

CF-Hardware



11.1 STANDARD CF FLANGES 316L STAINLESS STEEL -> Page 11.3

- Fixed blank Flange - 316L Stainless Steel
- Fixed weld Flange - 316L Stainless Steel
- Fixed blank Flange tapped metric - 316L Stainless Steel
- Fixed weld Flange tapped metric - 316L Stainless Steel
- Rotatable blank Flange - 316L Stainless Steel
- Rotatable weld Flange - 316L Stainless Steel
- ALLECTRA Rotatable Tapped & Through blank Flange - 316L Stainless Steel
- ALLECTRA Rotatable Tapped& Through weld Flange - 316L Stainless Steel



11.2 SPECIAL SERIES FLANGES 316LN STAINLESS STEEL -> Page 11.5

- Fixed blank Flange - Special Series 316LN Stainless Steel
- Fixed weld Flange - Special Series 316LN Stainless Steel
- Rotatable blank Flange - Special Series 316LN Stainless Steel
- Rotatable weld Flange - Special Series 316LN Stainless Steel



11.3 CF FLANGE COPPER GASKETS -> Page 11.6

- CF style OFE gaskets - Standard finish, individually packed
- CF style OFE gaskets - Soft (annealed) finish, individually packed
- CF style OFE gaskets - Silver plated finish, individually packed
- CF style VITON gaskets - individually packed



11.4 CF FLANGE HARDWARE -> Page 11.7

- CF Nut and Bolt Sets (Nuts, Bolts & Washers) - Standard 304 Stainless steel
- CF STUD Sets (Studs, Bolts & Washers) - Standard 304 Stainless steel
- CF Nut and Bolt Sets (Nuts, Bolts & Washers) - Special 316 Stainless steel
- CF Bolt Thread Lubricant - "Anti-Seize"
- CF Nut and Bolt Sets (Nuts, Bolts & Washers) - Silver plated
- CF Nut Plates, Nut Plate holds 2 bolts includes screws
- CF Double Sided Blank Flanges



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- CF Zero Length Flange Adaptors - 316L Stainless Steel
- CF Fixed Flange and Flange Adaptors with Tube - 316L Stainless Steel
- CF Rotatable Allectra Flange with Tube - 316L Stainless Steel
- CF Straight Connector and Elbow - 316L Stainless Steel
- CF Tee Piece and Reducing Tee Piece - 316L Stainless Steel
- CF 4-Way and 6-Way Cross - 316L Stainless Steel
- CF Reducing 4-Way and 6-Way Cross - 316L Stainless Steel



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- CF Edge Welded Bellows - 316L Stainless Steel

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- CF Flexible Hoses - 316L Stainless Steel with 316L flanges
- CF Flexible Couplings - 316L Stainless Steel with 316L flanges

- 1 Sub-D
- 2 CM + DIL F/T
- 3 Coax F/T
- 4 Power High Voltage
- 5 Thermo-couple
- 6 Cables Accessories
- 7 Viewports Fiberoptic
- 8 Valves
- 9 Motion Manipulation
- 10 Process Control
- 11 CF Hardware
- 12 KF Hardware
- 13 ISO-K Hardware
- 14 Adaptors Specials
- 15 HV / UHV Chambers
- 16 Atlas Bi-Metal

CF Hardware General Introduction

Alllectra uses the International System of Stainless Steel CF Flanges bolted together to trap an Oxygen Free Copper gasket which forms the Vacuum Seal. These CF flanges are bakeable to 450°C and suitable for pressures down to 10-12 mbar. Alllectra's CF flanges are compatible with the Varian Conflat® and other manufacturer's flanges for sizes up to DN200CF.

Since 2007 the ISO norm ISO3669-2 specifies flanges from 10CF to 400CF. Some non-standardized sizes are still available from various sources.



Materials for CF Flanges

CF flanges are made from forged billets or bar of Stainless Steel.

Materials

316L (1.4404) is a high quality stainless steel with good welding characteristics and relatively low magnetic permeability.

316LN (1.4429) is a Nitrogen enhanced version of 316L. It has very low magnetic permeability and is suitable for applications where magnetic effects must be avoided. Flanges bigger than 40CF are made out of forged billets.

304 (1.4301) is a general purpose Stainless Steel widely used in High Vacuum which has a higher magnetic permeability and poor welding characteristics.

Atlas Aluminium to Stainless Steel Bi-metal flanges are CF flanges which can be welded directly to Aluminium tube (see Section 16).

Alllectra Flanges

Blank Flanges and Rotatable Inners are 316L

Rotatable Outers are 304

Special Series Flanges are entirely 316LN



Torque for screws:

CF16	4 Nm
CF40	10 Nm
≥ CF63	20 Nm

Corrosive Gases

Stainless Steel grade 316L has better resistance to corrosive gases such as Chlorine than 304. For this reason it is the preferred steel for Semiconductor Production applications.

Alllectra uses 316L as standard material for flanges as well as for tubes for Vacuum Fittings.



Standard CF Flanges 316L Stainless Steel

Allectra Standard CF-Flanges are designed to be sealed with an OFE Copper Gasket and are suitable for UHV and Extreme High Vacuum. They are built from High Grade Stainless Steel Type 316L (1.4404).

This material offers:

- High Corrosion Resistance
- Good welding characteristics
- No softening (loss of knife edge hardness) at high temperatures.

General Specification CF Flanges

Vacuum	UHV to 10 ⁻¹² mbar
Material	316L (1.4404 SS) Stainless steel
Temp.	-273°C to 450°C
Mag perm.	<1.05 (annealed)



411-CFB100



411-CFB40



**Fixed BLANK Flange
316L Stainless Steel**

SIZE	OD mm (inch)	PART NUMBER	EURO
16CF	34 (1 1/3")	411-CFB16	12,00
40CF	70 (2 3/4")	411-CFB40	16,00
63CF	114 (4 1/2")	411-CFB63	57,00
100CF	152 (6")	411-CFB100	85,00
160CF	202 (8")	411-CFB160	154,00
200CF	253 (10")	411-CFB200	257,00
250CF	306 (12")	411-CFB250	514,00

**Fixed WELD Flange
316L Stainless Steel**

SIZE	TUBE OD	PART NUMBER	EURO
16CF	19	411-CF16-19	12,00
16CF*	19	411-CF16-19X	15,00
40CF	38.1	411-CF40-38	17,00
40CF	41	411-CF40-41	17,00
63CF	63.5	411-CF63-63	60,00
63CF	70	411-CF63-70	60,00
100CF	101.6	411-CF100-101	95,00
100CF	108	411-CF100-108	95,00
160CF	152.4	411-CF160-152	165,00
160CF	159	411-CF160-159	165,00
200CF	206	411-CF200-206	275,00
250CF	256	411-CF250-256	550,00

* Spigotted flange for tube 19mm OD 17mm ID

**Fixed Blank Flange TAPPED METRIC
316L Stainless Steel**

SIZE	OD mm (inch)	PART NUMBER	EURO
16CF	34 (1 1/3")	411-CFB16T	19,00
40CF	70 (2 2/3")	411-CFB40T	26,00
63CF	114 (4 1/2")	411-CFB63T	75,00
100CF	152 (6")	411-CFB100T	125,00
160CF	202 (8")	411-CFB160T	198,00
200CF	253 (10")	411-CFB200T	301,00
250CF	306 (12")	411-CFB250T	580,00

**Fixed WELD Flange TAPPED METRIC
316L Stainless Steel**

SIZE	TUBE OD	PART NUMBER	EURO
16CF	19	411-CF16-19T	20,00
40CF	38.1	411-CF40-38T	28,00
40CF	41	411-CF40-41T	28,00
63CF	63.5	411-CF63-63T	78,00
63CF	70	411-CF63-70T	78,00
100CF	101.6	411-CF100-101T	130,00
100CF	108	411-CF100-108T	130,00
160CF	152.4	411-CF160-152T	205,00
160CF	159	411-CF160-159T	205,00
200CF	206	411-CF200-206T	320,00
250CF	256	411-CF250-256T	600,00

- 1 Sub-D
- 2 CM + DIL F/T
- 3 Coax F/T
- 4 Power High Voltage
- 5 Thermo-couple
- 6 Cables Accessories
- 7 Viewports Fiberoptic
- 8 Valves
- 9 Motion Manipulation
- 10 Process Control
- 11 CF Hardware
- 12 KF Hardware
- 13 ISO-K Hardware
- 14 Adaptors Specials
- 15 HV / UHV Chambers
- 16 Atlas Bi-Metal

CF Flanges Rotatable and Allectra Rotatable

Allectra offers conventional Rotatable Flanges with 316L Inner Knife Edge Parts and a 304 Rotatable Bolt Ring which does not contact the Vacuum.

In addition, the ALLECTRA FLANGE is a Rotatable Flange where the Outer has both tapped and through holes. This enables the flange to be used as either a Rotatable Tapped or a standard Rotatable.



Specification Rotatable Flanges

Vacuum	UHV to 10-12 mbar
Material Inner	316L Stainless Steel
Material Outer	304 Stainless Steel
Bolt Hole pattern	
Rotatable type	Through Holes for metric bolts
Allectra type	Through Holes and Metric Tapped Holes alternated



411-CFB63R

Rotatable BLANK Flange 316L Stainless Steel inners, 304 outers

SIZE	OD mm (inch)	PART NUMBER	EURO
16CF	34 (1 1/3")	411-CFB16R	17,00
40CF	70 (2 3/4")	411-CFB40R	26,00
63CF	114 (4 1/2")	411-CFB63R	85,00
100CF	152 (6")	411-CFB100R	150,00
160CF	202 (8")	411-CFB160R	250,00
200CF	253 (10")	411-CFB200R	400,00
250CF	306 (12")	411-CFB250R	750,00

Rotatable WELD Flange 316L Stainless Steel inners, 304 outers

SIZE	TUBE OD	PART NUMBER	EURO
16CF	19	411-CF16-19R	18,00
16CF*	19	411-CF16-19XR	22,00
40CF	38.1	411-CF40-38R	26,00
40CF	41	411-CF40-41R	26,00
63CF	63.5	411-CF63-63R	90,00
63CF	70	411-CF63-70R	90,00
100CF	101.6	411-CF100-101R	155,00
100CF	108	411-CF100-108R	155,00
160CF	152.4	411-CF160-152R	260,00
160CF	159	411-CF160-159R	260,00
200CF	206	411-CF200-206R	415,00
250CF	256	411-CF250-256R	775,00

* Spigotted flange for tube 19od 17id

ALLECTRA Rotatable Tapped & Through BLANK Flange 316L Stainless Steel inners, 304 outers

SIZE	OD mm (inch)	PART NUMBER	EURO
16CF	34 (1 1/3")	411-ACFB16	21,00
40CF	70 (2 3/4")	411-ACFB40	27,00
63CF	114 (4 1/2")	411-ACFB63	84,00
100CF	152 (6")	411-ACFB100	146,00
160CF	202 (8")	411-ACFB160	248,00
200CF	253 (10")	411-ACFB200	445,00
250CF	306 (12")	411-ACFB250	850,00

ALLECTRA Rotatable Tapped & Through WELD Flange 316L Stainless Steel Inners, 304 Outers

SIZE	TUBE OD	PART NUMBER	EURO
16CF	19	411-ACF16-19	23,00
40CF	38.1	411-ACF40-38	30,00
40CF	41	411-ACF40-41	30,00
63CF	63.5	411-ACF63-63	90,00
63CF	70	411-ACF63-70	90,00
100CF	101.6	411-ACF100-101	155,00
100CF	108	411-ACF100-108	155,00
160CF	152.4	411-ACF160-152	260,00
160CF	159	411-ACF160-159	260,00
200CF	206	411-ACF200-206	455,00
250CF	256	411-ACF250-256	860,00

Sub-D
1
CM + DIL
F/T
2
Coax
F/T
3
Power
High Voltage
4
Thermo-
couple
5
Cables
Accessories
6
Viewports
Fiberoptic
7
Valves
8
Motion
Manipulation
9
Process
Control
10
CF
Hardware
11
KF
Hardware
12
ISO-K
Hardware
13
Adaptors
Specials
14
HV / UHV
Chambers
15
Atlas
Bi-Metal
16

Special Series CF Flanges 316LN Stainless Steel

For Applications which require the lowest magnetic permeability and the highest temperature performance, the stainless steel grade 316LN (1.4429) is recommended by laboratories such as CERN. Unlike many manufacturers Allectra 316LN Series flanges are completely made from 316LN, in the case of rotatable flanges - both the Inner and the Outer parts. The material used is bar; larger sizes from DN63CF and up are made from forged billets.



General Specification CF LN flanges

Vacuum	UHV to 10 ⁻¹² mbar
Material	316LN (1.4429 ESR SS) Stainless Steel
Rotatable Outers	316LN (1.4429 ESR SS) Stainless Steel
Temp.	-273°C to 450°C
Mag perm.	<1.005



415-CFB16-LN

**FIXED BLANK Flange
Special Series 316LN Stainless Steel**

SIZE	OD mm (inch)	PART NUMBER	EURO
16CF	34 (1 1/3")	415-CFB16-LN	POR
40CF	70 (2 3/4")	415-CFB40-LN	POR
63CF	114 (4 1/2")	415-CFB63-LN	POR
100CF	152 (6")	415-CFB100-LN	POR
160CF	202 (8")	415-CFB160-LN	POR
200CF	253 (10")	415-CFB200-LN	POR
250CF	306 (12")	415-CFB250-LN	POR

**FIXED WELD Flange
Special Series 316LN Stainless Steel**

SIZE	TUBE OD	PART NUMBER	EURO
16CF	19	415-CF16-19-LN	POR
16CF*	19	415-CF16-19X-LN	POR
40CF	38.1	415-CF40-38-LN	POR
40CF	41	415-CF40-41-LN	POR
63CF	63.5	415-CF63-63-LN	POR
63CF	70	415-CF63-70-LN	POR
100CF	101.6	415-CF100-101LN	POR
100CF	108	415-CF100-108-LN	POR
160CF	152.4	415-CF160-152-LN	POR
160CF	159	415-CF160-159-LN	POR
200CF	206	415-CF200-206-LN	POR
250CF	256	415-CF250-256-LN	POR

* Spigotted flange for tube 19od 17id

**ROTATABLE WELD Flange
Special Series 316LN Stainless Steel**

SIZE	TUBE OD	PART NUMBER	EURO
16CF	19	415-CF16-19R-LN	POR
16CF*	19	415-CF16-19RX-LN	POR
40CF	38.1	415-CF40-38R-LN	POR
40CF	41	415-CF40-41R-LN	POR
63CF	63.5	415-CF63-63R-LN	POR
63CF	70	415-CF63-70R-LN	POR
100CF	101.6	415-CF100-101R-LN	POR
100CF	108	415-CF100-108R-LN	POR
160CF	152.4	415-CF160-152R-LN	POR
160CF	159	415-CF160-159R-LN	POR
200CF	206	415-CF200-206R-LN	POR
250CF	256	415-CF250-256R-LN	POR

* Spigotted flange for tube 19mm OD 17mm ID

**ROTATABLE BLANK Flange
Special Series 316LN Stainless Steel**

SIZE	OD mm (inch)	PART NUMBER	EURO
16CF	34 (1 1/3")	415-CFB16R-LN	POR
40CF	70 (2 3/4")	415-CFB40R-LN	POR
63CF	114 (4 1/2")	415-CFB63R-LN	POR
100CF	152 (6")	415-CFB100R-LN	POR
160CF	202 (8")	415-CFB160R-LN	POR
200CF	253 (10")	415-CFB200R-LN	POR
250CF	306 (12")	415-CFB250R-LN	POR

- 1 Sub-D
- 2 CM + DIL F/T
- 3 Coax F/T
- 4 Power High Voltage
- 5 Thermo-couple
- 6 Cables Accessories
- 7 Viewports Fiberoptic
- 8 Valves
- 9 Motion Manipulation
- 10 Process Control
- 11 CF Hardware
- 12 KF Hardware
- 13 ISO-K Hardware
- 14 Adaptors Specials
- 15 HV / UHV Chambers
- 16 Atlas Bi-Metal

CF Flange OFE (Copper) Gaskets, CF Flange Viton Gaskets

CF Oxygen Free Copper (OFE) Gaskets are suitable for use to 450°C. Optionally OFE Gaskets can be Silver Plated to provide extra protection against oxidation. Silver Plated Gaskets are recommended for flanges which are very seldom opened. Annealed gaskets are recommended for Viewports.

For frequently opened flanges, Allectra offers special rectangular section Viton gaskets.



General Specification OFE Gaskets

Material	OFE Oxygen Free Electronic Grade Copper >99.9%
Thickness	2mm
Typical Hardness	
Standard	65 HB
Annealed	45 HB
Soft (Weich) type	45 HB
Max. temp.	450°C
Vacuum	10 ⁻¹² mbar

CF style OFE gaskets Standard finish, individually packed

SIZE No	ID	PER PKT.	PART NUMBER	EURO
16CF	16	10	411-CG16-H	12,00
40CF	39	10	411-CG40-H	18,00
63CF	63	10	411-CG63-H	32,00
100CF	101	10	411-CG100-H	42,00
160CF	152	5	411-CG160-H	35,00
200CF	203	5	411-CG200-H	50,00
250CF	254	5	411-CG250-H	150,00

CF style OFE gaskets Soft (annealed) finish, individually packed

SIZE No	ID	PER PKT.	PART NUMBER	EURO
16CF	17	5	411-CG16-W	9,00
40CF	40	5	411-CG40-W	11,00
63CF	67	5	411-CG63-W	19,00
100CF	101	5	411-CG100-A	58,00
160CF	152	5	411-CG160-A	62,00
200CF	203	5	411-CG200-A	99,00
250CF	254	5	411-CG250-A	210,00

Note: Gaskets for larger CF sizes available on request

CF style OFE gaskets Silver plated finish, individually packed

SIZE No	ID	PER PKT.	PART NUMBER	EURO
16CF	16	5	411-CG16-SP	13,00
40CF	37	5	411-CG40-SP	23,00
63CF	63	5	411-CG63-SP	33,00
100CF	101	5	411-CG100-SP	48,00
160CF	152	5	411-CG160-SP	78,00
200CF	203	5	411-CG200-SP	98,00
250CF	254	5	411-CG250-SP	210,00

Note: Annealed silver plated gaskets on request

CF style VITON gaskets packs of 2

SIZE	ID	No PER PKT.	PART NUMBER	EURO
16CF	18	2	411-VG16-2	9,00
40CF	40	2	411-VG40-2	10,00
63CF	65	2	411-VG63-2	35,00
100CF	102	2	411-VG100-2	42,00
160CF	156	2	411-VG160-2	55,00
200CF	203	2	411-VG200-2	93,00
250CF	254	2	411-VG250-2	116,00



411-CG40-W



Various sizes of Viton Gaskets

- 1 Sub-D
- 2 CM + DIL F/T
- 3 Coax F/T
- 4 Power High Voltage
- 5 Thermo-couple
- 6 Cables Accessories
- 7 Viewports Fiberoptic
- 8 Valves
- 9 Motion Manipulation
- 10 Process Control
- 11 CF Hardware
- 12 KF Hardware
- 13 ISO-K Hardware
- 14 Adaptors Specials
- 15 HV / UHV Chambers
- 16 Atlas Bi-Metal

CF Flange Nuts and Bolts Sets

Allectra offers three grades of bolts for use with UHV flanges:

- Stainless Steel 304
- Stainless Steel 316 (low magnetic permeability)
- Silver Plated Bolts - (see Section 11.8) which are recommended for frequently baked systems



General Specification Bolts

Material		304 Stainless Steel
Standard		304 Stainless Steel
Special Series		316L Stainless steel
Heads		
M4	Socket head	
above M4	Hexagon head (Socket head option)	

Flange Size	Hole Diameter	Qty	Through hole	Lapped hole length	Double sided flanges length
16CF	4.4mm	6	20mm	16mm	30mm
40CF	6.7mm	6	35mm	25mm	55mm
63CF	8.4mm	8	50mm	30mm	65mm
100CF	8.4mm	16	50mm	35mm	70mm
160CF	8.4mm	20	55mm	35mm	80mm
200CF	8.4mm	24	60mm	50mm	90mm
250CF	9.9mm	32	70mm	50mm	100mm

Recommended bolt sizes for CF Flanges. CF16 flanges use M4, CF40 use M6, all others use M8. The table lists also the quantity of bolt holes in the flanges and the hole diameter for through holes.

MoS2-Powder, for air and vacuum use "Anti-Seize"

QTY.	PART NUMBER	EURO
10g	330-MOS2-10G	11,00

CF Bolt Thread Lubricant "Anti-Seize"

QTY.	PART NUMBER	EURO
30g	330-ANTISEIZE	15,00



CF Nut and Bolt Sets, Packets of 25 Nuts, Bolts & Washers Standard Series 304 Stainless steel SOCKET HEAD BOLT

SIZE	LENGTH	PART NUMBER	EURO
M4	16	411-M4X16SET-SH	10,50
M4	20	411-M4X20SET-SH	11,00
M4	30	411-M4X30SET-SH	11,50
M6	35	411-M6X35SET-SH	18,00
M6	50	411-M6X50SET-SH	POR
M8	30	411-M8X30SET-SH	23,00
M8	55	411-M8X55SET-SH	POR

CF Nut and Bolt Sets, Packets of 25 Nuts, Bolts & Washers Standard Series 304 Stainless steel HEX HEAD BOLT

SIZE	LENGTH	PART NUMBER	EURO
M6	25	411-M6X25SET-HX	10,00
M6	35	411-M6X35SET-HX	10,00
M6	55	411-M6X55SET-HX	21,00
M8	35	411-M8X35SET-HX	17,50
M8	50	411-M8X50SET-HX	22,00
M8	60	411-M8X60SET-HX	34,00
M8	70	411-M8X70SET-HX	35,00

CF STUD Sets, Packets of 10 Studs, Nuts & Washers Standard Series 304 Stainless steel

SIZE	LENGTH	PART NUMBER	EURO
M4	25	411-M4-STUD-25	8,00
M6	40	411-M6-STUD-40	11,00
M8	60	411-M8-STUD-60	22,00

CF Nut and Bolt Sets, Packets of 25 Nuts, Bolts & Washers Special Series 316 Stainless steel

SIZE	LENGTH	PART NUMBER	EURO
M4	16	411-M4X16SET-316SH	22,00
M4	20	411-M4X20SET-316SH	24,00
M4	30	411-M4X30SET-316SH	24,00
M6	25	411-M6X25SET-316SH	20,00
M6	35	411-M6X35SET-316SH	20,00
M6	55	411-M6X55SET-316HX	41,00
M8	35	411-M8X35SET-316HX	34,00
M8	50	411-M8X50SET-316HX	43,00
M8	60	411-M8X60SET-316HX	65,00
M8	70	411-M8X70SET-316HX	67,00

1 Sub-D
 2 CM + DIL F/T
 3 Coax F/T
 4 Power High Voltage
 5 Thermo-couple
 6 Cables Accessories
 7 Viewports Fiberoptic
 8 Valves
 9 Motion Manipulation
 10 Process Control
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CF Flange Silver Plated Nut and Bolt Sets

CF Nut Plate Sets

Silver plated bolts are not galling and can be used without grease.

Nut Plates are very helpful if space is limited and no second key can be used for holding the nut.



For General Specification and recommended screw lengths see page 11.7

CF Nut and Bolt Sets, Packets of 25 Nuts, Bolts & Washers SILVER PLATED Stainless steel SOCKETHEAD

SIZE	LENGTH	PART NUMBER	EURO
M4	16	411-M4X16SET-SH-SP	22,00
M4	20	411-M4X20SET-SH-SP	23,00
M4	30	411-M4X30SET-SH-SP	20,00
M6	25	411-M6X25SET-HX-SP	20,00
M6	35	411-M6X35SET-HX-SP	28,00
M6	55	411-M6X55SET-HX-SP	38,00
M8	35	411-M8X35SET-HX-SP	40,00
M8	50	411-M8X50SET-HX-SP	49,00
M8	60	411-M8X60SET-HX-SP	60,00
M8	70	411-M8X70SET-HX-SP	POR

SH: Socket Head

HX: Hex Head

CF Nut Plate Sets - Nut Plate Set includes Bolts 304 Stainless steel

SIZE	No PER PKT.	PART NUMBER	EURO
16CF	3	411-NP16-3	8,50
40CF	3	411-NP40-3	9,00
63CF	4	411-NP63-4	16,50
100CF	8	411-NP100-8	33,00
160CF	10	411-NP160-10	POR



Double Sided CF Flanges

Double Sided Flanges are useful for constructing diaphragms or gas inlets. They are offered as blank flanges for boring to the required size. On request Allectra can bore the flange to size and fit gas inlet or other 16CF or 16KF ports. Please call Sales Office for details.



Specification Double Sided Flanges

Vacuum	UHV
Material	316L SS
Bolt Holes	Through Holes
Available standard bored versions (412-CFDxx):	
16CF	16mm
40CF	37mm
63CF	64mm
100CF	102mm

CF Double Sided BLANK Flanges 316L Stainless steel

SIZE	Thickness	PART NUMBER	EURO
16CF	7.3 mm	412-CFBD16	34,00
40CF	12.7 mm	412-CFBD40	48,00
63CF	17.5 mm	412-CFBD63	105,00
100CF	20 mm	412-CFBD100	160,00
160CF	22 mm	412-CFBD160	220,00
200CF	24.5 mm	412-CFBD200	340,00

CF to CF Zero Length Flange Adaptors
CF to CF Adaptors with Tube; Tubulated Flanges

Zero Length Adaptors are the easiest and most compact way to connect different flange sizes. The smaller flange profile has metric tapped threads.
 CF Flange Adaptors with tube may be used when a tapped flange cannot be accommodated.
 CF Flanges With Tube are intended for butt welding to Stainless Steel tube.



Specification CF Flange Adaptors & Tube Fittings

Vacuum	UHV to 10 ⁻¹² mbar
Material	316L (1.4404 SS) Stainless Steel
Temp.	-270°C to 450°C



412-CF100-40



412-CF100-40
 The smaller flange is rotatable



413-CFT100
 Rotatable versions use Allectra Flanges with tapped and through holes

Other sizes and lengths on request - please call Sales Office

CF Zero Length Flange Adaptors
316L Stainless Steel

FLANGE 1	FLANGE 2	PART NUMBER	EURO
40CF	16CF	412-CFZ40-16	42,00
63CF	16CF	412-CFZ63-16	94,00
63CF	40CF	412-CFZ63-40	97,00
100CF	40CF	412-CFZ100-40	125,00
100CF	63CF	412-CFZ100-63	143,00
160CF	40CF	412-CFZ160-40	197,00
160CF	63CF	412-CFZ160-63	215,00
160CF	100CF	412-CFZ160-100	227,00
200CF	63CF	412-CFZ200-63	317,00
200CF	100CF	412-CFZ200-100	334,00
200CF	160CF	412-CFZ200-160	355,00

Note: Other sizes and multiples on one flange on request

CF Flange Adaptors with Tube
316L Stainless Steel

FLANGE 1-2	LENGTH	PART NUMBER	EURO
40-16CF	45	412-CF40-16	75,00
63-40CF	75	412-CF63-40	138,00
100-40CF	95	412-CF100-40	225,00
100-63CF	95	412-CF100-63	240,00
160-100CF	105	412-CF160-100	390,00
200-100CF	115	412-CF200-100	525,00
200-160CF	115	412-CF200-160	608,00
250-200CF	125	412-CF250-200	POR

CF Fixed Flange with Tube
316L Stainless Steel

FLANGE	LENGTH	TUBE OD	PART NUMBER	EURO
16CF	38	19	413-CFT16	30,00
40CF	63	40	413-CFT40	42,00
63CF	105	70	413-CFT63	118,00
100CF	135	108	413-CFT100	210,00
160CF	167	159	413-CFT160	335,00
200CF	203	206	413-CFT200	525,00
250CF	250	256	413-CFT250	POR

CF Rotatable Allectra Flange with Tube
316L Stainless Steel

FLANGE	LENGTH	PART NUMBER	EURO
16CF	38	413-ACFT16	30,00
40CF	63	413-ACFT40	42,00
63CF	105	413-ACFT63	118,00
100CF	135	413-ACFT100	210,00
160CF	167	413-ACFT160	335,00
200CF	203	413-ACFT200	POR
250CF	250	413-ACFT250	POR

- 1 Sub-D
- 2 CM + DIL F/T
- 3 Coax F/T
- 4 Power High Voltage
- 5 Thermo-couple
- 6 Cables Accessories
- 7 Viewports Fiberoptic
- 8 Valves
- 9 Motion Manipulation
- 10 Process Control
- 11 CF Hardware
- 12 KF Hardware
- 13 ISO-K Hardware
- 14 Adaptors Specials
- 15 HV / UHV Chambers
- 16 Atlas Bi-Metal

CF Straight Connector, Elbow, Tee and Reducing Tee

Alllectra offers special Lengths on request:

- Straight Connectors
- Elbows
- Tee Pieces
- Reducing Tees



413-CFX2-C40

General Specification CF Fittings

Vacuum	UHV to 10^{-12} mbar
Material	316L (1.4404 SS) stainless Steel
Temp.	-273°C to 450°C
Fittings have opposite pairs Fixed & Rotatable Flanges	
Tees have 2 Rotatable Flanges	

CF Straight Connector 316L Stainless Steel

FLANGE	LENGTH A	PART NUMBER	EURO
16CF	76	413-CFX2-C16	55,00
40CF	126	413-CFX2-C40	75,00
63CF	210	413-CFX2-C63	195,00
100CF	270	413-CFX2-C100	310,00
160CF	334	413-CFX2-C160	480,00
200CF	406	413-CFX2-C200	770,00
250CF	500	413-CFX2-C250	POR

Note: Other lengths on request

CF Elbow 316L Stainless Steel

FLANGE	LENGTH A	PART NUMBER	EURO
16CF	38	413-BOW90-C16	68,00
40CF	63	413-BOW90-C40-B	95,00
63CF	105	413-BOW90-C63	250,00
100CF	135	413-BOW90-C100	395,00
160CF	167	413-BOW90-C160	598,00
200CF	203	413-BOW90-C200	975,00
250CF	250	413-BOW90-C250	POR

Note: Other lengths on request

CF TEE PIECE 316L Stainless Steel

FLANGE	LENGTH A / B	PART NUMBER	EURO
16CF	76/ 38	413-CFX3-C16	99,00
40CF	126/ 63	413-CFX3-C40	139,00
63CF	210/ 105	413-CFX3-C63	370,00
100CF	270/ 135	413-CFX3-C100	585,00
160CF	334/ 167	413-CFX3-C160	890,00
200CF	406/ 203	413-CFX3-C200	1.500,00
250CF	500/ 250	413-CFX3-C250	POR

Note: Other lengths on request

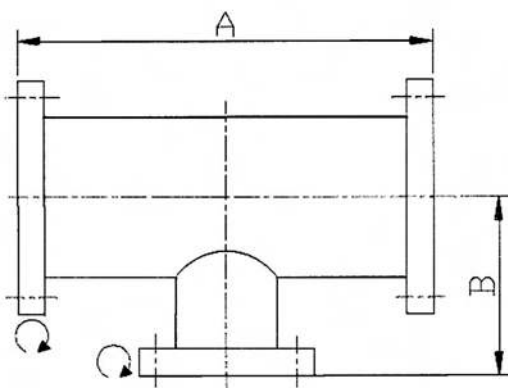
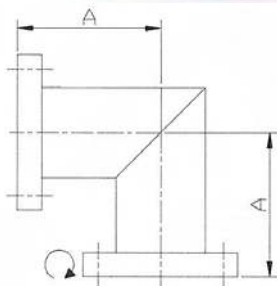
CF REDUCING TEE PIECE 316L Stainless Steel

FLANGE	LENGTHS A / B	PART NUMBER	EURO
40 - 16CF	126/50	413-CFX3-C40-C16	130,00
63 - 40CF	210/75	413-CFX3-C63-C40	275,00
100 - 63CF	270/100	413-CFX3-C100-C63	525,00
160 - 100CF	334/125	413-CFX3-C160-C100	775,00
200 - 160CF	406/150	413-CFX3-C200-C160	1.250,00

Note: Other lengths and flange combinations on request



413-BOW90-C40-B
 40CF use as standard a curved elbow, other sizes are mitred (curved available on request)



413-CFX3-C40

- 1 Sub-D
- 2 CM + DIL F/T
- 3 Coax F/T
- 4 Power High Voltage
- 5 Thermo-couple
- 6 Cables Accessories
- 7 Viewports Fiberoptic
- 8 Valves
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CF 4 Way Crosses

The Material is 316L (1.4404). All fittings can be delivered with 316LN (1.4429) flanges.

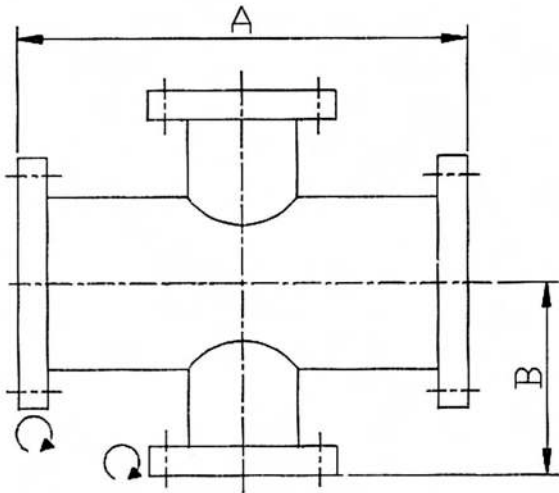
Special Fittings built to Order:

- Custom dimensions including asymmetric types
- Other flange types including combinations
- Fittings with CF-, KF- and ISO-K on the same body
- Extra Rotatable Flanges or Tapped flanges
- Fittings with Bellows

Please call Sales Office for details

Specification CF Fittings

Vacuum	UHV to 10 ⁻¹² mbar
Material	316L (1.4404 SS) stainless Steel
Temp.	-273°C to 450°C
Fittings have opposite pairs Fixed & Rotatable Flanges	



Reducing cross
413-CFX4-C63-40



Reducing 4 Way Cross with optional fitted one Allectra Flange per axis

**CF STANDARD 4 Way cross
316L Stainless Steel**

FLANGE	LENGTH A/ B	PART NUMBER	EURO
16CF	76/ 38	413-CFX4-C16	155,00
40CF	126/ 63	413-CFX4-C40	195,00
63CF	210/ 105	413-CFX4-C63	485,00
100CF	270/ 135	413-CFX4-C100	770,00
160CF	334/ 167	413-CFX4-C160	1.210,00
200CF	406/ 203	413-CFX4-C200	1.950,00
250CF	500/ 250	413-CFX4-C250	POR

Note: Other lengths on request

**CF SPHERICAL 4 Way cross
316L Stainless Steel**

FLANGE	LENGTH A/ B	PART NUMBER	EURO
16CF	76/ 38	413-CFX4-C16S	225,00
40CF	126/ 63	413-CFX4-C40S	237,00
63CF	210/ 105	413-CFX4-C63S	582,00
100CF	270/ 135	413-CFX4-C100S	925,00
160CF	334/ 167	413-CFX4-C160S	1.450,00
200CF	406/ 203	413-CFX4-C200S	2.350,00
250CF	500/ 250	413-CFX4-C250S	POR

Note: Other lengths on request

**CF REDUCING 4 Way Cross
316L Stainless Steel**

FLANGES	LENGTHS	PART NUMBER	EURO
40 - 16CF	126/ 100	413-CFX4-C40-C16	175,00
63 - 40CF	210/ 150	413-CFX4-C63-C40	325,00
100 - 63CF	270/ 200	413-CFX4-C100-C63	605,00
160 - 100CF	334/ 250	413-CFX4-C160-C100	940,00
200 - 160CF	406/ 300	413-CFX4-C200-C160	1.550,00

Note: Other lengths and flange combinations on request

- 1 Sub-D
- 2 CM + DIL F/T
- 3 Coax F/T
- 4 Power High Voltage
- 5 Thermo-couple
- 6 Cables Accessories
- 7 Viewports Fiberoptic
- 8 Valves
- 9 Motion Manipulation
- 10 Process Control
- 11 CF Hardware
- 12 KF Hardware
- 13 ISO-K Hardware
- 14 Adaptors Specials
- 15 HV / UHV Chambers
- 16 Atlas Bi-Metal

- 1 Sub-D
- 2 CM + DIL F/T
- 3 Coax F/T
- 4 Power High Voltage
- 5 Thermo-couple
- 6 Cables Accessories
- 7 Viewports Fiberoptic
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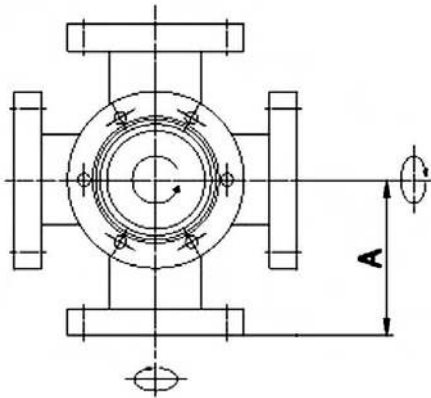
CF 6 Way Crosses

Standard 6 Way Crosses (Double Crosses) have one Fixed and one Rotatable Flange on each axis. The Fixed Flange is mounted so that the bolt holes straddle the vertical axis. This is the case for all spheres of sizes DN63 CF and over. If required, Crosses can be made with in-line bolt holes. Custom versions with extra or less ports and other Flanges are available on request. Please call Sales Office.



Specification CF Fittings

Vacuum UHV to 10^{-12} mbar
 Material 316L (1.4404) stainless Steel
 Temp. -273°C to 450°C
 Fittings have opposite pairs Fixed & Rotatable Flanges



413-CFX6-C40

CF STANDARD 6 Way cross 316L Stainless Steel

FLANGE	LENGTH A	PART NUMBER	EURO
16CF	38	413-CFX6-C16	225,00
40CF	63	413-CFX6-C40	295,00
63CF	105	413-CFX6-C63	720,00
100CF	135	413-CFX6-C100	1.175,00
160CF	167	413-CFX6-C160	1.875,00
200CF	203	413-CFX6-C200	2.880,00
250CF	250	413-CFX6-C250	POR

Note: Other lengths on request

CF SPHERICAL 6 Way cross 316L Stainless Steel

FLANGE	LENGTH A	PART NUMBER	EURO
40CF	63	413-CFX6-C40S	354,00
63CF	105	413-CFX6-C63S	865,00
100CF	135	413-CFX6-C100S	1.410,00
160CF	167	413-CFX6-C160S	2.250,00
200CF	203	413-CFX6-C200S	3.510,00
250CF	250	413-CFX6-C250S	POR

Note: Other lengths on request

CF REDUCING 6 Way Cross 316L Stainless Steel

FLANGES	LENGTHS	PART NUMBER	EURO
40 - 16CF	126/50	413-CFX6-C40-C16	POR
63 - 40CF	210/75	413-CFX6-C63-C40	POR
100 - 63CF	270/100	413-CFX6-C100-C63	POR
160 - 100CF	334/125	413-CFX6-C160-C100	POR
200 - 160CF	406/150	413-CFX6-C200-C160	POR

Note: Other lengths and flange combinations on request



413-CFX6-C40



413-CFX6-C40S

CF Edge Welded Bellows

Edge Welded Bellows are usually supplied according to Customer's Requirements.
 Some standard types are offered as suggestions.
 Please send us details of your application and Allectra will suggest a suitable bellows.

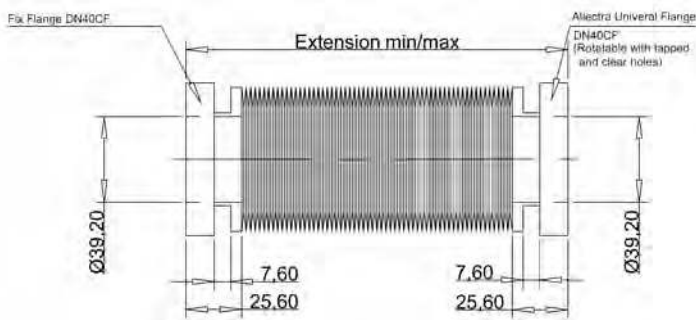


General Specification Edge Welded Bellows

Vacuum	UHV to 10 ⁻¹² mbar		
Material	316L Stainless steel (1.4404)		
Temp.	450°C max		
Mag perm.	<1.05 (annealed)		
Clear Bore ID	40CF 39.2mm		
Length over Flanges (mm)			
Travel	Min.	Free	Max.
25 mm	57.2	70	82.2
50 mm	63.2	90	113.2
100 mm	75.2	126	175.2
150 mm	87.2	165	237.2
200 mm	99.2	200	299.2

CF Edge Welded Bellows 316L Stainless Steel

FLANGE	TRAVEL	PART NUMBER	EURO
40CF	25 mm	453-EWB-C40-25	425,00
40CF	50 mm	453-EWB-C40-50	540,00
40CF	100 mm	453-EWB-C40-100	742,00
40CF	150 mm	453-EWB-C40-150	984,00



Alternative versions with Tapped Flanges at one end and Allectra Rotatable Flanges at the other end allow a small reduction (around 5mm) in overall minimum length when the shortest possible Bellows is required. Please ask for details.

Allectra uses over-sized bellows to give max. possible conductance and clearance. The bellows itself has 48mm ID, it is limited by the flange to 39.2mm



Custom made bellows assemblies are offered. Please contact the Sales Office with details of the application.

- 1 Sub-D
- 2 CM + DIL F/T
- 3 Coax F/T
- 4 Power High Voltage
- 5 Thermo-couple
- 6 Cables Accessories
- 7 Viewports Fiberoptic
- 8 Valves
- 9 Motion Manipulation
- 10 Process Control
- 11 CF Hardware
- 12 KF Hardware
- 13 ISO-K Hardware
- 14 Adaptors Specials
- 15 HV / UHV Chambers
- 16 Atlas Bi-Metal

- 1 Sub-D
- 2 CM + DIL F/T
- 3 Coax F/T
- 4 Power High Voltage
- 5 Thermo-couple
- 6 Cables Accessories
- 7 Viewports Fiberoptic
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CF Flexible Hoses

CF Flexible Couplings

Flexible Hoses are made from SS 316L Hydraulically Formed Bellows.

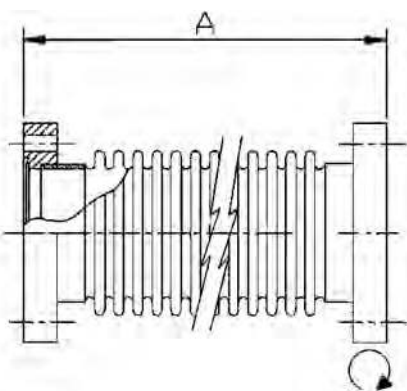
They are used, for example, as pumping lines.

Flexible couplings are used as connections in vacuum systems where some extension and compression are required or to compensate for small degree of misalignment.



Specification Flexible Hoses

Vacuum	UHV
Materials	316L Stainless Steel
CF Flanges	1 Fixed & 1 Rotatable
Recommended Min. Bend Radius	
16CF	160mm
40CF	300mm
63CF	600mm



CF Flexible Hoses 316L Stainless Steel

FLANGE	LENGTH	PART NUMBER	EURO
16CF	250 mm	452-HOSE-C16-0250	85,00
16CF	500 mm	452-HOSE-C16-0500	95,00
16CF	1000 mm	452-HOSE-C16-1000	110,00
16CF	2000 mm	452-HOSE-C16-2000	140,00
40CF	500 mm	452-HOSE-C40-0500	130,00
40CF	1000 mm	452-HOSE-C40-1000	160,00
40CF	2000 mm	452-HOSE-C40-2000	200,00
63CF	500 mm	452-HOSE-C63-0500	POR
63CF	1000 mm	452-HOSE-C63-1000	POR
63CF	2000 mm	452-HOSE-C63-2000	POR

Note: Other lengths on request

Specification Flexible Couplings

Vacuum	UHV
Materials	316L SS
CF Flanges	1 Fixed & 1 Rotatable
Recommended Max. Compression	
	5% of free length

CF Flexible Couplings 316L Stainless Steel with 316L flanges

FLANGE	LENGTH	PART NUMBER	EURO
16CF	110 mm	452-FLX-C16-110	102,00
40CF	160 mm	452-FLX-C40-160	152,00
63CF	250 mm	452-FLX-C63-250	323,00
100CF	250 mm	452-FLX-C100-250	459,00
160CF	270 mm	452-FLX-C160-270	725,00
200CF	300 mm	452-FLX-C200-300	1150,00

Note: Other lengths on request