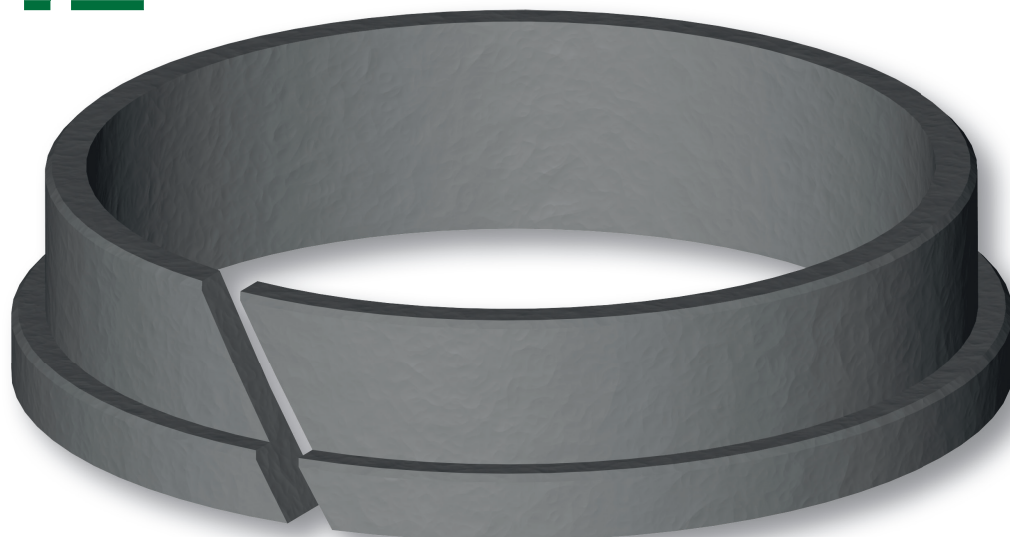


# FIL



The Aston Seals FIL type guide rings have been developed to substitute traditional bronze guides in hydraulic cylinders. They guide the rod and prevent metallic contact with the cylinder head when radial forces act perpendicular to the direction of movement.

Chamfered edges prevent splintering of the material during assembly and make the installation into the groove easier.

The compound used for these guides is a medium viscosity glass fibre reinforced acetal resin characterized by high strength, rigidity, hardness, impact resistance, resilience and excellent stability to high and low temperature.

- Extended service life
- Excellent wear-resistance
- Simple design of groove and assembly
- Reduce vibrations
- Low friction
- Good resistance to loads
- Good mechanical stability at high temperature
- Easy installation without expensive auxiliaries

## MATERIAL



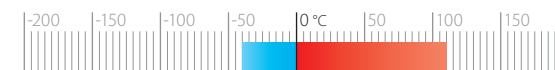
Type Acetal resin with glass fibre  
Designation BEARITE

## FIELD OF APPLICATION

Speed  
≤ 1 m/s



Temperature  
-40°C ÷ +110°C



Fluids

Hydraulic oils (mineral oil based)  
For other fluids contact our technical department

## SURFACE ROUGHNESS

Dynamic surface  
Static surface

$R_a \leq 0.3 \mu\text{m}$        $R_t \leq 2.5 \mu\text{m}$   
 $R_a \leq 2 \mu\text{m}$        $R_t \leq 10 \mu\text{m}$

## CHOICE OF GUIDE RING WIDTH

A rough estimate of guide width can be calculated with the following formula:

$$h_{mm} \geq \frac{F_N \times k}{p_{N/mm^2} \times d_{mm}}$$

where

$h_{mm}$

$F_N$

$k$

$d_{mm}$

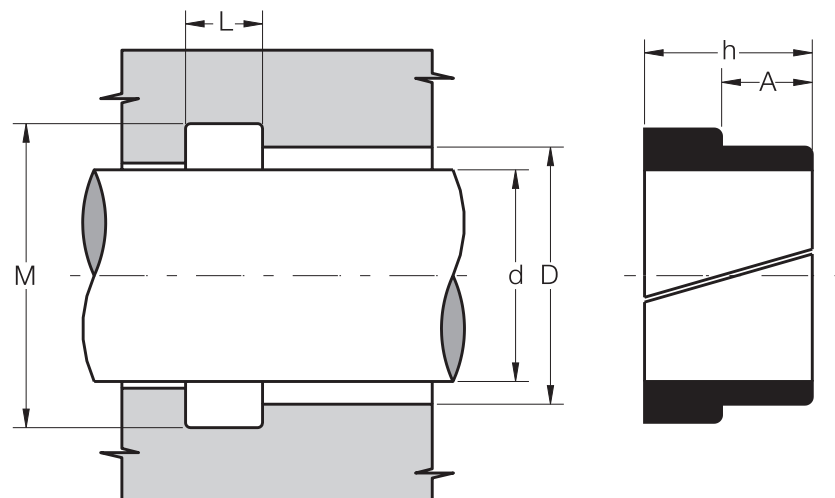
$p_{N/mm^2}$

- Guide ring width in mm
- Radial load in N
- Safety factor (generally 2)
- Rod diameter in mm
- Surface pressure N/mm<sup>2</sup>  
40 a 20 °C  
30 a 70 °C

Before assembly good cleanliness and lubrication are recommended.

The above data are maximum values, they may be maintained for short periods and can not be used at the same time simultaneously.

FIL



| Part.          | d <sup>f7</sup> | D <sup>+0.05</sup> | M <sup>+0.2</sup> | L <sup>+0.1</sup> | h  | A  |
|----------------|-----------------|--------------------|-------------------|-------------------|----|----|
| FIL 45 51 13   | 45              | 51                 | 56                | 5.0               | 13 | 8  |
| FIL 55 61 13   | 55              | 61                 | 66                | 5.0               | 13 | 8  |
| FIL 60 66 13   | 60              | 66                 | 71                | 5.0               | 13 | 8  |
| FIL 60 66 16   | 60              | 66                 | 71                | 5.0               | 16 | 11 |
| FIL 65 70 16   | 65              | 70                 | 73                | 5.0               | 16 | 11 |
| FIL 65 71 13   | 65              | 71                 | 76                | 5.0               | 13 | 8  |
| FIL 70 76 13   | 70              | 76                 | 81                | 5.0               | 13 | 8  |
| FIL 72 77 16   | 72              | 77                 | 82.4              | 5.0               | 16 | 11 |
| FIL 75 81 13   | 75              | 81                 | 86                | 5.0               | 13 | 8  |
| FIL 78 84 16   | 78              | 84                 | 89                | 5.0               | 16 | 11 |
| FIL 80 86 13   | 80              | 86                 | 91                | 5.0               | 13 | 8  |
| FIL 85 90 16   | 85              | 90                 | 93                | 5.0               | 16 | 11 |
| FIL 85 91 13   | 85              | 91                 | 96                | 5.0               | 13 | 8  |
| FIL 88 93 16   | 88              | 93                 | 98                | 5.0               | 16 | 11 |
| FIL 91 96 16   | 91              | 96                 | 101.4             | 5.0               | 16 | 11 |
| FIL 95 101 13  | 95              | 101                | 106               | 5.0               | 13 | 8  |
| FIL 99 105 16  | 99              | 105                | 110               | 5.0               | 16 | 11 |
| FIL 100 106 13 | 100             | 106                | 111               | 5.0               | 13 | 8  |
| FIL 105 111 13 | 105             | 111                | 116               | 5.0               | 13 | 8  |
| FIL 110 115 16 | 110             | 115                | 120.4             | 5.0               | 16 | 11 |

| Part.          | d <sup>f7</sup> | D <sup>+0.05</sup> | M <sup>+0.2</sup> | L <sup>+0.1</sup> | h  | A  |
|----------------|-----------------|--------------------|-------------------|-------------------|----|----|
| FIL 110 116 13 | 110             | 116                | 121               | 5.0               | 13 | 8  |
| FIL 115 121 13 | 115             | 121                | 126               | 5.0               | 13 | 8  |
| FIL 120 126 16 | 120             | 126                | 131               | 5.0               | 16 | 11 |
| FIL 125 131 13 | 125             | 131                | 136               | 5.0               | 13 | 8  |
| FIL 129 136 16 | 129             | 136                | 139.4             | 5.0               | 16 | 11 |
| FIL 132 138 13 | 132             | 138                | 143               | 5.0               | 13 | 8  |
| FIL 135 141 13 | 135             | 141                | 146               | 5.0               | 13 | 8  |
| FIL 140 146 13 | 140             | 146                | 151               | 5.0               | 13 | 8  |
| FIL 141 147 16 | 141             | 147                | 152               | 5.0               | 16 | 11 |
| FIL 142 148 13 | 142             | 148                | 153               | 5.0               | 13 | 8  |
| FIL 145 151 13 | 145             | 151                | 156               | 5.0               | 13 | 8  |
| FIL 152 158 13 | 152             | 158                | 163               | 5.0               | 13 | 8  |
| FIL 162 168 16 | 162             | 168                | 173               | 5.0               | 16 | 11 |
| FIL 165 171 13 | 165             | 171                | 176               | 5.0               | 13 | 8  |
| FIL 172 178 13 | 172             | 178                | 183               | 5.0               | 13 | 8  |
| FIL 183 189 16 | 183             | 189                | 194               | 5.0               | 16 | 11 |
| FIL 194 200 13 | 194             | 200                | 205               | 5.0               | 13 | 8  |
| FIL 207 213 16 | 207             | 213                | 218               | 5.0               | 16 | 11 |
| FIL 218 224 13 | 218             | 224                | 229               | 5.0               | 13 | 8  |