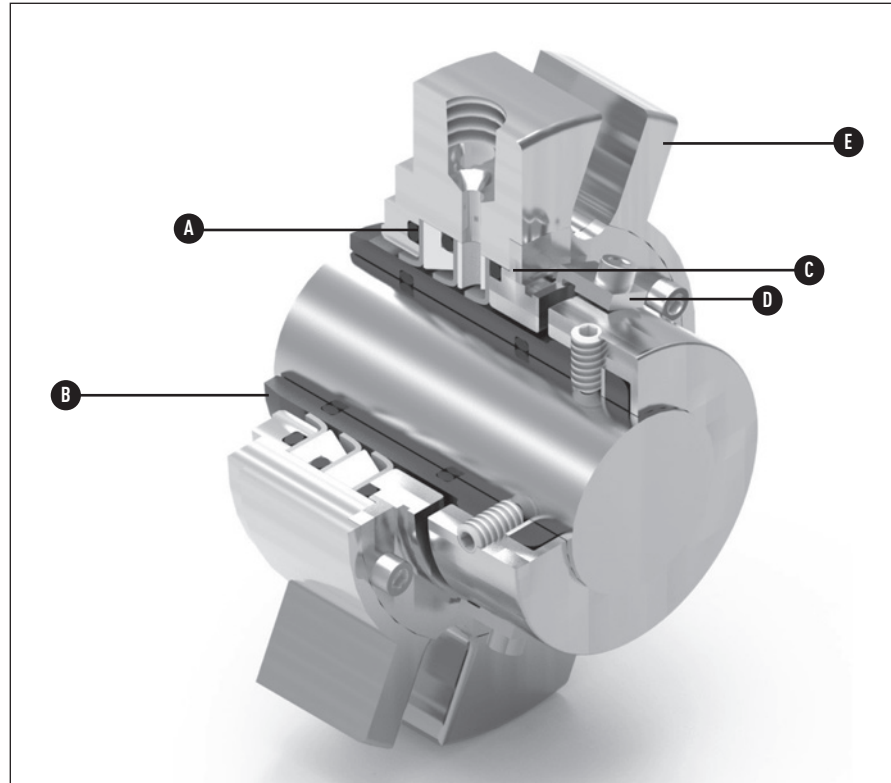


- A – PTFE seal
- B – Silicon Carbide sleeve
- C – Compression ring
- D – Setting spacer
- E – Gland plate



Product Description

The Type MLS Series is a cartridge seal designed for rotary positive displacement pumps handling high-viscosity fluids. The triple PTFE seal design is an effective alternative to packing or single mechanical seals.

- The design allows the sealing elements to run dry and function leak-free at low RPM with recurring startups
- The self-lubricating sealing elements are manufactured from a PTFE blend, and are incorporated in a sealing system that consists of three independent, sequential sealing chambers
- The cartridge design includes a silicon carbide shaft sleeve, 316 stainless steel gland with flush ports

Design Features

- Independently sealed, triple sealing element design
- Positive mechanical drive with one moving part
- Ease of installation and repair
- Seals independent of shaft rotation direction
- Silicon Carbide shaft sleeve
- Dry-running and external flush capability
- Triple lip seals to seal positive process

Performance Capabilities

- Temperature: Up to 325°F/163°C
- Pressure: Up to 200 psig/13.8 barg
- Speed: Up to 900 fpm/4.6 m/s and to 2,500 fpm/12.7 m/s with lubrication
- Viscosity: 20 to 500,000 cP
- End play/axial float allowance: 0.100"/2.54mm
- Runout/out of squareness: ±0.005"/0.127mm
- Size range: 1.125" to 3.437"/28.58mm to 87.30mm

(Contact John Crane for additional sizes.)

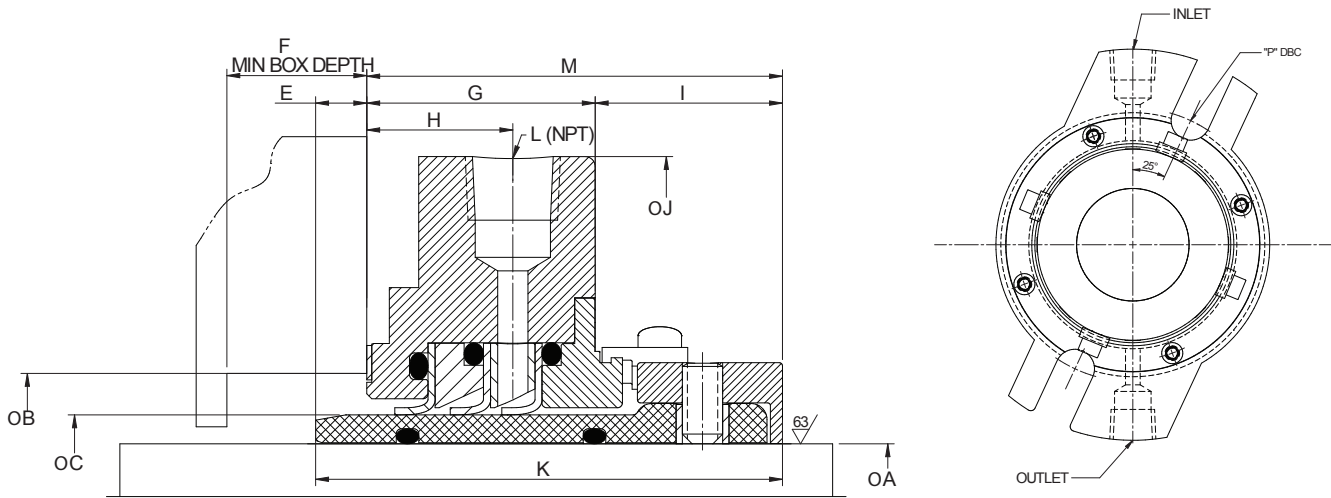
Applications

- Positive displacement pumps
 - Gear
 - Progressive cavity
 - Rotary lobe
 - Screw
- Mixers and agitators
- Centrifugal pumps
- Rotary valves

TYPE MLS-1

PTFE, MULTI-LIP CARTRIDGE SEAL

Dimensional Data



NOTE: Inlet and outlet are independent of direction, view, and shaft rotation

(Inches)

A Seal Size	B (Bore)		C	E	F (Min Box Depth)	G (Gland Length)	H	I	J (Gland OD)	K	L (NPT)	M (Out of Box)	N	O (slot diam)	P (DBC gland)
	Min.	Max.													
1.125	1.825	2.25	1.625	0.351	0.601	1.383	0.872	1.162	4	2.896	1/4 - 18	2.545	3.500	0.375	3.125
1.375	2.000	2.25	1.796	0.317	0.567	1.417	0.906	1.162	5	2.896	1/4 - 18	2.579	3.500	0.500	3.500
1.437	2.000	2.50	1.796	0.140	0.390	1.277	0.766	1.162	5	2.896	1/4 - 18	2.439	3.500	0.500	3.500
1.625	2.250	2.70	2.040	0.316	0.566	1.418	0.907	1.162	5	2.896	1/4 - 18	2.580	3.500	0.500	3.500
1.750	2.365	3.75	2.165	0.401	0.651	1.333	0.822	1.162	6	2.896	1/4 - 18	2.495	4.500	0.687	5.187
1.875	2.250	3.75	2.290	0.401	0.651	1.333	0.822	1.162	6	2.896	1/4 - 18	2.495	4.500	0.687	5.187
2.250	3.000	3.75	2.625	0.401	0.651	1.333	0.822	1.162	6	2.896	1/4 - 18	2.495	4.500	0.687	5.187
2.437	3.100	3.80	2.812	0.325	0.575	1.408	0.897	1.162	6.73	2.896	1/4 - 18	2.570	4.812	0.687	5.500
2.500	3.200	3.80	2.875	0.326	0.576	1.408	0.897	1.162	6.73	2.896	1/4 - 18	2.570	4.812	0.687	5.500
3.437	4.690	5.50	3.812	0.214	0.464	1.520	0.906	1.162	8.75	2.896	1/4 - 18	2.682	5.938	0.812	6.750

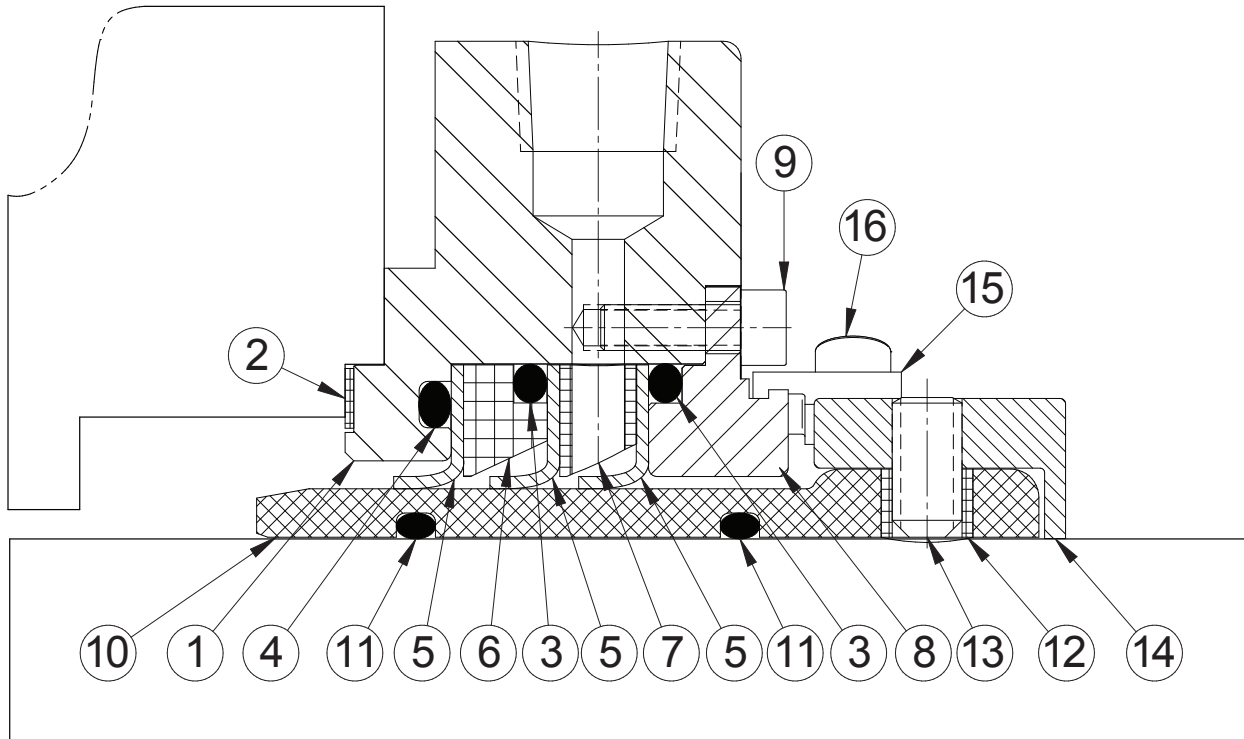
(Millimeters)

A Seal Size	B (Bore)		C	E	F (Min Box Depth)	G (Gland Length)	H	I	J (Gland OD)	K	L (NPT)	M (Out of Box)	N	O (slot diam)	P (DBC gland)
	Min.	Max.													
28.575	46.355	57.150	41.275	8.915	15.265	35.128	22.149	29.515	101.600	73.558	1/4 - 18	64.643	88.900	9.525	79.375
34.925	50.800	57.150	45.618	8.052	14.402	35.992	23.012	29.515	127.000	73.558	1/4 - 18	65.507	88.900	12.700	88.900
36.500	50.800	63.500	45.618	3.556	9.906	32.436	19.456	29.515	127.000	73.558	1/4 - 18	61.951	88.900	12.700	88.900
41.275	57.150	68.580	51.816	8.026	14.376	36.017	23.038	29.515	127.000	73.558	1/4 - 18	65.532	88.900	12.700	88.900
44.450	60.071	95.250	54.991	10.185	16.535	33.858	20.879	29.515	152.400	73.558	1/4 - 18	63.373	114.300	17.450	131.750
47.625	57.150	95.250	58.166	10.185	16.535	33.858	20.879	29.515	152.400	73.558	1/4 - 18	63.373	114.300	17.450	131.750
57.150	76.200	95.250	66.675	10.185	16.535	33.858	20.879	29.515	152.400	73.558	1/4 - 18	63.373	114.300	17.450	131.750
61.900	78.740	96.520	71.425	8.255	14.605	35.763	22.784	29.515	170.942	73.558	1/4 - 18	65.278	122.225	17.450	139.700
63.500	81.280	96.520	73.025	8.280	14.630	35.763	22.784	29.515	170.942	73.558	1/4 - 18	65.278	122.225	17.450	139.700
87.300	119.126	139.700	96.825	5.436	11.786	38.608	23.012	29.515	222.250	73.558	1/4 - 18	68.123	150.825	20.625	171.450

TYPE MLS-1

PTFE, MULTI-LIP CARTRIDGE SEAL

Seal Components

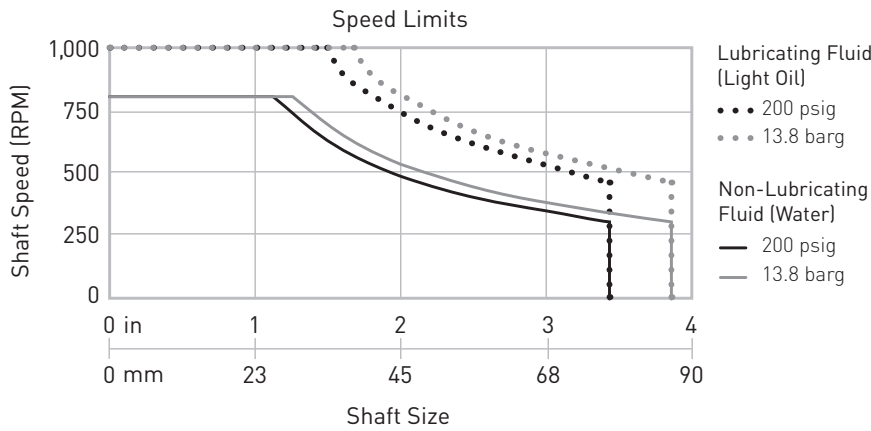


- 1 – Cast gland plate
- 2 – Gasket
- 3 – O-ring
- 4 – O-ring
- 5 – Lip seal
- 6 – O-ring spacer
- 7 – Flush spacer
- 8 – Compression ring
- 9 – Cap screw
- 10 – Sleeve
- 11 – O-ring
- 12 – Set screw bushing
- 13 – Set screw
- 14 – Drive collar
- 15 – Spacer
- 16 – Cap screw

TYPE MLS-1

PTFE, MULTI-LIP CARTRIDGE SEAL

Performance Curve



Notes:

1. Dry-running capability.
2. In order to optimize the life of the seal, an external flush system is recommended. Consult John Crane Engineering.
3. For operating outside the performance curve, consult John Crane Engineering.

Materials of Construction

Description	Materials
Gland, screws, compression ring, spacers	316 SS
Sleeve	Silicon carbide
Gland/Sleeve O-ring	Fluoroelastomer
Gasket	100% Virgin PTFE (FDA)
Setting spacer, O-ring spacer, flush spacer	Glass-filled PTFE (FDA)
Lip seals	Graphite-filled PTFE



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