

Piston Seals

Technical details

Metric

Inch

Operating conditions

Maximum Speed	0.5 m/sec
Temperature Range	-30°C +100°C
Maximum Pressure	700 bar

1.5 ft/sec
-22°F +212°F
10,000 p.s.i.

Surface roughness

	µmRa	µmRt
Dynamic Sealing Face $\varnothing D_1$	0.1 <> 0.4	4 max
Static Sealing Face $\varnothing d_1$ $\varnothing d_2$	1.6 max	10 max
Static Housing Faces $\varnothing d_3$ L ₁ L ₂	3.2 max	16 max

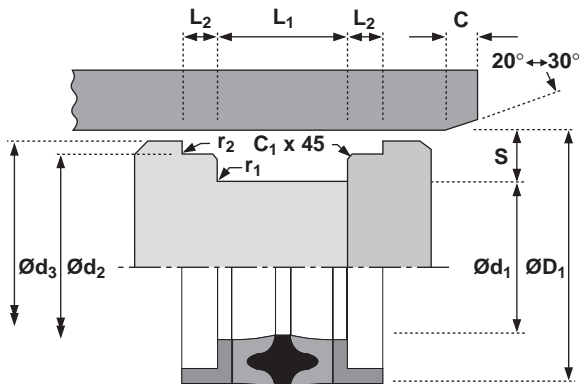
µinCLA	µinRMS
4 <> 16	5 <> 18
63 max	70 max
125 max	140 max

Chamfers & Radii

Groove Section \leq S mm	5.0	7.5	10.0	12.5	15.0	
Min Chamfer C mm	2.5	4.0	5.0	6.5	7.5	
Min Chamfer C ₁ mm	1.0	1.0	1.0	1.5	1.5	
Max Fillet Rad r ₁ mm	0.2	0.2	0.2	0.4	0.4	
Max Fillet Rad r ₂ mm	0.2	0.2	0.2	0.4	0.4	
Groove Section \leq S in	0.187	0.250	0.312	0.375	0.500	0.625
Min Chamfer C in	0.093	0.125	0.156	0.187	0.217	0.250
Min Chamfer C ₁ in	0.032	0.032	0.032	0.062	0.062	0.062
Max Fillet Rad r ₁ in	0.008	0.008	0.008	0.008	0.016	0.016
Max Fillet Rad r ₂ in	0.008	0.008	0.008	0.008	0.016	0.016

Tolerances

	$\varnothing D_1$	$\varnothing d_1$	$\varnothing d_2$	$\varnothing d_3$	L ₁	L ₂
mm	H11	js11	h9	js11	+0.25 -0	0 -0.15
in	H11	js11	h9	js11	+0.035 +0.025	0 -0.005



Design

The Hallite 58 double acting piston seal combines the Hallite 56 seal with bearing rings to give a very robust heavy duty seal assembly for split pistons. It enables the designer to use larger clearances and, with the integral bearing rings, to restrict the piston length.

The assembly comprises a seal and two L shaped bearings. The centre of the seal is rubber which is bonded to two 'U' section bases of rubberised fabric, and is compressed by the housing to obtain an effective low pressure seal. When the pressure increases the rubber energises the 'U' section and deforms it to the housing, increasing the sealing area and improving the seal.

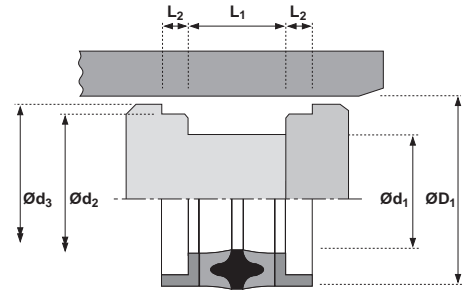
Rubberised fabric is used to protect the rubber, because it has strength and durability which combines with its ability to retain lubricant to help keep friction low and reduce wear.

Supporting the seal at either end is a polyacetal bearing proportioned to react to the pressure on the seal to prevent extrusion damage, and support the piston and its side load.

Features

- Well proven design
- Tolerant to contamination
- High pressure capability

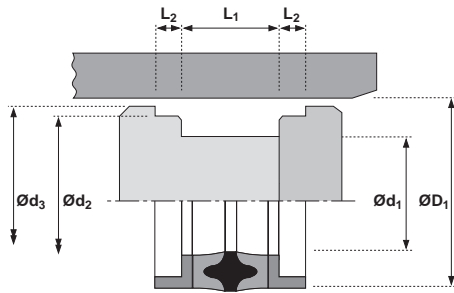
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ØD_1	TOL H11	Ød_1	TOL js11	Ød_2	TOL h9	Ød_3	TOL js11	L1 + 0.035	L2 + 0.025	L2 0 - 0.005	PART No.
1.000	+0.005 +0.000	0.625	+0.002 -0.002	0.868	+0.000 -0.002	0.968	+0.003 -0.003	0.594	0.187		1247650
1.250	+0.006 +0.000	0.750	+0.003 -0.003	1.118	+0.000 -0.002	1.218	+0.003 -0.003	0.750	0.250		0403750
1.500	+0.006 +0.000	1.000	+0.003 -0.003	1.362	+0.000 -0.002	1.460	+0.003 -0.003	0.625	0.188		6504850
1.500	+0.006 +0.000	1.000	+0.003 -0.003	1.362	+0.000 -0.002	1.460	+0.003 -0.003	0.625	0.254		1441150
1.500	+0.006 +0.000	1.000	+0.003 -0.003	1.371	+0.000 -0.002	1.468	+0.003 -0.003	0.750	0.250		0422450
1.625	+0.006 +0.000	1.000	+0.003 -0.003	1.428	+0.000 -0.002	1.562	+0.003 -0.003	0.937	0.250		0540650
1.750	+0.006 +0.000	1.125	+0.003 -0.003	1.555	+0.000 -0.002	1.687	+0.003 -0.003	0.937	0.250		0778250
1.750	+0.006 +0.000	1.125	+0.003 -0.003	1.572	+0.000 -0.002	1.710	+0.003 -0.003	0.750	0.254		6504450
2.000	+0.007 +0.000	1.375	+0.003 -0.003	1.805	+0.000 -0.002	1.937	+0.004 -0.004	0.937	0.250		0778450
2.000	+0.007 +0.000	1.375	+0.003 -0.003	1.822	+0.000 -0.002	1.962	+0.004 -0.004	0.750	0.254		0639150
2.125	+0.007 +0.000	1.500	+0.003 -0.003	1.928	+0.000 -0.002	2.062	+0.004 -0.004	0.937	0.250		0967650
2.250	+0.007 +0.000	1.625	+0.003 -0.003	2.055	+0.000 -0.003	2.187	+0.004 -0.004	0.937	0.250		1432650
2.250	+0.007 +0.000	1.625	+0.003 -0.003	2.071	+0.000 -0.003	2.211	+0.004 -0.004	0.750	0.254		0640450
2.375	+0.007 +0.000	1.750	+0.003 -0.003	2.180	+0.000 -0.003	2.312	+0.004 -0.004	0.750	0.250		0890850
2.375	+0.007 +0.000	1.750	+0.003 -0.003	2.180	+0.000 -0.003	2.312	+0.004 -0.004	0.937	0.250		0939850
2.500	+0.007 +0.000	1.875	+0.003 -0.003	2.305	+0.000 -0.003	2.437	+0.004 -0.004	0.937	0.250		0867250
2.500	+0.007 +0.000	1.875	+0.003 -0.003	2.321	+0.000 -0.003	2.460	+0.004 -0.004	0.750	0.254		6502250
2.625	+0.007 +0.000	2.000	+0.004 -0.004	2.428	+0.000 -0.003	2.562	+0.004 -0.004	0.937	0.250		1371050
2.750	+0.007 +0.000	2.000	+0.004 -0.004	2.485	+0.000 -0.003	2.687	+0.004 -0.004	1.187	0.250		1369150
2.750	+0.007 +0.000	2.000	+0.004 -0.004	2.524	+0.000 -0.003	2.710	+0.004 -0.004	0.937	0.254		0783250

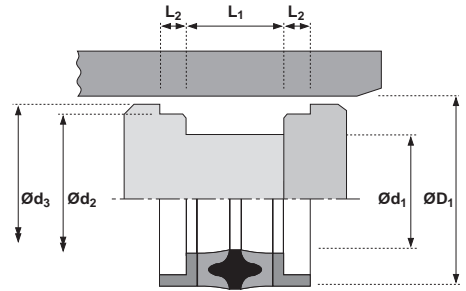
Piston Seals inch

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$\text{Ø}D_1$	TOL H11	$\text{Ø}d_1$	TOL js11	$\text{Ø}d_2$	TOL h9	$\text{Ø}d_3$	TOL js11	L_1 + 0.035	L_2 + 0.025	L_2 0 - 0.005	PART No.
2.875	+0.007 +0.000	2.125	+0.004 -0.004	2.610	+0.000 -0.003	2.812	+0.004 -0.004	1.187	0.250		0779650
3.000	+0.007 +0.000	2.250	+0.004 -0.004	2.735	+0.000 -0.003	2.937	+0.004 -0.004	1.187	0.250		1098450
3.000	+0.007 +0.000	2.250	+0.004 -0.004	2.774	+0.000 -0.003	2.960	+0.004 -0.004	0.937	0.254		6502450
3.125	+0.007 +0.000	2.375	+0.004 -0.004	2.858	+0.000 -0.003	3.062	+0.004 -0.004	1.187	0.250		1024850
3.250	+0.009 +0.000	2.500	+0.004 -0.004	2.985	+0.000 -0.003	3.187	+0.004 -0.004	1.187	0.250		0782450
3.250	+0.009 +0.000	2.500	+0.004 -0.004	3.024	+0.000 -0.003	3.210	+0.004 -0.004	0.937	0.254		1154150
3.500	+0.009 +0.000	2.750	+0.004 -0.004	3.235	+0.000 -0.003	3.437	+0.004 -0.004	1.187	0.250		0437850
3.500	+0.009 +0.000	2.750	+0.004 -0.004	3.273	+0.000 -0.003	3.460	+0.004 -0.004	0.937	0.254		6500550
3.625	+0.009 +0.000	2.875	+0.004 -0.004	3.360	+0.000 -0.003	3.562	+0.004 -0.004	1.187	0.250		1474550
3.750	+0.009 +0.000	3.000	+0.004 -0.004	3.485	+0.000 -0.003	3.687	+0.004 -0.004	1.187	0.250		0410550
3.875	+0.009 +0.000	3.125	+0.004 -0.004	3.610	+0.000 -0.003	3.812	+0.004 -0.004	1.187	0.250		0295850
4.000	+0.009 +0.000	3.250	+0.004 -0.004	3.735	+0.000 -0.003	3.937	+0.004 -0.004	1.187	0.250		1407750
4.000	+0.009 +0.000	3.250	+0.004 -0.004	3.772	+0.000 -0.003	3.958	+0.004 -0.004	0.937	0.254		6504750
4.250	+0.009 +0.000	3.500	+0.004 -0.004	3.985	+0.000 -0.003	4.187	+0.004 -0.004	1.187	0.250		1128850
4.250	+0.009 +0.000	3.500	+0.004 -0.004	4.022	+0.000 -0.003	4.210	+0.004 -0.004	0.937	0.254		6504550
4.500	+0.009 +0.000	3.500	+0.004 -0.004	4.231	+0.000 -0.003	4.450	+0.004 -0.004	1.250	0.254		6504250
4.500	+0.009 +0.000	3.500	+0.004 -0.004	4.234	+0.000 -0.003	4.437	+0.004 -0.004	1.500	0.375		0448850
4.750	+0.010 +0.000	3.750	+0.004 -0.004	4.483	+0.000 -0.003	4.700	+0.005 -0.005	1.250	0.254		0038250
4.750	+0.010 +0.000	3.750	+0.004 -0.004	4.485	+0.000 -0.003	4.687	+0.005 -0.005	1.500	0.375		1007050
5.000	+0.010 +0.000	4.000	+0.004 -0.004	4.730	+0.000 -0.004	4.956	+0.005 -0.005	1.250	0.254		6500650

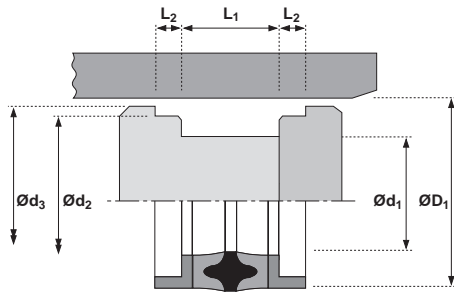
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ØD ₁	TOL H11	Ød ₁	TOL js11	Ød ₂	TOL h9	Ød ₃	TOL js11	L ₁ + 0.035	L ₂ + 0.025	0 - 0.005	PART No.
5.000	+0.010 +0.000	4.000	+0.004 -0.004	4.735	+0.000 -0.004	4.937	+0.005 -0.005	1.500	0.375		0443050
5.250	+0.010 +0.000	4.250	+0.004 -0.004	4.980	+0.000 -0.004	5.187	+0.005 -0.005	1.500	0.375		0892250
5.500	+0.010 +0.000	4.500	+0.004 -0.004	5.236	+0.000 -0.004	5.437	+0.005 -0.005	1.500	0.375		0133250
5.500	+0.010 +0.000	4.500	+0.004 -0.004	5.235	+0.000 -0.004	5.456	+0.005 -0.005	1.250	0.254		6504150
5.750	+0.010 +0.000	4.750	+0.005 -0.005	5.484	+0.000 -0.004	5.687	+0.005 -0.005	1.500	0.375		1366950
6.000	+0.010 +0.000	5.000	+0.005 -0.005	5.728	+0.000 -0.004	5.954	+0.005 -0.005	1.250	0.254		0557950
6.000	+0.010 +0.000	5.000	+0.005 -0.005	5.736	+0.000 -0.004	5.937	+0.005 -0.005	1.500	0.375		1367050
6.250	+0.010 +0.000	5.250	+0.005 -0.005	5.984	+0.000 -0.004	6.187	+0.005 -0.005	1.500	0.375		0083350
6.500	+0.010 +0.000	5.500	+0.005 -0.005	6.236	+0.000 -0.004	6.437	+0.005 -0.005	1.500	0.375		1164150
6.750	+0.010 +0.000	5.750	+0.005 -0.005	6.484	+0.000 -0.004	6.687	+0.005 -0.005	1.500	0.375		1286150
7.000	+0.010 +0.000	6.000	+0.005 -0.005	6.736	+0.000 -0.004	6.937	+0.005 -0.005	1.500	0.375		1188850
7.500	+0.010 +0.000	6.250	+0.005 -0.005	7.240	+0.000 -0.004	7.437	+0.006 -0.006	1.875	0.375		1255250
8.000	+0.011 +0.000	7.000	+0.005 -0.005	7.740	+0.000 -0.005	7.937	+0.006 -0.006	1.250	0.375		0224350
9.000	+0.011 +0.000	7.750	+0.006 -0.006	8.740	+0.000 -0.005	8.937	+0.006 -0.006	1.875	0.375		1266650
9.000	+0.011 +0.000	8.000	+0.006 -0.006	8.736	+0.000 -0.005	8.937	+0.006 -0.006	1.250	0.375		1273750
10.000	+0.013 +0.000	9.000	+0.006 -0.006	9.740	+0.000 -0.005	9.937	+0.006 -0.006	1.250	0.375		0697650

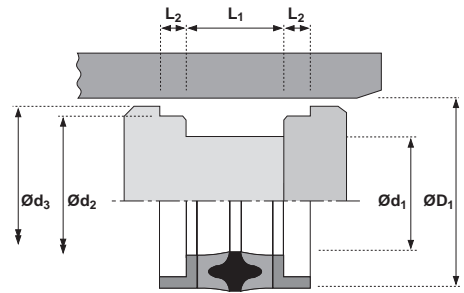
Piston Seals metric

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ØD ₁	TOL H11	Ød ₁	TOL js11	Ød ₂	TOL h9	Ød ₃	TOL js11	L ₁ + 0.25 - 0	L ₂ 0 - 0.15	PART No.
40	+0.16 +0.00	25	+0.07 -0.07	34.85	+0.000 -0.062	39.0	+0.08 -0.08	24.0	6.00	0472850
45	+0.16 +0.00	26	+0.07 -0.07	38.85	+0.000 -0.062	44.0	+0.08 -0.08	31.0	6.50	0474050
50	+0.16 +0.00	34	+0.08 -0.08	45.54	+0.000 -0.062	48.5	+0.08 -0.08	18.0	6.45	0814850
50	+0.16 +0.00	35	+0.08 -0.08	44.85	+0.000 -0.062	48.5	+0.08 -0.08	24.0	6.00	0474650
55	+0.19 +0.00	40	+0.08 -0.08	49.85	+0.000 -0.062	53.5	+0.10 -0.10	24.0	6.00	0475050
60	+0.19 +0.00	40	+0.08 -0.08	53.85	+0.000 -0.074	58.5	+0.10 -0.10	31.0	7.00	0282050
63	+0.19 +0.00	43	+0.08 -0.08	56.85	+0.000 -0.074	61.5	+0.10 -0.10	31.0	7.00	0646750
63	+0.19 +0.00	48	+0.08 -0.08	57.85	+0.000 -0.074	61.5	+0.10 -0.10	24.0	6.00	0205250
65	+0.19 +0.00	50	+0.08 -0.08	59.85	+0.000 -0.074	63.5	+0.10 -0.10	24.0	6.00	0383850
70	+0.19 +0.00	50	+0.08 -0.08	63.85	+0.000 -0.074	68.0	+0.10 -0.10	31.0	7.00	0294650
75	+0.19 +0.00	55	+0.10 -0.10	68.85	+0.000 -0.074	73.0	+0.10 -0.10	31.0	7.00	0818650
80	+0.19 +0.00	60	+0.10 -0.10	73.85	+0.000 -0.074	78.0	+0.10 -0.10	31.0	7.00	0294950
85	+0.22 +0.00	65	+0.10 -0.10	78.85	+0.000 -0.074	83.0	+0.11 -0.11	31.0	7.00	0388650
85	+0.22 +0.00	65	+0.10 -0.10	79.16	+0.000 -0.074	83.0	+0.11 -0.11	22.0	6.45	0314550
90	+0.22 +0.00	70	+0.10 -0.10	83.85	+0.000 -0.087	88.0	+0.11 -0.11	31.0	7.00	0296050
95	+0.22 +0.00	75	+0.10 -0.10	88.85	+0.000 -0.087	93.0	+0.11 -0.11	31.0	7.00	0412750
100	+0.22 +0.00	75	+0.10 -0.10	93.24	+0.000 -0.087	98.0	+0.11 -0.11	22.0	6.45	0034950
100	+0.22 +0.00	75	+0.10 -0.10	93.85	+0.000 -0.087	98.0	+0.11 -0.11	26.0	9.50	0891650
100	+0.22 +0.00	80	+0.10 -0.10	93.85	+0.000 -0.087	98.0	+0.11 -0.11	31.0	7.00	0295150
110	+0.22 +0.00	85	+0.11 -0.11	103.50	+0.000 -0.087	108.0	+0.11 -0.11	22.0	6.45	1188250

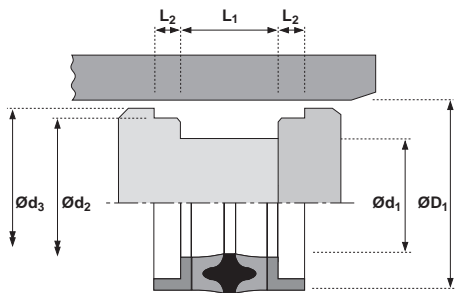
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ØD ₁	TOL H11	Ød ₁	TOL js11	Ød ₂	TOL h9	Ød ₃	TOL js11	L ₁ + 0.25 - 0	L ₂ 0 - 0.15	PART No.
110	+0.22 +0.00	90	+0.11 -0.11	103.85	+0.000 -0.087	108.0	+0.11 -0.11	31.0	7.00	0712450
115	+0.22 +0.00	95	+0.11 -0.11	108.85	+0.000 -0.087	113.0	+0.11 -0.11	31.0	7.00	0796450
120	+0.22 +0.00	100	+0.11 -0.11	113.85	+0.000 -0.087	118.0	+0.11 -0.11	31.0	7.00	0296150
125	+0.25 +0.00	100	+0.11 -0.11	118.50	+0.000 -0.087	123.0	+0.13 -0.13	25.0	6.45	1007450
125	+0.25 +0.00	100	+0.11 -0.11	118.85	+0.000 -0.087	123.0	+0.13 -0.13	38.0	9.50	0418650
130	+0.25 +0.00	104	+0.11 -0.11	123.85	+0.000 -0.100	128.0	+0.13 -0.13	38.0	9.50	0244350
130	+0.25 +0.00	105	+0.11 -0.11	123.50	+0.000 -0.100	128.0	+0.13 -0.13	25.0	6.45	0044850
135	+0.25 +0.00	110	+0.11 -0.11	128.35	+0.000 -0.100	133.0	+0.13 -0.13	38.0	9.50	0304350
140	+0.25 +0.00	115	+0.11 -0.11	133.50	+0.000 -0.100	138.0	+0.13 -0.13	25.0	6.45	1008450
140	+0.25 +0.00	120	+0.11 -0.11	133.85	+0.000 -0.100	138.0	+0.13 -0.13	31.0	7.00	0250550
145	+0.25 +0.00	125	+0.11 -0.11	138.85	+0.000 -0.100	143.0	+0.13 -0.13	31.0	7.00	0640150
150	+0.25 +0.00	120	+0.11 -0.11	143.85	+0.000 -0.100	148.0	+0.13 -0.13	44.0	9.50	1289550
150	+0.25 +0.00	125	+0.11 -0.11	143.50	+0.000 -0.100	148.0	+0.13 -0.13	25.0	6.45	1008050
160	+0.25 +0.00	130	+0.13 -0.13	153.50	+0.000 -0.100	158.0	+0.13 -0.13	25.0	6.45	1008250
160	+0.25 +0.00	135	+0.13 -0.13	153.85	+0.000 -0.100	158.0	+0.13 -0.13	38.0	9.50	0080450
160	+0.25 +0.00	140	+0.13 -0.13	153.85	+0.000 -0.100	158.0	+0.13 -0.13	31.0	7.00	0304650
170	+0.25 +0.00	140	+0.13 -0.13	162.54	+0.000 -0.100	168.0	+0.13 -0.13	25.0	6.45	1222250
170	+0.25 +0.00	150	+0.13 -0.13	163.85	+0.000 -0.100	168.0	+0.13 -0.13	31.0	7.00	0303350
180	+0.25 +0.00	150	+0.13 -0.13	173.00	+0.000 -0.100	178.0	+0.13 -0.13	35.0	6.45	0679850
180	+0.25 +0.00	160	+0.13 -0.13	173.85	+0.000 -0.100	178.0	+0.13 -0.13	31.0	7.00	1283150

Piston Seals metric

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$\varnothing D_1$	TOL H11	$\varnothing d_1$	TOL js11	$\varnothing d_2$	TOL h9	$\varnothing d_3$	TOL js11	L_1 + 0.25 - 0	L_2 0 - 0.15	PART No.
190	+0.29 +0.00	160	+0.13 -0.13	183.85	+0.000 -0.115	188.0	+0.15 -0.15	44.0	9.50	0838450
200	+0.29 +0.00	170	+0.13 -0.13	193.85	+0.000 -0.115	198.0	+0.15 -0.15	44.0	12.00	0087150
200	+0.29 +0.00	175	+0.13 -0.13	193.85	+0.000 -0.115	198.0	+0.15 -0.15	38.0	9.5	0838850
210	+0.29 +0.00	180	+0.13 -0.13	203.13	+0.000 -0.115	208.0	+0.15 -0.15	31.7	6.45	1198450
220	+0.29 +0.00	200	+0.15 -0.15	213.85	+0.000 -0.115	218.0	+0.15 -0.15	31.0	7.0	1056450
250	+0.29 +0.00	220	+0.15 -0.15	243.85	+0.000 -0.115	248.0	+0.15 -0.15	44.0	12.0	1056350
280	+0.32 +0.00	250	+0.15 -0.15	273.85	+0.000 -0.130	278.0	+0.16 -0.16	44.0	12.0	1055550

