

## Design

A medium to heavy duty single acting seal, the Hallite 18 has shown itself over many years to be an effective and robust seal in a wide variety of applications.

The seal comprises a rubberised fabric U form base to which is bonded a rubber energiser.

The seal section is pre-loaded by the housing when installed to ensure effective sealing at low pressure. When the pressure increases the rubber energises the U form to increase the sealing area and hence the efficiency of the seal. The strength and durability of the rubberised fabric combines with its ability to retain lubricant keeping friction and wear to a minimum.

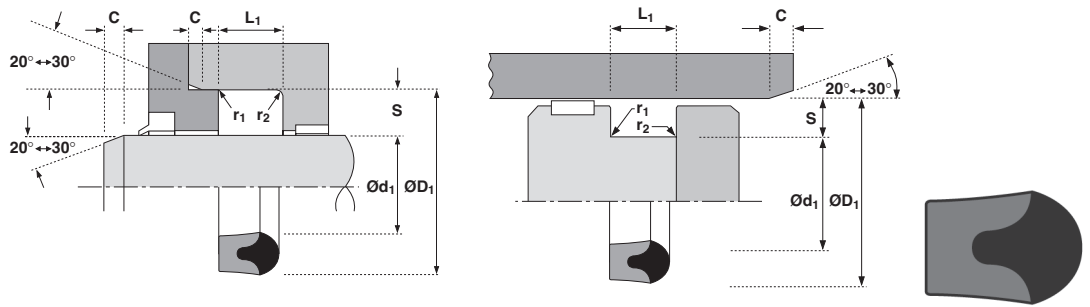
In a piston application the Hallite 18 should not be used back to back to make a double acting assembly.

The range should be fitted to split housings as shown, but sizes marked\* can be fitted to a grooved gland housing, if assembled with care.

**NB:** Size lists give "on line" tolerances for rod applications.

## Features

- The original Hallite fluid seal
- General purpose seal
- Long life



## Technical details

### Operating conditions

Maximum Speed	0.5 m/sec
Temperature Range	-30°C +100°C
Maximum Pressure	500 bar

1.5 ft/sec
-22°F +212°F
7500 p.s.i.

### Maximum extrusion gap

Figures show the maximum permissible gap all on one side, for rod seals using minimum rod  $\varnothing$  and maximum clearance  $\varnothing$  and for piston seals using the minimum clearance  $\varnothing$  and maximum bore  $\varnothing$ . Refer to Housing Design section.

Pressure bar	160	250	400	500
Maximum Gap mm	0.4	0.3	0.2	0.1
Pressure p.s.i.	2400	3750	6000	7500
Maximum Gap in	0.016	0.012	0.008	0.004

### Surface roughness

	$\mu\text{mRa}$	$\mu\text{mRt}$	$\mu\text{inCLA}$	$\mu\text{inRMS}$
Dynamic Sealing Face – Rod $\varnothing d_1$	0.1 < > 0.4	4 max	4 < > 16	5 < > 18
Static Sealing Face – Rod $\varnothing D_1$	1.6 max	10 max	63 max	70 max
Dynamic Sealing Face – Piston $\varnothing D_1$	0.1 < > 0.4	4 max	4 < > 16	5 < > 18
Static Sealing Face – Piston $\varnothing D_1$	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

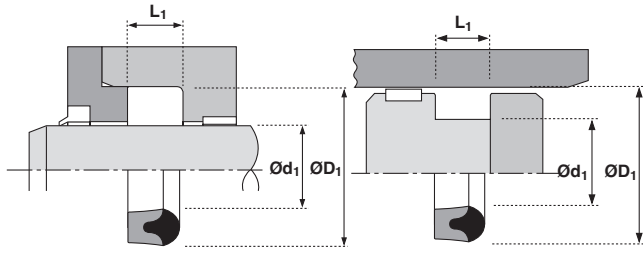
	4.0	5.0	7.5	10.0	12.5	15.0	20.0
Groove Section $\leq S$ mm	4.0	5.0	7.5	10.0	12.5	15.0	20.0
Min Chamfer C mm	2.0	2.5	4.0	5.0	6.5	7.5	10.0
Max Fillet Rad $r_1$ mm	0.2	0.4	0.8	0.8	1.2	1.6	1.6
Max Fillet Rad $r_2$ mm	0.4	0.8	1.2	1.2	1.6	2.4	2.4
Groove Section $\leq S$ in	0.187	0.250	0.312	0.375	0.500	0.625	0.750
Min Chamfer C in	0.093	0.125	0.156	0.187	0.217	0.250	0.375
Max Fillet Rad $r_1$ in	0.008	0.016	0.032	0.032	0.032	0.047	0.047
Max Fillet Rad $r_2$ in	0.016	0.032	0.047	0.047	0.047	0.062	0.062

### Tolerances

	$\varnothing d_1$	$\varnothing D_1$	$L_1$ mm	$L_1$ in
Rod	f9	Js11	+0.25 -0	+0.010 -0
Piston	js11	H9	+0.25 -0	+0.010 -0



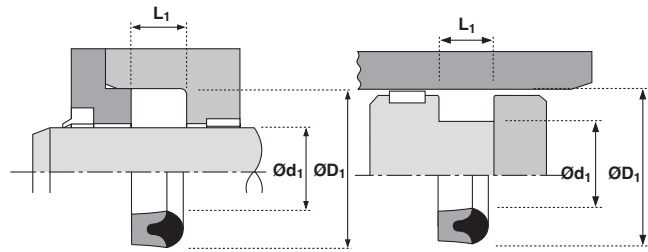
rod/piston seals



for piston sealing tolerances refer to technical details

$\varnothing d_1$	TOL f9	$\varnothing D_1$	TOL Js11	$L_1$ +0.25-0	PART No.
6	-0.010 -0.040	14	+0.05 -0.05	6.0	0202200
8	-0.013 -0.049	16	+0.05 -0.05	6.0	0202400
10	-0.013 -0.049	18	+0.06 -0.06	6.0	0202500
12	-0.016 -0.059	20	+0.07 -0.07	6.0	0202600
14	-0.016 -0.059	24	+0.07 -0.07	7.5	0202700
15	-0.016 -0.059	25	+0.07 -0.07	7.5	0202800
16	-0.016 -0.059	26	+0.07 -0.07	7.5	0615900
18	-0.016 -0.059	28	+0.07 -0.07	7.5	0202900
20	-0.020 -0.072	30	+0.07 -0.07	7.5	0200500
22	-0.020 -0.072	30	+0.07 -0.07	6.0	0817600
22	-0.020 -0.072	32	+0.08 -0.08	7.5	0203300
25	-0.020 -0.072	40	+0.08 -0.08	11.0	0472800
28	-0.020 -0.072	43	+0.08 -0.08	11.0	0204300
30	-0.020 -0.072	45	+0.08 -0.08	11.0	0204400
30	-0.020 -0.072	50	+0.08 -0.08	14.0	0282100
32	-0.025 -0.087	47	+0.08 -0.08	11.0	0204600
35	-0.025 -0.087	45	+0.08 -0.08	7.5	0052300
35	-0.025 -0.087	50	+0.08 -0.08	11.0	0474600
36	-0.025 -0.087	44	+0.08 -0.08	6.0	1204900*
36	-0.025 -0.087	51	+0.10 -0.10	11.0	0978800
40	-0.025 -0.087	50	+0.08 -0.08	10.5	0202000*
40	-0.025 -0.087	55	+0.10 -0.10	11.0	0475000
45	-0.025 -0.087	60	+0.10 -0.10	11.0	0979400

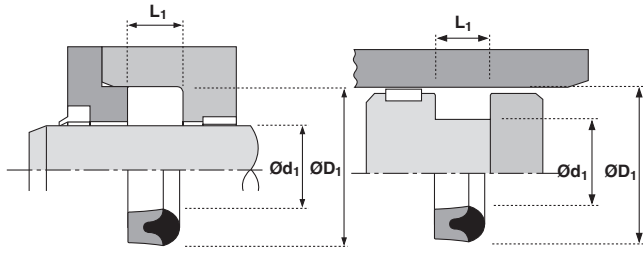
$\varnothing d_1$	TOL f9	$\varnothing D_1$	TOL Js11	$L_1$ +0.25-0	PART No.
45	-0.025 -0.087	65	+0.10 -0.10	14.0	0281700
50	-0.025 -0.087	60	+0.10 -0.10	7.5	0179300*
50	-0.025 -0.087	65	+0.10 -0.10	10.0	0208400*
50	-0.025 -0.087	65	+0.10 -0.10	11.0	0383800*
50	-0.025 -0.087	70	+0.10 -0.10	14.0	0294600
55	-0.030 -0.104	65	+0.10 -0.10	8.0	0242600*
56	-0.030 -0.104	76	+0.10 -0.10	14.0	0646100
60	-0.030 -0.104	72	+0.10 -0.10	9.5	1397700*
60	-0.030 -0.104	80	+0.10 -0.10	14.0	0294900
63	-0.030 -0.104	83	+0.11 -0.11	14.0	0646300
65	-0.030 -0.104	80	+0.11 -0.11	11.0	0740700*
70	-0.030 -0.104	90	+0.11 -0.11	14.0	0296000
75	-0.030 -0.104	90	+0.11 -0.11	12.0	0740600*
75	-0.030 -0.104	95	+0.11 -0.11	14.0	0412700
80	-0.030 -0.104	95	+0.11 -0.11	12.0	0732700*
80	-0.030 -0.104	100	+0.11 -0.11	14.0	0295100*
90	-0.036 -0.123	110	+0.11 -0.11	10.0	0306700*
90	-0.036 -0.123	110	+0.11 -0.11	14.0	0071700*
90	-0.036 -0.123	110	+0.11 -0.11	15.0	0712400*
100	-0.036 -0.123	115	+0.11 -0.11	12.0	0740500*
100	-0.036 -0.123	120	+0.11 -0.11	14.0	0296100*
100	-0.036 -0.123	125	+0.13 -0.13	19.0	0418600*
110	-0.036 -0.123	125	+0.13 -0.13	11.0	0558300*



for piston sealing tolerances refer to technical details

Ød <sub>1</sub>	TOL f <sub>9</sub>	ØD <sub>1</sub>	TOL Js11	L <sub>1</sub> +0.25-0	PART No.
110	-0.036 -0.123	135	+0.13 -0.13	19.0	0304300*
115	-0.036 -0.123	135	+0.13 -0.13	14.0	0639900*
120	-0.036 -0.123	140	+0.13 -0.13	12.0	0250500*
120	-0.036 -0.123	145	+0.13 -0.13	19.0	0070400*
125	-0.043 -0.143	150	+0.13 -0.13	19.0	0070500*
130	-0.043 -0.143	145	+0.13 -0.13	11.3	0634500*
135	-0.043 -0.143	160	+0.13 -0.13	19.0	0080400*
140	-0.043 -0.143	160	+0.13 -0.13	14.0	0304600*
140	-0.043 -0.143	165	+0.13 -0.13	19.0	0080500*
150	-0.043 -0.143	170	+0.13 -0.13	14.0	0303300*
160	-0.043 -0.143	180	+0.13 -0.13	15.0	1283100*
160	-0.043 -0.143	190	+0.15 -0.15	24.0	0136100*
175	-0.043 -0.143	200	+0.15 -0.15	19.0	0838800*

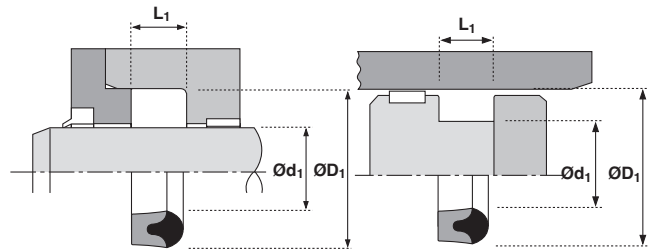
Ød <sub>1</sub>	TOL f <sub>9</sub>	ØD <sub>1</sub>	TOL Js11	L <sub>1</sub> +0.25-0	PART No.
180	-0.043 -0.143	210	+0.15 -0.15	24.0	0087200*
200	-0.050 -0.165	220	+0.15 -0.15	15.0	1284100*
200	-0.050 -0.165	230	+0.15 -0.15	24.0	2010000*
220	-0.050 -0.165	250	+0.15 -0.15	22.0	0958900*
250	-0.050 -0.165	280	+0.16 -0.16	24.0	1055500*
270	-0.056 -0.186	300	+0.16 -0.16	24.0	0094800*
280	-0.056 -0.186	310	+0.16 -0.16	24.0	0094900*
300	-0.056 -0.186	330	+0.18 -0.18	24.0	0095000*
320	-0.062 -0.212	360	+0.18 -0.18	30.0	1054000*
360	-0.062 -0.212	400	+0.18 -0.18	30.0	1054300*
380	-0.062 -0.212	420	+0.20 -0.20	30.0	0095100*
400	-0.062 -0.212	440	+0.20 -0.20	30.0	0095200*



for piston sealing tolerances refer to technical details

Ød <sub>1</sub>	TOL f <sub>9</sub>	ØD <sub>1</sub>	TOL Js11	L <sub>1</sub> +0.010-0	PART No.
0.375	-0.0005 -0.0019	0.750	+0.003 -0.003	0.281	1379300
0.500	-0.0006 -0.0023	0.875	+0.003 -0.003	0.281	0406700
0.625	-0.0006 -0.0023	0.875	+0.003 -0.003	0.187	1435600*
0.625	-0.0006 -0.0023	1.000	+0.003 -0.003	0.281	1247600
0.750	-0.0008 -0.0028	1.093	+0.003 -0.003	0.281	1364200
0.750	-0.0008 -0.0028	1.250	+0.003 -0.003	0.375	0403700
0.875	-0.0008 -0.0028	1.375	+0.003 -0.003	0.375	0401300
1.000	-0.0008 -0.0028	1.375	+0.003 -0.003	0.250	0282600*
1.000	-0.0008 -0.0028	1.500	+0.003 -0.003	0.375	0422400
1.125	-0.0008 -0.0028	1.625	+0.003 -0.003	0.375	0287000
1.125	-0.0008 -0.0028	1.750	+0.003 -0.003	0.437	0778200
1.250	-0.0010 -0.0034	1.625	+0.003 -0.003	0.281	0282400*
1.250	-0.0010 -0.0034	1.875	+0.003 -0.003	0.437	0404100
1.375	-0.0010 -0.0034	2.000	+0.004 -0.004	0.437	0778400
1.500	-0.0010 -0.0034	2.000	+0.004 -0.004	0.281	1447800*
1.500	-0.0010 -0.0034	2.125	+0.004 -0.004	0.437	0967600
1.625	-0.0010 -0.0034	2.250	+0.004 -0.004	0.437	1432600
1.750	-0.0010 -0.0034	2.250	+0.004 -0.004	0.312	1404300*
1.750	-0.0010 -0.0034	2.375	+0.004 -0.004	0.437	0939800
1.875	-0.0010 -0.0034	2.500	+0.004 -0.004	0.437	0867200*
2.000	-0.0012 -0.0041	2.625	+0.004 -0.004	0.437	1371000*
2.000	-0.0012 -0.0041	2.750	+0.004 -0.004	0.562	1369100
2.250	-0.0012 -0.0041	2.875	+0.004 -0.004	0.437	0424300*

Ød <sub>1</sub>	TOL f <sub>9</sub>	ØD <sub>1</sub>	TOL Js11	L <sub>1</sub> +0.010-0	PART No.
2.250	-0.0012 -0.0041	3.000	+0.004 -0.004	0.562	1098400
2.500	-0.0012 -0.0041	3.000	+0.004 -0.004	0.312	0641200*
2.500	-0.0012 -0.0041	3.250	+0.004 -0.004	0.562	0782400
2.750	-0.0012 -0.0041	3.500	+0.004 -0.004	0.562	0437800
3.000	-0.0012 -0.0041	3.750	+0.004 -0.004	0.562	0410500
3.250	-0.0014 -0.0048	4.000	+0.004 -0.004	0.562	1407700
3.500	-0.0014 -0.0048	4.000	+0.004 -0.004	0.375	1468200
3.500	-0.0014 -0.0048	4.250	+0.004 -0.004	0.562	1128800
3.750	-0.0014 -0.0048	4.500	+0.004 -0.004	0.500	1414800
4.000	-0.0014 -0.0048	4.875	+0.005 -0.005	0.656	1424100
4.000	-0.0014 -0.0048	5.000	+0.005 -0.005	0.750	0443000
4.250	-0.0014 -0.0048	5.250	+0.005 -0.005	0.750	0892200
4.500	-0.0014 -0.0048	5.250	+0.005 -0.005	0.469	0447800*
4.500	-0.0014 -0.0048	5.500	+0.005 -0.005	0.750	0133200
5.000	-0.0017 -0.0056	6.000	+0.005 -0.005	0.750	1367000
5.250	-0.0017 -0.0056	6.000	+0.005 -0.005	0.562	0487700*
5.500	-0.0017 -0.0056	6.500	+0.005 -0.005	0.750	1164100
6.000	-0.0017 -0.0056	7.000	+0.005 -0.005	0.750	1188800
6.500	-0.0017 -0.0056	7.750	+0.006 -0.006	1.000	1192700
7.000	-0.0017 -0.0056	8.000	+0.006 -0.006	0.875	6501200
7.000	-0.0017 -0.0056	8.250	+0.006 -0.006	1.000	1219200
7.500	-0.0020 -0.0065	8.750	+0.006 -0.006	1.000	0418100
8.000	-0.0020 -0.0065	9.000	+0.006 -0.006	0.750	1269400



for piston sealing tolerances refer to technical details

$\varnothing d_1$	TOL f9	$\varnothing D_1$	TOL Js11	$L_1$ +0.010-0	PART No.	$\varnothing d_1$	TOL f9	$\varnothing D_1$	TOL Js11	$L_1$ +0.010-0	PART No.
8.000	-0.0020 -0.0065	9.250	+0.006 -0.006	1.000	0455700	14.500	-0.0024 -0.0083	16.000	+0.008 -0.008	1.500	1345000
8.500	-0.0020 -0.0065	9.750	+0.006 -0.006	1.000	1332300	15.000	-0.0024 -0.0083	17.000	+0.008 -0.008	1.500	1345300
9.000	-0.0020 -0.0065	10.250	+0.006 -0.006	1.000	0437500	16.500	-0.0027 -0.0088	17.750	+0.008 -0.008	1.000	1318800
9.500	-0.0020 -0.0065	10.750	+0.006 -0.006	1.000	1320400	17.000	-0.0027 -0.0088	17.750	+0.008 -0.008	0.625	1345900*
10.000	-0.0022 -0.0073	11.250	+0.006 -0.006	1.000	0452200	18.000	-0.0027 -0.0088	19.250	+0.008 -0.008	1.250	1314500
10.500	-0.0022 -0.0073	11.750	+0.006 -0.000	1.000	1331300	19.000	-0.0027 -0.0088	20.750	+0.009 -0.009	1.312	1342200
11.000	-0.0022 -0.0073	12.250	+0.006 -0.006	1.000	1331000	20.000	-0.0030 -0.0099	21.500	+0.009 -0.009	1.750	0093600
12.000	-0.0022 -0.0073	13.250	+0.007 -0.007	1.000	1329100	30.000	-0.0031 -0.0110	31.500	+0.011 -0.011	1.125	1337900
13.000	-0.0024 -0.0083	14.250	+0.007 -0.007	1.000	0864800	30.000	-0.0031 -0.0110	32.000	+0.011 -0.011	1.500	2109700
14.000	-0.0024 -0.0083	15.250	+0.007 -0.007	1.208	0174900	38.000	-0.0034 -0.0124	39.500	+0.011 -0.011	1.125	0159200

