

ISO QF/KF/NW/LF Flanges & Fittings

ISO QF/KF/NW/LF Flanges & Fittings



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ISO-QF and LF FLANGES & FITTINGS

TECH TIP

Did you know?



ISO QF and LF flanges are known by several other names. QF is also called KF, NW, DN and Pneurop. LF is also called MF, PF, ISO-K, ISO-F



Overview

ISO-QF (Quick Flange) and LF (Large Flange) flanges are part of the same family of ISO standard elastomer sealed vacuum components. **ANCORP** ISO flanges and fittings are manufactured in accordance with ISO (International Standard Organization) 2861 standards and tolerances. These flanges are an economical, convenient and simplified means of constructing custom vacuum systems.

ISO flanges provide a complete range of fittings to mount with tubing sized 1/2 inch up to 20 inches in diameter. The flange system consists of two sexless, 360° rotatable flanges, a centering ring for alignment and support of the sealing ring and a fastener to compress the seal between the two flanges. ISO-QF and LF sealing components are similar, however, their fastening methods differ. **ANCORP** offers a complete line of flanges, fittings, valves, traps and accessories with ISO connections that can be used to create a complete vacuum system or pumping line.

Specifications:

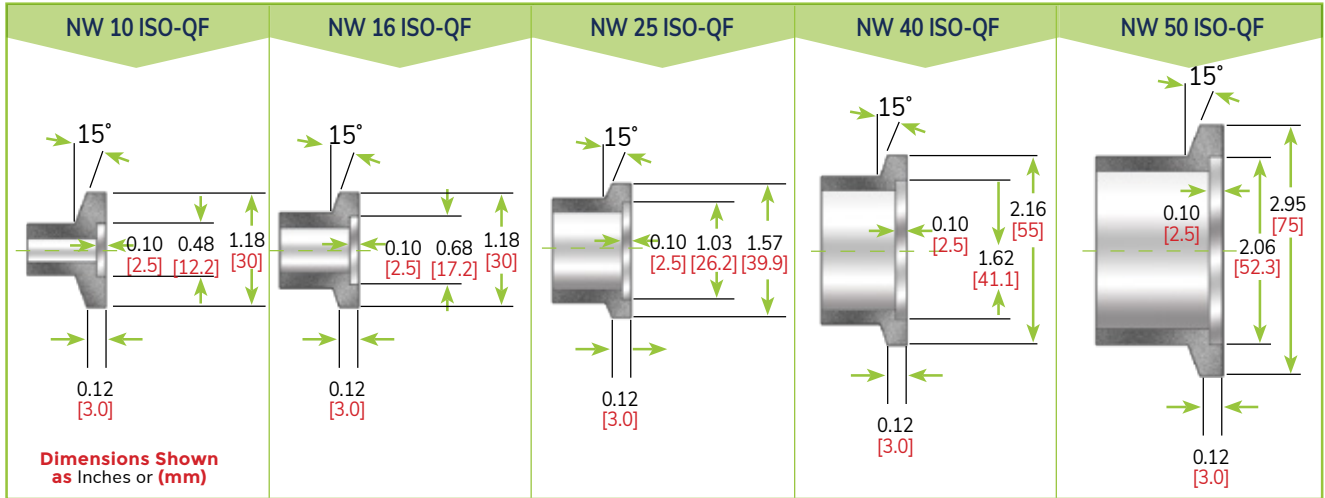
- Vacuum rated to 1×10^{-8} Torr.
- Leak rating $< 1 \times 10^{-9}$ std. cc/s helium
- Temperature range: -50°C to 200°C^{*2}
- Materials:
 - Flanges and fittings: 304L stainless steel, 6061 T6 aluminum
 - Elastomer seals: Viton®, Buna, silicone

Features:

- Quickly connect and disconnect
- Reusable flanges and seals
- 360° rotatable
- Sexless flanges
- Adapters to other flange systems available
- Compatible with U.S. standard (imperial) and metric measurements
- Multiple fastening options
- Interchangeable with all other flanges and assemblies made to ISO standards

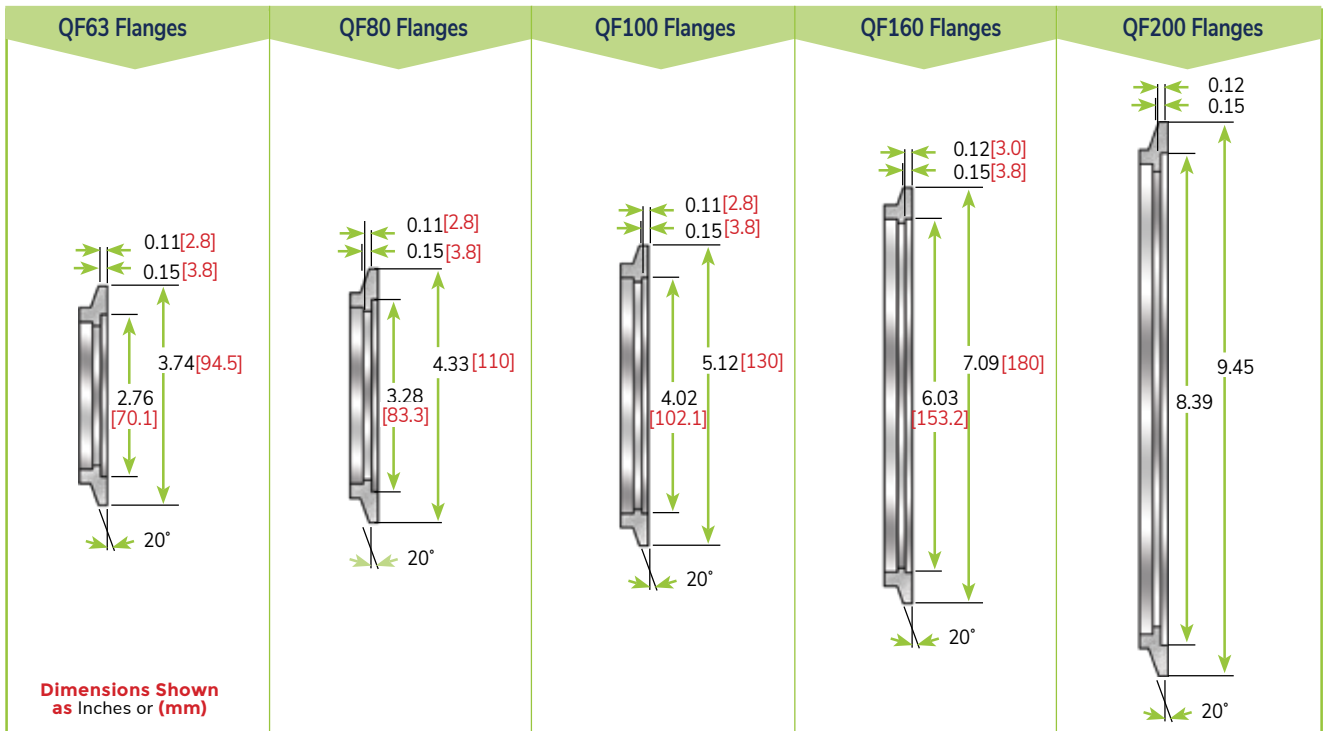
ISO Quick Flange Dimensions

The ISO standard flange interface dimensions are shown on these two pages and are not repeated throughout the catalog. Fittings (tees, crosses, elbows, etc.) and adapters, however, have no universal standards. These dimensions are shown throughout the catalog. See page 1.9 for a dimension cross-reference.



Large Size Quick Flange Dimensions

ANCORP now offers quick flanges up to size QF200 (8 inch tube outer diameter). ISO standards only apply to quick flanges up to size NW50 (2 inch tubing diameter). The sizes listed below were developed by vacuum component manufacturers within the United States. Quick clamps for these flanges are available in a variety of materials and designs. Adaptive fasteners are also available to allow users to seal directly from an LF or LFB style ISO flange to these more convenient large QF style flanges.

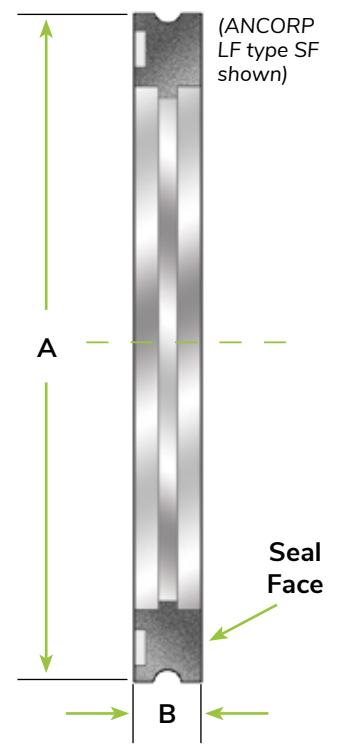


ISO Large Flange Dimensions Clamp Fastener Style (ISO-LF)

Dimensions Shown
as Inches (mm)

FLANGE SIZE	COMPATIBLE TUBE/PIPE O.D.	OUTER DIMENSIONS A	THICKNESS B	# CLAMPS REQUIRED
LF63	2.50 [63.5]	3.74 [95]	0.47 [12]	3-4
LF80	3.00 [76.2]	4.33 [110]	0.47 [12]	4-8
LF100	4.00 [101.6]	5.12 [130]	0.47 [12]	4-8
LF160	6.00 [152.4]	7.09 [180]	0.47 [12]	4-8
LF200	8.00 [203.2]	9.45 [240]	0.47 [12]	6-12
LF250	10.00 [254]	11.42 [290]	0.47 [12]	6-12
LF320	12 [304.8] or 12.75 [323.85]	14.57 [370]	0.67 [17]	8-12
LF400	16.00 [406.4]	17.72 [450]	0.67 [17]	8-16
LF500	20.00 [508]	21.65 [550]	0.67 [17]	12-16

ISO Multi-Fastener Flange



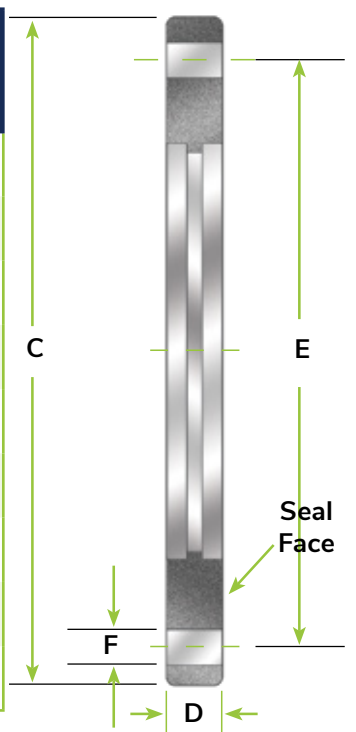
ISO Large Flange Dimensions

ISO Large Flange Dimensions Bolt Fastener Style (ISO-LFB)

Dimensions Shown
as Inches (mm)

FLANGE SIZE	COMPATIBLE TUBE/PIPE O.D.	OUTER DIMENSIONS C	THICKNESS D	BOLT CIRCLE E	BOLT HOLES F	# of HOLES	WRENCH (mm)
LFB63	2.50 [63.5]	5.12 [130]	0.47 [12]	4.33 [110]	0.35 [9]	4	13
LFB80	3.00 [76.2]	5.71 [145]	0.47 [12]	4.92 [125]	0.35 [9]	8	13
LFB100	4.00 [101.6]	6.50 [165]	0.47 [12]	5.71 [145]	0.35 [9]	8	13
LFB160	6.00 [152.4]	8.86 [225]	0.63 [16]	7.87 [200]	0.43 [11]	8	17
LFB200	8.00 [203.2]	11.22 [285]	0.63 [16]	10.24 [260]	0.43 [11]	12	17
LFB250	10.00 [254]	13.19 [335]	0.63 [16]	12.20 [310]	0.43 [11]	12	17
LFB320	12 [304.8] or 12.75 [323.85]	16.73 [425]	0.79 [20]	15.55 [395]	0.55 [14]	12	19
LFB400	16.00 [406.4]	20.08 [425]	0.79 [20]	18.90 [480]	0.55 [14]	16	19
LFB500	20.00 [508]	24.02 [610]	0.79 [20]	22.83 [580]	0.55 [14]	16	19

ISO Bolted Flange
(ANCORP LFB type SF shown)



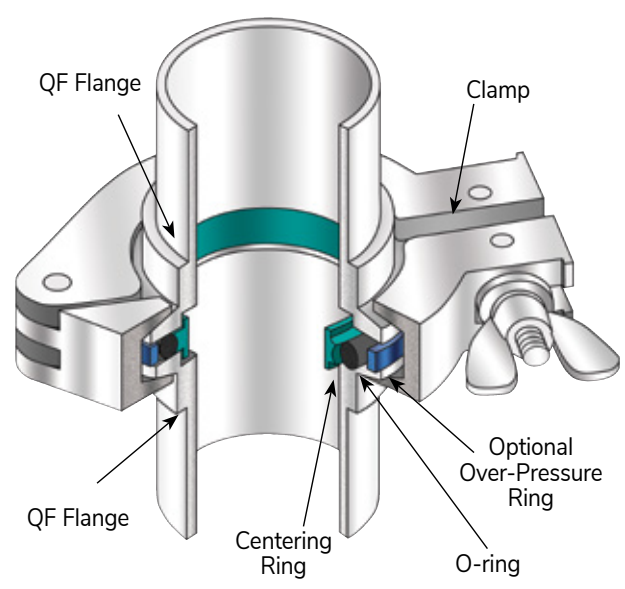
ISO Standard Sealing Assemblies

An ISO seal assembly consists of 3 types of sub-components: two sexless, 360° rotatable flanges, a centering ring for alignment and support of the sealing ring and a fastener to compress the seal between the two flanges. ISO-QF and LF sealing components are similar, however their fastening methods differ. Because of this, there are some differences in flange appearance depending on which fastening method you employ.



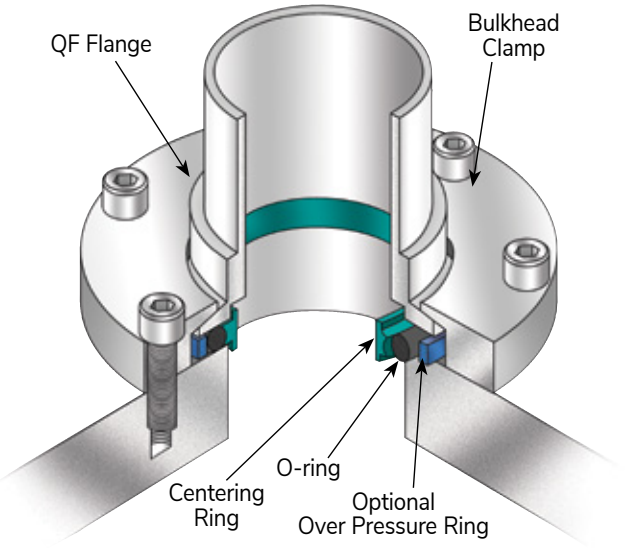
ANCORP uses different Reference Number prefixes to distinguish between ISO flange types. See the illustrations below and on the following pages for quick reference.

ISO-QF Quick Clamp Seal Assembly



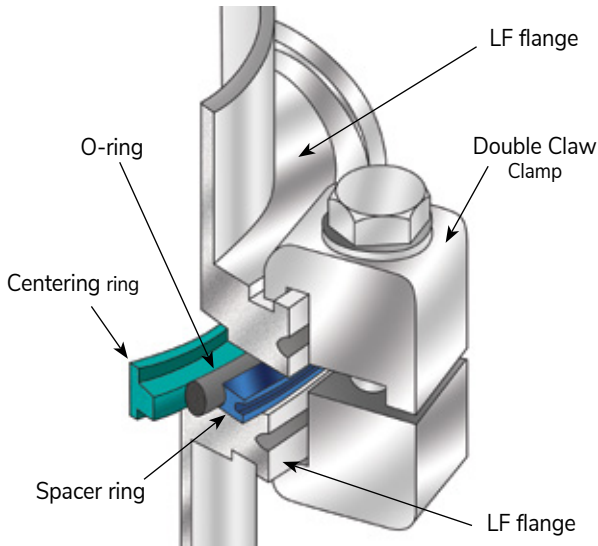
This is the commonly preferred method for fastening ISO flange connections due to the fact that the quick clamp offers the fastest and easiest fastening method for creating a reliable ISO vacuum seal. Traditionally these clamps have been limited to use with ISO flanges QF10 to QF50 (.75 inch to 2 inch tube outer diameter), but **ANCORP** now offers quick clamps and compatible flanges up to size QF200 (8 inch tube outer diameter). Quick clamps are available in a variety of materials and designs.

ISO-QF Bulkhead Clamp Seal Assembly



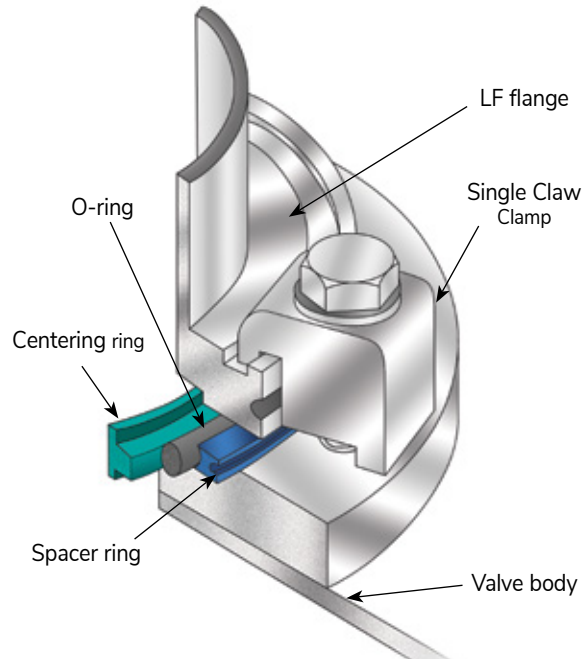
Bulkhead clamps are used to fasten ISO-QF style clamps directly to valves, chamber walls or base-plates. The object to which the flange is sealing must have a compatible bolt hole pattern and sealing groove machined into the sealing surface.

ISO-LF Double Claw Clamp Seal Assembly



This is traditionally the most popular clamp fastening system for ISO sizes LF63 (2.5 inch tube outer diameter) and larger. This fastening system requires the use of more than one clamp per flange connection. They require more work per seal assembly, but they offer greater strength than the quick clamp if the seal assembly must bear a lateral load. These clamps are the only clamps capable of sealing sizes LF250 to LF500 (10 inch to 20 inch tubing outer diameter).

ISO-LF Single Claw Clamp Seal Assembly

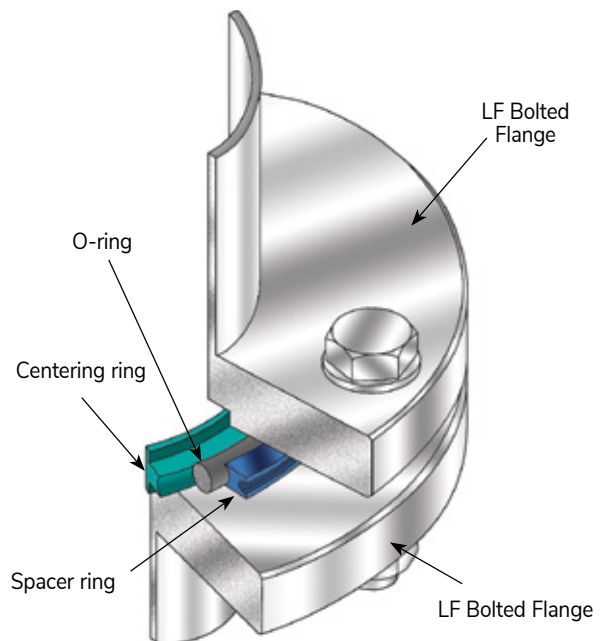


Single claw clamps are used to fasten ISO-LF style clamps directly to LFB flanges with tapped bolt holes, valves, chamber walls or baseplates. The object to which the flange is sealing must have a compatible bolt hole pattern and sealing groove machined into the sealing surface.

ISO-LFB Clamp Seal Assembly

The original means of fastening ISO flange connections offers good lateral load strength like the claw clamp, but also requires more than one bolt set per flange connection like the claw clamp. One great disadvantage to using this fastening system is that the user loses the ability to have infinitely rotatable flanges. Great care must be taken to achieve bolt hole alignment through careful design and installation or the use of rotatable and non-rotatable flanges within your system.

Note: To create a rotatable LFB flange a rotatable bolt ring is added to a standard LF style flange.



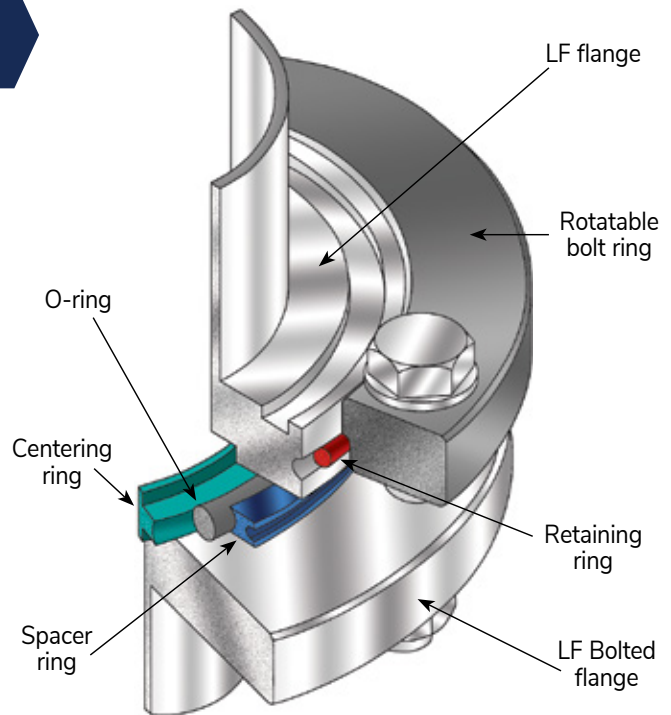
ISO Adaptive Sealing Assemblies

The ISO vacuum flange system accommodates the need to connect different styles of ISO flanges and fasteners through adaptive subcomponents. These adaptive components fit around the outer diameter of the flange and allow the direct connection of two different types of ISO flange.

ISO-LF to ISO-LFB Adaptive Seal Assembly

This fastener subcomponent fits around the outer diameter of a claw clamp style LF flange. This allows the flange to behave as a rotatable bolted style LFB flange to ease bolt-hole alignment issues when assembling the vacuum system.

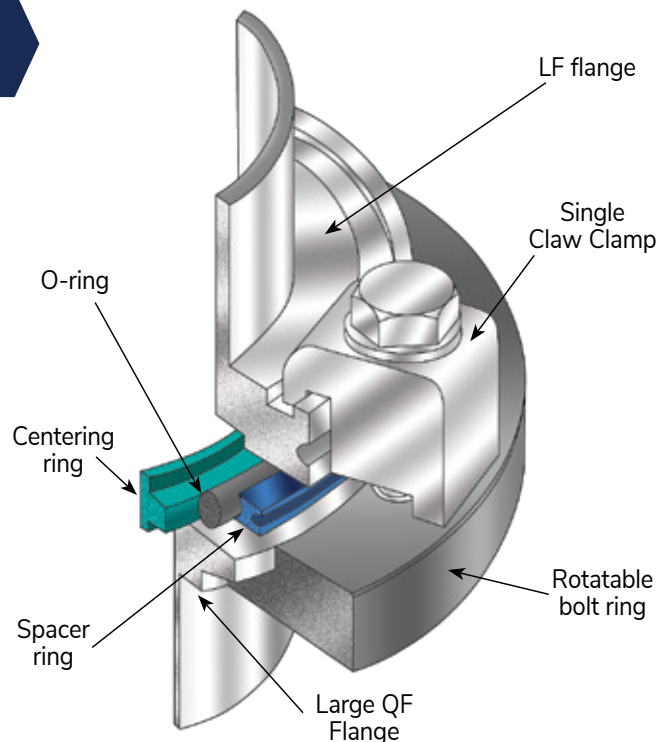
This assembly also has the advantage of having a low profile as compared to claw clamp fasteners. After the rotatable bolt ring is mounted to the LF flange a bolt kit is used to fasten the two flanges together.



ISO-LF to ISO-QF Adaptive Seal Assembly

Adaptive fasteners allow vacuum users to convert directly from one style of ISO fastening flanges to another without the purchase of an adaptive nipple fitting. This saves money and reduces the space needed to accomplish the flange adaptation within your system.

The **ANCORP** adaptive ISO fastener can convert a bolted or claw clamp style flange directly to a quick clamp flange for the same tubing diameter.



Sizes and Dimensions

All manufacturers of ISO components machine these flanges to measurements determined by the ISO standards referenced on the first page of this introduction, and as such, are interchangeable. It is worth noting that three of the flange sizes detailed on this page, namely the NW10, NW20 and NW32 are rarely used by modern vacuum equipment manufacturers in the United States and as such are not kept in stock by **ANCORP**. These can be manufactured upon request, but a better option is to use our adaptive centering ring. With our adaptive centering ring you can adapt directly from a QF10 to a QF16, QF20 to QF25, or QF32 to QF40. The connections can then be fastened with a standard clamp that corresponds with the larger of the two sizes.

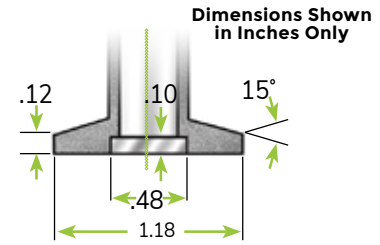
The ISO standard flange interface dimensions are shown on pg. 1.5 and are not repeated throughout the catalog.

Fittings (tees, crosses, elbows, etc.) and adapters have no universal standards; therefore, these dimensions are shown throughout the catalog. **ANCORP** uses U.S. dimensional standards for our ISO components. U.S. dimensional information is given in inches and references a tube's outer diameter. The international specifications for these flanges are stated in millimeters and refer to a tube's inside diameter. See the chart below for a cross-reference between the two standards.

ISO SIZE	TUBING I.D. (mm)	ANCORP REF #	TUBING O.D. (in)
NW10	10	QF10	0.50
NW16	16	QF16	0.75
NW25	25	QF25	1.00
NW40	40	QF40	1.50
NW50	50	QF50	2.00
NW63	63	LF63	2.50
NW80	80	LF80	3.00
NW100	100	LF100	4.00
NW160	160	LF160	6.00
NW200	200	LF200	8.00
NW250	250	LF250	10.00
NW320	320	LF320-1200	12.00
NW320	320	LF320-1275	12.75
NW400	400	LF400	16.00
NW500	500	LF500	20.00

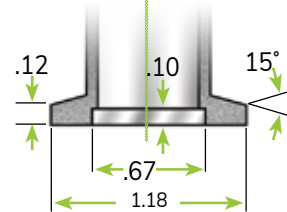
ISO NW10

Mates with **ISO QF16** using an adaptive centering ring.



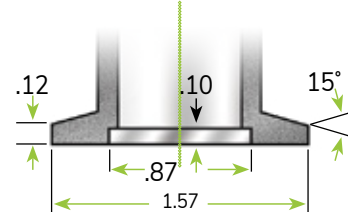
ISO QF16

Standard **ANCORP Quick Flange**



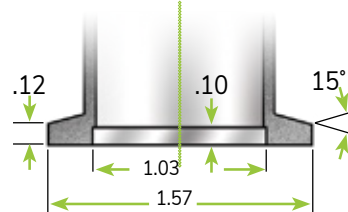
ISO NW20

Mates with **ISO QF25** using an adaptive centering ring.



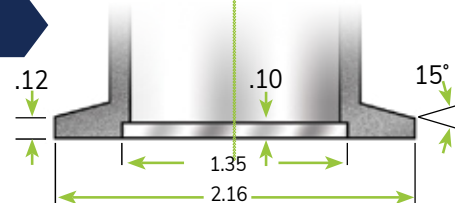
ISO QF25

Standard **ANCORP Quick Flange**



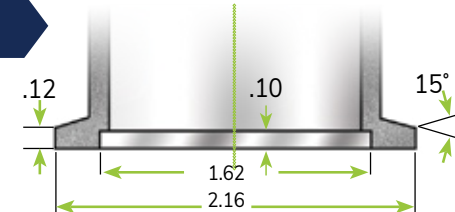
ISO NW32

Mates with **ISO QF40** using an adaptive centering ring.



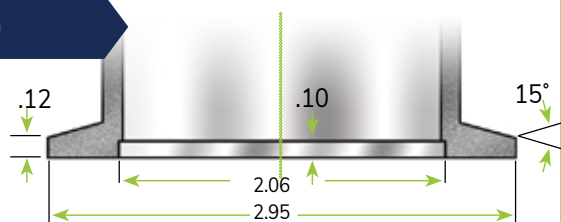
ISO QF40

Standard **ANCORP Quick Flange**



ISO QF50

Standard **ANCORP Quick Flange**



ISO Clamps and Fasteners

The ISO flange system has three traditional choices with which to fasten together your flanges and create a seal. These are the quick clamp connection, claw clamp connection and bolt kits. In addition to these fasteners there are adaptative bolt rings and bulkhead fasteners for special applications.

All of these fasteners have advantages for different applications and are described in detail below.



Specifications:

- High vacuum rated to 1×10^{-8} Torr
- Fasteners for all sizes of quick flange (ISO-QF) and large flange (ISO-LF) flanges
- Fastening materials: aluminum or stainless steel
- Compatible with all ISO standard vacuum flanges and fittings

Features:

- Reusable seals
- Sexless interface
- Infinitely rotatable
- Quick sealing and disassembly
- Ease installation
- Variety of fastening options
- Imperial and metric sizes available

Quick Clamps

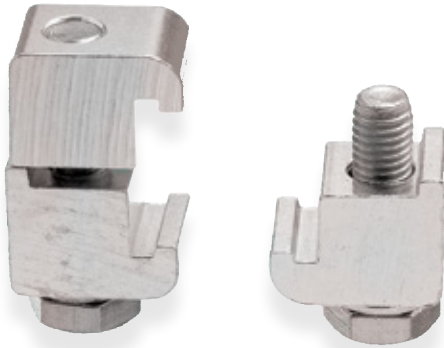


This is the commonly preferred method for fastening ISO flange connections due to the fact that they offer the fastest and easiest fastening method for creating a reliable ISO vacuum seal. Traditionally these clamps have been limited to use with ISO

flange sizes QF10 to QF50 (.75 inch to 2 inch tube outer diameter), but **ANCORP** now offers quick clamps and compatible flanges up to size QF200 (8 inch tube outer diameter). Quick clamps are available in a variety of materials and designs.

Claw Clamps

Claw clamps require the use of more than one clamp per flange connection. They require more work per seal assembly, but they offer greater strength than the quick clamp if the seal assembly must bear a lateral load. Claw clamps are traditionally the most popular clamps for ISO sizes LF63 (2.5 inch tube outer diameter) and larger. These clamps are the only clamps capable of sealing sizes LF250 to LF500 (10 inch to 20 inch tubing outer diameter).



Bolt Kits

The original means of fastening ISO flange connections offers good lateral load strength like the claw clamp, but also requires more than one bolt set per flange connection like the claw clamp.



One great disadvantage to using this fastening system is that the user loses the ability to have infinitely rotatable flanges. Great care must be taken to achieve bolt-hole alignment through careful design and installation or the use of rotatable and non-rotatable flanges within your system.

TECH TIP



To create a rotatable LFB flange, a Rotatable bolt ring is added to a standard LF style flange.

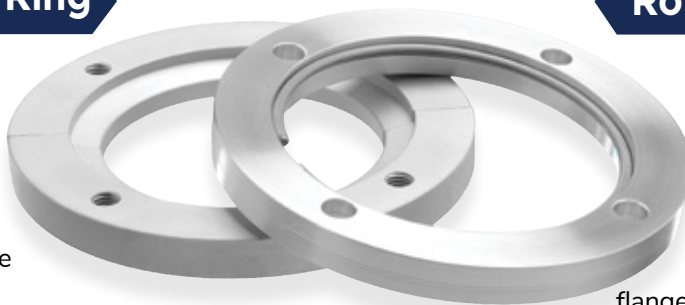
Bulkhead Clamps



Bulkhead clamps are used to fasten ISO-QF style flanges and components directly to valves, chamber walls, baseplates or bulkheads. The object to which the flange is sealing must have a compatible bolt hole pattern and sealing groove machined into the sealing surface.

Adaptive Bolt Ring

Adaptive bolt rings allow vacuum users to convert directly from one style of ISO fastening flanges to another without the purchase of an adaptive nipple fitting.



This saves money and reduces the space needed to accomplish the flange adaptation within your system. The **ANCORP** adaptive ISO fastener can convert a bolted or claw clamp style flange directly to a quick clamp flange for the same tubing diameter.

Rotatable Bolt Ring

Rotatable bolt rings are a subcomponent that fits around the outer diameter of a claw clamp style LF flange. This allows the flange to behave as a rotatable bolted style LFB flange to ease bolt-hole alignment issues when assembling the vacuum system.

This assembly also has the advantage of having a low profile as compared to claw clamp fasteners. After the rotatable bolt ring is mounted to the LF flange a bolt kit is used to fasten the two flanges together.

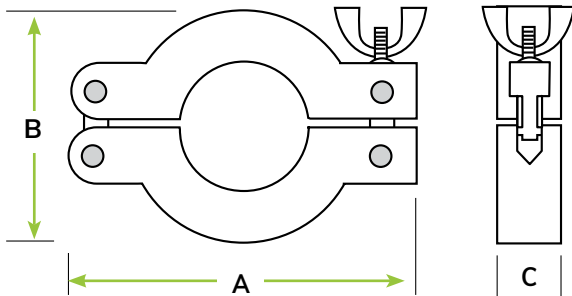
Wing-Nut Aluminum Clamp

Materials:

- Body: die-cast aluminum

Product Notes:

- Economy design for non-stressing vacuum applications



PART #	REFERENCE ID	TUBE SIZE (in)	A (in)	B (in)	C (in)	UNIT PRICE
4040000	QF10/16-WNC-AL	0.50 + 0.75	2.45	1.67	0.65	\$6.00
4040001	QF25-WNC-AL	1.00	2.86	2.16	0.65	\$7.50
4040002	QF40-WNC-AL	1.50	3.53	2.73	0.65	\$9.00
4040003	QF50-WNC-AL	2.00	4.80	3.70	0.90	\$15.00

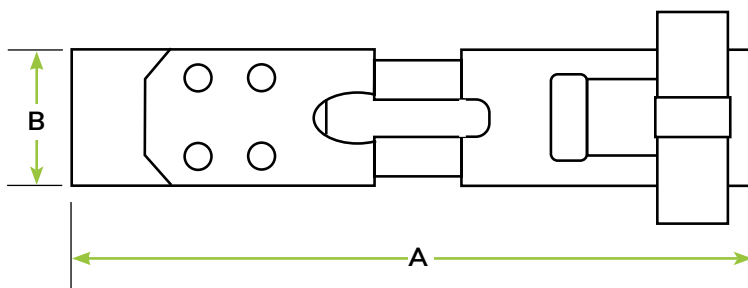
Band Clamp

Materials:

- Body: stainless steel

Product Notes:

- Fastens large size ISO-QF flanges with elastomer seals



PART #	REFERENCE ID	TUBE SIZE (in)	A (in)	B (in)	UNIT PRICE
4040008	QF63-BC	2.50	3.90	0.93	\$27.00
4040009	QF80-BC	3	4.75	0.93	\$32.00
4040010	QF100-BC	4	5.38	0.93	\$37.00
4040011	QF160-BC	6	7.25	0.93	\$42.00
4040012	QF200-BC	8	9.56	0.93	\$47.00

ORDERING NOTE: ANCORP recommends our line of CNC machined clamps for all connections that may bear a lateral load, positive pressure or dangerous substances.

ANCORP CNC Aluminum Clamp

Materials:

- Body: aluminum
- Hardware (pins, studs and hinges): stainless steel

Product Notes:

- Machined from solid bar for greatly increased strength
- Integrated handle lock to prevent accidental opening

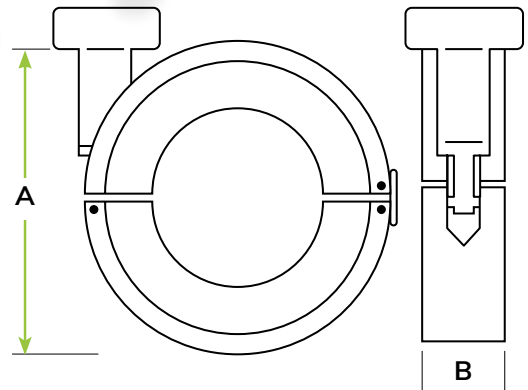


TECH TIP



The design of this clamp eliminates the need for over pressure rings on sizes QF16, QF25 and QF40

PART #	REFERENCE ID	TUBE SIZE (in)	A (in)	B (in)	UNIT PRICE
4050000	QF10/16-CLMP-AL	0.50 + 0.75	1.94	0.63	\$14.50
4050001	QF25-CLMP-AL	1.00	2.45	0.63	\$17.50
4050002	QF40-CLMP-AL	1.50	2.94	0.63	\$19.00
4050003	QF50-CLMP-AL	2.00	3.94	0.63	\$27.00



ANCORP CNC Stainless Steel Clamp

Materials:

- Body: stainless steel
- Hardware (pins, studs and hinges): stainless steel

- Integrated handle lock to prevent accidental opening
- Ideal for corrosive, high torque, high heat and low temperature applications
- Maximum closing torque = 6 ft. lbs.

Product Notes:

- Machined from solid bar for greatly increased strength

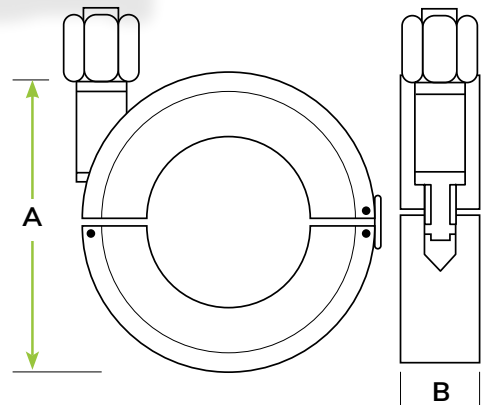


TECH TIP



The design of this clamp eliminates the need for over pressure rings on sizes QF16, QF25 and QF40

PART #	REFERENCE ID	TUBE SIZE (in)	A (in)	B (in)	UNIT PRICE
4050015	QF10/16-CS	0.50 + 0.75	1.94	0.63	\$43.00
4050016	QF25-CLMP-SS	1	2.45	0.63	\$53.00
4050017	QF40-CLMP-SS	1.50	2.94	0.63	\$63.00
4050018	QF50-CLMP-SS	2	3.94	0.63	\$73.00



Bulkhead Clamp

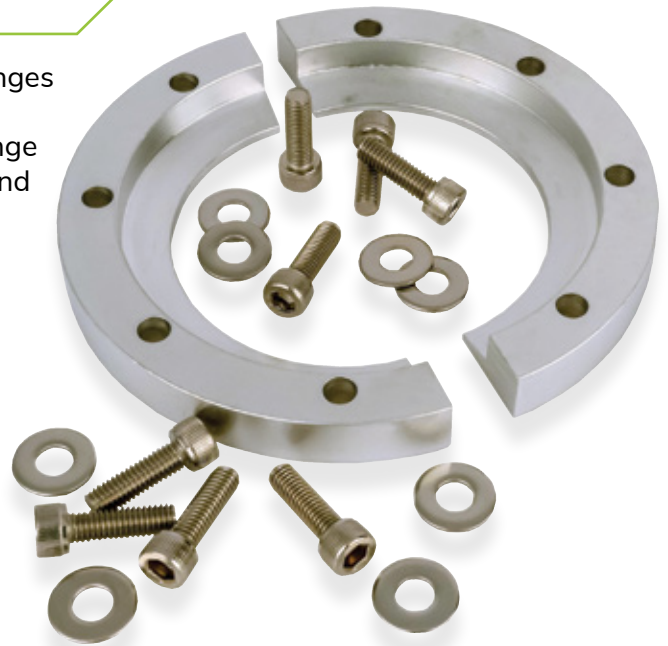
Bulkhead clamps are used to fasten ISO-QF style flanges and components directly to valves, chamber walls, baseplates or bulkheads. The object to which the flange is sealing must have a compatible bolt hole pattern and sealing groove machined into the sealing surface.

Materials:

- Body: aluminum
- Hardware (bolts and washers): stainless steel
- Bolt size: 10-32x5/8

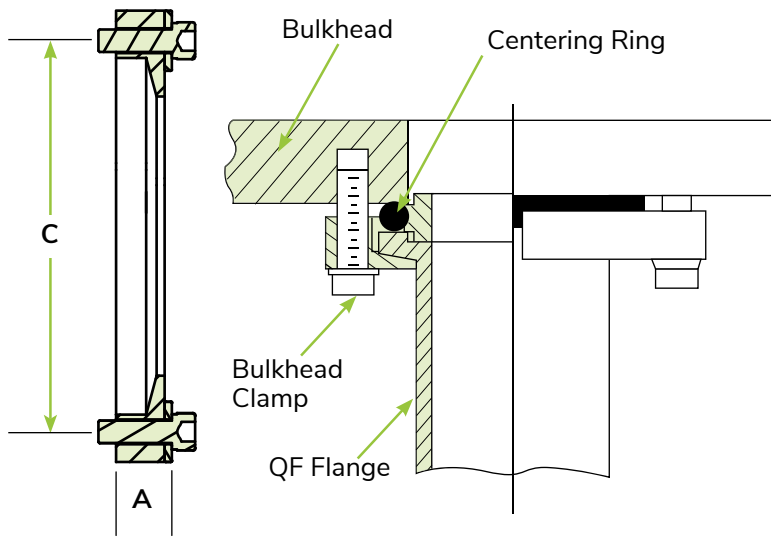
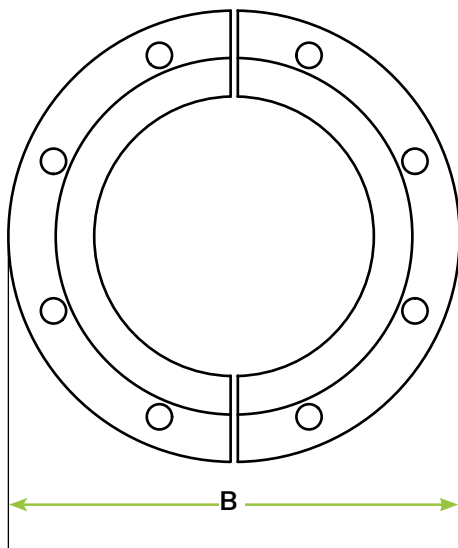
Product Notes:

- Utilizes a standard QF seal assembly
- Bolts included



TECH TIP

The design of this clamp eliminates the need for over pressure rings on sizes QF16, QF25 and QF40



PART #	REFERENCE ID	# OF BOLTS	A (in)	B (in)	C (in)	UNIT PRICE
4000000	QF10/16-BHC	6	0.36	2.00	1.50	\$18.00
4000001	QF25-BHC	6	0.39	2.38	1.89	\$21.00
4000002	QF40-BHC	6	0.37	2.94	2.44	\$25.00
4000003	QF50-BHC	8	0.40	3.75	3.25	\$29.00

Double Claw Clamp

Materials:

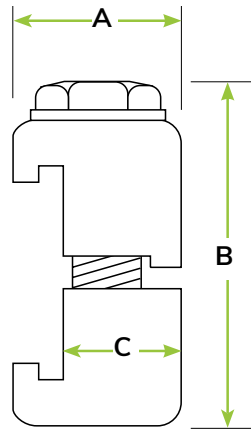
- Body: aluminum
- Hardware (bolts and washers): stainless steel

Product Notes:

- Fastens ISO-LF flanges

Options:

- Call for price and delivery
- Stainless steel clamp body



PART #	REFERENCE ID	FLANGE SIZE	A (in)	B (in)	C (in)	UNIT PRICE
4500000	LF63/100-DCC	63, 80, 100	0.96	1.99	0.66	\$6.50
4500001	LF160/250-DCC	160, 200, 250	1.10	2.05	0.80	\$7.00
4500002	LF320/500-DCC	320, 400, 500	1.34	2.56	1.04	\$13.50

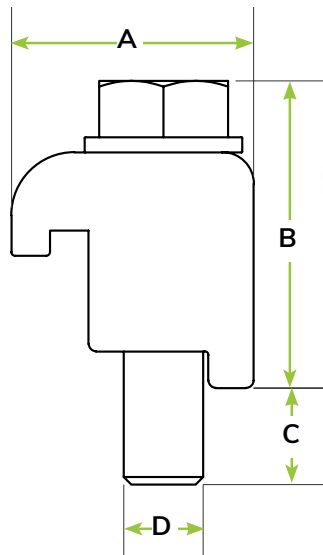
Single Claw Clamp

Materials:

- Body: aluminum
- Hardware (bolts and washers): stainless steel

Product Notes:

- Fastens ISO-LF flanges to tapped ISO-LFB flanges or components (valves, chambers) with a compatible bolt hole pattern and sealing groove.



Options: Call for price and delivery

- Stainless steel clamp body

PART #	REFERENCE ID	BOLT SIZE	FLANGE SIZE	A (in)	B (in)	C (in)	D (in)	UNIT PRICE
4500003	LF63/100-SCC	M8x35	63, 80, 100	0.95	1.20	0.655	0.39	\$5.50
4500004	LF160/250-SCC	M10x35	160, 200, 250	1.10	1.25	0.785	0.39	\$6.50
4500005	LF320/500-SCC	M12x50	320, 400, 500	1.34	1.57	0.965	0.72	\$9.00

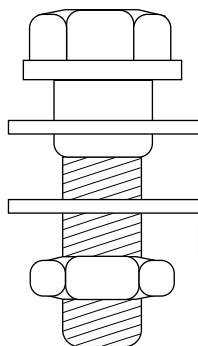
Double Flange Bolts

Materials:

- Hardware (bolts, nuts and washers): stainless steel

Product Notes:

- Fastens ISO-LF flanges
- Bolt kits include all of the bolt sets you will need for 1 ISO-LF sealing assembly.



PART #	REFERENCE ID	BOLT SIZE	# PER SET	UNIT PRICE
0604501	LFB63-DFB	M8x40	4	\$5.50
0604502	LFB80/100-DFB	M8x40	8	\$12.50
0604503	LFB160-DFB	M10x50	8	\$22.00
0604504	LFB200/250-DFB	M10x50	12	\$33.00
0604505	LFB320-DFB	M12x60	12	\$52.00
0604506	LFB400/500-DFB	M12x60	16	\$65.00

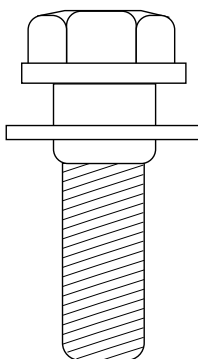
Tapped Flange Bolts

Materials:

- Hardware (bolts, nuts and washers): stainless steel

Product Notes:

- Fastens ISO-LFB flanges to tapped ISO-LFB flanges or components (valves, chambers) with a compatible bolt hole pattern and sealing groove.
- Bolt kits include all of the bolt sets you will need for one ISO-LF sealing assembly.



PART #	REFERENCE ID	BOLT SIZE	# PER SET	UNIT PRICE
0604510	LFB63-TFB	M8x30	4	\$3.50
0604511	LFB80/100-TFB	M8x30	8	\$7.00
0604512	LFB160-TFB	M10x35	8	\$13.50
0604513	LFB200/250-TFB	M10x35	12	\$20.00
0604514	LFB320-TFB	M12x45	12	\$31.00
0604515	LFB400/500-TFB	M12x45	16	\$44.00

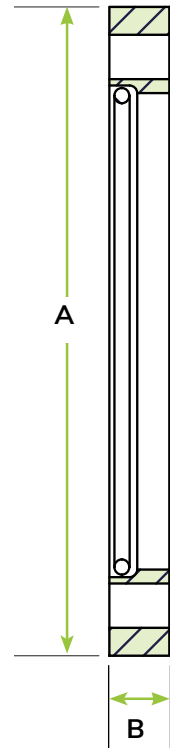
Rotatable Bolt Ring

Materials:

- Body: aluminum
- Retaining ring: stainless steel

Product Notes:

- Converts ISO-LF flanges to Rotatable ISO-LFB flanges
- O.D. and bolt pattern match ISO-LFB flanges
- **Retaining ring included**
- See pg. 1.18 for additional details



PART #	REFERENCE ID	A O.D. (in)	B THICKNESS (in)	UNIT PRICE
4500060	LF63-250-RBR	5.12	0.47	\$145.00
4500061	LF80-300-RBR	5.71	0.47	\$155.00
4500062	LF100-400-RBR	6.50	0.47	\$175.00
4500063	LF160-600-RBR	8.86	0.63	\$350.00
4500064	LF200-800-RBR	11.22	0.63	\$385.00
4500065	LF250-1000-RBR	13.19	0.63	\$450.00
4500066	LF320-1200-RBR	16.73	0.79	\$775.00
4500067	LF400-1600-RBR	20.08	0.79	\$850.00
4500068	LF500-2000-RBR	24.02	0.79	\$950.00

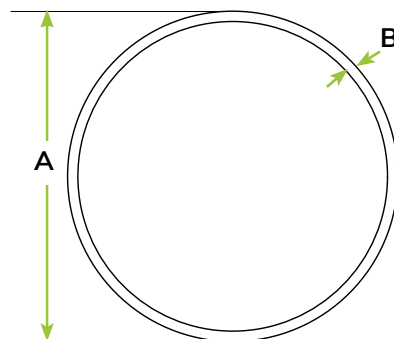
Replacement Retaining Ring

Materials:

- Stainless steel

Product Notes:

- Converts ISO-LF flanges to rotatable ISO-LFB flanges
- O.D. and bolt pattern match ISO-LFB flanges



PART #	REFERENCE ID	A O.D. (in)	B THICKNESS (in)	UNIT PRICE
4510036	LF63-250-RR	3.840	0.125	\$27.00
4510037	LF80-300-RR	4.456	0.125	\$32.00
4510038	LF100-400-RR	5.25	0.120	\$32.00
4510039	LF160-600-RR	7.26	0.180	\$34.00
4510040	LF200-800-RR	9.25	0.190	\$37.00
4510041	LF250-1000-RR	11.674	0.175	\$39.00
4510042	LF320-1200-RR	14.37	0.188	\$45.00
4510043	LF400-1600-RR	18.063	0.315	\$65.00
4510044	LF500-2000-RR	22.00	0.310	\$85.00

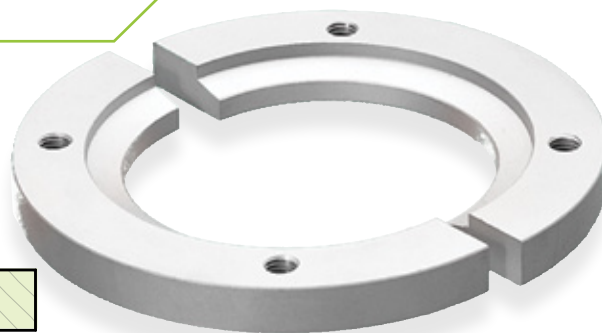
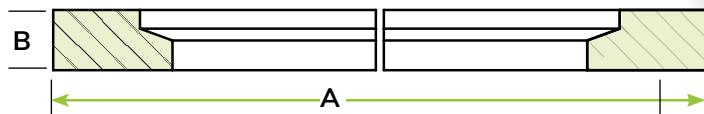
Adaptive Bolt Ring

Materials:

- Body: aluminum

Product Notes:

- Converts ISO-LF and ISO-LFB flanges to ISO-QF flanges
- O.D. and bolt pattern match ISO-LFB flanges



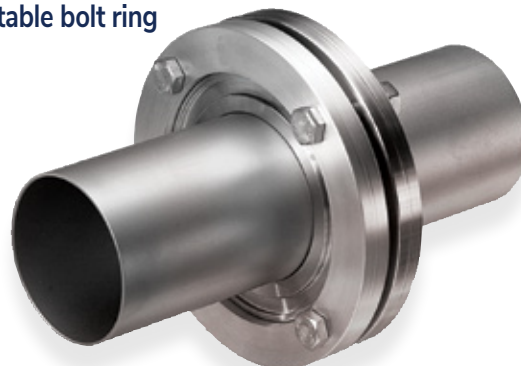
PART #	REFERENCE ID	A O.D. (in)	B THICKNESS (in)	UNIT PRICE
4001086	QF63-250-ABR	5.12	0.47	\$60.00
4001087	QF80-300-ABR	5.71	0.47	\$88.00
4001088	QF100-400-ABR	6.50	0.47	\$105.00
4001089	QF160-600-ABR	8.86	0.47	\$150.00
4001090	QF200-800-ABR	11.22	0.47	\$175.00

Rotatable Bolt Ring

ISO-LFB bolt fastener flange fastened to an ISO-LF flange with a rotatable bolt ring

Rotatable bolt rings are a subcomponent that fits around the outer diameter of a claw clamp style LF flange. This allows the flange to behave as a rotatable bolted style LFB flange to ease bolt-hole alignment issues when assembling the vacuum system.

This assembly also has the advantage of having a low profile as compared to claw clamp fasteners. After the rotatable bolt ring is mounted to the LF flange a bolt kit is used to fasten the two flanges together.



ISO Adaptive Bolt Ring

Adaptive bolt rings allow vacuum users to convert directly from one style of ISO-LF fastening flange to another without the purchase of an adaptive fitting. This saves money and reduces the space needed to accomplish the flange adaptation within your system. The **ANCORP** adaptive ISO fastener can convert a bolted or claw clamp style ISO-LF flange directly to a quick clamp flange for the same tubing diameter. (i.e. an LF80-300-SF can adapt directly to a QF80-300-SF)



ISO-LF clamp fastened flange directly adapted to an ISO-QF clamp flange of the same size.

ISO-LFB bolt fastened flange directly adapted to an ISO-QF clamp flange of the same size.

ISO Seals



ISO Seals

ANCORP provides ISO high vacuum seals and sealing assemblies for all ISO standard sizes.

We offer three different types of elastomer sealing rings and two different types of metallic supportive rings which can be configured to meet the needs of your specific application.

Specifications:

- High vacuum rated to 1×10^{-8} Torr
- Sealing materials: Viton®, Buna or silicone
- Compatible with all ISO standard vacuum flanges

Features:

- Reusable seals
- Sexless interface
- Infinitely rotatable
- Quick sealing and disassembly
- Ease installation
- Self-centering supportive ring
- Imperial and metric sizes available

Centering Ring Assemblies

The basic seal for the ISO flange system includes a supportive inner stainless steel ring and an elastomer outer ring (O-ring) which is compressed between the ISO flanges to create a vacuum tight seal.

ANCORP offers a choice of three different elastomers for the sealing ring (Viton®, Buna and silicone).



Adaptive Centering Ring Assemblies



These sealing assemblies allow you to adapt directly from the rarely used ISO-QF sizes (QF10, QF20 and QF32) to commonly available ISO-QF sizes (QF16, QF25 and QF40). The adapted assembly can then be fastened with a standard clamp that corresponds with the larger of the two sizes.

Screen Mesh Centering Ring Assemblies



These sealing assemblies are useful in many situations in which a vacuum system or instrument needs to be protected from contamination by particulate generated from outside the system or from within. These seal assemblies are made of the same sub-components as the standard centering ring assemblies described on the opposite page. The difference is that the supportive metallic ring for these seals has a screen mesh insert covering the inner aperture.

Replacement O-rings



The elastomer sealing rings (O-ring) for the ISO seal assembly must be used in conjunction with a metallic supportive ring. The elastomer component of this sealing assembly is a consumable item. When the O-ring no longer provides consistent vacuum tight seals replacement elastomer O-rings can be purchased separately from the supportive metallic ring to decrease cost of system maintenance. **ANCORP** offers a choice of three different elastomers for the sealing ring (Viton®, Buna and silicone).

Over-Pressure Rings



This centering ring accessory creates a barrier on the outer diameter of the elastomer sealing ring to prevent “blow out” due to the presence of pressures greater than 1 standard atmosphere within a vacuum system. A centering ring assembly with over-pressure ring can withstand up to 100psi of pressure depending on the size of the flange you are using. **ANCORP** CNC machined clamps have a built-in over-pressure ring design for sizes QF16, QF25, and QF40. With the use of these clamps there is no need for the added expense of an over-pressure ring addition to the centering ring assembly.

Centering Ring Assembly - Stainless Steel

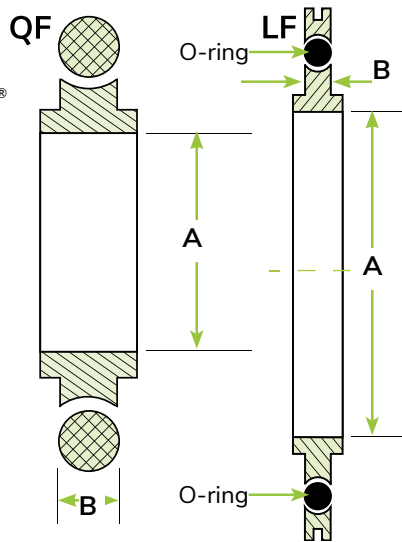
Centering Ring Assembly

Materials:

- Centering ring: stainless steel
- O-ring: Buna-N, Viton® or silicone
- Spacer ring (LF sizes only): aluminum

Product Notes:

- Metal centering ring aligns flanges during seal assembly and provides support for the elastomer sealing ring.



TEMPERATURE LIMITS			
O-ring MATERIAL	LOW	SUSTAINED HIGH	INTERMITTENT USE
Viton®	-26°C	150°C	205°C
Buna	-20°C	80°C	100°C
Silicone	-50°C	150°C	200°C

Silicone is chemically resistant

Stainless Steel Centering Ring

PART #	REFERENCE ID	A (in)	B (in)	UNIT PRICE
Viton® Seals				
4000005	QF16-075-CTR-VT	0.63	0.21	\$6.00
4000006	QF25-100-CTR-VT	0.98	0.21	\$7.00
4000007	QF40-150-CTR-VT	1.53	0.21	\$10.50
4000008	QF50-200-CTR-VT	1.97	0.21	\$14.00
4500008	LF63-250-CTR-VT	2.64	0.15	\$50.00
4500011	LF80-300-CTR-VT	3.15	0.15	\$64.00
4500014	LF100-400-CTR-VT	3.90	0.15	\$64.00
4500017	LF160-600-CTR-VT	5.91	0.15	\$78.00
4500020	LF200-800-CTR-VT	8.27	0.15	\$110.00
4500023	LF250-1000-CTR-VT	10.14	0.15	\$138.00
4500026	LF320-1200-CTR-VT	12.28	0.22	\$395.00
4500029	LF400-1600-CTR-VT	15.42	0.22	\$467.00
4500032	LF500-2000-CTR-VT	19.41	0.22	\$1,250.00
Buna-N Seals				
4000010	QF16-075-CTR-BN	0.63	0.21	\$5.50
4000011	QF25-100-CTR-BN	0.98	0.21	\$6.50
4000012	QF40-150-CTR-BN	1.53	0.21	\$9.50
4000013	QF50-200-CTR-BN	1.97	0.21	\$11.00
4500006	LF63-250-CTR-BN	2.65	0.15	\$47.00
4500009	LF80-300-CTR-BN	3.15	0.15	\$57.00

PART #	REFERENCE ID	A (in)	B (in)	UNIT PRICE
Buna-N Seals				
4500012	LF100-400-CTR-BN	3.90	0.15	\$57.00
4500015	LF160-600-CTR-BN	5.91	0.15	\$66.00
4500018	LF200-800-CTR-BN	8.27	0.15	\$86.00
4500021	LF250-1000-CTR-BN	10.14	0.15	\$115.00
4500024	LF320-1200-CTR-BN	12.28	0.22	\$305.00
4500027	LF400-1600-CTR-BN	15.42	0.22	\$467.00
4500030	LF500-2000-CTR-BN	19.41	0.22	\$1,215.00
Silicone Seals				
4000015	QF16-075-CTR-SN	0.63	0.21	\$6.50
4000016	QF25-100-CTR-SN	0.98	0.21	\$8.00
4000017	QF40-150-CTR-SN	1.53	0.21	\$11.50
4000018	QF50-200-CTR-SN	1.97	0.21	\$14.00
4500007	LF63-250-CTR-SN	2.65	0.15	\$53.00
4500010	LF80-300-CTR-SN	3.15	0.15	\$67.00
4500013	LF100-400-CTR-SN	3.90	0.15	\$67.00
4500016	LF160-600-CTR-SN	5.91	0.15	\$82.00
4500019	LF200-800-CTR-SN	8.27	0.15	\$115.00
4500022	LF250-1000-CTR-SN	10.14	0.15	\$125.00
4500025	LF320-1200-CTR-SN	12.28	0.22	\$325.00
4500028	LF400-1600-CTR-SN	15.42	0.22	\$467.00
4500031	LF500-2000-CTR-SN	19.41	0.22	\$1,250.00

ORDERING NOTE: Centering rings with screen mesh are available on pg. 1.24.

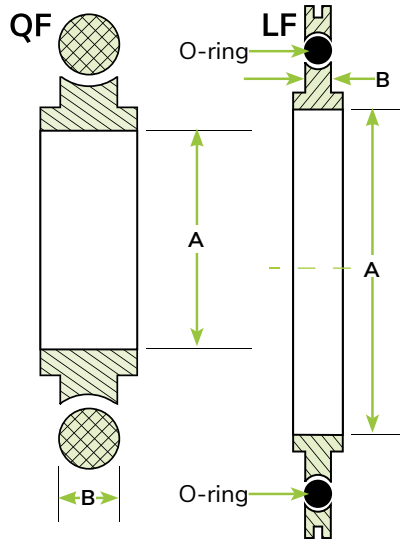
Centering Ring Assembly - Aluminum

Materials:

- Centering ring: aluminum
- O-ring: Buna-N, Viton® or silicone
- Spacer ring (LF sizes only): aluminum

Product Notes:

- Metal centering ring aligns flanges during seal assembly and provides support for the elastomer sealing ring.



TEMPERATURE LIMITS			
O-ring MATERIAL	LOW	SUSTAINED HIGH	INTERMITTENT USE
Viton®	-26°C	150°C	205°C
Buna	-20°C	80°C	100°C
Silicone	-50°C	150°C	200°C

Silicone is chemically resistant

Aluminum Centering Ring

PART #	REFERENCE ID	A (in)	B (in)	UNIT PRICE	PART #	REFERENCE ID	A (in)	B (in)	UNIT PRICE
Viton® Seals					Buna-N Seals				
4000020	QF16-075-CTR-AL-VT	0.63	0.21	\$5.50	4500039	LF100-400-CTR-AL-BN	3.90	0.15	\$35.00
4000021	QF25-100-CTR-AL-VT	0.98	0.21	\$6.50	4500042	LF160-600-CTR-AL-BN	5.91	0.15	\$42.00
4000022	QF40-150-CTR-AL-VT	1.53	0.21	\$8.50	4500045	LF200-800-CTR-AL-BN	8.27	0.15	\$54.00
4000023	QF50-200-CTR-AL-VT	1.97	0.21	\$11.00	4500048	LF250-1000-CTR-AL-BN	10.14	0.15	\$73.00
4500035	LF63-250-CTR-AL-VT	2.64	0.15	\$29.00	4500051	LF320-1200-CTR-AL-BN	12.28	0.21	\$120.00
4500038	LF80-300-CTR-AL-VT	3.15	0.15	\$35.00	4500054	LF400-1600-CTR-AL-BN	15.42	0.21	\$160.00
4500041	LF100-400-CTR-AL-VT	3.90	0.15	\$35.00	4500057	LF500-2000-CTR-AL-BN	19.41	0.21	CALL
4500044	LF160-600-CTR-AL-VT	5.91	0.15	\$47.00	Silicone Seals				
4500047	LF200-800-CTR-AL-VT	8.27	0.15	\$64.00	4000030	QF16-075-CTR-AL-SN	0.63	0.21	\$6.00
4500050	LF250-1000-CTR-AL-VT	10.14	0.15	\$73.00	4000031	QF25-100-CTR-AL-SN	0.98	0.21	\$7.50
4500053	LF320-1200-CTR-AL-VT	12.28	0.21	\$124.00	4000032	QF40-150-CTR-AL-SN	1.53	0.21	\$10.50
4500056	LF400-1600-CTR-AL-VT	15.42	0.21	\$210.00	4000033	QF50-200-CTR-AL-SN	1.97	0.21	\$13.00
4500059	LF500-2000-CTR-AL-VT	19.41	0.21	\$325.00	4500034	LF63-250-CTR-AL-SN	2.65	0.15	\$31.00
Buna-N Seals					4500037	LF80-300-CTR-AL-SN	3.15	0.15	\$36.00
4000025	QF16-075-CTR-AL-BN	0.63	0.21	\$3.25	4500040	LF100-400-CTR-AL-SN	3.90	0.15	\$36.00
4000026	QF25-100-CTR-AL-BN	0.98	0.21	\$4.35	4500043	LF160-600-CTR-AL-SN	5.91	0.15	\$48.00
4000027	QF40-150-CTR-AL-BN	1.53	0.21	\$5.50	4500046	LF200-800-CTR-AL-SN	8.27	0.15	\$69.00
4000028	QF50-200-CTR-AL-BN	1.97	0.21	\$6.50	4500049	LF250-1000-CTR-AL-SN	10.14	0.15	\$76.00
4500033	LF63-250-CTR-AL-BN	2.64	0.15	\$27.00	4500052	LF320-1200-CTR-AL-SN	12.28	0.21	\$130.00
4500036	LF80-300-CTR-AL-BN	3.15	0.15	\$33.00	4500055	LF400-1600-CTR-AL-SN	15.42	0.21	\$225.00
					4500058	LF500-2000-CTR-AL-SN	19.41	0.21	\$340.00

ORDERING NOTE: Centering rings with screen mesh are available on pg. 1.24.

Adaptive Centering Ring Assembly

Three of the ISO-QF flange sizes illustrated on the table on pg. 1.9 are rarely used by modern vacuum component manufacturers within the United States. These are the ISO-QF10, QF20 and QF32. These flanges are identical to the ISO-QF16, QF25 and QF40 respectively except for the seal groove machined into the I.D. of the flange.

With our adaptive centering ring you can adapt directly from a QF10 to a QF16, QF20 to QF25 and QF32 to QF40. The connections can then be fastened with a standard clamp that corresponds with the larger of the two sizes. Adaptation to these standard sizes will greatly expand the number of components that have standard dimensions compatible with your vacuum system. This will ease your system assembly, decrease product delivery time and reduce cost.



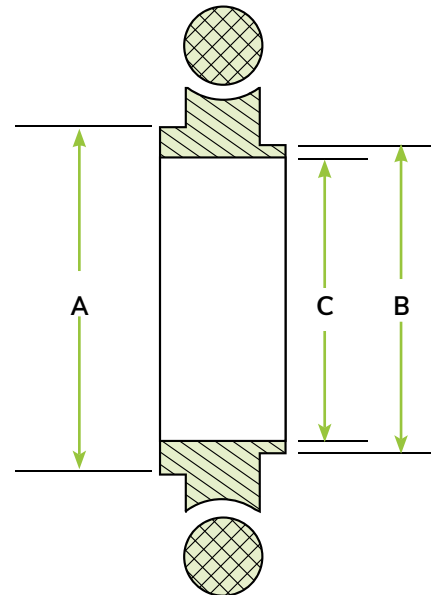
Adaptive Centering Ring Assembly

Materials:

- Centering ring: Standard: 316 stainless steel
- O-ring:
 - Standard: Viton®
 - Alternative: Buna-N or silicone (Call for price and delivery)

Product Notes:

- Metal centering ring aligns flanges during seal assembly and provides support for the elastomer, sealing ring.
- Replaceable O-ring



TEMPERATURE LIMITS

O-ring MATERIAL	LOW	SUSTAINED HIGH	INTERMITTENT USE
Viton®	-26°C	150°C	205°C
Buna	-20°C	80°C	100°C
Silicone	-50°C	150°C	200°C

Silicone is chemically resistant

Stainless Steel

PART #	REFERENCE ID	A (in)	B (in)	C (in)	UNIT PRICE
4000054	QF10/16-ACR-VT	0.70	0.47	0.39	\$9.00
4000055	QF20/25-ACR-VT	1.02	0.87	0.81	\$12.00
4000056	QF32/40-ACR-VT	1.61	1.34	1.26	\$20.00

Centering Ring Assembly with Screen

Screen Mesh Centering Ring Assemblies: These sealing assemblies are useful in many situations in which a vacuum system or instrument needs to be protected from contamination by particulate generated from outside the system or from within. The supportive metallic ring for these seals has a screen mesh insert covering the inner aperture.



Materials:

- Centering ring:
 - Standard: 304 stainless steel
- O-ring:
 - Standard: Viton®
 - Alternative: Buna-N or silicone
(Call for price and delivery)

Options: Call for price and delivery

- Larger sizes
- Mesh sizes

Product Notes:

- Metal centering ring aligns flanges during seal assembly and provides support for the elastomer, sealing ring.
- Replaceable O-ring

TEMPERATURE LIMITS			
O-ring MATERIAL	LOW	SUSTAINED HIGH	INTERMITTENT USE
Viton®	-26°C	150°C	205°C
Buna	-20°C	80°C	100°C
Silicone	-50°C	150°C	200°C

Silicone is chemically resistant

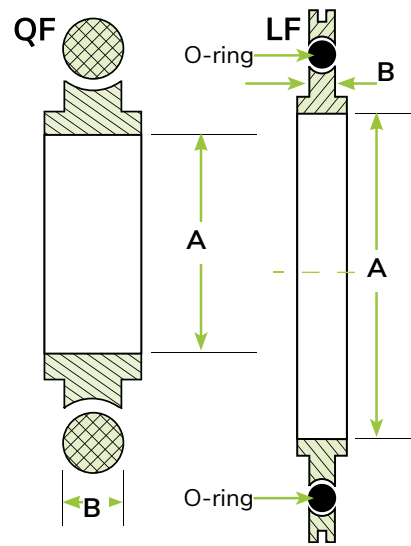


Fig. 1

Fig. 2

PART #	REFERENCE ID	FIGURE	A (in)	B (in)	UNIT PRICE
4000050	QF16-CTR-SM-VT	1	0.51	0.21	\$28.00
4000051	QF25-CTR-SM-VT	1	0.86	0.21	\$30.00
4000052	QF40-CTR-SM-VT	1	1.45	0.21	\$35.00
4000053	QF50-CTR-SM-VT	1	1.88	0.21	\$39.00
4500341	LF63-CTR-SM-VT	2	2.48	0.154	\$220.00
4500342	LF80-CTR-SM-VT	2	3.03	0.154	\$265.00
4500343	LF100-CTR-SM-VT	2	3.80	0.154	\$310.00
4500344	LF160-CTR-SM-VT	2	5.67	0.154	\$330.00

Over Pressure Ring

This centering ring accessory creates a barrier on the outer diameter of the elastomer sealing ring to prevent “blow out” due to the presence of pressures greater than 1 standard atmosphere within a vacuum system. A centering ring assembly with an over-pressure ring can withstand up to 100psi of pressure depending on the size of the flange you are using.

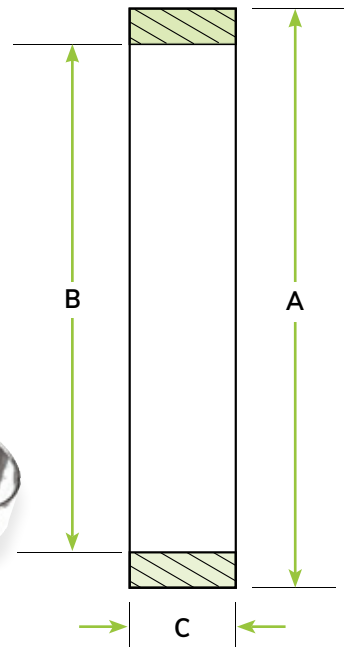
ANCORP CNC machined clamps have a built-in over-pressure ring design. With the use of these clamps there is no need for the added expense of an over-pressure ring addition to the centering ring assembly.

Materials:

- 304 stainless steel

Product Notes:

- Retains O-ring if your system is exposed to a burst of pressure



Over Pressure Ring

PART #	REFERENCE ID	MAX PSIG	MAX PSIG W/ CNC CLAMP	A (in)	B (in)	C (in)	UNIT PRICE
4000073	QF16-075-OPR	100	300	1.25	1.19	0.35	\$8.00
4000074	QF25-100-OPR	100	250	1.66	1.58	0.35	\$8.50
4000075	QF40-150-OPR	75	200	2.25	2.17	0.35	\$9.50
4000076	QF50-200-OPR	50	-	2.75	2.62	0.15	\$11.00

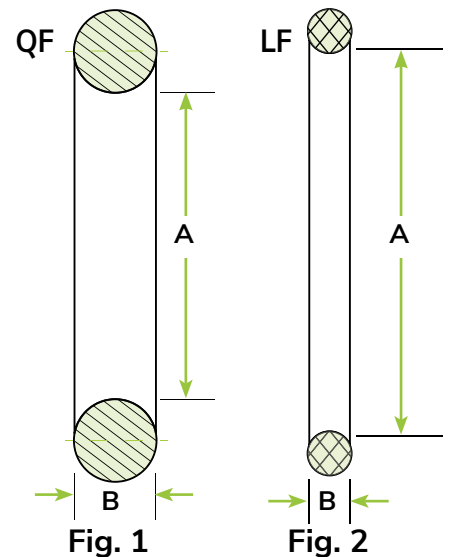
Replacement Viton® O-ring

Product Notes:

- Replacement seal for ISO centering rings
- Temperature limits:
Low: -26°C
Sustained High: 150°C
Intermittent Use: 205°C



PART #	REFERENCE ID	USE WITH FLANGE	FIG.	O-RING STD#	A (in)	B (in)	UNIT PRICE
0600312	2-312-OV	QF10	1	2-312	0.60	0.21	\$3.50
0600314	2-314-OV	QF16	1	2-314	0.73	0.21	\$3.50
0600320	2-320-OV	QF25	1	2-320	1.10	0.21	\$3.50
0600326	2-326-OV	QF40	1	2-326	1.60	0.21	\$4.50
0600330	2-330-OV	QF50	1	2-330	2.10	0.21	\$5.50
0600336	2-336-OV	LF63	2	2-336	2.85	0.21	\$9.00
0600340	2-340-OV	LF80	2	2-340	3.35	0.21	\$12.50
0600346	2-346-OV	LF100	2	2-346	4.10	0.21	\$21.00
0600361	2-361-OV	LF160	2	2-361	5.98	0.21	\$27.00
0600371	2-371-OV	LF200	2	2-371	8.48	0.21	\$30.00
0600378	2-378-OV	LF250	2	2-378	10.48	0.21	\$36.00
0600454	2-454-OV	LF320	2	2-454	12.48	0.28	\$44.00
0600460	2-460-OV	LF400	2	2-460	15.48	0.28	\$47.00
0600468	2-468-OV	LF500	2	2-468	19.46	0.28	\$61.00



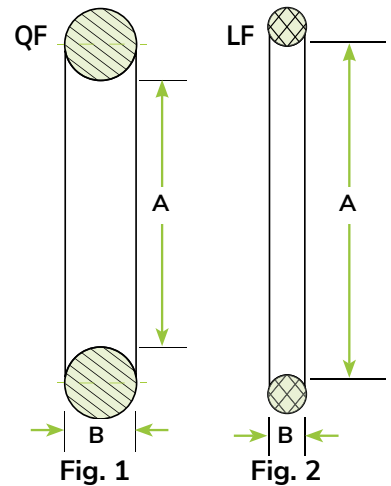
Replacement Silicone O-rings

Product Notes:

- Replacement seal for ISO centering rings
- Used in chemical processes
- Temperature limits:
 Low: -50°C
 Sustained High: 150°C
 Intermittent Use: 200°C



PART #	REFERENCE ID	USE WITH FLANGE	FIG.	O-RING STD#	A (in)	B (in)	UNIT PRICE
0602312	2-312-OS	QF10	1	2-312	0.60	0.21	\$1.50
0602314	2-314-OS	QF16	1	2-314	0.73	0.21	\$1.50
0602320	2-320-OS	QF25	1	2-320	1.10	0.21	\$2.00
0602326	2-326-OS	QF40	1	2-326	1.60	0.21	\$2.50
0602330	2-330-OS	QF50	1	2-330	2.10	0.21	\$2.50
0602336	2-336-OS	LF63	2	2-336	2.85	0.21	\$3.50
0602340	2-340-OS	LF80	2	2-340	3.35	0.21	\$4.00
0602346	2-346-OS	LF100	2	2-346	4.10	0.21	\$4.50
0602361	2-361-OS	LF160	2	2-361	5.98	0.21	\$8.00
0602371	2-371-OS	LF200	2	2-371	8.48	0.21	\$10.00
0602378	2-378-OS	LF250	2	2-378	10.48	0.21	\$11.00
0602454	2-454-OS	LF320	2	2-454	12.48	0.28	\$20.00
0602460	2-460-OS	LF400	2	2-460	15.48	0.28	\$22.00
0602468	2-468-OS	LF500	2	2-468	19.46	0.28	\$27.00



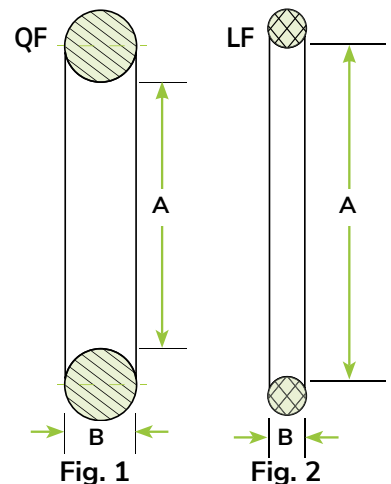
Replacement Buna-N O-rings

Product Notes:

- Replacement seal for ISO centering rings
- Temperature limits:
 Low: -20°C
 Sustained High: 80°C
 Intermittent Use: 100°C



PART #	REFERENCE ID	USE WITH FLANGE	FIG.	O-RING STD#	A (in)	B (in)	UNIT PRICE
0601312	2-312-OB	QF10	1	2-312	0.60	0.21	\$1.50
0601314	2-314-OB	QF16	1	2-314	0.73	0.21	\$1.50
0601320	2-320-OB	QF25	1	2-320	1.10	0.21	\$2.50
0601326	2-326-OB	QF40	1	2-326	1.60	0.21	\$2.50
0601330	2-330-OB	QF50	1	2-330	2.10	0.21	\$2.50
0601336	2-336-OB	LF63	2	2-336	2.85	0.21	\$2.50
0601340	2-340-OB	LF80	2	2-340	3.35	0.21	\$2.50
0601346	2-346-OB	LF100	2	2-346	4.10	0.21	\$2.50
0601361	2-361-OB	LF160	2	2-361	5.98	0.21	\$3.50
0601371	2-371-OB	LF200	2	2-371	8.48	0.21	\$5.00
0601378	2-378-OB	LF250	2	2-378	10.48	0.21	\$6.50
0601454	2-454-OB	LF320	2	2-454	12.48	0.28	\$13.50
0601460	2-460-OB	LF400	2	2-460	15.48	0.28	\$19.00
0601468	2-468-OB	LF500	2	2-468	19.46	0.28	\$25.00



Replacement Viton® O-rings (10-Pack)

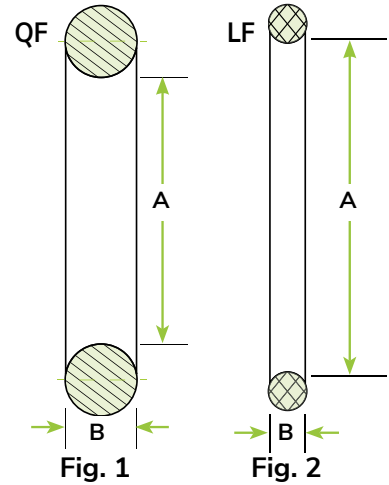
Product Notes:

- Replacement seal for ISO centering rings
- Temperature limits:
Low: -26°C
Sustained High: 150°C
Intermittent Use: 205°C



Replacement O-rings

PART #	REFERENCE ID	USE WITH FLANGE	FIG.	O-RING STD#	A (in)	B (in)	UNIT PRICE
0610312	2-312-OV-10	QF10	1	2-312	0.60	0.21	\$24.50
0610314	2-314-OV-10	QF16	1	2-314	0.73	0.21	\$24.50
0610320	2-320-OV-10	QF25	1	2-320	1.10	0.21	\$24.50
0610326	2-326-OV-10	QF40	1	2-326	1.60	0.21	\$31.50
0610330	2-330-OV-10	QF50	1	2-330	2.10	0.21	\$38.50
0610336	2-336-OV-10	LF63	2	2-336	2.85	0.21	\$63.00
0610340	2-340-OV-10	LF80	2	2-340	3.35	0.21	\$87.50
0610346	2-346-OV-10	LF100	2	2-346	4.10	0.21	\$147.00
0610361	2-361-OV-10	LF160	2	2-361	5.98	0.21	\$189.00
0610371	2-371-OV-10	LF200	2	2-371	8.48	0.21	\$210.00
0610378	2-378-OV-10	LF250	2	2-378	10.48	0.21	\$252.00
0610454	2-454-OV-10	LF320	2	2-454	12.48	0.28	\$308.00
0610460	2-460-OV-10	LF400	2	2-460	15.48	0.28	\$329.00
0610468	2-468-OV-10	LF500	2	2-468	19.46	0.28	\$427.00



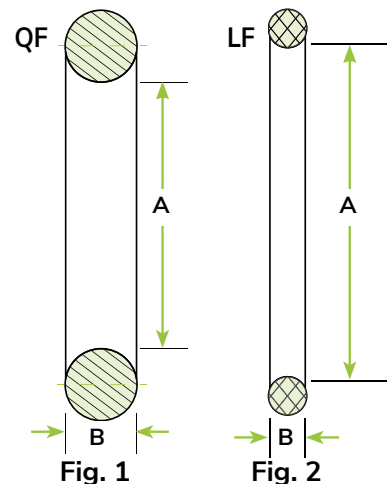
Replacement Silicone O-rings (10-Pack)

Product Notes:

- Replacement seal for ISO centering rings
- Used in chemical processes
- Temperature limits:
Low: -50°C
Sustained High: 150°C
Intermittent Use: 200°C



PART #	REFERENCE ID	USE WITH FLANGE	FIG.	O-RING STD#	A (in)	B (in)	UNIT PRICE
0612312	2-312-OS-10	QF10	1	2-312	0.60	0.21	\$10.50
0612314	2-314-OS-10	QF16	1	2-314	0.73	0.21	\$10.50
0622320	2-320-OS-10	QF25	1	2-320	1.10	0.21	\$14.00
0622326	2-326-OS-10	QF40	1	2-326	1.60	0.21	\$17.50
0612330	2-330-OS-10	QF50	1	2-330	2.10	0.21	\$17.50
0612336	2-336-OS-10	LF63	2	2-336	2.85	0.21	\$24.50
0612340	2-340-OS-10	LF80	2	2-340	3.35	0.21	\$28.00
0612346	2-346-OS-10	LF100	2	2-346	4.10	0.21	\$31.50
0612361	2-361-OS-10	LF160	2	2-361	5.98	0.21	\$56.00
0612371	2-371-OS-10	LF200	2	2-371	8.48	0.21	\$70.00



Replacement Buna-N O-rings (10-Pack)

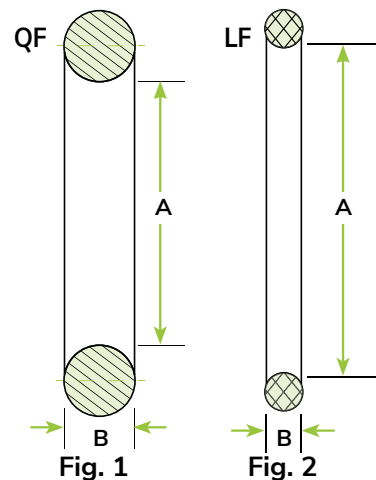


Product Notes:

- Replacement seal for ISO centering rings

- Temperature limits:
Low: -20°C
Sustained High: 80°C
Intermittent Use: 100°C

PART #	REFERENCE ID	USE WITH FLANGE	FIG.	O-RING STD#	A (in)	B (in)	UNIT PRICE
0611312	2-312-OB-10	QF10	1	2-312	0.60	0.21	\$10.50
0611314	2-314-OB-10	QF16	1	2-314	0.73	0.21	\$10.50
0611320	2-320-OB-10	QF25	1	2-320	1.10	0.21	\$17.50
0621326	2-326-OB-10	QF40	1	2-326	1.60	0.21	\$17.50
0621330	2-330-OB-10	QF50	1	2-330	2.10	0.21	\$17.50
0611336	2-336-OB-10	LF63	2	2-336	2.85	0.21	\$17.50
0611340	2-340-OB-10	LF80	2	2-340	3.35	0.21	\$17.50
0611346	2-346-OB-10	LF100	2	2-346	4.10	0.21	\$17.50
0611361	2-361-OB-10	LF160	2	2-361	5.98	0.21	\$24.50
0611371	2-371-OB-10	LF200	2	2-371	8.48	0.21	\$35.00
0611378	2-378-OB-10	LF250	2	2-378	10.48	0.21	\$45.50
0611454	2-454-OB-10	LF320	2	2-454	12.48	0.28	\$94.50
0611460	2-460-OB-10	LF400	2	2-460	15.48	0.28	\$133.00
0611468	2-468-OB-10	LF500	2	2-468	19.46	0.28	\$175.00



ISO Weld Flanges

ANCORP manufactures ISO 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. These flanges are manufactured to ISO specifications to ensure 100% compatibility with other ISO manufacturer's flanges.

Specifications:

- High vacuum rated to 1×10^{-8} Torr
- Bakeable to 200°C
- Materials: 304 or aluminum
- Compatible with all ISO standard vacuum flanges and fittings

Features:

- Reusable seals
- Sexless interface
- Infinitely rotatable
- Quick sealing and disassembly
- Ease installation
- Variety of fastening options
- Self-centering supportive ring
- Imperial and metric sizes available



ISO Weld Flanges

Weld Flanges

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

ANCORP offers weld flanges in 304 stainless steel or 6061 aluminum.

These flanges are also offered in four different designs to meet your specific requirements:

- Bored flanges
- Ring flanges
- Socket weld flanges
- Stub weld flanges

See Page 1.4-1.5 for sizes and specification details



Blank Flanges

Blank flanges are manufactured with no weld prep and no tubing bore. They are commonly used to close unused ports or they are altered by customers with their own custom machining capability for a special use.

ANCORP offers blank flanges in 304 stainless steel or 6061 aluminum.



Unbored Stub Flanges

Unbored stub flanges are manufactured with no weld prep and no tubing bore. They are commonly altered by customers with their own custom machining capability for a special use.

ANCORP offers weld flanges in 304 stainless steel or 6061 aluminum.



Weld Ring Flange

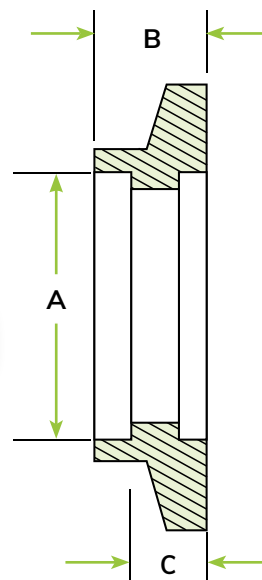
Weld ring flanges were created to offer a thin profile while still offering a weld preparation groove. This groove makes the flange self-aligning, offers greater weld joint strength and provides aesthetic coverage of the weld joint and heat discoloration that can appear after welding.

Materials:

- Standard:
 - 304 stainless steel
 - 316 stainless steel

Product Notes:

- Internal weld
- Self-aligning
- Designed to fit standard inch tubing O.D.'s
- Thinner design than standard socket weld flanges



PART #	REFERENCE ID	BORE SIZE (in)	A (in)	B (in)	C (in)	UNIT PRICE
4000077	QF16-075-RF	0.75	0.76	0.25	0.17	\$9.60
4000078	QF25-100-RF	1.00	1.01	0.25	0.17	\$9.60
4000079	QF40-150-RF	1.50	1.51	0.25	0.17	\$13.30
4000080	QF50-200-RF	2.00	2.01	0.25	0.17	\$18.00

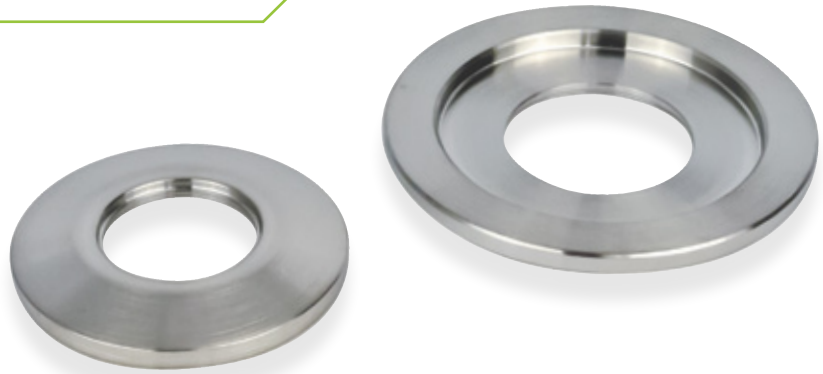
Bored Weld Flange

Materials:

- Standard:
 - 304 stainless steel
 - 316 stainless steel

Product Notes:

- Designed to fit standard inch tubing O.D.'s

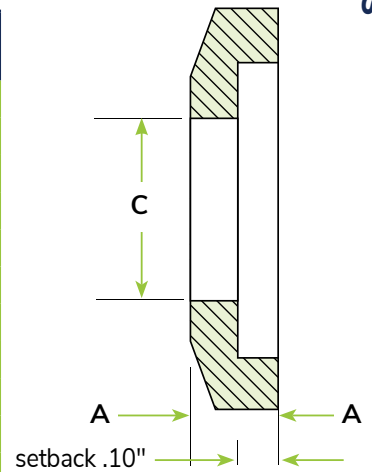


ISO Bored Weld Flanges

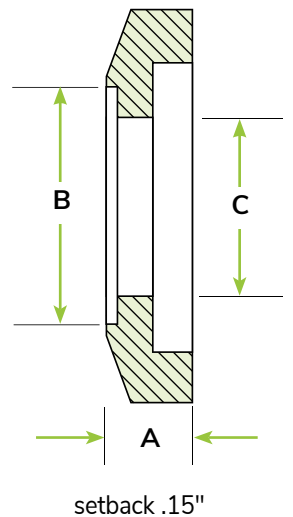
304 Stainless Steel

PART #	REFERENCE ID	BORE SIZE (in)	A (in)	B (in)	C (in)	UNIT PRICE
4000099	QF16-025-BW	0.25	0.20	-	0.26	\$8.50
4000100	QF16-038-BW	0.38	0.20	-	0.38	\$8.50
4000101	QF16-050-BW	0.50	0.20	0.51	0.45	\$9.60
4000102	QF16-075-BW	0.75	0.20	0.76	0.68	\$9.60
4000103	QF25-025-BW	0.25	0.20	-	0.26	\$9.60
4000104	QF25-038-BW	0.38	0.20	-	0.38	\$9.60
4000105	QF25-050-BW	0.50	0.20	0.51	0.45	\$9.60
4000106	QF25-075-BW	0.75	0.20	0.76	0.71	\$13.40
4000107	QF25-100-BW	1.00	0.20	1.01	0.94	\$13.40
4000108	QF40-025-BW	0.25	0.20	-	0.26	\$13.40
4000109	QF40-038-BW	0.38	0.20	-	0.38	\$13.40
4000110	QF40-050-BW	0.50	0.20	0.51	0.45	\$13.40
4000111	QF40-075-BW	0.75	0.20	0.76	0.71	\$13.40
4000112	QF40-100-BW	1.00	0.20	1.01	0.94	\$13.40
4000113	QF40-150-BW	1.50	0.20	1.51	1.44	\$14.00
4000114	QF50-025-BW	0.25	0.20	-	0.26	\$18.20
4000115	QF50-038-BW	0.38	0.20	-	0.38	\$18.20
4000116	QF50-050-BW	0.50	0.20	0.51	0.45	\$18.20
4000117	QF50-075-BW	0.75	0.20	0.76	0.71	\$18.20
4000118	QF50-100-BW	1.00	0.20	1.01	0.94	\$18.20
4000119	QF50-150-BW	1.50	0.20	1.51	1.44	\$18.20
4000120	QF50-200-BW	2.00	0.20	2.01	1.94	\$21.00

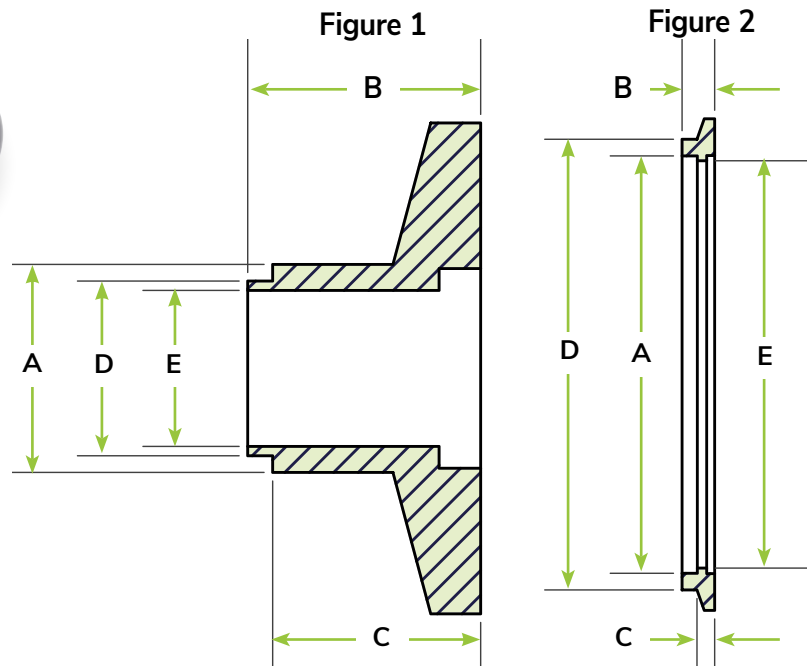
BORED SIZE:
1/4 in. & 3/8 in.



BORED SIZE:
1/2 in. THRU 2 in.



ISO-QF Socket Weld Flange



Materials:

- Standard:
304 stainless steel
316 stainless steel

Product Notes:

- Internal weld
- Self-aligning
- Designed to fit standard inch tubing O.D.'s
- QF63-QF200 uses LF Centering Rings

304 Stainless Steel

PART #	REFERENCE ID	FIGURE	TUBE SIZE (in)	A (in)	B (in)	C (in)	D (in)	E (in)	UNIT PRICE
4000082	QF16-050-SF	1	0.50	0.50	0.56	0.50	0.42	0.375	\$9.50
4000083	QF16-075-SF	1	0.75	0.75	0.56	0.50	0.67	0.625	\$9.50
4000084	QF25-100-SF	2	1.00	1.01	0.50	0.17	1.13	0.875	\$10.00
4000085	QF40-150-SF	2	1.50	1.51	0.50	0.21	1.76	1.375	\$13.50
4000086	QF50-200-SF	2	2.00	2.01	0.63	0.23	2.25	1.875	\$20.00
4001081	QF63-250-SF	2	2.50	2.51	0.47	0.25	3.00	2.375	\$71.00
4001082	QF80-300-SF	2	3.00	3.01	0.47	0.25	3.50	2.875	\$82.00
4001083	QF100-400-SF	2	4.00	4.02	0.47	0.25	4.50	3.875	\$105.00
4001084	QF160-600-SF	2	6.00	6.02	0.47	0.25	6.50	5.875	\$115.00
4001085	QF200-800-SF	2	8.00	8.02	0.47	0.25	8.50	7.760	\$205.00

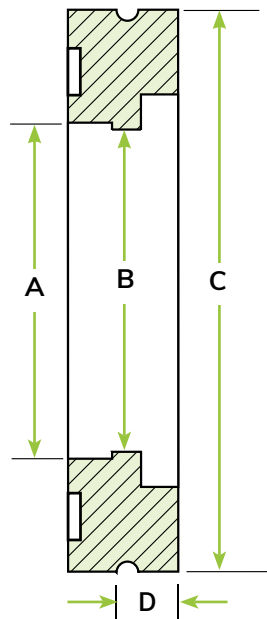
ISO-LF Socket Weld Flange

Materials:

- Standard: 304 stainless steel
- 316 stainless steel


Product Notes:

- Internal weld
- Self-aligning
- Designed to fit standard inch tubing O.D.'s



ORDERING NOTE:
See page 1.5 for bolt holes

TECH TIP



To simplify aluminum welding, **ANCORP** also offers an aluminum ISO-LF stub weld flange on page 1.35.

304 Stainless Steel

PART #	REFERENCE ID	TUBE O.D. (in)	A (in)	THRU HOLE B (in)	C (in)	SET BACK D (in)	UNIT PRICE
4500069	LF63-250-SF	2.50	2.51	2.37	3.74	0.25	\$53.00
4500070	LF80-300-SF	3.00	3.01	2.87	4.33	0.25	\$67.00
4500071	LF100-400-SF	4.00	4.01	3.87	5.12	0.25	\$72.00
4500072	LF160-600-SF	6.00	6.02	5.83	7.09	0.25	\$105.00
4500073	LF200-800-SF	8.00	8.02	7.76	9.45	0.25	\$170.00
4500074	LF250-1000-SF	10.00	10.02	9.75	11.42	0.25	\$210.00
4500181	LF320-1200-SF	12.00	12.03	12.42	14.57	0.38	\$575.00
4500075	LF320-1275-SF	12.75	12.77	12.42	14.57	0.38	\$530.00
4500076	LF400-1600-SF	16.00	16.03	15.62	17.72	0.38	CALL
4500077	LF500-2000-SF	20.00	20.04	19.62	21.65	0.38	CALL

6061 - T6 Aluminum

PART #	REFERENCE ID	TUBE O.D. (in)	A (in)	THRU HOLE B (in)	C (in)	SET BACK D (in)	UNIT PRICE
4500078	LF63-250-SF-AL	2.50	2.51	2.37	3.74	0.25	\$43.00
4500079	LF80-300-SF-AL	3.00	3.01	2.87	4.33	0.25	\$54.00
4500080	LF100-400-SF-AL	4.00	4.02	3.87	5.12	0.25	\$60.00
4500081	LF160-600-SF-AL	6.00	6.02	5.83	7.09	0.25	\$100.00
4500082	LF200-800-SF-AL	8.00	8.02	7.76	9.45	0.25	\$150.00
4500083	LF250-1000-SF-AL	10.00	10.03	9.76	11.42	0.25	\$175.00
4500084	LF320-1275-SF-AL	12.75	12.77	12.42	14.57	0.38	CALL
4500085	LF400-1600-SF-AL	16.00	16.03	15.62	17.72	0.38	CALL
4500086	LF500-2000-SF-AL	20.00	20.03	19.62	21.65	0.38	CALL
4500186	LF320-1200-SF-AL	12.00	12.03	11.88	14.57	0.38	CALL

ISO-LFB Socket Weld Flange

Materials:

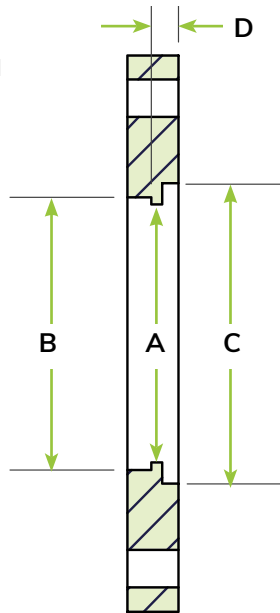
- Standard: 304 stainless steel
- Alternative: Aluminum
Call for price and delivery

Product Notes:

- Internal weld
- Self-aligning
- Designed to fit standard inch tubing O.D.'s

Options: Call for price and delivery

- Tapped bolt holes



PART #	REFERENCE ID	A (in)	B (in)	C (in)	SET BACK D (in)	UNIT PRICE
4500135	LFB63-250-SF	2.37	2.50	2.51	0.25	\$78.00
4500136	LFB80-300-SF	2.87	3.00	3.01	0.25	\$100.00
4500137	LFB100-400-SF	3.87	4.00	4.01	0.25	\$125.00
4500138	LFB160-600-SF	5.83	6.00	6.02	0.25	\$175.00
4500139	LFB200-800-SF	7.76	8.00	8.02	0.25	\$245.00
4500140	LFB250-1000-SF	9.75	10.00	10.02	0.25	\$350.00
4500183	LFB320-1200-SF	12.42	12.00	12.77	0.38	\$995.00
4500141	LFB320-1275-SF	12.42	12.75	12.77	0.38	\$695.00
4500142	LFB400-1600-SF	15.62	16.00	16.02	0.38	CALL
4500143	LFB500-2000-SF	19.62	20.00	20.02	0.38	CALL

ISO-QF Stub Weld Flange

Materials:

- Standard: 304 stainless steel
- 6061 aluminum

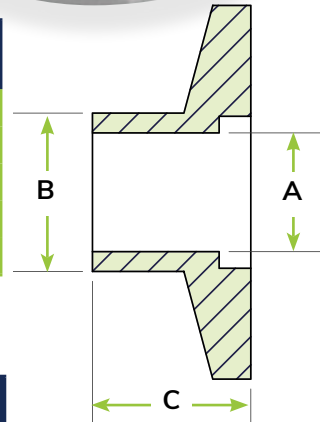
Product Notes:

- Butt weld
- Designed to fit standard inch tubing O.D.'s



304 Stainless Steel

PART #	REFERENCE ID	TUBE SIZE (in)	A (in)	B (in)	C (in)	UNIT PRICE
4000122	QF16-050-HNM-0.50	0.50	0.375	0.50	0.50	\$9.50
4000123	QF16-075-HNM-0.50	0.75	0.625	0.75	0.50	\$9.50
4000124	QF25-100-HNM-0.50	1.00	0.875	1.00	0.50	\$11.00
4000125	QF40-150-HNM-0.75	1.50	1.375	1.50	0.75	\$14.00
4000126	QF50-200-HNM-0.75	2.00	1.875	2.00	0.75	\$20.00



6061 - T6 Aluminum

PART #	REFERENCE ID	TUBE SIZE (in)	A (in)	B (in)	C (in)	UNIT PRICE
4000128	QF16-050-HNM-0.50-AL	0.50	0.50	0.375	0.50	\$8.00
4000129	QF16-075-HNM-0.50-AL	0.75	0.75	0.625	0.50	\$8.00
4000130	QF25-100-HNM-0.50-AL	1.00	1.00	0.875	0.50	\$8.50
4000131	QF40-150-HNM-0.75-AL	1.50	1.50	1.375	0.75	\$11.00
4000132	QF50-200-HNM-0.75-AL	2.00	2.00	1.875	0.75	\$17.50

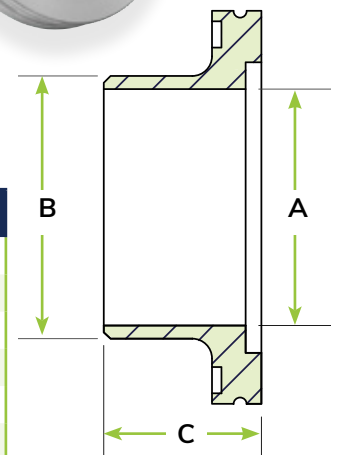
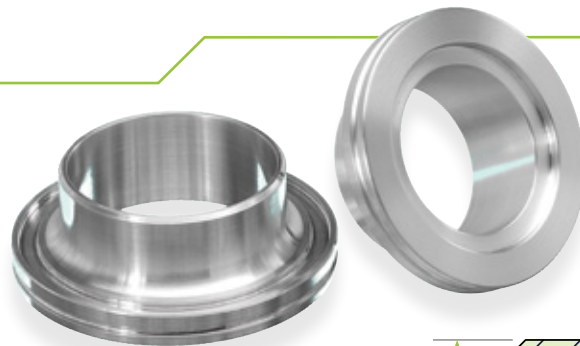
ISO-LF Stub Weld Flange

Materials:

- Standard: 6061 aluminum
- Alternative: 304 stainless steel
- Call for price and delivery

Product Notes:

- Butt weld
- Designed to fit standard inch tubing O.D.'s
- Machined from solid bar - No welds



PART #	REFERENCE ID	A (in)	B (in)	C (in)	UNIT PRICE
4500128	LF63-250-HNM-1.50-AL	2.25	2.50	1.50	\$56.00
4500129	LF80-300-HNM-1.50-AL	2.75	3.00	1.50	\$70.00
4500130	LF100-400-HNM-1.50-AL	3.75	4.00	1.50	\$73.00
4500131	LF160-600-HNM-1.50-AL	5.75	6.00	1.50	\$105.00
4500132	LF200-800-HNM-1.50-AL	7.76	8.00	1.50	\$170.00
4500133	LF250-1000-HNM-1.50-AL	9.75	10.00	1.50	\$225.00

ISO-QF Blank Flange

Materials:

- Standard:
304 stainless steel
6061 aluminum
- Alternative:
316 stainless steel

Product Notes:

- Close off unused ports
- Good choice for custom modification



304 Stainless Steel

PART #	REFERENCE ID	FIG.	A (in)	UNIT PRICE
4000160	QF16-000	1	0.20	\$8.00
4000161	QF25-000	1	0.20	\$8.50
4000162	QF40-000	1	0.20	\$14.00
4000163	QF50-000	1	0.20	\$17.00
4001091	QF63-000	2	0.47	\$60.00
4001092	QF80-000	2	0.47	\$71.00
4001093	QF100-000	2	0.47	\$93.00
4001094	QF160-000	2	0.47	\$105.00
4001095	QF200-000	2	0.47	\$195.00

6061 Aluminum

PART #	REFERENCE ID	FIG.	A (in)	UNIT PRICE
4000165	QF16-000-AL	1	0.20	\$5.50
4000166	QF25-000-AL	1	0.20	\$6.00
4000167	QF40-000-AL	1	0.20	\$10.50
4000168	QF50-000-AL	1	0.20	\$11.00

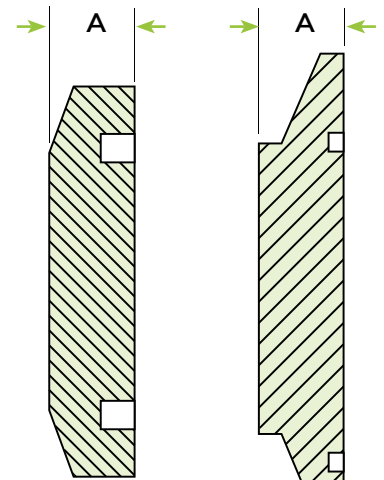


FIGURE 1

FIGURE 2

ISO-LF Blank Flange

304 Stainless Steel

PART #	REFERENCE ID	A (in)	B (in)	UNIT PRICE
4500087	LF63-000	0.47	3.74	\$53.00
4500088	LF80-000	0.47	4.33	\$72.00
4500089	LF100-000	0.47	5.12	\$78.00
4500090	LF160-000	0.47	7.09	\$105.00
4500091	LF200-000	0.47	9.45	\$175.00
4500092	LF250-000	0.47	11.42	\$230.00
4500093	LF320-000	0.67	14.57	\$575.00
4500094	LF400-000	0.67	17.72	CALL
4500095	LF500-000	0.67	21.65	CALL

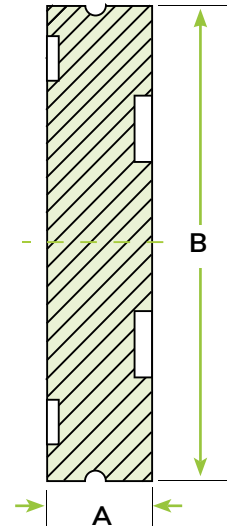


Materials:

- Standard: 304 stainless steel
- 6061 aluminum

Product Notes:

- Close off unused ports
- Good choice for custom modification



6061 Aluminum

PART #	REFERENCE ID	A (in)	B (in)	UNIT PRICE
4500096	LF63-000-AL	0.47	3.74	\$43.00
4500097	LF80-000-AL	0.47	4.33	\$56.00
4500098	LF100-000-AL	0.47	5.12	\$63.00
4500099	LF160-000-AL	0.47	7.09	\$85.00
4500100	LF200-000-AL	0.47	9.45	\$138.00
4500101	LF250-000-AL	0.47	11.42	\$175.00
4500102	LF320-000-AL	0.67	14.57	\$330.00
4500103	LF400-000-AL	0.67	17.72	CALL
4500104	LF500-000-AL	0.67	21.65	CALL

ISO-QF Unbored Stub Flange

304 Stainless Steel

PART #	REFERENCE ID	A (in)	B (in)	UNIT PRICE
4000175	QF16-000-US	0.75	0.75	\$12.00
4000176	QF25-000-US	0.75	1.00	\$13.50
4000177	QF40-000-US	1.00	1.50	\$19.50
4000178	QF50-000-US	1.00	2.00	\$26.00

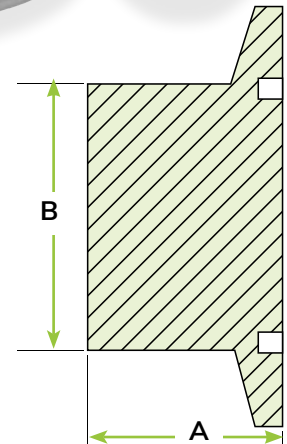


Materials:

- Standard: 304 stainless steel
- 6061 aluminum

Product Notes:

- Good choice for custom modification



6061 - T6 Aluminum

PART #	REFERENCE ID	A (in)	B (in)	UNIT PRICE
4000180	QF16-000-US-AL	0.75	0.75	\$9.50
4000181	QF25-000-US-AL	0.75	1.00	\$10.50
4000182	QF40-000-US-AL	1.00	1.50	\$15.50
4000183	QF50-000-US-AL	1.00	2.00	\$21.00

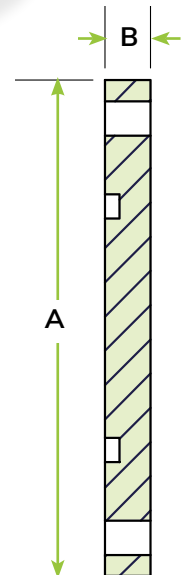
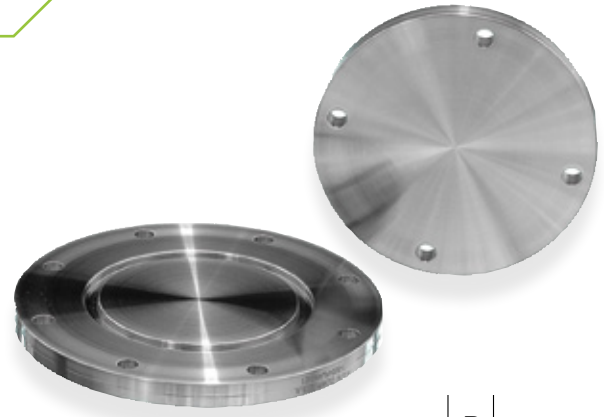
ISO-LFB Blank Flange

304 Stainless Steel

PART #	REFERENCE ID	A (in)	B (in)	UNIT PRICE
4500144	LFB63-000	5.12	0.47	\$78.00
4500145	LFB80-000	5.71	0.47	\$114.00
4500146	LFB100-000	6.50	0.47	\$125.00
4500147	LFB160-000	8.86	0.63	\$240.00
4500148	LFB200-000	11.22	0.63	\$300.00
4500149	LFB250-000	13.19	0.63	\$445.00
4500150	LFB320-000	16.73	0.79	\$800.00
4500151	LFB400-000	20.08	0.79	CALL
4500152	LFB500-000	24.02	0.79	CALL

6061 - T6 Aluminum

PART #	REFERENCE ID	A (in)	B (in)	UNIT PRICE
4500153	LFB63-000-AL	5.12	0.47	\$64.00
4500154	LFB80-000-AL	5.71	0.47	\$80.00
4500155	LFB100-000-AL	6.50	0.47	\$95.00
4500156	LFB160-000-AL	8.86	0.63	\$160.00
4500157	LFB200-000-AL	11.22	0.63	\$175.00
4500158	LFB250-000-AL	13.19	0.63	\$268.00
4500159	LFB320-000-AL	16.73	0.79	\$550.00
4500160	LFB400-000-AL	20.08	0.79	CALL
4500161	LFB500-000-AL	24.02	0.79	CALL



Materials:

- Standard:
304 stainless steel
6061 aluminum

Product Note:

- Close off unused ports
- Good choice for custom modification

Options:

- Call for price and delivery
- Tapped bolt holes

ISO Fittings

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

All ANCORP's ISO QF and LF fittings are made with flanges manufactured to ISO specifications to ensure 100% compatibility with other manufacturer's flanges.



ISO Fittings

Specifications:

- High vacuum rated to 1×10^{-8} Torr
- Bakeable to 200°C
- Materials: 304 stainless steel or aluminum
- Compatible with all ISO standard vacuum flanges and fittings

Features:

- Reusable seals
- Sexless interface
- Infinitely rotatable
- Quick sealing and disassembly
- Easy installation
- Variety of fastening options
- Self-centering supportive ring
- Imperial and metric sizes available

Half Nipple



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 connect compression fittings to make a vacuum tight connection without welding. ANCORP manufactures vacuum half nipples in 304 stainless steel and aluminum.

Nipples



These fittings are manufactured with an ISO 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 to as straight adapters between different tubing sizes or flange types. These fittings are available in all ISO sizes and flange types. ANCORP manufactures vacuum nipples in 304 stainless steel, aluminum, and flexible stainless steel.

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 five designs; 45° radius elbow, 90° radius elbow, 90° mitered elbow, 90° tangent radius elbow and 180° radius elbow to accommodate a wide variety of system configurations. **ANCORP** manufactures vacuum elbows in 304 stainless steel and aluminum.

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. These fittings are available in all ISO sizes and flange types. **ANCORP** manufactures vacuum tees in 304 stainless steel and aluminum.

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. These fittings are available in all ISO sizes and flange types. **ANCORP** manufactures vacuum crosses in 304 stainless steel and aluminum.

5 or 6 Way Crosses



These fittings are manufactured with a flange on each end of a 5 or 6 sided tubing junction. Crosses accommodate complex junctions or alignment considerations for vacuum system design. Larger sizes are sometimes used as the starting point of a simple vacuum chamber design. **ANCORP** manufactures 5 and 6-way vacuum crosses in 304 stainless steel and aluminum.

ISO-QF Half Nipple-Machined

Materials:

- Standard: 304 stainless steel
- Alternative:
316 stainless steel
6061 aluminum

Product Notes:

- Butt weld
- Designed to fit standard inch tubing O.D.'s
- Machined from solid bar – No welds



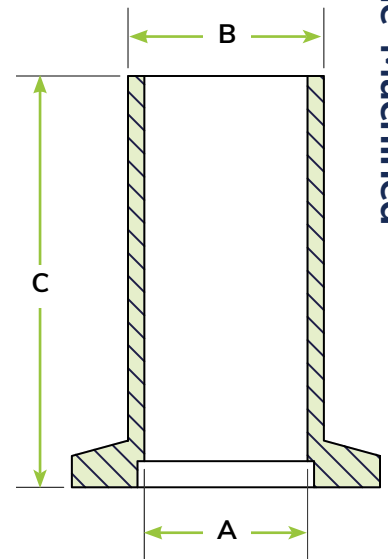
ISO-QF Half Nipple-Machined

304 Stainless Steel

PART #	REFERENCE ID	A (in)	B (in)	C (in)	UNIT PRICE
4000134	QF16-050-HNM-1.58	0.38	0.50	1.58	\$14.00
4000135	QF16-075-HNM-1.58	0.63	0.75	1.58	\$14.50
4000136	QF25-100-HNM-1.58	0.88	1.00	1.58	\$17.00
4000137	QF40-150-HNM-1.58	1.38	1.50	1.58	\$19.00
4000138	QF50-200-HNM-1.58	0.065	1.88	1.58	\$30.00

6061 Aluminum

PART #	REFERENCE ID	A (in)	B (in)	C (in)	UNIT PRICE
4000144	QF16-050-HNM-1.58-AL	0.38	0.50	1.58	\$11.50
4000145	QF16-075-HNM-1.58-AL	0.63	0.75	1.58	\$11.50
4000146	QF25-100-HNM-1.58-AL	0.88	1.00	1.58	\$14.00
4000147	QF40-150-HNM-1.58-AL	1.38	1.50	1.58	\$15.50
4000148	QF50-200-HNM-1.58-AL	1.875	2.00	1.58	\$24.00



ISO-QF Half Nipple-Welded

Materials:

- Standard: 304 stainless steel
- Alternative: 6061 aluminum (Call for price and delivery)

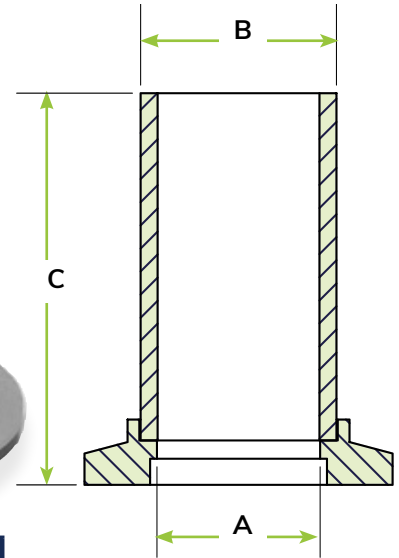
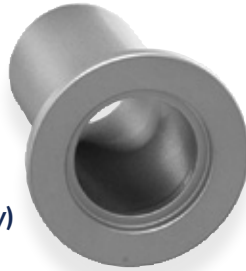
Product Notes:

- Butt weld
- Designed to fit standard inch tubing O.D.'s
- Highly customizable

Options:

(Call for price and delivery)

- Custom lengths
- ISO-QF large size flanges see pg. 1.05



PART #	REFERENCE ID	A (in)	B (in)	C (in)	UNIT PRICE
4000139	QF16-075-HN-1.50	0.63	0.75	1.50	\$14.00
4000140	QF25-100-HN-2.04	0.88	1.00	2.04	\$15.50
4000141	QF40-150-HN-2.46	1.38	1.50	2.46	\$19.00
4000142	QF50-200-HN-3.21	1.88	2.00	3.21	\$30.00

ISO-LF Half Nipple

Materials:

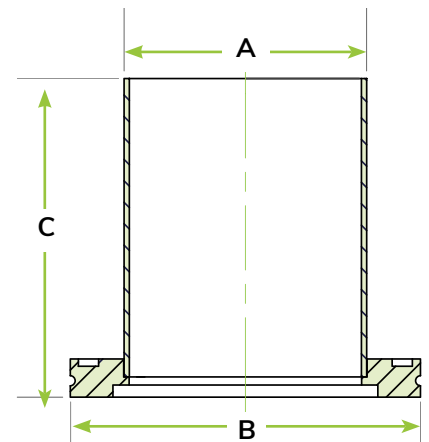
- Standard: 304 stainless steel

Product Notes:

- Butt weld
- Designed to fit standard inch tubing O.D.'s
- Highly Customizable

Options: (Call for price and delivery)

- Custom lengths
- ISO-QF large size flanges see pg. 1.05
- Alternative: 6061 aluminum



304 stainless steel

PART #	REFERENCE ID	A (in)	B (in)	C (in)	UNIT PRICE
4500110	LF63-250-HN-3.94	2.50	3.74	3.94	\$89.00
4500111	LF80-300-HN-3.94	3.00	4.33	3.94	\$100.00
4500112	LF100-400-HN-3.94	4.00	5.12	3.94	\$120.00
4500113	LF160-600-HN-3.94	6.00	7.09	3.94	\$155.00
4500114	LF200-800-HN-3.94	8.00	9.45	3.94	\$245.00
4500115	LF250-1000-HN-3.94	10.00	11.42	3.94	\$315.00
4500182	LF320-1200-HN-3.94	12.00	14.57	3.94	\$1,200.00
4500116	LF320-1275-HN-3.94	12.75	14.57	3.94	\$1,100.00
4500117	LF400-1600-HN-3.94	16.00	17.72	3.94	CALL
4500118	LF500-2000-HN-3.94	20.00	21.65	3.94	CALL

ISO-LFB Half Nipple

Materials:

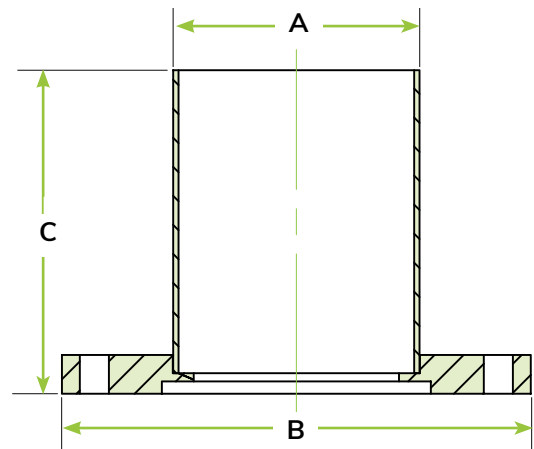
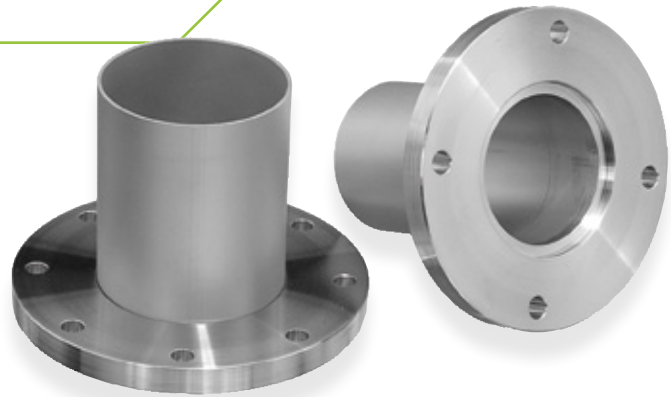
- Standard:
 - 304 stainless steel
 - 316 stainless steel
 - 6061 aluminum

Product Notes:

- Butt weld
- Designed to fit standard inch tubing O.D.'s
- Highly Customizable

Options: (Call for price and delivery)

- Custom lengths
- Tapped bolt holes
- ISO-QF large size flanges see pg. 1.05



ISO-LFB Half Nipple

PART #	REFERENCE ID	A (in)	B (in)	C (in)	UNIT PRICE
4500162	LFB63-250-HN-3.94	2.50	5.12	3.94	\$120.00
4500163	LFB80-300-HN-3.94	3.00	5.71	3.94	\$145.00
4500164	LFB100-400-HN-3.94	4.00	6.50	3.94	\$175.00
4500165	LFB160-600-HN-3.94	6.00	8.86	3.94	\$240.00
4500166	LFB200-800-HN-3.94	8.00	11.22	3.94	\$385.00
4500167	LFB250-1000-HN-3.94	10.00	13.19	3.94	\$550.00
4500188	LFB320-1200-HN-3.94	12.00	16.73	3.94	\$1,450.00
4500168	LFB320-1275-HN-3.94	12.75	16.73	3.94	\$1,170.00
4500169	LFB400-1600-HN-3.94	16.00	20.08	3.94	CALL
4500170	LFB500-2000-HN-3.94	20.00	24.02	3.94	CALL

ISO-QF Nipple

Materials:

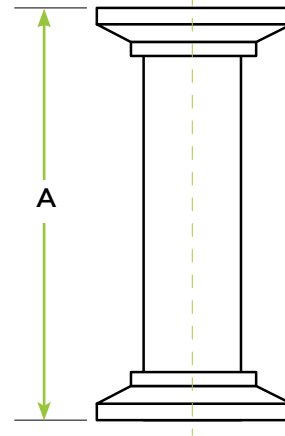
- Standard: 304 stainless steel
- Alternative: 6061 aluminum (Call for price and delivery)

Options:

(Call for price and delivery)

- Custom lengths
- Custom flange combinations
- ISO-QF large size flanges see pg. 1.05

PART #	REFERENCE ID	A (in)	UNIT PRICE
4000406	QF16-075-N-3.15	3.15	\$40.00
4000408	QF16-075-N-12.60	12.60	\$48.00
4000410	QF25-100-N-3.94	3.94	\$46.00
4000412	QF25-100-N-12.60	12.60	\$54.00
4000414	QF40-150-N-5.12	5.12	\$57.00
4000416	QF40-150-N-12.60	12.60	\$68.00
4000418	QF50-200-N-5.51	5.51	\$69.00
4000420	QF50-200-N-12.60	12.60	\$78.00



ISO-QF Flexible Nipple

Materials:

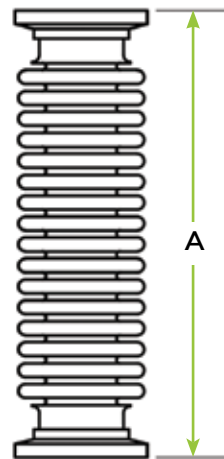
- Flanges
 - 304 stainless steel
- Flexible hose
 - 321 stainless steel

Product Notes:

- Corrects misaligned connections

Options: (Call for price and delivery)

- Custom lengths
- Custom flange combination
- ISO-QF large size flanges see pg. 1.05



PART #	REFERENCE ID	HOSE I.D. (in)	WALL THICKNESS (in)	A (in)	UNIT PRICE
0800000	QF16-075-B-4.0	0.75	0.006	4.00	\$70.00
0800001	QF25-100-B-4.0	1.00	0.006	4.00	\$75.00
0800002	QF40-150-B-4.0	1.50	0.006	4.00	\$120.00
0800003	QF50-200-B-4.0	2.00	0.006	4.00	\$110.00

ISO-LF Nipple

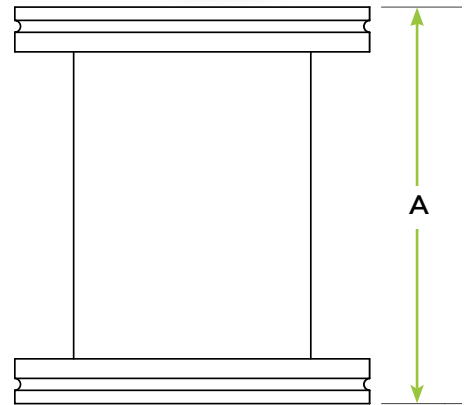
Materials:

- Standard: 304 stainless steel
- Alternative: 6061 aluminum
(Call for price and delivery)

Options:

(Call for price and delivery)

- Custom lengths
- Custom flange combinations
- ISO-QF large size flanges
see pg. 1.05
- ISO-LFB flanges
- Tapped bolt holes



PART #	REFERENCE ID	A (in)	UNIT PRICE
4500207	LF63-250-N-4.18	4.18	\$200.00
4500208	LF63-250-N-6.92	6.92	\$210.00
4500209	LF80-300-N-4.18	4.18	\$240.00
4500210	LF80-300-N-7.72	7.72	\$250.00
4500211	LF100-400-N-4.18	4.18	\$255.00
4500212	LF100-400-N-8.50	8.50	\$265.00
4500213	LF160-600-N-4.18	4.18	\$395.00
4500214	LF160-600-N-10.86	10.86	\$415.00
4500215	LF200-800-N-4.18	4.18	\$525.00
4500216	LF200-800-N-13.22	13.22	\$540.00
4500217	LF250-1000-N-4.18	4.18	\$705.00
4500218	LF250-1000-N-16.38	16.38	\$740.00
4500219	LF320-1200-N-19.76	19.76	CALL
4500220	LF400-1600-N-20.76	20.76	CALL
4500221	LF500-2000-N-21.76	21.76	CALL

ISO-LF Flexible Nipple

Materials

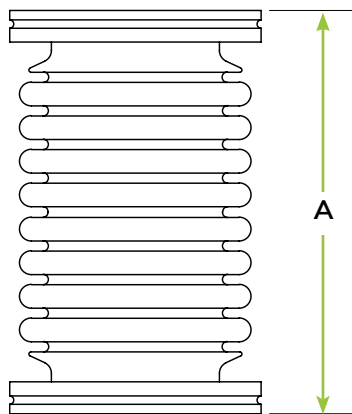
- Flanges: 304 stainless steel
- Flexible hose: 321 stainless steel

Product Notes

- Corrects misaligned connections

Options: (Call for price and delivery)

- Larger sizes
- Custom lengths
- Custom flange combination
- ISO-QF large size flanges see pg. 1.05



PART #	REFERENCE ID	WALL THICKNESS (in)	HOSE I.D. (in)	A (in)	UNIT PRICE
0800069	LF63-250-B-6.0	0.008	2.50	6.00	\$270.00
0800070	LF80-300-B-6.0	0.008	3.00	6.00	\$310.00
0800071	LF100-400-B-6.0	0.010	4.00	6.00	\$370.00
0800072	LF160-600-B-8.0	0.012	6.00	8.00	\$550.00

ISO-QF to QF Straight Reducer Nipple

Materials:

- Standard: 304 stainless steel
- Alternative: 6061 aluminum (Call for price and delivery)

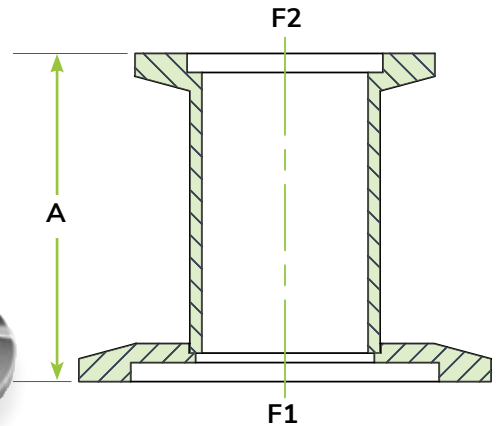
Product Notes:

- Connects different ISO-QF sizes

Options:

(Call for price and delivery)

- Custom lengths
- Custom flange combinations
- ISO-QF large size flanges see pg. 1.05



PART #	REFERENCE ID	FLANGE 1	FLANGE 2	A (in)	TUBE O.D. (in)	UNIT PRICE
4000422	QF25XQF16-075-N-1.73	QF25	QF16	1.73	0.75	\$40.00
4000424	QF40XQF16-075-N-1.73	QF40	QF16	1.73	0.75	\$45.00
4000426	QF50XQF16-075-N-1.73	QF50	QF16	1.73	0.75	\$52.00
4000428	QF40XQF25-100-N-1.73	QF40	QF25	1.73	1.00	\$45.00
4000430	QF50XQF25-100-N-1.73	QF50	QF25	1.73	1.00	\$52.00
4000432	QF50XQF40-150-N-1.73	QF50	QF40	1.73	1.50	\$52.00

ISO-LF to LF Straight Reducer Nipple

Materials:

- Standard: 304 stainless steel
- Alternative: 6061 aluminum (Call for price and delivery)

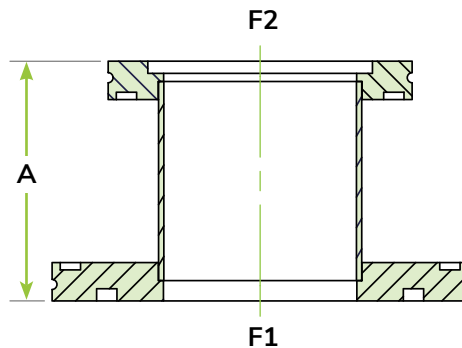
Product Notes:

- Connects different ISO-LF sizes

Options:

(Call for price and delivery)

- Custom Lengths
- Larger Sizes
- Custom Flange Combinations
- ISO-QF large size flanges see pg. 1.05
- ISO-LFB flanges
 - Tapped Bolt Holes



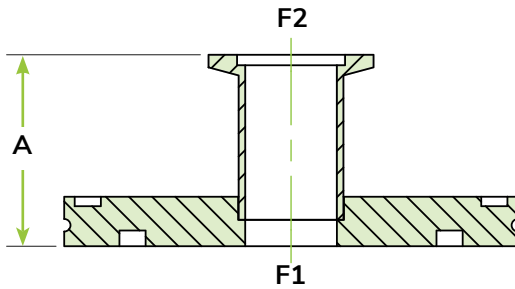
TECH TIP

Increase conductance with a conical reducer nipple. See pg. 1.47



PART #	REFERENCE ID	FLANGE 1	FLANGE 2	A (in)	TUBE O.D. (in)	UNIT PRICE
4500237	LF80XLF63-250-N-2.95	LF80	LF63	2.95	2.50	\$195.00
4500238	LF100XLF63-250-N-2.95	LF100	LF63	2.95	2.50	\$220.00
4500239	LF160XLF63-250-N-2.95	LF160	LF63	2.95	2.50	\$290.00
4500240	LF100XLF80-300-N-2.95	LF100	LF80	2.95	3.00	\$285.00
4500241	LF160XLF100-400-N-2.95	LF160	LF100	2.95	4.00	\$310.00
4501241	LF200XLF160-600-N-2.95	LF200	LF160	2.95	6.00	\$400.00

ISO-LF to QF Straight Reducer Nipple



Material:

- Standard: 304 stainless steel
- Alternative: 6061 aluminum (Call for price and delivery)

Product Notes:

- Connects to ISO-LF to ISO-QF sizes

Options: (Call for price and delivery)

- Custom lengths
- Custom flange combinations
- ISO-QF large size flanges see pg. 1.05
- ISO-LFB Flanges
 - Tapped bolt holes

PART #	REFERENCE ID	FLANGE 1	FLANGE 2	A (in)	TUBE O.D. (in)	UNIT PRICE
4500374	LF63XQF16-075-N-1.83	LF63	QF16	1.83	0.75	\$115.00
4500375	LF63XQF25-100-N-1.83	LF63	QF25	1.83	1.00	\$120.00
4500376	LF80XQF25-100-N-1.83	LF80	QF25	1.83	1.00	\$155.00
4500377	LF100XQF25-100-N-1.83	LF100	QF25	1.83	1.00	\$185.00
4500253	LF63XQF40-150-N-1.83	LF63	QF40	1.83	1.50	\$125.00
4500255	LF80XQF40-150-N-1.83	LF80	QF40	1.83	1.50	\$160.00
4500257	LF100XQF40-150-N-1.83	LF100	QF40	1.83	1.50	\$190.00
4500378	LF160XQF40-150-N-1.83	LF160	QF40	1.83	1.50	\$210.00
4500254	LF63XQF50-200-N-1.83	LF63	QF50	1.83	1.50	\$140.00
4500256	LF80XQF50-200-N-1.83	LF80	QF50	1.83	2.00	\$170.00
4500258	LF100XQF50-200-N-1.83	LF100	QF50	1.83	2.00	\$195.00
4500379	LF160XQF50-200-N-1.83	LF160	QF50	1.83	2.00	\$215.00

ISO-LF to QF Conical Reducer Nipple

Materials

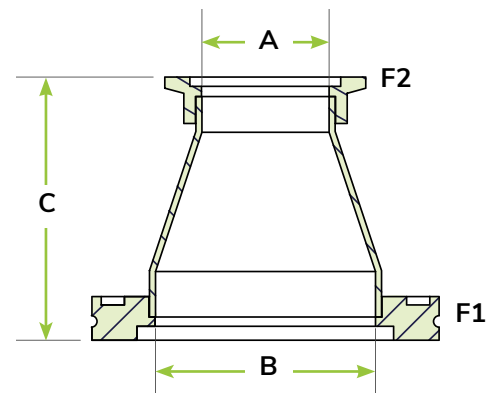
- Standard: 304 stainless steel
- Alternative: (Call for price and delivery)
 - 6061 aluminum

Product Notes:

- Connects ISO-LF to ISO-QF sizes

Options: (Call for price and delivery)

- Custom flange combinations
- Additional flange sizes
- ISO-QF large size flanges see pg. 1.5
- ISO-LFB flanges, Tapped bolt holes



PART #	REFERENCE ID	FLANGE 1	FLANGE 2	A (in)	B (in)	C (in)	UNIT PRICE
4500265	LF63XQF40-250X150-CR-2.84	LF63	QF40	1.37	2.37	2.84	\$155.00
4500266	LF80XQF40-300X150-CR-4.08	LF80	QF40	1.37	2.87	4.08	\$185.00
4500267	LF63XQF50-250X200-CR-2.85	LF63	QF50	1.87	2.37	2.85	\$170.00
4500268	LF80XQF50-300X200-CR-4.10	LF80	QF50	1.87	2.87	4.10	\$195.00
4500269	LF100XQF50-400X200-CR-4.12	LF100	QF50	1.87	3.87	4.12	\$210.00

ISO-LF to LF Conical Reducer Nipple

Materials:

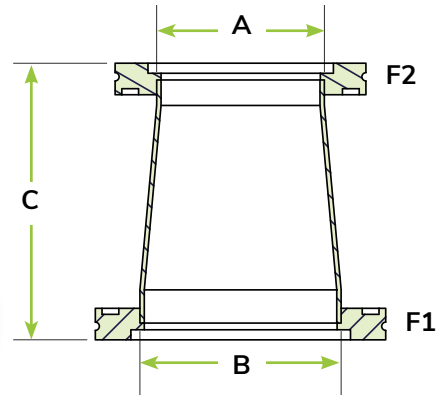
- Standard: 304 stainless steel
- Alternative: 6061 aluminum
(Call for price and delivery)

Product Notes:

- Connects different ISO-LF sizes

Options: (Call for price and delivery)

- Custom flange combinations
- Additional flange sizes
- ISO-QF large size flanges see pg. 1.05
- ISO-LFB flanges: Tapped bolt holes



PART #	REFERENCE ID	FLANGE 1	FLANGE 2	A (in)	B (in)	C (in)	UNIT PRICE
4500247	LF80XLF63-300X250-CR-4.13	LF80	LF63	2.37	2.87	4.13	\$220.00
4500248	LF100XLF63-400X250-CR-4.12	LF100	LF63	2.37	3.83	4.12	\$235.00
4500250	LF100XLF80-400X300-CR-4.13	LF100	LF80	2.87	3.83	4.13	\$245.00
4500251	LF160XLF80-600X300-CR-6.00	LF160	LF80	2.87	5.78	6.00	\$360.00
4500252	LF160XLF100-600X400-CR-6.92	LF160	LF100	3.83	5.78	6.92	\$380.00

ISO-QF to QF Conical Reducer Nipple

Materials

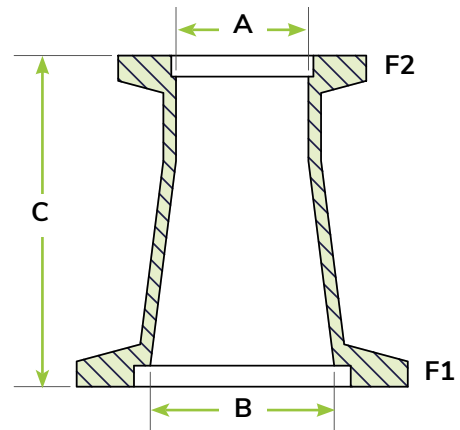
- Standard:
 - 304 stainless steel
 - 6061 aluminum

Product Notes:

- Machined from solid bar – No welds
- Connects different ISO-QF sizes

Options:

- (Call for price and delivery)**
- Custom flange combinations



304 Stainless Steel

PART #	REFERENCE ID	FLANGE 1	FLANGE 2	A (in)	B (in)	C (in)	UNIT PRICE
4000434	QF25XQF16-100X075-CRM-1.57	QF25	QF16	0.62	0.87	1.57	\$55.00
4000435	QF40XQF16-150X075-CRM-1.57	QF40	QF16	0.62	1.37	1.57	\$60.00
4000436	QF40XQF25-150X100-CRM-1.57	QF40	QF25	0.87	1.37	1.57	\$62.00
4000437	QF50XQF16-200X075-CRM-1.57	QF50	QF16	0.62	1.87	1.57	\$75.00
4000438	QF50XQF25-200X100-CRM-1.57	QF50	QF25	0.87	1.87	1.57	\$65.00
4000439	QF50XQF40-200X150-CRM-1.57	QF50	QF40	1.37	1.87	1.57	\$70.00

6061 Aluminum

PART #	REFERENCE ID	FLANGE 1	FLANGE 2	A (in)	B (in)	C (in)	UNIT PRICE
4000440	QF25XQF16-100X075-CRM-1.57-AL	QF25	QF16	0.62	0.87	1.57	\$47.00
4000441	QF40XQF16-150X075-CRM-1.57-AL	QF40	QF16	0.62	1.37	1.57	\$51.00
4000442	QF40XQF25-150X100-CRM-1.57-AL	QF40	QF25	0.87	1.37	1.57	\$53.00
4000443	QF50XQF16-200X075-CRM-1.57-AL	QF50	QF16	0.62	1.87	1.57	\$66.00
4000444	QF50XQF25-200X100-CRM-1.57-AL	QF50	QF25	0.87	1.87	1.57	\$65.00
4000445	QF50XQF40-200X150-CRM-1.57-AL	QF50	QF40	1.37	1.87	1.57	\$60.00

ISO-QF 45° Elbow

Materials

- Standard: 304 stainless steel

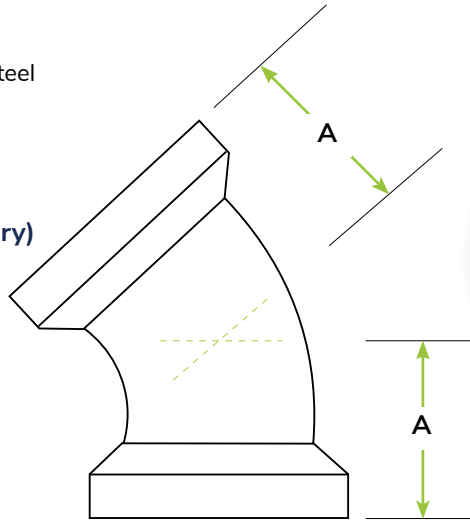
Product Notes:

- Radius elbow design

Options:

(Call for price and delivery)

- Custom lengths
- Custom flange combinations
- ISO-QF large size flanges see pg. 1.05



ORDERING NOTE: For aluminum elbow fittings see 90° mitered elbows pg. 1.51

PART #	REFERENCE ID	A (in)	UNIT PRICE
4000446	QF16-075-E45-0.96	0.96	\$49.00
4000447	QF25-100-E45-1.12	1.12	\$54.00
4000448	QF40-150-E45-1.69	1.69	\$84.00
4000449	QF50-200-E45-1.99	1.99	\$90.00

ISO-LF 45° Elbow

Materials:

- Standard: 304 stainless steel

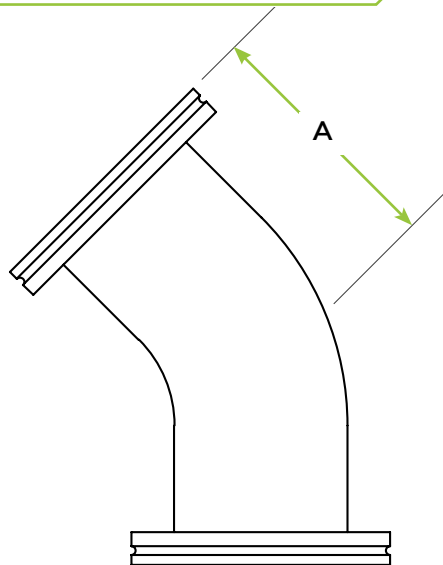
Product Notes:

- Radius elbow design

Options:

(Call for price and delivery)

- Custom lengths
- Larger sizes
- Custom flange combinations
- ISO-QF large size flanges see pg. 1.05
- ISO-LFB flanges
 - Tapped bolt holes



PART #	REFERENCE ID	A (in)	UNIT PRICE
4500270	LF63-250-E45-3.25	3.25	\$230.00
4500271	LF80-300-E45-3.93	3.93	\$255.00
4500272	LF100-400-E45-5.02	5.02	\$290.00
4500273	LF160-600-E45-9.71	9.71	\$560.00

ISO-QF 90° Elbow

Materials:

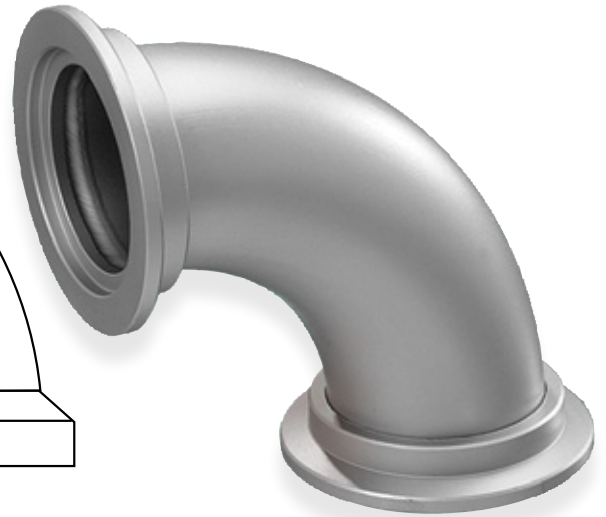
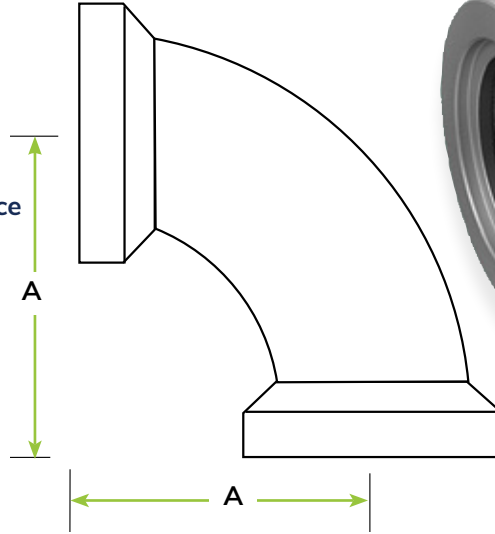
- Standard: 304 stainless steel

Product Notes:

- Radius elbow design

Options: (Call for price and delivery)

- Custom lengths
- Custom flange combinations
- ISO-QF large size flanges see pg. 1.05



PART #	REFERENCE ID	A (in)	UNIT PRICE
4000450	QF16-075-E90-1.57	1.57	\$45.00
4000451	QF25-100-E90-1.97	1.97	\$50.00
4000452	QF40-150-E90-2.56	2.56	\$68.00
4000453	QF50-200-E90-3.17	3.17	\$89.00

ORDERING NOTE: For aluminum elbow fittings see 90° mitered elbows pg. 1.51

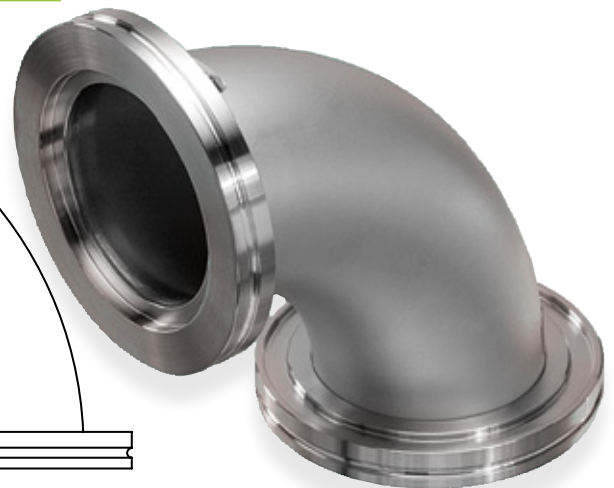
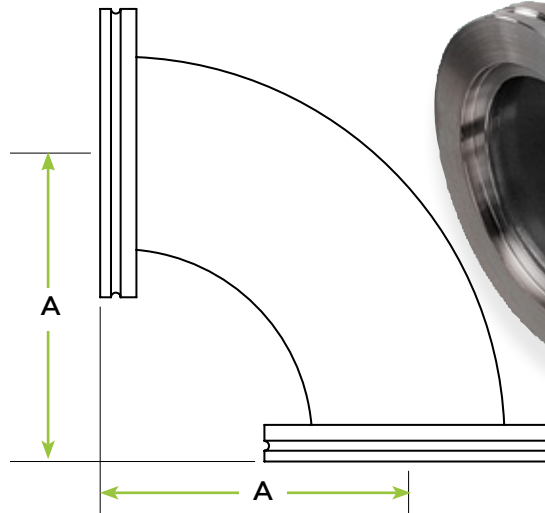
ISO-LF 90° Elbow

Materials:

- Standard: 304 stainless steel

Product Notes:

- Radius elbow design



PART #	REFERENCE ID	A (in)	UNIT PRICE
4500274	LF63-250-E90-4.00	4.00	\$205.00
4500275	LF80-300-E90-4.75	4.75	\$255.00
4500276	LF100-400-E90-6.25	6.25	\$265.00
4500277	LF160-600-E90-9.25	9.25	\$570.00
4500278	LF200-800-E90-12.25	12.25	CALL
4500279	LF250-1000-E90-15.25	15.25	CALL

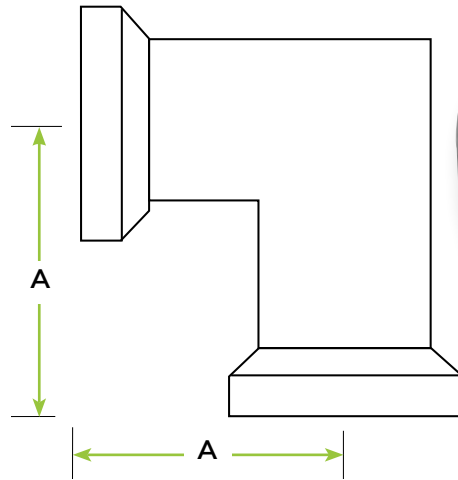
Options: (Call for price and delivery)

- Custom lengths
- Larger sizes
- Custom flange combinations
- ISO-QF large size flanges see pg. 1.05
- ISO-LFB flanges
-Tapped bolt holes

ISO-QF 90° Elbow-Mitered

Materials:

- Standard: 304 stainless steel
- Alternative: 6061 aluminum (Call for price and delivery)



ISO 90° Mitered Elbows

Options: (Call for price and delivery)

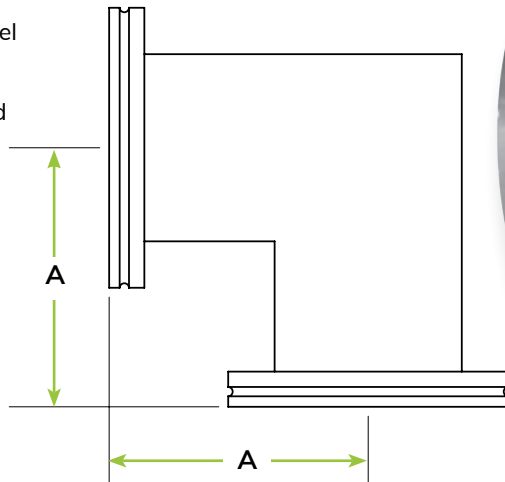
- Custom lengths
- Custom flange combinations
- ISO-QF large size flanges see pg. 1.05

PART #	REFERENCE ID	A (in)	UNIT PRICE
4000454	QF16-075-E90M-1.57	1.57	\$48.00
4000456	QF25-100-E90M-2.03	2.03	\$54.00
4000458	QF40-150-E90M-2.56	2.56	\$72.00
4000460	QF50-200-E90M-2.76	2.76	\$93.00

ISO-LF 90° Elbow-Mitered

Materials:

- Standard: 304 stainless steel
- Alternative: 6061 aluminum (Call for price and delivery)



Options: (Call for price and delivery)

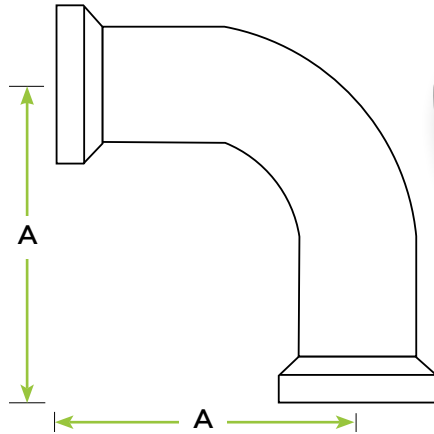
- Custom lengths
- Larger sizes
- Custom flange combinations
- ISO-QF large size flanges see pg. 1.05
- ISO-LFB flanges: Tapped bolt holes

PART #	REFERENCE ID	A (in)	UNIT PRICE
4500280	LF63-250-E90M-3.46	3.46	\$195.00
4500281	LF80-300-E90M-3.86	3.86	\$235.00
4500282	LF100-400-E90M-4.13	4.13	\$240.00
4500283	LF160-600-E90M-5.43	5.43	\$430.00
4500284	LF200-800-E90M-7.25	7.25	\$580.00
4500285	LF250-1000-E90M-8.19	8.19	\$1,350.00

ISO-QF 90° Elbow - Long Radius

Materials:

- Standard: 304 stainless steel



PART #	REFERENCE ID	A (in)	UNIT PRICE
4000462	QF16-075-E90LR-2.70	2.70	\$65.00
4000463	QF25-100-E90LR-3.64	3.64	\$70.00
4000464	QF40-150-E90LR-5.12	5.12	\$94.00
4000465	QF50-200-E90LR-5.52	5.52	\$113.00

Options: (Call for price and delivery)

- Custom lengths
- Custom flange combinations
- ISO-QF large size flanges see pg. 1.05

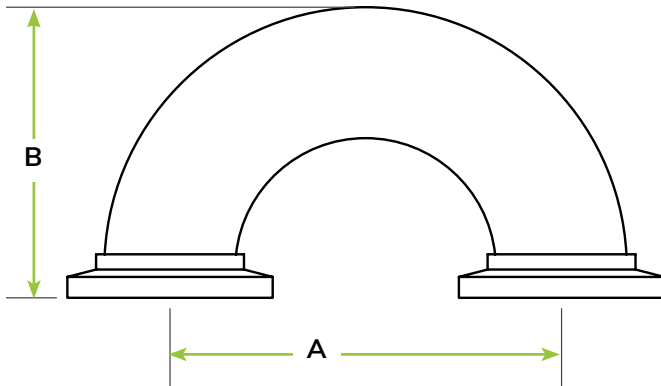
ISO-QF 180° Return

Materials:

- Standard: 304 stainless steel

Options: (Call for price and delivery)

- Custom lengths
- Custom flange combinations
- ISO-QF large size flanges see pg. 1.05



PART #	REFERENCE ID	A (in)	B (in)	UNIT PRICE
4000466	QF16-075-E180-2.25	2.25	1.67	\$70.00
4000467	QF25-100-E180-3.00	3.00	2.17	\$75.00
4000468	QF40-150-E180-4.50	4.50	3.17	\$96.00
4000469	QF50-200-E180-6.00	6.00	4.17	\$128.00

ISO-QF Tee

Materials:

- Standard: 304 stainless steel
- Alternative: 6061 aluminum (Call for price and delivery)

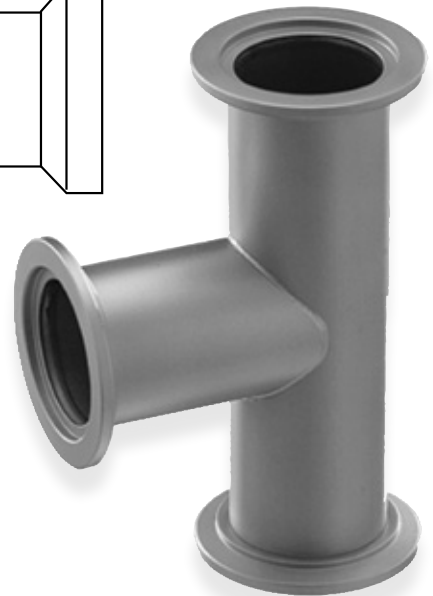
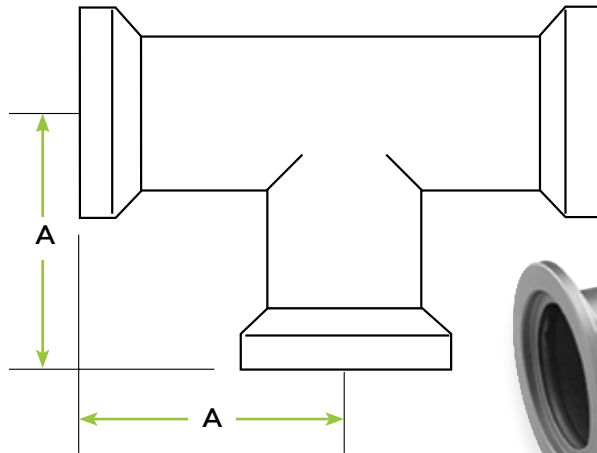
Product Notes:

- Pulled ports for optimal vacuum performance

Options:

(Call for price and delivery)

- Custom lengths
- Custom flange combinations
- ISO-QF large size flanges see pg. 1.05



PART #	REFERENCE ID	A (in)	UNIT PRICE
4000470	QF16-075-TEE-1.57	1.57	\$73.00
4000472	QF25-100-TEE-1.97	1.97	\$78.00
4000474	QF40-150-TEE-2.56	2.56	\$96.00
4000476	QF50-200-TEE-2.76	2.76	\$130.00

ISO-LF Tee

Materials:

- Standard: 304 stainless steel
- Alternative: 6061 aluminum (Call for price and delivery)

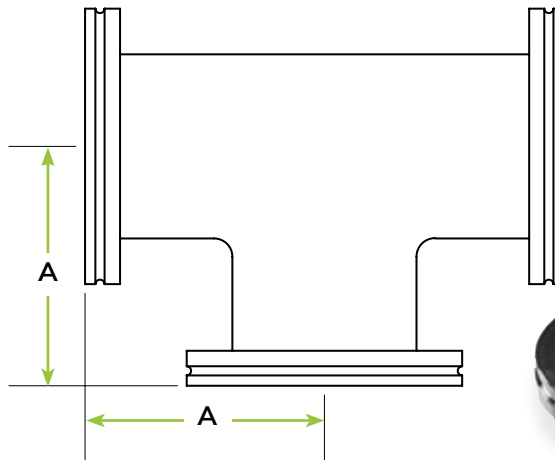
Product Notes:

- Pulled ports for optimal vacuum performance

Options:

(Call for price and delivery)

- Custom lengths
- Custom flange combinations
- ISO-QF large size flanges see pg. 1.05
- ISO-LFB flanges: Tapped bolt holes



PART #	REFERENCE ID	A (in)	UNIT PRICE
4500292	LF63-250-TEE-3.25	3.25	\$280.00
4500293	LF80-300-TEE-3.50	3.50	\$390.00
4500294	LF100-400-TEE-4.13	4.13	\$400.00
4500295	LF160-600-TEE-5.25	5.25	\$610.00
4500296	LF200-800-TEE-7.25	7.25	\$1,015.00
4500297	LF250-1000-TEE-9.75	9.75	\$1,575.00
4500298	LF320-1200-TEE-10.38	10.38	CALL
4500299	LF400-1600-TEE-12.38	12.38	CALL
4500300	LF500-2000-TEE-15.87	15.87	CALL

ISO-QF Reducing Tee

Materials:

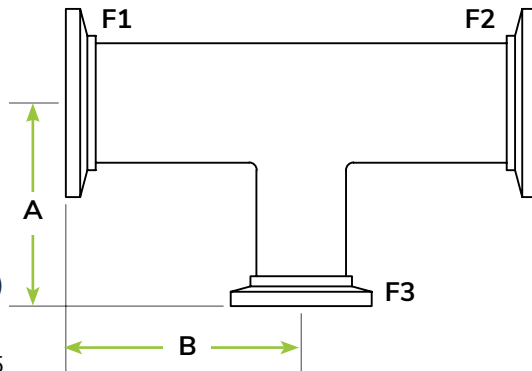
- Standard: 304 stainless steel
- Alternative: 6061 aluminum (Call for price and delivery)

Product Notes:

- Pulled ports for optimal vacuum performance
- Reducing intersection for different ISO-QF flange sizes

Options: (Call for price and delivery)

- Custom lengths
- Custom flange combinations
- ISO-QF large size flanges see pg. 1.05



PART #	REFERENCE ID	FLANGE 1 & 2	FLANGE 3	A (in)	B (in)	UNIT PRICE
4000478	QF25xQF16-100x075-RDT-1.97X1.70	QF25	QF16	1.70	1.97	\$75.00
4000480	QF40xQF16-150X075-RDT-2.56X1.95	QF40	QF16	1.95	2.56	\$88.00
4000482	QF40xQF25-150X100-RDT-2.56X2.22	QF40	QF25	2.22	2.56	\$103.00
4000484	QF50xQF16-200X075-RDT-2.76X2.20	QF50	QF16	2.20	2.76	\$105.00
4000486	QF50xQF25-200X100-RDT-2.76X2.47	QF50	QF25	2.47	2.76	\$115.00
4000488	QF50xQF40-200X150-RDT-2.76X2.81	QF50	QF40	2.81	2.76	\$135.00

ISO-LF to ISO-QF Reducing Tee

Materials:

- Standard: 304 stainless steel

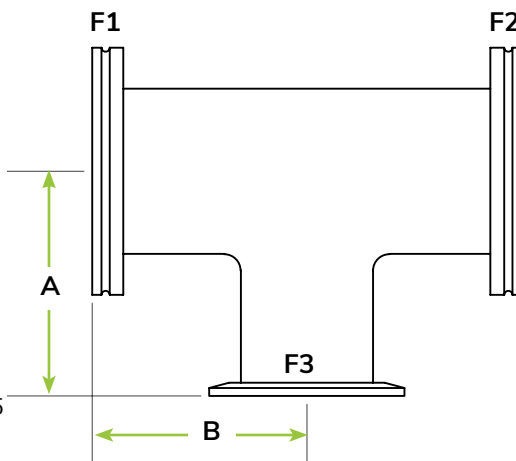
Product Notes:

- Pulled ports for optimal vacuum performance
- Reducing intersection for ISO-LF to ISO-QF flange sizes

Options:

(Call for price and delivery)

- Custom lengths
- Alternative: 6061 aluminum
- Custom flange combinations
- ISO-QF large size flanges see pg. 1.05
- ISO-LFB flanges: Tapped bolt holes



PART #	REFERENCE ID	FLANGE 1 & 2	TUBE O.D. (in)	FLANGE 3	TUBE O.D. (in)	A (in)	B (in)	UNIT PRICE
4500423	LF63xQF40-250x150-RDT-3.25X2.90	LF63	2.50	QF40	1.50	2.90	3.25	\$200.00
4500424	LF63xQF50-250X200-RDT-3.40X3.25	LF63	2.50	QF50	2.00	3.40	3.25	\$210.00
4500425	LF80XQF40-300X150-RDT-3.50X3.15	LF80	3.00	QF40	1.50	3.15	3.50	\$235.00
4500426	LF80XQF50-300X200-RDT-3.67X3.50	LF80	3.00	QF50	2.00	3.67	3.50	\$245.00
4500427	LF100XQF40-400X150-RDT-4.13X3.65	LF100	4.00	QF40	1.50	3.65	4.13	\$255.00
4500351	LF100XQF50-400X200-RDT-4.15X4.13	LF100	4.00	QF50	2.00	4.125	4.170	\$270.00

ISO-LF Reducing Tee

Materials:

- Standard: 304 stainless steel
- Alternative: 6061 aluminum
(Call for price and delivery)

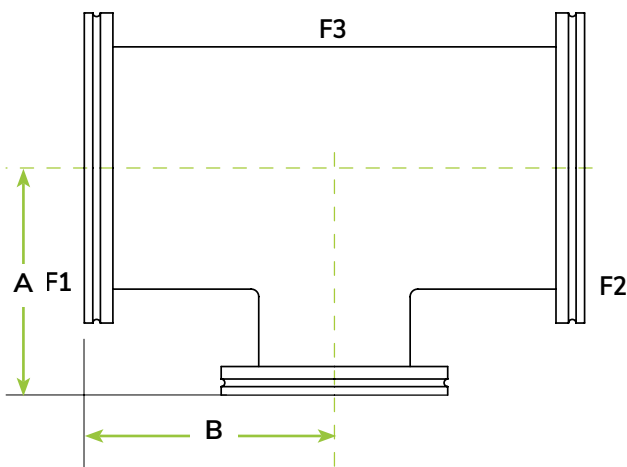
Product Notes:

- Pulled ports for optimal vacuum performance
- Reducing intersection for different ISO-LF flange sizes

Options:

(Call for price and delivery)

- Custom lengths
- Custom flange combinations
- ISO-QF large size flanges
see pg. 1.05
- ISO-LFB flanges:
Tapped bolt holes



ISO Reducing Tees

PART #	REFERENCE ID	FLANGE 1 & 2	TUBE O.D. (in)	FLANGE 3	TUBE O.D. (in)	A (in)	B (in)	UNIT PRICE
4500441	LF80XLF63-300X250-RDT-3.50X3.50	LF80	3.00	LF63	2.50	3.50	3.50	\$415.00
4500442	LF100XLF63-400X250-RDT-4.13X4.00	LF100	4.00	LF63	2.50	4.13	4.00	\$320.00
4500443	LF100XLF80-400X300-RDT-4.13X4.00	LF100	4.00	LF80	3.00	4.13	4.00	\$365.00
4500444	LF160XLF63-600X250-RDT-5.25X5.00	LF160	6.00	LF63	2.50	5.25	5.00	\$450.00
4500445	LF160XLF80-600X300-RDT-5.25X5.00	LF160	6.00	LF80	3.00	5.25	5.00	\$485.00
4500446	LF160XLF100-600X400-RDT-5.25X5.13	LF160	6.00	LF100	4.00	5.25	5.13	\$540.00
4500447	LF200XLF160-800X600-RDT-7.25X7.25	LF200	8.00	LF160	6.00	7.25	7.25	\$980.00

ISO-QF Cross

Materials:

- Standard: 304 stainless steel
- Alternative: 6061 aluminum (Call for price and delivery)

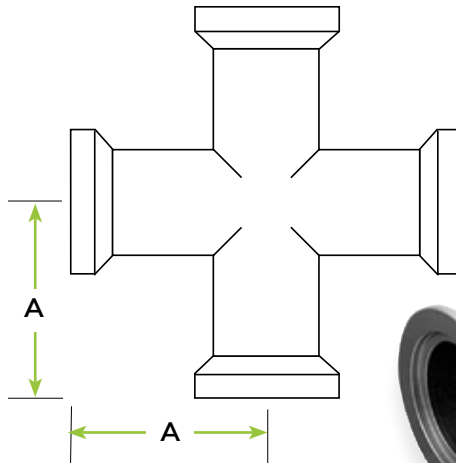
Product Notes:

- Pulled ports for optimal vacuum performance

Options:

(Call for price and delivery)

- Custom lengths
- Custom flange combinations
- ISO-QF large size flanges see pg. 1.05

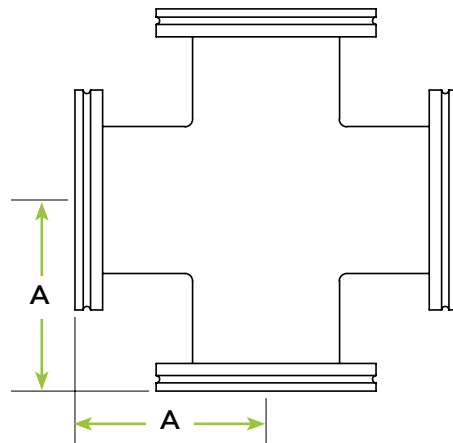


PART #	REFERENCE ID	A (in)	UNIT PRICE
4000502	QF16-075-4X-1.57	1.57	\$100.00
4000504	QF25-100-4X-1.97	1.97	\$120.00
4000506	QF40-150-4X-2.56	2.56	\$150.00
4000508	QF50-200-4X-2.76	2.76	\$200.00

ISO-LF Cross

Materials:

- Standard: 304 stainless steel
- Alternative: 6061 aluminum (Call for price and delivery)



PART #	REFERENCE ID	A (in)	UNIT PRICE
4500310	LF63-250-4X-3.25	3.25	\$385.00
4500311	LF80-300-4X-3.50	3.50	\$560.00
4500312	LF100-400-4X-4.13	4.13	\$600.00
4500313	LF160-600-4X-5.25	5.25	\$1,020.00
4500314	LF200-800-4X-7.25	7.25	\$1,765.00
4500315	LF250-1000-4X-9.75	9.75	\$2,175.00
4500316	LF320-1200-4X-10.38	10.38	CALL
4500317	LF400-1600-4X-13.37	13.37	CALL
4500318	LF500-2000-4X-15.87	15.87	CALL

Product Notes:

- Pulled ports for optimal vacuum performance

Options: (Call for price and delivery)

- Custom lengths
- Larger Sizes
- Custom flange combinations
- ISO-QF large size flanges see pg. 1.05
- ISO-LFB flanges
- Tapped bolt holes

ISO-QF Reducing Cross

Materials:

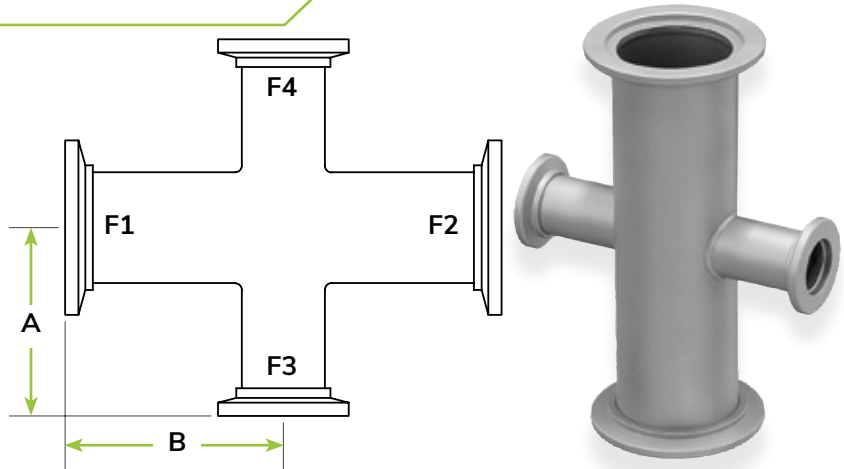
- Standard: 304 stainless steel
- Alternative: 6061 aluminum (Call for price and delivery)

Product Notes:

- Pulled ports for optimal vacuum performance
- Reducing intersection for different ISO-QF flange sizes

Options: (Call for price and delivery)

- Custom lengths
- Custom flange combinations
- ISO-QF large size flanges see pg. 1.05



PART #	REFERENCE ID	FLANGE 1 & 2	FLANGE 3 & 4	A (in)	B (in)	UNIT PRICE
4000490	QF25xQF16-100x075-R4X-1.97X1.70	QF25	QF16	1.70	1.97	\$125.00
4000492	QF40xQF16-150X075-R4X-2.56X1.95	QF40	QF16	1.95	2.56	\$145.00
4000494	QF40xQF25-150X100-R4X-2.56X2.22	QF40	QF25	2.22	2.56	\$155.00
4000496	QF50xQF16-200X075-R4X-2.76X2.20	QF50	QF16	2.20	2.76	\$195.00
4000498	QF50xQF25-200X100-R4X-2.81X2.76	QF50	QF25	2.81	2.76	\$200.00
4000500	QF50xQF40-200X150-R4X-2.81X2.75	QF50	QF40	2.81	2.75	\$225.00

ISO-LF to ISO-QF Reducing Cross

Materials:

- Standard: 304 stainless steel
- Alternative: 6061 aluminum (Call for price and delivery)

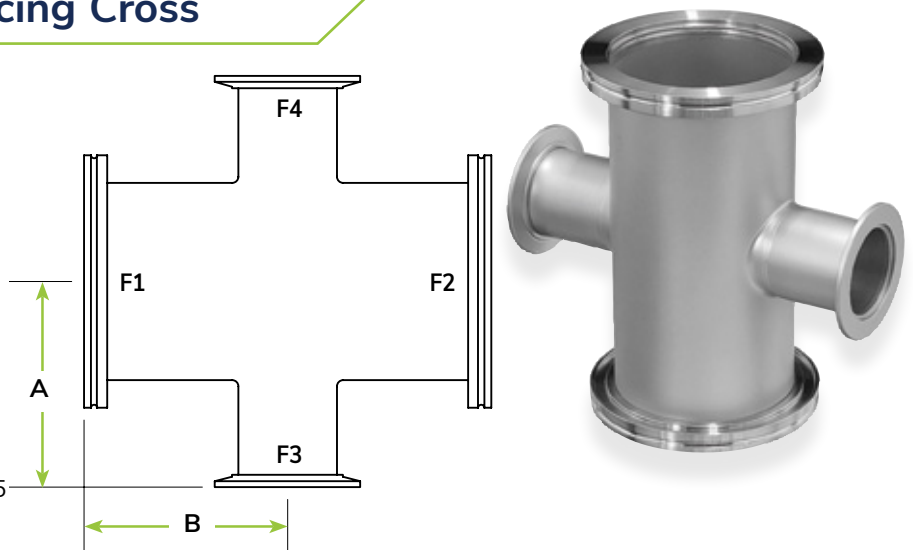
Product Notes:

- Pulled ports for optimal vacuum performance
- Reducing intersection for ISO-LF to ISO-QF flange sizes

Options:

(Call for price and delivery)

- Custom lengths
- Custom flange combinations
- ISO-QF large size flanges see pg. 1.05
- ISO-LFB flanges: Tapped bolt holes



PART #	REFERENCE ID	FLANGE 1 & 2	TUBE O.D. (in)	FLANGE 3 & 4	TUBE O.D. (in)	A (in)	B (in)	UNIT PRICE
4500435	LF63XQF40-250X150-R4X-3.25X2.79	LF63	2.50	QF40	1.50	2.79	3.25	\$310.00
4500436	LF63XQF50-250X200-R4X-3.25X3.40	LF63	2.50	QF50	2.00	3.40	3.25	\$360.00
4500437	LF80XQF40-300X150-R4X-3.50X3.17	LF80	3.00	QF40	1.50	3.17	3.50	\$395.00
4500438	LF80XQF50-300X200-R4X-3.50X3.65	LF80	3.00	QF50	2.00	3.65	3.50	\$445.00
4500439	LF100XQF40-400X150-R4X-4.13X3.65	LF100	4.00	QF40	1.50	3.65	4.13	\$450.00
4500369	LF100XQF50-400X200-R4X-4.13X4.17	LF100	4.00	QF50	2.00	4.17	4.13	\$550.00

ISO-LF Reducing Cross

Materials:

- Standard: 304 stainless steel

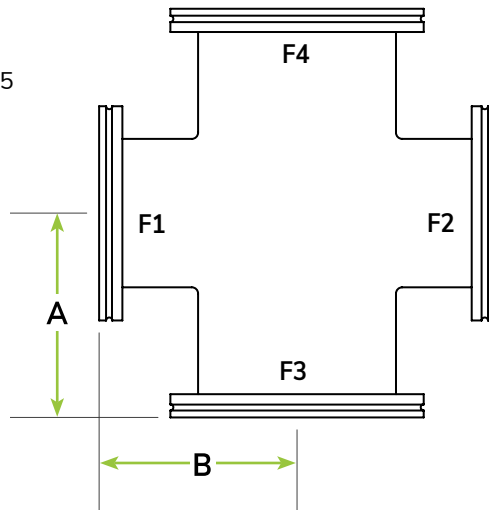
Product Notes:

- Pulled ports for optimal vacuum performance
- Reducing intersection for different ISO-LF flange sizes

Options:

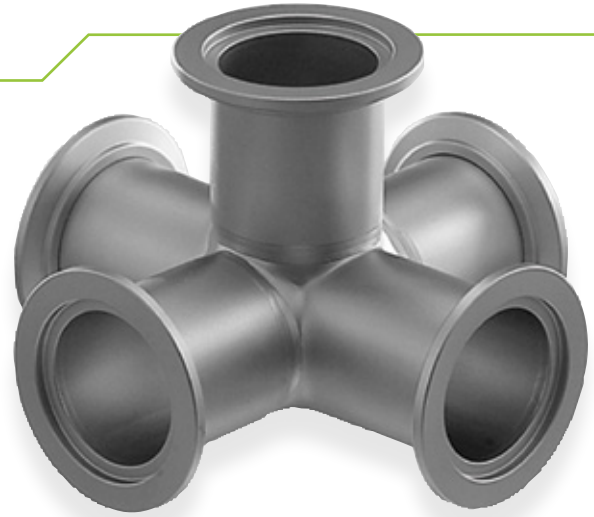
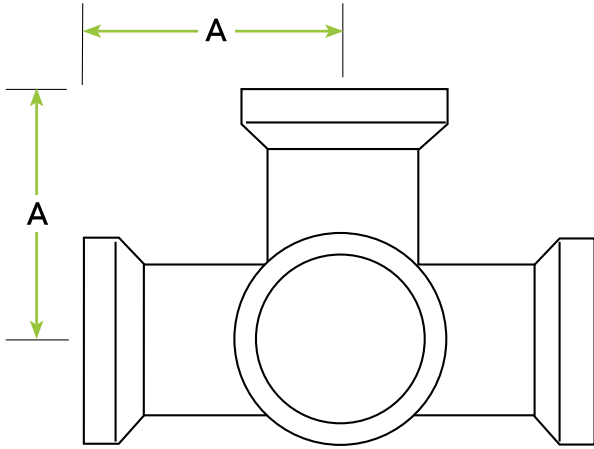
(Call for price and delivery)

- Custom lengths
- Custom flange combinations
- Alternative: 6061 aluminum
- ISO-QF large size flanges see pg. 1.05
- ISO-LFB flanges: Tapped Bolt Holes



PART #	REFERENCE ID	FLANGE 1 & 2	TUBE O.D. (in)	FLANGE 3 & 4	TUBE O.D. (in)	A (in)	B (in)	UNIT PRICE
4500450	LF80XLF63-300X250-R4X-3.50X3.50	LF80	3.00	LF63	2.50	3.50	3.50	\$500.00
4500451	LF100XLF63-400X250-R4X-4.13X4.00	LF100	4.00	LF63	2.50	4.13	4.00	\$570.00
4500452	LF100XLF80-400X300-R4X-4.13X4.00	LF100	4.00	LF80	3.00	4.13	4.00	\$670.00
4500453	LF160XLF63-600X250-R4X-5.25X5.00	LF160	6.00	LF63	2.50	5.25	5.00	\$790.00
4500454	LF160XLF80-600X300-R4X-5.25X5.00	LF160	6.00	LF80	3.00	5.25	5.00	CALL
4500455	LF160XLF100-600X400-R4X-5.25X5.13	LF160	6.00	LF100	4.00	5.25	5.13	\$1,000.00
4500456	LF200XLF160-800X600-R4X-7.25X6.25	LF200	8.00	LF160	6.00	7.25	6.25	\$1,470.00

ISO-QF 5-Way Cross



PART #	REFERENCE ID	A (in)	UNIT PRICE
4000510	QF16-075-5X-1.50	1.50	\$225.00
4000511	QF25-100-5X-2.05	2.05	\$250.00
4000512	QF40-150-5X-2.42	2.42	\$290.00
4000513	QF50-200-5X-3.17	3.17	\$390.00

Materials:

- Standard: 304 stainless steel

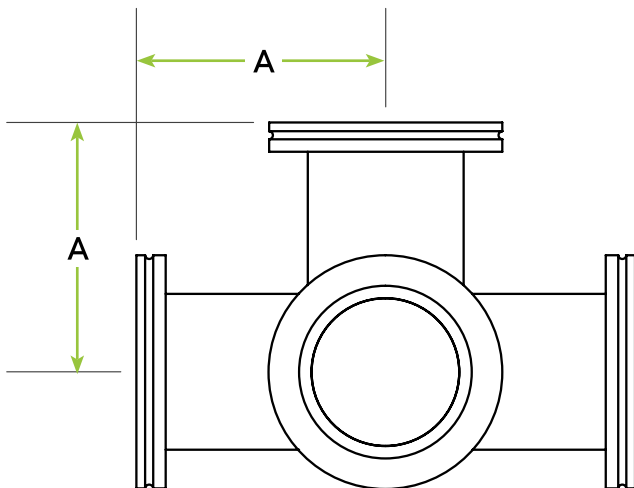
Product Notes:

- Pulled ports for optimal vacuum performance

Options: (Call for price and delivery)

- Custom lengths
- Custom flange combinations
- Alternative: 6061 aluminum
- ISO-QF large size flanges see pg. 1.05

ISO-LF 5-Way Cross



PART #	REFERENCE ID	A (in)	UNIT PRICE
4500328	LF63-250-5X-4.00	4.00	\$615.00
4500329	LF80-300-5X-3.50	3.50	\$780.00
4500330	LF100-400-5X-5.12	5.12	\$890.00
4500331	LF160-600-5X-6.31	6.31	CALL
4500332	LF200-800-5X-7.25	7.25	CALL
4500333	LF250-1000-5X-9.75	9.75	CALL

Materials:

- Standard: 304 stainless steel

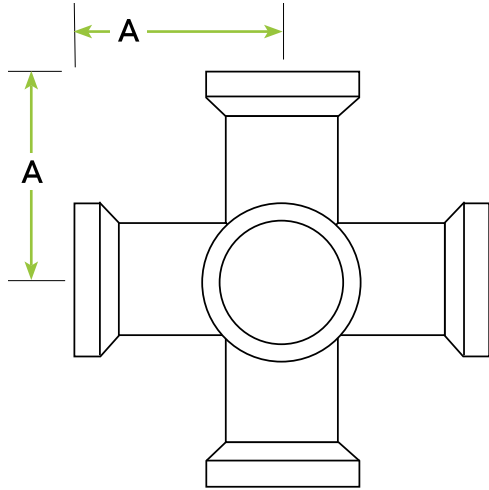
Product Notes:

- Pulled ports for optimal vacuum performance

Options: (Call for price and delivery)

- Custom lengths
- Custom flange combinations
- Alternative: 6061 aluminum
- ISO-QF large size flanges see pg. 1.05

ISO-QF 6-Way Cross



PART #	REFERENCE ID	A (in)	UNIT PRICE
4000514	QF16-075-6X-1.50	1.50	\$245.00
4000515	QF25-100-6X-2.05	2.05	\$275.00
4000516	QF40-150-6X-2.42	2.42	\$315.00
4000517	QF50-200-6X-3.17	3.17	\$420.00

Materials:

- Standard: 304 stainless steel
- Alternative: 6061 aluminum (Call for price and delivery)

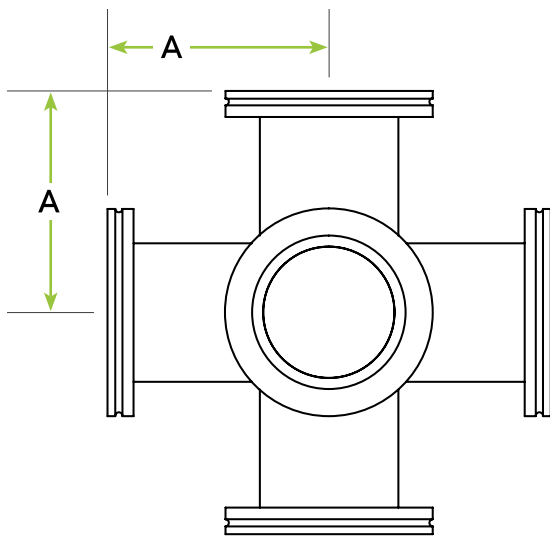
Options: (Call for price and delivery)

- Custom lengths
- Custom flange combinations
- ISO-QF large size flanges see pg. 1.05

Product Notes:

- Pulled ports for optimal vacuum performance

ISO-LF 6-Way Cross



PART #	REFERENCE ID	A (in)	UNIT PRICE
4500334	LF63-250-6X-4.00	4.00	\$820.00
4500335	LF80-300-6X-3.50	3.50	\$1,050.00
4500336	LF100-400-6X-5.12	5.12	\$1,125.00
4500337	LF160-600-6X-6.31	6.31	CALL
4500338	LF200-800-6X-7.25	7.25	CALL
4500339	LF250-1000-6X-9.75	9.75	CALL

Materials:

- Standard: 304 stainless steel
- Alternative: 6061 aluminum (Call for price and delivery)

Options: (Call for price and delivery)

- Custom lengths
- Custom flange combinations
- ISO-QF large size flanges see pg. 1.05
- ISO-LFB flanges - Tapped bolt holes

Product Notes:

- Pulled ports for optimal vacuum performance