

512

ROD/PISTON SEAL

Single-Acting
TPU/TPE with O-Ring Energizer

DESIGN

The Hallite 512 is a standard profile loaded U-cup with precision trimmed sealing lips manufactured in either a polyurethane or polyester shell energised by a high quality O-ring and designed for common North American grooves. The precision trimmed sealing lips ensure optimum sealing action. The deep profile of the Hallite 512 provides extra stability needed to resist rolling in the groove. Together these features result in improved life and sealing.

At zero or low pressure, the O-ring helps to increase the sealing force preventing any bypass. Under most conditions as the pressure rises, the sealing force increases and the O-ring ensures complete lip actuation.

The symmetry of the Hallite 512 makes it ideally suited for single-acting rod and piston applications and its flexibility enables easy installation. The Hallite 512 can also be fitted back-to-back for use in double-acting applications. Although the Hallite 512 can be used as a rod seal, other Hallite profiles are more suitable options, such as the Hallite 513, 605, or 621.



FEATURES

- Excellent resistance to abrasion
- Positive lip actuation
- Precision trimmed lips
- Deep profile for stability
- Easy to install

MATERIALS

This product comes in a number of material options to extend operating conditions. Contact your local Hallite technical team to decide which is best for your application. Use the part designator in the table below as the last digit of the part number to specify material choice when ordering. For further material details, please refer to the Hallite Material Table.

MATERIAL OPTIONS	Name	Seal Type	Seal Color	Part Designator
Standard	Hythane® 221-NBR	TPU-EU	Black	10
Optional	TPE 121-NBR	TPE	Orange	11
Optional	TPE 121-FKM	TPE	Orange	12
Optional	Hythane® 361-NBR	TPU-AU	Orange	16

TECHNICAL DETAILS

OPERATING CONDITIONS	METRIC	INCH
Maximum Speed	0.5 m/sec	1.5 ft/sec
Temperature Range	-40°C +110°C	-40°F +230°F
Maximum Pressure	350 bar	5000 psi

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.

MAXIMUM EXTRUSION GAP - 1/4 SECTION AND ABOVE			
Pressure bar	160	250	350
Maximum Gap mm	0.60	0.50	0.40
Pressure psi	2400	3750	6000
Maximum Gap in	0.024	0.020	0.016

NOTE

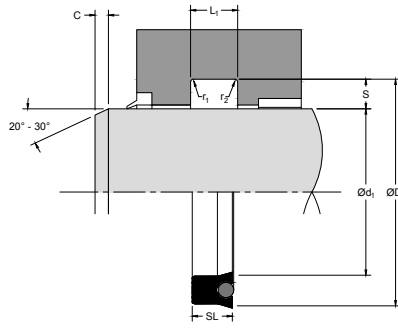
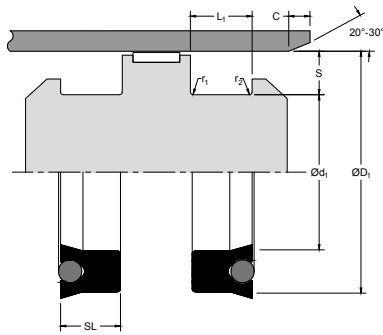
Figures show the maximum permissible gap all on one side, for rod seals using minimum rod \varnothing and maximum clearance \varnothing and for piston seals using the minimum clearance \varnothing and maximum bore \varnothing . Refer to Housing Design section.

SURFACE ROUGHNESS	μmRa	μmRz	μmRt	μinRa	μinRz	μinRt
Dynamic Sealing Face $\varnothing d_1$ - Rod	0.1 - 0.4	1.6 max	4 max	4 - 16	63 max	157 max
Static Sealing Face $\varnothing D_1$ - Rod	1.6 max	6.3 max	10 max	63 max	250 max	394 max
Dynamic Sealing Face $\varnothing D_1$ - Piston	0.1 - 0.4	1.6 max	4 max	4 - 16	63 max	157 max
Static Sealing Face $\varnothing d_1$ - Piston	1.6 max	6.3 max	10 max	63 max	250 max	394 max
Static Housing Faces L_1	3.2 max	10 max	16 max	125 max	394 max	630 max

RADII						
Groove Section $\leq S$ in	0.125	0.187	0.250	0.312	0.375	0.500
Min Chamfer C in	0.093	0.093	0.125	0.156	0.187	0.187
Max Fillet Rad r_1 in	0.008	0.008	0.016	0.032	0.032	0.032
Max Fillet Rad r_2 in	0.016	0.016	0.032	0.047	0.047	0.047

NOTE

Please refer to specified tolerances in the introduction page of the Hallite 500 Series.



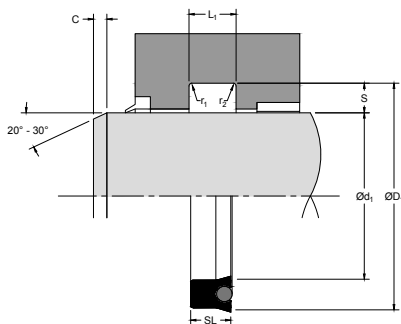
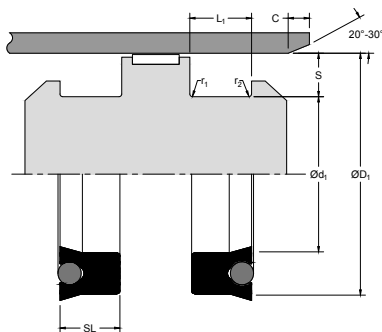
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Single-Acting
TPU/TPE with O-Ring Energizer

PART NUMBER RANGE

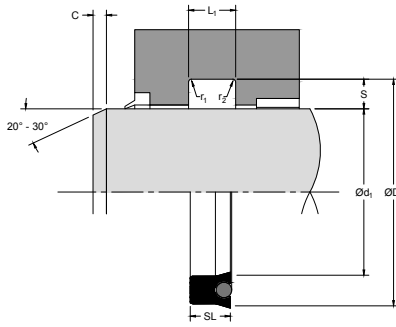
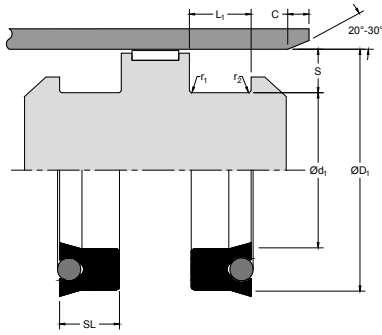
INCH					
ϕd_1	ϕD_1	SL	L_1	Standard Reference	PART No.
1/8 CROSS SECTION					
0.250	0.500	0.250	0.275	12500250-250	8820210
0.500	0.750	0.250	0.275	12500500-250	8870510
0.625	0.875	0.250	0.275	12500625-250	8820510
0.750	1.000	0.250	0.275	12500750-250	8820710
1.000	1.250	0.250	0.275	12501000-250	8821210
1.125	1.375	0.250	0.275	12501125-250	8854910
1.188	1.438	0.188	0.207	12501188-188	8858010
1.250	1.500	0.250	0.275	12501250-250	8821810
1.375	1.625	0.250	0.275	12501375-250	8822110
1.500	1.750	0.250	0.275	12501500-250	8822310
1.625	1.875	0.250	0.275	12501625-250	8870610
1.750	2.000	0.250	0.275	12501750-250	8822810
2.000	2.250	0.250	0.275	12502000-250	8823110
3/16 CROSS SECTION					
0.750	1.125	0.313	0.344	18700750-313	8820810
0.875	1.250	0.375	0.413	18700875-375	8933110
1.000	1.375	0.313	0.344	18701000-313	8821310
1.125	1.500	0.250	0.275	18701125-250	8820610
1.125	1.500	0.313	0.344	18701125-313	8821710
1.250	1.625	0.313	0.344	18701250-313	8821910
1.375	1.750	0.313	0.344	18701375-313	8822210
1.375	1.750	0.375	0.413	18701375-375	8870710
1.500	1.875	0.375	0.413	18701500-375	8822510
1.625	2.000	0.250	0.275	18701625-250	8908210
1.625	2.000	0.313	0.344	18701625-313	8858110
1.625	2.000	0.375	0.413	18701625-375	8822710
1.750	2.125	0.375	0.413	18701750-375	8822910
1.875	2.250	0.375	0.413	18701875-375	8870810
2.000	2.375	0.375	0.413	18702000-375	8823210
2.125	2.500	0.250	0.275	18702125-250	8865510
2.125	2.500	0.375	0.413	18702125-375	8870910



PART NUMBER RANGE

INCH

$\text{Ø}d_1$	$\text{Ø}D_1$	SL	L_1	Standard Reference	PART No.
2.188	2.563	0.375	0.413	18702188-375	8858210
2.250	2.625	0.313	0.344	18702250-313	8858310
2.250	2.625	0.375	0.413	18702250-375	8823410
2.375	2.750	0.375	0.413	18702375-375	8858410
2.500	2.875	0.375	0.413	18702500-375	8871010
2.625	3.000	0.313	0.344	18702625-313	8858510
2.625	3.000	0.375	0.413	18702625-375	8823710
2.750	3.125	0.375	0.413	18702750-375	8871110
2.875	3.250	0.250	0.275	18702875-250	8865610
3.000	3.375	0.375	0.413	18703000-375	8823910
3.125	3.500	0.250	0.275	18703125-250	8867310
3.125	3.500	0.375	0.413	18703125-375	8871210
3.188	3.563	0.375	0.413	18703188-375	8858610
3.250	3.625	0.313	0.344	18703250-313	8858710
3.250	3.625	0.375	0.413	18703250-375	8824010
3.375	3.750	0.375	0.413	18703375-375	8858810
3.500	3.875	0.375	0.413	18703500-375	8824110
3.625	4.000	0.313	0.344	18703625-313	8864010
3.625	4.000	0.375	0.413	18703625-375	8824210
3.750	4.125	0.375	0.413	18703750-375	8855010
3.875	4.250	0.250	0.275	18703875-250	8820910
4.000	4.375	0.375	0.413	18704000-375	8824310
4.125	4.500	0.313	0.344	18704125-313	8867210
4.125	4.500	0.375	0.413	18704125-375	8871310
4.188	4.563	0.375	0.413	18704188-375	8859010
4.250	4.625	0.313	0.344	18704250-313	8859110
4.250	4.625	0.375	0.413	18704250-375	8824410
4.375	4.750	0.375	0.413	18704375-375	8859210
4.500	4.875	0.375	0.413	18704500-375	8824510
4.625	5.000	0.313	0.344	18704625-313	8859310
4.625	5.000	0.375	0.413	18704625-375	8855410
4.875	5.250	0.250	0.275	18704875-250	8821510



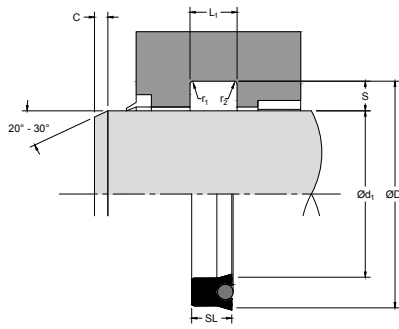
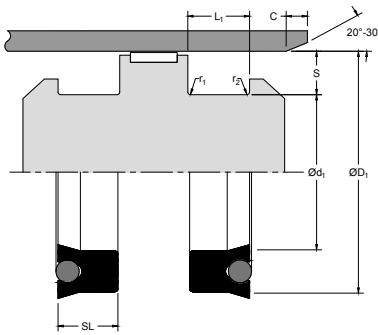
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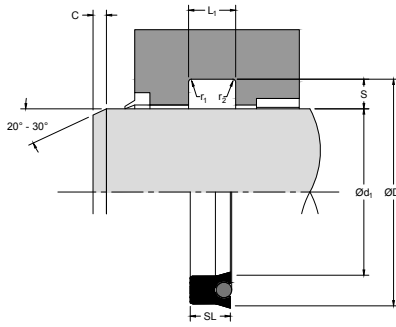
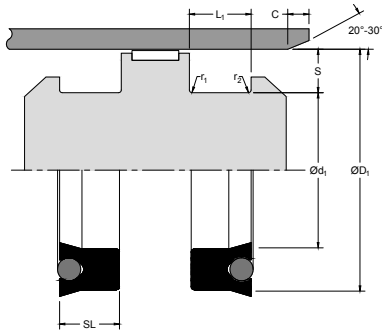
INCH					
Ød ₁	ØD ₁	SL	L ₁	Standard Reference	PART No.
1/4 CROSS SECTION					
0.500	1.000	0.375	0.413	25000500-375	8922310
0.688	1.188	0.375	0.413	25000688-375	8906110
0.750	1.250	0.375	0.413	25000750-375	8825010
0.875	1.375	0.313	0.344	25000875-313	8906810
1.000	1.500	0.313	0.344	25001000-313	8906910
1.000	1.500	0.375	0.413	25001000-375	8825210
1.000	1.500	0.437	0.480	25001000-437	8907210
1.125	1.625	0.375	0.413	25001125-375	8847610
1.250	1.750	0.375	0.413	25001250-375	8825410
1.375	1.875	0.375	0.413	25001375-375	8825610
1.500	2.000	0.313	0.344	25001500-313	8821010
1.500	2.000	0.375	0.413	25001500-375	8825710
1.750	2.250	0.375	0.413	25001750-375	8825910
2.000	2.500	0.375	0.413	25002000-375	8826210
2.125	2.625	0.375	0.413	25002125-375	8826410
2.250	2.750	0.375	0.413	25002250-375	8826510
2.250	2.750	0.563	0.619	25002250-563	8864110
2.375	2.875	0.375	0.413	25002375-375	8826610
2.500	3.000	0.313	0.344	25002500-313	8821110
2.500	3.000	0.375	0.413	25002500-375	8826810
2.750	3.250	0.375	0.413	25002750-375	8826910
3.000	3.500	0.375	0.413	25003000-375	8827010
3.000	3.500	0.563	0.619	25003000-563	8850610
3.125	3.625	0.375	0.413	25003125-375	8859510
3.250	3.750	0.375	0.413	25003250-375	8827310
3.500	4.000	0.313	0.344	25003500-313	8865710
3.500	4.000	0.375	0.413	25003500-375	8827510
3.750	4.250	0.375	0.413	25003750-375	8827810
4.000	4.500	0.375	0.413	25004000-375	8827910
4.000	4.500	0.563	0.619	25004000-563	8828010
4.125	4.625	0.375	0.413	25004125-375	8859610



PART NUMBER RANGE

INCH

$\text{Ø}d_1$	$\text{Ø}D_1$	SL	L_1	Standard Reference	PART No.
4.250	4.750	0.375	0.413	25004250-375	8828210
4.250	4.750	0.563	0.619	25004250-563	8833710
4.500	5.000	0.313	0.344	25004500-313	8821410
4.500	5.000	0.375	0.413	25004500-375	8828610
4.500	5.000	0.563	0.619	25004500-563	8828710
4.750	5.250	0.563	0.619	25004750-563	8933410
5.000	5.500	0.375	0.413	25005000-375	8871510
5.000	5.500	0.563	0.619	25005000-563	8828810
5.500	6.000	0.375	0.413	25005500-375	8829110
5.500	6.000	0.500	0.550	25005500-500	8922510
5.500	6.000	0.563	0.619	25005500-563	8829210
5.750	6.250	0.563	0.619	25005750-563	8905510
6.000	6.500	0.563	0.619	25006000-563	8829310
6.500	7.000	0.375	0.413	25006500-375	8829510
6.500	7.000	0.563	0.619	25006500-563	8829710
7.000	7.500	0.375	0.413	25007000-375	8822610
7.000	7.500	0.563	0.619	25007000-563	8877210
7.500	8.000	0.375	0.413	25007500-375	8829610
7.500	8.000	0.563	0.619	25007500-563	8877310
8.500	9.000	0.375	0.413	25008500-375	8829810
8.500	9.000	0.563	0.619	25008500-563	8855110
5/16 CROSS SECTION					
1.000	1.625	0.500	0.550	31201000-500	8825310
1.375	2.000	0.500	0.550	31201375-500	8871610
1.500	2.125	0.500	0.550	31201500-500	8825810
1.750	2.375	0.500	0.550	31201750-500	8826010
1.875	2.500	0.500	0.550	31201875-500	8826110
2.000	2.625	0.500	0.550	31202000-500	8826310
2.375	3.000	0.500	0.550	31202375-500	8826710
2.500	3.125	0.500	0.550	31202500-500	8871810
2.750	3.375	0.500	0.550	31202750-500	8871910
2.875	3.500	0.500	0.550	31202875-500	8872010



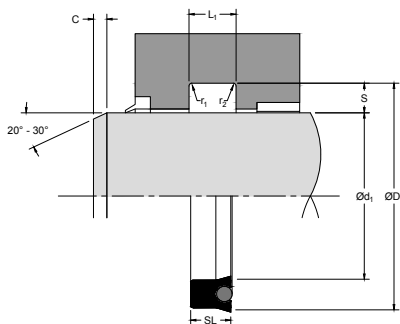
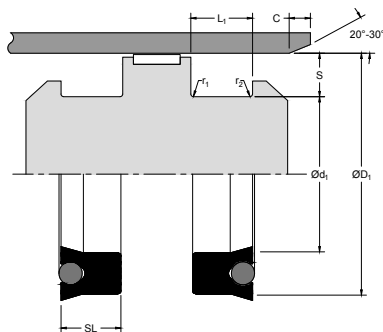
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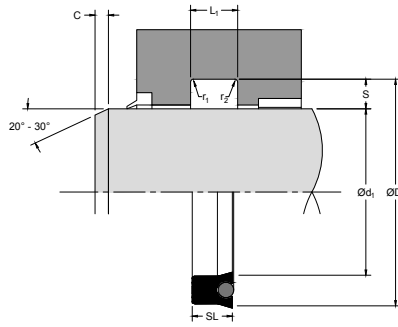
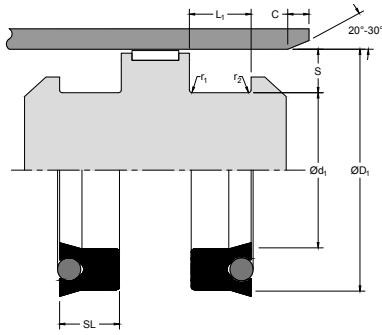
INCH					
$\varnothing d_1$	$\varnothing D_1$	SL	L_1	Standard Reference	PART No.
3.000	3.625	0.500	0.550	31203000-500	8827110
3.375	4.000	0.500	0.550	31203375-500	8872110
3.500	4.125	0.500	0.550	31203500-500	8827710
3.750	4.375	0.500	0.550	31203750-500	8872210
3.875	4.500	0.500	0.550	31203875-500	8872310
4.375	5.000	0.500	0.550	31204375-500	8828410
4.375	5.000	0.563	0.619	31204375-563	8922410
4.375	5.000	0.625	0.688	31204375-625	8872410
4.500	5.125	0.625	0.688	31204500-625	8872510
5.375	6.000	0.625	0.688	31205375-625	8872610
6.375	7.000	0.625	0.688	31206375-625	8829410
7.000	7.625	0.625	0.688	31207000-625	8859710
7.375	8.000	0.625	0.688	31207375-625	8855310
3/8 CROSS SECTION					
1.500	2.250	0.500	0.550	37501500-500	8872710
1.500	2.250	0.625	0.688	37501500-625	8872810
1.750	2.500	0.500	0.550	37501750-500	8830010
2.000	2.750	0.500	0.550	37502000-500	8830310
2.000	2.750	0.625	0.688	37502000-625	8830410
2.250	3.000	0.500	0.550	37502250-500	8872910
2.250	3.000	0.625	0.688	37502250-625	8873010
2.500	3.250	0.500	0.550	37502500-500	8879210
2.500	3.250	0.625	0.688	37502500-625	8830510
2.750	3.500	0.500	0.550	37502750-500	8830710
2.750	3.500	0.625	0.688	37502750-625	8830810
3.000	3.750	0.500	0.550	37503000-500	8831010
3.000	3.750	0.625	0.688	37503000-625	8878710
3.250	4.000	0.500	0.550	37503250-500	8831110
3.250	4.000	0.625	0.688	37503250-625	8831210
3.375	4.125	0.625	0.688	37503375-625	8855910
3.500	4.250	0.500	0.550	37503500-500	8878810
3.500	4.250	0.625	0.688	37503500-625	8831310



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INCH

Ød_1	ØD_1	SL	L_1	Standard Reference	PART No.
3.750	4.500	0.500	0.550	37503750-500	8831410
4.000	4.750	0.500	0.550	37504000-500	8878910
4.000	4.750	0.625	0.688	37504000-625	8831610
4.250	5.000	0.500	0.550	37504250-500	8831810
4.250	5.000	0.625	0.688	37504250-625	8831910
4.500	5.250	0.500	0.550	37504500-500	8832010
4.500	5.250	0.625	0.688	37504500-625	8832110
4.750	5.500	0.625	0.688	37504750-625	8832210
5.000	5.750	0.500	0.550	37505000-500	8879110
5.000	5.750	0.625	0.688	37505000-625	8832310
5.250	6.000	0.500	0.550	37505250-500	8905910
5.250	6.000	0.625	0.688	37505250-625	8832610
5.750	6.500	0.500	0.550	37505750-500	8829010
5.750	6.500	0.625	0.688	37505750-625	8832810
6.000	6.750	0.625	0.688	37506000-625	8833010
6.250	7.000	0.500	0.550	37506250-500	8833210
6.250	7.000	0.625	0.688	37506250-625	8833310
6.500	7.250	0.625	0.688	37506500-625	8833410
6.750	7.500	0.625	0.688	37506750-625	8850810
7.000	7.750	0.500	0.550	37507000-500	8859810
7.000	7.750	0.625	0.688	37507000-625	8877610
7.250	8.000	0.625	0.688	37507250-625	8833510
7.750	8.500	0.625	0.688	37507750-625	8859910
8.250	9.000	0.500	0.550	37508250-500	8860010
8.250	9.000	0.625	0.688	37508250-625	8853710
1/2 CROSS SECTION					
1.500	2.500	0.750	0.825	50001500-750	8820310
2.000	3.000	0.750	0.825	50002000-750	8853410
3.000	4.000	0.750	0.825	50003000-750	8850510
3.500	4.500	0.625	0.688	50003500-625	8907810
3.500	4.500	0.750	0.825	50003500-750	8823010
4.000	5.000	0.750	0.825	50004000-750	8853510



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ROD/PISTON SEAL

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INCH					
$\varnothing d_1$	$\varnothing D_1$	SL	L_1	Standard Reference	PART No.
5.000	6.000	0.750	0.825	50005000-750	8832410
5.500	6.500	0.750	0.825	50005500-750	8823310
6.000	7.000	0.750	0.825	50006000-750	8833110
7.000	8.000	0.750	0.825	50007000-750	8851910
7.500	8.500	0.750	0.825	50007500-750	8820410
8.000	9.000	0.750	0.825	50008000-750	8855210
8.250	9.250	0.750	0.825	50008250-750	8904710
9.000	10.000	0.750	0.825	50009000-750	8922610
10.000	11.000	0.750	0.825	50010000-750	8922710
11.000	12.000	0.750	0.825	50011000-750	8922810