

PDS

PISTON SEAL

Double-Acting

TECHNICAL DETAILS

The Hallite PDS is a double-acting low-friction piston seal solution for compact o-ring grooves, that extends the service range above what an o-ring alone is capable of supporting. The PDS is designed for light-duty applications, is particularly suited for small-diameter installations, and due to its size and design, is easy to install. High-performance Armorlene® materials, like HLX, provide outstanding wear and extrusion-resistance properties as well as large range of temperature and media compatibility.

Hallite's PDS is designed to be used in existing dynamic o-ring grooves and does not require any groove modification. A good choice for pneumatic and hydraulic equipment sealing needs, the PDS is proven to extend the service range and seal longevity over stand-alone o-ring installations.

This seal is available in a variety of Hallite's high-performance Armorlene® materials to suit a wide range of demanding applications.



FEATURES

- Compact design to save metal spacing
- Low breakout friction and elimination of stick-slip action
- Effective in pneumatic cylinder and light-duty hydraulic cylinder
- Can be used in standard AS-568 dynamic o-ring groove
- Fits groove dimensions per MIL-G-5514F
- Recommended for light-duty and small-diameter applications

Part Number Structure

PDSMR00700NHLX _

PDS	M	R	00700	N	HLX	—
PROFILE DESIGNATION	UNIT OF MEASUREMENT M = Metric E = Inch	APPLICATION Refer to <i>Installation Recommendations</i> and use designator for desired application	BORE DIAMETER Metric = mm X 10 Inch = inches X 1000	ENERGIZER MATERIAL Refer to <i>Energizer Table</i> for desired energizer material	PTFE MATERIAL Refer to <i>Material Table</i> for desired PTFE (face) material	SPECIAL FEATURE Blank = Std profile N = Notches

OPERATING CONDITIONS

	metric	inch
Maximum Speed	Up to 15.0m/sec	Up to 50.0ft/sec
Temperature Range*	-45 to 200°C	-49 to 392°F
Maximum Dynamic Pressure	350 bar	5000 psi

*Dependent upon energizer used (NBR, FKM, etc.).

NOTE

Data given are maximum values and can apply depending on specific application. Maximum ratings of temperature, pressure, or operating speeds are dependent on fluid medium, surface, gap value, and other variables such as dynamic or static service. Maximum values are not intended for use together at the same time, e.g. max temperature and max pressure. Please contact your Hallite technical representative for application support.

SURFACE FINISH RECOMMENDATIONS

SURFACE ROUGHNESS	metric			inch			RMR*
	μMRA	μMRZ	μMRT	μINRA	μINRZ	μINRT	
Dynamic Sealing Face ØD₁	0.05 - 0.2	1.3 max	2 max	2 - 8	52 max	78 max	60% - 90%
Static Sealing Face Ød₁	1.6 max	7 max	10 max	63 max	276 max	394 max	
Static Housing Faces L₁	3.2 max	10 max	16 max	125 max	394 max	630 max	

*RMR is measured at a depth of 25% of the Rz value based upon a reference level (zero line) at 5% material/bearing area.

ENERGIZER TABLE

ENERGIZER MATERIAL (SHORE A)	ENERGIZER TYPE	ENERGIZER DESIGNATION	ENERGIZER OPERATING TEMPERATURE°C	ENERGIZER OPERATING TEMPERATURE°F
NBR - 70A	O-Ring	N	-30 to 100°C	-22 to 212°F
NBR - 70A Low temp.	O-Ring	L	-45 to 80°C	-49 to 176°F
FKM - 75A	O-Ring	F	-10 to 200°C	14 to 392°F
EPDM - 70A	O-Ring	E	-45 to 145°C	-49 to 293°F
HNBR - 70A	O-Ring	H	-25 to 150°C	-13 to 302°F
NBR - 90A	O-Ring	Q	-30 to 100°C	-22 to 212°F
HNBR - 90A	O-Ring	U	-25 to 150°C	-13 to 302°F
No Energizer*	None	X	-	-

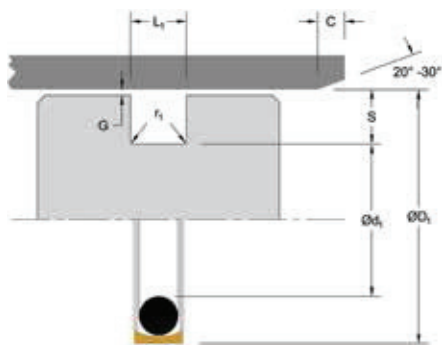
*Seal ratings are based upon capabilities of its matched material components. Hallite cannot rate seal performance when the seal is mixed with other manufacturers' energizers/components.

MATERIALS

MATERIAL FEATURES AND APPLICATIONS	FILLER	MATERIAL DESIGNATOR	COLOR	TEMPERATURE RANGE °C	TEMPERATURE RANGE °F	MAXIMUM DYNAMIC PRESSURE - BAR	MAXIMUM DYNAMIC PRESSURE - PSI
<p>ARMORLENE® HLX</p> <ul style="list-style-type: none"> • Standard material for hydraulic applications • High compressive strength • Excellent extrusion resistance • Extended wear resistance 	Special Bronze Compound	HLX	Gold	-73 to 288°C	-100 to 550°F	350 bar	5000 psi
<p>ARMORLENE® 711</p> <ul style="list-style-type: none"> • Excellent in all lubricating fluids and pneumatic applications • High chemical resistance • Excellent extrusion resistance • Excellent wear properties 	25% Carbon Graphite	711	Black	-73 to 288°C	-100 to 550°F	350 bar	5000 psi
<p>ARMORLENE® 700</p> <ul style="list-style-type: none"> • Excellent in all hydraulic fluids • Recommended for use with soft mating surfaces • Low friction and no stick-slip 	Unfilled	700	White	-184 to 204°C	-300 to 400°F	200 bar	2900 psi

For other material options consult the Master Materials Index at the front of the catalog. If you do not find the material that you require, please contact your local Hallite sales office.





INSTALLATION RECOMMENDATIONS

metric

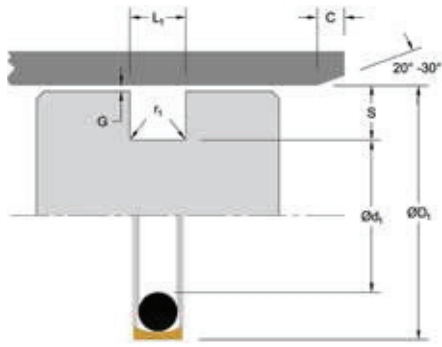
BORE DIAMETER ØD ₁ H9		GROOVE DIAMETER	GROOVE WIDTH	RADIUS	CHAMFER	GROOVE SECTION	RADIAL CLEARANCE G max*				O-RING CROSS SECTION
DIAMETER RANGE		Ød ₁ h9	L ₁ + 0.2	r ₁	C	S	Up to 20 bar	Up to 100 bar	Up to 200 bar	Up to 350 bar	O-Ring
Standard Duty Application - R	Light Duty Application - L										
5.0 - 13.9	14.0 - 24.9	D ₁ - 2.9	2.4	0.4	2.0	1.45	0.10	0.10	0.08	0.05	1.78
14.0 - 24.9	25.0 - 45.9	D ₁ - 4.5	3.6	0.4	3.0	2.25	0.15	0.15	0.10	0.07	2.62
25.0 - 45.9	46.0 - 124.9	D ₁ - 6.2	4.8	0.6	4.0	3.10	0.25	0.20	0.15	0.08	3.53
46.0 - 124.9	125.0 - 669.9	D ₁ - 9.4	7.1	0.8	6.0	4.70	0.35	0.25	0.20	0.10	5.33
125.0 - 669.9	670.0 - 999.9	D ₁ - 12.2	9.5	0.8	8.0	6.10	0.50	0.30	0.25	0.15	6.99
670.0 - 999.9	> 999.9	D ₁ - 15.0	10.0	1.0	1.0	7.50	0.60	0.40	0.30	0.20	8.40

*Radial Clearance G max. = maximum permissible gap all on one side using max. tube diameter and min. clearance diameter.

inch

BORE DIAMETER ØD ₁ H9		GROOVE DIAMETER	GROOVE WIDTH	RADIUS	CHAMFER	GROOVE SECTION	RADIAL CLEARANCE G max*				O-RING CROSS SECTION
DIAMETER RANGE		Ød ₁ h9	L ₁ + .008	r ₁	C	S	Up to 290 psi	Up to 1500 psi	Up to 2900 psi	Up to 5000 psi	O-Ring
Standard Duty Application - R	Light Duty Application - L										
0.250 - 0.312	0.313 - 0.999	D ₁ - 0.110	0.093	0.016	0.079	0.055	0.004	0.004	0.003	0.002	0.070
0.313 - 0.999	1.000 - 2.500	D ₁ - 0.176	0.140	0.016	0.118	0.088	0.006	0.006	0.004	0.003	0.103
1.000 - 2.500	2.501 - 4.999	D ₁ - 0.242	0.187	0.024	0.157	0.121	0.010	0.008	0.006	0.003	0.139
2.501 - 4.999	-	D ₁ - 0.370	0.281	0.032	0.236	0.185	0.014	0.010	0.008	0.004	0.210
5.000 - 16.000	-	D ₁ - 0.474	0.375	0.032	0.315	0.237	0.020	0.012	0.010	0.006	0.275

*Radial Clearance G max. = maximum permissible gap all on one side using max. tube diameter and min. clearance diameter.



PDS

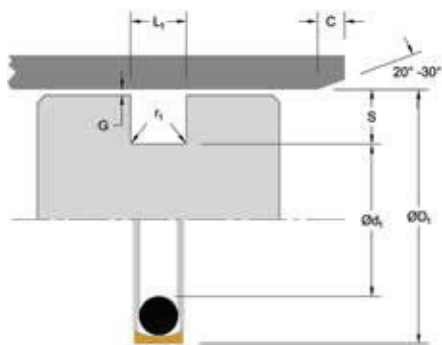
PISTON SEAL

Double-Acting

PART NUMBER RANGE (METRIC)*

metric			PART NUMBER
ØD ₁	Ød ₁	L ₁	
Tol. H9	Tol. H9	Tol. +0.2	
6.0	3.1	2.4	PDSMR00060****
8.0	5.1	2.4	PDSMR00080****
9.0	6.1	2.4	PDSMR00090****
10.0	7.1	2.4	PDSMR00100****
11.0	8.1	2.4	PDSMR00110****
12.0	9.1	2.4	PDSMR00120****
12.7	9.8	2.4	PDSMR00127****
14.0	9.5	3.6	PDSMR00140****
15.0	10.5	3.6	PDSMR00150****
16.0	11.5	3.6	PDSMR00160****
18.0	13.5	3.6	PDSMR00180****
20.0	15.5	3.6	PDSMR00200****
22.0	17.5	3.6	PDSMR00220****
24.0	19.5	3.6	PDSMR00240****
25.0	18.8	4.8	PDSMR00250****
25.4	19.2	4.8	PDSMR00254****
27.0	20.8	4.8	PDSMR00270****
28.0	21.8	4.8	PDSMR00280****
30.0	23.8	4.8	PDSMR00300****
32.0	25.8	4.8	PDSMR00320****
35.0	28.8	4.8	PDSMR00350****
40.0	33.8	4.8	PDSMR00400****
42.0	35.8	4.8	PDSMR00420****
45.0	38.8	4.8	PDSMR00450****
48.0	38.6	7.1	PDSMR00480****
50.0	40.6	7.1	PDSMR00500****
50.8	41.4	7.1	PDSMR00508****
52.0	42.6	7.1	PDSMR00520****

metric			PART NUMBER
ØD ₁	Ød ₁	L ₁	
Tol. H9	Tol. H9	Tol. +0.2	
55.0	45.6	7.1	PDSMR00550****
56.0	46.6	7.1	PDSMR00560****
60.0	50.6	7.1	PDSMR00600****
63.0	53.6	7.1	PDSMR00630****
65.0	55.6	7.1	PDSMR00650****
70.0	60.6	7.1	PDSMR00700****
75.0	65.6	7.1	PDSMR00750****
80.0	70.6	7.1	PDSMR00800****
85.0	75.6	7.1	PDSMR00850****
90.0	80.6	7.1	PDSMR00900****
95.0	85.6	7.1	PDSMR00950****
100.0	90.6	7.1	PDSMR01000****
110.0	100.6	7.1	PDSMR01100****
115.0	105.6	7.1	PDSMR01150****
120.0	110.6	7.1	PDSMR01200****
125.0	112.8	9.5	PDSMR01250****
130.0	117.8	9.5	PDSMR01300****
135.0	122.8	9.5	PDSMR01350****
140.0	127.8	9.5	PDSMR01400****
150.0	137.8	9.5	PDSMR01500****
160.0	147.8	9.5	PDSMR01600****
170.0	157.8	9.5	PDSMR01700****
180.0	167.8	9.5	PDSMR01800****
190.0	177.8	9.5	PDSMR01900****
200.0	187.8	9.5	PDSMR02000****
210.0	197.8	9.5	PDSMR02100****
220.0	207.8	9.5	PDSMR02200****
230.0	217.8	9.5	PDSMR02300****



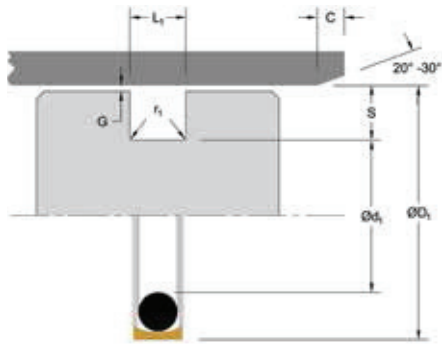
PART NUMBER RANGE (METRIC)*

metric			PART NUMBER
ØD ₁	Ød ₁	L ₁	
Tol. H9	Tol. H9	Tol. +0.2	
240.0	227.8	9.5	PDSMR02400****
250.0	237.8	9.5	PDSMR02500****
280.0	267.8	9.5	PDSMR02800****
300.0	287.8	9.5	PDSMR03000****
320.0	307.8	9.5	PDSMR03200****
350.0	337.8	9.5	PDSMR03500****
400.0	387.8	9.5	PDSMR04000****
420.0	407.8	9.5	PDSMR04200****
450.0	437.8	9.5	PDSMR04500****
480.0	467.8	9.5	PDSMR04800****
500.0	487.8	9.5	PDSMR05000****
600.0	587.8	9.5	PDSMR06000****
650.0	637.8	9.5	PDSMR06500****

*Please contact Hallite for custom sizes, material selection, or seal design.

PART NUMBER RANGE (INCH)*

inch			PART NUMBER
ØD ₁	Ød ₁	L ₁	
Tol. H9	Tol. H9	Tol. +0.008	
0.250	0.140	0.093	PDSE00250****
0.281	0.171	0.093	PDSE00281****
0.312	0.202	0.093	PDSE00312****
0.344	0.234	0.093	PDSE00344****
0.375	0.265	0.093	PDSE00375****
0.437	0.327	0.093	PDSE00437****
0.500	0.390	0.093	PDSE00500****
0.562	0.452	0.093	PDSE00562****
0.625	0.515	0.093	PDSE00625****
0.687	0.577	0.093	PDSE00687****
0.750	0.640	0.093	PDSE00750****
0.812	0.702	0.093	PDSE00812****
0.875	0.765	0.093	PDSE00875****
0.937	0.827	0.093	PDSE00937****
1.000	0.824	0.140	PDSE01000****
1.062	0.886	0.140	PDSE01062****
1.125	0.949	0.140	PDSE01125****
1.187	1.011	0.140	PDSE01187****
1.250	1.074	0.140	PDSE01250****
1.312	1.136	0.140	PDSE01312****
1.375	1.199	0.140	PDSE01375****
1.437	1.261	0.140	PDSE01437****
1.500	1.324	0.140	PDSE01500****
1.562	1.386	0.140	PDSE01562****
1.625	1.449	0.140	PDSE01625****
1.687	1.511	0.140	PDSE01687****
1.750	1.574	0.140	PDSE01750****
1.812	1.636	0.140	PDSE01812****



PDS

PISTON SEAL

Double-Acting

PART NUMBER RANGE (INCH)*

inch			PART NUMBER
ØD ₁	Ød ₁	L ₁	
Tol. H9	Tol. H9	Tol. +0.008	
1.875	1.699	0.187	PDSEL01875****
1.937	1.761	0.187	PDSEL01937****
2.000	1.824	0.187	PDSEL02000****
2.062	1.886	0.187	PDSEL02062****
2.125	1.949	0.187	PDSEL02125****
2.187	2.011	0.187	PDSEL02187****
2.250	2.074	0.187	PDSEL02250****
2.312	2.136	0.187	PDSEL02312****
2.375	2.199	0.187	PDSEL02375****
2.437	2.261	0.187	PDSEL02437****
2.500	2.324	0.187	PDSEL02500****
2.625	2.383	0.187	PDSEL02625****
2.750	2.508	0.187	PDSEL02750****
2.875	2.633	0.187	PDSEL02875****
3.000	2.758	0.187	PDSEL03000****
3.125	2.883	0.187	PDSEL03125****
3.250	3.008	0.187	PDSEL03250****
3.375	3.133	0.187	PDSEL03375****
3.500	3.258	0.187	PDSEL03500****
3.625	3.383	0.187	PDSEL03625****
3.750	3.508	0.187	PDSEL03750****
3.875	3.633	0.187	PDSEL03875****
4.000	3.758	0.187	PDSEL04000****
4.125	3.883	0.187	PDSEL04125****
4.250	4.008	0.187	PDSEL04250****
4.375	4.133	0.187	PDSEL04375****
4.500	4.258	0.187	PDSEL04500****
4.625	4.383	0.187	PDSEL04625****

inch			PART NUMBER
ØD ₁	Ød ₁	L ₁	
Tol. H9	Tol. H9	Tol. +0.008	
4.750	4.508	0.187	PDSEL04750****
4.875	4.633	0.187	PDSEL04875****
5.000	4.526	0.375	PDSE05000****
5.125	4.651	0.375	PDSE05125****
5.250	4.776	0.375	PDSE05250****
5.375	4.901	0.375	PDSE05375****
5.500	5.026	0.375	PDSE05500****
5.625	5.151	0.375	PDSE05625****
5.750	5.276	0.375	PDSE05750****
5.875	5.401	0.375	PDSE05875****
6.000	5.526	0.375	PDSE06000****
6.125	5.651	0.375	PDSE06125****
6.250	5.776	0.375	PDSE06250****
6.375	5.901	0.375	PDSE06375****
6.500	6.026	0.375	PDSE06500****
6.750	6.276	0.375	PDSE06750****
7.000	6.526	0.375	PDSE07000****
7.250	6.776	0.375	PDSE07250****
7.500	7.026	0.375	PDSE07500****
7.750	7.276	0.375	PDSE07750****
8.000	7.526	0.375	PDSE08000****
8.250	7.776	0.375	PDSE08250****
8.500	8.026	0.375	PDSE08500****

*Please contact Hallite for custom sizes, material selection, or seal design.

