

SSP

SWIVEL SEAL

OD Sealing

TECHNICAL DETAILS

The Hallite SSP is a double-acting, o-ring energized, rotary swivel seal designed to be used to seal outer diameters of shafts, bores, swivels, and other applications with rotating or oscillating movement. The SSP rotary seal has one or two machined grooves in the face ring, depending on the face-ring cross-section, that function to improve sealing against the surface while trapping lubrication and reducing surface contact area, thereby reducing running friction. The o-ring serves to energize the seal face ring, exerting a designed downward force, and also provides static sealing of the housing.

Hallite's SSP rotary seal has a specially designed circular inner recess that provides for maximum o-ring contact area to the inner diameter of the seal face, thereby minimizing the possibility of sealing components spinning relative to each other. The standard SSP seal face includes pressure notches, which makes the seal very responsive to changes in pressure. Made from exclusive Hallite Armorlene® 711 or HCF PTFE materials, the SSP rotary seal is energy-efficient due to its low-friction qualities and eliminates any potential sticking on start-up.

High-performance Armorlene® materials, like 711, provide outstanding wear resistance and support a large range of temperature and media compatibilities. The Armorlene® SSP and SSR rotary swivel seals are designed for slow-speed rotary and swivel applications.



FEATURES

- High temperature rating, low-friction and wear-resistant face-ring
- Compact groove design suitable for narrow spacing
- Good anti-extrusion resistance

Part Number Structure

SSPMR00550N711 _

SSP	M	R	00550	N	711	_
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 (with notches) X = No notches



OPERATING CONDITIONS

	metric	inch
Maximum Speed	Up to 2.0m/sec	Up to 6.5ft/sec
Temperature Range*	-45 to 200°C	-49 to 392°F
Maximum Dynamic Pressure**	300 bar	4350 psi

*Dependent upon energizer used (NBR, FKM, etc.). **For pressures above 300 bar (4350 psi), contact Hallite Engineering. Application limit PV ≤ 25 bar m/s (40 bar m/s for interrupted rotary).

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	-	-

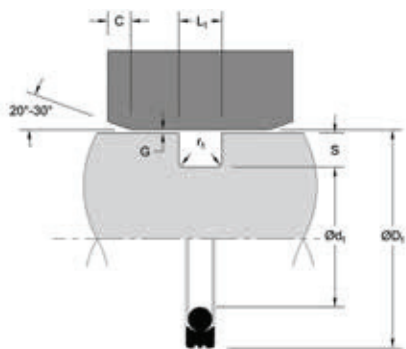
*Seal ratings are based upon capabilities of its matched material components. Hallite cannot rate seal performance when the seal is mixed with other manufacturers' energizers/components.

MATERIALS

MATERIAL FEATURES AND APPLICATIONS	FILLER	MATERIAL DESIGNATOR	COLOR	TEMPERATURE RANGE °C	TEMPERATURE RANGE °F	MAXIMUM DYNAMIC PRESSURE - BAR	MAXIMUM DYNAMIC PRESSURE - PSI
ARMORLENE® 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	300 bar	4350 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	300 bar	4350 psi
ARMORLENE® HCV <ul style="list-style-type: none"> • Recommended for lubricating and non-lubricating fluids • Excellent for high-frequency and short-stroke applications • Not recommended for gas sealing applications • Not recommended for electrical conductive fluids 	High Carbon Fiber Filled	HCV	Gray/Black	-73 to 260°C	-100 to 500°F	300 bar	4350 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*	NUMBER OF GROOVES
DIAMETER RANGE		Ød ₁ h9	L ₁ + 0.2	r ₁	C	S	Up to 300 bar	
Standard Duty Application - R	Light Duty Application - L							
8.0 - 39.9	40.0 - 79.9	D ₁ - 4.9	2.2	0.4	2.5	2.45	Tol H8/f7	0
40.0 - 79.9	80.0 - 132.9	D ₁ - 7.5	3.2	0.6	3.5	3.75	Tol H8/f7	1
80.0 - 132.9	133.0 - 329.9	D ₁ - 11.0	4.2	1.0	4.0	5.50	Tol H8/f7	1
133.0 - 329.9	330.0 - 649.9	D ₁ - 15.5	6.3	1.3	6.0	7.75	Tol H8/f7	2
330.0 - 649.9	650.0 - 999.9	D ₁ - 21.0	8.1	1.8	8.0	10.50	Tol H8/f7	2
650.0 - 999.9	-	D ₁ - 28.0	9.5	2.5	10.0	14.00	Tol H8/f7	2

At pressure >300 bar or greater contact Hallite Engineering.

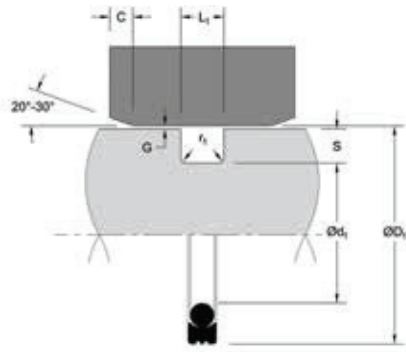
*Radial Clearance G max. = maximum permissible gap all on one side using max. tube diameter and min. clearance diameter.

inch

BORE DIAMETER ØD ₁ H9		GROOVE DIAMETER	GROOVE WIDTH	RADIUS	CHAMFER	GROOVE SECTION	RADIAL CLEARANCE G max*	NUMBER OF GROOVES
DIAMETER RANGE		Ød ₁ h9	L ₁ + .008	r ₁	C	S	Up to 4350 psi	
Standard Duty Application - R	Light Duty Application - L							
0.375 - 1.499	1.500 - 2.999	D ₁ - 0.193	0.087	0.015	0.100	0.096	Tol H8/f7	0
1.500 - 2.999	3.000 - 5.999	D ₁ - 0.295	0.126	0.015	0.125	0.147	Tol H8/f7	1
3.000 - 5.999	6.000 - 11.999	D ₁ - 0.433	0.165	0.015	0.187	0.216	Tol H8/f7	1
6.000 - 11.999	12.000-20.000	D ₁ - 0.610	0.248	0.035	0.250	0.305	Tol H8/f7	2
12.000-20.000	-	D ₁ - 0.827	0.319	0.035	0.312	0.413	Tol H8/f7	2

At pressure >4350 psi or greater contact Hallite Engineering.

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

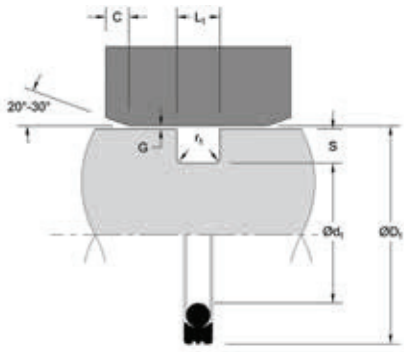


PART NUMBER RANGE (METRIC)*

metric			PART NUMBER
ØD ₁	Ød ₁	L ₁	
Tol. H9	Tol. H9	Tol. +0.2	
16.0	11.1	2.2	SSPMR00160****
18.0	13.1	2.2	SSPMR00180****
20.0	15.1	2.2	SSPMR00200****
22.0	17.1	2.2	SSPMR00220****
25.0	20.1	2.2	SSPMR00250****
28.0	23.1	2.2	SSPMR00280****
30.0	25.1	2.2	SSPMR00300****
32.0	27.1	2.2	SSPMR00320****
35.0	30.1	2.2	SSPMR00350****
40.0	32.5	3.2	SSPMR00400****
42.0	34.5	3.2	SSPMR00420****
45.0	37.5	3.2	SSPMR00450****
48.0	40.5	3.2	SSPMR00480****
50.0	42.5	3.2	SSPMR00500****
52.0	44.5	3.2	SSPMR00520****
55.0	47.5	3.2	SSPMR00550****
60.0	52.5	3.2	SSPMR00600****
63.0	55.5	3.2	SSPMR00630****
65.0	57.5	3.2	SSPMR00650****
70.0	62.5	3.2	SSPMR00700****
75.0	67.5	3.2	SSPMR00750****
80.0	69.0	4.2	SSPMR00800****
85.0	74.0	4.2	SSPMR00850****
90.0	79.0	4.2	SSPMR00900****
95.0	84.0	4.2	SSPMR00950****
100.0	89.0	4.2	SSPMR01000****
105.0	94.0	4.2	SSPMR01050****
110.0	99.0	4.2	SSPMR01100****

metric			PART NUMBER
ØD ₁	Ød ₁	L ₁	
Tol. H9	Tol. H9	Tol. +0.2	
115.0	104.0	4.2	SSPMR01150****
120.0	109.0	4.2	SSPMR01200****
125.0	114.0	4.2	SSPMR01250****
130.0	119.0	4.2	SSPMR01300****
135.0	119.5	6.3	SSPMR01350****
140.0	124.5	6.3	SSPMR01400****
150.0	134.5	6.3	SSPMR01500****
160.0	144.5	6.3	SSPMR01600****
170.0	154.5	6.3	SSPMR01700****
180.0	164.5	6.3	SSPMR01800****
190.0	174.5	6.3	SSPMR01900****
200.0	184.5	6.3	SSPMR02000****
210.0	194.5	6.3	SSPMR02100****
220.0	204.5	6.3	SSPMR02200****
230.0	214.5	6.3	SSPMR02300****
240.0	224.5	6.3	SSPMR02400****
250.0	234.5	6.3	SSPMR02500****
280.0	264.5	6.3	SSPMR02800****
300.0	284.5	6.3	SSPMR03000****
320.0	304.5	6.3	SSPMR03200****
350.0	329.0	8.1	SSPMR03500****
360.0	339.0	8.1	SSPMR03600****
400.0	379.0	8.1	SSPMR04000****
420.0	399.0	8.1	SSPMR04200****
450.0	429.0	8.1	SSPMR04500****
480.0	459.0	8.1	SSPMR04800****
500.0	479.0	8.1	SSPMR05000****
600.0	579.0	8.1	SSPMR06000****

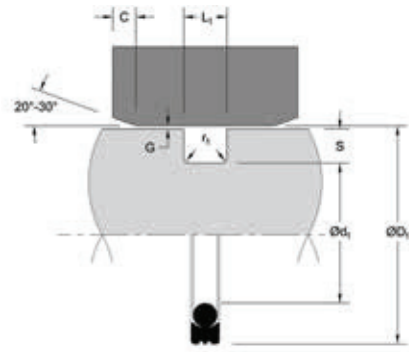
*Please contact Hallite for custom sizes, material selection, or seal design.



PART NUMBER RANGE (INCH)*

inch			PART NUMBER
ØD ₁	Ød ₁	L ₁	
Tol. H9	Tol. H9	Tol. +0.008	
0.375	0.182	0.087	SSPER00375****
0.437	0.244	0.087	SSPER00437****
0.500	0.307	0.087	SSPER00500****
0.562	0.369	0.087	SSPER00562****
0.625	0.432	0.087	SSPER00625****
0.687	0.494	0.087	SSPER00687****
0.750	0.557	0.087	SSPER00750****
0.812	0.619	0.087	SSPER00812****
0.875	0.682	0.087	SSPER00875****
0.937	0.744	0.087	SSPER00937****
1.000	0.807	0.087	SSPER01000****
1.125	0.932	0.087	SSPER01125****
1.250	1.057	0.087	SSPER01250****
1.375	1.182	0.087	SSPER01375****
1.500	1.205	0.126	SSPER01500****
1.625	1.330	0.126	SSPER01625****
1.750	1.455	0.126	SSPER01750****
1.875	1.580	0.126	SSPER01875****
2.000	1.705	0.126	SSPER02000****
2.125	1.830	0.126	SSPER02125****
2.250	1.955	0.126	SSPER02250****
2.375	2.080	0.126	SSPER02375****
2.500	2.205	0.126	SSPER02500****
2.625	2.330	0.126	SSPER02625****
2.750	2.455	0.126	SSPER02750****
2.875	2.580	0.126	SSPER02875****
3.000	2.567	0.165	SSPER03000****
3.125	2.692	0.165	SSPER03125****

inch			PART NUMBER
ØD ₁	Ød ₁	L ₁	
Tol. H9	Tol. H9	Tol. +0.008	
3.250	2.817	0.165	SSPER03250****
3.375	2.942	0.165	SSPER03375****
3.500	3.067	0.165	SSPER03500****
3.625	3.192	0.165	SSPER03625****
3.750	3.317	0.165	SSPER03750****
3.875	3.442	0.165	SSPER03875****
4.000	3.567	0.165	SSPER04000****
4.125	3.692	0.165	SSPER04125****
4.250	3.817	0.165	SSPER04250****
4.375	3.942	0.165	SSPER04375****
4.500	4.067	0.165	SSPER04500****
4.625	4.192	0.165	SSPER04625****
4.750	4.317	0.165	SSPER04750****
4.875	4.442	0.165	SSPER04875****
5.000	4.567	0.165	SSPER05000****
5.125	4.692	0.165	SSPER05125****
5.250	4.817	0.165	SSPER05250****
5.375	4.942	0.165	SSPER05375****
5.500	5.067	0.165	SSPER05500****
5.625	5.192	0.165	SSPER05625****
5.750	5.317	0.165	SSPER05750****
5.875	5.442	0.165	SSPER05875****
6.000	5.390	0.248	SSPER06000****
6.250	5.640	0.248	SSPER06250****
6.500	5.890	0.248	SSPER06500****
6.750	6.140	0.248	SSPER06750****
7.000	6.390	0.248	SSPER07000****
7.250	6.640	0.248	SSPER07250****



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PART NUMBER RANGE (INCH)*

inch			PART NUMBER
ØD ₁	Ød ₁	L ₁	
Tol. H9	Tol. H9	Tol. +0.008	
7.500	6.890	0.248	SSPER07500****
7.750	7.140	0.248	SSPER07750****
8.000	7.390	0.248	SSPER08000****
8.250	7.640	0.248	SSPER08250****
8.500	7.890	0.248	SSPER08500****
8.750	8.140	0.248	SSPER08750****
9.000	8.390	0.248	SSPER09000****
9.250	8.640	0.248	SSPER09250****
9.500	8.890	0.248	SSPER09500****
9.750	9.140	0.248	SSPER09750****
10.000	9.390	0.248	SSPER10000****
10.500	9.890	0.248	SSPER10500****
11.000	10.390	0.248	SSPER11000****
11.500	10.890	0.248	SSPER11500****
12.000	11.173	0.319	SSPER12000****
12.500	11.673	0.319	SSPER12500****

inch			PART NUMBER
ØD ₁	Ød ₁	L ₁	
Tol. H9	Tol. H9	Tol. +0.008	
13.000	12.173	0.319	SSPER13000****
13.500	12.673	0.319	SSPER13500****
14.000	13.173	0.319	SSPER14000****
14.500	13.673	0.319	SSPER14500****
15.000	14.173	0.319	SSPER15000****
15.500	14.673	0.319	SSPER15500****
16.000	15.173	0.319	SSPER16000****
16.500	15.673	0.319	SSPER16500****
17.000	16.173	0.319	SSPER17000****
17.500	16.673	0.319	SSPER17500****
18.000	17.173	0.319	SSPER18000****
18.500	17.673	0.319	SSPER18500****
19.000	18.173	0.319	SSPER19000****
19.500	18.673	0.319	SSPER19500****
20.000	19.173	0.319	SSPER20000****

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