



Design

The Hallite 54 double acting piston seal provides the designer with a compact, low friction seal for light to medium duty hydraulic cylinders.

It comprises a PTFE ring, strengthened with additives to resist creep, which is pre-loaded by an O ring to be effective for the operating pressure range recommended. As the pressure rises the O ring deforms and compresses the PTFE ring against the tube wall increasing the sealing force and the effectiveness of the seal. As only the PTFE ring is in contact with the sliding surface, friction is very low and stick-slip movement is eliminated.

The housing width allows the designer to use a narrow width piston, but it is recommended an adequate bearing is mounted either side of the seal as shown.*

A number of material options can be provided to extend operating conditions. Please ensure that the correct part number is specified for the material option as indicated.

The Hallite 54 seal is not recommended for applications where it is necessary for the pressurised cylinder to maintain the load in a set position.

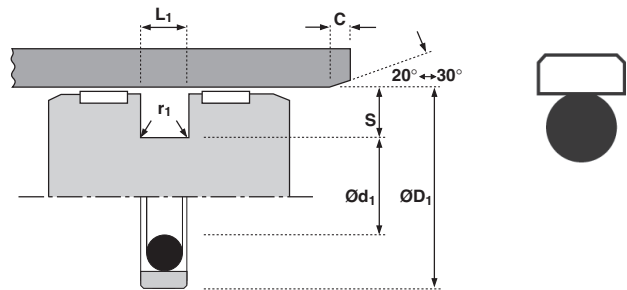
*See Hallite 87 and 506 wear ring data sheets.

NB: Part numbers suffixed by “±” indicate housing sizes to meet ISO 7425-1.

Note: Technical details shown are for 15% Glass/PTFE and NBR energiser. Technical details for material options should be requested from Hallite Seals.

Features	
• Low stick / slip	
• Low break out & running friction	
• High maximum speed	
• Compact piston design	
• Seal ring component can be machined to any size	

Material	
Face Material - O Ring	
Standard material	
15% Glass/PTFE – NBR	10
Material options:	
15% Glass/PTFE – FKM	11
Bronze/PTFE – NBR	20
Bronze/PTFE – FKM	21



Technical details

Operating conditions

	Metric	Inch
Maximum Speed	4.0 m/sec	12.0 ft/sec
Temperature Range	-30°C +100°C	-22°F +212°F
Maximum Pressure	350 bar	5000 p.s.i.

Maximum extrusion gap

Figures show the maximum permissible gap all on one side using minimum rod Ø and maximum clearance Ø. Refer to Housing Design section.

	100	160	250	350
Pressure bar	100	160	250	350
Maximum Gap mm	0.60	0.50	0.45	0.35
Pressure p.s.i.	1500	2400	3750	5250
Maximum Gap in	0.024	0.020	0.018	0.014

Surface roughness

	µmRa	µmRt	µinCLA	µinRMS
Dynamic Sealing Face ØD ₁	0.1 < > 0.4	4 max	4 < > 16	5 < > 18
Static Sealing Face Ød ₁	1.6 max	10 max	63 max	70 max
Static Housing Faces L ₁	3.2 max	16 max	125 max	140 max

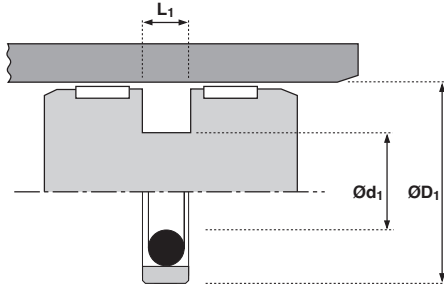
Chamfers & Radii

	3.75	5.50	7.75	10.50	12.25
Groove Section ≤ S mm	3.75	5.50	7.75	10.50	12.25
Min Chamfer C mm	2.00	2.50	5.00	7.50	10.00
Max Fillet Rad r ₁ mm	0.40	0.80	1.20	1.60	2.00
Groove Section ≤ S in	0.147	0.216	0.305	0.413	0.483
Min Chamfer C in	0.093	0.125	0.156	0.187	0.305
Max Fillet Rad r ₁ in	0.016	0.016	0.032	0.032	0.032

Tolerances

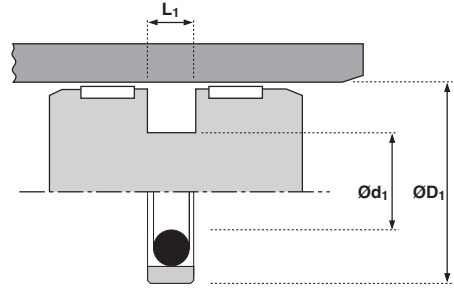
	ØD ₁	Ød ₁	L ₁
mm	H9	h9	+0.2 -0
in	H9	h9	+0.008 -0





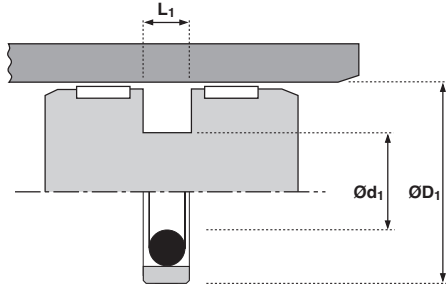
$\text{Ø}D_1$	TOL H9	$\text{Ø}d_1$	TOL h9	L_1 +0.2 -0	PART No.
12	+0.04 +0.00	7.1	+0.000 -0.036	2.20	66239_ _
15	+0.04 +0.00	7.5	+0.000 -0.036	3.20	86163_ _
16	+0.04 +0.00	8.5	+0.000 -0.036	3.20	66240_ _ ‡
20	+0.05 +0.00	12.5	+0.000 -0.043	3.20	66241_ _ ‡
24	+0.05 +0.00	16.5	+0.000 -0.043	3.20	66154_ _
25	+0.05 +0.00	17.5	+0.000 -0.043	3.20	66242_ _ ‡
30	+0.05 +0.00	22.5	+0.000 -0.052	3.20	65968_ _
32	+0.06 +0.00	24.5	+0.000 -0.052	3.20	65969_ _ ‡
35	+0.06 +0.00	27.5	+0.000 -0.052	3.20	65970_ _
38	+0.06 +0.00	30.5	+0.000 -0.062	3.20	66475_ _
40	+0.06 +0.00	29.0	+0.000 -0.062	4.20	65971_ _ ‡
42	+0.06 +0.00	31.0	+0.000 -0.062	4.20	65972_ _
45	+0.06 +0.00	34.0	+0.000 -0.062	4.20	65973_ _
50	+0.06 +0.00	39.0	+0.000 -0.062	4.20	65974_ _ ‡
55	+0.07 +0.00	44.0	+0.000 -0.062	4.20	65975_ _
60	+0.07 +0.00	49.0	+0.000 -0.062	4.20	65976_ _
63	+0.07 +0.00	52.0	+0.000 -0.074	4.20	66243_ _ ‡
65	+0.07 +0.00	54.0	+0.000 -0.074	4.20	86118_ _
70	+0.07 +0.00	59.0	+0.000 -0.074	4.20	65977_ _
75	+0.07 +0.00	64.0	+0.000 -0.074	4.20	66244_ _
80	+0.07 +0.00	64.5	+0.000 -0.074	6.30	65978_ _ ‡
90	+0.09 +0.00	74.5	+0.000 -0.074	6.30	65979_ _
95	+0.09 +0.00	79.5	+0.000 -0.074	6.30	86084_ _

$\text{Ø}D_1$	TOL H9	$\text{Ø}d_1$	TOL h9	L_1 +0.2 -0	PART No.
100	+0.09 +0.00	84.5	+0.000 -0.087	6.30	65980_ _ ‡
110	+0.09 +0.00	94.5	+0.000 -0.087	6.30	65981_ _
115	+0.09 +0.00	99.5	+0.000 -0.087	6.30	65982_ _
120	+0.09 +0.00	104.5	+0.000 -0.087	6.30	66361_ _
125	+0.10 +0.00	109.5	+0.000 -0.087	6.30	65983_ _ ‡
130	+0.10 +0.00	114.5	+0.000 -0.087	6.30	66476_ _
135	+0.10 +0.00	114.0	+0.000 -0.087	8.10	66477_ _
140	+0.10 +0.00	119.0	-0.000 -0.087	8.10	65984_ _
145	+0.10 +0.00	124.0	+0.000 -0.100	8.10	86080_ _
150	+0.10 +0.00	129.0	+0.000 -0.100	8.10	65985_ _
155	+0.10 +0.00	134.0	+0.000 -0.100	8.10	86177_ _
160	+0.10 +0.00	139.0	+0.000 -0.100	8.10	65986_ _ ‡
165	+0.10 +0.00	144.0	+0.000 -0.100	8.10	66491_ _
170	+0.10 +0.00	149.0	+0.000 -0.100	8.10	65987_ _
180	+0.10 +0.00	159.0	+0.000 -0.100	8.10	65988_ _
185	+0.12 +0.00	164.0	+0.000 -0.100	8.10	66478_ _
190	+0.12 +0.00	169.0	+0.000 -0.100	8.10	65989_ _
200	+0.12 +0.00	179.0	+0.000 -0.100	8.10	65990_ _ ‡
210	+0.12 +0.00	189.0	+0.000 -0.115	8.10	86146_ _
220	+0.12 +0.00	199.0	+0.000 -0.115	8.10	66245_ _
225	+0.12 +0.00	204.0	+0.000 -0.115	8.10	66246_ _
230	+0.12 +0.00	209.0	+0.000 -0.115	8.10	66247_ _
240	+0.12 +0.00	219.0	+0.000 -0.115	8.10	86154_ _



ØD ₁	TOL H9	Ød ₁	TOL h9	L ₁ +0.2 -0	PART No.
250	+0.12 +0.00	229.0	+0.000 -0.115	8.10	66401_ _ ‡
260	+0.13 +0.00	239.0	+0.000 -0.115	8.10	66479_ _
280	+0.13 +0.00	259.0	+0.000 -0.130	8.10	66402_ _
300	+0.13 +0.00	279.0	+0.000 -0.130	8.10	66403_ _
310	+0.13 +0.00	289.0	+0.000 -0.130	8.10	66480_ _
320	+0.14 +0.00	299.0	+0.000 -0.130	8.10	86086_ _ ‡
330	+0.14 +0.00	305.5	+0.000 -0.130	8.10	86081_ _

ØD ₁	TOL H9	Ød ₁	TOL h9	L ₁ +0.2 -0	PART No.
340	+0.14 +0.00	315.5	+0.000 -0.140	8.10	66481_ _
350	+0.14 +0.00	325.5	+0.000 -0.140	8.10	86155_ _
360	+0.14 +0.00	335.5	+0.000 -0.140	8.10	86218_ _
370	+0.14 +0.00	345.5	+0.000 -0.140	8.10	86219_ _
380	+0.14 +0.00	355.5	+0.000 -0.140	8.10	86220_ _
390	+0.14 +0.00	365.5	+0.000 -0.140	8.10	86221_ _
400	+0.14 +0.00	375.5	+0.000 -0.140	8.10	66482_ _ ‡



ØD ₁	TOL H9	Ød ₁	TOL h9	L ₁ +0.008 -0	PART No.
1.000	+0.002 +0.000	0.704	-0.0000 -0.0016	0.125	66248_ _
1.500	+0.002 +0.000	1.204	-0.0000 -0.0025	0.125	66249_ _
2.000	+0.003 +0.000	1.568	-0.0000 -0.0025	0.165	66250_ _
2.500	+0.003 +0.000	2.068	-0.0000 -0.0030	0.165	66251_ _
3.000	+0.003 +0.000	2.568	-0.0000 -0.0030	0.165	66252_ _
3.250	+0.003 +0.000	2.640	-0.0000 -0.0036	0.250	66253_ _
3.500	+0.003 +0.000	2.890	-0.0000 -0.0036	0.250	66254_ _

ØD ₁	TOL H9	Ød ₁	TOL h9	L ₁ +0.008 -0	PART No.
4.000	+0.003 +0.000	3.390	-0.0000 -0.0035	0.250	66255_ _
4.500	+0.003 +0.000	3.890	-0.0000 -0.0035	0.250	66256_ _
5.000	+0.004 +0.000	4.390	-0.0000 -0.0035	0.250	66257_ _
6.000	+0.004 +0.000	5.174	-0.0000 -0.0040	0.320	66258_ _
7.000	+0.004 +0.000	6.174	-0.0000 -0.0040	0.320	66259_ _
8.000	+0.004 +0.000	7.174	-0.0000 -0.0045	0.320	66260_ _

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