

G54

PISTON SEAL

Double-Acting

TECHNICAL DETAILS

The Hallite G54 is a double-acting, o-ring energized, low-friction piston seal that performs well in both high- and low-pressure systems. Its design has square-cut edges and is often preferred in glass-filled high-performance Armorlene® materials, such as HQ6 or 701, to provide outstanding wear and extrusion-resistance properties as well as large range of temperature and media compatibility. The G54 has a proven design pedigree as a high-performance seal used in demanding applications.

Used successfully for years in challenging applications in construction equipment, machine tools, material handling, agricultural equipment, and other industries, the Hallite G54 is a proven compact, double-acting piston sealing solution. This seal is available to fit a variety of housing sizes, including the ISO 7425-1 grooves. Hallite recommends proper guidance be used with this seal in heavy-duty applications (see Hallite Bearings section).

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
- High service temperature, long wear, and high extrusion resistance
- Effective o-ring and face ring pressure energized
- Able to handle higher service pressure applications

Part Number Structure

G54MR00900NHQ6_

G54	M	R	00900	N	HQ6	—
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 4.0m/sec	Up to 12.0ft/sec
Temperature Range*	-45 to 200°C	-49 to 392°F
Maximum Dynamic Pressure**	400 bar	5800 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

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	-	-

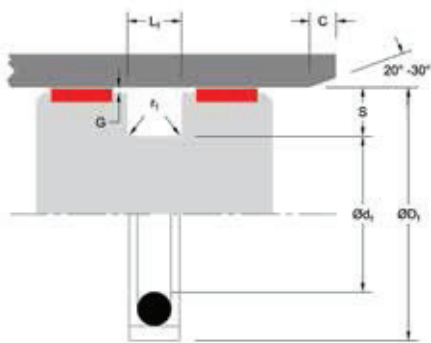
*Seal ratings are based upon capabilities of its matched material components. Hallite cannot rate seal performance when the seal is mixed with other manufacturers' energizers/components.

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® HQ6*</p> <ul style="list-style-type: none"> • Standard material for G16 and G54 profiles • Excellent in lubricating and non-lubricating hydraulic fluids • Excellent extrusion resistance • Excellent chemical resistance 	Special Glass Compound	HQ6	White	-73 to 288°C	-100 to 500°F	400 bar	5800 psi
<p>ARMORLENE® 701</p> <ul style="list-style-type: none"> • Excellent in lubricating and non-lubricating hydraulic fluids • Excellent extrusion resistance • Good chemical resistance • Good dielectrial properties 	25% Glass	701	Off-White	-73 to 260°C	-100 to 500°F	400 bar	5800 psi
<p>ARMORLENE® 706</p> <ul style="list-style-type: none"> • Excellent in lubricating and non-lubricating hydraulic fluids • Excellent extrusion resistance • Good chemical resistance • Good dielectrical properties 	15% Glass	706	Off-White	-73 to 260°C	-100 to 500°F	350 bar	5000 psi

*Available up to 380mm diameter. 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

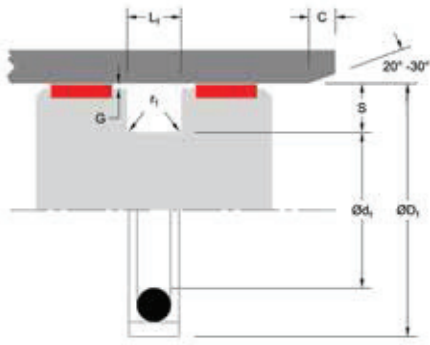
metric

BORE DIAMETER $\varnothing D_1$, H9			GROOVE DIAMETER	GROOVE WIDTH	RADIUS	CHAMFER	GROOVE SECTION	RADIAL CLEARANCE G_{max}^*			O-RING CROSS SECTION
DIAMETER RANGE			$\varnothing d_1$, h9	$L_1 + 0.2$	r_1	C	S	Up to 100 bar	Up to 200 bar	Up to 300 bar	O-Ring
Standard Duty Application - R	Light Duty Application - L	Heavy Duty Application - H									
8.0 - 14.9	15.0 - 39.9	-	$D_1 - 4.9$	2.2	0.4	2.0	2.5	0.30	0.20	0.15	1.78
15.0 - 39.9	40.0 - 79.9	-	$D_1 - 7.5$	3.2	0.6	3.0	3.8	0.40	0.25	0.15	2.62
40.0 - 79.9	80.0 - 132.9	15.0 - 39.9	$D_1 - 11.0$	4.2	1.0	4.0	5.5	0.40	0.25	0.20	3.53
80.0 - 132.9	133.0 - 329.9	40.0 - 79.9	$D_1 - 15.5$	6.3	1.3	6.0	7.8	0.50	0.30	0.20	5.33
133.0 - 329.9	330.0 - 669.9	80.0 - 132.9	$D_1 - 21.0$	8.1	1.8	8.0	10.5	0.60	0.35	0.25	6.99
330.0 - 669.9	670.0 - 999.9	133.0 - 329.9	$D_1 - 24.5$	8.1	1.8	8.0	12.3	0.60	0.35	0.25	6.99
670.0 - 999.9	≥ 1000.0	330.0 - 669.9	$D_1 - 28.0$	9.5	2.5	9.0	14.0	0.70	0.50	0.30	8.40
≥ 1000.0	-	670.0 - 999.9	$D_1 - 38.0$	13.8	3.0	10.0	19.0	1.00	0.70	0.60	12.00

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.

Temperature Range °C	-30 TO 80		-30 TO 100	
Max. Pressure Bar	300	200	240	160
At Speed v m/s	2	4	2	4



G54

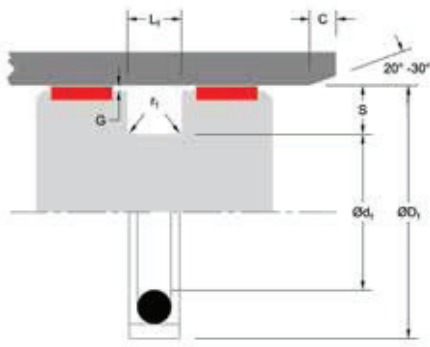
PISTON SEAL
Double-Acting

PART NUMBER RANGE (METRIC)*

metric			PART NUMBER
ØD ₁	Ød ₁	L ₁	
Tol. H9	Tol. H9	Tol. +0.2	
8.0	3.1	2.2	G54MR00080****
10.0	5.1	2.2	G54MR00100****
12.0	7.1	2.2	G54MR00120****
14.0	9.1	2.2	G54MR00140****
15.0	7.5	3.2	G54MR00150****
16.0	11.1	2.2	G54ML00160****
16.0	8.5	3.2	G54MR00160****
18.0	13.1	2.2	G54ML00180****
18.0	10.5	3.2	G54MR00180****
20.0	15.1	2.2	G54ML00200****
20.0	12.5	3.2	G54MR00200****
21.0	13.5	3.2	G54MR00210****
22.0	17.1	2.2	G54ML00220****
22.0	14.5	3.2	G54MR00220****
24.0	16.5	3.2	G54MR00240****
25.0	20.1	2.2	G54ML00250****
25.0	17.5	3.2	G54MR00250****
25.0	14.0	4.2	G54MH00250****
28.0	20.5	3.2	G54MR00280****
30.0	22.5	3.2	G54MR00300****
32.0	27.1	2.2	G54ML00320****
32.0	24.5	3.2	G54MR00320****
32.0	21.0	4.2	G54MH00320****
35.0	27.5	3.2	G54MR00350****
35.0	24.0	4.2	G54MH00350****
36.0	28.5	3.2	G54MR00360****
38.0	30.5	3.2	G54MR00380****
40.0	32.5	3.2	G54ML00400****

metric			PART NUMBER
ØD ₁	Ød ₁	L ₁	
Tol. H9	Tol. H9	Tol. +0.2	
40.0	29.0	4.2	G54MR00400****
42.0	31.0	4.2	G54MR00420****
45.0	34.0	4.2	G54MR00450****
48.0	37.0	4.2	G54MR00480****
50.0	42.5	3.2	G54ML00500****
50.0	39.0	4.2	G54MR00500****
50.0	34.5	6.3	G54MH00500****
50.8	43.3	3.2	G54ML00508****
50.8	39.8	4.2	G54MR00508****
52.0	41.0	4.2	G54MR00520****
53.0	42.0	4.2	G54MR00530****
55.0	44.0	4.2	G54MR00550****
57.0	46.0	4.2	G54MR00570****
58.0	47.0	4.2	G54MR00580****
60.0	49.0	4.2	G54MR00600****
62.0	51.0	4.2	G54MR00620****
63.0	52.0	4.2	G54MR00630****
63.0	47.5	6.3	G54MH00630****
65.0	54.0	4.2	G54MR00650****
68.0	57.0	4.2	G54MR00680****
70.0	59.0	4.2	G54MR00700****
70.0	54.5	6.3	G54MH00700****
75.0	64.0	4.2	G54MR00750****
75.0	59.5	6.3	G54MH00750****
80.0	69.0	4.2	G54ML00800****
80.0	64.5	6.3	G54MR00800****
80.0	59.0	8.1	G54MH00800****
82.5	67.0	6.3	G54MR00825****

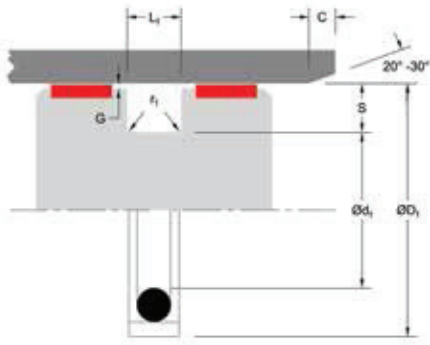




PART NUMBER RANGE (METRIC)*

metric			PART NUMBER
$\varnothing D_1$	$\varnothing d_1$	L_1	
Tol. H9	Tol. H9	Tol. +0.2	
85.0	69.5	6.3	G54MR00850****
85.0	64.0	8.1	G54MH00850****
90.0	79.0	4.2	G54ML00900****
90.0	74.5	6.3	G54MR00900****
90.0	69.0	8.1	G54MH00900****
95.0	84.0	4.2	G54ML00950****
95.0	79.5	6.3	G54MR00950****
95.0	74.0	8.1	G54MH00950****
100.0	89.0	4.2	G54ML01000****
100.0	84.5	6.3	G54MR01000****
100.0	79.0	8.1	G54MH01000****
101.6	86.1	6.3	G54MR01016****
105.0	94.0	4.2	G54ML01050****
105.0	89.5	6.3	G54MR01050****
108.0	92.5	6.3	G54MR01080****
110.0	99.0	4.2	G54ML01100****
110.0	94.5	6.3	G54MR01100****
110.0	89.0	8.1	G54MH01100****
115.0	99.5	6.3	G54MR01150****
120.0	109.0	4.2	G54ML01200****
120.0	104.5	6.3	G54MR01200****
120.0	99.0	8.1	G54MH01200****
125.0	114.0	4.2	G54ML01250****
125.0	109.5	6.3	G54MR01250****
125.0	104.0	8.1	G54MH01250****
127.0	111.5	6.3	G54MR01270****
130.0	114.5	6.3	G54MR01300****
130.0	109.0	8.1	G54MH01300****

metric			PART NUMBER
$\varnothing D_1$	$\varnothing d_1$	L_1	
Tol. H9	Tol. H9	Tol. +0.2	
132.0	121.0	4.2	G54ML01320****
135.0	114.0	8.1	G54MR01350****
140.0	124.5	6.3	G54ML01400****
140.0	119.0	8.1	G54MR01400****
145.0	129.5	6.3	G54ML01450****
145.0	124.0	8.1	G54MR01450****
150.0	134.5	6.3	G54ML01500****
150.0	129.0	8.1	G54MR01500****
155.0	134.0	8.1	G54MR01550****
160.0	144.5	6.3	G54ML01600****
160.0	139.0	8.1	G54MR01600****
165.0	144.0	8.1	G54MR01650****
170.0	149.0	8.1	G54MR01700****
175.0	154.0	8.1	G54MR01750****
180.0	164.5	6.3	G54ML01800****
180.0	159.0	8.1	G54MR01800****
190.0	169.0	8.1	G54MR01900****
194.0	178.5	6.3	G54ML01940****
200.0	184.5	6.3	G54ML02000****
200.0	179.0	8.1	G54MR02000****
205.0	184.0	8.1	G54MR02050****
210.0	189.0	8.1	G54MR02100****
215.0	194.0	8.1	G54MR02150****
220.0	199.0	8.1	G54MR02200****
230.0	214.5	6.3	G54ML02300****
230.0	209.0	8.1	G54MR02300****
240.0	219.0	8.1	G54MR02400****
250.0	229.0	8.1	G54MR02500****



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Double-Acting

PART NUMBER RANGE (METRIC)*

metric			PART NUMBER
ØD ₁	Ød ₁	L ₁	
Tol. H9	Tol. H9	Tol. +0.2	
250.0	225.5	8.1	G54MR02500****
250.0	234.5	6.3	G54ML02500****
254.0	233.0	8.1	G54MR02540****
260.0	239.0	8.1	G54MR02600****
265.0	244.0	8.1	G54MR02650****
268.0	247.0	8.1	G54MR02680****
270.0	249.0	8.1	G54MR02700****
280.0	259.0	8.1	G54MR02800****
290.0	269.0	8.1	G54MR02900****
300.0	279.0	8.1	G54MR03000****
300.0	275.5	8.1	G54ML03000****
304.8	283.8	8.1	G54MR03048****
310.0	289.0	8.1	G54MR03100****
320.0	299.0	8.1	G54MR03200****
320.0	295.5	8.1	G54ML03200****
330.0	305.5	8.1	G54MR03300****
340.0	315.5	8.1	G54MR03400****
350.0	325.5	8.1	G54MR03500****
360.0	335.5	8.1	G54MR03600****
370.0	345.5	8.1	G54MR03700****
380.0	355.5	8.1	G54MR03800****
400.0	375.5	8.1	G54MR04000****
420.0	395.5	8.1	G54MR04200****
430.0	405.5	8.1	G54MR04300****
440.0	415.5	8.1	G54MR04400****
450.0	425.5	8.1	G54MR04500****
460.0	435.5	8.1	G54MR04600****
480.0	455.5	8.1	G54MR04800****

metric			PART NUMBER
ØD ₁	Ød ₁	L ₁	
Tol. H9	Tol. H9	Tol. +0.2	
500.0	475.5	8.1	G54MR05000****
555.0	530.5	8.1	G54MR05550****
600.0	575.5	8.1	G54MR06000****
640.0	615.5	8.1	G54MR06400****
660.0	635.5	8.1	G54MR06600****
700.0	672.0	9.5	G54MR07000****
710.0	682.0	9.5	G54MR07100****
740.0	712.0	9.5	G54MR07400****
780.0	752.0	9.5	G54MR07800****
800.0	772.0	9.5	G54MR08000****
900.0	872.0	9.5	G54MR09000****
1000.0	972.0	9.5	G54ML10000****
1000.0	962.0	13.8	G54MR10000****
1050.0	1022.0	9.5	G54ML10500****
1065.0	1027.0	13.8	G54MR10650****
1070.0	1032.0	13.8	G54MR10700****
1200.0	1172.0	9.5	G54ML12000****
1200.0	1162.0	13.8	G54MR12000****
1225.0	1187.0	13.8	G54MR12250****

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

