

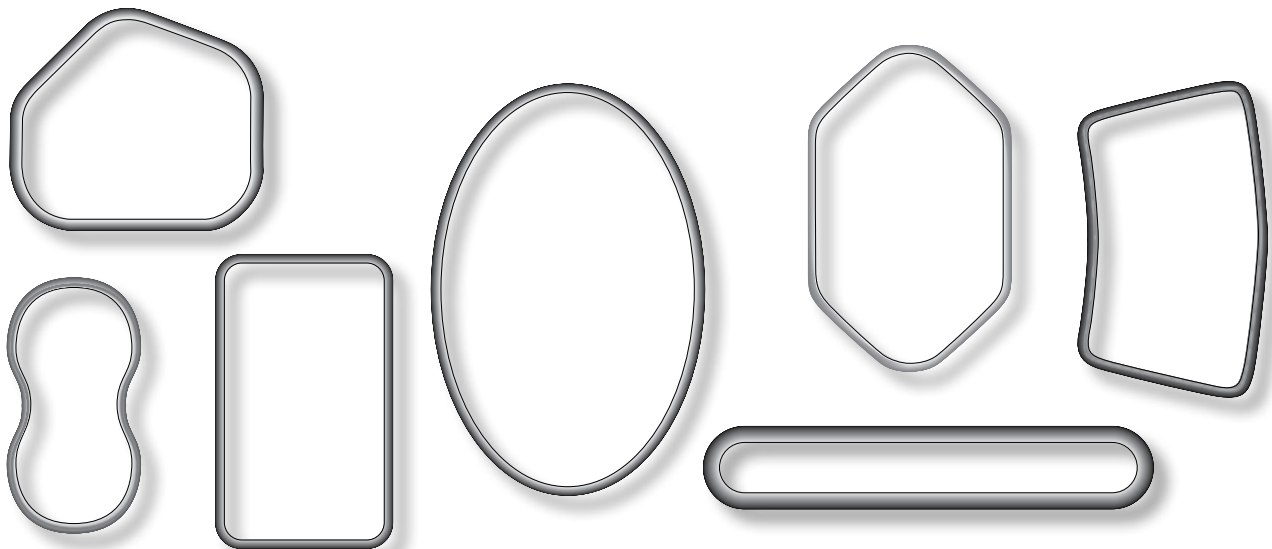
## Seal Shaping Requirements for Non-Circular Seals

All standard metal seals can be formed into various shapes. The illustration below shows some of the many shapes in which metal seals can be made.

For applications as varied as fuel nozzle mounting flanges on aircraft gas turbine engines, or dies for extrusion of plastic film, the availability of specially shaped metal seals offers the greatest design flexibility.

The table (below) provides the minimum outer corner radius for the various cross sections of metal C-rings, O-rings, spring energized C-rings, wire rings, E-rings and U-rings. All shaped seals are custom designed by our engineers. Please send us your completed "application data sheet" provided on pages F-103 and F-104 of this design guide including a sketch of the non-circular cavity and we will assist you in determining the best seal type and shape for your application.

Minimum Inside Bend Radius of Seal (inches)						
Cross Section Code	C-Ring	E-Ring	O-Ring	U-Ring	Spring Energized C-Ring	Wire Ring
01	0.20		0.40			
02	0.20		0.60			
03	0.20		0.60			0.40
04	0.20		0.90			
05	0.30	0.70	0.90	0.70	0.40	0.60
06	0.30	0.90	1.30			
07	0.50	1.50	1.30	1.00	0.60	0.90
08	0.50	0.90	0.40			
09	0.60	1.90	0.60	1.30	0.80	1.30
10	0.60	1.20	0.80			
11	0.80	1.20	1.60		0.90	
12	0.80		0.90			
13	0.90	1.90	1.90	2.00	1.10	
14	0.90		1.10			
15	1.20	2.70	2.50	2.60	1.50	
16	1.20		1.50			
17	1.80		3.80		2.30	
18	1.80		2.30			
19	2.40		5.00		3.00	
20	2.40		3.00			
21			6.30			
25			1.30			
29			0.50			
31			0.60			
32			0.90			



# Metal Seal Manufacturing Specifications

The table below provides the allowable roundness and flatness for standard metal seals: C-rings, E-rings, O-rings, U-rings, wire rings, spring energized C-rings, and spring energized O-rings in an unrestrained state. When restrained, the seal diameter shall be within the limits specified in Section C.

## Definition of Roundness

Difference between the largest measured reading and the lowest measured reading.

Metal Seal Roundness & Flatness	
Seal Diameter Range (inches)	Roundness & Flatness (inches)
0.180 - 1.000	0.020
1.001 - 2.500	0.030
2.501 - 5.000	0.060
5.001 - 10.000	0.090
10.001 - 12.000	0.125
12.001 - 14.000	0.150
14.001 - 16.000	0.175
16.001 - 18.000	0.200
18.001 - 22.000	0.250
22.001 - 36.000	0.500

## Metal Seal Surface Finish

All unplated and plated metal seals are produced with a 16 μ inch R<sub>a</sub> surface finish.

## Metal O-Ring Weld Finishing

The Metal O-Ring weld process results in a weld fillet which is finished and smoothed to the adjacent surfaces. The surface at the blend area shall not be more than 0.002 inch below the adjacent surfaces.