

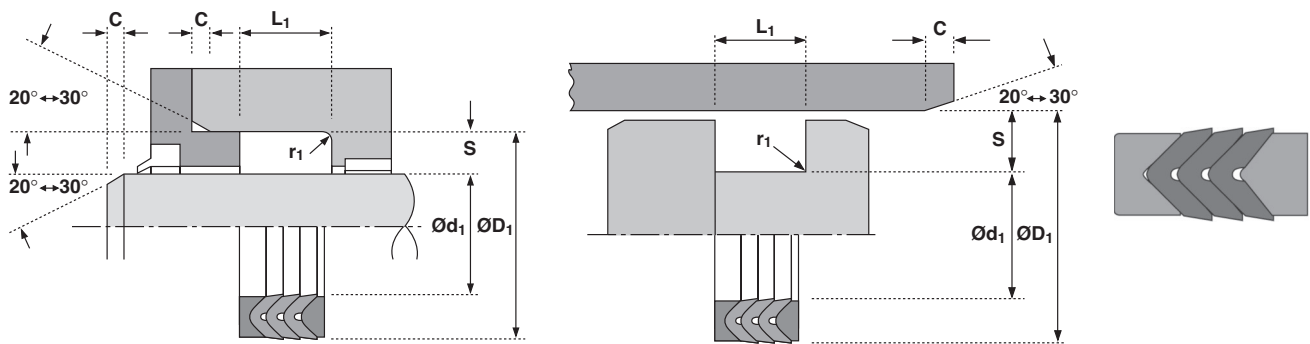
## Design

Hallite 09 vee packings incorporate the Hallite 08 vee ring manufactured from fabric reinforced high grade nitrile rubber, which is normally used in multiples in a set with a male and female adaptor. The parts are 'stacked' together and must be lubricated liberally with clean operating fluid prior to assembly.

The packing must be axially pre-loaded by the housing. This preload works through the male adaptor on the pressure side, exerting a hinging action on the vees, forcing the sealing lips apart to ensure a low pressure seal. As the pressure increases, so the hinging action increases, increasing the effectiveness of the seal even where severe vibration, shock loading and knuckling may occur.

The standard Hallite 09 comprises of three vees and two adaptors, available in metric and imperial inch sizes. In addition to the ranges the Hallite 09 is also available for standard American inch housings. Some adaptors are rubber fabric while others are polyacetal resin. Individual vee rings are stocked to supplement the sets, but it should be noted that individual adaptors are only available in special circumstances.

For sizes not listed or for special requirements, please contact your Hallite sales office.



## Technical details

### Metric

### Inch

#### Operating conditions

|                   |              |
|-------------------|--------------|
| Maximum Speed     | 0.5 m/sec    |
| Temperature Range | -30°C +100°C |
| Maximum Pressure  | 400 bar      |

|              |
|--------------|
| 1.5 ft/sec   |
| -22°F +212°F |
| 6000 p.s.i.  |

#### Maximum extrusion gap

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

|                 | 100   | 175   | 250   | 400   |
|-----------------|-------|-------|-------|-------|
| Pressure bar    |       |       |       |       |
| Maximum Gap mm  | 0.45  | 0.4   | 0.3   | 0.2   |
| Pressure p.s.i. | 1500  | 2250  | 3500  | 6000  |
| Maximum Gap in  | 0.018 | 0.015 | 0.010 | 0.007 |

#### Surface roughness

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

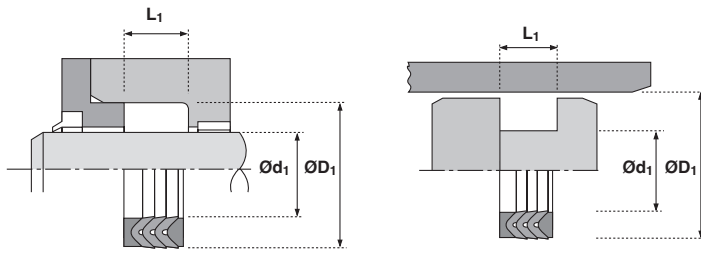
|                            | 5.0   | 7.5   | 10.0  | 12.5  | 15.0  |
|----------------------------|-------|-------|-------|-------|-------|
| Groove Section $\leq S$ mm |       |       |       |       |       |
| Min Chamfer C mm           | 3.0   | 5.0   | 6.5   | 7.0   | 7.5   |
| Max Fillet Rad $r_1$ mm    | 0.5   | 0.8   | 0.8   | 0.8   | 0.8   |
| Groove Section $\leq S$ in | 0.187 | 0.250 | 0.312 | 0.375 | 0.500 |
| Min Chamfer C in           | 0.093 | 0.125 | 0.156 | 0.187 | 0.250 |
| Max Fillet Rad $r_1$ in    | 0.020 | 0.031 | 0.031 | 0.031 | 0.031 |

#### Tolerances

|        | $\emptyset d_1$ | $\emptyset D_1$ | $L_1$ mm   | $L_1$ in  |
|--------|-----------------|-----------------|------------|-----------|
| Rod    | f9              | Js11            | +0.75 -0.0 | +0.030 -0 |
| Piston | js11            | H9              | +0.75 -0.0 | +0.030 -0 |

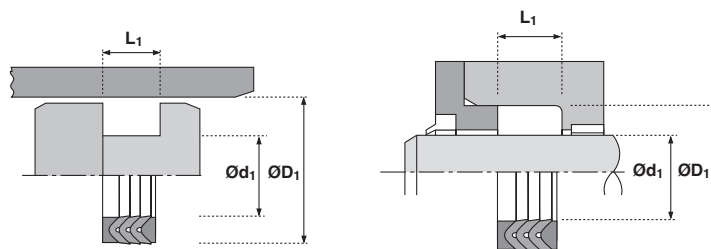


vee pack sets



| Ød <sub>1</sub> | TOL<br>f9        | ØD <sub>1</sub> | TOL<br>Js11      | L <sub>1</sub><br>+0.75-0.0 | PART<br>No. |
|-----------------|------------------|-----------------|------------------|-----------------------------|-------------|
| 12              | -0.016<br>-0.059 | 22              | +0.055<br>-0.055 | 16.00                       | 0188730     |
| 15              | -0.016<br>-0.059 | 25              | +0.055<br>-0.055 | 16.00                       | 0189530     |
| 16              | -0.016<br>-0.059 | 26              | +0.055<br>-0.055 | 16.00                       | 0190130     |
| 18              | -0.016<br>-0.059 | 28              | +0.055<br>-0.055 | 16.00                       | 0190530     |
| 20              | -0.020<br>-0.072 | 30              | +0.065<br>-0.065 | 16.00                       | 0190930     |
| 22              | -0.020<br>-0.072 | 32              | +0.065<br>-0.065 | 16.00                       | 0191730     |
| 25              | -0.020<br>-0.072 | 40              | +0.065<br>-0.065 | 22.50                       | 0192630     |
| 28              | -0.020<br>-0.072 | 43              | +0.065<br>-0.065 | 22.50                       | 0193430     |
| 30              | -0.020<br>-0.072 | 45              | +0.065<br>-0.065 | 22.50                       | 0193930     |
| 32              | -0.025<br>-0.087 | 47              | +0.080<br>-0.080 | 22.50                       | 0194330     |
| 35              | -0.025<br>-0.087 | 50              | +0.080<br>-0.080 | 22.50                       | 0195130     |
| 36              | -0.025<br>-0.087 | 51              | +0.080<br>-0.080 | 22.50                       | 0196030     |
| 42              | -0.025<br>-0.087 | 57              | +0.080<br>-0.080 | 22.50                       | 0196830     |
| 45              | -0.025<br>-0.087 | 60              | +0.080<br>-0.080 | 22.50                       | 0197430     |
| 48              | -0.025<br>-0.087 | 63              | +0.080<br>-0.080 | 22.50                       | 0197730     |
| 50              | -0.025<br>-0.087 | 70              | +0.080<br>-0.080 | 30.00                       | 1208430     |
| 55              | -0.030<br>-0.104 | 75              | +0.095<br>-0.095 | 30.00                       | 1208230     |
| 56              | -0.030<br>-0.104 | 76              | +0.095<br>-0.095 | 32.00                       | 1208630     |

| Ød <sub>1</sub> | TOL<br>f9        | ØD <sub>1</sub> | TOL<br>Js11      | L <sub>1</sub><br>+0.75-0.0 | PART<br>No. |
|-----------------|------------------|-----------------|------------------|-----------------------------|-------------|
| 60              | -0.030<br>-0.104 | 80              | +0.095<br>-0.095 | 32.00                       | 1208930     |
| 63              | -0.030<br>-0.104 | 83              | +0.095<br>-0.095 | 32.00                       | 1209130     |
| 70              | -0.030<br>-0.104 | 90              | +0.095<br>-0.095 | 30.00                       | 1209330     |
| 75              | -0.030<br>-0.104 | 95              | +0.095<br>-0.095 | 30.00                       | 1209530     |
| 80              | -0.030<br>-0.104 | 100             | +0.095<br>-0.095 | 30.00                       | 1209630     |
| 80              | -0.030<br>-0.104 | 105             | +0.095<br>-0.095 | 44.00                       | 0984230     |
| 85              | -0.036<br>-0.123 | 105             | +0.110<br>-0.110 | 30.00                       | 1209830     |
| 90              | -0.036<br>-0.123 | 110             | +0.095<br>-0.110 | 30.00                       | 1210630     |
| 100             | -0.036<br>-0.123 | 120             | +0.095<br>-0.110 | 30.00                       | 1210730     |
| 105             | -0.036<br>-0.123 | 125             | +0.095<br>-0.110 | 30.00                       | 1203130     |
| 110             | -0.036<br>-0.123 | 130             | +0.095<br>-0.110 | 30.00                       | 1195030     |
| 120             | -0.036<br>-0.123 | 140             | +0.095<br>-0.110 | 30.00                       | 4137830     |
| 125             | -0.043<br>-0.143 | 150             | +0.125<br>-0.125 | 34.00                       | 1215330     |
| 135             | -0.043<br>-0.143 | 160             | +0.125<br>-0.125 | 34.00                       | 1197630     |
| 140             | -0.043<br>-0.143 | 160             | +0.125<br>-0.125 | 33.00                       | 0677130     |
| 150             | -0.043<br>-0.143 | 180             | +0.125<br>-0.125 | 45.00                       | 1220130     |
| 170             | -0.043<br>-0.143 | 200             | +0.125<br>-0.125 | 45.00                       | 1224930     |
| 200             | +0.050<br>-0.165 | 230             | +0.145<br>-0.145 | 45.00                       | 1225830     |



| Ød <sub>1</sub> | TOL<br>f9          | ØD <sub>1</sub> | TOL<br>Js11      | L <sub>1</sub><br>+0.030-0.0 | PART<br>No. | Ød <sub>1</sub> | TOL<br>f9          | ØD <sub>1</sub> | TOL<br>Js11      | L <sub>1</sub><br>+0.030-0.0 | PART<br>No. |
|-----------------|--------------------|-----------------|------------------|------------------------------|-------------|-----------------|--------------------|-----------------|------------------|------------------------------|-------------|
| 0.500           | -0.0006<br>-0.0023 | 1.000           | +0.003<br>-0.003 | 0.715                        | 6530830     | 2.500           | -0.0012<br>-0.0041 | 3.250           | +0.005<br>-0.005 | 1.222                        | 4002530     |
| 0.750           | -0.0008<br>-0.0028 | 1.250           | +0.003<br>-0.003 | 0.875                        | 1735140     | 2.750           | -0.0012<br>-0.0041 | 3.250           | +0.005<br>-0.005 | 0.795                        | 4182430     |
| 0.875           | -0.0008<br>-0.0028 | 1.375           | +0.003<br>-0.003 | 0.825                        | 4135930     | 2.750           | -0.0012<br>-0.0041 | 3.500           | +0.005<br>-0.005 | 0.978                        | 4008430     |
| 1.000           | -0.0008<br>-0.0028 | 1.375           | +0.003<br>-0.003 | 0.675                        | 4138630     | 3.000           | -0.0014<br>-0.0048 | 3.500           | +0.005<br>-0.005 | 0.725                        | 4130730     |
| 1.000           | -0.0008<br>-0.0028 | 1.500           | +0.003<br>-0.003 | 0.710                        | 0183330     | 3.000           | -0.0014<br>-0.0048 | 3.625           | +0.005<br>-0.005 | 0.918                        | 4001530     |
| 1.125           | -0.0008<br>-0.0028 | 1.625           | +0.003<br>-0.003 | 0.775                        | 4136030     | 3.000           | -0.0014<br>-0.0048 | 3.750           | +0.005<br>-0.005 | 1.159                        | 0636930*    |
| 1.125           | -0.0008<br>-0.0028 | 1.750           | +0.003<br>-0.003 | 1.065                        | 4115330     | 3.250           | -0.0014<br>-0.0048 | 4.000           | +0.005<br>-0.005 | 0.960                        | 4008330     |
| 1.250           | -0.0010<br>-0.0034 | 1.750           | +0.003<br>-0.003 | 0.785                        | 4102530     | 3.375           | -0.0014<br>-0.0048 | 4.000           | +0.005<br>-0.005 | 0.833                        | 4002730     |
| 1.500           | -0.0010<br>-0.0034 | 2.000           | +0.004<br>-0.004 | 0.710                        | 4007630     | 3.375           | -0.0014<br>-0.0048 | 4.125           | +0.005<br>-0.005 | 1.236                        | 4134030     |
| 1.500           | -0.0010<br>-0.0034 | 2.125           | +0.004<br>-0.004 | 1.000                        | 4002130     | 3.500           | -0.0014<br>-0.0048 | 4.000           | +0.005<br>-0.005 | 0.825                        | 1461130     |
| 1.750           | -0.0010<br>-0.0034 | 2.250           | +0.004<br>-0.004 | 0.825                        | 1461530     | 3.500           | -0.0014<br>-0.0048 | 4.250           | +0.005<br>-0.005 | 1.086                        | 4115830     |
| 1.750           | -0.0010<br>-0.0034 | 2.375           | +0.004<br>-0.004 | 1.000                        | 4135130     | 3.750           | -0.0014<br>-0.0048 | 4.375           | +0.005<br>-0.005 | 0.900                        | 1365330     |
| 1.875           | -0.0010<br>-0.0034 | 2.500           | +0.004<br>-0.004 | 0.950                        | 4136230     | 3.750           | -0.0014<br>-0.0048 | 4.500           | +0.005<br>-0.005 | 1.090                        | 0755731*    |
| 2.000           | -0.0012<br>-0.0041 | 2.500           | +0.004<br>-0.004 | 0.715                        | 4007430     | 3.875           | -0.0014<br>-0.0048 | 4.500           | +0.005<br>-0.005 | 0.878                        | 4001930     |
| 2.000           | -0.0012<br>-0.0041 | 2.625           | +0.004<br>-0.004 | 0.898                        | 6557940     | 4.000           | -0.0014<br>-0.0048 | 4.500           | +0.005<br>-0.005 | 0.775                        | 6565930     |
| 2.000           | -0.0012<br>-0.0041 | 2.750           | +0.004<br>-0.004 | 0.986                        | 6575730     | 4.000           | -0.0014<br>-0.0048 | 4.750           | +0.005<br>-0.005 | 1.000                        | 6573130     |
| 2.250           | -0.0012<br>-0.0041 | 2.750           | +0.004<br>-0.004 | 0.705                        | 6555230     | 4.000           | -0.0014<br>-0.0048 | 5.000           | +0.005<br>-0.005 | 1.440                        | 0563630     |
| 2.250           | -0.0012<br>-0.0041 | 2.875           | +0.004<br>-0.004 | 0.937                        | 6530730     | 4.250           | -0.0014<br>-0.0048 | 5.000           | +0.005<br>-0.005 | 1.090                        | 0299330     |
| 2.250           | -0.0012<br>-0.0041 | 3.000           | +0.004<br>-0.004 | 0.960                        | 4008030     | 5.000           | -0.0016<br>-0.0056 | 6.000           | +0.005<br>-0.005 | 1.765                        | 0307530*    |
| 2.375           | -0.0012<br>-0.0041 | 3.000           | +0.004<br>-0.004 | 0.990                        | 4129530     | 5.250           | -0.0016<br>-0.0056 | 6.000           | +0.005<br>-0.005 | 1.055                        | 0411130     |
| 2.500           | -0.0012<br>-0.0041 | 3.000           | +0.004<br>-0.004 | 0.777                        | 0334330     | 5.500           | -0.0016<br>-0.0056 | 6.500           | +0.005<br>-0.005 | 1.175                        | 0048430     |
| 2.500           | -0.0012<br>-0.0041 | 3.125           | +0.004<br>-0.004 | 0.961                        | 4122230     | 6.000           | -0.0016<br>-0.0056 | 6.500           | +0.005<br>-0.005 | 0.675                        | 1207030     |

\* Supplied with OD anti-extrusion ring.

