

PCG

PISTON SEAL

Double-Acting

TECHNICAL DETAILS

The Hallite PCG is a double-acting, o-ring energized, low-friction piston seal designed for low- and medium-pressure systems. High-performance Armorlene® materials, like HLX, provide outstanding wear and extrusion-resistance properties as well as large range of temperature and media compatibility.

The compact design of the PCG piston seal provides an ideal sealing solution where housing space is limited. This seal is available in a variety of Hallite's high-performance Armorlene® materials to suit a wide range of demanding applications.



FEATURES

- Low breakout friction and elimination of stick-slip action
- Compact design to save metal spacing
- High service temperature, long wear, and high extrusion resistance

Part Number Structure

PCGMR00400NHLX_

PCG	M	R	00400	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	200 bar	2900 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	-	-

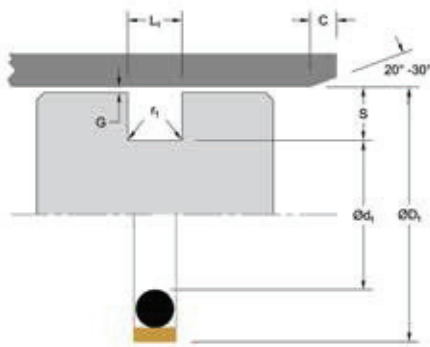
*Seal ratings are based upon capabilities of its matched material components. Hallite cannot rate seal performance when the seal is mixed with other manufacturers' energizers/components.

MATERIALS

MATERIAL FEATURES AND APPLICATIONS	FILLER	MATERIAL DESIGNATOR	COLOR	TEMPERATURE RANGE °C	TEMPERATURE RANGE °F	MAXIMUM DYNAMIC PRESSURE - BAR	MAXIMUM DYNAMIC PRESSURE - PSI
ARMORLENE® HLX <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	200 bar	2900 psi
ARMORLENE® HCF <ul style="list-style-type: none"> • Excellent in lubricating and non-lubricating hydraulic fluids (includes water) w/o zinc content • Not recommended for gas sealing applications • Not recommended for electrical conductive fluids 	Carbon Fiber Filled	HCF	Gray/Black	-73 to 260°C	-100 to 500°F	200 bar	2900 psi
ARMORLENE® 700 <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
ARMORLENE® 711 <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	200 bar	2900 psi
748 - UHMWPE <ul style="list-style-type: none"> • Excellent impact resistance • Good dielectrical properties • Excellent abrasion resistance • Low coefficient of friction 	Standard	748	Translucent	-184 to 82°C	-300 to 180°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

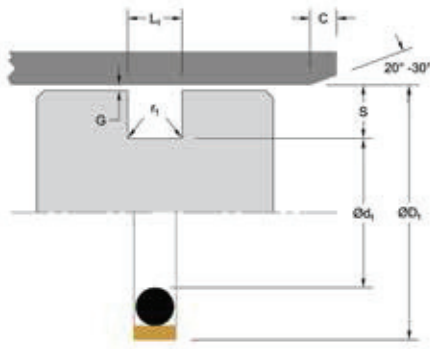
BORE DIAMETER ØD ₁ H9	GROOVE DIAMETER	GROOVE WIDTH	RADIUS	GROOVE SECTION	RADIAL CLEARANCE G _{max} *		O-RING CROSS SECTION
					Up to 100 bar	Up to 200 bar	
DIAMETER RANGE	Ød ₁ h9	L ₁ + 0.2	r ₁	S			O-Ring
Standard Duty Application - R							
7.0 - 15.9	D ₁ - 4.0	2.00	0.50	2.20	0.08	0.08	1.78
16.0 - 26.9	D ₁ - 6.0	2.85	0.50	3.00	0.08	0.08	2.62
27.0 - 49.9	D ₁ - 7.5	3.8	0.80	4.60	0.08	0.08	3.53
50.0 - 129.9	D ₁ - 12.5	5.6	1.30	6.25	0.10	0.10	5.33
130.0 - 179.9	D ₁ - 15.0	7.55	1.50	7.55	0.10	0.10	6.99
180.0 - 239.9	D ₁ - 18.0	7.55	1.50	9.10	0.10	0.10	6.99
240.0 - 420.0	D ₁ - 24.0	7.55	1.50	12.30	0.10	0.10	6.99

*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	GROOVE SECTION	RADIAL CLEARANCE G _{max} *		O-RING CROSS SECTION
DIAMETER RANGE						Up to 1500 psi	Up to 2900 psi	
Standard Duty Application - R	Light Duty Application - L	Ød ₁ h9	L ₁ + 0.008	r ₁	S			O-Ring
0.250 - 0.937	0.938 - 2.500	D ₁ - 0.172	0.079	0.02	0.087	0.002	0.002	0.070
0.938 - 2.500	2.501 - 3.875	D ₁ - 0.236	0.112	0.02	0.119	0.003	0.003	0.103
2.501 - 3.875	3.876 - 5.000	D ₁ - 0.363	0.149	0.03	0.182	0.003	0.003	0.139
3.876 - 5.000	5.001 - 6.500	D ₁ - 0.491	0.221	0.05	0.246	0.004	0.004	0.210
5.001 - 6.500	6.501 - 8.500	D ₁ - 0.593	0.297	0.06	0.297	0.004	0.004	0.275
6.501 - 8.500	8.501 - 25.500	D ₁ - 0.718	0.297	0.06	0.359	0.004	0.004	0.275
8.501 - 25.500	-	D ₁ - 0.968	0.297	0.06	0.484	0.004	0.004	0.275

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

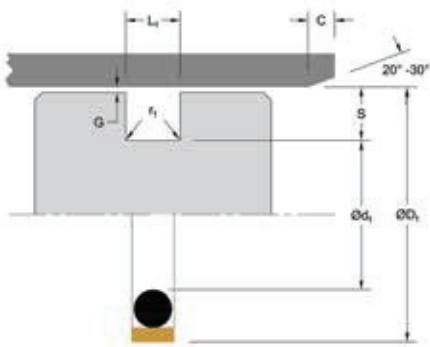


PART NUMBER RANGE (METRIC)*

metric			PART NUMBER
ØD ₁	Ød ₁	L ₁	
Tol. H9	Tol. H9	Tol. +0.2	
7.0	3.0	2.00	PCGMR00070****
8.0	4.0	2.00	PCGMR00080****
9.0	5.0	2.00	PCGMR00090****
10.0	6.0	2.00	PCGMR00100****
11.0	7.0	2.00	PCGMR00110****
12.0	8.0	2.00	PCGMR00120****
14.0	10.0	2.00	PCGMR00140****
16.0	10.0	2.85	PCGMR00160****
18.0	12.0	2.85	PCGMR00180****
19.0	13.0	2.85	PCGMR00190****
20.0	14.0	2.85	PCGMR00200****
22.0	16.0	2.85	PCGMR00220****
25.0	19.0	2.85	PCGMR00250****
28.0	20.5	3.80	PCGMR00280****
30.0	22.5	3.80	PCGMR00300****
32.0	24.5	3.80	PCGMR00320****
35.0	27.5	3.80	PCGMR00350****
36.0	28.5	3.80	PCGMR00360****
38.0	30.5	3.80	PCGMR00380****
40.0	32.5	3.80	PCGMR00400****
42.0	34.5	3.80	PCGMR00420****
45.0	37.5	3.80	PCGMR00450****

metric			PART NUMBER
ØD ₁	Ød ₁	L ₁	
Tol. H9	Tol. H9	Tol. +0.2	
48.0	40.5	3.80	PCGMR00480****
50.0	37.5	5.60	PCGMR00500****
55.0	42.5	5.60	PCGMR00550****
60.0	47.5	5.60	PCGMR00600****
63.0	50.5	5.60	PCGMR00630****
65.0	52.5	5.6	PCGMR00650****
70.0	57.5	5.6	PCGMR00700****
74.0	61.5	5.60	PCGMR00740****
75.0	62.5	5.60	PCGMR00750****
80.0	67.5	5.60	PCGMR00800****
85.0	72.5	5.60	PCGMR00850****
90.0	77.5	5.60	PCGMR00900****
92.0	79.5	5.60	PCGMR00920****
100.0	87.5	5.60	PCGMR01000****
105.0	92.5	5.60	PCGMR01050****
110.0	97.5	5.60	PCGMR01100****
115.0	102.5	5.60	PCGMR01150****
120.0	107.5	5.60	PCGMR01200****
125.0	112.5	5.60	PCGMR01250****
130.0	115.0	7.55	PCGMR01300****
140.0	125.0	7.55	PCGMR01400****

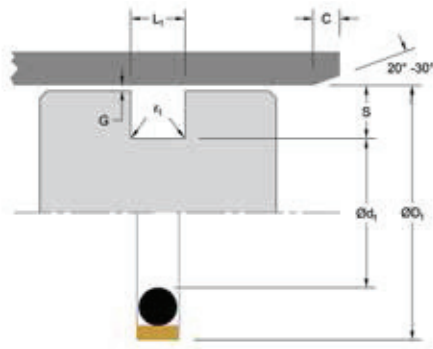
*Please contact Hallite for custom sizes, material selection, or seal design.



PART NUMBER RANGE (INCH)*

inch			PART NUMBER
$\varnothing D_1$	$\varnothing d_1$	L_1	
Tol. H9	Tol. H9	Tol. +0.008	
0.250	0.078	0.079	PCGER00250****
0.312	0.140	0.079	PCGER00312****
0.375	0.203	0.079	PCGER00375****
0.437	0.265	0.079	PCGER00437****
0.500	0.328	0.079	PCGER00500****
0.562	0.390	0.079	PCGER00562****
0.625	0.453	0.079	PCGER00625****
0.687	0.515	0.079	PCGER00687****
0.750	0.578	0.079	PCGER00750****
0.812	0.640	0.079	PCGER00812****
0.875	0.703	0.079	PCGER00875****
0.937	0.765	0.079	PCGER00937****
1.000	0.764	0.112	PCGER01000****
1.062	0.826	0.112	PCGER01062****
1.125	0.889	0.112	PCGER01125****
1.187	0.951	0.112	PCGER01187****
1.250	1.014	0.112	PCGER01250****
1.312	1.076	0.112	PCGER01312****
1.375	1.139	0.112	PCGER01375****
1.437	1.201	0.112	PCGER01437****
1.500	1.264	0.112	PCGER01500****
1.562	1.326	0.112	PCGER01562****
1.625	1.389	0.112	PCGER01625****
1.687	1.451	0.112	PCGER01687****
1.750	1.514	0.112	PCGER01750****
1.812	1.576	0.112	PCGER01812****
1.875	1.639	0.112	PCGER01875****
1.937	1.701	0.112	PCGER01937****

inch			PART NUMBER
$\varnothing D_1$	$\varnothing d_1$	L_1	
Tol. H9	Tol. H9	Tol. +0.008	
2.000	1.764	0.112	PCGER02000****
2.062	1.826	0.112	PCGER02062****
2.125	1.889	0.112	PCGER02125****
2.187	1.951	0.112	PCGER02187****
2.250	2.014	0.112	PCGER02250****
2.312	2.076	0.112	PCGER02312****
2.375	2.139	0.112	PCGER02375****
2.437	2.201	0.112	PCGER02437****
2.500	2.264	0.112	PCGER02500****
2.625	2.262	0.149	PCGER02625****
2.750	2.387	0.149	PCGER02750****
2.875	2.512	0.149	PCGER02875****
3.000	2.637	0.149	PCGER03000****
3.125	2.762	0.149	PCGER03125****
3.250	2.887	0.149	PCGER03250****
3.375	3.012	0.149	PCGER03375****
3.500	3.137	0.149	PCGER03500****
3.625	3.262	0.149	PCGER03625****
3.750	3.387	0.149	PCGER03750****
3.875	3.512	0.149	PCGER03875****
4.000	3.509	0.221	PCGER04000****
4.125	3.634	0.221	PCGER04125****
4.250	3.759	0.221	PCGER04250****
4.375	3.884	0.221	PCGER04375****
4.500	4.009	0.221	PCGER04500****
4.625	4.134	0.221	PCGER04625****
4.750	4.259	0.221	PCGER04750****
4.875	4.384	0.221	PCGER04875****



PCG

PISTON SEAL
Double-Acting

PART NUMBER RANGE (INCH)*

inch			PART NUMBER
ØD ₁	Ød ₁	L ₁	
Tol. H9	Tol. H9	Tol. +0.008	
5.000	4.509	0.221	PCGER05000****
5.125	4.532	0.297	PCGER05125****
5.250	4.657	0.297	PCGER05250****
5.375	4.782	0.297	PCGER05375****
5.500	4.907	0.297	PCGER05500****
5.625	5.032	0.297	PCGER05625****
5.750	5.157	0.297	PCGER05750****
5.875	5.282	0.297	PCGER05875****
6.000	5.407	0.297	PCGER06000****
6.125	5.532	0.297	PCGER06125****
6.250	5.657	0.297	PCGER06250****
6.375	5.782	0.297	PCGER06375****
6.500	5.907	0.297	PCGER06500****

inch			PART NUMBER
ØD ₁	Ød ₁	L ₁	
Tol. H9	Tol. H9	Tol. +0.008	
6.750	6.032	0.297	PCGER06750****
7.000	6.282	0.297	PCGER07000****
7.250	6.532	0.297	PCGER07250****
7.500	6.782	0.297	PCGER07500****
7.750	7.032	0.297	PCGER07750****
8.000	7.282	0.297	PCGER08000****
8.250	7.532	0.297	PCGER08250****
8.500	7.782	0.297	PCGER08500****
9.000	8.032	0.297	PCGER09000****
9.500	8.532	0.297	PCGER09500****
10.000	9.032	0.297	PCGER10000****
10.500	9.532	0.297	PCGER10500****

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