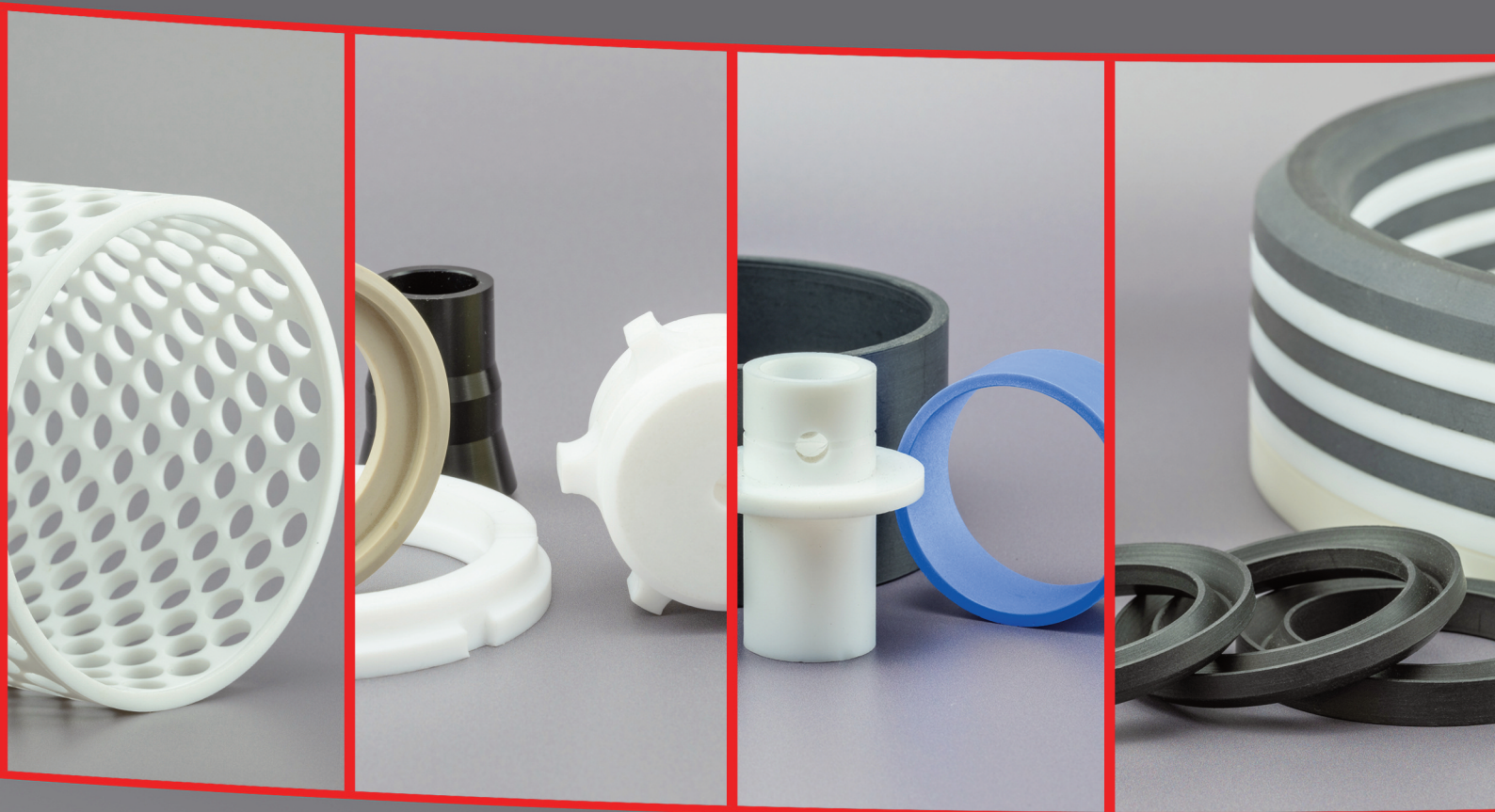


# SEAL DESIGN HANDBOOK



 **ASEAL**  
PLASTICS  
A DIVISION OF SEALCO INTERNATIONAL LTD

HIGH PERFORMANCE IN THE MOST DEMANDING ENVIRONMENTS



ASEAL Plastics was established in 1991 as a supplier of engineered plastic components including anti-extrusion rings, valve seats, gaskets, packings and many other specialised engineering products.

Now part of the Sealco International group of companies, we have extended our product range to include, seals in elastomeric compounds such as PU, Viton and HNBR, metal O and C rings and bespoke manufactured parts in both elastomers and engineering plastics.

Our customer base spans many industries including, seal stockists, valves and pressure control, oil and gas, food and pharmaceutical, motorsport, industrial hydraulics and many more.

We have a large UK based manufacturing facility capable of producing both prototype and test parts in small batches as well as large production runs on short lead times with no set-up or tooling costs.

Within both A Seal and the Sealco group, we have many years of experience of design and manufacture across all industries and can offer technical and engineering support to ensure you are using the optimum product for your application.

Our sales and engineering teams are ready to assist you with any applications you may have.



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ASEAL Plastics offer you sealing solutions tailored to your specifications. We have the very latest technology in machined seals, operated by experienced and knowledgeable engineers and geared up to manufacture urgent specials or standard seals, in a variety of quality materials. We can produce seals up to 520mm OD on site and larger sizes on request without the need of costly tooling.

### Quality

ASEAL Plastics are committed to continual improvement of our quality and safety systems, as such our group is certified to: **ISO9001:2015** Quality System, **ISO14001:2015** Environmental certification & **ISO45001:2018** Health & Safety certification. Copies can be supplied on request.

### Manufacturing

Due to having the latest technology in CNC machining we can rapidly respond to customer demands, ensuring we surpass customer requirements with:

- No Tooling requirements
- Reduce customer stocking requirements
- Very short lead times
- Engineering to customer requirements

### Materials

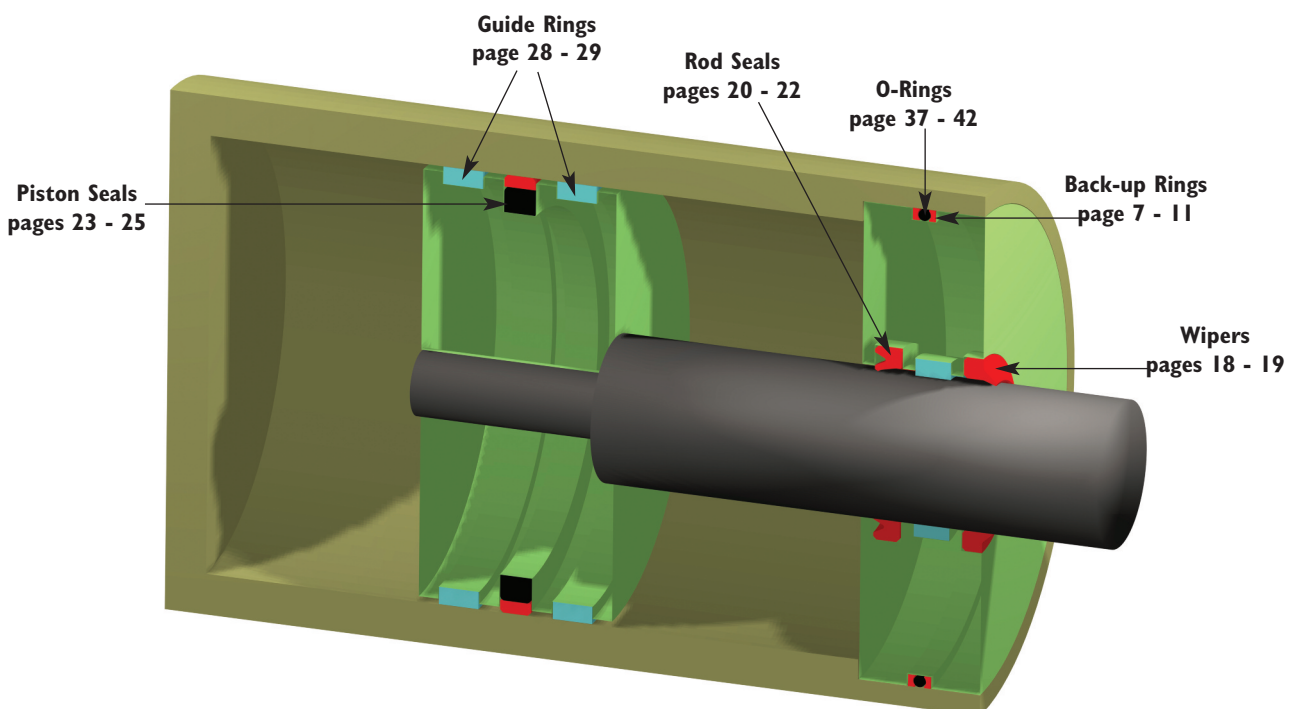
All materials used by ASEAL Plastics are stocked on site at our UK sites, to enable immediate manufacturing when required; standard stocked materials include: Polyurethane, Nitrile, H-Nitrile, Viton, FPM, EPDM, Silicone, Acetal, Peek, PTFE's and many more on demand within days.

### Full Package

ASEAL Plastics not only supply machined seals, but offer a full range of sealing products, from standard o rings, high performance metal seals, gaskets to any other type of seal to suit your application. Our internal and external engineers bring over 100 years of engineering sealing solutions, and can therefore offer the best solution to your sealing needs.

### Design

Working closely with our customers, ASEAL Plastics can offer drafting and design with the capability to also manufacture metal components for both prototypes and finished product with validation of components and design – both FEA evaluation and production of CFD (Fluid Dynamics). Our aim is to work with engineers and designers at the conceptual stage thus working in optimum seal geometries from day one – reducing rework, testing and time from concept to completion. Software such as Ansys, Inventor and SolidWorks are used. With these packages, the optimum seal can be designed from the offset. Also we can reduce the resource burden of the customer as the engineering of the metal parts can be handled by Sealco in association with our partners. Supply of metal parts with the seals also reduces the procurement burden as Sealco becomes the single source for the project also supplying bearings, snap rings, bolting etc.



Back-Up or Anti-Extrusion rings can play a critical role in the integrity of any sealed system.

When mating parts are to be assembled, especially when the parts are moving relative to each other, there inevitably must be a clearance to allow assembly without galling or allow free running without catastrophic metal to metal contact. This clearance provides a space, known as the extrusion gap, for the sealing element to potentially extrude or flow into under pressure causing damage and ultimately failure in the seal.

The back-up ring provides protection to the sealing element, reducing or in some cases completely closing the extrusion gap and preventing any extrusion damage to the seal.

PTFE is a commonly used material for back-up rings due to it having excellent properties including, high extrusion resistance, very low frictional properties, superb chemical resistance to most media and good low and high temperature capabilities.

Other materials such as PEEK, Acetal and Polyurethane are also available.

Whilst we can provide an almost infinite variety of Back-Up Rings to suit almost every sealing geometry, one of the most commonly used sealing solutions is the O-Ring. We have a full range of Back-Up Rings designed to improve the performance of these seals.

We offer different geometries of standard O-Ring Back-Up Rings designed for differing applications, all of them can be made to industry standards such as BS1806 or BS4518 as well as to custom sizes as required.

#### Sizes & Materials:

We offer various sizes of metric and imperial Back up Rings and can produce them in a number of materials, some of the more standard being: VIRGIN PTFE, GLASS FILLED PTFE, BRONZE FILLED PTFE, CARBON FILLED PTFE, NYLON, ACETAL, GLASS FILLED NYLON, PHENOLIC, PEEK, GLASS FILLED PEEK AND EKONOL. (See tables pages 7 – 11). For other materials please enquire.

#### Back Up - Spiral



The unique geometry of the Spiral Back-Up Ring allows the ring to open and close without there being a gap for the sealing material to extrude into.

This is particularly important when the hardware tolerances are wide or when the fitting of an endless ring is not possible. Produced in Virgin PTFE, these rings exhibit excellent performance in environments requiring wide ranging temperature capabilities and a comprehensive chemical resistance.

Example Part Number:

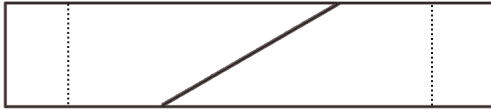
A Spiral Back-Up to suit a BS005 O-Ring would be BS005BUSP

**Back Up - Endless**

Endless Back-Rings are an excellent option for applications that are rotating during assembly or in operation as there is no potential for opening or unwinding of the ring. Also they offer a uniform surface for the seal to act against eliminating the potential of damage to the face of the seal in extremes of pressure. As they are often fitted into open glands, harder materials such as PEEK or Acetal can be used for these rings further increasing the extrusion resistance and allowing even higher system pressures to be applied.

Example Part Number:

An Endless Back-Up to suit a BS005 O-Ring would be BS005BUEN

**Back up - Split**

Split Back-Ups are used in situations where the hardware does not allow open glands for ease of installation but the same properties of an Endless Back-Up are required. These rings are produced as an endless ring then scarf cut at a shallow angle with no material loss. Again these ring can be produced in a wide variety of materials such as PTFE, PEEK or Acetal and offer excellent extrusion protection to the O-Ring at extremes of pressure.

Example Part Number:

A Split Back-Up to suit a BS005 O-Ring would be BS005BUCN

**Back Up - Contoured**

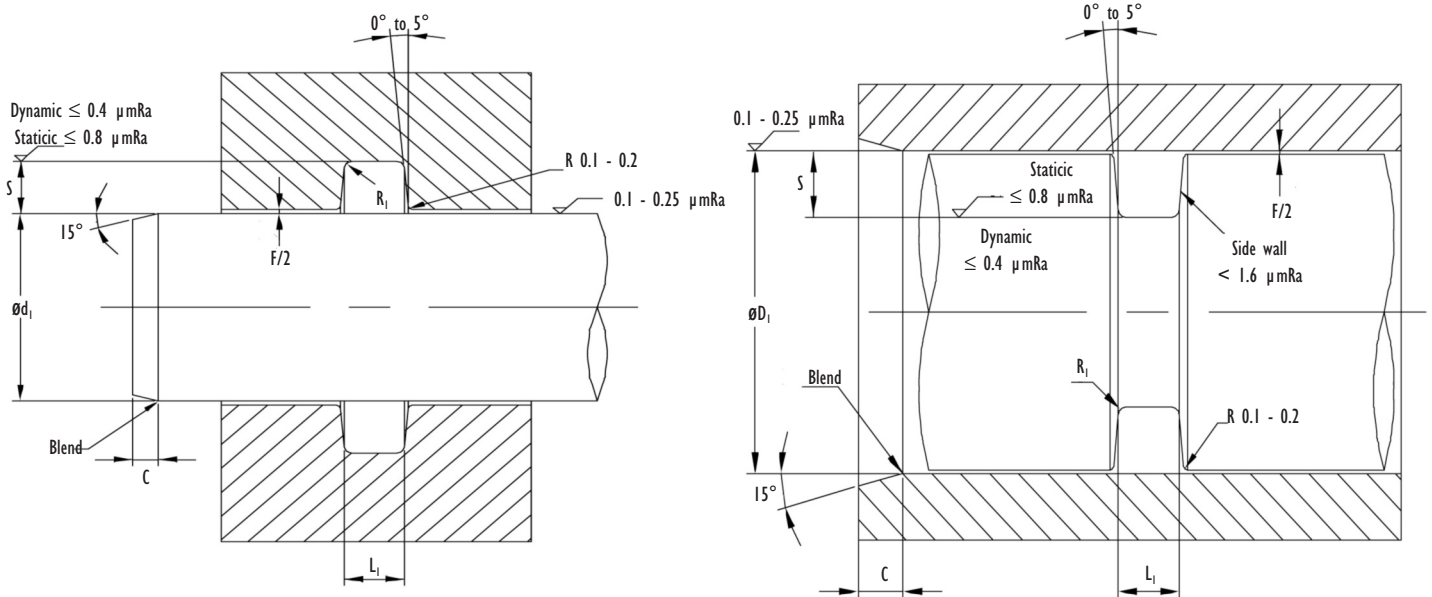
Contoured Back-Up Rings offer excellent protection to the O-Ring at extremes of pressure. The contoured face not only offers a greater surface area in contact with the seal but also assists in the O-Ring staying closer its original shape under high pressures ensuring that the O-Ring's radial forces remain constant. The geometry allows for extra protection from extrusion when there is movement in the hardware caused by pressure or when wider tolerances are required. Contoured Back-Ups can be supplied endless or split depending on assembly requirements and are manufactured in a wide range of materials ranging from harder elastomers such as NBR or FKM through to Polyurethane and harder plastics such as PTFE, PEEK and Acetal.

Example Part Number:

A Contoured Back-Up to suit a BS005 O-Ring manufactured in PTFE would be BS005PAR/PTFE

## HOUSING DIMENSIONS

For surface finish and recommended lead in chamfers refer to the illustration below. For housing dimensions and machining tolerances refer to the catalogue page of selected seal.



## Gland housing arrangement

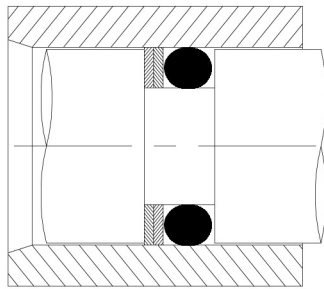
Max groove dia. = shaft dia.  $d_1$  min. +25 max Min groove dia. = shaft dia.  $d_1$  min. +25 min

## Piston housing arrangement

Max groove dia. = shaft dia.  $D_1$  min. -25 min Min groove dia. = shaft dia.  $d_1$  min. -25 max

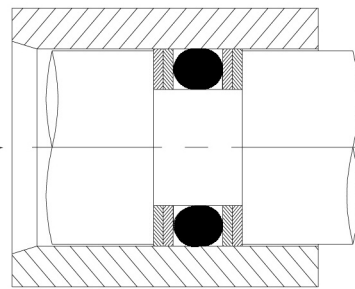
## POSITIONING OF BACK-UP RINGS

## Uni-directional pressure



PRESSURE

## Bi-directional pressure



PRESSURE

For the back up ring to function correctly, it is important that care be taken in fitting the backup within its housing.

Housing groove dimensions for 'O'-Rings to BS1806 and BS4518 fitted with back-up rings in Dynamic and Static diametral applications. The tables refer to the housing drawings.

## IMPERIAL

Housing groove dimensions for O-Rings to BS1806 fitted with back-up rings in Dynamic & Static diametral applications.

O-Ring Section	Radial width 'S'		Groove width $L_1$				Radius 'R1' Max	Chamfer 'C' Min
			One back-up ring		Two back-up rings			
	Max.	Min.	Max.	Min.	Max.	Min.		
0.070"	0.062"	0.060"	0.152"	0.147"	0.210"	0.205"	0.030"	0.085"
0.103"	0.094"	0.091"	0.199"	0.194"	0.257"	0.252"	0.030"	0.097"
0.139"	0.125"	0.122"	0.247"	0.241"	0.305"	0.299"	0.030"	0.103"
0.210"	0.188"	0.184"	0.355"	0.348"	0.427"	0.420"	0.030"	0.156"
0.275"	0.250"	0.245"	0.480"	0.473"	0.582"	0.576"	0.030"	0.187"

## METRIC

Housing groove dimensions for O-Rings to BS4518 fitted with back-up rings in Dynamic & Static diametral applications.

O-Ring Section	Radial width 'S'		Groove width $L_1$				Radius 'R1' Max	Chamfer 'C' Min
			One back-up ring		Two back-up rings			
	Max.	Min.	Max.	Min.	Max.	Min.		
1.6 mm	1.3 mm	1.25 mm	4.0 mm	3.8 mm	5.4 mm	5.2 mm	0.5 mm	2.2 mm
2.4 mm	2.09 mm	1.97 mm	4.8 mm	4.6 mm	6.2 mm	6.0 mm	0.5 mm	2.2 mm
3.0 mm	2.65 mm	2.50 mm	5.6 mm	5.4 mm	7.0 mm	6.8 mm	1.0 mm	2.6 mm
5.7 mm	5.18 mm	4.95 mm	9.5 mm	9.3 mm	11.3 mm	11.1 mm	1.0 mm	3.7 mm

Size Ref:	Nominal Dimensions				Size Ref:	Nominal Dimensions			
	$\phi d_1$ mm	$\phi D_1$ mm	T mm	O ring section		$\phi d_1$ mm	$\phi D_1$ mm	T mm	O ring section
BS005	0.109	0.234			BS121	1.062	1.250		
BS006	0.125	0.250			BS122	1.125	1.312		
BS007	0.156	0.281			BS123	1.187	1.375		
BS008	0.187	0.312			BS124	1.250	1.437		
BS009	0.219	0.344			BS125	1.312	1.500		
BS010	0.250	0.375			BS126	1.375	1.562		
BS011	0.312	0.437			BS127	1.437	1.625		
BS012	0.375	0.500			BS128	1.500	1.687		
BS013	0.437	0.562			BS129	1.562	1.750		
BS014	0.500	0.625			BS130	1.625	1.812		
BS015	0.562	0.687			BS131	1.687	1.875		
BS016	0.625	0.750			BS132	1.750	1.937		
BS017	0.687	0.812			BS133	1.812	2.000		
BS018	0.750	0.875			BS134	1.875	2.062		
BS019	0.812	0.937			BS135	1.937	2.125		
BS020	0.875	1.000			BS136	2.000	2.187		
BS021	0.937	1.062			BS137	2.062	2.250		
BS022	1.000	1.125			BS138	2.125	2.312		
BS023	1.062	1.187			BS139	2.187	2.375		
BS024	1.125	1.250			BS140	2.250	2.437		
BS025	1.187	1.312			BS141	2.312	2.500	0.050	
BS026	1.250	1.375			BS142	2.375	2.562	to	0.103
BS027	1.312	1.437	0.050		BS143	2.437	2.625	0.058	
BS028	1.375	1.500	to	0.070	BS144	2.500	2.687		
BS029	1.500	1.625	0.058		BS145	2.562	2.750		
BS030	1.625	1.750			BS146	2.625	2.812		
BS031	1.750	1.875			BS147	2.687	2.875		
BS032	1.875	2.000			BS148	2.750	2.937		
BS033	2.000	2.125			BS149	2.812	3.000		
BS034	2.125	2.250			BS150	2.875	3.062		
BS035	2.250	2.375			BS151	3.000	3.187		
BS036	2.375	2.500			BS152	3.250	3.437		
BS037	2.500	2.625			BS153	3.500	3.687		
BS038	2.625	2.750			BS154	3.750	3.937		
BS039	2.750	2.875			BS155	4.000	4.187		
BS040	2.875	3.000			BS156	4.250	4.437		
BS041	3.000	3.125			BS157	4.500	4.687		
BS042	3.250	3.375			BS158	4.750	4.937		
BS043	3.500	3.625			BS159	5.000	5.187		
BS044	3.750	3.875			BS160	5.250	5.437		
BS045	4.000	4.125			BS 161	5.500	5.687		
BS046	4.250	4.375			BS 162	5.750	5.937		
BS047	4.500	4.625							
BS048	4.750	4.875			BS206	0.500	0.750		
BS049	5.000	5.125			BS207	0.562	0.812		
BS050	5.250	5.375			BS208	0.625	0.875		
					BS209	0.687	0.937		
BS108	0.250	0.437			BS210	0.750	1.000		
BS109	0.312	0.500			BS211	0.812	1.062		
BS110	0.375	0.562			BS212	0.875	1.125		
BS111	0.437	0.625			BS213	0.937	1.187	0.050	
BS112	0.500	0.687			BS214	1.000	1.250	to	0.139
BS113	0.562	0.750	0.050		BS215	1.062	1.312	0.058	
BS114	0.625	0.812	to	0.103	BS216	1.125	1.375		
BS115	0.687	0.875	0.058		BS217	1.187	1.437		
BS116	0.750	0.937			BS218	1.250	1.500		
BS117	0.812	1.000			BS219	1.312	1.562		
BS118	0.875	1.062			BS220	1.375	1.625		
BS119	0.937	1.125			BS221	1.437	1.687		
BS120	1.000	1.187			BS222	1.500	1.750		



Spiral



Solid E



Solid Split ES

Size Ref:	Nominal Dimensions				Size Ref:	Nominal Dimensions			
	$\varnothing d_1$ mm	$\varnothing D_1$ mm	T mm	O ring section		$\varnothing d_1$ mm	$\varnothing D_1$ mm	T mm	O ring section
BS223	1.625	1.875			BS283	17.000	17.250	0.050	
BS224	1.750	2.000			BS284	18.000	18.250	to 0.058	0.139
BS225	1.875	2.125							
BS226	2.000	2.250			BS314	0.750	1.125		
BS227	2.125	2.375			BS315	0.812	1.187		
BS228	2.250	2.500			BS316	0.875	1.250		
BS229	2.375	2.625			BS317	0.937	1.312		
BS230	2.500	2.750			BS318	1.000	1.375		
BS231	2.625	2.875			BS319	1.062	1.437		
BS232	2.750	3.000			BS320	1.125	1.500		
BS233	2.875	3.125			BS321	1.187	1.562		
BS234	3.000	3.250			BS322	1.250	1.625		
BS235	3.125	3.375			BS323	1.312	1.687		
BS236	3.250	3.500			BS324	1.375	1.750		
BS237	3.375	3.625			BS325	1.500	1.875		
BS238	3.500	3.750			BS326	1.625	2.000		
BS239	3.625	3.875			BS327	1.750	2.125		
BS240	3.750	4.000			BS328	1.875	2.250		
BS241	3.875	4.125			BS329	2.000	2.375		
BS242	4.000	4.250			BS330	2.125	2.500		
BS243	4.125	4.375			BS331	2.250	2.625		
BS244	4.250	4.500			BS332	2.375	2.750		
BS245	4.375	4.625			BS333	2.500	2.875		
BS246	4.500	4.750			BS334	2.625	3.000		
BS247	4.625	4.875			BS335	2.750	3.125		
BS248	4.750	5.000			BS336	2.875	3.250		
BS249	4.875	5.125			BS337	3.000	3.375		
BS250	5.000	5.250			BS338	3.125	3.500		
BS251	5.125	5.375			BS339	3.250	3.625		
BS252	5.250	5.500	0.050		BS340	3.375	3.750		
BS253	5.375	5.625	to	0.139	BS341	3.500	3.875	0.062	
BS254	5.500	5.750	0.058		BS342	3.625	4.000	to	0.210
BS255	5.625	5.875			BS343	3.750	4.125	0.072	
BS256	5.750	6.000			BS344	3.875	4.250		
BS257	5.875	6.125			BS345	4.000	4.375		
BS258	6.000	6.250			BS346	4.125	4.500		
BS259	6.250	6.500			BS347	4.250	4.625		
BS260	6.500	6.750			BS348	4.375	4.750		
BS261	6.750	7.000			BS349	4.500	4.875		
BS262	7.000	7.250			BS350	4.625	5.000		
BS263	7.250	7.500			BS351	4.750	5.125		
BS264	7.500	7.750			BS352	4.875	5.250		
BS265	7.750	8.000			BS353	5.000	5.375		
BS266	8.000	8.250			BS354	5.125	5.500		
BS267	8.250	8.500			BS355	5.250	5.625		
BS268	8.500	8.750			BS356	5.375	5.750		
BS269	8.750	9.000			BS357	5.500	5.875		
BS270	9.000	9.250			BS358	5.625	6.000		
BS271	9.250	9.500			BS359	5.750	6.125		
BS272	9.500	9.750			BS360	5.875	6.250		
BS273	9.750	10.000			BS361	6.000	6.375		
BS274	10.000	10.250			BS362	6.250	6.625		
BS275	10.500	10.750			BS363	6.500	6.875		
BS276	11.000	11.250			BS364	6.750	7.125		
BS277	11.500	11.750			BS365	7.000	7.375		
BS278	12.000	12.250			BS366	7.250	7.625		
BS279	13.000	13.250			BS367	7.500	7.875		
BS280	14.000	14.250			BS368	7.750	8.125		
BS281	15.000	15.250			BS369	8.000	8.375		
BS282	16.000	16.250			BS370	8.250	8.625		



Spiral



Solid E



Solid Split ES



Size Ref:	Nominal Dimensions				Size Ref:	Nominal Dimensions			
	$\varnothing d_1$ mm	$\varnothing D_1$ mm	T mm	O ring section		$\varnothing d_1$ mm	$\varnothing D_1$ mm	T mm	O ring section
BS371	8.500	8.875			BS452	11.500	12.000		
BS372	8.750	9.125			BS452A	11.750	12.250		
BS373	9.000	9.375			BS453	12.000	12.500		
BS374	9.250	9.625			BS454	12.500	13.000		
BS375	9.500	9.875			BS455	13.000	13.500		
BS376	9.750	10.125			BS456	13.500	14.000		
BS377	10.000	10.375			BS457	14.000	14.500		
BS378	10.500	10.875			BS458	14.500	15.000		
BS379	11.000	11.375			BS459	15.000	15.500		
BS380	11.500	11.875			BS460	15.500	16.000		
BS381	12.000	12.375			BS461	16.000	16.500		
BS382	13.000	13.375	0.062		BS462	16.500	17.000	0.092	
BS383	14.000	14.375	to	0.210	BS463	17.000	17.500	to	0.275
BS384	15.000	15.375	0.072		BS464	17.500	18.000	0.104	
BS385	16.000	16.375			BS465	18.000	18.500		
BS386	17.000	17.375			BS466	18.500	19.000		
BS387	18.000	18.375			BS467	19.000	19.500		
BS388	19.000	19.375			BS468	19.500	20.000		
BS389	20.000	20.375			BS469	20.000	20.500		
BS390	21.000	21.375			BS470	21.000	21.500		
BS391	22.000	22.375			BS471	22.000	22.500		
BS392	23.000	23.375			BS472	23.000	23.500		
BS393	24.000	24.375			BS473	24.000	24.500		
BS394	25.000	25.375			BS474	25.000	25.500		
BS395	26.000	26.375			BS475	26.000	26.500		
BS425	4.500	5.000							
BS426	4.625	5.125							
BS427	4.750	5.250							
BS428	4.875	5.375							
BS429	5.000	5.500							
BS430	5.125	5.625							
BS431	5.250	5.750							
BS432	5.375	5.875							
BS433	5.500	6.000							
BS434	5.625	6.125							
BS435	5.750	6.250							
BS436	5.875	6.375							
BS437	6.000	6.500							
BS438	6.250	6.750							
BS439	6.500	7.000							
BS440	6.750	7.250							
BS441	7.000	7.500	0.092						
BS442	7.250	7.750	to	0.275					
BS443	7.500	8.000	0.104						
BS444	7.750	8.250							
BS445	8.000	8.500							
BS445A	8.250	8.750							
BS446	8.500	9.000							
BS446A	8.750	9.250							
BS447	9.000	9.500							
BS447A	9.250	9.750							
BS448	9.500	10.000							
BS448A	9.750	10.250							
BS449	10.000	10.500							
BS449A	10.250	10.750							
BS450	10.500	11.000							
BS450A	10.750	11.250							
BS451	11.000	11.500							
BS451A	11.250	11.750							



Spiral



Solid E



Solid Split ES

Size Ref:	Nominal Dimensions				Size Ref:	Nominal Dimensions			
	$\odot d_1$ mm	$\odot D_1$ mm	T mm	O ring section		$\odot d_1$ mm	$\odot D_1$ mm	T mm	O ring section
BS0031-16	3.5	6.0			BS0576-24	58	62		
BS0041-16	4.5	7.0			BS0586-24	59	63		
BS0051-16	5.5	8.0			BS0596-24	60	64		
BS0061-16	6.5	9.0			BS0616-24	62	66	1.2	
BS0071-16	7.5	10.0			BS0626-24	63	67	to	2.4
BS0081-16	8.5	11.0			BS0646-24	65	69	1.4	
BS0091-16	9.5	12.0			BS0676-24	68	72		
BS0101-16	10.5	13.0			BS0696-24	70	74		
BS0111-16	11.5	14.0							
BS0121-16	12.5	15.0			BS0195-30	20	25		
BS0131-16	13.5	16.0			BS0215-30	22	27		
BS0141-16	14.5	17.0	1.2		BS0225-30	23	28		
BS0151-16	15.5	18.0	to	1.6	BS0245-30	25	30		
BS0161-16	16.5	19.0	1.4		BS0255-30	26	31		
BS0171-16	17.5	20.0			BS0265-30	27	32		
BS0181-16	18.5	21.0			BS0275-30	28	33		
BS0191-16	19.5	22.0			BS0295-30	30	35		
BS0221-16	22.5	25.0			BS0315-30	32	37		
BS0251-16	25.5	28.0			BS0325-30	33	38		
BS0271-16	27.5	30.0			BS0345-30	35	40		
BS0291-16	29.5	32.0			BS0355-30	36	41		
BS0321-16	32.5	35.0			BS0365-30	37	42		
BS0351-16	35.5	38.0			BS0375-30	38	43		
BS0371-16	37.5	40.0			BS0395-30	40	45		
					BS0415-30	42	47		
BS0036-24	4	8			BS0425-30	43	48		
BS0046-24	5	9			BS0445-30	45	50		
BS0056-24	6	10			BS0495-30	50	55		
BS0066-24	7	11			BS0545-30	55	60		
BS0076-24	8	12			BS0555-30	56	61		
BS0086-24	9	13			BS0575-30	58	63		
BS0096-24	10	14			BS0595-30	60	65		
BS0106-24	11	15			BS0635-30	64	69		
BS0116-24	12	16			BS0645-30	65	70	1.2	
BS0126-24	13	17			BS0695-30	70	75	to	3.0
BS0136-24	14	18			BS0745-30	75	80	1.4	
BS0146-24	15	19			BS0795-30	80	85		
BS0156-24	16	20			BS0845-30	85	90		
BS0166-24	17	21			BS0895-30	90	95		
BS0176-24	18	22			BS0945-30	95	100		
BS0186-24	19	23			BS0995-30	100	105		
BS0196-24	20	24	1.2		BS1045-30	105	110		
BS0206-24	21	25	to	2.4	BS1095-30	110	115		
BS0216-24	22	26	1.4		BS1145-30	115	120		
BS0246-24	25	29			BS1195-30	120	125		
BS0276-24	28	32			BS1245-30	125	130		
BS0296-24	30	34			BS1295-30	130	135		
BS0316-24	32	36			BS1345-30	135	140		
BS0346-24	35	39			BS1395-30	140	145		
BS0356-24	36	40			BS1445-30	145	150		
BS0376-24	38	42			BS1495-30	150	155		
BS0396-24	40	44			BS1545-30	155	160		
BS0416-24	42	46			BS1595-30	160	165		
BS0446-24	45	49			BS1645-30	165	170		
BS0456-24	46	50			BS1695-30	170	175		
BS0476-24	48	52			BS1745-30	175	180		
BS0496-24	50	54			BS1795-30	180	185		
BS0516-24	52	56			BS1845-30	185	190		
BS0536-24	54	58			BS1895-30	190	195		
BS0546-24	55	59			BS1945-30	195	200		



Spiral



Solid E



Solid Split ES

# II PTFE BACK-UP RINGS to suit O rings to BS4518 (Metric)

Size Ref:	Nominal Dimensions				Size Ref:	Nominal Dimensions			
	$\varnothing d_1$ mm	$\varnothing D_1$ mm	T mm	O ring section		$\varnothing d_1$ mm	$\varnothing D_1$ mm	T mm	O ring section
BS1995-30	200	205			BS3993-57	400	410		
BS2045-30	205	210			BS4193-57	420	430		
BS2095-30	210	215			BS4393-57	440	450		
BS2195-30	220	225	1.2		BS4593-57	460	470	1.6	
BS2295-30	230	235	to	3.0	BS4793-57	480	490	to	5.7
BS2395-30	240	245	1.4		BS4893-57	490	500	1.8	
BS2495-30	250	255			BS4993-57	500	510		
BS0443-57	45	55							
BS0453-57	46	56							
BS0493-57	50	60							
BS0523-57	53	63							
BS0543-57	55	65							
BS0553-57	56	66							
BS0593-57	60	70							
BS0623-57	63	73							
BS0643-57	65	75							
BS0693-57	70	80							
BS0743-57	75	85							
BS0793-57	80	90							
BS0843-57	85	95							
BS0893-57	90	100							
BS0943-57	95	105							
BS0993-57	100	110							
BS1043-57	105	115							
BS1093-57	110	120							
BS1143-57	115	125							
BS1193-57	120	130							
BS1243-57	125	135							
BS1293-57	130	140							
BS1343-57	135	145							
BS1393-57	140	150							
BS1443-57	145	155							
BS1493-57	150	160	1.6						
BS1543-57	155	165	to	5.7					
BS1593-57	160	170	1.8						
BS1643-57	165	175							
BS1693-57	170	180							
BS1743-57	175	185							
BS1793-57	180	190							
BS1843-57	185	195							
BS1893-57	190	200							
BS1943-57	195	205							
BS1993-57	200	210							
BS2043-57	205	215							
BS2093-57	210	220							
BS2143-57	215	225							
BS2193-57	220	230							
BS2293-57	230	240							
BS2393-57	240	250							
BS2493-57	250	260							
BS2593-57	260	270							
BS2693-57	270	280							
BS2793-57	280	290							
BS2893-57	290	300							
BS2993-57	300	310							
BS3193-57	320	330							
BS3393-57	340	350							
BS3593-57	360	370							
BS3793-57	380	390							



Spiral



Solid E



Solid Split ES



### Chevron Packing

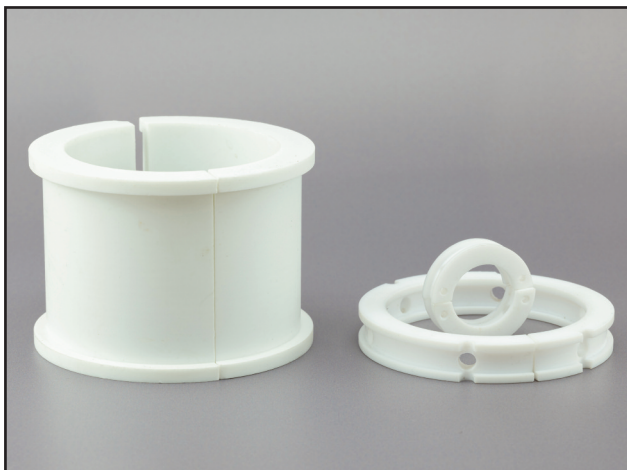
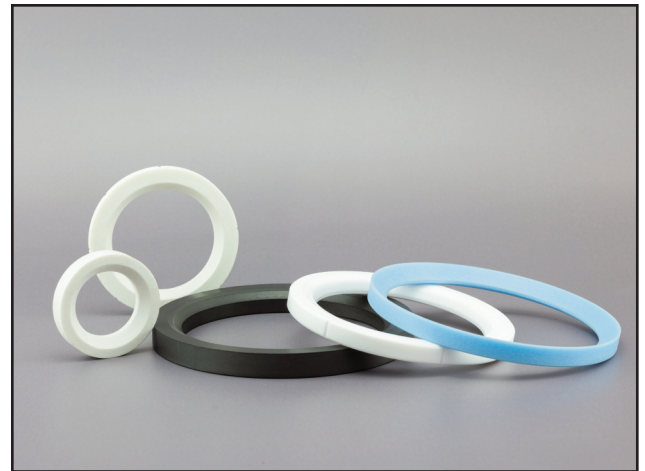
Chevron or vee packing provides a reliable and robust solution for many applications across all industries.

Using a mixture of compounds, the stack can be developed to suit requirements such as high or low temperatures and very high pressures.

### Valve Seats

Valve seats are the sealing element between the static and dynamic components in valves.

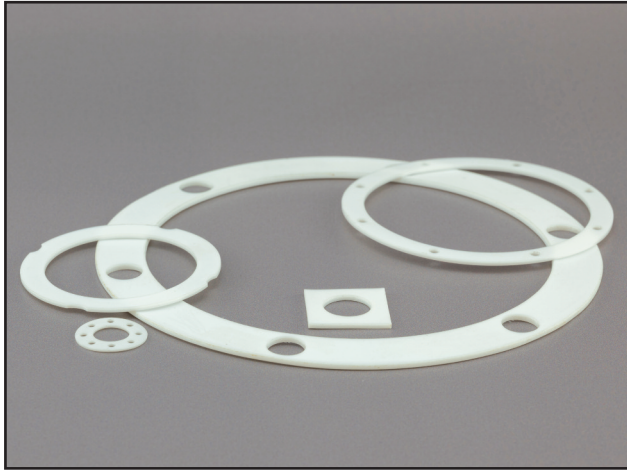
We offer a comprehensive range of valve seats in many premium materials for almost all valve types including ball, plug and gate.



### Lantern Rings

These are commonly found in pump stuffing boxes to provide protection for the packing and allow for cooling and lubrication of the sealing system.

We can manufacture lantern rings in a wide range of premium materials including PTFE, PEEK and polyacetal.



### Gaskets

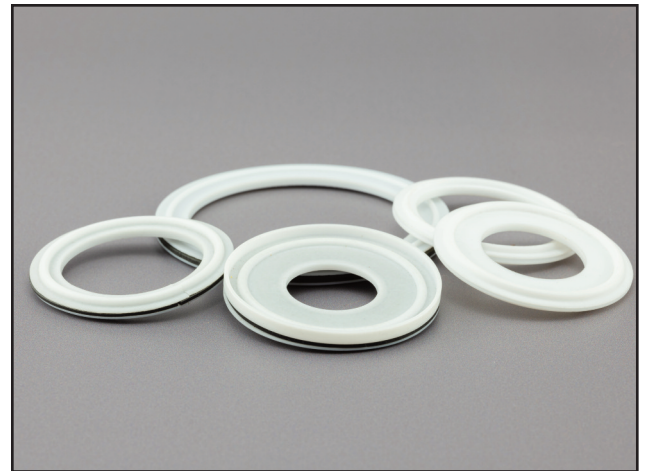
These are used to provide a sealing interface between two mating surfaces.

We produce both flat and profiled gasket products in a wide range of high performance materials.

### Hygienic Clamp Seals

These are commonly used in the food, beverage and pharmaceutical industries. They provide a hygienic seal between mating pipe clamps.

Available in a wide range of materials and types including solid PTFE and elastomer energised seals.



### Bearings and Top Hat Bushes

Low friction bearing and top hat bushes prevent damage and wear to moving parts as well as reducing the running friction of a dynamic system.

With a range of characteristics including low friction or high load bearing, we have a comprehensive choice of materials available to ensure the optimum guiding element for any applications.



### Phenolic Components

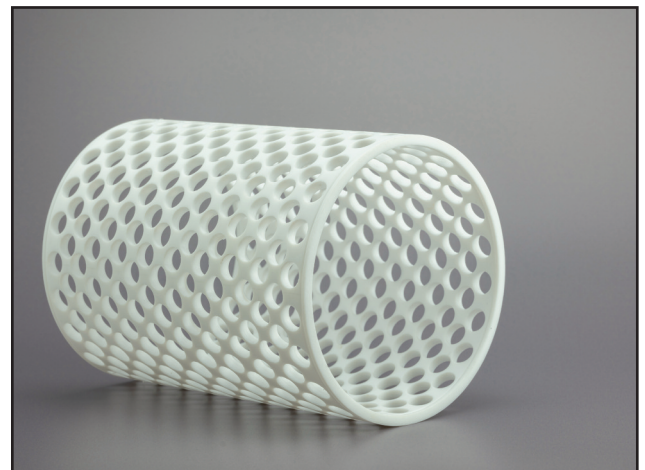
These components have excellent properties such as dimensional stability and high mechanical strength coupled with excellent wear properties. Reinforced phenolic resin is often the perfect choice for applications requiring a strong lightweight solution.

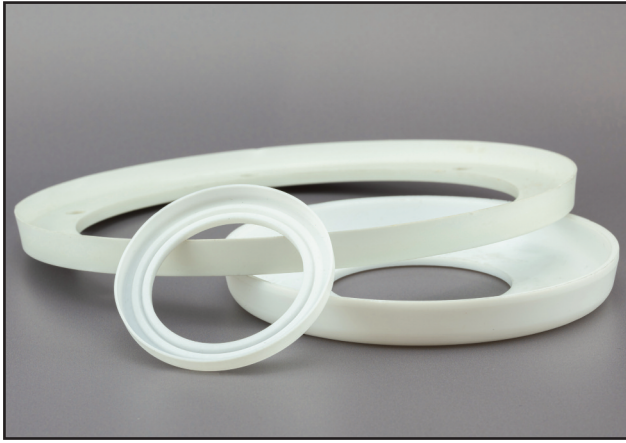
### Machined Plastic Parts

Our state of the art multi-axis machining centres can produce an almost infinite range of finished components.

Our extensive range of high performance engineering plastics coupled with our modern manufacturing capabilities allows us to produce complex parts in both prototype and high volume production quantities with short delivery times.

With many years experience in producing engineered plastic components, we can advise on suitable material selection and on the optimization of part geometry to ensure the best solution for your specific application.



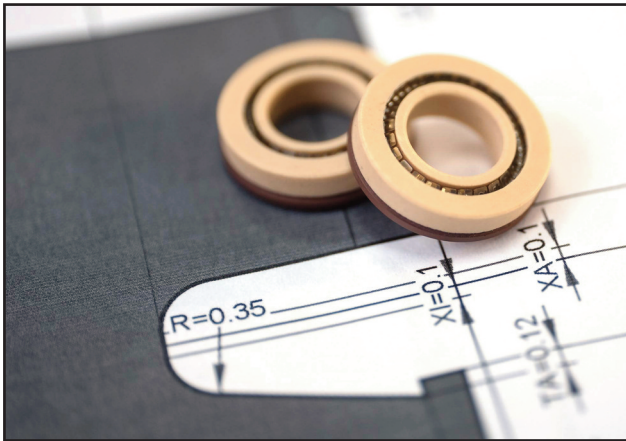


### PTFE Sealing Products

PTFE is an excellent material for sealing products.

It has unrivalled chemical compatibility suitable for extreme high and low temperatures and offers amongst the lowest friction of all sealing products.

Our range of PTFE sealing products include piston cup seals, rod seals, spring energised PTFE seals, scrapers, wipers and rotary sealing products.



### Bespoke Sealing Solutions

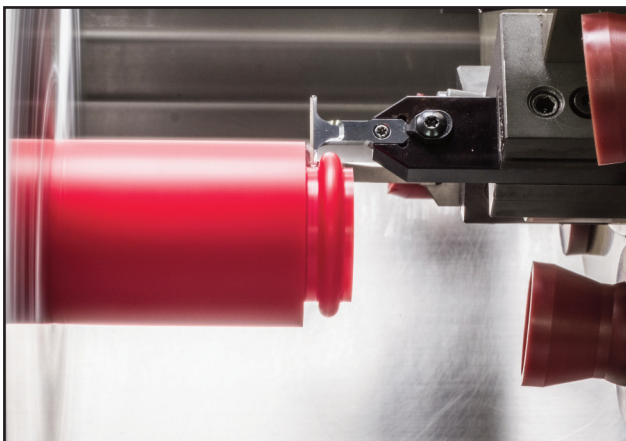
To complement our comprehensive engineering plastic machining capabilities, our state of the art seal making centres allow us to produce bespoke sealing solutions to suit your specific application.

With an industry leading selection of premium materials such as PU, NBR, viton and many other compounds, our experienced engineering team can ensure you have the best solution for your application.

We have a range of materials with approvals across many industries such as NACE, Norsok and FDA.

Our seal production centres facilitate rapid seal production with no minimum order quantities or expensive tooling costs.

Often size constraints can make the selection of a standard off the shelf seal less than ideal. Furthermore, delivery times of catalogue parts are often too long. Our rapid, often same day production capability ensures you have the right sealing solution just when you need it.



## Polyurethanes (other polyurethanes by request)

Coding			U203-R95	U203-G95	U203-B95	U203-B95LT	U203-GM95	U203-FDA95
Colour			Red	Green	Blue	Blue	Grey	Natural White
Description			Polyurethane	Polyurethane	Polyurethane	Low Temp Polyurethane	Polyurethane (MoS <sub>2</sub> )	Polyurethane
	DIN - Standard	Unit						
FDA Approved			no	no	YES	no	no	YES
Density	DIN 53479	g/cm <sup>3</sup>	1.1	1.1	1.1	1.1	1.15	1.1
Hardness at 20°	DIN 53505	Shore A	95 +/-2	95 +/-2	93 +/-2	95 +/-2	95 +/-2	93 +/-2
100% Modulus	DIN 53504	N/mm <sup>2</sup>	> 12	> 12	> 10	> 10	> 11	> 10
Tensile strength	DIN 53504	N/mm <sup>2</sup>	38	38	40	> 45	> 35	> 40
Elongation at break	DIN 53504	%	520	520	460	> 400	> 560	460
Tear strength	DIN 53515	kN/m	158	158	135	135	130	135
Rebound resilience	DIN 53512	%	40	40	38	38	49	38
Abrasion loss	DIN 53516	mm <sup>3</sup>	-	-	< 35	-	< 50	< 35
Compression set	DIN 53517	%	31	31	31	< 26	26	31
hardness at -5	DIN 53505	Shore A	95	95	96	96	95	96
Hardness at +80	DIN 53505	Shore A	93	93	93	93	93	93
Min. service temperature		°C	-30	-30	-30	-50	-30	-30
Max. service temperature		°C	105	105	105	105	105	105

## Rubber Elastomers (other rubbers by request)

Coding			N107-B85	N109-B95	N111-W85	HN112-B85	E131-B85	E132-W85
Colour			Black	Black	White	Black	Black	White
Description			NBR	NBR	NBR	Hydrogenated NBR	EPDM	EPDM
	DIN - Standard	Unit						
FDA Approved			no	no	YES	no	no	YES
Density	DIN 53479	g/cm <sup>3</sup>	1.32	1.27	1.36	1.23	1.22	1.39
hardness at 20°	DIN 53505	Shore A	85 +/- 5	95 +/- 5	85 +/- 5	85 +/- 5	85 +/- 5	85 +/- 5
Tensile strength	DIN 53504	N/mm <sup>2</sup>	17.2 +/- 15%	20.1 +/- 15%	7.9 +/- 15%	21.7 +/- 15%	12.8 +/- 15%	7.3 +/- 15%
Elongation at break	DIN 53504	%	171 +/- 20%	61 +/- 20%	305 +/- 20%	215 +/- 20%	130 +/- 20%	374 +/- 20%
Modulus 100%	DIN 53504	N/mm	10.2 +/- 30%	-	4.5 +/- 30%	-	6.2 +/- 30%	4.2 +/- 30%
Tear strength	DIN 53507B	N/mm	3.3	3	7.6	6.6	3.2	5.8
Compression set: 70h/RT	DIN 53517A	%	6.0 +/- 25%	13 +/- 20%	21 +/- 20%	-	20.9 +/- 20%	22.3 +/- 20%
Compression set: 22h/70°C	DIN 53517A	%	6.7 +/- 25%	16 +/- 20%	23 +/- 20%	20.2 +/- 20%	20.7 +/- 20%	45.1 +/- 20%
Compression set: 22h/100°C	DIN 53517A	%	6.8 +/- 25%	16 +/- 20%	29 +/- 20%	22.3 +/- 20%	19.8 +/- 20%	77.9 +/- 20%
Compression set: 22h/150°C	DIN 53517A	%	-	-	-	-	40.9 +/- 20%	-
Compression set: 24h/175°C	DIN 53517A	%	-	-	-	-	-	-
Min. service temperature		°C	-25	-25	-22	-25	-50	-50
Max. service temperature		°C	100	100	100	150	130	100
Short time max serv temp in air		°C	-	-	110	-	-	130

## Thermoplastics (other thermoplastics by request)

Coding			P101-WE	A112-WC	T101-W	T105-G	T110-BR40	T115-BR40
Colour			White	White	White	Grey	Brown	Blue
Description			Polyacetal	Polyamide	Virgin PTFE	15% Glass 5% Mos2 PTFE	40% Bronze PTFE	40 % Bronze PTFE
	DIN - Standard	Unit						
FDA Approved			YES	YES	YES	no	no	no
Density	DIN 53479	g/cm <sup>3</sup>	1.41	1.15	2.14 2.18	2.1 - 2.3	3.05 - 3.12	3.05 - 3.12
	62 - 67	62 - 67	65 - 70	62 - 67			62 - 67	62 - 67
Moisture absorption	23°C / 50% rel M	%	0.2	2.2	-	-	-	-
Moisture absorption	Water 23°C	%	0.8	6.6	-	-	-	-
Tensile strength	DIN 53455	N/mm <sup>2</sup>	68-70	80-85	23 - 28	14 - 20	23 - 28	23 - 28
Elongation at break	DIN 53455	%	35	25	250-300	200 - 220	200 - 250	200 - 250
Modulus of elasticity	DIN 53457	N/mm <sup>2</sup>	3300	3300	-	-	-	-
Ball Hardness H358/3	DIN 53456	N/mm <sup>2</sup>	140	165	25 - 28	-	-	-
Ball Hardness H132/6	DIN 53456	N/mm <sup>2</sup>	-	-	-	43	36	-
Coefficient of sliding		μ	< 0.4	< 0.4	-	-	-	-
Coefficient of Friction (dyn)	ASTM D1894	μ	-	-	0.06 - 0.1	0.08	0.13	0.13
Wear factor (K)	ASTM D3702	cm <sup>3</sup> min <sup>-1</sup> /kg m h	-	-	2.9	9 - 13	9 - 13	9 - 13
Strength at 1% Deformation	DIN 53454	N/mm <sup>2</sup>	-	-	4 - 5	8.5 - 9	7 - 9	7 - 9
Therm Exp Coeff (lin) 25-100°	DIN 53328	10 <sup>-7</sup> /°C	-	-	12 - 14.8	9 - 12	10 - 11.5	10 - 11.5
Melting temperature		°C	164 -167	220	-	-	-	-
Min Service temperature		°C	-50	-30	-200	-200	-200	-200
Max Service temperature		°C	100	100	260	260	260	260



## Polyurethanes (other polyurethanes by request)











Coding			U203-D57
Colour			Dark Blue
Description			Polyurethane
	DIN - Standard	Unit	
FDA Approved			YES
Density	DIN 53479	g/cm <sup>3</sup>	1.13
Hardness at 20°	DIN 53505	Shore A	57 +/-2
100% Modulus	DIN 53504	N/mm <sup>2</sup>	> 18
Tensile strength	DIN 53504	N/mm <sup>2</sup>	> 30
Elongation at break	DIN 53504	%	330
Tear strength	DIN 53515	kN/m	125
Rebound resilience	DIN 53512	%	42
Abrasion loss	DIN 53516	mm <sup>3</sup>	-
Compression set	DIN 53517	%	32
hardness at -5	DIN 53505	Shore A	57
Hardness at +80	DIN 53505	Shore A	52
Min. service temperature		°C	-30
Max. service temperature		°C	90










## Rubber Elastomers (other rubbers by request)










Coding			F109-BR85	F110-BR85	F111-B85	S102-R85	S103-BL85	AF101-B85
Colour			Brown	Brown	Black	Red	Blue	Black
Description			VITON (GEN)	FPM	FPM	Silicone	Silicone	AFLAS
	DIN - Standard	Unit						
FDA Approved			no	YES	no	no	YES	no density
Density	DIN 53479	g/cm <sup>3</sup>	2.44	2.62	1.88	1.54	1.54	1.68
hardness at 20°	DIN 53505	Shore A	85 +/- 5	85 +/- 5	85 +/- 5	85 +/- 5	85 +/- 5	85 +/- 5
Tensile strength	DIN 53504	N/mm <sup>2</sup>	11.7 +/- 15%	7.7 +/- 15%	11.5 +/- 15%	7.4 +/- 15%	7.4 +/- 15%	7.2 +/- 15%
Elongation at break	DIN 53504	%	154 +/- 20%	160 +/- 20%	180 +/- 20%	120 +/- 20%	120 +/- 20%	236 +/- 20%
Modulus 100%	DIN 53504	N/mm	8.8 +/- 30%	6.55 +/- 30%	7.3 +/- 30%	-	-	4.2 +/- 30%
Tear strength	DIN 53507B	N/mm	4.2	4.3	6.4	10	10	7.2
Compression set: 70h/RT	DIN 53517A	%	14.1 +/- 20%	-	32.0 +/- 20%	10.8 +/- 25%	-	27.0 +/- 20%
Compression set: 22h/70°C	DIN 53517A	%	9.4 +/- 25%	-	27.3 +/- 20%	10.6 +/- 25%	-	24.7 +/- 20%
Compression set: 22h/100°C	DIN 53517A	%	6.0 +/- 25%	-	25.3 +/- 20%	6.8 +/- 25%	-	19.8 +/- 20%
Compression set: 22h/150°C	DIN 53517A	%	-	-	-	-	-	-
Compression set: 24h/175°C	DIN 53517A	%	9.4 +/- 25%	27 +/- 20%	32.8 +/- 20%	20.4 +/- 20%	18.5 +/- 20%	24.5 +/- 20%
Min. service temperature		°C	-20	-25	-25	-55	-55	-15
Max. service temperature		°C	210	210	210	210	180	210
Short time max serv temp in air		°C	280	280	280	270	270	280










## Thermoplastics (other thermoplastics by request)










Coding			T120-BR60	T125-C25	PK100-CN
Colour			Brown	Black	Beige
Description			60% Bronze	25% Carbon	Peek
	DIN - Standard	Unit	PTFE	PTFE	
FDA Approved			no	no	YES
Density	DIN 53479	g/cm <sup>3</sup>	3.8 - 3.9	2.05 -2.15	1.31
	62 - 67	62 - 67	65 - 70	62 - 67	
Moisture absorption	23°C / 50% rel M	%	-	-	0.2
Moisture absorption	Water 23°C	%	-	-	0.45
Tensile strength	DIN 53455	N/mm <sup>2</sup>	15 - 20	14 -18	115
Elongation at break	DIN 53455	%	150 - 160	70 -130	17
Modulus of elasticity	DIN 53457	N/mm <sup>2</sup>	-	-	4300
Ball Hardness H358/3	DIN 53456	N/mm <sup>2</sup>	-	-	190
Ball Hardness H132/6	DIN 53456	N/mm <sup>2</sup>	34	43	-
Coefficient of sliding		μ	-	-	< 0.5
Coefficient of Friction (dyn)	ASTM D1894	μ	0.13	0.13	-
Wear factor (K)	ASTM D3702	cm <sup>3</sup> min <sup>10</sup> /kg m h	10	16 -20	-
Strength at 1% Deformation	DIN 53454	N/mm <sup>2</sup>	10 - 11	7 - 9	-
Therm Exp Coeff (lin) 25-100°	DIN 53328	10 <sup>-7</sup> /°C	8 - 9	10 - 12	-
Melting temperature		°C	-	-	340
Min Service temperature		°C	-200	-200	-50
Max Service temperature		°C	260	260	250










Profile	Description	Temperature	Speed max.	Pressure max.	Seal Material	Other Materials
<b>WR01</b> 	The profile is designed with interference on the OD which provides a good static fit in the groove, preventing the entry of humidity and other contamination via the outside diameter. The design of the wiper lip supports the recirculation of the remaining oil film into the cylinder, whilst the exclusion of contamination is guaranteed. For housings acc. to ISO 6195-Type A.	-30°C to +105°C	4 m/s	N/A	PU Red U203-95	
		-30°C to +105°C	4 m/s	N/A	PU 57 MoS2 Grey U203-GM95	
		-25°C to +100°C	4 m/s	N/A	NBR 85 N107-85	
		-25°C to +150°C	4 m/s	N/A	HNBR 85 HN112-B85	
		-20°C to +210°C	4 m/s	N/A	FPM 85 F109-BR85	
<b>WR01A</b> 	The profile is designed with interference on the OD which provides a good static fit in the groove, preventing the entry of humidity and other contamination via the outside diameter. The support shoulder prevents tilting of the wiper. The design of the wiper lip supports the recirculation of the remaining oil film into the cylinder, whilst the exclusion of contamination is guaranteed. For housings acc. to ISO 6195-Type A.	-30°C to +105°C	4 m/s	N/A	PU Red U203-95	
		-30°C to +105°C	4 m/s	N/A	PU 57 MoS2 Grey U203-GM95	
		-25°C to +100°C	4 m/s	N/A	NBR 85 N107-85	
		-25°C to +150°C	4 m/s	N/A	HNBR 85 HN112-B85	
		-20°C to +210°C	4 m/s	N/A	FPM 85 F109-BR85	
<b>WR02</b> 	The profile is designed with interference on the OD which provides a good static fit, preventing the entry of humidity and other contamination via the outside diameter. The design of the wiper lip supports the recirculation of the remaining oil film into the cylinder, whilst the exclusion of contamination is guaranteed.	-30°C to +105°C	4 m/s	N/A	PU Red U203-95	
		-30°C to +105°C	4 m/s	N/A	PU 57 MoS2 Grey U203-GM95	
		-25°C to +100°C	4 m/s	N/A	NBR 85 N107-85	
		-25°C to +150°C	4 m/s	N/A	HNBR 85 HN112-B85	
		-20°C to +210°C	4 m/s	N/A	FPM 85 F109-BR85	
<b>WR02A</b> 	The profile is designed with interference on the OD which provides a good static fit, preventing the entry of humidity and other contamination via the outside diameter. The design of the wiper lip supports the recirculation of the remaining oil film into the cylinder, whilst the exclusion of contamination is guaranteed. Support shoulder to prevent tilting.	-30°C to +105°C	4 m/s	N/A	PU Red U203-95	
		-30°C to +105°C	4 m/s	N/A	PU 57 MoS2 Grey U203-GM95	
		-25°C to +100°C	4 m/s	N/A	NBR 85 N107-85	
		-25°C to +150°C	4 m/s	N/A	HNBR 85 HN112-B85	
		-20°C to +210°C	4 m/s	N/A	FPM 85 F109-BR85	
<b>WR02B</b> 	The profile is designed with interference on the OD which provides a good static fit, preventing the entry of humidity and other contamination via the outside diameter. The design of the wiper lip supports the recirculation of the remaining oil film into the cylinder, whilst the exclusion of contamination is guaranteed. For housings acc. to ISO 6195-1986 Type C.	-30°C to +105°C	4 m/s	N/A	PU Red U203-95	
		-30°C to +105°C	4 m/s	N/A	PU 57 MoS2 Grey U203-GM95	
		-25°C to +100°C	4 m/s	N/A	NBR 85 N107-85	
		-25°C to +150°C	4 m/s	N/A	HNBR 85 HN112-B85	
		-20°C to +210°C	4 m/s	N/A	FPM 85 F109-BR85	
<b>WR02C</b> 	The profile is designed with an additional sealing lip on the OD which provides a good static fit, preventing the entry of humidity and other contamination via the outside diameter. Sharp sealing lip for wiping in extreme conditions (mining industry, ice etc.). Commonly made out of hard materials such as hard grade PU.	-30°C to +105°C	4 m/s	N/A	PU Red U203-95	
		-30°C to +105°C	4 m/s	N/A	PU 57 MoS2 Grey U203-GM95	
		-25°C to +100°C	4 m/s	N/A	NBR 85 N107-85	
		-25°C to +150°C	4 m/s	N/A	HNBR 85 HN112-B85	
		-20°C to +210°C	4 m/s	N/A	FPM 85 F109-BR85	
<b>WR02D</b> 	The profile is designed with interference on the OD which provides a good static fit, preventing the entry of humidity and other contamination via the outside diameter. Sharp sealing edge for aggressive wiping. The hump on the sealing lip enables better stability of the wiper. The design of the wiper lip supports the recirculation of the remaining oil film into the cylinder, whilst the exclusion of contamination is guaranteed.	-30°C to +105°C	4 m/s	N/A	PU Red U203-95	
		-30°C to +105°C	4 m/s	N/A	PU 57 MoS2 Grey U203-GM95	
		-25°C to +100°C	4 m/s	N/A	NBR 85 N107-85	
		-25°C to +150°C	4 m/s	N/A	HNBR 85 HN112-B85	
		-20°C to +210°C	4 m/s	N/A	FPM 85 F109-BR85	
<b>WR03</b> 	The profile is designed with interference on the OD which provides a good static fit, preventing the entry of humidity and other contamination via the outside diameter. Tight seat in the housing ensures that the wiper is held in place. Prevention of corrosion in the seat due to the use of a retainer ring in hard plastics. Not suitable for pressure from the trailing side. For housings acc. to ISO 6195-1986 Type B.	-30°C to +105°C	4 m/s	N/A	PU Red U203-95	POM P101-WE
		-30°C to +105°C	4 m/s	N/A	PU 57 MoS2 Grey U203-GM95	POM P101-WE
		-25°C to +100°C	4 m/s	N/A	NBR 85 N107-85	POM P101-WE
		-25°C to +150°C	4 m/s	N/A	HNBR 85 HN112-B85	PEEK PK100-CN
		-20°C to +210°C	4 m/s	N/A	FPM 85 F109-BR85	PEEK PK100-CN
<b>WR04</b> 	The design of the wiper lip supports the recirculation of the remaining oil film into the cylinder, whilst the exclusion of contamination is guaranteed. No precision fit required. Mainly used in English machines. Special housing designs required. Pressure on the trailing side should be avoided.	-30°C to +105°C	4 m/s	N/A	PU Red U203-95	
		-30°C to +105°C	4 m/s	N/A	PU 57 MoS2 Grey U203-GM95	
		-25°C to +100°C	4 m/s	N/A	NBR 85 N107-85	
		-25°C to +150°C	4 m/s	N/A	HNBR 85 HN112-B85	
		-20°C to +210°C	4 m/s	N/A	FPM 85 F109-BR85	
<b>WR07</b> 	The profile is designed with a slight interference on the OD which provides a good static fit, preventing the entry of humidity and other contamination via the outside diameter. Wiper is made in hard plastics (POM, PEEK, etc.) or hard grade PU which ensures high stiffness, breaking strength and stability. Good dry running properties. Not suitable for pressure from the trailing side. Special designed housings required.	-30°C to +105°C	1 m/s	N/A	PU 57 MoS2 Grey U203-GM95	
		-60°C to +100°C	1 m/s	N/A	POM P101-WE	
		-30°C to +105°C	1 m/s	N/A	PA A112-WC	
		-50°C to +250°C	1 m/s	N/A	PEEK PK100-CN	










Profile	Description	Temperature	Speed max.	Pressure max.	Seal Material	Other Materials
<b>WR08</b> 	The profile is held in place via the outside lip and the retainer nose. Made in hard plastics (POM, PEEK, etc.) or hard grade PU which ensures high stiffness, breaking strength and stability. Good dry running properties. Not suitable for pressure from the trailing side. Special designed housings required.	-30°C to +105°C	1 m/s	N/A	PU 57 MoS2 Grey U203-GM95	
		-60°C to +100°C	1 m/s	N/A	POM P101-WE	
		-30°C to +105°C	1 m/s	N/A	PA A112-WC	
		-50°C to +250°C	1 m/s	N/A	PEEK PK100-CN	
<b>WR11</b> 	The profile is designed with interference on the OD which provides a good static fit, preventing the entry of humidity and other contamination via the outside diameter. The design of the wiper lip supports the recirculation of the remaining oil film into the cylinder, whilst the exclusion of contamination is guaranteed. The sealing lip on the fluid side reduces the remaining oil film to a minimum if used in combination with composite seals as a tandem seal. For housings acc. to ISO 6195-Type C.	-30°C to +105°C	4 m/s	N/A	PU Red U203-95	
		-30°C to +105°C	4 m/s	N/A	PU 57 MoS2 Grey U203-GM95	
		-25°C to +100°C	4 m/s	N/A	NBR 85 N107-85	
		-25°C to +150°C	4 m/s	N/A	HNBR 85 HN112-B85	
		-20°C to +210°C	4 m/s	N/A	FPM 85 F109-BR85	
<b>WR012</b> 	The profile is designed with interference on the OD which provides a good static fit, preventing the entry of humidity and other contamination via the outside diameter. The design of the wiper lip supports the recirculation of the remaining oil film into the cylinder, whilst the exclusion of contamination is guaranteed. The sealing lip on the fluid side reduces the remaining oil film to a minimum if used in combination with composite seals as a tandem seal. For housings acc. to ISO 6195-Type C.	-30°C to +105°C	4 m/s	N/A	PU Red U203-95	
		-30°C to +105°C	4 m/s	N/A	PU 57 MoS2 Grey U203-GM95	
		-25°C to +100°C	4 m/s	N/A	NBR 85 N107-85	
		-25°C to +150°C	4 m/s	N/A	HNBR 85 HN112-B85	
		-20°C to +210°C	4 m/s	N/A	FPM 85 F109-BR85	
<b>WR13</b> 	The profile is designed with two geometrically different lips for wiping off any dirt on the rod and to reduce the residual oil film on the media side. The wiper consists of a PTFE wiping part and an O-Ring as preload element, maintaining contact pressure on the rod. Due to the use of an O-Ring the wiper is able to compensate deflections of the rod. Mainly used in combination with rod seal RS09B. Pressure should be limited to 15bar. For housings acc. to ISO 6195 Type D.	-30°C to +105°C	4 m/s	N/A	PU Red U203-95	NBR 70
		-30°C to +105°C	4 m/s	N/A	PU 57 MoS2 Grey U203-GM95	NBR 70
		-20°C to +210°C	4 m/s	N/A	PTFE T101-W	FPM 75
		-20°C to +210°C	4 m/s	N/A	PTFE-40% Bronze T120-BR40	FPM 75
		-20°C to +210°C	4 m/s	N/A	PTFE-25% Carbon T125-C25	FPM 75
<b>WR13-E2</b> 	The profile is designed with two geometrically different lips for wiping off any dirt on the rod and to reduce the residual oil film on the medium side. The wiper consists of a PTFE wiping part and an O-Ring as preload element, maintaining contact pressure on the rod. Due to the use of an O-Ring the wiper is able to compensate deflections of the rod. Bigger O-Ring compared to WR13. Mainly used in combination with rod seal RS09B. Pressure should be limited to 15bar. For housings acc. to ISO 6195 Type D.	-30°C to +105°C	4 m/s	N/A	PU Red U203-95	NBR 70
		-30°C to +105°C	4 m/s	N/A	PU 57 MoS2 Grey U203-GM95	NBR 70
		-20°C to +210°C	4 m/s	N/A	PTFE T101-W	FPM 75
		-20°C to +210°C	4 m/s	N/A	PTFE-40% Bronze T120-BR40	FPM 75
		-20°C to +210°C	4 m/s	N/A	PTFE-25% Carbon T125-C25	FPM 75
<b>WR014</b> 	The profile is designed with one sharp lip for wiping off any dirt on the rod. The residual oil film is recovered. The wiper consists of a PTFE wiping part and an O-Ring as preload element, maintaining contact pressure on the rod. Due to the use of an O-Ring the wiper is able to compensate deflections of the rod. Good dry running properties. No "stick-slip". Pressure on the trailing side should be avoided. For housings acc. to ISO 6195 Type D.	-30°C to +105°C	4 m/s	N/A	PU 57 MoS2 Grey U203-GM95	NBR 70
		-20°C to +210°C	4 m/s	N/A	PTFE T101-W	FPM 75
		-20°C to +210°C	4 m/s	N/A	PTFE-40% Bronze T120-BR40	FPM 75
		-20°C to +210°C	4 m/s	N/A	PTFE-25% Carbon T125-C25	FPM 75
<b>WR15</b> 	The profile is designed with two geometrically different lips for wiping off any dirt on the rod and to reduce the residual oil film on the medium side. The wiper consists of a PTFE wiping part and two O-Rings as preload element, maintaining contact pressure on the rod. Due to the use of O-Rings the wiper is able to compensate deflections of the rod. Mainly used in combination with rod seal RS09B. Pressure should be limited to 15bar. For housings acc. to ISO 6195 Type D.	-30°C to +105°C	4 m/s	N/A	PU Red U203-95	NBR 70
		-30°C to +105°C	4 m/s	N/A	PU 57 MoS2 Grey U203-GM95	NBR 70
		-20°C to +210°C	4 m/s	N/A	PTFE T101-W	FPM 75
		-20°C to +210°C	4 m/s	N/A	PTFE-40% Bronze T120-BR40	FPM 75
		-20°C to +210°C	4 m/s	N/A	PTFE-25% Carbon T125-C25	FPM 75
<b>WR17</b> 	The profile is designed with interference on the OD which provides a good static fit, preventing the entry of humidity and other contamination via the outside diameter. Double acting wiper that is now only used in old machinery. For new constructions WR11 or WR12 is recommended. Special designed housings required. Pressure from the trailing side should be avoided.	-30°C to +105°C	4 m/s	N/A	PU Red U203-95	
		-30°C to +105°C	4 m/s	N/A	PU 57 MoS2 Grey U203-GM95	
		-25°C to +100°C	4 m/s	N/A	NBR 85 N107-85	
		-25°C to +150°C	4 m/s	N/A	HNBR 85 HN112-B85	
		-20°C to +210°C	4 m/s	N/A	FPM 85 F109-BR85	
<b>WR18</b> 	Special wiper for outside sealing. The profile is designed with interference on the ID which provides a good static fit, preventing the entry of humidity and other contamination via the inside diameter. The design of the wiper lip supports the recirculation of the remaining oil film into the cylinder, whilst the exclusion of contamination is guaranteed. Pressure from the trailing side has to be avoided.	-30°C to +105°C	4 m/s	N/A	PU Red U203-95	
		-30°C to +105°C	4 m/s	N/A	PU 57 MoS2 Grey U203-GM95	
		-25°C to +100°C	4 m/s	N/A	NBR 85 N107-85	
		-25°C to +150°C	4 m/s	N/A	HNBR 85 HN112-B85	
		-20°C to +210°C	4 m/s	N/A	FPM 85 F109-BR85	

Profile	Description	Temperature	Speed max.	Pressure max.	Seal Material	Other Materials
<b>RS01</b> 	Asymmetrical, single acting rod seal, designed with interference on the OD which provides a good static fit in the groove. Dynamic sealing lip shorter than static lip to avoid drag pressure. Excellent static and dynamic sealing performance. Useable for long stroke lengths. Negligible tendency to "stick-slip" effect above a speed of 0.15 m/s. For lower speeds the dynamic lip should be redesigned (shorter, stiffer).	-30°C to +105°C	0.5 m/s	400 bar/5800 psi	PU Red U203-95	
		-30°C to +105°C	0.5 m/s	400 bar/5800 psi	PU 57 MoS2 Grey U203-GM95	
		-25°C to +100°C	0.5 m/s	150 bar/2200 psi	NBR 85 N107-85	
		-25°C to +150°C	0.5 m/s	150 bar/2200 psi	HNBR 85 HN112-B85	
		-20°C to +210°C	0.5 m/s	150 bar/2200 psi	FPM 85 F109-BR85	
<b>RS01A</b> 	Asymmetrical, single acting rod seal, designed with interference on the OD which provides a good static fit in the groove. Wider groove and softer lips compared to RS01. Dynamic sealing lip shorter than static lip to avoid drag pressure. Excellent static and dynamic sealing performance. Useable for long stroke lengths. Negligible tendency to "stick-slip" effect above a speed of 0.15 m/s.	-30°C to +105°C	0.5 m/s	160 bar/2300 psi	PU Red U203-95	
		-30°C to +105°C	0.5 m/s	160 bar/2300 psi	PU 57 MoS2 Grey U203-GM95	
		-25°C to +100°C	0.5 m/s	160 bar/2300 psi	NBR 85 N107-85	
		-25°C to +150°C	0.5 m/s	160 bar/2300 psi	HNBR 85 HN112-B85	
		-20°C to +210°C	0.5 m/s	160 bar/2300 psi	FPM 85 F109-BR85	
<b>RS01B</b> 	Asymmetrical, single acting rod seal, designed with interference on the OD which provides a good static fit in the groove. Dynamic sealing lip shorter than static lip to avoid drag pressure. Sharp lips on ID and OD. Good static and dynamic sealing performance. Good performance in low pressure conditions. Useable for long stroke lengths. Out-of date profile; only used in old machinery. Poor sealing that causes a relatively thick oil film.	-30°C to +105°C	0.5 m/s	400 bar/5800 psi	PU Red U203-95	
		-30°C to +105°C	0.5 m/s	400 bar/5800 psi	PU 57 MoS2 Grey U203-GM95	
		-25°C to +100°C	0.5 m/s	150 bar/2200 psi	NBR 85 N107-85	
		-25°C to +150°C	0.5 m/s	150 bar/2200 psi	HNBR 85 HN112-B85	
		-20°C to +210°C	0.5 m/s	150 bar/2200 psi	FPM 85 F109-BR85	
<b>RS02</b> 	Asymmetrical, single acting rod seal with integrated back-up ring, designed with interference on the OD which provides a good static fit in the groove. Dynamic sealing lip shorter than static lip to avoid drag pressure. Excellent static and dynamic sealing performance. Useable for long stroke lengths. Negligible tendency to "stick-slip" effect above a speed of 0.15 m/s. For lower speeds the dynamic lip should be redesigned (shorter, stiffer). Activated back-up ring prevents and reduces extrusion.	-30°C to +105°C	0.5 m/s	700 bar/10.000 psi	PU Red U203-95	POM P101-WE
		-30°C to +105°C	0.5 m/s	700 bar/10.000 psi	PU 57 MoS2 Grey U203-GM95	POM P101-WE
		-25°C to +100°C	0.5 m/s	300 bar/4300 psi	NBR 85 N107-85	POM P101-WE
		-25°C to +150°C	0.5 m/s	300 bar/4300 psi	HNBR 85 HN112-B85	PEEK PK100-CN
		-20°C to +210°C	0.5 m/s	300 bar/4300 psi	FPM 85 F109-BR85	PEEK PK100-CN
<b>RS02A</b> 	Asymmetrical, single acting rod seal with integrated back-up ring, designed with interference on the OD which provides a good static fit in the groove. Dynamic sealing lip shorter than static lip to avoid drag pressure. Excellent static and dynamic sealing performance. Useable for long stroke lengths. Negligible tendency to "stick-slip" effect above a speed of 0.15 m/s. For lower speeds the dynamic lip should be redesigned (shorter, stiffer). Activated back-up ring prevents and reduces extrusion.	-30°C to +105°C	0.5 m/s	700 bar/10.000 psi	PU Red U203-95	POM P101-WE
		-30°C to +105°C	0.5 m/s	700 bar/10.000 psi	PU 57 MoS2 Grey U203-GM95	POM P101-WE
		-25°C to +100°C	0.5 m/s	300 bar/4300 psi	NBR 85 N107-85	POM P101-WE
		-25°C to +150°C	0.5 m/s	300 bar/4300 psi	HNBR 85 HN112-B85	PEEK PK100-CN
		-20°C to +210°C	0.5 m/s	300 bar/4300 psi	FPM 85 F109-BR85	PEEK PK100-CN
<b>RS02B</b> 	Asymmetrical, single acting rod seal, designed with interference on the OD which provides a good static fit in the groove. Dynamic sealing lip shorter than static lip to avoid drag pressure. Improved sealing performance in pressureless condition because of the glide ring on the ID. Excellent static and dynamic sealing performance. Useable for long stroke lengths. Negligible tendency to "stick-slip" Activated back-up ring prevents and reduces extrusion.	-30°C to +105°C	0.5 m/s	700 bar/10.000 psi	PU Red U203-95	POM P101-WE
		-30°C to +105°C	0.5 m/s	700 bar/10.000 psi	PU 57 MoS2 Grey U203-GM95	POM P101-WE
		-25°C to +100°C	0.5 m/s	300 bar/4300 psi	NBR 85 N107-85	POM P101-WE
		-25°C to +150°C	0.5 m/s	300 bar/4300 psi	HNBR 85 HN112-B85	PEEK PK100-CN
		-20°C to +210°C	0.5 m/s	300 bar/4300 psi	FPM 85 F109-BR85	PEEK PK100-CN
<b>RS03</b> 	Asymmetrical, single acting rod seal, designed with interference on the OD which provides a good static fit in the groove. Dynamic sealing lip shorter than static lip to avoid drag pressure. Increased preload due to an additional O-Ring. Excellent static and dynamic sealing performance. Excellent performance in all pressure ranges. Used for short, pulsating strokes. No reverse leakage when changing direction. Recommended for positioning or holding under pressure.	-30°C to +105°C	0.5 m/s	400 bar/5800 psi	PU Red U203-95	NBR 70
		-30°C to +105°C	0.5 m/s	400 bar/5800 psi	PU 57 MoS2 Grey U203-GM95	NBR 70
		-25°C to +100°C	0.5 m/s	150 bar/2200 psi	NBR 85 N107-85	NBR 70
		-25°C to +150°C	0.5 m/s	150 bar/2200 psi	HNBR 85 HN112-B85	FPM 75
		-20°C to 210°C	0.5 m/s	150 bar/2200 psi	FPM 85 F109-BR85	FPM 75
<b>RS04</b> 	Asymmetrical, single acting rod seal, designed with interference on the OD which provides a good static fit in the groove. Dynamic sealing lip shorter than static lip to avoid drag pressure. Increased preload due to an additional O-Ring. Activated back-up ring prevents and reduces gap extrusion. Excellent static and dynamic sealing performance. Excellent performance in all pressure ranges. Used for short, pulsating strokes. No reverse leakage when changing direction. Recommended for positioning or holding under pressure.	-30°C to +105°C	0.5 m/s	700 bar/10.000 psi	PU Red U203-95	POM P101-WE NBR 70
		-30°C to +105°C	0.5 m/s	700 bar/10.000 psi	PU 57 MoS2 Grey U203-GM95	POM P101-WE NBR 70
		-25°C to +100°C	0.5 m/s	300 bar/4300 psi	NBR 85 N107-85	POM P101-WE NBR 70
		-25°C to +150°C	0.5 m/s	300 bar/4300 psi	HNBR 85 HN112-B85	PEEK PK100-CN FPM 75
		-20°C to +210°C	0.5 m/s	300 bar/4300 psi	FPM 85 F109-BR85	PEEK PK100-CN FPM 75
<b>RS05</b> 	Asymmetrical, single acting rod seal for pneumatic applications, designed with interference on the OD which provides a good static fit in the groove. Special designed sealing lip to retain the lubrication film and prevent dry running. Excellent static and dynamic sealing performance. Useable for long stroke lengths. Negligible tendency to "stick-slip", small break-away loads after long standstill.	-30°C to +105°C	0.5 m/s	25 bar/350 psi	PU Red U203-95	
		-30°C to +105°C	0.5 m/s	25 bar/350 psi	PU 57 MoS2 Grey U203-GM95	
		-25°C to +100°C	0.5 m/s	25 bar/350 psi	NBR 85 N107-85	
		-25°C to +150°C	0.5 m/s	25 bar/350 psi	HNBR 85 HN112-B85	
		-20°C to +210°C	0.5 m/s	25 bar/350 psi	FPM 85 F109-BR85	











Profile	Description	Temperature	Speed max.	Pressure max.	Seal Material	Other Materials
<b>RS08</b> 	Symmetrical, single acting rod seal, designed with interference on the OD which provides a good static fit in the groove. Special design for small cross sections where lips would be too thin. Excellent static and dynamic sealing performance. Excellent performance over all pressure ranges. Used for short pulsating strokes. No reverse leakage when changing direction. Recommended for positioning or holding under pressure. Particularly suitable for high viscosity media.	-30°C to +105°C -30°C to +105°C -25°C to +100°C -25°C to +150°C -20°C to +210°C	0.5 m/s 0.5 m/s 0.5 m/s 0.5 m/s 0.5 m/s	400 bar/5800 psi 400 bar/5800 psi 150 bar/2200 psi 150 bar/2200 psi 150 bar/2200 psi	PU Red U203-95 PU 57 MoS2 Grey U203-GM95 NBR 85 N107-85 HNBR 85 HN112-B85 FPM 85 F109-BR85	
<b>RS09</b> 	Asymmetrical, single acting rod seal, designed with interference of the O-Ring on the OD and slight interference of the glide ring on the ID. Excellent sealing performance in low and high speeds. Suitable for positioning functions. Negligible tendency to "stick-slip" effect, good sliding properties. Low break-away load after long standstills. Excellent gap extrusion resistance due to the free space on the trailing side.	-30°C to +105°C -30°C to +105°C -60°C to +80°C -20°C to +210°C -20°C to +210°C	10 m/s 10 m/s 10 m/s 10 m/s 10 m/s	250 bar/3600 psi 400 bar/5800 psi 400 bar/5800 psi 400 bar/5800 psi 400 bar/5800 psi	PU Red U203-95 PU 57 MoS2 Grey U203-GM95 UHMWPE PTFE T101-W PTFE-25% Carbon T125-C25	NBR 70 NBR 70 NBR 70 FPM 75 FPM 75
<b>RS09A</b> 	Symmetrical, double acting rod seal, designed with interference of the O-Ring on the OD and slight interference of the glide ring on the ID. Excellent sealing performance in low and high speeds. Suitable for positioning functions. Negligible tendency to "stick-slip" effect, good sliding properties. Low break-away load after long standstills. Excellent extrusion resistance.	-30°C to +105°C -30°C to +105°C -60°C to +80°C -20°C to +210°C -20°C to +210°C	10 m/s 10 m/s 10 m/s 10 m/s 10 m/s	250 bar/3600 psi 400 bar/5800 psi 400 bar/5800 psi 400 bar/5800 psi 400 bar/5800 psi	PU Red U203-95 PU 57 MoS2 Grey U203-GM95 UHMWPE PTFE T101-W PTFE-25% Carbon T125-C25	NBR 70 NBR 70 NBR 70 FPM 75 FPM 75
<b>RS09B</b> 	Asymmetrical, single acting rod seal, designed with interference of the O-Ring on the OD and slight interference of the glide ring on the ID. Excellent sealing performance in low and high speeds. Suitable for positioning functions. Negligible tendency to "stick-slip" effect, good sliding properties. Low break-away load after long standstills. Excellent extrusion resistance due to the free space on the trailing side.	-30°C to +105°C -30°C to +105°C -60°C to +80°C -20°C to +210°C -20°C to +210°C	10 m/s 10 m/s 10 m/s 10 m/s 10 m/s	250 bar/3600 psi 400 bar/5800 psi 400 bar/5800 psi 400 bar/5800 psi 400 bar/5800 psi	PU Red U203-95 PU 57 MoS2 Grey U203-GM95 UHMWPE PTFE T101-W PTFE-25% Carbon T125-C25	NBR 70 NBR 70 NBR 70 FPM 75 FPM 75
<b>RS9 I</b> 	Asymmetrical, single acting rod seal, designed with interference of the preload element on the OD and slight interference of the glide ring on the ID. High pressure force because of a machined rubber preload element. Less relative movement of the rubber part compared to an O-Ring giving the seal a higher wear resistance. Excellent sealing performance in low and high speeds. Suitable for positioning functions. Negligible tendency to "stick-slip" effect, good sliding properties. Low break-away load after long standstills. Excellent gap extrusion resistance due to the free space on the trailing side. Can be used in grooves where no O-Ring is possible.	-30°C to +105°C -30°C to +105°C -60°C to +80°C -20°C to +210°C -20°C to +210°C	10 m/s 10 m/s 10 m/s 10 m/s 10 m/s	250 bar/3600 psi 400 bar/5800 psi 400 bar/5800 psi 400 bar/5800 psi 400 bar/5800 psi	PU Red U203-95 PU 57 MoS2 Grey U203-GM95 UHMWPE PTFE T101-W PTFE-25% Carbon T125-C25	NBR 85 NBR 85 NBR 85 FPM 85 FPM 85
<b>RS9 I B</b> 	Asymmetrical, single acting rod seal, designed with interference of the preload element on the OD and slight interference of the glide ring on the ID. High pressure force because of a machined rubber preload element. Less relative movement of the rubber part compared to an O-Ring giving the seal a higher wear resistance. Excellent sealing performance in low and high speeds. Suitable for positioning functions. Negligible tendency to "stick-slip" effect, good sliding properties. Low break-away load after long standstills. Excellent gap extrusion resistance due to the free space on the trailing side. Can be used in grooves where no O-Ring is possible.	-30°C to +105°C -30°C to +105°C -60°C to +80°C -20°C to +210°C -20°C to +210°C	10 m/s 10 m/s 10 m/s 10 m/s 10 m/s	250 bar/3600 psi 400 bar/5800 psi 400 bar/5800 psi 400 bar/5800 psi 400 bar/5800 psi	PU Red U203-95 PU 57 MoS2 Grey U203-GM95 UHMWPE PTFE T101-W PTFE-25% Carbon T125-C25	NBR 85 NBR 85 NBR 85 FPM 85 FPM 85
<b>RS16</b> 	Asymmetrical, single acting rod seal. Long sealing lip compensates for radial inaccuracy or eccentricity. Useable for long stroke lengths. Low break-away load after long standstills. Seal design tends to "stick-slip" effect.	-30°C to +105°C -30°C to +105°C -25°C to +100°C -25°C to +150°C -20°C to +210°C	0.5 m/s 0.5 m/s 0.5 m/s 0.5 m/s 0.5 m/s	150 bar/2200 psi 150 bar/2200 psi 150 bar/2200 psi 150 bar/2200 psi 150 bar/2200 psi	PU Red U203-95 PU 57 MoS2 Grey U203-GM95 NBR 85 N107-85 HNBR 85 HN112-B85 FPM 85 F109-BR85	
<b>RS17</b> 	Asymmetrical, single acting rod seal, designed with interference on the OD which provides a good static fit in the groove. Dynamic sealing lip shorter than static lip to avoid drag pressure. Secondary lip for stabilising at large seal heights and reducing the residual oil film. Excellent static and dynamic sealing performance. Useable for long stroke lengths. Negligible tendency to "stick-slip" effect above a speed of 0.15 m/s.	-30°C to +105°C -30°C to +105°C -25°C to +100°C -25°C to +150°C -20°C to +210°C	0.5 m/s 0.5 m/s 0.5 m/s 0.5 m/s 0.5 m/s	400 bar/5800 psi 400 bar/5800 psi 150 bar/2200 psi 150 bar/2200 psi 150 bar/2200 psi	PU Red U203-95 PU 57 MoS2 Grey U203-GM95 NBR 85 N107-85 HNBR 85 HN112-B85 FPM 85 F109-BR85	
<b>RS17A</b> 	Asymmetrical, single acting rod seal, designed with interference on the OD which provides a good static fit in the groove. Dynamic sealing lip shorter than static lip to avoid drag pressure. Secondary lip for stabilising at large seal heights and reducing the residual oil film. Activated back-up ring prevents and reduces gap extrusion. Excellent static and dynamic sealing performance. Useable for long stroke lengths. Negligible tendency to "stick-slip" effect above a speed of 0.15 m/s.	-30°C to +105°C -30°C to +105°C -25°C to +100°C -25°C to +150°C -20°C to +210°C	0.5 m/s 0.5 m/s 0.5 m/s 0.5 m/s 0.5 m/s	700 bar/10.000 psi 700 bar/10.000 psi 300 bar/4300 psi 300 bar/4300 psi 300 bar/4300 psi	PU Red U203-95 PU 57 MoS2 Grey U203-GM95 NBR 85 N107-85 HNBR 85 HN112-B85 FPM 85 F109-BR85	POM P101-WE POM P101-WE POM P101-WE PEEK PK100-CN PEEK PK100-CN












Profile	Description	Temperature	Speed max.	Pressure max.	Seal Material	Other Materials
<b>RS17B</b> 	Asymmetrical, single acting rod seal, designed with interference on the OD which provides a good static fit in the groove. Dynamic sealing lip shorter than static lip to avoid drag pressure. Increased preload due to an additional O-Ring. Secondary lip for stabilising at large seal heights and reducing the residual oil film. Excellent static and dynamic sealing performance. Excellent performance in all pressure ranges. No reverse leakage when changing direction. Recommended for positioning or holding under pressure.	-30°C to +105°C	0.5 m/s	400 bar/5800 psi	PU Red U203-95	NBR 70
		-30°C to +105°C	0.5 m/s	400 bar/5800 psi	PU 57 MoS2 Grey U203-GM95	NBR 70
		-25°C to +100°C	0.5 m/s	150 bar/2200 psi	NBR 85 N107-85	NBR 70
		-25°C to +150°C	0.5 m/s	150 bar/2200 psi	HNBR 85 HN112-B85	FPM 75
		-20°C to +210°C	0.5 m/s	150 bar/2200 psi	FPM 85 F109-BR85	FPM 75
<b>RS17C</b> 	Asymmetrical, single acting rod seal, designed with interference on the OD which provides a good static fit in the groove. Dynamic sealing lip shorter than static lip to avoid drag pressure. Increased preload due to an additional O-Ring. Activated back-up ring prevents and reduces extrusion. Secondary lip for stabilising at large seal heights and reducing the residual oil film. Excellent static and dynamic sealing performance. Excellent performance in all pressure ranges. No reverse leakage when changing direction. Recommended for positioning or holding under pressure.	-30°C to +105°C	0.5 m/s	700 bar/10.000 psi	PU Red U203-95	POM P101-WE NBR 70
		-30°C to +105°C	0.5 m/s	700 bar/10.000 psi	PU 57 MoS2 Grey U203-GM95	POM P101-WE NBR 70
		-25°C to +100°C	0.5 m/s	300 bar/4300 psi	NBR 85 N107-85	POM P101-WE NBR 70
		-25°C to +150°C	0.5 m/s	300 bar/4300 psi	HNBR 85 HN112-B85	PEEK PK100-CN FPM 75
		-20°C to +210°C	0.5 m/s	300 bar/4300 psi	FPM 85 F109-BR85	PEEK PK100-CN FPM 75
<b>RS17D</b> 	Symmetrical, single acting rod seal, designed with interference on the OD which provides a good static fit in the groove. Special design for small cross sections where lips would be too thin. Secondary lip for stabilising at large seal heights and reducing the residual oil film. Excellent static and dynamic sealing performance. Excellent performance over all pressure ranges. Used for short pulsating strokes. No reverse leakage when changing direction. Recommended for positioning or holding under pressure. Particularly suitable for high viscosity media.	-30°C to +105°C	0.3 m/s	400 bar/5800 psi	PU Red U203-95	
		-30°C to +105°C	0.3 m/s	400 bar/5800 psi	PU 57 MoS2 Grey U203-GM95	
		-25°C to +100°C	0.3 m/s	150 bar/2200 psi	NBR 85 N107-85	
		-25°C to +150°C	0.3 m/s	150 bar/2200 psi	HNBR 85 HN112-B85	
		-20°C to +210°C	0.3 m/s	150 bar/2200 psi	FPM 85 F109-BR85	
<b>RS17E</b> 	Asymmetrical, single acting rod seal, designed with interference on the OD which provides a good static fit in the groove. Special design for small cross sections where lips would be too thin. Secondary lip for stabilising at large seal heights and reducing the residual oil film. Activated back-up ring prevents and reduces extrusion. Excellent static and dynamic sealing performance. Excellent performance over all pressure ranges. Used for short pulsating strokes. No reverse leakage when changing direction. Recommended for positioning or holding under pressure. Particularly suitable for high viscosity media.	-30°C to +105°C	0.3 m/s	700 bar/10.000 psi	PU Red U203-95	POM P101-WE
		-30°C to +105°C	0.3 m/s	700 bar/10.000 psi	PU 57 MoS2 Grey U203-GM95	POM P101-WE
		-25°C to +100°C	0.3 m/s	300 bar/4300 psi	NBR 85 N107-85	POM P101-WE
		-25°C to +150°C	0.3 m/s	300 bar/4300 psi	HNBR 85 HN112-B85	PEEK PK100-CN
		-20°C to +210°C	0.3 m/s	300 bar/4300 psi	FPM 85 F109-BR85	PEEK PK100-CN
<b>RS19</b> 	Asymmetrical, single acting rod seal, designed with low interference on the static sealing diameter. Preload effected through V-spring. Dynamic sealing lip shorter than static lip to avoid drag pressure. Excellent static and dynamic sealing performance. Useable for short and long stroke lengths. Low friction in dry running or poor lubrication conditions. Negligible tendency to "stick-slip" effect, small break away loads.	-200°C to +80°C	15 m/s	160 bar/2300 psi	UHMWPE	
		-200°C to +260°C	15 m/s	160 bar/2300 psi	PTFE T101-W	
		-200°C to +260°C	15 m/s	160 bar/2300 psi	PTFE-40% Bronze T120-BR40	
		-200°C to +260°C	15 m/s	160 bar/2300 psi	PTFE-25% Carbon T125-C25	
<b>RS19A</b> 	Asymmetrical, single acting rotary seal with clamping flange. Preload effected through V-spring. Dynamic sealing lip shorter than static lip to avoid drag pressure. Excellent static and dynamic sealing performance. Useable for short and long stroke lengths. Low friction in dry running or poor lubrication conditions, no stick-slip effect.	-200°C to +80°C	2 m/s	150 bar/2200 psi	UHMWPE	
		-200°C to +260°C	2 m/s	150 bar/2200 psi	PTFE T101-W	
		-200°C to +260°C	2 m/s	150 bar/2200 psi	PTFE-40% Bronze T120-BR40	
		-200°C to +260°C	2 m/s	150 bar/2200 psi	PTFE-25% Carbon T125-C25	
<b>RS20</b> 	Asymmetrical, double acting compact rod seal, designed with interference on the OD which provides a good static fit in the groove. Excellent static and dynamic sealing performance. Excellent performance in high and low pressure conditions. Negligible tendency to "stick-slip" effect. High break-away load after long standstills. Activated back-up rings reduce extrusion and prevent twisting of the seal in the groove.	-30°C to +105°C	0.5 m/s	700 bar/10.000 psi	PU Red U203-95	POM P101-WE NBR 70
		-30°C to +105°C	0.5 m/s	700 bar/10.000 psi	PU 57 MoS2 Grey U203-GM95	POM P101-WE NBR 70
		-25°C to +100°C	0.5 m/s	700 bar/10.000 psi	NBR 85 N107-85	POM P101-WE NBR 70
		-25°C to +150°C	0.5 m/s	700 bar/10.000 psi	HNBR 85 HN112-B85	PEEK PK100-CN FPM 75
		-20°C to +210°C	0.5 m/s	700 bar/10.000 psi	FPM 85 F109-BR85	PEEK PK100-CN FPM 75
<b>RS31-33</b> 	Asymmetrical, single acting rod seal, combined with pressure ring and support ring. By adjusting the number of packings friction and leakage characteristics can be influenced. Excellent dynamic and good static sealing performance. Excellent performance in high pressure conditions. Especially used for long stroke lengths. Low friction due to flexible lip design.	-30°C to +105°C	0.5 m/s	500 bar/7200 psi	PU Red U203-95	POM P101-WE NBR 70
		-30°C to +105°C	0.5 m/s	500 bar/7200 psi	PU 57 MoS2 Grey U203-GM95	POM P101-WE NBR 70
<b>RS35</b> 	Asymmetrical, double acting compact rod seal, designed with interference on the OD which provides a good static fit in the groove. Excellent static and dynamic sealing performance. Excellent performance in low pressure conditions. For rotary applications the interference on the OD has to be increased (better static fit to reduce the danger of the seal rotating in the housing), the preload has to be reduced (lower friction).	-30°C to +105°C	0.4 m/s	400 bar/5800 psi	PU Red U203-95	
		-30°C to +105°C	0.4 m/s	400 bar/5800 psi	PU 57 MoS2 Grey U203-GM95	
		-25°C to +100°C	0.4 m/s	150 bar /2200 psi	NBR 85 N107-85	
		-25°C to +150°C	0.4 m/s	150 bar /2200 psi	HNBR 85 HN112-B85	
		-20°C to +210°C	0.4 m/s	150 bar /2200 psi	FPM 85 F109-BR85	






Profile	Description	Temperature	Speed max.	Pressure max.	Seal Material	Other Materials
<b>PS01</b> 	Asymmetrical, single acting piston seal, designed with interference on the ID which provides a good static fit in the groove. Dynamic sealing lip shorter than static lip to avoid drag pressure. Excellent static and dynamic sealing performance. Useable for long stroke lengths. Negligible tendency to "stick-slip" effect above a speed of 0.15 m/s. For lower speeds the dynamic lip should be redesigned (shorter, stiffer).	-30°C to +105°C	0.5 m/s	400 bar/5800 psi	PU Red U203-95	
		-30°C to +105°C	0.5 m/s	400 bar/5800 psi	PU 57 MoS2 Grey U203-GM95	
		-25°C to +100°C	0.5 m/s	150 bar/2200 psi	NBR 85 N107-85	
		-25°C to +150°C	0.5 m/s	150 bar/2200 psi	HNBR 85 HN112-B85	
		-20°C to +210°C	0.5 m/s	150 bar/2200 psi	FPM 85 F109-BR85	
<b>PS01A</b> 	Asymmetrical, single acting piston seal, designed with interference on the ID which provides a good static fit in the groove. Dynamic sealing lip shorter than static lip to avoid drag pressure. Wider groove and softer lips compared to PS01. Excellent static and dynamic sealing performance. Useable for long stroke lengths. Negligible tendency to "stick-slip" effect above a speed of 0.15 m/s.	-30°C to +105°C	0.5 m/s	160 bar/2300 psi	PU Red U203-95	
		-30°C to +105°C	0.5 m/s	160 bar/2300 psi	PU 57 MoS2 Grey U203-GM95	
		-25°C to +100°C	0.5 m/s	160 bar/2300 psi	NBR 85 N107-85	
		-25°C to +150°C	0.5 m/s	160 bar/2300 psi	HNBR 85 HN112-B85	
		-20°C to +210°C	0.5 m/s	160 bar/2300 psi	FPM 85 F109-BR85	
<b>PS01B</b> 	Asymmetrical, single acting piston seal, designed with interference on the ID which provides a good static fit in the groove. Dynamic sealing lip shorter than static lip to avoid drag pressure. Sharp lips on ID and OD. Good static and dynamic sealing performance. Good performance in low pressure conditions. Useable for long stroke lengths. Out-of date profile; only used in old machinery. Poor sealing that causes a relatively thick oil film.	-30°C to +105°C	0.5 m/s	400 bar/5800 psi	PU Red U203-95	
		-30°C to +105°C	0.5 m/s	400 bar/5800 psi	PU 57 MoS2 Grey U203-GM95	
		-25°C to +100°C	0.5 m/s	150 bar/2200 psi	NBR 85 N107-85	
		-25°C to +150°C	0.5 m/s	150 bar/2200 psi	HNBR 85 HN112-B85	
		-20°C to +210°C	0.5 m/s	150 bar/2200 psi	FPM 85 F109-BR85	
<b>PS02</b> 	Asymmetrical, single acting piston seal with integrated back-up ring, designed with interference on the ID which provides a good static fit in the groove. Dynamic sealing lip shorter than static lip to avoid drag pressure. Excellent static and dynamic sealing performance. Useable for long stroke lengths. Negligible tendency to "stick-slip" effect above a speed of 0.15 m/s. For lower speeds the dynamic lip should be redesigned (shorter, stiffer). Activated back-up ring prevents and reduces extrusion.	-30°C to +105°C	0.5 m/s	700 bar/10.000 psi	PU Red U203-95	POM P101-WE
		-30°C to +105°C	0.5 m/s	700 bar/10.000 psi	PU 57 MoS2 Grey U203-GM95	POM P101-WE
		-25°C to +100°C	0.5 m/s	300 bar/4300 psi	NBR 85 N107-85	POM P101-WE
		-25°C to +150°C	0.5 m/s	300 bar/4300 psi	HNBR 85 HN112-B85	PEEK PK100-CN
		-20°C to +210°C	0.5 m/s	300 bar/4300 psi	FPM 85 F109-BR85	PEEK PK100-CN
<b>PS02A</b> 	Asymmetrical, single acting piston seal with integrated back-up ring, designed with interference on the ID which provides a good static fit in the groove. Dynamic sealing lip shorter than static lip to avoid drag pressure. Excellent static and dynamic sealing performance. Useable for long stroke lengths. Negligible tendency to "stick-slip" effect above a speed of 0.15 m/s. For lower speeds the dynamic lip should be redesigned (shorter, stiffer). Activated back-up ring prevents and reduces extrusion.	-30°C to +105°C	0.5 m/s	700 bar/10.000 psi	PU Red U203-95	POM P101-WE
		-30°C to +105°C	0.5 m/s	700 bar/10.000 psi	PU 57 MoS2 Grey U203-GM95	POM P101-WE
		-25°C to +100°C	0.5 m/s	300 bar/4300 psi	NBR 85 N107-85	POM P101-WE
		-25°C to +150°C	0.5 m/s	300 bar/4300 psi	HNBR 85 HN112-B85	PEEK PK100-CN
		-20°C to +210°C	0.5 m/s	300 bar/4300 psi	FPM 85 F109-BR85	PEEK PK100-CN
<b>PS03</b> 	Asymmetrical, single acting piston seal, designed with interference on the ID which provides a good static fit in the groove. Dynamic sealing lip shorter than static lip to avoid drag pressure. Increased preload due to an additional O-Ring. Excellent static and dynamic sealing performance. Excellent performance in all pressure ranges. Used for short, pulsating strokes. No reverse leakage when changing direction. Recommended for positioning or holding under pressure.	-30°C to +105°C	0.5 m/s	400 bar/5800 psi	PU Red U203-95	NBR 70
		-30°C to +105°C	0.5 m/s	400 bar/5800 psi	PU 57 MoS2 Grey U203-GM95	NBR 70
		-25°C to +100°C	0.5 m/s	150 bar/2200 psi	NBR 85 N107-85	NBR 70
		-25°C to +150°C	0.5 m/s	150 bar/2200 psi	HNBR 85 HN112-B85	FPM 75
		-20°C to +210°C	0.5 m/s	150 bar/2200 psi	FPM 85 F109-BR85	FPM 75
<b>PS04</b> 	Asymmetrical, single acting piston seal, designed with interference on the ID which provides a good static fit in the groove. Dynamic sealing lip shorter than static lip to avoid drag pressure. Increased preload due to an additional O-Ring. Activated back-up ring prevents and reduces extrusion. Excellent static and dynamic sealing performance. Excellent performance in all pressure ranges. Used for short, pulsating strokes. No reverse leakage when changing direction. Recommended for positioning or holding under pressure.	-30°C to +105°C	0.5 m/s	700 bar/10.000 psi	PU Red U203-95	POM P101-WE NBR 70
		-30°C to +105°C	0.5 m/s	700 bar/10.000 psi	PU 57 MoS2 Grey U203-GM95	POM P101-WE NBR 70
		-25°C to +100°C	0.5 m/s	300 bar/4300 psi	NBR 85 N107-85	POM P101-WE NBR 70
		-25°C to +150°C	0.5 m/s	300 bar/4300 psi	HNBR 85 HN112-B85	PEEK PK100-CN FPM 75
		-20°C to +210°C	0.5 m/s	300 bar/4300 psi	FPM 85 F109-BR85	PEEK PK100-CN FPM 75
<b>PS05</b> 	Asymmetrical, single acting piston seal for pneumatic applications, designed with interference on the ID which provides a good static fit in the groove. Special designed sealing lip to retain the lubrication film and prevent dry running. Excellent static and dynamic sealing performance. Useable for long stroke lengths. Negligible tendency to "stick-slip", small break-away loads after long standstill.	-30°C to +105°C	0.5 m/s	25 bar/350 psi	PU Red U203-95	
		-30°C to +105°C	0.5 m/s	25 bar/350 psi	PU 57 MoS2 Grey U203-GM95	
		-25°C to +100°C	0.5 m/s	25 bar/350 psi	NBR 85 N107-85	
		-25°C to +150°C	0.5 m/s	25 bar/350 psi	HNBR 85 HN112-B85	
		-20°C to +210°C	0.5 m/s	25 bar/350 psi	FPM 85 F109-BR85	
<b>PS08</b> 	Symmetrical, double acting piston seal, designed with interference of the O-Ring on the ID and slight interference of the PTFE glide ring on the OD. Excellent sealing performance in low and high speeds. Suitable for positioning functions. Negligible tendency to "stick-slip" effect, good sliding properties. Low break-away load after long standstills. Excellent gap extrusion resistance.	-30°C to +105°C	10 m/s	250 bar/3600 psi	PU Red U203-95	NBR 70
		-30°C to +105°C	10 m/s	400 bar/5800 psi	PU 57 MoS2 Grey U203-GM95	NBR 70
		-60°C to +80°C	10 m/s	400 bar/5800 psi	UHMWPE	NBR 70
		-20°C to +210°C	10 m/s	400 bar/5800 psi	PTFE T101-W	FPM 75
		-20°C to +210°C	10 m/s	400 bar/5800 psi	PTFE-25% Carbon T125-C25	FPM 75

Profile	Description	Temperature	Speed max.	Pressure max.	Seal Material	Other Materials
<b>PS08A</b> 	Symmetrical, double acting piston seal, designed with interference of the O-Ring on the ID and slight interference of the glide ring on the OD. Two external sealing edges working as a primary seal and reducing the risk of the blow-by effect. Central back-up and sealing bulge. Glide ring is made from very wear resistant hard grade polyurethane. Suitable for positioning and holding functions. Negligible tendency to "stick-slip" effect. Low break-away load after long standstills. Good extrusion resistance.	-30°C to +105°C	1 m/s	250 bar/3600 psi	PU Red U203-95	NBR 70
		-30°C to +105°C	1 m/s	250 bar/3600 psi	PU 57 MoS2 Grey U203-GM95	NBR 70
		-60°C to +80°C	1 m/s	250 bar/3600 psi	UHMWPE	NBR 70
		-20°C to +210°C	1 m/s	250 bar/3600 psi	PTFE T101-W	FPM 75
		-20°C to +210°C	1 m/s	250 bar/3600 psi	PTFE-25% Carbon T125-C25	FPM 75
<b>PS08B</b> 	Asymmetrical, single acting piston seal, designed with interference of the O-Ring on the ID and slight interference of the glide ring on the OD. Excellent sealing performance in low and high speeds. Suitable for positioning functions. Negligible tendency to "stick-slip" effect, good sliding properties. Low break-away load after long standstills. Excellent extrusion resistance due to the free space on the trailing side.	-30°C to +105°C	10 m/s	250 bar/3600 psi	PU Red U203-95	NBR 70
		-30°C to +105°C	10 m/s	400 bar/5800 psi	PU 57 MoS2 Grey U203-GM95	NBR 70
		-60°C to +80°C	10 m/s	400 bar/5800 psi	UHMWPE	NBR 70
		-20°C to +210°C	10 m/s	400 bar/5800 psi	PTFE T101-W	FPM 75
		-20°C to +210°C	10 m/s	400 bar/5800 psi	PTFE-25% Carbon T125-C25	FPM 75
<b>PS08C</b> 	Symmetrical, double acting piston seal, designed with interference of the O-Ring on the ID and slight interference of the glide ring on the OD. Quad ring® on the outside diameter ensures additional sealing especially at holding and positioning functions. Good sealing function at medium separation. Negligible tendency to "stick-slip" effect, good sliding properties. Low break-away load after long standstills. Excellent extrusion resistance.	-30°C to +105°C	2 m/s	250 bar/3600 psi	PU Red U203-95	NBR 70
		-30°C to +105°C	2 m/s	400 bar/5800 psi	PU 57 MoS2 Grey U203-GM95	NBR 70
		-60°C to +80°C	2 m/s	400 bar/5800 psi	UHMWPE	NBR 70
		-20°C to +210°C	2 m/s	400 bar/5800 psi	PTFE T101-W	FPM 75
		-20°C to +210°C	2 m/s	400 bar/5800 psi	PTFE-25% Carbon T125-C25	FPM 75
<b>PS08D</b> 	Symmetrical, double acting piston seal, designed with interference of the O-Rings on the ID and slight interference of the glide ring on the OD. Quad ring® on the outside diameter ensures additional sealing especially at holding and positioning functions. The use of two O-Rings ensures better pressure distribution on the sealing edges. Good sealing function at medium separation. Negligible tendency to "stick-slip" effect, good sliding properties. Low break-away load after long standstills. Excellent extrusion resistance.	-30°C to +105°C	2 m/s	250 bar/3600 psi	PU Red U203-95	NBR 70
		-30°C to +105°C	2 m/s	400 bar/5800 psi	PU 57 MoS2 Grey U203-GM95	NBR 70
		-60°C to +80°C	2 m/s	400 bar/5800 psi	UHMWPE	NBR 70
		-20°C to +210°C	2 m/s	400 bar/5800 psi	PTFE T101-W	FPM 75
		-20°C to +210°C	2 m/s	400 bar/5800 psi	PTFE-25% Carbon T125-C25	FPM 75
<b>PS08E</b> 	Symmetrical, double acting piston seal, designed with interference of the O-Ring on the ID and slight interference of the glide ring on the OD. Glide ring is made from very wear resistant hard grade polyurethane. Excellent sealing performance in low and high speeds. Suitable for positioning functions. Negligible tendency to "stick-slip" effect, good sliding properties. Low break-away load after long standstills. Excellent extrusion resistance.	-30°C to +105°C	1 m/s	250 bar/3600 psi	PU Red U203-95	NBR 70
		-30°C to +105°C	1 m/s	400 bar/5800 psi	PU 57 MoS2 Grey U203-GM95	NBR 70
		-60°C to +80°C	10 m/s	400 bar/5800 psi	UHMWPE	NBR 70
		-20°C to +210°C	10 m/s	400 bar/5800 psi	PTFE T101-W	FPM 75
		-20°C to +210°C	10 m/s	400 bar/5800 psi	PTFE-25% Carbon T125-C25	FPM 75
<b>PS08F</b> 	Symmetrical, double acting piston seal, designed with interference of the O-Ring on the ID and slight interference of the glide ring on the OD. Glide ring is made from very wear resistant hard grade polyurethane. Excellent sealing performance in low and high speeds. Suitable for positioning and holding functions. Negligible tendency to "stick-slip" effect. Low break-away load after long standstills. Good extrusion resistance.	-30°C to +105°C	1 m/s	250 bar/3600 psi	PU Red U203-95	NBR 70
		-30°C to +105°C	1 m/s	250 bar/3600 psi	PU 57 MoS2 Grey U203-GM95	NBR 70
		-60°C to +80°C	1 m/s	250 bar/3600 psi	UHMWPE	NBR 70
		-20°C to +210°C	1 m/s	250 bar/3600 psi	PTFE T101-W	FPM 75
		-20°C to +210°C	1 m/s	250 bar/3600 psi	PTFE-25% Carbon T125-C25	FPM 75
<b>PS8 I</b> 	Symmetrical, double acting piston seal, designed with interference of the preload element on the ID and slight interference of the glide ring on the OD. High pressure force because of a machined rubber preload element. Less relative movement of the rubber part compared to an O-Ring giving the seal a higher wear resistance. Excellent sealing performance in low and high speeds. Suitable for positioning functions. Negligible tendency to "stick-slip" effect, good sliding properties. Low break-away load after long standstills. Excellent extrusion resistance. Can be used in grooves where no O-Ring is possible.	-30°C to +105°C	2 m/s	250 bar/3600 psi	PU Red U203-95	NBR 85
		-30°C to +105°C	2 m/s	400 bar/5800 psi	PU 57 MoS2 Grey U203-GM95	NBR 85
		-60°C to +80°C	2 m/s	400 bar/5800 psi	UHMWPE	NBR 85
		-20°C to +210°C	2 m/s	400 bar/5800 psi	PTFE T101-W	FPM 85
		-20°C to +210°C	2 m/s	400 bar/5800 psi	PTFE-25% Carbon T125-C25	FPM 85
<b>PS09</b> 	Double acting piston seal, designed with interference on the ID which provides a good static fit in the groove. Consisting of one gliding, one energizing and two guiding/back-up elements. Useable for short and long stroke lengths. Good static and dynamic sealing performance. High frictional force.	-30°C to +105°C	0.5 m/s	400 bar/5800 psi	PU Red U203-95	NBR 85 N107-85 POM P101-WE
		-30°C to +105°C	0.5 m/s	400 bar/5800 psi	PU MoS2 Grey U203-GM95	NBR 85 N107-85 POM P101-WE
		-30°C to +105°C	0.5 m/s	400 bar/5800 psi	PU 57 MoS2 Grey U203-GM95	NBR 85 N107-85 POM P101-WE
<b>PS09A</b> 	Double acting piston seal, designed with interference on the ID which provides a good static fit in the groove. Consisting of one gliding, one energizing, two back-up and two guide elements. Useable for short and long stroke lengths. Compact piston design possible Good static and dynamic sealing performance. Good positioning control.	-30°C to +105°C	0.5 m/s	400 bar/5800 psi	PU Red U203-95	NBR 85 N107-85 POM P101-WE
		-30°C to +105°C	0.5 m/s	400 bar/5800 psi	PU MoS2 Grey U203-GM95	NBR 85 N107-85 POM P101-WE
		-30°C to +105°C	0.5 m/s	400 bar/5800 psi	PU 57 MoS2 Grey U203-GM95	NBR 85 N107-85 POM P101-WE

















Profile	Description	Temperature	Speed max.	Pressure max.	Seal Material	Other Materials
<b>PSI6</b> 	Asymmetrical, single acting piston seal. Long sealing lip compensates for radial inaccuracy or eccentricity. Useable for long stroke lengths. Low break-away load after long standstills. Seal design tends to "stick-slip" effect.	-30°C to +105°C	0.5 m/s	150 bar/2200 psi	PU Red U203-95	
		-30°C to +105°C	0.5 m/s	150 bar/2200 psi	PU 57 MoS2 Grey U203-GM95	
		-25°C to +100°C	0.5 m/s	150 bar/2200 psi	NBR 85 N107-85	
		-25°C to +150°C	0.5 m/s	150 bar/2200 psi	HNBR 85 HN112-B85	
		-20°C to +210°C	0.5 m/s	150 bar/2200 psi	FPM 85 F109-BR85	
<b>PSI6A</b> 	Asymmetrical, single acting piston seal. Long sealing lip compensates for radial inaccuracy or eccentricity. Useable for long stroke lengths. Low break-away load after long standstills. Seal design tends to "stick-slip" effect.	-30°C to +105°C	0.5 m/s	150 bar/2200 psi	PU Red U203-95	
		-30°C to +105°C	0.5 m/s	150 bar/2200 psi	PU 57 MoS2 Grey U203-GM95	
		-25°C to +100°C	0.5 m/s	150 bar/2200 psi	NBR 85 N107-85	
		-25°C to +150°C	0.5 m/s	150 bar/2200 psi	HNBR 85 HN112-B85	
		-20°C to +210°C	0.5 m/s	150 bar/2200 psi	FPM 85 F109-BR85	
<b>PSI7</b> 	Double acting piston seal, designed with interference on the ID which provides a good static fit in the groove. Consisting of one sealing and two guiding/back-up elements. Useable for short and long stroke lengths. Good dynamic and static sealing performance. High frictional force.	-30°C to +105°C	0.5 m/s	700 bar/10.000 psi	PU Red U203-95	POM P101-WE NBR 70
		-30°C to +105°C	0.5 m/s	700 bar/10.000 psi	PU 57 MoS2 Grey U203-GM95	POM P101-WE NBR 70
		-25°C to +100°C	0.5 m/s	300 bar/4300 psi	NBR 85 N107-85	POM P101-WE NBR 70
		-25°C to +150°C	0.5 m/s	300 bar/4300 psi	HNBR 85 HN112-B85	PEEK PK100-CN FPM 75
		-20°C to +210°C	0.5 m/s	300 bar/4300 psi	FPM 85 F109-BR85	PEEK PK100-CN FPM 75
<b>PSI7A</b> 	Double acting piston seal, designed with interference on the ID which provides a good static fit in the groove. Consisting of one sealing and two guiding/back-up elements. Useable for short and long stroke lengths. Good dynamic and static sealing performance. High frictional force.	-30°C to +105°C	0.5 m/s	700 bar/10.000 psi	PU Red U203-95	POM P101-WE NBR 70
		-30°C to +105°C	0.5 m/s	700 bar/10.000 psi	PU 57 MoS2 Grey U203-GM95	POM P101-WE NBR 70
		-25°C to +100°C	0.5 m/s	300 bar/4300 psi	NBR 85 N107-85	POM P101-WE NBR 70
		-25°C to +150°C	0.5 m/s	300 bar/4300 psi	HNBR 85 HN112-B85	PEEK PK100-CN FPM 75
		-20°C to +210°C	0.5 m/s	300 bar/4300 psi	FPM 85 F109-BR85	PEEK PK100-CN FPM 75
<b>PSI7B</b> 	Double acting piston seal, designed with interference on the ID which provides a good static fit in the groove. Consisting of one sealing and two guiding/back-up elements. Two sealing edges on the OD for improved media separation. Useable for short and long stroke lengths. Good dynamic and static sealing performance. High frictional force.	-30°C to +105°C	0.5 m/s	700 bar/10.000 psi	PU Red U203-95	POM P101-WE NBR 70
		-30°C to +105°C	0.5 m/s	700 bar/10.000 psi	PU 57 MoS2 Grey U203-GM95	POM P101-WE NBR 70
		-25°C to +100°C	0.5 m/s	300 bar/4300 psi	NBR 85 N107-85	POM P101-WE NBR 70
		-25°C to +150°C	0.5 m/s	300 bar/4300 psi	HNBR 85 HN112-B85	PEEK PK100-CN FPM 75
		-20°C to +210°C	0.5 m/s	300 bar/4300 psi	FPM 85 F109-BR85	PEEK PK100-CN FPM 75
<b>PSI9</b> 	Asymmetrical, single acting piston seal, designed with low interference on the static sealing diameter. Preload effected through V-spring. Dynamic sealing lip shorter than static lip to avoid drag pressure. Excellent static and dynamic sealing performance. Useable for short and long stroke lengths. Low friction in dry running or poor lubrication conditions. Negligible tendency to "stick-slip" effect, small break away loads.	-200°C to +80°C	15 m/s	160 bar/2300 psi	UHMWPE	
		-200°C to +260°C	15 m/s	160 bar/2300 psi	PTFE T101-W	
		-200°C to +260°C	15 m/s	160 bar/2300 psi	PTFE-40% Bronze T120-BR40	
		-200°C to +260°C	15 m/s	160 bar/2300 psi	PTFE-25% Carbon T125-C25	
<b>PSI9A</b> 	Asymmetrical, single acting rotary seal with clamping flange. Preload effected through V-spring. Dynamic sealing lip shorter than static lip to avoid drag pressure. Excellent static and dynamic sealing performance. Useable for short and long stroke lengths. Low friction in dry running or poor lubrication conditions, no stick-slip effect.	-200°C to +80°C	2 m/s	150 bar/2200 psi	UHMWPE	
		-200°C to +260°C	2 m/s	150 bar/2200 psi	PTFE T101-W	
		-200°C to +260°C	2 m/s	150 bar/2200 psi	PTFE-40% Bronze T120-BR40	
		-200°C to +260°C	2 m/s	150 bar/2200 psi	PTFE-25% Carbon T125-C25	
<b>PS20</b> 	Symmetrical, double acting compact piston seal, designed with interference on the ID which provides a good static fit in the groove. Excellent static and dynamic sealing performance. Excellent performance in high and low pressure conditions. Negligible tendency to "stick-slip" effect. High break-away load after long standstills. Activated back-up rings reduce extrusion and prevent twisting of the seal in the groove.	-30°C to +105°C	0.5 m/s	700 bar/10.000 psi	PU Red U203-95	POM P101-WE NBR 70
		-30°C to +105°C	0.5 m/s	700 bar/10.000 psi	PU 57 MoS2 Grey U203-GM95	POM P101-WE NBR 70
		-25°C to +100°C	0.5 m/s	700 bar/10.000 psi	NBR 85 N107-85	POM P101-WE NBR 70
		-25°C to +150°C	0.5 m/s	700 bar/10.000 psi	HNBR 85 HN112-B85	PEEK PK100-CN FPM 75
		-20°C to +210°C	0.5 m/s	700 bar/10.000 psi	FPM 85 F109-BR85	PEEK PK100-CN FPM 75
<b>PS23</b> 	Double acting piston seal, designed with interference on the ID which provides a good static fit in the groove. Consisting of one gliding, one energizing and two back-up elements. Useable for short and long stroke lengths. Good static and dynamic sealing performance. High frictional force. No drag pressure build-up.	-30°C to +105°C	0.5 m/s	400 bar/5800 psi	PU Red U203-95	NBR 85 N107-85 POM P101-WE
		-30°C to +105°C	0.5 m/s	400 bar/5800 psi	PU MoS2 Grey U203-GM95	NBR 85 N107-85 POM P101-WE
		-30°C to +105°C	0.5 m/s	400 bar/5800 psi	PU 57 MoS2 Grey U203-GM95	NBR 85 N107-85 POM P101-WE
<b>PS35</b> 	Asymmetrical, double acting compact piston seal, designed with interference on the ID which provides a good static fit in the groove. Excellent static and dynamic sealing performance. Excellent performance in low pressure conditions. For rotary applications the interference on the ID has to be increased (better static fit to reduce the danger of the seal rotating in the housing), the preload has to be reduced (lower friction).	-30°C to +105°C	0.4 m/s	400 bar/5800 psi	PU Red U203-95	
		-30°C to +105°C	0.4 m/s	400 bar/5800 psi	PU 57 MoS2 Grey U203-GM95	
		-25°C to +100°C	0.4 m/s	150 bar/2200 psi	NBR 85 N107-85	
		-25°C to +150°C	0.4 m/s	150 bar/2200 psi	HNBR 85 HN112-B85	
		-20°C to +210°C	0.4 m/s	150 bar/2200 psi	FPM 85 F109-BR85	






Profile	Description	Temperature	Speed max.	Pressure max.	Seal Material	Other Materials
<b>PRS06</b> 	Symmetrical, single acting piston/rod seal. Excellent static and dynamic sealing performance. Excellent performance in low pressure conditions. Useable for long stroke lengths. Negligible tendency to "stick-slip" effect above a speed of 0.15 m/s.	-30°C to +105°C	0.5 m/s	400 bar/5800 psi	PU Red U203-95	
		-30°C to +105°C	0.5 m/s	400 bar/5800 psi	PU 57 MoS2 Grey U203-GM95	
		-25°C to +100°C	0.5 m/s	150 bar/2200 psi	NBR 85 N107-85	
		-25°C to +150°C	0.5 m/s	150 bar/2200 psi	HNBR 85 HN112-B85	
		-20°C to +210°C	0.5 m/s	150 bar/2200 psi	FPM 85 F109-BR85	
<b>PRS06A</b> 	Symmetrical, single acting piston/rod seal. Wider groove and softer lips compared to PRS06. Excellent static and dynamic sealing performance. Excellent performance in low pressure conditions. Useable for long stroke lengths. Negligible tendency to "stick-slip" effect above a speed of 0.15 m/s.	-30°C to +105°C	0.5 m/s	160 bar/2300 psi	PU Red U203-95	
		-30°C to +105°C	0.5 m/s	160 bar/2300 psi	PU 57 MoS2 Grey U203-GM95	
		-25°C to +100°C	0.5 m/s	160 bar/2300 psi	NBR 85 N107-85	
		-25°C to +150°C	0.5 m/s	160 bar/2300 psi	HNBR 85 HN112-B85	
		-20°C to +210°C	0.5 m/s	160 bar/2300 psi	FPM 85 F109-BR85	
<b>PRS06B</b> 	Symmetrical, single acting piston/rod seal. Good static and dynamic sealing performance. Good performance in low pressure conditions. Useable for long stroke lengths. Out-of date profile; only used in old machinery. Poor sealing that causes a relative thick oil film.	-30°C to +105°C	0.5 m/s	400 bar/5800 psi	PU Red U203-95	
		-30°C to +105°C	0.5 m/s	400 bar/5800 psi	PU 57 MoS2 Grey U203-GM95	
		-25°C to +100°C	0.5 m/s	150 bar/2200 psi	NBR 85 N107-85	
		-25°C to +150°C	0.5 m/s	150 bar/2200 psi	HNBR 85 HN112-B85	
		-20°C to +210°C	0.5 m/s	150 bar/2200 psi	FPM 85 F109-BR85	
<b>PRS06C</b> 	Symmetrical, single acting piston/rod seal. Special design for small cross sections where lips would be too thin. Excellent static and dynamic sealing performance. Excellent performance over all pressure ranges. Used for short pulsating strokes. No reverse leakage when changing direction. Recommended for positioning or holding under pressure. Particularly suitable for high viscosity media.	-30°C to +105°C	0.5 m/s	400 bar/5800 psi	PU Red U203-95	
		-30°C to +105°C	0.5 m/s	400 bar/5800 psi	PU 57 MoS2 Grey U203-GM95	
		-25°C to +100°C	0.5 m/s	150 bar/2200 psi	NBR 85 N107-85	
		-25°C to +150°C	0.5 m/s	150 bar/2200 psi	HNBR 85 HN112-B85	
		-20°C to +210°C	0.5 m/s	150 bar/2200 psi	FPM 85 F109-BR85	
<b>PRS06D</b> 	Symmetrical, single acting piston/rod seal. Special design with wider groove for large cross sections. Excellent static and dynamic sealing performance. Excellent performance in low pressure conditions. Useable for long stroke lengths. Negligible tendency to "stick-slip" effect above a speed of 0.15 m/s.	-30°C to +105°C	0.5 m/s	400 bar/5800 psi	PU Red U203-95	
		-30°C to +105°C	0.5 m/s	400 bar/5800 psi	PU 57 MoS2 Grey U203-GM95	
		-25°C to +100°C	0.5 m/s	150 bar/2200 psi	NBR 85 N107-85	
		-25°C to +150°C	0.5 m/s	150 bar/2200 psi	HNBR 85 HN112-B85	
		-20°C to +210°C	0.5 m/s	150 bar/2200 psi	FPM 85 F109-BR85	
<b>PRS06E</b> 	Symmetrical, single acting piston/rod seal. Axial stabilisation of the seal by means of an additional land. Excellent static and dynamic sealing performance. Excellent performance in low pressure conditions. Useable for long stroke lengths. Negligible tendency to "stick-slip" effect above a speed of 0.15 m/s.	-30°C to +105°C	0.5 m/s	400 bar/5800 psi	PU Red U203-95	
		-30°C to +105°C	0.5 m/s	400 bar/5800 psi	PU 57 MoS2 Grey U203-GM95	
		-25°C to +100°C	0.5 m/s	150 bar/2200 psi	NBR 85 N107-85	
		-25°C to +150°C	0.5 m/s	150 bar/2200 psi	HNBR 85 HN112-B85	
		-20°C to +210°C	0.5 m/s	150 bar/2200 psi	FPM 85 F109-BR85	
<b>PRS07</b> 	Symmetrical, single acting piston/rod seal. Increased preload due to an additional O-Ring. Excellent static and dynamic sealing performance. Excellent performance in low pressure conditions. Used for short pulsating strokes. No reverse leakage when changing direction. Recommended for positioning or holding under pressure.	-30°C to +105°C	0.5 m/s	400 bar/5800 psi	PU Red U203-95	NBR 70
		-30°C to +105°C	0.5 m/s	400 bar/5800 psi	PU 57 MoS2 Grey U203-GM95	NBR 70
		-25°C to +100°C	0.5 m/s	150 bar/2200 psi	NBR 85 N107-85	NBR 70
		-25°C to +150°C	0.5 m/s	150 bar/2200 psi	HNBR 85 HN112-B85	FPM 75
		-20°C to +210°C	0.5 m/s	150 bar/2200 psi	FPM 85 F109-BR85	FPM 75
<b>PRS10SP</b> 	Variable support ring for vee packings PRS10-12. Excellent static and dynamic sealing performance. Excellent performance in high pressure conditions. Useable for short and long stroke lengths. High wear resistance.	-60°C to +100°C	Contact us	Contact us	POM P101-WE NBR70	
		-200°C to +80°C	Contact us	Contact us	UHMWPE	
		-200°C to +260°C	Contact us	Contact us	PTFE-25% Carbon T125-C25	
		-50°C to +250°C	Contact us	Contact us	PEEK PK100-CN FPM75	
<b>PRS10-12</b> 	Symmetrical, single acting piston/rod seal, combined with pressure ring and support ring. By adjusting the number of packings friction and leakage characteristics can be influenced. Excellent static and dynamic sealing performance. Excellent performance in high pressure conditions. Useable for short and long stroke lengths. High wear resistance.	-30°C to +105°C	0.5 m/s	500 bar/7200 psi	PU Red U203-95	POM P101-WE NBR 70
		-200°C to +260°C	0.5 m/s	500 bar/7200 psi	PTFE-25% Carbon T125-C25	PEEK PK100-CN FPM 75
		-25°C to +100°C	0.5 m/s	300 bar/4300 psi	NBR 85 N107-85	POM P101-WE NBR 70
		-25°C to +150°C	0.5 m/s	300 bar/4300 psi	HNBR 85 HN112-B85	PEEK PK100-CN
		-20°C to +210°C	0.5 m/s	300 bar/4300 psi	FPM 85 F109-BR85	PEEK PK100-CN
<b>PRS13-15</b> 	Symmetrical, single acting piston/rod seal, combined with pressure ring and support ring. By adjusting the number of packings friction and leakage characteristics can be influenced. Excellent static and dynamic sealing performance. Excellent performance in high pressure conditions. Useable for short and long stroke lengths. Reduced friction compared to PRS10-12 profile especially in the high pressure range.	-30°C to +105°C	0.5 m/s	500 bar/7200 psi	PU Red U203-95	POM P101-WE NBR 70
		-200°C to +260°C	0.5 m/s	500 bar/7200 psi	PTFE-25% Carbon T125-C25	PEEK PK100-CN
		-25°C to +100°C	0.5 m/s	300 bar/4300 psi	NBR 85 N107-85	POM P101-WE NBR 70
		-25°C to +150°C	0.5 m/s	300 bar/4300 psi	HNBR 85 HN112-B85	PEEK PK100-CN
		-20°C to +210°C	0.5 m/s	300 bar/4300 psi	FPM 85 F109-BR85	PEEK PK100-CN
<b>PRS18</b> 	Symmetrical, single acting piston/rod seal, no interference on the ID or OD. Increased preload due to an additional O-Ring. Sharp lips for use in high viscosity media. Excellent static and dynamic sealing performance. Good performance in all pressure ranges. Used for short pulsating strokes. No reverse leakage when changing direction. Recommended for positioning or holding under pressure.	-30°C to +105°C	0.5 m/s	400 bar/5800 psi	PU Red U203-95	NBR70
		-30°C to +105°C	0.5 m/s	400 bar/5800 psi	PU 57 MoS2 Grey U203-GM95	NBR70
		-25°C to +100°C	0.5 m/s	150 bar/2200 psi	NBR 85 N107-85	NBR70
		-25°C to +150°C	0.5 m/s	150 bar/2200 psi	HNBR 85 HN112-B85	FPM75
		-20°C to +210°C	0.5 m/s	150 bar/2200 psi	FPM 85 F109-BR85	FPM75










Profile	Description	Temperature	Speed max.	Pressure max.	Seal Material	Other Materials
<b>PRS19B</b> 	Symmetrical, single acting piston/rod seal, no interference on the ID or OD. Preload effected through round Helicoil-spring which ensures high pressure on the sealing edges. Excellent static and dynamic sealing performance. Excellent sealing performance in low and high pressure ranges. Useable for short and long stroke lengths. Low friction in dry running or poor lubrication conditions. Also used for gas applications. Negligible tendency to "stick-slip" effect, small break away loads.	-200°C to +80°C	5 m/s *	150 bar/2200 psi	UHMWPE	
		-200°C to +260°C	5 m/s *	150 bar/2200 psi	PTFE T101-W	
		-200°C to +260°C	5 m/s *	150 bar/2200 psi	PTFE-40% Bronze T120-BR40	
		-200°C to +260°C	5 m/s *	150 bar/2200 psi	PTFE-25% Carbon T125-C25	
			* (0.1 m/s rotating)			
<b>PRS19C</b> 	Symmetrical, single acting piston/rod seal, no interference on the ID or OD. Preload effected through Helicoil-spring which ensures high pressure on the rounded sealing lips.. Excellent static and dynamic sealing performance. Excellent sealing performance in low and high pressure ranges. Useable for short and long stroke lengths. Low friction in dry running or poor lubrication conditions. Also used for gas applications. Negligible tendency to "stick-slip" effect, small break away loads.	-200°C to +80°C	5 m/s *	150 bar/2200 psi	UHMWPE	
		-200°C to +260°C	5 m/s *	150 bar/2200 psi	PTFE T101-W	
		-200°C to +260°C	5 m/s *	150 bar/2200 psi	PTFE-40% Bronze T120-BR40	
		-200°C to +260°C	5 m/s *	150 bar/2200 psi	PTFE-25% Carbon T125-C25	
			* (0.1 m/s rotating)			
<b>PRS19D</b> 	Symmetrical, single acting piston/rod seal, no interference on the ID or OD. Preload effected through round Helicoil-spring which ensures high pressure on the sealing edges. Excellent static and dynamic sealing performance. Excellent sealing performance in low and high pressure ranges. Useable for short and long stroke lengths. Low friction in dry running or poor lubrication conditions. Negligible tendency to "stick-slip" effect, small break away loads.	-200°C to +80°C	2 m/s	200 bar/2900 psi	UHMWPE	
		-200°C to +260°C	2 m/s	200 bar/2900 psi	PTFE T101-W	
		-200°C to +260°C	2 m/s	200 bar/2900 psi	PTFE-40% Bronze T120-BR40	
		-200°C to +260°C	2 m/s	200 bar/2900 psi	PTFE-25% Carbon T125-C25	
<b>PRS22</b> 	Symmetrical, single acting piston/rod seal, no interference on the ID or OD. Stabilisation of the sealing ring by an additional retainer ring. Excellent static and dynamic sealing performance. Excellent performance in low pressure conditions. Useable for long stroke lengths. Negligible tendency to "stick-slip" effect above a speed of 0.15 m/s.	-30°C to +105°C	0.5 m/s	400 bar/5800 psi	PU Red U203-95	POM P101-WE
		-30°C to +105°C	0.5 m/s	400 bar/5800 psi	PU 57 MoS2 Grey U203-GM95	POM P101-WE
		-25°C to +100°C	0.5 m/s	150 bar/2200 psi	NBR 85 N107-85	POM P101-WE
		-25°C to +150°C	0.5 m/s	150 bar/2200 psi	HNBR 85 HN112-B85	PEEK PK100-CN
		-20°C to +210°C	0.5 m/s	150 bar/2200 psi	FPM 85 F109-BR85	PEEK PK100-CN
<b>PRS99</b> 	Variable pressure ring for vee packings PRS10-12 Excellent static and dynamic sealing performance. Excellent performance in high pressure conditions. Useable for short and long stroke lengths. High wear resistance.	-30°C to +105°C	0.5 m/s	400 bar/5800 psi	PU Red U203-95	NBR 70
		-30°C to +105°C	0.5 m/s	400 bar/5800 psi	PU 57 MoS2 Grey U203-GM95	NBR 70
		-25°C to +100°C	0.5 m/s	150 bar/2200 psi	NBR 85 N107-85	NBR 70
		-25°C to +150°C	0.5 m/s	150 bar/2200 psi	HNBR 85 HN112-B85	FPM 85
		-20°C to +210°C	0.5 m/s	150 bar/2200 psi	FPM 85 F109-BR85	FPM 85










## CUSTOM BACK-UP RINGS







<b>BUR08</b> 	Normally cut at an angle for easy installation, but also available as non-split version. Low dynamic friction. Low break-away forces after long standstills. Activated back-up rings reduce extrusion gap and prevent twisting of the seal in the groove.	-30°C to +105°C	N/A	N/A	PU 57 MoS2 Grey U203-GM95	
		-60°C to +100°C	N/A	N/A	POM P101-WE NBR70	
		-200°C to +80°C	N/A	N/A	UHMWPE	
		-200°C to +260°C	N/A	N/A	PTFE-25% Carbon T125-C25	
		-50°C to +250°C	N/A	N/A	PEEK PK100-CN FPM75	
<b>BUR09</b> 	Especially designed for use with O-Rings. Improved form stability of the elastomer O-Ring. Bigger contact area of the O-Ring compared to BUR08 creating less deformation. Normally cut at an angle for easy installation, but also available as non-split version. Low dynamic friction. Low break-away forces after long standstills. Activated back-up rings reduce extrusion gap and prevent twisting of the seal in the groove.	-30°C to +105°C	N/A	N/A	PU 57 MoS2 Grey U203-GM95	
		-60°C to +100°C	N/A	N/A	POM P101-WE NBR70	
		-200°C to +80°C	N/A	N/A	UHMWPE	
		-200°C to +260°C	N/A	N/A	PTFE-25% Carbon T125-C25	
		-50°C to +250°C	N/A	N/A	PEEK PK100-CN FPM75	
<b>BUR10</b> 	Back-up rings or Anti Extrusion Rings do not have a sealing function. They are designed to prevent elastic sealing elements of extrusion gap. Features Active Anti Extrusion Ring for Piston Seal PS02. Reduced gap extrusion of the elastomer seal and/or higher pressures up to 700bar possible Prevention of twisting of the seal in the groove. Available as split non-split version.	-30°C to +105°C	N/A	N/A	PU 57 MoS2 Grey U203-GM95	
		-60°C to +100°C	N/A	N/A	POM P101-WE NBR70	
		-200°C to +80°C	N/A	N/A	UHMWPE	
		-200°C to +260°C	N/A	N/A	PTFE-25% Carbon T125-C25	
		-50°C to +250°C	N/A	N/A	PEEK PK100-CN FPM75	
<b>BUR11</b> 	Active Anti Extrusion Ring for Rod Seal RS02. Reduced extrusion gap of the elastomer seal and/or higher pressures up to 700bar possible Prevention of twisting of the seal in the groove. Available as split non-split version.	-30°C to +105°C	N/A	N/A	PU 57 MoS2 Grey U203-GM95	
		-60°C to +100°C	N/A	N/A	POM P101-WE NBR70	
		-200°C to +80°C	N/A	N/A	UHMWPE	
		-200°C to +260°C	N/A	N/A	PTFE-25% Carbon T125-C25	
		-50°C to +250°C	N/A	N/A	PEEK PK100-CN FPM75	
<b>BUR12</b> 	Triangular Anti Extrusion Ring for Rod applications. Special housing designs required. Reduced extrusion gap of the elastomer seal and/or higher pressures up to 700bar possible. Available as split and non-split version.	-30°C to +105°C	N/A	N/A	PU 57 MoS2 Grey U203-GM95	
		-60°C to +100°C	N/A	N/A	POM P101-WE NBR70	
		-200°C to +80°C	N/A	N/A	UHMWPE	
		-200°C to +260°C	N/A	N/A	PTFE-25% Carbon T125-C25	
		-50°C to +250°C	N/A	N/A	PEEK PK100-CN FPM75	
<b>BUR13</b> 	Triangular Anti Extrusion Ring for Piston applications. Special housing designs required. Reduced extrusion gap of the elastomer seal and/or higher pressures up to 700bar possible. Available as split and non-split version.	-30°C to +105°C	N/A	N/A	PU 57 MoS2 Grey U203-GM95	
		-60°C to +100°C	N/A	N/A	POM P101-WE NBR70	
		-200°C to +80°C	N/A	N/A	UHMWPE	
		-200°C to +260°C	N/A	N/A	PTFE-25% Carbon T125-C25	
		-50°C to +250°C	N/A	N/A	PEEK PK100-CN FPM75	

Profile	Description	Temperature	Speed max.	Pressure max.	Seal Material	Other Materials
<b>BWR01</b> 	Normally cut at an angle for easy installation, but also available as non-split version. Low dynamic friction. Low break-away forces after long standstills.	-60°C to +100°C	Contact us	N/A	POM P101-WE NBR70	
		-200°C to +80°C	Contact us	N/A	UHMWPE	
		-200°C to +260°C	Contact us	N/A	PTFE-25% Carbon T125-C25	
		-50°C to +250°C	Contact us	N/A	PEEK PK100-CN FPM75	
<b>BWR01A</b> 	Spiral groove on the outside diameter for better lubrication. Normally cut at an angle for easy installation, but also available as non-split version. Low dynamic friction. Low break-away forces after long standstills.	-60°C to +100°C	Contact us	N/A	POM P101-WE NBR70	
		-200°C to +80°C	Contact us	N/A	UHMWPE	
		-200°C to +260°C	Contact us	N/A	PTFE-25% Carbon T125-C25	
		-50°C to +250°C	Contact us	N/A	PEEK PK100-CN FPM75	
<b>BWR03</b> 	Normally cut at an angle for easy installation, but also available as non-split version. For use in piston applications. Design combines guiding and back-up ring function. Low dynamic friction. Low break-away forces after long standstills.	-60°C to +100°C	Contact us	N/A	POM P101-WE NBR70	
		-200°C to +80°C	Contact us	N/A	UHMWPE	
		-200°C to +260°C	Contact us	N/A	PTFE-25% Carbon T125-C25	
		-50°C to +250°C	Contact us	N/A	PEEK PK100-CN FPM75	
<b>BWR04</b> 	Normally cut at an angle for easy installation, but also available as non-split version. For use in rod applications. Design combines guiding and back-up ring function. Low dynamic friction. Low break-away forces after long standstills.	-60°C to +100°C	Contact us	N/A	POM P101-WE NBR70	
		-200°C to +80°C	Contact us	N/A	UHMWPE	
		-200°C to +260°C	Contact us	N/A	PTFE-25% Carbon T125-C25	
		-50°C to +250°C	Contact us	N/A	PEEK PK100-CN FPM75	
<b>BWR05</b> 	Normally cut at an angle for easy installation, but also available as non-split version. For use in piston applications. Integrated collar on inside diameter. Low dynamic friction. Low break-away forces after long standstills.	-60°C to +100°C	Contact us	N/A	POM P101-WE NBR70	
		-200°C to +80°C	Contact us	N/A	UHMWPE	
		-200°C to +260°C	Contact us	N/A	PTFE-25% Carbon T125-C25	
		-50°C to +250°C	Contact us	N/A	PEEK PK100-CN FPM75	
<b>BWR06</b> 	Normally cut at an angle for easy installation, but also available as non-split version. For use in rod applications. Integrated collar on outside diameter. Low dynamic friction. Low break-away forces after long standstills.	-60°C to +100°C	Contact us	N/A	POM P101-WE NBR70	
		-200°C to +80°C	Contact us	N/A	UHMWPE	
		-200°C to +260°C	Contact us	N/A	PTFE-25% Carbon T125-C25	
		-50°C to +250°C	Contact us	N/A	PEEK PK100-CN FPM75	
<b>BWR07</b> 	Normally cut at an angle for easy installation, but also available as non-split version. For use in piston applications. Integrated collar on Inside diameter. Design combines guiding and back-up ring function. Low dynamic friction. Low break-away forces after long standstills.	-60°C to +100°C	Contact us	N/A	POM P101-WE NBR70	
		-200°C to +80°C	Contact us	N/A	UHMWPE	
		-200°C to +260°C	Contact us	N/A	PTFE-25% Carbon T125-C25	
		-50°C to +250°C	Contact us	N/A	PEEK PK100-CN FPM75	
<b>BWR08</b> 	Normally cut at an angle for easy installation, but also available as non-split version. For use in rod applications. Integrated collar on outside diameter. Design combines guiding and back-up ring function. Low dynamic friction. Low break-away forces after long standstills.	-60°C to +100°C	Contact us	N/A	POM P101-WE NBR70	
		-200°C to +80°C	Contact us	N/A	UHMWPE	
		-200°C to +260°C	Contact us	N/A	PTFE-25% Carbon T125-C25	
		-50°C to +250°C	Contact us	N/A	PEEK PK100-CN FPM75	

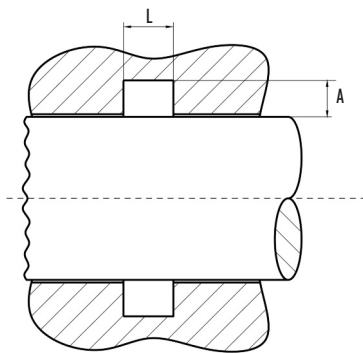
Profile	Description	Temperature	Speed max.	Pressure max.	Seal Material	Other Materials
<b>OS01</b> 	The profile is designed with interference on the OD which provides a good static fit, preventing the entry of humidity and other contamination via the outside diameter. Tight seat in the housing and an additional retainer ring in hard plastic or Aluminium / Steel ensures that the seal is held in place. Tension spring for increasing the bonding force. Not suitable for high pressure from the trailing side.	-30°C to +105°C	5 m/s	0.5 bar/7 PSI	PU Red U203-95	POM P101-WE NBR 70
		-25°C to +100°C	10 m/s	0.5 bar/7 PSI	NBR 85 N107-85	POM P101-WE NBR 70
		-20°C to +210°C	15 m/s	0.5 bar/7 PSI	FPM 85 F109-BR85	PTFE-25% Carbon T125-C25
<b>OS02</b> 	The profile is designed with interference on the OD which provides a good static fit, preventing the entry of humidity and other contamination via the outside diameter. Additional dust lip for protecting the sealing lip. Tight seat in the housing and an additional retainer ring in hard plastic or Aluminium / Steel ensures that the seal is held in place. Tension spring for increasing the bonding force. Not suitable for high pressure from the trailing side.	-30°C to +105°C	5 m/s	0.5 bar/7 PSI	PU Red U203-95	POM P101-WE NBR 70
		-25°C to +100°C	10 m/s	0.5 bar/7 PSI	NBR 85 N107-85	POM P101-WE NBR 70
		-20°C to +210°C	15 m/s	0.5 bar/7 PSI	FPM 85 F109-BR85	PTFE-25% Carbon T125-C25
<b>OS08</b> 	The profile is designed with interference on the OD which provides a good static fit, preventing the entry of humidity and other contamination via the outside diameter. Springless preloaded sealing lip which enables a compact design. Small friction and low heat build-up. Not suitable for pressure from the trailing side.	-30°C to +105°C	5 m/s	N/A	PU Red U203-95	
		-30°C to +105°C	7 m/s	N/A	PU 57 MoS2 Grey U203-GM95	
		-25°C to +100°C	10 m/s	N/A	NBR 85 N107-85	
		-25°C to +150°C	10 m/s	N/A	HNBR 85 HN112-B85	
		-20°C to +210°C	10 m/s	N/A	FPM 85 F109-BR85	
<b>R03</b> 	Symmetrical, double acting rotary seal for high pressures and low speeds, designed with interference on the OD which provides a good static fit in the groove. Dynamic sealing on the ID. Backup elements on the left and right side for maintaining the function also at large sealing gaps. Excellent static and dynamic sealing performance.	-30°C to +105°C	0.2 m/s	400 bar/5800 psi	PU Red U203-95	POM P101-WE NBR 70
		-30°C to +105°C	0.2 m/s	400 bar/5800 psi	PU 57 MoS2 Grey U203-GM95	POM P101-WE NBR 70
		-25°C to +100°C	0.2 m/s	200 bar/2900 psi	NBR 85 N107-85	POM P101-WE NBR 70
		-25°C to +150°C	0.2 m/s	200 bar/2900 psi	HNBR 85 HN112-B85	PEEK PK100-CN FPM 75
		-20°C to +210°C	0.2 m/s	200 bar/2900 psi	FPM 85 F109-BR85	PEEK PK100-CN FPM 75
<b>R04</b> 	Symmetrical, double acting rotary seal, designed with interference on the OD which provides a good static fit in the groove. Dynamic sealing on the ID. Excellent static and dynamic sealing performance. Low friction.	-30°C to +105°C	0.2 m/s	160 bar/2300 psi	PU Red U203-95	
		-30°C to +105°C	0.2 m/s	160 bar/2300 psi	PU 57 MoS2 Grey U203-GM95	
		-25°C to +100°C	0.2 m/s	100 bar/1400 psi	NBR 85 N107-85	
		-25°C to +150°C	0.2 m/s	100 bar/1400 psi	HNBR 85 HN112-B85	
		-20°C to +210°C	0.2 m/s	100 bar/1400 psi	FPM 85 F109-BR85	
<b>R04A</b> 	Symmetrical, double acting rotary seal, designed with interference on the OD which provides a good static fit in the groove. Dynamic sealing on the ID. Excellent static and dynamic sealing performance. Low friction.	-30°C to +105°C	0.2 m/s	160 bar/2300 psi	PU Red U203-95	
		-30°C to +105°C	0.2 m/s	160 bar/2300 psi	PU 57 MoS2 Grey U203-GM95	
		-25°C to +100°C	0.2 m/s	100 bar/1400 psi	NBR 85 N107-85	
		-25°C to +150°C	0.2 m/s	100 bar/1400 psi	HNBR 85 HN112-B85	
		-20°C to +210°C	0.2 m/s	100 bar/1400 psi	FPM 85 F109-BR85	
<b>R05</b> 	Symmetrical, double acting rotary seal, designed with interference on the ID which provides a good static fit in the groove. Dynamic sealing on the OD. Excellent static and dynamic sealing performance. Low friction.	-30°C to +105°C	0.2 m/s	160 bar/2300 psi	PU Red U203-95	
		-30°C to +105°C	0.2 m/s	160 bar/2300 psi	PU 57 MoS2 Grey U203-GM95	
		-25°C to +100°C	0.2 m/s	100 bar/1400 psi	NBR 85 N107-85	
		-25°C to +150°C	0.2 m/s	100 bar/1400 psi	HNBR 85 HN112-B85	
		-20°C to +210°C	0.2 m/s	100 bar/1400 psi	FPM 85 F109-BR85	
<b>R05A</b> 	Symmetrical, double acting rotary seal, designed with interference on the ID which provides a good static fit in the groove. Dynamic sealing on the OD. Excellent static and dynamic sealing performance. Low friction.	-30°C to +105°C	0.2 m/s	160 bar/2300 psi	PU Red U203-95	
		-30°C to +105°C	0.2 m/s	160 bar/2300 psi	PU 57 MoS2 Grey U203-GM95	
		-25°C to +100°C	0.2 m/s	100 bar/1400 psi	NBR 85 N107-85	
		-25°C to +150°C	0.2 m/s	100 bar/1400 psi	HNBR 85 HN112-B85	
		-20°C to +210°C	0.2 m/s	100 bar/1400 psi	FPM 85 F109-BR85	
<b>VR06</b> 	Rotary seal, designed with interference on the ID which provides a good static fit on the shaft and ensures the seal rotates with the shaft. Axial dynamic sealing lip vertical to the rod. Small contact pressure of the sealing lip that enables also "dry running". Low friction on the sealing lip - decreasing with the rotation speed as a result of the centrifugal force. Little abrasion and long lifetime. Ensurance of sealing also at eccentric rods or rod misalignments. Pressure must be avoided.	-30°C to +105°C	25 m/s	N/A	PU Red U203-95	
		-30°C to +105°C	25 m/s	N/A	PU 57 MoS2 Grey U203-GM95	
		-25°C to +100°C	25 m/s	N/A	NBR 85 N107-85	
		-25°C to +150°C	25 m/s	N/A	HNBR 85 HN112-B85	
		-20°C to +210°C	25 m/s	N/A	FPM 85 F109-BR85	
<b>VR07</b> 	Rotary seal, designed with interference on the ID which provides a good static fit on the shaft and ensures the seal rotates with the shaft. Axial dynamic sealing lip vertical to the rod. Small contact pressure of the sealing lip that enables also "dry running". Low friction on the sealing lip - decreasing with the rotation speed as a result of the centrifugal force. Little abrasion and long lifetime. Ensures of sealing also at eccentric rods or rod misalignments. Pressure must be avoided.	-30°C to +105°C	25 m/s	N/A	PU Red U203-95	
		-30°C to +105°C	25 m/s	N/A	PU 57 MoS2 Grey U203-GM95	
		-25°C to +100°C	25 m/s	N/A	NBR 85 N107-85	
		-25°C to +150°C	25 m/s	N/A	HNBR 85 HN112-B85	
		-20°C to +210°C	25 m/s	N/A	FPM 85 F109-BR85	

Profile	Description	Temperature	Speed max.	Pressure max.	Seal Material	Other Materials
<b>R08</b> 		-30°C to +105°C	0.4 m/s	350 bar/5000 psi	PU 57 MoS2 Grey U203-GM95	NBR 70
		-60°C to +80°C	0.4 m/s	350 bar/5000 psi	UHMWPE	NBR 70
		-20°C to +210°C	0.4 m/s	350 bar/5000 psi	PTFE T101-W	FPM 75
		-20°C to +210°C	0.4 m/s	350 bar/5000 psi	PTFE-40% Bronze T120-BR40	FPM 75
		-20°C to +210°C	0.4 m/s	350 bar/5000 psi	PTFE-25% Carbon T125-C25	FPM 75
<b>R08D</b> 		-30°C to +105°C	0.4 m/s	350 bar/5000 psi	PU 57 MoS2 Grey U203-GM95	NBR 70
		-60°C to +80°C	0.4 m/s	350 bar/5000 psi	UHMWPE	NBR 70
		-20°C to +210°C	0.4 m/s	350 bar/5000 psi	PTFE T101-W	FPM 75
		-20°C to +210°C	0.4 m/s	350 bar/5000 psi	PTFE-40% Bronze T120-BR40	FPM 75
		-20°C to +210°C	0.4 m/s	350 bar/5000 psi	PTFE-25% Carbon T125-C25	FPM 75
<b>R09</b> 		-30°C to +105°C	0.4 m/s	350 bar/5000 psi	PU 57 MoS2 Grey U203-GM95	NBR 70
		-60°C to +80°C	0.4 m/s	350 bar/5000 psi	UHMWPE	NBR 70
		-20°C to +210°C	0.4 m/s	350 bar/5000 psi	PTFE T101-W	FPM 75
		-20°C to +210°C	0.4 m/s	350 bar/5000 psi	PTFE-40% Bronze T120-BR40	FPM 75
		-20°C to +210°C	0.4 m/s	350 bar/5000 psi	PTFE-25% Carbon T125-C25	FPM 75
<b>R09A</b> 		-30°C to +105°C	0.4 m/s	350 bar/5000 psi	PU 57 MoS2 Grey U203-GM95	NBR 85
		-60°C to +80°C	0.4 m/s	350 bar/5000 psi	UHMWPE	NBR 85
		-20°C to +210°C	0.4 m/s	350 bar/5000 psi	PTFE T101-W	FPM 85
		-20°C to +210°C	0.4 m/s	350 bar/5000 psi	PTFE-40% Bronze T120-BR40	FPM 85
		-20°C to +210°C	0.4 m/s	350 bar/5000 psi	PTFE-25% Carbon T125-C25	FPM 85
<b>R10</b> 		-30°C to +105°C	0.4 m/s	350 bar/5000 psi	PU 57 MoS2 Grey U203-GM95	NBR 70
		-60°C to +80°C	0.4 m/s	350 bar/5000 psi	UHMWPE	NBR 70
		-20°C to +210°C	0.4 m/s	350 bar/5000 psi	PTFE T101-W	FPM 75
		-20°C to +210°C	0.4 m/s	350 bar/5000 psi	PTFE-40% Bronze T120-BR40	FPM 75
		-20°C to +210°C	0.4 m/s	350 bar/5000 psi	PTFE-25% Carbon T125-C25	FPM 75
<b>R10A</b> 		-30°C to +105°C	0.4 m/s	350 bar/5000 psi	PU 57 MoS2 Grey U203-GM95	NBR 85
		-60°C to +80°C	0.4 m/s	350 bar/5000 psi	UHMWPE	NBR 85
		-20°C to +210°C	0.4 m/s	350 bar/5000 psi	PTFE T101-W	FPM 85
		-20°C to +210°C	0.4 m/s	350 bar/5000 psi	PTFE-40% Bronze T120-BR40	FPM 85
		-20°C to +210°C	0.4 m/s	350 bar/5000 psi	PTFE-25% Carbon T125-C25	FPM 85
<b>R11</b> 		-30°C to +105°C	0.4 m/s	350 bar/5000 psi	PU 57 MoS2 Grey U203-GM95	NBR 70
		-60°C to +80°C	0.4 m/s	350 bar/5000 psi	UHMWPE	NBR 70
		-20°C to +210°C	0.4 m/s	350 bar/5000 psi	PTFE T101-W	FPM 75
		-20°C to +210°C	0.4 m/s	350 bar/5000 psi	PTFE-40% Bronze T120-BR40	FPM 75
		-20°C to +210°C	0.4 m/s	350 bar/5000 psi	PTFE-25% Carbon T125-C25	FPM 75
<b>RS19A</b> 		-200°C to +80°C	2 m/s	150 bar/2200 psi	UHMWPE	
		-200°C to +260°C	2 m/s	150 bar/2200 psi	PTFE T101-W	
		-200°C to +260°C	2 m/s	150 bar/2200 psi	PTFE-40% Bronze T120-BR40	
		-200°C to +260°C	2 m/s	150 bar/2200 psi	PTFE-25% Carbon T125-C25	
<b>PS19A</b> 		-200°C to +80°C	2 m/s	150 bar/2200 psi	UHMWPE	
		-200°C to +260°C	2 m/s	150 bar/2200 psi	PTFE T101-W	
		-200°C to +260°C	2 m/s	150 bar/2200 psi	PTFE-40% Bronze T120-BR40	
		-200°C to +260°C	2 m/s	150 bar/2200 psi	PTFE-25% Carbon T125-C25	

Profile	Description	Temperature	Speed max.	Pressure max.	Seal Material	Other Materials
<b>FL01A</b> 	Especially designed for pressure from outside. Simple seal designed to maintain low costs. Variable dimensions to be used also in special dimensioned grooves. Sealing over a wide range of pressures, temperatures and tolerances. Wide application range. Simple mounting. Compact and simple grooves.	-30°C to +105°C	N/A	Contact us	PU Red U203-95	
		-30°C to +105°C	N/A	Contact us	PU 57 MoS2 Grey U203-GM95	
		-25°C to +100°C	N/A	Contact us	NBR 85 N107-85	
		-25°C to +150°C	N/A	Contact us	HNBR 85 HN112-B85	
		-20°C to +210°C	N/A	Contact us	FPM 85 F109-BR85	
<b>FL02B</b> 	Especially designed for pressure from inside. Simple seal designed to maintain low costs. Variable dimensions to be used also in special dimensioned grooves. Sealing over a wide range of pressures, temperatures and tolerances. Wide application range. Simple mounting. Compact and simple grooves.	-30°C to +105°C	N/A	Contact us	PU Red U203-95	
		-30°C to +105°C	N/A	Contact us	PU 57 MoS2 Grey U203-GM95	
		-25°C to +100°C	N/A	Contact us	NBR 85 N107-85	
		-25°C to +150°C	N/A	Contact us	HNBR 85 HN112-B85	
		-20°C to +210°C	N/A	Contact us	FPM 85 F109-BR85	
<b>FL03</b> 	Simple seal designed to maintain low costs. Variable dimensions to be used also in special dimensioned grooves. Sealing over a wide range of pressures, temperatures and tolerances. Wide application range. Simple mounting. Compact and simple grooves.	-30°C to +105°C	N/A	Contact us	PU Red U203-95	
		-30°C to +105°C	N/A	Contact us	PU 57 MoS2 Grey U203-GM95	
		-25°C to +100°C	N/A	Contact us	NBR 85 N107-85	
		-25°C to +150°C	N/A	Contact us	HNBR 85 HN112-B85	
		-20°C to +210°C	N/A	Contact us	FPM 85 F109-BR85	
<b>FL06</b> 	A spring energised face seal for internal pressure. This profile offers high static sealing integrity over a wide temperature range with excellent chemical compatibility. Low bolt loading is required between flanges due to the flexible spring energisation of the seal. Can also be used in some rotary applications as a face seal.	-200°C to +80°C	Contact us	250 bar/3500 psi	UHMWPE	
		-200°C to +260°C	Contact us	250 bar/3500 psi	PTFE T101-W	
		-200°C to +260°C	Contact us	250 bar/3500 psi	PTFE-40% Bronze T120-BR40	
		-200°C to +260°C	Contact us	250 bar/3500 psi	PTFE-25% Carbon T125-C25	
<b>OR</b> 	Sealing over a wide range of pressures, temperatures and tolerances. Simple and compact design. Symmetrical profile cross section. Wide application ranges. Simple mounting. Compact and simple grooves. Easy and cost saving constructions possible.	-30°C to +105°C	Contact us	Contact us	PU Red U203-95	
		-25°C to +100°C	Contact us	Contact us	NBR 85 N107-85	
		-25°C to +150°C	Contact us	Contact us	HNBR 85 HN112-B85	
		-20°C to +210°C	Contact us	Contact us	FPM 85 F109-BR85	
		-200°C to +260°C	Contact us	Contact us	PTFE T101-W	
<b>ORH</b> 	Used for special dimensioned grooves. Sealing over a wide range of pressures, temperatures and tolerances. Simple and compact design. Symmetrical profile cross section. Wide application ranges. Simple mounting. Compact and simple grooves. Easy and cost saving constructions possible.	-30°C to +105°C	Contact us	Contact us	PU Red U203-95	
		-25°C to +100°C	Contact us	Contact us	NBR 85 N107-85	
		-25°C to +150°C	Contact us	Contact us	HNBR 85 HN112-B85	
		-20°C to +210°C	Contact us	Contact us	FPM 85 F109-BR85	
		-200°C to +260°C	Contact us	Contact us	PTFE T101-W	
<b>ORV</b> 	Used for special dimensioned grooves. Sealing over a wide range of pressures, temperatures and tolerances. Simple and compact design. Symmetrical profile cross section. Wide application ranges. Simple mounting. Compact and simple grooves. Easy and cost saving constructions possible.	-30°C to +105°C	Contact us	Contact us	PU Red U203-95	
		-25°C to +100°C	Contact us	Contact us	NBR 85 N107-85	
		-25°C to +150°C	Contact us	Contact us	HNBR 85 HN112-B85	
		-20°C to +210°C	Contact us	Contact us	FPM 85 F109-BR85	
		-200°C to +260°C	Contact us	Contact us	PTFE T101-W	
<b>QR01</b> 	Better pressure distribution compared to O-Rings. Used for special dimensioned grooves. Sealing over a wide range of pressures, temperatures and tolerances. Wide application ranges. Simple mounting. Compact and simple grooves. Easy and cost saving constructions possible.	-30°C to +105°C	Contact us	Contact us	PU Red U203-95	
		-25°C to +100°C	Contact us	Contact us	NBR 85 N107-85	
		-25°C to +150°C	Contact us	Contact us	HNBR 85 HN112-B85	
		-20°C to +210°C	Contact us	Contact us	FPM 85 F109-BR85	
		-200°C to +260°C	Contact us	Contact us	PTFE T101-W	
<b>SS01</b> 	Better pressure distribution compared to O-Rings. Flexible dimensioning of the seal for use also in special dimensioned grooves. Sealing over a wide range of pressures, temperatures and tolerances. Wide application ranges. Simple mounting. Compact and simple grooves. Easy and cost saving constructions possible.	-30°C to +105°C	Contact us	Contact us	PU Red U203-95	
		-25°C to +100°C	Contact us	Contact us	NBR 85 N107-85	
		-25°C to +150°C	Contact us	Contact us	HNBR 85 HN112-B85	
		-20°C to +210°C	Contact us	Contact us	FPM 85 F109-BR85	
		-200°C to +260°C	Contact us	Contact us	PTFE T101-W	

Profile	Description	Temperature	Speed max.	Pressure max.	Seal Material	Other Materials
<b>P50</b> 	Double acting piston seal, designed with interference on the ID which provides a good static fit in the groove. Consisting of one elastic sealing element and two back-up elements. Useable for short and long stroke lengths. Good static and dynamic sealing performance. High frictional force.	-30°C to +105°C	0.5 m/s	400 bar/5800 psi*	PU Red U203-95	NBR 85 N107-85 POM P101-WE
		-30°C to +105°C	0.5 m/s	400 bar/5800 psi*	PU MoS2 Grey U203-GM95	NBR 85 N107-85 POM P101-WE
		-30°C to +105°C	0.5 m/s	400 bar/5800 psi*	PU 57 MoS2 Grey U203-GM95	NBR 85 N107-85 POM P101-WE
<b>P51</b> 	Double acting piston seal, designed with interference on the ID which provides a good static fit in the groove. Consisting of one gliding, one energizing and two back-up elements. Useable for short and long stroke lengths. Good static and dynamic sealing performance. High frictional force. No drag pressure build-up.	-30°C to +105°C	0.5 m/s	400 bar/5800 psi*	PU Red U203-95	NBR 85 N107-85 POM P101-WE
		-30°C to +105°C	0.5 m/s	400 bar/5800 psi*	PU MoS2 Grey U203-GM95	NBR 85 N107-85 POM P101-WE
		-30°C to +105°C	0.5 m/s	400 bar/5800 psi*	PU 57 MoS2 Grey U203-GM95	NBR 85 N107-85 POM P101-WE
<b>P51G</b> 	Double acting piston seal, designed with interference on the ID which provides a good static fit in the groove. Consisting of one gliding, one energizing and two back-up elements. Useable for short and long stroke lengths. Good static and dynamic sealing performance. High frictional force. No drag pressure build-up.	-30°C to +105°C	0.5 m/s	400 bar/5800 psi*	PU Red U203-95	NBR 85 N107-85 POM P101-WE
		-30°C to +105°C	0.5 m/s	400 bar/5800 psi*	PU MoS2 Grey U203-GM95	NBR 85 N107-85 POM P101-WE
		-30°C to +105°C	0.5 m/s	400 bar/5800 psi*	PU 57 MoS2 Grey U203-GM95	NBR 85 N107-85 POM P101-WE
<b>P52</b> 	Double acting piston seal, designed with interference on the ID which provides a good static fit in the groove. Consisting of one elastic sealing element and two back-up elements that also have guiding properties. Useable for short and long stroke lengths. Good static and dynamic sealing performance. High frictional force. No drag pressure build-up.	-30°C to +105°C	0.5 m/s	700 bar/10.000 psi*	PU Red U203-95	NBR 85 N107-85 POM P101-WE
		-30°C to +105°C	0.5 m/s	700 bar/10.000 psi*	PU Red U203-95	NBR 85 N107-85 POM P101-WE
		-30°C to +105°C	0.5 m/s	700 bar/10.000 psi*	PU Red U203-95	NBR 85 N107-85 POM P101-WE
<b>P53</b> 	Double acting piston seal, designed with interference on the ID which provides a good static fit in the groove. Consisting of one gliding, one energizing and two integrated back-up elements that also have guiding properties. Useable for short and long stroke lengths. Good static and dynamic sealing performance. High frictional force. No drag pressure build-up.	-30°C to +105°C	0.5 m/s	700 bar/10.000 psi*	PU Red U203-95	NBR 85 N107-85 POM P101-WE
		-30°C to +105°C	0.5 m/s	700 bar/10.000 psi*	PU Red U203-95	NBR 85 N107-85 POM P101-WE
		-30°C to +105°C	0.5 m/s	700 bar/10.000 psi*	PU Red U203-95	NBR 85 N107-85 POM P101-WE
<b>P54</b> 	Double acting piston seal, designed with interference on the ID which provides a good static fit in the groove. Consisting of one gliding, one energizing and two integrated guiding / back-up elements. Useable for short and long stroke lengths. Good dynamic and static sealing performance. High frictional force.	-30°C to +105°C	0.5 m/s	400 bar/5800 psi*	PU Red U203-95	NBR 85 N107-85 POM P101-WE
		-30°C to +105°C	0.5 m/s	400 bar/5800 psi*	PU MoS2 Grey U203-GM95	NBR 85 N107-85 POM P101-WE
		-30°C to +105°C	0.5 m/s	400 bar/5800 psi*	PU 57 MoS2 Grey U203-GM95	NBR 85 N107-85 POM P101-WE

## TYPICAL O-RING AND BACK-UP HOUSING SIZES

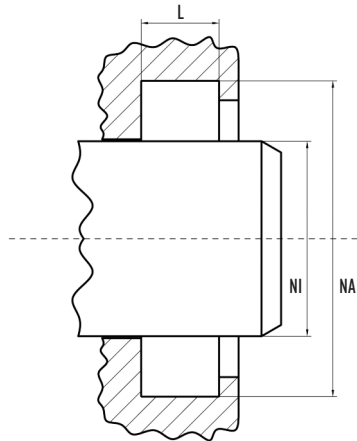


Please refer to the O-Ring charts for standard O-Ring sizes

O-ring section	A	L No back-up ring	L One back-up ring	L Two back-up rings	Back-up width
1.50	1.10mm	2.10mm	3.10mm	4.10mm	1.00mm
1.78	1.35mm	2.50mm	3.50mm	4.50mm	1.00mm
2.00	1.56mm	2.70mm	4.20mm	5.70mm	1.50mm
2.50	2.05mm	3.30mm	4.80mm	6.30mm	1.50mm
2.62	2.18mm	3.50mm	5.00mm	6.50mm	1.50mm
3.00	2.50mm	3.90mm	5.40mm	6.90mm	1.50mm
3.53	3.00mm	4.40mm	5.90mm	7.40mm	1.50mm
4.00	3.40mm	5.00mm	6.70mm	8.40mm	1.70mm
5.00	4.25mm	6.30mm	8.00mm	9.70mm	1.70mm
5.33	4.50mm	6.70mm	8.40mm	10.10mm	1.70mm
5.70	4.85mm	7.10mm	9.10mm	11.10mm	2.00mm
6.00	5.10mm	7.50mm	9.50mm	11.50mm	2.00mm
6.99	5.94mm	8.80mm	10.80mm	12.80mm	2.00mm



## Tolerances



## Tolerances

L < 10mm	+ 0.2mm
L ≥ 10mm	+ 0.3mm
∅ NA	H 11
∅ NI	f 8

## Surface roughness

	Rt max	Ra
Bottom of groove	≤ 6.3 μm	≤ 1.6 μm
Face of groove	≤ 15 μm	≤ 3.0 μm

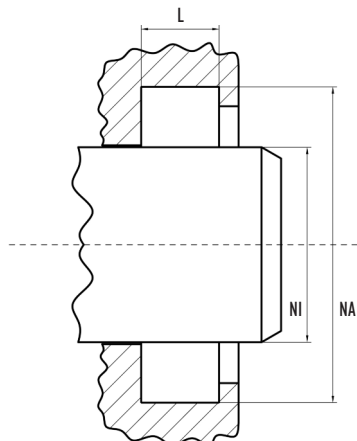
## Sliding surface

PU, elastomers	≤ 2.5 μm	≤ 0.1 - 0.5 μm
PTFE	≤ 2.0 μm	≤ 0.05 - 0.3 μm

NA = Outside diameter NI = Rod diameter L = Groove length

## Profiles

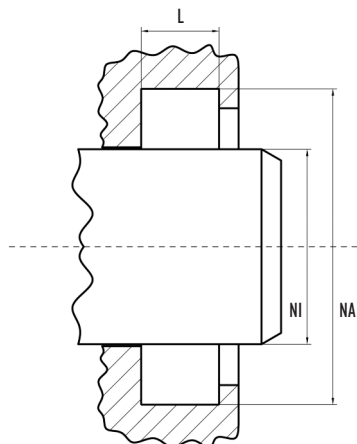
WR01  
WR12



NI	NA	L
6 - 99mm	NI + 8.0mm	4.0mm
100 - 149mm	NI + 12.0mm	5.5mm
> 149mm	NI + 15.0mm	6.5mm

## Profiles

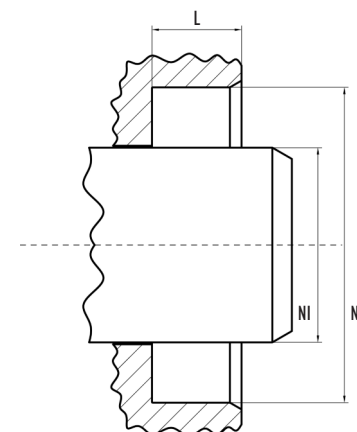
WR02  
WR11



NI	NA	L
6 - 99mm	NI + 8.0mm	5.0mm
100 - 149mm	NI + 10.0mm	6.5mm
> 149mm	NI + 15.0mm	8.5mm

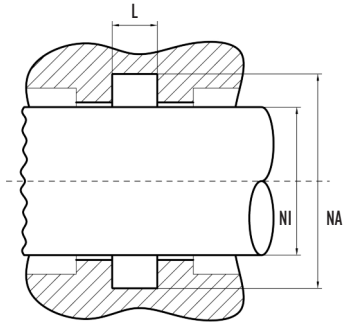
## Profiles

WR03



NI	NA	L
6 - 99mm	NI + 8.0mm	5.0mm
100 - 149mm	NI + 10.0mm	7.5mm
150 - 199mm	NI + 15.0mm	8.5mm
> 200mm	NI + 20.0mm	12.0mm

## Tolerances



## Tolerances

L < 10mm	+ 0.2mm
L ≥ 10mm	+ 0.3mm
∅ NA	H 10
∅ NI	f 8

## Surface roughness

	Rt max	Ra
Bottom of groove	≤ 6.3 μm	≤ 1.6 μm
Face of groove	≤ 15 μm	≤ 3.0 μm

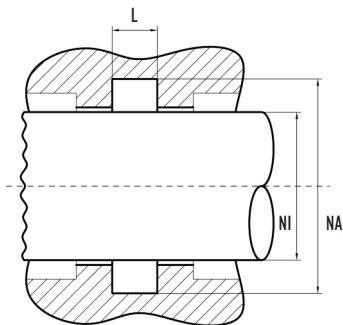
## Sliding surface

PU, elastomers	≤ 2.5 μm	≤ 0.1 - 0.5 μm
PTFE	≤ 2.0 μm	≤ 0.05 - 0.3 μm

NA = Outside diameter NI = Rod diameter L = Groove length

## Profiles

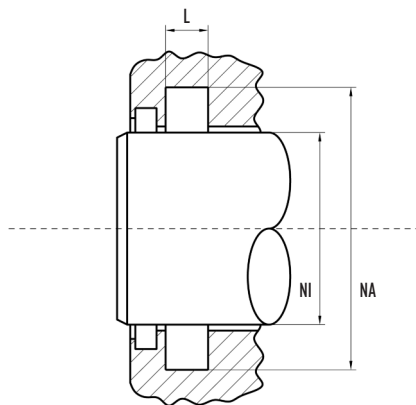
RS01  
RS02  
RS03  
RS04  
RS05  
RS06  
RS07  
RS08  
RS17  
RS19  
RS35



NI	NA	L
6 - 24mm	NI + 8.0mm	6.0mm
25 - 49mm	NI + 10.0mm	8.0mm
40 - 149mm	NI + 15.0mm	10.0mm
150 - 299mm	NI + 20.0mm	15.0mm
300 - 499mm	NI + 25.0mm	18.0mm
500 - 699mm	NI + 30.0mm	25.0mm
> 700mm	NI + 35.0mm	30.0mm

## Profiles

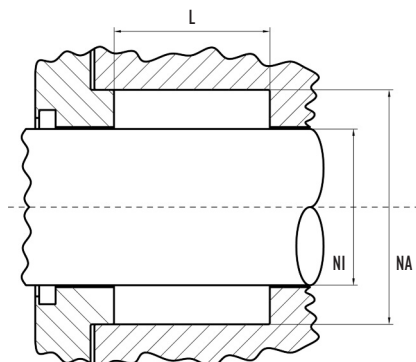
RS09  
RS09A  
RS09B  
RS91  
RS91B



NI	NA	L
5 - 7mm	NI + 4.9mm	2.2mm
8 - 19mm	NI + 7.3mm	2.2mm
20 - 39mm	NI + 10.7mm	4.2mm
40 - 199mm	NI + 15.1mm	6.3mm
200 - 259mm	NI + 20.5mm	8.1mm
260 - 699mm	NI + 24.0mm	8.1mm
> 700mm	NI + 27.3mm	9.5mm

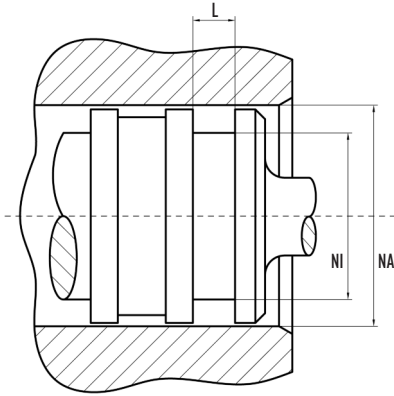
## Profiles

RS31-33  
PRS10-12  
PRS13-15



NI	NA	L
10 - 39mm	NI + 10.0mm	16.0mm
40 - 79mm	NI + 15.0mm	25.0mm
80 - 159mm	NI + 20.0mm	30.5mm
160 - 219mm	NI + 25.0mm	38.0mm
220 - 299mm	NI + 30.0mm	48.0mm
> 300mm	NI + 40.0mm	65.0mm

## Tolerances



## Tolerances

L < 10mm	+ 0.2mm
L ≥ 10mm	+ 0.3mm
Ø NA	H 9
Ø NI	h 10

## Surface roughness

	Rt max	Ra
Bottom of groove	≤ 6.3 μm	≤ 1.6 μm
Face of groove	≤ 15 μm	≤ 3.0 μm

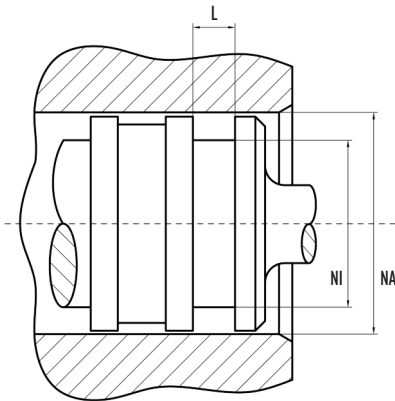
## Sliding surface

PU, elastomers	≤ 2.5 μm	≤ 0.1 - 0.5 μm
PTFE	≤ 2.0 μm	≤ 0.05 - 0.3 μm

NA = Outside diameter NI = Groove diameter L = Groove length

## Profiles

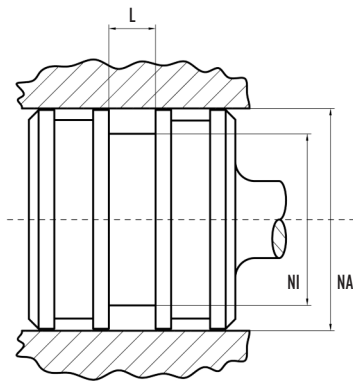
PS01  
PS02  
PS03  
PS04  
PS05  
PS19  
PS35



NA	NI	L
6 - 24mm	NA -8.0mm	6.0mm
25 - 49mm	NA -10.0mm	8.0mm
50 - 74mm	NA -12.0mm	8.5mm
75 - 149mm	NA -16.0mm	10.0mm
150 - 299mm	NA -20.0mm	12.0mm
300 - 499mm	NA -25.0mm	18.0mm
> 500mm	NA -35.0mm	26.0mm

## Profiles

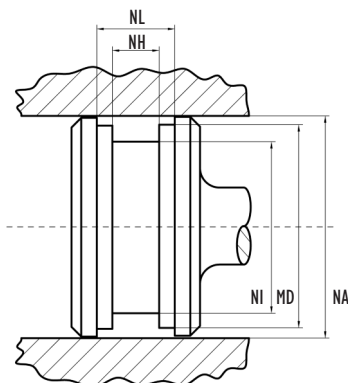
PS08  
PS08A  
PS08B  
PS08C  
PS08E  
PS08F  
PS81



NA	NI	L
8 - 14mm	NA -4.9mm	2.2mm
15 - 39mm	NA -7.5mm	3.2mm
40 - 74mm	NA -11.0mm	4.2mm
75 - 149mm	NA -15.5mm	6.3mm
150 - 299mm	NA -21.0mm	8.1mm
300 - 699mm	NA -24.5mm	8.1mm
> 700mm	NA -28.0mm	9.5mm

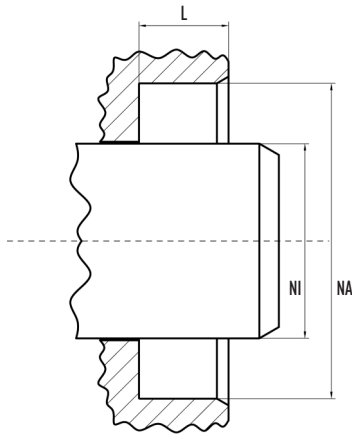
## Profiles

PS09  
PS17



NA	NI	MD	NH	NL
20 - 49mm	NA -20.0mm	NA -3.0mm	12.5mm	20.0mm
50 - 79mm	NA -15.0mm	NA -4.0mm	20.0mm	28.0mm
80 - 149mm	NA -20.0mm	NA -5.0mm	25.0mm	35.0mm
150 - 399mm	NA -25.0mm	NA -6.0mm	30.0mm	45.0mm
400 - 699mm	NA -30.0mm	NA -8.0mm	35.0mm	50.0mm
> 700mm	NA -40.0mm	NA -8.0mm	40.0mm	55.0mm

## Tolerances



## Tolerances

L < 10mm	+ 0.2mm
L ≥ 10mm	+ 0.3mm
∅ NA	H 8
∅ NI	f 7

## Surface roughness

	Rt max	Ra
Bottom of groove	≤ 10 μm	≤ 1.8 μm
Face of groove	≤ 15 μm	≤ 3.0 μm

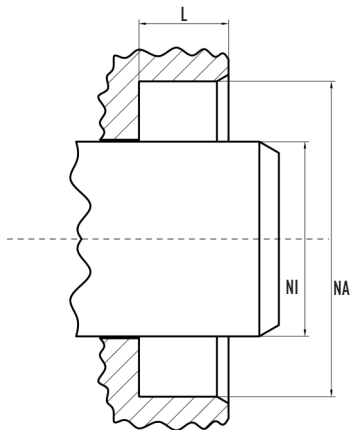
## Sliding surface

PU, elastomers	≤ 2.5 μm	≤ 0.1 - 0.5 μm
PTFE	≤ 2.0 μm	≤ 0.05 - 0.3 μm

NA = Outside diameter NI = Rod diameter L = Groove length

## Profiles

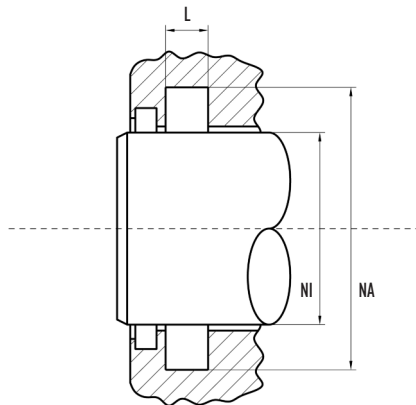
OS01  
OS02



NI	NA	L
6 - 59mm	NI +12.0mm	7.0mm
60 - 149mm	NI +15.0mm	8.0mm
150 - 299mm	NI +20.0mm	10.0mm
300 - 499mm	NI +30.0mm	12.0mm
500 - 699mm	NI +40.0mm	22.0mm
> 700mm	NI +50.0mm	25.0mm

## Profiles

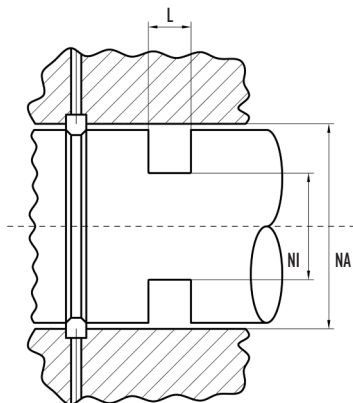
R08  
R08D  
R09  
R09A



NI	NA	L
6 - 19mm	NI +4.9mm	2.2mm
20 - 39mm	NI +7.5mm	3.2mm
40 - 199mm	NI +11.0mm	4.2mm
200 - 259mm	NI +15.5mm	6.3mm
260 - 699mm	NI +21.0mm	8.1mm
> 700mm	NI +28.0mm	9.5mm

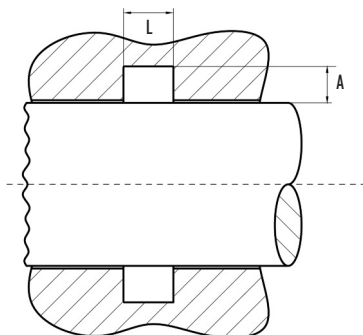
## Profiles

R10  
R10A  
R11



NI	NA	L
15 - 39mm	NI +7.5mm	3.2mm
40 - 74mm	NI +11.0mm	4.2mm
75 - 149mm	NI +15.5mm	6.3mm
150 - 299mm	NI +21.0mm	8.1mm
300 - 699mm	NI +24.5mm	8.1mm
> 700mm	NI +28.0mm	9.5mm

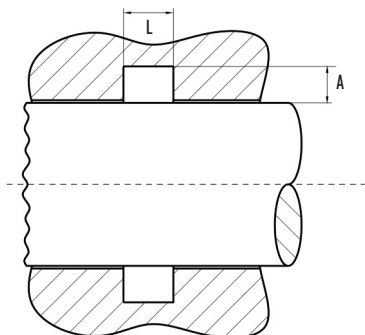
Size Ref:	To suit SHAFT		To suit CYLINDER		Internal Diameter		Tolerance on Int. Diameter		Size Ref:	To suit SHAFT		To suit CYLINDER		Internal Diameter		Tolerance on Int. Diameter	
	ins	mm	ins	mm	ins	mm	ins	mm		ins	mm	ins	mm	ins	mm	ins	mm
BS001*	1/32	0,8	.095	2,5	0.029	0,73	.040	1,02	BS042	3.1/4	82	3.3/8	86	3.239	82,28	.015	0,38
BS002*	3/64	1,2	.130	3,3	0.042	1,07	.050	1,27	BS534	3.3/8	85	3.1/2	90	3.360	85,34	.020	0,51
BS003*	1/16	1,6	.160	4,1	0.056	1,42	.060	1,53	BS043	3.1/2	88,5	3.5/8	92	3.489	88,64	.015	0,38
BS606*	5/64	2		3,8	0.070	1,78	.040	1,02	BS536	3.5/8	91,5	3.3/4	96	3.610	91,7	.020	0,51
BS607*	7/64	2,8		4,5	0.100	2,54	.040	1,02	BS044	3.3/4	95	3.7/8	99	3.739	95	.015	0,38
Cross Section 1/16" Nominal .070" ± .003" (1,78mm ± 0,08mm)									BS538	3.7/8	98	4	102	3.860	98,05	.020	0,51
BS004*	5/64	2	13/64	5	0.070	1,78	.005	0,13	BS045	4	101	4.1/8	105	3.989	101,34	.015	0,38
BS005*	7/64	2,8	15/64	6	0.101	2,57	.005	0,13	BS540	4.1/8	104	4.1/4	109	4.110	104,4	.020	0,51
BS006*	1/8	3	1/4	6,3	0.114	2,90	.005	0,13	BS046	4.1/4	107	4.3/8	112	4.239	107,7	.015	0,38
BS801*		3,2		6,5	0.125	3,17	.005	0,13	BS542	4.3/8	110,5	4.1/2	115	4.360	110,74	.020	0,51
BS007*	5/32	4	9/32	7	0.145	3,69	.005	0,13	BS047	4.1/2	114	4.5/8	118	4.489	114	.015	0,38
BS008*	3/16	4,5	5/16	8	0.176	4,47	.005	0,15	BS544	4.5/8	116	4.3/4	121	4.610	117,1	.020	0,51
BS802*		4,7		8,3	0.187	4,76	.005	0,13	BS048	4.3/4	120	4.7/8	124	4.739	120,4	.015	0,38
BS009*	7/32	5,5	11/32	8,7	0.208	5,28	.005	0,13	BS546	4.7/8	123	5	127	4.860	123,44	.020	0,51
BS010*	1/4	6	3/8	9,5	0.239	6,07	.005	0,13	BS049	5	127	5.1/8	130	4.989	126,76	.023	0,58
BS803*		6,3		10	0.250	6,35	.005	0,13	BS548	5.1/8	130	5.1/4	133	5.095	129,4	.028	0,71
BS610*	17/64	6,7		10,2	0.266	6,75	.005	0,13	BS050	5.1/4	133	5.3/8	136	5.239	133,1	.023	0,58
BS011*	5/16	7,6	7/16	11	0.301	7,66	.005	0,13	BS550	5.3/8	136	5.1/2	140	5.345	135,76	.028	0,71
BS804*		8		11,5	0.312	7,94	.005	0,13	BS551	5.1/2	139	5.5/8	143	5.470	138,94	.028	0,71
BS611*	11/32	8,7	15/32	12	0.344	8,73	.005	0,13	BS552	5.5/8	142	5.3/4	146	5.595	142,11	.028	0,71
BS012*	3/8	9,5	1/2	12,7	0.364	9,25	.005	0,13	BS553	5.3/4	145	5.7/8	149	5.720	145,29	.028	0,71
BS013	7/16	11	9/16	14,2	0.426	10,82	.005	0,13	BS554	5.7/8	148	6	152	5.845	148,46	.028	0,71
BS806	7/16	11		14,5	0.437	11,11	.005	0,13	BS555	6	151	6.1/8	156	5.970	151,64	.028	0,71
BS014	1/2	12,5	5/8	15,6	0.489	12,42	.005	0,13	BS556	6.1/8	155	6.1/4	160	6.095	154,81	.028	0,71
BS015	9/16	14	11/16	17,2	0.551	14	.005	0,13	BS557	6.1/4	158	6.3/8	163	6.220	158	.028	0,71
BS016	5/8	15,5	3/4	18,8	0.614	15,60	.005	0,13	BS558	6.3/8	161	6.1/2	166	6.345	161,16	.028	0,71
BS017	11/16	17,4	13/16	20,5	0.676	17,16	.005	0,13	BS559	6.1/2	164	6.5/8	169	6.470	164,34	.028	0,71
BS018	3/4	19	7/8	22	0.739	18,77	.005	0,13	BS560	6.5/8	167	6.3/4	172	6.695	167,51	.028	0,71
BS019	13/16	20,5	15/16	23,5	0.801	20,35	.006	0,15	BS561	6.3/4	170	6.7/8	175	6.720	170,69	.028	0,71
BS020	7/8	22	1	25,4	0.864	21,95	.006	0,15	BS562	6.7/8	174	7	179	6.845	173,87	.028	0,71
BS021	15/16	23,5	1.1/16	26,8	0.926	23,52	.006	0,15	Cross Section 3/32" Nominal .103" ± .003" (2,62mm ± 0,08mm)								
BS022	1	25	1.1/8	28,5	0.989	25,12	.006	0,15	BS102*	1/16	1,6	1/4	6,0	0.049	1,24	.004	0,10
BS023	1.1/16	27	1.3/16	30	1.051	26,70	.006	0,15	BS103*	3/32	2,4	9/32	7,0	0.081	2,06	.005	0,13
BS024	1.1/8	28	1.1/4	31,5	1.114	28,30	.006	0,15	BS104*	1/8	3,0	5/16	7,6	0.112	2,84	.005	0,13
BS025	1.3/16	30	1.5/16	33,5	1.176	29,87	.006	0,15	BS105*	5/32	4,0	11/32	8,7	0.143	3,63	.005	0,13
BS026	1.1/4	31,5	1.3/8	35	1.239	31,47	.006	0,15	BS106*	3/16	4,5	3/8	9,5	0.174	4,42	.005	0,13
BS027	1.5/16	33	1.7/16	36,3	1.301	33,05	.006	0,15	BS107*	7/32	5,5		10,2	0.206	5,23	.005	0,13
BS028	1.3/8	34,5	1.1/2	38	1.364	34,65	.006	0,15	BS108*	1/4	6	7/16	11	0.237	6,02	.005	0,13
BS517	1.7/16	36	1.9/16	40	1.428	36,27	.015	0,38	BS109*	5/16	7,6	1/2	12,7	0.299	7,60	.005	0,13
BS029	1.1/2	38	1.5/8	41	1.489	37,82	.010	0,25	BS110*	3/8	9,5	9/16	14,2	0.362	9,19	.005	0,13
BS519	1.9/16	39,5	1.11/16	43	1.553	39,45	.015	0,38	BS613*	25/64	9,9	37/64	14,6	0.391	9,92	.005	0,13
BS030	1.5/8	41	1.3/4	44,5	1.614	41	.010	0,25	BS111*	7/16	11	5/8	15,6	0.424	10,78	.005	0,13
BS031	1.3/4	44	1.7/8	47	1.739	44,17	.010	0,25	BS614*	15/32	11,9	21/32	16,6	0.469	11,91	.005	0,13
BS032	1.7/8	47	2	51	1.864	47,34	.010	0,25	BS112*	1/2	12,5	11/16	17,2	0.487	12,37	.005	0,13
BS033	2	50	2.1/8	54	1.989	50,52	.010	0,25	BS807*	1/2	12,5	—	17,5	0.500	12,70	.005	0,13
BS034	2.1/8	53	2.1/4	58	2.114	53,67	.010	0,25	BS615*	33/64	13	45/64	17,8	0.516	13,10	.005	0,13
BS035	2.1/4	56,5	2.3/8	61	2.239	56,87	.010	0,25	BS113*	9/16	14	3/4	18,8	0.549	13,95	.005	0,13
BS036	2.3/8	60	2.1/2	64	2.364	60,4	.010	0,25	BS616*	19/32	15	25/32	19,8	0.594	15,08	.005	0,13
BS037	2.1/2	63	2.5/8	67	2.489	63,22	.010	0,25	BS114*	5/8	15,5	13/16	20,5	0.612	15,54	.005	0,13
BS038	2.5/8	66	2.3/4	70	2.614	66,4	.010	0,25	BS809*	—	15,8	—	21	0.625	15,88	.005	0,13
BS039	2.3/4	69,5	2.7/8	74	2.739	69,57	.015	0,38	BS115*	11/16	17,4	7/8	22	0.674	17,13	.005	0,13
BS040	2.7/8	73	3	77	2.864	72,76	.015	0,38	BS810*	11/16	17,4	—	22,5	0.687	17,46	.005	0,13
BS041	3	76	3.1/8	80	2.989	75,94	.015	0,38	BS617*	—	17,8	—	23	0.703	17,86	.005	0,13
BS532	3.1/8	79	3.1/4	83	3.110	79	.020	0,51	BS116*	3/4	19	15/16	23,5	0.737	18,72	.005	0,13



\* Items indicated are suitable for dynamic application

O-ring section	A	L No back-up ring	L One back-up ring	L Two back-up rings	Back-up width
1.78	1.35mm	2.50mm	3.50mm	4.50mm	1.00mm
2.62	2.18mm	3.50mm	5.00mm	6.50mm	1.50mm

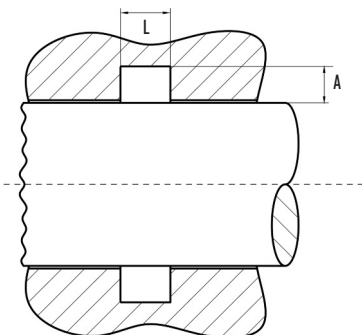
Size Ref:	To suit SHAFT		To suit CYLINDER		Internal Diameter		Tolerance on Int. Diameter		Size Ref:	To suit SHAFT		To suit CYLINDER		Internal Diameter		Tolerance on Int. Diameter	
	ins	mm	ins	mm	ins	mm	ins	mm		ins	mm	ins	mm	ins	mm	ins	mm
BS117	13/16	20,5	1	25,4	0.799	20,29	.006	0,15	BS164	6.1/4	158	6.7/16	164	6.237	158,43	.023	0,58
BS812	—	21	—	26	0.812	20,54	.006	0,15	BS165	6.1/2	164	6.11/16	170	6.487	164,78	.023	0,58
BS118	7/8	22	1.1/16	26,8	0.862	21,90	.006	0,15	BS166	6.3/4	170	6.15/16	177	6.737	171,13	.023	0,58
BS813	—	22,5	—	27,5	0.875	22,23	.006	0,15	BS167	7	177	7.3/16	183	6.987	177,48	.023	0,58
BS119	15/16	23,5	1.1/8	28,5	0.924	23,47	.006	0,15	BS168	7.1/4	183	7.7/16	190	7.237	183,83	.030	0,76
BS814	—	23,8	—	29	0.937	23,81	.006	0,15	BS169	7.1/2	190	7.11/16	196	7.487	190,18	.030	0,76
BS120	1	25	1.3/16	30	0.987	25,07	.006	0,15	BS170	7.3/4	196	7.15/16	202	7.737	196,53	.030	0,76
BS121	1.1/16	27	1.1/4	31,5	1.049	26,65	.006	0,15	BS171	8	202	8.3/16	209	7.987	202,88	.030	0,76
BS122	1.1/8	28	1.5/15	33,5	1.112	28,25	.006	0,15	BS172	8.1/4	209	8.7/16	215	8.237	209,23	.030	0,76
BS123	1.3/16	30	1.3/8	35	1.174	29,83	.006	0,15	BS173	8.1/2	215	8.11/16	222	8.487	215,58	.030	0,76
BS124	1.1/4	31,5	1.7/16	36,3	1.237	31,42	.006	0,15	BS174	8.3/4	221	8.15/16	228	8.737	221,93	.030	0,76
BS125	1.5/16	33	1.1/2	38	1.299	33	.006	0,15	BS175	9	228	9.3/16	234	8.987	228,28	.030	0,76
BS126	1.3/8	34,5	1.9/16	40	1.362	34,60	.006	0,15	BS176	9.1/4	234	9.7/16	240	9.237	234,63	.030	0,76
BS127	1.7/16	36	1.5/8	41	1.424	36,17	.006	0,15	BS177	9.1/2	240	9.11/16	247	9.487	240,98	.030	0,76
BS128	1.1/2	38	1.11/16	43	1.487	37,77	.006	0,15	BS178	9.3/4	247	9.15/16	253	9.737	247,33	.030	0,76
BS129	1.9/16	39,5	1.3/4	44,5	1.549	39,35	.010	0,25	<b>Cross Section 1/8" Nominal .139" ± .004" (3,53mm ± 0,10mm)</b>								
BS130	1.5/8	41	1.13/16	46	1.612	40,95	.010	0,25	BS201	3/16	4,5	7/16	11,0	0.171	4,34	.005	0,13
BS131	1.11/16	42,5	1.7/8	47	1.674	42,52	.010	0,25	BS202	1/4	6,0	1/2	12,5	0.234	5,94	.005	0,13
BS132	1.3/4	44	1.15/16	49	1.737	44,12	.010	0,25	BS203	5/16	7,6	9/16	14,0	0.296	7,52	.005	0,13
BS133	1.13/16	45,5	2	51	1.799	45,70	.010	0,25	BS204	3/8	9,5	5/8	15,5	0.359	9,12	.005	0,13
BS134	1.7/8	47	2.1/16	53	1.862	47,30	.010	0,25	BS205	7/16	11,0	11/16	17,4	0.421	10,69	.005	0,13
BS135	1.15/16	49	2.1/8	54	1.925	48,90	.010	0,25	BS206	1/2	12,5	3/4	19,0	0.484	12,29	.005	0,13
BS136	2	50	2.3/16	56	1.987	50,47	.010	0,25	BS207	9/16	14,0	13/16	20,5	0.546	13,87	.005	0,13
BS137	2.1/16	52	2.1/4	58	2.050	52,07	.010	0,25	BS208	5/8	15,5	7/8	22,0	0.609	15,47	.005	0,13
BS138	2.1/8	53	2.5/16	59	2.112	53,65	.010	0,25	BS209	11/16	17,4	15/16	23,5	0.671	17,04	.005	0,13
BS139	2.3/16	55	2.3/8	61	2.175	55,25	.010	0,25	BS210	3/4	19	1	25,4	0.734	18,64	.006	0,15
BS140	2.1/4	56,5	2.7/16	62,5	2.237	56,82	.010	0,25	BS211	13/16	20,5	1.1/16	26,8	0.796	20,22	.006	0,15
BS141	2.5/16	58,5	2.1/2	64	2.300	58,42	.010	0,25	BS212	7/8	22	1.1/8	28,5	0.859	21,82	.006	0,15
BS142	2.3/8	60	2.9/16	66	2.362	60	.010	0,25	BS213	15/16	23,5	1.3/16	30	0.921	23,4	.006	0,15
BS143	2.7/16	61,5	2.5/8	67	2.425	61,60	.010	0,25	BS214	1	25	1.1/4	31,5	0.984	25	.006	0,15
BS144	2.1/2	63	2.11/16	69	2.487	63,17	.010	0,25	BS618	1.1/64	25,5	—	33	1.016	25,8	.006	0,15
BS145	2.9/16	65	2.3/4	70	2.550	64,77	.010	0,25	BS215	1.1/16	27	1.5/16	33,5	1.086	26,57	.006	0,15
BS146	2.5/8	66	2.13/16	72	2.612	66,35	.010	0,25	BS216	1.1/8	28	1.3/8	35	1.109	28,17	.006	0,15
BS147	2.11/16	68	2.7/8	74	2.675	67,95	.015	0,38	BS217	1.3/16	30	1.7/16	36,3	1.171	29,75	.006	0,15
BS148	2.3/4	69,5	2.15/16	75	2.737	69,52	.015	0,38	BS218	1.1/4	31,5	1.1/2	38	1.234	31,34	.006	0,15
BS149	2.13/16	71	3	77	2.800	71,12	.015	0,38	BS219	1.5/16	33	1.9/16	40	1.296	32,93	.006	0,15
BS150	2.7/8	73	3.1/16	78	2.862	72,70	.015	0,38	BS220	1.3/8	34,5	1.5/8	41	1.359	34,52	.006	0,15
BS640	2.15/16	74,5	3.1/8	80	2.924	74,30	.015	0,38	BS221	1.7/16	36	1.11/16	43	1.421	36,1	.006	0,15
BS151	3	76	3.3/16	82	2.987	75,88	.015	0,38	BS222	1.1/2	38	1.3/4	44,5	1.484	37,7	.006	0,15
BS641	3.1/16	77	3.1/4	83	3.049	77,50	.015	0,38	BS824	1.9/16	39,5	1.13/16	46	1.563	39,7	.010	0,25
BS642	3.3/16	80,5	3.3/8	86	3.174	80,60	.015	0,38	BS223	1.5/8	41	1.7/8	47	1.609	40,87	.010	0,25
BS152	3.1/4	82	3.7/16	88	3.237	82,22	.015	0,38	BS825	1.5/8	41	—	48,5	1.625	41,28	.010	0,25
BS643	3.5/16	84	3.1/2	90	3.299	83,80	.015	0,38	BS826	1.11/16	42,5	1.15/16	49	1.687	42,86	.010	0,25
BS153	3.1/2	88,5	3.11/16	94	3.487	88,58	.015	0,38	BS224	1.3/4	44	2	51	1.734	44,05	.010	0,25
BS154	3.3/4	95	3.15/16	101	3.737	94,93	.015	0,38	BS827	—	44,5	—	52	1.750	44,45	.010	0,25
BS155	4	101	4.3/16	107	3.987	101,28	.015	0,38	BS828	1.13/16	45,5	2.1/16	53	1.812	46,04	.010	0,25
BS156	4.1/4	107	4.7/16	113	4.237	107,63	.015	0,38	BS225	1.7/8	47	2.1/8	54	1.859	47,23	.010	0,25
BS157	4.1/2	114	4.11/16	120	4.487	113,98	.015	0,38	BS829	—	47,5	—	55	1.875	47,62	.010	0,25
BS158	4.3/4	120	4.15/16	126	4.737	120,33	.015	0,38	BS830	1.15/16	49	2.3/16	56	1.937	49,2	.010	0,25
BS159	5	127	5.3/16	132	4.987	126,67	.015	0,38	BS226	2	50	2.1/4	58	1.984	50,4	.010	0,25
BS160	5.1/4	133	5.7/16	138	5.237	133	.023	0,58	BS831	—	50,5	—	58,5	2.000	50,8	.010	0,25
BS161	5.1/2	139	5.11/16	145	5.487	139,38	.023	0,58	BS832	2.1/16	52	2.5/16	59	2.062	52,4	.010	0,25
BS162	5.3/4	145	5.15/16	151	5.737	145,73	.023	0,58	BS227	2.1/8	53	2.3/8	61	2.109	53,57	.010	0,25
BS163	6	151	6.3/16	158	5.987	152,07	.023	0,58	BS833	—	53,5	—	61,5	2.125	53,97	.010	0,25



\* Items indicated are suitable for dynamic application

O-ring section	A	L No back-up ring	L One back-up ring	L Two back-up rings	Back-up width
1.78	1.35mm	2.50mm	3.50mm	4.50mm	1.00mm
2.62	2.18mm	3.50mm	5.00mm	6.50mm	1.50mm

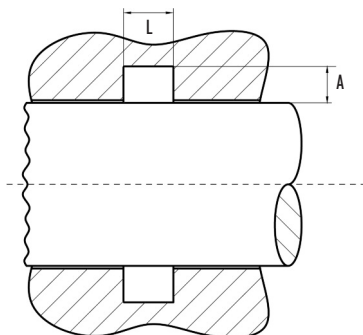
Size Ref:	To suit SHAFT		To suit CYLINDER		Internal Diameter		Tolerance on Int. Diameter		Size Ref:	To suit SHAFT		To suit CYLINDER		Internal Diameter		Tolerance on Int. Diameter	
	ins	mm	ins	mm	ins	mm	ins	mm		ins	mm	ins	mm	ins	mm	ins	mm
BS834	2.3/16	55	2.7/16	62,5	2.187	55,56	.010	0,25	BS269	8.3/4	221	9	230	8.734	221,85	.030	0,76
BS228	2.1/4	56,5	2.1/2	64	2.234	56,75	.010	0,25	BS270	9	228	9.1/4	236	8.984	228,2	.030	0,76
BS835	—	57	—	64,5	2.250	57,15	.010	0,25	BS271	9.1/4	234	9.1/2	242	9.234	234,55	.030	0,76
BS836	25/16	58,5	2.9/16	66	2.312	58,74	.010	0,25	BS272	9.1/2	240	9.3/4	249	9.484	240,9	.030	0,76
BS229	2.3/8	60	2.5/8	67	2.359	59,92	.010	0,25	BS273	9.3/4	247	10	255	9.734	247,25	.030	0,76
BS837	2.3/8	60	—	68	2.375	60,32	.010	0,25	BS274	10	253	10.1/4	262	9.984	253,6	.030	0,76
BS838	2.7/16	61,5	2.11/16	69	2.437	61,9	.010	0,25	BS275	10.1/2	266	10.3/4	274	10.484	266,3	.030	0,76
BS230	2.1/2	63	2.3/4	70	2.484	63,1	.010	0,25	BS276	11	278	11.1/4	287	10.984	279	.030	0,76
BS839	—	63,5	—	70,5	2.500	63,5	.010	0,25	BS277	11.1/2	291	11.3/4	300	11.484	291,7	.030	0,76
BS840	2.9/16	65	2.13/16	72	2.563	65,1	.010	0,25	BS278	12	304	12.1/4	312	11.984	304,4	.030	0,76
BS231	2.5/8	66	.27/8	74	2.609	66,27	.010	0,25	BS279	13	330	13.1/4	338	12.984	329,8	.030	0,76
BS841	—	66,5	—	74,5	2.625	66,67	.015	0,38	BS280	14	355	14.1/4	363	13.984	355,2	.030	0,76
BS842	2.11/16	68	2.15/16	75	2.687	68,26	.015	0,38	BS281	15	380	15.1/4	389	14.984	380,6	.030	0,76
BS232	2.3/4	69,5	3	77	2.734	69,44	.015	0,38	BS282	16	405	16.1/4	414	15.955	405,26	.045	1,14
BS843	2.13/16	71	—	77,5	2.750	69,85	.015	0,38	BS283	17	431	17.1/4	440	16.955	430,66	.045	1,14
BS844	—	72	3.1/16	78	2.812	71,44	.015	0,38	BS284	18	456	18.1/4	465	17.955	456,06	.045	1,14
BS233	2.7/8	73	3.1/8	80	2.859	72,62	.015	0,38	<b>Cross Section 3/16" Nominal .210" ± .005" (5,33mm ± 0,13mm)</b>								
BS845	—	74	—	80,5	2.875	73,02	.015	0,38	BS309	7/16	11,0	13/16	20,5	0.412	10,46	.005	0,13
BS846	2.15/16	74,5	3.3/16	82	2.937	74,6	.015	0,38	BS310	1/2	12,5	7/8	22,0	0.475	12,07	.005	0,13
BS234	3	76	3.1/4	83	2.984	75,8	.015	0,38	BS311	9/16	14,0	15/16	23,5	0.537	13,64	.005	0,13
BS235	3.1/8	79	3.3/8	86	3.109	78,97	.015	0,38	BS312	5/8	15,5	1	25,0	0.600	15,24	.005	0,13
BS236	3.1/4	82	3.1/2	90	3.234	82,14	.015	0,38	BS313	11/16	17,4	1.1/16	27,0	0.662	16,81	.005	0,13
BS237	3.3/8	85	3.5/8	92	3.359	85,32	.015	0,38	BS314	3/4	19,0	1.1/8	28,0	0.725	18,42	.005	0,13
BS238	3.1/2	88,5	3.3/4	96	3.484	88,5	.015	0,38	BS315	13/16	20,5	1.3/16	30,0	0.787	19,99	.006	0,15
BS239	3.5/8	91,5	3.7/8	99	3.609	91,67	.015	0,38	BS316	7/8	22,0	1.1/4	31,5	0.850	21,59	.006	0,15
BS240	3.3/4	95	4	102	3.734	94,84	.015	0,38	BS317	15/16	23,5	1.5/16	33,0	0.912	23,16	.006	0,15
BS241	3.7/8	98	4.1/8	105	3.859	98,02	.015	0,38	BS318	1	25,0	1.3/8	34,5	0.975	24,77	.006	0,15
BS242	4	101	4.1/4	109	3.984	101,2	.015	0,38	BS319	1.1/16	27,0	1.7/16	36,3	1.037	26,34	.006	0,15
BS243	4.1/8	104	4.3/8	112	4.109	104,37	.015	0,38	BS320	1.1/8	28,0	1.1/2	38,0	1.100	27,94	.006	0,15
BS244	4.1/4	107	4.1/2	115	4.234	107,54	.015	0,38	BS321	1.3/16	30,0	1.9/16	40,0	1.162	29,51	.006	0,15
BS245	4.3/8	110,5	4.5/8	118	4.359	110,72	.015	0,38	BS322	1.1/4	31,5	1.5/8	41,0	1.225	31,12	.006	0,15
BS246	4.1/2	114	4.3/4	121	4.484	113,9	.015	0,38	BS323	1.5/16	33,0	1.11/16	43,0	1.287	32,69	.006	0,15
BS247	4.5/8	116	4.7/8	124	4.609	117,07	.015	0,38	BS324	1.3/8	34,5	1.3/4	44,5	1.350	34,29	.006	0,15
BS248	4.3/4	120	5	127	4.734	120,24	.015	0,38	BS325	1.1/2	38	1.7/8	47	1.475	37,47	.010	0,25
BS249	4.7/8	123	5.1/8	130	4.859	123,42	.015	0,38	BS326	1.5/8	41	2	51	1.600	40,65	.010	0,25
BS250	5	127	5.1/4	133	4.984	126,6	.015	0,38	BS327	1.3/4	44	2.1/8	54	1.725	43,82	.010	0,25
BS251	5.1/8	130	5.3/8	136	5.109	129,77	.023	0,58	BS328	1.7/8	47	2.1/4	58	1.850	47	.010	0,25
BS252	5.1/4	133	5.1/2	140	5.234	132,94	.023	0,58	BS329	2	50	2.3/8	61	1.975	50,16	.010	0,25
BS253	5.3/8	136	5.5/8	143	5.359	136,12	.023	0,58	BS330	2.1/8	53	2.1/2	64	2.100	53,34	.010	0,25
BS254	5.1/2	139	5.3/4	146	5.484	139,3	.023	0,58	BS331	2.1/4	56,5	2.5/8	67	2.225	56,52	.010	0,25
BS255	5.5/8	142	5.7/8	149	5.609	142,47	.023	0,58	BS332	2.3/8	60	2.3/4	70	2.350	59,70	.010	0,25
BS256	5.3/4	145	6	152	5.734	145,65	.023	0,58	BS333	2.1/2	63	2.7/8	74	2.475	62,87	.010	0,25
BS257	5.7/8	184	6.1/8	156	5.859	148,82	.023	0,58	BS334	2.5/8	66	3	77	2.600	66,04	.010	0,25
BS258	6	151	6.1/4	160	5.984	152	.023	0,58	BS335	2.3/4	69,5	3.1/8	80	2.725	69,22	.015	0,38
BS259	6.1/4	158	6.1/2	166	6.234	158,35	.023	0,58	BS336	2.7/8	73	3.1/4	83	2.850	72,40	.015	0,38
BS260	6.1/2	164	6.3/4	172	6.484	164,7	.023	0,58	BS619	2.15/16	74,5	3.5/16	85	2.938	74,63	.015	0,38
BS261	6.3/4	170	7	179	6.734	171,05	.023	0,58	BS337	3	76	3.3/8	86	2.975	75,57	.015	0,38
BS262	7	177	7.1/4	185	6.984	177,4	.023	0,58	BS338	3.1/8	79	3.1/2	90	3.100	78,74	.015	0,38
BS263	7.1/4	183	7.1/2	191	7.234	183,75	.030	0,76	BS620	—	80	—	91	3.141	79,77	.015	0,38
BS264	7.1/2	190	7.3/4	198	7.484	190,1	.030	0,76	BS339	3.1/4	82	3.5/8	92	3.225	81,92	.015	0,38
BS265	7.3/4	196	8	204	7.734	196,45	.030	0,76	BS340	3.3/8	85	3.3/4	96	3.350	85,10	.015	0,38
BS266	8	202	8.1/4	210	7.984	202,8	.030	0,76	BS341	3.1/2	88,5	3.7/8	99	3.475	88,27	.015	0,38
BS267	8.1/4	209	8.1/2	217	8.234	209,15	.030	0,76	BS621	3.9/16	90	3.15/16	101	3.531	89,69	.015	0,38
BS268	8.1/2	215	8.3/4	223	8.484	215,5	.030	0,76	BS342	3.5/8	91,5	4	102	3.600	91,44	.015	0,38



\* Items indicated are suitable for dynamic application

O-ring section	A	L No back-up ring	L One back-up ring	L Two back-up rings	Back-up width
2.62	2.18mm	3.50mm	5.00mm	6.50mm	1.50mm
5.33	4.50mm	6.70mm	8.40mm	10.10mm	1.70mm

Size Ref:	To suit SHAFT		To suit CYLINDER		Internal Diameter		Tolerance on Int. Diameter		Size Ref:	To suit SHAFT		To suit CYLINDER		Internal Diameter		Tolerance on Int. Diameter	
	ins	mm	ins	mm	ins	mm	ins	mm		ins	mm	ins	mm	ins	mm	ins	mm
BS343	3.3/4	95	4.1/8	105	3.725	94,62	.015	0,38	BS380	11.1/2	291	11.7/8	303	11.475	291,47	.030	0,76
BS344	3.7/8	98	4.1/4	109	3.850	97,80	.015	0,38	BS381	12	304	12.3/8	315	11.975	304,17	.030	0,76
BS622	3.15/16	100	4.5/16	111	3.937	100	.015	0,38	BS382	13	330	13.3/8	341	12.975	329,57	.030	0,76
BS345	4	101	4.3/8	112	3.975	100,97	.015	0,38	BS383	14	355	14.3/8	366	13.975	354,97	.030	0,76
BS346	4.1/8	104	4.1/2	115	4.100	104,14	.015	0,38	BS384	15	380	15.3/8	392	14.975	380,37	.030	0,76
BS347	4.1/4	107	4.5/8	118	4.225	107,32	.015	0,38	BS385	16	405	16.3/8	417	15.955	405,26	.045	1,14
BS623	4.5/16	109	—	120,5	4.312	109,54	.015	0,38	BS386	17	431	17.3/8	443	16.955	430,66	.045	1,14
BS348	4.3/8	110,5	4.3/4	121	4.350	110,50	.015	0,38	BS387	18	456	18.3/8	468	17.955	456,06	.045	1,14
BS349	4.1/2	114	4.7/8	124	4.475	113,67	.015	0,38	BS388	19	482	19.3/8	494	18.955	481,46	.045	1,14
BS350	4.5/8	116	5	127	4.600	116,84	.015	0,38	BS389	20	507	20.3/8	519	19.955	506,86	.045	1,14
BS860	—	117	5.1/16	129	4.625	117,48	.015	0,38	BS390	21	532	21.3/8	544	20.955	532,26	.045	1,14
BS351	4.3/4	120	5.1/8	130	4.725	120,02	.015	0,38	BS391	22	558	22.3/8	570	21.955	557,66	.045	1,14
BS861	—	121	5.3/16	132	4.750	120,65	.015	0,38	BS392	23	583	23.3/8	595	22.940	582,68	.060	1,52
BS352	4.7/8	123	5.1/4	133	4.850	123,20	.015	0,38	BS393	24	608	24.3/8	620	23.940	608,08	.060	1,52
BS862	—	124	5.5/16	135	4.875	123,83	.015	0,38	BS394	25	634	25.3/8	646	24.940	633,48	.060	1,52
BS353	5	127	5.3/8	136	4.975	126,37	.015	0,38	BS395	26	660	26.5	671	25.940	658,88	.060	1,52
BS863	—	128	5/16	138	5.0	127	.023	0,58	<b>Cross Section 1/4" Nominal .275" ± .006" (6,99mm ± 0,15mm)</b>								
BS354	5.1/8	130	5/2	140	5.100	129,54	.023	0,58	BS425	4.1/2	114	5.1/16	127	4.475	113,67	.015	0,38
BS864	—	131	—	141	5.125	130,18	.023	0,58	BS624	4.9/16	115	5.1/8	129	4.516	114,7	.015	0,38
BS355	5.1/4	133	5.5/8	143	5.225	132,72	.023	0,58	BS426	4.5/8	116	5.1/4	130	4.600	116,84	.015	0,38
BS865	—	134	—	144	5.250	133,35	.023	0,58	BS427	4.3/4	120	5.3/8	133	4.725	120,02	.015	0,38
BS356	5.3/8	136	5.3/4	146	5.350	135,90	.023	0,58	BS428	4.7/8	123	—	136	4.850	123,2	.015	0,38
BS866	—	137	—	148	5.375	136,53	.023	0,58	BS625	—	124	5.1/2	139	4.906	124,6	.015	0,38
BS357	5.1/2	139	5.7/8	149	5.475	139,07	.023	0,58	BS429	5	127	5.5/8	140	4.975	126,37	.015	0,38
BS867	—	140	5.15/16	151	5.500	139,70	.023	0,58	BS430	5.1/8	130	5.3/4	143	5.100	129,54	.023	0,58
BS358	5.5/8	142	6	152	5.600	142,24	.023	0,58	BS431	5.1/4	133	5.13/16	146	5.225	132,72	.023	0,58
BS868	—	143	—	154	5.625	142,88	.023	0,58	BS626	—	134	5.7/8	148	5.297	134,5	.023	0,58
BS359	5.3/4	145	6.1/8	156	5.725	145,42	.023	0,58	BS432	5.3/8	136	6	149	5.350	135,9	.023	0,58
BS869	—	146	6.3/16	158	5.750	146,05	.023	0,58	BS433	5.1/2	139	6.1/8	152	5.475	139,07	.023	0,58
BS360	5.7/8	148	6.1/4	160	5.850	148,60	.023	0,58	BS434	5.5/8	142	6.1/4	156	5.600	142,24	.023	0,58
BS870	—	149	—	161	5.875	149,23	.023	0,58	BS435	5.3/4	145	6.3/8	160	5.725	145,42	.023	0,58
BS361	6	151	6.3/8	163	5.975	151,77	.023	0,58	BS436	5.7/8	148	6.1/2	163	5.850	148,6	.023	0,58
BS644	6.1/8	155	6.1/2	166	6.100	155	.023	0,58	BS437	6	151	6.5/8	166	5.975	151,77	.023	0,58
BS362	6.1/4	158	6.5/8	169	6.225	158,12	.023	0,58	BS872	6.1/8	155	6.3/4	169	6.125	155,6	.023	0,58
BS645	6.3/8	161	6.3/4	172	6.350	161,30	.023	0,58	BS438	6.1/4	158	6.13/16	172	6.225	158,12	.023	0,58
BS363	6.1/2	164	6.7/8	175	6.475	164,47	.023	0,58	BS627	—	159	—	174	6.281	159,5	.023	0,58
BS646	6.5/8	167	7	179	6.600	167,70	.023	0,58	BS874	6.3/8	161	7	176	6.375	161,9	.023	0,58
BS364	6.3/4	170	7.1/8	182	6.725	170,82	.023	0,58	BS439	6.1/2	164	3/8	179	6.475	164,47	.023	0,58
BS647	6.7/8	174	7.1/4	185	6.850	174	.023	0,58	BS628	6.9/16	166	7.1/16	181	6.563	166,7	.023	0,58
BS365	7	177	7.3/8	188	6.975	177,17	.023	0,58	BS876	6.5/8	167	7.1/8	182	6.625	168,3	.023	0,58
BS366	7.1/4	183	7.5/8	195	7.225	183,52	.030	0,76	BS440	6.3/4	170	7.1/4	185	6.725	170,82	.023	0,58
BS367	7.1/2	190	7.7/8	201	7.475	189,87	.030	0,76	BS878	6.7/8	174	7.7/16	190	6.875	174,6	.023	0,58
BS368	7.3/4	196	8.1/8	208	7.725	196,22	.030	0,76	BS441	7	177	7.1/2	191	6.975	177,17	.023	0,58
BS369	8	202	8.3/8	214	7.975	202,57	.030	0,76	BS880	7.1/8	180	7.5/8	195	7.125	181	.030	0,76
BS370	8.1/4	209	8.5/8	220	8.225	208,92	.030	0,76	BS442	7.1/4	183	7.3/4	198	7.225	183,52	.030	0,76
BS371	.81/2	215	8.7/8	226	8.475	215,27	.030	0,76	BS882	7.3/8	187	7.7/8	201	7.375	187,3	.030	0,76
BS372	.83/4	221	9.1/8	232	8.725	221,62	.030	0,76	BS443	7.1/2	190	8	204	7.475	189,87	.030	0,76
BS373	9	228	9.3/8	239	8.975	227,97	.030	0,76	BS884	7.5/8	193	8.1/8	208	7.625	193,7	.030	0,76
BS374	9.1/4	234	9.5/8	245	9.225	234,32	.030	0,76	BS444	7.3/4	196	8.1/4	210	7.725	196,22	.030	0,76
BS375	9.1/2	240	9.7/8	252	9.475	240,67	.030	0,76	BS886	7.7/8	199	8.3/8	214	7.875	200	.030	0,76
BS376	9.3/4	247	10.1/8	258	9.725	247,02	.030	0,76	BS445	8	202	8.1/2	217	7.975	202,57	.030	0,76
BS377	10	253	10.3/8	265	9.975	253,37	.030	0,76	BS674	8.1/4	209	8.3/4	223	8.225	208,92	.030	0,76
BS378	10.1/2	266	10.7/8	277	10.475	266,07	.030	0,76	BS446	8.1/2	215	9	230	8.475	215,27	.030	0,76
BS379	11	278	11.3/8	290	10.975	278,77	.030	0,76	BS676	8.3/4	221	9.1/4	236	8.725	221,62	.030	0,76

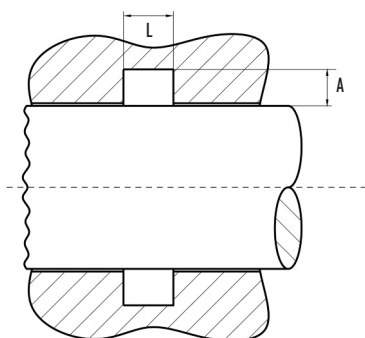


\* Items indicated are suitable for dynamic application

O-ring section	A	L No back-up ring	L One back-up ring	L Two back-up rings	Back-up width
5.33	4.50mm	6.70mm	8.40mm	10.10mm	1.70mm
6.99	5.94mm	8.80mm	10.80mm	12.80mm	2.00mm



Size Ref:	To suit SHAFT		To suit CYLINDER		Internal Diameter		Tolerance on Int. Diameter	
	ins	mm	ins	mm	ins	mm	ins	mm
BS447	9	228	9.1/2	242	8.975	227,97	.030	0,76
BS678	9.1/4	234	9.3/4	249	9.225	234,32	.030	0,76
BS448	9.1/2	240	10	255	9.475	240,67	.030	0,76
BS680	9.3/4	247	10.1/4	262	9.725	247	.030	0,76
BS449	10	253	10.1/2	268	9.975	253,57	.030	0,76
BS682	10.1/4	260	10.3/4	274	10.225	259,7	.030	0,76
BS450	10.1/2	266	11	280	10.475	266,07	.030	0,76
BS684	10.3/4	273	11.1/4	287	10.725	272,4	.030	0,76
BS451	11	278	11.1/2	293	10.975	278,77	.030	0,76
BS686	11.1/4	285	11.3/4	300	11.225	285,1	.030	0,76
BS452	11.1/2	291	12	306	11.475	291,47	.030	0,76
BS688	11.3/4	298	12.1/4	312	11.725	297,8	.030	0,76
BS453	12	304	12.1/2	319	11.975	304,17	.030	0,76
BS648	12.1/4	311	12.3/4	325	12.225	310,5	.030	0,76
BS454	12.1/2	317	13	331	12.475	316,87	.030	0,76
BS649	12.3/4	323	13.1/4	338	12.725	323,2	.030	0,76
BS455	13	330	13.1/2	344	12.975	329,57	.030	0,76
BS650	13.1/4	336	13.3/4	350	13.225	335,9	.030	0,76
BS456	13.1/2	342	14	357	13.475	342,27	.030	0,76
BS457	14	355	14.1/2	370	13.975	354,97	.030	0,76
BS458	14.1/2	368	15	382	14.475	367,67	.030	0,76
BS459	15	380	15.1/2	395	14.975	380,37	.030	0,76
BS460	15.1/2	393	16	408	15.475	393,07	.030	0,76
BS461	16	405	16.1/2	420	15.955	405,26	.045	1,14
BS462	16.1/2	418	17	432	16.455	417,96	.045	1,14
BS463	17	431	17.1/2	445	16.955	430,66	.045	1,14
BS464	17.1/2	443	18	458	17.455	443,36	.045	1,14
BS465	18	456	18.1/2	471	17.955	456,06	.045	1,14
BS466	18.1/2	469	19	483	18.455	468,76	.045	1,14
BS467	19	482	19.1/2	496	18.955	481,46	.045	1,14
BS468	19.1/2	494	20	509	19.455	494,16	.045	1,14
BS469	20	507	20.1/2	521	19.955	506,86	.045	1,14
BS470	21	532	21.1/2	547	20.955	532,26	.045	1,14
BS471	22	558	22.1/2	573	21.955	557,66	.045	1,14
BS472	23	583	23.1/2	598	22.940	582,68	.060	1,52
BS473	24	608	24.1/2	624	23.940	608,08	.060	1,52
BS474	25	634	25.1/2	649	24.940	633,48	.060	1,52
BS475	26	660	26.1/2	675	25.940	658,88	.060	1,52



\* Items indicated are suitable for dynamic application

O-ring section	A	L No back-up ring	L One back-up ring	L Two back-up rings	Back-up width
6.99	5.94mm	8.80mm	10.80mm	12.80mm	2.00mm

## METRIC RANGE OF O RINGS TO BS4518

Size Ref: 1.6mm sec	Inside I.D. (mm)	Tolerance on I.D. (mm)	Size Ref: 2.4mm sec	Inside I.D. (mm)	Tolerance on I.D. (mm)	Size Ref: 3.0mm sec	Inside I.D. (mm)	Tolerance on I.D. (mm)	Size Ref: 5.7mm sec	Inside I.D. (mm)	Tolerance on I.D. (mm)	Size Ref: 8.4mm sec	Inside I.D. (mm)	Tolerance on I.D. (mm)
0031-16	3.1	0.15	0036-24	3.6	0.15	0195-30	19.5	0.25	0443-57	44.3	0.30	1441-84	144.1	0.60
0041-16	4.1	0.15	0046-24	4.6	0.15	0215-30	21.5	0.25	0453-57	45.3	0.30	1491-84	149.1	0.60
0051-16	5.1	0.15	0056-24	5.6	0.15	0225-30	22.5	0.25	0493-57	49.3	0.30	1541-84	154.1	0.60
0061-16	6.1	0.15	0066-24	6.6	0.15	0245-30	24.5	0.25	0523-57	52.3	0.40	1591-84	159.1	0.60
0071-16	7.1	0.15	0076-24	7.6	0.15	0255-30	25.5	0.25	0543-57	54.3	0.40	1641-84	164.1	0.60
0081-16	8.1	0.15	0086-24	8.6	0.15	0265-30	26.5	0.25	0553-57	55.3	0.40	1691-84	169.1	0.60
0091-16	9.1	0.15	0096-24	9.6	0.15	0275-30	27.5	0.25	0593-57	59.3	0.40	1741-84	174.1	0.60
0101-16	10.1	0.20	0106-24	10.6	0.20	0295-30	29.5	0.25	0623-57	62.3	0.40	1791-84	179.1	0.60
0111-16	11.1	0.20	0116-24	11.6	0.20	0315-30	31.5	0.30	0643-57	64.3	0.40	1841-84	184.1	0.80
0121-16	12.1	0.20	0126-24	12.6	0.20	0325-30	32.5	0.30	0693-57	69.3	0.40	1891-84	189.1	0.80
0131-16	13.1	0.20	0136-24	13.6	0.20	0345-30	34.5	0.30	0743-57	74.3	0.40	1941-84	194.1	0.80
0141-16	14.1	0.20	0146-24	14.6	0.20	0355-30	35.5	0.30	0793-57	79.3	0.40	1991-84	199.1	0.80
0151-16	15.1	0.20	0156-24	15.6	0.20	0365-30	36.5	0.30	0843-57	84.3	0.50	2041-84	204.1	0.80
0161-16	16.1	0.20	0166-24	16.6	0.20	0375-30	37.5	0.30	0893-57	89.3	0.50	2091-84	209.1	0.80
0171-16	17.1	0.20	0176-24	17.6	0.20	0395-30	39.5	0.30	0943-57	94.3	0.50	2191-84	219.1	0.80
0181-16	18.1	0.25	0186-24	18.6	0.25	0415-30	41.5	0.30	0993-57	99.3	0.50	2291-84	229.1	0.80
0191-16	19.1	0.25	0196-24	19.6	0.25	0425-30	42.5	0.30	1043-57	104.3	0.50	2341-84	234.1	0.80
0221-16	22.1	0.25	0216-24	21.6	0.25	0445-30	44.5	0.30	1093-57	109.3	0.50	2391-84	239.1	0.80
0251-16	25.1	0.25	0246-24	24.6	0.25	0495-30	49.5	0.30	1143-57	114.3	0.50	2491-84	249.1	0.80
0271-16	27.1	0.25	0276-24	27.6	0.25	0545-30	54.5	0.30	1193-57	119.3	0.50			
0291-16	29.1	0.25	0296-24	29.6	0.25	0595-30	59.5	0.40	1243-57	124.3	0.60			
0321-16	32.1	0.30	0316-24	31.6	0.30	0645-30	64.5	0.40	1293-57	129.3	0.60			
0351-16	35.1	0.30	0346-24	34.6	0.30	0695-30	69.5	0.40	1343-57	134.3	0.60			
0371-16	37.1	0.30	0376-24	37.6	0.30	0745-30	74.5	0.40	1393-57	139.3	0.60			
			0396-24	39.6	0.30	0795-30	79.5	0.40	1443-57	144.3	0.60			
			0416-24	41.6	0.30	0845-30	84.5	0.50	1493-57	149.3	0.60			
			0446-24	44.6	0.30	0895-30	89.5	0.50	1543-57	154.3	0.60			
			0476-24	47.6	0.30	0945-30	94.5	0.50	1593-57	159.3	0.60			
			0496-24	49.6	0.40	0995-30	99.5	0.50	1643-57	164.3	0.60			
			0516-24	51.6	0.40	1045-30	104.5	0.50	1693-57	169.3	0.60			
			0546-24	54.6	0.40	1095-30	109.5	0.50	1743-57	174.3	0.60			
			0576-24	57.6	0.40	1145-30	114.5	0.50	1793-57	179.3	0.80			
			0596-24	59.6	0.40	1195-30	119.5	0.50	1843-57	184.3	0.80			
			0616-24	61.6	0.40	1245-30	124.5	0.60	1893-57	189.3	0.80			
			0646-24	64.6	0.40	1295-30	129.5	0.60	1943-57	194.3	0.80			
			0676-24	67.6	0.40	1345-30	134.5	0.60	1993-57	199.3	0.80			
			0696-24	69.6	0.40	1395-30	139.5	0.60	2093-57	209.3	0.80			
						1445-30	144.5	0.60	2193-57	219.3	0.80			
						1495-30	149.5	0.60	2293-57	229.3	0.80			
						1545-30	154.5	0.60	2393-57	239.3	0.80			
						1595-30	159.5	0.60	2493-57	249.3	0.80			
						1645-30	164.5	0.60	2593-57	259.3	1.00			
						1695-30	169.5	0.60	2693-57	269.3	1.00			
						1745-30	174.5	0.60	2793-57	279.3	1.00			
						1795-30	179.5	0.60	2893-57	289.3	1.00			
						1845-30	184.5	0.80	2993-57	299.3	1.00			
						1895-30	189.5	0.80	3193-57	319.3	1.50			
						1945-30	194.5	0.80	3393-57	339.3	1.50			
						1995-30	199.5	0.80	3593-57	359.3	1.50			
						2095-30	209.5	0.80	3793-57	379.3	1.50			
						2195-30	219.5	0.80	3993-57	399.3	1.50			
						2295-30	229.5	0.80	4193-57	419.3	2.00			
						2395-30	239.5	0.80	4393-57	439.3	2.00			
						2495-30	249.5	0.80	4593-57	459.3	2.00			
									4793-57	479.3	2.00			
									4993-57	499.3	2.00			





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