

652

ROD SEAL

Polyurethane with AE Ring and Rubber Energiser for Heavy-Duty Applications

DESIGN

The Hallite 652 is a rod seal designed to provide a dry sealing solution specifically for heavy-duty longwall mining applications using water-based fluids. The design is also suitable for standard hydraulic oil applications.

The seal is manufactured in a polyurethane shell energised by a high quality O-ring, or in some cases a profiled NBR energiser as used in the Hallite 621 twin lip rod seal. The Hallite 652 also incorporates an acetal anti-extrusion ring to withstand side loads and extreme pressure peaks even with the extrusion gaps, which are the result of using remote plastic bearing strips like the Hallite 506 or 708.

The Hallite 652's seal shell is moulded in Hythane® 181, Hallite's high-performance polyurethane, for easy installation.



FEATURES

- Extremely well proven in longwall mining applications
- Extremely well proven in HFA water-based fluids
- High pressure and shock load capability
- Responsive sealing
- Easy to install

MATERIALS

As standard, this product comes in the following materials. Contact your local Hallite technical team if you would like to find out if this profile can be made in a custom material to suit your application. For further material details, please refer to the Hallite Material Table.

MATERIAL OPTIONS	Name	Shell Type	Shell Colour
Standard	Hythane® 181-NBR-POM 0011	TPU-EU	Blue

TECHNICAL DETAILS

OPERATING CONDITIONS	METRIC	INCH
Maximum Speed	1.0 m/sec	3.0 ft/sec
Temperature Range Hydraulic Oils	-45°C +110°C	-50°F +230°F
Temperature Range Water-Based Fluids	-0°C +60°C	32°F +140°F
Maximum Pressure	700 bar	10000 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					
Pressure bar	160	250	400	500	700
Maximum Gap mm	1.00	0.80	0.60	0.40	0.25
Pressure psi	2400	3750	6000	7500	10000
Maximum Gap in	0.040	0.032	0.024	0.016	0.010

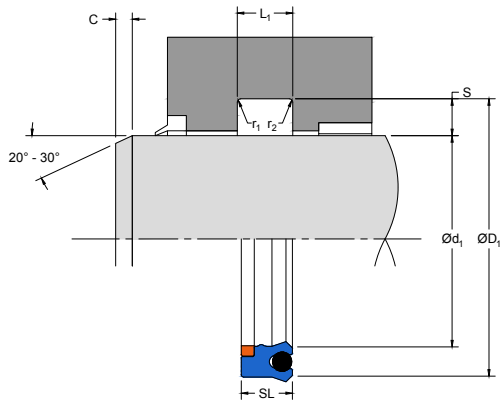
NOTE

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

SURFACE ROUGHNESS	μmRa	μmRz	μmRt	μinRa	μinRz	μinRt
Dynamic Sealing Face $\varnothing d_1$	0.1 - 0.4	1.6 max	4 max	4 - 16	63 max	157 max
Static Sealing Face $\varnothing D_1$	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

CHAMFERS & RADII						
Groove Section $<S$ mm	4.00	5.00	7.50	10.00	12.50	15.00
Min Chamfer C mm	3.00	3.50	5.00	6.50	7.00	8.00
Max Fillet Rad r_1 mm	0.20	0.40	0.80	0.80	2.30	1.60
Max Fillet Rad r_2 mm	0.40	0.80	1.20	1.60	1.60	2.40

TOLERANCES	$\varnothing d_1$	$\varnothing D_1$	L_1
mm	f9	Js11	+0.25 -0



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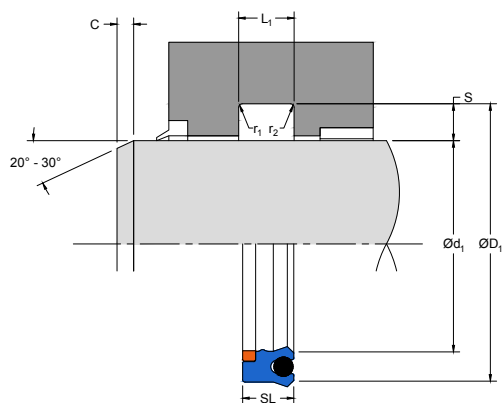
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PART NUMBER RANGE

METRIC						
Ød ₁	TOL f9	ØD ₁	TOL Js11	L ₁ +0.25-0	SL	PART No.
32.00	-0.03 -0.09	44.00	+0.08 -0.08	9.60	8.70	4344111
40.00	-0.03 -0.09	52.00	+0.10 -0.10	9.60	8.70	4326311
50.00	-0.03 -0.09	62.00	+0.10 -0.10	9.60	8.70	4326411
60.00	-0.03 -0.10	69.80	+0.10 -0.10	12.50	11.40	4534910*
60.00	-0.03 -0.10	72.00	+0.10 -0.10	9.60	8.70	4344211*
60.00	-0.03 -0.10	75.00	+0.10 -0.10	13.00	11.90	4451211
63.00	-0.03 -0.10	75.00	+0.10 -0.10	9.60	8.70	4326511*
70.00	-0.03 -0.10	82.00	+0.11 -0.11	9.60	8.70	4344311*
75.00	-0.03 -0.10	95.00	+0.11 -0.11	14.00	12.50	4547810*
80.00	-0.03 -0.10	95.00	+0.11 -0.11	13.00	11.80	4797410
80.00	-0.03 -0.10	95.00	+0.11 -0.11	16.00	14.50	4446511
85.00	-0.04 -0.12	97.00	+0.11 -0.11	9.60	8.70	4344511
90.00	-0.04 -0.12	105.00	+0.11 -0.11	13.00	11.80	4875010
90.00	-0.04 -0.12	105.00	+0.11 -0.11	16.00	14.50	4428011
100.00	-0.04 -0.12	115.00	+0.11 -0.11	12.00	11.00	4528010*
100.00	-0.04 -0.12	115.00	+0.11 -0.11	16.00	14.50	4397611*
105.00	-0.04 -0.12	120.00	+0.11 -0.11	13.00	11.80	4406711*

NOTE Part numbers suffixed by "*" indicate profiled NBR energiser

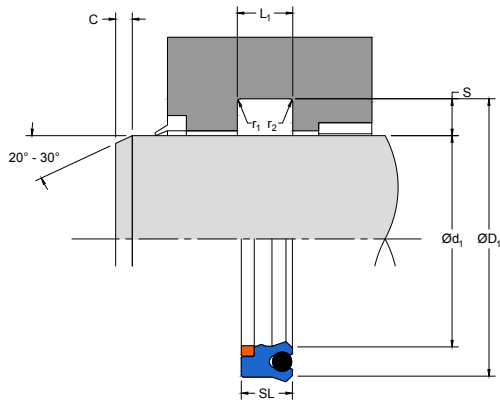


PART NUMBER RANGE

METRIC						
Ød ₁	TOL f ₉	ØD ₁	TOL Js11	L ₁ +0.25-0	SL	PART No.
105.00	-0.04 -0.12	120.00	+0.11 -0.11	16.00	14.50	4781810
110.00	-0.04 -0.12	125.00	+0.13 -0.13	16.00	14.50	4445611
115.00	-0.04 -0.12	130.00	+0.13 -0.13	16.00	14.50	4455411
120.00	-0.04 -0.12	135.00	+0.13 -0.13	16.00	14.50	4452011
125.00	-0.04 -0.14	140.00	+0.13 -0.13	16.00	14.50	4446911
128.00	-0.04 -0.14	143.00	+0.13 -0.13	16.00	14.50	4581611
130.00	-0.04 -0.14	145.00	+0.13 -0.13	16.00	14.50	4782410
135.00	-0.04 -0.14	155.00	+0.13 -0.13	15.00	13.60	4475410*
140.00	-0.04 -0.14	155.00	+0.13 -0.13	16.00	14.50	4753210
150.00	-0.04 -0.14	165.00	+0.13 -0.13	16.00	14.50	4389111*
160.00	-0.04 -0.14	175.00	+0.13 -0.13	12.80	11.70	4484010
160.00	-0.04 -0.14	175.00	+0.13 -0.13	16.00	14.50	4405011*
160.00	-0.04 -0.14	177.00	+0.13 -0.13	16.00	14.50	4767610
160.00	-0.04 -0.14	185.00	+0.14 -0.14	20.00	18.80	4401711*
165.00	-0.04 -0.14	182.00	+0.14 -0.14	16.00	14.50	4537411
170.00	-0.04 -0.14	185.00	+0.14 -0.14	16.00	14.50	4745610
177.00	-0.04 -0.14	192.00	+0.14 -0.14	16.00	14.50	4445711

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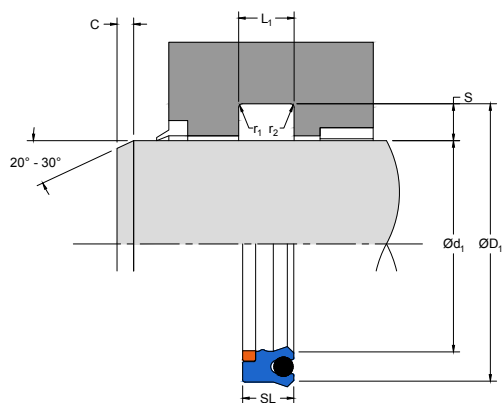
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METRIC						
Ød ₁	TOL f9	ØD ₁	TOL Js11	L ₁ +0.25-0	SL	PART No.
180.00	-0.04 -0.14	195.00	+0.14 -0.14	16.00	14.50	4734610
185.00	-0.05 -0.17	200.00	+0.14 -0.14	16.00	14.50	4777210
185.00	-0.05 -0.17	210.00	+0.14 -0.14	20.00	18.00	4546611
190.00	-0.05 -0.17	205.00	+0.14 -0.14	16.00	14.50	4430811
195.00	-0.05 -0.17	210.00	+0.14 -0.14	16.00	14.50	4459311
195.00	-0.05 -0.17	215.00	+0.14 -0.14	16.00	14.50	4550511
200.00	-0.05 -0.17	220.00	+0.14 -0.14	16.00	14.50	4387611*
205.00	-0.05 -0.17	220.00	+0.14 -0.14	16.00	14.50	4762110
210.00	-0.05 -0.17	230.00	+0.14 -0.14	16.00	14.50	4472911
220.00	-0.05 -0.17	235.00	+0.14 -0.14	16.00	14.50	4759610
220.00	-0.05 -0.17	240.00	+0.14 -0.14	16.00	14.50	4544510*
225.00	-0.05 -0.17	240.00	+0.14 -0.14	16.00	14.50	4445811
225.00	-0.05 -0.17	250.00	+0.14 -0.14	20.00	18.00	4537511
230.00	-0.05 -0.17	247.00	+0.14 -0.14	16.00	14.50	4767710
230.00	-0.05 -0.17	249.30	+0.14 -0.14	16.00	14.50	4439411
230.00	-0.05 -0.17	250.00	+0.14 -0.14	16.00	14.50	4707210
230.00	-0.05 -0.17	255.00	+0.16 -0.16	25.00	22.80	4555511

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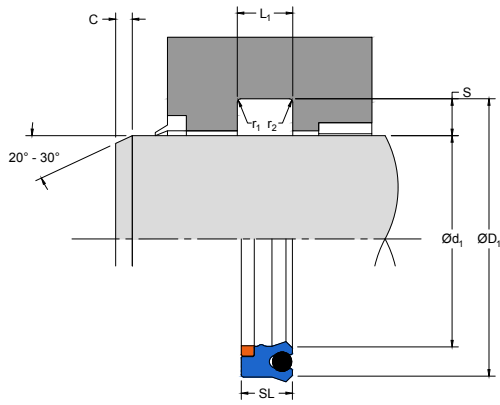
PART NUMBER RANGE

METRIC						
Ød ₁	TOL f ₉	ØD ₁	TOL Js ₁₁	L ₁ +0.25-0	SL	PART No.
235.00	-0.05 -0.17	255.00	+0.16 -0.16	16.00	14.50	4771410
240.00	-0.05 -0.17	260.00	+0.16 -0.16	16.00	14.50	4496511
245.00	-0.05 -0.17	270.00	+0.16 -0.16	20.00	18.00	4546711
250.00	-0.05 -0.17	270.00	+0.16 -0.16	16.00	14.50	4728810
255.00	-0.06 -0.19	275.00	+0.16 -0.16	16.00	14.50	4578611
260.00	-0.06 -0.19	280.00	+0.16 -0.16	18.00	16.40	4499011
265.00	-0.06 -0.19	285.00	+0.16 -0.16	16.00	14.50	4722110
275.00	-0.06 -0.19	295.00	+0.16 -0.16	16.00	14.50	4807310
280.00	-0.06 -0.19	300.00	+0.16 -0.16	16.00	14.50	4713910
285.00	-0.06 -0.19	305.00	+0.16 -0.16	18.00	16.40	4767810
285.00	-0.06 -0.19	310.00	+0.16 -0.16	20.00	18.00	4537611
290.00	-0.06 -0.19	310.00	+0.16 -0.16	18.00	16.40	4475111
290.00	-0.06 -0.19	315.00	+0.16 -0.16	20.00	18.00	4759410
295.00	-0.06 -0.19	315.00	+0.16 -0.16	18.00	16.40	4598211
300.00	-0.06 -0.19	320.00	+0.18 -0.18	16.00	14.50	4525110*
305.00	-0.06 -0.19	325.00	+0.18 -0.18	18.00	16.40	4473011
305.00	-0.06 -0.19	330.00	+0.18 -0.18	20.00	18.00	4546811

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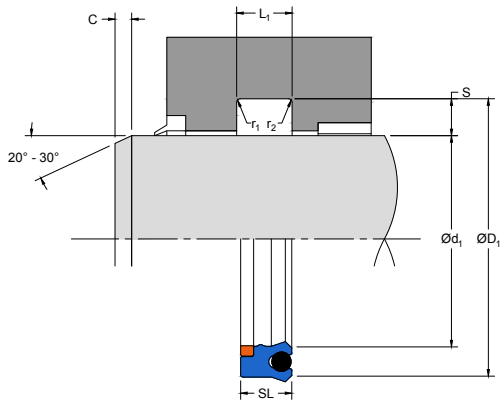
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METRIC						
Ød ₁	TOL f ₉	ØD ₁	TOL Js ₁₁	L ₁ +0.25-0	SL	PART No.
305.00	-0.06 -0.19	335.00	+0.18 -0.18	18.00	16.40	4721910
320.00	-0.06 -0.20	340.00	+0.18 -0.18	16.00	14.50	4544410*
320.00	-0.06 -0.20	340.00	+0.18 -0.18	18.00	16.40	4707310
325.00	-0.06 -0.20	355.00	+0.18 -0.18	20.00	18.00	4555711
330.00	-0.06 -0.20	350.00	+0.18 -0.18	18.00	16.40	4796710
335.00	-0.06 -0.20	355.00	+0.18 -0.18	18.00	16.40	4496611
335.00	-0.06 -0.20	360.00	+0.18 -0.18	20.00	18.00	4831710
340.00	-0.06 -0.20	360.00	+0.18 -0.18	20.50	18.50	4788110
340.00	-0.06 -0.20	365.00	+0.18 -0.18	20.00	18.00	4732810
350.00	-0.06 -0.20	375.00	+0.18 -0.18	20.00	18.00	4718010
355.00	-0.06 -0.20	380.00	+0.18 -0.18	20.00	18.00	4578411
360.00	-0.06 -0.20	385.00	+0.18 -0.18	20.00	18.00	4781110
370.00	-0.06 -0.20	395.00	+0.18 -0.18	20.00	18.00	4579710
380.00	-0.06 -0.20	405.00	+0.20 -0.20	20.00	18.00	4752010
390.00	-0.06 -0.20	415.00	+0.20 -0.20	20.00	18.00	4730010
395.00	-0.06 -0.20	420.00	+0.20 -0.20	20.00	18.00	4807110
400.00	-0.06 -0.20	425.00	+0.20 -0.20	20.00	18.00	4797210

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METRIC						
$\varnothing d_1$	TOL f9	$\varnothing D_1$	TOL Js11	L_1 +0.25-0	SL	PART No.
410.00	-0.07 -0.22	435.00	+0.20 -0.20	20.00	18.00	4785110*
415.00	-0.07 -0.22	445.00	+0.20 -0.20	22.50	20.50	4820510
430.00	-0.07 -0.22	455.00	+0.20 -0.20	20.00	18.00	4862310
445.00	-0.07 -0.22	475.00	+0.20 -0.20	22.50	20.50	4838010
470.00	-0.07 -0.22	495.00	+0.20 -0.20	20.00	18.00	4814610
490.00	-0.07 -0.22	515.00	+0.22 -0.22	20.00	18.00	4888810

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