

Features:

Low compression set
 profiled energizer

Highly wear-resistant
 polyurethane seal
 cap

The single-point seal
 cap design provides
 extraordinary sealing
 performance

Very robust design

Extrusion resistance
 under high pressure



MATERIAL

The 233 Series piston seal features a robust NBR elastomer, a profile seal cap in abrasion resistant polyurethane and two backup rings in high-strength thermoplastic.

Material	Code
Polyurethane H-PU / NBR / POM	MP38
Polyurethane H-PU / NBR / Nylon	MP40

OPERATING PARAMETERS

Temperature	°C	°F
hydraulic oil	-20...+115	-5...+240
water oil emulsions (HFA)	+5...+55	+40...+130
water-glycol fluids (HFC)	-20...+55	-5...+130
polyol esters (HFD)	-	-
water	+5...+55	+40...+130
speed	0.5 m/s (1.6 ft/sec)	
pressure	≤1380 bar (20,000psi)	

Note: for other materials or fluids please contact our engineering department.

DESCRIPTION

The 233 Series is one of the most robust four-piece piston seals available on the market. It consists of a profiled energizer, a polyurethane seal element and two full-face, anti-extrusion backup rings. It is designed for double-acting cylinders in heavy-duty applications subject to severe pressure spikes coupled with high running clearance.

PRODUCT BENEFITS

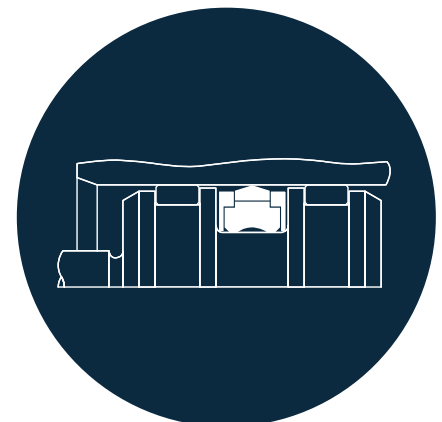
- Long service life under the harshest conditions
- Compatible with water-based fluids (H-PU)
- Optimized for high running clearance
- Easy installation

APPLICATIONS

The 233 Series four-piece piston seal is ideal in heavy duty sealing applications where pressure spiking can occur.

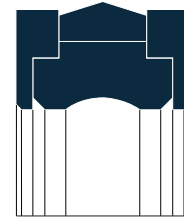
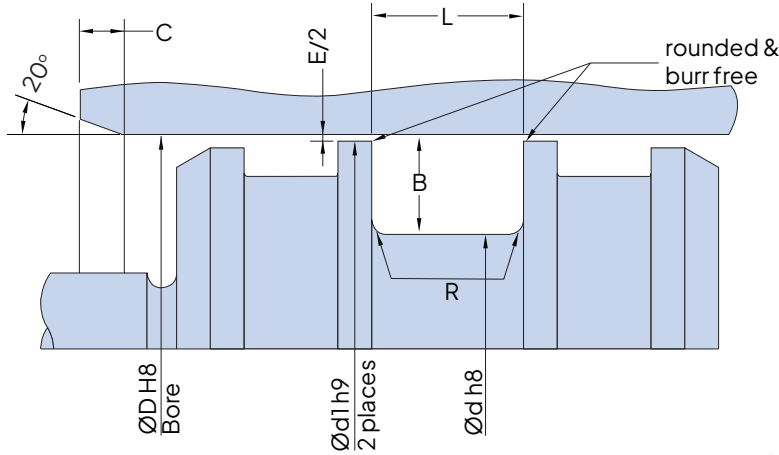
Typical applications include:

- Mining
- Heavy duty clamp cylinders
- Specialty high-pressure cylinders
- Hydraulic rams
- Various advancing and secondary cylinders



Above: Installation Drawing

DESIGN GUIDELINES



METRIC SERIES

	B	L ^{+0.20}	Ød	Ød1	R	C
Series 1	7.5	20.00	D-15	D-E	0.40	6
Series 2	10.0	22.00	D-20	D-E	0.40	8
Series 3	12.5	25.00	D-25	D-E	0.40	9
Series 4	15.0	30.00	D-30	D-E	0.40	11

Pressure (bar)	E
≤100	1.00
≤250	0.85
≤400	0.70

Extrusion Gaps

INCH SERIES

	B	L ^{+0.008}	Ød	Ød1	R	C
Series 1	0.375	1.000	D-0.750	D-E	0.016	0.275
Series 2	0.500	1.125	D-1.000	D-E	0.016	0.375
Series 3	0.625	1.250	D-1.250	D-E	0.016	0.500
Series 4	0.750	1.500	D-1.500	D-E	0.016	0.600

Pressure (psi)	E
≤1450	0.040
≤3625	0.035
≤6000	0.030

Extrusion Gaps

Note: The extrusion gap "E" is suitable for pressure up to 500 bar (7250 psi) and temperatures up to 80° C (176° F). For higher pressures or temperatures, please consult our engineering department for guidance. For a complete list of available sizes please refer to the System Seals online product catalogue at www.systemseals.com.

SURFACE FINISH

Surface roughness	Ra	Rt	RMS
Sliding surface	≤0.3 µm	≤3 µm	8 RMS
Surface of groove I.D.	≤1.8 µm	≤10 µm	64 RMS
Sides of groove	≤3 µm	≤16 µm	125 RMS

