

## Metal O-Ring Internal Pressure

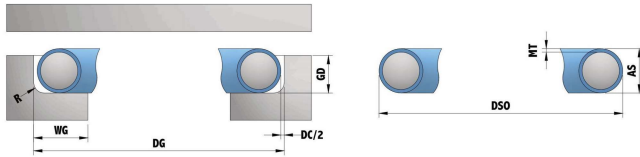
### Common Metallic Material Options

• Alloy 718 • Alloy X-750 • Alloy 600 • 316 SS • 321 SS • Waspaloy

### Common Plating Options

• Silver • Nickel • Gold • Stannum • Copper • PTFE

## Groove and Seal Design



Seal:  $DSO = DG - DC - (\text{Plating thickness}) \times 2$   
 Groove:  $DG = DSO + DC + (\text{Plating thickness}) \times 2$

## Groove Finish Recommendation

Groove finish is a critical factor for metal seal. Depend on different medium, Sonkit recommend the following groove surface roughness

| Medium        | For metal seal with plating | For meta seal without plating |
|---------------|-----------------------------|-------------------------------|
| Viscous media | Ra = 1.6 – 2.5              | Ra = 0.8 – 1.6                |
| Liquid media  | Ra = 0.4 – 0.8              | Unrecommended                 |
| Vacuum/ gases | Ra = 0.2 -0.6               | Unrecommended                 |



# OI-OVI-OSI-OGI

Note: the data below is based on Alloy 750 and metal seal types of OI, OVI and OGI, OSI is excluded. Load and spring back figures are based on Alloy 750 with work hardened heat treatment.

| Groove Dimension      |                    |                   |              | Seal Dimension |                                 |                    |      | Performance           |                    |      |                  |      |  |
|-----------------------|--------------------|-------------------|--------------|----------------|---------------------------------|--------------------|------|-----------------------|--------------------|------|------------------|------|--|
| DG                    | GD                 | WG                | R            | AS             |                                 | MT                 |      | DC                    |                    | Load |                  | SB   |  |
| Groove Diameter Range | Groove Depth Range | Width Groove (mm) | Radius (max) | Axial Section  | Tolerance On AS (cross section) | Material Thickness |      | Diametrical Clearance | N/mm Circumference |      | Spring Back (mm) |      |  |
|                       |                    |                   |              |                |                                 | M                  | H    |                       | M                  | H    | M                | H    |  |
| 6 - 25                | 0.64-0.69          | 1.40              | 0.25         | 0.89           | +0.08/-0.03                     | 0.15               | N/A  | 0.20                  | 65                 | N/A  | 0.01             | N/A  |  |
| 10- 50                | 0.94 -1.02         | 1.78              | 0.30         | 1.19           | +0.08/-0.03                     | N/A                | 0.20 | 0.25                  | N/A                | 80   | N/A              | 0.03 |  |
| 12-200                | 1.14 -1.27         | 2.29              | 0.38         | 1.57           | +0.08/-0.03                     | 0.25               | 0.36 | 0.28                  | 100                | 220  | 0.03             | 0.03 |  |
| 25-200                | 1.88 -2.01         | 3.18              | 0.51         | 2.39           | +0.08/-0.03                     | 0.25               | 0.46 | 0.33                  | 55                 | 200  | 0.05             | 0.03 |  |
| 50-400                | 2.54 -2.67         | 4.06              | 0.76         | 3.18           | +0.08/-0.03                     | 0.25               | 0.51 | 0.43                  | 35                 | 160  | 0.07             | 0.04 |  |
| 75-650                | 3.18 -3.30         | 5.08              | 1.27         | 3.96           | +0.10                           | 0.41               | 0.51 | 0.61                  | 70                 | 115  | 0.10             | 0.08 |  |
| 100-800               | 3.84 -3.99         | 6.35              | 1.27         | 4.78           | +0.13                           | 0.51               | 0.64 | 0.71                  | 90                 | 150  | 0.10             | 0.08 |  |
| 200-1200              | 5.05 -5.28         | 8.89              | 1.52         | 6.35           | +0.13                           | 0.64               | 0.81 | 0.76                  | 100                | 180  | 0.20             | 0.10 |  |
| 300-2000              | 8.26 -8.51         | 12.70             | 1.52         | 9.53           | +0.13                           | 0.97               | 1.24 | 1.02                  | 160                | 280  | 0.15             | 0.12 |  |
| 800-3000              | 11.05-11.43        | 16.51             | 1.52         | 12.70          | +0.15                           | 1.27               | 1.65 | 1.27                  | 200                | 365  | 0.22             | 0.18 |  |

## Typical Applications

- Hot mold equipment
- Nuclear (Reactor vessels and connection seals)
- Gas turbines (Fuel systems, Exhaust connectors, Heat exchangers)



In house Lab



In house HT



Test Report