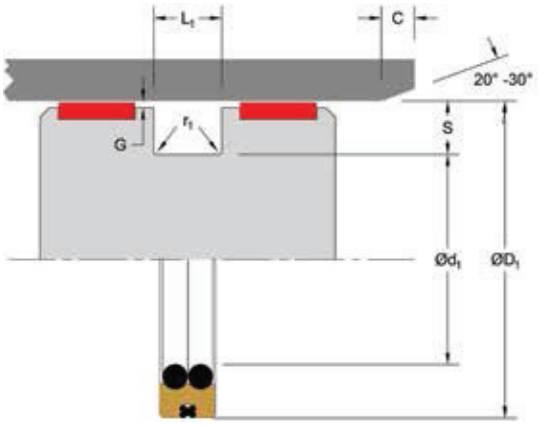


GP2

PISTON SEAL

Double-Acting

TECHNICAL DETAILS

The Hallite GP2 is a double-acting piston seal utilizing Hallite's proprietary high- performance Armorlene® HLX PTFE paired with twin premium o-ring energizers and an x-ring for optimum performance and durability. The Armorlene® PTFE seal ring and the x-ring together provides the dynamic sealing function, while the o-ring energizers provide the static sealing.

Hallite's GP2 seals are especially effective in applications where two different types of media need to be separated such as in piston accumulators, intensifiers, and position-holding applications. This makes this seal a good choice for applications in stabilizers, accumulators, manlifts, industrial machinery, and hydraulic suspension. The GP2 is well-suited for larger-diameter heavy-duty systems.

F E A T U R E S

- Excellent sealing in applications that require separation of two different fluids
- Low breakout friction and elimination of stick-slip action
- Higher pressure rating than original GPS
- Uses an x-ring and 2 energizers to maximize sealing response at all pressure ranges to ensure best performance

Part Number Structure

GP2MR00550NHLX _

GP2	M	R	00550	N	HLX	___
PROFILE DESIGNATION	**UNIT OF MEASUREMENT** **M** = Metric **E** = Inch	**APPLICATION** Refer to ***Installation Recommendations*** and use designator for desired application	**BORE DIAMETER** **Metric** = mm X 10 **Inch** = inches X 1000	**ENERGIZER MATERIAL** Refer to ***Energizer Table*** for desired energizer material	**PTFE MATERIAL** Refer to ***Material Table*** for desired PTFE (face) material	**SPECIAL FEATURE** **Blank** = Std profile **N** = Notches

OPERATING CONDITIONS

	metric	inch
Maximum Speed	Up to 3.0m/sec	Up to 10.0ft/sec
Temperature Range*	-45 to 200°C	-49 to 392°F
Maximum Dynamic Pressure**	600 bar	8700 psi

**Dependent upon energizer used (NBR, FKM, etc.). **For pressures above 300 bar (4350 psi), contact Hallite Engineering.*

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

	metric			inch			RMR*
SURFACE ROUGHNESS	**µMRA**	**µMRZ**	**µMRT**	**µINRA**	**µINRZ**	**µINRT**	
Dynamic Sealing Face $ØD_1$	0.05 - 0.2	1.3 max	2 max	2 - 8	52 max	78 max	60% - 90%
Static Sealing Face $Ød_1$	1.6 max	7 max	10 max	63 max	276 max	394 max	
Static Housing Faces L_1	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 AND X-RING TABLE

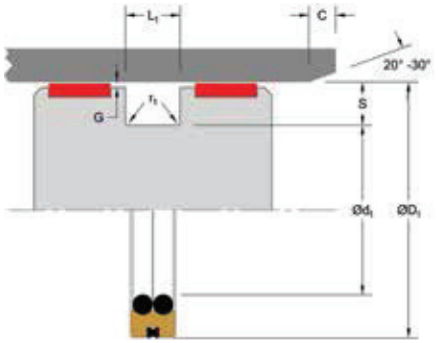
ENERGIZER AND X-RING MATERIAL (SHORE A)	ENERGIZER TYPE	ENERGIZER DESIGNATION	ENERGIZER OPERATING TEMPERATURE°C	ENERGIZER OPERATING TEMPERATURE°F
NBR - 70A	O-Ring/X-Ring	N	-30 to 100°C	-22 to 212°F
NBR - 70A Low temp.	O-Ring/X-Ring	L	-45 to 80°C	-49 to 176°F
FKM - 75A	O-Ring/X-Ring	F	-10 to 200°C	14 to 392°F
EPDM - 70A	O-Ring/X-Ring	E	-45 to 145°C	-49 to 293°F
HNBR - 70A	O-Ring/X-Ring	H	-25 to 150°C	-13 to 302°F
NBR - 90A	O-Ring/X-Ring	Q	-30 to 100°C	-22 to 212°F
HNBR - 90A	O-Ring/X-Ring	U	-25 to 150°C	-13 to 302°F
No O-Ring Energizers or X-Ring*	-	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 • 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	500 bar	7250 psi
ARMORLENE® HLA • Excellent in all hydraulic fluids • Excellent wear resistance • Excellent low-friction properties • Good extrusion resistance	Special Mineral Compound	HLA	Gray	-73 to 260°C	-100 to 500°F	500 bar	7250 psi
ARMORLENE® HCF • 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	250 bar	3625 psi
ARMORLENE® 700 • 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® 713 • High compressive strength • Excellent extrusion resistance • Excellent wear properties	60% Bronze Content	713	Bronze	-73 to 288°C	-100 to 550°F	600 bar	8700 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.



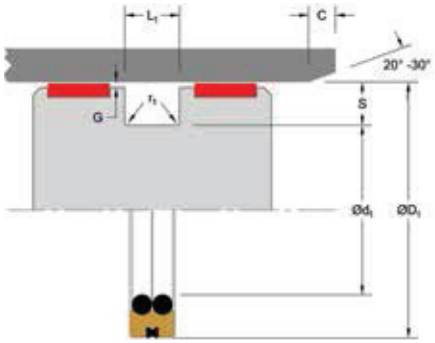
Applications with maximum radial clearance that are using nylon, phenolic, or PTFE bearings must ensure proper clearance in accordance with the bearing recommendations to avoid metal-to-metal contact. Please refer to Hallite Type 87, Type 506, and Type 533 Specification Sheets for this information.

INSTALLATION RECOMMENDATIONS

metric

BORE DIAMETER ØD$_1$ H9		GROOVE DIAMETER	GROOVE WIDTH	RADIUS	CHAMFER	GROOVE SECTION	RADIAL CLEARANCE G max*			O-RING CROSS SECTION	X-RING CROSS SECTION
DIAMETER RANGE		Ød$_1$ h9	L$_1$ + 0.2	r$_1$	C	S	Up to 100 bar	Up to 200 bar	Up to 300 bar	O-Ring	X-Ring
Standard Duty Application - R	Heavy Duty Application - H										
40.0 - 79.9	25.0 - 39.9	D$_1$ - 10.0	6.3	0.6	2.5	5.00	0.30	0.20	0.15	2.62	1.78
80.0 - 132.9	50.0 - 79.9	D$_1$ - 13.0	8.3	1.0	5	6.50	0.40	0.30	0.15	3.53	2.62
133.0 - 462.9	100.0 - 132.9	D$_1$ - 18.0	12.3	1.3	7.5	9.00	0.40	0.30	0.20	5.33	3.53
463.0 - 700.0	425.0 - 462.9	D$_1$ - 31.0	16.3	1.8	10	15.50	0.50	0.40	0.30	6.99	5.33

At pressure >300 bar use diameter tolerance H8/f7.
**Radial Clearance G max. = maximum permissible gap all on one side using max. tube diameter and min. clearance diameter.*



GP2

PISTON SEAL

Double-Acting

PART NUMBER RANGE (METRIC)*

metric			
$ØD_1$	$Ød_1$	L_1	PART NUMBER
Tol. H9	Tol. H9	Tol. +0.2	
40.0	30.0	6.3	GP2MR00400****
42.0	32.0	6.3	GP2MR00420****
45.0	35.0	6.3	GP2MR00450****
48.0	38.0	6.3	GP2MR00480****
50.0	40.0	6.3	GP2MR00500****
52.0	42.0	6.3	GP2MR00520****
55.0	45.0	6.3	GP2MR00550****
60.0	50.0	6.3	GP2MR00600****
63.0	53.0	6.3	GP2MR00630****
65.0	55.0	6.3	GP2MR00650****
70.0	60.0	6.3	GP2MR00700****
75.0	65.0	6.3	GP2MR00750****
80.0	67.0	8.3	GP2MR00800****
85.0	72.0	8.3	GP2MR00850****
90.0	77.0	8.3	GP2MR00900****
95.0	82.0	8.3	GP2MR00950****
100.0	87.0	8.3	GP2MR01000****
105.0	92.0	8.3	GP2MR01050****
110.0	97.0	8.3	GP2MR01100****
115.0	102.0	8.3	GP2MR01150****
120.0	107.0	8.3	GP2MR01200****
125.0	112.0	8.3	GP2MR01250****
130.0	117.0	8.3	GP2MR01300****
135.0	117.0	12.3	GP2MR01350****
140.0	122.0	12.3	GP2MR01400****
150.0	132.0	12.3	GP2MR01500****
160.0	142.0	12.3	GP2MR01600****
170.0	152.0	12.3	GP2MR01700****

metric			
$ØD_1$	$Ød_1$	L_1	PART NUMBER
Tol. H9	Tol. H9	Tol. +0.2	
180.0	162.0	12.3	GP2MR01800****
190.0	172.0	12.3	GP2MR01900****
200.0	182.0	12.3	GP2MR02000****
210.0	192.0	12.3	GP2MR02100****
220.0	202.0	12.3	GP2MR02200****
230.0	212.0	12.3	GP2MR02300****
240.0	222.0	12.3	GP2MR02400****
250.0	232.0	12.3	GP2MR02500****
280.0	262.0	12.3	GP2MR02800****
300.0	282.0	12.3	GP2MR03000****
320.0	302.0	12.3	GP2MR03200****
350.0	332.0	12.3	GP2MR03500****
400.0	382.0	12.3	GP2MR04000****
420.0	402.0	12.3	GP2MR04200****
450.0	432.0	12.3	GP2MR04500****
480.0	449.0	16.3	GP2MR04800****
500.0	469.0	16.3	GP2MR05000****
600.0	569.0	16.3	GP2MR06000****
700.0	669.0	16.3	GP2MR07000****

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