



ISO FLANGES & FITTINGS





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ISO-QF & LF FLANGES



Specifications

- Vacuum rated to 1×10^{-9} 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, 360 brass
 - 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

Overview

ISO-QF (Quick Flange) and LF (Large Flange) flanges are part of the same family of ISO standard elastomer sealed vacuum components. A&N 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.^{*3} A&N 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.

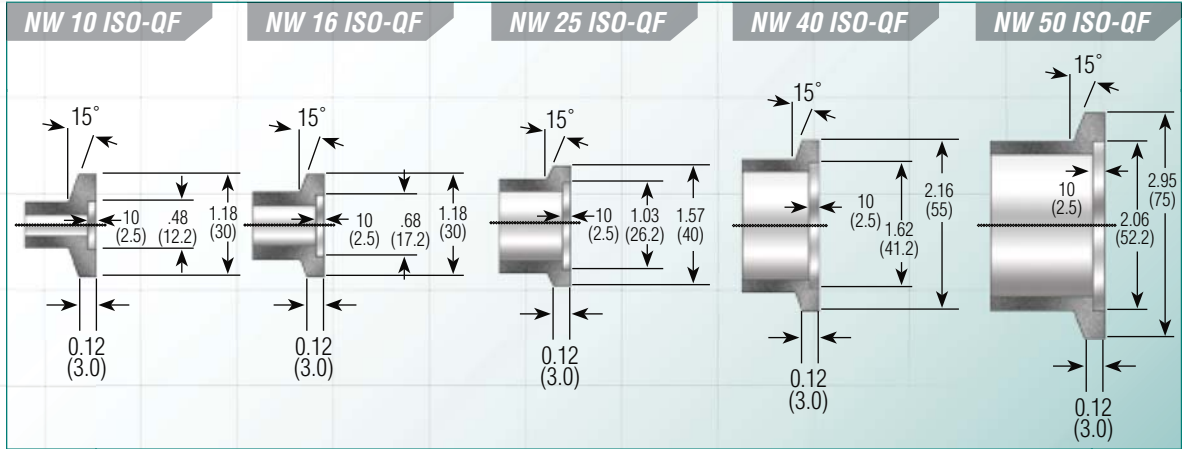
TECH TIP
Did you know? ISO QF and LF flanges are known by several other names. QF is also called KF, NW, DN and Pnerop. LF is also called MF, PF, ISO-K, ISO-F

For More Info...
^{*2} see pg. 5.22 for elastomer temperature ranges
^{*3} see pg. 5.6 - 5.8 for further details



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.



Large Size Quick Flange Dimensions

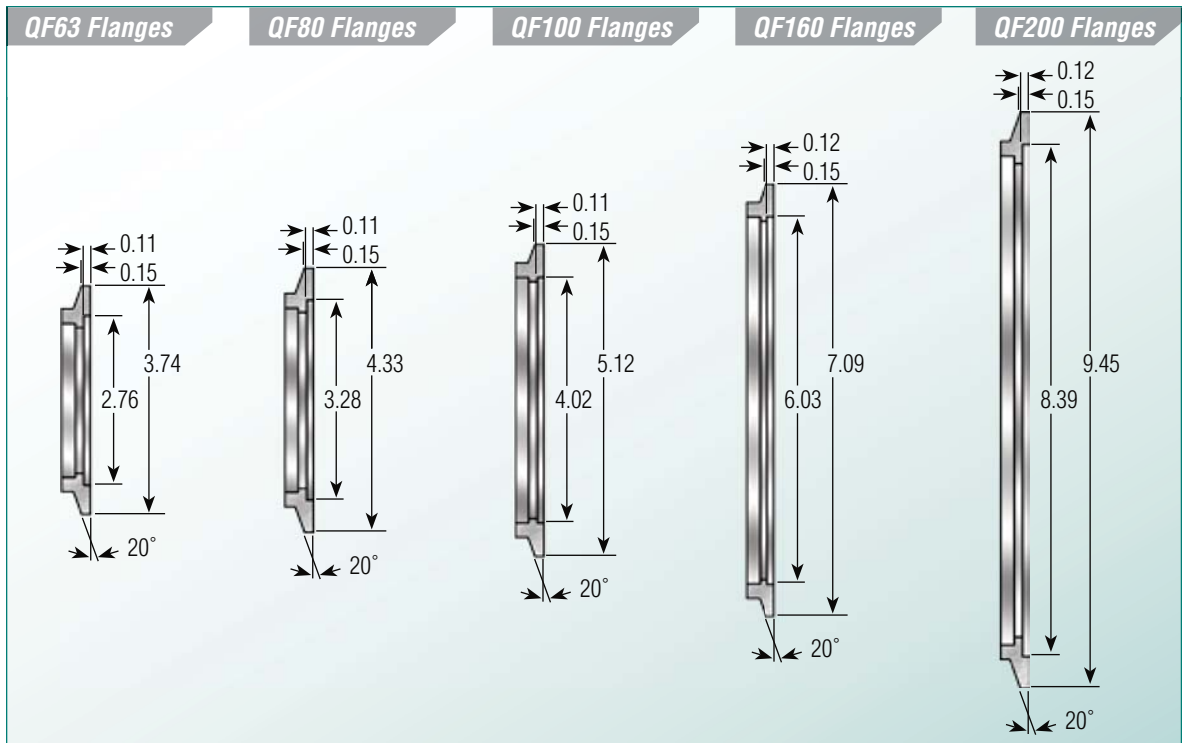
A&N Corporation now offers quick flanges up to size QF200 (8 inch tube outer diameter). ISO standards only apply to quick flanges up to size NW50 (2 inch tubing diameter). The sizes listed below were developed by vacuum component manufacturers within the United States. Quick clamps for these flanges are available in a variety of materials and designs.^{*5} 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.^{*6}



For More Info...

*5 see pg. 5.10 & 5.14 for sizes and details

*6 see pg. 5.11 & 5.19 for sizes and details



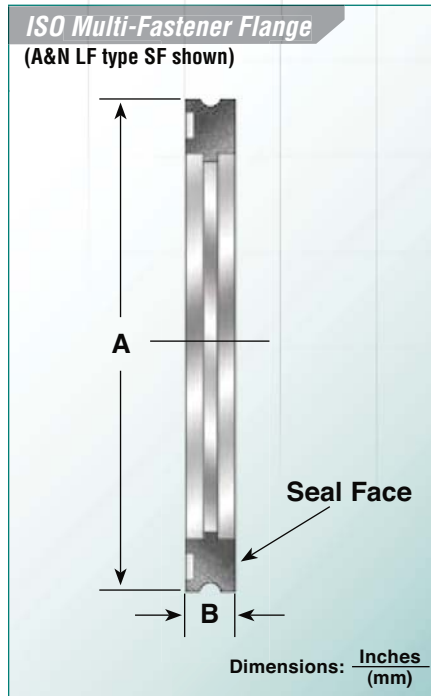
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ISO Large Flange Dimensions

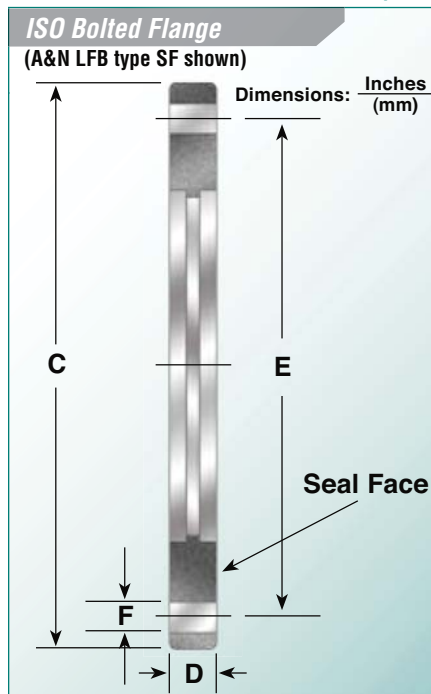
Clamp Fastener Style (ISO-LF)



FLANGE SIZE	COMPATIBLE TUBE/PIPE O.D.	A (O.D.)	B (THICKNESS)	NO. CLAMPS REQUIRED
LF63	2 1/2"	3.74	0.47	3-4
	(63.5)	(95)	(12)	
LF80	3"	4.33	0.47	4-8
	(76.2)	(110)	(12)	
LF100	4"	5.12	0.47	4-8
	(101.6)	(130)	(12)	
LF160	6"	7.09	0.47	4-8
	(152.4)	(180)	(12)	
LF200	8"	9.45	0.47	6-12
	(203.2)	(240)	(12)	
LF250	10"	11.42	0.47	6-12
	(254)	(290)	(12)	
LF320	12" or 12 3/4"	14.57	0.67	8-12
	(304.8) or (323.85)	(370)	(17)	
LF400	16"	17.72	0.67	8-16
	(406.4)	(450)	(17)	
LF500	20"	21.65	0.67	12-16
	(508)	(550)	(17)	

ISO Large Flange Dimensions

Bolt Fastener Style (ISO-LFB)



FLANGE SIZE	COMPATIBLE TUBE/PIPE O.D.	C (O.D.)	D (THICKNESS)	E (BOLT CIRCLE)	F (BOLT HOLES)	N (NO. HOLES)	WRENCH (MM)
LFB63	2 1/2"	5.12	0.47	4.33	0.35	4	13
	(63.5)	(130)	(12)	(110)	(9)		
LFB80	3"	5.71	0.47	4.92	0.35	8	13
	(76.2)	(145)	(12)	(125)	(9)		
LFB100	4"	6.50	0.47	5.71	0.35	8	13
	(101.6)	(165)	(12)	(145)	(9)		
LFB160	6"	8.86	0.63	7.87	0.43	8	17
	(152.4)	(225)	(16)	(200)	(11)		
LFB200	8"	11.22	0.63	10.24	0.43	12	17
	(203.2)	(285)	(16)	(260)	(11)		
LFB250	10"	13.19	0.63	12.20	0.43	12	17
	(254)	(335)	(16)	(310)	(11)		
LFB320	12" or 12 3/4"	16.73	0.79	15.55	0.55	12	19
	(304.8) or (323.85)	(425)	(20)	(395)	(14)		
LFB400	16"	20.08	0.79	18.90	0.55	16	19
	(406.4)	(425)	(20)	(480)	(14)		
LFB500	20"	24.02	0.79	22.83	0.55	16	19
	(508)	(610)	(20)	(580)	(14)		

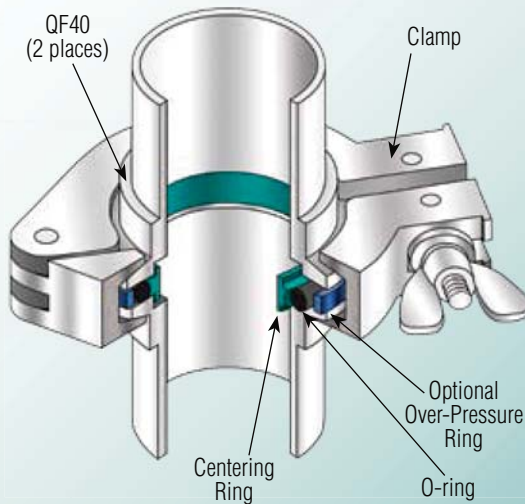


ISO Standard Sealing Assemblies

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

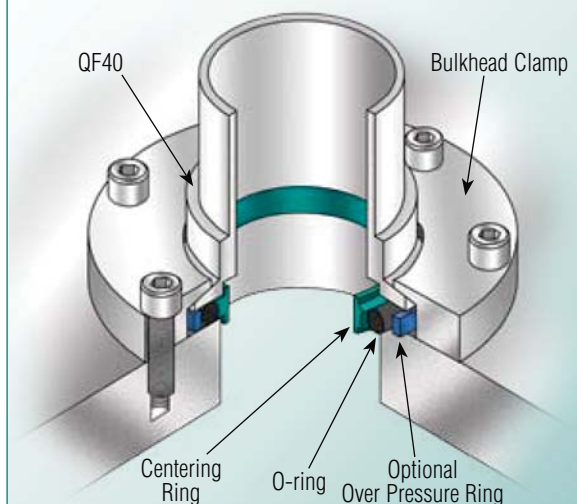
ISO-QF Quick Clamp Seal Assembly

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 A&N Corporation 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 baseplates. The object to which the flange is sealing must have a compatible bolt hole pattern and sealing groove machined into the sealing surface.



For More Info...

- pg. 5.10 - 5.11 for QF clamps
- pg. 5.20 - 5.21 for QF seals
- pg. 5.30 - 5.31 for QF flanges
- pg. 5.44 - 5.45 for QF fittings

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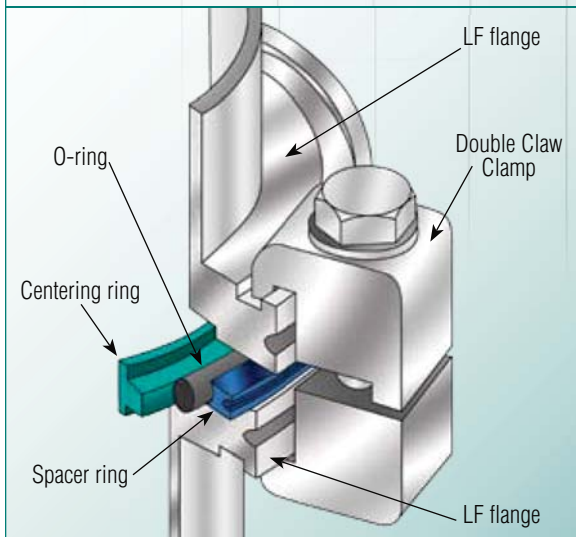
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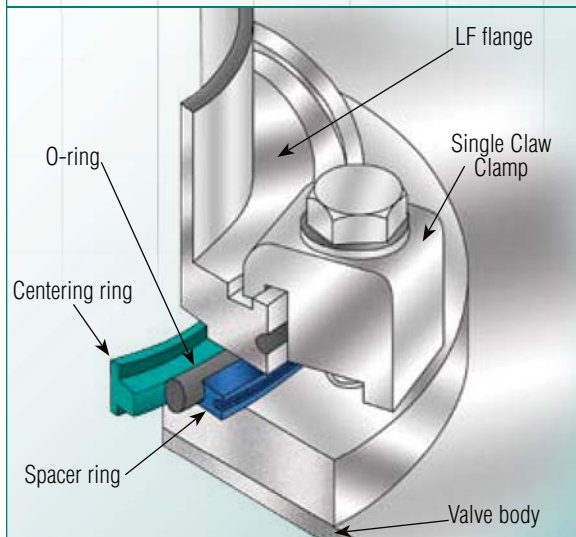
ISO-LF Double Claw Clamp Seal Assembly

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

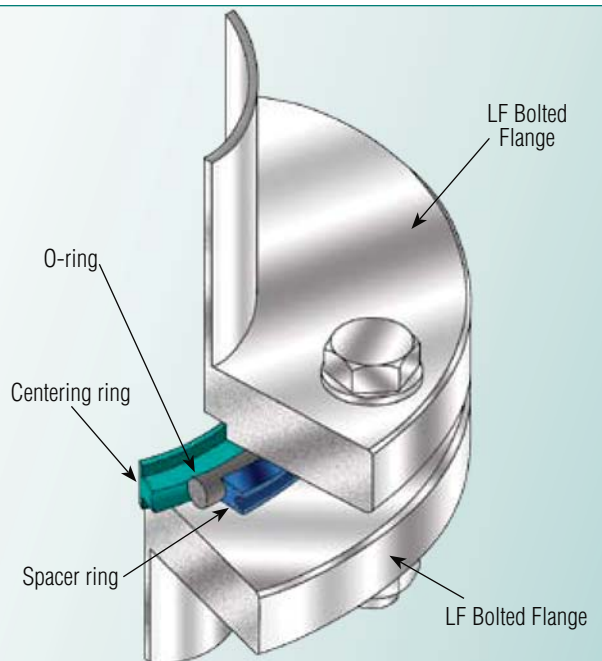
Single claw clamps are used to fasten ISO-LF style clamps directly to LFB flanges with tapped bolt holes, valves, chamber walls or baseplates. The object to which the flange is sealing must have a compatible bolt hole pattern and sealing groove machined into the sealing surface.



ISO-LFB 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.^{*7}

Note: To create a rotatable LFB flange a rotatable bolt ring is added to a standard LF style flange.^{*8}



For More Info...

*7 see pg. 5.36 for sizes and additional details.

*8 see pg. 5.11 for sizes and further description.

pg. 5.10 - 5.11 for LF clamps & bolts
pg. 5.20 - 5.21 for LF seals

pg. 5.30 - 5.31 for LF flanges

pg. 5.44 - 5.45 for LF fittings

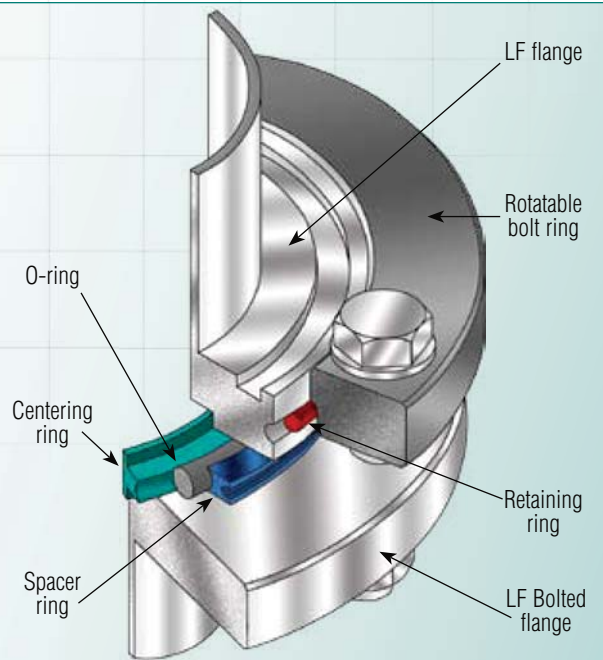


ISO Adaptive Sealing Assemblies

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.^{*9}



For More Info...

*9 see pg. 5.18 - 5.19 for sizes and further description.

*10 see pg. 5.19 for sizes and further description.

pg. 5.10 - 5.11 for LFB bolts

pg. 5.20 - 5.21 for LF seals

pg. 5.30 - 5.31 for LFB flanges

pg. 5.44 - 5.45 for LF fittings

pg. 5.10 - 5.11 for ISO fasteners

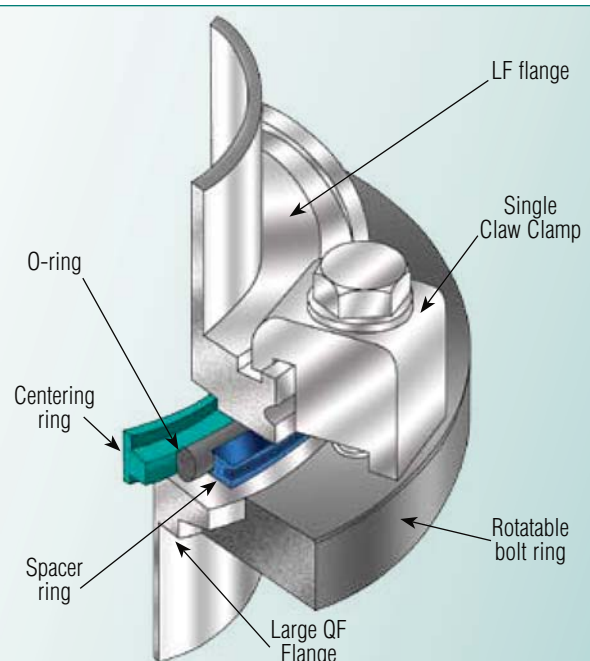
pg. 5.20 - 5.21 for ISO seals

pg. 5.30 - 5.31 for ISO flanges

pg. 5.44 - 5.45 for ISO fittings

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 A&N adaptive ISO fastener can convert a bolted or claw clamp style flange directly to a quick clamp flange for the same tubing diameter.^{*10}

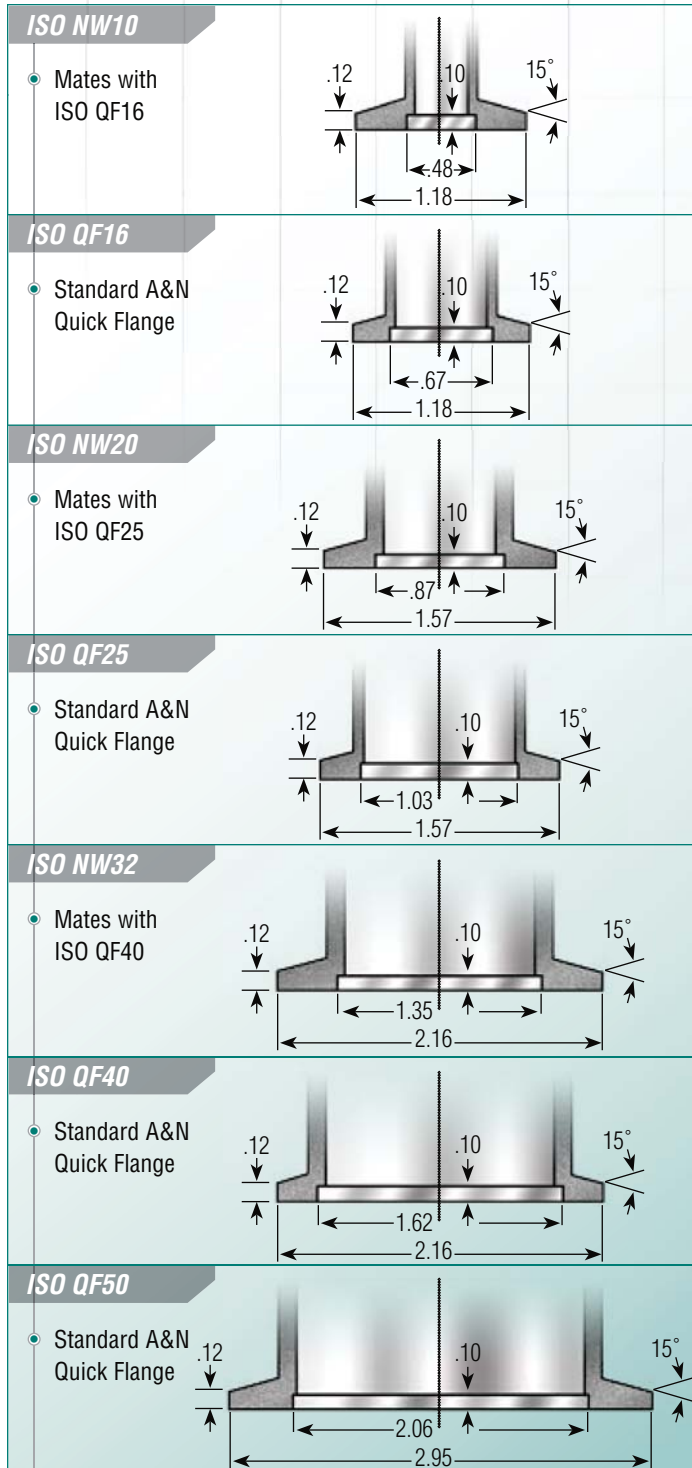


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U.S. and International Sizes and Dimensions



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 QF10, QF20 and QF32 are rarely used by modern vacuum equipment manufacturers in the United States and as such are not kept in stock by A&N Corporation. 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.*4

The ISO standard flange interface dimensions are shown on pg. 5.4 & 5.5 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.

A&N 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	A&N REFERENCE #	TUBING O.D. - INS.
NW10	10	QF10	0.5"
NW16	16	QF16	0.75"
NW25	25	QF25	1.00"
NW40	40	QF40	1.5"
NW50	50	QF50	2.0"
NW63	63	LF63	2.5"
NW80	80	LF80	3.0"
NW100	100	LF100	4.0"
NW160	160	LF160	6.0"
NW200	200	LF200	8.0"
NW250	250	LF250	10.0"
		LF320-1200	12.0"
NW320	320	LF320-1275	12.75"
NW400	400	LF400	16.00"
NW500	500	LF500	20.0"

For More Info...
*4 see pg. 5.25 for more detailed information on the adaptive centering ring



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 bulk head 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



For More Info...

*24 See pg. 5.12 - 5.15
for sizes and details

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 A&N Corporation 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.*²⁴



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Claw Clamps

These 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. These 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).^{*25}



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.^{*26}



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.^{*27}



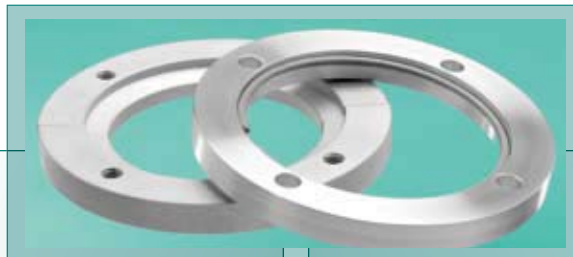
TECH TIP

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

See pg. 5.18 - 5.19 for sizes and further description.

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 A&N adaptive ISO fastener can convert a bolted or claw clamp style flange directly to a quick clamp flange for the same tubing diameter.^{*29}



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.^{*28}



For More Info...

^{*25} See pg. 5.16 for sizes and additional details.

^{*26} See pg. 5.17 for sizes and additional details.

^{*27} See pg. 5.15 for sizes and additional details.

^{*28} See pg. 5.18 - 5.19 for sizes and additional details.

^{*29} See pg. 5.19 for sizes and additional details.



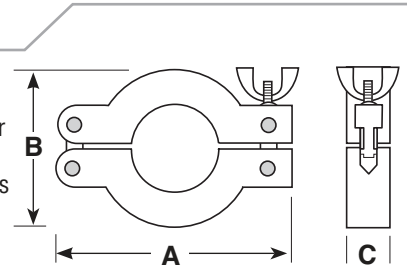
Wing-Nut Aluminum Clamp

Materials:

- Body: die-cast aluminum
- Hardware (pins, studs and hinges): die-cast aluminum

Product Notes

- Economy design for non-stressing vacuum applications



PART NUMBER	REFERENCE NUMBER	TUBE SIZE	A	B	C
4040000	QF10/16-CW	1/2 + 3/4	2.45	1.67	0.65
4040001	QF25-CW	1	2.86	2.16	0.65
4040002	QF40-CW	1 1/2	3.53	2.73	0.65
4040003	QF50-CW	2	4.80	3.70	0.90

***ORDERING NOTE**

A&N recommends the line of A&N CNC machined clamps for all connections that may bear a lateral load, positive pressure or dangerous substances.

See pg. 5.14 - 5.15



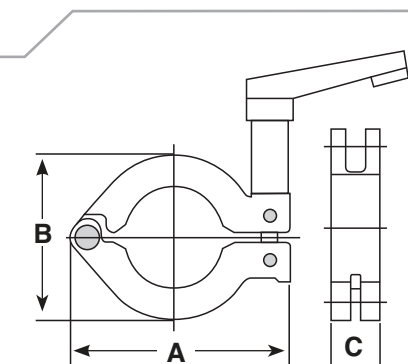
Ratchet Clamp

Materials:

- Body: die-cast aluminum
- Hardware (pins, studs and hinges): stainless steel
- Ratchet handle: zinc alloy

Product Notes

- Innovative design to ease installation
- Integrated handle lock to prevent accidental opening



PART NUMBER	REFERENCE NUMBER	TUBE SIZE	A	B	C
4040020	QF10/16-RC	1/2 + 3/4	2.40	1.77	0.63
4040021	QF25-RC	1	2.83	2.17	0.63
4040022	QF40-RC	1 1/2	3.54	2.76	0.63
4040023	QF50-RC	2	4.45	3.54	0.79

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Chain Clamp

Materials:

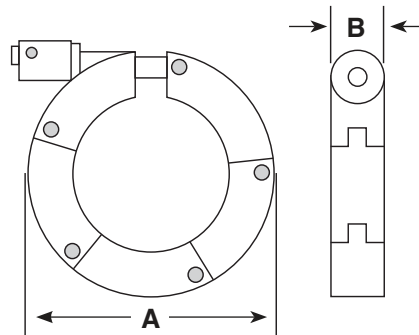
- Links: Black plastic (Polyamid 6 with 30% fiberglass)
- Hardware (pins, studs and hinges): stainless steel
- Knob: aluminum

Product Notes

- High temp: 60°C (70°C intermittent)
- Non-conductive for electricity and heat
- Integrated handle lock to prevent accidental opening
- Flexible design eases installation for small spaces
- Tight links provide full flange coverage and even distribution of sealing torque

Options: Call for price and delivery

- High temperature plastic links
- Aluminum links



PART NUMBER	REFERENCE NUMBER	TUBE SIZE	A	B
4040030	QF10/16-CC-B	1/2 + 3/4	2.01	0.87
4040031	QF25-CC-B	1	2.40	1.26
4040032	QF40-CC-B	1 1/2	2.99	1.85
4040033	QF50-CC-B	2	3.78	2.64



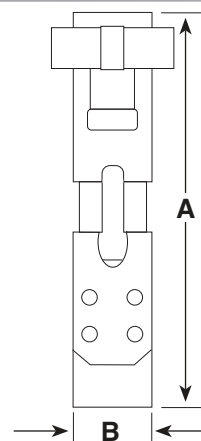
Band Clamp

Materials:

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

Product Notes

- Fastens large size ISO-QF flanges with elastomer seals



* ORDERING NOTE

See compatible flanges pg. 5.34 & 5.40

PART NUMBER	REFERENCE NUMBER	TUBE SIZE	A	B
4040008	QF63-CK	2 1/2	3.90	0.93
4040009	QF80-CK	3	4.75	0.93
4040010	QF100-CK	4	5.38	0.93
4040011	QF160-CK	6	7.25	0.93
4040012	QF200-CK	8	9.56	0.93



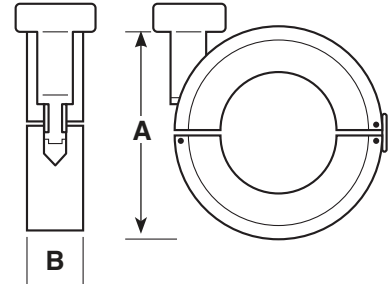
A&N CNC Aluminum Clamp

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



PART NUMBER	REFERENCE NUMBER	MAX PSI	TUBE SIZE	A	B
4050000	QF10/16-C	300	1/2 + 3/4	1.94	0.63
4050001	QF25-C	250	1	2.45	0.63
4050002	QF40-C	220	1 1/2	2.94	0.63
4050003	QF50-C	-	2	3.94	0.63

TECH TIP

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



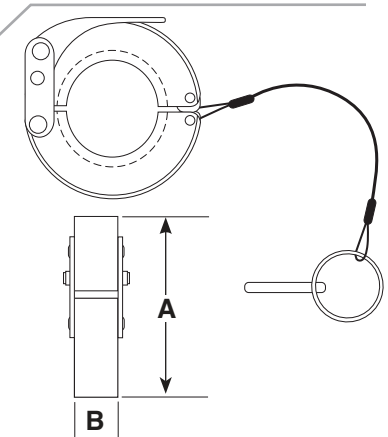
A&N CNC Toggle Clamp with Lanyard

Materials:

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

Product Notes

- Machined from solid bar for greatly increased strength
- Locking pin included to prevent accidental opening
- Lanyard included to prevent loss of locking pin



PART NUMBER	REFERENCE NUMBER	MAX PSI	TUBE SIZE	A	B
4050010	QF10/16-CTC-L	300	1/2 + 3/4	1.94	0.63
4050011	QF25-CTC-L	250	1	2.45	0.63
4050012	QF40-CTC-L	220	1 1/2	2.94	0.63
4050013	QF50-CTC-L	-	2	3.94	0.63

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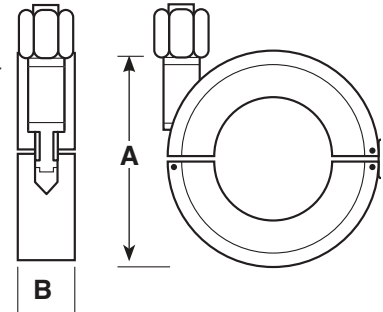
A&N CNC Stainless Steel Clamp

Materials:

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

Product Notes

- Machined from solid bar for greatly increased strength
- Integrated handle lock to prevent accidental opening
- Ideal for corrosive, high torque, high heat and low temperature applications
- Maximum closing torque = 7 ft. lbs.



PART NUMBER	REFERENCE NUMBER	MAX PSI	TUBE SIZE	A	B
4050015	QF10/16-CS	300	1/2 + 3/4	1.94	0.63
4050016	QF25-CS	250	1	2.45	0.63
4050017	QF40-CS	220	1 1/2	2.94	0.63
4050018	QF50-CS	-	2	3.94	0.63



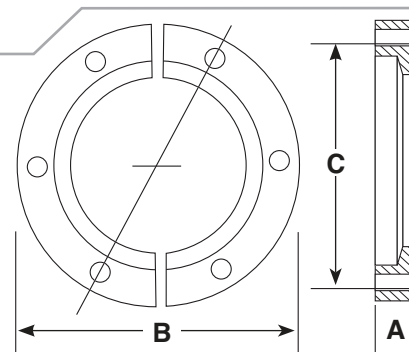
Bulkhead Clamp

Materials:

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

Product Notes

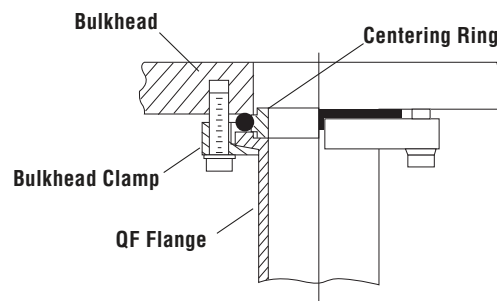
- Utilizes a standard QF seal assembly



PART NUMBER	REFERENCE NUMBER	# OF BOLTS	A	B	C
4000000	QF10/16-BC	6	0.36	2.00	1.50
4000001	QF25-BC	6	0.39	2.38	1.89
4000002	QF40-BC	6	0.37	2.94	2.44
4000003	QF50-BC	8	0.40	3.75	3.25

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.



TECH TIP

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



Double Claw Clamp

Materials:

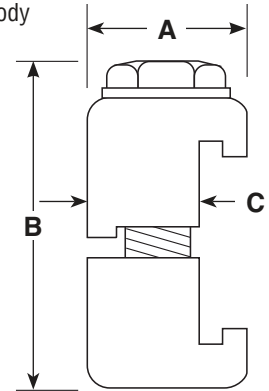
- Body: aluminum
- Hardware (bolts and washers): stainless steel

Options: Call for price and delivery

- Stainless steel clamp body

Product Notes

- Fastens ISO-LF flanges
- See chart on pg. 5.5 to assess the required number of clamps for your ISO-LF flange size



PART NUMBER	REFERENCE NUMBER	FLANGE SIZE	A	B	C
4500000	LF63/100-DC	63, 80, 100	0.95	1.98	0.63
4500001	LF160/250-DC	160, 200, 250	1.10	2.05	0.80
4500002	LF320/500-DC	320, 400, 500	1.34	2.56	1.04



Single Claw Clamp

Materials:

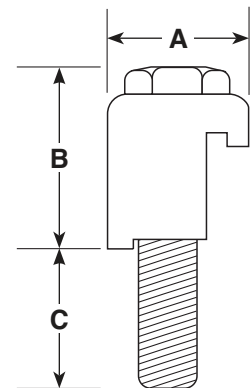
- Body: aluminum
- Hardware (bolts and washers): stainless steel

Options: Call for price and delivery

- Stainless steel clamp body

Product Notes

- Fastens ISO-LF flanges to tapped ISO-LFB flanges or components (valves, chambers) with a compatible bolt hole pattern and sealing groove.
- See chart on pg. 5.5 to assess the required number of clamps for your ISO-LF flange size.



PART NUMBER	REFERENCE NUMBER	BOLT SIZE	FLANGE SIZE	A	B	C
4500003	LF63/100-C	M8x35	63, 80, 100	0.95	1.20	0.39
4500004	LF160/250-C	M10x35	160, 200, 250	1.10	1.25	0.39
4500005	LF320/500-C	M12x50	320, 400, 500	1.34	1.57	0.72

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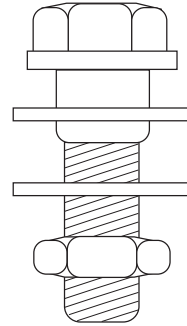
Double Flange Bolts

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 NUMBER	REFERENCE NUMBER	BOLT SIZE	# PER SET
0604501	LFB63-BD	M8x40	4
0604502	LFB80/100-BD	M8x40	8
0604503	LFB160-BD	M10x50	8
0604504	LFB200/250-BD	M10x50	12
0604505	LFB320-BD	M12x60	12
0604506	LFB400/500-BD	M12x60	16



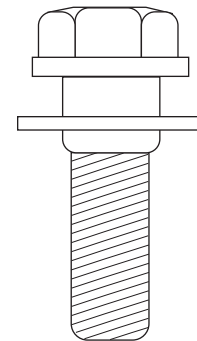
Tapped Flange Bolts

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 NUMBER	REFERENCE NUMBER	BOLT SIZE	# PER SET
0604510	LFB63-BS	M8x30	4
0604511	LFB80/100-BS	M8x30	8
0604512	LFB160-BS	M10x35	8
0604513	LFB200/250-BS	M10x35	12
0604514	LFB320-BS	M12x45	12
0604515	LFB400/500-BS	M12x45	16



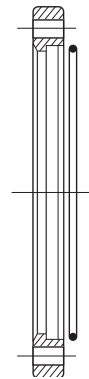
Rotatable Bolt Ring

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. 5.19 for additional details



PART NUMBER	REFERENCE NUMBER	O. D.	THICKNESS
4500060	LF63-250-RBR	5.120	0.472
4500061	LF80-300-RBR	5.710	0.472
4500062	LF100-400-RBR	6.500	0.472
4500063	LF160-600-RBR	8.860	0.630
4500064	LF200-800-RBR	11.220	0.630
4500065	LF250-1000-RBR	13.190	0.630
4500066	LF320-1200-RBR	16.730	0.790
4500067	LF400-1600-RBR	20.080	0.790
4500068	LF500-2000-RBR	24.020	0.790



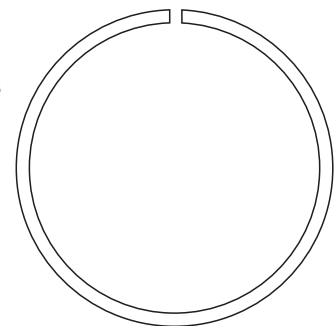
Retaining Ring

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. 5.19 for additional details



PART NUMBER	REFERENCE NUMBER	A	B
4510036	LF63-250-RR	3.60	0.125
4510037	LF80-300-RR	4.21	0.125
4510038	LF100-400-RR	5.00	0.125
4510039	LF160-600-RR	6.89	0.188
4510040	LF200-800-RR	9.25	0.188
4510041	LF250-1000-RR	11.22	0.188
4510042	LF320-1200-RR	14.37	0.188
4510043	LF400-1600-RR	17.50	0.312
4510044	LF500-2000-RR	21.45	0.312

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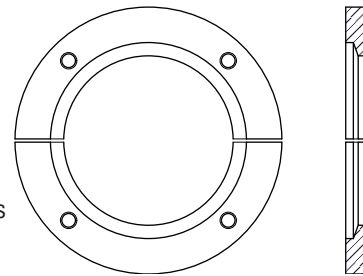
Adaptive Bolt Ring

Materials:

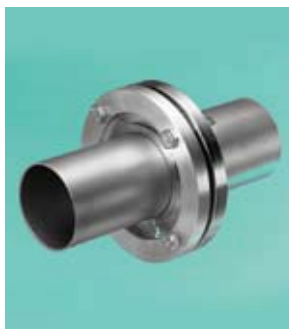
- Body: aluminum

Product Notes

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



PART NUMBER	REFERENCE NUMBER	O.D.	THICKNESS
4001086	QF63-250-ABR	5.12	0.472
4001087	QF80-300-ABR	5.71	0.472
4001088	QF100-400-ABR	6.50	0.472
4001089	QF160-600-ABR	8.86	0.472
4001090	QF200-800-ABR	11.22	0.472



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

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

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



Section 6-2

ISO Seals

A&N Corporation provides ISO high vacuum seals and sealing assemblies for all ISO standard sizes. We offer three different types of elastomer sealing rings and four 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
- Support rings: 304 or aluminum or brass
- Compatible with all ISO standard vacuum flanges and fittings

Features

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

For More Info...

*30 See pg. 5.22 & 5.24 for sizes and additional details

Centering Ring Assemblies

The basic seal for the ISO flange system includes a supportive inner metallic ring and an elastomer outer ring (o-ring) which is compressed between the ISO flanges to create a vacuum tight seal. A&N offers a choice of four different metals for the supporting ring (304 stainless steel, aluminum and brass) and three different elastomers for the sealing ring (Viton®, Buna and silicone)^{*30}



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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.*³¹



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.*³²



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. A&N offers a choice of three different elastomers for the sealing ring (Viton®, Buna and silicone)*³³



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.*³⁴ A&N Corporation 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.*³⁵



For More Info...

- *³¹ See pg. 5.25 for sizes and additional details
- *³² See pg. 5.26 for sizes and additional details
- *³³ See pg. 5.28 - 5.29 for sizes and additional details
- *³⁴ See pg. 5.27 for sizes and additional details
- *³⁵ See pg. 5.13 - 5.14 for sizes and additional details



Centering Ring Assembly

Materials:

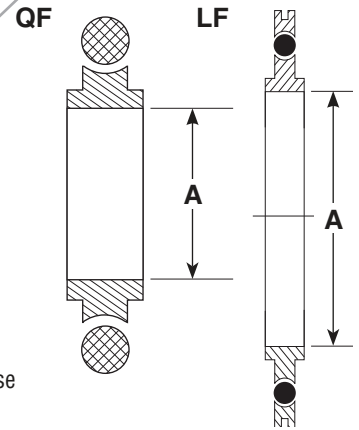
- Centering ring: 304 stainless steel, aluminum and brass
- O-ring: Buna-N, Viton® or silicone
- Spacer ring (LF sizes only): aluminum
- Temperature limits:

Product Notes

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

	Low	Sustained High	Intermittent Use
Viton®	-20°C	150°C	200°C
Buna	-20°C	80°C	100°C
Silicone	-50°C	150°C	200°C

Silicone is chemically resistant



***ORDERING NOTE**

Centering rings with screen mesh are available on pg. 5.26

See pg. 5.24 for brass centering ring assemblies

Brass

PART NUMBER	REFERENCE NUMBER	A
-------------	------------------	---

Viton®

4000034	QF10-050-BR-V	0.39
4000035	QF16-075-BR-V	0.63
4000036	QF25-100-BR-V	0.98
4000037	QF40-150-BR-V	1.53
4000038	QF50-200-BR-V	1.97

Buna

4000039	QF10-050-BR-B	0.39
4000040	QF16-075-BR-B	0.63
4000041	QF25-100-BR-B	0.98
4000042	QF40-150-BR-B	1.53
4000043	QF50-200-BR-B	1.97

Silicone

4000044	QF10-050-BR-S	0.39
4000045	QF16-075-BR-S	0.63
4000046	QF25-100-BR-S	0.98
4000047	QF40-150-BR-S	1.53
4000048	QF50-200-BR-S	1.97

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304 Stainless Steel

PART NUMBER	REFERENCE NUMBER	A
Viton®		
4000004	QF10-050-SR-V	0.39
4000005	QF16-075-SR-V	0.63
4000006	QF25-100-SR-V	0.98
4000007	QF40-150-SR-V	1.53
4000008	QF50-200-SR-V	1.97
4500008	LF63-250-SR-V	2.65
4500011	LF80-300-SR-V	3.16
4500014	LF100-400-SR-V	3.90
4500017	LF160-600-SR-V	5.80
4500020	LF200-800-SR-V	8.15
4500023	LF250-1000-SR-V	10.05
4500026	LF320-1200-SR-V	12.30
4500029	LF400-1600-SR-V	15.53
4500032	LF500-2000-SR-V	19.51

Buna

4000009	QF10-050-SR-B	0.39
4000010	QF16-075-SR-B	0.63
4000011	QF25-100-SR-B	0.98
4000012	QF40-150-SR-B	1.53
4000013	QF50-200-SR-B	1.97
4500006	LF63-250-SR-B	2.65
4500009	LF80-300-SR-B	3.16
4500012	LF100-400-SR-B	3.90
4500015	LF160-600-SR-B	5.80
4500018	LF200-800-SR-B	8.15
4500021	LF250-1000-SR-B	10.05
4500024	LF320-1200-SR-B	12.30
4500027	LF400-1600-SR-B	15.53
4500030	LF500-2000-SR-B	19.51

Silicone

4000014	QF10-050-SR-S	0.39
4000015	QF16-075-SR-S	0.63
4000016	QF25-100-SR-S	0.98
4000017	QF40-150-SR-S	1.53
4000018	QF50-200-SR-S	1.97
4500007	LF63-250-SR-S	2.65
4500010	LF80-300-SR-S	3.16
4500013	LF100-400-SR-S	3.90
4500016	LF160-600-SR-S	5.80
4500019	LF200-800-SR-S	8.15
4500022	LF250-1000-SR-S	10.05
4500025	LF320-1200-SR-S	12.30
4500028	LF400-1600-SR-S	15.53
4500031	LF500-2000-SR-S	19.51

Aluminum

PART NUMBER	REFERENCE NUMBER	A
Viton®		
4000019	QF10-050-AR-V	0.39
4000020	QF16-075-AR-V	0.63
4000021	QF25-100-AR-V	0.98
4000022	QF40-150-AR-V	1.53
4000023	QF50-200-AR-V	1.97
4500035	LF63-250-AR-V	2.65
4500038	LF80-300-AR-V	3.16
4500041	LF100-400-AR-V	3.90
4500044	LF160-600-AR-V	5.80
4500047	LF200-800-AR-V	8.15
4500050	LF250-1000-AR-V	10.05
4500053	LF320-1200-AR-V	12.30
4500056	LF400-1600-AR-V	15.53
4500059	LF500-2000-AR-V	19.51

Buna

4000024	QF10-050-AR-B	0.39
4000025	QF16-075-AR-B	0.63
4000026	QF25-100-AR-B	0.98
4000027	QF40-150-AR-B	1.53
4000028	QF50-200-AR-B	1.97
4500033	LF63-250-AR-B	2.65
4500036	LF80-300-AR-B	3.16
4500039	LF100-400-AR-B	3.90
4500042	LF160-600-AR-B	5.80
4500045	LF200-800-AR-B	8.15
4500048	LF250-1000-AR-B	10.05
4500051	LF320-1200-AR-B	12.30
4500054	LF400-1600-AR-B	15.53
4500057	LF500-2000-AR-B	19.51

Silicone

4000029	QF10-050-AR-S	0.39
4000030	QF16-075-AR-S	0.63
4000031	QF25-100-AR-S	0.98
4000032	QF40-150-AR-S	1.53
4000033	QF50-200-AR-S	1.97
4500034	LF63-250-AR-S	2.65
4500037	LF80-300-AR-S	3.16
4500040	LF100-400-AR-S	3.90
4500043	LF160-600-AR-S	5.80
4500046	LF200-800-AR-S	8.15
4500049	LF250-1000-AR-S	10.05
4500052	LF320-1200-AR-S	12.30
4500055	LF400-1600-AR-S	15.53
4500058	LF500-2000-AR-S	19.51



Adaptive Centering Ring Assembly

Three of the ISO-QF flange sizes illustrated on the table on pg. 5.9 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.

Materials:

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

Product Notes:

- Metal centering ring aligns flanges

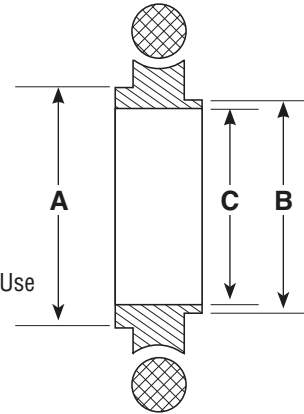
during seal assembly and provides support for the elastomer, sealing ring.

- Replaceable o-ring

• Temperature limits:

	Low	Sustained High	Intermittent Use
Viton®	-20°C	150°C	200°C
Buna	-20°C	80°C	100°C
Silicone	-50°C	150°C	200°C

Silicone is chemically resistant



Stainless Steel

PART NUMBER	REFERENCE NUMBER	A	B	C
4000054	QF10/16-ASR-V	0.67	0.47	0.39
4000055	QF20/25-ASR-V	1.02	0.87	0.81
4000056	QF32/40-ASR-V	1.61	1.34	1.26

Aluminum

PART NUMBER	REFERENCE NUMBER	A	B	C
4000063	QF10/16-AAR-V	0.67	0.47	0.39
4000064	QF20/25-AAR-V	1.02	0.87	0.81
4000065	QF32/40-AAR-V	1.61	1.34	1.26

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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)
- Screen
 - Stainless steel 72 mesh

Options: Call for price and delivery

- Larger sizes
- Other screen 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:

	Low	Sustained High	Intermittent Use
Viton®	-20°C	150°C	200°C
Buna	-20°C	80°C	100°C
Silicone	-50°C	150°C	200°C
- Silicone is chemically resistant*

Figure 1

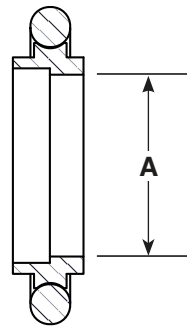
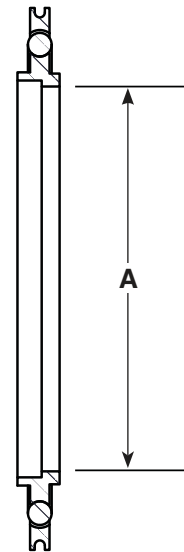


Figure 2



PART NUMBER	REFERENCE NUMBER	FIGURE	A
4000049	QF10-SRV-SM	1	0.31
4000050	QF16-SRV-SM	1	0.50
4000051	QF25-SRV-SM	1	0.86
4000052	QF40-SRV-SM	1	1.45
4000053	QF50-SRV-SM	1	1.88
4500341	LF63-SRV-SM	2	2.50
4500342	LF80-SRV-SM	2	3.00
4500343	LF100-SRV-SM	2	3.80
4500344	LF160-SRV-SM	2	5.67



Over Pressure Ring

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 an over-pressure ring can withstand up to 100psi of pressure depending on the size of the flange you are using.

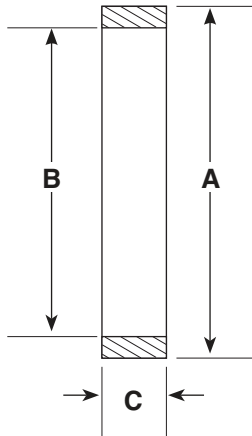
A&N Corporation CNC machined clamps have a built-in over-pressure ring design. With the use of these clamps there is no need for the added expense of an over-pressure ring addition to the centering ring assembly.

Materials:

- 304 stainless steel

Product Notes:

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



TECH TIP

Over pressure rings not needed with A&N CNC clamps. See pg. 5.14 - 5.15

PART NUMBER	REFERENCE NUMBER	MAX PSIG	MAX PSIG W/CNC CLAMP	A	B	C
4000072	QF10-050-OPR	100		1.25	1.09	0.14
4000073	QF16-075-OPR	100	300	1.25	1.19	0.35
4000074	QF25-100-OPR	100	250	1.66	1.58	0.35
4000075	QF40-150-OPR	75	200	2.25	2.17	0.35
4000076	QF50-200-OPR	50		2.75	2.62	0.15

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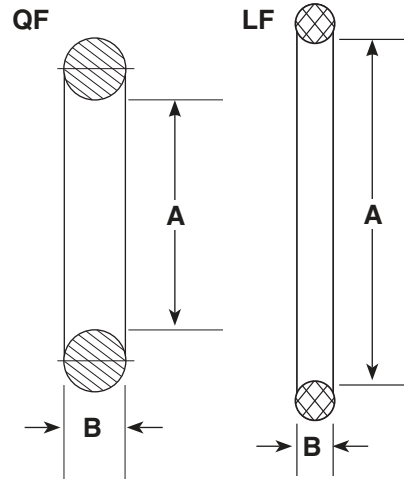


Replacement Viton® O-ring

Product Notes:

- Replacement seal for ISO centering rings
- Temperature limits:

Low	Sustained High	Intermittent Use
-20°C	150°C	200°C



Viton®

PART NUMBER	REFERENCE NUMBER	O-RING STD #	A	B
0600312	QF10-050-OV	2-312	0.60	0.210
0600314	QF16-075-OV	2-314	0.73	0.210
0600320	QF25-100-OV	2-320	1.10	0.210
0600326	QF40-150-OV	2-326	1.60	0.210
0600330	QF50-200-OV	2-330	2.10	0.210
0600336	LF63-250-OV	2-336	2.85	0.210
0600340	LF80-300-OV	2-340	3.35	0.210
0600346	LF100-400-OV	2-346	4.10	0.210
0600361	LF160-600-OV	2-361	5.98	0.210
0600371	LF200-800-OV	2-371	8.48	0.210
0600378	LF250-1000-OV	2-378	10.48	0.210
0600454	LF320-1200-OV	2-454	12.48	0.275
0600460	LF400-1600-OV	2-460	15.48	0.275
0600468	LF500-2000-OV	2-468	19.46	0.275

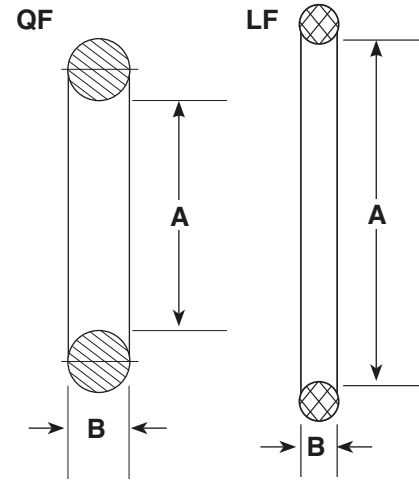


Replacement Silicone O-ring

Product Notes:

- Replacement seal for ISO centering rings
- Chemically resistant
- Temperature limits:

Low	Sustained High	Intermittent Use
-50°C	150°C	200°C



Silicone

PART NUMBER	REFERENCE NUMBER	O-RING STD #	A	B
0600312	QF10-050-OS	2-312	0.60	0.210
0602314	QF16-075-OS	2-314	0.73	0.210
0602320	QF25-100-OS	2-320	1.10	0.210
0602326	QF40-150-OS	2-326	1.60	0.210
0602330	QF50-200-OS	2-330	2.10	0.210
0602336	LF63-250-OS	2-336	2.85	0.210
0602340	LF80-300-OS	2-340	3.35	0.210
0602346	LF100-400-OS	2-346	4.10	0.210
0602361	LF160-600-OS	2-361	5.98	0.210
0602371	LF200-800-OS	2-371	8.48	0.210
0602378	LF250-1000-OS	2-378	10.48	0.210
0602454	LF320-1200-OS	2-454	12.48	0.275
0602460	LF400-1600-OS	2-460	15.48	0.275
0602468	LF500-2000-OS	2-468	19.46	0.275

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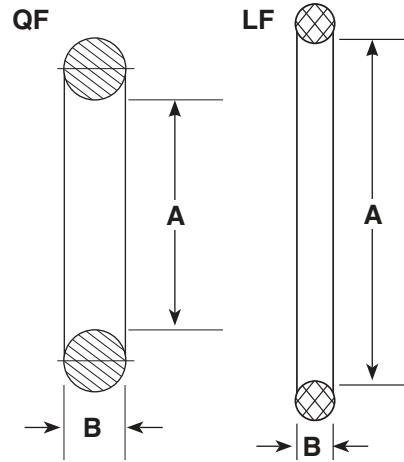


Replacement Buna-N O-ring

Product Notes:

- Replacement seal for ISO centering rings
- Superior permeation resistance
- Temperature limits:

Low	Sustained High	Intermittent Use
-20°C	80°C	100°C



Buna-N

PART NUMBER	REFERENCE NUMBER	O-RING STD #	A	B
0600312	QF10-050-OB	2-312	0.60	0.210
0601314	QF16-075-OB	2-314	0.73	0.210
0601320	QF25-100-OB	2-320	1.10	0.210
0601326	QF40-150-OB	2-326	1.60	0.210
0601330	QF50-200-OB	2-330	2.10	0.210
0601336	LF63-250-OB	2-336	2.85	0.210
0601340	LF80-300-OB	2-340	3.35	0.210
0601346	LF100-400-OB	2-346	4.10	0.210
0601361	LF160-600-OB	2-361	5.98	0.210
0601371	LF200-800-OB	2-371	8.48	0.210
0601378	LF250-1000-OB	2-378	10.48	0.210
0601454	LF320-1200-OB	2-454	12.48	0.275
0601460	LF400-1600-OB	2-460	15.48	0.275
0601468	LF500-2000-OB	2-468	19.46	0.275



Section 6-3

ISO Weld Flanges

A&N Corporation 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 or brass
- 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



For More Info...

*36 See pg. 5.32 - 5.39
for sizes and
specific details

Weld Flanges

These flanges are manufactured with a weld prep and tubing bore for immediate installation on your system with no additional alteration. A&N offers weld flanges in four different materials: 304 stainless steel, 6061 aluminum and brass. These flanges are also offered in four different designs to meet your specific requirements: bored flanges, ring flanges, socket weld flanges and stub weld flanges.*36



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Blank Flanges

These flanges are manufactured with no weld prep and no tubing bore. These flanges are commonly used to close unused ports or they are altered by customers with their own custom machining capability for a special use. A&N offers blank flanges in several different materials: 304 stainless steel, 6061 aluminum and brass.*³⁷



Unbored Stub Flanges

These flanges are manufactured with no weld prep and no tubing bore. These flanges are commonly altered by customers with their own custom machining capability for a special use. A&N offers weld flanges in three different materials: 304 stainless steel, 6061 aluminum and brass.*³⁸



For More Info...

*37 See pg. 5.40 - 5.42 for sizes and specific details

*38 See pg. 5.43 for sizes and specific details



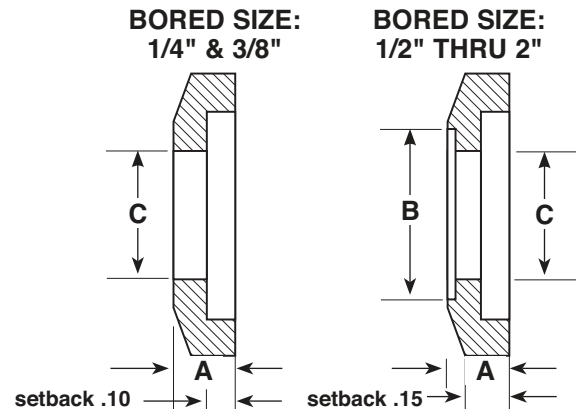
Bored Weld Flange

Materials

- 304 stainless steel

Product Notes

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



304 Stainless Steel

PART NUMBER	REFERENCE NUMBER	BORE SIZE	A	B	C
4000096	QF10-B25	0.25	0.20	-	0.26
4000097	QF10-B38	0.38	0.20	-	0.38
4000098	QF10-B50	0.50	0.20	0.51	0.45
4000099	QF16-B25	0.25	0.20	-	0.26
4000100	QF16-B38	0.38	0.20	-	0.38
4000101	QF16-B50	0.50	0.20	0.51	0.45
4000102	QF16-B75	0.75	0.20	0.76	0.68
4000103	QF25-B25	0.25	0.20	-	0.26
4000104	QF25-B38	0.38	0.20	-	0.38
4000105	QF25-B50	0.50	0.20	0.51	0.45
4000106	QF25-B75	0.75	0.20	0.76	0.71
4000107	QF25-B100	1.00	0.20	1.01	0.94
4000108	QF40-B25	0.25	0.20	-	0.26
4000109	QF40-B38	0.38	0.20	-	0.38
4000110	QF40-B50	0.50	0.20	0.51	0.45
4000111	QF40-B75	0.75	0.20	0.76	0.71
4000112	QF40-B100	1.00	0.20	1.01	0.94
4000113	QF40-B150	1.50	0.20	1.51	1.44
4000114	QF50-B25	0.25	0.20	-	0.26
4000115	QF50-B38	0.38	0.20	-	0.38
4000116	QF50-B50	0.50	0.20	0.51	0.45
4000117	QF50-B75	0.75	0.20	0.76	0.71
4000118	QF50-B100	1.00	0.20	1.01	0.94
4000119	QF50-B150	1.50	0.20	1.51	1.44
4000120	QF50-B200	2.00	0.20	2.01	1.94

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Weld Ring Flange

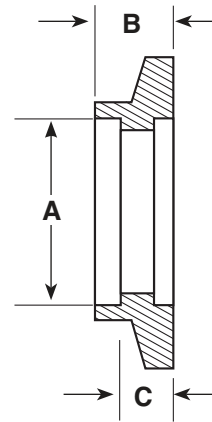
These flanges were created to offer a thin profile while still offering a weld preparation groove. This groove makes the flange self-aligning, offers greater weld joint strength and provides aesthetic coverage of the weld joint and heat discoloration that can appear after welding.

Materials

- 304 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 NUMBER	REFERENCE NUMBER	TUBE SIZE	A	B	C
4000077	QF16-075-RF	0.75	0.76	0.25	0.17
4000078	QF25-100-RF	1.00	1.01	0.25	0.17
4000079	QF40-150-RF	1.50	1.51	0.25	0.17
4000080	QF50-200-RF	2.00	2.01	0.25	0.17



ISO-QF Socket Weld Flange

Materials

- 304 stainless steel
- Brass

Product Notes

- Internal weld
- Utilize braze weld for brass flanges
- Self-aligning
- Designed to fit standard inch tubing O.D.'s

FIGURE 1

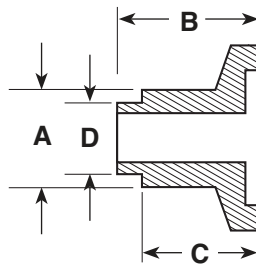
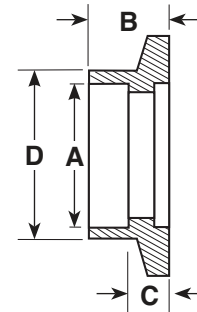


FIGURE 2



304 Stainless Steel

PART NUMBER	REFERENCE NUMBER	FIGURE	TUBE SIZE	SET BACK			
				A	B	C	D
4000081	QF10-050-SF	1	.050 x .03	0.500	0.560	0.500	0.420
4000082	QF16-050-SF	1	.050 x .03	0.500	0.560	0.500	0.420
4000083	QF16-075-SF	1	.075 x .03	0.750	0.560	0.500	0.670
4000084	QF25-100-SF	2	1.00	1.010	0.500	0.170	1.125
4000085	QF40-150-SF	2	1.50	1.510	0.500	0.210	1.760
4000086	QF50-200-SF	2	2.00	2.010	0.625	0.225	2.250
4001081	QF63-250-SF	2	2.50	2.510	0.472	0.250	3.000
4001082	QF80-300-SF	2	3.00	3.010	0.472	0.250	3.500
4001083	QF100-400-SF	2	4.00	4.020	0.472	0.250	4.500
4001084	QF160-600-SF	2	6.00	6.020	0.472	0.250	6.500
4001085	QF200-800-SF	2	8.00	8.020	0.472	0.250	8.500

Brass

PART NUMBER	REFERENCE NUMBER	FIGURE	TUBE SIZE	SET BACK			
				A	B	C	D
4000087	QF16-050-BF	2	0.50	0.510	0.500	0.250	0.625
4000088	QF16-062-BF	2	0.62	0.630	0.500	0.250	0.750
4000089	QF16-075-BF	2	0.75	0.510	0.500	0.250	0.625
4000090	QF25-100-BF	2	1.00	1.010	0.500	0.250	1.250
4000091	QF25-112-BF	2	1.12	1.135	0.500	0.250	1.250
4000092	QF40-150-BF	2	1.50	1.510	0.500	0.250	1.750
4000093	QF40-162-BF	2	1.62	1.635	0.500	0.250	1.750
4000094	QF50-200-BF	2	2.00	2.010	0.625	0.375	2.250
4000095	QF50-212-BF	2	2.12	2.135	0.625	0.375	2.250

*ORDERING NOTE

For Standard ISO-QF weld flanges made of aluminum see pg. 5.38

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ISO-LF Socket Weld Flange

Materials

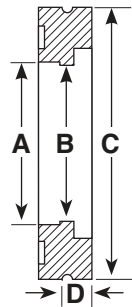
- 304 stainless steel
- Aluminum

Product Notes

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

*ORDERING NOTE

For standard ISO-LFB socket weld flanges see pg. 5.36



TECH TIP

To simplify aluminum welding A&N also offers an aluminum ISO-LF stub weld flange pg. 5.39

304 Stainless Steel

PART NUMBER	REFERENCE NUMBER	TUBE O.D.	A	THRU HOLE B	C	SETBACK D
4500069	LF63-250-SF	2.50	2.51	2.37	3.74	0.25
4500070	LF80-300-SF	3.00	3.01	2.87	4.33	0.25
4500071	LF100-400-SF	4.00	4.01	3.87	5.12	0.25
4500072	LF160-600-SF	6.00	6.02	5.83	7.09	0.25
4500073	LF200-800-SF	8.00	8.02	7.76	9.45	0.25
4500074	LF250-1000-SF	10.00	10.02	9.75	11.42	0.25
4500181	LF320-1200-SF	12.00	12.77	12.42	14.57	0.38
4500075	LF320-1275-SF	12.75	12.77	12.42	14.57	0.38
4500076	LF400-1600-SF	16.00	16.02	15.62	17.72	0.38
4500077	LF500-2000-SF	20.00	20.02	19.62	21.65	0.38

6061 - T6 Aluminum

PART NUMBER	REFERENCE NUMBER	TUBE O.D.	A	THRU HOLE B	C	SETBACK D
4500078	LF63-250-ASF	2.50	2.51	2.37	3.74	0.25
4500079	LF80-300-ASF	3.00	3.01	2.87	4.33	0.25
4500080	LF100-400-ASF	4.00	4.01	3.87	5.12	0.25
4500081	LF160-600-ASF	6.00	6.02	5.83	7.09	0.25
4500082	LF200-800-ASF	8.00	8.02	7.76	9.45	0.25
4500083	LF250-1000-ASF	10.00	10.02	9.75	11.42	0.25
4500186	LF320-1200-ASF	12.00	12.77	12.42	14.57	0.38
4500084	LF320-1275-ASF	12.75	12.77	12.42	14.57	0.38
4500085	LF400-1600-ASF	16.00	16.02	15.62	17.72	0.38
4500086	LF500-2000-ASF	20.00	20.02	19.62	21.65	0.38



ISO-LFB Socket Weld Flange

Materials

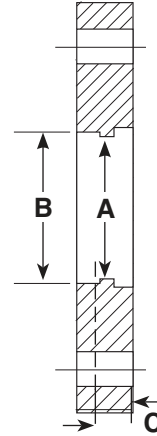
- Standard
 - 304 stainless steel
- Alternative: Call for price and delivery
 - Aluminum

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 NUMBER	REFERENCE NUMBER	TUBE O.D.	A	B	SETBACK C
4500135	LFB63-250-SF	2.50	2.37	2.51	0.25
4500136	LFB80-300-SF	3.00	2.87	3.01	0.25
4500137	LFB100-400-SF	4.00	3.87	4.01	0.25
4500138	LFB160-600-SF	6.00	5.83	6.02	0.25
4500139	LFB200-800-SF	8.00	7.76	8.02	0.25
4500140	LFB250-1000-SF	10.00	9.75	10.02	0.25
4500183	LFB320-1200-SF	12.00	12.42	12.77	0.38
4500141	LFB320-1275-SF	12.75	12.42	12.77	0.38
4500142	LFB400-1600-SF	16.00	15.62	16.02	0.38
4500143	LFB500-2000-SF	20.00	19.62	20.02	0.38

*ORDERING NOTE

For standard ISO-LF socket weld flanges see pg. 5.35

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304 Stainless Steel

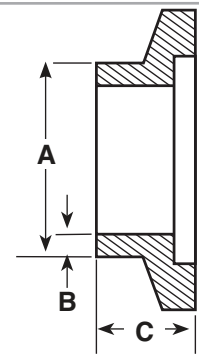
ISO-QF Stub Weld Flange

Materials

- Standard
 - 304 stainless steel
 - 6061 aluminum

Product Notes

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



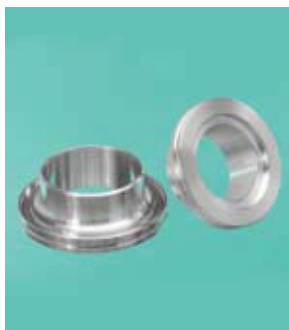
PART NUMBER	REFERENCE NUMBER	TUBE SIZE	A	B	C
4000121	QF10-050-SS	0.50	0.50	0.07	0.50
4000122	QF16-050-SS	0.50	0.50	0.07	0.50
4000123	QF16-075-SS	0.75	0.75	0.07	0.50
4000124	QF25-100-SS	1.00	1.00	0.07	0.50
4000125	QF40-150-SS	1.50	1.50	0.07	0.75
4000126	QF50-200-SS	2.00	2.00	0.07	0.75

6061 - T6 Aluminum

PART NUMBER	REFERENCE NUMBER	TUBE SIZE	A	B	C
4000127	QF10-050-AS	0.50	0.50	0.07	0.50
4000128	QF16-050-AS	0.50	0.50	0.07	0.50
4000129	QF16-075-AS	0.75	0.75	0.07	0.50
4000130	QF25-100-AS	1.00	1.00	0.07	0.50
4000131	QF40-150-AS	1.50	1.50	0.07	0.75
4000132	QF50-200-AS	2.00	2.00	0.07	0.75

*ORDERING NOTE

For ISO-LF socket weld flanges made from aluminum or stainless steel see pg. 5.35



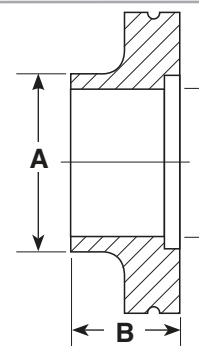
ISO-LF Stub Weld Flange

Materials

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

Product Notes

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



PART NUMBER	REFERENCE NUMBER	A	B
4500128	LF63-250-AS	2.50	1.50
4500129	LF80-300-AS	3.00	1.50
4500130	LF100-400-AS	4.00	1.50
4500131	LF160-600-AS	6.00	1.50
4500132	LF200-800-AS	8.00	1.50
4500133	LF250-1000-AS	10.00	1.50



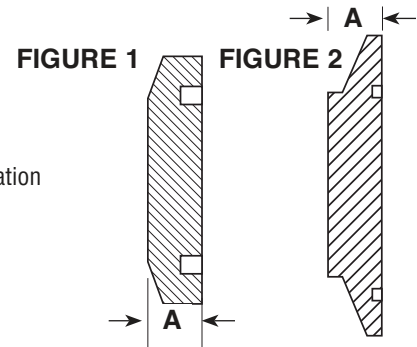
ISO-QF Blank Flange

Materials

- Standard
 - 304 stainless steel
 - 6061 aluminum
 - Brass

Product Notes

- Close off unused ports
- Good choice for custom modification



304 Stainless Steel

PART NUMBER	REFERENCE NUMBER	FIGURE	A
4000159	QF10-SB	1	0.20
4000160	QF16-SB	1	0.20
4000161	QF25-SB	1	0.20
4000162	QF40-SB	1	0.20
4000163	QF50-SB	1	0.20
4001091	QF63-SB	2	0.470
4001092	QF80-SB	2	0.470
4001093	QF100-SB	2	0.470
4001094	QF160-SB	2	0.470
4001095	QF200-SB	2	0.470

6061 Aluminum

PART NUMBER	REFERENCE NUMBER	FIGURE	A
4000164	QF10-AB	1	0.20
4000165	QF16-AB	1	0.20
4000166	QF25-AB	1	0.20
4000167	QF40-AB	1	0.20
4000168	QF50-AB	1	0.20

Brass

PART NUMBER	REFERENCE NUMBER	FIGURE	A
4000169	QF10-BB	1	0.20
4000170	QF16-BB	1	0.20
4000171	QF25-BB	1	0.20
4000172	QF40-BB	1	0.20
4000173	QF50-BB	1	0.20

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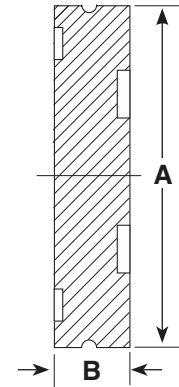
ISO-LF Blank Flange

Materials

- Standard
 - 304 stainless steel
 - 6061 aluminum

Product Notes

- Close off unused ports
- Good choice for custom modification



*ORDERING NOTE

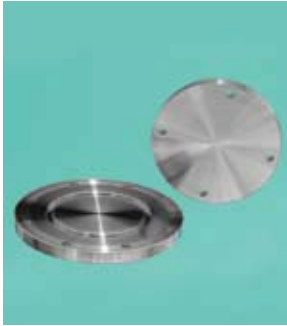
For ISO-LFB blank flanges see pg. 5.42

304 Stainless Steel

PART NUMBER	REFERENCE NUMBER	A	B
4500087	LF63-SB	3.74	0.47
4500088	LF80-SB	4.33	0.47
4500089	LF100-SB	5.12	0.47
4500090	LF160-SB	7.09	0.47
4500091	LF200-SB	9.45	0.47
4500092	LF250-SB	11.42	0.47
4500093	LF320-SB	14.57	0.67
4500094	LF400-SB	17.72	0.67
4500095	LF500-SB	21.65	0.67

6061 Aluminum

PART NUMBER	REFERENCE NUMBER	A	B
4500096	LF63-AB	3.74	0.47
4500097	LF80-AB	4.33	0.47
4500098	LF100-AB	5.12	0.47
4500099	LF160-AB	7.09	0.47
4500100	LF200-AB	9.45	0.47
4500101	LF250-AB	11.42	0.47
4500102	LF320-AB	14.57	0.67
4500103	LF400-AB	17.72	0.67
4500104	LF500-AB	21.65	0.67



ISO-LFB Blank Flanges

Materials

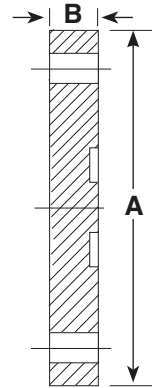
- Standard
 - 304 stainless steel
 - 6061 aluminum

Product Notes

- Close off unused ports
- Good choice for custom modification

Options: Call for price and delivery

- Tapped bolt holes



304 Stainless Steel

PART NUMBER	REFERENCE NUMBER	A	B
4500144	LFB63-SB	5.12	0.47
4500145	LFB80-SB	5.71	0.47
4500146	LFB100-SB	6.50	0.47
4500147	LFB160-SB	8.86	0.63
4500148	LFB200-SB	11.22	0.63
4500149	LFB250-SB	13.19	0.63
4500150	LFB320-SB	16.73	0.79
4500151	LFB400-SB	20.08	0.79
4500152	LFB500-SB	24.02	0.79

6061 - T6 Aluminum

PART NUMBER	REFERENCE NUMBER	A	B
4500153	LFB63-AB	5.12	0.47
4500154	LFB80-AB	5.71	0.47
4500155	LFB100-AB	6.50	0.47
4500156	LFB160-AB	8.86	0.63
4500157	LFB200-AB	11.22	0.63
4500158	LFB250-AB	13.19	0.63
4500159	LFB320-AB	16.73	0.79
4500160	LFB400-AB	20.08	0.79
4500161	LFB500-AB	24.02	0.79

*ORDERING NOTE

For standard ISO-LF blank flanges see pg. 5.41

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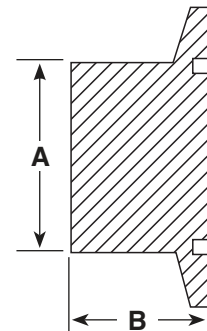
ISO-QF Unbored Stub Flange

Materials

- Standard
 - 304 stainless steel
 - 6061 aluminum
 - Brass

Product Notes

- Good choice for custom modification



304 Stainless Steel

PART NUMBER	REFERENCE NUMBER	A	B
4000174	QF10-US	0.75	0.75
4000175	QF16-US	0.75	0.75
4000176	QF25-US	1.00	0.75
4000177	QF40-US	1.50	1.00
4000178	QF50-US	2.00	1.00

6061 - T6 Aluminum

PART NUMBER	REFERENCE NUMBER	A	B
4000179	QF10-UA	0.75	0.75
4000180	QF16-UA	0.75	0.75
4000181	QF25-UA	1.00	0.75
4000182	QF40-UA	1.50	1.00
4000183	QF50-UA	2.00	1.00

Brass

PART NUMBER	REFERENCE NUMBER	A	B
4000184	QF10-UB	0.75	0.75
4000185	QF16-UB	0.75	0.75
4000186	QF25-UB	1.00	0.75
4000187	QF40-UB	1.50	1.00
4000188	QF50-UB	2.00	1.00



Section 6-4

ISO Fittings

A&N Corporation'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 A&N Corporation's ISO QF and LF fittings are made with flanges manufactured to ISO specifications to ensure 100% compatibility with other manufacturer's flanges.



For More Info...

*39 See section 7 for quick connect compression fittings

*40 See pg. 5.46 - 5.49 for sizes and additional details

*41 See pg. 5.50 - 5.55 for sizes and additional details

Specifications

- High vacuum rated to 1×10^{-8} torr
- Bakeable to 200°C
- Materials: 304 stainless steel, aluminum or brass
- 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 Nipples

These fittings are manufactured with a flange on one end and raw tubing on the other. Half nipples are often welded onto a custom vacuum system or instrument by a customer with in-house welding capabilities. However, these fittings can also be used with quick connect compression fittings to make a vacuum tight connection without welding.*39 A&N manufactures vacuum half nipples in 304 stainless steel, aluminum and brass.*40



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. A&N manufactures vacuum nipples in 304 stainless steel, aluminum, brass and flexible stainless steel.*41



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Elbows

These fittings are manufactured with a flange on each end of a curved section of tubing. Elbows accommodate turns or alignment considerations for vacuum system design. Elbows are offered in 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. A&N manufactures vacuum elbows in 304 stainless steel and aluminum.*42



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. A&N manufactures vacuum tees in 304 stainless steel and aluminum.*43



For More Info...

- *42 See pg. 5.56 - 5.59 for sizes and additional details
- *43 See pg. 5.60 - 5.63 for sizes and additional details
- *44 See pg. 5.64 - 5.67 for sizes and additional details
- *45 See pg. 5.68 - 5.69 for sizes and additional details

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. A&N manufactures vacuum Crosses in 304 stainless steel and aluminum.*44



5-way & 6-way Crosses

These fittings are manufactured with a flange on each end of a 5 or 6 sided tubing junction. These Crosses accommodate complex junctions or alignment considerations for vacuum system design. Larger sizes are sometimes used as the starting point of a simple vacuum chamber design. A&N manufactures 5 and 6-way vacuum crosses in 304 stainless steel and aluminum.*45



TECH TIP

There are two terms used within this catalog that require specific definition.

Reducer fittings are used to reduce the size of flanges and tubing used within the same flange family. For example, CF600 to CF275 or ISO-LF63 to ISO-QF40. These products are listed with the fittings components for that flange family.

Adapter fittings are used to change from one family of flanges to another. For example, ISO-QF25 to CF275. For these products see Section 8: Hybrid Adapters



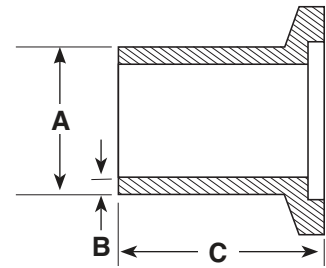
ISO-QF Half Nipple-Machined

Materials

- 304 stainless steel
- 6061 aluminum
- Brass

Product Notes

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



304 Stainless Steel

PART NUMBER	REFERENCE NUMBER	TUBE SIZE	A	B	C
4000133	QF10-050-LF	0.50	0.50	0.065	1.58
4000134	QF16-050-LF	0.50	0.50	0.065	1.58
4000135	QF16-075-LF	0.75	0.75	0.065	1.58
4000136	QF25-100-LF	1.00	1.00	0.065	1.58
4000137	QF40-150-LF	1.50	1.50	0.065	1.58
4000138	QF50-200-LF	2.00	2.00	0.065	1.58

*ORDERING NOTE

This listing is for ISO-QF flange sizes. For larger ISO-LF and ISO-LFB half nipples see pg. 5.48 - 5.49

6061 Aluminum

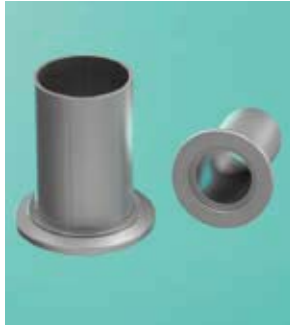
PART NUMBER	REFERENCE NUMBER	TUBE SIZE	A	B	C
4000143	QF10-050-ALF	0.50	0.50	0.065	1.58
4000144	QF16-050-ALF	0.50	0.50	0.065	1.58
4000145	QF16-075-ALF	0.75	0.75	0.065	1.58
4000146	QF25-100-ALF	1.00	1.00	0.065	1.58
4000147	QF40-150-ALF	1.50	1.50	0.065	1.58
4000148	QF50-200-ALF	2.00	2.00	0.065	1.58

Brass

PART NUMBER	REFERENCE NUMBER	TUBE SIZE	A	B	C
4000149	QF16-050-LB	0.50	0.50	0.065	1.00
4000150	QF16-062-LB	0.62	0.62	0.065	1.00
4000151	QF16-075-LB	0.75	0.75	0.065	1.00
4000152	QF16-087-LB	0.87	0.87	0.065	1.00
4000153	QF25-100-LB	1.00	1.00	0.065	1.38
4000154	QF25-112-LB	1.12	1.12	0.065	1.38
4000155	QF40-150-LB	1.50	1.50	0.065	1.58
4000156	QF40-162-LB	1.62	1.62	0.065	1.58
4000157	QF50-200-LB	2.00	2.00	0.065	1.58
4000158	QF50-212-LB	2.12	2.12	0.065	1.58

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ISO-QF Half Nipple-Welded

Materials

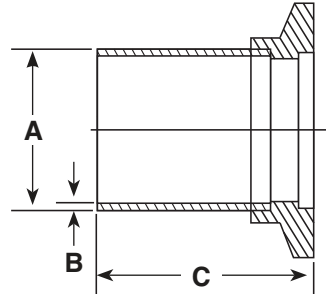
- Standard
 - 304 stainless steel
- Alternative: (Call for price and delivery)
 - 6061 aluminum

Product Notes

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

Options: (Call for price and delivery)

- Custom lengths
- ISO-QF large size flanges see pg. 5.4



PART NUMBER	REFERENCE NUMBER	TUBE SIZE	A	B	C
4000139	QF16-075-HN	0.75	0.75	0.065	1.50
4000140	QF25-100-HN	1.00	1.00	0.065	2.04
4000141	QF40-150-HN	1.50	1.50	0.065	2.46
4000142	QF50-200-HN	2.00	2.00	0.065	3.21

*ORDERING NOTE

This listing is for ISO-QF flange sizes. For larger ISO-LF and ISO-LFB half nipples see pg. 5.48 - 5.49



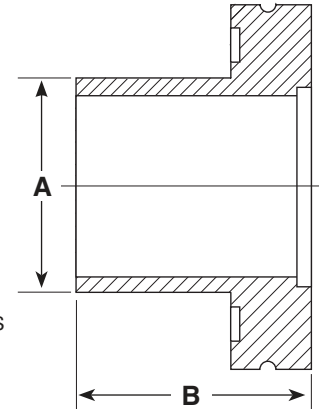
ISO-LF Half Nipple

Materials

- Standard
 - 304 stainless steel
- Alternative: (Call for price and delivery)
 - 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
 - ISO-QF large size flanges see pg. 5.4



304 stainless steel

PART NUMBER	REFERENCE NUMBER	A	B
4500110	LF63-250-LF	2.50	3.94
4500111	LF80-300-LF	3.00	3.94
4500112	LF100-400-LF	4.00	3.94
4500113	LF160-600-LF	6.00	3.94
4500114	LF200-800-LF	8.00	3.94
4500115	LF250-1000-LF	10.00	3.94
4500182	LF320-1200-LF	12.00	3.94
4500116	LF320-1275-LF	12.75	3.94
4500117	LF400-1600-LF	16.00	3.94
4500118	LF500-2000-LF	20.00	3.94

* ORDERING NOTE

This listing is for ISO-LF flange sizes. For smaller ISO-QF half nipples see pg. 5.46 - 5.47

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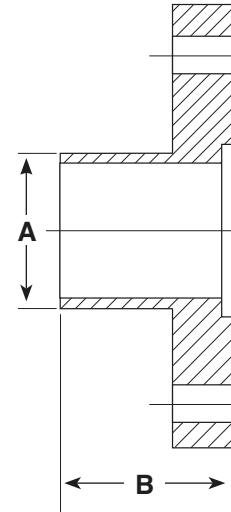
ISO-LFB Half Nipple

Materials

- Standard
 - 304 stainless steel
- Alternative: (Call for price and delivery)
 - 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. 5.4



PART NUMBER	REFERENCE NUMBER	A	B
4500162	LFB63-250-LF	2.50	3.94
4500163	LFB80-300-LF	3.01	3.94
4500164	LFB100-400-LF	4.00	3.94
4500165	LFB160-600-LF	6.00	3.94
4500166	LFB200-800-LF	8.00	3.94
4500167	LFB250-1000-LF	10.00	3.94
4500188	LFB320-1200-LF	12.00	3.94
4500168	LFB320-1275-LF	12.75	3.94
4500169	LFB400-1600-LF	16.00	3.94
4500170	LFB500-2000-LF	20.00	3.94

*ORDERING NOTE

This listing is for ISO-LFB flange sizes. For smaller ISO-QF half nipples see pg. 5.46 - 5.47



ISO-LF Hardware

DESCRIPTION	PAGE/S
Claw Clamps	6.15
Bolt Kits	6.16
Rotatable and Adaptive Bolt Rings	6.17 - 5.18
Centering Ring Assemblies	6.21 - 5.25
Replacement O-rings	6.27 - 5.28
Plastic Flange Caps	see Chamber Accessories
Vacuum Grease	see Chamber Accessories



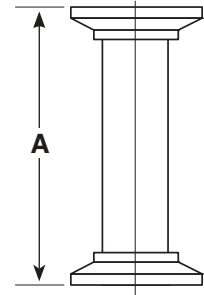
ISO-QF Nipple

Materials

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

Options: (Call for price and delivery)

- Custom lengths
- Custom flange combinations
- ISO-QF large size flanges see pg. 5.4



PART NUMBER	REFERENCE NUMBER	A
4000406	QF16-075-NS	3.15
4000408	QF16-075-NL	12.60
4000410	QF25-100-NS	3.94
4000412	QF25-100-NL	12.60
4000414	QF40-150-NS	5.12
4000416	QF40-150-NL	12.60
4000418	QF50-200-NS	5.51
4000420	QF50-200-NL	12.60

TECH TIP

For additional standard length flexible hose fittings see section 11: Roughing Components



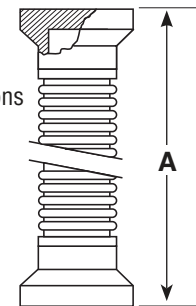
ISO-QF Flexible Nipple

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. 5.4



PART NUMBER	REFERENCE NUMBER	HOSE I.D.	WALL	A
0800000	QF16-075-F	0.75	0.006	4.00
0800001	QF25-100-F	1.00	0.006	4.00
0800002	QF40-150-F	1.50	0.006	4.00
0800003	QF50-200-F	2.00	0.006	4.00

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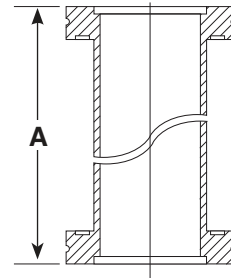
ISO-LF Nipple

Materials

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

Options: (Call for price and delivery)

- Custom lengths
- Custom flange combinations
- ISO-QF large size flanges see pg. 5.4
- ISO-LFB flanges
 - Tapped bolt holes



PART NUMBER	REFERENCE NUMBER	A
4500207	LF63-250-NS	4.18
4500208	LF63-250-NL	6.92
4500209	LF80-300-NS	4.18
4500210	LF80-300-NL	7.72
4500211	LF100-400-NS	4.18
4500212	LF100-400-NL	8.50
4500213	LF160-600-NS	4.18
4500214	LF160-600-NL	10.86
4500215	LF200-800-NS	4.18
4500216	LF200-800-NL	13.22
4500217	LF250-1000-NS	4.18
4500218	LF250-1000-NL	16.38
4500219	LF320-1200-NL	19.76
4500220	LF400-1600-NL	-
4500221	LF500-2000-NL	-

TECH TIP

For additional standard length flexible hose fittings see section 11: Roughing Components



ISO-LF Flexible Nipple

Materials

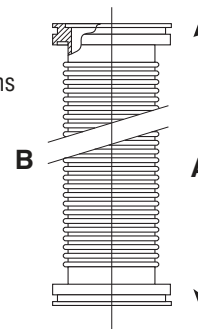
- Flanges
 - 304 stainless steel
- Flexible hose
 - 321 stainless steel

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. 5.3



PART NUMBER	REFERENCE NUMBER	WALL THICKNESS	HOSE I.D.	A	B
0800069	LF63-250-F	0.008	2.5	6.00	4.50
0800070	LF80-300-F	0.008	3.0	6.00	4.50
0800071	LF100-400-F	0.010	4.0	6.00	4.50
0800072	LF160-600-F	0.012	6.0	8.00	5.70



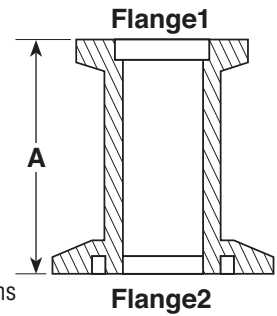
ISO-QF to QF Reducer Nipple

Materials

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

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. 5.4



PART NUMBER	REFERENCE NUMBER	FLANGE 1	FLANGE 2	A	TUBE O.D.
4000422	QF25X16	QF16	QF25	1.73	0.75
4000424	QF40X16	QF16	QF40	1.73	0.75
4000426	QF50X16	QF16	QF50	1.73	0.75
4000428	QF40X25	QF25	QF40	1.73	1.00
4000430	QF50X25	QF25	QF50	1.73	1.00
4000432	QF50X40	QF40	QF50	1.73	1.50

TECH TIP

Increase conductance with a conical reducer nipple. See pg. 5.54 - 5.55



ISO-LF to LF Reducer Nipple

Materials

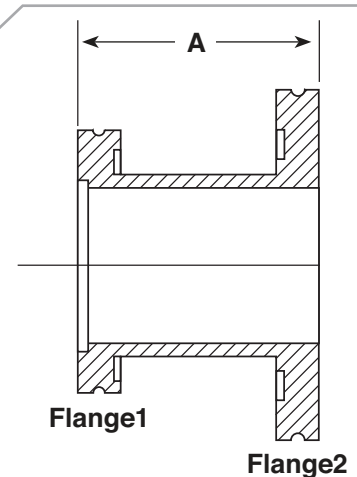
- Standard
 - 304 stainless steel
- Alternative: (Call for price and delivery)
 - 6061 aluminum

Options: (Call for price and delivery)

- Custom Lengths
- Larger Sizes
- Custom Flange Combinations
- ISO-QF large size flanges see pg. 5.4
- ISO-LFB flanges
 - Tapped Bolt Holes

Product Notes

- Connects different ISO-LF sizes



PART NUMBER	REFERENCE NUMBER	FLANGE 1	FLANGE 2	A	TUBE O.D.
4500237	LF63XLF80	LF63	LF80	2.95	2.50
4500238	LF63XLF100	LF63	LF100	2.95	2.50
4500239	LF63XLF160	LF63	LF160	2.95	2.50
4500240	LF80XLF100	LF80	LF100	2.95	3.00
4500241	LF100XLF160	LF100	LF160	2.95	4.00
4501241	LF160XLF200	LF160	LF200	2.95	6.00

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ISO-LF to QF Reducer Nipple

Materials

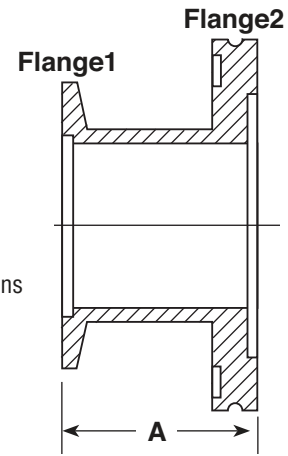
- Standard
 - 304 stainless steel
- Alternative: (Call for price and delivery)
 - 6061 aluminum

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. 5.4
- ISO-LFB Flanges
 - Tapped bolt holes



PART NUMBER	REFERENCE NUMBER	FLANGE 1	FLANGE 2	A	TUBE O.D.
4500374	QF16XLF63	QF16	LF63	1.83	0.75
4500375	QF25XLF63	QF25	LF63	1.83	1.00
4500376	QF25XLF80	QF25	LF80	1.83	1.00
4500377	QF25XLF100	QF25	LF100	1.83	1.00
4500253	QF40XLF63	QF40	LF63	1.83	1.50
4500255	QF40XLF80	QF40	LF80	1.83	1.50
4500257	QF40XLF100	QF40	LF100	1.83	1.50
4500378	QF40XLF160	QF40	LF160	1.83	1.50
4500254	QF50XLF63	QF50	LF63	1.83	1.50
4500256	QF50XLF80	QF50	LF80	1.83	2.00
4500258	QF50XLF100	QF50	LF100	1.83	2.00
4500379	QF50XLF160	QF50	LF160	1.83	2.00



ISO Hardware

DESCRIPTION	PAGE/S
Quick Clamps	6.11 - 5.13
Claw Clamps	6.15
Bolt Kits	6.16
Bulkhead Clamps	6.14
Rotatable and Adaptive Bolt Rings	6.17 - 5.18
Centering Ring Assemblies	6.21 - 5.25
Replacement O-rings	6.27 - 5.28
Over Pressure Rings	6.26
Plastic Flange Caps	see Chamber Accessories
Vacuum Grease	see Chamber Accessories



ISO-QF to QF Conical Reducer Nipple

Materials

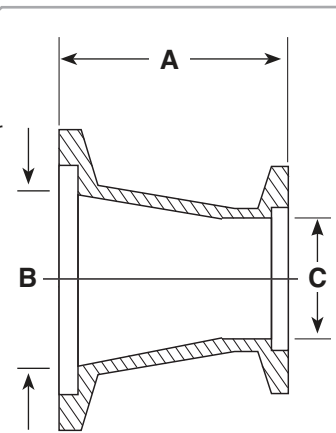
- Standard
 - 304 stainless steel
 - 6061 aluminum

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 NUMBER	REFERENCE NUMBER	A	B	C
4000434	QF25X16-CR	1.57	0.87	0.62
4000435	QF40X16-CR	1.57	1.37	0.62
4000436	QF40X25-CR	1.57	1.37	0.87
4000437	QF50X16-CR	1.57	1.87	0.62
4000438	QF50X25-CR	1.57	1.87	0.87
4000439	QF50X40-CR	1.57	1.87	1.37

6061 Aluminum

PART NUMBER	REFERENCE NUMBER	A	B	C
4000440	QF25X16-ACR	1.57	0.87	0.62
4000441	QF40X16-ACR	1.57	1.37	0.62
4000442	QF40X25-ACR	1.57	1.37	0.87
4000443	QF50X16-ACR	1.57	1.87	0.62
4000444	QF50X25-ACR	1.57	1.87	0.87
4000445	QF50X40-ACR	1.57	1.87	1.37

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ISO-LF to QF Conical Reducer Nipple

Materials

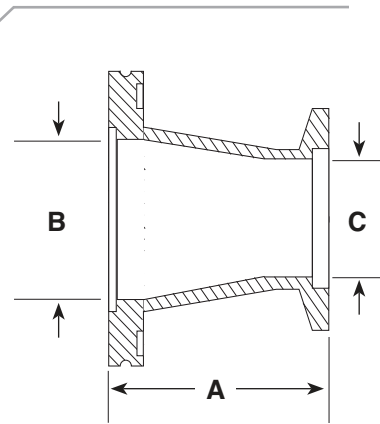
- Standard
 - 304 stainless steel
- Alternative: (Call for price and delivery)
 - 6061 aluminum

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. 5.4
- ISO-LFB flanges
 - Tapped bolt holes



PART NUMBER	REFERENCE NUMBER	A	B	C
4500265	QF40XLF63-CR	2.84	2.37	1.37
4500266	QF40XLF80-CR	4.08	2.87	1.37
4500267	QF50XLF63-CR	2.85	2.37	1.87
4500268	QF50XLF80-CR	4.10	2.87	1.87
4500269	QF50XLF100-CR	4.12	3.87	1.87



ISO-LF to LF Conical Reducer Nipple

Materials

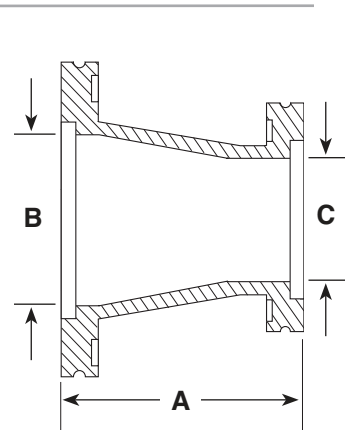
- Standard
 - 304 stainless steel
- Alternative: (Call for price and delivery)
 - 6061 aluminum

Product Notes

- Connects different ISO-LF sizes

Options: (Call for price and delivery)

- Custom flange combinations
- Larger sizes
- Additional flange sizes
- ISO-QF large size flanges see pg. 5.4
- ISO-LFB flanges
 - Tapped bolt holes



PART NUMBER	REFERENCE NUMBER	A	B	C
4500247	LF63XLF80-CR	4.12	2.87	2.37
4500248	LF63XLF100-CR	4.12	3.83	2.37
4500250	LF80XLF100-CR	4.12	3.83	2.87
4500251	LF80XLF160-CR	6.00	5.78	2.87
4500252	LF100XLF160-CR	6.00	5.78	3.83



ISO-QF 45° Elbow

Materials

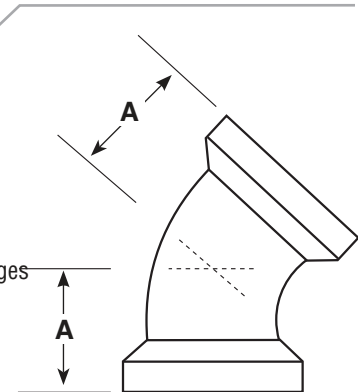
- Standard
 - 304 stainless steel

Product Notes

- Radius elbow design

Options: (Call for price and delivery)

- Custom lengths
- Custom flange combinations
- ISO-QF large size flanges see pg. 5.4



PART NUMBER	REFERENCE NUMBER	A
4000446	QF16-075-E45	0.91
4000447	QF25-100-E45	1.12
4000448	QF40-150-E45	1.69
4000449	QF50-200-E45	1.99

***ORDERING NOTE**

For aluminum elbow fittings see 90° mitered elbows pg. 5.58



ISO-LF 45° Elbow

Materials

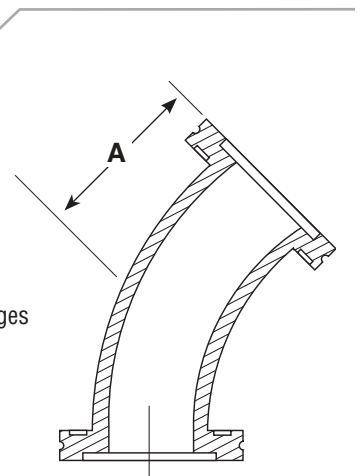
- Standard
 - 304 stainless steel

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. 5.4
- ISO-LFB flanges
 - Tapped bolt holes



PART NUMBER	REFERENCE NUMBER	A
4500270	LF63-250-E45	3.25
4500271	LF80-300-E45	3.93
4500272	LF100-400-E45	5.02
4500273	LF160-600-E45	9.71

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ISO-QF 90° Elbow

Materials

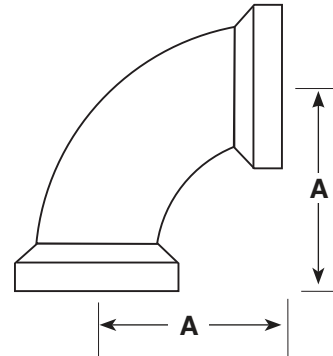
- Standard
- 304 stainless steel

Product Notes

- Radius elbow design

Options: (Call for price and delivery)

- Custom lengths
- Custom flange combinations
- ISO-QF large size flanges see pg. 5.4



PART NUMBER	REFERENCE NUMBER	A
4000450	QF16-075-E90	1.57
4000451	QF25-100-E90	1.99
4000452	QF40-150-E90	2.56
4000453	QF50-200-E90	3.17



ISO-LF 90° Elbow

Materials

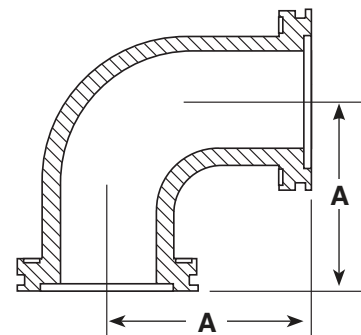
- Standard
- 304 stainless steel

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. 5.4
- ISO-LFB flanges
- Tapped bolt holes



*ORDERING NOTE

For aluminum elbow fittings see 90° mitered elbows pg. 5.58

PART NUMBER	REFERENCE NUMBER	A
4500274	LF63-250-E90	4.00
4500275	LF80-300-E90	4.75
4500276	LF100-400-E90	6.25
4500277	LF160-600-E90	9.25
4500278	LF200-800-E90	12.25
4500279	LF250-1000-E90	15.25



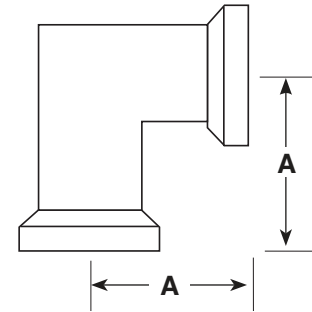
ISO-QF 90° Elbow-Mitered

Materials

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

Options: (Call for price and delivery)

- Custom lengths
- Custom flange combinations
- ISO-QF large size flanges see pg. 5.4



PART NUMBER	REFERENCE NUMBER	A
4000454	QF16-075-E90M	1.57
4000456	QF25-100-E90M	1.97
4000458	QF40-150-E90M	2.56
4000460	QF50-200-E90M	2.76

***ORDERING NOTE**

For radius elbow fittings see pg. 5.56 - 5.57



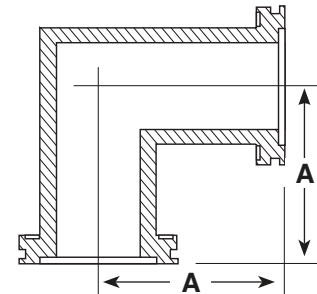
ISO-LF 90° Elbow-Mitered

Materials

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

Options: (Call for price and delivery)

- Custom lengths
- Larger sizes
- Custom flange combinations
- ISO-QF large size flanges see pg. 5.4
- ISO-LFB flanges
 - Tapped bolt holes



PART NUMBER	REFERENCE NUMBER	A
4500280	LF63-250-E90M	3.46
4500281	LF80-300-E90M	3.86
4500282	LF100-400-E90M	4.13
4500283	LF160-600-E90M	5.43
4500284	LF200-800-E90M	7.25
4500285	LF250-1000-E90M	8.19

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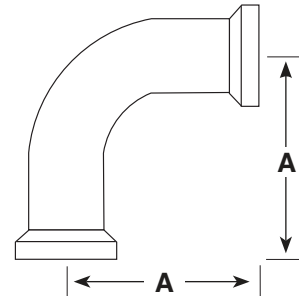
ISO-QF 90° Elbow - Long Radius

Materials

- Standard
 - 304 stainless steel

Options: (Call for price and delivery)

- Custom lengths
- Custom flange combinations
- ISO-QF large size flanges see pg. 5.4



PART NUMBER	REFERENCE NUMBER	A
4000462	QF16-075-E90-LR	2.70
4000463	QF25-100-E90-LR	3.64
4000464	QF40-150-E90-LR	5.12
4000465	QF50-200-E90-LR	5.52



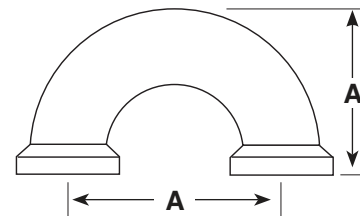
ISO-QF 180° Return

Materials

- Standard
 - 304 stainless steel

Options: (Call for price and delivery)

- Custom lengths
- Custom flange combinations
- ISO-QF large size flanges see pg. 5.4



PART NUMBER	REFERENCE NUMBER	A	B
4000466	QF16-075-E180	2.25	1.67
4000467	QF25-100-E180	3.00	2.17
4000468	QF40-150-E180	4.50	3.17
4000469	QF50-200-E180	6.00	4.17



ISO-QF Tee

Materials

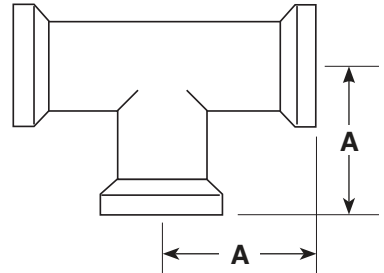
- Standard
 - 304 stainless steel
- Alternative: (Call for price and delivery)
 - 6061 aluminum

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. 5.4



PART NUMBER	REFERENCE NUMBER	A
4000470	QF16-075-T	1.57
4000472	QF25-100-T	1.97
4000474	QF40-150-T	2.56
4000476	QF50-200-T	2.76

*** ORDERING NOTE**

For reducing tee fittings see pg. 5.62 - 5.63

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ISO-QF Hardware

DESCRIPTION	PAGE/S
Quick Clamps	6.11 - 5.13
Bulkhead Clamps	6.14
Centering Ring Assemblies	6.21 - 5.25
Replacement O-rings	6.27 & 5.28
Over Pressure Rings	6.26
Plastic Flange Caps	see Chamber Accessories
Vacuum Grease	see Chamber Accessories



ISO-LF Tee

Materials

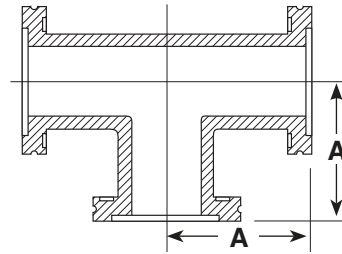
- Standard
 - 304 stainless steel
- Alternative: (Call for price and delivery)
 - 6061 aluminum

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. 5.4
- ISO-LFB flanges
 - Tapped bolt holes



PART NUMBER	REFERENCE NUMBER	A
4500292	LF63-250-T	3.25
4500293	LF80-300-T	3.50
4500294	LF100-400-T	4.13
4500295	LF160-600-T	5.25
4500296	LF200-800-T	7.25
4500297	LF250-1000-T	9.75
4500298	LF320-1200-T	-
4500299	LF400-1600-T	-
4500300	LF500-2000-T	-

* ORDERING NOTE

For reducing tee fittings see pg. 5.62 - 5.63



ISO-LF Hardware

DESCRIPTION	PAGE/S
Claw Clamps	6.15
Bolt Kits	6.16
Rotatable and Adaptive Bolt Rings	6.17 - 5.18
Centering Ring Assemblies	6.21 - 5.25
Replacement O-rings	6.27 - 5.28
Plastic Flange Caps	see Chamber Accessories
Vacuum Grease	see Chamber Accessories



ISO-QF Reducing Tee

Materials

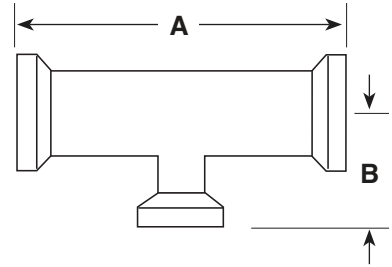
- Standard
 - 304 stainless steel
- Alternative: (Call for price and delivery)
 - 6061 aluminum

Options: (Call for price and delivery)

- Custom lengths
- Custom flange combinations
- ISO-QF large size flanges see pg. 5.4

Product Notes

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



PART NUMBER	REFERENCE NUMBER	A	B
4000478	QF25X16-T	3.94	1.70
4000480	QF40X16-T	5.12	1.95
4000482	QF40X25-T	5.12	2.22
4000484	QF50X16-T	5.51	2.20
4000486	QF50X25-T	5.51	2.47
4000488	QF50X40-T	5.51	2.81

*** ORDERING NOTE**

For standard tee fittings see pg. 5.60 - 5.61



ISO Hardware

DESCRIPTION	PAGE/S
Quick Clamps	6.11 - 5.13
Claw Clamps	6.15
Bolt Kits	6.16
Bulkhead Clamps	6.14
Rotatable and Adaptive Bolt Rings	6.17 - 5.18
Centering Ring Assemblies	6.21 - 5.25
Replacement O-rings	6.27 - 5.28
Over Pressure Rings	6.26
Plastic Flange Caps	see Chamber Accessories
Vacuum Grease	see Chamber Accessories

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ISO-LF to ISO-QF Reducing Tee

Materials

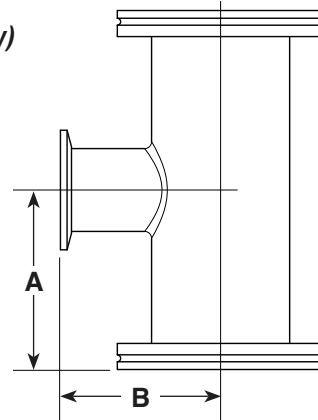
- Standard
 - 304 stainless steel
- Alternative: (Call for price and delivery)
 - 6061 aluminum

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. 5.4
- ISO-LFB flanges
 - Tapped bolt holes



PART NUMBER	REFERENCE NUMBER	FLANGE 1 & 2	TUBE O.D.	FLANGE 3	TUBE O.D.	A	B
4500423	LF63XQF40-T	LF63	2.50	QF40	1.50	3.25	2.90
4500424	LF63XQF50-T	LF63	2.50	QF50	2.00	3.25	3.40
4500425	LF80XQF40-T	LF80	3.00	QF40	1.50	3.50	3.15
4500426	LF80XQF50-T	LF80	3.00	QF50	2.00	3.50	3.65
4500427	LF100XQF40-T	LF100	4.00	QF40	1.50	4.13	3.65
4500351	LF100XQF50-T	LF100	4.00	QF50	2.00	4.13	4.15

*ORDERING NOTE

For standard tee fittings see pg. 5.60 - 5.61



ISO-LF Reducing Tee

Materials

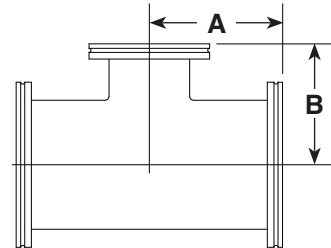
- Standard
 - 304 stainless steel
- Alternative: (Call for price and delivery)
 - 6061 aluminum

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. 5.4
- ISO-LFB flanges
 - Tapped bolt holes



PART NUMBER	REFERENCE NUMBER	FLANGE 1 & 2	TUBE O.D.	FLANGE 3	TUBE O.D.	A	B
4500441	LF80XLF63-T	LF80	3.00	LF63	2.50	3.50	3.50
4500442	LF100XLF63-T	LF100	4.00	LF63	2.50	4.13	4.00
4500443	LF100XLF80-T	LF100	4.00	LF80	3.00	4.13	4.00
4500444	LF160XLF63-T	LF160	6.00	LF63	2.50	5.25	5.00
4500445	LF160XLF80-T	LF160	6.00	LF80	3.00	5.25	5.00
4500446	LF160XLF100-T	LF160	6.00	LF100	4.00	5.25	5.13
4500447	LF200XLF160-T	LF200	8.00	LF160	6.00	7.25	6.25



ISO-QF Cross

Materials

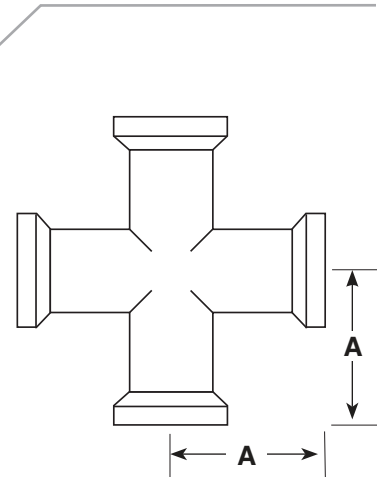
- Standard
 - 304 stainless steel
- Alternative: (Call for price and delivery)
 - 6061 aluminum

Options: (Call for price and delivery)

- Custom lengths
- Custom flange combinations
- ISO-QF large size flanges see pg. 5.4

Product Notes

- Pulled ports for optimal vacuum performance



PART NUMBER	REFERENCE NUMBER	A
4000502	QF16-075-X	1.57
4000504	QF25-100-X	1.97
4000506	QF40-150-X	2.56
4000508	QF50-200-X	2.76

***ORDERING NOTE**

For reducing cross fittings see pg. 5.66 - 5.67



ISO-QF Hardware

DESCRIPTION	PAGE/S
Quick Clamps	6.11 - 5.13
Bulkhead Clamps	6.14
Centering Ring Assemblies	6.21 - 5.25
Replacement O-rings	6.27 - 5.28
Over Pressure Rings	6.26
Plastic Flange Caps	see Chamber Accessories
Vacuum Grease	see Chamber Accessories

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ISO-LF Cross

Materials

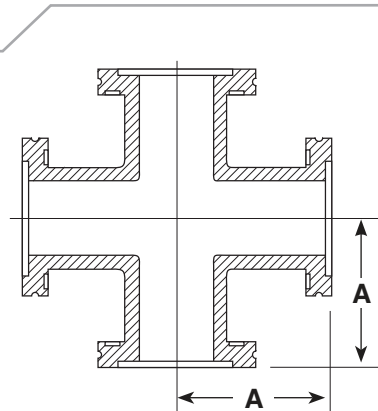
- Standard
- 304 stainless steel
- Alternative: (Call for price and delivery)
 - 6061 aluminum

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. 5.4
- ISO-LFB flanges
 - Tapped bolt holes



PART NUMBER	REFERENCE NUMBER	A
4500310	LF63-250-X	3.25
4500311	LF80-300-X	3.50
4500312	LF100-400-X	4.13
4500313	LF160-600-X	5.25
4500314	LF200-800-X	7.25
4500315	LF250-1000-X	9.75
4500316	LF320-1200-X	-
4500317	LF400-1600-X	-
4500318	LF500-2000-X	-

*ORDERING NOTE

For reducing cross fittings see pg. 5.66 - 5.67



ISO-LF Hardware

DESCRIPTION	PAGE/S
Claw Clamps	6.15
Bolt Kits	6.16
Rotatable and Adaptive Bolt Rings	6.17 - 5.18
Centering Ring Assemblies	6.21 - 5.25
Replacement O-rings	6.27 - 5.28
Plastic Flange Caps	see Chamber Accessories
Vacuum Grease	see Chamber Accessories



ISO-QF Reducing Cross

Materials

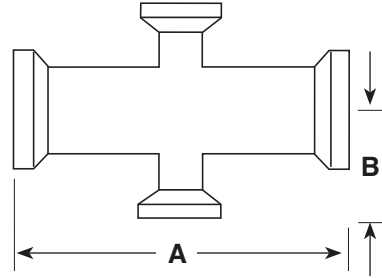
- Standard
 - 304 stainless steel
- Alternative: (Call for price and delivery)
 - 6061 aluminum

Options: (Call for price and delivery)

- Custom lengths
- Custom flange combinations
- ISO-QF large size flanges see pg. 5.4

Product Notes

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



PART NUMBER	REFERENCE NUMBER	A	B
4000490	QF25X16-X	3.94	1.70
4000492	QF40X16-X	5.12	1.95
4000494	QF40X25-X	5.12	2.22
4000496	QF50X16-X	5.51	2.20
4000498	QF50X25-X	5.51	2.47
4000500	QF50X40-X	5.51	2.81

* ORDERING NOTE

For standard cross fittings see pg. 5.64 - 5.65



ISO Hardware

DESCRIPTION	PAGE/S
Quick Clamps	6.11 - 5.13
Claw Clamps	6.15
Bolt Kits	6.16
Bulkhead Clamps	6.14
Rotatable and Adaptive Bolt Rings	6.17 - 5.18
Centering Ring Assemblies	6.21 - 5.25
Replacement O-rings	6.27 - 5.28
Over Pressure Rings	6.26
Plastic Flange Caps	see Chamber Accessories
Vacuum Grease	see Chamber Accessories

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ISO-LF to ISO-QF Reducing Cross

Materials

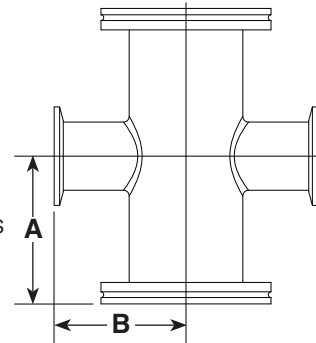
- Standard
 - 304 stainless steel
- Alternative: (Call for price and delivery)
 - 6061 aluminum

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. 5.4
- ISO-LFB flanges
 - Tapped bolt holes



PART NUMBER	REFERENCE NUMBER	FLANGE 1 & 2	TUBE O.D.	FLANGE 3	TUBE O.D.	A	B
4500435	LF63XQF40-X	LF63	2.50	QF40	1.50	3.25	2.90
4500436	LF63XQF50-X	LF63	2.50	QF50	2.00	3.25	3.40
4500437	LF80XQF40-X	LF80	3.00	QF40	1.50	3.50	3.15
4500438	LF80XQF50-X	LF80	3.00	QF50	2.00	3.50	3.65
4500439	LF100XQF40-X	LF100	4.00	QF40	1.50	4.13	3.65
4500369	LF100XQF50-X	LF100	4.00	QF50	2.00	4.13	4.15



ISO-LF Reducing Cross

Materials

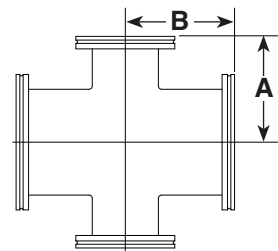
- Standard
 - 304 stainless steel
- Alternative: (Call for price and delivery)
 - 6061 aluminum

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. 5.4
- ISO-LFB flanges
 - Tapped Bolt Holes



ORDERING NOTE

For standard cross fittings see pg. 5.64 - 5.65

PART NUMBER	REFERENCE NUMBER	FLANGE 1 & 2	TUBE O.D.	FLANGE 3	TUBE O.D.	A	B
4500450	LF80XLF63-X	LF80	3.00	LF63	2.50	3.50	3.50
4500451	LF100XLF63-X	LF100	4.00	LF63	2.50	4.13	4.00
4500452	LF100XLF80-X	LF100	4.00	LF80	3.00	4.13	4.00
4500453	LF160XLF63-X	LF160	6.00	LF63	2.50	5.25	5.00
4500454	LF160XLF80-X	LF160	6.00	LF80	3.00	5.25	5.00
4500455	LF160XLF100-X	LF160	6.00	LF100	4.00	5.25	5.13
4500456	LF200XLF160-X	LF200	8.00	LF160	6.00	7.25	6.25



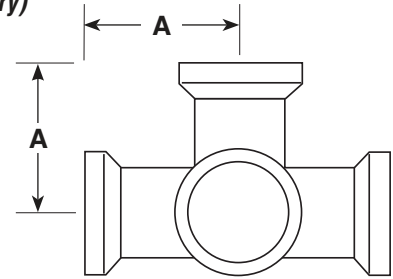
ISO-QF 5-Way Cross

Materials

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

Options: (Call for price and delivery)

- Custom lengths
- Custom flange combinations
- ISO-QF large size flanges see pg. 5.4



Product Notes

- Pulled ports for optimal vacuum performance

PART NUMBER	REFERENCE NUMBER	A
4000510	QF16-075-5X	1.50
4000511	QF25-100-5X	2.05
4000512	QF40-150-5X	2.42
4000513	QF50-200-5X	3.17



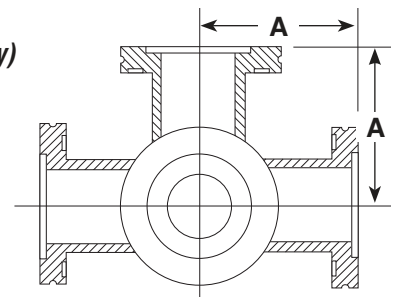
ISO-LF 5-Way Cross

Materials

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

Options: (Call for price and delivery)

- Custom lengths
- Larger sizes
- Custom flange combinations
- ISO-QF large size flanges see pg. 5.4
- ISO-LFB flanges
 - Tapped bolt holes



Product Notes

- Pulled ports for optimal vacuum performance

PART NUMBER	REFERENCE NUMBER	A
4500328	LF63-250-5X	4.00
4500329	LF80-300-5X	3.50
4500330	LF100-400-5X	5.12
4500331	LF160-600-5X	6.31
4500332	LF200-800-5X	7.25
4500333	LF250-1000-5X	9.75

A&N Corporation

707 SW 19th Ave.
Williston, FL 32696
1(800) FLANGE1
FAX (352) 528-3441
www.ancorp.com



ISO-QF 6-Way Cross

Materials

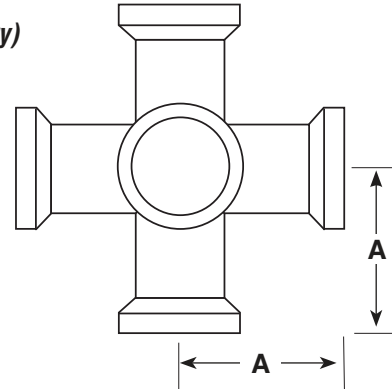
- Standard
 - 304 stainless steel
- Alternative: (Call for price and delivery)
 - 6061 aluminum

Options: (Call for price and delivery)

- Custom lengths
- Custom flange combinations
- ISO-QF large size flanges see pg. 5.4

Product Notes

- Pulled ports for optimal vacuum performance



PART NUMBER	REFERENCE NUMBER	A
4000514	QF16-075-6X	1.50
4000515	QF25-100-6X	2.05
4000516	QF40-150-6X	2.42
4000517	QF50-200-6X	3.17



ISO-LF 6-Way Cross

Materials

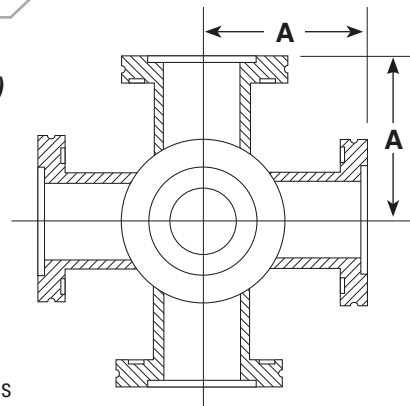
- Standard
 - 304 stainless steel
- Alternative: (Call for price and delivery)
 - 6061 aluminum

Options: (Call for price and delivery)

- Custom lengths
- Larger sizes
- Custom flange combinations
- ISO-QF large size flanges see pg. 5.4
- ISO-LFB flanges
 - Tapped bolt holes

Product Notes

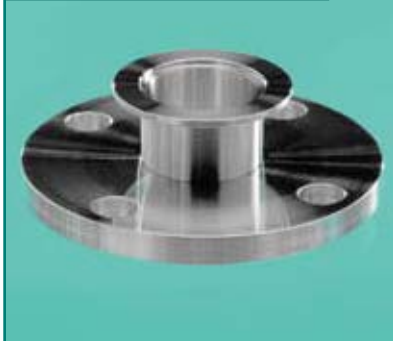
- Pulled ports for optimal vacuum performance



PART NUMBER	REFERENCE NUMBER	A
4500334	LF63-250-6X	4.00
4500335	LF80-300-6X	3.50
4500336	LF100-400-6X	5.12
4500337	LF160-600-6X	6.31
4500338	LF200-800-6X	7.25
4500339	LF250-1000-6X	9.75



Hybrid Adapters

CF to LF Conical Reducer**QF to ASA****QF to Quick Disconnect****QF to NPT Female****QF to Swagelok®****QF to Ball Socket Grooved**

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

For example, ISO-QF25 to CF275. For these products see *Section 9: Hybrid Adapters*

Please Note: There is a difference between adapters (described above) and reducers. *Reducer Fittings* are used to reduce the size of flanges and tubing used within the same flange family. For example, CF600 to CF275 or ISO-LF63 to ISO-QF40. These products are listed with the fittings components for that flange family.

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