



CF & 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 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. A&N 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.

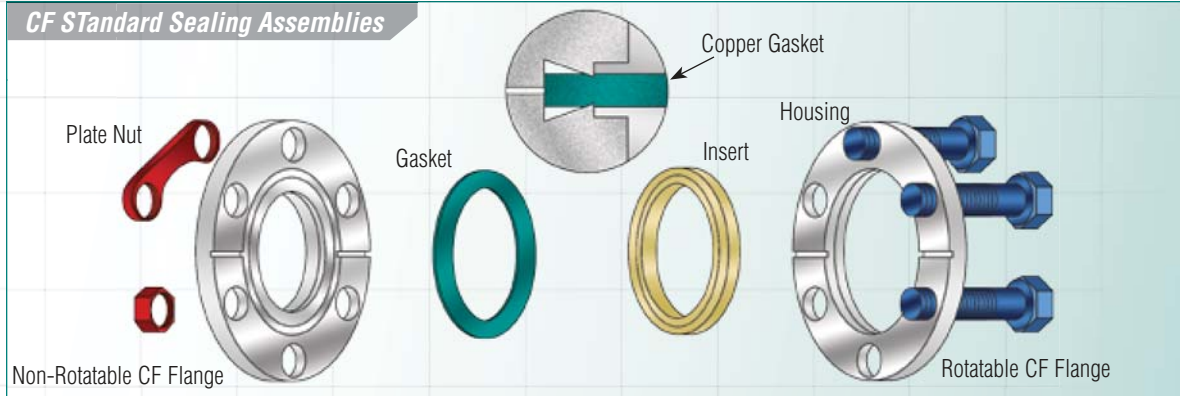
All flanges offered by A&N Corporation are manufactured on state-of-the-art CNC (computer numerical control) lathes to ensure consistency with dimensional tolerances, and extremely fine surface finishes. Water soluble, non-sulfur based coolants are used during the manufacturing process. The flanges are 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
- All-metal 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



The CF flange system provides a complete range of flanges to mount with tubing sized 1/4 inch up to 14 inch 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 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. A&N 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 (204°C intermittent use). Viton® gaskets are reusable and can be used many times to make new vacuum tight seals.

CF Fasteners are bolts, nuts and washers made of high tensile strength stainless steel. Bolts are offered with standard hex-head or 12-point head and silver plated. A&N 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.

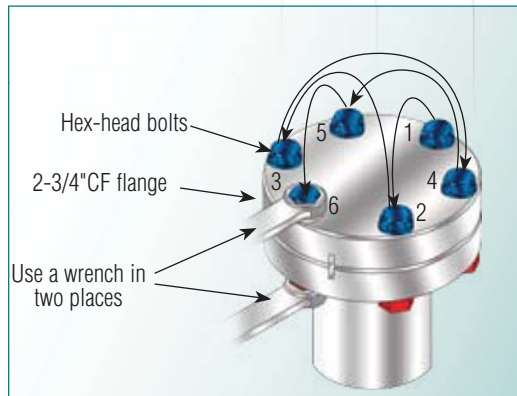
A&N offers a complete line of flanges, fittings, valves, traps and accessories with CF connections that can be used to create a complete vacuum system or pumping line.

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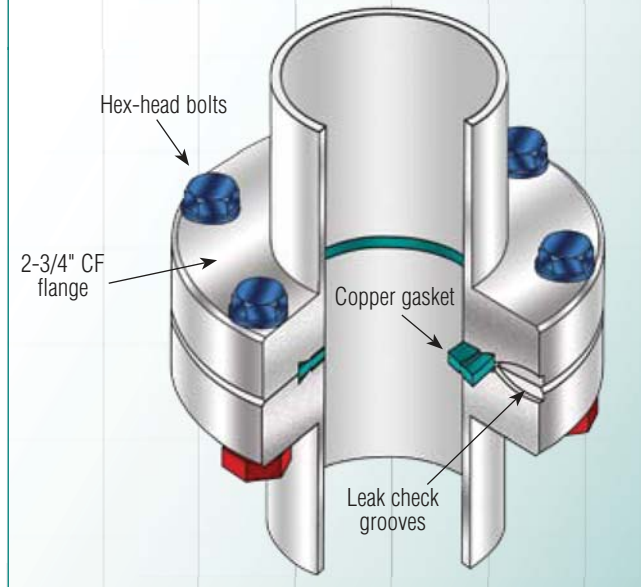
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CF Standard Sealing Assemblies

A sealing pair of CF flanges each 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 on the sealing knife-edges 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.



Del-Seal™ CF Metal Seal Flange



Assembly Instructions

Always wear gloves (lint free) 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 sealing surfaces have no dents or scratches. 2) Apply anti-seize lubricant to the threaded portion of your bolts. If you have purchased silver plated bolts then the anti-seize lubricant is unnecessary. A&N recommends either anti-seize lubricant or silver plated bolts for almost all CF assemblies. Especially for those assemblies that will be subjected to high 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 and leak check groove of the opposing flange. 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 until the desired torque pressures have been achieved. This tightening procedure ensures even gasket compression and a reliable seal.

TECH TIP

If you are using plate nuts then you only need to apply a wrench to the bolt head and you tighten the assembly by turning the bolt and not the nut

Flange Size	Maximum Torque	
	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

Common U.S. to Metric Equivalents

Flange Size	Din Standard	European Sizes
CF133	DN16 CF	CF16
CF212		
CF275	DN35 CF	CF35, CF38, CF40
CF338		
CF450	DN63 CF	CF63, CF64
CF462		
CF600	DN100 CF	CF100
CF675		
CF800	DN150 CF	CF150, CF160
CF1000	DN200 CF	CF200
CF1200	DN250 CF	CF250

U.S. manufacturers of CF flanges name them according to their outer diameter 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. A&N can provide metric tapped flanges on request.

Special Purpose CF Flanges

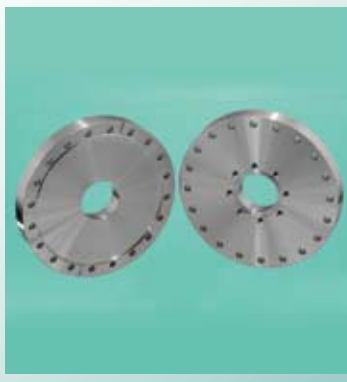
Double Sided CF Flanges

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.



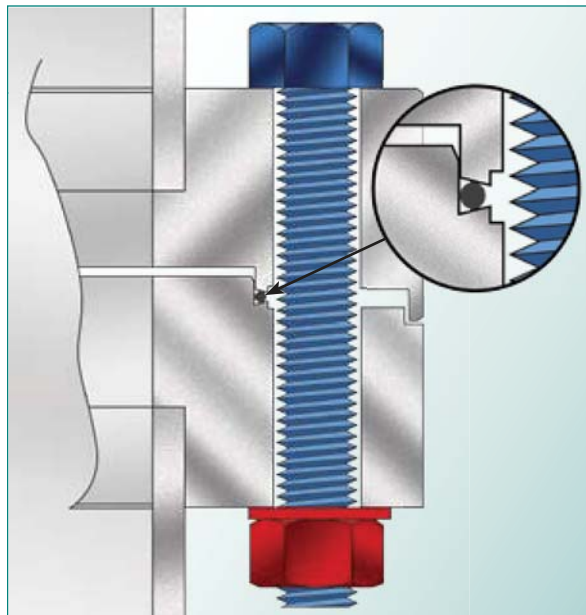
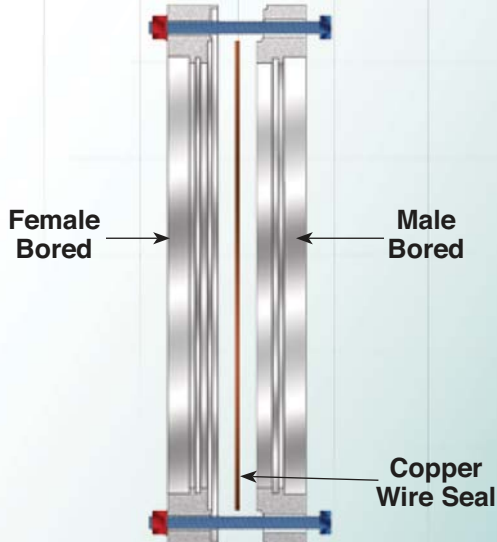
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Wire Seal Flange System

Wire Seal Flange Assembly



Flange Size	Maximum Torque	
	Copper Gasket	Viton® Gasket
WS1200	26 ft./lbs.	7-10 ft./lbs.
WS1400	26 ft./lbs.	7-10 ft./lbs.
WS1700	33 ft./lbs.	7-10 ft./lbs.
WS1900	33 ft./lbs.	7-10 ft./lbs.
WS2200	33 ft./lbs.	7-10 ft./lbs.
WS2700	33 ft./lbs.	7-10 ft./lbs.

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 . A&N 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 (204°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.*1

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



For More Info...
*1 See pg. 4.5 for CF assembly guidelines.



CF and Wire Seal Fasteners

These metal sealed flange systems both use bolt kits to fasten together your flanges and create a seal. The different styles of bolt kits detailed on these pages offer advantages for different applications and are described in detail below.



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
- All-metal 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



For More Info...

*2 See pg. 4.10 - 4.14 for sizes and details.

CF Clearance Flange Fasteners

These bolt kits fasten two flanges together that both have clearance bolt holes. The bolts slide easily through smooth bored bolt holes and are fastened with a nut and washer on the far side of the flange assembly. These bolt kits are offered in two bolt designs: 1) Hex-head bolt, nut and washer kits, and 2) 12-point bolt, nut and washer kits. Each of these bolt designs have two options: 1) Silver plated bolts – silver plating replaces the need for anti-seize lubricant to prevent galling between the nut and bolt after being subjected to high temperatures. 2) Plate nuts - 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.*2



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CF Tapped Flange Fasteners

These bolt kits fasten a flange to another flange that has tapped bolt holes. Tapped bolt holes are threaded to receive and tighten the bolt directly and do not utilize a nut. This an excellent space saving option and is particularly useful when fastening a flange to a chamber wall or gate valve. These bolt kits are offered in two bolt designs; hex-head bolt and washer kits and 12-point bolt and washer kits. Each of these bolt designs have the option of silver plated bolts. Silver plating replaces the need for anti-seize lubricant to prevent galling between the bolt and flange after being subjected to high temperatures.*³



CF Double Sided Flange Fasteners

These bolt kits are the same as the standard hex-head bolt, nut and washer kits listed for CF clearance flanges on the opposite page with one difference. The bolts are longer to accommodate the thickness of the three CF flanges that are fastened with a double sided CF flange assembly.*⁴



Wire Seal Bolt Fasteners

These bolt kits fasten a male wire seal flange to a female flange. Each bolt kit contains the appropriate number of hex-head bolts, nuts and washers for one assembly.*⁵



Fastener Accessories

A&N offers two accessories for CF and wire seal fasteners. 1) Anti-seize thread lubricant prevents galling on bolts that are not silver plated. A&N recommends either anti-seize lubricant or silver plated bolts for almost all CF assemblies. Especially for those assemblies that will be subjected to high 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. 2) A 12-point wrench for use with all CF 12-point bolt kits.*⁶



For More Info...

- *3 See pg. 4.16 - 4.17 for sizes and details.
- *4 See pg. 4.14 for sizes and details.
- *5 See pg. 4.15 for sizes and details.
- *6 See pg. 4.10 for product details.



CF Clearance Bolt Hole 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

- For use with clearance bolt hole CF flanges
- Silver-plating prevents galling of bolt and nut after exposure to high temperatures.



Standard

PART NUMBER	REFERENCE NUMBER	USE WITH FLANGE	DESCRIPTION
0605105	133-BK	CF133	(25) Bolt, Nut & Washer Kit 8-32x3/4 in.
0605109	212-BK	CF212	(25) Bolt, Nut & Washer Kit; 1/4-28x1 1/4 in.
0605114	275-BK	CF275	(25) Bolt, Nut & Washer Kit; 1/4-28x1 1/4 in.
0605121	338-BK	CF338	(25) Bolt, Nut & Washer Kit; 5/16-24x1 3/4 in.
0605128	450-BK	CF450	(25) Bolt, Nut & Washer Kit; 5/16-24x2 in.
0605135	462-BK	CF462	(25) Bolt, Nut & Washer Kit; 5/16-24x2 1/4 in.
0605142	600-BK	CF600	(25) Bolt, Nut & Washer Kit; 5/16-24x2 1/4 in.
0605153	675-BK	CF675	(25) Bolt, Nut & Washer Kit; 5/16-24x2 1/4 in.
0605157	800-BK	CF800	(25) Bolt, Nut & Washer Kit; 5/16-24x2 1/4 in.
0605164	1000-BK	CF1000	(25) Bolt, Nut & Washer Kit; 5/16-24x2 1/2 in.
0605171	1200-BK	CF1200	(32) Bolt, Nut & Washer Kit; 5/16-24x3 in.
0605173	1325-BK	CF1325	(30) Bolt, Nut & Washer Kit; 3/8-24x3 in.
0605175	1400-BK	CF1400	(30) Bolt, Nut & Washer Kit; 3/8-24x3 in.
0605177	1450-BK	CF1450	(32) Bolt, Nut & Washer Kit; 3/8-24x3 in.
0605179	1650-BK	CF1650	(36) Bolt, Nut & Washer Kit; 3/8-24x3 in.

* ORDERING NOTE

For tapped flange bolt kits see pg. 4.16 - 4.17.

Silver Plated

PART NUMBER	REFERENCE NUMBER	USE WITH FLANGE	DESCRIPTION
0605181	133-BK-S	CF133	(25) Silver Plated Bolt, Nut & Washer Kit; 8-32x3/4 in.
0605204	1325-BK-S	CF1325	(30) Silver Plated Bolt, Nut & Washer Kit; 3/8-24x3 in.
0605206	1400-BK-S	CF1400	(30) Silver Plated Bolt, Nut & Washer Kit; 3/8-24x3 in.
0605304	1650-BK-S	CF1650	(36) Silver Plated Bolt, Nut & Washer Kit; 3/8-24x3 in.

* ORDERING NOTE

Additional silver plated bolt kit sizes are available with 12-point bolts see pg. 4.11



CF Fasteners Accessories

PART NUMBER	REFERENCE NUMBER	DESCRIPTION
0605208	ASTL	Bolt thread lubricant eliminates galling of bolt and nut or tapped bolt hole
0605113	12-POINT WRENCH	Fits CF 12-point bolts

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CF Clearance Bolt Hole Flange Fasteners – 12-Point Bolt Kit

Materials:

- 12-Point bolt: stainless steel or silver plated stainless steel
- Hardware (nut and washer): stainless steel

Product Notes

- For use with clearance bolt hole CF flanges
- Silver plating prevents galling of bolt and nut after exposure to high temperatures.



Standard

PART NUMBER	REFERENCE NUMBER	USE WITH FLANGE	DESCRIPTION
0605111	212-BK-12	CF212	(25) 12-point Bolt, Nut & Washer Kit; 1/4-28x1 1/4 in.
0605116	275-BK-12	CF275	(25) 12-point Bolt, Nut & Washer Kit; 1/4-28x1 1/4 in.
0605123	338-BK-12	CF338	(25) 12-point Bolt, Nut & Washer Kit; 5/16-24x1 3/4 in.
0605130	450-BK-12	CF450	(25) 12-point Bolt, Nut & Washer Kit; 5/16-24x2 in.
0605137	462-BK-12	CF462	(25) 12-point Bolt, Nut & Washer Kit; 5/16-24x2 1/4 in.
0605145	600-BK-12	CF600	(25) 12-point Bolt, Nut & Washer Kit; 5/16-24x2 1/4 in.
0605155	675-BK-12	CF675	(25) 12-point Bolt, Nut & Washer Kit; 5/16-24x2 1/4 in.
0605159	800-BK-12	CF800	(25) 12-point Bolt, Nut & Washer Kit; 5/16-24x2 1/4 in.
0605166	1000-BK-12	CF1000	(25) 12-point Bolt, Nut & Washer Kit; 5/16-24x2 1/2 in.

* ORDERING NOTE

For tapped flange bolt kits see pg. 4.16 - 4.17.

Silver Plated

PART NUMBER	REFERENCE NUMBER	USE WITH FLANGE	DESCRIPTION
0605183	212-BK-12-S	CF212	(25) Silver Plated 12-point Bolt, Nut & Washer Kit; 1/4-28x1 1/4 in.
0605186	275-BK-12-S	CF275	(25) Silver Plated 12-point Bolt, Nut & Washer Kit; 1/4-28x1 1/4 in.
0605187	338-BK-12-S	CF338	(25) Silver Plated 12-point Bolt, Nut & Washer Kit; 5/16-24x1 3/4 in.
0605190	450-BK-12-S	CF450	(25) Silver Plated 12-point Bolt, Nut & Washer Kit; 5/16-24x2 in.
0605192	462-BK-12-S	CF462	(25) Silver Plated 12-point Bolt, Nut & Washer Kit; 5/16-24x2 1/4 in.
0605194	600-BK-12-S	CF600	(25) Silver Plated 12-point Bolt, Nut & Washer Kit; 5/16-24x2 1/4 in.
0605196	675-BK-12-S	CF675	(25) Silver Plated 12-point Bolt, Nut & Washer Kit; 5/16-24x2 1/4 in.
0605198	800-BK-12-S	CF800	(25) Silver Plated 12-point Bolt, Nut & Washer Kit; 5/16-24x2 1/4 in.
0605200	1000-BK-12-S	CF1000	(25) Silver Plated 12-point Bolt, Nut & Washer Kit; 5/16-24x2 1/2 in.

* ORDERING NOTE

Additional silver plated bolt kit sizes are available with Hex-head bolts see pg. 4.10.



CF Fasteners Accessories

PART NUMBER	REFERENCE NUMBER	DESCRIPTION
0605208	ASTL	Bolt thread lubricant eliminates galling of bolt and nut or tapped bolt hole
0605113	12-POINT WRENCH	Fits CF 12-point bolts



CF Clearance Bolt Hole Flange Fasteners – Hex-Head Bolt Kit with Plate Nuts

Materials:

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

Product Notes

- For use with clearance bolt hole CF flanges
- Plate nuts ease flange installation see pg. 4.8



Standard

PART NUMBER	REFERENCE NUMBER	USE WITH FLANGE	DESCRIPTION
0605107	133-PNK	CF133	(12) Plate Nuts, (24) Bolts & Washers; 8-32x3/4 in.
0605118	275-PNK	CF275	(12) Plate Nuts, (24) Bolts & Washers; 1/4-28x1 1/4 in.
0605125	338-PNK	CF338	(16) Plate Nuts, (32) Bolts & Washers; 5/16-24x1 3/4 in.
0605132	450-PNK	CF450	(16) Plate Nuts, (32) Bolts & Washers; 5/16-24x2 in.
0605139	462-PNK	CF462	(20) Plate Nuts, (40) Bolts & Washers; 5/16-24x2 1/4 in.
0605148	600-PNK	CF600	(16) Plate Nuts, (32) Bolts & Washers; 5/16-24x2 1/4 in.
0605161	800-PNK	CF800	(20) Plate Nuts, (40) Bolts & Washers; 5/16-24x2 1/4 in.
0605168	1000-PNK	CF1000	(24) Plate Nuts, (48) Bolts & Washers; 5/16-24x2 1/2 in.

Silver Plated

PART NUMBER	REFERENCE NUMBER	USE WITH FLANGE	DESCRIPTION
0605248	133-PNK-S	CF133	(12) Plate Nuts, (24) 8-32x3/4 in. Silver Plated Hex Socket Head Bolt & Washer Kit

*ORDERING NOTE

To order only plate nuts see pg. 4.14

Additional silver plated bolt kit sizes are available with 12-Point bolts see pg. 4.13



CF Fasteners Accessories

PART NUMBER	REFERENCE NUMBER	DESCRIPTION
0605208	ASTL	Bolt thread lubricant eliminates galling of bolt and nut or tapped bolt hole
0605113	12-POINT WRENCH	Fits CF 12-point bolts

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CF Clearance Bolt Hole Flange Fasteners – 12-Point Bolt Kit with Plate Nuts

Materials:

- 12-Point bolt: stainless steel or silver plated stainless steel
- Hardware (plate nut and washer): stainless steel

Product Notes

- For use with clearance bolt hole CF flanges
- Plate nuts ease flange installation see pg. 4.8
- Silver plating prevents galling of bolt and nut after exposure to high temperatures.



Standard

PART NUMBER	REFERENCE NUMBER	USE WITH FLANGE	DESCRIPTION
0605120	275-PNK-12	CF275	(12) Plate Nuts, (24) 12-point Bolts & Washers; 1/4-28x1 1/4 in.
0605127	338-PNK-12	CF338	(16) Plate Nuts, (32) 12-point Bolts & Washers; 5/16-24x1 3/4 in.
0605134	450-PNK-12	CF450	(16) Plate Nuts, (32) 12-point Bolts & Washers; 5/16-24x2 in.
0605141	462-PNK-12	CF462	(20) Plate Nuts, (40) 12-point Bolts & Washers; 5/16-24x2 1/4 in.
0605150	600-PNK-12	CF600	(16) Plate Nuts, (32) 12-point Bolts & Washers; 5/16-24x2 1/4 in.
0605163	800-PNK-12	CF800	(20) Plate Nuts, (40) 12-point Bolts & Washers; 5/16-24x2 1/4 in.
0605170	1000-PNK-12	CF1000	(24) Plate Nuts, (48) 12-point Bolts & Washers; 5/16-24x2 1/2 in.

Silver Plated

PART NUMBER	REFERENCE NUMBER	USE WITH FLANGE	DESCRIPTION
0605249	275-PNK-12-S	CF275	(12) Plate Nuts, (24) Silver Plated 12-point Bolts & Washers; 1/4-28x1 1/4 in.
0605307	338-PNK-12-S	CF338	(16) Plate Nuts, (32) Silver Plated 12-point Bolts & Washers; 5/16-24x1 3/4 in.
0605308	450-PNK-12-S	CF450	(16) Plate Nuts, (32) Silver Plated 12-point Bolts & Washers; 5/16-24x2 in.
0605309	462-PNK-12-S	CF462	(20) Plate Nuts, (40) Silver Plated 12-point Bolts & Washers; 5/16-24x2 1/4 in.
0605265	600-PNK-12-S	CF600	(16) Plate Nuts, (32) Silver Plated 12-point Bolts & Washers; 5/16-24x2 1/4 in.
0605270	800-PNK-12-S	CF800	(20) Plate Nuts, (40) Silver Plated 12-point Bolts & Washers; 5/16-24x2 1/4 in.
0605310	1000-PNK-12-S	CF1000	(24) Plate Nuts, (48) Silver Plated 12-point Bolts & Washers; 5/16-24x2 1/2 in.



CF Fasteners Accessories

PART NUMBER	REFERENCE NUMBER	DESCRIPTION
0605208	ASTL	Bolt thread lubricant eliminates galling of bolt and nut or tapped bolt hole
0605113	12-POINT WRENCH	Fits CF 12-point bolts



CF Plate Nuts

Materials:

- Plate nut: stainless steel

Product Notes

- Self centering over adjacent bolt holes
- Plate nuts ease flange installation see pg. 4.8

PART NUMBER	REFERENCE NUMBER	USE WITH FLANGE	DESCRIPTION
0605108	133-PN	CF133	(24) Plate Nuts; 8-32
0605119	275-PN	CF275	(24) Plate Nuts; 1/4-28
0605126	338-PN	CF338	(24) Plate Nuts; 5/16-24
0605133	450-PN	CF450	(24) Plate Nuts; 5/16-24
0605140	462-PN	CF462	(24) Plate Nuts; 5/16-24
0605152	600-PN	CF600	(24) Plate Nuts; 5/16-24
0605162	800-PN	CF800	(24) Plate Nuts; 5/16-24
0605169	1000-PN	CF1000	(24) Plate Nuts; 5/16-24



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 NUMBER	REFERENCE NUMBER	USE WITH FLANGE	DESCRIPTION
0605087	133-BKD	CF133	(25) Bolt, Nut & Washer Kit; 8-32x1 1/4 in.
0605088	212-BKD	CF212	(25) Bolt, Nut & Washer Kit; 1/4-28x1 3/4 in.
0605089	275-BKD	CF275	(25) Bolt, Nut & Washer Kit; 1/4-28x1 3/4 in.
0605090	275-BKD-.750	CF275	(25) Bolt, Nut & Washer Kit; 1/4-28x2 in.
0605091	275-PNK-D	CF275	(6) Plate Nuts, (12) Bolts & Washers; 1/4-28x2 in.
0605092	338-BKD	CF338	(25) Bolt, Nut & Washer Kit; 5/16-24x2 1/2 in.
0605093	450-BKD	CF450	(25) Bolt, Nut & Washer Kit; 5/16-24x2 3/4 in.
0605094	462-BKD	CF462	(25) Bolt, Nut & Washer Kit; 5/16-24x3 in.
0605095	600-BKD	CF600	(25) Bolt, Nut & Washer Kit; 5/16-24x3 in.
0605096	675-BKD	CF675	(25) Bolt, Nut & Washer Kit; 5/16-24x3 in.
0605097	800-BKD	CF800	(25) Bolt, Nut & Washer Kit; 5/16-24x3 in.
0605098	1000-BKD	CF1000	(25) Bolt, Nut & Washer Kit; 5/16-24x3 1/2 in.
0605099	1325-BKD	CF1325	(30) Bolt, Nut and Washer Kit; 3/8-24x4 in.
0605100	1400-BKD	CF1400	(30) Bolt, Nut and Washer Kit; 3/8-24x4 in.
0605101	1650-BKD	CF1650	(36) Bolt, Nut and Washer Kit; 3/8-24x4 in.

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Wire Seal 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

- For use with clearance bolt hole flanges

PART NUMBER	REFERENCE NUMBER	USE WITH FLANGE	DESCRIPTION
0607000	WF1200-BK	WF1200	(24) Bolt, Nut & Washer Kit; 3/8-24x2 1/2 in.
0607001	WF1400-BK	WF1400	(32) Bolt, Nut & Washer Kit; 3/8-24x2 3/4 in.
0607002	WF1700-BK	WF1700	(36) Bolt, Nut & Washer Kit; 1/2-20x2 3/4 in.
0607003	WF1900-BK	WF1900	(36) Bolt, Nut & Washer Kit; 1/2-20x3 in.
0607004	WF2200-BK	WF2200	(36) Bolt, Nut & Washer Kit; 5/8-18x3 1/2 in.
0607005	WF2700-BK	WF2700	(40) Bolt, Nut & Washer Kit; 5/8-18x4 in.



CF Fasteners Accessories

PART NUMBER	REFERENCE NUMBER	DESCRIPTION
0605208	ASTL	Bolt thread lubricant eliminates galling of bolt and nut or tapped bolt hole
0605113	12-POINT WRENCH	Fits CF 12-point bolts



*ORDERING NOTE

For Clearance Bolt Hole flange bolt kits see pg. 4.10 - 4.14



CF Tapped Bolt Hole Flange Fasteners – Hex-Head Bolt Kit

Materials:

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

Product Notes

- For use with tapped bolt hole CF flanges
- Silver plating prevents galling of bolt and tapped bolt hole after exposure to high temperatures.



Standard

PART NUMBER	REFERENCE NUMBER	USE WITH FLANGE	DESCRIPTION
0605106	133-BT	CF133	(25) Bolt & Washer Kit; 8-32x1/2 in.
0605110	212-BT	CF212	"(25) Bolt & Washer Kit, 1/4-28x7/8 in."
0605115	275-BT	CF275	"(25) Bolt & Washer Kit, 1/4-28x1 in."
0605122	338-BT	CF338	(25) Bolt & Washer Kit; 5/16-24x1 1/4 in.
0605129	450-BT	CF450	(25) Bolt & Washer Kit; 5/16-24x1 1/4 in.
0605136	462-BT	CF462	(25) Bolt & Washer Kit; 5/16-24x1 1/4 in.
0605144	600-BT	CF600	(25) Bolt & Washer Kit; 5/16-24x1 1/4 in.
0605154	675-BT	CF675	(25) Bolt & Washer Kit; 5/16-24x1 1/2 in.
0605158	800-BT	CF800	(25) Bolt & Washer Kit; 5/16-24x1 3/4 in.
0605165	1000-BT	CF1000	(25) Bolt & Washer Kit; 5/16-24x1 3/4 in.
0605172	1200-BT	CF1200	(32) Bolt & Washer Kit; 5/16-24x1 3/4 in.
0605174	1325-BT	CF1325	(30) Bolt & Washer Kit; 3/8-24x2 in.
0605176	1400-BT	CF1400	(30) Bolt & Washer Kit; 3/8-24x2 in.
0605178	1450-BT	CF1450	(32) Bolt & Washer Kit; 3/8-24x2 in.
0605180	1650-BT	CF1650	(36) Bolt & Washer Kit; 3/8-24x2 in.

Silver Plated

PART NUMBER	REFERENCE NUMBER	USE WITH FLANGE	DESCRIPTION
0605182	133-BT-S	CF133	(25) Silver Plated Bolt & Washer Kit; 8-32x1/2 in.
0605203	1325-BT-S	CF1325	(30) Silver Plated Bolt & Washer Kit; 3/8-24x2 in.
0605205	1400-BT-S	CF1400	(30) Silver Plated Bolt & Washer Kit; 3/8-24x2 in.
0605311	1450-BT-S	CF1450	(32) Silver Plated Bolt & Washer Kit; 3/8-24x2 in.
0605207	1650-BT-S	CF1650	(36) Silver Plated Bolt & Washer Kit; 3/8-24x2 in.

*ORDERING NOTE

Additional silver plated bolt kit sizes are available with 12-point bolts see pg. 4.17.



CF Fasteners Accessories

PART NUMBER	REFERENCE NUMBER	DESCRIPTION
0605208	ASTL	Bolt thread lubricant eliminates galling of bolt and nut or tapped bolt hole
0605113	12-POINT WRENCH	Fits CF 12-point bolts

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CF Tapped Bolt Hole Flange Fasteners – 12-Point Bolt Kit

Materials:

- 12-Point bolt: stainless steel or silver plated stainless steel
- Hardware (washer): stainless steel

Product Notes

- For use with tapped bolt hole CF flanges
- Silver plating prevents galling of bolt and tapped bolt hole after exposure to high temperatures.



*ORDERING NOTE

For Clearance Bolt Hole flange bolt kits see pg. 4.10 - 4.14

Standard

PART NUMBER	REFERENCE NUMBER	USE WITH FLANGE	DESCRIPTION
0605112	212-BT-12	CF212	(25) 12-point Bolt & Washer Kit; 1/4-28x7/8 in.
0605117	275-BT-12	CF275	(25) 12-point Bolt & Washer Kit; 1/4-28x7/8 in.
0605124	338-BT-12	CF338	(25) 12-point Bolt & Washer Kit; 5/16-24x1 1/4 in.
0605131	450-BT-12	CF450	(25) 12-point Bolt & Washer Kit; 5/16-24x1 1/4 in.
0605138	462-BT-12	CF462	(25) 12-point Bolt & Washer Kit; 5/16-24x1 1/4 in.
0605147	600-BT-12	CF600	(25) 12-point Bolt & Washer Kit; 5/16-24x1 1/4 in.
0605156	675-BT-12	CF675	(25) 12-point Bolt & Washer Kit; 5/16-24x1 1/4 in.
0605160	800-BT-12	CF800	(25) 12-point Bolt & Washer Kit; 5/16-24x1 3/4 in.
0605167	1000-BT-12	CF1000	(25) 12-point Bolt & Washer Kit; 5/16-24x1 3/4 in.
0605312	1200-BT-12	CF1200	(32) 12-point Bolt & Washer Kit; 5/16-24x1 3/4 in.

Silver Plated

PART NUMBER	REFERENCE NUMBER	USE WITH FLANGE	DESCRIPTION
0605184	212-BT-12-S	CF212	(25) Silver Plated 12-point Bolt & Washer Kit; 1/4-28x7/8 in.
0605185	275-BT-12-S	CF275	(25) Silver Plated 12-point Bolt & Washer Kit; 1/4-28x7/8 in.
0605188	338-BT-12-S	CF338	(25) Silver Plated 12-point Bolt & Washer Kit; 5/16-24x1 1/4 in.
0605189	450-BT-12-S	CF450	(25) Silver Plated 12-point Bolt & Washer Kit; 5/16-24x1 1/4 in.
0605191	462-BT-12-S	CF462	(25) Silver Plated 12-point Bolt & Washer Kit; 5/16-24x1 1/4 in.
0605193	600-BT-12-S	CF600	(25) Silver Plated 12-point Bolt & Washer Kit; 5/16-24x1 1/4 in.
0605195	675-BT-12-S	CF675	(25) Silver Plated 12-point Bolt & Washer Kit; 5/16-24x1 1/4 in.
0605197	800-BT-12-S	CF800	(25) Silver Plated 12-point Bolt & Washer Kit; 5/16-24x1 3/4 in.
0605199	1000-BT-12-S	CF1000	(25) Silver Plated 12-point Bolt & Washer Kit; 5/16-24x1 3/4 in.
0605202	1200-BT-12-S	CF1200	(32) Silver Plated 12-point Bolt & Washer Kit; 5/16-24x1 3/4 in.

*ORDERING NOTE

Product Note: Additional silver plated bolt kit sizes are available with Hex-head bolts see pg. 4.16.



CF Fasteners Accessories

PART NUMBER	REFERENCE NUMBER	DESCRIPTION
0605208	ASTL	Bolt thread lubricant eliminates galling of bolt and nut or tapped bolt hole
0605113	12-POINT WRENCH	Fits CF 12-point bolts



CF Seals

A&N Corporation 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.



Specifications

- Vacuum rated to 1×10^{-13} Torr.
- Leak rating < 1×10^{-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
- All-metal 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

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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 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 . These gaskets are precisely punched, de-burred, chemically treated and packaged to eliminate and prevent surface imperfections. CF copper gaskets provide one reliable seal per use. Use a new copper gasket each time you install a CF sealing assembly.*⁷



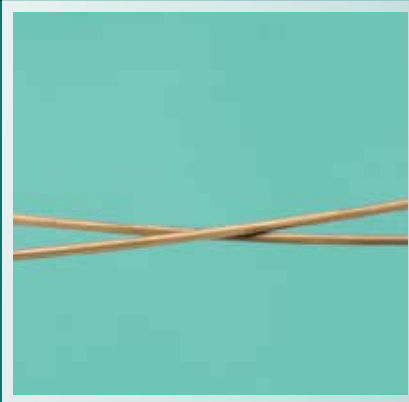
CF Viton® Gaskets

This alternative seal for the CF flange system is a vacuum grade fluorocarbon elastomer gasket that is compressed between the knife-edges of two CF flanges to create a seal capable of achieving high vacuum pressure. Viton® gaskets have a temperature range of -20°C up to 150°C (200°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.*⁸



Wire Seal Copper Gaskets

The basic seal for the wire seal flange system is an oxygen free electronic grade (OFE) copper wire gasket that is compressed between the male and female wire seal 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 . These gaskets are precisely punched, de-burred, chemically treated and packaged to eliminate and prevent surface imperfections. Wire seal copper gaskets provide one reliable seal per use. Use a new copper gasket each time you install a wire seal sealing assembly.*⁹



Wire Seal Viton® Gaskets

This alternative seal for the wire seal flange system is a vacuum grade fluorocarbon elastomer gasket that is compressed between the male and female wire seal flanges to create a seal capable of achieving high vacuum pressure. Viton® gaskets have a temperature range of -20°C up to 150°C (200°C intermittent use). These gaskets are precisely lathe cut, de-burred, cleaned and packaged to eliminate and prevent shedding or rips. Wire seal Viton® gaskets may be reused many times for reinstallation of wire seal sealing assemblies.*¹⁰



For More Info...

- *7 See pg. 4.20 for sizes and additional details.
- *8 See pg. 4.21 for sizes and additional details.
- *9 See pg. 4.20 for sizes and additional details.
- *10 See pg. 4.21 for sizes and additional details.



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 NUMBER	REFERENCE NUMBER	USE WITH FLANGE	INNER DIAMETER	OUTER DIAMETER	DESCRIPTION
0604020	133-CG	CF133	0.64	0.835	Copper Gaskets (10)
0604022	212-CG	CF212	1.01	1.29	Copper Gaskets (10)
0604024	275-CG	CF275	1.45	1.895	Copper Gaskets (10)
0604026	275-175-CG	CF275	SOLID	1.895	Copper Gaskets (10)
0604025	275-CG-SD	CF275	1.53	1.895	Copper Gaskets; Solid (10)
0604027	338-CG	CF338	2.01	2.42	Copper Gaskets (10)
0604029	450-CG	CF450	2.505	3.24	Copper Gaskets (10)
0604031	462-CG	CF462	3.01	3.60	Copper Gaskets (10)
0604033	600-CG	CF600	4.01	4.74	Copper Gaskets (10)
0604035	675-CG	CF675	5.00	5.56	Copper Gaskets (10)
0604037	800-CG	CF800	6.01	6.74	Copper Gaskets (10)
0604039	1000-CG	CF1000	8.01	8.74	Copper Gaskets (10)
0604041	1200-CG	CF1200	10.00	10.74	Copper Gaskets (1)
0604043	1325-CG	CF1325	10.89	11.575	Copper Gaskets (1)
0604045	1400-CG	CF1400	11.80	12.31	Copper Gaskets (1)
0604047	1450-CG	CF1450	12.11	12.81	Copper Gaskets (1)
0604049	1650-CG	CF1650	14.135	14.81	Copper Gaskets (1)



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 NUMBER	REFERENCE NUMBER	USE WITH FLANGE	DESCRIPTION
0606511	WF1200-CG	WF1200	Copper Gasket (1)
0606512	WF1400-CG	WF1400	Copper Gasket (1)
0606513	WF1700-CG	WF1700	Copper Gasket (1)
0606514	WF1900-CG	WF1900	Copper Gasket (1)
0606515	WF2200-CG	WF2200	Copper Gasket (1)
0606516	WF2700-CG	WF2700	Copper Gasket (1)

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CF Viton® Gaskets

Materials:

- Fluorocarbon elastomer

Product Notes

- Multi-use seal

- Temperature range: -70°C up to 150°C (intermittent use to 200°C)
- Pressure range: HV (approx. 1×10^{-8} Torr)

PART NUMBER	REFERENCE NUMBER	USE WITH FLANGE	DESCRIPTION
0604000	133-VG	CF133	Viton® Gaskets (5)
0604001	212-VG	CF212	Viton® Gaskets (5)
0604002	275-VG	CF275	Viton® Gaskets (5)
0604003	338-VG	CF338	Viton® Gasket (1)
0604004	450-VG	CF450	Viton® Gasket (1)
0604005	462-VG	CF462	Viton® Gasket (1)
0604006	600-VG	CF600	Viton® Gasket (1)
0604007	675-VG	CF675	Viton® Gasket (1)
0604008	800-VG	CF800	Viton® Gasket (1)
0604009	1000-VG	CF1000	Viton® Gasket (1)
0604010	1200-VG	CF1200	Viton® Gasket (1)
0604011	1325-VG	CF1325	Viton® Gasket (1)
0604012	1400-VG	CF1400	Viton® Gasket (1)
0604013	1450-VG	CF1450	Viton® Gasket (1)
0604014	1650-VG	CF1650	Viton® Gasket (1)



Wire Seal Viton® Gaskets

Materials:

- Fluorocarbon elastomer

Product Notes

- Multi-use seal
- Temperature range: -70°C up to 150°C (intermittent use to 200°C)
- Pressure range: HV (approx. 1×10^{-8} Torr)

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



CF and Wire Seal Flanges

A&N Corporation 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 A&N Corporation CF flanges are manufactured to industry specifications to ensure compatibility with other manufacturer's flanges.



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 inch to 16 1/2 inch (for tubing diameter 1/4 inch up to 14 inch)
 - Wire seal flanges outer diameter: 12 3/8 inch up to 27 1/8 inch (for tubing diameter 10 inch up to 24 inch)

Features

- Reusable flanges
- All-metal 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



For More Info...

*11 See pg. 4.24 - 4.55 for sizes and additional details.

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CF Weld Flanges

These flanges are manufactured with a weld prep and tubing bore for immediate installation on your system with no additional alteration. A&N 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.*11



CF Blank Flanges

These 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. A&N 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.^{*12}



Wire Seal Weld Flanges

These 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.^{*13}



Wire Seal Blank Flanges

These 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.^{*14}



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.^{*15}



For More Info...

*12 See pg. 4.24 - 4.55 for sizes and additional details.

*13 See pg. 4.56 - 4.57 for sizes and additional details.

*14 See pg. 4.56 - 4.57 for sizes and additional details.

*15 These flanges have their own introduction on pg. 4.58 for more details.



CF133 – 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 see section 8

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.

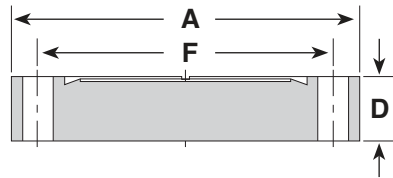
*ORDERING NOTE

CF133 flanges are also available with a weld neck to ease welding to small diameter tubing. See pg. 4.26 - 4.27

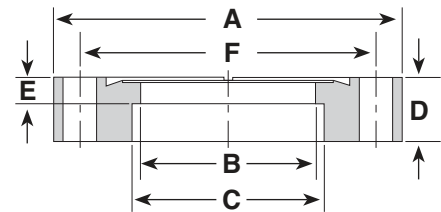


CF 133 - Fixed Flanges

BLANK



BORED



Clearance Bolt Holes

PART NUMBER	REFERENCE NUMBER	A	B	C	D	E	F	BOLT HOLES NO.	DIA/THRD
5000000	133-000	1.33	-	-	0.300	-	1.062	6	0.172
5000003	133-025	1.33	0.255	-	0.300	-	1.062	6	0.172
5000004	133-038	1.33	0.380	-	0.300	-	1.062	6	0.172
5000005	133-050	1.33	0.505	-	0.300	-	1.062	6	0.172
5000006	133-075	1.33	0.630	0.755	0.300	0.175	1.062	6	0.172

Tapped Bolt Holes

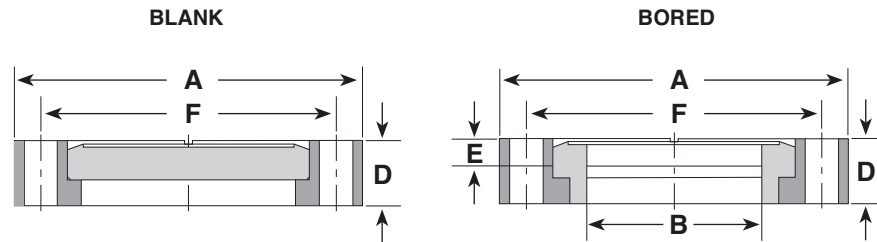
PART NUMBER	REFERENCE NUMBER	A	B	C	D	E	F	BOLT HOLES NO.	DIA/THRD
5000009	133-000-T	1.33	-	-	0.300	-	1.062	6	8-32
5000012	133-025-T	1.33	0.255	-	0.300	-	1.062	6	8-32
5000013	133-038-T	1.33	0.380	-	0.300	-	1.062	6	8-32
5000014	133-050-T	1.33	0.505	-	0.300	-	1.062	6	8-32
5000015	133-075-T	1.33	0.630	0.755	0.300	0.175	1.062	6	8-32

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CF 133 - Rotatable Flanges



Clearance Bolt Holes

PART NUMBER	REFERENCE NUMBER	A	B	C	D	E	F	BOLT HOLES NO.	DIA/THRD
5000018	133-000-R	1.33	-	-	0.300	-	1.062	6	0.172
5000021	133-025-R	1.33	0.255	-	0.300	-	1.062	6	0.172
5000022	133-038-R	1.33	0.380	-	0.300	-	1.062	6	0.172
5000023	133-050-R	1.33	0.505	-	0.300	-	1.062	6	0.172
5000024	133-075-R	1.33	0.630	-	0.300	-	1.062	6	0.172

Tapped Bolt Holes

PART NUMBER	REFERENCE NUMBER	A	B	C	D	E	F	BOLT HOLES NO.	DIA/THRD
5000027	133-000-R-T	1.33	-	-	0.300	-	1.062	6	8-32
5000030	133-025-R-T	1.33	0.255	-	0.300	-	1.062	6	8-32
5000031	133-038-R-T	1.33	0.380	-	0.300	-	1.062	6	8-32
5000032	133-050-R-T	1.33	0.505	-	0.300	-	1.062	6	8-32
5000033	133-075-R-T	1.33	0.630	-	0.300	-	1.062	6	8-32



CF 133 Flange Hardware

PART NUMBER	REFERENCE NUMBER	DESCRIPTION
0604020	133-CG	Copper Gaskets (10)
0604000	133-VG	Viton® Gaskets (5)
0605105	133-BK	(25) Bolt, Nut & Washer Kit 8-32x3/4 in.
0605181	133-BK-S	(25) Silver Plated Bolt, Nut & Washer Kit; 8-32x3/4 in.
0605106	133-BT	(25) Bolt & Washer Kit; 8-32x1/2 in.
0605182	133-BT-S	(25) Silver Plated Bolt & Washer Kit; 8-32x1/2 in.
0605107	133-PNK	(12) Plate Nuts, (24) Bolts & Washers; 8-32x3/4 in.
0605248	133-PNK-S	(12) Plate Nuts, (24) 8-32x3/4 in. Silver Plated Hex Socket Head Bolt & Washer Kit
0605108	133-PN	(24) Plate Nuts; 8-32
0605208	ASTL	Bolt thread lubricant eliminates galling of bolt and nut or tapped bolt hole



CF133 – 1.33 inches O.D. UHV Flanges with Weld Neck

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
- Adapters to other flange systems available see section 8

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.

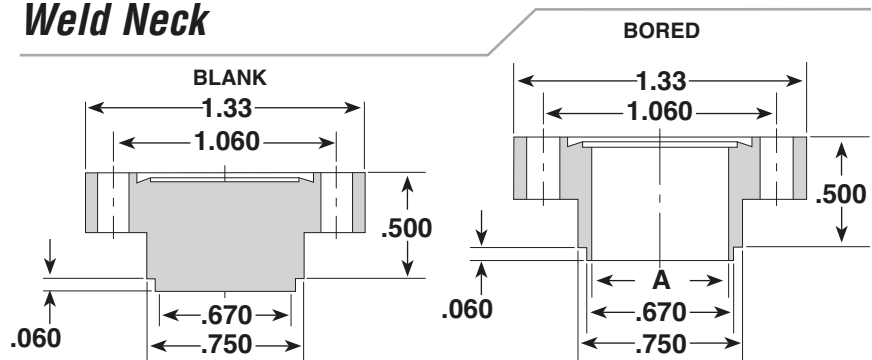
*ORDERING NOTE

“WNB” reference number suffix = weld neck without the 0.060 weld prep. Suitable for stub weld.

CF133 flanges are also without a weld neck for internal welding see pg. 4.24 - 4.25.



CF 133 - Fixed Flanges Weld Neck



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.

Clearance Bolt Holes

PART NUMBER	REFERENCE NUMBER	A	B	SETBACK C	BOLT HOLES NO.	DIA/THRD
5000001	133-000-WN	-	-	-	6	0.172
5000002	133-000-WNB	-	-	-	6	0.172
5000007	133-075-WN	0.63	-	-	6	0.172
5000008	133-075-WNB	0.63	-	-	6	0.172

Tapped Bolt Holes

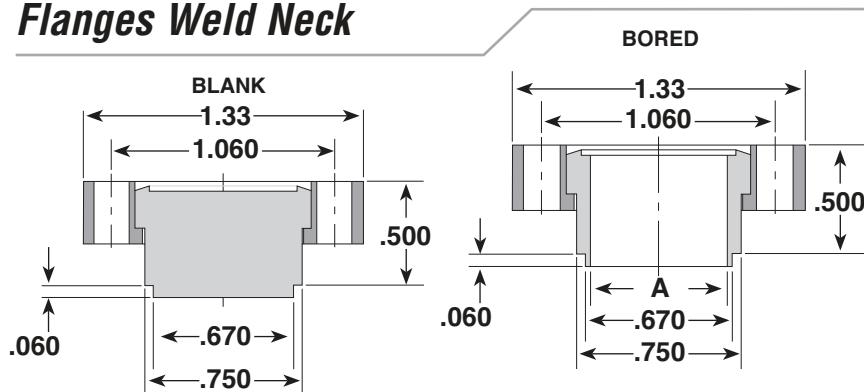
PART NUMBER	REFERENCE NUMBER	A	B	SETBACK C	BOLT HOLES NO.	DIA/THRD
5000010	133-000-WN-T	-	-	-	6	8-32
5000011	133-000-WNB-T	-	-	-	6	8-32
5000016	133-075-WN-T	0.63	-	-	6	8-32
5000017	133-075-WNB-T	0.63	-	-	6	8-32

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CF 133 - Rotatable Flanges Weld Neck



Clearance Bolt Holes

PART NUMBER	REFERENCE NUMBER				BOLT HOLES	
		A	B	SETBACK C	NO.	DIA/THRD
5000019	133-000-R-WN	-	-	-	6	0.172
5000020	133-000-R-WNB	-	-	-	6	0.172
5000025	133-075-R-WN	0.63	-	-	6	0.172
5000026	133-075-R-WNB	0.63	-	-	6	0.172

Tapped Bolt Holes

PART NUMBER	REFERENCE NUMBER				BOLT HOLES	
		A	B	SETBACK C	NO.	DIA/THRD
5000028	133-000-R-WN-T	-	-	-	6	8-32
5000029	133-000-R-WNB-T	-	-	-	6	8-32
5000034	133-075-R-WN-T	0.63	-	-	6	8-32
5000035	133-075-R-WNB-T	0.63	-	-	6	8-32



CF 133 Flange Hardware

PART NUMBER	REFERENCE NUMBER	DESCRIPTION
0604020	133-CG	Copper Gaskets (10)
0604000	133-VG	Viton® Gaskets (5)
0605105	133-BK	(25) Bolt, Nut & Washer Kit 8-32x3/4 in.
0605181	133-BK-S	(25) Silver Plated Bolt, Nut & Washer Kit; 8-32x3/4 in.
0605106	133-BT	(25) Bolt & Washer Kit; 8-32x1/2 in.
0605182	133-BT-S	(25) Silver Plated Bolt & Washer Kit; 8-32x1/2 in.
0605107	133-PNK	(12) Plate Nuts, (24) Bolts & Washers; 8-32x3/4 in.
0605248	133-PNK-S	(12) Plate Nuts, (24) 8-32x3/4 in. Silver Plated Hex Socket Head Bolt & Washer Kit
0605108	133-PN	(24) Plate Nuts; 8-32
0605208	ASTL	Bolt thread lubricant eliminates galling of bolt and nut or tapped bolt hole



CF 212 - 2.125 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 see section 8

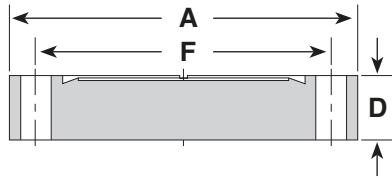
Product Specifications:

- 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.

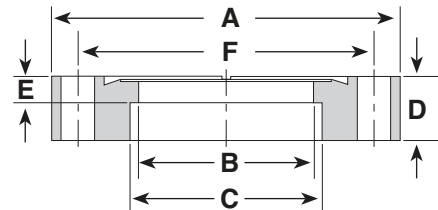


CF 212 - Fixed Flanges

BLANK



BORED



Clearance Bolt Holes

PART NUMBER	REFERENCE NUMBER	A	B	C	D	E	F	BOLT HOLES NO.	DIA/THRD
5000036	212-000	2.12	-	-	0.470	-	1.625	4	0.265
5000037	212-025	2.12	0.255	-	0.470	-	1.625	4	0.265
5000038	212-050	2.12	0.505	-	0.470	-	1.625	4	0.265
5000039	212-075	2.12	0.625	0.760	0.470	0.170	1.625	4	0.265
5000040	212-100	2.12	0.875	1.010	0.470	0.170	1.625	4	0.265

Tapped Bolt Holes

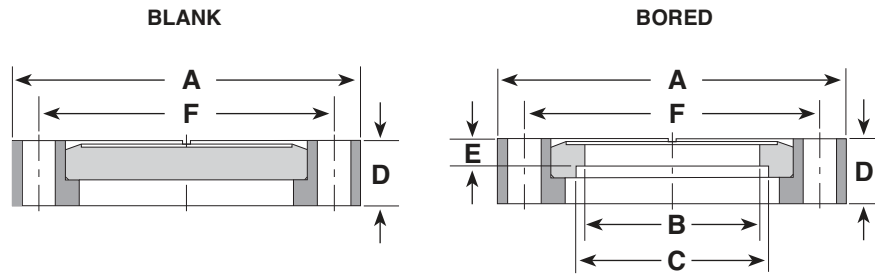
PART NUMBER	REFERENCE NUMBER	A	B	C	D	E	F	BOLT HOLES NO.	DIA/THRD
5000041	212-000-T	2.12	-	-	0.470	-	1.625	4	1/4-28
5000042	212-025-T	2.12	0.255	-	0.470	-	1.625	4	1/4-28
5000043	212-050-T	2.12	0.505	-	0.470	-	1.625	4	1/4-28
5000044	212-075-T	2.12	0.625	0.760	0.470	0.170	1.625	4	1/4-28
5000045	212-100-T	2.12	0.875	1.010	0.470	0.170	1.625	4	1/4-28

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CF 212 - Rotatable Flanges



Clearance Bolt Holes

PART NUMBER	REFERENCE NUMBER	A	B	C	D	E	F	BOLT HOLES NO.	DIA/THRD
5000046	212-000-R	2.12	-	-	0.470	-	1.625	4	0.265
5000047	212-025-R	2.12	0.255	-	0.470	-	1.625	4	0.265
5000048	212-050-R	2.12	0.505	-	0.470	-	1.625	4	0.265
5000049	212-075-R	2.12	0.625	0.760	0.470	0.170	1.625	4	0.265
5000911	212-100-R	2.12	0.875	1.010	0.470	0.170	1.625	4	0.265

Tapped Bolt Holes

PART NUMBER	REFERENCE NUMBER	A	B	C	D	E	F	BOLT HOLES NO.	DIA/THRD
5000050	212-000-R-T	2.12	-	-	0.470	-	1.625	4	1/4-28
5000052	212-025-R-T	2.12	0.255	-	0.470	-	1.625	4	1/4-28
5000053	212-050-R-T	2.12	0.505	-	0.470	-	1.625	4	1/4-28
5000054	212-075-R-T	2.12	0.625	0.760	0.470	0.170	1.625	4	1/4-28
5000055	212-100-R-T	2.12	0.875	1.010	0.470	0.170	1.625	4	1/4-28



CF 212 Flange Hardware

PART NUMBER	REFERENCE NUMBER	DESCRIPTION
0604022	212-CG	Copper Gaskets (10)
0604001	212-VG	Viton® Gaskets (5)
0605109	212-BK	(25) Bolt, Nut & Washer Kit; 1/4-28x1 1/4 in.
0605110	212-BT	(25) Bolt & Washer Kit, 1/4-28x7/8 in.
0605111	212-BK-12	(25) 12-point Bolt, Nut & Washer Kit; 1/4-28x1 1/4 in.
0605183	212-BK-12-S	(25) Silver Plated 12-point Bolt, Nut & Washer Kit; 1/4-28x1 1/4 in.
0605112	212-BT-12	(25) 12-point Bolt & Washer Kit; 1/4-28x7/8 in.
0605184	212-BT-12-S	(25) Silver Plated 12-point Bolt & Washer Kit; 1/4-28x7/8 in.
0605113	12-POINT WRENCH	Fits CF 12-point bolts
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
- 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 see section 8

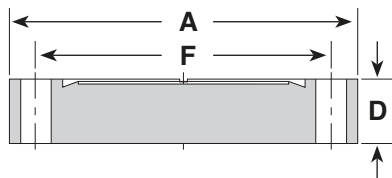
Product Specifications:

- 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.

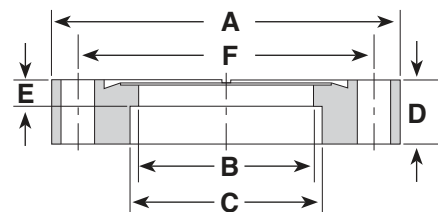


CF 275 - Fixed Flanges

BLANK



BORED



Clearance Bolt Holes

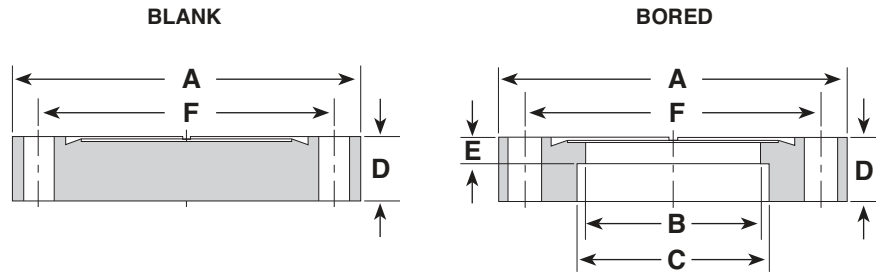
PART NUMBER	REFERENCE NUMBER	A	B	C	D	E	F	BOLT HOLES NO.	DIA/THRD
5000056	275-000	2.72	-	-	0.500	-	2.312	6	0.265
5000057	275-025	2.72	0.255	-	0.500	-	2.312	6	0.265
5000058	275-050	2.72	0.505	-	0.500	-	2.312	6	0.265
5000059	275-075	2.72	0.625	0.760	0.500	0.209	2.312	6	0.265
5000060	275-100	2.72	0.875	1.010	0.500	0.209	2.312	6	0.265
5000061	275-125	2.72	1.125	1.260	0.500	0.209	2.312	6	0.265
5000062	275-150	2.72	1.375	1.510	0.500	0.209	2.312	6	0.265
5000063	275-162	2.72	1.500	1.635	0.500	0.209	2.312	6	0.265

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CF 275 - Fixed Flanges



Tapped Bolt Holes

PART NUMBER	REFERENCE NUMBER	A	B	C	D	E	F	BOLT HOLES NO.	DIA/THRD
5000064	275-000-T	2.72	-	-	0.500	-	2.312	6	1/4-28
5000065	275-025-T	2.72	0.255	-	0.500	-	2.312	6	1/4-28
5000066	275-050-T	2.72	0.505	-	0.500	-	2.312	6	1/4-28
5000067	275-075-T	2.72	0.625	0.760	0.500	0.209	2.312	6	1/4-28
5000068	275-100-T	2.72	0.875	1.010	0.500	0.209	2.312	6	1/4-28
5000069	275-125-T	2.72	1.125	1.260	0.500	0.209	2.312	6	1/4-28
5000070	275-150-T	2.72	1.375	1.510	0.500	0.209	2.312	6	1/4-28
5000071	275-162-T	2.72	1.500	1.635	0.500	0.209	2.312	6	1/4-28



CF 275 Flange Hardware

PART NUMBER	REFERENCE NUMBER	DESCRIPTION
0604024	275-CG	Copper Gaskets (10)
0604025	275-CG-SD	Copper Gaskets; Solid (10)
0604002	275-VG	Viton® Gaskets (5)
0605114	275-BK	(25) Bolt, Nut & Washer Kit; 1/4-28x1 1/4 in.
0605115	275-BT	(25) Bolt & Washer Kit, 1/4-28x1 in.
0605116	275-BK-12	(25) 12-point Bolt, Nut & Washer Kit; 1/4-28x1 1/4 in.
0605186	275-BK-12-S	(25) Silver Plated 12-point Bolt, Nut & Washer Kit; 1/4-28x1 1/4 in.
0605117	275-BT-12	(25) 12-point Bolt & Washer Kit; 1/4-28x7/8 in.
0605185	275-BT-12-S	(25) Silver Plated 12-point Bolt & Washer Kit; 1/4-28x7/8 in.
0605118	275-PNK	(12) Plate Nuts, (24) Bolts & Washers; 1/4-28x1 1/4 in.
0605119	275-PN	(24) Plate Nuts; 1/4-28
0605120	275-PNK-12	(12) Plate Nuts, (24) 12-point Bolts & Washers; 1/4-28x1 1/4 in.
0605249	275-PNK-12-S	(12) Plate Nuts, (24) Silver Plated 12-point Bolts & Washers; 1/4-28x1 1/4 in.
0605113	12-POINT WRENCH	Fits CF 12-point bolts
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:

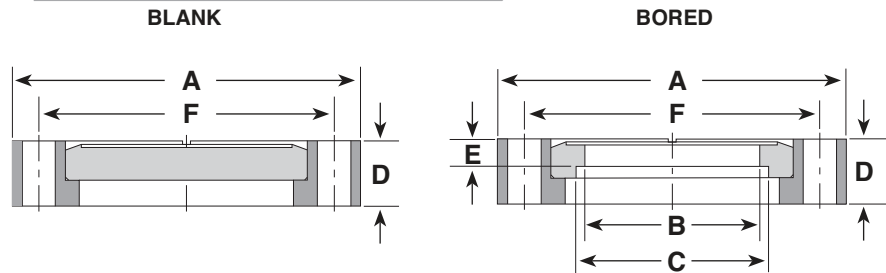
- Designed to fit standard inch tubing O.D.'s
- Self-aligning
- Internal weld
- Sexless flanges
- Rotatable flanges for easier bolt hole alignment
- Tapped and clearance bolt holes available
- Blank flanges to close unused ports or custom modify
- Interchangeable with other ConFlat® style flanges
- Adapters to other flange systems available see section 8

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 275 - Rotatable Flanges



Clearance Bolt Holes

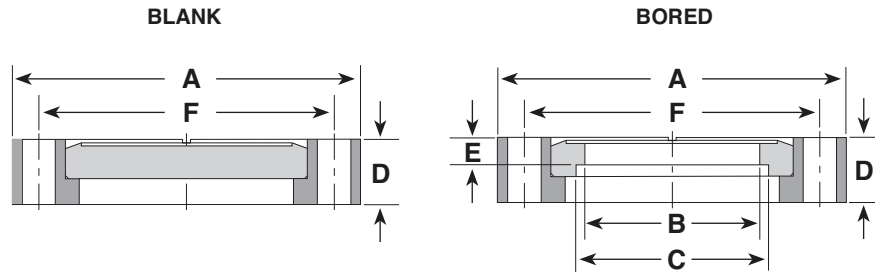
PART NUMBER	REFERENCE NUMBER	A	B	C	D	E	F	BOLT HOLES NO.	DIA/THRD
5000072	275-000-R	2.72	-	-	0.500	-	2.312	6	0.265
5000073	275-025-R	2.72	0.255	-	0.500	-	2.312	6	0.265
5000074	275-050-R	2.72	0.505	-	0.500	-	2.312	6	0.265
5000075	275-075-R	2.72	0.625	0.760	0.500	0.209	2.312	6	0.265
5000076	275-100-R	2.72	0.875	1.010	0.500	0.209	2.312	6	0.265
5000077	275-125-R	2.72	1.125	1.260	0.500	0.209	2.312	6	0.265
5000078	275-150-R	2.72	1.375	1.510	0.500	0.209	2.312	6	0.265
5000079	275-162-R	2.72	1.500	1.635	0.500	0.209	2.312	6	0.265

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CF 275 - Rotatable Flanges



Tapped Bolt Holes

PART NUMBER	REFERENCE NUMBER	A	B	C	D	E	F	BOLT HOLES NO.	DIA/THRD
5000080	275-000-R-T	2.72	-	-	0.500	-	2.312	6	1/4-28
5000081	275-025-R-T	2.72	0.255	-	0.500	-	2.312	6	1/4-28
5000082	275-050-R-T	2.72	0.505	-	0.500	-	2.312	6	1/4-28
5000083	275-075-R-T	2.72	0.625	0.760	0.500	0.209	2.312	6	1/4-28
5000084	275-100-R-T	2.72	0.875	1.010	0.500	0.209	2.312	6	1/4-28
5000085	275-125-R-T	2.72	1.125	1.260	0.500	0.209	2.312	6	1/4-28
5000086	275-150-R-T	2.72	1.375	1.510	0.500	0.209	2.312	6	1/4-28
5000087	275-162-R-T	2.72	1.500	1.635	0.500	0.209	2.312	6	1/4-28



CF 275 Flange Hardware

PART NUMBER	REFERENCE NUMBER	DESCRIPTION
0604024	275-CG	Copper Gaskets (10)
0604025	275-CG-SD	Copper Gaskets; Solid (10)
0604002	275-VG	Viton® Gaskets (5)
0605114	275-BK	(25) Bolt, Nut & Washer Kit; 1/4-28x1 1/4 in.
0605115	275-BT	(25) Bolt & Washer Kit, 1/4-28x1 in.
0605116	275-BK-12	(25) 12-point Bolt, Nut & Washer Kit; 1/4-28x1 1/4 in.
0605186	275-BK-12-S	(25) Silver Plated 12-point Bolt, Nut & Washer Kit; 1/4-28x1 1/4 in.
0605117	275-BT-12	(25) 12-point Bolt & Washer Kit; 1/4-28x7/8 in.
0605185	275-BT-12-S	(25) Silver Plated 12-point Bolt & Washer Kit; 1/4-28x7/8 in.
0605118	275-PNK	(12) Plate Nuts, (24) Bolts & Washers; 1/4-28x1 1/4 in.
0605119	275-PN	(24) Plate Nuts; 1/4-28
0605120	275-PNK-12	(12) Plate Nuts, (24) 12-point Bolts & Washers; 1/4-28x1 1/4 in.
0605249	275-PNK-12-S	(12) Plate Nuts, (24) Silver Plated 12-point Bolts & Washers; 1/4-28x1 1/4 in.
0605113	12-POINT WRENCH	Fits CF 12-point bolts
0605208	ASTL	Bolt thread lubricant eliminates galling of bolt and nut or tapped bolt hole



CF 338 - 3.375 inches O.D. UHV Flanges

Product Features:

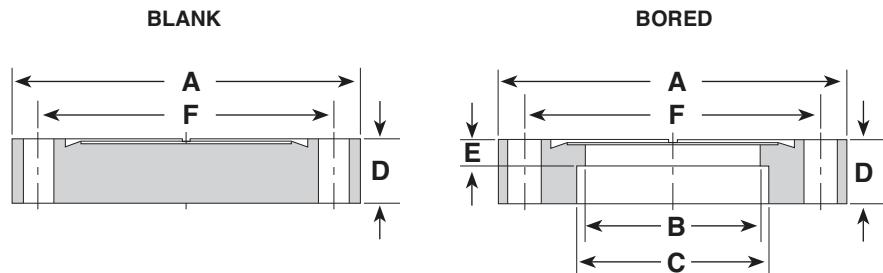
- Designed to fit standard inch tubing O.D.'s
- Self-aligning
- Internal weld
- Sexless flanges
- Rotatable flanges for easier bolt hole alignment
- Tapped and clearance bolt holes available
- Blank flanges to close unused ports or custom modify
- Interchangeable with other ConFlat® style flanges
- Adapters to other flange systems available see section 8

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 338 - Fixed Flanges



Clearance Bolt Holes

PART NUMBER	REFERENCE NUMBER	A	B	C	D	E	F	BOLT HOLES NO.	DIA/THRD
5000088	338-000	3.37	-	-	0.625	-	2.850	8	0.332
5000089	338-150	3.37	1.375	1.510	0.625	0.225	2.850	8	0.332
5000090	338-200	3.37	1.875	2.010	0.625	0.225	2.850	8	0.332

Tapped Bolt Holes

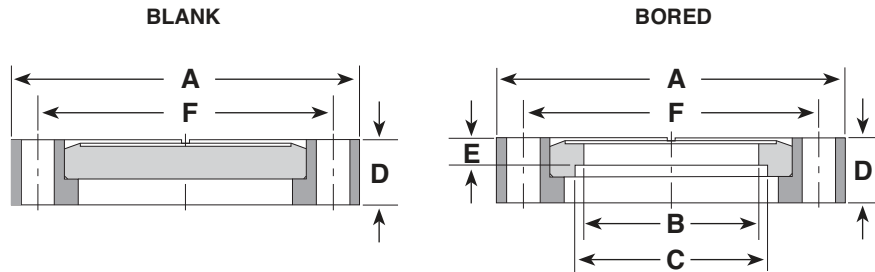
PART NUMBER	REFERENCE NUMBER	A	B	C	D	E	F	BOLT HOLES NO.	DIA/THRD
5000091	338-000-T	3.37	-	-	0.625	-	2.850	8	5/16-24
5000092	338-150-T	3.37	1.375	1.510	0.625	0.225	2.850	8	5/16-24
5000093	338-200-T	3.37	1.875	2.010	0.625	0.225	2.850	8	5/16-24

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CF 338 - Rotatable Flanges



Clearance Bolt Holes

PART NUMBER	REFERENCE NUMBER	A	B	C	D	E	F	BOLT HOLES NO.	DIA/THRD
5000094	338-000-R	3.37	-	-	0.680	-	2.850	8	0.332
5000095	338-150-R	3.37	1.375	1.510	0.680	0.225	2.850	8	0.332
5000096	338-200-R	3.37	1.875	2.010	0.680	0.225	2.850	8	0.332

Tapped Bolt Holes

PART NUMBER	REFERENCE NUMBER	A	B	C	D	E	F	BOLT HOLES NO.	DIA/THRD
5000097	338-000-R-T	3.37	-	-	0.680	-	2.850	8	5/16-24
5000098	338-150-R-T	3.37	1.375	1.510	0.680	0.225	2.850	8	5/16-24
5000099	338-200-R-T	3.37	1.875	2.010	0.680	0.225	2.850	8	5/16-24



CF 338 Flange Hardware

PART NUMBER	REFERENCE NUMBER	DESCRIPTION
0604027	338-CG	Copper Gaskets (10)
0604003	338-VG	Viton® Gasket (1)
0605121	338-BK	(25) Bolt, Nut & Washer Kit; 5/16-24x1 3/4 in.
0605122	338-BT	(25) Bolt & Washer Kit; 5/16-24x1 1/4 in.
0605123	338-BK-12	(25) 12-point Bolt, Nut & Washer Kit; 5/16-24x1 3/4 in.
0605187	338-BK-12-S	(25) Silver Plated 12-point Bolt, Nut & Washer Kit; 5/16-24x1 3/4 in.
0605124	338-BT-12	(25) 12-point Bolt & Washer Kit; 5/16-24x1 1/4 in.
0605188	338-BT-12-S	(25) Silver Plated 12-point Bolt & Washer Kit; 5/16-24x1 1/4 in.
0605125	338-PNK	(16) Plate Nuts, (32) Bolts & Washers; 5/16-24x1 3/4 in.
0605126	338-PN	(24) Plate Nuts; 5/16-24
0605127	338-PNK-12	(16) Plate Nuts, (32) 12-point Bolts & Washers; 5/16-24x1 3/4 in.
0605307	338-PNK-12-S	(16) Plate Nuts, (32) Silver Plated 12-point Bolts & Washers; 5/16-24x1 3/4 in.
0605113	12-POINT WRENCH	Fits CF 12-point bolts
0605208	ASTL	Bolt thread lubricant eliminates galling of bolt and nut or tapped bolt hole



CF 450 - 4.5 inches O.D. UHV Flanges

Product Features:

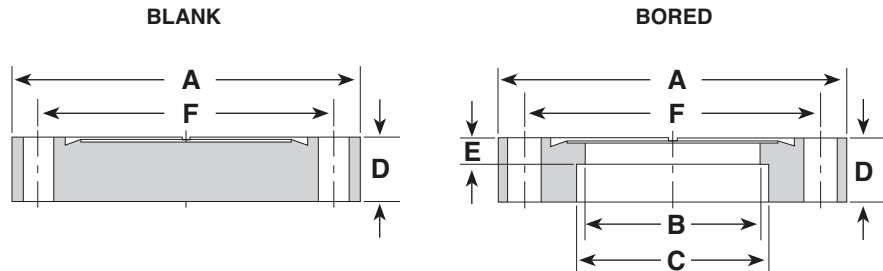
- Designed to fit standard inch tubing O.D.'s
- Self-aligning
- Internal weld
- Sexless flanges
- Rotatable flanges for easier bolt hole alignment
- Tapped and clearance bolt holes available
- Blank flanges to close unused ports or custom modify
- Interchangeable with other ConFlat® style flanges
- Adapters to other flange systems available see section 8

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 450 - Fixed Flanges



Clearance Bolt Holes

PART NUMBER	REFERENCE NUMBER	A	B	C	D	E	F	BOLT HOLES NO.	DIA/THRD
5000100	450-000	4.47	-	-	0.680	-	3.628	8	0.332
5000101	450-150	4.47	1.375	1.510	0.680	0.375	3.628	8	0.332
5000102	450-200	4.47	1.875	2.010	0.680	0.375	3.628	8	0.332
5000103	450-250	4.47	2.375	2.510	0.680	0.375	3.628	8	0.332

Tapped Bolt Holes

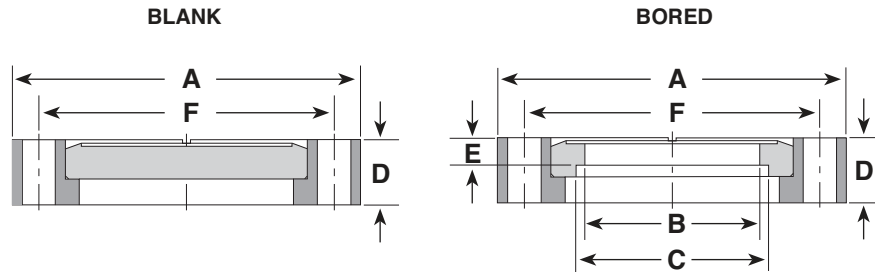
PART NUMBER	REFERENCE NUMBER	A	B	C	D	E	F	BOLT HOLES NO.	DIA/THRD
5000104	450-000-T	4.47	-	-	0.680	-	3.628	8	5/16-24
5000105	450-150-T	4.47	1.375	1.510	0.680	0.375	3.628	8	5/16-24
5000106	450-200-T	4.47	1.875	2.010	0.680	0.375	3.628	8	5/16-24
5000107	450-250-T	4.47	2.375	2.510	0.680	0.375	3.628	8	5/16-24

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CF 450 - Rotatable Flanges



Clearance Bolt Holes

PART NUMBER	REFERENCE NUMBER	A	B	C	D	E	F	BOLT HOLES NO.	DIA/THRD
5000108	450-000-R	4.47	-	-	0.750	-	3.628	8	0.332
5000109	450-150-R	4.47	1.375	1.510	0.750	0.375	3.628	8	0.332
5000110	450-200-R	4.47	1.875	2.010	0.750	0.375	3.628	8	0.332
5000111	450-250-R	4.47	2.375	2.510	0.750	0.375	3.628	8	0.332

Tapped Bolt Holes

PART NUMBER	REFERENCE NUMBER	A	B	C	D	E	F	BOLT HOLES NO.	DIA/THRD
5000112	450-000-R-T	4.47	-	-	0.750	-	3.628	8	5/16-24
5000113	450-150-R-T	4.47	1.375	1.510	0.750	0.375	3.628	8	5/16-24
5000114	450-200-R-T	4.47	1.875	2.010	0.750	0.375	3.628	8	5/16-24
5000115	450-250-R-T	4.47	2.375	2.510	0.750	0.375	3.628	8	5/16-24



CF 450 Flange Hardware

PART NUMBER	REFERENCE NUMBER	DESCRIPTION
0604029	450-CG	Copper Gaskets (10)
0604004	450-VG	Viton® Gasket (1)
0605128	450-BK	(25) Bolt, Nut & Washer Kit; 5/16-24x2 in.
0605129	450-BT	(25) Bolt & Washer Kit; 5/16-24x1 1/4 in.
0605130	450-BK-12	(25) 12-point Bolt, Nut & Washer Kit; 5/16-24x2 in.
0605190	450-BK-12-S	(25) Silver Plated 12-point Bolt, Nut & Washer Kit; 5/16-24x2 in.
0605131	450-BT-12	(25) 12-point Bolt & Washer Kit; 5/16-24x1 1/4 in.
0605189	450-BT-12-S	(25) Silver Plated 12-point Bolt & Washer Kit; 5/16-24x1 1/4 in.
0605132	450-PNK	(16) Plate Nuts, (32) Bolts & Washers; 5/16-24x2 in.
0605133	450-PN	(24) Plate Nuts; 5/16-24
0605134	450-PNK-12	(16) Plate Nuts, (32) 12-point Bolts & Washers; 5/16-24x2 in.
0605308	450-PNK-12-S	(16) Plate Nuts, (32) Silver Plated 12-point Bolts & Washers; 5/16-24x2 in.
0605113	12-POINT WRENCH	Fits CF 12-point bolts
0605208	ASTL	Bolt thread lubricant eliminates galling of bolt and nut or tapped bolt hole



CF 462 - 4.625 inches O.D. UHV Flanges

Product Features:

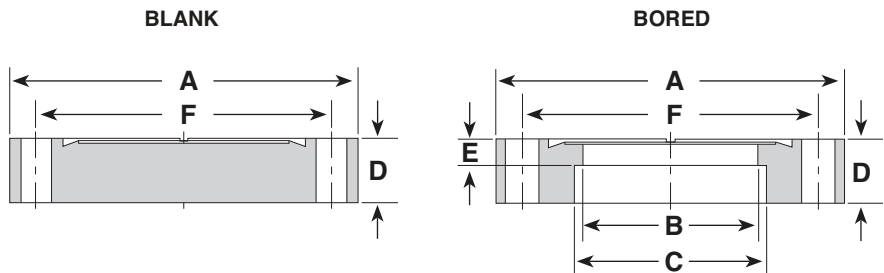
- Designed to fit standard inch tubing O.D.'s
- Self-aligning
- Internal weld
- Sexless flanges
- Rotatable flanges for easier bolt hole alignment
- Tapped and clearance bolt holes available
- Blank flanges to close unused ports or custom modify
- Interchangeable with other ConFlat® style flanges
- Adapters to other flange systems available see section 8

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 462 - Fixed Flanges



Clearance Bolt Holes

PART NUMBER	REFERENCE NUMBER	A	B	C	D	E	F	BOLT HOLES NO.	DIA/THRD
5000116	462-000	4.62	-	-	0.750	-	4.030	10	0.332
5000117	462-250	4.62	2.375	2.510	0.750	0.375	4.030	10	0.332
5000118	462-300	4.62	2.875	3.010	0.750	0.375	4.030	10	0.332

Tapped Bolt Holes

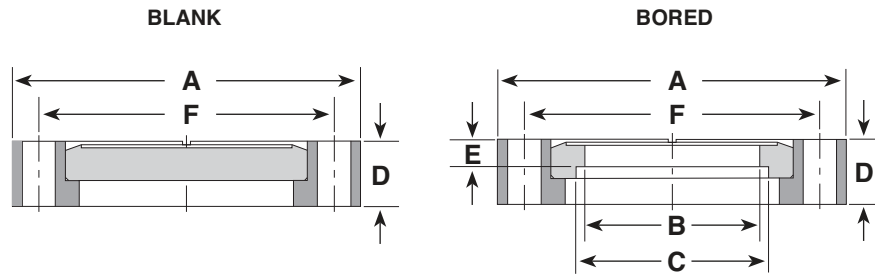
PART NUMBER	REFERENCE NUMBER	A	B	C	D	E	F	BOLT HOLES NO.	DIA/THRD
5000119	462-000-T	4.62	-	-	0.750	-	4.030	10	5/16-24
5000120	462-250-T	4.62	2.375	2.510	0.750	0.375	4.030	10	5/16-24
5000121	462-300-T	4.62	2.875	3.010	0.750	0.375	4.030	10	5/16-24

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CF 462 - Rotatable Flanges



Clearance Bolt Holes

PART NUMBER	REFERENCE NUMBER	A	B	C	D	E	F	BOLT HOLES NO.	DIA/THRD
5000122	462-000-R	4.62	-	-	0.810	-	4.030	10	0.332
5000123	462-250-R	4.62	2.375	2.510	0.810	0.375	4.030	10	0.332
5000124	462-300-R	4.62	2.875	3.010	0.810	0.375	4.030	10	0.332

Tapped Bolt Holes

PART NUMBER	REFERENCE NUMBER	A	B	C	D	E	F	BOLT HOLES NO.	DIA/THRD
5000125	462-000-R-T	4.62	-	-	0.810	-	4.030	10	5/16-24
5000126	462-250-R-T	4.62	2.375	2.510	0.810	0.375	4.030	10	5/16-24
5000127	462-300-R-T	4.62	2.875	3.010	0.810	0.375	4.030	10	5/16-24



CF 452 Flange Hardware

PART NUMBER	REFERENCE NUMBER	DESCRIPTION
0604031	462-CG	Copper Gaskets (10)
0604005	462-VG	Viton® Gasket (1)
0605135	462-BK	(25) Bolt, Nut & Washer Kit; 5/16-24x2 1/4 in.
0605136	462-BT	(25) Bolt & Washer Kit; 5/16-24x1 1/4 in.
0605137	462-BK-12	(25) 12-point Bolt, Nut & Washer Kit; 5/16-24x2 1/4 in.
0605192	462-BK-12-S	(25) Silver Plated 12-point Bolt, Nut & Washer Kit; 5/16-24x2 1/4 in.
0605138	462-BT-12	(25) 12-point Bolt & Washer Kit; 5/16-24x1 1/4 in.
0605191	462-BT-12-S	(25) Silver Plated 12-point Bolt & Washer Kit; 5/16-24x1 1/4 in.
0605139	462-PNK	(20) Plate Nuts, (40) Bolts & Washers; 5/16-24x2 1/4 in.
0605140	462-PN	(24) Plate Nuts; 5/16-24
0605141	462-PNK-12	(20) Plate Nuts, (40) 12-point Bolts & Washers; 5/16-24x2 1/4 in.
0605309	462-PNK-12-S	(20) Plate Nuts, (40) Silver Plated 12-point Bolts & Washers; 5/16-24x2 1/4 in.
0605113	12-POINT WRENCH	Fits CF 12-point bolts
0605208	ASTL	Bolt thread lubricant eliminates galling of bolt and nut or tapped bolt hole



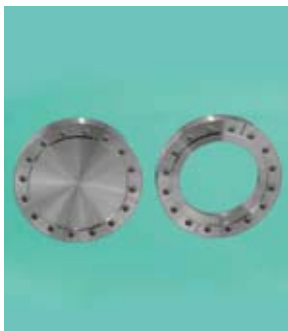
CF 600 - 6 inches O.D. UHV Flanges

Product Features:

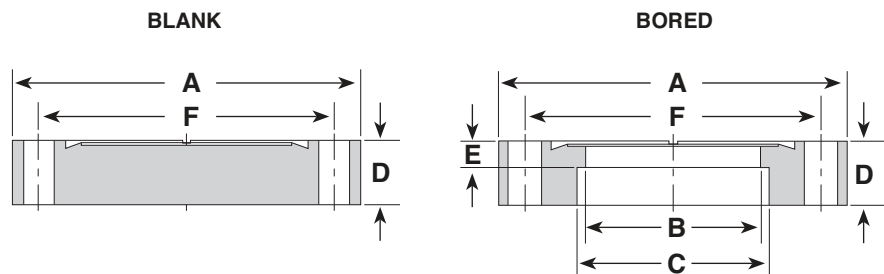
- Designed to fit standard inch tubing O.D.'s
- Self-aligning
- Internal weld
- Sexless flanges
- Rotatable flanges for easier bolt hole alignment
- Tapped and clearance bolt holes available
- Blank flanges to close unused ports or custom modify
- Interchangeable with other ConFlat® style flanges
- Adapters to other flange systems available see section 8

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 600 - Fixed Flanges



Clearance Bolt Holes

PART NUMBER	REFERENCE NUMBER	A	B	C	D	E	F	BOLT HOLES NO.	DIA/THRD
5000128	600-000	5.97	-	-	0.780	-	5.128	16	0.332
5000129	600-400	5.97	3.875	4.010	0.780	0.437	5.128	16	0.332

Tapped Bolt Holes

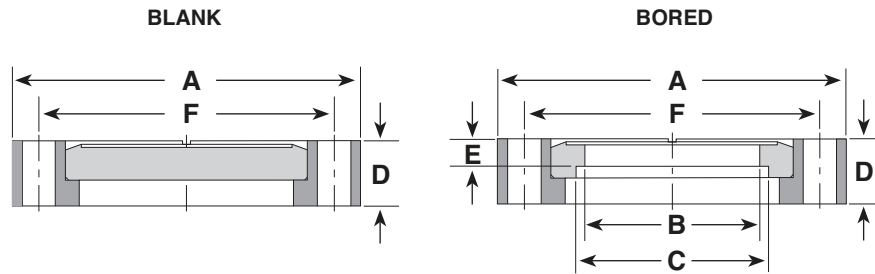
PART NUMBER	REFERENCE NUMBER	A	B	C	D	E	F	BOLT HOLES NO.	DIA/THRD
5000130	600-000-T	5.97	-	-	0.780	-	5.128	16	5/16-24
5000131	600-400-T	5.97	3.810	4.010	0.780	0.437	5.128	16	5/16-24

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CF 600 - Rotatable Flanges



Clearance Bolt Holes

PART NUMBER	REFERENCE NUMBER	A	B	C	D	E	F	BOLT HOLES NO.	DIA/THRD
5000132	600-000-R	5.97	-	-	0.840	-	5.128	16	0.332
5000133	600-400-R	5.97	3.810	4.010	0.840	0.437	5.128	16	0.332

Tapped Bolt Holes

PART NUMBER	REFERENCE NUMBER	A	B	C	D	E	F	BOLT HOLES NO.	DIA/THRD
5000134	600-000-R-T	5.97	-	-	0.840	-	5.128	16	5/16-24
5000135	600-400-R-T	5.97	3.810	4.010	0.840	0.437	5.128	16	5/16-24



CF 600 Flange Hardware

PART NUMBER	REFERENCE NUMBER	DESCRIPTION
0604033	600-CG	Copper Gaskets (10)
0604006	600-VG	Viton® Gasket (1)
0605142	600-BK	(25) Bolt, Nut & Washer Kit; 5/16-24x2 1/4 in.
0605144	600-BT	(25) Bolt & Washer Kit; 5/16-24x1 1/4 in.
0605145	600-BK-12	(25) 12-point Bolt, Nut & Washer Kit; 5/16-24x2 1/4 in.
0605194	600-BK-12-S	(25) Silver Plated 12-point Bolt, Nut & Washer Kit; 5/16-24x2 1/4 in.
0605147	600-BT-12	(25) 12-point Bolt & Washer Kit; 5/16-24x1 1/4 in.
0605193	600-BT-12-S	(25) Silver Plated 12-point Bolt & Washer Kit; 5/16-24x1 1/4 in.
0605148	600-PNK	(16) Plate Nuts, (32) Bolts & Washers; 5/16-24x2 1/4 in.
0605152	600-PN	(24) Plate Nuts; 5/16-24
0605150	600-PNK-12	(16) Plate Nuts, (32) 12-point Bolts & Washers; 5/16-24x2 1/4 in.
0605265	600-PNK-12-S	(16) Plate Nuts, (32) Silver Plated 12-point Bolts & Washers; 5/16-24x2 1/4 in.
0605113	12-POINT WRENCH	Fits CF 12-point bolts
0605208	ASTL	Bolt thread lubricant eliminates galling of bolt and nut or tapped bolt hole



CF 675 - 6.75 inches O.D. UHV Flanges

Product Features:

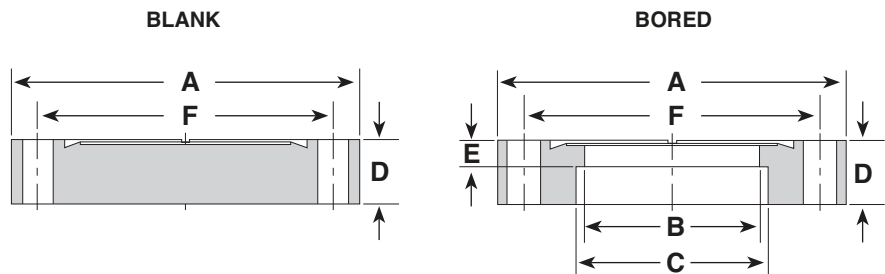
- Designed to fit standard inch tubing O.D.'s
- Self-aligning
- Internal weld
- Sexless flanges
- Rotatable flanges for easier bolt hole alignment
- Tapped and clearance bolt holes available
- Blank flanges to close unused ports or custom modify
- Interchangeable with other ConFlat® style flanges
- Adapters to other flange systems available see section 8

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 675 - Fixed Flanges



Clearance Bolt Holes

PART NUMBER	REFERENCE NUMBER	A	B	C	D	E	F	BOLT HOLES NO. DIA/THRD	
5000136	675-000	6.75	-	-	0.840	-	5.969	18	0.332
5000137	675-400	6.75	3.875	4.010	0.840	0.460	5.969	18	0.332
5000138	675-500	6.75	4.875	5.010	0.840	0.460	5.969	18	0.332

Tapped Bolt Holes

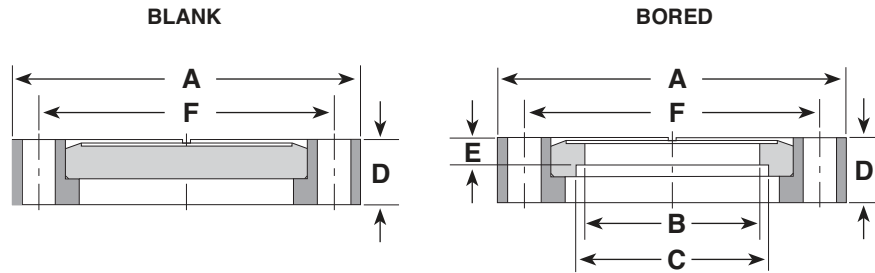
PART NUMBER	REFERENCE NUMBER	A	B	C	D	E	F	BOLT HOLES NO. DIA/THRD	
5000139	675-000-T	6.75	-	-	0.840	-	5.969	18	5/16-24
5000140	675-400-T	6.75	3.875	4.010	0.840	0.460	5.969	18	5/16-24
5000141	675-500-T	6.75	4.875	5.010	0.840	0.460	5.969	18	5/16-24

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CF 675 - Rotatable Flanges



Clearance Bolt Holes

PART NUMBER	REFERENCE NUMBER	A	B	C	D	E	F	BOLT HOLES NO.	DIA/THRD
5000142	675-000-R	6.75	-	-	0.840	-	5.969	18	0.332
5000143	675-400-R	6.75	3.875	4.010	0.840	0.460	5.969	18	0.332
5000144	675-500-R	6.75	4.875	5.010	0.840	0.460	5.969	18	0.332

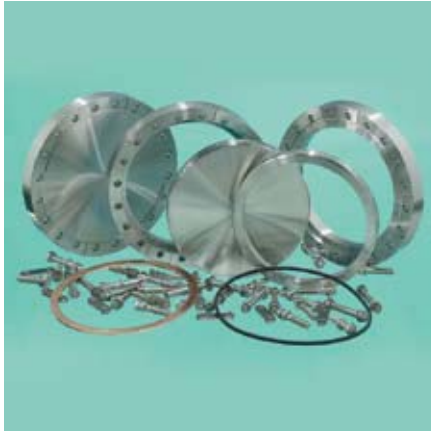
Tapped Bolt Holes

PART NUMBER	REFERENCE NUMBER	A	B	C	D	E	F	BOLT HOLES NO.	DIA/THRD
5000145	675-000-R-T	6.75	-	-	0.840	-	5.969	18	5/16-24
5000146	675-400-R-T	6.75	3.875	4.010	0.840	0.460	5.969	18	5/16-24
5000147	675-500-R-T	6.75	4.875	5.010	0.840	0.460	5.969	18	5/16-24



CF 675 Flange Hardware

PART NUMBER	REFERENCE NUMBER	DESCRIPTION
0604033	675-CG	Copper Gaskets (10)
0604006	675-VG	Viton® Gasket (1)
0605142	675-BK	(25) Bolt, Nut & Washer Kit; 5/16-24x2 1/4 in.
0605144	675-BT	(25) Bolt & Washer Kit; 5/16-24x1 1/4 in.
0605145	675-BK-12	(25) 12-point Bolt, Nut & Washer Kit; 5/16-24x2 1/4 in.
0605194	675-BK-12-S	(25) Silver Plated 12-point Bolt, Nut & Washer Kit; 5/16-24x2 1/4 in.
0605147	675-BT-12	(25) 12-point Bolt & Washer Kit; 5/16-24x1 1/4 in.
0605193	675-BT-12-S	(25) Silver Plated 12-point Bolt & Washer Kit; 5/16-24x1 1/4 in.
0605113	12-POINT WRENCH	Fits CF 12-point bolts
0605208	ASTL	Bolt thread lubricant eliminates galling of bolt and nut or tapped bolt hole



CF 800 - 8 inches O.D. UHV Flanges

Product Features:

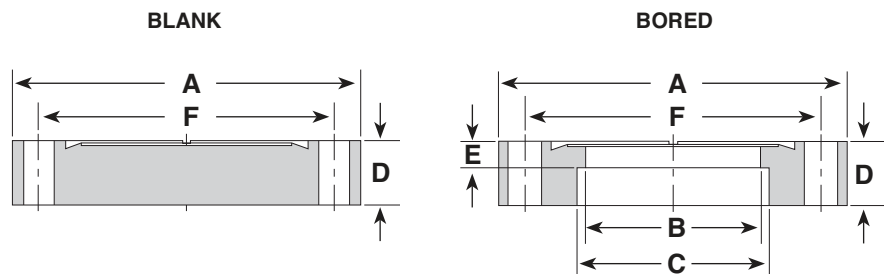
- Designed to fit standard inch tubing O.D.'s
- Self-aligning
- Internal weld
- Sexless flanges
- Rotatable flanges for easier bolt hole alignment
- Tapped and clearance bolt holes available
- Blank flanges to close unused ports or custom modify
- Interchangeable with other ConFlat® style flanges
- Adapters to other flange systems available see section 8

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.a



CF 800 - Fixed Flanges



Clearance Bolt Holes

PART NUMBER	REFERENCE NUMBER	A	B	C	D	E	F	BOLT HOLES NO.	DIA/THRD
5000148	800-000	7.97	-	-	0.880	-	7.128	20	0.332
5000149	800-600	7.97	5.835	6.020	0.880	0.500	7.128	20	0.332

Tapped Bolt Holes

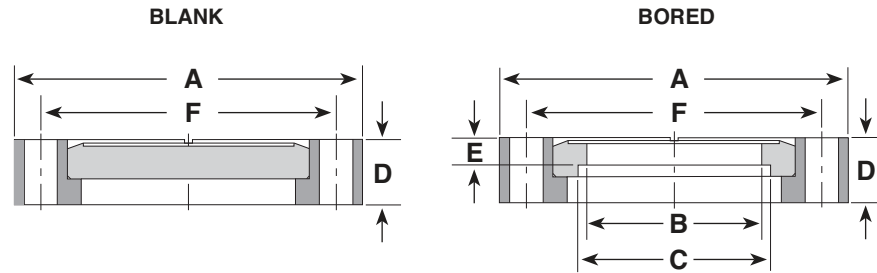
PART NUMBER	REFERENCE NUMBER	A	B	C	D	E	F	BOLT HOLES NO.	DIA/THRD
5000150	800-000-T	7.97	-	-	0.880	-	7.128	20	5/16-24
5000151	800-600-T	7.97	5.835	6.020	0.880	0.500	7.128	20	5/16-24

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CF 800 - Rotatable Flanges



Clearance Bolt Holes

PART NUMBER	REFERENCE NUMBER	A	B	C	D	E	F	BOLT HOLES NO.	DIA/THRD
5000152	800-000-R	7.97	-	-	0.940	-	7.128	20	0.332
5000153	800-600-R	7.97	5.835	6.020	0.940	0.500	7.128	20	0.332

Tapped Bolt Holes

PART NUMBER	REFERENCE NUMBER	A	B	C	D	E	F	BOLT HOLES NO.	DIA/THRD
5000154	800-000-R-T	7.97	-	-	0.940	-	7.128	20	5/16-24
5000155	800-600-R-T	7.97	5.835	6.020	0.940	0.500	7.128	20	5/16-24



CF 800 Flange Hardware

PART NUMBER	REFERENCE NUMBER	DESCRIPTION
0604037	800-CG	Copper Gaskets (10)
0604008	800-VG	Viton® Gasket (1)
0605157	800-BK	(25) Bolt, Nut & Washer Kit; 5/16-24x2 1/4 in.
0605158	800-BT	(25) Bolt & Washer Kit; 5/16-24x1 3/4 in.
0605159	800-BK-12	(25) 12-point Bolt, Nut & Washer Kit; 5/16-24x2 1/4 in.
0605198	800-BK-12-S	(25) Silver Plated 12-point Bolt, Nut & Washer Kit; 5/16-24x2 1/4 in.
0605160	800-BT-12	(25) 12-point Bolt & Washer Kit; 5/16-24x1 3/4 in.
0605197	800-BT-12-S	(25) Silver Plated 12-point Bolt & Washer Kit; 5/16-24x1 3/4 in.
0605161	800-PNK	(20) Plate Nuts, (40) Bolts & Washers; 5/16-24x2 1/4 in.
0605162	800-PN	(24) Plate Nuts; 5/16-24
0605163	800-PNK-12	(20) Plate Nuts, (40) 12-point Bolts & Washers; 5/16-24x2 1/4 in.
0605270	800-PNK-12-S	(20) Plate Nuts, (40) Silver Plated 12-point Bolts & Washers; 5/16-24x2 1/4 in.
0605113	12-POINT WRENCH	Fits CF 12-point bolts
0605208	ASTL	Bolt thread lubricant eliminates galling of bolt and nut or tapped bolt hole



CF 1000 - 10 inches O.D. UHV Flanges

Product Features:

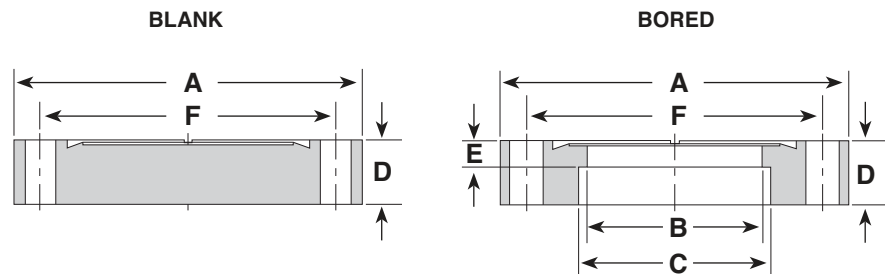
- Designed to fit standard inch tubing O.D.'s
- Self-aligning
- Internal weld
- Sexless flanges
- Rotatable flanges for easier bolt hole alignment
- Tapped and clearance bolt holes available
- Blank flanges to close unused ports or custom modify
- Interchangeable with other ConFlat® style flanges
- Adapters to other flange systems available see section 8

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 1000 - Fixed Flanges



Clearance Bolt Holes

PART NUMBER	REFERENCE NUMBER	A	B	C	D	E	F	BOLT HOLES NO.	DIA/THRD
5000156	1000-000	9.97	-	-	0.970	-	9.128	24	0.332
5000157	1000-800	9.97	7.834	8.020	0.970	0.500	9.128	24	0.332

Tapped Bolt Holes

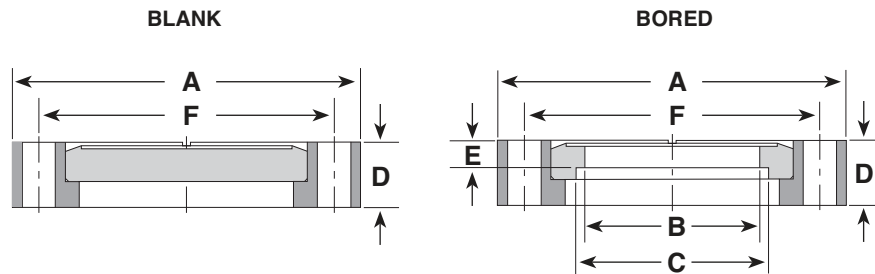
PART NUMBER	REFERENCE NUMBER	A	B	C	D	E	F	BOLT HOLES NO.	DIA/THRD
5000158	1000-000-T	9.97	-	-	0.970	-	9.128	24	5/16-24
5000159	1000-800-T	9.97	7.834	8.020	0.970	0.500	9.128	24	5/16-24

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CF 1000 - Rotatable Flanges



Clearance Bolt Holes

PART NUMBER	REFERENCE NUMBER	A	B	C	D	E	F	BOLT HOLES NO.	DIA/THRD
5000160	1000-000-R	9.97	-	-	0.970	-	9.128	24	0.332
5000161	1000-800-R	9.97	7.834	8.020	0.970	0.500	9.128	24	0.332

Tapped Bolt Holes

PART NUMBER	REFERENCE NUMBER	A	B	C	D	E	F	BOLT HOLES NO.	DIA/THRD
5000162	1000-000-R-T	9.97	-	-	0.970	-	9.128	24	5/16-24
5000163	1000-800-R-T	9.97	7.834	8.020	0.970	0.500	9.128	24	5/16-24



CF 1000 Flange Hardware

PART NUMBER	REFERENCE NUMBER	DESCRIPTION
0604039	1000-CG	Copper Gaskets (10)
0604009	1000-VG	Viton® Gasket (1)
0605164	1000-BK	(25) Bolt, Nut & Washer Kit; 5/16-24x2 1/2 in.
0605165	1000-BT	(25) Bolt & Washer Kit; 5/16-24x1 3/4 in.
0605166	1000-BK-12	(25) 12-point Bolt, Nut & Washer Kit; 5/16-24x2 1/2 in.
0605200	1000-BK-12-S	(25) Silver Plated 12-point Bolt, Nut & Washer Kit; 5/16-24x2 1/2 in.
0605167	1000-BT-12	(25) 12-point Bolt & Washer Kit; 5/16-24x1 3/4 in.
0605199	1000-BT-12-S	(25) Silver Plated 12-point Bolt & Washer Kit; 5/16-24x1 3/4 in.
0605168	1000-PNK	(24) Plate Nuts, (48) Bolts & Washers; 5/16-24x2 1/2 in.
0605169	1000-PN	(24) Plate Nuts; 5/16-24
0605170	1000-PNK-12	(24) Plate Nuts, (48) 12-point Bolts & Washers; 5/16-24x2 1/2 in.
0605310	1000-PNK-12-S	(24) Plate Nuts, (48) Silver Plated 12-point Bolts & Washers; 5/16-24x2 1/2 in.
0605113	12-POINT WRENCH	Fits CF 12-point bolts
0605208	ASTL	Bolt thread lubricant eliminates galling of bolt and nut or tapped bolt hole



CF 1200 - 12 inches O.D. UHV Flanges

Product Features:

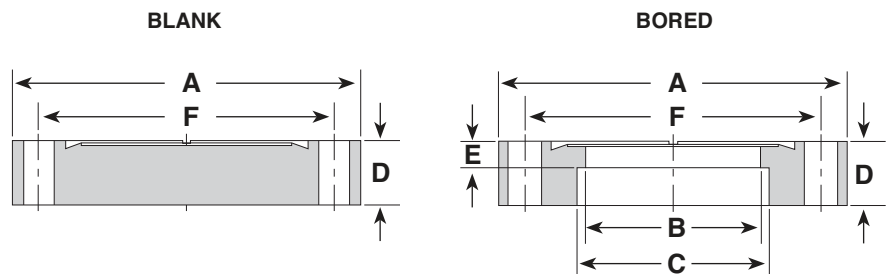
- Designed to fit standard inch tubing O.D.'s
- Self-aligning
- Internal weld
- Sexless flanges
- Rotatable flanges for easier bolt hole alignment
- Tapped and clearance bolt holes available
- Blank flanges to close unused ports or custom modify
- Interchangeable with other ConFlat® style flanges
- Adapters to other flange systems available see section 8

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 1200 - Fixed Flanges



Clearance Bolt Holes

PART NUMBER	REFERENCE NUMBER	A	B	C	D	E	F	BOLT HOLES NO.	DIA/THRD
5000164	1200-000	11.97	-	-	1.120	-	11.181	32	0.332
5000165	1200-1000	11.97	9.750	10.030	1.120	0.500	11.181	32	0.332

Tapped Bolt Holes

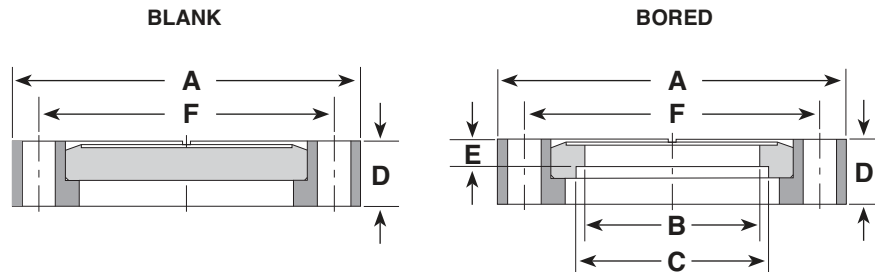
PART NUMBER	REFERENCE NUMBER	A	B	C	D	E	F	BOLT HOLES NO.	DIA/THRD
5000166	1200-000-T	11.97	-	-	1.120	-	11.181	32	5/16-24
5000167	1200-1000-T	11.97	9.750	10.030	1.120	0.500	11.181	32	5/16-24

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CF 1200 - Rotatable Flanges



Clearance Bolt Holes

PART NUMBER	REFERENCE NUMBER	A	B	C	D	E	F	BOLT HOLES NO.	DIA/THRD
5000168	1200-000-R	11.97	-	-	1.120	-	11.181	32	0.332
5000169	1200-1000-R	11.97	9.750	10.030	1.120	0.500	11.181	32	0.332

Tapped Bolt Holes

PART NUMBER	REFERENCE NUMBER	A	B	C	D	E	F	BOLT HOLES NO.	DIA/THRD
5000170	1200-000-R-T	11.97	-	-	1.120	-	11.181	32	5/16-24
5000171	1200-1000-R-T	11.97	9.750	10.030	1.120	0.500	11.181	32	5/16-24



CF 1200 Flange Hardware

PART NUMBER	REFERENCE NUMBER	DESCRIPTION
0604041	1200-CG	Copper Gaskets (1)
0604010	1200-VG	Viton® Gasket (1)
0605171	1200-BK	(32) Bolt, Nut & Washer Kit; 5/16-24x3 in.
0605172	1200-BT	(32) Bolt & Washer Kit; 5/16-24x1 3/4 in.
0605305	1200-BK-12	(32) 12-point Bolt, Nut & Washer Kit; 5/16-24x3 in.
0605306	1200-BK-12-S	(32) Silver Plated 12-point Bolt, Nut & Washer Kit; 5/16-24x2 3/4 in.
0605312	1200-BT-12	(32) 12-point Bolt & Washer Kit; 5/16-24x1 3/4 in.
0605202	1200-BT-12-S	(32) Silver Plated 12-point Bolt & Washer Kit; 5/16-24x1 3/4 in.
0605208	ASTL	Bolt thread lubricant eliminates galling of bolt and nut or tapped bolt hole



CF 1325 - 13.25 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 see section 8

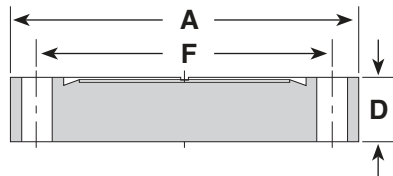
Product Specifications:

- 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.

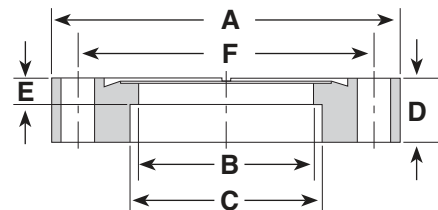


CF 1325 - Fixed Flanges

BLANK



BORED



Clearance Bolt Holes

PART NUMBER	REFERENCE NUMBER	A	B	C	D	E	F	BOLT HOLES NO. DIA/THRD	
5000172	1325-000	13.25	-	-	1.120	-	12.060	30	0.390
5000173	1325-1000	13.25	9.750	10.020	1.120	0.500	12.060	30	0.390
5000174	1325-1075	13.25	10.500	10.765	1.120	0.500	12.060	30	0.390

Tapped Bolt Holes

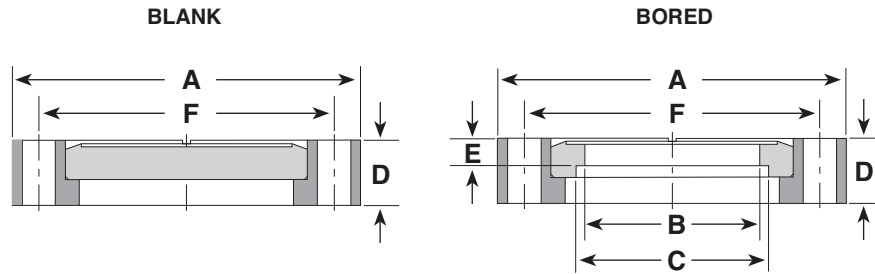
PART NUMBER	REFERENCE NUMBER	A	B	C	D	E	F	BOLT HOLES NO. DIA/THRD	
5000175	1325-000-T	13.25	-	-	1.120	-	12.060	30	3/8-24
5000176	1325-1000-T	13.25	9.750	10.020	1.120	0.500	12.060	30	3/8-24
5000177	1325-1075-T	13.25	10.500	10.765	1.120	0.500	12.060	30	3/8-24

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CF 1325 - Rotatable Flanges



Clearance Bolt Holes

PART NUMBER	REFERENCE NUMBER	A	B	C	D	E	F	BOLT HOLES NO. DIA/THRD	
5000178	1325-000-R	13.25	-	-	1.120	-	12.060	30	0.390
5000179	1325-1000-R	13.25	9.750	10.020	1.120	0.500	12.060	30	0.390
5000180	1325-1075-R	13.25	10.500	10.765	1.120	0.500	12.060	30	0.390

Tapped Bolt Holes

PART NUMBER	REFERENCE NUMBER	A	B	C	D	E	F	BOLT HOLES NO. DIA/THRD	
5000181	1325-000-R-T	13.25	-	-	1.120	-	12.060	30	3/8-24
5000182	1325-1000-R-T	13.25	9.750	10.020	1.120	0.500	12.060	30	3/8-24
5000183	1325-1075-R-T	13.25	10.500	10.765	1.120	0.500	12.060	30	3/8-24



CF 1325 Flange Hardware

PART NUMBER	REFERENCE NUMBER	DESCRIPTION
0604043	1325-CG	Copper Gaskets (1)
0604011	1325-VG	Viton® Gasket (1)
0605173	1325-BK	(30) Bolt, Nut & Washer Kit; 3/8-24x3 in.
0605174	1325-BT	(30) Bolt & Washer Kit; 3/8-24x2 in.
0605204	1325-BK-S	(30) Silver Plated Bolt, Nut & Washer Kit; 3/8-24x3 in.
0605203	1325-BT-S	(30) Silver Plated Bolt & Washer Kit; 3/8-24x2 in.
0605208	ASTL	Bolt thread lubricant eliminates galling of bolt and nut or tapped bolt hole



CF 1400 - 14 inches O.D. UHV Flanges

Product Features:

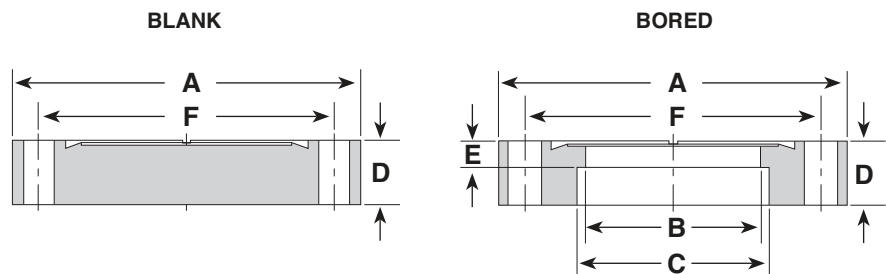
- Designed to fit standard inch tubing O.D.'s
- Self-aligning
- Internal weld
- Sexless flanges
- Rotatable flanges for easier bolt hole alignment
- Tapped and clearance bolt holes available
- Blank flanges to close unused ports or custom modify
- Interchangeable with other ConFlat® style flanges
- Adapters to other flange systems available see section 8

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 1400 - Fixed Flanges



Clearance Bolt Holes

PART NUMBER	REFERENCE NUMBER	A	B	C	D	E	F	BOLT HOLES NO.	DIA/THRD
5000184	1400-000	14.00	-	-	1.120	-	12.810	30	0.390
5000185	1400-1200	14.00	11.750	12.020	1.120	0.500	12.810	30	0.390

Tapped Bolt Holes

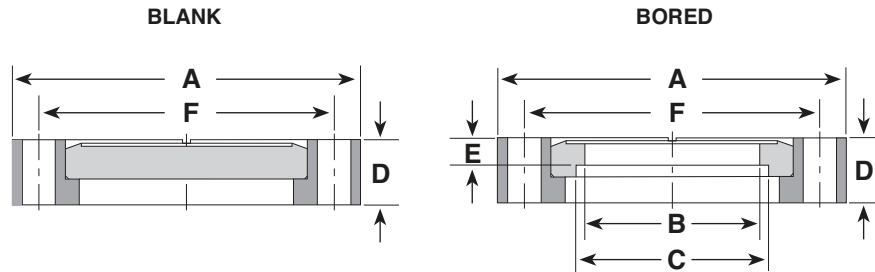
PART NUMBER	REFERENCE NUMBER	A	B	C	D	E	F	BOLT HOLES NO.	DIA/THRD
5000186	1400-000-T	14.00	-	-	1.120	-	12.810	30	3/8-24
5000187	1400-1200-T	14.00	11.750	12.020	1.120	0.500	12.810	30	3/8-24

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CF 1400 - Rotatable Flanges



Clearance Bolt Holes

PART NUMBER	REFERENCE NUMBER	A	B	C	D	E	F	BOLT HOLES NO. DIA/THRD	
5000188	1400-000-R	14.00	-	-	1.120	-	12.810	30	0.390
5000189	1400-1200-R	14.00	11.750	12.020	1.120	0.500	12.810	30	0.390

Tapped Bolt Holes

PART NUMBER	REFERENCE NUMBER	A	B	C	D	E	F	BOLT HOLES NO. DIA/THRD	
5000190	1400-000-R-T	14.00	-	-	1.120	-	12.810	30	3/8-24
5000191	1400-1200-R-T	14.00	11.750	12.020	1.120	0.500	12.810	30	3/8-24



CF 1400 Flange Hardware

PART NUMBER	REFERENCE NUMBER	DESCRIPTION
0604045	1400-CG	Copper Gaskets (1)
0604012	1400-VG	Viton® Gasket (1)
0605175	1400-BK	(30) Bolt, Nut & Washer Kit; 3/8-24x3 in.
0605176	1400-BT	(30) Bolt & Washer Kit; 3/8-24x2 in.
0605206	1400-BK-S	(30) Silver Plated Bolt, Nut & Washer Kit; 3/8-24x3 in.
0605205	1400-BT-S	(30) Silver Plated Bolt & Washer Kit; 3/8-24x2 in.
0605208	ASTL	Bolt thread lubricant eliminates galling of bolt and nut or tapped bolt hole



CF 1450 - 14.5 inches O.D. UHV Flanges

Product Features:

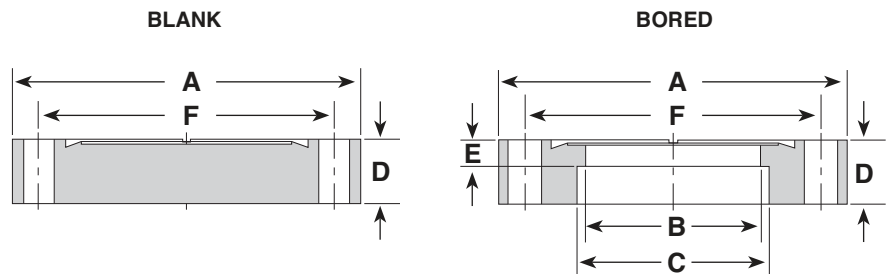
- Designed to fit standard inch tubing O.D.'s
- Self-aligning
- Internal weld
- Sexless flanges
- Rotatable flanges for easier bolt hole alignment
- Tapped and clearance bolt holes available
- Blank flanges to close unused ports or custom modify
- Interchangeable with other ConFlat® style flanges
- Adapters to other flange systems available see section 8

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 1450 - Fixed Flanges



Clearance Bolt Holes

PART NUMBER	REFERENCE NUMBER	A	B	C	D	E	F	BOLT HOLES NO.	DIA/THRD
5000192	1450-000	14.50	-	-	1.120	-	13.310	32	0.390
5000193	1450-1200	14.50	11.750	12.030	1.120	0.500	13.310	32	0.390

Tapped Bolt Holes

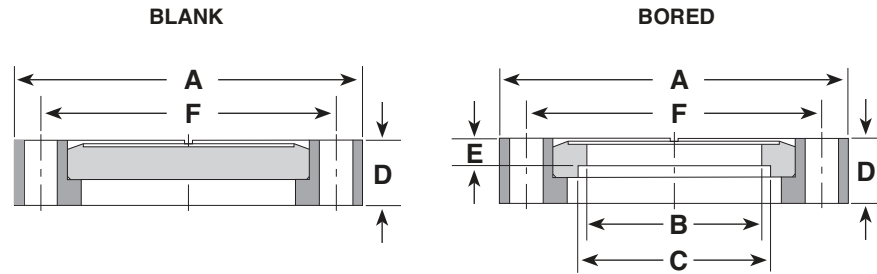
PART NUMBER	REFERENCE NUMBER	A	B	C	D	E	F	BOLT HOLES NO.	DIA/THRD
5000194	1450-000-T	14.50	-	-	1.120	-	13.310	32	3/8-24
5000195	1450-1200-T	14.50	11.750	12.030	1.120	0.500	13.310	32	3/8-24

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CF 1450 - Rotatable Flanges



Clearance Bolt Holes

PART NUMBER	REFERENCE NUMBER	A	B	C	D	E	F	BOLT HOLES NO.	DIA/THRD
5000196	1450-000-R	14.50	-	-	1.120	-	13.310	32	0.390
5000197	1450-1200-R	14.50	11.750	12.030	1.120	0.500	13.310	32	0.390

Tapped Bolt Holes

PART NUMBER	REFERENCE NUMBER	A	B	C	D	E	F	BOLT HOLES NO.	DIA/THRD
5000198	1450-000-R-T	14.50	-	-	1.120	-	13.310	32	3/8-24
5000199	1450-1200-R-T	14.50	11.750	12.030	1.120	0.500	13.310	32	3/8-24



CF 1450 Flange Hardware

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



CF 1650 - 16.5 inches O.D. UHV Flanges

Product Features:

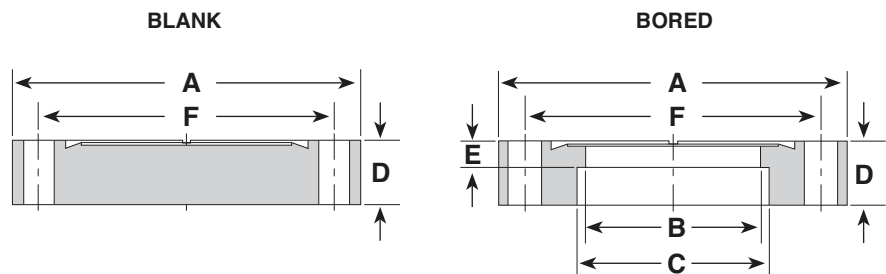
- Designed to fit standard inch tubing O.D.'s
- Self-aligning
- Internal weld
- Sexless flanges
- Rotatable flanges for easier bolt hole alignment
- Tapped and clearance bolt holes available
- Blank flanges to close unused ports or custom modify
- Interchangeable with other ConFlat® style flanges
- Adapters to other flange systems available see section 8

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 1650 - Fixed Flanges



Clearance Bolt Holes

PART NUMBER	REFERENCE NUMBER	A	B	C	D	E	F	BOLT HOLES NO.	DIA/THRD
5000200	1650-000	16.50	-	-	1.120	-	15.310	36	0.390
5000201	1650-1400	16.50	13.750	14.020	1.120	0.500	15.310	36	0.390

Tapped Bolt Holes

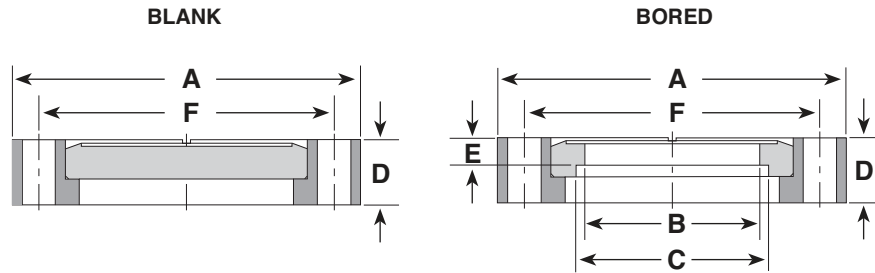
PART NUMBER	REFERENCE NUMBER	A	B	C	D	E	F	BOLT HOLES NO.	DIA/THRD
5000202	1650-000-T	16.50	-	-	1.120	-	15.310	36	3/8-24
5000203	1650-1400-T	16.50	13.750	14.020	1.120	0.500	15.310	36	3/8-24

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CF 1650 - Rotatable Flanges



Clearance Bolt Holes

PART NUMBER	REFERENCE NUMBER	A	B	C	D	E	F	BOLT HOLES NO.	DIA/THRD
5000204	1650-000-R	16.50	-	-	1.120	-	15.310	36	0.390
5000205	1650-1400-R	16.50	13.750	14.020	1.120	0.500	15.310	36	0.390

Tapped Bolt Holes

PART NUMBER	REFERENCE NUMBER	A	B	C	D	E	F	BOLT HOLES NO.	DIA/THRD
5000206	1650-000-R-T	16.50	-	-	1.120	-	15.310	36	3/8-24
5000207	1650-1400-R-T	16.50	13.750	14.020	1.120	0.500	15.310	36	3/8-24



CF 1650 Flange Hardware

PART NUMBER	REFERENCE NUMBER	DESCRIPTION
0604049	1650-CG	Copper Gaskets (1)
0604014	1650-VG	Viton® Gasket (1)
0605179	1650-BK	(36) Bolt, Nut & Washer Kit; 3/8-24x3 in.
0605180	1650-BT	(36) Bolt & Washer Kit; 3/8-24x2 in.
0605304	1650-BK-S	(36) Silver Plated Bolt, Nut & Washer Kit; 3/8-24x3 in.
0605207	1650-BT-S	(36) Silver Plated Bolt & Washer Kit; 3/8-24x2 in.
0605208	ASTL	Bolt thread lubricant eliminates galling of bolt and nut or tapped bolt hole



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 number

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 grade stainless steel others available on request

*ORDERING NOTE

Wire seal flange bolt fasteners can be found on pg. 4.15.
Wire seal gaskets can be found on pg. 4.21

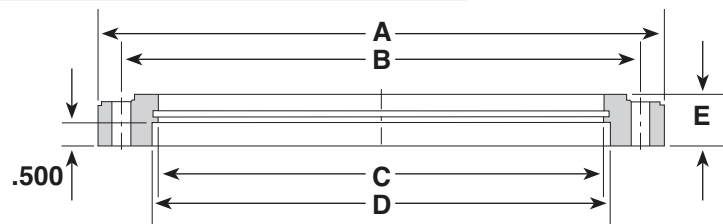


For More Info...

Detailed information about the wire seal flange system is available on pg. 4.7



Wire Sealed, Bored Male Flanges



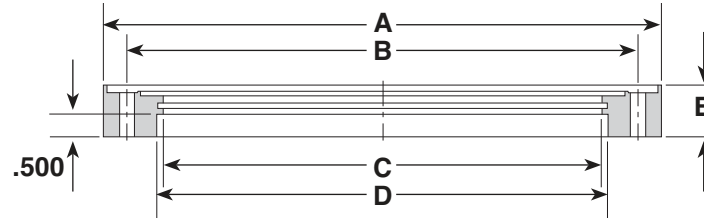
PART NUMBER	REFERENCE NUMBER	FLANGE OD	TUBE OD	A	B	C	D	E	F	G	BOLT HOLES
5500004	WF1200-1000-M	12 3/8	10.00	12.375	11.343	9.75	10.00	1.125	0.50	-	24
5500010	WF1400-1200-M	14 5/8	12.00	14.625	13.593	11.75	12.00	1.125	0.50	-	32
5500016	WF1700-1400-M	17 1/4	14.00	17.250	15.718	13.75	14.00	1.125	0.50	-	36
5500036	WF1900-1600-M	19 9/16	16.00	19.562	17.875	15.75	16.00	1.312	0.50	-	36
5500028	WF2200-1800-M	22 1/8	18.00	22.125	20.187	17.75	18.00	1.500	0.50	-	36
5500034	WF2700-2400-M	27 1/8	24.00	27.125	25.843	23.75	24.00	1.750	0.63	-	40

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Wire Sealed, Bored Female Flanges



PART NUMBER	REFERENCE NUMBER	FLANGE OD	TUBE OD	A	B	C	D	E	F	G	BOLT HOLES
5500005	WF1200-1000-F	12 3/8	10.00	12.375	11.343	9.75	10.00	1.125	0.50	-	24
5500011	WF1400-1200-F	14 5/8	12.00	14.625	13.593	11.75	12.00	1.125	0.50	-	32
5500017	WF1700-1400-F	17 1/4	14.00	17.250	15.718	13.75	14.00	1.125	0.50	-	36
5500023	WF1900-1600-F	19 9/16	16.00	19.562	17.875	15.75	16.00	1.312	0.50	-	36
5500029	WF2200-1800-F	22 1/8	18.00	22.125	20.187	17.75	18.00	1.500	0.50	-	36
5500035	WF2700-2400-F	27 1/8	24.00	27.125	25.843	23.75	24.00	1.750	0.63	-	40



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 number

Product Specifications:

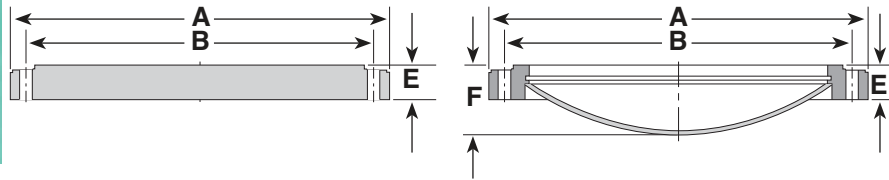
- Sizes: outer diameter 12 3/8 inches up to 27 1/8 inches (for tubing diameter 10 inches up to 24 inches)
- Pressure range: UHV (approx. 1×10^{-13} Torr)
- Temperature range: -200°C up to 450°C
- Standard materials: 304L grade stainless steel others available on request



Wire Sealed, Blank Male Flanges

STANDARD

DISHHEAD



*ORDERING NOTE

Wire seal flange bolt fasteners can be found on pg. 4.15.
Wire seal gaskets can be found on pg. 4.21.

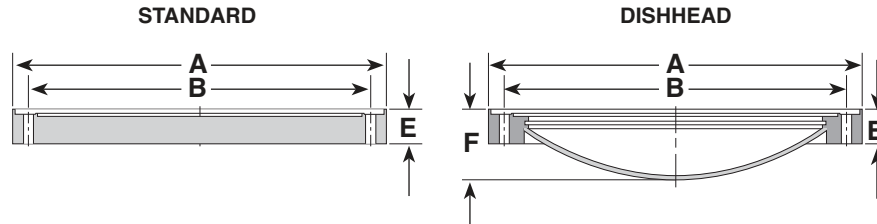
PART NUMBER	REFERENCE NUMBER	FIGURE	FLANGE OD	TUBE OD	A	B	E	F	BOLT HOLES
5500000	WF1200-000-M	1	12 3/8	10.00	12.375	11.343	1.125	-	24
5500001	WF1200-000-M-D	2	12 3/8	10.00	12.375	11.343	1.125	2.33	24
5500006	WF1400-000-M	1	14 5/8	12.00	14.625	13.593	1.125	-	32
5500007	WF1400-000-M-D	2	14 5/8	12.00	14.625	13.593	1.125	2.33	32
5500012	WF1700-000-M	1	17 1/4	14.00	17.250	15.718	1.125	-	36
5500013	WF1700-000-M-D	2	17 1/4	14.00	17.250	15.718	1.125	2.60	36
5500018	WF1900-000-M	1	19 9/16	16.00	19.562	17.875	1.312	-	36
5500019	WF1900-000-M-D	2	19 9/16	16.00	19.562	17.875	1.312	3.04	36
5500024	WF2200-000-M	1	22 1/8	18.00	22.125	20.187	1.500	-	36
5500025	WF2200-000-M-D	2	22 1/8	18.00	22.125	20.187	1.500	3.50	36
5500030	WF2700-000-M	1	27 1/8	24.00	27.125	25.843	1.750	-	40
5500031	WF2700-000-M-D	2	27 1/8	24.00	27.125	25.843	1.750	4.43	40

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Wire Sealed, Blank Female Flanges



For More Info...
Detailed information about the wire seal flange system is available on pg. 4.7.

PART NUMBER	REFERENCE NUMBER	FIGURE	FLANGE OD	TUBE OD	A	B	E	F	BOLT HOLES
5500002	WF1200-000-F	1	12 3/8	10.00	12.375	11.343	1.125	-	24
5500003	WF1200-000-F-D	2	12 3/8	10.00	12.375	11.343	1.125	2.33	24
5500008	WF1400-000-F	1	14 5/8	12.00	14.625	13.593	1.125	-	32
5500009	WF1400-000-F-D	2	14 5/8	12.00	14.625	13.593	1.125	2.33	32
5500014	WF1700-000-F	1	17 1/4	14.00	17.250	15.718	1.125	-	36
5500015	WF1700-000-F-D	2	17 1/4	14.00	17.250	15.718	1.125	2.60	36
5500020	WF1900-000-F	1	19 9/16	16.00	19.562	17.875	1.312	-	36
5500021	WF1900-000-F-D	2	19 9/16	16.00	19.562	17.875	1.312	3.04	36
5500026	WF2200-000-F	1	22 1/8	18.00	22.125	20.187	1.500	-	36
5500027	WF2200-000-F-D	2	22 1/8	18.00	22.125	20.187	1.500	3.50	36
5500032	WF2700-000-F	1	27 1/8	24.00	27.125	25.843	1.750	-	40
5500033	WF2700-000-F-D	2	27 1/8	24.00	27.125	25.843	1.750	4.43	40

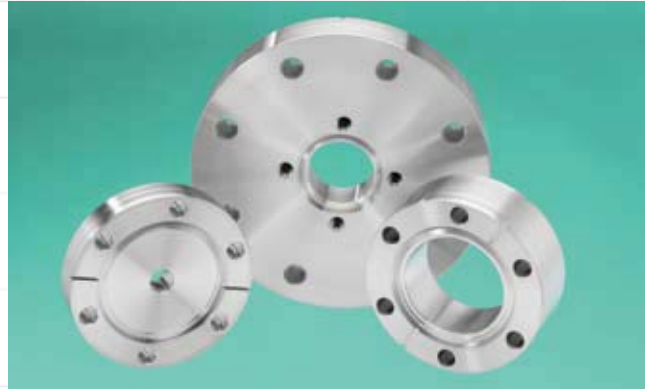
*ORDERING NOTE

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 number.



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.



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)

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



For More Info...

*16 See pg. 4.60 - 4.61 for sizes and additional details.

Double Sided CF Flanges

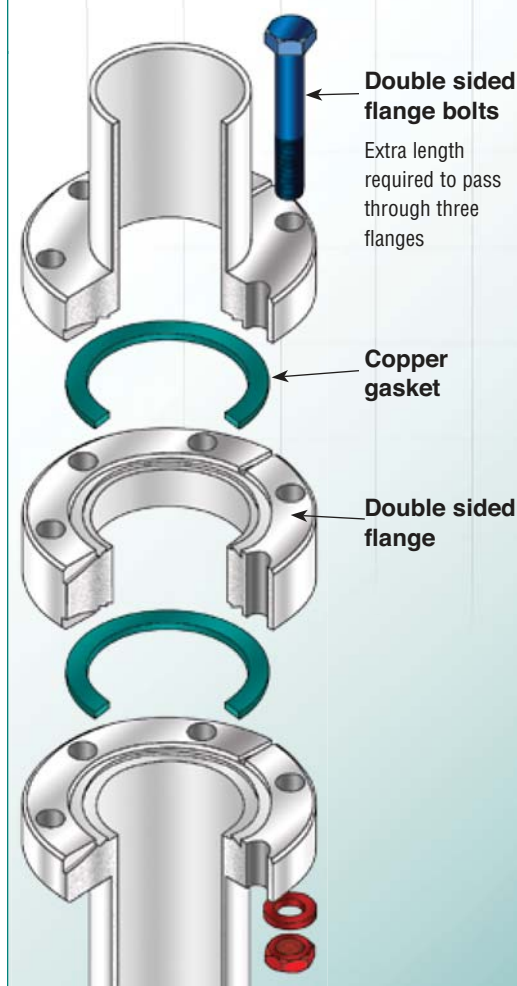
These flanges are manufactured with the same size CF flange on both sides. They are installed between two flanges also of the same size. This is a convenient and efficient way to add a spacer or customize with a radial port to add a variety of vacuum accessories to your system such as measurement devices, shutters and valves. Double sided CF flanges have special hardware to accommodate the width of three CF flanges for this seal assembly.**16



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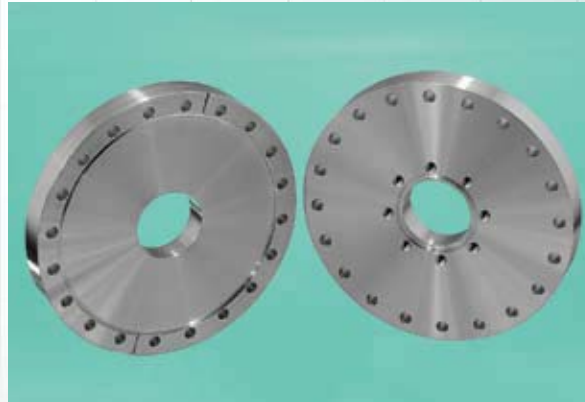
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Double Sided CF Diagram

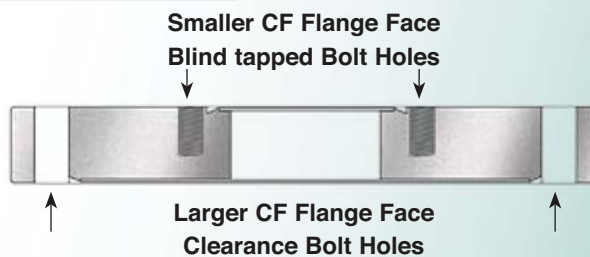


Zero-Length Reducer CF Flanges

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.^{*17}



Zero-Length Reducer



For More Info...

*17 See pg. 4.62 - 4.63 for sizes and additional details.

*18 See pg. 4.64 - 4.65 for sizes and additional details.

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.^{*18}





CF Double Sided Flanges

Product Features:

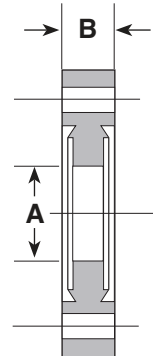
- Same size CF flange on both sides
- Ideal to add a spacer to your system or customize with a radial port
- Requires special CF double sided flange bolt kit for fastening
- Use standard CF gaskets to seal
- Self-aligning
- Sexless flanges
- Interchangeable with other ConFlat® style flanges
- Adapters to other flange systems available see section 8

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

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



PART NUMBER	REFERENCE NUMBER	CF SIZE	A	B	BOLT HOLES NO.	BOLT HOLES DIA/THRD
5000245	133-000-D	1.33	-	0.300	6	.172
5000246	133-025-D	1.33	0.255	0.300	6	.172
5000247	133-038-D	1.33	0.380	0.300	6	.172
5000248	133-050-D	1.33	0.505	0.300	6	.172
5000249	133-075-D	1.33	0.630	0.300	6	.172
5000250	133-000-D-.500	1.33	-	0.500	6	.172
5000251	133-075-D-.500	1.33	0.630	0.500	6	.172
5000252	212-000-D	2.12	-	0.470	4	.265
5000253	212-100-D	2.12	1.010	0.470	4	.265
5000254	275-000-D	2.75	-	0.500	6	.265
5000255	275-025-D	2.75	0.255	0.500	6	.265
5000256	275-050-D	2.75	0.505	0.500	6	.265
5000257	275-075-D	2.75	0.760	0.500	6	.265
5000258	275-100-D	2.75	1.010	0.500	6	.265
5000259	275-125-D	2.75	1.260	0.500	6	.265
5000260	275-150-D	2.75	1.510	0.500	6	.265
5000261	275-000-D-.750	2.75	-	0.750	6	.265
5000262	275-150-D-.750	2.75	1.510	0.750	6	.265
5008261	275-000-D-1.0	2.75	-	1.00	6	.265
5008262	275-150-D-1.0	2.75	1.510	1.00	6	.265
5000263	338-000-D	3.38	-	0.620	8	.332
5000264	338-150-D	3.38	1.510	0.620	8	.332
5000265	338-200-D	3.38	2.010	0.620	8	.332
5000266	450-000-D	4.50	-	0.680	8	.332
5000267	450-150-D	4.50	1.510	0.680	8	.332
5000268	450-200-D	4.50	2.010	0.680	8	.332
5000269	450-250-D	4.50	2.510	0.680	8	.332
5000270	462-000-D	4.62	-	0.750	10	.332
5000271	462-300-D	4.62	3.010	0.750	10	.332
5000272	600-000-D	6.00	-	0.780	16	.332
5000273	600-400-D	6.00	4.010	0.780	16	.332

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PART NUMBER	REFERENCE NUMBER	CF SIZE	A	B	BOLT HOLES NO.	DIA/THRD
5000274	675-000-D	6.75	-	0.840	18	.332
5000275	675-500-D	6.75	5.010	0.840	18	.332
5000276	800-000-D	8.00	-	0.870	20	.332
5000277	800-600-D	8.00	6.020	0.870	20	.332
5000278	1000-000-D	10.00	-	0.970	24	.332
5000279	1000-800-D	10.00	8.020	0.970	24	.332
5000280	1325-000-D	13.25	-	1.120	30	.390
5000281	1325-1000-D	13.25	10.030	1.120	30	.390
5000282	1400-000-D	14.00	-	1.120	30	.390
5000283	1400-1200-D	14.00	12.030	1.120	30	.390
5000284	1650-000-D	16.50	-	1.120	36	.390
5000285	1650-1400-D	16.50	14.030	1.120	36	.390



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

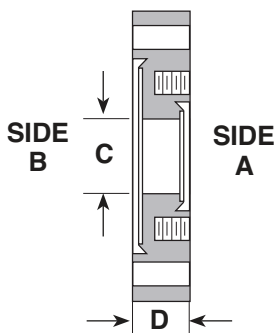
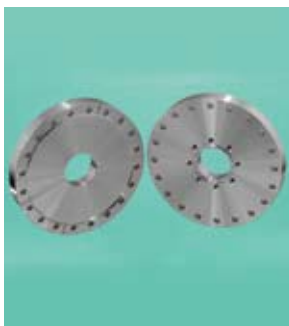
Materials:

- 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 NUMBER	REFERENCE NUMBER	USE WITH FLANGE	DESCRIPTION
0605087	133-BKD	CF133	(25) Bolt, Nut & Washer Kit; 8-32x1 1/4 in.
0605088	212-BKD	CF212	(25) Bolt, Nut & Washer Kit; 1/4-28x1 3/4 in.
0605089	275-BKD	CF275	(25) Bolt, Nut & Washer Kit; 1/4-28x1 3/4 in.
0605090	275-BKD-.750	CF275	(25) Bolt, Nut & Washer Kit; 1/4-28x2 in.
0605091	275-PNK-D	CF275	(6) Plate Nuts, (12) Bolts & Washers; 1/4-28x2 in.
0605092	338-BKD	CF338	(25) Bolt, Nut & Washer Kit; 5/16-24x2 1/2 in.
0605093	450-BKD	CF450	(25) Bolt, Nut & Washer Kit; 5/16-24x2 3/4 in.
0605094	462-BKD	CF462	(25) Bolt, Nut & Washer Kit; 5/16-24x3 in.
0605095	600-BKD	CF600	(25) Bolt, Nut & Washer Kit; 5/16-24x3 in.
0605096	675-BKD	CF675	(25) Bolt, Nut & Washer Kit; 5/16-24x3 in.
0605097	800-BKD	CF800	(25) Bolt, Nut & Washer Kit; 5/16-24x3 in.
0605098	1000-BKD	CF1000	(25) Bolt, Nut & Washer Kit; 5/16-24x3 1/2 in.
0605099	1325-BKD	CF1325	(30) Bolt, Nut and Washer Kit; 3/8-24x4 in.
0605100	1400-BKD	CF1400	(30) Bolt, Nut and Washer Kit; 3/8-24x4 in.
0605101	1650-BKD	CF1650	(36) Bolt, Nut and Washer Kit; 3/8-24x4 in.



CF Zero Length Reducer Flanges

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 see section 8

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

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

* 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.

PART NUMBER	REFERENCE NUMBER	FOR FLANGE DETAIL SEE SIDE A	FOR FLANGE DETAIL SEE SIDE B	C	D
5000286	212x133-075-0-T2	133-075-T	212-075-T	0.620	0.470
5000287	275x133-075-0-T1	133-075-T	275-075	0.620	0.500
5000288	275x212-100-0-T2	212-100-T	275-100-T	1.000	0.500
5000289	338x133-075-0-T1	133-075-T	338-075	0.620	0.620
5000290	338x212-100-0-T2	212-100-T	338-100-T	1.000	0.620
5000291	338x275-150-0-T2	275-150-T	338-150-T	1.500	0.620
5000292	450x133-075-0-T1	133-075-T	450-075	0.620	0.680
5000293	450x212-100-0-T1	212-100-T	450-100	1.000	0.680
5000294	450x275-150-0-T1	275-150-T	450-150	1.500	0.680
5000295	450x338-200-0-T2	338-200-T	450-200-T	2.000	0.680
5000296	462x133-075-0-T1	133-075-T	462-075	0.620	0.750
5000297	462x212-100-0-T1	212-100-T	462-100	1.000	0.750
5000298	462x275-150-0-T1	275-150-T	462-150	1.500	0.750
5000299	462x338-200-0-T1	338-200-T	462-200	2.000	0.750
5000300	600x133-075-0-T1	133-075-T	600-075	0.620	0.780
5000301	600x212-100-0-T1	212-100-T	600-100	1.000	0.780
5000302	600x275-150-0-T1	275-150-T	600-150	1.500	0.780
5000303	600x338-200-0-T1	338-200-T	600-200	2.000	0.780
5000304	600x450-250-0-T1	450-250-T	600-250	2.500	0.780
5000305	600x462-300-0-T2	462-300-T	600-300-T	3.000	0.780
5000306	675x133-075-0-T1	133-075-T	675-075	0.620	0.840
5000307	675x212-100-0-T1	212-100-T	675-100	1.000	0.840
5000308	675x275-150-0-T1	275-150-T	675-150	1.500	0.840
5000309	675x338-200-0-T1	338-200-T	675-200	2.000	0.840
5000310	675x450-250-0-T1	450-250-T	675-250	2.500	0.840
5000311	675x462-300-0-T1	462-300-T	675-300	3.000	0.840
5000312	675x600-400-0-T2	600-400-T	675-400-T	4.000	0.840

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PART NUMBER	REFERENCE NUMBER	FOR FLANGE DETAIL SEE		C	D
		SIDE A	SIDE B		
5000313	800x133-075-0-T1	133-075-T	800-075	0.620	0.880
5000314	800x212-100-0-T1	212-100-T	800-100	1.000	0.880
5000315	800x275-150-0-T1	275-150-T	800-150	1.500	0.880
5000316	800x338-200-0-T1	338-200-T	800-200	2.000	0.880
5000317	800x450-250-0-T1	450-250-T	800-250	2.500	0.880
5000318	800x462-300-0-T1	462-300-T	800-300	3.000	0.880
5000319	800x600-400-0-T1	600-400-T	800-400	4.000	0.880
5000320	800x675-500-0-T2	675-500-T	800-500-T	5.000	0.880
5000321	1000x133-075-0-T1	133-075-T	1000-075	0.620	0.970
5000322	1000x212-100-0-T1	212-100-T	1000-100	1.000	0.970
5000323	1000x275-150-0-T1	275-150-T	1000-150	1.500	0.970
5000324	1000x338-200-0-T1	338-200-T	1000-200	2.000	0.970
5000325	1000x450-250-0-T1	450-250-T	1000-250	2.500	0.970
5000326	1000x462-300-0-T1	462-300-T	1000-300	3.000	0.970
5000327	1000x600-400-0-T1	600-400-T	1000-400	4.000	0.970
5000328	1000x675-500-0-T1	675-500-T	1000-500	5.000	0.970
5000329	1000x800-600-0-T1	800-600-T	1000-600	6.000	0.970
5000330	1325x133-075-0-T1	133-075-T	1325-075	0.620	1.120
5000331	1325x212-100-0-T1	212-100-T	1325-100	1.000	1.120
5000332	1325x275-150-0-T1	275-150-T	1325-150	1.500	1.120
5000333	1325x338-200-0-T1	338-200-T	1325-200	2.000	1.120
5000334	1325x450-250-0-T1	450-250-T	1325-250	2.500	1.120
5000335	1325x462-300-0-T1	462-300-T	1325-300	3.000	1.120
5000336	1325x600-400-0-T1	600-400-T	1325-400	4.000	1.120
5000337	1325x675-500-0-T1	675-500-T	1325-500	5.000	1.120
5000338	1325x800-600-0-T1	800-600-T	1325-600	6.000	1.120
5000339	1325x1000-800-0-T1	1000-800-T	1325-800	8.000	1.120



CF Flange to Female NPT – Front Port

Product Features:

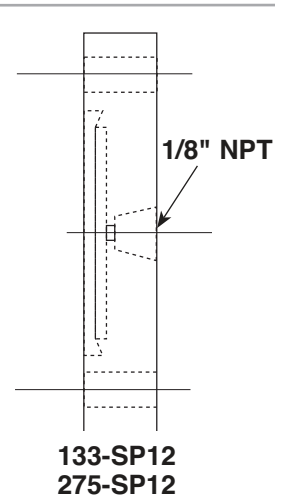
- Ideal for adding vacuum accessories (vacuum measurement, valves, etc.) or gas lines to your system.
- Use standard CF gaskets to seal
- Self-aligning
- Sexless flanges
- Interchangeable with other ConFlat® style flanges
- Adapters to other flange systems available see section 8

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

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



***ORDERING NOTE**

Double Sided Flange bolt fasteners are on pg. 4.14

PART NUMBER	REFERENCE NUMBER	DESCRIPTION
-------------	------------------	-------------

5000208	133XSP12	1.33 Flange - (1) 1/8 in. NPT Hole
5000209	275XSP12	2.75 Flange - (1) 1/8 in. NPT Hole



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

Product Features:

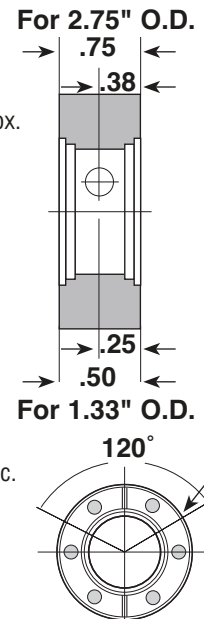
- Ideal for adding vacuum accessories (vacuum measurement, valves, etc.) or gas lines to your system.
- Requires special CF double sided flange bolt kit for fastening
- Use standard CF gaskets to seal
- Self-aligning
- Sexless flanges
- Interchangeable with other ConFlat® style flanges
- Adapters to other flange systems available see section 8

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

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



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PART NUMBER	REFERENCE NUMBER	DESCRIPTION
-------------	------------------	-------------

5000220	133DXSP06	1.33 Flange - (1) 1/16 in. NPT Hole
5000221	275DXSP12	2.75 Flange - (1) 1/8 in. NPT Hole
5000222	133DXSP06-2	1.33 Flange - (2) 1/16 in. NPT Holes
5000223	275DXSP12-2	2.75 Flange - (2) 1/8 in. NPT Holes



CF Double Sided Flange to CF133 flange – Side Port

Product Features:

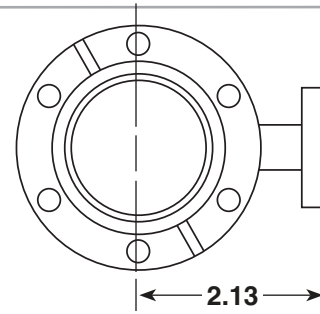
- Ideal for adding vacuum accessories (vacuum measurement, valves, etc.) to your system.
- Requires special CF double sided flange bolt kit for fastening
- Use standard CF gaskets to seal
- Self-aligning
- Sexless flanges
- Interchangeable with other ConFlat® style flanges
- Adapters to other flange systems available see section 8

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.



*ORDERING NOTE

Double Sided Flange bolt fasteners are on pg. 4.14

PART NUMBER	REFERENCE NUMBER	DESCRIPTION
5000244	275DX133SP	CF275 SS Double with 1.33 Flange Port



CF Fittings

A&N Corporation'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 A&N Corporation CF fittings are made with flanges manufactured to industry specifications to ensure compatibility with other manufacturer's flanges.



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
- 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



For More Info...

*19 See pg. 4.68 - 4.69 for sizes and additional details.

*20 See pg. 4.70 - 4.71 for sizes and additional details.

Half Nipples

These fittings 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. (see section 8 for our selection of quick disconnect compression fittings) A&N manufactures standard half nipples in 304L stainless steel, other materials are available on request.*19



Nipples

These fittings 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. A&N manufactures standard nipples in 304L stainless steel, other materials are available on request.*20



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Elbows

These fittings 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. A&N manufactures standard Elbows in 304L stainless steel, other materials are available on request.*²¹



For More Info...

- *21 See pg. 4.72 - 4.73 for sizes and additional details.
- *22 See pg. 4.74 - 4.75 for sizes and additional details.
- *23 See pg. 4.76 - 4.77 for sizes and additional details.
- *24 See pg. 4.78 - 4.79 for sizes and additional details.

Tees

These fittings 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. A&N manufactures standard tees in 304L stainless steel, other materials are available on request.*²²



Crosses

These fittings 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. A&N manufactures standard crosses in 304L stainless steel, other materials are available on request.*²³



5-way and 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. A&N manufactures standard 5 and 6-way crosses and cubes in 304L stainless steel, other materials are available on request.*²⁴



TECH TIP

Product Note: There are two terms used within this catalog that require specific 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. For these products see the Section 8: Hybrid Adapters



CF Half Nipple – Fixed Flange

Materials:

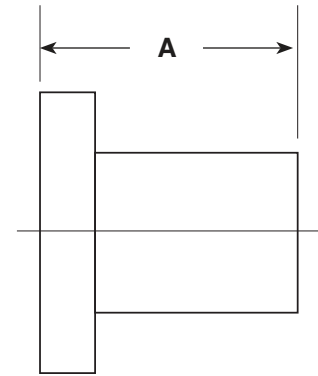
- 304L stainless steel

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, etc.



FIXED

*ORDERING NOTE

This listing is for Fixed CF Flange Half Nipples. For Rotatable Half Nipples see pg. 4.69.

Clearance Bolt Holes

PART NUMBER	REFERENCE NUMBER	FLANGE TYPE	TUBE O.D.	A
5000340	133-075-LF	CF133	0.75	1.50
5000341	212-100-LF	CF212	1.00	2.05
5000342	275-150-LF	CF275	1.50	2.46
5000343	338-200-LF	CF338	2.00	3.21
5000344	450-250-LF	CF450	2.50	3.38
5000346	462-300-LF	CF462	3.00	3.53
5000347	600-400-LF	CF600	4.00	4.32
5000349	675-500-LF	CF675	5.00	4.32
5000350	800-600-LF	CF800	6.00	5.50
5000352	1000-800-LF	CF1000	8.00	8.00
5000353	1325-1000-LF	CF1325	10.00	10.00
5000354	1400-1200-LF	CF1400	12.00	10.00

Tapped Bolt Holes

PART NUMBER	REFERENCE NUMBER	FLANGE TYPE	TUBE O.D.	A
5000372	133-075-LF-T	CF133	0.75	1.50
5000375	212-100-LF-T	CF212	1.00	2.05
5000378	275-150-LF-T	CF275	1.50	2.46
5000381	338-200-LF-T	CF338	2.00	3.21
5000384	450-250-LF-T	CF450	2.50	3.38
5000389	462-300-LF-T	CF462	3.00	3.53
5000392	600-400-LF-T	CF600	4.00	4.32
5000397	675-500-LF-T	CF675	5.00	4.32
5000400	800-600-LF-T	CF800	6.00	5.50

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CF Half Nipple – Rotatable Flange

Materials:

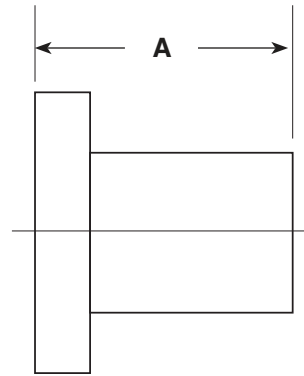
- 304L stainless steel

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, etc.



ROTATABLE

Clearance Bolt Holes

PART NUMBER	REFERENCE NUMBER	FLANGE TYPE	TUBE O.D.	A
5000371	133-075-LF-R	CF133	0.75	1.50
5000374	212-100-LF-R	CF212	1.00	2.05
5000377	275-150-LF-R	CF275	1.50	2.46
5000380	338-200-LF-R	CF338	2.00	3.21
5000383	450-250-LF-R	CF450	2.50	3.38
5000388	462-300-LF-R	CF462	3.00	3.53
5000391	600-400-LF-R	CF600	4.00	4.32
5000396	675-500-LF-R	CF675	5.00	4.32
5000399	800-600-LF-R	CF800	6.00	5.50

Tapped Bolt Holes

PART NUMBER	REFERENCE NUMBER	FLANGE TYPE	TUBE O.D.	A
5000373	133-075-LF-R-T	CF133	0.75	1.50
5000376	212-100-LF-R-T	CF212	1.00	2.05
5000379	275-150-LF-R-T	CF275	1.50	2.46
5000382	338-200-LF-R-T	CF338	2.00	3.21
5000385	450-250-LF-R-T	CF450	2.50	3.38
5000390	462-300-LF-R-T	CF462	3.00	3.53
5000393	600-400-LF-R-T	CF600	4.00	4.32
5000398	675-500-LF-R-T	CF675	5.00	4.32
5000401	800-600-LF-R-T	CF800	6.00	5.50

*ORDERING NOTE

This listing is for Rotatable CF Flange Half Nipples. For Fixed Half Nipples see pg. 4.68.



CF Nipple

Materials:

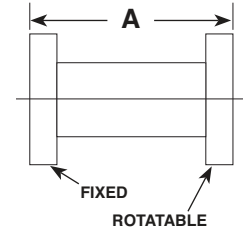
- 304L stainless steel

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 reference number
- Custom lengths
- Custom flange combinations
- Alternative materials – 316L stainless steel, aluminum, etc.



PART NUMBER	REFERENCE NUMBER	FLANGE TYPE	TUBE O.D.	A
5000355	133-075-N	CF133	0.75	3.00
5000356	212-100-N	CF212	1.00	4.10
5000357	275-150-N	CF275	1.50	4.93
5000358	338-200-N	CF338	2.00	6.43
5000359	450-250-N	CF450	2.50	6.76
5000360	450-250-N-L	CF450	2.50	8.25
5000361	462-300-N	CF462	3.00	7.06
5000362	600-400-N	CF600	4.00	8.64
5000363	600-400-N-L	CF600	4.00	10.62
5000364	675-500-N	CF675	5.00	8.46
5000365	675-500-N-L	CF675	5.00	9.87
5000366	800-600-N	CF800	6.00	11.00
5000367	800-600-N-L	CF800	6.00	13.12
5000368	1000-800-N	CF1000	8.00	16.00
5000369	1325-1000-N	CF1325	10.00	20.00
5000370	1400-1200-N	CF1400	12.00	20.00



For More Info...

For additional standard length flexible hose fittings see section 12: Roughing Components

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CF Flexible Nipple

Materials:

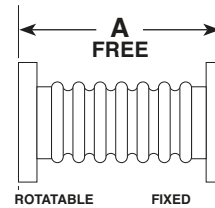
- Flanges
- 304 stainless steel
- Flexible hose
- 321 Stainless steel formed bellows

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 (i.e. 316L stainless steel)



PART NUMBER	REFERENCE NUMBER	FLANGE TYPE	HOSE I.D.	WALL THICKNESS	A
0800089	133-F	CF133	0.75	0.006	4.00
0800092	212-F	CF212	1.00	0.006	4.00
0800095	275-F	CF275	1.50	0.006	4.00
0800098	338-F	CF338	2.00	0.006	4.00
0800099	450-F	CF450	2.50	0.008	6.00
0800100	462-F	CF462	3.00	0.008	6.00
0800101	600-F	CF600	4.00	0.010	6.00
0800103	800-F	CF800	6.00	0.012	8.00



CF Reducer Nipple

Materials:

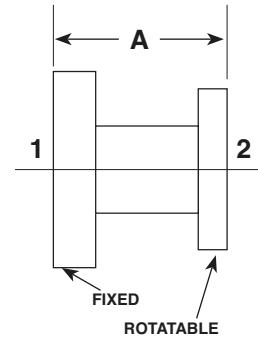
- 304L stainless steel

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 NUMBER	REFERENCE NUMBER	FLANGE 1 O.D.	FLANGE 2 O.D.	TUBE O.D.	A
5000429	275x133-RN	2.75	1.33	0.75	2.50
5000925	338x275-RN	3.37	2.75	1.50	2.50
5000926	450x275-RN	4.50	2.75	1.50	2.50
5000430	600x275-RN	6.00	2.75	1.50	5.00
5000927	600x450-RN	6.00	4.50	2.50	5.00
5000431	800x275-RN	8.00	2.75	1.50	5.00
5000432	800x450-RN	8.00	4.50	2.50	5.00
5000433	800x600-RN	8.00	6.00	4.00	5.00
5000434	1000x275-RN	10.00	2.75	1.50	5.00
5000435	1000x450-RN	10.00	4.50	2.50	5.00
5000436	1000x600-RN	10.00	6.00	4.00	5.00
5000437	1000x800-RN	10.00	8.00	6.00	5.00
5000438	1325x1000-RN	13.25	10.00	8.00	5.00
5000439	1400x1200-RN	14.00	12.00	10.00	5.00

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CF Conical Reducer Nipple

Materials:

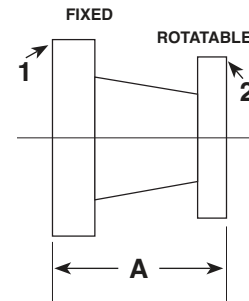
- 304L stainless steel

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 (i.e. 316L stainless steel)



PART NUMBER	REFERENCE NUMBER	FLANGE 1		FLANGE 2		A
		TYPE	TUBE O.D.	TYPE	TUBE O.D.	
5000440	212x133-CR	CF212	1.00	CF133	0.75	2.042
5000441	275x133-CR	CF275	1.50	CF133	0.75	3.084
5000442	275x212-CR	CF275	1.50	CF212	1.00	2.751
5000443	338x212-CR	CF338	2.00	CF212	1.00	2.767
5000444	338x275-CR	CF338	2.00	CF275	1.50	2.809
5000445	450x275-CR	CF450	2.50	CF275	1.50	2.959
5000446	450x338-CR	CF450	2.50	CF338	2.00	2.975
5000447	462x275-CR	CF462	3.00	CF275	1.50	4.115
5000448	462x338-CR	CF462	3.00	CF338	2.00	4.131
5000449	462x450-CR	CF462	3.00	CF450	2.50	4.281
5000451	600x338-CR	CF600	4.00	CF338	2.00	4.287
5000452	600x450-CR	CF600	4.00	CF450	2.50	4.438



CF 45° Elbow

Materials:

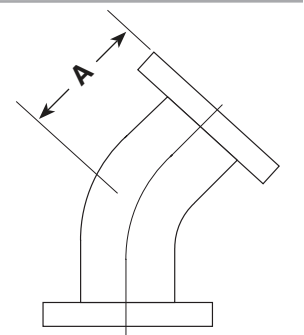
- 304L stainless steel

Product Notes

- Radius elbow design

Options: Call for price and availability

- Custom lengths
- Tapped flanges
- Custom flange combinations
- Alternative materials (i.e. 316L stainless steel)

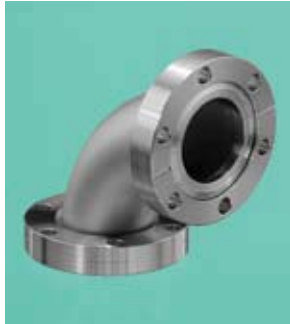


BOTH FLANGES ROTATABLE

PART NUMBER	REFERENCE NUMBER	FLANGE TYPE	TUBE O.D.	A
5000454	133-075-E45	CF133	0.75	1.26
5000455	212-100-E45	CF212	1.00	1.14
5000456	275-150-E45	CF275	1.50	1.741
5000457	338-200-E45	CF338	2.00	2.067
5000458	450-250-E45	CF450	2.50	3.38
5000459	462-300-E45	CF462	3.00	4.06
5000460	600-400-E45	CF600	4.00	5.215

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CF 90° Elbow

Materials:

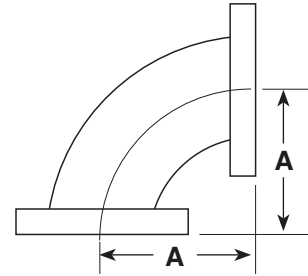
- 304L stainless steel

Product Notes

- Radius elbow design

Options: Call for price and availability

- Custom lengths
- Tapped flanges
- Custom flange combinations
- Alternative materials (i.e. 316L stainless steel)



BOTH FLANGES ROTATABLE

PART NUMBER	REFERENCE NUMBER	FLANGE TYPE	TUBE O. D.	A
5000461	133-075-E90	CF133	0.75	1.50
5000462	212-100-E90	CF212	1.00	1.99
5000463	275-150-E90	CF275	1.50	2.46
5000464	338-200-E90	CF338	2.00	3.22
5000465	450-250-E90	CF450	2.50	4.12
5000466	462-300-E90	CF462	3.00	4.88
5000467	600-400-E90	CF600	4.00	6.44
5000468	800-600-E90	CF800	6.00	9.50



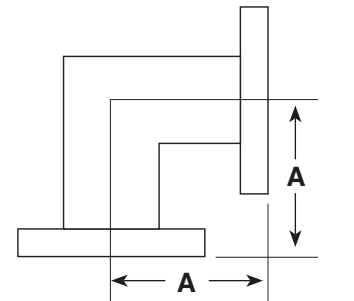
CF 90° Elbow - Mitered

Materials:

- 304L stainless steel

Options: Call for price and availability

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



BOTH FLANGES ROTATABLE

PART NUMBER	REFERENCE NUMBER	FLANGE TYPE	TUBE O.D.	A
5000469	133-075-E90M	1.33	0.75	1.50
5000470	212-100-E90M	2.12	1.00	2.05
5000471	275-150-E90M	2.75	1.50	2.46
5000472	338-200-E90M	3.38	2.00	3.22
5000473	450-250-E90M	4.50	2.50	3.38
5000474	450-250-E90M-L	4.50	2.50	4.12
5000475	462-300-E90M	4.62	3.00	3.34
5000476	600-400-E90M	6.00	4.00	4.32
5000477	600-400-E90M-L	6.00	4.00	5.31
5000478	675-500-E90M	6.75	5.00	4.71
5000479	800-600-E90M	8.00	6.00	5.50
5000480	800-600-E90M-L	8.00	6.00	6.56
5000481	1000-800-E90M	10.00	8.00	7.50
5000482	1325-1000-E90M	13.25	10.00	10.00

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CF 90° Elbow – Mitered, High Conductance

Materials:

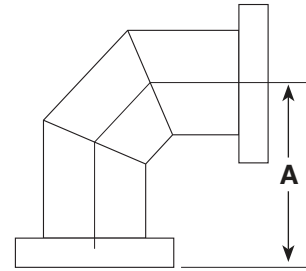
- 304L stainless steel

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.



BOTH FLANGES ROTATABLE

PART NUMBER	REFERENCE NUMBER	FLANGE TYPE	TUBE O.D.	A
5000483	800-600-E90-MHC	8.00	6.00	9.50
5000484	1000-800-E90-MHC	10.00	8.00	12.50
5000485	1325-1000-E90-MHC	13.25	10.00	15.50

**CF - Tee****Materials:**

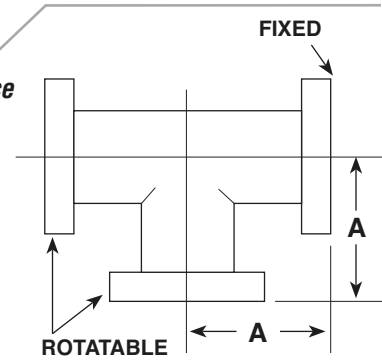
- 304L stainless steel

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.



PART NUMBER	REFERENCE NUMBER	FLANGE TYPE	TUBE O.D.	A
5000486	133-075-CFT	1.33	0.75	1.50
5000487	212-100-CFT	2.12	1.00	2.05
5000488	275-150-CFT	2.75	1.50	2.46
5000489	275-150-CFT-L	2.75	1.50	2.62
5000490	338-200-CFT	3.38	2.00	3.22
5000491	450-250-CFT	4.50	2.50	3.38
5000492	450-250-CFT-L	4.50	2.50	4.12
5000493	462-300-CFT	4.62	3.00	3.63
5000494	600-400-CFT	6.00	4.00	4.32
5000495	600-400-CFT-L	6.00	4.00	5.31
5000496	675-500-CFT	6.75	5.00	4.71
5000497	800-600-CFT	8.00	6.00	5.50
5000498	800-600-CFT-L	8.00	6.00	6.56
5000499	1000-800-CFT	10.00	8.00	7.50
5000500	1325-1000-CFT	13.25	10.00	10.00

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CF Reducing Tee

Materials:

- 304L stainless steel

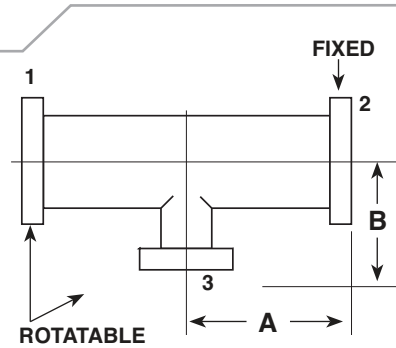
Product Notes

- 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 NUMBER	REFERENCE NUMBER	FLANGE 1&2		FLANGE 3		A	B
		O.D.	TUBE O.D.	O.D.	TUBE O.D.		
5000501	275x133-RDT	2.75	1.50	1.33	0.75	2.46	1.87
5000502	275x212-RDT	2.75	1.50	2.12	1.00	2.46	2.29
5000503	338x133-RDT	3.38	2.00	1.33	0.75	3.22	2.13
5000504	338x275-RDT	3.38	2.00	2.75	1.50	3.22	2.71
5000505	450x275-RDT	4.50	2.50	2.75	1.50	3.38	2.96
5000506	450x338-RDT	4.50	2.50	3.38	2.00	3.38	3.48
5000507	462x338-RDT	4.62	3.00	3.38	2.00	3.63	3.73
5000508	462x450-RDT	4.62	3.00	4.50	2.50	3.63	3.63
5000509	600x275-RDT	6.00	4.00	2.75	1.50	4.32	3.71
5000510	600x338-RDT	6.00	4.00	3.38	2.00	4.32	4.23
5000511	600x450-RDT	6.00	4.00	4.50	2.50	4.32	4.13
5000512	600x462-RDT	6.00	4.00	4.62	3.00	4.32	4.13
5000513	675x600-RDT	6.75	5.00	6.00	4.00	4.71	4.82
5000514	800x275-RDT	8.00	6.00	2.75	1.50	5.50	4.71
5000515	800x338-RDT	8.00	6.00	3.38	2.00	5.50	5.23
5000516	800x450-RDT	8.00	6.00	4.50	2.50	5.50	5.13
5000517	800x600-RDT	8.00	6.00	6.00	4.00	5.50	5.32
5000518	1000x800-RDT	10.00	8.00	8.00	6.00	7.50	6.50



CF Cross

Materials:

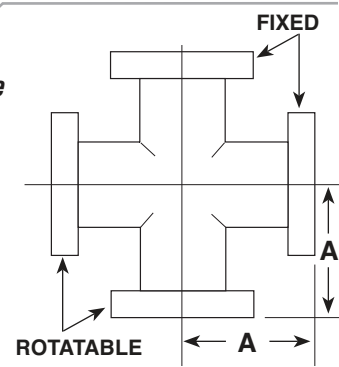
- 304L stainless steel

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 NUMBER	REFERENCE NUMBER	FLANGE TYPE	TUBE O.D.	A
5000519	133-075-X	1.33	0.75	1.50
5000520	212-100-X	2.12	1.00	2.05
5000521	275-150-X	2.75	1.50	2.46
5000522	338-200-X	3.38	2.00	3.22
5000523	450-250-X	4.50	2.50	3.38
5000524	450-250-X-L	4.50	2.50	4.12
5000525	462-300-X	4.62	3.00	3.63
5000526	600-400-X	6.00	4.00	4.32
5000527	600-400-X-L	6.00	4.00	5.31
5000528	675-500-X	6.75	5.00	4.71
5000529	800-600-X	8.00	6.00	5.50
5000530	800-600-X-L	8.00	6.00	6.56
5000531	1000-800-X	10.00	8.00	7.50
5000532	1325-1000-X	13.25	10.00	10.00

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CF Reducing Cross

Materials:

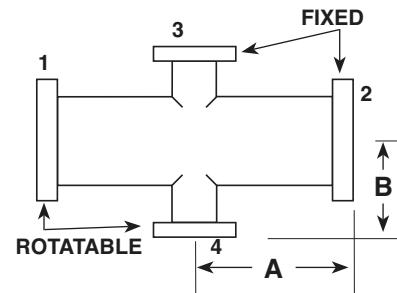
- 304L stainless steel

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 NUMBER	REFERENCE NUMBER	FLANGE 1&2		FLANGE 3		A	B
		O.D.	TUBE O.D.	O.D.	TUBE O.D.		
5000533	275x133-RDX	2.75	1.50	1.33	0.75	2.46	1.87
5000534	275x212-RDX	2.75	1.50	2.12	1.00	2.46	2.29
5000535	338x133-RDX	3.38	2.00	1.33	0.75	3.22	2.13
5000536	338x275-RDX	3.38	2.00	2.75	1.50	3.22	2.71
5000537	450x275-RDX	4.50	2.50	2.75	1.50	3.38	2.96
5000538	450x338-RDX	4.50	2.50	3.38	2.00	3.38	3.48
5000539	462x338-RDX	4.62	3.00	3.38	2.00	3.63	3.73
5000540	462x450-RDX	4.62	3.00	4.50	2.50	3.63	3.63
5000541	600x275-RDX	6.00	4.00	2.75	1.50	4.32	3.71
5000542	600x338-RDX	6.00	4.00	3.38	2.00	4.32	4.23
5000543	600x450-RDX	6.00	4.00	4.50	2.50	4.32	4.13
5000544	600x462-RDX	6.00	4.00	4.62	3.00	4.32	4.13
5000545	675x600-RDX	6.75	5.00	6.00	4.00	4.71	4.82
5000546	800x275-RDX	8.00	6.00	2.75	1.50	5.50	4.71
5000547	800x338-RDX	8.00	6.00	3.38	2.00	5.50	5.23
5000548	800x450-RDX	8.00	6.00	4.50	2.50	5.50	5.13
5000549	800x600-RDX	8.00	6.00	6.00	4.00	5.50	5.32
5000550	1000x800-RDX	10.00	8.00	8.00	6.00	7.50	6.50



CF 5-Way Cross

Materials:

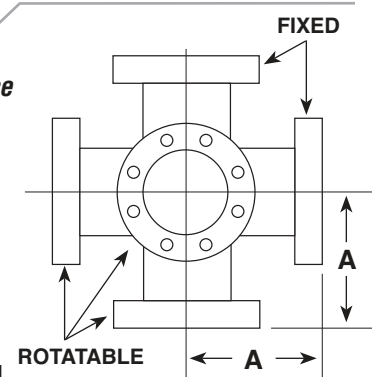
- 304L stainless steel

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.



PART NUMBER	REFERENCE NUMBER	FLANGE TYPE	TUBE O.D.	A
5000551	133-075-5X	1.33	0.75	1.50
5000552	212-100-5X	2.12	1.00	2.05
5000553	275-150-5X	2.75	1.50	2.46
5000554	338-200-5X	3.38	2.00	3.22
5000555	450-250-5X	4.50	2.50	3.38
5000556	450-250-5X-L	4.50	2.50	4.12
5000557	462-300-5X	4.62	3.00	3.63
5000558	600-400-5X	6.00	4.00	4.32
5000559	600-400-5X-L	6.00	4.00	5.31
5000560	675-500-5X	6.75	5.00	4.71
5000561	800-600-5X	8.00	6.00	5.50
5000562	800-600-5X-L	8.00	6.00	6.56
5000563	1000-800-5X	10.00	8.00	7.50
5000564	1325-1000-5X	13.25	10.00	10.00

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CF 6-Way Cross

Materials:

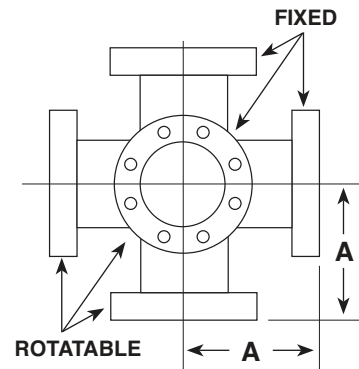
- 304L stainless steel

Product Notes

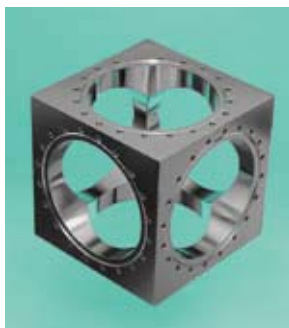
- Pulled ports for optimum vacuum performance

Options: Call for price and availability

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



PART NUMBER	REFERENCE NUMBER	FLANGE TYPE	TUBE O.D.	A
5000565	133-075-6X	1.33	0.75	1.50
5000566	212-100-6X	2.12	1.00	2.05
5000567	275-150-6X	2.75	1.50	2.46
5000568	338-200-6X	3.38	2.00	3.22
5000569	450-250-6X	4.50	2.50	3.38
5000570	450-250-6X-L	4.50	2.50	4.12
5000571	462-300-6X	4.62	3.00	3.63
5000572	600-400-6X	6.00	4.00	4.32
5000573	600-400-6X-L	6.00	4.00	5.31
5000574	675-500-6X	6.75	5.00	4.71
5000575	800-600-6X	8.00	6.00	5.50
5000576	800-600-6X-L	8.00	6.00	6.56
5000577	1000-800-6X	10.00	8.00	7.50
5000578	1325-1000-6X	13.25	10.00	10.00



CF 6-Way Cube

Materials:

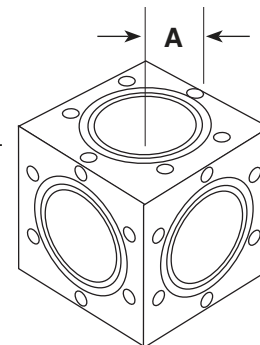
- 304L stainless steel

Product Notes

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

Options: Call for price and availability

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



PART NUMBER	REFERENCE NUMBER	FLANGE SIZE	A
5000579	133-CU	1.33	0.67
5000580	275-CU	2.75	1.38
5000581	338-CU	3.38	1.68
5000582	450-CU	4.50	2.23
5000583	600-CU	6.00	2.98
5000584	800-CU	8.00	3.98
5000585	1000-CU	10.00	4.98



Hybrid Adapters

CF to LF Conical Reducer



QF to ASA



QF to Quick Disconnect



QF to NPT Female



QF to Swagelok®



QF to Ball Socket Grooved



A&N Corporation offers an extensive selection of standard adapters to ease design and assembly of your vacuum systems. *Adapter Fittings and Flanges* are used to change from one family of flanges to another.

For example, ISO-QF25 to CF275. For these products see *Section 8: Hybrid Adapters*

Please Note: There is a difference between adapters (described above) and reducers. *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.

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