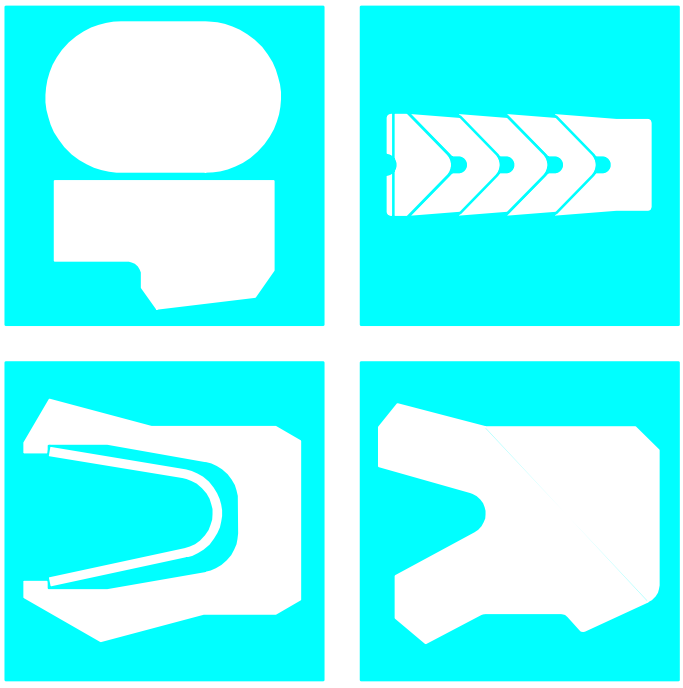
HYDRAULIC SEALS
ROD SEALS



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Choice of the Sealing Element

Sealing elements have a decisive influence on the design, function and service life of hydraulic and pneumatic cylinders and systems.

This applies equally to the piston rod seals where leak tightness, resistance to wear and gap extrusion, resistance to process media, resistance to high and low temperatures, low friction, compact form and simple installation are demanded in order to meet the requirements of industry for a functional sealing solution.

The significance of these parameters and their limits is generally dependent on the requirements of the specific application. B+S has therefore developed a complete range of seals which, due to their optimized geometries and designs and the use of high-quality materials such as Turcon® and Zurcon®, satisfy the technical and economic demands of the industry in full.

In order to be in a position to select the most appropriate seal type and material, it is necessary to first define all the desired functional parameters. Table I can then be used to make an initial selection of seals and materials according to the specific requirements of the application.

The second column of the table contains the number of the page on which further general information together with specific design and installation instructions on the particular seal type and materials (or material combinations with multi-element seals, e.g. Turcon® Stepseal® K) can be found.

Furthermore on page 11, attention is drawn to the quality of the mating surface. We recommend that the limits specified there be observed, as they have a decisive influence on the functionality and service life of the system.

The final choice of seal type and material must also take account of the detailed information on the seal elements.

Please do not hesitate to contact our Technical Department for further information on specific applications and special technical questions.

This Catalogue is a compilation of the preferred product ranges of Busak+Shamban, Sealing Parts and POLYPAC. All similar products are technically equivalent but availability and pricing may vary. For further information please contact your local Busak+Shamban company.

Note on Ordering

All multi-element standard rod seals, e.g. Turcon® Stepseal® K, are generally supplied as complete seal sets. The supply includes the seal and matching elastomer energizing elements. The O-Ring does not have to be ordered separately. It is also possible to use other O-Ring materials from our O-Ring catalogue. In this case, please order the seal ring and O-Ring separately.

Older designs of seals no longer contained in this catalogue naturally continue to be available. For all new applications, however, we recommend the use of the seal types and preferred sizes (ISO series, wherever possible) listed in this catalogue.

Other combinations of Turcon® materials and special designs can be developed and supplied for special applications in all intermediate sizes up to 2.600 mm diameter, provided there is sufficient demand.

The sizes contained in this catalogue are mostly available from stock or can be supplied at short notice. We reserve the right to modify our supply programme.

Table I Selection Criteria for Rod Seals

Seal		Application				Standard	Size Range	Action		Technical Data*			Recommended Seal Material
										Temp. Range**	Speed	Pressure	
Type	Page	Field of Application	Light	Medium	Heavy	ISO/DIN	mm	Single	Double	°C	m/s	MPa max.	
Turcon® Stepseal® K 	19	Mobile hydraulics Standard cylinders Machine tools Injection moulding machines Presses Automotive industry Hydraulic hammers Servo hydraulic	● ● ● ● ● ● ● ●	● ● ● ● ● ● ● ●	● ● ● ● ● ● ● ●	7425/2	3-2600	X		-45/ +200	15	60	Turcon® T46
												60	Turcon® T29
												20	Turcon® T05
							3-1700			-45/ +100	2	80	Zurcon® Z51
Zurcon® Rimseal 	31	Mobile hydraulics Standard cylinders Machine tools Injection moulding machines Presses	● ● ● ● ●	● ● ● ● ●	● ● ● ● ●	7425/2	8-1700	X		-30/ +100	In tandem with Turcon® Stepseal® K 5m/s	In tandem 60 MPa As single seal 25 MPa	Zurcon® Z52
Veepac CH/G5 	39	Hydraulic cylinder Presses Mining Steel mills Water locks	● ● ● ● ●	● ● ● ● ●	● ● ● ● ●	-	20-1000	X		-30/ +200	0.5	40	Rubber fabric reinforced + POM
Selemaster SM 	45	Hydraulic cylinder Presses Mining Steel mills Water locks	● ● ● ● ●	● ● ● ● ●	● ● ● ● ●	-	15-335	X		-40 +130	0.5	70	Rubber fabric reinforced + POM
Balsele 	51	Hydraulic cylinder Presses Truck cranes	● ● ●	● ● ●		5597/1	10-1200	X		-30/ +130	0.5	25 With Back-up 40	Rubber fabric reinforced NBR
Zurcon® L-Cup 	69	Hydraulic cylinder Tail lift cylinder Steering cylinder	● ● ●	● ● ●		5597/1	8-250	X		-30/ +80	0.5	40	Zurcon® Z04
U-Cup RU0 	77	Hydraulic cylinder Mobile hydraulic Industrial hydraulic	● ● ●	● ● ●		5597/1	6-280	X		-30/ +80	0,5	40	TPU
U-Cup RU1 	91	Hydraulic cylinder Telescopic cylinders Mobile hydraulic	● ● ●	● ● ●		5597/1	10-170	X		-30/ +80	0,5	40	TPU

* The data below are maximum values and cannot be used at the same time. The max. pressure depends on temperature and gap dimension.
** Temperature Range is depending on choise of elastomer material.

Rod Seals

Seal		Application				Standard	Size Range	Action		Technical Data*			Recom-mended Seal Material
										Temp. Range**	Speed	Pressure	
Type	Page	Field of Application	Light	Medium	Heavy	ISO/DIN	mm	Single	Double	°C	m/s	MPa max.	
U-Cup RU2 	99	Hydraulic cylinder Telescopic cylinders Mobile hydraulic	● ● ●	● ● ●		5597/1	6-300	X		-30/ +80	0,5	40	TPU
U-Cup RU2B 	109	Hydraulic cylinder Mobile hydraulic		● ●	● ●	5597/1	32-160	X		-30/ +80	0,5	50	TPU
U-Cup RU3 	113	Hydraulic cylinder Industrial hydraulic Mobile hydraulic	● ● ●	● ● ●		5597/1	6 - 235	X		-30/ +80	0,5	40	TPU
U-Cup RU3B 	125	Hydraulic cylinder Industrial hydraulic Mobile hydraulic		● ● ●	● ● ●	5597/1	40 - 171	X		-30/ +80	0,5	50	TPU
U-Cup RU6 	129	Hydraulic cylinder Industrial hydraulic Mobile hydraulic	● ● ●	● ● ●		5597/1	12 - 250	X		-30/ +80	0,5	25	Zurcon® Z04
Variseal®M2 	135	High and low temperatures Aggresive media Foodstuff	● ● ●	● ● ●		-	3-2600	X		-70/ +260	15	45	Turcon® T40
												20	Turcon® T05
Glyd Ring® RG 	141	Special cylinder Pumps and valves Machine tools Servo equipment	● ● ● ●	● ● ● ●	● ● ● ●	7425/2	3-2600		X	-45/ +200	15	60	Turcon® T46
												60	Turcon® T29
												20	Turcon® T05
							3-1700			-45/ +100	2	80	Zurcon® Z51
Glyd Ring®T RT 	151	Special cylinder Pumps and valves Machine tools Robotics/manipulators	● ● ● ●	● ● ● ●	● ● ● ●	7425/2	3-2600		X	-45/ +200	15	60	Turcon® T46
												25	Turcon® T40
							3-1700			-45/ +100	2	80	Zurcon® Z51
Double Delta® RD 	161	Valve stems Mini hydraulic Low temperature hydraulics	● ● ●	● ● ●			3-2600		X	-45/ +200	15	20	Turcon® T05
												35	Turcon® T46
												25	Turcon® T24

* The data below are maximum values and cannot be used at the same time. The max. pressure depends on temperature and gap dimension.
** Temperature Range is depending on choise of elastomer material.

Redundant Sealing System

Sealing of environmentally harmful fluids has led Busak+Shamban to develop innovative sealing systems to meet the ever demanding industry specifications with regard to leak-free performance and high service life.

In heavy duty applications, leak free performance and high service life cannot be assured by a single sealing element; therefore, specially developed "system seals" are arranged in series, building a "tandem arrangement".

Each sealing element in a system has its specific function and their interaction needs to be secured to get a redundant sealing system.

The primary seal in PTFE based proprietary Turcon® material generates low friction and has an excelent wear and extrusion resistance under extreme working conditions. It allows a fine lubrication film passing this first barrier, ensuring the necessary lubrication of the secondary sealing element for long service life.

The "tandem arrangement" requires an outstanding back-pumping ability of the primary seal and the secondary seal, if a double acting scraper is installed. A combination of different sealing materials in a system, Turcon® and Zurcon®, (PTFE and Polyurethane) ensures the best sealing performance.

Busak+Shamban has pioneered work in this area and continues development of redundant sealing today.

Outstanding solutions to such applications have been the Turcon® Stepseal® K in tandem arrangement. A tandem sealing system can also be created by using e.g. Zurcon® Rimseal, Zurcon® L-Cup® or U-Cup as secondary sealing elements. Depending on type of secondary seal, a single- or double acting scraper completes the system, to offer the highest possible operation reliability, ensuring both adequate lubrication of the sealing system and a long service life.

The figure 1 shows as an example a redundant sealing system consisting of Turcon® Stepseal® K, Zurcon® Rimseal and Rod Scraper DA 22 with corresponding wear ring arrangement.

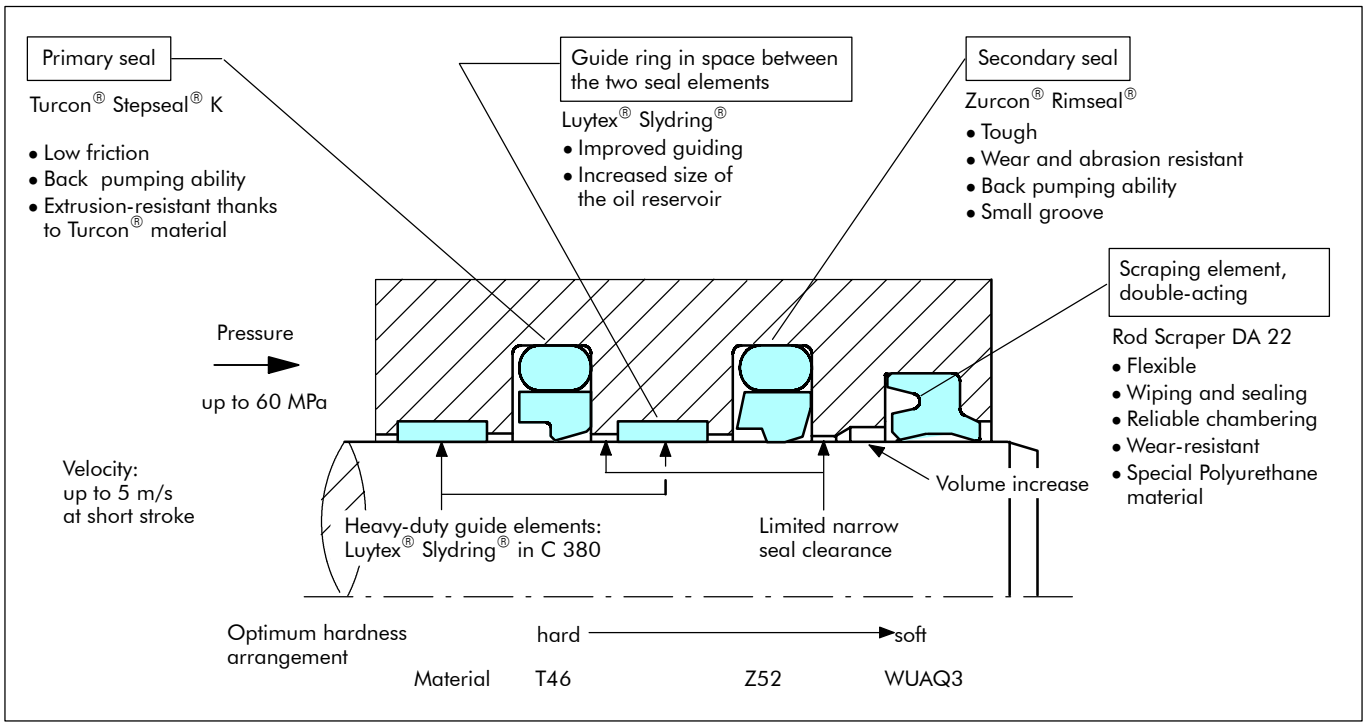


Figure 1 Example of a Redundant Modular Sealing System

Design Instructions

Lead-in Chamfers

In order to avoid damage to the rod seal during installation, lead-in chamfers and rounded edges must be provided on the piston rods (see Figure 2). If this is not possible for design reasons, a separate installation tool must be used.

The minimum length of the lead-in chamfer depends on the profile size of the seal and can be seen from the following tables.

Additionally it is recommended that the diameter reduction Δd exceeds 0.015 x rod diameter.

Table II Elastomer Energized Seals

Lead-in Chamfer Diameter reduction Δd min.	Groove Width L_1 *
1.1	2.2
1.4	3.2
1.9	4.2
2.7	6.3
3.5	8.1
4.0	9.5
5.5	13.8

* The dimension L1 for the groove width can be found for all seal series in the appropriate table "Installation dimensions".

Table III U-Cups and Variseal®

Lead-in Chamfer Diameter reduction Δd min.	U-Cups Type RU0, RU1, RU2, RU2B, RU3, RU3B, and RU6 Groove Depth*	Turcon® Variseal® M2 Series
1.1	3.0 - 3.5 - 4.0	
1.1	5.0	
1.4	6.0 - 6.5	
2.2	7.5 - 8.0	RVA0
2.7	10.0	RVA1,RVA2
3.5	12.5	
4.0	15.0	RVA3
5.5	20.0	
6.5		RVA4

* The groove depth is calculated from: (d1 - d)/2. The dimensions for d_1 and d can be found in the tables, "Installation dimensions".

Table IV Double Delta®

Lead-in Chamfer* Diameter reduction Δd min.	O-Ring Cross Section** d_2	
1.1	1.78	-
1.4	2.40	2.62
1.9	3.00	3.53
2.7	5.33	5.70
3.5	7.00	8.40

* Though not less than 1.5 % of service diameter (bore/rod diameter).

**The O-Ring cross section d_2 can be found in the in the appropriate table "Installation Dimensions".

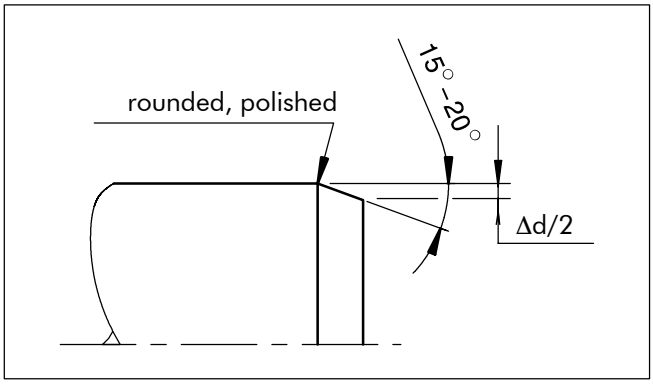


Figure 2 Lead-in chamfers

Distance between Grooves

When installing double-acting scraper seals in conjunction with rod seals with back pumping effects such as Turcon® Stepseal® K and Zurcon® Rimseal, we recommend the following arrangement:

- Distance between seal groove and scraper seal groove L = at least groove depth X
- Oil reservoir for collecting the returning oil as shown in Figure 3.

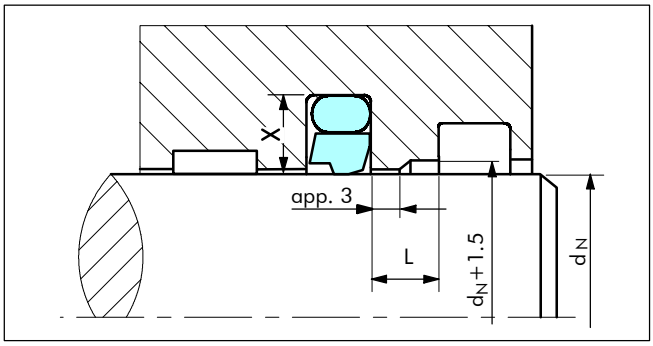


Figure 3 Recommendation for groove spacings between grooves

Surface Roughness DIN EN ISO 4287

The functional reliability and service life of a seal depend to a very great extent on the quality and surface finish of the mating surface to be sealed.

Scores, scratches, pores, concentric or spiral machining marks are not permitted. Higher demands must be made on the surface finish of dynamic surfaces than of static mating surfaces.

The characteristics most frequently used to describe the surface microfinish Ra_a, R_z and R_{max} are defined in DIN EN ISO 4287. These characterics alone, however, are not sufficient for assessing the suitability in seal technology. In addition the material contact area of the surface roughness profile Rmr in accordance with DIN EN ISO 4287 should be demanded. The significance of this surface specification is illustrated in Fig. 4. It shows clearly that specification of R_a and R_z alone does not describe the surface roughness profile accurately enough for the seal technology and is thus not sufficient for assessing the suitability. The material contact area Rmr is essential for assessing surfaces, as this parameter is determined by the specific surface roughness profile. This in turn is directly dependent on the machining process employed.

Busak+Shamban recommends that the following surface finishes be observed:

Table V Surface Roughness

Surface Roughness µm			
Parameter	Mating Surface		Groove Surface
	Turcon® Materials	Polyurethane and Rubber	
R_{max}	0.63 - 2.50	1.00 - 4.00	< 16.0
$R_{z\ DIN}$	0.40 - 1.60	0.63 - 2.50	< 10.0
R_a	0.05 - 0.20	0.10 - 0.40	< 1.6

The material contact area R_{mr} should be approx. 50 to 70%, determined at a cut depth c = 0.25 x R_z, relative to a reference line of $C_{ref.}$ 5%.

Surface profile	R_a	R_z	R_{mr}
closed profile form 	0.1	1.0	70%
open profile form 	0.2	1.0	15%

Figure 4 Profile forms of surfaces

Figure 4 shows two surface profiles, both of which exhibit nearly the same value for R_z in the test procedure. The difference becomes obvious only when the material contact area of the surface roughness profiles are compared. These show that the upper roughness profile with R_{mr} = 70% has the better seal/mating surface ratio.

Hardware

For optimum performance Busak+Shamban recommends a piston rod of chrome-plated steel.

Material: preferably 42CrMo4V, purity class K3 to DIN 50602.

Induction hardened	min. HRC 45
Hardening depth	min. 2.5 mm
Ground and hard chrome-plated, coating thickness 20 to 30 µm, polished	
Roughness	R_a 0.1 to 0.3 µm max. corresponding to N4 DIN/ISO 1302
Material contact area	R_{mr}= 50 to 70%
Cut depth	c = 0.25 x R_z

For other rod materials, special coatings and treatments please contact your local B+S Company.

Installation Instructions

The following points should be observed before installation of the seals:

- Ensure the piston rod has a lead-in chamfer; if not, use an installation sleeve
- Deburr and chamfer or round sharp edges, cover the tips of screw threads
- Remove machining residues such as chips, dirt and other foreign particles and carefully clean all parts
- The seals can be installed more easily if the rod is greased or oiled. Attention must be paid to the compatibility of the seal materials with these lubricants. Use only grease without solid additives (e.g. molybdenum disulphide or zinc sulphide).
- Use no sharp-edged installation tools

Installation in Split Grooves

Installation in split grooves is problem free. The sequence of installation corresponds to the configuration of the seal, whereby the individual seal elements must not be allowed to twist. During final installation (insertion of the piston rod into the seal), elastomer or spring-energized seals must be sized. The piston rod itself can be used for this purpose, provided that it has a long lead-in chamfer, or use a sizing sleeve.

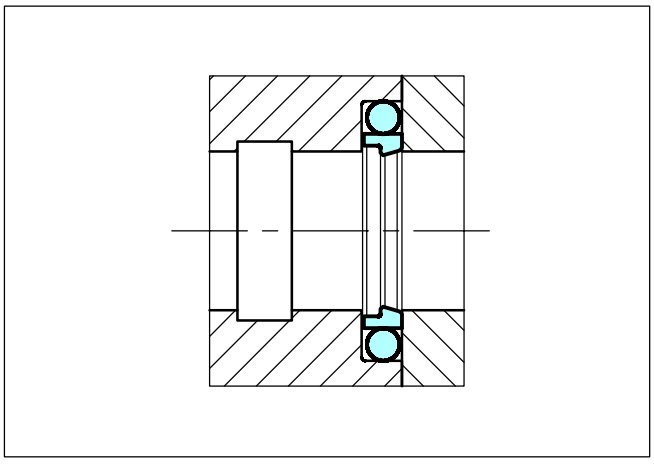


Figure 5 Installation in a split groove

Installation in Closed Grooves

By following the instructions in each seal type description (sizes for closed or split grooves) or using the light series for Turcon® seals, it will result in a problem free installation of our rod seal elements at small diameters.

For Zurcon® and polyurethane (not Turcon®) seals, the use of installation tools is to be recommended. If installation has to be performed without installation tools, however, the following points should be observed:

- Place the O-Ring into the groove (not necessary with U-Cups)
- Compress the Turcon® or Zurcon® seals into a kidney shape. The seal must have no sharp bends (Figure 6)!

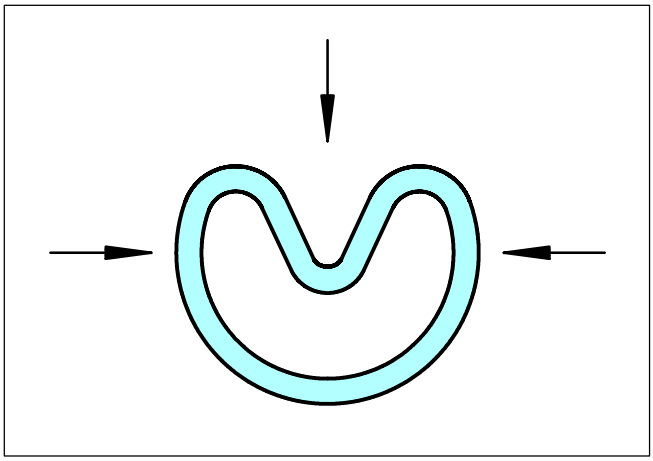


Figure 6 Kidney-shaped deformation of the seal ring

- Place the seal ring in compressed form into the groove and push against the O-Ring in the direction of the arrow (Figure 7).

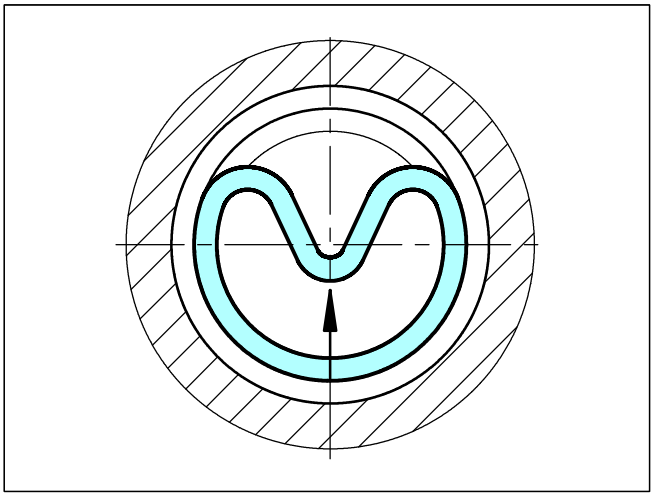


Figure 7 Inserting the seal ring into the closed groove

- After placing into the groove, form the seal into a ring again in the groove by hand.
- Finally size the seal ring using a mandrel which should have a chamfer of 10° to 15° over a length of approx. 30 mm

The sizing mandrel should be made from a polymer material (e.g. polyamide) with good sliding characteristics and high surface quality in order to avoid damage to the seals.

The piston rod itself can also be used for calibration, provided it has a sufficiently long lead-in chamfer.

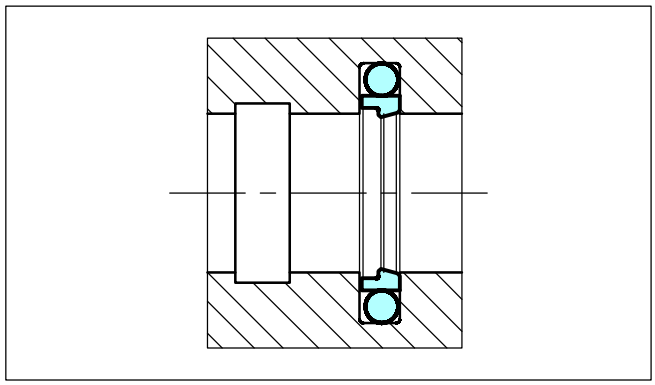


Figure 8 Installation in a closed groove

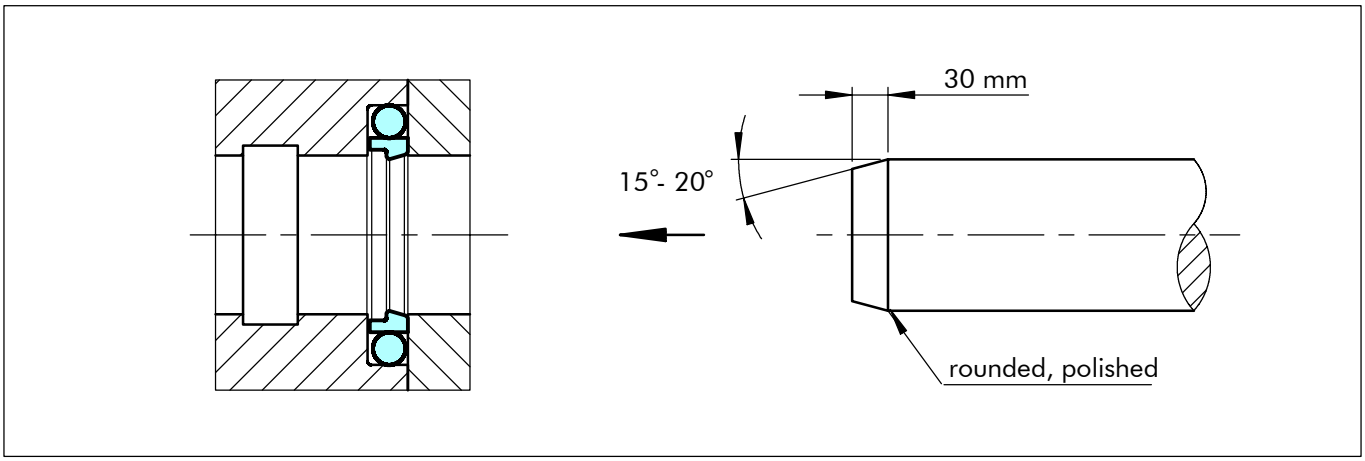


Figure 9 Calibration of the installed seal

Installation of Double Delta®

Installation in closed grooves is possible for diameters from 12 mm using the following procedure:

- Place the O-Ring into the groove.
- Compress the Turcon® seal into a kidney shape, avoid making sharp bends on the seal (Figure 10).
- Place the seal ring in compressed form into the groove and push against the O-Ring in the direction of the arrow in the groove by hand (Figure 11).
  For diameters smaller than 30 mm an inserter tube is recommended (Figure 12).
- Finally, size the seal ring using a mandrel which should have a chamfer of 10° to 15° over a length of min. 30 mm (Figure 13).

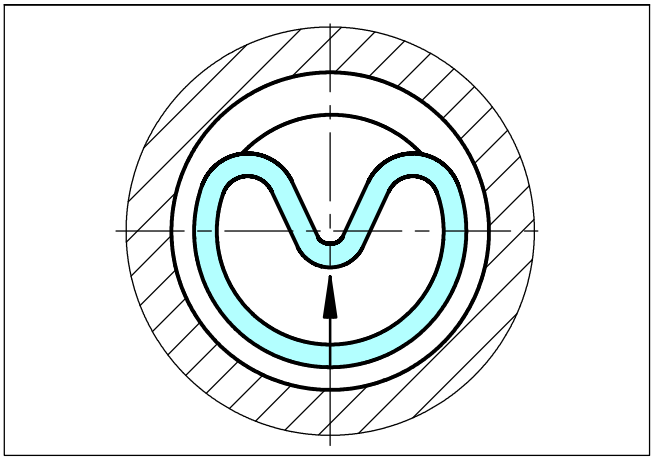


Figure 11 Inserting the seal ring into the closed groove

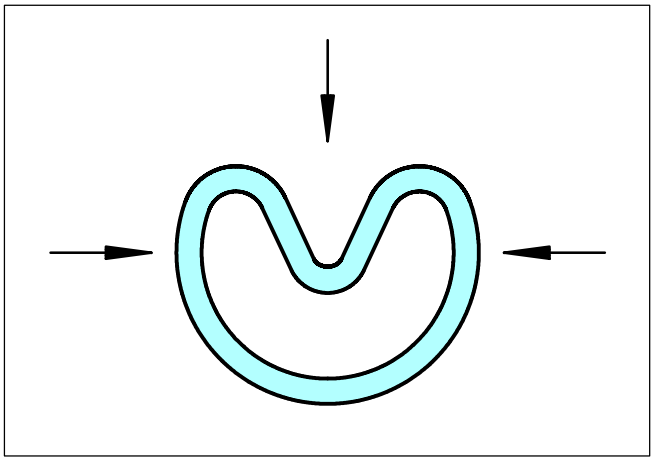


Figure 10 Kidney-shaped deformation

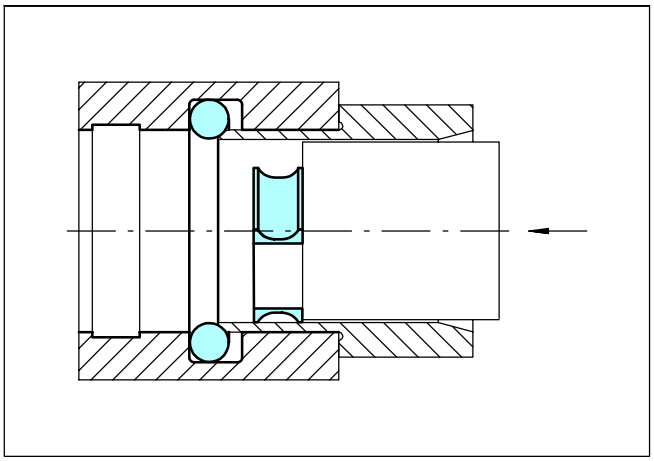


Figure 12 Insertion with an inserter tube

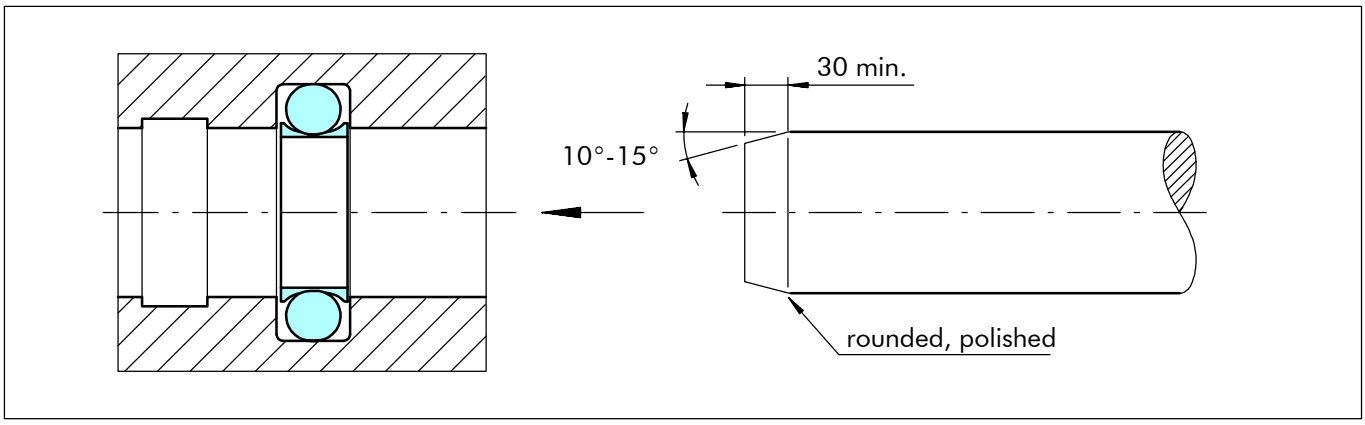


Figure 13 Calibration of the installed seal by means of a calibration mandrel

Installation of Spring Energized Seals

Turcon® Variseal® M2 seals should preferably be installed in split grooves.

Installation in half-open grooves is possible with a snap fitting. Figure 14 shows the design of the groove.

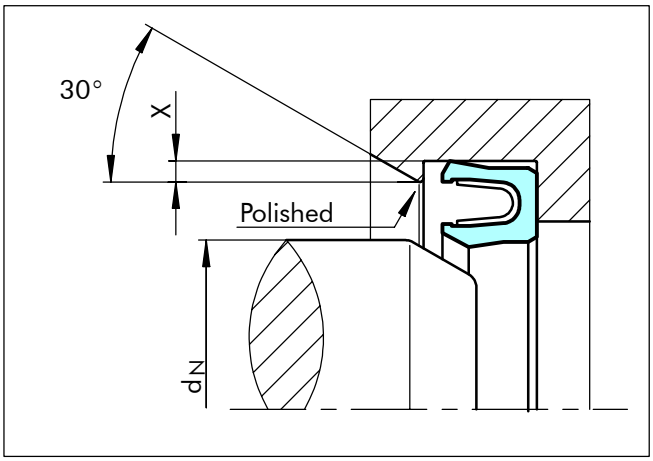


Figure 14 Installation in a half-open groove

Table VI Installation in Half-Open Grooves

Serial-No.	X min.	d_N min.
RVA0	0.4	12.0
RVA1	0.6	20.0
RVA2	0.7	30.0
RVA3	0.8	40.0
RVA4	0.9	55.0

Further details, see Figure 50 and Table XXIX on page 139.

In exceptional cases or with existing designs, an installation in closed grooves is also possible. The details in Table VII should be regarded as guide values for installation.

Table VII Installation in Closed Grooves

Serial-No.	d_N min.
RVA0	30.0
RVA1	70.0
RVA2	110.0
RVA3	300.0
RVA4	500.0

Quality Criteria

The cost-effective use of seals and bearings is highly influenced by the quality criteria applied in production. Seals and bearings from Busak+Shamban are continuously monitored according to strict quality standards from material acquisition through to delivery.

Certification of our production plants in accordance with international standards QS 9000 / ISO 9000 meets the specific requirements for quality control and management of purchasing, production and marketing functions.

Our quality policy is consistently controlled by strict procedures and guidelines which are implemented within all strategic areas of the company.

All testing of materials and products is performed in accordance with accepted test standards and specifications, e.g. random sample testing in accordance with DIN ISO 2859, part 1. Inspection specifications correspond to standards applicable to individual product groups (e.g. for O-Rings: ISO 3601).

Our sealing materials are produced free of chlorofluorinated hydrocarbons and carcinogenic elements.

The tenth digit of our part number defines the quality characteristics of the part. A hyphen indicates compliance with standard quality criteria outlined in this catalogue. Customer-specific requirements are indicated by a different symbol in this position. Customers who require special quality criteria should contact their local Busak+Shamban sales office for assistance. We have experience in meeting all Customer quality requirements.

Storage and Shelf Life

Seals and bearings are often stored as spare parts for prolonged periods. Most rubbers change in physical properties during storage and ultimately become unserviceable due, e.g., to excessive hardening, softening, cracking, crazing or other surface degradation. These changes may be the result of particular factors or combination of factors, such as the action of deformation, oxygen, ozone, light, heat, humidity or oils and solvents.

With a few simple precautions, the shelf life of these products can be considerably lengthened.

Fundamental instructions on storage, cleaning and maintenance of elastomeric seal elements are described in international standards, such as:
DIN 7716 / BS 3F68:1977,
ISO 2230, or
DIN 9088

The standards give several recommendations for the storage and the shelf life of elastomers, depending on the material classes.

The following recommendations are based on the several standards and are intended to provide the most suitable conditions for storage of rubbers. They should be observed to maintain the optimum physical and chemical values of the parts:

Heat

The storage temperature should preferable be between +5 °C and +25 °C. Direct contact with sources of heat such as boilers, radiators and direct sunlight should be avoided.
If the storage temperature is below +15 °C, care should be taken to avoid distorting them during handling at that temperature as they may have stiffened. In this case the temperature of the articles should be raised to approximately +20 °C before they are put into service.

Humidity

The relative humidity in the store room should be below 70 %. Very moist or very dry conditions should be avoided. Condensation should not occur.

Light

Elastomeric seals should be protected from light sources, in particular direct sunlight or strong artificial light with an ultraviolet content. The individual storage bags offer the best protection as long as they are UV resistant.

It is advisable to cover any windows of storage rooms with a red or orange coating or screen.

Radiation

Precaution should be taken to protect stored articles from all sources of ionising radiation likely to cause damage to stored articles.

Oxygen and ozone

Where possible, elastomeric materials should be protected from circulating air by wrapping, storage in airtight containers or by other suitable means.

As ozone is particular deleterious to some elastomeric seals, storage rooms should not contain any equipment that is capable of generating ozone, such as mercury vapour lamps, high voltage electrical equipment, electric motors or other equipment which may give rise to electric sparks or silent electrical discharges. Combustion gases and organic vapour should be excluded from storage rooms alas they may give rise to ozone via photochemical processe

Deformation

Elastomeric materials should, wherever possible, be stored in a relaxed condition free from tension, compression or other deformation. Where articles are packed in a strain-free condition they should be stored in their original packaging.

Contact with liquid and semi-solid materials

Elastomeric seals should not be allowed to come into contact with solvents, oils, greases or any other semi-solid materials at any time during storage, unless so packed by the manufacturer.

Contact with metal and non-metals

Direct contact with certain metals, e.g. manganese, iron and particularly copper and its alloys, e.g. brass and compounds of these materials are known to have deleterious effects on some rubbers. Elastomeric seals should not be stored in contact with such metals.

Because of possible transfer of plasticisers or other ingredients, rubbers must not be stored in contact with PVC. Different rubbers should preferably be separated from each other.

Cleaning

Where necessary, cleaning should be carried out with the aid of soap and water or methylated spirits. Water should not, however, be permitted to come into contact with fabric reinforced components, bonded seals (because of corrosion) or polyurethane rubbers. Disinfectants or other organic solvents as well as sharp-edged objects must not be used. The articles should be dried at room temperature and not placed near a source of heat.

Shelf life and shelf life control

The useful life of a elastomeric seals will depend to a large extend on the type of rubber. When stored under the recommended conditions (above sections) the below given shelf life of several materials should be considered.

AU, Thermoplastics	4 years
NBR, HNBR, CR	6 years
EPDM	8 years
FKM, VMQ, FVMQ	10 years
FFKM, Isolast®	18 years
PTFE	unlimited

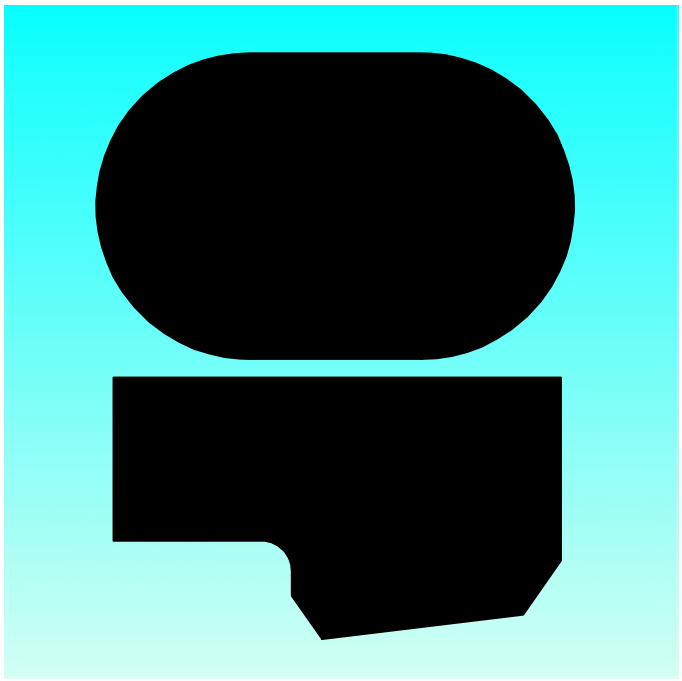
Elastomeric seals should be inspected after the given period. After this giving an extension period is possible.

Rubber details and components less than 1,5 mm thick are liable to be more seriously affected by oxidation degradation even when stored in satisfactory conditions as recommended. Therefore they may be inspected and tested more frequently than it is mentioned above.

Rubber details / seals in assembled components

It is recommended that the units should be exercised at least every six months and that the maximum period a rubber detail be allowed to remain assembled within a stored unit, without inspection, be a total of the initial period stated above and the extension period. Naturally this will depend on the design of the unit concerned.

TURCON® STEPSEAL® K



- Single Acting -

- Rubber Energised Plastic Faced Seal -

- Material -

- Turcon® and Zurcon® -

Turcon® Stepseal® K*

Description

The sealing of piston rods places the highest demands on operational safety and environmental protection in hydraulic engineering.

Rod seals must exhibit no dynamic leakage to the atmosphere side under all operating conditions and must be statically completely leak tight when the machine is at a standstill.

Furthermore, they should achieve a high degree of mechanical efficiency through low friction and be easy to install in small grooves. Costs and service life must meet the high expectations of the operator.

The piston rod seal, Turcon® Stepseal® K, developed by Busak+Shamban comes closest to satisfying these ideal demands. Already in use for several decades this seal is still a technically outstanding seal element due to the continuous innovative further development of the design and of the Turcon® and Zurcon® materials.

With the introduction of the Stepseal® K it was possible for the first time to arrange several seals one behind the other, thus allowing statically and dynamically tight, double-acting tandem seal configurations to be created without any disturbing build-up of intermediate pressure.

The single-acting seal element is made of high-grade Turcon® or Zurcon® materials with outstanding sliding and wear resistance properties. It is installed according to ISO 7425/2 and Busak+Shamban standard grooves, using an O-Ring as energizing element.

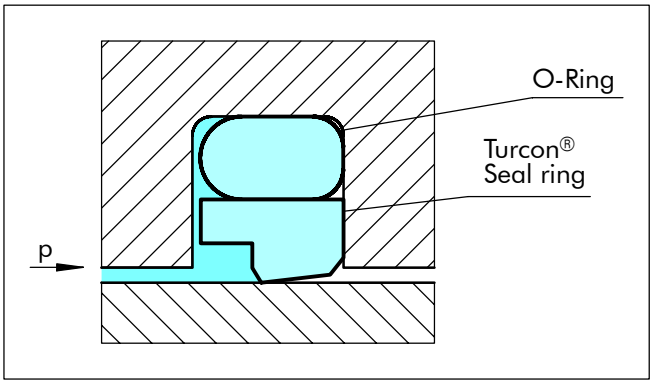


Figure 15 Turcon® Stepseal® K

* Patent-No. P 32 25 906

Method of Operation

The sealing mechanism of the Stepseal® K (Figure 15) is based on the hydrodynamic properties of the seal. The specially formed seal edge with a steep contact pressure gradient on the high pressure side and a shallow contact pressure gradient on the low pressure side ensures that the fluid film adhering to the piston rod is returned to the high pressure chamber on the return stroke of the rod. This prevents the micro-fluid layer, carried out of the high pressure chamber when the piston rod is extended, causing leaks.

This return delivery property prevents the build-up of intermediate pressure normally associated with tandem seal configurations (Figure 16) with primary and secondary seal. From our experience we know that the level of the pressure between the two seals does not exceed 10% of the working pressure. It depends on the speed, the stroke length and the groove design.

Advantages

- High static and dynamic sealing effect
- Low friction, high efficiency
- Stick-slip-free starting, no sticking
- High abrasion resistance, high operational reliability
- Simple groove design
- Wide range of application temperatures and high resistance to chemicals, depending on the choice of O-Ring material
- Simple installation without seal edge deformation thanks to the K-edge
- Available for all diameters up to 2.600 mm

Technical Data

Operating pressure:	up to 80 MPa
Speed:	up to 15 m/s with reciprocating movements, frequency up to 5 Hz
Temperature:	-45°C to +200°C (depending on O-Ring material)
Media:	Mineral oil-based hydraulic fluids, flame retardant hydraulic fluids, environmentally safe hydraulic fluids (bio-oils), water and others, depending on the O-Ring material
Clearance:	The maximum permissible radial clearance s_{max} is shown in Table IX, as a function of the operating pressure and functional diameter

Important Note:
The above data are maximum values and cannot be used at the same time. e.g. the maximum operating speed depends on material type, pressure, temperature and gap value.

Materials

The following material combination has proven effective for most applications:

Turcon® Stepseal® K:	Turcon® T46	
O-Ring:	NBR, 70 Shore A	N
	FKM, 70 Shore A	V
Set:	T46N/T46V	

For specific applications, other material combinations listed in Table VIII, may also be used.

Series

Different profile cross-sections are defined as a function of the seal diameters. These are indicated by the series numbers.

Table IX, shows the relationship between the series number according to the seal diameter range and the different application class sizes. These application classes are:

Standard application:	General applications in which no exceptional operating conditions exist.
Light application:	Applications with demands for reduced friction or for smaller grooves.
Heavy-duty application:	For exceptional operating loads such as high pressures, pressure peaks, etc.

Application Examples

- Mobile hydraulic
- Standard cylinders
- Machine tools
- Injection moulding machines
- Presses
- Automobile industry
- Hydraulic hammers
- Servo hydraulics

Design Instructions

In many applications, secondary seal systems are demanded. Figure 16 shows such a tandem configuration with the Stepseal® K.

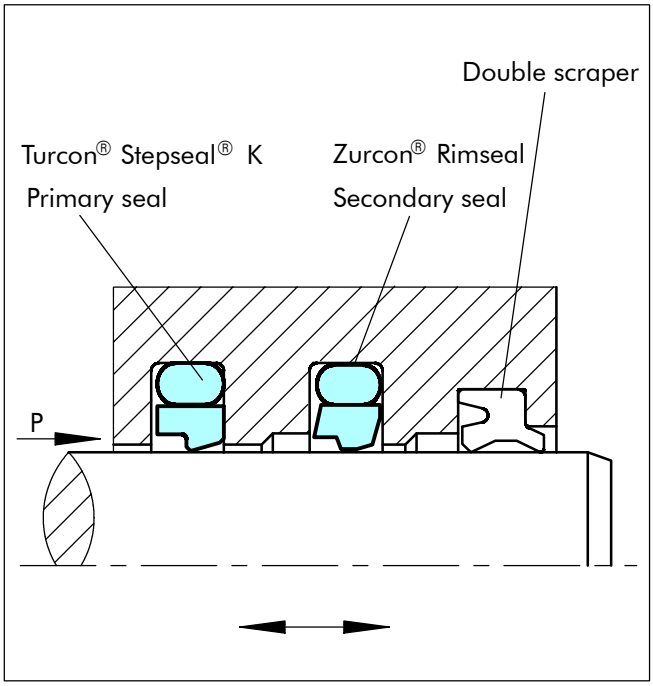


Figure 16 Turcon® Stepseal® K and Zurcon® Rimseal in tandem configuration

In this configuration it must be noted that a sufficiently large space is formed between the seals to take the hydraulic fluid, as shown in the figure.

Depending on the application and the operating conditions, the combination of different materials offers a further improvement in the sealing efficiency and the service life of the system, e.g. in hydraulic cylinders subject to high loads and under rough operating conditions, the primary seal should be made of Turcon® and the secondary seal of Zurcon®.

Stepseal® K elements should always be used in combination with a double scraper to provide an optimum sealing effect.

The scraper Turcon® Excluder® 2, Turcon® Excluder® 5, Zurcon® Excluder® 500, DA17 and DA22 are well suited to such applications. For further details, please refer to our "Scrapers" catalogue.

Table VIII Turcon® and Zurcon® Materials for Stepseal® K

Material, Applications, Properties	Code	O-Ring Material	Code	O-Ring Operating Temp.* °C	Mating Surface Material	MPa max.
Turcon® T46 **Standard material** for hydraulics, high compressive strength, good sliding and wear properties, good extrusion resistance, **BAM approval.** Bronze filled Colour: Greyish to dark brown	T46	NBR - 70 Shore A	N	-30 to +100	Steel, hardened Steel, chromeplated Cast iron	60
		NBR - Low temp. 70 Shore A	T	-45 to +80		
		FKM - 70 Shore A	V	-10 to +200		
Turcon® T08 **Very high compressive strength, very good extrusion resistance.** High bronze filled Colour: Light to dark brown	T08	NBR - 70 Shore A	N	-30 to +100	Steel, hardened Steel, chromeplated Cast iron	80
		NBR - Low temp. 70 Shore A	T	-45 to +80		
		FKM - 70 Shore A	V	-10 to +200		
Turcon® T40 For all lubricating and non-lubricating hydraulic fluids, **soft mating surfaces.** Carbon fibre filled Colour: Grey	T40	NBR - 70 Shore A	N	-30 to +100	Mild steel Steel, chromeplated Cast iron Stainless steel Aluminium Bronze Alloys	25
		NBR - Low temp. 70 Shore A	T	-45 to +80		
		FKM - 70 Shore A	V	-10 to +200		
		EPDM-70 Shore A	E**	-45 to +145		
Turcon® T29 For all lubricating and non-lubricating hydraulic fluids, **soft mating surfaces, good extrusion resistance.** High carbon fibre filled Colour: Grey	T29	NBR - 70 Shore A	N	-30 to +100	Mild steel Steel, chromeplated Cast iron Stainless steel Aluminium Bronze	60
		NBR - Low temp. 70 Shore A	T	-45 to +80		
		FKM - 70 Shore A	V	-10 to +200		
		EPDM-70 Shore A	E**	-45 to +145		
Turcon® T05 For all lubricating hydraulic fluids, hard mating surfaces, **very good slide properties, low friction.** Colour: Turquoise	T05	NBR - 70 Shore A	N	-30 to +100	Steel, hardened Steel, chromeplated	20
		NBR - Low temp. 70 Shore A	T	-45 to +80		
		FKM - 70 Shore A	V	-10 to +200		
Turcon® T42 For all lubricating and non-lubricating hydraulic fluids, good chemical resistance, **good dielectric properties.** Glass fibre filled + MoS_2 Colour: Grey to blue	T42	NBR - 70 Shore A	N	-30 to +100	Steel, hardened Steel, chromeplated Cast iron	30
		NBR - Low temp. 70 Shore A	T	-45 to +80		
		FKM - 70 Shore A	V	-10 to +200		
Turcon® T10 **For water hydraulic, oil hydraulic and pneumatic for all lubricating and non-lubricating fluids,** high extrusion resistance, good chemical resistance, **BAM approval**. Carbon, graphite filled Colour: Black	T10	NBR - 70 Shore A	N	-30 to +100	Mild steel Steel, chromeplated Stainless steel	60
		NBR - Low temp. 70 Shore A	T	-45 to +80		
		FKM - 70 Shore A	V	-10 to +200		
		EPDM-70 Shore A	E**	-45 to +145		
Zurcon® Z51 For lubricating hydraulic fluids, **high abrasion resistance, high extrusion resistance,** limited chemical resistance. Cast polyurethane Colour: Yellow to light-brown	Z51	NBR - 70 Shore A	N	-30 to +100	Mild steel Steel, chromeplated Cast iron Ceramic coating Stainless steel	80
		NBR - Low temp. 70 Shore A	T	-45 to +80		
Zurcon® Z80 For lubricating and non-lubricating hydraulic fluids, high abrasion resistance, very good chemical resistance, limited temperature resistance. Ultra high molecular weight polyethylen Colour: White to off-white	Z80	NBR - 70 Shore A	N	-30 to +80	Mild steel Steel, chromeplated Stainless steel Aluminium Bronze Ceramic coating	40
		NBR - Low temp. 70 Shore A	T	-45 to +80		

* The O-Ring Operation Temperature is only valid in mineral hydraulic oil. BAM: Approved by "Bundes Anstalt Materialprüfung, Germany".
Highlighted materials are standard. **Material not suitable for mineral oils.

Installation Recommendation

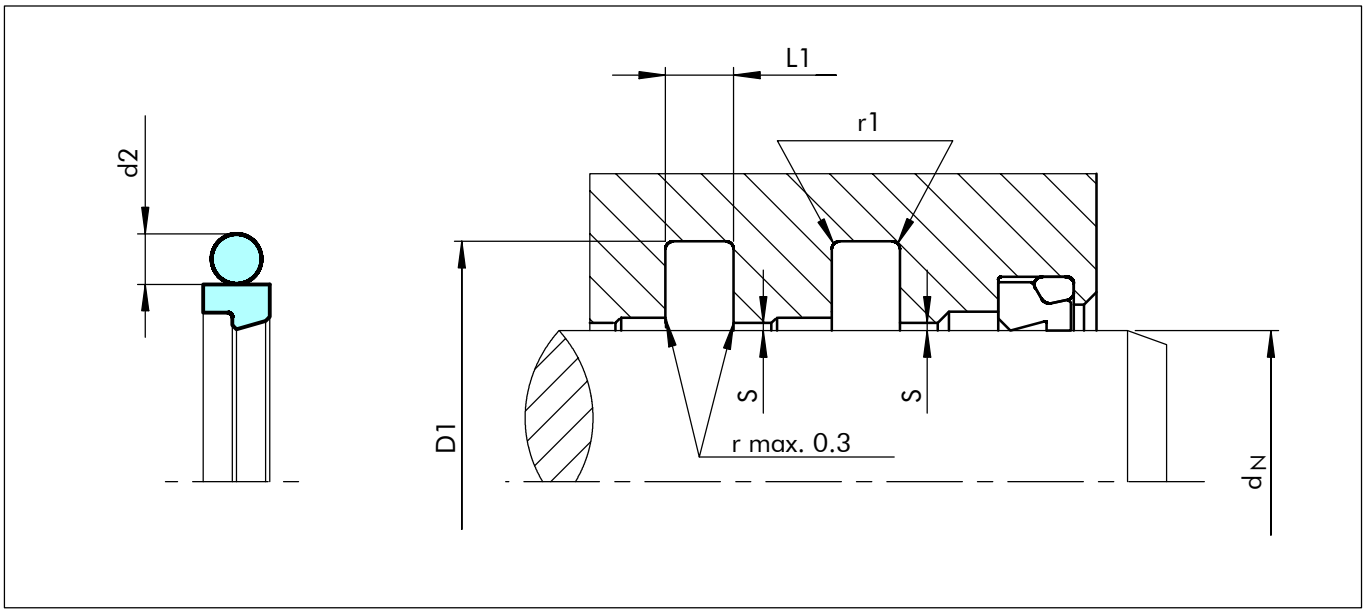


Figure 17 Installation drawing

Table IX Installation Dimensions - Standard Recommendations

Rod d_N f8/h9			Groove Diameter	Groove width	Radius	Radial Clearance S max.*			O-Ring Cross-Section
Series No. RS 13 Standard Application	Series No. RS 15[1] Light Application	Series No. RS 11 Heavy Duty Application	D_1 H9	L_1 +0.2	r_1	10 MPa	20 MPa	40 MPa	d_2
3 - 7.9	8 - 18.9	-	d_N + 4.9	2.2	0.4	0.30	0.20	0.15	1.78
8 - 18.9	19 - 37.9	-	d_N + 7.3	3.2	0.6	0.40	0.25	0.15	2.62
19 - 37.9	38 - 199.9	8 - 18.9	d_N + 10.7	4.2	1.0	0.40	0.25	0.20	3.53
38 - 199.9	200 - 255.9	19 - 37.9	d_N + 15.1	6.3	1.3	0.50	0.30	0.20	5.33
200 - 255.9	256 - 649.9	38 - 199.9	d_N + 20.5	8.1	1.8	0.60	0.35	0.25	7.00
256 - 649.9	650 - 999.9	200 - 255.9	d_N + 24.0	8.1	1.8	0.60	0.35	0.25	7.00
650 - 999.9	≥ 1000	256 - 649.9	d_N + 27.3	9.5	2.5	0.70	0.50	0.30	8.40
≥ 1000**	-	650 - 999.9	d_N + 38.0	13.8	3.0	1.00	0.70	0.60	12.00

* At pressures **> 40 MPa**: S max. = H8/f8 (bore/ rod) in the area behind the seal.
[1] For easier installation in closed grooves with small rod diameters (< 40 mm) we recommend the use of series RS 15.
** Energiser has a special shape.

Ordering example

Turcon® Stepseal® K complete with O-Ring, standard application, Series RS 13 (from Table IX).
Rod diameter: d_N = 80.0 mm
Part No.: RS1300800 (from Table X)
Select the material from Table VIII. The corresponding code numbers are appended to the Part No. (from Table X). Together these form the order number.
The order number for all intermediate sizes not shown in Table X can be determined following the example opposite.
*** For diameters ≥ 1000.0 mm multiply only by factor 1.
Example: RS13 for diameter 1200.0 mm.
Order no.: RS13**X1200** - T46N.

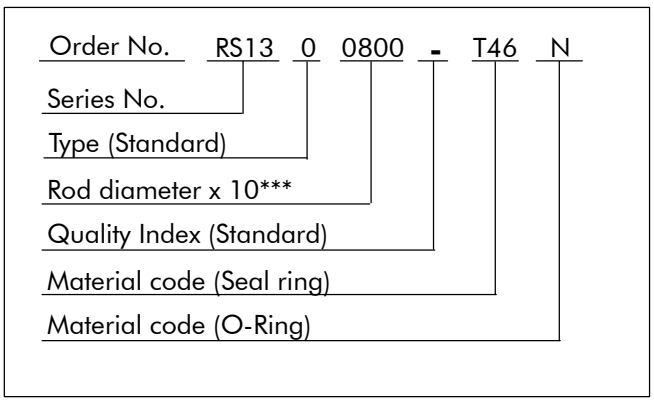


Table X Preferred Series / Part No.

Rod	Groove Diame-ter	Groove Width	Part No.	O-Ring Size
d_N f8/h9	D_1 H9	L_1 +0.2		
3.0	7.9	2.2	RS1300030	4.47 x 1.78
4.0	**8.9**	**2.2**	**RS1300040**	**5.6 x 1.8**
5.0	**9.9**	**2.2**	**RS1300050**	**6.7 x 1.8**
6.0	**10.9**	**2.2**	**RS1300060**	**7.65 x 1.78**
7.0	11.9	2.2	RS1300070	8.75 x 1.8
8.0	**12.9**	**2.2**	**RS1500080**	**9.5 x 1.8**
8.0	**15.3**	**3.2**	**RS1300080**	**10.77 x 2.62**
9.0	13.9	2.2	RS1500090	10.82 x 1.78
9.0	16.3	3.2	RS1300090	10.77 x 2.62
10.0	**14.9**	**2.2**	**RS1500100**	**11.8 x 1.8**
10.0	**17.3**	**3.2**	**RS1300100**	**12.37 x 2.62**
12.0	**16.9**	**2.2**	**RS1500120**	**14.00 x 1.78**
12.0	**19.3**	**3.2**	**RS1300120**	**13.94 x 2.62**
12.7	17.6	2.2	RS1500127	14.00 x 1.78
12.7	20.0	3.2	RS1300127	15.54 x 2.62
14.0	**18.9**	**2.2**	**RS1500140**	**15.60 x 1.78**
14.0	**21.3**	**3.2**	**RS1300140**	**17.12 x 2.62**
15.0	19.9	2.2	RS1500150	17.17 x 1.78
15.0	22.3	3.2	RS1300150	17.12 x 2.62
16.0	20.9	2.2	RS1500160	17.17 x 1.78
16.0	**23.3**	**3.2**	**RS1300160**	**18.72 x 2.62**
17.0	21.9	2.2	RS1500170	18.77 x 1.78
18.0	22.9	2.2	RS1500180	18.77 x 1.78
18.0	**25.3**	**3.2**	**RS1300180**	**20.29 x 2.62**
19.0	29.7	4.2	RS1300190	23.40 x 3.53
20.0	**27.3**	**3.2**	**RS1500200**	**21.89 x 2.62**
20.0	**30.7**	**4.2**	**RS1300200**	**23.40 x 3.53**
22.0	**29.3**	**3.2**	**RS1500220**	**25.07 x 2.62**
22.0	**32.7**	**4.2**	**RS1300220**	**26.58 x 3.53**
24.0	31.3	3.2	RS1500240	26.64 x 2.62
25.0	**32.3**	**3.2**	**RS1500250**	**28.24 x 2.62**
25.0	**35.7**	**4.2**	**RS1300250**	**29.75 x 3.53**
25.4	32.7	3.2	RS1500254	28.24 x 2.62
25.4	36.1	4.2	RS1300254	29.75 x 3.53
26.0	33.3	3.2	RS1500260	28.24 x 2.62
26.0	36.7	4.2	RS1300260	29.75 x 3.53
28.0	35.3	3.2	RS1500280	29.82 x 2.62
28.0	**38.7**	**4.2**	**RS1300280**	**32.92 x 3.53**
28.575	35.875	3.2	RS1500286	31.42 x 2.62
30.0	37.3	3.2	RS1500300	32.99 x 2.62
30.0	40.7	4.2	RS1300300	34.52 x 3.53
32.0	39.3	3.2	RS1500320	34.59 x 2.62
32.0	**42.7**	**4.2**	**RS1300320**	**36.09 x 3.53**
35.0	42.3	3.2	RS1500350	37.77 x 2.62
35.0	45.7	4.2	RS1300350	37.69 x 3.53

Rod	Groove Diame-ter	Groove Width	Part No.	O-Ring Size
d_N f8/h9	D_1 H9	L_1 +0.2		
36.0	43.3	3.2	RS1500360	39.34 x 2.62
36.0	**46.7**	**4.2**	**RS1300360**	**40.87 x 3.53**
37.0	44.3	3.2	RS1500370	39.34 2.62
37.0	47.7	4.2	RS1300370	40.87 x 3.53
38.0	48.7	4.2	RS1500380	40.87 x 3.53
38.0	53.1	6.3	RS1300380	43.82 x 5.33
40.0	**50.7**	**4.2**	**RS1500400**	**44.04 x 3.53**
40.0	**55.1**	**6.3**	**RS1300400**	**43.82 x 5.33**
42.0	52.7	4.2	RS1500420	47.22 x 3.53
42.0	57.1	6.3	RS1300420	46.99 x 5.33
43.0	53.7	4.2	RS1500430	47.22 x 3.53
44.45	59.55	6.3	RS1300444	50.17 x 5.33
45.0	**55.7**	**4.2**	**RS1500450**	**50.39 x 3.53**
45.0	**60.1**	**6.3**	**RS1300450**	**50.17 x 5.33**
48.0	58.7	4.2	RS1500480	51.5 x 3.55
48.0	63.1	6.3	RS1300480	53.34 x 5.33
50.0	**60.7**	**4.2**	**RS1500500**	**53.57 x 3.53**
50.0	**65.1**	**6.3**	**RS1300500**	**56.52 x 5.33**
50.8	61.5	4.2	RS1500508	53.57 x 3.53
50.8	65.9	6.3	RS1300508	56.52 x 5.33
52.0	62.7	4.2	RS1500520	56.74 x 3.53
52.0	67.1	6.3	RS1300520	56.52 x 5.33
54.0	69.1	6.3	RS1300540	59.69 x 5.33
55.0	65.7	4.2	RS1500550	59.92 x 3.53
55.0	70.1	6.3	RS1300550	59.69 x 5.33
56.0	**66.7**	**4.2**	**RS1500560**	**59.92 x 3.53**
56.0	**71.1**	**6.3**	**RS1300560**	**62.87 x 5.33**
56.0	76.5	8.1	RS1100560	63 x 7.0
57.0	72.1	6.3	RS1300570	62.87 x 5.33
59.0	69.7	4.2	RS1500590	63.09 x 3.53
60.0	70.7	4.2	RS1500600	63.09 x 3.53
60.0	75.1	6.3	RS1300600	66.04 x 5.33
63.0	**73.7**	**4.2**	**RS1500630**	**66.27 x 3.53**
63.0	**78.1**	**6.3**	**RS1300630**	**69.22 x 5.33**
63.5	78.6	6.3	RS1300635	69.22 x 5.33
65.0	75.7	4.2	RS1500650	69.44 x 3.53
65.0	80.1	6.3	RS1300650	69.22 x 5.33
67.0	77.7	4.2	RS1500670	72.62 x 3.53
69.0	84.1	6.3	RS1300690	75.57 x 5.33
70.0	80.7	4.2	RS1500700	75.79 x 3.53
70.0	**85.1**	**6.3**	**RS1300700**	**75.57 x 5.33**
70.0	90.5	8.1	RS1100700	78 x 7.0
72.0	82.7	4.2	RS1500720	75.79 x 3.53
73.0	88.1	6.3	RS1300730	78.74 x 5.33
75.0	85.7	4.2	RS1500750	78.97 x 3.53

Rod	Groove Diame-ter	Groove Width	Part No.	O-Ring Size
d_N f8/h9	D_1 H9	L_1 +0.2		
75.0	90.1	6.3	RS1300750	81.92 x 5.33
76.2	91.3	6.3	RS1300762	81.92 x 5.33
78.0	93.1	6.3	RS1300780	85.09 x 5.33
80.0	90.7	4.2	RS1500800	85.32 x 3.53
80.0	**95.1**	**6.3**	**RS1300800**	**85.09 x 5.33**
80.0	100.5	8.1	RS1100800	88 x 7.0
82.5	97.6	6.3	RS1300825	88.27 x 5.33
83.0	93.7	4.2	RS1500830	88.49 x 3.53
85.0	95.7	4.2	RS1500850	88.49 x 3.53
85.0	100.1	6.3	RS1300850	91.44 x 5.33
85.0	105.5	8.1	RS1100850	93 x 7.0
89.0	104.1	6.3	RS1300890	94.62 x 5.33
90.0	100.7	4.2	RS1500900	94.84 x 3.53
90.0	**105.1**	**6.3**	**RS1300900**	**94.62 x 5.33**
90.0	110.5	8.1	RS1100900	98 x 7.0
92.0	102.7	4.2	RS1500920	98.02 x 3.53
92.0	107.1	6.3	RS1300920	97.79 x 5.33
95.0	105.7	4.2	RS1500950	101.19 x 3.53
95.0	110.1	6.3	RS1300950	100.97 x 5.33
100.0	110.7	4.2	RS1501000	104.37 x 3.53
100.0	**115.1**	**6.3**	**RS1301000**	**107.32 x 5.33**
100.0	120.5	8.1	RS1101000	108 x 7.0
101.6	116.7	6.3	RS1301016	107.32 x 5.33
104.7	119.8	6.3	RS1301047	110.49 x 5.33
105.0	120.1	6.3	RS1301050	110.49 x 5.33
105.0	125.5	8.1	RS1101050	113.67 x 7.0
110.0	120.7	4.2	RS1501100	113.89 x 3.53
110.0	**125.1**	**6.3**	**RS1301100**	**116.84 x 5.33**
110.0	130.5	8.1	RS1101100	116.84 x 7.0
115.0	130.1	6.3	RS1301150	120.02 x 5.33
120.0	135.1	6.3	RS1301200	126.37 x 5.33
120.0	145.5	8.1	RS1101200	129.54 x 7.0
125.0	**140.1**	**6.3**	**RS1301250**	**129.54 x 5.33**
125.0	145.5	8.1	RS1101250	132.72 x 7.0
125.4	140.5	6.3	RS1301254	132.72 x 5.33
127.0	142.1	6.3	RS1301270	132.72 x 5.33
130.0	145.1	6.3	RS1301300	135.89 x 5.33
130.0	150.5	8.1	RS1101300	139.07 x 7.0
132.0	147.1	6.3	RS1301320	139.07 x 5.33
135.0	145.7	4.2	RS1501350	139.29 x 3.53
135.0	150.1	6.3	RS1301350	142.24 x 5.33
137.0	152.1	6.3	RS1301370	142.24 x 5.33
138.0	153.1	6.3	RS1301380	142.24 x 5.33
140.0	150.7	4.2	RS1501400	145.64 x 3.53
140.0	**155.1**	**6.3**	**RS1301400**	**145.42 x 5.33**

Rod	Groove Diame-ter	Groove Width	Part No.	O-Ring Size
d_N f8/h9	D_1 H9	L_1 +0.2		
140.0	160.5	8.1	RS1101400	148.59 x 7.0
140.5	155.6	6.3	RS1301405	145.42 x 5.33
145.0	160.1	6.3	RS1301450	151.77 x 5.33
145.0	165.5	8.1	RS1101450	151.77 x 7.0
150.0	165.1	6.3	RS1301500	158.12 x 5.33
150.0	170.5	8.1	RS1101500	158.12 x 7.0
153.0	168.1	6.3	RS1301530	158.12 x 5.33
155.0	170.1	6.3	RS1301550	158.12 x 5.33
160.0	**175.1**	**6.3**	**RS1301600**	**164.47 x 5.33**
160.0	**180.5**	**8.1**	**RS1101600**	**170.82 x 7.0**
165.0	180.1	6.3	RS1301650	170.82 x 5.33
170.0	185.1	6.3	RS1301700	177.17 x 5.33
170.0	190.5	8.1	RS1101700	177.17 x 7.0
173.0	188.1	6.3	RS1301730	177.17 x 5.33
175.0	190.1	6.3	RS1301750	183.52 x 5.33
180.0	**195.1**	**6.3**	**RS1301800**	**183.52 x 5.33**
180.0	**200.5**	**8.1**	**RS1101800**	**189.87 x 7.0**
185.0	200.1	6.3	RS1301850	189.87 x 5.33
185.0	205.5	8.1	RS1101850	196.22 x 7.0
190.0	205.1	6.3	RS1301900	196.22 x 5.33
190.0	210.5	8.1	RS1101900	196.22 x 7.0
195.0	210.1	6.3	RS1301950	202.57 x 5.33
200.0	215.1	6.3	RS1502000	208.92 x 5.33
200.0	**220.5**	**8.1**	**RS1302000**	**215.27 x 7.0**
205.0	225.5	8.1	RS1302050	215.27 x 7.0
210.0	230.5	8.1	RS1302100	215.27 x 7.0
211.0	231.5	8.1	RS1302110	215.27 x 7.0
212.0	232.5	8.1	RS1302120	227.97 x 7.0
215.0	235.5	8.1	RS1302150	227.97 x 7.0
220.0	**240.5**	**8.1**	**RS1302200**	**227.97 x 7.0**
225.0	245.5	8.1	RS1302250	240.67 x 7.0
230.0	245.1	6.3	RS1502300	234.32 x 5.33
230.0	250.5	8.1	RS1302300	240.67 x 7.0
235.0	255.5	8.1	RS1302350	240.67 x 7.0
240.0	260.5	8.1	RS1302400	253.37 x 7.0
245.0	265.5	8.1	RS1302450	253.37 x 7.0
250.0	**270.5**	**8.1**	**RS1302500**	**266.07 x 7.0**
260.0	284.0	8.1	RS1302600	266.07 x 7.0
265.0	289.0	8.1	RS1302650	278.77 x 7.0
270.0	290.5	8.1	RS1502700	278.77 x 7.0
270.0	294.0	8.1	RS1302700	278.77 x 7.0
275.0	299.0	8.1	RS1302750	291.47 x 7.0
280.0	**304.0**	**8.1**	**RS1302800**	**291.47 x 7.0**
285.0	309.0	8.1	RS1302850	291.47 x 7.0
290.0	314.0	8.1	RS1302900	304.17 x 7.0

Rod	Groove Diameter	Groove Width	Part No.	O-Ring Size
d_N f8/h9	D_1 H9	L_1 +0.2		
295.0	319.0	8.1	RS1302950	304.17 x 7.0
300.0	320.5	8.1	RS1503000	304.17 x 7.0
300.0	324.0	8.1	RS1303000	316.87 x 7.0
310.0	334.0	8.1	RS1303100	316.87 x 7.0
320.0	**344.0**	**8.1**	**RS1303200**	**329.57 x 7.0**
330.0	354.0	8.1	RS1303300	342.27 x 7.0
340.0	364.0	8.1	RS1303400	354.97 x 7.0
350.0	370.5	8.1	RS1503500	354.97 x 7.0
350.0	374.0	8.1	RS1303500	367.67 x 7.0
360.0	**384.0**	**8.1**	**RS1303600**	**367.67 x 7.0**
365.0	389.0	8.1	RS1303650	380.37 x 7.0
370.0	394.0	8.1	RS1303700	380.37 x 7.0
375.0	399.0	8.1	RS1303750	393.07 x 7.0
380.0	404.0	8.1	RS1303800	393.07 x 7.0
390.0	414.0	8.1	RS1303900	405.26 x 7.0
400.0	424.0	8.1	RS1304000	417.96 x 7.0
410.0	434.0	8.1	RS1304100	417.96 x 7.0
420.0	444.0	8.1	RS1304200	430.66 x 7.0
430.0	454.0	8.1	RS1304300	443.36 x 7.0
435.0	459.0	8.1	RS1304350	443.36 x 7.0
440.0	464.0	8.1	RS1304400	456.06 x 7.0
450.0	474.0	8.1	RS1304500	468.76 x 7.0
460.0	484.0	8.1	RS1304600	468.76 x 7.0
470.0	494.0	8.1	RS1304700	481.46 x 7.0
480.0	504.0	8.1	RS1304800	494.16 x 7.0
485.0	509.0	8.1	RS1304850	494.16 x 7.0
490.0	514.0	8.1	RS1304900	506.86 x 7.0
500.0	524.0	8.1	RS1305000	506.86 x 7.0
510.0	534.0	8.1	RS1305100	532.26 x 7.0
520.0	544.0	8.1	RS1305200	532.26 x 7.0
525.0	549.0	8.1	RS1305250	532.26 x 7.0
530.0	554.0	8.1	RS1305300	557.66 x 7.0
540.0	564.0	8.1	RS1305400	557.66 x 7.0
550.0	574.0	8.1	RS1305500	557.66 x 7.0
560.0	584.0	8.1	RS1305600	582.68 x 7.0
570.0	594.0	8.1	RS1305700	582.68 x 7.0
580.0	604.0	8.1	RS1305800	608.08 x 7.0
585.0	609.0	8.1	RS1305850	608.08 x 7.0
590.0	614.0	8.1	RS1305900	608.08 x 7.0
600.0	624.0	8.1	RS1306000	608.08 x 7.0
610.0	634.0	8.1	RS1306100	633.48 x 7.0
620.0	644.0	8.1	RS1306200	633.48 x 7.0
630.0	654.0	8.1	RS1306300	658.88 x 7.0
640.0	664.0	8.1	RS1306400	658.88 x 7.0
650.0	677.3	9.5	RS1306500	663 x 8.4

Rod	Groove Diameter	Groove Width	Part No.	O-Ring* Size
d_N f8/h9	D_1 H9	L_1 +0.2		
656.0	683.3	9.5	RS1306560	669 x 8.4
660.0	687.3	9.5	RS1306600	673 x 8.4
680.0	707.3	9.5	RS1306800	693 x 8.4
685.0	712.3	9.5	RS1306850	698 x 8.4
700.0	724.0	8.1	RS1507000	712 x 7.0
700.0	727.3	9.5	RS1307000	713 x 8.4
710.0	737.3	9.5	RS1307100	723 x 8.4
730.0	757.3	9.5	RS1307300	743 x 8.4
760.0	787.3	9.5	RS1307600	773 x 8.4
765.0	792.3	9.5	RS1307650	778 x 8.4
780.0	807.3	9.5	RS1307800	793 x 8.4
790.0	817.3	9.5	RS1307900	803 x 8.4
800.0	827.3	9.5	RS1308000	813 x 8.4
810.0	837.3	9.5	RS1308100	823 x 8.4
820.0	847.3	9.5	RS1308200	833 x 8.4
830.0	857.3	9.5	RS1308300	843 x 8.4
850.0	877.3	9.5	RS1308500	863 x 8.4
870.0	897.3	9.5	RS1308700	883 x 8.4
880.0	907.3	9.5	RS1308800	893 x 8.4
885.0	912.3	9.5	RS1308850	898 x 8.4
890.0	917.3	9.5	RS1308900	903 x 8.4
930.0	957.3	9.5	RS1309300	943 x 8.4
955.0	982.3	9.5	RS1309550	968 x 8.4
1000.0	1038.0	13.8	RS13X1000	1016 x 12
1035.0	1073.0	13.8	RS13X1035	1051 x 12
1040.0	1067.3	9.5	RS15X1040	1053 x 8.4
1040.0	1078.0	13.8	RS13X1040	1056 x 12
1050.0	1077.3	9.5	RS15X1050	1063 x 8.4
1050.0	1088.0	13.8	RS13X1050	1066 x 12
1100.0	1138.0	13.8	RS13X1100	1116 x 12
1120.0	1147.3	9.5	RS15X1120	1133 x 8.4
1120.0	1158.0	13.8	RS13X1120	1136 x 12
1200.0	1227.3	9.5	RS15X1200	1213 x 8.4
1200.0	1238.0	13.8	RS13X1200	1216 x 12
1330.0	1357.3	9.5	RS15X1330	1343 x 8.4
1330.0	1368.0	13.8	RS13X1330	1346 x 12
1500.0	1527.3	9.5	RS15X1500	1513 x 8.4
1500.0	1538.0	13.8	RS13X1500	1516 x 12
1600.0	1638.0	13.8	RS13X1600	1616 x 12
2000.0	2038.0	13.8	RS13X2000	2016 x 12
2600.0	2638.0	13.8	RS13X2600	2616 x 12

The rod diameters in bold type are in accordance with the recommendations of ISO 3320.

Other dimensions and all intermediate sizes up to 2.600 mm diameter including imperial (inch) sizes can be supplied.

*All O-Rings with 12 mm cross section are delivered as special profilring.

Installation According to ISO 7425, Part 2

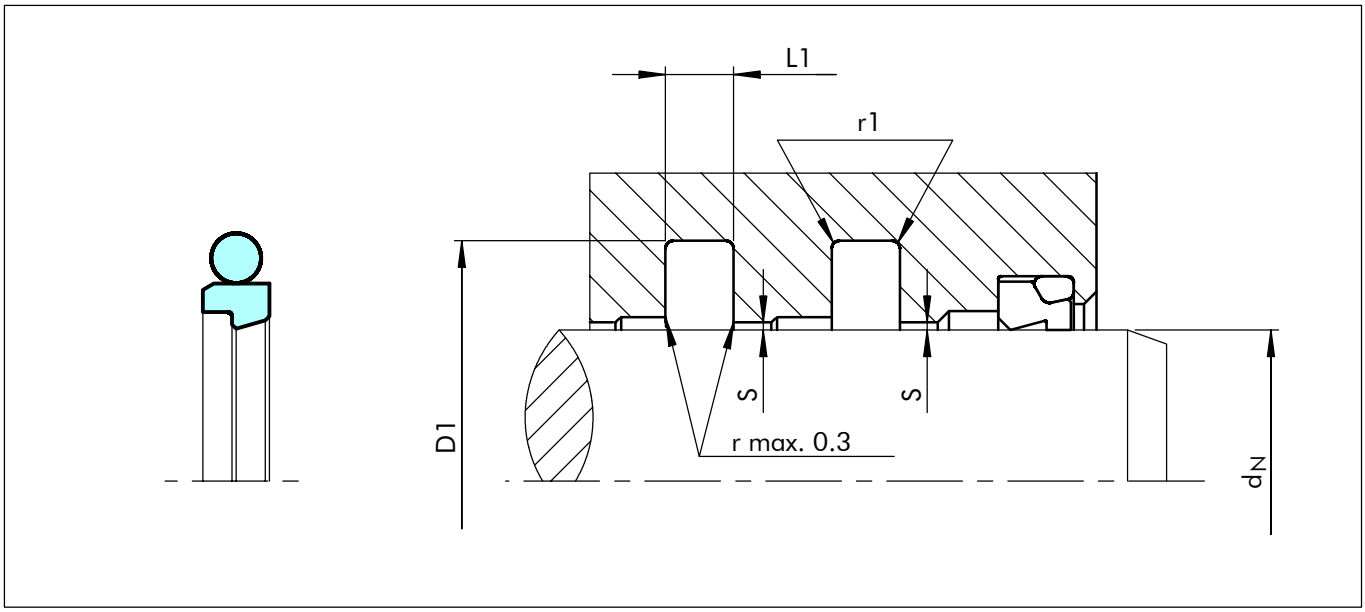


Figure 18 Installation drawing

Dimensions to ISO 7425/2.
Turcon® Stepseal® K seals to fit grooves to ISO 7425/2 are additionally marked with a chamfer on the corner of one outside diameter.

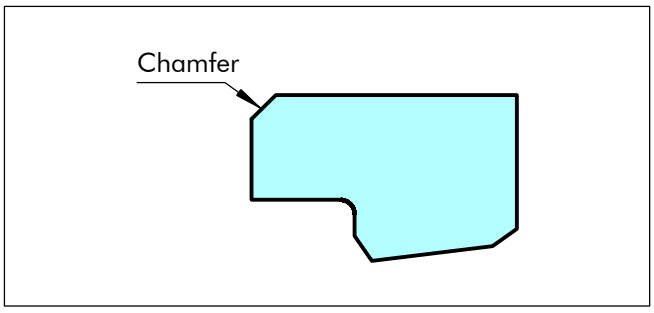


Figure 19 Marking of the ISO version

The dimensions for clearance S, depending on seal dimensions (groove width) and pressure, can be taken from the standard stepseal®.

For dimensions d_N, d1 and L1 please refer to Table XI.

Ordering Example

Turcon® Stepseal® K to ISO 7425/2

Rod diameter:	d_N = 63.0 mm
Groove width:	L1 = 4.2 mm
Part No.	RS6200630

Select the material from Table VIII. The corresponding code numbers are appended to the Part No. (from Table XI). Together these form the order number.

Order No.	RS62	0	0630	-	T46	N
Part No.	RS62					
Type (Standard)		0				
Rod diameter x 10			0630			
Quality Index (Standard)				-		
Material code (Seal ring)					T46	
Material code (O-Ring)						N

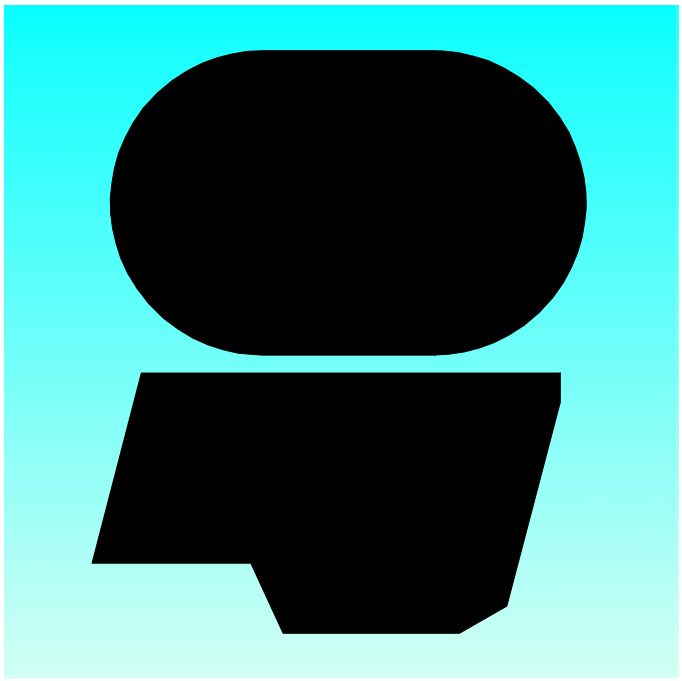
Table XI Installation Dimensions to ISO 7425/2

Rod	Groove Diameter	Groove Width	r_1	Part No.	O-Ring Size
d_N f8/h9	D_1 H9	L_1 +0,2			
6.0	11.0	2.2	0.5	RS 6000060	7.65 x 1.78
8.0	13.0	2.2	0.5	RS 6000080	9.5 x 1.8
10.0	15.0	2.2	0.5	RS 6000100	11.8 x 1.8
12.0	17.0	2.2	0.5	RS 6000120	14.0 x 1.78
12.0	19.5	3.2	0.5	RS 6100120	13.94 x 2.62
14.0	19.0	2.2	0.5	RS 6000140	15.60 x 1.78
14.0	21.5	3.2	0.5	RS 6100140	17.12 x 2.62
16.0	23.5	3.2	0.5	RS 6100160	18.72 x 2.62
18.0	25.5	3.2	0.5	RS 6100180	20.29 x 2.62
20.0	27.5	3.2	0.5	RS 6100200	23.47 x 2.62
20.0	31.0	4.2	0.5	RS 6200200	25.00 x 3.53
22.0	29.5	3.2	0.5	RS 6100220	25.07 x 2.62
22.0	33.0	4.2	0.5	RS 6200220	26.58 x 3.53
25.0	32.5	3.2	0.5	RS 6100250	28.24 x 2.62
25.0	36.0	4.2	0.5	RS 6200250	29.75 x 3.53
28.0	39.0	4.2	0.5	RS 6200280	32.92 x 3.53
32.0	43.0	4.2	0.5	RS 6200320	36.09 x 3.53
36.0	47.0	4.2	0.5	RS 6200360	40.87 x 3.53
40.0	51.0	4.2	0.5	RS 6200400	44.04 x 3.53
45.0	56.0	4.2	0.5	RS 6200450	50.39 x 3.53
50.0	61.0	4.2	0.5	RS 6200500	53.57 x 3.53
56.0	67.0	4.2	0.5	RS 6200560	59.92 x 3.53
56.0	71.5	6.3	0.9	RS 6300560	62.87 x 5.33
63.0	74.0	4.2	0.5	RS 6200630	66.27 x 3.53
63.0	78.5	6.3	0.9	RS 6300630	69.22 x 5.33
70.0	85.5	6.3	0.9	RS 6300700	75.57 x 5.33
80.0	95.5	6.3	0.9	RS 6300800	85.09 x 5.33
90.0	105.5	6.3	0.9	RS 6300900	94.62 x 5.33
100.0	115.5	6.3	0.9	RS 6301000	107.32 x 5.33
110.0	125.5	6.3	0.9	RS 6301100	116.84 x 5.33
125.0	140.5	6.3	0.9	RS 6301250	132.72 x 5.33
140.0	155.5	6.3	0.9	RS 6301400	145.42 x 5.33
160.0	175.5	6.3	0.9	RS 6301600	164.47 x 5.33
160.0	181.0	8.1	0.9	RS 6401600	170.82 x 7.0
180.0	195.5	6.3	0.9	RS 6301800	189.87 x 5.33
180.0	201.0	8.1	0.9	RS 6401800	189.87 x 7.0
200.0	221.0	8.1	0.9	RS 6402000	215.27 x 7.0
220.0	241.0	8.1	0.9	RS 6402200	227.97 x 7.0
250.0	271.0	8.1	0.9	RS 6402500	266.07 x 7.0
280.0	304.5	8.1	0.9	RS 7402800	291.47 x 7.0
320.0	344.5	8.1	0.9	RS 7403200	329.57 x 7.0
360.0	384.5	8.1	0.9	RS 7403600	367.67 x 7.0

Above table only includes ISO rod diameters.

Other dimensions and all intermediate sizes up to 2.600 mm diameter including imperial (inch) sizes can be supplied.

ZURCON® RIMSEAL



- Single Acting -

- Rubber Energised Plastic Faced Seal -

- Material -

- Zurcon® -

Zurcon® Rimseal *

Description

When the field of application and system requirements make high demands on leakage control and operational reliability, a redundant sealing system is necessary to ensure reliable sealing of hydraulic cylinders at the piston rod. Sealing systems with elastomer-energized polymer seals are a proven answer to widely varying demands for standardised grooves, simple installation, resistance to media, high and low temperatures and pressures. The system offers enormous flexibility in the choice and matching of materials.

The piston rod sealing system for hydraulic cylinders subject to heavy loads should consist of three elements:

The proven Turcon® Stepseal® K used as primary seal. This seal element offers the back pumping property necessary for redundant rod seal systems as well as good resistance to high and low temperatures and high media resistance.

The Zurcon® Rimseal was developed as the secondary seal in this system to ensure reliable sealing of thin oil films at low secondary pressures. A relatively soft material (polyurethane Shore D 58) is used combined with a new seal profile.

The contact pressure curve is automatically optimised under dynamic conditions.

The final outer element of the redundant sealing system is a double-acting scraper seal (e.g. DA 22, DA 17. Turcon® Excluder® 2 resp. 5 or Zurcon® Excluder® 500).

The optimum sealing system thus consists of three independent lip seals installed in line, whereby the hardness of the material decreases from the pressure side to the atmospheric side.

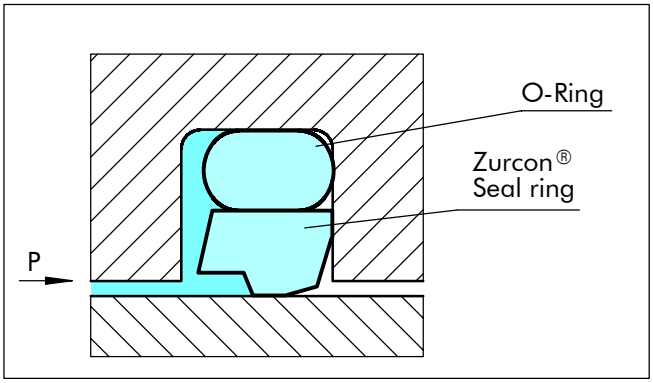


Figure 20 Zurcon® Rimseal

* Patent No.: EP 0 670 444

Method of Operation

The Zurcon® Rimseal is an elastomer energised seal element. The changes in seal position in the groove necessary for an optimum sealing function are guaranteed by the combination of the two component parts (O-Ring and seal ring).

In order to achieve a contact pressure curve which enhances the sealing effect, the seal has a chamfer on the low pressure side. When under pressure and exposed to friction against the piston rod, this chamfer causes the seal to tilt slightly so that the seal ring is forced against the side of the groove. This creates an area of maximum pressure at the edge of the seal.

When the Zurcon® Rimseal is used in a system with a double-acting scraper (DA 22, DA 17, Excluder® 2 resp. 5 or 500), the sealing function of the system must be assured even if pressure build-up occurs between the Zurcon® Rimseal and the double-acting scraper seal.

For this reason, the high-pressure side of the seal ring also has a chamfer which, in the event of a build-up of pressure behind the Zurcon® Rimseal, comes into contact with the flank of the groove. The Zurcon® Rimseal moves in the groove so that a contact pressure distribution is obtained on the piston rod which enhances the back pumping effect.

Advantages

- High static and dynamic leak tightness
- Low friction for reduced power loss
- High wear resistance for long service life
- Small groove
- Easy installation
- Optimum system element
- ISO/DIN grooves optional
- Available for any diameter from 8 to 1700 mm

Application Examples

- Mobile hydraulics
- Standard cylinders
- Machine tools
- Injection moulding machines
- Presses

Technical Data

Pressure:	In tandem system: Up to 60 MPa As an individual element: 25MPa
Velocity:	5 m/s with short strokes (<1 m) in tandem system
Temperature:	-45°C to +100°C depending on O-Ring material
Media:	Hydraulic fluids -Mineral oil -Synthetic and natural esters -HEES. HETG up to +60°C -Flame retardant fluids HFA. HFC

Important Note:
The above data are maximum values and cannot be used at the same time. e.g. the maximum operating speed depends on material type, pressure, temperature and gap value.

Materials

The Zurcon® Rimseal is made in the following material combinations as standard:

Zurcon® Rimseal:	Zurcon® Z52 Special polyurethane 58 Shore D
O-Ring:	NBR. 70 Shore A
Set:	Z52N or Z52T

Series

The Zurcon® Rimseal is a system seal and is preferably used in tandem sealing systems in conjunction with the Turcon® Stepseal® K. For this reason. the type series are identical with those for the Turcon® Stepseal® K.

Table XII shows the relationship between the series number according to the seal diameter range and the different application class sizes. These application classes are:

Standard application	RR13
Light application	RR15
Heavy-duty application	RR11

Design Instructions

Redundant sealing systems are used where the application conditions no longer permit reliable sealing over the demanded service life with a single seal.

The property of the tandem sealing system is particularly important during cold starts when, due to the very high viscosity of the oil, the primary seal allows oil to pass as the piston rod is extended. In the tandem system the oil is heated as a result of the friction at the primary seal and is then reliably wiped off - at a now lower viscosity - by the secondary seal, the Zurcon® Rimseal.

As the piston rod is retracted, the oil is stored in the reservoir between the seals, and is then pumped back against the system pressure by the hydrodynamics in the seal clearance of the Turcon® Stepseal® K.

Particularly with strokes of more than 1 metre, constructional measures have to be taken to provide a storage chamber between the seals.

The Zurcon® Rimseal is designed so that it also has the back pumping properties necessary when using a double-acting scraper in the rod sealing system.

Due to the controlled sealing behaviour of the individual elements in the sealing system and the appropriate combination of the seal materials, a rod seal system is obtained with a low overall friction.

The figure 21 shows a redundant rod seal system consisting of Turcon® Stepseal® K, Zurcon® Rimseal and Rod Scraper DA 22 with corresponding wear ring arrangement.

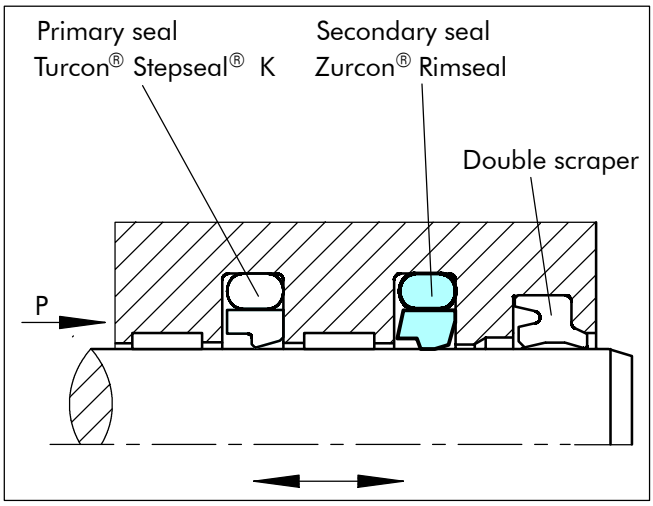


Figure 21 Zurcon® Rimseal in tandem configuration

Installation Recommendations

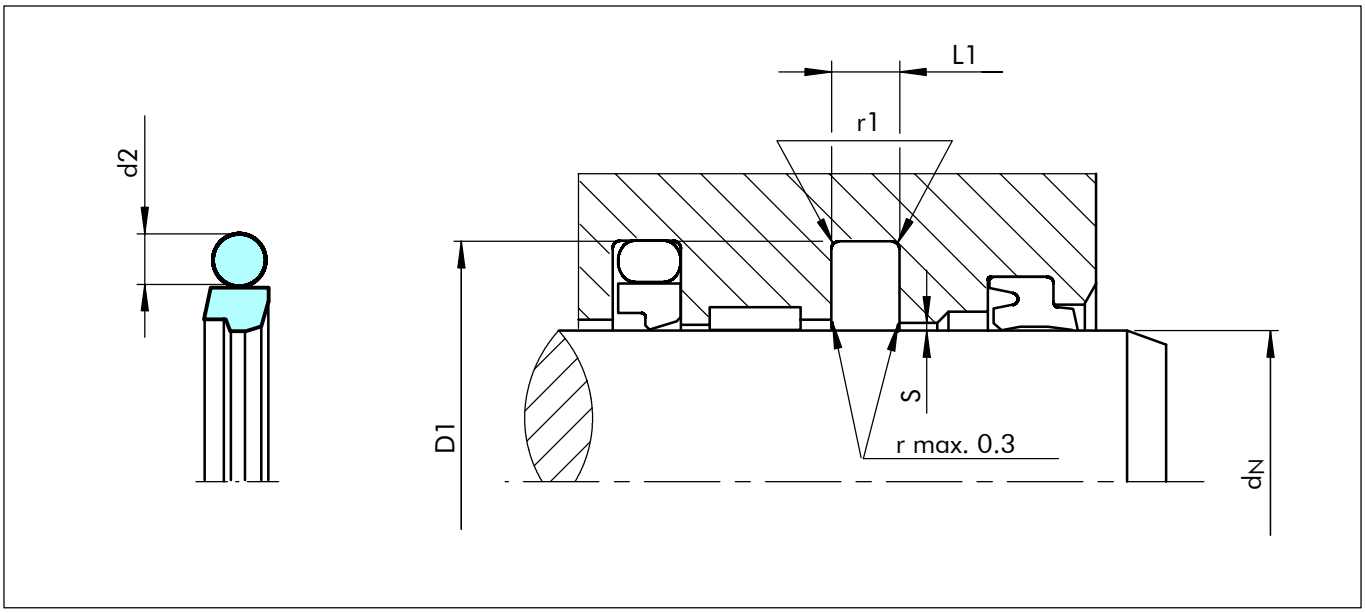


Figure 22 Installation drawing

Table XII Installation Dimensions - Standard Recommendations

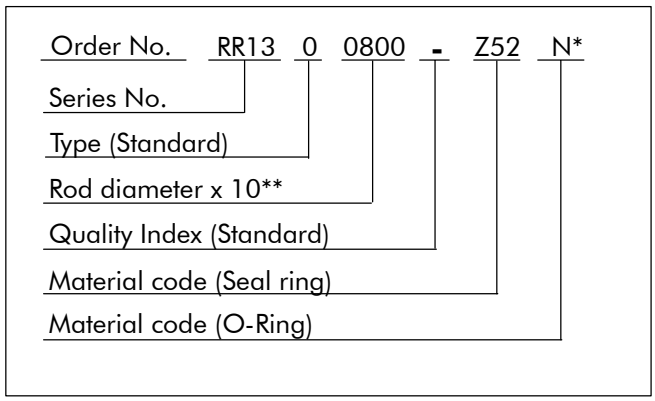
Rod Diameter d_N f8/h9			Groove Diameter	Groove Width	Radius	Radial Clearance S max.		O-Ring Cross-Section
Series No. RR 13 Standard Application	Series No. RR 15 Light Application	Series No. RR 11 Heavy Duty Application	D_1 H9	L_1 +0.2	r_1	10 MPa	20 MPa	d_2
8 - 18.9	19 - 37.9	-	d_N + 7.3	3.2	0.6	0.40	0.25	2.62
19 - 37.9	38 - 199.9	8 - 18.9	d_N + 10.7	4.2	1.0	0.40	0.25	3.53
38 - 199.9	200 - 255.9	19 - 37.9	d_N + 15.1	6.3	1.3	0.50	0.30	5.33
200 - 255.9	256 - 649.9	38 - 199.9	d_N + 20.5	8.1	1.8	0.60	0.35	7.00
256 - 649.9	650 - 999.9	200 - 255.9	d_N + 24.0	8.1	1.8	0.60	0.35	7.00
650 - 999.9	1000 - 1700	256 - 649.9	d_N + 27.3	9.5	2.5	0.70	0.50	8.40
1000 - 1700	-	650 - 999.9	d_N + 38.0	13.8	3.0	1.00	0.70	12.00

all dimensions in mm - closed groove from diameters > 18 mm

Ordering example

Zurcon® Rimseal complete with O-Ring
Series RR 13 (from table XII).
Rod diameter: d_N = 80.0 mm
Part No.: RR1300800
(from table XIII).

The order number for all sizes not shown in table XIII can be determined following the example opposite.
** For diameters ≥ 1000.0 mm multiply only by factor 1.
Example: RR13 for diameter 1200.0 mm.
Order no.: RR13**X1200** - Z52N.



* Zurcon® Rimseal is always supplied as a set with a Nitrile O-Ring, code N or T

Table XIII Preferred Series / Part No.

Rod d_N f8/h9	Groove Dia. D_1 H9	Groove Width L_1 +0.2	Part No.	O-Ring Size
8.0	**15.3**	**3.2**	**RR1300080-Z52N**	**10.77 x 2.62**
10.0	**17.3**	**3.2**	**RR1300100-Z52N**	**12.37 x 2.62**
12.0	**19.3**	**3.2**	**RR1300120-Z52N**	**13.94 x 2.62**
14.0	**21.3**	**3.2**	**RR1300140-Z52N**	**17.12 x 2.62**
16.0	**23.3**	**3.2**	**RR1300160-Z52N**	**18.72 x 2.62**
18.0	**25.3**	**3.2**	**RR1300180-Z52N**	**20.29 x 2.62**
20.0	27.3	3.2	RR1500200-Z52N	21.89 x 2.62
20.0	**30.7**	**4.2**	**RR1300200-Z52N**	**23.40 x 3.53**
22.0	29.3	3.2	RR1500220-Z52N	25.07 x 2.62
22.0	**32.7**	**4.2**	**RR1300220-Z52N**	**26.58 x 3.53**
25.0	32.3	3.2	RR1500250-Z52N	26.64 x 2.62
25.0	**35.7**	**4.2**	**RR1300250-Z52N**	**29.75 x 3.53**
28.0	35.3	3.2	RR1500280-Z52N	29.82 x 2.62
28.0	**38.7**	**4.2**	**RR1300280-Z52N**	**32.92 x 3.53**
30.0	37.3	3.2	RR1500300-Z52N	32.99 x 2.62
30.0	40.7	4.2	RR1300300-Z52N	34.52 x 3.53
32.0	39.3	3.2	RR1500320-Z52N	34.59 x 2.62
32.0	**42.7**	**4.2**	**RR1300320-Z52N**	**36.09 x 3.53**
35.0	42.3	3.2	RR1500350-Z52N	37.77 x 2.62
35.0	45.7	4.2	RR1300350-Z52N	37.70 x 3.53
36.0	43.3	3.2	RR1500360-Z52N	39.34 x 2.62
36.0	**46.7**	**4.2**	**RR1300360-Z52N**	**40.87 x 3.53**
40.0	50.7	4.2	RR1500400-Z52N	44.04 x 3.53
40.0	**55.1**	**6.3**	**RR1300400-Z52N**	**43.82 x 5.33**
45.0	55.7	4.2	RR1500450-Z52N	50.39 x 3.53
45.0	**60.1**	**6.3**	**RR1300450-Z52N**	**50.17 x 5.33**
50.0	60.7	4.2	RR1500500-Z52N	53.57 x 3.53
50.0	**65.1**	**6.3**	**RR1300500-Z52N**	**56.52 x 5.33**
55.0	65.7	4.2	RR1500550-Z52N	59.92 x 3.53
55.0	70.1	6.3	RR1300550-Z52N	59.69 x 5.33
56.0	**71.1**	**6.3**	**RR1300560-Z52N**	**62.87 x 5.33**
60.0	70.7	4.2	RR1500600-Z52N	63.09 x 3.53
60.0	75.1	6.3	RR1300600-Z52N	66.04 x 5.33
63.0	73.7	4.2	RR1500630-Z52N	66.27 x 3.53
63.0	**78.1**	**6.3**	**RR1300630-Z52N**	**69.22 x 5.33**
65.0	80.1	6.3	RR1300650-Z52N	69.22 x 5.33

Rod d_N f8/h9	Groove Dia. D_1 H9	Groove Width L_1 +0.2	Part No.	O-Ring Size
70.0	**85.1**	**6.3**	**RR1300700-Z52N**	**75.57 x 5.33**
75.0	90.1	6.3	RR1300750-Z52N	81.92 x 5.33
80.0	90.7	4.2	RR1500800-Z52N	85.32 x 3.53
80.0	**95.1**	**6.3**	**RR1300800-Z52N**	**85.09 x 5.33**
85.0	100.1	6.3	RR1300850-Z52N	91.44 x 5.33
90.0	**105.1**	**6.3**	**RR1300900-Z52N**	**94.62 x 5.33**
95.0	110.1	6.3	RR1300950-Z52N	100.97 x 5.33
100.0	**115.1**	**6.3**	**RR1301000-Z52N**	**107.32x5.33**
105.0	120.1	6.3	RR1301050-Z52N	110.49 x 5.33
110.0	**125.1**	**6.3**	**RR1301100-Z52N**	**116.84x5.33**
110.0	130.5	8.1	RR1101100-Z52N	116.89 x 7.0
115.0	130.1	6.3	RR1301150-Z52N	120.02 x 5.33
120.0	135.1	6.3	RR1301200-Z52N	126.37 x 5.33
125.0	**140.1**	**6.3**	**RR1301250-Z52N**	**129.54x5.33**
125.0	145.5	8.1	RR1101250-Z52N	132.72 x 7.0
130.0	145.1	6.3	RR1301300-Z52N	135.89 x 5.33
135.0	150.1	6.3	RR1301350-Z52N	142.24 x 5.33
140.0	**155.1**	**6.3**	**RR1301400-Z52N**	**145.42x5.33**
145.0	160.1	6.3	RR1301450-Z52N	151.77 x 7.0
150.0	165.1	6.3	RR1301500-Z52N	158.12 x 5.33
150.0	170.5	8.1	RR1101500-Z52N	158.12 x 7.0
155.0	170.1	6.3	RR1301550-Z52N	158.12 x 5.33
160.0	**175.1**	**6.3**	**RR1301600-Z52N**	**164.47x5.33**
160.0	180.5	8.1	RR1101600-Z52N	170.82 x 7.0
165.0	180.1	6.3	RR1301650-Z52N	170.82 x 5.33
170.0	185.1	6.3	RR1301700-Z52N	177.17 x 5.33
175.0	190.1	6.3	RR1301750-Z52N	183.52 x 5.33
180.0	**195.1**	**6.3**	**RR1301800-Z52N**	**183.52x5.33**
180.0	200.5	8.1	RR1101800-Z52N	189.87 x 7.0
185.0	200.1	6.3	RR1301850-Z52N	189.87 x 5.33
190.0	205.1	6.3	RR1301900-Z52N	196.22 x 5.33
200.0	**220.5**	**8.1**	**RR1302000-Z52N**	**215.27 x 7.0**
210.0	230.5	8.1	RR1302100-Z52N	215.27 x 7.0
220.0	**240.5**	**8.1**	**RR1302200-Z52N**	**227.97 x 7.0**
230.0	250.5	8.1	RR1302300-Z52N	240.67 x 7.0
240.0	260.5	8.1	RR1302400-Z52N	253.37 x 7.0

Rod	Groove Dia.	Groove Width	Part No.	O-Ring Size
d_N f8/h9	D_1 H9	L_1 +0.2		
250.0	**270.5**	**8.1**	**RR1302500-Z52N**	**266.07 x 7.0**
260.0	284.0	8.1	RR1302600-Z52N	266.07 x 7.0
280.0	**304.0**	**8.1**	**RR1302800-Z52N**	**291.47 x 7.0**
300.0	324.0	8.1	RR1303000-Z52N	316.87 x 7.0
310.0	334.0	8.1	RR1303100-Z52N	316.87 x 7.0
320.0	**344.0**	**8.1**	**RR1303200-Z52N**	**329.57 x 7.0**
340.0	364.0	8.1	RR1303400-Z52N	354.97 x 7.0
350.0	374.0	8.1	RR1303500-Z52N	367.67 x 7.0
360.0	**384.0**	**8.1**	**RR1303600-Z52N**	**367.67 x 7.0**
380.0	404.0	8.1	RR1303800-Z52N	393.07 x 7.0
400.0	424.0	8.1	RR1304000-Z52N	417.96 x 7.0
420.0	444.0	8.1	RR1304200-Z52N	430.66 x 7.0
450.0	474.0	8.1	RR1304500-Z52N	468.76 x 7.0
480.0	504.0	8.1	RR1304800-Z52N	494.16 x 7.0
500.0	524.0	8.1	RR1305000-Z52N	506.86 x 7.0
600.0	624.0	8.1	RR1306000-Z52N	608.08 x 7.0

The rod diameters in bold type are in accordance with the recommendations of ISO 3320.

Further sizes up to 1700 mm on request!

Installation According to ISO 7425. Part 2

Table XIV Installation Dimensions to ISO 7425/2

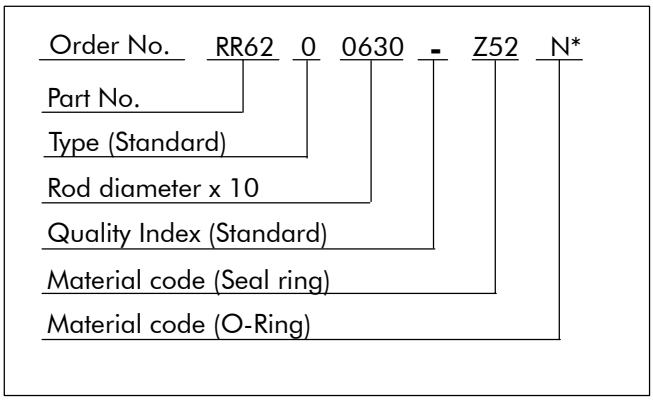
Rod Dia. d_N f8/h9	Groove Dia. D_1 H9	Groove Width L_1 +0.2	r_1	Part No.	O-Ring Size
6.0	11.0	2.2	0.5	RR 6000060	7.65 x 1.78
8.0	13.0	2.2	0.5	RR 6000080	9.5 x 1.8
10.0	15.0	2.2	0.5	RR 6000100	11.8 x 1.8
10.0	17.5	3.2	0.5	RR 6100100	12.37 x 2.62
12.0	17.0	2.2	0.5	RR 6000120	14.00 x 1.78
12.0	19.5	3.2	0.5	RR 6100120	13.94 x 2.62
14.0	19.0	2.2	0.5	RR 6000140	15.60 x 1.78
14.0	21.5	3.2	0.5	RR 6100140	17.12 x 2.62
16.0	23.5	3.2	0.5	RR 6100160	18.72 x 2.62
18.0	25.5	3.2	0.5	RR 6100180	20.29 x 2.62
20.0	27.5	3.2	0.5	RR 6100200	23.47 x 2.62
20.0	31.0	4.2	0.5	RR 6200200	25.00 x 3.53
22.0	29.5	3.2	0.5	RR 6100220	25.07 x 2.62
22.0	33.0	4.2	0.5	RR 6200220	26.58 x 3.53
25.0	32.5	3.2	0.5	RR 6100250	28.24 x 2.62
25.0	36.0	4.2	0.5	RR 6200250	29.75 x 3.53
28.0	39.0	4.2	0.5	RR 6200280	32.92 x 3.53
32.0	43.0	4.2	0.5	RR 6200320	36.09 x 3.53
36.0	47.0	4.2	0.5	RR 6200360	40.87 x 3.53
40.0	51.0	4.2	0.5	RR 6200400	44.04 x 3.53
45.0	56.0	4.2	0.5	RR 6200450	50.39 x 3.53
50.0	61.0	4.2	0.5	RR 6200500	53.57 x 3.53
56.0	67.0	4.2	0.5	RR 6200560	59.92 x 3.53
56.0	71.5	6.3	0.9	RR 6300560	62.87 x 5.33
63.0	74.0	4.2	0.5	RR 6200630	66.27 x 3.53
63.0	78.5	6.3	0.9	RR 6300630	78.97 x 3.53
70.0	85.5	6.3	0.9	RR 6300700	85.32 x 3.53
80.0	95.5	6.3	0.9	RR 6300800	85.09 x 5.33
90.0	105.5	6.3	0.9	RR 6300900	94.62 x 5.33
100.0	115.5	6.3	0.9	RR 6301000	107.32 x 5.33
110.0	125.5	6.3	0.9	RR 6301100	116.84 x 5.33
125.0	140.5	6.3	0.9	RR 6301250	132.72 x 5.33
140.0	155.5	6.3	0.9	RR 6301400	145.42 x 5.33
160.0	175.5	6.3	0.9	RR 6301600	164.47 x 5.33
160.0	181.0	8.1	0.9	RR 6401600	170.82 x 7.00
180.0	195.5	6.3	0.9	RR 6301800	189.87 x 5.33
180.0	201.0	8.1	0.9	RR 6401800	189.87 x 7.00
200.0	221.0	8.1	0.9	RR 6402000	215.27 x 7.00
220.0	241.0	8.1	0.9	RR 6402200	227.97 x 7.00
250.0	271.0	8.1	0.9	RR 6402500	266.07 x 7.00
280.0	304.5	8.1	0.9	RR 6402800	291.47 x 7.00
320.0	344.5	8.1	0.9	RR 6403200	329.57 x 7.00
360.0	384.5	8.1	0.9	RR 6403600	367.67 x 7.00

Above table only includes ISO rod diameters.

Other dimensions and all intermediate sizes up to 1.700 mm diameter including imperial (inch) sizes can be supplied.

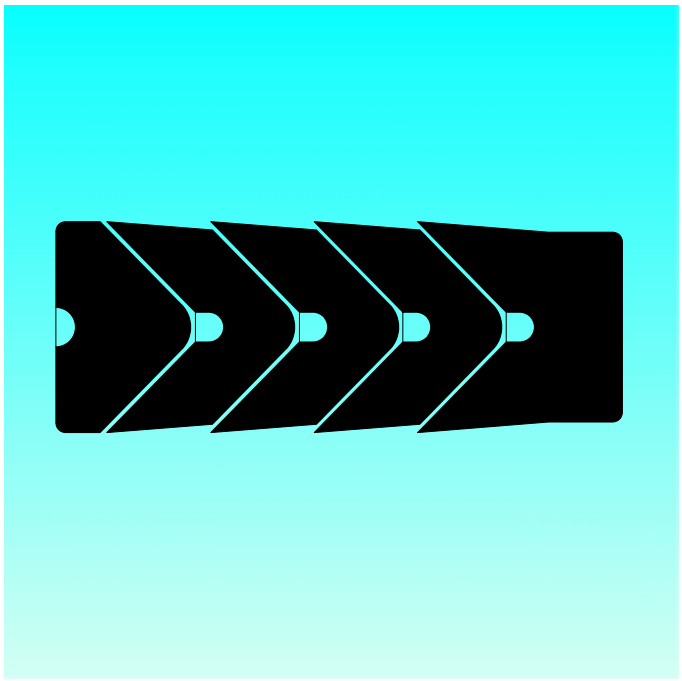
Ordering Example

Zurcon® Rimseal to ISO 7425/2
Rod diameter: d_N = 63.0 mm
Groove width: L1 = 4.2 mm
Part No. RR6200630



* Zurcon® Rimseal is always supplied as a set with a Nitrile O-Ring, code N or T

POLYPAC® - VEEPAC CH/G5



- Single Acting -

- Set of Chevron Rings -

- With Support and Pressure Energising Ring -

- Material -

- Cotton Fabric Reinforced Rubber, POM or PTFE -

Veepac CH/G5 Set

Description

Veepac is a set of fabric reinforced Chevron rings comprising of a support ring (1), sealing rings (2) and a pressure energising ring (3). In the packing set the energising axial force is transferred between the individual packing rings so that each ring is pressed into positive contact with the rod surface. Additional to the standard material special material grades are available for a large variety of working conditions. The figure shows the Veepac design.

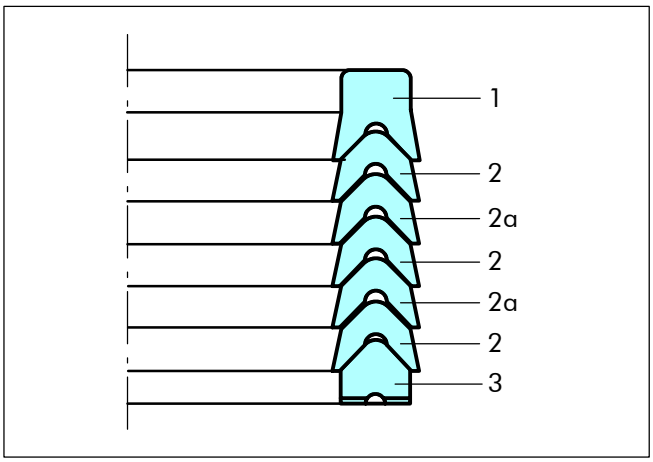


Figure 23 Veepac design

1) "U" or base rings in standard version manufactured in reinforced fabric comprising of layers of cotton impregnated with nitrile rubber compounded to resist extrusion. This component supports the Vee Rings for effective performances.

2) Vee Rings are made of reinforced cotton fabric and nitrile elastomer, in standard version, to give good resilience, sealing efficiency and extrusion resistance.

   Due to their specific design, Vee Rings are sensitive to fluid pressure variations, enabling them to deflect throughout their radial section, increase the seal loading and effectiveness in proportion to the pressures applied.

2a) Vee Rings are made of pure elastomer for high sealing efficienty.

3) Energiser or spreader rings are manufactured in acetal resin or PTFE. In the latter materials, the rings will be supplied split. The function of this component is to ensure a uniform pressure distribution.

Advantages

- Very robust seal
- Non sensitive
- Adjustable
- Easy replacement in the field with split rings
- Extensive range of sizes (see symmetrical seals)
- Requires non super mating surfaces

Application Examples

- Mining equipment (with approvals)
- Excavators
- Steel mills
- Water hydraulic
- Presses
- Ship hydraulics
- Stabilizer cylinders on cranes
- Continous casting equipment

Technical Data

Operating conditions

Pressure: Up to 40 MPa

Velocity: Up to 0.5 m/s

Temperature: -30°C to +200°C depending on material

Media: Hydraulic fluids
Mineral oil, water glycol, water emulsions

Important Note:
The above data are maximum values and cannot be used at the same time. e.g. the maximum operating speed depends on material type, pressure, temperature and gap value.

Materials

The following material combination can be supplied:

	Standard	None Standard	None Standard
Material Code	N0ONC	V0PVA	V0PVC
Carrier material	Cotton Fabric	Aramid Fabric	Cotton Fabric
Top	NBR	FKM	FKM
Bottom*	POM	PTFE	PTFE
Elastomeric Vee Rings	NBR	FKM	FKM
Temperature Range °C	-30 +130	-20 +200	-20 +150

* The material for the bottom is depending from the diameter

Design Instructions

Lead in chamfers

In order to avoid damage to the Veepac during installation, lead in chamfers of min. 5 x 20° must be provided on the rods.

Rod Diameter	Lead in Chamfer
0 - 100	5 x 20°
101 - 200	7 x 20°
201 - 400	10 x 20°

Surface roughness

Parameter	Mating Surface µm	Groove Surface µm
R_{max}	1.00 - 4.00	< 16.0
$R_{z\ DIN}$	0.63 - 2.50	< 10.0
R_a	0.10 - 0.40	< 1.6

The material contact area R_{mr} should be approx. 50 to 70%, determined at a cut depth c = 0.25 x R_z, relative to a reference line of $C_{ref.}$ 5%.

Clearance

The gap behind the seal should not be larger than 0.30 mm in diameter.

Installation Recommendation

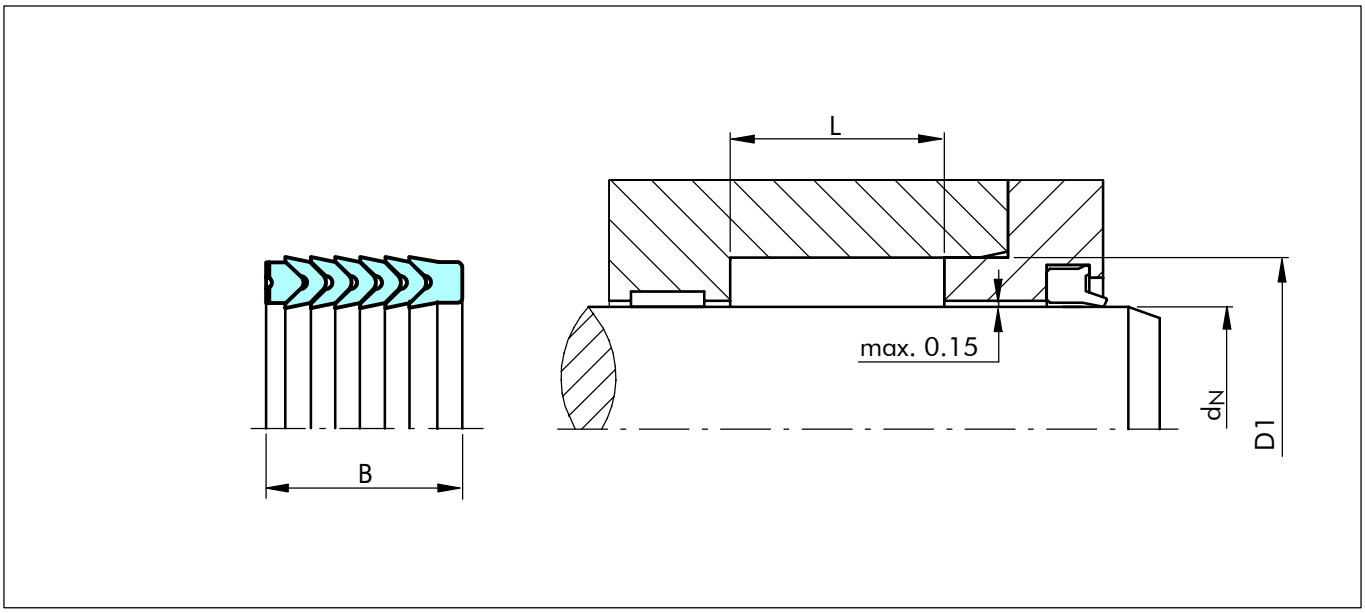


Figure 24 Installation drawing

Table XV Installation Dimensions / Part No.

Rod Dia.	Groove Dia.	Groove Width	Seal Width	Part No.	Polypac Ref. No.
d_N f8/h9	**D1** H11	**L** +0.2	**B**		
25.0	37.0	22.5	22.5	RCH0G0250	CH 145098 G5
25.0	40.0	22.5	22.5	RCH1G0250	CH 157098 G5
28.0	40.0	22.5	22.5	RCH0G0280	CH 157110 G5
30.0	45.0	22.5	22.5	RCH0G0300	CH 177118 G5
36.0	48.0	22.5	22.5	RCH0G0360	CH 188141 G5
40.0	55.0	22.5	22.5	RCH0G0400	CH 216157 G5
45.0	60.0	22.5	22.5	RCH0G0450	CH 236177G5
45.0	65.0	27.5	27.5	RCH1G0450	CH 255177 G5
50.0	65.0	22.5	22.5	RCH0G0500	CH 255196 G5
56.0	71.0	22.5	22.5	RCH0G0560	CH 279220 G5
60.0	80.0	37.0	37.0	RCH0G0600	CH 314236 G5
65.0	85.0	40.0	40.0	RCH0G0650	CH 334255 G5
70.0	85.0	22.5	22.5	RCH0G0700	CH 334275 G5
70.0	90.0	40.0	40.0	RCH1G0700	CH354275 G5
75.0	90.0	22.5	22.5	RCH0G0750	CH 354295 G5
80.0	95.0	22.5	22.5	RCH0G0800	CH 374314 G5
80.0	100.0	40.0	40.0	RCH1G0800	CH 393314 G5
85.0	100.0	22.5	22.5	RCH0G0850	CH393334 G5
90.0	105.0	22.5	22.5	RCH0G0900	CH 413354 G5
90.0	110.0	40.0	40.0	RCH1G0900	CH 433354 G5
100.0	115.0	30.0	30.0	RCH0G1000	CH 452393 G5
100.0	120.0	40.0	40.0	RCH1G1000	CH 472393 G5
110.0	125.0	30.0	30.0	RCH0G1100	CH492433 G5
110.0	130.0	40.0	40.0	RCH1G1100	CH 511433 G5

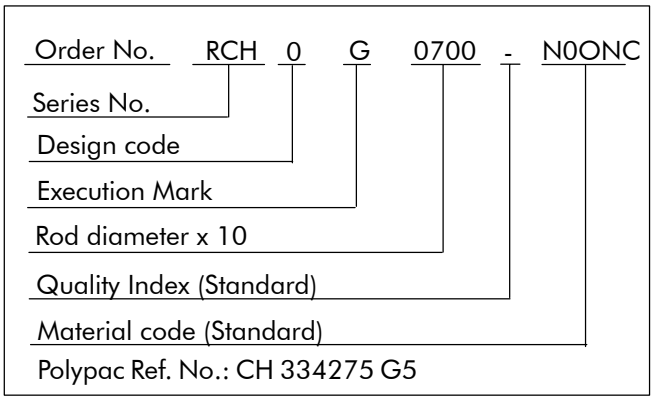
Rod Dia.	Groove Dia.	Groove Width	Seal Width	Part No.	Polypac Ref. No.
d_N f8/h9	**D1** H11	**L** +0.2	**B**		
120.0	145.0	50.0	50.0	RCH0G1200	CH 570472 G5
125.0	140.0	34.0	34.0	RCH0G1250	CH 551492 G5
125.0	150.0	46.0	46.0	RCH1G1250	CH 590492 G5
140.0	155.0	34.0	34.0	RCH0G1400	CH 610551 G5
140.0	165.0	46.0	46.0	RCH1G1400	CH 649551 G5
160.0	180.0	40.0	40.0	RCH0G1600	CH 708629 G5
160.0	190.0	60.0	60.0	RCH1G1600	CH 748629 G5

CH Production No. available size.
Further size on Symmetric catalogue.

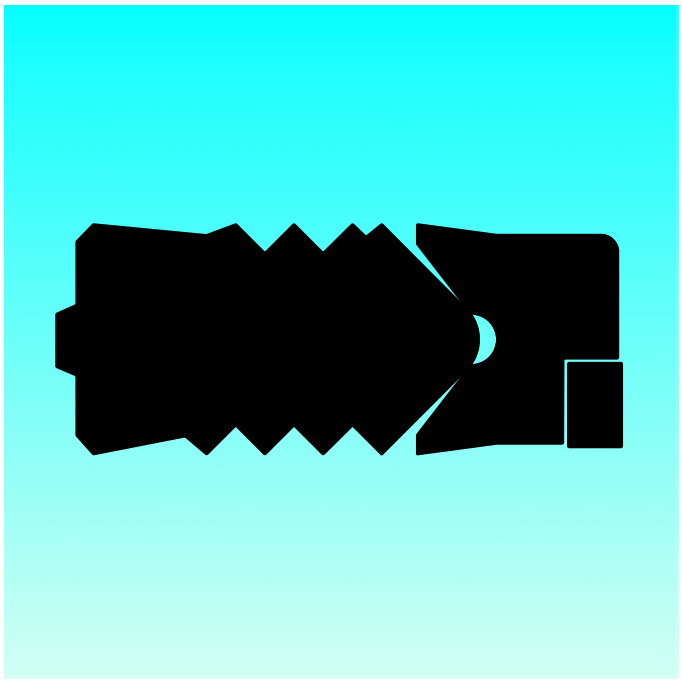
Ordering example

Veepac Type RCH_G

Rod diameter:	d_N = 70.0 mm
Groove diameter:	D1 = 85.0 mm
Groove width	L = 22.5 mm
Part No.:	RCH0G0700 -
Material:	N0ONC (standard)



POLYPAC® - SELEMASTER SM



- Single Acting -

- Compact Rod Seal -

- Material -

- Rubber + Fabric Reinforced Rubber -

- With Anti-extrusion Ring -

Selemaster SM

Description

The rod seal range has been designed to meet the needs of hydraulic equipments operating at high pressures and subjected to severe loading and vibration conditions.

The main sealing element is manufactured in a highly compression set resistant nitrile. The most important quality of this element is the design of the multiple sealing lips for maximum sealing efficiency and end face configuration, which ensures that the selemaster can tolerate vibrations and severe misalignment.

The support ring is made in cotton fabric reinforced nitrile elastomer; the ''U'' shape is energised when pressure is applied.

The last element is the anti-extrusion ring manufactured in acetal resin.

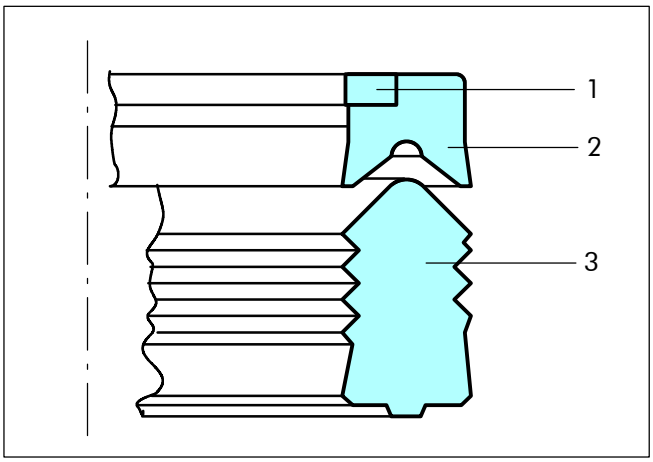


Figure 25 Selemaster design

1) POM anti-extrusion ring
2) Support ring in cotton fabric reinforced nitrile NBR 80 Shore A
3) Sealing element in nitrile

Advantages

- High sealing efficiency
- Effective sealing during vibration and shock loading
- Extrusion resistance at high pressure

Application Examples

- Earth-moving machines
- Excavators
- Lift platforms

Technical Data

Operating conditions

Pressure: Up to 70 MPa

Velocity: Up to 0.5 m/s

Temperature: -40°C to +130°C

Media: Hydraulic fluids
Mineral oil-based hydraulic fluids, water and water/ glycol emulsions

Groove type: Open

Important Note:
The above data are maximum values and cannot be used at the same time. e.g. the maximum operating speed depends on material type, pressure, temperature and gap value.

Ordering Example

Selemaster RCK

Rod diameter:	d_N = 50.0 mm
Groove diameter:	D = 65.0 mm
Groove width	E = 24.5 mm
Part No.:	RCK100500
Material code:	N8C0
Polypac Ref.:	SM 255196/1AX

Order No.	RCK	0	00500	-	N8C0
	Series No.				
		Type (Standard)			
			Rod diameter x 10		
				Quality Index (see table)	
					Material Set-code

Installation Recommendation

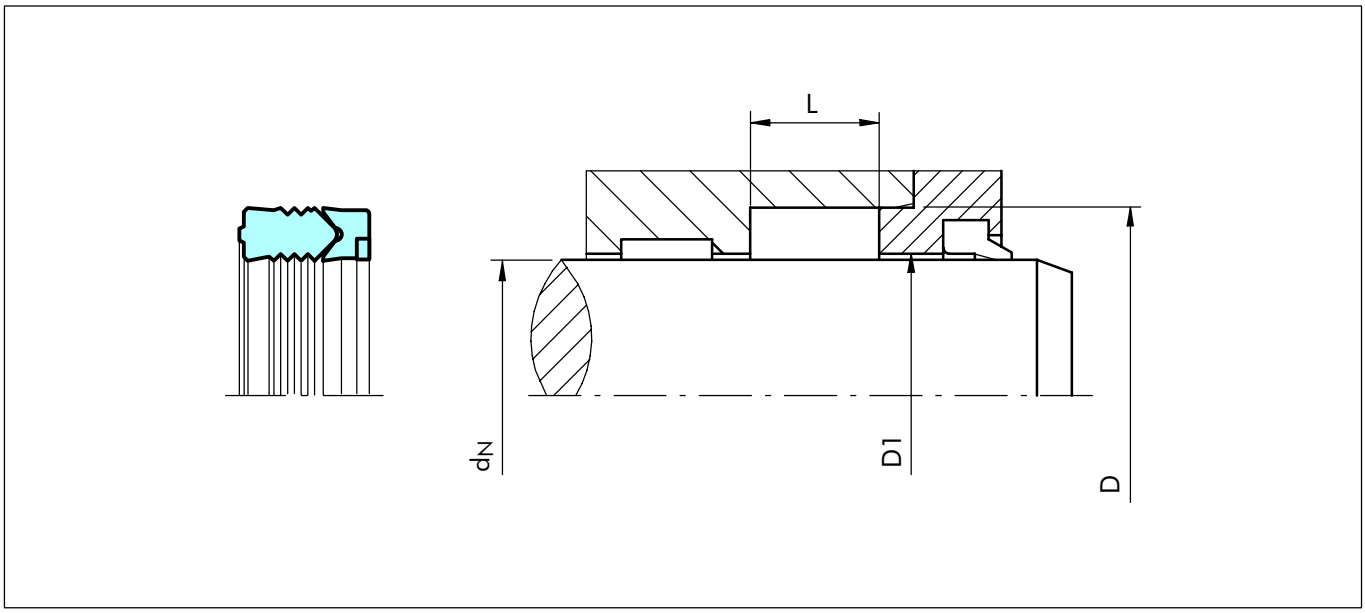


Figure 26 Installation drawing

Table XVI Installation Dimensions / Part No.

Rod Dia.	Groove Dia.	Groove Width	Dia.		Order No.	Polypac Ref. No.
d_N h9	**D** H10	**L** +0.4	**D1** +/-0.1			
15.00	27.00	20.00	15.40		RCK000150-N8C0	SM 106059/1AX
20.00	33.00	20.00	20.40		RCK000200-N8C0	SM 129078/1AX
22.00	35.00	20.00	22.40		RCK000220-N8C0	SM 137086/1AX
25.00	38.00	20.00	25.40		RCK000250-N8C0	SM 149098/1AX
28.00	41.00	20.00	28.40		RCK000280-N8C0	SM 161110/1 AX
30.00	43.00	20.00	30.40		RCK000300-N8C0	SM 169118/1AX
32.00	47.00	22.50	32.40		RCK000320-N8C0	SM 185125/1AX
35.00	45.00	25.60	35.40		RCK000350-N8C0	SM 177137/1AX
35.00	47.00	22.50	35.40		RCK100350-N8C0	SM 185137/1AX
35.00	50.00	22.50	35.40		RCK200350-N8C0	SM 196137/1AX
36.00	51.00	22.50	36.40		RCK000360-N8C0	SM 200141/1AX
38.10	50.80	23.90	38.50		RCK000381-N8C0	SM 200150/1AX
40.00	52.00	22.50	40.40		RCK200400-N8C0	SM 204157/1AX
40.00	55.00	22.60	40.40		RCK100400-N8C0	SM 216157/1AX
40.00	60.00	30.00	40.40		RCK000400-N8C0	SM 236157/1AX
45.00	60.00	22.50	45.40		RCK000450-N8C0	SM 236177/1AX
45.00	65.00	28.00	45.40		RCK100450-N8C0	SM 255177/1AX
50.00	63.00	20.00	50.40		RCK000500-N8C0	SM 248196/1AX
50.00	65.00	24.50	50.40		RCK100500-N8C0	SM 255196/1AX
50.00	65.00	26.50	50.40	^	RCK200500-N8C0	SM 255196/2AX
50.00	65.00	22.50	50.40		RCK300500-N8C0	SM255196/1BX
50.00	70.00	30.00	50.40		RCK400500-N8C0	SM 275196/1BX
50.00	70.00	31.90	50.40		RCK500500-N8C0	SM 275196/1AX
50.80	66.67	24.90	51.20		RCK000508-N8C0	SM 262200/1AX

^ Availabla upon request

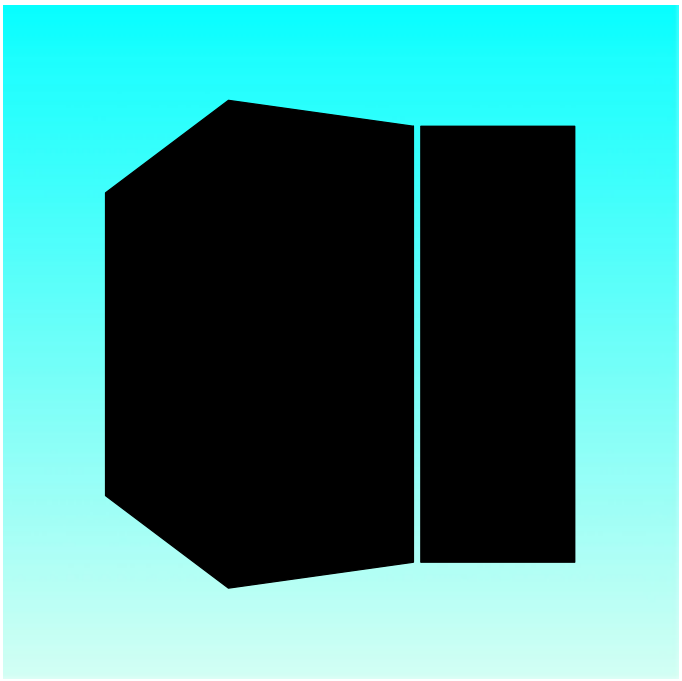
Rod Dia.	Groove Dia.	Groove Width	Dia.		Order No.	Polypac Ref. No.
d_N h9	D H10	L +0.4	D1 +/-0.1			
55.00	70.00	25.00	55.40		RCK000550-N8C0	SM 275216/1AX
55.00	70.00	22.50	55.40		RCK100550-N8C0	SM 275216/2AX
55.00	75.00	32.00	55.40		RCK200550-N8C0	SM 295216/1AX
55.00	75.00	30.00	55.40		RCK300550-N8C0	SM 295216/2AX
56.00	71.00	25.00	56.40		RCK000560-N8C0	SM 279220/1AX
56.00	76.00	28.00	56.40	^	RCK100560-N8C0	SM 299220/1AX
60.00	75.00	25.00	60.40		RCK000600-N8C0	SM 295236/1AX
60.00	75.00	22.50	60.40		RCK100600-N8C0	SM 295236/2AX
60.00	77.00	27.00	60.40		RCK200600-N8C0	SM 303236/1AX
60.00	80.00	34.90	40.40		RCK300600-N8C0	SM 314236/1AX
63.00	83.00	29.00	63.40		RCK000630-N8C0	SM 326248/1AX
63.00	83.00	27.00	63.40	^	RCK100630-N8C0	SM 326248/1BX
63.50	82.55	26.60	63.90		RCK000635-N8C0	SM 325250/1AX
65.00	85.00	29.00	65.40		RCK000650-N8C0	SM 334255/1AX
70.00	83.00	25.00	70.40		RCK000700-N8C0	SM 326275/1AX
70.00	85.00	22.50	70.40		RCK100700-N8C0	SM 334275/1AX
70.00	85.00	25.00	70.40		RCK200700-N8C0	SM 334275/1BX
70.00	90.00	30.00	70.40		RCK300700-N8C0	SM 354275/1AX
70.00	90.00	31.90	70.40		RCK400700-N8C0	SM 354275/2AX
75.00	95.00	28.00	75.40		RCK000750-N8C0	SM 374295/2AX
75.00	95.00	30.00	75.40		RCK100750-N8C0	SM 374295/2CX
76.20	95.25	24.60	76.60		RCK000762-N8C0	SM 375300/1AX
76.50	96.50	32.50	76.90		RCK000765-N8C0	SM 379301/1AX
80.00	100.00	30.00	80.40		RCK000800-N8C0	SM 393314/1AX •
85.00	98.00	25.00	85.40		RCK000850-N8C0	SM 385334/1AX
85.00	105.00	30.00	85.40		RCK100850-N8C0	SM 413334/1AX
90.00	105.00	25.00	90.40		RCK000900-N8C0	SM 413354/1AX
90.00	105.00	33.50	90.40		RCK100900-N8C0	SM 413354/1BX
90.00	110.00	30.00	90.40		RCK200900-N8C0	SM 433354/1AX
90.00	110.00	32.50	90.40		RCK300900-N8C0	SM 433354/2BX
95.00	115.00	28.00	95.40		RCK000950-N8C0	SM 452374/1AX
100.00	114.30	24.20	100.40		RCK001000-N8C0	SM 450393/1AX
100.00	120.00	30.00	100.40		RCK101000-N8C0	SM 472393/1AX
105.00	118.00	25.00	105.40		RCK001050-N8C0	SM 464413/1AX
105.00	120.00	34.00	105.40		RCK101050-N8C0	SM 472413/1AX
110.00	130.00	32.50	110.40		RCK001100-N8C0	SM 511433/1AX
110.00	132.00	36.50	110.40		RCK101100-N8C0	SM 519433/1AX
115.00	130.00	30.00	115.70		RCK001150-N8C0	SM 511452/1AX
115.00	130.00	22.50	115.70		RCK101150-N8C0	SM 511452/2AX
120.00	135.00	22.50	120.70	^	RCK001200-N8C0	SM 531472/1AX
120.00	140.00	30.00	120.70		RCK101200-N8C0	SM 551472/1AX
125.00	145.00	29.60	125.70		RCK001250-N8C0	SM 570492/1AX
127.00	142.00	22.50	127.40	^	RCK001270-N8C0	SM 559500/1AX
130.00	150.00	28.00	130.70		RCK001300-N8C0	SM 590511/1AX
135.00	155.00	28.00	135.70		RCK001350-N8C0	SM 610531/1AX
140.00	160.00	28.00	140.70		RCK001400-N8C0	SM 629551/1AX
145.00	165.00	28.00	145.70		RCK001450-N8C0	SM 649570/1AX
150.00	170.00	28.00	150.70		RCK001500-N8C0	SM 669590/1AX

^ Availabla upon request

Rod Dia.	Groove Dia.	Groove Width	Dia.		Order No.	Polypac Ref. No.
d_N h9	**D** H10	**L** +0.4	**D1** +/-0.1			
155.00	175.00	28.00	155.70		RCK001550-N8C0	SM 688610/1AX
158.50	180.00	28.00	159.20	^	RCK001585-N8C0	SM 708624/1AX
160.00	180.00	28.00	160.70		RCK001600-N8C0	SM 708629/1AX
165.00	185.00	30.00	165.70		RCK001650-N8C0	SM 729649/1AX
170.00	195.00	35.00	170.70		RCK001700-N8C0	SM 767669/1AX
180.00	205.00	35.00	180.70		RCK001800-N8C0	SM 807708/1AX
185.00	200.00	22.50	185.70		RCK001850-N8C0	SM 787728/2AX
185.00	210.00	35.00	210.70		RCK101850-N8C0	SM 826728/1AX
190.00	215.00	35.00	190.70		RCK001900-N8C0	SM 846748/2AX
200.00	225.00	35.00	200.70		RCK002000-N8C0	SM 885787/1AX
215.00	240.00	35.00	215.70	^	RCK002150-N8C0	SM 944846/1AX
220.00	245.00	35.00	220.70		RCK002200-N8C0	SM 964866/1AX
225.00	250.00	35.00	225.70		RCK002250-N8C0	SM 984886/1AX
230.00	255.00	35.00	230.70		RCK002300-N8C0	SM 1003905/1AX
240.00	265.00	35.00	240.70		RCK002400-N8C0	SM 1043945/1AX
250.00	275.00	35.00	250.70		RCK002500-N8C0	SM 1082984/1AX
260.00	280.00	30.00	260.70		RCK002600-N8C0	SM 11021024/1AX
265.00	290.00	35.00	265.70		RCK002650-N8C0	SM 11411043/1AX
275.00	300.00	35.00	275.70		RCK002750-N8C0	SM 11811082/1AX
280.00	305.00	35.00	280.70		RCK002800-N8C0	SM 12011102/1AX
300.00	325.00	35.00	300.70		RCK003000-N8C0	SM 12791181/1AX
335.00	360.00	35.00	335.70		RCK003350-N8C0	SM 14171318/1AX

^ Availabla upon request

POLYPAC® - BALSELE



- Single Acting -

- Compact Symmetric Seal -

- Without and with Back-up Ring -

- Material -

- Fabric Reinforced NBR + POM -

Balsele

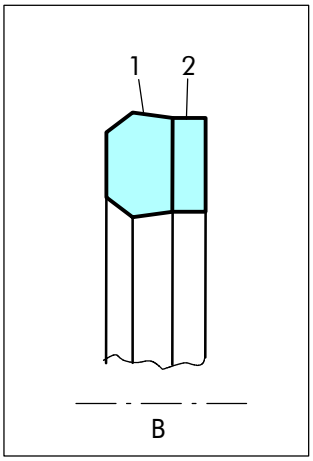
Description

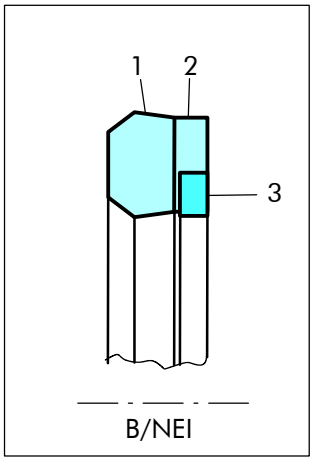
The Balsele is a compact rod seal consisting of an elastomeric sealing element and an integrated fabric reinforced base.

Due to the radial pre-load an exellent sealing performance will be achieved even at low pressures. The fabric reinforced base prevents the seal from extrusion. Where extrusion gaps are greater than those specified or for higher pressure conditions the serie B/NEI with incorporated anti-extrusion ring shall be selected.

Design

1) Sealing element manufactured from a specially developed nitrile compound particularly resistant to compression set. The sealing lips are produced to give optimum efficiency and wear resistance.
2) The reinforced base of the seal element is of cotton fabric impregnated with nitrile elastomer and vulcanised with the sealing element 1, thus forming an integral component.
3) Guide rings or antiextrusion rings are made from acetal resin. As previously described these rings maintain the seal in the optimum position for maximum performance, and minimise all possible extrusion gaps.





Advantages

- Small cross sections
- Good chemical resistance
- Large size range
- No hydrolyses problems
- Wide temperature range

Application Examples

- Standard hydraulic cylinders (low to medium duty)
- Mobile hydraulic
- Water based fluids equipment
- After market
- Presses

Technical Data

Operating conditions

Pressure:	Up to 25 MPa (Type B)
	Up to 40 MPa (Type B/NEI)
Velocity:	Up to 0.5 m/s
Temperature:	-30°C to +130°C
Media:	Mineral oil, water, air

Important Note:
The above data are maximum values and cannot be used at the same time. e.g. the maximum operating speed depends on material type, pressure, temperature and gap value.

Materials

For type B:
NBR + cotton fabric
Material code N8C0

For type B/NEI:
NBR + cotton fabric
Back-up Ring material POM
Material code N8CO

Design Instructions

Lead in chamfers

In order to avoid damage to the Balsele during installation, lead in chamfers of min. 5 x 20° must be provided on the rods.

Rod Diameter	Lead in Chamfer
0 - 100	5 x 20°
101 - 200	7 x 20°
201 - 400	10 x 20°

Surface roughness

Parameter	Mating Surface µm	Groove Surface µm
R_{max}	0.63 - 2.50	< 16.0
$R_{z\ DIN}$	0.40 - 1.60	< 10.0
R_a	0.05 - 0.20	< 1.6

The material contact area R_{mr} should be approx. 50 to 70%, determined at a cut depth c = 0.25 x R_z, relative to a reference line of $C_{ref.}$ 5%.

Clearance

Operating max. Pressure MPa	Radial Clearance S max.
16	0.20
25	0.10

For Type B/NEI (with Back-up Ring) the values can be double.

Installation Recommendation

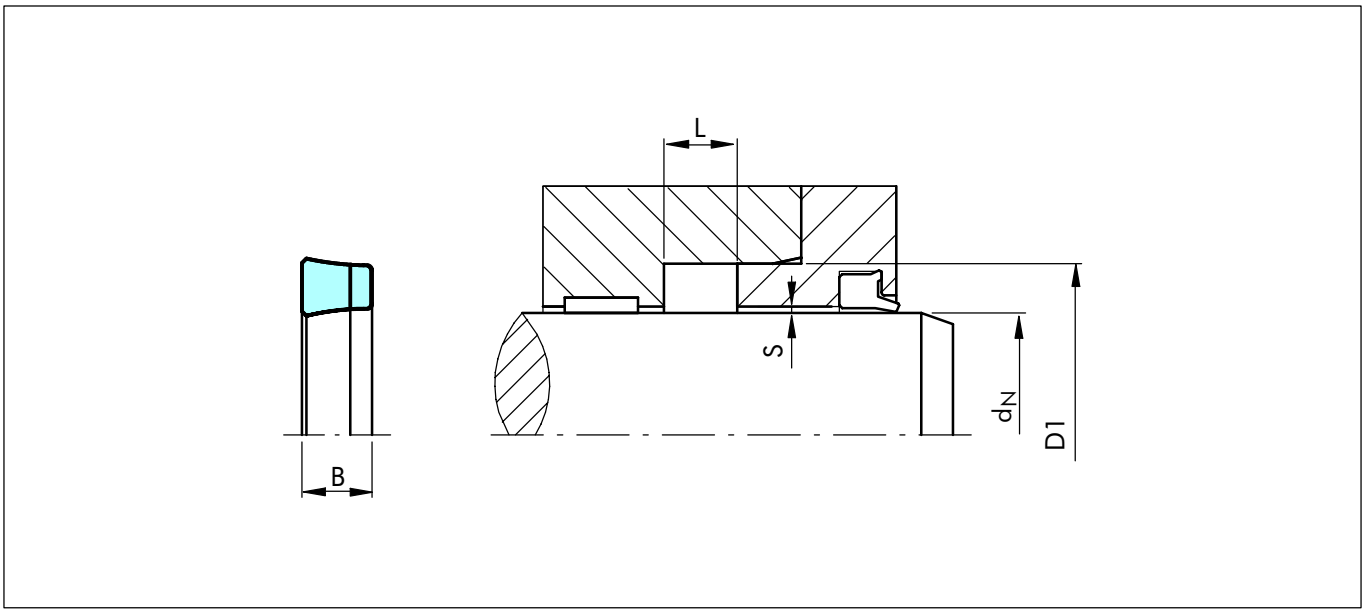


Figure 27 Installation drawing

Table XVII Preferred Series / Part No.

Note	Rod Diameter	Groove Diameter	Groove Width	Seal Width	Order No.	Polypac Ref. No.
	d_N h11	**D1** H11	**L** +0.1	**B**		
*	4.76	12.70	6.40	5.75	RUM000047-N8C0	B 050018
*	6.00	10.00	5.00	4.00	RUM000060-N8C0	B 039023
*	**6.00**	**14.00**	**6.40**	**5.90**	**RUM100060-N8C0**	**B 055024**
*	6.35	14.28	6.85	6.30	RUM000063-N8C0	B 056025
*	8.00	15.00	6.40	5.90	RUM000080-N8C0	B 059031
*	10.00	17.00	6.40	5.90	RUM100100-N8C0	B 066039
*	10.00	18.00	6.00	5.40	RUM000100-N8C0	B 070039
*	11.11	20.63	7.65	7.00	RUM000111-N8C0	B 081043
*	12.00	18.00	7.50	7.00	RUM000120-N8C0	B 070047
*	12.00	19.00	6.30	5.80	RUM100120-N8C0	B 075047
*	**12.00**	**20.00**	**6.40**	**5.80**	**RUM200120-N8C0**	**B 078047**
	12.00	23.00	7.50	6.90	RUM300120-N8C0	B 090047
*	12.70	19.05	5.25	4.80	RUM000127-N8C0	B 075050
*	12.70	20.63	6.85	6.30	RUM100127-N8C0	B 081050
*	12.70	22.22	7.65	7.00	RUM200127-N8C0	B 087050
*	14.00	22.00	6.50	5.90	RUM000140-N8C0	B 086055
*	14.28	23.81	7.65	7.00	RUM000142-N8C0	B 093056
*	15.00	23.00	6.40	5.80	RUM000150-N8C0	B 090059
	15.00	27.00	7.00	6.30	RUM100150-N8C0	B 106059
*	15.87	22.22	5.25	4.80	RUM000158-N8C0	B 087062
	15.87	25.40	7.65	7.00	RUM100158-N8C0	B 100062
*	**16.00**	**24.00**	**6.40**	**5.90**	**RUM000160-N8C0**	**B 094063/1**
	16.00	24.00	7.00	6.50	RUM100160-N8C0	B 094063
	16.00	28.00	7.50	6.90	RUM200160-N8C0	B 11062/

B Production No. available size. Dimensions printed in **bold** type correspond to ISO/DIN 5597 and ISO 5597/1. * Split groove

Note	Rod Diameter	Groove Diameter	Groove Width	Seal Width	Order No.	Polypac Ref. No.
	d_N h11	**D1** H11	**L** +0.1	**B**		
*	17.46	30.16	10.00	9.20	RUM000174-N8C0	B 118068
*	18.00	24.00	5.20	4.70	RUM000180-N8C0	B 094070
*	18.00	25.00	8.00	7.30	RUM100180-N8C0	B 098070
*	**18.00**	**26.00**	**6.40**	**5.80**	**RUM200180-N8C0**	**B 102070/1**
*	**18.00**	**26.00**	**7.00**	**6.50**	**RUM300180-N8C0**	**B 102070**
	18.00	28.00	6.30	5.70	RUM400180-N8C0	B 110070
	18.00	30.00	7.50	6.90	RUM500180-N8C0	B 118070
*	19.05	28.58	9.00	8.00	RUM100190-N8C0	B 112075
*	19.05	31.75	8.50	7.70	RUM000190-N8C0	B 125075/1
*	20.00	27.00	6.50	5.90	RUM000200-N8C0	B 106078
	20.00	28.00	6.30	5.70	RUM200200-N8C0	B 110078/1
	20.00	28.00	7.00	6.50	RUM100200-N8C0	B 110078
	20.00	30.00	8.50	7.60	RUM300200-N8C0	B 118078
*	20.00	35.00	11.50	10.60	RUM400200-N8C0	B 137078
*	20.63	33.33	10.00	9.20	RUM000206-N8C0	B 131081
*	22.00	30.00	6.50	5.90	RUM000220-N8C0	B 118086/1
	22.00	30.00	7.00	6.50	RUM100220-N8C0	B 118086
	22.00	32.00	10.00	9.00	RUM200220-N8C0	B 125086
	22.00	34.00	9.50	8.90	RUM300220-N8C0	B 133086
	22.00	35.00	10.00	9.20	RUM400220-N8C0	B 137086
*	22.22	31.75	9.20	8.60	RUM000222-N8C0	B 125087
*	23.81	36.51	10.00	9.20	RUM000238-N8C0	B 143093
*	24.00	32.00	7.50	6.90	RUM000240-N8C0	B 125094
*	24.00	34.00	6.50	5.90	RUM100240-N8C0	B 134094
	25.00	33.00	6.40	5.80	RUM000250-N8C0	B 129098/1
	25.00	35.00	9.00	8.40	RUM100250-N8C0	B 137098
	25.00	38.00	10.00	9.15	RUM200250-N8C0	B 149098
*	25.00	44.00	12.50	11.40	RUM300250-N8C0	B 173098
*	25.40	31.75	5.25	4.70	RUM000254-N8C0	B 125100
*	25.40	34.92	6.85	6.20	RUM100254-N8C0	B 137100
	25.40	38.10	10.00	9.20	RUM200254-N8C0	B 150100
*	25.40	41.27	11.60	10.70	RUM300254-N8C0	B 162100
*	26.00	40.00	10.00	9.20	RUM000260-N8C0	B 157102/1
*	27.00	35.00	6.50	5.90	RUM000270-N8C0	B 137106
	28.00	36.00	6.40	5.80	RUM000280-N8C0	B 141110
	28.00	38.00	8.00	7.40	RUM100280-N8C0	B 149110/1
	28.00	40.00	9.50	8.90	RUM200280-N8C0	B 157110
	28.00	41.00	10.00	9.30	RUM300280-N8C0	B 161110
*	28.19	39.68	8.00	7.30	RUM000281-N8C0	B 156111
	28.57	39.68	9.25	8.50	RUM000285-N8C0	B 156112
*	28.57	41.27	10.00	9.20	RUM100285-N8C0	B 162112
*	28.57	44.45	11.60	10.70	RUM200285-N8C0	B 175112
*	30.00	37.50	6.50	6.00	RUM100300-N8C0	B 147118
	30.00	38.00	6.40	5.80	RUM000300-N8C0	B 149118
	30.00	40.00	7.50	6.80	RUM300300-N8C0	B 157118
	30.00	40.00	10.50	9.80	RUM400300-N8C0	B 157118/1
*	30.00	41.60	8.00	7.20	RUM500300-N8C0	B 164118
	30.00	45.00	9.00	8.50	RUM600300-N8C0	B 177118/1

B Production No. available size. Dimensions printed in **bold** type correspond to ISO/DIN 5597 and ISO 5597/1. * Split groove

Note	Rod Diameter	Groove Diameter	Groove Width	Seal Width	Order No.	Polypac Ref. No.
	d_N h11	**D1** H11	**L** +0.1	**B**		
	30.00	50.00	14.50	13.50	RUM700300-N8C0	B 196118
*	31.75	38.10	6.75	6.00	RUM000317-N8C0	B 150125
*	31.75	44.45	9.52	8.70	RUM100317-N8C0	B 175125
	31.75	47.62	11.60	10.60	RUM200317-N8C0	B 187125
	32.00	40.00	6.30	5.80	RUM000320-N8C0	B 157125/1
	32.00	40.00	9.00	8.50	RUM100320-N8C0	B 157125
	32.00	42.00	8.50	7.80	RUM200320-N8C0	B 165125/1
	32.00	42.00	11.00	10.30	RUM300320-N8C0	B 165125
	32.00	45.00	10.00	9.50	RUM400320-N8C0	B 177125
	34.92	50.80	8.50	7.50	RUM000349-N8C0	B 200137/4
*	34.92	50.80	10.00	9.10	RUM100349-N8C0	B 200137/1
	34.92	50.80	11.60	10.60	RUM200349-N8C0	B 200137/2
	35.00	43.00	6.50	6.00	RUM000350-N8C0	B 169137
*	35.00	45.00	8.00	7.20	RUM100350-N8C0	B 177137/5
	35.00	45.00	10.50	9.80	RUM200350-N8C0	B 177137/3
*	35.00	45.00	13.50	12.80	RUM300350-N8C0	B 177137/2
	35.00	50.00	11.50	10.60	RUM400350-N8C0	B 196137
	36.00	43.00	6.50	6.00	RUM000360-N8C0	B 169141
	36.00	44.00	6.40	5.90	RUM100360-N8C0	B 173141
	36.00	46.00	8.50	7.80	RUM200360-N8C0	B 181141
	36.00	48.00	9.50	8.70	RUM300360-N8C0	B 188141
	36.00	48.00	12.00	11.20	RUM400360-N8C0	B 188141/1
*	37.72	50.80	9.00	8.20	RUM000377-N8C0	B 200148
*	38.00	50.00	9.50	8.80	RUM000380-N8C0	B 196149
*	38.10	47.62	6.35	5.70	RUM000381-N8C0	B 187150/1
	38.10	50.80	10.00	9.22	RUM200381-N8C0	B 200150
*	38.10	50.80	12.40	11.90	RUM100381-N8C0	B 200150/1
	38.10	53.97	10.50	9.50	RUM300381-N8C0	B 212150/5
*	38.10	53.97	11.50	10.50	RUM400381-N8C0	B 212150/1
*	38.10	53.97	12.83	12.00	RUM500381-N8C0	B 212150/2
	40.00	48.00	6.50	6.00	RUM000400-N8C0	B 188157
	40.00	50.00	8.00	7.40	RUM100400-N8C0	B 196157/3
	40.00	50.00	10.50	9.80	RUM200400-N8C0	B 196157/1
	40.00	50.00	11.00	10.30	RUM300400-N8C0	B 196157
*	40.00	50.00	13.50	12.80	RUM400400-N8C0	B 196157/2
	40.00	55.00	8.00	7.00	RUM500400-N8C0	B 216157
	40.00	55.00	11.00	10.10	RUM600400-N8C0	B 216157/1
	40.00	60.00	14.50	13.30	RUM700400-N8C0	B 236157
*	41.27	57.12	11.60	10.70	RUM000412-N8C0	B 225162
*	42.00	50.00	6.40	6.00	RUM000420-N8C0	B 196165
	42.00	52.00	9.00	8.40	RUM100420-N8C0	B 204165
*	42.92	55.50	8.90	8.10	RUM000429-N8C0	B 218169
*	43.00	53.00	9.00	8.40	RUM000430-N8C0	B 208169
	44.00	53.00	8.00	7.30	RUM000440-N8C0	B 208173
	44.45	53.97	7.62	7.00	RUM000444-N8C0	B 212178/1
	44.45	60.32	11.60	10.70	RUM100444-N8C0	B 237175
*	44.45	61.91	11.60	10.60	RUM200444-N8C0	B 243175
	45.00	53.00	6.50	6.00	RUM000450-N8C0	B 208177

B Production No. available size. Dimensions printed in **bold** type correspond to ISO/DIN 5597 and ISO 5597/1. * Split groove

Note	Rod Diameter	Groove Diameter	Groove Width	Seal Width	Order No.	Polypac Ref. No.
	d_N h11	**D1** H11	**L** +0.1	**B**		
	45.00	55.00	8.00	7.30	RUM100450-N8C0	B 216177
	45.00	55.00	11.00	10.00	RUM200450-N8C0	B 216177/1
	45.00	57.00	10.00	9.00	RUM300450-N8C0	B 224177
	45.00	60.00	10.50	9.60	RUM400450-N8C0	B 236177
	45.00	63.00	11.00	10.00	RUM500450-N8C0	B 248177
	45.00	65.00	14.50	13.30	RUM600450-N8C0	B 255177
	45.97	55.37	8.33	7.60	RUM000459-N8C0	B 218181
	46.00	56.00	8.00	7.30	RUM100460-N8C0	B 220181
*	47.23	60.32	10.00	9.20	RUM000472-N8C0	B 237186
*	47.62	63.50	11.50	10.60	RUM000476-N8C0	B 250187
*	48.00	60.00	7.00	6.30	RUM000480-N8C0	B 236188
*	50.00	58.00	12.50	12.00	RUM000500-N8C0	B 228196
	50.00	60.00	8.00	7.30	RUM100500-N8C0	B 236196
	50.00	60.00	10.00	9.30	RUM200500-N8C0	B 236196/1
	50.00	62.00	9.50	8.50	RUM300500-N8C0	B 244196/1
*	50.00	64.50	11.50	10.50	RUM400500-N8C0	B 254196
	50.00	65.00	11.00	10.10	RUM500500-N8C0	B 255196
	50.00	70.00	14.50	13.30	RUM600500-N8C0	B 275196
	50.80	60.35	11.00	10.30	RUM000508-N8C0	B 237200
*	50.80	66.67	11.50	10.50	RUM100508-N8C0	B 262200
*	53.97	73.02	14.80	13.80	RUM000539-N8C0	B 287212
	54.00	66.00	9.50	8.70	RUM000540-N8C0	B 259212
	55.00	65.00	8.00	7.30	RUM000550-N8C0	B 255216/1
	55.00	65.00	11.00	10.30	RUM100550-N8C0	B 255216
	55.00	70.00	10.50	9.60	RUM200550-N8C0	B 275216
	55.00	75.00	14.50	13.30	RUM300550-N8C0	B 295216
	56.00	66.00	8.00	7.30	RUM000560-N8C0	B 259220
	56.00	71.00	10.50	9.60	RUM100560-N8C0	B 279220
	56.00	76.00	14.50	13.40	RUM200560-N8C0	B 299220
	57.00	67.00	8.00	7.30	RUM000570-N8C0	B 263224
	57.15	69.85	10.00	9.20	RUM000571-N8C0	B 275225
*	57.15	73.02	11.50	10.60	RUM100571-N8C0	B 287225
*	57.15	76.20	10.00	8.90	RUM200571-N8C0	B 300225
*	57.15	76.20	13.50	12.40	RUM300571-N8C0	B 300225/1
*	57.15	76.20	14.28	13.20	RUM400571-N8C0	B 300225/2
	60.00	69.50	7.00	6.40	RUM000600-N8C0	B 273236
	60.00	70.00	8.00	7.50	RUM100600-N8C0	B 275236
	60.00	70.00	11.00	10.30	RUM200600-N8C0	B 275236/1
	60.00	70.00	13.00	12.25	RUM300600-N8C0	B 275236/2
	60.00	71.00	9.60	9.00	RUM400600-N8C0	B 279236
	60.00	72.00	10.00	9.20	RUM500600-N8C0	B 283236
	60.00	75.00	13.00	12.10	RUM600600-N8C0	B 295236
	60.00	80.00	14.50	13.50	RUM700600-N8C0	B 314236
*	60.32	79.37	14.80	13.80	RUM000603-N8C0	B 312237
	61.00	69.00	8.50	7.90	RUM000610-N8C0	B 271240
	63.00	75.00	9.60	8.80	RUM000630-N8C0	B 295248/1
	63.00	75.00	11.00	10.20	RUM100630-N8C0	B 295248
	63.00	78.00	12.50	11.50	RUM200630-N8C0	B 307248

B Production No. available size. Dimensions printed in **bold** type correspond to ISO/DIN 5597 and ISO 5597/1. * Split groove

Note	Rod Diameter	Groove Diameter	Groove Width	Seal Width	Order No.	Polypac Ref. No.
	d_N h11	**D1** H11	**L** +0.1	**B**		
	63.00	83.00	14.50	13.30	RUM300630-N8C0	B 326248
	63.50	76.20	8.50	7.70	RUM000635-N8C0	B 300250
	63.50	77.78	11.50	10.70	RUM100635-N8C0	B 306250
	63.50	82.55	14.28	13.13	RUM200635-N8C0	B 325250/1
	65.00	75.00	8.50	7.80	RUM000650-N8C0	B 295255/1
	65.00	75.00	13.50	12.30	RUM100650-N8C0	B 295255
	65.00	77.00	9.60	8.80	RUM200650-N8C0	B 303255
	65.00	80.00	11.50	10.60	RUM300650-N8C0	B 314255
	65.00	80.00	12.50	11.50	RUM400650-N8C0	B 314255/2
	65.00	85.00	14.50	13.50	RUM600650-N8C0	B 334255
*	65.00	95.00	17.50	15.80	RUM500650-N8C0	B 374255
*	66.00	80.00	11.00	10.10	RUM000660-N8C0	B 314259
*	66.67	85.72	14.80	13.70	RUM000667-N8C0	B 337262
	68.00	76.00	8.00	7.40	RUM000680-N8C0	B 299267
	70.00	76.00	6.00	5.40	RUM000700-N8C0	B 299275
	70.00	80.00	8.00	7.30	RUM000700-N8C0	B 314275/1
	70.00	80.00	13.00	12.30	RUM200700-N8C0	B 314275
	70.00	82.00	9.60	8.80	RUM300700-N8C0	B 322275/1
	70.00	82.00	10.50	9.70	RUM400700-N8C0	B 322275
	70.00	84.00	12.50	11.20	RUM500700-N8C0	B 330275
	70.00	85.00	12.00	11.00	RUM600700-N8C0	B 334275/1
	70.00	85.00	12.50	11.50	RUM700700-N8C0	B 334275
	70.00	90.00	14.50	13.50	RUM800700-N8C0	B 354275
	72.00	87.00	11.00	10.00	RUM000720-N8C0	B 342283
*	73.02	88.90	12.50	11.50	RUM000730-N8C0	B 350287
	75.00	85.00	8.00	7.30	RUM000750-N8C0	B 334295/1
	75.00	85.00	11.00	10.30	RUM100750-N8C0	B 334295/2
	75.00	89.50	11.50	10.50	RUM200750-N8C0	B 352295
	75.00	90.00	11.50	10.60	RUM300750-N8C0	B 354295
	75.00	90.00	12.80	11.80	RUM400750-N8C0	B 354295/1
*	75.00	95.00	11.00	10.00	RUM500750-N8C0	B 374295/1
	75.00	95.00	14.50	13.50	RUM600750-N8C0	B 374295
	76.00	84.00	8.50	7.90	RUM000760-N8C0	B 330299
	76.20	88.90	9.40	8.70	RUM000762-N8C0	B 350300
*	76.20	92.07	10.00	9.20	RUM100762-N8C0	B 362300
*	76.20	95.25	14.80	13.70	RUM200762-N8C0	B 375300
	77.00	87.00	8.00	7.30	RUM000770-N8C0	B 342303
	79.00	88.50	7.00	6.40	RUM000790-N8C0	B 348311
	80.00	90.00	8.00	7.30	RUM000800-N8C0	B 354314
	80.00	92.00	9.60	8.80	RUM100800-N8C0	B 362314
	80.00	93.00	14.50	13.50	RUM200800-N8C0	B 366314
	80.00	95.00	12.00	11.10	RUM300800-N8C0	B 374314
	80.00	96.00	10.50	9.60	RUM400800-N8C0	B 377314
	80.00	100.00	12.00	10.80	RUM500800-N8C0	B 393314/1
	80.00	100.00	14.50	13.40	RUM600800-N8C0	B 393314
	81.00	91.00	8.00	7.30	RUM000800-N8C0	B 358318
	82.55	101.60	14.80	13.70	RUM000825-N8C0	B 400325/1
	84.00	92.00	6.00	5.40	RUM000840-N8C0	B 362330

B Production No. available size. Dimensions printed in **bold** type correspond to ISO/DIN 5597 and ISO 5597/1. * Split groove

Note	Rod Diameter	Groove Diameter	Groove Width	Seal Width	Order No.	Polypac Ref. No.
	d_N h11	**D1** H11	**L** +0.1	**B**		
	84.00	94.00	8.00	7.30	RUM100840-N8C0	B 370330
	85.00	95.00	8.00	7.30	RUM000850-N8C0	B 374334
	85.00	95.00	8.50	7.80	RUM100850-N8C0	B 374334/1
	85.00	97.00	9.60	9.00	RUM200850-N8C0	B 381334
	85.00	100.00	12.00	10.80	RUM300850-N8C0	B 393334/1
	85.00	105.00	14.50	13.40	RUM400850-N8C0	B 413334
*	85.00	110.00	13.50	12.20	RUM500850-N8C0	B 433334
*	85.72	104.77	14.80	13.80	RUM000857-N8C0	B 412337
*	85.72	111.12	19.50	18.20	RUM100857-N8C0	B 437337
	88.00	96.00	8.00	7.50	RUM000880-N8C0	B 377346
	88.90	101.60	10.00	9.20	RUM000889-N8C0	B 400350
*	88.90	107.95	12.70	11.60	RUM100889-N8C0	B 425350
	88.90	114.30	12.70	18.20	RUM200889-N8C0	B 450350/2
	90.00	100.00	11.00	10.20	RUM000900-N8C0	B 393354
	90.00	102.00	9.60	8.80	RUM100900-N8C0	B 401354
	90.00	105.00	9.50	8.70	RUM200900-N8C0	B 413354
	90.00	105.00	12.50	11.60	RUM300900-N8C0	B 413354/1
	90.00	106.20	10.80	9.80	RUM400900-N8C0	B 418354
	90.00	110.00	12.50	11.40	RUM500900-N8C0	B 433354
	91.00	99.00	8.50	7.90	RUM000910-N8C0	B 389358
	92.07	111.12	12.50	11.30	RUM000920-N8C0	B 437362
*	92.07	117.45	13.20	12.00	RUM100920-N8C0	B 462362/1
	95.00	105.00	11.00	10.30	RUM000950-N8C0	B 413374
	95.00	107.00	12.50	11.70	RUM100950-N8C0	B 421374
	95.00	110.00	12.50	11.36	RUM200950-N8C0	B 433374
	95.00	112.00	12.00	11.10	RUM300950-N8C0	B 441374
	95.00	115.00	14.50	13.30	RUM400950-N8C0	B 452374
	95.25	114.30	13.50	12.40	RUM000952-N8C0	B 450375
*	95.25	120.65	19.50	18.20	RUM100952-N8C0	B 475375
	96.00	105.00	8.50	7.90	RUM000960-N8C0	B 413377
	96.00	108.00	12.50	11.70	RUM100960-N8C0	B 425377
	97.00	108.00	12.50	11.80	RUM000970-N8C0	B 425381
	98.00	107.50	7.00	6.20	RUM000980-N8C0	B 423385
	100.00	113.00	13.50	12.70	RUM001000-N8C0	B 444393
	100.00	115.00	11.50	10.60	RUM101000-N8C0	B 452393/1
	100.00	115.00	12.50	11.50	RUM201000-N8C0	B 452393
	100.00	120.00	12.00	11.20	RUM301000-N8C0	B 472393/1
	100.00	120.00	14.50	13.40	RUM401000-N8C0	B 472393
	101.00	111.00	6.00	5.40	RUM001010-N8C0	B 437397
	101.50	123.82	17.18	16.00	RUM001015-N8C0	B 487400
	101.60	127.00	19.50	18.00	RUM001016-N8C0	B 500400
	103.00	115.00	12.50	11.80	RUM001030-N8C0	B 452405
	104.00	120.00	12.00	11.20	RUM001040-N8C0	B 472409
	104.00	130.00	19.50	18.00	RUM101040-N8C0	B 511409
	105.00	115.00	11.00	10.00	RUM101040-N8C0	B 452413
	105.00	117.00	12.50	11.80	RUM101050-N8C0	B 460413
	105.00	120.00	12.00	11.00	RUM201050-N8C0	B 472413
	105.00	125.00	12.50	11.40	RUM301050-N8C0	B 492413

B Production No. available size. Dimensions printed in **bold** type correspond to ISO/DIN 5597 and ISO 5597/1. * Split groove

Note	Rod Diameter	Groove Diameter	Groove Width	Seal Width	Order No.	Polypac Ref. No.
	d_N h11	**D1** H11	**L** +0.1	**B**		
	106.00	116.00	8.50	7.80	RUM001060-N8C0	B 457417
	107.00	115.00	8.00	7.40	RUM001070-N8C0	B 452421
	107.95	133.35	19.00	17.70	RUM001079-N8C0	B 525425
	110.00	125.00	12.00	11.20	RUM001100-N8C0	B 492433
	110.00	130.00	12.50	11.40	RUM101100-N8C0	B 511433
	110.00	135.00	15.50	14.20	RUM201100-N8C0	B 531433
	110.00	140.00	16.50	15.00	RUM301100-N8C0	B 551433
	114.30	133.35	12.40	11.40	RUM001143-N8C0	B 525450
	114.30	139.70	19.50	18.00	RUM101143-N8C0	B 550450
	115.00	125.00	8.00	7.40	RUM001150-N8C0	B 492452
	115.00	135.00	16.00	14.80	RUM101150-N8C0	B 531452
	118.00	130.00	12.50	11.80	RUM001180-N8C0	B 511464
	120.00	130.00	8.00	7.40	RUM001200-N8C0	B 511472
	120.00	132.70	10.00	9.20	RUM101200-N8C0	B 522472
	120.00	135.00	12.50	11.60	RUM201200-N8C0	B 531472
	120.00	140.00	12.50	11.40	RUM301200-N8C0	B 551472
	120.00	145.00	18.80	17.50	RUM401200-N8C0	B 570472
	120.65	146.05	19.50	18.20	RUM001206-N8C0	B 575475
	121.00	133.00	8.00	7.20	RUM001210-N8C0	B 523476
	123.00	133.00	8.00	7.40	RUM001230-N8C0	B 523484
	125.00	135.00	8.50	7.80	RUM001250-N8C0	B 531492
	125.00	140.00	12.00	11.00	RUM101250-N8C0	B 551492
	125.00	150.00	14.50	13.10	RUM201250-N8C0	B 590492
	126.00	134.00	8.00	7.50	RUM001260-N8C0	B 527496
	126.00	136.00	8.50	7.80	RUM101260-N8C0	B 535496
	127.00	139.70	10.00	8.70	RUM001270-N8C0	B 550500
	127.00	145.00	11.50	10.50	RUM101270-N8C0	B 570500
	127.00	152.40	19.50	18.20	RUM201270-N8C0	B 600500
	130.00	140.00	8.00	7.40	RUM001300-N8C0	B 551511
	130.00	145.00	9.50	8.50	RUM101300-N8C0	B 570511/2
	130.00	145.00	13.00	12.00	RUM201300-N8C0	B 570511/1
	130.00	145.00	15.00	14.00	RUM301300-N8C0	B 570511
	130.00	150.00	16.00	14.80	RUM401300-N8C0	B 590511
	130.00	155.00	18.80	17.50	RUM501300-N8C0	B 610511
	131.00	144.00	13.50	12.70	RUM001310-N8C0	B 566515
	133.35	158.75	14.00	12.60	RUM001333-N8C0	B 625525/1
	135.00	150.00	14.00	13.00	RUM001350-N8C0	B 590531/1
	135.00	155.00	16.00	14.80	RUM101350-N8C0	B 610531
	135.00	160.00	14.00	12.70	RUM201350-N8C0	B 629531
	139.70	165.10	19.50	18.20	RUM001397-N8C0	B 650550
	140.00	155.00	13.00	12.00	RUM001400-N8C0	B 610551
	140.00	160.00	12.50	11.40	RUM101400-N8C0	B 629551
	140.00	160.00	14.50	13.40	RUM201400-N8C0	B 629551/1
	140.00	170.00	22.80	21.20	RUM301400-N8C0	B 669551
	145.00	157.70	10.00	9.20	RUM001450-N8C0	B 620570
	146.00	158.00	8.00	7.20	RUM001460-N8C0	B 622575
	146.05	171.45	19.50	18.20	RUM101460-N8C0	B 675575
	150.00	165.00	13.00	11.50	RUM001500-N8C0	B 649590

B Production No. available size. Dimensions printed in **bold** type correspond to ISO/DIN 5597 and ISO 5597/1. * Split groove

Note	Rod Diameter	Groove Diameter	Groove Width	Seal Width	Order No.	Polypac Ref. No.
	d_N h11	**D1** H11	**L** +0.1	**B**		
	150.00	170.00	14.50	13.40	RUM101500-N8C0	B 669590/1
	152.40	177.80	19.50	18.20	RUM001524-N8C0	B 700600
	152.40	184.15	25.80	24.20	RUM101524-N8C0	B 725600
	155.00	170.00	9.50	8.55	RUM001550-N8C0	B 669610
	158.75	190.50	25.80	24.20	RUM001587-N8C0	B 750625
	160.00	174.00	11.50	10.60	RUM001600-N8C0	B 685629
	160.00	175.00	16.00	15.50	RUM101600-N8C0	B 688629
	160.00	180.00	14.50	13.30	RUM201600-N8C0	B 708629
	163.00	178.00	13.00	12.00	RUM001630-N8C0	B 700641
	165.00	184.00	16.00	14.80	RUM001650-N8C0	B 728649
	165.00	195.00	20.40	18.70	RUM101650-N8C0	B 767649
	165.10	177.80	10.00	9.20	RUM001651-N8C0	B 700650
	165.10	196.85	25.80	24.20	RUM101651-N8C0	B 775650
	170.00	182.70	10.00	9.20	RUM001700-N8C0	B 719669
	171.00	183.00	8.00	7.20	RUM001710-N8C0	B 720673
	171.45	203.20	25.80	24.20	RUM001714-N8C0	B 800675
	175.00	200.00	14.50	13.10	RUM001750-N8C0	B 787688
	175.00	200.00	23.00	21.55	RUM101750-N8C0	B 787688/1
	177.80	203.20	22.70	21.40	RUM001778-N8C0	B 800700
	180.00	195.00	12.50	11.50	RUM001800-N8C0	B 767708
	180.00	200.00	14.50	13.30	RUM101800-N8C0	B 787708
	180.00	210.00	20.50	18.90	RUM201800-N8C0	B 826708/1
	184.15	215.90	25.80	24.20	RUM001841-N8C0	B 850725
	187.00	202.00	11.50	10.60	RUM001870-N8C0	B 795736
	188.00	203.00	13.00	12.00	RUM001880-N8C0	B 799740
	190.00	210.00	14.50	13.40	RUM001900-N8C0	B 826748
	190.50	222.25	25.80	24.20	RUM001905-N8C0	B 875750
	196.00	208.70	9.50	8.70	RUM001960-N8C0	B 821771
	196.85	228.60	25.80	24.20	RUM001968-N8C0	B 900775
	197.00	209.00	8.00	7.20	RUM001970-N8C0	B 823775
	198.00	208.00	12.00	11.30	RUM001980-N8C0	B 819779
	200.00	220.00	14.50	13.30	RUM002000-N8C0	B 866787
	203.20	235.00	25.80	24.20	RUM002032-N8C0	B 925800
	210.00	230.00	14.50	13.30	RUM002100-N8C0	B 905826
	210.00	240.00	22.50	21.00	RUM102100-N8C0	B 944826
	214.00	229.00	13.00	12.10	RUM002140-N8C0	B 901842
	215.90	247.65	25.80	24.20	RUM002159-N8C0	B 975850
	220.00	250.00	20.50	18.90	RUM002200-N8C0	B 984866
	222.25	254.00	25.80	24.20	RUM002222-N8C0	B 1000875
	223.00	235.00	8.00	7.20	RUM002230-N8C0	B 925878
	224.00	236.70	9.50	8.70	RUM002240-N8C0	B 931881
	228.60	260.35	25.80	24.20	RUM002286-N8C0	B 1025900
	230.00	260.00	20.50	18.90	RUM002300-N8C0	B 1023905
	238.00	258.00	15.50	14.40	RUM002380-N8C0	B 1015937
	240.00	255.00	13.00	12.00	RUM002400-N8C0	B 1003944
	241.30	273.05	25.80	24.20	RUM002413-N8C0	B 1075950
	249.00	261.00	8.00	7.20	RUM002490-N8C0	B 1027980
	250.00	290.00	25.40	23.30	RUM002500-N8C0	B 1141984

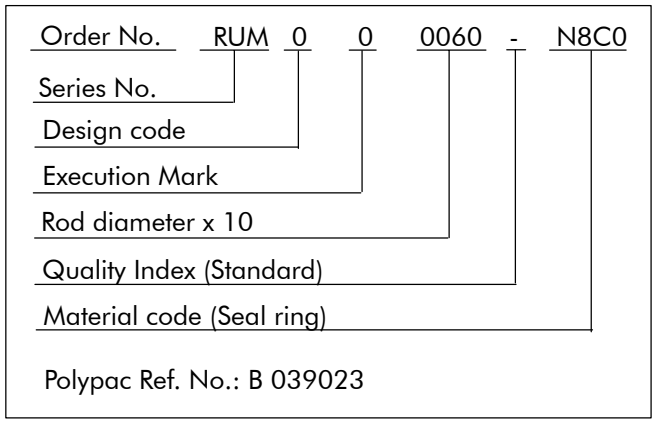
B Production No. available size. Dimensions printed in **bold** type correspond to ISO/DIN 5597 and ISO 5597/1. * Split groove

Note	Rod Diameter	Groove Diameter	Groove Width	Seal Width	Order No.	Polypac Ref. No.
	d_N h11	**D1** H11	**L** +0.1	**B**		
	254.00	285.75	25.80	24.20	RUM002540-N8C0	B 11251000
	260.35	292.10	25.80	24.20	RUM002603-N8C0	B 11501025
	266.70	298.45	25.80	24.20	RUM002667-N8C0	B 11751050
	273.05	304.80	25.80	24.20	RUM002730-N8C0	B 12001075
	279.40	311.15	25.80	24.20	RUM002794-N8C0	B 12251100
	280.00	320.00	22.50	20.30	RUM002800-N8C0	B 12591102
	285.75	317.50	25.80	24.20	RUM002857-N8C0	B 12501125
	298.45	330.20	25.80	24.20	RUM002984-N8C0	B 13001175
	304.80	336.55	25.80	24.20	RUM003048-N8C0	B 13251200
	318.00	355.00	13.00	11.90	RUM003180-N8C0	B 13191252
	320.00	360.00	25.50	23.30	RUM003200-N8C0	B 14171259
	350.00	385.00	25.40	23.50	RUM003500-N8C0	B 15151377
	375.00	415.00	25.40	23.20	RUM003750-N8C0	B 16331476
	445.00	482.00	35.50	33.50	RUM004450-N8C0	B 19001750
	500.00	570.00	35.00	32.80	RUM005000-N8C0	B 21261968
	530.00	570.00	25.00	23.00	RUM005300-N8C0	B 22442086
	640.00	680.00	25.00	23.00	RUM006400-N8C0	B 26772519
	702.00	752.40	30.00	27.50	RUM007020-N8C0	B 29612764
	760.00	820.00	35.00	32.00	RUM007600-N8C0	B 32282992
	785.00	845.00	35.00	32.00	RUM007850-N8C0	B 33273090
	845.00	905.00	35.00	32.00	RUM008450-N8C0	B 35633327
	921.00	981.00	35.00	32.00	RUM009210-N8C0	B 38623626
	1040.00	1110.00	35.00	32.00	RUM0T1040-N8C0	B 43704094
	1195.00	1265.00	35.00	32.00	RUM0T1195-N8C0	B 49804705

B Production No. available size. Dimensions printed in **bold** type correspond to ISO/DIN 5597 and ISO 5597/1. * Split groove

Ordering example

Balsele Type B
Rod diameter: d_N = 6.0 mm
Groove diameter: D1 = 10.0 mm
Groove width L = 5 mm
Part No.: RUM000060 -
Compound: N8C0 (NBR + cotton fabric)



Installation Recommendation

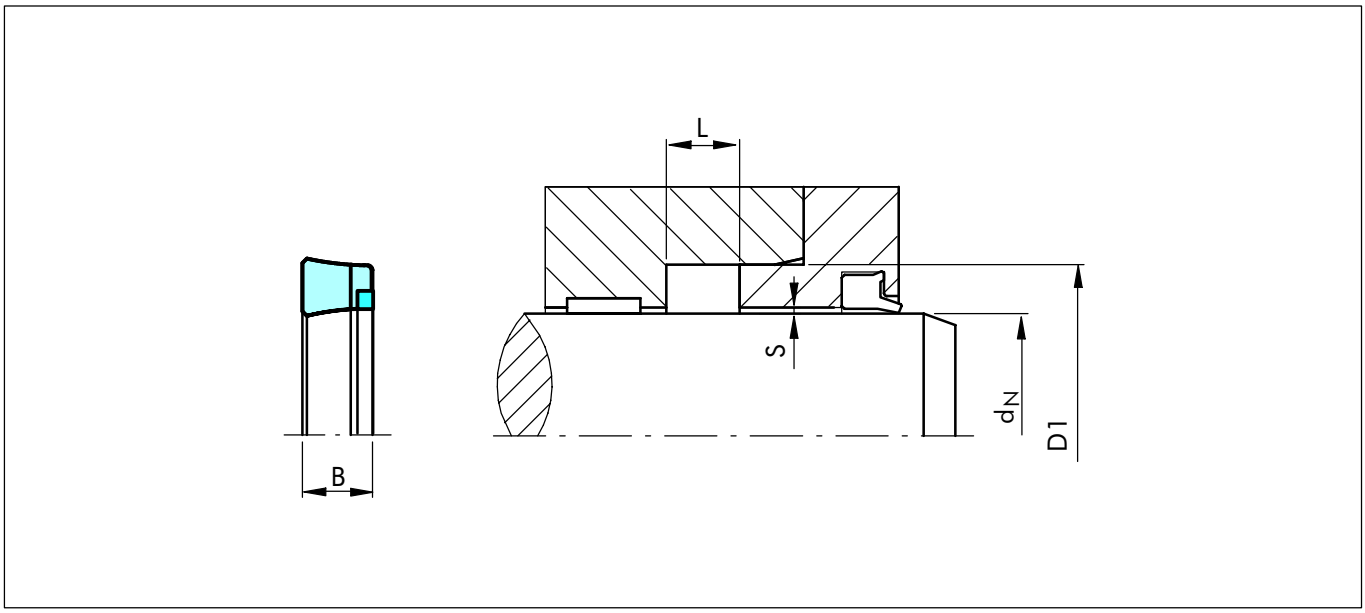


Figure 28 Installation drawing

Table XVIII Preferred Series / Part No.

Note	Rod Diameter	Groove Diameter	Groove Width	Seal Width	Order No.	Polypac Ref. No.
	d_N h11	**D1** H11	**L** +0.1	**B**		
*	12.00	23.00	7.50	6.80	RUM3E0120-N8CO	B 090047/NEI
*	15.00	27.00	7.00	6.30	RUM1E0150-N8CO	B 106059/NEI
*	15.87	25.40	7.65	7.00	RUM1E0158-N8CO	B 100062/NEI
*	16.00	24.00	7.00	6.50	RUM1E0160-N8CO	B 094063/NEI
*	16.00	28.00	7.50	6.90	RUM2E0160-N8CO	B 110062/NEI
*	**18.00**	**28.00**	**6.30**	**5.70**	**RUM4E0180-N8CO**	**B 110070/NEI**
*	18.00	30.00	7.50	6.90	RUM5E0180-N8CO	B 118070/NEI
*	**20.00**	**28.00**	**6.30**	**5.70**	**RUM2E0200-N8CO**	**B 110078/1/NEI**
*	20.00	28.00	7.00	6.50	RUM1E0200-N8CO	B 110078/NEI
*	20.00	30.00	8.50	7.60	RUM3E0200-N8CO	B 118078/NEI
*	22.00	30.00	7.00	6.50	RUM1E0220-N8CO	B 118086/NEI
*	22.00	32.00	10.00	9.00	RUM2E0220-N8CO	B 125086/NEI
*	22.00	34.00	9.50	8.90	RUM3E0220-N8CO	B 133086/NEI
*	22.00	35.00	10.00	9.20	RUM4E0220-N8CO	B 137086/NEI
*	**25.00**	**33.00**	**6.40**	**5.80**	**RUM0E0250-N8CO**	**B 129098/1/NEI**
*	25.00	35.00	9.00	8.40	RUM1E0250-N8CO	B 137098/NEI
*	25.00	38.00	10.00	9.15	RUM2E0250-N8CO	B 149098/NEI
*	25.40	38.10	10.00	9.20	RUM2E0254-N8CO	B 150100/NEI
*	28.00	36.00	6.40	5.80	RUM0E0280-N8CO	B 141110/NEI
*	**28.00**	**38.00**	**8.00**	**7.40**	**RUM1E0280-N8CO**	**B 149110/1/NEI**
*	28.00	40.00	9.50	8.90	RUM2E0280-N8CO	B 157110/NEI
*	28.00	41.00	10.00	9.30	RUM3E0280-N8CO	B 161110/NEI
*	28.57	39.68	9.25	8.50	RUM0E0285-N8CO	B 156112/NEI
*	30.00	38.00	6.40	5.80	RUM0E0300-N8CO	B 149118/NEI

B Production No. available size. Dimensions printed in **bold** type correspond to ISO/DIN 5597 and ISO 5597/1. * Split groove

Note	Rod Diameter	Groove Diameter	Groove Width	Seal Width	Order No.	Polypac Ref. No.
	d_N h11	**D1** H11	**L** +0.1	**B**		
*	30.00	40.00	7.50	6.80	RUM3E0300-N8CO	B 157118/NEI
*	30.00	40.00	10.50	9.80	RUM4E0300-N8CO	B 157118/1/NEI
*	30.00	45.00	9.00	8.50	RUM6E0300-N8CO	B 177118/1/NEI
*	30.00	50.00	14.50	13.50	RUM7E0300-N8CO	B 196118/NEI
*	31.75	47.62	11.60	10.60	RUM2E0317-N8CO	B 187125/NEI
*	32.00	40.00	6.30	5.80	RUM0E0320-N8CO	B 157125/1/NEI
*	32.00	40.00	9.00	8.50	RUM1E0320-N8CO	B 157125/NEI
*	32.00	42.00	8.50	7.80	RUM2E0320-N8CO	B 165125/1/NEI
*	32.00	42.00	11.00	10.30	RUM3E0320-N8CO	B 165125/NEI
*	32.00	45.00	10.00	9.50	RUM4E0320-N8CO	B 177125/NEI
*	34.92	50.80	8.50	7.50	RUM0E0349-N8CO	B 200137/4/NEI
*	34.92	50.80	11.60	10.60	RUM2E0349-N8CO	B 200137/2/NEI
	35.00	43.00	6.50	6.00	RUM0E0350-N8CO	B 169137/NEI
*	35.00	45.00	10.50	9.80	RUM2E0350-N8CO	B 177137/3/NEI
*	35.00	50.00	11.50	10.60	RUM4E0350-N8CO	B 196137/NEI
	36.00	43.00	6.50	6.00	RUM0E0360-N8CO	B 169141/NEI
	36.00	44.00	6.40	5.90	RUM1E0360-N8CO	B 173141/NEI
*	36.00	46.00	8.50	7.80	RUM2E0360-N8CO	B 181141/NEI
*	36.00	48.00	9.50	8.70	RUM3E0360-N8CO	B 188141/NEI
*	36.00	48.00	12.00	11.20	RUM4E0360-N8CO	B 188141/1/NEI
*	38.10	50.80	10.00	9.22	RUM2E0381-N8CO	B 200150/NEI
*	38.10	53.97	10.50	9.50	RUM3E0381-N8CO	B 212150/5/NEI
	40.00	48.00	6.50	6.00	RUM0E0400-N8CO	B 188157/NEI
*	**40.00**	**50.00**	**8.00**	**7.40**	**RUM1E0400-N8CO**	**B 196157/3/NEI**
*	40.00	50.00	10.50	9.80	RUM2E0400-N8CO	B 196157/1/NEI
*	40.00	50.00	11.00	10.30	RUM3E0400-N8CO	B 196157/NEI
*	**40.00**	**55.00**	**8.00**	**7.00**	**RUM5E0400-N8CO**	**B 216157/NEI**
*	40.00	55.00	11.00	10.10	RUM6E0400-N8CO	B 216157/1/NEI
*	40.00	60.00	14.50	13.30	RUM7E0400-N8CO	B 236157/NEI
*	42.00	52.00	9.00	8.40	RUM1E0420-N8CO	B 204165/NEI
	44.45	53.97	7.62	7.00	RUM0E0444-N8CO	B 212175/1/NEI
*	44.45	60.32	11.60	10.70	RUM1E0444-N8CO	B 237175/NEI
	45.00	**55.00**	**8.00**	**7.30**	**RUM1E0450-N8CO**	**B 216177/NEI**
	45.00	55.00	11.00	10.00	RUM2E0450-N8CO	B 216177/1/NEI
*	45.00	57.00	10.00	9.00	RUM3E0450-N8CO	B 224177/NEI
*	45.00	60.00	10.50	9.60	RUM4E0450-N8CO	B 236177/NEI
*	45.00	65.00	14.50	13.30	RUM6E0450-N8CO	B 255177/NEI
	50.00	**60.00**	**8.00**	**7.30**	**RUM1E0500-N8CO**	**B 236196/NEI**
	50.00	60.00	10.00	9.30	RUM2E0500-N8CO	B 236196/1/NEI
*	50.00	62.00	9.50	8.50	RUM3E0500-N8CO	B 244196/1/NEI
	50.00	65.00	11.00	10.10	RUM5E0500-N8CO	B 255196/NEI
*	50.00	70.00	14.50	13.30	RUM6E0500-N8CO	B 275196/NEI
*	54.00	66.00	9.50	8.70	RUM0E0540-N8CO	B 259212/NEI
	55.00	65.00	8.00	7.30	RUM0E0550-N8CO	B 255216/1/NEI
	55.00	65.00	11.00	10.30	RUM1E0550-N8CO	B 255216/NEI
*	55.00	70.00	10.50	9.60	RUM2E0550-N8CO	B 275216/NEI
*	55.00	75.00	14.50	13.30	RUM3E0550-N8CO	B 295216/NEI
*	56.00	71.00	10.50	9.60	RUM1E0560-N8CO	B 279220/NEI

B Production No. available size. Dimensions printed in **bold** type correspond to ISO/DIN 5597 and ISO 5597/1. * Split groove

Note	Rod Diameter	Groove Diameter	Groove Width	Seal Width	Order No.	Polypac Ref. No.
	d_N h11	**D1** H11	**L** +0.1	**B**		
*	56.00	76.00	14.50	13.40	RUM2E0560-N8CO	B 299220/NEI
	57.15	69.85	10.00	9.20	RUM0E0571-N8CO	B 275225/NEI
	60.00	69.50	7.00	6.40	RUM0E0600-N8CO	B 273236/NEI
	60.00	70.00	8.00	6.40	RUM1E0600-N8CO	B 275236/NEI
	60.00	70.00	11.00	10.30	RUM2E0600-N8CO	B 275236/1/NEI
	60.00	70.00	13.00	12.25	RUM3E0600-N8CO	B 275236/2/NEI
	60.00	72.00	10.00	9.20	RUM5E0600-N8CO	B 283236/NEI
*	60.00	75.00	13.00	12.10	RUM6E0600-N8CO	B 295236/NEI
*	60.00	80.00	14.50	13.50	RUM7E0600-N8CO	B 314236/NEI
	63.00	75.00	11.00	10.20	RUM1E0630-N8CO	B 295248/NEI
*	**63.00**	**78.00**	**12.50**	**11.50**	**RUM2E0630-N8CO**	**B 307248/NEI**
*	63.00	83.00	14.50	13.30	RUM3E0630-N8CO	B 326248/NEI
	63.50	76.20	8.50	7.70	RUM0E0635-N8CO	B 300250/NEI
*	63.50	77.78	11.50	10.70	RUM1E0635-N8CO	B 306250/NEI
*	63.50	82.55	14.28	13.13	RUM2E0635-N8CO	B 325250/1/NEI
	65.00	75.00	13.50	12.30	RUM1E0650-N8CO	B 295255/NEI
	65.00	77.00	9.60	8.80	RUM2E0650-N8CO	B 303255/NEI
*	65.00	80.00	11.50	10.60	RUM3E0650-N8CO	B 314255/NEI
*	65.00	80.00	12.50	11.50	RUM4E0650-N8CO	B 314255/2/NEI
	70.00	80.00	8.00	7.30	RUM0E0700-N8CO	B 314275/1/NEI
	70.00	80.00	13.00	12.30	RUM2E0700-N8CO	B 314275/NEI
	70.00	82.00	10.50	9.70	RUM4E0700-N8CO	B 322275/NEI
	70.00	84.00	12.50	11.20	RUM5E0700-N8CO	B 330275/NEI
*	70.00	85.00	12.00	11.00	RUM6E0700-N8CO	B 334275/1/NEI
*	**70.00**	**85.00**	**12.50**	**11.50**	**RUM7E0700-N8CO**	**B 334275/NEI**
*	70.00	90.00	14.50	13.50	RUM8E0700-N8CO	B 354275/NEI
*	72.00	87.00	11.00	10.00	RUM0E0720-N8CO	B 342283/NEI
	75.00	85.00	11.00	10.30	RUM1E0750-N8CO	B 334295/2/NEI
	75.00	90.00	11.50	10.60	RUM3E0750-N8CO	B 354295/NEI
	75.00	90.00	12.80	11.80	RUM4E0750-N8CO	B 354295/1/NEI
*	75.00	95.00	14.50	13.50	RUM6E0750-N8CO	B 374295/NEI
	80.00	93.00	14.50	13.50	RUM2E0800-N8CO	B 366314/NEI
	80.00	95.00	12.00	11.10	RUM3E0800-N8CO	B 374314/NEI
	80.00	96.00	10.50	9.60	RUM4E0800-N8CO	B 377314/NEI
*	80.00	100.00	12.00	10.80	RUM5E0800-N8CO	B 393314/1/NEI
*	80.00	100.00	14.50	13.40	RUM6E0800-N8CO	B 393314/NEI
	85.00	95.00	8.00	7.30	RUM0E0850-N8CO	B 374334/NEI
	85.00	97.00	9.60	9.00	RUM2E0850-N8CO	B 381334/NEI
	85.00	100.00	12.00	10.80	RUM3E0850-N8CO	B 393334/1/NEI
*	85.00	105.00	14.50	13.40	RUM4E0850-N8CO	B 413334/NEI
*	88.90	114.30	19.50	18.20	RUM2E0889-N8CO	B 450350/2/NEI
	90.00	**105.00**	**9.50**	**8.70**	**RUM2E0900-N8CO**	**B 413354/NEI**
	90.00	**105.00**	**12.50**	**11.60**	**RUM3E0900-N8CO**	**B 413354/1/NEI**
	90.00	106.20	10.80	9.80	RUM4E0900-N8CO	B 418354/NEI
*	**90.00**	**110.00**	**12.50**	**11.40**	**RUM5E0900-N8CO**	**B 433354/NEI**
*	92.07	111.12	12.50	11.30	RUM0E0920-N8CO	B 437362/NEI
	95.00	105.00	11.00	10.30	RUM0E0950-N8CO	B 413374/NEI
	95.00	112.00	12.00	11.10	RUM3E0950-N8CO	B 441374/NEI

B Production No. available size. Dimensions printed in **bold** type correspond to ISO/DIN 5597 and ISO 5597/1. * Split groove

Note	Rod Diameter	Groove Diameter	Groove Width	Seal Width	Order No.	Polypac Ref. No.
	d_N h11	**D1** H11	**L** +0.1	**B**		
*	95.00	115.00	14.50	13.30	RUM4E0950-N8CO	B 452374/NEI
	100.00	113.00	13.50	12.70	RUM0E1000-N8CO	B 444393/NEI
	100.00	115.00	11.50	10.60	RUM1E1000-N8CO	B 452393/1/NEI
	100.00	115.00	12.50	11.50	RUM2E1000-N8CO	B 452393/NEI
	100.00	120.00	12.00	11.20	RUM3E1000-N8CO	B 472393/1/NEI
	100.00	120.00	14.50	13.40	RUM4E1000-N8CO	B 472393/NEI
	105.00	115.00	11.00	10.00	RUM0E1050-N8CO	B 452413/NEI
	105.00	125.00	12.50	11.40	RUM3E1050-N8CO	B 492413/NEI
	110.00	125.00	12.00	11.20	RUM0E1100-N8CO	B 492433/NEI
	110.00	**130.00**	**12.50**	**11.40**	**RUM1E1100-N8CO**	**B 511433/NEI**
	110.00	135.00	15.50	14.20	RUM2E1100-N8CO	B 531433/NEI
	120.00	132.70	10.00	9.20	RUM1E1200-N8CO	B 522472/NEI
	120.00	135.00	12.50	11.60	RUM2E1200-N8CO	B 531472/NEI
	120.00	140.00	12.50	11.40	RUM3E1200-N8CO	B 551472/NEI
	120.00	145.00	18.80	17.50	RUM4E1200-N8CO	B 570472/NEI
	125.00	150.00	14.50	13.10	RUM2E1250-N8CO	B 590492/NEI
	130.00	145.00	9.50	8.50	RUM1E1300-N8CO	B 570511/2/NEI
	130.00	145.00	13.00	12.00	RUM2E1300-N8CO	B 570511/1/NEI
	130.00	145.00	15.00	14.00	RUM3E1300-N8CO	B 570511/NEI
	130.00	150.00	16.00	14.80	RUM4E1300-N8CO	B 590511/NEI
	130.00	155.00	18.80	17.50	RUM5E1300-N8CO	B 610511/NEI
	133.35	158.75	14.00	12.60	RUM0E1333-N8CO	B 625525/1/NEI
	135.00	150.00	14.00	13.00	RUM0E1350-N8CO	B 590531/1/NEI
	135.00	155.00	16.00	14.80	RUM1E1350-N8CO	B 610531/NEI
	135.00	160.00	14.00	12.70	RUM2E1350-N8CO	B 629531/NEI
	140.00	155.00	13.00	12.00	RUM0E1400-N8CO	B 610551/NEI
	140.00	**160.00**	**12.50**	**11.40**	**RUM1E1400-N8CO**	**B 629551/NEI**
	140.00	160.00	14.50	13.40	RUM2E1400-N8CO	B 629551/1/NEI
	140.00	170.00	22.80	21.20	RUM3E1400-N8CO	B 669551/NEI
	145.00	157.70	10.00	9.20	RUM0E1450-N8CO	B 620570/NEI
	150.00	165.00	13.00	11.50	RUM0E1500-N8CO	B 649590/NEI
	150.00	170.00	14.50	13.40	RUM1E1500-N8CO	B 669590/1/NEI
	160.00	175.00	16.00	15.50	RUM1E1600-N8CO	B 688629/NEI
	160.00	180.00	14.50	13.30	RUM2E1600-N8CO	B 708629/NEI
	165.00	184.00	16.00	14.80	RUM0E1650-N8CO	B 728649/NEI
	165.00	195.00	20.40	18.70	RUM1E1650-N8CO	B 767649/NEI
	175.00	200.00	23.00	21.55	RUM1E1750-N8CO	B 787688/1/NEI
	180.00	200.00	14.50	13.30	RUM1E1800-N8CO	B 787708/NEI
	180.00	210.00	20.50	18.90	RUM2E1800-N8CO	B 826708/1/NEI
	190.00	210.00	14.50	13.40	RUM0E1900-N8CO	B 826748/NEI
	198.00	208.00	12.00	11.30	RUM0E1980-N8CO	B 819779/NEI
	200.00	220.00	14.50	13.30	RUM0E2000-N8CO	B 866787/NEI
	210.00	230.00	14.50	13.30	RUM0E2100-N8CO	B 905826/NEI
	210.00	240.00	22.50	21.00	RUM1E2100-N8CO	B 944826/NEI
	220.00	250.00	20.50	18.90	RUM0E2200-N8CO	B 984866/NEI
	230.00	260.00	20.50	19.00	RUM0E2300-N8CO	B 1023905/NEI
	500.00	540.00	35.00	32.80	RUM0E5000-N8CO	B 21261968/NEI
	530.00	570.00	25.00	23.00	RUM0E5300-N8CO	B 22442086/NEI

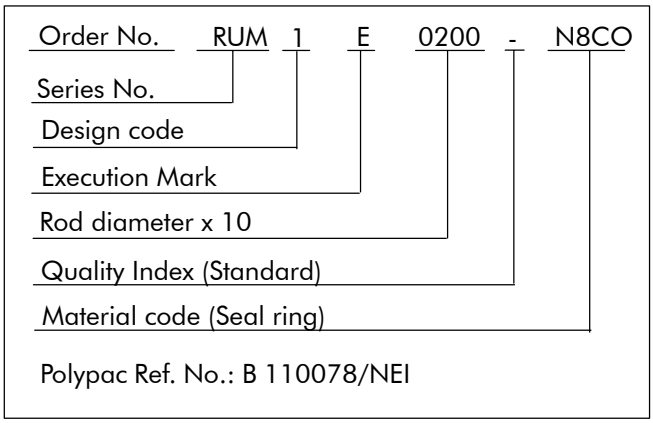
B Production No. available size. Dimensions printed in **bold** type correspond to ISO/DIN 5597 and ISO 5597/1. * Split groove

Note	Rod Diameter	Groove Diameter	Groove Width	Seal Width	Order No.	Polypac Ref. No.
	d_N h11	**D1** H11	**L** +0.1	**B**		
	640.00	680.00	25.00	23.00	RUM0E6400-N8CO	B 26772519/NEI
	702.00	752.40	30.00	27.50	RUM0E7020-N8CO	B 29612764/NEI
	760.00	820.00	35.00	32.00	RUM0E7600-N8CO	B 32282992/NEI
	785.00	845.00	35.00	32.00	RUM0E7850-N8CO	B 33273090/NEI
	845.00	905.00	35.00	32.00	RUM0E8450-N8CO	B 35633327/NEI
	921.00	981.00	35.00	32.00	RUM0E9210-N8CO	B 38623626/NEI
	1040.00	1110.00	35.00	32.00	RUM0X1040-N8CO	B 43704094/NEI
	1195.00	1265.00	35.00	32.00	RUM0X1195-N8CO	B 49804705/NEI

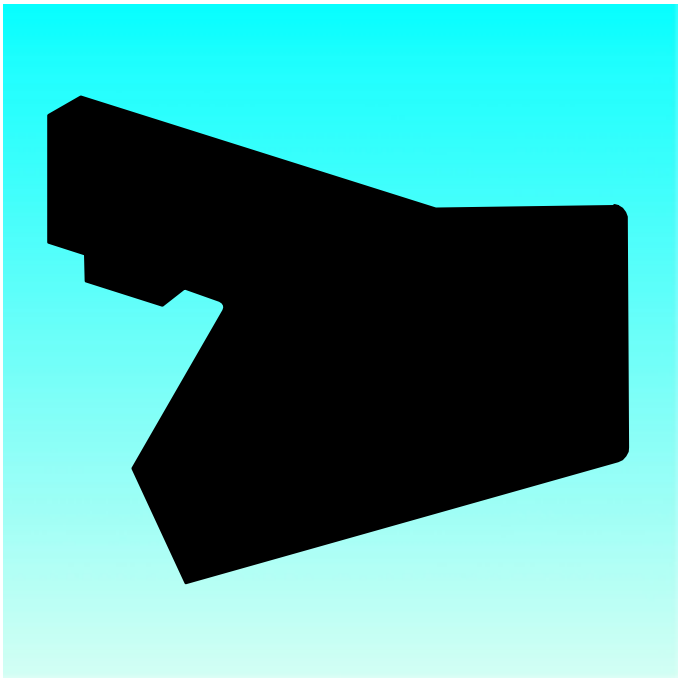
B Production No. available size. Dimensions printed in **bold** type correspond to ISO/DIN 5597 and ISO 5597/1. * Split groove

Ordering example

Balsele Type B/NEI
Rod diameter: d_N = 20.0 mm
Groove diameter: D1 = 28.0 mm
Groove width L = 7 mm
Part No.: RUM1E0200 -
Compound: N8CO (NBR + cotton fabric and POM Back-up Ring)



ZURCON® L-CUP



- Single Acting -

- Innovative Design based on U-Cup -

- Low Friction Properties -

- Material -

- Polyurethane -

Introduction

The rod sealing system is the most critical part of a hydraulic cylinder. Therefore it is expected that a rod sealing system performs under leak-free conditions in the static and dynamic state. Moreover it has to fulfil the lifetime of several thousand hours.

To meet these requirements, Busak+Shamban has developed the Zurcon® L-Cup®*, a highly effective and innovative rod sealing component.

***Patent for: Europe No. EP 0724693**
***Patent for: US No. 5,649,711**
***Patent for: China No. ZL 94193869.7**

Zurcon® L-Cup® is a trade name.

Description

Zurcon® L-Cup® is a single acting polyurethane rod seal with a unique design offering a hydrodynamic back-pumping ability over the complete working pressure range. The pressure-independent, hydrodynamic sealing ability of this new sealing element requires no lubrication reservoir in the sealing area and ensures a constant and controlled pressure distribution over a wide pressure range. Additionally, the seal's dynamic sealing edge has a highly effective friction-reducing microstructure**. This structure creates a constant lubrication film to prevent dry running, thus enabling an increased service life.

The advantages of the new Zurcon® L-Cup® design lead to the following improved properties:

Advantages

- Hydrodynamic back-pumping ability over the complete working pressure range
- Low friction and therefore a reduction of heat generated
- Low breakout force even after a long period of non-operation
- Very low stick-slip
- Low increase in friction at increasing pressure
- High extrusion resistance
- Optimum geometry of the static sealing lip for higher sealing ability
- No entrapped oil and grease between seal and groove (due to notches)
- No pressure build-up between seal and groove OD
- Long service life

The new Zurcon® L-Cup® was designed in accordance with customers' demands.

- Groove dimensions according to ISO 5597 Part 2
- Interchangeable with existing U-Cup grooves
- Installation into closed grooves
- Wear and extrusion resistant high-performance polyurethane

**** Patent No. DE4300889C1**

Application Examples

Zurcon® L-Cup® can be used in all applications in which previously a conventional U-Cup was applied, such as:

- Fork lifts
- Agricultural machines
- Light and medium mobile hydraulics
- Industrial hydraulics
- Machine tools
- Injection moulding machines
- hydraulic presses.

Another preferred solution for tandem rod sealing systems is the combination with the Turcon® Stepseal® K as primary seal and L-Cup® as secondary seal, in conjunction with a double acting scraper.

Technical Data

Operating conditions

Pressure:	Up to 40 MPa
Velocity:	Up to 0.5 m/s
Temperature:	-30°C to +80°C
Media:	Hydraulic fluids based on mineral oil

Important Note:
The above data are maximum values and cannot be used at the same time. e.g. the maximum operating speed depends on material type, pressure, temperature and gap value.

Materials

Zurcon® Z04

Special polyurethane Shore A 93

Colour: turquoise

Method of Operation

Busak+Shamban's experience in the production of hydrodynamic back-pumping seals such as Turcon® Stepseal® K, and the use of Finite Element Analysis (FEA) and other laboratory tests have led to the development of Zurcon® L-Cup®. The main objective in the development of this seal was the ability to achieve an optimum pressure distribution over the complete pressure range.

The pressure distribution curve under the sealing lip needs to have a steep gradient on the high-pressure side and a shallow gradient on the rear of the seal.

The operating principles and function of Zurcon® L-Cup® is similar to the well-known Turcon® Stepseal® K.

Friction

In Figure 29 the friction values of a conventional U-Cup and of Zurcon® L-Cup® are being compared. A high increase in friction of the U-Cup is clearly shown between approximately 5 and 15 MPa. This is due to the U-Cup being totally pressed on the rod surface at increased pressure, causing elimination of the oil reservoir and dry running of the U-Cup.

In comparison, the L-Cup® shows only a low increase in friction which is due to the smaller contact area and better tribological behaviour. The result is a very low friction heat generation.

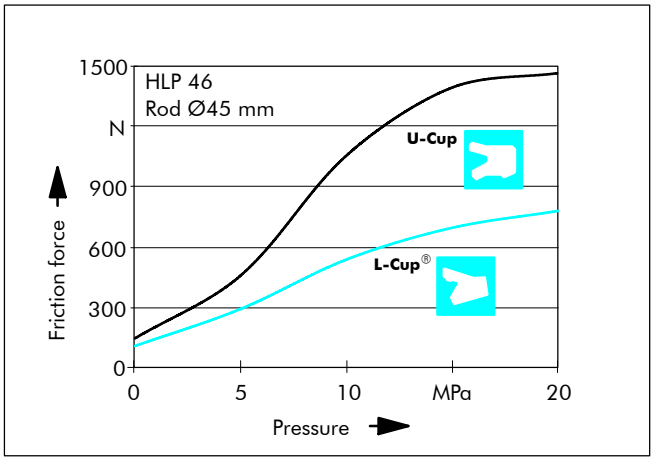


Figure 29 Friction dependent on pressure

The surface microstructure reduces the effective contact area to the rod and therefore the breakout and dynamic friction are reduced compared to seals with smooth sealing surfaces. The hollow spaces between the peaks of the seal and the rod are filled with oil even during long periods without operation. When starting the movement after this period, a lubrication film is still present. This reduction of a large surface contact area into many small contact points also prevents excessive breakout friction and stick-slip.

During short stroke oscillation, oil is retained in the microstructures. This result would be unlikely with smooth sealing surfaces where full contact with the rod causes the oil to be pressed out.

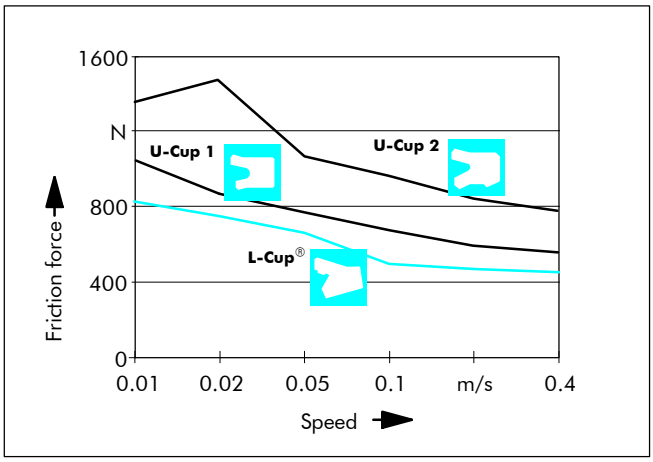


Figure 30 Friction dependent on speed

Friction Heat

The effect described above can be made visible by simply measuring the temperature. Figure 31 shows the increase in temperature on the rod surface caused by friction, measured at a pressure of 40 MPa after 20 000 cycles. This explains the prolonged service life of L-Cup®.

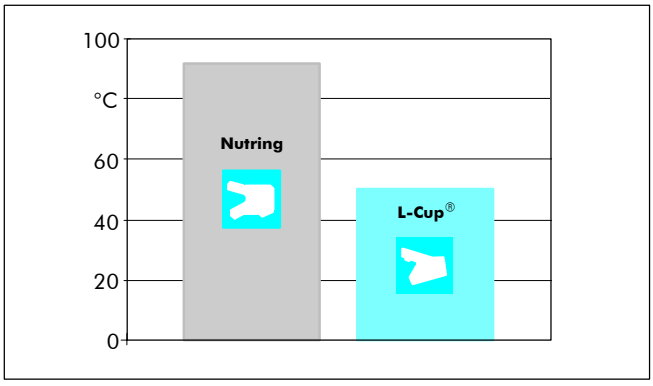


Figure 31 Increase in temperature caused by friction

Test Conditions (Fig. 31)

Dimension:	50 x 60 x 11 mm
Pressure:	0/40 MPa
Velocity:	0.1 m/s
Temperature:	ambient

Sealing Gap

Temperature: ambient

The recommended gap dimensions described in Figure 32, depend on pressure and temperature.

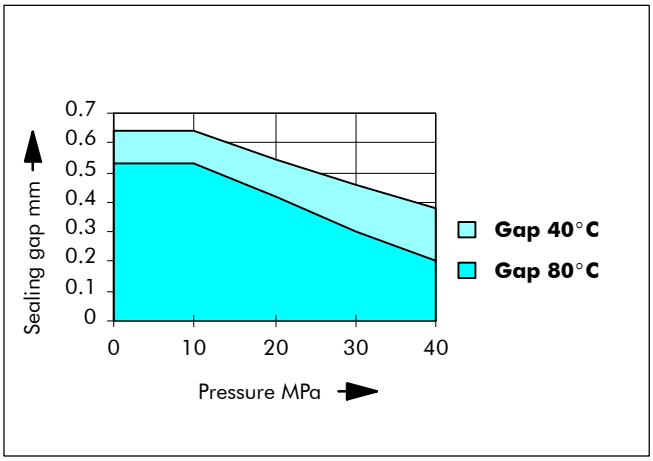


Figure 32 Sealing gap

Design Instructions

Lead-in chamfers

In order to avoid damage to the rod seal during installation, lead-in chamfers and rounded edges must be provided on the piston rods (Figure 33). If this is not possible for design reasons, a separate installation tool must be used.

The minimum length of the lead-in chamfer depends on the profile size of the seal and can be seen from the following tables.

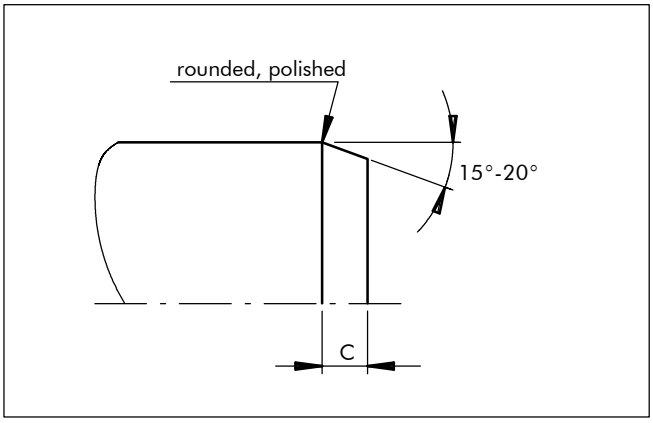


Figure 33 Lead-in chamfer

Lead-in Chamfer Length C min.	Zurcon® L-Cup® Groove Depth*
2.0	3.5
2.0	4.0
2.5	5.0
4.0	7.5
5.0	10.0
6.5	12.5
7.5	15.0

* The groove depth is calculated from: $(D - d_N)/2$.
The dimensions for D and d_N can be found in the table XIX.

Installation Recommendation

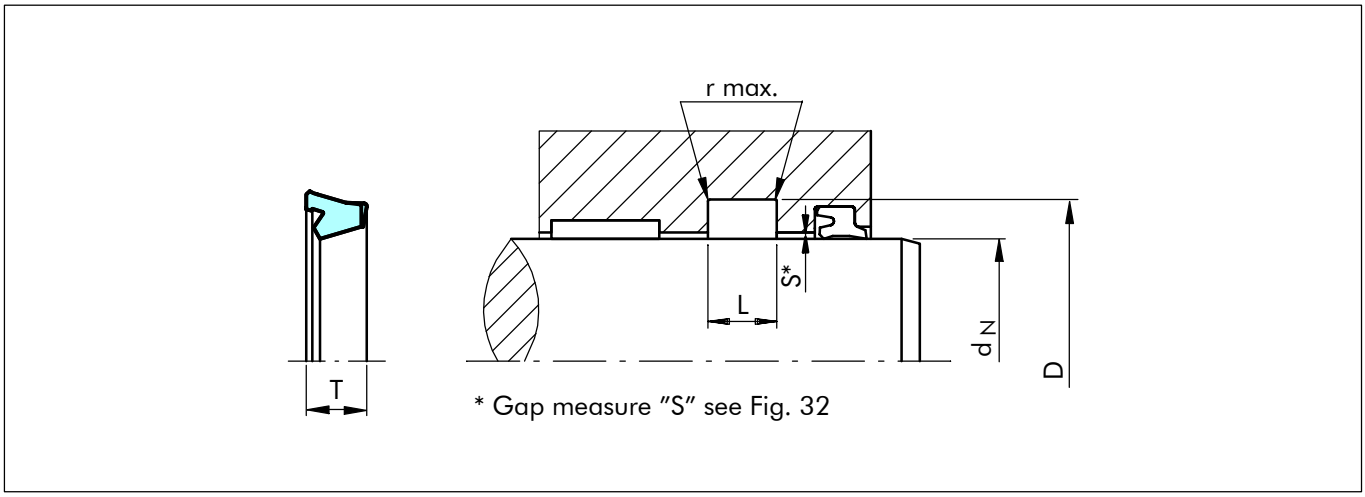


Figure 34 Installation drawing

Table XIX Preferred Series / Order No.

Rod Dia. d_N f8	Groove Dia. D H10	Groove Width* L +0.25	Radius r max.	Ring Width T	Order No.
6	10	4.5	0.2	3.6	RLM000060-Z04
8	12	3.6	0.2	3.2	RLM000080-Z04
8	**16**	**5.0**	**0.3**	**4.2**	**RLS400080-Z04**
8	**16**	**6.3**	**0.3**	**5.7**	RLS100080-Z04
10	**18**	**6.3**	**0.3**	**5.7**	**RLS100100-Z04**
12	16	3.6	0.2	3.2	RLM100120-Z04
12	17	4.0	0.3	3.6	RLM000120-Z04
12	**20**	**6.3**	**0.3**	**5.7**	**RLS100120-Z04**
12	**22**	**8.0**	**0.3**	**7.2**	**RLS500120-Z04**
14	**22**	**6.3**	**0.3**	**5.7**	**RLS100140-Z04**
15	21	5.0	0.3	4.5	RLM000150-Z04
15	23	5.0	0.3	4.2	RLS400150-Z04
16	22	6.0	0.3	5.4	RL38N0160-Z04
16	**24**	**6.3**	**0.3**	**5.7**	**RLS100160-Z04**
18	**26**	**6.3**	**0.3**	**5.7**	**RLS100180-Z04**
20	26	5.5	0.3	5.0	RLM000200-Z04
20	**28**	**6.3**	**0.3**	**5.7**	**RL08N0200-Z04**
22	28	5.0	0.3	4.5	RLM100220-Z04
22	**29**	**5.6**	**0.5**	**5.0**	**RLS000220-Z04**
22	**30**	**6.3**	**0.3**	**5.7**	**RL08N0220-Z04**
22	30	7.0	0.3	6.3	RL09N0220-Z04
25	**33**	**6.3**	**0.3**	**5.7**	**RLS100250-Z04**
25	**35**	**8.0**	**0.3**	**7.2**	**RLS500250-Z04**
26	36	11.0	0.3	9.9	RL17N0260-Z04

Rod Dia. d_N f8	Groove Dia. D H10	Groove Width* L +0.25	Radius r max.	Ring Width T	Order No.
28	**36**	**6.3**	**0.5**	**5.7**	**RLS100280-Z04**
28	**38**	**8.0**	**0.3**	**7.2**	**RL14N0280-Z04**
28	38	11.0	0.3	9.9	RL17N0280-Z04
28	40	9.5	0.3	8.1	RLM000280-Z04
30	38	6.3	0.3	5.7	RLM000300-Z04
30	38	8.0	0.3	7.2	RL10N0300-Z04
30	40	11.0	0.3	9.9	RLM100300-Z04
32	40	7.0	0.3	6.3	RLM000320-Z04
32	**42**	**8.0**	**0.3**	**7.2**	**RL14N0320-Z04**
32	42	11.0	0.3	9.9	RLM100320-Z04
32	47	11.0	0.3	9.9	RL24N0320-Z04
35	43	6.3	0.3	5.7	RLM000350-Z04
35	45	8.0	0.3	7.2	RL14N0350-Z04
35	45	11.0	0.3	9.9	RL17N0350-Z04
36	**44**	**6.3**	**0.5**	**5.7**	**RLS100360-Z04**
36	46	6.9	0.3	5.5	RLM000360-Z04
36	46	10.0	0.3	9.0	RL16N0360-Z04
36	**46**	**8.0**	**0.3**	**7.2**	**RLS500360-Z04**
37	47	11.0	0.3	9.9	RL17N0370-Z04
38	48	11.0	0.3	9.9	RL17N0380-Z04
38	45	7.0	0.3	6.3	RLM000380-Z04
38	55	10.7	0.3	9.2	RL39N0380-Z04
38.6	50	8.0	0.3	7.2	RL37N0386-Z04
40	48	6.3	0.3	5.7	RLM400400-Z04

Rod Dia. d_N f8	Groove Dia. D H10	Groove Width* L +0.25	Radius r max.	Ring Width T	Order No.
40	48	7.0	0.3	6.3	RL09N0400-Z04
40	48	9.0	0.3	8.1	RL11N0400-Z04
40	50	7.0	0.3	6.3	RL40N0400-Z04
40	**50**	**8.0**	**0.3**	**7.2**	**RLS500400-Z04**
40	50	10.0	0.3	9.0	RL16N0400-Z04
40	50	11.0	0.3	9.9	RL17N0400-Z04
40	52	9.0	0.3	8.1	RLM500400-Z04
40	55	9.4	0.4	8.1	RLM000400-Z04
45	53	8.0	0.3	7.2	RL10N0450-Z04
45	53	9.0	0.3	8.1	RL11N0450-Z04
45	**55**	**8.0**	**0.3**	**7.2**	**RL14N0450-Z04**
45	55	10.0	0.3	9.0	RL16N0450-Z04
45	60	9.4	0.4	8.1	RLM000450-Z04
46	56	11.0	0.3	9.9	RL17N0460-Z04
48	60	11.0	0.3	9.9	RL36N0480-Z04
50	58	8.0	0.3	7.2	RL10N0500-Z04
50	58	9.0	0.3	8.1	RL11N0500-Z04
50	**60**	**8.0**	**0.3**	**7.2**	**RLS500500-Z04**
50	60	10.0	0.3	9.0	RL16N0500-Z04
50	60	11.0	0.3	9.9	RL17N0500-Z04
50	65	11.0	0.4	9.9	RLM200500-Z04
50	**65**	**12.5**	**0.4**	**11.3**	**RL26N0500-Z04**
52	62	11.0	0.3	9.9	RL17N0520-Z04
55	63	9.0	0.3	8.1	RL11N0550-Z04
55	65	8.0	0.3	7.2	RL14N0550-Z04
55	65	10.0	0.3	9.0	RL16N0550-Z04
55	65	11.0	0.3	9.9	RL17N0550-Z04
55	70	11.0	0.4	9.9	RLM400550-Z04
56	**71**	**12.5**	**0.4**	**11.3**	**RL26N0560-Z04**
58	68	11.0	0.3	9.9	RL17N0580-Z04
60	68	9.0	0.3	8.1	RL11N0600-Z04
60	70	10.0	0.3	9.0	RL16N0600-Z04
60	70	11.0	0.3	9.9	RL17N0600-Z04
60	75	12.5	0.4	11.3	RL26N0600-Z04
63	75	9.6	0.3	8.6	RL20N0630-Z04
63	75	10.0	0.3	9.0	RLM000630-Z04
63	**78**	**12.5**	**0.4**	**11.3**	**RL26N0630-Z04**
65	73	7.0	0.3	6.3	RL09N0650-Z04
65	75	10.0	0.3	9.0	RL16N0650-Z04

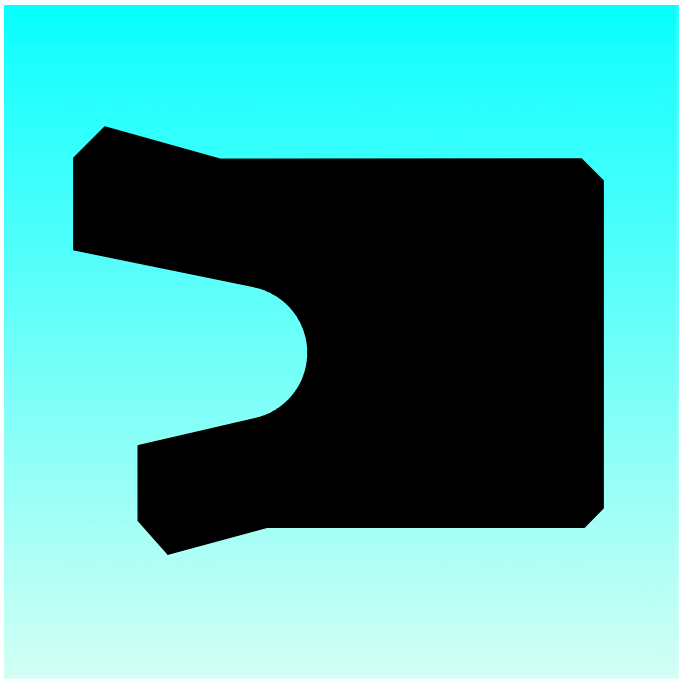
Rod Dia. d_N f8	Groove Dia. D H10	Groove Width* L +0.25	Radius r max.	Ring Width T	Order No.
65	75	11.0	0.3	9.9	RL17N0650-Z04
68	78	11.0	0.3	9.9	RL17N0680-Z04
70	80	8.0	0.3	7.2	RL14N0700-Z04
70	80	10.0	0.3	9.0	RL16N0700-Z04
70	**85**	**12.5**	**0.4**	**11.3**	**RL26N0700-Z04**
75	85	10.0	0.3	9.0	RL16N0750-Z04
75	85	11.0	0.3	9.9	RL17N0750-Z04
75	90	12.5	0.3	11.3	RL26N0750-Z04
80	92	9.6	0.3	8.6	RLM000800-Z04
80	**95**	**12.5**	**0.4**	**11.3**	**RL26N0800-Z04**
80	100	12.5	0.6	10.8	RLM100800-Z04
80	**100**	**16.0**	**0.6**	**14.4**	**RL30N0800-Z04**
85	100	13.1	0.4	11.8	RL27N0850-Z04
90	105	13.1	0.4	11.8	RL27N0900-Z04
90	**105**	**12.5**	**0.4**	**11.3**	**RL26N0900-Z04**
90	110	12.5	0.6	10.8	RLSA00900-Z04
95	110	13.1	0.4	11.8	RL27N0950-Z04
100	**120**	**12.5**	**0.6**	**10.8**	**RLSA01000-Z04**
100	**120**	**16.0**	**0.6**	**14.4**	**RL30N1000-Z04**
101.6	114.3	10.6	0.6	9.5	RLE304000-Z04
105	125	12.5	0.6	10.8	RL29N1050-Z04
110	125	12.0	0.4	10.8	RL25N1100-Z04
110	**130**	**16.0**	**0.6**	**14.4**	**RL30N1100-Z04**
115	135	16.0	0.6	14.4	RL30N1150-Z04
119	134	9.4	0.4	8.1	RL22N1190-Z04
120	135	12.5	0.4	11.3	RL26N1200-Z04
120	140	12.5	0.6	10.8	RLSA01200-Z04
120	140	16.0	0.6	14.4	RL30N1200-Z04
125	140	12.0	0.4	10.8	RL25N1250-Z04
125	**145**	**16.0**	**0.6**	**14.4**	**RL30N1250-Z04**
130	150	16.0	0.6	14.4	RL30N1300-Z04
135	155	16.0	0.6	14.4	RL30N1350-Z04
140	**160**	**16.0**	**0.6**	**14.4**	**RL30N1400-Z04**
142	157	9.4	0.4	8.1	RL22N1420-Z04
150	170	12.5	0.6	10.8	RL29N1500-Z04
150	170	16.0	0.6	14.4	RL30N1500-Z04
160	180	12.5	0.6	10.8	RLSA01600-Z04
160	180	16.0	0.6	14.4	RL30N1600-Z04
160	**185**	**16.0**	**0.8**	**13.5**	**RLSC01600-Z04**

Rod Dia.	Groove Dia.	Groove Width*	Ra-dius	Ring Width	Order No.
d_N f8	D H10	L +0.25	r max.	T	
180	**205**	**20.0**	**0.8**	**18.0**	**RL32N1800-Z04**
195	220	20.0	0.6	18.0	RL32N1950-Z04
200	220	16.0	0.6	14.4	RL30N2000-Z04
200	**225**	**20.0**	**0.8**	**18.0**	**RL32N2000-Z04**
220	240	16.0	0.6	14.4	RL30N2200-Z04
220	**250**	**20.0**	**0.8**	**16.2**	**RLSE02200-Z04**
250	**280**	**20.0**	**0.8**	**16.2**	**RLSE02500-Z04**

Dimensions and Part Numbers in bold according to ISO 5597, Edition 2 tables 4 and 5.

* The Zurcon® L-Cup® has been developed in order to perform also in grooves with a width up to 0.5 mm larger than the values indicated in the above table. Additional information and special dimensions are available upon request. We will be glad to be of assistance.

B+S RU0
SEALING PARTS RS
POLYPAC® EU



- Single Acting U-Cup -

- Asymmetric, Single Lip -

- Material -

- Polyurethane -

U-Cup RU0

Description

Today U-Cups are used primarily as seals for piston rods in hydraulic cylinders. U-Cups in polyurethane are proven elements, due to their good mechanical properties, for standard cylinder construction, particularly for mobile hydraulics under rough operating conditions.

The U-Cup is a single lip seal.

Type RU0

The U-Cup type RU0 is installed as a single-acting single-lip compact seal. The seal is installed with a simple snap fitting and seals statically on the outside diameter via a fixed seat. It has an asymmetric seal lip profile with shortened inner lip. This form can absorb deflections in the piston rod more easily than, e.g. U-Cup Form RU2 with its more rigid lip geometry. In pressure-free state, it exhibits lower frictional forces than double-lipped U-Cups.

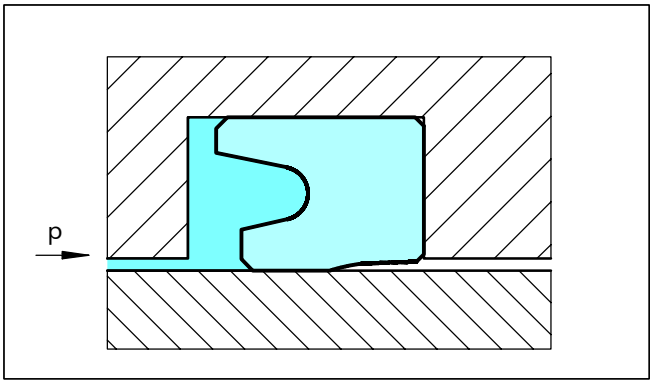


Figure 35 U-Cup, type RU0

Method of Operation

The sealing effect of the U-Cup comes from the intrinsic preload of the seal body and from the compression of the seal lips during installation. In operating condition, the radial mechanical contact forces are superimposed by the system pressure.

At low stroke speeds, U-Cups can tend to have a stick-slip effect due to an inadequate lubrication film formation in the seal clearance and to their material properties. This behaviour corresponds to the Stribeck curve described in the relevant literature.

Advantages

- Good pressure-adapted sealing effect
- Unaffected by high loads and deflections of the piston rod
- Good resistance to clearance extrusion
- Simple installation
- Lower friction in the low pressure range compared with double-lipped versions.

Technical Data

Operating pressure:	Max. 40 MPa
Speed:	Up to 0.5 m/s
Temperature:	Use in mineral oils: -30°C to + 80°C
Media:	Mineral oil-based hydraulic fluids.

Important Note:
The above data are maximum values and cannot be used at the same time. e.g. the maximum operating speed depends on material type, pressure, temperature and gap value.

Seal clearance

Guide values for the radial clearance between rod and gland in relation to the operating pressure and rod diameter can be found in Table XX.

Table XX Clearance

Operating max. Pressure MPa	Radial Clearance S max.	
	d_N <60 mm	d_N >60 mm
5	0.40	0.50
10	0.30	0.40
20	0.20	0.30
30	0.15	0.20
40	0.10	0.15

The values for S max given in this table apply to all types for the low-pressure side of the U-Cup. They are designed for an operating temperature of 60°C.

Material

The thermoplastic polyurethane material used for U-Cups has a high abrasion resistance, a low compression set and exhibits a high resistance to clearance extrusion.

WUAQ3 turquoise color
WU9L3 blue color
UAT60 red color

Design and Installation Instructions

The different forms have different grooves, see Tables XXI and XXII. U-Cups are used together with single-acting scrapers.

Installation Recommendation

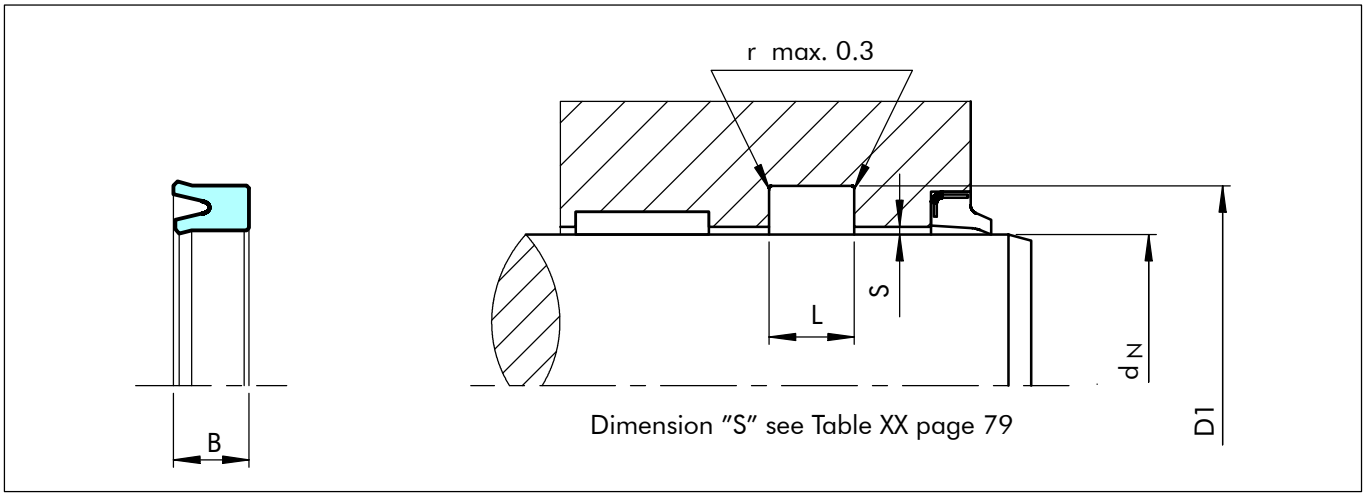


Figure 36 Installation drawing

Table XXI Preferred Series / Part No.

Note	Rod Diameter	Groove Diameter	Groove Width	Seal Width	Part No.	B+S Ref.	Sealing Parts Ref. No	Polypac Ref. No.
						Material Code		
	d_N f8/h9	**D1** H10	**L** +0.2	**B**		WUAQ3	WU9L3	UAT60
	6.0	12.0	5.8	5.5	RU0000060	-	RS 6 12/1	-
*	**6.0**	**14.0**	**6.3**	**5.7**	**RU0100060**	-	**RS 6 14**	**-**
	8.0	14.4	10.5	9.5	RU0000080	-	RS 8 14.1/1	-
*	**8.0**	**16.0**	**6.3**	**5.7**	**RU0100080**	-	**RS 8 16**	**-**
*	8.0	18.0	9.0	8.0	RU0200080	-	RS 8 18/1	-
*	**10.0**	**18.0**	**6.3**	**5.7**	**RU0100100**	-	**RS 10 18**	**-**
*	**10.0**	**20.0**	**8.0**	**7.2**	**RU0200100**	-	**RS 10 20**	**-**
*	10.0	20.0	9.0	8.0	RU0000100	•	RS 10 20/1	-
*	12.0	20.0	5.5	5.0	RU0100120	•	-	-
*	12.0	20.0	6.4	5.7	RU0200120	-	RS 12 20	EU 1220
*	12.0	22.0	8.0	7.2	RU0300120	-	RS 12 22	-
*	12.0	22.0	9.0	8.0	RU0000120	•	RS 12 22/1	-
*	14.0	22.0	6.3	5.7	RU0000140	-	RS 14 22	EU 1422
*	14.0	24.0	8.0	7.2	RU0100140	-	RS 14 24	-
*	14.0	24.0	9.0	8.0	RU0200140	-	RS 14 24 /1	-
*	15.0	23.0	6.3	5.7	RU0000150	-	RS 15 23	EU 1523/1
*	15.0	25.0	9.0	8.0	RU0100150	-	RS 15 25/1	-
	16.0	20.6	3.6	3.3	RU0100160	-	RS 16 20.6	-
	16.0	22.0	6.0	5.0	RU0000160	•	-	-
*	**16.0**	**24.0**	**6.3**	**5.7**	**RU0200160**	•	**RS 16 24**	**EU 1624**
*	16.0	24.0	7.0	6.2	RU0300160	-	RS 16 24/1	-

• Available sizes - Not available RS/EU Production No. available sizes
Dimensions printed in **bold** type correspond to ISO/DIN 5597 and ISO 5597. * Split groove
The listed products are technically equivalent but availability and pricing may vary.

U-Cup RU0

Note	Rod Diameter	Groove Diameter	Groove Width	Seal Width	Part No.	B+S Ref.	Sealing Parts Ref. No	Polypac Ref. No.
						Material Code		
	d_N f8/h9	**D1** H10	**L** +0.2	**B**		WUAQ3	WU9L3	UAT60
*	**16.0**	**26.0**	**8.0**	**7.2**	**RU0400160**	-	**RS 16 26**	**EU 1626**
*	16.0	26.0	9.0	8.0	RU0500160	-	RS 16 26/1	-
*	16.0	26.0	10.0	9.0	RU0600160	-	RS 16 26/2	-
	18.0	24.0	5.3	4.7	RU0200180	●	RS 18 24	EU 1824
	18.0	24.0	6.0	5.0	RU0000180	●	-	-
*	**18.0**	**26.0**	**6.3**	**5.7**	**RU0300180**	-	**RS 18 26**	**EU 1826/1**
*	18.0	26.0	9.0	8.0	RU0400180	-	RS 18 26/1	EU 1826
*	**18.0**	**28.0**	**8.0**	**7.2**	**RU0500180**	-	**RS 18 28**	**EU 1828**
*	18.0	28.0	9.0	8.0	RU0600180	-	RS 18 28/1	-
*	18.0	34.0	9.0	8.0	RU0100180	●	-	-
	20.0	26.0	6.0	5.0	RU0000200	●	RS 20 26/1	-
*	20.0	28.0	6.0	5.0	RU0200200	●	-	-
*	**20.0**	**28.0**	**6.3**	**5.7**	**RU0300200**	-	**RS 20 28**	**EU 2028**
*	20.0	28.0	7.0	6.2	RU0400200	-	RS 20 28/1	-
*	20.0	28.0	8.0	7.2	RU0500200	-	RS 20 28/2	-
*	**20.0**	**30.0**	**8.0**	**7.2**	**RU0600200**	-	**RS 20 30**	**EU 2030**
*	20.0	30.0	9.0	8.0	RU0700200	-	RS 20 30/2	-
*	20.0	30.0	11.0	10.0	RU0100200	●	RS 20 30/1	-
*	20.0	35.0	11.0	10.0	RU0800200	-	RS 20 35	-
*	**22.0**	**30.0**	**6.4**	**5.7**	**RU0200220**	-	**RS 22 30**	EU 2230/1
*	22.0	30.0	9.0	8.0	RU0000220	●	-	EU 2230
*	**22.0**	**32.0**	**8.0**	**7.2**	**RU0300220**	-	**RS 22 32**	**EU 2232/1**
*	22.0	32.0	9.0	8.0	RU0100220	●	RS 22 32/1	-
*	**22.0**	**32.0**	**10.0**	**9.0**	**RU0400220**	-	**-**	**EU 2232**
*	**22.0**	**32.0**	**11.0**	**10.0**	**RU0500220**	-	**RS 22 32/2**	**-**
	24.0	34.0	8.0	7.2	RU0000240	-	RS 24 34	-
	24.0	34.0	9.5	8.5	RU0100240	-	RS 24 34/1	-
	25.0	32.0	7.0	6.0	RU0000250	●	-	-
	25.0	**33.0**	**6.3**	**5.7**	**RU0500250**	●	**RS 25 33**	**EU 2533**
	25.0	33.0	7.0	6.3	RU0200250	-	RS 25 33/3	-
*	25.0	33.0	8.0	7.2	RU0600250	-	RS 25 33/1	-
*	25.0	33.0	11.0	10.0	RU0100250	●	RS 25 33/2	-
*	**25.0**	**35.0**	**8.0**	**7.2**	**RU0700250**	-	**RS 25 35**	**EU 2535**
*	25.0	35.0	9.0	8.0	RU0300250	●	RS 25 35/2	-
*	25.0	35.0	11.0	10.0	RU0800250	-	RS 25 35/1	-
*	**25.0**	**38.0**	**10.0**	**9.0**	**RU0900250**	-	**RS 25 38/1**	**-**

● Available sizes - Not available RS/EU Production No. available sizes
Dimensions printed in **bold** type correspond to ISO/DIN 5597 and ISO 5597. * Split groove
The listed products are technically equivalent but availability and pricing may vary.

U-Cup RU0

Note	Rod Doiameter	Groove Diameter	Groove Width	Seal Width	Part No.	B+S Ref.	Sealing Parts Ref. No.	Polypac Ref. No.
						Material Code		
	d_N f8/h9	**D1** H10	**L** +0.2	**B**		WUAQ3	WU9L3	UAT60
*	25.0	40.0	11.0	10.0	RU0400250	•	RS 25 40	-
	28.0	36.0	6.3	5.7	RU0000280	-	RS 28 36	EU 2836
*	**28.0**	**38.0**	**8.0**	**7.2**	**RU0100280**	-	**RS 28 38**	**EU 2838**
*	28.0	38.0	9.0	8.0	RU0200280	-	RS 28 38/1	-
*	28.0	38.0	11.0	10.0	RU0300280	-	RS 28 38/2	-
*	28.0	40.0	9.5	8.5	RU0400280	-	RS 28 40	-
*	28.0	40.0	11.0	10.0	RU0500280	-	RS 28 40/1	-
*	**28.0**	**43.0**	**12.5**	**11.5**	**RU0600280**	-	**RS 28 43**	**-**
	29.0	35.0	6.3	5.6	RU0000290	-	RS 29 35	-
	30.0	**38.0**	**6.3**	**5.7**	**RU0100300**	•	**RS 30 38**	**EU 3038**
	30.0	38.0	9.0	8.0	RU0400300	-	RS 30 38/1	-
	30.0	40.0	6.3	5.7	RU0500300	-	RS 30 40/3	-
	30.0	40.0	8.0	7.2	RU0600300	-	RS 30 40	EU 3040
	30.0	40.0	10.5	9.5	RU0700300	-	RS 30 40/2	-
	30.0	40.0	11.0	10.0	RU0000300	•	RS 30 40/1	EU 3040/1
*	30.0	43.0	10.0	9.0	RU0200300	•	RS 30 43	-
*	30.0	45.0	9.0	8.0	RU0800300	-	RS 30 45/1	-
*	30.0	45.0	11.0	10.0	RU0900300	-	RS 30 45	-
	32.0	40.0	6.3	5.7	RU0200320	•	RS 32 40	-
	32.0	40.0	9.0	8.0	RU0300320	-	RS 32 40/1	EU 3240
	32.0	**42.0**	**8.0**	**7.2**	**RU0400320**	-	**RS 32 42**	**EU 3242**
	32.0	42.0	9.0	8.0	RU0000320	•	-	-
	32.0	42.0	11.0	10.0	RU0500320	-	RS 32 42/1	EU 3242/1
	32.0	42.5	9.0	8.0	RU0600320	-	RS 32 42.5/1	-
*	**32.0**	**45.0**	**10.5**	**9.5**	**RU0800320**	-	**RS 32 45/1**	**-**
*	**32.0**	**45.0**	**11.0**	**10.0**	**RU0100320**	•	**-**	**EU 3245**
*	32.0	47.0	11.0	10.0	RU0700320	-	RS 32 47/1	-
	33.0	43.0	11.0	10.0	RU0000330	-	RS 33 43/1	-
	35.0	43.0	6.3	5.7	RU0200350	-	RS 35 43	EU 3543
	35.0	45.0	8.0	7.2	RU0100350	•	RS 35 45	EU 3545
	35.0	45.0	9.0	8.0	RU0300350	-	RS 35 43/1	-
	35.0	45.0	11.0	10.0	RU0000350	•	RS 35 45/1	EU 3545/1
*	35.0	45.0	13.5	12.5	RU0400350	-	RS 35 45/2	-
*	35.0	46.0	9.0	8.0	RU0500350	-	RS 35 46	-
*	35.0	46.0	10.0	9.0	RU0600350	-	RS 35 46/1	-
*	35.0	47.0	9.0	8.0	RU0700350	-	-	EU 3547

• Available sizes - Not available RS/EU Production No. available sizes
Dimensions printed in **bold** type correspond to ISO/DIN 5597 and ISO 5597. * Split groove
The listed products are technically equivalent but availability and pricing may vary.

Note	Rod Diameter	Groove Diameter	Groove Width	Seal Width	Part No.	B+S Ref.	Sealing Parts Ref. No.	Polypac Ref. No.
						Material Code		
	d_N f8/h9	**D1** H10	**L** +0.2	**B**		WUAQ3	WU9L3	UAT60
*	35.0	50.0	11.0	10.0	RU0800350	-	RS 35 50	EU 3550
*	35.0	55.0	13.0	12.0	RU0900350	-	RS 35 55	-
	36.0	44.0	6.4	5.3	RU0000360	-	-	EU 3644
	36.0	44.0	9.0	8.0	RU0300360	●	-	-
	36.0	**46.0**	**8.0**	**7.0**	**RU0100360**	●	**RS 36 46**	**EU 3646**
	36.0	46.0	11.0	10.0	RU0200360	●	RS 36 46/1	-
*	36.0	48.0	8.0	7.0	RU0400360	-	RS 36 48/1	-
*	36.0	48.0	9.0	8.0	RU0500360	-	RS 36 48	-
*	36.0	51.0	11.0	10.0	RU0600360	-	RS 36 51	-
*	**36.0**	**51.0**	**12.5**	**11.5**	**RU0700360**	-	**RS 36 51/1**	**-**
	37.0	45.0	6.3	5.7	RU0000370	-	RS 37 45	-
	38.0	44.5	5.3	4.7	RU0100380	-	RS 38 44.5	-
	38.0	45.0	5.5	5.0	RU0200380	-	RS 38 45	-
	38.0	**45.0**	**7.0**	**6.2**	**RU0300380**	-	**RS 38 45/1**	**EU 3845**
	40.0	48.0	6.3	5.7	RU0200400	-	RS 40 48	-
	40.0	48.0	9.0	8.0	RU0300400	-	-	EU 4048
	40.0	49.5	10.5	9.5	RU0400400	-	RS 40 49.5/1	-
	40.0	**50.0**	**8.0**	**7.2**	**RU0500400**	-	**RS 40 50**	**EU 4050/2**
	40.0	50.0	10.0	9.0	RU0600400	-	-	EU 4050
	40.0	**50.0**	**11.0**	**10.0**	**RU0000400**	●	**RS 40 50/1**	**EU 4050/1**
	40.0	50.0	13.5	12.5	RU0700400	-	RS 40 50/2	-
	40.0	52.0	9.0	8.0	RU0800400	-	RS 40 52	EU 4052
*	40.0	55.0	11.0	10.0	RU0100400	●	RS 40 55	EU 4055
*	**40.0**	**55.0**	**12.5**	**11.5**	**RU0900400**	-	**RS 40 55/1**	**-**
*	40.0	60.0	13.0	12.0	RU0A00400	-	RS 40 60	-
*	42.0	62.0	11.0	10.0	RU0000420	-	RS 42 62/1	-
*	42.0	62.0	13.0	12.0	RU0100420	-	RS 42 62	-
	45.0	53.0	6.3	5.7	RU0100450	-	RS 45 53	EU 4553
	45.0	53.0	11.0	10.0	RU0200450	-	RS 45 53/2	-
	45.0	53.0	13.0	12.0	RU0300450	-	RS 45 53/1	-
	45.0	**55.0**	**8.0**	**7.2**	**RU0400450**	-	**RS 45 55**	**EU 4555/1**
	45.0	55.0	11.0	10.0	RU0500450	-	RS 45 55/1	EU 4555
	45.0	57.7	10.5	9.5	RU0600450	-	RS 45 57.7/1	-
	45.0	58.0	10.0	9.0	RU0700450	-	RS 45 58/1	-
*	**45.0**	**60.0**	**11.0**	**10.0**	**RU0800450**	-	**RS 45 60**	**EU 4560**
*	45.0	60.0	12.5	11.5	RU0900450	-	RS 45 60/1	-

● Available sizes - Not available RS/EU Production No. available sizes
Dimensions printed in **bold** type correspond to ISO/DIN 5597 and ISO 5597. * Split groove
The listed products are technically equivalent but availability and pricing may vary.

U-Cup RU0

Note	Rod Diameter	Groove Diameter	Groove Width	Seal Width	Part No.	B+S Ref.	Sealing Parts Ref. No.	Polypac Ref. No.
						Material Code		
	d_N f8/h9	**D1** H10	**L** +0.2	**B**		WUAQ3	WU9L3	UAT60
*	45.0	65.0	11.0	10.0	RU0A00450	-	RS 45 65/2	-
*	45.0	65.0	13.0	12.0	RU0B00450	-	RS 45 65	-
*	45.0	65.0	14.5	13.5	RU0C00450	-	RS 45 65/1	-
	46.0	56.0	8.0	7.2	RU0000460	-	RS 46 56	-
	50.0	**60.0**	**8.0**	**7.2**	**RU0000500**	●	**RS 50 60**	**EU 5060/1**
	50.0	60.0	11.0	10.0	RU0100500	-	RS 50 60/1	EU 5060
	50.0	60.0	13.0	12.0	RU0200500	-	RS 50 60/2	-
	50.0	62.0	9.0	8.0	RU0300500	-	RS 50 62	-
	50.0	62.0	10.0	9.0	RU0500500	-	-	EU 5062
	50.0	62.7	10.5	9.5	RU0600500	-	RS 50 62.7/1	-
	50.0	63.0	11.0	10.0	RU0700500	-	-	EU 5063
	50.0	65.0	11.0	10.0	RU0400500	-	RS 50 65	EU 5065/1
	50.0	**65.0**	**12.5**	**11.5**	**RU0800500**	-	**RS 50 65/1**	**EU 5065**
*	50.0	68.0	10.0	9.0	RU0900500	-	RS 50 68/1	-
*	50.0	70.0	11.0	10.0	RU0A00500	-	RS 50 70/1	-
*	50.0	70.0	13.0	12.0	RU0B00500	-	RS 50 70/1	-
*	50.0	70.0	14.5	13.5	RU0C00500	-	RS 50 70/2	-
	52.0	62.0	11.0	10.0	RU0000520	●	-	-
	52.0	62.0	13.0	12.0	RU0100520	●	-	-
	55.0	63.0	13.0	12.0	RU0100550	-	RS 55 63/1	-
	55.0	65.0	8.0	7.2	RU0200550	-	RS 55 65	EU 5565/1
	55.0	65.0	11.0	10.0	RU0300550	-	RS 55 65/1	-
	55.0	65.0	13.0	12.0	RU0000550	●	RS 55 65/2	-
	55.0	65.0	14.5	13.5	RU0400550	-	RS 55 65/3	-
	55.0	67.0	11.0	10.0	RU0500550	-	RS 55 67/1	-
	55.0	68.0	11.0	10.0	RU0600550	-	-	EU 5568
	55.0	70.0	11.0	10.0	RU0700550	-	RS 55 70	EU 5570
*	55.0	70.0	13.0	12.0	RU0800550	-	RS 55 70/1	-
*	55.0	75.0	13.0	12.0	RU0900550	-	RS 55 75	-
	55.0	75.0	14.5	13.5	RU0A00550	-	RS 55 75/1	-
	56.0	66.0	11.0	10.0	RU0000560	-	RS 56 66/1	EU 5666
	56.0	71.0	11.0	10.0	RU0100560	-	RS 56 71	EU 5671/1
	56.0	**71.0**	**12.5**	**11.5**	**RU0200560**	-	**RS 56 71/1**	**-**
	56.0	71.0	13.5	12.5	RU0600560	-	-	EU 5671
*	56.0	76.0	13.0	12.0	RU0300560	-	RS 56 76	-
*	56.0	76.0	14.5	13.5	RU0400560	-	RS 56 76/1	-

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U-Cup RU0

Note	Rod Diameter	Groove Diameter	Groove Width	Seal Width	Part No.	B+S Ref.	Sealing Parts Ref. No.	Polypac Ref. No.
						Material Code		
	d_N f8/h9	**D1** H10	**L** +0.2	**B**		WUAQ3	WU9L3	UAT60
	56.0	**76.0**	**16.0**	**15.0**	**RU0500560**	-	**RS 56 76/2**	**-**
	60.0	68.0	13.5	12.5	RU0000600	-	-	EU 6068
	60.0	70.0	8.0	7.2	RU0100600	●	RS 60 70	EU 6070/1
	60.0	70.0	11.0	10.0	RU0300600	-	RS 60 70/2	EU 6070
	60.0	70.0	13.0	12.0	RU0400600	-	RS 60 72	-
	60.0	72.0	9.0	8.0	RU0500600	-	RS 60 72/1	-
	60.0	72.0	10.0	9.0	RU0600600	-	RS 60 75	-
	60.0	73.0	11.0	10.0	RU0700600	-	-	EU 6073
	60.0	75.0	11.0	10.0	RU0200600	●	RS 60 75/1	EU 6075
	60.0	75.0	13.0	12.0	RU0800600	-	RS 60 77	-
	60.0	77.0	12.0	11.0	RU0900600	-	RS 60 80	-
*	60.0	80.0	13.0	12.0	RU0A00600	-	RS 60 80/1	-
*	60.0	80.0	14.5	13.5	RU0B00600	-	RS 60 80/1	-
	61.0	69.0	8.5	7.5	RU0000610	-	RS 61 69/1	-
	62.0	74.0	14.0	13.0	RU0000620	-	RS 62 74/1	-
	63.0	73.0	11.0	10.0	RU0100630	-	RS 63 73/1	-
	63.0	73.0	13.0	12.0	RU0200630	-	RS 63 73/2	EU 6373
	63.0	75.0	9.6	8.6	RU0300630	-	-	EU 6375
	63.0	75.0	13.0	12.0	RU0000630	●	-	-
	63.0	78.0	11.0	10.0	RU0400630	-	RS 63 78	EU 6378/1
	63.0	**78.0**	**12.5**	**11.5**	**RU0500630**	-	**RS 63 78/2**	**EU 6378**
	63.0	78.0	13.0	12.0	RU0600630	-	RS 63 78/1	-
*	63.0	83.0	13.0	12.0	RU0700630	-	RS 63 83	-
*	63.0	83.0	14.5	13.5	RU0800630	-	RS 63 83/1	-
*	**63.0**	**83.0**	**16.0**	**15.0**	**RU0900630**	-	**RS 63 83/2**	**-**
	65.0	73.0	10.0	9.0	RU0000650	●	-	-
	65.0	75.0	11.0	10.0	RU0100650	-	RS 65 75/3	-
	65.0	75.0	13.0	12.0	RU0200650	-	RS 65 75/1	-
	65.0	75.0	14.5	13.5	RU0300650	-	RS 65 75/2	-
	65.0	77.0	9.6	8.6	RU0400650	-	-	EU 6577
	65.0	77.0	10.0	9.0	RU0500650	-	RS 65 77/1	-
	65.0	80.0	11.0	10.0	RU0600650	-	RS 65 80	EU 6580
	65.0	80.0	13.0	12.0	RU0700650	-	RS 65 80/1	-
*	65.0	85.0	13.0	12.0	RU0800650	-	RS 65 85	-
*	65.0	85.0	14.5	13.5	RU0900650	-	RS 65 85/1	-
	70.0	80.0	6.5	6.0	RU0100700	-	RS 70 80/3	-

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U-Cup RU0

Note	Rod Diameter	Groove Diameter	Groove Width	Seal Width	Part No.	B+S Ref.	Sealing Parts Ref. No.	Polypac Ref. No.
						Material Code		
	d_N f8/h9	**D1** H10	**L** +0.2	**B**		WUAQ3	WU9L3	UAT60
	70.0	80.0	8.0	7.2	RU0200700	-	RS 70 80	-
	70.0	80.0	11.0	10.0	RU0300700	-	RS 70 80/2	-
	70.0	80.0	13.0	12.0	RU0000700	•	RS 70 80/1	EU 7080
	70.0	82.0	9.6	8.6	RU0400700	-	-	EU 7082
	70.0	85.0	11.0	10.0	RU0500700	-	RS 70 85	EU 7085/1
	70.0	**85.0**	**12.5**	**11.5**	**RU0600700**	-	**RS 70 85/2**	**EU 7085**
	70.0	85.0	13.0	12.0	RU0700700	-	RS 70 85/1	-
	70.0	90.0	13.0	12.0	RU0800700	-	RS 70 90	-
	70.0	90.0	14.5	13.5	RU0900700	-	RS 70 90/1	-
	70.0	**90.0**	**16.0**	**15.0**	**RU0A00700**	-	**RS 70 90/2**	**-**
	73.0	82.5	8.0	7.2	RU0000730	-	RS 73 82/5	-
	75.0	85.0	8.0	7.2	RU0000750	-	RS 75 85	-
	75.0	85.0	13.0	12.0	RU0100750	-	RS 75 85/1	-
	75.0	87.0	9.6	8.6	RU0200750	-	-	EU 7587
	75.0	90.0	11.0	10.0	RU0300750	-	RS 75 90	-
	75.0	90.0	13.0	12.0	RU0400750	-	RS 75 90/1	EU 7590
	75.0	95.0	13.0	12.0	RU0500750	-	RS 75 95	-
	75.0	95.0	14.5	13.5	RU0600750	-	RS 75 95/1	-
	76.0	84.0	8.5	7.5	RU0000760	-	RS 76 84/1	-
	80.0	90.0	8.0	7.2	RU0000800	-	RS 80 90	-
	80.0	90.0	11.0	10.0	RU0100800	-	-	EU 8090
	80.0	90.0	13.0	12.0	RU0200800	-	RS 80 90/2	-
	80.0	90.0	15.0	14.0	RU0300800	-	RS 80 90/1	-
	80.0	92.0	9.6	8.6	RU0400800	-	-	EU 8092
	80.0	95.0	11.0	10.0	RU0500800	-	RS 80 95	-
	80.0	95.0	12.5	11.5	RU0600800	-	RS 80 95/1	-
	80.0	**95.0**	**13.0**	**12.0**	**RU0700800**	-	**-**	**EU 8095**
	80.0	95.0	13.0	12.0	RU0800800	-	RS 80 95/2	-
	80.0	100.0	13.0	12.0	RU0900800	-	RS 80 100	EU 80100
	80.0	100.0	14.5	13.5	RU0A00800	-	RS 80 100/1	-
	80.0	**100.0**	**16.0**	**15.0**	**RU0B00800**	-	**RS 80 100/2**	**-**
	85.0	95.0	8.0	7.2	RU0000850	-	RS 85 95	-
	85.0	100.0	12.0	11.0	RU0100850	-	RS 85 100/1	-
	85.0	100.0	12.5	11.5	RU0200850	-	RS 85 100/3	-
	85.0	100.0	13.0	12.0	RU0300850	-	RS 85 100/2	EU 85100
	85.0	105.0	13.0	12.0	RU0400850	-	RS 85 105	-

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Note	Rod Diameter	Groove Diameter	Groove Width	Seal Width	Part No.	B+S Ref.	Sealing Parts Ref. No.	Polypac Ref. No.
						Material Code		
	d_N f8/h9	**D1** H10	**L** +0.2	**B**		WUAQ3	WU9L3	UAT60
	85.0	105.0	14.5	13.5	RU0500850	-	RS 85 105/1	-
	90.0	100.0	12.5	11.5	RU0000900	-	RS 90 100/1	-
	90.0	105.0	9.5	8.5	RU0200900	-	RS 90 105/2	-
	90.0	105.0	10.5	9.5	RU0300900	-	RS 90 105/4	-
	90.0	**105.0**	**12.5**	**11.5**	**RU0400900**	-	**RS 90 105/3**	**-**
	90.0	**105.0**	**13.0**	**12.0**	**RU0500900**	-	**RS 90 105/1**	**EU 90105**
	90.0	110.0	13.0	12.0	RU0100900	•	RS 90 110	-
	90.0	**110.0**	**16.0**	**15.0**	**RU0600900**	-	**RS 90 110/1**	**-**
	91.0	99.0	8.5	7.5	RU0000910	-	RS 91 99/1	-
	93.0	104.0	11.0	10.0	RU0000930	-	RS 93 104/1	-
	95.0	105.0	11.0	10.0	RU0000950	-	RS 95 105/1	-
	95.0	110.0	13.0	12.0	RU0100950	-	-	EU 95110
	95.0	115.0	13.0	12.0	RU0200950	-	RS 95 115	-
	98.0	118.0	11.0	10.0	RU0000980	-	-	EU 98118
	100.0	110.0	15.0	14.0	RU0001000	-	RS 100 110/1	-
	100.0	113.0	13.5	12.5	RU0101000	-	RS 100 113/1	-
	100.0	115.0	11.5	10.5	RU0201000	-	RS 100 115/2	-
	100.0	115.0	13.0	12.0	RU0301000	-	RS 100 115/1	EU 100115
	100.0	**120.0**	**13.0**	**12.0**	**RU0401000**	-	**RS 100 120**	**EU 100120**
	100.0	120.0	14.5	13.5	RU0501000	-	RS 100 120/1	-
	100.0	**120.0**	**16.0**	**15.0**	**RU0601000**	-	**RS 100 120/2**	**EU 100120/1**
	100.0	**125.0**	**20.0**	**19.0**	**RU0701000**	-	**RS 100 125**	**-**
	105.0	115.0	11.0	10.0	RU0101050	-	RS 105 115/1	-
	105.0	115.0	12.5	11.5	RU0201050	-	RS 105 115/2	-
	105.0	115.0	13.0	12.0	RU0301050	-	-	EU 105115
	105.0	115.0	14.5	13.5	RU0401050	-	RS 105 115/3	-
	105.0	125.0	13.0	12.0	RU0001050	•	RS 105 125	-
	105.0	125.0	16.0	15.0	RU0501050	-	-	EU 105125
	110.0	125.0	12.0	11.0	RU0101100	-	RS 110 125/1	EU 110125/1
	110.0	125.0	16.0	15.0	RU0001100	•	RS 110 125/2	EU 110125
	110.0	130.0	13.0	12.0	RU0201100	-	RS 110 130	-
	110.0	**130.0**	**16.0**	**15.0**	**RU0301100**	-	**RS 110 130/1**	**EU 110130**
	110.0	**135.0**	**20.0**	**19.0**	**RU0401100**	-	**RS 110 135**	**-**
	115.0	130.0	12.0	11.0	RU0001150	-	-	EU 115130
	115.0	135.0	13.0	12.0	RU0101150	-	RS 115 135	-
	120.0	130.0	8.0	7.2	RU0001200	-	RS 120130/1	-

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Note	Rod Diameter	Groove Diameter	Groove Width	Seal Width	Part No.	B+S Ref.	Sealing Parts Ref. No.	Polypac Ref. No.
						Material Code		
	d_N f8/h9	**D1** H10	**L** +0.2	**B**		WUAQ3	WU9L3	UAT60
	120.0	130.0	12.5	11.5	RU0201200	-	RS 120 130/2	-
	120.0	132.0	11.0	10.0	RU0301200	-	RS 120 132/1	-
	120.0	135.0	12.5	11.5	RU0401200	-	RS 120 135/1	EU 120135/1
	120.0	135.0	16.0	15.0	RU0001200	●	-	-
	120.0	135.0	16.0	15.0	RU0501200	-	RS 120135/2	EU 120135
	120.0	140.0	13.0	12.0	RU0601200	-	RS 120 140	-
	120.0	140.0	16.0	15.0	RU0701200	-	RS 120 140/1	EU 120140
	125.0	145.0	13.0	12.0	RU0001250	-	RS 125 145	-
	125.0	**145.0**	**16.0**	**15.0**	**RU0101250**	-	**RS 125 145/1**	**EU 125145**
	125.0	150.0	15.0	14.0	RU0201250	-	RS 125 150	-
	125.0	**150.0**	**20.0**	**19.0**	**RU0301250**	-	**RS 125 150/1**	**-**
	125.0	155.0	19.0	18.0	RU0401250	-	RS 125 155	-
	127.0	139.7	10.0	9.2	RU0001270	-	RS 127 139.7/1	-
	130.0	140.0	8.0	7.2	RU0001300	-	RS 130 140	-
	130.0	145.0	13.0	12.0	RU0101300	-	RS 130 145	-
	130.0	145.0	15.0	14.0	RU0201300	-	RS 130 145/2	-
	130.0	145.0	16.0	15.0	RU0301300	-	RS 130 145/1	-
	130.0	150.0	13.0	12.0	RU0401300	-	RS 130 150	-
	130.0	150.0	16.0	15.0	RU0501300	-	RS 130 150/1	-
	132.0	142.0	7.0	6.0	RU0001320	●	-	-
	136.0	146.0	7.0	6.0	RU0001360	●	-	-
	140.0	150.0	12.5	11.5	RU0101400	-	RS 140 150/1	-
	140.0	155.0	13.0	12.0	RU0201400	-	RS 140 155/1	-
	140.0	160.0	13.0	12.0	RU0301400	-	RS 140 160	-
	140.0	**160.0**	**16.0**	**15.0**	**RU0001400**	●	**RS 140 160/2**	**EU 140160**
	140.0	**165.0**	**20.0**	**19.0**	**RU0401400**	-	**RS 140 165**	**-**
	145.0	157.7	10.0	9.0	RU0001450	-	RS 145 157.7/1	-
	147.0	160.0	13.0	12.0	RU0001470	-	RS 147 160/1	-
	150.0	170.0	13.0	12.0	RU0001500	-	RS 150 170	-
	150.0	170.0	14.5	13.5	RU0101500	-	RS 150 170/1	-
	150.0	170.0	16.0	15.0	RU0201500	-	RS 150 170/2	-
	160.0	180.0	13.0	12.0	RU0001600	-	RS 160 180	-
	160.0	180.0	16.0	15.0	RU0101600	-	RS 160 180/1	-
	160.0	185.0	20.0	19.0	RU0201600	-	RS 160 185	-
	165.0	195.0	21.0	20.0	RU0001650	-	RS 165 195	-
	170.0	190.0	13.0	12.0	RU0001700	-	RS 170 190/1	-

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U-Cup RU0

Note	Rod Diameter	Groove Diameter	Groove Width	Seal Width	Part No.	B+S Ref.	Sealing Parts Ref. No.	Polypac Ref. No.
						Material Code		
	d_N f8/h9	**D1** H10	**L** +0.2	**B**		WUAQ3	WU9L3	UAT60
	170.0	190.0	16.0	15.0	RU0101700	-	RS 170 190/1	-
	180.0	200.0	13.0	12.0	RU0001800	-	RS 180 200	-
	180.0	200.0	16.0	15.0	RU0101800	-	RS 180 200/1	-
	180.0	200.0	20.0	19.0	RU0201800	-	RS 180 200/2	-
	190.0	210.0	13.0	12.0	RU0101900	-	RS 190 210	-
	190.0	210.0	16.0	15.0	RU0001900	●	RS 190 210/1	-
	198.0	207.6	7.5	7.3	RU0001980	-	RS 198 207.6	-
	200.0	212.0	16.0	15.0	RU0102000	-	RS 200 212/1	-
	200.0	220.0	13.0	12.0	RU0202000	-	RS 200 220	-
	200.0	220.0	16.0	15.0	RU0002000	●	RS 200 220/1	-
	200.0	**225.0**	**20.0**	**19.0**	**RU0302000**	-	**RS 200 225**	**-**
	210.0	230.0	13.0	12.0	RU0002100	-	RS 210 230	-
	210.0	230.0	16.0	15.0	RU0102100	-	RS 210 230/2	-
	210.0	235.0	26.0	24.5	RU0202100	-	RS 210 235/1	-
	220.0	240.0	13.0	12.0	RU0002200	-	RS 220 240	-
	220.0	240.0	16.0	15.0	RU0102200	-	RS 220 240/1	-
	220.0	250.0	19.0	18.0	RU0202200	-	RS 220 250	-
	230.0	250.0	13.0	12.0	RU0002300	-	RS 230 250	-
	230.0	260.0	25.0	23.7	RU0102300	-	RS 230 260	-
	240.0	260.0	13.0	12.0	RU0002400	-	RS 240 260	-
	240.0	260.0	16.0	15.0	RU0102400	-	RS 240 260/1	-
	240.0	270.0	19.0	18.0	RU0202400	-	RS 240 2702	-
	250.0	270.0	13.0	12.0	RU0002500	-	RS 250 270	-
	250.0	270.0	16.0	15.0	RU0102500	-	RS 250 270/1	-
	250.0	280.0	23.0	22.0	RU0202500	-	RS 250 280	-
	270.0	300.0	19.0	18.0	RU0002700	-	RS 270 300	-
	280.0	305.0	16.0	15.0	RU0002800	-	RS 280 305/1	-
	280.0	**310.0**	**25.0**	**24.0**	**RU0102800**	-	**RS 280 310**	**-**

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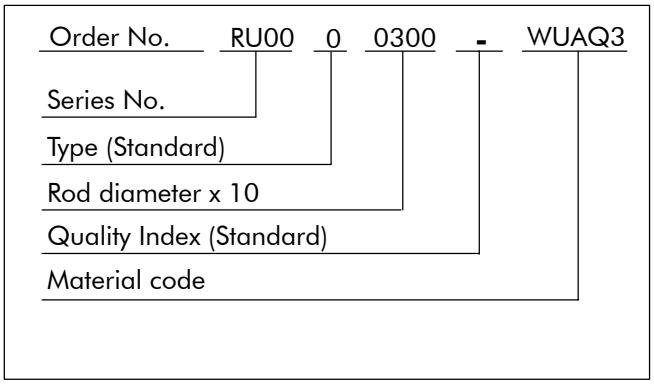
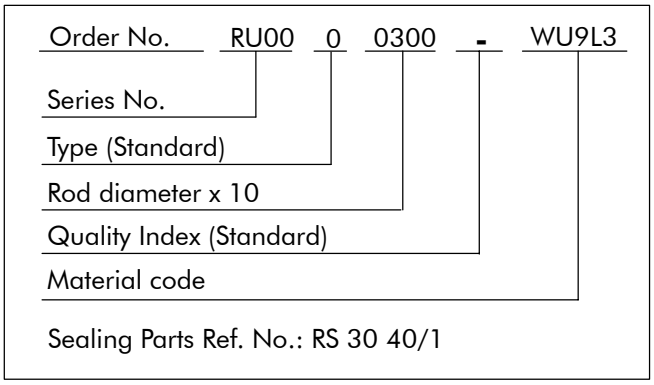
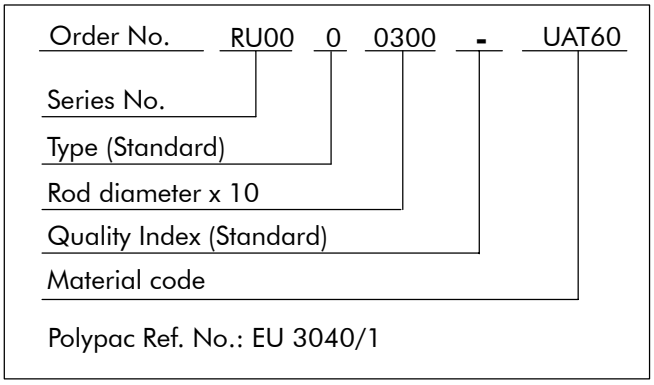
Ordering Example

U-Cup Type RU0
Rod diameter: d_N = 30.0 mm
Groove diameter: d1 = 40.0 mm
Groove width L = 11 mm
Part No.: RU0000300 -

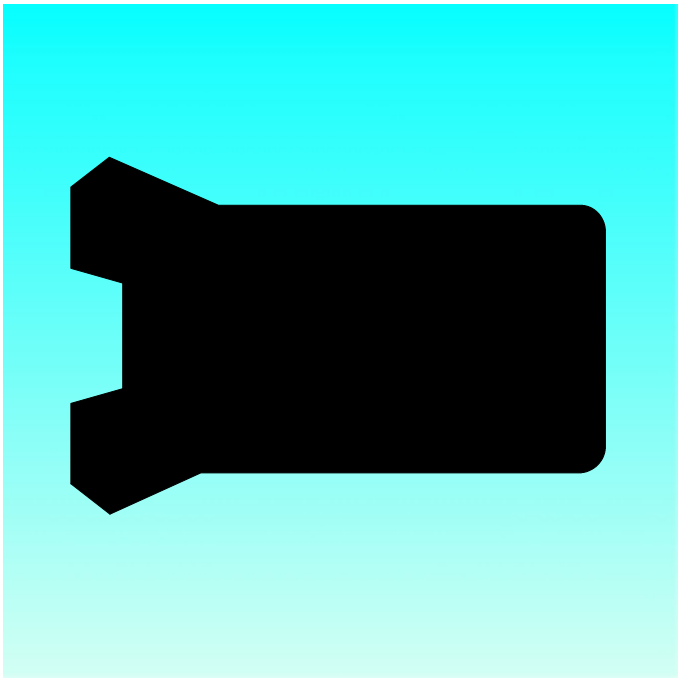
Compound
B+S: WUAQ3
Sealing Parts: WU9L3
Polypac: UAT60







B+S RU1
SEALING PARTS TS
POLYPAC® EUK



- Single Acting U-Cup -

- Asymmetric, Single Lip, Compact -

- Material -

- Polyurethane -

U-Cup RU1

Description

Today U-Cups are used primarily as seals for piston rods in hydraulic cylinders. U-Cups in polyurethane are proven elements, due to their good mechanical properties, for standard cylinder construction, particularly for mobile hydraulics under rough operating conditions.

The U-Cup RU1 is a single lip seal in a compact design.

Type RU1

The compact U-Cup type RU1 is designed for small grooves. It is thus particularly suitable for use in space-saving designs. The compact form provides a high sealing effect even with low system pressures.

The U-Cup has one sealing lip in the dynamic sealing zone. The compact form provides an improvement in the leakage behaviour at low system pressures.

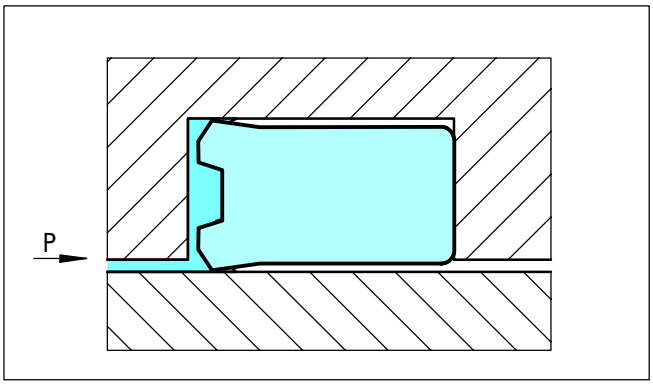


Figure 37 U-Cup, type RU1

Method of Operation

The sealing effect of the U-Cup comes from the intrinsic preload of the seal body and from the compression of the seal lips during installation. In operating condition, the radial mechanical contact forces are superimposed by the system pressure.

At low stroke speeds, U-Cups can tend to have a stick-slip effect due to an inadequate lubrication film formation in the seal clearance and to their material properties. This behaviour corresponds to the Stribeck curve described in the relevant literature.

Advantages

- Good sealing effect at high and low pressures
- Good abrasion resistance, wear-resistant
- Unaffected by sudden loads
- Suitable for small grooves
- Simple installation.

Technical Data

Operating pressure:	Max. 40 MPa
Speed:	Up to 0.5 m/s
Temperature:	Use in mineral oils: -30°C to + 80°C
Media:	Mineral oil-based hydraulic fluids.

Important Note:
The above data are maximum values and cannot be used at the same time. e.g. the maximum operating speed depends on material type, pressure, temperature and gap value.

Material

The thermoplastic polyurethane material used for U-Cups has a high abrasion resistance, a low compression set and exhibits a high resistance to clearance extrusion.

WUAQ3	turquoise color
WU9L3	blue color
UAT60	red color

Seal clearance

Guide values for the radial clearance between rod and gland in relation to the operating pressure and rod diameter can be found in Table XX page 77.

Design and Installation Instructions

The different forms have different grooves, see Table XXII. U-Cups are used together with single-acting scrapers.

Installation Recommendation

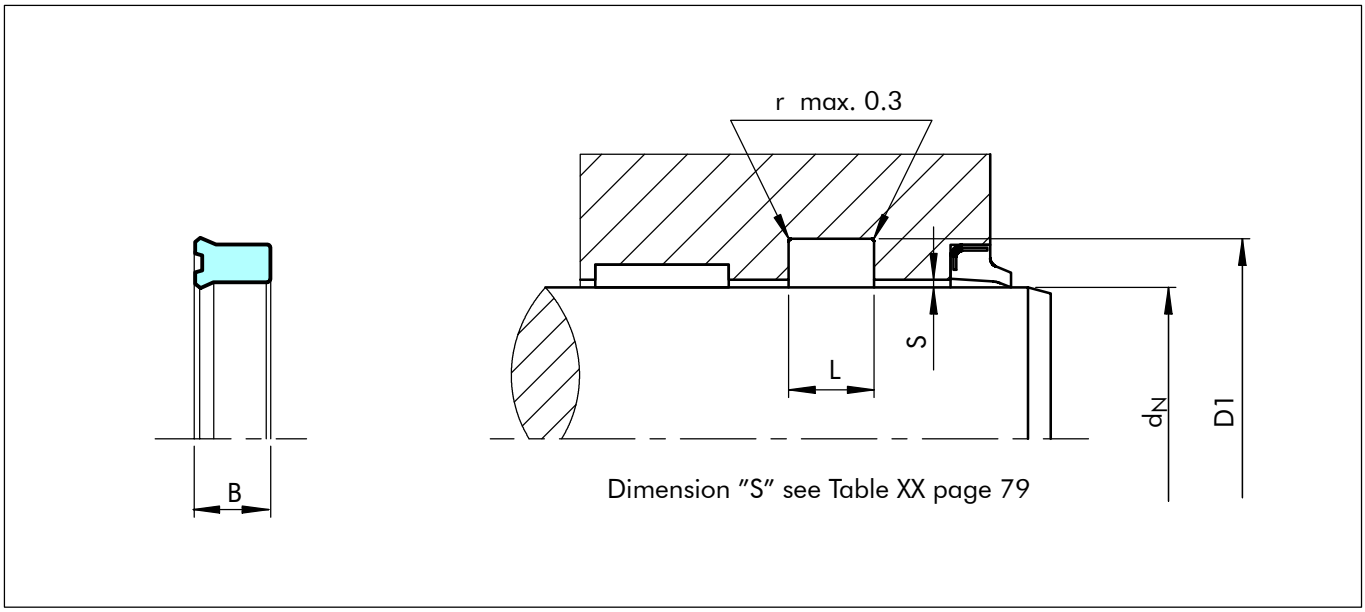


Figure 38 Installation drawing

Table XXII Preferred Series / Part No.

Note	Rod Diameter	Groove Diameter	Groove Width	Seal Width	Part No.	B+S Ref.	Sealing Parts Ref. No.	Polypac Ref. No.
						Material Code		
	d_N f8/h9	**D1** H10	**L** +0.2	**B**		WUAQ3	WU9L3	UAT60
*	**10.0**	**18.0**	**6.3**	**5.5**	**RU1000100**	●	**-**	**-**
	12.0	18.0	5.0	4.5	RU1000120	●	TS 12 18 4.5	-
*	**12.0**	**20.0**	**6.3**	**5.8**	**RU1100120**	●	**TS 12 20 5.8**	**-**
	14.0	**22.0**	**6.3**	**5.5**	**RU1000140**	●	**-**	**-**
	16.0	22.0	4.5	4.0	RU1000160	-	TS 16 22 4	-
*	16.0	24.0	7.0	6.0	RU1100160	●	TS 16 24 6	-
	18.0	25.0	5.7	5.0	RU1000180	-	TS 18 25 5	-
	18.0	26.0	7.0	6.0	RU1100180	●	TS 18 26 6	-
*	18.0	28.0	6.3	5.8	RU1200180	-	TS 18 28 5.8	-
*	**18.0**	**28.0**	**8.0**	**7.0**	**RU1300180**	-	**TS 18 28 7**	**-**
	20.0	25.0	3.5	3.0	RU1300200	-	TS 20 25 3	-
	20.0	25.0	4.5	3.7	RU1400200	-	TS 20 25 3.7	-
	20.0	26.0	6.0	5.2	RU1200200	●	TS 20 26 5.2	-
	20.0	27.0	6.5	5.7	RU1100200	●	TS 20 27 5.7	-
*	**20.0**	**28.0**	**6.3**	**5.8**	**RU1500200**	-	**TS 20 28 5.8**	**EU 2028/K**
*	20.0	28.0	7.0	6.0	RU1600200	●	-	-
*	20.0	28.0	8.0	7.0	RU1700200	-	TS 20 28 7	-
	20.0	**30.0**	**8.0**	**7.2**	**RU1800200**	-	**TS 20 30 7.2**	**-**
	20.0	30.0	9.0	8.0	RU1900200	-	TS 20 30 8	-
	20.0	30.0	11.0	10.0	RU1A00200	-	TS 20 30 10	-
	21.0	27.0	5.0	4.5	RU1000210	-	TS 21 27 4.5	-

● Available sizes - Not available RS/EU Production No. available sizes
Dimensions printed in **bold** type correspond to ISO/DIN 5597 and ISO 5597. * Split groove
The listed products are technically equivalent but availability and pricing may vary.

U-Cup RU1

Note	Rod Diameter	Groove Diameter	Groove Width	Seal Width	Part No.	B+S Ref.	Sealing Parts Ref. No.	Polypac Ref. No.
						Material Code		
	d_N f8/h9	**D1** H10	**L** +0.2	**B**		WUAQ3	WU9L3	UAT60
	22.0	28.0	5.5	4.5	RU1100220	●	TS 22 28 4.5	-
	22.0	29.0	5.6	5.0	RU1200220	-	TS 22 29 5	-
	22.0	30.0	7.0	6.7	RU1300220	●	TS 22 30 6	EU 2230/K
	22.0	30.0	8.0	7.0	RU1400220	●	TS 22 30 7	-
*	**22.0**	**32.0**	**8.0**	**7.0**	**RU1500220**	-	**TS 22 32 7**	-
*	22.0	32.0	9.0	8.0	RU1000220	●	TS 22 32 8	-
	24.0	30.0	5.0	4.5	RU1000240	-	TS 24 30 4.5	-
*	24.0	34.0	6.5	5.7	RU1100240	-	TS 24 34 5.7	-
	25.0	32.0	5.0	4.0	RU1400250	●	TS 25 32 4	-
	25.0	32.0	6.3	5.7	RU1300250	●	-	-
	25.0	**33.0**	**6.3**	**5.8**	**RU1500250**	-	**TS 25 33 5.8**	-
	25.0	33.0	7.0	6.0	RU1200250	●	-	-
*	25.0	33.0	9.0	8.0	RU1000250	●	TS 25 33 8	-
*	25.0	35.0	6.0	5.0	RU1100250	●	TS 25 35 5	-
*	**25.0**	**35.0**	**8.0**	**7.0**	**RU1600250**	-	**TS 25 35 7**	-
*	25.0	35.0	9.0	8.0	RU1700250	-	TS 25 35 8	-
*	25.0	35.0	10.0	9.0	RU1800250	-	TS 25 35 9	-
*	25.0	35.0	11.0	10.0	RU1900250	-	TS 25 35 10	-
*	25.0	36.0	6.0	5.0	RU1A00250	-	TS 25 36 5	-
*	25.0	38.0	11.0	10.0	RU1B00250	-	TS 25 38 10	-
	28.0	36.0	6.3	5.8	RU1000280	-	TS 28 36 5.8	-
	28.0	36.0	7.0	6.0	RU1100280	●	-	-
	28.0	36.0	9.0	8.0	RU1200280	-	TS 28 36 8	-
*	**28.0**	**38.0**	**8.0**	**7.0**	**RU1300280**	-	**TS 28 38 7**	-
	30.0	38.0	6.3	5.8	RU1100300	-	TS 30 38 5.8	-
	30.0	38.0	7.0	6.0	RU1000300	●	-	-
	30.0	38.0	9.0	8.0	RU1200300	●	TS 30 38 8	-
	30.0	40.0	8.0	7.0	RU1300300	-	TS 30 40 7	-
*	30.0	40.0	11.0	10.0	RU1400300	-	TS 30 40 10	-
	32.0	40.0	6.3	5.8	RU1100320	●	TS 32 40 5.8	-
	32.0	40.0	7.0	6.0	RU1300320	●		-
	32.0	40.0	9.0	8.0	RU1000320	●	TS 32 40 8	-
	32.0	**42.0**	**8.0**	**7.0**	**RU1400320**	-	**TS 32 42 7**	-
	32.0	42.0	9.0	8.0	RU1200320	●	TS 32 42 8	-
	32.0	42.0	11.0	10.0	RU1500320	-	TS 32 42 10	-
	35.0	43.0	7.0	6.0	RU1000350	●	TS 35 43 6	-
	35.0	43.0	9.0	8.0	RU1200350	-	TS 35 43 8	-
	35.0	45.0	8.0	7.0	RU1100350	●	TS 35 45 7	-
*	35.0	45.0	11.0	10.0	RU1300350	-	TS 35 45 10	-
	36.0	44.0	6.4	5.8	RU1000360	-	TS 36 44 5.8	EU 3644/1/K
*	36.0	44.0	7.0	6.0	RU1100360	●	TS 36 44 6	-
	36.0	44.0	9.0	8.0	RU1200360	●	TS 36 44 8	EU 3644/K
	36.0	**46.0**	**8.0**	**7.0**	**RU1300360**	-	**TS 36 46 7**	-
	36.0	46.0	11.0	10.0	RU1400360	-	TS 36 46 10	-
	38.0	45.0	7.0	6.0	RU1000380	-	TS 38 45 6	-

● Available sizes - Not available RS/EU Production No. available sizes
Dimensions printed in **bold** type correspond to ISO/DIN 5597 and ISO 5597. * Split groove
The listed products are technically equivalent but availability and pricing may vary.

U-Cup RU1

Note	Rod Diameter	Groove Diameter	Groove Width	Seal Width	Part No.	B+S Ref.	Sealing Parts Ref. No.	Polypac Ref. No.
						Material Code		
	d_N f8/h9	**D1** H10	**L** +0.2	**B**		WUAQ3	WU9L3	UAT60
	40.0	48.0	6.3	5.8	RU1100400	-	TS 40 48 5.8	-
	40.0	48.0	7.0	6.0	RU1200400	●	-	-
	40.0	48.0	9.0	8.0	RU1000400	●	TS 40 48 8	EU 4048/K
	40.0	50.0	7.0	6.0	RU1300400	-	TS 40 50 6	-
	40.0	**50.0**	**8.0**	**7.0**	**RU1400400**	-	**TS 40 50 7**	-
	40.0	50.0	11.0	10.0	RU1500400	-	TS 40 50 10	-
*	40.0	55.0	11.0	10.0	RU1600400	-	-	EU 4055/K
	42.0	50.0	7.0	6.0	RU1100420	●	-	-
	42.0	50.0	7.0	6.0	RU1200420	●	-	-
	42.0	50.0	9.0	8.0	RU1000420	●	-	-
	42.0	53.0	10.0	9.0	RU1300420	-	TS 42 53 9	-
	45.0	53.0	6.4	5.8	RU1000450	-	TS 45 53 5.8	EU 4553/K
	45.0	53.0	7.0	6.0	RU1100450	-	TS 45 53 6	-
	45.0	53.0	9.0	8.0	RU1200450	●	TS 45 53 8	-
	45.0	53.0	11.0	10.0	RU1300450	-	TS 45 53 10	-
	45.0	**55.0**	**8.0**	**7.0**	**RU1400450**	-	**TS 45 55 7**	-
	46.0	54.0	9.0	8.0	RU1200460	-	TS 46 54 8	-
	46.0	56.0	11.0	10.0	RU1100460	●	-	-
*	46.0	58.0	13.0	12.0	RU1000460	●	-	-
	50.0	58.0	9.0	8.0	RU1100500	●	TS 50 58 8	EU 5058/K
	50.0	58.0	13.0	12.0	RU1000500	●	-	-
	50.0	58.0	13.0	12.0	RU1200500	●	-	-
	50.0	**60.0**	**8.0**	**7.0**	**RU1300500**	●	**TS 50 60 7**	-
	50.0	60.0	11.0	10.0	RU1400500	-	TS 50 60 10	-
	50.0	62.0	9.0	8.0	RU1500500	-	TS 50 62 8	-
	50.0	62.0	11.0	10.0	RU1600500	-	TS 50 62 10	-
*	50.0	65.0	11.0	10.0	RU1700500	-	TS 50 65 10	-
	55.0	63.0	9.0	8.0	RU1000550	●	TS 55 63 8	-
	55.0	65.0	8.0	7.2	RU1100550	-	TS 55 65 7.2	-
	55.0	65.0	11.0	10.0	RU1200550	●	TS 55 65 10	EU 5565/K
	55.0	65.0	13.0	12.0	RU1300550	-	TS 55 65 12	-
	56.0	66.0	7.5	6.5	RU1000560	-	TS 56 66 6.5	-
	56.0	66.0	11.0	10.0	RU1100560	-	TS 56 66 10	-
	60.0	68.0	9.0	8.0	RU1000600	●	TS 60 68 8	EU 6068/1/K
	60.0	68.0	14.0	13.0	RU1100600	-	TS 60 68 13	-
	60.0	70.0	8.0	7.2	RU1200600	-	TS 60 70 7.2	-
	60.0	70.0	8.5	7.5	RU1300600	●		-
	60.0	70.0	11.0	10.0	RU1400600	-	TS 60 70 10	-
	60.0	70.0	13.0	12.0	RU1500600	-	TS 60 70 12	-
	60.0	72.0	10.0	9.0	RU1600600	-	TS 60 72 9	-
	61.0	69.0	9.0	8.0	RU1000610	-	TS 61 69 8	-
	63.0	71.0	9.0	8.0	RU1000630	●	TS 63 71 8	-
	63.0	75.0	11.0	10.0	RU1100630	-	TS 63 75 10	-
	65.0	73.0	9.0	8.0	RU1000650	●		-
	65.0	75.0	13.0	12.0	RU1100650	●	TS 65 75 12	-

● Available sizes - Not available RS/EU Production No. available sizes
Dimensions printed in **bold** type correspond to ISO/DIN 5597 and ISO 5597. * Split groove
The listed products are technically equivalent but availability and pricing may vary.

U-Cup RU1

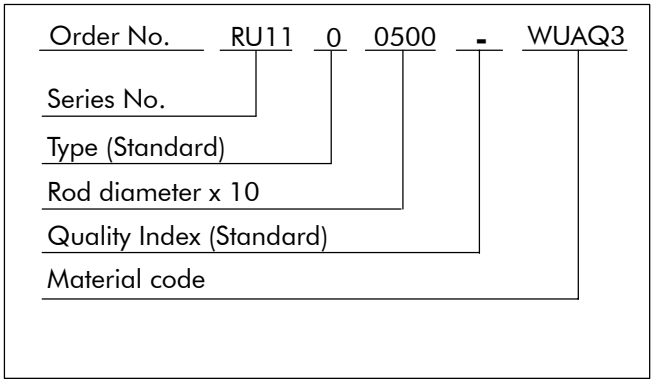
Note	Rod Diameter	Groove Diameter	Groove Width	Seal Width	Part No.	B+S Ref.	Sealing Parts Ref. No.	Polypac Ref. No.
						Material Code		
	d_N f8/h9	**D1** H10	**L** +0.2	**B**		WUAQ3	WU9L3	UAT60
*	66.0	80.0	11.0	10.0	RU1000660	-	TS 66 80 10	-
	68.0	76.0	9.0	8.0	RU1000680	-	TS 68 76 8	-
	70.0	78.0	9.0	8.0	RU1100700	●	-	-
	70.0	80.0	7.5	6.5	RU1200700	-	TS 70 80 6.5	-
	70.0	80.0	8.0	7.0	RU1300700	-	TS 70 80 7	-
	70.0	80.0	11.0	10.0	RU1400700	-	TS 70 80 10	-
	70.0	80.0	13.0	12.0	RU1500700	-	TS 70 80 12	EU 7080/K
	70.0	82.0	10.0	9.0	RU1600700	-	TS 70 82 9	-
	70.0	82.0	11.0	10.0	RU1000700	●	-	-
	70.0	85.0	11.0	10.0	RU1700700	●	-	-
	72.0	78.0	7.0	6.0	RU1000720	-	TS 72 78 6	-
	75.0	83.0	9.0	8.0	RU1000750	●	-	-
	75.0	85.0	8.0	7.2	RU1100750	-	TS 75 85 7.2	-
	75.0	85.0	10.0	9.0	RU1200750	-	-	EU 7585/K
	75.0	85.0	13.0	12.0	RU1300750	-	TS 75 85 12	-
	76.0	84.0	9.0	8.0	RU1000760	-	TS 76 84 8	-
	78.0	86.0	14.0	13.0	RU1000780	-	TS 78 86 13	-
	78.0	93.0	11.5	10.5	RU1100780	-	TS 78 93 10.5	-
	80.0	88.0	9.0	8.0	RU1000800	●	-	-
	80.0	90.0	8.0	7.2	RU1100800	-	TS 80 90 7.2	-
	80.0	90.0	11.0	10.0	RU1200800	●	-	-
	80.0	90.0	13.0	12.0	RU1300800	-	TS 80 90 12	EU 8090/K
	80.0	90.0	15.0	14.0	RU1400800	-	TS 80 90 14	-
	85.0	95.0	8.0	7.0	RU1000850	-	TS 85 95 7	-
	85.0	97.0	9.5	8.5	RU1100850	-	TS 85 97 8.5	-
	86.0	92.0	7.0	6.0	RU1000860	-	TS 86 92 6	-
	88.0	96.0	9.0	8.0	RU1000880	-	TS 88 96 8	-
	90.0	96.0	5.5	4.8	RU1100900	-	TS 90 96 4.8	-
	90.0	98.0	9.0	8.0	RU1200900	●	-	-
	90.0	100.0	7.5	6.5	RU1300900	-	TS 90 100 6.5	-
	90.0	100.0	13.0	12.0	RU1400900	-	-	EU 90100/K
	90.0	100.0	13.0	12.0	RU1000900	●	-	-
	91.0	99.0	9.0	8.0	RU1000910	-	TS 91 99 8	-
	95.0	105.0	13.0	12.0	RU1000950	●	-	-
	95.0	112.0	12.5	11.5	RU1100950	-	TS 95 112 11.5	-
	97.0	105.0	14.0	13.0	RU1000970	-	TS 97 105 13	-
	107.0	115.0	9.0	8.0	RU1001070	-	TS 107 115 8	-
	115.0	125.0	13.0	12.0	RU1001150	●	-	-
	118.0	126.0	14.0	13.0	RU1001180	-	TS 118 126 13	-
	120.0	135.0	16.0	15.0	RU1001200	-	TS 120 135 15	-
	126.0	134.0	9.0	8.0	RU1001260	-	TS 126 134 8	-
	140.0	150.0	13.0	12.0	RU1001400	●	-	-
	143.0	151.0	14.0	13.0	RU1001430	-	TS 143 151 13	-
	143.0	153.0	9.0	8.0	RU1101430	-	TS 145 153 8	-
	147.0	155.0	11.0	10.0	RU1001470	-	TS 147 155 10	-
	170.0	180.0	11.0	10.0	RU1101700	-	TS 170 180 10	-
	170.0	180.0	13.0	12.0	RU1001700	●	-	-

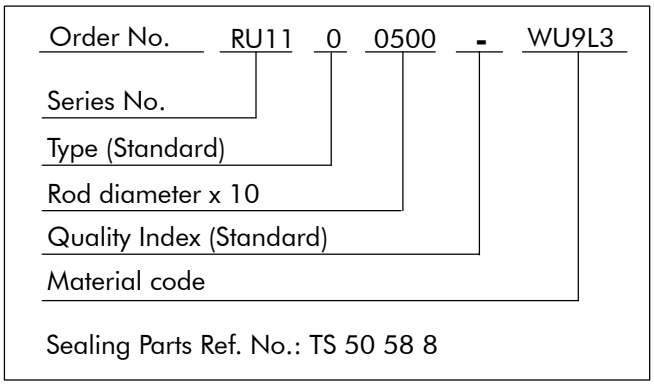
● Available sizes - Not available RS/EU Production No. available sizes
Dimensions printed in **bold** type correspond to ISO/DIN 5597 and ISO 5597. * Split groove
The listed products are technically equivalent but availability and pricing may vary.

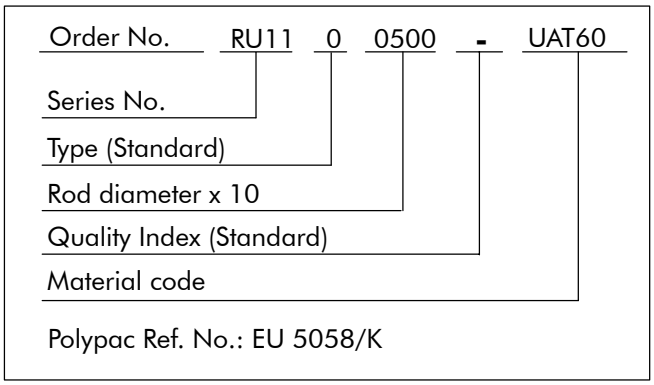
Ordering example

U-Cup Type RU1
Rod diameter: d_N = 50.0 mm
Groove diameter: D1 = 58.0 mm
Groove width L = 9 mm
Part No.: RU1100500 -

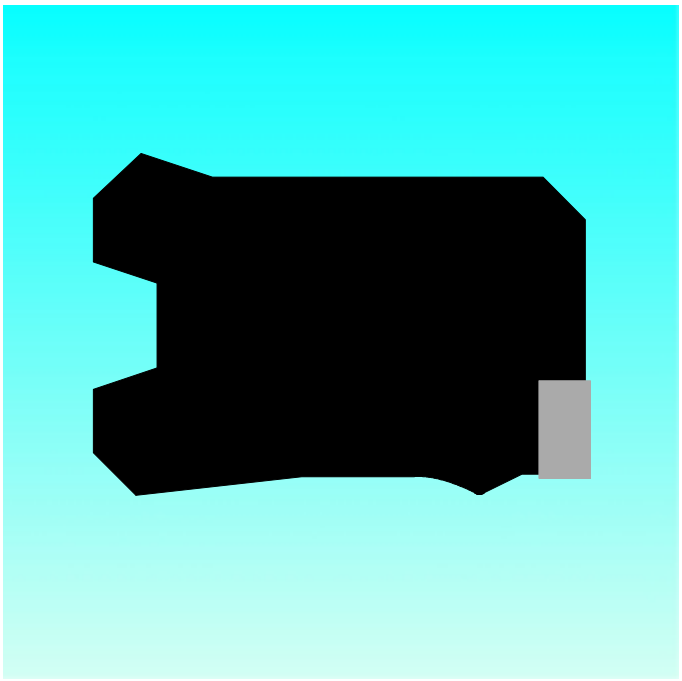
Compound
B+S: WUAQ3
Sealing Parts: WU9L3
Polypac: UAT60







B+S RU2/RU2B
SEALING PARTS TS/L AND TS/LA



- Single Acting U-Cup -

- Asymmetric, Double Lip, Compact -

- Without and with Back-up Ring

- Material -

- Polyurethane -

U-Cup RU2

Description

Today U-Cups are used primarily as seals for piston rods in hydraulic cylinders. U-Cups in polyurethane are proven elements, due to their good mechanical properties, for standard cylinder construction, particularly for mobile hydraulics under rough operating conditions.

The U-Cup RU2 is a double lip seal in a compact design.

Type RU2

The compact U-Cup type RU2 is designed for small grooves. It is thus particularly suitable for use in space-saving designs. The compact form provides a high sealing effect even with low system pressures.

The U-Cup has two sealing lips in the dynamic sealing zone. The compact form with two sealing lips provides an improvement in the leakage behaviour at low system pressures. Due to the incorporation of an oil trap between the two sealing lips, friction at pressures above approx. 10 MPa is reduced. Furthermore, the second sealing lip prevents the entry of dirt from the atmosphere side.

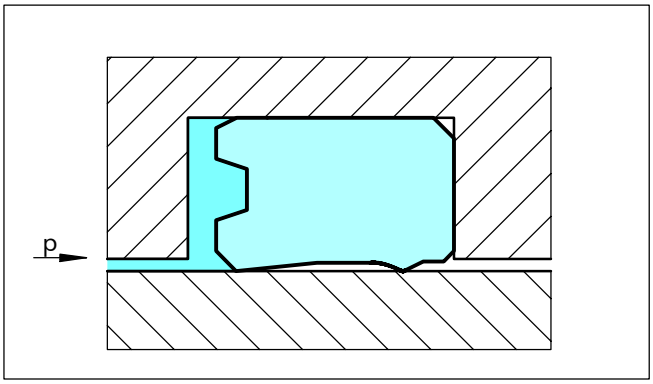


Figure 39 U-Cup, type RU2

Method of Operation

The sealing effect of the U-Cup comes from the intrinsic preload of the seal body and from the compression of the seal lips during installation. In operating condition, the radial mechanical contact forces are superimposed by the system pressure.

At low stroke speeds, U-Cups can tend to have a stick-slip effect due to an inadequate lubrication film formation in the seal clearance and to their material properties. This behaviour corresponds to the Stribeck curve described in the relevant literature.

Advantages

- Good sealing effect at high and low pressures
- Good abrasion resistance, wear-resistant
- Good lubricant film formation
- Unaffected by sudden loads
- Suitable for small grooves
- Simple installation.

Technical Data

Operating pressure:	Max. 40 MPa
Speed:	Up to 0.5 m/s
Temperature:	Use in mineral oils: -30°C to + 80°C
Media:	Mineral oil-based hydraulic fluids.

Important Note:
The above data are maximum values and cannot be used at the same time. e.g. the maximum operating speed depends on material type, pressure, temperature and gap value.

Material

The thermoplastic polyurethane material used for U-Cups has a high abrasion resistance, a low compression set and exhibits a high resistance to clearance extrusion.

WUAQ3	turquoise color
WU9L3	blue color
UAT60	red color

Seal clearance

Guide values for the radial clearance between rod and gland in relation to the operating pressure and rod diameter can be found in Table XX page 77.

Design and Installation Instructions

The different forms have different grooves, see Table XXIII. U-Cups are used together with single-acting scrapers.

Installation Recommendation

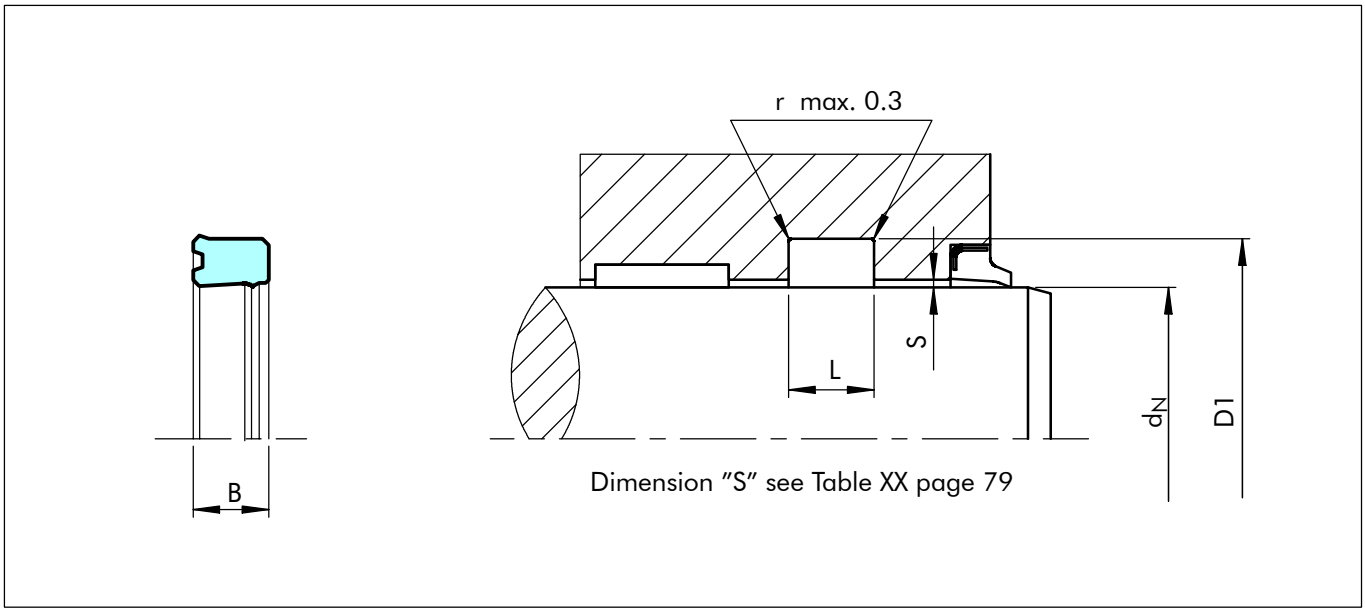


Figure 40 Installation drawing

Table XXIII Installation Dimensions / Part No.

Note	Rod Diameter	Groove Diameter	Groove Width	Seal Width	Part No.	B+S Ref.	Sealing Parts Ref. No.
						Material Code	
	d_N f8/h9	**D1** H10	**L** +0.2	**B**		WUAQ3	WU9L3
*	6.0	10.0	4.5	4.0	RU2100060	●	-
*	**6.0**	**14.0**	**6.3**	**5.8**	**RU2000060**	●	**TS 6 14 5.8/L**
*	6.4	14.3	7.0	6.0	RU2000064	-	TS 6.35 14.3 6/L
*	8.0	14.0	6.0	5.0	RU2300080	●	-
*	**8.0**	**14.0**	**6.3**	**5.7**	**RU2000080**	●	**-**
*	8.0	15.0	6.3	5.7	RU2100080	●	-
*	**8.0**	**16.0**	**6.3**	**5.8**	**RU2200080**	●	**TS 8 16 5.8/L**
*	10.0	16.0	5.4	4.8	RU2100100	-	TS 10 16 4.8/L
*	**10.0**	**18.0**	**6.3**	**5.8**	**RU2000100**	●	**TS 10 18 5.8/L**
	12.0	17.0	4.5	3.7	RU2200120	●	-
*	12.0	19.0	6.0	5.0	RU2000120	●	-
*	12.0	19.0	6.3	5.7	RU2300120	-	TS 12 19 5.7/L
*	**12.0**	**20.0**	**6.3**	**5.8**	**RU2100120**	●	**TS 12 20 5.8/L**
*	12.0	23.0	7.5	6.5	RU2400120	-	TS 12 23 6.5/L
*	12.7	22.2	7.0	6.0	RU2000127	●	-
	14.0	20.0	5.3	4.8	RU2200140	-	TS 14 20 4.8/L
*	14.0	21.0	6.0	5.0	RU2000140	●	-
*	**14.0**	**22.0**	**6.3**	**5.8**	**RU2100140**	●	**TS 14 22 5.8/L**
	15.0	21.5	5.0	4.2	RU2100150	-	TS 15 21.5 4.2/L
*	15.0	23.0	7.0	6.0	RU2000150	●	-
*	15.4	25.5	7.4	6.5	RU2000154	-	TS 15.4 25.5 6.5/L

● Available sizes - Not available TS/EU Production No. available sizes
Dimensions printed in **bold** type correspond to ISO/DIN 5597 and ISO 5597. * Split groove
The listed products are technically equivalent but availability and pricing may vary.

U-Cup RU2

Note	Rod Diameter	Groove Diameter	Groove Width	Seal Width	Part No.	B+S Ref.	Sealing Parts Ref. No.
						Material Code	
	d_N f8/h9	**D1** H10	**L** +0.2	**B**		WUAQ3	WU9L3
*	**16.0**	**24.0**	**6.3**	**5.8**	**RU2000160**	●	**TS 16 24 5.8/L**
*	16.0	24.0	7.0	6.0	RU2100160	●	-
	18.0	22.0	4.5	4.0	RU2300180	●	-
*	18.0	24.0	5.5	4.5	RU2200180	●	-
*	18.0	25.0	6.0	5.0	RU2000180	●	-
*	**18.0**	**26.0**	**6.3**	**5.8**	**RU2100180**	●	**TS 18 26 5.8/L**
*	18.0	26.0	7.0	6.0	RU2400180	-	TS 18 26 6/L
*	18.0	26.0	9.0	8.0	RU2500180	-	TS 18 26 8/L
*	18.0	28.0	6.3	5.8	RU2600180	-	TS 18 28 5.8/L
*	19.5	27.5	9.0	8.0	RU2000195	-	TS 19.5 27.5 8/L
	20.0	26.0	6.0	5.2	RU2000200	●	TS 20 26 5.2/L
	20.0	**28.0**	**6.3**	**5.8**	**RU2100200**	●	**TS 20 28 5.8/L**
*	20.0	30.0	5.0	4.5	RU2200200	-	TS 20 30 4.5/L
*	**20.0**	**30.0**	**8.0**	**7.0**	**RU2300200**	**-**	**TS 20 30 7/L**
	22.0	28.0	5.0	4.5	RU2000220	●	-
	22.0	28.0	6.3	5.7	RU2100220	●	-
	22.0	29.0	6.0	5.0	RU2200220	●	-
	22.0	**30.0**	**6.3**	**5.8**	**RU2300220**	●	**TS 22 30 5.8/L**
	25.0	**33.0**	**6.3**	**5.8**	**RU2000250**	●	**TS 25 33 5.8/L**
*	25.0	33.0	7.5	6.5	RU2100250	-	TS 25 33 6.5/L
*	25.0	33.0	8.0	7.0	RU2200250	-	TS 25 33 7/L
*	25.0	35.0	6.3	5.8	RU2300250	-	TS 25 35 5.8/L
*	**25.0**	**35.0**	**8.0**	**7.0**	**RU2400250**	**-**	**TS 25 35 7/L**
*	25.0	35.0	9.0	8.0	RU2500250	-	TS 25 35 8/L
	28.0	34.2	6.0	5.2	RU2200280	-	TS 28 34.2 5.2/L
	28.0	36.0	6.3	5.8	RU2000280	●	TS 28 36 5.8/L
	28.0	36.0	7.0	6.0	RU2100280	●	-
*	**28.0**	**38.0**	**6.3**	**5.8**	**RU2300280**	**-**	**TS 28 38 5.8/L**
*	**28.0**	**38.0**	**8.0**	**7.0**	**RU2400280**	**-**	**TS 28 38 7/L**
	30.0	38.0	6.3	5.8	RU2000300	●	TS 30 38 5.8/L
	30.0	38.0	7.0	6.0	RU2200300	●	-
	30.0	38.0	8.0	7.0	RU2100300	●	TS 30 38 7/L
	30.0	38.0	9.0	8.0	RU2300300	●	-
	30.0	40.0	7.5	6.5	RU2500300	-	TS 30 40 6.5/L
*	30.0	40.0	11.0	10.0	RU2400300	●	TS 30 40 10/L
	32.0	40.0	6.3	5.8	RU2500320	-	TS 32 40 5.8/L
	32.0	40.0	7.0	6.0	RU2000320	●	-
	32.0	40.0	7.7	6.7	RU2600320	-	TS 32 40 6.7/L
	32.0	40.0	9.0	8.0	RU2700320	-	TS 32 40 8/L
	32.0	41.5	8.9	7.8	RU2800320	-	TS 32 41.5 7.8/L
	32.0	**42.0**	**8.0**	**7.0**	**RU2100320**	●	**-**
	32.0	42.0	9.0	8.0	RU2300320	●	-
	32.0	**42.0**	**11.0**	**10.0**	**RU2400320**	●	**-**
	32.0	42.5	9.0	8.0	RU2900320	-	TS 32 42.5 8/L
*	32.0	47.0	11.0	10.0	RU2200320	●	-

● Available sizes - Not available TS/EU Production No. available sizes

Dimensions printed in **bold** type correspond to ISO/DIN 5597 and ISO 5597. * Split groove

The listed products are technically equivalent but availability and pricing may vary.

U-Cup RU2

Note	Rod Diameter	Groove Diameter	Groove Width	Seal Width	Part No.	B+S Ref.	Sealing Parts Ref. No.
						Material Code	
	d_N f8/h9	**D1** H10	**L** +0.2	**B**		WUAQ3	WU9L3
	35.0	43.0	6.3	5.8	RU2300350	-	TS 35 43 5.8/L
	35.0	43.0	7.0	6.0	RU2000350	●	TS 35 43 6/L
	35.0	43.0	9.0	8.0	RU2100350	●	-
*	35.0	45.0	11.0	10.0	RU2200350	●	TS 35 45 10/L
*	35.0	45.0	13.5	12.5	RU2400350	-	TS 35 45 12.5/L
*	35.0	50.0	11.0	10.0	RU2500350	-	TS 35 50 10/L
	36.0	44.0	6.3	5.8	RU2000360	●	TS 36 44 5.8/L
	36.0	44.0	7.0	6.0	RU2100360	●	-
	36.0	44.0	9.0	8.0	RU2200360	●	-
	37.0	47.0	8.0	7.0	RU2000370	●	-
*	38.0	50.0	9.5	8.5	RU2000380	-	TS 38 50.8.5/L
	40.0	48.0	6.3	5.8	RU2300400	-	TS 40 48 5.8/L
	40.0	48.0	7.0	6.0	RU2000400	●	-
	40.0	48.0	9.0	8.0	RU2100400	●	TS 40 48 8/L
	40.0	49.5	10.5	9.5	RU2400400	-	TS 40 49.5 9.5/L
	40.0	**50.0**	**8.0**	**7.0**	**RU2500400**	**-**	**TS 40 50 7/L**
	40.0	50.0	11.0	10.0	RU2200400	●	TS 40 50 10/L
*	40.0	55.0	11.0	10.0	RU2600400	-	TS 40 55 10/L
*	40.0	60.0	11.0	10.0	RU2700400	-	TS 40 60 10/L
	42.0	50.0	7.0	6.0	RU2000420	●	-
	42.0	52.0	9.0	8.0	RU2100420	-	TS 42 52 8/L
	45.0	53.0	6.3	5.8	RU2000450	●	TS 45 53 5.8/L
	45.0	53.0	7.0	6.0	RU2600450	●	-
	45.0	53.0	9.0	8.0	RU2100450	●	TS 45 53 8/L
	45.0	**55.0**	**6.3**	**5.7**	**RU2300450**	●	**-**
	45.0	**55.0**	**8.0**	**7.0**	**RU2500450**	●	**TS 45 55 7/L**
	45.0	**55.0**	**8.5**	**7.5**	**RU2400450**	●	**-**
	45.0	55.0	11.0	10.0	RU2200450	●	TS 45 55 10/L
	45.0	57.7	10.5	9.5	RU2700450	-	TS 45 57.7 9.5/L
	46.0	54.0	8.5	7.5	RU2100460	●	-
	46.0	54.0	9.0	8.0	RU2000460	●	-
	48.0	60.0	7.0	6.0	RU2000480	-	TS 48 60 6/L
	50.0	58.0	9.0	8.0	RU2000500	●	-
	50.0	**60.0**	**8.0**	**7.0**	**RU2400500**	●	**TS 50 60 7/L**
	50.0	60.0	8.5	7.5	RU2200500	●	-
	50.0	60.0	10.0	9.0	RU2600500	-	TS 50 60 9/L
	50.0	60.0	11.0	10.0	RU2100500	●	TS 50 60 10/L
	50.0	60.0	13.0	12.0	RU2300500	●	-
	50.0	62.7	10.5	9.5	RU2700500	-	TS 50 62.7 9.5/L
*	50.0	65.0	11.0	10.0	RU2800500	-	TS 50 65 10/L
	50.0	65.5	7.0	6.0	RU2500500	●	-
*	50.0	70.0	14.5	13.5	RU2900500	-	TS 50 70 13.5/L
	55.0	63.0	9.0	8.0	RU2000550	●	TS 55 63 8/L
	55.0	65.0	8.0	7.0	RU2200550	●	-
	55.0	65.0	8.5	7.5	RU2100550	●	-

● Available sizes - Not available TS/EU Production No. available sizes
Dimensions printed in **bold** type correspond to ISO/DIN 5597 and ISO 5597. * Split groove
The listed products are technically equivalent but availability and pricing may vary.

Note	Rod Diameter	Groove Diameter	Groove Width	Seal Width	Part No.	B+S Ref.	Sealing Parts Ref. No.
						Material Code	
	d_N f8/h9	**D1** H10	**L** +0.2	**B**		WUAQ3	WU9L3
	55.0	65.0	11.0	10.0	RU2600550	●	TS 55 65 10/L
	55.0	65.0	13.0	12.0	RU2400550	●	TS 55 65 12/L
*	55.0	70.0	13.5	12.5	RU2500550	●	-
	55.0	70.5	7.0	6.0	RU2300550	●	-
	56.0	64.0	9.0	8.0	RU2000560	●	-
	56.0	66.0	7.5	6.5	RU2100560	●	-
	56.0	**71.0**	**12.5**	**11.5**	**RU2200560**	**-**	**TS 56 71 11.5/L**
	57.1	66.7	10.5	9.5	RU2000571	-	TS 57.1 66.7 9.5/L
	57.1	69.8	10.5	9.5	RU2100571	-	TS 57.1 69.8 9.5/L
	60.0	68.0	7.0	6.0	RU2600600	●	-
	60.0	68.0	9.0	8.0	RU2000600	●	TS 6068 8/L
	60.0	68.0	12.5	11.5	RU2700600	-	TS 60 68 11.5/L
	60.0	70.0	8.0	7.0	RU2200600	●	-
	60.0	70.0	8.5	7.5	RU2100600	●	-
	60.0	70.0	11.0	10.0	RU2300600	●	-
	60.0	70.0	12.5	11.5	RU2800600	-	TS 60 70 11.5/L
	60.0	70.0	13.0	12.0	RU2400600	●	-
	60.0	71.0	9.0	8.0	RU2900600	-	TS 60 71 8/L
	60.0	72.0	10.0	9.0	RU2A00600	-	TS 60 72 9/L
	60.0	75.0	11.0	10.0	RU2B00600	-	TS 60 75 10/L
	60.0	75.0	14.0	13.0	RU2500600	●	-
	61.0	69.0	8.5	7.5	RU2100610	●	-
	61.0	69.0	9.0	8.0	RU2200610	●	TS 61 69 8/L
	63.0	71.0	9.0	8.0	RU2000630	●	-
	63.5	76.2	10.5	9.5	RU2000635	-	TS 63.5 76.2 9.5/L
	65.0	73.0	7.5	6.5	RU2200650	●	-
	65.0	73.0	9.0	8.0	RU2000650	●	-
	65.0	75.0	12.5	11.5	RU2400650	●	-
	65.0	75.0	13.5	12.5	RU2500650	-	TS 65 75 12.5/L
	65.0	77.0	10.0	9.0	RU2100650	●	-
	65.0	77.7	10.5	9.5	RU2600650	-	TS 65 77.7 9.5/L
	65.0	79.2	12.5	11.5	RU2700650	-	TS 65 79.2 11.5/L
	65.0	80.0	6.3	5.6	RU2300650	●	-
	66.7	76.2	10.5	9.5	RU2000667	-	TS 66.7 76.2 9.5/L
	69.8	82.5	10.5	9.5	RU2000698	-	TS 69.8 82.5 9.5/L
	70.0	78.0	9.0	8.0	RU2000700	●	-
	70.0	80.0	7.5	6.5	RU2200700	●	-
	70.0	80.0	12.5	11.5	RU2400700	●	-
	70.0	80.0	13.0	12.0	RU2100700	●	-
	70.0	82.0	10.5	9.5	RU2300700	●	-
	70.0	**85.0**	**12.5**	**11.5**	**RU2500700**	**-**	**TS 70 85 11.5/L**
	73.0	82.4	8.0	7.0	RU2000730	-	TS 73 82.4 7/L
	75.0	83.0	7.0	6.0	RU2100750	●	-
	75.0	83.0	9.0	8.0	RU2000750	●	TS 75 83 8/L
	75.0	85.0	8.0	7.0	RU2200750	-	TS 75 85 7/L

● Available sizes - Not available TS/EU Production No. available sizes
Dimensions printed in **bold** type correspond to ISO/DIN 5597 and ISO 5597. * Split groove
The listed products are technically equivalent but availability and pricing may vary.

Note	Rod Diameter	Groove Diameter	Groove Width	Seal Width	Part No.	B+S Ref.	Sealing Parts Ref. No.
						Material Code	
	d_N f8/h9	**D1** H10	**L** +0.2	**B**		WUAQ3	WU9L3
	75.0	85.0	13.0	12.0	RU2300750	-	TS 75 85 12/L
	75.0	90.0	11.5	10.5	RU2400750	-	TS 75 90 10.5/L
	76.0	84.0	8.5	7.5	RU2100760	●	-
	76.0	84.0	9.0	8.0	RU2000760	●	-
	76.2	88.9	10.5	9.5	RU2000762	-	TS 76.2 88.9 9.5/L
	76.2	91.2	13.0	12.0	RU2100762	-	TS 76.2 91.2 12/L
	79.4	88.9	10.5	9.5	RU2000794	-	TS 79.4 88.9 9.5/L
	80.0	88.0	9.0	8.0	RU2000800	●	-
	80.0	88.0	12.5	11.5	RU2200800	-	TS 80 88 11.5/L
	80.0	90.0	13.0	12.0	RU2300800	●	TS 80 90 12/L
	80.0	92.0	9.6	9.0	RU2400800	-	TS 80 92 9/L
	80.0	95.0	12.0	11.0	RU2500800	-	TS 80 95 11/L
	80.0	**95.0**	**12.5**	**11.5**	**RU2100800**	●	**TS 80 95 11.5/L**
	80.0	96.0	10.5	9.5	RU2600800	-	TS 80 96 9.5/L
	82.5	97.5	13.0	12.0	RU2000825	-	TS 82.5 97.5 12/L
	85.0	93.0	7.5	6.5	RU2100850	●	-
	85.0	93.0	9.0	8.0	RU2000850	●	-
	85.0	93.0	12.5	11.5	RU2200850	-	TS 85 93 11.5/L
	85.0	95.0	13.0	12.0	RU2300850	-	TS 85 95 12/L
	86.0	101.0	13.0	12.0	RU2000860	-	TS 86 101 12/L
	88.0	96.0	9.0	8.0	RU2000880	-	TS 88 96 8/L
	88.9	101.6	10.5	9.5	RU2000889	-	TS 88.9 101.6 9.5/L
	90.0	98.0	7.0	6.0	RU2200900	●	-
	90.0	98.0	9.0	8.0	RU2100900	●	-
	90.0	100.0	7.5	6.5	RU2000900	●	-
	90.0	102.0	10.0	9.0	RU2300900	-	TS 90 102 9/L
	90.0	**105.0**	**12.5**	**11.5**	**RU2400900**	**-**	**TS 90 105 11.5/L**
	90.0	110.0	15.0	14.0	RU2500900	-	TS 90 110 14/L
	91.0	99.0	8.5	7.5	RU2100910	●	-
	91.0	99.0	9.0	8.0	RU2000910	●	TS 91 99 8/L
	92.0	100.0	7.5	6.5	RU2000920	●	-
	95.0	103.0	9.0	8.0	RU2000950	●	-
	100.0	108.0	7.5	6.5	RU2401000	●	-
	100.0	108.0	9.0	8.0	RU2301000	●	-
	100.0	108.0	12.5	11.5	RU2501000	-	TS 100 108 11.5/L
	100.0	110.0	13.0	12.0	RU2001000	●	-
	100.0	115.0	12.5	11.3	RU2201000	●	-
	100.0	115.0	13.0	12.0	RU2601000	-	TS 100 115 12/L
	100.0	**120.0**	**16.0**	**15.0**	**RU2101000**	●	**-**
	105.0	113.0	7.5	6.5	RU2101050	●	-
	105.0	113.0	9.0	8.0	RU2001050	●	-
	107.0	115.0	8.5	7.5	RU2101070	●	-
	107.0	115.0	9.0	8.0	RU2001070	●	-
	108.0	116.0	9.0	8.0	RU2001080	-	TS 108 116 8/L
	110.0	125.0	10.5	9.5	RU2001100	●	-

● Available sizes - Not available TS/EU Production No. available sizes
Dimensions printed in **bold** type correspond to ISO/DIN 5597 and ISO 5597. * Split groove
The listed products are technically equivalent but availability and pricing may vary.

U-Cup RU2

Note	Rod Diameter	Groove Diameter	Groove Width	Seal Width	Part No.	B+S Ref.	Sealing Parts Ref. No.
						Material Code	
	d_N f8/h9	**D1** H10	**L** +0.2	**B**		WUAQ3	WU9L3
	110.0	125.0	12.0	11.3	RU2201100	-	TS 110 125 11.3/L
	110.0	**130.0**	**16.0**	**15.0**	**RU2101100**	●	**-**
	112.0	127.0	13.0	12.0	RU2001120	-	TS 112 127 12/L
	115.0	123.0	9.0	8.0	RU2101150	●	-
	115.0	130.0	12.5	11.3	RU2001150	●	-
	120.0	128.0	12.5	11.5	RU2101200	-	TS 120 128 11.5/L
	120.0	130.0	15.0	14.0	RU2201200	-	-
	120.0	135.0	16.0	15.0	RU2001200	●	-
	125.0	133.0	7.5	6.5	RU2301250	●	-
	125.0	133.0	8.5	7.5	RU2201250	●	-
	125.0	133.0	9.0	8.0	RU2101250	●	-
	125.0	**145.0**	**16.0**	**15.0**	**RU2001250**	●	**-**
	126.0	134.0	9.0	8.0	RU2001260	●	TS 126 134 8/L
	130.0	145.0	16.0	15.0	RU2001300	-	TS 130 145 15/L
	130.0	155.0	16.0	15.0	RU2101300	-	TS 130 155 15/L
	135.0	143.0	9.0	8.0	RU2001350	●	-
	135.0	143.7	9.0	8.0	RU2101350	●	-
	135.0	150.0	12.5	11.5	RU2201350	-	TS 135 150 11.5/L
	137.0	152.0	13.0	12.0	RU2001370	-	TS 137 152 12/L
	140.0	150.0	12.5	11.5	RU2101400	-	TS 140 150 11.5/L
	140.0	155.0	10.5	9.5	RU2001400	●	-
	140.0	**160.0**	**16.0**	**15.0**	**RU2201400**	●	**-**
	145.0	153.0	7.5	6.5	RU2001450	●	-
	145.0	153.0	8.5	7.5	RU2201450	●	-
	145.0	154.5	7.0	6.0	RU2101450	●	-
	146.0	156.0	11.0	10.0	RU2001460	-	TS 146 156 10/L
	150.0	180.0	16.0	15.0	RU2001500	●	-
	152.0	162.0	11.0	10.0	RU2001520	-	-
	154.0	162.7	9.0	8.0	RU2001540	●	-
	163.0	178.0	13.0	12.0	RU2001630	-	TS 163 178 12/L
	170.0	180.0	11.0	10.0	RU2101700	-	TS 170 180 10/L
	170.0	180.0	13.0	12.0	RU2001700	●	-
	185.0	216.0	20.0	19.0	RU2001850	●	-
	188.0	203.0	13.0	12.0	RU2001880	-	TS 188 203 12/L
	197.0	209.0	13.0	12.0	RU2001970	-	TS 197 209 12/L
	218.0	237.0	17.0	16.0	RU2002180	-	TS 218 237 16/L
	228.0	240.0	13.0	12.0	RU2002280	-	TS 228 240 12/L
	300.0	325.0	25.0	24.0	RU2003000	-	TS 300 325 24/L

● Available sizes - Not available TS/EU Production No. available sizes
Dimensions printed in **bold** type correspond to ISO/DIN 5597 and ISO 5597. * Split groove
The listed products are technically equivalent but availability and pricing may vary.

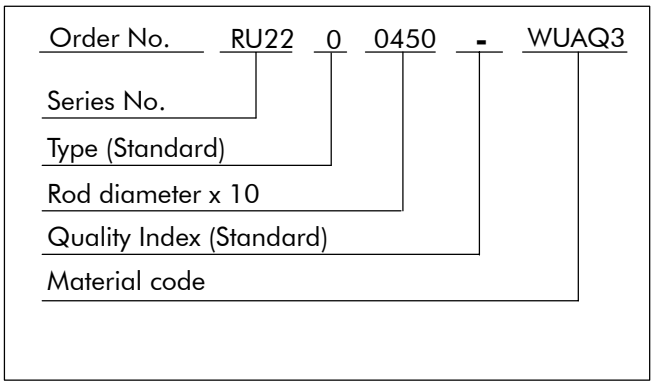
Ordering example

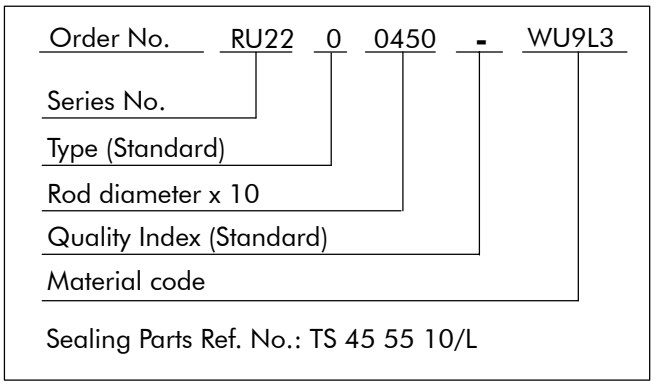
U-Cup Type RU2

Rod diameter:	d = 45.0 mm
Groove diameter:	d1 = 55.0 mm
Groove width	L = 11 mm
Part No.:	RU2200450 -

Compound

B+S:	WUAQ3
Sealing Parts:	WU9L3





Sealing Parts Ref. No.: TS 45 55 10/L

Type RU2B

The compact U-Cup type RU2B is designed for small grooves. It is thus particularly suitable for use in space-saving designs. The compact form provides a high sealing effect even with low system pressures.

For larger gaps and high pressure peaks, the U-Cup RU2B has an integrated Back-up Ring.

The U-Cup has two sealing lips in the dynamic sealing zone. The compact form with two sealing lips provides an improvement in the leakage behaviour at low system pressures. Due to the incorporation of an oil trap between the two sealing lips, friction at pressures above approx. 10 MPa is reduced. Furthermore, the second sealing lip prevents the entry of dirt from the atmosphere side.

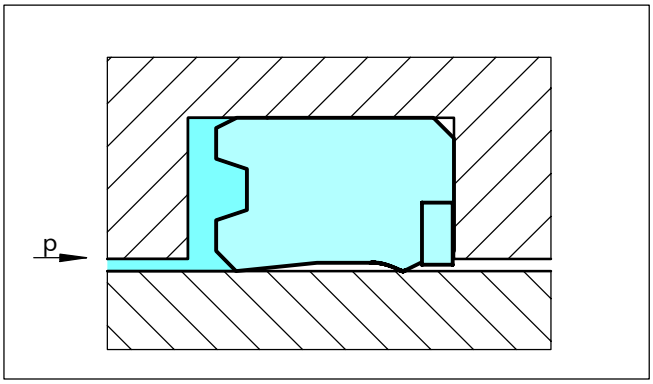


Figure 41 U-Cup, type RU2B

Advantages

- Good sealing effect at high and low pressures
- Good abrasion resistance, wear-resistant
- Good lubricant film formation
- Unaffected by sudden loads
- Suitable for small grooves
- Integrated Back-up Ring
- Larger sealing gaps
  (approx. 50% larger than table XX values)
- High pressure peaks sealing

Material

The thermoplastic polyurethane material used for U-Cups has a high abrasion resistance, a low compression set and exhibits a high resistance to clearance extrusion.

U-Cup material:

WU9L3	blue color

Back-up ring material:

Polyamid	PA

Material set code:

WUR0L

Installation Recommendation

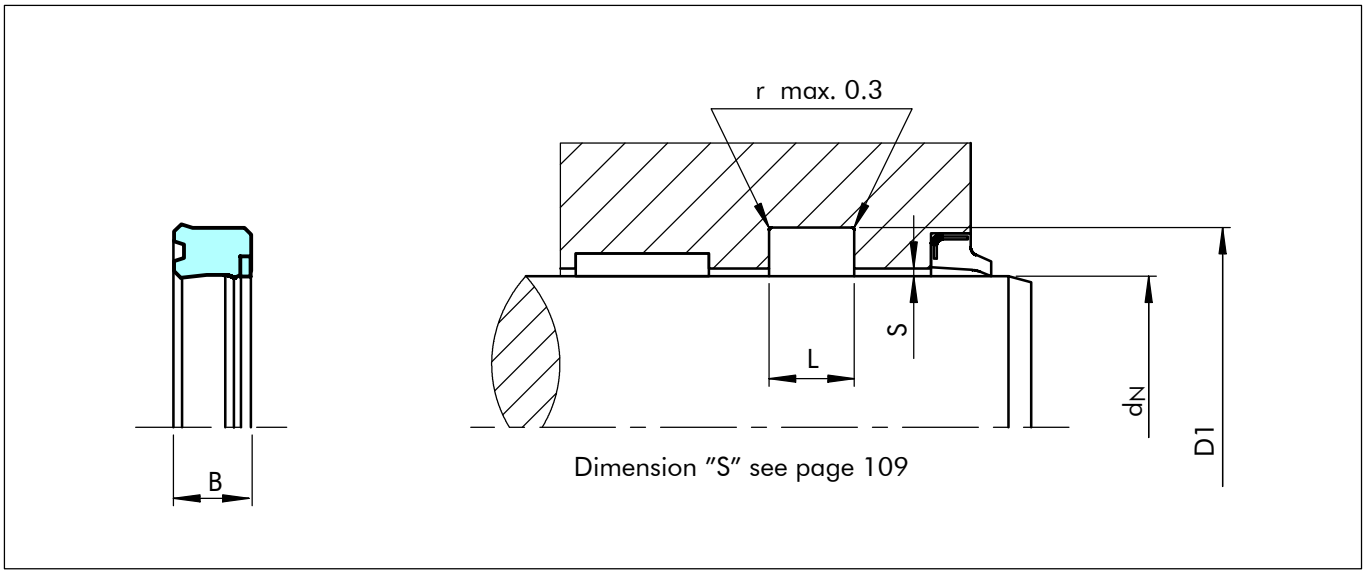


Figure 42 Installation drawing

Table XXIV Preferred Series / Part No.

Note	Rod Diameter	Groove Diameter	Groove Width	Seal Width	Part No.	Sealing Parts Ref. No.
	d_N h11	**D1** H11	**L** +0.1	**B**		
*	32.0	45.0	10.5	9.5	RU20B0320	TS 32 45 9.5/LA
*	**36.0**	**46.0**	**8.0**	**7.0**	**RU20B0360**	**TS 36 46 7/LA**
	40.0	48.0	9.0	8.0	RU20B0400	TS 40 48 8/LA
	40.0	50.0	11.0	10.0	RU21B0400	TS 40 50 10/LA
*	40.0	52.0	11.0	10.0	RU22B0400	TS 40 52 10/LA
*	40.0	52.0	18.0	17.0	RU23B0400	TS 40 52 17/LA
*	40.0	55.0	8.5	7.5	RU24B0400	TS 40 55 7.5/LA
*	40.0	55.0	11.0	10.0	RU25B0400	TS 40 55 10/LA
	45.0	55.0	11.0	10.0	RU20B0450	TS 45 55 10/LA
*	45.0	60.0	11.0	10.0	RU21B0450	TS 45 60 10/LA
	50.0	60.0	11.0	10.0	RU20B0500	TS 50 60 10/LA
	50.0	65.0	11.0	10.0	RU21B0500	TS 50 65 12/LA
*	50.0	70.0	13.0	12.0	RU22B0500	TS 50 70 12/LA
	55.0	65.0	11.0	10.0	RU20B0550	TS 55 65 10/LA
*	**56.0**	**71.0**	**12.5**	**11.5**	**RU20B0560**	**TS 56 71 11.5/LA**
	60.0	70.0	13.5	12.5	RU20B0600	TS 60 70 12.5/LA
	60.0	75.0	13.0	12.0	RU21B0600	TS 60 75 12/LA
*	60.0	80.0	13.0	12.0	RU22B0600	TS 60 80 12/LA
	63.0	75.0	13.0	12.0	RU20B0630	TS 63 75 12/LA
	63.0	**78.0**	**13.5**	**11.5**	**RU21B0630**	**TS 63 78 11.5/LA**
	63.0	78.0	13.5	12.5	RU22B0630	TS 63 78 12.5/LA
*	63.0	83.0	13.0	12.0	RU23B0630	TS 63 83 12/LA
*	63.0	83.0	14.5	13.5	RU24B0630	TS 63 83 13.5/LA
	65.0	75.0	13.0	12.0	RU20B0650	TS 65 75 12/LA

TS Production No. available sizes
Dimensions printed in **bold** type correspond to ISO/DIN 5597 and ISO 5597. * Split groove
The listed products are technically equivalent but availability and pricing may vary.

U-Cup RU2B

Note	Rod Diameter	Groove Diameter	Groove Width	Seal Width	Part No.	Sealing Parts Ref. No.
	d_N h11	**D1** H11	**L** +0.1	**B**		
	65.0	80.0	12.5	11.5	RU21B0650	TS 65 80 11.5/LA
	70.0	85.0	13.0	12.0	RU20B0700	TS 70 85 12/LA
*	70.0	90.0	13.0	12.0	RU21B0700	TS 70 90 12/LA
*	70.0	90.0	14.5	13.5	RU22B0700	TS 70 90 13.5/LA
	75.0	85.0	13.0	12.0	RU20B0750	TS 75 85 12/LA
	75.0	90.0	13.0	12.0	RU21B0750	TS 75 90 12/LA
*	75.0	95.0	14.5	13.5	RU22B0750	TS 75 95 13.5/LA
	80.0	88.0	10.0	9.0	RU20B0800	TS 80 88 9/LA
	80.0	**95.0**	**12.5**	**11.5**	**RU21B0800**	**TS 80 95 11.5/LA**
	80.0	96.0	10.5	9.5	RU22B0800	TS 80 96 9.5/LA
	80.0	100.0	12.5	11.5	RU23B0800	TS 80 100 11.5/LA
	80.0	100.0	14.5	13.5	RU24B0800	TS 80 100 13.5/LA
	85.0	105.0	13.0	12.0	RU20B0850	TS 85 105 12/LA
	85.0	105.0	14.5	13.5	RU21B0850	TS 85 105 13.5/LA
	90.0	105.0	9.5	8.5	RU20B0900	TS 90 105 8.5/LA
	90.0	105.0	13.0	12.0	RU21B0900	TS 90 105 12/LA
	90.0	110.0	12.5	11.5	RU22B0900	TS 90 110 11.5/LA
	90.0	110.0	13.0	12.0	RU23B0900	TS 90 110 12/LA
	95.0	115.0	14.5	13.5	RU20B0950	TS 95 115 13.5/LA
	100.0	110.0	13.5	12.5	RU20B1000	TS 100 110 12.5/LA
	100.0	113.0	13.5	12.5	RU21B1000	TS 100 113 12.5/LA
	100.0	120.0	14.5	13.5	RU22B1000	TS 100 120 13.5/LA
	105.0	125.0	13.0	12.0	RU20B1050	TS 105 125 12/LA
	110.0	120.0	14.5	13.5	RU20B1100	TS 110 120 13.5/LA
	110.0	125.0	13.0	12.0	RU21B1100	TS 110 125 12/LA
	110.0	130.0	13.0	12.0	RU22B1100	TS 110 130 12/LA
	115.0	130.0	17.0	16.0	RU20B1150	TS 115 130 16/LA
	120.0	140.0	12.5	11.5	RU20B1200	TS 120 140 11.5/LA
	127.0	140.0	13.5	12.5	RU20B1270	TS 127 140 12.5/LA
	140.0	160.0	15.0	14.0	RU20B1400	TS 140 160 14/LA
	140.0	165.0	19.0	18.0	RU21B1400	TS 140 165 18/LA
	160.0	185.0	19.0	18.0	RU20B1600	TS 160 185 18/LA

TS Production No. available sizes
Dimensions printed in **bold** type correspond to ISO/DIN 5597 and ISO 5597. * Split groove
The listed products are technically equivalent but availability and pricing may vary.

Ordering Example

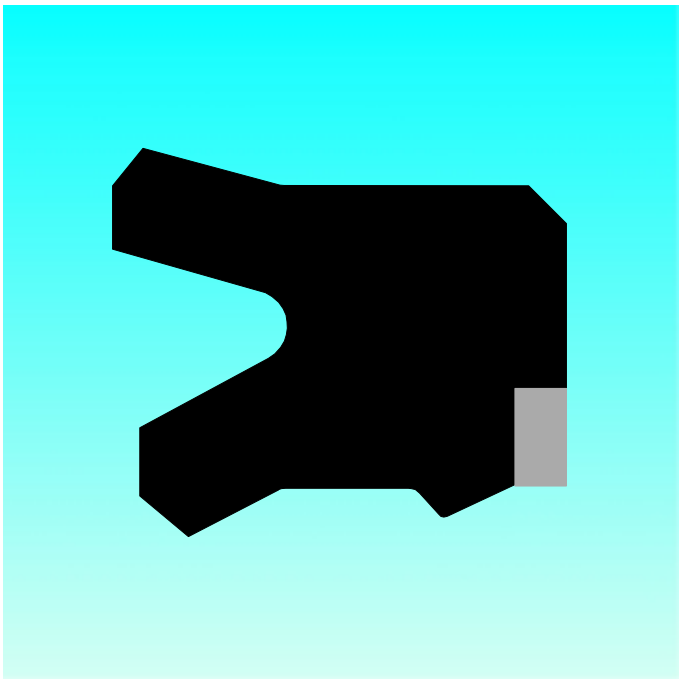
U-Cup Type RU2B
Rod diameter: d_N = 50.0 mm
Groove diameter: d1 = 60.0 mm
Groove width L = 11 mm
Part No.: RU20B0500 -
Compound WUR0L (blue color)

Order No. RU20 B 0500 - WUR0L

- RU20 — Series No.
- B — Type (Standard)
- 0500 — Rod diameter x 10
- - — Quality Index (Standard)
- WUR0L — Material code

Sealing Parts Ref. No. TS 50 60 10/LA

B+S RU3/RU3B
SEALING PARTS RS/L
POLYPAC® EU/S



- Single Acting U-Cup -

- Asymmetric, Double Lip -

- Without and with Back-up Ring

- Material -

- Polyurethane -

U-Cup RU3

Description

Today U-Cups are used primarily as seals for piston rods in hydraulic cylinders. U-Cups in polyurethane are proven elements, due to their good mechanical properties, for standard cylinder construction, particularly for mobile hydraulics under rough operating conditions.

Type RU3

The U-Cup type RU3 is used as a rod seal for heavy-duty conditions in mobile and industrial hydraulics. It is installed with a fixed seat at its outer diameter. The rear dynamic sealing lip improves the leakage behaviour and, at the same time, prevents the entry of contaminants from the atmosphere side. Compared with the type RU2, the shorter inner lip is more flexible and can adapt better to the operating conditions and deflections of the piston rod.

A lubricant trap forms between the sealing lips. This counters the stick-slip tendency and prevents dry running. At the same time the good lubrication behaviour reduces wear.

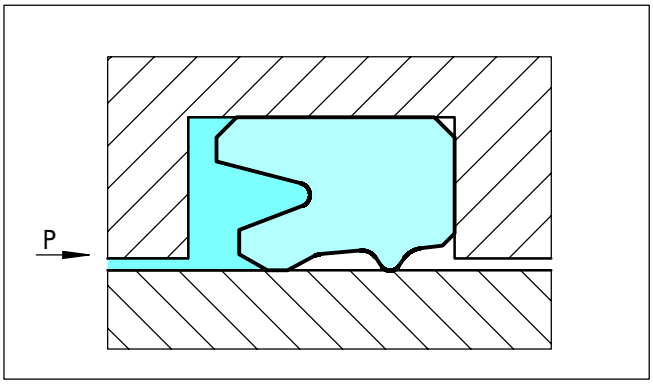


Figure 43 U-Cup, type RU3

Method of Operation

The sealing effect of the U-Cup comes from the intrinsic preload of the seal body and from the compression of the seal lips during installation. In operating condition, the radial mechanical contact forces are superimposed by the system pressure.

At low stroke speeds, U-Cups can tend to have a stick-slip effect due to an inadequate lubrication film formation in the seal clearance and to their material properties. This behaviour corresponds to the Stribeck curve described in the relevant literature.

Advantages

- Good sealing effect even in pressure-free state
- Good abrasion resistance, wear-resistant
- Good lubricant film formation in the seal clearance
- Compensates deflections of the piston rod
- Low stick-slip effect
- Entry of dirt and air into the system is more or less ruled out
- Unaffected by sudden loads and high pressures
- Simple installation.

Technical Data

Operating pressure:	Max. 40 MPa
Speed:	Up to 0.5 m/s
Temperature:	Use in mineral oils: -30°C to + 80°C
Media:	Mineral oil-based hydraulic fluids.

Important Note:
The above data are maximum values and cannot be used at the same time. e.g. the maximum operating speed depends on material type, pressure, temperature and gap value.

Material

The thermoplastic polyurethane material used for U-Cups has a high abrasion resistance, a low compression set and exhibits a high resistance to clearance extrusion.

WUAQ3	turquoise color
WU9L3	blue color
UAT60	red color

Seal Clearance

Guide values for the radial clearance between rod and gland in relation to the operating pressure and rod diameter can be found in Table XX page 77.

Design and Installation Instructions

The different forms have different grooves, see Table XXV. U-Cups are used together with single-acting scrapers.

Installation Recommendation

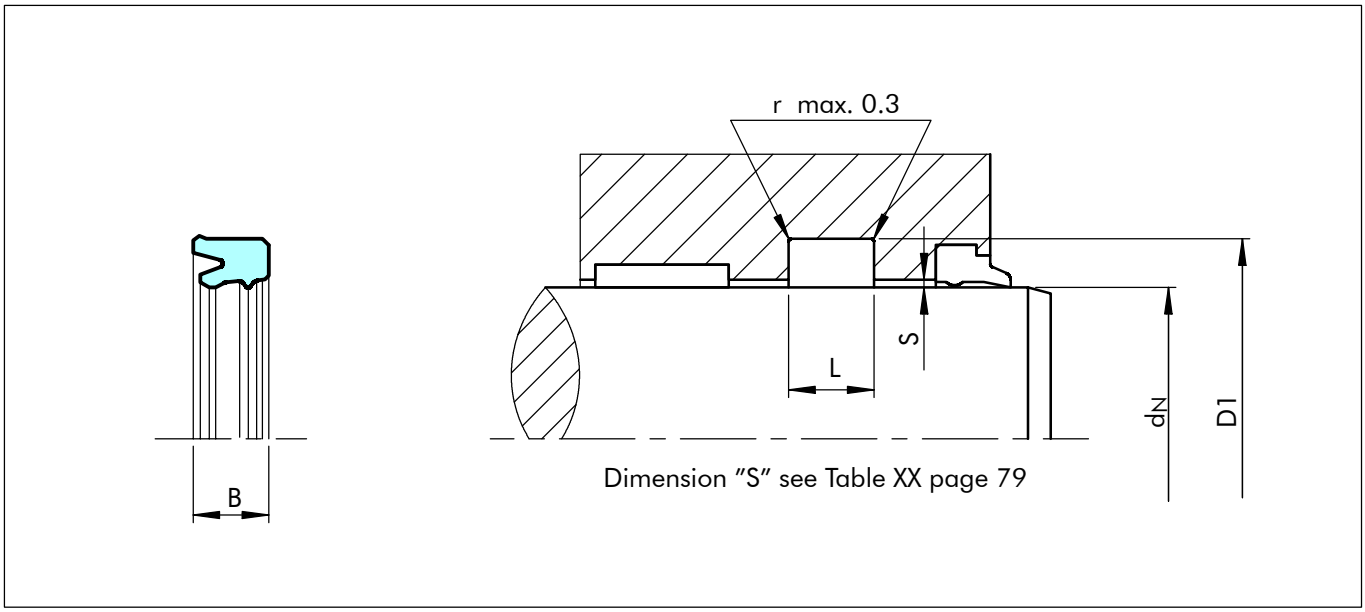


Figure 44 Installation drawing

Table XXV Preferred Series / Part No.

Note	Rod Diameter	Groove Diameter	Groove Width	Seal Width	Part No.	B+S Ref.	Sealing Parts Ref. No.	Polypac Ref. No.
						Material Code		
	d_N f8/h9	**D1** H10	**L** +0.2	**B**		WUAQ3	WU9L3	UAT60
*	**6.0**	**14.0**	**6.3**	**5.7**	**RU3100060**	•	-	-
*	6.0	16.0	7.0	6.0	RU3000060	•	-	-
*	**8.0**	**16.0**	**6.3**	**5.7**	**RU3000080**	•	-	-
*	**10.0**	**18.0**	**6.3**	**5.7**	**RU3100100**	•	-	-
*	**10.0**	**20.0**	**8.0**	**7.0**	**RU3000100**	•	-	-
	12.0	19.0	5.6	5.0	RU3100120	•	-	-
*	**12.0**	**20.0**	**6.3**	**5.7**	**RU3200120**	•	-	-
*	**12.0**	**22.0**	**8.0**	**7.0**	**RU3000120**	•	-	-
	14.0	21.0	6.0	5.0	RU3100140	•	-	-
*	**14.0**	**22.0**	**6.3**	**5.7**	**RU3200140**	•	-	-
*	**14.0**	**24.0**	**8.0**	**7.3**	**RU3000140**	•	**RS 14 24/L**	-
*	15.0	23.0	6.3	5.7	RU3000150	•	-	-
*	15.0	26.0	8.0	7.0	RU3100150	-	RS 15 26/L	-
*	15.4	25.5	7.4	6.5	RU3000154	-	RS 15.4 25.5 L	-
*	**16.0**	**24.0**	**6.3**	**5.7**	**RU3200160**	•	-	-
*	16.0	24.0	7.0	6.0	RU3300160	•	-	-
*	16.0	26.0	6.0	5.0	RU3100160	•	-	-
*	**16.0**	**26.0**	**8.0**	**7.3**	**RU3000160**	•	-	-
	18.0	25.0	6.0	5.0	RU3200180	•	-	-
*	**18.0**	**26.0**	**6.3**	**5.7**	**RU3300180**	•	-	-
*	18.0	26.0	7.0	6.3	RU3100180	•	RS 18 26/L1	-

• Available sizes - Not available RS/EU Production No. available sizes
Dimensions printed in **bold** type correspond to ISO/DIN 5597 and ISO 5597. * Split groove *** U-Cups for telescope cylinders*
The listed products are technically equivalent but availability and pricing may vary.

U-Cup RU3

Note	Rod Diameter	Groove Diameter	Groove Width	Seal Width	Part No.	B+S Ref.	Sealing Parts Ref. No.	Polypac Ref. No.
						Material Code		
	d_N f8/h9	**D1** H10	**L** +0.2	**B**		WUAQ3	WU9L3	UAT60
*	18.0	26.0	9.0	8.0	RU3100180	-	RS 18 26/L	-
*	**18.0**	**28.0**	**8.0**	**7.3**	**RU3000180**	●	**-**	**-**
*	19.5	27.5	9.0	8.0	RU3000195	-	RS 19.5 27.5/L	-
	20.0	26.0	6.3	5.4	RU3400200	-	-	EU 2026/S
*	**20.0**	**28.0**	**5.0**	**4.3**	**RU3200200**	●	**-**	**-**
*	**20.0**	**28.0**	**6.3**	**5.7**	**RU3300200**	●	**-**	**-**
*	20.0	28.0	8.0	7.3	RU3100200	●	-	-
*	**20.0**	**30.0**	**6.3**	**5.7**	**RU3500200**	●	**-**	**-**
*	**20.0**	**30.0**	**8.0**	**7.3**	**RU3000200**	●	**-**	**-**
*	20.0	30.0	9.0	8.0	RU3600200	●	-	-
*	20.0	30.0	11.0	10.0	RU3700200	●	-	-
	22.0	29.0	6.0	5.0	RU3100220	●	-	-
*	22.0	30.0	7.0	6.0	RU3200220	-	RS 22 30/L	-
*	**22.0**	**32.0**	**8.0**	**7.3**	**RU3000220**	●	**-**	**-**
*	**25.0**	**33.0**	**6.3**	**5.7**	**RU3100250**	●	**-**	**-**
	25.0	33.0	7.0	6.0	RU3200250	-	RS 25 33/L2	-
	25.0	33.0	7.5	6.5	RU3300250	-	RS 25 33/L1	-
*	**25.0**	**35.0**	**8.0**	**7.3**	**RU3000250**	●	RS 25 33/L	**-**
*	25.0	35.0	11.0	10.0	RU3400250	●	-	-
	28.0	36.0	6.3	5.7	RU3400280	●	-	-
	28.0	36.0	8.0	7.3	RU3000280	●	**-**	-
*	**28.0**	**38.0**	**6.3**	**5.7**	**RU3500280**	●	**-**	**-**
*	**28.0**	**38.0**	**8.0**	**7.3**	**RU3100280**	●	**-**	**-**
*	28.0	38.0	8.5	7.5	RU3600280	-	RS 28 38/L	-
*	28.0	38.0	9.0	8.0	RU3200280	●	**-**	-
*	**28.0**	**43.0**	**12.5**	**11.5**	**RU3300280**	●	**-**	**-**
	30.0	38.0	6.3	5.7	RU3100300	●	**-**	-
	30.0	38.0	7.0	6.0	RU3200300	●	-	-
	30.0	38.0	8.0	7.0	RU3300300	●	-	-
	30.0	38.0	9.0	8.0	RU3400300	●	-	-
	30.0	40.0	7.5	6.5	RU3500300	-	RS 30 40/L1	-
	30.0	40.0	8.0	7.3	RU3000300	●	RS 30 40/L	-
	30.0	40.0	9.0	8.0	RU3600300	-	-	EU 3040/2/S
*	30.0	45.0	11.0	10.0	RU3700300	●	-	-
	32.0	40.0	6.3	5.7	RU3300320	●	-	-
	32.0	40.0	7.0	6.0	RU3100320	●	-	-
	32.0	40.0	7.7	6.7	RU3400320	-	RS 32 40/L	-
	32.0	40.0	9.0	8.0	RU3500320	●	-	-
	32.0	41.5	8.9	7.9	RU3600320	-	RS 32 41.5/L	-
	32.0	42.0	6.3	5.7	RU3200320	●	**-**	-
*	**32.0**	**42.0**	**8.0**	**7.3**	**RU3000320**	●	**-**	**-**
*	32.0	42.0	11.0	10.0	RU3700320	●	-	-
	35.0	42.0	8.0	7.0	RU3200350	●	-	-
	35.0	42.5	8.0	7.0	RU3300350	●	-	-
	35.0	43.0	6.3	5.7	RU3100350	●	-	-

● Available sizes - Not available RS/EU Production No. available sizes

Dimensions printed in **bold** type correspond to ISO/DIN 5597 and ISO 5597. * Split groove *** U-Cups for telescope cylinders*

The listed products are technically equivalent but availability and pricing may vary.

U-Cup RU3

Note	Rod Diameter	Groove Diameter	Groove Width	Seal Width	Part No.	B+S Ref.	Sealing Parts Ref. No.	Polypac Ref. No.
						Material Code		
	d_N f8/h9	**D1** H10	**L** +0.2	**B**		WUAQ3	WU9L3	UAT60
	35.0	43.0	8.0	7.2	RU3400350	-	RS 35 43/L	-
	35.0	43.0	9.0	8.0	RU3500350	●	-	-
	35.0	45.0	8.0	7.0	RU3000350	●	-	-
	35.0	45.0	9.0	8.0	RU3600350	●	-	-
*	35.0	45.0	11.0	10.0	RU3700350	●	-	-
*	35.0	50.0	11.0	10.0	RU3800350	●	-	-
*	35.0	55.0	11.0	10.0	RU3900350	●	-	-
	36.0	44.0	6.3	5.7	RU3100360	●	-	-
	36.0	44.0	7.0	6.3	RU3200360	-	RS 36 44/L	-
	36.0	**46.0**	**8.0**	**7.3**	**RU3000360**	●	-	-
	36.0	46.0	8.5	7.5	RU3300360	-	RS 36 46/L	-
	38.0	48.0	9.0	8.0	RU3000380	●	-	-
	40.0	48.0	6.3	5.7	RU3000400	●	-	-
	40.0	48.0	6.5	5.5	RU3400400	-	-	EU 4048/1/S
	40.0	49.5	10.5	9.5	RU3500400	-	RS 40 49.5/L	-
*	**40.0**	**50.0**	**8.0**	**7.3**	**RU3100400**	●	**RS 40 50/L**	-
*	40.0	50.0	9.0	8.0	RU3600400	●	-	-
*	40.0	55.0	11.0	10.0	RU3700400	-	RS 40 55/L	EU 4055/S
	40.0	**55.0**	**12.5**	**11.5**	**RU3200400**	●	-	-
	40.0	60.0	11.0	10.0	RU3800400	●	-	-
	40.0	60.0	13.0	12.0	RU3300400	●	-	-
	42.0	50.0	9.0	8.0	RU3000420	●	-	-
	42.0	50.0	12.5	11.5	RU3100420	-	RS 42 50/L	-
	42.0	52.0	11.0	10.0	RU3200420	●	-	-
	42.0	53.0	10.0	9.0	RU3300420	-	RS 42 53/L	-
	45.0	53.0	6.3	5.7	RU3200450	●	-	-
	45.0	53.0	11.0	10.0	RU3300450	●	-	-
	45.0	53.0	12.5	11.5	RU3400450	-	RS 45 53/L	-
	45.0	**55.0**	**6.3**	**5.7**	**RU3500450**	●	-	
	45.0	**55.0**	**8.0**	**7.3**	**RU3000450**	●	-	**EU 4555/1/S**
	45.0	55.0	12.5	11.5	RU3600450	-	RS 45 55/L	-
*	45.0	57.7	10.5	9.5	RU3700450	-	RS 45 57.7/L	-
*	**45.0**	**60.0**	**12.5**	**11.5**	**RU3100450**	●	-	-
	46.0	56.0	11.0	10.0	RU3000460	●	-	-
	48.0	56.0	12.5	11.5	RU3000480	-	RS 48 56/L1	-
	48.0	56.0	13.0	12.0	RU3100480	-	RS 48 56/L	-
	50.0	57.0	11.0	10.0	RU3400500	-	RS 50 57/L	-
	50.0	58.0	12.5	11.5	RU3500500	-	RS 50 58/L	-
	50.0	**60.0**	**8.0**	**7.0**	**RU3100500**	●	-	-
*	50.0	60.0	8.0	7.3	RU3000500	●	-	-
*	50.0	60.0	11.0	10.0	RU3600500	●	-	-
*	50.0	62.7	10.5	9.5	RU3700500	-	RS 50 62.7/L	-
	50.0	65.0	11.0	10.0	RU3800500	●	RS 50 65/L1	-
	50.0	65.0	12.0	11.0	RU3300500	●	-	-
	50.0	**65.0**	**12.5**	**11.5**	**RU3200500**	●	-	-

● Available sizes - Not available RS/EU Production No. available sizes

Dimensions printed in **bold** type correspond to ISO/DIN 5597 and ISO 5597. * Split groove *** U-Cups for telescope cylinders*

The listed products are technically equivalent but availability and pricing may vary.

U-Cup RU3

Note	Rod Diameter	Groove Diameter	Groove Width	Seal Width	Part No.	B+S Ref.	Sealing Parts Ref. No.	Polypac Ref. No.
						Material Code		
	d_N f8/h9	**D1** H10	**L** +0.2	**B**		WUAQ3	WU9L3	UAT60
	50.0	65.0	16.5	15.5	RU3900500	-	RS 50 65/L	-
	50.0	70.0	11.0	10.0	RU3A00500	●	-	-
	50.0	70.0	15.0	14.0	RU3B00500	-	RS 50 70/L	-
	52.0	62.0	13.0	12.0	RU3000520	●	-	-
	55.0	62.5	10.0	9.0	RU3100550	-	RS 55 62.5/L	-
	55.0	63.0	12.5	11.5	RU3200550	-	RS 55 63/L	-
	55.0	65.0	8.0	7.3	RU3000550	●	-	-
	55.0	65.0	9.5	8.5	RU3400550	-	RS 55 65/L1	-
	55.0	65.0	11.0	10.0	RU3300550	●	RS 55 65/L	-
	56.0	71.0	11.0	10.0	RU3300560	●	-	-
	56.0	71.0	12.5	11.5	RU3100560	●	-	-
	56.0	**71.0**	**12.5**	**11.4**	**RU3000560**	●	-	-
*	**56.0**	**76.0**	**16.0**	**15.0**	**RU3200560**	●	-	-
	57.1	66.7	10.5	9.5	RU3000571	-	RS 57.1 66.7/L	-
	57.1	69.8	10.5	9.5	RU3100571	-	RS 57.1 69.8/L	-
	58.0	68.0	12.5	11.5	RU3000580	-	RS 58 68/L	-
	60.0	68.0	12.5	11.5	RU3600600	-	RS 60 68/L	-
	60.0	70.0	6.0	5.2	RU3100600	●	-	-
	60.0	70.0	7.0	6.2	RU3200600	●	-	-
	60.0	70.0	8.0	7.3	RU3400600	●	-	-
	60.0	70.0	11.0	10.0	RU3700600	●	-	EU 6070/2/S
	60.0	70.0	12.5	11.5	RU3000600	●	RS 60 70/L	-
	60.0	70.0	13.0	12.0	RU3800600	●	RS 60 70/L1	-
**	*60.0*	*70.0*	*15.0*	*14.3*	*RU3900600*	-	-	*EU 6070/S*
	60.0	72.0	10.0	9.0	RU3500600	●	-	-
	60.0	75.0	11.0	10.0	RU3A00600	-	RS 60 75/L1	-
	60.0	75.0	12.5	11.5	RU3300600	●	-	EU 6075/1/S
*	60.0	75.0	16.5	15.5	RU3B00600	-	RS 60 75/L	-
	63.0	75.0	11.0	10.0	RU3200630	-	RS 63 75/L	-
	63.0	**78.0**	**12.5**	**11.5**	**RU3000630**	●	-	-
*	63.0	83.0	14.5	13.5	RU3300630	-	RS 63 83/L	-
*	**63.0**	**83.0**	**16.0**	**15.0**	**RU3100630**	●	-	-
	63.5	76.2	10.5	9.5	RU3000635	-	RS 63.5 76.2/L	-
	65.0	73.0	12.5	11.5	RU3300650	-	RS 65 73/L	-
	65.0	75.0	8.0	7.3	RU3100650	●	-	-
	65.0	75.0	11.0	10.0	RU3200650	●	RS 65 75/L	-
	65.0	75.0	12.5	11.5	RU3000650	●	-	-
	65.0	75.0	13.0	12.0	RU3400650	-	-	EU 6575/S
	65.0	77.7	10.5	9.5	RU3500650	-	RS 65 77.7/L	-
	66.0	80.0	11.0	10.0	RU3000660	-	RS 66 80/L	-
	67.0	75.0	12.5	11.5	RU3000670	-	RS 67 75/L	-
	69.8	82.5	10.5	9.5	RU3000698	-	RS 69.8 82.5/L	-
	70.0	77.5	10.0	9.0	RU3600700	-	RS 70 77.5/L	-
	70.0	78.0	12.5	11.5	RU3700700	-	RS 70 78/L	-
	70.0	79.0	14.0	13.0	RU3800700	-	RS 70 79/L	-

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Dimensions printed in **bold** type correspond to ISO/DIN 5597 and ISO 5597. * Split groove ** *U-Cups for telescope cylinders*

The listed products are technically equivalent but availability and pricing may vary.

U-Cup RU3

Note	Rod Diameter	Groove Diameter	Groove Width	Seal Width	Part No.	B+S Ref.	Sealing Parts Ref. No.	Polypac Ref. No.
						Material Code		
	d_N f8/h9	**D1** H10	**L** +0.2	**B**		WUAQ3	WU9L3	UAT60
	70.0	80.0	12.5	11.5	RU3900700	-	RS 70 80/L	-
	70.0	80.0	13.0	12.0	RU3300700	●	RS 70 80/L1	-
	70.0	82.0	9.6	8.6	RU3200700	●	-	-
	70.0	85.0	11.0	10.0	RU3A00700	●	-	-
	70.0	85.0	12.0	11.0	RU3400700	●	-	-
	70.0	**85.0**	**12.5**	**11.5**	**RU3000700**	●	**RS 70 85/L**	**EU 7085/S**
*	70.0	90.0	13.0	12.0	RU3B00700	-	RS 70 90/L	-
*	70.0	90.0	16.0	15.0	RU3100700	●	**-**	-
	73.0	82.4	7.8	7.0	RU3000730	-	RS 73 82.4/L	-
	75.0	83.0	12.5	11.5	RU3400750	-	RS 75 83/L	-
	75.0	85.0	7.0	6.2	RU3200750	●	**-**	-
	75.0	85.0	9.5	8.5	RU3500750	-	RS 75 85/L1	-
	75.0	85.0	11.0	10.0	RU3300750	●	RS 75 85/L2	-
	75.0	85.0	12.5	11.5	RU3000750	●	RS 75 85/L	-
	75.0	85.0	13.0	12.0	RU3100750	●	**-**	-
	75.0	90.0	13.0	12.0	RU3600750	●	-	-
	76.0	86.0	12.5	11.5	RU3000760	●	**-**	-
	76.2	88.9	10.5	9.5	RU3000762	-	RS 76.2 88.9/L	-
	77.0	86.0	15.0	14.0	RU3000770	-	RS 77 86/L	-
	78.0	86.0	12.5	11.5	RU3000780	●	RS 78 86/L1	-
	78.0	86.0	14.5	13.5	RU3100780	-	RS 78 86/L	-
	78.0	88.0	13.0	12.0	RU3200780	-	RS 78 88/L	-
**	*78.0*	*88.0*	*15.0*	*14.3*	*RU3300780*	-	-	*EU 7888/S*
	78.0	90.0	13.0	12.0	RU3400780	-	RS 78 90/L	-
	79.4	88.9	10.5	9.5	RU3000794	-	RS 79.4 88.9/L	-
	80.0	88.0	12.5	11.5	RU3600800	-	RS 80 88/L	-
	80.0	90.0	8.0	7.3	RU3300800	●	-	-
	80.0	90.0	11.0	10.0	RU3400800	●	-	-
	80.0	90.0	12.5	11.5	RU3200800	●	-	-
	80.0	90.0	13.0	12.0	RU3500800	●	-	EU 8090/S
	80.0	95.0	11.0	10.0	RU3700800	●	-	-
	80.0	**95.0**	**12.5**	**11.5**	**RU3000800**	●	**-**	**-**
	80.0	95.0	13.0	12.0	RU3800800	●	-	EU 8095/S
	80.0	100.0	13.0	12.0	RU3900800		-	EU 80100/S
	80.0	**100.0**	**16.0**	**15.0**	**RU3100800**	●	**-**	**-**
	82.5	97.5	13.0	12.0	RU3000825		RS 82.5 97.5/L	-
	85.0	92.5	10.0	9.0	RU3200850		RS 85 92.5/L	-
	85.0	93.0	12.5	11.5	RU3300850		RS 85 93/L	-
	85.0	95.0	12.5	11.5	RU3100850	●	-	-
	85.0	100.0	12.5	11.5	RU3000850	●	**-**	-
	85.0	105.0	13.0	12.0	RU3400850	●	-	-
	88.9	101.6	10.5	9.5	RU3000889		RS 88.9 101.6/L	-
	90.0	98.0	12.5	11.5	RU3500900		RS 90 98/L	-
	90.0	100.0	8.0	7.3	RU3300900	●	-	-
	90.0	100.0	12.5	11.5	RU3600900		RS 90 100/L	-

● Available sizes - Not available RS/EU Production No. available sizes

Dimensions printed in **bold** type correspond to ISO/DIN 5597 and ISO 5597. * Split groove *** U-Cups for telescope cylinders*

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U-Cup RU3

Note	Rod Diameter	Groove Diameter	Groove Width	Seal Width	Part No.	B+S Ref.	Sealing Parts Ref. No.	Polypac Ref. No.
						Material Code		
	d_N f8/h9	**D1** H10	**L** +0.2	**B**		WUAQ3	WU9L3	UAT60
	90.0	**105.0**	**12.5**	**11.5**	**RU3000900**	●	RS 90 105/L	**-**
	90.0	105.0	13.0	12.0	RU3100900	●	**-**	-
	90.0	110.0	13.0	12.0	RU3400900	●	RS 90 110/L	-
	90.0	**110.0**	**16.0**	**15.0**	**RU3200900**	●	**-**	**-**
	93.0	101.0	12.5	11.5	RU3000930		RS 93 101/L	-
	95.0	103.0	8.0	7.0	RU3200950	●	-	-
	95.0	103.0	12.5	11.5	RU3300950	-	RS 95 103/L	-
	95.0	105.0	9.5	8.7	RU3400950	-	RS 95 105/L1	-
	95.0	**105.0**	**13.0**	**12.0**	**RU3000950**	●	**RS 95 105/L**	**EU 95105/S**
	95.0	110.0	13.0	12.0	RU3100950	●	-	-
	95.0	115.0	13.0	12.0	RU3500950	●	-	-
	97.0	105.0	12.5	11.5	RU3000970	-	RS 97 105/L1	-
	97.0	105.0	14.5	13.5	RU3100970	-	RS 97 105/L	-
	97.0	106.0	15.0	14.0	RU3200970	-	RS 97 106/L	-
	99.0	109.0	13.0	12.0	RU3000990	-	RS 99 109/L	-
**	*99.0*	*109.0*	*15.0*	*14.3*	*RU3100990*	-	-	*EU 99109/S*
	100.0	108.0	12.5	11.5	RU3401000	-	RS 100 108/L	-
	100.0	110.0	11.0	10.0	RU3501000	-	RS 100 110/L1	-
	100.0	110.0	12.5	11.5	RU3601000	-	RS 100 110/L	-
	100.0	115.0	11.0	10.0	RU3301000	●	-	-
	100.0	115.0	13.0	12.0	RU3001000	●	**-**	-
	100.0	120.0	13.0	12.0	RU3201000	●	**-**	-
	100.0	**120.0**	**16.0**	**15.0**	**RU3101000**	●	**-**	**-**
	104.8	117.0	7.0	6.0	RU3001048	●	-	-
	105.0	113.0	8.0	7.0	RU3101050	●	-	-
	105.0	113.0	12.5	11.5	RU3201050	-	RS 105 113/L1	-
	105.0	113.0	14.5	13.5	RU3301050	-	RS 105 113/L	-
	105.0	115.0	12.5	11.5	RU3401050	-	RS 105 115/L	-
	105.0	115.0	13.0	12.0	RU3501050	-	-	EU 105115/S
	105.0	120.0	10.0	9.2	RU3001050	●	**-**	-
	110.0	118.0	12.5	11.5	RU3301100	-	RS 110 118/L	-
	110.0	125.0	10.6	9.6	RU3101100	●	-	-
	110.0	**130.0**	**16.0**	**15.0**	**RU3001100**	●	**-**	**-**
	110.0	**135.0**	**20.0**	**19.0**	**RU3201100**	●	**-**	**-**
	112.0	122.0	11.0	10.0	RU3001120	-	RS 112 122/L	-
	113.0	123.0	9.5	8.7	RU3001130	-	RS 113 123/L1	-
	115.0	123.0	12.5	11.5	RU3101150	-	RS 115 123/L	-
	115.0	125.0	13.0	12.0	RU3201150	-	RS 115 125/L1	-
	115.0	125.0	15.0	14.0	RU3301150	-	RS 115 125/L	-
	115.0	130.0	11.0	10.0	RU3401150	-	RS 115 130/L	-
	117.0	126.0	15.0	14.0	RU3101170	-	RS 117 126/L	-
	117.0	133.0	10.0	9.2	RU3001170	●	-	-
	117.8	133.0	10.0	9.2	RU3001178	●	-	-
	118.0	126.0	12.5	11.5	RU3001180	-	RS 118 126/L1	-
	118.0	126.0	14.5	13.5	RU3101180	-	RS 118 126/L	-

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U-Cup RU3

Note	Rod Diameter	Groove Diameter	Groove Width	Seal Width	Part No.	B+S Ref.	Sealing Parts Ref. No.	Polypac Ref. No.
						Material Code		
	d_N f8/h9	**D1** H10	**L** +0.2	**B**		WUAQ3	WU9L3	UAT60
	120.0	128.0	12.5	11.5	RU3101200	-	RS 120 128/L	-
	120.0	130.0	12.5	11.5	RU3201200	-	RS 120 130/L	-
	120.0	130.0	13.0	12.0	RU3301200	-	RS 120 130/L1	-
**	***120.0***	***130.0***	***15.0***	***14.3***	***RU3401200***	**-**	**-**	***EU 120130/S***
	120.0	140.0	16.0	15.0	RU3001200	●	-	-
	121.0	135.0	10.0	9.0	RU3001210	-	RS 121 135/L	-
	125.0	133.0	12.5	11.5	RU3201250	-	RS 125 133/L	-
	125.0	135.0	11.0	10.0	RU3301250	-	RS 125 135/L	-
	125.0	**145.0**	**16.0**	**15.0**	**RU3001250**	●	**-**	**-**
	125.0	**150.0**	**20.0**	**19.0**	**RU3101250**	●	**-**	**-**
	127.0	140.0	12.5	11.5	RU3001270	-	RS 127 140/L	-
	128.0	136.0	12.5	11.5	RU3001280	-	RS 128 136/L	-
	130.0	138.0	12.5	11.5	RU3201300	-	RS 130 138/L	-
	130.0	150.0	13.5	12.5	RU3001300	●	**-**	-
	130.0	150.0	16.0	15.0	RU3101300	●	-	-
	131.0	150.0	14.0	13.0	RU3001310	-	RS 131 150/L	-
	132.0	142.0	9.5	8.7	RU3001320	-	RS 132 142/L1	-
	135.0	143.0	12.5	11.5	RU3001350	-	RS 135 143/L	-
	135.0	150.0	12.5	11.5	RU3101350	-	RS 135 150/L	-
	135.0	150.0	16.0	15.0	RU3201350	-	RS 135 150/L1	-
	137.0	146.0	15.0	14.0	RU3001370	-	RS 137 146/L	-
	139.8	156.0	7.0	6.0	RU3001398	●	-	-
	140.0	148.0	12.5	11.5	RU3301400	-	RS 140 148/L	-
	140.0	150.0	12.5	11.5	RU3401400	-	RS 140 150/L	-
	140.0	155.0	10.6	9.6	RU3101400	●	-	-
	140.0	**160.0**	**16.0**	**15.0**	**RU3001400**	●	**-**	**-**
	140.0	**165.0**	**20.0**	**19.0**	**RU3201400**	●	**-**	**-**
	141.0	151.0	13.0	12.0	RU3001410	-	RS 141 151/L	-
**	*141.0*	*151.0*	*15.0*	*14.3*	*RU3101410*	-	-	*EU 141151/S*
	143.0	151.0	12.5	11.5	RU3001430	-	RS 143 151/L1	-
	143.0	151.0	14.5	13.5	RU3101430	-	RS 143 151/L	-
	145.0	155.0	13.0	12.0	RU3001450	-	RS 145 155/L	-
	145.0	160.0	13.0	12.0	RU3101450	-	RS 145 160/L	-
	148.0	160.0	13.0	12.0	RU3001480	-	RS 148 160/L	-
	150.0	170.0	16.0	15.0	RU3001500	●	-	-
	152.0	160.0	12.5	11.5	RU3001520	-	RS 152 160/L	-
	152.0	162.0	11.0	10.0	RU3101520	-	RS 152 162/L	-
	152.0	171.0	12.5	11.5	RU3201520	-	RS 152 171/L	-
	152.5	160.5	15.0	14.0	RU3001525	-	RS 152.5 160.5/L	-
	155.0	163.0	12.5	11.5	RU3001550	-	RS 155 163/L	-
	160.0	168.0	12.5	11.5	RU3001600	-	RS 160 168/L	-
	160.0	170.0	12.5	11.5	RU3101600	-	RS 160 170/L	-
	162.0	172.0	13.0	12.0	RU3001620	-	RS 162 172/L	-
**	*162.0*	*172.0*	*15.0*	*14.3*	*RU3101620*	-	-	*EU 162172/S*
	165.0	184.0	14.0	13.0	RU3001650	-	RS 165 184/L	-

● Available sizes - Not available RS/EU Production No. available sizes

Dimensions printed in **bold** type correspond to ISO/DIN 5597 and ISO 5597. * Split groove ** *U-Cups for telescope cylinders*

The listed products are technically equivalent but availability and pricing may vary.

Note	Rod Diameter	Groove Diameter	Groove Width	Seal Width	Part No.	B+S Ref.	Sealing Parts Ref. No.	Polypac Ref. No.
						Material Code		
	d_N f8/h9	**D1** H10	**L** +0.2	**B**		WUAQ3	WU9L3	UAT60
	170.0	178.0	12.5	11.5	RU3201700	-	RS 170 178/L	-
	170.0	180.0	13.0	12.0	RU3301700	-	RS 170 180/L	-
	170.0	190.0	16.0	15.0	RU3001700	•	-	-
	171.0	179.0	12.5	11.5	RU3001710	-	RS 171 179/L	-
	175.0	185.0	13.0	12.0	RU3001750	-	RS 175 185/L	-
	177.0	205.0	20.0	19.0	RU3001770	-	RS 177 205/L	-
	178.0	188.0	11.0	10.0	RU3001780	•	-	-
	180.0	188.0	14.5	13.5	RU3201800	-	RS 180 188/L	-
	180.0	190.0	11.0	10.0	RU3301800	-	RS 180 190/L	-
	180.0	195.0	13.5	12.5	RU3401800	-	RS 180 195/L	-
	180.0	200.0	16.0	15.0	RU3101800	•	-	-
	180.0	**205.0**	**16.0**	**15.0**	**RU3001800**	•	**-**	**-**
**	*183.0*	*193.0*	*15.0*	*14.3*	*RU3001830*	-	-	*EU 183193/S*
	185.0	193.0	12.5	11.5	RU3001850	-	RS 185 193/L	-
	200.0	208.0	12.5	11.5	RU3302000	-	RS 200 208/L	-
	200.0	220.0	11.5	10.5	RU3102000	•	-	-
	200.0	**225.0**	**16.0**	**15.0**	**RU3002000**	•	**-**	**-**
	205.0	220.0	13.5	12.5	RU3002050	-	RS 205 220/L	-
**	*207.0*	*217.0*	*15.0*	*14.3*	*RU3002070*	-	-	*EU 207217/S*
	209.0	228.0	14.0	13.0	RU3002090	-	RS 209 228/L	-
	212.0	220.0	14.5	13.5	RU3002120	-	RS 212 220/L	-
	220.0	245.0	16.0	15.0	RU3002200	•	**-**	-
**	*231.0*	*242.0*	*15.0*	*14.3*	*RU3002310*	-	-	*EU 231241/S*
	232.0	246.0	13.0	12.0	RU3002320	-	RS 232 246/L	-
	235.0	254.0	11.5	10.0	RU3002350	•	-	-

• Available sizes - Not available RS/EU Production No. available sizes
Dimensions printed in **bold** type correspond to ISO/DIN 5597 and ISO 5597. * Split groove *** U-Cups for telescope cylinders*
The listed products are technically equivalent but availability and pricing may vary.

Ordering Example

U-Cup Type RU3
Rod diameter: d = 70.0 mm
Groove diameter: d1 = 85.0 mm
Groove width L = 12.5 mm
Part No.: RU3000700 -

Material code

B+S:	WUAQ3	turquoise
Sealing Parts:	WU9L3	blue
Polypac:	UAT60	red

Order No. RU30 0 0700 - WUAQ3

- RU30 — Series No.
- 0 — Type (Standard)
- 0700 — Rod diameter x 10
- - — Quality Index (Standard)
- WUAQ3 — Material code

Order No. RU30 0 0700 - WU9L3

- RU30 — Series No.
- 0 — Type (Standard)
- 0700 — Rod diameter x 10
- - — Quality Index (Standard)
- WU9L3 — Material code

Sealing Parts Ref. No.: RS 70 85/L

Order No. RU30 0 0700 - UAT60

- RU30 — Series No.
- 0 — Type (Standard)
- 0700 — Rod diameter x 10
- - — Quality Index (Standard)
- UAT60 — Material code

Polypac Ref. No.: EU 7085/S

Type RU3B

The U-Cup type RU3B is used as a rod seal for heavy-duty conditions in mobile and industrial hydraulics. It is installed with a fixed seat at its outer diameter. The rear dynamic sealing lip improves the leakage behaviour and, at the same time, prevents the entry of contaminants from the atmosphere side. Compared with the type RU2, the shorter inner lip is more flexible and can adapt better to the operating conditions and deflections of the piston rod.

U-Cup RU3B has integrated Back-up Ring to prevent the seal material from extrusion at high temperatures and high peak pressures.

A lubricant trap forms between the sealing lips. This counters the stick-slip tendency and prevents dry running. At the same time the good lubrication behaviour reduces wear.

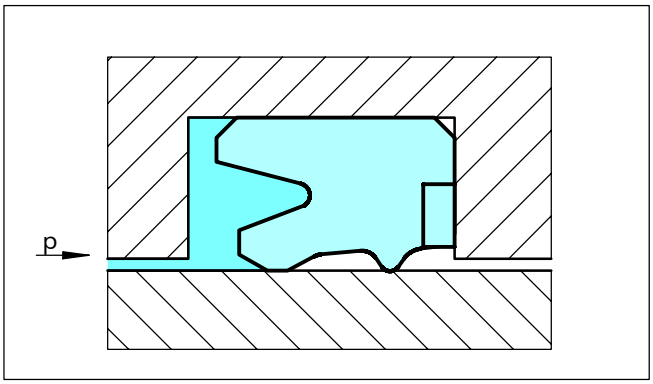


Figure 45 U-Cup, type RU3B

Advantages

- Good sealing effect even in pressure-free state
- Good abrasion resistance, wear-resistant
- Good lubricant film formation in the seal clearance
- Compensates deflections of the piston rod
- Low stick-slip effect
- Entry of dirt and air into the system is more or less ruled out
- Unaffected by sudden loads and high pressures
- Good extrusion resistance
- Larger sealing gaps (approx. 50% larger than table XX values)
- Suitable for high pressure peaks

Material

The thermoplastic polyurethane material used for U-Cups has a high abrasion resistance, a low compression set and exhibits a high resistance to clearance extrusion.

U-Cup material:

WU9L3	blue color

Back-up ring material:

Polyamid	PA

Material set code:

WUR0L

Installation Recommendation

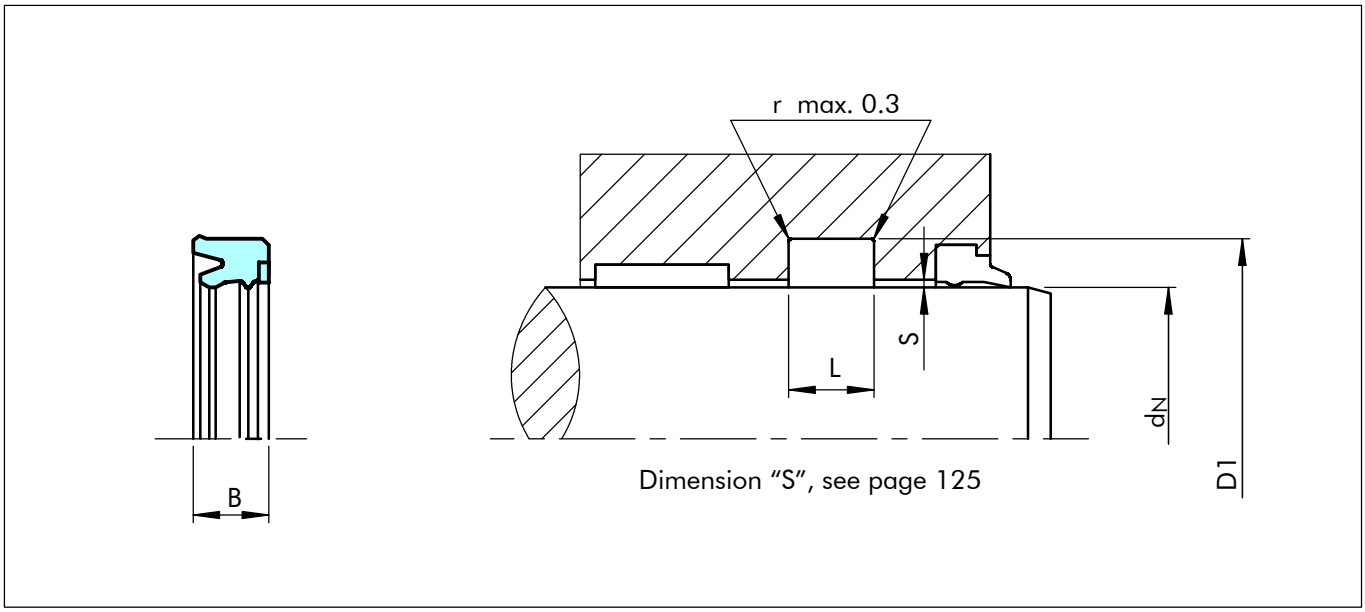


Figure 46 Installation drawing

Table XXVI Preferred Series / Part No.

Note	Rod Diameter	Groove Diameter	Groove Width	Seal Width	Part No.	Sealing Parts Ref. No.
	d_N h11	**D1** H11	**L** +0.2	**B**		
*	40.0	55.0	11.0	10.0	RU30B0400	RS 40 55/LA
	42.0	51.0	11.0	10.0	RU30B0420	RS 42 51/LA
	42.0	52.0	14.0	13.0	RU31B0420	RS 45 52/LA
*	50.0	59.0	11.0	10.0	RU30B0500	RS 50 59/LA
	50.0	**60.0**	**8.0**	**7.2**	RU31B0500	**RS 50 60/LA**
	50.0	65.0	11.0	10.0	RU32B0500	RS 50 65/LA
*	50.0	70.0	13.0	12.0	RU33B0500	RS 50 70/LA
*	60.0	68.0	14.0	13.0	RU30B0600	RS 60 68/LA
	60.0	69.0	11.0	10.0	RU31B0600	RS 60 69/LA
	60.0	80.0	13.0	12.0	RU32B0600	RS 60 80/LA
	63.0	83.0	13.0	12.0	RU30B0630	RS 63 83/LA
	70.0	80.0	8.0	7.2	RU30B0700	RS 70 80/LA
	70.0	85.0	12.5	11.5	R031B0700	RS 70 85/LA
	78.0	86.0	14.0	13.0	RU30B0780	RS 78 86/LA
	80.0	**95.0**	**12.5**	**11.5**	**RU30B0800**	**RS 80 95/LA**
**	97.0	105.0	14.0	13.0	RU30B0970	RS 97 105/LA
	100.0	120.0	14.5	13.5	RU30B1000	RS 100 120/LA
	105.0	125.0	13.0	12.0	RU30B1050	RS 105 125/LA
**	118.0	126.0	14.0	13.0	RU30B1180	RS 118 126/LA
	120.0	140.0	13.0	12.0	RU30B1200	RS 120 140/LA
	125.0	145.0	13.0	12.0	RU30B1250	RS 125 145/LA
**	143.0	151.0	14.0	13.0	RU30B1430	RS 143 151/LA
**	171.0	179.0	14.0	13.0	RU30B1710	RS 171 179/LA

RS Production No. available sizes Dimensions printed in **bold** type correspond to ISO/DIN 5597 and ISO 5597.
* Split groove ** *U-Cups for telescope cylinders* The listed products are technically equivalent but availability and pricing may vary.

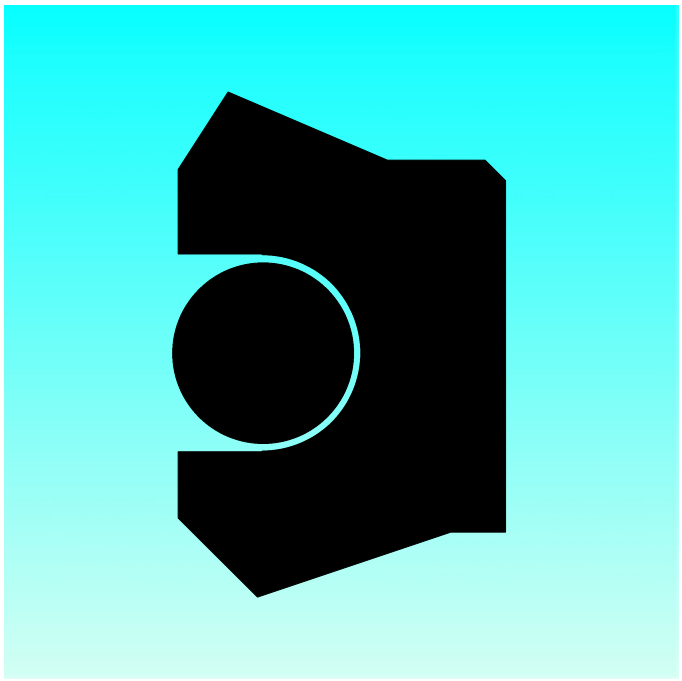
Ordering example

U-Cup Type RU3B
Rod diameter: d_N = 50.0 mm
Groove diameter: d1 = 65.0 mm
Groove width L = 11 mm
Part No.: RU32B0500 -
Compound WUR0L blue color

Order No.	RU32	B	0500	-	WUR0L
	Series No.				
		Type (Standard)			
			Rod diameter x 10		
				Quality Index (Standard)	
					Material code

Sealing Parts Ref. No.: RS 50 65/LA

B+S RU6



- Single Acting U-Cup -

- Rubber Energized -

- Material -

- Polyurethane + NBR -

U-Cup RU6

Description

additional to the machined seals Stepseal® K and Rimseal for housings due to ISO 7425/2 (rubber energised plastic seals) the U-Cup type RU6 has been developped as an injection molded seal of polyurethane material to fit in the same ISO housings. The integrated NBR O-Ring (only available for series RU62 RU64) improves the performance at low pressure and low temperature applications. Polyurethan (Zurcon® Z04) is a proved material for U-cups due to their good mechanical properties.

Type RU6

The U-Cup type RU6 can be installed as a single seal for low to medium duty applications; for sealing systems, the U-Cup RU6 shall be installed mainly as a secondary seal together with the Turcon® Stepseal® K as primary seals.

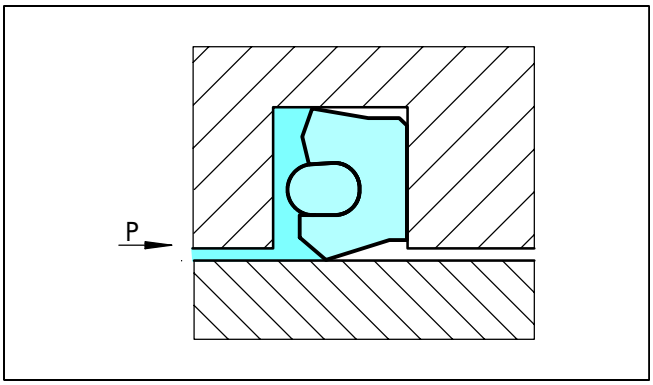


Figure 47 U-Cup, type RU6

Method of Operation

The sealing effect of the U-Cup RU6 comes from the intrinsive preload of the seal body and from the compression of the seal lip and the O-Ring during installation. In operation conditions, the radial contact forces are superimposed by the system pressure.

Due to the special design and the integrated O-Ring the RU6 U-Cups have an excellent sealing behavior with and without pressure activation. The short sealing lip gives better friction values compared to common U-Cups.

Advantages

- Very good low pressure sealability
- Simple installation
- Lower friction compared with common U-Cups
- Installation in ISO 7475/2 grooves
- Very low compression set due to O-Ring

Application Examples

- General hydraulic cylinders
- Injection molding machines
- Lift trucks
- Agricultural machines

Technical Data

Operating pressure:	Max. 25 MPa (as single element)
Speed:	Up to 0.5 m/s
Temperature:	Use in mineral oils: -30°C to + 80°C
Media:	Mineral oil-based hydraulic fluids.

Important Note:
The above data are maximum values and cannot be used at the same time. e.g. the maximum operating speed depends on material type, pressure, temperature and gap value.

Clearance

Operating Pressure MPa max.	Radial Clearance S max.
16	0.60
25	0.50

The values for S max given in this table apply to all types for the low-pressure side of the U-Cup. They are designed for an operating temperature of 60°C.(for harsh conditions and high side loads the gap must be reduced by 50%)

Material

The thermoplastic polyurethane material Zurcon® Z04 has a high abrasion resistance, a low compression set and exhibits a high resistance to clearance extrusion.

The integrated O-Ring is an NBR with 70 shore A and a very low compression set.

U-Cup: polyurethane 94 shore A
material code Z04

O-Ring: NBR 70 shore A
material code N

Set: Z04 N

Design and Installation Instructions

The different forms have different grooves, see Tables XXI and XXVII. U-Cups are used together with single-acting scrapers.

Surface roughness

Parameter	Mating Surface µm	Groove Surface µm
R_{max}	1.00 - 4.00	< 16.0
$R_{z\ DIN}$	0.63 - 2.50	< 10.0
R_a	0.10 - 0.40	< 1.6

The material contact area R_{mr} should be approx. 50 to 70%, determined at a cut depth c = 0.25 x R_z, relative to a reference line of $C_{ref.}$ 5%.

Installation Recommendation

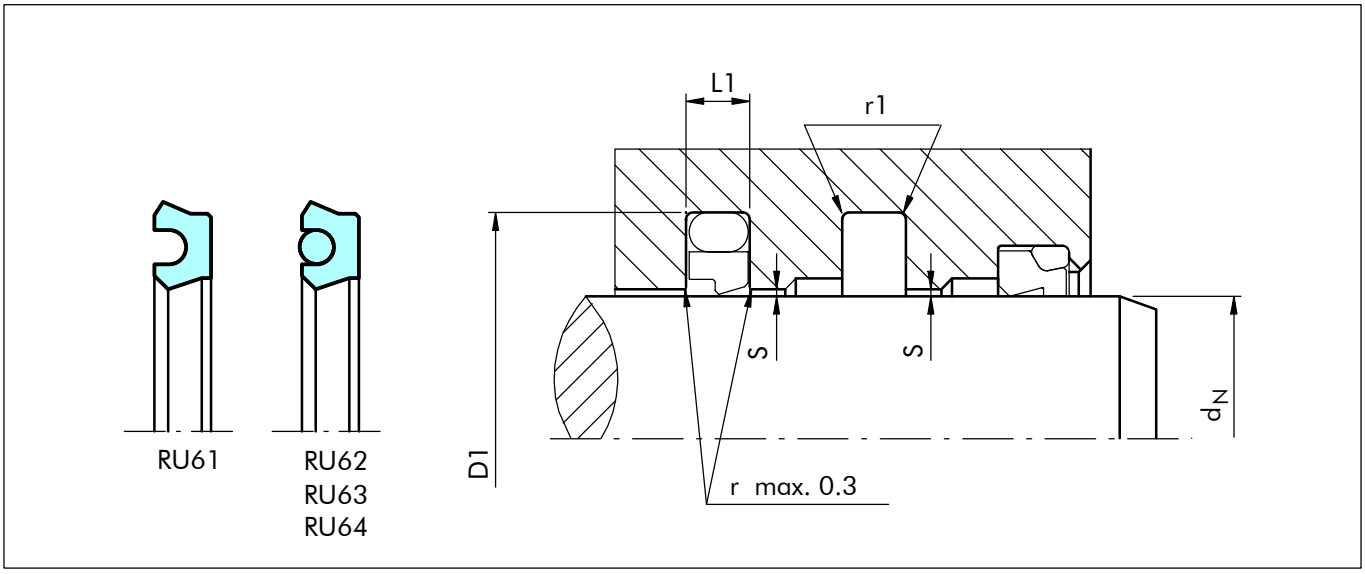


Figure 48 Installation drawing

Table XXVII Installation Dimensions / Part No.

Rod Diameter	Groove Diameter	Groove Width	Radius	Part No.	O-Ring Size
d_N f8/h9	D1 H10	L1 +0.2	r1		
12.0	**19.5**	**3.2**	**0.5**	**RU6100120**	**-**
14.0	**21.5**	**3.2**	**0.5**	**RU6100140**	**-**
16.0	**23.5**	**3.2**	**0.5**	**RU6100160**	**-**
18.0	**25.5**	**3.2**	**0.5**	**RU6100180**	**-**
20.0	**27.5**	**3.2**	**0.5**	**RU6100200**	**-**
20.0	**31.0**	**4.2**	**0.5**	**RU6200200**	**23.47 x 2.62**
22.0	**29.5**	**3.2**	**0.5**	**RU6100220**	**-**
22.0	**33.0**	**4.2**	**0.5**	**RU6200220**	**25.07 x 2.62**
25.0	**32.5**	**3.2**	**0.5**	**RU6100250**	**-**
25.0	**36.0**	**4.2**	**0.5**	**RU6200250**	**28.24 x 2.62**
28.0	**39.0**	**4.2**	**0.5**	**RU6200280**	**31.42 x 2.62**
30.0	41.0	4.2	0.5	RU6200300	-
32.0	**43.0**	**4.2**	**0.5**	**RU6200320**	**36.17 x 2.62**
36.0	**47.0**	**4.2**	**0.5**	**RU6200360**	**39.34 x 2.62**
40.0	**51.0**	**4.2**	**0.5**	**RU6200400**	**44.12 x 2.62**
40.0	**55.5**	**6.3**	**0.9**	**RU6300400**	**44.04 x 3.53**
45.0	**56.0**	**4.2**	**0.5**	**RU6200450**	**48.90 x 2.62**
45.0	**60.5**	**6.3**	**0.9**	**RU6300450**	**50.39 x 3.53**
50.0	**61.0**	**4.2**	**0.5**	**RU6200500**	**53.64 x 2.62**
50.0	**65.5**	**6.3**	**0.9**	**RU6300500**	**53.57 x 3.53**
55.0	66.0	4.2	0.5	RU6200550	58.42 x 2.62
56.0	**67.0**	**4.2**	**0.5**	**RU6200560**	**59.99 x 2.62**
56.0	**71.5**	**6.3**	**0.9**	**RU6300560**	**59.92 x 3.53**
63.0	**74.0**	**4.2**	**0.5**	**RU6200630**	**66.34 x 2.62**

Dimensions printed in **bold** type correspond to ISO/DIN 7425/2. Is also suitable for B+S Stepseal® groove.

U-Cup RU6

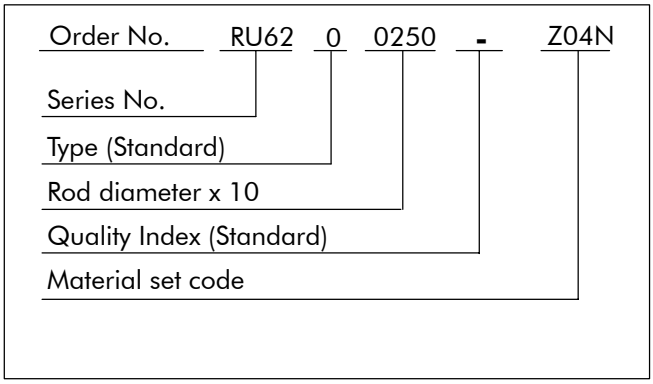
Rod Diameter	Groove Diameter	Groove Width	Radius	Part No.	O-Ring Size
d_N f8/h9	**D1** H10	**L1** +0.2	**r1**		
63.0	**78.5**	**6.3**	**0.9**	**RU6300630**	**66.27 x 3.53**
70.0	**85.5**	**6.3**	**0.9**	**RU6300700**	**75.79 x 3.53**
75.0	**86.0**	**4.2**	**0.5**	**RU6200750**	**82.22 x 2.62**
75.0	**86.0**	**6.3**	**0.9**	**RU6300750**	**-**
80.0	**95.5**	**6.3**	**0.9**	**RU6300800**	**85.32 x 3.53**
90.0	**105.5**	**6.3**	**0.9**	**RU6300900**	**94.84 x 3.53**
95.0	**110.5**	**6.3**	**0.9**	**RU6300950**	**101.19 x 3.53**
100.0	**115.5**	**6.3**	**0.9**	**RU6301000**	**104.37 x 3.53**
110.0	**125.5**	**6.3**	**0.9**	**RU6301100**	**113.89 x 3.53**
125.0	**140.5**	**6.3**	**0.9**	**RU6301250**	**129.77 x 3.53**
130.0	**145.5**	**6.3**	**0.9**	**RU6301300**	**-**
140.0	**155.5**	**6.3**	**0.9**	**RU6301400**	**145.64 x 3.53**
145.0	**160.5**	**6.3**	**0.9**	**RU6301450**	**-**
150.0	**165.5**	**6.3**	**0.9**	**RU6301500**	**158.34 x 3.53**
160.0	**175.5**	**6.3**	**0.9**	**RU6301600**	**164.69 x 3.53**
160.0	**181.0**	**8.1**	**0.9**	**RU6401600**	**164.47 x 5.33**
180.0	**195.5**	**6.3**	**0.9**	**RU6301800**	**183.74 x 3.53**
180.0	**201.0**	**8.1**	**0.9**	**RU6401800**	**189.87 x 5.33**
190.0	**205.5**	**6.3**	**0.9**	**RU6301900**	**196.44 x 3.53**
200.0	**221.0**	**8.1**	**0.9**	**RU6402000**	**208.92 x 5.33**
220.0	**241.0**	**8.1**	**0.9**	**RU6102200**	**227.97 x 5.33**
250.0	**271.0**	**8.1**	**0.9**	**RU6402500**	**253.37 x 5.33**
260.0	**281.0**	**8.1**	**0.9**	**RU6402600**	**-**
350.0	**371.0**	**8.1**	**0.9**	**RU6403500**	**-**

Dimensions printed in **bold** type correspond to ISO/DIN 7425/2. Is also suitable for B+S Stepseal® groove.

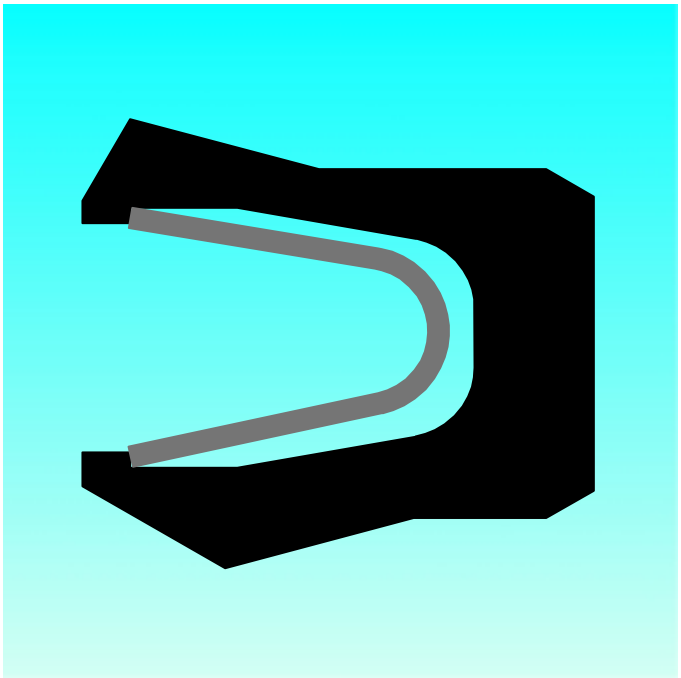
Ordering example

U-Cup Type RU6
Rod diameter: d_N = 25.0 mm
Groove diameter: d1 = 36.0 mm
Groove width: L = 4.2 mm
Part No.: RU6200250 -

Compound code seal: Z04 turquoise color
Compound code O-Ring: N
Material set code: Z04N



TURCON® VARISEAL® M2



- Single Acting -

- Spring Energised Plastic U-Cup -

- Material -

- Turcon® and Zurcon® -

Turcon® Variseal® M2

Description

The Turcon® Variseal® M2 is a single-acting seal consisting of a U-shaped seal jacket and a V-shaped corrosion resistant spring.

The characteristic of the Variseal® M2 is the newly developed asymmetric seal profile, where the dynamic lip has an optimized short and heavy profile, offering reduced friction and long service life.

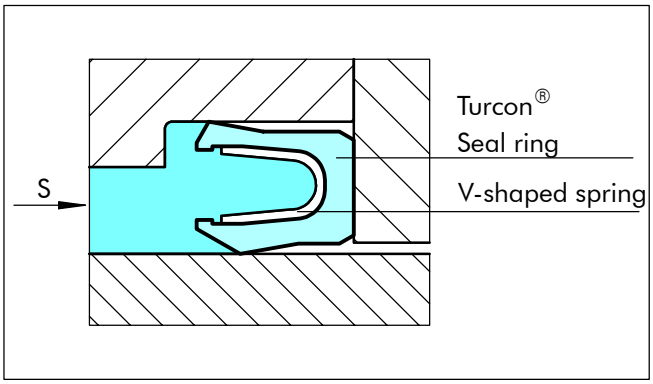


Figure 49 Turcon® Variseal® M2

At low and zero pressure, the metal spring provides the primary sealing force. As the system pressure increases, the main sealing force is achieved by the system pressure and ensures a tight seal from zero to high pressure.

The possibility of matching suitable materials for the seal and the spring allows use in a wide range of applications going beyond the field of hydraulics, e.g. in the chemical, pharmaceutical and foodstuff industry.

The Variseal® M2 can be sterilized and is available in a special Hi-Clean version where the spring cavity is filled with a Silicone gel preventing contaminants from being entrapped in the seal. This design also works well in applications involving mud, slurries or adhersives to keep grit from packing into the seal cavity and inhibiting the spring action.

For applications with highly viscous media, please contact our engineering department.

Variseal® M2 seals can be installed in grooves to MIL G 5514F and ISO 3771. The seal can only be installed to a limited extent in closed grooves. Installation instructions, see fig. 14 page 15.

Advantages

- Resistant to most fluids and chemicals
- Low coefficients of friction
- Stick-slip-free operating for precise control
- High abrasion resistance and dimensional stability
- Can handle rapid changes in temperature
- No contamination in contact with foodstuffs, pharmaceutical and medicinal fluids
- High temperature range
- Sterilisable
- Unlimited shelf life.

Application Examples

Turcon® Variseal® M2 is the recommended sealing element for all applications requiring stick slip free operation as well as chemical resistance against almost all media such as:

- Valves
- Pumps
- Separators
- Actuators
- Dosing devices

It requires a mating surface of high quality to avoid high wear rate.

Technical Data

Operating conditions

Pressure:	For dynamic loads: 45 MPa
Speed:	Up to 15 m/s
Temperature:	-70°C to +260°C
	For specific applications at lower temperatures, please enquire
Media:	Practically all fluids, chemicals and gases
Note:	At high temperatures, pressures and speeds must be reduced.

Important Note:
The above data are maximum values and cannot be used at the same time. e.g. the maximum operating speed depends on material type, pressure, temperature and gap value.

Materials

All materials used are physiologically safe. They contain no odour or taste-affecting substances.

The following material combination has proved effective for most fluid applications:

Seal ring: Turcon® T40

Spring: Stainless Steel Material No. AISI 301 Code S

For gas application use:

Seal ring: Turcon® T05/Zurcon® Z80

For use in accordance with the demands of the "Food and Drug Administration", suitable materials are available on request.

Table XXVIII Turcon® and Zurcon® Materials for Variseal® M2

Material, Applications, Properties	Code	Spring Material	Code	Operating Temp.* °C	Mating Surface Material	MPa max.
Turcon® T40 For all lubricating and non-lubricating hydraulic fluids, **soft mating surfaces.** Carbon fibre filled Colour: Grey	T40	AISI 301	S	-70 to +260	Mild steel Steel, chromeplated Cast iron Stainless steel Aluminium Bronze Alloys	45
Turcon® T05 For all lubricating hydraulic fluids, hard mating surfaces, **very good sliding properties, low friction.** Colour: Turquoise	T05	AISI 301	S	-70 to +260	Mild steel tubes Steel, hardened Steel, chromeplated	20
Zurcon® Z80 For lubricating and non-lubricating hydraulic fluids, high abrasion resistance, very good chemical resistance, limited temperature resistance. Ultra high molecular weight polyethylen Colour: White to off-white	Z80	AISI 301	S	-70 to +80	Mild steel Steel, chromeplated Stainless steel Aluminium Bronze Ceramic coating	40

* The Operation Temperature is only valid in mineral hydraulic oil.

Highlighted materials are standard.

Installation Recommendation

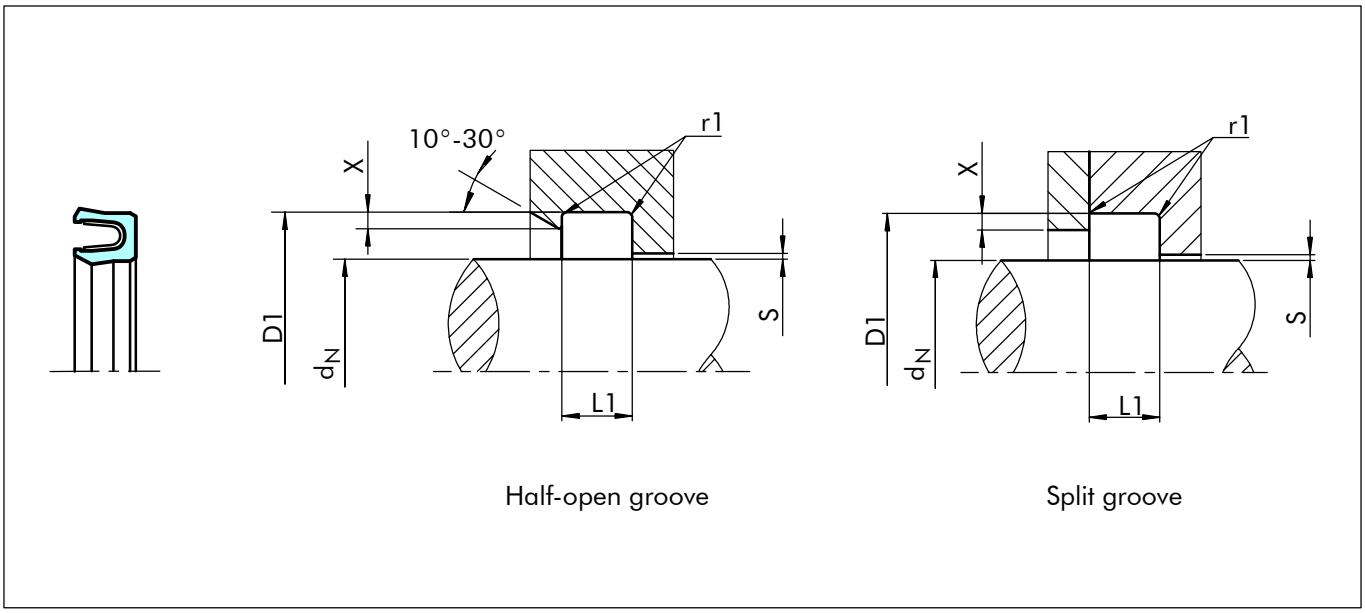


Figure 50 Installation drawing

Table XXIX Installation Dimensions

Series No.	Rod Diameter d_N h9		Groove Diameter	Groove Width	Radius	Step[2] Height	Radial Clearance S max.*			
	Recommended Range	Extended[1] Range	D_1 H9	L_1 +0.2	r_1	X min.	<2 MPa	<10 MPa	<20 MPa	<40 MPa
RVA0	3.0 - 9.9	3.0 - 40.0	d_N + 2.9	2.4	0.4	0.4	0.20	0.10	0.08	0.05
RVA1	10.0 - 19.9	6.0 - 200.0[3]	d_N + 4.5	3.6	0.4	0.6	0.25	0.15	0.10	0.07
RVA2	20.0 - 39.9	10.0 - 400.0[3]	d_N + 6.2	4.8	0.6	0.7	0.35	0.20	0.15	0.08
RVA3	40.0 - 119.9	20.0 - 700.0[3]	d_N + 9.4	7.1	0.8	0.8	0.50	0.25	0.20	0.10
RVA4	120.0 - 630.0	35.0 - 1600.0[3]	d_N + 12.2	9.5	0.8	0.9	0.60	0.30	0.25	0.12
RVA5	1000.0 - 2600.0	80.0 - 2600.0[3]	d_N + 19.0	15.0	0.8	0.9	0.90	0.50	0.40	0.20

* At pressures **> 40 MPa**: S max. = H8/f8 (bore/rod) in the area of the seal

[1] Available on request

[2] Maximum X - see table VI page 15
Note: Recommended Step Height is not always obtainable

[3] By diameters larger than "Recommended Range": the tolerance on d and d_1 is changed to h8/H8.
By pressure above 40 MPa, please contact Busak+Shamban

Ordering Example

Turcon® Variseal® M2, standard series, Series RVA3 (from Table XXIX).
Rod diameter: d_N = 80.0 mm
Part No.: RVA300800 (from Table XXX)

For other seal and spring materials please contact the Busak+Shamban representative.

** For diameters ≥ 1000.0 mm multiply only by factor 1.
Example: RVA5 for diameter 1200.0 mm.
Order no.: RVA5**X1200** - T40S.

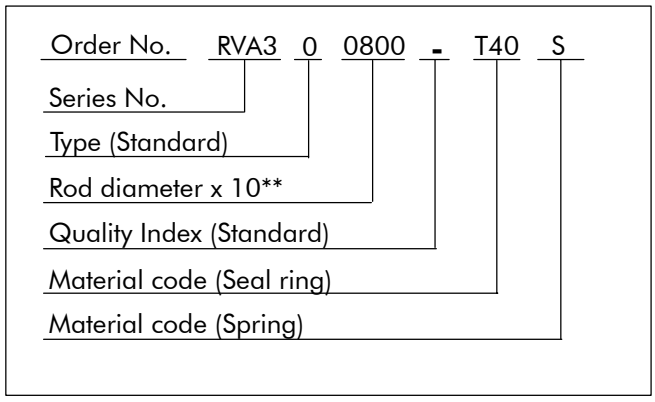


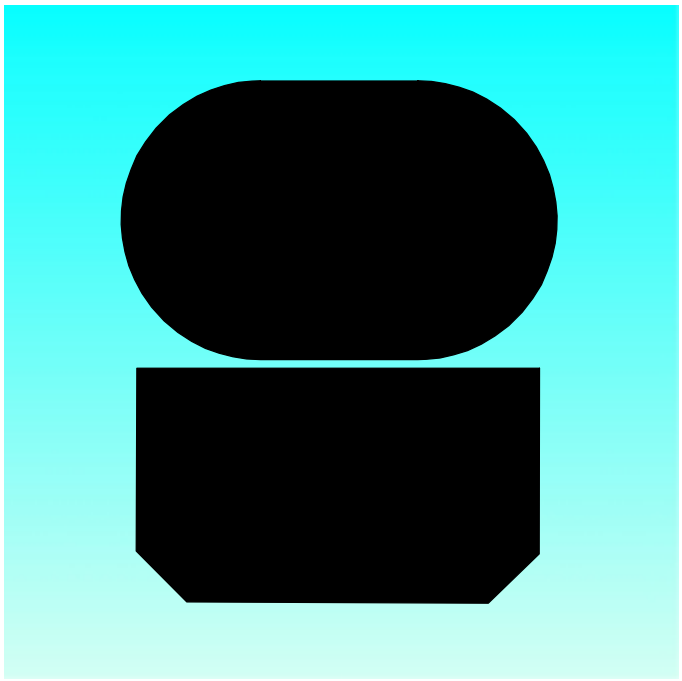
Table XXX Preferred Series / Part No.

Rod Diameter	Groove Diameter	Groove Width	Part No.
d_N h9	D_1 H9	L_1 +0.2	
3.0	5.9	2.4	RVA 000030
4.0	**6.9**	**2.4**	**RVA 000040**
5.0	**7.9**	**2.4**	**RVA 000050**
6.0	**8.9**	**2.4**	**RVA 000060**
8.0	**10.9**	**2.4**	**RVA 000080**
10.0	**14.5**	**3.6**	**RVA 100100**
12.0	**16.5**	**3.6**	**RVA 100120**
14.0	**18.5**	**3.6**	**RVA 100140**
15.0	19.5	3.6	RVA 100150
16.0	**20.5**	**3.6**	**RVA 100160**
18.0	**22.5**	**3.6**	**RVA 100180**
20.0	**26.2**	**4.8**	**RVA 200200**
22.0	**28.2**	**4.8**	**RVA 200220**
25.0	**31.2**	**4.8**	**RVA 200250**
28.0	**34.2**	**4.8**	**RVA 200280**
30.0	36.2	4.8	RVA 200300
32.0	**38.2**	**4.8**	**RVA 200320**
35.0	41.2	4.8	RVA 200350
36.0	**42.2**	**4.8**	**RVA 200360**
40.0	**49.4**	**7.1**	**RVA 300400**
42.0	51.4	7.1	RVA 300420
45.0	**54.4**	**7.1**	**RVA 300450**
48.0	57.4	7.1	RVA 300480
50.0	**59.4**	**7.1**	**RVA 300500**
52.0	61.4	7.1	RVA 300520
55.0	64.4	7.1	RVA 300550
56.0	**65.4**	**7.1**	**RVA 300560**
60.0	69.4	7.1	RVA 300600
63.0	**72.4**	**7.1**	**RVA 300630**
65.0	74.4	7.1	RVA 300650
70.0	**79.4**	**7.1**	**RVA 300700**
75.0	84.4	7.1	RVA 300750
80.0	**89.4**	**7.1**	**RVA 300800**
85.0	94.4	7.1	RVA 300850
90.0	**99.4**	**7.1**	**RVA 300900**
95.0	104.4	7.1	RVA 300950
100.0	**109.4**	**7.1**	**RVA 301000**
105.0	114.4	7.1	RVA 301050
110.0	**119.4**	**7.1**	**RVA 301100**

Rod Diameter	Groove Diameter	Groove Width	Part No.
d_N h9	D_1 H9	L_1 +0.2	
115.0	124.4	7.1	RVA 301150
120.0	132.2	9.5	RVA 401200
125.0	**137.2**	**9.5**	**RVA 401250**
130.0	142.2	9.5	RVA 401300
135.0	147.2	9.5	RVA 401350
140.0	**152.2**	**9.5**	**RVA 401400**
150.0	162.2	9.5	RVA 401500
160.0	**172.2**	**9.5**	**RVA 401600**
170.0	182.2	9.5	RVA 401700
180.0	**192.2**	**9.5**	**RVA 401800**
190.0	202.2	9.5	RVA 401900
200.0	**212.2**	**9.5**	**RVA 402000**
210.0	222.2	9.5	RVA 402100
220.0	**232.2**	**9.5**	**RVA 402200**
230.0	242.2	9.5	RVA 402300
240.0	252.2	9.5	RVA 402400
250.0	**262.2**	**9.5**	**RVA 402500**
280.0	**292.2**	**9.5**	**RVA 402800**
300.0	312.2	9.5	RVA 403000
320.0	**332.2**	**9.5**	**RVA 403200**
350.0	362.2	9.5	RVA 403500
360.0	**372.2**	**9.5**	**RVA 403600**
400.0	412.2	9.5	RVA 404000

The rod diameters in bold type correspond to the recommendations of ISO 3320.
Other dimensions and all intermediate sizes up to 2.600 mm diameter including imperial (inch) sizes can be supplied.

TURCON® GLYD RING®



- Double Acting -

- Rubber Energised Plastic Faced Seal -

- Material -

- Turcon® and Zurcon® -

Turcon® Glyd Ring®

Description

Successfully used for decades, the Tucon® Glyd Ring® is a very effective and reliable low frictional seal. It is particularly suitable as a rod seal in both high and low pressure systems.

The double acting Tucon® Glyd Ring® is a combination of a Turcon based slipper seal and an energising O-Ring. It is produced with an interference fit which together with the squeeze of the O-Ring ensures a good sealing effect even at low pressure. At higher system pressures, the O-Ring is energised by the fluid, pushing the Turcon® Glyd Ring® against the sealing face with increased force.

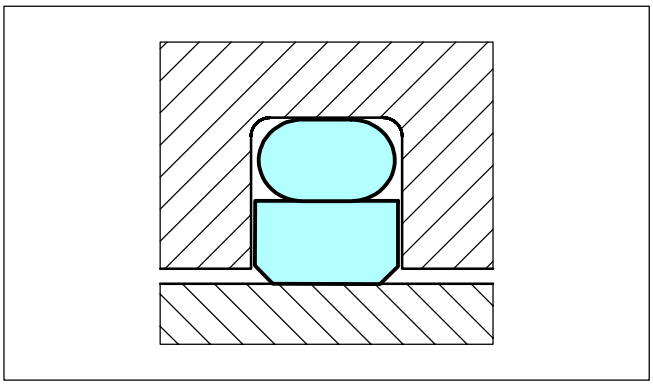


Figure 51 Turcon® Glyd Ring®

The geometry of the Tucon® Glyd Ring® ensures a good static sealing and allows the lubricating hydrodynamic oil film to be build under the seal in reciprocating applications.

Notches
To assure that a rapid energising of the seal takes place at sudden changes of pressure and direction of motion, radial "notches" are machined on both sides of the seal.

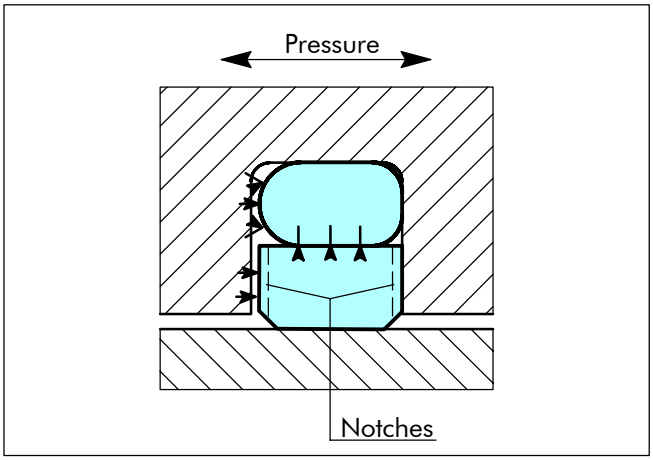


Figure 52 Turcon® Glyd Ring® with notches

Notches are standard on the following series and diameters
RG 41 for bore dia. > 30mm
RG 43 for bore dia. > 20mm
RG 45 for bore dia. > 40mm

Advantages

- No stick-slip effect when starting for smooth operation
- Minimum static and dynamic friction coefficient for a minimum energy loss and operating temperature
- Suitable for non lubricating fluids depending on seal material for optimum design flexibility
- High wear resistance ensures long service life
- Installation grooves acc. to ISO 7425/2
- No adhesive effect to the mating surface during long period of inactivity or storage
- Suitable for most hydraulic fluids in relation with most modern hardware materials and surface finish depending on material selected.
- Suitable for new environmentally safe hydraulic fluids
- Available for all rod diameters up to 2.600 mm.

Applications examples

Over several decades the Turcon® Glyd Ring® has been successfully implemented in a lot of applications as double acting Rod seals of hydraulic components such as:

- Injection moulding machines
- Machine tools
- Presses
- Handling machinery
- Valves for hydraulic & pneumatic circuits.

Technical Data

Operating conditions:

The Turcon® Glyd Ring® is recommended for reciprocating (with a length of stroke at least twice the groove width) and helical movements.

Pressure:	up to 80MPa
Speed:	up to 15m/s
Frequency:	up to 5 Hz.
Temperature:	-45°C to +200°C (depending on O-Ring Material)
Media:	Mineral oil based hydraulic fluids, barely flammable hydraulic fluids, environmentally safe hydraulic fluids (biological degradable oils), water, air and others. Depending on the O-Ring material compatibility.
Clearance:	the maximum permissible radial clearance Smax is shown in the table XXXII, as a function of the operating pressure and functional diameter.

Important Note:
The above data are maximum values and cannot be used at the same time. e.g. the maximum operating speed depends on material type, pressure, temperature and gap value.

Materials

Standard Application:

For hydraulic components with reciprocating movement in mineral oils or medium with good lubricating performance.

Turcon® seal:	Turcon® T46
Energiser:	O-Ring NBR 70 shore A or FKM 70 Shore A depending on the temperature
Set:	T46N or T46V

Special Application:

Short stroke movements, non-lubricating fluids or pneumatic applications require self-lubricating sealing materials. Therefore we recommend:

Turcon® Seal:	Turcon® T29
Energiser:	O-Ring NBR 70 Shore A or FKM 70 Shore A depending on the temperature
Set:	T29N or T29V

If low friction coefficient is required, we recommend:

Turcon® Seal:	Turcon® T05
Energiser:	O-Ring NBR 70 Shore A or FKM 70 Shore A depending on the temperature. For special requirements other elastomers are available on request
Set:	T05N or T05V

If rougher surface finish must be sealed, we recommend:

Zurcon seal:	Zurcon Z51
Energiser:	O-Ring NBR 70 Shore A
Set ref.:	Z51N

Table XXXI Turcon® and Zurcon® Materials for Glyd Ring®

Material, Applications, Properties	Code	O-Ring Material	Code	O-Ring Operating Temp.* °C	Mating Surface Material	MPa max.
Turcon® T46 **Standard material** for hydraulics, high compressive strength, good sliding and wear properties, good extrusion resistance, **BAM approval.** Bronze filled Colour: Greyish to dark brown	T46	NBR - 70 Shore A	N	-30 to +100	Steel, hardened Steel, chromeplated Cast iron	60
		NBR - Low temp. 70 Shore A	T	-45 to +80		
		FKM - 70 Shore A	V	-10 to +200		
Turcon® T08 **Very high compressive strength, very good extrusion resistance.** High bronze filled Colour: Light to dark brown	T08	NBR - 70 Shore A	N	-30 to +100	Steel, hardened Steel, chromeplated Cast iron	80
		NBR - Low temp. 70 Shore A	T	-45 to +80		
		FKM - 70 Shore A	V	-10 to +200		
Turcon® T40 For all lubricating and non-lubricating hydraulic fluids, **soft mating surfaces.** Carbon fibre filled Colour: Grey	T40	NBR - 70 Shore A	N	-30 to +100	Mild steel Steel, chromeplated Cast iron Stainless steel Aluminium Bronze Alloys	25
		NBR - Low temp. 70 Shore A	T	-45 to +80		
		FKM - 70 Shore A	V	-10 to +200		
		EPDM-70 Shore A	E**	-45 to +145		
Turcon® T29 For all lubricating and non-lubricating hydraulic fluids, **soft mating surfaces, good extrusion resistance.** High carbon fibre filled Colour: Grey	T29	NBR - 70 Shore A	N	-30 to +100	Mild steel Steel, chromeplated Cast iron Stainless steel Aluminium Bronze	60
		NBR - Low temp. 70 Shore A	T	-45 to +80		
		FKM - 70 Shore A	V	-10 to +200		
		EPDM-70 Shore A	E**	-45 to +145		
Turcon® T05 For all lubricating hydraulic fluids, hard mating surfaces, **very good slide properties, low friction.** Colour: Turquoise	T05	NBR - 70 Shore A	N	-30 to +100	Steel, hardened Steel, chromeplated	20
		NBR - Low temp. 70 Shore A	T	-45 to +80		
		FKM - 70 Shore A	V	-10 to +200		
Turcon® T42 For all lubricating and non-lubricating hydraulic fluids, good chemical resistance, **good dielectric properties.** Glass fibre filled + MoS_2 Colour: Grey to blue	T42	NBR - 70 Shore A	N	-30 to +100	Steel, hardened Steel, chromeplated Cast iron	30
		NBR - Low temp. 70 Shore A	T	-45 to +80		
		FKM - 70 Shore A	V	-10 to +200		
Turcon® T10 **For water hydraulic, oil hydraulic and pneumatic for all lubricating and non-lubricating fluids,** high extrusion resistance, good chemical resistance, BAM approval. Carbon, graphite filled Colour: Black	T10	NBR - 70 Shore A	N	-30 to +100	Mild steel Steel, chromeplated Stainless steel	60
		NBR - Low temp. 70 Shore A	T	-45 to +80		
		FKM - 70 Shore A	V	-10 to +200		
		EPDM-70 Shore A	E**	-45 to +145		
Zurcon® Z51 For lubricating hydraulic fluids, **high abrasion resistance, high extrusion resistance,** limited chemical resistance. Cast polyurethane Colour: Yellow to light-brown	Z51	NBR - 70 Shore A	N	-30 to +100	Mild steel Steel, chromeplated Cast iron Ceramic coating Stainless steel	80
		NBR - Low temp. 70 Shore A	T	-45 to +80		
Zurcon® Z80 For lubricating and non-lubricating hydraulic fluids, high abrasion resistance, very good chemical resistance, limited temperature resistance. Ultra high molecular weight polyethylen Colour: White to off-white	Z80	NBR - 70 Shore A	N	-30 to +80	Mild steel Steel, chromeplated Stainless steel Aluminium Bronze Ceramic coating	40
		NBR - Low temp. 70 Shore A	T	-45 to +80		

* The O-Ring Operation Temperature is only valid in mineral hydraulic oil. BAM: Approved by "Bundes Anstalt Materialprüfung, Germany".

Highlighted materials are standard. **Material not suitable for mineral oils.

Installation Recommendation

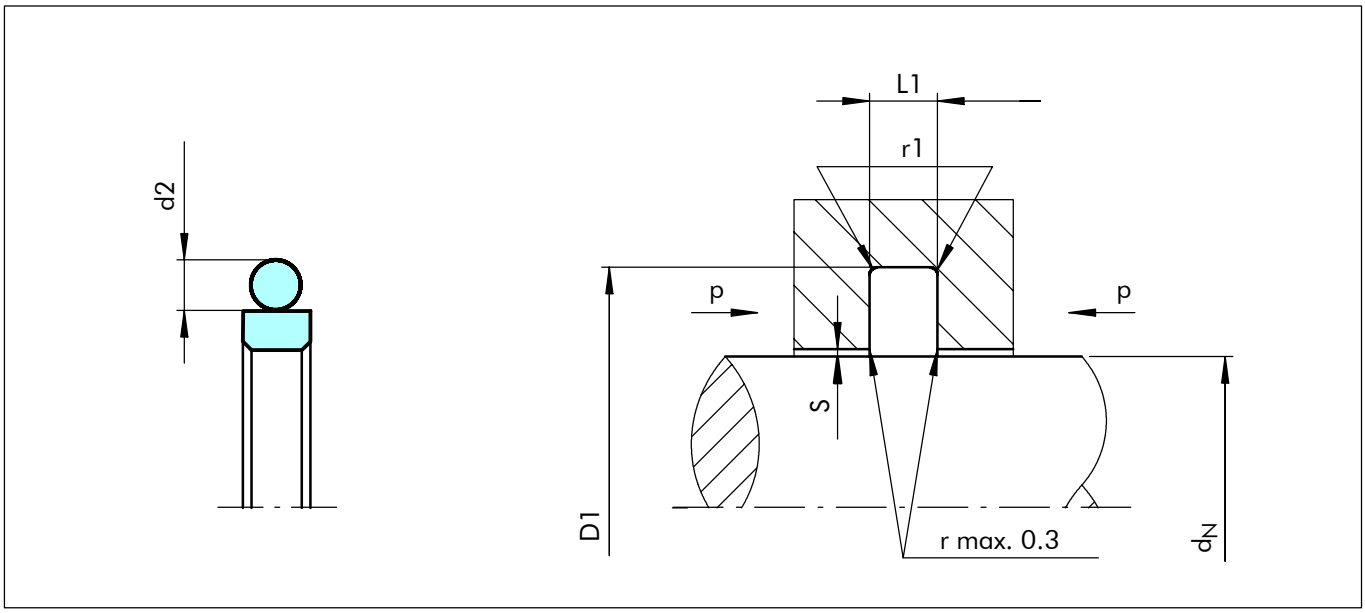


Figure 53 Installation drawing

Table XXXII Installation Dimensions

Rod Diameter d_N f8/h9			Groove Diameter*	Groove Width	Radius	Radial Clearance S max.**			O-Ring Cross-Section
Series No. RG 43	Series No. RG 45	Series No. RG 41							
Standard Application	Light Application	Heavy-Duty Application	D_1 H9	L_1 +0.2	r_1	10 MPa	20 MPa	40 MPa	d_2
-	8 - 18.9	-	d_N + 4.9	2.2	0.4	0.40	0.30	0.20	1.78
8 - 18.9	19 - 37.9	-	d_N + 7.3	3.2	0.6	0.60	0.50	0.30	2.62
19 - 37.9	38 - 199.9	8 - 18.9	d_N + 10.7	4.2	1.0	0.70	0.50	0.30	3.53
38 - 199.9	200 - 255.9	19 - 37.9	d_N + 15.1	6.3	1.3	0.80	0.60	0.40	5.33
200 - 255.9	256 - 649.9	38 - 199.9	d_N + 20.5	8.1	1.8	0.80	0.60	0.40	7.00
256 - 649.9	650 - 999.9	200 - 255.9	d_N + 24.0	8.1	1.8	0.90	0.70	0.50	7.00
650 - 999.9	≥ 1000	256 - 649.9	d_N + 27.3	9.5	2.5	1.00	0.80	0.60	8.40
≥ 1000***	-	650 - 999.9	d_N + 38.0	13.8	3.0	1.20	0.90	0.70	12.00

* Installation with groove dimensions to ISO 7425/2 is possible. ** At pressures **> 40 MPa**: S max. = H8/f8 (bore/rod) in area of the seal.
*** Energiser has a special shape.

Ordering Example

Turcon® Glyd Ring®, complete with O-Ring, standard series, Series RG43 (from Table XXXII).
Rod diameter: d_N = 80.0 mm
Part No.: RG4300800 (from Table XXXIII)

Select the material from Table XXXI. The corresponding code numbers are appended to the Part No. (from Table XXXIII).
Together these form the order number. The order number for all intermediate sizes not shown in Table XXXIII can be determined following the example opposite.
**** For diameters ≥ 1000.0 mm multiply only by factor 1.
Example: RG43 for diameter 1200.0 mm.
Order no.: RG43**X1200** - T46N.

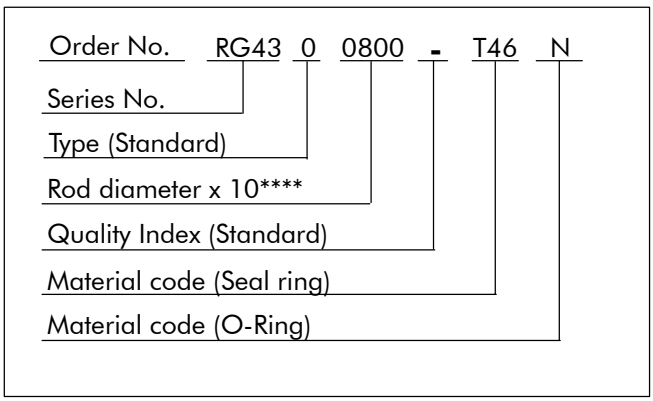


Table XXXIII Preferred Series / Part No.

Rod Diameter d_N f8/h9	Groove Diameter D_1 H9	Groove Width L_1 +0.2	Part No.	O-Ring Sizes
3.0	7.9	2.2	RG4300030	4.47 x 1.78
4.0	**8.9**	**2.2**	**RG4300040**	**5.6 x 1.8**
5.0	**9.9**	**2.2**	**RG4300050**	**6.7 x 1.8**
6.0	**10.9**	**2.2**	**RG4300060**	**7.65 x 1.78**
7.0	11.9	2.2	RG4300070	8.75 x 1.8
8.0	**12.9**	**2.2**	**RG4500080**	**9.5 x 1.8**
8.0	**15.3**	**3.2**	**RG4300080**	**10.77 x 2.62**
10.0	**14.9**	**2.2**	**RG4500100**	**11.8 x 1.8**
10.0	**17.3**	**3.2**	**RG4300100**	**12.37 x 2.62**
12.0	**16.9**	**2.2**	**RG4500120**	**14.0 x 1.78**
12.0	**19.3**	**3.2**	**RG4300120**	**13.94 x 2.62**
14.0	**18.9**	**2.2**	**RG4500140**	**15.6 x 1.78**
14.0	**21.3**	**3.2**	**RG4300140**	**17.12 x 2.62**
15.0	19.9	2.2	RG4500150	17.17 x 1.78
15.0	22.3	3.2	RG4300150	17.12 x 2.62
16.0	20.9	2.2	RG4500160	17.17 x 1.78
16.0	**23.3**	**3.2**	**RG4300160**	**18.72 x 2.62**
18.0	22.9	2.2	RG4500180	20.35 x 1.78
18.0	**25.3**	**3.2**	**RG4300180**	**20.29 x 2.62**
19.0	29.7	4.2	RG4300190	23.39 x 3.53
20.0	**27.3**	**3.2**	**RG4500200**	**21.89 x 2.62**
20.0	**30.7**	**4.2**	**RG4300200**	**25.0 x 3.53**
22.0	**29.3**	**3.2**	**RG4500220**	**25.07 x 2.62**
22.0	**32.7**	**4.2**	**RG4300220**	**26.57 x 3.53**
24.0	31.3	3.2	RG4500240	26.64 x 2.62
25.0	**32.3**	**3.2**	**RG4500250**	**28.24 x 2.62**
25.0	**35.7**	**4.2**	**RG4300250**	**29.74 x 3.53**
25.4	32.7	3.2	RG4500254	28.24 x 2.62
25.4	36.1	4.2	RG4300254	29.74 x 3.53
26.0	33.3	3.2	RG4500260	28.24 x 2.62
26.0	36.7	4.2	RG4300260	29.74 x 3.53
27.0	34.3	3.2	RG4500270	29.82 x 2.62
28.0	35.3	3.2	RG4500280	29.82 x 2.62
28.0	**38.7**	**4.2**	**RG4300280**	**32.92 x 3.53**
28.575	35.875	3.2	RG4500286	31.42 x 2.62
29.0	36.3	3.2	RG4500290	31.42 x 2.62
30.0	37.3	3.2	RG4500300	32.99 x 2.62
30.0	40.7	4.2	RG4300300	34.52 x 3.53
32.0	39.3	3.2	RG4500320	34.59 x 2.62
32.0	**42.7**	**4.2**	**RG4300320**	**36.09 x 3.53**
35.0	42.3	3.2	RG4500350	37.77 x 2.62
35.0	45.7	4.2	RG4300350	37.69 x 3.53
36.0	43.3	3.2	RG4500360	39.34 x 2.62
36.0	**46.7**	**4.2**	**RG4300360**	**40.87 x 3.53**
38.0	48.7	4.2	RG4500380	40.87 x 3.53
38.0	53.1	6.3	RG4300380	43.82 x 5.33
39.0	49.7	4.2	RG4500390	44.04 x 3.53
40.0	**50.7**	**4.2**	**RG4500400**	**44.04 x 3.53**
40.0	**55.1**	**6.3**	**RG4300400**	**43.82 x 5.33**
42.0	52.7	4.2	RG4500420	47.22 x 3.53
42.0	57.1	6.3	RG4300420	46.99 x 5.33
44.0	54.7	4.2	RG4500440	47.22 x 3.53
44.45	59.55	6.3	RG4300444	50.17 x 5.33
45.0	**55.7**	**4.2**	**RG4500450**	**50.39 x 3.53**
45.0	**60.1**	**6.3**	**RG4300450**	**50.17 x 5.33**
48.0	58.7	4.2	RG4500480	51.5 x 3.55
48.0	63.1	6.3	RG4300480	53.34 x 5.33
50.0	**60.7**	**4.2**	**RG4500500**	**53.57 x 3.53**
50.0	**65.1**	**6.3**	**RG4300500**	**56.52 x 5.33**
50.8	61.5	4.2	RG4500508	53.57 x 3.53
50.8	65.9	6.3	RG4300508	56.52 x 5.33
52.0	62.7	4.2	RG4500520	56.74 x 3.53
52.0	67.1	6.3	RG4300520	56.52 x 5.33
54.0	69.1	6.3	RG4300540	59.69 x 5.33
55.0	65.7	4.2	RG4500550	59.92 x 3.53
55.0	70.1	6.3	RG4300550	59.69 x 5.33
56.0	**66.7**	**4.2**	**RG4500560**	**59.92 x 3.53**
56.0	**71.1**	**6.3**	**RG4300560**	**62.87 x 5.33**
58.0	73.1	6.3	RG4300580	62.87 x 5.33
60.0	70.7	4.2	RG4500600	63.09 x 3.53
60.0	75.1	6.3	RG4300600	66.04 x 5.33
63.0	**73.7**	**4.2**	**RG4500630**	**66.27 x 3.53**
63.0	**78.1**	**6.3**	**RG4300630**	**69.22 x 5.33**
65.0	80.1	6.3	RG4300650	69.22 x 5.33
67.0	77.7	4.2	RG4500670	72.62 x 3.53
70.0	80.7	4.2	RG4500700	75.79 x 3.53
70.0	**85.1**	**6.3**	**RG4300700**	**75.57 x 5.33**
72.0	82.7	4.2	RG4500720	75.79 x 3.53
75.0	85.7	4.2	RG4500750	78.97 x 3.53
75.0	90.1	6.3	RG4300750	81.92 x 5.33
80.0	90.7	4.2	RG4500800	85.32 x 3.53
80.0	**95.1**	**6.3**	**RG4300800**	**85.09 x 5.33**
83.0	93.7	4.2	RG4500830	88.49 x 3.53
85.0	100.1	6.3	RG4300850	91.44 x 5.33
86.0	96.7	4.2	RG4500860	91.67 x 3.53
90.0	100.7	4.2	RG4500900	94.84 x 3.53
90.0	**105.1**	**6.3**	**RG4300900**	**94.62 x 5.33**
92.0	102.7	4.2	RG4500920	98.02 x 3.53
95.0	105.7	4.2	RG4500950	101.19 x 3.53
95.0	110.1	6.3	RG4300950	100.97 x 5.33

Rod Diameter d_N f8/h9	Groove Diameter D_1 H9	Groove Width L_1 +0.2	Part No.	O-Ring Sizes
100.0	110.7	4.2	RG4501000	104.37 x 3.53
100.0	**115.1**	**6.3**	**RG4301000**	**107.32 x 5.33**
101.6	112.3	4.2	RG4501016	107.54 x 3.53
101.6	116.7	6.3	RG4301016	107.32 x 5.33
104.7	119.8	6.3	RG4301047	110.49 x 5.33
105.0	115.7	4.2	RG4501050	110.72 x 3.53
105.0	120.1	6.3	RG4301050	110.49 x 5.33
110.0	120.7	4.2	RG4501100	113.89 x 3.53
110.0	**125.1**	**6.3**	**RG4301100**	**116.84 x 5.33**
110.0	130.5	8.1	RG4101100	120.02 x 7.00
112.0	127.1	6.3	RG4301120	116.84 x 5.33
115.0	125.7	4.2	RG4501150	120.24 x 3.53
115.0	130.1	6.3	RG4301150	120.02 x 5.33
118.0	133.1	6.3	RG4301180	123.19 x 5.33
120.0	130.7	4.2	RG4501200	123.42 x 3.53
120.0	135.1	6.3	RG4301200	126.37 x 5.33
125.0	135.7	4.2	RG4501250	129.77 x 3.53
125.0	**140.1**	**6.3**	**RG4301250**	**129.54 x 5.33**
129.0	139.7	4.2	RG4501290	132.94 x 3.53
130.0	140.7	4.2	RG4501300	136.12 x 3.53
130.0	145.1	6.3	RG4301300	135.89 x 5.33
135.0	145.7	4.2	RG4501350	139.29 x 3.53
135.0	150.1	6.3	RG4301350	142.24 x 5.33
140.0	150.7	4.2	RG4501400	145.64 x 3.53
140.0	**155.1**	**6.3**	**RG4301400**	**145.42 x 5.33**
145.0	155.7	4.2	RG4501450	148.82 x 3.53
145.0	160.1	6.3	RG4301450	151.77 x 5.33
150.0	165.1	6.3	RG4301500	158.12 x 5.33
160.0	**175.1**	**6.3**	**RG4301600**	**164.47 x 5.33**
160.0	**180.5**	**8.1**	**RG4101600**	**170.82 x 7.00**
165.0	180.1	6.3	RG4301650	170.82 x 5.33
170.0	180.7	4.2	RG4501700	177.39 x 3.53
170.0	185.1	6.3	RG4301700	177.17 x 5.33
175.0	190.1	6.3	RG4301750	183.52 x 5.33
180.0	190.7	4.2	RG4501800	183.74 x 3.53
180.0	**195.1**	**6.3**	**RG4301800**	**183.17 x 5.33**
180.0	**200.5**	**8.1**	**RG4101800**	**189.87 x 7.00**
190.0	200.7	4.2	RG4501900	196.44 x 3.53
190.0	205.1	6.3	RG4301900	196.22 x 5.33
200.0	215.1	6.3	RG4502000	208.92 x 5.33
200.0	**220.5**	**8.1**	**RG4302000**	**215.27 x 7.00**
205.0	220.1	6.3	RG4502050	208.92 x 5.33
210.0	225.1	6.3	RG4502100	215.27 x 5.33
220.0	235.1	6.3	RG4502200	227.97 x 5.33
220.0	**240.5**	**8.1**	**RG4302200**	**227.97 x 7.00**

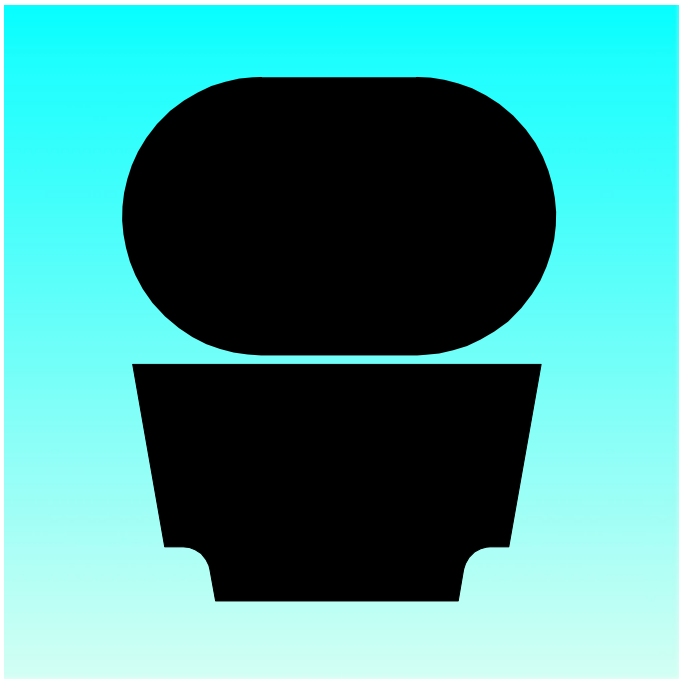
Rod Diameter d_N f8/h9	Groove Diameter D_1 H9	Groove Width L_1 +0.2	Part No.	O-Ring Sizes
230.0	245.1	6.3	RG4502300	234.32 x 5.33
230.0	250.5	8.1	RG4302300	240.67 x 7.00
240.0	255.1	6.3	RG4502400	247.02 x 5.33
240.0	260.5	8.1	RG4302400	253.37 x 7.00
250.0	**270.5**	**8.1**	**RG4302500**	**266.07 x 7.00**
260.0	284.0	8.1	RG4302600	266.07 x 7.00
270.0	290.5	8.1	RG4502700	278.77 x 7.00
270.0	294.0	8.1	RG4302700	278.77 x 7.00
275.0	299.0	8.1	RG4302750	291.47 x 7.00
280.0	300.5	8.1	RG4502800	291.47 x 7.00
280.0	**304.0**	**8.1**	**RG4302800**	**291.47 x 7.00**
290.0	310.5	8.1	RG4502900	304.39 x 7.00
290.0	314.0	8.1	RG4302900	304.39 x 7.00
300.0	324.0	8.1	RG4303000	316.87 x 7.00
310.0	330.5	8.1	RG4503100	316.87 x 7.00
310.0	334.0	8.1	RG4303100	316.87 x 7.00
320.0	**344.0**	**8.1**	**RG4303200**	**329.57 x 7.00**
330.0	354.0	8.1	RG4303300	342.47 x 7.00
340.0	364.0	8.1	RG4303400	354.97 x 7.00
350.0	370.5	8.1	RG4503500	354.97 x 7.00
350.0	374.0	8.1	RG4303500	367.67 x 7.00
360.0	**384.0**	**8.1**	**RG4303600**	**367.67 x 7.00**
370.0	390.5	8.1	RG4503700	380.37 x 7.00
370.0	394.0	8.1	RG4303700	380.37 x 7.00
380.0	404.0	8.1	RG4303800	393.07 x 7.00
390.0	414.0	8.1	RG4303900	405.26 x 7.00
400.0	420.5	8.1	RG4504000	417.96 x 7.00
400.0	424.0	8.1	RG4304000	417.96 x 7.00
410.0	434.0	8.1	RG4304100	417.96 x 7.00
420.0	444.0	8.1	RG4304200	430.66 x 7.00
430.0	454.0	8.1	RG4304300	443.36 x 7.00
440.0	464.0	8.1	RG4304400	456.06 x 7.00
450.0	474.0	8.1	RG4304500	468.76 x 7.00
460.0	484.0	8.1	RG4304600	468.76 x 7.00
470.0	494.0	8.1	RG4304700	481.00 x 7.00
480.0	504.0	8.1	RG4304800	494.16 x 7.00
490.0	514.0	8.1	RG4304900	506.86 x 7.00
500.0	524.0	8.1	RG4305000	506.86 x 7.00
510.0	534.0	8.1	RG4305100	532.26 x 7.00
520.0	544.0	8.1	RG4305200	532.26 x 7.00
530.0	554.0	8.1	RG4305300	557.66 x 7.00
540.0	564.0	8.1	RG4305400	557.66 x 7.00
550.0	574.0	8.1	RG4305500	557.66 x 7.00
560.0	584.0	8.1	RG4305600	582.68 x 7.00
570.0	594.0	8.1	RG4305700	582.68 x 7.00

Rod Diameter	Groove Diameter	Groove width	Part No.	O-Ring Sizes
d_N f8/h9	D_1 H9	L_1 +0.2		
580.0	604.0	8.1	RG4305800	608.08 x 7.00
590.0	614.0	8.1	RG4305900	608.08 x 7.00
600.0	624.0	8.1	RG4306000	608.08 x 7.00
610.0	634.0	8.1	RG4306100	633.48 x 7.00
620.0	644.0	8.1	RG4306200	633.48 x 7.00
630.0	654.0	8.1	RG4306300	658.88 x 7.00
640.0	664.0	8.1	RG4306400	658.88 x 7.00
650.0	677.3	9.5	RG4306500	663 x 8.4
660.0	687.3	9.5	RG4306600	673 x 8.4
670.0	697.3	9.5	RG4306700	683 x 8.4
680.0	707.3	9.5	RG4306800	693 x 8.4
688.0	715.3	9.5	RG4306880	701 x 8.4
690.0	717.3	9.5	RG4306900	703 x 8.4
700.0	724.0	8.1	RG4507000	712 x 7.0
710.0	737.3	9.5	RG4307100	723 x 8.4
740.0	767.3	9.5	RG4307400	753 x 8.4
760.0	784.0	8.1	RG4507600	772 x 7.00
770.0	797.3	9.5	RG4307700	783 x 8.4
800.0	827.3	9.5	RG4308000	813 x 8.4
850.0	877.3	9.5	RG4308500	863 x 8.4
870.0	897.3	9.5	RG4308700	883 x 8.4
900.0	927.3	9.5	RG4309000	913 x 8.4
910.0	937.3	9.5	RG4309100	923 x 8.4
950.0	977.3	9.5	RG4309500	963 x 8.4
960.0	987.3	9.5	RG4309600	973 x 8.4
1000.0	1027.3	9.5	RG45X1000	1013 x 8.4
1000.0	1038.0	13.8	RG43X1000	1016 x 12
1050.0	1077.3	9.5	RG45X1050	1063 x 8.4
1050.0	1088.0	13.8	RG43X1050	1066 x 12
1100.0	1138.0	13.8	RG43X1100	1116 x 12
1160.0	1187.3	9.5	RG45X1160	1173 x 8.4
1200.0	1227.3	9.5	RG45X1200	1213 x 8.4
1200.0	1238.0	13.8	RG43X1200	1216 x 12
1300.0	1327.3	9.5	RG45X1300	1313 x 8.4
1300.0	1338.0	13.8	RG43X1300	1316 x 12
1500.0	1527.3	9.5	RG45X1500	1513 x 8.4
1500.0	1538.0	13.8	RG43X1500	1516 x 12
1600.0	1638.0	13.8	RG43X1600	1616 x 12
2000.0	2038.0	13.8	RG43X2000	2016 x 12
2600.0	2638.0	13.8	RG43X2600	2616 x 12

The rod diameters in bold type are in accordance with the recommendations of ISO 3320.

Other dimensions and all intermediate sizes up to 2.600 mm diameter including imperial (inch) sizes can be supplied.

TURCON® GLYD RING® T



- Double Acting -

- Rubber Energised Plastic Faced Seal -

- Material -

- Turcon® and Zurcon® -

Turcon® Glyd Ring® T *

Description

Turcon® Glyd Ring® T is a further technical development of the Turcon® Glyd Ring® seal which has been successfully used for decades. It is fully interchangeable with the earlier Glyd Ring® seals in all new applications. Glyd Ring® T meets all the market demands for a function-specific seal solution, observing economic and ecological aspects.

The benefits of the patented seal concept are provided by the innovative functional principle of the trapezoidal profile cross-section.

* Patent-No. P 41 40833.0

Both lateral profile flanks are inclined so that the seal profile tapers towards the seal surface. The profile can thus retain the robust and compact form typical of piston seals without losing any of the flexibility required to achieve a pressure-related maximum compression (Figure 54).

The edge angle created by the special Glyd Ring® T cross-sectional form permits an additional degree of freedom and enables a slight tilting movement of the seal. The maximum compression is thus always shifted towards the area of the seal edge directly exposed to the pressure. On the low-pressure edge of the seal, on the other hand, the Glyd Ring® T exhibits only zones with neutral strains without compressive or shearing loads, thus effectively reducing the danger of gap extrusion. The resulting benefits for the user can be seen in the following list.

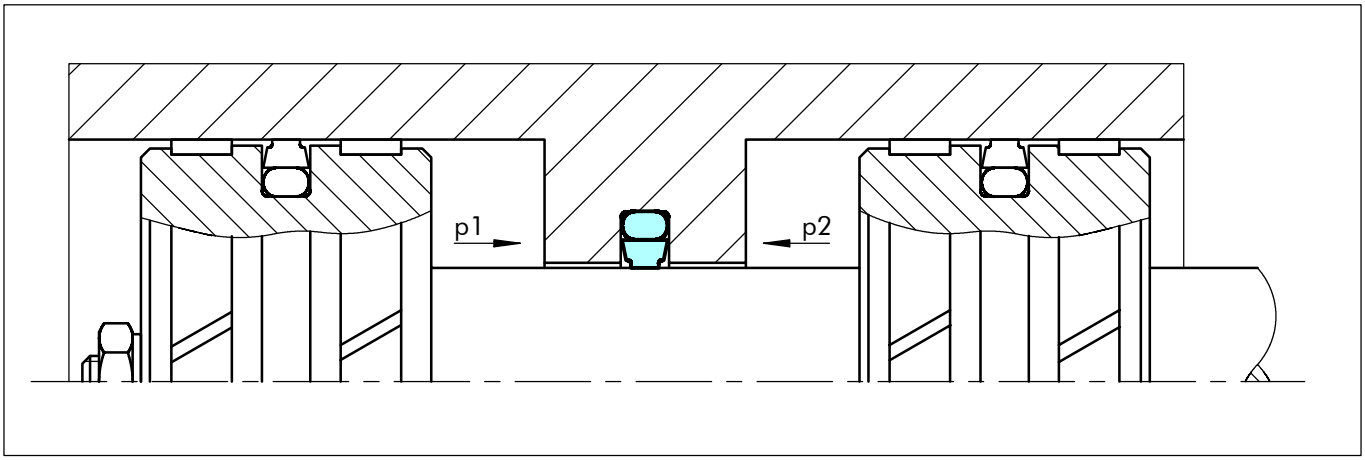


Figure 54 Turcon® Glyd Ring® T

Advantages

The benefits offered to date by the Glyd Ring® are still retained in full, and are now complemented by a number of further important advantages:

- Very good static leak-tightness
- Increased clearance possible (approx. +50%), depending on the operating conditions
- Low friction, no stick-slip effect
- Simple groove design
- Installation grooves to ISO 7425/2
- Available for all rod diameters up to 2.600 mm.

Application Examples

The Turcon® Glyd Ring® T is the recommended sealing element for double acting inside sealing seal for hydraulic components such as:

- Injection moulding machines
- Machine tools
- Presses
- Handling machinery
- Agriculture
- Valves.

It is particularly recommended for heavy duty and large diameter applications.

Technical Data

Operating pressure:	Up to 80 MPa
Speed:	Up to 15 m/s
Temperature:	-45°C to +200°C (depending on O-Ring material)
Media:	Mineral oil-based hydraulic fluids, flame retardant hydraulic fluids, environmentally safe hydraulic fluids (bio-oils), water, air and others, depending on the O-Ring material (see Table XXXIV)
Clearance:	The maximum permissible radial clearance s_{max} is shown in Table XXXV as a function of the operating pressure and functional diameter.

Important Note:
The above data are maximum values and cannot be used at the same time. e.g. the maximum operating speed depends on material type, pressure, temperature and gap value.

Materials

- For hydraulic components with reciprocating movement in mineral oils or medium with good lubricating performance.

Turcon® Seal:	Turcon® T46
Energiser:	O-Ring NBR 70 shore A or FKM 70 Shore A depending on the temperature
Set reference:	T46N or T46V

- Non-lubricating fluids or pneumatic applications require self-lubricating sealing materials. Therefore we recommend:

Turcon® Seal:	Turcon® T40
Energiser:	O-Ring NBR 70 Shore A or FKM 70 Shore A depending on the temperature
Set reference:	T40N or T40V

- If rougher surface finish must be sealed, we recommend:

Zurcon® Seal:	Zurcon® Z51
Energiser:	O-Ring NBR 70 Shore A
Set reference:	Z51N

Table XXXIV Turcon® and Zurcon® Materials for Glyd Ring® T

Material, Applications, Properties	Code	O-Ring Material	Code	O-Ring Operating Temp.* °C	Mating Surface Material	MPa max.
Turcon® T46 **Standard material** for hydraulics, high compressive strength, good sliding and wear properties, good extrusion resistance, **BAM approval.** Bronze filled Colour: Greyish to dark brown	T46	NBR - 70 Shore A	N	-30 to +100	Steel, hardened Steel, chromeplated Cast iron	60
		NBR - Low temp. 70 Shore A	T	-45 to +80		
		FKM - 70 Shore A	V	-10 to +200		
Turcon® T40 For all lubricating and non-lubricating hydraulic fluids, **soft mating surfaces, good extrusion resistance.** High carbon fibre filled Colour: Grey	T40	NBR - 70 Shore A	N	-30 to +100	Mild steel Steel, chromeplated Cast iron Stainless steel Aluminium Bronze	25
		NBR - Low temp. 70 Shore A	T	-45 to +80		
		FKM - 70 Shore A	V	-10 to +200		
		EPDM - 70 Shore A	E**	-45 to +145		
Zurcon® Z51 For lubricating hydraulic fluids, **high abrasion resistance, high extrusion resistance,** limited chemical resistance. Cast polyurethane Colour: Yellow to light-brown	Z51	NBR - 70 Shore A	N	-30 to +100	Mild steel Steel, chromeplated Cast iron Ceramic coating Stainless steel	80
		NBR - Low temp. 70 Shore A	T	-45 to +80		

* The O-Ring Operation Temperature is only valid in mineral hydraulic oil. BAM: Approved by "Bundes Anstalt Materialprüfung, Germany".

Highlighted materials are standard. **Material not suitable for mineral oils.

Installation Recommendation

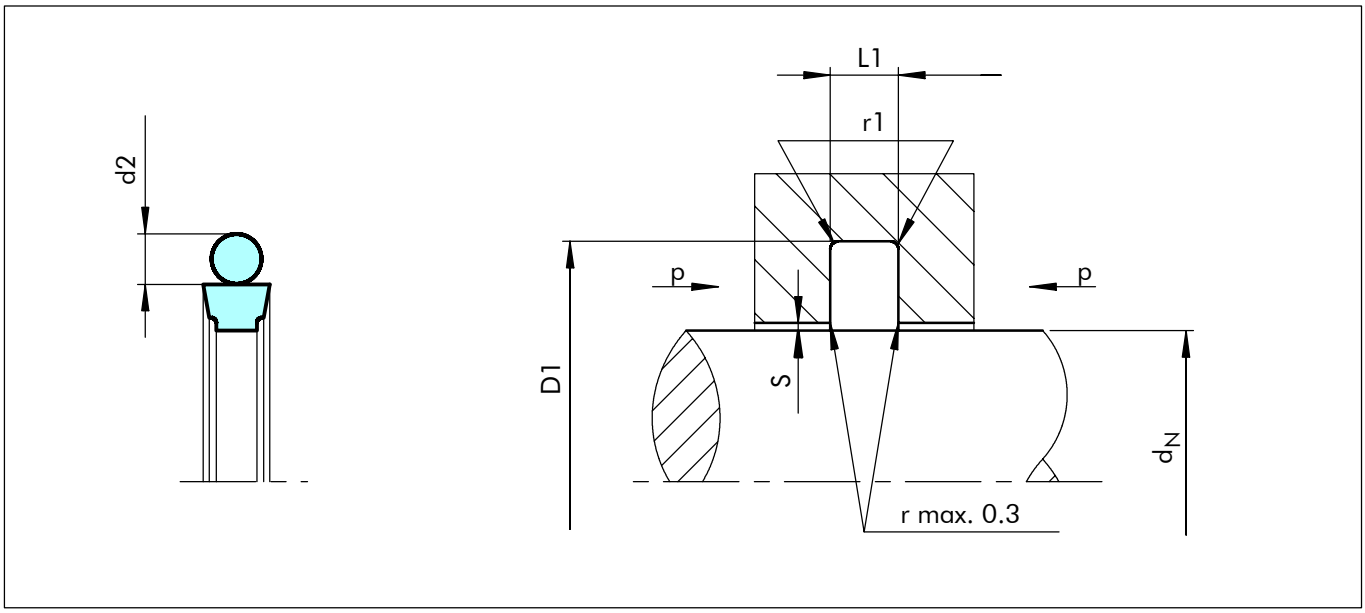


Figure 55 Installation drawing

Table XXXV Installation Dimensions

Series No.	Rod Diameter d_N f8/h9			Groove Diameter*	Groove Width	Radius	Radial Clearance S max.**			O-Ring Cross-Section
	Standard Application	Light Application	Heavy-Duty Application	D_1 H9	L_1 +0.2	r_1	10 MPa	20 MPa	40 MPa	d_2
RT00	-	8 - 18.9	-	d_N + 4.9	2.2	0.4	0.40	0.30	0.20	1.78
RT01	8 - 18.9	19 - 37.9	-	d_N + 7.3	3.2	0.6	0.60	0.50	0.30	2.62
RT02	19 - 37.9	38 - 199.9	8 - 18.9	d_N + 10.7	4.2	1.0	0.70	0.50	0.30	3.53
RT03	38 - 199.9	200 - 255.9	19 - 37.9	d_N + 15.1	6.3	1.3	0.80	0.60	0.40	5.33
RT04	200 - 255.9	256 - 649.9	38 - 199.9	d_N + 20.5	8.1	1.8	0.80	0.60	0.40	7.00
RT08	256 - 649.9	650 - 999.9	200 - 255.9	d_N + 24.0	8.1	1.8	0.90	0.70	0.50	7.00
RT05	650 - 999.9	≥ 1000	256 - 649.9	d_N + 27.3	9.5	2.5	1.00	0.80	0.60	8.40
RT06***	≥ 1000	-	650 - 999.9	d_N + 38.0	13.8	3.0	1.20	0.90	0.70	12.00

* Installation with groove dimensions to ISO 7425/2 is possible. ** At pressures **> 40 MPa**: S max. = H8/f8 (bore/rod) in area of the seal.
*** RT06 energiser has a special shape.

Ordering Example

Turcon® Glyd Ring® T, complete with O-Ring, standard series, Series RT03 (from Table XXXV).
Rod diameter: d_N = 80.0 mm
Part No.: RT0300800 (from Table XXXVI)

Select the material from Table XXXIV. The corresponding code numbers are appended to the Part No. (from Table XXXVI).
Together these form the order number. The order number for all intermediate sizes not shown in Table XXXVI can be determined following the example opposite.
**** For diameters ≥ 1000.0 mm multiply only by factor 1.
Example: RT06 for diameter 1200.0 mm.
Order no.: RT06**X1200** - T46N.

Order No. RT03 0 0800 - T46 N
Series No.
Type (Standard)
Rod diameter x 10****
Quality Index (Standard)
Material code (Seal ring)
Material code (O-Ring)

Table XXXVI Preferred Series / Part No.

Rod Diame-ter	Groove Diame-ter	Groove Width	Part No.	O-Ring Sizes
d_N f8/h9	D_1 H9	L_1 +0.2		
3.0	7.9	2.2	RT0000030	4.47 x 1.78
4.0	**8.9**	**2.2**	**RT0000040**	**5.6 x 1.8**
5.0	**9.9**	**2.2**	**RT0000050**	**6.7 x 1.8**
6.0	**10.9**	**2.2**	**RT0000060**	**7.65 x 1.78**
7.0	11.9	2.2	RT0000070	8.75 x 1.8
8.0	**12.9**	**2.2**	**RT0000080**	**9.5 x 1.8**
8.0	**15.3**	**3.2**	**RT0100080**	**10.77 x 2.62**
10.0	**14.9**	**2.2**	**RT0000100**	**11.8 x 1.8**
10.0	**17.3**	**3.2**	**RT0100100**	**12.37 x 2.62**
12.0	**16.9**	**2.2**	**RT0000120**	**14.0 x 1.78**
12.0	**19.3**	**3.2**	**RT0100120**	**13.94 x 2.62**
14.0	**18.9**	**2.2**	**RT0000140**	**15.6 x 1.78**
14.0	**21.3**	**3.2**	**RT0100140**	**17.12 x 2.62**
15.0	19.9	2.2	RT0000150	17.17 x 1.78
15.0	22.3	3.2	RT0100150	17.12 x 2.62
16.0	20.9	2.2	RT0000160	17.17 x 1.78
16.0	**23.3**	**3.2**	**RT0100160**	**18.72 x 2.62**
18.0	22.9	2.2	RT0000180	20.35 x 1.78
18.0	**25.3**	**3.2**	**RT0100180**	**20.29 x 2.62**
19.0	29.7	4.2	RT0200190	23.39 x 3.53
20.0	**27.3**	**3.2**	**RT0100200**	**21.89 x 2.62**
20.0	**30.7**	**4.2**	**RT0200200**	**25.0 x 3.53**
22.0	**29.3**	**3.2**	**RT0100220**	**25.07 x 2.62**
22.0	**32.7**	**4.2**	**RT0200220**	**26.57 x 3.53**
24.0	31.3	3.2	RT0100240	26.64 x 2.62
25.0	**32.3**	**3.2**	**RT0100250**	**28.24 x 2.62**
25.0	**35.7**	**4.2**	**RT0200250**	**29.74 x 3.53**
25.4	32.7	3.2	RT0100254	28.24 x 2.62
25.4	36.1	4.2	RT0200254	29.74 x 3.53
26.0	33.3	3.2	RT0100260	28.24 x 2.62
26.0	36.7	4.2	RT0200260	29.74 x 3.53
27.0	34.3	3.2	RT0100270	29.82 x 2.62
28.0	35.3	3.2	RT0100280	29.82 x 2.62
28.0	**38.7**	**4.2**	**RT0200280**	**32.92 x 3.53**
28.575	35.875	3.2	RT0100286	31.42 x 2.62
29.0	36.3	3.2	RT0100290	31.42 x 2.62
30.0	37.3	3.2	RT0100300	32.99 x 2.62
30.0	40.7	4.2	RT0200300	34.52 x 3.53
32.0	39.3	3.2	RT0100320	34.59 x 2.62
32.0	**42.7**	**4.2**	**RT0200320**	**36.09 x 3.53**
35.0	42.3	3.2	RT0100350	37.77 x 2.62
35.0	45.7	4.2	RT0200350	37.69 x 3.53
36.0	43.3	3.2	RT0100360	39.34 x 2.62
36.0	**46.7**	**4.2**	**RT0200360**	**40.87 x 3.53**
38.0	48.7	4.2	RT0200380	40.87 x 3.53

Rod Diame-ter	Groove Diame-ter	Groove Width	Part No.	O-Ring Sizes
d_N f8/h9	D_1 H9	L_1 +0.2		
38.0	53.1	6.3	RT0300380	43.82 x 5.33
39.0	49.7	4.2	RT0200390	44.04 x 3.53
40.0	**50.7**	**4.2**	**RT0200400**	**44.04 x 3.53**
40.0	**55.1**	**6.3**	**RT0300400**	**43.82 x 5.33**
42.0	52.7	4.2	RT0200420	47.22 x 3.53
42.0	57.1	6.3	RT0300420	46.99 x 5.33
44.0	54.7	4.2	RT0200440	47.22 x 3.53
44.45	59.55	6.3	RT0300444	50.17 x 5.33
45.0	**55.7**	**4.2**	**RT0200450**	**50.39 x 3.53**
45.0	**60.1**	**6.3**	**RT0300450**	**50.17 x 5.33**
48.0	58.7	4.2	RT0200480	51.5 x 3.55
48.0	63.1	6.3	RT0300480	53.34 x 5.33
50.0	**60.7**	**4.2**	**RT0200500**	**53.57 x 3.53**
50.0	**65.1**	**6.3**	**RT0300500**	**56.52 x 5.33**
50.8	61.5	4.2	RT0200508	53.57 x 3.53
50.8	65.9	6.3	RT0300508	56.52 x 5.33
52.0	62.7	4.2	RT0200520	56.74 x 3.53
52.0	67.1	6.3	RT0300520	56.52 x 5.33
54.0	69.1	6.3	RT0300540	59.69 x 5.33
55.0	65.7	4.2	RT0200550	59.92 x 3.53
55.0	70.1	6.3	RT0300550	59.69 x 5.33
56.0	**66.7**	**4.2**	**RT0200560**	**59.92 x 3.53**
56.0	**71.1**	**6.3**	**RT0300560**	**62.87 x 5.33**
58.0	73.1	6.3	RT0300580	62.87 x 5.33
60.0	70.7	4.2	RT0200600	63.09 x 3.53
60.0	75.1	6.3	RT0300600	66.04 x 5.33
63.0	**73.7**	**4.2**	**RT0200630**	**66.27 x 3.53**
63.0	**78.1**	**6.3**	**RT0300630**	**69.22 x 5.33**
65.0	80.1	6.3	RT0300650	69.22 x 5.33
67.0	77.7	4.2	RT0200670	72.62 x 3.53
70.0	80.7	4.2	RT0200700	75.79 x 3.53
70.0	**85.1**	**6.3**	**RT0300700**	**75.57 x 5.33**
72.0	82.7	4.2	RT0200720	75.79 x 3.53
75.0	85.7	4.2	RT0200750	78.97 x 3.53
75.0	90.1	6.3	RT0300750	81.92 x 5.33
80.0	90.7	4.2	RT0200800	85.32 x 3.53
80.0	**95.1**	**6.3**	**RT0300800**	**85.09 x 5.33**
83.0	93.7	4.2	RT0200830	88.49 x 3.53
85.0	100.1	6.3	RT0300850	91.44 x 5.33
86.0	96.7	4.2	RT0200860	91.67 x 3.53
90.0	100.7	4.2	RT0200900	94.84 x 3.53
90.0	**105.1**	**6.3**	**RT0300900**	**94.62 x 5.33**
92.0	102.7	4.2	RT0200920	98.02 x 3.53
95.0	105.7	4.2	RT0200950	101.19 x 3.53
95.0	110.1	6.3	RT0300950	100.97 x 5.33

Rod Diameter d_N f8/h9	Groove Diameter D_1 H9	Groove Width L_1 +0.2	Part No.	O-Ring Sizes
100.0	110.7	4.2	RT0201000	104.37 x 3.53
100.0	**115.1**	**6.3**	**RT0301000**	**107.32 x 5.33**
101.6	112.3	4.2	RT0201016	107.54 x 3.53
101.6	116.7	6.3	RT0301016	107.32 x 5.33
104.7	119.8	6.3	RT0301047	110.49 x 5.33
105.0	115.7	4.2	RT0201050	110.72 x 3.53
105.0	120.1	6.3	RT0301050	110.49 x 5.33
110.0	120.7	4.2	RT0201100	113.89 x 3.53
110.0	**125.1**	**6.3**	**RT0301100**	**116.84 x 5.33**
110.0	130.5	8.1	RT0401100	120.02 x 7.00
112.0	127.1	6.3	RT0301120	116.84 x 5.33
115.0	125.7	4.2	RT0201150	120.24 x 3.53
115.0	130.1	6.3	RT0301150	120.02 x 5.33
118.0	133.1	6.3	RT0301180	123.19 x 5.33
120.0	130.7	4.2	RT0201200	123.42 x 3.53
120.0	135.1	6.3	RT0301200	126.37 x 5.33
125.0	135.7	4.2	RT0201250	129.77 x 3.53
125.0	**140.1**	**6.3**	**RT0301250**	**129.54 x 5.33**
129.0	139.7	4.2	RT0201290	132.94 x 3.53
130.0	140.7	4.2	RT0201300	136.12 x 3.53
130.0	145.1	6.3	RT0301300	135.89 x 5.33
135.0	145.7	4.2	RT0201350	139.29 x 3.53
135.0	150.1	6.3	RT0301350	142.24 x 5.33
140.0	150.7	4.2	RT0201400	145.64 x 3.53
140.0	**155.1**	**6.3**	**RT0301400**	**145.42 x 5.33**
145.0	155.7	4.2	RT0201450	148.82 x 3.53
145.0	160.1	6.3	RT0301450	151.77 x 5.33
150.0	165.1	6.3	RT0301500	158.12 x 5.33
160.0	**175.1**	**6.3**	**RT0301600**	**164.47 x 5.33**
160.0	**180.5**	**8.1**	**RT0401600**	**170.82 x 7.00**
165.0	180.1	6.3	RT0301650	170.82 x 5.33
170.0	180.7	4.2	RT0201700	177.39 x 3.53
170.0	185.1	6.3	RT0301700	177.17 x 5.33
175.0	190.1	6.3	RT0301750	183.52 x 5.33
180.0	190.7	4.2	RT0201800	183.74 x 3.53
180.0	**195.1**	**6.3**	**RT0301800**	**183.17 x 5.33**
180.0	**200.5**	**8.1**	**RT0401800**	**189.87 x 7.00**
190.0	200.7	4.2	RT0201900	196.44 x 3.53
190.0	205.1	6.3	RT0301900	196.22 x 5.33
200.0	215.1	6.3	RT0302000	208.92 x 5.33
200.0	**220.5**	**8.1**	**RT0402000**	**215.27 x 7.00**
205.0	220.1	6.3	RT0302050	208.92 x 5.33
210.0	225.1	6.3	RT0302100	215.27 x 5.33
220.0	235.1	6.3	RT0302200	227.97 x 5.33
220.0	**240.5**	**8.1**	**RT0402200**	**227.97 x 7.00**

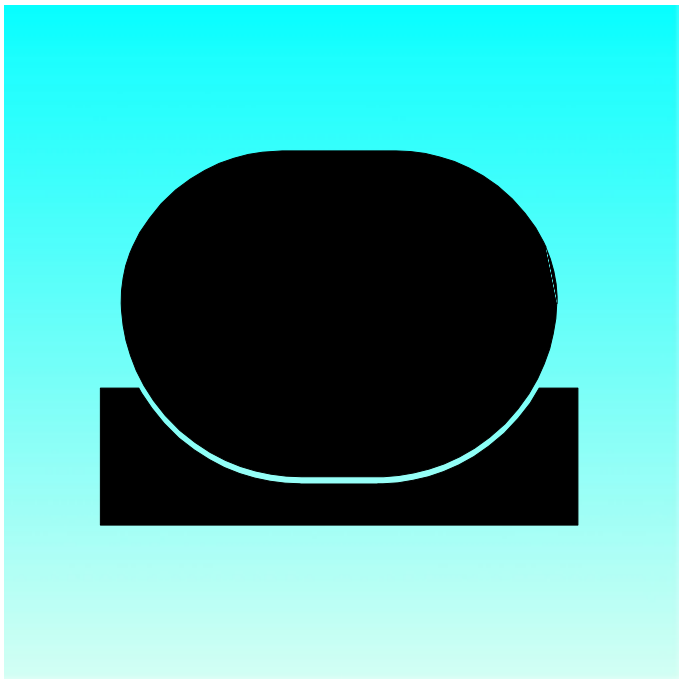
Rod Diameter d_N f8/h9	Groove Diameter D_1 H9	Groove Width L_1 +0.2	Part No.	O-Ring Sizes
230.0	245.1	6.3	RT0302300	234.32 x 5.33
230.0	250.5	8.1	RT0402300	240.67 x 7.00
240.0	255.1	6.3	RT0302400	247.02 x 5.33
240.0	260.5	8.1	RT0402400	253.37 x 7.00
250.0	**270.5**	**8.1**	**RT0402500**	**266.07 x 7.00**
260.0	284.0	8.1	RT0802600	266.07 x 7.00
270.0	290.5	8.1	RT0402700	278.77 x 7.00
270.0	294.0	8.1	RT0802700	278.77 x 7.00
275.0	299.0	8.1	RT0802750	291.47 x 7.00
280.0	300.5	8.1	RT0402800	291.47 x 7.00
280.0	**304.0**	**8.1**	**RT0802800**	**291.47 x 7.00**
290.0	310.5	8.1	RT0402900	304.39 x 7.00
290.0	314.0	8.1	RT0802900	304.39 x 7.00
300.0	324.0	8.1	RT0803000	316.87 x 7.00
310.0	330.5	8.1	RT0403100	316.87 x 7.00
310.0	334.0	8.1	RT0803100	316.87 x 7.00
320.0	**344.0**	**8.1**	**RT0803200**	**329.57 x 7.00**
330.0	354.0	8.1	RT0803300	342.47 x 7.00
340.0	364.0	8.1	RT0803400	354.97 x 7.00
350.0	370.5	8.1	RT0403500	354.97 x 7.00
350.0	374.0	8.1	RT0803500	367.67 x 7.00
360.0	**384.0**	**8.1**	**RT0803600**	**367.67 x 7.00**
370.0	390.5	8.1	RT0403700	380.37 x 7.00
370.0	394.0	8.1	RT0803700	380.37 x 7.00
380.0	404.0	8.1	RT0803800	393.07 x 7.00
390.0	414.0	8.1	RT0803900	405.26 x 7.00
400.0	420.5	8.1	RT0404000	417.96 x 7.00
400.0	424.0	8.1	RT0804000	417.96 x 7.00
410.0	434.0	8.1	RT0804100	417.96 x 7.00
420.0	444.0	8.1	RT0804200	430.66 x 7.00
430.0	454.0	8.1	RT0804300	443.36 x 7.00
440.0	464.0	8.1	RT0804400	456.06 x 7.00
450.0	474.0	8.1	RT0804500	468.76 x 7.00
460.0	484.0	8.1	RT0804600	468.76 x 7.00
470.0	494.0	8.1	RT0804700	481.00 x 7.00
480.0	504.0	8.1	RT0804800	494.16 x 7.00
490.0	514.0	8.1	RT0804900	506.86 x 7.00
500.0	524.0	8.1	RT0805000	506.86 x 7.00
510.0	534.0	8.1	RT0805100	532.26 x 7.00
520.0	544.0	8.1	RT0805200	532.26 x 7.00
530.0	554.0	8.1	RT0805300	557.66 x 7.00
540.0	564.0	8.1	RT0805400	557.66 x 7.00
550.0	574.0	8.1	RT0805500	557.66 x 7.00
560.0	584.0	8.1	RT0805600	582.68 x 7.00
570.0	594.0	8.1	RT0805700	582.68 x 7.00

Rod Diameter	Groove Diameter	Groove width	Part No.	O-Ring Sizes
d_N f8/h9	D_1 H9	L_1 +0.2		
580.0	604.0	8.1	RT0805800	608.08 x 7.00
590.0	614.0	8.1	RT0805900	608.08 x 7.00
600.0	624.0	8.1	RT0806000	608.08 x 7.00
610.0	634.0	8.1	RT0806100	633.48 x 7.00
620.0	644.0	8.1	RT0806200	633.48 x 7.00
630.0	654.0	8.1	RT0806300	658.88 x 7.00
640.0	664.0	8.1	RT0806400	658.88 x 7.00
650.0	677.3	9.5	RT0506500	663 x 8.4
660.0	687.3	9.5	RT0506600	673 x 8.4
670.0	697.3	9.5	RT0506700	683 x 8.4
680.0	707.3	9.5	RT0506800	693 x 8.4
688.0	715.3	9.5	RT0506880	701 x 8.4
690.0	717.3	9.5	RT0506900	703 x 8.4
700.0	724.0	8.1	RT0807000	712 x 7.0
710.0	737.3	9.5	RT0507100	723 x 8.4
740.0	767.3	9.5	RT0507400	753 x 8.4
760.0	784.0	8.1	RT0807600	772 x 7.00
770.0	797.3	9.5	RT0507700	783 x 8.4
800.0	827.3	9.5	RT0508000	813 x 8.4
850.0	877.3	9.5	RT0508500	863 x 8.4
870.0	897.3	9.5	RT0508700	883 x 8.4
900.0	927.3	9.5	RT0509000	913 x 8.4
910.0	937.3	9.5	RT0509100	923 x 8.4
950.0	977.3	9.5	RT0509500	963 x 8.4
960.0	987.3	9.5	RT0509600	973 x 8.4
1000.0	1027.3	9.5	RT05X1000	1013 x 8.4
1000.0	1038.0	13.8	RT06X1000	1016 x 12
1050.0	1077.3	9.5	RT05X1050	1063 x 8.4
1050.0	1088.0	13.8	RT06X1050	1066 x 12
1100.0	1138.0	13.8	RT06X1100	1116 x 12
1160.0	1187.3	9.5	RT05X1160	1173 x 8.4
1200.0	1227.3	9.5	RT05X1200	1213 x 8.4
1200.0	1238.0	13.8	RT06X1200	1216 x 12
1300.0	1327.3	9.5	RT05X1300	1313 x 8.4
1300.0	1338.0	13.8	RT06X1300	1316 x 12
1500.0	1527.3	9.5	RT05X1500	1513 x 8.4
1500.0	1538.0	13.8	RT06X1500	1516 x 12
1600.0	1638.0	13.8	RT06X1600	1616 x 12
2000.0	2038.0	13.8	RT06X2000	2016 x 12
2600.0	2638.0	13.8	RT06X2600	2616 x 12

The rod diameters in bold type are in accordance with the recommendations of ISO 3320.

Other dimensions and all intermediate sizes up to 2.600 mm diameter including imperial (inch) sizes can be supplied.

TURCON® DOUBLE DELTA®



- Double Acting -

- Rubber Energised Plastic Faced Seal -

- For O-Ring Grooves -

- Material -

- Turcon® -

Turcon® Double Delta®

Description

Turcon® Double Delta® is an rubber energised plastic faced seal. The seal is designed to expand and improve the service parameters of O-Rings and is installed in existing O-Ring grooves.

Double Delta® combines the flexibility and response of O-Rings with the wear and friction characteristics of the Turcon materials in dynamic applications.

The figures below shows the cross section of the Double Delta®.

The double acting performance of the seal follows from the symmetrical cross section which allow the seal to respond to pressure in both directions.

Initial contact pressure is provided by radial compression of the O-Ring. When the system pressure is increased the O-Ring transforms this into additional contact pressure, the contact pressure of the seal is thereby automatically adjusted so sealing is ensured under all service conditions.

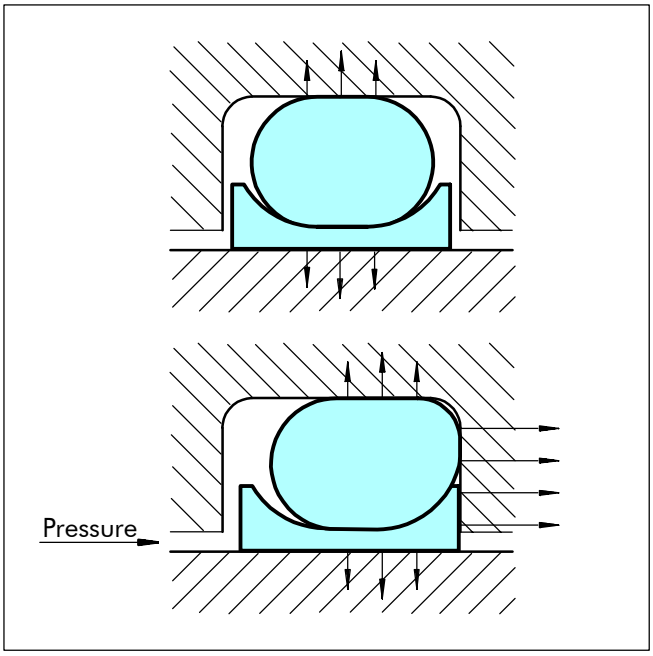


Figure 56 Turcon® Double Delta® without and with pressure

Notches

Turcon® Double Delta® is as standard supplied without radial notches, as the thin radial section of the seal gives good response to pressure variations.

For diameters from 8 mm notches on both sides are optional. These ensure direct pressurizing of the seal under all operating conditions.

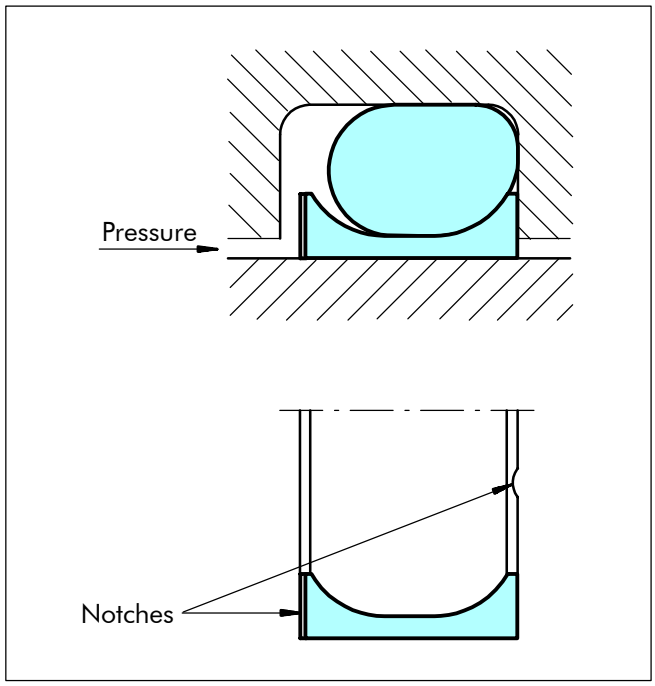


Figure 57 Turcon® Double Delta® with notches

Advantages

- Compact groove dimensions and simple installation
- Low friction without stick-slip
- Resistance against wear and extrusion
- Rod seals available for all diameters from 2 to 999.9 mm
- Standard cross sections cover AS 568A and important metric O-Rings, other cross sections available on request.
- Fits also groove dimensions per MIL-G-5514F

Application Examples

The Turcon® Double Delta® is preferably used as a double acting seal for hydraulic and pneumatic equipment in sectors such as:

- Machine tools
- Handling devices
- Manipulators
- Valves
- Chemical process equipments

It is particular recommended for light duty and small diameter applications.

Technical Data

Operating conditions

Pressure:	Up to 35 MPa
Velocity:	Up to 15 m/s
Temperature:	-45°C to +200°C (according to O-Ring material)
Media:	Mineral oil, Non-flammable fluids, Environmentally safe fluids and others according to O-Ring material.

Important Note:
The above data are maximum values and cannot be used at the same time. e.g. the maximum operating speed depends on material type, pressure, temperature and gap value.

Materials

Standard Application:

- For hydraulic components with reciprocating movement in mineral oils or medium with good lubricating performance and hard mating surface.

Turcon® seal: Turcon® T46

Energiser: O-Ring NBR 70 shore A or FKM 70 shore A (depending on the temp.)

Special Application:

- Short stroke movements, poor lubricating fluids and soft mating surfaces.

Turcon® seal: Turcon® T24

Energiser: O-Ring NBR 70 shore A or FKM 70 shore A (depending on the temp.)

- For low friction requirement in dynamic hydraulic components with good lubricating medium:

Turcon® seal: Turcon® T05

Energiser: O-Ring NBR 70 shore A or FKM 70 shore A (depending on the temp.)

- For specific applications other material combinations as listed may also be used. Please contact your local Busak+Shamban Company.

Material for the seal set:

Example: T05 plus FKM - O-Ring T05V

T46 plus NBR - O-Ring T46N

Table XXXVII Turcon® Materials for Double Delta®

Material, Applications, Properties	Code	O-Ring Material	Code	O-Ring Operating Temp.* °C	Mating Surface Material	MPa max.
Turcon® T46 **Standard material** for hydraulics, high compressive strength, good sliding and wear properties, good extrusion resistance, **BAM approval.** Bronze filled Colour: Greyish to dark brown	T46	NBR - 70 Shore A	N	-30 to +100	Steel, hardened Steel, chromeplated Cast iron	35
		NBR - Low temp. 70 Shore A	T	-45 to +80		
		FKM - 70 Shore A	V	-10 to +200		
Turcon® T24 For all lubricating and non-lubricating fluids, **soft mating surfaces.** Carbon filled Colour: Black	T24	NBR - 70 Shore A	N	-30 to +100	Mild steel Steel, chromeplated Cast iron Stainless steel Aluminium Bronze	25
		NBR - Low temp. 70 Shore A	T	-45 to +80		
		FKM - 70 Shore A	V	-10 to +200		
		EPDM - 70 Shore A	E**	-45 to +145		
Turcon® T05 For all lubricating hydraulic fluids, hard mating surfaces, **very good sliding properties, low friction.** Colour: Turquoise	T05	NBR - 70 Shore A	N	-30 to +100	Steel, hardened Steel, chromeplated	20
		NBR - Low temp. 70 Shore A	T	-45 to +80		
		FKM - 70 Shore A	V	-10 to +200		

* The O-Ring Operation Temperature is only valid in mineral hydraulic oil. BAM: Approved by "Bundes Anstalt Materialprüfung, Germany".

Highlighted materials are standard. **Material not suitable for mineral oils.

Installation Recommendation

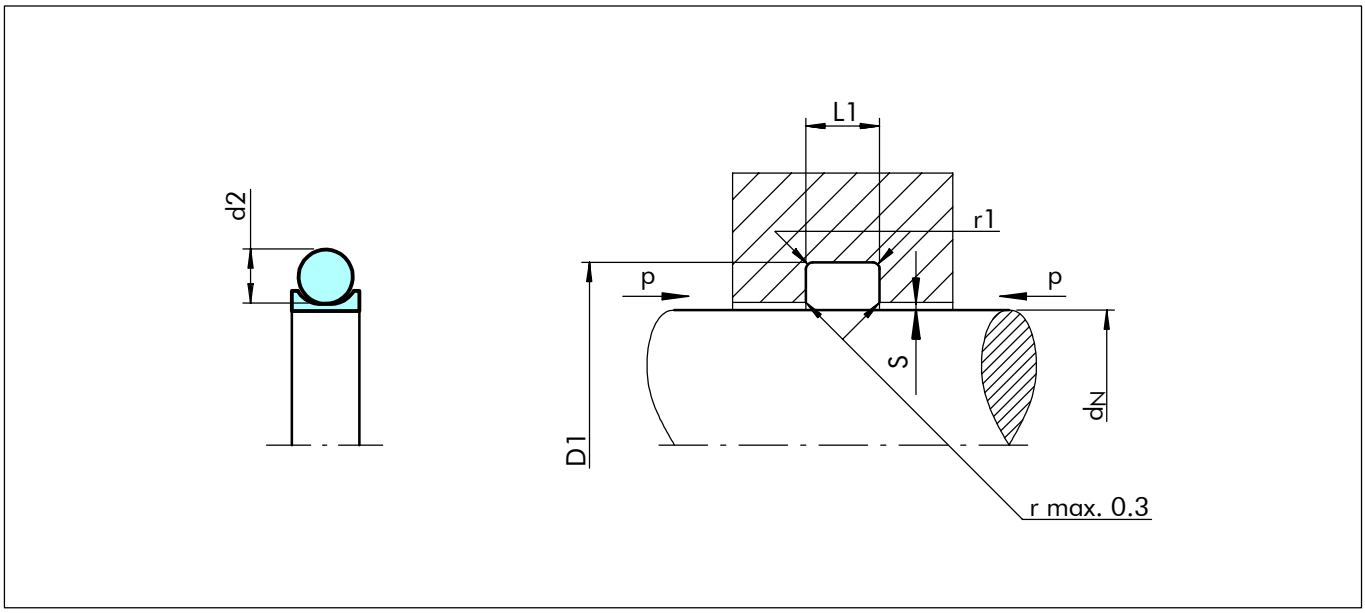


Figure 58 Installation drawing

Table XXXVIII Installation Dimensions

Series No.	Rod Diameter d_N f8/h9		Groove Diameter	Groove Width	Radius	Radial Clearance S max				O-Ring Cross-Section
	Standard Range	Extended Range	D_1 H9	L_1 +0.2	r_1	2 MPa	10 MPa	20 MPa	35 MPa	d_2
RDD0	4 - 9.9	2 - 129.9	d_N+2.9	2.4	0.4	0.10	0.10	0.08	0.05	1.78
RDD1	10 - 19.9	5 - 249.9	d_N+4.5	3.6	0.4	0.15	0.15	0.10	0.07	2.62
RDD2	20 - 39.9	5 - 449.9	d_N+6.2	4.8	0.6	0.25	0.20	0.15	0.08	3.53
RDD3	40 - 111.9	12 - 649.9	d_N+9.4	7.1	0.8	0.35	0.25	0.20	0.10	5.33
RDD4	120 - 649.9	60 - 999.9	d_N+12.2	9.5	0.8	0.50	0.30	0.25	0.15	7.00
RDD5	650 - 999.9	110 - 999.9	d_N+15.0	10.0	1.0	0.60	0.40	0.30	0.20	8.40

Ordering example

Turcon® Double Delta®, complete with O-Ring, standard range, series RDD3 (from Table XXXVIII),
Rod diameter: d_N = 80.0 mm
Part No.: RDD300800 (from Table XXXIX)

Select the material from Table XXXVII. The corresponding code numbers are appended to the Part No. (from Table XXXIX). Together they form the Order No.
For all intermediate sizes not shown in Table XXXIX, the Order No. can be determined from the example opposite.

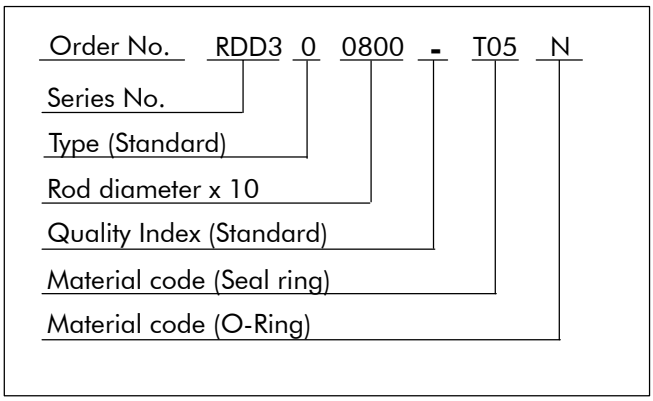


Table XXXIX Preferred Series/Part No.

Rod Diameter	Groove Diameter	Groove Width	Part No.	O-Ring Sizes
d_N h9	D_1 H9	L_1 +0.2		
3.0	5.9	2.4	RDD000030	2.90 x 1.78
4.0	**6.9**	**2.4**	**RDD000040**	**3.68 x 1.78**
5.0	**7.9**	**2.4**	**RDD000050**	**4.87 x 1.80**
6.0	**8.9**	**2.4**	**RDD000060**	**6.07 x 1.78**
8.0	**10.9**	**2.4**	**RDD000080**	**7.65 x 1.78**
10.0	**14.5**	**3.6**	**RDD100100**	**10.77 x 2.62**
12.0	**16.5**	**3.6**	**RDD100120**	**12.37 x 2.62**
14.0	**18.5**	**3.6**	**RDD100140**	**13.94 x 2.62**
15.0	19.5	3.6	RDD100150	15.0 x 2.65
16.0	**20.5**	**3.6**	**RDD100160**	**17.12 x 2.62**
18.0	**22.5**	**3.6**	**RDD100180**	**18.72 x 2.62**
20.0	**26.2**	**4.8**	**RDD200200**	**20.22 x 3.53**
22.0	**28.2**	**4.8**	**RDD200220**	**21.82 x 3.53**
25.0	**31.2**	**4.8**	**RDD200250**	**25.00 x 3.53**
28.0	**34.2**	**4.8**	**RDD200280**	**28.17 x 3.53**
30.0	36.2	4.8	RDD200300	31.35 x 3.53
32.0	**38.2**	**4.8**	**RDD200320**	**32.92 x 3.53**
35.0	41.2	4.8	RDD200350	36.09 x 3.53
36.0	**42.2**	**4.8**	**RDD200360**	**36.09 x 3.53**
40.0	**49.4**	**7.1**	**RDD300400**	**40.64 x 5.33**
42.0	51.4	7.1	RDD300420	43.82 x 5.33
45.0	**54.4**	**7.1**	**RDD300450**	**46.99 x 5.33**
48.0	57.4	7.1	RDD300480	46.99 x 5.33
50.0	**59.4**	**7.1**	**RDD300500**	**50.17 x 5.33**
52.0	61.4	7.1	RDD300520	53.34 x 5.33
55.0	64.4	7.1	RDD300550	56.52 x 5.33
56.0	**65.4**	**7.1**	**RDD300560**	**56.52 x 5.33**
60.0	69.4	7.1	RDD300600	59.69 x 5.33
63.0	**72.4**	**7.1**	**RDD300630**	**62.87 x 5.33**
65.0	74.4	7.1	RDD300650	66.04 x 5.33
70.0	**79.4**	**7.1**	**RDD300700**	**72.39 x 5.33**
80.0	**89.4**	**7.1**	**RDD300800**	**81.92 x 5.33**
85.0	94.4	7.1	RDD300850	85.09 x 5.33
90.0	**99.4**	**7.1**	**RDD300900**	**91.44 x 5.33**
95.0	104.4	7.1	RDD300950	97.79 x 5.33
100.0	**109.4**	**7.1**	**RDD301000**	**100.97 x 5.33**
105.0	114.4	7.1	RDD301050	107.32 x 5.33
110.0	**119.4**	**7.1**	**RDD301100**	**110.49 x 5.33**
115.0	124.4	7.1	RDD301150	116.84 x 5.33
120.0	132.2	9.5	RDD401200	120.02 x 7.0
125.0	**137.2**	**9.5**	**RDD401250**	**126.37 x 7.0**
130.0	142.2	9.5	RDD401300	132.72 x 7.0
135.0	147.2	9.5	RDD401350	135.89 x 7.0
140.0	**152.2**	**9.5**	**RDD401400**	**142.24 x 7.0**
150.0	162.2	9.5	RDD401500	151.77 x 7.0
160.0	**172.2**	**9.5**	**RDD401600**	**164.47 x 7.0**
170.0	182.2	9.5	RDD401700	170.82 x 7.0
180.0	**192.2**	**9.5**	**RDD401800**	**183.52 x 7.0**
190.0	202.2	9.5	RDD401900	189.87 x 7.0
200.0	**212.2**	**9.5**	**RDD402000**	**202.57 x 7.0**
210.0	222.2	9.5	RDD402100	215.27 x 7.0
220.0	**232.2**	**9.5**	**RDD402200**	**227.97 x 7.0**
230.0	242.2	9.5	RDD402300	227.97 x 7.0
240.0	252.2	9.5	RDD402400	240.67 x 7.0
250.0	**262.2**	**9.5**	**RDD402500**	**253.37 x 7.0**
280.0	**292.2**	**9.5**	**RDD402800**	**291.47 x 7.0**
300.0	312.2	9.5	RDD403000	304.17 x 7.0
320.0	**332.2**	**9.5**	**RDD403200**	**329.57 x 7.0**
350.0	362.2	9.5	RDD403500	354.97 x 7.0
360.0	**372.2**	**9.5**	**RDD403600**	**367.67 x 7.0**
400.0	412.2	9.5	RDD404000	405.26 x 7.0

The rod diameters in bold type correspond to the recommendations of ISO 3320.
Patr No. for other dimensions and **all** intermediate sizes up to 999.9 mm diameter including imperial (inch) sizes can be supplied. Larger sizes up to 2600 mm available upon request.

Special Turcon® Double Delta®

Turcon® Double Delta® for one Back-up Ring grooves

Double Delta® is available for designs where grooves for O-Ring with one Back up Ring are used according to Table XL.

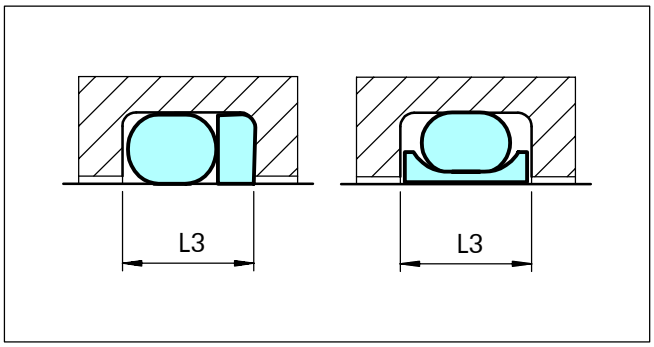


Figure 59 Groove width

Table XL Seals for one Back-up Ring groove

Series No.	Groove Width	Execution Mark 5th digit		O-Ring Cross Section
	L_3	Without Notch	With Notch*	d_2
RDA0	3.80	0	N	1.78
RDA1	4.65	0	N	2.62
RDA2	5.70	0	N	3.53
RDA3	8.50	0	N	5.33
RDA4	11.20	0	N	7.00
RDA5	12.50	0	N	8.40

* Available for diameters from 8 mm

Ordering Example

Double Delta® complete with NBR O-Ring
Rod diameter: d_N = 80 mm
Groove diameter: 89.4 mm
Groove width: 8.5 mm.
Order No:. RDA300800-T05N

Order No. PDA3 0 0800 - T05 N

- Series No.*
- Type (Standard) 1)
- Rod diameter x 10
- Quality Index (Standard)
- Material code (Seal ring)**
- Material code (O-Ring)***

* From table XL or XLI

** From table XXXVII

*** From table XXXVII

1) N for seals with notches, available from dia. 8mm

Turcon® Double Delta® for Metric O-Rings

Double Delta® is available for installation in grooves for metric O-Rings as listed in Table XLI.

Table XLI Rod Seals for Metric O-Ring Grooves

O-Ring Cross-Section	Groove Diameter	Groove Width	Series No.	Execution Mark 5th digit		Available Range
d_2	D_1 H9	L_1 +0.2		Standard	Notch*	
2.0	d_N + 3.3	2.7	RD2A	0	N	3 - 100.0
2.4	d_N + 4.1	3.2	RD2E	0	N	5 - 160.0
2.5	d_N + 4.3	3.3	RD2F	0	N	5 - 160.0
3.0	d_N + 5.2	4.0	RD3A	0	N	6 - 200.0
4.0	d_N + 7.0	5.2	RD4A	0	N	8 - 300.0
5.0	d_N + 8.8	6.6	RD5A	0	N	12 - 400.0
5.7	d_N + 10.0	7.2	RD5H	0	N	12 - 649.9

* Available for diameters from 8 mm

NON STANDARD SEALS

- Available upon Request -

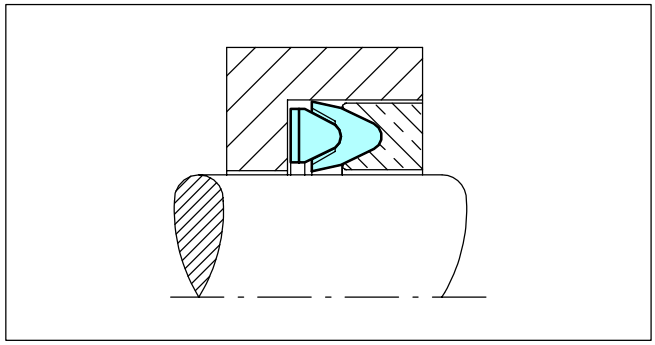
- Old Series -

- Special Series -

Polypac® VA

Seal for high pressure volumetric water pump. It's made with a special grade NBR+FABRIC. High sealing efficiency and wear resistance.

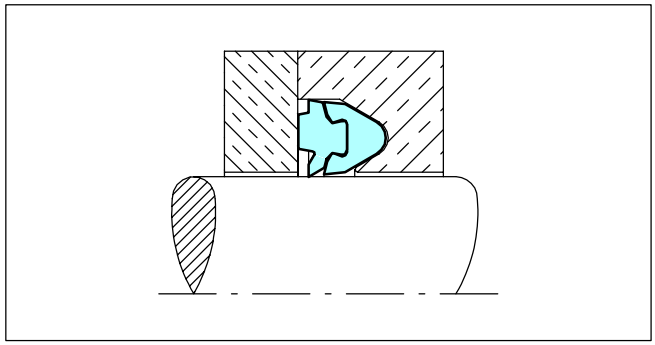
Diameter Range mm	Pressure Range MPa	Temperature Range °C	Velocity m/s
15 - 70	Up to 40	Up to+80	Up to 2



Polypac® VB

Seal for low pressure volumetric water pump. It's made with a NBR rubber gasket clamped on a softer NBR+FABRIC V-ring shape. These seals in combination with VA seals for high pressure improve the performance of the sealing system in high pressure water pump.

Diameter Range mm	Pressure Range MPa	Temperature Range °C	Velocity m/s
13 - 60	-	Up to+80	Up to 2

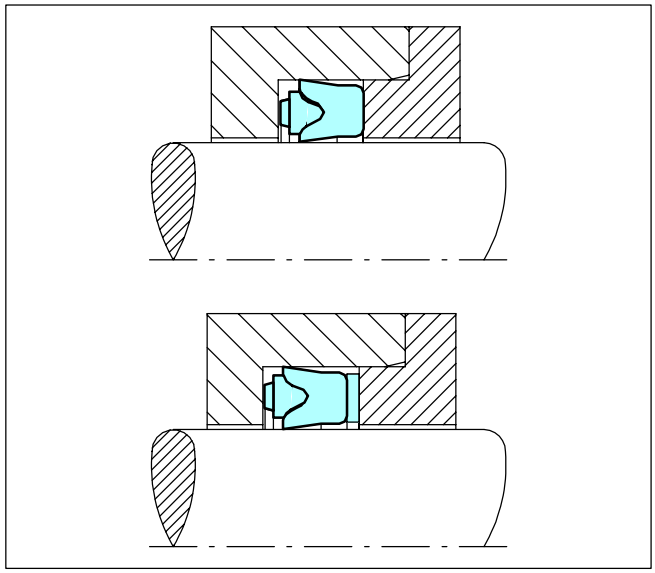


Polypac® DS - CX95 and DS/TE - CX95

The seals DS and DS/TE are designed to improve the water cleaning equipment's performance.

The special profile can withstand the frequent pressure variations, high temperatures and critical lubrication. The U shaped sealing element is made out of cotton fabric reinforced NBR and provide with a NBR energiser ring a good sealing performance at high as low pressure working condition. The version DS/TE with bronze filled PTFE back up ring permit to work at high pressure.

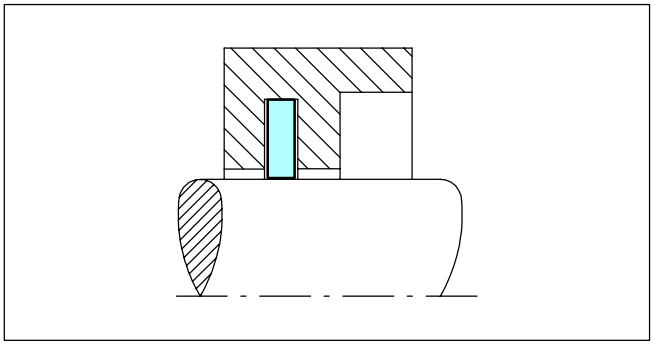
Diameter Range mm	Pressure Range MPa	Temperature Range °C	Velocity m/s
15 - 40	Up to 40 for DS/TE Up to 10 for DS	Up to+80	Up to 2



Polypac® BF - R

The BF-R (buffer ring), polyurethane rectangular section ring is used in addition to the polyurethane rod U-seal in order to reduce the peak of pressure generally present in excavator equipment and increasing sealing system performance and life.

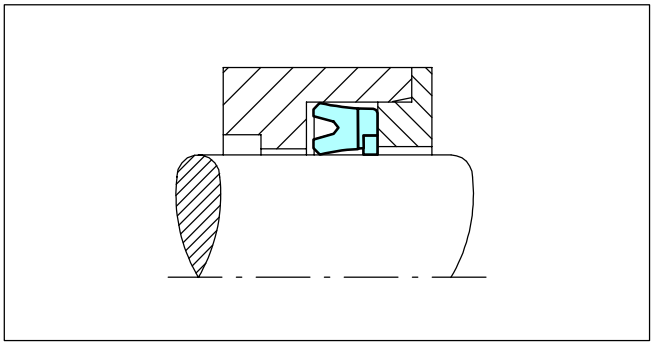
Diameter Range mm	Pressure Range MPa	Temperature Range °C	Velocity m/s
20 - 120	Up to 40	-30 to+80	Up to 0.5



Polypac® GB/NEI

Single acting rod seal with an annular groove in the pressure face. The groove forms two sealing lips which can move independently in such a way as to give a greater interference fit with less friction than solid seals. The nitrile sealing element is supported by a vulcanised cotton fabric reinforced ring with additional anti-extrusion ring. High sealing efficiency and wear resistance.

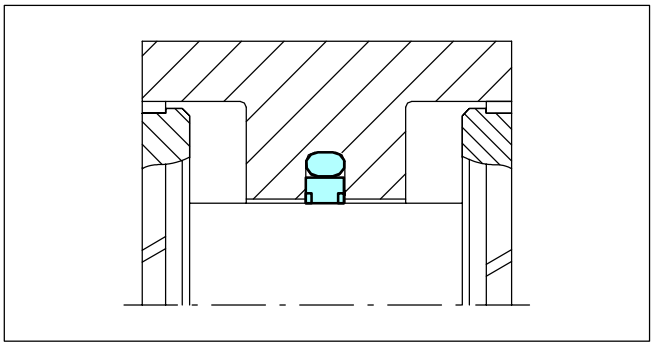
Diameter Range mm	Pressure Range MPa	Temperature Range °C	Velocity m/s
30 - 65	Up to 40	-30 to+130	Up to 0.5



Turcon® Glyd Ring® CR

Double acting rubber energised rod seal for dynamic applications. Installed in grooves to ISO 7425. Low friction with no Stick-slip, minimal break out force and high wear resistance with integrated Back-up Rings for higher pressures or larger gaps.

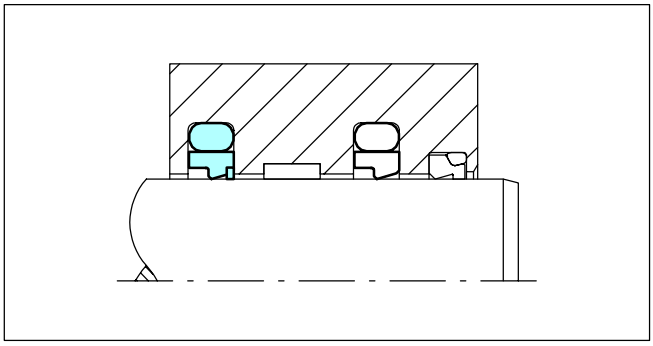
Diameter Range mm	Pressure Range MPa	Temperature Range °C	Velocity m/s
30 - 2700	100	-45 to+200	5



Turcon® Stepseal® CR

Single acting rubber energised rod seal for dynamic applications. Installed in closed grooves including grooves to ISO 7425. High sealing efficiency, low friction with no Stick-slip, minimal break out force and high wear resistance with integrated back up ring for higher pressures or bigger gaps.

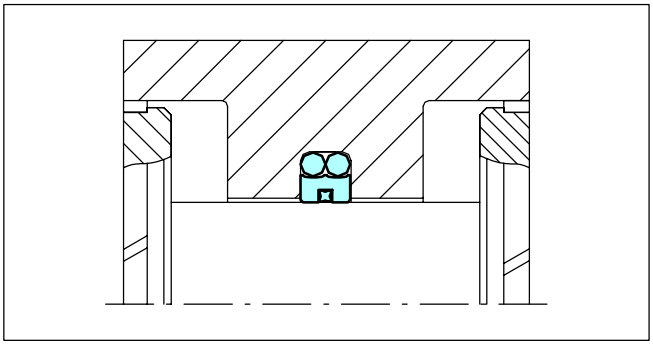
Diameter Range mm	Pressure Range MPa	Temperature Range °C	Velocity m/s
30 - 2700	100	-45 to+200	5



Turcon® AQ-Seal® 5

A further development of the standard Turcon® AQ-Seal® double acting seal for sealing between two media, e.g. fluid/gas separation by incorporating a limited footprint QUAD-RING® Seal elastomer in the dynamic sealing face. Energised by two O-rings to improve sealing behaviour.

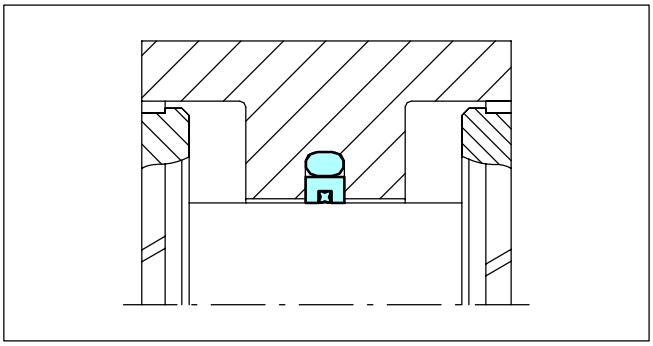
Diameter Range mm	Pressure Range MPa	Temperature Range °C	Velocity m/s
40 - 700	60	-45 to+200	3



Turcon® AQ-Seal®

A double acting rubber energised seal development for sealing between two media, e.g. fluid/gas seperation by incorporating a limited footprint QUAD-RING® Seal inset into the dynamic sealing face. Installed in grooves to ISO 7425.

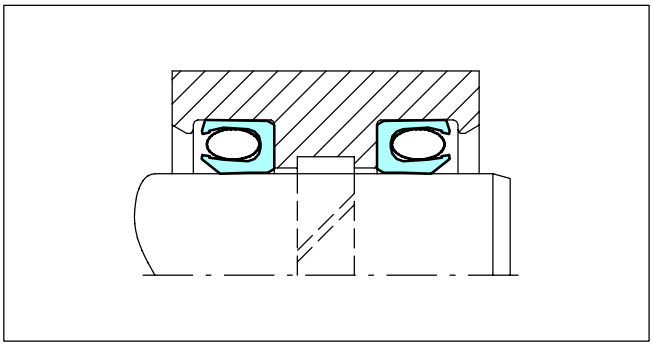
Diameter Range mm	Pressure Range MPa	Temperature Range °C	Velocity m/s
16 - 700	40	-45 to+200	2



Turcon® Variseal® W

The Turcon® Variseal® W is a single acting rod seal energized by a special helical spring. The advantage of the Turcon®Variseal® W lies in its low friction and constant preloading force over a relatively large deformation range. The Turcon® Variseal® W is used wherever friction has to be kept within a narrow tolerance zone.

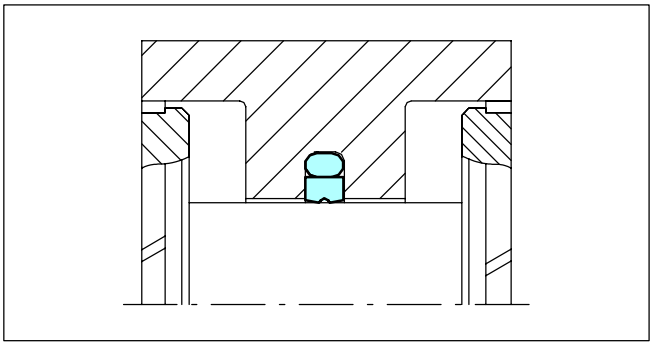
Diameter Range mm	Pressure Range MPa	Temperature Range °C	Velocity m/s
6 - 2700	45	-70 to+200	15



Turcon® Glyd Ring® Hz

Glyd Ring® Hz is a symmetric double-acting seal with a special design on the sealing area. In principle there are two Stepseals® face to face. The seal width is close to the groove to reduce axial movements. The Glyd Ring® Hz is for applications with short and high frequencies.

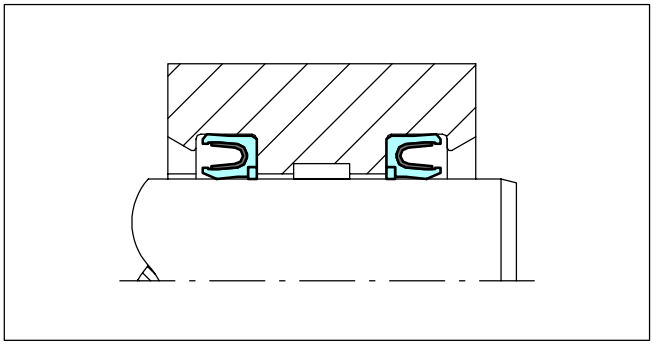
Diameter Range mm	Pressure Range MPa	Temperature Range °C	Velocity m/s
8 - 2700	40	-45 to+200	15



Turcon® Variseal® M2 CR

Single acting sealing element comprising a U-shaped Turcon® ring and stainless energising finger spring. Low friction with no Stick-slip, minimal break out force and high wear resistance. Resistant to most liquids and chemical. Unlimited shelf life. For higher pressure applications or Larger extrusion gaps the Variseal® MZ CR has an integrated Back-up Ring in material Zurcon® Z43.

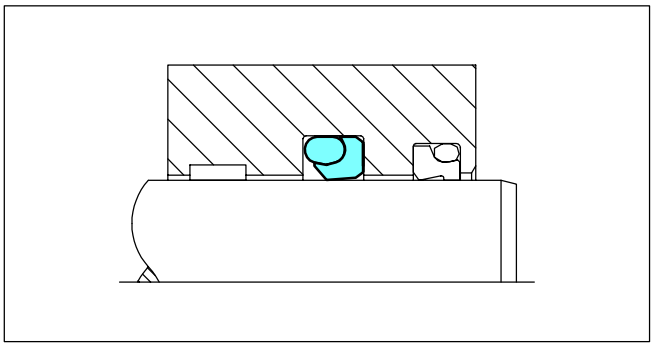
Diameter Range mm	Pressure Range MPa	Temperature Range °C	Velocity m/s
8 - 300	100	-30 to+260	15



Turcon® Vectorseal® VL

A single acting L-shaped Turcon® seal with an O-ring as elastic spring for rods subjected to dynamic and static loads. Low friction, no sticklip effect, wear-resistant.

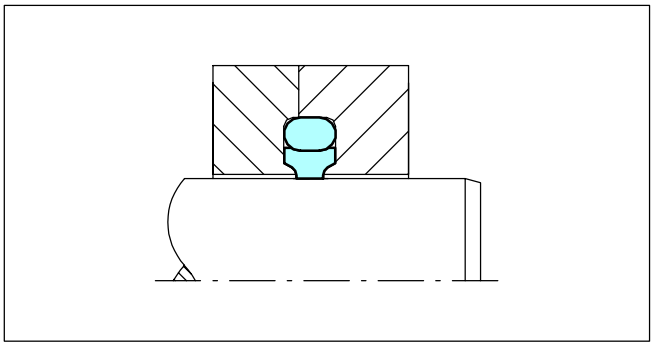
Diameter Range mm	Pressure Range MPa	Temperature Range °C	Velocity m/s
10 - 700	60	-45 to+200	15



Captive Turcon® Glyd Ring®

A seal for special applications where the Glyd Ring® has to slide across dimensional changes (e.g. from a small diameter with sealing efficiency over the seal to a large diameter with no sealing efficiency or vise virsa).

Diameter Range mm	Pressure Range MPa	Temperature Range °C	Velocity m/s
6 - 2700	60	-45 to+200	15



Turcon® Servo Seal

The servo seal can be used where the accuracy of the positioning movement and a low friction is necessary for a low hysteresis, e.g. in applications like a hydraulic pressure switch.

Diameter Range mm	Pressure Range MPa	Temperature Range °C	Velocity m/s
3 - 20	30	-45 to+200	15