

# Metal Seals

Standard Cross Sections for a Wide Range of Industries



## Highest Integrity Sealing Solutions

The most extreme environments demand metal seal sealing solutions. Parker's resilient metal seals meet the challenges of high temperatures or cryogenics, high pressures or hard vacuum, corrosive chemicals and intense levels of radiation, performing dependably year after year.

Metal seals are used in industry in temperature, pressure, and media conditions which are outside the range of elastomers.

Standard designs and custom engineered solutions available.



## Contact Information:

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## Product Features:

- Cryogenic applications
- High temperature applications
- Vacuum applications
- High pressure applications
- Corrosive media
- Many standard cross-sections
- Multiple plating options
- Custom engineered solutions available



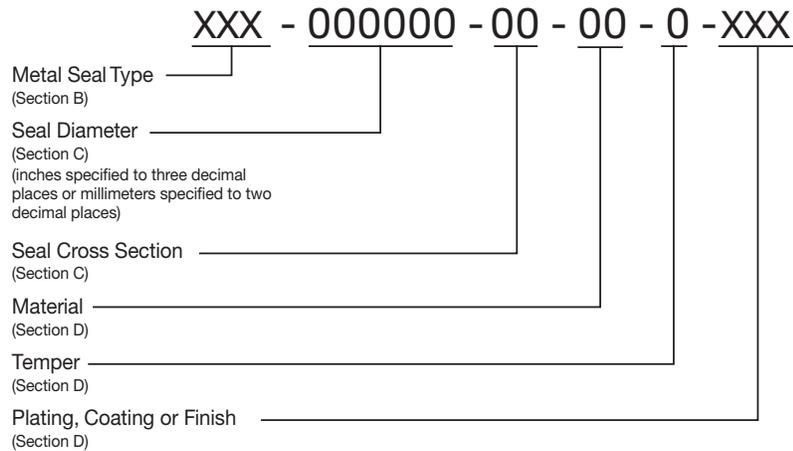
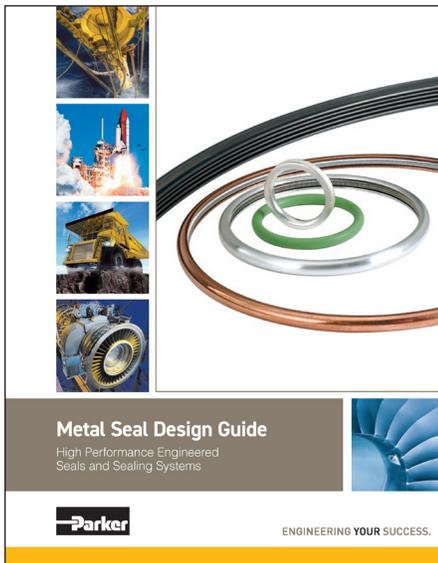
ENGINEERING YOUR SUCCESS.

								
	<b>C-Ring</b>	<b>Spring Energized C-Ring</b>	<b>E-Ring (W-Ring)</b>	<b>Metal O-Ring</b>	<b>U-Ring (V-Ring)</b>	<b>Wire Ring</b>	<b>Axial Seal</b>	
<b>Seal Type Options</b>	ECl: Internal Pressure ECE: External Pressure	ESl: Internal Pressure ESE: External Pressure	EEl: Internal Pressure EEe: External Pressure	EOl: ID Vented, Internal Pressure EON: Plain, Internal Pressure EOP: Pressure Filled, Internal Pressure EOE: OD Vented, External Pressure EOM: Plain, External Pressure EOR: Pressure Filled, External Pressure	EUI: Internal Pressure EUE: External Pressure	EWl: Internal Pressure EWE: External Pressure	ECA: Internal Pressure ECA: External Pressure	
<b>Recommended Materials</b>	Alloy 718 Waspaloy  <i>Alternate materials available upon request</i>	Alloy X-750 Rene 41	Alloy 718 Alloy 625 Rene 41	Alloy X-750 Waspaloy Haynes 188	Alloy 718 Waspaloy	Alloy X-750 Rene 41	Alloy 718 Waspaloy	Alloy X-750 Rene 41
<b>Springback Range</b>	Min: 0.001" Max: 0.025"	Min: 0.003" Max: 0.022"	Min: 0.001" Max: 0.048"	Min: 0.001" Max: 0.006"	Min: 0.001" Max: 0.025"	Min: 0.001" Max: 0.002"	Min: N/A Max: N/A	
<b>Diameter Range</b>	Min: 0.185" Max: 120.000" <i>Contact us for larger sizes</i>	Min: 0.425" Max: 120.000"	Min: 1.000" Max: 60.000"	Min: 0.250" Max: 48.000"	Min: 1.750" Max: 48.000"	Min: 0.250" Max: 24.000"	Min: 0.219" Max: 9.000"	
<b>Free Height Range</b>	Min: 1/32" Max: 1/2"	Min: 1/16" Max: 1/2"	Min: 1/16" Max: 1/4"	Min: 1/32" Max: 1/4"	Min: 1/32" Max: 1/4"	Min: 1/32" Max: 1/8"	Min: N/A Max: N/A	
<b>Seating Load Range</b>	Min: 80 lbs/in circumference Max: 1700 lbs/in circumference	Min: 500 lbs/in circumference Max: 2900 lbs/in circumference	Min: 300 lbs/in circumference Max: 90 lbs/in circumference	Min: 100 lbs/in circumference Max: 1500 lbs/in circumference	Min: 45 lbs/in circumference Max: 70 lbs/in circumference	Min: 4200 lbs/in circumference Max: 6000 lbs/in circumference	Min: N/A Max: N/A	
<b>Temperature Range</b>	Min: Cryogenic Max: ~1450° F	Min: Cryogenic Max: ~1450° F	Min: Cryogenic Max: ~1450° F	Min: Cryogenic Max: ~1450° F	Min: Cryogenic Max: ~1450° F	Min: Cryogenic Max: ~2000° F	Min: Cryogenic Max: ~1450° F	
<b>Working Pressure Range</b>	Min: Vacuum Max: 99,000 psi	Min: Vacuum Max: 38,000 psi	Min: Atmosphere Max: 5,500 psi	Min: Vacuum Max: 25,000 psi	Min: Atmosphere Max: 12,000 psi	Min: Vacuum Max: 20,000 psi	Min: Atmosphere Max: 57,000 psi	
<b>Leakage Range</b>	Min: 10 <sup>-12</sup> cc/sec Max = 10 <sup>-1</sup> cc/sec	Min: 10 <sup>-13</sup> cc/sec Max = 10 <sup>-2</sup> cc/sec	Min: 10 <sup>-4</sup> cc/sec Max = 10 <sup>+3</sup> cc/sec	Min: 10 <sup>-11</sup> cc/sec Max = 10 <sup>+1</sup> cc/sec	Min: 10 <sup>-3</sup> cc/sec Max = 10 <sup>+3</sup> cc/sec	Min: 10 <sup>-11</sup> cc/sec Max = 10 <sup>-6</sup> cc/sec	Min: 10 <sup>-11</sup> cc/sec Max = 10 <sup>-6</sup> cc/sec	
<b>Leak Expectation</b>	Depending on the cross-section, can be bubble tight seal	Yes, this is a bubble tight seal	No, this is not a bubble tight seal	Depending on the cross-section, can be bubble tight seal	No, this is not a bubble tight seal	Yes, this is a bubble tight seal	Depending on the cross-section, can be bubble tight seal	
<b>Applications</b>	Valve assemblies, pressure vessels, jet engines, fuel injectors, separable fittings	Pressure vessel enclosures, manways, steam generators, gasoline/diesel engines, exhaust joints	Pneumatic joints, turbine engines, bleed air ducting joints, turbine engine cases, low-load flanges, and joints	Heavy joints with minimal movement, static low-leakage face sealing	Valve assemblies, pressure vessels, jet engines, fuel injectors, separable fittings, etc., that require more springback	Small process valves, pressure vessels, high loads applied, cost-effective assemblies, static applications	Static and low cycle dynamic axial sealing, quarter turn valve systems, mechanical seal to shaft interface	
<b>Features</b>	Relatively flexible for use with non-flat flanges, optimized one-piece construction for low cost	Similar design as the C-Ring, but allows for higher load applications and rougher mating surfaces	Multiple cross-sections, low load seal, generally used unplated, fully elastic for consistent performance over many cycles	Standard metal O-rings available for all "MS" sizes and configurations, robust, high integrity seal for ease of handling	Compliant low load seal, generally used unplated, strongly pressure energized	Can be made with many different material options, requires a large clamping load	Close tolerance seal for light installation loads. Plating partially transfers to stem for low wear	
<b>Relative Cost</b>	\$\$	\$\$\$	\$\$\$	\$\$	\$\$\$	\$	\$\$\$\$	

# Design Guide Walkthrough

Using our Metal Seal Design Guide, Catalog CSS 5129, you can customize all of our standard catalog parts to fit your application using our universal part number system. We also offer a variety of part configurators on our website.

Visit [www.parker.com/css](http://www.parker.com/css) to customize your sealing solution.



This design guide provides a rapid, unambiguous, self-selection process with all the features, applications and limitations of each product clearly stated. The guide is organized into sections which easily allows you to determine the part number of the metal seal that is right for your application.

[DOWNLOAD THE GUIDE CSS 5129](#)

To locate the nearest Authorized Distributor of Parker CSS Division Metal Seals, click on the button below or on the Where to Buy tab on our website:

[www.parker.com/css](http://www.parker.com/css)

[WHERE TO BUY](#)

Section B helps you to determine which metal seal type is most appropriate for your application.

Section C is organized by metal seal type. Having selected the best metal seal type from Section B, simply turn to the page in Section C for the seal selected and you will find all the groove and metal seal dimensions you need.

Section D lists the many available metal seal materials and assists you in determining which combination of materials is most appropriate for your sealing environment.

Section E provides supporting technical information and recommendations.

Section F shows a number of other metal seal designs which are available for unique applications when only a special seal will do. In these cases, please contact one of our applications engineers at any of our worldwide offices and we will be happy to assist you. Please send us your application data sheet (Page F-103 & F-104) for a fast, complete response.

