

application	profile	description	temperature	max. speed	max. pressure	material			
		hydraulic, single acting asymmetric piston seal for standard applications. design provides stable fit in the housing, ultimate sealing effect over a wide temperature range. avoids extensive drag pressure. back-to-back arrangement with guide ring in between or for double acting pistons or to separate different fluids.	-30 °C ... +110 °C	0,5 m/s	400 bar (5800 psi)	PU			
			-20 °C ... +110 °C	0,5 m/s	400 bar (5800 psi)	HPU			
			-20 °C ... +110 °C	0,7 m/s	400 bar (5800 psi)	SPU			
			-50 °C ... +110 °C	0,5 m/s	400 bar (5800 psi)	LTPU			
			-30 °C ... +110 °C	0,5 m/s	400 bar (5800 psi)	GPU			
		hydraulic, single acting asymmetric piston seal for standard applications as P01 but due to design with active back-up ring suitable for higher pressure range or larger extrusion gaps. P02 for short housings..	-30 °C ... +100 °C	0,5 m/s	700 bar (10.000 psi)	PU	seal part	back-up ring	
			-20 °C ... +100 °C	0,5 m/s	700 bar (10.000 psi)	HPU		POM/PA*	
			-20 °C ... +100 °C	0,7 m/s	700 bar (10.000 psi)	SPU		POM/PA*	
			-40 °C ... +100 °C	0,5 m/s	700 bar (10.000 psi)	LTPU		POM/PA*	
			-30 °C ... +100 °C	0,5 m/s	700 bar (10.000 psi)	GPU		POM/PA*	
		hydraulic, single acting asymmetric piston seal for standard applications as P01 but due to design with active back-up ring suitable for higher pressure range or larger extrusion gaps. P02-A for standard housings..	-30 °C ... +100 °C	0,5 m/s	700 bar (10.000 psi)	PU	seal part	back-up ring	
			-20 °C ... +100 °C	0,5 m/s	700 bar (10.000 psi)	HPU		POM/PA*	
			-20 °C ... +100 °C	0,7 m/s	700 bar (10.000 psi)	SPU		POM/PA*	
			-40 °C ... +100 °C	0,5 m/s	700 bar (10.000 psi)	LTPU		POM/PA*	
			-30 °C ... +100 °C	0,5 m/s	700 bar (10.000 psi)	GPU		POM/PA*	
		hydraulic, single acting o-ring activated, asymmetrical piston seal. interference fit on inside diameter maintains stable fit in the housing. design provides ultimate sealing effect. especially suitable for short stroke applications (e.g. spindle seals, coupling actuators...)	-30 °C ... +100 °C	0,5 m/s	400 bar (5800 psi)	PU		o ring	
			-20 °C ... +100 °C	0,5 m/s	400 bar (5800 psi)	HPU		NBR	
			-30 °C ... +100 °C	0,5 m/s	400 bar (5800 psi)	LTPU		NBR	
			-20 °C ... +100 °C	0,7 m/s	400 bar (5800 psi)	SPU		NBR	
			-30 °C ... +100 °C	0,5 m/s	400 bar (5800 psi)	GPU		NBR	
			-50 °C ... +100 °C	0,5 m/s	400 bar (5800 psi)	LTPU		MVQ	
		PTFE-piston seal, single acting o-ring activated, asymmetrical PTFE piston seal, low friction and no stick-slip effect. good adaptation possibilities for diverse temperatures and media by selection of suitable o-ring material, almost no dead spots as required for applications in food and pharma industry.	-20 °C ... +200 °C	1,0 m/s	100 bar (1450 psi)	PTFE virgin	seal part	o ring	
			-20 °C ... +200 °C	1,0 m/s	160 bar (2300 psi)	PTFE glass		FKM	
			-25 °C ... +150 °C	1,0 m/s	100 bar (1450 psi)	PTFE virgin		HNBR	
			-25 °C ... +150 °C	1,0 m/s	160 bar (2300 psi)	PTFE glass		HNBR	
			-60 °C ... + 80 °C	0,5 m/s	200 bar (2900 psi)	UHMWPE		MVQ	
			-60 °C ... +200 °C	1,0 m/s	100 bar (1450 psi)	PTFE virgin		MVQ	
-60 °C ... +200 °C	1,0 m/s	160 bar (2300 psi)	PTFE glass		MVQ				
		PTFE-piston seal, single acting helicoil spring activated, asymmetrical PTFE piston seal, low friction and no stick-slip effect, excellent chemical and thermal resistance, mainly used in chemical, pharma and food industry or for valves.	-200 °C ... +260 °C	1,0 m/s	100 bar (1450 psi)	PTFE	seal part	spring	
			-200 °C ... +260 °C	1,0 m/s	160 bar (2300 psi)	PTFE glass		14310	
			-200 °C ... + 80 °C	0,5 m/s	200 bar (2900 psi)	UHMWPE		14310	
		hydraulic, single acting asymmetric piston seal for standard applications as P03, but due to design with active back-up ring suitable for larger extrusion gaps. P04 for short housings.	-30 °C ... +100 °C	0,5 m/s	700 bar (10.000 psi)	PU	seal part	back-up ring	back up
			-20 °C ... +100 °C	0,5 m/s	700 bar (10.000 psi)	HPU		NBR 70	POM/PA*
			-30 °C ... +100 °C	0,5 m/s	700 bar (10.000 psi)	LTPU		NBR 70	POM/PA*
			-20 °C ... +100 °C	0,7 m/s	700 bar (10.000 psi)	SPU		NBR 70	POM/PA*
			-30 °C ... +100 °C	0,5 m/s	700 bar (10.000 psi)	GPU		NBR 70	POM/PA*



not bolded symbols. please consult our technical dpmt. for application limitations

* POM up to ø260 mm, PA above ø260 mm

** attention: not suitable for mineral oils!

application	profile	description	temperature	max. speed	max. pressure	material	back-up ring	back up
		hydraulic, single acting asymmetric piston seal for standard applications as P03, but due to design with active back-up ring suitable for larger extrusion gaps or higher pressure. P04 for standard housing design	-30 °C ... +100 °C	0,5 m/s	700 bar (10.000 psi)	PU	NBR 70	POM/PA*
			-20 °C ... +100 °C	0,5 m/s	700 bar (10.000 psi)	HPU	NBR 70	POM/PA*
			-30 °C ... +100 °C	0,5 m/s	700 bar (10.000 psi)	LTPU	NBR 70	POM/PA*
			-20 °C ... +100 °C	0,7 m/s	700 bar (10.000 psi)	SPU	NBR 70	POM/PA*
			-30 °C ... +100 °C	0,5 m/s	700 bar (10.000 psi)	GPU	NBR 70	POM/PA*
		pneumatic, single acting asymmetric piston seal, extremely wear resistant, for use in lubricated or dry pneumatic applications. special design of sealing lip allows retention of initial lubricating film.	-30 °C ... +110 °C	1,0 m/s	25 bar (360 psi)	PU		
			-20 °C ... +110 °C	1,0 m/s	25 bar (360 psi)	HPU		
			-20 °C ... +110 °C	2,0 m/s	25 bar (360 psi)	SPU		
			-50 °C ... +110 °C	1,0 m/s	25 bar (360 psi)	LTPU		
			-30 °C ... +110 °C	1,0 m/s	25 bar (360 psi)	GPU		
		pneumatic, single acting asymmetric piston seal, good wear resistant, for use in lubricated or dry pneumatic applications. good adaptation possibilities for diverse temperatures and media by selection of suitable seal material. special design of sealing lip allows retention of initial lubricating film.	-30 °C ... + 80 °C	1,0 m/s	25 bar (360 psi)	NBR		
			-20 °C ... +200 °C	1,0 m/s	25 bar (360 psi)	FKM		
			-50 °C ... +150 °C	1,0 m/s	25 bar (360 psi)	EPDM**		
			-25 °C ... +150 °C	1,0 m/s	25 bar (360 psi)	HNBR		
		hydraulic, single acting symmetric piston seal for simple standard applications, not recommended for new designs (profile P01 preferred). also for larger cross section, easier to install.	-30 °C ... +110 °C	0,5 m/s	400 bar (5800 psi)	PU		
			-20 °C ... +110 °C	0,5 m/s	400 bar (5800 psi)	HPU		
			-20 °C ... +110 °C	0,7 m/s	400 bar (5800 psi)	SPU		
			-50 °C ... +110 °C	0,5 m/s	400 bar (5800 psi)	LTPU		
			-30 °C ... +110 °C	0,5 m/s	400 bar (5800 psi)	GPU		
		hydraulic, single acting o-ring activated symmetric piston seal for simple standard applications, not recommended for new designs (profile P03 preferred)	-30 °C ... +100 °C	0,5 m/s	400 bar (5800 psi)	PU	NBR	
			-20 °C ... +100 °C	0,5 m/s	400 bar (5800 psi)	HPU	NBR	
			-20 °C ... +100 °C	0,7 m/s	400 bar (5800 psi)	SPU	NBR	
			-30 °C ... +100 °C	0,5 m/s	400 bar (5800 psi)	LTPU	NBR	
			-30 °C ... +100 °C	0,5 m/s	400 bar (5800 psi)	GPU	NBR	
		hydraulic, double acting o-ring activated symmetric PTFE piston seal, low friction. for extreme low or high speed, suitable for positioning functions. for mobile hydraulics, machine tools, injection moulding machines, heavy hydraulics.	-30 °C ... +100 °C	10,0 m/s	400 bar (5800 psi)			NBR
			-20 °C ... +200 °C	10,0 m/s	400 bar (5800 psi)	PTFE (glass, bronze, carbon)	FPM/FKM	
			-50 °C ... +150 °C	10,0 m/s	400 bar (5800 psi)		EPDM**	
			-60 °C ... +200 °C	10,0 m/s	400 bar (5800 psi)		MVQ	
			-60 °C ... + 80 °C	10,0 m/s	400 bar (5800 psi)	UHMWPE	MVQ	
		hydraulic, double acting o-ring activated symmetric PU piston seal with excellent static and dynamic sealing capacity, extremely wear resistant.	-30 °C ... +100 °C	1,0 m/s	250 bar (3600 psi)	PU		NBR
			-20 °C ... +100 °C	1,0 m/s	250 bar (3600 psi)	HPU		NBR
			-20 °C ... +100 °C	1,4 m/s	250 bar (3600 psi)	SPU		NBR
			-30 °C ... +100 °C	1,0 m/s	250 bar (3600 psi)	LTPU		NBR



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* POM up to ø260 mm, PA above ø260 mm

** attention: not suitable for mineral oils!

application	profile	description	temperature	max. speed	max. pressure	material		
		hydraulic, single acting o-ring activated asymmetric PTFE piston seal, low friction. for extreme low or high speed. suitable for positioning functions.	-30 °C ... +100 °C	10,0 m/s	400 bar (5800 psi)	glide ring	o ring	
			-20 °C ... +200 °C	10,0 m/s	400 bar (5800 psi)		PTFE (glass, bronze, carbon)	NBR
			-50 °C ... +150 °C	10,0 m/s	400 bar (5800 psi)	FPM/FKM		
			-60 °C ... +200 °C	10,0 m/s	400 bar (5800 psi)	EPDM**		
			-60 °C ... + 80 °C	10,0 m/s	400 bar (5800 psi)	MVQ		
		hydraulic, single acting profile ring-activated asymmetric PTFE piston seal, with special heavy duty design. for heavy industry hydraulics or for special housing dimensions.	-30 °C ... +100 °C	10,0 m/s	400 bar (5800 psi)	glide ring	energizer	
			-20 °C ... +200 °C	10,0 m/s	400 bar (5800 psi)		PTFE (glass, bronze, carbon)	NBR
			-50 °C ... +150 °C	10,0 m/s	400 bar (5800 psi)	FPM/FKM		
			-25 °C ... +150 °C	10,0 m/s	400 bar (5800 psi)	EPDM**		
		hydraulic, double acting profile ring-activated symmetric PTFE piston seal, similar to S09-D, but special heavy duty design. for heavy industry hydraulics or for special housing dimensions.	-30 °C ... +100 °C	10,0 m/s	400 bar (5800 psi)	glide ring	energizer	
			-20 °C ... +200 °C	10,0 m/s	400 bar (5800 psi)		PTFE (glass, bronze, carbon)	NBR
			-50 °C ... +150 °C	10,0 m/s	400 bar (5800 psi)	FPM/FKM		
			-25 °C ... +150 °C	10,0 m/s	400 bar (5800 psi)	EPDM**		
		hydraulic, double acting profile ring-activated compact piston seal with integrated guiding elements. excellent static and dynamic sealing capacity.	-30 °C ... +100 °C	0,5 m/s	400 bar (5800 psi)	seal part	energizer	back up
			-20 °C ... +100 °C	0,5 m/s	400 bar (5800 psi)			
			-30 °C ... +100 °C	0,5 m/s	400 bar (5800 psi)	HPU	NBR	POM / PA*
			-20 °C ... +100 °C	0,7 m/s	400 bar (5800 psi)	LTPU	NBR	POM / PA*
			-30 °C ... +100 °C	0,5 m/s	400 bar (5800 psi)	SPU	NBR	POM / PA*
		hydraulic, double acting profile ring-activated compact piston seal with integrated guiding elements. excellent static sealing capacity. commonly used in standard cylinders.	-30 °C ... +100 °C	0,5 m/s	400 bar (5800 psi)	seal part	energizer	back up
			-20 °C ... +100 °C	0,5 m/s	400 bar (5800 psi)			
			-30 °C ... +100 °C	0,5 m/s	400 bar (5800 psi)	HPU	NBR	POM / PA*
			-20 °C ... +100 °C	0,7 m/s	400 bar (5800 psi)	LTPU	NBR	POM / PA*
			-30 °C ... +100 °C	0,5 m/s	400 bar (5800 psi)	SPU	NBR	POM / PA*
		hydraulic, double acting profile ring-activated compact piston seal with integrated guiding elements. excellent static and dynamic sealing capacity.	-30 °C ... +100 °C	0,5 m/s	400 bar (5800 psi)	seal part	energizer	back up
			-20 °C ... +100 °C	0,5 m/s	400 bar (5800 psi)			
			-30 °C ... +100 °C	0,5 m/s	400 bar (5800 psi)	HPU	NBR	POM / PA*
			-20 °C ... +100 °C	0,7 m/s	400 bar (5800 psi)	LTPU	NBR	POM / PA*
			-30 °C ... +100 °C	0,5 m/s	400 bar (5800 psi)	SPU	NBR	POM / PA*
		hydraulic, double acting profile ring-activated compact piston seal with integrated guiding elements. design for high pressure range, excellent static sealing capacity. mainly used in mining / tunneling industry.	-20 °C ... +100 °C	3 m/s	1500 bar (21700 psi)	seal part	energizer	back up
			-30 °C ... +100 °C	3 m/s	1500 bar (21700 psi)			
						GPU	NBR	POM / PA*



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* POM up to ø260 mm, PA above ø260 mm

** attention: not suitable for mineral oils!

application	profile	description	temperature	max. speed	max. pressure	material			
		hydraulic, double acting profile ring-activated compact PTFE piston seal with integrated guiding elements. low friction, good chemical and thermal resistance.	-30 °C ... +100 °C	1,5 m/s	500 bar (7200 psi)	PTFE glass	seal part	energizer	back up
			-30 °C ... +100 °C	1,5 m/s	500 bar (7200 psi)	PTFE glass	NBR	POM	
			-20 °C ... +200 °C	1,5 m/s	400 bar (5800 psi)	PTFE glass	FPM/FKM	PAEK	
			-20 °C ... +200 °C	1,5 m/s	400 bar (5800 psi)	PTFE glass	FPM/FKM	PTFE carbon	
		hydraulic, single acting chevron sealing set, parted surface design. in back-to-back arrangement with one intermediate chevron for double sided pressure activation, in single acting applications with more intermediate chevrons possible for heavy industry hydraulics.	-30 °C ... +100 °C	0,5 m/s	500 bar (7200 psi)	POM / PA*	P10-A	P11-M	P12-M
			-20 °C ... +100 °C	0,5 m/s	500 bar (7200 psi)	POM / PA*	HPU	POM / PA*	
			-40 °C ... +100 °C	0,5 m/s	500 bar (7200 psi)	POM / PA*	LTPU	POM / PA*	
			-20 °C ... +100 °C	0,7 m/s	500 bar (7200 psi)	POM / PA*	SPU	POM / PA*	
			-30 °C ... +100 °C	0,5 m/s	250 bar (3600 psi)	PTFE glass	NBR	PTFE glass	
			-20 °C ... +200 °C	0,5 m/s	250 bar (3600 psi)	PTFE glass	FKM	PTFE glass	
			-50 °C ... +150 °C	0,5 m/s	250 bar (3600 psi)	PTFE glass	EPDM**	PTFE glass	
			-25 °C ... +150 °C	0,5 m/s	250 bar (3600 psi)	PTFE glass	HNBR	PTFE glass	
		hydraulic, single acting chevron sealing set, machined surface design. in back-to-back arrangement with one intermediate chevron for double sided pressure activation, in single acting applications with more intermediate chevrons possible for heavy industry hydraulics.	-30 °C ... +100 °C	0,5 m/s	500 bar (7200 psi)	POM / PA*	P10-A	P11-T	P12-T
			-20 °C ... +100 °C	0,5 m/s	500 bar (7200 psi)	POM / PA*	HPU	POM / PA*	
			-40 °C ... +100 °C	0,5 m/s	500 bar (7200 psi)	POM / PA*	LTPU	POM / PA*	
			-20 °C ... +100 °C	0,7 m/s	500 bar (7200 psi)	POM / PA*	SPU	POM / PA*	
			-30 °C ... +100 °C	0,5 m/s	250 bar (3600 psi)	PTFE glass	NBR	PTFE glass	
			-20 °C ... +200 °C	0,5 m/s	250 bar (3600 psi)	PTFE glass	FKM	PTFE glass	
			-50 °C ... +150 °C	0,5 m/s	250 bar (3600 psi)	PTFE glass	EPDM**	PTFE glass	
			-25 °C ... +150 °C	0,5 m/s	250 bar (3600 psi)	PTFE glass	HNBR	PTFE glass	
		hydraulic, single acting chevron sealing set, design with flexible sealing lips, good sealing ability in higher pressure range. for heavy industry hydraulics, water hydraulic systems	-30 °C ... +100 °C	0,5 m/s	600 bar (8700 psi)	POM / PA*	P13-T	P11-M	P15-T
			-20 °C ... +100 °C	0,5 m/s	600 bar (8700 psi)	POM / PA*	HPU	POM / PA*	
			-40 °C ... +100 °C	0,5 m/s	600 bar (8700 psi)	POM / PA*	LTPU	POM / PA*	
			-20 °C ... +100 °C	0,7 m/s	600 bar (8700 psi)	POM / PA*	SPU	POM / PA*	
		hydraulic, single acting simple cup seal, usually fixed on the piston by means of a clamping plate. mainly used for replacement in old hydraulic and pneumatic cylinders or for low-grade secondary applications. also used for food filling / portioning equipment.	-30 °C ... +110 °C	0,5 m/s	160 bar (2300 psi)	PU			
			-20 °C ... +110 °C	0,5 m/s	160 bar (2300 psi)	HPU			
			-50 °C ... +110 °C	0,5 m/s	160 bar (2300 psi)	LTPU			
			-20 °C ... +110 °C	0,7 m/s	160 bar (2300 psi)	SPU			
			-30 °C ... +110 °C	0,5 m/s	160 bar (2300 psi)	GPU			
			-30 °C ... +100 °C	0,5 m/s	160 bar (2300 psi)	NBR			
			-25 °C ... +150 °C	0,5 m/s	160 bar (2300 psi)	HNBR			
			-20 °C ... +200 °C	0,5 m/s	160 bar (2300 psi)	FKM			
-50 °C ... +150 °C	0,5 m/s	160 bar (2300 psi)	EPDM**						



not bolded symbols: please consult our technical dpmt. for application limitations

* POM up to ø260 mm, PA above ø260 mm

** attention: not suitable for mineral oils!

application	profile	description	temperature	max. speed	max. pressure	material		
		hydraulic, single acting simple cup seal, usually fixed on the piston by means of a clamping plate. mainly used for replacement in old hydraulic and pneumatic cylinders or for low-grade secondary applications. also used for food filling / portioning equipment.	-30 °C ... +110 °C	0,5 m/s	160 bar (2300 psi)	PU		
			-20 °C ... +110 °C	0,5 m/s	160 bar (2300 psi)	HPU		
			-50 °C ... +110 °C	0,5 m/s	160 bar (2300 psi)	LTPU		
			-20 °C ... +110 °C	0,7 m/s	160 bar (2300 psi)	SPU		
			-30 °C ... +110 °C	0,5 m/s	160 bar (2300 psi)	GPU		
			-30 °C ... +100 °C	0,5 m/s	160 bar (2300 psi)	NBR		
			-25 °C ... +150 °C	0,5 m/s	160 bar (2300 psi)	HNBR		
			-20 °C ... +200 °C	0,5 m/s	160 bar (2300 psi)	FKM		
-50 °C ... +150 °C	0,5 m/s	160 bar (2300 psi)	EPDM**					
		hydraulic, double acting space saving, compact piston seal with integrated guiding elements. excellent static sealing capacity, suitable for small housings.	-30 °C ... +100 °C	0,5 m/s	250 bar (3600 psi)	PU	back up	POM / PA*
			-20 °C ... +100 °C	0,5 m/s	250 bar (3600 psi)	HPU	POM / PA*	
			-40 °C ... +100 °C	0,5 m/s	250 bar (3600 psi)	LTPU	POM / PA*	
			-20 °C ... +100 °C	0,7 m/s	250 bar (3600 psi)	SPU	POM / PA*	
		hydraulic, double acting space saving, compact piston seal with integrated guiding elements. excellent static sealing capacity, good adaptation possibilities for diverse temperatures and media by selection of suitable material. suitable for small housings.	-30 °C ... +100 °C	0,5 m/s	250 bar (3600 psi)	NBR	back up	POM
			-30 °C ... +100 °C	0,5 m/s	250 bar (3600 psi)	NBR	PA*	
			-20 °C ... +200 °C	0,5 m/s	250 bar (3600 psi)	FKM	PTFE glass	
			-20 °C ... +200 °C	0,5 m/s	250 bar (3600 psi)	FKM	PAEK	
		PTFE piston seal, single acting finger-spring activated, asymmetrical PTFE piston seal, low friction and good dry running properties, excellent chemical and thermal resistance, mainly used in chemical, pharma and food industry.	-200 °C ... +260 °C	15 m/s	100 bar (1450 psi)	PTFE virgin	spring	14310
			-200 °C ... +260 °C	15 m/s	160 bar (2300 psi)	PTFE glass	14310	
			-200 °C ... +260 °C	15 m/s	160 bar (2300 psi)	PTFE bronze	14310	
			-200 °C ... +80 °C	15 m/s	200 bar (2900 psi)	UHMWPE	14310	
		hydraulic, single acting space saving, compact piston seal, suitable for standard o-ring housings. advantage compared to o-ring: integrated active back-up rings for high pressure, design with interference fit on outside diameter prevents twisting in dynamic applications.	-30 °C ... +100 °C	0,5 m/s	700 bar (10.000 psi)	NBR	back up	POM / PA*
			-25 °C ... +100 °C	0,5 m/s	700 bar (10.000 psi)	HNBR	POM / PA*	
			-20 °C ... +200 °C	0,5 m/s	700 bar (10.000 psi)	FKM	PAEK	
			-25 °C ... +150 °C	0,5 m/s	700 bar (10.000 psi)	HNBR	PTFE	
		hydraulic, single acting o-ring activated symmetric rod seal with sharp-edged sealing lips, good sealing effect for high viscosity fluids, not recommended for new designs.	-30 °C ... +100 °C	0,5 m/s	400 bar (5800 psi)	PU	o ring	NBR
			-20 °C ... +100 °C	0,5 m/s	400 bar (5800 psi)	HPU	NBR	
			-30 °C ... +100 °C	0,5 m/s	400 bar (5800 psi)	SPU	NBR	
			-20 °C ... +100 °C	0,7 m/s	400 bar (5800 psi)	LTPU	NBR	
			-30 °C ... +100 °C	0,5 m/s	400 bar (5800 psi)	GPU	NBR	






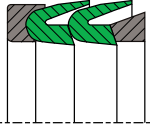





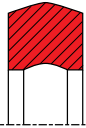
application	profile	description	temperature	max. speed	max. pressure	material			
		hydraulic, single acting symmetric piston seal with support ring for simple applications to serve repair purpose, not recommended for new designs (profile P01 preferred). retainer ring in angled design possible.	-30 °C ... +100 °C	0,5 m/s	400 bar (5800 psi)	PU	seal part	supporting	
			-20 °C ... +100 °C	0,5 m/s	400 bar (5800 psi)	HPU		POM / PA*	
			-30 °C ... +100 °C	0,5 m/s	400 bar (5800 psi)	LTPU		POM / PA*	
			-20 °C ... +100 °C	0,7 m/s	400 bar (5800 psi)	SPU		POM / PA*	
			-30 °C ... +100 °C	0,5 m/s	400 bar (5800 psi)	GPU		POM / PA*	
		hydraulic, double acting profile ring-activated compact piston seal with integrated back-up rings, excellent static sealing capacity, external guiding elements required.	-30 °C ... +100 °C	0,5 m/s	400 bar (5800 psi)	PU	seal part	energizer	back up
			-20 °C ... +100 °C	0,5 m/s	400 bar (5800 psi)	HPU		NBR	POM / PA*
			-30 °C ... +100 °C	0,5 m/s	400 bar (5800 psi)	SPU		NBR	POM / PA*
			-20 °C ... +100 °C	0,7 m/s	400 bar (5800 psi)	LTPU		NBR	POM / PA*
			-30 °C ... +100 °C	0,5 m/s	400 bar (5800 psi)	GPU		NBR	POM / PA*
		hydraulic, double acting profile ring-activated compact piston seal with integrated back-up rings, excellent static and dynamic sealing capacity, external guiding elements required.	-30 °C ... +100 °C	0,5 m/s	400 bar (5800 psi)	PU	seal part	energizer	back up
			-20 °C ... +100 °C	0,5 m/s	400 bar (5800 psi)	HPU		NBR	POM / PA*
			-30 °C ... +100 °C	0,5 m/s	400 bar (5800 psi)	SPU		NBR	POM / PA*
			-20 °C ... +100 °C	0,7 m/s	400 bar (5800 psi)	LTPU		NBR	POM / PA*
			-30 °C ... +100 °C	0,5 m/s	400 bar (5800 psi)	GPU		NBR	POM / PA*
		hydraulic, double acting profile ring-activated compact piston seal with integrated back-up rings, design for high pressure range, excellent static sealing capacity, mainly used in mining / tunneling industry, external guiding elements required.	-20 °C ... +100 °C	0,3 m/s	1500 bar (21000 psi)	HPU	seal part	energizer	back up
			-30 °C ... +100 °C	0,3 m/s	1500 bar (21000 psi)	GPU		NBR	POM / PA*
		hydraulic, double acting profile ring-activated compact PTFE piston seal with integrated back-up rings, low friction, good chemical and thermal resistance, external guiding elements required.	-30 °C ... +100 °C	1,5 m/s	500 bar (7200 psi)	PTFE glass	seal part	energizer	back up
			-30 °C ... +100 °C	1,5 m/s	500 bar (7200 psi)	PTFE glass		NBR	POM
			-20 °C ... +200 °C	1,5 m/s	400 bar (5800 psi)	PTFE glass		NBR	PA
			-20 °C ... +200 °C	1,5 m/s	400 bar (5800 psi)	PTFE glass		FKM	PEEK
			-20 °C ... +200 °C	1,5 m/s	400 bar (5800 psi)	PTFE carbon		FKM	PTFE carbon
		hydraulic/pneumatic, single acting chevron ring with flexible lip design, replacement part for standard commercial housings (male and female adapter mainly made of metal).	-30 °C ... +110 °C	0,5 m/s	500 bar (7200 psi)	PU			
			-20 °C ... +110 °C	0,5 m/s	500 bar (7200 psi)	HPU			
			-50 °C ... +110 °C	0,5 m/s	500 bar (7200 psi)	LTPU			
			-20 °C ... +110 °C	0,7 m/s	500 bar (7200 psi)	SPU			
			-30 °C ... +110 °C	0,5 m/s	500 bar (7200 psi)	GPU			
			-30 °C ... +100 °C	0,5 m/s	250 bar (3600 psi)	NBR			
			-20 °C ... +200 °C	0,5 m/s	250 bar (3600 psi)	FKM			
			-50 °C ... +150 °C	0,5 m/s	250 bar (3600 psi)	EPDM**			
-25 °C ... +150 °C	0,5 m/s	250 bar (3600 psi)	HNBR						



not bolded symbols: please consult our technical dpmt. for application limitations

* POM up to ø260 mm, PA above ø260 mm

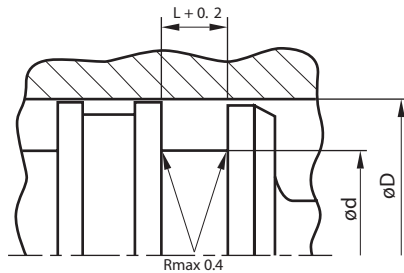
** attention: not suitable for mineral oils!

application	profile	description	temperature	max. speed	max. pressure	material	seal part	color	back up
    	P32 	hydraulic, single acting profile ring-activated compact piston seal with integrated back-up rings. excellent static and dynamic sealing capacity. external guiding elements required.	-30 °C ... +100 °C	0,5 m/s	500 bar (7200 psi)	PU		POM / PA*	POM / PA*
			-20 °C ... +100 °C	0,5 m/s	500 bar (7200 psi)	HPU		POM / PA*	POM / PA*
			-40 °C ... +100 °C	0,5 m/s	500 bar (7200 psi)	LTPU		POM / PA*	POM / PA*
			-20 °C ... +100 °C	0,7 m/s	500 bar (7200 psi)	SPU		POM / PA*	POM / PA*
			-30 °C ... +100 °C	0,5 m/s	500 bar (7200 psi)	GPU		POM / PA*	POM / PA*
    	P35 	hydraulic, double acting compact piston seal with almost no dead spots as required for applications in food and pharma industry, also commonly used as o-ring replacement, because design with interference fit on outside diameter maintains non-twisting in dynamic applications.	-30 °C ... +110 °C	0,4 m/s	400 bar (5800 psi)	PU			
			-20 °C ... +110 °C	0,4 m/s	400 bar (5800 psi)	HPU			
			-50 °C ... +110 °C	0,4 m/s	400 bar (5800 psi)	LTPU			
			-20 °C ... +110 °C	0,5 m/s	400 bar (5800 psi)	SPU			
			-30 °C ... +110 °C	0,4 m/s	400 bar (5800 psi)	GPU			

Piston seal housing details and recommendations

indicated dimensions
are required to process an order

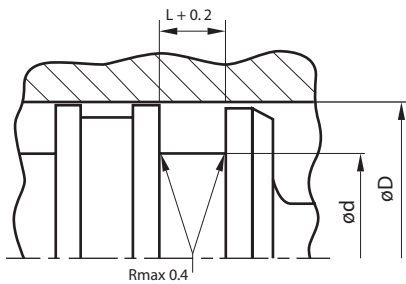
ØD outside diameter
ød inside diameter
L groove length



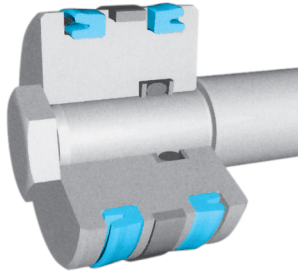
surface	R tmax	Ra
roughness	(µm)	(µm)
sliding surface for PU/RUBBER seals	≤2,5	≤0,1 - 0,5
sliding surface for PTFE seals	≤ 2	≤0,05 - 0,3
bottom of groove	≤6,3	≤1,6
groove face	≤15	≤3
bearing area Tp	50% - 95%	

seal housing tolerances	
Ø d	h10
Ø D	H9

easy ordering procedure	P01	HPU	160 x 140 x 12
	profile	material	nominal housing dimensions



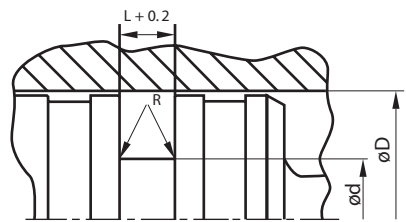
P01 P21
P02 P35
P03
P04
P05
P06
P07
P20



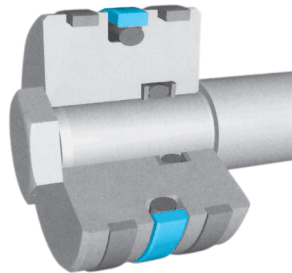
main application:
support and retaining cylinders
standard cylinders

advantages:
stable fit in the housing,
ultimate sealing effect,
wide temperature range

standard materials:
PU or NBR, FKM, EPDM, HNBR & MVQ



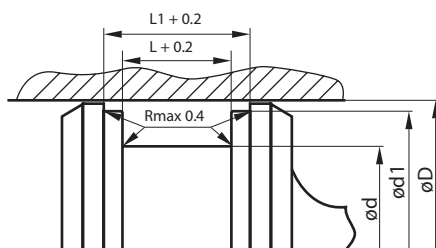
P08
P23



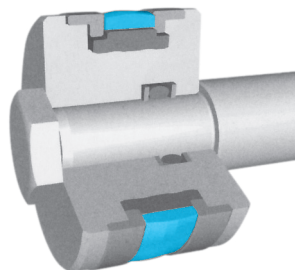
main application:
standard cylinders for positioning
functions, mobile hydraulics, etc.

advantages:
low friction, no stick-slip, excellent
resistance against pressure shocks

standard materials:
PTFE virgin/glass/bronze/carbon/
PU/NBR/FKM



P09
P17



main application:
support and retaining cylinders
standard cylinders

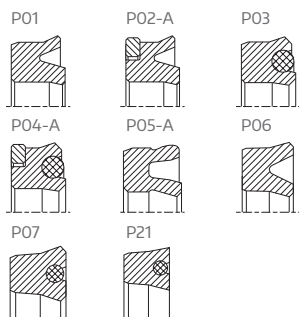
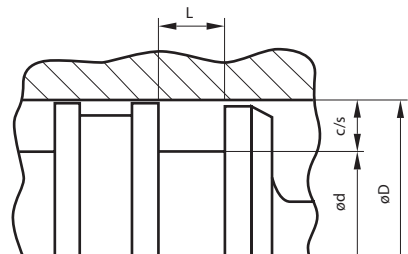
advantages:
excellent static and dynamic sealing
capacity, integrated guide rings

standard materials:
PTFE virgin/glass/bronze/carbon/
PU/NBR/FKM/EPDM/MVQ/POM/PA

housing recommendations

- single acting piston seals
- lip type (u-cup) seals
- compact seals

the listing below is our suggestion for standard housing dimensions. please note that we are able to produce those profiles to your specific need or any non standard housing.

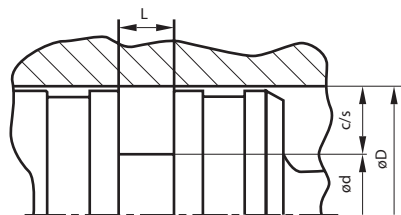


øD	ød	L	c/s
5 - 24,9	ød-8	6	4
25 - 49,9	ød-10	7	5
50 - 74,9	ød-12	8	6
75 - 149,9	ød-16	10	8
150 - 299,9	ød-20	12	10
300 - 500	ød-24	18	12
500 - 750	ød-30	20	15
> 750	ød-40	26	20

housing recommendations

- single/double acting piston seals
- o-ring activated PTFE (PU) seals

the listing below is our suggestion for standard housing dimensions. please note that we are able to produce those profiles to your specific need or any non standard housing.



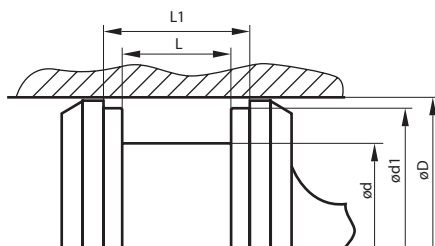
øD	ød	L	c/s
8-14,9	ød-4,9	2,2	2,45
15-39,9	ød-7,5	3,2	3,75
40-79,9	ød-11	4,2	5,5
80-132,9	ød-15,5	6,3	7,75
133 - 329,9	ød-21	8,1	10,5
330 - 669,9	ød-24,5	8,1	12,25
670 - 1.000	ød-28	9,5	14*
> 1.000	ød-28	9,5	14*

* only profiles P08-D and P08-S, not for profile P08-DP

housing recommendations

- double acting piston seals
- compact type

the listing below is our suggestion for standard housing dimensions. please note that we are able to produce those profiles to your specific need or any non standard housing.



øD	ød	ød1	L*	L1*
20 - 49,9	ød-10	ød-3	12,5	20,5
50 - 79,9	ød-15	ød-4	20	28
80 - 149,9	ød-20	ød-5	25	36
150 - 399,9	ød-25	ød-6	32	46
400 - 750	ød-30	ød-8	36	50
>750	ød-40	ød-8	40	54

* not valid for profile P09-H