



## Design

The Hallite 454 double acting piston seal provides the designer with a compact, low friction seal for light to medium duty hydraulic cylinders.

It comprises a bronze filled PTFE ring, 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 454 seal is not recommended for applications where it is necessary for the pressurised cylinder to maintain the load in a set position.

### Features

- Low stick/slip
- Low cost
- High strength precision machined PTFE cap ring
- Compact piston design
- Wide range of materials available

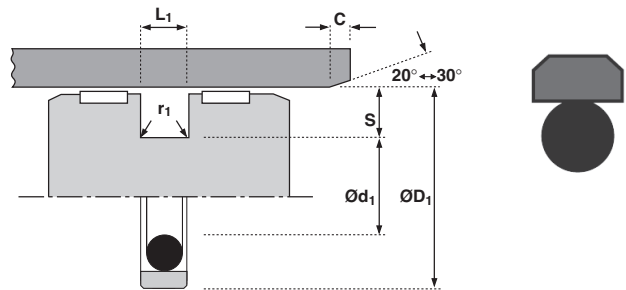
### Materials

Face Material - O Ring  
**Standard material**  
Bronze/PTFE – NBR  
----- 00

**Material options:**  
15% Glass/PTFE – NBR  
----- 01

15% Glass/PTFE – FKM  
----- 11

Bronze/PTFE – FKM  
----- 10



## Technical details

### Operating conditions

|                   |              |
|-------------------|--------------|
| Maximum Speed     | 4.0 m/sec    |
| Temperature Range | -30°C +100°C |
| Maximum Pressure  | 350 bar      |

### Inch

|              |
|--------------|
| 12.0 ft/sec  |
| -22°F +212°F |
| 5,000 p.s.i. |

### Maximum extrusion gap

|                 |       |       |       |       |
|-----------------|-------|-------|-------|-------|
| Pressure p.s.i. | 1500  | 2400  | 3750  | 5250  |
| Maximum Gap in  | 0.024 | 0.020 | 0.018 | 0.014 |

Figures show the maximum permissible gap all on one side using minimum clearance Ø and maximum bore Ø.

### Surface roughness

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

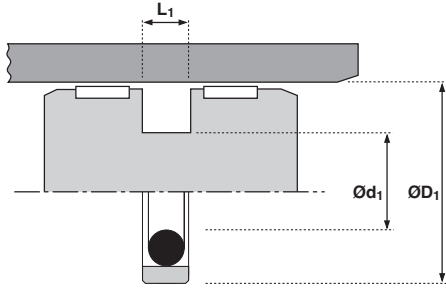
### Chamfers & Radii

|                                  |       |       |       |       |       |
|----------------------------------|-------|-------|-------|-------|-------|
| 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 <sub>1</sub> in | 0.016 | 0.016 | 0.032 | 0.032 | 0.032 |

### Tolerances

|    |                 |                 |                |
|----|-----------------|-----------------|----------------|
| in | ØD <sub>1</sub> | Ød <sub>1</sub> | L <sub>1</sub> |
|    | H9              | f8              | +0.008 -0      |





| ØD <sub>1</sub> | TOL<br>H9          | Ød <sub>1</sub> | TOL<br>f8          | L <sub>1</sub><br>+ 0.008 -0 | PART<br>No. |
|-----------------|--------------------|-----------------|--------------------|------------------------------|-------------|
| 2.000           | +0.0030<br>+0.0000 | 1.576           | -0.0012<br>-0.0030 | 0.165                        | 72305__     |
| 2.500           | +0.0030<br>+0.0000 | 2.076           | -0.0012<br>-0.0030 | 0.165                        | 72310__     |
| 2.750           | +0.0030<br>+0.0000 | 2.326           | -0.0012<br>-0.0030 | 0.165                        | 72315__     |
| 3.000           | +0.0030<br>+0.0000 | 2.576           | -0.0012<br>-0.0030 | 0.165                        | 72320__     |
| 3.250           | +0.0035<br>+0.0000 | 2.634           | -0.0014<br>-0.0036 | 0.246                        | 72325__     |
| 3.500           | +0.0035<br>+0.0000 | 2.884           | -0.0014<br>-0.0036 | 0.246                        | 72330__     |
| 4.000           | +0.0035<br>+0.0000 | 3.384           | -0.0014<br>-0.0036 | 0.246                        | 72335__     |
| 4.250           | +0.0035<br>+0.0000 | 3.634           | -0.0014<br>-0.0036 | 0.246                        | 72340__     |
| 4.500           | +0.0035<br>+0.0000 | 3.884           | -0.0014<br>-0.0036 | 0.246                        | 72345__     |

| ØD <sub>1</sub> | TOL<br>H9          | Ød <sub>1</sub> | TOL<br>f8          | L <sub>1</sub><br>+ 0.008 -0 | PART<br>No. |
|-----------------|--------------------|-----------------|--------------------|------------------------------|-------------|
| 5.000           | +0.0040<br>+0.0000 | 4.384           | -0.0016<br>-0.0041 | 0.246                        | 72350__     |
| 5.500           | +0.0040<br>+0.0000 | 4.670           | -0.0016<br>-0.0041 | 0.319                        | 72355__     |
| 6.000           | +0.0040<br>+0.0000 | 5.170           | -0.0016<br>-0.0041 | 0.319                        | 72360__     |
| 6.500           | +0.0040<br>+0.0000 | 5.670           | -0.0016<br>-0.0041 | 0.319                        | 72365__     |
| 7.000           | +0.0040<br>+0.0000 | 6.170           | -0.0016<br>-0.0041 | 0.319                        | 72370__     |
| 7.500           | +0.0045<br>+0.0000 | 6.670           | -0.0016<br>-0.0041 | 0.319                        | 72375__     |
| 8.000           | +0.0045<br>+0.0000 | 7.170           | -0.0020<br>-0.0048 | 0.319                        | 72380__     |
| 9.500           | +0.0045<br>+0.0000 | 8.670           | -0.0020<br>-0.0048 | 0.319                        | 72385__     |
| 10.000          | +0.0050<br>+0.0000 | 9.170           | -0.0020<br>-0.0048 | 0.319                        | 72390__     |

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