Roughness	Dynamic surface area	Static surface area	Groove flanks
Ra	0.05 - 0.2 µm	≤1.6 µm	≤3.2 µm
Rz	0.4 - 1.6 µm	≤6.3 µm	≤10.0 µm
Rmax	0.63 - 2.5 µm	≤10.0 µm	≤16.0 µm

CHAMFERS AND RADIUS

Radial section S	Radius R1	Radius R2	Chamfer C
1.30	0.30	0.10	2.00
2.00	0.30	0.20	2.00
2.60	0.30	0.20	2.00
3.25	0.30	0.20	3.00
3.90	0.30	0.20	3.00
4.55	0.30	0.20	4.00
5.20	0.30	0.30	4.50
5.85	0.30	0.30	5.00
6.50	0.30	0.40	5.50
7.80	0.30	0.40	6.00
10.40	0.30	0.60	8.00
13.00	0.30	0.80	10.00



○ INSTALLATION DIMENSIONS

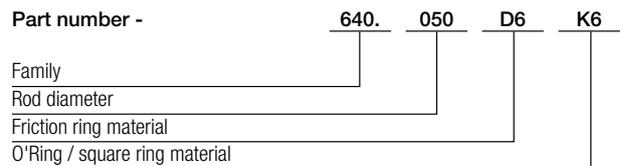
Rod diameter	Groove diameter	Groove width	Radial section	Cross-section
Ød1 f8	ØD1 H9	L1 0/+0.20	S	Ød2
3.0 - 11.9	d1 + 2.60	1.35	1.30	1.00
12.0 - 23.9	d1 + 4.00	2.00	2.00	1.78
24.0 - 33.9	d1 + 5.20	2.60	2.60	2.00
34.0 - 45.9	d1 + 6.50	3.20	3.25	2.62
46.0 - 58.9	d1 + 7.80	3.85	3.90	3.00
59.0 - 80.9	d1 + 9.10	4.50	4.55	3.53
81.0 - 129.9	d1 + 10.20	5.10	5.20	4.00
130.0 - 199.9	d1 + 11.70	5.70	5.85	5.00
200.0 - 299.9	d1 + 13.00	6.35	6.50	5.33
300.0 - 399.9	d1 + 15.60	7.60	7.80	6.99
400.0 - 599.9	d1 + 20.80	10.10	10.40	8.40
600.0 - **	d1 + 26.00	12.60	13.00	12.00

For special applications > 40 MPa, we recommend using an H8/f8 tolerance (groove/rod) or selecting other, more suitable materials. Please contact our experts.

○ EXAMPLE OF CODIFICATION

STANDARD CODIFICATION

Materials _____ : Polyamide friction ring - D6
 _____ : NBR 70 Shore A O'Ring / square ring - Code K6
Rod diameter _____ : Ød1 = 50.00 mm
Groove diameter _____ : ØD1 = 57.80 mm
Part number _____ : 640. 050D6K6

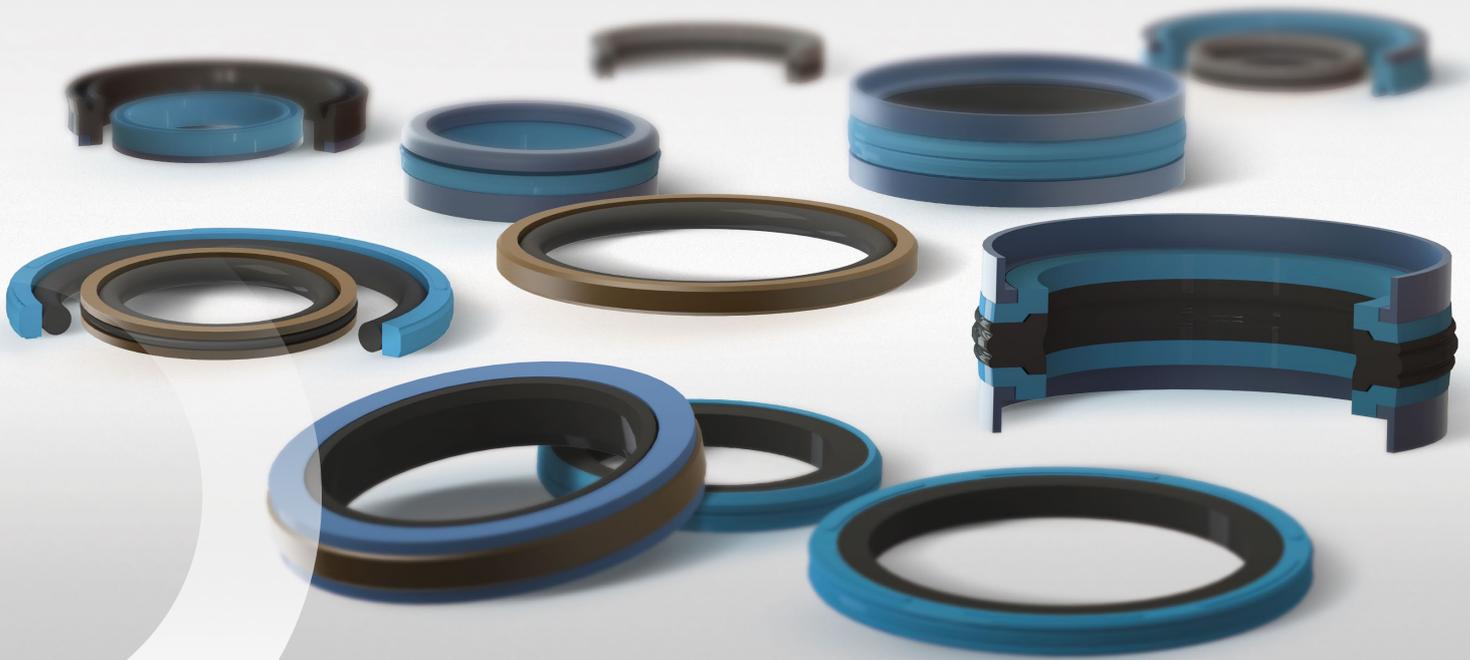


○ DIMENSIONS

Part number	Rod diameter Ød1 f8	Groove diameter ØD1 H9	Groove width L1 0/+0.10
640.003	3.00	5.60	1.35
640.004	4.00	6.60	1.35
640.005	5.00	7.60	1.35
640.006	6.00	8.60	1.35
640.007	7.00	9.60	1.35
640.008	8.00	10.60	1.35
640.009	9.00	11.60	1.35
640.010	10.00	12.60	1.35
640.011	11.00	13.60	1.35
640.012	12.00	16.00	2.00
640.013	13.00	17.00	2.00
640.014	14.00	18.00	2.00
640.015	15.00	19.00	2.00
640.016	16.00	20.00	2.00
640.017	17.00	21.00	2.00
640.018	18.00	22.00	2.00
640.019	19.00	23.00	2.00
640.020	20.00	24.00	2.00
640.021	21.00	25.00	2.00
640.022	22.00	26.00	2.00
640.024	24.00	29.20	2.60
640.025	25.00	30.20	2.60
640.026	26.00	31.20	2.60
640.027	27.00	32.20	2.60
640.028	28.00	33.20	2.60
640.029	29.00	34.20	2.60
640.030	30.00	35.20	2.60
640.032	32.00	37.20	2.60
640.034	34.00	40.50	3.20
640.035	35.00	41.50	3.20
640.036	36.00	42.50	3.20
640.038	38.00	44.50	3.20
640.039	39.00	45.50	3.20
640.040	40.00	46.50	3.20
640.041	41.00	47.50	3.20
640.042	42.00	48.50	3.20
640.044	44.00	50.50	3.20
640.045	45.00	51.50	3.20
640.046	46.00	53.80	3.85
640.047	47.00	54.80	3.85
640.048	48.00	55.80	3.85
640.050	50.00	57.80	3.85
640.051	51.00	58.80	3.85
640.052	52.00	59.80	3.85
640.055	55.00	62.80	3.85
640.056	56.00	63.80	3.85
640.058	58.00	65.80	3.85
640.060	60.00	69.10	4.50
640.061	61.00	70.10	4.50
640.062	62.00	71.10	4.50
640.063	63.00	72.10	4.50
640.065	65.00	74.10	4.50
640.067	67.00	76.10	4.50
640.068	68.00	77.10	4.50
640.070	70.00	79.10	4.50
640.072	72.00	81.10	4.50
640.075	75.00	84.10	4.50
640.078	78.00	87.10	4.50
640.079	79.00	88.10	4.50
640.080	80.00	89.10	4.50
640.081	81.00	91.40	5.10
640.082	82.00	92.40	5.10
640.083	83.00	93.40	5.10
640.084	84.00	94.40	5.10
640.085	85.00	95.40	5.10
640.086	86.00	96.40	5.10
640.088	88.00	98.40	5.10
640.090	90.00	100.40	5.10

Part number	Rod diameter Ød1 f8	Groove diameter ØD1 H9	Groove width L1 0/+0.10
640.092	92.00	102.40	5.10
640.095	95.00	105.40	5.10
640.098	98.00	108.40	5.10
640.100	100.00	110.40	5.10
640.105	105.00	115.40	5.10
640.108	108.00	118.40	5.10
640.110	110.00	120.40	5.10
640.115	115.00	125.40	5.10
640.120	120.00	130.40	5.10
640.125	125.00	135.40	5.10
640.127	127.00	137.40	5.10
640.130	130.00	141.70	5.70
640.135	135.00	146.70	5.70
640.138	138.00	149.70	5.70
640.140	140.00	151.70	5.70
640.145	145.00	156.70	5.70
640.150	150.00	161.70	5.70
640.155	155.00	166.70	5.70
640.160	160.00	171.70	5.70
640.165	165.00	176.70	5.70
640.170	170.00	181.70	5.70
640.175	175.00	186.70	5.70
640.180	180.00	191.70	5.70
640.185	185.00	196.70	5.70
640.190	190.00	201.70	5.70
640.195	195.00	206.70	5.70
640.200	200.00	213.00	6.35
640.210	210.00	223.00	6.35
640.215	215.00	228.00	6.35
640.220	220.00	233.00	6.35
640.230	230.00	243.00	6.35
640.240	240.00	253.00	6.35
640.250	250.00	263.00	6.35
640.260	260.00	273.00	6.35
640.270	270.00	283.00	6.35
640.275	275.00	288.00	6.35
640.280	280.00	293.00	6.35
640.285	285.00	298.00	6.35
640.290	290.00	303.00	6.35
640.295	295.00	308.00	6.35
640.300	300.00	315.60	7.60
640.305	305.00	320.60	7.60
640.310	310.00	325.60	7.60
640.320	320.00	335.60	7.60
640.330	330.00	345.60	7.60
640.340	340.00	355.60	7.60
640.350	350.00	365.60	7.60
640.360	360.00	375.60	7.60
640.370	370.00	385.60	7.60
640.380	380.00	395.60	7.60
640.390	390.00	405.60	7.60
640.400	400.00	420.80	10.10
640.410	410.00	430.80	10.10
640.420	420.00	440.80	10.10
640.430	430.00	450.80	10.10
640.440	440.00	460.80	10.10
640.450	450.00	470.80	10.10
640.460	460.00	480.80	10.10
640.470	470.00	490.80	10.10
640.480	480.00	500.80	10.10
640.490	490.00	510.80	10.10
640.500	500.00	520.80	10.10

The figures highlighted in bold correspond to the rod diameters that are recommended by standard ISO 3320. Other intermediate sizes can be provided.



7. Piston seals

Piston seals, which are mainly used in hydraulic cylinders, must ensure the sealing of pressurised fluids between the piston and bore.

FRANCE JOINT offers a complete range of single or double acting piston seals made from different types of materials, depending on the applications.

IMPORTANT

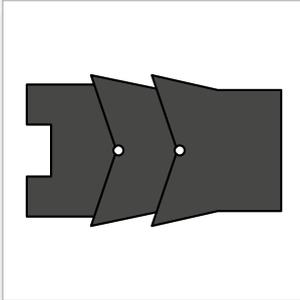
The pressures, speeds and temperatures indicate the maximum values and may not be cumulated. Moreover, they may be developed depending on the materials used.

For specific orders (temperature, pressure, speed, etc.), please contact our technical team so that they can direct you towards the appropriate choice of material and seal profile.

The dimensions shown in the catalogue are usually in stock and can be sent quickly. However, we reserve the right to modify our delivery schedule. Please contact our sales team to find out our availabilities.

Contents

	BECA 003 Materials: NBR + fabric NBR Temperature: -30°C / +110°C Pressure: 40 MPa Speed: 0.5 m/sec	P. 108		BECA 530 Materials: PU + NBR Temperature: -30°C / +100°C Pressure: 25 MPa Speed: 0.5 m/sec	P. 146
	BECA 235P/AE Materials: Rubber + POM/PTFE Temperature: -30°C / +200°C Pressure: 25 MPa Speed: 0.5 m/sec	P. 309		BECA 535 Materials: PU + NBR Temperature: -30°C / +100°C Pressure: 25 MPa Speed: 0.5 m/sec	P. 150
	BECA 335P/AE Materials: PU + POM Temperature: -30°C / +110°C Pressure: 45 MPa Speed: 0.5 m/sec	P. 310		BECA 540 - 549 Materials: PTFE + Stainless steel Temperature: -200°C / +260°C Pressure: 30 MPa Speed: 15 m/s	P. 154
	BECA 336 Materials: PU Temperature: -30°C / +110°C Pressure: 40 MPa Speed: 0.5 m/sec	P. 110		BECA 550 - 559 Materials: PTFE + Rubber Temperature: -30°C / +200°C Pressure: 35 MPa Speed: 5 m/s	P. 158
	BECA 336/AE Materials: PU + POM Temperature: -30°C / +110°C Pressure: 50 MPa Speed: 0.5 m/sec	P. 311		BECA 560 Materials: NBR + POM Temperature: -30°C / +100°C Pressure: 40 MPa Speed: 0.5 m/sec	P. 162
	BECA 500 - 502 - 504 Materials: PTFE + Rubber Temperature: -30°C / +200°C Pressure: 50 MPa Speed: 5 m/s	P. 114		BECA 570 Materials: Fabric NBR + POM Temperature: -30°C / +100°C Pressure: 40 MPa Speed: 0.5 m/sec	P. 164
	BECA 501 - 503 - 505 Materials: PTFE + Rubber Temperature: -30°C / +200°C Pressure: 50 MPa Speed: 5 m/s	P. 120		BECA 571 Materials: Rubber + POM/PTFE Temperature: -30°C / +100°C Pressure: 40 MPa Speed: 0.5 m/sec	P. 166
	BECA 507 - 508 Materials: PTFE + Rubber Temperature: -30°C / +200°C Pressure: 50 MPa Speed: 2 m/s	P. 126		BECA 572 Materials: PU + POM + POM Temperature: -30°C / +110°C Pressure: 40 MPa Speed: 0.5 m/sec	P. 168
	BECA 510 Materials: PU + NBR + POM Temperature: -30°C / +100°C Pressure: 40 MPa Speed: 0.5 m/sec	P. 130		BECA 579 Materials: NBR + PU + POM Temperature: -30°C / +100°C Pressure: 50 MPa Speed: 0.5 m/sec	P. 170
	BECA 512 Materials: PTFE + NBR + POM Temperature: -30°C / +100°C Pressure: 50 MPa Speed: 1.5 m/s	P. 132		BECA 579S Materials: NBR + PU + POM Temperature: -30°C / +100°C Pressure: 50 MPa Speed: 0.5 m/sec	P. 172
	BECA 513 Materials: PU + NBR + POM Temperature: -30°C / +100°C Pressure: 40 MPa Speed: 0.5 m/sec	P. 134		BECA 580 - 581 Materials: Rubber Temperature: -30°C / +200°C Pressure: 8 MPa Speed: 0.5 m/sec	P. 176
	BECA 519 Materials: PU + NBR Temperature: -30°C / +100°C Pressure: 40 MPa Speed: 0.5 m/sec	P. 136		BECA 650 Materials: PA6 + NBR Temperature: -30°C / +100°C Pressure: 40 MPa Speed: 0.5 m/sec	P. 180
	BECA 520 - 522 - 524 Materials: PU + NBR Temperature: -30°C / +100°C Pressure: 25 MPa Speed: 0.5 m/sec	P. 138		BECA 655 Materials: PA6 + NBR Temperature: -30°C / +100°C Pressure: 50 MPa Speed: 0.5 m/sec	P. 184
	BECA 525 Materials: PU + NBR Temperature: -30°C / +100°C Pressure: 25 MPa Speed: 0.5 m/sec	P. 132			



PISTON SEALS

BECA 003



DESCRIPTION

The BECA 003 profile is a 3-part chevron seal in which the central part, which is made of textile-reinforced NBR, is encapsulated between a POM head nut and a TPE locking ring.

ADVANTAGES

Strong sealing, tolerant to defects in the surface condition (impacts on the rod, carbon deposits, etc.)

The tightness can be adjusted depending on the application

Excellent resistance to pressure

APPLICATIONS

Cylinders for extreme demands

Presses

Steel industry

Mining machines

Installations in corrosive and abrasive environments

MATERIALS

POM + fabric NBR + TPE

TECHNICAL DATA

Temperature	-30°C / +110°C
Pressure	40 MPa
Speed	0.5 m/sec
Media	Mineral oils

The figures above indicate the maximum values and may not be cumulated. They may be developed, depending on the materials used.

EXTRUSION GAPS

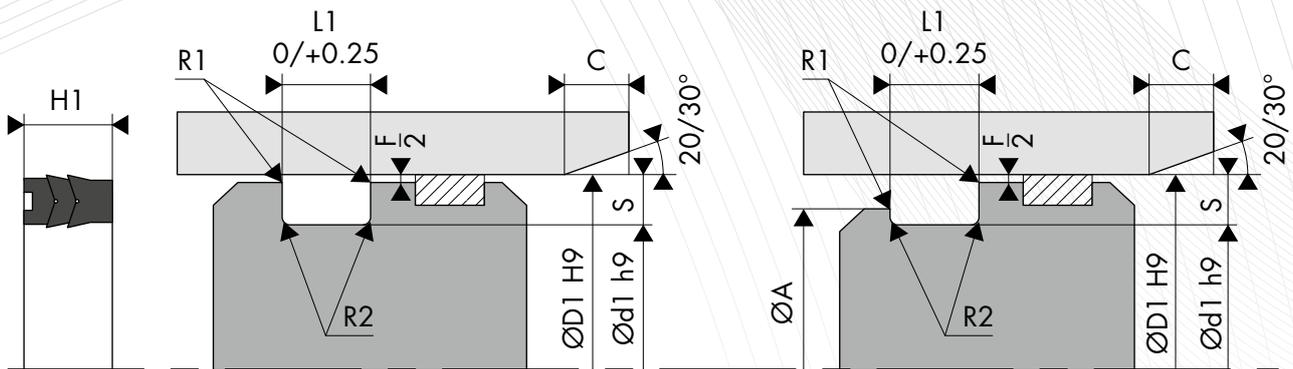
Radial section S	Radial gap F/2			
	16 MPa	26 MPa	32 MPa	40 MPa
≤ 5.00	0.50	0.40	0.35	-
≤ 7.50	0.55	0.45	0.40	0.35
≤ 12.50	0.60	0.50	0.45	0.40
≤ 15.00	0.65	0.55	0.45	0.40

SURFACE ROUGHNESS

Roughness	Dynamic surface area	Static surface area	Groove flanks
Ra	0.1 - 0.4 µm	≤1.6 µm	≤3.2 µm
Rz	0.63 - 2.5 µm	≤6.3 µm	≤10.0 µm
Rmax	1.0 - 4.0 µm	≤10.0 µm	≤16.0 µm

CHAMFERS AND RADIUS

Bore diameter ØD1	Radius R1	Radius R2	Chamfer C
≤ 100.00	0.30	0.40	2.50
> 100.00	0.30	0.80	4.00

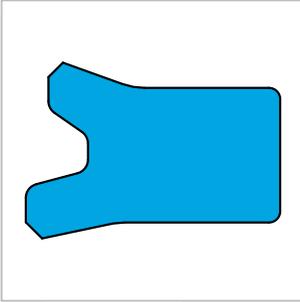


DIMENSIONS

Part number	Bore diameter ØD1 H9	Groove diameter Ød1 h9	Groove width L1 0/+0.25
003.302009	20.00	10.00	9.30
003.302209	22.00	12.00	9.30
003.302509	25.00	15.00	9.30
003.302809	28.00	18.00	9.30
003.303009	30.00	20.00	9.30
003.303210	32.00	20.00	10.90
003.303510	35.00	23.00	10.90
003.303610	36.00	24.00	10.90
003.304011	40.00	25.00	11.50
003.304211	42.00	27.00	11.50
003.304511	45.00	30.00	11.50
003.305011	50.00	35.00	11.50
003.305511	55.00	40.00	11.50
003.305611	56.00	41.00	11.50
003.306011	60.00	45.00	11.50
003.306313	63.00	48.00	13.00
003.307015	70.00	50.00	15.20
003.308015	80.00	60.00	15.20
003.39021	90.00	70.00	21.20
003.310021	100.00	80.00	21.20
003.311021	110.00	90.00	21.20
003.311521	115.00	95.00	21.20
003.312525	125.00	100.00	25.80
003.314025	140.00	115.00	25.80
003.315029	150.00	120.00	29.00

Part number	Bore diameter ØD1 H9	Groove diameter Ød1 h9	Groove width L1 0/+0.25
003.315534	155.00	125.00	34.00
003.316029	160.00	130.00	29.00
003.318031	180.00	150.00	31.50
003.319532	195.00	165.00	32.50
003.320033	200.00	170.00	33.50
003.321033	210.00	180.00	33.50
003.322033	220.00	190.00	33.50
003.322533	225.00	195.00	33.50
003.323033	230.00	200.00	33.50
003.324033	240.00	215.00	33.50
003.325033	250.00	220.00	33.50
003.327033	270.00	240.00	33.50
003.327533	275.00	245.00	33.50
003.328033	280.00	250.00	33.50
003.330033	300.00	270.00	33.50
003.331033	310.00	280.00	33.50
003.332033	320.00	290.00	33.50
003.333032	330.00	300.00	32.00
003.334032	340.00	300.00	32.00
003.336033	360.00	320.00	33.50
003.338042	380.00	340.00	42.50
003.340040	400.00	360.00	40.00
003.342040	420.00	380.00	40.00
003.345041	450.00	410.00	41.50
003.346040	460.00	420.00	40.00

The figures highlighted in bold correspond to the bore diameters that are recommended by standard ISO 3320. Other intermediate sizes can be provided.



PISTON SEALS

BECA 336



DESCRIPTION

The BECA 336 profile is a U-ring type single acting piston seal with offset polyurethane lips.

ADVANTAGES

Optimised sealing effect at both high and low pressures

Excellent abrasion and wear resistance

Assembly by deformation in closed groove

APPLICATIONS

Mobile hydraulics

Injection presses

Machine tools

Presses

Hydraulic cylinders

MATERIALS

Profiled seal

PU 93 Shore A - Blue

PU 96 Shore A - Blue

High temp. PU 96 Shore A - Beige

Other grades of materials are available. Please contact our experts.

TECHNICAL DATA

Temperature	-30°C / +110°C
Pressure	40 MPa
Speed	0.5 m/sec
Media	Mineral hydraulic oils

The figures above indicate the maximum values and may not be cumulated. They may be developed, depending on the materials used.

EXTRUSION GAPS

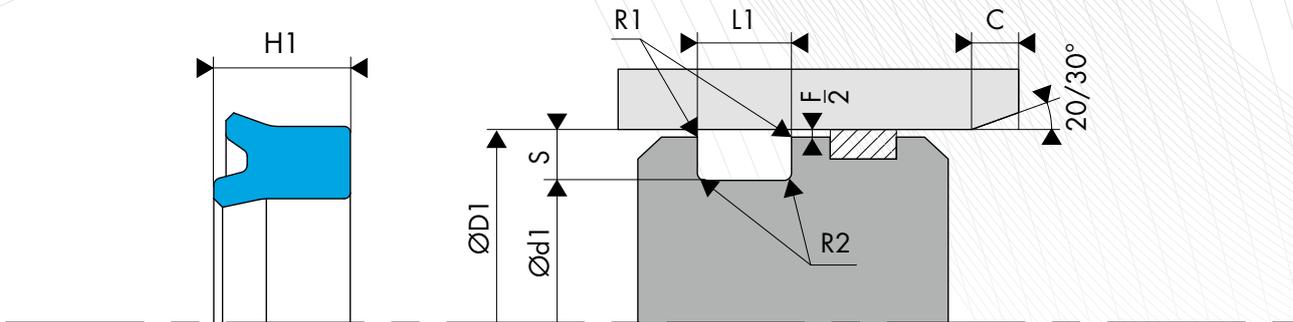
Bore diameter ØD1	Radial extrusion gap F/2				
	≤ 5 MPa	≤ 10 MPa	≤ 20 MPa	≤ 30 MPa	≤ 40 MPa
≤ 60 mm	0.40	0.30	0.20	0.15	0.10
> 60 mm	0.50	0.40	0.30	0.20	0.15

SURFACE ROUGHNESS

Roughness	Dynamic surface area	Static surface area	Groove flanks
Ra	0.1 - 0.4 µm	≤1.6 µm	≤3.2 µm
Rz	0.63 - 2.5 µm	≤6.3 µm	≤10.0 µm
Rmax	1.0 - 4.0 µm	≤10.0 µm	≤16.0 µm

CHAMFERS AND RADIUS

Radial section S	Radius R1	Radius R2	Chamfer C
3.00	0.20	0.40	2.00
4.00	0.20	0.40	2.50
5.00	0.40	0.60	3.00
7.50	0.80	1.00	4.00
10.00	0.80	1.00	5.00



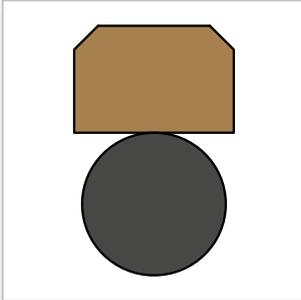
○ DIMENSIONS

Part number	Bore diameter ØD1 H9	Groove diameter Ød1 h9	Seal height H1	Groove width L1 0/+0.5
336.0060294	6.00	2.90	4.00	4.50
336.0120055	12.00	5.00	5.50	6.00
336.0140094	14.00	9.00	4.00	5.00
336.0150103	15.00	10.00	3.00	4.00
336.0160104	16.00	10.00	3.80	4.20
336.0100186	18.00	10.00	6.00	7.00
336.0220144	22.00	14.00	4.00	4.50
336.2251456	22.50	14.50	6.00	7.00
336.0230174	23.00	17.00	4.00	4.50
336.0240148	24.00	14.00	8.00	9.00
336.0240166	24.00	16.00	6.00	7.00
336.0250155	25.00	15.00	5.80	6.30
336.0250158	25.00	15.00	8.00	9.00
336.0250174	25.00	17.00	4.00	4.50
336.0250176	25.00	17.00	5.70	6.30
336.0260185	26.00	18.00	5.50	6.50
336.0280186	28.00	18.00	6.30	7.00
336.0300206	30.00	20.00	6.00	7.00
336.0300208	30.00	20.00	8.00	9.00
336.0300226	30.00	22.00	6.40	7.00
336.3012066	30.16	20.63	6.35	7.35
336.3220663	32.00	20.63	6.35	7.35
336.0320228	32.00	22.00	8.00	9.00
336.0320244	32.00	24.00	4.00	4.50
336.0340248	34.00	24.00	8.50	9.50
336.0350258	35.00	25.00	8.00	9.00
336.0350274	35.00	27.00	4.00	4.50
336.0350278	35.00	27.00	8.00	9.00
336.0380251	38.00	25.00	10.00	11.00
336.0380308	38.00	30.00	8.00	9.00
336.3083896	38.90	30.80	6.00	7.00
336.0390316	39.00	31.00	6.10	6.30
336.0400308	40.00	30.00	7.30	8.00
336.0400301	40.00	30.00	10.00	11.00
336.0400327	40.00	32.00	6.50	7.20
336.0400328	40.00	32.00	8.00	9.00
336.0400338	40.00	33.00	8.00	9.00
336.0410301	41.00	30.00	10.00	11.00
336.0430308	43.00	30.00	8.00	9.00
336.0330406	44.00	33.00	6.00	7.00
336.0440341	44.00	34.00	10.00	11.00
336.0445267	44.50	26.50	7.70	8.20
336.0450309	45.00	30.00	9.00	10.00

Part number	Bore diameter ØD1 H9	Groove diameter Ød1 h9	Seal height H1	Groove width L1 0/+0.5
336.0450301	45.00	30.00	10.00	11.00
336.0450358	45.00	35.00	7.50	8.00
336.0460341	46.00	34.00	10.50	12.00
336.0315483	48.00	31.50	12.50	13.50
336.0500351	50.00	35.00	10.00	11.00
336.0500405	50.00	40.00	5.00	6.00
336.0400505	50.00	40.00	5.70	6.30
336.0500406	50.00	40.00	6.30	7.00
336.0500407	50.00	40.00	7.00	8.00
336.0500401	50.00	40.00	10.00	11.00
336.0420506	50.00	42.00	6.00	7.00
336.5084087	50.80	40.80	7.00	8.00
336.5084127	50.80	41.27	6.35	6.80
336.0520421	52.00	42.00	10.00	11.00
336.0450356	53.00	45.00	6.70	7.70
336.0550352	55.00	35.00	12.00	13.00
336.0550456	55.00	45.00	6.00	7.00
336.0550451	55.00	45.00	10.00	11.00
336.0600506	60.00	50.00	6.00	7.00
336.0600507	60.00	50.00	7.20	8.00
336.0600501	60.00	50.00	10.00	11.00
336.0520626	62.00	52.00	6.00	7.00
336.0630489	63.00	48.00	9.00	10.00
336.0500637	63.00	50.00	7.00	8.00
336.0630537	63.00	53.00	7.00	8.00
336.0630532	63.00	53.00	12.00	13.00
336.0630555	63.00	55.00	5.70	6.00
336.0630576	63.00	57.00	5.00	6.00
336.6475206	64.77	52.07	6.93	7.93
336.0650452	65.00	45.00	12.00	13.00
336.0650453	65.00	45.00	13.70	14.50
336.0650528	65.00	52.00	8.50	9.50
336.0526510	65.00	52.20	10.00	11.00
336.0650553	65.00	55.00	13.50	14.50
336.6507528	65.07	52.37	8.70	9.50
336.0550709	70.00	55.00	9.00	10.00
336.0700606	70.00	60.00	6.00	7.00
336.0700607	70.00	60.00	7.00	8.00
336.0700602	70.00	60.00	12.00	13.00
336.0730571	73.00	57.00	10.00	11.00
336.0550752	75.00	55.00	12.00	13.00
336.0750601	75.00	60.00	9.00	10.00
336.0760681	76.00	68.00	10.00	11.00
336.0580800	80.00	58.00	10.00	11.00
336.0800604	80.00	60.00	13.50	14.50
336.0800650	80.00	65.00	10.00	11.00
336.6080070	80.00	70.00	6.00	7.00
336.0800706	80.00	70.00	6.80	7.50
336.0800707	80.00	70.00	7.20	7.50
336.0800701	80.00	70.00	9.00	10.00
336.0800702	80.00	70.00	12.00	13.00
336.0720801	80.00	71.80	10.00	11.00
336.8286342	82.80	63.40	11.60	12.60
336.0700859	85.00	70.00	9.00	10.00
336.0900702	90.00	70.00	12.00	13.00
336.0900752	90.00	75.00	12.00	13.00
336.0980842	98.00	84.00	12.00	13.00
336.1000804	100.00	80.00	13.50	14.50
336.1000852	100.00	85.00	12.00	13.00
336.1000906	100.00	90.00	6.70	7.70
336.0821012	101.00	82.00	12.00	13.00
336.1010862	101.00	86.00	12.00	13.00
336.1016794	101.60	79.38	12.70	13.70

Part number	Bore diameter ØD1 H9	Groove diameter Ød1 h9	Seal height H1	Groove width L1 0/+0.5
336.1100952	110.00	95.00	12.00	13.00
336.1201002	120.00	100.00	12.00	13.00
336.1201005	120.00	100.00	15.00	16.00
336.1200894	120.65	88.90	14.30	15.30
336.1201016	120.65	101.60	16.00	17.50
336.1251055	125.00	105.00	15.00	16.00
336.1251155	125.00	115.00	14.00	15.00
336.1301156	130.00	115.00	15.00	16.00
336.1351253	135.00	125.00	13.50	14.50
336.1501301	150.00	130.00	15.00	16.00
336.1501405	150.00	140.00	14.00	15.00
336.1521409	152.00	140.00	8.00	9.00
336.1551401	155.00	140.00	10.00	11.00
336.1601355	160.00	135.00	15.50	16.50
336.1601405	160.00	140.00	15.00	16.00
336.1751632	175.00	163.00	12.00	13.00
336.1801668	180.00	166.00	8.00	9.00
336.1831653	185.00	165.00	13.00	14.00
336.2001805	200.00	180.00	15.00	16.00
336.2001888	200.00	187.82	8.30	9.30
336.1962256	225.00	196.00	26.00	27.00
336.2302165	230.00	216.00	15.00	16.00
336.2402109	240.00	210.00	18.00	19.00
336.2802602	280.00	260.00	12.00	13.00

The figures highlighted in bold correspond to the dimensions for standard ISO 5597, with the bore diameters in line with standard ISO 3320. Other intermediate sizes can be provided.



PISTON SEALS

BECA

500-502-504



DESCRIPTION

The BECA 500 - 502 - 504 profiles are double acting composite piston seals composed of a filled PTFE friction ring and pre-tightened rubber O'Ring. They can be assembled in grooves according to standard ISO 7425/1. Option of connecting the seal to 1 or 2 back-up rings.

ADVANTAGES

Optimal sealing in static and dynamic applications

Low friction coefficient;
no stick-slip effect

Excellent abrasion and extrusion resistance

Wide temperature range and excellent chemical resistance, depending on the material selected for the O'Ring

APPLICATIONS

Mobile hydraulics

Injection presses

Machine tools

Presses

Standard cylinders

MATERIALS

Friction ring

Bronze-filled PTFE

Carbon-filled PTFE

Blue GL PTFE

O'Ring

NBR 70 Shore A

FKM 70 Shore A

Other grades of materials are available. Please refer to the materials table on the next page.

TECHNICAL DATA

Temperature	-30°C / +200°C
Pressure	50 MPa
Speed	5 m/s
Media	Mineral hydraulic oils Fire-resistant liquids Biocompatible fluids Water Others (contact our experts)

The figures above indicate the maximum values and may not be cumulated. They may be developed, depending on the materials used.

EXTRUSION GAPS

Radial section S	Radial gap F/2		
	10 MPa	20 MPa	40 MPa
2.45	0.30	0.20	0.15
3.75	0.40	0.25	0.15
5.50	0.40	0.25	0.20
7.75	0.50	0.30	0.20
10.50	0.60	0.35	0.25
12.25	0.60	0.35	0.25
14.00	0.70	0.50	0.30
19.00	1.00	0.70	0.60

SURFACE ROUGHNESS

Roughness	Dynamic surface area	Static surface area	Groove flanks
Ra	0.05 - 0.2 µm	≤1.6 µm	≤3.2 µm
Rz	0.4 - 1.6 µm	≤6.3 µm	≤10.0 µm
Rmax	0.63 - 2.5 µm	≤10.0 µm	≤16.0 µm

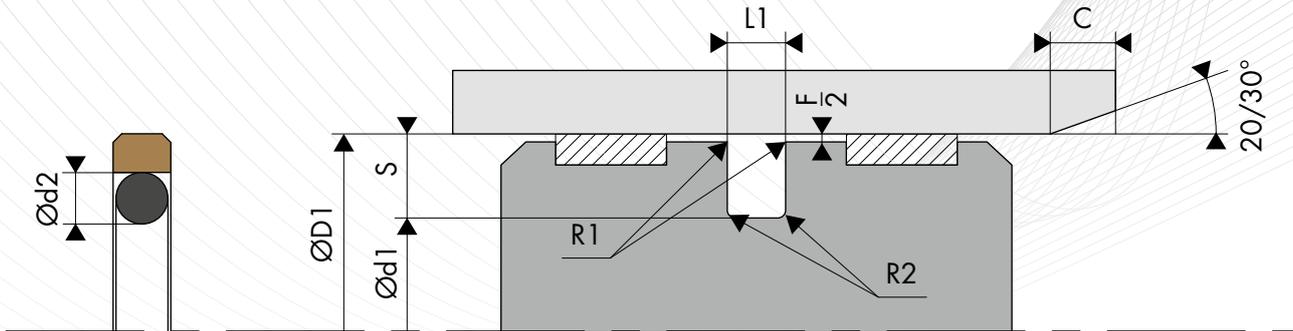
CHAMFERS AND RADIUS

Radial section S	Radius R1	Radius R2	Chamfer C
2.45	0.30	0.40	3.00
3.75	0.30	0.60	3.00
5.50	0.30	1.00	3.00
7.75	0.30	1.30	5.00
10.50	0.30	1.80	6.00
12.25	0.30	1.80	8.00
14.00	0.30	2.50	10.00
19.00	0.30	3.00	12.00

TABLE MATERIALS

Standard code	ISO code	Friction ring			O'Ring			Mating surface material	
		Material	Colour	Characteristics	Code	Type of material	Service temperature		
DP	P	Virgin PTFE	White	Resistance to chemical products Impermeability Dielectric Non-stick Low friction coefficient Food industry	K6	NBR 70 Shore A	-30°C/+100°C	Steel Stainless steel Chrome steel Aluminium Bronze Cast iron Treated surface	
					G6	FKM 70 Shore A	-20°C/+200°C		
					C6	EPDM 70 Shore A	-45°C/+150°C		
					F6	VMQ 70 Shore A	-60°C/+200°C		
DC	C	PTFE + 25% Carbon	Grey	Improvements • Wear properties • Compression set Good resistance to chemical products Thermal and electrical conductivity Anti-static High-performing in compression-based dynamic applications	K6	NBR 70 Shore A	-30°C/+100°C		
					G6	FKM 70 Shore A	-20°C/+200°C		
					C6	EPDM 70 Shore A	-45°C/+150°C		
CG	C	PTFE + 23% Carbon + 2% Graphite	Black	Thermal and electrical conductivity Anti-static High-performing in compression-based dynamic applications	K6	NBR 70 Shore A	-30°C/+100°C		
					G6	FKM 70 Shore A	-20°C/+200°C		
					C6	EPDM 70 Shore A	-45°C/+150°C		
DV	V	PTFE + 25 % Glass	Blue	Improvements • Wear properties • Mechanical strength Slightly more abrasive, however, this is corrected by adding MOS2 Maintains its chemical and dielectric properties Well-suited to applications with rotational and simultaneous alternating movements	K6	NBR 70 Shore A	-30°C/+100°C		Steel Chrome steel Cast iron
					G6	FKM 70 Shore A	-20°C/+200°C		
VM	M	PTFE + 15 % Glass + 5% MOS2	Grey	Well-suited to applications with rotational and simultaneous alternating movements	K6	NBR 70 Shore A	-30°C/+100°C		
					G6	FKM 70 Shore A	-20°C/+200°C		
DX	X	PTFE GL Blue + Glass + Metal oxides	Turquoise blue	Resistance to compression Resistance to wear Excellent chemical stability Good thermal conductivity	K6	NBR 70 Shore A	-30°C/+100°C		
					G6	FKM 70 Shore A	-20°C/+200°C		
DG	G	PTFE + 15% Graphite	Black	Improvements • Wear properties Reduced wear on metal parts Self-lubricating Thermal and electrical conductivity Low permeability Good friction coefficient Anti-static High performing in dynamic self-lubricating applications	K6	NBR 70 Shore A	-30°C/+100°C	Steel Stainless steel Chrome steel Aluminium Bronze Cast iron Treated surface	
					G6	FKM 70 Shore A	-20°C/+200°C		
					C6	EPDM 70 Shore A	-45°C/+150°C		
K1	K	PTFE + 10% Ekonol	Light brown	Improvements • Better abrasion resistance • Better dimensional stability at high temperatures Use up to +300°C Good friction coefficient and low permeability	K6	NBR 70 Shore A	-30°C/+100°C		
					G6	FKM 70 Shore A	-20°C/+200°C		
					C6	EPDM 70 Shore A	-45°C/+150°C		
K2	K	PTFE + 20% Ekonol	Light brown	Good friction coefficient and low permeability	K6	NBR 70 Shore A	-30°C/+100°C		
					G6	FKM 70 Shore A	-20°C/+200°C		
DB	B	PTFE + 60% Bronze	Dark brown	Improvements • Wear properties • Warping resistance and creep strength • Compression resistance Self-lubricating Electrical and thermal conductivity Does not alter the metal parts Reduced hold with certain chemical products Used for high-compression dynamic seals and has a low level of wear	K6	NBR 70 Shore A	-30°C/+100°C	Steel Chrome steel Cast iron	
					G6	FKM 70 Shore A	-20°C/+200°C		
B4	B	PTFE + 40% Bronze	Dark brown	Used for high-compression dynamic seals and has a low level of wear	K6	NBR 70 Shore A	-30°C/+100°C		
					G6	FKM 70 Shore A	-20°C/+200°C		
HG	HG	PE-UHMW	White or off-white	Excellent wear resistance on contact with water and air	K6	NBR 70 Shore A	-30°C/+80°C	Steel Stainless steel Chrome steel Aluminium Bronze Cast iron Treated surface	
PU	U	Polyurethane	Blue	Strong mechanical resistance Good resistance to wear and abrasion High elasticity modulus	K6	NBR 70 Shore A	-30°C/+90°C		
PUHT	U	High-temperature polyurethane	White or off-white	Good flexibility Very good resistance to ozone and oxidation	K6	NBR 70 Shore A	-30°C/+100°C		

Other grades of materials are available depending on your specificities.



○ INSTALLATION DIMENSIONS

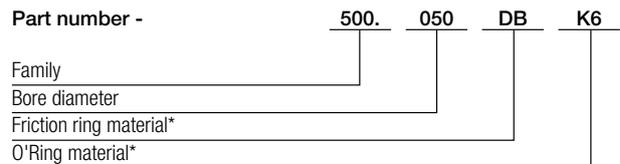
Bore diameter ØD1 H9			Groove diameter	Groove width	Radial section	O'Ring cross-section
BECA 500 Standard range	BECA 502 Light range	BECA 504 Heavy-duty range	Ød1 h9	L1 0/+0.20	S	Ød2
8.0 - 14.9	15.0 - 39.9	---	D1 - 4.90	2.20	2.45	1.78
15.0 - 39.9	40.0 - 79.9	---	D1 - 7.50	3.20	3.75	2.62
40.0 - 79.9	80.0 - 132.9	15.0 - 39.9	D1 - 11.00	4.20	5.50	3.53
80.0 - 132.9	133.0 - 329.9	40.0 - 79.9	D1 - 15.50	6.30	7.75	5.33
133.0 - 329.9	330.0 - 669.9	80.0 - 132.9	D1 - 21.00	8.10	10.50	6.99
330.0 - 669.9	670.0 - 999.9	133.0 - 329.9	D1 - 24.50	8.10	12.25	6.99
670.0 - 999.9	1000.0 - **	330.0 - 669.9	D1 - 28.00	9.50	14.00	8.40
1000.0 - **	---	1000.0 - **	D1 - 38.00	13.80	19.00	12.00

For special applications > 40 MPa, we recommend using an H8/f8 tolerance (bore/piston) or selecting other, more suitable materials. Please contact our experts.

○ EXAMPLE OF CODIFICATION

STANDARD CODIFICATION

Materials _____ : Friction ring, PTFE + 60% Bronze - Code DB
 _____ : NBR 70 Shore A O'Ring - Code K6
Bore diameter _____ : ØD1 = 50.00 mm
Groove diameter _____ : Ød1 + 39.00 mm
Part number _____ : 500. 050DBK6



* The codes that define the materials are set out in the materials table on the previous page.

DIMENSIONS

Part number	Bore diameter ØD1 H9	Groove diameter Ød1 h9	Groove width L1 0/+0.20
500.008	8.00	3.10	2.20
500.010	10.00	5.10	2.20
500.012	12.00	7.10	2.20
500.014	14.00	9.10	2.20
504.015	15.00	4.00	4.20
500.015	15.00	7.50	3.20
502.015	15.00	10.10	2.20
504.016	16.00	5.00	4.20
500.016	16.00	8.50	3.20
502.016	16.00	11.10	2.20
504.018	18.00	7.00	4.20
500.018	18.00	10.50	3.20
502.018	18.00	13.10	2.20
504.020	20.00	9.00	4.20
500.020	20.00	12.50	3.20
502.020	20.00	15.10	2.20
504.021	21.00	10.00	4.20
500.021	21.00	13.50	3.20
502.021	21.00	16.10	2.20
504.022	22.00	11.00	4.20
500.022	22.00	14.50	3.20
502.022	22.00	17.10	2.20
504.024	24.00	13.00	4.20
500.024	24.00	16.50	3.20
502.024	24.00	19.10	2.20
504.025	25.00	14.00	4.20
500.025	25.00	17.50	3.20
502.025	25.00	20.10	2.20
504.028	28.00	17.00	4.20
500.028	28.00	20.50	3.20
502.028	28.00	23.10	2.20
504.030	30.00	19.00	4.20
500.030	30.00	22.50	3.20
502.030	30.00	25.10	2.20
504.032	32.00	21.00	4.20
500.032	32.00	24.50	3.20
502.032	32.00	27.10	2.20
504.035	35.00	24.00	4.20
500.035	35.00	27.50	3.20
502.035	35.00	30.10	2.20
504.036	36.00	25.00	4.20
500.036	36.00	28.50	3.20
502.036	36.00	31.10	2.20
504.038	38.00	27.00	4.20
500.038	38.00	30.50	3.20
502.038	38.00	33.10	2.20
504.040	40.00	24.50	6.30
500.040	40.00	29.00	4.20
502.040	40.00	32.50	3.20
504.042	42.00	26.50	6.30
500.042	42.00	31.00	4.20
502.042	42.00	34.50	3.20
504.045	45.00	29.50	6.30
500.045	45.00	34.00	4.20
502.045	45.00	37.50	3.20
504.048	48.00	32.50	6.30
500.048	48.00	37.00	4.20
502.048	48.00	40.50	3.20
504.050	50.00	34.50	6.30
500.050	50.00	39.00	4.20
502.050	50.00	42.50	3.20
504.052	52.00	36.50	6.30

Part number	Bore diameter ØD1 H9	Groove diameter Ød1 h9	Groove width L1 0/+0.20
500.052	52.00	41.00	4.20
502.052	52.00	44.50	3.20
504.053	53.00	37.50	6.30
500.053	53.00	42.00	4.20
502.053	53.00	45.50	3.20
504.055	55.00	39.50	6.30
500.055	55.00	44.00	4.20
502.055	55.00	47.50	3.20
504.057	57.00	41.50	6.30
500.057	57.00	46.00	4.20
502.057	57.00	49.50	3.20
504.058	58.00	42.50	6.30
500.058	58.00	47.00	4.20
502.058	58.00	50.50	3.20
504.060	60.00	44.50	6.30
500.060	60.00	49.00	4.20
502.060	60.00	52.50	3.20
504.062	62.00	46.50	6.30
500.062	62.00	51.00	4.20
502.062	62.00	54.50	3.20
504.063	63.00	47.50	6.30
500.063	63.00	52.00	4.20
502.063	63.00	55.50	3.20
504.065	65.00	49.50	6.30
500.065	65.00	54.00	4.20
502.065	65.00	57.50	3.20
504.068	68.00	52.50	6.30
500.068	68.00	57.00	4.20
502.068	68.00	60.50	3.20
504.070	70.00	54.50	6.30
500.070	70.00	59.00	4.20
502.070	70.00	62.50	3.20
504.072	72.00	56.50	6.30
500.072	72.00	61.00	4.20
502.072	72.00	64.50	3.20
504.075	75.00	59.50	6.30
500.075	75.00	64.00	4.20
502.075	75.00	67.50	3.20
504.080	80.00	59.00	8.10
500.080	80.00	64.50	6.30
502.080	80.00	69.00	4.20
504.082	82.00	61.00	8.10
500.082	82.00	66.50	6.30
502.082	82.00	71.00	4.20
504.085	85.00	64.00	8.10
500.085	85.00	69.50	6.30
502.085	85.00	74.00	4.20
504.087	87.00	66.00	8.10
500.087	87.00	71.50	6.30
502.087	87.00	76.00	4.20
504.090	90.00	69.00	8.10
500.090	90.00	74.50	6.30
502.090	90.00	79.00	4.20
504.092	92.00	71.00	8.10
500.092	92.00	76.50	6.30
502.092	92.00	81.00	4.20
504.095	95.00	74.00	8.10
500.095	95.00	79.50	6.30
502.095	95.00	84.00	4.20
504.100	100.00	79.00	8.10
500.100	100.00	84.50	6.30
502.100	100.00	89.00	4.20

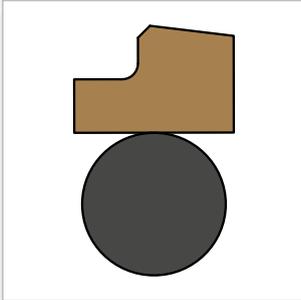
Part number	Bore diameter ØD1 H9	Groove diameter Ød1 h9	Groove width L1 0/+0.20
504.105	105.00	84.00	8.10
500.105	105.00	89.50	6.30
502.105	105.00	94.00	4.20
504.108	108.00	87.00	8.10
500.108	108.00	92.50	6.30
502.108	108.00	97.00	4.20
504.110	110.00	89.00	8.10
500.110	110.00	94.50	6.30
502.110	110.00	99.00	4.20
504.115	115.00	94.00	8.10
500.115	115.00	99.50	6.30
502.115	115.00	104.00	4.20
504.120	120.00	99.00	8.10
500.120	120.00	104.50	6.30
502.120	120.00	109.00	4.20
504.125	125.00	104.00	8.10
500.125	125.00	109.50	6.30
502.125	125.00	114.00	4.20
504.127	127.00	106.00	8.10
500.127	127.00	111.50	6.30
502.127	127.00	116.00	4.20
504.130	130.00	109.00	8.10
500.130	130.00	114.50	6.30
502.130	130.00	119.00	4.20
504.132	132.00	111.00	8.10
500.132	132.00	116.50	6.30
502.132	132.00	121.00	4.20
504.135	135.00	110.50	8.10
500.135	135.00	114.00	8.10
502.135	135.00	119.50	6.30
504.140	140.00	115.50	8.10
500.140	140.00	119.00	8.10
502.140	140.00	124.50	6.30
504.145	145.00	120.50	8.10
500.145	145.00	124.00	8.10
502.145	145.00	129.50	6.30
504.150	150.00	125.50	8.10
500.150	150.00	129.00	8.10
502.150	150.00	134.50	6.30
504.155	155.00	130.50	8.10
500.155	155.00	134.00	8.10
502.155	155.00	139.50	6.30
504.160	160.00	135.50	8.10
500.160	160.00	139.00	8.10
502.160	160.00	144.50	6.30
504.165	165.00	140.50	8.10
500.165	165.00	144.00	8.10
502.165	165.00	149.50	6.30
504.170	170.00	145.50	8.10
500.170	170.00	149.00	8.10
502.170	170.00	154.50	6.30
504.175	175.00	150.50	8.10
500.175	175.00	154.00	8.10
502.175	175.00	159.50	6.30
504.180	180.00	155.50	8.10
500.180	180.00	159.00	8.10
502.180	180.00	164.50	6.30
504.185	185.00	160.50	8.10
500.185	185.00	164.00	8.10
502.185	185.00	169.50	6.30
504.190	190.00	165.50	8.10
500.190	190.00	169.00	8.10

Part number	Bore diameter ØD1 H9	Groove diameter Ød1 h9	Groove width L1 0/+0.20
502.190	190.00	174.50	6.30
504.195	195.00	170.50	8.10
500.195	195.00	174.00	8.10
502.195	195.00	179.50	6.30
504.200	200.00	175.50	8.10
500.200	200.00	179.00	8.10
502.200	200.00	184.50	6.30
504.205	205.00	180.50	8.10
500.205	205.00	184.00	8.10
502.205	205.00	189.50	6.30
504.210	210.00	185.50	8.10
500.210	210.00	189.00	8.10
502.210	210.00	194.50	6.30
504.215	215.00	190.50	8.10
500.215	215.00	194.00	8.10
502.215	215.00	199.50	6.30
504.220	220.00	195.50	8.10
500.220	220.00	199.00	8.10
502.220	220.00	204.50	6.30
504.230	230.00	205.50	8.10
500.230	230.00	209.00	8.10
502.230	230.00	214.50	6.30
504.240	240.00	215.50	8.10
500.240	240.00	219.00	8.10
502.240	240.00	224.50	6.30
504.250	250.00	225.50	8.10
500.250	250.00	229.00	8.10
502.250	250.00	234.50	6.30
504.260	260.00	235.50	8.10
500.260	260.00	239.00	8.10
502.260	260.00	244.50	6.30
504.270	270.00	245.50	8.10
500.270	270.00	249.00	8.10
502.270	270.00	254.50	6.30
504.280	280.00	255.50	8.10
500.280	280.00	259.00	8.10
502.280	280.00	264.50	6.30
504.290	290.00	265.50	8.10
500.290	290.00	269.00	8.10
502.290	290.00	274.50	6.30
504.300	300.00	275.50	8.10
500.300	300.00	279.00	8.10
502.300	300.00	284.50	6.30
504.310	310.00	285.50	8.10
500.310	310.00	289.00	8.10
502.310	310.00	294.50	6.30
504.320	320.00	295.50	8.10
500.320	320.00	299.00	8.10
502.320	320.00	304.50	6.30
504.330	330.00	302.00	9.50
500.330	330.00	305.50	8.10
502.330	330.00	309.00	8.10
504.340	340.00	312.00	9.50
500.340	340.00	315.50	8.10
502.340	340.00	319.00	8.10
504.350	350.00	322.00	9.50
500.350	350.00	325.50	8.10
502.350	350.00	329.00	8.10
504.360	360.00	332.00	9.50
500.360	360.00	335.50	8.10
502.360	360.00	339.00	8.10
504.370	370.00	342.00	9.50

Part number	Bore diameter ØD1 H9	Groove diameter Ød1 h9	Groove width L1 0/+0.20
500.370	370.00	345.50	8.10
502.370	370.00	349.00	8.10
504.380	380.00	352.00	9.50
500.380	380.00	355.50	8.10
502.380	380.00	359.00	8.10
504.390	390.00	362.00	9.50
500.390	390.00	365.50	8.10
502.390	390.00	369.00	8.10
504.400	400.00	372.00	9.50
500.400	400.00	375.50	8.10
502.400	400.00	379.00	8.10
504.410	410.00	382.00	9.50
500.410	410.00	385.50	8.10
502.410	410.00	389.00	8.10
504.420	420.00	392.00	9.50
500.420	420.00	395.50	8.10
502.420	420.00	399.00	8.10
504.430	430.00	402.00	9.50
500.430	430.00	405.50	8.10
502.430	430.00	409.00	8.10
504.440	440.00	412.00	9.50

Part number	Bore diameter ØD1 H9	Groove diameter Ød1 h9	Groove width L1 0/+0.20
500.440	440.00	415.50	8.10
502.440	440.00	419.00	8.10
504.450	450.00	422.00	9.50
500.450	450.00	425.50	8.10
502.450	450.00	429.00	8.10
504.460	460.00	432.00	9.50
500.460	460.00	435.50	8.10
502.460	460.00	439.00	8.10
504.470	470.00	442.00	9.50
500.470	470.00	445.50	8.10
502.470	470.00	449.00	8.10
504.480	480.00	452.00	9.50
500.480	480.00	455.50	8.10
502.480	480.00	459.00	8.10
504.490	490.00	462.00	9.50
500.490	490.00	465.50	8.10
502.490	490.00	469.00	8.10
504.500	500.00	472.00	9.50
500.500	500.00	475.50	8.10
502.500	500.00	479.00	8.10

The figures highlighted in bold correspond to the dimensions for standard ISO 7425/1, with the bore diameters in line with standard ISO 3320. Other intermediate sizes can be provided.



PISTON SEALS

BECA

501-503-505



DESCRIPTION

The BECA 501 - 503 - 505 profiles are single acting composite piston seals composed of a filled PTFE friction ring and pre-tightened rubber O'Ring. Option of connecting the seal to a back-up ring.

ADVANTAGES

Optimal sealing in static and dynamic applications

Low friction coefficient; no stick-slip effect

Excellent abrasion and extrusion resistance

Wide temperature range and excellent chemical resistance, depending on the material selected for the O'Ring

APPLICATIONS

Mobile hydraulics
Injection presses
Machine tools
Presses
Standard cylinders

MATERIALS

Friction ring

Bronze-filled PTFE
Carbon-filled PTFE
Blue GL PTFE

O'Ring

NBR 70 Shore A
FKM 70 Shore A

Other grades of materials are available. Please refer to the materials table on the next page.

TECHNICAL DATA

Temperature	-30°C / +200°C
Pressure	50 MPa
Speed	5 m/s
Media	Mineral hydraulic oils Fire-resistant liquids Biocompatible fluids Water Others (contact our experts)

The figures above indicate the maximum values and may not be cumulated. They may be developed, depending on the materials used.

EXTRUSION GAPS

Radial section S	Radial gap F/2		
	10 MPa	20 MPa	40 MPa
2.45	0.30	0.20	0.15
3.65	0.40	0.25	0.15
5.35	0.50	0.30	0.20
7.55	0.70	0.40	0.25
10.25	0.80	0.60	0.35
12.00	0.90	0.70	0.40
13.65	1.00	0.80	0.50
19.00	1.20	0.90	0.60

SURFACE ROUGHNESS

Roughness	Dynamic surface area	Static surface area	Groove flanks
Ra	0.05 - 0.2 µm	≤1.6 µm	≤3.2 µm
Rz	0.4 - 1.6 µm	≤6.3 µm	≤10.0 µm
Rmax	0.63 - 2.5 µm	≤10.0 µm	≤16.0 µm

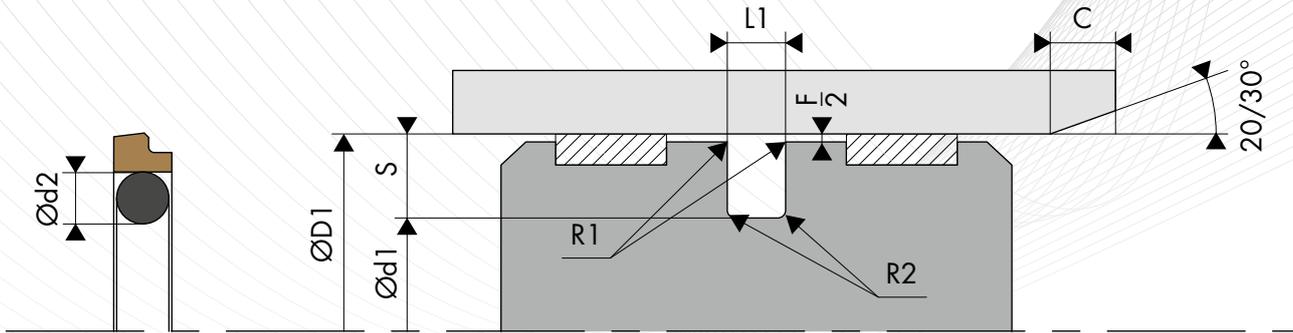
CHAMFERS AND RADIUS

Radial section S	Radius R1	Radius R2	Chamfer C
2.45	0.30	0.40	3.00
3.65	0.30	0.60	3.00
5.35	0.30	1.00	3.00
7.55	0.30	1.30	5.00
10.25	0.30	1.80	6.00
12.00	0.30	1.80	8.00
13.65	0.30	2.50	10.00
19.00	0.30	3.00	12.00

TABLE MATERIALS

Friction ring					O'Ring			Mating surface material	
Standard code	ISO code	Material	Colour	Characteristics	Code	Type of material	Service temperature		
DP	P	Virgin PTFE	White	Resistance to chemical products Impermeability Dielectric Non-stick Low friction coefficient Food industry	K6	NBR 70 Shore A	-30°C/+100°C	Steel Stainless steel Chrome steel Aluminium Bronze Cast iron Treated surface	
					G6	FKM 70 Shore A	-20°C/+200°C		
					C6	EPDM 70 Shore A	-45°C/+150°C		
					F6	VMQ 70 Shore A	-60°C/+200°C		
DC	C	PTFE + 25% Carbon	Grey	Improvements • Wear properties • Compression set Good resistance to chemical products Thermal and electrical conductivity Anti-static High-performing in compression-based dynamic applications	K6	NBR 70 Shore A	-30°C/+100°C		
					G6	FKM 70 Shore A	-20°C/+200°C		
					C6	EPDM 70 Shore A	-45°C/+150°C		
CG	C	PTFE + 23% Carbon + 2% Graphite	Black	High-performing in compression-based dynamic applications	K6	NBR 70 Shore A	-30°C/+100°C		
					G6	FKM 70 Shore A	-20°C/+200°C		
					C6	EPDM 70 Shore A	-45°C/+150°C		
DV	V	PTFE + 25 % Glass	Blue	Improvements • Wear properties • Mechanical strength Slightly more abrasive, however, this is corrected by adding MOS2 Maintains its chemical and dielectric properties Well-suited to applications with rotational and simultaneous alternating movements	K6	NBR 70 Shore A	-30°C/+100°C		Steel Chrome steel Cast iron
					G6	FKM 70 Shore A	-20°C/+200°C		
VM	M	PTFE + 15 % Glass + 5% MOS2	Grey	Well-suited to applications with rotational and simultaneous alternating movements	K6	NBR 70 Shore A	-30°C/+100°C		
					G6	FKM 70 Shore A	-20°C/+200°C		
DX	X	PTFE GL Blue + Glass + Metal oxides	Turquoise blue	Resistance to compression Resistance to wear Excellent chemical stability Good thermal conductivity	K6	NBR 70 Shore A	-30°C/+100°C		
					G6	FKM 70 Shore A	-20°C/+200°C		
DG	G	PTFE + 15% Graphite	Black	Improvements • Wear properties Reduced wear on metal parts Self-lubricating Thermal and electrical conductivity Low permeability Good friction coefficient Anti-static High performing in dynamic self-lubricating applications	K6	NBR 70 Shore A	-30°C/+100°C	Steel Stainless steel Chrome steel Aluminium Bronze Cast iron Treated surface	
					G6	FKM 70 Shore A	-20°C/+200°C		
					C6	EPDM 70 Shore A	-45°C/+150°C		
K1	K	PTFE + 10% Ekonol	Light brown	Improvements • Better abrasion resistance • Better dimensional stability at high temperatures Use up to +300°C Good friction coefficient and low permeability	K6	NBR 70 Shore A	-30°C/+100°C		
					G6	FKM 70 Shore A	-20°C/+200°C		
					C6	EPDM 70 Shore A	-45°C/+150°C		
K2	K	PTFE + 20% Ekonol	Light brown	Good friction coefficient and low permeability	K6	NBR 70 Shore A	-30°C/+100°C		
					G6	FKM 70 Shore A	-20°C/+200°C		
					C6	EPDM 70 Shore A	-45°C/+150°C		
DB	B	PTFE + 60% Bronze	Dark brown	Improvements • Wear properties • Warping resistance and creep strength • Compression resistance Self-lubricating Electrical and thermal conductivity Does not alter the metal parts Reduced hold with certain chemical products Used for high-compression dynamic seals and has a low level of wear	K6	NBR 70 Shore A	-30°C/+100°C	Steel Chrome steel Cast iron	
					G6	FKM 70 Shore A	-20°C/+200°C		
B4	B	PTFE + 40% Bronze	Dark brown	Used for high-compression dynamic seals and has a low level of wear	K6	NBR 70 Shore A	-30°C/+100°C		
					G6	FKM 70 Shore A	-20°C/+200°C		
HG	HG	PE-UHMW	White or off-white	Excellent wear resistance on contact with water and air	K6	NBR 70 Shore A	-30°C/+80°C	Steel Stainless steel Chrome steel Aluminium Bronze Cast iron Treated surface	
PU	U	Polyurethane	Blue	Strong mechanical resistance Good resistance to wear and abrasion High elasticity modulus	K6	NBR 70 Shore A	-30°C/+90°C		
PUHT	U	High-temperature polyurethane	White or off-white	Good flexibility Very good resistance to ozone and oxidation	K6	NBR 70 Shore A	-30°C/+100°C		

Other grades of materials are available depending on your specificities.



○ INSTALLATION DIMENSIONS

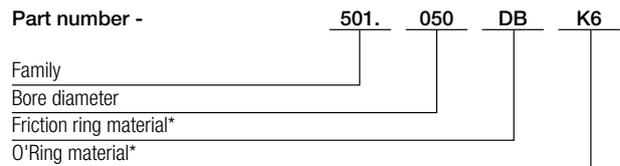
Bore diameter ØD1 H9			Groove diameter	Groove width	Radial section	O'Ring cross-section
BECA 501 Standard range	BECA 503 Light range	BECA 505 Heavy-duty range	Ød1 h9	L1 0/+0.20	S	Ød2
8.0 - 14.9	15.0 - 39.9	---	D1 - 4.90	2.20	2.45	1.78
15.0 - 39.9	40.0 - 79.9	---	D1 - 7.30	3.20	3.65	2.62
40.0 - 79.9	80.0 - 132.9	15.0 - 39.9	D1 - 10.70	4.20	5.35	3.53
80.0 - 132.9	133.0 - 329.9	40.0 - 79.9	D1 - 15.10	6.30	7.55	5.33
133.0 - 329.9	330.0 - 669.9	80.0 - 132.9	D1 - 20.50	8.10	10.25	6.99
330.0 - 669.9	670.0 - 999.9	133.0 - 329.9	D1 - 24.00	8.10	12.00	6.99
670.0 - 999.9	1000.0 - **	330.0 - 669.9	D1 - 27.30	9.50	13.65	8.40
1000.0 - **	---	1000.0 - **	D1 - 38.00	13.80	19.00	12.00

For special applications > 40 MPa, we recommend using an H8/f8 tolerance (bore/piston) or selecting other, more suitable materials. Please contact our experts.

○ EXAMPLE OF CODIFICATION

STANDARD CODIFICATION

Materials _____ : Friction ring, PTFE + 60% Bronze - Code DB
 _____ : NBR 70 Shore A O'Ring - Code K6
Bore diameter _____ : ØD1 = 50.00 mm
Groove diameter _____ : Ød1 + 39.30 mm
Part number _____ : 501. 050DBK6



* The codes that define the materials are set out in the materials table on the previous page.

DIMENSIONS

Part number	Bore diameter ØD1 H9	Groove diameter Ød1 h9	Groove width L1 0/+0.20
501.008	8.00	3.10	2.20
501.009	9.00	4.10	2.20
501.010	10.00	5.10	2.20
501.012	12.00	7.10	2.20
501.014	14.00	9.10	2.20
503.015	15.00	10.10	2.20
503.016	16.00	11.10	2.20
505.018	18.00	7.30	4.20
501.018	18.00	10.70	3.20
503.018	18.00	13.10	2.20
505.020	20.00	9.30	4.20
501.020	20.00	12.70	3.20
503.020	20.00	15.10	2.20
505.022	22.00	11.30	4.20
501.022	22.00	14.70	3.20
503.022	22.00	17.10	2.20
505.025	25.00	14.30	4.20
501.025	25.00	17.70	3.20
503.025	25.00	20.10	2.20
505.028	28.00	17.30	4.20
501.028	28.00	20.70	3.20
505.030	30.00	19.30	4.20
501.030	30.00	22.70	3.20
505.032	32.00	21.30	4.20
501.032	32.00	24.70	3.20
505.035	35.00	24.30	4.20
501.035	35.00	27.70	3.20
505.038	38.00	27.30	4.20
501.038	38.00	30.70	3.20
505.040	40.00	24.90	6.30
501.040	40.00	29.30	4.20
503.040	40.00	32.70	3.20
505.042	42.00	26.90	6.30
501.042	42.00	31.30	4.20
503.042	42.00	34.70	3.20
505.045	45.00	29.90	6.30
501.045	45.00	34.30	4.20
503.045	45.00	37.70	3.20
505.048	48.00	32.90	6.30
501.048	48.00	37.30	4.20
503.048	48.00	40.70	3.20
505.050	50.00	34.90	6.30
501.050	50.00	39.30	4.20
503.050	50.00	42.70	3.20
505.052	52.00	36.90	6.30
501.052	52.00	41.30	4.20
503.052	52.00	44.70	3.20
505.055	55.00	39.90	6.30
501.055	55.00	44.30	4.20

Part number	Bore diameter ØD1 H9	Groove diameter Ød1 h9	Groove width L1 0/+0.20
503.055	55.00	47.70	3.20
505.058	58.00	42.90	6.30
501.058	58.00	47.30	4.20
503.058	58.00	50.70	3.20
505.060	60.00	44.90	6.30
503.060	60.00	49.30	4.20
505.062	62.00	46.90	6.30
503.062	62.00	51.30	4.20
505.063	63.00	47.90	6.30
503.063	63.00	52.30	4.20
505.065	65.00	49.90	6.30
503.065	65.00	54.30	4.20
505.070	70.00	54.90	6.30
503.070	70.00	59.30	4.20
505.072	72.00	56.90	6.30
503.072	72.00	61.30	4.20
505.075	75.00	59.90	6.30
503.075	75.00	64.30	4.20
505.078	78.00	62.90	6.30
503.078	78.00	67.30	4.20
505.080	80.00	59.50	8.10
501.080	80.00	64.90	6.30
503.080	80.00	69.30	4.20
505.082	82.00	61.50	8.10
501.082	82.00	66.90	6.30
503.082	82.00	71.30	4.20
505.085	85.00	64.50	8.10
501.085	85.00	69.90	6.30
503.085	85.00	74.30	4.20
505.090	90.00	69.50	8.10
501.090	90.00	74.90	6.30
503.090	90.00	79.30	4.20
505.095	95.00	74.50	8.10
501.095	95.00	79.90	6.30
503.095	95.00	84.30	4.20
505.100	100.00	79.50	8.10
501.100	100.00	84.90	6.30
503.100	100.00	89.30	4.20
505.105	105.00	84.50	8.10
501.105	105.00	89.90	6.30
503.105	105.00	94.30	4.20
505.110	110.00	89.50	8.10
501.110	110.00	94.90	6.30
503.110	110.00	99.30	4.20
505.115	115.00	94.50	8.10
501.115	115.00	99.90	6.30
503.115	115.00	104.30	4.20
505.120	120.00	99.50	8.10
501.120	120.00	104.90	6.30

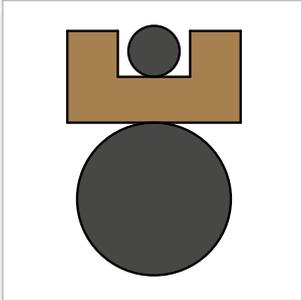
Part number	Bore diameter ØD1 H9	Groove diameter Ød1 h9	Groove width L1 0/+0.20
503.120	120.00	109.30	4.20
505.125	125.00	104.50	8.10
501.125	125.00	109.90	6.30
503.125	125.00	114.30	4.20
505.130	130.00	109.50	8.10
501.130	130.00	114.90	6.30
503.130	130.00	119.30	4.20
501.135	135.00	114.50	8.10
503.135	135.00	119.90	6.30
501.140	140.00	119.50	8.10
503.140	140.00	124.90	6.30
501.145	145.00	124.50	8.10
503.145	145.00	129.90	6.30
501.150	150.00	129.50	8.10
503.150	150.00	134.90	6.30
501.155	155.00	134.50	8.10
503.155	155.00	139.90	6.30
501.160	160.00	139.50	8.10
503.160	160.00	144.90	6.30
501.165	165.00	144.50	8.10
503.165	165.00	149.90	6.30
501.170	170.00	149.50	8.10
503.170	170.00	154.90	6.30
501.175	175.00	154.50	8.10
503.175	175.00	159.90	6.30
501.180	180.00	159.50	8.10
503.180	180.00	164.90	6.30
501.190	190.00	169.50	8.10
503.190	190.00	174.90	6.30
505.200	200.00	176.00	8.10
501.200	200.00	179.50	8.10
503.200	200.00	184.90	6.30
505.210	210.00	186.00	8.10
501.210	210.00	189.50	8.10
503.210	210.00	194.90	6.30
505.220	220.00	196.00	8.10
501.220	220.00	199.50	8.10
503.220	220.00	204.90	6.30
505.230	230.00	206.00	8.10
501.230	230.00	209.50	8.10
503.230	230.00	214.90	6.30
505.240	240.00	216.00	8.10
501.240	240.00	219.50	8.10
503.240	240.00	224.90	6.30
505.250	250.00	226.00	8.10
501.250	250.00	229.50	8.10
503.250	250.00	234.90	6.30
505.260	260.00	236.00	8.10
501.260	260.00	239.50	8.10

Part number	Bore diameter ØD1 H9	Groove diameter Ød1 h9	Groove width L1 0/+0.20
505.270	270.00	246.00	8.10
501.270	270.00	249.50	8.10
505.280	280.00	256.00	8.10
501.280	280.00	259.50	8.10
505.290	290.00	266.00	8.10
501.290	290.00	269.50	8.10
505.300	300.00	276.00	8.10
501.300	300.00	279.50	8.10
505.310	310.00	286.00	8.10
501.310	310.00	289.50	8.10
505.320	320.00	296.00	8.10
501.320	320.00	299.50	8.10
505.330	330.00	302.70	9.50
501.330	330.00	306.00	8.10
503.330	330.00	309.50	8.10
505.340	340.00	312.70	9.50
501.340	340.00	316.00	8.10
503.340	340.00	319.50	8.10
505.350	350.00	322.70	9.50
501.350	350.00	326.00	8.10
503.350	350.00	329.50	8.10
505.360	360.00	332.70	9.50
501.360	360.00	336.00	8.10
503.360	360.00	339.50	8.10
505.370	370.00	342.70	9.50
501.370	370.00	346.00	8.10
503.370	370.00	349.50	8.10
505.380	380.00	352.70	9.50
501.380	380.00	356.00	8.10
503.380	380.00	359.50	8.10
505.390	390.00	362.70	9.50
501.390	390.00	366.00	8.10
503.390	390.00	369.50	8.10
505.400	400.00	372.70	9.50
501.400	400.00	376.00	8.10
503.400	400.00	379.50	8.10
505.410	410.00	382.70	9.50
501.410	410.00	386.00	8.10
503.410	410.00	389.50	8.10
505.420	420.00	392.70	9.50
501.420	420.00	396.00	8.10
503.420	420.00	399.50	8.10
505.430	430.00	402.70	9.50
501.430	430.00	406.00	8.10
503.430	430.00	409.50	8.10
505.440	440.00	412.70	9.50
501.440	440.00	416.00	8.10
503.440	440.00	419.50	8.10
505.450	450.00	422.70	9.50

Part number	Bore diameter ØD1 H9	Groove diameter Ød1 h9	Groove width L1 0/+0.20
501.450	450.00	426.00	8.10
503.450	450.00	429.50	8.10
505.460	460.00	432.70	9.50
501.460	460.00	436.00	8.10
503.460	460.00	439.50	8.10
505.470	470.00	442.70	9.50
501.470	470.00	446.00	8.10
503.470	470.00	449.50	8.10
505.480	480.00	452.70	9.50

Part number	Bore diameter ØD1 H9	Groove diameter Ød1 h9	Groove width L1 0/+0.20
501.480	480.00	456.00	8.10
503.480	480.00	459.50	8.10
505.490	490.00	462.70	9.50
501.490	490.00	466.00	8.10
503.490	490.00	469.50	8.10
505.500	500.00	472.70	9.50
501.500	500.00	476.00	8.10
503.500	500.00	479.50	8.10

The figures highlighted in bold correspond to the bore diameters that are recommended by standard ISO 3320. Other intermediate sizes can be provided.



PISTON SEALS

BECA

507-508



DESCRIPTION

The BECA 507-508 profiles are double acting composite piston seals composed of a filled PTFE friction ring, static O'Ring and dynamic rubber O'Ring. They can be assembled in grooves according to standard ISO 7425/1. Option of connecting the seal to 1 or 2 back-up rings.

ADVANTAGES

Optimal sealing for separating two fluids
 Low friction coefficient;
 no stick-slip effect
 Excellent abrasion resistance
 Wide temperature range and excellent chemical resistance, depending on the material selected for the O'Rings

APPLICATIONS

Mobile hydraulics
 Machine tools
 Presses
 Hydro-pneumatic suspension systems

MATERIALS

Friction ring

Bronze-filled PTFE
 Carbon-filled PTFE
 Blue GL PTFE

O'Rings

NBR 70 Shore A
 FKM 70 Shore A

Other grades of materials are available. Please refer to the materials table on the next page.

TECHNICAL DATA

Temperature	-30°C / +200°C
Pressure	50 MPa
Speed	2 m/s
Media	Mineral hydraulic oils Fire-resistant liquids Biocompatible fluids Water Others (contact our experts)

The figures above indicate the maximum values and may not be cumulated. They may be developed, depending on the materials used.

EXTRUSION GAPS

Radial section S	Radial gap F/2		
	10 MPa	20 MPa	40 MPa
5.50	0.25	0.15	0.10
7.75	0.30	0.20	0.15
10.50	0.30	0.20	0.15
12.25	0.30	0.20	0.15
14.00	0.45	0.30	0.25
17.50	0.55	0.40	0.35

SURFACE ROUGHNESS

Roughness	Dynamic surface area	Static surface area	Groove flanks
Ra	0.05 - 0.2 µm	≤1.6 µm	≤3.2 µm
Rz	0.4 - 1.6 µm	≤6.3 µm	≤10.0 µm
Rmax	0.63 - 2.5 µm	≤10.0 µm	≤16.0 µm

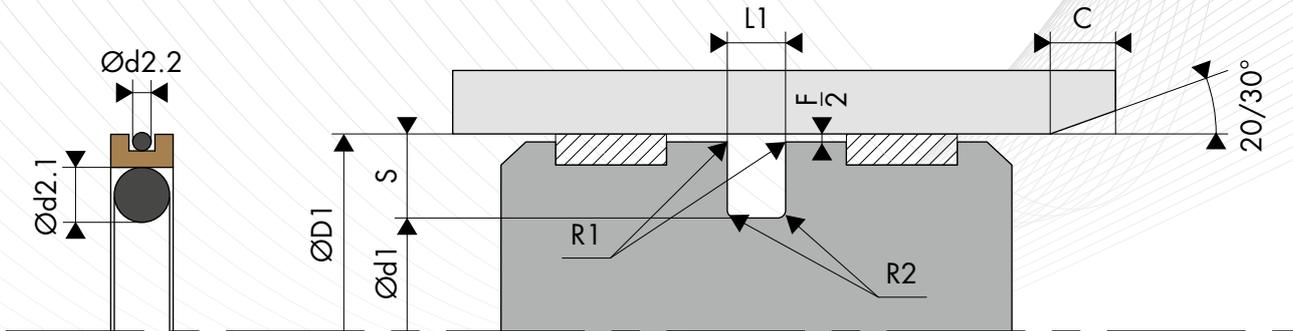
CHAMFERS AND RADIUS

Radial section S	Radius R1	Radius R2	Chamfer C
5.50	0.30	1.00	3.00
7.75	0.30	1.30	3.00
10.50	0.30	1.80	5.00
12.25	0.30	1.80	6.00
14.00	0.30	2.50	8.00
17.50	0.30	3.00	10.00

TABLE MATERIALS

Friction ring					O'Rings			Mating surface material	
Standard code	ISO code	Material	Colour	Characteristics	Code	Type of material	Service temperature		
DP	P	Virgin PTFE	White	Resistance to chemical products Impermeability Dielectric Non-stick Low friction coefficient Food industry	K6	NBR 70 Shore A	-30°C/+100°C	Steel Stainless steel Chrome steel Aluminium Bronze Cast iron Treated surface	
					G6	FKM 70 Shore A	-20°C/+200°C		
					C6	EPDM 70 Shore A	-45°C/+150°C		
					F6	VMQ 70 Shore A	-60°C/+200°C		
DC	C	PTFE + 25% Carbon	Grey	Improvements • Wear properties • Compression set Good resistance to chemical products Thermal and electrical conductivity Anti-static High-performing in compression-based dynamic applications	K6	NBR 70 Shore A	-30°C/+100°C		
					G6	FKM 70 Shore A	-20°C/+200°C		
					C6	EPDM 70 Shore A	-45°C/+150°C		
CG	C	PTFE + 23% Carbon + 2% Graphite	Black	Thermal and electrical conductivity Anti-static High-performing in compression-based dynamic applications	K6	NBR 70 Shore A	-30°C/+100°C		
					G6	FKM 70 Shore A	-20°C/+200°C		
					C6	EPDM 70 Shore A	-45°C/+150°C		
DV	V	PTFE + 25 % Glass	Blue	Improvements • Wear properties • Mechanical strength Slightly more abrasive, however, this is corrected by adding MOS2 Maintains its chemical and dielectric properties Well-suited to applications with rotational and simultaneous alternating movements	K6	NBR 70 Shore A	-30°C/+100°C		Steel Chrome steel Cast iron
					G6	FKM 70 Shore A	-20°C/+200°C		
VM	M	PTFE + 15 % Glass + 5% MOS2	Grey	Well-suited to applications with rotational and simultaneous alternating movements	K6	NBR 70 Shore A	-30°C/+100°C		
					G6	FKM 70 Shore A	-20°C/+200°C		
DX	X	PTFE GL Blue + Glass + Metal oxides	Turquoise blue	Resistance to compression Resistance to wear Excellent chemical stability Good thermal conductivity	K6	NBR 70 Shore A	-30°C/+100°C		
					G6	FKM 70 Shore A	-20°C/+200°C		
DG	G	PTFE + 15% Graphite	Black	Improvements • Wear properties Reduced wear on metal parts Self-lubricating Thermal and electrical conductivity Low permeability Good friction coefficient Anti-static High performing in dynamic self-lubricating applications	K6	NBR 70 Shore A	-30°C/+100°C	Steel Stainless steel Chrome steel Aluminium Bronze Cast iron Treated surface	
					G6	FKM 70 Shore A	-20°C/+200°C		
					C6	EPDM 70 Shore A	-45°C/+150°C		
K1	K	PTFE + 10% Ekonol	Light brown	Improvements • Better abrasion resistance • Better dimensional stability at high temperatures Use up to +300°C Good friction coefficient and low permeability	K6	NBR 70 Shore A	-30°C/+100°C		
					G6	FKM 70 Shore A	-20°C/+200°C		
					C6	EPDM 70 Shore A	-45°C/+150°C		
K2	K	PTFE + 20% Ekonol	Light brown	Use up to +300°C Good friction coefficient and low permeability	K6	NBR 70 Shore A	-30°C/+100°C		
					G6	FKM 70 Shore A	-20°C/+200°C		
					C6	EPDM 70 Shore A	-45°C/+150°C		
DB	B	PTFE + 60% Bronze	Dark brown	Improvements • Wear properties • Warping resistance and creep strength • Compression resistance Self-lubricating Electrical and thermal conductivity Does not alter the metal parts Reduced hold with certain chemical products Used for high-compression dynamic seals and has a low level of wear	K6	NBR 70 Shore A	-30°C/+100°C	Steel Chrome steel Cast iron	
					G6	FKM 70 Shore A	-20°C/+200°C		
B4	B	PTFE + 40% Bronze	Dark brown	Used for high-compression dynamic seals and has a low level of wear	K6	NBR 70 Shore A	-30°C/+100°C		
					G6	FKM 70 Shore A	-20°C/+200°C		

Other grades of materials are available depending on your specificities.



○ INSTALLATION DIMENSIONS

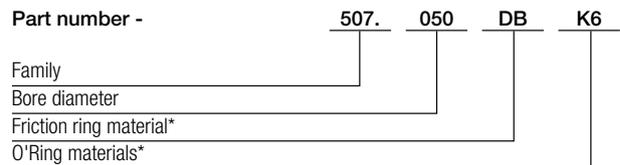
Bore diameter ØD1 H9		Groove diameter	Groove width	Radial section	O'Ring cross-section	O'Ring / X'Ring cross-section
BECA 507 Standard range	BECA 508 Light range	Ød1 h9	L1 0/+0.20	S	Ød2.1	Ød2.2
15.0 - 39.9	40.0 - 79.9	D1 - 11.00	4.20	5.50	3.53	1.78
40.0 - 79.9	80.0 - 132.9	D1 - 15.50	6.30	7.75	3.53	1.78
80.0 - 132.9	133.0 - 252.9	D1 - 21.00	8.10	10.50	6.99	2.62
133.0 - 252.9	---	D1 - 24.50	8.10	12.25	6.99	2.62
253.0 - 462.9	---	D1 - 28.00	9.50	14.00	8.40	3.53
463.0 - 700.0	---	D1 - 35.00	11.50	17.50	10.00	3.53

For special applications > 40 MPa, we recommend using an H8/f8 tolerance (bore/piston) or selecting other, more suitable materials. Please contact our experts.

○ EXAMPLE OF CODIFICATION

STANDARD CODIFICATION

Materials _____ : Friction ring, PTFE + 60% Bronze - Code DB
 _____ : NBR 70 Shore A O'Rings - Code K6
Bore diameter _____ : ØD1 = 50.00 mm
Groove diameter _____ : Ød1 + 34.50 mm
Part number _____ : 507. 050DBK6



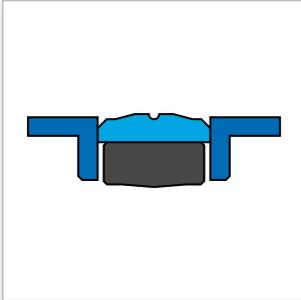
* The codes that define the materials are set out in the materials table on the previous page.

DIMENSIONS

Part number	Bore diameter ØD1 H9	Groove diameter Ød1 h9	Groove width L1 0/+0.2
507.015	15.00	4.00	4.20
507.016	16.00	5.00	4.20
507.018	18.00	7.00	4.20
507.020	20.00	9.00	4.20
507.022	22.00	11.00	4.20
507.025	25.00	14.00	4.20
507.028	28.00	17.00	4.20
507.030	30.00	19.00	4.20
507.032	32.00	21.00	4.20
507.035	35.00	24.00	4.20
507.038	38.00	22.50	6.30
507.040	40.00	24.50	6.30
508.040	40.00	29.00	4.20
507.042	42.00	26.50	6.30
508.042	42.00	31.00	4.20
507.045	45.00	29.50	6.30
508.045	45.00	34.00	4.20
507.048	48.00	32.50	6.30
508.048	48.00	37.00	4.20
507.050	50.00	34.50	6.30
508.050	50.00	39.00	4.20
507.052	52.00	36.50	6.30
508.052	52.00	41.00	4.20
507.055	55.00	39.50	6.30
508.055	55.00	44.00	4.20
507.058	58.00	42.50	6.30
508.058	58.00	47.00	4.20
507.060	60.00	44.50	6.30
508.060	60.00	49.00	4.20
507.062	62.00	46.50	6.30
508.062	62.00	51.00	4.20
507.063	63.00	47.50	6.30
508.063	63.00	52.00	4.20
507.065	65.00	49.50	6.30
508.065	65.00	54.00	4.20
507.070	70.00	54.50	6.30
508.070	70.00	59.00	4.20
507.072	72.00	56.50	6.30
508.072	72.00	61.00	4.20
507.075	75.00	59.50	6.30
508.075	75.00	64.00	4.20
507.078	78.00	62.50	6.30
508.078	78.00	67.00	4.20
507.080	80.00	59.00	8.10
508.080	80.00	64.50	6.30
507.082	82.00	61.00	8.10
508.082	82.00	66.50	6.30
507.085	85.00	64.00	8.10
508.085	85.00	69.50	6.30
507.090	90.00	69.00	8.10
508.090	90.00	74.50	6.30
507.095	95.00	74.00	8.10
508.095	95.00	79.50	6.30
507.100	100.00	79.00	8.10
508.100	100.00	84.50	6.30
507.105	105.00	84.00	8.10
508.105	105.00	89.50	6.30
507.110	110.00	89.00	8.10
508.110	110.00	94.50	6.30
507.115	115.00	94.00	8.10
508.115	115.00	99.50	6.30
507.120	120.00	99.00	8.10
508.120	120.00	104.50	6.30
507.125	125.00	104.00	8.10

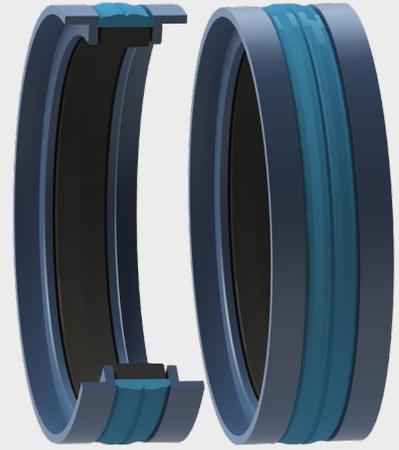
Part number	Bore diameter ØD1 H9	Groove diameter Ød1 h9	Groove width L1 0/+0.2
508.125	125.00	109.50	6.30
507.130	130.00	109.00	8.10
508.130	130.00	114.50	6.30
507.135	135.00	110.50	8.10
508.135	135.00	114.00	8.10
507.140	140.00	115.50	8.10
508.140	140.00	119.00	8.10
507.145	145.00	120.50	8.10
508.145	145.00	124.00	8.10
507.150	150.00	125.50	8.10
508.150	150.00	129.00	8.10
507.155	155.00	130.50	8.10
508.155	155.00	134.00	8.10
507.160	160.00	135.50	8.10
508.160	160.00	139.00	8.10
507.165	165.00	140.50	8.10
508.165	165.00	144.00	8.10
507.170	170.00	145.50	8.10
508.170	170.00	149.00	8.10
507.175	175.00	150.50	8.10
508.175	175.00	154.00	8.10
507.180	180.00	155.50	8.10
508.180	180.00	159.00	8.10
507.190	190.00	165.50	8.10
508.190	190.00	169.00	8.10
507.200	200.00	175.50	8.10
508.200	200.00	179.00	8.10
507.210	210.00	185.50	8.10
508.210	210.00	189.00	8.10
507.220	220.00	195.50	8.10
508.220	220.00	199.00	8.10
507.230	230.00	205.50	8.10
508.230	230.00	209.00	8.10
507.240	240.00	215.50	8.10
508.240	240.00	219.00	8.10
507.250	250.00	225.50	8.10
508.250	250.00	229.00	8.10
507.260	260.00	232.00	9.50
507.270	270.00	242.00	9.50
507.280	280.00	252.00	9.50
507.290	290.00	262.00	9.50
507.300	300.00	272.00	9.50
507.310	310.00	282.00	9.50
507.320	320.00	292.00	9.50
507.330	330.00	302.00	9.50
507.340	340.00	312.00	9.50
507.350	350.00	322.00	9.50
507.360	360.00	332.00	9.50
507.370	370.00	342.00	9.50
507.380	380.00	352.00	9.50
507.390	390.00	362.00	9.50
507.400	400.00	372.00	9.50
507.410	410.00	382.00	9.50
507.420	420.00	392.00	9.50
507.430	430.00	402.00	9.50
507.440	440.00	412.00	9.50
507.450	450.00	422.00	9.50
507.460	460.00	432.00	9.50
507.470	470.00	435.00	11.50
507.480	480.00	445.00	11.50
507.490	490.00	455.00	11.50
507.500	500.00	465.00	11.50

The figures highlighted in bold correspond to the dimensions for standard ISO 7425/1, with the bore diameters in line with standard ISO 3320. Other intermediate sizes can be provided.



PISTON SEALS

BECA 510



DESCRIPTION

The BECA 510 profile is a high-performing, double acting compact piston seal composed of two POM wear/back-up rings, a polyurethane friction ring for dynamic applications and a flexible pre-tightened NBR ring. It can be assembled in a groove according to standard ISO 6547.

ADVANTAGES

- Excellent wear resistance
- Very low compression set
- Closed groove assembly

APPLICATIONS

- Construction equipment
- Lifting equipment
- Hydraulic cylinders

MATERIALS

Profiled seal

NBR 80 Shore A

Friction ring

PU 93 Shore A - Blue

PU 96 Shore A - Blue

High temp. PU 96 Shore A - Beige

Wear/back-up rings

Polyoxymethylene - POM

TECHNICAL DATA

Temperature	-30°C / +100°C
Pressure	40 MPa
Speed	0.5 m/sec
Media	Mineral hydraulic oils

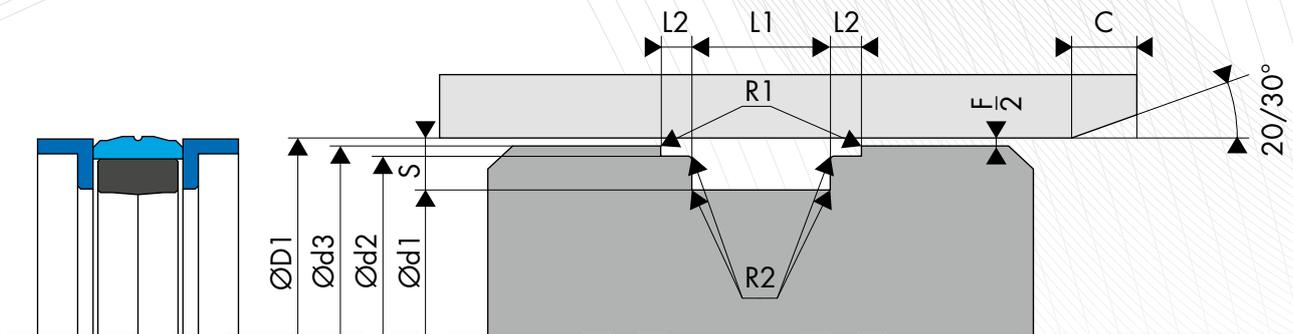
The figures above indicate the maximum values and may not be cumulated. They may be developed, depending on the materials used.

SURFACE ROUGHNESS

Roughness	Dynamic surface area	Static surface area	Groove flanks
Ra	0.1 - 0.4 μm	$\leq 1.6 \mu\text{m}$	$\leq 3.2 \mu\text{m}$
Rz	0.63 - 2.5 μm	$\leq 6.3 \mu\text{m}$	$\leq 10.0 \mu\text{m}$
Rmax	1.0 - 4.0 μm	$\leq 10.0 \mu\text{m}$	$\leq 16.0 \mu\text{m}$

CHAMFERS AND RADIUS

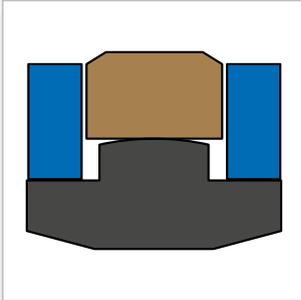
Radial section S	Radius R1	Radius R2	Chamfer C
4.00	0.40	0.40	2.50
5.00	0.40	0.40	3.00
7.50	0.40	0.40	4.50
10.00	0.80	0.80	5.50
15.00	0.80	0.80	8.00



○ DIMENSIONS

Part number	Bore diameter ØD1 H9	Groove diameter			Groove width	
		Ød1 h9	Ød2 h9	Ød3 h11	L1 0/+0.4	L2 0/+0.15
510.3025AP9	25.00	405.74	0/+0.10	24.00	10.00	4.00
510.3032AP9	32.00	24.00	29.00	31.00	10.00	4.00
510.3040AP9	40.00	32.00	37.00	39.00	10.00	4.00
510.3050AP9	50.00	40.00	47.00	49.00	12.50	4.00
510.3063AP9	63.00	53.00	60.00	62.00	12.50	4.00
510.3080AP9	80.00	65.00	76.00	78.50	20.00	5.00
510.3100AP9	100.00	85.00	96.00	98.50	20.00	5.00
510.3125AP9	125.00	105.00	120.00	123.00	25.00	6.30
510.3140AP9	140.00	120.00	135.00	138.00	25.00	6.30
510.3160AP9	160.00	140.00	155.00	158.00	25.00	6.30
510.3180AP9	180.00	150.00	172.00	178.00	36.00	12.50
510.3200AP9	200.00	170.00	192.00	197.00	36.00	12.50
510.3250AP9	250.00	220.00	242.00	247.00	36.00	12.50
510.3320AP9	320.00	290.00	312.00	317.00	36.00	12.50
510.3400AP9	400.00	360.00	392.00	397.00	50.00	16.00
510.3500AP9	500.00	460.00	492.00	497.00	50.00	16.00

The figures highlighted in bold correspond to the dimensions for standard ISO 6547, with the bore diameters in line with standard ISO 3320. Other intermediate sizes can be provided.



PISTON SEALS

BECA 512



DESCRIPTION

The BECA 512 profile is a high-performing, double acting compact piston seal composed of a dynamic bronze-filled PTFE friction ring, flexible pre-tightened NBR ring and two POM back-up rings.

ADVANTAGES

- Low friction coefficient; no stick-slip effect
- Increase in possible extrusion gaps
- Excellent extrusion resistance even during pressure peaks
- Excellent abrasion resistance
- Assembled by deformation

APPLICATIONS

Mobile hydraulics
Hydraulic cylinders

MATERIALS

Profiled seal

NBR 80 Shore A
FKM 80 Shore A

Friction ring

Bronze-filled PTFE

Back-up rings

Polyoxymethylene - POM

Other grades of materials are available. Please refer to the materials table on the next page.

TECHNICAL DATA

Temperature	-30°C / +115°C depending on the material selected
Pressure	50 MPa
Speed	1.5 m/s
Media	Mineral hydraulic oils Glycol/oil emulsions Water/oil

The figures above indicate the maximum values and may not be cumulated. They may be developed, depending on the materials used.

EXTRUSION GAPS

Pressure MPa	Radial gap F/2
10 MPa	0.50
25 MPa	0.50
35 MPa	0.40
40 MPa	0.30
50 MPa	0.30

SURFACE ROUGHNESS

Roughness	Dynamic surface area	Static surface area	Groove flanks
Ra	0.05 - 0.2 µm	≤1.6 µm	≤3.2 µm
Rz	0.4 - 1.6 µm	≤6.3 µm	≤10.0 µm
Rmax	0.63 - 2.5 µm	≤10.0 µm	≤16.0 µm

CHAMFERS AND RADIUS

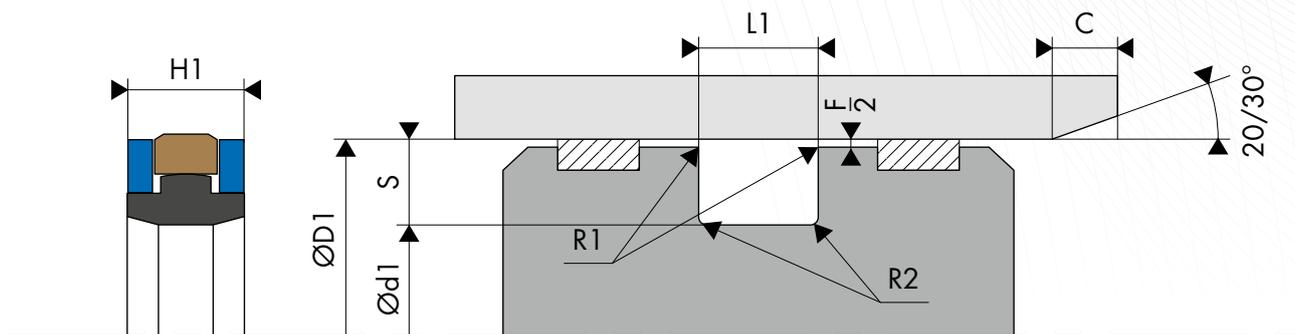
Radial section S	Radius R1	Radius R2	Chamfer C
5.00	0.20	0.70	2.50
7.50	0.20	1.20	5.00
11.50	0.20	1.80	8.00
14.00	0.20	2.50	10.00

○ TABLE MATERIALS

Friction ring			Flexible ring			Mating surface material
Standard code	Type of material	Colour	Code	Type of material	Service temperature	
DB	PTFE + 60% Bronze	Dark brown	K8	NBR 80 Shore A	-30°C/+100°C	Steel Chrome steel Cast iron
			G8	FKM 80 Shore A	-20°C / +115°C*	

Other grades of materials are available depending on your specificities.

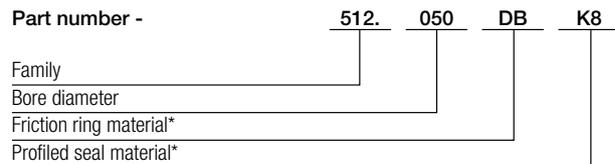
* Temperature limited due to the combination of polyoxymethylene (POM) back-up rings



○ EXAMPLE OF CODIFICATION

STANDARD CODIFICATION

Materials _____ : Friction ring, PTFE + 60% Bronze - Code DB
 _____ : NBR 80 Shore A profiled seal - Code K8
 _____ : Polyoxymethylene (POM) back-up ring - Code HC
 Bore diameter _____ : ØD1 = 50.00 mm
 Groove diameter _____ : Ød1 + 36.00 mm
 Part number _____ : 512. 050DBK8



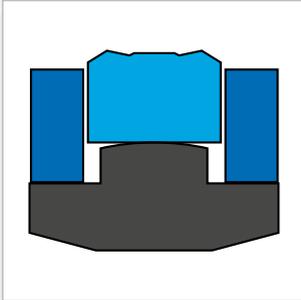
* The codes that define the materials are set out in the materials table on the previous page.

○ DIMENSIONS

Part number	Bore diameter ØD1 H9	Groove diameter Ød1 h9	Seal height H1	Groove width L1 0/+0.20
512.040	40.00	30.00	8.50	9.00
512.045	45.00	35.00	8.50	9.00
512.050	50.00	36.00	8.50	9.00
512.S55	55.00	41.00	8.50	9.00
512.060	60.00	46.00	8.50	9.00
512.063	63.00	48.00	10.50	11.00
512.065	65.00	50.00	10.50	11.00
512.070	70.00	55.00	10.50	11.00
512.S75	75.00	60.00	10.50	11.00
512.080	80.00	65.00	10.50	11.00
512.085	85.00	70.00	10.50	11.00
512.090	90.00	75.00	10.50	11.00
512.095	95.00	80.00	10.50	11.00
512.100	100.00	85.00	12.00	12.50
512.105	105.00	90.00	12.00	12.50
512.110	110.00	95.00	12.00	12.50
512.115	115.00	100.00	12.00	12.50
512.120	120.00	105.00	12.00	12.50
512.125	125.00	102.00	15.50	16.00
512.130	130.00	107.00	15.50	16.00
512.S130	130.00	116.00	17.00	17.50
512.135	135.00	112.00	15.50	16.00

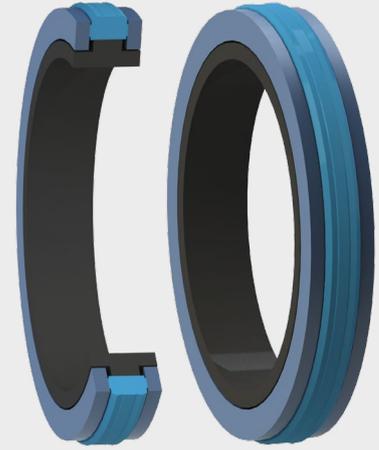
Part number	Bore diameter ØD1 H9	Groove diameter Ød1 h9	Seal height H1	Groove width L1 0/+0.20
512.S140	140.00	115.00	15.50	16.00
512.140	140.00	117.00	15.50	16.00
512.150	150.00	127.00	15.50	16.00
512.S150	150.00	134.00	15.50	16.00
512.160	160.00	137.00	15.50	16.00
512.170	170.00	147.00	15.50	16.00
512.180	180.00	157.00	15.50	16.00
512.185	185.00	162.00	15.50	16.00
512.190	190.00	167.00	15.50	16.00
512.200	200.00	177.00	15.50	16.00
512.2210	210.00	187.00	15.50	16.00
512.2220	220.00	197.00	15.50	16.00
512.225	225.00	202.00	15.50	16.00
512.2230	230.00	207.00	15.50	16.00
512.2240	240.00	217.00	15.50	16.00
512.2250	250.00	222.00	17.00	17.50
512.2260	260.00	232.00	17.00	17.50
512.2270	270.00	242.00	17.00	17.50
512.280	280.00	252.00	17.00	17.50
512.2300	300.00	272.00	17.00	17.50
512.2320	320.00	292.00	17.00	17.50

The figures highlighted in bold correspond to the bore diameters that are recommended by standard ISO 3320. Other intermediate sizes can be provided.



PISTON SEALS

BECA 513



DESCRIPTION

The BECA 513 profile is a high-performing, double acting compact piston seal composed of a dynamic polyurethane friction ring, flexible pre-tightened NBR ring and two POM back-up rings.

ADVANTAGES

- Very good sealing effect
- Increase in possible extrusion gaps
- Excellent extrusion resistance even during pressure peaks
- Excellent abrasion resistance
- Assembled by deformation

APPLICATIONS

- Mobile hydraulics
- Hydraulic cylinders

MATERIALS

Profiled seal

NBR 80 Shore A

Friction ring

PU 93 Shore A - Blue

PU 96 Shore A - Blue

High temp. PU 96 Shore A - Beige

Back-up rings

Polyoxymethylene - POM

TECHNICAL DATA

Temperature	-30°C / +100°C
Pressure	40 MPa
Speed	0.5 m/sec
Media	Mineral hydraulic oils

The figures above indicate the maximum values and may not be cumulated. They may be developed, depending on the materials used.

EXTRUSION GAPS

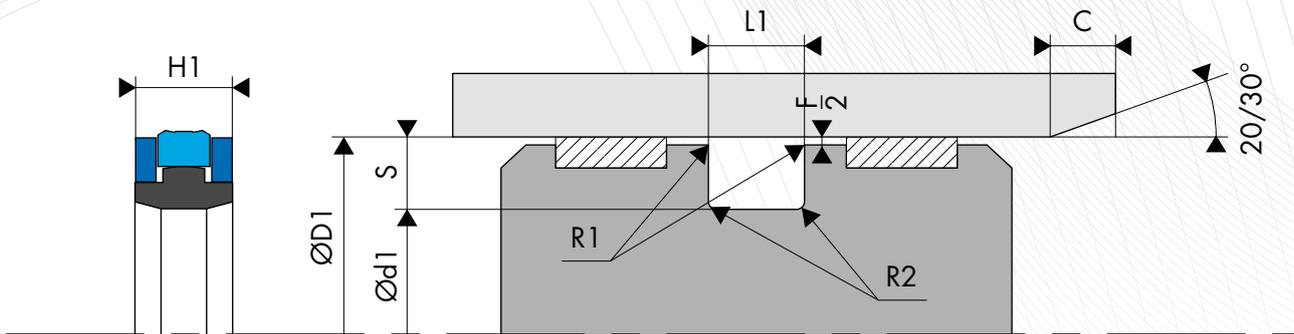
Pressure MPa	Radial gap F/2
10 MPa	0.50
25 MPa	0.50
35 MPa	0.40
40 MPa	0.30

SURFACE ROUGHNESS

Roughness	Dynamic surface area	Static surface area	Groove flanks
Ra	0.1 - 0.4 µm	≤1.6 µm	≤3.2 µm
Rz	0.63 - 2.5 µm	≤6.3 µm	≤10.0 µm
Rmax	1.0 - 4.0 µm	≤10.0 µm	≤16.0 µm

CHAMFERS AND RADIUS

Radial section S	Radius R1	Radius R2	Chamfer C
5.00	0.20	0.70	2.50
7.50	0.20	1.20	5.00
11.50	0.20	1.80	8.00
14.00	0.20	2.50	10.00

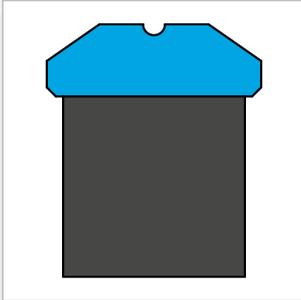


○ DIMENSIONS

Part number	Bore diameter ØD1 H9	Groove diameter Ød1 h9	Seal height H1	Groove width L1 0/+0.20
513.050	50.00	36.00	8.50	9.00
513.060	60.00	46.00	8.50	9.00
513.063	63.00	48.00	10.50	11.00
513.065	65.00	50.00	10.50	11.00
513.070	70.00	55.00	10.50	11.00
513.075	75.00	60.00	10.50	11.00
513.080	80.00	65.00	10.50	11.00
513.085	85.00	70.00	10.50	11.00
513.090	90.00	75.00	10.50	11.00
513.095	95.00	80.00	10.50	11.00
513.100	100.00	85.00	12.00	12.50
513.105	105.00	90.00	12.00	12.50
513.110	110.00	95.00	12.00	12.50
513.115	115.00	100.00	12.00	12.50
513.120	120.00	105.00	12.00	12.50
513.125	125.00	102.00	15.50	16.00
513.130	130.00	107.00	15.50	16.00
513.135	135.00	112.00	15.50	16.00
513.140	140.00	117.00	15.50	16.00

Part number	Bore diameter ØD1 H9	Groove diameter Ød1 h9	Seal height H1	Groove width L1 0/+0.20
513.150	150.00	127.00	15.50	16.00
513.160	160.00	137.00	15.50	16.00
513.170	170.00	147.00	15.50	16.00
513.180	180.00	157.00	15.50	16.00
513.185	185.00	162.00	15.50	16.00
513.190	190.00	167.00	15.50	16.00
513.200	200.00	177.00	15.50	16.00
513.210	210.00	187.00	15.50	16.00
513.220	220.00	197.00	15.50	16.00
513.225	225.00	202.00	15.50	16.00
513.230	230.00	207.00	15.50	16.00
513.240	240.00	217.00	15.50	16.00
513.250	250.00	222.00	17.00	17.50
513.260	260.00	232.00	17.00	17.50
513.270	270.00	242.00	17.00	17.50
513.280	280.00	252.00	17.00	17.50
513.300	300.00	272.00	17.00	17.50
513.320	320.00	292.00	17.00	17.50

The figures highlighted in bold correspond to the bore diameters that are recommended by standard ISO 3320. Other intermediate sizes can be provided.



PISTON SEALS

BECA 519



DESCRIPTION

The BECA 519 profile is a double acting composite piston seal composed of a polyurethane friction ring and a flexible rubber ring.

ADVANTAGES

Good sealing in static and dynamic applications

The square ring does not twist under pressure

Suitable for reduced axial size

APPLICATIONS

Mobile hydraulics
Injection presses
Hydraulic cylinders

MATERIALS

Profiled seal

NBR 70 Shore A if $\varnothing D1 \leq 63.00$ mm

NBR 80 Shore A if $\varnothing D1 > 63.00$ mm

Friction ring

PU 93 Shore A - Blue

PU 96 Shore A - Blue

High temp. PU 96 Shore A - Beige

TPC-E (Hytrel)

TECHNICAL DATA

Temperature	-30°C / +100°C
Pressure	40 MPa
Speed	0.5 m/sec
Media	Mineral hydraulic oils

The figures above indicate the maximum values and may not be cumulated. They may be developed, depending on the materials used.

EXTRUSION GAPS

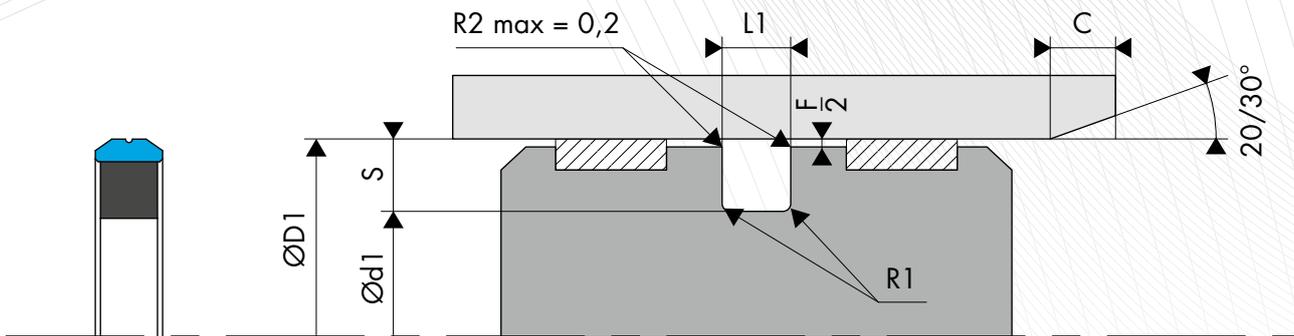
Radial section S	Radial gap F/2			
	10 MPa	25 MPa	35 MPa	40 MPa
3.75	0.30	0.20	---	---
5.50	0.40	0.30	0.20	---
7.75	0.50	0.40	0.30	0.25
10.50	0.60	0.50	0.40	0.35
12.50	0.65	0.55	0.45	0.40

SURFACE ROUGHNESS

Roughness	Dynamic surface area	Static surface area	Groove flanks
Ra	0.1 - 0.4 μm	≤ 1.6 μm	≤ 3.2 μm
Rz	0.63 - 2.5 μm	≤ 6.3 μm	≤ 10.0 μm
Rmax	1.0 - 4.0 μm	≤ 10.0 μm	≤ 16.0 μm

CHAMFERS AND RADIUS

Radial section S	Radius R1	Chamfer C
3.75	0.20	2.00
5.50	0.30	2.50
7.75	0.30	3.00
10.50	0.40	5.00
12.50	0.40	9.00

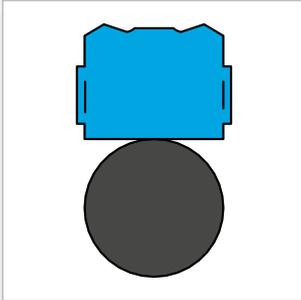


○ DIMENSIONS

Part number	Bore diameter ØD1 H9	Groove diameter Ød1 h9	Groove width L1 0/+0.20
519.020	20.00	12.50	3.20
519.025	25.00	17.50	3.20
519.030	30.00	22.50	3.20
519.032	32.00	24.50	3.20
519.040	40.00	24.50	6.30
519.1040	40.00	27.00	6.30
519.2040	40.00	29.00	4.20
519.045	45.00	29.50	6.30
519.1045	45.00	32.00	6.30
519.050	50.00	34.50	6.30
519.1050	50.00	37.00	6.30
519.2050	50.00	39.00	4.20
519.055	55.00	39.50	6.30
519.155	55.00	44.00	4.20
519.058	58.00	45.00	6.30
519.060	60.00	44.50	6.30
519.1060	60.00	49.00	4.20
519.063	63.00	47.50	6.30
519.1063	63.00	50.00	6.30
519.2063	63.00	52.00	4.20
519.3063	63.00	53.00	5.00
519.065	65.00	49.50	6.30
519.1065	65.00	52.00	6.30
519.2065	65.00	54.00	4.20
519.3065	65.00	54.00	6.30
519.070	70.00	54.50	6.30
519.1070	70.00	57.00	6.30
519.2070	70.00	59.00	4.20

Part number	Bore diameter ØD1 H9	Groove diameter Ød1 h9	Groove width L1 0/+0.20
519.712	71.20	66.40	7.20
519.075	75.00	59.50	6.30
519.1075	75.00	62.00	6.30
519.2075	75.00	64.00	4.20
519.080	80.00	59.00	8.10
519.1080	80.00	64.50	6.30
519.2080	80.00	66.50	6.30
519.085	85.00	71.50	6.30
519.090	90.00	74.50	6.30
519.1090	90.00	74.50	7.10
519.095	95.00	79.50	6.30
519.100	100.00	79.00	8.10
519.1100	100.00	84.50	6.30
519.1100	100.00	86.50	6.30
519.105	105.00	89.50	6.30
519.110	110.00	89.00	8.10
519.1110	110.00	94.50	6.30
519.2110	110.00	94.50	6.30
519.120	120.00	99.00	10.50
519.1120	120.00	104.50	6.30
519.125	125.00	104.00	8.10
519.1125	125.00	109.50	6.30
519.130	130.00	109.00	8.10
519.140	140.00	119.00	8.10
519.150	150.00	129.00	10.50
519.160	160.00	139.00	8.10
519.180	180.00	159.00	7.80
519.1180	180.00	159.00	8.10

The figures highlighted in bold correspond to the dimensions for standard ISO 7425/1, with the bore diameters in line with standard ISO 3320. Other intermediate sizes can be provided.



PISTON SEALS

BECA

520-522-524



DESCRIPTION

The BECA 520-522-524 profiles are double acting composite piston seals composed of a pre-tightened rubber O'Ring and a custom-made polyurethane friction ring.

ADVANTAGES

Optimal sealing in static and dynamic applications
Excellent abrasion and wear resistance
Assembled by deformation

APPLICATIONS

Agriculture
Light and medium-sized industry
Machine tools
Material handling/Lifting

MATERIALS

Friction ring

PU 93 Shore A - Blue
PU 96 Shore A - Blue
High temp. PU 96 Shore A - Beige
TPC-E (Hytrel)

O'Ring

NBR 70 Shore A

Other grades of materials are available. Please refer to the materials table on the next page.

TECHNICAL DATA

Temperature	-30°C / +100°C
Pressure	25 MPa
Speed	0.5 m/sec
Media	Mineral hydraulic oils

The figures above indicate the maximum values and may not be cumulated. They may be developed, depending on the materials used.

EXTRUSION GAPS

Radial section S	Radial gap F/2
2.45	0.20
3.75	0.25
5.50	0.25
7.75	0.30
10.50	0.30
12.25	0.35
14.00	0.35
19.00	0.40

SURFACE ROUGHNESS

Roughness	Dynamic surface area	Static surface area	Groove flanks
Ra	0.1 - 0.4 µm	≤1.6 µm	≤3.2 µm
Rz	0.63 - 2.5 µm	≤6.3 µm	≤10.0 µm
Rmax	1.0 - 4.0 µm	≤10.0 µm	≤16.0 µm

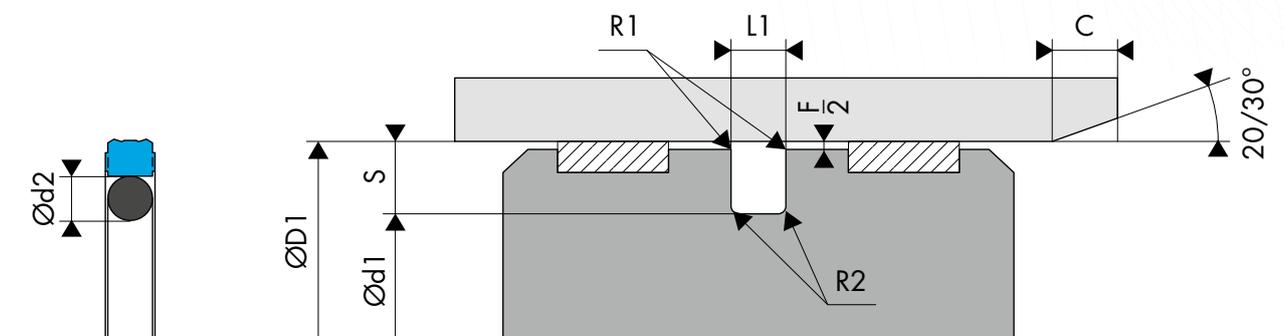
CHAMFERS AND RADIUS

Radial section S	Radius R1	Radius R2	Chamfer C
2.45	0.30	0.40	3.00
3.75	0.30	0.60	3.00
5.50	0.30	1.00	3.00
7.75	0.30	1.30	5.00
10.50	0.30	1.80	6.00
12.25	0.30	1.80	8.00
14.00	0.30	2.50	10.00
19.00	0.30	3.00	12.00

○ TABLE MATERIALS

Friction ring					O'Ring			Mating surface material
Standard code	ISO code	Material	Colour	Characteristics	Code	Type of material	Service temperature	
HG	HG	PE-UHMW	White or off-white	Excellent wear resistance on contact with water and air	K6	NBR 70 Shore A	-30°C/+80°C	Steel Stainless steel Chrome steel Aluminium Bronze Cast iron Treated surface
PU	U	Polyurethane	Blue	Strong mechanical resistance Good resistance to wear and abrasion High elasticity modulus	K6	NBR 70 Shore A	-30°C/+90°C	
PUHT	U	High-temperature polyurethane	White or off-white	Good flexibility Very good resistance to ozone and oxidation	K6	NBR 70 Shore A	-30°C/+100°C	

Other grades of materials are available depending on your specificities.



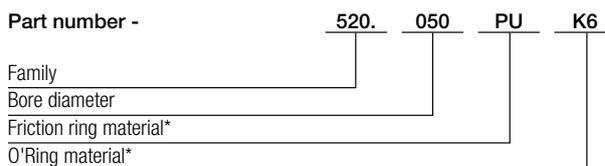
○ INSTALLATION DIMENSIONS

Bore diameter ØD1 H9			Groove diameter	Groove width	Radial section	O'Ring cross-section
BECA 520 Standard range	BECA 522 Light range	BECA 524 Heavy-duty range	Ød1 h9	L1 0/+0.20	S	Ød2
8.0 - 14.9	15.0 - 39.9	---	D1 - 4.90	2.20	2.45	1.78
15.0 - 39.9	40.0 - 79.9	---	D1 - 7.50	3.20	3.75	2.62
40.0 - 79.9	80.0 - 132.9	15.0 - 39.9	D1 - 11.00	4.20	5.50	3.53
80.0 - 132.9	133.0 - 329.9	40.0 - 79.9	D1 - 15.50	6.30	7.75	5.33
133.0 - 329.9	330.0 - 669.9	80.0 - 132.9	D1 - 21.00	8.10	10.50	6.99
330.0 - 669.9	670.0 - 999.9	133.0 - 329.9	D1 - 24.50	8.10	12.25	6.99
670.0 - 999.9	1000.0 - **	330.0 - 669.9	D1 - 28.00	9.50	14.00	8.40
1000.0 - **	---	1000.0 - **	D1 - 38.00	13.80	19.00	12.00

○ EXAMPLE OF CODIFICATION

STANDARD CODIFICATION

Materials _____ : Polyurethane friction ring - Code PU
 _____ : NBR 70 Shore A O'Ring - Code K6
 Bore diameter _____ : ØD1 = 50.00 mm
 Groove diameter _____ : Ød1 + 39.00 mm
 Part number _____ : 520. 050PUK6



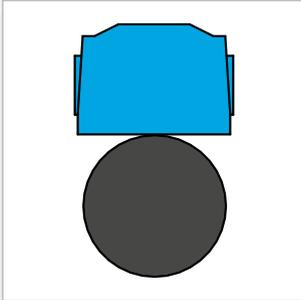
* The codes that define the materials are set out in the materials table on the previous page.

○ DIMENSIONS

Part number	Bore diameter ØD1 H9	Groove diameter Ød1 h9	Groove width L1 0/+0.20
520.008	8.00	3.10	2.20
520.010	10.00	5.10	2.20
520.012	12.00	7.10	2.20
520.014	14.00	9.10	2.20
520.015	15.00	7.50	3.20
520.016	16.00	8.50	3.20
520.018	18.00	10.50	3.20
520.020	20.00	12.50	3.20
520.021	21.00	13.50	3.20
520.022	22.00	14.50	3.20
520.024	24.00	16.50	3.20
524.025	25.00	14.00	4.20
520.025	25.00	17.50	3.20
520.028	28.00	20.50	3.20
520.030	30.00	22.50	3.20
524.032	32.00	21.00	4.20
520.032	32.00	24.50	3.20
520.035	35.00	27.50	3.20
520.036	36.00	28.50	3.20
520.038	38.00	30.50	3.20
520.040	40.00	29.00	4.20
522.040	40.00	32.50	3.20
520.042	42.00	31.00	4.20
520.045	45.00	34.00	4.20
520.048	48.00	37.00	4.20
524.050	50.00	34.50	6.30
520.050	50.00	39.00	4.20
520.052	52.00	41.00	4.20
520.053	53.00	42.00	4.20
520.055	55.00	44.00	4.20
520.057	57.00	46.00	4.20
520.058	58.00	47.00	4.20
520.060	60.00	49.00	4.20
520.062	62.00	51.00	4.20
524.063	63.00	47.50	6.30
520.063	63.00	52.00	4.20
520.065	65.00	54.00	4.20
520.068	68.00	57.00	4.20
520.070	70.00	59.00	4.20
520.072	72.00	61.00	4.20
520.075	75.00	64.00	4.20
520.080	80.00	64.50	6.30
522.080	80.00	69.00	4.20
520.082	82.00	66.50	6.30
520.085	85.00	69.50	6.30
520.087	87.00	71.50	6.30
520.090	90.00	74.50	6.30
520.092	92.00	76.50	6.30
520.095	95.00	79.50	6.30
520.100	100.00	84.50	6.30
522.100	100.00	89.00	4.20
520.105	105.00	89.50	6.30
520.108	108.00	92.50	6.30
520.110	110.00	94.50	6.30
520.115	115.00	99.50	6.30
520.120	120.00	104.50	6.30
524.125	125.00	104.00	8.10
520.125	125.00	109.50	6.30
520.127	127.00	111.50	6.30
520.130	130.00	114.50	6.30
520.132	132.00	116.50	6.30
520.135	135.00	114.00	8.10
520.140	140.00	119.00	8.10

Part number	Bore diameter ØD1 H9	Groove diameter Ød1 h9	Groove width L1 0/+0.20
520.145	145.00	124.00	8.10
520.150	150.00	129.00	8.10
520.155	155.00	134.00	8.10
520.160	160.00	139.00	8.10
522.160	160.00	144.50	6.30
520.165	165.00	144.00	8.10
520.170	170.00	149.00	8.10
520.175	175.00	154.00	8.10
520.180	180.00	159.00	8.10
520.185	185.00	164.00	8.10
520.190	190.00	169.00	8.10
520.195	195.00	174.00	8.10
520.200	200.00	179.00	8.10
522.200	200.00	184.50	6.30
520.205	205.00	184.00	8.10
520.210	210.00	189.00	8.10
520.215	215.00	194.00	8.10
520.220	220.00	199.00	8.10
520.230	230.00	209.00	8.10
520.240	240.00	219.00	8.10
524.250	250.00	225.50	8.10
520.250	250.00	229.00	8.10
520.260	260.00	239.00	8.10
520.270	270.00	249.00	8.10
520.280	280.00	259.00	8.10
520.290	290.00	269.00	8.10
520.300	300.00	279.00	8.10
520.310	310.00	289.00	8.10
524.320	320.00	295.50	8.10
520.320	320.00	299.00	8.10
520.330	330.00	305.50	8.10
520.340	340.00	315.50	8.10
520.350	350.00	325.50	8.10
520.360	360.00	335.50	8.10
520.370	370.00	345.50	8.10
520.380	380.00	355.50	8.10
520.390	390.00	365.50	8.10
520.400	400.00	375.50	8.10
520.410	410.00	385.50	8.10
520.420	420.00	395.50	8.10
520.430	430.00	405.50	8.10
520.440	440.00	415.50	8.10
520.450	450.00	425.50	8.10
520.460	460.00	435.50	8.10
520.470	470.00	445.50	8.10
520.480	480.00	455.50	8.10
520.490	490.00	465.50	8.10
520.500	500.00	475.50	8.10

The figures highlighted in bold correspond to the dimensions for standard ISO 7425/1, with the bore diameters in line with standard ISO 3320. Other intermediate sizes can be provided.



PISTON SEALS

BECA 525



DESCRIPTION

The BECA 525 profile is a double acting composite piston seal composed of a pre-tightened rubber O'Ring and a trapezoidal friction ring made from polyurethane or TPC (Hytrel) depending on the type of application.

ADVANTAGES

Optimal sealing in static and dynamic applications

Excellent abrasion and wear resistance

APPLICATIONS

Agriculture

Middle-sized and heavy industry

Machine tools

Material handling/Lifting

MATERIALS

Friction ring

PU 93 Shore A - Blue

PU 96 Shore A - Blue

High temp. PU 96 Shore A - Beige

TPC-E (Hytrel)

O'Ring

NBR 70 Shore A

Other grades of materials are available. Please refer to the materials table on the next page.

TECHNICAL DATA

Temperature	-30°C / +100°C
Pressure	25 MPa
Speed	0.5 m/sec
Media	Mineral hydraulic oils

The figures above indicate the maximum values and may not be cumulated. They may be developed, depending on the materials used.

EXTRUSION GAPS

Radial section S	Radial gap F/2
2.45	0.20
3.75	0.30
5.50	0.30
7.75	0.40
10.50	0.40
12.25	0.50
14.00	0.60
19.00	0.70

SURFACE ROUGHNESS

Roughness	Dynamic surface area	Static surface area	Groove flanks
Ra	0.1 - 0.4 µm	≤1.6 µm	≤3.2 µm
Rz	0.63 - 2.5 µm	≤6.3 µm	≤10.0 µm
Rmax	1.0 - 4.0 µm	≤10.0 µm	≤16.0 µm

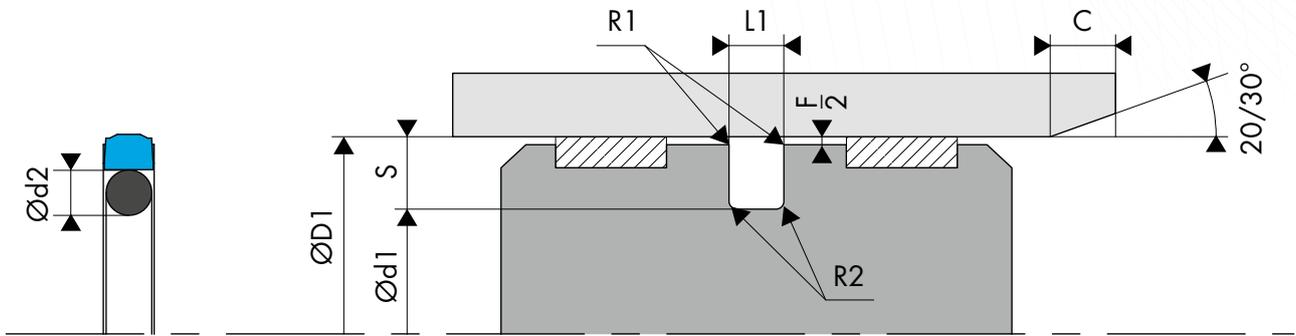
CHAMFERS AND RADIUS

Radial section S	Radius R1	Radius R2	Chamfer C
2.45	0.30	0.40	3.00
3.75	0.30	0.60	3.00
5.50	0.30	1.00	3.00
7.75	0.30	1.30	5.00
10.50	0.30	1.80	6.00
12.25	0.30	1.80	8.00
14.00	0.30	2.50	10.00
19.00	0.30	3.00	12.00

○ TABLE MATERIALS

Friction ring					O'Ring			Mating surface material
Standard code	ISO code	Material	Colour	Characteristics	Code	Type of material	Service temperature	
HG	HG	PE-UHMW	White or off-white	Excellent wear resistance on contact with water and air	K6	NBR 70 Shore A	-30°C/+80°C	Steel Stainless steel Chrome steel Aluminium Bronze Cast iron Treated surface
PU	U	Polyurethane	Blue	Strong mechanical resistance Good resistance to wear and abrasion High elasticity modulus Good flexibility	K6	NBR 70 Shore A	-30°C/+90°C	
PUHT	U	High-temperature polyurethane	White or off-white	Very good resistance to ozone and oxidation	K6	NBR 70 Shore A	-30°C/+100°C	

Other grades of materials are available depending on your specificities.



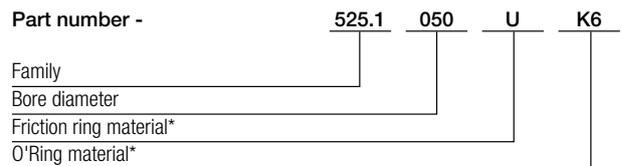
○ INSTALLATION DIMENSIONS

Bore diameter ØD1 H9			Groove diameter	Groove width	Radial section	O'Ring cross-section
BECA 525.1 Standard range	BECA 525.3 Light range	BECA 525.2 Heavy-duty range	Ød1 h9	L1 0/+0.20	S	Ød2
8.0 - 14.9	15.0 - 39.9	---	D1 - 4.90	2.20	2.45	1.78
15.0 - 39.9	40.0 - 79.9	---	D1 - 7.50	3.20	3.75	2.62
40.0 - 79.9	80.0 - 132.9	15.0 - 39.9	D1 - 11.00	4.20	5.50	3.53
80.0 - 132.9	133.0 - 329.9	40.0 - 79.9	D1 - 15.50	6.30	7.75	5.33
133.0 - 329.9	330.0 - 669.9	80.0 - 132.9	D1 - 21.00	8.10	10.50	6.99
330.0 - 669.9	670.0 - 999.9	133.0 - 329.9	D1 - 24.50	8.10	12.25	6.99
670.0 - 999.9	1000.0 - **	330.0 - 669.9	D1 - 28.00	9.50	14.00	8.40
1000.0 - **	---	1000.0 - **	D1 - 38.00	13.80	19.00	12.00

○ EXAMPLE OF CODIFICATION

STANDARD CODIFICATION

Materials _____ : Polyurethane friction ring - Code U
 _____ : NBR 70 Shore A O'Ring - Code K6
Bore diameter _____ : ØD1 = 50.00 mm
Groove diameter _____ : Ød1 + 39.00 mm
Part number _____ : 525.1050UK6



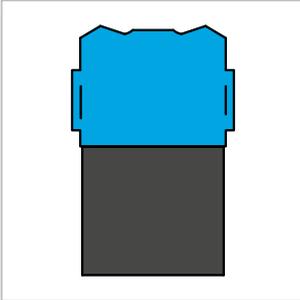
* The codes that define the materials are set out in the materials table on the previous page.

○ DIMENSIONS

Part number	Bore diameter ØD1 H9	Groove diameter Ød1 h9	Groove width L1 0/+0.20
525.1008	8.00	3.10	2.20
525.1010	10.00	5.10	2.20
525.1012	12.00	7.10	2.20
525.1014	14.00	9.10	2.20
525.1015	15.00	7.50	3.20
525.1016	16.00	8.50	3.20
525.3016	16.00	11.10	2.20
525.1018	18.00	10.50	3.20
525.1020	20.00	12.50	3.20
525.3020	20.00	15.10	2.20
525.1021	21.00	13.50	3.20
525.1022	22.00	14.50	3.20
525.1024	24.00	16.50	3.20
525.2025	25.00	14.00	4.20
525.1025	25.00	17.50	3.20
525.1028	28.00	20.50	3.20
525.1030	30.00	22.50	3.20
525.2032	32.00	21.00	4.20
525.1032	32.00	24.50	3.20
525.1035	35.00	27.50	3.20
525.1036	36.00	28.50	3.20
525.1038	38.00	30.50	3.20
525.1040	40.00	29.00	4.20
525.3040	40.00	32.50	3.20
525.1042	42.00	31.00	4.20
525.1045	45.00	34.00	4.20
525.1048	48.00	37.00	4.20
525.2050	50.00	34.50	6.30
525.1050	50.00	39.00	4.20
525.1052	52.00	41.00	4.20
525.1053	53.00	42.00	4.20
525.1055	55.00	44.00	4.20
525.1057	57.00	46.00	4.20
525.1058	58.00	47.00	4.20
525.1060	60.00	49.00	4.20
525.1062	62.00	51.00	4.20
525.2063	63.00	47.50	6.30
525.1063	63.00	52.00	4.20
525.1065	65.00	54.00	4.20
525.1068	68.00	57.00	4.20
525.1070	70.00	59.00	4.20
525.1072	72.00	61.00	4.20
525.1075	75.00	64.00	4.20
525.1080	80.00	64.50	6.30
525.3080	80.00	69.00	4.20
525.1082	82.00	66.50	6.30
525.1085	85.00	69.50	6.30
525.1087	87.00	71.50	6.30
525.1090	90.00	74.50	6.30
525.1092	92.00	76.50	6.30
525.1095	95.00	79.50	6.30
525.1100	100.00	84.50	6.30
525.3100	100.00	89.00	4.20
525.1105	105.00	89.50	6.30
525.1108	108.00	92.50	6.30
525.1110	110.00	94.50	6.30
525.1115	115.00	99.50	6.30
525.1120	120.00	104.50	6.30
525.2125	125.00	104.00	8.10
525.1125	125.00	109.50	6.30
525.1127	127.00	111.50	6.30
525.1130	130.00	114.50	6.30
525.1132	132.00	116.50	6.30

Part number	Bore diameter ØD1 H9	Groove diameter Ød1 h9	Groove width L1 0/+0.20
525.1135	135.00	114.00	8.10
525.1140	140.00	119.00	8.10
525.1145	145.00	124.00	8.10
525.1150	150.00	129.00	8.10
525.1155	155.00	134.00	8.10
525.1160	160.00	139.00	8.10
525.3160	160.00	144.50	6.30
525.1165	165.00	144.00	8.10
525.1170	170.00	149.00	8.10
525.1175	175.00	154.00	8.10
525.1180	180.00	159.00	8.10
525.1185	185.00	164.00	8.10
525.1190	190.00	169.00	8.10
525.1195	195.00	174.00	8.10
525.1200	200.00	179.00	8.10
525.3200	200.00	184.50	6.30
525.1205	205.00	184.00	8.10
525.1210	210.00	189.00	8.10
525.1215	215.00	194.00	8.10
525.1220	220.00	199.00	8.10
525.1230	230.00	209.00	8.10
525.1240	240.00	219.00	8.10
525.2250	250.00	225.50	8.10
525.1250	250.00	229.00	8.10
525.1260	260.00	239.00	8.10
525.1270	270.00	249.00	8.10
525.1280	280.00	259.00	8.10
525.1290	290.00	269.00	8.10
525.1300	300.00	279.00	8.10
525.1310	310.00	289.00	8.10
525.2320	320.00	295.50	8.10
525.1320	320.00	299.00	8.10
525.1330	330.00	305.50	8.10
525.1340	340.00	315.50	8.10
525.1350	350.00	325.50	8.10
525.1360	360.00	335.50	8.10
525.1370	370.00	345.50	8.10
525.1380	380.00	355.50	8.10
525.1390	390.00	365.50	8.10
525.1400	400.00	375.50	8.10
525.1410	410.00	385.50	8.10
525.1420	420.00	395.50	8.10
525.1430	430.00	405.50	8.10
525.1440	440.00	415.50	8.10
525.1450	450.00	425.50	8.10
525.1460	460.00	435.50	8.10
525.1470	470.00	445.50	8.10
525.1480	480.00	455.50	8.10
525.1490	490.00	465.50	8.10
525.1500	500.00	475.50	8.10

The figures highlighted in bold correspond to the dimensions for standard ISO 7425/1, with the bore diameters in line with standard ISO 3320. Other intermediate sizes can be provided.



PISTON SEALS

BECA 530



DESCRIPTION

The BECA 530 profile is a double acting composite piston seal composed of a pre-tightened rubber square ring and a specific polyurethane friction ring.

ADVANTAGES

Optimal sealing in static and dynamic applications

Excellent abrasion and wear resistance

The square ring does not twist under pressure

APPLICATIONS

Agriculture

Light and medium-sized industry

Machine tools

Material handling/Lifting

MATERIALS

Friction ring

PU 93 Shore A - Blue

PU 96 Shore A - Blue

High temp. PU 96 Shore A - Beige

TPC-E (Hytrel)

Square ring

NBR 70 Shore A

Other grades of materials are available. Please refer to the materials table on the next page.

TECHNICAL DATA

Temperature	-30°C / +100°C
Pressure	25 MPa
Speed	0.5 m/sec
Media	Mineral hydraulic oils

The figures above indicate the maximum values and may not be cumulated. They may be developed, depending on the materials used.

EXTRUSION GAPS

Radial section S	Radial gap F/2
2.45	0.20
3.75	0.25
5.50	0.25
7.75	0.30
10.50	0.30
12.25	0.35
14.00	0.35
19.00	0.40

SURFACE ROUGHNESS

Roughness	Dynamic surface area	Static surface area	Groove flanks
Ra	0.1 - 0.4 µm	≤1.6 µm	≤3.2 µm
Rz	0.63 - 2.5 µm	≤6.3 µm	≤10.0 µm
Rmax	1.0 - 4.0 µm	≤10.0 µm	≤16.0 µm

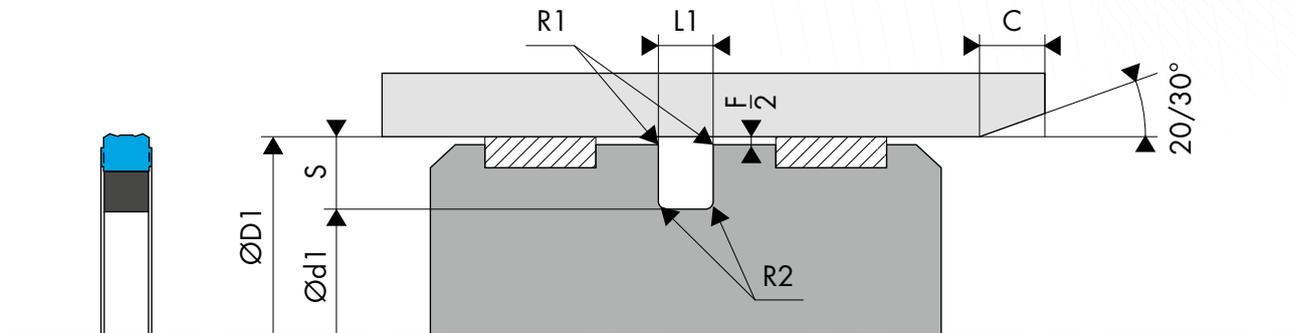
CHAMFERS AND RADIUS

Radial section S	Radius R1	Radius R2	Chamfer C
2.45	0.30	0.40	2.00
3.75	0.30	0.60	2.00
5.50	0.30	1.00	2.50
7.75	0.30	1.30	5.00
10.50	0.30	1.80	5.00
12.25	0.30	1.80	6.00
14.00	0.30	2.50	8.00
19.00	0.30	3.00	10.00

○ TABLE MATERIALS

Friction ring					Square ring			Mating surface material
Standard code	ISO code	Material	Colour	Characteristics	Code	Type of material	Service temperature	
HG	HG	PE-UHMW	White or off-white	Excellent wear resistance on contact with water and air	K6	NBR 70 Shore A	-30°C/+80°C	Steel Stainless steel Chrome steel Aluminium Bronze Cast iron Treated surface
PU	U	Polyurethane	Blue	Strong mechanical resistance Good resistance to wear and abrasion High elasticity modulus Good flexibility	K6	NBR 70 Shore A	-30°C/+90°C	
PUHT	U	High-temperature polyurethane	White or off-white	Very good resistance to ozone and oxidation	K6	NBR 70 Shore A	-30°C/+100°C	

Other grades of materials are available depending on your specificities.



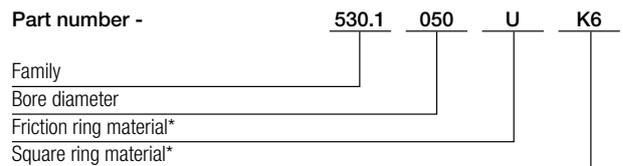
○ INSTALLATION DIMENSIONS

Bore diameter ØD1 H9			Groove diameter	Groove width	Radial section	Square ring
BECA 530.1 Standard range	BECA 530.3 Light range	BECA 530.2 Heavy-duty range	Ød1 h9	L1 0/+0.20	S	Thickness
8.0 - 14.9	15.0 - 39.9	---	D1 - 4.90	2.20	2.45	1.78
15.0 - 39.9	40.0 - 79.9	---	D1 - 7.50	3.20	3.75	2.62
40.0 - 79.9	80.0 - 132.9	15.0 - 39.9	D1 - 11.00	4.20	5.50	3.53
80.0 - 132.9	133.0 - 329.9	40.0 - 79.9	D1 - 15.50	6.30	7.75	5.33
133.0 - 329.9	330.0 - 669.9	80.0 - 132.9	D1 - 21.00	8.10	10.50	6.99
330.0 - 669.9	670.0 - 999.9	133.0 - 329.9	D1 - 24.50	8.10	12.25	6.99
670.0 - 999.9	1000.0 - **	330.0 - 669.9	D1 - 28.00	9.50	14.00	8.40
1000.0 - **	---	1000.0 - **	D1 - 38.00	13.80	19.00	12.00

○ EXAMPLE OF CODIFICATION

STANDARD CODIFICATION

Materials _____ : Polyurethane friction ring - Code U
 _____ : NBR 70 Shore A square ring - Code K6
Bore diameter _____ : ØD1 = 50.00 mm
Groove diameter _____ : Ød1 + 39.00 mm
Part number _____ : 530.1050UK6



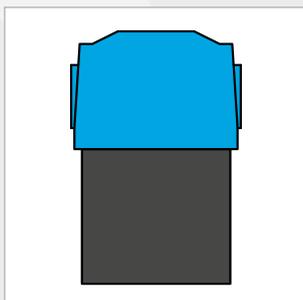
* The codes that define the materials are set out in the materials table on the previous page.

○ DIMENSIONS

Part number	Bore diameter ØD1 H9	Groove diameter Ød1 h9	Groove width L1 0/+0.20
530.1008	8.00	3.10	2.20
530.1010	10.00	5.10	2.20
530.1012	12.00	7.10	2.20
530.1014	14.00	9.10	2.20
530.1015	15.00	7.50	3.20
530.1016	16.00	8.50	3.20
530.3016	16.00	11.10	2.20
530.1018	18.00	10.50	3.20
530.1020	20.00	12.50	3.20
530.3020	20.00	15.10	2.20
530.1021	21.00	13.50	3.20
530.1022	22.00	14.50	3.20
530.1024	24.00	16.50	3.20
530.2025	25.00	14.00	4.20
530.1025	25.00	17.50	3.20
530.1028	28.00	20.50	3.20
530.1030	30.00	22.50	3.20
530.2032	32.00	21.00	4.20
530.1032	32.00	24.50	3.20
530.1035	35.00	27.50	3.20
530.1036	36.00	28.50	3.20
530.1038	38.00	30.50	3.20
530.1040	40.00	29.00	4.20
530.3040	40.00	32.50	3.20
530.1042	42.00	31.00	4.20
530.1045	45.00	34.00	4.20
530.1048	48.00	37.00	4.20
530.2050	50.00	34.50	6.30
530.1050	50.00	39.00	4.20
530.1052	52.00	41.00	4.20
530.1053	53.00	42.00	4.20
530.1055	55.00	44.00	4.20
530.1057	57.00	46.00	4.20
530.1058	58.00	47.00	4.20
530.1060	60.00	49.00	4.20
530.1062	62.00	51.00	4.20
530.2063	63.00	47.50	6.30
530.1063	63.00	52.00	4.20
530.1065	65.00	54.00	4.20
530.1068	68.00	57.00	4.20
530.1070	70.00	59.00	4.20
530.1072	72.00	61.00	4.20
530.1075	75.00	64.00	4.20
530.1080	80.00	64.50	6.30
530.3080	80.00	69.00	4.20
530.1082	82.00	66.50	6.30
530.1085	85.00	69.50	6.30
530.1087	87.00	71.50	6.30
530.1090	90.00	74.50	6.30
530.1092	92.00	76.50	6.30
530.1095	95.00	79.50	6.30
530.1100	100.00	84.50	6.30
530.3100	100.00	89.00	4.20
530.1105	105.00	89.50	6.30
530.1108	108.00	92.50	6.30
530.1110	110.00	94.50	6.30
530.1115	115.00	99.50	6.30
530.1120	120.00	104.50	6.30
530.2125	125.00	104.00	8.10
530.1125	125.00	109.50	6.30
530.1127	127.00	111.50	6.30
530.1130	130.00	114.50	6.30
530.1132	132.00	116.50	6.30

Part number	Bore diameter ØD1 H9	Groove diameter Ød1 h9	Groove width L1 0/+0.20
530.1135	135.00	114.00	8.10
530.1140	140.00	119.00	8.10
530.1145	145.00	124.00	8.10
530.1150	150.00	129.00	8.10
530.1155	155.00	134.00	8.10
530.1160	160.00	139.00	8.10
530.3160	160.00	144.50	6.30
530.1165	165.00	144.00	8.10
530.1170	170.00	149.00	8.10
530.1175	175.00	154.00	8.10
530.1180	180.00	159.00	8.10
530.1185	185.00	164.00	8.10
530.1190	190.00	169.00	8.10
530.1195	195.00	174.00	8.10
530.1200	200.00	179.00	8.10
530.3200	200.00	184.50	6.30
530.1205	205.00	184.00	8.10
530.1210	210.00	189.00	8.10
530.1215	215.00	194.00	8.10
530.1220	220.00	199.00	8.10
530.1230	230.00	209.00	8.10
530.1240	240.00	219.00	8.10
530.2250	250.00	225.50	8.10
530.1250	250.00	229.00	8.10
530.1260	260.00	239.00	8.10
530.1270	270.00	249.00	8.10
530.1280	280.00	259.00	8.10
530.1290	290.00	269.00	8.10
530.1300	300.00	279.00	8.10
530.1310	310.00	289.00	8.10
530.2320	320.00	295.50	8.10
530.1320	320.00	299.00	8.10
530.1330	330.00	305.50	8.10
530.1340	340.00	315.50	8.10
530.1350	350.00	325.50	8.10
530.1360	360.00	335.50	8.10
530.1370	370.00	345.50	8.10
530.1380	380.00	355.50	8.10
530.1390	390.00	365.50	8.10
530.1400	400.00	375.50	8.10
530.1410	410.00	385.50	8.10
530.1420	420.00	395.50	8.10
530.1430	430.00	405.50	8.10
530.1440	440.00	415.50	8.10
530.1450	450.00	425.50	8.10
530.1460	460.00	435.50	8.10
530.1470	470.00	445.50	8.10
530.1480	480.00	455.50	8.10
530.1490	490.00	465.50	8.10
530.1500	500.00	475.50	8.10

The figures highlighted in bold correspond to the dimensions for standard ISO 7425/1, with the bore diameters in line with standard ISO 3320. Other intermediate sizes can be provided.



PISTON SEALS

BECA 535



DESCRIPTION

The BECA 535 profile is a double acting composite piston seal composed of a pre-tightened rubber square ring and a trapezoidal polyurethane or TPC (Hytrel) friction ring, depending on the type of application.

ADVANTAGES

Optimal sealing in static and dynamic applications

Excellent abrasion and wear resistance

The square ring does not twist under pressure

APPLICATIONS

Agriculture

Middle-sized and heavy industry

Machine tools

Material handling/Lifting

MATERIALS

Friction ring

PU 93 Shore A - Blue

PU 96 Shore A - Blue

High temp. PU 96 Shore A - Beige

TPC-E (Hytrel)

Square ring

NBR 70 Shore A

Other grades of materials are available. Please refer to the materials table on the next page.

TECHNICAL DATA

Temperature	-30°C / +100°C
Pressure	25 MPa
Speed	0.5 m/sec
Media	Mineral hydraulic oils

The figures above indicate the maximum values and may not be cumulated. They may be developed, depending on the materials used.

EXTRUSION GAPS

Radial section S	Radial gap F/2
2.45	0.20
3.75	0.30
5.50	0.30
7.75	0.40
10.50	0.40
12.25	0.50
14.00	0.60
19.00	0.70

SURFACE ROUGHNESS

Roughness	Dynamic surface area	Static surface area	Groove flanks
Ra	0.1 - 0.4 µm	≤1.6 µm	≤3.2 µm
Rz	0.63 - 2.5 µm	≤6.3 µm	≤10.0 µm
Rmax	1.0 - 4.0 µm	≤10.0 µm	≤16.0 µm

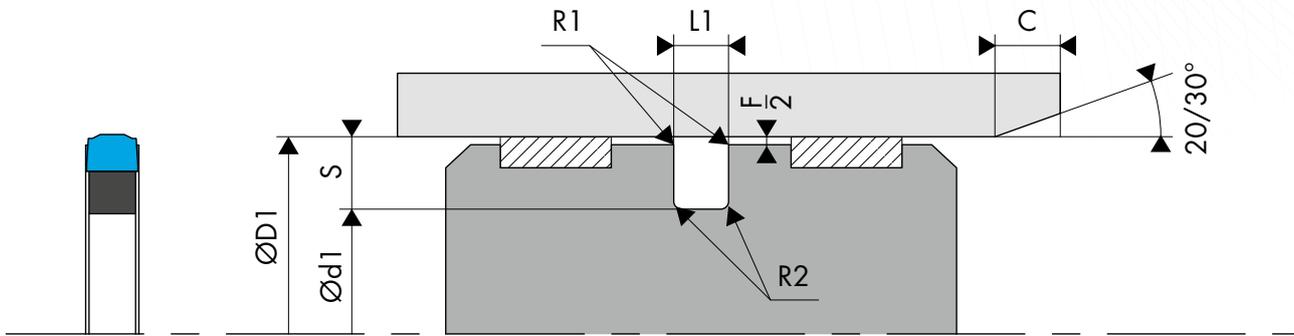
CHAMFERS AND RADIUS

Radial section S	Radius R1	Radius R2	Chamfer C
2.45	0.30	0.40	2.00
3.75	0.30	0.60	2.00
5.50	0.30	1.00	2.50
7.75	0.30	1.30	5.00
10.50	0.30	1.80	5.00
12.25	0.30	1.80	6.00
14.00	0.30	2.50	8.00
19.00	0.30	3.00	10.00

○ TABLE MATERIALS

Friction ring					Square ring			Mating surface material
Standard code	ISO code	Material	Colour	Characteristics	Code	Type of material	Service temperature	
HG	HG	PE-UHMW	White or off-white	Excellent wear resistance on contact with water and air	K6	NBR 70 Shore A	-30°C/+80°C	Steel Stainless steel Chrome steel Aluminium Bronze Cast iron Treated surface
PU	U	Polyurethane	Blue	Strong mechanical resistance Good resistance to wear and abrasion High elasticity modulus	K6	NBR 70 Shore A	-30°C/+90°C	
PUHT	U	High-temperature polyurethane	White or off-white	Good flexibility Very good resistance to ozone and oxidation	K6	NBR 70 Shore A	-30°C/+100°C	

Other grades of materials are available depending on your specificities.



○ INSTALLATION DIMENSIONS

Bore diameter ØD1 H9			Groove diameter	Groove width	Radial section	Square ring
BECA 535.1 Standard range	BECA 535.3 Light range	BECA 535.2 Heavy-duty range	Ød1 h9	L1 0/+0.20	S	Thickness
8.0 - 14.9	15.0 - 39.9	---	D1 - 4.90	2.20	2.45	1.78
15.0 - 39.9	40.0 - 79.9	---	D1 - 7.50	3.20	3.75	2.62
40.0 - 79.9	80.0 - 132.9	15.0 - 39.9	D1 - 11.00	4.20	5.50	3.53
80.0 - 132.9	133.0 - 329.9	40.0 - 79.9	D1 - 15.50	6.30	7.75	5.33
133.0 - 329.9	330.0 - 669.9	80.0 - 132.9	D1 - 21.00	8.10	10.50	6.99
330.0 - 669.9	670.0 - 999.9	133.0 - 329.9	D1 - 24.50	8.10	12.25	6.99
670.0 - 999.9	1000.0 - **	330.0 - 669.9	D1 - 28.00	9.50	14.00	8.40
1000.0 - **	---	1000.0 - **	D1 - 38.00	13.80	19.00	12.00

○ EXAMPLE OF CODIFICATION

STANDARD CODIFICATION

Materials _____ : Polyurethane friction ring - Code U
 _____ : NBR 70 Shore A square ring - Code K6
Bore diameter _____ : ØD1 = 50.00 mm
Groove diameter _____ : Ød1 + 39.00 mm
Part number _____ : 535.1050UK6



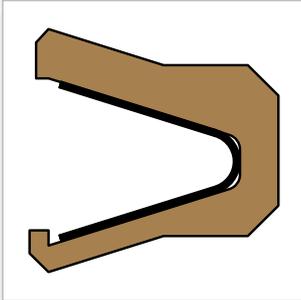
* The codes that define the materials are set out in the materials table on the previous page.

DIMENSIONS

Part number	Bore diameter ØD1 H9	Groove diameter Ød1 h9	Groove width L1 0/+0.20
535.1008	8.00	3.10	2.20
535.1010	10.00	5.10	2.20
535.1012	12.00	7.10	2.20
535.1014	14.00	9.10	2.20
535.1015	15.00	7.50	3.20
535.1016	16.00	8.50	3.20
535.3016	16.00	11.10	2.20
535.1018	18.00	10.50	3.20
535.1020	20.00	12.50	3.20
535.3020	20.00	15.10	2.20
535.1021	21.00	13.50	3.20
535.1022	22.00	14.50	3.20
535.1024	24.00	16.50	3.20
535.2025	25.00	14.00	4.20
535.1025	25.00	17.50	3.20
535.1028	28.00	20.50	3.20
535.1030	30.00	22.50	3.20
535.2032	32.00	21.00	4.20
535.1032	32.00	24.50	3.20
535.1035	35.00	27.50	3.20
535.1036	36.00	28.50	3.20
535.1038	38.00	30.50	3.20
535.1040	40.00	29.00	4.20
535.3040	40.00	32.50	3.20
535.1042	42.00	31.00	4.20
535.1045	45.00	34.00	4.20
535.1048	48.00	37.00	4.20
535.2050	50.00	34.50	6.30
535.1050	50.00	39.00	4.20
535.1052	52.00	41.00	4.20
535.1053	53.00	42.00	4.20
535.1055	55.00	44.00	4.20
535.1057	57.00	46.00	4.20
535.1058	58.00	47.00	4.20
535.1060	60.00	49.00	4.20
535.1062	62.00	51.00	4.20
535.2063	63.00	47.50	6.30
535.1063	63.00	52.00	4.20
535.1065	65.00	54.00	4.20
535.1068	68.00	57.00	4.20
535.1070	70.00	59.00	4.20
535.1072	72.00	61.00	4.20
535.1075	75.00	64.00	4.20
535.1080	80.00	64.50	6.30
535.3080	80.00	69.00	4.20
535.1082	82.00	66.50	6.30
535.1085	85.00	69.50	6.30
535.1087	87.00	71.50	6.30
535.1090	90.00	74.50	6.30
535.1092	92.00	76.50	6.30
535.1095	95.00	79.50	6.30
535.1100	100.00	84.50	6.30
535.3100	100.00	89.00	4.20
535.1105	105.00	89.50	6.30
535.1108	108.00	92.50	6.30
535.1110	110.00	94.50	6.30
535.1115	115.00	99.50	6.30
535.1120	120.00	104.50	6.30
535.2125	125.00	104.00	8.10
535.1125	125.00	109.50	6.30
535.1127	127.00	111.50	6.30
535.1130	130.00	114.50	6.30
535.1132	132.00	116.50	6.30

Part number	Bore diameter ØD1 H9	Groove diameter Ød1 h9	Groove width L1 0/+0.20
535.1135	135.00	114.00	8.10
535.1140	140.00	119.00	8.10
535.1145	145.00	124.00	8.10
535.1150	150.00	129.00	8.10
535.1155	155.00	134.00	8.10
535.1160	160.00	139.00	8.10
535.3160	160.00	144.50	6.30
535.1165	165.00	144.00	8.10
535.1170	170.00	149.00	8.10
535.1175	175.00	154.00	8.10
535.1180	180.00	159.00	8.10
535.1185	185.00	164.00	8.10
535.1190	190.00	169.00	8.10
535.1195	195.00	174.00	8.10
535.1200	200.00	179.00	8.10
535.3200	200.00	184.50	6.30
535.1205	205.00	184.00	8.10
535.1210	210.00	189.00	8.10
535.1215	215.00	194.00	8.10
535.1220	220.00	199.00	8.10
535.1230	230.00	209.00	8.10
535.1240	240.00	219.00	8.10
535.2250	250.00	225.50	8.10
535.1250	250.00	229.00	8.10
535.1260	260.00	239.00	8.10
535.1270	270.00	249.00	8.10
535.1280	280.00	259.00	8.10
535.1290	290.00	269.00	8.10
535.1300	300.00	279.00	8.10
535.1310	310.00	289.00	8.10
535.2320	320.00	295.50	8.10
535.1320	320.00	299.00	8.10
535.1330	330.00	305.50	8.10
535.1340	340.00	315.50	8.10
535.1350	350.00	325.50	8.10
535.1360	360.00	335.50	8.10
535.1370	370.00	345.50	8.10
535.1380	380.00	355.50	8.10
535.1390	390.00	365.50	8.10
535.1400	400.00	375.50	8.10
535.1410	410.00	385.50	8.10
535.1420	420.00	395.50	8.10
535.1430	430.00	405.50	8.10
535.1440	440.00	415.50	8.10
535.1450	450.00	425.50	8.10
535.1460	460.00	435.50	8.10
535.1470	470.00	445.50	8.10
535.1480	480.00	455.50	8.10
535.1490	490.00	465.50	8.10
535.1500	500.00	475.50	8.10

The figures highlighted in bold correspond to the dimensions for standard ISO 7425/1, with the bore diameters in line with standard ISO 3320. Other intermediate sizes can be provided.



PISTON SEALS

BECA

540-549



DESCRIPTION

The BECA 540 profile is a single acting piston seal composed of a profiled, filled PTFE U-ring type seal and a V-spring that is resistant to corrosion.

The BECA 549 profile is specially designed for applications where the seal is in contact with food products. It is characterised by a silicone overmoulding on the inside of the seal, which completely hides the V-spring, thus preventing impurities from accumulating in this hard-to-clean area.

ADVANTAGES

Wide temperature range and excellent chemical resistance
 Low friction coefficient; no stick-slip effect
 Excellent abrasion resistance
 Good dimensional stability
 Non-toxic material

APPLICATIONS

Food & Beverage
 Medical
 Pharmaceutical
 Static hydraulics

MATERIALS

Profiled seal

Carbon-filled PTFE
 Blue GL PTFE
 PE-UHMW

V-Shaped spring

Stainless steel

Other grades of materials are available. Please refer to the materials table on the next page.

TECHNICAL DATA

Temperature	-200°C / +260°C
Pressure	30 MPa
Speed	15 m/s
Media	Practically all types of fluids, and chemical and gas products

The figures above indicate the maximum values and may not be cumulated. They may be developed, depending on the materials used.

EXTRUSION GAPS

Radial section S	Radial gap F/2			
	2 MPa	10 MPa	20 MPa	30 MPa
1.45	0.20	0.10	0.08	0.05
2.25	0.25	0.15	0.10	0.07
3.10	0.35	0.20	0.15	0.08
4.70	0.50	0.25	0.20	0.10
6.10	0.60	0.30	0.25	0.12
9.50	0.90	0.50	0.40	0.20

SURFACE ROUGHNESS

Roughness	Dynamic surface area	Static surface area	Groove flanks
Ra	0.05 - 0.2 µm	≤1.6 µm	≤3.2 µm
Rz	0.4 - 1.6 µm	≤6.3 µm	≤10.0 µm
Rmax	0.63 - 2.5 µm	≤10.0 µm	≤16.0 µm

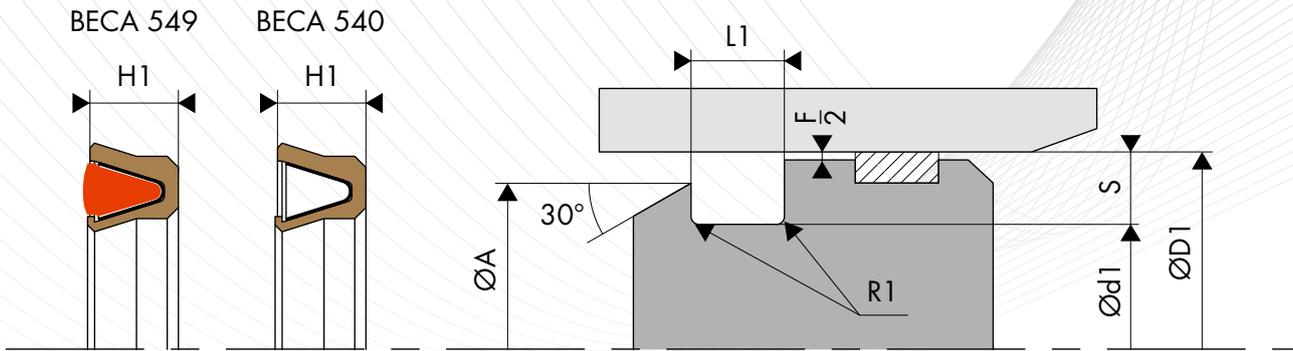
CHAMFERS AND RADIUS

Radial section S	Radius R1	Chamfer C
1.45	0.40	3.00
2.25	0.40	3.00
3.10	0.60	3.00
4.70	0.80	3.00
6.10	0.80	3.50
9.50	0.80	6.50

○ TABLE MATERIALS

Profiled seal					V-spring			Mating surface material
Standard code	ISO code	Material	Colour	Characteristics	Code	Type of material	Service temperature	
DP	P	Virgin PTFE	White	Resistance to chemical products Impermeability Dielectric Non-stick Low friction coefficient Food industry	I	X10 Cr Ni 18-8	-200°C/+260°C	Steel Stainless steel Chrome steel Aluminium Bronze Cast iron Treated surface
DC	C	PTFE + 25% Carbon	Grey	Improvements • Wear properties • Compression set Good resistance to chemical products Thermal and electrical conductivity Anti-static High-performing in compression-based dynamic applications	I	X10 Cr Ni 18-8	-200°C/+260°C	
CG	C	PTFE + 23% Carbon + 2% Graphite	Black	Good resistance to chemical products Thermal and electrical conductivity Anti-static High-performing in compression-based dynamic applications	I	X10 Cr Ni 18-8	-200°C/+260°C	
DV	V	PTFE + 25 % Glass	Blue	Improvements • Wear properties • Mechanical strength Slightly more abrasive, however, this is corrected by adding MOS2 Maintains its chemical and dielectric properties Well-suited to applications with rotational and simultaneous alternating movements	I	X10 Cr Ni 18-8	-200°C/+260°C	Steel Chrome steel Cast iron
VM	M	PTFE + 15 % Glass + 5% MOS2	Grey	Maintains its chemical and dielectric properties Well-suited to applications with rotational and simultaneous alternating movements	I	X10 Cr Ni 18-8	-200°C/+260°C	
DX	X	PTFE GL Blue + Glass + Metal oxides	Turquoise blue	Resistance to compression Resistance to wear Excellent chemical stability Good thermal conductivity	I	X10 Cr Ni 18-8	-200°C/+260°C	
DG	G	PTFE + 15% Graphite	Black	Improvements • Wear properties Reduced wear on metal parts Self-lubricating Thermal and electrical conductivity Low permeability Good friction coefficient Anti-static High performing in dynamic self-lubricating applications	I	X10 Cr Ni 18-8	-200°C/+260°C	Steel Stainless steel Chrome steel Aluminium Bronze Cast iron Treated surface
K1	K	PTFE + 10% Ekonol	Light brown	Improvements • Better abrasion resistance • Better dimensional stability at high temperatures Use up to +300°C Good friction coefficient and low permeability	I	X10 Cr Ni 18-8	-200°C/+260°C	
K2	K	PTFE + 20% Ekonol	Light brown	Use up to +300°C Good friction coefficient and low permeability	I	X10 Cr Ni 18-8	-200°C/+260°C	
DB	B	PTFE + 60% Bronze	Dark brown	Improvements • Wear properties • Warping resistance and creep strength • Compression resistance Self-lubricating Electrical and thermal conductivity Does not alter the metal parts Reduced hold with certain chemical products Used for high-compression dynamic seals and has a low level of wear	I	X10 Cr Ni 18-8	-200°C/+260°C	Steel Chrome steel Cast iron
B4	B	PTFE + 40% Bronze	Dark brown	Self-lubricating Electrical and thermal conductivity Does not alter the metal parts Reduced hold with certain chemical products Used for high-compression dynamic seals and has a low level of wear	I	X10 Cr Ni 18-8	-200°C/+260°C	
HG	HG	PE-UHMW	White or off-white	Excellent wear resistance on contact with water and air	I	X10 Cr Ni 18-8	-70°C/+80°C	Steel Stainless steel Chrome steel Aluminium Bronze Cast iron Treated surface

Other grades of materials are available depending on your specificities.



○ INSTALLATION DIMENSIONS

Series	Bore diameter ØD1 H9		Groove diameter	Groove width	Radial section	Step height
	Standard range	Extended range	Ød1 h9	L1 0/+0.20	S	ØD1 - A
540.0*	6.0 - 13.9	6.0 - 40.0	D1 - 2.90	2.40	1.45	0.4
540.1	14.0 - 24.9	10.0 - 200.0	D1 - 4.50	3.60	2.25	0.6
540.2	25.0 - 45.9	16.0 - 400.0	D1 - 6.20	4.80	3.10	0.7
540.3	46.0 - 124.9	28.0 - 700.0	D1 - 9.40	7.10	4.70	0.8
540.4	125.0 - 999.9	45.0 - 999.9	D1 - 12.20	9.50	6.10	0.9
540.5	1000.0 - 2500.0	100.0 - 2500.0	D1 - 19.00	15.00	9.50	0.9

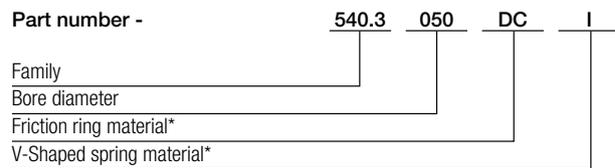
For special applications > 30 MPa, we recommend using an H8/f8 tolerance (bore/piston) or selecting other, more suitable materials. Please contact our experts.

*Only BECA 540.0 profiles are fitted with an O'Ring instead of a V-spring.

○ EXAMPLE OF CODIFICATION

STANDARD CODIFICATION

Materials _____ : PTFE + 25% Carbon profiled seal - Code DC
 _____ : Stainless steel V-Shaped spring - Code I
Bore diameter _____ : ØD1 = 50.00 mm
Groove diameter _____ : Ød1 + 40.60 mm
Part number _____ : 540.3050DCI



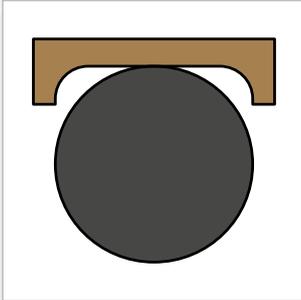
* The codes that define the materials are set out in the materials table on the previous page.

DIMENSIONS

Part number	Bore diameter ØD1 H9	Groove diameter Ød1 h9	Seal height H1	Groove width L1 0/+0.20
540.0008	8.00	5.10	2.10	2.40
540.0010	10.00	7.10	2.10	2.40
540.0012	12.00	9.10	2.10	2.40
540.1014	14.00	9.50	3.30	3.60
540.1015	15.00	10.50	3.30	3.60
540.1016	16.00	11.50	3.30	3.60
540.1017	17.00	12.50	3.30	3.60
540.1018	18.00	13.50	3.30	3.60
540.1020	20.00	15.50	3.30	3.60
540.1022	22.00	17.50	3.30	3.60
540.1024	24.00	19.50	3.30	3.60
540.2025	25.00	18.80	4.40	4.80
540.2026	26.00	19.80	4.40	4.80
540.2028	28.00	21.80	4.40	4.80
540.2030	30.00	23.80	4.40	4.80
540.2032	32.00	25.80	4.40	4.80
540.2035	35.00	28.80	4.40	4.80
540.2384	38.40	32.20	4.40	4.80
540.2040	40.00	33.80	4.40	4.80
540.2042	42.00	35.80	4.40	4.80
540.2045	45.00	38.80	4.40	4.80
540.3046	46.00	36.60	6.50	7.10
540.3048	48.00	38.60	6.50	7.10
540.3049	49.00	39.60	6.50	7.10
540.3050	50.00	40.60	6.50	7.10
540.3052	52.00	42.60	6.50	7.10
540.3053	53.00	43.60	6.50	7.10
540.3055	55.00	45.60	6.50	7.10
540.3056	56.00	46.60	6.50	7.10
540.3058	58.00	48.60	6.50	7.10
540.3060	60.00	50.60	6.50	7.10
540.3061	61.00	51.60	6.50	7.10
540.3063	63.00	53.60	6.50	7.10
540.3064	64.00	54.60	6.50	7.10
540.3065	65.00	55.60	6.50	7.10
540.3067	67.00	57.60	6.50	7.10
540.3068	68.00	58.60	6.50	7.10
540.3070	70.00	60.60	6.50	7.10
540.3072	72.00	62.60	6.50	7.10
540.3074	74.00	64.60	6.50	7.10
540.3075	75.00	65.60	6.50	7.10
540.3078	78.00	68.60	6.50	7.10
540.3080	80.00	70.60	6.50	7.10
540.3083	83.00	73.60	6.50	7.10
540.3085	85.00	75.60	6.50	7.10
540.3086	86.00	76.60	6.50	7.10
540.3090	90.00	80.60	6.50	7.10
540.3092	92.00	82.60	6.50	7.10
540.3095	95.00	85.60	6.50	7.10
540.3098	98.00	88.60	6.50	7.10
540.3100	100.00	90.60	6.50	7.10
540.3105	105.00	95.60	6.50	7.10
540.3108	108.00	98.60	6.50	7.10

Part number	Bore diameter ØD1 H9	Groove diameter Ød1 h9	Seal height H1	Groove width L1 0/+0.20
540.3110	110.00	100.60	6.50	7.10
540.3115	115.00	105.60	6.50	7.10
540.3120	120.00	110.60	6.50	7.10
540.4125	125.00	112.80	8.80	9.50
540.4130	130.00	117.80	8.80	9.50
540.4135	135.00	122.80	8.80	9.50
540.4140	140.00	127.80	8.80	9.50
540.4145	145.00	132.80	8.80	9.50
540.4150	150.00	137.80	8.80	9.50
540.4155	155.00	142.80	8.80	9.50
540.4160	160.00	147.80	8.80	9.50
540.4165	165.00	152.80	8.80	9.50
540.4170	170.00	157.80	8.80	9.50
540.4175	175.00	162.80	8.80	9.50
540.4180	180.00	167.80	8.80	9.50
540.4185	185.00	172.80	8.80	9.50
540.4190	190.00	177.80	8.80	9.50
540.4195	195.00	182.80	8.80	9.50
540.4200	200.00	187.80	8.80	9.50
540.4205	205.00	192.80	8.80	9.50
540.4210	210.00	197.80	8.80	9.50
540.4215	215.00	202.80	8.80	9.50
540.4220	220.00	207.80	8.80	9.50
540.4225	225.00	212.80	8.80	9.50
540.4230	230.00	217.80	8.80	9.50
540.4235	235.00	222.80	8.80	9.50
540.4240	240.00	227.80	8.80	9.50
540.4245	245.00	232.80	8.80	9.50
540.4250	250.00	237.80	8.80	9.50
540.4255	255.00	242.80	8.80	9.50
540.4260	260.00	247.80	8.80	9.50
540.4264	264.00	251.80	8.80	9.50
540.4265	265.00	252.80	8.80	9.50
540.4270	270.00	257.80	8.80	9.50
540.4275	275.00	262.80	8.80	9.50
540.4280	280.00	267.80	8.80	9.50
540.4285	285.00	272.80	8.80	9.50
540.4290	290.00	277.80	8.80	9.50
540.4295	295.00	282.80	8.80	9.50
540.4300	300.00	287.80	8.80	9.50
540.4305	305.00	292.80	8.80	9.50
540.4310	310.00	297.80	8.80	9.50
540.4315	315.00	302.80	8.80	9.50
540.4320	320.00	307.80	8.80	9.50
540.4325	325.00	312.80	8.80	9.50
540.4350	350.00	337.80	8.80	9.50
540.4360	360.00	347.80	8.80	9.50
540.4400	400.00	387.80	8.80	9.50
540.4420	420.00	407.80	8.80	9.50
540.4450	450.00	437.80	8.80	9.50
540.4480	480.00	467.80	8.80	9.50
540.4500	500.00	487.80	8.80	9.50

The figures highlighted in bold correspond to the bore diameters that are recommended by standard ISO 3320. Other intermediate sizes can be provided.



PISTON SEALS

BECA 550-559



DESCRIPTION

The BECA 550-559 profiles are double acting composite piston seals composed of a filled PTFE friction ring and pre-tightened rubber O'Ring. They can be mounted in the grooves of the O'Rings. Option of connecting the seal to 1 or 2 back-up rings.

ADVANTAGES

Suitable for a reduced size

Low friction coefficient;
no stick-slip effect

Excellent extrusion and wear resistance

Wide temperature range and excellent chemical resistance, depending on the material selected for the O'Ring

APPLICATIONS

Machine tools

Lifting systems

Valves

MATERIALS

Friction ring

Bronze-filled PTFE

Carbon-filled PTFE

Blue GL PTFE

O'Ring

NBR 70 Shore A

FKM 70 Shore A

Other grades of materials are available. Please refer to the materials table on the next page.

TECHNICAL DATA

Temperature	-30°C / +200°C
Pressure	35 MPa
Speed	5 m/s
Media	Mineral hydraulic oils Fire-resistant liquids Biocompatible fluids Water Others (contact our experts)

The figures above indicate the maximum values and may not be cumulated. They may be developed, depending on the materials used.

EXTRUSION GAPS

Radial section S	Radial gap F/2			
	2 MPa	10 MPa	20 MPa	35 MPa
1.45	0.10	0.10	0.08	0.05
2.25	0.15	0.15	0.10	0.07
3.10	0.25	0.20	0.15	0.08
4.70	0.35	0.25	0.20	0.10
6.10	0.50	0.30	0.25	0.15
7.50	0.60	0.40	0.30	0.20

SURFACE ROUGHNESS

Roughness	Dynamic surface area	Static surface area	Groove flanks
Ra	0.05 - 0.2 µm	≤1.6 µm	≤3.2 µm
Rz	0.4 - 1.6 µm	≤6.3 µm	≤10.0 µm
Rmax	0.63 - 2.5 µm	≤10.0 µm	≤16.0 µm

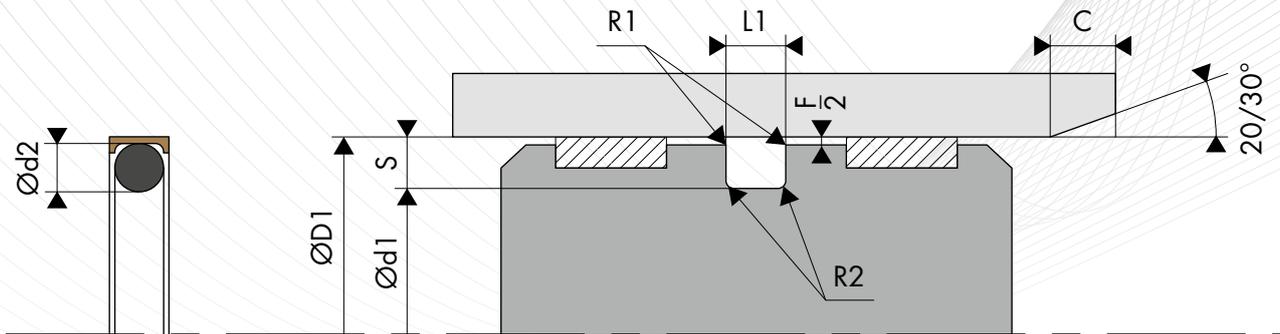
CHAMFERS AND RADIUS

Radial section S	Radius R1	Radius R2	Chamfer C
1.45	0.30	0.40	2.00
2.25	0.30	0.40	2.00
3.10	0.30	0.60	3.00
4.70	0.30	0.80	3.00
6.10	0.30	0.80	5.00
7.50	0.30	1.00	6.00

TABLE MATERIALS

Friction ring					O'Ring			Mating surface material	
Standard code	ISO code	Material	Colour	Characteristics	Code	Type of material	Service temperature		
DP	P	Virgin PTFE	White	Resistance to chemical products Impermeability Dielectric Non-stick Low friction coefficient Food industry	K6	NBR 70 Shore A	-30°C/+100°C	Steel Stainless steel Chrome steel Aluminium Bronze Cast iron Treated surface	
					G6	FKM 70 Shore A	-20°C/+200°C		
					C6	EPDM 70 Shore A	-45°C/+150°C		
					F6	VMQ 70 Shore A	-60°C/+200°C		
DC	C	PTFE + 25% Carbon	Grey	Improvements • Wear properties • Compression set Good resistance to chemical products Thermal and electrical conductivity Anti-static High-performing in compression-based dynamic applications	K6	NBR 70 Shore A	-30°C/+100°C		
					G6	FKM 70 Shore A	-20°C/+200°C		
					C6	EPDM 70 Shore A	-45°C/+150°C		
CG	C	PTFE + 23% Carbon + 2% Graphite	Black	Thermal and electrical conductivity Anti-static High-performing in compression-based dynamic applications	K6	NBR 70 Shore A	-30°C/+100°C		
					G6	FKM 70 Shore A	-20°C/+200°C		
					C6	EPDM 70 Shore A	-45°C/+150°C		
DV	V	PTFE + 25 % Glass	Blue	Improvements • Wear properties • Mechanical strength Slightly more abrasive, however, this is corrected by adding MOS2 Maintains its chemical and dielectric properties Well-suited to applications with rotational and simultaneous alternating movements	K6	NBR 70 Shore A	-30°C/+100°C		Steel Chrome steel Cast iron
					G6	FKM 70 Shore A	-20°C/+200°C		
VM	M	PTFE + 15 % Glass + 5% MOS2	Grey	Well-suited to applications with rotational and simultaneous alternating movements	K6	NBR 70 Shore A	-30°C/+100°C		
					G6	FKM 70 Shore A	-20°C/+200°C		
DX	X	PTFE GL Blue + Glass + Metal oxides	Turquoise blue	Resistance to compression Resistance to wear Excellent chemical stability Good thermal conductivity	K6	NBR 70 Shore A	-30°C/+100°C		
					G6	FKM 70 Shore A	-20°C/+200°C		
DG	G	PTFE + 15% Graphite	Black	Improvements • Wear properties Reduced wear on metal parts Self-lubricating Thermal and electrical conductivity Low permeability Good friction coefficient Anti-static High performing in dynamic self-lubricating applications	K6	NBR 70 Shore A	-30°C/+100°C	Steel Stainless steel Chrome steel Aluminium Bronze Cast iron Treated surface	
					G6	FKM 70 Shore A	-20°C/+200°C		
					C6	EPDM 70 Shore A	-45°C/+150°C		
K1	K	PTFE + 10% Ekonol	Light brown	Improvements • Better abrasion resistance • Better dimensional stability at high temperatures Use up to +300°C Good friction coefficient and low permeability	K6	NBR 70 Shore A	-30°C/+100°C		
					G6	FKM 70 Shore A	-20°C/+200°C		
					C6	EPDM 70 Shore A	-45°C/+150°C		
K2	K	PTFE + 20% Ekonol	Light brown	Use up to +300°C Good friction coefficient and low permeability	K6	NBR 70 Shore A	-30°C/+100°C		
					G6	FKM 70 Shore A	-20°C/+200°C		
					C6	EPDM 70 Shore A	-45°C/+150°C		
DB	B	PTFE + 60% Bronze	Dark brown	Improvements • Wear properties • Warping resistance and creep strength • Compression resistance Self-lubricating Electrical and thermal conductivity Does not alter the metal parts Reduced hold with certain chemical products Used for high-compression dynamic seals and has a low level of wear	K6	NBR 70 Shore A	-30°C/+100°C	Steel Chrome steel Cast iron	
					G6	FKM 70 Shore A	-20°C/+200°C		
B4	B	PTFE + 40% Bronze	Dark brown	Used for high-compression dynamic seals and has a low level of wear	K6	NBR 70 Shore A	-30°C/+100°C		
					G6	FKM 70 Shore A	-20°C/+200°C		
HG	HG	PE-UHMW	White or off-white	Excellent wear resistance on contact with water and air	K6	NBR 70 Shore A	-30°C/+80°C	Steel Stainless steel Chrome steel Aluminium Bronze Cast iron Treated surface	

Other grades of materials are available depending on your specificities.



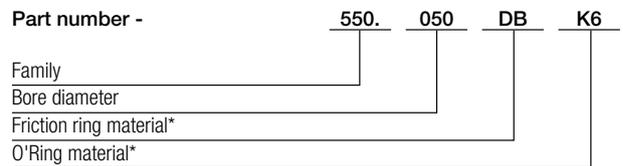
○ INSTALLATION DIMENSIONS

Bore diameter ØD1 H9		Groove diameter	Groove width	Radial section	O'Ring cross-section
BECA 550 Standard range	BECA 559 Extended range	Ød1 h9	L1 0/+0.20	S	Ød2
5.0 - 13.9	5.0 - 139.9	D1 - 2.90	2.40	1.45	1.78
14.0 - 24.9	8.0 - 259.9	D1 - 4.50	3.60	2.25	2.62
25.0 - 45.9	12.0 - 469.9	D1 - 6.20	4.80	3.10	3.53
46.0 - 124.9	20.0 - 669.9	D1 - 9.40	7.10	4.70	5.33
125.0 - 669.9	80.0 - 999.9	D1 - 12.20	9.50	6.10	6.99
670.0 - 999.9	125.0 - 999.9	D1 - 15.00	10.00	7.50	8.40

○ EXAMPLE OF CODIFICATION

STANDARD CODIFICATION

Materials _____ : Friction ring, PTFE + 60% Bronze - Code DB
 _____ : NBR 70 Shore A O'Ring - Code K6
Bore diameter _____ : ØD1 = 50.00 mm
Groove diameter _____ : Ød1 + 40.60 mm
Part number _____ : 550.050DBK6



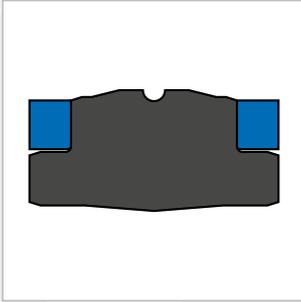
* The codes that define the materials are set out in the materials table on the previous page.

DIMENSIONS

Part number	Bore diameter ØD1 H9	Groove diameter Ød1 h9	Groove width L1 0/+0.20
550.008	8.00	5.10	2.40
550.022	22.00	17.50	3.60
550.025	25.00	18.80	4.80
550.028	28.00	21.80	4.80
550.030	30.00	23.80	4.80
550.032	32.00	25.80	4.80
550.035	35.00	28.80	4.80
550.038	38.00	28.60	7.10
550.040	40.00	33.80	4.80
550.042	42.00	35.80	4.80
550.045	45.00	38.80	4.80
550.009	9.00	6.10	2.40
550.048	48.00	38.60	7.10
550.050	50.00	40.60	7.10
550.052	52.00	42.60	7.10
550.055	55.00	45.60	7.10
550.058	58.00	48.60	7.10
550.060	60.00	50.60	7.10
550.062	62.00	52.60	7.10
550.063	63.00	53.60	7.10
550.065	65.00	55.60	7.10
550.070	70.00	60.60	7.10
550.010	10.00	7.10	2.40
550.072	72.00	62.60	7.10
550.075	75.00	65.60	7.10
550.078	78.00	68.60	7.10
550.080	80.00	70.60	7.10
550.082	82.00	72.60	7.10
550.085	85.00	75.60	7.10
550.090	90.00	80.60	7.10
550.095	95.00	85.60	7.10
550.100	100.00	90.60	7.10
550.105	105.00	95.60	7.10
550.012	12.00	9.10	2.40
550.110	110.00	100.60	7.10
550.115	115.00	105.60	7.10
550.120	120.00	110.60	7.10
550.125	125.00	112.80	9.50
550.130	130.00	117.80	9.50
550.135	135.00	122.80	9.50
550.140	140.00	127.80	9.50
550.150	150.00	137.80	9.50
550.155	155.00	142.80	9.50

Part number	Bore diameter ØD1 H9	Groove diameter Ød1 h9	Groove width L1 0/+0.20
550.014	14.00	9.50	3.60
550.160	160.00	147.80	9.50
550.165	165.00	152.80	9.50
550.170	170.00	157.80	9.50
550.175	175.00	162.80	9.50
550.180	180.00	167.80	9.50
550.190	190.00	177.80	9.50
550.200	200.00	187.80	9.50
550.210	210.00	197.80	9.50
550.220	220.00	207.80	9.50
550.015	15.00	10.50	3.60
550.240	240.00	227.80	9.50
550.250	250.00	237.80	9.50
550.260	260.00	247.80	9.50
550.270	270.00	257.80	9.50
550.280	280.00	267.80	9.50
550.290	290.00	277.80	9.50
550.300	300.00	287.80	9.50
550.320	320.00	307.80	9.50
550.330	330.00	317.80	9.50
550.016	16.00	11.50	3.60
550.340	340.00	327.80	9.50
550.350	350.00	337.80	9.50
550.360	360.00	347.80	9.50
550.370	370.00	357.80	9.50
550.380	380.00	367.80	9.50
550.390	390.00	377.80	9.50
550.410	410.00	397.80	9.50
550.420	420.00	407.80	9.50
550.430	430.00	417.80	9.50
550.018	18.00	13.50	3.60
550.440	440.00	427.80	9.50
550.450	450.00	437.80	9.50
550.460	460.00	447.80	9.50
550.470	470.00	457.80	9.50
550.480	480.00	467.80	9.50
550.490	490.00	477.80	9.50
550.500	500.00	487.80	9.50
550.020	20.00	15.50	3.60
550.145	145.00	132.80	9.50
550.230	230.00	217.80	9.50
550.310	310.00	297.80	9.50
550.400	400.00	387.80	9.50

The figures highlighted in bold correspond to the bore diameters that are recommended by standard ISO 3320. Other intermediate sizes can be provided.



PISTON SEALS

BECA 560



DESCRIPTION

The BECA 560 profile is a high-performing, double acting compact piston seal composed of a flexible rubber ring and two POM back-up rings as standard.

ADVANTAGES

- Good sealing effect
- Excellent extrusion resistance
- Excellent wear resistance
- Reliable sealing for significant and sudden pressure variations
- Assembled by deformation

APPLICATIONS

- Agriculture
- Mobile machinery
- Hydraulic cylinders

MATERIALS

Flexible ring

- NBR 80 Shore A
- FKM 80 Shore A

Back-up rings

- Polyoxymethylene (POM)
- Bronze-filled PTFE

Other grades of materials are available. Please contact our experts.

TECHNICAL DATA

Temperature	-30°C / +200°C
Pressure	40 MPa
Speed	0.5 m/sec
Media	Mineral hydraulic oils Fire-resistant liquids Biocompatible fluids Water Others (contact our experts)

The figures above indicate the maximum values and may not be cumulated. They may be developed, depending on the materials used.

EXTRUSION GAPS

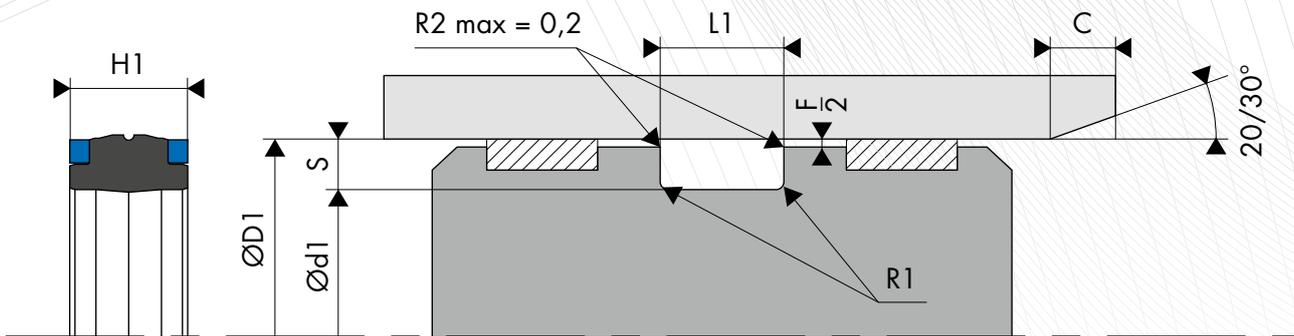
Pressure MPa	Radial gap F/2
25 MPa	0.30
35 MPa	0.20
40 MPa	0.15

SURFACE ROUGHNESS

Roughness	Dynamic surface area	Static surface area	Groove flanks
Ra	0.1 - 0.4 µm	≤1.6 µm	≤3.2 µm
Rz	0.63 - 2.5 µm	≤6.3 µm	≤10.0 µm
Rmax	1.0 - 4.0 µm	≤10.0 µm	≤16.0 µm

CHAMFERS AND RADIUS

Radial section S	Radius R1	Chamfer C
8.00	0.20	5.00
10.00	0.30	6.00

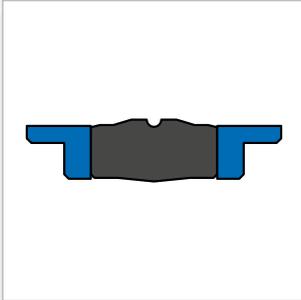


○ DIMENSIONS

Part number	Bore diameter ØD1 H11	Groove diameter Ød1 h9	Seal height H1	Groove width L1 0/+0.20
560.1040AK8	40.00	24.00	18.00	18.40
560.1110AK8	110.00	90.00	22.00	22.40
560.1115AK8	115.00	90.00	22.00	22.30
560.1120AK8	120.00	95.00	22.00	22.40
560.1130AK8	130.00	105.00	25.00	25.30
560.1050AK8	50.00	34.00	18.00	18.40
560.1055AK8	55.00	39.00	18.00	18.40

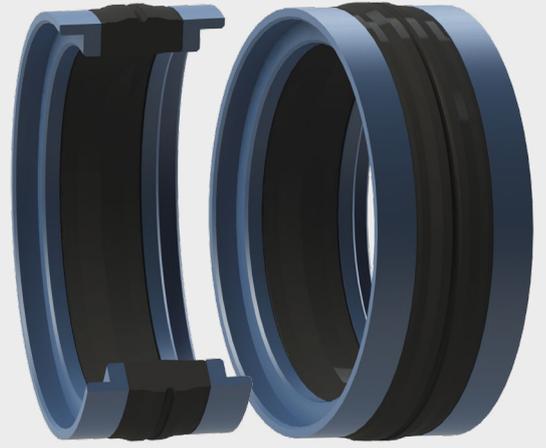
Part number	Bore diameter ØD1 H11	Groove diameter Ød1 h9	Seal height H1	Groove width L1 0/+0.20
560.1060AK8	60.00	44.00	18.00	18.40
560.1070AK8	70.00	50.00	22.00	22.40
560.1080AK8	80.00	60.00	22.00	22.40
560.1090AK8	90.00	70.00	22.00	22.40
560.1095AK8	95.00	75.00	22.00	22.30
560.1100AK8	100.00	75.00	22.00	22.40

The figures highlighted in bold correspond to the bore diameters that are recommended by standard ISO 3320. Other intermediate sizes can be provided.



PISTON SEALS

BECA 570



DESCRIPTION

The BECA 570 profile is a high-performing, double acting compact piston seal composed of a profiled rubber ring with special fibre reinforcements and a POM wear/back-up ring. It can be assembled in a groove according to standard ISO 6547.

ADVANTAGES

- Good sealing effect
- Excellent extrusion resistance
- Excellent wear resistance
- Reliable sealing for significant and sudden pressure variations

APPLICATIONS

- Agriculture
- Mobile machinery
- Hydraulic cylinders

MATERIALS

Profiled seal

Fabric NBR

Wear/back-up rings

Polyoxymethylene - POM

TECHNICAL DATA

Temperature	-30°C / +110°C
Pressure	40 MPa
Speed	0.5 m/sec
Media	Mineral hydraulic oils Fire-resistant liquids Biocompatible fluids Water Others (contact our experts)

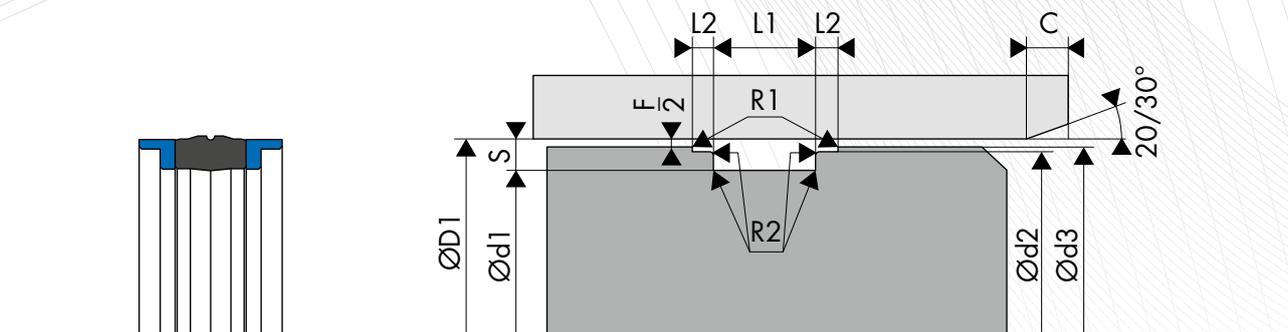
The figures above indicate the maximum values and may not be cumulated. They may be developed, depending on the materials used.

SURFACE ROUGHNESS

Roughness	Dynamic surface area	Static surface area	Groove flanks
Ra	0.1 - 0.4 µm	≤1.6 µm	≤3.2 µm
Rz	0.63 - 2.5 µm	≤6.3 µm	≤10.0 µm
Rmax	1.0 - 4.0 µm	≤10.0 µm	≤16.0 µm

CHAMFERS AND RADIUS

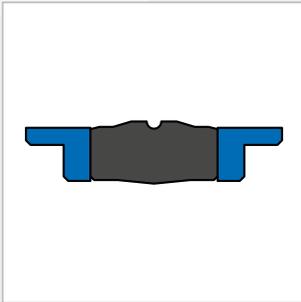
Radial section S	Radius R1	Radius R2	Min. chamfer C
4.00	0.40	0.40	2.50
5.00	0.40	0.40	3.00
6.00	0.40	0.40	3.00
7.50	0.40	0.40	4.00
8.50	0.40	0.40	5.00
10.00	0.80	0.80	6.00
15.00	0.80	0.80	8.00



DIMENSIONS

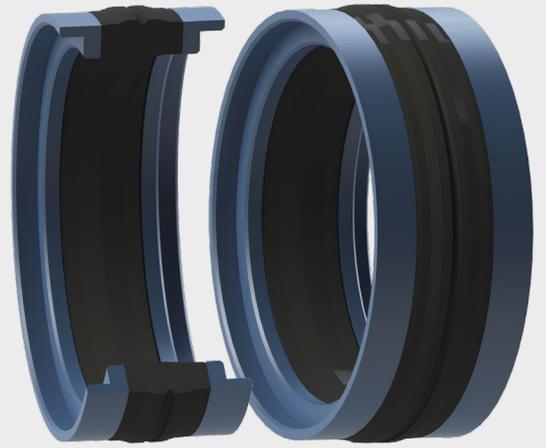
Part number	Bore diameter ØD1 H11	Groove dimensions					
		Ød1 h9	Ød2 h9	Ød3 h11	L1 0/+0.15	L2 0/+0.15	L3 0/+0.10
570.R025AF8	25.00	17.00	21.00	24.40	13.50	3.20	2.10
570.2040AF8	40.00	30.00	35.40	38.40	16.30	6.35	-
570.0040AF8	40.00	32.00	36.00	39.40	15.50	3.20	-
570.R040AF8	40.00	32.00	36.00	39.40	15.50	3.20	3.10
570.3040AF8	40.00	32.00	37.00	39.00	10.00	4.00	-
570.0045AF8	45.00	37.00	41.00	44.40	15.50	3.20	-
570.R045AF8	45.00	37.00	41.00	44.40	15.50	3.20	3.10
570.0050AF8	50.00	38.00	46.00	49.40	20.50	4.20	-
570.3050AF8	50.00	40.00	47.00	49.00	12.50	4.00	-
570.0055AF8	55.00	43.00	51.00	54.40	20.50	4.20	-
570.0060AF8	60.00	48.00	56.00	59.40	20.50	4.20	-
570.3025AF8	25.00	17.00	22.00	24.00	10.00	4.00	-
570.0063AF8	63.00	51.00	59.00	62.40	20.50	4.20	-
570.3063AF8	63.00	53.00	60.00	62.00	12.50	4.00	-
570.0065AF8	65.00	53.00	61.00	64.40	20.50	4.20	-
570.0070AF8	70.00	58.00	66.00	69.40	20.50	4.20	-
570.0075AF8	75.00	63.00	71.00	74.40	20.50	4.20	-
570.3080AF8	80.00	65.00	76.00	78.50	20.00	5.00	-
570.0080AF8	80.00	66.00	76.00	79.40	22.50	5.20	-
570.0085AF8	85.00	71.00	81.00	84.40	22.50	5.20	-
570.0090AF8	90.00	76.00	86.00	89.40	22.50	5.20	-
570.3100AF8	100.00	85.00	96.00	98.50	20.00	5.00	-
570.S030AF8	30.00	21.00	27.00	29.00	13.50	2.10	-
570.0100AF8	100.00	86.00	96.00	99.40	22.50	5.20	-
570.0110AF8	110.00	96.00	106.00	109.40	22.50	5.20	-
570.0120AF8	120.00	106.00	116.00	119.40	22.50	5.20	-
570.3125AF8	125.00	105.00	120.00	123.00	25.00	6.30	-
570.0125AF8	125.00	108.00	121.00	124.40	26.50	7.20	-
570.5130AF8	130.00	105.00	122.60	127.50	25.30	3.50	-
570.3140AF8	140.00	120.00	135.00	138.00	25.00	6.30	-
570.0140AF8	140.00	123.00	136.00	139.40	26.50	7.20	-
570.0150AF8	150.00	133.00	146.00	149.40	26.50	7.20	-
570.5160AF8	160.00	140.00	155.00	158.00	25.00	6.30	-
570.R030AF8	30.00	22.00	26.00	29.40	13.50	3.20	2.10
570.0160AF8	160.00	143.00	156.00	159.40	26.50	7.20	-
570.0170AF8	170.00	153.00	166.00	169.40	26.50	7.20	-
570.3180AF8	180.00	150.00	172.00	178.00	36.00	7.20	-
570.0180AF8	180.00	163.00	176.00	179.40	26.50	7.20	-
570.3200AF8	200.00	170.00	192.00	197.00	36.00	12.50	-
570.0200AF8	200.00	180.00	196.00	199.40	31.50	9.20	-
570.0220AF8	220.00	200.00	216.00	219.40	31.50	9.20	-
570.0250AF8	250.00	230.00	246.00	249.40	31.50	9.20	-
570.0320AF8	320.00	290.00	312.00	317.00	36.00	12.50	-
570.0400AF8	400.00	360.00	392.00	397.00	50.00	16.00	-
570.0030AF8	30.00	22.00	26.00	29.40	13.50	3.20	-
570.0500AF8	500.00	460.00	492.00	497.00	50.00	16.00	-
570.R032AF8	32.00	24.00	28.00	31.40	15.50	3.20	3.10
570.3032AF8	32.00	24.00	29.00	31.00	10.00	4.00	-
570.0035AF8	35.00	27.00	31.00	34.40	15.50	3.20	-
570.R035AF8	35.00	27.00	31.00	34.40	15.50	3.20	3.10

The figures highlighted in bold correspond to the dimensions for standard ISO 6547, with the bore diameters in line with standard ISO 3320. Other intermediate sizes can be provided.



PISTON SEALS

BECA 571



DESCRIPTION

The BECA 571 profile is a high-performing, double acting compact piston seal composed of a soft rubber ring and a POM wear/back-up ring as standard.

ADVANTAGES

- Good sealing effect
- Excellent extrusion resistance
- Excellent wear resistance
- Reliable sealing for significant and sudden pressure variations

APPLICATIONS

- Agriculture
- Mobile machinery
- Hydraulic cylinders

MATERIALS

Profiled seal

- NBR 80 Shore A
- FKM 80 Shore A

Wear/back-up rings

- Polyoxymethylene - POM
- Bronze-filled PTFE

Other grades of materials are available. Please contact our experts.

TECHNICAL DATA

Temperature	-30°C / +200°C
Pressure	40 MPa
Speed	0.5 m/sec
Media	Mineral hydraulic oils Fire-resistant liquids Biocompatible fluids Water Others (contact our experts)

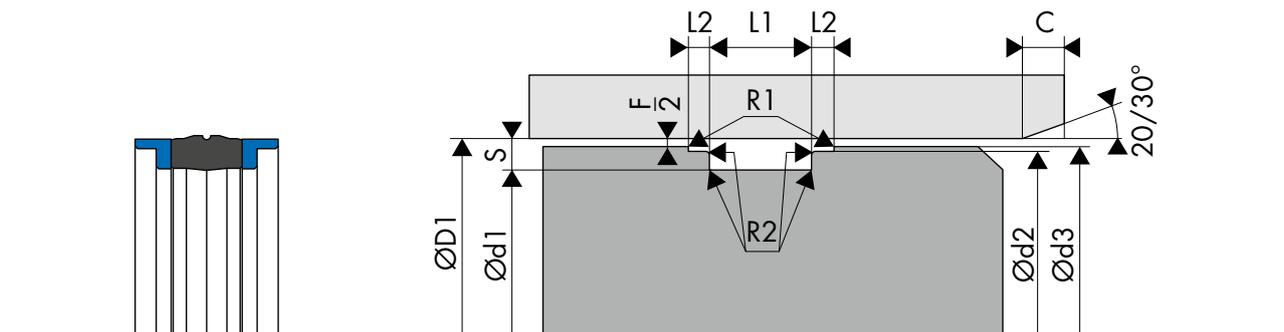
The figures above indicate the maximum values and may not be cumulated. They may be developed, depending on the materials used.

SURFACE ROUGHNESS

Roughness	Dynamic surface area	Static surface area	Groove flanks
Ra	0.1 - 0.4 μm	$\leq 1.6 \mu\text{m}$	$\leq 3.2 \mu\text{m}$
Rz	0.63 - 2.5 μm	$\leq 6.3 \mu\text{m}$	$\leq 10.0 \mu\text{m}$
Rmax	1.0 - 4.0 μm	$\leq 10.0 \mu\text{m}$	$\leq 16.0 \mu\text{m}$

CHAMFERS AND RADIUS

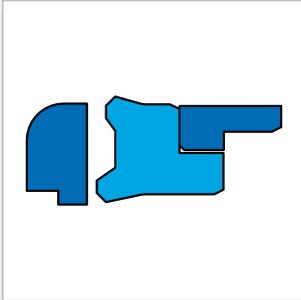
Radial section S	Radius R1	Radius R2	Min. chamfer C
4.00	0.40	0.40	2.50
5.00	0.40	0.40	3.00
6.00	0.40	0.40	3.00
7.50	0.40	0.40	4.00
8.50	0.40	0.40	5.00
10.00	0.80	0.80	6.00
15.00	0.80	0.80	8.00





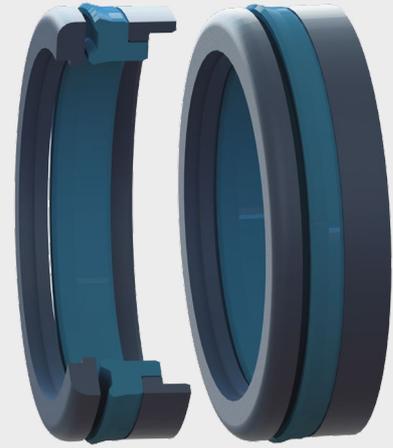
Part number	Bore diameter ØD1 H11	Groove dimensions						
		Ød1 h9	Ød2 h9	Ød3 h11	Ød4 h9	L1 0/+0.15	L2 0/+0.15	L3
571.0035AK8	35.00	27.00	31.00	34.40	-	15.50	3.20	-
571.R035AK8	35.00	27.00	31.00	34.40	24.00	15.50	3.20	3.10
571.0036AK8	36.00	28.00	32.00	35.40	-	15.50	3.20	-
571.1040AK8	40.00	24.00	35.40	38.70	-	18.40	6.35	-
571.5040AK8	40.00	26.00	36.00	39.40	-	15.50	3.20	-
571.2040AK8	40.00	30.00	35.40	38.70	-	16.30	6.35	-
571.0040AK8	40.00	32.00	36.00	39.40	-	15.50	3.20	-
571.R040AK8	40.00	32.00	36.00	39.40	29.00	15.50	3.25	3.10
571.3040AK8	40.00	32.00	37.00	39.00	-	10.00	4.00	-
571.0042AK8	42.00	34.00	38.00	41.40	-	15.50	3.20	-
571.0045AK8	45.00	37.00	41.00	44.40	-	15.50	3.20	-
571.1025AK8	25.00	16.00	20.00	24.40	-	13.50	3.20	-
571.R045AK8	45.00	37.00	41.00	44.40	34.00	15.50	3.20	3.10
571.1050AK8	50.00	34.00	45.40	48.70	-	18.40	6.35	-
571.0050AK8	50.00	38.00	46.00	49.40	-	20.50	4.20	-
571.3050AK8	50.00	40.00	47.00	49.00	-	12.50	4.00	-
571.1055AK8	55.00	39.00	50.40	53.60	-	18.40	6.35	-
571.0055AK8	55.00	43.00	51.00	54.40	-	20.50	4.20	-
571.1060AK8	60.00	44.00	55.40	58.70	-	18.40	6.35	-
571.0060AK8	60.00	48.00	56.00	59.40	-	20.50	4.20	-
571.1063AK8	63.00	47.00	58.40	61.70	-	18.40	6.35	-
571.0063AK8	63.00	51.00	59.00	62.40	-	20.50	4.20	-
571.R025AK8	25.00	17.00	21.00	24.40	14.00	13.50	3.20	2.10
571.3063AK8	63.00	53.00	60.00	62.00	-	12.50	4.00	-
571.0065AK8	65.00	50.00	61.00	64.40	-	18.30	4.20	-
571.1070AK8	70.00	50.00	64.20	68.30	-	22.40	6.35	-
571.0070AK8	70.00	58.00	66.00	69.40	-	20.50	4.20	-
571.1075AK8	75.00	55.00	69.20	73.30	-	22.40	6.35	-
571.0075AK8	75.00	63.00	71.00	74.40	-	20.50	4.20	-
571.1080AK8	80.00	60.00	74.20	78.30	-	22.40	6.35	-
571.3080AK8	80.00	65.00	76.00	78.50	-	20.00	5.00	-
571.0080AK8	80.00	66.00	76.00	79.40	-	22.50	5.20	-
571.1085AK8	85.00	65.00	79.20	83.30	-	22.40	6.35	-
571.3025AK8	25.00	17.00	22.00	24.00	-	10.00	4.00	-
571.0085AK8	85.00	71.00	81.00	84.40	-	22.50	5.20	-
571.1090AK8	90.00	70.00	84.20	88.30	-	22.40	6.35	-
571.0090AK8	90.00	76.00	86.00	89.40	-	22.50	5.20	-
571.1095AK8	95.00	75.00	89.20	93.30	-	22.40	6.35	-
571.1100AK8	100.00	75.00	93.20	98.00	-	22.40	6.35	-
571.3100AK8	100.00	85.00	96.00	98.50	-	20.00	5.00	-
571.0100AK8	100.00	86.00	96.00	99.40	-	22.50	5.20	-
571.2100AK8	100.00	87.00	93.80	98.50	-	14.00	6.00	-
571.2110AK8	110.00	90.00	104.10	108.30	-	22.50	6.35	-
571.1110AK8	110.00	90.00	104.10	108.30	-	25.30	6.35	-
571.R030AK8	30.00	22.00	26.00	29.40	19.00	13.50	3.20	2.10
571.0110AK8	110.00	96.00	106.00	109.40	-	22.50	5.20	-
571.0115AK8	115.00	90.00	111.00	114.40	-	22.40	5.20	-
571.0120AK8	120.00	106.00	116.00	119.40	-	22.50	5.20	-
571.3125AK8	125.00	105.00	120.00	123.00	-	25.00	6.30	-
571.0125AK8	125.00	108.00	121.00	124.40	-	26.50	7.20	-
571.5130AK8	130.00	105.00	122.60	127.50	-	25.30	9.50	-
571.3140AK8	140.00	120.00	135.00	138.00	-	25.00	6.30	-
571.0140AK8	140.00	123.00	136.00	139.40	-	26.50	7.20	-
571.0150AK8	150.00	133.00	148.00	149.40	-	26.50	7.20	-
571.0160AF8	160.00	143.00	156.00	159.40	-	26.50	7.20	-
571.1032AK8	32.00	22.00	26.00	31.40	-	15.50	3.20	-
571.0160AK8	160.00	143.00	156.00	159.40	-	26.50	7.20	-
571.0170AK8	170.00	153.00	166.00	169.40	-	26.50	7.20	-
571.3180AK8	180.00	150.00	172.00	178.00	-	36.00	12.50	-
571.0180AK8	180.00	163.00	176.00	179.50	-	26.50	7.20	-
571.0200AK8	200.00	180.00	196.00	199.40	-	31.50	9.20	-
571.0220AK8	220.00	200.00	216.00	219.40	-	31.50	9.20	-
571.0250AK8	250.00	230.00	246.00	249.40	-	31.50	9.20	-
571.R032AK8	32.00	24.00	28.00	31.40	21.00	15.50	3.20	3.10
571.3032AK8	32.00	24.00	29.00	31.00	-	10.00	4.00	-
571.5035AK8	35.00	25.00	29.00	34.40	-	15.50	3.20	-

The figures highlighted in bold correspond to the dimensions for standard ISO 6547, with the bore diameters in line with standard ISO 3320. Other intermediate sizes can be provided.



PISTON SEALS

BECA 572



DESCRIPTION

The BECA 572 profile is a high-performing, single acting compact piston seal composed of a stop joint, POM wear/back-up ring and profiled polyurethane seal.

ADVANTAGES

Excellent wear resistance
Excellent extrusion resistance
Excellent resistance to high pressures

APPLICATIONS

Agriculture
Mobile machinery
Hydraulic cylinders

MATERIALS

Profiled seal

PU 93 Shore A - Blue
PU 96 Shore A - Blue
High temp. PU 96 Shore A - Beige

Wear/back-up rings

Polyoxymethylene - POM

Retaining ring

Polyoxymethylene - POM

Other grades of materials are available.
Please contact our experts.

TECHNICAL DATA

Temperature	-30°C / +110°C
Pressure	40 MPa
Speed	0.5 m/sec
Media	Mineral hydraulic oils

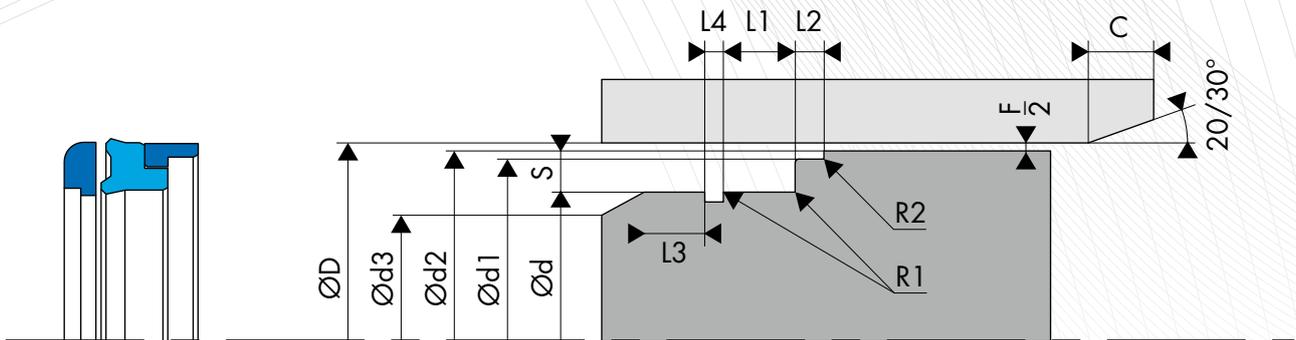
The figures above indicate the maximum values and may not be cumulated. They may be developed, depending on the materials used.

SURFACE ROUGHNESS

Roughness	Dynamic surface area	Static surface area	Groove flanks
Ra	0.1 - 0.4 μm	$\leq 1.6 \mu\text{m}$	$\leq 3.2 \mu\text{m}$
Rz	0.63 - 2.5 μm	$\leq 6.3 \mu\text{m}$	$\leq 10.0 \mu\text{m}$
Rmax	1.0 - 4.0 μm	$\leq 10.0 \mu\text{m}$	$\leq 16.0 \mu\text{m}$

CHAMFERS AND RADIUS

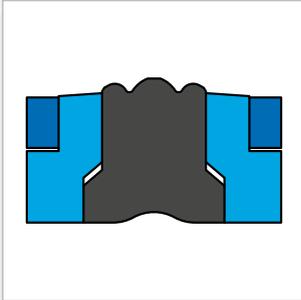
Radial section S	Radius R1	Radius R2	Chamfer C
6.00	0.20	0.20	3.00
7.50	0.20	0.20	4.00
10.00	0.30	0.30	5.00



DIMENSIONS

Part number	Bore diameter ØD1 H11	Groove dimensions							
		Ød ±0.15	Ød1 -0.10/0	Ød2 ±0.15	Ød3 -0.25/0	L1 ±0.10	L2 ±0.15	L3	L4 +0.10/+0.20
572.0032AP9	32.00	20.00	28.00	31.00	-	10.00	6.40	-	-
572.0090AP9	90.00	70.00	84.20	88.30	65.60	14.50	6.40	6.50	3.30
572.0100AP9	100.00	80.00	93.20	98.30	75.60	14.50	6.40	6.50	3.30
572.0105AP9	105.00	85.00	98.20	103.30	80.60	14.50	6.40	6.50	3.30
572.0035AP9	35.00	23.00	31.00	34.00	-	10.00	6.40	-	-
572.0040AP9	40.00	28.00	35.40	38.70	23.60	10.00	6.40	6.00	3.10
572.0050AP9	50.00	30.00	44.20	48.30	25.60	14.50	6.40	6.50	3.30
572.0060AP9	60.00	40.00	54.20	58.30	35.60	14.50	6.40	6.50	3.30
572.0063AP9	63.00	48.00	57.20	61.30	38.60	11.00	6.40	-	-
572.0065AP9	65.00	45.00	59.20	63.30	40.60	14.50	6.40	6.50	3.30
572.0070AP9	70.00	50.00	64.20	68.30	45.60	14.50	6.40	6.50	3.30
572.0080AP9	80.00	60.00	74.20	78.30	55.60	14.50	6.40	6.50	3.30

The figures highlighted in bold correspond to the bore diameters that are recommended by standard ISO 3320. Other intermediate sizes can be provided.



PISTON SEALS

BECA 579



DESCRIPTION

The BECA 579 profile is a high-performing, double acting compact piston seal composed of a flexible rubber ring, two polyurethane back-up rings and two POM wear rings.

ADVANTAGES

- Good sealing effect
- Excellent extrusion resistance
- Excellent wear resistance
- Reliable sealing for significant and sudden pressure variations
- Assembly in closed groove, reduced machining costs

APPLICATIONS

- Agriculture
- Mobile machinery
- Hydraulic cylinders

MATERIALS

Profiled seal

NBR 80 Shore A

Back-up rings

Polyurethane 97 Shore A

Wear rings

Polyoxymethylene - POM

TECHNICAL DATA

Temperature	-30°C / +100°C
Pressure	50 MPa
Speed	0.5 m/sec
Media	Mineral hydraulic oils

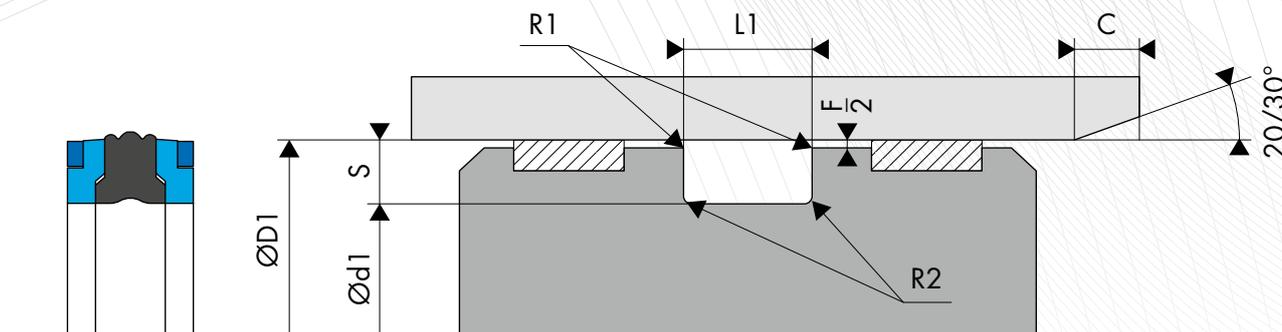
The figures above indicate the maximum values and may not be cumulated. They may be developed, depending on the materials used.

SURFACE ROUGHNESS

Roughness	Dynamic surface area	Static surface area	Groove flanks
Ra	0.1 - 0.4 µm	≤1.6 µm	≤3.2 µm
Rz	0.63 - 2.5 µm	≤6.3 µm	≤10.0 µm
Rmax	1.0 - 4.0 µm	≤10.0 µm	≤16.0 µm

CHAMFERS AND RADIUS

Radial section S	Radius R1	Radius R2	Chamfer C
4.00	0.40	0.40	2.50
5.00	0.40	0.40	3.00
6.00	0.40	0.40	3.00
7.50	0.40	0.40	4.00
8.50	0.40	0.40	5.00
10.00	0.80	0.80	6.00
15.00	0.80	0.80	8.00

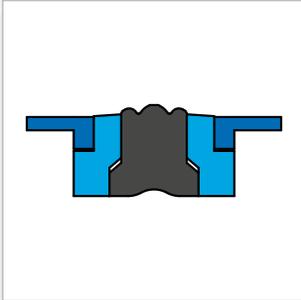


DIMENSIONS

Part number	Bore diameter ØD1 H9	Groove diameter Ød1 h9	Groove width L1 0/+0.20
579.0020AK8	20.00	11.00	13.50
579.0032AK8	32.00	22.00	15.50
579.1032AK8	32.00	22.00	16.40
579.0035AK8	35.00	25.00	15.50
579.1035AK8	35.00	25.00	16.40
579.0040AK8	40.00	24.00	18.40
579.4040AK8	40.00	26.00	15.50
579.2040AK8	40.00	30.00	12.50
579.3040AK8	40.00	30.00	12.50
579.1040AK8	40.00	30.00	16.40
579.0042AK8	42.00	28.00	15.50
579.0022AK8	22.00	13.00	13.50
579.0045AK8	45.00	29.00	18.40
579.1045AK8	45.00	31.00	15.50
579.2045AK8	45.00	35.00	16.40
579.0050AK8	50.00	34.00	18.40
579.1050AK8	50.00	34.00	20.50
579.0055AK8	55.00	39.00	18.40
579.1055AK8	55.00	39.00	20.50
579.0056AK8	56.00	40.00	20.50
579.0060AK8	60.00	44.00	18.40
579.1060AK8	60.00	44.00	20.50
579.0025AK8	25.00	15.00	12.00
579.0063AK8	63.00	47.00	18.40
579.1063AK8	63.00	47.00	19.40
579.2063AK8	63.00	47.00	20.50
579.0065AK8	65.00	49.00	20.50
579.1065AK8	65.00	50.00	18.40
579.0070AK8	70.00	50.00	22.40
579.1070AK8	70.00	54.00	20.50
579.0075AK8	75.00	55.00	22.40
579.1075AK8	75.00	59.00	20.50
579.0080AK8	80.00	60.00	22.40
579.2025AK8	25.00	15.00	12.50
579.1080AK8	80.00	62.00	22.50
579.0085AK8	85.00	65.00	22.40
579.0090AK8	90.00	70.00	22.40
579.1090AK8	90.00	72.00	22.50
579.0095AK8	95.00	75.00	22.40
579.0100AK8	100.00	75.00	22.40
579.1100AK8	100.00	82.00	22.50
579.0105AK8	105.00	80.00	22.40
579.0110AK8	110.00	85.00	22.40
579.1110AK8	110.00	92.00	22.50
579.1025AK8	25.00	15.00	16.40
579.0115AK8	115.00	90.00	22.40

Part number	Bore diameter ØD1 H9	Groove diameter Ød1 h9	Groove width L1 0/+0.20
579.1115AK8	115.00	97.00	22.50
579.0120AK8	120.00	95.00	22.40
579.0125AK8	125.00	100.00	25.40
579.1125AK8	125.00	103.00	26.50
579.0130AK8	130.00	105.00	25.40
579.1130AK8	130.00	105.00	25.40
579.0133AK8	133.00	115.00	22.40
579.0135AK8	135.00	110.00	25.40
579.1135AK8	135.00	110.00	25.40
579.3025AK8	25.00	16.00	13.50
579.0140AK8	140.00	115.00	25.40
579.1140AK8	140.00	115.00	25.40
579.2140AK8	140.00	118.00	26.50
579.0145AK8	145.00	120.00	25.40
579.1145AK8	145.00	120.00	25.40
579.0150AK8	150.00	125.00	25.40
579.1150AK8	150.00	128.00	26.50
579.0152AK8	152.40	127.00	31.75
579.0155AK8	155.00	130.00	25.40
579.1155AK8	155.00	130.00	25.40
579.0028AK8	28.00	19.00	13.50
579.0160AK8	160.00	130.00	25.40
579.1160AK8	160.00	130.00	25.40
579.2160AK8	160.00	135.00	25.40
579.3160AK8	160.00	138.00	26.50
579.0165AK8	165.00	140.00	25.40
579.0170AK8	170.00	145.00	25.40
579.1170AK8	170.00	148.00	26.50
579.0175AK8	175.00	150.00	25.40
579.0180AK8	180.00	150.00	35.40
579.1180AK8	180.00	155.00	25.40
579.0030AK8	30.00	17.00	15.40
579.0185AK8	185.00	160.00	25.40
579.0190AK8	190.00	165.00	25.40
579.0195AK8	195.00	170.00	25.40
579.0200AK8	200.00	175.00	25.40
579.1200AK8	200.00	175.00	31.50
579.0210AK8	210.00	185.00	25.40
579.0220AK8	220.00	190.00	35.40
579.1220AK8	220.00	195.00	25.40
579.0230AK8	230.00	205.00	25.40
579.0240AK8	240.00	215.00	25.40
579.1030AK8	30.00	21.00	13.50
579.0250AK8	250.00	220.00	35.40
579.1250AK8	250.00	225.00	25.40

The figures highlighted in bold correspond to the bore diameters that are recommended by standard ISO 3320. Other intermediate sizes can be provided.



PISTON SEALS

BECA 579S



DESCRIPTION

The BECA 579S profile is a high-performing, double acting compact piston seal composed of a flexible rubber ring, two polyurethane back-up rings and two L-shaped POM wear rings.

ADVANTAGES

- Good sealing effect
- Excellent extrusion resistance
- Excellent wear resistance
- Reliable sealing for significant and sudden pressure variations
- Assembly in closed groove, reduced machining costs
- Economic wear and sealing solution

APPLICATIONS

- Agriculture
- Mobile machinery
- Hydraulic cylinders

MATERIALS

Profiled seal

NBR 80 Shore A

Back-up rings

Polyurethane 97 Shore A

Wear rings

Polyoxymethylene - POM

TECHNICAL DATA

Temperature	-30°C / +100°C
Pressure	50 MPa
Speed	0.5 m/sec
Media	Mineral hydraulic oils

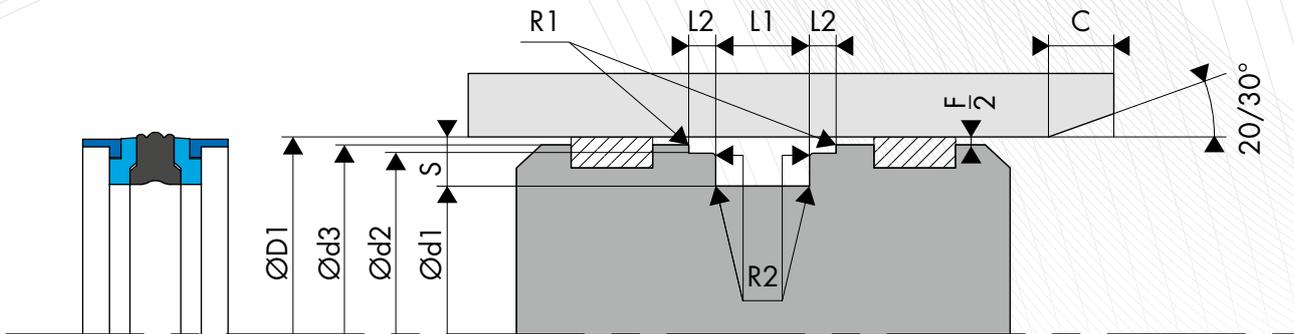
The figures above indicate the maximum values and may not be cumulated. They may be developed, depending on the materials used.

SURFACE ROUGHNESS

Roughness	Dynamic surface area	Static surface area	Groove flanks
Ra	0.1 - 0.4 µm	≤1.6 µm	≤3.2 µm
Rz	0.63 - 2.5 µm	≤6.3 µm	≤10.0 µm
Rmax	1.0 - 4.0 µm	≤10.0 µm	≤16.0 µm

CHAMFERS AND RADIUS

Radial section S	Radius R1	Radius R2	Chamfer C
4.00	0.40	0.40	2.50
5.00	0.40	0.40	3.00
6.00	0.40	0.40	3.00
7.50	0.40	0.40	4.00
8.50	0.40	0.40	5.00
10.00	0.80	0.80	6.00
15.00	0.80	0.80	8.00



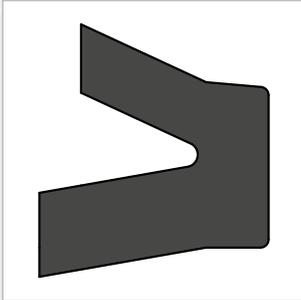
DIMENSIONS

Part number	Bore diameter ØD1 H9	Groove dimensions				
		Ød1 h9	Ød2 h9	Ød3 h11	L1 0/+0.20	L2 0/+0.10
579.0020BK8	20.00	11.00	17.00	19.00	13.50	2.10
579.0032BK8	32.00	22.00	28.00	31.00	15.50	2.60
579.1032BK8	32.00	22.00	28.50	30.50	16.40	6.35
579.0035BK8	35.00	25.00	31.00	34.00	15.50	2.60
579.1035BK8	35.00	25.00	31.40	33.50	16.40	6.35
579.0040BK8	40.00	26.00	36.00	39.00	15.50	2.60
579.2040BK8	40.00	30.00	36.00	38.00	12.50	4.00
579.3040BK8	40.00	30.00	37.00	39.00	12.50	4.00
579.1040BK8	40.00	30.00	35.40	38.50	16.40	6.35
579.0042BK8	42.00	28.00	38.00	41.00	15.50	2.60
579.0045BK8	45.00	29.00	40.40	43.50	18.40	6.35
579.0022BK8	22.00	13.00	19.00	21.00	13.50	2.10
579.1045BK8	45.00	31.00	41.00	44.00	15.50	2.60
579.2045BK8	45.00	35.00	40.40	43.50	16.40	6.35
579.0050BK8	50.00	34.00	45.40	48.50	18.40	6.35
579.1050BK8	50.00	34.00	46.00	49.00	20.50	3.10
579.0055BK8	55.00	39.00	50.36	53.50	18.40	6.35
579.1055BK8	55.00	39.00	51.00	54.00	20.50	3.10
579.0056BK8	56.00	40.00	52.00	55.00	20.50	3.10
579.0060BK8	60.00	44.00	55.40	58.50	18.40	6.35
579.1060BK8	60.00	44.00	56.00	59.00	20.50	3.10
579.0063BK8	63.00	47.00	58.40	61.50	18.40	6.35
579.0025BK8	25.00	15.00	21.00	23.00	12.00	4.00
579.3063BK8	63.00	47.00	58.40	61.50	19.40	6.35
579.4063BK8	63.00	47.00	59.00	62.00	20.50	3.10
579.0065BK8	65.00	49.00	61.00	64.00	20.50	3.10
579.1065BK8	65.00	50.00	60.40	63.50	18.40	6.35
579.0070BK8	70.00	50.00	64.20	68.30	22.40	6.35
579.1070BK8	70.00	54.00	66.00	69.00	20.50	3.10
579.0075BK8	75.00	55.00	69.20	73.30	22.40	6.35
579.1075BK8	75.00	59.00	71.00	74.00	20.50	3.10
579.0080BK8	80.00	60.00	74.15	78.30	22.40	6.35
579.1080BK8	80.00	62.00	76.00	79.00	22.50	3.60

Part number	Bore diameter ØD1 H9	Groove dimensions				
		Ød1 h9	Ød2 h9	Ød3 h11	L1 0/+0.20	L2 0/+0.10
579.2025BK8	25.00	15.00	22.00	24.00	12.50	4.00
579.0085BK8	85.00	65.00	79.15	83.30	22.40	6.35
579.0090BK8	90.00	70.00	84.15	88.30	22.40	6.35
579.1090BK8	90.00	72.00	86.00	89.00	22.50	3.60
579.0095BK8	95.00	75.00	89.15	93.30	22.40	6.35
579.0100BK8	100.00	75.00	93.15	98.00	22.40	6.35
579.1100BK8	100.00	82.00	96.00	99.00	22.50	3.60
579.0105BK8	105.00	80.00	98.10	103.00	22.40	6.35
579.0110BK8	110.00	85.00	103.10	108.00	22.40	6.35
579.1110BK8	110.00	92.00	106.00	109.00	22.50	3.60
579.0115BK8	115.00	90.00	108.10	113.00	22.40	6.35
579.1025BK8	25.00	15.00	21.45	23.50	16.40	6.35
579.1115BK8	115.00	97.00	111.00	114.00	22.50	3.60
579.0120BK8	120.00	95.00	113.10	118.10	22.40	6.35
579.0125BK8	125.00	100.00	118.10	123.00	25.40	6.35
579.1125BK8	125.00	103.00	121.00	124.00	26.50	5.10
579.0130BK8	130.00	105.00	122.60	127.50	25.40	9.50
579.1130BK8	130.00	105.00	123.10	128.00	25.40	6.35
579.0133BK8	133.00	115.00	125.60	130.50	22.40	9.52
579.0135BK8	135.00	110.00	127.60	132.50	25.40	9.50
579.1135BK8	135.00	110.00	128.10	133.00	25.40	6.35
579.0140BK8	140.00	115.00	132.60	137.50	25.40	9.50
579.3025BK8	25.00	16.00	22.00	24.00	13.50	2.10
579.1140BK8	140.00	115.00	133.00	138.00	25.40	6.35
579.2140BK8	140.00	118.00	136.00	139.00	26.50	5.10
579.0145BK8	145.00	120.00	137.60	142.50	25.40	9.50
579.1145BK8	145.00	120.00	138.30	142.95	25.40	6.35
579.2150BK8	150.00	125.00	142.60	147.50	25.40	9.50
579.1150BK8	150.00	125.00	143.00	148.00	25.40	6.35
579.0150BK8	150.00	128.00	146.00	149.00	26.50	5.10
579.0152BK8	152.40	127.00	145.00	149.91	31.75	9.50
579.0155BK8	155.00	130.00	147.60	152.50	25.40	9.50
579.1155BK8	155.00	130.00	148.00	153.00	25.40	6.35
579.0028BK8	28.00	19.00	25.00	27.00	13.50	2.10
579.0160BK8	160.00	130.00	152.60	157.50	25.40	9.50
579.1160BK8	160.00	130.00	153.00	157.50	25.40	6.35
579.2160BK8	160.00	135.00	152.60	157.50	25.40	9.50
579.3160BK8	160.00	138.00	156.00	159.00	26.50	5.10
579.0165BK8	165.00	140.00	157.60	162.50	25.40	9.50
579.0170BK8	170.00	145.00	161.70	167.10	25.40	12.70
579.1170BK8	170.00	148.00	166.00	169.00	26.50	5.10
579.0175BK8	175.00	150.00	166.70	172.10	25.40	12.70
579.0180BK8	180.00	150.00	172.95	177.87	35.40	6.35
579.1180BK8	180.00	155.00	171.70	177.10	25.40	12.70
579.0030BK8	30.00	17.00	26.50	28.50	15.40	6.35
579.0185BK8	185.00	160.00	176.70	182.10	25.40	12.70
579.0190BK8	190.00	165.00	181.70	187.00	25.40	12.70
579.0195BK8	195.00	170.00	186.70	192.00	25.40	12.70
579.0200BK8	200.00	175.00	191.60	197.00	25.40	12.70

Part number	Bore diameter ØD1 H9	Groove dimensions				
		Ød1 h9	Ød2 h9	Ød3 h11	L1 0/+0.20	L2 0/+0.10
579.1200BK8	200.00	175.00	196.00	199.00	31.50	6.60
579.0210BK8	210.00	185.00	201.60	207.00	25.40	12.70
579.0220BK8	220.00	190.00	212.70	217.90	35.40	6.35
579.1220BK8	220.00	195.00	211.60	217.00	25.40	12.70
579.0230BK8	230.00	205.00	221.60	227.00	25.40	12.70
579.0240BK8	240.00	215.00	231.60	237.00	25.40	12.70
579.1030BK8	30.00	21.00	27.00	29.00	13.50	2.10
579.0250BK8	250.00	220.00	242.90	247.85	35.40	6.35

The figures highlighted in bold correspond to the dimensions for standard ISO 6547, with the bore diameters in line with standard ISO 3320. Other intermediate sizes can be provided.



PISTON SEALS

BECA

580-581



DESCRIPTION

The BECA 580 - 581 profiles are U-ring type piston seals with offset rubber lips.

ADVANTAGES

Very good sealing at low pressures
Excellent wear resistance
Wide temperature range, depending on the material chosen
Reduced size
Closed groove assembly

APPLICATIONS

Material handling - Lifting
Presses
Hydraulic cylinders

MATERIALS

NBR 75 Shore A
NBR 80 Shore A
FKM 80 Shore A

Other grades of materials are available.
Please contact our experts.

TECHNICAL DATA

Temperature	-30°C / +200°C
Pressure	8 MPa
Speed	0.5 m/sec
Media	Mineral hydraulic oils Fire-resistant liquids Biocompatible fluids Water Others (contact our experts)

The figures above indicate the maximum values and may not be cumulated. They may be developed, depending on the materials used.

EXTRUSION GAPS

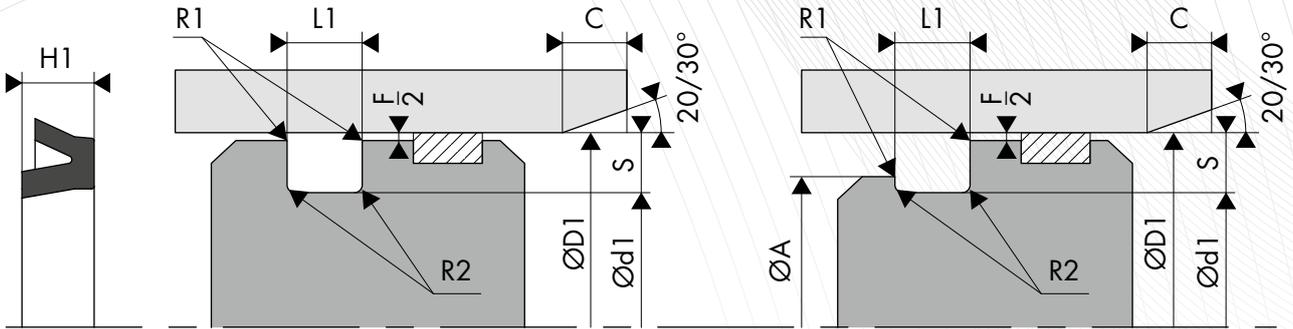
Pressure MPa	Radial gap F/2
1.0 MPa	0.25
1.5 MPa	0.20
6.5 MPa	0.10
8.0 MPa	0.05

SURFACE ROUGHNESS

Roughness	Dynamic surface area	Static surface area	Groove flanks
Ra	0.1 - 0.4 µm	≤1.6 µm	≤3.2 µm
Rz	0.63 - 2.5 µm	≤6.3 µm	≤10.0 µm
Rmax	1.0 - 4.0 µm	≤10.0 µm	≤16.0 µm

CHAMFERS AND RADIUS

Radial section S	Radius R1	Radius R2	Chamfer C
3.00	0.30	0.50	2.00
4.00	0.30	0.50	2.00
5.00	0.40	0.60	2.50
6.00	0.50	0.70	3.00
7.50	0.80	1.00	4.00
10.00	0.80	1.00	5.00



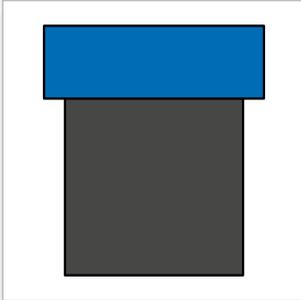
DIMENSIONS

Part number	Bore diameter ØD1 H10	Groove diameter Ød1 f9	Seal height H1	Groove width L1 0/+0.25
580.1016008	16.00	8.10	5.55	7.00
580.1016010	16.00	10.00	4.00	5.50
580.1017012	17.50	12.60	3.17	5.00
580.1134121	134.00	121.30	9.52	11.00
580.1140125	140.00	25.00	10.00	11.50
580.1140127	140.00	127.30	9.52	11.00
580.1145130	145.00	130.00	10.00	11.50
580.1146120	146.00	120.60	15.90	19.00
580.1149136	149.00	136.30	9.52	11.00
580.1153127	153.00	127.60	15.90	19.00
580.1159133	159.00	133.60	15.90	19.00
580.1165139	165.00	139.60	15.90	19.00
580.1171146	171.45	146.05	15.87	17.45
580.1019012	19.00	12.70	3.17	5.00
580.1172153	172.00	153.00	11.10	12.50
580.1180160	180.00	160.00	14.00	17.00
580.1184165	184.00	165.00	11.11	12.50
580.1191159	191.00	159.30	19.00	22.00
580.1197165	197.00	165.30	19.00	22.00
580.1204172	204.00	172.30	19.00	22.00
580.1210178	210.00	178.30	19.00	22.00
580.1019009	19.05	9.52	6.35	7.14
580.1216184	216.00	184.30	19.00	22.00
580.1220200	220.00	200.00	14.00	17.00
580.1222190	222.25	190.50	19.05	20.62
580.1223201	223.00	201.30	12.70	14.50
580.1228196	228.60	196.85	19.05	20.62
580.1229210	229.00	210.00	12.70	14.50
580.1235203	235.00	203.30	19.00	22.00
580.1242210	242.00	210.30	19.00	22.00
580.1248216	248.00	216.30	19.00	22.00
580.1250230	250.00	230.00	14.00	17.00
580.0200107	20.00	10.00	7.00	8.50
580.1253234	253.00	234.00	12.70	14.50
580.1254222	254.00	222.25	19.05	20.62
580.1254235	254.00	235.00	12.70	14.50
580.1261229	261.00	229.30	19.00	22.00
580.1266234	266.70	234.95	19.05	20.62
580.1274242	274.00	242.30	19.00	22.00
580.1280248	280.00	248.30	19.00	22.00
580.1286254	286.00	254.30	19.00	22.00
580.1292260	292.00	260.30	19.00	22.00
580.1020012	20.00	12.00	5.50	7.00
580.1299267	299.00	267.30	19.00	22.00
580.1300268	300.40	268.50	19.00	20.90

Part number	Bore diameter ØD1 H10	Groove diameter Ød1 f9	Seal height H1	Groove width L1 0/+0.25
580.1304273	304.80	273.05	19.05	20.62
580.1305279	305.00	279.60	12.70	14.00
580.1330311	330.00	311.00	12.70	14.50
580.1343323	343.00	323.00	12.70	14.50
580.1356335	356.00	335.50	12.70	14.50
580.1020014	20.00	14.00	4.00	5.50
580.1020011	20.62	11.10	6.35	7.14
580.1004008	8.00	4.00	2.80	3.50
580.1022012	22.00	12.50	6.35	8.00
580.0250174	25.00	17.00	4.50	4.80
580.1025018	25.00	18.00	4.00	5.50
580.1026016	26.00	16.50	6.35	8.00
580.009SPK8	9.00	3.00	6.20	6.90
580.1028015	28.57	15.87	7.92	9.52
580.1030020	30.00	20.50	6.20	8.00
580.4030024	30.00	24.00	4.00	5.00
580.1031019	31.75	19.05	7.92	9.52
580.0320229	32.00	22.20	9.00	9.40
580.1033020	33.32	20.62	7.92	9.52
580.1009003	9.50	3.17	3.96	5.50
580.1034015	34.00	15.00	9.52	11.00
580.1034022	34.92	22.22	7.92	9.52
580.1036023	36.50	23.80	7.92	9.52
580.1037026	37.00	26.00	6.35	8.00
580.1038025	38.10	25.40	7.92	9.52
580.1040030	40.00	30.00	7.00	8.50
580.1011004	11.10	4.76	3.96	5.50
580.1041025	41.27	25.40	9.52	11.10
580.1013006	13.00	6.70	4.76	6.30
580.1063047	63.50	47.62	9.52	11.10
580.1014007	14.00	7.70	4.76	6.30
580.1002006	6.00	2.00	2.80	3.50
580.1095076	95.00	76.70	7.40	9.00
580.2095076	95.25	76.20	12.70	14.30
580.1099086	99.00	86.30	9.52	11.00
580.1100088	100.00	88.00	8.50	10.00
580.1101082	101.60	82.55	12.70	14.30
580.1020891	102.00	89.30	9.00	10.00
580.1102089	102.00	89.30	9.52	11.00
580.1105089	105.00	89.10	7.93	9.50
580.1105093	105.00	93.00	8.50	10.00
580.1107088	107.95	88.90	12.70	14.30
580.1108095	108.00	95.30	7.90	9.50
580.1110098	110.00	98.00	8.50	10.00
580.1111094	111.00	94.70	7.93	9.50
580.1115089	115.00	89.60	15.90	19.00
580.1150951	115.00	95.00	10.00	11.50
580.1118105	118.00	105.30	9.52	11.00
580.1120105	120.00	105.00	10.00	11.00
580.1120095	120.65	95.25	15.87	17.45
580.1121108	121.00	108.30	9.52	11.00
580.1124111	124.00	111.30	9.52	11.00
580.F125110	125.00	110.00	10.00	11.00
580.1127101	127.00	101.60	15.87	17.45
580.1127108	127.00	108.00	9.52	11.00
580.1130117	130.00	117.30	9.52	11.00
580.1133107	133.35	107.95	15.87	17.45
580.1137124	137.00	124.30	9.52	11.00
580.1139114	139.70	114.30	15.87	17.45
580.1431893	18.90	14.30	3.50	5.00
580.1143130	143.00	130.30	9.52	11.00
580.1150135	150.00	135.00	10.00	11.00
580.1160145	160.00	145.00	10.00	11.00
580.1178152	178.00	152.60	15.90	19.00
580.1184152	184.15	152.40	19.05	20.62
580.1200180	200.00	180.00	14.00	17.00

Part number	Bore diameter Ød1 H10	Groove diameter Ød1 f9	Seal height H1	Groove width L1 0/+0.25
580.1267248	267.00	248.00	12.70	14.50
580.1021014	21.00	14.70	6.35	8.00
580.FJ02214	22.00	14.00	6.00	7.00
580.1024014	24.00	14.50	6.35	8.00
580.1017024	24.70	17.00	5.00	5.50
580.1025017	25.00	17.00	5.50	7.00
580.1027017	27.00	17.50	6.35	8.00
580.1029019	29.00	19.05	6.35	8.00
580.1030017	30.15	17.45	7.92	9.52
580.1032019	32.00	19.30	6.35	8.00
580.1032024	32.00	24.00	5.50	7.00
580.1025034	34.00	25.00	8.20	8.70
580.1035022	35.00	22.30	6.35	8.00
580.1038030	38.00	30.00	6.35	8.00
580.1040027	40.00	27.30	6.35	8.00
580.FJ04030	40.00	30.00	7.50	8.50
580.1042030	42.00	30.90	6.35	8.00
580.1043030	43.00	30.30	9.52	11.00
580.1044028	44.45	28.57	9.52	11.10
580.1045035	45.00	35.50	7.00	8.50
580.1046028	46.00	28.20	10.20	12.00
580.1047031	47.62	31.75	9.52	11.10
580.1048032	48.00	32.10	7.93	9.50
580.1049035	49.00	35.00	9.52	11.00
580.1012006	12.00	6.00	4.00	5.50
580.6050040	50.00	40.00	6.00	7.00
580.1050040	50.00	40.00	7.00	8.50
580.FJ05040	50.00	40.00	7.50	8.50
580.1050034	50.80	34.92	9.52	11.10
580.1051041	51.00	41.50	7.14	9.00
580.1053038	53.97	38.10	9.52	11.11
580.1054041	54.00	41.30	9.52	11.00
580.1055045	55.00	45.00	7.00	8.50
580.1057044	57.00	44.30	6.35	8.00
580.1057041	57.15	41.27	9.52	11.10
580.1060050	60.00	50.00	7.00	8.50
580.1060044	60.32	44.45	9.52	11.10
580.1061048	61.00	48.30	6.35	8.00
580.FJ06353	63.00	53.00	7.00	7.50
580.0630478	63.50	47.62	7.93	9.52
580.1064046	64.00	46.30	8.85	10.50
580.1065055	65.00	55.00	7.00	8.00
580.1066050	66.67	50.80	9.52	11.10
580.1067051	67.00	51.10	8.85	10.50
580.1069050	69.85	50.80	12.70	14.30
580.1070054	70.00	54.10	7.93	9.50
580.1070058	70.00	58.00	8.50	10.00
580.1073063	73.00	63.50	5.55	7.00
580.1073053	73.02	53.97	12.70	14.30
580.1075063	75.00	63.00	8.50	10.00
580.1076057	76.00	57.90	8.73	10.50
580.2076057	76.20	57.15	12.70	14.30
580.1079060	79.37	60.32	12.70	14.30
580.1080067	80.00	67.30	6.35	8.00
580.1080068	80.00	68.00	8.50	10.00
580.1082063	82.55	63.50	12.70	14.30
580.1083071	83.00	71.90	7.10	8.50
580.1085073	85.00	73.00	8.50	10.00
580.1086073	86.00	73.30	9.52	11.00
580.1088069	88.90	69.85	12.70	14.30
580.1089076	89.00	76.30	6.35	8.00
580.2090078	90.00	78.00	6.50	7.00
580.1090078	90.00	78.00	8.50	10.00
580.1092076	92.00	76.10	9.52	11.00

The figures highlighted in bold correspond to the bore diameters that are recommended by standard ISO 3320. Other intermediate sizes can be provided.



PISTON SEALS

BECA 650



DESCRIPTION

The BECA 650 profile is a double acting composite piston seal composed of a rubber O'Ring or square ring, and a polyamide friction ring.

ADVANTAGES

The square ring does not twist
Low friction coefficient
Excellent extrusion resistance
Compatible with hydraulic oils

APPLICATIONS

Agriculture
Mobile machinery
Hydraulic cylinders

MATERIALS

Friction ring

Polyamide PA6

O'Ring or square ring

NBR 70 Shore A

Other grades of materials are available.
Please contact our experts.

TECHNICAL DATA

Temperature	-30°C / +100°C
Pressure	40 MPa
Speed	0.5 m/sec
Media	Mineral hydraulic oils Fire-resistant liquids Biocompatible fluids Water Others (contact our experts)

The figures above indicate the maximum values and may not be cumulated. They may be developed, depending on the materials used.

EXTRUSION GAPS

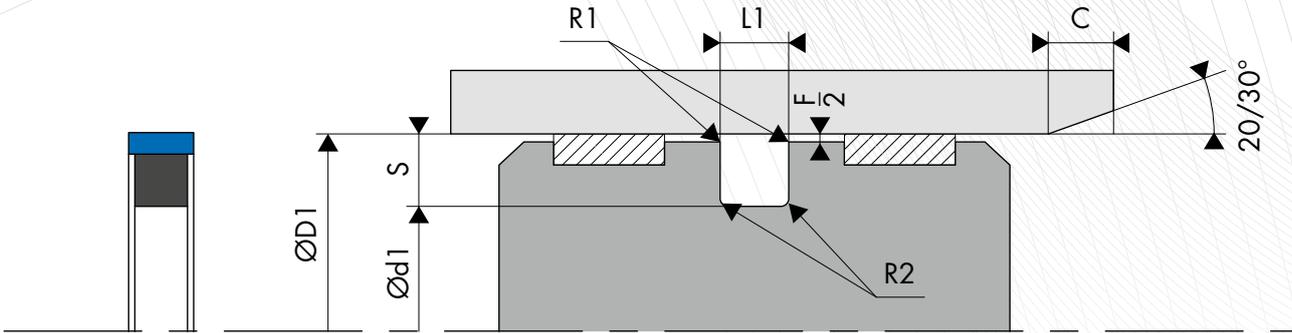
Pressure MPa	Radial gap F/2
20 MPa	0.25
35 MPa	0.20
40 MPa	0.15

SURFACE ROUGHNESS

Roughness	Dynamic surface area	Static surface area	Groove flanks
Ra	0.05 - 0.2 µm	≤1.6 µm	≤3.2 µm
Rz	0.4 - 1.6 µm	≤6.3 µm	≤10.0 µm
Rmax	0.63 - 2.5 µm	≤10.0 µm	≤16.0 µm

CHAMFERS AND RADIUS

Radial section S	Radius R1	Radius R2	Chamfer C
1.30	0.30	0.20	2.00
2.00	0.30	0.20	2.00
2.60	0.30	0.20	2.00
3.25	0.30	0.20	3.00
3.90	0.30	0.20	3.00
4.55	0.30	0.30	4.00
5.20	0.30	0.30	4.50
5.85	0.30	0.40	5.00
6.50	0.30	0.40	5.50
7.80	0.30	0.60	6.00
10.40	0.30	0.80	8.00
13.00	0.30	0.80	10.00



○ INSTALLATION DIMENSIONS

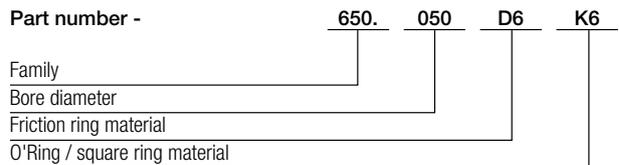
Bore diameter	Groove diameter	Groove width	Radial section	Cross-section / Ring thickness
ØD1 H9	Ød1 h9	L1 0/+0.20	S	Ød2 / E
6.0 - 11.9	D1 - 2.60	1.35	1.30	1.00
12.0 - 23.9	D1 - 4.00	2.00	2.00	1.78
24.0 - 33.9	D1 - 5.20	2.60	2.60	2.00
34.0 - 45.9	D1 - 6.50	3.20	3.25	2.62
46.0 - 58.9	D1 - 7.80	3.85	3.90	3.00
59.0 - 80.9	D1 - 9.10	4.50	4.55	3.53
81.0 - 129.9	D1 - 10.20	5.10	5.20	4.00
130.0 - 199.9	D1 - 11.70	5.70	5.85	5.00
200.0 - 299.9	D1 - 13.00	6.35	6.50	5.33
300.0 - 399.9	D1 - 15.60	7.60	7.80	6.99
400.0 - 599.9	D1 - 20.80	10.10	10.40	8.40
600.0 - **	D1 - 26.00	12.60	13.00	12.00

For special applications > 40 MPa, we recommend using an H8/f8 tolerance (bore/piston) or selecting other, more suitable materials. Please contact our experts.

○ EXAMPLE OF CODIFICATION

STANDARD CODIFICATION

Materials _____ : Polyamide friction ring - Code D6
 _____ : NBR 70 Shore A O'Ring / square ring - Code K6
Bore diameter _____ : ØD1 = 50.00 mm
Groove diameter _____ : Ød1 + 42.20 mm
Part number _____ : 650.050D6K6

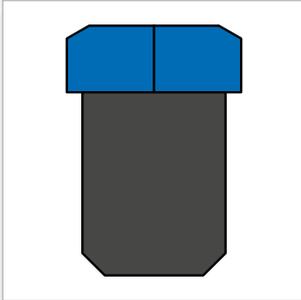


○ DIMENSIONS

Part number	Bore diameter ØD1 H9	Groove diameter Ød1 h9	Groove width L1 0/+0.10
650.006	6.20	3.60	1.35
650.021	21.00	17.00	2.00
650.360	360.00	344.40	7.60
650.370	370.00	354.40	7.60
650.380	380.00	364.40	7.60
650.390	390.00	374.40	7.60
650.400	400.00	379.20	10.10
650.410	410.00	389.20	10.10
650.420	420.00	399.20	10.10
650.430	430.00	409.20	10.10
650.440	440.00	419.20	10.10
650.450	450.00	429.20	10.10
650.022	22.00	18.00	2.00
650.460	460.00	439.20	10.10
650.470	470.00	449.20	10.10
650.480	480.00	459.20	10.10
650.490	490.00	469.20	10.10
650.500	500.00	479.20	10.10
650.024	24.00	18.80	2.60
650.025	25.00	19.80	2.60
650.028	28.00	22.80	2.60
650.030	30.00	24.80	2.60
650.032	32.00	26.80	2.60
650.035	35.00	28.50	3.20
650.036	36.00	29.50	3.20
650.038	38.00	31.50	3.20
650.008	8.00	5.40	1.35
650.040	40.00	33.50	3.20
650.041	41.00	34.50	3.20
650.042	42.00	35.50	3.20
650.045	45.00	38.50	3.20
650.046	46.00	38.20	3.85
650.048	48.00	40.20	3.85
650.050	50.00	42.20	3.85
650.052	52.00	44.20	3.85
650.053	53.00	45.20	3.85
650.055	55.00	47.20	3.85
650.010	10.00	7.40	1.35
650.057	57.00	49.20	3.85
650.058	58.00	50.20	3.85
650.060	60.00	50.90	4.50
650.062	62.00	52.90	4.50
650.063	63.00	53.90	4.50
650.065	65.00	55.90	4.50
650.068	68.00	58.90	4.50
650.070	70.00	60.90	4.50
650.072	72.00	62.90	4.50
650.075	75.00	65.90	4.50
650.012	12.00	8.00	2.00
650.080	80.00	70.90	4.50
650.082	82.00	71.60	5.10
650.085	85.00	74.60	5.10
650.087	87.00	76.60	5.10
650.090	90.00	79.60	5.10
650.092	92.00	81.60	5.10
650.095	95.00	84.60	5.10
650.098	98.00	87.60	5.10
650.100	100.00	89.60	5.10
650.105	105.00	94.60	5.10
650.014	14.00	10.00	2.00
650.108	108.00	97.60	5.10
650.110	110.00	99.60	5.10
650.115	115.00	104.60	5.10

Part number	Bore diameter ØD1 H9	Groove diameter Ød1 h9	Groove width L1 0/+0.10
650.118	118.00	107.60	5.10
650.120	120.00	109.60	5.10
650.125	125.00	114.60	5.10
650.127	127.00	116.60	5.10
650.130	130.00	118.30	5.70
650.132	132.00	120.30	5.70
650.135	135.00	123.30	5.70
650.015	15.00	11.00	2.00
650.138	138.00	126.30	5.70
650.140	140.00	128.30	5.70
650.144	144.50	132.80	5.70
650.145	145.00	133.30	5.70
650.150	150.00	138.30	5.70
650.155	155.00	143.30	5.70
650.156	156.00	144.30	5.70
650.158	158.70	147.00	5.70
650.160	160.00	148.30	5.70
650.164	164.00	152.30	5.70
650.016	16.00	12.00	2.00
650.165	165.00	153.30	5.70
650.166	166.00	154.30	5.70
650.170	170.00	158.30	5.70
650.175	175.00	163.30	5.70
650.177	177.00	165.30	5.70
650.180	180.00	168.30	5.70
650.185	185.00	173.30	5.70
650.190	190.00	178.30	5.70
650.195	195.00	183.30	5.70
650.200	200.00	187.00	6.35
650.018	18.00	14.00	2.00
650.205	205.00	192.00	6.35
650.210	210.00	197.00	6.35
650.215	215.00	202.00	6.35
650.216	216.00	203.00	6.35
650.220	220.00	207.00	6.35
650.225	225.00	212.00	6.35
650.230	230.00	217.00	6.35
650.240	240.00	227.00	6.35
650.250	250.00	237.00	6.35
650.260	260.00	247.00	6.35
650.020	20.00	16.00	2.00
650.268	268.00	255.00	6.35
650.270	270.00	257.00	6.35
650.280	280.00	267.00	6.35
650.290	290.00	277.00	6.35
650.300	300.00	284.40	7.60
650.310	310.00	294.40	7.60
650.320	320.00	304.40	7.60
650.330	330.00	314.40	7.60
650.340	340.00	324.40	7.60
650.350	350.00	334.40	7.60

The figures highlighted in bold correspond to the bore diameters that are recommended by standard ISO 3320. Other intermediate sizes can be provided.



PISTON SEALS

BECA 655



DESCRIPTION

The BECA 655 profile is a double acting composite piston seal composed of a flexible rubber ring and a polyamide friction ring with a step cut.

ADVANTAGES

The square ring does not twist
Low friction coefficient
Excellent extrusion resistance
Compatible with hydraulic oils

APPLICATIONS

Agriculture
Mobile machinery
Hydraulic cylinders

MATERIALS

Friction ring

Polyamide PA6
Polyoxymethylene (POM)

Profiled seal

NBR 70 Shore A

Other grades of materials are available.
Please contact our experts.

TECHNICAL DATA

Temperature	-30°C / +100°C
Pressure	50 MPa
Speed	0.5 m/sec
Media	Mineral hydraulic oils Fire-resistant liquids Biocompatible fluids Water Others (contact our experts)

The figures above indicate the maximum values and may not be cumulated. They may be developed, depending on the materials used.

EXTRUSION GAPS

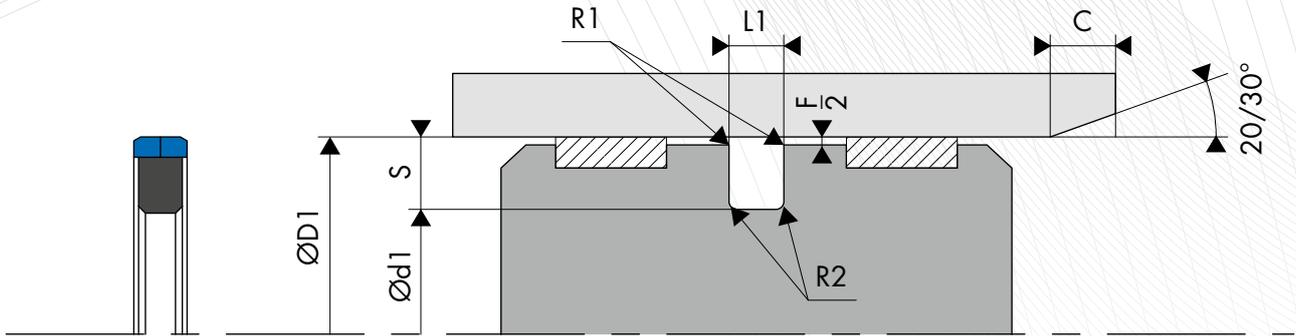
Pressure MPa	Radial gap F/2
20 MPa	0.25
35 MPa	0.20
40 MPa	0.15
50 MPa	0.10

SURFACE ROUGHNESS

Roughness	Dynamic surface area	Static surface area	Groove flanks
Ra	0.05 - 0.2 µm	≤1.6 µm	≤3.2 µm
Rz	0.4 - 1.6 µm	≤6.3 µm	≤10.0 µm
Rmax	0.63 - 2.5 µm	≤10.0 µm	≤16.0 µm

CHAMFERS AND RADIUS

Radial section S	Radius R1	Radius R2	Chamfer C
5.50	0.30	0.50	3.00
7.75	0.30	0.90	4.00
10.50	0.30	0.90	5.00



○ INSTALLATION DIMENSIONS

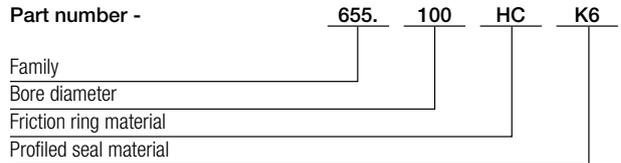
Groove diameter Ød1 h9	Groove width L1 0/+0.20	Radial section S
D1 - 11.00	4.20	5.50
D1 - 15.50	6.30	7.75
D1 - 21.00	8.10	10.50

For special applications > 40 MPa, we recommend using an H8/f8 tolerance (bore/piston) or selecting other, more suitable materials. Please contact our experts.

○ EXAMPLE OF CODIFICATION

STANDARD CODIFICATION

Materials _____ : Polyoxymethylene (POM) friction ring - Code HC
 _____ : NBR 70 Shore A profiled seal - Code K6
 Bore diameter _____ : ØD1 = 100.00 mm
 Groove diameter _____ : Ød1 + 79.00 mm
 Part number _____ : 655.100HC6



○ DIMENSIONS

Part number	Bore diameter ØD1 H9	Groove diameter Ød1 h9	Groove width L1 0/+0.10
655.070	70.00	49.00	8.10
655.115	115.00	94.00	8.10
655.120	120.00	99.00	8.10
655.125	125.00	104.00	8.10
655.130	130.00	109.00	8.10
655.140	140.00	119.00	8.10
655.150	150.00	129.00	8.10
655.160	160.00	139.00	8.10
655.170	170.00	149.00	8.10
655.180	180.00	159.00	8.10

Part number	Bore diameter ØD1 H9	Groove diameter Ød1 h9	Groove width L1 0/+0.10
655.190	190.00	169.00	8.10
655.075	75.00	54.00	8.10
655.080	80.00	59.00	8.10
655.085	85.00	64.00	8.10
655.090	90.00	69.00	8.10
655.095	95.00	74.00	8.10
655.100	100.00	79.00	8.10
655.105	105.00	84.00	8.10
655.110	110.00	89.00	8.10

The figures highlighted in bold correspond to the bore diameters that are recommended by standard ISO 3320. Other intermediate sizes can be provided.



8. Piston/rod seals

Piston/rod seals can be used both in static and dynamic applications to ensure sealing at the rod and piston.

FRANCE JOINT offers several symmetrical seal profiles with different types of materials, depending on the applications.

IMPORTANT

The pressures, speeds and temperatures indicate the maximum values and may not be cumulated. Moreover, they may be developed depending on the materials used.

For specific orders (temperature, pressure, speed, etc.), please contact our technical team so that they can direct you towards the appropriate choice of material and seal profile.

The dimensions shown in the catalogue are usually in stock and can be sent quickly. However, we reserve the right to modify our delivery schedule. Please contact our sales team to find out our availabilities.

Contents



BECA 235

Materials: Rubber
Temperature: -30°C / +200°C
Pressure: 15 MPa
Speed: 0.5 m/sec

P. 188



BECA 301

Materials: Fabric NBR
Temperature: -30°C / +120°C
Pressure: 25 MPa
Speed: 0.5 m/sec

P. 190



BECA 302

Materials: FKM
Temperature: -20°C / +200°C
Pressure: 25 MPa
Speed: 0.5 m/sec

P. 192



BECA 310

Materials: PU
Temperature: -30°C / +110°C
Pressure: 40 MPa
Speed: 0.5 m/sec

P. 194



BECA 320

Materials: PU + NBR
Temperature: -30°C / +100°C
Pressure: 40 MPa
Speed: 0.5 m/sec

P. 198



BECA 335

Materials: PU
Temperature: -30°C / +110°C
Pressure: 30 MPa
Speed: 0.5 m/sec

P. 202



BECA 337 - 339

Materials: PTFE + Stainless steel
Temperature: -200°C / +260°C
Pressure: 30 MPa
Speed: 15 m/s

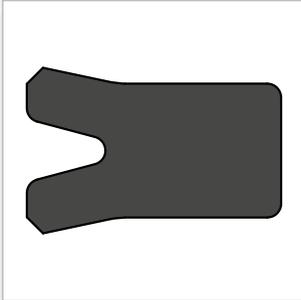
P. 206



BECA 338

Materials: PTFE + Stainless steel
Temperature: -200°C / +260°C
Pressure: 30 MPa
Speed: 15 m/s

P. 212



PISTON/ROD SEALS

BECA 235



DESCRIPTION

The BECA 235 profile is a U-ring type single acting symmetrical seal with matching rubber lips. It can be used for both rod and piston applications.

ADVANTAGES

Optimised sealing effect
Excellent resistance to high temperatures depending on the type of material chosen
Assembly by deformation in closed groove

APPLICATIONS

Mobile hydraulics
Machine tools
Presses
Standard cylinders

MATERIALS

NBR 70 Shore A
NBR 85 Shore A
FKM 85 Shore A

Other grades of materials are available.
Please contact our experts.

TECHNICAL DATA

Temperature	-30°C / +200°C
Pressure	15 MPa
Speed	0.5 m/sec
Media	Mineral hydraulic oils Fire-resistant liquids Biocompatible fluids Water Others (contact our experts)

The figures above indicate the maximum values and may not be cumulated. They may be developed, depending on the materials used.

EXTRUSION GAPS

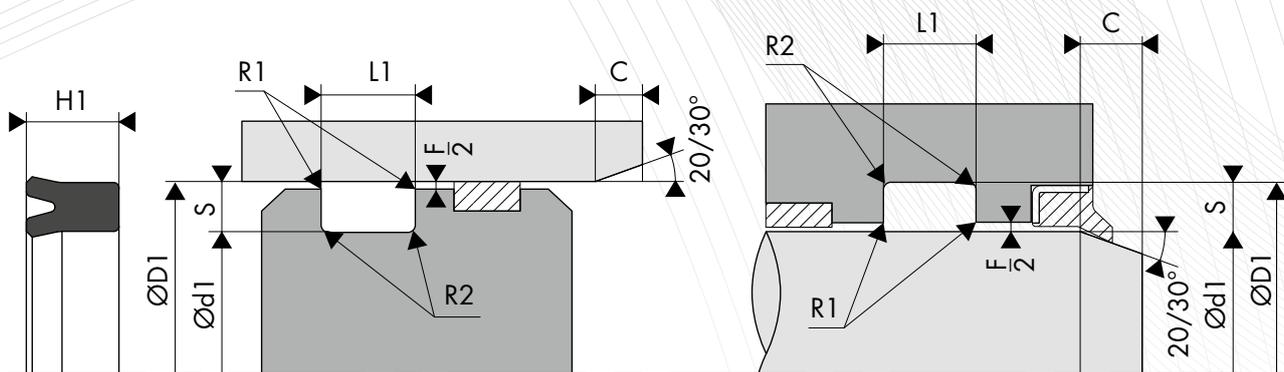
Pressure MPa	Radial gap F/2
2.5 MPa	0.45
5.0 MPa	0.35
7.5 MPa	0.30
10 MPa	0.25
15 MPa	0.20

SURFACE ROUGHNESS

Roughness	Dynamic surface area	Static surface area	Groove flanks
Ra	0.1 - 0.4 µm	≤1.6 µm	≤3.2 µm
Rz	0.63 - 2.5 µm	≤6.3 µm	≤10.0 µm
Rmax	1.0 - 4.0 µm	≤10.0 µm	≤16.0 µm

CHAMFERS AND RADIUS

Radial section S	Radius R1	Radius R2	Chamfer C
3.50	0.20	0.40	2.00
5.00	0.40	0.60	2.50
7.50	0.80	1.00	4.00
10.00	0.80	1.00	5.00

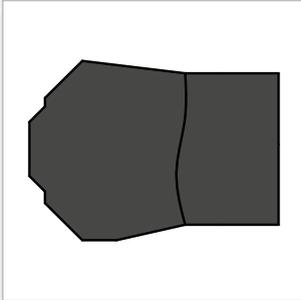


DIMENSIONS

Part number	Rod diameter Ød1 f8 Groove diameter Ød1 f8	Groove diameter ØD1 H10 Bore diameter ØD1 H8	Seal height H1	Groove width L1 +0.5/+1
235.1007003	3.00	7.00	5.00	6.00
235.0280204	20.00	28.00	4.50	5.00
235.0300206	20.00	30.00	6.00	7.00
235.0300208	20.00	30.00	8.00	9.00
235.0250335	25.00	33.00	5.00	6.00
235.0350256	25.00	35.00	6.00	7.00
235.1035025	25.00	35.00	8.00	9.00
235.0320254	25.20	32.60	4.00	5.00
235.1038025	25.40	38.10	7.93	8.50
235.0280365	28.00	36.00	5.00	6.00
235.28048CA	28.00	48.00	12.00	13.00
235.0030082	3.17	7.92	2.38	2.50
235.1035029	28.70	35.00	4.50	5.00
235.0400308	30.00	40.00	8.00	9.00
235.1040030	30.00	40.00	10.00	11.00
235.0320426	32.00	42.00	6.20	6.70
235.0320456	32.00	45.00	6.50	7.00
235.1045035	35.00	45.00	6.00	6.50
235.1050038	38.00	50.00	6.00	6.50
235.1050040	40.00	50.00	5.00	5.50
235.0500406	40.00	50.00	6.00	7.00
235.0500409	40.00	50.00	9.00	10.00
235.0100044	4.00	10.00	4.50	5.00
235.2050040	40.00	50.00	10.00	11.00
235.0550428	42.00	55.00	8.00	9.00
235.0620442	44.00	62.00	12.00	13.00
235.1050045	45.00	50.00	5.00	6.00
235.0550456	45.00	55.00	6.00	6.50
235.0630451	45.00	63.00	11.00	12.00
235.0630452	45.00	63.00	12.00	13.00
235.S650451	45.00	65.00	10.00	11.00
235.0580462	46.00	58.00	12.00	13.00
235.1060048	48.00	60.00	6.00	6.50
235.0180094	9.50	18.50	4.50	5.00
235.1060050	50.00	60.00	10.00	11.00
235.8063050	50.00	63.00	8.20	9.00
235.0650501	50.00	65.00	10.00	11.00
235.0630535	53.00	63.00	5.00	6.00
235.1063053	53.00	63.00	12.00	13.00
235.0700557	55.00	70.00	7.50	8.50

Part number	Rod diameter Ød1 f8 Groove diameter Ød1 f8	Groove diameter ØD1 H10 Bore diameter ØD1 H8	Seal height H1	Groove width L1 +0.5/+1
235.1070055	55.00	70.00	12.00	13.00
235.55075CA	55.00	75.00	12.00	13.00
235.0580686	58.80	68.00	5.40	6.20
235.1070060	60.00	70.00	12.00	13.00
235.1020010	10.00	20.00	8.00	9.00
235.0900605	60.00	90.00	15.00	16.50
235.0620882	62.00	88.00	12.00	13.00
235.0780632	63.00	78.00	12.00	13.00
235.0750651	65.00	75.00	10.00	11.00
235.1075065	65.00	75.00	12.00	13.00
235.0800659	65.00	80.00	9.00	10.00
235.0660922	66.67	92.07	19.00	20.00
235.5070080	70.00	80.00	5.00	6.00
235.0800705	70.00	80.00	5.50	6.50
235.1080070	70.00	80.00	8.00	9.00
235.0200145	14.00	20.00	5.00	6.00
235.0700902	70.00	90.00	11.00	12.00
235.0880734	73.00	88.50	14.60	15.50
235.0750856	75.00	85.00	6.00	7.00
235.1085075	75.00	85.00	12.00	13.00
235.0900752	75.00	90.00	12.00	13.00
235.0760865	76.50	86.50	5.00	5.50
235.1090080	80.00	90.00	10.00	11.00
235.1100805	80.00	110.00	15.00	16.50
235.1100085	85.00	100.00	12.00	13.00
235.1000868	86.00	100.00	8.00	8.70
235.0250184	18.00	25.00	4.00	4.50
235.1000908	90.00	100.00	8.00	9.00
235.1000909	90.00	100.00	9.00	10.00
235.1100090	90.00	100.00	12.00	13.00
235.1150951	95.00	115.00	10.00	11.50
235.0951202	95.25	120.65	19.00	20.00
235.1201008	100.00	120.00	8.00	9.00
235.1301159	115.00	130.00	9.50	10.50
235.1451256	125.00	145.00	16.00	17.00
235.2001755	175.00	200.00	15.70	16.00
235.0180264	18.00	26.00	4.00	5.00
235.0270195	19.00	27.00	5.00	6.00

The figures highlighted in bold correspond to the rod diameters and bore diameters that are recommended by standard ISO 3320. Other intermediate sizes can be provided.



PISTON/ROD SEALS

BECA 301



DESCRIPTION

The BECA 301 profile is a single acting compact symmetrical seal composed of a profiled fabric NBR seal. It can be assembled in a groove according to standard ISO 5597.

ADVANTAGES

- Optimised sealing effect
- Good chemical compatibility, depending on the material chosen
- Excellent wear resistance
- Good extrusion resistance

APPLICATIONS

- Mobile hydraulics
- Material handling - Lifting
- Presses
- Hydraulic cylinders

MATERIALS

Fabric NBR

TECHNICAL DATA

Temperature	-30°C / +110°C
Pressure	25 MPa
Speed	0.5 m/sec
Media	Mineral hydraulic oils Fire-resistant liquids Biocompatible fluids Water Others (contact our experts)

The figures above indicate the maximum values and may not be cumulated. They may be developed, depending on the materials used.

EXTRUSION GAPS

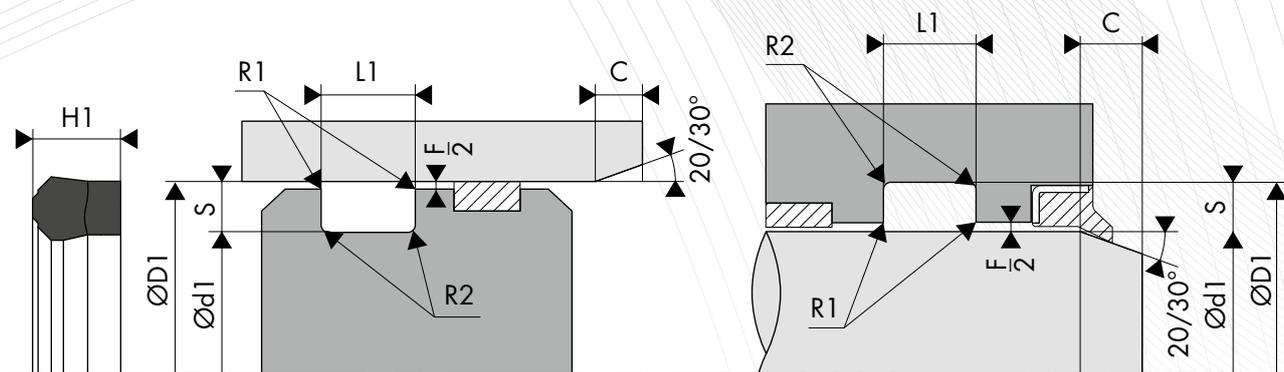
Pressure MPa	Radial gap F/2
15 MPa	0.20
25 MPa	0.10

SURFACE ROUGHNESS

Roughness	Dynamic surface area	Static surface area	Groove flanks
Ra	0.1 - 0.4 µm	≤1.6 µm	≤3.2 µm
Rz	0.63 - 2.5 µm	≤6.3 µm	≤10.0 µm
Rmax	1.0 - 4.0 µm	≤10.0 µm	≤16.0 µm

CHAMFERS AND RADIUS

Radial section S	Radius R1	Radius R2	Chamfer C
4.00	0.20	0.40	2.00
5.00	0.40	0.70	2.50
6.00	0.70	1.10	3.00
7.50	0.70	1.10	4.00
10.00	1.00	1.10	5.00

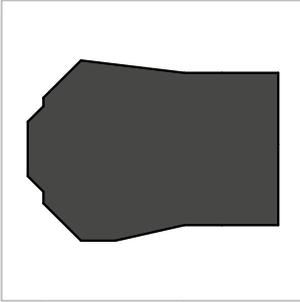


DIMENSIONS

Part number	Rod diameter Ød1 f9 Groove diameter Ød1 f9	Groove diameter ØD1 H10 Bore diameter ØD1 H10	Seal height H1	Groove width L1 0/+0.25
301.1582224	15.87	22.22	4.76	5.50
301.7022030	22.00	30.00	6.50	7.00
301.0220347	22.00	34.00	7.00	8.00
301.1370870	22.23	34.93	9.53	10.50
301.6025033	25.00	33.00	5.70	6.30
301.1025033	25.00	33.00	6.50	7.00
301.0250358	25.00	35.00	9.50	10.50
301.6028036	28.00	36.00	5.70	6.30
301.0280364	28.00	36.00	6.50	7.00
301.1028036	28.00	36.00	6.50	7.00
301.6016024	16.00	24.00	5.70	6.30
301.8028038	28.00	38.00	7.50	8.00
301.2863545	28.57	34.92	4.76	5.50
301.1030038	30.00	38.00	5.70	6.30
301.0300407	30.00	40.00	7.30	7.50
301.6032040	32.00	40.00	5.70	6.30
301.1032040	32.00	40.00	6.50	7.00
301.1035043	35.00	43.00	5.70	6.30
301.0350458	35.00	45.00	6.50	7.50
301.1035050	35.00	50.00	10.00	11.00
301.9036048	36.00	48.00	8.20	9.00
301.0172655	17.00	26.00	5.50	6.00
301.7038050	38.00	50.00	6.50	7.00
301.9038050	38.00	50.00	8.20	9.00
301.3814766	38.10	47.62	6.35	7.00
301.0381556	38.10	55.56	11.11	12.00
301.6040048	40.00	48.00	5.70	6.30
301.1040048	40.00	48.00	6.50	7.00
301.3400486	40.00	48.00	6.50	7.00
301.0400481	40.00	48.00	10.00	11.00
301.0400482	40.00	48.00	11.50	12.50
301.8040050	40.00	50.00	7.50	8.00
301.0180245	18.00	24.00	4.70	5.50
301.2040050	40.00	50.00	8.00	9.00
301.1040050	40.00	50.00	10.40	11.00
301.1040055	40.00	55.00	10.00	11.00
301.0400603	40.00	60.00	13.50	14.50
301.1681181	42.85	30.15	9.52	10.50
301.0440537	44.45	53.97	7.13	8.00
301.0445603	44.45	60.33	10.40	11.11
301.0445617	44.45	61.72	11.00	11.60

Part number	Rod diameter Ød1 f9 Groove diameter Ød1 f9	Groove diameter ØD1 H10 Bore diameter ØD1 H10	Seal height H1	Groove width L1 0/+0.25
301.0450521	45.00	52.00	11.00	11.50
301.2045055	45.00	55.00	7.50	8.00
301.0180266	18.00	26.00	6.00	7.00
301.1045055	45.00	55.00	10.40	11.00
301.S475709	47.00	57.00	9.00	10.00
301.8050060	50.00	60.00	7.50	8.00
301.2050060	50.00	60.00	8.00	9.00
301.1050060	50.00	60.00	9.30	10.00
301.0500604	50.00	60.00	14.50	15.50
301.0500708	50.00	70.00	12.00	13.00
301.2055065	55.00	65.00	7.20	8.00
301.1055065	55.00	65.00	10.00	11.00
301.0600683	60.00	68.00	12.50	13.50
301.0202655	20.00	26.00	5.50	6.30
301.1060070	60.00	70.00	7.20	8.00
301.1060071	60.00	71.00	9.00	10.00
301.1065075	65.00	75.00	10.00	11.00
301.3065075	65.00	75.00	13.50	14.50
301.0650779	65.00	77.00	9.00	9.60
301.2752310	69.85	58.72	9.52	10.50
301.0700808	70.00	80.00	7.20	8.00
301.0700859	70.00	82.00	9.60	10.50
301.0700903	70.00	90.00	15.00	16.00
301.0750857	75.00	85.00	7.00	8.00
301.6020028	20.00	28.00	5.70	6.30
301.0750879	75.00	87.00	9.00	9.60
301.0800902	80.00	90.00	12.00	13.00
301.1080092	80.00	92.00	10.00	11.00
301.1085095	85.00	95.00	8.00	9.00
301.8085095	85.00	95.00	8.00	9.00
301.S851002	85.00	100.00	22.50	23.50
301.1001152	100.00	115.00	11.50	12.50
301.100CLAR	100.00	120.00	14.50	15.50
301.1105115	105.00	115.00	10.00	11.00
301.1201405	120.00	140.00	15.00	16.00
301.1020028	20.00	28.00	6.50	7.50
301.1301503	130.00	150.00	13.50	14.50
301.1140160	140.00	160.00	12.00	13.00
301.212.6K8	212.60	231.78	14.00	15.00
301.6022030	22.00	30.00	5.70	6.30

The figures highlighted in bold correspond to the dimensions for standard ISO 5597, with the rod and bore diameters in line with standard ISO 3320. Other intermediate sizes can be provided.



PISTON/ROD SEALS

BECA 302



DESCRIPTION

The BECA 302 profile is a single acting compact symmetrical seal composed of a profiled FKM seal. It can be assembled in a groove according to standard ISO 5597.

ADVANTAGES

Optimised sealing effect
 Good chemical compatibility and wide temperature range, depending on the material chosen
 Excellent wear resistance
 Good extrusion resistance

APPLICATIONS

Mobile hydraulics
 Material handling - Lifting
 Presses
 Hydraulic cylinders

MATERIALS

FKM 80 Shore A

Other grades of materials are available. Please contact our experts.

TECHNICAL DATA

Temperature	-20°C / +200°C
Pressure	25 MPa
Speed	0.5 m/sec
Media	Mineral hydraulic oils Fire-resistant liquids Biocompatible fluids Water Others (contact our experts)

The figures above indicate the maximum values and may not be cumulated. They may be developed, depending on the materials used.

EXTRUSION GAPS

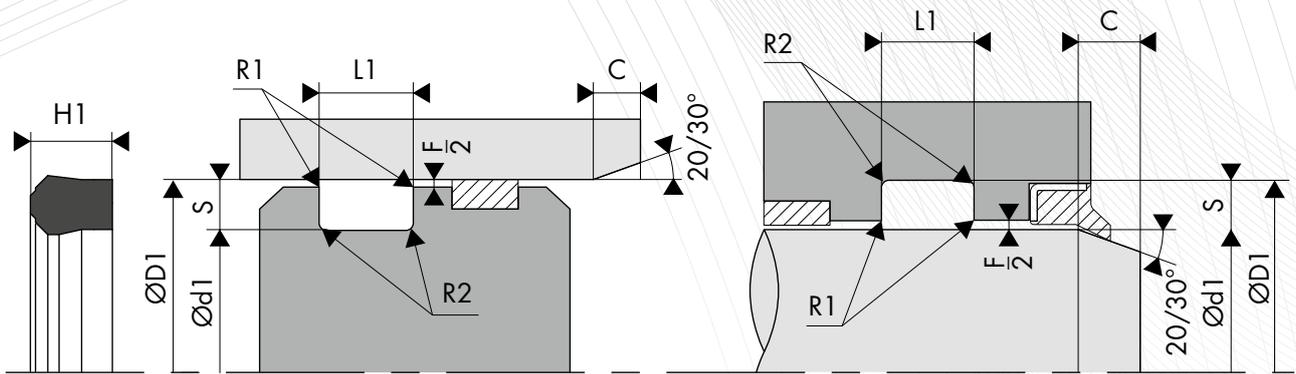
Pressure MPa	Radial gap F/2
15 MPa	0.20
25 MPa	0.10

SURFACE ROUGHNESS

Roughness	Dynamic surface area	Static surface area	Groove flanks
Ra	0.1 - 0.4 µm	≤1.6 µm	≤3.2 µm
Rz	0.63 - 2.5 µm	≤6.3 µm	≤10.0 µm
Rmax	1.0 - 4.0 µm	≤10.0 µm	≤16.0 µm

CHAMFERS AND RADIUS

Radial section S	Radius R1	Radius R2	Chamfer C
4.00	0.20	0.40	2.00
5.00	0.40	0.70	2.50
6.00	0.70	1.10	3.00
7.50	0.70	1.10	4.00
10.00	1.00	1.10	5.00

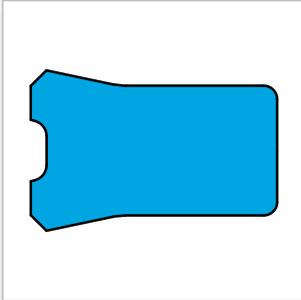


○ DIMENSIONS

Part number	Rod diameter Ød1 f9	Groove diameter ØD1 H10	Seal height H1	Groove width L1 0/+0.25
	Groove diameter Ød1 f9	Bore diameter ØD1 H10		
302.0550656	55.00	65.00	6.00	7.00
302.1060070	60.00	70.00	7.20	8.00
302.0600717	60.00	71.00	7.00	8.00
302.0650756	65.00	75.00	6.00	7.00
301.80953G8	80.00	95.00	12.00	13.00
302.6025033	25.00	33.00	5.70	6.30
302.0250336	25.00	33.00	6.40	7.00

Part number	Rod diameter Ød1 f9	Groove diameter ØD1 H10	Seal height H1	Groove width L1 0/+0.25
	Groove diameter Ød1 f9	Bore diameter ØD1 H10		
302.028BBG6	28.00	36.00	5.70	6.30
302.1035043	35.00	43.00	5.37	6.30
302.6040048	40.00	48.00	5.70	6.30
302.0450556	45.00	55.00	6.00	7.00
302.1045055	45.00	55.00	11.00	12.00
302.8050060	50.00	60.00	7.50	8.00

The figures highlighted in bold correspond to the dimensions for standard ISO 5597, with the rod and bore diameters in line with standard ISO 3320. Other intermediate sizes can be provided.



PISTON/ROD SEALS

BECA 310



DESCRIPTION

The BECA 310 profile is a U-ring type single acting compact rod/piston seal with matching lips and made of a very dense polyurethane body. It can be assembled in a groove according to standard ISO 5597.

ADVANTAGES

Good sealing at both high and low pressures
Excellent abrasion resistance

APPLICATIONS

Mobile hydraulics
Material handling - Lifting
Presses
Hydraulic cylinders

MATERIALS

PU 93 Shore A - Blue
PU 96 Shore A - Blue
High temp. PU 96 Shore A - Beige

Other grades of materials are available.
Please contact our experts.

TECHNICAL DATA

Temperature	-30°C / +110°C
Pressure	40 MPa
Speed	0.5 m/sec
Media	Mineral hydraulic oils

The figures above indicate the maximum values and may not be cumulated. They may be developed, depending on the materials used.

EXTRUSION GAPS

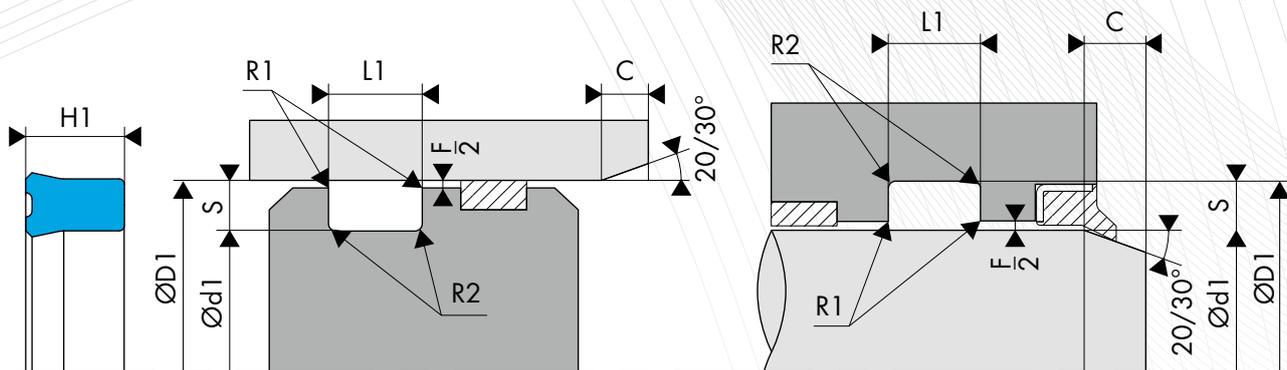
Bore diameter ØD1 Rod diameter Ød1	Radial gap F/2				
	≤ 5 MPa	≤ 10 MPa	≤ 20 MPa	≤ 30 MPa	≤ 40 MPa
≤ 60 mm	0.40	0.30	0.20	0.15	0.10
> 60 mm	0.50	0.40	0.30	0.20	0.15

SURFACE ROUGHNESS

Roughness	Dynamic surface area	Static surface area	Groove flanks
Ra	0.1 - 0.4 µm	≤1.6 µm	≤3.2 µm
Rz	0.63 - 2.5 µm	≤6.3 µm	≤10.0 µm
Rmax	1.0 - 4.0 µm	≤10.0 µm	≤16.0 µm

CHAMFERS AND RADIUS

Radial section S	Radius R1	Radius R2	Chamfer C
3.00	0.40	0.60	2.50
4.00	0.40	0.60	2.50
5.00	0.40	0.60	2.50
7.50	0.80	1.00	4.00



DIMENSIONS

Part number	Rod diameter Ød1 f8	Groove diameter ØD1 H9	Seal height H1	Groove width L1 0/+0.25
	Groove diameter Ød1 f8	Bore diameter ØD1 H10		
310.0060145	6.00	14.00	5.70	6.30
310.0120227	12.00	22.00	7.30	8.00
310.0490651	49.20	65.00	10.00	11.00
310.6050058	50.00	58.00	5.70	6.30
310.0500586	50.00	58.00	6.00	7.00
310.0500588	50.00	58.00	8.00	9.00
310.0500606	50.00	60.00	6.00	7.00
310.8050060	50.00	60.00	7.20	8.00
310.0500607	50.00	60.00	7.30	8.00
310.0500608	50.00	60.00	8.00	9.00
310.0500609	50.00	60.00	9.00	10.00
310.0500601	50.00	60.00	10.00	11.00
310.0140215	14.00	21.00	5.00	5.60
310.0500602	50.00	60.00	12.00	13.00
310.0500603	50.00	60.00	13.50	14.50
310.0500659	50.00	65.00	9.00	10.00
310.0500651	50.00	65.00	10.00	11.00
310.0500652	50.00	65.00	11.50	12.50
310.0500703	50.00	70.00	13.50	14.50
310.0500637	50.80	63.88	17.00	18.00
310.0510573	51.00	57.00	3.50	4.50
310.0550635	55.00	63.00	5.70	6.30
310.0550636	55.00	63.00	6.00	7.00
310.0140225	14.00	22.00	5.70	6.30
310.0550639	55.00	63.00	8.00	9.00
310.0550656	55.00	65.00	6.00	7.00
310.0550658	55.00	65.00	8.00	9.00
310.0550651	55.00	65.00	10.00	11.00
310.0550652	55.00	65.00	12.00	13.00
310.0550751	55.00	75.00	12.00	13.00
310.0560665	56.00	66.00	5.00	5.60
310.7056066	56.00	66.00	6.80	7.50
310.0560711	56.00	71.00	11.50	12.50
310.0560765	56.00	76.00	15.00	16.00
310.0140247	14.00	24.00	7.30	8.00
310.0580684	58.00	68.00	13.00	14.00
310.0600686	60.00	68.00	7.00	8.00
310.0600688	60.00	68.00	8.00	9.00
310.0600681	60.00	68.00	11.50	12.50

Part number	Rod diameter Ød1 f8	Groove diameter ØD1 H9	Seal height H1	Groove width L1 0/+0.25
	Groove diameter Ød1 f8	Bore diameter ØD1 H10		
310.0600684	60.00	68.00	13.00	14.00
310.0600706	60.00	70.00	6.00	7.00
310.0600707	60.00	70.00	7.00	8.00
310.0600701	60.00	70.00	10.00	11.00
310.0600702	60.00	70.00	12.00	13.00
310.7063073	63.00	73.00	6.80	7.50
310.5016023	16.00	23.00	5.00	5.60
310.0630781	63.00	78.00	11.50	12.50
310.0630831	63.00	83.00	15.00	16.00
310.0650736	65.00	73.00	6.00	7.00
310.0650738	65.00	73.00	8.00	9.00
310.0650751	65.00	75.00	10.00	11.00
310.0650752	65.00	75.00	12.00	13.00
310.0680768	68.00	76.00	8.00	9.00
310.0700806	70.00	80.00	6.50	7.50
310.7070080	70.00	80.00	6.80	7.50
310.0700807	70.00	80.00	7.00	8.00
310.6016024	16.00	24.00	5.70	6.30
310.0700809	70.00	80.00	9.00	10.00
310.1070080	70.00	80.00	10.00	11.00
310.0700801	70.00	80.00	11.50	12.50
310.0700802	70.00	80.00	12.00	13.00
310.0700829	70.00	82.00	9.00	10.00
310.0700851	70.00	85.00	11.50	12.50
310.0700905	70.00	90.00	15.00	16.00
310.0750852	75.00	85.00	12.00	13.00
310.0800905	80.00	90.00	5.00	5.60
310.7080090	80.00	90.00	6.80	7.50
310.0160267	16.00	26.00	7.30	8.00
310.0800901	80.00	90.00	10.00	11.00
310.0800902	80.00	90.00	12.00	13.00
310.0800929	80.00	92.00	9.00	10.00
310.0800951	80.00	95.00	11.50	12.50
310.0801005	80.00	100.00	15.00	16.00
310.0801006	80.00	100.00	15.50	16.50
310.0800922	80.50	92.50	12.00	13.00
310.0840948	84.00	94.00	8.00	9.00
310.0850936	85.00	93.00	6.50	7.50
310.0850957	85.00	95.00	7.00	8.00

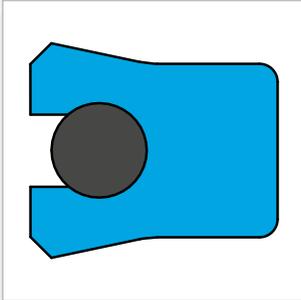
Part number	Rod diameter Ød1 f8	Groove diameter ØD1 H9	Seal height H1	Groove width L1 0/+0.25
	Groove diameter Ød1 f8	Bore diameter ØD1 H10		
310.5018025	18.00	25.00	5.00	5.60
310.0851053	85.00	105.00	13.50	14.50
310.0851055	85.00	105.00	15.00	16.00
310.0901006	90.00	100.00	6.00	7.00
310.0901007	90.00	100.00	6.50	7.50
310.0901009	90.00	100.00	9.00	10.00
310.0901001	90.00	100.00	11.50	12.50
310.0901051	90.00	105.00	11.50	12.50
310.0901105	90.00	110.00	15.00	16.00
310.0921008	92.00	100.00	8.00	9.00
310.0921218	92.00	121.00	18.00	19.00
310.6018026	18.00	26.00	5.70	6.30
310.0951051	95.00	105.00	10.00	11.00
310.0961074	96.50	107.00	4.50	5.00
310.1001088	100.00	108.00	8.00	9.00
310.1001105	100.00	110.00	5.00	5.60
310.1001101	100.00	110.00	10.00	11.00
310.1001132	100.00	113.00	12.00	13.00
310.1001205	100.00	120.00	15.00	16.00
310.1001259	100.00	125.00	19.00	20.00
310.1051136	105.00	113.00	6.50	7.50
310.1081215	108.00	121.00	15.00	16.00
310.0180287	18.00	28.00	7.30	8.00
310.1101259	110.00	125.00	9.60	10.60
310.1101305	110.00	130.00	15.00	16.00
310.1101359	110.00	135.00	19.00	20.00
310.1201305	120.00	130.00	5.00	5.60
310.1201351	120.00	135.00	11.50	12.50
310.1201355	120.00	135.00	15.00	16.00
310.1201405	120.00	140.00	15.00	16.00
310.1251336	125.00	133.00	6.50	7.50
310.1251455	125.00	145.00	15.00	16.00
310.1251509	125.00	150.00	19.00	20.00
310.0070134	7.00	13.00	4.50	5.00
310.0200265	20.00	26.00	5.00	5.60
310.1301429	130.00	142.00	9.00	10.00
310.1381461	138.00	146.00	11.50	12.50
310.1401505	140.00	150.00	5.00	5.60
310.1401501	140.00	150.00	10.00	11.00
310.1401605	140.00	160.00	15.00	16.00
310.1401659	140.00	165.00	19.00	20.00
310.1451609	145.00	160.00	9.60	10.60
310.1601709	160.00	170.00	9.00	10.00
310.1601859	160.00	185.00	19.00	20.00
310.1601902	160.00	190.00	24.00	25.00
310.5020027	20.00	27.00	5.00	5.60
310.1631752	163.00	175.00	12.00	13.00
310.1802059	180.00	205.00	19.00	20.00
310.1802102	180.00	210.00	24.00	25.00
310.1852009	185.00	200.00	9.60	10.60
310.1902103	190.00	210.00	13.50	14.50
310.1902105	190.00	210.00	15.00	16.00
310.2002259	200.00	225.00	19.00	20.00
310.2002302	200.00	230.00	24.00	25.00
310.2202502	220.00	250.00	24.00	25.00
310.2422573	242.00	257.00	13.00	14.00
310.0200276	20.00	27.00	6.00	7.00
310.2502802	250.00	280.00	24.00	25.00
310.2803102	280.00	310.00	24.00	25.00

Part number	Rod diameter Ød1 f8	Groove diameter ØD1 H9	Seal height H1	Groove width L1 0/+0.25
	Groove diameter Ød1 f8	Bore diameter ØD1 H10		
310.3203603	320.00	360.00	31.00	32.00
310.3604003	360.00	400.00	31.00	32.00
310.6020028	20.00	28.00	5.70	6.30
310.0200286	20.00	28.00	6.00	7.00
310.0200307	20.00	30.00	7.00	8.00
310.0200308	20.00	30.00	7.30	8.00
310.0210307	21.70	30.00	7.00	8.00
310.5022029	22.00	29.00	5.00	5.60
310.6022031	22.00	30.00	5.70	6.30
310.0080164	8.00	16.00	4.50	5.00
310.0220306	22.00	30.00	6.00	7.00
310.0220328	22.00	32.00	7.00	8.00
310.0200327	22.00	32.00	7.30	8.00
310.0200309	22.00	32.00	8.00	9.00
310.5025032	25.00	32.00	5.00	5.60
310.6025033	25.00	33.00	5.70	6.30
310.0250336	25.00	33.00	6.00	7.00
310.0250338	25.00	33.00	8.00	9.00
310.0250357	25.00	35.00	7.30	8.00
310.0250358	25.00	35.00	8.00	9.00
310.0080165	8.00	16.00	5.70	6.30
310.0270355	27.00	35.00	5.70	6.30
310.0270358	27.00	35.00	8.00	9.00
310.0280364	28.00	36.00	4.50	5.00
310.3028036	28.00	36.00	5.70	6.30
310.0280366	28.00	36.00	6.00	7.00
310.0280368	28.00	36.00	8.00	9.00
310.0280387	28.00	38.00	7.00	8.00
310.0280389	28.00	38.00	8.00	9.00
310.0280431	28.00	43.00	11.50	12.50
310.6030038	30.00	38.00	5.70	6.30
310.0090133	9.00	13.00	3.50	4.50
310.0300386	30.00	38.00	6.00	7.00
310.0300387	30.00	38.00	7.00	8.00
310.0300389	30.00	38.00	8.00	9.00
310.0300398	30.00	39.00	8.00	9.00
310.0300431	30.00	43.00	10.00	11.00
310.3174131	31.75	41.27	9.52	10.50
310.0320404	32.00	40.00	4.00	4.50
310.6032040	32.00	40.00	5.70	6.30
310.0320406	32.00	40.00	6.00	7.00
310.0320408	32.00	40.00	8.00	9.00
310.0100176	10.00	17.00	6.00	7.00
310.0320416	32.00	41.00	6.00	7.00
310.0320426	32.00	42.00	6.00	7.00
310.0320427	32.00	42.00	7.00	8.00
310.7032042	32.00	42.00	7.30	8.00
310.0320441	32.00	44.00	11.50	12.50
310.0320471	32.00	47.00	11.50	12.50
310.0340474	34.00	47.00	4.00	4.50
310.0350415	35.00	41.00	5.00	5.60
310.6035043	35.00	43.00	5.70	6.30
310.0350436	35.00	43.00	6.00	7.00
310.0100186	10.00	18.00	5.70	6.30
310.0350437	35.00	43.00	6.50	7.50
310.0350509	35.00	50.00	9.00	10.00
310.0360444	36.00	44.00	4.50	5.00
310.6036044	36.00	44.00	5.70	6.30
310.0360446	36.00	44.00	6.00	7.00

Part number	Rod diameter Ød1 f8	Groove diameter ØD1 H9	Seal height H1	Groove width L1 0/+0.25
	Groove diameter Ød1 f8	Bore diameter ØD1 H10		
310.0360467	36.00	46.00	7.30	8.00
310.0360488	36.00	48.00	8.00	9.00
310.0360511	36.00	51.00	11.50	12.50
310.0390478	39.00	47.00	8.00	9.00
310.6040048	40.00	48.00	5.70	6.30
310.0100207	10.00	20.00	7.30	8.00
310.0400486	40.00	48.00	6.00	7.00
310.0400488	40.00	48.00	8.00	9.00
310.8040050	40.00	50.00	7.20	8.00
310.0400507	40.00	50.00	7.30	8.00
310.0400501	40.00	50.00	10.00	11.00
310.0400521	40.00	52.00	10.00	11.00
310.0400551	40.00	55.00	11.50	12.50
310.0420505	42.00	50.00	5.70	6.30

Part number	Rod diameter Ød1 f8	Groove diameter ØD1 H9	Seal height H1	Groove width L1 0/+0.25
	Groove diameter Ød1 f8	Bore diameter ØD1 H10		
310.0420528	42.00	52.00	8.00	9.00
310.6045053	45.00	53.00	5.70	6.30
310.0120205	12.00	20.00	5.70	6.30
310.0450537	45.00	53.00	7.20	8.00
310.8045055	45.00	55.00	7.20	8.00
310.0450557	45.00	55.00	7.30	8.00
310.0450558	45.00	55.00	8.00	9.00
310.0450559	45.00	55.00	9.00	10.00
310.0450551	45.00	55.00	10.00	11.00
310.0450601	45.00	60.00	11.50	12.50
310.0450631	45.00	63.00	10.00	11.00
310.0480566	48.00	56.00	6.00	7.00
310.0480606	48.00	60.00	6.00	7.00

The figures highlighted in bold correspond to the dimensions for standard ISO 5597, with the rod and bore diameters in line with standard ISO 3320. Other intermediate sizes can be provided.



PISTON/ROD SEALS

BECA 320



DESCRIPTION

The BECA 320 profile is a U-ring type single acting rod seal with matching lips composed of a profiled polyurethane seal and a NBR O'Ring to preserve its elastic memory. It can be assembled in a groove according to standard ISO 5597.

ADVANTAGES

Very good sealing at low pressures
Elastic memory preserved using the O'Ring
Excellent abrasion resistance

APPLICATIONS

Agriculture
Mobile machinery
Lifting systems
Injection presses
Hydraulic cylinders

MATERIALS

Profiled seal

PU 93 Shore A - Blue
PU 96 Shore A - Blue
High temp. PU 96 Shore A - Beige

O'Ring

NBR 70 Shore A

Other grades of materials are available.
Please contact our experts.

TECHNICAL DATA

Temperature	-30°C / +100°C
Pressure	40 MPa
Speed	0.5 m/sec
Media	Mineral hydraulic oils

The figures above indicate the maximum values and may not be cumulated. They may be developed, depending on the materials used.

EXTRUSION GAPS

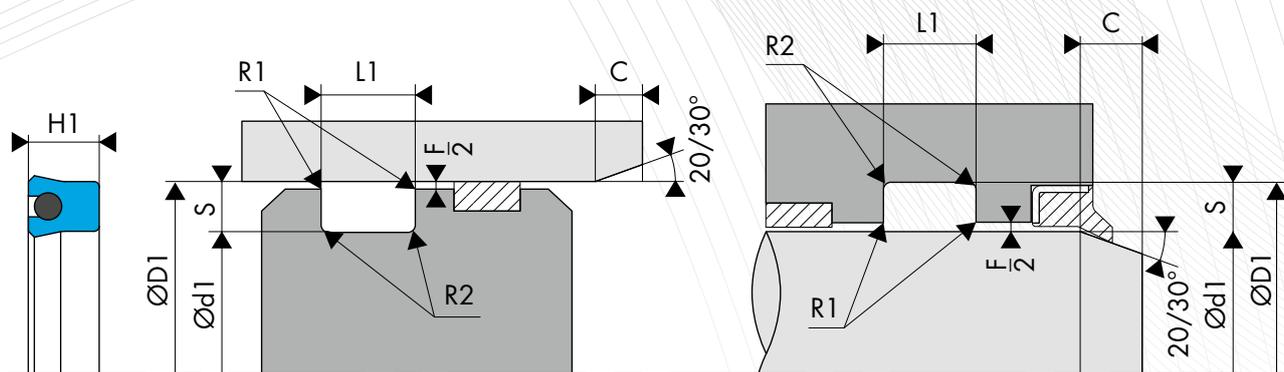
Pressure MPa	Radial gap F/2
20 MPa	0.30
25 MPa	0.25
35 MPa	0.15
40 MPa	0.10

SURFACE ROUGHNESS

Roughness	Dynamic surface area	Static surface area	Groove flanks
Ra	0.1 - 0.4 µm	≤1.6 µm	≤3.2 µm
Rz	0.63 - 2.5 µm	≤6.3 µm	≤10.0 µm
Rmax	1.0 - 4.0 µm	≤10.0 µm	≤16.0 µm

CHAMFERS AND RADIUS

Radial section S	Radius R1	Radius R2	Chamfer C
3.00	0.20	0.40	2.00
4.00	0.40	0.60	2.50
5.00	0.80	1.00	2.50
7.50	0.80	1.00	4.00
10.00	0.80	1.00	5.00



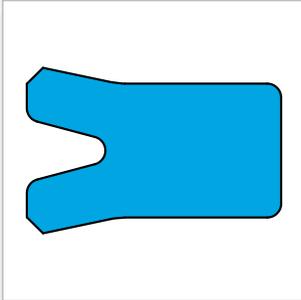
○ DIMENSIONS

Part number	Rod diameter Ød1 f8	Groove diameter ØD1 H9	Seal height H1	Groove width L1 0/+0.25
	Groove diameter Ød1 f8	Bore diameter ØD1 H10		
320.7009022	9.50	22.00	6.50	7.00
320.5016023	16.00	23.00	5.00	5.60
320.8076084	76.00	84.00	8.20	9.00
320.7628899	76.20	88.90	9.52	10.20
320.1079090	79.00	90.00	12.00	13.00
320.7080090	80.00	90.00	6.80	7.50
320.2080095	80.00	95.00	11.50	12.50
320.1080100	80.00	100.00	15.00	16.00
320.8088096	88.00	96.00	8.20	9.00
320.0881019	88.90	101.60	9.52	10.20
320.7090098	90.00	98.00	6.00	7.00
320.8090098	90.00	98.00	8.20	9.00
320.6016024	16.00	24.00	5.70	6.30
320.7090100	90.00	100.00	6.50	7.50
320.2090105	90.00	103.00	11.50	12.50
320.1090105	90.00	105.00	11.50	12.50
320.1090110	90.00	110.00	15.00	16.00
320.7091099	91.00	99.00	6.00	7.00
320.8091099	91.00	99.00	8.20	9.00
320.9091099	91.00	99.00	8.20	9.00
320.1100115	100.00	115.00	12.00	13.00
320.1100120	100.00	120.00	15.00	16.00
320.2100125	100.00	125.00	19.00	20.00
320.8016026	16.00	26.00	7.30	8.00
320.8107115	107.00	115.00	8.20	9.00
320.1110125	110.00	125.00	9.60	10.60
320.1110130	110.00	130.00	15.00	16.00
320.2110135	110.00	135.00	19.00	20.00
320.1125140	125.00	140.00	15.00	16.00
320.1125145	125.00	145.00	15.00	16.00
320.2125150	125.00	150.00	19.00	20.00
320.8126134	126.00	134.00	8.20	9.00
320.1134149	134.80	149.40	16.00	17.00
320.1140160	140.00	160.00	15.00	16.00
320.5018025	18.00	25.00	5.00	5.60
320.2140165	140.00	165.00	19.00	20.00
320.8145153	145.00	153.00	8.20	9.00
320.1145160	145.00	160.00	9.60	10.60
320.1147155	147.00	155.00	10.00	11.00
320.2160185	160.00	185.00	19.00	20.00

Part number	Rod diameter Ød1 f8	Groove diameter ØD1 H9	Seal height H1	Groove width L1 0/+0.25
	Groove diameter Ød1 f8	Bore diameter ØD1 H10		
320.2160190	160.00	190.00	24.00	25.00
320.8165173	165.00	173.00	8.20	9.00
320.1170180	170.00	180.00	10.00	11.00
320.1180205	180.00	205.00	15.00	16.00
320.2180205	180.00	205.00	19.00	20.00
320.6018026	18.00	26.00	5.70	6.30
320.2180210	180.00	210.00	24.00	25.00
320.1185200	185.00	200.00	9.60	10.60
320.2200225	200.00	225.00	19.00	20.00
320.2200230	200.00	230.00	24.00	25.00
320.2220250	220.00	250.00	24.00	25.00
320.2249279	249.35	279.00	22.50	23.50
320.2250280	250.00	280.00	24.00	25.00
320.2280310	280.00	310.00	24.00	25.00
320.3320360	320.00	360.00	31.00	32.00
320.3360400	360.00	400.00	31.00	32.00
320.8018028	18.00	28.00	7.30	8.00
320.5020027	20.00	27.00	5.00	5.60
320.6020028	20.00	28.00	5.70	6.30
320.7020028	20.00	28.00	6.40	7.00
320.8020030	20.00	30.00	7.30	8.00
320.6010018	10.00	18.00	5.70	6.30
320.5022029	22.00	29.00	5.00	5.60
320.6022030	22.00	30.00	5.70	6.30
320.8022032	22.00	32.00	7.20	8.00
320.5025032	25.00	32.00	5.00	5.60
320.6025033	25.00	33.00	5.70	6.30
320.7025033	25.00	33.00	6.40	7.00
320.8025035	25.00	35.00	7.30	8.00
320.1025038	25.40	38.10	14.30	15.00
320.6028036	28.00	36.00	5.70	6.30
320.8028038	28.00	38.00	7.20	8.00
320.8010020	10.00	20.00	7.30	8.00
320.1028043	28.00	43.00	11.50	12.50
320.5028034	28.60	34.90	4.50	5.60
320.6030038	30.00	38.00	5.70	6.30
320.7030038	30.00	38.00	6.40	7.00
320.8030040	30.00	40.00	7.20	8.00
320.3184138	31.80	41.30	7.90	8.50
320.6032040	32.00	40.00	5.70	6.30
320.7032042	32.00	42.00	6.30	7.00
320.8032042	32.00	42.00	7.20	8.00
320.1032045	32.00	45.00	10.00	11.00
320.7011018	11.10	18.00	6.50	7.00
320.1032047	32.00	47.00	11.50	12.50
320.3494457	34.90	44.45	7.90	8.50
320.6035043	35.00	43.00	5.70	6.30
320.7035043	35.00	43.00	6.40	7.00
320.6036044	36.00	44.00	5.70	6.30
320.8036046	36.00	46.00	7.20	8.00
320.1036051	36.00	51.00	11.50	12.50
320.9037047	37.00	47.00	8.00	9.00
320.4038044	38.00	44.00	3.20	4.00
320.8038053	38.70	53.10	7.00	8.00
320.6012020	12.00	20.00	5.70	6.30
320.6040048	40.00	48.00	5.70	6.30
320.8040050	40.00	50.00	7.20	8.00
320.1040050	40.00	50.00	10.00	11.00
320.1040055	40.00	55.00	11.50	12.50
320.4135089	41.30	50.80	9.52	10.00

Part number	Rod diameter Ød1 f8	Groove diameter ØD1 H9	Seal height H1	Groove width L1 0/+0.25
	Groove diameter Ød1 f8	Bore diameter ØD1 H10		
320.6042050	42.00	50.00	5.70	6.30
320.0440549	44.45	54.00	9.52	10.00
320.1044057	44.45	57.15	9.52	10.00
320.6045053	45.00	53.00	5.70	6.30
320.8045053	45.00	53.00	8.20	9.00
320.8012022	12.00	22.00	7.30	8.00
320.8045055	45.00	55.00	7.20	8.00
320.1045060	45.00	60.00	11.50	12.50
320.4765719	47.62	57.15	9.52	10.00
320.6050058	50.00	58.00	5.70	6.30
320.8050060	50.00	60.00	7.20	8.00
320.1050060	50.00	60.00	10.00	11.00
320.1050061	50.00	60.00	11.50	12.50
320.1050065	50.00	65.00	11.50	12.50
320.5050060	50.75	60.20	5.00	5.60
320.8053063	53.00	63.00	7.50	8.50
320.5013023	13.40	23.00	5.00	5.60
320.5396356	53.98	63.50	6.35	7.00
320.6055063	55.00	63.00	5.70	6.30
320.1055063	55.00	63.00	12.30	13.00
320.7055065	55.00	65.00	6.80	7.50
320.7056066	56.00	66.00	6.80	7.50
320.1056071	56.00	71.00	10.50	11.50
320.2056071	56.00	71.00	11.50	12.50
320.1056076	56.00	76.00	15.00	16.00
320.0570669	57.20	66.70	9.52	10.00
320.5726999	57.20	69.90	9.52	10.20
320.6014022	14.00	22.00	5.70	6.30
320.8060068	60.00	68.00	8.20	9.00
320.7060070	60.00	70.00	6.80	7.50
320.3060070	60.00	70.00	12.00	13.00
320.1060071	60.00	71.00	10.00	11.00
320.8061069	61.00	69.00	8.20	9.00
320.7063073	63.00	73.00	6.80	7.50
320.2063078	63.00	78.00	11.50	12.50
320.1063083	63.00	83.00	15.00	16.00
320.6357309	63.50	73.03	9.52	10.00
320.6357629	63.50	76.20	9.52	10.20
320.8014024	14.00	24.00	7.30	8.00
320.1064072	64.00	72.00	13.00	14.00
320.9065080	65.00	80.00	8.00	9.00
320.8068076	68.00	76.00	8.20	9.00
320.1069082	69.85	82.55	9.52	10.00
320.7070080	70.00	80.00	6.80	7.50
320.2070085	70.00	83.00	11.50	12.50
320.1070085	70.00	85.00	11.50	12.50
320.1070090	70.00	90.00	15.00	16.00
320.7072082	72.00	82.00	6.80	7.50
320.8075083	75.00	83.00	8.20	9.00

The figures highlighted in bold correspond to the dimensions for standard ISO 5597, with the rod and bore diameters in line with standard ISO 3320. Other intermediate sizes can be provided.



PISTON/ROD SEALS

BECA 335



DESCRIPTION

The BECA 335 profile is a U-ring type single acting symmetrical seal with matching polyurethane lips. It can be used for both rod and piston applications.

ADVANTAGES

Optimised sealing effect
Excellent abrasion resistance
Very good wear resistance

APPLICATIONS

Agriculture
Mobile machinery
Lifting systems
Injection presses
Hydraulic cylinders

MATERIALS

PU 93 Shore A - Blue
PU 96 Shore A - Blue
High temp. PU 96 Shore A - Beige

Other grades of materials are available.
Please contact our experts.

TECHNICAL DATA

Temperature	-30°C / +110°C
Pressure	30 MPa
Speed	0.5 m/sec
Media	Mineral hydraulic oils

The figures above indicate the maximum values and may not be cumulated. They may be developed, depending on the materials used.

EXTRUSION GAPS

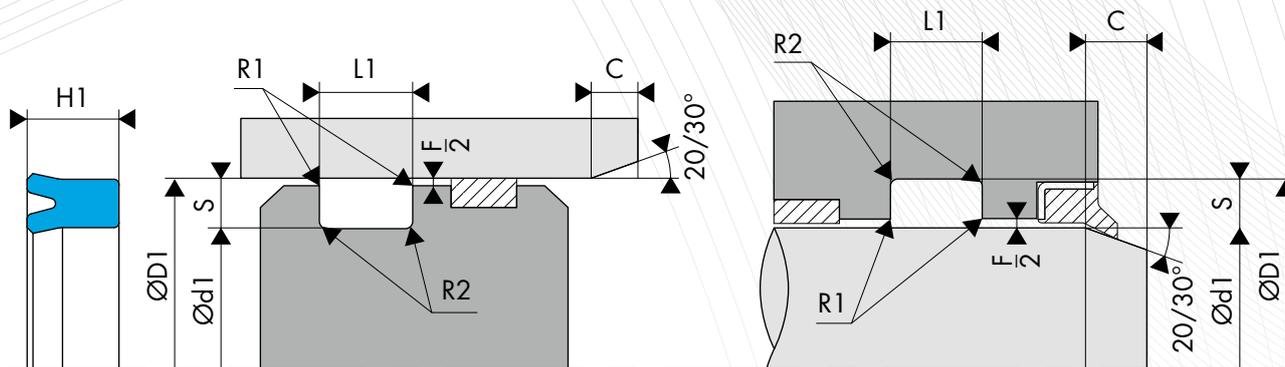
Bore diameter ØD1 Rod diameter Ød1	Radial gap F/2			
	≤ 5 MPa	≤ 10 MPa	≤ 20 MPa	≤ 30 MPa
≤ 60 mm	0.40	0.30	0.20	0.15
> 60 mm	0.50	0.40	0.30	0.20

SURFACE ROUGHNESS

Roughness	Dynamic surface area	Static surface area	Groove flanks
Ra	0.1 - 0.4 µm	≤1.6 µm	≤3.2 µm
Rz	0.63 - 2.5 µm	≤6.3 µm	≤10.0 µm
Rmax	1.0 - 4.0 µm	≤10.0 µm	≤16.0 µm

CHAMFERS AND RADIUS

Radial section S	Radius R1	Radius R2	Chamfer C
3.00	0.20	0.40	2.00
4.00	0.20	0.40	2.50
5.00	0.40	0.60	3.00
7.50	0.80	1.00	4.00
10.00	0.80	1.00	5.00



DIMENSIONS

Part number	Rod diameter Ød1 f8 Groove diameter Ød1 f8	Groove diameter ØD1 H9 Bore diameter ØD1 H10	Seal height H1	Groove width L1 0/+0.5
335.0040094	4.00	9.00	4.00	4.50
335.0040104	4.00	10.00	4.00	4.50
335.0700148	7.00	14.00	8.00	9.00
335.0140086	8.00	14.00	6.00	6.50
335.0100166	10.00	16.00	6.50	7.50
335.0180105	10.00	18.00	5.50	6.00
335.0180106	10.00	18.00	6.00	6.50
335.0190104	10.00	19.00	4.00	5.00
335.0100226	10.00	22.00	6.00	7.00
335.0250107	10.00	25.00	7.00	8.00
335.0120184	12.00	18.00	4.50	5.50
335.0120185	12.00	18.00	5.00	6.00
335.0120186	12.00	18.00	6.00	6.50
335.0190124	12.00	19.00	4.50	5.00
335.0220128	12.00	22.00	8.00	9.00
335.0120248	12.00	24.00	7.00	8.00
335.0200134	13.00	20.00	4.50	5.00
335.0200135	13.00	20.00	5.50	6.50
335.0130206	13.00	20.00	6.00	7.00
335.0250131	13.00	25.00	10.00	11.00
335.0200144	14.00	20.00	4.50	5.50
335.0140205	14.00	20.00	5.00	6.00
335.0220144	14.00	22.00	4.00	5.00
335.0220146	14.00	22.00	6.00	7.00
335.0220149	14.00	22.00	9.00	10.00
335.0250146	14.00	25.00	6.00	7.00
335.0220154	15.00	22.00	3.50	4.00
335.0250155	15.00	25.00	5.80	7.00
335.0250158	15.00	25.00	8.00	9.00
335.0250150	15.00	25.00	10.00	11.00
335.0160224	16.00	22.00	4.00	4.50
335.0240166	16.00	24.00	5.50	6.00
335.0160249	16.00	24.00	9.00	10.00
335.0260168	16.00	26.00	8.00	9.00
335.0320168	16.00	32.00	8.00	9.00
335.0250184	18.00	25.00	4.00	5.00
335.0180288	18.00	28.00	8.00	9.00
335.0300188	18.00	30.00	8.00	9.00

Part number	Rod diameter Ød1 f8 Groove diameter Ød1 f8	Groove diameter ØD1 H9 Bore diameter ØD1 H10	Seal height H1	Groove width L1 0/+0.5
335.0250195	19.00	25.00	5.00	6.00
335.0250196	19.00	25.00	6.00	7.00
335.1925838	19.00	25.80	3.30	3.80
335.0200285	20.00	28.00	4.00	5.00
335.0300207	20.00	30.00	7.50	8.50
335.0300208	20.00	30.00	8.00	9.00
335.0300200	20.00	30.00	10.00	11.00
335.0350201	20.00	35.00	10.00	11.00
335.0220305	22.00	30.00	5.00	6.00
335.0220306	22.00	30.00	6.00	7.00
335.0320228	22.00	32.00	8.00	9.00
335.0340228	22.00	34.00	8.00	9.00
335.0240326	24.00	32.00	5.70	6.30
335.0320247	24.00	32.00	7.00	8.00
335.0240408	24.00	40.00	8.00	9.00
335.0400241	24.00	40.00	10.00	11.00
335.0250306	25.00	30.00	6.00	7.00
335.0330251	25.00	33.00	10.00	11.00
335.0350255	25.00	35.00	5.00	6.00
335.0350256	25.00	35.00	6.00	7.00
335.0350258	25.00	35.00	8.00	9.00
335.1035025	25.00	35.00	10.00	11.00
335.0380251	25.00	38.00	10.00	11.00
335.0400255	25.00	40.00	5.00	6.00
335.0400257	25.00	40.00	6.00	7.00
335.0400250	25.00	40.00	10.00	11.00
335.0250441	25.00	44.00	10.00	11.00
335.0380257	25.40	38.10	7.93	9.00
335.0280357	28.00	35.00	6.50	7.30
335.0350288	28.00	35.00	8.00	9.00
335.0280385	28.00	38.00	5.50	7.00
335.0380287	28.00	38.00	7.00	7.50
335.0280408	28.00	40.00	8.90	9.90
335.0280401	28.00	40.00	10.00	11.00
335.2850451	28.50	45.00	10.50	11.50
335.0300365	30.00	36.00	5.00	6.00
335.0300366	30.00	36.00	6.00	6.50
335.3039565	30.00	39.50	6.50	7.50

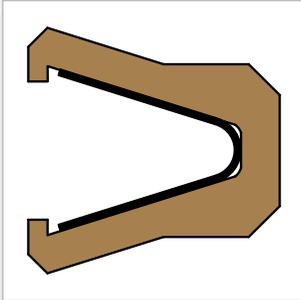
Part number	Rod diameter Ød1 f8	Groove diameter ØD1 H9	Seal height H1	Groove width L1 0/+0.5
	Groove diameter Ød1 f8	Bore diameter ØD1 H10		
335.0400305	30.00	40.00	5.00	6.00
335.0400306	30.00	40.00	6.50	7.50
335.0400307	30.00	40.00	7.00	8.00
335.0400308	30.00	40.00	7.50	8.00
335.0400300	30.00	40.00	10.00	11.00
335.0420306	30.00	42.00	6.00	7.00
335.0300420	30.00	42.00	10.00	11.00
335.0300451	30.00	45.00	10.00	11.00
335.3153843	31.50	38.40	3.30	3.80
335.5083179	31.75	50.80	9.52	10.52
335.3831845	31.80	38.00	4.50	
335.0400326	32.00	40.00	5.50	6.00
335.0400327	32.00	40.00	6.00	7.00
335.0320426	32.00	42.00	6.00	7.00
335.1042032	32.00	42.00	10.00	11.00
335.0320437	32.00	43.00	6.50	7.50
335.0440321	32.00	44.00	9.00	10.00
335.0320451	32.00	45.00	10.00	11.00
335.0450321	32.00	45.00	11.00	12.00
335.0500321	32.00	50.00	10.00	11.00
335.0440342	34.00	44.00	12.00	13.00
335.0340466	34.00	46.00	6.00	7.00
335.0340468	34.00	46.00	8.00	9.00
335.3494769	34.92	47.63	9.52	10.52
335.0400355	35.00	40.00	5.00	5.50
335.0350436	35.00	43.00	6.00	7.00
335.0430358	35.00	43.00	8.00	9.00
335.0450356	35.00	45.00	6.00	7.00
335.0350457	35.00	45.00	6.50	7.20
335.0450358	35.00	45.00	8.00	9.00
335.0450350	35.00	45.00	10.00	11.00
335.3504528	35.00	45.20	7.00	8.00
335.0500350	35.00	50.00	10.00	11.00
335.0550351	35.00	55.00	10.00	11.00
335.0360456	36.00	45.00	6.00	7.00
335.5718365	36.55	57.18	8.00	8.80
335.0500386	38.00	50.00	6.00	7.00
335.0550380	38.00	55.00	10.00	11.00
335.0380509	38.10	50.80	9.52	10.52
335.0450394	39.00	45.00	4.50	5.00
335.0500405	40.00	50.00	5.00	6.00
335.0500406	40.00	50.00	6.00	7.00
335.0500407	40.00	50.00	6.50	7.50
335.0500408	40.00	50.00	7.00	8.00
335.7050040	40.00	50.00	7.50	8.50
335.0500409	40.00	50.00	9.00	10.00
335.0500400	40.00	50.00	10.00	11.00
335.0550409	40.00	55.00	9.00	10.00
335.0550401	40.00	55.00	10.00	11.00
335.0400602	40.00	60.00	12.50	13.50
335.0400605	40.00	60.00	15.00	16.00
335.0600408	40.00	60.00	18.00	19.00
335.0420500	42.00	50.00	10.00	11.00
335.0520429	42.00	52.00	9.00	10.00
335.0440658	44.00	65.00	8.00	9.00
335.0440579	44.45	57.15	9.52	10.52
335.0550456	45.00	55.00	6.00	7.00
335.0550450	45.00	55.00	10.00	11.00

Part number	Rod diameter Ød1 f8	Groove diameter ØD1 H9	Seal height H1	Groove width L1 0/+0.5
	Groove diameter Ød1 f8	Bore diameter ØD1 H10		
335.0600459	45.00	60.00	9.00	10.00
335.0600450	45.00	60.00	10.00	11.00
335.0580480	48.00	58.00	10.00	11.00
335.0480628	48.00	62.00	8.00	9.00
335.0486348	48.00	63.40	8.00	9.00
335.0480683	48.00	68.00	12.00	13.00
335.0600506	50.00	60.00	6.00	7.00
335.0600500	50.00	60.00	10.00	11.00
335.0500626	50.00	62.00	6.00	7.00
335.0650509	50.00	65.00	9.00	10.00
335.0650501	50.00	65.00	10.00	11.00
335.0700501	50.00	70.00	10.00	11.00
335.0700502	50.00	70.00	12.00	13.00
335.0700504	50.00	70.00	13.50	14.50
335.0500639	50.80	63.50	9.52	10.52
335.0620522	52.00	62.00	12.00	13.00
335.0520649	52.00	64.00	9.00	10.00
335.0530626	53.00	62.00	6.50	7.50
335.0630536	53.00	63.00	6.00	7.00
335.0630538	53.00	63.00	7.30	8.00
335.0630531	53.00	63.00	10.00	11.00
335.0550632	55.00	63.00	12.00	13.00
335.0650551	55.00	65.00	10.00	11.00
335.0650552	55.00	65.00	12.00	13.00
335.0700559	55.00	70.00	9.00	10.00
335.0700551	55.00	70.00	10.00	11.00
335.0700552	55.00	70.00	12.00	13.00
335.0555718	55.50	71.00	8.00	8.50
335.0660567	56.00	66.00	6.00	7.00
335.0560661	56.00	66.00	10.00	11.00
335.0680582	58.00	68.00	12.00	13.00
335.0800584	58.00	80.00	14.00	15.00
335.0680607	60.00	68.00	7.00	8.00
335.0680608	60.00	68.00	8.00	9.00
335.0600685	60.00	68.00	24.50	25.00
335.0700606	60.00	70.00	6.00	7.00
335.0700601	60.00	70.00	10.00	11.00
335.0700602	60.00	70.00	12.00	13.00
335.0600722	60.00	72.00	12.00	13.00
335.0600759	60.00	75.00	9.50	10.50
335.0800601	60.00	80.00	10.00	11.00
335.0800602	60.00	80.00	12.00	13.00
335.0760621	62.00	76.00	14.00	15.00
335.0780631	63.00	78.00	11.00	12.00
335.0760646	64.00	76.00	6.00	7.00
335.0750656	65.00	75.00	6.00	7.00
335.0750651	65.00	75.00	10.00	11.00
335.0750652	65.00	75.00	12.00	13.00
335.0800659	65.00	80.00	9.00	10.00
335.0650802	65.00	80.00	11.00	12.00
335.0670872	67.00	87.00	12.00	13.00
335.0700788	70.00	78.00	8.00	9.00
335.0780705	70.00	78.00	25.00	26.00
335.0800706	70.00	80.00	6.00	7.00
335.0800701	70.00	80.00	10.00	11.00
335.0800702	70.00	80.00	12.00	13.00
335.0850702	70.00	85.00	12.00	13.00
335.0900702	70.00	90.00	12.00	13.00

Part number	Rod diameter Ød1 f8	Groove diameter ØD1 H9	Seal height H1	Groove width L1 0/+0.5
	Groove diameter Ød1 f8	Bore diameter ØD1 H10		
335.0900724	72.00	90.00	14.00	15.00
335.0730859	73.00	85.00	9.00	10.00
335.8927382	73.80	89.20	12.00	13.00
335.0850756	75.00	85.00	6.00	7.00
335.0850752	75.00	85.00	12.00	13.00
335.0900759	75.00	90.00	8.80	9.80
335.0900750	75.00	90.00	10.00	11.00
335.0900752	75.00	90.00	12.00	13.00
335.0900806	80.00	90.00	6.00	7.00
335.0900801	80.00	90.00	10.00	11.00
335.0800903	80.00	90.00	12.00	13.00
335.0900803	80.00	90.00	13.50	14.50
335.0800921	80.00	92.00	10.00	11.00
335.0800952	80.00	95.00	12.00	13.00
335.1000802	80.00	100.00	12.00	13.00
335.0801009	80.00	100.00	18.00	19.00
335.0811011	81.00	101.50	10.30	11.30
335.0950852	85.00	95.00	12.00	13.00
335.1000852	85.00	100.00	12.00	13.00
335.1000908	90.00	100.00	8.00	9.00
335.1000909	90.00	100.00	9.00	10.00
335.1000902	90.00	100.00	12.00	13.00
335.1100902	90.00	110.00	12.00	13.00
335.1030952	95.00	103.00	12.00	13.00
335.1100952	95.00	110.00	12.00	13.00
335.1150952	95.00	115.00	12.00	13.00
335.1001105	100.00	110.00	4.90	5.50
335.1151002	100.00	115.00	12.00	13.00
335.1201002	100.00	120.00	12.00	13.00
335.1231049	104.80	123.80	9.50	10.50
335.1251052	105.00	125.00	12.00	13.00
335.1251055	105.00	125.00	15.00	16.00
335.1101242	110.00	124.00	12.50	13.50
335.1101252	110.00	125.00	12.00	13.00
335.1251131	113.00	125.00	10.50	11.50

Part number	Rod diameter Ød1 f8	Groove diameter ØD1 H9	Seal height H1	Groove width L1 0/+0.5
	Groove diameter Ød1 f8	Bore diameter ØD1 H10		
335.1151306	115.00	130.00	5.00	6.00
335.1201305	120.00	130.00	4.90	5.50
335.1401205	120.00	140.00	15.00	16.00
335.1401252	125.00	140.00	12.00	13.00
335.1401255	125.00	140.00	15.00	16.00
335.1451255	125.00	145.00	15.00	16.00
335.1301501	130.00	150.00	11.00	12.00
335.1501305	130.00	150.00	15.00	16.00
335.1401505	140.00	150.00	4.90	5.50
335.1601402	140.00	160.00	12.00	13.00
335.1511715	151.00	171.00	15.00	16.00
335.1551856	155.00	185.00	26.00	27.00
335.1601757	160.00	175.00	7.70	8.50
335.1801605	160.00	180.00	15.00	16.00
335.1601845	160.00	184.00	15.50	16.50
335.1751659	165.00	175.00	9.00	10.00
335.1701956	170.00	195.00	16.00	17.00
335.2001709	170.00	200.00	18.00	19.00
335.1742056	174.50	206.00	16.50	17.50
335.1751953	175.00	195.00	13.00	14.00
335.1752006	175.00	200.00	16.00	17.00
335.1852007	185.00	200.00	7.50	8.00
335.2211915	191.80	221.80	15.00	16.00
335.2002255	200.00	225.00	15.00	16.00
335.2252008	200.00	225.00	18.00	19.00
335.2302009	200.00	230.00	18.00	19.00
335.2022205	202.00	220.00	15.00	16.00
335.2112255	211.00	225.00	15.00	16.00
335.2402202	220.00	240.00	12.00	13.00
335.2402552	240.00	255.00	12.00	13.00
335.2602806	260.00	280.00	15.00	16.00
335.2803202	280.00	320.00	20.00	21.00
335.3603909	360.00	390.00	18.00	19.00
335.4304504	430.00	450.00	13.00	14.00
335.4805005	480.00	500.00	15.00	16.00

The figures highlighted in bold correspond to the rod diameters and bore diameters that are recommended by standard ISO 3320. Other intermediate sizes can be provided.



PISTON/ROD SEALS

BECA

337-339



DESCRIPTION

The BECA 337 profile is a single acting symmetrical seal composed of a profiled, filled PTFE U-ring type seal and a V-spring that is resistant to corrosion.

The BECA 339 profile is specially designed for applications where the seal is in contact with food products. It is characterised by a silicone overmoulding on the inside of the seal, which completely hides the V-spring, thus preventing impurities from accumulating in this hard-to-clean area.

ADVANTAGES

Low friction coefficient;
no stick-slip effect
Excellent abrasion resistance
Good dimensional stability
Wide temperature range and excellent chemical resistance
Non-toxic material

APPLICATIONS

Food & Beverage
Medical
Pharmaceutical
Static hydraulics

MATERIALS

Profiled seal

Carbon-filled PTFE
Blue GL PTFE
PE-UHMW

V-Shaped spring

Stainless steel

Other materials are available. Please refer to the materials table on the next page.

TECHNICAL DATA

Temperature	-200°C / +260°C
Pressure	30 MPa
Speed	15 m/s
Media	Practically all types of fluids, and chemical and gas products

The figures above indicate the maximum values and may not be cumulated. They may be developed, depending on the materials used.

EXTRUSION GAPS

Radial section S	Radial gap F/2			
	2 MPa	10 MPa	20 MPa	30 MPa
1.45	0.20	0.10	0.08	0.05
2.25	0.25	0.15	0.10	0.07
3.10	0.35	0.20	0.15	0.08
4.70	0.50	0.25	0.20	0.10
6.10	0.60	0.30	0.25	0.12
9.50	0.90	0.50	0.40	0.20

SURFACE ROUGHNESS

Roughness	Dynamic surface area	Static surface area	Groove flanks
Ra	0.05 - 0.2 µm	≤1.6 µm	≤3.2 µm
Rz	0.4 - 1.6 µm	≤6.3 µm	≤10.0 µm
Rmax	0.63 - 2.5 µm	≤10.0 µm	≤16.0 µm

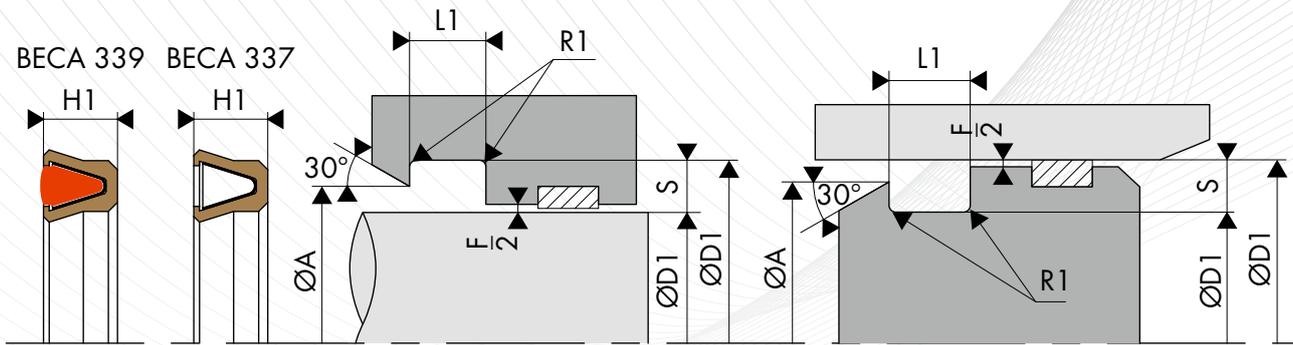
CHAMFERS AND RADIUS

Radial section S	Radius R1	Radius R2	Chamfer C
1.45	0.30	0.40	3.00
2.25	0.30	0.40	3.00
3.10	0.30	0.60	3.00
4.70	0.30	0.80	3.00
6.10	0.30	0.80	3.50
9.50	0.30	0.80	6.50

TABLE MATERIALS

Profiled seal					V-spring			Mating surface material
Standard code	ISO code	Material	Colour	Characteristics	Code	Type of material	Service temperature	
DP	P	Virgin PTFE	White	Resistance to chemical products Impermeability Dielectric Non-stick Low friction coefficient Food industry	I	X10 Cr Ni 18-8	-200°C/+260°C	Steel Stainless steel Chrome steel Aluminium Bronze Cast iron Treated surface
DC	C	PTFE + 25% Carbon	Grey	Improvements • Wear properties • Compression set Good resistance to chemical products Thermal and electrical conductivity Anti-static High-performing in compression-based dynamic applications	I	X10 Cr Ni 18-8	-200°C/+260°C	
CG	C	PTFE + 23% Carbon + 2% Graphite	Black	Good resistance to chemical products Thermal and electrical conductivity Anti-static High-performing in compression-based dynamic applications	I	X10 Cr Ni 18-8	-200°C/+260°C	Steel Chrome steel Cast iron
DV	V	PTFE + 25 % Glass	Blue	Improvements • Wear properties • Mechanical strength Slightly more abrasive, however, this is corrected by adding MOS2 Maintains its chemical and dielectric properties Well-suited to applications with rotational and simultaneous alternating movements	I	X10 Cr Ni 18-8	-200°C/+260°C	
VM	M	PTFE + 15 % Glass + 5% MOS2	Grey	Resistance to compression Resistance to wear Excellent chemical stability Good thermal conductivity	I	X10 Cr Ni 18-8	-200°C/+260°C	Steel Stainless steel Chrome steel Aluminium Bronze Cast iron Treated surface
DX	X	PTFE GL Blue + Glass + Metal oxides	Turquoise blue	Improvements • Wear properties Reduced wear on metal parts Self-lubricating Thermal and electrical conductivity Low permeability Good friction coefficient Anti-static High performing in dynamic self-lubricating applications	I	X10 Cr Ni 18-8	-200°C/+260°C	
DG	G	PTFE + 15% Graphite	Black	Improvements • Better abrasion resistance • Better dimensional stability at high temperatures Use up to +300°C Good friction coefficient and low permeability	I	X10 Cr Ni 18-8	-200°C/+260°C	Steel Chrome steel Cast iron Treated surface
K1	K	PTFE + 10% Ekonol	Light brown	Improvements • Wear properties • Warping resistance and creep strength • Compression resistance Self-lubricating Electrical and thermal conductivity Does not alter the metal parts Reduced hold with certain chemical products Used for high-compression dynamic seals and has a low level of wear	I	X10 Cr Ni 18-8	-200°C/+260°C	
K2	K	PTFE + 20% Ekonol	Light brown	Use up to +300°C Good friction coefficient and low permeability	I	X10 Cr Ni 18-8	-200°C/+260°C	Steel Chrome steel Cast iron
DB	B	PTFE + 60% Bronze	Dark brown	Excellent wear resistance on contact with water and air	I	X10 Cr Ni 18-8	-70°C/+80°C	
B4	B	PTFE + 40% Bronze	Dark brown		I	X10 Cr Ni 18-8	-200°C/+260°C	Steel Stainless steel Chrome steel Aluminium Bronze Cast iron Treated surface
HG	HG	PE-UHMW	White or off-white		I	X10 Cr Ni 18-8	-70°C/+80°C	

Other grades of materials are available depending on your specificities.



○ INSTALLATION DIMENSIONS

Series	Cylinder sealing			Rod sealing			Groove width L1 0/+0.20	Radial section S
	Bore diameter ØD1 H9		Groove diameter Ød1 h9	Rod diameter Ød1 h9		Groove diameter ØD1 H9		
	Standard range	Extended range		Standard range	Extended range			
337.0*	6.0 - 13.9	6.0 - 40.0	D1 - 2.90	3.0 - 9.9	3.0 - 40.0	d1 + 2.90	2.40	1.45
337.1	14.0 - 24.9	10.0 - 200.0	D1 - 4.50	10.0 - 19.9	6.0 - 200.0	d1 + 4.50	3.60	2.25
337.2	25.0 - 45.9	16.0 - 400.0	D1 - 6.20	20.0 - 39.9	10.0 - 400.0	d1 + 6.20	4.80	3.10
337.3	46.0 - 124.9	28.0 - 700.0	D1 - 9.40	40.0 - 119.9	20.0 - 700.0	d1 + 9.40	7.10	4.70
337.4	125.0 - 999.9	45.0 - 999.9	D1 - 12.20	120.0 - 629.9	35.0 - 999.9	d1 + 12.20	9.50	6.10
337.5	1000.0 - 2500.0	100.0 - 2500.0	D1 - 19.00	630.0 - 999.9	80.0 - 999.9	d1 + 19.00	15.00	9.50

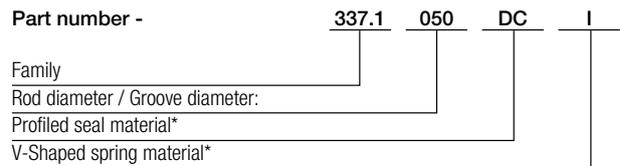
For special applications > 30 MPa, we recommend using H8/f8 (bore/piston) and H8/f8 (groove/rod) tolerances or selecting other, more suitable materials. Please contact our experts.

*Only BECA 337.0 profiles are fitted with an O'Ring instead of a V-spring.

○ EXAMPLE OF CODIFICATION

STANDARD CODIFICATION

Materials _____ : PTFE + 25% Carbon profiled seal - Code DC
 _____ : Stainless steel V-Shaped spring - Code I
Rod diameter / Groove diameter _____ : Ød1 + 50.00 mm
Groove diameter / Bore diameter _____ : ØD1 = 59.40 mm
Part number _____ : 337.3050DCI



* The codes that define the materials are set out in the materials table on the previous page.

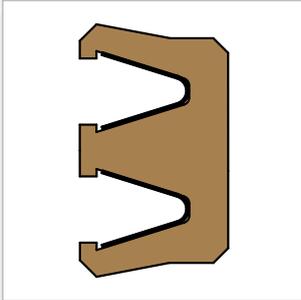
 DIMENSIONS

Part number	Rod diameter Ød1 h9	Groove diameter ØD1 H9	Seal height H1	Groove width L1 0/+0.20	Step height ØD1 - A
	Groove diameter Ød1 h9	Bore diameter ØD1 H9			
337.0004	4.00	6.90	2.10	2.40	0.40
337.0005	5.00	7.90	2.10	2.40	0.40
337.0051	5.10	8.00	2.10	2.40	0.40
337.0006	6.00	8.90	2.10	2.40	0.40
337.0007	7.00	9.90	2.10	2.40	0.40
337.0071	7.10	10.00	2.10	2.40	0.40
337.0008	8.00	10.90	2.10	2.40	0.40
337.0091	9.10	12.00	2.10	2.40	0.40
337.1095	9.50	14.00	3.30	3.60	0.60
337.1010	10.00	14.50	3.30	3.60	0.60
337.1105	10.50	15.00	3.30	3.60	0.60
337.1011	11.00	15.50	3.30	3.60	0.60
337.1115	11.50	16.00	3.30	3.60	0.60
337.1012	12.00	16.50	3.30	3.60	0.60
337.1125	12.50	17.00	3.30	3.60	0.60
337.1135	13.50	18.00	3.30	3.60	0.60
337.1014	14.00	18.50	3.30	3.60	0.60
337.1015	15.00	19.50	3.30	3.60	0.60
337.1155	15.50	20.00	3.30	3.60	0.60
337.1016	16.00	20.50	3.30	3.60	0.60
337.1175	17.50	22.00	3.30	3.60	0.60
337.1018	18.00	22.50	3.30	3.60	0.60
337.2188	18.80	25.00	4.40	4.80	0.70
337.2195	19.50	24.00	3.30	3.60	0.60
337.2198	19.80	26.00	4.40	4.80	0.70
337.2020	20.00	26.20	4.40	4.80	0.70
337.2218	21.80	28.00	4.40	4.80	0.70
337.2022	22.00	28.20	4.40	4.80	0.70
337.2238	23.80	30.00	4.40	4.80	0.70
337.2025	25.00	31.20	4.40	4.80	0.70
337.2258	25.80	32.00	4.40	4.80	0.70
337.2028	28.00	34.20	4.40	4.80	0.70
337.2288	28.80	35.00	4.40	4.80	0.70
337.2030	30.00	36.20	4.40	4.80	0.70
337.2032	32.00	38.20	4.40	4.80	0.70
337.2322	32.20	38.40	4.40	4.80	0.70
337.2033	33.00	39.20	4.40	4.80	0.70
337.2338	33.80	40.00	4.40	4.80	0.70
337.2035	35.00	41.20	4.40	4.80	0.70
337.2358	35.80	42.00	4.40	4.80	0.70
337.2036	36.00	42.20	4.40	4.80	0.70
337.3366	36.60	46.00	6.50	7.10	0.80
337.2038	38.00	44.20	4.40	4.80	0.70
337.3386	38.60	48.00	6.50	7.10	0.80
337.2388	38.80	45.00	4.40	4.80	0.70
337.3396	39.60	49.00	6.50	7.10	0.80
337.3040	40.00	49.40	6.50	7.10	0.80
337.3406	40.60	50.00	6.50	7.10	0.80
337.3042	42.00	51.40	6.50	7.10	0.80
337.3426	42.60	52.00	6.50	7.10	0.80
337.3436	43.60	53.00	6.50	7.10	0.80
337.3045	45.00	54.40	6.50	7.10	0.80
337.3456	45.60	55.00	6.50	7.10	0.80
337.3466	46.60	56.00	6.50	7.10	0.80
337.3048	48.00	57.40	6.50	7.10	0.80
337.3486	48.60	58.00	6.50	7.10	0.80
337.3050	50.00	59.40	6.50	7.10	0.80
337.3506	50.60	60.00	6.50	7.10	0.80
337.3516	51.60	61.00	6.50	7.10	0.80
337.3052	52.00	61.40	6.50	7.10	0.80
337.3536	53.60	63.00	6.50	7.10	0.80
337.3546	54.60	64.00	6.50	7.10	0.80
337.3055	55.00	64.40	6.50	7.10	0.80
337.3556	55.60	65.00	6.50	7.10	0.80
337.3056	56.00	65.40	6.50	7.10	0.80
337.3576	57.60	67.00	6.50	7.10	0.80
337.3060	60.00	69.40	6.50	7.10	0.80
337.3606	60.60	70.00	6.50	7.10	0.80
337.3063	63.00	72.40	6.50	7.10	0.80

Part number	Rod diameter Ød1 h9	Groove diameter ØD1 H9	Seal height H1	Groove width L1 0/+0.20	Step height ØD1 - A
	Groove diameter Ød1 h9	Bore diameter ØD1 H9			
337.3646	64.60	74.00	6.50	7.10	0.80
337.3065	65.00	74.40	6.50	7.10	0.80
337.3656	65.60	75.00	6.50	7.10	0.80
337.3070	70.00	79.40	6.50	7.10	0.80
337.3706	70.60	80.00	6.50	7.10	0.80
337.3072	72.00	81.40	6.50	7.10	0.80
337.3736	73.60	83.00	6.50	7.10	0.80
337.3075	75.00	84.40	6.50	7.10	0.80
337.3756	75.60	85.00	6.50	7.10	0.80
337.3766	76.60	86.00	6.50	7.10	0.80
337.3080	80.00	89.40	6.50	7.10	0.80
337.3806	80.60	90.00	6.50	7.10	0.80
337.3085	85.00	94.40	6.50	7.10	0.80
337.3856	85.60	95.00	6.50	7.10	0.80
337.3886	88.60	98.00	6.50	7.10	0.80
337.3090	90.00	99.40	6.50	7.10	0.80
337.3906	90.60	100.00	6.50	7.10	0.80
337.3095	95.00	104.40	6.50	7.10	0.80
337.3986	98.60	108.00	6.50	7.10	0.80
337.3100	100.00	109.40	6.50	7.10	0.80
337.1006	100.60	110.00	6.50	7.10	0.80
337.3105	105.00	114.40	6.50	7.10	0.80
337.1056	105.60	115.00	6.50	7.10	0.80
337.3110	110.00	119.40	6.50	7.10	0.80
337.1106	110.60	120.00	6.50	7.10	0.80
337.1128	112.80	125.00	8.80	9.50	0.90
337.3115	115.00	124.40	6.50	7.10	0.80
337.3116	116.00	125.40	6.50	7.10	0.80
337.1178	117.80	130.00	8.80	9.50	0.90
337.4120	120.00	132.20	8.80	9.50	0.90
337.1228	122.80	135.00	8.80	9.50	0.90
337.4125	125.00	137.20	8.80	9.50	0.90
337.1278	127.80	140.00	8.80	9.50	0.90
337.4130	130.00	142.20	8.80	9.50	0.90
337.4135	135.00	147.20	8.80	9.50	0.90
337.1378	137.80	150.00	8.80	9.50	0.90
337.4140	140.00	152.20	8.80	9.50	0.90
337.1478	147.80	160.00	8.80	9.50	0.90
337.4150	150.00	162.20	8.80	9.50	0.90
337.1578	157.80	170.00	8.80	9.50	0.90
337.4160	160.00	172.20	8.80	9.50	0.90
337.4165	165.00	177.20	8.80	9.50	0.90
337.1678	167.80	180.00	8.80	9.50	0.90
337.4170	170.00	182.20	8.80	9.50	0.90
337.1778	177.80	190.00	8.80	9.50	0.90
337.4180	180.00	192.20	8.80	9.50	0.90
337.1878	187.80	200.00	8.80	9.50	0.90
337.4190	190.00	202.20	8.80	9.50	0.90
337.1978	197.80	210.00	8.80	9.50	0.90
337.4200	200.00	212.20	8.80	9.50	0.90
337.2078	207.80	220.00	8.80	9.50	0.90
337.4210	210.00	222.20	8.80	9.50	0.90
337.2178	217.80	230.00	8.80	9.50	0.90
337.4220	220.00	232.20	8.80	9.50	0.90
337.2278	227.80	240.00	8.80	9.50	0.90
337.4230	230.00	242.20	8.80	9.50	0.90
337.2378	237.80	250.00	8.80	9.50	0.90
337.4238	238.00	250.20	8.80	9.50	0.90
337.4240	240.00	252.20	8.80	9.50	0.90
337.4250	250.00	262.20	8.80	9.50	0.90
337.2518	251.80	264.00	8.80	9.50	0.90
337.2678	267.80	280.00	8.80	9.50	0.90
337.4280	280.00	292.20	8.80	9.50	0.90
337.2878	287.80	300.00	8.80	9.50	0.90
337.4300	300.00	312.20	8.80	9.50	0.90
337.3078	307.80	320.00	8.80	9.50	0.90
337.4315	315.00	327.20	8.80	9.50	0.90
337.4320	320.00	332.20	8.80	9.50	0.90
337.3378	337.80	350.00	8.80	9.50	0.90

Part number	Rod diameter Ød1 h9	Groove diameter ØD1 H9	Seal height H1	Groove width L1 0/+0.20	Step height ØD1 - A
	Groove diameter Ød1 h9	Bore diameter ØD1 H9			
337.3478	347.80	360.00	8.80	9.50	0.90
337.4350	350.00	362.20	8.80	9.50	0.90
337.4360	360.00	372.20	8.80	9.50	0.90
337.3878	387.80	400.00	8.80	9.50	0.90
337.4400	400.00	412.20	8.80	9.50	0.90
337.4078	407.80	420.00	8.80	9.50	0.90
337.4378	437.80	450.00	8.80	9.50	0.90
337.4678	467.80	480.00	8.80	9.50	0.90
337.4878	487.80	500.00	8.80	9.50	0.90

The figures highlighted in bold correspond to the rod diameters and bore diameters that are recommended by standard ISO 3320. Other intermediate sizes can be provided.



PISTON/ROD SEALS

BECA 338



DESCRIPTION

The BECA 338 profile is a single acting symmetrical seal composed of a profiled, filled PTFE seal and two V-springs that are resistant to corrosion. Each of the springs acts individually on one of the seal's lips. This profile is particularly suited to applications where it is necessary to have a significant seal radial cross-section.

ADVANTAGES

- Wide temperature range and excellent chemical resistance
- Low friction coefficient; no stick-slip effect
- Excellent abrasion resistance
- Good dimensional stability
- Non-toxic material

APPLICATIONS

- Food & Beverage
- Measuring devices
- Pumps
- Separators
- Valves

MATERIALS

- Profiled seal**
- Carbon-filled PTFE
- V-Shaped springs**
- Stainless steel

Other materials are available. Please refer to the materials table on the next page.

TECHNICAL DATA

Temperature	-200°C / +260°C
Pressure	30 MPa
Speed	15 m/s
Media	Practically all types of fluids, and chemical and gas products

The figures above indicate the maximum values and may not be cumulated. They may be developed, depending on the materials used.

EXTRUSION GAPS

Radial section S	Radial gap F/2			
	2 MPa	10 MPa	20 MPa	30 MPa
7.00	0.10	0.08	0.05	0.05
8.00	0.10	0.08	0.05	0.05
10.00	0.15	0.10	0.08	0.05
12.50	0.15	0.10	0.08	0.05
15.00	0.15	0.10	0.08	0.05

SURFACE ROUGHNESS

Roughness	Dynamic surface area	Static surface area	Groove flanks
Ra	0.05 - 0.2 µm	≤1.6 µm	≤3.2 µm
Rz	0.4 - 1.6 µm	≤6.3 µm	≤10.0 µm
Rmax	0.63 - 2.5 µm	≤10.0 µm	≤16.0 µm

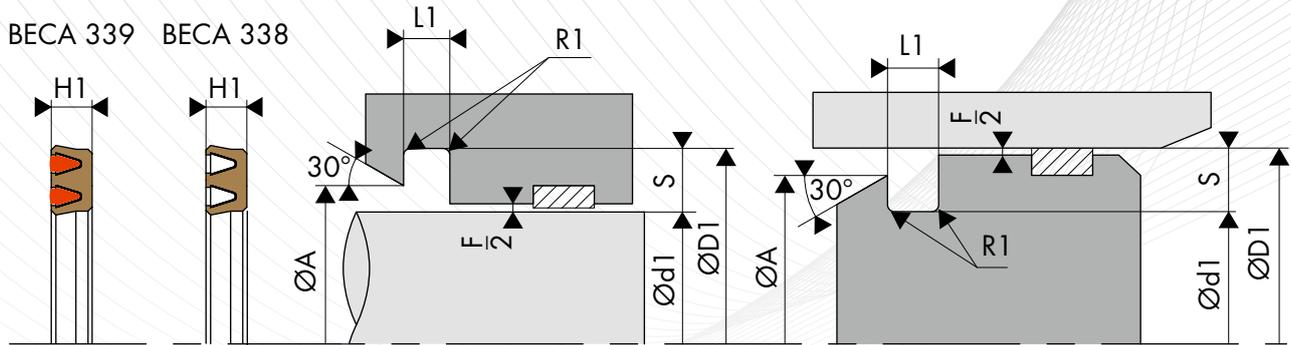
CHAMFERS AND RADIUS

Radial section S	Radius R1	Chamfer C
7.00	0.80	4.50
8.00	0.80	4.50
10.00	0.80	6.50
12.50	0.80	6.50
15.00	1.00	8.00

TABLE MATERIALS

Profiled seal					V-springs			Mating surface material
Standard code	ISO code	Material	Colour	Characteristics	Code	Type of material	Service temperature	
DP	P	Virgin PTFE	White	Resistance to chemical products Impermeability Dielectric Non-stick Low friction coefficient Food industry	I	X10 Cr Ni 18-8	-200°C/+260°C	Steel Stainless steel Chrome steel Aluminium Bronze Cast iron Treated surface
DC	C	PTFE + 25% Carbon	Grey	Improvements • Wear properties • Compression set	I	X10 Cr Ni 18-8	-200°C/+260°C	
CG	C	PTFE + 23% Carbon + 2% Graphite	Black	Good resistance to chemical products Thermal and electrical conductivity Anti-static High-performing in compression-based dynamic applications	I	X10 Cr Ni 18-8	-200°C/+260°C	
DV	V	PTFE + 25 % Glass	Blue	Improvements • Wear properties • Mechanical strength	I	X10 Cr Ni 18-8	-200°C/+260°C	Steel Chrome steel Cast iron
VM	M	PTFE + 15 % Glass + 5% MOS2	Grey	Slightly more abrasive, however, this is corrected by adding MOS2 Maintains its chemical and dielectric properties Well-suited to applications with rotational and simultaneous alternating movements	I	X10 Cr Ni 18-8	-200°C/+260°C	
DX	X	PTFE GL Blue + Glass + Metal oxides	Turquoise blue	Resistance to compression Resistance to wear Excellent chemical stability Good thermal conductivity	I	X10 Cr Ni 18-8	-200°C/+260°C	Steel Stainless steel Chrome steel Aluminium Bronze Cast iron Treated surface
DG	G	PTFE + 15% Graphite	Black	Improvements • Wear properties Reduced wear on metal parts Self-lubricating Thermal and electrical conductivity Low permeability Good friction coefficient Anti-static High performing in dynamic self-lubricating applications	I	X10 Cr Ni 18-8	-200°C/+260°C	
K1	K	PTFE + 10% Ekonol	Light brown	Improvements • Better abrasion resistance • Better dimensional stability at high temperatures	I	X10 Cr Ni 18-8	-200°C/+260°C	
K2	K	PTFE + 20% Ekonol	Light brown	Use up to +300°C Good friction coefficient and low permeability	I	X10 Cr Ni 18-8	-200°C/+260°C	Steel Chrome steel Cast iron
DB	B	PTFE + 60% Bronze	Dark brown	Improvements • Wear properties • Warping resistance and creep strength • Compression resistance	I	X10 Cr Ni 18-8	-200°C/+260°C	
B4	B	PTFE + 40% Bronze	Dark brown	Self-lubricating Electrical and thermal conductivity Does not alter the metal parts Reduced hold with certain chemical products Used for high-compression dynamic seals and has a low level of wear	I	X10 Cr Ni 18-8	-200°C/+260°C	Steel Stainless steel Chrome steel Aluminium Bronze Cast iron Treated surface
HG	HG	PE-UHMW	White or off-white	Excellent wear resistance on contact with water and air	I	X10 Cr Ni 18-8	-70°C/+80°C	

Other grades of materials are available depending on your specificities.



○ INSTALLATION DIMENSIONS

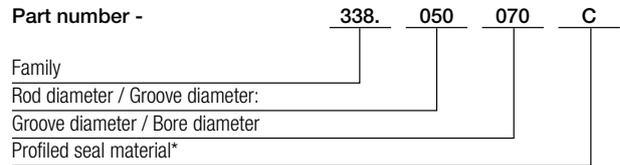
Cylinder sealing		Rod sealing		Groove width	Groove width	Radial section
Bore diameter ØD1 H9	Groove diameter Ød1 h9	Rod diameter Ød1 h9	Groove diameter ØD1 H9	L1 0/+0.20	L according to ISO	S
25.0 - **	D1 - 25.00	25.0 - **	d1 + 25.0	9.00	16.00/20.00/40.00	12.50
25.0 - **	D1 - 30.00	25.0 - **	d1 + 30.0	9.00	20.00/25.00/50.00	15.00

For special applications > 30 MPa, we recommend using H8/f8 (bore/piston) and H8/f8 (groove/rod) tolerances or selecting other, more suitable materials. Please contact our experts.

○ EXAMPLE OF CODIFICATION

STANDARD CODIFICATION

Materials _____ : PTFE + 25% Carbon profiled seal - Code ISO C
 _____ : Stainless steel V-Shaped springs - Code I
Rod diameter / Groove diameter _____ : Ød1 + 50.00 mm
Groove diameter / Bore diameter _____ : ØD1 = 70.00 mm
Part number _____ : 338.050070C

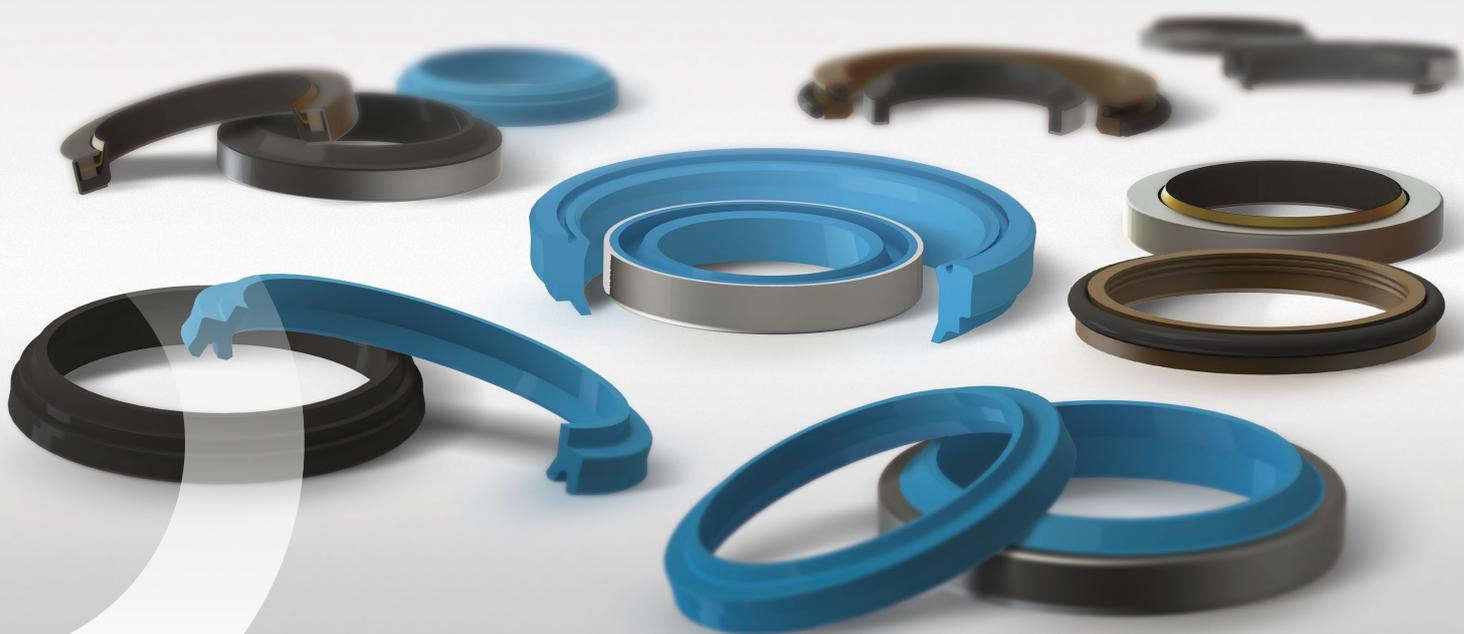


* The codes that define the materials are set out in the materials table.

DIMENSIONS

Part number	Rod diameter Ød1 h9	Groove diameter ØD1 H9	Seal height H1	Groove width L1 0/+0.20
	Groove diameter Ød1 h9	Bore diameter ØD1 H9		
338.245422	24.50	42.20	8.70	9.50
338.028042	28.00	42.00	9.70	10.00
338.032052	32.00	52.00	12.20	12.50
338.036052	36.00	52.00	10.20	10.50
338.040056	40.00	56.00	10.20	10.50
338.040060	40.00	60.00	12.20	12.50
338.050070	50.00	70.00	12.20	12.50
338.060080	60.00	80.00	12.20	12.50
338.060085	60.00	85.00	12.00	13.50
338.070090	70.00	90.00	12.20	12.50
338.080096	80.00	96.00	10.20	10.50
338.100116	100.00	116.00	10.20	10.50
338.155180	155.00	180.00	13.70	14.50
338.155185	155.00	185.00	16.70	17.00
338.165190	165.00	190.00	16.70	17.00
338.290320	290.00	320.00	16.70	17.00
338.300235	300.00	325.00	8.70	9.00

The figures highlighted in bold correspond to the rod diameters and bore diameters that are recommended by standard ISO 3320. Other intermediate sizes can be provided.



9. Wiper seals

Mainly used for linear dynamic applications, wiper seals are used to stop the entry of impurities and to preserve the lubricating film on the contact rod.

The causes of premature deterioration in seals, in the rod and other parts, are pollution (or entry of impurities) in the hydraulic system; that's why FRANCE JOINT takes special care in its selection of wiper seals.

IMPORTANT

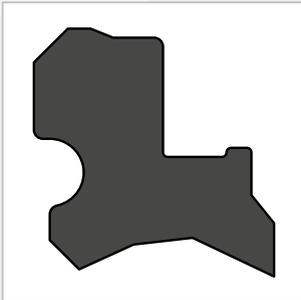
The pressures, speeds and temperatures indicate the maximum values and may not be cumulated. Moreover, they may be developed depending on the materials used.

For specific orders (temperature, pressure, speed, etc.), please contact our technical team so that they can direct you towards the appropriate choice of material and seal profile.

The dimensions shown in the catalogue are usually in stock and can be sent quickly. However, we reserve the right to modify our delivery schedule. Please contact our sales team to find out our availabilities.

Contents

	BECA 382 Materials: Rubber Temperature: -30°C / +200°C Speed: 1 m/s	P. 218		BECA 472 Materials: Rubber + Steel Temperature: -30°C / +200°C Speed: 1 m/s	P. 244
	BECA 417 Materials: Rubber Temperature: -30°C / +200°C Speed: 1 m/s	P. 220		BECA 473 Materials: PU + Steel Temperature: -30°C / +110°C Speed: 1 m/s	P. 246
	BECA 455 Materials: PU Temperature: -30°C / +110°C Speed: 1 m/s	P. 222		BECA 475 Materials: PU + Steel Temperature: -30°C / +110°C Speed: 1 m/s	P. 248
	BECA 460 Materials: Rubber Temperature: -30°C / +200°C Speed: 1 m/s	P. 224		BECA 476 Materials: PU + Steel Temperature: -30°C / +110°C Speed: 1 m/s	P. 250
	BECA 461 Materials: PU Temperature: -30°C / +100°C Speed: 1 m/s	P. 226		BECA 477 Materials: PU + Steel Temperature: -30°C / +110°C Speed: 1 m/s	P. 252
	BECA 464 Materials: PU Temperature: -30°C / +110°C Speed: 1 m/s	P. 228		BECA 478 Materials: NBR + Steel + Brass Temperature: -40°C / +100°C Speed: 1 m/s	P. 312
	BECA 465 Materials: PU Temperature: -30°C / +110°C Speed: 1 m/s	P. 230		BECA 480 Materials: PTFE + Rubber Temperature: -30°C / +200°C Speed: 5 m/s	P. 254
	BECA 466 Materials: Rubber Temperature: -30°C / +200°C Speed: 1 m/s	P. 232		BECA 482 Materials: PTFE + Rubber Temperature: -30°C / +200°C Speed: 5 m/s	P. 258
	BECA 467 Materials: PU Temperature: -30°C / +110°C Speed: 1 m/s	P. 234		BECA 483 Materials: PTFE + Rubber Temperature: -30°C / +200°C Speed: 5 m/s	P. 262
	BECA 468 Materials: PU Temperature: -30°C / +110°C Speed: 1 m/s	P. 236		BECA 485 Materials: PTFE + Rubber Temperature: -30°C / +200°C Speed: 5 m/s	P. 266
	BECA 470 Materials: NBR + Steel Temperature: -30°C / +100°C Speed: 1 m/s	P. 238		BECA 486 Materials: PTFE + Rubber Temperature: -30°C / +200°C Speed: 5 m/s	P. 270
	BECA 471 Materials: FKM + Steel Temperature: -20°C / +200°C Speed: 1 m/s	P. 242			



WIPER SEALS

BECA 382



DES CRIPTION

The BECA 382 profile is a U-ring type double acting wiper seal composed of two rubber wiping lips.

ADVANTAGES

Good wiping effect, both internally and externally
Easy assembly by deformation

APPLICATIONS

Agriculture
Mobile machinery
Material handling - Lifting
Hydraulic cylinders

MATERIALS

NBR 90 Shore A
FKM 90 Shore A

Other grades of materials are available.
Please contact our experts.

TECHNICAL DATA

Temperature	-30°C / +200°C
Speed	1 m/s
Media	Mineral hydraulic oils Fire-resistant liquids Biocompatible fluids Water Others (contact our experts)

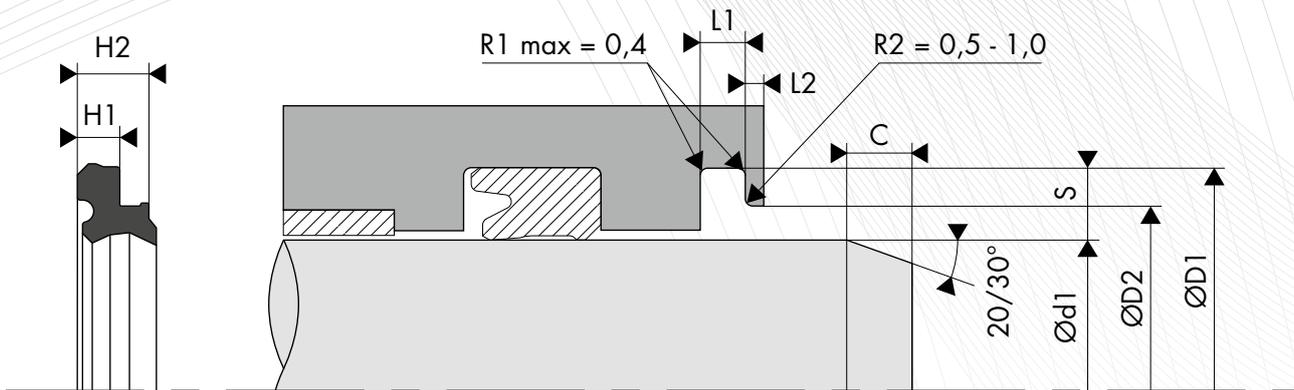
The figures above indicate the maximum values and may not be cumulated. They may be developed, depending on the materials used.

SURFACE ROUGHNESS

Roughness	Dynamic surface area	Static surface area	Groove flanks
Ra	0.1 - 0.4 µm	≤1.6 µm	≤3.2 µm
Rz	0.63 - 2.5 µm	≤6.3 µm	≤10.0 µm
Rmax	1.0 - 4.0 µm	≤10.0 µm	≤16.0 µm

CHAMFER

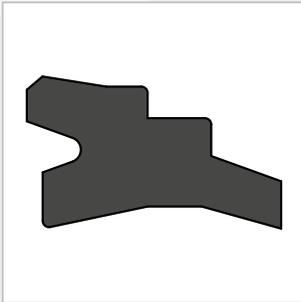
The chamfer length as well as the chamfer angle are determined by the rod seal.



○ DIMENSIONS

Part number	Rod diameter Ød1 f8	Groove diameter ØD1 H8	Bore diameter ØD2 H11	Groove width L1 0/+0.20	Seal height H2
382.0020028	20.00	28.00	24.00	3.30	3.60
382.0090105	90.00	105.00	98.00	5.10	8.10
382.0110122	110.00	122.00	118.00	5.10	8.10
382.0115130	115.00	130.00	123.00	5.10	8.10
382.0140155	140.00	155.00	148.00	6.00	10.00
382.0145155	145.00	155.00	149.00	6.00	10.00
382.0160175	160.00	175.00	168.00	6.00	10.00
382.0165180	165.00	180.00	173.00	6.00	10.00
382.0175185	175.00	185.00	179.00	6.00	10.00
382.0190209	190.00	209.00	199.00	6.00	10.00

The figures highlighted in bold correspond to the rod diameters that are recommended by standard ISO 3320. Other intermediate sizes can be provided.



WIPER SEALS

BECA 417



DESCRIPTION

The BECA 417 profile is a stepped double acting wiper seal composed of two rubber wiping lips.

ADVANTAGES

Low friction
Good wiping effect, both internally and externally
Easy assembly by deformation

APPLICATIONS

Agriculture
Mobile machinery
Material handling - Lifting
Hydraulic cylinders

MATERIALS

NBR 90 Shore A
FKM 90 Shore A

Other grades of materials are available.
Please contact our experts.

TECHNICAL DATA

Temperature	-30°C / +200°C
Speed	1 m/s
Media	Mineral hydraulic oils Fire-resistant liquids Biocompatible fluids Water Others (contact our experts)

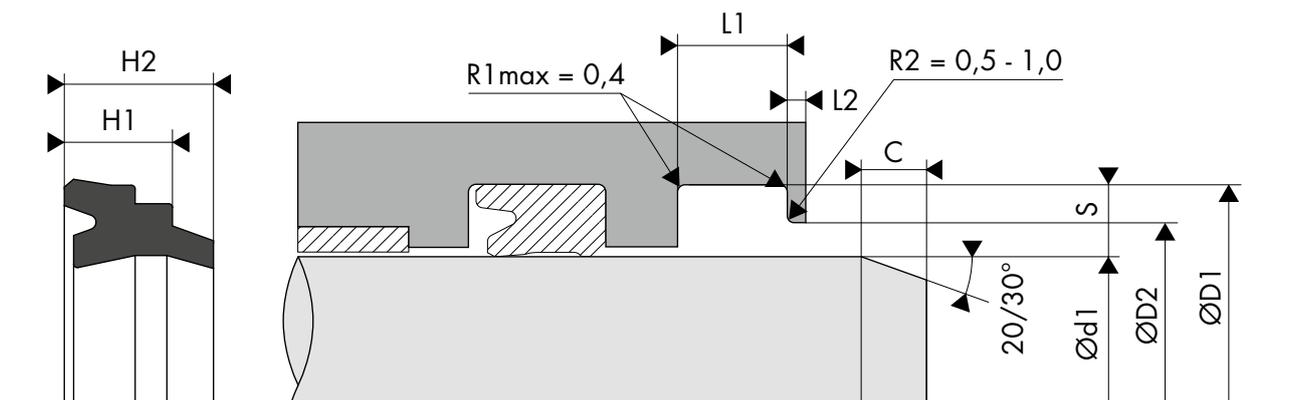
The figures above indicate the maximum values and may not be cumulated. They may be developed, depending on the materials used.

SURFACE ROUGHNESS

Roughness	Dynamic surface area	Static surface area	Groove flanks
Ra	0.1 - 0.4 μm	$\leq 1.6 \mu\text{m}$	$\leq 3.2 \mu\text{m}$
Rz	0.63 - 2.5 μm	$\leq 6.3 \mu\text{m}$	$\leq 10.0 \mu\text{m}$
Rmax	1.0 - 4.0 μm	$\leq 10.0 \mu\text{m}$	$\leq 16.0 \mu\text{m}$

CHAMFER

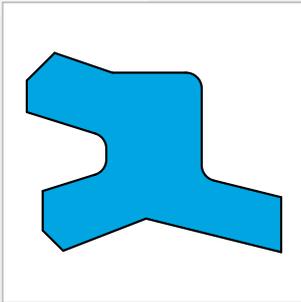
The chamfer length as well as the chamfer angle are determined by the rod seal.



 DIMENSIONS

Part number	Rod diameter Ød1 f8/h9	Groove diameter ØD1 H9	Bore diameter ØD2 H11	Groove width L1 0/+0.20	Seal height H2	Groove width L2 0/+0.20
417.0100186	10.00	18.00	13.50	6.00	8.00	2.00
417.0120206	12.00	20.00	15.50	6.00	8.00	2.00
417.0140226	14.00	22.00	17.50	6.00	8.00	2.00
417.0150236	15.00	23.00	18.50	6.00	8.00	2.00
417.0160246	16.00	24.00	19.50	6.00	8.00	2.00
417.0180266	18.00	26.00	21.50	6.00	8.00	2.00
417.0200286	20.00	28.00	23.50	6.00	8.00	2.00
417.0220306	22.00	30.00	25.50	6.00	8.00	2.00
417.0240326	24.00	32.00	27.50	6.00	8.00	2.00
417.0250336	25.00	33.00	28.50	6.00	8.00	2.00
417.0280366	28.00	36.00	31.50	6.00	8.00	2.00
417.0300386	30.00	38.00	33.50	6.00	8.00	2.00
417.0320406	32.00	40.00	35.50	6.00	8.00	2.00
417.0350436	35.00	43.00	38.50	6.00	8.00	2.00
417.0360446	36.00	44.00	39.50	6.00	8.00	2.00
417.0370456	37.00	45.00	40.50	6.00	8.00	2.00
417.0380466	38.00	46.00	41.50	6.00	8.00	2.00
417.0400486	40.00	48.00	43.50	6.00	8.00	2.00
417.0420506	42.00	50.00	45.50	6.00	8.00	2.00
417.0450536	45.00	53.00	48.50	6.00	8.00	2.00
417.0460546	46.00	54.00	49.50	6.00	8.00	2.00
417.0480566	48.00	56.00	51.50	6.00	8.00	2.00
417.0500586	50.00	58.00	53.50	6.00	8.00	2.00
417.0550606	52.00	60.00	55.50	6.00	8.00	2.00
417.0550636	55.00	63.00	58.50	6.00	8.00	2.00
417.0560646	56.00	64.00	59.50	6.00	8.00	2.00
417.0600686	60.00	68.00	63.50	6.00	8.00	2.00
417.0600728	60.00	72.00	65.00	8.20	11.00	3.00
417.0630716	63.00	71.00	66.50	6.00	8.00	2.00
417.0650736	65.00	73.00	68.50	6.00	8.00	2.00
417.0680766	68.00	76.00	71.50	6.00	8.00	2.00
417.0700786	70.00	78.00	73.50	6.00	8.00	2.00
417.0750836	75.00	83.00	78.50	6.00	8.00	2.00
417.0800886	80.00	88.00	83.50	6.00	8.00	2.00
417.0850936	85.00	93.00	88.50	6.00	8.00	2.00
417.0900986	90.00	98.00	93.50	6.00	8.00	2.00
417.0951036	95.00	103.00	98.50	6.00	8.00	2.00
417.1001086	100.00	108.00	103.50	6.00	8.00	2.00
417.1051178	105.00	117.00	110.00	8.20	11.00	3.00
417.1101228	110.00	122.00	115.00	8.20	11.00	3.00
417.1151278	115.00	127.00	120.00	8.20	11.00	3.00
417.1201328	120.00	132.00	125.00	8.20	11.00	3.00
417.1251358	125.00	135.00	130.00	8.20	11.00	3.00
417.1301428	130.00	142.00	135.00	8.20	11.00	3.00
417.1351478	135.00	147.00	140.00	8.20	11.00	3.00
417.1401528	140.00	152.00	145.00	8.20	11.00	3.00
417.1451578	145.00	157.00	150.00	8.20	11.00	3.00
417.1501628	150.00	162.00	155.00	8.20	11.00	3.00
417.1551678	155.00	167.00	160.00	8.20	11.00	3.00
417.1651778	165.00	177.00	170.00	8.20	11.00	3.00
417.1701828	170.00	182.00	175.00	8.20	11.00	3.00
417.1751878	175.00	187.00	180.00	8.20	11.00	3.00
417.1801928	180.00	192.00	185.00	8.20	11.00	3.00
417.1851978	185.00	197.00	190.00	8.20	11.00	3.00
417.1902028	190.00	202.00	195.00	8.20	11.00	3.00
417.1952078	195.00	207.00	200.00	8.20	11.00	3.00
417.2002128	200.00	212.00	205.00	8.20	11.00	3.00
417.2052209	205.00	220.00	212.00	9.50	13.00	3.00
417.2102259	210.00	225.00	217.00	9.50	13.00	3.00
417.2152309	215.00	230.00	222.00	9.50	13.00	3.00
417.2202359	220.00	235.00	227.00	9.50	13.00	3.00
417.2252409	225.00	240.00	232.00	9.50	13.00	3.00
417.2302459	230.00	245.00	237.00	9.50	13.00	3.00
417.2402559	240.00	255.00	247.00	9.50	13.00	3.00
417.2502659	250.00	265.00	257.00	9.50	13.00	3.00
417.2602759	260.00	275.00	267.00	9.50	13.00	3.00
417.2702859	270.00	285.00	277.00	9.50	13.00	3.00
417.2802959	280.00	295.00	287.00	9.50	13.00	3.00
417.2903059	290.00	305.00	297.00	9.50	13.00	3.00
417.3003159	300.00	315.00	307.00	9.50	13.00	3.00
417.3103259	310.00	325.00	317.00	9.50	13.00	3.00
417.3203359	320.00	335.00	327.00	9.50	13.00	3.00
417.3303459	330.00	345.00	337.00	9.50	13.00	3.00
417.3403559	340.00	355.00	347.00	9.50	13.00	3.00
417.3503659	350.00	365.00	357.00	9.50	13.00	3.00
417.3603759	360.00	375.00	367.00	9.50	13.00	3.00
417.3703859	370.00	385.00	377.00	9.50	13.00	3.00
417.3803959	380.00	395.00	387.00	9.50	13.00	3.00
417.3904059	390.00	405.00	397.00	9.50	13.00	3.00
417.4004159	400.00	415.00	407.00	9.50	13.00	3.00
417.4104259	410.00	425.00	417.00	9.50	13.00	3.00
417.4204359	420.00	435.00	427.00	9.50	13.00	3.00
417.4304459	430.00	445.00	437.00	9.50	13.00	3.00
417.4404559	440.00	455.00	447.00	9.50	13.00	3.00

The figures highlighted in bold correspond to the rod diameters that are recommended by standard ISO 3320. Other intermediate sizes can be provided.



WIPER SEALS

BECA 455



DESCRIPTION

The BECA 455 profile is a U-ring type double acting wiper seal composed of two polyurethane wiping lips.

ADVANTAGES

Excellent abrasion and wear resistance
 Good wiping effect, both internally and externally
 Easy assembly by deformation

APPLICATIONS

Agriculture
 Mobile machinery
 Material handling - Lifting
 Hydraulic cylinders

MATERIALS

PU 93 Shore A - Blue
 PU 96 Shore A - Blue
 High temp. PU 96 Shore A - Beige

Other grades of materials are available.
 Please contact our experts.

TECHNICAL DATA

Temperature	-30°C / +110°C
Speed	1 m/s
Media	Mineral hydraulic oils

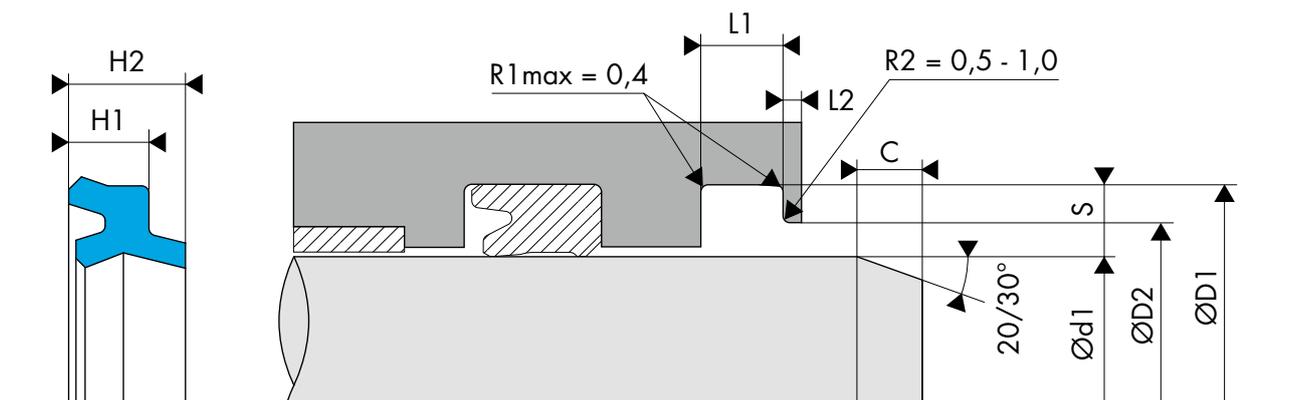
The figures above indicate the maximum values and may not be cumulated. They may be developed, depending on the materials used.

SURFACE ROUGHNESS

Roughness	Dynamic surface area	Static surface area	Groove flanks
Ra	0.1 - 0.4 μm	$\leq 1.6 \mu\text{m}$	$\leq 3.2 \mu\text{m}$
Rz	0.63 - 2.5 μm	$\leq 6.3 \mu\text{m}$	$\leq 10.0 \mu\text{m}$
Rmax	1.0 - 4.0 μm	$\leq 10.0 \mu\text{m}$	$\leq 16.0 \mu\text{m}$

CHAMFER

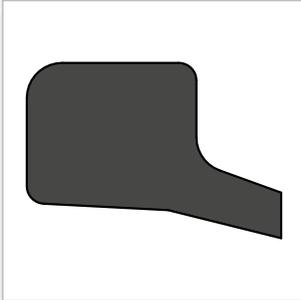
The chamfer length as well as the chamfer angle are determined by the rod seal.



 DIMENSIONS

Part number	Rod diameter Ød1 f8/h9	Groove diameter ØD1 H9	Bore diameter ØD2 H11	Groove width L1 0/+0.20	Seal height H2	Groove width L2 0/+0.20
455.0120183	12.00	18.00	14.50	3.60	4.80	2.00
455.0140224	14.00	22.00	18.50	4.50	6.00	2.00
455.0180243	18.00	24.00	20.50	3.60	4.80	2.00
455.0180264	18.00	26.00	22.50	4.50	6.00	2.00
455.0190264	19.00	26.00	22.50	4.50	6.00	2.00
455.0200284	20.00	28.00	24.50	4.50	6.00	2.00
455.0200285	20.00	28.00	24.50	5.00	6.80	2.00
455.0200306	20.00	30.00	26.50	6.00	7.50	2.00
455.0220283	22.00	28.00	24.50	3.60	4.80	2.00
455.0250313	25.00	31.00	27.50	3.60	4.80	2.00
455.0250334	25.00	33.00	29.50	4.50	6.00	2.00
455.0280364	28.00	36.00	31.00	4.50	6.00	2.00
455.0300384	30.00	38.00	33.00	4.50	5.80	2.00
455.0300385	30.00	38.00	33.00	5.00	6.50	2.00
455.0320404	32.00	40.00	35.00	4.50	5.80	2.00
455.0320405	32.00	40.00	35.00	5.00	6.50	2.00
455.0350435	35.00	43.00	38.00	5.00	6.50	2.00
455.0360444	36.00	44.00	39.00	4.50	5.80	2.00
455.0360445	36.00	44.00	39.00	5.00	6.80	2.00
455.0400484	40.00	48.00	43.00	4.50	5.80	2.00
455.0400485	40.00	48.00	43.00	5.00	6.50	2.00
455.0400505	40.00	50.00	45.00	5.00	6.50	2.00
455.0420514	42.00	51.00	46.00	4.60	6.00	2.00
455.0450534	45.00	53.00	48.00	4.50	5.80	2.00
455.0450535	45.00	53.00	48.00	5.00	6.50	2.00
455.0450555	45.00	55.00	50.00	5.00	6.80	2.00
455.0500585	50.00	58.00	53.00	5.00	6.50	2.00
455.0500605	50.00	60.00	53.00	5.00	6.80	2.00
455.0530615	53.00	61.00	54.00	5.00	6.50	2.00
455.0550635	55.00	63.00	56.00	5.00	6.50	2.00
455.0550655	55.00	65.00	58.00	5.00	6.80	2.00
455.0560665	56.00	66.00	59.00	5.30	6.80	2.00
455.0600685	60.00	68.00	61.00	5.00	6.50	2.00
455.0600705	60.00	70.00	63.00	5.00	6.80	2.00
455.0630715	63.00	71.00	64.00	5.00	6.50	2.00
455.0650735	65.00	73.00	66.00	5.00	6.50	2.00
455.0650755	65.00	75.00	68.00	5.00	6.80	2.00
455.0700805	70.00	80.00	73.00	5.00	6.80	2.00
455.0700806	70.00	80.00	73.00	6.00	8.00	2.00
455.0750856	75.00	85.00	78.00	6.00	8.00	2.00
455.0750877	75.00	87.00	80.00	7.00	9.00	2.00
455.0800905	80.00	90.00	83.00	5.30	6.80	2.00
455.0800906	80.00	90.00	83.00	6.00	8.00	2.00
455.0800927	80.00	92.00	85.00	7.00	9.00	2.00
455.0850956	85.00	95.00	88.00	6.00	8.00	2.00
455.0850977	85.00	97.00	90.00	7.00	10.00	2.00
455.0901005	90.00	100.00	93.00	5.30	6.80	2.00
455.0901006	90.00	100.00	93.00	6.00	8.00	2.00
455.0901027	90.00	102.00	95.00	7.00	9.00	2.00
455.0951077	95.00	107.00	100.00	7.00	9.00	2.00
455.1001106	100.00	110.00	103.00	6.00	8.00	2.00
455.1101257	110.00	125.00	114.00	7.50	9.50	2.00
455.1151277	115.00	127.00	116.00	7.00	9.00	2.00
455.1251387	125.00	138.00	127.00	7.00	9.50	2.00
455.1351477	135.00	147.00	136.00	7.00	9.00	2.00
455.1401537	140.00	153.00	142.00	7.00	9.50	2.00
455.1401557	140.00	155.00	144.00	7.50	9.50	2.00
455.1451587	145.00	158.00	147.00	7.00	9.50	2.00
455.1551677	155.00	167.00	156.00	7.00	9.50	2.00
455.1601727	160.00	172.00	161.00	7.00	9.50	2.00
455.1601747	160.00	174.00	163.00	7.00	9.50	2.00
455.1651797	165.00	179.00	168.00	7.00	9.50	2.00
455.1801947	180.00	194.00	183.00	7.00	9.50	2.00
455.1851977	185.00	197.00	186.00	7.00	9.50	2.00
455.2152277	215.00	227.00	216.00	7.00	9.50	2.00

The figures highlighted in bold correspond to the rod diameters that are recommended by standard ISO 3320. Other intermediate sizes can be provided.



WIPER SEALS

BECA 460



DESCRIPTION

The BECA 460 profile is a single acting wiper seal composed of a rubber wiping lip.

ADVANTAGES

Economic solution
Easy assembly by deformation
Space saving construction

APPLICATIONS

Agriculture
Mobile machinery
Material handling - Lifting
Hydraulic cylinders

MATERIALS

NBR 90 Shore A
FKM 90 Shore A

Other grades of materials are available.
Please contact our experts.

TECHNICAL DATA

Temperature	-30°C / +200°C
Speed	1 m/s
Media	Mineral hydraulic oils Fire-resistant liquids Biocompatible fluids Water Others (contact our experts)

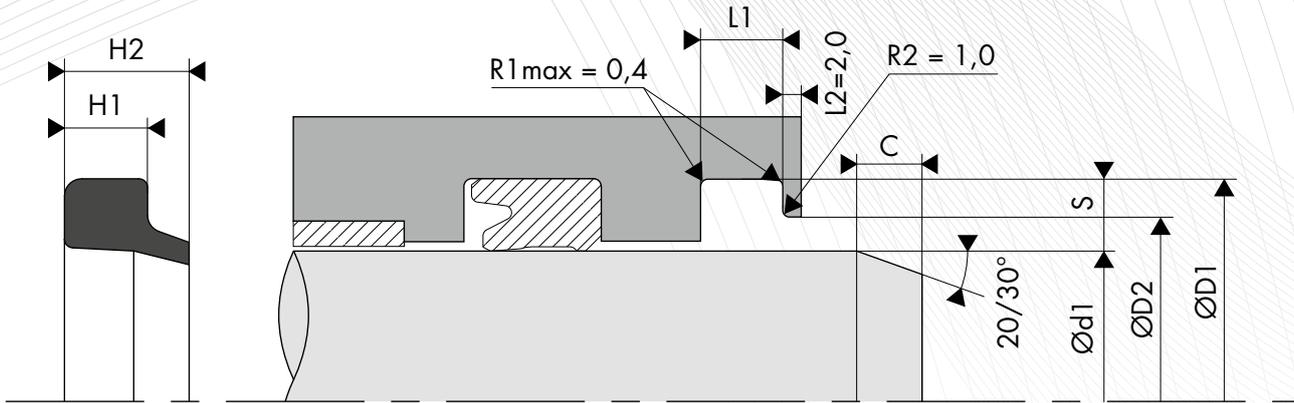
The figures above indicate the maximum values and may not be cumulated. They may be developed, depending on the materials used.

SURFACE ROUGHNESS

Roughness	Dynamic surface area	Static surface area	Groove flanks
Ra	0.1 - 0.4 µm	≤1.6 µm	≤3.2 µm
Rz	0.63 - 2.5 µm	≤6.3 µm	≤10.0 µm
Rmax	1.0 - 4.0 µm	≤10.0 µm	≤16.0 µm

CHAMFER

The chamfer length as well as the chamfer angle are determined by the rod seal.

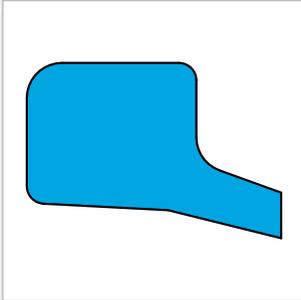


DIMENSIONS

Part number	Rod diameter Ød1 f8/h9	Groove diameter ØD1 H9	Bore diameter ØD2 H11	Groove width L1 +0/+0.20
460.0050122	5.00	12.00	8.00	2.80
460.0060123	6.00	12.00	9.00	3.00
460.0080143	8.00	14.60	11.00	3.80
460.0100151	10.00	15.00	13.00	1.00
460.0100163	10.00	16.60	13.00	3.80
460.0120183	12.00	18.60	15.00	3.80
460.0130193	13.00	19.60	16.00	3.80
460.0140203	14.00	20.60	17.00	3.80
460.0150213	15.00	21.60	18.00	3.80
460.0160223	16.00	22.60	19.00	3.80
460.0180243	18.00	24.60	21.00	3.80
460.0200285	20.00	28.60	23.00	5.30
460.0220305	22.00	30.60	25.00	5.30
460.0240325	24.00	32.60	27.00	5.30
460.0250335	25.00	33.60	28.00	5.30
460.0260345	26.00	34.60	29.00	5.30
460.0270355	27.00	35.60	30.00	5.30
460.0280365	28.00	36.60	31.00	5.30
460.0300380	30.00	38.00	33.00	5.30
460.0300385	30.00	38.60	33.00	5.30
460.0320405	32.00	40.60	35.00	5.30
460.0330415	33.00	41.60	38.00	5.30
460.0350435	35.00	43.60	38.00	5.30
460.0360445	36.00	44.60	39.00	5.30
460.0380465	38.00	46.60	41.00	5.30
460.0400485	40.00	48.60	43.00	5.30
460.0420505	42.00	50.60	45.00	5.30
460.0450535	45.00	53.60	48.00	5.30
460.0460545	46.00	54.60	49.00	5.30
460.0480565	48.00	56.60	51.00	5.30
460.0490575	49.00	57.60	52.00	5.30
460.0500580	50.00	58.00	53.00	5.30
460.0500585	50.00	58.60	53.00	5.30
460.0530615	53.00	61.60	56.00	5.30
460.0550635	55.00	63.60	58.00	5.30
460.0550655	55.00	65.60	58.00	5.30
460.0560645	56.00	64.60	59.00	5.30
460.0600680	60.00	68.00	63.00	5.30
460.0600685	60.00	68.60	63.00	5.30
460.0600705	60.00	70.00	63.00	5.00
460.0610695	61.00	69.60	64.00	5.30
460.0630715	63.00	71.60	66.00	5.30
460.0650735	65.00	73.60	68.00	5.30
460.0700785	70.00	78.60	73.00	5.30
460.0700805	70.00	80.00	73.00	5.00
460.0700827	70.00	82.60	76.00	7.10

Part number	Rod diameter Ød1 f8/h9	Groove diameter ØD1 H9	Bore diameter ØD2 H11	Groove width L1 +0/+0.20
460.0720805	72.00	80.60	75.00	5.30
460.0730815	73.00	81.60	76.00	5.30
460.0750835	75.00	83.60	78.00	5.30
460.0750877	75.00	87.20	81.00	7.10
460.0760845	76.00	84.60	79.00	5.30
460.0800885	80.00	88.60	83.00	5.30
460.0800907	80.00	90.20	83.00	7.10
460.0800927	80.00	92.60	83.00	7.10
460.0850935	85.00	93.60	88.00	5.30
460.0850977	85.00	97.20	91.00	7.10
460.0901027	90.00	102.20	96.00	7.10
460.0910995	91.00	99.60	94.00	5.30
460.0951077	95.00	107.20	101.00	7.10
460.1001085	100.00	108.60	103.00	5.30
460.1001127	100.00	112.20	106.00	7.10
460.1051135	105.00	113.60	108.00	5.30
460.1051177	105.00	117.20	111.00	7.10
460.1071155	107.00	115.60	110.00	5.30
460.1101185	110.00	118.60	113.00	5.30
460.1101227	110.00	122.20	116.00	7.10
460.1151277	115.00	127.20	121.00	7.10
460.1201327	120.00	132.20	126.00	7.10
460.1251377	125.00	137.20	131.00	7.10
460.1261345	126.00	134.60	129.00	5.30
460.1301427	130.00	142.20	136.00	7.10
460.1351477	135.00	147.20	141.00	7.10
460.1401527	140.00	152.20	146.00	7.10
460.1401559	140.00	155.00	146.50	9.00
460.1451577	145.00	157.20	151.00	7.10
460.1501627	150.00	162.20	156.00	7.10
460.1601727	160.00	172.20	166.00	7.10
460.1601751	160.00	175.20	168.00	10.10
460.1651701	165.00	170.20	173.00	10.10
460.1701851	170.00	185.20	178.00	10.10
460.1751901	175.00	190.20	183.00	10.10
460.1801951	180.00	195.20	188.00	10.10
460.1802001	180.00	200.20	183.00	10.20
460.1902051	190.00	205.20	198.00	10.10
460.2002151	200.00	215.20	208.00	10.10
460.2102251	210.00	225.20	218.00	10.10
460.2202351	220.00	235.20	228.00	10.10
460.2302451	230.00	245.20	238.00	10.10
460.2402551	240.00	255.20	248.00	10.10
460.2502651	250.00	265.20	258.00	10.10

The figures highlighted in bold correspond to the rod diameters that are recommended by standard ISO 3320. Other intermediate sizes can be provided.



WIPER SEALS

BECA 461



DESCRIPTION

The BECA 461 profile is a single acting wiper seal composed of a polyurethane wiping lip.

ADVANTAGES

Good external wiping effect
Excellent abrasion and wear resistance
Easy assembly by deformation

APPLICATIONS

Agriculture
Mobile machinery
Material handling - Lifting
Hydraulic cylinders

MATERIALS

PU 93 Shore A - Blue
PU 96 Shore A - Blue
High temp. PU 96 Shore A - Beige

Other grades of materials are available.
Please contact our experts.

TECHNICAL DATA

Temperature	-30°C / +110°C
Speed	1 m/s
Media	Mineral hydraulic oils

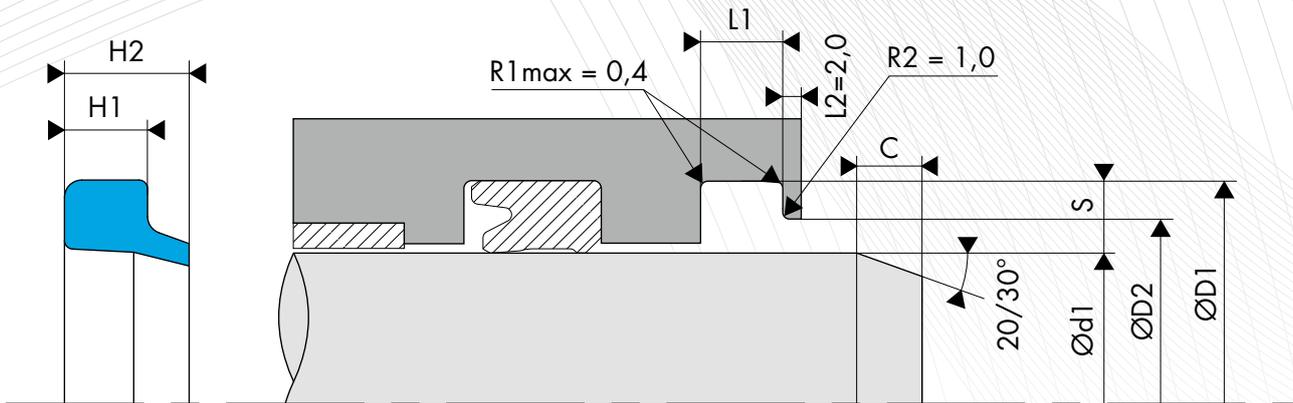
The figures above indicate the maximum values and may not be cumulated. They may be developed, depending on the materials used.

SURFACE ROUGHNESS

Roughness	Dynamic surface area	Static surface area	Groove flanks
Ra	0.1 - 0.4 µm	≤1.6 µm	≤3.2 µm
Rz	0.63 - 2.5 µm	≤6.3 µm	≤10.0 µm
Rmax	1.0 - 4.0 µm	≤10.0 µm	≤16.0 µm

CHAMFER

The chamfer length as well as the chamfer angle are determined by the rod seal.

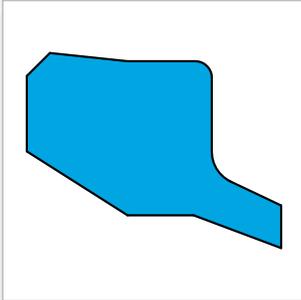


DIMENSIONS

Part number	Rod diameter Ød1 f8/h9	Groove diameter ØD1 H9	Bore diameter ØD2 H11	Groove width L1 0/+0.20
461.0050122	5.00	12.00	8.00	2.80
461.0060123	6.00	12.00	9.00	3.00
461.0080143	8.00	14.60	11.00	3.80
461.0100151	10.00	15.00	13.00	1.00
461.0100163	10.00	16.60	13.00	3.80
461.0120183	12.00	18.60	15.00	3.80
461.0130193	13.00	19.60	16.00	3.80
461.0140203	14.00	20.60	17.00	3.80
461.0150213	15.00	21.60	18.00	3.80
461.0160223	16.00	22.60	19.00	3.80
461.0180243	18.00	24.60	21.00	3.80
461.0200285	20.00	28.60	23.00	5.30
461.0220305	22.00	30.60	25.00	5.30
461.0240325	24.00	32.60	27.00	5.30
461.0250335	25.00	33.60	28.00	5.30
461.0260345	26.00	34.60	29.00	5.30
461.0270355	27.00	35.60	30.00	5.30
461.0280365	28.00	36.60	31.00	5.30
461.0300380	30.00	38.00	33.00	5.30
461.0300385	30.00	38.60	33.00	5.30
461.0320405	32.00	40.60	35.00	5.30
461.0330415	33.00	41.60	38.00	5.30
461.0350435	35.00	43.60	38.00	5.30
461.0360445	36.00	44.60	39.00	5.30
461.0380465	38.00	46.60	41.00	5.30
461.0400485	40.00	48.60	43.00	5.30
461.0420505	42.00	50.60	45.00	5.30
461.0450535	45.00	53.60	48.00	5.30
461.0460545	46.00	54.60	49.00	5.30
461.0480565	48.00	56.60	51.00	5.30
461.0490575	49.00	57.60	52.00	5.30
461.0500580	50.00	58.00	53.00	5.30
461.0500585	50.00	58.60	53.00	5.30
461.0530615	53.00	61.60	56.00	5.30
461.0550635	55.00	63.60	58.00	5.30
461.0550655	55.00	65.60	58.00	5.30
461.0560645	56.00	64.60	59.00	5.30
461.0600680	60.00	68.00	63.00	5.30
461.0600685	60.00	68.60	63.00	5.30
461.0600705	60.00	70.00	63.00	5.00
461.0610695	61.00	69.60	64.00	5.30
461.0630715	63.00	71.60	66.00	5.30
461.0650735	65.00	73.60	68.00	5.30
461.0700785	70.00	78.60	73.00	5.30
461.0700805	70.00	80.00	73.00	5.00
461.0700827	70.00	82.60	76.00	7.10

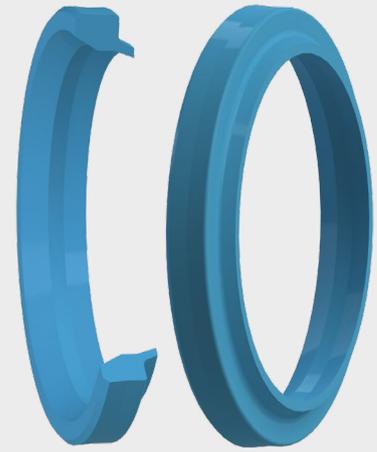
Part number	Rod diameter Ød1 f8/h9	Groove diameter ØD1 H9	Bore diameter ØD2 H11	Groove width L1 0/+0.20
461.0720805	72.00	80.60	75.00	5.30
461.0730815	73.00	81.60	76.00	5.30
461.0750835	75.00	83.60	78.00	5.30
461.0750877	75.00	87.20	81.00	7.10
461.0760845	76.00	84.60	79.00	5.30
461.0800885	80.00	88.60	83.00	5.30
461.0800907	80.00	90.20	83.00	7.10
461.0800927	80.00	92.60	83.00	7.10
461.0850935	85.00	93.60	88.00	5.30
461.0850977	85.00	97.20	91.00	7.10
461.0901027	90.00	102.20	96.00	7.10
461.0910995	91.00	99.60	94.00	5.30
461.0951077	95.00	107.20	101.00	7.10
461.1001085	100.00	108.60	103.00	5.30
461.1001127	100.00	112.20	106.00	7.10
461.1051135	105.00	113.60	108.00	5.30
461.1051177	105.00	117.20	111.00	7.10
461.1071155	107.00	115.60	110.00	5.30
461.1101185	110.00	118.60	113.00	5.30
461.1101227	110.00	122.20	116.00	7.10
461.1151277	115.00	127.20	121.00	7.10
461.1201327	120.00	132.20	126.00	7.10
461.1251377	125.00	137.20	131.00	7.10
461.1261345	126.00	134.60	129.00	5.30
461.1301427	130.00	142.20	136.00	7.10
461.1351477	135.00	147.20	141.00	7.10
461.1401527	140.00	152.20	146.00	7.10
461.1401559	140.00	155.00	146.50	9.00
461.1451577	145.00	157.20	151.00	7.10
461.1501627	150.00	162.20	156.00	7.10
461.1601727	160.00	172.20	166.00	7.10
461.1601751	160.00	175.20	168.00	10.10
461.1651701	165.00	170.20	173.00	10.10
461.1701851	170.00	185.20	178.00	10.10
461.1751901	175.00	190.20	183.00	10.10
461.1801951	180.00	195.20	188.00	10.10
461.1802001	180.00	200.20	183.00	10.20
461.1902051	190.00	205.20	198.00	10.10
461.2002151	200.00	215.20	208.00	10.10
461.2102251	210.00	225.20	218.00	10.10
461.2202351	220.00	235.20	228.00	10.10
461.2302451	230.00	245.20	238.00	10.10
461.2402551	240.00	255.20	248.00	10.10
461.2502651	250.00	265.20	258.00	10.10

The figures highlighted in bold correspond to the rod diameters that are recommended by standard ISO 3320. Other intermediate sizes can be provided.



WIPER SEALS

BECA 464



DESCRIPTION

The BECA 464 profile is a single acting wiper seal composed of a polyurethane wiping lip and a diagonally cut back.

ADVANTAGES

Good external wiping effect
Excellent abrasion and wear resistance
Easy assembly by deformation

APPLICATIONS

Agriculture
Mobile machinery
Material handling - Lifting
Hydraulic cylinders

MATERIALS

PU 93 Shore A - Blue
PU 96 Shore A - Blue
High temp. PU 96 Shore A - Beige

Other grades of materials are available.
Please contact our experts.

TECHNICAL DATA

Temperature	-30°C / +110°C
Speed	1 m/s
Media	Mineral hydraulic oils

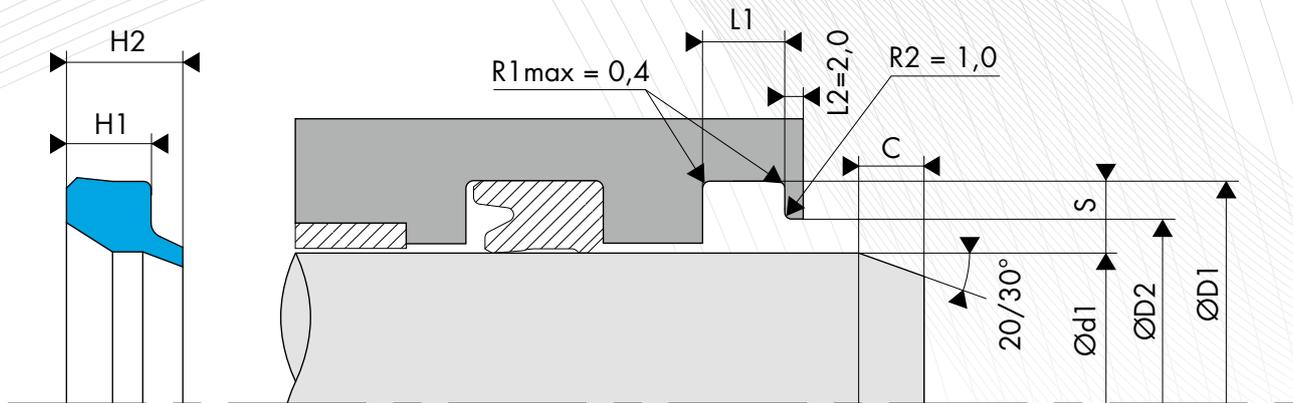
The figures above indicate the maximum values and may not be cumulated. They may be developed, depending on the materials used.

SURFACE ROUGHNESS

Roughness	Dynamic surface area	Static surface area	Groove flanks
Ra	0.1 - 0.4 µm	≤1.6 µm	≤3.2 µm
Rz	0.63 - 2.5 µm	≤6.3 µm	≤10.0 µm
Rmax	1.0 - 4.0 µm	≤10.0 µm	≤16.0 µm

CHAMFER

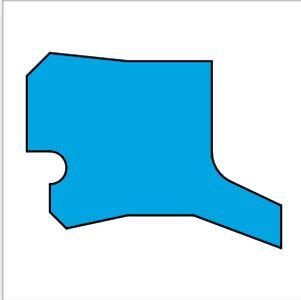
The chamfer length as well as the chamfer angle are determined by the rod seal.



○ DIMENSIONS

Part number	Rod diameter Ød1 f8/h9	Groove diameter ØD1 H9	Bore diameter ØD2 H11	Groove width L1 0/+0.20	Seal height H2
464.3016022	16.00	22.00	18.50	4.00	5.30
464.3018024	18.00	24.00	20.50	4.00	5.30
464.3020026	20.00	26.00	22.50	4.00	5.30
464.3022028	22.00	28.00	24.50	4.00	5.30
464.3025033	25.00	33.00	28.00	5.00	6.40
464.3028036	28.00	36.00	31.00	5.00	6.40
464.0300404	30.00	40.00	35.00	4.00	8.00
464.3032040	32.00	40.00	35.00	5.00	6.40
464.3036044	36.00	44.00	39.00	5.00	6.40
464.3040048	40.00	48.00	43.00	5.00	6.40
464.3045053	45.00	53.00	48.00	5.00	6.40
464.3050058	50.00	58.00	53.00	5.00	6.40
464.3056066	56.00	66.00	59.00	6.00	7.30
464.3060068	60.00	68.00	63.00	5.00	6.70
464.3063073	63.00	73.00	66.00	6.00	7.30
464.3070080	70.00	80.00	73.00	6.00	7.30
464.3075083	75.00	83.00	78.00	5.00	6.70
464.3080090	80.00	90.00	83.00	6.00	7.30
464.3090098	90.00	98.00	93.00	5.00	6.70
464.3090100	90.00	100.00	93.00	6.00	7.30
464.3100115	100.00	115.00	104.00	8.50	10.30
464.3105113	105.00	113.00	102.00	5.00	6.70
464.3110125	110.00	125.00	114.00	8.50	10.30

The figures highlighted in bold correspond to the rod diameters that are recommended by standard ISO 3320. Other intermediate sizes can be provided.



WIPER SEALS

BECA 465



DESCRIPTION

The BECA 465 profile is a compact double acting wiper seal composed of two polyurethane wiping lips. It can be assembled in a groove in line with standard ISO 6195 type C.

ADVANTAGES

Excellent abrasion and wear resistance
 Good wiping effect, both internally and externally
 Easy assembly by deformation

APPLICATIONS

Agriculture
 Mobile machinery
 Material handling - Lifting
 Hydraulic cylinders

MATERIALS

PU 93 Shore A - Blue
 PU 96 Shore A - Blue
 High temp. PU 96 Shore A - Beige

Other grades of materials are available.
 Please contact our experts.

TECHNICAL DATA

Temperature	-30°C / +110°C
Speed	1 m/s
Media	Mineral hydraulic oils Fire-resistant liquids Biocompatible fluids Water Others (contact our experts)

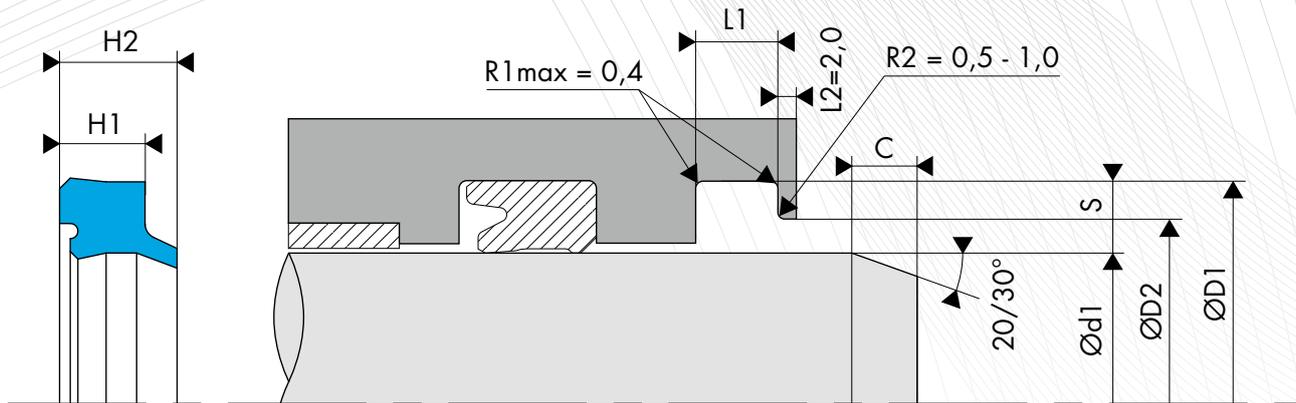
The figures above indicate the maximum values and may not be cumulated. They may be developed, depending on the materials used.

SURFACE ROUGHNESS

Roughness	Dynamic surface area	Static surface area	Groove flanks
Ra	0.1 - 0.4 µm	≤1.6 µm	≤3.2 µm
Rz	0.63 - 2.5 µm	≤6.3 µm	≤10.0 µm
Rmax	1.0 - 4.0 µm	≤10.0 µm	≤16.0 µm

CHAMFER

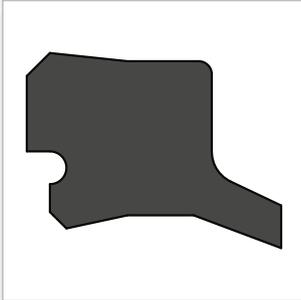
The chamfer length as well as the chamfer angle are determined by the rod seal.



○ DIMENSIONS

Part number	Rod diameter Ød1 f8/h9	Groove diameter ØD1 H9	Bore diameter ØD2 H11	Groove width L1 0/+0.20	Seal height H2
465.3016022	16.00	22.00	18.50	4.00	5.30
465.3018024	18.00	24.00	20.50	4.00	5.30
465.3020026	20.00	26.00	22.50	4.00	5.30
465.3022028	22.00	28.00	24.50	4.00	5.30
465.3025033	25.00	33.00	28.00	5.00	6.40
465.3028036	28.00	36.00	31.00	5.00	6.40
465.3032040	32.00	40.00	35.00	5.00	6.40
465.3036044	36.00	44.00	39.00	5.00	6.40
465.3040048	40.00	48.00	43.00	5.00	6.40
465.3045053	45.00	53.00	48.00	5.00	6.40
465.3050058	50.00	58.00	53.00	5.00	6.40
465.3056066	56.00	66.00	59.00	6.00	7.30
465.3061069	61.00	69.00	64.00	5.00	6.40
465.3063073	63.00	73.00	66.00	6.00	7.30
465.3068076	68.00	76.00	71.00	5.00	6.40
465.3070080	70.00	80.00	73.00	6.00	7.30
465.3076084	76.00	84.00	79.00	5.00	6.40
465.3080090	80.00	90.00	83.00	6.00	7.30
465.3088096	88.00	96.00	91.00	5.00	6.40
465.3090100	90.00	100.00	93.00	6.00	7.30
465.3091099	91.00	99.00	94.00	5.00	6.40
465.3100115	100.00	115.00	104.00	8.50	10.30
465.3107115	107.00	115.00	110.00	5.00	6.40
465.3110125	110.00	125.00	114.00	8.50	10.30
465.3125140	125.00	140.00	129.00	8.50	10.30
465.3126134	126.00	134.00	129.00	5.00	6.40
465.3147155	147.00	155.00	150.00	5.00	6.40
465.3170178	170.00	178.00	173.00	5.00	6.40

The figures highlighted in bold correspond to the dimensions for standard ISO 6195 Type C, with the rod diameters in line with standard ISO 3320. Other intermediate sizes can be provided.



WIPER SEALS

BECA 466



DESCRIPTION

The BECA 466 profile is a compact double acting wiper seal composed of two rubber wiping lips. It can be assembled in a groove in line with standard ISO 6195 type C.

ADVANTAGES

Wide temperature range, depending on the material chosen

Good wiping effect, both internally and externally

Easy assembly by deformation

APPLICATIONS

Agriculture

Mobile machinery

Material handling - Lifting

Hydraulic cylinders

MATERIALS

NBR 90 Shore A

FKM 90 Shore A

Other grades of materials are available.
Please contact our experts.

TECHNICAL DATA

Temperature	-30°C / +200°C
Speed	1 m/s
Media	Mineral hydraulic oils Fire-resistant liquids Biocompatible fluids Water Others (contact our experts)

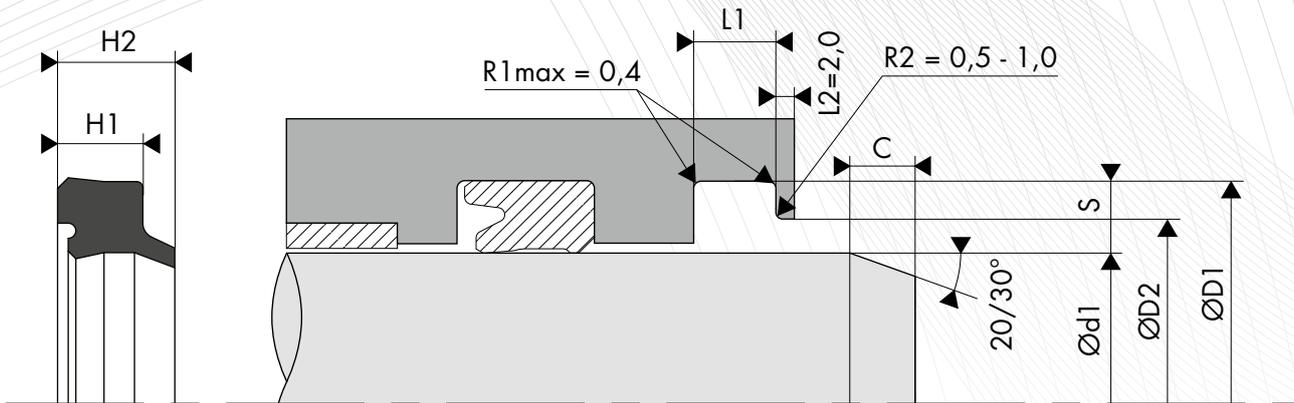
The figures above indicate the maximum values and may not be cumulated. They may be developed, depending on the materials used.

SURFACE ROUGHNESS

Roughness	Dynamic surface area	Static surface area	Groove flanks
Ra	0.1 - 0.4 µm	≤1.6 µm	≤3.2 µm
Rz	0.63 - 2.5 µm	≤6.3 µm	≤10.0 µm
Rmax	1.0 - 4.0 µm	≤10.0 µm	≤16.0 µm

CHAMFER

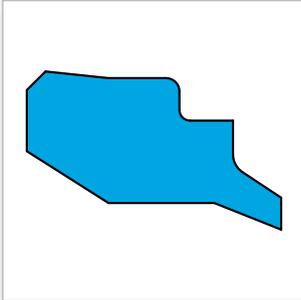
The chamfer length as well as the chamfer angle are determined by the rod seal.



○ DIMENSIONS

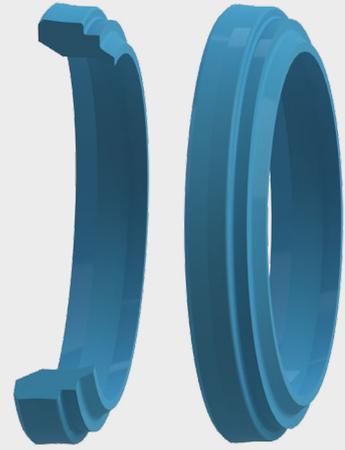
Part number	Rod diameter Ød1 f8/h9	Groove diameter ØD1 H9	Bore diameter ØD2 H11	Groove width L1 0/+0.20	Seal height H2
466.0160224	16.00	22.00	18.50	4.00	5.30
466.0180244	18.00	24.00	20.50	4.00	5.30
466.0220284	22.00	28.00	24.50	4.00	5.30
466.0280365	28.00	36.00	31.00	5.00	6.40
466.0360445	36.00	44.00	39.00	5.00	6.40
466.0450535	45.00	53.00	48.00	5.00	6.40
466.0560666	56.00	66.00	59.00	6.00	7.30
466.0700806	70.00	80.00	73.00	6.00	7.30
466.0901006	90.00	100.00	93.00	6.00	7.30
466.1101258	110.00	125.00	114.00	8.50	10.30
466.1251408	125.00	140.00	129.00	8.50	10.30
466.1401558	140.00	155.00	144.00	8.50	10.30
466.2002158	200.00	215.00	204.00	8.50	10.30

The figures highlighted in bold correspond to the dimensions for standard ISO 6195 Type C, with the rod diameters in line with standard ISO 3320. Other intermediate sizes can be provided.



WIPER SEALS

BECA 467



DESCRIPTION

The BECA 467 profile is a stepped compact single acting wiper seal composed of a polyurethane wiping lip and a diagonally cut back. It can be assembled in a groove in line with standard ISO 6195 type A.

ADVANTAGES

Excellent abrasion and wear resistance
Good external wiping effect
Easy assembly by deformation

APPLICATIONS

Agriculture
Mobile machinery
Material handling - Lifting
Hydraulic cylinders

MATERIALS

PU 93 Shore A - Blue
PU 96 Shore A - Blue
High temp. PU 93 Shore A - Beige

Other grades of materials are available.
Please contact our experts.

TECHNICAL DATA

Temperature	-30°C / +110°C
Speed	1 m/s
Media	Mineral hydraulic oils

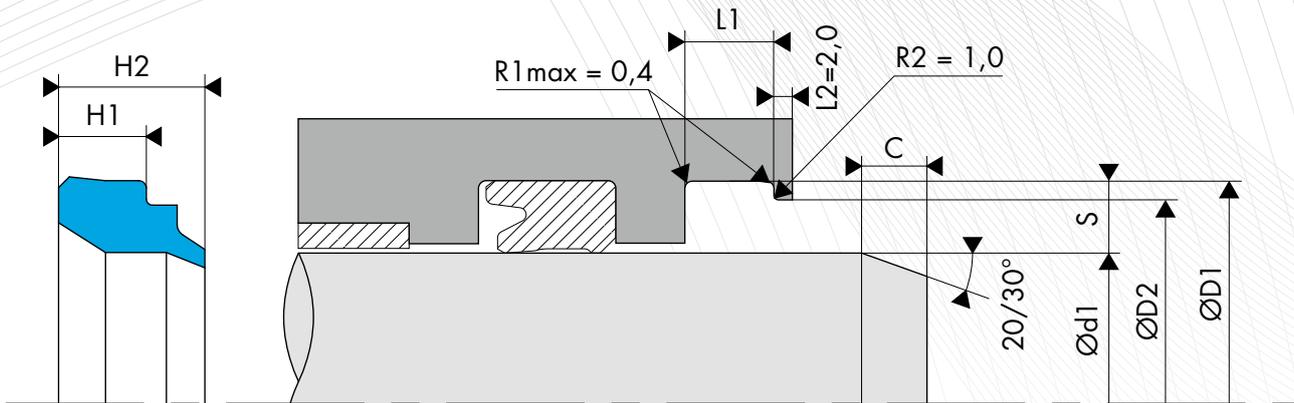
The figures above indicate the maximum values and may not be cumulated. They may be developed, depending on the materials used.

SURFACE ROUGHNESS

Roughness	Dynamic surface area	Static surface area	Groove flanks
Ra	0.1 - 0.4 µm	≤1.6 µm	≤3.2 µm
Rz	0.63 - 2.5 µm	≤6.3 µm	≤10.0 µm
Rmax	1.0 - 4.0 µm	≤10.0 µm	≤16.0 µm

CHAMFER

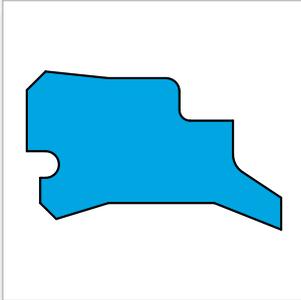
The chamfer length as well as the chamfer angle are determined by the rod seal.



○ DIMENSIONS

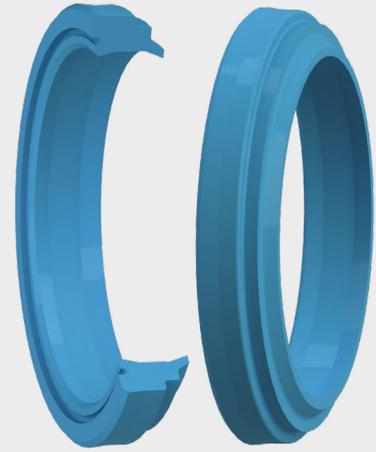
Part number	Rod diameter Ød1 f8/h9	Groove diameter ØD1 H9	Bore diameter ØD2 H11	Groove width L1 0/+0.20	Seal height H2
467.3020028	20.00	28.00	25.50	5.00	8.00
467.3022030	22.00	30.00	27.50	5.00	8.00
467.3025033	25.00	33.00	30.50	5.00	8.00
467.3028036	28.00	36.00	33.50	5.00	8.00
467.3032040	32.00	40.00	37.50	5.00	8.00
467.3036044	36.00	44.00	41.50	5.00	8.00
467.3040048	40.00	48.00	45.50	5.00	8.00
467.3045053	45.00	53.00	50.50	5.00	8.00
467.3050058	50.00	58.00	55.50	5.00	8.00
467.3056066	56.00	66.00	63.00	6.30	10.00
467.3063073	63.00	73.00	70.00	6.30	10.00
467.3070080	70.00	80.00	77.00	6.30	10.00
467.3080090	80.00	90.00	87.00	6.30	10.00
467.3090100	90.00	100.00	97.00	6.30	10.00
467.3100115	100.00	115.00	110.00	9.50	14.00
467.3110125	110.00	125.00	120.00	9.50	14.00

The figures highlighted in bold correspond to the dimensions for standard ISO 6195 Type A, with the rod diameters in line with standard ISO 3320. Other intermediate sizes can be provided.



WIPER SEALS

BECA 468



DESCRIPTION

The BECA 468 profile is a stepped compact double acting wiper seal composed of two polyurethane wiping lips. It can be assembled in a groove in line with standard ISO 6195 type A.

ADVANTAGES

Excellent abrasion and wear resistance
 Good wiping effect, both internally and externally
 Easy assembly by deformation

APPLICATIONS

Agriculture
 Mobile machinery
 Material handling - Lifting
 Hydraulic cylinders

MATERIALS

PU 93 Shore A - Blue
 PU 96 Shore A - Blue
 High temp. PU 96 Shore A - Beige

Other grades of materials are available.
 Please contact our experts.

TECHNICAL DATA

Temperature	-30°C / +110°C
Speed	1 m/s
Media	Mineral hydraulic oils

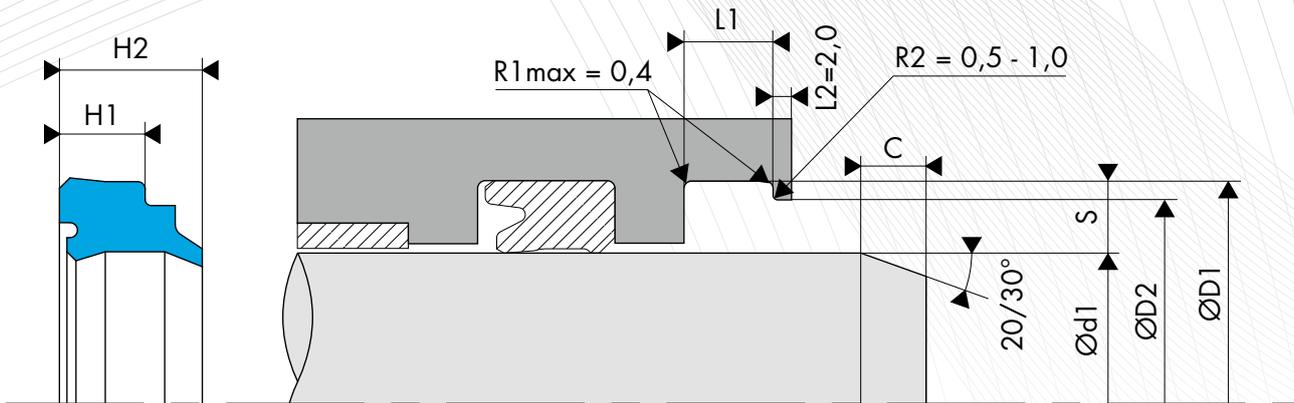
The figures above indicate the maximum values and may not be cumulated. They may be developed, depending on the materials used.

SURFACE ROUGHNESS

Roughness	Dynamic surface area	Static surface area	Groove flanks
Ra	0.1 - 0.4 µm	≤1.6 µm	≤3.2 µm
Rz	0.63 - 2.5 µm	≤6.3 µm	≤10.0 µm
Rmax	1.0 - 4.0 µm	≤10.0 µm	≤16.0 µm

CHAMFER

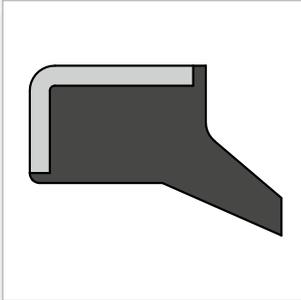
The chamfer length as well as the chamfer angle are determined by the rod seal.



○ DIMENSIONS

Part number	Rod diameter Ød1 f8/h9	Groove diameter ØD1 H9	Bore diameter ØD2 H11	Groove width L1 0/-0.20	Seal height H2
468.0200284	20.00	28.00	25.50	4.00	7.00
468.3020028	20.00	28.00	25.50	5.00	8.00
468.3022030	22.00	30.00	27.50	5.00	8.00
468.3025033	25.00	33.00	30.50	5.00	8.00
468.3028036	28.00	36.00	33.50	5.00	8.00
468.3032040	32.00	40.00	37.50	5.00	8.00
468.3036044	36.00	44.00	41.50	5.00	8.00
468.3040048	40.00	48.00	45.50	5.00	8.00
468.3045053	45.00	53.00	50.50	5.00	8.00
468.3050058	50.00	58.00	55.50	5.00	8.00
468.3056066	56.00	66.00	63.00	6.30	10.00
468.3063073	63.00	73.00	70.00	6.30	10.00
468.3070080	70.00	80.00	77.00	6.30	10.00
468.3080090	80.00	90.00	87.00	6.30	10.00
468.3090100	90.00	100.00	97.00	6.30	10.00
468.3100115	100.00	115.00	110.00	9.50	14.00
468.3110125	110.00	125.00	120.00	9.50	14.00

The figures highlighted in bold correspond to the dimensions for standard ISO 6195 Type A, with the rod diameters in line with standard ISO 3320. Other intermediate sizes can be provided.



WIPER SEALS

BECA 470



DESCRIPTION

The BECA 470 profile is a vulcanised NBR single acting wiper seal on a metal cage.

ADVANTAGES

Economic solution
Tight and precise fitting in the housing
Good external wiping effect

APPLICATIONS

Agriculture
Mobile machinery
Material handling - Lifting
Hydraulic cylinders

MATERIALS

Profiled seal
NBR 90 Shore A
Metal cage
Steel

Other grades of materials are available.
Please contact our experts.

TECHNICAL DATA

Temperature	-30°C / +100°C
Speed	1 m/s
Media	Mineral hydraulic oils Fire-resistant liquids Biocompatible fluids Water Others (contact our experts)

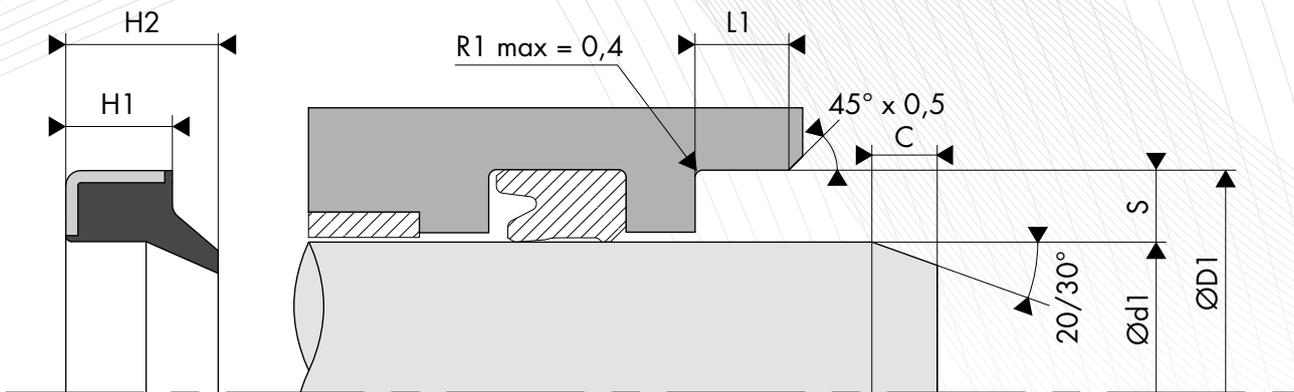
The figures above indicate the maximum values and may not be cumulated. They may be developed, depending on the materials used.

SURFACE ROUGHNESS

Roughness	Dynamic surface area	Static surface area	Groove flanks
Ra	0.1 - 0.4 µm	≤1.6 µm	≤3.2 µm
Rz	0.63 - 2.5 µm	≤6.3 µm	≤10.0 µm
Rmax	1.0 - 4.0 µm	≤10.0 µm	≤16.0 µm

CHAMFER

The chamfer length as well as the chamfer angle are determined by the rod seal.



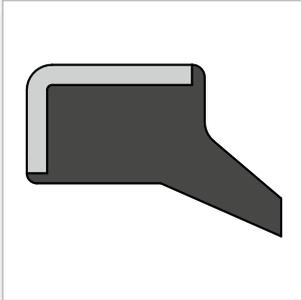
○ DIMENSIONS

Part number	Rod diameter Ød1 h9	Groove diameter ØD1 H8	Groove width L1 0/+0.20	Seal height H2
470.0060133	6.00	13.00	3.00	4.50
470.0080154	8.00	15.00	4.50	7.00
470.0080165	8.00	16.00	5.00	8.00
470.0100162	10.00	16.00	2.00	3.15
470.0100163	10.00	16.00	3.00	4.50
470.0100185	10.00	18.00	5.00	8.00
470.0100205	10.00	20.00	5.00	8.00
470.0120183	12.00	18.00	3.00	4.50
470.0120184	12.00	18.00	4.00	6.00
470.0120185	12.00	18.00	5.00	7.00
470.0120204	12.00	20.00	4.00	6.00
470.0120225	12.00	22.00	5.00	8.00
470.0120227	12.00	22.00	7.00	10.00
470.0130204	13.00	20.00	4.00	6.00
470.0140203	14.00	20.00	3.50	5.00
470.0140204	14.00	20.00	4.00	5.00
470.0140223	14.00	22.00	3.00	4.00
470.0140247	14.00	24.00	7.00	10.00
470.0140255	14.00	25.00	5.00	8.00
470.0140257	14.00	25.00	7.00	10.00
470.0150255	15.00	25.00	5.00	8.00
470.0150257	15.00	25.00	7.00	10.00
470.0160223	16.00	22.00	3.00	4.00
470.0160224	16.00	22.00	4.00	6.00
470.0160243	16.00	24.00	3.00	4.00
470.0160265	16.00	26.00	5.00	8.00
470.0160267	16.00	26.00	7.00	10.00
470.0180265	18.00	26.00	5.00	8.00
470.0180285	18.00	28.00	5.00	7.00
470.0180287	18.00	28.00	7.00	10.00
470.0180355	18.00	35.00	5.00	8.00
470.0200264	20.00	26.00	4.00	6.00
470.0200265	20.00	26.00	5.00	8.00
470.0200274	20.00	27.00	4.00	6.00
470.0200283	20.00	28.00	3.00	5.00
470.0200285	20.00	28.00	5.00	8.00
470.0200304	20.00	30.00	4.00	6.00
470.0200305	20.00	30.00	5.00	8.00
470.0200307	20.00	30.00	7.00	10.00
470.0200327	20.00	32.00	7.00	10.00
470.0200357	20.00	35.00	7.00	10.00
470.0210283	21.00	28.00	3.50	5.00
470.0220285	22.00	28.00	5.00	8.00
470.0220305	22.00	30.00	5.00	8.00
470.0220325	22.00	32.00	5.00	7.00
470.0220327	22.00	32.00	7.00	10.00
470.0220355	22.00	35.00	5.00	8.00
470.0220357	22.00	35.00	7.00	10.00
470.0220385	22.00	38.00	5.00	8.00
470.0240325	24.00	32.00	5.00	7.00

Part number	Rod diameter Ød1 h9	Groove diameter ØD1 H8	Groove width L1 0/+0.20	Seal height H2
470.0240357	24.00	35.00	7.00	10.00
470.0240377	24.00	37.00	7.00	10.00
470.0250315	25.00	31.00	5.00	7.00
470.0250355	25.00	35.00	5.00	8.00
470.0250357	25.00	35.00	7.00	10.00
470.0250376	25.00	37.00	6.00	9.00
470.0260345	26.00	34.00	5.00	8.00
470.0280365	28.00	36.00	5.00	8.00
470.0280385	28.00	38.00	5.00	8.00
470.0280387	28.00	38.00	7.00	10.00
470.0280407	28.00	40.00	7.00	10.00
470.0300405	30.00	40.00	5.00	8.00
470.0300407	30.00	40.00	7.00	10.00
470.0300427	30.00	42.00	7.00	10.00
470.0300455	30.00	45.00	5.00	8.00
470.0300457	30.00	45.00	7.00	10.00
470.0320404	32.00	40.00	4.00	7.00
470.0320405	32.00	40.00	5.00	8.00
470.0320407	32.00	40.00	7.00	10.00
470.0320425	32.00	42.00	5.00	7.00
470.0320427	32.00	42.00	7.00	10.00
470.0320454	32.00	45.00	4.00	8.00
470.0320455	32.00	45.00	5.00	7.00
470.0320457	32.00	45.00	7.00	10.00
470.0330437	33.00	43.00	7.00	10.00
470.0350415	35.00	41.00	5.00	7.00
470.0350455	35.00	45.00	5.00	8.00
470.0350457	35.00	45.00	7.00	10.00
470.0350477	35.00	47.00	7.00	10.00
470.0350527	35.00	52.00	7.00	10.00
470.0360455	36.00	45.00	5.00	7.00
470.0360457	36.00	45.00	7.00	10.00
470.0360465	36.00	46.00	5.00	8.00
470.0360467	36.00	46.00	7.00	10.00
470.0370475	37.00	47.00	5.00	8.00
470.0380453	38.00	45.00	3.00	4.00
470.0380487	38.00	48.00	7.00	10.00
470.0380535	38.00	53.00	5.00	8.00
470.0400503	40.00	50.00	3.50	5.00
470.0400505	40.00	50.00	5.00	8.00
470.0400507	40.00	50.00	7.00	10.00
470.0400525	40.00	52.00	5.00	8.00
470.0400527	40.00	52.00	7.00	10.00
470.0400535	40.00	53.00	5.00	8.00
470.0420527	42.00	52.00	7.00	10.00
470.0440555	44.00	55.00	5.00	7.00
470.0450535	45.00	53.00	5.00	8.00
470.0450555	45.00	55.00	5.00	7.00
470.0450557	45.00	55.00	7.00	10.00
470.0450577	45.00	57.00	7.00	10.00
470.0450607	45.00	60.00	7.00	10.00
470.0480607	48.00	60.00	7.00	10.00
470.0500565	50.00	56.00	5.00	7.00
470.0500605	50.00	60.00	5.00	7.00
470.0500607	50.00	60.00	7.00	10.00
470.0500655	50.00	65.00	5.00	8.00
470.0500657	50.00	65.00	7.00	10.00
470.0520627	52.00	62.00	7.00	10.00
470.0550637	55.00	63.00	7.00	10.00
470.0550655	55.00	65.00	5.00	8.00
470.0550657	55.00	65.00	7.00	10.00
470.0550687	55.00	68.00	7.00	10.00
470.0550707	55.00	70.00	7.00	10.00
470.0560655	56.00	65.00	5.00	7.00
470.0560657	56.00	65.00	7.00	10.00
470.0560665	56.00	66.00	5.00	8.00
470.0560667	56.00	66.00	7.00	10.00
470.0600685	60.00	68.00	5.00	7.00
470.0600705	60.00	70.00	5.00	7.00
470.0600707	60.00	70.00	7.00	10.00
470.0600745	60.00	74.00	5.00	8.00
470.0600757	60.00	75.00	7.00	10.00
470.0610727	61.00	72.00	7.00	10.00

Part number	Rod diameter Ød1 h9	Groove diameter ØD1 H8	Groove width L1 0/+0.20	Seal height H2
470.0620727	62.00	72.00	7.00	10.00
470.0630727	63.00	72.00	7.00	10.00
470.0630736	63.00	73.00	6.00	9.00
470.0630737	63.00	73.00	7.00	10.00
470.0630757	63.00	75.00	7.00	10.00
470.0650757	65.00	75.00	7.00	10.00
470.0700805	70.00	80.00	5.00	8.00
470.0700806	70.00	80.00	6.00	7.00
470.0700807	70.00	80.00	7.00	10.00
470.0720827	72.00	82.00	7.00	10.00
470.0750857	75.00	85.00	7.00	10.00
470.0750875	75.00	87.00	5.00	7.00
470.0750877	75.00	87.00	7.00	10.00
470.0780887	78.00	88.00	7.00	10.00
470.0800887	80.00	88.00	7.00	10.00
470.0800907	80.00	90.00	7.00	10.00
470.0800947	80.00	94.00	7.00	10.00
470.0820927	82.00	92.00	7.00	10.00
470.0850957	85.00	95.00	7.00	10.00
470.0901007	90.00	100.00	7.00	10.00
470.0951057	95.00	105.00	7.00	10.00
470.1001107	100.00	110.00	7.00	10.00
470.1001159	100.00	115.00	9.00	12.00
470.1051157	105.00	115.00	7.00	10.00
470.1081207	108.00	120.00	7.00	10.00
470.1101207	110.00	120.00	7.00	10.00
470.1101259	110.00	125.00	9.00	12.00
470.1151257	115.00	125.00	7.00	10.00
470.1201307	120.00	130.00	7.00	10.00
470.1251357	125.00	135.00	7.00	10.00
470.1251409	125.00	140.00	9.00	12.00
470.1251419	125.00	141.00	9.00	12.00
470.1301407	130.00	140.00	7.00	10.00
470.1301457	130.00	145.00	7.00	10.00
470.1301459	130.00	145.00	9.00	12.00
470.1351507	135.00	150.00	7.00	10.00
470.1351509	135.00	150.00	9.00	12.00
470.1401507	140.00	150.00	7.00	10.00
470.1401559	140.00	155.00	9.00	12.00
470.1451609	145.00	160.00	9.00	12.00
470.1451650	145.00	165.00	10.00	15.00
470.1451709	145.00	170.00	9.00	12.00
470.1501659	150.00	165.00	9.00	12.00
470.1601759	160.00	175.00	9.00	12.00
470.1651809	165.00	180.00	9.00	12.00
470.1701859	170.00	185.00	9.00	12.00
470.1701850	170.00	185.00	10.00	14.00
470.1751900	175.00	190.00	10.00	14.00
470.1801950	180.00	195.00	10.00	14.00
470.1852000	185.00	200.00	10.00	14.00
470.2002159	200.00	215.00	9.00	13.00
470.2002200	200.00	220.00	10.00	14.00
470.2002202	200.00	220.00	12.00	16.00
470.2102300	210.00	230.00	10.00	15.00
470.2102302	210.00	230.00	12.00	16.00
470.2202402	220.00	240.00	12.00	16.00
470.2502702	250.00	270.00	12.00	16.00
470.2753002	275.00	300.00	12.00	16.00
470.2803002	280.00	300.00	12.00	16.00
470.3103406	310.00	340.00	16.00	22.00
470.3203402	320.00	340.00	12.00	16.00
470.3603802	360.00	380.00	12.00	16.00
470.3904206	390.00	420.00	16.00	22.00
470.4004202	400.00	420.00	12.00	16.00
470.4905206	490.00	520.00	16.00	22.00

The figures highlighted in bold correspond to the rod diameters that are recommended by standard ISO 3320. Other intermediate sizes can be provided.



WIPER SEALS

BECA 471



DESCRIPTION

The BECA 471 profile is a vulcanised FKM single acting wiper seal on a metal cage.

ADVANTAGES

Excellent chemical compatibility and wide temperature range

Tight and precise fitting in the housing
Good external wiping effect

APPLICATIONS

Agriculture
Mobile machinery
Material handling - Lifting
Hydraulic cylinders

MATERIALS

Profiled seal

FKM 90 Shore A

Metal cage

Steel

TECHNICAL DATA

Temperature	-20°C / +200°C
Speed	1 m/s
Media	Mineral hydraulic oils Fire-resistant liquids Biocompatible fluids Water Others (contact our experts)

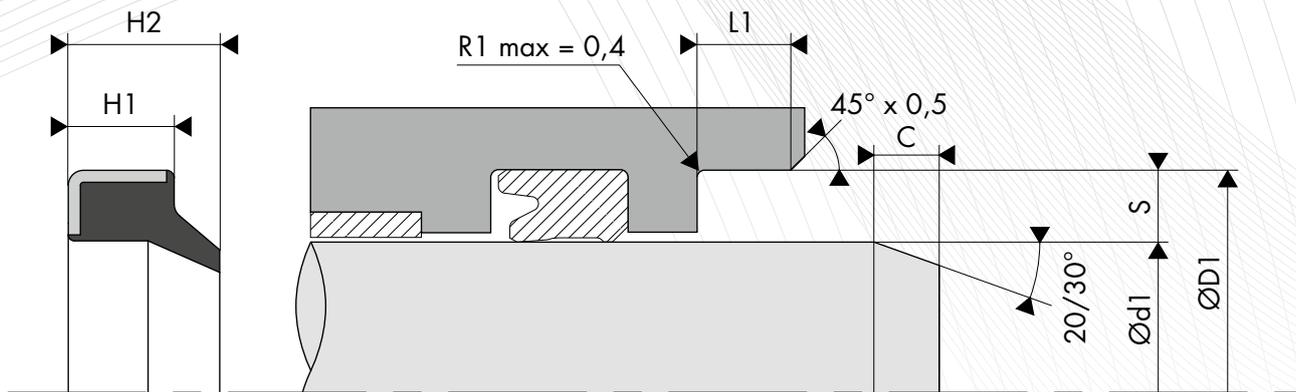
The figures above indicate the maximum values and may not be cumulated. They may be developed, depending on the materials used.

SURFACE ROUGHNESS

Roughness	Dynamic surface area	Static surface area	Groove flanks
Ra	0.1 - 0.4 µm	≤1.6 µm	≤3.2 µm
Rz	0.63 - 2.5 µm	≤6.3 µm	≤10.0 µm
Rmax	1.0 - 4.0 µm	≤10.0 µm	≤16.0 µm

CHAMFER

The chamfer length as well as the chamfer angle are determined by the rod seal.

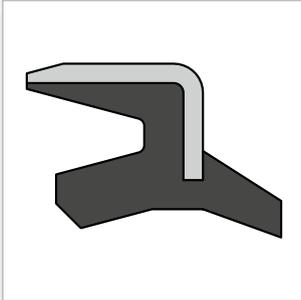


DIMENSIONS

Part number	Rod diameter Ød1 h9	Groove diameter ØD1 H8	Groove width L1 0/+0.20	Seal height H2
471.0613345	6.00	13.00	3.00	4.50
471.0100163	10.00	16.00	3.00	4.50
471.0120204	12.00	20.00	4.00	6.00
471.0160265	16.00	26.00	5.00	8.00
471.0180287	18.00	28.00	7.00	10.00
471.0200284	20.00	28.00	4.00	7.00
471.0200285	20.00	28.00	5.00	8.00
471.0200307	20.00	30.00	7.00	10.00
471.0220285	22.00	28.00	5.00	8.00
471.0250355	25.00	35.00	5.00	8.00
471.0250357	25.00	35.00	7.00	10.00
471.0280385	28.00	38.00	5.00	8.00
471.0280407	28.00	40.00	7.00	10.00
471.0300405	30.00	40.00	5.00	8.00
471.0300407	30.00	40.00	7.00	10.00
471.0320427	32.00	42.00	7.00	10.00
471.0350457	35.00	45.00	7.00	10.00
471.0400505	40.00	50.00	5.00	8.00
471.0400507	40.00	50.00	7.00	10.00
471.0450557	45.00	55.00	7.00	10.00
471.0450607	45.00	60.00	7.00	10.00

Part number	Rod diameter Ød1 h9	Groove diameter ØD1 H8	Groove width L1 0/+0.20	Seal height H2
471.0500565	50.00	56.00	5.00	8.00
471.0500605	50.00	60.00	5.00	7.00
471.0500607	50.00	60.00	7.00	10.00
471.0500657	50.00	65.00	7.00	10.00
471.0550657	55.00	65.00	7.00	10.00
471.0560657	56.00	65.00	7.00	10.00
471.0560667	56.00	66.00	7.00	10.00
471.0650757	65.00	75.00	7.00	10.00
471.0700807	70.00	80.00	7.00	10.00
471.0750857	75.00	85.00	7.00	10.00
471.0800907	80.00	90.00	7.00	10.00
471.0850957	85.00	95.00	7.00	10.00
471.0901007	90.00	100.00	7.00	10.00
471.1001107	100.00	110.00	7.00	10.00
471.1051157	105.00	115.00	7.00	10.00
471.1101207	110.00	120.00	7.00	10.00
471.1251409	125.00	140.00	9.00	12.00
471.1351457	135.00	145.00	7.00	10.00
471.1801950	180.00	195.00	10.00	14.00
471.2202402	220.00	240.00	12.00	16.00

The figures highlighted in bold correspond to the rod diameters that are recommended by standard ISO 3320. Other intermediate sizes can be provided.



WIPER SEALS

BECA 472



DESCRIPTION

The BECA 472 profile is a rubber double acting wiper seal on a metal cage.

ADVANTAGES

Tight and precise fitting in the housing
Good wiping effect, both internally and externally

APPLICATIONS

Agriculture
Mobile machinery
Material handling - Lifting
Hydraulic cylinders

MATERIALS

Profiled seal

NBR 90 Shore A
FKM 90 Shore A

Metal cage

Steel

Other grades of materials are available.
Please contact our experts.

TECHNICAL DATA

Temperature	-30°C / +200°C
Speed	1 m/s
Media	Mineral hydraulic oils Fire-resistant liquids Biocompatible fluids Water Others (contact our experts)

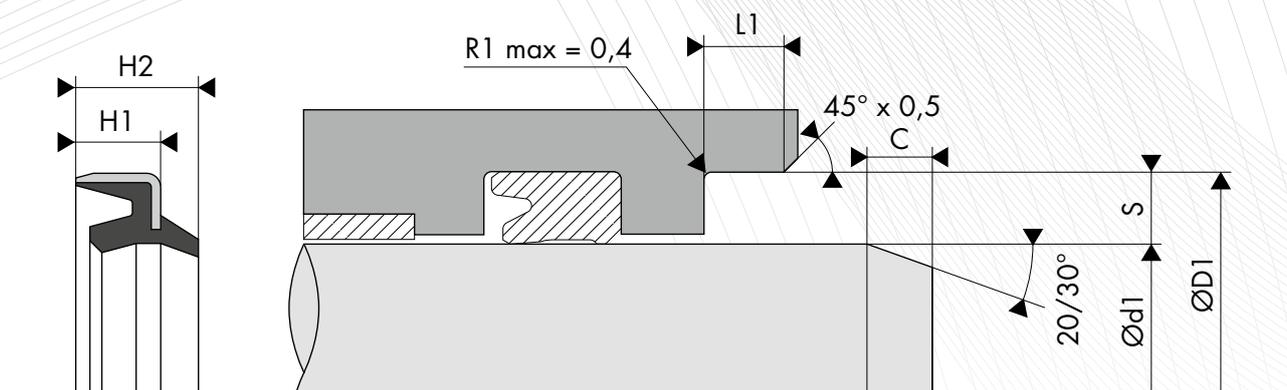
The figures above indicate the maximum values and may not be cumulated. They may be developed, depending on the materials used.

SURFACE ROUGHNESS

Roughness	Dynamic surface area	Static surface area	Groove flanks
Ra	0.1 - 0.4 µm	≤1.6 µm	≤3.2 µm
Rz	0.63 - 2.5 µm	≤6.3 µm	≤10.0 µm
Rmax	1.0 - 4.0 µm	≤10.0 µm	≤16.0 µm

CHAMFER

The chamfer length as well as the chamfer angle are determined by the rod seal.

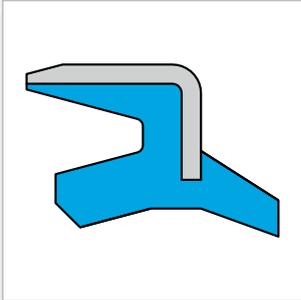


DIMENSIONS

Part number	Rod diameter Ød1 h9	Groove diameter ØD1 H8	Groove width L1 0/+0.20	Seal height H2
472.0120183	12.00	18.00	3.50	5.00
472.1250193	12.50	19.00	3.00	5.00
472.0130193	13.00	19.00	3.50	5.00
472.0140213	14.00	21.00	3.50	5.00
472.0140224	14.00	22.00	4.00	5.50
472.0140245	14.00	24.00	5.00	7.00
472.0150213	15.00	21.00	3.50	5.00
472.0160223	16.00	22.00	3.50	5.00
472.0170233	17.00	23.00	3.50	5.00
472.0180243	18.00	24.00	3.50	5.00
472.0180306	18.00	30.00	6.00	9.00
472.0190274	19.00	27.00	4.00	6.00
472.0190285	19.00	28.00	5.00	7.00
472.0190316	19.00	31.00	6.00	9.00
472.0200274	20.00	27.00	4.00	6.00
472.0200285	20.00	28.00	5.00	7.00
472.0200326	20.00	32.00	6.00	9.00
472.0220305	22.00	30.00	5.00	7.00
472.0220326	22.00	32.00	6.00	9.00
472.0220346	22.00	34.00	6.00	9.00
472.0240325	24.00	32.00	5.00	7.00
472.0250335	25.00	33.00	5.00	7.00
472.0250376	25.00	37.00	6.00	9.00
472.0260322	26.00	32.00	2.50	4.00
472.0270355	27.00	35.00	5.00	7.00
472.0280354	28.00	35.00	4.00	5.50
472.0280365	28.00	36.00	5.00	7.00
472.0280385	28.00	38.00	5.00	7.00
472.0280406	28.00	40.00	6.00	9.00
472.285395	28.58	39.12	5.80	8.10
472.0300385	30.00	38.00	5.00	7.00
472.0300426	30.00	42.00	6.00	9.00
472.0300456	30.00	45.00	6.00	9.00
472.0300477	30.00	47.00	7.00	10.00
472.0320405	32.00	40.00	5.00	7.00
472.0320447	32.00	44.00	7.00	10.00
472.0320528	32.00	52.00	8.00	11.00
472.0330415	33.00	41.00	5.00	7.00
472.0340467	34.00	46.00	7.00	10.00
472.0350435	35.00	43.00	5.00	7.00
472.0350477	35.00	47.00	7.00	10.00
472.0360445	36.00	44.00	5.00	7.00
472.0380465	38.00	46.00	5.00	7.00
472.0380507	38.00	50.00	7.00	10.00
472.0400485	40.00	48.00	5.00	7.00
472.0400527	40.00	52.00	7.00	10.00
472.0420505	42.00	50.00	5.00	7.00
472.0450535	45.00	53.00	5.00	7.00
472.0450555	45.00	55.00	5.00	7.00
472.0450577	45.00	57.00	7.00	10.00
472.0500585	50.00	58.00	5.00	7.00
472.0500605	50.00	60.00	5.00	7.00
472.0500627	50.00	62.00	7.00	10.00
472.0500728	50.00	72.00	8.00	11.00
472.0550635	55.00	63.00	5.00	7.00
472.0550655	55.00	65.00	5.00	7.00
472.0550698	55.00	69.00	8.00	11.00

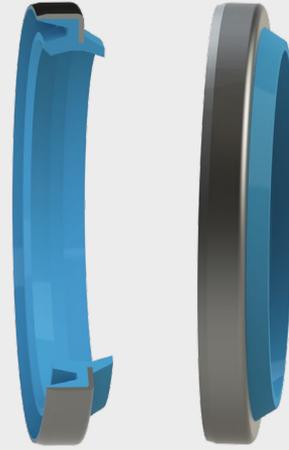
Part number	Rod diameter Ød1 h9	Groove diameter ØD1 H8	Groove width L1 0/+0.20	Seal height H2
472.0560665	56.00	66.00	5.00	7.00
472.0560687	56.00	68.00	7.00	10.00
472.0600685	60.00	68.00	5.00	7.00
472.0600705	60.00	70.00	5.00	7.00
472.0600748	60.00	74.00	8.00	11.00
472.0600828	60.00	82.00	8.00	11.00
472.0630715	63.00	71.00	5.00	7.00
472.0630735	63.00	73.00	5.00	7.00
472.0650735	65.00	73.00	5.00	7.00
472.0650755	65.00	75.00	5.00	7.00
472.0650798	65.00	79.00	8.00	11.00
472.0700785	70.00	78.00	5.00	7.00
472.0700805	70.00	80.00	5.00	7.00
472.0700848	70.00	84.00	8.00	11.00
472.0700901	70.00	90.00	10.00	14.00
472.0730815	73.00	81.00	5.00	7.00
472.0750835	75.00	83.00	5.00	7.00
472.0750877	75.00	87.00	7.00	12.00
472.0750898	75.00	89.00	8.00	11.00
472.0800927	80.00	92.00	7.00	12.00
472.0800948	80.00	94.00	8.00	11.00
472.0850935	85.00	93.00	5.00	7.00
472.0850998	85.00	99.00	8.00	11.00
472.0901027	90.00	102.00	7.00	12.00
472.0901048	90.00	104.00	8.00	11.00
472.0901077	90.00	107.00	7.00	12.00
472.0951098	95.00	109.00	8.00	11.00
472.1001127	100.00	112.00	7.00	12.00
472.1001148	100.00	114.00	8.00	11.00
472.1051177	105.00	117.00	7.00	12.00
472.1051218	105.00	121.00	8.00	11.00
472.1051219	105.00	121.00	9.00	12.00
472.1101269	110.00	126.00	9.00	12.00
472.1151319	115.00	131.00	9.00	12.00
472.1201369	120.00	136.00	9.00	12.00
472.1251419	125.00	141.00	9.00	11.00
472.1301469	130.00	146.00	9.00	12.00
472.1351477	135.00	147.00	7.00	12.50
472.1351509	135.00	150.00	9.00	12.00
472.1351551	135.00	155.00	10.00	14.00
472.1401609	140.00	160.00	9.00	12.00
472.1401601	140.00	160.00	10.00	14.00
472.1451651	145.00	165.00	10.00	14.00
472.1501701	150.00	170.00	10.00	14.00
472.1551751	155.00	175.00	10.00	14.00
472.1601801	160.00	180.00	10.00	14.00
472.1701901	170.00	190.00	10.00	14.00
472.1802001	180.00	200.00	10.00	14.00
472.1802051	180.00	205.00	12.00	17.00
472.1902151	190.00	215.00	12.00	17.00
472.2002251	200.00	225.00	12.00	17.00
472.2102351	210.00	235.00	12.00	17.00
472.2202451	220.00	245.00	12.00	17.00
472.2252387	225.00	238.00	7.00	9.50
472.2302551	230.00	255.00	12.00	17.00
472.2402651	240.00	265.00	12.00	17.00
472.2502751	250.00	275.00	12.00	17.00

The figures highlighted in bold correspond to the rod diameters that are recommended by standard ISO 3320. Other intermediate sizes can be provided.



WIPER SEALS

BECA 473



DESCRIPTION

The BECA 473 profile is a double acting wiper seal with a polyurethane metal insert.

ADVANTAGES

Tight and precise fitting in the housing
Very good wiping effect, both internally and externally
Excellent abrasion and wear resistance

APPLICATIONS

Agriculture
Mobile machinery
Material handling - Lifting
Hydraulic cylinders

MATERIALS

Profiled seal

PU 94 Shore A - White

Metal cage

Steel

Other grades of materials are available.
Please contact our experts.

TECHNICAL DATA

Temperature	-30°C / +110°C
Speed	1 m/s
Media	Mineral hydraulic oils

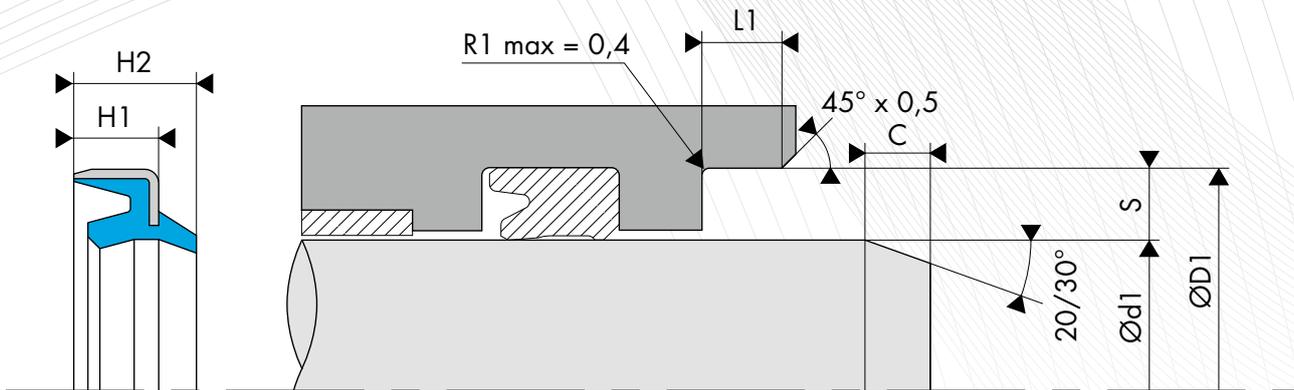
The figures above indicate the maximum values and may not be cumulated. They may be developed, depending on the materials used.

SURFACE ROUGHNESS

Roughness	Dynamic surface area	Static surface area	Groove flanks
Ra	0.1 - 0.4 µm	≤1.6 µm	≤3.2 µm
Rz	0.63 - 2.5 µm	≤6.3 µm	≤10.0 µm
Rmax	1.0 - 4.0 µm	≤10.0 µm	≤16.0 µm

CHAMFER

The chamfer length as well as the chamfer angle are determined by the rod seal.

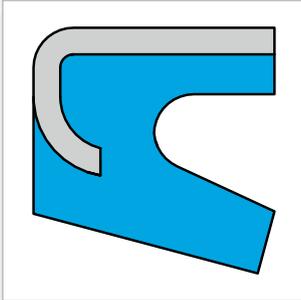


○ DIMENSIONS

Part number	Rod diameter Ød1 h9	Groove diameter ØD1 H8	Groove width L1 0/+0.20	Seal height H2
473.0200326	20.00	32.00	6.00	9.00
473.0250376	25.00	37.00	6.00	9.00
473.0280406	28.00	40.00	6.00	9.00
473.0300426	30.00	42.00	6.00	9.00
473.0320447	32.00	44.00	7.00	10.00
473.0340467	34.00	46.00	7.00	10.00
473.0350477	35.00	47.00	7.00	10.00
473.0360487	36.00	48.00	7.00	10.00
473.0380507	38.00	50.00	7.00	10.00
473.0400527	40.00	52.00	7.00	10.00
473.0450577	45.00	57.00	7.00	10.00
473.0500627	50.00	62.00	7.00	10.00
473.0550698	55.00	69.00	8.00	12.00
473.0560708	56.00	70.00	8.00	12.00
473.0600748	60.00	74.00	8.00	12.00
473.0630778	63.00	77.00	8.00	12.00
473.0650798	65.00	79.00	8.00	12.00

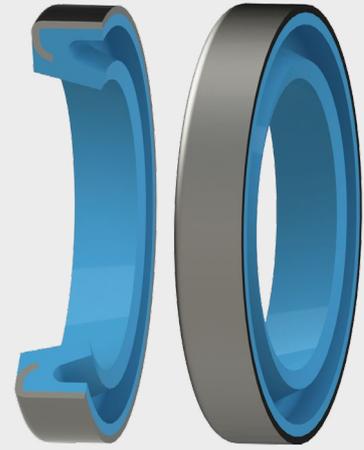
Part number	Rod diameter Ød1 h9	Groove diameter ØD1 H8	Groove width L1 0/+0.20	Seal height H2
473.0700848	70.00	84.00	8.00	12.00
473.0750898	75.00	89.00	8.00	12.00
473.0800948	80.00	94.00	8.00	12.00
473.0850998	85.00	99.00	8.00	12.00
473.0901048	90.00	104.00	8.00	12.00
473.0951098	95.00	109.00	8.00	12.00
473.1001148	100.00	114.00	8.00	12.00
473.1051219	105.00	121.00	9.00	12.00
473.1101269	110.00	126.00	9.00	12.00
473.1151319	115.00	131.00	9.00	12.00
473.1201369	120.00	136.00	9.00	12.00
473.1251419	125.00	141.00	9.00	12.00
473.1301469	130.00	146.00	9.00	12.00
473.1351508	135.00	150.00	8.00	11.00
473.1401601	140.00	160.00	10.00	14.00
473.2002168	200.00	216.00	8.00	11.00

The figures highlighted in bold correspond to the rod diameters that are recommended by standard ISO 3320. Other intermediate sizes can be provided.



WIPER SEALS

BECA 475



DESCRIPTION

The BECA 475 profile is a single acting wiper seal with a polyurethane metal insert.

ADVANTAGES

Tight and precise fitting in the housing
Very good external wiping effect
Excellent abrasion and wear resistance

APPLICATIONS

Agriculture
Mobile machinery
Material handling - Lifting
Hydraulic cylinders

MATERIALS

Profiled seal

PU 94 Shore A - White

Metal cage

Steel

Other grades of materials are available.
Please contact our experts.

TECHNICAL DATA

Temperature	-30°C / +110°C
Speed	1 m/s
Media	Mineral hydraulic oils

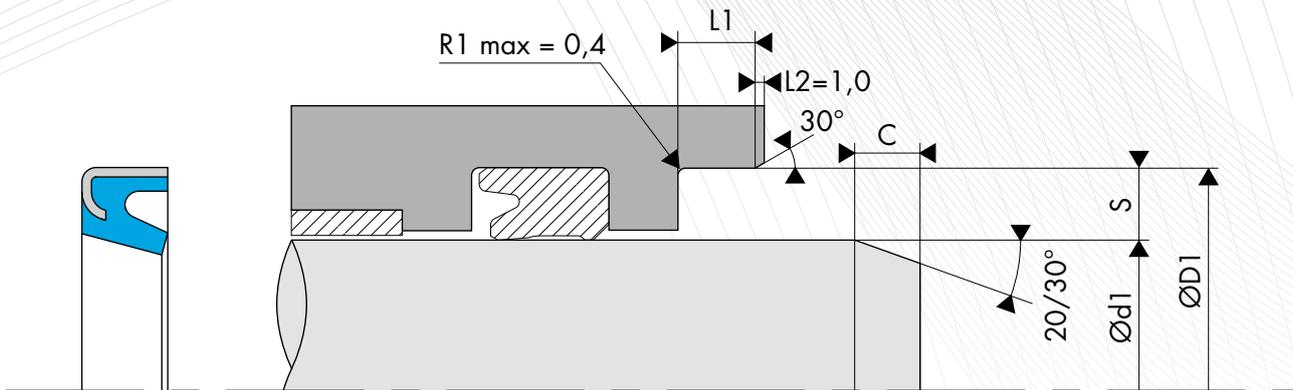
The figures above indicate the maximum values and may not be cumulated. They may be developed, depending on the materials used.

SURFACE ROUGHNESS

Roughness	Dynamic surface area	Static surface area	Groove flanks
Ra	0.1 - 0.4 µm	≤1.6 µm	≤3.2 µm
Rz	0.63 - 2.5 µm	≤6.3 µm	≤10.0 µm
Rmax	1.0 - 4.0 µm	≤10.0 µm	≤16.0 µm

CHAMFER

The chamfer length as well as the chamfer angle are determined by the rod seal.

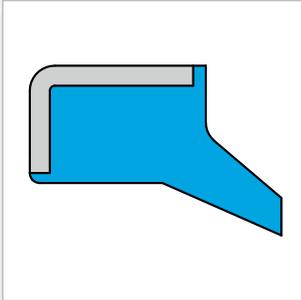


DIMENSIONS

Part number	Rod diameter Ød1 h9	Groove diameter ØD1 H8	Groove width L1 0/+0.10
475.0300404	30.00	40.00	4.00
475.0300406	30.00	40.00	6.00
475.0350454	35.00	45.00	4.00
475.0350456	35.00	45.00	6.00
475.0350509	35.00	50.00	9.00
475.0360467	36.00	46.00	7.00
475.0400504	40.00	50.00	4.00
475.0400505	40.00	50.00	5.00
475.0400508	40.00	50.00	8.00
475.0400526	40.00	52.00	6.00
475.0400559	40.00	55.00	9.00
475.0450553	45.00	55.00	3.20
475.0450554	45.00	55.00	4.00
475.0450555	45.00	55.00	5.00
475.0450607	45.00	60.00	7.50
475.0500603	50.00	60.00	3.20
475.0500605	50.00	60.00	5.00
475.0500634	50.00	63.00	4.00
475.0500655	50.00	65.00	5.00
475.0500657	50.00	65.00	7.50
475.0500659	50.00	65.00	9.00
475.0550653	55.00	65.00	3.20
475.0550655	55.00	65.00	5.00
475.0550705	55.00	70.00	5.00
475.0550707	55.00	70.00	7.50
475.0560719	56.00	71.00	9.00
475.0600705	60.00	70.00	5.00
475.0600748	60.00	74.00	8.00
475.0600754	60.00	75.00	4.20
475.0600755	60.00	75.00	5.00
475.0600757	60.00	75.00	7.50
475.0600758	60.00	75.00	8.00
475.0600751	60.00	75.00	10.00
475.0630789	63.00	78.00	9.00
475.0650755	65.00	75.00	5.00

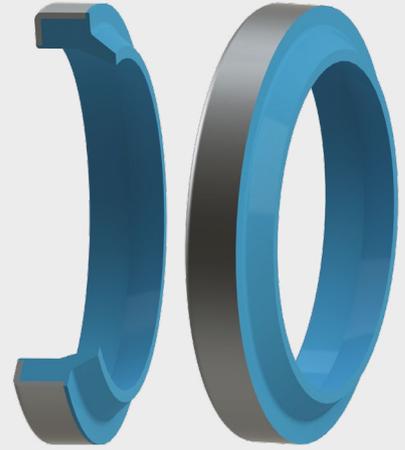
Part number	Rod diameter Ød1 h9	Groove diameter ØD1 H8	Groove width L1 0/+0.10
475.0650798	65.00	79.00	8.00
475.0650805	65.00	80.00	5.00
475.0700805	70.00	80.00	5.00
475.0700807	70.00	80.00	7.00
475.0700848	70.00	84.00	8.00
475.0700855	70.00	85.00	5.00
475.0700857	70.00	85.00	7.00
475.0700858	70.00	85.00	8.00
475.0700851	70.00	85.00	10.00
475.0710865	71.00	86.00	5.00
475.0750855	75.00	85.00	5.00
475.0750898	75.00	89.00	8.00
475.0750908	75.00	90.00	8.00
475.0800903	80.00	90.00	3.20
475.0800948	80.00	94.00	8.00
475.0800954	80.00	95.00	4.00
475.0800955	80.00	95.00	5.00
475.0800958	80.00	95.00	8.00
475.0850954	85.00	95.00	4.50
475.0850998	85.00	99.00	8.00
475.0901007	90.00	100.00	7.00
475.0901048	90.00	104.00	8.00
475.0901056	90.00	105.00	6.00
475.0901058	90.00	105.00	8.00
475.0951056	95.00	105.00	6.00
475.0951098	95.00	109.00	8.00
475.0951106	95.00	110.00	6.50
475.1001148	100.00	114.00	8.00
475.1001157	100.00	115.00	7.00
475.1001158	100.00	115.00	8.00
475.1101258	110.00	125.00	8.00
475.1101304	110.00	130.00	4.50
475.1201358	120.00	135.00	8.00
475.1251408	125.00	140.00	8.00

The figures highlighted in bold correspond to the rod diameters that are recommended by standard ISO 3320. Other intermediate sizes can be provided.



WIPER SEALS

BECA 476



DESCRIPTION

The BECA 476 profile is a single acting wiper seal with a polyurethane metal insert.

ADVANTAGES

Tight and precise fitting in the housing
Very good external wiping effect
Excellent abrasion and wear resistance

APPLICATIONS

Agriculture
Mobile machinery
Material handling - Lifting
Hydraulic cylinders

MATERIALS

Profiled seal

PU 94 Shore A - White

Metal cage

Steel

Other grades of materials are available.
Please contact our experts.

TECHNICAL DATA

Temperature	-30°C / +110°C
Speed	1 m/s
Media	Mineral hydraulic oils

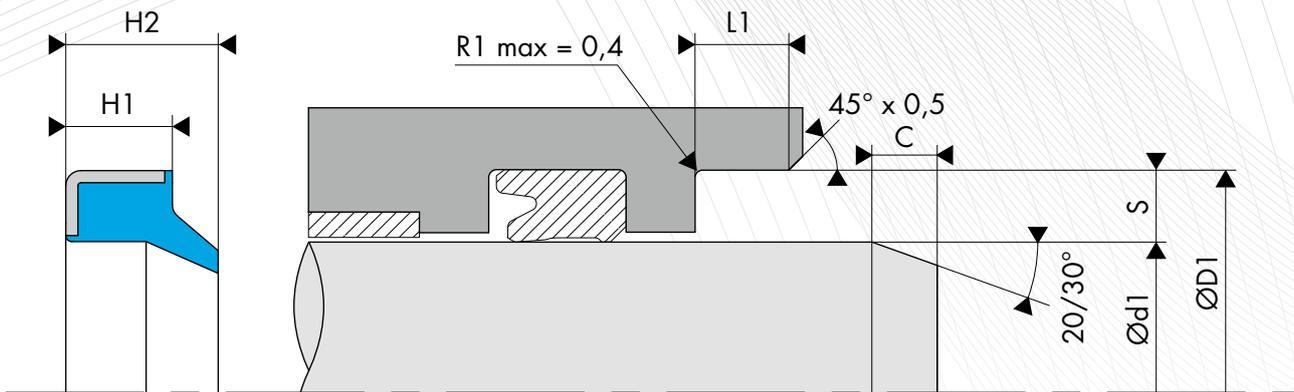
The figures above indicate the maximum values and may not be cumulated. They may be developed, depending on the materials used.

SURFACE ROUGHNESS

Roughness	Dynamic surface area	Static surface area	Groove flanks
Ra	0.1 - 0.4 µm	≤1.6 µm	≤3.2 µm
Rz	0.63 - 2.5 µm	≤6.3 µm	≤10.0 µm
Rmax	1.0 - 4.0 µm	≤10.0 µm	≤16.0 µm

CHAMFER

The chamfer length as well as the chamfer angle are determined by the rod seal.

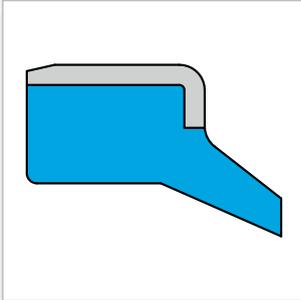


○ DIMENSIONS

Part number	Rod diameter Ød1 h9	Groove diameter ØD1 H8	Groove width L1 0/+0.20	Seal height H2
476.0130194	13.00	19.00	4.00	5.00
476.0140255	14.00	25.00	5.00	8.00
476.0200307	20.00	30.00	7.00	10.00
476.0250357	25.00	35.00	7.00	10.00
476.0280387	28.00	38.00	7.00	10.00
476.0300407	30.00	40.00	7.00	10.00
476.0350457	35.00	45.00	7.00	10.00
476.0400505	40.00	50.00	5.00	7.00
476.0400507	40.00	50.00	7.00	10.00
476.0450557	45.00	55.00	7.00	10.00
476.0500607	50.00	60.00	7.00	10.00
476.0550657	55.00	65.00	7.00	10.00
476.0550698	55.00	69.00	8.00	11.00
476.0560667	56.00	66.00	7.00	10.00
476.0570667	57.00	66.00	7.00	9.20
476.0600707	60.00	70.00	7.00	10.00
476.0600748	60.00	74.00	8.00	11.00
476.0630757	63.00	75.00	7.00	10.00

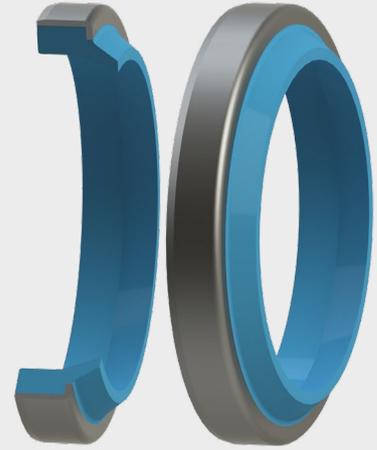
Part number	Rod diameter Ød1 h9	Groove diameter ØD1 H8	Groove width L1 0/+0.20	Seal height H2
476.0630778	63.00	77.00	8.00	11.00
476.0650757	65.00	75.00	7.00	10.00
476.0650798	65.00	79.00	8.00	11.00
476.0670767	67.00	76.00	7.00	9.20
476.0700807	70.00	80.00	7.00	10.00
476.0700848	70.00	84.00	8.00	11.00
476.0750898	75.00	89.00	8.00	11.00
476.0800907	80.00	90.00	7.00	10.00
476.0800948	80.00	94.00	8.00	11.00
476.0850998	85.00	99.00	8.00	11.00
476.0901007	90.00	100.00	7.00	10.00
476.0901048	90.00	104.00	8.00	11.00
476.0951098	95.00	109.00	8.00	11.00
476.1001107	100.00	110.00	7.00	10.00
476.1251409	125.00	140.00	9.00	12.00
476.1601759	160.00	175.00	9.00	12.00
476.1801951	180.00	195.00	10.00	14.00

The figures highlighted in bold correspond to the rod diameters that are recommended by standard ISO 3320. Other intermediate sizes can be provided.



WIPER SEALS

BECA 477



DESCRIPTION

The BECA 477 profile is a single acting wiper seal with a polyurethane metal insert.

ADVANTAGES

Tight and precise fitting in the housing
Very good external wiping effect
Excellent abrasion and wear resistance

APPLICATIONS

Agriculture
Mobile machinery
Material handling - Lifting
Hydraulic cylinders

MATERIALS

Profiled seal

PU 94 Shore A - White

Metal cage

Steel

Other grades of materials are available.
Please contact our experts.

TECHNICAL DATA

Temperature	-30°C / +110°C
Speed	1 m/s
Media	Mineral hydraulic oils

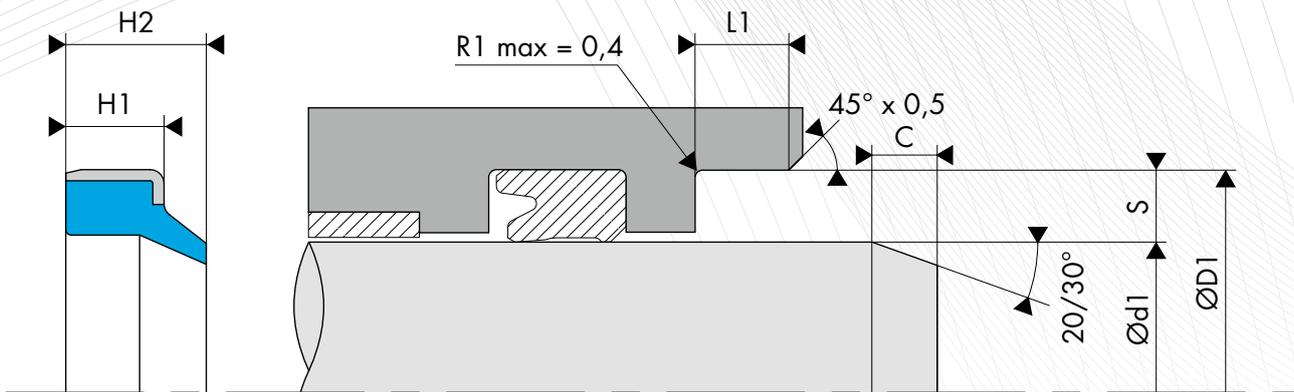
The figures above indicate the maximum values and may not be cumulated. They may be developed, depending on the materials used.

SURFACE ROUGHNESS

Roughness	Dynamic surface area	Static surface area	Groove flanks
Ra	0.1 - 0.4 µm	≤1.6 µm	≤3.2 µm
Rz	0.63 - 2.5 µm	≤6.3 µm	≤10.0 µm
Rmax	1.0 - 4.0 µm	≤10.0 µm	≤16.0 µm

CHAMFER

The chamfer length as well as the chamfer angle are determined by the rod seal.

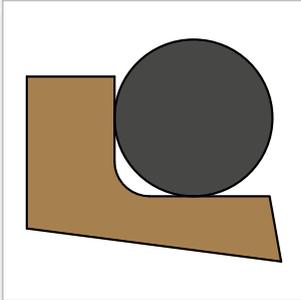


DIMENSIONS

Part number	Rod diameter Ød1 h9	Groove diameter ØD1 H8	Groove width L1 0/+0.20	Seal height H2
477.0100205	10.00	20.00	5.00	8.00
477.0120204	12.00	20.00	4.00	6.00
477.0150255	15.00	25.00	5.00	7.00
477.0160223	16.00	22.00	3.00	4.00
477.0160265	16.00	26.00	5.00	8.00
477.0170243	17.00	24.00	3.50	5.00
477.0180285	18.00	28.00	5.00	7.00
477.0180306	18.00	30.00	6.00	9.00
477.0200283	20.00	28.00	3.50	5.00
477.0200304	20.00	30.00	4.00	6.00
477.0200305	20.00	30.00	5.00	8.00
477.0250355	25.00	35.00	5.00	8.00
477.0250376	25.00	37.00	6.00	9.00
477.0280385	28.00	38.00	5.00	8.00
477.0280387	28.00	38.00	7.00	10.00
477.0300405	30.00	40.00	5.00	8.00
477.0300426	30.00	42.00	6.00	9.00
477.0300455	30.00	45.00	5.00	8.00
477.0320425	32.00	42.00	5.00	8.00
477.0320426	32.00	42.00	6.00	9.00
477.0320457	32.00	45.00	7.00	10.00
477.0320528	32.00	52.00	8.00	11.00
477.0350457	35.00	45.00	7.00	10.00
477.0350477	35.00	47.00	7.00	10.00
477.0400505	40.00	50.00	5.00	8.00
477.0400507	40.00	50.00	7.00	10.00
477.0400527	40.00	52.00	7.00	10.00
477.0400607	40.00	60.00	7.00	10.00
477.0450557	45.00	55.00	7.00	10.00
477.0450577	45.00	57.00	7.00	10.00
477.0450607	45.00	60.00	7.00	10.00
477.0500607	50.00	60.00	7.00	10.00
477.0500627	50.00	62.00	7.00	10.00

Part number	Rod diameter Ød1 h9	Groove diameter ØD1 H8	Groove width L1 0/+0.20	Seal height H2
477.0550655	55.00	65.00	5.00	8.00
477.0550657	55.00	65.00	7.00	10.00
477.0550698	55.00	69.00	8.00	11.00
477.0600707	60.00	70.00	7.00	10.00
477.0600745	60.00	74.00	5.00	8.00
477.0600748	60.00	74.00	8.00	11.00
477.0630757	63.00	75.00	7.00	10.00
477.0650757	65.00	75.00	7.00	10.00
477.0650798	65.00	79.00	8.00	11.00
477.0700807	70.00	80.00	7.00	10.00
477.0700848	70.00	84.00	8.00	11.00
477.0750857	75.00	85.00	7.00	10.00
477.0750898	75.00	89.00	8.00	11.00
477.0800907	80.00	90.00	7.00	10.00
477.0800948	80.00	94.00	8.00	11.00
477.0850957	85.00	95.00	7.00	10.00
477.0850998	85.00	99.00	8.00	11.00
477.0901007	90.00	100.00	7.00	10.00
477.0901048	90.00	104.00	8.00	11.00
477.0951057	95.00	105.00	7.00	10.00
477.0951098	95.00	109.00	8.00	11.00
477.1001107	100.00	110.00	7.00	10.00
477.1001148	100.00	114.00	8.00	11.00
477.1051219	105.00	121.00	9.00	12.00
477.1101207	110.00	120.00	7.00	10.00
477.1101269	110.00	126.00	9.00	12.00
477.1151319	115.00	131.00	9.00	12.00
477.1201307	120.00	130.00	7.00	10.00
477.1201369	120.00	136.00	9.00	12.00
477.1301469	130.00	146.00	9.00	12.00
477.1401601	140.00	160.00	10.00	14.00
477.1501701	150.00	170.00	10.00	14.00
477.1601801	160.00	180.00	10.00	14.00

The figures highlighted in bold correspond to the rod diameters that are recommended by standard ISO 3320. Other intermediate sizes can be provided.



WIPER SEALS

BECA 480



DESCRIPTION

The BECA 480 profile is a composite wiper seal composed of a filled PTFE friction ring and a pre-tightened rubber O'Ring.

ADVANTAGES

Low friction coefficient;
no stick-slip effect

Wide temperature range and excellent chemical resistance, depending on the materials selected

Excellent abrasion and wear resistance

Very good wiping effect against external pollutions

APPLICATIONS

Agro-food

Machine tools

Hydraulic cylinders

Fluid technologies

MATERIALS

Friction ring

Bronze-filled PTFE

Carbon-filled PTFE

Blue GL PTFE

O'Ring

NBR 70 Shore A

FKM 70 Shore A

Other grades of materials are available. Please refer to the materials table on the next page.

TECHNICAL DATA

Temperature	-30°C / +200°C
Speed	5 m/s
Media	Mineral hydraulic oils Fire-resistant liquids Biocompatible fluids Water Others (contact our experts)

The figures above indicate the maximum values and may not be cumulated. They may be developed, depending on the materials used.

SURFACE ROUGHNESS

Roughness	Dynamic surface area	Static surface area	Groove flanks
Ra	0.05 - 0.2 µm	≤1.6 µm	≤3.2 µm
Rz	0.4 - 1.6 µm	≤6.3 µm	≤10.0 µm
Rmax	0.63 - 2.5 µm	≤10.0 µm	≤16.0 µm

RADIUS

Radial section S	Radius R1	Radius R2
2.40	0.20	0.40
3.40	0.20	0.80
4.40	0.20	1.00
6.10	0.20	1.50
8.00	0.20	1.50

CHAMFER

The chamfer length as well as the chamfer angle are determined by the rod seal.

TABLE MATERIALS

Friction ring					O'Ring			Mating surface material	
Standard code	ISO code	Material	Colour	Characteristics	Code	Type of material	Service temperature		
DP	P	Virgin PTFE	White	Resistance to chemical products Impermeability Dielectric Non-stick Low friction coefficient Food industry	K6	NBR 70 Shore A	-30°C/+100°C	Steel Stainless steel Chrome steel Aluminium Bronze Cast iron Treated surface	
					G6	FKM 70 Shore A	-20°C/+200°C		
					C6	EPDM 70 Shore A	-45°C/+150°C		
					F6	VMQ 70 Shore A	-60°C/+200°C		
DC	C	PTFE + 25% Carbon	Grey	Improvements • Wear properties • Compression set Good resistance to chemical products Thermal and electrical conductivity Anti-static High-performing in compression-based dynamic applications	K6	NBR 70 Shore A	-30°C/+100°C		
					G6	FKM 70 Shore A	-20°C/+200°C		
					C6	EPDM 70 Shore A	-45°C/+150°C		
CG	C	PTFE + 23% Carbon + 2% Graphite	Black	Thermal and electrical conductivity Anti-static High-performing in compression-based dynamic applications	K6	NBR 70 Shore A	-30°C/+100°C		
					G6	FKM 70 Shore A	-20°C/+200°C		
					C6	EPDM 70 Shore A	-45°C/+150°C		
DV	V	PTFE + 25 % Glass	Blue	Improvements • Wear properties • Mechanical strength Slightly more abrasive, however, this is corrected by adding MOS2 Maintains its chemical and dielectric properties Well-suited to applications with rotational and simultaneous alternating movements	K6	NBR 70 Shore A	-30°C/+100°C		Steel Chrome steel Cast iron
					G6	FKM 70 Shore A	-20°C/+200°C		
VM	M	PTFE + 15 % Glass + 5% MOS2	Grey	Well-suited to applications with rotational and simultaneous alternating movements	K6	NBR 70 Shore A	-30°C/+100°C		
					G6	FKM 70 Shore A	-20°C/+200°C		
DX	X	PTFE GL Blue + Glass + Metal oxides	Turquoise blue	Resistance to compression Resistance to wear Excellent chemical stability Good thermal conductivity	K6	NBR 70 Shore A	-30°C/+100°C		
					G6	FKM 70 Shore A	-20°C/+200°C		
DG	G	PTFE + 15% Graphite	Black	Improvements • Wear properties Reduced wear on metal parts Self-lubricating Thermal and electrical conductivity Low permeability Good friction coefficient Anti-static High performing in dynamic self-lubricating applications	K6	NBR 70 Shore A	-30°C/+100°C	Steel Stainless steel Chrome steel Aluminium Bronze Cast iron Treated surface	
					G6	FKM 70 Shore A	-20°C/+200°C		
					C6	EPDM 70 Shore A	-45°C/+150°C		
K1	K	PTFE + 10% Ekonol	Light brown	Improvements • Better abrasion resistance • Better dimensional stability at high temperatures Use up to +300°C Good friction coefficient and low permeability	K6	NBR 70 Shore A	-30°C/+100°C		
					G6	FKM 70 Shore A	-20°C/+200°C		
					C6	EPDM 70 Shore A	-45°C/+150°C		
K2	K	PTFE + 20% Ekonol	Light brown	Use up to +300°C Good friction coefficient and low permeability	K6	NBR 70 Shore A	-30°C/+100°C		
					G6	FKM 70 Shore A	-20°C/+200°C		
DB	B	PTFE + 60% Bronze	Dark brown	Improvements • Wear properties • Warping resistance and creep strength • Compression resistance Self-lubricating Electrical and thermal conductivity Does not alter the metal parts Reduced hold with certain chemical products Used for high-compression dynamic seals and has a low level of wear	K6	NBR 70 Shore A	-30°C/+100°C	Steel Chrome steel Cast iron	
					G6	FKM 70 Shore A	-20°C/+200°C		
B4	B	PTFE + 40% Bronze	Dark brown	Used for high-compression dynamic seals and has a low level of wear	K6	NBR 70 Shore A	-30°C/+100°C		
					G6	FKM 70 Shore A	-20°C/+200°C		

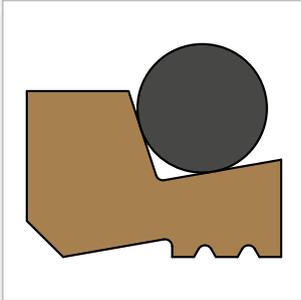
Other grades of materials are available depending on your specificities.

DIMENSIONS

Part number	Rod diameter Ød1 f8/h9	Groove diameter ØD1 H9	Bore diameter ØD2 H11	Groove width L1 0/+0.20	Shoulder width L2 min
480.004	4.00	8.80	6.70	3.70	2.00
480.005	5.00	9.80	7.70	3.70	2.00
480.006	6.00	10.80	8.70	3.70	2.00
480.008	8.00	12.80	10.70	3.70	2.00
480.009	9.00	13.80	11.70	3.70	2.00
480.010	10.00	14.80	12.70	3.70	2.00
480.012	12.00	18.80	15.50	5.00	2.00
480.014	14.00	20.80	17.50	5.00	2.00
480.015	15.00	21.80	18.50	5.00	2.00
480.016	16.00	22.80	19.50	5.00	2.00
480.018	18.00	24.80	21.50	5.00	2.00
480.020	20.00	26.80	23.50	5.00	2.00
480.022	22.00	28.80	25.50	5.00	2.00
480.025	25.00	31.80	28.50	5.00	2.00
480.028	28.00	34.80	31.50	5.00	2.00
480.030	30.00	36.80	33.50	5.00	2.00
480.032	32.00	38.80	35.50	5.00	2.00
480.035	35.00	41.80	38.50	5.00	2.00
480.036	36.00	42.80	39.50	5.00	2.00
480.037	37.00	43.80	40.50	5.00	2.00
480.038	38.00	44.80	41.50	5.00	2.00
480.040	40.00	46.80	43.50	5.00	2.00
480.042	42.00	48.80	45.50	5.00	2.00
480.045	45.00	51.80	48.50	5.00	2.00
480.048	48.00	54.80	51.50	5.00	2.00
480.049	49.00	55.80	52.50	5.00	2.00
480.050	50.00	56.80	53.50	5.00	2.00
480.052	52.00	58.80	55.50	5.00	2.00
480.054	54.00	60.80	57.50	5.00	2.00
480.055	55.00	61.80	58.50	5.00	2.00
480.056	56.00	62.80	59.50	5.00	2.00
480.058	58.00	64.80	61.50	5.00	2.00
480.060	60.00	66.80	63.50	5.00	2.00
480.062	62.00	68.80	65.50	5.00	2.00
480.063	63.00	69.80	66.50	5.00	2.00
480.065	65.00	73.80	69.00	6.00	3.00
480.068	68.00	76.80	72.00	6.00	3.00
480.070	70.00	78.80	74.00	6.00	3.00
480.075	75.00	83.80	79.00	6.00	3.00
480.080	80.00	88.80	84.00	6.00	3.00
480.085	85.00	93.80	89.00	6.00	3.00
480.090	90.00	98.80	94.00	6.00	3.00
480.095	95.00	103.80	99.00	6.00	3.00
480.100	100.00	108.80	104.00	6.00	3.00

Part number	Rod diameter Ød1 f8/h9	Groove diameter ØD1 H9	Bore diameter ØD2 H11	Groove width L1 0/+0.20	Shoulder width L2 min
480.105	105.00	113.80	109.00	6.00	3.00
480.110	110.00	118.80	114.00	6.00	3.00
480.115	115.00	123.80	119.00	6.00	3.00
480.120	120.00	128.80	124.00	6.00	3.00
480.125	125.00	133.80	129.00	6.00	3.00
480.130	130.00	138.80	134.00	6.00	3.00
480.135	135.00	143.80	139.00	6.00	3.00
480.140	140.00	148.80	144.00	6.00	3.00
480.145	145.00	153.80	149.00	6.00	3.00
480.150	150.00	158.80	154.00	6.00	3.00
480.155	155.00	163.80	159.00	6.00	3.00
480.160	160.00	168.80	164.00	6.00	3.00
480.165	165.00	173.80	169.00	6.00	3.00
480.170	170.00	178.80	174.00	6.00	3.00
480.175	175.00	183.80	179.00	6.00	3.00
480.180	180.00	188.80	184.00	6.00	3.00
480.185	185.00	193.80	189.00	6.00	3.00
480.190	190.00	198.80	194.00	6.00	3.00
480.195	195.00	203.80	199.00	6.00	3.00
480.200	200.00	208.80	204.00	6.00	3.00
480.205	205.00	213.80	209.00	6.00	3.00
480.210	210.00	218.80	214.00	6.00	3.00
480.215	215.00	223.80	219.00	6.00	3.00
480.220	220.00	228.80	224.00	6.00	3.00
480.230	230.00	238.80	234.00	6.00	3.00
480.240	240.00	248.80	244.00	6.00	3.00
480.250	250.00	258.80	254.00	6.00	3.00
480.260	260.00	272.20	264.50	8.40	4.00
480.270	270.00	282.20	274.50	8.40	4.00
480.280	280.00	292.20	284.50	8.40	4.00
480.290	290.00	302.20	294.50	8.40	4.00
480.300	300.00	312.20	304.50	8.40	4.00
480.310	310.00	322.20	314.50	8.40	4.00
480.320	320.00	332.20	324.50	8.40	4.00
480.330	330.00	342.20	334.50	8.40	4.00
480.340	340.00	352.20	344.50	8.40	4.00
480.350	350.00	362.20	354.50	8.40	4.00
480.360	360.00	372.20	364.50	8.40	4.00
480.370	370.00	382.20	374.50	8.40	4.00
480.380	380.00	392.20	384.50	8.40	4.00
480.390	390.00	402.20	394.50	8.40	4.00
480.400	400.00	412.20	404.50	8.40	4.00
480.450	450.00	466.00	455.20	11.00	4.00
480.500	500.00	516.00	505.20	11.00	4.00

The figures highlighted in bold correspond to the rod diameters in line with standard ISO 3320. Other intermediate sizes can be provided.



WIPER SEALS

BECA 482



DESCRIPTION

The BECA 482 profile is a double acting composite wiper seal composed of a filled PTFE friction ring and a pre-tightened rubber O'Ring.

ADVANTAGES

Low friction coefficient;
no stick-slip effect

Wide temperature range and excellent chemical resistance, depending on the materials selected

Excellent abrasion and wear resistance

Very good wiping effect against external pollutions

APPLICATIONS

Agro-food

Machine tools

Hydraulic cylinders

Fluid technologies

MATERIALS

Friction ring

Bronze-filled PTFE

Carbon-filled PTFE

O'Ring

NBR 70 Shore A

FKM 70 Shore A

Other grades of materials are available. Please refer to the materials table on the next page.

TECHNICAL DATA

Temperature	-30°C / +200°C
Speed	5 m/s
Media	Mineral hydraulic oils Fire-resistant liquids Biocompatible fluids Water Others (contact our experts)

The figures above indicate the maximum values and may not be cumulated. They may be developed, depending on the materials used.

SURFACE ROUGHNESS

Roughness	Dynamic surface area	Static surface area	Groove flanks
Ra	0.05 - 0.2 µm	≤1.6 µm	≤3.2 µm
Rz	0.4 - 1.6 µm	≤6.3 µm	≤10.0 µm
Rmax	0.63 - 2.5 µm	≤10.0 µm	≤16.0 µm

RADIUS

Radial section S	Radius R1	Radius R2
2.40	0.20	0.40
3.40	0.20	0.80
4.40	0.20	1.00
6.10	0.20	1.50
8.00	0.20	1.50
10.00	0.20	2.00

CHAMFER

The chamfer length as well as the chamfer angle are determined by the rod seal.

TABLE MATERIALS

Friction ring					O'Ring			Mating surface material	
Standard code	ISO code	Material	Colour	Characteristics	Code	Type of material	Service temperature		
DP	P	Virgin PTFE	White	Resistance to chemical products Impermeability Dielectric Non-stick Low friction coefficient Food industry	K6	NBR 70 Shore A	-30°C/+100°C	Steel Stainless steel Chrome steel Aluminium Bronze Cast iron Treated surface	
					G6	FKM 70 Shore A	-20°C/+200°C		
					C6	EPDM 70 Shore A	-45°C/+150°C		
					F6	VMQ 70 Shore A	-60°C/+200°C		
DC	C	PTFE + 25% Carbon	Grey	Improvements • Wear properties • Compression set Good resistance to chemical products Thermal and electrical conductivity Anti-static High-performing in compression-based dynamic applications	K6	NBR 70 Shore A	-30°C/+100°C		
					G6	FKM 70 Shore A	-20°C/+200°C		
					C6	EPDM 70 Shore A	-45°C/+150°C		
CG	C	PTFE + 23% Carbon + 2% Graphite	Black	Thermal and electrical conductivity Anti-static High-performing in compression-based dynamic applications	K6	NBR 70 Shore A	-30°C/+100°C		
					G6	FKM 70 Shore A	-20°C/+200°C		
					C6	EPDM 70 Shore A	-45°C/+150°C		
DV	V	PTFE + 25 % Glass	Blue	Improvements • Wear properties • Mechanical strength Slightly more abrasive, however, this is corrected by adding MOS2 Maintains its chemical and dielectric properties Well-suited to applications with rotational and simultaneous alternating movements	K6	NBR 70 Shore A	-30°C/+100°C		Steel Chrome steel Cast iron
					G6	FKM 70 Shore A	-20°C/+200°C		
VM	M	PTFE + 15 % Glass + 5% MOS2	Grey	Well-suited to applications with rotational and simultaneous alternating movements	K6	NBR 70 Shore A	-30°C/+100°C		
					G6	FKM 70 Shore A	-20°C/+200°C		
DX	X	PTFE GL Blue + Glass + Metal oxides	Turquoise blue	Resistance to compression Resistance to wear Excellent chemical stability Good thermal conductivity	K6	NBR 70 Shore A	-30°C/+100°C		
					G6	FKM 70 Shore A	-20°C/+200°C		
DG	G	PTFE + 15% Graphite	Black	Improvements • Wear properties Reduced wear on metal parts Self-lubricating Thermal and electrical conductivity Low permeability Good friction coefficient Anti-static High performing in dynamic self-lubricating applications	K6	NBR 70 Shore A	-30°C/+100°C	Steel Stainless steel Chrome steel Aluminium Bronze Cast iron Treated surface	
					G6	FKM 70 Shore A	-20°C/+200°C		
					C6	EPDM 70 Shore A	-45°C/+150°C		
K1	K	PTFE + 10% Ekonol	Light brown	Improvements • Better abrasion resistance • Better dimensional stability at high temperatures Use up to +300°C Good friction coefficient and low permeability	K6	NBR 70 Shore A	-30°C/+100°C		
					G6	FKM 70 Shore A	-20°C/+200°C		
					C6	EPDM 70 Shore A	-45°C/+150°C		
K2	K	PTFE + 20% Ekonol	Light brown	Use up to +300°C Good friction coefficient and low permeability	K6	NBR 70 Shore A	-30°C/+100°C		
					G6	FKM 70 Shore A	-20°C/+200°C		
					C6	EPDM 70 Shore A	-45°C/+150°C		
DB	B	PTFE + 60% Bronze	Dark brown	Improvements • Wear properties • Warping resistance and creep strength • Compression resistance Self-lubricating Electrical and thermal conductivity Does not alter the metal parts Reduced hold with certain chemical products Used for high-compression dynamic seals and has a low level of wear	K6	NBR 70 Shore A	-30°C/+100°C	Steel Chrome steel Cast iron	
					G6	FKM 70 Shore A	-20°C/+200°C		
B4	B	PTFE + 40% Bronze	Dark brown	Used for high-compression dynamic seals and has a low level of wear	K6	NBR 70 Shore A	-30°C/+100°C		
					G6	FKM 70 Shore A	-20°C/+200°C		

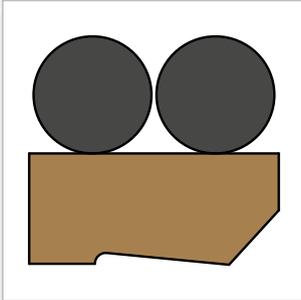
Other grades of materials are available depending on your specificities.

DIMENSIONS

Part number	Rod diameter Ød1 f8/h9	Groove diameter ØD1 H9	Groove diameter ØD2 H11	Groove width L1 0/+0.20	Shoulder width L2 min
482.004	4.00	8.80	5.50	3.70	2.00
482.005	5.00	9.80	6.50	3.70	2.00
482.006	6.00	10.80	7.50	3.70	2.00
482.008	8.00	12.80	9.50	3.70	2.00
482.009	9.00	13.80	10.50	3.70	2.00
482.010	10.00	14.80	11.50	3.70	2.00
482.012	12.00	18.80	13.50	5.00	2.00
482.014	14.00	20.80	15.50	5.00	2.00
482.015	15.00	21.80	16.50	5.00	2.00
482.016	16.00	22.80	17.50	5.00	2.00
482.018	18.00	24.80	19.50	5.00	2.00
482.020	20.00	26.80	21.50	5.00	2.00
482.022	22.00	28.80	23.50	5.00	2.00
482.025	25.00	31.80	26.50	5.00	2.00
482.028	28.00	34.80	29.50	5.00	2.00
482.030	30.00	36.80	31.50	5.00	2.00
482.032	32.00	38.80	33.50	5.00	2.00
482.035	35.00	41.80	36.50	5.00	2.00
482.036	36.00	42.80	37.50	5.00	2.00
482.037	37.00	43.80	38.50	5.00	2.00
482.038	38.00	44.80	39.50	5.00	2.00
482.040	40.00	46.80	41.50	5.00	2.00
482.042	42.00	48.80	43.50	5.00	2.00
482.045	45.00	51.80	46.50	5.00	2.00
482.048	48.00	54.80	49.50	5.00	2.00
482.049	49.00	55.80	50.50	5.00	2.00
482.050	50.00	56.80	51.50	5.00	2.00
482.052	52.00	58.80	53.50	5.00	2.00
482.054	54.00	60.80	55.50	5.00	2.00
482.055	55.00	61.80	56.50	5.00	2.00
482.056	56.00	62.80	57.50	5.00	2.00
482.058	58.00	64.80	59.50	5.00	2.00
482.060	60.00	66.80	61.50	5.00	2.00
482.062	62.00	68.80	63.50	5.00	2.00
482.063	63.00	69.80	64.50	5.00	2.00
482.065	65.00	73.80	66.50	6.00	3.00
482.068	68.00	76.80	69.50	6.00	3.00
482.070	70.00	78.80	71.50	6.00	3.00
482.075	75.00	83.80	76.50	6.00	3.00
482.080	80.00	88.80	81.50	6.00	3.00
482.085	85.00	93.80	86.50	6.00	3.00
482.090	90.00	98.80	91.50	6.00	3.00
482.095	95.00	103.80	96.50	6.00	3.00
482.100	100.00	108.80	101.50	6.00	3.00

Part number	Rod diameter Ød1 f8/h9	Groove diameter ØD1 H9	Groove diameter ØD2 H11	Groove width L1 0/+0.20	Shoulder width L2 min
482.105	105.00	113.80	106.50	6.00	3.00
482.110	110.00	118.80	111.50	6.00	3.00
482.115	115.00	123.80	116.50	6.00	3.00
482.120	120.00	128.80	121.50	6.00	3.00
482.125	125.00	133.80	126.50	6.00	3.00
482.130	130.00	138.80	131.50	6.00	3.00
482.135	135.00	143.80	136.50	6.00	3.00
482.140	140.00	148.80	141.50	6.00	3.00
482.145	145.00	153.80	146.50	6.00	3.00
482.150	150.00	158.80	151.50	6.00	3.00
482.155	155.00	163.80	156.50	6.00	3.00
482.160	160.00	168.80	161.50	6.00	3.00
482.165	165.00	173.80	166.50	6.00	3.00
482.170	170.00	178.80	171.50	6.00	3.00
482.175	175.00	183.80	176.50	6.00	3.00
482.180	180.00	188.80	181.50	6.00	3.00
482.185	185.00	193.80	186.50	6.00	3.00
482.190	190.00	198.80	191.50	6.00	3.00
482.195	195.00	203.80	196.50	6.00	3.00
482.200	200.00	208.80	201.50	6.00	3.00
482.205	205.00	213.80	206.50	6.00	3.00
482.210	210.00	218.80	211.50	6.00	3.00
482.215	215.00	223.80	216.50	6.00	3.00
482.220	220.00	228.80	221.50	6.00	3.00
482.230	230.00	238.80	231.50	6.00	3.00
482.240	240.00	248.80	241.50	6.00	3.00
482.250	250.00	258.80	251.50	6.00	3.00
482.260	260.00	272.20	262.00	8.40	4.00
482.270	270.00	282.20	272.00	8.40	4.00
482.280	280.00	292.20	282.00	8.40	4.00
482.290	290.00	302.20	292.00	8.40	4.00
482.300	300.00	312.20	302.00	8.40	4.00
482.310	310.00	322.20	312.00	8.40	4.00
482.320	320.00	332.20	322.00	8.40	4.00
482.330	330.00	342.20	332.00	8.40	4.00
482.340	340.00	352.20	342.00	8.40	4.00
482.350	350.00	362.20	352.00	8.40	4.00
482.360	360.00	372.20	362.00	8.40	4.00
482.370	370.00	382.20	372.00	8.40	4.00
482.380	380.00	392.20	382.00	8.40	4.00
482.390	390.00	402.20	392.00	8.40	4.00
482.400	400.00	412.20	402.00	8.40	4.00
482.450	450.00	466.00	452.00	11.00	4.00
482.500	500.00	516.00	502.00	11.00	4.00

The figures highlighted in bold correspond to the dimensions for standard ISO 6195 Type D, with the rod diameters in line with standard ISO 3320. Other intermediate sizes can be provided.



WIPER SEALS

BECA 483



DESCRIPTION

The BECA 483 profile is a double acting composite wiper seal composed of a filled PTFE friction ring and two pre-tightened rubber O'Rings.

ADVANTAGES

Low friction coefficient;
no stick-slip effect

Wide temperature range and excellent chemical resistance, depending on the materials selected

Excellent abrasion and wear resistance

Very good wiping effect against external pollutions

APPLICATIONS

Agro-food

Machine tools

Hydraulic cylinders

Fluid technologies

MATERIALS

Friction ring

Bronze-filled PTFE

Glass-filled PTFE

O'Rings

NBR 70 Shore A

FKM 70 Shore A

Other grades of materials are available. Please refer to the materials table on the next page.

TECHNICAL DATA

Temperature	-30°C / +200°C
Speed	5 m/s
Media	Mineral hydraulic oils Fire-resistant liquids Biocompatible fluids Water Others (contact our experts)

The figures above indicate the maximum values and may not be cumulated. They may be developed, depending on the materials used.

SURFACE ROUGHNESS

Roughness	Dynamic surface area	Static surface area	Groove flanks
Ra	0.05 - 0.2 µm	≤1.6 µm	≤3.2 µm
Rz	0.4 - 1.6 µm	≤6.3 µm	≤10.0 µm
Rmax	0.63 - 2.5 µm	≤10.0 µm	≤16.0 µm

RADIUS

Radial section S	Radius R1	Radius R2
3.80	0.30	0.40
4.40	0.30	1.00
6.10	0.30	1.20
8.00	0.30	2.00
12.00	0.30	2.50
13.65	0.30	2.50

CHAMFER

The chamfer length as well as the chamfer angle are determined by the rod seal.

TABLE MATERIALS

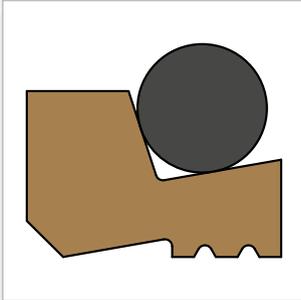
Friction ring					O'Rings			Mating surface material	
Standard code	ISO code	Material	Colour	Characteristics	Code	Type of material	Service temperature		
DP	P	Virgin PTFE	White	Resistance to chemical products Impermeability Dielectric Non-stick Low friction coefficient Food industry	K6	NBR 70 Shore A	-30°C/+100°C	Steel Stainless steel Chrome steel Aluminium Bronze Cast iron Treated surface	
					G6	FKM 70 Shore A	-20°C/+200°C		
					C6	EPDM 70 Shore A	-45°C/+150°C		
					F6	VMQ 70 Shore A	-60°C/+200°C		
DC	C	PTFE + 25% Carbon	Grey	Improvements • Wear properties • Compression set Good resistance to chemical products Thermal and electrical conductivity Anti-static High-performing in compression-based dynamic applications	K6	NBR 70 Shore A	-30°C/+100°C		
					G6	FKM 70 Shore A	-20°C/+200°C		
					C6	EPDM 70 Shore A	-45°C/+150°C		
CG	C	PTFE + 23% Carbon + 2% Graphite	Black	Thermal and electrical conductivity Anti-static High-performing in compression-based dynamic applications	K6	NBR 70 Shore A	-30°C/+100°C		
					G6	FKM 70 Shore A	-20°C/+200°C		
					C6	EPDM 70 Shore A	-45°C/+150°C		
DV	V	PTFE + 25 % Glass	Blue	Improvements • Wear properties • Mechanical strength Slightly more abrasive, however, this is corrected by adding MOS2 Maintains its chemical and dielectric properties Well-suited to applications with rotational and simultaneous alternating movements	K6	NBR 70 Shore A	-30°C/+100°C		Steel Chrome steel Cast iron
					G6	FKM 70 Shore A	-20°C/+200°C		
VM	M	PTFE + 15 % Glass + 5% MOS2	Grey	Well-suited to applications with rotational and simultaneous alternating movements	K6	NBR 70 Shore A	-30°C/+100°C		
					G6	FKM 70 Shore A	-20°C/+200°C		
DX	X	PTFE GL Blue + Glass + Metal oxides	Turquoise blue	Resistance to compression Resistance to wear Excellent chemical stability Good thermal conductivity	K6	NBR 70 Shore A	-30°C/+100°C		
					G6	FKM 70 Shore A	-20°C/+200°C		
DG	G	PTFE + 15% Graphite	Black	Improvements • Wear properties Reduced wear on metal parts Self-lubricating Thermal and electrical conductivity Low permeability Good friction coefficient Anti-static High performing in dynamic self-lubricating applications	K6	NBR 70 Shore A	-30°C/+100°C	Steel Stainless steel Chrome steel Aluminium Bronze Cast iron Treated surface	
					G6	FKM 70 Shore A	-20°C/+200°C		
					C6	EPDM 70 Shore A	-45°C/+150°C		
K1	K	PTFE + 10% Ekonol	Light brown	Improvements • Better abrasion resistance • Better dimensional stability at high temperatures Use up to +300°C Good friction coefficient and low permeability	K6	NBR 70 Shore A	-30°C/+100°C		
					G6	FKM 70 Shore A	-20°C/+200°C		
					C6	EPDM 70 Shore A	-45°C/+150°C		
K2	K	PTFE + 20% Ekonol	Light brown	Use up to +300°C Good friction coefficient and low permeability	K6	NBR 70 Shore A	-30°C/+100°C		
					G6	FKM 70 Shore A	-20°C/+200°C		
					C6	EPDM 70 Shore A	-45°C/+150°C		
DB	B	PTFE + 60% Bronze	Dark brown	Improvements • Wear properties • Warping resistance and creep strength • Compression resistance Self-lubricating Electrical and thermal conductivity Does not alter the metal parts Reduced hold with certain chemical products Used for high-compression dynamic seals and has a low level of wear	K6	NBR 70 Shore A	-30°C/+100°C	Steel Chrome steel Cast iron	
					G6	FKM 70 Shore A	-20°C/+200°C		
B4	B	PTFE + 40% Bronze	Dark brown	Used for high-compression dynamic seals and has a low level of wear	K6	NBR 70 Shore A	-30°C/+100°C		
					G6	FKM 70 Shore A	-20°C/+200°C		

Other grades of materials are available depending on your specificities.

DIMENSIONS

Part number	Rod diameter Ød1 f8/h9	Groove diameter ØD1 H9	Bore diameter ØD2 H11	Groove width L1 0/+0.20	Dimensions O'Ring
483.019	19.00	26.60	20.00	4.20	23.52 x 1.78
483.020	20.00	27.60	21.00	4.20	23.52 x 1.78
483.025	25.00	32.60	26.00	4.20	29.87 x 1.78
483.028	28.00	35.60	29.00	4.20	33.05 x 1.78
483.030	30.00	37.60	31.00	4.20	34.65 x 1.78
483.032	32.00	39.60	33.00	4.20	36.27 x 1.78
483.035	35.00	42.60	36.00	4.20	39.45 x 1.78
483.036	36.00	43.60	37.00	4.20	41.00 x 1.78
483.038	38.00	45.60	39.00	4.20	41.00 x 1.78
483.040	40.00	48.80	41.50	6.30	44.12 x 2.62
483.042	42.00	50.80	43.50	6.30	45.69 x 2.62
483.045	45.00	53.80	46.50	6.30	48.90 x 2.62
483.050	50.00	58.80	51.50	6.30	53.64 x 2.62
483.055	55.00	63.80	56.50	6.30	58.42 x 2.62
483.056	56.00	64.80	57.50	6.30	59.99 x 2.62
483.060	60.00	68.80	61.50	6.30	63.17 x 2.62
483.063	63.00	71.80	64.50	6.30	66.34 x 2.62
483.065	65.00	73.80	66.50	6.30	67.95 x 2.62
483.070	70.00	82.20	72.00	8.10	75.79 x 3.53
483.075	75.00	87.20	77.00	8.10	78.97 x 3.53
483.080	80.00	92.20	82.00	8.10	85.32 x 3.53
483.085	85.00	97.20	87.00	8.10	88.49 x 3.53
483.090	90.00	102.20	92.00	8.10	94.84 x 3.53
483.095	95.00	107.20	97.00	8.10	101.19 x 3.53
483.100	100.00	112.20	102.00	8.10	104.37 x 3.53
483.105	105.00	117.20	107.00	8.10	110.72 x 3.53
483.110	110.00	122.20	112.00	8.10	113.89 x 3.53
483.115	115.00	127.20	117.00	8.10	120.24 x 3.53
483.120	120.00	132.20	122.00	8.10	123.42 x 3.53
483.125	125.00	137.20	127.00	8.10	129.77 x 3.53
483.130	130.00	142.20	132.00	8.10	136.12 x 3.53
483.135	135.00	147.20	137.00	8.10	139.29 x 3.53
483.140	140.00	156.00	142.00	11.50	145.42 x 5.33
483.145	145.00	161.00	147.00	11.50	148.49 x 5.33
483.150	150.00	166.00	152.00	11.50	155.00 x 5.30
483.155	155.00	171.00	157.00	11.50	158.12 x 5.33
483.160	160.00	176.00	162.00	11.50	164.47 x 5.33
483.165	165.00	181.00	167.00	11.50	170.82 x 5.33
483.170	170.00	186.00	172.00	11.50	175.00 x 5.30
483.175	175.00	191.00	177.00	11.50	180.00 x 5.30
483.180	180.00	196.00	182.00	11.50	183.52 x 5.33
483.185	185.00	201.00	187.00	11.50	189.87 x 5.33
483.190	190.00	206.00	192.00	11.50	196.22 x 5.33
483.195	195.00	211.00	197.00	11.50	196.22 x 5.33
483.200	200.00	216.00	202.00	11.50	202.57 x 5.33
483.210	210.00	226.00	212.00	11.50	215.27 x 5.33
483.220	220.00	236.00	222.00	11.50	227.97 x 5.33
483.230	230.00	246.00	232.00	11.50	234.32 x 5.33
483.240	240.00	256.00	242.00	11.50	247.02 x 5.33
483.250	250.00	266.00	252.00	11.50	253.37 x 5.33
483.260	260.00	276.00	262.00	11.50	266.07 x 5.33
483.270	270.00	286.00	272.00	11.50	278.77 x 5.33
483.280	280.00	296.00	282.00	11.50	290.00 x 5.30
483.290	290.00	306.00	292.00	11.50	291.47 x 5.33
483.300	300.00	316.00	302.00	11.50	304.17 x 5.33
483.310	310.00	326.00	312.00	11.50	315.00 x 5.30
483.320	320.00	336.00	322.00	11.50	329.57 x 5.33
483.330	330.00	346.00	332.00	11.50	329.57 x 5.33
483.340	340.00	356.00	342.00	11.50	345.00 x 5.30
483.350	350.00	366.00	352.00	11.50	354.97 x 5.33
483.360	360.00	376.00	362.00	11.50	365.00 x 5.30
483.370	370.00	386.00	372.00	11.50	365.00 x 5.30
483.380	380.00	396.00	382.00	11.50	387.00 x 5.30
483.390	390.00	406.00	392.00	11.50	380.37 x 5.33
483.400	400.00	424.00	402.50	15.50	412.00 x 7.00
483.420	420.00	444.00	422.50	15.50	430.66 x 7.00
483.440	440.00	464.00	442.50	15.50	450.00 x 7.00
483.460	460.00	484.00	462.50	15.50	468.76 x 7.00
483.480	480.00	504.00	482.50	15.50	494.16 x 7.00
483.500	500.00	524.00	502.50	15.50	506.86 x 7.00

The figures highlighted in bold correspond to the dimensions for standard ISO 6195 Type D, with the rod diameters in line with standard ISO 3320. Other intermediate sizes can be provided.



WIPER SEALS

BECA 485



DESCRIPTION

The BECA 485 profile is a double acting composite wiper seal composed of a filled PTFE friction ring and a pre-tightened rubber O'Ring.

ADVANTAGES

Low friction coefficient;
no stick-slip effect

Wide temperature range and excellent chemical resistance, depending on the materials selected

Excellent abrasion and wear resistance

Very good wiping effect against external pollutions

APPLICATIONS

Agro-food

Machine tools

Hydraulic cylinders

Fluid technologies

MATERIALS

Friction ring

Bronze-filled PTFE

Carbon-filled PTFE

Blue GL PTFE

O'Ring

NBR 70 Shore A

FKM 70 Shore A

Other grades of materials are available. Please refer to the materials table on the next page.

TECHNICAL DATA

Temperature	-30°C / +200°C
Speed	5 m/s
Media	Mineral hydraulic oils Fire-resistant liquids Biocompatible fluids Water Others (contact our experts)

The figures above indicate the maximum values and may not be cumulated. They may be developed, depending on the materials used.

SURFACE ROUGHNESS

Roughness	Dynamic surface area	Static surface area	Groove flanks
Ra	0.05 - 0.2 µm	≤1.6 µm	≤3.2 µm
Rz	0.4 - 1.6 µm	≤6.3 µm	≤10.0 µm
Rmax	0.63 - 2.5 µm	≤10.0 µm	≤16.0 µm

RADIUS

Radial section S	Radius R1	Radius R2
3.80	0.20	0.80
4.40	0.20	0.80
6.10	0.20	1.00
8.00	0.20	1.50
12.00	0.20	1.50
13.65	0.20	2.00

CHAMFER

The chamfer length as well as the chamfer angle are determined by the rod seal.

TABLE MATERIALS

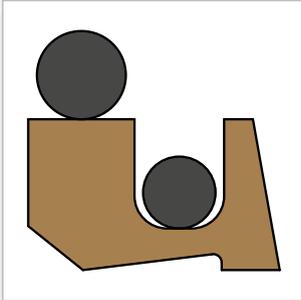
Friction ring					O'Ring			Mating surface material	
Standard code	ISO code	Material	Colour	Characteristics	Code	Type of material	Service temperature		
DP	P	Virgin PTFE	White	Resistance to chemical products Impermeability Dielectric Non-stick Low friction coefficient Food industry	K6	NBR 70 Shore A	-30°C/+100°C	Steel Stainless steel Chrome steel Aluminium Bronze Cast iron Treated surface	
					G6	FKM 70 Shore A	-20°C/+200°C		
					C6	EPDM 70 Shore A	-45°C/+150°C		
					F6	VMQ 70 Shore A	-60°C/+200°C		
DC	C	PTFE + 25% Carbon	Grey	Improvements • Wear properties • Compression set Good resistance to chemical products Thermal and electrical conductivity Anti-static High-performing in compression-based dynamic applications	K6	NBR 70 Shore A	-30°C/+100°C		
					G6	FKM 70 Shore A	-20°C/+200°C		
					C6	EPDM 70 Shore A	-45°C/+150°C		
CG	C	PTFE + 23% Carbon + 2% Graphite	Black	Thermal and electrical conductivity Anti-static High-performing in compression-based dynamic applications	K6	NBR 70 Shore A	-30°C/+100°C		
					G6	FKM 70 Shore A	-20°C/+200°C		
					C6	EPDM 70 Shore A	-45°C/+150°C		
DV	V	PTFE + 25 % Glass	Blue	Improvements • Wear properties • Mechanical strength Slightly more abrasive, however, this is corrected by adding MOS2 Maintains its chemical and dielectric properties Well-suited to applications with rotational and simultaneous alternating movements	K6	NBR 70 Shore A	-30°C/+100°C		Steel Chrome steel Cast iron
					G6	FKM 70 Shore A	-20°C/+200°C		
VM	M	PTFE + 15 % Glass + 5% MOS2	Grey	Well-suited to applications with rotational and simultaneous alternating movements	K6	NBR 70 Shore A	-30°C/+100°C		
					G6	FKM 70 Shore A	-20°C/+200°C		
DX	X	PTFE GL Blue + Glass + Metal oxides	Turquoise blue	Resistance to compression Resistance to wear Excellent chemical stability Good thermal conductivity	K6	NBR 70 Shore A	-30°C/+100°C		
					G6	FKM 70 Shore A	-20°C/+200°C		
DG	G	PTFE + 15% Graphite	Black	Improvements • Wear properties Reduced wear on metal parts Self-lubricating Thermal and electrical conductivity Low permeability Good friction coefficient Anti-static High performing in dynamic self-lubricating applications	K6	NBR 70 Shore A	-30°C/+100°C	Steel Stainless steel Chrome steel Aluminium Bronze Cast iron Treated surface	
					G6	FKM 70 Shore A	-20°C/+200°C		
					C6	EPDM 70 Shore A	-45°C/+150°C		
K1	K	PTFE + 10% Ekonol	Light brown	Improvements • Better abrasion resistance • Better dimensional stability at high temperatures Use up to +300°C Good friction coefficient and low permeability	K6	NBR 70 Shore A	-30°C/+100°C		
					G6	FKM 70 Shore A	-20°C/+200°C		
					C6	EPDM 70 Shore A	-45°C/+150°C		
K2	K	PTFE + 20% Ekonol	Light brown	Use up to +300°C Good friction coefficient and low permeability	K6	NBR 70 Shore A	-30°C/+100°C		
					G6	FKM 70 Shore A	-20°C/+200°C		
					C6	EPDM 70 Shore A	-45°C/+150°C		
DB	B	PTFE + 60% Bronze	Dark brown	Improvements • Wear properties • Warping resistance and creep strength • Compression resistance Self-lubricating Electrical and thermal conductivity Does not alter the metal parts Reduced hold with certain chemical products Used for high-compression dynamic seals and has a low level of wear	K6	NBR 70 Shore A	-30°C/+100°C	Steel Chrome steel Cast iron	
					G6	FKM 70 Shore A	-20°C/+200°C		
B4	B	PTFE + 40% Bronze	Dark brown	Used for high-compression dynamic seals and has a low level of wear	K6	NBR 70 Shore A	-30°C/+100°C		
					G6	FKM 70 Shore A	-20°C/+200°C		

Other grades of materials are available depending on your specificities.

DIMENSIONS

Part number	Rod diameter Ød1 f8/h9	Groove diameter ØD1 H9	Groove diameter ØD2 H11	Groove width L1 0/+0.20	Shoulder width L2 min
485.019	19.00	26.60	20.50	4.20	3.00
485.020	20.00	27.60	21.50	4.20	3.00
485.022	22.00	29.60	23.50	4.20	3.00
485.025	25.00	32.60	26.50	4.20	3.00
485.028	28.00	35.60	29.50	4.20	3.00
485.030	30.00	37.60	31.50	4.20	3.00
485.032	32.00	39.60	33.50	4.20	3.00
485.035	35.00	42.60	36.50	4.20	3.00
485.036	36.00	43.60	37.50	4.20	3.00
485.037	37.00	44.60	38.50	4.20	3.00
485.038	38.00	45.60	39.50	4.20	3.00
485.040	40.00	48.80	41.50	6.30	3.00
485.042	42.00	50.80	43.50	6.30	3.00
485.045	45.00	53.80	46.50	6.30	3.00
485.048	48.00	56.80	49.50	6.30	3.00
485.049	49.00	57.80	50.50	6.30	3.00
485.050	50.00	58.80	51.50	6.30	3.00
485.052	52.00	60.80	53.50	6.30	3.00
485.054	54.00	62.80	55.50	6.30	3.00
485.055	55.00	63.80	56.50	6.30	3.00
485.056	56.00	64.80	57.50	6.30	3.00
485.058	58.00	66.80	59.50	6.30	3.00
485.060	60.00	68.80	61.50	6.30	3.00
485.062	62.00	70.80	63.50	6.30	3.00
485.063	63.00	71.80	64.50	6.30	3.00
485.065	65.00	73.80	66.50	6.30	3.00
485.068	68.00	76.80	69.50	6.30	3.00
485.070	70.00	82.20	72.00	8.10	4.00
485.075	75.00	87.20	77.00	8.10	4.00
485.080	80.00	92.20	82.00	8.10	4.00
485.085	85.00	97.20	87.00	8.10	4.00
485.090	90.00	102.20	92.00	8.10	4.00
485.095	95.00	107.20	97.00	8.10	4.00
485.100	100.00	112.20	102.00	8.10	4.00
485.105	105.00	117.20	107.00	8.10	4.00
485.110	110.00	122.20	112.00	8.10	4.00
485.115	115.00	127.20	117.00	8.10	4.00
485.120	120.00	132.20	122.00	8.10	4.00
485.125	125.00	137.20	127.00	8.10	4.00
485.130	130.00	142.20	132.00	8.10	4.00
485.135	135.00	147.20	137.00	8.10	4.00
485.140	140.00	156.00	142.50	9.50	5.00
485.145	145.00	161.00	147.50	9.50	5.00
485.150	150.00	166.00	152.50	9.50	5.00
485.155	155.00	171.00	157.50	9.50	5.00
485.160	160.00	176.00	162.50	9.50	5.00
485.165	165.00	181.00	167.50	9.50	5.00
485.170	170.00	186.00	172.50	9.50	5.00
485.175	175.00	191.00	177.50	9.50	5.00
485.180	180.00	196.00	182.50	9.50	5.00
485.185	185.00	201.00	187.50	9.50	5.00
485.190	190.00	206.00	192.50	9.50	5.00
485.195	195.00	211.00	197.50	9.50	5.00
485.200	200.00	216.00	202.50	9.50	5.00
485.205	205.00	221.00	207.50	9.50	5.00
485.210	210.00	226.00	212.50	9.50	5.00
485.215	215.00	231.00	217.50	9.50	5.00
485.220	220.00	236.00	222.50	9.50	5.00
485.230	230.00	246.00	232.50	9.50	5.00
485.240	240.00	256.00	242.50	9.50	5.00
485.250	250.00	266.00	252.50	9.50	5.00
485.260	260.00	276.00	262.50	9.50	5.00
485.270	270.00	286.00	272.50	9.50	5.00
485.280	280.00	296.00	282.50	9.50	5.00
485.290	290.00	306.00	292.50	9.50	5.00
485.300	300.00	316.00	302.50	9.50	5.00
485.310	310.00	326.00	312.50	9.50	5.00
485.320	320.00	336.00	322.50	9.50	5.00
485.330	330.00	346.00	332.50	9.50	5.00
485.340	340.00	356.00	342.50	9.50	5.00
485.350	350.00	366.00	352.50	9.50	5.00
485.360	360.00	376.00	362.50	9.50	5.00
485.370	370.00	386.00	372.50	9.50	5.00
485.380	380.00	396.00	382.50	9.50	5.00
485.390	390.00	406.00	392.50	9.50	5.00
485.400	400.00	424.00	402.50	14.00	8.00
485.450	450.00	474.00	452.50	14.00	8.00
485.500	500.00	524.00	502.50	14.00	8.00

The figures highlighted in bold correspond to the dimensions for standard ISO 6195 Type D, with the rod diameters in line with standard ISO 3320. Other intermediate sizes can be provided.



WIPER SEALS

BECA 486



DESCRIPTION

The BECA 486 profile is a double acting composite wiper seal composed of a filled PTFE friction ring and two pre-tightened rubber O'Rings.

ADVANTAGES

Low friction coefficient;
no stick-slip effect

Wide temperature range and excellent chemical resistance, depending on the materials selected

Excellent abrasion and wear resistance

Very good wiping effect against external pollutions

Suitable for large dimensions

APPLICATIONS

Steelworks

Offshore

Mine

Hydraulic presses

Water treatment

MATERIALS

Friction ring

Bronze-filled PTFE

Carbon-filled PTFE

O'Rings

NBR 70 Shore A

FKM 70 Shore A

Other grades of materials are available. Please refer to the materials table on the next page.

TECHNICAL DATA

Temperature	-30°C / +200°C
Speed	5 m/s
Media	Mineral hydraulic oils Fire-resistant liquids Biocompatible fluids Water Others (contact our experts)

The figures above indicate the maximum values and may not be cumulated. They may be developed, depending on the materials used.

SURFACE ROUGHNESS

Roughness	Dynamic surface area	Static surface area	Groove flanks
Ra	0.05 - 0.2 µm	≤1.6 µm	≤3.2 µm
Rz	0.4 - 1.6 µm	≤6.3 µm	≤10.0 µm
Rmax	0.63 - 2.5 µm	≤10.0 µm	≤16.0 µm

RADIUS

Radial section S	Radius R1	Radius R2
11.10	0.30	1.20
12.10	0.30	1.20
16.50	0.30	1.20
18.25	0.30	2.00

CHAMFER

The chamfer length as well as the chamfer angle are determined by the rod seal.

DETERMINATION OF O-RING INSIDE DIAMETERS

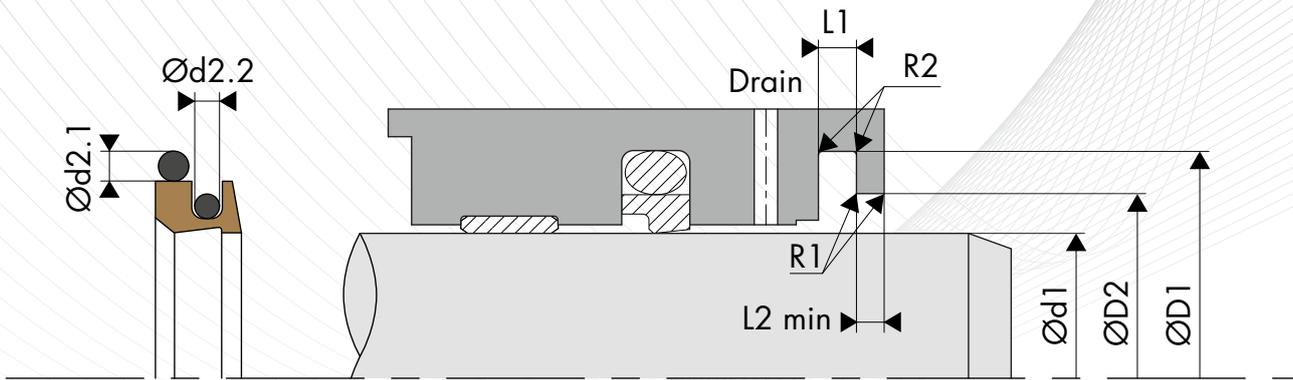
Radial section S	Ød1 O'Rings	
	Ød1.1	Ød1.2
11.10	Ød1 + 12.00	Ød1 + 5.00
12.10	Ød1 + 14.00	Ød1 + 5.00
16.50	Ød1 + 20.00	Ød1 + 6.00
18.25	Ød1 + 21.00	Ød1 + 6.00

We recommend consulting the dimensions in standard ISO 3601-1 that are closest to the value calculated.

TABLE MATERIALS

Friction ring					O'Rings			Mating surface material	
Standard code	ISO code	Material	Colour	Characteristics	Code	Type of material	Service temperature		
DP	P	Virgin PTFE	White	Resistance to chemical products Impermeability Dielectric Non-stick Low friction coefficient Food industry	K6	NBR 70 Shore A	-30°C/+100°C	Steel Stainless steel Chrome steel Aluminium Bronze Cast iron Treated surface	
					G6	FKM 70 Shore A	-20°C/+200°C		
					C6	EPDM 70 Shore A	-45°C/+150°C		
					F6	VMQ 70 Shore A	-60°C/+200°C		
DC	C	PTFE + 25% Carbon	Grey	Improvements • Wear properties • Compression set Good resistance to chemical products Thermal and electrical conductivity Anti-static High-performing in compression-based dynamic applications	K6	NBR 70 Shore A	-30°C/+100°C		
					G6	FKM 70 Shore A	-20°C/+200°C		
					C6	EPDM 70 Shore A	-45°C/+150°C		
CG	C	PTFE + 23% Carbon + 2% Graphite	Black	Thermal and electrical conductivity Anti-static High-performing in compression-based dynamic applications	K6	NBR 70 Shore A	-30°C/+100°C		
					G6	FKM 70 Shore A	-20°C/+200°C		
					C6	EPDM 70 Shore A	-45°C/+150°C		
DV	V	PTFE + 25 % Glass	Blue	Improvements • Wear properties • Mechanical strength Slightly more abrasive, however, this is corrected by adding MOS2 Maintains its chemical and dielectric properties Well-suited to applications with rotational and simultaneous alternating movements	K6	NBR 70 Shore A	-30°C/+100°C		Steel Chrome steel Cast iron
					G6	FKM 70 Shore A	-20°C/+200°C		
VM	M	PTFE + 15 % Glass + 5% MOS2	Grey	Well-suited to applications with rotational and simultaneous alternating movements	K6	NBR 70 Shore A	-30°C/+100°C		
					G6	FKM 70 Shore A	-20°C/+200°C		
DX	X	PTFE GL Blue + Glass + Metal oxides	Turquoise blue	Resistance to compression Resistance to wear Excellent chemical stability Good thermal conductivity	K6	NBR 70 Shore A	-30°C/+100°C		
					G6	FKM 70 Shore A	-20°C/+200°C		
DG	G	PTFE + 15% Graphite	Black	Improvements • Wear properties Reduced wear on metal parts Self-lubricating Thermal and electrical conductivity Low permeability Good friction coefficient Anti-static High performing in dynamic self-lubricating applications	K6	NBR 70 Shore A	-30°C/+100°C	Steel Stainless steel Chrome steel Aluminium Bronze Cast iron Treated surface	
					G6	FKM 70 Shore A	-20°C/+200°C		
					C6	EPDM 70 Shore A	-45°C/+150°C		
K1	K	PTFE + 10% Ekonol	Light brown	Improvements • Better abrasion resistance • Better dimensional stability at high temperatures Use up to +300°C Good friction coefficient and low permeability	K6	NBR 70 Shore A	-30°C/+100°C		
					G6	FKM 70 Shore A	-20°C/+200°C		
					C6	EPDM 70 Shore A	-45°C/+150°C		
K2	K	PTFE + 20% Ekonol	Light brown	Use up to +300°C Good friction coefficient and low permeability	K6	NBR 70 Shore A	-30°C/+100°C		
					G6	FKM 70 Shore A	-20°C/+200°C		
					C6	EPDM 70 Shore A	-45°C/+150°C		
DB	B	PTFE + 60% Bronze	Dark brown	Improvements • Wear properties • Warping resistance and creep strength • Compression resistance Self-lubricating Electrical and thermal conductivity Does not alter the metal parts Reduced hold with certain chemical products Used for high-compression dynamic seals and has a low level of wear	K6	NBR 70 Shore A	-30°C/+100°C	Steel Chrome steel Cast iron	
					G6	FKM 70 Shore A	-20°C/+200°C		
B4	B	PTFE + 40% Bronze	Dark brown	Used for high-compression dynamic seals and has a low level of wear	K6	NBR 70 Shore A	-30°C/+100°C		
					G6	FKM 70 Shore A	-20°C/+200°C		

Other grades of materials are available depending on your specificities.



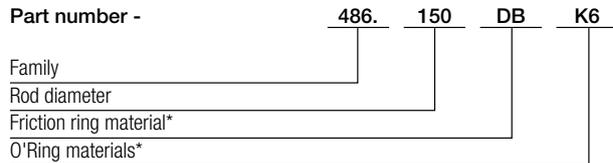
○ INSTALLATION DIMENSIONS

Rod diameter Ød1 f8/h9		Groove diameter	Bore diameter	Groove width	Step width	O'Ring cross-section	O'Ring cross-section
Standard range	Extended range	ØD1 H8	ØD2 H8	L1 0/+0.20	L2 +0/-0.10	Ød2.1	Ød2.2
140.0 - 229.9	100.0 - 450.0	d1 + 22.20	d1 + 10.70	6.30	4.20	5.33	3.53
230.0 - 299.9	220.0 - 450.0	d1 + 24.20	d1 + 10.70	6.30	4.20	5.33	3.53
300.0 - 629.9	250.0 - 650.0	d1 + 33.00	d1 + 15.10	8.10	6.30	6.99	5.33
630.0 - 999.9	550.0 - 999.9	d1 + 36.50	d1 + 15.10	9.50	6.30	8.40	5.33

○ EXAMPLE OF CODIFICATION

STANDARD CODIFICATION

Materials _____ : Friction ring, PTFE + 60% Bronze - Code DB
 _____ : NBR 70 Shore A O'Rings - Code K6
Rod diameter _____ : Ød1 = 150.00 mm
Groove diameter _____ : ØD1 = 172.20 mm
Part number _____ : 486.150DBK6



* The codes that define the materials are set out in the materials table on the previous page.

DIMENSIONS

Part number	Rod diameter Ød1 f8/h9	Groove diameter ØD1 H8	Bore diameter ØD2 H8	Seal height H1	Groove width L1 0/+0.20	Shoulder width L2 +0/-0.10	O'Ring Ød1.1 x Ød2.1	O'Ring Ød1.2 x Ød2.2
486.100	100.00	122.20	110.70	13.50	6.30	4.20	110.49 x 5.33	104.37 x 3.53
486.110	110.00	132.20	120.70	13.50	6.30	4.20	123.19 x 5.33	117.07 x 3.53
486.120	120.00	142.20	130.70	13.50	6.30	4.20	132.72 x 5.33	126.59 x 3.53
486.130	130.00	152.20	140.70	13.50	6.30	4.20	142.24 x 5.33	136.12 x 3.53
486.140	140.00	162.20	150.70	13.50	6.30	4.20	151.77 x 5.33	142.47 x 3.53
486.150	150.00	172.20	160.70	13.50	6.30	4.20	164.47 x 5.33	151.99 x 3.53
486.160	160.00	182.20	170.70	13.50	6.30	4.20	170.82 x 5.33	164.69 x 3.53
486.170	170.00	192.20	180.70	13.50	6.30	4.20	183.52 x 5.33	171.04 x 3.53
486.180	180.00	202.20	190.70	13.50	6.30	4.20	189.87 x 5.33	183.74 x 3.53
486.190	190.00	212.20	200.70	13.50	6.30	4.20	202.57 x 5.33	190.09 x 3.53
486.200	200.00	222.20	210.70	13.50	6.30	4.20	215.27 x 5.33	202.79 x 3.53
486.210	210.00	232.20	220.70	13.50	6.30	4.20	221.62 x 5.33	215.49 x 3.53
486.220	220.00	242.20	230.70	13.50	6.30	4.20	234.32 x 5.33	221.84 x 3.53
486.230	230.00	254.20	240.70	13.50	6.30	4.20	247.02 x 5.33	234.54 x 3.53
486.240	240.00	264.20	250.70	13.50	6.30	4.20	253.37 x 5.33	247.24 x 3.53
486.250	250.00	274.20	260.70	13.50	6.30	4.20	266.07 x 5.33	253.59 x 3.53
486.260	260.00	284.20	270.70	13.50	6.30	4.20	278.77 x 5.33	266.29 x 3.53
486.270	270.00	294.20	280.70	13.50	6.30	4.20	278.77 x 5.33	278.99 x 3.53
486.280	280.00	304.20	290.70	13.50	6.30	4.20	291.47 x 5.33	291.69 x 3.53
486.290	290.00	314.20	300.70	13.50	6.30	4.20	304.17 x 5.33	291.69 x 3.53
486.300	300.00	333.00	315.10	18.40	8.10	6.30	316.87 x 6.99	304.17 x 5.33
486.310	310.00	343.00	325.10	18.40	8.10	6.30	329.57 x 6.99	304.17 x 5.33
486.320	320.00	353.00	335.10	18.40	8.10	6.30	342.47 x 6.99	329.57 x 5.33
486.330	330.00	363.00	345.10	18.40	8.10	6.30	354.97 x 6.99	329.57 x 5.33
486.340	340.00	373.00	355.10	18.40	8.10	6.30	354.97 x 6.99	354.97 x 5.33
486.350	350.00	383.00	365.10	18.40	8.10	6.30	367.67 x 6.99	354.97 x 5.33
486.360	360.00	393.00	375.10	18.40	8.10	6.30	380.37 x 6.99	354.97 x 5.33
486.370	370.00	403.00	385.10	18.40	8.10	6.30	393.07 x 6.99	380.37 x 5.33
486.380	380.00	413.00	395.10	18.40	8.10	6.30	405.26 x 6.99	380.37 x 5.33
486.390	390.00	423.00	405.10	18.40	8.10	6.30	417.96 x 6.99	405.26 x 5.33
486.400	400.00	433.00	415.10	18.40	8.10	6.30	417.96 x 6.99	405.26 x 5.33
486.410	410.00	443.00	425.10	18.40	8.10	6.30	430.66 x 6.99	405.26 x 5.33
486.420	420.00	453.00	435.10	18.40	8.10	6.30	443.36 x 6.99	430.66 x 5.33
486.430	430.00	463.00	445.10	18.40	8.10	6.30	456.06 x 6.99	430.66 x 5.33
486.440	440.00	473.00	455.10	18.40	8.10	6.30	468.76 x 6.99	456.06 x 5.33
486.450	450.00	483.00	465.10	18.40	8.10	6.30	468.76 x 6.99	456.06 x 5.33
486.460	460.00	493.00	475.10	18.40	8.10	6.30	481.46 x 6.99	456.06 x 5.33
486.470	470.00	503.00	485.10	18.40	8.10	6.30	494.16 x 6.99	481.38 x 5.33
486.480	480.00	513.00	495.10	18.40	8.10	6.30	506.86 x 6.99	481.38 x 5.33
486.500	500.00	533.00	515.10	18.40	8.10	6.30	532.26 x 6.99	506.78 x 5.33

The figures highlighted in bold correspond to the rod diameters in line with standard ISO 3320. Other intermediate sizes can be provided.



10. Guiding components

Wear rings and guide strips are used to resist deformation under radial load by guiding the piston and the rod in the system. The effects of metal on metal contact between the different components can lead to complete system deterioration; that's why FRANCE JOINT provides its expertise when developing guiding components using different types of materials.

IMPORTANT

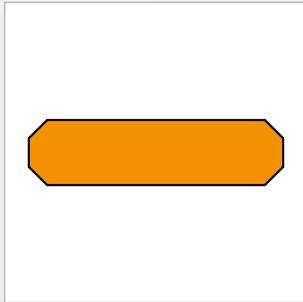
The pressures, speeds and temperatures indicate the maximum values and may not be cumulated. Moreover, they may be developed depending on the materials used.

For specific orders (temperature, pressure, speed, etc.), please contact our technical team so that they can direct you towards the appropriate choice of material and seal profile.

The dimensions shown in the catalogue are usually in stock and can be sent quickly. However, we reserve the right to modify our delivery schedule. Please contact our sales team to find out our availabilities.

Contents

	BECA 005 Piston Materials: Phenolic PF Temperature: -40°C / +130°C Speed: 1 m/s	P. 276		BECA 007 Piston Materials: POM Temperature: -50°C / +115°C Speed: 1 m/s	P. 292
	BECA 005 Rod Materials: Phenolic PF Temperature: -40°C / +130°C Speed: 1 m/s	P. 280		BECA 007 Rod Materials: POM Temperature: -50°C / +115°C Speed: 1 m/s	P. 296
	BECA 006 Piston Materials: PTFE / UHMW Temperature: PTFE: -60°C / +150°C UHMW: -60°C / +80°C Speed: PTFE: 15 m/s UHMW: 2 m/s	P. 284		BECA 006/B Materials: PTFE Temperature: -60°C / +150°C Speed: 15 m/s	P. 300
	BECA 006 Rod Materials: PTFE / UHMW Temperature: PTFE: -60°C / +150°C UHMW: -60°C / +80°C Speed: PTFE: 15 m/s UHMW: 2 m/s	P. 288			



WEAR RINGS

BECA 005 Piston



DESCRIPTION

The BECA 005 profile is a machined guide ring with a 30° angle cut as standard in a tubular material composed of a cotton weave with a superfine mesh, imbued with phenolic resin with added lubricant. Other types of cuts can be made.

ADVANTAGES

- Good dimensional stability
- Good vibration absorption
- Good friction characteristics
- Good dry operation
- Increased life span

APPLICATIONS

- Hydraulic cylinders
- Hydraulic excavators
- Mobile machinery
- Construction equipment
- Presses

MATERIALS

Phenolic resin PF

Other grades of materials are available.
Please contact our experts.

TECHNICAL DATA

Temperature	-40°C / +130°C
Speed	1 m/s
Max. compression resistance	270 to 340 N/mm ²
Radial loads in dynamic applications	max. 100 N/mm ² at 25°C max. 50 N/mm ² > at 60°C

The figures above indicate the maximum values and may not be cumulated. They may be developed, depending on the materials used.

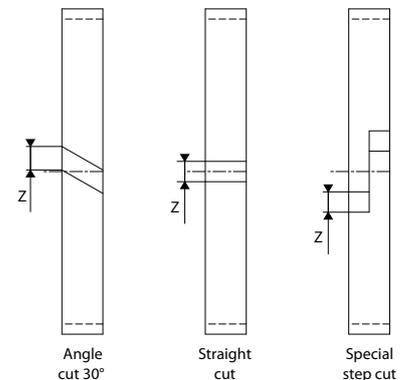
WEAR RING HEIGHT DIMENSIONING

$$H = (F \times f) / (\varnothing D1 \times Cr)$$

where:

H = Min. height of guide (mm)
 F = Max. radial force (N)
 f = Safety coefficient (we recommend 2)
 ØD1 = Bore diameter (mm)
 Cr = Permissible radial load in dynamic applications (N/mm²)

TYPES OF CUT



EXTRUSION GAPS

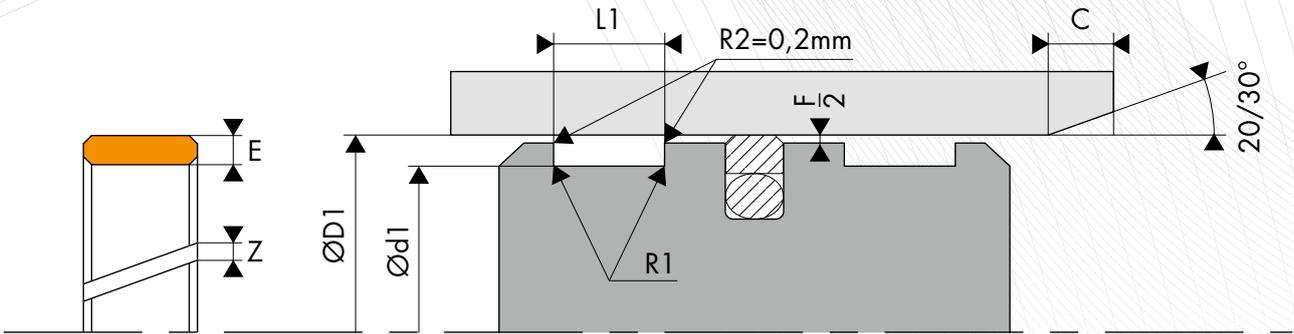
Seal thickness E	Radial gap F/2
1.55	0.50
2.50	0.90
4.00	1.50

RADIUS

Bore diameter ØD1	Radius R1
≤ 250.0	0.20
> 250.0	0.40

SURFACE ROUGHNESS

Roughness	Dynamic surface area	Static surface area	Groove flanks
Ra	0.1 - 0.4 µm	≤1.6 µm	≤3.2 µm
Rz	0.63 - 2.5 µm	≤6.3 µm	≤10.0 µm
Rmax	1.0 - 4.0 µm	≤10.0 µm	≤16.0 µm



○ INSTALLATION DIMENSIONS

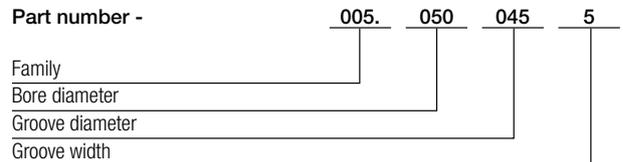
ISO 10766	Bore diameter	Groove diameter	Groove width	Seal thickness	Gap
	ØD1 H9	Ød1 h8	L1 0/+0.20	E	Z +/-0.50
*	16.0 - 50.0	D1 - 3.10	4.00	1.55	1.00
*	16.0 - 125.0	D1 - 5.00	5.60	2.50	1.25
*	25.0 - 250.0	D1 - 5.00	9.70	2.50	1.25
*	80.0 - 500.0	D1 - 5.00	15.00	2.50	1.25
*	125.0 - 999.9	D1 - 5.00	25.00	2.50	1.25
*	280.0 - 999.9	D1 - 8.00	25.00	4.00	2.00

Other dimensions are possible, not taking ISO 10766 into consideration. Please contact our experts

○ EXAMPLE OF CODIFICATION

STANDARD CODIFICATION

Material _____ : Phenolic resin PF
 Bore diameter _____ : ØD1 = 50.00 mm
 Groove diameter _____ : Ød1 + 45.00 mm
 Groove width _____ : L1 = 5.60 mm
 Part number _____ : 005.0500455



DIMENSIONS

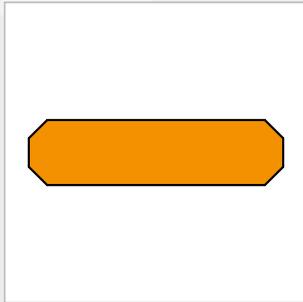
Part number	Bore diameter ØD1 H9	Groove diameter Ød1 h8	Groove width L1 0/+0.20	Seal thickness E
005.0080494	8.00	4.90	4.00	1.55
005.0100694	10.00	6.90	4.00	1.55
005.0120894	12.00	8.90	4.00	1.55
005.0141094	14.00	10.90	4.00	1.55
005.0151194	15.00	11.90	4.00	1.55
005.0160115	16.00	11.00	5.60	2.50
005.0161294	16.00	12.90	4.00	1.55
005.0180135	18.00	13.00	5.60	2.50
005.0181494	18.00	14.90	4.00	1.55
005.0200155	20.00	15.00	5.60	2.50
005.0201694	20.00	16.90	4.00	1.55
005.0220175	22.00	17.00	5.60	2.50
005.0221894	22.00	18.90	4.00	1.55
005.0250205	25.00	20.00	5.60	2.50
005.0250209	25.00	20.00	9.70	2.50
005.0252194	25.00	21.90	4.00	1.55
005.0270225	27.00	22.00	5.60	2.50
005.0270229	27.00	22.00	9.70	2.50
005.0272394	27.00	23.90	4.00	1.55
005.0280235	28.00	23.00	5.60	2.50
005.0280239	28.00	23.00	9.70	2.50
005.0282494	28.00	24.90	4.00	1.55
005.0300255	30.00	25.00	5.60	2.50
005.0300259	30.00	25.00	9.70	2.50
005.0302694	30.00	26.90	4.00	1.55
005.0320275	32.00	27.00	5.60	2.50
005.0320279	32.00	27.00	9.70	2.50
005.0322894	32.00	28.90	4.00	1.55
005.0330285	33.00	28.00	5.60	2.50
005.0330289	33.00	28.00	9.70	2.50
005.0332994	33.00	29.90	4.00	1.55
005.0350305	35.00	30.00	5.60	2.50
005.0350309	35.00	30.00	9.70	2.50
005.0353194	35.00	31.90	4.00	1.55
005.0360315	36.00	31.00	5.60	2.50
005.0360319	36.00	31.00	9.70	2.50
005.0363294	36.00	32.90	4.00	1.55
005.0370325	37.00	32.00	5.60	2.50
005.0370329	37.00	32.00	9.70	2.50
005.0373394	37.00	33.90	4.00	1.55
005.0380335	38.00	33.00	5.60	2.50
005.0380339	38.00	33.00	9.70	2.50
005.0383494	38.00	34.90	4.00	1.55
005.0400355	40.00	35.00	5.60	2.50
005.0400359	40.00	35.00	9.70	2.50
005.0403694	40.00	36.90	4.00	1.55
005.0410365	41.00	36.00	5.60	2.50
005.0410369	41.00	36.00	9.70	2.50
005.0413794	41.00	37.90	4.00	1.55
005.0420375	42.00	37.00	5.60	2.50
005.0420379	42.00	37.00	9.70	2.50
005.0423894	42.00	38.90	4.00	1.55
005.0450405	45.00	40.00	5.60	2.50
005.0450409	45.00	40.00	9.70	2.50
005.0454194	45.00	41.90	4.00	1.55
005.0480435	48.00	43.00	5.60	2.50
005.0480439	48.00	43.00	9.70	2.50
005.0484494	48.00	44.90	4.00	1.55
005.0500455	50.00	45.00	5.60	2.50
005.0500459	50.00	45.00	9.70	2.50
005.0504694	50.00	46.90	4.00	1.55
005.0520475	52.00	47.00	5.60	2.50

Part number	Bore diameter ØD1 H9	Groove diameter Ød1 h8	Groove width L1 0/+0.20	Seal thickness E
005.0520479	52.00	47.00	9.70	2.50
005.0550505	55.00	50.00	5.60	2.50
005.0550509	55.00	50.00	9.70	2.50
005.0580535	58.00	53.00	5.60	2.50
005.0580539	58.00	53.00	9.70	2.50
005.0600555	60.00	55.00	5.60	2.50
005.0600559	60.00	55.00	9.70	2.50
005.0610565	61.00	56.00	5.60	2.50
005.0610569	61.00	56.00	9.70	2.50
005.0630585	63.00	58.00	5.60	2.50
005.0630589	63.00	58.00	9.70	2.50
005.0650605	65.00	60.00	5.60	2.50
005.0650609	65.00	60.00	9.70	2.50
005.0680635	68.00	63.00	5.60	2.50
005.0680639	68.00	63.00	9.70	2.50
005.0700655	70.00	65.00	5.60	2.50
005.0700659	70.00	65.00	9.70	2.50
005.0720675	72.00	67.00	5.60	2.50
005.0720679	72.00	67.00	9.70	2.50
005.0750705	75.00	70.00	5.60	2.50
005.0750709	75.00	70.00	9.70	2.50
005.0780735	78.00	73.00	5.60	2.50
005.0780739	78.00	73.00	9.70	2.50
005.0800755	80.00	75.00	5.60	2.50
005.0800759	80.00	75.00	9.70	2.50
005.0850805	85.00	80.00	5.60	2.50
005.0850809	85.00	80.00	9.70	2.50
005.0900855	90.00	85.00	5.60	2.50
005.0900859	90.00	85.00	9.70	2.50
005.0950905	95.00	90.00	5.60	2.50
005.0950909	95.00	90.00	9.70	2.50
005.1000955	100.00	95.00	5.60	2.50
005.1000959	100.00	95.00	9.70	2.50
005.1051005	105.00	100.00	5.60	2.50
005.1051009	105.00	100.00	9.70	2.50
005.1101055	110.00	105.00	5.60	2.50
005.1101059	110.00	105.00	9.70	2.50
005.1151105	115.00	110.00	5.60	2.50
005.1151109	115.00	110.00	9.70	2.50
005.1201155	120.00	115.00	5.60	2.50
005.1201159	120.00	115.00	9.70	2.50
005.1251205	125.00	120.00	5.60	2.50
005.1251209	125.00	120.00	9.70	2.50
005.1251202	125.00	120.00	25.00	2.50
005.1301259	130.00	125.00	9.70	2.50
005.1301252	130.00	125.00	25.00	2.50
005.1351309	135.00	130.00	9.70	2.50
005.1351302	135.00	130.00	25.00	2.50
005.1401359	140.00	135.00	9.70	2.50
005.1401352	140.00	135.00	25.00	2.50
005.1451409	145.00	140.00	9.70	2.50
005.1451402	145.00	140.00	25.00	2.50
005.1501459	150.00	145.00	9.70	2.50
005.1501452	150.00	145.00	25.00	2.50
005.1551509	155.00	150.00	9.70	2.50
005.1551502	155.00	150.00	25.00	2.50
005.1601559	160.00	155.00	9.70	2.50
005.1601552	160.00	155.00	25.00	2.50
005.1651609	165.00	160.00	9.70	2.50
005.1651602	165.00	160.00	25.00	2.50
005.1701659	170.00	165.00	9.70	2.50
005.1701652	170.00	165.00	25.00	2.50

Part number	Bore diameter ØD1 H9	Groove diameter Ød1 h8	Groove width L1 0/+0.20	Seal thickness E
005.1751709	175.00	170.00	9.70	2.50
005.1751702	175.00	170.00	25.00	2.50
005.1801759	180.00	175.00	9.70	2.50
005.1801751	180.00	175.00	15.00	2.50
005.1801752	180.00	175.00	25.00	2.50
005.1851809	185.00	180.00	9.70	2.50
005.1851801	185.00	180.00	15.00	2.50
005.1851802	185.00	180.00	25.00	2.50
005.1901859	190.00	185.00	9.70	2.50
005.1901851	190.00	185.00	15.00	2.50
005.1901852	190.00	185.00	25.00	2.50
005.1951909	195.00	190.00	9.70	2.50
005.1951901	195.00	190.00	15.00	2.50
005.1951902	195.00	190.00	25.00	2.50
005.2001959	200.00	195.00	9.70	2.50
005.2001951	200.00	195.00	15.00	2.50
005.2001952	200.00	195.00	25.00	2.50
005.2052009	205.00	200.00	9.70	2.50
005.2052001	205.00	200.00	15.00	2.50
005.2052002	205.00	200.00	25.00	2.50
005.2102059	210.00	205.00	9.70	2.50
005.2102051	210.00	205.00	15.00	2.50
005.2102052	210.00	205.00	25.00	2.50
005.2152109	215.00	210.00	9.70	2.50
005.2152101	215.00	210.00	15.00	2.50
005.2152102	215.00	210.00	25.00	2.50
005.2202159	220.00	215.00	9.70	2.50
005.2202151	220.00	215.00	15.00	2.50
005.2202152	220.00	215.00	25.00	2.50
005.2252209	225.00	220.00	9.70	2.50
005.2252201	225.00	220.00	15.00	2.50
005.2252202	225.00	220.00	25.00	2.50
005.2302259	230.00	225.00	9.70	2.50
005.2302251	230.00	225.00	15.00	2.50
005.2302252	230.00	225.00	25.00	2.50
005.2352309	235.00	230.00	9.70	2.50
005.2352301	235.00	230.00	15.00	2.50
005.2352302	235.00	230.00	25.00	2.50
005.2402359	240.00	235.00	9.70	2.50
005.2402351	240.00	235.00	15.00	2.50
005.2402352	240.00	235.00	25.00	2.50
005.2452409	245.00	240.00	9.70	2.50
005.2452401	245.00	240.00	15.00	2.50
005.2452402	245.00	240.00	25.00	2.50
005.2502459	250.00	245.00	9.70	2.50
005.2502451	250.00	245.00	15.00	2.50
005.2502452	250.00	245.00	25.00	2.50
005.2552501	255.00	250.00	15.00	2.50
005.2552502	255.00	250.00	25.00	2.50
005.2602551	260.00	255.00	15.00	2.50
005.2602552	260.00	255.00	25.00	2.50

Part number	Bore diameter ØD1 H9	Groove diameter Ød1 h8	Groove width L1 0/+0.20	Seal thickness E
005.2652601	265.00	260.00	15.00	2.50
005.2652602	265.00	260.00	25.00	2.50
005.2702651	270.00	265.00	15.00	2.50
005.2702652	270.00	265.00	25.00	2.50
005.2752701	275.00	270.00	15.00	2.50
005.2752702	275.00	270.00	25.00	2.50
005.2802751	280.00	275.00	15.00	2.50
005.2802752	280.00	275.00	25.00	2.50
005.2852801	285.00	280.00	15.00	2.50
005.2852802	285.00	280.00	25.00	2.50
005.2902851	290.00	285.00	15.00	2.50
005.2902852	290.00	285.00	25.00	2.50
005.2952901	295.00	290.00	15.00	2.50
005.2952902	295.00	290.00	25.00	2.50
005.3002951	300.00	295.00	15.00	2.50
005.3002952	300.00	295.00	25.00	2.50
005.3053001	305.00	300.00	15.00	2.50
005.3053002	305.00	300.00	25.00	2.50
005.3103051	310.00	305.00	15.00	2.50
005.3103052	310.00	305.00	25.00	2.50
005.3153101	315.00	310.00	15.00	2.50
005.3153102	315.00	310.00	25.00	2.50
005.3203151	320.00	315.00	15.00	2.50
005.3203152	320.00	315.00	25.00	2.50
005.3253201	325.00	320.00	15.00	2.50
005.3253202	325.00	320.00	25.00	2.50
005.3303251	330.00	325.00	15.00	2.50
005.3303252	330.00	325.00	25.00	2.50
005.3353301	335.00	330.00	15.00	2.50
005.3353302	335.00	330.00	25.00	2.50
005.3403351	340.00	335.00	15.00	2.50
005.3403352	340.00	335.00	25.00	2.50
005.3453401	345.00	340.00	15.00	2.50
005.3453402	345.00	340.00	25.00	2.50
005.3503451	350.00	345.00	15.00	2.50
005.3503452	350.00	345.00	25.00	2.50
005.3603551	360.00	355.00	15.00	2.50
005.3603552	360.00	355.00	25.00	2.50
005.3703651	370.00	365.00	15.00	2.50
005.3703652	370.00	365.00	25.00	2.50
005.3803751	380.00	375.00	15.00	2.50
005.3803752	380.00	375.00	25.00	2.50
005.3903851	390.00	385.00	15.00	2.50
005.3903852	390.00	385.00	25.00	2.50
005.4003951	400.00	395.00	15.00	2.50
005.4003952	400.00	395.00	25.00	2.50
005.4504451	450.00	445.00	15.00	2.50
005.4504452	450.00	445.00	25.00	2.50
005.5004951	500.00	495.00	15.00	2.50
005.5004952	500.00	495.00	25.00	2.50

The figures highlighted in bold correspond to the dimensions for standard ISO 10766, with the bore diameters in line with standard ISO 3320. Other intermediate sizes can be provided.



WEAR RINGS

BECA 005 Rod



DESCRIPTION

The BECA 005 profile is a machined guide ring with a 30° angle cut as standard in a tubular material composed of a cotton weave with a superfine mesh, imbued with phenolic resin with added lubricant. Other types of cuts can be made.

ADVANTAGES

- Good dimensional stability
- Good vibration absorption
- Good friction characteristics
- Good dry operation
- Increased life span

APPLICATIONS

- Hydraulic cylinders
- Hydraulic excavators
- Mobile machinery
- Construction equipment
- Presses

MATERIALS

Phenolic resin PF

Other grades of materials are available. Please contact our experts.

TECHNICAL DATA

Temperature	-40°C / +130°C
Speed	1 m/s
Max. compression resistance	270 to 340 N/mm ²
Radial loads in dynamic applications	max. 100 N/mm ² at 25°C max. 50 N/mm ² > at 60°C

The figures above indicate the maximum values and may not be cumulated. They may be developed, depending on the materials used.

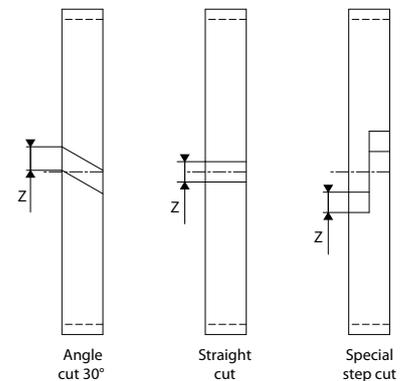
WEAR RING HEIGHT DIMENSIONING

$$H = (F \times f) / (\text{Ø}d1 \times Cr)$$

where:

H = Min. height of guide (mm)
 F = Max. radial force (N)
 f = Safety coefficient (we recommend 2)
 Ød1 = Rod diameter (mm)
 Cr = Permissible radial load in dynamic applications (N/mm²)

TYPES OF CUT



EXTRUSION GAPS

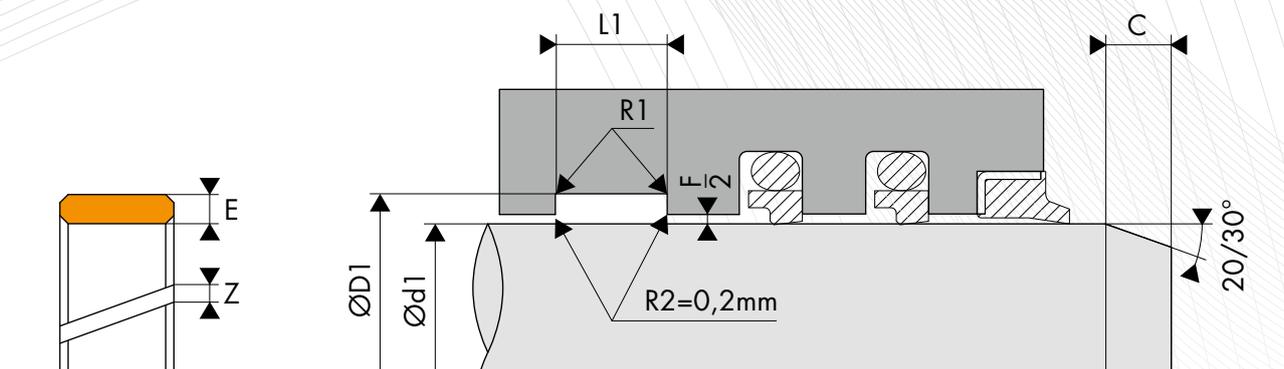
Seal thickness E	Radial gap F/2
1.55	0.50
2.50	0.90
4.00	1.50

RADIUS

Rod diameter Ød1	Radius R1
≤ 250.0	0.20
> 250.0	0.40

SURFACE ROUGHNESS

Roughness	Dynamic surface area	Static surface area	Groove flanks
Ra	0.1 - 0.4 µm	≤1.6 µm	≤3.2 µm
Rz	0.63 - 2.5 µm	≤6.3 µm	≤10.0 µm
Rmax	1.0 - 4.0 µm	≤10.0 µm	≤16.0 µm



○ INSTALLATION DIMENSIONS

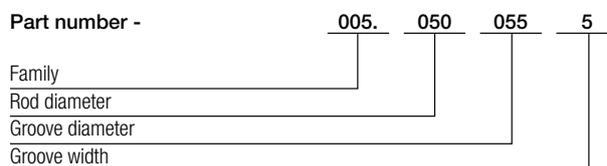
ISO 10766	Rod diameter	Groove diameter	Groove width	Seal thickness	Gap
	Ød1 f8/h9	ØD1 H8	L1 0/+0.20	E	Z +/-0.50
*	10.0 - 50.0	d1 + 3.10	4.00	1.55	1.00
*	16.0 - 120.0	d1 + 5.00	5.60	2.50	1.25
*	25.0 - 250.0	d1 + 5.00	9.70	2.50	1.25
*	75.0 - 500.0	d1 + 5.00	15.00	2.50	1.25
*	120.0 - 999.9	d1 + 5.00	25.00	2.50	1.25
*	280.0 - 999.9	d1 + 8.00	25.00	4.00	2.00

Other dimensions are possible, not taking ISO 10766 into consideration. Please contact our experts

○ EXAMPLE OF CODIFICATION

STANDARD CODIFICATION

Material _____ : Phenolic resin PF
Rod diameter _____ : Ød1 + 50.00 mm
Groove diameter _____ : ØD1 = 55.00 mm
Groove width _____ : L1 = 5.60 mm
Part number _____ : 005.0500555



DIMENSIONS

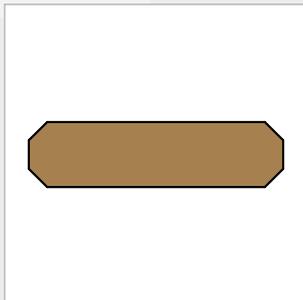
Part number	Rod diameter Ød1 f8/h9	Groove diameter ØD1 H8	Groove width L1 0/+0.20	Seal thickness E
005.0081114	8.00	11.10	4.00	1.55
005.0101314	10.00	13.10	4.00	1.55
005.0121514	12.00	15.10	4.00	1.55
005.0141714	14.00	17.10	4.00	1.55
005.0151814	15.00	18.10	4.00	1.55
005.0161914	16.00	19.10	4.00	1.55
005.0182114	18.00	21.10	4.00	1.55
005.0202314	20.00	23.10	4.00	1.55
005.0222514	22.00	25.10	4.00	1.55
005.0252814	25.00	28.10	4.00	1.55
005.0250305	25.00	30.00	5.60	2.50
005.0273014	27.00	30.10	4.00	1.55
005.0270325	27.00	32.00	5.60	2.50
005.0283114	28.00	31.10	4.00	1.55
005.0280335	28.00	33.00	5.60	2.50
005.0303314	30.00	33.10	4.00	1.55
005.0300355	30.00	35.00	5.60	2.50
005.0300359	30.00	35.00	9.70	2.50
005.0323514	32.00	35.10	4.00	1.55
005.0320375	32.00	37.00	5.60	2.50
005.0320379	32.00	37.00	9.70	2.50
005.0333614	33.00	36.10	4.00	1.55
005.0330385	33.00	38.00	5.60	2.50
005.0330389	33.00	38.00	9.70	2.50
005.0353814	35.00	38.10	4.00	1.55
005.0350405	35.00	40.00	5.60	2.50
005.0350409	35.00	40.00	9.70	2.50
005.0363914	36.00	39.10	4.00	1.55
005.0360415	36.00	41.00	5.60	2.50
005.0360419	36.00	41.00	9.70	2.50
005.0374014	37.00	40.10	4.00	1.55
005.0370425	37.00	42.00	5.60	2.50
005.0370429	37.00	42.00	9.70	2.50
005.0384114	38.00	41.10	4.00	1.55
005.0380435	38.00	43.00	5.60	2.50
005.0380439	38.00	43.00	9.70	2.50
005.0404314	40.00	43.10	4.00	1.55
005.0400455	40.00	45.00	5.60	2.50
005.0400459	40.00	45.00	9.70	2.50
005.0414414	41.00	44.10	4.00	1.55
005.0410465	41.00	46.00	5.60	2.50
005.0410469	41.00	46.00	9.70	2.50
005.0424514	42.00	45.10	4.00	1.55
005.0420475	42.00	47.00	5.60	2.50
005.0420479	42.00	47.00	9.70	2.50
005.0454814	45.00	48.10	4.00	1.55
005.0450505	45.00	50.00	5.60	2.50
005.0450509	45.00	50.00	9.70	2.50
005.0485114	48.00	51.10	4.00	1.55
005.0480535	48.00	53.00	5.60	2.50
005.0480539	48.00	53.00	9.70	2.50
005.0505314	50.00	53.10	4.00	1.55
005.0500555	50.00	55.00	5.60	2.50
005.0500559	50.00	55.00	9.70	2.50
005.0520575	52.00	57.00	5.60	2.50
005.0520579	52.00	57.00	9.70	2.50
005.0550605	55.00	60.00	5.60	2.50
005.0550609	55.00	60.00	9.70	2.50
005.0580635	58.00	63.00	5.60	2.50
005.0580639	58.00	63.00	9.70	2.50
005.0600655	60.00	65.00	5.60	2.50
005.0600659	60.00	65.00	9.70	2.50

Part number	Rod diameter Ød1 f8/h9	Groove diameter ØD1 H8	Groove width L1 0/+0.20	Seal thickness E
005.0610665	61.00	66.00	5.60	2.50
005.0610669	61.00	66.00	9.70	2.50
005.0630685	63.00	68.00	5.60	2.50
005.0630689	63.00	68.00	9.70	2.50
005.0650705	65.00	70.00	5.60	2.50
005.0650709	65.00	70.00	9.70	2.50
005.0680735	68.00	73.00	5.60	2.50
005.0680739	68.00	73.00	9.70	2.50
005.0700755	70.00	75.00	5.60	2.50
005.0700759	70.00	75.00	9.70	2.50
005.0720779	72.00	77.00	9.70	2.50
005.0750809	75.00	80.00	9.70	2.50
005.0780839	78.00	83.00	9.70	2.50
005.0800859	80.00	85.00	9.70	2.50
005.0800851	80.00	85.00	15.00	2.50
005.0850909	85.00	90.00	9.70	2.50
005.0850901	85.00	90.00	15.00	2.50
005.0900959	90.00	95.00	9.70	2.50
005.0900951	90.00	95.00	15.00	2.50
005.0951009	95.00	100.00	9.70	2.50
005.0951001	95.00	100.00	15.00	2.50
005.1001059	100.00	105.00	9.70	2.50
005.1001051	100.00	105.00	15.00	2.50
005.1051109	105.00	110.00	9.70	2.50
005.1051101	105.00	110.00	15.00	2.50
005.1101159	110.00	115.00	9.70	2.50
005.1101151	110.00	115.00	15.00	2.50
005.1151209	115.00	120.00	9.70	2.50
005.1151201	115.00	120.00	15.00	2.50
005.1201259	120.00	125.00	9.70	2.50
005.1201251	120.00	125.00	15.00	2.50
005.1251309	125.00	130.00	9.70	2.50
005.1251301	125.00	130.00	15.00	2.50
005.1301359	130.00	135.00	9.70	2.50
005.1301351	130.00	135.00	15.00	2.50
005.1351409	135.00	140.00	9.70	2.50
005.1351401	135.00	140.00	15.00	2.50
005.1401459	140.00	145.00	9.70	2.50
005.1401451	140.00	145.00	15.00	2.50
005.1451509	145.00	150.00	9.70	2.50
005.1451501	145.00	150.00	15.00	2.50
005.1501559	150.00	155.00	9.70	2.50
005.1501551	150.00	155.00	15.00	2.50
005.1551609	155.00	160.00	9.70	2.50
005.1551601	155.00	160.00	15.00	2.50
005.1601659	160.00	165.00	9.70	2.50
005.1601651	160.00	165.00	15.00	2.50
005.1651709	165.00	170.00	9.70	2.50
005.1651701	165.00	170.00	15.00	2.50
005.1701759	170.00	175.00	9.70	2.50
005.1701751	170.00	175.00	15.00	2.50
005.1751809	175.00	180.00	9.70	2.50
005.1751801	175.00	180.00	15.00	2.50
005.1801859	180.00	185.00	9.70	2.50
005.1801851	180.00	185.00	15.00	2.50
005.1851909	185.00	190.00	9.70	2.50
005.1851901	185.00	190.00	15.00	2.50
005.1901959	190.00	195.00	9.70	2.50
005.1901951	190.00	195.00	15.00	2.50
005.1952009	195.00	200.00	9.70	2.50
005.1952001	195.00	200.00	15.00	2.50
005.2002059	200.00	205.00	9.70	2.50

Part number	Rod diameter Ød1 f8/h9	Groove diameter ØD1 H8	Groove width L1 0/+0.20	Seal thickness E
005.2002051	200.00	205.00	15.00	2.50
005.2002052	200.00	205.00	25.00	2.50
005.2052101	205.00	210.00	15.00	2.50
005.2052102	205.00	210.00	25.00	2.50
005.2102151	210.00	215.00	15.00	2.50
005.2102152	210.00	215.00	25.00	2.50
005.2152201	215.00	220.00	15.00	2.50
005.2152202	215.00	220.00	25.00	2.50
005.2202251	220.00	225.00	15.00	2.50
005.2202252	220.00	225.00	25.00	2.50
005.2252301	225.00	230.00	15.00	2.50
005.2252302	225.00	230.00	25.00	2.50
005.2302351	230.00	235.00	15.00	2.50
005.2302352	230.00	235.00	25.00	2.50
005.2352401	235.00	240.00	15.00	2.50
005.2352402	235.00	240.00	25.00	2.50
005.2402451	240.00	245.00	15.00	2.50
005.2402452	240.00	245.00	25.00	2.50
005.2452501	245.00	250.00	15.00	2.50
005.2452502	245.00	250.00	25.00	2.50
005.2502551	250.00	255.00	15.00	2.50
005.2502552	250.00	255.00	25.00	2.50
005.2552601	255.00	260.00	15.00	2.50
005.2552602	255.00	260.00	25.00	2.50
005.2602651	260.00	265.00	15.00	2.50
005.2602652	260.00	265.00	25.00	2.50
005.2652701	265.00	270.00	15.00	2.50
005.2652702	265.00	270.00	25.00	2.50
005.2702751	270.00	275.00	15.00	2.50
005.2702752	270.00	275.00	25.00	2.50
005.2752801	275.00	280.00	15.00	2.50
005.2752802	275.00	280.00	25.00	2.50

Part number	Rod diameter Ød1 f8/h9	Groove diameter ØD1 H8	Groove width L1 0/+0.20	Seal thickness E
005.2802851	280.00	285.00	15.00	2.50
005.2802852	280.00	285.00	25.00	2.50
005.2852901	285.00	290.00	15.00	2.50
005.2852902	285.00	290.00	25.00	2.50
005.2902951	290.00	295.00	15.00	2.50
005.2902952	290.00	295.00	25.00	2.50
005.2953001	295.00	300.00	15.00	2.50
005.2953002	295.00	300.00	25.00	2.50
005.3003051	300.00	305.00	15.00	2.50
005.3003052	300.00	305.00	25.00	2.50
005.3053101	305.00	310.00	15.00	2.50
005.3053102	305.00	310.00	25.00	2.50
005.3103151	310.00	315.00	15.00	2.50
005.3103152	310.00	315.00	25.00	2.50
005.3153201	315.00	320.00	15.00	2.50
005.3153202	315.00	320.00	25.00	2.50
005.3203251	320.00	325.00	15.00	2.50
005.3203252	320.00	325.00	25.00	2.50
005.3253301	325.00	330.00	15.00	2.50
005.3253302	325.00	330.00	25.00	2.50
005.3303351	330.00	335.00	15.00	2.50
005.3303352	330.00	335.00	25.00	2.50
005.3353401	335.00	340.00	15.00	2.50
005.3353402	335.00	340.00	25.00	2.50
005.3403451	340.00	345.00	15.00	2.50
005.3403452	340.00	345.00	25.00	2.50
005.3453501	345.00	350.00	15.00	2.50
005.3453502	345.00	350.00	25.00	2.50
005.3503551	350.00	355.00	15.00	2.50
005.3503552	350.00	355.00	25.00	2.50
005.3603651	360.00	365.00	15.00	2.50
005.3603652	360.00	365.00	25.00	2.50

The figures highlighted in bold correspond to the dimensions for standard ISO 10766, with the rod diameters in line with standard ISO 3320. Other intermediate sizes can be provided.



WEAR RINGS

BECA 006 Piston



DESCRIPTION

The BECA 006 profile is a machined guide ring with a 30° angle cut as standard made from filled PTFE or PE-UHMW, depending on the type of application. Embossed rings are also offered. The embossing is a set of lubricant pockets, which improves the friction. Other types of cuts can be made.

ADVANTAGES

Substantial and improved lubrication conditions through the tear structures
Very good friction coefficient; no stick-slip effect
Good wear resistance; very long life
Increased absorption of foreign particles
Good vibration absorption
No water absorption for the PE-UHMW

APPLICATIONS

Agriculture
Food & Beverage
Shock absorbers
Maintenance
Dry applications
Injection presses
Pneumatics
Presses
Robotics
Standard cylinders

MATERIALS

Bronze-filled PTFE
Carbon-filled PTFE
PE-UHMW

Other grades of materials are available.
Please contact our experts.

TECHNICAL DATA

Temperature	PTFE: -60°C / +150°C PE-UHMW: -60°C / +80°C
Speed	PTFE: 15 m/s PE-UHMW: 2 m/s
Media	Mineral hydraulic oils Biocompatible fluids Water Air Others (contact our experts)
Max. compression resistance	30 to 35 N/mm ²
Radial loads in dynamic applications	Filled PTFE: 15 N/mm ² at 25°C 12 N/mm ² at 80°C 8 N/mm ² at 120°C PE-UHMW: 25 N/mm ² at 25°C 10 N/mm ² at 80°C

The figures above indicate the maximum values and may not be cumulated. They may be developed, depending on the materials used.

WEAR RING HEIGHT DIMENSIONING

$$H = (F \times f) / (\varnothing D1 \times Cr)$$

where:

H = Min. height of guide (mm)

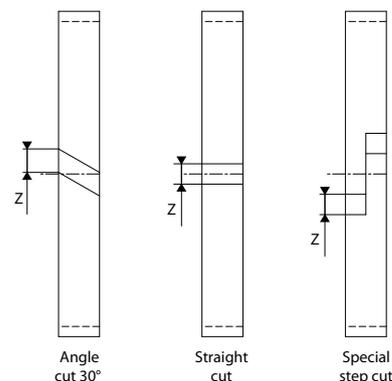
F = Max. radial force (N)

f = Safety coefficient (we recommend 2)

∅D1 = Bore diameter (mm)

Cr = Permissible radial load in dynamic applications (N/mm²)

TYPES OF CUT



EXTRUSION GAPS

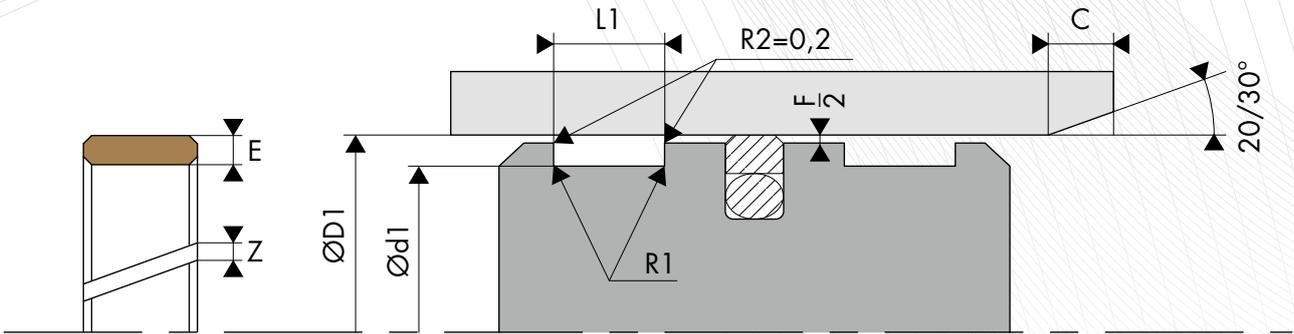
Bore diameter ∅D1	Min. radial gap F/2 min	Max. radial gap F/2 max
8.0 - 20.0	0.20	0.30
21.00 - 100.0	0.25	0.40
101.0 - 250.0	0.30	0.60
251.0 - 500.0	0.40	0.80
501.0 - 1000.0	0.50	1.10
> 1000.0	0.50	1.20

SURFACE ROUGHNESS

Roughness	Dynamic surface area	Static surface area	Groove flanks
Ra	0.05 - 0.2 µm	≤1.6 µm	≤3.2 µm
Rz	0.4 - 1.6 µm	≤6.3 µm	≤10.0 µm
Rmax	0.63 - 2.5 µm	≤10.0 µm	≤16.0 µm

RADIUS

Bore diameter ∅D1	Radius R1
≤ 250.0	0.20
> 250.0	0.40



○ INSTALLATION DIMENSIONS

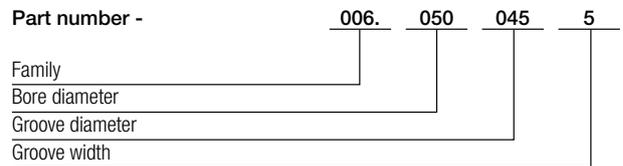
ISO 10766	Bore diameter	Groove diameter	Groove width	Seal thickness	Gap
	ØD1 H9	Ød1 h8	L1 0/+0.20	E	Z +/-0.50
*	8.0 - 20.0	D1 - 3.10	2.50	1.55	1.00
*	10.0 - 50.0	D1 - 3.10	4.00	1.55	1.00
*	16.0 - 140.0	D1 - 5.00	5.60	2.50	1.25
*	60.0 - 220.0	D1 - 5.00	9.70	2.50	1.25
*	130.0 - 400.0	D1 - 5.00	15.00	2.50	1.25
*	280.0 - 999.9	D1 - 5.00	25.00	2.50	1.25
*	280.0 - 999.9	D1 - 8.00	25.00	4.00	2.00

Other dimensions are possible, not taking ISO 10766 into consideration. Please contact our experts

○ EXAMPLE OF CODIFICATION

STANDARD CODIFICATION

Material _____ : Bronze-filled PTFE
Bore diameter _____ : ØD1 = 50.00 mm
Groove diameter _____ : Ød1 + 45.00 mm
Groove width _____ : L1 = 5.60 mm
Part number _____ : 006.0500455



DIMENSIONS

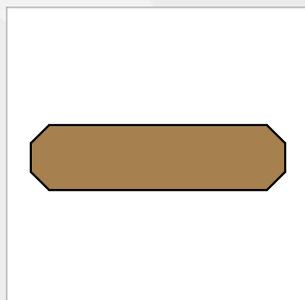
Part number	Bore diameter ØD1 H9	Groove diameter Ød1 h8	Groove width L1 0/+0.20	Seal thickness E
006.0080494	8.00	4.90	4.00	1.55
006.0100694	10.00	6.90	4.00	1.55
006.0120894	12.00	8.90	4.00	1.55
006.0141094	14.00	10.90	4.00	1.55
006.0151194	15.00	11.90	4.00	1.55
006.0160115	16.00	11.00	5.60	2.50
006.0161294	16.00	12.90	4.00	1.55
006.0180135	18.00	13.00	5.60	2.50
006.0181494	18.00	14.90	4.00	1.55
006.0200155	20.00	15.00	5.60	2.50
006.0201694	20.00	16.90	4.00	1.55
006.0220175	22.00	17.00	5.60	2.50
006.0221894	22.00	18.90	4.00	1.55
006.0250205	25.00	20.00	5.60	2.50
006.0250209	25.00	20.00	9.70	2.50
006.0252194	25.00	21.90	4.00	1.55
006.0270225	27.00	22.00	5.60	2.50
006.0270229	27.00	22.00	9.70	2.50
006.0272394	27.00	23.90	4.00	1.55
006.0280235	28.00	23.00	5.60	2.50
006.0280239	28.00	23.00	9.70	2.50
006.0282494	28.00	24.90	4.00	1.55
006.0300255	30.00	25.00	5.60	2.50
006.0300259	30.00	25.00	9.70	2.50
006.0302694	30.00	26.90	4.00	1.55
006.0320275	32.00	27.00	5.60	2.50
006.0320279	32.00	27.00	9.70	2.50
006.0322894	32.00	28.90	4.00	1.55
006.0330285	33.00	28.00	5.60	2.50
006.0330289	33.00	28.00	9.70	2.50
006.0332994	33.00	29.90	4.00	1.55
006.0350305	35.00	30.00	5.60	2.50
006.0350309	35.00	30.00	9.70	2.50
006.0353194	35.00	31.90	4.00	1.55
006.0360315	36.00	31.00	5.60	2.50
006.0360319	36.00	31.00	9.70	2.50
006.0363294	36.00	32.90	4.00	1.55
006.0370325	37.00	32.00	5.60	2.50
006.0370329	37.00	32.00	9.70	2.50
006.0373394	37.00	33.90	4.00	1.55
006.0380335	38.00	33.00	5.60	2.50
006.0380339	38.00	33.00	9.70	2.50
006.0383494	38.00	34.90	4.00	1.55
006.0400355	40.00	35.00	5.60	2.50
006.0400359	40.00	35.00	9.70	2.50
006.0403694	40.00	36.90	4.00	1.55
006.0410365	41.00	36.00	5.60	2.50
006.0410369	41.00	36.00	9.70	2.50
006.0413794	41.00	37.90	4.00	1.55
006.0420375	42.00	37.00	5.60	2.50
006.0420379	42.00	37.00	9.70	2.50
006.0423894	42.00	38.90	4.00	1.55
006.0450405	45.00	40.00	5.60	2.50
006.0450409	45.00	40.00	9.70	2.50
006.0454194	45.00	41.90	4.00	1.55
006.0480435	48.00	43.00	5.60	2.50
006.0480439	48.00	43.00	9.70	2.50
006.0484494	48.00	44.90	4.00	1.55
006.0500455	50.00	45.00	5.60	2.50
006.0500459	50.00	45.00	9.70	2.50
006.0504694	50.00	46.90	4.00	1.55
006.0520475	52.00	47.00	5.60	2.50

Part number	Bore diameter ØD1 H9	Groove diameter Ød1 h8	Groove width L1 0/+0.20	Seal thickness E
006.0520479	52.00	47.00	9.70	2.50
006.0550505	55.00	50.00	5.60	2.50
006.0550509	55.00	50.00	9.70	2.50
006.0580535	58.00	53.00	5.60	2.50
006.0580539	58.00	53.00	9.70	2.50
006.0600555	60.00	55.00	5.60	2.50
006.0600559	60.00	55.00	9.70	2.50
006.0610565	61.00	56.00	5.60	2.50
006.0610569	61.00	56.00	9.70	2.50
006.0630585	63.00	58.00	5.60	2.50
006.0630589	63.00	58.00	9.70	2.50
006.0650605	65.00	60.00	5.60	2.50
006.0650609	65.00	60.00	9.70	2.50
006.0680635	68.00	63.00	5.60	2.50
006.0680639	68.00	63.00	9.70	2.50
006.0700655	70.00	65.00	5.60	2.50
006.0700659	70.00	65.00	9.70	2.50
006.0720675	72.00	67.00	5.60	2.50
006.0720679	72.00	67.00	9.70	2.50
006.0750705	75.00	70.00	5.60	2.50
006.0750709	75.00	70.00	9.70	2.50
006.0780735	78.00	73.00	5.60	2.50
006.0780739	78.00	73.00	9.70	2.50
006.0800755	80.00	75.00	5.60	2.50
006.0800759	80.00	75.00	9.70	2.50
006.0850805	85.00	80.00	5.60	2.50
006.0850809	85.00	80.00	9.70	2.50
006.0900855	90.00	85.00	5.60	2.50
006.0900859	90.00	85.00	9.70	2.50
006.0950905	95.00	90.00	5.60	2.50
006.0950909	95.00	90.00	9.70	2.50
006.1000955	100.00	95.00	5.60	2.50
006.1000959	100.00	95.00	9.70	2.50
006.1051005	105.00	100.00	5.60	2.50
006.1051009	105.00	100.00	9.70	2.50
006.1101055	110.00	105.00	5.60	2.50
006.1101059	110.00	105.00	9.70	2.50
006.1151105	115.00	110.00	5.60	2.50
006.1151109	115.00	110.00	9.70	2.50
006.1201155	120.00	115.00	5.60	2.50
006.1201159	120.00	115.00	9.70	2.50
006.1251205	125.00	120.00	5.60	2.50
006.1251209	125.00	120.00	9.70	2.50
006.1251202	125.00	120.00	25.00	2.50
006.1301259	130.00	125.00	9.70	2.50
006.1301252	130.00	125.00	25.00	2.50
006.1351309	135.00	130.00	9.70	2.50
006.1351302	135.00	130.00	25.00	2.50
006.1401359	140.00	135.00	9.70	2.50
006.1401352	140.00	135.00	25.00	2.50
006.1451409	145.00	140.00	9.70	2.50
006.1451402	145.00	140.00	25.00	2.50
006.1501459	150.00	145.00	9.70	2.50
006.1501452	150.00	145.00	25.00	2.50
006.1551509	155.00	150.00	9.70	2.50
006.1551502	155.00	150.00	25.00	2.50
006.1601559	160.00	155.00	9.70	2.50
006.1601552	160.00	155.00	25.00	2.50
006.1651609	165.00	160.00	9.70	2.50
006.1651602	165.00	160.00	25.00	2.50
006.1701659	170.00	165.00	9.70	2.50
006.1701652	170.00	165.00	25.00	2.50

Part number	Bore diameter ØD1 H9	Groove diameter Ød1 h8	Groove width L1 0/+0.20	Seal thickness E
006.1751709	175.00	170.00	9.70	2.50
006.1751702	175.00	170.00	25.00	2.50
006.1801759	180.00	175.00	9.70	2.50
006.1801751	180.00	175.00	15.00	2.50
006.1801752	180.00	175.00	25.00	2.50
006.1851809	185.00	180.00	9.70	2.50
006.1851801	185.00	180.00	15.00	2.50
006.1851802	185.00	180.00	25.00	2.50
006.1901859	190.00	185.00	9.70	2.50
006.1901851	190.00	185.00	15.00	2.50
006.1901852	190.00	185.00	25.00	2.50
006.1951909	195.00	190.00	9.70	2.50
006.1951901	195.00	190.00	15.00	2.50
006.1951902	195.00	190.00	25.00	2.50
006.2001959	200.00	195.00	9.70	2.50
006.2001951	200.00	195.00	15.00	2.50
006.2001952	200.00	195.00	25.00	2.50
006.2052009	205.00	200.00	9.70	2.50
006.2052001	205.00	200.00	15.00	2.50
006.2052002	205.00	200.00	25.00	2.50
006.2102059	210.00	205.00	9.70	2.50
006.2102051	210.00	205.00	15.00	2.50
006.2102052	210.00	205.00	25.00	2.50
006.2152109	215.00	210.00	9.70	2.50
006.2152101	215.00	210.00	15.00	2.50
006.2152102	215.00	210.00	25.00	2.50
006.2202159	220.00	215.00	9.70	2.50
006.2202151	220.00	215.00	15.00	2.50
006.2202152	220.00	215.00	25.00	2.50
006.2252209	225.00	220.00	9.70	2.50
006.2252201	225.00	220.00	15.00	2.50
006.2252202	225.00	220.00	25.00	2.50
006.2302259	230.00	225.00	9.70	2.50
006.2302251	230.00	225.00	15.00	2.50
006.2302252	230.00	225.00	25.00	2.50
006.2352309	235.00	230.00	9.70	2.50
006.2352301	235.00	230.00	15.00	2.50
006.2352302	235.00	230.00	25.00	2.50
006.2402359	240.00	235.00	9.70	2.50
006.2402351	240.00	235.00	15.00	2.50
006.2402352	240.00	235.00	25.00	2.50
006.2452409	245.00	240.00	9.70	2.50
006.2452401	245.00	240.00	15.00	2.50
006.2452402	245.00	240.00	25.00	2.50
006.2502459	250.00	245.00	9.70	2.50
006.2502451	250.00	245.00	15.00	2.50
006.2502452	250.00	245.00	25.00	2.50
006.2552501	255.00	250.00	15.00	2.50
006.2552502	255.00	250.00	25.00	2.50
006.2602551	260.00	255.00	15.00	2.50
006.2602552	260.00	255.00	25.00	2.50

Part number	Bore diameter ØD1 H9	Groove diameter Ød1 h8	Groove width L1 0/+0.20	Seal thickness E
006.2652601	265.00	260.00	15.00	2.50
006.2652602	265.00	260.00	25.00	2.50
006.2702651	270.00	265.00	15.00	2.50
006.2702652	270.00	265.00	25.00	2.50
006.2752701	275.00	270.00	15.00	2.50
006.2752702	275.00	270.00	25.00	2.50
006.2802751	280.00	275.00	15.00	2.50
006.2802752	280.00	275.00	25.00	2.50
006.2852801	285.00	280.00	15.00	2.50
006.2852802	285.00	280.00	25.00	2.50
006.2902851	290.00	285.00	15.00	2.50
006.2902852	290.00	285.00	25.00	2.50
006.2952901	295.00	290.00	15.00	2.50
006.2952902	295.00	290.00	25.00	2.50
006.3002951	300.00	295.00	15.00	2.50
006.3002952	300.00	295.00	25.00	2.50
006.3053001	305.00	300.00	15.00	2.50
006.3053002	305.00	300.00	25.00	2.50
006.3103051	310.00	305.00	15.00	2.50
006.3103052	310.00	305.00	25.00	2.50
006.3153101	315.00	310.00	15.00	2.50
006.3153102	315.00	310.00	25.00	2.50
006.3203151	320.00	315.00	15.00	2.50
006.3203152	320.00	315.00	25.00	2.50
006.3253201	325.00	320.00	15.00	2.50
006.3253202	325.00	320.00	25.00	2.50
006.3303251	330.00	325.00	15.00	2.50
006.3303252	330.00	325.00	25.00	2.50
006.3353301	335.00	330.00	15.00	2.50
006.3353302	335.00	330.00	25.00	2.50
006.3403351	340.00	335.00	15.00	2.50
006.3403352	340.00	335.00	25.00	2.50
006.3453401	345.00	340.00	15.00	2.50
006.3453402	345.00	340.00	25.00	2.50
006.3503451	350.00	345.00	15.00	2.50
006.3503452	350.00	345.00	25.00	2.50
006.3603551	360.00	355.00	15.00	2.50
006.3603552	360.00	355.00	25.00	2.50
006.3703651	370.00	365.00	15.00	2.50
006.3703652	370.00	365.00	25.00	2.50
006.3803751	380.00	375.00	15.00	2.50
006.3803752	380.00	375.00	25.00	2.50
006.3903851	390.00	385.00	15.00	2.50
006.3903852	390.00	385.00	25.00	2.50
006.4003951	400.00	395.00	15.00	2.50
006.4003952	400.00	395.00	25.00	2.50
006.4504451	450.00	445.00	15.00	2.50
006.4504452	450.00	445.00	25.00	2.50
006.5004951	500.00	495.00	15.00	2.50
006.5004952	500.00	495.00	25.00	2.50

The figures highlighted in bold correspond to the dimensions for standard ISO 10766, with the bore diameters in line with standard ISO 3320. Other intermediate sizes can be provided.



WEAR RINGS

BECA 006 Rod



DESCRIPTION

The BECA 006 profile is a machined guide ring with a 30° angle cut as standard made from filled PTFE or PE-UHMW, depending on the type of application. Embossed rings are also offered. The embossing is a set of lubricant pockets, which improves the friction. Other types of cuts can be made.

ADVANTAGES

Substantial and improved lubrication conditions through the tear structures
Very good friction coefficient; no stick-slip effect
Good wear resistance; very long life
Increased absorption of foreign particles
Good vibration absorption
No water absorption for the PE-UHMW

APPLICATIONS

Agriculture
Food & Beverage
Shock absorbers
Maintenance
Dry applications
Injection presses
Pneumatics
Presses
Robotics
Standard cylinders

MATERIALS

Bronze-filled PTFE
Carbon-filled PTFE
PE-UHMW

Other grades of materials are available. Please contact our experts.

TECHNICAL DATA

Temperature	PTFE: -60°C / +150°C PE-UHMW: -60°C / +80°C
Speed	PTFE: 15 m/s PE-UHMW: 2 m/s
Media	Mineral hydraulic oils Biocompatible fluids Water Air Others (contact our experts)
Max. compression resistance	30 to 35 N/mm ²
Radial loads in dynamic applications	Filled PTFE: 15 N/mm ² at 25°C 12 N/mm ² at 80°C 8 N/mm ² at 120°C PE-UHMW: 25 N/mm ² at 25°C 10 N/mm ² at 80°C

The figures above indicate the maximum values and may not be cumulated. They may be developed, depending on the materials used.

EXTRUSION GAPS

Rod diameter Ød1	Min. radial gap F/2 min	Max. radial gap F/2 min
8.0 - 20.0	0.20	0.30
21.0 - 100.0	0.25	0.40
101.0 - 250.0	0.30	0.60
251.0 - 500.0	0.40	0.80
501.0 - 1000.0	0.50	1.10
> 1000.0	0.50	1.20

SURFACE ROUGHNESS

Roughness	Dynamic surface area	Static surface area	Groove flanks
Ra	0.05 - 0.2 µm	≤1.6 µm	≤3.2 µm
Rz	0.4 - 1.6 µm	≤6.3 µm	≤10.0 µm
Rmax	0.63 - 2.5 µm	≤10.0 µm	≤16.0 µm

RADIUS

Rod diameter Ød1	Radius R1
≤ 250.0	0.20
> 250.0	0.40

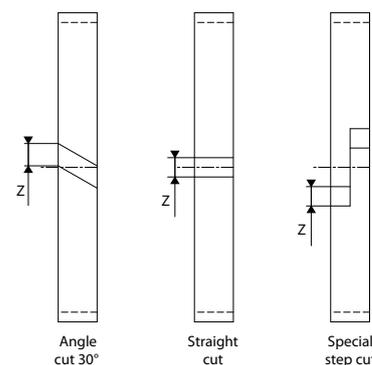
WEAR RING HEIGHT DIMENSIONING

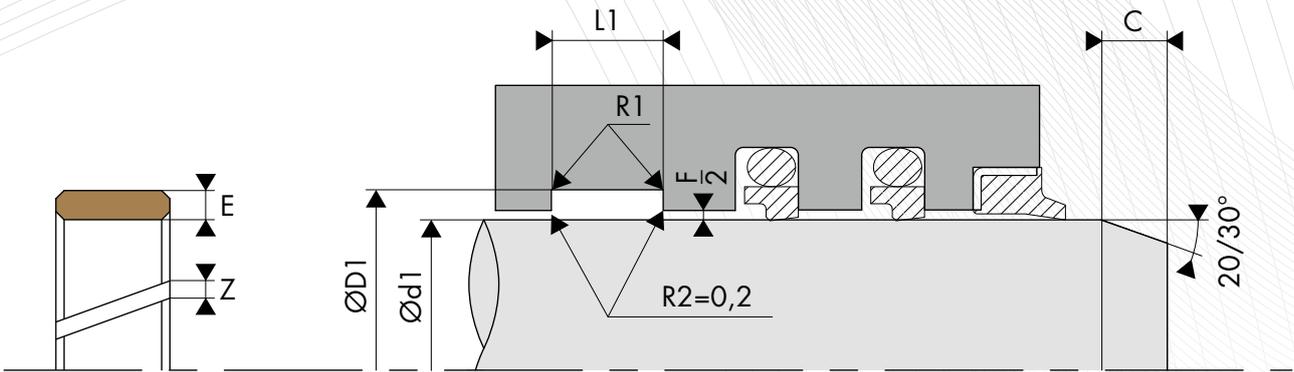
$$H = (F \times f) / (\text{Ød1} \times Cr)$$

where:

H = Min. height of guide (mm)
F = Max. radial force (N)
f = Safety coefficient (we recommend 2)
Ød1 = Rod diameter (mm)
Cr = Permissible radial load in dynamic applications (N/mm²)

TYPES OF CUT





○ INSTALLATION DIMENSIONS

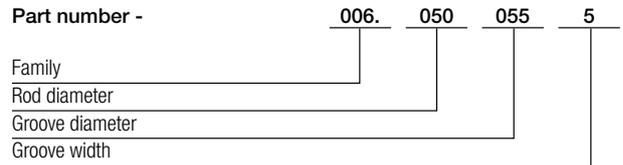
ISO 10766	Rod diameter Ød1 f8/h9	Groove diameter ØD1 H8	Groove width L1 0/+0.20	Seal thickness E	Gap Z +/-0.50
*	8.0 - 20.0	d1 + 3.10	2.50	1.55	1.00
*	10.0 - 50.0	d1 + 3.10	4.00	1.55	1.00
*	15.0 - 140.0	d1 + 5.00	5.60	2.50	1.25
*	20.0 - 220.0	d1 + 5.00	9.70	2.50	1.25
*	80.0 - 400.0	d1 + 5.00	15.00	2.50	1.25
*	200.0 - 999.9	d1 + 5.00	25.00	2.50	1.25
*	280.0 - 999.9	d1 + 8.00	25.00	4.00	2.00

Other dimensions are possible, not taking ISO 10766 into consideration. Please contact our experts

○ EXAMPLE OF CODIFICATION

STANDARD CODIFICATION

Material _____ : Bronze-filled PTFE
Rod diameter _____ : d1 = 50.00 mm
Groove diameter _____ : D1 = 55.00 mm
Groove width _____ : L1 = 5.60 mm
Part number _____ : 006.0500555



* The codes that define the materials are set out in the materials table.

DIMENSIONS

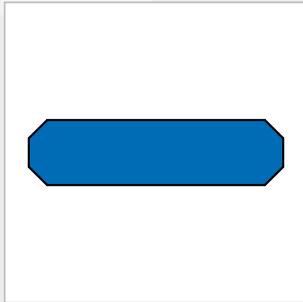
Part number	Rod diameter Ød1 f8/h9	Groove diameter ØD1 H8	Groove width L1 0/+0.20	Seal thickness E
006.0081114	8.00	11.10	4.00	1.55
006.0101314	10.00	13.10	4.00	1.55
006.0121514	12.00	15.10	4.00	1.55
006.0141714	14.00	17.10	4.00	1.55
006.0151814	15.00	18.10	4.00	1.55
006.0161914	16.00	19.10	4.00	1.55
006.0182114	18.00	21.10	4.00	1.55
006.0202314	20.00	23.10	4.00	1.55
006.0222514	22.00	25.10	4.00	1.55
006.0252814	25.00	28.10	4.00	1.55
006.0250305	25.00	30.00	5.60	2.50
006.0273014	27.00	30.10	4.00	1.55
006.0270325	27.00	32.00	5.60	2.50
006.0283114	28.00	31.10	4.00	1.55
006.0280335	28.00	33.00	5.60	2.50
006.0303314	30.00	33.10	4.00	1.55
006.0300355	30.00	35.00	5.60	2.50
006.0300359	30.00	35.00	9.70	2.50
006.0323514	32.00	35.10	4.00	1.55
006.0320375	32.00	37.00	5.60	2.50
006.0320379	32.00	37.00	9.70	2.50
006.0333614	33.00	36.10	4.00	1.55
006.0330385	33.00	38.00	5.60	2.50
006.0330389	33.00	38.00	9.70	2.50
006.0353814	35.00	38.10	4.00	1.55
006.0350405	35.00	40.00	5.60	2.50
006.0350409	35.00	40.00	9.70	2.50
006.0363914	36.00	39.10	4.00	1.55
006.0360415	36.00	41.00	5.60	2.50
006.0360419	36.00	41.00	9.70	2.50
006.0374014	37.00	40.10	4.00	1.55
006.0370425	37.00	42.00	5.60	2.50
006.0370429	37.00	42.00	9.70	2.50
006.0384114	38.00	41.10	4.00	1.55
006.0380435	38.00	43.00	5.60	2.50
006.0380439	38.00	43.00	9.70	2.50
006.0404314	40.00	43.10	4.00	1.55
006.0400455	40.00	45.00	5.60	2.50
006.0400459	40.00	45.00	9.70	2.50
006.0414414	41.00	44.10	4.00	1.55
006.0410465	41.00	46.00	5.60	2.50
006.0410469	41.00	46.00	9.70	2.50
006.0424514	42.00	45.10	4.00	1.55
006.0420475	42.00	47.00	5.60	2.50
006.0420479	42.00	47.00	9.70	2.50
006.0454814	45.00	48.10	4.00	1.55
006.0450505	45.00	50.00	5.60	2.50
006.0450509	45.00	50.00	9.70	2.50
006.0485114	48.00	51.10	4.00	1.55
006.0480535	48.00	53.00	5.60	2.50
006.0480539	48.00	53.00	9.70	2.50
006.0505314	50.00	53.10	4.00	1.55
006.0500555	50.00	55.00	5.60	2.50
006.0500559	50.00	55.00	9.70	2.50
006.0520575	52.00	57.00	5.60	2.50
006.0520579	52.00	57.00	9.70	2.50
006.0550605	55.00	60.00	5.60	2.50
006.0550609	55.00	60.00	9.70	2.50
006.0580635	58.00	63.00	5.60	2.50
006.0580639	58.00	63.00	9.70	2.50
006.0600655	60.00	65.00	5.60	2.50
006.0600659	60.00	65.00	9.70	2.50

Part number	Rod diameter Ød1 f8/h9	Groove diameter ØD1 H8	Groove width L1 0/+0.20	Seal thickness E
006.0610665	61.00	66.00	5.60	2.50
006.0610669	61.00	66.00	9.70	2.50
006.0630685	63.00	68.00	5.60	2.50
006.0630689	63.00	68.00	9.70	2.50
006.0650705	65.00	70.00	5.60	2.50
006.0650709	65.00	70.00	9.70	2.50
006.0680735	68.00	73.00	5.60	2.50
006.0680739	68.00	73.00	9.70	2.50
006.0700755	70.00	75.00	5.60	2.50
006.0700759	70.00	75.00	9.70	2.50
006.0720779	72.00	77.00	9.70	2.50
006.0750809	75.00	80.00	9.70	2.50
006.0780839	78.00	83.00	9.70	2.50
006.0800859	80.00	85.00	9.70	2.50
006.0800851	80.00	85.00	15.00	2.50
006.0850909	85.00	90.00	9.70	2.50
006.0850901	85.00	90.00	15.00	2.50
006.0900959	90.00	95.00	9.70	2.50
006.0900951	90.00	95.00	15.00	2.50
006.0951009	95.00	100.00	9.70	2.50
006.0951001	95.00	100.00	15.00	2.50
006.1001059	100.00	105.00	9.70	2.50
006.1001051	100.00	105.00	15.00	2.50
006.1051109	105.00	110.00	9.70	2.50
006.1051101	105.00	110.00	15.00	2.50
006.1101159	110.00	115.00	9.70	2.50
006.1101151	110.00	115.00	15.00	2.50
006.1151209	115.00	120.00	9.70	2.50
006.1151201	115.00	120.00	15.00	2.50
006.1201259	120.00	125.00	9.70	2.50
006.1201251	120.00	125.00	15.00	2.50
006.1251309	125.00	130.00	9.70	2.50
006.1251301	125.00	130.00	15.00	2.50
006.1301359	130.00	135.00	9.70	2.50
006.1301351	130.00	135.00	15.00	2.50
006.1351409	135.00	140.00	9.70	2.50
006.1351401	135.00	140.00	15.00	2.50
006.1401459	140.00	145.00	9.70	2.50
006.1401451	140.00	145.00	15.00	2.50
006.1451509	145.00	150.00	9.70	2.50
006.1451501	145.00	150.00	15.00	2.50
006.1501559	150.00	155.00	9.70	2.50
006.1501551	150.00	155.00	15.00	2.50
006.1551609	155.00	160.00	9.70	2.50
006.1551601	155.00	160.00	15.00	2.50
006.1601659	160.00	165.00	9.70	2.50
006.1601651	160.00	165.00	15.00	2.50
006.1651709	165.00	170.00	9.70	2.50
006.1651701	165.00	170.00	15.00	2.50
006.1701759	170.00	175.00	9.70	2.50
006.1701751	170.00	175.00	15.00	2.50
006.1751809	175.00	180.00	9.70	2.50
006.1751801	175.00	180.00	15.00	2.50
006.1801859	180.00	185.00	9.70	2.50
006.1801851	180.00	185.00	15.00	2.50
006.1851909	185.00	190.00	9.70	2.50
006.1851901	185.00	190.00	15.00	2.50
006.1901959	190.00	195.00	9.70	2.50
006.1901951	190.00	195.00	15.00	2.50
006.1952009	195.00	200.00	9.70	2.50
006.1952001	195.00	200.00	15.00	2.50
006.2002059	200.00	205.00	9.70	2.50

Part number	Rod diameter Ød1 f8/h9	Groove diameter ØD1 H8	Groove width L1 0/+0.20	Seal thickness E
006.2002051	200.00	205.00	15.00	2.50
006.2002052	200.00	205.00	25.00	2.50
006.2052101	205.00	210.00	15.00	2.50
006.2052102	205.00	210.00	25.00	2.50
006.2102151	210.00	215.00	15.00	2.50
006.2102152	210.00	215.00	25.00	2.50
006.2152201	215.00	220.00	15.00	2.50
006.2152202	215.00	220.00	25.00	2.50
006.2202251	220.00	225.00	15.00	2.50
006.2202252	220.00	225.00	25.00	2.50
006.2252301	225.00	230.00	15.00	2.50
006.2252302	225.00	230.00	25.00	2.50
006.2302351	230.00	235.00	15.00	2.50
006.2302352	230.00	235.00	25.00	2.50
006.2352401	235.00	240.00	15.00	2.50
006.2352402	235.00	240.00	25.00	2.50
006.2402451	240.00	245.00	15.00	2.50
006.2402452	240.00	245.00	25.00	2.50
006.2452501	245.00	250.00	15.00	2.50
006.2452502	245.00	250.00	25.00	2.50
006.2502551	250.00	255.00	15.00	2.50
006.2502552	250.00	255.00	25.00	2.50
006.2552601	255.00	260.00	15.00	2.50
006.2552602	255.00	260.00	25.00	2.50
006.2602651	260.00	265.00	15.00	2.50
006.2602652	260.00	265.00	25.00	2.50
006.2652701	265.00	270.00	15.00	2.50
006.2652702	265.00	270.00	25.00	2.50
006.2702751	270.00	275.00	15.00	2.50
006.2702752	270.00	275.00	25.00	2.50
006.2752801	275.00	280.00	15.00	2.50
006.2752802	275.00	280.00	25.00	2.50

Part number	Rod diameter Ød1 f8/h9	Groove diameter ØD1 H8	Groove width L1 0/+0.20	Seal thickness E
006.2802851	280.00	285.00	15.00	2.50
006.2802852	280.00	285.00	25.00	2.50
006.2852901	285.00	290.00	15.00	2.50
006.2852902	285.00	290.00	25.00	2.50
006.2902951	290.00	295.00	15.00	2.50
006.2902952	290.00	295.00	25.00	2.50
006.2953001	295.00	300.00	15.00	2.50
006.2953002	295.00	300.00	25.00	2.50
006.3003051	300.00	305.00	15.00	2.50
006.3003052	300.00	305.00	25.00	2.50
006.3053101	305.00	310.00	15.00	2.50
006.3053102	305.00	310.00	25.00	2.50
006.3103151	310.00	315.00	15.00	2.50
006.3103152	310.00	315.00	25.00	2.50
006.3153201	315.00	320.00	15.00	2.50
006.3153202	315.00	320.00	25.00	2.50
006.3203251	320.00	325.00	15.00	2.50
006.3203252	320.00	325.00	25.00	2.50
006.3253301	325.00	330.00	15.00	2.50
006.3253302	325.00	330.00	25.00	2.50
006.3303351	330.00	335.00	15.00	2.50
006.3303352	330.00	335.00	25.00	2.50
006.3353401	335.00	340.00	15.00	2.50
006.3353402	335.00	340.00	25.00	2.50
006.3403451	340.00	345.00	15.00	2.50
006.3403452	340.00	345.00	25.00	2.50
006.3453501	345.00	350.00	15.00	2.50
006.3453502	345.00	350.00	25.00	2.50
006.3503551	350.00	355.00	15.00	2.50
006.3503552	350.00	355.00	25.00	2.50
006.3603651	360.00	365.00	15.00	2.50
006.3603652	360.00	365.00	25.00	2.50

The figures highlighted in bold correspond to the dimensions for standard ISO 10766, with the rod diameters in line with standard ISO 3320. Other intermediate sizes can be provided.



WEAR RINGS

BECA 007 Piston



DESCRIPTION

The BECA 007 Piston profile is a machined guide ring with a 30° angle cut as standard, made from glass-filled PTFE. Other types of cuts can be made.

ADVANTAGES

Great compression resistance
Great wear resistance
Water absorption limited to 0.2%
Good stiffness

APPLICATIONS

Lifting trucks
Construction equipment
Agricultural machinery
Standard cylinders

MATERIALS

Polyoxymethylene - POM

Other grades of materials are available.
Please contact our experts.

TECHNICAL DATA

Temperature	-50°C / +115°C
Speed	1 m/s
Max. compression resistance	170 N/mm ²
Radial loads in dynamic applications	40 N/mm ² at 25°C 25 N/mm ² > 60°C

The figures above indicate the maximum values and may not be cumulated. They may be developed, depending on the materials used.

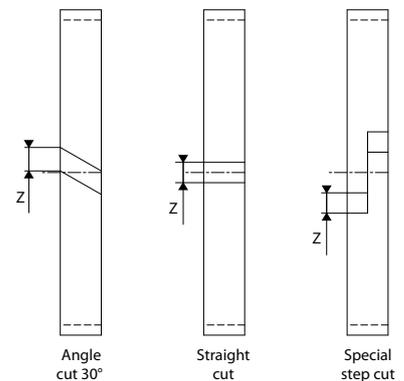
WEAR RING HEIGHT DIMENSIONING

$$H = (F \times f) / (\text{ØD1} \times Cr)$$

where:

H = Min. height of guide (mm)
F = Max. radial force (N)
f = Safety coefficient (we recommend 2)
ØD1 = Bore diameter (mm)
Cr = Permissible radial load in dynamic applications (N/mm²)

TYPES OF CUT



EXTRUSION GAPS

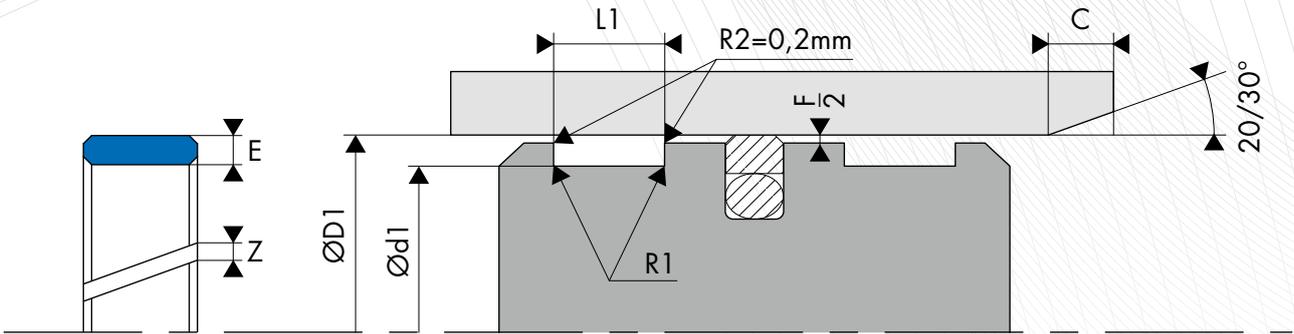
Bore diameter ØD1	Radial gap F/2	
8.0 - 20.0	0.20	0.30
21.0 - 100.0	0.25	0.40
101.0 - 250.0	0.30	0.60
251.0 - 300.0	0.40	0.80
301.0 - 500.0	0.40	0.80

SURFACE ROUGHNESS

Roughness	Dynamic surface area	Static surface area	Groove flanks
Ra	0.1 - 0.4 µm	≤1.6 µm	≤3.2 µm
Rz	0.63 - 2.5 µm	≤6.3 µm	≤10.0 µm
Rmax	1.0 - 4.0 µm	≤10.0 µm	≤16.0 µm

RADIUS

Bore diameter ØD1	Radius R1
8.0 - 250.0	0.20
> 250.0	0.40



○ INSTALLATION DIMENSIONS

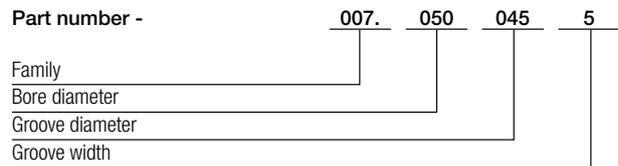
ISO 10766	Bore diameter ØD1 H9	Groove diameter Ød1 h8	Groove width L1 0/+0.20	Seal thickness E	End Gap Z +/-0.50
*	10.0 - 50.0	D1 - 3.10	4.00	1.55	1.00
*	16.0 - 140.0	D1 - 5.00	5.60	2.50	1.25
*	60.0 - 220.0	D1 - 5.00	9.70	2.50	1.25
*	130.0 - 500.0	D1 - 5.00	15.00	2.50	1.25
*	280.0 - 500.0	D1 - 5.00	25.00	2.50	1.25
*	280.0 - 500.0	D1 - 8.00	25.00	4.00	2.00

Other dimensions are possible, not taking ISO 10766 into consideration. Please contact our experts

○ EXAMPLE OF CODIFICATION

STANDARD CODIFICATION

Material _____ : Polyoxymethylene (POM)
Bore diameter ____ : D1 = 50.00 mm
Groove diameter ___ : d1 = 45.00 mm
Groove width ____ : L1 = 5.60 mm
Part number _____ : 007.0500455



* The codes that define the materials are set out in the materials table.

DIMENSIONS

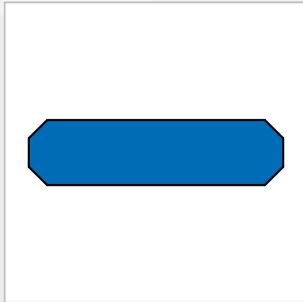
Part number	Bore diameter ØD1 H9	Groove diameter Ød1 h8	Groove width L1 0/+0.20	Seal thickness E
007.0080494	8.00	4.90	4.00	1.55
007.0100694	10.00	6.90	4.00	1.55
007.0120894	12.00	8.90	4.00	1.55
007.0141094	14.00	10.90	4.00	1.55
007.0151194	15.00	11.90	4.00	1.55
007.0160115	16.00	11.00	5.60	2.50
007.0161294	16.00	12.90	4.00	1.55
007.0180135	18.00	13.00	5.60	2.50
007.0181494	18.00	14.90	4.00	1.55
007.0200155	20.00	15.00	5.60	2.50
007.0201694	20.00	16.90	4.00	1.55
007.0220175	22.00	17.00	5.60	2.50
007.0221894	22.00	18.90	4.00	1.55
007.0250205	25.00	20.00	5.60	2.50
007.0250209	25.00	20.00	9.70	2.50
007.0252194	25.00	21.90	4.00	1.55
007.0270225	27.00	22.00	5.60	2.50
007.0270229	27.00	22.00	9.70	2.50
007.0272394	27.00	23.90	4.00	1.55
007.0280235	28.00	23.00	5.60	2.50
007.0280239	28.00	23.00	9.70	2.50
007.0282494	28.00	24.90	4.00	1.55
007.0300255	30.00	25.00	5.60	2.50
007.0300259	30.00	25.00	9.70	2.50
007.0302694	30.00	26.90	4.00	1.55
007.0320275	32.00	27.00	5.60	2.50
007.0320279	32.00	27.00	9.70	2.50
007.0322894	32.00	28.90	4.00	1.55
007.0330285	33.00	28.00	5.60	2.50
007.0330289	33.00	28.00	9.70	2.50
007.0332994	33.00	29.90	4.00	1.55
007.0350305	35.00	30.00	5.60	2.50
007.0350309	35.00	30.00	9.70	2.50
007.0353194	35.00	31.90	4.00	1.55
007.0360315	36.00	31.00	5.60	2.50
007.0360319	36.00	31.00	9.70	2.50
007.0363294	36.00	32.90	4.00	1.55
007.0370325	37.00	32.00	5.60	2.50
007.0370329	37.00	32.00	9.70	2.50
007.0373394	37.00	33.90	4.00	1.55
007.0380335	38.00	33.00	5.60	2.50
007.0380339	38.00	33.00	9.70	2.50
007.0383494	38.00	34.90	4.00	1.55
007.0400355	40.00	35.00	5.60	2.50
007.0400359	40.00	35.00	9.70	2.50
007.0403694	40.00	36.90	4.00	1.55
007.0410365	41.00	36.00	5.60	2.50
007.0410369	41.00	36.00	9.70	2.50
007.0413794	41.00	37.90	4.00	1.55
007.0420375	42.00	37.00	5.60	2.50
007.0420379	42.00	37.00	9.70	2.50
007.0423894	42.00	38.90	4.00	1.55
007.0450405	45.00	40.00	5.60	2.50
007.0450409	45.00	40.00	9.70	2.50
007.0454194	45.00	41.90	4.00	1.55
007.0480435	48.00	43.00	5.60	2.50
007.0480439	48.00	43.00	9.70	2.50
007.0484494	48.00	44.90	4.00	1.55
007.0500455	50.00	45.00	5.60	2.50
007.0500459	50.00	45.00	9.70	2.50
007.0504694	50.00	46.90	4.00	1.55
007.0520475	52.00	47.00	5.60	2.50

Part number	Bore diameter ØD1 H9	Groove diameter Ød1 h8	Groove width L1 0/+0.20	Seal thickness E
007.0520479	52.00	47.00	9.70	2.50
007.0550505	55.00	50.00	5.60	2.50
007.0550509	55.00	50.00	9.70	2.50
007.0580535	58.00	53.00	5.60	2.50
007.0580539	58.00	53.00	9.70	2.50
007.0600555	60.00	55.00	5.60	2.50
007.0600559	60.00	55.00	9.70	2.50
007.0610565	61.00	56.00	5.60	2.50
007.0610569	61.00	56.00	9.70	2.50
007.0630585	63.00	58.00	5.60	2.50
007.0630589	63.00	58.00	9.70	2.50
007.0650605	65.00	60.00	5.60	2.50
007.0650609	65.00	60.00	9.70	2.50
007.0680635	68.00	63.00	5.60	2.50
007.0680639	68.00	63.00	9.70	2.50
007.0700655	70.00	65.00	5.60	2.50
007.0700659	70.00	65.00	9.70	2.50
007.0720675	72.00	67.00	5.60	2.50
007.0720679	72.00	67.00	9.70	2.50
007.0750705	75.00	70.00	5.60	2.50
007.0750709	75.00	70.00	9.70	2.50
007.0780735	78.00	73.00	5.60	2.50
007.0780739	78.00	73.00	9.70	2.50
007.0800755	80.00	75.00	5.60	2.50
007.0800759	80.00	75.00	9.70	2.50
007.0850805	85.00	80.00	5.60	2.50
007.0850809	85.00	80.00	9.70	2.50
007.0900855	90.00	85.00	5.60	2.50
007.0900859	90.00	85.00	9.70	2.50
007.0950905	95.00	90.00	5.60	2.50
007.0950909	95.00	90.00	9.70	2.50
007.1000955	100.00	95.00	5.60	2.50
007.1000959	100.00	95.00	9.70	2.50
007.1051005	105.00	100.00	5.60	2.50
007.1051009	105.00	100.00	9.70	2.50
007.1101055	110.00	105.00	5.60	2.50
007.1101059	110.00	105.00	9.70	2.50
007.1151105	115.00	110.00	5.60	2.50
007.1151109	115.00	110.00	9.70	2.50
007.1201155	120.00	115.00	5.60	2.50
007.1201159	120.00	115.00	9.70	2.50
007.1251205	125.00	120.00	5.60	2.50
007.1251209	125.00	120.00	9.70	2.50
007.1251202	125.00	120.00	25.00	2.50
007.1301259	130.00	125.00	9.70	2.50
007.1301252	130.00	125.00	25.00	2.50
007.1351309	135.00	130.00	9.70	2.50
007.1351302	135.00	130.00	25.00	2.50
007.1401359	140.00	135.00	9.70	2.50
007.1401352	140.00	135.00	25.00	2.50
007.1451409	145.00	140.00	9.70	2.50
007.1451402	145.00	140.00	25.00	2.50
007.1501459	150.00	145.00	9.70	2.50
007.1501452	150.00	145.00	25.00	2.50
007.1551509	155.00	150.00	9.70	2.50
007.1551502	155.00	150.00	25.00	2.50
007.1601559	160.00	155.00	9.70	2.50
007.1601552	160.00	155.00	25.00	2.50
007.1651609	165.00	160.00	9.70	2.50
007.1651602	165.00	160.00	25.00	2.50
007.1701659	170.00	165.00	9.70	2.50
007.1701652	170.00	165.00	25.00	2.50

Part number	Bore diameter ØD1 H9	Groove diameter Ød1 h8	Groove width L1 0/+0.20	Seal thickness E
007.1751709	175.00	170.00	9.70	2.50
007.1751702	175.00	170.00	25.00	2.50
007.1801759	180.00	175.00	9.70	2.50
007.1801751	180.00	175.00	15.00	2.50
007.1801752	180.00	175.00	25.00	2.50
007.1851809	185.00	180.00	9.70	2.50
007.1851801	185.00	180.00	15.00	2.50
007.1851802	185.00	180.00	25.00	2.50
007.1901859	190.00	185.00	9.70	2.50
007.1901851	190.00	185.00	15.00	2.50
007.1901852	190.00	185.00	25.00	2.50
007.1951909	195.00	190.00	9.70	2.50
007.1951901	195.00	190.00	15.00	2.50
007.1951902	195.00	190.00	25.00	2.50
007.2001959	200.00	195.00	9.70	2.50
007.2001951	200.00	195.00	15.00	2.50
007.2001952	200.00	195.00	25.00	2.50
007.2052009	205.00	200.00	9.70	2.50
007.2052001	205.00	200.00	15.00	2.50
007.2052002	205.00	200.00	25.00	2.50
007.2102059	210.00	205.00	9.70	2.50
007.2102051	210.00	205.00	15.00	2.50
007.2102052	210.00	205.00	25.00	2.50
007.2152109	215.00	210.00	9.70	2.50
007.2152101	215.00	210.00	15.00	2.50
007.2152102	215.00	210.00	25.00	2.50
007.2202159	220.00	215.00	9.70	2.50
007.2202151	220.00	215.00	15.00	2.50
007.2202152	220.00	215.00	25.00	2.50
007.2252209	225.00	220.00	9.70	2.50
007.2252201	225.00	220.00	15.00	2.50
007.2252202	225.00	220.00	25.00	2.50
007.2302259	230.00	225.00	9.70	2.50
007.2302251	230.00	225.00	15.00	2.50
007.2302252	230.00	225.00	25.00	2.50
007.2352309	235.00	230.00	9.70	2.50
007.2352301	235.00	230.00	15.00	2.50
007.2352302	235.00	230.00	25.00	2.50
007.2402359	240.00	235.00	9.70	2.50
007.2402351	240.00	235.00	15.00	2.50
007.2402352	240.00	235.00	25.00	2.50
007.2452409	245.00	240.00	9.70	2.50
007.2452401	245.00	240.00	15.00	2.50
007.2452402	245.00	240.00	25.00	2.50
007.2502459	250.00	245.00	9.70	2.50
007.2502451	250.00	245.00	15.00	2.50
007.2502452	250.00	245.00	25.00	2.50
007.2552501	255.00	250.00	15.00	2.50
007.2552502	255.00	250.00	25.00	2.50
007.2602551	260.00	255.00	15.00	2.50
007.2602552	260.00	255.00	25.00	2.50

Part number	Bore diameter ØD1 H9	Groove diameter Ød1 h8	Groove width L1 0/+0.20	Seal thickness E
007.2652601	265.00	260.00	15.00	2.50
007.2652602	265.00	260.00	25.00	2.50
007.2702651	270.00	265.00	15.00	2.50
007.2702652	270.00	265.00	25.00	2.50
007.2752701	275.00	270.00	15.00	2.50
007.2752702	275.00	270.00	25.00	2.50
007.2802751	280.00	275.00	15.00	2.50
007.2802752	280.00	275.00	25.00	2.50
007.2852801	285.00	280.00	15.00	2.50
007.2852802	285.00	280.00	25.00	2.50
007.2902851	290.00	285.00	15.00	2.50
007.2902852	290.00	285.00	25.00	2.50
007.2952901	295.00	290.00	15.00	2.50
007.2952902	295.00	290.00	25.00	2.50
007.3002951	300.00	295.00	15.00	2.50
007.3002952	300.00	295.00	25.00	2.50
007.3053001	305.00	300.00	15.00	2.50
007.3053002	305.00	300.00	25.00	2.50
007.3103051	310.00	305.00	15.00	2.50
007.3103052	310.00	305.00	25.00	2.50
007.3153101	315.00	310.00	15.00	2.50
007.3153102	315.00	310.00	25.00	2.50
007.3203151	320.00	315.00	15.00	2.50
007.3203152	320.00	315.00	25.00	2.50
007.3253201	325.00	320.00	15.00	2.50
007.3253202	325.00	320.00	25.00	2.50
007.3303251	330.00	325.00	15.00	2.50
007.3303252	330.00	325.00	25.00	2.50
007.3353301	335.00	330.00	15.00	2.50
007.3353302	335.00	330.00	25.00	2.50
007.3403351	340.00	335.00	15.00	2.50
007.3403352	340.00	335.00	25.00	2.50
007.3453401	345.00	340.00	15.00	2.50
007.3453402	345.00	340.00	25.00	2.50
007.3503451	350.00	345.00	15.00	2.50
007.3503452	350.00	345.00	25.00	2.50
007.3603551	360.00	355.00	15.00	2.50
007.3603552	360.00	355.00	25.00	2.50
007.3703651	370.00	365.00	15.00	2.50
007.3703652	370.00	365.00	25.00	2.50
007.3803751	380.00	375.00	15.00	2.50
007.3803752	380.00	375.00	25.00	2.50
007.3903851	390.00	385.00	15.00	2.50
007.3903852	390.00	385.00	25.00	2.50
007.4003951	400.00	395.00	15.00	2.50
007.4003952	400.00	395.00	25.00	2.50
007.4504451	450.00	445.00	15.00	2.50
007.4504452	450.00	445.00	25.00	2.50
007.5004951	500.00	495.00	15.00	2.50
007.5004952	500.00	495.00	25.00	2.50

The figures highlighted in bold correspond to the dimensions for standard ISO 10766, with the bore diameters in line with standard ISO 3320. Other intermediate sizes can be provided.



WEAR RINGS

BECA 007 Rod



DESCRIPTION

The BECA 007 Piston profile is a machined guide ring with a 30° angle cut as standard, made from glass-filled PTFE. Other types of cuts can be made.

ADVANTAGES

Great compression resistance
Great wear resistance
Water absorption limited to 0.2%
Good stiffness

APPLICATIONS

Lifting trucks
Construction equipment
Agricultural machinery
Standard cylinders

MATERIALS

Polyoxymethylene - POM

Other grades of materials are available.
Please contact our experts.

TECHNICAL DATA

Temperature	-50°C / +115°C
Speed	1 m/s
Max. compression resistance	170 N/mm ²
Radial loads in dynamic applications	40 N/mm ² at 25°C 25 N/mm ² > 60°C

The figures above indicate the maximum values and may not be cumulated. They may be developed, depending on the materials used.

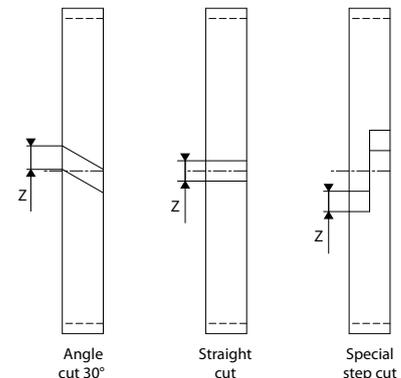
WEAR RING HEIGHT DIMENSIONING

$$H = (F \times f) / (\text{Ø}d1 \times Cr)$$

where:

H = Min. height of guide (mm)
F = Max. radial force (N)
f = Safety coefficient (we recommend 2)
Ød1 = Rod diameter (mm)
Cr = Permissible radial load in dynamic applications (N/mm²)

TYPES OF CUT



EXTRUSION GAPS

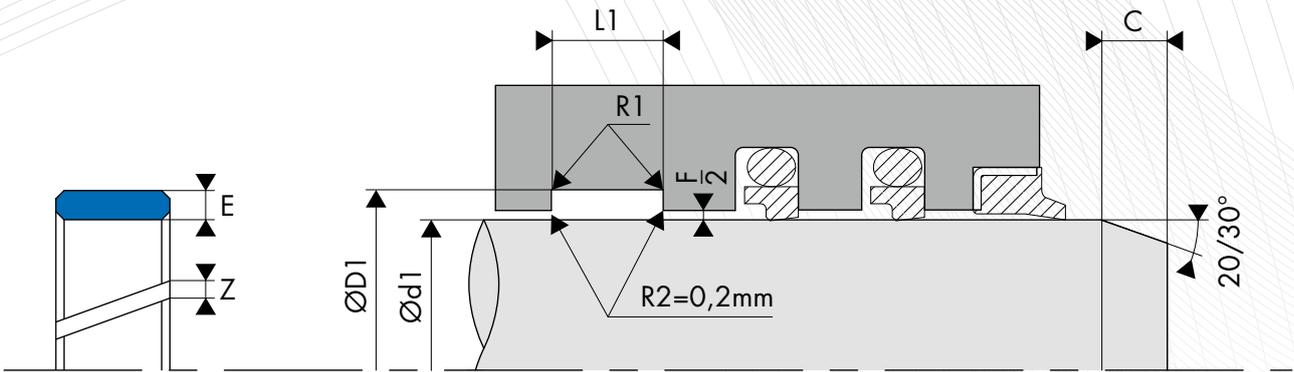
Rod diameter Ød1	Radial gap F/2	
8.0 - 20.0	0.20	0.30
21.0 - 100.0	0.25	0.40
101.0 - 250.0	0.30	0.60
251.0 - 300.0	0.40	0.80
301.0 - 500.0	0.40	0.80

SURFACE ROUGHNESS

Roughness	Dynamic surface area	Static surface area	Groove flanks
Ra	0.1 - 0.4 µm	≤1.6 µm	≤3.2 µm
Rz	0.63 - 2.5 µm	≤6.3 µm	≤10.0 µm
Rmax	1.0 - 4.0 µm	≤10.0 µm	≤16.0 µm

RADIUS

Rod diameter Ød1	Radius R1
≤ 250.0	0.20
> 250.0	0.40



○ INSTALLATION DIMENSIONS

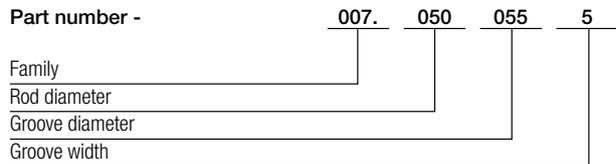
ISO 10766	Rod diameter Ød1 f8/h9	Groove diameter ØD1 H8	Groove width L1 0/+0.20	Seal thickness E	End Gap Z +/-0.50
*	10.0 - 50.0	d1 + 3.10	4.00	1.55	1.00
*	15.0 - 140.0	d1 + 5.00	5.60	2.50	1.25
*	20.0 - 220.0	d1 + 5.00	9.70	2.50	1.25
*	80.0 - 360.0	d1 + 5.00	15.00	2.50	1.25
*	200.0 - 360.0	d1 + 5.00	25.00	2.50	1.25
*	280.0 - 360.0	d1 + 8.00	25.00	4.00	2.00

Other dimensions are possible, not taking ISO 10766 into consideration. Please contact our experts

○ EXAMPLE OF CODIFICATION

STANDARD CODIFICATION

Material _____ : Polyoxymethylene (POM)
Rod diameter _____ : d1 = 50.00 mm
Groove diameter _____ : D1 = 55.00 mm
Groove width _____ : L1 = 5.60 mm
Part number _____ : 007.0500555



* The codes that define the materials are set out in the materials table.

DIMENSIONS

Part number	Rod diameter Ød1 f8/h9	Groove diameter ØD1 H8	Groove width L1 0/+0.20	Seal thickness E
007.0081114	8.00	11.10	4.00	1.55
007.0101314	10.00	13.10	4.00	1.55
007.0121514	12.00	15.10	4.00	1.55
007.0141714	14.00	17.10	4.00	1.55
007.0151814	15.00	18.10	4.00	1.55
007.0161914	16.00	19.10	4.00	1.55
007.0182114	18.00	21.10	4.00	1.55
007.0202314	20.00	23.10	4.00	1.55
007.0222514	22.00	25.10	4.00	1.55
007.0252814	25.00	28.10	4.00	1.55
007.0250305	25.00	30.00	5.60	2.50
007.0273014	27.00	30.10	4.00	1.55
007.0270325	27.00	32.00	5.60	2.50
007.0283114	28.00	31.10	4.00	1.55
007.0280335	28.00	33.00	5.60	2.50
007.0303314	30.00	33.10	4.00	1.55
007.0300355	30.00	35.00	5.60	2.50
007.0300359	30.00	35.00	9.70	2.50
007.0323514	32.00	35.10	4.00	1.55
007.0320375	32.00	37.00	5.60	2.50
007.0320379	32.00	37.00	9.70	2.50
007.0333614	33.00	36.10	4.00	1.55
007.0330385	33.00	38.00	5.60	2.50
007.0330389	33.00	38.00	9.70	2.50
007.0353814	35.00	38.10	4.00	1.55
007.0350405	35.00	40.00	5.60	2.50
007.0350409	35.00	40.00	9.70	2.50
007.0363914	36.00	39.10	4.00	1.55
007.0360415	36.00	41.00	5.60	2.50
007.0360419	36.00	41.00	9.70	2.50
007.0374014	37.00	40.10	4.00	1.55
007.0370425	37.00	42.00	5.60	2.50
007.0370429	37.00	42.00	9.70	2.50
007.0384114	38.00	41.10	4.00	1.55
007.0380435	38.00	43.00	5.60	2.50
007.0380439	38.00	43.00	9.70	2.50
007.0404314	40.00	43.10	4.00	1.55
007.0400455	40.00	45.00	5.60	2.50
007.0400459	40.00	45.00	9.70	2.50
007.0414414	41.00	44.10	4.00	1.55
007.0410465	41.00	46.00	5.60	2.50
007.0410469	41.00	46.00	9.70	2.50
007.0424514	42.00	45.10	4.00	1.55
007.0420475	42.00	47.00	5.60	2.50
007.0420479	42.00	47.00	9.70	2.50
007.0454814	45.00	48.10	4.00	1.55
007.0450505	45.00	50.00	5.60	2.50
007.0450509	45.00	50.00	9.70	2.50
007.0485114	48.00	51.10	4.00	1.55
007.0480535	48.00	53.00	5.60	2.50
007.0480539	48.00	53.00	9.70	2.50
007.0505314	50.00	53.10	4.00	1.55
007.0500555	50.00	55.00	5.60	2.50
007.0500559	50.00	55.00	9.70	2.50
007.0520575	52.00	57.00	5.60	2.50
007.0520579	52.00	57.00	9.70	2.50
007.0550605	55.00	60.00	5.60	2.50
007.0550609	55.00	60.00	9.70	2.50
007.0580635	58.00	63.00	5.60	2.50
007.0580639	58.00	63.00	9.70	2.50
007.0600655	60.00	65.00	5.60	2.50
007.0600659	60.00	65.00	9.70	2.50

Part number	Rod diameter Ød1 f8/h9	Groove diameter ØD1 H8	Groove width L1 0/+0.20	Seal thickness E
007.0610665	61.00	66.00	5.60	2.50
007.0610669	61.00	66.00	9.70	2.50
007.0630685	63.00	68.00	5.60	2.50
007.0630689	63.00	68.00	9.70	2.50
007.0650705	65.00	70.00	5.60	2.50
007.0650709	65.00	70.00	9.70	2.50
007.0680735	68.00	73.00	5.60	2.50
007.0680739	68.00	73.00	9.70	2.50
007.0700755	70.00	75.00	5.60	2.50
007.0700759	70.00	75.00	9.70	2.50
007.0720779	72.00	77.00	9.70	2.50
007.0750809	75.00	80.00	9.70	2.50
007.0780839	78.00	83.00	9.70	2.50
007.0800859	80.00	85.00	9.70	2.50
007.0800851	80.00	85.00	15.00	2.50
007.0850909	85.00	90.00	9.70	2.50
007.0850901	85.00	90.00	15.00	2.50
007.0900959	90.00	95.00	9.70	2.50
007.0900951	90.00	95.00	15.00	2.50
007.0951009	95.00	100.00	9.70	2.50
007.0951001	95.00	100.00	15.00	2.50
007.1001059	100.00	105.00	9.70	2.50
007.1001051	100.00	105.00	15.00	2.50
007.1051109	105.00	110.00	9.70	2.50
007.1051101	105.00	110.00	15.00	2.50
007.1101159	110.00	115.00	9.70	2.50
007.1101151	110.00	115.00	15.00	2.50
007.1151209	115.00	120.00	9.70	2.50
007.1151201	115.00	120.00	15.00	2.50
007.1201259	120.00	125.00	9.70	2.50
007.1201251	120.00	125.00	15.00	2.50
007.1251309	125.00	130.00	9.70	2.50
007.1251301	125.00	130.00	15.00	2.50
007.1301359	130.00	135.00	9.70	2.50
007.1301351	130.00	135.00	15.00	2.50
007.1351409	135.00	140.00	9.70	2.50
007.1351401	135.00	140.00	15.00	2.50
007.1401459	140.00	145.00	9.70	2.50
007.1401451	140.00	145.00	15.00	2.50
007.1451509	145.00	150.00	9.70	2.50
007.1451501	145.00	150.00	15.00	2.50
007.1501559	150.00	155.00	9.70	2.50
007.1501551	150.00	155.00	15.00	2.50
007.1551609	155.00	160.00	9.70	2.50
007.1551601	155.00	160.00	15.00	2.50
007.1601659	160.00	165.00	9.70	2.50
007.1601651	160.00	165.00	15.00	2.50
007.1651709	165.00	170.00	9.70	2.50
007.1651701	165.00	170.00	15.00	2.50
007.1701759	170.00	175.00	9.70	2.50
007.1701751	170.00	175.00	15.00	2.50
007.1751809	175.00	180.00	9.70	2.50
007.1751801	175.00	180.00	15.00	2.50
007.1801859	180.00	185.00	9.70	2.50
007.1801851	180.00	185.00	15.00	2.50
007.1851909	185.00	190.00	9.70	2.50
007.1851901	185.00	190.00	15.00	2.50
007.1901959	190.00	195.00	9.70	2.50
007.1901951	190.00	195.00	15.00	2.50
007.1952009	195.00	200.00	9.70	2.50
007.1952001	195.00	200.00	15.00	2.50
007.2002059	200.00	205.00	9.70	2.50

Part number	Rod diameter Ød1 f8/h9	Groove diameter ØD1 H8	Groove width L1 0/+0.20	Seal thickness E
007.2002051	200.00	205.00	15.00	2.50
007.2002052	200.00	205.00	25.00	2.50
007.2052101	205.00	210.00	15.00	2.50
007.2052102	205.00	210.00	25.00	2.50
007.2102151	210.00	215.00	15.00	2.50
007.2102152	210.00	215.00	25.00	2.50
007.2152201	215.00	220.00	15.00	2.50
007.2152202	215.00	220.00	25.00	2.50
007.2202251	220.00	225.00	15.00	2.50
007.2202252	220.00	225.00	25.00	2.50
007.2252301	225.00	230.00	15.00	2.50
007.2252302	225.00	230.00	25.00	2.50
007.2302351	230.00	235.00	15.00	2.50
007.2302352	230.00	235.00	25.00	2.50
007.2352401	235.00	240.00	15.00	2.50
007.2352402	235.00	240.00	25.00	2.50
007.2402451	240.00	245.00	15.00	2.50
007.2402452	240.00	245.00	25.00	2.50
007.2452501	245.00	250.00	15.00	2.50
007.2452502	245.00	250.00	25.00	2.50
007.2502551	250.00	255.00	15.00	2.50
007.2502552	250.00	255.00	25.00	2.50
007.2552601	255.00	260.00	15.00	2.50
007.2552602	255.00	260.00	25.00	2.50
007.2602651	260.00	265.00	15.00	2.50
007.2602652	260.00	265.00	25.00	2.50
007.2652701	265.00	270.00	15.00	2.50
007.2652702	265.00	270.00	25.00	2.50
007.2702751	270.00	275.00	15.00	2.50
007.2702752	270.00	275.00	25.00	2.50
007.2752801	275.00	280.00	15.00	2.50
007.2752802	275.00	280.00	25.00	2.50

Part number	Rod diameter Ød1 f8/h9	Groove diameter ØD1 H8	Groove width L1 0/+0.20	Seal thickness E
007.2802851	280.00	285.00	15.00	2.50
007.2802852	280.00	285.00	25.00	2.50
007.2852901	285.00	290.00	15.00	2.50
007.2852902	285.00	290.00	25.00	2.50
007.2902951	290.00	295.00	15.00	2.50
007.2902952	290.00	295.00	25.00	2.50
007.2953001	295.00	300.00	15.00	2.50
007.2953002	295.00	300.00	25.00	2.50
007.3003051	300.00	305.00	15.00	2.50
007.3003052	300.00	305.00	25.00	2.50
007.3053101	305.00	310.00	15.00	2.50
007.3053102	305.00	310.00	25.00	2.50
007.3103151	310.00	315.00	15.00	2.50
007.3103152	310.00	315.00	25.00	2.50
007.3153201	315.00	320.00	15.00	2.50
007.3153202	315.00	320.00	25.00	2.50
007.3203251	320.00	325.00	15.00	2.50
007.3203252	320.00	325.00	25.00	2.50
007.3253301	325.00	330.00	15.00	2.50
007.3253302	325.00	330.00	25.00	2.50
007.3303351	330.00	335.00	15.00	2.50
007.3303352	330.00	335.00	25.00	2.50
007.3353401	335.00	340.00	15.00	2.50
007.3353402	335.00	340.00	25.00	2.50
007.3403451	340.00	345.00	15.00	2.50
007.3403452	340.00	345.00	25.00	2.50
007.3453501	345.00	350.00	15.00	2.50
007.3453502	345.00	350.00	25.00	2.50
007.3503551	350.00	355.00	15.00	2.50
007.3503552	350.00	355.00	25.00	2.50
007.3603651	360.00	365.00	15.00	2.50
007.3603652	360.00	365.00	25.00	2.50

The figures highlighted in bold correspond to the dimensions for standard ISO 10766, with the rod diameters in line with standard ISO 3320. Other intermediate sizes can be provided.



GUIDE TAPES

BECA 006/B



DESCRIPTION

The BECA 006/B profile is a roll of tape that can be cut to a specific length according to the customer's specification. Embossed strips are also offered. The embossing is a set of lubricant pockets, which improves the friction. Several types of cuts can be made.

ADVANTAGES

Substantial and improved lubrication conditions through the tear structures
 Very good friction coefficient; no stick-slip effect
 Good wear resistance; very long life
 Increased absorption of foreign particles
 Easy to fit
 Good vibration absorption

APPLICATIONS

Agriculture
 Food & Beverage
 Shock absorbers
 Maintenance
 Dry applications
 Injection presses
 Pneumatics
 Presses
 Robotics
 Standard cylinders

MATERIALS

Bronze-filled PTFE
 Carbon graphite-filled PTFE

Other grades of materials are available. Please contact our experts.

TECHNICAL DATA

Temperature	-60°C / +150°C
Speed	15 m/s
Media	Mineral hydraulic oils Biocompatible fluids Water Air Others (contact our experts)
Max. compression resistance	30 to 35 N/mm ²
Radial loads in dynamic applications	15 N/mm ² at 25°C 12 N/mm ² at 80°C 8 N/mm ² at 120°C

The figures above indicate the maximum values and may not be cumulated. They may be developed, depending on the materials used.

EXTRUSION GAPS

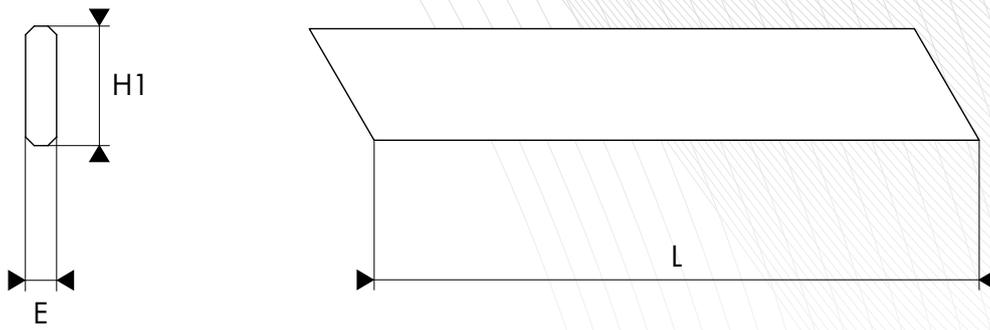
Bore diameter ØD1 Rod diameter Ød1	Min. radial gap F/2 min	Max. radial gap F/2 max
8.0 - 20.0	0.20	0.30
21.0 - 100.0	0.25	0.40
101.0 - 250.0	0.30	0.60
251.0 - 500.0	0.40	0.80
501.0 - 1000.0	0.50	1.10
> 1000.0	0.60	1.20

SURFACE ROUGHNESS

Roughness	Dynamic surface area	Static surface area	Groove flanks
Ra	0.05 - 0.2 µm	≤1.6 µm	≤3.2 µm
Rz	0.4 - 1.6 µm	≤6.3 µm	≤10.0 µm
Rmax	0.63 - 2.5 µm	≤10.0 µm	≤16.0 µm

RADIUS

Bore diameter ØD1 Rod diameter Ød1	Radius R1
≤ 250.0	0.20
> 250.0	0.40



○ DETERMINING THE LENGTH OF THE TAPE

In the piston guide:
 $L \text{ (mm)} = \pi \times (\text{ØD1} - E) - Z$

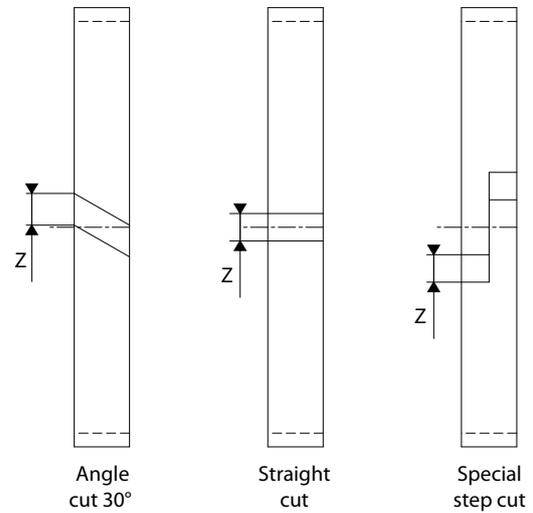
In the rod guide:
 $L \text{ (mm)} = \pi \times (\text{ØD1} - E) - Z$

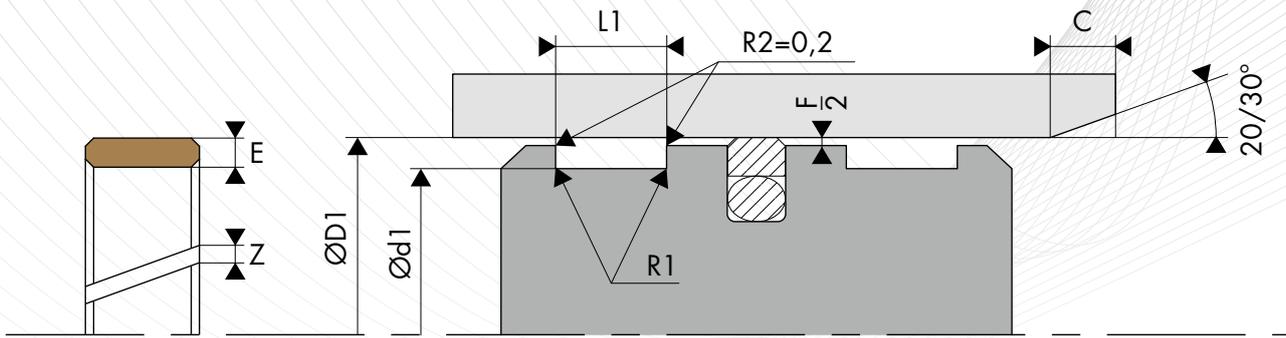
where:
 L = Length of the guide tape (mm)
 ØD1 = Bore diameter (mm)
 Ød1 = Rod diameter (mm)
 E = Thickness of the tape (mm)
 Z = Gap after fitting

○ TOLERANCES OF THE TAPE LENGTH

Length of the tape L (mm)	Tolerances of L (mm)
≤ 45.00	± 0.25
> 45.00	± 0.40
> 80.00	± 0.60
> 100.00	± 0.80
> 125.00	± 1.00
> 150.00	± 1.20
> 180.00	± 1.40
> 215.00	± 1.60
> 270.00	± 1.80
> 330.00	± 2.00

○ TYPES OF CUT

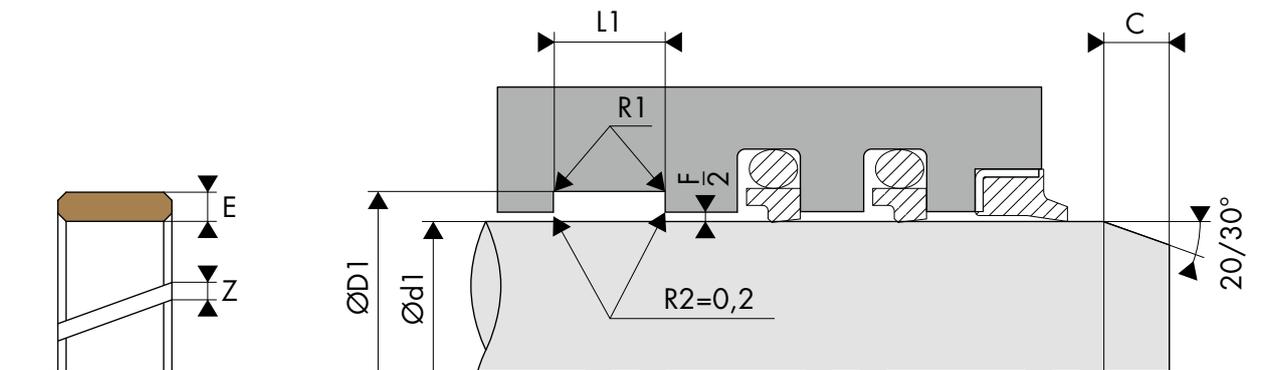




○ INSTALLATION DIMENSIONS - PISTON GUIDE

Piston guide				Thickness of the tape	Gap
ISO 10766	Bore diameter ØD1 H9	Groove diameter Ød1 h8	Groove width L1 0/+0.20	E	Z +/-0.50
*	8.0 - 20.0	D1 - 3.10	2.50	1.55	1.00
*	10.0 - 50.0	D1 - 3.10	4.00	1.55	1.00
*	16.0 - 140.0	D1 - 5.00	5.60	2.50	1.25
*	60.0 - 220.0	D1 - 5.00	9.70	2.50	1.25
*	130.0 - 400.0	D1 - 5.00	15.00	2.50	1.25
*	280.0 - 999.9	D1 - 5.00	25.00	2.50	1.25
*	280.0 - 999.9	D1 - 8.00	25.00	4.00	2.00

Other dimensions are possible, not taking ISO 10766 into consideration. Please contact our experts.



○ INSTALLATION DIMENSIONS - ROD GUIDE

Rod guide				Thickness of the tape	Gap
ISO 10766	Rod diameter Ød1 f8/h9	Groove diameter ØD1 H8	Groove width L1 0/+0.20	E	Z +/-0.50
*	8.0 - 20.0	d1 + 3.10	2.50	1.55	1.00
*	10.0 - 50.0	d1 + 3.10	4.00	1.55	1.00
*	15.0 - 140.0	d1 + 5.00	5.60	2.50	1.25
*	20.0 - 220.0	d1 + 5.00	9.70	2.50	1.25
*	80.0 - 400.0	d1 + 5.00	15.00	2.50	1.25
*	200.0 - 999.9	d1 + 5.00	25.00	2.50	1.25
*	280.0 - 999.9	d1 + 8.00	25.00	4.00	2.00

Other dimensions are possible, not taking ISO 10766 into consideration. Please contact our experts.

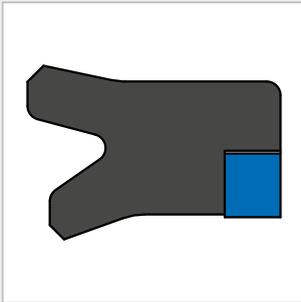
DIMENSIONS

Part number	Groove width L1 0/+0.20	Height of the tape H1 0/-0.10	Thickness of the tape Ep +/-0.05
006.0321.5	3.20	3.00	1.50
006.0421.5	4.20	4.00	1.50
006.0631.5	6.30	6.10	1.50
006.0811.5	8.10	7.90	1.50
006.0971.5	9.70	9.50	1.50
006.1271.5	12.70	12.50	1.50
006.0151.5	15.00	14.80	1.50
006.0161.5	16.00	15.80	1.50
006.0201.5	20.00	19.50	1.50
006.0251.5	25.00	24.50	1.50
006.0301.5	30.00	29.50	1.50
006.0322.0	3.20	3.00	2.00
006.0422.0	4.20	4.00	2.00
006.0632.0	6.30	6.10	2.00
006.0812.0	8.10	7.90	2.00
006.0972.0	9.70	9.50	2.00
006.1272.0	12.70	12.50	2.00
006.0152.0	15.00	14.80	2.00
006.0202.0	20.00	19.50	2.00
006.0252.0	25.00	24.50	2.00
006.0302.0	30.00	29.50	2.00
006.0322.5	3.20	3.00	2.50
006.0422.5	4.20	4.00	2.50
006.0632.5	6.30	6.10	2.50
006.0812.5	8.10	7.90	2.50

Part number	Groove width L1 0/+0.20	Height of the tape H1 0/-0.10	Thickness of the tape Ep +/-0.05
006.0972.5	9.70	9.50	2.50
006.1272.5	12.70	12.50	2.50
006.0152.5	15.00	14.80	2.50
006.0202.5	20.00	19.50	2.50
006.0252.5	25.00	24.50	2.50
006.0302.5	30.00	29.50	2.50
006.0323.0	3.20	3.00	3.00
006.0423.0	4.20	4.00	3.00
006.0633.0	6.30	6.10	3.00
006.0813.0	8.10	7.90	3.00
006.0973.0	9.70	9.50	3.00
006.1273.0	12.70	12.50	3.00
006.0153.0	15.00	14.80	3.00
006.0203.0	20.00	19.50	3.00
006.0253.0	25.00	24.50	3.00
006.0303.0	30.00	29.50	3.00
006.3553.0	35.50	35.00	3.00
006.0634.0	6.30	6.10	4.00
006.0814.0	8.10	7.90	4.00
006.0974.0	9.70	9.50	4.00
006.1274.0	12.70	12.50	4.00
006.0154.0	15.00	14.80	4.00
006.0204.0	20.00	19.50	4.00
006.0254.0	25.00	24.50	4.00
006.0304.0	30.00	29.50	4.00

The figures highlighted in bold correspond to standard ISO 10766. Other intermediate sizes can be provided.

Other profiles



ROD SEALS

BECA 230/AE



DESCRIPTIONS

The BECA 230/AE profile is a rubber U-ring type single acting rod seal with offset lips, with a filled PTFE or POM back-up ring.

ADVANTAGES

Optimised sealing effect
Excellent resistance to high temperatures depending on the type of material chosen
Good extrusion resistance
Assembly by deformation in closed groove

APPLICATIONS

Mobile hydraulics
Machine tools
Presses
Standard cylinders

MATERIALS

Profiled seal

NBR 70 Shore A
NBR 85 Shore A
FKM 85 Shore A

Back-up ring

Polyoxymethylene - POM
Bronze-filled PTFE

Other grades of materials are available.
Please contact our experts.

TECHNICAL DATA

Temperature	-30°C / +200°C
Pressure	25 MPa
Speed	0.5 m/sec
Media	Mineral hydraulic oils Fire-resistant liquids Biocompatible fluids Water Others (contact our experts)

The figures above indicate the maximum values and may not be cumulated. They may be developed, depending on the materials used.

EXTRUSION GAPS

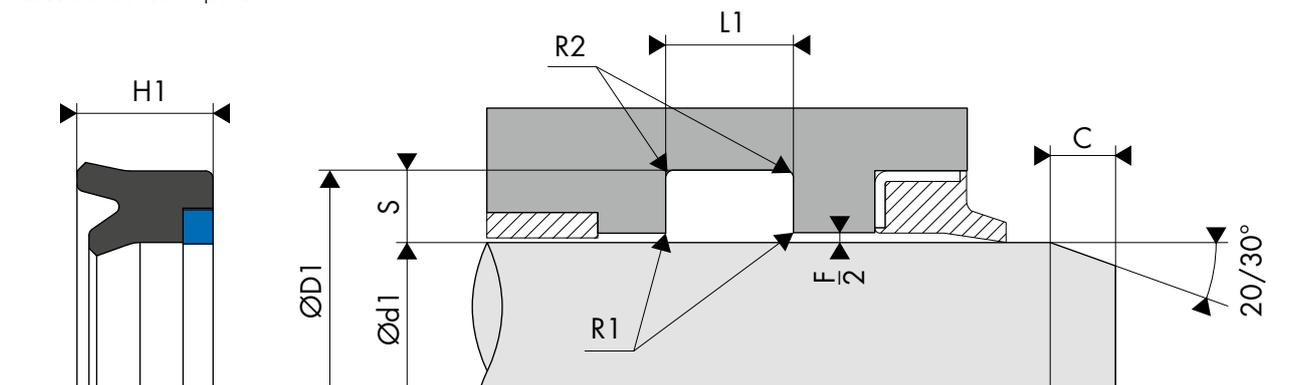
Pressure MPa	Radial gap F/2
2.5 MPa	0.45
5.0 MPa	0.35
7.5 MPa	0.30
10.0 MPa	0.25
15.0 MPa	0.20
25.0 MPa	0.10

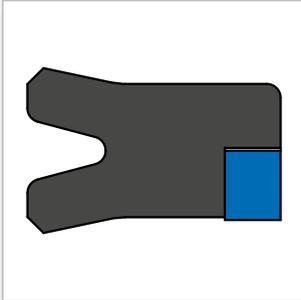
SURFACE ROUGHNESS

Roughness	Dynamic surface area	Static surface area	Groove flanks
Ra	0.1 - 0.4 µm	≤1.6 µm	≤3.2 µm
Rz	0.63 - 2.5 µm	≤6.3 µm	≤10.0 µm
Rmax	1.0 - 4.0 µm	≤10.0 µm	≤16.0 µm

CHAMFERS AND RADIUS

Radial section S	Radius R1	Radius R2	Chamfer C
3.50	0.20	0.40	2.00
5.00	0.40	0.60	2.50
7.50	0.80	1.00	4.00
10.00	0.80	1.00	5.00





ROD SEALS

BECA 235T/AE



DESCRIPTIONS

The BECA 235T/AE profile is a rubber U-ring type single acting rod seal with matching lips and a POM back-up ring.

ADVANTAGES

Optimised sealing effect
Excellent resistance to high temperatures depending on the type of material chosen
Good extrusion resistance

APPLICATIONS

Mobile hydraulics
Machine tools
Presses
Standard cylinders

MATERIALS

Profiled seal

NBR 70 Shore A
NBR 85 Shore A
FKM 85 Shore A

Back-up ring

Polyoxymethylene - POM

Other grades of materials are available.
Please contact our experts.

TECHNICAL DATA

Temperature	-30°C / +200°C
Pressure	25 MPa
Speed	0.5 m/sec
Media	Mineral hydraulic oils Fire-resistant liquids Biocompatible fluids Water Others (contact our experts)

The figures above indicate the maximum values and may not be cumulated. They may be developed, depending on the materials used.

EXTRUSION GAPS

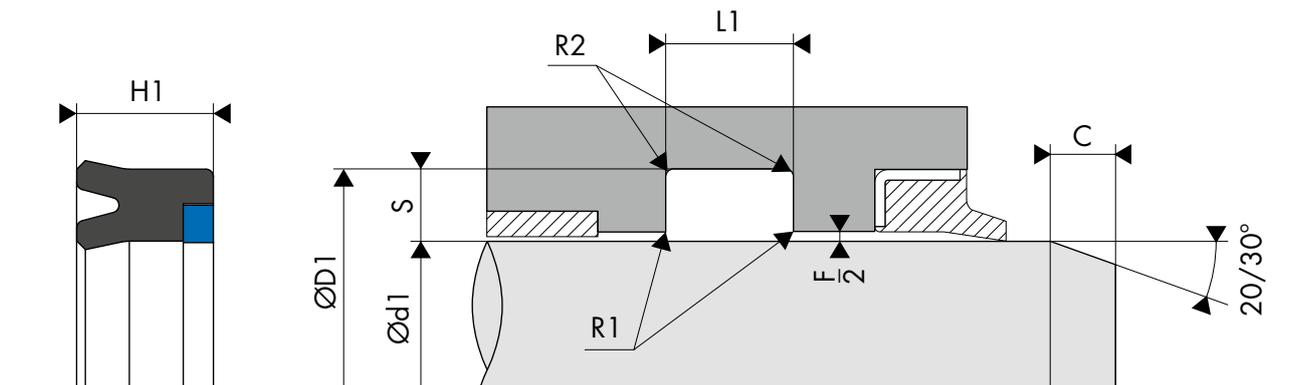
Pressure MPa	Radial gap F/2
2.5 MPa	0.45
5.0 MPa	0.35
7.5 MPa	0.30
10.0 MPa	0.25
15.0 MPa	0.20
25.0 MPa	0.10

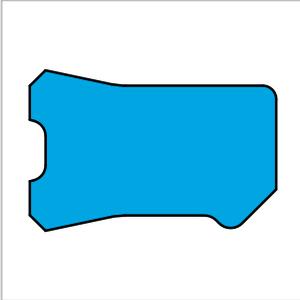
SURFACE ROUGHNESS

Roughness	Dynamic surface area	Static surface area	Groove flanks
Ra	0.1 - 0.4 µm	≤1.6 µm	≤3.2 µm
Rz	0.63 - 2.5 µm	≤6.3 µm	≤10.0 µm
Rmax	1.0 - 4.0 µm	≤10.0 µm	≤16.0 µm

CHAMFERS AND RADIUS

Radial section S	Radius R1	Radius R2	Chamfer C
3.50	0.20	0.40	2.00
5.00	0.40	0.60	2.50
7.50	0.80	1.00	4.00
10.00	0.80	1.00	5.00





ROD SEALS BECA 310/B



DESCRIPTIONS

The BECA 310/B profile is a U-ring type single acting compact rod seal with matching lips, symmetrical lips and a second sealing lip, and is composed of a very dense polyurethane body. It can be assembled in a groove according to standard ISO 5597.

ADVANTAGES

Good sealing at both high and low pressures
Excellent abrasion resistance

APPLICATIONS

Mobile hydraulics
Material handling - Lifting
Presses
Hydraulic cylinders

MATERIALS

PU 93 Shore A - Blue
PU 96 Shore A - Blue
High temp. PU 96 Shore A - Beige

Other grades of materials are available.
Please contact our experts.

TECHNICAL DATA

Temperature	-30°C / +110°C
Pressure	40 MPa
Speed	0.5 m/sec
Media	Mineral hydraulic oils

The figures above indicate the maximum values and may not be cumulated. They may be developed, depending on the materials used.

EXTRUSION GAPS

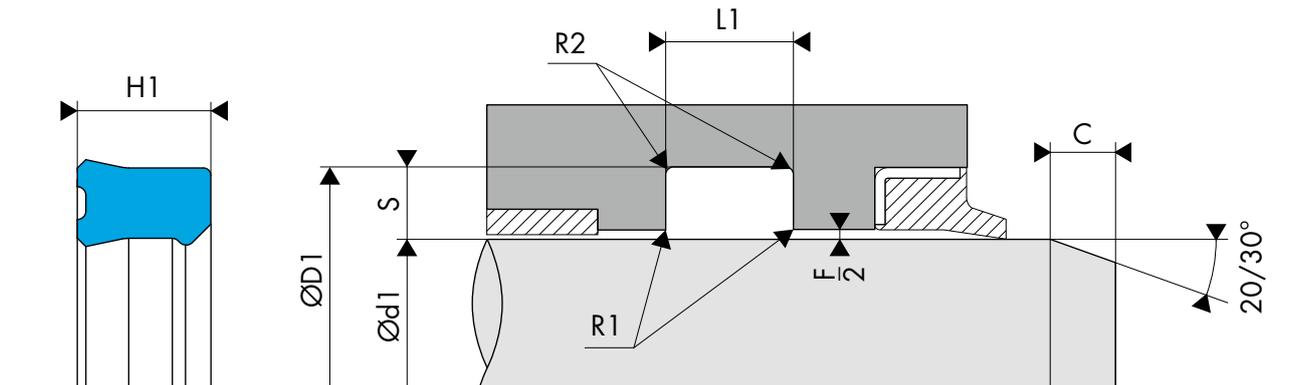
Rod diameter Ød1	Radial gap F/2				
	≤ 5 MPa	≤ 10 MPa	≤ 20 MPa	≤ 30 MPa	≤ 40 MPa
≤ 60 mm	0.40	0.30	0.20	0.15	0.10
> 60 mm	0.50	0.40	0.30	0.20	0.15

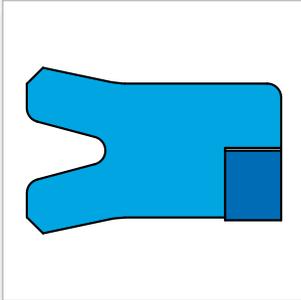
SURFACE ROUGHNESS

Roughness	Dynamic surface area	Static surface area	Groove flanks
Ra	0.1 - 0.4 µm	≤1.6 µm	≤3.2 µm
Rz	0.63 - 2.5 µm	≤6.3 µm	≤10.0 µm
Rmax	1.0 - 4.0 µm	≤10.0 µm	≤16.0 µm

CHAMFERS AND RADIUS

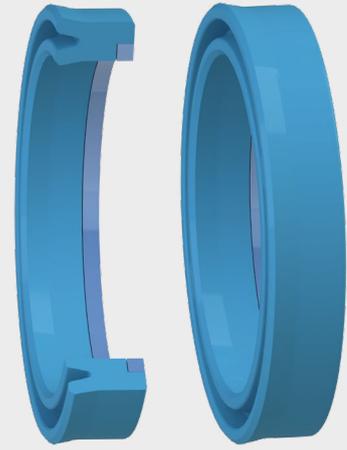
Radial section S	Radius R1	Radius R2	Chamfer C
3.00	0.40	0.60	2.50
4.00	0.40	0.60	2.50
5.00	0.40	0.60	2.50
7.50	0.80	1.00	4.00





ROD SEALS

BECA 335T/AE



DESCRIPTIONS

The BECA 335T/AE profile is a polyurethane U-ring type single acting rod seal with matching lips and a POM back-up ring.

ADVANTAGES

Optimised sealing effect
Excellent abrasion resistance
Very good extrusion resistance
Very good wear resistance

APPLICATIONS

Agriculture
Mobile machinery
Lifting systems
Injection presses
Hydraulic cylinders

MATERIALS

Profiled seal

PU 93 Shore A - Blue
PU 96 Shore A - Blue
High temp. PU 96 Shore A - Beige

Back-up ring

Polyoxymethylene - POM

Other grades of materials are available.
Please contact our experts.

TECHNICAL DATA

Temperature	-30°C / +110°C
Pressure	45 MPa
Speed	0.5 m/sec
Media	Mineral hydraulic oils

The figures above indicate the maximum values and may not be cumulated. They may be developed, depending on the materials used.

EXTRUSION GAPS

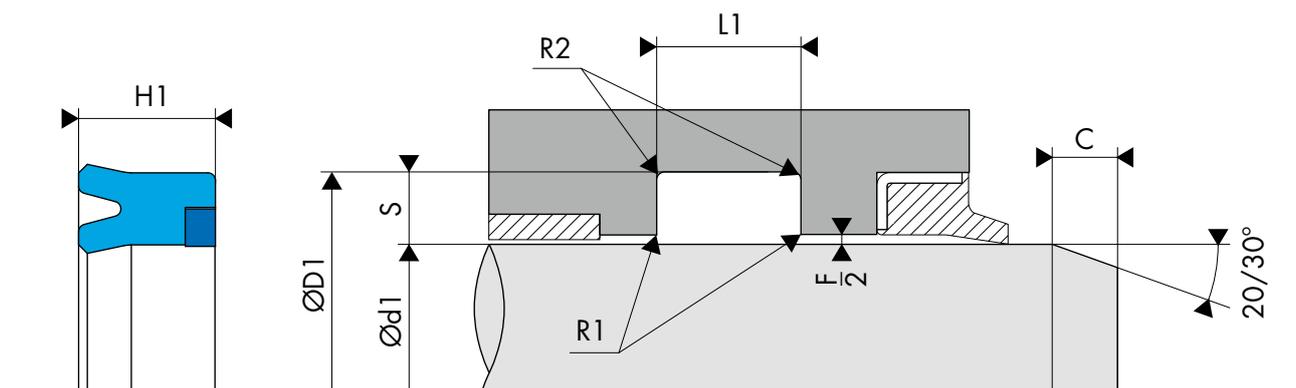
Rod diameter Ød1	Radial gap F/2					
	≤ 5 MPa	≤ 10 MPa	≤ 20 MPa	≤ 30 MPa	≤ 40 MPa	≤ 45 MPa
≤ 60 mm	0.40	0.30	0.20	0.15	0.10	0.07
> 60 mm	0.50	0.40	0.30	0.20	0.15	0.10

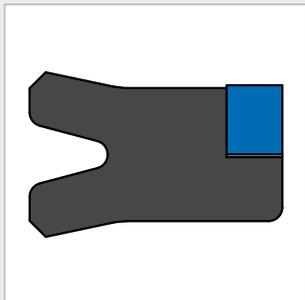
SURFACE ROUGHNESS

Roughness	Dynamic surface area	Static surface area	Groove flanks
Ra	0.1 - 0.4 µm	≤1.6 µm	≤3.2 µm
Rz	0.63 - 2.5 µm	≤6.3 µm	≤10.0 µm
Rmax	1.0 - 4.0 µm	≤10.0 µm	≤16.0 µm

CHAMFERS AND RADIUS

Radial section S	Radius R1	Radius R2	Chamfer C
3.00	0.20	0.40	2.00
4.00	0.20	0.40	2.50
5.00	0.40	0.60	3.00
7.50	0.80	1.00	4.00
10.00	0.80	1.00	5.00





PISTON SEALS

BECA 235P/AE



DESCRIPTIONS

The BECA 235P/AE profile is a rubber U-ring type single acting piston seal with matching lips and a POM back-up ring.

ADVANTAGES

- Optimised sealing effect
- Excellent resistance to high temperatures depending on the type of material chosen
- Good extrusion resistance

APPLICATIONS

- Mobile hydraulics
- Machine tools
- Presses
- Standard cylinders

MATERIALS

Profiled seal

- NBR 70 Shore A
- NBR 85 Shore A
- FKM 85 Shore A

Back-up ring

- Polyoxymethylene - POM
- Bronze-filled PTFE

Other grades of materials are available. Please contact our experts.

TECHNICAL DATA

Temperature	-30°C / +200°C
Pressure	25 MPa
Speed	0.5 m/sec
Media	Mineral hydraulic oils Fire-resistant liquids Biocompatible fluids Water Others (contact our experts)

The figures above indicate the maximum values and may not be cumulated. They may be developed, depending on the materials used.

EXTRUSION GAPS

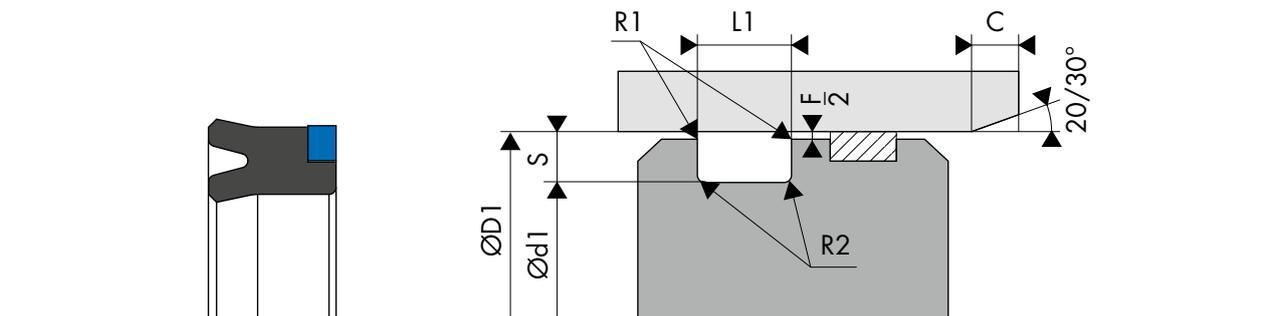
Pressure MPa	Radial gap F/2
2.5 MPa	0.45
5.0 MPa	0.35
7.5 MPa	0.30
10.0 MPa	0.25
15.0 MPa	0.20
25.0 MPa	0.10

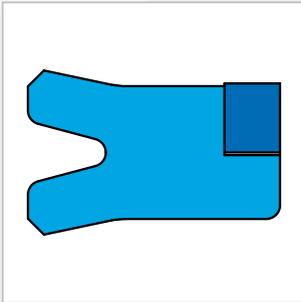
SURFACE ROUGHNESS

Roughness	Dynamic surface area	Static surface area	Groove flanks
Ra	0.1 - 0.4 µm	≤1.6 µm	≤3.2 µm
Rz	0.63 - 2.5 µm	≤6.3 µm	≤10.0 µm
Rmax	1.0 - 4.0 µm	≤10.0 µm	≤16.0 µm

CHAMFERS AND RADIUS

Radial section S	Radius R1	Radius R2	Chamfer C
3.50	0.20	0.40	2.00
5.00	0.40	0.60	2.50
7.50	0.80	1.00	4.00
10.00	0.80	1.00	5.00





PISTON SEALS

BECA 335P/AE



DESCRIPTIONS

The BECA 335P/AE profile is a polyurethane U-ring type single acting piston seal with matching lips and a POM back-up ring.

ADVANTAGES

Optimised sealing effect
Excellent abrasion resistance
Very good extrusion resistance
Very good wear resistance

APPLICATIONS

Agriculture
Mobile machinery
Lifting systems
Injection presses
Hydraulic cylinders

MATERIALS

Profiled seal

PU 93 Shore A - Blue
PU 96 Shore A - Blue
High temp. PU 96 Shore A - Beige

Back-up ring

Polyoxymethylene - POM

Other grades of materials are available.
Please contact our experts.

TECHNICAL DATA

Temperature	-30°C / +110°C
Pressure	45 MPa
Speed	0.5 m/sec
Media	Mineral hydraulic oils

The figures above indicate the maximum values and may not be cumulated. They may be developed, depending on the materials used.

EXTRUSION GAPS

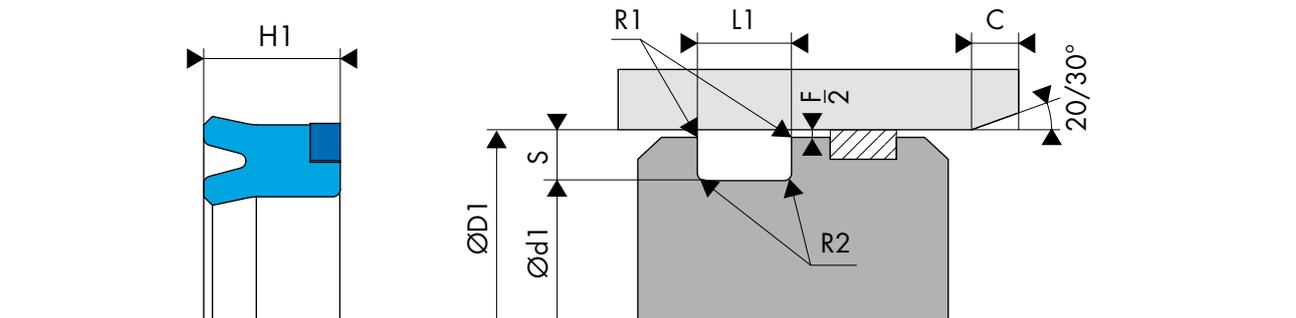
Bore diameter ØD1	Radial extrusion gap F/2					
	≤ 5 MPa	≤ 10 MPa	≤ 20 MPa	≤ 30 MPa	≤ 40 MPa	≤ 45 MPa
≤ 60 mm	0.40	0.30	0.20	0.15	0.10	0.07
> 60 mm	0.50	0.40	0.30	0.20	0.15	0.10

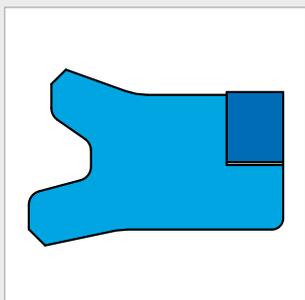
SURFACE ROUGHNESS

Roughness	Dynamic surface area	Static surface area	Groove flanks
Ra	0.1 - 0.4 µm	≤1.6 µm	≤3.2 µm
Rz	0.63 - 2.5 µm	≤6.3 µm	≤10.0 µm
Rmax	1.0 - 4.0 µm	≤10.0 µm	≤16.0 µm

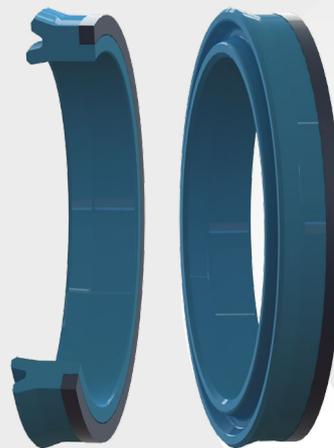
CHAMFERS AND RADIUS

Radial section S	Radius R1	Radius R2	Chamfer C
3.00	0.20	0.40	2.00
4.00	0.20	0.40	2.50
5.00	0.40	0.60	3.00
7.50	0.80	1.00	4.00
10.00	0.80	1.00	5.00





PISTON SEALS BECA 336/AE



DESCRIPTIONS

The BECA 336/AE profile is a U-ring type single acting piston seal with offset lips composed of a polyurethane profile ring and a POM back-up ring on the back.

ADVANTAGES

Optimised sealing effect at both high and low pressures

Excellent abrasion and wear resistance

Excellent extrusion resistance

APPLICATIONS

Mobile hydraulics

Injection presses

Machine tools

Presses

Hydraulic cylinders

MATERIALS

Profiled seal

PU 93 Shore A - Blue

PU 96 Shore A - Blue

High temp. PU 96 Shore A - Beige

Back-up ring

Polyoxymethylene - POM

Other grades of materials are available. Please contact our experts.

TECHNICAL DATA

Temperature	-30°C / +110°C
Pressure	50 MPa
Speed	0.5 m/sec
Media	Mineral hydraulic oils

The figures above indicate the maximum values and may not be cumulated. They may be developed, depending on the materials used.

EXTRUSION GAPS

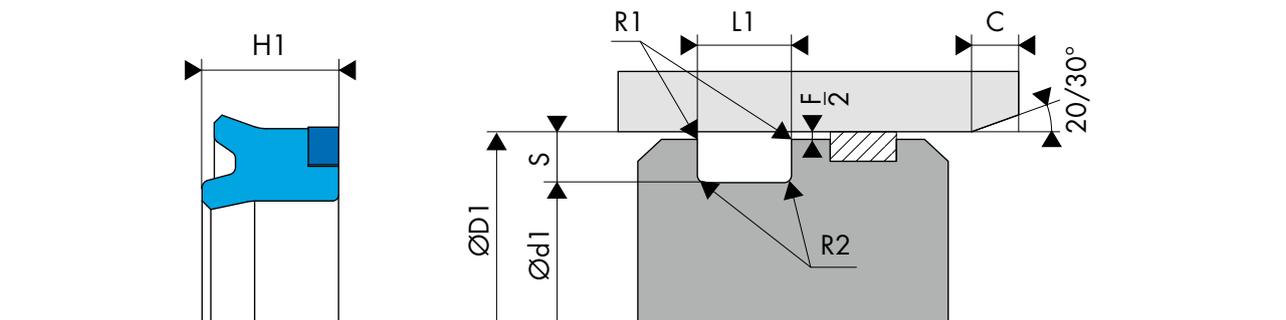
Bore diameter ØD1	Radial extrusion gap F/2					
	≤ 5 MPa	≤ 10 MPa	≤ 20 MPa	≤ 30 MPa	≤ 40 MPa	≤ 50 MPa
≤ 60 mm	0.40	0.30	0.20	0.15	0.10	0.07
> 60 mm	0.50	0.40	0.30	0.20	0.15	0.10

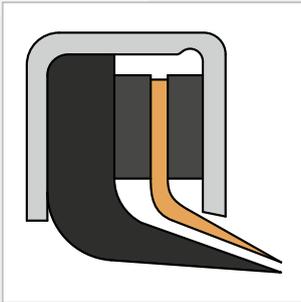
SURFACE ROUGHNESS

Roughness	Dynamic surface area	Static surface area	Groove flanks
Ra	0.1 - 0.4 µm	≤1.6 µm	≤3.2 µm
Rz	0.63 - 2.5 µm	≤6.3 µm	≤10.0 µm
Rmax	1.0 - 4.0 µm	≤10.0 µm	≤16.0 µm

CHAMFERS AND RADIUS

Radial section S	Radius R1	Radius R2	Chamfer C
3.00	0.20	0.40	2.00
4.00	0.20	0.40	2.50
5.00	0.40	0.60	3.00
7.50	0.80	1.00	4.00
10.00	0.80	1.00	5.00





WIPER SEALS

BECA 478



DESCRIPTIONS

The BECA 478 profile is a wiper seal composed of a thin brass wiping lip assembled in tandem with a second rubber wiping lip in a metal shell. This seal is designed to efficiently remove the solid particles (ice, mud) and all other impurities that stick to the rod.

ADVANTAGES

Very good external wiping effect even for stubborn soiling (ice, mud)
 Very good abrasion resistance
 Assembly in open groove

APPLICATIONS

Cold and heavily contaminated environments
 Agriculture
 Mobile machinery
 Material handling - Lifting
 Hydraulic cylinders

MATERIALS

Primary sealing lip
 Brass
Secondary sealing lip
 NBR 70 Shore A
Metal cage
 Steel

TECHNICAL DATA

Temperature	-40°C / +100°C
Speed	1 m/s
Media	Mineral oils Fire-resistant hydraulic fluids (HFA, HFB and HFC) Water Air

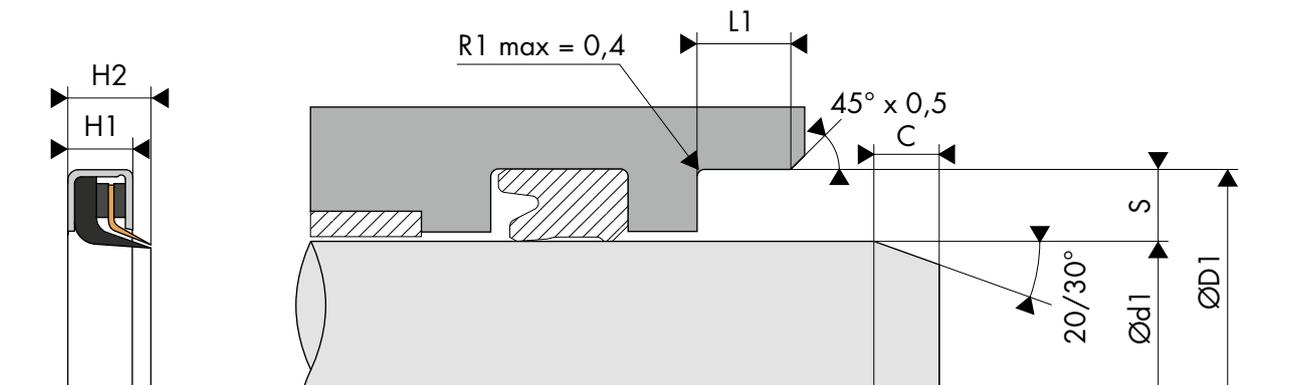
The figures above indicate the maximum values and may not be cumulated. They may be developed, depending on the materials used.

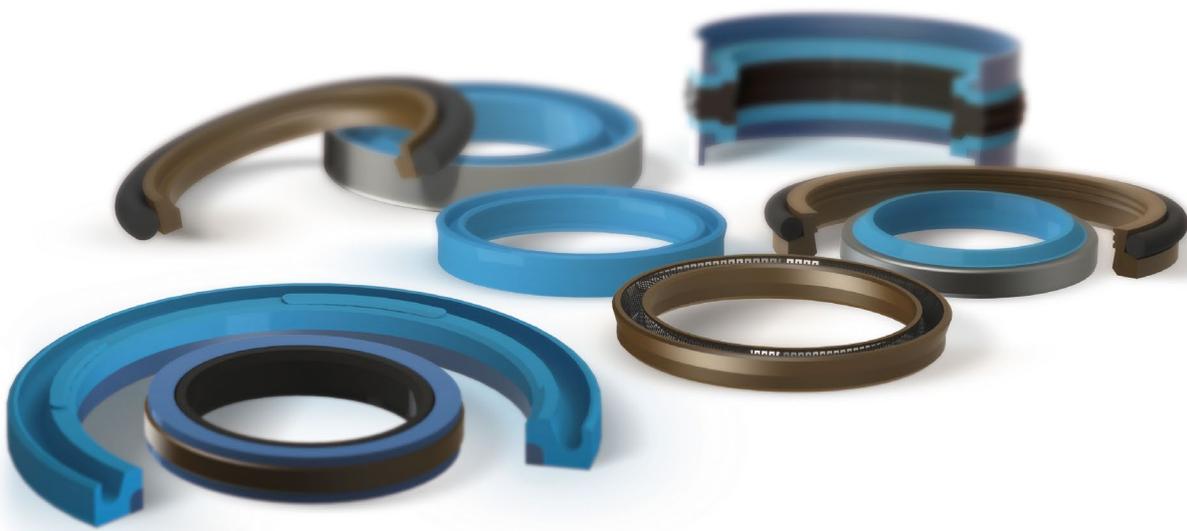
SURFACE ROUGHNESS

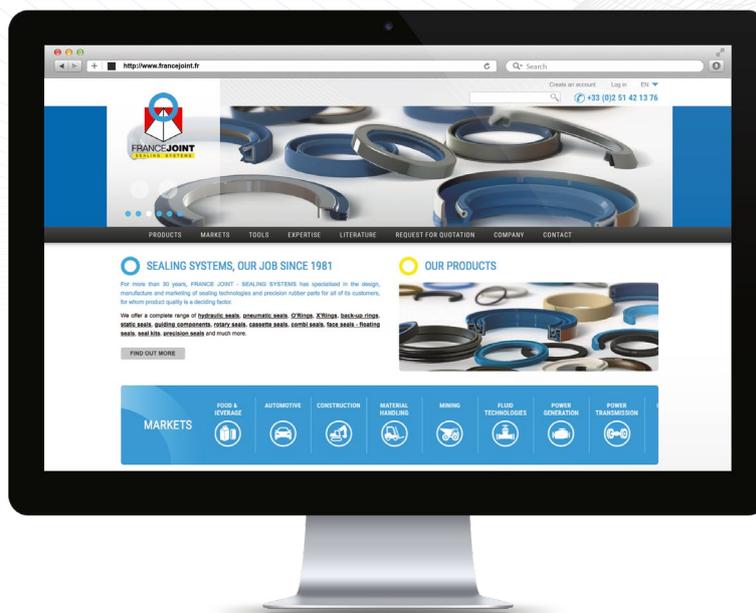
Roughness	Dynamic surface area	Static surface area	Groove flanks
Ra	0.1 - 0.4 µm	≤1.6 µm	≤3.2 µm
Rz	0.63 - 2.5 µm	≤6.3 µm	≤10.0 µm
Rmax	1.0 - 4.0 µm	≤10.0 µm	≤16.0 µm

CHAMFER

The length as well as the chamfer angle are determined by the rod seal.







FIND US ONLINE

We offer a complete range of hydraulic seals, pneumatic seals, O'Rings, X'Rings, back-up rings, static seals, guiding components, rotary seals, cassette seals, combi seals, floating seals, seal kits, custom-made seals and much more.

EXPLORE OUR ONLINE TOOLS

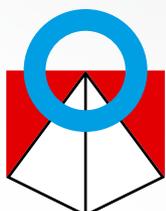
- ▶ MATERIAL SEARCH
- ▶ CHEMICAL COMPATIBILITY
- ▶ O'RING CALCULATOR

www.francejoint.com



www.francejoint.com

QUALITY & EXPERTISE
FOR YOUR SEALING NEEDS



FRANCEJOINT
SEALING SYSTEMS

FRANCE JOINT SAS

Zone Artisanale Le Mortier - B.P. 50009 - Cugand - 85613 Montaigu Cedex - France

Ph. **+33 (0)2 51 42 13 76** - Fax **+33 (0)2 51 43 61 14**

Email: contact@francejoint.fr - Website: www.francejoint.com

SAS CAPITAL 1,000,000 Euro - RCS 450 136 809 - VAT No. FR 10 450 136 809 - SIRET 450 136 809 00016 - FIN 2219 Z

