

Metal O-Ring Internal Pressure

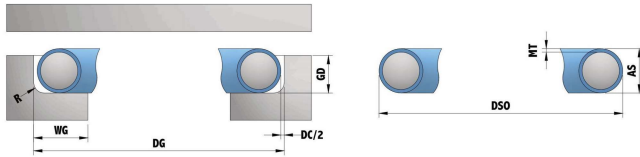
Common Metallic Material Options

• 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

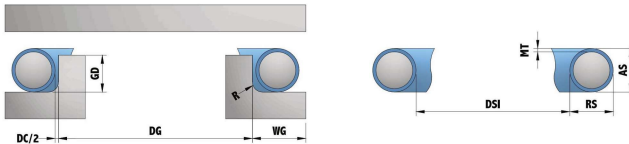


Test Report

Metal O-Ring External Pressure

- Common Metallic Material Options**
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Common Plating Options
 • Silver • Nickel • Gold • Stannum • Copper • PTFE

Groove and Seal Design



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

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OE-OVE-OSE-OGE

Note: the data below is based on Alloy 750 and metal seal types of OE, OVE and OGE, OSE 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 (min)	Radius (max)	Axial Section	Tolerance On AS (cross section)	Material Thickness		Diametrical Clearance	N/mm Circumference		Spring Back (mm)	
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