

# ESE Spring Energized Metal C-Ring External Pressure Face Seal

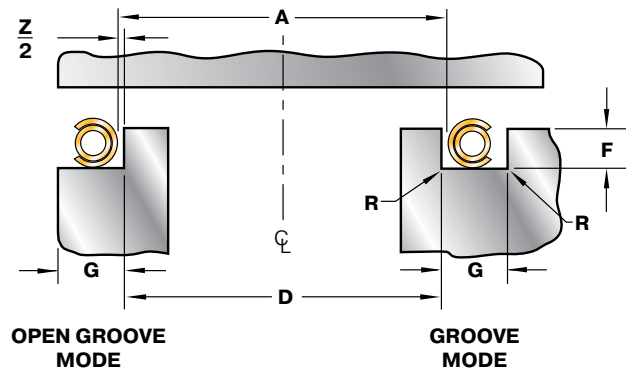
## Applications:

- Similar to ECE, but higher loads for use with rougher mating surfaces.
- Externally pressurized joints. Flanges with a rougher surface finish.
- Internally pressurized joints to avoid passage of working fluid into the seal cavity (reduced working pressure rating).



## Features:

- Lowest leak rate.
- Internal spring provides high pressure capabilities of up to 38,000 psi.
- All plating options available.
- Excellent footprint with good plastic flow of plating material.
- Available in a range of diameters. See table on page 23 for details or contact us for specific availability.
- Wide range of eight standard free heights from 1/16" to 1/2".
- Multiple material choices for high temperature strength, good spring-back, corrosion and fatigue resistance.
- Uses jacket forces, spring forces and hydrostatic forces additively to increase sealing forces at higher pressures when used with external pressurization.
- Circular, race-track and other custom shapes available. Tri-lobed or elliptical Spring Energized C-rings available for snap-in/snap-out convenience.



Cavity Dimensions				
Nominal Cross Section	D	F	G	R
	I.D. Range Tolerance h10	Depth Range	Minimum Width	Maximum Radius
1/16	0.650 – 8.000	0.050 – 0.054	0.090	0.015
3/32	0.900 – 16.000	0.075 – 0.079	0.125	0.020
1/8	1.000 – 24.000	0.100 – 0.105	0.160	0.030
5/32	1.250 – 30.000	0.125 – 0.130	0.200	0.050
3/16	3.000 – 36.000	0.151 – 0.157	0.250	0.050
1/4	4.000 – 60.000	0.200 – 0.208	0.350	0.060
3/8	12.000 – 60.000	0.300 – 0.316	0.500	0.060
1/2	24.0000 – 60.000	0.400 – 0.420	0.650	0.060

All dimensions are in inches. The tolerance reference table can be found on page F-85.

## Part Numbering:

Refer to Section A, page A-9 for part numbering convention.  
The seal size is specified in the part number as follows:

**ESE - 000000 - 00 - 00 - 0 - XXX**

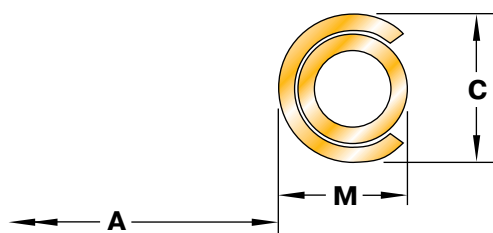
Seal I.D. prior to plating  
(dimension A) to three decimal  
places. (Example: A 3.000 inch  
seal is specified as 003000)

Metal Seal Cross Section Code

Material (Section D)

Temper (Section D)

Plating, Coating or Finish (Section D)



## Seal and Cavity Sizing:

Seal free height is based on cavity diameter and depth alone. Seal diameter (dimension A) is derived below.

$$A = D + Z + 2P_{\max}$$

(tolerance H11, see page F-85)

Where: D = Maximum cavity I.D.

Z = Diametral clearance between cavity and seal

P<sub>max</sub> = Maximum plating thickness (from page D-56)

Nominal Cross Section	Seal Dimensions			Cross Section Code
	Z Diametral Clearance	M Maximum Radial Width	C Free Height	
1/16	0.006	0.059	0.062 <small>+0.003 -0.002</small>	05
3/32	0.008	0.087	0.094 <small>+0.004 -0.002</small>	07
1/8	0.012	0.114	0.125 <small>+0.004 -0.002</small>	09
5/32	0.016	0.144	0.156 <small>+0.004 -0.002</small>	11
3/16	0.018	0.173	0.188 <small>+0.005 -0.004</small>	13
1/4	0.020	0.230	0.250 <small>+0.006 -0.004</small>	15
3/8	0.030	0.342	0.375 <small>+0.008 -0.004</small>	17
1/2	0.040	0.456	0.500 <small>+0.010 -0.005</small>	19

Performance		
Seating Load (pounds per inch circumference)	Springback (inches)	Working* Pressure Rating (psi)
500	0.003	29000
850	0.005	32500
950	0.006	38000
1300	0.008	31000
1500	0.009	32500
2000	0.011	30000
2500	0.017	30500
2900	0.022	30000

All dimensions are in inches and prior to plating.

Performance data is based on Alloy 718 material with -6 treatment. Seal performance is discussed in Section F.

\*If working pressures exceed these ratings consult Parker for recommendations.