

# SEAL DESIGN HANDBOOK

The logo for sealXpress, featuring the brand name in a blue, lowercase, sans-serif font inside a white circle. The background of the cover is a vibrant, multi-colored gradient of horizontal bands in shades of blue, green, red, black, orange, and dark blue, with a large blue curved shape in the bottom right corner.

sealXpress

## About us

SealXpress are a leading distributor and manufacturer of sealing products. We have over 50 years of experience in the sealing industry which means our sales team has a wide variety of product knowledge.

We are an ISO 9001:2008 accredited company. We are always committed to supplying the highest standard of products to our customers.

Contact us today on;

Phone: 0121 544 4440

Email: [sales@sealxpress.co.uk](mailto:sales@sealxpress.co.uk)



## On-site CNC machine

Do you need a non-standard size but can't wait on the manufacturers long lead time?

With our CNC machine we are able to meet customers unique application demands and we are able to manufacture seals up to 530mm on-site (or up to 1.5 meters within days).

Additional to our standard profiles, we are also able to custom design seals to suit your application.



## Product range

O-rings  
Rotary shaft seals  
Hydraulic seals  
Cords  
Vulcanised o-rings  
Bonded seals  
Mechanical seals



Speedi sleeves  
V-rings  
Circlips  
Quad rings  
Hygienic seals  
Gland packing  
Bespoke kitting



## Our location

We are conveniently located just off the M5 between junction 1&2.

You can visit our trade counter at:

SealXpress Ltd,  
Unit 6, Elm Court, Crystal Drive,  
Sandwell Business Park,  
West Midlands, **B66 1RB**



















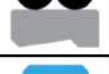


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Page 2	Wipers
Page 3	Rod seals
Page 5	Piston seals
Page 7	Symmetrical seals
Page 8	Back up & guide rings
Page 9	Rotary seals
Page 10	Static seals & O-rings
Page 11	Mining seals
Page 12	Material data





Profile	Type	Description	Standard Material	Pressure (Bar)	Temp (°C)	Surface speed m/s
	WR01	Known as the A1 style wiper, the design features a double step on the OD. Designed to remove contaminates from the rod to prevent them from getting into the cylinder.	PU NBR	-	-30 to 105 -25 to 100	4
	WR01A	Same as profile WR01, plus the added support to prevent tilting of the wiper.	PU NBR	-	-30 to 105 -25 to 100	4
	WR02	Medium to heavy duty wiper. Designed to remove contaminates from the rod to prevent them getting into the cylinder.	PU NBR	-	-30 to 105 -25 to 100	4
	WR02A	Same as profile WR02, plus the added back support to prevent tilting of the wiper.	PU NBR	-	-30 to 105 -25 to 100	4
	WR02B	Same as profile WR02A, but without back support. Special housing Acc. To ISO6195-Type C.	PU NBR	-	-30 to 105 -25 to 100	4
	WR02C	Additional lip on the OD adds extra prevention of dirt and humidity entry via the OD. Normally used for increased durability in harsh environments.	PU NBR	-	-30 to 105 -25 to 100	4
	WR02D	Alternative design light to medium wiper.	PU PU-D57	-	-30 to 105	4
	WR03	Self retaining (knock-in) wiper for use in press fit housings acc. To ISO6195-Type B	PU/POM* NBR/POM*	-	-30 to 105 -25 to 100	4
	WR04	Wiper to fit into angled housings. Mainly used in British machinery.	PU NBR	-	-30 to 105 -25 to 100	4
	WR07	Heavy duty wiper normally used in conjunction with a standard wiper such as the WR02. Scrapes heavy contaminants from the rod which protects the conventional wiper behind.	POM PA PU-D57	-	-60 to 100 -60 to 100 -30 to 105	1
	WR08	This profile (known as a Y-Clip) is self retaining and made using hard materials such as POM/PEEK/PTFE. It has high stiffness, breaking strength and stability.	POM PA PU-D57	-	-60 to 100 -60 to 100 -30 to 105	1
	WR11	Light to medium duty wiper. Utilizes a double lip profile for use where zero leakage is required.	PU NBR	-	-30 to 105 -25 to 100	4
	WR12	Light to medium duty wiper. Like the WR11 but with a double step on the OD. Utilizes a double lip profile for use where zero leakage is required. For housings acc. To ISO6195-Type C.	PU NBR	-	-30 to 105 -25 to 100	4
	WR13	Double acting two part rod wiper consisting of a profiled sleeve and O-Ring energizer. Sleeve manufactured in various materials but mainly supplied in Bronze PTFE.	PTFE/NBR	-	-25 to 100	10
	WR13_E2	Same as profiled profile WR13 but utilizes a bigger O-Ring.	PTFE/NBR	-	-25 to 100	10
	WR14	Single acting two part rod wiper consisting of a profiled sleeve and an O-Ring energizer. Sleeve manufactured in various materials but mainly supplied in Bronze PTFE.	PTFE/NBR	-	-25 to 100	10
	WR15	Double acting rod wiper consisting of a profiled sleeve and two O-Ring energizers. Sleeve manufactured in various materials but mainly supplied in Bronze PTFE.	PTFE/NBR	-	-25 to 100	10
	WR17	Double acting wiper now only used in old machinery. For new designs WR1 or WR12 is recommended.	PU NBR	-	-30 to 105 -25 to 100	4
	WR18	Special design external wiper where the interference fit is on the ID and the scraping is performed on the OD.	PU NBR	-	-30 to 105 -25 to 100	4

Profile	Type	Description	Standard Material	Pressure (Bar)	Temp (°C)	Surface speed m/s
	RS01	Asymmetrical single acting seal with interference fit on the OD. Sealing lip shorter than static lip to avoid drag pressure. Excellent static and dynamic sealing. For lower speeds the sealing lips should be shorter/stiffer.	PU NBR FPM	400 160 160	-30 to 105 -25 to 100 -20 to 210	0.5
	RS01A	Same as profile RS01 but with wider groove. This wider groove gives the seal softer lips compared with RS01.	PU NBR FPM	160 160 160	-30 to 105 -25 to 100 -20 to 210	0.5
	RS01B	Asymmetrical single acting seal with interference fit on the OD. Sealing lip shorter than static lip to avoid drag pressure. Sharp lips on the ID and OD. Good static and dynamic sealing. Good in low pressure applications.	PU NBR FPM	400 160 160	-30 to 105 -25 to 100 -20 to 210	0.5
	RS02	Same as RS01 but with added angled back-up ring to prevent/resist extrusion.	PU/POM NBR/POM FPM/PTFE	700 250 250	-30 to 100 -25 to 100 -20 to 210	0.5
	RS02A	Same as profile RS02 but utilizes an added back-up ring instead. Used in short housings.	PU/POM NBR/POM FPM/PTFE	700 250 250	-30 to 105 -25 to 100 -20 to 210	0.5
	RS02B	Same as profile RS01 but with added glide ring on ID. Glide ring prevents/resists extrusion.	PU/PTFE	700	-30 to 105	0.5
	RS03	O-Ring activated asymmetrical rod seal. Interference fit on OD. Especially suitable for short stroke applications.	PU/NBR	400	-25 to 100	0.5
	RS04	Same as profile RS03 but with the added benefit of a back-up ring to prevent/resist extrusion. Suitable for higher extrusion gaps or higher pressure range.	PU/NBR/POM	700	-25 to 100	0.5
	RS05	Asymmetrical single acting rod seal for pneumatic applications with interference fit on the OD. Special design lip to retain lubrication film and prevent dry running.	PU NBR	25	-30 to 105 -25 to 100	1
	RS08	Asymmetrical single acting seal with interference fit on the OD. Especially used for small cross sections where the lips would be too thin. Used for short pulsating strokes.	PU NBR	400 160	-30 to 105 -25 to 100	0.3
	RS09	O-Ring activated asymmetrical rod seal. Single acting. Low friction. Good resistance to pressure shocks.	PU-D57/NBR PTFE/NBR	250 400	-25 to 100	1 10
	RS09A	Symmetrical double acting rod seal. Low friction.	PU-D57/NBR PTFE/NBR	250 400	-25 to 100	1 10
	RS09B	O-Ring activated asymmetrical rod seal. Single acting. Low friction. Good resistance to pressure shocks.	PU-D57/NBR PTFE/NBR	250 400	-25 to 100	1 10
	RS09C	O-Ring activated symmetrical double acting rod seal. The X-ring on the OD of the sleeve offers additional sealing (especially good for holding positions). Excellent gap extrusion resistance.	PTFE/NBR	400	-25 to 100	2
	RS09D	As per profile RS09C but the two O-Rings offer improved pressure distribution.	PTFE/NBR	400	-25 to 100	3
	RS91	Rubber energized asymmetrical rod seal. Higher pressure force due to the special preload profile. Less relative movement of the rubber element helps provide greater wear resistance.	PU-D57/NBR PTFE/NBR	250 400	-25 to 100	1 10
	RS91B	Rubber energized asymmetrical rod seal. Higher pressure force due to the special preload profile. Less relative movement of the rubber element helps provide greater wear resistance.	PU-D57/NBR PTFE/NBR	250 400	-25 to 100	1 10
	RS16	Known commonly as a "Hat seal" this profile utilizes a long sealing lip which compensates for radial inaccuracy or eccentricity.	NBR	160	-25 to 100	0.5
	RS17	Same as profile RS01 but with the added support beam/secondary lip on the ID. This is used for stabilizing the seal and so helps to extend the life of the seal.	PU	400	-30 to 105	0.5

Profile	Type	Description	Standard Material	Pressure (Bar)	Temp (°C)	Surface speed m/s
	RS17A	Same as profile RS17 but with the added back up ring to prevent/resist extrusion.	PU/POM	700	-30 to 100	0.5
	RS17B	Same as profile RS17 but with the added O-Ring energizer.	PU/NBR	160 160 160	-30 to 105 -25 to 100 -20 to 210	0.5
	RS17C	RS17C utilizes a secondary lip, back up ring and an O Ring energizer. Excellent static and dynamic sealing performance. Excellent performance in all pressure ranges.	PU/NBR/POM	700	-25 to 100	0.5
	RS17D	Same as profile RS08 but with the added support beam/secondary lip on the ID. Used to stabilize the seal and to extend the seal life.	PU NBR	400 160	-30 to 105 -25 to 100	0.3
	RS17E	Same as profile RS17D but also utilizes a back up ring to resist/prevent extrusion.	PU/POM	700	-30 to 100	0.3
	RS19	Asymmetrical single acting rod seal with low interference on the static lip. Preloaded via V Spring. Excellent static and dynamic sealing. Low friction in dry running or low lubrication applications.	PTFE-Virgin/ V Spring PTFE-Filled/ V Spring	200 400	-200 to 260	15
	RS19A	Same as profile RS19 but with added clamping flange.	PTFE-Virgin/ V Spring PTFE-Filled/ V Spring	200 400	-200 to 260	15
	RS20	Space saving double acting rod seal suitable for standard O Ring grooves. Comprises 1 rubber sealing element with 2 integrated back up rings.	NBR/POM	700	-25 to 100	0.5
	RS31-33	Asymmetrical single acting rod seal with combined pressure and support rings. The friction and leakage characteristics can be influenced by adjusting the number of intermediate rings.	PU/POM	500	-30 to 100	0.5
	RS35	Asymmetrical double acting compact rod seal. Excellent performance in low pressure conditions. For rotary application the OD interference must be increased to prevent seal rotation and the preload has to be reduced.	PU	400	-30 to 105	0.4

## Can't see the profile you require?

We regularly custom design seals based on customer drawings or samples.

We work based on:




















- . Sample seals
- . Application drawings
- . Application details
- . Seal part numbers
- . Metalwork
- . Seal photographs/sketches










Contact us for assistance today

0121 544 4440  
sales@sealxpress.co.uk





Profile	Type	Description	Standard Material	Pressure (Bar)	Temp (°C)	Surface speed m/s
	PS01	Asymmetrical single acting seal with interference fit on the ID. Sealing lip shorter than static lip to avoid drag pressure. Excellent static and dynamic sealing. For lower speeds the sealing lips should be shorter/stiffer.	PU NBR FPM	400 160 160	-30 to 105 -25 to 100 -20 to 210	0.5
	PS01A	Same as profile PS01 but with a wider groove. This wider groove gives the seal softer lips compared with the PS01.	PU NBR FPM	160 160 160	-30 to 105 -25 to 100 -20 to 210	0.5
	PS01B	Asymmetrical single acting seal with interference fit on the ID. Sealing lip shorter than static lip to avoid drag pressure. Sharp lips on ID and OD. Good static and dynamic sealing. Good in low pressure applications.	PU NBR FPM	400 160 160	-30 to 105 -25 to 100 -20 to 210	0.5
	PS02	Same as profile PS02 but utilizes an angled back up ring instead. Used in short housings.	PU/POM NBR/POM FPM/PTFE	700 250 250	-30 to 100 -25 to 100 -20 to 210	0.5
	PS02A	Same as profile PS01 but with added back up ring to prevent/resist extrusion	PU/POM NBR/POM FPM/PTFE	700 250 250	-30 to 100 -25 to 100 -20 to 210	0.5
	PS03	O Ring activated asymmetrical piston seal. Interference fit on ID. Especially suitable for short stroke applications.	PU/NBR	400 160 160	-25 to 100	0.5
	PS04	As per profile PS03 but with added back up ring to prevent/resist extrusion.	PU/NBR/POM	700 250 250	-25 to 100	0.5
	PS05	Asymmetrical single acting piston seal for pneumatic applications with interference fit on the ID. Special design lip to retain lubrication film and prevent dry running.	NBR/POM	700	-25 to 100	0.5
	PS08	O Ring activated symmetrical double acting piston seal. Excellent sealing performance in both low and high speeds. Excellent gap extrusion resistance.	PU-D57/NBR PTFE/NBR	250 400	-25 to 100	1 15
	PS08A	Same as profile PS08 but designed with two external sealing edges to reduce blow-by-effect.	PU-D57/NBR PTFE/NBR	250 400	-25 to 100	1 15
	PS08B	O Ring activated asymmetrical single acting piston seal. Excellent sealing performance in both slow and fast speeds. Excellent gap extrusion resistance.	PU-D57/NBR PTFE/NBR	250 400	-25 to 100	1 10
	PS08C	O Ring activated symmetrical double acting piston seal. The X ring on the OD of the sleeve offers additional sealing (especially good for holding positions). Excellent gap extrusion resistance.	PTFE/NBR	400	-25 to 100	2
	PS08D	As per profile PS08C but the two O Rings offer improved pressure distribution.	PTFE/NBR	400	-25 to 100	3
	PS08E	O ring activated symmetrical double acting piston seal. Excellent sealing performance in both low and high speeds. Excellent gap extrusion resistance.	PU-D57/NBR PTFE/NBR	250 400	-25 to 100	1 10
	PS08F	O Ring activated symmetrical double acting piston seal. Excellent sealing performance in both low and high speeds. Excellent gap extrusion resistance.	PU-D57/NBR	250 400	-25 to 100	1
	PS81	Symmetrical double acting piston seal. The special profile energizer offers less energizer movement, so improved wear resistance is achieved. Excellent sealing performance in low and high speeds.	PU-D57/NBR PTFE/NBR	250 400	-25 to 100	1 10
	PS09	Double acting piston seal comprising one rubber energizer, one sealing element and two guide rings. Good performance in both static and dynamic sealing. High frictional force.	PU/NBR/POM	400	-25 to 100	0.5
	PS09A	Double acting piston seal comprising one rubber energizer, one sealing element and two guide rings. Good performance in both static and dynamic sealing.	PTFE/NBR/POM	400 160 160	-25 to 100	1
	PS16	Single acting piston seal known as the "Cup" seal. Useable in long strokes lengths. Long sealing lip allows for radial inaccuracy.	NBR	160	-25 to 100	0.5

Profile	Type	Description	Standard Material	Pressure (Bar)	Temp (°C)	Surface speed m/s
	PS16A	Single acting piston seal known as the "Cup" seal. Useable in long stroke lengths. Long sealing lip allows for radial inaccuracy.	NBR	160	-25 to 100	0.5
	PS17	Double acting piston seal comprising one sealing element and two guide rings. Good performance in both static and dynamic sealing. High frictional force.	PU/POM NBR/POM	400 250	-25 to 100	0.5
	PS17A	Double acting piston seal comprising one sealing element and two guide rings. Good performance in both static and dynamic sealing. High frictional force.	PU/POM NBR/POM	400 250	-25 to 100	0.5
	PS17B	Double acting piston seal comprising one sealing element & two guide rings. Added benefit of two sealing edges. Good performance in both static and dynamic sealing. High frictional force.	PU/POM NBR/POM	400 250	-25 to 100	0.5
	PS19	Asymmetrical single acting piston seal. Preloaded with a V-Spring. Excellent static and dynamic sealing performance. Low friction for dry running conditions.	PTFE-Virgin / V Spring PTFE-filled / V Spring	200 400	-200 to 260	1.5
	PS19A	As per profile PS19 but with clamping flange.	PTFE-Virgin / V Spring PTFE-filled / V Spring	200 400	-200 to 260	1.5
	PS20	Space saving double acting piston seal suitable for standard O Ring grooves. Comprises 1 rubber sealing element with 2 integrated back up rings to resist/prevent extrusion.	NBR/POM	700	-25 to 100	0.5
	PS23	Double acting piston seal with interference fit on ID. Consists of one sealing element, one energizer and two back up rings. Good static and dynamic sealing. High frictional force.	PU/NBR/POM	400	-25 to 100	0.5
	PS35	Asymmetrical double acting compact piston seal. Excellent static and dynamic sealing as well as excellent sealing performance at low pressure.	PU	400	-30 to 105	0.4

 Turn to page 12 to view our standard materials data.



















# Symmetrical Seals Piston & Rod Seals

Profile	Type	Description	Standard Material	Pressure (Bar)	Temp (°C)	Surface speed m/s
	PRS06	Symmetrical Single acting seal for rod or piston applications. Excellent static & dynamic sealing performance. Good low pressure sealing.	PU NBR	400 160	-30 to 105 -25 to 100	0.5
	PRS06A	Same as profile PRS06 but with a wider groove. This wider groove gives the seal softer lips compared with PRS06.	PU NBR	160 160	-30 to 105 -25 to 100	0.5
	PRS06B	Symmetrical single acting seal for rod or piston applications. Excellent static and dynamic sealing performance. Old design used in old machinery.	PU NBR	400 160	-30 to 105 -25 to 100	0.5
	PRS06C	Symmetrical single acting seal for rod or piston applications. Especially used for small cross sections where the lips would be too thin. Used for short pulsating strokes.	PU NBR	400 160	-30 to 105 -25 to 100	0.5
	PRS06D	Same as profile PRS06 but with a wider groove. The wider groove gives the seal softer lips compared with the PRS06.	PU NBR	160 160	-30 to 105 -25 to 100	0.5
	PRS06E	Symmetrical single acting seals for rod or piston applications. Added leg in the groove aids seal stabilization.	PU NBR	400 160	-30 to 105 -25 to 100	0.5
	PRS07	O Ring activated symmetrical rod/piston seal. Single acting. Low friction. Excellent low pressure sealing. Good resistance to pressure shocks.	PU/NBR	400	-25 to 100	0.5
	PRS10SP	Support ring for PRS10-12	PU FPM POM	-	-30 to 105 -20 to 210 -60 to 100	-
	PRS10-12	Symmetrical single acting seal for rod or piston applications. Seal comprises top header, bottom spreader and intermediate vee rings. High wear resistance.	PU/POM	500 250	-30 to 100 -25 to 100	0.5
	PRS13-15	Reduced friction when compared to the PRS10-12 especially at high pressures.	PU/POM NBR/POM	500 250	-30 to 100 -25 to 100	0.5
	PRS18	Symmetrical single acting seal for rod or piston applications. Preload via O Ring in the groove. Sharp lips for use in high viscosity fluids. Excellent static and dynamic sealing performance.	PU/NBR	400	-25 to 100	0.5
	PRS19	Symmetrical single acting rod/piston seal with low interference on the static lip. Preloaded via V-Spring. Excellent static and dynamic sealing. Low friction in dry running or low lubrication applications.	PTFE/ V Spring	160	-200 to 260	15
	PRS19B	Symmetrical single acting piston/rod seal. Preload via a helicoil spring which ensures high pressure on the sealing edges. Low friction in dry running or poor lubrication applications.	PTFE-Virgin/Helicoil Spring PTFE filled / Helicoil spring	200 400	-60 to 200	5
	PRS19C	Symmetrical single acting piston/rod seal. Preload via a helicoil spring which ensures high pressure on the sealing edges. Low friction in dry running or poor lubrication applications.	PTFE-Virgin/Helicoil Spring PTFE filled / Helicoil spring	200 400	-60 to 200	5
	PRS19D	Symmetrical single acting piston/rod seal. Preload via a helicoil spring which ensures high pressure on the sealing edges. Low friction in dry running or poor lubrication applications.	PTFE-Virgin/Helicoil Spring PTFE filled / Helicoil spring	200 400	-60 to 200	1
	PRS22	Symmetrical single acting seal for use in rod or piston applications. Stabilization of the seal is achieved by addition of a support ring in the groove.	PU/POM NBR/POM FPM/PTFE	400 160 160	-30 to 100 -25 to 100 -20 to 210	0.5
	PRS99	Intermediate Vee ring for use in profile PRS10-12. High wear resistance.	PU NBR FPM	400 160 160	-30 to 105 -25 to 100 -20 to 210	0.5













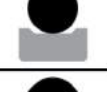


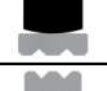



## Back-up Rings

Profile	Type	Description	Standard Material	Pressure (Bar)	Temp (°C)	Surface speed m/s
	BUR08	Can be supplied solid or split for easy installation.	PU POM PTFE	-	-30 to 105 -60 to 100 -200 to 260	-
	BUR09	Contoured back-up ring for use with O Rings. Can be supplied solid or split.	PU POM PTFE	-	-30 to 105 -60 to 100 -200 to 260	-
	BUR10	Angled back-up ring normally for use with piston seals such as our PS02. Can be supplied solid or split.	PU POM PTFE	-	-30 to 105 -60 to 100 -200 to 260	-
	BUR11	Angled back-up ring normally for use with rod seals such as our RS02. Can be supplied solid or split.	PU POM PTFE	-	-30 to 105 -60 to 100 -200 to 260	-
	BUR12	Triangular back-up ring for use in rod applications. Can be supplied solid or split.	PU POM PTFE	-	-30 to 105 -60 to 100 -200 to 260	-
	BUR13	Triangular back-up ring for use in piston applications. Can be supplied solid or split.	PU POM PTFE	-	-30 to 105 -60 to 100 -200 to 260	-

## Guide Rings



Profile	Type	Description	Standard Material	Pressure (Bar)	Temp (°C)	Surface speed m/s
	BRW01	Normally cut at an angle for an easy installation. Can also be supplied solid.	POM PTFE Polyester Fabric	-	-60 to 100 -200 to 260 -40 to 130	4
	BWR01A	As profile BWR01 but with added spiral on the outside diameter for better lubrication. Normally cut but can be supplied solid too.	POM PTFE	-	-60 to 100 -200 to 260	4
	BWR03	L Shape Wear ring for piston applications. Normally split for easy application but can also be supplied solid.	POM PTFE	-	-60 to 100 -200 to 260	4
	BWR04	L Shape wear ring for rod applications. Normally split for easy application but can also be supplied solid.	POM PTFE	-	-60 to 100	4
	BWR05	T Shape wear ring for piston applications. Normally split for easy application but can also be supplied solid	POM PTFE	-	-60 to 100 -200 to 260	4
	BWR06	T Shape wear ring for rod applications. Normally split for easy application but can be supplied solid too.	POM PTFE	-	-60 to 100 -200 to 260	4
	BWR07	Wear ring for piston applications. Normally split for easy application but can be supplied solid too.	POM PTFE	-	-60 to 100 -200 to 260	4
	BWR08	Wear ring for rod applications. Normally split for easy application but can be supplied solid too.	POM PTFE	-	-60 to 100 -200 to 260	4

# Rotary Seals











Profile	Type	Description	Standard Material	Pressure (Bar)	Temp (°C)	Surface speed m/s
	OS01	Can be supplied solid or split for easy installation.	PU/POM NBR/POM FPM/PTFE	0.5 0.5 0.5	-30 to 100 -25 to 100 -20 to 210	5 10 25
	OS02	Contoured back-up ring for use with O Rings. Can be supplied solid or split.	PU/POM NBR/POM FPM/PTFE	0.5 0.5 0.5	-30 to 105 -60 to 100 -200 to 260	5 10 25
	OS03	Angled back-up ring normally for use with piston seals such as our PS02. Can be supplied solid or split.	PU/POM NBR/POM FPM/PTFE	0.5 0.5 0.5	-30 to 100 -25 to 100 -20 to 210	5 10 25
	OS08	Angled back-up ring normally for use with rod seals such as our RS02. Can be supplied solid or split.	PU NBR	-	-30 to 105 -25 to 100	5 10
	OS08A	Triangular back-up ring for use in rod applications. Can be supplied solid or split.	PU NBR	-	-30 to 105 -25 to 100	5 10
	R03	Triangular back-up ring for use in piston applications. Can be supplied solid or split.	PU/POM NBR/POM	400 250	-30 to 100 -25 to 100	0.2 0.2
	R04	Symmetrical double acting rotary seal with interference on the OD. Dynamic sealing on the ID. Excellent static and dynamic sealing performance. Low friction.	PU NBR	160 100	-30 to 105 -25 to 100	0.2 0.2
	R04A	Symmetrical double acting rotary seal with interference on the OD. Dynamic sealing on the ID. Excellent static and dynamic sealing performance.	PU NBR	160 100	-30 to 105 -25 to 100	0.2 0.2
	R05	Symmetrical double acting rotary shaft seal with interference on the ID. Dynamic sealing on the OD. Excellent static and dynamic sealing performance.	PU NBR	160 100	-30 to 105 -25 to 100	0.2 0.2
	R05A	Symmetrical double acting rotary seal with interference on the ID. Dynamic sealing on the OD. Excellent static and dynamic sealing performance. Low friction.	PU NBR	160 100	-30 to 105 -25 to 100	0.2 0.2
	VR06	V Ring which stretch fits onto the shaft to ensure the seal rotates with the shaft. Used primarily as a secondary seal to prevent ingress of contaminants.	NBR	-	-25 to 100	25
	VR07	V Ring as profile VR06 but with angled back.	NBR	-	-25 to 100	25
	R08	Double acting seal for rotary applications. Excellent performance at low speeds and high pressure. Good extrusion resistance.	PTFE/NBR	350	-25 to 100	0.4
	R08D	Double acting seal for rotary applications. Excellent performance at low speeds and high pressure. Good extrusion resistance.	PTFE/NBR	350	-25 to 100	0.4
	R09	As per profile R08 but with added ridges on the sleeve which create a lubricant reservoir.	PTFE/NBR	350	-25 to 100	0.4
	R09A	As per profile R09 but with special profile energizer which improves the seals wear resistance. Excellent extrusion resistance.	PTFE/NBR	350	-25 to 100	0.4
	R10	Double acting rotary shaft seal for outside sealing. Excellent sealing at low speeds with high pressure. Grooves on the outer sleeve create a lubricant reservoir.	PTFE/NBR	350	-25 to 100	0.4
	R10A	As per profile R10 only this option uses a special design energizer to improve the wear resistance. Excellent extrusion resistance.	PTFE/NBR	350	-25 to 100	0.4
	R11	Double acting rotary shaft seal for outside sealing. Excellent sealing at low speeds with high pressure. Excellent sealing performance at low speeds with high pressure. Good extrusion Resistance.	PTFE/NBR	350	-25 to 100	0.4



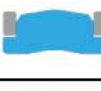


## Rotary Seals (cont)




















Profile	Type	Description	Standard Material	Pressure (Bar)	Temp (°C)	Surface speed m/s
	RS19A	Single acting rotary seal with clamping flange. Seal preload with a V-Spring. Excellent static and dynamic sealing. Offers low friction for dry running applications.	PTFE/V-Spring	150	-200 to 260	2
	PS19A	Single acting rotary seal with clamping flange. Seal preload via a V Spring. Excellent static and dynamic sealing. Offers low friction for dry running applications.	PTFE/V-Spring	150	-200 to 260	2



## Static Seals & O-rings

Profile	Type	Description	Standard Material	Pressure (Bar)	Temp (°C)	Surface speed m/s
	FLO1A	Suitable for external pressure. Simple seal for wide range of pressures and temperatures. Suits a wide range of applications.	PU FPM EPDM	400 250 250	-30 to 105 -20 to 210 -50 to 130	-
	FLO2B	Suitable for internal pressure. Simple seal for wide range of pressures and temperatures. Suits a wide range of applications.	PU FPM EPDM	400 250 250	-30 to 105 -20 to 210 -50 to 130	-
	FLO3	Low cost seal for special dimensioned grooves. Useful in compact groves.	PU NBR EPDM	600 160 160	-30 to 105 -25 to 210 -20 to 210	-
	FLO6	Spring energized face seal for internal pressure. Excellent static sealing. Low bolt loading. Can also be used in rotary applications.	PTFE/Helicoil spring	160	-60 to 200	15
	FLO7	Spring energized face seal for external pressure. Excellent static sealing. Low bolt loading. Can also be used in rotary applications.	PTFE/Helicoil spring	160	-60 to 200	15
	OR	The well known O Ring with proven reliability and used in multiple applications. Used in simple grooves. For extreme pressures we suggest using the PS20/RS20 or PS35/RS35.	PU NBR FPM	600 160 160	-30 to 105 -25 to 100 -20 to 120	-
	ORH	Used in special dimension grooves. Useful for compact grooves.	PU NBR FPM	600 160 160	-30 to 105 -25 to 100 -20 to 210	-
	ORV	Used in special dimension grooves. Useful for compact grooves.	PU NBR FPM	600 160 160	-30 to 105 -25 to 100 -20 to 120	-
	QR01	Improved pressure rating compared with an O Ring. Useful for compact grooves.	PU NBR FPM	600 160 160	-30 to 105 -25 to 100 -20 to 210	-
	SS01	Improved pressure rating compared with an O Ring. For compact and simple groove designs.	PU NBR FPM	600 160 160	-30 to 105 -20 to 100 -20 to 210	-
















## Mining Seals

Profile	Type	Description	Standard Material	Pressure (Bar)	Temp (°C)	Surface speed m/s
	P50	Double acting piston seal with interference on the ID. Good static fit in the groove. Consists of one sealing element and two back-up rings. High frictional force.	PU/POM	400 dyn. 1500 Stat	-30 to 100	0.5/0.2
	P50A	As per profile P50 but with a double sealing edge on the OD.	PU/POM	400 dyn. 1500 Stat	-30 to 100	0.5/0.2
	P51	Double acting piston seal with interference on the ID. Good static fit in the groove. Consists of one sealing element, one energizer and two back-up rings. High frictional force.	PU/NBR/POM	400 dyn. 1500 Stat	-25 to 100	0.5/0.2

Profile	Type	Description	Standard Material	Pressure (Bar)	Temp (°C)	Surface speed m/s
	P51A	Double acting piston seal with interference on the ID. Good static fit in the groove. Consists of one sealing element, one energizer and two back-up rings. High frictional force.	PU/NBR/POM	400 dyn 1500 stat	-25 to 100	0.5/0.2
	P51G	Double acting piston seal with interference on the ID. Good static fit in the groove. Consists of one sealing element, one force energizer and two back-up rings. High frictional force.	PU/NBR/POM	400 dyn 1500 stat	-25 to 100	0.5/0.2
	P52	Double acting piston seal with interference on the ID. Good static fit in the groove. Consists of one sealing element and two back-up rings. Back up rings also act as guide rings. High frictional force.	PU/POM	700 dyn 1500 stat	-30 to 100	0.5/0.2
	P53	Double acting piston seal with interference fit on the ID. Good static fit in the groove. Consists of one sealing element, one energizer and two back-up rings. High frictional force.	PU/NBR/POM	700 dyn 1500 stat	-25 to 100	0.5/0.2
	P54	As per profile P53 but with L Shape Wear rings/back-up rings.	PU/NBR/POM	400 dyn 1500 stat	-25 to 100	0.5/0.2
	P54A	As per profile P54 but with a double sealing edge on the OD.	PU/NBR/POM	400 dyn 1500 stat	-25 to 100	0.5/0.2
	P55	Conventional 5 pc double actor comprises one elastomeric sealing element with 2 rigid spacers and two L Shape guide rings.	PU/POM NBR/POM	700 dyn/ 1500 stat 400 dyn/ 1500 stat	-25 to 100	0.5/0.2
	R50	Single acting rod seal with O Ring energizer and back-up ring to prevent/resist extrusion. Also has the added benefit of a secondary lip to stabilize the seal in the groove.	PU/POM NBR/POM	700 dyn/ 1500 stat 400 dyn/ 1500 stat	-25 to 100	0.5/0.2
	R50A	Single acting rod seal with an O Ring energizer and back-up rings to prevent/resist extrusion. Also has the added benefit of a secondary lip to stabilize the seal in the groove.	PU/NBR/POM	700	-25 to 100	0.5
	R51	Symmetrical seal with O Ring energizer for use on both rod and piston applications. Also has secondary lip to help stabilize the seal in the groove.	PU/NBR	400	-25 to 100	0.5
	R52	Single acting rod seal with back-up ring to help prevent/resist extrusion. Also has secondary lip to help stabilize the seal in the groove.	PU/POM	700	-30 to 100	0.5
	R53	Symmetrical seal for use in both rod/piston applications. Also has a secondary lip to help stabilize the seal in the groove.	PU	400	-30 to 100	0.5
	W50	Medium to heavy duty wiper. Designed to remove contaminated from the rod to prevent them getting into the cylinder.	PU	-	-30 to 105	2
	W51	Accurate closure at the cylinder provides reliable protection even in the most arduous of conditions.	PU	-	-30 to 105	2
	W53	Self retaining (Knock-in) wiper for use in press fit housings.	PU/POM	-	-30 to 100	2
	W54	Flexible wiper featuring a double step on the OD. Designed to remove contaminates from the rod to prevent them from getting into the cylinder.	PU	-	-30 to 105	2
	BWR01-P	Guide ring - Normally cut at an angle for easy installation. Can be supplied solid too.	POM PTFE	-	-60 to 100 -200 to 260	4
	BWR01-R	Guide ring - Normally cut at an angle for easy installation. Can be supplied solid too.	POM PTFE	-	-60 to 100 -200 to 260	4
	P58	Symmetrical single acting seal. Normally used on small section seals where lips would be too thin. Recommended for positioning or holding positions.	PU	400	-30 to 100	0.3

	Description	Colour	Application Temp	Hardness at 20°C	info
Polyurethane	PU Red U500-R95		-30 to +125°C	Shore A 95 +/- 2	FDA EC
	PU Petrol U505-P79		-25 to +100°C	Shore A 79 +/- 3	
	PU Light Green U510-G88		-30 to +115°C	Shore A 90 +/- 2	
	PU Orange U520-OR95-HT		-30 to +135°C	Shore A 96 +/- 2	High temp Norsok M-710
	PU Light Blue U530-B95-LT		-50 to +105°C	Shore A 95 +/- 2	Low temp FDA
	PU Violet U540-VI95-CR		-30 to +115°C	Shore A 95 +/- 2	Chemical Resistance, 3-A
	PU Dark Red U550-GM95		-30 to +125°C	Shore A 95 +/- 2	MoS <sub>2</sub> filled Low Friction
	PU Blue U570-D57		-30 to +125°C	Shore D 57 +/- 3	FDA, EC, 3-A
	PU Grey U580-D57G		-30 to +125°C	Shore D 57 +/- 3	Mos2 filled Low Friction
	PU Green U203-G95		-30 to +105°C	Shore A 95 +/- 2	
NBR	NBR Black N107-B85		-25 to +100°C	Shore A 85 +/- 5	
	NBR95 Black N109-B95		-25 to +100°C	Shore A 95 +/- 5	
	NBR FDA White N111-W85		-22 to +100°C	Shore A 85 +/- 3	FDA
HNBR	H-NBR Black HN112-B85		-25 to +150°C	Shore A 85 +/- 5	
	H-NBR RGD Black HN900-B85-RGD		-20 to +150°C	Shore A 85 +/- 5	Norsok M-710
	H-NBR RGD LT Black HN901-B85-RGD		-40 to +150°C	Shore A 85 +/- 5	Norsok M-710
FPM	FPM Brown F109-BR85		-20 to +210°C	Shore A 85 +/- 5	FDA, EC
	FPM FDA Brown F110-BR85		-25 to +210°C	Shore A 85 +/- 5	
	FPM Black F111-B85		-25 to +210°C	Shore A 85 +/- 5	
	FPM-RGD Black F800-B85-RGD		-30 to +210°C	Shore A 85 +/-5	Norsok M-710



	Description	Colour	Application Temp	Hardness at 20°C	info
EPDM	EPDM Black E131-B85		-50 to +130°C	Shore A 85 +/- 5	
	EPDM FDA White E132-W85		-50 to +100°C	Shore A 85 +/- 3	FDA EC
	EPDM KTW Black E133-W270		-45 to +120°C	Shore A 85 +/- 5	KTW
Silicone	Silicone FDA Red S102-R85		-55 to 210°C	Shore A 85 +/- 5	FDA EC
	Silicone FDA Blue S103-BL85		-55 to +180°C	Shore A 85 +/- 3	FDA EC
TFE/P	AFLAS Black AF101-B85		-15 to +210°C	Shore A 85 +/- 5	
PTFE	PTFE-P FDA White T101-W		-200 to +260°C	Shore D 51 – 60	FDA
	PTFE-F Grey T105-G		-200 to +260°C	Shore D 55 – 64	15% Glass + 5% MoS <sub>2</sub>
	PTFE-40% Bronze Brown T110-BR40		-200 to +260°C	Shore D 62 – 67	
	PTFE-25% Carbon Grey T125-C25		-200 to +260°C	Shore D 62 – 67	
	PTFE-25% Carbon Grey T125-C25-FDA		-200 to 260°C	Shore D 62 – 67	FDA
Plastics	POM FDA White P101-WE		-50 to +100°C	-	FDA
	PA FDA Natural A112-WC		-40 to +90°C	-	FDA
	Peek Natural Beige PK100-CN		-50 to +250°C	Shore D 90	FDA
	UHMW – PE White PE1000-HD		-200 to +80°C	Shore D 60 – 65	FDA



Material data sheets are available to download from our website.

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