

High Performance Metallic Seals

C-Seal



Stands for assurance of design, manufacturing and quality in advanced sealing technology

Pressure fluctuations and heat are constant concerns for designers of aircraft engines, valves, pressure transducers exhaust manifolds and fuel injectors. A combination of these two factors can result in premature failures or short seal life. Candia Technology C-Ring Seals can help overcome both heat and pressure pulsating sealing problems. Key to the seal's performance is the high spring back characteristic due to the C-shaped construction. These highly resilient seals can be used for internal, external and axial pressures under extreme conditions that preclude the use of gaskets made of organic materials. This uniquely fabricated seal configuration is capable of producing relatively high levels of spring back. The compression of the seal in a controlled groove or between two radial interfaces, produces a counter load, generating an effective sealing action that is ideal for these special applications.

Basic Design Characteristics

Candia Technology C-Ring Seals will undergo plastic deformation when installed at the 20% recommended compression. These C-Ring seals may be reusable in their original cavities or in cavities that are nearly the same depth as the original. C-Ring seals have much lower initial flange load requirements than O-Ring. However, it is still high enough to provide effective smearing of the plating or coating used on the sealing surfaces. Deflection capability is excellent and it is normally assumed to be about half of the spring back, however, this is a function of the operating conditions and the required leakage rate.

Determining factors in seal selection

In the seal selection process, the designer should always keep in mind the following rules:

- There is a direct relationship between seal O.D. and free height
- Larger free height always provides a better performing, more consistent seal

The seal selection is a process of optimizing design limitations, size, available load, spring back, design requirements and cost.

Deflection Capability

We define this as the ability to continue to seal as the flanges separate under pressure. This function is related to free height, material type, heat treatment and diameter. All things being equal, the larger the free height the more resilient the seal. More resilient seals allows for some tolerance on flanges which are out of flat and parallel.

The most important factor in C-Ring seal design are:

- Maximum pressure and direction
- Allowable leakage rate
- Extreme operating temperature
- Available flange load

High Performance Metallic Seal Types

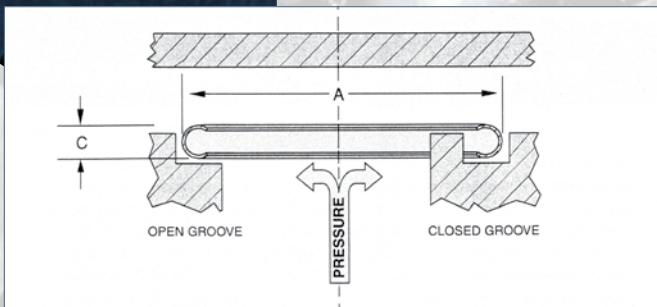
- Internal pressure
- External pressure
- Axial pressure

Material Types, Plating and Coatings

Candia Technology C-Ring Seals can be made of almost any alloy that can be formed. However, because strength and temperature properties are the primary technical consideration, we produce our seals primarily from alloy X750 or 718 materials. Other high temperature alloys are also available.

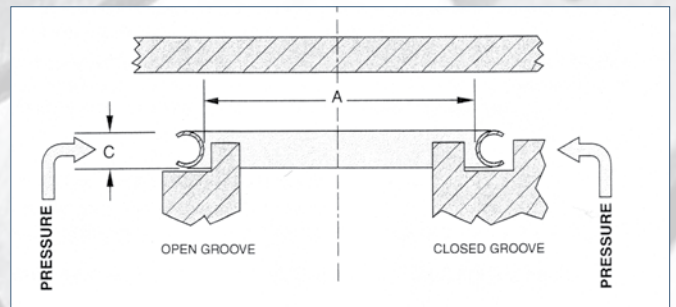
Candia Technology C-Ring Seals

Where very low leak rates are demanded, C-Ring seals are plated or coated to provide a relatively soft surface which flow into the minor imperfections of the flanges at installation. Plating or coatings will not compensate for poor surface finishes on the mating hardware. The selection of plating or coating is based on the allowable leak rate, the viscosity (density) of the fluid, flange roughness and the application temperature.



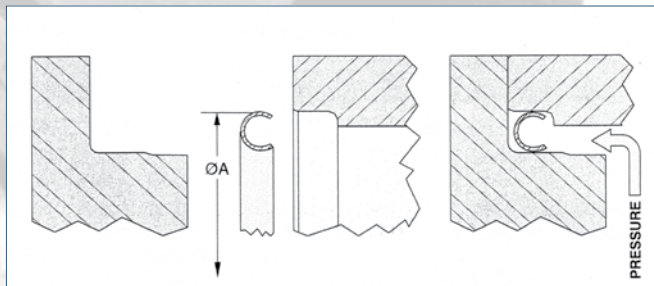
INTERNAL PRESSURE EXHIBIT A
SEAL

Free Height	C		A	
	Tot.	OD Range	Tot.	OD Range
.031	+-.002	.187 - 1.000		
.047	+-.002	.250 - 1.375		
.062	+-.002	.375 - 4.000		
.094	+-.002	.750 - 6.000		
.125	+-.003	1.000 - 36.000		
.156	+-.003	1.250 - 36.000		
.188	+-.004	2.000 - 48.000		
.250	+-.004	4.000 - 120.000		
.375	+-.004	12.000 - 120.000		
.500	+-.005	24.000 - 120.000		



INTERNAL PRESSURE EXHIBIT B
SEAL

Free Height	C		A	
	Tot.	OD Range	Tot.	OD Range
.031	+-.002	.187 - 1.000		
.047	+-.002	.250 - 1.375		
.062	+-.002	.375 - 4.000		
.094	+-.002	.750 - 6.000		
.125	+-.003	1.000 - 36.000		
.156	+-.003	1.250 - 36.000		
.188	+-.004	2.000 - 48.000		
.250	+-.004	4.000 - 120.000		
.375	+-.004	12.000 - 120.000		
.500	+-.005	24.000 - 120.000		



INTERNAL PRESSURE EXHIBIT C
SEAL

Free Height	C		A	
	Tot.	OD Range	Tot.	OD Range
.045		.225 - 1.375		
.062		.375 - 4.000		
.094		.750 - 6.500		
.125		1.750 - 10.000		
.156		2.000 - 10.000		
.188		3.000 - 12.000		
.250		5.000 - 12.000		

For application assistance contact our sales/technical service department.



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