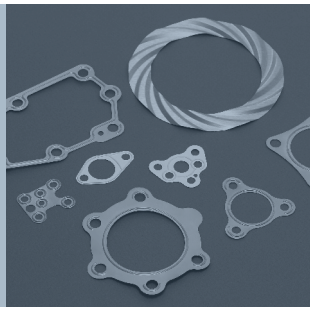
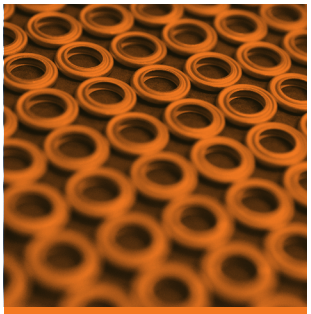
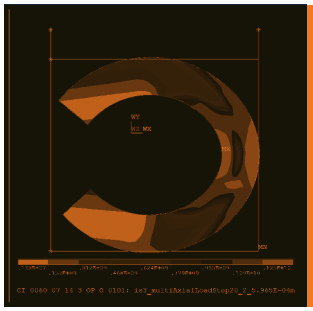
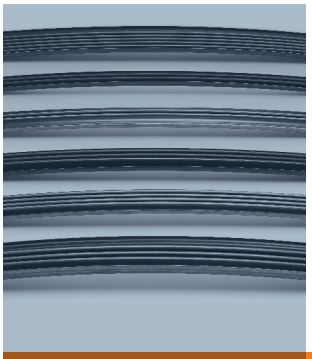
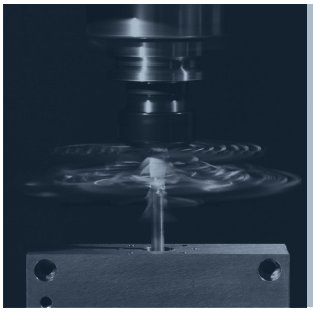
Nicholsons

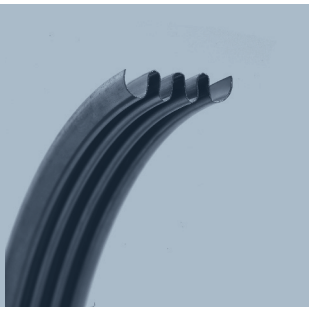


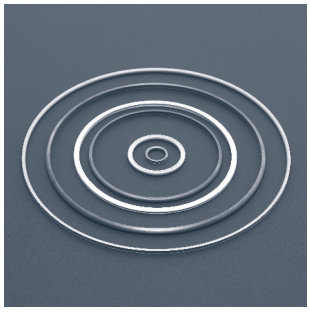


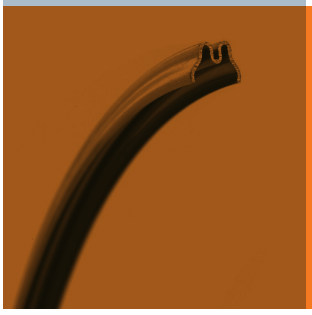


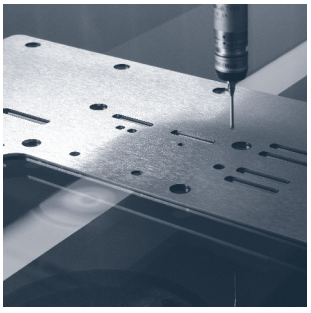












Catalogue

Metric
Issue A (09/25)

Table of Contents

Nicholsons

Company Overview

Nicholsons Group is a global specialist in the design and manufacture of resilient metal seals and gaskets. Our extensive range of precision metal seals offers sealing solutions for extreme temperature, pressure and compression applications.

Established in 1923, Nicholsons has design, sales and manufacturing sites in the UK and EU. We have the experience and global presence to support you with your sealing requirements.

Our seals are used in a number of sectors including:

– Aerospace
– Automotive
– Oil and Gas
– Power Generation
– Nuclear
– Medical

Our metal seals are capable of sealing a wide range of media from helium gas to heavy oil, operating in extreme environments from cryogenic to high temperatures, and vacuum to high pressures.

Our Complete Engineering Service

Nicholsons deliver a complete engineering service from design and prototype manufacture to full volume production of standard, optimised and fully bespoke seals.

Our team of Engineers have significant experience in designing the optimum seal for a wide range of customer applications and use a variety of methods during the development process of a design. Our design engineering capabilities include:

– Non-Linear Finite Element Analysis (FEA)
– Stress, fatigue and buckling analysis
– Modelling of loads, pressure effects, modification of part geometry and cavity relaxation
– Qualification testing specific to customer requirements
– Physical testing and measurement including load vs deflection, pressure testing and fatigue testing

For more specific testing requirements, we work with third party consultants, Universities and test facilities.

Our Production Engineering Departments develop and manufacture rolling, press and forming tools, as well as the specialist machines required during the manufacturing process. Production Engineers identify the most controlled and cost-effective method of manufacture for each new part and continually focus on the development and improvement of precision forming and rolling methods to ensure that manufacturing methods continue to progress.

Our in-house production capabilities include welding, rolling, forming, laser-cutting, machining, heat treatment and chemical processing. Quality is key when designing and manufacturing parts for safety critical and extreme environments. Nicholsons hold ISO, AS and IA accreditations and are Nadcap approved for various special processes.

Nicholsons Engineering and Sales teams work closely with our customers to ensure projects are managed in line with, and exceed, customer expectations. We recommend that you involve us as early as possible in your design process to ensure that the most appropriate sealing solution is specified in terms of performance, cost and lead time.

Nicholsons Metal Seals

Customer requirements are becoming more demanding in terms of increased temperatures, leakage legislation, length of product life and the need for greater efficiencies. Our metal seals are able to cope with and support these demands.

Benefits of Metal Seals:

– Available in a wide range of sections, materials, heat treatments and finishes
– Able to cope with large thermal movement of hardware
– Can be adapted to suit multiple hardware arrangements
– No issues related to explosive decompression
– Long shelf life

Our core product range includes the following seal types:

– Corruseal Gasket
– C-Seal
– Boss Seal
– Corruplus
– E-Seal
– High Temperature Duct Seal*
– Sigma Seal
– Multi Bellow Seal (W-Seal/M-Seal)

The product groups fall into one of three main categories:

– Standard Parts: Corruseal Gasket, Boss Seal, Corruplus, High Temperature Duct Seal*
– Part numbers that can be built to a variety of specifications: C-Seal, E-Seal
– Seal sections that require design input: Sigma Seal, Multi Bellow Seal

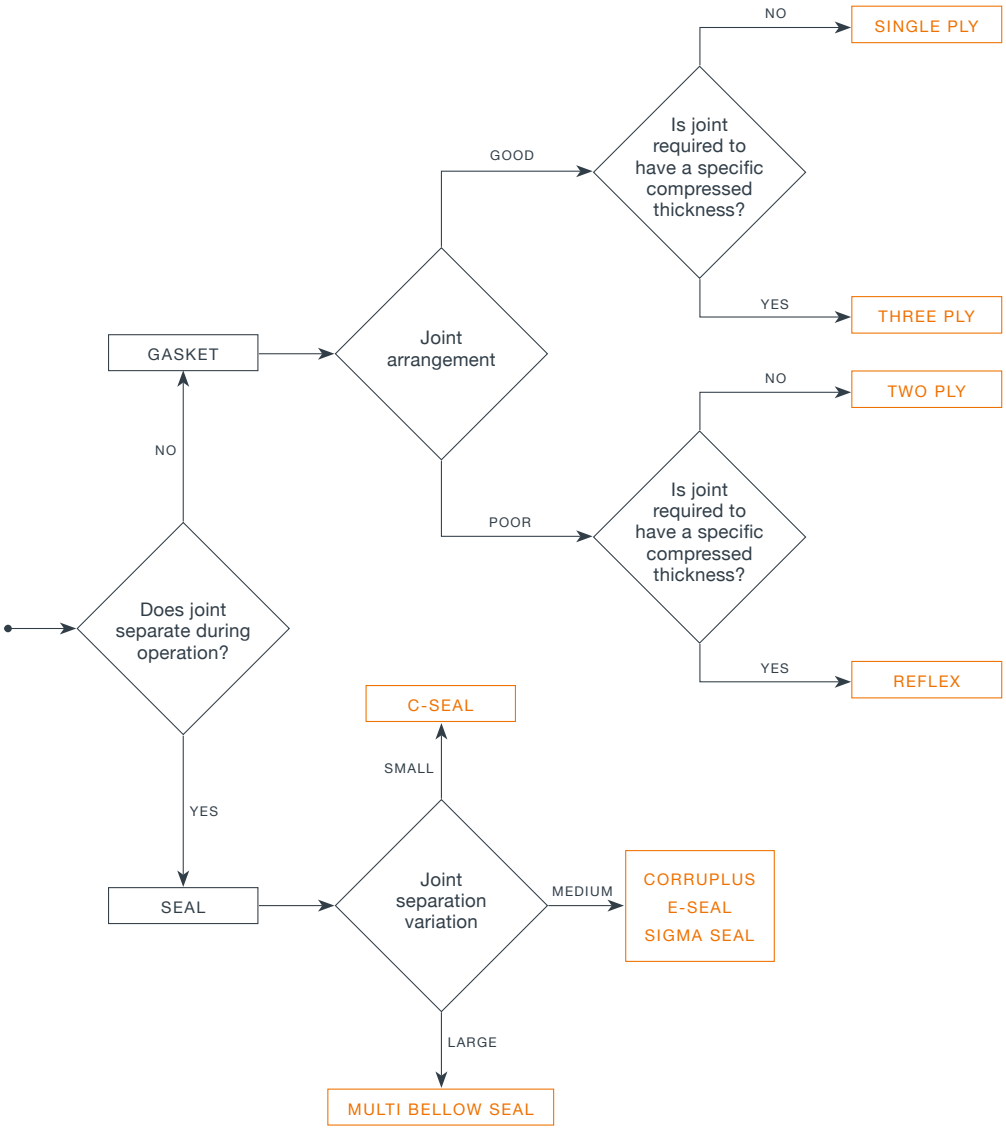
This catalogue includes Nicholsons core product groups, however, it does not cover the full range of sealing options that we have available. Each product type can be adapted to meet non-standard applications and product types not listed in this catalogue can also be specified. In these instances, contact one of our Design Engineers who will be able to assist you with your sealing requirements.

Nicholsons part numbers that have been designed for specific applications typically have either a ‘NA’, ‘NS’ or ‘S’ prefix.

*** See Imperial Catalogue for further details**

Seal Types

The choice of seal type is dependent on a variety of factors. The flow chart below guides you through some of the choices. This is a basic guide and a number of other factors may influence the choice of seal including temperature, pressure, clamping load and available space.



If other factors are influencing your seal selection or you wish to discuss your application, please consult us.

Seal Material

Material is selected according to product type and service requirements. Our range of material options are shown below for each core product group.

Nicholsons stock a wide range of standard material thicknesses in the material types listed as ‘available’. Other material types may be available on request in order to meet extreme operational requirements or specific customer needs. Please contact our Engineers for assistance in identifying the appropriate material for your needs.

		GASKETS			SEALS				
MATERIAL	PART NO. CODE	Corruseal	Two Ply	Reflexseal	C-Seal	Corruplus	Sigma Seal	E-Seal	Multi Bellow Seal
Aluminium	·	•	·	·	·	·	·	·	·
Cupro-nickel	·	•	•	·	·	·	·	·	·
Mild steel	·	•	•	·	·	·	·	·	·
Stainless steel	13	•	•	•	•	·	·	·	·
Inconel 600	·	•[2]	•[2]	•[2]	•	·[2]	·	·	·
Inconel 625	·	•	•	•	•	·	·	·	·
Inconel X750	12	·	·	·	•	·	•	•	•
Inconel 718	14	·	·	·	•[1]	•[1]	○[1]	•[1]	○[1]
Rene 41	·	·	·	·	•[2]	·	•[2]	•[2]	•[2]
Waspaloy	·	·	·	·	•	·	○[1]	•	○[1]
Haynes 25	·	·	·	·	•[2]	·	•[2]	•[2]	•[2]

- • Available
- ○ Dependant on temperature requirements
- [1] Preferred option
- [2] Available on request
- · Not available

Heat Treatment

Heat treatment is applied to create the required material properties and improve the performance of metal seals and gaskets. This can range from annealing to reduce the seating load for gasket materials, to precipitation hardening to enhance the spring and creep properties of seal materials. The heat treatment options that we recommend for each core product group are listed below.

	GASKETS			SEALS					
MATERIAL	Corruseal	Two Ply	Reflexseal	C-Seal (Face)	C-Seal (Axial)	Corruplus	Sigma Seal	E-Seal	Multi Bellow Seal
Aluminium	1	·	·	·	·	·	·	·	·
Cupro-nickel	1	1	·	·	·	·	·	·	·
Mild Steel	1	1	·	·	·	·	·	·	·
Stainless Steel	1,8	1,8	1,8	1	1	·	·	·	·
Inconel 600	1,8	1,8	1,8	1	1	·	·	·	·
Inconel 625	1,8	1,8	1,8	1	1	·	·	·	·
Inconel X750	·	·	·	1,2,3,4,9	1	·	2,3,4,9	4	2,3,4,9
Inconel 718	·	·	·	1,3,4,9	1	4	3,4,9	4	3,4,9
Rene 41	·	·	·	1,3,4	1	·	3,4	4	3,4
Waspaloy	·	·	·	1,6,7	1	·	6,7	6	6,7
Haynes 25	·	·	·	1	1	·	1	1	1

PART NO. CODE	HEAT TREATMENT
1	Work hardened
2	Short cycle precipitation
3	Long cycle precipitation
4	Solution and long cycle precipitation
5	Not used
6	Solution, stabilisation and long cycle precipitation
7	Stabilisation and long cycle precipitation
8	Annealed
9	Solution and precipitation (NACE)
·	Material not suitable for the product type

Option 4 is the only option available for catalogue E-Seals. Option 6, 7, 8 and 9 are not available for catalogue C-Seals.

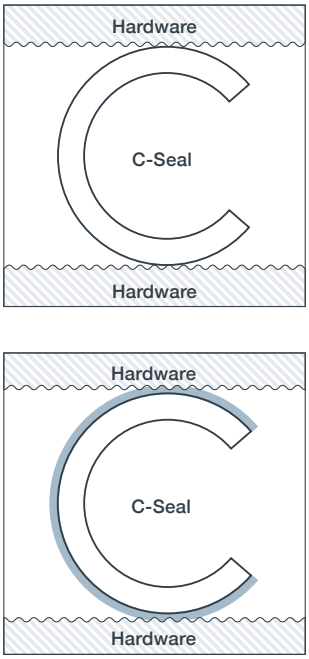
Finish

The surface properties of a metal seal can be modified by applying a plating or coating. The selection of the finish material is affected by the hardware surface finish, temperature of the application, cost restrictions and the chemical compatibility with the media and environment.

Plating improves sealing by filling in voids and surface irregularities in the hardware sealing surfaces. Coatings are also available to give high temperature protection and wear resistance.

The surface finish of the mating hardware must be considered when defining the thickness of the plating or coating. Generally, the rougher the cavity surface finish, the thicker the finish that is required for optimum sealing.

If you wish to discuss the most suitable finish material and thickness options for your application, please consult our Engineers.



Top: Unplated C-Seal
Bottom: Plated C-Seal

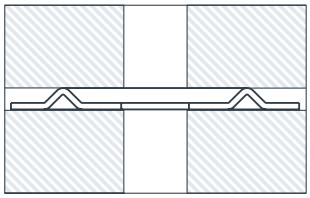
FINISH MATERIAL	PART NO. CODE	MAX. TEMPERATURE	COMMENTS
None	OP	N/A	N/A
Silver	SP	650°C/1200°F	Suitable for most applications. Anti-galling.
Nickel	NP	1200°C/2200°F	Use when temperature too high for silver. Not as soft as silver.
Copper	CP	930°C/1700°F	Specialist applications only. Good for electrical applications.
Gold	GP	930°C/1700°F	Inert. Expensive alternative to silver.
PTFE	PP	220°C/430°F	Inert. Not suitable for nuclear applications.
Indium	IP	80°C/180°F	Very soft. Low temperature only. Good for vacuum and/or cryogenic applications. Needs careful handling.
Tin	·	200°C/390°F	Very soft. Higher temperature alternative to indium. Good for vacuum and/or cryogenic applications. Needs careful handling.
Aluminium titanium nitride (AlTiN)	·	800°C/1450°F	Physical Vapour Deposition (PVD) coating. High temperature stability. Use for wear resistance.
Chromium nitride (CrN)	·	700°C/1300°F	Physical Vapour Deposition (PVD) coating. Self polishes. Work hardens. Use for wear resistance.
Tribaloy™	·	980°C/1800°F	Cobalt chromium molybdenum coating. Use for wear resistance.
Tribomet™	·	800°C/1450°F	Cobalt based coating containing chromium carbide. Use for wear resistance.

Note that these temperatures are guidance figures only.

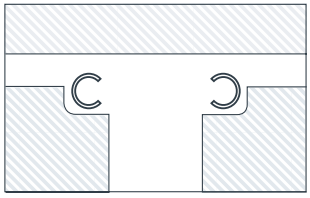
Installation Guidelines

The performance of a metal seal can be significantly affected by the hardware design, the hardware surface finish and the installation of the seal.

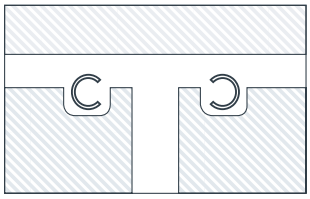
Corruseal gaskets are installed between two flat and parallel surfaces: either two flanges, or between a fitting and a flange, or under a bolt head.



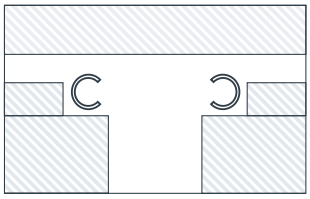
Other seals are often designed to operate in a cavity. Typical cavity arrangements are:



Counterbore



Groove



Retaining Plate

SURFACE FINISH

Surface finish of the mating hardware should ideally be as shown in the table below. The smoother the finish, the better the sealing. High temperature, high pressure and vacuum applications require smoother hardware surface finishes. A turned finish with a circular lay is preferred as it does not produce radial leak paths across the sealing line.

	GASKETS			SEALS					
FINISH (Ra)	Corruseal	Two Ply	Reflexseal	C-Seal	Corruplus	Corruplus	Sigma Seal	E-Seal	Multi Bellow Seal
Micrometres	0.8	0.8	0.8	1.6	0.8	0.4	0.8	0.8	0.8
Microinches	32	32	32	63	32	16	32	32	32
Roughness Number	N6	N6	N6	N7	N6	N5	N6	N6	N6
DIRECTION OF LAY	C	C	C	C	C	M.D	C	C	C

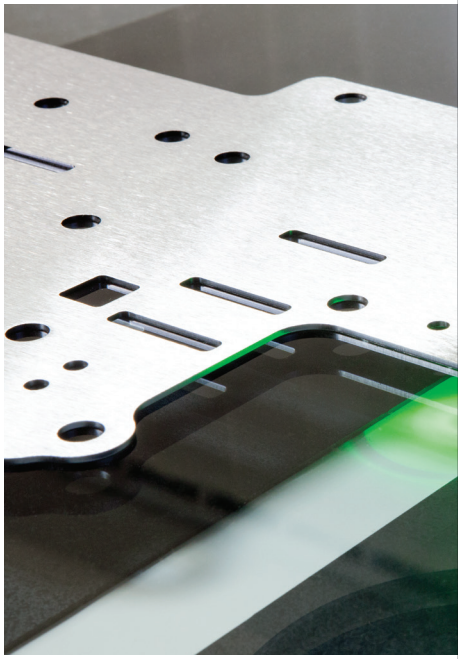
C Circular
M.D Multi-Directional

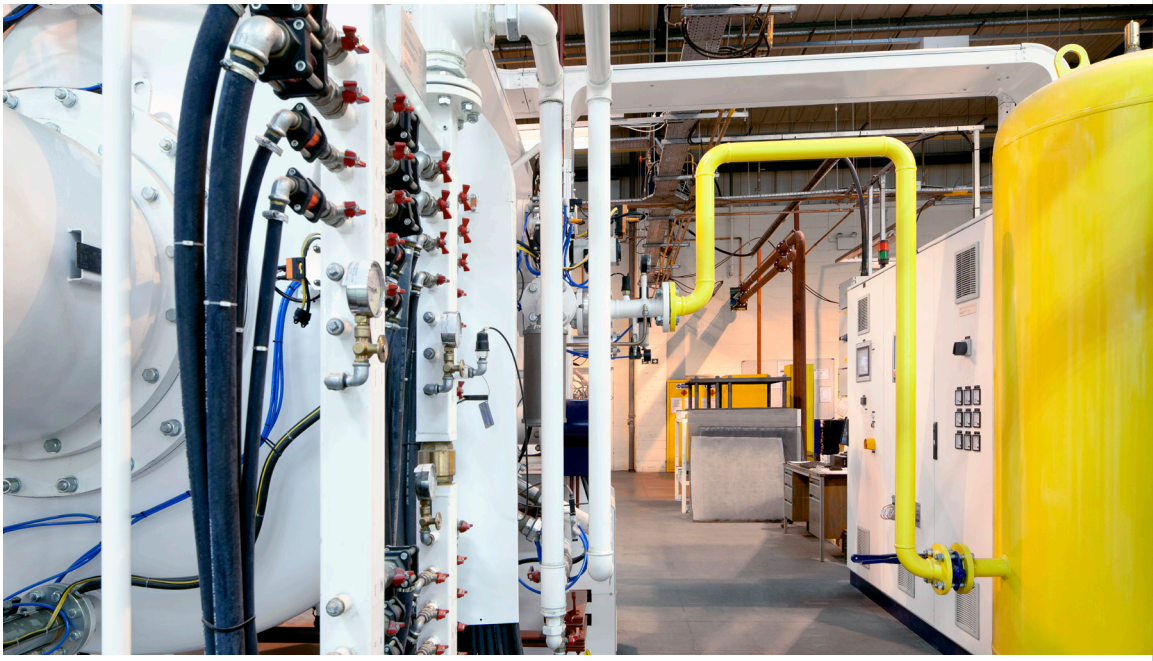
Note that finish values shown are ideal maximum values. Seals will work with values above these but sealing performance will be reduced.

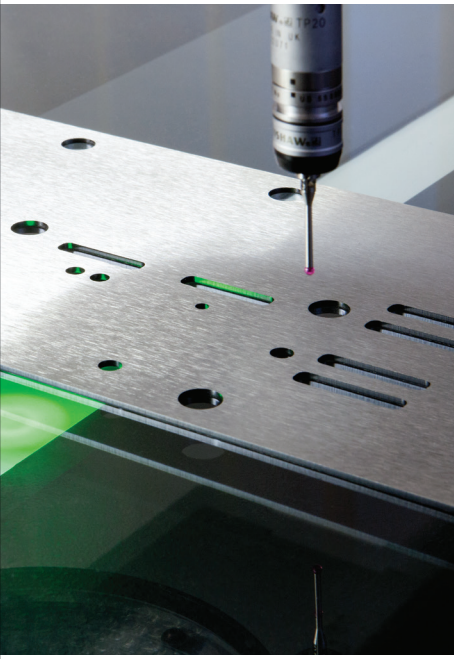
Handling Instructions

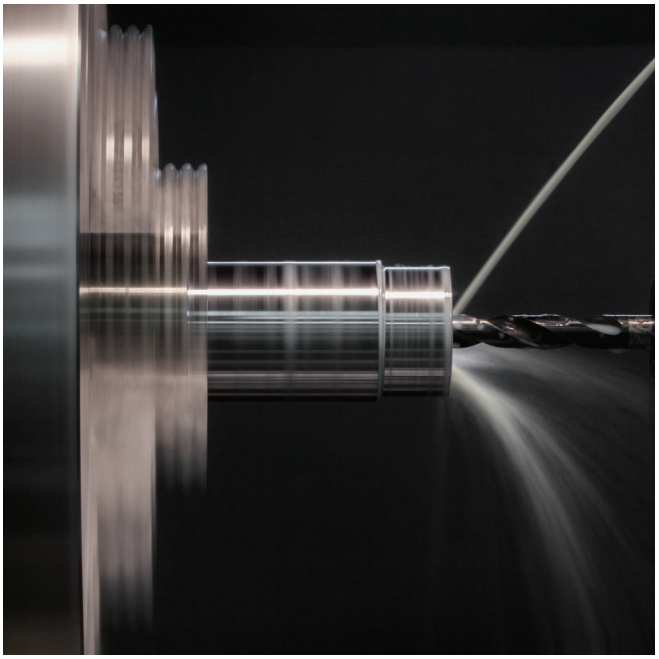
As both seal and plating can be easily damaged, we would recommend the following:

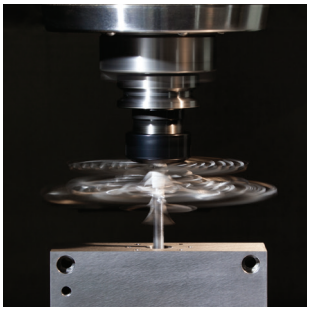
– The seals are protected during storage, i.e. not stored with other components as this will cause unnecessary contact and potential damage.
– The seal should remain in the original packaging until time of use, even on the assembly line.
– Ideally, measuring should be kept to a minimum as accidental damage can occur to the seal and more easily the plating (if applicable).
– The conditions when installing the seal should be clean, i.e. clean hands and uncontaminated hardware. The hardware should be scratch free and cleaned with acetone or equivalent prior to installing the seal.
– Place the seal carefully in the hardware, preventing scraping of the seal/plating and avoiding unnecessary sealing surface contact.
– Careful assembly of the mating hardware is required, with compression applied incrementally and uniformly (bolts tightened in a cross fashion) around the seal circumference.

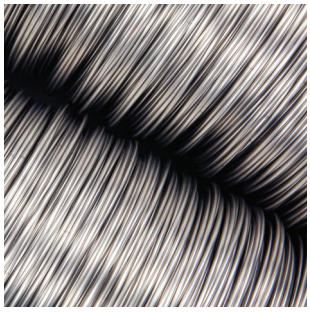












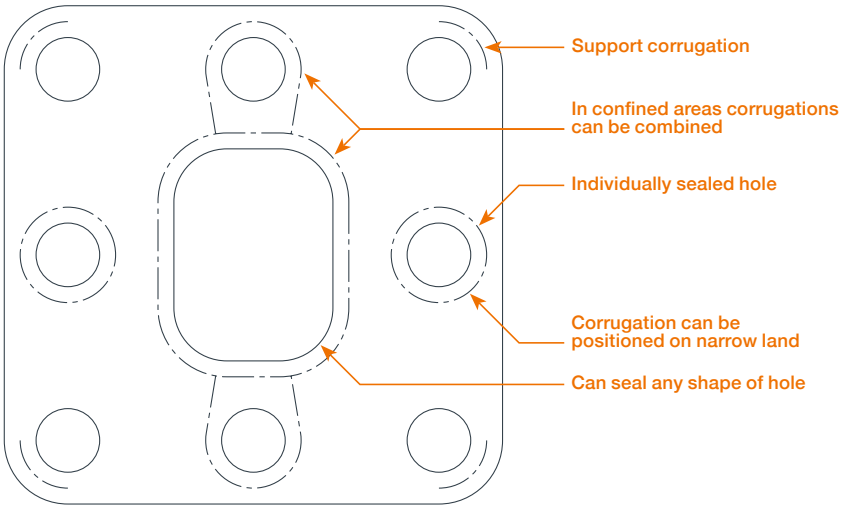
Gaskets

Product Description

Corruseal and Reflexseal are a range of single or multi ply embossed metal gaskets designed to be compressed between two parallel flanges to create a seal.

These products can be designed to suit the required customer application geometry and operating environments. Tight tolerances and complex sealing arrangements can be solved with gaskets and the Reflexseal pushes those limits further in its abilities to accommodate vibration and cavity thermal growth.

The Corruseal gasket is a metal crush type gasket which utilises a triangular corrugation form to concentrate the load available to those specific areas that require sealing. The corrugation is positioned around the aperture to be sealed. When used with thin or weak flanges, support corrugations can be placed around the bolt holes to prevent flange distortion and help the gasket to compress evenly.

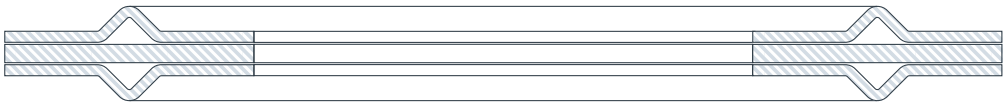


Corruseal can be offered in single ply, two ply and three ply options.

Corruseal – Single Ply
The single ply, single sealing corrugation design is the simplest and cheapest form of design. They are generally used between strong and flat flange faces, with an even and well distributed bolt load available.

Corruseal – Two Ply

Two ply Corruseal comprises two layers which are spot welded together. Offering 'open bore' sealing, this design can utilise the pressure it is sealing against to further enhance the gasket performance. If balance corrugations around bolt holes are required they are only formed in the top ply.



Corruseal – Three Ply

The three ply Corruseal design comprises a top and bottom layer which are mirror images of each other with a plain centre ply sandwiched between. The centre layer is often made from a different material to the top and bottom plys and its thickness can be varied to meet a specific gasket thickness. It is better suited than the single ply design for coping with flange distortion due to high temperatures, particularly if the bolting pattern is not ideal.

Reflexseal

The Nicholsons Reflexseal provides additional flexible sealing benefits by introducing a sealing device which incorporates established resilient metal sealing technology, similar to the Corruplus seal, into multi-layer gasket manufacture. The standard three ply Reflexseal design consists of top and bottom 'formed' plys which are situated either side of a plain centre ply which controls the amount of compression the gasket receives. The thickness of the centre can vary according to the specific application. The Reflexseal is ideal for those demanding applications involving high temperatures and pressures where the crush type gaskets have reached their limits.

Part Properties

– Able to seal high and low temperatures and pressures
– Few limitations on size, shape or flange width
– Can be designed to seal circular, irregular and multi aperture applications
– A range of standard corrugations are available
– Does not require a machined groove
– Does not stick to mating faces
– Good structural strength; will not blow out during use
– Low cost in both prototype and production runs

Gasket Specification

Nicholsons offer a range of Corruseal Gaskets which are approved standard parts for three bolt flanges. Further details for these part numbers, AGS 3870–AGS 3909, can be found on pages 23 to 24. Corruseal Sealing Washers for a range of standard bolt and thread sizes are listed on page 25. Further sizes are listed in our Imperial Catalogue.

Bespoke Gaskets can be designed for specific applications. In this instance, Nicholsons are able to work with you to develop a design for your requirements. Please contact us for assistance.

1. MATERIAL TYPE

Gasket materials are selected according to service requirements. Stainless steel is the most suitable option for many applications, however, Aluminium is most suitable for Aluminium flanges. A larger range of Gasket material options are listed on page 12.

Typical material thickness is within the range 0.178mm to 0.381mm.

AGS 3870–AGS 3889 are made from Cupro-Nickel 0.254mm thick.
AGS 3890–AGS 3909 are made from Stainless Steel 0.254mm thick.
Corruseal Sealing Washers are typically made from Stainless Steel 0.254mm thick.

2. HEAT TREATMENT

The available heat treatment options for Gaskets are listed on page 13.

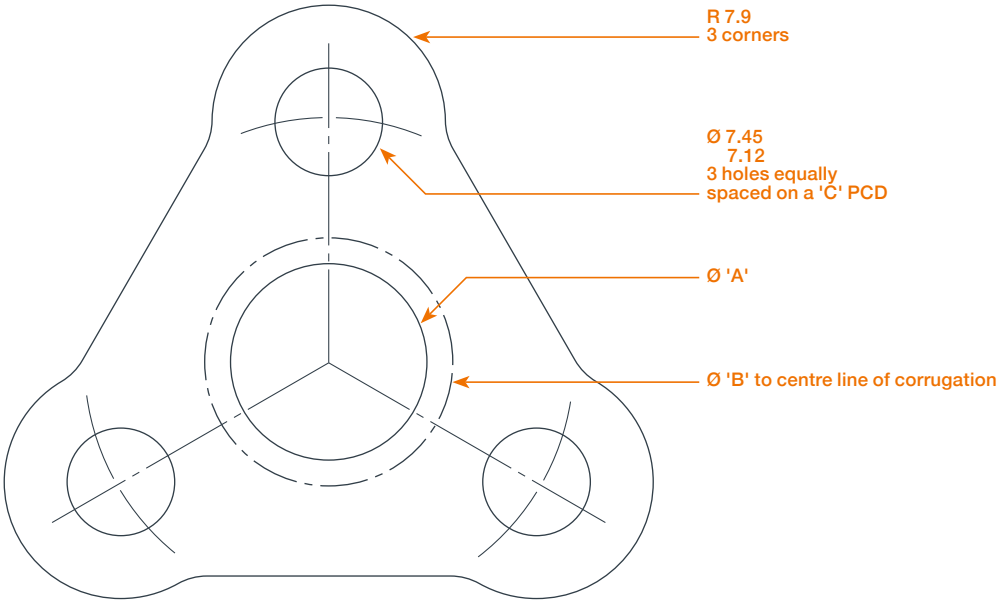
3. PLATING OR COATING

Uncoated Gaskets are suitable for use in many applications. However, there are applications where a plating or coating is applied to the gasket to improve performance. See page 14 for further details on the options available.

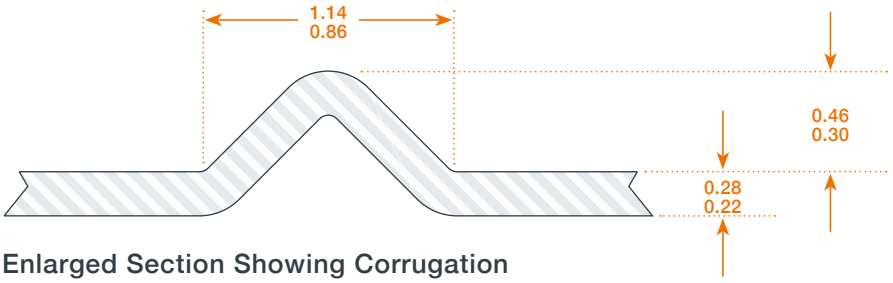
Not all plating or coating options are valid for Gaskets, please consult us if you require further information.

AGS 3870–AGS 3889 are uncoated.
AGS 3890–AGS 3909 are silver plated to a thickness of 0.010mm/0.015mm.
Corruseal Sealing Washers are uncoated.

Part List – AGS 3870–3889



AGS 3870–3889

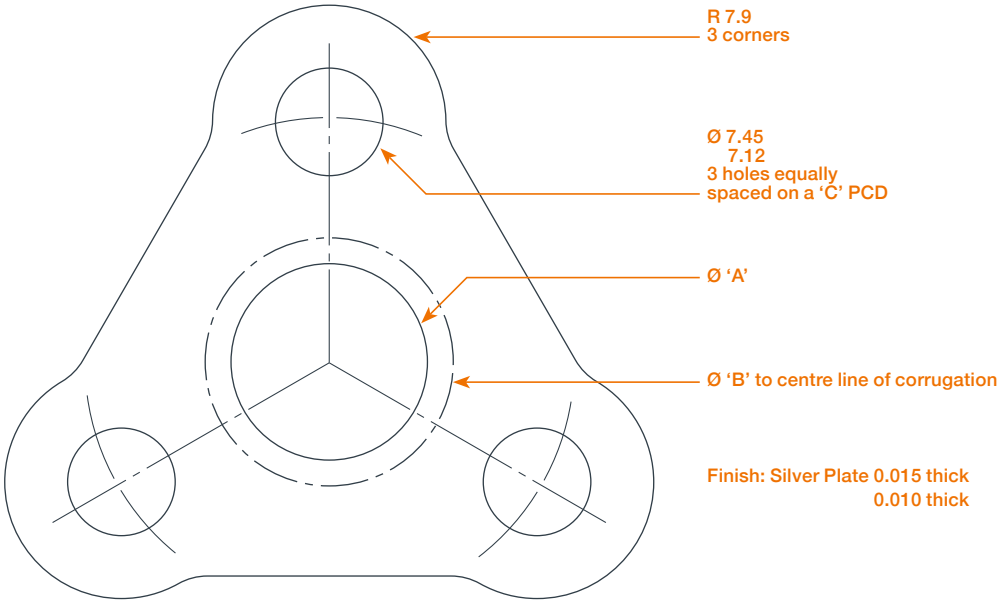


Enlarged Section Showing Corrugation

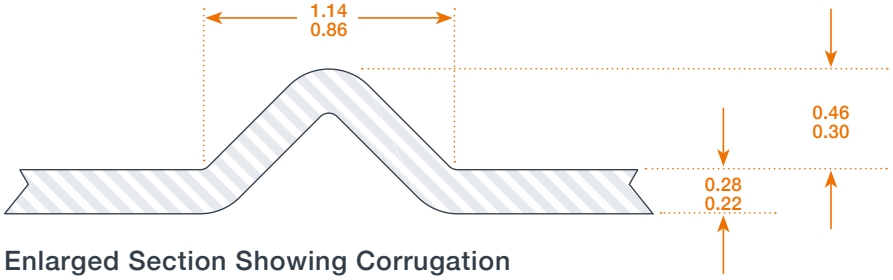
PART NUMBER	TUBE O.D	A	B	C
	NOM	+0.25 -0.08	+0.50 -0.50	.
AGS 3872	6	6.3	9.8	25.5
AGS 3873	8	7.8	11.3	27.0
AGS 3874	10	9.8	13.3	29.0
AGS 3876	12	13.3	16.8	32.5
AGS 3878	16	17.3	20.8	36.5
AGS 3880	20	19.3	22.8	40.0

Not all part numbers have been assigned

Part List – AGS 3890–3909



AGS 3890–3909

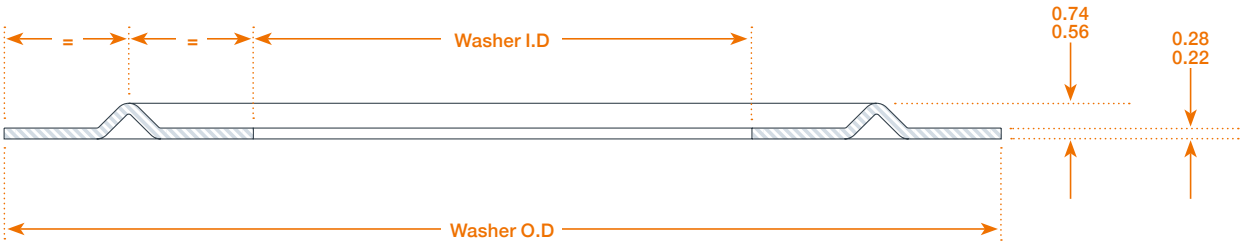


Enlarged Section Showing Corrugation

PART NUMBER	TUBE O.D	A	B	C
	NOM	+0.25 -0.08	+0.50 -0.50	.
AGS 3892	6	6.3	9.8	25.5
AGS 3893	8	7.8	11.3	27.0
AGS 3894	10	9.8	13.3	29.0
AGS 3896	12	13.3	16.8	32.5
AGS 3898	16	17.3	20.8	36.5
AGS 3900	20	19.3	22.8	40.0

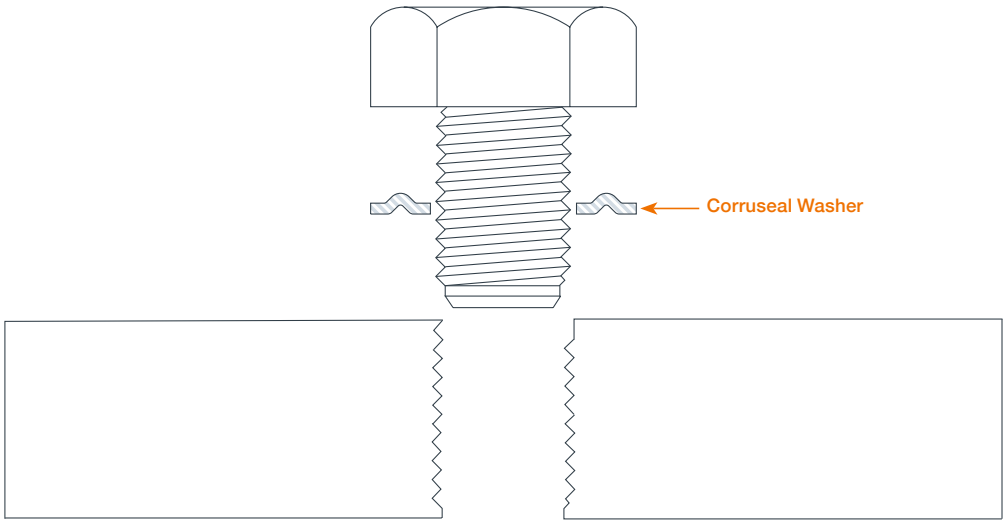
Gasket dimensions are prior to plating
Not all part numbers have been assigned

Part List – Corruseal Sealing Washers



Please contact us for non-standard materials and finishes

Corruseal Sealing Washer



PART NUMBER	BOLT SIZE	I.D		O.D	
		max.	min.	max.	min.
CP 603	M3	3.40	3.20	5.07	4.82
CP 604	M4	4.50	4.30	6.53	6.28
CP 605	M5	5.50	5.30	7.53	7.28
CP 606	M6	6.70	6.40	9.53	9.28
CP 608	M8	8.70	8.40	12.48	12.23
CP 610	M10	10.90	10.50	16.48	16.23
CP 612	M12	13.40	13.00	18.37	18.12
CP 616	M16	17.40	17.00	23.18	22.93
CP 620	M20	21.50	21.00	29.10	28.85
CP 624	M24	25.50	25.00	35.00	34.75
CP 630	M30	31.60	31.00	44.95	44.55
CP 636	M36	37.60	37.00	53.83	53.43

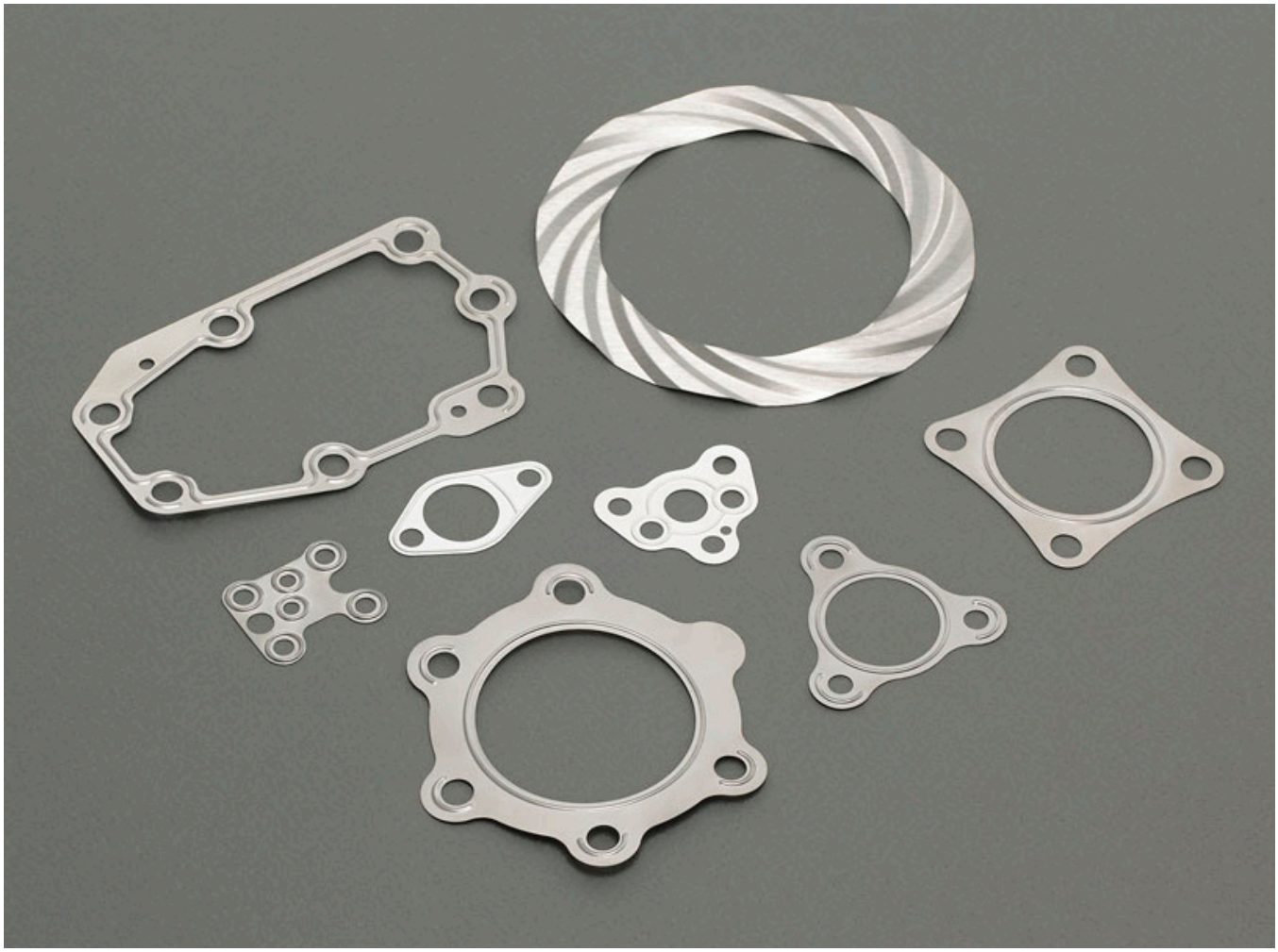
Load

The seating loads for various Gasket materials are shown below. The values shown are for 0.254mm thick material. Information is for guidance only as a number of factors can have an effect on the load including:

– Corrugation length
– Tolerances
– Variations in material thickness and properties
– Heat treatment
– Coatings and platings

The load values can be significantly altered when heat treatment is applied, for example annealing stainless steel after forming can reduce the load required by approximately 25%.

Seating Load – Gasket Materials

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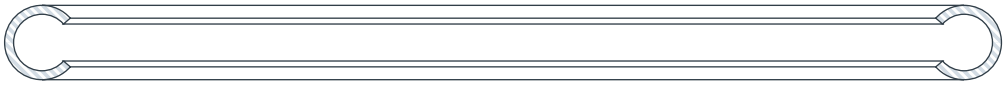
C-Seals

Product Description

C-Seals are designed to be compressed in a cavity of a controlled depth creating a seal. Three types of C-Seal are available to accomodate internal, external and axial pressure conditions.



CI Series – Internal Pressure

CE Series – External Pressure

CA Series – Axial Pressure

Part Properties

– Able to seal high and low temperatures and pressures
– Ideal for cryogenic and vacuum applications
– A large range of standard industry sizes are available
– Eleven standard seal sections are available
– Non-round seal shapes can be manufactured
– Commonly used in a large range of applications

C-Seal Specification

Nicholsons offer a range of standard C-Seal part numbers. The part number system enables the selection of the correct seal for each application and installation using the permutations of size, material, plating, etc. An explanation of the Nicholsons C-Seal part number system is shown below.

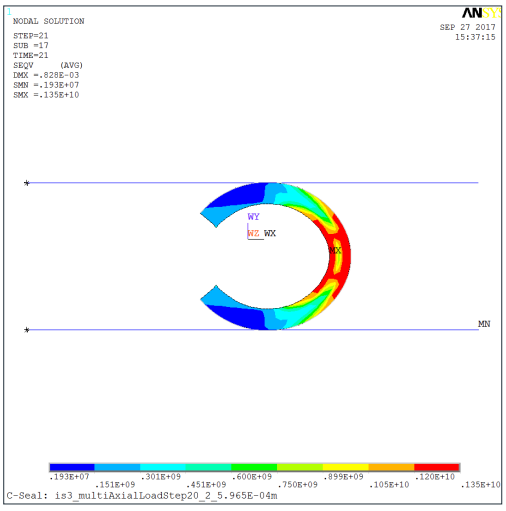
Bespoke C-Seals can be designed for specific applications where the use of a standard C-Seal would not be appropriate due to shape, diameter, material type, snap fit requirements etc. Please contact us if you require a bespoke design or need any assistance specifying a standard C-Seal part number for your application.

PART NUMBER

2. DIAMETER The seal and cavity diameters		4. MATERIAL TYPE The material type that we offer as standard		6. PLATING OR COATING The plating or coating type that we offer as standard	
XX	0000	00	00	0	XX	X
1. SEAL TYPE The type of seal and its orientation		3. SECTION AND MATERIAL THICKNESS The seal section height and the standard material thickness options available for each		5. HEAT TREATMENT The heat treatments that we offer as standard. Not all heat treatments are applicable to all materials	7. PLATING OR COATING THICKNESS The thickness of the plating or coating

1. SEAL TYPE

The first section specifies the seal type:
CI – Internal pressure face seal
CE – External pressure face seal
CA – Axial pressure face seal



2. DIAMETER

The second section specifies the seal and cavity diameter:
For CI seals, see pages 35 to 41 for details of sizes
For CE seals, see pages 42 to 48 for details of sizes
For CA seals, see pages 50 to 51 for details of sizes

3a. SECTION AND MATERIAL THICKNESS – CI AND CE SERIES

PART NO. CODE	NOMINAL SEAL FREE HEIGHT	ACTUAL SEAL FREE HEIGHT	MATERIAL THICKNESS		CAVITY DEPTH	CAVITY CORNER RADIUS R (max.)
01 02*	1.58	1.600 1.549	0.152 0.254	Thin Wall Standard	1.295 1.245	0.508
03 04*	2.36	2.388 2.337	0.254 0.381	Thin Wall Standard	1.956 1.854	0.762
05 06 07	3.18	3.200 3.150	0.254 0.381 0.508	Thin Wall Standard Thick Wall	2.642 2.515	1.143
08 09	4.75	4.801 4.699	0.381 0.508	Thin Wall Standard	3.937 3.785	1.778
10 11	6.35	6.426 6.274	0.508 0.635	Thin Wall Standard	5.207 5.055	2.286

3b. SECTION AND MATERIAL THICKNESS – CA SERIES

PART NO. CODE	NOMINAL SEAL FREE HEIGHT	SEAL AXIAL LENGTH (max.)	MATERIAL THICKNESS		CAVITY AXIAL LENGTH (min.)	CAVITY CORNER RADIUS R (max.)
01 02*	1.58	1.473	0.152 0.254	Thin Wall Standard	1.575	0.508
03 04*	2.36	2.159	0.254 0.381	Thin Wall Standard	2.362	0.762
05 06 07	3.18	2.794	0.254 0.381 0.508	Thin Wall Standard Thick Wall	3.048	1.143
08 09	4.75	4.064	0.381 0.508	Thin Wall Standard	4.445	1.778
10 11	6.35	5.588	0.508 0.635	Thin Wall Standard	6.096	2.286

*For Seals CI 0007, CE 0007, CA 0007, and smaller, standard material thickness is:
0.152 for 1.58 free height
0.254 for 2.36 free height

4. MATERIAL TYPE

The fourth section specifies the material types that are offered.

PART NO. CODE	MATERIAL	COMMENTS
11	Nimonic 80A	Obsolete material
12	Inconel X750	Standard material for C-Seals
13	Stainless Steel	·
14	Inconel 718	Standard material for C-Seals

5. HEAT TREATMENT

The fifth section specifies the heat treatments that are available as standard. Not all heat treatments are applicable to all materials.

PART NO. CODE	HEAT TREATMENT	COMMENTS
1	Work Hardened	Standard for Axial Pressure C-Seals
2	Short Cycle Precipitation Heat Treatment	Suitable for most Face C-Seals
3	Long Cycle Precipitation Heat Treatment	Consider for very high temperature and/or very arduous applications
4	Solution and Long Cycle Precipitation Heat Treatment	Consider for very high temperature and/or very arduous applications
5	Customer Specification	·

6. PLATING OR COATING

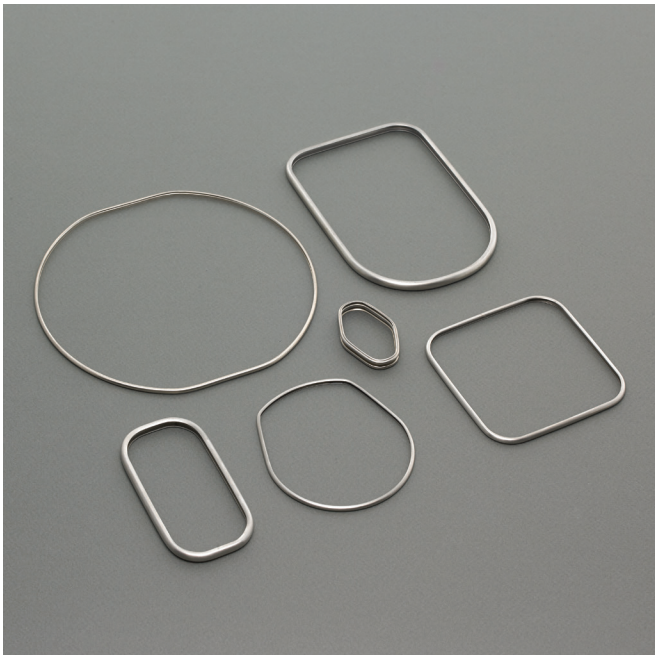
The sixth section specifies the plating or coating applied to the seal. Plating may be incomplete away from sealing surfaces.

PART NO. CODE	PLATING OR COATING	COMMENTS
OP	None	·
SP	Silver	Suitable for most applications
NP	Nickel	·
CP	Copper	·
GP	Gold	Very expensive
LP	Lead	Soft. Max. temp. 150°C/300°F
PP	PTFE	Max. temp. 220°C/430°F
IP	Indium	Very soft. Low temp only

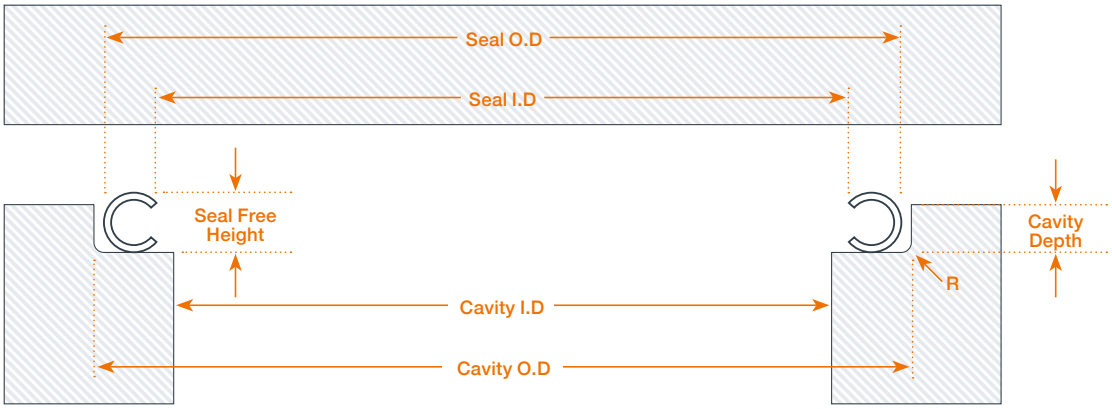
7. PLATING OR COATING THICKNESS

The seventh section specifies the plating or coating thickness.

PART NO. CODE	PLATING OR COATING THICKNESS	COMMENTS
A	0.0254 0.0127	Standard for Silver
B	0.0381 0.0254	.
C	0.0635 0.0381	.
D	0.0762 0.0508	.
E	Customer Specification	Customer Specification
O	None	Use with Unplated Seals



CI Series – Internal Pressure Face C-Seal



- Weld permitted
- Plating may be incomplete away from sealing surfaces
- Seal diameters are an average and can be out of round in excess of tolerances
- See the C-Seal introduction pages for details of seal free height, cavity depth and radius R

Internal C-Seal cavity

SEAL TYPE & DIAMETER	FREE HEIGHT 1.58				FREE HEIGHT 2.36				FREE HEIGHT 3.18			
	CAVITY		SEAL		CAVITY		SEAL		CAVITY		SEAL	
	I.D max.	O.D +0.025 -0.000	I.D min.	O.D +0.000 -0.051	I.D max.	O.D +0.025 -0.000	I.D min.	O.D +0.000 -0.051	I.D ·	O.D ·	I.D ·	O.D ·
CI 0002	3.226	6.350	3.429	6.096	·	·	·	·	·	·	·	·
CI 0532	4.013	7.137	4.216	6.883	·	·	·	·	·	·	·	·
CI 0003	5.080	8.255	5.334	8.001	5.080	9.525	5.334	9.246	·	·	·	·
CI 0732	5.867	9.042	6.121	8.788	5.867	10.312	6.121	10.033	·	·	·	·
CI 0004	6.655	9.830	6.909	9.576	6.655	11.100	6.909	10.820	·	·	·	·
CI 0932	7.442	10.617	7.696	10.363	7.442	11.887	7.696	11.608	·	·	·	·
CI 0005	8.255	11.430	8.509	11.176	8.255	12.700	8.509	12.421	·	·	·	·
CI 1132	9.042	12.217	9.296	11.963	9.042	13.487	9.296	13.208	·	·	·	·
CI 0006	9.830	13.005	10.084	12.751	9.830	14.275	10.084	13.995	·	·	·	·
CI 1332	10.617	13.792	10.871	13.538	10.617	15.062	10.871	14.783	·	·	·	·
CI 0007	11.430	14.605	11.684	14.351	11.430	15.875	11.684	15.596	·	·	·	·
CI 1532	12.217	15.392	12.471	15.138	12.217	16.662	12.471	16.383	·	·	·	·
CI 0008	13.005	16.180	13.259	15.926	13.005	17.450	13.259	17.170	·	·	·	·
CI 1732	13.792	16.967	14.046	16.713	13.792	18.237	14.046	17.958	·	·	·	·
CI 0009	14.605	17.780	14.859	17.526	14.605	19.050	14.859	18.771	·	·	·	·
CI 1932	15.392	18.567	15.646	18.313	15.392	19.837	15.646	19.558	·	·	·	·
CI 0010	16.180	19.355	16.434	19.101	16.180	20.625	16.434	20.345	·	·	·	·
CI 2132	16.967	20.142	17.221	19.888	16.967	21.412	17.221	21.133	·	·	·	·
CI 0011	17.780	20.995	18.034	20.701	17.780	22.225	18.034	21.946	·	·	·	·
CI 2332	18.567	21.742	18.821	21.488	18.567	23.012	18.821	22.733	·	·	·	·
	I.D max.	O.D +0.051 -0.000	I.D min.	O.D +0.000 -0.051	I.D max.	O.D +0.051 -0.000	I.D min.	O.D +0.000 -0.051	I.D max.	O.D +0.051 -0.000	I.D min.	O.D +0.000 -0.051
CI 0012	19.380	22.555	19.634	22.301	19.380	23.800	19.634	23.546	19.380	24.968	19.634	24.714

Seal dimensions are in millimetres and are prior to plating or coating

CI Series – Internal Pressure Face C-Seal

SEAL TYPE & DIAMETER	FREE HEIGHT 1.58				FREE HEIGHT 2.36				FREE HEIGHT 3.18			
	CAVITY		SEAL		CAVITY		SEAL		CAVITY		SEAL	
	I.D max.	O.D +0.051 -0.000	I.D min.	O.D +0.000 -0.051	I.D max.	O.D +0.051 -0.000	I.D min.	O.D +0.000 -0.051	I.D max.	O.D +0.051 -0.000	I.D min.	O.D +0.000 -0.051
CI 2532	20.168	23.343	20.422	23.089	20.168	24.587	20.422	24.333	20.168	25.756	20.422	25.502
CI 0013	20.980	24.155	21.234	23.901	20.980	25.400	21.234	25.146	20.980	26.568	21.234	26.314
CI 2732	21.768	24.943	22.022	24.689	21.768	26.187	22.022	25.933	21.768	27.356	22.022	27.102
CI 0014	22.555	25.730	22.809	25.476	22.555	26.975	22.809	26.721	22.555	28.143	22.809	27.889
CI 2932	23.343	26.518	23.597	26.264	23.343	27.762	23.597	27.508	23.343	28.931	23.597	28.677
CI 0015	24.155	27.330	24.409	27.076	24.155	28.575	24.409	28.321	24.155	29.743	24.409	29.489
CI 3132	24.943	28.118	25.197	27.864	24.943	29.362	25.197	29.108	24.943	30.531	25.197	30.277
CI 0016	25.730	28.905	25.984	28.651	25.730	30.150	25.984	29.896	25.730	31.318	25.984	31.064
CI 0017	27.330	30.505	27.584	30.251	27.330	31.750	27.584	31.496	27.330	32.918	27.584	32.664
CI 0018	28.905	32.080	29.159	31.826	28.905	33.325	29.159	33.071	28.905	34.493	29.159	34.239
CI 0019	30.505	33.680	30.759	33.426	30.505	34.925	30.759	34.671	30.505	36.093	30.759	35.839
CI 0020	32.080	35.255	32.334	35.001	32.080	36.500	32.334	36.246	32.080	37.668	32.334	37.414
CI 0021	33.680	36.855	33.934	36.601	33.680	38.100	33.934	37.846	33.680	39.268	33.934	39.014
CI 0022	35.255	38.430	35.509	38.176	35.255	39.675	35.509	39.421	35.255	40.843	35.509	40.589
CI 0023	36.855	40.030	37.109	39.776	36.855	41.275	37.109	41.021	36.855	42.443	37.109	42.189
CI 0024	38.430	41.605	38.684	41.351	38.430	42.850	38.684	42.596	38.430	44.018	38.684	43.764
CI 0025	40.030	43.205	40.284	42.951	40.030	44.450	40.284	44.196	40.030	45.618	40.284	45.364
CI 0026	41.605	44.780	41.859	44.526	41.605	46.025	41.859	45.771	41.605	47.193	41.859	46.939
CI 0027	43.205	46.380	43.459	46.126	43.205	47.625	43.459	47.371	43.205	48.793	43.459	48.539
CI 0028	44.780	47.955	45.034	47.701	44.780	49.200	45.034	48.946	44.780	50.368	45.034	50.114
CI 0029	46.380	49.555	46.634	49.301	46.380	50.800	46.634	50.546	46.380	51.968	46.634	51.714
	I.D max.	O.D +0.076 -0.000	I.D min.	O.D +0.000 -0.076	I.D max.	O.D +0.076 -0.000	I.D min.	O.D +0.000 -0.076	I.D max.	O.D +0.076 -0.000	I.D min.	O.D +0.000 -0.076
CI 0030	47.955	51.130	48.209	50.876	47.955	52.375	48.209	52.121	47.955	53.543	48.209	53.289
CI 0031	49.555	52.730	49.809	52.476	49.555	53.975	49.809	53.721	49.555	55.143	49.809	54.889
CI 0032	51.562	54.737	51.816	54.483	51.562	55.982	51.816	55.728	51.562	57.150	51.816	56.896
CI 0033	53.137	56.312	53.391	56.058	53.137	57.556	53.391	57.302	53.137	58.725	53.391	58.471
CI 0034	54.737	57.912	54.991	57.658	54.737	59.157	54.991	58.903	54.737	60.325	54.991	60.071
CI 0035	56.312	59.487	56.566	59.233	56.312	60.731	56.566	60.477	56.312	61.900	56.566	61.646
CI 0036	57.912	61.087	58.166	60.833	57.912	62.332	58.166	62.078	57.912	63.500	58.166	63.246
CI 0037	59.487	62.662	59.741	62.408	59.487	63.906	59.741	63.652	59.487	65.075	59.741	64.821
CI 0038	61.087	64.262	61.341	64.008	61.087	65.507	61.341	65.253	61.087	66.675	61.341	66.421
CI 0039	62.662	65.837	62.916	65.583	62.662	67.081	62.916	66.827	62.662	68.250	62.916	67.996
CI 0040	64.262	67.437	64.516	67.183	64.262	68.682	64.516	68.428	64.262	69.850	64.516	69.596
CI 0041	65.837	69.012	66.091	68.758	65.837	70.256	66.091	70.002	65.837	71.425	66.091	71.171
CI 0042	67.437	70.612	67.691	70.358	67.437	71.857	67.691	71.603	67.437	73.025	67.691	72.771
CI 0043	69.012	72.187	69.266	71.933	69.012	73.431	69.266	73.177	69.012	74.600	69.266	74.346
CI 0044	70.612	73.787	70.866	73.533	70.612	75.032	70.866	74.778	70.612	76.200	70.866	75.946

Seal dimensions are in millimetres and are prior to plating or coating

CI Series – Internal Pressure Face C-Seal

SEAL TYPE & DIAMETER	FREE HEIGHT 1.58				FREE HEIGHT 2.36				FREE HEIGHT 3.18			
	CAVITY		SEAL		CAVITY		SEAL		CAVITY		SEAL	
	I.D max.	O.D +0.076 -0.000	I.D min.	O.D +0.000 -0.076	I.D max.	O.D +0.076 -0.000	I.D min.	O.D +0.000 -0.076	I.D max.	O.D +0.076 -0.000	I.D min.	O.D +0.000 -0.076
CI 0045	72.187	75.362	72.441	75.108	72.187	76.606	72.441	76.352	72.187	77.775	72.441	77.521
CI 0046	73.787	76.708	74.041	76.454	73.787	78.207	74.041	77.953	73.787	79.375	74.041	79.121
CI 0047	75.362	78.283	75.616	78.029	75.362	79.781	75.616	79.527	75.362	80.950	75.616	80.696
CI 0048	76.962	79.883	77.216	79.629	76.962	81.382	77.216	81.128	76.962	82.550	77.216	82.296
	I.D max.	O.D +0.102 -0.000	I.D min.	O.D +0.000 -0.102	I.D max.	O.D +0.102 -0.000	I.D min.	O.D +0.000 -0.102	I.D max.	O.D +0.102 -0.000	I.D min.	O.D +0.000 -0.102
CI 0049	78.537	81.458	78.791	81.204	78.537	82.956	78.791	82.702	78.537	84.125	78.791	83.871
CI 0050	80.137	83.058	80.391	82.804	80.137	84.557	80.391	84.303	80.137	85.725	80.391	85.471
CI 0051	81.712	84.633	81.966	84.379	81.712	86.131	81.966	85.877	81.712	87.300	81.966	87.046
CI 0052	83.312	86.233	83.566	85.979	83.312	87.732	83.566	87.478	83.312	88.900	83.566	88.646
CI 0053	84.887	87.808	85.141	87.554	84.887	89.306	85.141	89.052	84.887	90.475	85.141	90.221
CI 0054	86.487	89.408	86.741	89.154	86.487	90.907	86.741	90.653	86.487	92.075	86.741	91.821
CI 0055	88.062	90.983	88.316	90.729	88.062	92.481	88.316	92.227	88.062	93.650	88.316	93.142
CI 0056	89.662	92.583	89.916	92.329	89.662	94.082	89.916	93.828	89.662	95.250	89.916	94.996

SEAL TYPE & DIAMETER	FREE HEIGHT 3.18				FREE HEIGHT 4.75				FREE HEIGHT 6.35			
	CAVITY		SEAL		CAVITY		SEAL		CAVITY		SEAL	
	I.D max.	O.D +0.102 -0.000	I.D min.	O.D +0.000 -0.102	I.D max.	O.D +0.102 -0.000	I.D min.	O.D +0.000 -0.102	I.D max.	O.D +0.102 -0.000	I.D min.	O.D +0.000 -0.102
CI 0057	91.237	96.825	91.491	96.571	91.237	99.365	91.491	99.111	·	·	·	·
CI 0058	92.837	98.425	93.091	98.171	92.837	100.965	93.091	100.711	·	·	·	·
CI 0059	94.412	100.000	94.666	99.746	94.412	102.540	94.666	102.286	·	·	·	·
CI 0060	96.012	101.600	96.266	101.346	96.012	104.140	96.266	103.886	·	·	·	·
CI 0061	97.587	103.175	97.841	102.921	97.587	105.715	97.841	105.461	·	·	·	·
CI 0062	99.187	104.775	99.441	104.521	99.187	107.315	99.441	107.061	·	·	·	·
CI 0063	100.762	106.350	101.016	106.096	100.762	108.890	101.016	108.636	·	·	·	·
CI 0064	102.997	108.585	103.251	108.331	102.997	111.125	103.251	110.871	102.997	113.665	103.251	113.411
CI 0065	104.572	110.160	104.826	109.906	104.572	112.700	104.826	112.446	104.572	115.240	104.826	114.986
CI 0066	106.172	111.760	106.426	111.506	106.172	114.300	106.426	114.046	106.172	116.840	106.426	116.586
CI 0067	107.747	113.335	108.001	113.081	107.747	115.875	108.001	115.621	107.747	118.415	108.001	118.161
CI 0068	109.347	114.935	109.601	114.681	109.347	117.475	109.601	117.221	109.347	120.015	109.601	119.761
CI 0069	110.922	116.510	111.176	116.256	110.922	119.050	111.176	118.796	110.922	121.590	111.176	121.336
CI 0070	112.522	118.110	112.776	117.856	112.522	120.650	112.776	120.396	112.522	123.190	112.776	122.936
CI 0071	114.097	119.685	114.351	119.431	114.097	122.225	114.351	121.971	114.097	124.765	114.351	124.511
CI 0072	115.697	121.285	115.951	121.031	115.697	123.825	115.951	123.571	115.697	126.365	115.951	126.111
CI 0073	117.272	122.860	117.526	122.606	117.272	125.400	117.526	125.146	117.272	127.940	117.526	127.686
CI 0074	118.872	124.460	119.126	124.206	118.872	127.000	119.126	126.746	118.872	129.540	119.126	129.286

Seal dimensions are in millimetres and are prior to plating or coating

CI Series – Internal Pressure Face C-Seal

SEAL TYPE & DIAMETER	FREE HEIGHT 3.18				FREE HEIGHT 4.75				FREE HEIGHT 6.35			
	CAVITY		SEAL		CAVITY		SEAL		CAVITY		SEAL	
	I.D max.	O.D +0.102 -0.000	I.D min.	O.D +0.000 -0.102	I.D max.	O.D +0.102 -0.000	I.D min.	O.D +0.000 -0.102	I.D max.	O.D +0.102 -0.000	I.D min.	O.D +0.000 -0.102
CI 0075	120.447	126.035	120.701	125.871	120.447	128.575	120.701	128.321	120.447	131.115	120.701	130.861
CI 0076	122.047	127.635	122.301	127.381	122.047	130.175	122.301	129.921	122.047	132.715	122.301	132.461
CI 0077	123.622	129.210	123.876	128.956	123.622	131.750	123.876	131.496	123.622	134.290	123.876	134.036
CI 0078	125.222	130.810	125.476	130.556	125.222	133.350	125.476	133.096	125.222	135.890	125.476	135.636
CI 0079	126.797	132.385	127.051	132.131	126.797	134.925	127.051	134.671	126.797	137.465	127.051	137.211
CI 0080	128.397	133.985	128.651	133.731	128.397	136.525	128.651	136.271	128.397	139.065	128.651	138.811
	I.D max.	O.D +0.152 -0.000	I.D min.	O.D +0.000 -0.152	I.D max.	O.D +0.152 -0.000	I.D min.	O.D +0.000 -0.152	I.D max.	O.D +0.152 -0.000	I.D min.	O.D +0.000 -0.152
CI 0081	129.972	135.560	130.226	135.306	129.972	138.100	130.226	137.846	129.972	140.640	130.226	140.386
CI 0082	131.572	137.160	131.826	136.906	131.572	139.700	131.826	139.446	131.572	142.240	131.826	141.986
CI 0083	133.147	138.735	133.401	138.481	133.147	141.275	133.401	141.021	133.147	143.815	133.401	143.561
CI 0084	134.747	140.335	135.001	140.081	134.747	142.875	135.001	142.621	134.747	145.415	135.001	145.161
CI 0085	136.322	141.910	136.576	141.656	136.322	144.450	136.576	144.196	136.322	146.990	136.576	146.736
CI 0086	137.922	143.510	138.176	143.256	137.922	146.050	138.176	145.796	137.922	148.590	138.176	148.336
CI 0087	139.497	145.085	139.751	144.831	139.497	147.625	139.751	147.371	139.497	150.165	139.751	149.911
CI 0088	141.097	146.685	141.351	146.431	141.097	149.225	141.351	148.971	141.097	151.765	141.351	151.511
CI 0089	142.672	148.260	142.926	148.006	142.672	150.800	142.926	150.546	142.672	153.340	142.926	153.086
CI 0090	144.272	149.860	144.526	149.606	144.272	152.400	144.526	152.146	144.272	154.940	144.526	154.686
CI 0092	147.447	153.035	147.701	152.781	147.447	155.575	147.701	155.321	147.447	158.115	147.701	157.861
CI 0094	150.622	156.210	150.876	155.956	150.622	158.750	150.876	158.496	150.622	161.290	150.876	161.036
CI 0096	153.797	159.385	154.051	159.131	153.797	161.925	154.051	161.671	153.797	164.465	154.051	164.211
CI 0098	156.972	162.560	157.226	162.306	156.972	165.100	157.226	164.846	156.972	167.640	157.226	167.386
CI 0100	160.147	165.735	160.401	165.481	160.147	168.275	160.401	168.021	160.147	170.815	160.401	170.561
CI 0102	163.322	168.910	163.576	168.656	163.322	171.450	163.576	171.196	163.322	173.990	163.576	173.736
CI 0104	166.497	172.085	166.751	171.831	166.497	174.625	166.751	174.371	166.497	177.165	166.751	176.911
CI 0106	169.672	175.260	169.926	175.006	169.672	177.800	169.926	177.546	169.672	180.340	169.926	180.086
CI 0108	172.847	178.435	173.101	178.181	172.847	180.975	173.101	180.721	172.847	183.515	173.101	183.261
CI 0110	176.022	181.610	176.276	181.356	176.022	184.150	176.276	183.896	176.022	186.690	176.276	186.436
CI 0112	179.197	184.785	179.451	184.531	179.197	187.325	179.451	187.071	179.197	189.865	179.451	189.611
	I.D max.	O.D +0.203 -0.000	I.D min.	O.D +0.000 -0.203	I.D max.	O.D +0.203 -0.000	I.D min.	O.D +0.000 -0.203	I.D max.	O.D +0.203 -0.000	I.D min.	O.D +0.000 -0.203
CI 0114	182.372	187.960	182.626	187.706	182.372	190.500	182.626	190.246	182.372	193.040	182.626	192.786
CI 0116	185.547	191.135	185.801	190.881	185.547	193.675	185.801	193.421	185.547	196.215	185.801	195.961
CI 0118	188.722	194.310	188.976	194.056	188.722	196.850	188.976	196.596	188.722	199.390	188.976	199.136
CI 0120	191.897	197.485	192.151	197.231	191.897	200.025	192.151	199.771	191.897	202.565	192.151	202.311
CI 0122	195.072	200.660	195.326	200.406	195.072	203.200	195.326	202.946	195.072	205.740	195.326	205.486
CI 0124	198.247	203.835	198.501	203.581	198.247	206.375	198.501	206.121	198.247	208.915	198.501	208.661

Seal dimensions are in millimetres and are prior to plating or coating

CI Series – Internal Pressure Face C-Seal

SEAL TYPE & DIAMETER	FREE HEIGHT 3.18				FREE HEIGHT 4.75				FREE HEIGHT 6.35			
	CAVITY		SEAL		CAVITY		SEAL		CAVITY		SEAL	
	I.D max.	O.D +0.203 -0.000	I.D min.	O.D +0.000 -0.203	I.D max.	O.D +0.203 -0.000	I.D min.	O.D +0.000 -0.203	I.D max.	O.D +0.203 -0.000	I.D min.	O.D +0.000 -0.203
CI 0126	201.422	207.010	201.676	206.756	201.422	209.550	201.676	209.296	201.422	212.090	201.676	211.836
CI 0128	204.597	210.185	204.851	209.931	204.597	212.725	204.851	212.471	204.597	215.265	204.851	215.011
CI 0130	207.772	213.360	208.026	213.106	207.772	215.900	208.026	215.646	207.772	218.440	208.026	218.186
CI 0132	210.947	216.535	211.201	216.281	210.947	219.075	211.201	218.821	210.947	221.615	211.201	221.361
CI 0134	214.122	219.710	214.376	219.456	214.122	222.250	214.376	221.996	214.122	224.790	214.376	224.536
CI 0136	217.297	222.885	217.551	222.631	217.297	225.425	217.551	225.171	217.297	228.965	217.551	227.711
CI 0138	220.472	226.060	220.726	225.806	220.472	228.600	220.726	228.346	220.472	231.140	220.726	230.886
CI 0140	223.647	229.235	223.901	228.981	223.647	231.775	223.901	231.521	223.647	234.315	223.901	234.061
CI 0142	226.822	232.410	227.076	232.156	226.822	234.950	227.076	234.696	226.822	237.490	227.076	237.236
CI 0144	229.997	235.585	230.251	235.331	229.997	238.125	230.251	237.871	229.997	240.665	230.251	240.411
CI 0146	233.172	238.760	233.426	238.506	233.172	241.300	233.426	241.046	233.172	243.840	233.426	243.586
CI 0148	236.347	241.935	236.601	241.681	236.347	244.475	236.601	244.221	236.347	247.015	236.601	246.761
CI 0150	239.522	245.110	239.776	244.856	239.522	247.650	239.776	247.396	239.522	250.190	239.776	249.936
CI 0152	242.697	248.285	242.951	248.031	242.697	250.825	242.951	250.571	242.697	253.365	242.951	253.111
CI 0154	245.872	251.460	246.126	251.206	245.872	254.000	246.126	253.746	245.872	256.540	246.126	256.286
CI 0156	249.047	254.635	249.301	254.381	249.047	257.175	249.301	256.921	249.047	259.715	249.301	259.461
CI 0158	252.222	257.810	252.476	257.556	252.222	260.350	252.476	260.096	252.222	262.890	252.476	262.636
CI 0160	255.397	260.985	255.651	260.731	255.397	263.525	255.651	263.271	255.397	266.065	255.651	265.811
	I.D max.	O.D +0.305 -0.000	I.D min.	O.D +0.000 -0.305	I.D max.	O.D +0.305 -0.000	I.D min.	O.D +0.000 -0.305	I.D max.	O.D +0.305 -0.000	I.D min.	O.D +0.000 -0.305
CI 0162	258.572	264.160	258.826	263.906	258.572	266.700	258.826	266.446	258.572	269.240	258.826	268.986
CI 0164	261.747	267.335	262.001	267.081	261.747	269.875	262.001	269.621	261.747	272.415	262.001	272.161
CI 0166	264.922	270.510	265.176	270.256	264.922	273.050	265.176	272.796	264.922	275.590	265.176	275.336
CI 0168	268.097	273.685	268.351	273.431	268.097	276.225	268.351	275.971	268.097	278.765	268.351	278.511
CI 0170	271.272	276.860	271.526	276.606	271.272	279.400	271.526	279.146	271.272	281.940	271.526	281.686
CI 0172	274.447	280.035	274.701	279.781	274.447	282.575	274.701	282.321	274.447	285.115	274.701	284.861
CI 0174	277.622	283.210	277.876	282.956	277.622	285.750	277.876	285.496	277.622	288.290	277.876	288.036
CI 0176	280.797	286.385	281.051	286.131	280.797	288.925	281.051	288.671	280.797	291.465	281.051	291.211
CI 0178	283.972	289.560	284.226	289.306	283.972	292.100	284.226	291.846	283.972	294.640	284.226	294.386
CI 0180	287.147	292.735	287.401	292.481	287.147	295.275	287.401	295.021	287.147	297.815	287.401	297.561
CI 0182	290.322	295.910	290.576	295.656	290.322	298.450	290.576	298.196	290.322	300.990	290.576	300.736
CI 0184	293.497	299.085	293.751	298.831	293.497	301.625	293.751	301.371	293.497	304.165	293.751	303.911
CI 0186	296.672	302.260	296.926	302.006	296.672	304.800	296.926	304.546	296.672	307.340	296.926	307.086
CI 0188	299.847	305.435	300.101	305.181	299.847	307.975	300.101	307.721	299.847	310.515	300.101	310.261
CI 0190	303.022	308.610	303.276	308.356	303.022	311.150	303.276	310.896	303.022	313.690	303.276	313.436
CI 0192	306.197	311.785	306.451	311.531	306.197	314.325	306.451	314.071	306.197	316.865	306.451	316.611
CI 0194	309.372	314.960	309.626	314.706	309.372	317.500	309.626	317.246	309.372	320.040	309.626	319.786
CI 0196	312.547	318.135	312.801	317.881	312.547	320.675	312.801	320.421	312.547	323.215	312.801	322.961

Seal dimensions are in millimetres and are prior to plating or coating

CI Series – Internal Pressure Face C-Seal

SEAL TYPE & DIAMETER	FREE HEIGHT 3.18				FREE HEIGHT 4.75				FREE HEIGHT 6.35			
	CAVITY		SEAL		CAVITY		SEAL		CAVITY		SEAL	
	I.D max.	O.D +0.305 -0.000	I.D min.	O.D +0.000 -0.305	I.D max.	O.D +0.305 -0.000	I.D min.	O.D +0.000 -0.305	I.D max.	O.D +0.305 -0.000	I.D min.	O.D +0.000 -0.305
CI 0198	315.722	321.310	315.976	321.056	315.722	323.850	315.976	323.596	315.722	326.390	315.976	326.136
CI 0200	318.897	324.485	319.151	324.231	218.897	327.025	319.151	326.771	318.897	329.565	319.151	329.311
CI 0202	322.072	327.660	322.326	327.406	322.072	330.200	322.326	329.946	322.072	332.740	322.326	332.486
CI 0204	325.247	330.835	325.501	330.581	325.247	333.375	325.501	333.121	325.247	335.915	325.501	335.661
CI 0206	328.422	334.010	328.676	333.756	328.422	336.550	328.676	336.296	328.422	339.090	328.676	338.836
CI 0208	331.597	337.185	331.851	336.931	331.597	339.725	331.851	339.471	331.597	342.265	331.851	342.011
CI 0210	334.772	340.360	335.026	340.106	334.772	342.900	335.026	342.646	334.772	345.440	335.026	345.186
CI 0212	337.947	343.535	338.201	343.281	337.947	346.075	338.201	345.821	337.947	348.615	338.201	348.361
CI 0214	341.122	346.710	341.376	346.456	341.122	349.250	341.376	348.996	341.122	351.790	341.376	351.536
CI 0216	344.297	349.885	344.551	349.631	344.297	352.425	344.551	352.171	344.297	354.965	344.551	354.711
CI 0218	347.472	353.060	347.726	352.806	347.472	355.600	347.726	355.364	347.472	358.140	347.726	357.886
CI 0220	350.647	356.235	350.901	355.981	350.647	358.775	350.901	358.521	350.647	361.315	350.901	361.061
CI 0222	353.822	359.410	354.076	359.156	353.822	361.950	354.076	361.696	353.822	364.490	354.076	364.236
CI 0224	356.997	362.585	357.251	362.331	356.997	365.125	357.251	364.871	356.997	367.665	357.251	367.411
CI 0226	360.172	365.760	360.426	365.506	360.172	368.300	360.426	368.046	360.172	370.840	360.426	370.586
CI 0228	363.347	368.935	363.601	368.681	363.347	371.475	363.601	371.221	363.347	374.015	363.601	373.761
CI 0230	366.522	372.110	366.776	371.856	366.522	374.650	366.776	374.396	366.522	377.190	366.776	376.936
CI 0232	369.697	375.285	369.951	375.031	369.697	377.825	369.951	377.571	369.697	380.365	369.951	380.111
CI 0234	372.872	378.460	373.126	378.206	372.872	381.000	373.126	380.746	372.872	383.540	373.126	383.286
CI 0236	376.047	381.635	376.301	381.381	376.047	384.175	376.301	383.921	376.047	386.715	376.301	386.461
CI 0238	379.222	384.810	379.476	384.556	379.222	387.350	379.476	387.096	379.222	389.890	379.476	389.636
CI 0240	382.397	387.985	382.651	387.731	382.397	390.525	382.651	390.271	382.397	393.065	382.651	392.811
	I.D max.	O.D +0.381 -0.000	I.D min.	O.D +0.000 -0.381	I.D max.	O.D +0.381 -0.000	I.D min.	O.D +0.000 -0.381	I.D max.	O.D +0.381 -0.000	I.D min.	O.D +0.000 -0.381
CI 0242	385.572	391.160	385.826	390.906	385.572	393.700	385.826	393.446	385.572	396.240	385.826	395.986
CI 0244	388.747	394.335	389.001	394.081	388.747	396.875	389.001	396.621	388.747	399.415	389.001	399.161
CI 0246	391.922	397.510	392.176	397.256	391.922	400.050	392.176	399.796	391.922	402.590	392.176	402.336
CI 0248	395.097	400.685	395.351	400.431	395.097	403.225	395.351	402.971	395.097	405.765	395.351	405.511
CI 0250	398.272	403.860	398.526	403.606	398.272	406.400	398.526	406.146	398.272	408.940	398.526	408.686
CI 0252	401.447	407.035	401.701	406.781	401.447	409.575	401.701	409.321	401.447	412.115	401.701	411.861
CI 0254	404.622	410.210	404.876	409.956	404.622	412.750	404.876	412.496	404.622	415.290	404.876	415.036
CI 0256	407.797	413.385	408.051	413.131	407.797	415.925	408.051	415.671	407.797	418.465	408.051	418.211
CI 0258	410.972	416.560	411.226	416.306	410.972	419.100	411.226	418.846	410.972	421.640	411.226	421.386
CI 0260	414.147	419.735	414.401	419.481	414.147	422.275	414.401	422.021	414.147	424.815	414.401	424.561
CI 0262	417.322	422.910	417.576	422.656	417.322	425.450	417.576	425.196	417.322	427.990	417.576	427.736
CI 0264	420.497	426.085	420.751	425.831	420.497	428.625	420.751	428.371	420.497	431.165	420.751	430.911
CI 0266	423.672	429.260	423.926	429.006	423.672	431.800	423.926	431.546	423.672	434.340	423.926	434.086
CI 0268	426.847	432.435	427.101	432.181	426.847	434.975	427.101	434.721	426.847	437.515	427.101	437.261

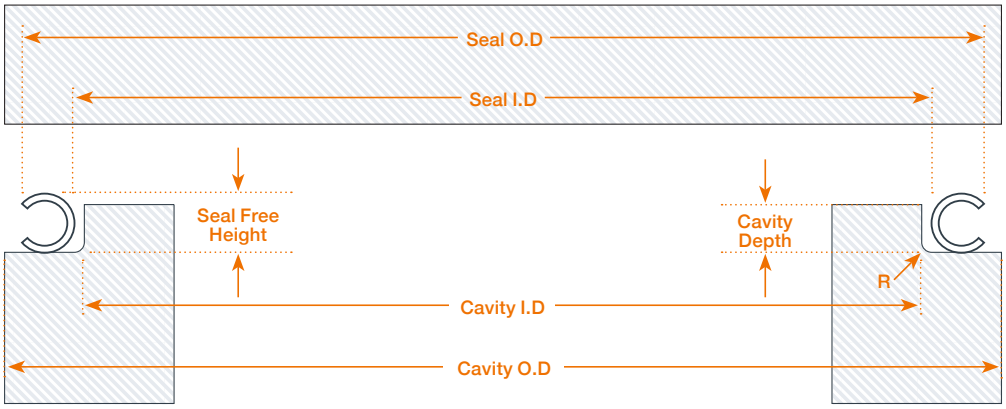
Seal dimensions are in millimetres and are prior to plating or coating

CI Series – Internal Pressure Face C-Seal

SEAL TYPE & DIAMETER	FREE HEIGHT 3.18				FREE HEIGHT 4.75				FREE HEIGHT 6.35			
	CAVITY		SEAL		CAVITY		SEAL		CAVITY		SEAL	
	I.D max.	O.D +0.381 -0.000	I.D min.	O.D +0.000 -0.381	I.D max.	O.D +0.381 -0.000	I.D min.	O.D +0.000 -0.381	I.D max.	O.D +0.381 -0.000	I.D min.	O.D +0.000 -0.381
CI 0270	430.022	435.610	430.276	435.356	430.022	438.150	430.276	437.896	430.022	440.690	430.276	440.436
CI 0272	433.197	438.785	433.451	438.531	433.197	441.325	433.451	441.071	433.197	443.865	433.451	443.611
CI 0274	436.372	441.960	436.626	441.706	436.372	444.500	436.626	444.246	436.372	447.040	436.626	446.786
CI 0276	439.547	445.135	439.801	444.881	439.547	447.675	439.801	447.421	439.547	450.215	439.801	449.961
CI 0278	442.722	448.310	442.976	448.056	442.722	450.850	442.976	450.596	442.722	453.390	442.976	453.136
CI 0280	445.897	451.485	446.151	451.231	445.897	454.025	446.151	453.771	445.897	456.565	446.151	456.311
CI 0282	449.072	454.660	449.326	454.406	449.072	457.200	449.326	456.946	449.072	459.740	449.326	459.486
CI 0284	452.247	457.835	452.501	457.581	452.247	460.375	452.501	460.121	452.247	462.915	452.501	462.661
CI 0286	455.422	461.010	455.676	460.756	455.422	463.550	455.676	463.296	455.422	466.090	455.676	465.836
CI 0288	458.597	464.185	458.851	463.931	458.597	466.725	458.851	466.471	458.597	469.265	458.851	469.011
CI 0290	461.772	467.360	462.026	467.106	461.772	469.900	462.026	469.646	461.772	472.440	462.026	472.186
CI 0292	464.947	470.535	465.201	470.281	464.947	473.075	465.201	472.821	464.947	475.615	465.201	475.361
CI 0294	468.122	473.710	468.376	473.456	468.122	476.250	468.376	475.996	468.122	478.790	468.376	478.536
CI 0296	471.297	476.885	471.551	476.631	471.297	479.425	471.551	479.171	471.297	481.965	471.551	481.711
CI 0298	474.472	480.060	474.726	479.806	474.472	482.600	474.726	482.346	474.472	485.140	474.726	484.886
CI 0300	477.647	483.235	477.901	482.981	477.647	485.775	477.901	485.521	477.647	488.315	477.901	488.061
CI 0302	480.822	486.410	481.076	486.156	480.822	488.950	481.076	488.696	480.822	491.490	481.076	491.236
CI 0304	483.997	489.585	484.251	489.331	483.997	492.125	484.251	491.871	483.997	494.665	484.251	494.411
CI 0306	487.172	492.760	487.426	492.506	487.172	495.300	487.426	495.046	487.172	497.840	487.426	497.586
CI 0308	490.347	495.935	490.601	495.681	490.347	498.475	490.601	498.221	490.347	501.015	490.601	500.761
CI 0310	493.522	499.110	493.776	498.856	493.522	501.650	493.776	501.396	493.522	504.190	493.776	503.936
CI 0312	496.697	502.285	496.951	502.031	496.697	504.825	496.951	504.571	496.697	507.365	496.951	507.111
CI 0314	499.872	505.460	500.126	505.206	499.872	508.000	500.126	507.746	499.872	510.540	500.126	510.286
CI 0316	503.047	508.635	503.301	508.381	503.047	511.175	503.301	510.921	503.047	513.715	503.301	513.461
CI 0318	506.222	511.810	506.476	511.556	506.222	514.350	506.476	514.096	506.222	516.890	506.476	516.636

Seal dimensions are in millimetres and are prior to plating or coating

CE Series – External Pressure Face C-Seal



– Weld permitted

– Plating may be incomplete away from sealing surfaces

– Seal diameters are an average and can be out of round in excess of tolerances

– See the C-Seal introduction pages for details of seal free height, cavity depth and radius R

External C-Seal Cavity

SEAL TYPE & DIAMETER	FREE HEIGHT 1.58				FREE HEIGHT 2.36				FREE HEIGHT 3.18			
	CAVITY		SEAL		CAVITY		SEAL		CAVITY		SEAL	
	I.D +0.000 -0.025	O.D min.	I.D +0.051 -0.000	O.D max.	I.D +0.000 -0.025	O.D min.	I.D +0.051 -0.000	O.D max.	I.D ·	O.D ·	I.D ·	O.D ·
CE 0002	2.946	6.198	3.251	5.918	·	·	·	·	·	·	·	·
CE 0532	3.734	6.985	4.039	6.706	·	·	·	·	·	·	·	·
CE 0003	4.547	7.798	4.851	7.518	4.547	9.296	4.851	8.915	·	·	·	·
CE 0732	5.309	8.585	5.613	8.306	5.309	10.084	5.613	9.677	·	·	·	·
CE 0004	6.096	9.373	6.401	9.093	6.096	10.871	6.401	10.465	·	·	·	·
CE 0932	6.883	10.160	7.188	9.881	6.883	11.659	7.188	11.252	·	·	·	·
CE 0005	7.696	10.973	8.001	10.693	7.696	12.471	8.001	12.065	·	·	·	·
CE 1132	8.484	11.760	8.788	11.481	8.484	13.259	8.788	12.852	·	·	·	·
CE 0006	9.271	12.548	9.576	12.268	9.271	14.046	9.576	13.640	·	·	·	·
CE 1332	10.058	13.335	10.363	13.056	10.058	14.834	10.363	14.427	·	·	·	·
CE 0007	10.871	14.148	11.176	13.868	10.871	15.646	11.176	15.240	·	·	·	·
CE 1532	11.659	14.935	11.963	14.656	11.659	16.434	11.963	16.027	·	·	·	·
CE 0008	12.446	15.723	12.751	15.443	12.446	17.221	12.751	16.815	·	·	·	·
CE 1732	13.233	16.510	13.538	16.231	13.233	18.009	13.538	17.602	·	·	·	·
CE 0009	14.046	17.323	14.351	17.043	14.046	18.821	14.351	18.415	·	·	·	·
CE 1932	14.834	18.110	15.138	17.831	14.834	19.609	15.138	19.202	·	·	·	·
CE 0010	15.621	18.898	15.926	18.618	15.621	20.396	15.926	19.990	·	·	·	·
CE 2132	16.408	19.685	16.713	19.406	16.408	21.184	16.713	20.777	·	·	·	·
CE 0011	17.196	20.498	17.501	20.218	17.196	21.996	17.501	21.565	·	·	·	·
CE 2332	18.009	21.285	18.313	21.006	18.009	22.784	18.313	22.377	·	·	·	·
	I.D +0.000 -0.051	O.D min.	I.D +0.051 -0.000	O.D max.	I.D +0.000 -0.051	O.D min.	I.D +0.051 -0.000	O.D max.	I.D +0.000 -0.051	O.D min.	I.D +0.051 -0.000	O.D max.
CE 0012	18.796	22.073	19.101	21.793	18.796	23.571	19.101	23.165	18.796	25.070	19.101	24.206

Seal dimensions are in millimetres and are prior to plating or coating

CE Series – External Pressure Face C-Seal

SEAL TYPE & DIAMETER	FREE HEIGHT 1.58				FREE HEIGHT 2.36				FREE HEIGHT 3.18			
	CAVITY		SEAL		CAVITY		SEAL		CAVITY		SEAL	
	I.D +0.000 -0.051	O.D min.	I.D +0.051 -0.000	O.D max.	I.D +0.000 -0.051	O.D min.	I.D +0.051 -0.000	O.D max.	I.D +0.000 -0.051	O.D min.	I.D +0.051 -0.000	O.D max.
CE 2532	19.583	22.860	19.888	22.581	19.583	24.359	19.888	23.952	19.583	25.857	19.888	24.994
CE 0013	20.396	23.673	20.701	23.393	20.396	25.171	20.701	24.765	20.396	26.670	20.701	25.806
CE 2732	21.184	24.460	21.488	24.181	21.184	25.959	21.488	25.552	21.184	27.457	21.488	26.594
CE 0014	21.971	25.248	22.276	24.968	21.971	26.746	22.276	26.340	21.971	28.245	22.276	27.381
CE 2932	22.758	26.035	23.063	25.756	22.758	27.534	23.063	27.127	22.758	29.032	23.063	28.042
CE 0015	23.571	26.848	23.876	26.568	23.571	28.346	23.876	27.940	23.571	29.845	23.876	28.981
CE 3132	24.359	27.635	24.663	27.356	24.359	29.134	24.663	28.727	24.359	30.632	24.663	29.769
CE 0016	25.146	28.423	25.451	28.143	25.146	29.921	25.451	29.515	25.146	31.420	25.451	30.556
CE 0017	26.746	30.023	27.051	29.743	26.746	31.521	27.051	31.115	26.746	33.020	27.051	32.156
CE 0018	28.321	31.598	28.626	31.318	28.321	33.096	28.626	32.690	28.321	34.595	28.626	33.731
CE 0019	29.947	33.198	30.251	32.918	29.947	34.696	30.251	34.315	29.947	36.220	30.251	35.357
CE 0020	31.496	34.773	31.801	34.493	31.496	36.271	31.801	35.865	31.496	37.770	31.801	36.906
CE 0021	33.096	36.373	33.401	36.093	33.096	37.871	33.401	37.465	33.096	39.370	33.401	38.506
CE 0022	34.671	37.948	34.976	37.668	34.671	39.446	34.976	39.040	34.671	40.945	34.976	40.081
CE 0023	36.271	39.548	36.576	39.268	36.271	41.046	36.576	40.640	36.271	42.545	36.576	41.681
CE 0024	37.846	41.123	38.151	40.843	37.846	42.621	38.151	42.215	37.846	44.120	38.151	43.256
CE 0025	39.446	42.723	39.751	42.443	39.446	44.221	39.751	43.815	39.446	45.720	39.751	44.856
CE 0026	41.021	44.298	41.326	44.018	41.021	45.796	41.326	45.390	41.021	47.295	41.326	46.431
CE 0027	42.621	45.898	42.926	45.618	42.621	47.396	42.926	46.990	42.621	48.895	42.926	48.031
CE 0028	44.196	47.473	44.501	47.193	44.196	48.971	44.501	48.565	44.196	50.470	44.501	49.606
CE 0029	45.796	49.073	46.101	48.793	45.796	50.571	46.101	50.165	45.796	52.070	46.101	51.206
	I.D +0.000 -0.076	O.D min.	I.D +0.076 -0.000	O.D max.	I.D +0.000 -0.076	O.D min.	I.D +0.076 -0.000	O.D max.	I.D +0.000 -0.076	O.D min.	I.D +0.076 -0.000	O.D max.
CE 0030	47.371	50.648	47.676	50.368	47.371	52.146	47.676	51.740	47.371	53.645	47.676	52.781
CE 0031	48.971	52.248	49.276	51.968	48.971	53.746	49.276	53.340	48.971	55.245	49.276	54.381
CE 0032	50.571	53.823	50.876	53.543	50.571	55.321	50.876	54.940	50.571	56.820	50.876	55.956
CE 0033	52.070	55.423	52.476	55.143	52.070	56.921	52.476	56.540	52.070	58.420	52.476	57.556
CE 0034	53.645	56.998	54.051	56.718	53.645	58.496	54.051	58.115	53.645	59.995	54.051	59.131
CE 0035	55.245	58.598	55.651	58.318	55.245	60.096	55.651	59.715	55.245	61.595	55.651	60.731
CE 0036	56.820	60.173	57.226	59.893	56.820	61.671	57.226	61.290	56.820	63.170	57.226	62.306
CE 0037	58.395	61.773	58.801	61.493	58.395	63.271	58.801	62.890	58.395	64.770	58.801	63.881
CE 0038	59.995	63.348	60.401	63.068	59.995	64.846	60.401	64.465	59.995	66.345	60.401	65.481
CE 0039	61.595	64.948	62.001	64.668	61.595	66.446	62.001	66.065	61.595	67.945	62.001	67.081
CE 0040	63.170	66.523	63.576	66.243	63.170	68.021	63.576	67.640	63.170	69.520	63.576	68.656
CE 0041	64.770	68.123	65.176	67.843	64.770	69.621	65.176	69.240	64.770	71.120	65.176	70.256
CE 0042	66.345	69.698	66.751	69.418	66.345	71.196	66.751	70.815	66.345	72.695	66.751	71.831
CE 0043	67.945	71.298	68.351	71.018	67.945	72.796	68.351	72.415	67.945	74.295	68.351	73.431
CE 0044	69.520	72.873	69.926	72.593	69.520	74.371	69.926	73.990	69.520	75.870	69.926	75.006

Seal dimensions are in millimetres and are prior to plating or coating

CE Series – External Pressure Face C-Seal

SEAL TYPE & DIAMETER	FREE HEIGHT 1.58				FREE HEIGHT 2.36				FREE HEIGHT 3.18			
	CAVITY		SEAL		CAVITY		SEAL		CAVITY		SEAL	
	I.D +0.000 -0.076	O.D min.	I.D +0.076 -0.000	O.D max.	I.D +0.000 -0.076	O.D min.	I.D +0.076 -0.000	O.D max.	I.D +0.000 -0.076	O.D min.	I.D +0.076 -0.000	O.D max.
CE 0045	71.120	74.473	71.526	74.193	71.120	75.971	71.526	75.590	71.120	77.470	71.526	76.606
CE 0046	72.695	76.048	73.101	75.768	72.695	77.546	73.101	77.165	72.695	79.045	73.101	78.181
CE 0047	74.295	77.648	74.701	77.368	74.295	79.146	74.701	78.765	74.295	80.645	74.701	79.781
CE 0048	75.870	79.223	76.276	78.943	75.870	80.721	76.276	80.340	75.870	82.220	76.276	81.356
	I.D +0.000 -0.102	O.D min.	I.D +0.102 -0.000	O.D max.	I.D +0.000 -0.102	O.D min.	I.D +0.102 -0.000	O.D max.	I.D +0.000 -0.102	O.D min.	I.D +0.102 -0.000	O.D max.
CE 0049	77.470	80.823	77.876	80.543	77.470	82.321	77.876	81.940	77.470	83.820	77.876	82.956
CE 0050	79.045	82.398	79.451	82.118	79.045	83.896	79.451	83.515	79.045	85.395	79.451	84.531
CE 0051	80.645	83.998	81.051	83.718	80.645	85.496	81.051	85.115	80.645	86.995	81.051	86.131
CE 0052	82.220	85.573	82.626	85.293	82.220	87.071	82.626	86.690	82.220	88.570	82.626	87.706
CE 0053	83.820	87.173	84.226	86.893	83.820	88.671	84.226	88.290	83.820	90.170	84.226	89.306
CE 0054	85.395	88.748	85.801	88.468	85.395	90.246	85.801	89.865	85.395	91.745	85.801	90.881
CE 0055	86.995	90.348	87.401	90.068	86.995	91.846	87.401	91.465	86.995	93.345	87.401	92.481
CE 0056	88.570	91.923	88.976	91.643	88.570	93.421	88.976	93.040	88.570	94.920	88.976	94.056

SEAL TYPE & DIAMETER	FREE HEIGHT 3.18				FREE HEIGHT 4.75				FREE HEIGHT 6.35			
	CAVITY		SEAL		CAVITY		SEAL		CAVITY		SEAL	
	I.D +0.000 -0.102	O.D min.	I.D +0.102 -0.000	O.D max.	I.D +0.000 -0.102	O.D min.	I.D +0.102 -0.000	O.D max.	I.D +0.000 -0.102	O.D min.	I.D +0.102 -0.000	O.D max.
CE 0057	90.170	96.520	90.576	95.656	90.170	99.543	90.576	98.222	·	·	·	·
CE 0058	91.745	98.095	92.151	97.231	91.745	101.117	92.151	99.797	·	·	·	·
CE 0059	93.345	99.695	93.751	98.831	93.345	102.718	93.751	101.397	·	·	·	·
CE 0060	94.920	101.270	95.326	100.406	94.920	104.292	95.326	102.972	·	·	·	·
CE 0061	96.520	102.870	96.926	102.006	96.520	105.893	96.926	104.572	·	·	·	·
CE 0062	98.095	104.445	98.501	103.581	98.095	107.467	98.501	106.147	·	·	·	·
CE 0063	99.695	106.045	100.101	105.181	99.695	109.068	100.101	107.747	·	·	·	·
CE 0064	101.270	107.620	101.676	106.756	101.270	110.642	101.676	109.322	101.270	113.665	101.676	111.887
CE 0065	102.768	109.220	103.276	108.356	102.768	112.243	103.276	110.922	102.768	115.265	103.276	113.487
CE 0066	104.343	110.795	104.851	109.931	104.343	113.817	104.851	112.497	104.343	116.840	104.851	115.062
CE 0067	105.943	112.395	106.451	111.531	105.943	115.418	106.451	114.097	105.943	118.440	106.451	116.662
CE 0068	107.581	113.970	108.026	113.106	107.518	116.992	108.026	115.672	107.518	120.015	108.026	118.237
CE 0069	109.118	115.570	109.626	114.706	109.118	118.593	109.626	117.272	109.118	121.615	109.626	119.837
CE 0070	110.693	117.145	111.201	116.281	110.693	120.167	111.201	118.847	110.693	123.190	111.201	121.412
CE 0071	112.293	118.745	112.801	117.881	112.293	121.768	112.801	120.447	112.293	124.790	112.801	123.012
CE 0072	113.868	120.320	114.376	119.456	113.868	123.342	114.376	122.022	113.868	126.365	114.376	124.587
CE 0073	115.468	121.920	115.976	121.056	115.468	124.943	115.976	123.622	115.468	127.965	115.976	126.187
CE 0074	117.043	123.495	117.551	122.631	117.043	126.517	117.551	125.197	117.043	129.540	117.551	127.762

Seal dimensions are in millimetres and are prior to plating or coating

CE Series – External Pressure Face C-Seal

SEAL TYPE & DIAMETER	FREE HEIGHT 3.18				FREE HEIGHT 4.75				FREE HEIGHT 6.35			
	CAVITY		SEAL		CAVITY		SEAL		CAVITY		SEAL	
	I.D +0.000 -0.102	O.D min.	I.D +0.102 -0.000	O.D max.	I.D +0.000 -0.102	O.D min.	I.D +0.102 -0.000	O.D max.	I.D +0.000 -0.102	O.D min.	I.D +0.102 -0.000	O.D max.
CE 0075	118.643	125.095	119.151	124.231	118.643	128.118	119.151	126.797	118.643	131.140	119.151	129.362
CE 0076	120.218	126.670	120.726	125.806	120.218	129.692	120.726	128.372	120.218	132.715	120.726	123.937
CE 0077	121.818	128.270	122.326	127.406	121.818	131.293	122.326	129.972	121.818	134.315	122.326	132.537
CE 0078	123.393	129.845	123.901	128.981	123.393	132.867	123.901	131.547	123.393	135.890	123.901	134.112
CE 0079	124.993	131.445	125.501	130.581	124.993	134.468	125.501	133.147	124.993	137.490	125.501	135.712
CE 0080	126.568	133.020	127.076	132.156	126.568	136.042	127.076	134.722	126.568	139.065	127.076	137.287
	I.D +0.000 -0.152	O.D min.	I.D +0.152 -0.000	O.D max.	I.D +0.000 -0.152	O.D min.	I.D +0.152 -0.000	O.D max.	I.D +0.000 -0.152	O.D min.	I.D +0.152 -0.000	O.D max.
CE 0081	128.168	134.620	128.676	133.756	128.168	137.643	128.676	136.322	128.168	140.665	128.676	138.887
CE 0082	129.743	136.195	130.251	135.331	129.743	139.217	130.251	137.897	129.743	142.240	130.251	140.462
CE 0083	131.343	137.795	131.851	136.931	131.343	140.818	131.851	139.497	131.343	143.840	131.851	142.062
CE 0084	132.918	139.370	133.426	138.506	132.918	142.392	133.426	141.072	132.918	145.415	133.426	143.637
CE 0085	134.518	140.970	135.026	140.106	134.518	143.993	135.026	142.672	134.518	147.015	135.026	145.237
CE 0086	136.093	142.545	136.601	141.681	136.093	145.567	136.601	144.247	136.093	148.590	136.601	146.812
CE 0087	137.693	144.145	138.201	143.281	137.693	147.168	138.201	145.847	137.693	150.190	138.201	148.412
CE 0088	139.268	145.720	139.776	144.856	139.268	148.742	139.776	147.422	139.268	151.765	139.776	149.987
CE 0089	140.868	147.320	141.376	146.456	140.868	150.343	141.376	149.022	140.868	153.365	141.376	151.587
CE 0090	142.443	148.895	142.951	148.031	142.443	151.917	142.951	150.597	142.443	154.940	142.951	153.162
CE 0092	145.618	152.070	146.126	151.206	145.618	155.092	146.126	153.772	145.618	158.115	146.126	156.337
CE 0094	148.793	155.245	149.301	154.381	148.793	158.267	149.301	156.947	148.793	161.290	149.301	159.512
CE 0096	151.968	158.420	152.476	157.556	151.968	161.442	152.476	160.122	151.968	164.465	152.476	162.687
CE 0098	155.143	161.595	155.651	160.731	155.143	164.617	155.651	163.297	155.143	167.640	155.651	165.862
CE 0100	158.318	164.770	158.826	163.906	158.318	167.792	158.826	166.472	158.318	170.815	158.826	169.037
CE 0102	161.493	167.945	162.001	167.081	161.493	170.967	162.001	169.647	161.493	173.990	162.001	172.212
CE 0104	164.668	171.120	165.176	170.256	164.668	174.142	165.176	172.822	164.668	177.165	165.176	175.387
CE 0106	167.843	174.295	168.351	173.431	167.843	177.317	168.351	175.997	167.843	180.340	168.351	178.562
CE 0108	171.018	177.470	171.526	176.606	171.018	180.492	171.526	179.172	171.018	183.515	171.526	181.737
CE 0110	174.193	180.645	174.701	179.781	174.193	183.667	174.701	182.347	174.193	186.690	174.701	184.912
CE 0112	177.368	183.820	177.876	182.956	177.368	186.842	177.876	185.522	177.368	189.865	177.876	188.087
	I.D +0.000 -0.203	O.D min.	I.D +0.203 -0.000	O.D max.	I.D +0.000 -0.203	O.D min.	I.D +0.203 -0.000	O.D max.	I.D +0.000 -0.203	O.D min.	I.D +0.203 -0.000	O.D max.
CE 0114	180.543	186.995	181.051	186.131	180.543	190.017	181.051	188.697	180.543	193.040	181.051	191.262
CE 0116	183.718	190.170	184.226	189.306	183.718	193.192	184.226	191.872	183.718	196.215	184.226	194.437
CE 0118	186.893	193.345	187.401	192.481	186.893	196.367	187.401	195.047	186.893	199.390	187.401	197.612
CE 0120	190.068	196.520	190.576	195.656	190.068	199.542	190.576	198.222	190.068	202.565	190.576	200.787
CE 0122	193.243	199.695	193.751	198.831	193.243	202.717	193.751	201.397	193.243	205.740	193.751	203.962
CE 0124	196.418	202.870	196.926	202.006	196.418	205.892	196.926	204.572	196.418	208.915	196.926	207.137

Seal dimensions are in millimetres and are prior to plating or coating

CE Series – External Pressure Face C-Seal

SEAL TYPE & DIAMETER	FREE HEIGHT 3.18				FREE HEIGHT 4.75				FREE HEIGHT 6.35			
	CAVITY		SEAL		CAVITY		SEAL		CAVITY		SEAL	
	I.D +0.000 -0.203	O.D min.	I.D +0.203 -0.000	O.D max.	I.D +0.000 -0.203	O.D min.	I.D +0.203 -0.000	O.D max.	I.D +0.000 -0.203	O.D min.	I.D +0.203 -0.000	O.D max.
CE 0126	199.593	206.045	200.101	205.181	199.593	209.067	200.101	207.747	199.593	212.090	200.101	210.312
CE 0128	202.768	209.220	203.276	208.356	202.768	212.242	203.276	210.922	202.768	215.265	203.276	213.487
CE 0130	205.943	212.395	206.451	211.531	205.943	215.417	206.451	214.097	205.943	218.440	206.451	216.662
CE 0132	209.118	215.570	209.626	214.706	209.118	218.592	209.626	217.272	209.118	221.615	209.626	219.837
CE 0134	212.293	218.745	212.801	217.881	212.293	221.767	212.801	220.447	212.293	224.790	212.801	223.012
CE 0136	215.468	221.920	215.976	221.056	215.468	224.942	215.976	223.622	215.468	227.965	215.976	226.187
CE 0138	218.643	225.095	219.151	224.231	218.643	228.117	219.151	226.797	218.643	231.140	219.151	229.362
CE 0140	221.818	228.270	222.326	227.406	221.818	231.292	222.326	229.972	221.818	234.315	222.326	232.537
CE 0142	224.993	231.445	225.501	230.581	224.993	234.467	225.501	233.147	224.993	237.490	225.501	235.712
CE 0144	228.168	234.620	228.676	233.756	228.168	237.642	228.676	236.322	228.168	240.665	228.676	238.887
CE 0146	231.343	237.795	231.851	236.931	231.343	240.817	231.851	239.497	231.343	243.840	231.851	242.062
CE 0148	234.518	240.970	235.026	240.106	234.518	243.992	235.026	242.672	234.518	247.015	235.026	245.237
CE 0150	237.693	244.145	238.201	243.281	237.693	247.167	238.201	245.847	237.693	250.190	238.201	248.412
CE 0152	240.868	247.230	241.376	246.456	240.868	250.342	241.376	249.022	240.868	253.365	241.376	251.587
CE 0154	244.043	250.495	244.551	249.631	244.043	253.517	244.551	252.197	244.043	256.540	244.551	254.762
CE 0156	247.218	253.670	247.726	252.806	247.218	256.692	247.726	255.372	247.218	259.715	247.726	257.937
CE 0158	250.393	256.845	250.901	255.981	250.393	259.867	250.901	258.547	250.393	262.890	250.901	261.112
CE 0160	253.568	260.020	254.076	259.156	253.568	263.042	254.076	261.722	253.568	266.065	254.076	264.287
	I.D +0.000 -0.305	O.D min.	I.D +0.305 -0.000	O.D max.	I.D +0.000 -0.305	O.D min.	I.D +0.305 -0.000	O.D max.	I.D +0.000 -0.305	O.D min.	I.D +0.305 -0.000	O.D max.
CE 0162	256.743	263.195	257.251	262.331	256.743	266.217	257.251	264.897	256.743	269.240	257.251	267.462
CE 0164	259.918	266.370	260.426	265.506	259.918	269.392	260.426	268.072	259.918	272.415	260.426	270.637
CE 0166	263.093	269.545	263.601	268.681	263.093	272.567	263.601	271.247	263.093	275.590	263.601	273.812
CE 0168	266.268	272.720	266.776	271.856	266.268	275.742	266.776	274.422	266.268	278.765	266.776	276.987
CE 0170	269.443	275.895	269.951	275.031	269.443	278.917	269.951	277.597	269.443	281.940	269.951	280.162
CE 0172	272.618	279.070	273.126	278.206	272.618	282.092	273.126	280.772	272.618	285.115	273.126	283.337
CE 0174	275.793	282.245	276.301	281.381	275.793	285.267	276.301	283.947	275.793	288.290	276.301	286.512
CE 0176	278.968	285.420	279.476	284.556	278.968	288.442	279.476	287.122	278.968	291.465	279.476	289.687
CE 0178	282.143	288.595	282.651	287.731	282.143	291.617	282.651	290.297	282.143	294.640	282.651	292.862
CE 0180	285.318	291.770	285.826	290.906	285.318	294.792	285.826	293.472	285.318	297.815	285.826	296.037
CE 0182	288.493	294.945	289.001	294.081	288.493	297.967	289.001	296.647	288.493	300.990	289.001	299.212
CE 0184	291.668	298.120	292.176	297.256	291.668	301.142	292.176	299.822	291.668	304.165	292.176	302.387
CE 0186	294.843	301.295	295.351	300.431	294.843	304.317	295.351	302.997	294.843	307.340	295.351	305.562
CE 0188	298.018	304.470	298.526	303.606	298.018	307.492	298.526	306.172	298.018	310.515	298.526	308.737
CE 0190	301.193	307.645	301.701	306.781	301.193	310.667	301.701	309.347	301.193	313.690	301.701	311.912
CE 0192	304.368	310.820	304.876	309.956	304.368	313.842	304.876	312.522	304.368	316.865	304.876	315.087
CE 0194	307.543	313.995	308.051	313.131	307.543	317.017	308.051	315.697	307.543	320.040	308.051	318.262
CE 0196	310.718	317.170	311.226	316.306	310.718	320.192	311.226	318.872	310.718	323.215	311.226	321.437

Seal dimensions are in millimetres and are prior to plating or coating

CE Series – External Pressure Face C-Seal

SEAL TYPE & DIAMETER	FREE HEIGHT 3.18				FREE HEIGHT 4.75				FREE HEIGHT 6.35			
	CAVITY		SEAL		CAVITY		SEAL		CAVITY		SEAL	
	I.D +0.000 -0.305	O.D min.	I.D +0.305 -0.000	O.D max.	I.D +0.000 -0.305	O.D min.	I.D +0.305 -0.000	O.D max.	I.D +0.000 -0.305	O.D min.	I.D +0.305 -0.000	O.D max.
CE 0198	313.893	320.345	314.401	319.481	313.893	323.367	314.401	322.047	313.893	326.390	314.401	324.612
CE 0200	317.068	323.520	317.576	322.656	317.068	326.542	317.576	325.222	317.068	329.565	317.576	327.787
CE 0202	320.243	326.695	320.751	325.831	320.243	329.717	320.751	328.397	320.243	332.740	320.751	330.962
CE 0204	323.418	329.870	323.926	329.006	323.418	332.892	323.926	331.572	323.418	335.915	323.926	334.137
CE 0206	326.593	333.045	327.101	332.181	326.593	336.067	327.101	334.747	326.593	339.090	327.101	337.312
CE 0208	329.768	336.220	330.276	335.356	329.768	339.242	330.276	337.922	329.768	342.265	330.276	340.487
CE 0210	332.943	339.395	333.451	338.531	332.943	342.417	333.451	341.097	332.943	345.440	333.451	343.662
CE 0212	336.118	342.570	336.626	341.706	336.118	345.592	336.626	344.272	336.118	348.615	336.626	346.837
CE 0214	339.293	345.745	339.801	344.881	339.293	348.767	339.801	347.447	339.293	351.790	339.801	350.012
CE 0216	342.468	348.920	342.976	348.056	342.468	351.942	342.976	350.622	342.468	354.965	342.976	353.187
CE 0218	345.643	352.095	346.151	351.231	345.643	355.117	346.151	353.797	345.643	358.140	346.151	356.362
CE 0220	348.818	355.270	349.326	354.406	348.818	358.292	349.326	356.972	348.818	361.315	349.326	359.537
CE 0222	351.993	358.445	352.501	357.581	351.993	361.467	352.501	360.147	351.993	364.490	352.501	362.712
CE 0224	355.168	361.620	355.676	360.756	355.168	364.642	355.676	363.322	355.168	367.665	355.676	365.887
CE 0226	358.343	364.795	358.851	363.931	358.343	367.817	358.851	366.497	358.343	370.840	358.851	369.062
CE 0228	361.518	367.970	362.026	367.106	361.518	370.992	362.026	369.672	361.518	374.015	362.026	372.237
CE 0230	364.693	371.145	365.201	370.281	364.693	374.167	365.201	372.847	364.693	377.190	365.201	375.412
CE 0232	367.868	374.320	368.376	373.456	367.868	377.342	368.376	376.022	367.868	380.365	368.376	378.587
CE 0234	371.043	377.495	371.551	376.631	371.043	380.517	371.551	379.197	371.043	383.540	371.551	381.762
CE 0236	374.218	380.670	374.726	379.806	374.218	383.692	374.726	382.372	374.218	386.715	374.726	384.937
CE 0238	377.393	383.845	377.901	382.981	377.393	386.867	377.901	385.547	377.393	389.890	377.901	388.112
CE 0240	380.568	387.020	381.076	386.156	380.568	390.042	381.076	388.722	380.568	393.065	381.076	391.287
	I.D +0.000 -0.381	O.D min.	I.D +0.381 -0.000	O.D max.	I.D +0.000 -0.381	O.D min.	I.D +0.381 -0.000	O.D max.	I.D +0.000 -0.381	O.D min.	I.D +0.381 -0.000	O.D max.
CE 0242	383.743	390.195	384.251	389.331	383.743	393.217	384.251	391.897	383.743	396.240	384.251	394.462
CE 0244	386.918	393.370	387.426	392.506	386.918	396.392	387.426	395.072	386.918	399.415	387.426	397.637
CE 0246	390.093	396.545	390.601	395.681	390.093	399.567	390.601	398.247	390.093	402.590	390.601	400.812
CE 0248	393.268	399.720	393.776	398.856	393.268	402.742	393.776	401.422	393.268	405.765	393.776	403.987
CE 0250	396.443	402.895	396.951	402.031	396.443	405.917	396.951	404.597	396.443	408.940	396.951	407.162
CE 0252	399.618	406.070	400.126	405.206	399.618	409.092	400.126	407.772	399.618	412.115	400.126	410.337
CE 0254	402.793	409.245	403.301	408.381	402.793	412.267	403.301	410.947	402.793	415.290	403.301	413.512
CE 0256	405.968	412.420	406.476	411.556	405.968	415.442	406.476	414.122	405.968	418.465	406.476	416.687
CE 0258	409.143	415.595	409.651	414.731	409.143	418.617	409.651	417.297	409.143	421.640	409.651	419.862
CE 0260	412.318	418.770	412.826	417.906	412.318	421.792	412.826	420.472	412.318	424.815	412.826	423.037
CE 0262	415.493	421.945	416.001	421.081	415.493	424.967	416.001	423.647	415.493	427.990	416.001	426.212
CE 0264	418.668	425.120	419.176	424.256	418.668	428.142	419.176	426.822	418.668	431.165	419.176	429.387
CE 0266	421.843	428.295	422.351	427.431	421.843	431.317	422.351	429.997	421.843	434.340	422.351	432.562
CE 0268	425.018	431.470	425.526	430.606	425.018	434.492	425.526	433.172	425.018	437.515	425.526	435.737

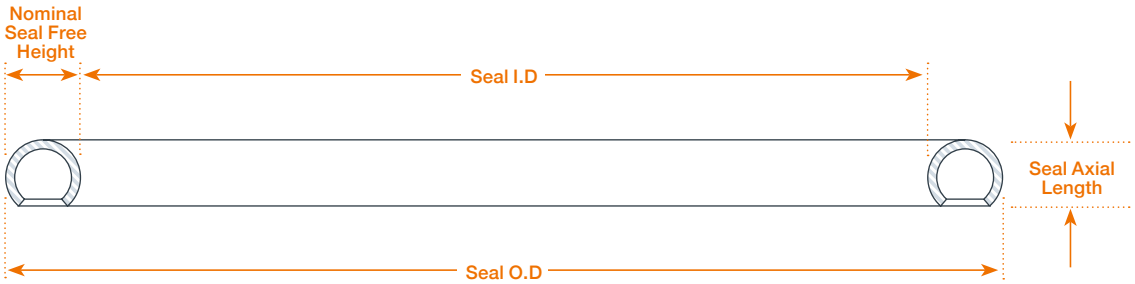
Seal dimensions are in millimetres and are prior to plating or coating

CE Series – External Pressure Face C-Seal

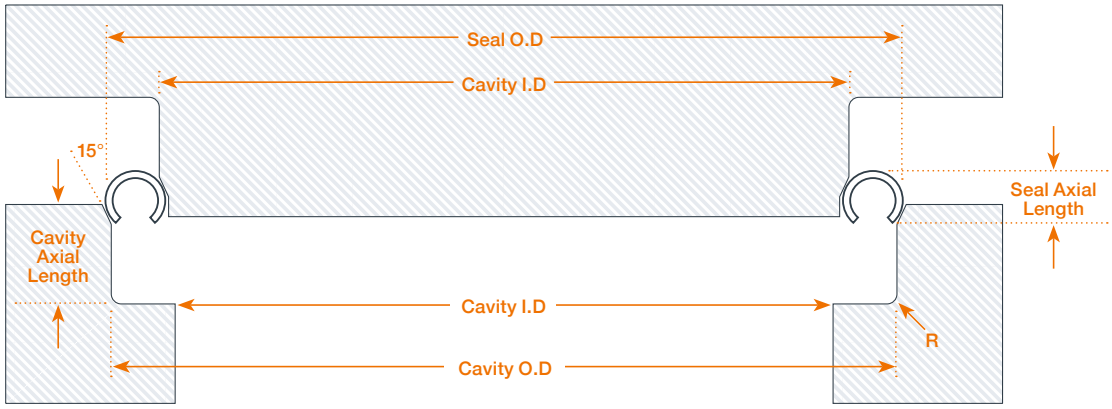
SEAL TYPE & DIAMETER	FREE HEIGHT 3.18				FREE HEIGHT 4.75				FREE HEIGHT 6.35			
	CAVITY		SEAL		CAVITY		SEAL		CAVITY		SEAL	
	I.D +0.000 -0.381	O.D min.	I.D +0.381 -0.000	O.D max.	I.D +0.000 -0.381	O.D min.	I.D +0.381 -0.000	O.D max.	I.D +0.000 -0.381	O.D min.	I.D +0.381 -0.000	O.D max.
CE 0270	428.193	434.645	428.701	433.781	428.193	437.667	428.701	436.347	428.193	440.690	428.701	438.912
CE 0272	431.368	437.820	431.876	436.956	431.368	440.842	431.876	439.522	431.368	443.865	431.876	442.087
CE 0274	434.543	440.995	435.051	440.131	434.543	444.017	435.051	442.697	434.543	447.040	435.051	445.262
CE 0276	437.718	444.170	438.226	443.306	437.718	447.192	438.226	445.872	437.718	450.215	438.226	448.437
CE 0278	440.893	447.345	441.401	446.481	440.893	450.367	441.401	449.047	440.893	453.390	441.401	451.612
CE 0280	444.068	450.520	444.576	449.656	444.068	453.542	444.576	452.222	444.068	456.565	444.576	454.787
CE 0282	447.243	453.695	447.751	452.831	447.243	456.717	447.751	455.397	447.243	459.740	447.751	457.962
CE 0284	450.418	456.870	450.926	456.006	450.418	459.892	450.926	458.572	450.418	462.915	450.926	461.137
CE 0286	453.593	460.045	454.101	459.181	452.593	463.067	454.101	461.747	453.593	466.090	454.101	464.312
CE 0288	456.768	463.220	457.276	462.356	456.768	466.242	457.276	464.922	456.768	469.265	457.276	467.487
CE 0290	459.943	466.395	460.451	465.531	459.943	469.417	460.451	468.097	459.943	472.440	460.451	470.662
CE 0292	463.118	469.570	463.626	468.706	463.118	472.592	463.626	471.272	463.118	475.615	463.626	473.837
CE 0294	466.293	472.745	466.801	471.881	466.293	475.767	466.801	474.447	466.293	478.790	466.801	477.012
CE 0296	469.468	475.920	469.976	475.056	469.468	478.942	469.976	477.622	469.468	481.965	469.976	480.187
CE 0298	472.643	479.095	473.151	478.231	472.643	482.117	473.151	480.797	472.643	485.140	473.151	483.362
CE 0300	475.818	482.270	476.326	481.406	475.818	485.292	476.326	483.972	475.818	488.315	476.326	486.537
CE 0302	478.993	485.445	479.501	484.581	478.993	488.467	479.501	487.147	478.993	491.490	479.501	489.712
CE 0304	482.168	488.620	482.676	487.756	482.168	491.642	482.676	490.322	482.168	494.665	482.676	492.887
CE 0306	485.343	491.795	485.851	490.931	485.343	494.817	485.851	493.497	485.343	497.840	485.851	496.062
CE 0308	488.518	494.970	489.026	494.106	488.518	497.992	489.026	496.672	488.518	501.015	489.026	499.237
CE 0310	491.693	498.145	492.201	497.281	491.693	501.167	492.201	499.847	491.693	504.190	492.201	502.412
CE 0312	494.868	501.320	495.376	500.456	494.868	504.342	495.376	503.022	494.868	507.365	495.376	505.587
CE 0314	498.043	504.495	498.551	503.631	498.043	507.517	498.551	506.197	498.043	510.540	498.551	508.762
CE 0316	501.218	507.670	501.726	506.806	501.218	510.692	501.726	509.372	501.218	513.715	501.726	511.937
CE 0318	504.393	510.845	504.901	509.981	504.393	513.867	504.901	512.547	504.393	516.890	504.901	515.112

Seal dimensions are in millimetres and are prior to plating or coating

CA Series – Axial C-Seal



Axial C-Seal



Axial C-Seal Cavity

- Weld permitted
- Plating may be incomplete away from sealing surfaces
- Seal diameters are an average and can be out of round in excess of tolerances
- See the C-Seal introduction pages for details of seal free height, cavity depth and radius R

CA Series – Axial C-Seal

SEAL TYPE & DIAMETER	FREE HEIGHT 1.58				FREE HEIGHT 2.36				FREE HEIGHT 3.18			
	CAVITY		SEAL		CAVITY		SEAL		CAVITY		SEAL	
	I.D +0.000 -0.025	O.D +0.025 -0.000	I.D +0.025 -0.025	O.D +0.025 -0.025	I.D +0.000 -0.025	O.D +0.025 -0.000	I.D +0.025 -0.025	O.D +0.025 -0.025	I.D +0.000 -0.025	O.D +0.025 -0.000	I.D +0.025 -0.025	O.D +0.025 -0.025
CA 0002	3.175	6.299	3.099	6.375	3.175	7.874	3.099	7.950	·	·	·	·
CA 0003	4.750	7.874	4.674	7.950	4.750	9.474	4.674	9.550	·	·	·	·
CA 0004	6.350	9.474	6.274	9.550	6.350	11.049	6.274	11.125	·	·	·	·
CA 0005	7.925	11.049	7.849	11.125	7.925	12.649	7.849	12.725	·	·	·	·
CA 0006	9.525	12.649	9.449	12.725	9.525	14.224	9.449	14.300	9.525	15.824	9.449	15.900
CA 0007	11.100	14.224	11.024	14.300	11.100	15.824	11.024	15.900	11.100	17.399	11.024	17.475
CA 0008	12.700	15.824	12.624	15.900	12.700	17.399	12.624	17.475	12.700	18.999	12.624	19.075
CA 0009	14.275	17.399	14.199	17.475	14.275	18.999	14.199	19.075	14.275	20.574	14.199	20.650
CA 0010	15.875	18.999	15.799	19.075	15.875	20.574	15.799	20.650	15.875	22.174	15.799	22.250
CA 0011	17.450	20.574	17.374	20.650	17.450	22.174	17.374	22.250	17.450	23.749	17.374	23.825
CA 0012	19.050	22.174	18.974	22.250	19.050	23.749	18.974	23.825	19.050	25.349	18.974	25.425
CA 0013	20.625	23.749	20.549	23.825	20.625	25.349	20.549	25.425	20.625	26.924	20.549	27.000
CA 0014	22.225	25.349	22.149	25.425	22.225	26.924	22.149	27.000	22.225	28.524	22.149	28.600
CA 0015	23.800	26.924	23.724	27.000	23.800	28.524	23.724	28.600	23.800	30.099	23.724	30.175
CA 0016	25.400	28.524	25.324	28.600	25.400	30.099	25.324	30.175	25.400	31.699	25.324	31.775
CA 0018	28.575	31.699	28.499	31.775	28.575	33.274	28.499	33.350	28.575	34.874	28.499	34.950
CA 0020	31.750	34.874	31.674	34.950	31.750	36.449	31.674	36.525	31.750	38.049	31.674	38.125
CA 0022	34.925	38.049	34.849	38.125	34.925	39.624	34.849	39.700	34.925	41.224	34.849	41.300
CA 0024	·	·	·	·	38.100	42.799	38.024	42.875	38.100	44.399	38.024	44.475
CA 0026	·	·	·	·	41.275	45.974	41.199	46.050	41.275	47.574	41.199	47.650
CA 0028	·	·	·	·	44.450	49.149	44.374	49.225	44.450	50.749	44.374	50.825
CA 0030	·	·	·	·	47.625	52.324	47.549	52.400	47.625	53.924	47.549	54.000
CA 0032	·	·	·	·	50.800	55.499	50.724	55.575	50.800	57.099	50.724	57.175
CA 0034	·	·	·	·	53.975	58.674	53.899	58.750	53.975	60.274	53.899	60.350
CA 0036	·	·	·	·	57.150	61.849	57.074	61.925	57.150	63.449	57.074	63.525
CA 0038	·	·	·	·	60.325	65.024	60.249	65.100	60.325	66.624	60.249	66.700
CA 0040	·	·	·	·	63.500	68.199	63.424	68.275	63.500	69.799	63.424	69.875
CA 0042	·	·	·	·	66.675	71.374	66.599	71.450	66.675	72.974	66.599	73.050
CA 0044	·	·	·	·	69.850	74.549	69.774	74.625	69.850	76.149	69.774	76.225
CA 0046	·	·	·	·	73.025	77.724	72.949	77.800	73.025	79.324	72.949	79.400

Seal dimensions are in millimetres and are prior to plating or coating

CA Series – Axial C-Seal

SEAL TYPE & DIAMETER	FREE HEIGHT 3.18				FREE HEIGHT 4.75				FREE HEIGHT 6.35			
	CAVITY		SEAL		CAVITY		SEAL		CAVITY		SEAL	
	I.D +0.000 -0.051	O.D +0.051 -0.000	I.D +0.051 -0.051	O.D +0.051 -0.051	I.D +0.000 -0.051	O.D +0.051 -0.000	I.D +0.051 -0.051	O.D +0.051 -0.051	I.D +0.000 -0.051	O.D +0.051 -0.000	I.D +0.051 -0.051	O.D +0.051 -0.051
CA 0048	76.200	82.398	76.073	82.525	76.200	85.573	76.073	85.700	·	·	·	·
CA 0050	79.375	85.573	79.248	85.700	79.375	88.748	79.248	88.875	·	·	·	·
CA 0052	82.550	88.748	82.423	88.875	82.550	91.923	82.423	92.050	·	·	·	·
CA 0054	85.725	91.923	85.598	92.050	85.725	95.098	85.598	95.225	·	·	·	·
CA 0056	88.900	95.098	88.773	95.225	89.900	98.273	88.773	98.400	·	·	·	·
CA 0058	92.075	98.273	91.948	98.400	92.075	101.448	91.948	101.575	·	·	·	·
CA 0060	95.250	101.448	95.123	101.575	95.250	104.623	95.123	104.750	·	·	·	·
CA 0062	98.425	104.623	98.298	104.750	98.425	107.798	98.298	107.925	98.425	110.973	98.298	111.100
CA 0064	101.600	107.798	101.473	107.925	101.600	110.973	101.473	111.100	101.600	114.148	101.473	114.275
CA 0066	104.775	110.973	104.648	111.100	104.775	114.148	104.648	114.275	104.775	117.323	104.648	117.450
CA 0068	107.950	114.148	107.823	114.275	107.950	117.323	107.823	117.450	107.950	120.498	107.823	120.625
CA 0070	111.125	117.323	110.998	117.450	111.125	120.498	110.998	120.625	111.125	123.673	110.998	123.800
CA 0072	114.300	120.498	114.173	120.625	114.300	123.673	114.173	123.800	114.300	126.848	114.173	126.975
CA 0074	117.475	123.673	117.348	123.800	117.475	126.848	117.348	126.975	117.475	130.023	117.348	130.150
CA 0076	120.650	126.848	120.523	126.975	120.650	130.023	120.523	130.150	120.650	133.198	120.523	133.325
CA 0078	123.825	130.023	123.698	130.150	123.825	133.198	123.698	133.325	123.825	136.373	123.698	136.500
CA 0080	127.000	133.198	126.873	133.325	127.000	136.373	126.873	136.500	127.000	139.548	126.873	139.675
CA 0082	130.175	136.373	130.048	136.500	130.175	139.548	130.048	139.675	130.175	142.723	130.048	142.850
CA 0084	133.350	139.548	133.223	139.675	133.350	142.723	133.223	142.850	133.350	145.898	133.223	146.025
CA 0086	136.525	142.723	136.398	142.850	136.525	145.898	136.398	146.025	136.525	149.073	136.398	149.200
CA 0088	139.700	145.898	139.573	146.025	139.700	149.073	139.573	149.200	139.700	152.248	139.573	152.375

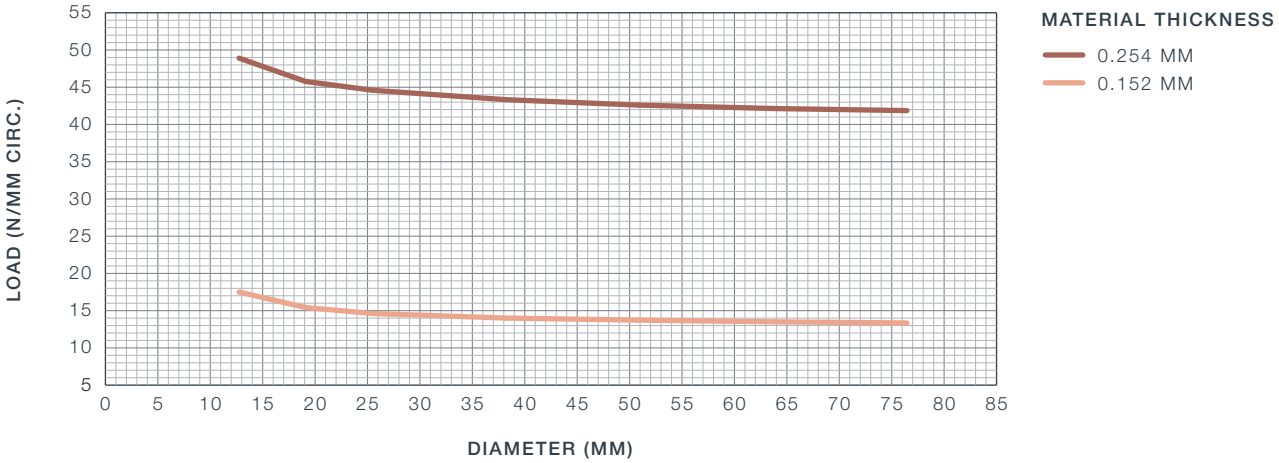
Seal dimensions are in millimetres and are prior to plating or coating

Load

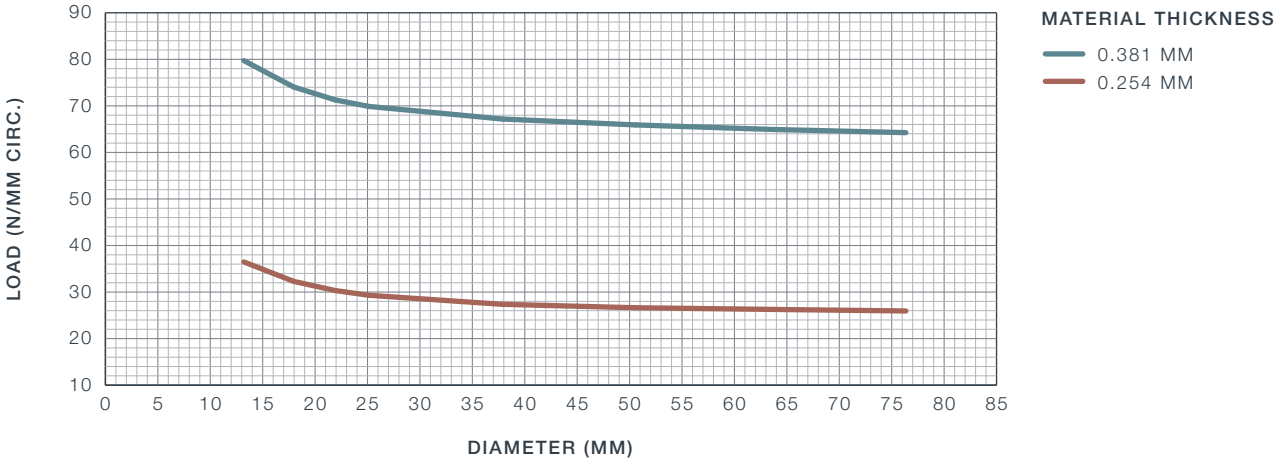
The seating loads for each seal section are shown below. The values shown are for long cycle precipitation heat treated Inconel 718 seals. These values are for guidance only as a number of factors can have a significant effect on the load including:

– Seal diameter
– Seal free height
– Cavity depth
– Tolerances
– Variations in material thickness and properties
– Heat treatment
– Coatings and platings

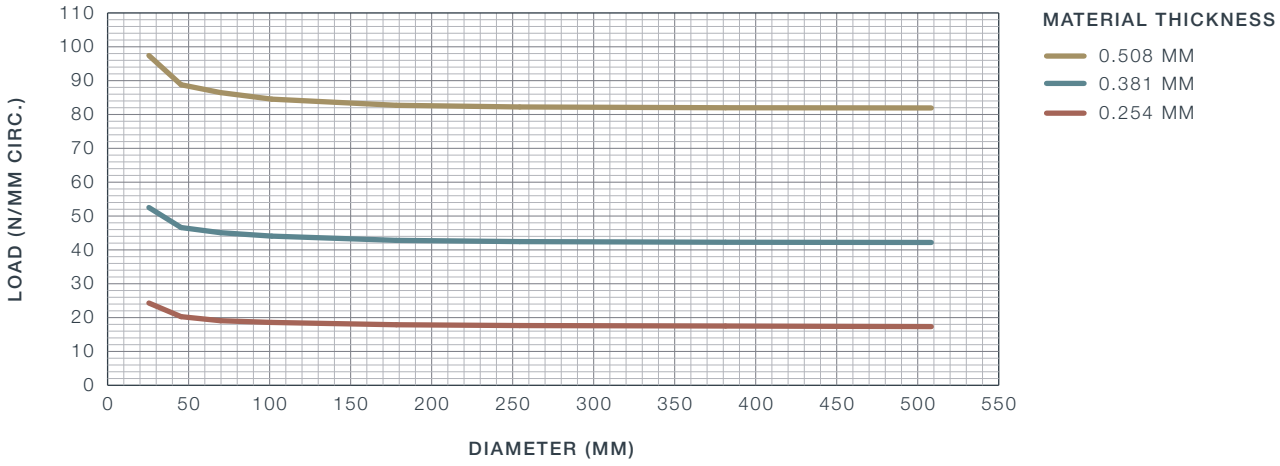
As a guideline, for work hardened Inconel 718, the values are reduced by approximately 50%. For long cycle precipitation heat treated Inconel X750, the values are reduced by approximately 25%.



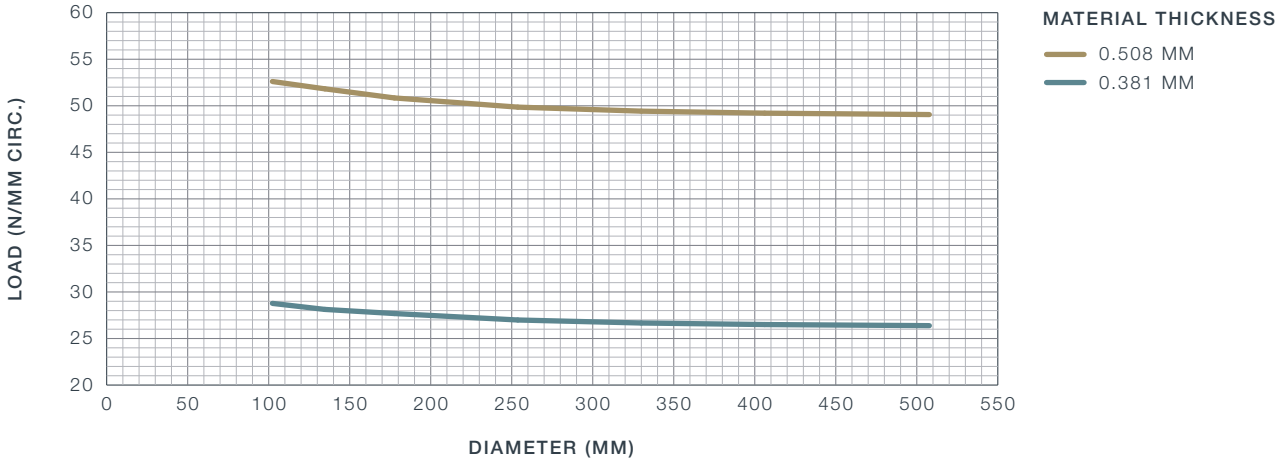
1.58 Section Seating Load



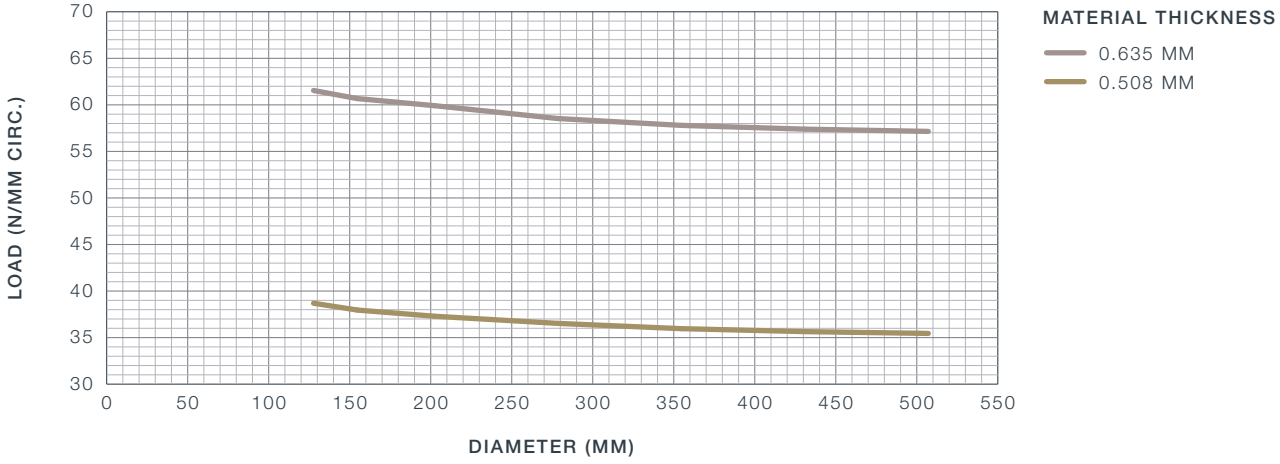
2.36 Section Seating Load



3.18 Section Seating Load



4.75 Section Seating Load

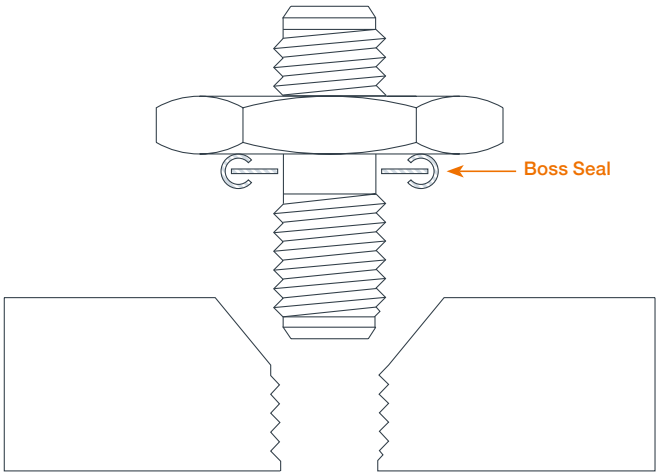


6.35 Section Seating Load

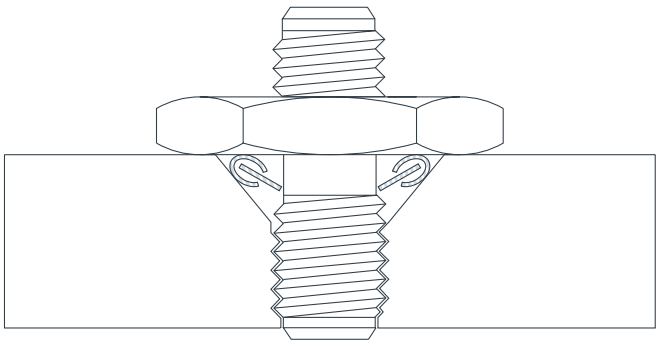
Boss Seals

Product Description

Boss Seals are a specialist range of C-Seals with an internal location washer designed for use with AND 10050 and MS 33649 type bosses.



Boss Seal – Before Installation



Boss Seals – After Installation

Part Properties

– Available in a range of standard industry sizes
– Fits in either direction at installation
– Internal washer enables part to be screwed on to the fitting and centres the seal in the boss
– Part remains with fitting on disassembly

Boss Seal Specification

Nicholsons offer a range of industry standard Boss Seal sizes. Available sizes are listed on page 57.

MATERIAL TYPE

The standard material for a Boss Seal is Inconel X750

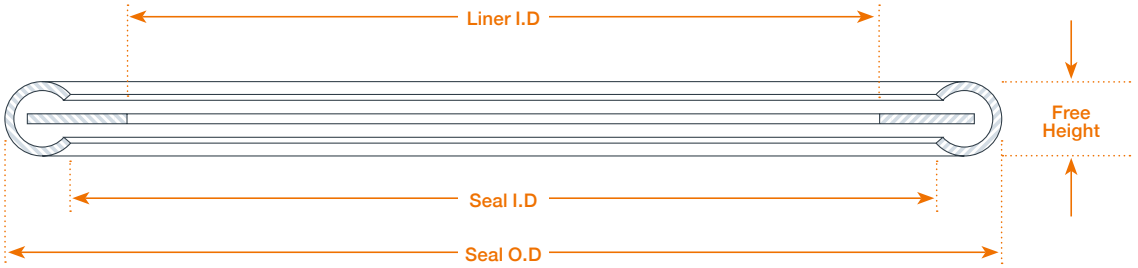
HEAT TREATMENT

The standard treatment is work hardened.

PLATING OR COATING

The standard Boss Seal is silver plated to a thickness of 0.0127mm/0.0254mm. Other plating types are available on request. Please contact our Engineers for further information.

Part List – Boss Seal



Boss Seal

– Weld permitted

– Plating may be incomplete away from sealing surfaces

– Seal diameters are an average and can be out of round in excess of tolerances

BOSS NUMBER	PART NUMBER	SEAL O.D	SEAL I.D	FREE HEIGHT	LINER I.D	MT'L THK
		+0.000 -0.127	min.	+0.051 -0.051	.	+0.025 -0.025
2	1616 0002	9.677	7.671	1.168	7.061	0.152
3	1616 0003	11.278	9.271	1.168	8.661	0.152
4	1616 0004	12.852	10.846	1.168	10.084	0.152
5	1616 0005	14.453	12.446	1.168	11.659	0.152
6	1616 0006	16.027	14.021	1.168	13.132	0.152
7	1616 0007	17.628	15.621	1.168	14.707	0.152
8	1616 0008	20.803	18.796	1.168	17.755	0.152
9	1616 0009	22.403	20.396	1.168	19.329	0.152
10	1616 0010	23.978	21.971	1.168	20.752	0.152
11	1616 0011	27.940	25.933	1.168	23.673	0.152
12	1616 0012	29.362	26.695	1.575	25.273	0.254
14	1616 0014	32.537	29.870	1.575	28.448	0.254
16	1616 0016	35.712	33.045	1.575	31.623	0.254
18	1616 0018	40.462	37.795	1.575	36.373	0.254
20	1616 0020	43.637	40.970	1.575	39.548	0.254
24	1616 0024	49.987	47.320	1.575	45.898	0.254
28	1616 0028	59.512	56.845	1.575	55.423	0.254
32	1616 0032	65.888	63.221	1.575	61.773	0.254

Seal dimensions are in millimetres and are prior to plating or coating

Corruplus

Product Description

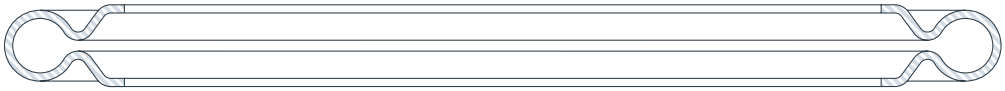
Corruplus Mk1 seals are a range of flexible metal seals designed to be compressed in a cavity of a controlled depth creating a seal.

The Corruplus Mk1 range of part numbers AS42700–AS42799 are approved as an SBAC industry standard part.

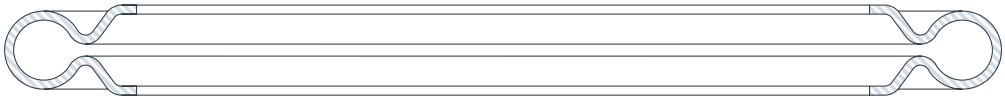
Although normally used in a groove or counterbore, it is possible to use Corruplus with a retaining/nip control ring. The low clamp load characteristic of the seal makes it ideally suited for use in 'V' Band type couplings.

Three standard seal sections are available:

Small Section Corruplus Mk1 Seals



Large Section Corruplus Mk1 Seals



Corruplus Mk1 Seals for 'V' Band Couplings

Part Properties

– Able to seal high and low temperatures and pressures
– Flexible, low load seal with good recovery
– A large range of standard sizes
– Three standard seal sections available
– All seals are individually pressure tested
– Can be re-used. A Corruplus Test Rig is required
– Fire proof operation

Corruplus Specification

Nicholsons offer a range of Corruplus Mk1 seals in the three standard sections. Further information for small and large section ‘AS’ and ‘CPL’ Corruplus Mk1 seals can be found on pages 62 to 67. We also offer a series of CPL/V seals for ‘V’ Band Couplings (page 68) designed to suit a particular flange configuration.

Bespoke Corruplus can be designed for specific applications. In this instance, please contact us for assistance.

MATERIAL TYPE

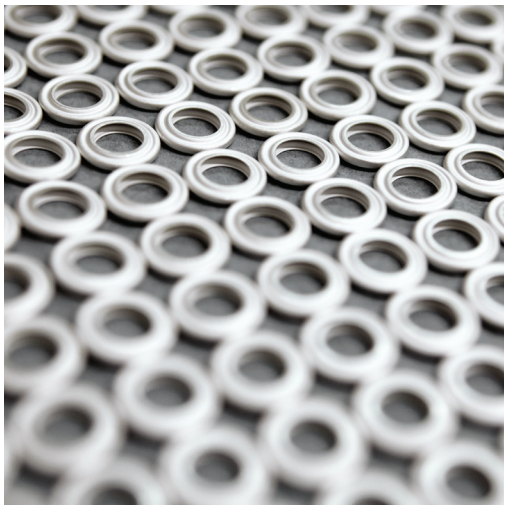
The standard material for Corruplus is Inconel 718.
Small section Corruplus are made from 0.305mm material thickness.
Large section Corruplus are made from 0.381mm material thickness.
For ‘V’ Band Coupling sections, 0.381mm thick material is used.

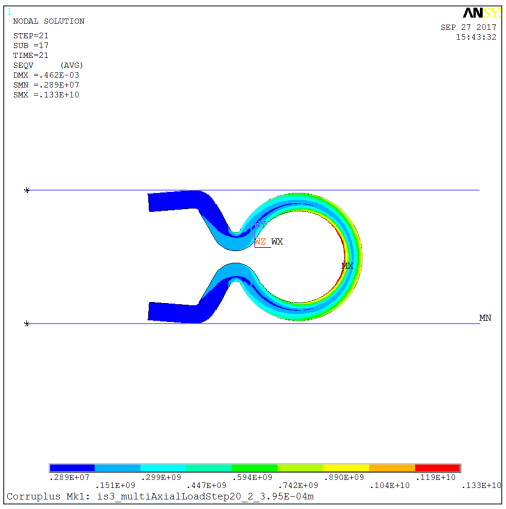
HEAT TREATMENT

The standard treatment is Solution and Long Cycle Precipitation.

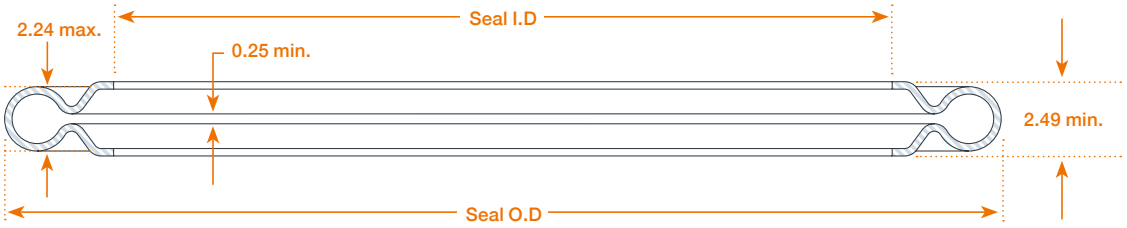
PLATING OR COATING

Corruplus are silver plated to a thickness of 0.0508mm min. The seal is given a high temperature bake to soften the silver plating.
Nickel plating is an available option. Please contact us for further information.

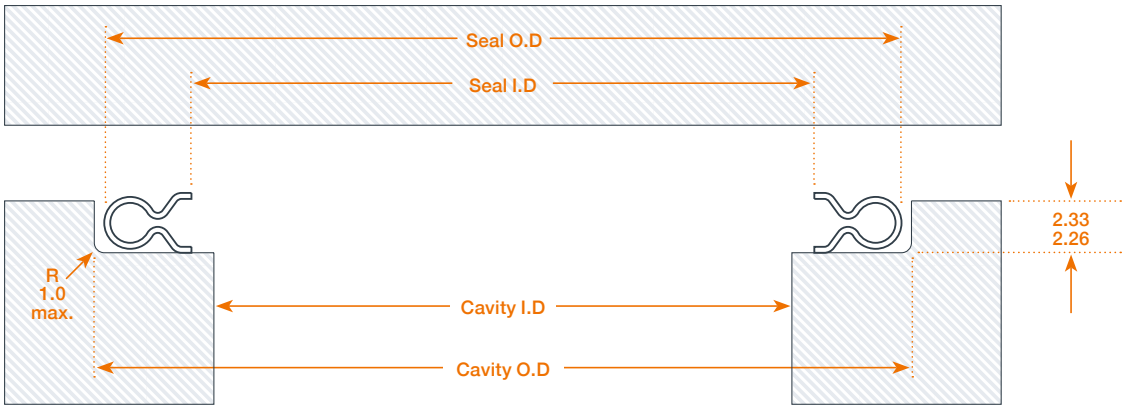




Small Section Corruplus Mk1 Seals



Corruplus Mk1 Small Section



Small Section Corruplus Mk1 Cavity

PART NUMBER	CAVITY		SEAL	
	I.D max.	O.D +0.13 -0.00	I.D +0.25 -0.00	O.D +0.00 -0.25
CPL 107	3.00	10.34	3.68	10.29
CPL 108	3.78	11.13	4.47	11.07
CPL 109	5.36	12.70	6.04	12.65
AS42701	6.32	13.65	7.00	13.60
CPL 110	6.91	14.30	7.62	14.22
AS42702	7.32	14.65	8.00	14.60
AS42703	8.32	15.65	9.00	15.60
CPL 111	8.53	15.88	9.22	15.82
AS42704	9.32	16.65	10.00	16.60
CPL 112	10.08	17.48	10.79	17.40
AS42705	10.32	17.65	11.00	17.60
AS42706	11.32	18.65	12.00	18.60
CPL 113	11.71	19.05	12.39	19.00
AS42707	12.32	19.65	13.00	19.60
AS42708	13.32	20.65	14.00	20.60
AS42709	14.32	21.65	15.00	21.60

Seal dimensions are in millimetres and apply after plating

Small Section Corruplus Mk1 Seals

PART NUMBER	CAVITY		SEAL	
	I.D max.	O.D +0.13 -0.00	I.D +0.25 -0.00	O.D +0.00 -0.25
CPL 115	14.88	22.22	15.57	22.17
AS42710	15.32	22.65	16.00	22.60
AS42711	16.32	23.65	17.00	23.60
CPL 116	16.43	23.83	17.14	23.75
AS42712	17.32	24.65	18.00	24.60
CPL 117	18.06	25.40	18.74	25.35
AS42713	18.32	25.65	19.00	25.60
AS42714	19.32	26.65	20.00	26.60
CPL 118	19.61	27.00	20.32	26.92
AS42715	20.32	27.65	21.00	27.60
CPL 119	21.23	28.58	21.92	28.52
AS42716	21.32	28.65	22.00	28.60
AS42717	22.32	29.65	23.00	29.60
CPL 120	22.83	30.18	23.52	30.12
AS42718	23.32	30.65	24.00	30.60
AS42719	24.32	31.65	25.00	31.60
CPL 121	24.41	31.75	25.10	31.70
AS42720	25.32	32.65	26.00	32.60
CPL 122	25.96	33.35	26.67	33.27
AS42721	26.32	33.65	27.00	33.60
AS42722	27.32	34.65	28.00	34.60
CPL 123	27.58	34.92	28.27	34.80
AS42723	28.32	35.65	29.00	35.60
CPL 124	29.18	36.53	29.87	36.47
AS42724	29.32	36.65	30.00	36.60
AS42725	30.32	37.65	31.00	37.60
CPL 125	30.76	38.10	31.45	38.05
AS42726	31.32	38.65	32.00	38.60
AS42727	32.32	39.65	33.00	39.60
AS42728	33.32	40.65	34.00	40.60
CPL 127	33.93	41.28	34.62	41.22
AS42729	34.32	41.65	35.00	41.60
AS42730	35.32	42.65	36.00	42.60
CPL 128	35.51	42.88	36.19	42.82
AS42731	36.32	43.65	37.00	43.60
CPL 129	37.11	44.45	37.79	44.40
AS42732	37.32	44.65	38.00	44.60
AS42733	38.32	45.65	39.00	45.60
CPL 130	38.66	46.05	39.37	45.97
AS42734	39.32	46.65	40.00	46.60
AS42735	40.32	47.65	41.00	47.60

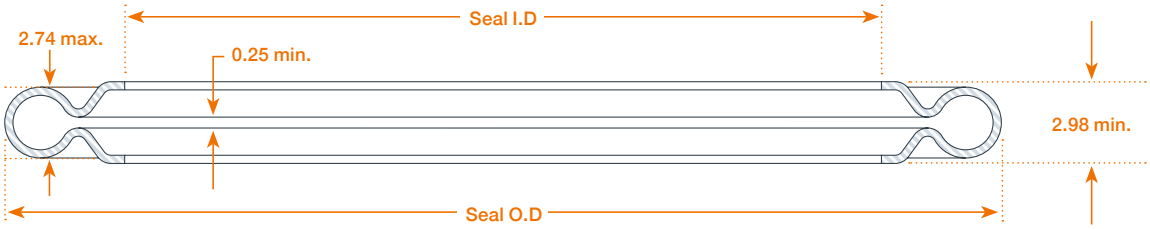
Seal dimensions are in millimetres and apply after plating

Small Section Corruplus Mk1 Seals

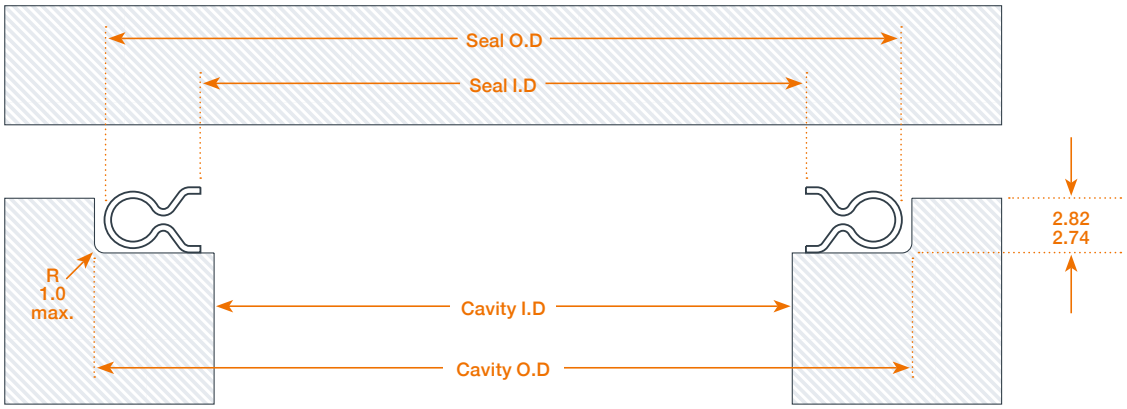
PART NUMBER	CAVITY		SEAL	
	I.D max.	O.D +0.13 -0.00	I.D +0.25 -0.00	O.D +0.00 -0.25
AS42736	41.32	48.65	42.00	48.60
CPL 132	41.83	49.23	42.54	49.15
AS42737	42.32	49.65	43.00	49.60
AS42738	43.32	50.65	44.00	50.60
CPL 134	43.46	50.80	44.14	50.75
AS42739	44.32	51.65	45.00	51.60
CPL 135	45.01	52.40	45.72	52.32
AS42740	45.32	52.65	46.00	52.60
AS42741	46.32	53.65	47.00	53.60
CPL 136	46.61	54.00	47.32	53.92
AS42742	47.32	54.65	48.00	54.60
CPL 137	48.23	55.58	48.92	55.52
AS42743	48.32	55.65	49.00	55.60
AS42744	49.32	56.65	50.00	56.60
CPL 138	49.83	57.18	50.52	57.12
AS42745	50.32	57.65	51.00	57.60
AS42746	51.32	58.65	52.00	58.60
AS42747	52.32	59.65	53.00	59.60
AS42748	53.32	60.65	54.00	60.60

Seal dimensions are in millimetres and apply after plating

Large Section Corruplus Mk1 Seals



Corruplus Mk1 Large Section



Large Section Corruplus Mk1 Cavity

PART NUMBER	CAVITY		SEAL	
	I.D max.	O.D +0.25 -0.00	I.D +0.25 -0.00	O.D +0.00 -0.25
CPL 227	50.75	60.50	51.56	60.45
CPL 228	53.92	63.68	54.74	63.63
AS42749	54.15	64.00	55.00	63.90
CPL 229	57.10	66.85	57.91	66.80
AS42750	59.15	69.00	60.00	68.90
CPL 230	60.27	70.03	61.09	69.98
CPL 231	63.45	73.20	64.26	73.15
AS42751	64.15	74.00	65.00	73.90
CPL 232	66.62	76.38	67.44	76.33
AS42752	69.15	79.00	70.00	78.90
CPL 233	69.80	79.55	70.61	79.50
CPL 234	72.97	82.73	73.79	82.68
AS42753	74.15	84.00	75.00	83.90
CPL 235	76.15	85.90	76.96	85.85
AS42754	79.15	89.00	80.00	88.90

Seal dimensions are in millimetres and apply after plating

Large Section Corruplus Mk1 Seals

PART NUMBER	CAVITY		SEAL	
	I.D max.	O.D +0.25 -0.00	I.D +0.25 -0.00	O.D +0.00 -0.25
CPL 236	79.32	89.08	80.14	89.03
CPL 237	82.50	92.25	83.31	92.20
AS42755	84.15	94.00	85.00	93.90
CPL 238	85.67	95.43	86.49	95.38
CPL 239	88.85	98.60	89.66	98.55
AS42756	89.15	99.00	90.00	98.90
CPL 240	92.02	101.78	92.84	101.73
AS42757	94.15	104.00	95.00	103.90
CPL 241	95.20	104.95	96.01	104.90
CPL 242	98.37	108.13	99.19	108.08
AS42758	99.15	109.00	100.00	108.90
CPL 243	101.55	111.30	102.36	111.25
AS42759	104.15	114.00	105.00	113.90
CPL 244	104.72	114.48	105.54	114.43
CPL 245	107.90	117.65	108.71	117.60
AS42760	109.15	119.00	110.00	118.90
CPL 246	111.07	120.83	111.89	120.78
AS42761	114.15	124.00	115.00	123.90
CPL 248	117.42	127.18	118.24	127.13
AS42762	119.15	129.00	120.00	128.90
CPL 249	120.60	130.35	121.41	130.30
CPL 250	123.77	133.53	124.59	133.48
AS42763	124.15	134.00	125.00	133.90
CPL 251	126.95	136.70	127.76	136.65
AS42764	129.15	139.00	130.00	138.90
CPL 252	130.12	139.88	130.94	139.83
CPL 253	133.30	143.05	134.11	143.00
AS42765	134.15	144.00	135.00	143.90
CPL 254	136.47	146.23	137.29	146.18
AS42766	139.15	149.00	140.00	148.90
CPL 255	139.65	149.40	140.46	149.35
CPL 256	142.82	152.58	143.64	152.53
AS42767	144.15	154.00	145.00	153.90
CPL 257	146.00	155.75	146.81	155.70
AS42768	149.15	159.00	150.00	158.90
AS42769	154.15	164.00	155.00	163.90
AS42770	159.15	169.00	160.00	168.90
AS42771	164.15	174.00	165.00	173.90
AS42772	169.15	179.00	170.00	178.90
AS42773	174.15	184.00	175.00	183.90

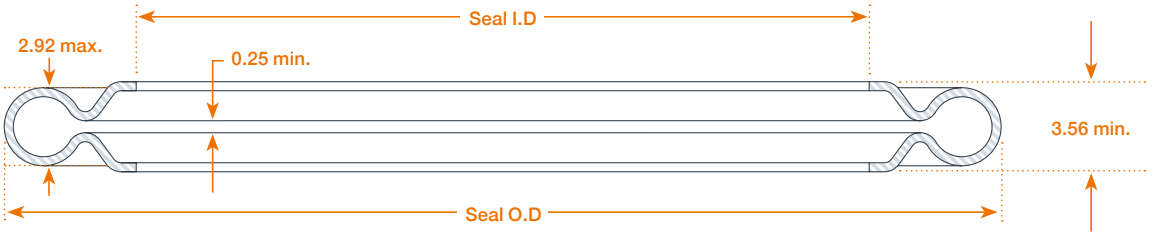
Seal dimensions are in millimetres and apply after plating

Large Section Corruplus Mk1 Seals

PART NUMBER	CAVITY		SEAL	
	I.D max.	O.D +0.25 -0.00	I.D +0.25 -0.00	O.D +0.00 -0.25
AS42774	179.15	189.00	180.00	188.90
AS42775	184.15	194.00	185.00	193.90
AS42776	189.15	199.00	190.00	198.90
AS42777	194.15	204.00	195.00	203.90
AS42778	199.15	209.00	200.00	208.90
AS42779	209.15	219.00	210.00	218.90
AS42780	219.15	229.00	220.00	228.90
AS42781	229.15	239.00	230.00	238.90
AS42782	239.15	249.00	240.00	248.90
AS42783	249.15	259.00	250.00	258.90
AS42784	259.15	269.00	260.00	268.90
AS42785	269.15	279.00	270.00	278.90
AS42786	279.15	289.00	280.00	288.90
AS42787	289.15	299.00	290.00	298.90
AS42788	299.15	309.00	300.00	308.90

Seal dimensions are in millimetres and apply after plating

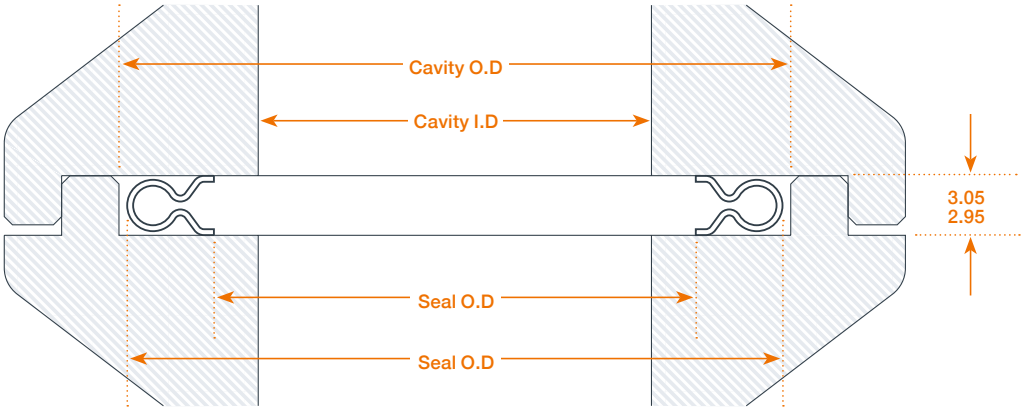
Corruplus Mk1 Seals For ‘V’ Band Couplings



Corruplus Mk1 for ‘V’ Band Couplings

This series of CPL/V seals are designed to suit one particular flange configuration as used in the Aircraft Industry

All other Corruplus Mk1 Seals can be used in suitable ‘V’ flanges



Corruplus Mk1 Cavity for ‘V’ Band Couplings

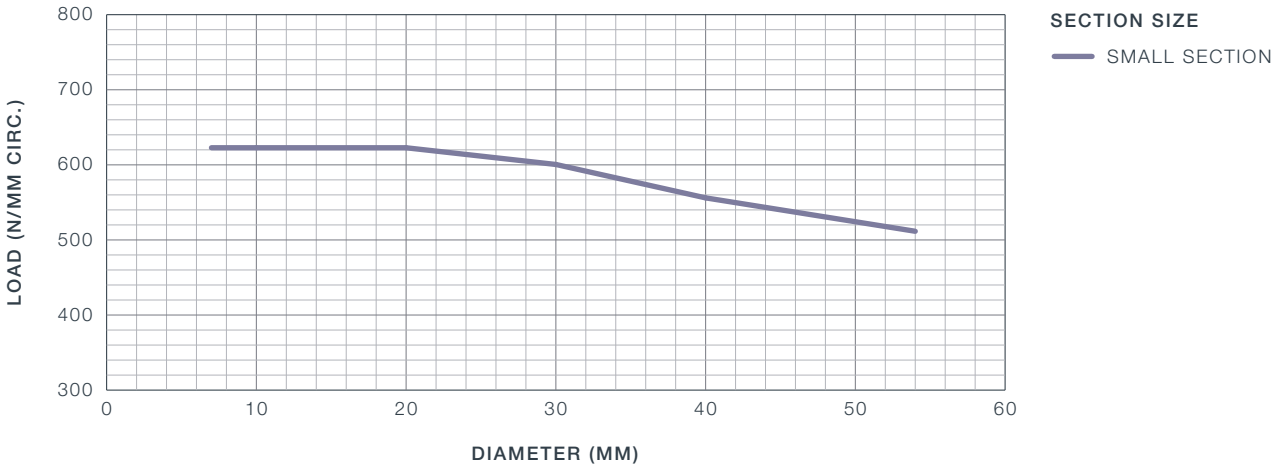
PART NUMBER	CAVITY		SEAL	
	I.D max.	O.D +0.13 -0.00	I.D +0.25 -0.00	O.D +0.00 -0.25
CPL/V 100	24.44	34.65	25.10	34.62
CPL/V 125	30.79	41.00	31.45	40.97
CPL/V 150	37.14	47.35	37.80	47.32
CPL/V 175	43.49	53.70	44.15	53.67
CPL/V 200	49.84	60.05	50.50	60.02
CPL/V 225	56.22	66.42	56.87	66.40
CPL/V 250	62.57	72.77	63.22	72.75
CPL/V 275	68.92	79.12	69.57	79.10
CPL/V 300	75.27	85.47	75.92	85.45
CPL/V 325	81.62	91.82	82.27	91.80
CPL/V 350	87.99	98.20	88.65	98.17
CPL/V 400	100.69	110.9	101.35	110.87
CPL/V 450	113.39	123.60	114.05	123.57
CPL/V 500	126.14	136.35	126.80	136.32
CPL/V 550	138.84	149.05	139.50	149.02
CPL/V 600	151.54	161.75	152.20	161.72

Seal dimensions are in millimetres and apply after plating

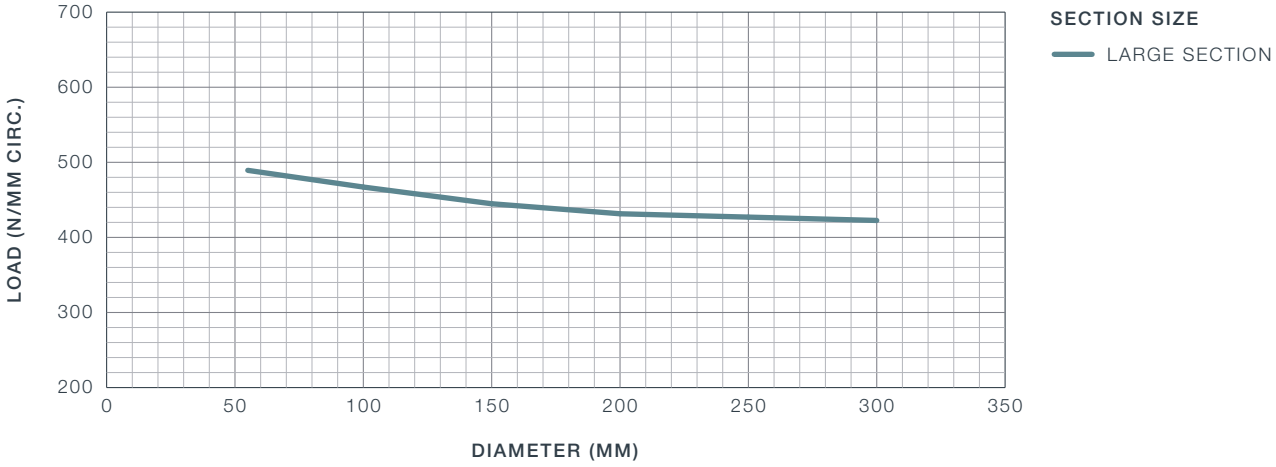
Load

The seating loads for small and large Corruplus sections are shown below. The values shown are for solution and long cycle precipitation heat treated Inconel 718 seals. This information is for guidance only as a number of factors can have a significant effect on the load including:

– Seal diameter
– Seal free height
– Cavity depth
– Tolerances
– Variations in material thicknesses and properties



Small Section Seating Load

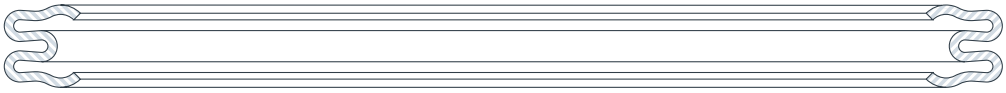


Large Section Seating Load

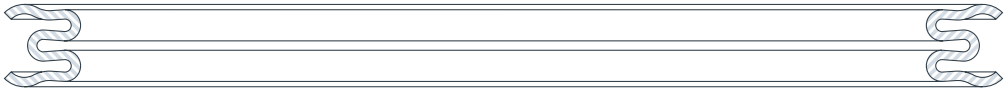
E-Seals

Product Description

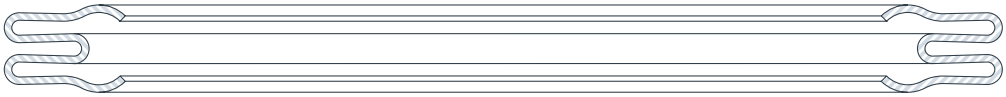
E-Seals are designed to be compressed in a cavity of a controlled depth creating a seal. Short leg and long leg options are available to accommodate both internal and external pressure conditions.



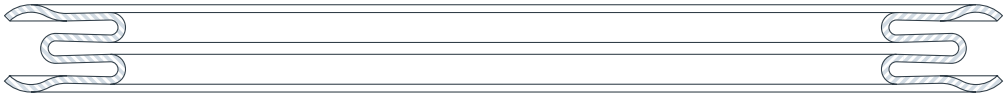
EIS Series – Internal Pressure Short Leg



EES Series – External Pressure Short Leg



EIL Series – Internal Pressure Long Leg



EEL Series – External Pressure Long Leg

Part Properties

– Able to seal high and low temperatures and pressures
– A flexible low load seal with good recovery
– A large range of standard industry sizes are available
– A range of standard seal sections are available
– Non-round seal shapes can be manufactured

E-Seal Specification

Nicholsons offer a range of standard E-Seal part numbers. The part number system enables the selection of the correct seal for each application and installation using the permutations of size, material, plating etc. An explanation of the Nicholsons E-Seal part number system is shown below.

We also offer a specialist range of E-Seals which are designed for use in standard aerospace flange and duct systems. Please consult the High Temperature Duct Seals section in our Imperial Catalogue for further details.

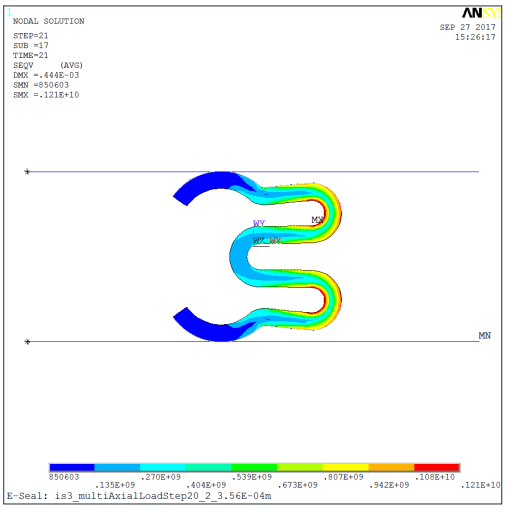
Bespoke E-Seals can be designed for specific applications where the use of a standard E-Seal would not be appropriate due to shape, diameter, material type etc. Please contact us if you require a bespoke design or need any assistance specifying a standard E-Seal part number for your application.

PART NUMBER

1. SEAL TYPE	2. DIAMETER	3. SECTION AND MATERIAL THICKNESS	4. MATERIAL TYPE	5. HEAT TREATMENT	6. PLATING OR COATING	7. PLATING OR COATING THICKNESS
XXX	0000	00	00	0	XX	X
The type of seal and its orientation	The seal and cavity diameters	The seal section height and the standard material thickness options available for each	The material type that we offer as standard	The heat treatments that we offer as standard. Not all heat treatments are applicable to all materials	The plating or coating type that we offer as standard	The thickness of the plating or coating

1. SEAL TYPE

The first section specifies the seal type.
EIS – Internal pressure short leg seal.
EES – External pressure short leg seal.
EIL – Internal pressure long leg seal.
EEL – External pressure long leg seal.



2. DIAMETER

The second section specifies the seal and cavity diameter.
For EIS seals, see pages 76 to 79 for details of sizes.
For EES seals, see pages 80 to 83 for details of sizes.
For EIL seals, see pages 84 to 87 for details of sizes.
For EEL seals, see pages 88 to 92 for details of sizes.

3. SECTION AND MATERIAL THICKNESS

PART NO. CODE	SEAL TYPE	NOMINAL SEAL FREE HEIGHT	ACTUAL SEAL FREE HEIGHT	MATERIAL THICKNESS	CAVITY DEPTH	CAVITY CORNER RADIUS R (max.)
03	Short leg	2.36	2.642 2.540	0.254	2.235 2.184	0.508
06	Short leg	3.18	3.429 3.277	0.381	3.048 2.946	0.762
08	Short leg	4.75	5.664 5.410	0.381	4.648 4.547	0.762
13	Long leg	2.36	2.870 2.616	0.254	2.235 2.184	0.508
16	Long leg	3.18	3.683 3.429	0.305	3.048 2.946	0.762

4. MATERIAL TYPE

The fourth section specifies the material types that are offered.

PART NO. CODE	MATERIAL	COMMENTS
12	Inconel X750	·
14	Inconel 718	Standard material for E-Seals

5. HEAT TREATMENT

The fifth section specifies the heat treatments that are available as standard.
All E-Seals have a solution and long cycle precipitation heat treatment as standard.

PART NO. CODE	HEAT TREATMENT	COMMENTS
4	Solution and Long Cycle Precipitation Heat Treatment	·

6. PLATING OR COATING

The sixth section specifies the plating or coating applied to the seal. Plating may be incomplete away from sealing surfaces.

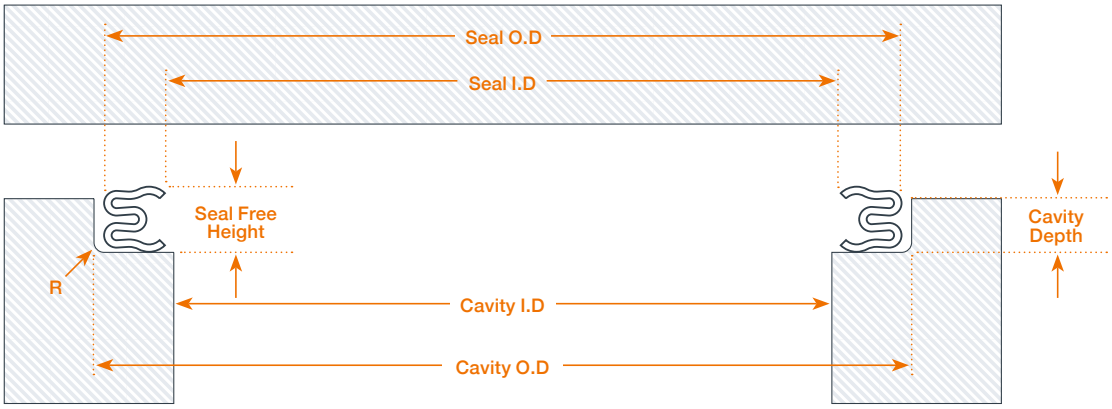
PART NO. CODE	PLATING OR COATING	COMMENTS
OP	None	.
SP	Silver	Suitable for most applications
NP	Nickel	.
CP	Copper	.
GP	Gold	Very expensive
LP	Lead	Soft. Max. temp. 150°C/300°F
PP	PTFE	Max. temp. 220°C/430°F
IP	Indium	Very soft. Low temp only

7. PLATING OR COATING THICKNESS

The seventh section specifies the plating or coating thickness.

PART NO. CODE	PLATING OR COATING THICKNESS	COMMENTS
A	0.0254 0.0127	Standard for Silver
B	0.0381 0.0254	.
C	0.0635 0.0381	.
D	0.0762 0.0508	.
E	Customer Specification	Customer Specification
O	None	Use with Unplated Seals

EIS Series – Internal Pressure Short Leg E-Seal



– Weld permitted

– Plating may be incomplete away from sealing surfaces

– Seal diameters are an average and can be out of round in excess of tolerances

– See the E-Seal introduction pages for details of seal free height, cavity depth and radius R

Internal E-Seal Cavity

SEAL TYPE & DIAMETER	FREE HEIGHT 2.36				FREE HEIGHT 3.18				FREE HEIGHT 4.75			
	CAVITY		SEAL		CAVITY		SEAL		CAVITY		SEAL	
	I.D max.	O.D +0.076 -0.000	I.D min.	O.D +0.000 -0.076	I.D max.	O.D +0.076 -0.000	I.D min.	O.D +0.000 -0.076	I.D max.	O.D +0.076 -0.000	I.D min.	O.D +0.000 -0.076
EIS 0030	47.625	52.375	47.701	52.299	47.625	53.975	47.701	53.899	·	·	·	·
EIS 0031	49.200	53.975	49.276	53.899	49.200	55.550	49.276	55.474	·	·	·	·
EIS 0032	50.800	55.550	50.876	55.474	50.800	57.150	50.876	57.074	·	·	·	·
EIS 0033	52.375	57.150	52.451	57.074	52.375	58.725	52.451	58.649	·	·	·	·
EIS 0034	53.975	58.725	54.051	58.649	53.975	60.325	54.051	60.249	·	·	·	·
EIS 0035	55.550	60.325	55.626	60.249	55.550	61.900	55.626	61.824	·	·	·	·
EIS 0036	57.150	61.900	57.226	61.824	57.150	63.500	57.226	63.424	·	·	·	·
EIS 0037	58.725	63.500	58.801	63.424	58.725	65.075	58.801	64.999	·	·	·	·
EIS 0038	60.325	65.075	60.401	64.999	60.325	66.675	60.401	66.599	·	·	·	·
EIS 0039	61.900	66.675	61.976	66.599	61.900	68.250	61.976	68.174	·	·	·	·
EIS 0040	63.500	68.250	63.576	68.174	63.500	69.850	63.576	69.774	·	·	·	·
EIS 0041	65.075	69.850	65.151	69.774	65.075	71.425	65.151	71.349	·	·	·	·
EIS 0042	66.675	71.425	66.751	71.349	66.675	73.025	66.751	72.949	·	·	·	·
EIS 0043	68.250	73.025	68.326	72.949	68.250	74.600	68.326	74.524	·	·	·	·
EIS 0044	69.850	74.600	69.926	74.524	69.850	76.200	69.926	76.124	·	·	·	·
EIS 0045	71.425	76.200	71.501	76.124	71.425	77.775	71.501	77.699	·	·	·	·
EIS 0046	73.025	77.775	73.101	77.699	73.025	79.375	73.101	79.299	·	·	·	·
EIS 0047	74.600	79.375	74.676	79.299	74.600	80.950	74.676	80.874	·	·	·	·
EIS 0048	76.200	80.950	76.276	80.874	76.200	82.550	76.276	82.474	76.200	85.725	76.276	85.649
EIS 0049	77.775	82.550	77.851	82.474	77.775	84.125	77.851	84.049	77.775	87.300	77.851	87.224
	I.D max.	O.D +0.102 -0.000	I.D min.	O.D +0.000 -0.102	I.D max.	O.D +0.102 -0.000	I.D min.	O.D +0.000 -0.102	I.D max.	O.D +0.102 -0.000	I.D min.	O.D +0.000 -0.102
EIS 0050	79.375	84.125	79.451	84.049	79.375	85.725	79.451	85.649	79.375	88.900	79.451	88.824

Seal dimensions are in millimetres and are prior to plating or coating

EIS Series – Internal Pressure Short Leg E-Seal

SEAL TYPE & DIAMETER	FREE HEIGHT 2.36				FREE HEIGHT 3.18				FREE HEIGHT 4.75			
	CAVITY		SEAL		CAVITY		SEAL		CAVITY		SEAL	
	I.D max.	O.D +0.102 -0.000	I.D min.	O.D +0.000 -0.102	I.D max.	O.D +0.102 -0.000	I.D min.	O.D +0.000 -0.102	I.D max.	O.D +0.102 -0.000	I.D min.	O.D +0.000 -0.102
EIS 0051	80.950	85.725	81.026	85.649	80.950	87.300	81.026	87.224	80.950	90.475	81.026	90.399
EIS 0052	82.550	87.300	82.626	87.224	82.550	88.900	82.626	88.824	82.550	92.075	82.626	91.999
EIS 0053	84.125	88.900	84.201	88.824	84.125	90.475	84.201	90.399	84.125	93.650	84.201	93.574
EIS 0054	85.725	90.475	85.801	90.399	85.725	92.075	85.801	91.999	85.725	95.250	85.801	95.174
EIS 0055	87.300	92.075	87.376	91.999	87.300	93.650	87.376	93.574	87.300	96.825	87.376	96.749
EIS 0056	88.900	93.650	88.976	93.574	88.900	95.250	88.976	95.174	88.900	98.425	88.976	98.349
EIS 0057	90.475	95.250	90.551	95.174	90.475	96.825	90.551	96.749	90.475	100.000	90.551	99.924
EIS 0058	92.075	96.825	92.151	96.749	92.075	98.425	92.151	98.349	92.075	101.600	92.151	101.524
EIS 0059	93.650	98.425	93.726	98.349	93.650	100.000	93.726	99.924	93.650	103.175	93.726	103.099
EIS 0060	95.250	100.000	95.326	99.924	95.250	101.600	95.326	101.524	95.250	104.775	95.326	104.699
EIS 0061	96.825	101.600	96.901	101.524	96.825	103.175	96.901	103.099	96.825	106.350	96.901	106.274
EIS 0062	98.425	103.175	98.501	103.099	98.425	104.775	98.501	104.699	98.425	107.950	98.501	107.874
EIS 0063	100.000	104.775	100.076	104.699	100.000	106.350	100.076	106.274	100.000	109.525	100.076	109.449
EIS 0064	101.600	106.350	101.676	106.274	101.600	107.950	101.676	107.874	101.600	111.125	101.676	111.049
EIS 0065	103.175	107.950	103.251	107.874	103.175	109.525	103.251	109.449	103.175	112.700	103.251	112.624
EIS 0066	104.775	109.525	104.851	109.449	104.775	111.125	104.851	111.049	104.775	114.300	104.851	114.224
EIS 0067	106.350	111.125	106.426	111.049	106.350	112.700	106.426	112.624	106.350	115.875	106.426	115.799
EIS 0068	107.950	112.700	108.026	112.624	107.950	114.300	108.026	114.224	107.950	117.475	108.026	117.399
EIS 0069	109.525	114.300	109.601	114.224	109.525	115.875	109.601	115.799	109.525	119.050	109.601	118.974
EIS 0070	111.125	115.875	111.201	115.799	111.125	117.475	111.201	117.399	111.125	120.650	111.201	120.574
EIS 0071	112.700	117.475	112.776	117.399	112.700	119.050	112.776	118.974	112.700	122.225	112.776	122.149
EIS 0072	114.300	119.050	114.376	118.974	114.300	120.650	114.376	120.574	114.300	123.825	114.376	123.749
EIS 0073	115.875	120.650	115.951	120.574	115.875	122.225	115.951	122.149	115.875	125.400	115.951	125.324
EIS 0074	117.475	122.225	117.551	122.149	117.475	123.825	117.551	123.749	117.475	127.000	117.551	126.924
EIS 0075	119.050	123.825	119.126	123.749	119.050	125.400	119.126	125.324	119.050	128.575	119.126	128.499
EIS 0076	120.650	125.400	120.726	125.324	120.650	127.000	120.726	126.924	120.650	130.175	120.726	130.099
EIS 0077	122.225	127.000	122.301	126.924	122.225	128.575	122.301	128.499	122.225	131.750	122.301	131.674
EIS 0078	123.825	128.575	123.901	128.499	123.825	130.175	123.901	130.099	123.825	133.350	123.901	133.274
EIS 0079	125.400	130.175	125.476	130.099	125.400	131.750	125.476	131.674	125.400	134.925	125.476	134.849
EIS 0080	127.000	131.750	127.076	131.674	127.000	133.350	127.076	133.274	127.000	136.525	127.076	136.449
EIS 0081	128.575	133.350	128.651	133.274	128.575	134.925	128.651	134.849	128.575	138.100	128.651	138.024
	I.D max.	O.D +0.152 -0.000	I.D min.	O.D +0.000 -0.152	I.D max.	O.D +0.152 -0.000	I.D min.	O.D +0.000 -0.152	I.D max.	O.D +0.152 -0.000	I.D min.	O.D +0.000 -0.152
EIS 0082	130.175	134.925	130.251	134.849	130.175	136.525	130.251	136.449	130.175	139.700	130.251	139.624
EIS 0083	131.750	136.525	131.826	136.449	131.750	138.100	131.826	138.024	131.750	141.275	131.826	141.199
EIS 0084	133.350	138.100	133.426	138.024	133.350	139.700	133.426	139.624	133.350	142.875	133.426	142.799
EIS 0085	134.925	139.700	135.001	139.624	134.925	141.275	135.001	141.199	134.925	144.450	135.001	144.374
EIS 0086	136.525	141.275	136.601	141.199	136.525	142.875	136.601	142.799	136.525	146.050	136.601	145.974

Seal dimensions are in millimetres and are prior to plating or coating

EIS Series – Internal Pressure Short Leg E-Seal

SEAL TYPE & DIAMETER	FREE HEIGHT 2.36				FREE HEIGHT 3.18				FREE HEIGHT 4.75			
	CAVITY		SEAL		CAVITY		SEAL		CAVITY		SEAL	
	I.D max.	O.D +0.152 -0.000	I.D min.	O.D +0.000 -0.152	I.D max.	O.D +0.152 -0.000	I.D min.	O.D +0.000 -0.152	I.D max.	O.D +0.152 -0.000	I.D min.	O.D +0.000 -0.152
EIS 0087	138.100	142.875	138.176	142.799	138.100	144.450	138.176	144.374	138.100	147.625	138.176	147.549
EIS 0088	139.700	144.450	139.776	144.374	139.700	146.050	139.776	145.974	139.700	149.225	139.776	149.149
EIS 0089	141.275	146.050	141.351	145.974	141.275	147.625	141.351	147.549	141.275	150.800	141.351	150.724
EIS 0090	142.875	147.625	142.951	147.549	142.875	149.225	142.951	149.149	142.875	152.400	142.951	152.324
EIS 0092	146.050	150.800	146.126	150.724	146.050	152.400	146.126	152.324	146.050	155.575	146.126	155.499
EIS 0094	149.225	153.975	149.301	153.899	149.225	155.575	149.301	155.499	149.225	158.750	149.301	158.674
EIS 0096	152.400	157.150	152.476	157.074	152.400	158.750	152.476	158.674	152.400	161.925	152.476	161.849
EIS 0098	·	·	·	·	155.575	161.925	155.651	161.849	155.575	165.100	155.651	165.024
EIS 0100	·	·	·	·	158.750	165.100	158.826	165.024	158.750	168.275	158.826	168.199
EIS 0102	·	·	·	·	161.925	168.275	162.001	168.199	161.925	171.450	162.001	171.374
EIS 0104	·	·	·	·	165.100	171.450	165.176	171.374	165.100	174.625	165.176	174.549
EIS 0106	·	·	·	·	168.275	174.625	168.351	174.549	168.275	177.800	168.351	177.724
EIS 0108	·	·	·	·	171.450	177.800	171.526	177.724	171.450	180.975	171.526	180.899
EIS 0110	·	·	·	·	174.625	180.975	174.701	180.899	174.625	184.150	174.701	184.074
EIS 0112	·	·	·	·	177.800	184.150	177.876	184.074	177.800	187.325	177.876	187.249
	I.D max.	O.D +0.203 -0.000	I.D min.	O.D +0.000 -0.203	I.D max.	O.D +0.203 -0.000	I.D min.	O.D +0.000 -0.203	I.D max.	O.D +0.203 -0.000	I.D min.	O.D +0.000 -0.203
EIS 0114	·	·	·	·	180.975	187.325	181.051	187.249	180.975	190.500	181.051	190.424
EIS 0116	·	·	·	·	184.150	190.500	184.226	190.424	184.150	193.675	184.226	193.599
EIS 0118	·	·	·	·	187.325	193.675	187.401	193.599	187.325	196.850	187.401	196.774
EIS 0120	·	·	·	·	190.500	196.850	190.576	196.774	190.500	200.025	190.576	199.949
EIS 0122	·	·	·	·	193.675	200.025	193.751	199.949	193.675	203.200	193.751	203.124
EIS 0124	·	·	·	·	196.850	203.200	196.926	203.124	196.850	206.375	196.926	206.299
EIS 0126	·	·	·	·	200.025	206.375	200.101	206.299	200.025	209.550	200.101	209.474
EIS 0128	·	·	·	·	203.200	209.550	203.276	209.474	203.200	212.725	203.276	212.649
EIS 0130	·	·	·	·	·	·	·	·	206.375	215.900	206.451	215.824
EIS 0132	·	·	·	·	·	·	·	·	209.550	219.075	209.626	218.999
EIS 0134	·	·	·	·	·	·	·	·	212.725	222.250	212.801	222.174
EIS 0136	·	·	·	·	·	·	·	·	215.900	225.425	215.976	225.349
EIS 0138	·	·	·	·	·	·	·	·	219.075	228.600	219.151	228.524
EIS 0140	·	·	·	·	·	·	·	·	222.250	231.775	222.326	231.699
EIS 0142	·	·	·	·	·	·	·	·	225.425	234.950	225.501	234.874
EIS 0144	·	·	·	·	·	·	·	·	228.600	238.125	228.676	238.049
EIS 0146	·	·	·	·	·	·	·	·	231.775	241.300	231.851	241.224
EIS 0148	·	·	·	·	·	·	·	·	234.950	244.475	235.026	244.399
EIS 0150	·	·	·	·	·	·	·	·	238.125	247.650	238.201	247.574
EIS 0152	·	·	·	·	·	·	·	·	241.300	250.825	241.376	250.749
EIS 0154	·	·	·	·	·	·	·	·	244.475	254.000	244.551	253.924

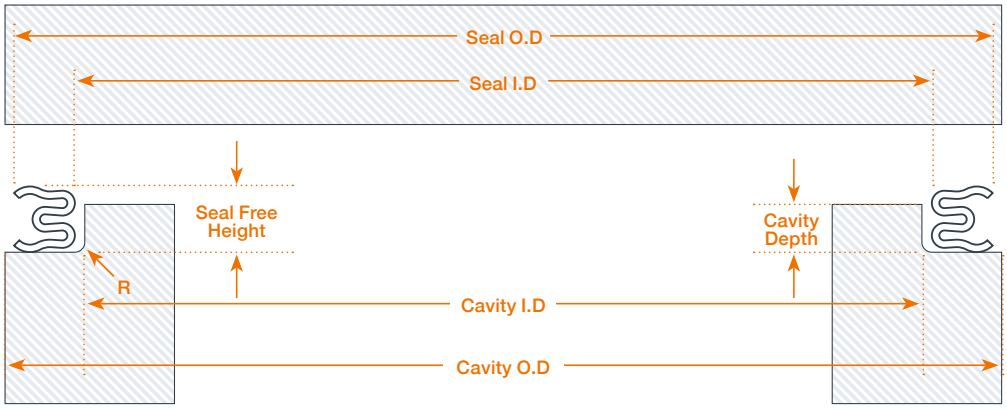
Seal dimensions are in millimetres and are prior to plating or coating

EIS Series – Internal Pressure Short Leg E-Seal

SEAL TYPE & DIAMETER	FREE HEIGHT 2.36				FREE HEIGHT 3.18				FREE HEIGHT 4.75			
	CAVITY		SEAL		CAVITY		SEAL		CAVITY		SEAL	
	I.D max.	O.D +0.203 -0.000	I.D min.	O.D +0.000 -0.203	I.D max.	O.D +0.203 -0.000	I.D min.	O.D +0.000 -0.203	I.D max.	O.D +0.203 -0.000	I.D min.	O.D +0.000 -0.203
EIS 0156	·	·	·	·	·	·	·	·	247.650	257.175	247.726	257.099
EIS 0158	·	·	·	·	·	·	·	·	250.825	260.350	250.901	260.274
EIS 0160	·	·	·	·	·	·	·	·	254.000	263.525	254.076	263.449
	I.D max.	O.D +0.305 -0.000	I.D min.	O.D +0.000 -0.305	I.D max.	O.D +0.305 -0.000	I.D min.	O.D +0.000 -0.305	I.D max.	O.D +0.305 -0.000	I.D min.	O.D +0.000 -0.305
EIS 0162	·	·	·	·	·	·	·	·	257.175	266.700	257.251	266.624
EIS 0164	·	·	·	·	·	·	·	·	260.350	269.875	260.426	269.799
EIS 0166	·	·	·	·	·	·	·	·	263.525	273.050	263.601	272.974
EIS 0168	·	·	·	·	·	·	·	·	266.700	276.225	266.776	276.149
EIS 0170	·	·	·	·	·	·	·	·	269.875	279.400	269.951	279.324
EIS 0172	·	·	·	·	·	·	·	·	273.050	282.575	273.126	282.499
EIS 0174	·	·	·	·	·	·	·	·	276.225	285.750	276.301	285.674
EIS 0176	·	·	·	·	·	·	·	·	279.400	288.925	279.476	288.849
EIS 0178	·	·	·	·	·	·	·	·	282.575	292.100	282.651	292.024
EIS 0180	·	·	·	·	·	·	·	·	285.750	295.275	285.826	295.199
EIS 0182	·	·	·	·	·	·	·	·	288.925	298.450	289.001	298.374
EIS 0184	·	·	·	·	·	·	·	·	292.100	301.625	292.176	301.549
EIS 0186	·	·	·	·	·	·	·	·	295.275	304.800	295.351	304.724
EIS 0188	·	·	·	·	·	·	·	·	298.450	307.975	298.526	307.899
EIS 0190	·	·	·	·	·	·	·	·	301.625	311.150	301.701	311.074
EIS 0192	·	·	·	·	·	·	·	·	304.800	314.325	304.876	314.249
EIS 0194	·	·	·	·	·	·	·	·	307.975	317.500	308.051	317.424
EIS 0196	·	·	·	·	·	·	·	·	311.150	320.675	311.226	320.599
EIS 0198	·	·	·	·	·	·	·	·	314.325	323.850	314.401	323.774

Seal dimensions are in millimetres and are prior to plating or coating

EES Series – External Pressure Short Leg E-Seal



– Weld permitted

– Plating may be incomplete away from sealing surfaces

– Seal diameters are an average and can be out of round in excess of tolerances

– See the E-Seal introduction pages for details of seal free height, cavity depth and radius R

External E-Seal Cavity

SEAL TYPE & DIAMETER	FREE HEIGHT 2.36				FREE HEIGHT 3.18				FREE HEIGHT 4.75			
	CAVITY		SEAL		CAVITY		SEAL		CAVITY		SEAL	
	I.D +0.000 -0.076	O.D min.	I.D +0.076 -0.000	O.D max.	I.D +0.000 -0.076	O.D min.	I.D +0.076 -0.000	O.D max.	I.D +0.000 -0.076	O.D min.	I.D +0.076 -0.000	O.D max.
EES 0030	47.625	52.375	47.701	52.299	47.625	53.975	47.701	53.899	·	·	·	·
EES 0031	49.200	53.975	49.276	53.899	49.200	55.500	49.276	55.474	·	·	·	·
EES 0032	50.800	55.500	50.876	55.474	50.800	57.150	50.876	57.074	·	·	·	·
EES 0033	52.375	57.150	52.451	57.074	52.375	58.725	52.451	58.649	·	·	·	·
EES 0034	53.975	58.725	54.051	58.649	53.975	60.325	54.051	60.249	·	·	·	·
EES 0035	55.550	60.325	55.626	60.249	55.550	61.900	55.626	61.824	·	·	·	·
EES 0036	57.150	61.900	57.226	61.824	57.150	63.500	57.226	63.424	·	·	·	·
EES 0037	58.725	63.500	58.801	63.424	58.725	65.075	58.801	64.999	·	·	·	·
EES 0038	60.325	65.075	60.401	64.999	60.325	66.675	60.401	66.599	·	·	·	·
EES 0039	61.900	66.675	61.976	66.599	61.900	68.250	61.976	68.174	·	·	·	·
EES 0040	63.500	68.250	63.576	68.174	63.500	69.850	63.576	69.774	·	·	·	·
EES 0041	65.075	69.850	65.151	69.774	65.075	71.425	65.151	71.349	·	·	·	·
EES 0042	66.675	71.425	66.751	71.349	66.675	73.025	66.751	72.949	·	·	·	·
EES 0043	68.250	73.025	68.326	72.949	68.250	74.600	68.326	74.524	·	·	·	·
EES 0044	69.850	74.600	69.926	74.524	69.850	76.200	69.926	76.124	·	·	·	·
EES 0045	71.425	76.200	71.501	76.124	71.425	77.775	71.501	77.699	·	·	·	·
EES 0046	73.025	77.775	73.101	77.699	73.025	79.375	73.101	79.299	·	·	·	·
EES 0047	74.600	79.375	74.676	79.299	74.600	80.950	74.676	80.874	·	·	·	·
EES 0048	76.200	80.950	76.276	80.874	76.200	82.550	76.276	82.474	76.200	85.725	76.276	85.649
	I.D +0.000 -0.102	O.D min.	I.D +0.102 -0.000	O.D max.	I.D +0.000 -0.102	O.D min.	I.D +0.102 -0.000	O.D max.	I.D +0.000 -0.102	O.D min.	I.D +0.102 -0.000	O.D max.
EES 0049	77.775	82.550	77.851	82.474	77.775	84.125	77.851	84.049	77.775	87.300	77.851	87.224

Seal dimensions are in millimetres and are prior to plating or coating

EES Series – External Pressure Short Leg E-Seal

SEAL TYPE & DIAMETER	FREE HEIGHT 2.36				FREE HEIGHT 3.18				FREE HEIGHT 4.75			
	CAVITY		SEAL		CAVITY		SEAL		CAVITY		SEAL	
	I.D +0.000 -0.102	O.D min.	I.D +0.102 -0.000	O.D max.	I.D +0.000 -0.102	O.D min.	I.D +0.102 -0.000	O.D max.	I.D +0.000 -0.102	O.D min.	I.D +0.102 -0.000	O.D max.
EES 0050	79.375	84.125	79.451	84.049	79.375	85.725	79.451	85.649	79.375	88.900	79.451	88.824
EES 0051	80.950	85.725	81.026	85.649	80.950	87.300	81.026	87.224	80.950	90.475	81.026	90.399
EES 0052	82.550	87.300	82.626	87.224	82.550	88.900	82.626	88.824	82.550	92.075	82.626	91.999
EES 0053	84.125	88.900	84.201	88.824	84.125	90.475	84.201	90.399	84.125	93.650	84.201	93.574
EES 0054	85.725	90.475	85.801	90.399	85.725	92.075	85.801	91.999	85.725	95.250	85.801	95.174
EES 0055	87.300	92.075	87.376	91.999	87.300	93.650	87.376	93.574	87.300	96.825	87.376	96.749
EES 0056	88.900	93.650	88.976	93.574	88.900	95.250	88.976	95.174	88.900	98.425	88.976	98.349
EES 0057	90.475	95.250	90.551	95.174	90.475	96.825	90.551	96.749	90.475	100.000	90.551	99.924
EES 0058	92.075	96.825	92.151	96.749	92.075	98.425	92.151	98.349	92.075	101.600	92.151	101.524
EES 0059	93.650	98.425	93.726	98.349	93.650	100.000	93.726	99.924	93.650	103.175	93.726	103.099
EES 0060	95.250	100.000	95.326	99.924	95.250	101.600	95.326	101.524	95.250	104.775	95.326	104.699
EES 0061	96.825	101.600	96.901	101.524	96.825	103.175	96.901	103.099	96.825	106.350	96.901	106.274
EES 0062	98.425	103.175	98.501	103.099	98.425	104.775	98.501	104.699	98.425	107.950	98.501	107.874
EES 0063	100.000	104.775	100.076	104.699	100.000	106.350	100.076	106.274	100.000	109.525	100.076	109.449
EES 0064	101.600	106.350	101.676	106.274	101.600	107.950	101.676	107.874	101.600	111.125	101.676	111.049
EES 0065	103.175	107.950	103.251	107.874	103.175	109.525	103.251	109.449	103.175	112.700	103.251	112.624
EES 0066	104.775	109.525	104.851	109.449	104.775	111.125	104.851	111.049	104.775	114.300	104.851	114.224
EES 0067	106.350	111.125	106.426	111.049	106.350	112.700	106.426	112.624	106.350	115.875	106.426	115.799
EES 0068	107.950	112.700	108.026	112.624	107.950	114.300	108.026	114.224	107.950	117.475	108.026	117.399
EES 0069	109.525	114.300	109.601	114.224	109.525	115.875	109.601	115.799	109.525	119.050	109.601	118.974
EES 0070	111.125	115.875	111.201	115.799	111.125	117.475	111.201	117.399	111.125	120.650	111.201	120.574
EES 0071	112.700	117.475	112.776	117.399	112.700	119.050	112.776	118.974	112.700	122.225	112.776	122.149
EES 0072	114.300	119.050	114.376	118.974	114.300	120.650	114.376	120.574	114.300	123.825	114.376	123.749
EES 0073	115.875	120.650	115.951	120.574	115.875	122.225	115.951	122.149	115.875	125.400	115.951	125.324
EES 0074	117.475	122.225	117.551	122.149	117.475	123.825	117.551	123.749	117.475	127.000	117.551	126.924
EES 0075	119.050	123.825	119.126	123.749	119.050	125.400	119.126	125.324	119.050	128.575	119.126	128.499
EES 0076	120.650	125.400	120.726	125.324	120.650	127.000	120.726	126.924	120.650	130.175	120.726	130.099
EES 0077	122.225	127.000	122.301	126.924	122.225	128.575	122.301	128.499	122.225	131.750	122.301	131.674
EES 0078	123.825	128.575	123.901	128.499	123.825	130.175	123.901	130.099	123.825	133.350	123.901	133.274
EES 0079	125.400	130.175	125.476	130.099	125.400	131.750	125.476	131.674	125.400	134.925	125.476	134.849
EES 0080	127.000	131.750	127.076	131.674	127.000	133.350	127.076	133.274	127.000	136.525	127.076	136.449
	I.D +0.000 -0.152	O.D min.	I.D +0.152 -0.000	O.D max.	I.D +0.000 -0.152	O.D min.	I.D +0.152 -0.000	O.D max.	I.D +0.000 -0.152	O.D min.	I.D +0.152 -0.000	O.D max.
EES 0081	128.575	133.350	128.651	133.274	128.575	134.925	128.651	134.849	128.575	138.100	128.651	138.024
EES 0082	130.175	134.925	130.251	134.849	130.175	136.525	130.251	136.449	130.175	139.700	130.251	139.624
EES 0083	131.750	136.525	131.826	136.449	131.750	138.100	131.826	138.024	131.750	141.275	131.826	141.199
EES 0084	133.350	138.100	133.426	138.024	133.350	139.700	133.426	139.624	133.350	142.875	133.426	142.799
EES 0085	134.925	139.700	135.001	139.624	134.925	141.275	135.001	141.199	134.925	144.450	135.001	144.374

Seal dimensions are in millimetres and are prior to plating or coating

EES Series – External Pressure Short Leg E-Seal

SEAL TYPE & DIAMETER	FREE HEIGHT 2.36				FREE HEIGHT 3.18				FREE HEIGHT 4.75			
	CAVITY		SEAL		CAVITY		SEAL		CAVITY		SEAL	
	I.D +0.000 -0.152	O.D min.	I.D +0.152 -0.000	O.D max.	I.D +0.000 -0.152	O.D min.	I.D +0.152 -0.000	O.D max.	I.D +0.000 -0.152	O.D min.	I.D +0.152 -0.000	O.D max.
EES 0086	136.525	141.275	136.601	141.199	136.525	142.875	136.601	142.799	136.525	146.050	136.601	145.974
EES 0087	138.100	142.875	138.176	142.799	138.100	144.450	138.176	144.374	138.100	147.625	138.176	147.549
EES 0088	139.700	144.450	139.776	144.374	139.700	146.050	139.776	145.974	139.700	149.225	139.776	149.149
EES 0089	141.275	146.050	141.351	145.974	141.275	147.625	141.351	147.549	141.275	150.800	141.351	150.724
EES 0090	142.875	147.625	142.951	147.549	142.875	149.225	142.951	149.149	142.875	152.400	142.951	152.324
EES 0092	146.050	150.800	146.126	150.724	146.050	152.400	146.126	152.324	146.050	155.575	146.126	155.499
EES 0094	149.225	153.975	149.301	153.899	149.225	155.575	149.301	155.499	149.225	158.750	149.301	158.674
EES 0096	152.400	157.150	152.476	157.074	152.400	158.750	152.476	158.674	152.400	161.925	152.476	161.849
EES 0098	·	·	·	·	155.575	161.925	155.651	161.849	155.575	165.100	155.651	165.024
EES 0100	·	·	·	·	158.750	165.100	158.826	165.024	158.750	168.275	158.826	168.199
EES 0102	·	·	·	·	161.925	168.275	162.001	168.199	161.925	171.450	162.001	171.374
EES 0104	·	·	·	·	165.100	171.450	165.176	171.374	165.100	174.625	165.176	174.549
EES 0106	·	·	·	·	168.275	174.625	168.351	174.549	168.275	177.800	168.351	177.724
EES 0108	·	·	·	·	171.450	177.800	171.526	177.724	171.450	180.975	171.526	180.899
EES 0110	·	·	·	·	174.625	180.975	174.701	180.899	174.625	184.150	174.701	184.074
EES 0112	·	·	·	·	177.800	184.150	177.876	184.074	177.800	187.325	177.876	187.249
	I.D +0.000 -0.203	O.D min.	I.D +0.203 -0.000	O.D max.	I.D +0.000 -0.203	O.D min.	I.D +0.203 -0.000	O.D max.	I.D +0.000 -0.203	O.D min.	I.D +0.203 -0.000	O.D max.
EES 0114	·	·	·	·	180.975	187.325	181.051	187.249	180.975	190.500	181.051	190.424
EES 0116	·	·	·	·	184.150	190.500	184.226	190.424	184.150	193.675	184.226	193.599
EES 0118	·	·	·	·	187.325	193.675	187.401	193.599	187.325	196.850	187.401	196.774
EES 0120	·	·	·	·	190.500	196.850	190.576	196.774	190.500	200.025	190.576	199.949
EES 0122	·	·	·	·	193.675	200.025	193.751	199.949	193.675	203.200	193.751	203.124
EES 0124	·	·	·	·	196.850	203.200	196.926	203.124	196.850	206.375	196.926	206.299
EES 0126	·	·	·	·	200.025	206.375	200.101	206.299	200.025	209.550	200.101	209.474
EES 0128	·	·	·	·	203.200	209.550	203.276	209.474	203.200	212.725	203.276	212.649
EES 0130	·	·	·	·	·	·	·	·	206.375	215.900	206.451	215.824
EES 0132	·	·	·	·	·	·	·	·	209.550	219.075	209.626	218.999
EES 0134	·	·	·	·	·	·	·	·	212.725	222.250	212.801	222.174
EES 0136	·	·	·	·	·	·	·	·	215.900	225.425	215.976	225.349
EES 0138	·	·	·	·	·	·	·	·	219.075	228.600	219.151	228.524
EES 0140	·	·	·	·	·	·	·	·	222.250	231.775	222.326	231.699
EES 0142	·	·	·	·	·	·	·	·	225.425	234.950	225.501	234.874
EES 0144	·	·	·	·	·	·	·	·	228.600	238.125	228.676	238.049
EES 0146	·	·	·	·	·	·	·	·	231.775	241.300	231.851	241.224
EES 0148	·	·	·	·	·	·	·	·	234.950	244.475	235.026	244.399
EES 0150	·	·	·	·	·	·	·	·	238.125	247.650	238.201	247.574
EES 0152	·	·	·	·	·	·	·	·	241.300	250.825	241.376	250.749

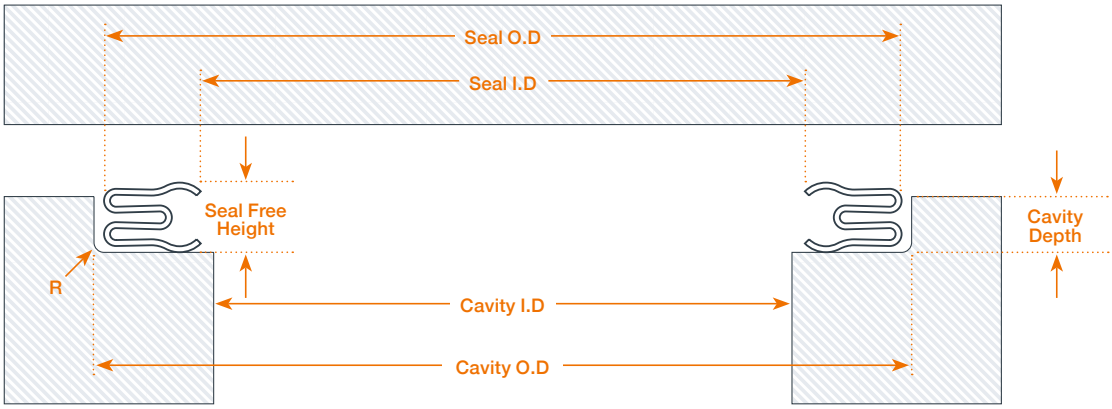
Seal dimensions are in millimetres and are prior to plating or coating

EES Series – External Pressure Short Leg E-Seal

SEAL TYPE & DIAMETER	FREE HEIGHT 2.36				FREE HEIGHT 3.18				FREE HEIGHT 4.75			
	CAVITY		SEAL		CAVITY		SEAL		CAVITY		SEAL	
	I.D +0.000 -0.203	O.D min.	I.D +0.203 -0.000	O.D max.	I.D +0.000 -0.203	O.D min.	I.D +0.203 -0.000	O.D max.	I.D +0.000 -0.203	O.D min.	I.D +0.203 -0.000	O.D max.
EES 0154	·	·	·	·	·	·	·	·	244.475	254.000	244.551	253.924
EES 0156	·	·	·	·	·	·	·	·	247.650	257.175	247.726	257.099
EES 0158	·	·	·	·	·	·	·	·	250.825	260.350	250.901	260.274
EES 0160	·	·	·	·	·	·	·	·	254.000	263.525	254.076	263.449
	I.D +0.000 -0.305	O.D min.	I.D +0.305 -0.000	O.D max.	I.D +0.000 -0.305	O.D min.	I.D +0.305 -0.000	O.D max.	I.D +0.000 -0.305	O.D min.	I.D +0.305 -0.000	O.D max.
EES 0162	·	·	·	·	·	·	·	·	257.175	266.700	257.251	266.624
EES 0164	·	·	·	·	·	·	·	·	260.350	269.875	260.426	269.799
EES 0166	·	·	·	·	·	·	·	·	263.525	273.050	263.601	272.974
EES 0168	·	·	·	·	·	·	·	·	266.700	276.225	266.776	276.149
EES 0170	·	·	·	·	·	·	·	·	269.875	279.400	269.951	279.324
EES 0172	·	·	·	·	·	·	·	·	273.050	282.575	273.126	282.499
EES 0174	·	·	·	·	·	·	·	·	276.225	285.750	276.301	285.674
EES 0176	·	·	·	·	·	·	·	·	279.400	288.925	279.476	288.849
EES 0178	·	·	·	·	·	·	·	·	282.575	292.100	282.651	292.024
EES 0180	·	·	·	·	·	·	·	·	285.750	295.275	285.826	295.199
EES 0182	·	·	·	·	·	·	·	·	288.925	298.450	289.001	298.374
EES 0184	·	·	·	·	·	·	·	·	292.100	301.625	292.176	301.549
EES 0186	·	·	·	·	·	·	·	·	295.275	304.800	295.351	304.724
EES 0188	·	·	·	·	·	·	·	·	298.450	307.975	298.526	307.899
EES 0190	·	·	·	·	·	·	·	·	301.625	311.150	301.701	311.074
EES 0192	·	·	·	·	·	·	·	·	304.800	314.325	304.876	314.249

Seal dimensions are in millimetres and are prior to plating or coating

EIL Series – Internal Pressure Long Leg E-Seal



Internal E-Seal Cavity

– Weld permitted

– Plating may be incomplete away from sealing surfaces

– Seals are manufactured to an average diameter then made to be a snap fit in their cavities. Therefore seal diameters are out of round in excess of tolerances

– See the E-Seal introduction pages for details of seal free height, cavity depth and radius R

SEAL TYPE & DIAMETER	FREE HEIGHT 2.36				FREE HEIGHT 3.18			
	CAVITY		SEAL		CAVITY		SEAL	
	I.D max.	O.D +0.076 -0.000	I.D min.	O.D +0.000 -0.152	I.D max.	O.D +0.076 -0.000	I.D min.	O.D +0.000 -0.152
EIL 0033	52.375	60.249	52.730	60.122	52.375	62.713	52.730	62.586
EIL 0034	53.975	61.849	54.331	61.722	53.975	64.313	54.331	64.186
EIL 0035	55.550	63.424	55.905	63.297	55.550	65.888	55.905	65.761
EIL 4261	56.185	64.059	56.540	63.932	56.185	66.523	56.540	66.396
EIL 0036	57.150	65.024	57.506	64.897	57.150	67.488	57.506	67.361
EIL 0037	58.275	66.599	59.080	66.472	58.725	69.063	59.080	68.936
EIL 0038	60.325	68.199	60.681	68.072	60.325	70.663	60.681	70.536
EIL 0039	61.900	69.774	62.255	69.647	61.900	72.238	62.255	72.111
EIL 3274	62.078	69.952	62.433	69.825	62.078	72.415	62.433	72.288
EIL 4286	62.535	70.409	62.890	70.282	62.535	72.873	62.890	72.746
EIL 0040	63.500	71.374	63.856	71.247	63.500	73.838	63.856	73.711
EIL 0041	65.075	72.949	65.430	72.822	65.075	75.413	65.430	72.286
EIL 0042	66.675	74.549	67.031	74.422	66.675	77.013	67.031	76.886
EIL 0043	68.250	76.124	68.605	75.997	68.250	78.588	68.605	78.461
EIL 4311	68.885	76.759	69.240	76.632	68.885	79.223	69.240	79.096
EIL 0044	69.850	77.724	70.206	77.597	69.850	80.188	70.206	80.061
EIL 0045	71.425	79.299	71.780	79.172	71.425	81.763	71.780	81.636
EIL 0046	73.025	80.899	73.381	80.772	73.025	83.363	73.381	82.236
EIL 0047	74.600	82.474	74.955	82.347	74.600	84.938	74.955	84.811
EIL 4336	75.235	83.109	75.590	82.982	75.235	85.573	75.590	85.446
EIL 0048	76.200	84.125	76.606	83.998	76.200	86.589	76.606	86.462
EIL 0049	77.775	85.700	78.181	85.573	77.775	88.163	78.181	88.036
EIL 0050	79.375	87.300	79.781	87.173	79.375	89.764	79.781	89.637

Seal dimensions are in millimetres and are prior to plating or coating

EIL Series – Internal Pressure Long Leg E-Seal

SEAL TYPE & DIAMETER	FREE HEIGHT 2.36				FREE HEIGHT 3.18			
	CAVITY		SEAL		CAVITY		SEAL	
	I.D max.	O.D +0.102 -0.000	I.D min.	O.D +0.000 -0.203	I.D max.	O.D +0.102 -0.000	I.D min.	O.D +0.000 -0.203
EIL 0051	80.950	88.875	81.356	88.748	80.950	91.338	81.356	91.211
EIL 4361	81.534	89.459	81.940	89.332	81.534	91.923	81.940	91.796
EIL 0052	82.550	90.475	82.956	90.348	82.550	92.939	82.956	92.812
EIL 0053	84.125	92.050	84.531	91.923	84.125	94.513	84.531	94.386
EIL 0054	85.725	93.650	86.131	93.523	85.725	96.114	86.131	95.987
EIL 0055	87.300	95.225	87.706	95.098	87.300	97.688	87.706	97.561
EIL 4386	87.909	95.834	88.316	95.707	87.909	98.298	88.316	98.171
EIL 0056	88.900	96.825	89.306	96.698	88.900	99.289	89.306	99.162
EIL 3386	90.373	98.298	90.780	98.171	90.373	100.762	90.780	100.635
EIL 0057	90.475	98.400	90.881	98.273	90.475	100.863	90.881	100.736
EIL 0058	92.075	100.000	92.481	99.873	92.075	102.464	92.481	102.337
EIL 0059	93.650	101.575	94.056	101.448	93.650	104.038	94.056	103.911
EIL 0060	95.250	103.175	95.656	103.048	92.250	105.639	95.656	105.512
EIL 0061	96.825	104.750	97.231	104.623	96.825	107.213	97.231	107.086
EIL 0062	98.425	106.350	98.831	106.223	98.425	108.814	98.831	108.687
EIL 0063	100.000	107.925	100.406	107.798	100.000	110.388	100.406	110.261
EIL 4436	100.609	108.534	101.016	108.407	100.609	110.998	101.016	110.871
EIL 0064	101.600	109.576	102.057	109.449	101.600	112.039	102.057	111.912
EIL 0065	103.175	111.150	103.632	111.023	103.175	113.614	103.632	113.487
	I.D max.	O.D +0.127 -0.000	I.D min.	O.D +0.000 -0.254	I.D max.	O.D +0.127 -0.000	I.D min.	O.D +0.000 -0.254
EIL 0066	104.775	112.751	105.232	112.624	104.775	115.214	105.232	115.087
EIL 0067	106.350	114.325	106.807	114.198	106.350	116.789	106.807	116.662
EIL 0068	107.950	115.926	108.407	115.799	107.950	118.389	108.407	118.262
EIL 0069	109.525	117.500	109.982	117.373	109.525	119.964	109.982	119.837
EIL 0070	111.125	119.101	111.582	118.974	111.125	121.564	111.582	121.437
EIL 0071	112.700	120.675	113.157	120.548	112.700	123.139	113.157	123.012
EIL 4486	113.259	121.234	113.716	121.107	113.259	123.698	113.716	123.571
EIL 0072	114.300	122.276	114.757	122.149	114.300	124.739	114.757	124.612
EIL 0073	115.875	123.850	116.332	123.723	115.875	126.314	116.332	126.187
EIL 0074	117.475	125.451	117.932	125.324	117.475	127.914	117.932	127.787
EIL 0075	119.050	127.025	119.507	126.898	119.050	129.489	119.507	129.362
EIL 0076	120.650	128.626	121.107	128.499	120.650	131.089	121.107	130.962
EIL 0077	122.225	130.200	122.682	130.073	122.225	132.664	122.682	132.537
EIL 0078	123.825	131.801	124.282	131.674	123.825	134.264	124.282	134.137
EIL 0079	125.400	133.375	125.857	133.248	125.400	135.839	125.857	135.712
EIL 4536	126.009	133.985	126.467	133.858	126.009	136.449	126.467	136.322

Seal dimensions are in millimetres and are prior to plating or coating

EIL Series – Internal Pressure Long Leg E-Seal

SEAL TYPE & DIAMETER	FREE HEIGHT 2.36				FREE HEIGHT 3.18			
	CAVITY		SEAL		CAVITY		SEAL	
	I.D max.	O.D +0.152 -0.000	I.D min.	O.D +0.000 -0.305	I.D max.	O.D +0.152 -0.000	I.D min.	O.D +0.000 -0.305
EIL 0080	127.000	135.026	127.508	134.899	127.000	137.490	127.508	137.363
EIL 0081	128.575	136.601	129.083	136.474	128.575	139.065	129.083	138.938
EIL 0082	130.175	138.201	130.683	138.074	130.175	140.665	130.683	140.538
EIL 0083	131.750	139.776	132.258	139.649	131.750	142.240	132.258	142.113
EIL 0084	133.350	141.376	133.858	141.249	133.350	143.840	133.858	143.713
EIL 0085	134.925	142.951	135.433	142.824	134.925	145.415	135.433	145.288
EIL 0086	136.525	144.551	137.033	144.424	136.525	147.015	137.033	146.888
EIL 0087	138.100	146.126	138.608	145.999	138.100	148.590	138.608	148.463
EIL 4586	138.659	146.685	139.167	146.558	138.659	149.149	139.167	149.022
EIL 0088	139.700	147.726	140.208	147.599	139.700	150.190	140.208	150.063
EIL 0089	141.275	149.301	141.783	149.174	141.275	151.765	141.783	151.638
EIL 0090	142.875	150.901	143.383	150.774	142.875	153.365	143.383	153.238
EIL 0092	146.050	154.076	146.558	153.949	146.050	156.540	146.558	156.413
EIL 0094	149.225	157.251	149.733	157.124	149.225	159.715	149.733	159.588
EIL 4636	151.359	159.385	151.867	159.258	151.359	161.849	151.867	161.722
EIL 0096	152.400	160.447	152.959	160.350	152.400	162.941	152.959	162.814
	I.D max.	O.D +0.178 -0.000	I.D min.	O.D +0.000 -0.356	I.D max.	O.D +0.178 -0.000	I.D min.	O.D +0.000 -0.356
EIL 4646	·	·	·	·	153.899	164.440	154.457	164.313
EIL 0098	·	·	·	·	155.575	166.116	156.134	165.989
EIL 0100	·	·	·	·	158.750	169.291	159.309	169.164
EIL 0102	·	·	·	·	161.925	172.466	162.484	172.339
EIL 0104	·	·	·	·	165.100	175.641	165.659	175.514
EIL 0106	·	·	·	·	168.275	178.816	168.834	178.689
EIL 0105	·	·	·	·	171.450	181.991	172.009	181.864
EIL 0110	·	·	·	·	174.625	185.166	175.184	185.039
EIL 0112	·	·	·	·	177.800	188.392	178.410	188.265
	I.D max.	O.D +0.203 -0.000	I.D min.	O.D +0.000 -0.406	I.D max.	O.D +0.203 -0.000	I.D min.	O.D +0.000 -0.406
EIL 0114	·	·	·	·	180.975	191.567	181.585	191.440
EIL 0116	·	·	·	·	184.150	194.742	184.760	194.615
EIL 0118	·	·	·	·	187.325	197.917	187.935	197.790
EIL 0120	·	·	·	·	190.500	201.092	191.110	200.965
EIL 0122	·	·	·	·	193.675	204.267	194.285	204.140
EIL 0124	·	·	·	·	196.850	207.442	197.460	207.315
EIL 0126	·	·	·	·	200.025	210.617	200.635	210.490
EIL 0128	·	·	·	·	203.200	213.843	203.860	213.716

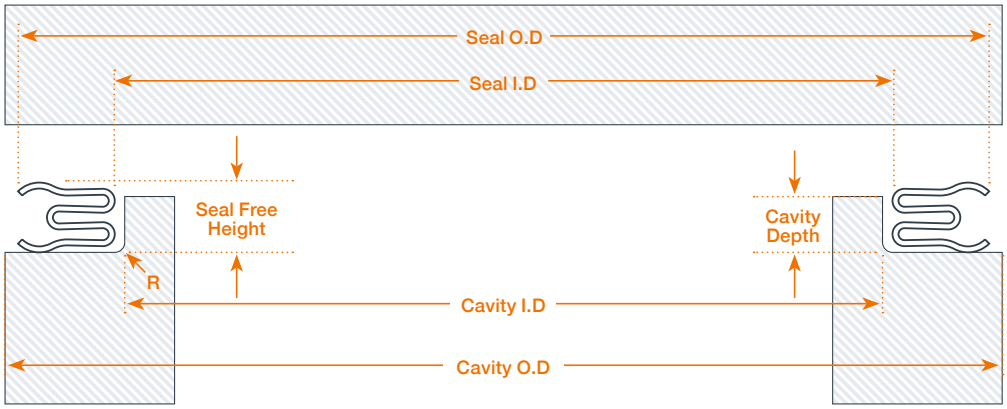
Seal dimensions are in millimetres and are prior to plating or coating

EIL Series – Internal Pressure Long Leg E-Seal

SEAL TYPE & DIAMETER	FREE HEIGHT 2.36				FREE HEIGHT 3.18			
	CAVITY		SEAL		CAVITY		SEAL	
	I.D max.	O.D +0.229 -0.000	I.D min.	O.D +0.000 -0.457	I.D max.	O.D +0.229 -0.000	I.D min.	O.D +0.000 -0.457
EIL 0130	·	·	·	·	206.375	217.018	207.035	216.891
EIL 0132	·	·	·	·	209.550	220.193	210.210	220.066
EIL 0134	·	·	·	·	212.725	223.368	213.385	223.241
EIL 0136	·	·	·	·	215.900	226.543	216.560	226.416
EIL 0138	·	·	·	·	219.075	229.718	219.735	229.591
EIL 0140	·	·	·	·	222.250	232.893	222.910	232.766
EIL 0142	·	·	·	·	225.425	236.068	226.085	235.941
EIL 0144	·	·	·	·	228.600	239.293	229.311	239.166
	I.D max.	O.D +0.254 -0.000	I.D min.	O.D +0.000 -0.508	I.D max.	O.D +0.254 -0.000	I.D min.	O.D +0.000 -0.508
EIL 0146	·	·	·	·	231.775	242.468	232.486	242.341
EIL 0148	·	·	·	·	234.950	245.643	235.661	245.516
EIL 0150	·	·	·	·	238.125	248.818	238.836	248.691
EIL 0152	·	·	·	·	241.300	251.993	242.011	251.866
EIL 0154	·	·	·	·	244.475	255.168	245.186	255.041
EIL 0156	·	·	·	·	247.650	258.343	248.361	258.216
EIL 0158	·	·	·	·	250.825	261.518	251.536	261.391
EIL 0160	·	·	·	·	254.000	264.744	254.762	264.617
EIL 0162	·	·	·	·	257.175	267.919	257.937	267.792
EIL 0164	·	·	·	·	260.350	271.094	261.112	270.967
EIL 0166	·	·	·	·	263.525	274.269	264.287	274.142

Seal dimensions are in millimetres and are prior to plating or coating

EEL Series – External Pressure Long Leg E-Seal



– Weld permitted

– Plating may be incomplete away from sealing surfaces

– Seals are manufactured to an average diameter then made to be a snap fit in their cavities. Therefore seal diameters are out of round in excess of tolerances

– See the E-Seal introduction pages for details of seal free height, cavity depth and radius R

External E-Seal Cavity

SEAL TYPE & DIAMETER	FREE HEIGHT 2.36				FREE HEIGHT 3.18			
	CAVITY		SEAL		CAVITY		SEAL	
	I.D +0.000 -0.076	O.D min.	I.D +0.152 -0.000	O.D max.	I.D +0.000 -0.076	O.D min.	I.D +0.152 -0.000	O.D max.
EEL 0032	50.800	58.674	50.927	58.318	50.800	61.138	50.927	60.782
EEL 0033	52.375	60.249	52.502	59.893	52.375	62.713	52.502	62.357
EEL 0034	53.975	61.849	54.102	61.493	53.975	64.313	54.102	63.957
EEL 0035	55.550	63.424	55.677	63.068	55.550	65.888	55.677	65.532
EEL 0036	57.150	65.024	57.277	64.668	57.150	67.488	57.277	67.132
EEL 0037	58.725	66.599	58.852	66.243	58.725	69.063	58.852	68.707
EEL 0038	60.325	68.199	60.452	67.843	60.325	70.663	60.452	70.307
EEL 0039	61.900	69.774	62.027	69.418	61.900	72.238	62.027	71.882
EEL 0040	63.500	71.374	63.627	71.018	63.500	73.838	63.627	73.482
EEL 0041	65.075	72.949	65.202	72.593	65.075	75.413	65.202	75.057
EEL 0042	66.675	74.549	66.802	74.193	66.675	77.013	66.802	76.657
EEL 0043	68.250	76.124	68.377	75.768	68.250	78.588	68.377	78.232
EEL 0044	69.850	77.724	69.977	77.368	69.850	80.188	69.977	79.832
EEL 0045	71.425	79.299	71.552	78.943	71.425	81.763	71.552	81.407
EEL 0046	73.025	80.899	73.152	80.543	73.025	83.363	73.152	83.007
EEL 0047	74.600	82.474	74.727	82.118	74.600	84.938	74.727	84.582
EEL 0048	76.200	84.125	76.327	83.718	76.200	86.589	76.327	86.182
EEL 0049	77.775	85.700	77.902	85.293	77.775	88.163	77.902	87.757
EEL 0050	79.375	87.300	79.502	86.893	79.375	89.764	79.502	89.357
EEL 0051	80.950	88.875	81.077	88.468	80.950	91.338	81.077	90.932
	I.D +0.000 -0.102	O.D min.	I.D +0.203 -0.000	O.D max.	I.D +0.000 -0.102	O.D min.	I.D +0.203 -0.000	O.D max.
EEL 0052	82.550	90.475	82.677	90.068	82.550	92.939	82.677	92.532

Seal dimensions are in millimetres and are prior to plating or coating

EEL Series – External Pressure Long Leg E-Seal

SEAL TYPE & DIAMETER	FREE HEIGHT 2.36				FREE HEIGHT 3.18			
	CAVITY		SEAL		CAVITY		SEAL	
	I.D +0.000 -0.102	O.D min.	I.D +0.203 -0.000	O.D max.	I.D +0.000 -0.102	O.D min.	I.D +0.203 -0.000	O.D max.
EEL 0053	84.125	92.050	84.252	91.643	84.125	94.513	84.252	94.107
EEL 0054	85.725	93.650	85.852	93.243	85.725	96.114	85.852	95.707
EEL 0055	87.300	95.225	87.427	94.818	87.300	97.688	87.427	97.282
EEL 0056	88.900	96.825	89.027	96.418	88.900	99.289	89.027	98.882
EEL 0057	90.475	98.400	90.602	97.993	90.475	100.863	90.602	100.457
EEL 0058	92.075	100.000	92.202	99.593	92.075	102.464	92.202	102.057
EEL 0059	93.650	101.575	93.777	101.168	93.650	104.038	93.777	103.632
EEL 0060	95.250	103.175	95.377	102.768	95.250	105.639	95.377	105.232
EEL 0061	96.825	104.750	96.952	104.343	96.825	107.213	96.952	106.807
EEL 0062	98.425	106.350	98.552	105.943	98.425	108.814	98.552	108.407
EEL 0063	100.000	107.925	100.127	107.518	100.000	110.388	100.127	109.982
EEL 0064	101.600	109.576	101.727	109.118	101.600	112.039	101.727	111.582
EEL 0065	103.175	111.150	103.302	110.693	103.175	113.614	103.302	113.157
EEL 0066	104.775	112.751	104.902	112.293	10.775	115.214	104.902	114.757
EEL 0067	106.350	114.325	106.477	113.868	106.350	116.789	106.477	116.332
	I.D +0.000 -0.127	O.D min.	I.D +0.254 -0.000	O.D max.	I.D +0.000 -0.127	O.D min.	I.D +0.254 -0.000	O.D max.
EEL 0068	107.950	115.926	108.077	115.468	107.950	118.389	108.077	117.932
EEL 0069	109.525	117.500	109.652	117.043	109.525	119.964	109.652	119.507
EEL 0070	111.125	119.101	111.252	118.643	111.125	121.564	111.252	121.107
EEL 0071	112.700	120.675	112.827	120.218	112.700	123.139	112.827	122.682
EEL 0072	114.300	122.276	114.427	121.818	114.300	124.739	114.427	124.282
EEL 0073	115.875	123.850	116.002	123.393	115.875	126.314	116.002	125.857
EEL 0074	117.475	125.451	117.602	124.993	117.475	127.914	117.602	127.457
EEL 0075	119.050	127.025	119.177	126.568	119.050	129.489	119.177	129.032
EEL 0076	120.650	128.626	120.777	128.168	120.650	131.089	120.777	130.632
EEL 0077	122.225	130.200	122.352	129.743	122.225	132.664	122.352	132.207
EEL 0078	123.825	131.801	123.952	131.343	123.825	134.264	123.952	133.807
EEL 0079	125.400	133.375	125.527	132.918	125.400	135.839	125.527	135.382
EEL 0080	127.000	135.026	127.127	134.518	127.000	137.490	127.127	136.982
EEL 0081	128.575	136.601	128.702	136.093	128.575	139.065	128.702	138.557
EEL 0082	130.175	138.201	130.302	137.693	130.175	140.665	130.302	140.157
	I.D +0.000 -0.152	O.D min.	I.D +0.305 -0.000	O.D max.	I.D +0.000 -0.152	O.D min.	I.D +0.305 -0.000	O.D max.
EEL 0083	131.750	139.776	131.877	139.268	131.750	142.240	131.877	141.732
EEL 0084	133.350	141.376	133.477	140.868	133.350	143.840	133.477	143.332
EEL 0085	134.925	142.951	135.052	142.443	134.925	145.415	135.052	144.907

Seal dimensions are in millimetres and are prior to plating or coating

EEL Series – External Pressure Long Leg E-Seal

SEAL TYPE & DIAMETER	FREE HEIGHT 2.36				FREE HEIGHT 3.18			
	CAVITY		SEAL		CAVITY		SEAL	
	I.D +0.000 -0.152	O.D min.	I.D +0.305 -0.000	O.D max.	I.D +0.000 -0.152	O.D min.	I.D +0.305 -0.000	O.D max.
EEL 0086	136.525	144.551	136.652	144.043	136.525	147.015	136.652	146.507
EEL 0087	138.100	146.126	138.227	145.618	138.100	148.590	138.227	148.082
EEL 0088	139.700	147.726	139.827	147.218	139.700	150.190	139.827	149.682
EEL 0089	141.275	149.301	141.402	148.793	141.275	151.765	141.402	151.257
EEL 0090	142.875	150.901	143.002	150.393	142.875	153.365	143.002	152.857
EEL 0092	146.050	154.076	146.177	153.568	146.050	156.540	145.177	156.032
EEL 0094	149.225	157.251	149.352	156.743	149.225	159.715	149.352	159.207
EEL 0096	152.400	160.477	152.527	159.918	152.400	162.941	152.527	162.382
	I.D +0.000 -0.178	O.D min.	I.D +0.356 -0.000	O.D max.	I.D +0.000 -0.178	O.D min.	I.D +0.356 -0.000	O.D max.
EEL 0098	·	·	·	·	155.575	166.116	155.702	165.557
EEL 0100	·	·	·	·	158.750	169.291	158.877	168.732
EEL 0102	·	·	·	·	161.925	172.466	162.052	171.907
EEL 0104	·	·	·	·	165.100	175.641	165.227	175.082
EEL 0106	·	·	·	·	168.275	178.816	168.402	178.257
EEL 0108	·	·	·	·	171.450	181.991	171.577	181.432
EEL 0110	·	·	·	·	174.625	185.166	174.752	184.607
EEL 0112	·	·	·	·	177.800	188.392	177.927	187.782
	I.D +0.000 -0.203	O.D min.	I.D +0.406 -0.000	O.D max.	I.D +0.000 -0.203	O.D min.	I.D +0.406 -0.000	O.D max.
EEL 0114	·	·	·	·	180.975	191.567	181.102	190.957
EEL 0116	·	·	·	·	184.150	194.742	184.277	194.132
EEL 0118	·	·	·	·	187.325	197.917	187.452	197.307
EEL 0120	·	·	·	·	190.500	201.092	190.627	200.482
EEL 0122	·	·	·	·	193.675	204.267	193.802	203.657
EEL 0124	·	·	·	·	196.850	207.442	196.977	206.832
EEL 0126	·	·	·	·	200.025	210.617	200.152	210.007
EEL 0128	·	·	·	·	203.200	213.843	203.327	213.182
	I.D +0.000 -0.229	O.D min.	I.D +0.457 -0.000	O.D max.	I.D +0.000 -0.229	O.D min.	I.D +0.457 -0.000	O.D max.
EEL 0130	·	·	·	·	206.375	217.018	206.502	216.357
EEL 0132	·	·	·	·	209.550	220.193	209.677	219.532
EEL 0134	·	·	·	·	212.725	223.368	212.852	222.707
EEL 0136	·	·	·	·	215.900	226.543	216.027	225.882
EEL 0138	·	·	·	·	219.075	229.718	219.202	229.057
EEL 0140	·	·	·	·	222.250	232.893	222.377	232.232

Seal dimensions are in millimetres and are prior to plating or coating

EEL Series – External Pressure Long Leg E-Seal

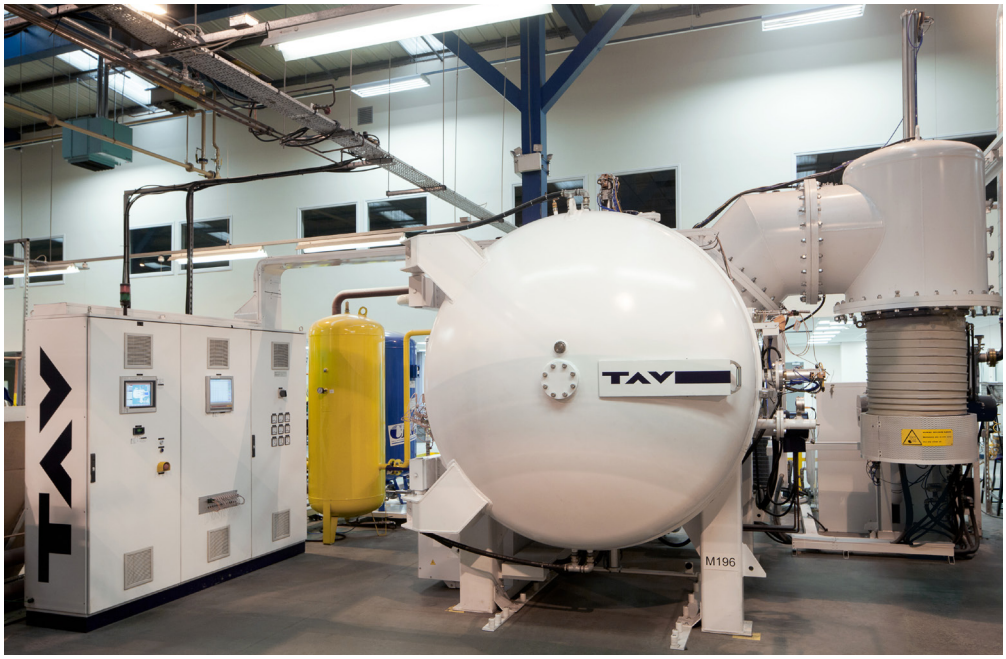
SEAL TYPE & DIAMETER	FREE HEIGHT 2.36				FREE HEIGHT 3.18			
	CAVITY		SEAL		CAVITY		SEAL	
	I.D +0.000 -0.229	O.D min.	I.D +0.457 -0.000	O.D max.	I.D +0.000 -0.229	O.D min.	I.D +0.457 -0.000	O.D max.
EEL 0142	·	·	·	·	225.425	236.068	225.552	235.407
EEL 0144	·	·	·	·	228.600	239.293	228.727	238.582
	I.D +0.000 -0.254	O.D min.	I.D +0.508 -0.000	O.D max.	I.D +0.000 -0.254	O.D min.	I.D +0.508 -0.000	O.D max.
EEL 0146	·	·	·	·	231.775	241.468	231.902	241.757
EEL 0148	·	·	·	·	234.950	245.643	235.077	244.932
EEL 0150	·	·	·	·	238.125	248.818	238.252	248.107
EEL 0152	·	·	·	·	241.300	254.993	241.427	251.282
EEL 0154	·	·	·	·	244.475	255.168	244.602	254.457
EEL 0156	·	·	·	·	247.650	258.343	247.777	257.632
EEL 0158	·	·	·	·	250.825	261.518	250.952	260.807
EEL 0160	·	·	·	·	254.000	264.744	254.127	263.982
	I.D +0.000 -0.279	O.D min.	I.D +0.559 -0.000	O.D max.	I.D +0.000 -0.279	O.D min.	I.D +0.559 -0.000	O.D max.
EEL 0162	·	·	·	·	257.175	267.919	257.302	267.157
EEL 0164	·	·	·	·	260.350	271.094	260.477	270.332
EEL 0166	·	·	·	·	263.525	274.269	263.652	273.507
EEL 0168	·	·	·	·	266.700	277.444	266.827	276.682
EEL 0170	·	·	·	·	269.875	280.619	270.002	279.857
EEL 0172	·	·	·	·	273.050	283.794	273.177	283.032
EEL 0174	·	·	·	·	276.225	286.969	276.352	286.207
EEL 0176	·	·	·	·	279.400	290.195	279.527	289.382
	I.D +0.000 -0.305	O.D min.	I.D +0.610 -0.000	O.D max.	I.D +0.000 -0.305	O.D min.	I.D +0.610 -0.000	O.D max.
EEL 0178	·	·	·	·	282.575	293.370	282.702	292.557
EEL 0180	·	·	·	·	285.750	296.545	285.877	295.732
EEL 0182	·	·	·	·	288.925	299.720	289.052	298.907
EEL 0184	·	·	·	·	292.100	302.895	292.227	302.082
EEL 0186	·	·	·	·	295.275	306.070	295.402	305.257
EEL 0188	·	·	·	·	298.450	309.245	298.577	308.432
EEL 0190	·	·	·	·	301.625	312.420	301.752	311.607
EEL 0192	·	·	·	·	304.800	315.646	304.927	314.782

Seal dimensions are in millimetres and are prior to plating or coating

EEL Series – External Pressure Long Leg E-Seal

SEAL TYPE & DIAMETER	FREE HEIGHT 2.36				FREE HEIGHT 3.18			
	CAVITY		SEAL		CAVITY		SEAL	
	I.D +0.000 -0.330	O.D min.	I.D +0.660 -0.000	O.D max.	I.D +0.000 -0.330	O.D min.	I.D +0.660 -0.000	O.D max.
EEL 0194	·	·	·	·	307.975	318.821	308.102	317.957
EEL 0196	·	·	·	·	311.150	321.996	311.277	321.132
EEL 0198	·	·	·	·	314.325	325.171	314.452	324.307
EEL 0200	·	·	·	·	317.500	328.346	317.627	327.482
EEL 0202	·	·	·	·	320.675	331.521	320.802	330.657
EEL 0204	·	·	·	·	323.850	334.696	323.977	333.832
EEL 0206	·	·	·	·	327.025	337.871	327.152	337.007
EEL 0208	·	·	·	·	330.200	341.046	330.327	340.182
EEL 0210	·	·	·	·	333.375	344.221	333.502	343.357

Seal dimensions are in millimetres and are prior to plating or coating


TAV
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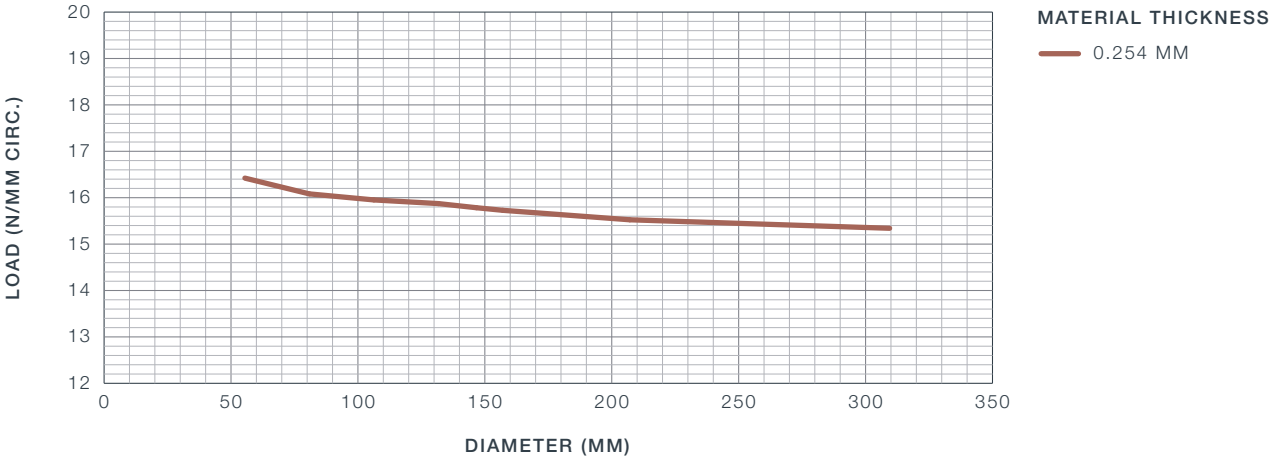
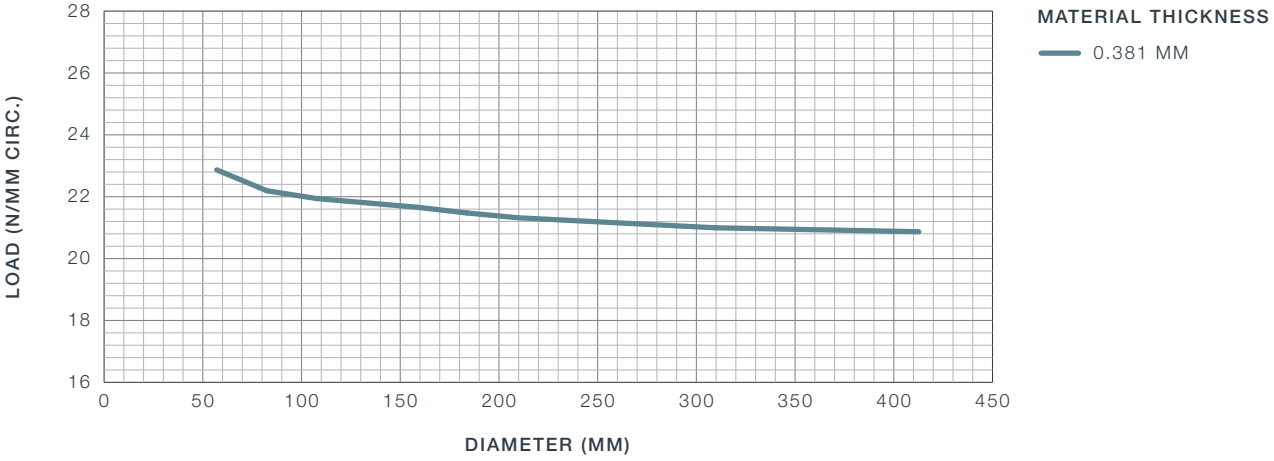
Load

The seating loads for each seal section are shown below. The values shown are for solution and long cycle precipitation heat treated Inconel 718 seals. These values are for guidance only as a number of factors can have a significant effect on the load including:

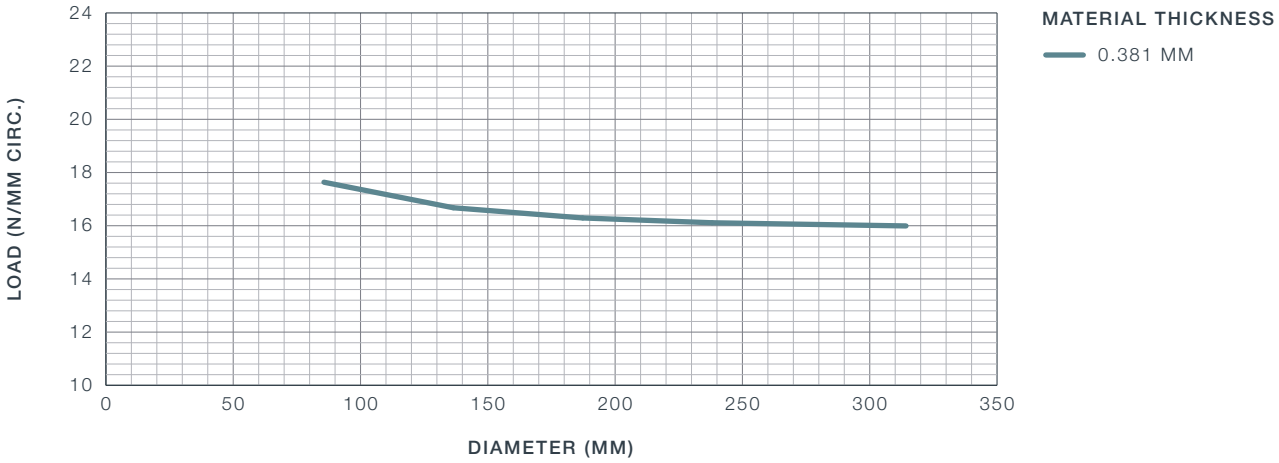
– Seal diameter
– Seal free height
– Cavity depth
– Tolerances
– Variations in material thickness and properties
– Coatings and platings



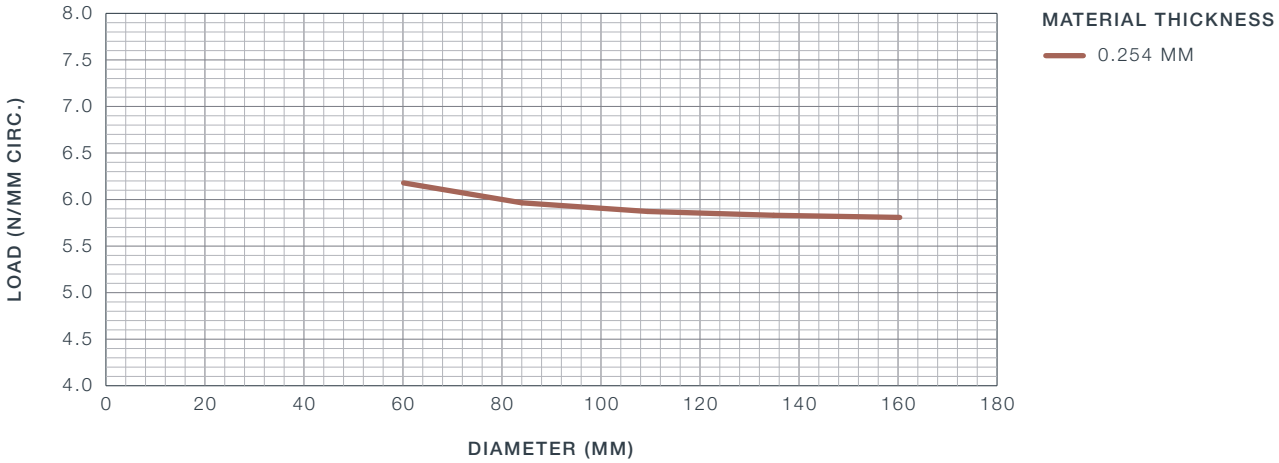
2.36 Section Short Leg Seating Load



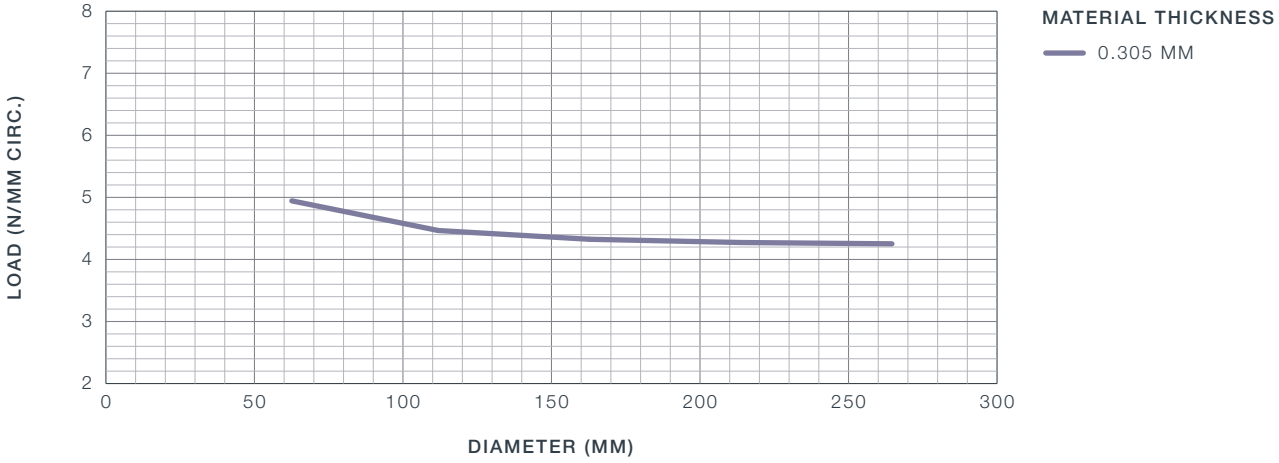
3.18 Section Short Leg Seating Load



4.75 Section Short Leg Seating Load



2.36 Section Long Leg Seating Load



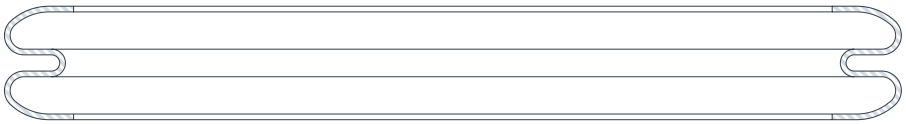
3.18 Section Long Leg Seating Load

Sigma Seals

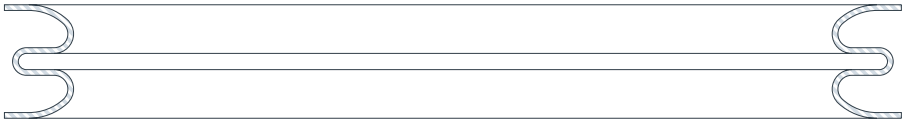
Product Description

Sigma Seals are single or multi bellow flexible metal seals designed for demanding applications where large thermal movement or tolerance stack-ups need to be accommodated.

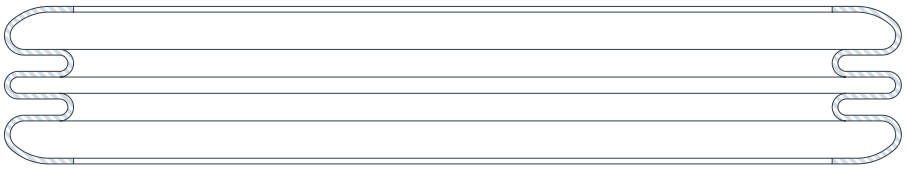
Standard Sigma Seal sections are available and can be designed to seal either internal or external pressure applications.



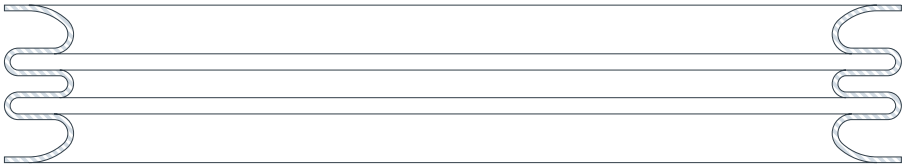
Single Bellow Internal Pressure



Single Bellow External Pressure



Multiple Bellows Internal Pressure



Multiple Bellows External Pressure

Part Properties

– Able to seal high and low temperatures and pressures
– A flexible low load seal with good recovery
– Designed to cope with large movements
– Can be manufactured to suit large cavity depths
– Three standard seal sections available to large diameters
– Non-standard seal sections available
– Non-round seal shapes can be manufactured

Sigma Seal Specification

Sigma Seals are designed on an individual basis to suit the customer's applications. A standard part list is not available for this product due to the large range of section and diameter options that can be selected.

There are three standard Sigma Seal sections available which are suited to many applications that utilise industry standard flanges. The details of the three standard sections and their corresponding cavity dimensions are shown on pages 100 and 101.

For other applications where standard sections are not appropriate, Nicholsons can design an alternative section to suit your particular requirements. Further options can be found in the Multi Bellow Seals section on page 106.

Please consult us if you require a bespoke design or need any assistance specifying a Sigma Seal or Multi Bellow Seal for your application.

MATERIAL TYPE

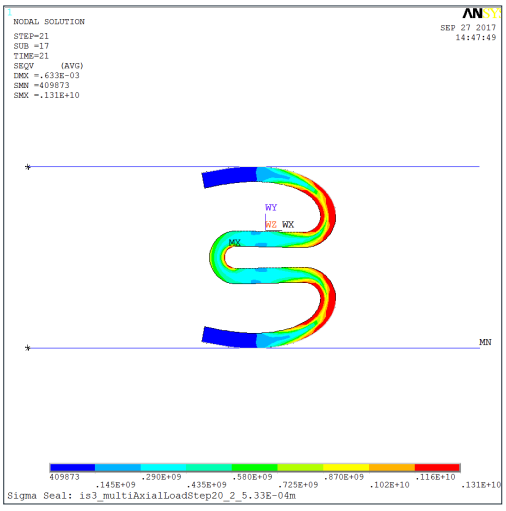
Sigma Seal materials are selected according to service requirements. They include high strength nickel alloys such as Inconels, Waspaloy and cobalt based alloys such as Haynes 25. Suitable material options are listed on page 12. Typical material thickness is within the range 0.152mm to 0.381mm.

HEAT TREATMENT

Full heat treatment is usually applied to the seal to ensure maximum use of the material properties. Further heat treatment options for this product are listed on page 13.

PLATING OR COATING

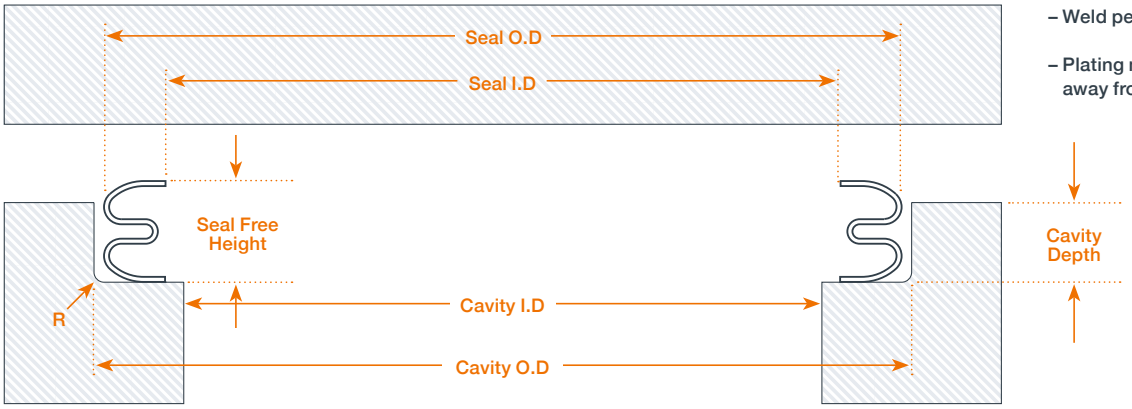
The standard Sigma Seal is uncoated. Plating or coating is available and options are listed on page 14. Wear resistance coatings can be applied to help protect the seal in arduous conditions. Not all plating or coating options are valid for Sigma Seals. Please consult us if you require any assistance in selecting the appropriate plating or coating.



Standard Sigma Seal Sections

Tolerances for Seal Design

SEAL DIAMETERS	SEAL OD TOL T_1 +0.000	SEAL ID TOL T_2 -0.000	SEAL RADIAL WIDTH W TOL T_3
Up to 254.0	-0.254	+0.254	±0.127
254.0 to 508.0	-0.508	+0.508	±0.254
508.0 to 762.0	-0.762	+0.762	±0.381
762.0 and above	-1.016	+1.016	±0.508



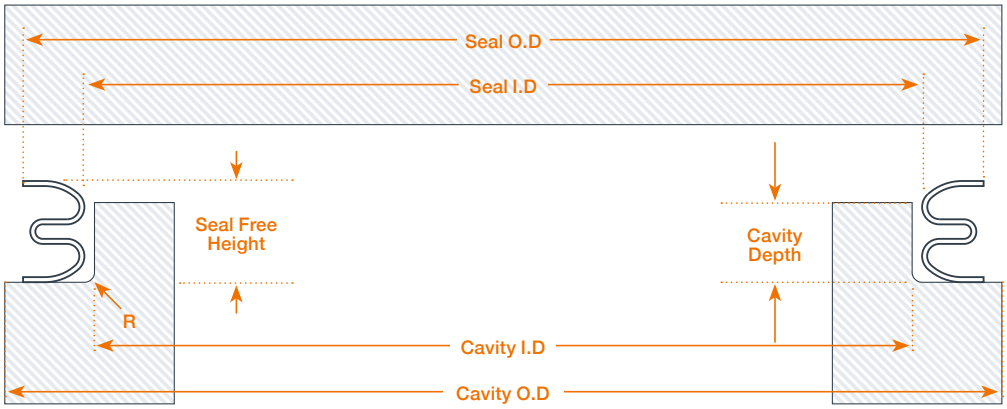
– Weld permitted

– Plating may be incomplete away from sealing surfaces

Internal Sigma Seal Cavity

NOMINAL SIZE	CAVITY				SEAL			
	DEPTH	O.D (min.)	I.D (max.)	CORNER RADIUS (max.) R	FREE HEIGHT	RADIAL WIDTH W	O.D (max.) A	I.D (min.) B
3.0	3.048 2.946	A+0.254	B-(0.508+T_2+T_4)	0.762	3.66 3.40	2.108±T_3	A	A-2WMAX
4.5	4.648 4.547	A+0.254	B-(0.508+T_2+T_4)	0.762	5.54 5.28	3.048±T_3	A	A-2WMAX
6.0	6.248 6.147	A+0.254	B-(0.508+T_2+T_4)	1.524	7.42 7.16	4.242±T_3	A	A-2WMAX

T_4 is the total tolerance on the cavity O/D



– Weld permitted

– Plating may be incomplete away from sealing surfaces

External Sigma Seal Cavity

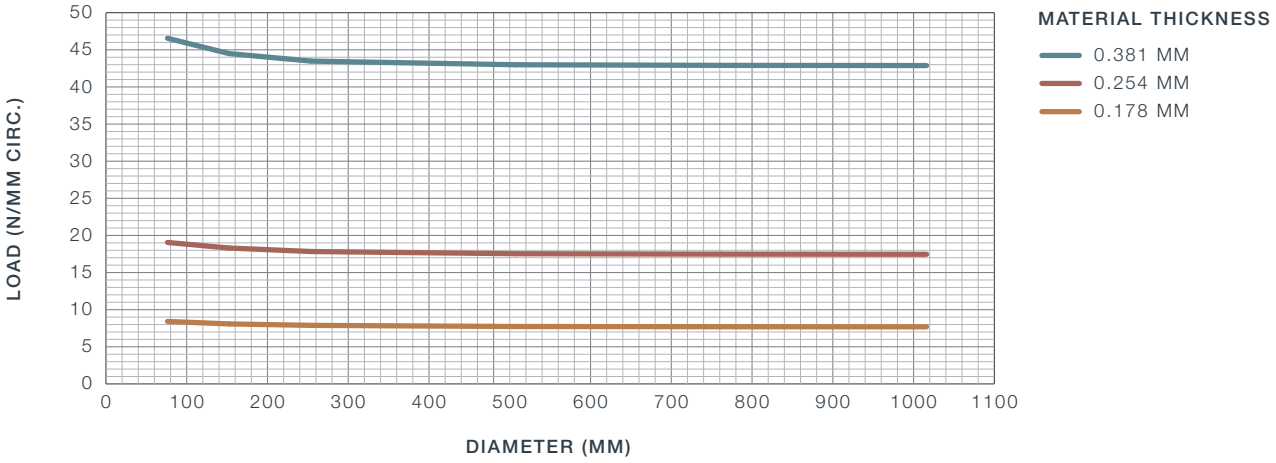
NOMINAL SIZE	CAVITY				SEAL			
	DEPTH	O.D (min.)	I.D (max.)	CORNER RADIUS (max.) R	FREE HEIGHT	RADIAL WIDTH W	O.D (max.) A	I.D (min.) B
3.0	3.048 2.946	$A+(0.508+T_2+T_5)$	B-0.254	0.762	3.66 3.40	$2.108\pm T_3$	B+2WMAX	B
4.5	4.648 4.547	$A+(0.508+T_2+T_5)$	B-0.254	0.762	5.54 5.28	$3.048\pm T_3$	B+2WMAX	B
6.0	6.248 6.147	$A+(0.508+T_2+T_5)$	B-0.254	1.524	7.42 7.16	$4.242\pm T_3$	B+2WMAX	B

T_5 is the total tolerance on the cavity O/D

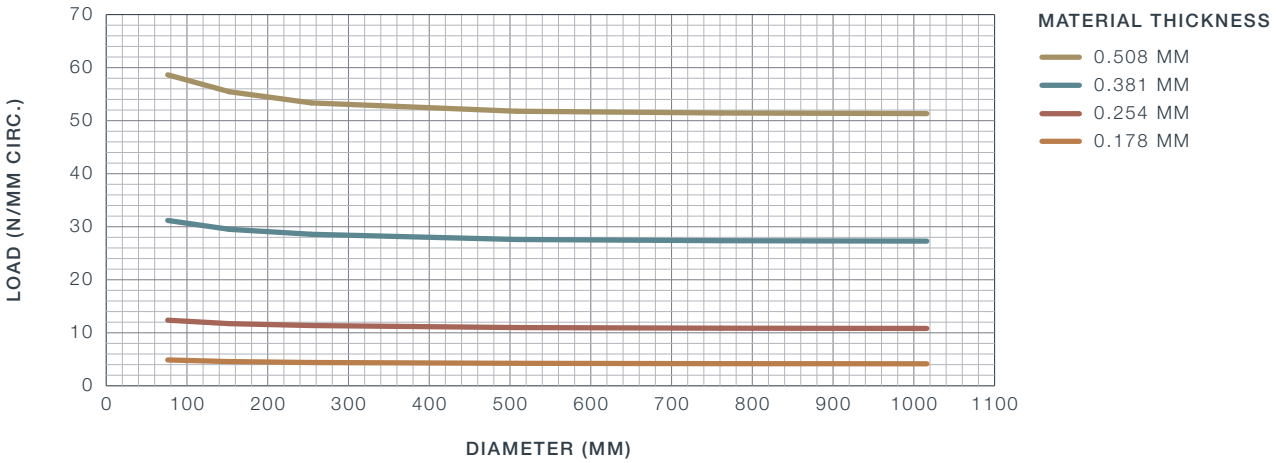
Load

The seating loads for each seal section are shown below. The values shown are for long cycle precipitation heat treated Inconel 718 seals. These values are for guidance only as a number of factors can have a significant effect on the load including:

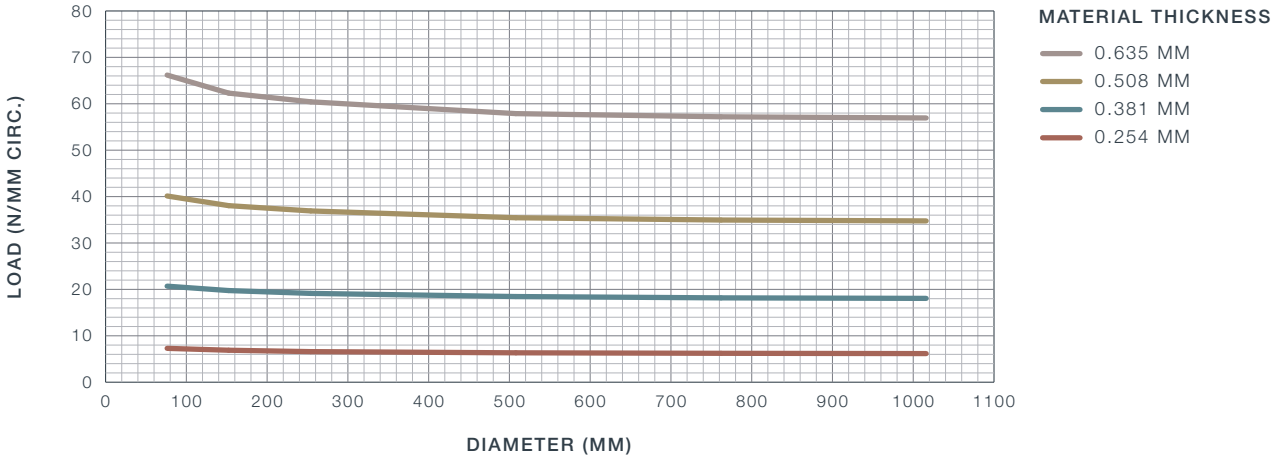
– Seal diameter
– Seal free height
– Cavity depth
– Tolerances
– Variations in material thickness and properties
– Coatings and platings



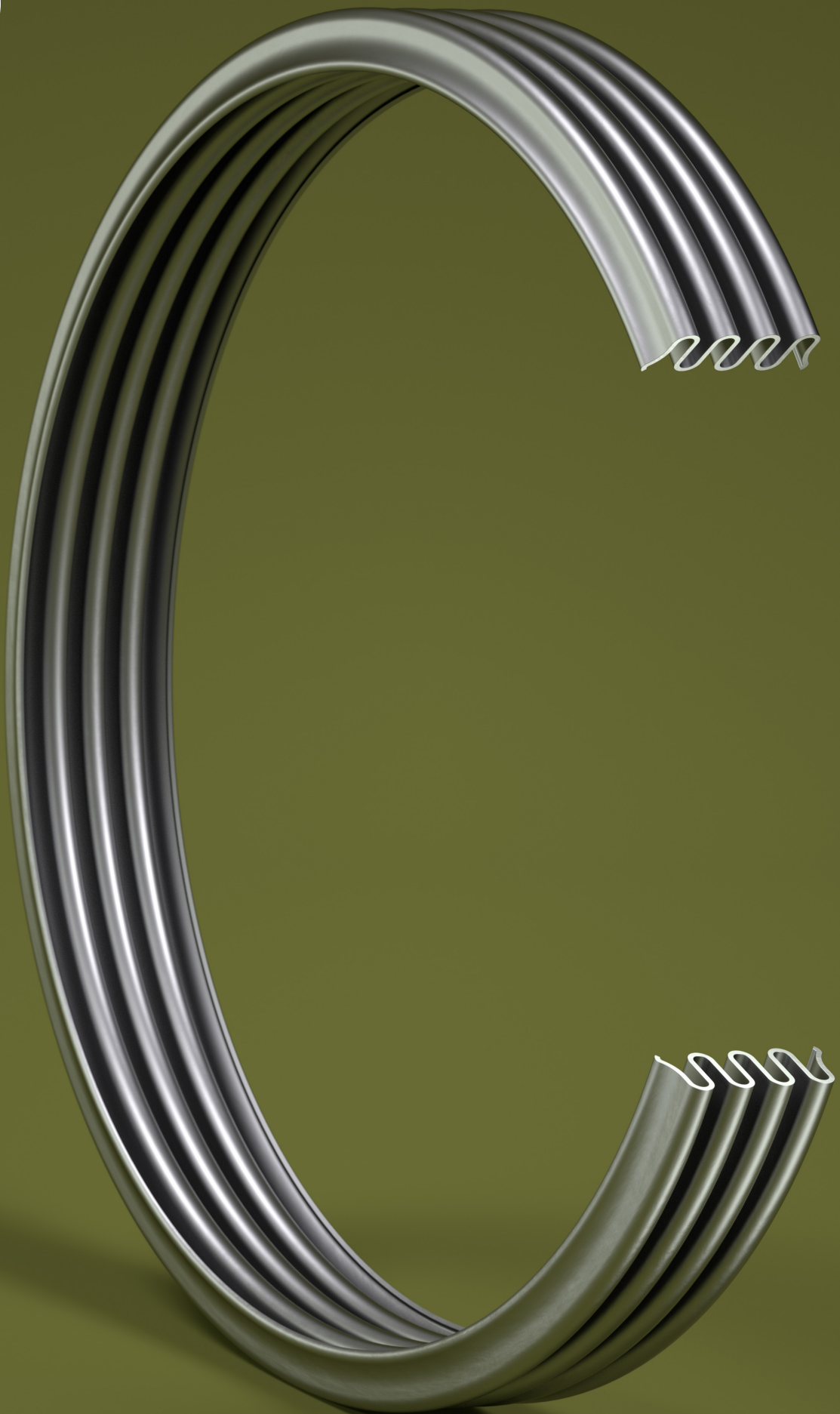
3.0 Section Seating Load



4.5 Section Seating Load



6.0 Section Seating Load



Multi Bellow Seals

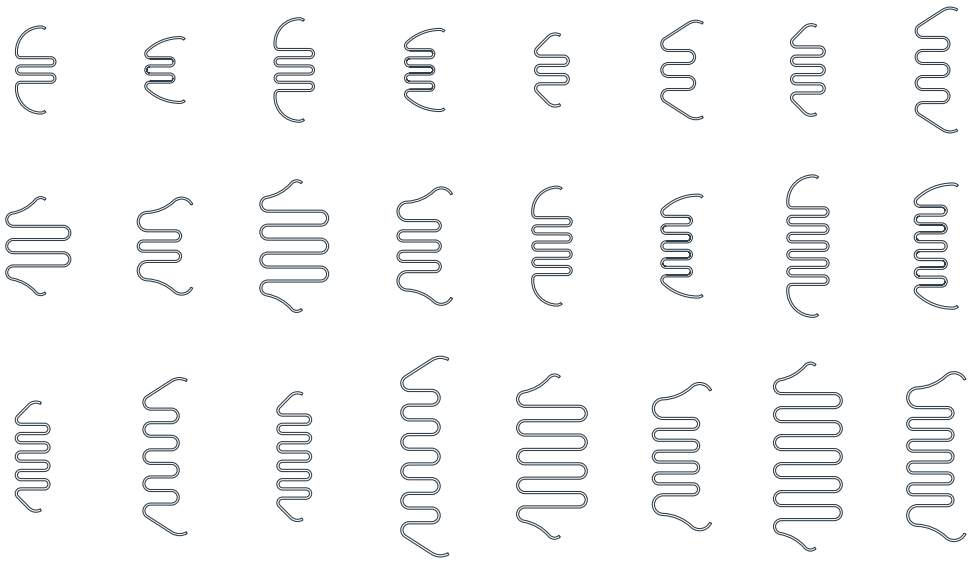
Product Description

Multi Bellow Seals are a range of flexible metal seals that are designed for more specialised applications where a non-standard section is required.

Sometimes referred to as W- or M-Seals, Multi Bellow Seals are particularly suitable for use where the available cavity radial width is limited or where the ratio of cavity radial width to cross section height is less than one.

Large scale vibration and cavity thermal growth can be accommodated by using a multiple bellow configuration. A non-standard section can be designed to produce a seal which exerts a greater specific load at the area of contact than the standard Sigma Seal sections which is beneficial for high pressure applications. Finite Element Analysis is often used during the design process to model the sealing load generated upon the cavity and the structural abilities of the seal to meet required cyclic operating conditions and fatigue life.

Multi Bellow Seals can be designed to seal either internal or external pressure applications. Some seal section examples are shown below.



Part Properties

– Able to seal high and low temperatures and pressures
– A flexible low load seal with good recovery
– Designed to cope with large movements
– Can be manufactured to suit large cavity depths
– Available in a range of sections to virtually any diameter
– Non-round seal shapes can be manufactured

Multi Bellow Seal Specification

Multi Bellow Seals are designed on an individual basis to suit the customer's application. A standard part list is not available for this product due to the large range of section and diameter options that can be selected.
Please contact us if you require a Multi Bellow Seal for your application.

MATERIAL TYPE

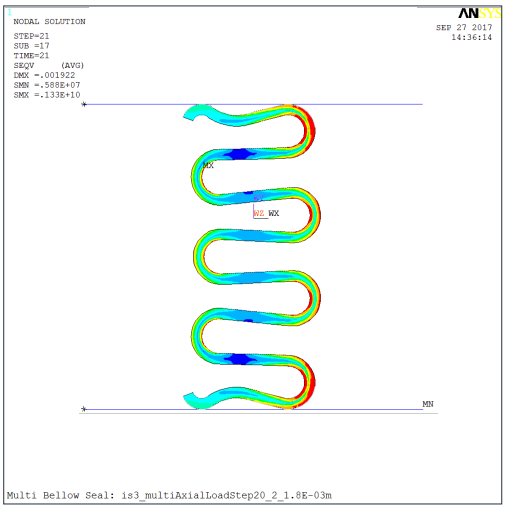
Multi Bellow Seal materials are selected according to service requirements. They include high strength nickel alloys such as Inconels, Waspaloy and cobalt based alloys such as Haynes 25. Suitable material options are listed on page 12. Typical material thickness is within the range 0.152mm to 0.381mm.

HEAT TREATMENT

Full heat treatment is usually applied to the seal to ensure maximum use of the material properties. Further heat treatment options for this product are listed on page 13.

PLATING OR COATING

The standard Multi Bellow Seal is uncoated.
Plating or coating is available and options are listed on page 14. Wear resistance coatings can be applied to help protect the seal in arduous conditions. Not all plating or coating options are valid for Multi Bellow Seals. Please consult us if you require any assistance in selecting the appropriate plating or coating.



Glossary

Axial Seal:	A seal that contacts the hardware on the OD and ID.
Contact Line:	The location at which the seal contacts the hardware.
External Seal:	A face seal that has higher pressure on its OD.
Face Seal:	A Seal that contacts the hardware in the axial direction.
Free Height:	The length of a seal in the axial direction.
ID:	Inner Diameter.
Internal Seal:	A face seal that has higher pressure on its ID.
Nominal:	The value specified in the catalogue or the mid-point of a toleranced dimension.
OD:	Outer Diameter.
Out-of-round Seal:	A seal that is made slightly oval to retain the seal in the hardware.
Radial Width:	The width of the seal section in the radial direction ((OD-ID)/2).
Seal Compression:	The difference between free height and compressed height.
Seal Set:	The seal free height minus the height of the seal after compression.
Seating Load:	The load required to fully compress the seal.
Snap-Fit:	The retention of an out-of-round seal in a cavity regardless of orientation.
Springback:	The height of seal after compression minus the compressed height.
Witness Line:	The visible line on a used seal indicating where contact between the seal and the hardware has occurred.

The information included in this catalogue is for general information purposes only and is not specific to a particular application. Whilst every effort has been made to ensure that all technical data contained within is correct, it is the ultimate responsibility of the customer to ensure that the selected product is suitable for the operating conditions of their individual application, including but not limited to temperature, pressure, compression and coupling materials.

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