

CF and Wire Seal Flanges & Fittings

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CF and Wire Seal Flanges & Fittings



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CF and Wire Seal FLANGES & FITTINGS

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CF and Wire Seal Flanges & Fittings



Overview

CF and wire seal flanges are part of the same family of ultra high vacuum components that compress a copper or elastomer gasket between two stainless steel flanges to create a vacuum tight seal. The CF flange system is more commonly used within the vacuum industry and as such has a much larger standard product offering and faster delivery. Wire seal flanges are desirable for those applications that require flanges larger than those available with the CF flange system. **ANCORP** CF flanges are manufactured to industry standards and are interchangeable with all other ConFlat® style flanges and fittings. Wire seal flanges have no standard dimension specifications. Vacuum component manufacturers endeavor to create interchangeable flanges, however, it is our opinion that the only way to ensure compatibility is to purchase a mating set of wire seal flanges from one manufacturer.

All flanges offered by **ANCORP** are manufactured on state-of-the-art CNC (computer numerical control) lathes to ensure consistency with dimensional tolerances, and extremely fine surface finishes. Water soluble, non-sulfur based coolants are used during the manufacturing process. The flanges are cleaned in an ultrasonic deionized water based cleaning system and vacuum packaged free from visible particulates and oils, ready for immediate use in any vacuum application.

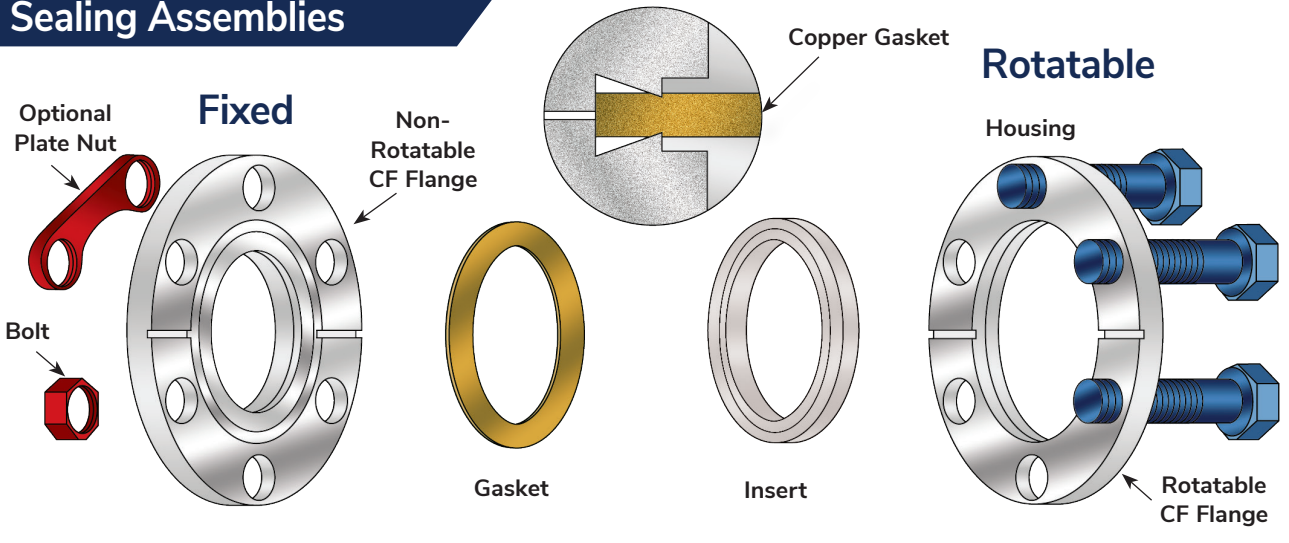
Specifications:

- Vacuum rated to 1×10^{-13} Torr.
- Leak rating $< 1 \times 10^{-9}$ std. cc/s helium
- Temperature range: -200°C to 450°C
- Standard materials:
 - Flanges and fittings: 304L stainless steel
 - Seals: OFHC copper for ultra high vacuum (UHV) or Viton® for high vacuum (HV)
- Standard sizes:
 - CF flanges outer diameter: 1 1/3 inches to 16 1/2 inches (for tubing diameter 1/4 inch up to 14 inches)
 - Wire seal flanges outer diameter: 12 3/8 inches up to 27 1/8 inches (for tubing diameter 10 inches up to 24 inches)

Features:

- Reusable flanges
- Elastomer Seals
- Sexless flanges – CF flange system
- Rotatable flanges for easier bolt hole alignment – CF flange system
- Tapped or clearance bolt holes available
- Adapters to other flange systems available
- Compatible with U.S. Standard (imperial) and metric measurements
- Interchangeable with other ConFlat® style flanges

CF Standard Sealing Assemblies



The CF flange system provides a complete range of flanges to mount with tubing sized 3/4 inch up to 14 inches in diameter. The CF seal assembly consists of three types of sub-components; two flanges, a sealing gasket and a fastener to compress the seal between the two flanges.

CF Flanges are available in two general styles; fixed and rotatable. Fixed flanges have a set bolt hole orientation while rotatable flanges have a two piece design allowing for bolt hole rotation to ease bolt alignment when mating the two flanges.

The two pieces of the rotatable CF flange are called the insert (in which the knife-edge is machined) and the housing (in which the bolt holes are machined). When installing these components the housing is placed behind the insert on the tubing prior to welding the insert to the tubing.

Both fixed and rotatable flanges are available with clearance and tapped bolt holes. Clearance bolt holes allow for unrestricted passage of a bolt through the flanges. The bolt is then tightened with a nut on the back side of the flange assembly. Tapped bolt holes are threaded to receive and tighten the bolt directly and do not utilize a nut. This is an excellent space saving option and is particularly useful when fastening a flange to a chamber wall or gate valve.

CF gaskets are made of either OFHC electronic grade copper or Viton® elastomer. Copper gaskets are by far

the most commonly used with the CF flange system and when compressed between the flange knife-edges provide a vacuum tight seal capable of achieving ultra high vacuum pressures and temperatures as high as 450°C. **ANCORP** does not recommend using a CF copper gasket for more than one seal. Viton® gaskets are capable of high vacuum pressures and temperatures as high as 150°C (205°C intermittent use). Viton® gaskets are reusable and can be used many times to make new vacuum tight seals.

CF Fasteners such as; bolts, nuts and washers are made of high tensile strength stainless steel. Bolts are offered with standard hex-head or 12-point head and silver plated. **ANCORP** recommends either high temperature anti-seize lubricant or silver plated bolts for applications with high temperature to prevent galling of the bolt and nut or threaded bolt hole. Nuts are offered with standard or plate nut design. Plate nuts are the most convenient way of fastening CF flanges. Plate nuts allow adjacent bolts to be tightened into one nut and eliminate the need for a second wrench to hold the nut while tightening. This is particularly useful when access to the installation is limited or there is limited clearance for the flange in an area of your vacuum system.

ANCORP offers a complete line of flanges, fittings, valves, traps and accessories with CF connections that can be used to create a complete vacuum system or pumping line.

CF Standard Sealing Assemblies

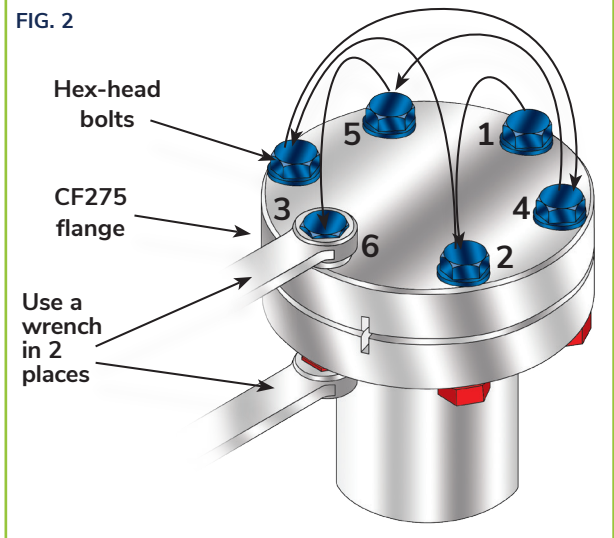
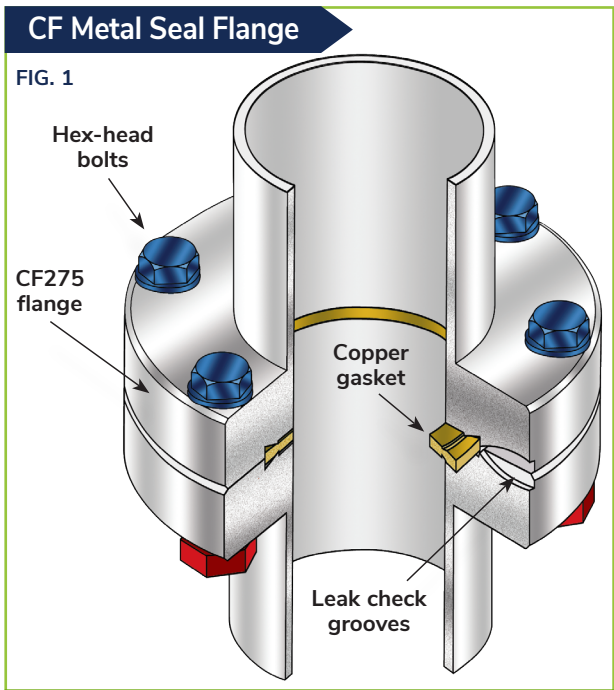
Each sealing pair of CF flanges contains an identical flange face with a knife-edge machined into the surface. A copper or Viton® sealing gasket is placed into the gasket capture groove of one of the two flanges. The flanges compress the gasket as the fastening bolts are tightened. This pressure forces the knife-edges of the two flanges into the gasket, creating an annular groove. The gasket material cold flows under this pressure and fills microscopic surface imperfections. The sealing knife-edges create a vacuum tight seal capable of withstanding temperature extremes from -200°C up to 450°C and pressures as low as 1×10^{-13} Torr.

Assembly Instructions:

Always wear lint-free gloves when touching or handling any part of a vacuum component that will come into contact with the vacuum atmosphere.

- 1) Check both flanges for cleanliness and that no sealing surfaces have dents or scratches.
 - 2) Apply anti-seize lubricant on the threaded portion of your bolts. If you have silver-plated bolts then the anti-seize lubricant is unnecessary.
- ANCORP** recommends either anti-seize lubricant or silver plated bolts for almost all CF assemblies. Especially for those assemblies that will be subjected to higher temperatures or have tapped bolt holes. Bolt galling in a tapped flange can ruin the machined thread pattern in the bolt hole and render the entire flange unusable.
- 3) Place a sealing gasket against the knife-edge of a non-rotatable flange.
 - 4) Align the bolt holes.
 - 5) Insert the bolts, add the washer to the nut side of the assembly and hand tighten. After hand tightening all the bolts in the assembly, apply a wrench to both the bolt head and the nut.

Tighten by turning the nuts in small increments (1/2 turn or less) using an alternating pattern choosing a bolt across the flange from the last. Continue the incremental tightening of the nuts in the pattern (shown in Fig. 2) until the desired torque pressures have been achieved. This tightening procedure ensures even gasket compression and a reliable seal.



Maximum Torque

FLANGE SIZE	COPPER GASKET	VITON® GASKET
CF133	7 ft./lbs.	7-10 ft./lbs.
CF212	12 ft./lbs.	7-10 ft./lbs.
CF275	12 ft./lbs.	7-10 ft./lbs.
CF338	15 ft./lbs.	7-10 ft./lbs.
CF450	15 ft./lbs.	7-10 ft./lbs.
CF462	15 ft./lbs.	7-10 ft./lbs.
CF600	15 ft./lbs.	7-10 ft./lbs.
CF675	15 ft./lbs.	7-10 ft./lbs.
CF800	15 ft./lbs.	7-10 ft./lbs.
CF1000	15 ft./lbs.	7-10 ft./lbs.
CF1200	15 ft./lbs.	7-10 ft./lbs.
CF1325	26 ft./lbs.	7-10 ft./lbs.
CF1400	26 ft./lbs.	7-10 ft./lbs.
CF1650	26 ft./lbs.	7-10 ft./lbs.

U.S. vs. Metric CF Flanges

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Special Purpose CF Flanges

U.S. manufacturers of CF flanges name them according to their outer diameter. Flanges measured in inches i.e. a CF600 flange has an outer diameter of approximately 6 inches.

European identification for these flanges is expressed in a variety of ways; the flange outer diameter is measured in millimeters or the flange inner diameter counterbore (the area machined to accept tubing for welding) is measured in millimeters or the inner diameter of the largest through bore is measured in millimeters. Measurements are rounded to the nearest millimeter for naming purposes.

U.S. and Metric CF flanges are compatible. The only difference in design is that metric flanges have a metric bolt thread machined into tapped bolt holes. **ANCORP** can provide metric tapped flanges upon request.

Common U.S. to Metric Equivalents

FLANGE SIZE	DIN STANDARD	EUROPEAN SIZES
CF133	DN16 CF	CF16
CF212	DN25 CF	CF25
CF275	DN35 CF	CF35, CF38, CF40
CF338	DN50 CF	CF50
CF450	DN63 CF	CF63, CF64
CF462	DN75 CF	CF75
CF600	DN100 CF	CF100
CF675	DN125 CF	CF125
CF800	DN150 CF	CF150, CF160
CF1000	DN200 CF	CF200
CF1200	DN250 CF	CF250

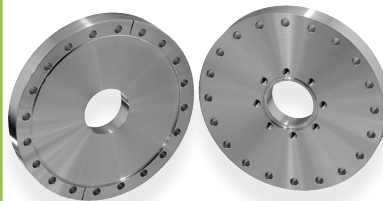
Special Purpose CF Flanges

Double-Sided CF Flanges



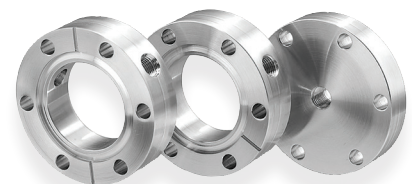
These flanges are manufactured with the same size CF flange on both sides. They are installed between two flanges also of the same size. This is a convenient and efficient way to add a variety of vacuum accessories to your system such as measurement devices, shutters and valves.

Zero-Length Reducer CF Flanges



These flanges are manufactured with different size CF flange on either side of the flange. They allow direct assembly of two different sizes of CF flanges with minimal impact on the length added to your system to accomplish the transition. Zero-length reducers are the width of one standard flange.

Adaptive CF Flanges



These flanges are manufactured in a variety of useful designs. Adapt from a single or double-sided CF to one or two female NPT side ports, or a double-sided CF with a CF133 side port. These flanges are ideal for adding vacuum accessories to your system such as measurement devices, shutters and valves.

Wire Seal Flange System

The wire seal flange system provides a complete range of flanges to mount with tubing sized 10 inches up to 24 inches outer diameter. The wire seal assembly consists of three types of sub-components: two flanges, a sealing gasket and a fastener to compress the seal between the two flanges.

Wire seal flanges are available in two general designs: male and female. Female flanges accept the sealing gasket while the male flange has a protruding circular ridge that fits into the gasket groove on the receiving female flange. Upon compression the gasket material cold flows under this pressure and fills microscopic surface imperfections on the sealing surfaces creating a vacuum tight seal capable of withstanding temperature extremes from -200°C up to 450°C and pressures as low as 1×10^{-13} Torr. There are no standard rotatable wire seal flanges so great care must be taken to specify bolt hole orientation on chambers and fittings that are assembled with these flanges.

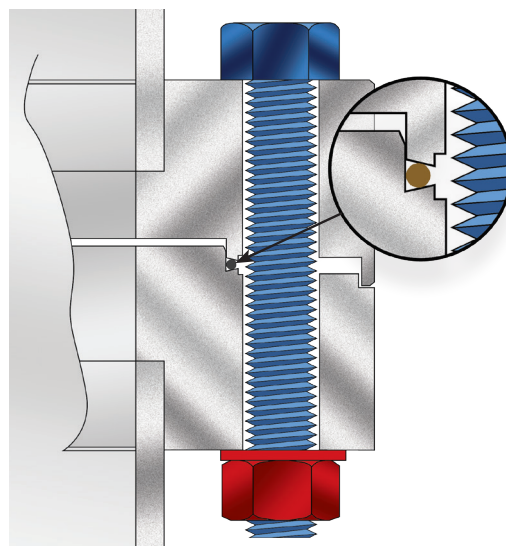
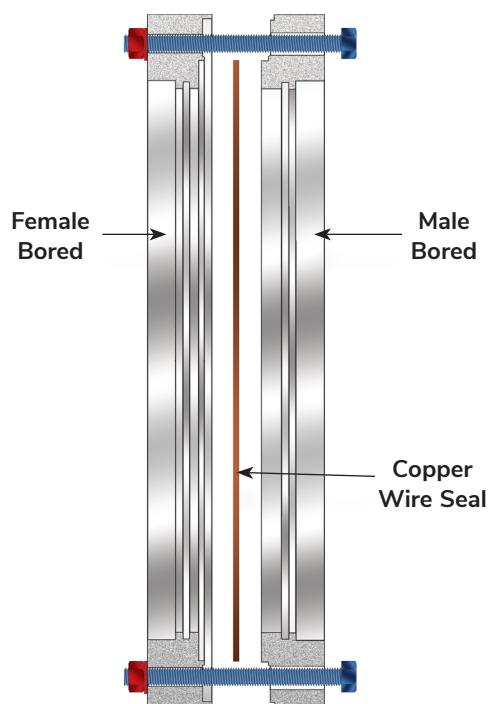
Wire seal gaskets are made of either OFHC electronic grade copper wire or Viton® elastomer. Copper gaskets are by far the most commonly used with the wire seal flange system and when compressed between the flanges provide a vacuum tight seal capable of achieving ultra high vacuum pressures and temperatures as high as 450°C .

ANCORP does not recommend using a wire seal copper gasket for more than one seal. Viton® gaskets are capable of high vacuum pressures and temperatures as high as 150°C (205°C intermittent use). Viton® gaskets are reusable and can be used many times to make new vacuum tight seals.

Wire seal fasteners are hex-head bolts, nuts and washers made of high tensile strength stainless steel. Wire seal assembly follows the same guidelines as the CF flange system except for the maximum torque ratings which are included on this page.

Wire seal flanges are ideal for those applications that require large diameter ports and extremely low vacuum pressure. Common examples are bell jar systems, vacuum furnaces, deposition systems and environmental chambers.

Wire Seal Flange Assembly



Maximum Torque

FLANGE SIZE	COPPER GASKET	VITON® GASKET
WF1200	26 ft./lbs.	7-10 ft./lbs.
WF1400	26 ft./lbs.	7-10 ft./lbs.
WF1700	33 ft./lbs.	7-10 ft./lbs.
WF1900	33 ft./lbs.	7-10 ft./lbs.
WF2200	33 ft./lbs.	7-10 ft./lbs.
WF2700	33 ft./lbs.	7-10 ft./lbs.

CF and Wire Seal Gaskets

ANCORP provides CF and wire seal gaskets for all standard sizes. We offer either high vacuum or ultra high vacuum sealing gaskets to meet the needs of your specific application.

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CF and Wire Seal Gaskets

Specifications:

- Leak rating 1×10^{-9} std. cc/s helium
- Temperature range:
 - OFE Copper: -200°C to 450°C
 - Viton® -26°C up to 150°C (Intermittent use to 205°C)
- Standard materials:
 - OFHC copper for ultra high vacuum (UHV) or Viton® for high vacuum (HV)

Features:

- Reusable flanges
- All-metal seals
- Sexless flanges - CF flange system
- Rotatable flanges for easier bolt hole alignment
- Tapped or clearance bolt holes available
- Adapters to other flange systems available
- Compatible with U.S. Standard and metric measurements
- Interchangeable with other ConFlat® style flanges

CF Copper Gaskets



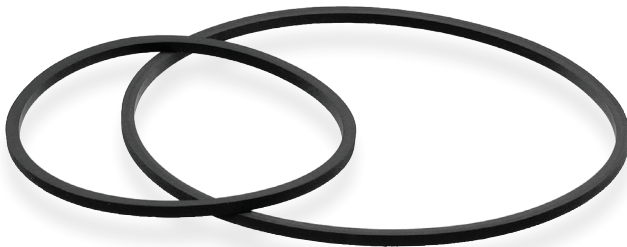
The basic seal for the CF flange system is an oxygen free electronic grade (OFE) copper gasket that is compressed between the knife-edges (flat version) or between a male and female edge (round single strand version) of two CF flanges to create a seal capable of achieving ultra high vacuum pressures. Copper gaskets have a temperature range of -200°C up to 450°C.

Wire Seal Copper Gaskets



The Wire Seal Copper Gaskets are precisely punched, de-burred, chemically treated and packaged to eliminate and prevent surface imperfections. CF wire seal copper gaskets provide one reliable seal per use. Use a new copper gasket each time you install a CF sealing assembly. They are the best gasket to use for ultra-high vacuum processes with a UHV rating of approximately 1×10^{-13} Torr.

CF & Wire Seal Viton® Gaskets



This alternative seal for the CF flange system is a vacuum grade fluorocarbon elastomer gasket that is compressed between either the knife-edges or the male and female wire seal flanges of two CF flanges to create a seal capable of achieving high vacuum pressure. Viton® gaskets have a temperature range of -26°C up to 150°C (205°C intermittent use). These gaskets are precisely lathe cut, de-burred, cleaned and packaged to eliminate and prevent shedding or rips. CF Viton® gaskets may be reused many times for reinstallation of CF sealing assemblies. They are the best gasket to use for high vacuum processes with a UHV rating of approximately 1×10^{-8} Torr.

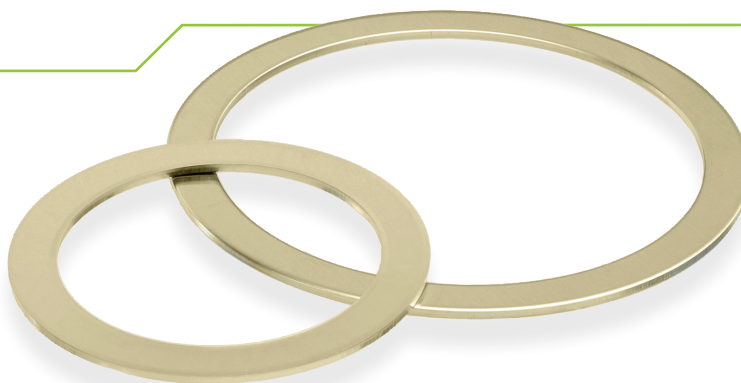
CF Copper Gaskets

Materials:

- OFE Copper

Product Notes:

- Single use seal
- Temperature range: -200°C up to 450°C
- Pressure range: UHV (approx. 1×10^{-13} Torr.)



PART #	REFERENCE ID	USE WITH FLANGE	INNER DIAMETER (in)	OUTER DIAMETER (in)	DESCRIPTION
0604020	CF133-GA-CO	CF133	0.64	0.835	(10) Copper Gaskets
0604022	CF212-GA-CO	CF212	1.01	1.29	(10) Copper Gaskets
0604024	CF275-GA-CO	CF275	1.45	1.895	(10) Copper Gaskets
0604025	CF275-GA-CO-SD	CF275	SOLID	1.895	(10) Copper Gaskets, SOLID
0604026	CF275-175-GA-CO	CF275	1.53	1.895	(10) Copper Gaskets
0604027	CF338-GA-CO	CF338	2.01	2.42	(10) Copper Gaskets
0604029	CF450-GA-CO	CF450	2.505	3.24	(10) Copper Gaskets
0604031	CF462-GA-CO	CF462	3.01	3.60	(10) Copper Gaskets
0604033	CF600-GA-CO	CF600	4.01	4.74	(10) Copper Gaskets
0604035	CF675-GA-CO	CF675	5.00	5.56	(10) Copper Gaskets
0604037	CF800-GA-CO	CF800	6.01	6.74	(10) Copper Gaskets
0604039	CF1000-GA-CO	CF1000	8.01	8.74	(10) Copper Gaskets
0604041	CF1200-GA-CO	CF1200	10.00	10.74	(1) Copper Gaskets
0604043	CF1325-GA-CO	CF1325	10.89	11.575	(1) Copper Gaskets
0604045	CF1400-GA-CO	CF1400	11.80	12.31	(1) Copper Gaskets
0604047	CF1450-GA-CO	CF1450	12.11	12.81	(1) Copper Gaskets
0604049	CF1650-GA-CO	CF1650	14.135	14.81	(1) Copper Gaskets

Wire Seal Copper Gaskets

Materials:

- OFE Copper

Product Notes:

- Single use seal

- Temperature range: -200°C up to 450°C
- Pressure range: UHV (approx. 1×10^{-13} Torr)



PART #	REFERENCE ID	USE WITH FLANGE	DESCRIPTION
0606511	WF1200-GA-CO	WF1200	(1) Copper Gasket
0606512	WF1400-GA-CO	WF1400	(1) Copper Gasket
0606513	WF1700-GA-CO	WF1700	(1) Copper Gasket
0606514	WF1900-GA-CO	WF1900	(1) Copper Gasket
0606515	WF2200-GA-CO	WF2200	(1) Copper Gasket
0606516	WF2700-GA-CO	WF2700	(1) Copper Gasket

CF Viton® Gaskets

Materials:

- Fluorocarbon elastomer

Product Notes:

- Multi-use seal
- Temperature range: -26°C up to 150°C (intermittent use to 205°C)
- Pressure range: HV (approx. 1×10^{-8} Torr)



PART #	REFERENCE ID	USE WITH FLANGE	DESCRIPTION
0604000	CF133-GA-VT	CF133	(5) Viton® Gaskets
0604001	CF212-GA-VT	CF212	(5) Viton® Gaskets
0604002	CF275-GA-VT	CF275	(5) Viton® Gaskets
0604003	CF338-GA-VT	CF338	(1) Viton® Gasket
0604004	CF450-GA-VT	CF450	(1) Viton® Gasket
0604005	CF462-GA-VT	CF462	(1) Viton® Gasket
0604006	CF600-GA-VT	CF600	(1) Viton® Gasket
0604007	CF675-GA-VT	CF675	(1) Viton® Gasket
0604008	CF800-GA-VT	CF800	(1) Viton® Gasket
0604009	CF1000-GA-VT	CF1000	(1) Viton® Gasket
0604010	CF1200-GA-VT	CF1200	(1) Viton® Gasket
0604011	CF1325-GA-VT	CF1325	(1) Viton® Gasket
0604012	CF1400-GA-VT	CF1400	(1) Viton® Gasket
0604013	CF1450-GA-VT	CF1450	(1) Viton® Gasket
0604014	CF1650-GA-VT	CF1650	(1) Viton® Gasket

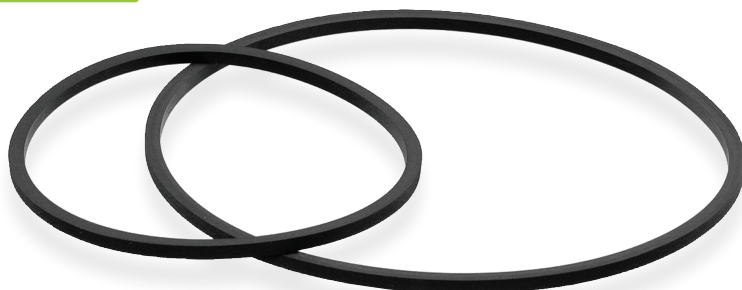
Wire Seal Viton® Gaskets

Materials:

- Fluorocarbon elastomer

Product Notes:

- Multi-use seal
- Temperature range: -26°C up to 150°C (intermittent use to 205°C)
- Pressure range: HV (approx. 1×10^{-8} Torr)



PART #	REFERENCE ID	USE WITH FLANGE	DESCRIPTION
0606521	WF1200-GA-VT	WF1200	(1) Viton® Gasket
0606522	WF1400-GA-VT	WF1400	(1) Viton® Gasket
0606523	WF1700-GA-VT	WF1700	(1) Viton® Gasket
0606524	WF1900-GA-VT	WF1900	(1) Viton® Gasket
0606525	WF2200-GA-VT	WF2200	(1) Viton® Gasket
0606526	WF2700-GA-VT	WF2700	(1) Viton® Gasket

CF and Wire Seal Flanges

ANCORP manufactures flanges for our own use as we manufacture modular fittings (tee's, elbows and nipples) valves, feedthroughs, chambers and other components. We offer these same flanges for those customers that have in-house welding capabilities and desire to customize their system or components themselves.



All ANCORP CF flanges are manufactured to industry specifications to ensure compatibility with other manufacturer's flanges.

Features:

- Reusable flanges
- All-metal or elastomer seals
- Sexless flanges - CF flange system
- Rotatable flanges for easier bolt hole alignment - CF flange system
- Tapped or clearance bolt holes available
- Adapters to other flange systems available
- Compatible with U.S. Standard (imperial) and metric measurements
- Interchangeable with other ConFlat® style flanges

Specifications:

- Vacuum rated to 1×10^{-13} Torr. with Copper Seals
- Leak rating $< 1 \times 10^{-9}$ std. cc/s helium
- Temperature range: -200°C to 450°C with Copper Seals
- Standard materials:
 - Flanges and fittings: 304L stainless steel
 - Seals: OFHC copper for ultra high vacuum (UHV) or Viton® for high vacuum (HV)
- Standard sizes:
 - CF flanges outer diameter: 1 1/3 inches to 16 1/2 inches (for tubing diameter 1/4 inches up to 14 inches)
 - Wire seal flanges outer diameter: 12 3/8 inches up to 27 1/8 inches (for tubing diameter 10 inches up to 24 inches)

CF Weld Flanges

These flanges are manufactured with a weld prep and tubing bore for immediate installation on your system with no additional alteration. ANCORP offers CF weld flanges in two designs; fixed and rotatable. Fixed flanges have a set bolt hole orientation while rotatable flanges have a two piece design allowing for bolt hole rotation to ease bolt alignment when



mating the two flanges. Fixed and rotatable flanges have two bolt hole options; clearance or tapped bolt holes. Clearance bolt holes allow for unrestricted passage of a bolt through the flanges. The bolt is then tightened with a nut on the back side of the flange assembly. Tapped bolt holes are threaded to receive and tighten the bolt directly and do not utilize a nut. Standard CF weld flanges are manufactured of 304L stainless steel. Other materials are available on request.

CF Blank Flanges

CF Blank flanges are manufactured with no weld prep and no tubing bore. Blank flanges are commonly used to close unused ports or they are altered by customers with their own custom machining capability for a special use. **ANCORP** offers CF blank flanges in two designs; fixed and rotatable. Fixed flanges have a set bolt hole orientation while rotatable flanges have a two piece design allowing for bolt hole rotation to ease bolt alignment when mating the two flanges.



Fixed and rotatable flanges have two bolt hole options: clearance or tapped bolt holes. Clearance bolt holes allow for unrestricted passage of a bolt through the flanges. The bolt is then tightened with a nut on the back side of the flange assembly. Tapped bolt holes are threaded to receive and tighten the bolt directly and do not utilize a nut. Standard CF blank flanges are manufactured of 304L stainless steel. Other materials are available on request.

Wire Seal Weld Flanges

Wire Seal Weld flanges are manufactured with a weld prep and tubing bore for immediate installation on your system with no additional alteration. Wire seal flanges are available in two general designs: male and female. Female flanges accept the sealing gasket while the male flange has a protruding circular ridge that fits into the gasket groove on the receiving female flange. Standard wire seal bored flanges are manufactured of 304L stainless steel. Other materials are available on request.



Wire Seal Blank Flanges

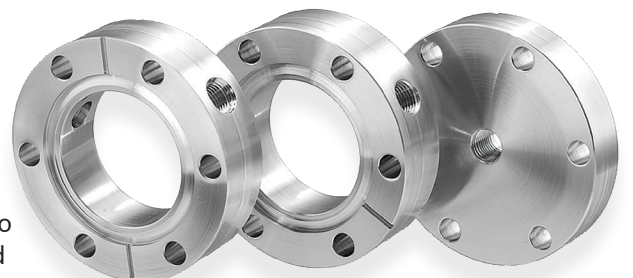
Wire Seal Blank flanges are manufactured with no weld prep and no tubing bore. Blank flanges are commonly used to close unused ports or they are altered by customers with their own custom machining capability for a special use. Wire seal flanges are available in two general designs: male and female.

Female flanges accept the sealing gasket while the male flange has a protruding circular ridge that fits into the gasket groove on the receiving female flange. Standard wire seal blank flanges are manufactured of 304L stainless steel. Other materials are available on request.



CF Special Purpose Flanges

CF Special Purpose flanges can serve a variety of useful functions in your vacuum system. Adapt directly from a larger CF to a smaller flange, from a single or double-sided CF to one or two female NPT side ports, or a double-sided CF with a CF133 machined side port. These flanges are ideal for adding vacuum accessories to your system such as measurement devices, shutters and valves.



CF 133 – 1.33 inches O.D.
UHV Flanges



Product Features:

- Designed to fit standard inch tubing O.D.'s
- Self-aligning
- Internal weld
- Sexless flanges
- Rotatable flanges for easier bolt hole alignment
- Tapped and clearance bolt holes available
- Blank flanges to close unused ports or custom modify
- Interchangeable with other ConFlat® style flanges
- Adapters to other flange systems available

Product Specifications:

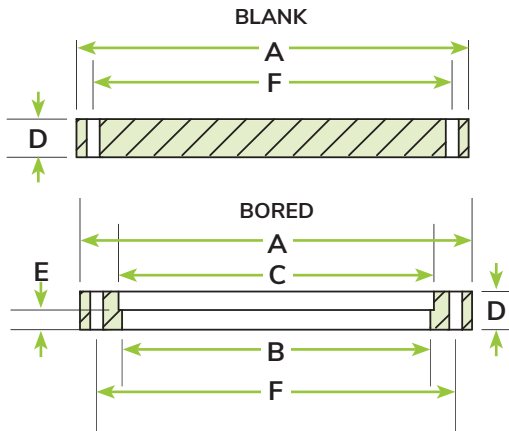
- Pressure range: UHV (approx. 1×10^{-13} Torr)
- Temperature range: -200°C up to 450°C
- Standard materials: 304L grade stainless steel

Options: Call for price and availability

- Metric tapped bolt holes
- Alternative materials:
316L stainless steel, aluminum, etc.

CF 133 - Fixed Flanges

2
CF133 Flanges



ORDERING NOTE: CF133 flanges are also available with a weld neck to ease welding to small diameter tubing. See pg. 2.16 - 2.18

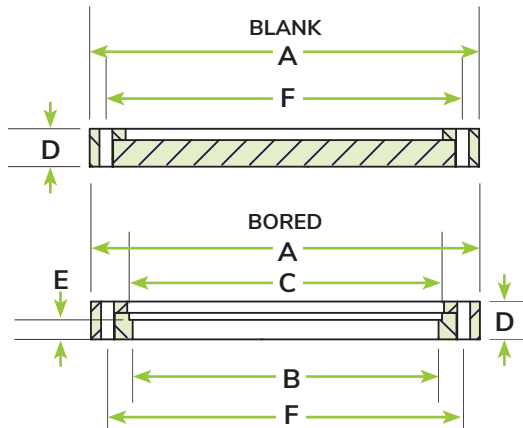
Clearance Bolt Holes

PART #	REFERENCE ID	A (in)	B (in)	C (in)	D (in)	E (in)	F (in)	BOLT HOLES	
								#	DIAMETER
5000000	CF133-000	1.33	Blank	-	0.30	-	1.06	6	0.17
5000003	CF133-025	1.33	0.26	-	0.30	-	1.06	6	0.17
5000004	CF133-038	1.33	0.38	-	0.30	-	1.06	6	0.17
5000005	CF133-050	1.33	0.51	-	0.30	-	1.06	6	0.17
5000006	CF133-075	1.33	0.63	0.76	0.30	0.18	1.06	6	0.17

Tapped Bolt Holes

PART #	REFERENCE ID	A (in)	B (in)	C (in)	D (in)	E (in)	F (in)	BOLT HOLES	
								#	THREAD
5000009	CF133T-000	1.33	Blank	-	0.30	-	1.06	6	8-32
5000012	CF133T-025	1.33	0.26	-	0.30	-	1.06	6	8-32
5000013	CF133T-038	1.33	0.38	-	0.30	-	1.06	6	8-32
5000014	CF133T-050	1.33	0.51	-	0.30	-	1.06	6	8-32
5000015	CF133T-075	1.33	0.63	0.76	0.30	0.18	1.06	6	8-32

CF 133 - Rotatable Flanges



2
CF133 Flanges

Clearance Bolt Holes

PART #	REFERENCE ID	A (in)	B (in)	C (in)	D (in)	E (in)	F (in)	BOLT HOLES	
								#	DIAMETER
5000018	CF133R-000	1.33	Blank	-	0.30	-	1.06	6	0.17
5000021	CF133R-025	1.33	0.26	-	0.30	-	1.06	6	0.17
5000022	CF133R-038	1.33	0.38	-	0.30	-	1.06	6	0.17
5000023	CF133R-050	1.33	0.51	-	0.30	-	1.06	6	0.17
5000024	CF133R-075	1.33	0.63	0.76	0.30	0.18	1.06	6	0.17

Tapped Bolt Holes

PART #	REFERENCE ID	A (in)	B (in)	C (in)	D (in)	E (in)	F (in)	BOLT HOLES	
								#	THREAD
5000027	CF133RT-000	1.33	Blank	-	0.30	-	1.06	6	8-32
5000030	CF133RT-025	1.33	0.26	-	0.30	-	1.06	6	8-32
5000031	CF133RT-038	1.33	0.38	-	0.30	-	1.06	6	8-32
5000032	CF133RT-050	1.33	0.51	-	0.30	-	1.06	6	8-32
5000033	CF133RT-075	1.33	0.63	0.76	0.30	0.18	1.06	6	8-32

CF 133 Flange Hardware

PART #	REFERENCE ID	DESCRIPTION
0604020	CF133-GA-CO	(10) Copper Gaskets
0604000	CF133-GA-VT	(5) Viton® Gaskets
0605105	CF133-HBK	(25) Bolt, Nut & Washer Kit 8-32x3/4 in.
0605181	CF133-HBK-SP	(25) Silver Plated Bolt, Nut & Washer Kit; 8-32x3/4 in.
0605106	CF133-HTBK	(25) Bolt & Washer Kit; 8-32x1/2 in.
0605182	CF133-HTBK-SP	(25) Silver Plated Bolt & Washer Kit; 8-32x1/2 in.
0605107	CF133-HPBK	(12) Plate Nuts, (24) Bolts & Washers; 8-32x3/4 in.
0605248	CF133-HPBK-SP	(12) Plate Nuts, (24) 8-32x3/4 in. Silver Plated Hex Socket Head Bolt & Washer Kit
0605108	CF133-PN	(24) Plate Nuts; 8-32
0605208	ASTL	Bolt thread lubricant eliminates galling of bolt and nut or tapped bolt hole

CF 133 – 1.33 inches O.D. UHV Flanges with Weld Neck

2

CF 133 Flanges



Product Features:

- Designed to fit standard inch tubing O.D.'s
- Self-aligning
- External weld
- Available with and without 0.060 weld prep
- Sexless flanges
- Rotatable flanges for easier bolt hole alignment
- Tapped and clearance bolt holes available
- Blank flanges to close unused ports or custom modify
- Interchangeable with other ConFlat® style flanges

Product Specifications:

- Pressure range: UHV (approx. 1×10^{-13} Torr)
- Temperature range: -200°C up to 450°C
- Standard materials: 304L grade stainless steel

Options: Call for price and availability

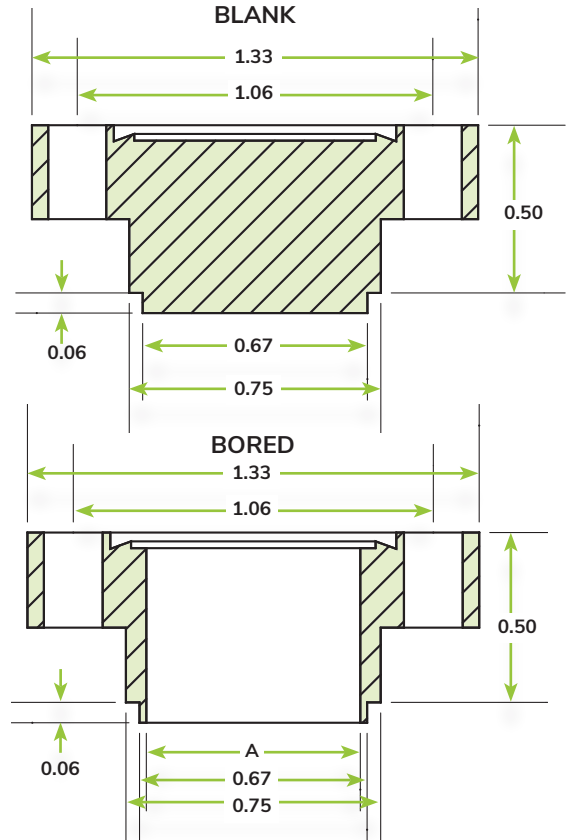
- Metric tapped bolt holes
- Alternative materials:
316L, 316LN stainless steel, aluminum, titanium, bimetal etc.

TECH TIP



CF133 flanges with weld neck ease welding to small diameter tubing and lessen the possibility that the heat from welding will warp the flange.

CF 133 - Fixed Flanges Weld Neck



2

CF 133 Flanges

Clearance Bolt Holes

PART #	REFERENCE ID	A (in)	BOLT HOLES	
			#	DIAMETER
5000001	CF133-000-WN	Blank	6	0.17
5000007	CF133-075-WN	0.63	6	0.17

Tapped Bolt Holes

PART #	REFERENCE ID	A (in)	BOLT HOLES	
			#	THREAD
5000010	CF133T-000-WN	Blank	6	8-32
5000016	CF133T-075-WN	0.63	6	8-32

CF 133 - Fixed Flanges Weld Neck with Butt Weld

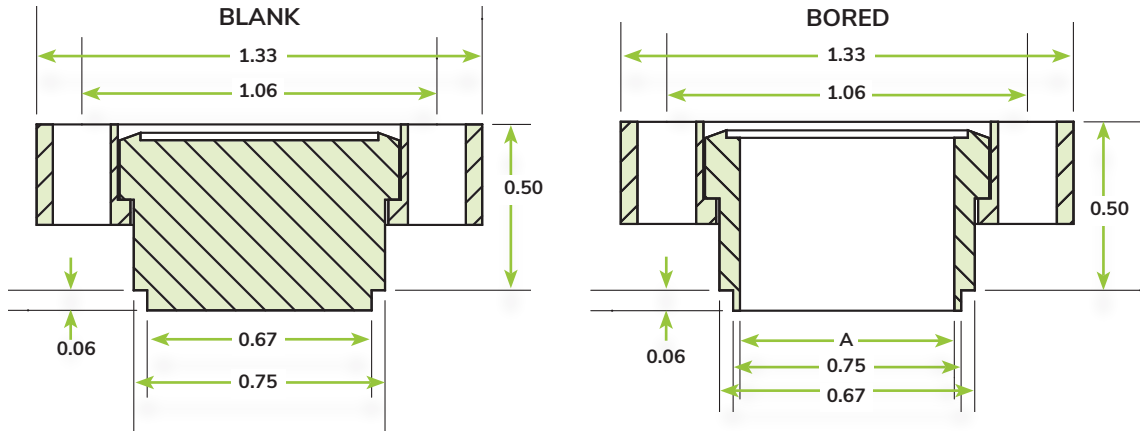
Clearance Bolt Holes

PART #	REFERENCE ID	A (in)	BOLT HOLES	
			#	DIAMETER
5000002	CF133-000-WNB	Blank	6	0.17
5000008	CF133-075-WNB	0.63	6	0.17

Tapped Bolt Holes

PART #	REFERENCE ID	A (in)	BOLT HOLES	
			#	THREAD
5000011	CF133T-000-WNB	Blank	6	8-32
5000017	CF133T-075-WNB	0.63	6	8-32

CF 133 - Rotatable Flanges Weld Neck



Clearance Bolt Holes

PART #	REFERENCE ID	A (in)	BOLT HOLES	
			#	DIAMETER
5000019	CF133R-000-WN	Blank	6	0.17
5000025	CF133R-075-WN	0.63	6	0.17

Tapped Bolt Holes

PART #	REFERENCE ID	A (in)	BOLT HOLES	
			#	THREAD
5000028	CF133RT-000-WN	Blank	6	8-32
5000034	CF133RT-075-WN	0.63	6	8-32



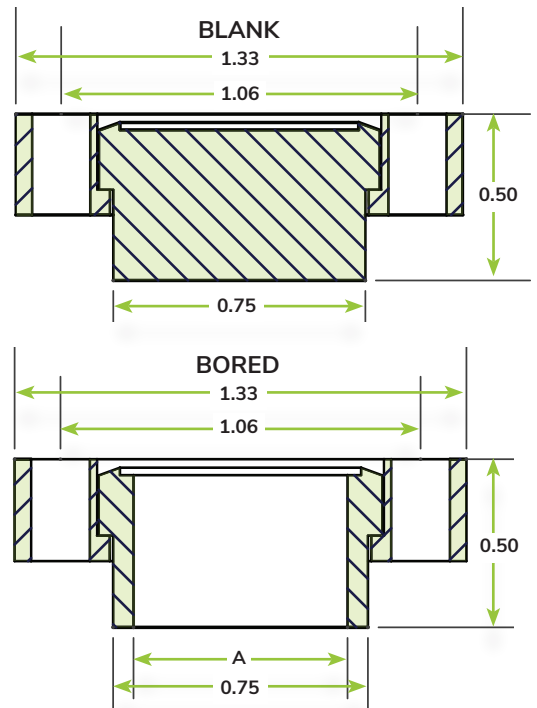
CF 133 - Rotatable Flanges Weld Neck with Butt Weld

Clearance Bolt Holes

PART #	REFERENCE ID	A (in)	BOLT HOLES	
			#	DIAMETER
5000020	CF133R-000-WNB	Blank	6	0.17
5000026	CF133R-075-WNB	0.63	6	0.17

Tapped Bolt Holes

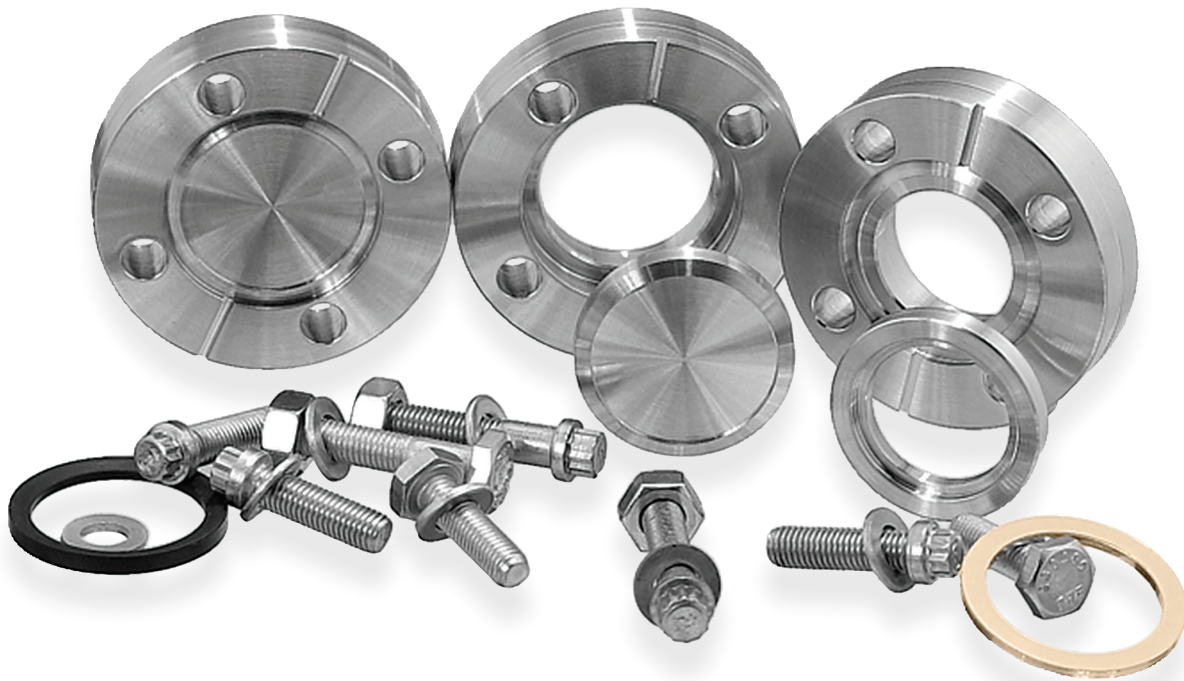
PART #	REFERENCE ID	A (in)	BOLT HOLES	
			#	THREAD
5000029	CF133RT-000-WNB	Blank	6	8-32
5000035	CF133RT-075-WNB	0.63	6	8-32



CF 212 - 2.125 inches O.D. UHV Flanges

2

CF 212 Flanges



Product Features:

- Designed to fit standard inch tubing O.D.'s
- Self-aligning
- Internal weld
- Sexless flanges
- Rotatable flanges for easier bolt hole alignment
- Tapped and clearance bolt holes available
- Blank flanges to close unused ports or custom modify
- Interchangeable with other ConFlat® style flanges
- Adapters to other flange systems available

Product Specifications:

- Pressure range: UHV (approx. 1×10^{-13} Torr)
- Temperature range: -200°C up to 450°C
- Standard materials: 304L stainless steel

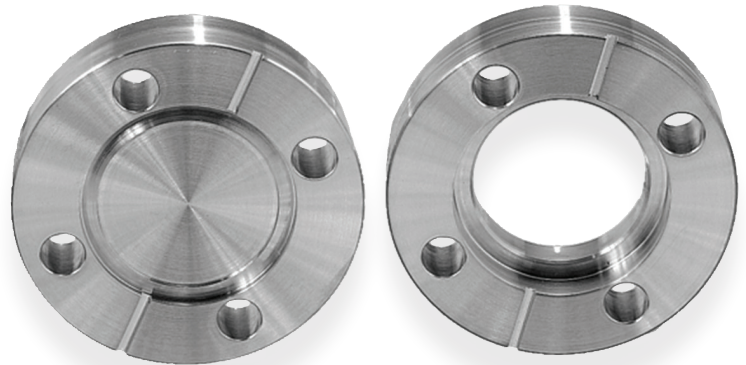
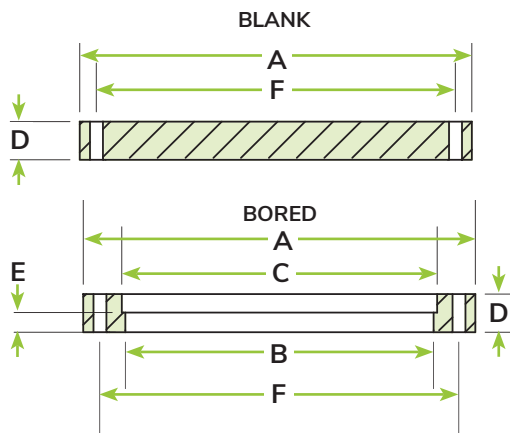
Options: Call for price and availability

- Metric tapped bolt holes
- Alternative materials:
- Alternative materials: 316L, 316LN stainless steel, aluminum, titanium, bimetal etc.

CF 212 - Fixed Flanges

2

CF 212 Flanges



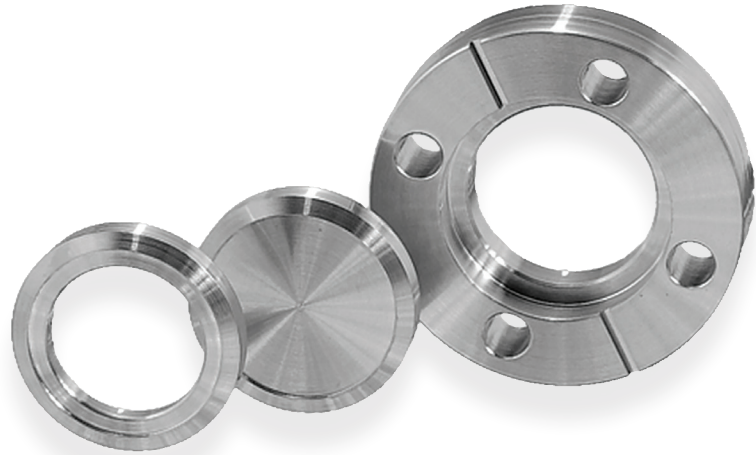
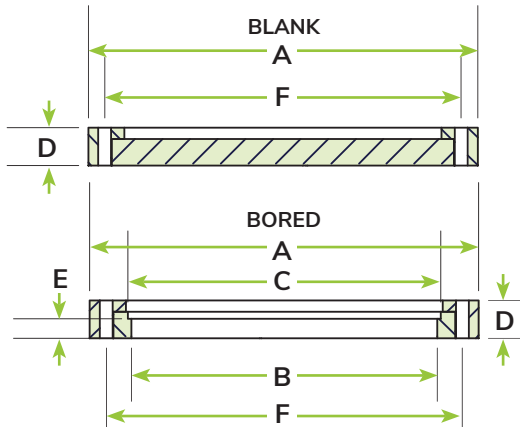
Clearance Bolt Holes

PART #	REFERENCE ID	A (in)	B (in)	C (in)	D (in)	E (in)	F (in)	BOLT HOLES	
								#	DIAMETER
5000036	CF212-000	2.12	Blank	-	0.47	-	1.63	4	0.27
5000037	CF212-025	2.12	0.26	-	0.47	-	1.63	4	0.27
5000038	CF212-050	2.12	0.51	-	0.47	-	1.63	4	0.27
5000039	CF212-075	2.12	0.63	0.76	0.47	0.17	1.63	4	0.27
5000040	CF212-100	2.12	0.94	1.01	0.47	0.17	1.63	4	0.27

Tapped Bolt Holes

PART #	REFERENCE ID	A (in)	B (in)	C (in)	D (in)	E (in)	F (in)	BOLT HOLES	
								#	THREAD
5000041	CF212T-000	2.12	Blank	-	0.47	-	1.63	4	1/4-28
5000042	CF212T-025	2.12	0.26	-	0.47	-	1.63	4	1/4-28
5000043	CF212T-050	2.12	0.51	-	0.47	-	1.63	4	1/4-28
5000044	CF212T-075	2.12	0.63	0.76	0.47	0.17	1.63	4	1/4-28
5000045	CF212T-100	2.12	0.94	1.01	0.47	0.17	1.63	4	1/4-28

CF 212 - Rotatable Flanges



2
CF 212 Flanges

Clearance Bolt Holes

PART #	REFERENCE ID	A (in)	B (in)	C (in)	D (in)	E (in)	F (in)	BOLT HOLES	
								#	DIAMETER
5000046	CF212R-000	2.12	Blank	-	0.47	-	1.63	4	0.27
5000047	CF212R-025	2.12	0.26	-	0.47	-	1.63	4	0.27
5000048	CF212R-050	2.12	0.51	-	0.47	-	1.63	4	0.27
5000049	CF212R-075	2.12	0.63	0.76	0.47	0.17	1.63	4	0.27
5000911	CF212R-100	2.12	0.94	1.01	0.47	0.17	1.63	4	0.27

Tapped Bolt Holes

PART #	REFERENCE ID	A (in)	B (in)	C (in)	D (in)	E (in)	F (in)	BOLT HOLES	
								#	THREAD
5000050	CF212RT-000	2.12	Blank	-	0.47	-	1.63	4	1/4-28
5000052	CF212RT-025	2.12	0.26	-	0.47	-	1.63	4	1/4-28
5000053	CF212RT-050	2.12	0.51	-	0.47	-	1.63	4	1/4-28
5000054	CF212RT-075	2.12	0.63	0.76	0.47	0.17	1.63	4	1/4-28
5000055	CF212RT-100	2.12	0.94	1.01	0.47	0.17	1.63	4	1/4-28

CF 212 Flange Hardware

PART #	REFERENCE ID	DESCRIPTION
0604022	CF212-GA-CO	(10) Copper Gaskets
0604001	CF212-GA-VT	(5) Viton® Gaskets
0605109	CF212-HBK	(25) Bolt, Nut & Washer Kit 1/4 - 28 x 1 1/4 in.
0605110	CF212-HTBK	(25) Bolt & Washer Kit; 1/4-28 x 1 1/4 in.
0605111	CF212-12BK	(25) 12-Point Bolt, Nut & Washer Kit 1/4 - 28 x 1 1/4 in.
0605183	CF212-12BK-SP	(25) Silver Plated 12-Point Bolt, Nut & Washer Kit; 1/4 - 28 x 1 1/4 in
0605112	CF212-12TBK	(25) 12-Point Bolt & Washer Kit 1/4 - 28 x 7/8 in.
0605184	CF212-12TBK-SP	(25) Silver Plated 12-Point Bolt & Washer Kit 1/4 - 28 x 7/8 in.
0605113	12-POINT WRENCH	(1) Fits CF 12-Point bolts
0605208	ASTL	(1) Bolt thread lubricant eliminates galling of bolt and nut or tapped bolt hole

CF 275 - 2.75 inches O.D. UHV Flanges

2

CF 275 Flanges

**Product Features:**

- Designed to fit standard inch tubing O.D.'s
- Self-aligning
- Internal weld
- Sexless flanges
- Rotatable flanges for easier bolt hole alignment
- Tapped and clearance bolt holes available
- Blank flanges to close unused ports or custom modify
- Interchangeable with other ConFlat® style flanges
- Adapters to other flange systems available

Product Specifications:

- Pressure range: UHV (approx. 1×10^{-13} Torr)
- Temperature range: -200°C up to 450°C
- Standard materials: 304L grade stainless steel

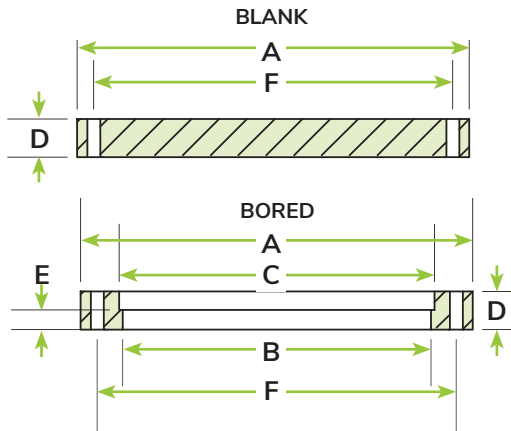
Options: Call for price and availability

- Metric tapped bolt holes
- Alternative materials:
- Alternative materials: 316L, 316LN stainless steel, aluminum, titanium, bimetals etc.

CF 275 - Fixed Flanges

2

CF 275 Flanges



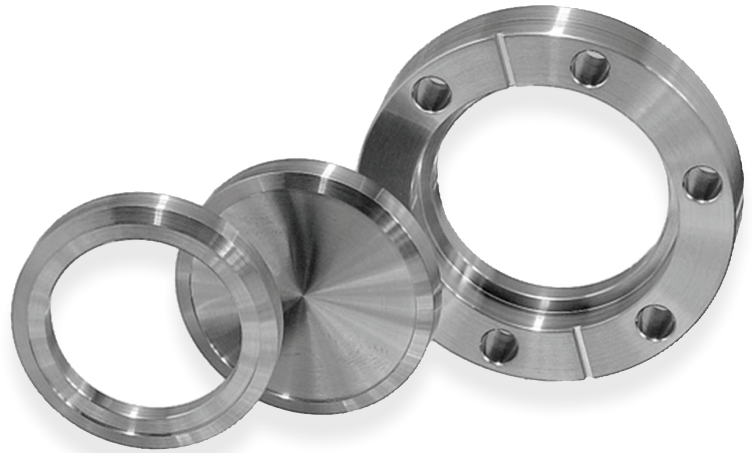
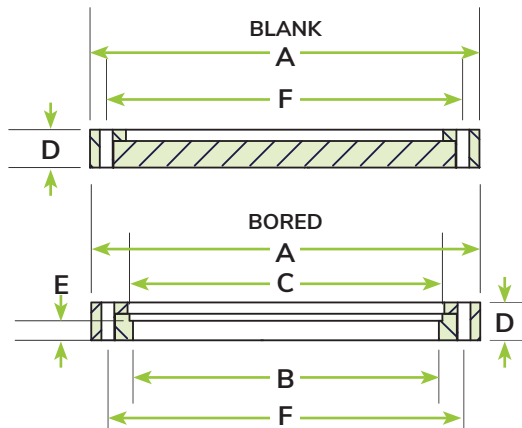
Clearance Bolt Holes

PART #	REFERENCE ID	A (in)	B (in)	C (in)	D (in)	E (in)	F (in)	BOLT HOLES	DIAMETER
5000056	CF275-000	2.72	Blank	-	0.50	-	2.31	6	0.27
5000057	CF275-025	2.72	0.26	-	0.50	-	2.31	6	0.27
5000058	CF275-050	2.72	0.51	-	0.50	-	2.31	6	0.27
5000059	CF275-075	2.72	0.63	0.76	0.50	0.21	2.31	6	0.27
5000060	CF275-100	2.72	0.88	1.01	0.50	0.21	2.31	6	0.27
5000061	CF275-125	2.72	1.13	1.26	0.50	0.21	2.31	6	0.27
5000062	CF275-150	2.72	1.44	1.51	0.50	0.21	2.31	6	0.27
5000063	CF275-162	2.72	1.50	1.63	0.50	0.21	2.31	6	0.27

Tapped Bolt Holes

PART #	REFERENCE ID	A (in)	B (in)	C (in)	D (in)	E (in)	F (in)	BOLT HOLES	THREAD
5000064	CF275T-000	2.72	-	-	0.50	-	2.31	6	1/4-28
5000065	CF275T-025	2.72	0.26	-	0.50	-	2.31	6	1/4-28
5000066	CF275T-050	2.72	0.51	-	0.50	-	2.31	6	1/4-28
5000067	CF275T-075	2.72	0.63	0.76	0.50	0.21	2.31	6	1/4-28
5000068	CF275T-100	2.72	0.88	1.01	0.50	0.21	2.31	6	1/4-28
5000069	CF275T-125	2.72	1.13	1.26	0.50	0.21	2.31	6	1/4-28
5000070	CF275T-150	2.72	1.44	1.51	0.50	0.21	2.31	6	1/4-28
5000071	CF275T-162	2.72	1.50	1.63	0.50	0.21	2.31	6	1/4-28

CF 275 - Rotatable Flanges



Clearance Bolt Holes

PART #	REFERENCE ID	A (in)	B (in)	C (in)	D (in)	E (in)	F (in)	BOLT HOLES	DIAMETER
5000072	CF275R-000	2.72	Blank	-	0.50	-	2.31	6	0.27
5000073	CF275R-025	2.72	0.26	-	0.50	-	2.31	6	0.27
5000074	CF275R-050	2.72	0.51	-	0.50	-	2.31	6	0.27
5000075	CF275R-075	2.72	0.63	0.76	0.50	0.21	2.31	6	0.27
5000076	CF275R-100	2.72	0.88	1.01	0.50	0.21	2.31	6	0.27
5000077	CF275R-125	2.72	1.13	1.26	0.50	0.21	2.31	6	0.27
5000078	CF275R-150	2.72	1.44	1.51	0.50	0.21	2.31	6	0.27
5000079	CF275R-162	2.72	1.50	1.63	0.50	0.21	2.31	6	0.27

Tapped Bolt Holes

PART #	REFERENCE ID	A (in)	B (in)	C (in)	D (in)	E (in)	F (in)	BOLT HOLES	THREAD
5000080	CF275RT-000	2.72	Blank	-	0.50	-	2.31	6	1/4-28
5000081	CF275RT-025	2.72	0.26	-	0.50	-	2.31	6	1/4-28
5000082	CF275RT-050	2.72	0.51	-	0.50	-	2.31	6	1/4-28
5000083	CF275RT-075	2.72	0.63	0.76	0.50	0.21	2.31	6	1/4-28
5000084	CF275RT-100	2.72	0.88	1.01	0.50	0.21	2.31	6	1/4-28
5000085	CF275RT-125	2.72	1.13	1.26	0.50	0.21	2.31	6	1/4-28
5000086	CF275RT-150	2.72	1.44	1.51	0.50	0.21	2.31	6	1/4-28
5000087	CF275RT-162	2.72	1.50	1.63	0.50	0.21	2.31	6	1/4-28

CF 275 Flange Hardware

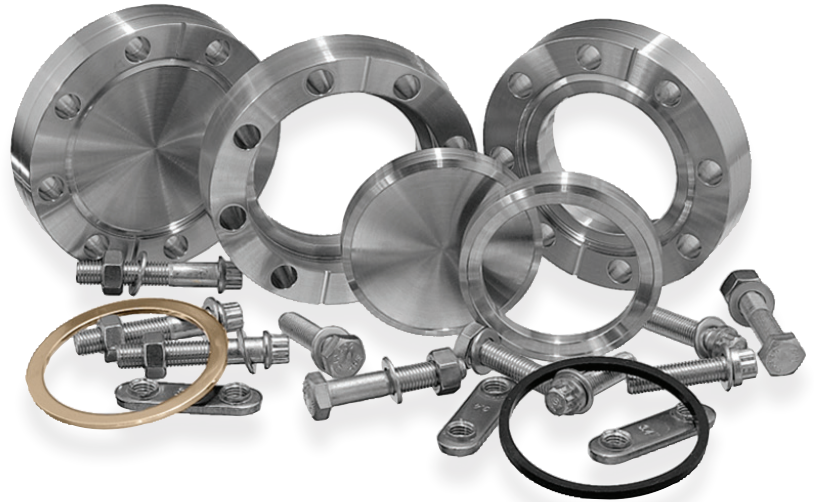
PART #	REFERENCE ID	DESCRIPTION
0604024	CF275-GA-CO	(10) Copper Gaskets
0604025	CF275-GA-CO-SD	(10) Copper Gaskets; Solid
0604002	CF275-GA-VT	(5) Viton® Gaskets
0605114	CF275-HBK	(25) Bolt, Nut & Washer Kit; 1/4-28x1 1/4 in.
0605115	CF275-HTBK	(25) Bolt & Washer Kit, 1/4-28x1 in.
0605116	CF275-12BK	(25) 12-point Bolt, Nut & Washer Kit; 1/4-28x1 1/4 in.
0605186	CF275-12BK-SP	(25) Silver Plated 12-point Bolt, Nut & Washer Kit; 1/4-28x1 1/4 in.
0605117	CF275-12TBK	(25) 12-point Bolt & Washer Kit; 1/4-28x7/8 in.
0605185	CF275-12TBK-SP	(25) Silver Plated 12-point Bolt & Washer Kit; 1/4-28x7/8 in.
0605118	CF275-HPBK	(12) Plate Nuts, (24) Bolts & Washers; 1/4-28x1 1/4 in.
0605119	CF275-PN	(24) Plate Nuts; 1/4-28
0605120	CF275-12PBK	(12) Plate Nuts, (24) 12-point Bolts & Washers; 1/4-28x1 1/4 in.
0605249	CF275-12PBK-SP	(12) Plate Nuts, (24) Silver Plated 12-point Bolts & Washers; 1/4-28x1 1/4 in.
0605113	12-POINT WRENCH	(1) Fits CF 12-point bolts
0605208	ASTL	(1) Bolt thread lubricant eliminates galling of bolt and nut or tapped bolt hole

CF 338 - 3.375 inches O.D. UHV Flanges

2
CF 338 Flanges

Product Features:

- Designed to fit standard inch tubing O.D.'s
- Self-aligning
- Internal weld
- Sexless flanges
- Rotatable flanges for easier bolt hole alignment
- Tapped and clearance bolt holes available
- Blank flanges to close unused ports or custom modify
- Interchangeable with other ConFlat® style flanges
- Adapters to other flange systems available



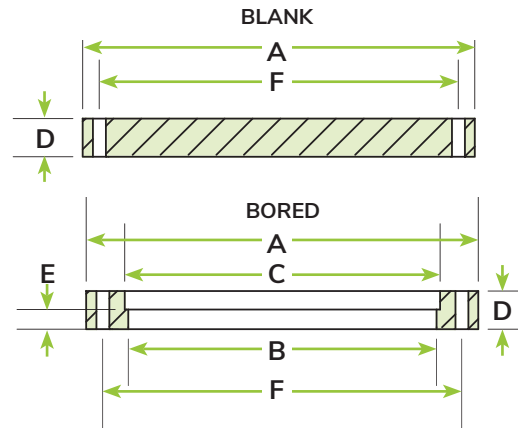
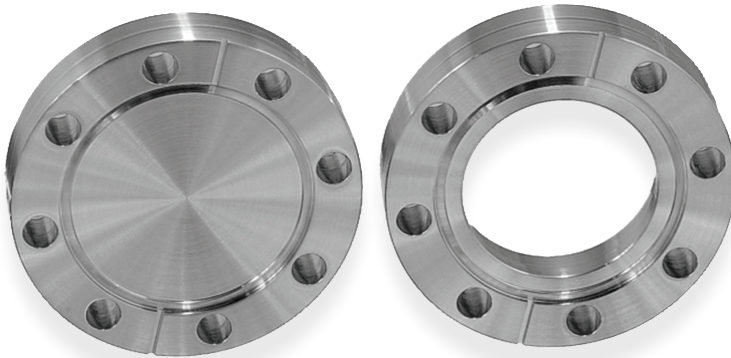
Product Specifications:

- Pressure range: UHV (approx. 1×10^{-13} Torr)
- Temperature range: -200°C up to 450°C
- Standard materials: 304L stainless steel

Options: Call for price and availability

- Metric tapped bolt holes
- Alternative materials: 316L, 316LN stainless steel, aluminum, titanium, bimetal etc.

CF 338 - Fixed Flanges



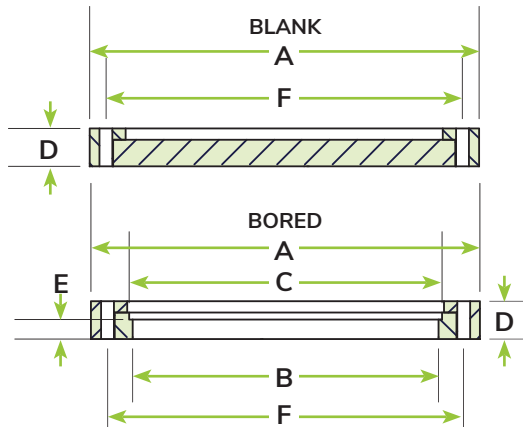
Clearance Bolt Holes

PART #	REFERENCE ID	A (in)	B (in)	C (in)	D (in)	E (in)	F (in)	BOLT HOLES	DIAMETER
5000088	CF338-000	3.37	Blank	-	0.625	-	2.850	8	0.332
5000089	CF338-150	3.37	1.375	1.510	0.625	0.225	2.850	8	0.332
5000090	CF338-200	3.37	1.875	2.010	0.625	0.225	2.850	8	0.332

Tapped Bolt Holes

PART #	REFERENCE ID	A (in)	B (in)	C (in)	D (in)	E (in)	F (in)	BOLT HOLES	THREAD
5000091	CF338T-000	3.37	Blank	-	0.625	-	2.850	8	5/16-24
5000092	CF338T-150	3.37	1.375	1.510	0.625	0.225	2.850	8	5/16-24
5000093	CF338T-200	3.37	1.875	2.010	0.625	0.225	2.850	8	5/16-24

CF 338 - Rotatable Flanges



2
CF 338 Flanges

Clearance Bolt Holes

PART #	REFERENCE ID	A (in)	B (in)	C (in)	D (in)	E (in)	F (in)	BOLT HOLES	DIAMETER
5000094	CF338R-000	3.37	Blank	-	0.680	-	2.850	8	0.332
5000095	CF338R-150	3.37	1.375	1.510	0.680	0.225	2.850	8	0.332
5000096	CF338R-200	3.37	1.875	2.010	0.680	0.225	2.850	8	0.332

Tapped Bolt Holes

PART #	REFERENCE ID	A (in)	B (in)	C (in)	D (in)	E (in)	F (in)	BOLT HOLES	THREAD
5000097	CF338RT-000	3.37	Blank	-	0.680	-	2.850	8	5/16-24
5000098	CF338RT-150	3.37	1.375	1.510	0.680	0.225	2.850	8	5/16-24
5000099	CF338RT-200	3.37	1.875	2.010	0.680	0.225	2.850	8	5/16-24

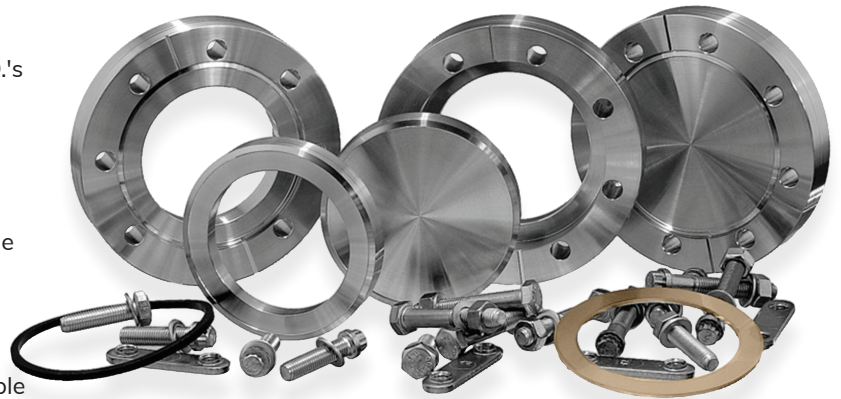
CF 338 Flange Hardware

PART #	REFERENCE ID	DESCRIPTION
0604027	CF338-GA-CO	(10) Copper Gaskets
0604003	CF338-GA-VT	(1) Viton® Gasket
0605121	CF338-HBK	(25) Bolt, Nut & Washer Kit; 5/16-24x1 3/4 in.
0605122	CF338-HBTK	(25) Bolt & Washer Kit; 5/16-24x1 1/4 in.
0605123	CF338-12BK	(25) 12-point Bolt, Nut & Washer Kit; 5/16-24x1 3/4 in.
0605187	CF338-12BK-SP	(25) Silver Plated 12-point Bolt, Nut & Washer Kit; 5/16-24x1 3/4 in.
0605124	CF338-12TBK	(25) 12-point Bolt & Washer Kit; 5/16-24x1 1/4 in.
0605188	CF338-12TBK-SP	(25) Silver Plated 12-point Bolt & Washer Kit; 5/16-24x1 1/4 in.
0605125	CF338-HBPK	(16) Plate Nuts, (32) Bolts & Washers; 5/16-24x1 3/4 in.
0605126	CF338-PN	(24) Plate Nuts; 5/16-24
0605127	CF338-12PBK	(16) Plate Nuts, (32) 12-point Bolts & Washers; 5/16-24x1 3/4 in.
0605307	CF338-12PBK-SP	(16) Plate Nuts, (32) Silver Plated 12-point Bolts & Washers; 5/16-24x1 3/4 in.
0605113	12-POINT WRENCH	(1) Fits CF 12-point bolts
0605208	ASTL	(1) Bolt thread lubricant eliminates galling of bolt and nut or tapped bolt hole

CF 450 - 4.5 inches O.D. UHV Flanges

Product Features:

- Designed to fit standard inch tubing O.D.'s
- Self-aligning
- Internal weld
- Sexless flanges
- Rotatable flanges for easier bolt hole alignment
- Tapped and clearance bolt holes available
- Blank flanges to close unused ports or custom modify
- Interchangeable with other ConFlat® style flanges
- Adapters to other flange systems available



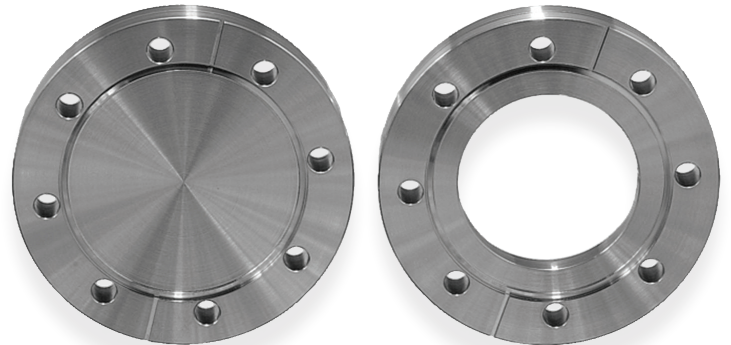
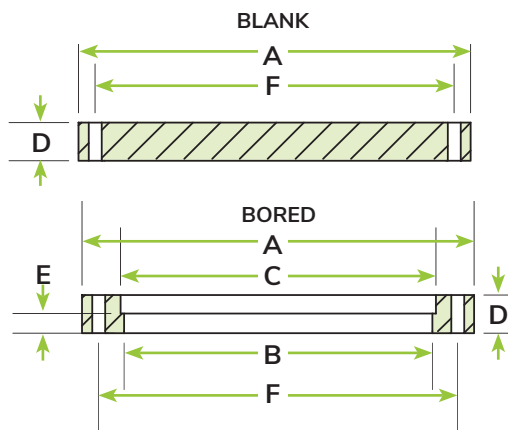
Product Specifications:

- Pressure range: UHV (approx. 1×10^{-13} Torr)
- Temperature range: -200°C up to 450°C
- Standard materials: 304L stainless steel

Options: Call for price and availability

- Metric tapped bolt holes
- Alternative materials: 316L, 316LN stainless steel, aluminum, titanium, bimetal etc.

CF 450 - Fixed Flanges



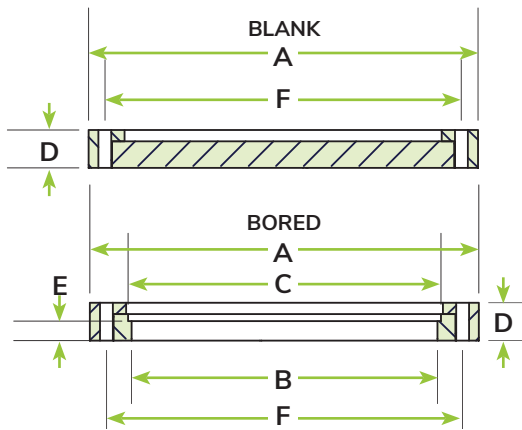
Clearance Bolt Holes

PART #	REFERENCE ID	A (in)	B (in)	C (in)	D (in)	E (in)	F (in)	BOLT HOLES	DIAMETER
5000100	CF450-000	4.47	Blank	-	0.68	-	3.63	8	0.332
5000101	CF450-150	4.47	1.38	1.51	0.68	0.38	3.63	8	0.332
5000102	CF450-200	4.47	1.94	2.01	0.68	0.38	3.63	8	0.332
5000103	CF450-250	4.47	2.44	2.51	0.68	0.38	3.63	8	0.332

Tapped Bolt Holes

PART #	REFERENCE ID	A (in)	B (in)	C (in)	D (in)	E (in)	F (in)	BOLT HOLES	THREAD
5000104	CF450T-000	4.47	Blank	-	0.68	-	3.63	8	5/16-24
5000105	CF450T-150	4.47	1.38	1.51	0.68	0.38	3.63	8	5/16-24
5000106	CF450T-200	4.47	1.94	2.01	0.68	0.38	3.63	8	5/16-24
5000107	CF450T-250	4.47	2.44	2.51	0.68	0.38	3.63	8	5/16-24

CF 450 - Rotatable Flanges



2
CF 450 Flanges

Clearance Bolt Holes

PART #	REFERENCE ID	A (in)	B (in)	C (in)	D (in)	E (in)	F (in)	BOLT HOLES	DIAMETER
5000108	CF450R-000	4.47	Blank	-	0.75	-	3.63	8	0.332
5000109	CF450R-150	4.47	1.38	1.51	0.75	0.38	3.63	8	0.332
5000110	CF450R-200	4.47	1.94	2.01	0.75	0.38	3.63	8	0.332
5000111	CF450R-250	4.47	2.44	2.51	0.75	0.38	3.63	8	0.332

Tapped Bolt Holes

PART #	REFERENCE ID	A (in)	B (in)	C (in)	D (in)	E (in)	F (in)	BOLT HOLES	THREAD
5000112	CF450RT-000	4.47	Blank	-	0.75	-	3.63	8	5/16-24
5000113	CF450RT-150	4.47	1.38	1.51	0.75	0.38	3.63	8	5/16-24
5000114	CF450RT-200	4.47	1.94	2.01	0.75	0.38	3.63	8	5/16-24
5000115	CF450RT-250	4.47	2.44	2.51	0.75	0.38	3.63	8	5/16-24

CF 450 Flange Hardware

PART #	REFERENCE ID	DESCRIPTION
0604029	CF450-GA-CO	(10) Copper Gaskets
0604004	CF450-GA-VT	(1) Viton® Gasket
0605128	CF450-HBK	(25) Bolt, Nut & Washer Kit; 5/16-24x2 in.
0605129	CF450-HTBK	(25) Bolt & Washer Kit; 5/16-24x1 1/4 in.
0605130	CF450-12BK	(25) 12-point Bolt, Nut & Washer Kit; 5/16-24x2 in.
0605190	CF450-12BK-SP	(25) Silver Plated 12-point Bolt, Nut & Washer Kit; 5/16-24x2 in.
0605131	CF450-12TBK	(25) 12-point Bolt & Washer Kit; 5/16-24x1 1/4 in.
0605189	CF450-12TBK-SP	(25) Silver Plated 12-point Bolt & Washer Kit; 5/16-24x1 1/4 in.
0605132	CF450-HPBK	(16) Plate Nuts, (32) Bolts & Washers; 5/16-24x2 in.
0605133	CF450-PN	(24) Plate Nuts; 5/16-24
0605134	CF450-12PBK	(16) Plate Nuts, (32) 12-point Bolts & Washers; 5/16-24x2 in.
0605308	CF450-12PBK-SP	(16) Plate Nuts, (32) Silver Plated 12-point Bolts & Washers; 5/16-24x2 in.
0605113	12-POINT WRENCH	(1) Fits CF 12-point bolts
0605208	ASTL	(1) Bolt thread lubricant eliminates galling of bolt and nut or tapped bolt hole

CF 462 - 4.625 inches O.D. UHV Flanges

Product Features:

- Designed to fit standard inch tubing O.D.'s
- Self-aligning
- Internal weld
- Sexless flanges
- Rotatable flanges for easier bolt hole alignment
- Tapped and clearance bolt holes available
- Blank flanges to close unused ports or custom modify
- Interchangeable with other ConFlat® style flanges
- Adapters to other flange systems available



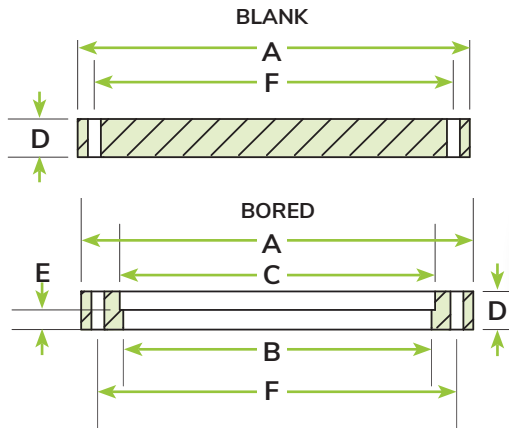
Product Specifications:

- Pressure range: UHV (approx. 1×10^{-13} Torr)
- Temperature range: -200°C up to 450°C
- Standard materials: 304L grade stainless steel

Options: Call for price and availability

- Metric tapped bolt holes
- Alternative materials: 316L, 316LN stainless steel, aluminum, titanium, bimetal etc.

CF 462 - Fixed Flanges



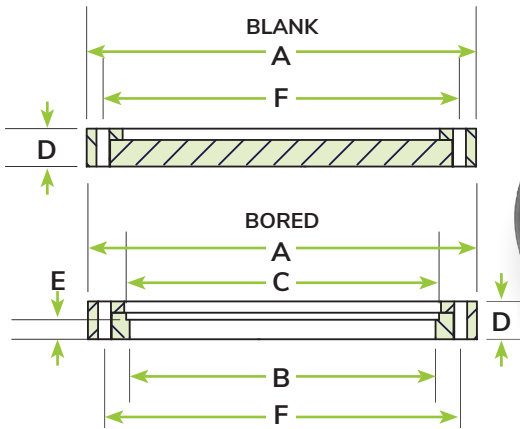
Clearance Bolt Holes

PART #	REFERENCE ID	A (in)	B (in)	C (in)	D (in)	E (in)	F (in)	BOLT HOLES	DIAMETER
5000116	CF462-000	4.62	Blank	-	0.75	-	4.03	10	0.332
5000117	CF462-250	4.62	2.38	2.51	0.75	0.38	4.03	10	0.332
5000118	CF462-300	4.62	2.88	3.01	0.75	0.38	4.03	10	0.332

Tapped Bolt Holes

PART #	REFERENCE ID	A (in)	B (in)	C (in)	D (in)	E (in)	F (in)	BOLT HOLES	THREAD
5000119	CF462T-000-T	4.62	Blank	-	0.75	-	4.03	10	5/16-24
5000120	CF462T-250	4.62	2.38	2.51	0.75	0.38	4.03	10	5/16-24
5000121	CF462T-300	4.62	2.88	3.01	0.75	0.38	4.03	10	5/16-24

CF 462 - Rotatable Flanges



2
CF 462 Flanges

Clearance Bolt Holes

PART #	REFERENCE ID	A (in)	B (in)	C (in)	D (in)	E (in)	F (in)	BOLT HOLES	DIAMETER
5000122	CF462R-000	4.62	Blank	-	0.810	-	4.030	10	0.332
5000123	CF462R-250	4.62	2.44	2.510	0.810	0.375	4.030	10	0.332
5000124	CF462R-300	4.62	2.94	3.010	0.810	0.375	4.030	10	0.332

Tapped Bolt Holes

PART #	REFERENCE ID	A (in)	B (in)	C (in)	D (in)	E (in)	F (in)	BOLT HOLES	THREAD
5000125	CF462RT-000	4.62	Blank	-	0.81	-	4.03	10	5/16-24
5000126	CF462RT-250	4.62	2.44	2.51	0.81	0.38	4.03	10	5/16-24
5000127	CF462RT-300	4.62	2.94	3.01	0.81	0.38	4.03	10	5/16-24

CF 462 Flange Hardware

PART #	REFERENCE ID	DESCRIPTION
0604031	CF462-GA-CO	(10) Copper Gaskets
0604005	CF462-GA-VT	(1) Viton® Gasket
0605135	CF462-HBK	(25) Bolt, Nut & Washer Kit; 5/16-24x2 1/4 in.
0605136	CF462-HTBK	(25) Bolt & Washer Kit; 5/16-24x1 1/4 in.
0605137	CF462-12BK	(25) 12-point Bolt, Nut & Washer Kit; 5/16-24x2 1/4 in.
0605192	CF462-12BK-SP	(25) Silver Plated 12-point Bolt, Nut & Washer Kit; 5/16-24x2 1/4 in.
0605138	CF462-12TBK	(25) 12-point Bolt & Washer Kit; 5/16-24x1 1/4 in.
0605191	CF462-12TBK-SP	(25) Silver Plated 12-point Bolt & Washer Kit; 5/16-24x1 1/4 in.
0605139	CF462-HPBK	(20) Plate Nuts, (40) Bolts & Washers; 5/16-24x2 1/4 in.
0605140	CF462-PN	(24) Plate Nuts; 5/16-24
0605141	CF462-12PBK	(20) Plate Nuts, (40) 12-point Bolts & Washers; 5/16-24x2 1/4 in.
0605309	CF462-12PBK-SP	(20) Plate Nuts, (40) Silver Plated 12-point Bolts & Washers; 5/16-24x2 1/4 in.
0605113	12-POINT WRENCH	(1) Fits CF 12-point bolts
0605208	ASTL	(1) Bolt thread lubricant eliminates galling of bolt and nut or tapped bolt hole

CF 600 - 6 inches O.D. UHV Flanges



Product Features:

- Designed to fit standard inch tubing O.D.'s
- Self-aligning
- Internal weld
- Sexless flanges
- Rotatable flanges for easier bolt hole alignment
- Tapped and clearance bolt holes available
- Blank flanges to close unused ports or custom modify
- Interchangeable with other ConFlat® style flanges
- Adapters to other flange systems available

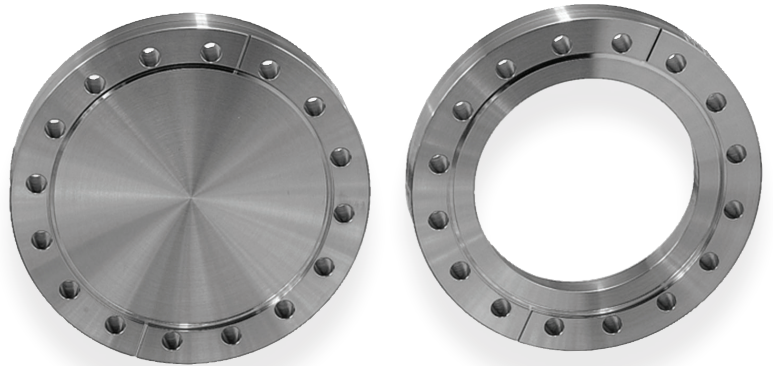
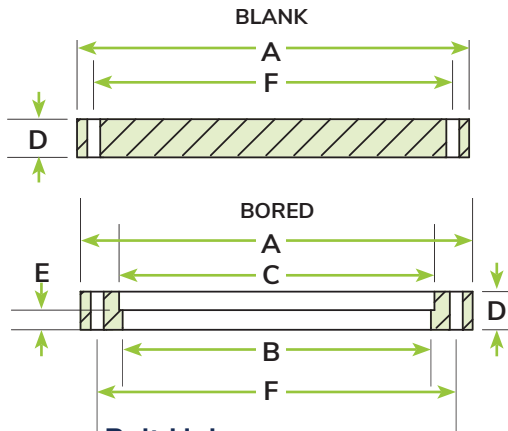
Product Specifications:

- Pressure range: UHV (approx. 1×10^{-13} Torr)
- Temperature range: -200°C up to 450°C
- Standard materials: 304L stainless steel

Options: Call for price and availability

- Metric tapped bolt holes
- Alternative materials: 316L, 316LN stainless steel, aluminum, titanium, bimetal etc.

CF 600 - Fixed Flanges



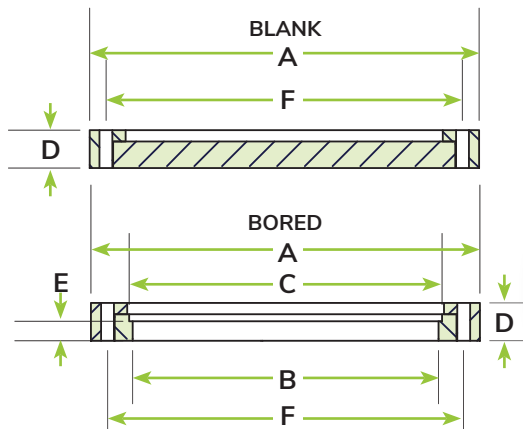
Clearance Bolt Holes

PART #	REFERENCE ID	A (in)	B (in)	C (in)	D (in)	E (in)	F (in)	BOLT HOLES	DIAMETER
5000128	CF600-000	5.97	Blank	-	0.78	-	5.13	16	0.332
5000129	CF600-400	5.97	3.92	4.02	0.78	0.44	5.13	16	0.332

Tapped Bolt Holes

PART #	REFERENCE ID	A (in)	B (in)	C (in)	D (in)	E (in)	F (in)	BOLT HOLES	THREAD
5000130	CF600T-000	5.97	Blank	-	0.78	-	5.13	16	5/16-24
5000131	CF600T-400	5.97	3.92	4.02	0.78	0.44	5.13	16	5/16-24

CF 600 - Rotatable Flanges



2
CF 600 Flanges

Clearance Bolt Holes

PART #	REFERENCE ID	A (in)	B (in)	C (in)	D (in)	E (in)	F (in)	BOLT HOLES	DIAMETER
5000132	CF600R-000	5.97	Blank	-	0.84	-	5.13	16	0.332
5000133	CF600R-400	5.97	3.81	4.01	0.84	0.44	5.13	16	0.332

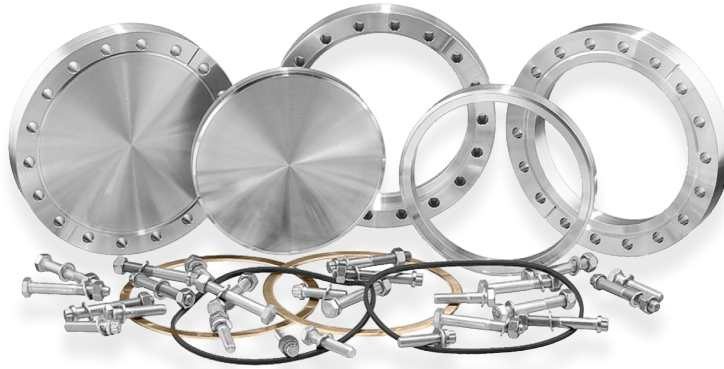
Tapped Bolt Holes

PART #	REFERENCE ID	A (in)	B (in)	C (in)	D (in)	E (in)	F (in)	BOLT HOLES	THREAD
5000134	CF600RT-000	5.97	Blank	-	0.84	-	5.13	16	5/16-24
5000135	CF600RT-400	5.97	3.81	4.01	0.84	0.44	5.13	16	5/16-24

CF 600 Flange Hardware

PART #	REFERENCE ID	DESCRIPTION
0604033	CF600-GA-CO	(10) Copper Gaskets
0604006	CF600-GA-VT	(1) Viton® Gasket
0605142	CF600-HBK	(25) Bolt, Nut & Washer Kit; 5/16-24x2 1/4 in.
0605144	CF600-HTBK	(25) Bolt & Washer Kit; 5/16-24x1 1/4 in.
0605145	CF600-12BK	(25) 12-point Bolt, Nut & Washer Kit; 5/16-24x2 1/4 in.
0605194	CF600-12BK-SP	(25) Silver Plated 12-point Bolt, Nut & Washer Kit; 5/16-24x2 1/4 in.
0605147	CF600-12TBK	(25) 12-point Bolt & Washer Kit; 5/16-24x1 1/4 in.
0605193	CF600-12TBK-SP	(25) Silver Plated 12-point Bolt & Washer Kit; 5/16-24x1 1/4 in.
0605148	CF600-HPBK	(16) Plate Nuts, (32) Bolts & Washers; 5/16-24x2 1/4 in.
0605152	CF600-PN	(24) Plate Nuts; 5/16-24
0605150	CF600-12PBK	(16) Plate Nuts, (32) 12-point Bolts & Washers; 5/16-24x2 1/4 in.
0605265	CF600-12PBK-SP	(16) Plate Nuts, (32) Silver Plated 12-point Bolts & Washers; 5/16-24x2 1/4 in.
0605113	12-POINT WRENCH	(1) Fits CF 12-point bolts
0605208	ASTL	(1) Bolt thread lubricant eliminates galling of bolt and nut or tapped bolt hole

CF 675 - 6.75 inches O.D. UHV Flanges



2
CF 675 Flanges

Product Features:

- Designed to fit standard inch tubing O.D.'s
- Self-aligning
- Internal weld
- Sexless flanges
- Rotatable flanges for easier bolt hole alignment
- Tapped and clearance bolt holes available
- Blank flanges to close unused ports or custom modify
- Interchangeable with other ConFlat® style flanges
- Adapters to other flange systems available

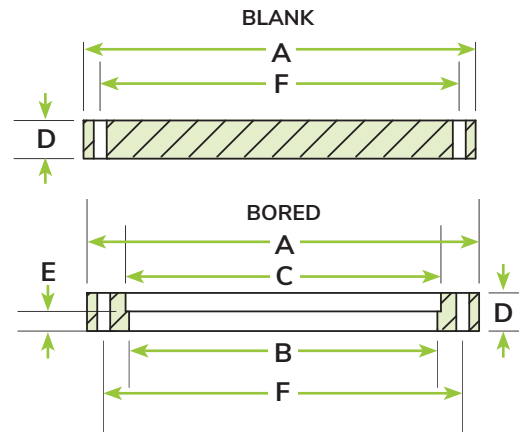
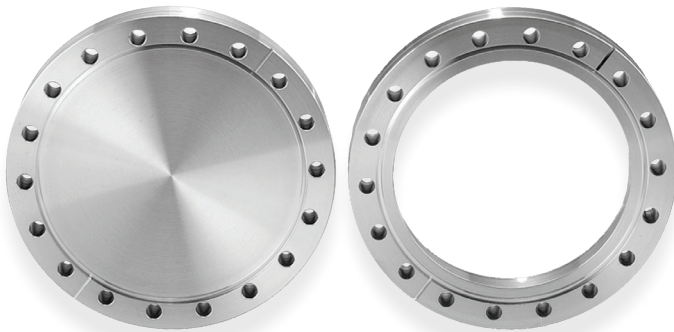
Product Specifications:

- Pressure range: UHV (approx. 1×10^{-13} Torr)
- Temperature range: -200°C up to 450°C
- Standard materials: 304L stainless steel

Options: Call for price and availability

- Metric tapped bolt holes
- Alternative materials: 316L, 316LN stainless steel, aluminum, titanium, bimetal etc.

CF 675 - Fixed Flanges



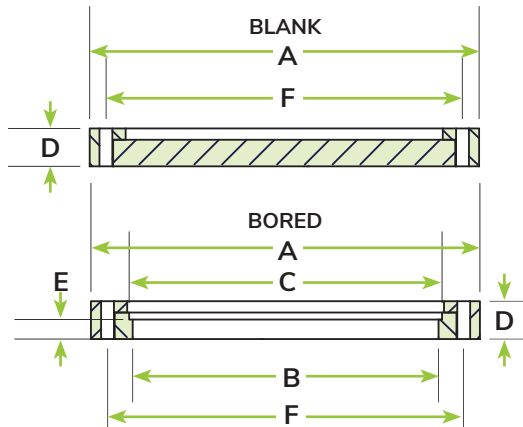
Clearance Bolt Holes

PART #	REFERENCE ID	A (in)	B (in)	C (in)	D (in)	E (in)	F (in)	BOLT HOLES	DIAMETER
5000136	CF675-000	6.75	Blank	-	0.84	-	5.97	18	0.332
5000137	CF675-400	6.75	3.88	4.01	0.84	0.46	5.97	18	0.332
5000138	CF675-500	6.75	4.88	5.02	0.84	0.46	5.97	18	0.332

Tapped Bolt Holes

PART #	REFERENCE ID	A (in)	B (in)	C (in)	D (in)	E (in)	F (in)	BOLT HOLES	THREAD
5000139	CF675T-000	6.75	Blank	-	0.84	-	5.97	18	5/16-24
5000140	CF675T-400	6.75	3.88	4.01	0.84	0.46	5.97	18	5/16-24
5000141	CF675T-500	6.75	4.88	5.02	0.84	0.46	5.97	18	5/16-24

CF 675 - Rotatable Flanges



2
CF 675 Flanges

Clearance Bolt Holes

PART #	REFERENCE ID	A (in)	B (in)	C (in)	D (in)	E (in)	F (in)	BOLT HOLES	DIAMETER
5000142	CF675R-000	6.75	Blank	-	0.84	-	5.97	18	0.332
5000143	CF675R-400	6.75	3.81	4.01	0.84	0.46	5.97	18	0.332
5000144	CF675R-500	6.75	4.88	5.01	0.84	0.46	5.97	18	0.332

Tapped Bolt Holes

PART #	REFERENCE ID	A (in)	B (in)	C (in)	D (in)	E (in)	F (in)	BOLT HOLES	THREAD
5000145	CF675RT-000	6.75	-	-	0.84	-	5.97	18	5/16-24
5000146	CF675RT-400	6.75	3.81	4.01	0.84	0.46	5.97	18	5/16-24
5000147	CF675RT-500	6.75	4.88	5.01	0.84	0.46	5.97	18	5/16-24

CF 675 Flange Hardware

PART #	REFERENCE ID	DESCRIPTION
0604035	CF675-GA-CO	(10) Copper Gaskets
0604007	CF675-GA-VT	(1) Viton® Gasket
0605153	CF675-HBK	(25) Bolt, Nut & Washer Kit; 5/16-24x2 1/4 in.
0605155	CF675-12BK	(25) 12-point Bolt, Nut & Washer Kit; 5/16-24x2 1/4 in.
0605154	CF675-HTBK	(25) Bolt & Washer Kit; 5/16-24x1 1/2
0605196	CF675-12BK-SP	(25) Silver Plated 12-point Bolt, Nut & Washer Kit; 5/16-24x2 1/4 in.
0605156	CF675-12TBK	(25) 12-point Bolt & Washer Kit; 5/16-24x1 1/4 in.
0605195	CF675-12TBK-SP	(25) Silver Plated 12-point Bolt & Washer Kit; 5/16-24x1 1/4 in.
0605113	12-POINT WRENCH	(1) Fits CF 12-point bolts
0605208	ASTL	(1) Bolt thread lubricant eliminates galling of bolt and nut or tapped bolt hole

CF 800 - 8 inches O.D. UHV Flanges



2
CF 800 Flanges

Product Features:

- Designed to fit standard inch tubing O.D.'s
- Self-aligning
- Internal weld
- Sexless flanges
- Rotatable flanges for easier bolt hole alignment
- Tapped and clearance bolt holes available
- Blank flanges to close unused ports or custom modify
- Interchangeable with other ConFlat® style flanges
- Adapters to other flange systems available

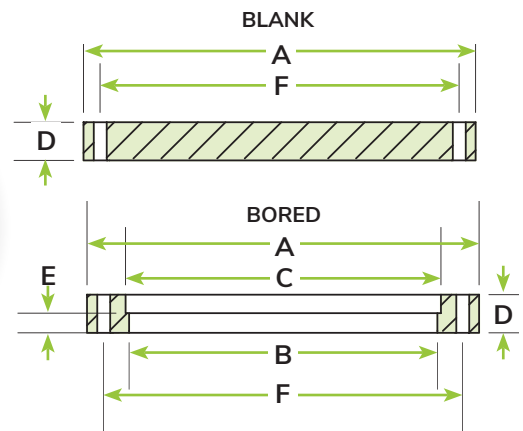
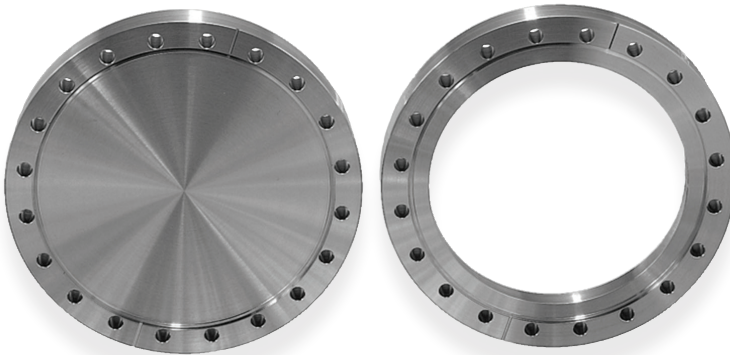
Product Specifications:

- Pressure range: UHV (approx. 1×10^{-13} Torr)
- Temperature range: -200°C up to 450°C
- Standard materials: 304L stainless steel

Options: Call for price and availability

- Metric tapped bolt holes
- Alternative materials: 316L, 316LN stainless steel, aluminum, titanium, bimetal etc.

CF 800 - Fixed Flanges



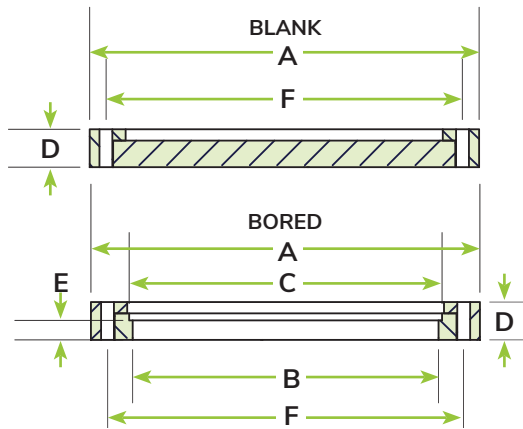
Clearance Bolt Holes

PART #	REFERENCE ID	A (in)	B (in)	C (in)	D (in)	E (in)	F (in)	BOLT HOLES	DIAMETER
5000148	CF800-000	7.97	Blank	-	0.88	-	7.13	20	0.332
5000149	CF800-600	7.97	5.84	6.02	0.88	0.50	7.13	20	0.332

Tapped Bolt Holes

PART #	REFERENCE ID	A (in)	B (in)	C (in)	D (in)	E (in)	F (in)	BOLT HOLES	THREAD
5000150	CF800T-000	7.97	Blank	-	0.88	-	7.13	20	5/16-24
5000151	CF800T-600	7.97	5.84	6.02	0.88	0.50	7.13	20	5/16-24

CF 800 - Rotatable Flanges



2
CF 800 Flanges

Clearance Bolt Holes

PART #	REFERENCE ID	A (in)	B (in)	C (in)	D (in)	E (in)	F (in)	BOLT HOLES	DIAMETER
5000152	CF800R-000	7.97	Blank	-	0.94	-	7.13	20	0.332
5000153	CF800R-600	7.97	6.13	6.75	0.94	0.50	7.13	20	0.332

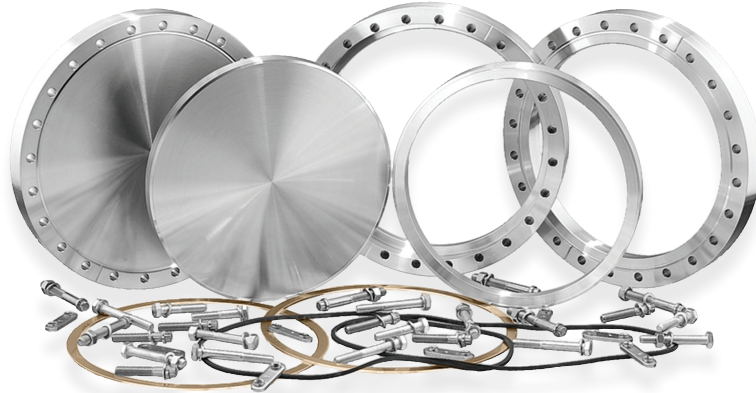
Tapped Bolt Holes

PART #	REFERENCE ID	A (in)	B (in)	C (in)	D (in)	E (in)	F (in)	BOLT HOLES	THREAD
5000154	CF800RT-000	7.97	Blank	-	0.94	-	7.13	20	5/16-24
5000155	CF800RT-600	7.97	6.13	6.75	0.94	0.50	7.13	20	5/16-24

CF 800 Flange Hardware

PART #	REFERENCE ID	DESCRIPTION
0604037	CF800-GA-CO	(10) Copper Gaskets
0604008	CF800-GA-VT	(1) Viton® Gasket
0605157	CF800-HBK	(25) Bolt, Nut & Washer Kit; 5/16-24x2 1/4 in.
0605158	CF800-HTBK	(25) Bolt & Washer Kit; 5/16-24x1 3/4 in.
0605159	CF800-12BK	(25) 12-point Bolt, Nut & Washer Kit; 5/16-24x2 1/4 in.
0605198	CF800-12BK-SP	(25) Silver Plated 12-point Bolt, Nut & Washer Kit; 5/16-24x2 1/4 in.
0605160	CF800-12TBK	(25) 12-point Bolt & Washer Kit; 5/16-24x1 3/4 in.
0605197	CF800-12TBK-SP	(25) Silver Plated 12-point Bolt & Washer Kit; 5/16-24x1 3/4 in.
0605161	CF800-HPBK	(20) Plate Nuts, (40) Bolts & Washers; 5/16-24x2 1/4 in.
0605162	CF800-PN	(24) Plate Nuts; 5/16-24
0605163	CF800-12PBK	(20) Plate Nuts, (40) 12-point Bolts & Washers; 5/16-24x2 1/4 in.
0605270	CF800-12PBK-SP	(20) Plate Nuts, (40) Silver Plated 12-point Bolts & Washers; 5/16-24x2 1/4 in.
0605113	12-POINT WRENCH	(1) Fits CF 12-point bolts
0605208	ASTL	(1) Bolt thread lubricant eliminates galling of bolt and nut or tapped bolt hole

CF 1000 - 10 inches O.D. UHV Flanges



Product Features:

- Designed to fit standard inch tubing O.D.'s
- Self-aligning
- Internal weld
- Sexless flanges
- Rotatable flanges for easier bolt hole alignment
- Tapped and clearance bolt holes available
- Blank flanges to close unused ports or custom modify
- Interchangeable with other ConFlat® style flanges
- Adapters to other flange systems available

Product Specifications:

- Pressure range: UHV (approx. 1×10^{-13} Torr)
- Temperature range: -200°C up to 450°C
- Standard materials: 304L stainless steel

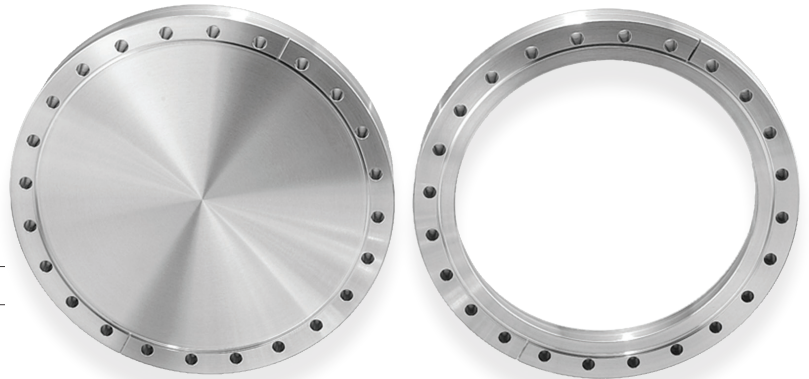
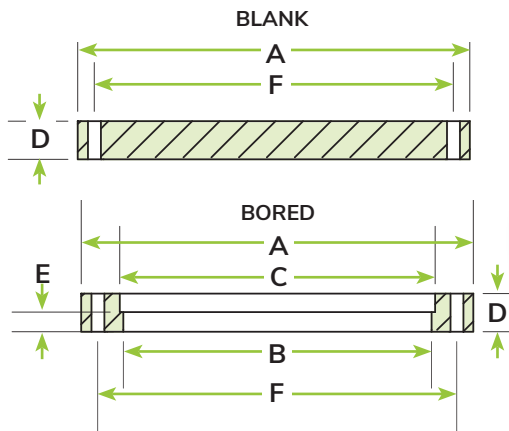
Options: Call for price and availability

- Metric tapped bolt holes
- Alternative materials: 316L, 316LN stainless steel, aluminum, titanium, bimetal etc.

2

CF 1000 Flanges

CF 1000 - Fixed Flanges



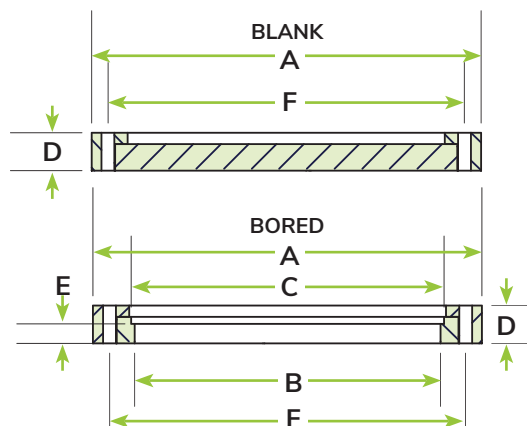
Clearance Bolt Holes

PART #	REFERENCE ID	A (in)	B (in)	C (in)	D (in)	E (in)	F (in)	BOLT HOLES	DIAMETER
5000156	CF1000-000	9.97	Blank	-	0.97	-	9.13	24	0.332
5000157	CF1000-800	9.97	7.83	8.02	0.97	0.50	9.13	24	0.332

Tapped Bolt Holes

PART #	REFERENCE ID	A (in)	B (in)	C (in)	D (in)	E (in)	F (in)	BOLT HOLES	THREAD
5000158	CF1000T-000	9.97	Blank	-	0.97	-	9.13	24	5/16-24
5000159	CF1000T-800	9.97	7.83	8.02	0.97	0.50	9.13	24	5/16-24

CF 1000 - Rotatable Flanges



2
CF 1000 Flanges

Clearance Bolt Holes

PART #	REFERENCE ID	A (in)	B (in)	C (in)	D (in)	E (in)	F (in)	BOLT HOLES	DIAMETER
5000160	CF1000R-000	9.97	Blank	-	0.97	-	9.13	24	0.332
5000161	CF1000R-800	9.97	7.83	8.02	0.97	0.50	9.13	24	0.332

Tapped Bolt Holes

PART #	REFERENCE ID	A (in)	B (in)	C (in)	D (in)	E (in)	F (in)	BOLT HOLES	THREAD
5000162	CF1000RT-000	9.97	Blank	-	0.97	-	9.13	24	5/16-24
5000163	CF1000RT-800	9.97	7.83	8.02	0.97	0.50	9.13	24	5/16-24

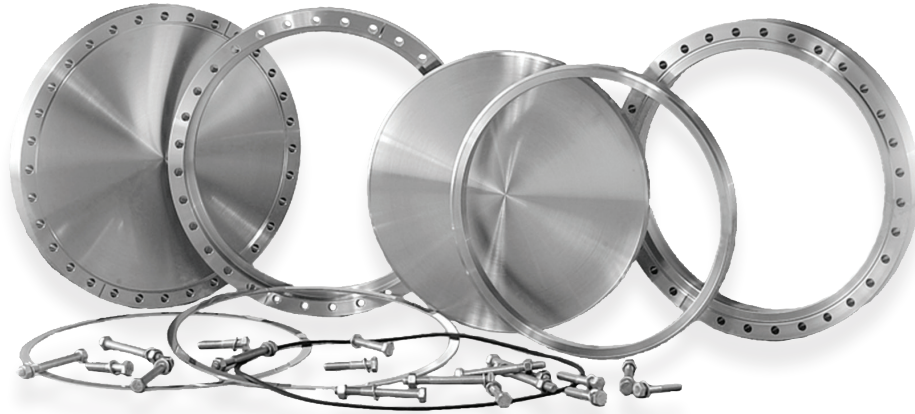
CF 1000 Flange Hardware

PART #	REFERENCE ID	DESCRIPTION
0604039	CF1000-GA-CO	(10) Copper Gaskets
0604009	CF1000-GA-VT	(1) Viton® Gasket
0605164	CF1000-HBK	(25) Bolt, Nut & Washer Kit; 5/16-24x2 1/2 in.
0605165	CF1000-HTBK	(25) Bolt & Washer Kit; 5/16-24x1 3/4 in.
0605166	CF1000-12BK	(25) 12-point Bolt, Nut & Washer Kit; 5/16-24x2 1/2 in.
0605200	CF1000-12BK-SP	(25) Silver Plated 12-point Bolt, Nut & Washer Kit; 5/16-24x2 1/2 in.
0605167	CF1000-12TBK	(25) 12-point Bolt & Washer Kit; 5/16-24x1 3/4 in.
0605199	CF1000-12TBK-SP	(25) Silver Plated 12-point Bolt & Washer Kit; 5/16-24x1 3/4 in.
0605168	CF1000-HPBK	(24) Plate Nuts, (48) Bolts & Washers; 5/16-24x2 1/2 in.
0605169	CF1000-PN	(24) Plate Nuts; 5/16-24
0605170	CF1000-12PBK	(24) Plate Nuts, (48) 12-point Bolts & Washers; 5/16-24x2 1/2 in.
0605310	CF1000-12PBK-SP	(24) Plate Nuts, (48) Silver Plated 12-point Bolts & Washers; 5/16-24x2 1/2 in.
0605113	12-POINT WRENCH	(1) Fits CF 12-point bolts
0605208	ASTL	(1) Bolt thread lubricant eliminates galling of bolt and nut or tapped bolt hole

CF 1200 - 12 inches O.D. UHV Flanges

2

CF 1200 Flanges



Product Features:

- Designed to fit standard inch tubing O.D.'s
- Self-aligning
- Internal weld
- Sexless flanges
- Rotatable flanges for easier bolt hole alignment
- Tapped and clearance bolt holes available
- Blank flanges to close unused ports or custom modify
- Interchangeable with other ConFlat® style flanges
- Adapters to other flange systems available

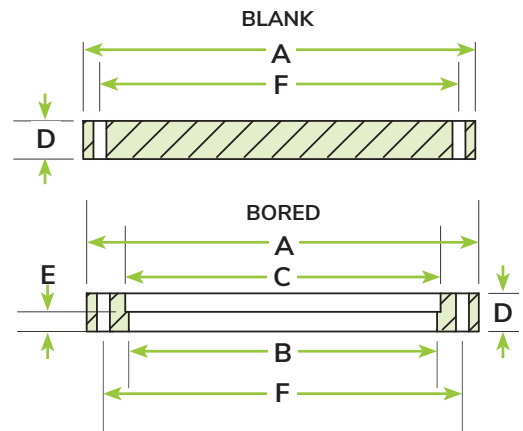
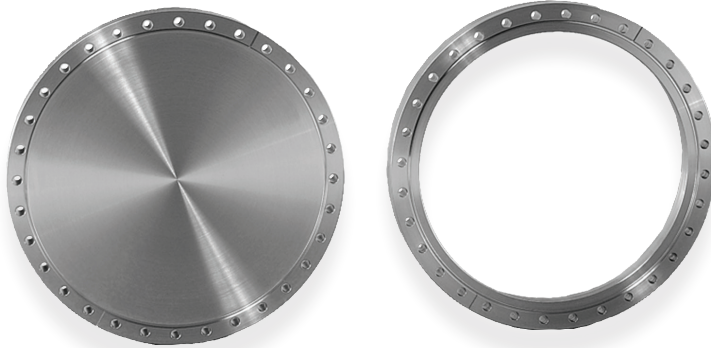
Product Specifications:

- Pressure range: UHV (approx. 1×10^{-13} Torr)
- Temperature range: -200°C up to 450°C
- Standard materials: 304L stainless steel

Options: Call for price and availability

- Metric tapped bolt holes
- Alternative materials: 316L, 316LN stainless steel, aluminum, titanium, bimetal etc.

CF 1200 - Fixed Flanges



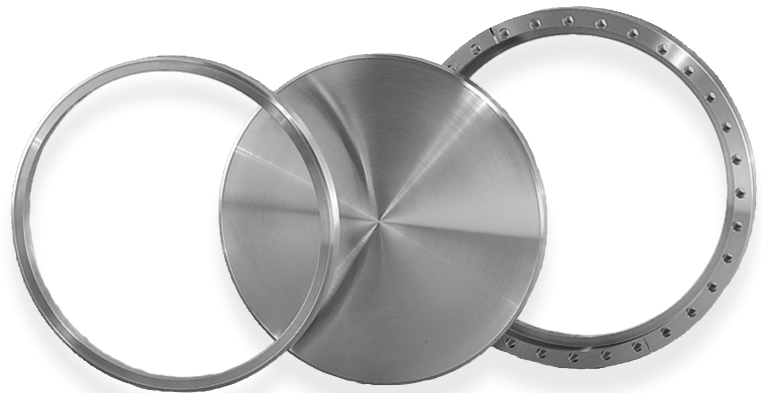
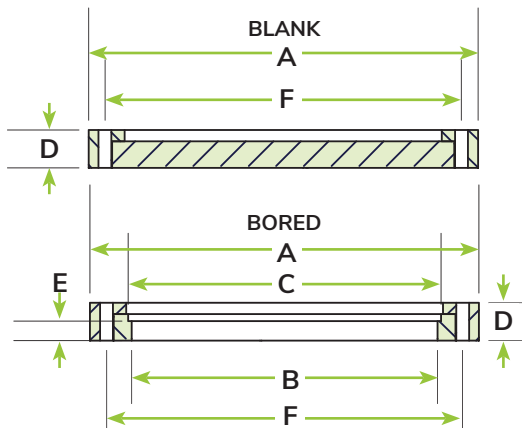
Clearance Bolt Holes

PART #	REFERENCE ID	A (in)	B (in)	C (in)	D (in)	E (in)	F (in)	BOLT HOLES	DIAMETER
5000164	CF1200-000	11.97	Blank	-	1.02	-	11.18	32	0.332
5000165	CF1200-1000	11.97	9.88	10.03	1.02	0.50	11.18	32	0.332

Tapped Bolt Holes

PART #	REFERENCE ID	A (in)	B (in)	C (in)	D (in)	E (in)	F (in)	BOLT HOLES	THREAD
5000166	CF1200T-000	11.97	Blank	-	1.02	-	11.18	32	5/16-24
5000167	CF1200T-1000	11.97	9.88	10.03	1.02	0.500	11.18	32	5/16-24

CF 1200 - Rotatable Flanges



2
CF 1200 Flanges

Clearance Bolt Holes

PART #	REFERENCE ID	A (in)	B (in)	C (in)	D (in)	E (in)	F (in)	BOLT HOLES	DIAMETER
5000168	CF1200R-000	11.97	Blank	-	1.02	-	11.18	32	0.332
5000169	CF1200R-1000	11.97	9.88	10.03	1.02	0.50	11.18	32	0.332

Tapped Bolt Holes

PART #	REFERENCE ID	A (in)	B (in)	C (in)	D (in)	E (in)	F (in)	BOLT HOLES	THREAD
5000170	CF1200RT-000	11.97	Blank	-	1.02	-	11.18	32	5/16-24
5000171	CF1200RT-1000	11.97	9.88	10.03	1.02	0.50	11.18	32	5/16-24

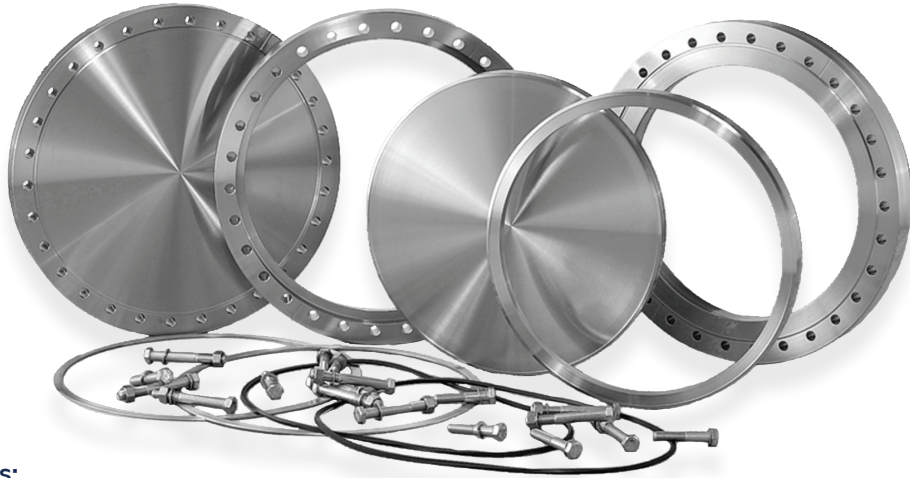
CF 1200 Flange Hardware

PART #	REFERENCE ID	DESCRIPTION
0604041	CF1200-GA-CO	(1) Copper Gaskets
0604010	CF1200-GA-VT	(1) Viton® Gasket
0605171	CF1200-HBK	(32) Bolt, Nut & Washer Kit; 5/16-24x3 in.
0605172	CF1200-HTBK	(32) Bolt & Washer Kit; 5/16-24x1 3/4 in.
0605312	CF1200-12BK	(32) 12-point Bolt & Washer Kit; 5/16-24x1 3/4 in.
0605202	CF1200-12BK-SP	(32) Silver Plated 12-point Bolt & Washer Kit; 5/16-24x1 3/4 in.
0605208	ASTL	(1) Bolt thread lubricant eliminates galling of bolt and nut or tapped bolt hole

CF 1325 - 13.25 inches O.D. UHV Flanges

2

CF 1325 Flanges



Product Features:

- Designed to fit standard inch tubing O.D.'s
- Self-aligning
- Internal weld
- Sexless flanges
- Rotatable flanges for easier bolt hole alignment
- Tapped and clearance bolt holes available
- Blank flanges to close unused ports or custom modify
- Interchangeable with other ConFlat® style flanges
- Adapters to other flange systems available

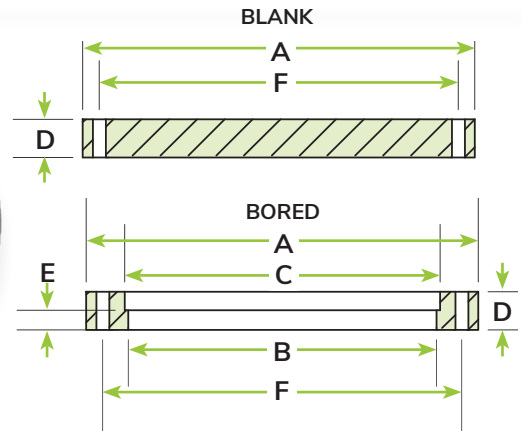
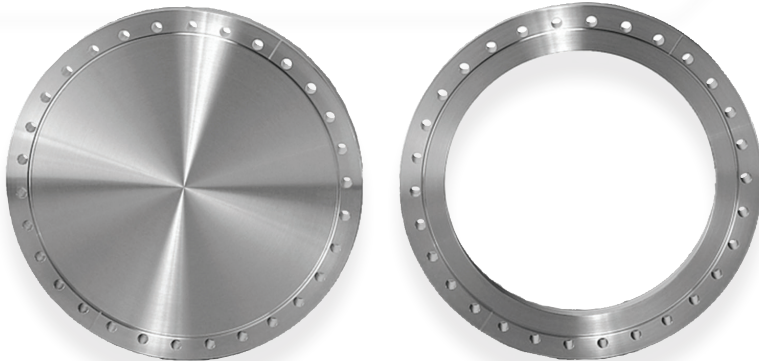
Product Specifications:

- Pressure range: UHV (approx. 1×10^{-13} Torr)
- Temperature range: -200°C up to 450°C
- Standard materials: 304L stainless steel

Options: Call for price and availability

- Metric tapped bolt holes
- Alternative materials: 316L, 316LN stainless steel, aluminum, titanium, bimetal etc.

CF 1325 - Fixed Flanges



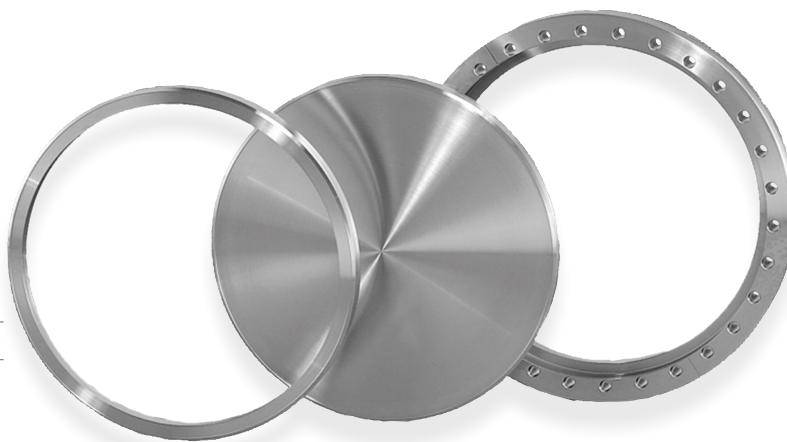
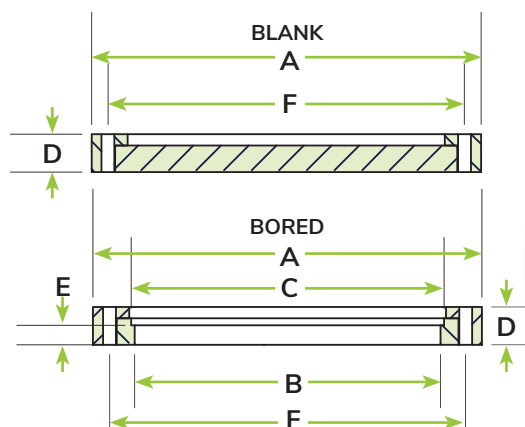
Clearance Bolt Holes

PART #	REFERENCE ID	A (in)	B (in)	C (in)	D (in)	E (in)	F (in)	BOLT HOLES	DIAMETER
5000172	CF1325-000	13.25	Blank	-	1.12	-	12.06	30	0.390
5000173	CF1325-1000	13.25	9.75	10.02	1.12	0.50	12.06	30	0.390
5000174	CF1325-1075	13.25	10.50	10.78	1.12	0.50	12.06	30	0.390

Tapped Bolt Holes

PART #	REFERENCE ID	A (in)	B (in)	C (in)	D (in)	E (in)	F (in)	BOLT HOLES	THREAD
5000175	CF1325T-000	13.25	Blank	-	1.12	-	12.06	30	3/8-24
5000176	CF1325T-1000	13.25	9.75	10.02	1.12	0.50	12.06	30	3/8-24
5000177	CF1325T-1075	13.25	10.50	10.78	1.12	0.50	12.06	30	3/8-24

CF 1325 - Rotatable Flanges



2
CF 1325 Flanges

Clearance Bolt Holes

PART #	REFERENCE ID	A (in)	B (in)	C (in)	D (in)	E (in)	F (in)	BOLT HOLES	DIAMETER
5000178	CF1325R-000	13.25	Blank	-	1.12	-	12.06	30	0.390
5000179	CF1325R-1000	13.25	9.75	10.03	1.12	0.50	12.06	30	0.390
5000180	CF1325R-1075	13.25	10.50	10.77	1.12	0.50	12.06	30	0.390

Tapped Bolt Holes

PART #	REFERENCE ID	A (in)	B (in)	C (in)	D (in)	E (in)	F (in)	BOLT HOLES	THREAD
5000181	CF1325RT-000	13.25	Blank	-	1.12	-	12.06	30	3/8-24
5000182	CF1325RT-1000	13.25	9.75	10.03	1.12	0.50	12.06	30	3/8-24
5000183	CF1325RT-1075	13.25	10.50	10.77	1.12	0.50	12.06	30	3/8-24

CF 1325 Flange Hardware

PART #	REFERENCE ID	DESCRIPTION
0604043	CF1325-GA-CO	(1) Copper Gaskets
0604011	CF1325-GA-VT	(1) Viton® Gasket
0605173	CF1325-HBK	(30) Bolt, Nut & Washer Kit; 3/8-24x3 in.
0605174	CF1325-HTBK	(30) Bolt & Washer Kit; 3/8-24x2 in.
0605204	CF1325-HBK-SP	(30) Silver Plated Bolt, Nut & Washer Kit; 3/8-24x3 in.
0605203	CF1325-HTBK-SP	(30) Silver Plated Bolt & Washer Kit; 3/8-24x2 in.
0605208	ASTL	(1) Bolt thread lubricant eliminates galling of bolt and nut or tapped bolt hole

CF 1400 - 14 inches O.D. UHV Flanges



Product Features:

- Designed to fit standard inch tubing O.D.'s
- Self-aligning
- Internal weld
- Sexless flanges
- Rotatable flanges for easier bolt hole alignment
- Tapped and clearance bolt holes available
- Blank flanges to close unused ports or custom modify
- Interchangeable with other ConFlat® style flanges
- Adapters to other flange systems available

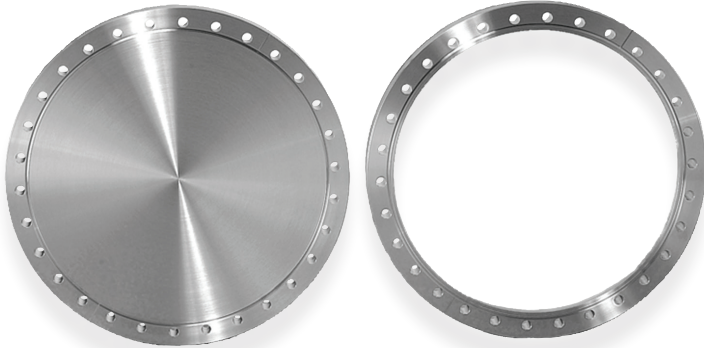
Product Specifications:

- Pressure range: UHV (approx. 1×10^{-13} Torr)
- Temperature range: -200°C up to 450°C
- Standard materials: 304L stainless steel

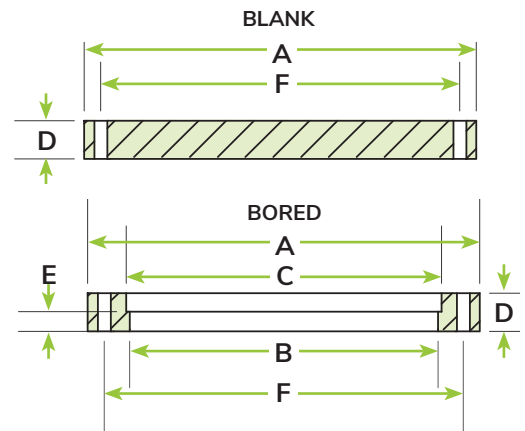
Options: Call for price and availability

- Metric tapped bolt holes
- Alternative materials: 316L, 316LN stainless steel, aluminum, titanium, bimetal etc.

CF 1400 - Fixed Flanges



Clearance Bolt Holes

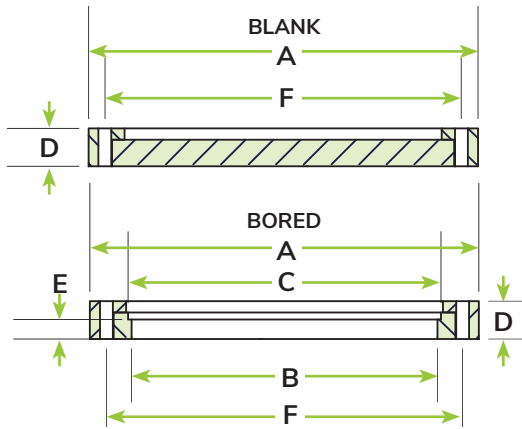


PART #	REFERENCE ID	A (in)	B (in)	C (in)	D (in)	E (in)	F (in)	BOLT HOLES	DIAMETER
5000184	CF1400-000	14.00	Blank	-	1.12	-	12.81	30	0.390
5000185	CF1400-1200	14.00	11.75	12.03	1.12	0.50	12.81	30	0.390

Tapped Bolt Holes

PART #	REFERENCE ID	A (in)	B (in)	C (in)	D (in)	E (in)	F (in)	BOLT HOLES	THREAD
5000186	CF1400T-000	14.00	Blank	-	1.120	-	12.81	30	3/8-24
5000187	CF1400T-1200	14.00	11.75	12.03	1.120	0.50	12.81	30	3/8-24

CF 1400 - Rotatable Flanges



2
CF 1400 Flanges

Clearance Bolt Holes

PART #	REFERENCE ID	A (in)	B (in)	C (in)	D (in)	E (in)	F (in)	BOLT HOLES	DIAMETER
5000188	CF1400R-000	14.00	Blank	-	1.12	-	12.81	30	0.390
5000189	CF1400R-1200	14.00	11.75	12.03	1.12	0.50	12.81	30	0.390

Tapped Bolt Holes

PART #	REFERENCE ID	A (in)	B (in)	C (in)	D (in)	E (in)	F (in)	BOLT HOLES	THREAD
5000190	CF1400RT-000	14.00	Blank	-	1.12	-	12.81	30	3/8-24
5000191	CF1400RT-1200	14.00	11.75	12.03	1.12	0.50	12.81	30	3/8-24

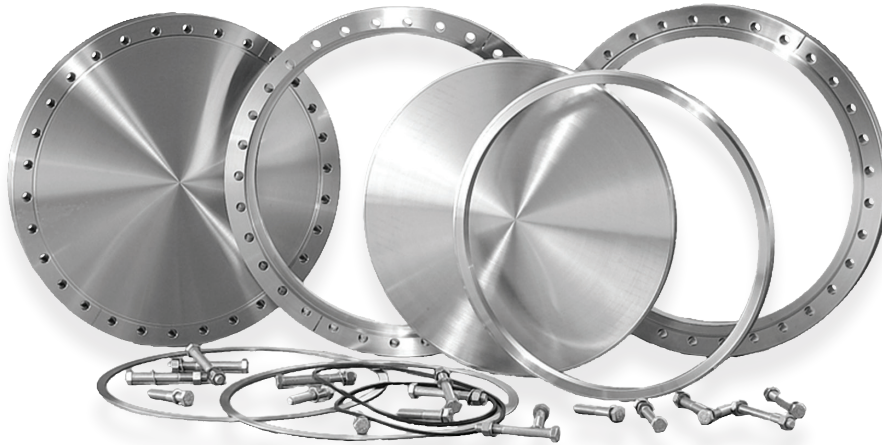
CF 1400 Flange Hardware

PART #	REFERENCE ID	DESCRIPTION
0604045	CF1400-GA-CO	(1) Copper Gaskets
0604012	CF1400-GA-VT	(1) Viton® Gasket
0605175	CF1400-HBK	(30) Bolt, Nut & Washer Kit; 3/8-24x3 in.
0605176	CF1400-HTBK	(30) Bolt & Washer Kit; 3/8-24x2 in.
0605206	CF1400-HBK-SP	(30) Silver Plated Bolt, Nut & Washer Kit; 3/8-24x3 in.
0605205	CF1400-HTBK-SP	(30) Silver Plated Bolt & Washer Kit; 3/8-24x2 in.
0605208	ASTL	(1) Bolt thread lubricant eliminates galling of bolt and nut or tapped bolt hole

CF 1450 - 14.5 inches O.D. UHV Flanges

2

CF 1450 Flanges



Product Features:

- Designed to fit standard inch tubing O.D.'s
- Self-aligning
- Internal weld
- Sexless flanges
- Rotatable flanges for easier bolt hole alignment
- Tapped and clearance bolt holes available
- Blank flanges to close unused ports or custom modify
- Interchangeable with other ConFlat® style flanges
- Adapters to other flange systems available

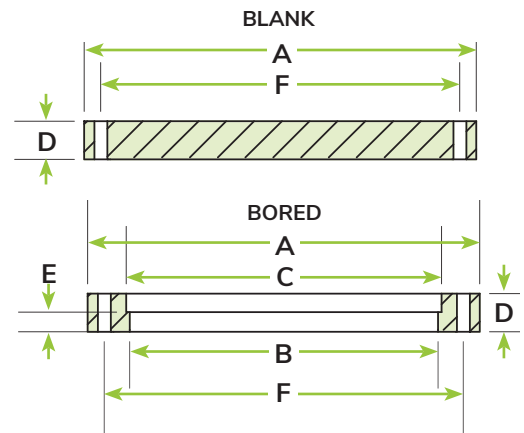
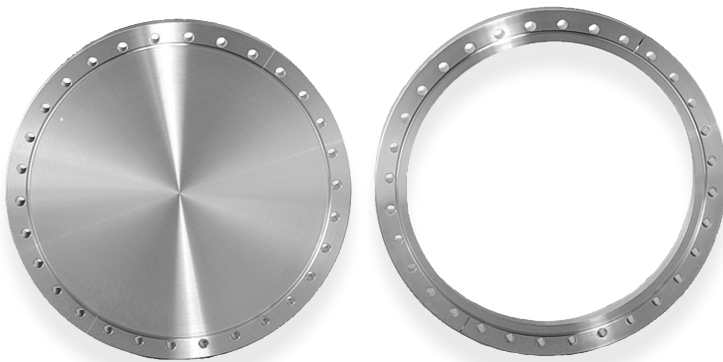
Product Specifications:

- Pressure range: UHV (approx. 1×10^{-13} Torr)
- Temperature range: -200°C up to 450°C
- Standard materials: 304L stainless steel

Options: Call for price and availability

- Metric tapped bolt holes
- Alternative materials: 316L, 316LN stainless steel, aluminum, titanium, bimetal etc.

CF 1450 - Fixed Flanges



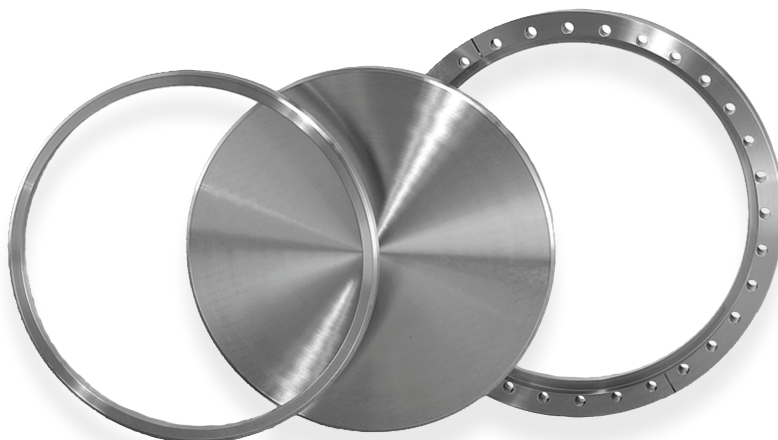
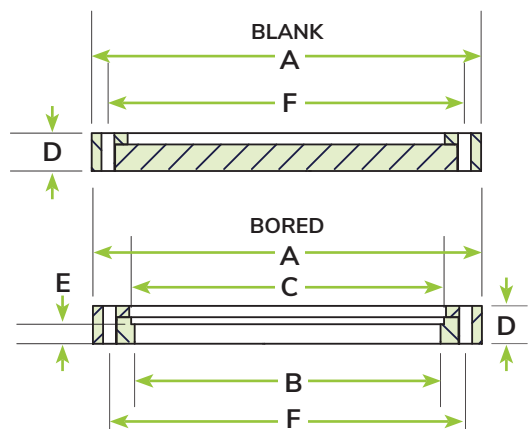
Clearance Bolt Holes

PART #	REFERENCE ID	A (in)	B (in)	C (in)	D (in)	E (in)	F (in)	BOLT HOLES	DIAMETER
5000192	CF1450-000	14.50	Blank	-	1.12	-	13.31	32	0.390
5000193	CF1450-1200	14.50	11.75	12.03	1.12	0.50	13.31	32	0.390

Tapped Bolt Holes

PART #	REFERENCE ID	A (in)	B (in)	C (in)	D (in)	E (in)	F (in)	BOLT HOLES	THREAD
5000194	CF1450T-000	14.50	Blank	-	1.12	-	13.31	32	3/8-24
5000195	CF1450T-1200	14.50	11.75	12.03	1.12	0.50	13.31	32	3/8-24

CF 1450 - Rotatable Flanges



2

Clearance Bolt Holes

PART #	REFERENCE ID	A (in)	B (in)	C (in)	D (in)	E (in)	F (in)	BOLT HOLES	DIAMETER
5000196	CF1450R-000	14.50	Blank	-	1.12	-	13.31	32	0.390
5000197	CF1450R-1200	14.50	11.75	12.03	1.12	0.50	13.31	32	0.390

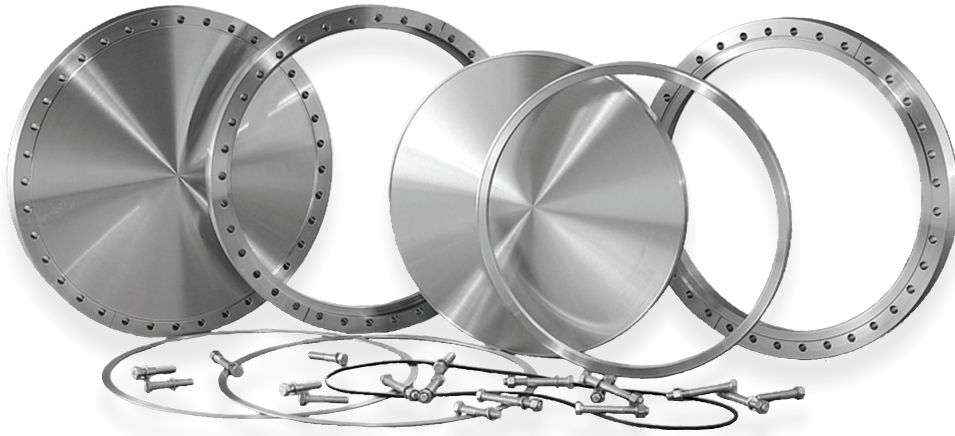
Tapped Bolt Holes

PART #	REFERENCE ID	A (in)	B (in)	C (in)	D (in)	E (in)	F (in)	BOLT HOLES	THREAD
5000198	1450-000-R-T	14.50	Blank	-	1.12	-	13.31	32	3/8-24
5000199	1450-1200-R-T	14.50	11.75	12.03	1.12	0.50	13.31	32	3/8-24

CF 1450 Flange Hardware

PART #	REFERENCE ID	DESCRIPTION
0604047	CF1450-GA-CO	(1) Copper Gaskets
0604013	CF1450-GA-VT	(1) Viton® Gasket
0605177	CF1450-HBK	(32) Bolt, Nut & Washer Kit; 3/8-24x3 in.
0605178	CF1450-HTBK	(32) Bolt & Washer Kit; 3/8-24x2 in.
0605303	1450-BK-S	(32) Silver Plated Bolt, Nut & Washer Kit; 3/8-24x3 in.
0605311	CF1450-HTBK-SP	(32) Silver Plated Bolt & Washer Kit; 3/8-24x2 in.
0605208	ASTL	(1) Bolt thread lubricant eliminates galling of bolt and nut or tapped bolt hole

CF 1650 - 16.5 inches O.D. UHV Flanges



2

CF 1650 Flanges

Product Features:

- Designed to fit standard inch tubing O.D.'s
- Self-aligning
- Internal weld
- Sexless flanges
- Rotatable flanges for easier bolt hole alignment
- Tapped and clearance bolt holes available
- Blank flanges to close unused ports or custom modify
- Interchangeable with other ConFlat® style flanges
- Adapters to other flange systems available

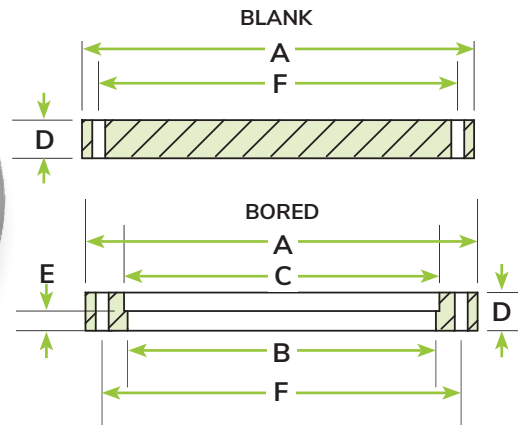
Product Specifications:

- Pressure range: UHV (approx. 1×10^{-13} Torr)
- Temperature range: -200°C up to 450°C
- Standard materials: 304L stainless steel

Options: Call for price and availability

- Metric tapped bolt holes
- Alternative materials: 316L, 316LN stainless steel, aluminum, titanium, bimetal etc.

CF 1650 - Fixed Flanges



Clearance Bolt Holes

PART #	REFERENCE ID	A (in)	B (in)	C (in)	D (in)	E (in)	F (in)	BOLT HOLES	DIAMETER
5000200	CF1650-000	16.50	Blank	-	1.12	-	15.31	36	0.390
5000201	CF1650-1400	16.50	13.75	14.03	1.12	0.50	15.31	36	0.390

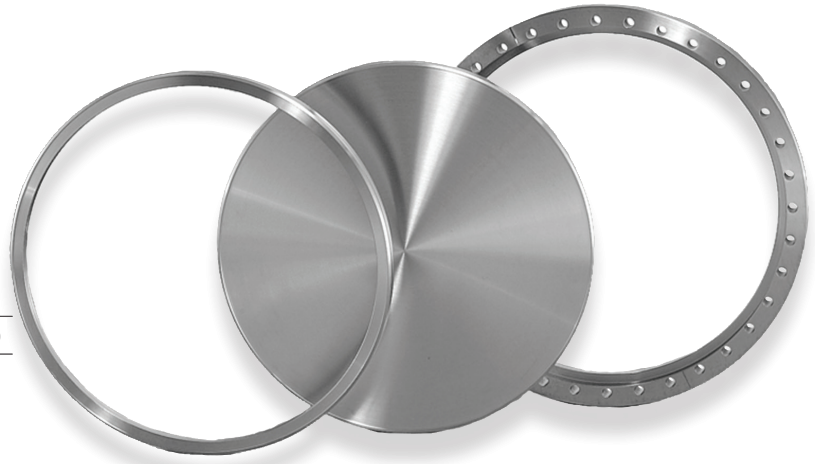
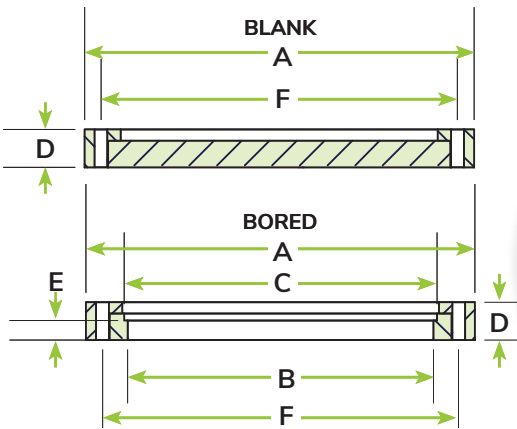
Tapped Bolt Holes

PART #	REFERENCE ID	A (in)	B (in)	C (in)	D (in)	E (in)	F (in)	BOLT HOLES	THREAD
5000202	CF1650T-000	16.50	Blank	-	1.12	-	15.31	36	0.38-24
5000203	CF1650T-1400	16.50	13.75	14.03	1.12	0.50	15.31	36	0.38-24

CF 1650 - Rotatable Flanges

2

CF 1650 Flanges



Clearance Bolt Holes

PART #	REFERENCE ID	A (in)	B (in)	C (in)	D (in)	E (in)	F (in)	BOLT HOLES	DIAMETER
5000204	CF1650R-000	16.50	-	-	1.12	-	15.31	36	0.390
5000205	CF1650R-1400	16.50	13.75	14.03	1.12	0.50	15.31	36	0.390

Tapped Bolt Holes

PART #	REFERENCE ID	A (in)	B (in)	C (in)	D (in)	E (in)	F (in)	BOLT HOLES	THREAD
5000206	CF1650RT-000	16.50	-	-	1.12	-	15.31	36	0.38-24
5000207	CF1650RT-1400	16.50	13.75	14.03	1.12	0.50	15.31	36	0.38-24

CF 1650 Flange Hardware

PART #	REFERENCE ID	DESCRIPTION
0604049	CF1650-GA-CO	(1) Copper Gaskets
0604014	CF1650-GA-VT	(1) Viton® Gasket
0605179	CF1650-HBK	(36) Bolt, Nut & Washer Kit; 3/8-24x3 in.
0605180	CF1650-HTBK	(36) Bolt & Washer Kit; 3/8-24x2 in.
0605304	CF1650-HBK-SP	(36) Silver Plated Bolt, Nut & Washer Kit; 3/8-24x3 in.
0605207	CF1650-HTBK-SP	(36) Silver Plated Bolt & Washer Kit; 3/8-24x2 in.
0605208	ASTL	(1) Bolt thread lubricant eliminates galling of bolt and nut or tapped bolt hole

316LN ConFlat Flanges

2

316LN CF 133 Flanges

FEATURES & BENEFITS OF 316LN:

- Low magnetic permeability of $1.005 \mu_{\max}$
- Temperature Range: -200°C to 450°C
- Vacuum Rating: 1×10^{-13} Torr
- Excellent for Beamlines, XHV, X-Ray, and Laser applications
- Increased resistance to irradiation damage
- Resistant to crevice corrosion
- High level of weldability
- Resistant to pitting



ANCORP's 316LN austenitic stainless steel CF flanges are produced for critical UHV and XHV applications where low magnetic permeability is required.

316LN CF flanges are machined from low carbon, nitrogen-enriched material and undergo Electro Slag Remelting (ESR) during secondary refinement. The secondary refining process further eliminates impurities in the 316LN stainless steel, increasing final quality and granting material benefits such as increased resistance to heat hardening.

Product Features:

- Designed to fit standard inch tubing O.D.'s
- Self-aligning
- Internal weld
- Sexless flanges
- Rotatable flanges for easier bolt hole alignment
- Metric tapped and clearance bolt holes available
- Blank flanges to close unused ports or custom modify
- Interchangeable with other ConFlat® style flanges
- Adapters to other flange systems available (UHV) or Viton® for high vacuum (HV)

Specifications:

- Vacuum rated to 1×10^{-13} Torr. with Copper Seals
- Leak rating $< 1 \times 10^{-9}$ std. cc/s helium
- Temperature range: -200°C to 450°C with Copper Seals
- Standard materials: 316LN
 - Flanges and fittings: 316LN stainless steel
 - Seals: OFHC copper for ultra high vacuum

(UHV) or Viton® for high vacuum (HV)

CF 133 - 1.33 inches O.D. UHV Flanges



Product Features:

- Designed to fit standard inch tubing O.D.'s
- Self-aligning
- Internal weld
- Sexless flanges
- Rotatable flanges for easier bolt hole alignment
- Metric tapped and clearance bolt holes available
- Blank flanges to close unused ports or custom modify
- Interchangeable with other ConFlat® style flanges
- Adapters to other flange systems available

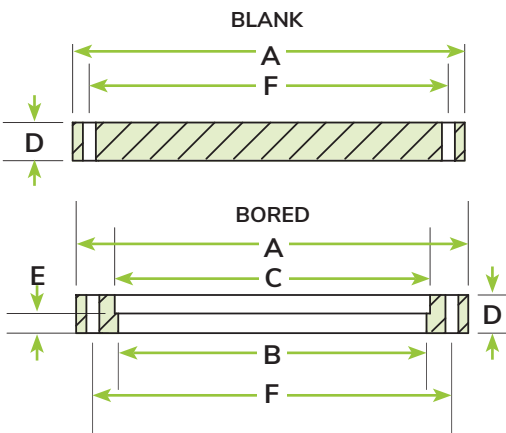
Product Specifications:

- Pressure range: UHV (approx. 1×10^{-13} Torr)
- Temperature range: -200°C up to 450°C
- Standard materials: 316LN stainless steel

Options: Call for price and availability

- Alternative materials: 304L, 316L stainless steel, aluminum, titanium, bimetal etc.

CF 133 - Fixed Flanges



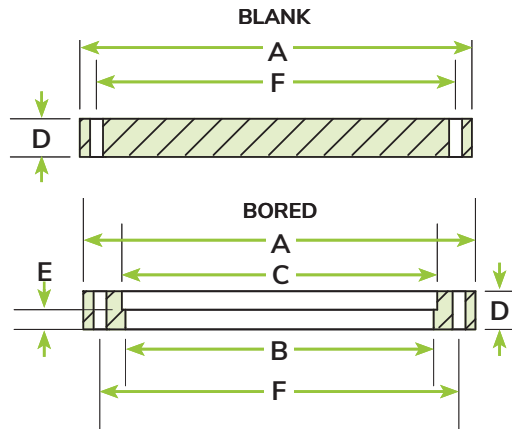
Clearance Bolt Holes

PART #	REFERENCE ID	A (in)	B (in)	C (in)	D (in)	E (in)	F (in)	BOLT HOLES	DIAMETER
5004000	CF133-000-316LN	1.33	-	-	0.3	-	1.06	6	0.17
5004007	CF133-075-316LN	1.33	0.63	0.76	0.3	0.18	1.06	6	0.17

Tapped Bolt Holes

PART #	REFERENCE ID	A (in)	B (in)	C (in)	D (in)	E (in)	F (in)	BOLT HOLES	THREAD
5004009	CF133TM-000-316LN	1.33	-	-	0.3	-	1.06	6	M4
5004015	CF133TM-075-316LN	1.33	0.63	0.76	0.3	0.18	1.06	6	M4

CF 133 - Rotatable Flanges



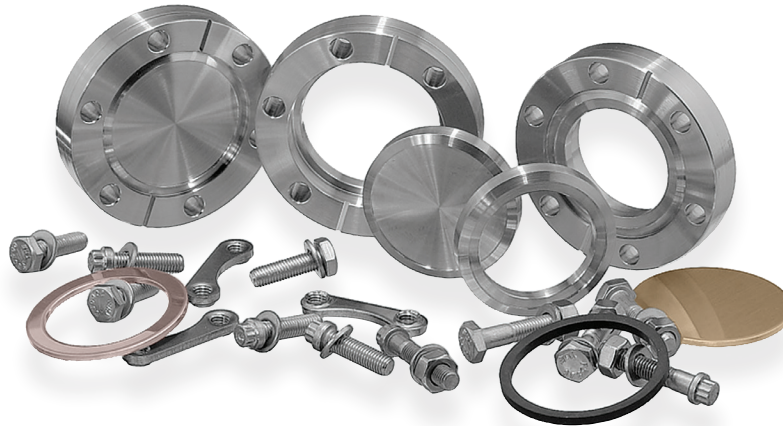
Clearance Bolt Holes

PART #	REFERENCE ID	A (in)	B (in)	C (in)	D (in)	E (in)	F (in)	BOLT HOLES	DIAMETER
5004018	CF133R-000-316LN	1.33	-	-	0.3	-	1.06	6	0.17
5004024	CF133R-075-316LN	1.33	0.63	1.06	0.3	-	1.06	6	0.27

CF 133 Flange Hardware

PART #	REFERENCE ID	DESCRIPTION
0604020	CF133-GA-CO	(10) Copper Gaskets
0604000	CF133-GA-VT	(5) Viton® Gaskets
0605105	CF133-HBK	(25) Bolt, Nut & Washer Kit 8-32x3/4 in.
0605181	CF133-HBK-SP	(25) Silver Plated Bolt, Nut & Washer Kit; 8-32x3/4 in.
0605106	CF133-HTBK	(25) Bolt & Washer Kit; 8-32x1/2 in.
0605182	CF133-HTBK-SP	(25) Silver Plated Bolt & Washer Kit; 8-32x1/2 in.
0605107	CF133-HPBK	(12) Plate Nuts, (24) Bolts & Washers; 8-32x3/4 in.
0605248	CF133-HPBK-SP	(12) Plate Nuts, (24) 8-32x3/4 in. Silver Plated Hex Socket Head Bolt & Washer Kit
0605108	CF133-PN	(24) Plate Nuts; 8-32
0605208	ASTL	Bolt thread lubricant eliminates galling of bolt and nut or tapped bolt hole

CF 275 - 2.75 inches O.D. UHV Flanges



Product Features:

- Designed to fit standard inch tubing O.D.'s
- Self-aligning
- Internal weld
- Sexless flanges
- Rotatable flanges for easier bolt hole alignment
- Metric tapped and clearance bolt holes available
- Blank flanges to close unused ports or custom modify
- Interchangeable with other ConFlat® style flanges
- Adapters to other flange systems available

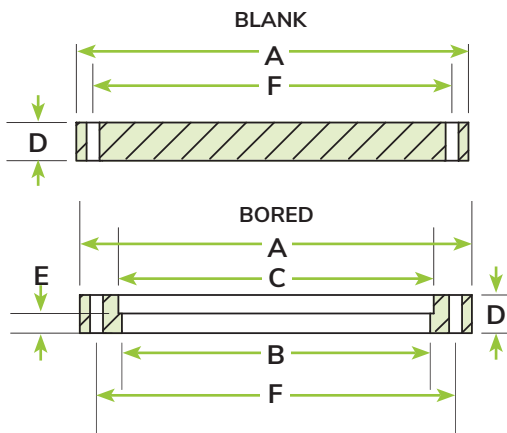
Product Specifications:

- Pressure range: UHV (approx. 1×10^{-13} Torr)
- Temperature range: -200°C up to 450°C
- Standard materials: 316LN stainless steel

Options: Call for price and availability

- Alternative materials: 304L, 316L stainless steel, aluminum, titanium, bimetal etc.

CF 275 - Fixed Flanges



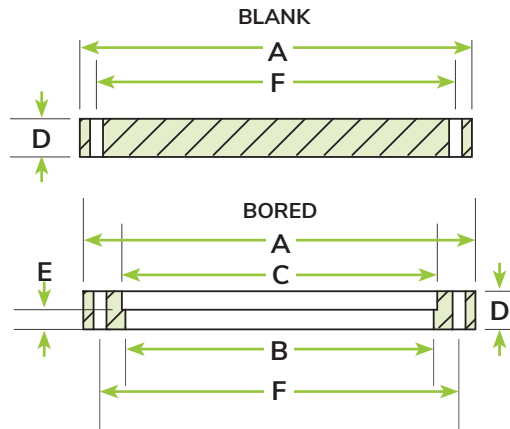
Clearance Bolt Holes

PART #	REFERENCE ID	A (in)	B (in)	C (in)	D (in)	E (in)	F (in)	BOLT HOLES	DIAMETER
5004056	CF275-000-316LN	2.72	-	-	0.5	-	2.31	6	0.27
5004063	CF275-150-316LN	2.72	1.5	1.635	0.5	2.1	2.31	6	0.27

Tapped Bolt Holes

PART #	REFERENCE ID	A (in)	B (in)	C (in)	D (in)	E (in)	F (in)	BOLT HOLES	THREAD
5004064	CF275TM-000-316LN	2.72	-	-	0.5	-	2.31	6	M6
5004071	CF275TM-162-316LN	2.72	1.5	1.635	0.5	0.21	2.31	6	M6

CF 275 - Rotatable Flanges



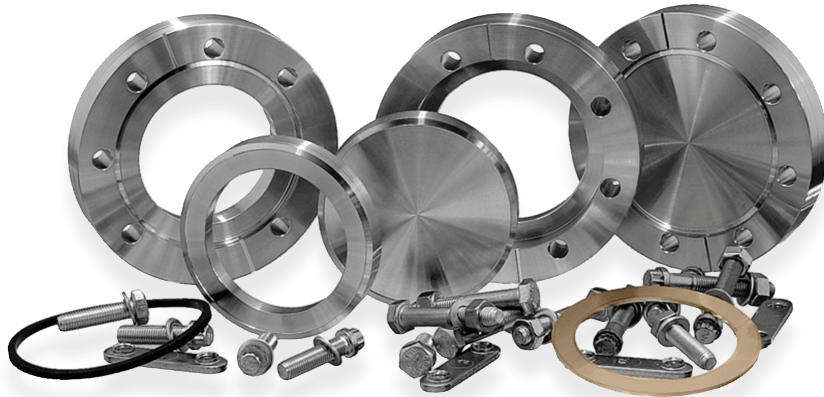
Clearance Bolt Holes

PART #	REFERENCE ID	A (in)	B (in)	C (in)	D (in)	E (in)	F (in)	BOLT HOLES	DIAMETER
5004056	CF275R-000-316LN	2.72	-	-	0.5	-	2.31	6	0.27
5004063	CF275R-162-316LN	2.72	1.5	1.635	0.5	2.1	2.31	6	0.27

CF 275 Flange Hardware

PART #	REFERENCE ID	DESCRIPTION
0604024	CF275-GA-CO	(10) Copper Gaskets
0604025	CF275-GA-CO-SD	(10) Copper Gaskets; Solid
0604002	CF275-GA-VT	(5) Viton® Gaskets
0605114	CF275-HBK	(25) Bolt, Nut & Washer Kit; 1/4-28x1 1/4 in.
0605115	CF275-HTBK	(25) Bolt & Washer Kit, 1/4-28x1 in.
0605116	CF275-12BK	(25) 12-point Bolt, Nut & Washer Kit; 1/4-28x1 1/4 in.
0605186	CF275-12BK-SP	(25) Silver Plated 12-point Bolt, Nut & Washer Kit; 1/4-28x1 1/4 in.
0605117	CF275-12TBK	(25) 12-point Bolt & Washer Kit; 1/4-28x7/8 in.
0605185	CF275-12TBK-SP	(25) Silver Plated 12-point Bolt & Washer Kit; 1/4-28x7/8 in.
0605118	CF275-HPBK	(12) Plate Nuts, (24) Bolts & Washers; 1/4-28x1 1/4 in.
0605119	CF275-PN	(24) Plate Nuts; 1/4-28
0605120	CF275-12PBK	(12) Plate Nuts, (24) 12-point Bolts & Washers; 1/4-28x1 1/4 in.
0605249	CF275-12PBK-SP	(12) Plate Nuts, (24) Silver Plated 12-point Bolts & Washers; 1/4-28x1 1/4 in.
0605113	12-POINT WRENCH	(1) Fits CF 12-point bolts
0605208	ASTL	(1) Bolt thread lubricant eliminates galling of bolt and nut or tapped bolt hole

CF 450 - 4.50 inches O.D. UHV Flanges



Product Features:

- Designed to fit standard inch tubing O.D.'s
- Self-aligning
- Internal weld
- Sexless flanges
- Rotatable flanges for easier bolt hole alignment
- Metric tapped and clearance bolt holes available
- Blank flanges to close unused ports or custom modify
- Interchangeable with other ConFlat® style flanges
- Adapters to other flange systems available

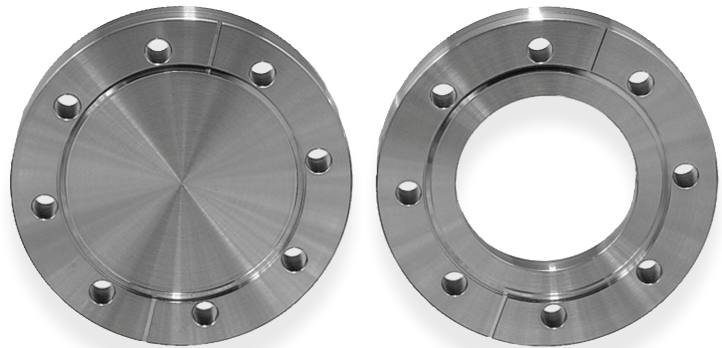
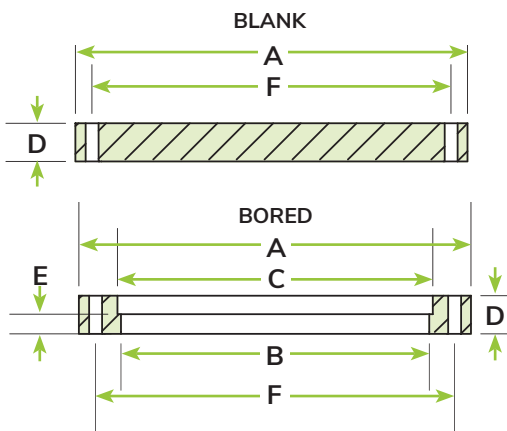
Product Specifications:

- Pressure range: UHV (approx. 1×10^{-13} Torr)
- Temperature range: -200°C up to 450°C
- Standard materials: 316LN stainless steel

Options: Call for price and availability

- Alternative materials: 304L, 316L stainless steel, aluminum, titanium, bimetal etc.

CF 450 - Fixed Flanges



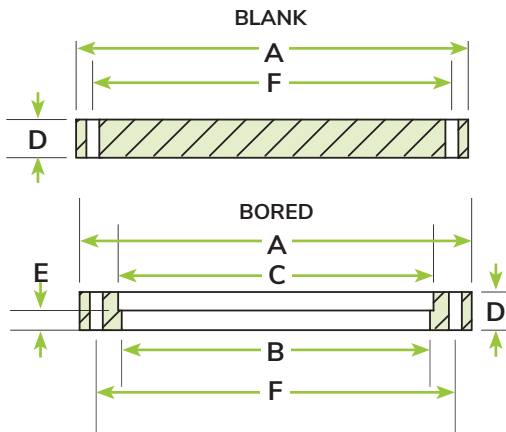
Clearance Bolt Holes

PART #	REFERENCE ID	A (in)	B (in)	C (in)	D (in)	E (in)	F (in)	BOLT HOLES	DIAMETER
5004100	CF450-000-316LN	4.47	-	-	0.68	-	3.63	8	0.33
5004103	CF450-250-316LN	4.47	2.44	2.51	0.68	0.38	3.63	8	0.33

Tapped Bolt Holes

PART #	REFERENCE ID	A (in)	B (in)	C (in)	D (in)	E (in)	F (in)	BOLT HOLES	THREAD
5004104	CF450TM-000-316LN	4.47	-	-	0.68	-	3.63	8	M8
5004107	CF450TM-250-316LN	4.47	2.44	2.51	0.68	0.38	3.63	8	M8

CF 450 - Rotatable Flanges



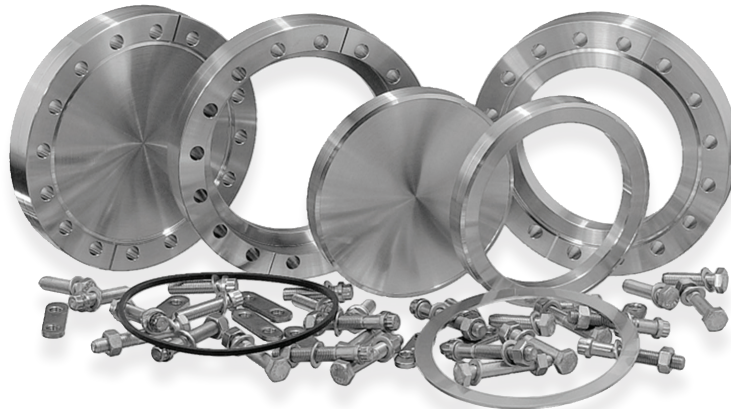
Clearance Bolt Holes

PART #	REFERENCE ID	A (in)	B (in)	C (in)	D (in)	E (in)	F (in)	BOLT HOLES	DIAMETER
5004108	CF450R-000-316LN	4.47	-	-	0.75	-	3.63	8	0.332
5004111	CF450R-250-316LN	4.47	2.44	2.51	0.75	0.38	3.63	8	0.332

CF 450 Flange Hardware

PART #	REFERENCE ID	DESCRIPTION
0604029	CF450-GA-CO	(10) Copper Gaskets
0604004	CF450-GA-VT	(1) Viton® Gasket
0605128	CF450-HBK	(25) Bolt, Nut & Washer Kit; 5/16-24x2 in.
0605129	CF450-HTBK	(25) Bolt & Washer Kit; 5/16-24x1 1/4 in.
0605130	CF450-12BK	(25) 12-point Bolt, Nut & Washer Kit; 5/16-24x2 in.
0605190	CF450-12BK-SP	(25) Silver Plated 12-point Bolt, Nut & Washer Kit; 5/16-24x2 in.
0605131	CF450-12TBK	(25) 12-point Bolt & Washer Kit; 5/16-24x1 1/4 in.
0605189	CF450-12TBK-SP	(25) Silver Plated 12-point Bolt & Washer Kit; 5/16-24x1 1/4 in.
0605132	CF450-HPBK	(16) Plate Nuts, (32) Bolts & Washers; 5/16-24x2 in.
0605133	CF450-PN	(24) Plate Nuts; 5/16-24
0605134	CF450-12PBK	(16) Plate Nuts, (32) 12-point Bolts & Washers; 5/16-24x2 in.
0605308	CF450-12PBK-SP	(16) Plate Nuts, (32) Silver Plated 12-point Bolts & Washers; 5/16-24x2 in.
0605113	12-POINT WRENCH	(1) Fits CF 12-point bolts
0605208	ASTL	(1) Bolt thread lubricant eliminates galling of bolt and nut or tapped bolt hole

CF 600 - 6.00 inches O.D. UHV Flanges



Product Features:

- Designed to fit standard inch tubing O.D.'s
- Self-aligning
- Internal weld
- Sexless flanges
- Rotatable flanges for easier bolt hole alignment
- Metric tapped and clearance bolt holes available
- Blank flanges to close unused ports or custom modify
- Interchangeable with other ConFlat® style flanges
- Adapters to other flange systems available

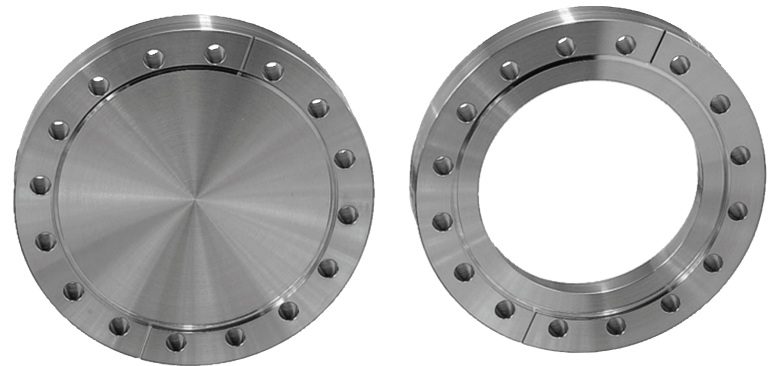
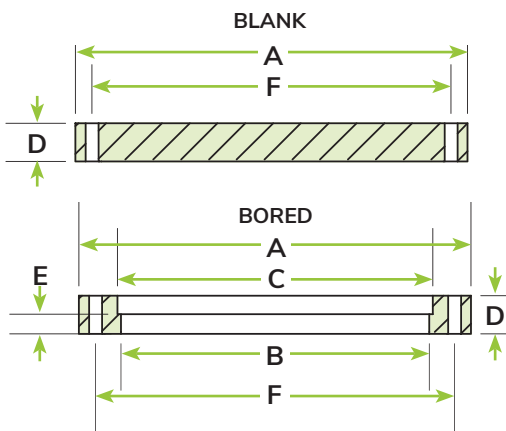
Product Specifications:

- Pressure range: UHV (approx. 1×10^{-13} Torr)
- Temperature range: -200°C up to 450°C
- Standard materials: 316LN stainless steel

Options: Call for price and availability

- Alternative materials: 304L, 316L stainless steel, aluminum, titanium, bimetal etc.

CF 600 - Fixed Flanges



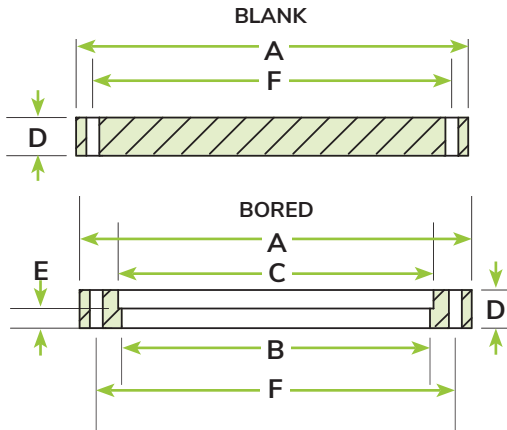
Clearance Bolt Holes

PART #	REFERENCE ID	A (in)	B (in)	C (in)	D (in)	E (in)	F (in)	BOLT HOLES	DIAMETER
5004128	CF600-000-316LN	5.97	-	-	0.78	-	5.13	16	0.332
5004129	CF600-400-316LN	5.97	3.92	4.02	0.78	0.44	5.13	16	0.332

Tapped Bolt Holes

PART #	REFERENCE ID	A (in)	B (in)	C (in)	D (in)	E (in)	F (in)	BOLT HOLES	THREAD
5004130	CF600-TM-000-316LN	5.97	-	-	0.78	-	5.13	16	M8
5004131	CF600TM-400-316LN	5.97	3.92	4.02	0.78	0.44	5.13	16	M8

CF 600 - Rotatable Flanges



Clearance Bolt Holes

PART #	REFERENCE ID	A (in)	B (in)	C (in)	D (in)	E (in)	F (in)	BOLT HOLES	DIAMETER
5004132	CF600R-000-316LN	5.97	-	-	0.84	-	5.128	16	0.332
5004063	CF600R-400-316LN	5.97	3.81	4.01	0.84	0.437	5.128	16	0.332

CF 450 Flange Hardware

PART #	REFERENCE ID	DESCRIPTION
0604029	CF450-GA-CO	(10) Copper Gaskets
0604004	CF450-GA-VT	(1) Viton® Gasket
0605128	CF450-HBK	(25) Bolt, Nut & Washer Kit; 5/16-24x2 in.
0605129	CF450-HTBK	(25) Bolt & Washer Kit; 5/16-24x1 1/4 in.
0605130	CF450-12BK	(25) 12-point Bolt, Nut & Washer Kit; 5/16-24x2 in.
0605190	CF450-12BK-SP	(25) Silver Plated 12-point Bolt, Nut & Washer Kit; 5/16-24x2 in.
0605131	CF450-12TBK	(25) 12-point Bolt & Washer Kit; 5/16-24x1 1/4 in.
0605189	CF450-12TBK-SP	(25) Silver Plated 12-point Bolt & Washer Kit; 5/16-24x1 1/4 in.
0605132	CF450-HPBK	(16) Plate Nuts, (32) Bolts & Washers; 5/16-24x2 in.
0605133	CF450-PN	(24) Plate Nuts; 5/16-24
0605134	CF450-12PBK	(16) Plate Nuts, (32) 12-point Bolts & Washers; 5/16-24x2 in.
0605308	CF450-12PBK-SP	(16) Plate Nuts, (32) Silver Plated 12-point Bolts & Washers; 5/16-24x2 in.
0605113	12-POINT WRENCH	(1) Fits CF 12-point bolts
0605208	ASTL	(1) Bolt thread lubricant eliminates galling of bolt and nut or tapped bolt hole

CF 800 - 8.00 inches O.D. UHV Flanges



Product Features:

- Designed to fit standard inch tubing O.D.'s
- Self-aligning
- Internal weld
- Sexless flanges
- Rotatable flanges for easier bolt hole alignment
- Metric tapped and clearance bolt holes available
- Blank flanges to close unused ports or custom modify
- Interchangeable with other ConFlat® style flanges
- Adapters to other flange systems available

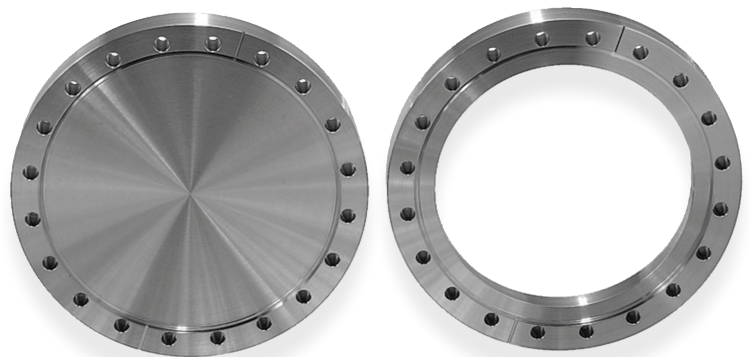
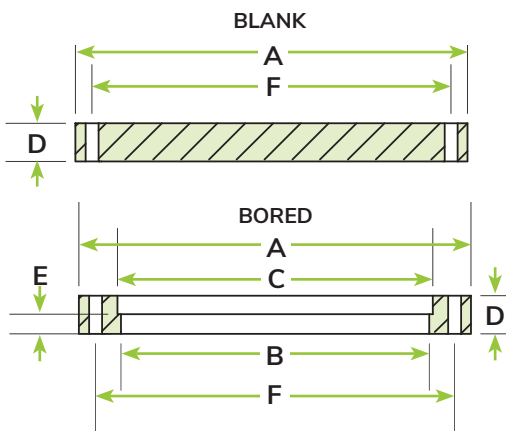
Product Specifications:

- Pressure range: UHV (approx. 1×10^{-13} Torr)
- Temperature range: -200°C up to 450°C
- Standard materials: 316LN stainless steel

Options: Call for price and availability

- Alternative materials: 304L, 316L stainless steel, aluminum, titanium, bimetal etc.

CF 800 - Fixed Flanges



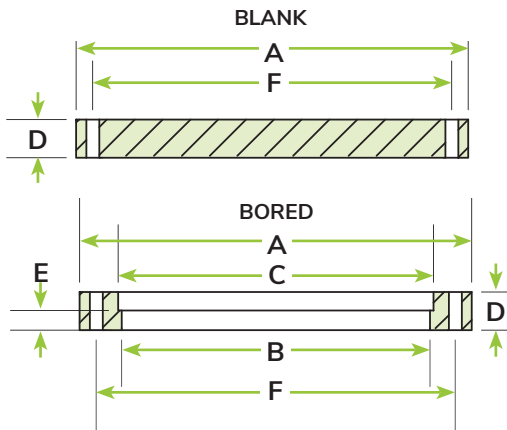
Clearance Bolt Holes

PART #	REFERENCE ID	A (in)	B (in)	C (in)	D (in)	E (in)	F (in)	BOLT HOLES	DIAMETER
5004148	CF800-000-316LN	7.97	-	-	0.88	-	7.13	20	0.332
5004149	CF800-600-316LN	7.97	5.84	6.02	0.88	0.5	7.13	20	0.332

Tapped Bolt Holes

PART #	REFERENCE ID	A (in)	B (in)	C (in)	D (in)	E (in)	F (in)	BOLT HOLES	THREAD
5004150	CF800TM-000-316LN	7.97	-	-	0.88	-	7.13	20	M8
5004151	CF800TM-600-316LN	7.97	5.84	6.02	0.88	0.5	7.13	20	M8

CF 800 - Rotatable Flanges



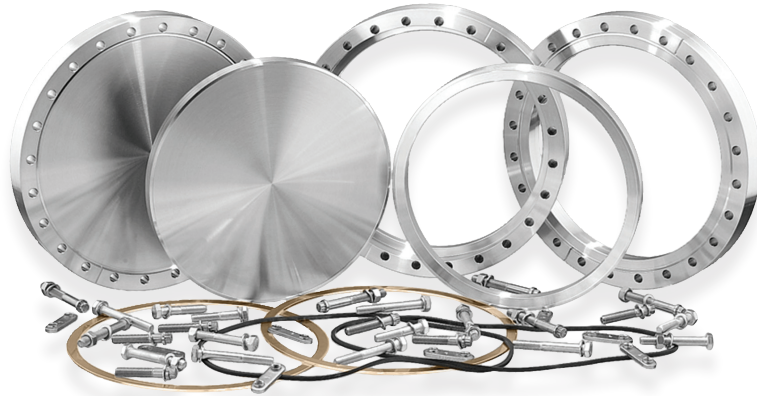
Clearance Bolt Holes

PART #	REFERENCE ID	A (in)	B (in)	C (in)	D (in)	E (in)	F (in)	BOLT HOLES	DIAMETER
5004108	CF450R-000-316LN	4.47	-	-	0.75	-	3.63	8	0.332
5004111	CF450R-250-316LN	4.47	2.44	2.51	0.75	0.38	3.63	8	0.332

CF 800 Flange Hardware

PART #	REFERENCE ID	DESCRIPTION
0604037	CF800-GA-CO	(10) Copper Gaskets
0604008	CF800-GA-VT	(1) Viton® Gasket
0605157	CF800-HBK	(25) Bolt, Nut & Washer Kit; 5/16-24x2 1/4 in.
0605158	CF800-HTBK	(25) Bolt & Washer Kit; 5/16-24x1 3/4 in.
0605159	CF800-12BK	(25) 12-point Bolt, Nut & Washer Kit; 5/16-24x2 1/4 in.
0605198	CF800-12BK-SP	(25) Silver Plated 12-point Bolt, Nut & Washer Kit; 5/16-24x2 1/4 in.
0605160	CF800-12TBK	(25) 12-point Bolt & Washer Kit; 5/16-24x1 3/4 in.
0605197	CF800-12TBK-SP	(25) Silver Plated 12-point Bolt & Washer Kit; 5/16-24x1 3/4 in.
0605161	CF800-HPBK	(20) Plate Nuts, (40) Bolts & Washers; 5/16-24x2 1/4 in.
0605162	CF800-PN	(24) Plate Nuts; 5/16-24
0605163	CF800-12PBK	(20) Plate Nuts, (40) 12-point Bolts & Washers; 5/16-24x2 1/4 in.
0605270	CF800-12PBK-SP	(20) Plate Nuts, (40) Silver Plated 12-point Bolts & Washers; 5/16-24x2 1/4 in.
0605113	12-POINT WRENCH	(1) Fits CF 12-point bolts
0605208	ASTL	(1) Bolt thread lubricant eliminates galling of bolt and nut or tapped bolt hole

CF 1000 - 10.00 inches O.D. UHV Flanges



Product Features:

- Designed to fit standard inch tubing O.D.'s
- Self-aligning
- Internal weld
- Sexless flanges
- Rotatable flanges for easier bolt hole alignment
- Metric tapped and clearance bolt holes available
- Blank flanges to close unused ports or custom modify
- Interchangeable with other ConFlat® style flanges
- Adapters to other flange systems available

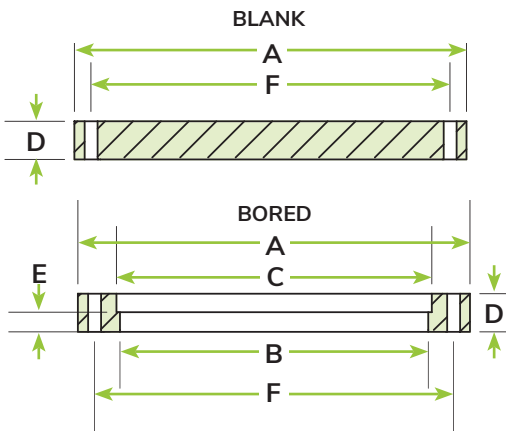
Product Specifications:

- Pressure range: UHV (approx. 1×10^{-13} Torr)
- Temperature range: -200°C up to 450°C
- Standard materials: 316LN stainless steel

Options: Call for price and availability

- Alternative materials: 304L, 316L stainless steel, aluminum, titanium, bimetal etc.

CF 1000 - Fixed Flanges



Clearance Bolt Holes

PART #	REFERENCE ID	A (in)	B (in)	C (in)	D (in)	E (in)	F (in)	BOLT HOLES	DIAMETER
5004156	CF1000-000-316LN	9.97	-	-	0.97	-	9.13	24	0.332
5004157	CF1000-800-316LN	9.97	7.83	8.02	0.97	0.5	9.13	24	0.332

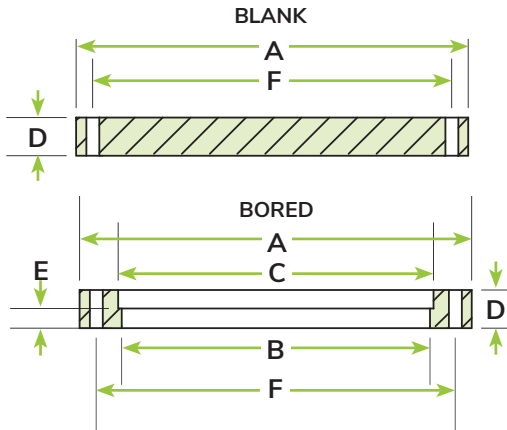
Tapped Bolt Holes

PART #	REFERENCE ID	A (in)	B (in)	C (in)	D (in)	E (in)	F (in)	BOLT HOLES	THREAD
5004158	CF1000TM-000-316LN	9.97	-	0.97	0.5	-	9.13	24	M8
5004159	CF1000TM-800-316LN	9.97	7.83	8.02	0.97	0.5	9.13	24	M8

CF 1000 - Rotatable Flanges

2

316LN CF 1000 Flanges



Clearance Bolt Holes

PART #	REFERENCE ID	A (in)	B (in)	C (in)	D (in)	E (in)	F (in)	BOLT HOLES	DIAMETER
50041460	CF1000R-000-316LN	9.97	-	-	0.97	-	9.13	24	0.332
5004149	CF1000R-800-316LN	9.97	7.83	8.02	0.97	0.5	9.13	24	0.332

CF 1000 Flange Hardware

PART #	REFERENCE ID	DESCRIPTION
0604039	CF1000-GA-CO	(10) Copper Gaskets
0604009	CF1000-GA-VT	(1) Viton® Gasket
0605164	CF1000-HBK	(25) Bolt, Nut & Washer Kit; 5/16-24x2 1/2 in.
0605165	CF1000-HTBK	(25) Bolt & Washer Kit; 5/16-24x1 3/4 in.
0605166	CF1000-12BK	(25) 12-point Bolt, Nut & Washer Kit; 5/16-24x2 1/2 in.
0605200	CF1000-12BK-SP	(25) Silver Plated 12-point Bolt, Nut & Washer Kit; 5/16-24x2 1/2 in.
0605167	CF1000-12TBK	(25) 12-point Bolt & Washer Kit; 5/16-24x1 3/4 in.
0605199	CF1000-12TBK-SP	(25) Silver Plated 12-point Bolt & Washer Kit; 5/16-24x1 3/4 in.
0605168	CF1000-HPBK	(24) Plate Nuts, (48) Bolts & Washers; 5/16-24x2 1/2 in.
0605169	CF1000-PN	(24) Plate Nuts; 5/16-24
0605170	CF1000-12PBK	(24) Plate Nuts, (48) 12-point Bolts & Washers; 5/16-24x2 1/2 in.
0605310	CF1000-12PBK-SP	(24) Plate Nuts, (48) Silver Plated 12-point Bolts & Washers; 5/16-24x2 1/2 in.
0605113	12-POINT WRENCH	(1) Fits CF 12-point bolts
0605208	ASTL	(1) Bolt thread lubricant eliminates galling of bolt and nut or tapped bolt hole

ANCORP Becomes Exclusive Global Distributor of LOS Bimetal Products



ANCORP is pleased to announce our partnership with **LOS Low Outgassing Solutions** as the exclusive seller and distributor of all LOS Vacuum Products.

We now offer LOS' full line of UHV/XHV-compatible bimetal flanges and fittings, bimetal face-seal fittings, and aluminum and titanium fabrication of custom items including vacuum chambers.



MADE IN USA
10212019-001

About LOS

LOS Vacuum Products provides vacuum technology innovators with the lowest outgassing solutions ideal for an array of applications including spectroscopy, atomic physics research, particle acceleration, and microscopy.

LOS vacuum components and vacuum flanges are an alternative to the standard. Superior titanium, stainless steel, and aluminum alloys allow for quick evacuation of vacuum chambers. Advanced LOS technology makes it easy for end users to obtain UHV and XHV. All LOS flanges are cleaned in an ultrasonic tank and packaged with dry nitrogen for cleanliness.

Products

Bimetal CF Flanges

- o 304SS/Al Bonded Bimetal CF Flanges
- o 316SS/Al Bonded Bimetal CF Flanges
- o Ti/Al Bonded Bimetal CF Flanges

Titanium CF Flanges

Bimetal Face Seal Fittings, VCR-Style

- o 304SS/Al Bimetal Face Seal Fittings
- o 316SS/Al Bimetal Face Seal Fittings
- o Ti/Al Bimetal Face Seal Fittings

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Wire Seal Flanges

Product Features:

- Designed to fit standard inch tubing O.D.'s
- Self aligning
- Internal weld
- Blank flanges to close unused ports or custom modify
- Standard blank flanges are machined from solid stainless steel plate for highest sealing reliability
- Dish head blank flanges have a stainless steel disk welded onto the back of a bored flange. This option weighs less and costs less. Dish head blank flanges have a “-D” suffix on the REFERENCE ID

Product Specifications:

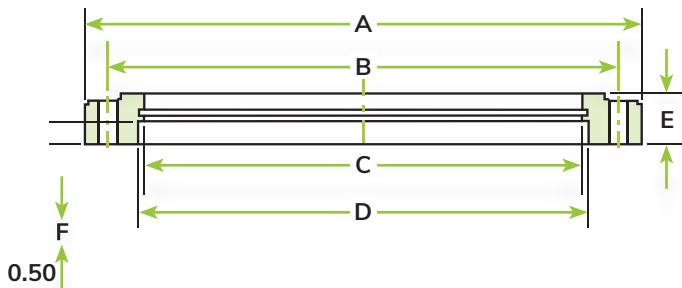
- Sizes: outer diameter 12 3/8 inches up to 27 1/8 inches (for tubing diameter 10 inches up to 24 inches)
- Pressure range: UHV (approx. 1×10^{-13} Torr)
- Temperature range: -200°C up to 450°C
- Standard materials: 304L stainless steel. Others available on request



ORDERING NOTE:

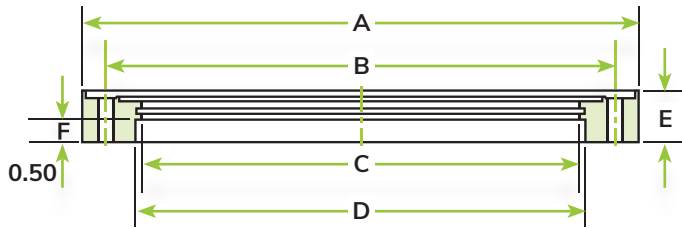
Wire seal gaskets can be found on pages 2.09 - 2.10.
Wire seal flange bolt fasteners can be found on page 2.53.

Wire Seal, Bored, Male Flanges



PART #	REFERENCE ID	FLANGE O.D. (in)	TUBE O.D. (in)	A (in)	B (in)	C (in)	D (in)	E (in)	F (in)	BOLT HOLES
5500004	WF1200M-1000	12.38	10.00	12.38	11.34	9.75	10.00	1.13	0.50	24
5500010	WF1400M-1200	14.63	12.00	14.63	13.59	11.75	12.00	1.13	0.50	32
5500016	WF1700M-1400	17.25	14.00	17.25	15.72	13.75	14.00	1.13	0.50	36
5500036	WF1900M-1600	19.56	16.00	19.56	17.88	15.75	16.00	1.31	0.50	36
5500028	WF2200M-1800	22.13	18.00	22.13	20.19	17.75	18.00	1.50	0.50	36
5500034	WF2700M-2400	27.13	24.00	27.13	25.84	23.75	24.00	1.75	0.63	40

Wire Seal, Bored, Female Flanges



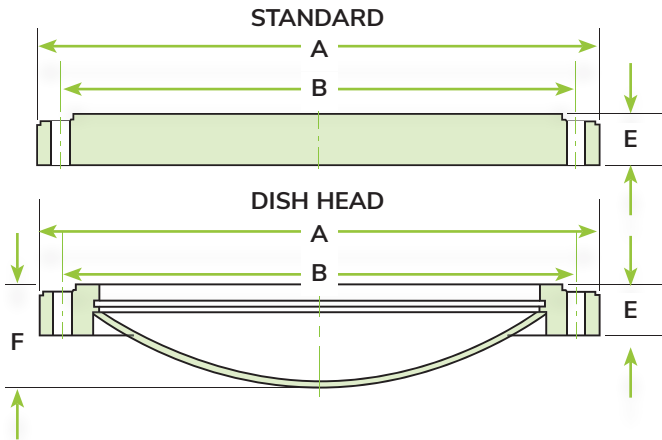
2 Wire Seal Flanges

PART #	REFERENCE ID	FLANGE O.D. (in)	TUBE O.D. (in)	A (in)	B (in)	C (in)	D (in)	E (in)	F (in)	BOLT HOLES
5500005	WF1200F-1000	12.38	10.00	12.38	11.34	9.75	10.00	1.13	0.50	24
5500011	WF1400F-1200	14.63	12.00	14.63	13.59	11.75	12.00	1.13	0.50	32
5500017	WF1700F-1400	17.25	14.00	17.25	15.72	13.75	14.00	1.13	0.50	36
5500023	WF1900F-1600	19.56	16.00	19.56	17.88	15.75	16.00	1.31	0.50	36
5500029	WF2200F-1800	22.13	18.00	22.13	20.19	17.75	18.00	1.50	0.50	36
5500035	WF2700F-2400	27.13	24.00	27.13	25.84	23.75	24.00	1.75	0.63	40

Wire Seal Flange Hardware

PART #	REFERENCE ID	USE WITH FLANGE	DESCRIPTION
607000	WF1200-HBK	WF1200-BK	(24) Bolt, Nut and Washer Kit, 3/8-24x2 1/2 in.
607001	WF1400-HBK	WF1400-BK	(32) Bolt, Nut and Washer Kit, 3/8-24x2 3/4 in.
607002	WF1700-HBK	WF1700-BK	(36) Bolt, Nut and Washer Kit, 1/2-20x2 3/4 in.
607003	WF1900-HBK	WF1900-BK	(36) Bolt, Nut and Washer Kit, 1/2-20x3 in.
607004	WF2200-HBK	WF2200-BK	(36) Bolt, Nut and Washer Kit, 5/8-18x3 1/2 in.
607005	WF2700-HBK	WF2700-BK	(40) Bolt, Nut and Washer Kit, 5/8-18x4 in.

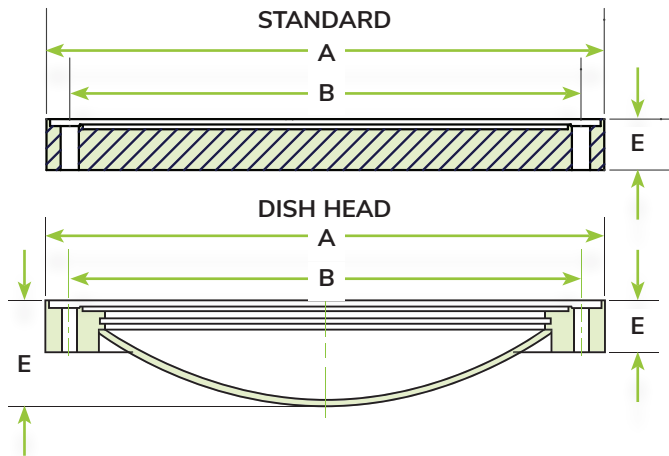
Wire Seal, Blank Male Flanges



ORDERING NOTE: Dish head blank flanges have a metal disk welded onto the back of bored flange. They are designated with a “-D” suffix on the REFERENCE ID.

PART #	REFERENCE ID	TYPE	FLANGE O.D. (in)	TUBE O.D. (in)	A (in)	B (in)	E (in)	F (in)	BOLT HOLES
5500000	WF1200M-000	Standard	12.38	10.00	12.38	11.34	1.13	-	24
5500001	WF1200MD-000	Dishhead	12.38	10.00	12.38	11.34	1.13	2.70	24
5500006	WF1400M-000	Standard	14.63	12.00	14.63	13.59	1.13	-	32
5500007	WF1400MD-000	Dishhead	14.63	12.00	14.63	13.59	1.13	2.70	32
5500012	WF1700M-000	Standard	17.25	14.00	17.25	15.72	1.13	-	36
5500013	WF1700MD-000	Dishhead	17.25	14.00	17.25	15.72	1.13	3.10	36
5500018	WF1900M-000	Standard	19.56	16.00	19.56	17.88	1.31	-	36
5500019	WF1900MD-000	Dishhead	19.56	16.00	19.56	17.88	1.31	3.04	36
5500024	WF2200M-000	Standard	22.13	18.00	22.13	20.19	1.50	-	36
5500025	WF2200MD-000	Dishhead	22.13	18.00	22.13	20.19	1.50	3.50	36
5500030	WF2700M-000	Standard	27.13	24.00	27.13	25.84	1.75	-	40
5500031	WF2700MD-000	Dishhead	27.13	24.00	27.13	25.84	1.75	5.10	40

Wire Seal, Blank Female Flanges



2 Wire Seal Flanges

ORDERING NOTE Dish head blank flanges have a metal disk welded onto the back of bored flange. They are designated with a “-D” suffix on the REFERENCE ID.

PART #	REFERENCE ID	TYPE	FLANGE O.D. (in)	TUBE O.D. (in)	A (in)	B (in)	E (in)	F (in)	BOLT HOLES
5500002	WF1200F-000	Standard	12.38	10.00	12.38	11.34	1.13	-	24
5500003	WF1200FD-000	Dishhead	12.38	10.00	12.38	11.34	1.13	2.70	24
5500008	WF1400F-000	Standard	14.63	12.00	14.63	13.59	1.13	-	32
5500009	WF1400FD-000	Dishhead	14.63	12.00	14.63	13.59	1.13	2.70	32
5500014	WF1700F-000	Standard	17.25	14.00	17.25	15.72	1.13	-	36
5500015	WF1700FD-000	Dishhead	17.25	14.00	17.25	15.72	1.13	3.10	36
5500020	WF1900F-000	Standard	19.56	16.00	19.56	17.88	1.31	-	36
5500021	WF1900FD-000	Dishhead	19.56	16.00	19.56	17.88	1.31	3.04	36
5500026	WF2200F-000	Standard	22.13	18.00	22.13	20.19	1.50	-	36
5500027	WF2200FD-000	Dishhead	22.13	18.00	22.13	20.19	1.50	3.50	36
5500032	WF2700F-000	Standard	27.13	24.00	27.13	25.84	1.75	-	40
5500033	WF2700FD-000	Dishhead	27.13	24.00	27.13	25.84	1.75	5.10	40

CF Special Purpose Flanges

2

CF Special Purpose Flanges

These flanges can serve a variety of useful functions in your vacuum system. Adapt directly from a larger CF to a smaller flange, from a single or double-sided CF to one or two female NPT side ports, or a double-sided CF with a CF133 machined side port. These flanges are ideal for adding vacuum accessories to your system such as measurement devices, shutters and valves.



Product Specifications:

- Vacuum rated to 1×10^{-13} Torr.
- Leak rating $< 1 \times 10^{-9}$ std. cc/s helium
- Temperature range: -200°C to 450°C
- Standard materials:
 - Flanges and fittings: 304L stainless steel
 - Seals: OFHC copper for ultra high vacuum (UHV) or Viton® for high vacuum (HV)
- Standard sizes:
 - CF flanges outer diameter: 1 1/3 inches to 16 1/2 inches (for tubing diameter 1/4 inches up to 14 inches)

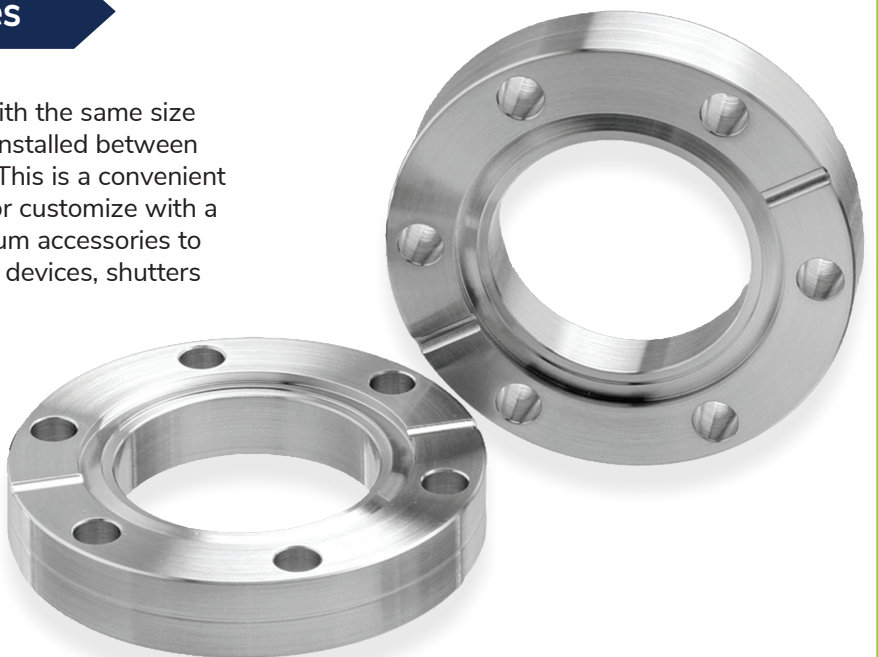
Product Features:

- Reusable flanges
- All-metal seals
- Sexless flanges
- Rotatable flanges for easier bolt hole alignment
- Tapped or clearance bolt holes available
- Adapters to other flange systems available
- Compatible with U.S. Standard (imperial) and metric measurements
- Interchangeable with other ConFlat® style flanges made to industry standards, others available on request

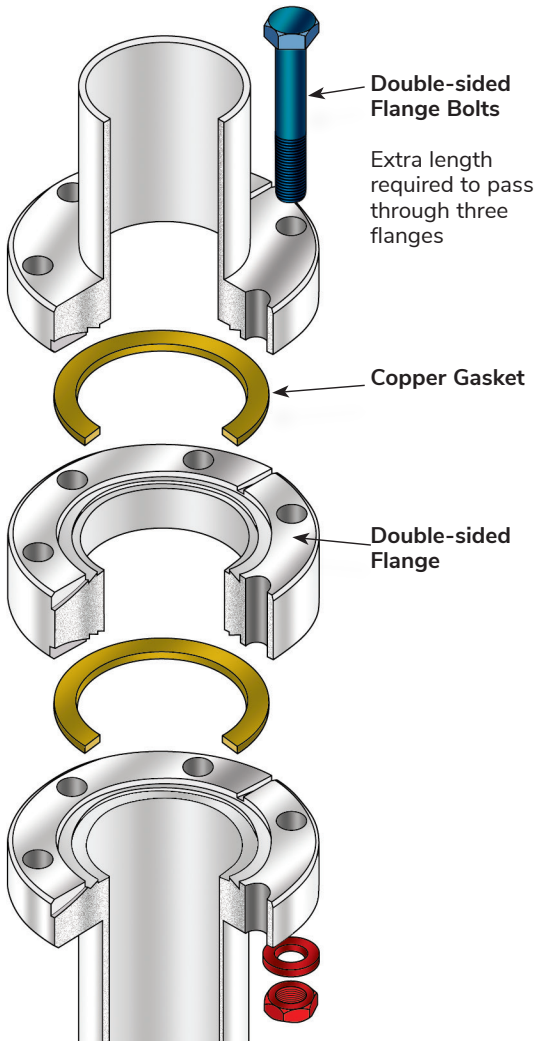
Double-sided CF Flanges

These flanges are manufactured with the same size CF flange on both sides. They are installed between two flanges also of the same size. This is a convenient and efficient way to add a spacer or customize with a radial port to add a variety of vacuum accessories to your system such as measurement devices, shutters and valves.

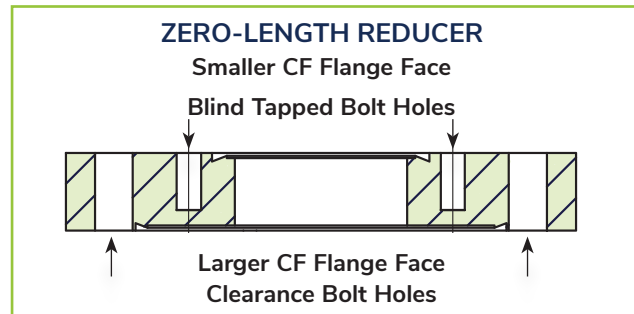
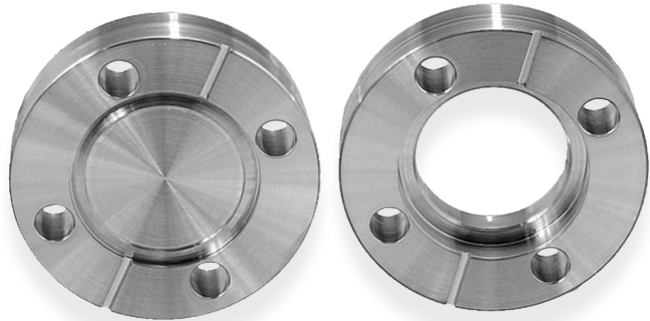
Double-sided CF flanges have special hardware to accommodate the width of three CF flanges for this seal assembly.



Double-sided CF Diagram



Zero-Length Reducer CF Flanges

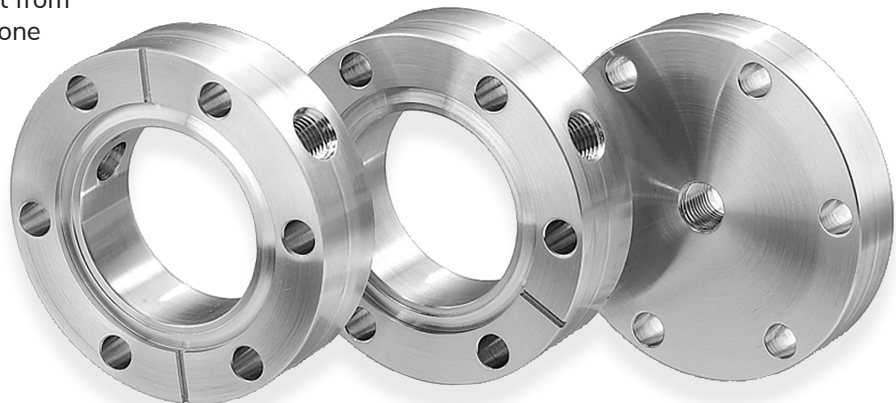


These flanges are manufactured with different size CF flange on either side of the flange. They allow direct assembly of two different sizes of CF flanges with minimal impact on the length added to your system to accomplish the transition. Zero-length reducers are the width of one standard flange.

Adaptive CF Flanges

These flanges are manufactured in a variety of useful designs. Adapt from a single or double-sided CF to one or two female NPT side ports, or a double-sided CF with a CF133 machined side port.

These flanges are ideal for adding vacuum accessories to your system such as measurement devices, shutters and valves.



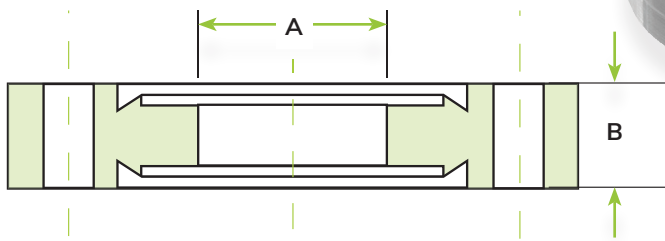
CF Double-Sided Flanges

Product Features:

- Same size CF flange on both sides
- Ideal to add a spacer to your system or customize with a radial port
- Requires special CF double-sided flange bolt kit for fastening
- Use standard CF gaskets to seal
- Self-aligning
- Sexless flanges
- Interchangeable with other ConFlat® style flanges
- Adapters to other flange systems available

Product Specifications:

- Pressure range: UHV (approx. 1×10^{-13} Torr)
- Temperature range: -200°C up to 450°C
- Standard materials: 304L stainless steel



Options: Call for price and availability

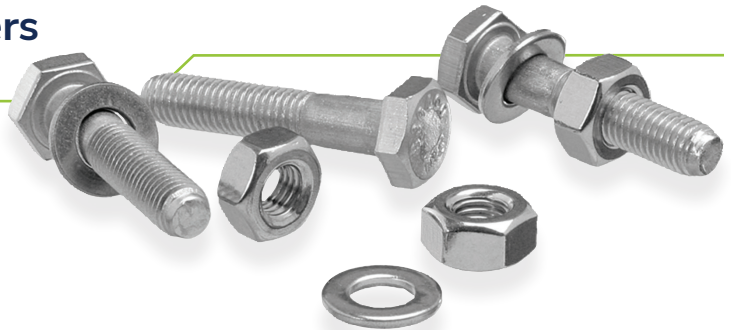
- Tapped bolt holes
- Alternative materials: 316L stainless steel, aluminum, etc.

PART #	REFERENCE ID	FLANGE O.D. (in)	A (in)	B (in)	BOLT HOLES	
					#	DIA/THRD
5000245	CF133-000-DS-0.300	1.33	blank	0.30	6	0.17
5000246	CF133-025-DS-0.300	1.33	0.26	0.30	6	0.17
5000247	CF133-038-DS-0.300	1.33	0.38	0.30	6	0.17
5000248	CF133-050-DS-0.300	1.33	0.51	0.30	6	0.17
5000249	CF133-075-DS-0.300	1.33	0.63	0.30	6	0.17
5000250	CF133-000-DS-0.500	1.33	blank	0.50	6	0.17
5000251	CF133-075-DS-0.500	1.33	0.63	0.50	6	0.17
5000252	CF212-000-DS-0.470	2.12	blank	0.47	4	0.27
5000253	CF212-100-DS-0.470	2.12	1.01	0.47	4	0.27
5000254	CF275-000-DS-0.500	2.72	blank	0.50	6	0.27
5000255	CF275-025-DS-0.500	2.72	0.26	0.50	6	0.27
5000256	CF275-050-DS-0.500	2.72	0.51	0.50	6	0.27
5000257	CF275-075-DS-0.500	2.72	0.76	0.50	6	0.27
5000258	CF275-100-DS-0.500	2.72	1.01	0.50	6	0.27
5000259	CF275-125-DS-0.500	2.72	1.26	0.50	6	0.27
5000260	CF275-150-DS-0.500	2.72	1.51	0.50	6	0.27
5000261	CF275-000-DS-0.750	2.72	blank	0.75	6	0.27
5000262	CF275-150-DS-0.750	2.72	1.51	0.75	6	0.27
5008261	CF275-000-DS-1.000	2.72	blank	1.00	6	0.27
5008262	CF275-150-DS-1.000	2.72	1.51	1.00	6	0.27
5000263	CF338-000-DS-0.625	3.38	blank	0.62	8	0.33
5000264	CF338-150-DS-0.625	3.38	1.51	0.62	8	0.33
5000265	CF338-200-DS-0.625	3.38	2.01	0.62	8	0.33
5000266	CF450-000-DS-0.680	4.47	blank	0.68	8	0.33
5000267	CF450-150-DS-0.680	4.47	1.51	0.68	8	0.33
5000268	CF450-200-DS-0.680	4.47	2.01	0.68	8	0.33

CF Double-Sided Flanges continued

PART #	REFERENCE ID	FLANGE O.D. (in)	A (in)	B (in)	BOLT HOLES	
					#	DIA/THRD
5000269	CF450-250-DS-0.680	4.47	2.51	0.68	8	0.33
5000270	CF462-000-DS-0.750	4.62	blank	0.75	10	0.33
5000271	CF462-300-DS-0.750	4.62	3.01	0.75	10	0.33
5000272	CF600-000-DS-0.780	5.97	blank	0.78	16	0.33
5000273	CF600-400-DS-0.780	5.97	4.01	0.78	16	0.33
5000274	CF675-000-DS-0.840	6.75	blank	0.84	18	0.33
5000275	CF675-500-DS-0.840	6.75	5.01	0.84	18	0.33
5000276	CF800-000-DS-0.880	7.97	blank	0.87	20	0.33
5000277	CF800-600-DS-0.880	7.97	6.02	0.87	20	0.33
5000278	CF1000-000-DS-0.970	9.97	blank	0.97	24	0.33
5000279	CF1000-800-DS-0.970	9.97	8.02	0.97	24	0.33
5000280	CF1325-000-DS-1.120	13.25	blank	1.12	30	0.39
5000281	CF1325-1000-DS-1.120	13.25	10.03	1.12	30	0.39
5000282	CF1400-000-DS-1.120	14.00	blank	1.12	30	0.39
5000283	CF1400-1200-DS-1.120	14.00	12.03	1.12	30	0.39
5000284	CF1650-000-DS-1.120	16.50	blank	1.12	36	0.39
5000285	CF1650-1400-DS-1.120	16.50	14.03	1.12	36	0.39

CF Double-Sided Flange Fasteners – Hex-Head Bolt Kit



Materials:

- Hex-head bolt: stainless steel or silver plated stainless steel
- Hardware (nut and washer): stainless steel

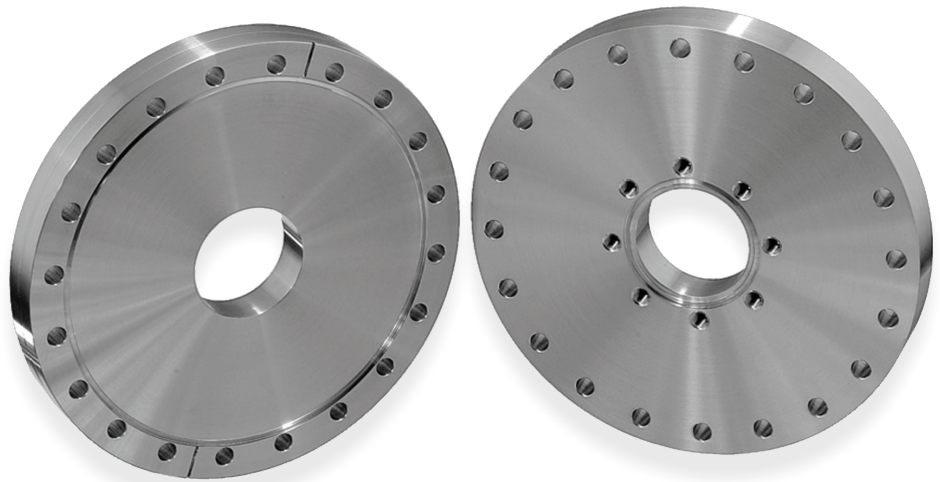
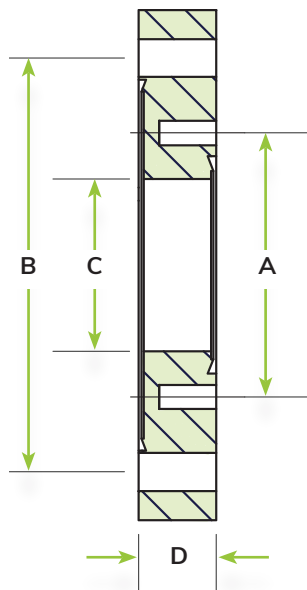
Product Notes:

- Extended length bolts to fasten three CF flanges in one assembly

PART #	REFERENCE ID	USE WITH FLANGE	DESCRIPTION
0605087	CF133-DSHBK	CF133	(25) Bolt, Nut & Washer Kit; 8-32x1 1/4 in.
0605088	CF212-DSHBK	CF212	(25) Bolt, Nut & Washer Kit; 1/4-28x1 3/4 in.
0605089	CF275-DSHBK	CF275	(25) Bolt, Nut & Washer Kit; 1/4-28x1 3/4 in.
0605090	CF275-DSHBK-.750	CF275	(25) Bolt, Nut & Washer Kit; 1/4-28x2 in.
0605092	CF338-DSHBK	CF338	(25) Bolt, Nut & Washer Kit; 5/16-24x2 1/2 in.
0605093	CF450-DSHBK	CF450	(25) Bolt, Nut & Washer Kit; 5/16-24x2 3/4 in.
0605094	CF462-DSHBK	CF462	(25) Bolt, Nut & Washer Kit; 5/16-24x3 in.
0605095	CF600-DSHBK	CF600	(25) Bolt, Nut & Washer Kit; 5/16-24x3 in.
0605096	CF675-DSHBK	CF675	(25) Bolt, Nut & Washer Kit; 5/16-24x3 in.
0605097	CF800-DSHBK	CF800	(25) Bolt, Nut & Washer Kit; 5/16-24x3 in.
0605098	CF1000-DSHBK	CF1000	(25) Bolt, Nut & Washer Kit; 5/16-24x3 1/2 in.
0605099	CF1325-DSHBK	CF1325	(30) Bolt, Nut and Washer Kit; 3/8-24x4 in.
0605100	CF1400-DSHBK	CF1400	(30) Bolt, Nut and Washer Kit; 3/8-24x4 in.
0605101	CF1650-DSHBK	CF1650	(36) Bolt, Nut and Washer Kit; 3/8-24x4 in.

CF Zero Length Reducer Flanges

2
CF Zero Length Reducer Flanges



ORDERING NOTE: When ordering hardware for your Zero Length Reducer take note of the flange bolt holes to order clearance bolts kits and tapped bolt kits appropriate to the design of your flange. "T1" and "T2" designate one or both sets of bolt holes are tapped. The smaller flange is always tapped. Zero Length Reducers are only the width of 1 standard CF flange.

Product Features:

- Different size CF flange on both sides
- Enable direct assembly of two different size CF flanges with minimal impact to space needed within your vacuum system.
- At least one and when necessary both flanges have tapped bolt holes – see line item descriptions for details
- Use standard CF gaskets to seal
- Self-aligning
- Sexless flanges
- Interchangeable with other ConFlat® style flanges
- Adapters to other flange systems available

Product Specifications:

- Pressure range: UHV (approx. 1×10^{-13} Torr)
- Temperature range: -200°C up to 450°C
- Standard materials: 304L stainless steel

Options: Call for price and availability

- Tapped bolt holes
- Alternative materials: 316L stainless steel, aluminum, etc.

PART #	REFERENCE ID	SIDE A	SIDE B	C (in)	D (in)
5000286	CF212XCF133BT-075-ZLR-0.470	CF212T-075	CF133BT-075	0.62	0.47
5000287	CF275XCF133BT-075-ZLR-0.500	CF275-075	CF133BT-075	0.62	0.50
5000288	CF275XCF212BT-100-ZLR-0.500	CF275T-100	CF212BT-100	1.00	0.50
5000289	CF338XCF133BT-075-ZLR-0.625	CF338-075	CF133BT-075	0.62	0.62
5000290	CF338XCF212BT-100-ZLR-0.625	CF338T-100	CF212BT-100	1.00	0.62
5000291	CF338XCF275BT-150-ZLR-0.625	CF338T-150	CF275BT-150	1.50	0.62
5000292	CF450XCF133BT-075-ZLR-0.680	CF450-075	CF133BT-075	0.62	0.68
5000293	CF450XCF212BT-100-ZLR-0.680	CF450-100	CF212BT-100	1.00	0.68
5000294	CF450XCF275BT-150-ZLR-0.680	CF450-150	CF275BT-150	1.50	0.68
5000295	CF450XCF338BT-200-ZLR-0.680	CF450T-200	CF338BT-200	2.00	0.68
5000296	CF462XCF133BT-075-ZLR-0.750	CF462-075	CF133BT-075	0.62	0.75
5000297	CF462XCF212BT-100-ZLR-0.750	CF462-100	CF212BT-100	1.00	0.75
5000298	CF462XCF275BT-150-ZLR-0.750	CF462-150	CF275BT-150	1.50	0.75
5000299	CF462XCF338BT-200-ZLR-0.750	CF462-200	CF338BT-200	2.00	0.75

CF Zero Length Reducer Flanges continued

PART #	REFERENCE ID	SIDE A	SIDE B	C (in)	D (in)
5000300	CF600XCF133BT-075-ZLR-0.780	CF600-075	CF133BT-075	0.62	0.78
5000301	CF600XCF212BT-100-ZLR-0.780	CF600-100	CF212BT-100	1.00	0.78
5000302	CF600XCF275BT-150-ZLR-0.780	CF600-150	CF275BT-150	1.50	0.78
5000303	CF600XCF338BT-200-ZLR-0.780	CF600-200	CF338BT-200	2.00	0.78
5000304	CF600XCF450BT-250-ZLR-0.780	CF600-250	CF450BT-250	2.50	0.78
5000305	CF600TXCF462BT-300-ZLR-0.780	CF600-300T	CF462BT-300	3.00	0.78
5000306	CF675XCF133BT-075-ZLR-0.840	CF675-075	CF133BT-075	0.62	0.84
5000307	CF675XCF212BT-100-ZLR-0.840	CF675-100	CF212BT-100	1.00	0.84
5000308	CF675XCF275BT-150-ZLR-0.840	CF675-150	CF275BT-150	1.50	0.84
5000309	CF675XCF338BT-200-ZLR-0.840	CF675-200	CF338BT-200	2.00	0.84
5000310	CF675XCF450BT-250-ZLR-0.840	CF675-250	CF450BT-250	2.50	0.84
5000311	CF675XCF462BT-300-ZLR-0.840	CF675-300	CF462BT-300	3.00	0.84
5000312	CF675TXCF600BT-400-ZLR-0.840	CF675T-400	CF600BT-400	4.00	0.84
5000313	CF800XCF133BT-075-ZLR-0.880	CF800-075	CF133BT-075	0.62	0.88
5000314	CF800XCF212BT-100-ZLR-0.880	CF800-100	CF212BT-100	1.00	0.88
5000315	CF800XCF275BT-150-ZLR-0.880	CF800-150	CF275BT-150	1.50	0.88
5000316	CF800XCF338BT-200-ZLR-0.880	CF800-200	CF338BT-200	2.00	0.88
5000317	CF800XCF450BT-250-ZLR-0.880	CF800-250	CF450BT-250	2.50	0.88
5000318	CF800XCF462BT-300-ZLR-0.880	CF800-300	CF462BT-300	3.00	0.88
5000319	CF800XCF600BT-400-ZLR-0.880	CF800-400	CF600BT-400	4.00	0.88
5000320	CF800TXCF675BT-500-ZLR-0.880	CF800T-500	CF675BT-500	5.00	0.88
5000321	CF1000XCF133BT-075-ZLR-0.970	CF1000-075	CF133BT-075	0.62	0.97
5000322	CF1000XCF212BT-100-ZLR-0.970	CF1000-100	CF212BT-100	1.00	0.97
5000323	CF1000XCF275BT-150-ZLR-0.970	CF1000-150	CF275BT-150	1.50	0.97
5000324	CF1000XCF338BT-200-ZLR-0.970	CF1000-200	CF338BT-200	2.00	0.97
5000325	CF1000XCF450BT-250-ZLR-0.970	CF1000-250	CF450BT-250	2.50	0.97
5000326	CF1000XCF462BT-300-ZLR-0.970	CF1000-300	CF462BT-300	3.00	0.97
5000327	CF1000XCF600BT-400-ZLR-0.970	CF1000-400	CF600BT-400	4.00	0.97
5000328	CF1000XCF675BT-500-ZLR-0.970	CF1000-500	CF675BT-500	5.00	0.97
5000329	CF1000XCF800BT-600-ZLR-0.970	CF1000-600	CF800BT-600	6.00	0.97
5000330	CF1325XCF133BT-075-ZLR-1.120	CF1325-075	CF133BT-075	0.62	1.12
5000331	CF1325XCF212BT-100-ZLR-1.120	CF1325-100	CF212BT-100	1.00	1.12
5000332	CF1325XCF275BT-150-ZLR-1.120	CF1325-150	CF275BT-150	1.50	1.12
5000333	CF1325XCF338BT-200-ZLR-1.120	CF1325-200	CF338BT-200	2.00	1.12
5000334	CF1325XCF450BT-250-ZLR-1.120	CF1325-250	CF450BT-250	2.50	1.12
5000335	CF1325XCF462BT-300-ZLR-1.120	CF1325-300	CF462BT-300	3.00	1.12
5000336	CF1325XCF600BT-400-ZLR-1.120	CF1325-400	CF600BT-400	4.00	1.12
5000337	CF1325XCF675BT-500-ZLR-1.120	CF1325-500	CF675BT-500	5.00	1.12
5000338	CF1325XCF800BT-600-ZLR-1.120	CF1325-600	CF800BT-600	6.00	1.12
5000339	CF1325XCF1000BT-800-ZLR-1.120	CF1325-800	CF1000BT-800	8.00	1.12

CF Flange to Female NPT – Front Port

Product Features:

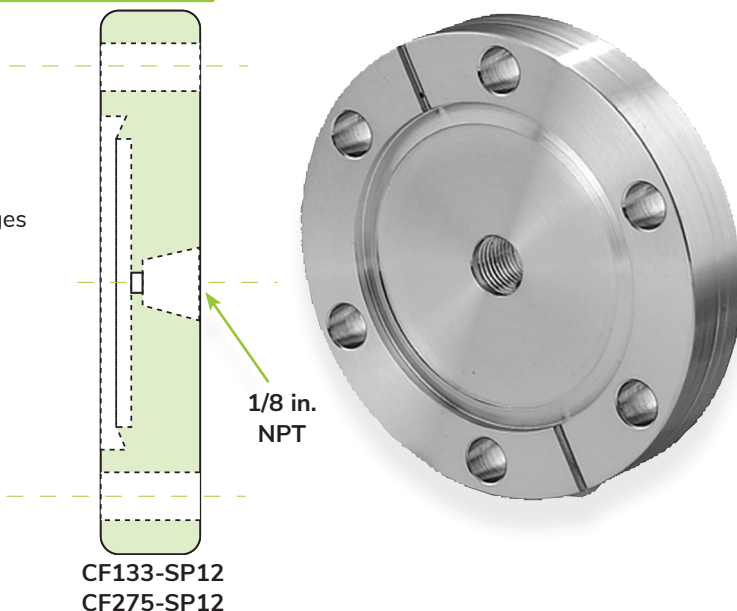
- Ideal for adding vacuum accessories (vacuum measurement, valves, etc.) or gas lines to your system.
- Use standard CF gaskets to seal
- Self-aligning
- Sexless flanges
- Interchangeable with other ConFlat® style flanges
- Adapters to other flange systems available

Product Specifications:

- Pressure range: UHV (approx. 1×10^{-13} Torr)
- Temperature range: -200°C up to 450°C
- Standard materials: 304L stainless steel

Options: Call for price and availability

- Tapped bolt holes
- Alternative materials: 316L stainless steel, aluminum, etc.



PART #	REFERENCE ID	DESCRIPTION
5000208	CF133XFNPT12	1.33 Flange - (1) 1/8 in. NPT Hole
5000209	CF275XFNPT12	2.75 Flange - (1) 1/8 in. NPT Hole

CF Double-Sided Flange to Female NPT – Side Port(s)

Product Features:

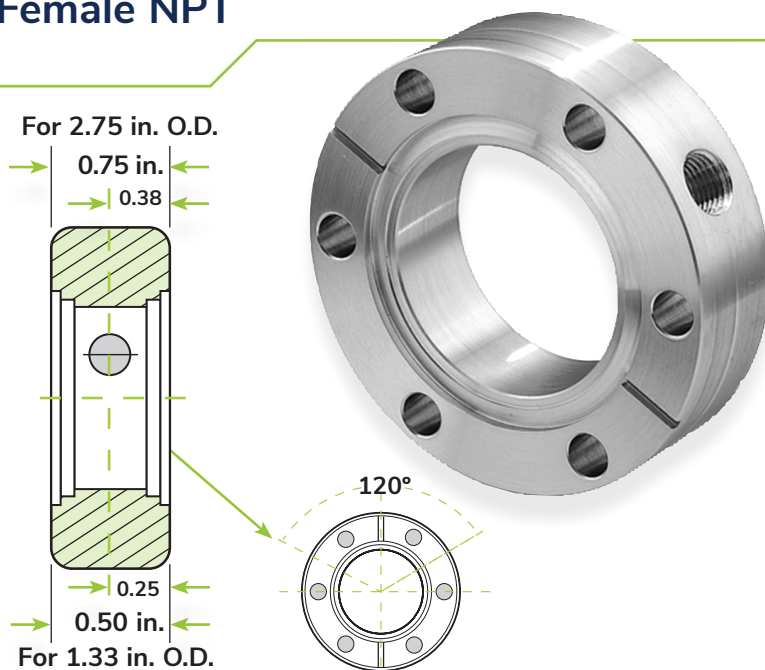
- Ideal for adding vacuum accessories (vacuum measurement, valves, etc.) or gas lines to your system.
- Requires special CF double-sided flange bolt kit for fastening
- Use standard CF gaskets to seal
- Self-aligning
- Sexless flanges
- Interchangeable with other ConFlat flanges
- Adapters to other flange systems available

Product Specifications:

- Pressure range: UHV (approx. 1×10^{-13} Torr)
- Temperature range: -200°C up to 450°C
- Standard materials: 304L stainless steel

Options: Call for price and availability

- Tapped bolt holes
- Alternative materials – 316L stainless steel, aluminum, etc.



PART #	REFERENCE ID	DESCRIPTION
5000220	CF133DXFNPT06-SPC	1.33 Flange - (1) 1/16 in. NPT Hole
5000221	CF275DXFNPT12-SPC	2.75 Flange - (1) 1/8 in. NPT Hole
5000222	CF133DXFNPT06-2X-SPC	1.33 Flange - (2) 1/16 in. NPT Holes
5000223	CF275DXFNPT12-2X-SPC	2.75 Flange - (2) 1/8 in. NPT Holes

CF Double-Sided Flange to CF133 flange – Side Port

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CF Double-Sided Flange to CF133 Flange

Product Features:

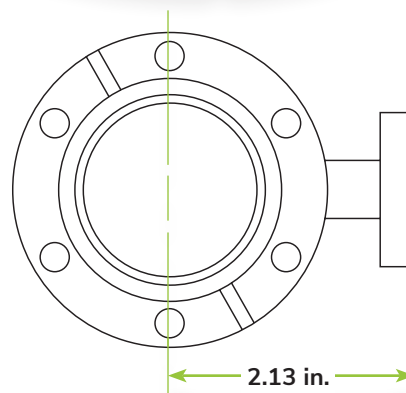
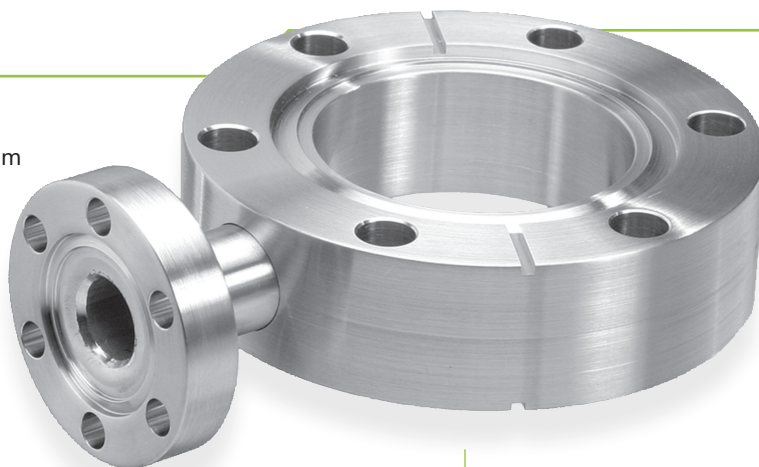
- Ideal for adding vacuum accessories (vacuum measurement, valves, etc.) to your system.
- Requires special CF double-sided flange bolt kit for fastening
- Use standard CF gaskets to seal
- Self-aligning
- Sexless flanges
- Interchangeable with other ConFlat® style flanges
- Adapters to other flange systems available

Product Specifications:

- Pressure range: UHV (approx. 1×10^{-13} Torr)
- Temperature range: -200°C up to 450°C
- Standard materials: 304 grade stainless steel

Options: Call for price and availability

- Tapped bolt holes
- Alternative materials: 316 stainless steel, aluminum, etc.

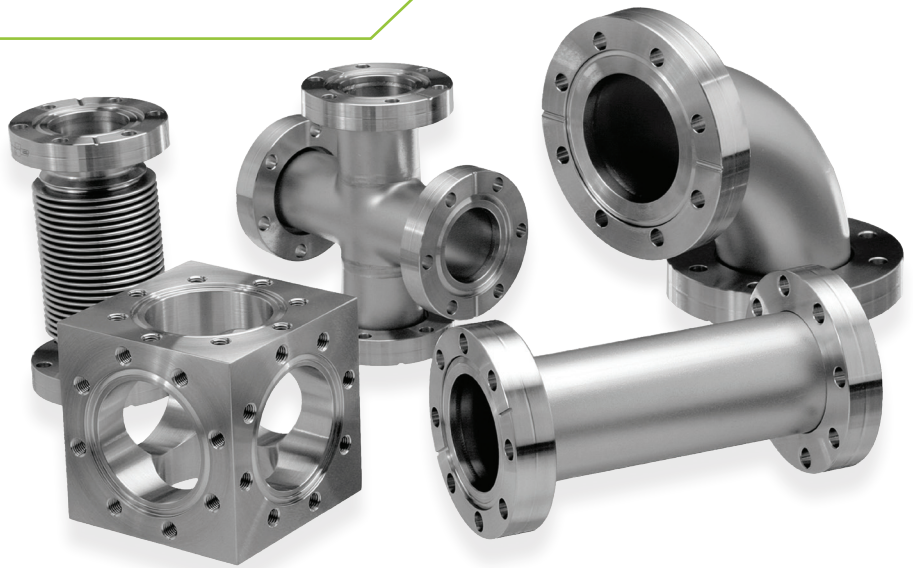


PART #	REFERENCE ID	DESCRIPTION
5000244	CF275DSXCF133-SPC	CF275 SS Double with 1.33 Flange Port

CF Fittings

ANCORP's CF fittings make up a complete set of modular components that allow our customers to create a custom vacuum system without the trouble and expense of having in-house machining and welding capabilities.

All ANCORP CF fittings are made with flanges manufactured to industry specifications to ensure compatibility with other manufacturers' flanges.



Product Specifications:

- Vacuum rated to 1×10^{-13} Torr.
- Leak rating $< 1 \times 10^{-9}$ std. cc/s helium
- Temperature range: -200°C to 450°C
- Standard materials:
 - Flanges and fittings: 304L stainless steel
 - Seals: OFHC copper for ultra high vacuum (UHV) or Viton® for high vacuum (HV)
- Standard sizes:
 - CF flanges outer diameter: 1 1/3 inches to 16 1/2 inches (for tubing diameter 1/4 inch up to 14 inches)
 - Wire seal flanges outer diameter: 12 3/8 inches up to 27 1/8 inches (for tubing diameter 10 inches up to 24 inches)

Product Features:

- Reusable flanges
- All-metal seals
- Sexless flanges
- Rotatable flanges for easier bolt hole alignment
- Tapped or clearance bolt holes available
- Adapters to other flange systems available
- Compatible with U.S. Standard (imperial) and metric measurements
- Interchangeable with other ConFlat® style flanges made to industry standards

Nipples



Nipples are manufactured with a flange on each end of a straight section of tubing. Nipples are used to create a weld free straight connection within a vacuum system. Nipples are also used as straight adapters between different tubing sizes or flange types. These fittings are available in all CF sizes and flange types. ANCORP manufactures standard nipples in 304L stainless steel, other materials are available on request.

Half Nipples



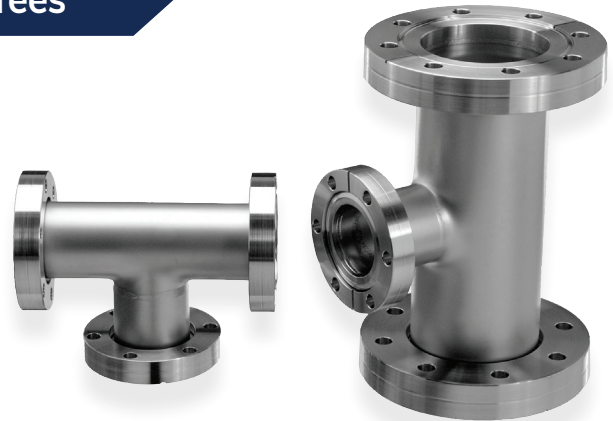
Half Nipples are manufactured with a flange on one end and raw tubing on the other. Half nipples are often welded onto a custom vacuum system or instrument by a customer with in-house welding capabilities. However, these fittings can also be used with quick disconnect compression fittings to make a vacuum tight connection without welding. ANCORP manufactures standard half nipples in 304L stainless steel, other materials are available on request.

Elbows



Elbows are manufactured with a flange on each end of a curved section of tubing. Elbows accommodate turns or alignment considerations for vacuum system design. Elbows are offered in four designs; 45° radius elbow, 90° radius elbow, 90° mitered elbow and 90° mitered high conductance elbow to accommodate a wide variety of system configurations. **ANCORP** manufactures standard Elbows in 304L stainless steel, other materials are available on request.

Tees



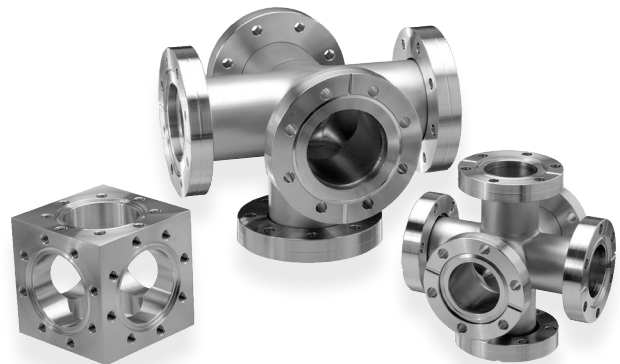
Tees are manufactured with a flange on each end of a "T" shaped section of tubing. Tees accommodate junctions or alignment considerations for vacuum system design. Tees are also used as junction adapters between different tubing sizes or flange types. **ANCORP** manufactures standard tees in 304L stainless steel, other materials are available on request.

Crosses



Crosses are manufactured with a flange on each end of an "X" shaped section of tubing. Crosses accommodate junctions or alignment considerations for vacuum system design. Crosses are also used as junction adapters between different tubing sizes or flange types. **ANCORP** manufactures standard crosses in 304L stainless steel, other materials are available on request.

5-Way & 6-Way Crosses and cubes



These fittings are manufactured with a flange on each end of a 5 or 6 sided tubing junction. These crosses accommodate complex junctions or alignment considerations for vacuum system design. Larger sizes are sometimes used as the starting point of a simple vacuum chamber design. **ANCORP** manufactures standard 5 and 6-way crosses and cubes in 304L stainless steel, other materials are available on request. Cubes are machined from a solid piece.

CF Half Nipple - Fixed Flange

Materials:

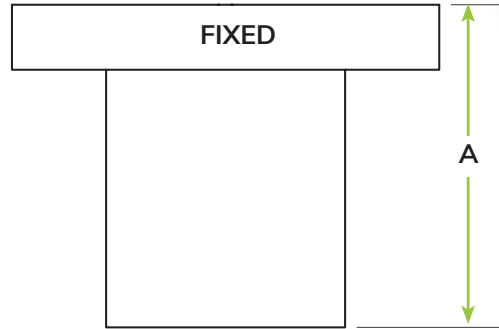
- 304L stainless steel

Product Notes:

- Clearance and tapped bolt holes
- Butt weld
- Designed to fit standard inch tubing O.D.'s
- Highly customizable

Options: Call for price and availability

- Custom lengths
- Alternative materials: 316L stainless steel
aluminum



Clearance Bolt Holes

PART #	REFERENCE ID	FLANGE TYPE	TUBE O.D. (in)	A (in)
5000340	CF133-075-HN-1.50	CF133	0.75	1.50
5000341	CF212-100-HN-2.05	CF212	1.00	2.05
5000342	CF275-150-HN-2.46	CF275	1.50	2.46
5000343	CF338-200-HN-3.21	CF338	2.00	3.21
5000344	CF450-250-HN-3.38	CF450	2.50	3.38
5000346	CF462-300-HN-3.53	CF462	3.00	3.53
5000347	CF600-400-HN-4.32	CF600	4.00	4.32
5000349	CF675-500-HN-4.32	CF675	5.00	4.32
5000350	CF800-600-HN-5.50	CF800	6.00	5.50
5000352	CF1000-800-HN-8.00	CF1000	8.00	8.00
5000353	CF1325-1000-HN-10.00	CF1325	10.00	10.00
5000354	CF1400-1200-HN-10.00	CF1400	12.00	10.00

Tapped Bolt Holes

PART #	REFERENCE ID	FLANGE TYPE	TUBE O.D. (in)	A (in)
5000372	CF133T-075-HN-1.50	CF133	0.75	1.50
5000375	CF212T-100-HN-2.05	CF212	1.00	2.05
5000378	CF275T-150-HN-2.46	CF275	1.50	2.46
5000381	CF338T-200-HN-3.21	CF338	2.00	3.21
5000384	CF450T-250-HN-3.38	CF450	2.50	3.38
5000389	CF462T-300-HN-3.53	CF462	3.00	3.53
5000392	CF600T-400-HN-4.32	CF600	4.00	4.32
5000397	CF675T-500-HN-4.32	CF675	5.00	4.32
5000400	CF800T-600-HN-5.50	CF800	6.00	5.50

Product Note:

There are two terms used within this catalog that require definition. **Reducer Fittings** are used to reduce the size of flanges and tubing used within the same flange family. For example, CF600 to CF275 or ISO-LF63 to ISO-QF40. These products are listed with

the fittings components for that flange family.

Adapter Fittings are used to change from one family of flanges to another. For example, ISO-QF25 to CF275.

CF Half Nipple – Rotatable Flange

Materials:

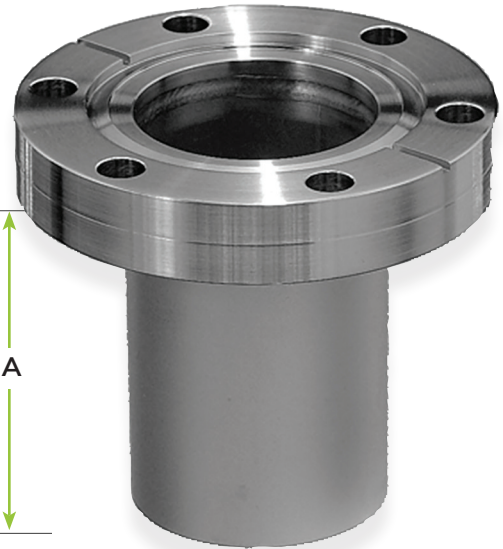
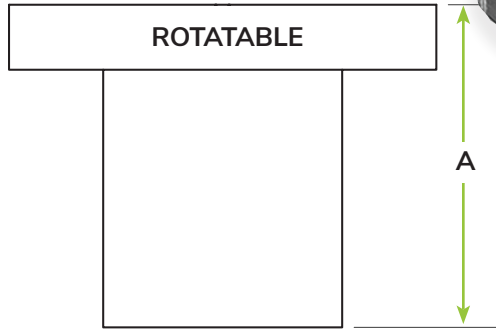
- 304L stainless steel

Product Notes:

- Clearance and tapped bolt holes
- Butt weld
- Designed to fit standard inch tubing O.D.'s
- Highly customizable

Options: Call for price and availability

- Custom lengths
- Alternative materials:
316L stainless steel
Aluminum



2

CF Half Nipple

Clearance Bolt Holes

PART #	REFERENCE ID	FLANGE TYPE	TUBE O.D. (in)	A (in)
5000371	CF133R-075-HN-1.50	CF133	0.75	1.50
5000374	CF212R-100-HN-2.05	CF212	1.00	2.05
5000377	CF275R-150-HN-2.46	CF275	1.50	2.46
5000380	CF338R-200-HN-3.21	CF338	2.00	3.21
5000383	CF450R-250-HN-3.38	CF450	2.50	3.38
5000388	CF462R-300-HN-3.53	CF462	3.00	3.53
5000391	CF600R-400-HN-4.32	CF600	4.00	4.32
5000396	CF675R-500-HN-4.32	CF675	5.00	4.32
5000399	CF800R-600-HN-5.50	CF800	6.00	5.50

Tapped Bolt Holes

PART #	REFERENCE ID	FLANGE TYPE	TUBE O.D. (in)	A (in)
5000373	CF133RT-075-HN-1.50	CF133	0.75	1.50
5000376	CF212RT-100-HN-2.05	CF212	1.00	2.05
5000379	CF275RT-150-HN-2.46	CF275	1.50	2.46
5000382	CF338RT-200-HN-3.21	CF338	2.00	3.21
5000385	CF450RT-250-HN-3.38	CF450	2.50	3.38
5000390	CF462RT-300-HN-3.53	CF462	3.00	3.53
5000393	CF600RT-400-HN-4.32	CF600	4.00	4.32
5000398	CF675RT-500-HN-4.32	CF675	5.00	4.32
5000401	CF800RT-600-HN-5.50	CF800	6.00	5.50

CF Nipple

Materials:

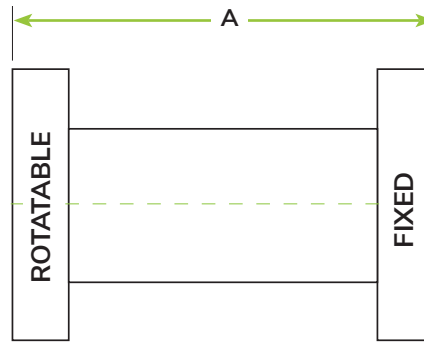
- 304L stainless steel

Product Notes:

- Same size flange on both ends
- Clearance bolt holes standard
- One fixed and one rotatable flange per fitting
- Highly customizable

Options: Call for price and availability

- For tapped flanges add "T" to the end of the flange number. Example: CF133T-075
- Custom lengths and flange combinations
- Alternative materials: 316L stainless steel, aluminum, etc.



PART #	REFERENCE ID	FLANGE TYPE	TUBE O.D. (in)	A (in)
5000355	CF133-075-N-3.00	CF133	0.75	3.00
5000356	CF212-100-N-4.10	CF212	1.00	4.10
5000357	CF275-150-N-4.93	CF275	1.50	4.93
5000358	CF338-200-N-6.43	CF338	2.00	6.43
5000359	CF450-250-N-6.76	CF450	2.50	6.76
5000360	CF450-250-N-8.25	CF450	2.50	8.25
5000361	CF462-300-N-7.06	CF462	3.00	7.06
5000362	CF600-400-N-8.64	CF600	4.00	8.64
5000363	CF600-400-N-10.62	CF600	4.00	10.62
5000364	CF675-500-N-8.46	CF675	5.00	8.46
5000365	CF675-500-N-9.87	CF675	5.00	9.87
5000366	CF800-600-N-11.00	CF800	6.00	11.00
5000367	CF800-600-N-13.12	CF800	6.00	13.12
5000368	CF1000-800-N-16.00	CF1000	8.00	16.00
5000369	CF1325-1000-N-20.00	CF1325	10.00	20.00
5000370	CF1400-1200-N-20.00	CF1400	12.00	20.00

CF Flexible Nipple

Materials:

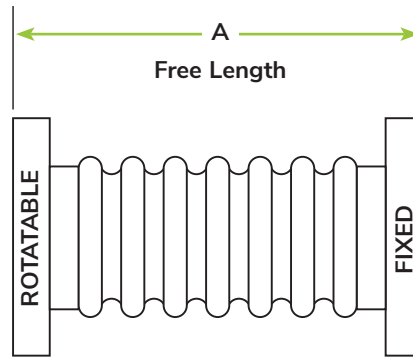
- Flanges: 304 stainless steel
- Flexible hose: 321 Stainless steel formed bellows

Product Notes:

- Corrects misaligned connections
- Compress up to 20% or extend up to 15% of free length

Options: Call for price and availability

- Custom lengths
- Tapped flanges
- Custom flange combination
- Alternative materials: 316L stainless steel



2
CF Flexible Nipple

PART #	REFERENCE ID	FLANGE TYPE	HOSE I.D. (in)	WALL THICKNESS (in)	A (in)
0800089	CF133-075-B-4.0	CF133	0.75	0.006	4.00
0800092	CF212-100-B-4.0	CF212	1.00	0.006	4.00
0800095	CF275-150-B-4.0	CF275	1.50	0.006	4.00
0800098	CF338-150-B-4.0	CF338	2.00	0.006	4.00
0800099	CF450-250-B-6.0	CF450	2.50	0.008	6.00
0800100	CF462-300-B-6.0	CF462	3.00	0.008	6.00
0800101	CF600-400-B-6.4	CF600	4.00	0.010	6.40
0800103	CF800-600-B-8.5	CF800	6.00	0.012	8.50

CF Straight Reducer Nipple

Materials:

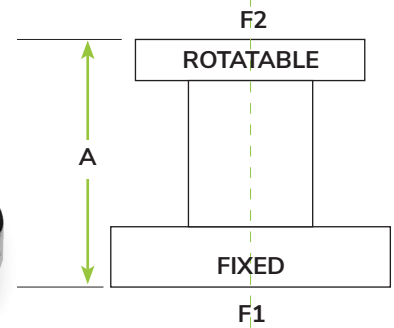
- 304L stainless steel

Product Notes:

- Connects different size CF Flanges

Options: Call for price and availability

- Custom lengths
- Tapped flanges
- Custom flange combinations
- Alternative materials: 316L stainless steel, aluminum, etc.



PART #	REFERENCE ID	FLANGE 1 O.D. (in)	FLANGE 2 O.D. (in)	TUBE O.D. (in)	A (in)
5000429	CF275XCF133R-075-N-2.50	2.72	1.33	0.75	2.50
5000925	CF338XCF275R-150-N-2.50	3.38	2.72	1.50	2.50
5000926	CF450XCF275R-150-N-2.50	4.47	2.72	1.50	2.50
5000430	CF600XCF275R-150-N-5.00	5.97	2.72	1.50	5.00
5000927	CF600XCF450R-250-N-5.00	5.97	4.47	2.50	5.00
5000431	CF800XCF275R-150-N-5.00	7.97	2.72	1.50	5.00
5000432	CF800XCF450R-250-N-5.00	7.97	4.47	2.50	5.00
5000433	CF800XCF600R-400-N-5.00	7.97	5.97	4.00	5.00
5000434	CF1000XCF275R-150-N-5.00	9.97	2.72	1.50	5.00
5000435	CF1000XCF450R-250-N-5.00	9.97	4.47	2.50	5.00
5000436	CF1000XCF600R-400-N-5.00	9.97	5.97	4.00	5.00
5000437	CF1000XCF800R-600-N-5.00	9.97	7.97	6.00	5.00
5000438	CF1325XCF1000R-800-N-5.00	13.25	9.97	8.00	5.00
5000439	CF1400XCF1200R-1000-N-5.00	14.00	11.97	10.00	5.00

CF Conical Reducer Nipple

Materials:

- 304L stainless steel

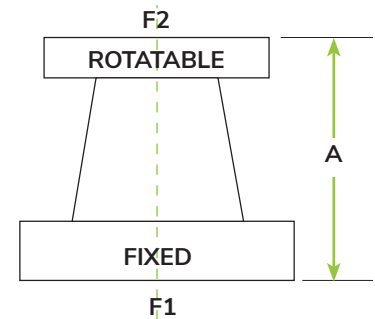
Product Notes:

- Connects different size CF flanges
- Maximizes conductance during transition to smaller size tubing

Options:

Call for price and availability

- Tapped flanges
- Custom flange combinations
- Alternative materials: 316L stainless steel



PART #	REFERENCE ID	FLANGE 1		FLANGE 2 O.D. (in)		A (in)
		TYPE	TUBE O.D.	TYPE	TUBE O.D.	
5000440	CF212XCF133R-100X075-CR-2.04	CF212	1.00	CF133	0.75	2.04
5000441	CF275XCF133R-150X075-CR-3.08	CF275	1.50	CF133	0.75	3.08
5000442	CF275XCF212R-150X100-CR-2.75	CF275	1.50	CF212	1.00	2.75
5000443	CF338XCF212R-200X100-CR-2.77	CF338	2.00	CF212	1.00	2.77
5000444	CF338XCF275R-200X150-CR-2.81	CF338	2.00	CF275	1.50	2.81
5000445	CF450XCF275R-250X150-CR-2.96	CF450	2.50	CF275	1.50	2.96
5000446	CF450XCF338R-250X200-CR-2.98	CF450	2.50	CF338	2.00	2.98
5000447	CF462XCF275R-300X150-CR-4.21	CF462	3.00	CF275	1.50	4.21
5000448	CF462XCF338R-300X200-CR-4.23	CF462	3.00	CF338	2.00	4.23
5000449	CF462XCF450R-300X250-CR-4.38	CF462	3.00	CF450	2.50	4.38
5000451	CF600XCF338R-400X200-CR-4.29	CF600	4.00	CF338	2.00	4.29
5000452	CF600XCF450R-400X250-CR-4.44	CF600	4.00	CF450	2.50	4.44

CF 45° Elbow

Materials:

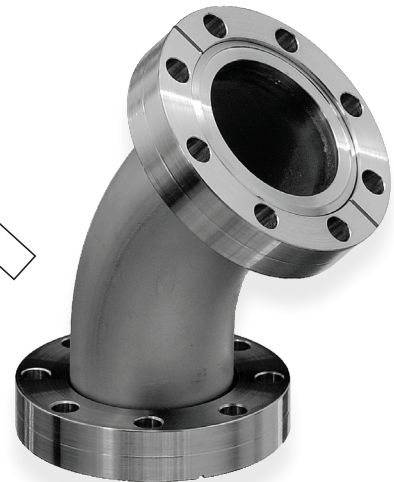
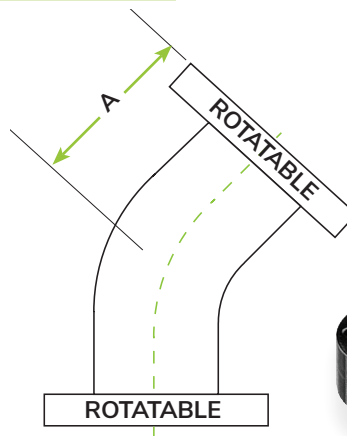
- 304L stainless steel

Product Notes:

- Radius elbow design

Options: Call for price and availability

- Custom lengths
- Tapped flanges
- Custom flange combinations
- Alternative materials: 316L stainless steel



2

CF 45° & 90° Elbows

PART #	REFERENCE ID	FLANGE TYPE	TUBE O.D. (in)	A (in)
5000454	CF133-075-E45-1.26	CF133	0.75	1.26
5000455	CF212-100-E45-1.14	CF212	1.00	1.14
5000456	CF275-150-E45-1.74	CF275	1.50	1.74
5000457	CF338-200-E45-2.07	CF338	2.00	2.07
5000458	CF450-250-E45-3.38	CF450	2.50	3.38
5000459	CF462-300-E45-4.06	CF462	3.00	4.06
5000460	CF600-400-E45-5.21	CF600	4.00	5.21

CF 90° Elbow

Materials:

- 304L stainless steel

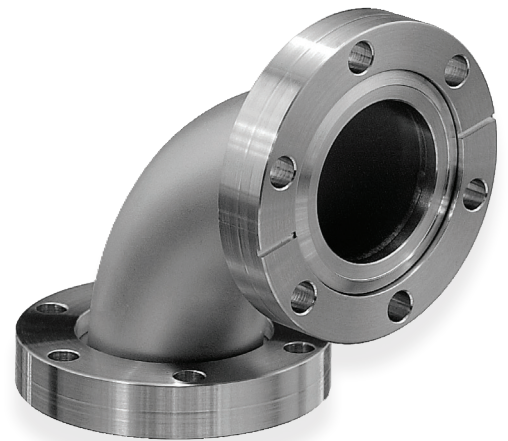
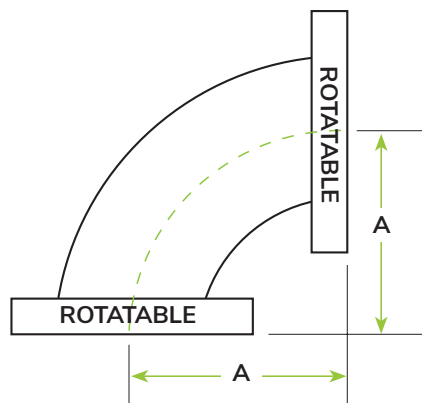
Product Notes:

- Radius elbow design

Options:

Call for price and availability

- Custom lengths
- Tapped flanges
- Custom flange combinations
- Alternative materials: 316L stainless steel



PART #	REFERENCE ID	FLANGE TYPE	TUBE O.D. (in)	A (in)
5000461	CF133-075-E90-1.50	CF133	0.75	1.50
5000462	CF212-100-E90-2.00	CF212	1.00	2.00
5000463	CF275-150-E90-2.46	CF275	1.50	2.46
5000464	CF338-200-E90-3.22	CF338	2.00	3.22
5000465	CF450-250-E90-4.12	CF450	2.50	4.12
5000466	CF462-300-E90-4.88	CF462	3.00	4.88
5000467	CF600-400-E90-6.44	CF600	4.00	6.44
5000468	CF800-600-E90-9.50	CF800	6.00	9.50

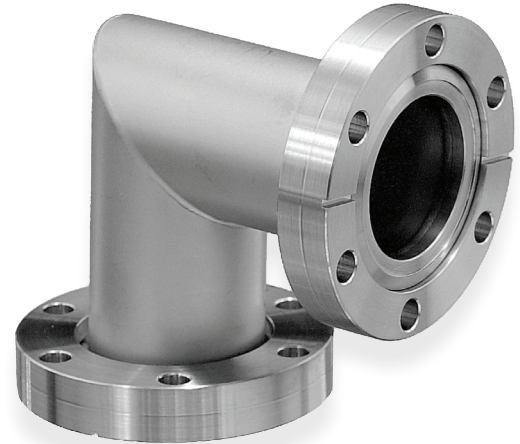
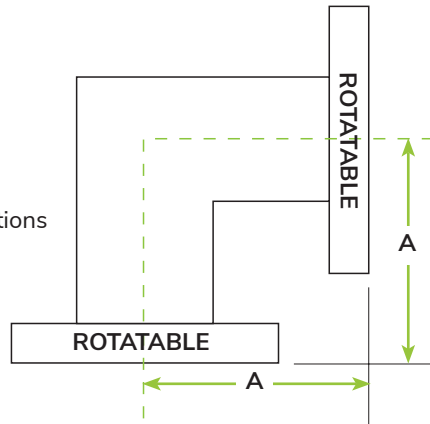
CF 90° Elbow - Mitered

Materials:

- 304L stainless steel

Options: Call for price and availability

- Custom lengths
- Tapped flanges
- Custom flange combinations
- Alternative materials: 316L stainless steel, aluminum, etc.



PART #	REFERENCE ID	FLANGE TYPE	TUBE O.D. (in)	A (in)
5000469	CF133-075-E90M-1.50	CF133	0.75	1.50
5000470	CF212-100-E90M-2.05	CF212	1.00	2.05
5000471	CF212-150-E90M-2.46	CF275	1.50	2.46
5000472	CF338-200-E90M-3.21	CF338	2.00	3.21
5000473	CF450-250-E90M-3.38	CF450	2.50	3.38
5000474	CF450-250-E90M-4.12	CF450	2.50	4.13
5000475	CF462-300-E90M-3.35	CF462	3.00	3.35
5000476	CF600-400-E90M-4.32	CF600	4.00	4.32
5000477	CF600-400-E90M-5.31	CF600	4.00	5.31
5000478	CF675-500-E90M-4.71	CF675	5.00	4.71
5000479	CF800-600-E90M-5.50	CF800	6.00	5.50
5000480	CF800-600-E90M-6.56	CF800	6.00	6.56
5000481	CF1000-800-E90M-7.50	CF1000	8.00	7.50
5000482	CF1325-1000-E90M-10.00	CF1325	10.00	10.00

CF 90° Elbow – Mitered, High Conductance

Materials:

- 304L stainless steel

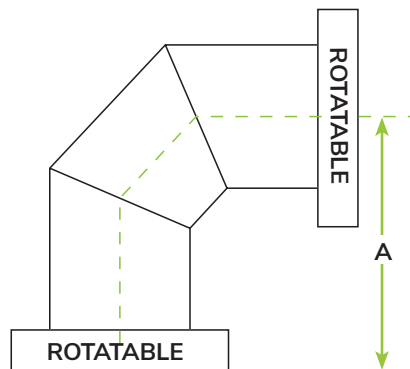
Product Notes:

- High conductance design

Options:

Call for price and availability

- Custom lengths
- Tapped flanges
- Custom flange combinations
- Alternative materials: 316L stainless steel, aluminum, etc.



PART #	REFERENCE ID	FLANGE TYPE	TUBE O.D. (in)	A (in)
5000483	CF800-600-E90MHC-9.50	CF800	6.00	9.50
5000484	CF1000-800-E90MHC-12.50	CF1000	8.00	12.50
5000485	CF1325-1000-E90MHC-15.50	CF1325	10.00	15.50

CF - Tee

Materials:

- 304L stainless steel

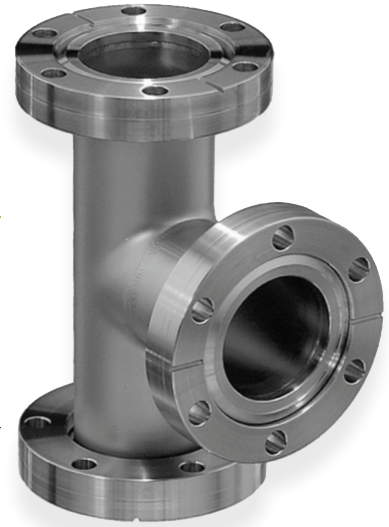
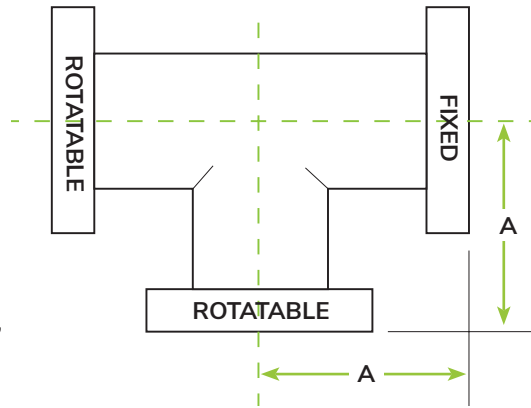
Product Notes

- Pulled ports for optimum vacuum performance

Options:

Call for price and availability

- Custom lengths
- Tapped flanges
- Custom flange combinations
- Alternative materials: 316L stainless steel, aluminum, etc.



2

CF Tee

PART #	REFERENCE ID	FLANGE TYPE	TUBE O.D. (in)	A (in)
5000486	CF133-075-TEE-1.50	CF133	0.75	1.50
5000487	CF212-100-TEE-2.05	CF212	1.00	2.05
5000488	CF275-150-TEE-2.46	CF275	1.50	2.46
5000489	CF275-150-TEE-2.62	CF275	1.50	2.62
5000490	CF338-200-TEE-3.22	CF338	2.00	3.22
5000491	CF450-250-TEE-3.38	CF450	2.50	3.38
5000492	CF450-250-TEE-4.12	CF450	2.50	4.12
5000493	CF462-300-TEE-3.63	CF462	3.00	3.63
5000494	CF600-400-TEE-4.32	CF600	4.00	4.32
5000495	CF600-400-TEE-5.31	CF600	4.00	5.31
5000496	CF675-500-TEE-4.71	CF675	5.00	4.71
5000497	CF800-600-TEE-5.50	CF800	6.00	5.50
5000498	CF800-600-TEE-6.56	CF800	6.00	6.56
5000499	CF1000-800-TEE-7.50	CF1000	8.00	7.50
5000500	CF1325-1000-TEE-10.00	CF1325	10.00	10.00

CF Reducing Tee

2
CF Reducing Tee

Materials:

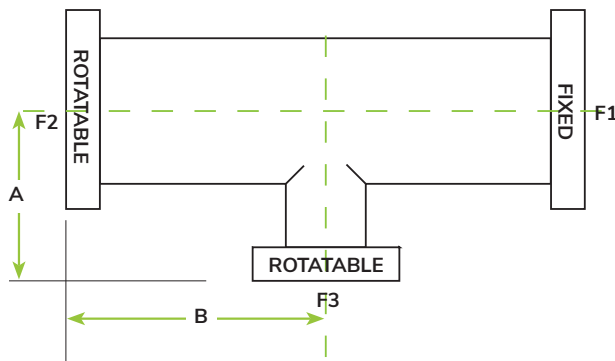
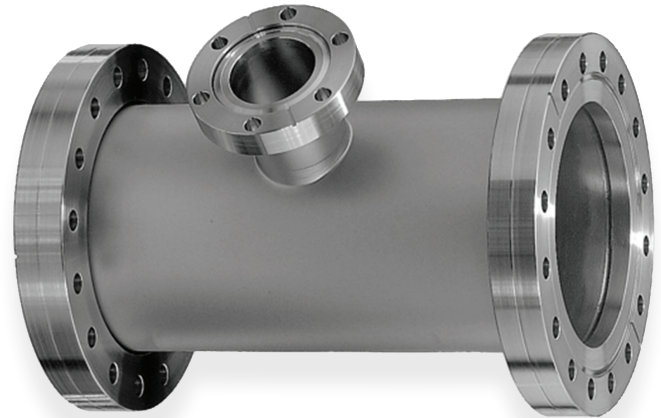
- 304L stainless steel

Product Notes

- Pulled ports for optimum vacuum performance
- Reducing intersection for different CF flange sizes

Options: Call for price and availability

- Custom lengths
- Tapped flanges
- Custom flange combinations
- Alternative materials:
316L stainless steel, aluminum, etc.



PART #	REFERENCE ID	FLANGE 1 & 2		FLANGE 3		A (in)	B (in)
		O.D.	TUBE O.D.	O.D.	TUBE O.D.		
5000501	CF275XCF133-150X075-RDT-1.87X2.46	2.72	1.50	1.33	0.75	1.87	2.46
5000502	CF275XCF212-150X100-RDT-2.30X2.46	2.72	1.50	2.12	1.00	2.29	2.46
5000503	CF338XCF133-200X075-RDT-2.12X3.22	3.38	2.00	1.33	0.75	2.13	3.22
5000504	CF338XCF275-200X150-RDT-2.71X3.22	3.38	2.00	2.72	1.50	2.71	3.22
5000505	CF450XCF338-250X200-RDT-3.38X3.48	4.47	2.50	2.72	1.50	2.96	3.38
5000506	CF462XCF338-300X200-RDT-3.63X3.73	4.47	2.50	3.38	2.00	3.48	3.38
5000507	CF462XCF338-300X200-RDT-3.63X3.73	4.62	3.00	3.38	2.00	3.73	3.63
5000508	CF462XCF450-300X250-RDT-3.63X3.63	4.62	3.00	4.47	2.50	3.63	3.63
5000509	CF600XCF275-400X150-RDT-4.32X3.71	5.97	4.00	2.72	1.50	3.71	4.32
5000510	CF600XCF338-400X200-RDT-4.23X4.32	5.97	4.00	3.38	2.00	4.23	4.32
5000511	CF600XCF450-400X250-RDT-4.13X4.32	5.97	4.00	4.47	2.50	4.13	4.32
5000512	CF600XCF462-400X300-RDT-4.13X4.32	5.97	4.00	4.62	3.00	4.13	4.32
5000513	CF675XCF600-500X400-RDT-4.82X4.71	6.75	5.00	5.97	4.00	4.82	4.71
5000514	CF800XCF275-600X150-RDT-4.71X5.50	7.97	6.00	2.72	1.50	4.71	5.50
5000515	CF800XCF338-600X200-RDT-5.23X5.50	7.97	6.00	3.38	2.00	5.23	5.50
5000516	CF800XCF450-600X250-RDT-5.13X5.50	7.97	6.00	4.47	2.50	5.13	5.50
5000517	CF800XCF600-600X400-RDT-5.32X5.50	7.97	6.00	5.97	4.00	5.32	5.50
5000518	CF1000XCF800-800X600-RDT-7.50X7.50	9.97	8.00	7.97	6.00	7.50	7.50

CF Cross

Materials:

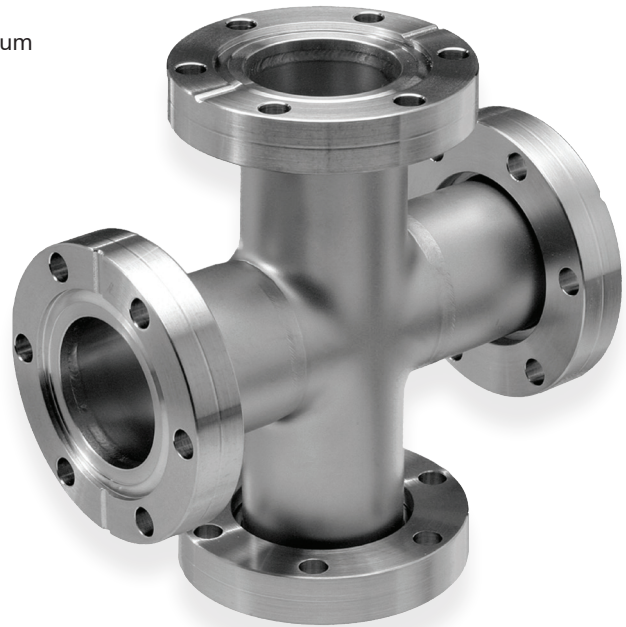
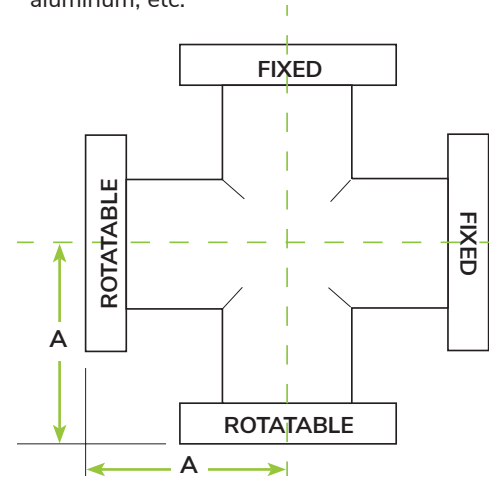
- 304L stainless steel

Options: Call for price and availability

- Custom lengths
- Tapped flanges
- Custom flange combinations
- Alternative materials: 316L stainless steel, aluminum, etc.

Product Notes

- Pulled ports for optimum vacuum performance



2

CF Cross

PART #	REFERENCE ID	FLANGE TYPE	TUBE O.D. (in)	A (in)
5000519	CF133-075-4X-1.50	CF133	0.75	1.50
5000520	CF212-100-4X-2.05	CF212	1.00	2.05
5000521	CF275-150-4X-2.46	CF275	1.50	2.46
5000522	CF338-200-4X-3.22	CF338	2.00	3.23
5000523	CF450-250-4X-3.38	CF450	2.50	3.38
5000524	CF450-250-4X-4.12	CF450	2.50	4.12
5000525	CF462-300-4X-3.63	CF462	3.00	3.63
5000526	CF600-400-4X-4.32	CF600	4.00	4.32
5000527	CF600-400-4X-5.31	CF600	4.00	5.31
5000528	CF675-500-4X-4.71	CF675	5.00	4.71
5000529	CF800-600-4X-5.50	CF800	6.00	5.50
5000530	CF800-600-4X-6.56	CF800	6.00	6.56
5000531	CF1000-800-4X-7.50	CF1000	8.00	7.50
5000532	CF1325-1000-4X-10.00	CF1325	10.00	10.00

CF Reducing Cross

2 CF Reducing Cross

Materials:

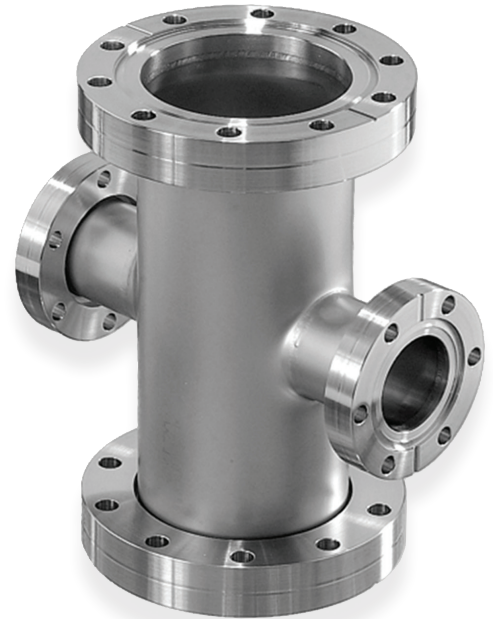
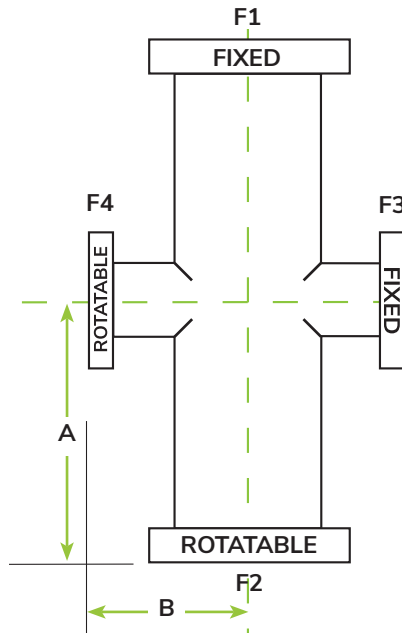
- 304L stainless steel

Product Notes:

- Pulled ports for optimum vacuum performance
- Reducing intersection for different CF flange sizes

Options: Call for price and availability

- Custom lengths
- Tapped flanges
- Custom flange combinations
- Alternative materials: 316L stainless steel, aluminum, etc.



PART #	REFERENCE ID	FLANGE 1 & 2		FLANGE 3 & 4		A (in)	B (in)
		O.D.	TUBE O.D.	O.D.	TUBE O.D.		
5000533	CF275XCF133-150X075-R4X-2.46X1.88	2.72	1.50	1.33	0.75	2.46	1.88
5000534	CF275XCF212-150X100-R4X-2.46X2.30	2.72	1.50	2.12	1.00	2.46	2.30
5000535	CF338XCF133-200X075-R4X-3.23X2.13	3.37	2.00	1.33	0.75	3.23	2.13
5000536	CF338XCF275-200X150-R4X-3.23X2.71	3.37	2.00	2.72	1.50	3.23	2.71
5000537	CF450XCF275-250X150-R4X-3.38X2.83	4.47	2.50	2.72	1.50	3.38	2.83
5000538	CF450XCF338-150X075-R4X-3.38X3.48	4.47	2.50	3.37	2.00	3.38	3.48
5000539	CF462XCF338-150X075-R4X-3.63X3.73	4.62	3.00	3.37	2.00	3.63	3.73
5000540	CF462XCF450-150X075-R4X-3.63X3.63	4.62	3.00	4.47	2.50	3.63	3.63
5000541	CF600XCF275-150X075-R4X-4.32X3.71	5.97	4.00	2.72	1.50	4.32	3.71
5000542	CF600XCF338-150X075-R4X-4.32X4.23	5.97	4.00	3.37	2.00	4.32	4.23
5000543	CF600XCF450-150X075-R4X-4.32X4.13	5.97	4.00	4.47	2.50	4.32	4.13
5000544	CF600XCF462-150X075-R4X-4.32X4.13	5.97	4.00	4.62	3.00	4.32	4.13
5000545	CF675XCF600-150X075-R4X-4.71X4.82	6.75	5.00	5.97	4.00	4.71	4.82
5000546	CF800XCF275-150X075-R4X-5.50X4.71	7.97	6.00	2.72	1.50	5.50	4.71
5000547	CF800XCF338-150X075-R4X-5.50X5.23	7.97	6.00	3.37	2.00	5.50	5.23
5000548	CF800XCF450-150X075-R4X-5.50X5.13	7.97	6.00	4.47	2.50	5.50	5.13
5000549	CF800XCF600-150X075-R4X-5.50X5.32	7.97	6.00	5.97	4.00	5.50	5.32
5000550	CF1000XCF800-150X075-R4X-7.50X6.50	9.97	8.00	7.97	6.00	7.50	6.50

CF 5-Way Cross

Materials:

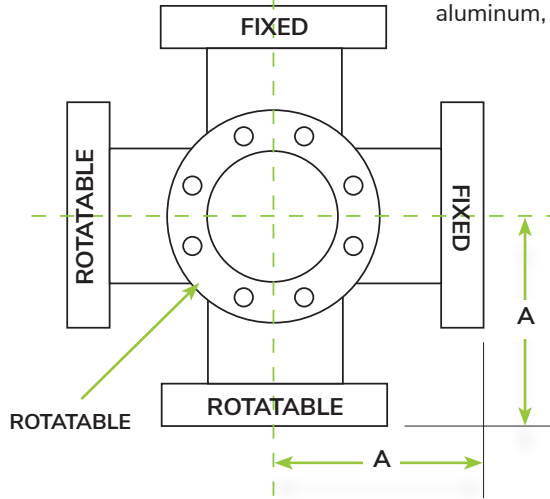
- 304L stainless steel

Product Notes:

- Pulled ports for optimum vacuum performance

Options: Call for price and availability

- Custom lengths
- Tapped flanges
- Custom flange combinations
- Alternative materials: 316L stainless steel, aluminum, etc.



2

CF 5-Way Cross

PART #	REFERENCE ID	FLANGE TYPE	TUBE O.D. (in)	A (in)
5000551	CF133-075-5X-1.50	CF133	0.75	1.50
5000552	CF212-100-5X-2.05	CF212	1.00	2.05
5000553	CF275-150-5X-2.46	CF275	1.50	2.46
5000554	CF338-200-5X-3.22	CF338	2.00	3.23
5000555	CF450-250-5X-3.38	CF450	2.50	3.38
5000556	CF450-250-5X-4.13	CF450	2.50	4.13
5000557	CF462-300-5X-3.63	CF462	3.00	3.63
5000558	CF600-400-5X-4.32	CF600	4.00	4.32
5000559	CF600-400-5X-5.31	CF600	4.00	5.31
5000560	CF675-500-5X-4.71	CF675	5.00	4.71
5000561	CF800-600-5X-5.50	CF800	6.00	5.50
5000562	CF800-600-5X-6.56	CF800	6.00	6.56
5000563	CF1000-800-5X-7.50	CF1000	8.00	7.50
5000564	CF1325-1000-5X-10.00	CF1325	10.00	10.00

CF 6-Way Cross

2

CF 6-Way Cross

Materials:

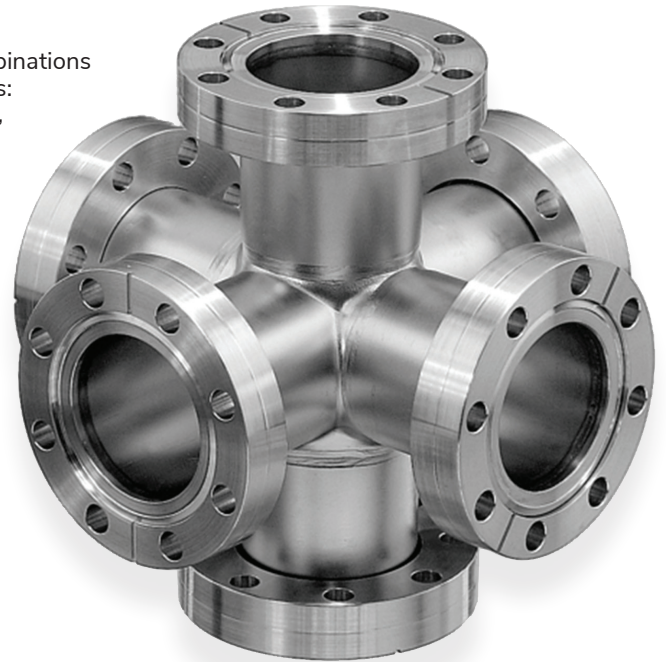
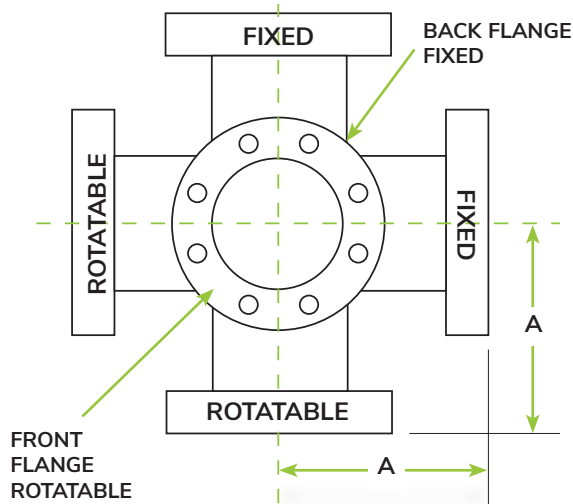
- 304L stainless steel

Product Notes:

- Pulled ports for optimum vacuum performance

Options: Call for price and availability

- Custom lengths
- Tapped flanges
- Custom flange combinations
- Alternative materials: 316L stainless steel, aluminum, etc.



PART #	REFERENCE ID	FLANGE TYPE	TUBE O.D. (in)	A (in)
5000565	CF133-075-6X-1.50	CF133	0.75	1.50
5000566	CF212-100-6X-2.05	CF212	1.00	2.05
5000567	CF275-150-6X-2.46	CF275	1.50	2.46
5000568	CF338-200-6X-3.23	CF338	2.00	3.23
5000569	CF450-250-6X-3.38	CF450	2.50	3.38
5000570	CF450-250-6X-4.13	CF450	2.50	4.13
5000571	CF462-300-6X-3.63	CF462	3.00	3.63
5000572	CF600-400-6X-4.32	CF600	4.00	4.32
5000573	CF600-400-6X-5.31	CF600	4.00	5.31
5000574	CF675-500-6X-4.71	CF675	5.00	4.71
5000575	CF800-600-6X-5.50	CF800	6.00	5.50
5000576	CF800-600-6X-6.56	CF800	6.00	6.56
5000577	CF1000-800-6X-7.50	CF1000	8.00	7.50
5000578	CF1325-1000-6X-10.00	CF1325	10.00	10.00

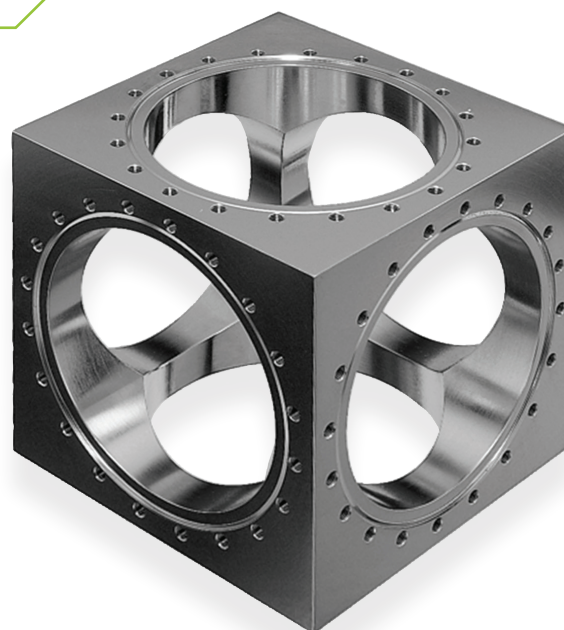
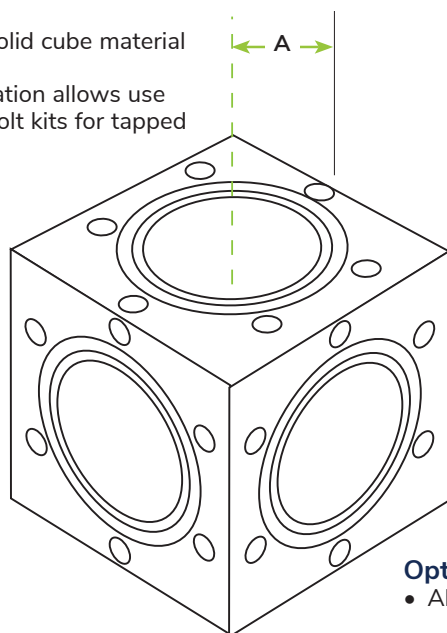
CF 6-Way Cube

Materials:

- 304L stainless steel

Product Notes:

- Machined from solid cube material – no welds
- Bolt holes orientation allows use of standard CF bolt kits for tapped bolt hole flanges



2

CF 6-Way Cube

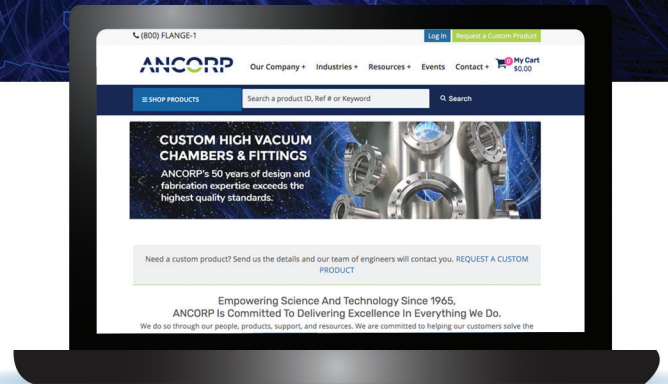
Options: Call for price and availability

- Alternative materials: 316L stainless steel, aluminum, etc.

PART #	REFERENCE ID	FLANGE SIZE	A (in)
5000579	CF133-CU-0.67	1.34	0.67
5000580	CF275-CU-1.38	2.76	1.38
5000581	CF338-CU-1.685	3.37	1.68
5000582	CF450-CU-2.235	4.47	2.23
5000583	CF600-CU-2.985	5.97	2.98
5000584	CF800-CU-3.985	7.97	3.98
5000585	CF1000-CU-4.985	9.97	4.98

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