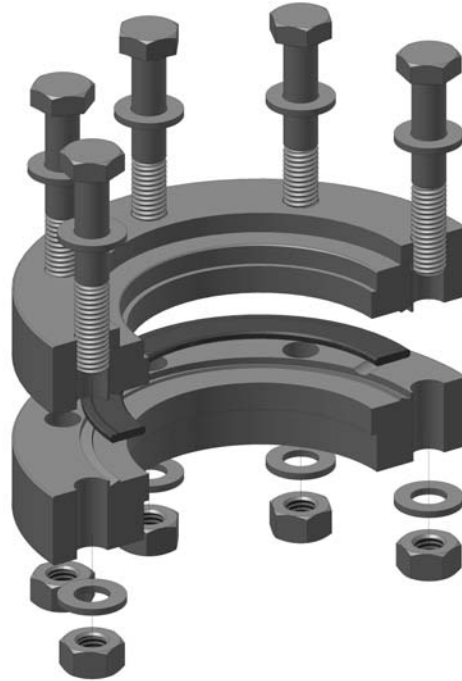


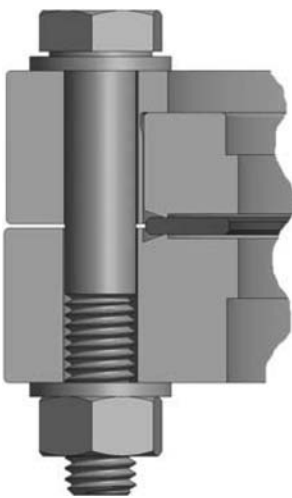
## Introduction

The generation of ultra high vacuum (UHV) makes great demands on the material and on the connections. Therefore the CF standard was created in the UHV technology (ISO 3669; enhancement ISO/TS 3669-2). The following figure shows the principle construction:

1



## Functional principle



CF flanges are manufactured from circular blanks of stainless steel on CNC machines. Rotatable flanges are bipartite and consist of an inner part with the seal face and an outer part with the bolt holes. CF flanges have an annular groove on the vacuum side for the reception of the gasket and a knife-edge.

The sealing is realised by means of a flat gasket of oxygen-free (OFHC) copper because of the low leak rate and high bakeout temperature necessary for UHV technology. This gasket can be used generally only one time due to the plastic deformation by the knife-edge.

The pressing-on is realised by bolts which must be fastened uniformly crosswise in order to avoid any kind of distortion. The so realised flange connection has a leak rate of  $< 1.0E-11$  mbar l/s and is bakeable up to 450 °C.

## Introduction

### Dimensions

VACOM provides CF flanges and components of the dimensions DN10 to DN250 according to the pre-norm ISO/TS 3669-2. These flanges are fully interchangeable with ConFlat® and CF flanges of other manufacturers. Micro CF flanges of the dimension DN10 are exclusively supplied by VACOM.

Please note that apart from this there are individual standards of institutions in the market available. Please add the auxiliary dimensions (DN25, DN50, DN75, DN125) in case of requests and offers of CF flanges and components. In addition, please add the size and the number of required bolts and the to use copper gasket.

### Dimensions of CF Flanges

Nominal diameter	AD (mm (inch))	Thickness (mm)	AD CU gasket (mm)	Bolt circle (mm)	Number of holes
DN10	25,4 (1")	6	13.4	18	6 x M3
DN16	34 (1.33")	8	21	27	6 x M4
DN25	54 (2.12")	12	33	41	4 x M4
DN35	70 (2.75")	13	48	59	6 x M6
DN50	86 (3.38")	16	61	72	6 x M6
DN63	114 (4.5")	17	82	92	8 x M8
DN75	117 (4.62")	18	92	102	10 x M8
DN100	154 (6")	20	120	130	16 x M8
DN125	171 (6.75")	21	142	152	18 x M8
DN150	203 (8")	22	171	181	20 x M8
DN200	254 (10")	25	222	232	24 x M8
DN250	305 (12")	25	272.7	284	32 x M8
DN250 "imperial"	305 (12")	27	270	283	32 x M10

### Materials

Gaskets	Flanges	Components
FPM	Stainless steel 304	Stainless steel 304
OFHC Copper	Stainless steel 304L	Stainless steel 304L
OFHC Copper silver plated	Stainless steel 316L	Stainless steel 316L
OFHC Copper soft annealed	Stainless steel 316LN ESR	Stainless steel 316Ti

## CF Clamps

### CF Nut, bolt and washer sets, stainless steel



#### Technical data

- Material A2
- Packing unit 25 pieces

Order code	DN	GM	L
NBW316	10	M3	16
NBW420	16	M4	20
NBW635	35	M6	35
NBW845	63	M8	45
NBW850	100	M8	50
NBW860	150 - 200	M8	60
NBW865	250	M8	65

### CF Nut, bolt and washer sets for double sided flanges, stainless steel



#### Technical data

- Material A2
- Packing unit 25 pieces

Order code	DN	GM	L
NBW435	16	M4	35
NBW650	35	M6	50
NBW860D	63	M8	60
NBW870	100	M8	70
NBW880	150	M8	80
NBW890	200	M8	90

### CF Nut, bolt and washer sets for tapped flanges, stainless steel



#### Technical data

- Material A2
- Packing unit 25 pieces

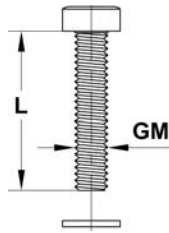
Order code	DN	GM	L
BW312	10	M3	12
BW416	16	M4	16
BW625	35	M6	25
BW830	63	M8	30
BW835	100 - 150	M8	35
BW845	200	M8	45

# CF Components

## CF Clamps

1

### CF Allen head bolt and washer sets for tapped flanges, stainless steel



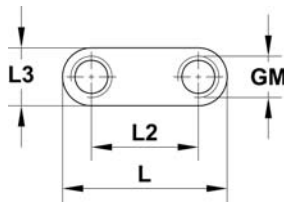
#### Technical data

- Material A2
- Packing unit 25 pieces

Order code	DN	GM	L
CW416	16	M4	16
CW625	35	M6	25
CW830	63	M8	30
CW835	100 - 150	M8	35
CW845	200	M8	45

For high and ultra high vacuum applications we also offer different screws, nuts and washers with and without vent hole. Further information in chapter 13.

### CF Plate nuts, stainless steel

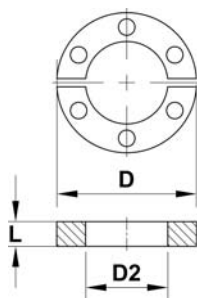


#### Technical data

- Packing unit 25 pieces

Order cod	DN	L	L2	L3	GM	Gravure
PN16	16	20	13	7	M4	M
PN35	35	41	29	11	M6	2.75
PN63	63	51	35	12	M8	114
PN100	100	44	25	12	M8	150
PN150	150	44	28	12	M8	200
PN200	200	45	30	13	M8	250

### CF Horse shoe plate nuts, stainless steel



#### Technical data

- Scope of delivery with screws and washers

Order code	DN	D	D2	L
PN16HS	16	34	20	6
PN35HS	35	70	43	9
PN63HS	63	113	65	12
PN100HS	100	151	103	12
PN150HS	150	202	154	12

### CF Thread lubricant



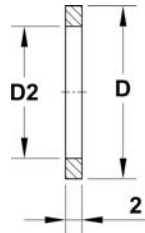
#### Technical data

- Application loosening of screws after bakeout

Order code	Material
TL100	MoS <sub>2</sub>

## CF Copper gaskets

### CF Copper gaskets



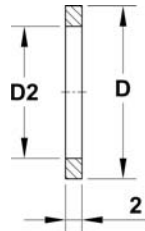
#### Technical data

■ Material	OFHC copper
■ Hardness	approx. 85 Brinell
■ Bakeout temperature	450 °C

Order code	DN	D	D2	Pack size
<b>CU10</b>	10	13.4	8.5	10
<b>CU16</b>	16	21	16	10
<b>CU38</b>	35	48	39	10
<b>CU63</b>	63	82	63	10
<b>CU100</b>	100	120	101	10
<b>CU150</b>	150	171	152	5
<b>CU200</b>	200	222	203	5
<b>SPCU250</b>	250	272.7	254	5

- Other measures on request

### CF Copper gaskets, annealed



#### Technical data

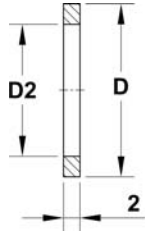
■ Material	OFHC copper
■ Hardness	approx. 45 Brinell
■ Bakeout temperature	450 °C
■ Application	feedthroughs, viewports, glass-to-metal connection
■ Packing unit	5 pieces

Order code	DN	D	D2
<b>CUA16</b>	16	21	16
<b>CUA38</b>	35	48	39
<b>CUA63</b>	63	82	63
<b>CUA100</b>	100	120	101
<b>CUA150</b>	150	171	152
<b>CUA200</b>	200	222	203
<b>SPCUA250</b>	250	272.7	254

## CF Copper gaskets

1

### CF Copper gaskets, silver plated

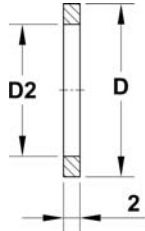


#### Technical data

■ Material	OFHC copper, silver plated
■ Hardness	approx. 85 Brinell
■ Bakeout temperature	450 °C
■ Packing unit	5 pieces

Order code	DN	D	D2
CU16SP	16	21	16
CU38SP	35	48	39
CU63SP	63	82	63
CU100SP	100	120	101
CU150SP	150	171	152
CU200SP	200	222	203
SPCU250SP	250	272.7	254

### CF Copper gaskets, silver plated, annealed

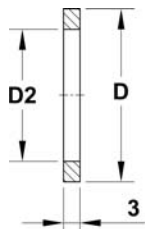
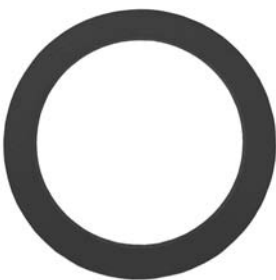


#### Technical data

■ Material	OFHC copper
■ Hardness	approx. 85 Brinell
■ Packing unit	5 pieces

Order code	DN	D	D2
CUA16SP	16	21	16
CUA38SP	35	48	39
CUA63SP	63	82	63
CUA100SP	100	120	101
CUA150SP	150	171	152
CUA200SP	200	222	203
SPCUA250SP	250	272.7	254

### CF Gaskets, FPM



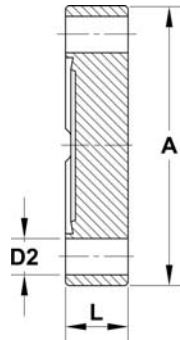
#### Technical data

■ Temperature range	-10 °C to 150 °C (intermittent 200 °C)
■ Application	multiple use possible

Order code	DN	D	D2
VGF10	10	13.4	7
VGF16	16	21	16
VGF35	35	48	37
VGF63	63	82	63
VGF100	100	120	101
VGF150	150	171	152
VGF200	200	222	202
VGF250-BA	250	272.7	254

## CF Fittings

### CF Blank flanges, fixed, stainless steel



**Technical data**

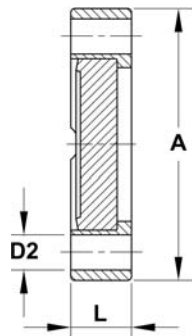
■ Option

with tapped holes

Order code			DN	A	D2	L
Stainless steel 304	Stainless steel 316L	Stainless steel 316LN ESR				
-	F10-316	-	10	25	3.2	6
F16-304	F16-316	F16-316LNS	16	34	4.3	7
F35-304	F35-316	F35-316LNS	35	70	6.7	13
F63-304	F63-316	F63-316LNS	63	114	8.3	17
F100-304	F100-316	F100-316LNS	100	152	8.3	20
F150-304	F150-316	F150-316LNS	150	203	8.3	22
F200-304	F200-316	F200-316LNS	200	254	8.3	24
F250-304	F250-316	F250-316LNS	250	304	8.3	25

- A and L (basic dimensions) serve as orientation

### CF Blank flanges, rotatable, stainless steel



**Technical data**

■ Option

with tapped holes

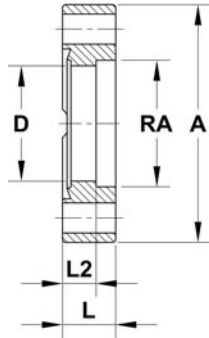
Order code			DN	A	D2	L
Stainless steel 304	Stainless steel 316L	Stainless steel 316LN ESR				
F16R-304	F16R-316	F16R-316LNS	16	34	4.3	7
F35R-304	F35R-316	F35R-316LNS	35	70	6.7	13
F63R-304	F63R-316	F63R-316LNS	63	114	8.3	17
F100R-304	F100R-316	F100R-316LNS	100	152	8.3	20
F150R-304	F150R-316	F150R-316LNS	150	203	8.3	22
F200R-304	F200R-316	F200R-316LNS	200	254	8.3	24
F250R-304	F250R-316	F250R-316LNS	250	304	8.3	25

- A and L (basic dimensions) serve as orientation

## CF Fittings

1

### CF Bored flanges, fixed, stainless steel



#### Technical data

■ Option

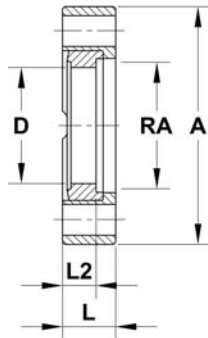
with tapped holes

Order code			DN	A	RA	D	L	L2
Stainless steel 304	Stainless steel 316L	Stainless steel 316LN ESR						
-	F10B10-316	-	10	25	10	9	6	3
F16B19-304	F16B19-316	F16B19-316LNS	16	34	19	16	7	4.8
F35B41-304	F35B41-316	F35B41-316LNS	35	70	41	38	13	4.8
F35B42-304	F35B42-316	F35B42-316LNS	35	70	42	38	13	4.8
F63B63-304	-	-	63	114	63	61	17	7.9
F63B70-304	F63B70-316	F63B70-316LNS	63	114	70	66	17	7.9
F100B101-304	-	-	100	152	101	98	20	9.5
F100B104-304	F100B104-316	F100B104-316LNS	100	152	104	100	20	9.5
F150B152-304	-	F150B152-316LNS	150	203	152	149	22	9.5
F150B154-304	F150B154-316	F150B154-316LNS	150	203	154	154	22	9.5
F200B204-304	F200B204-316	F200B204-316LNS	200	254	204	200	25	9.5
F250B254-304	F250B254-316	F250B254-316LNS	250	304	254	250	25	12.7

- A and L (basic dimensions) serve as orientation

## CF Fittings

### CF Bored flanges, rotatable, stainless steel



#### Technical data

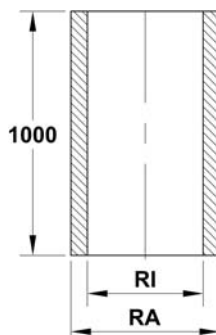
■ Option

with tapped holes

Order code			DN	A	RA	D	L	L2
Stainless steel 304	Stainless steel 316L	Stainless steel 316LN ESR						
F16RB19-304	F16RB19-316	F16RB19-316LNS	16	34	19	16	7	4.8
F35RB41-304	F35RB41-316	F35RB41-316LNS	35	70	41	38	13	4.8
F35RB42-304	F35RB42-316	F35RB42-316LNS	35	70	42	38	13	4.8
F63RB63-304	-	-	63	114	63	61	17	7.9
F63RB70-304	F63RB70-316	F63RB70-316LNS	63	114	70	66	17	7.9
F100RB101-304	-	-	100	152	101	98	20	9.5
F100RB104-304	F100RB104-316	F100RB104-316LNS	100	152	104	100	20	9.5
F150RB152-304	-	F150RB152-316LNS	150	203	152	149	22	9.5
F150RB154-304	F150RB154-316	F150RB154-316LNS	150	203	154	154	22	9.5
F200RB204-304	F200RB204-316	F200RB204-316LNS	200	253	204	200	25	9.5
F250RB254-304	F250RB254-316	F250RB254-316LNS	250	305	254	250	25	12.7

- A and L (basic dimensions) serve as orientation

### CF Tube, 1 m length, stainless steel



#### Technical data

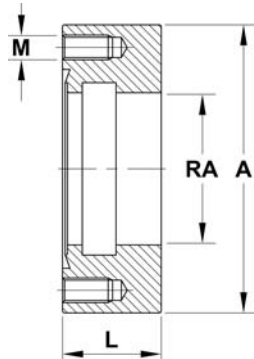
- Lengthwise welded
- Outside and inside etched
- Ra <math>< 0.8 \mu\text{m}</math>
- Ra (welding seam area) <math>< 1.6 \mu\text{m}</math>

Order code		DN	RI	RA
St. steel 316L	St. steel 304			
R316-19x1.5-1	R304-19x1.5-1	16	16	19
R316-41x1.5-1	R304-41x1.5-1	35	38	41
R316-70x2.0-1	R304-70x2.0-1	63	66	70
R316-104x2.0-1	R304-104x2.0-1	100	100	104
R316-154x2.0-1	R304-154x2.0-1	150	150	154
R316-204x2.0-1	R304-204x2.0-1	200	200	204

## CF Fittings

1

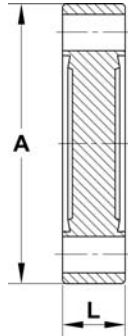
### CF Welded flanges, stainless steel



Order code	DN	A	L	RA	M
F16WF	16	34	16	16	M4
F35WF	35	70	24	37	M6
F63WF	63	114	24	63	M8
F100WF	100	152	24	100	M8

- A and L (basic dimensions) serve as orientation

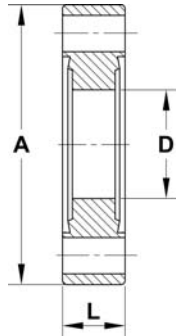
### CF Double sided blank flanges, stainless steel



Order code		DN	A	L
St. steel 304	St. steel 316LN ESR			
F16DB	F16DBLNS	16	34	7
F35DB	F35DBLNS	35	70	13
F63DB	F63DBLNS	63	114	17
F100DB	F100DBLNS	100	152	20
F150DB	F150DBLNS	150	203	22

- A and L (basic dimensions) serve as orientation

### CF Double sided bored flanges, stainless steel



#### Technical data

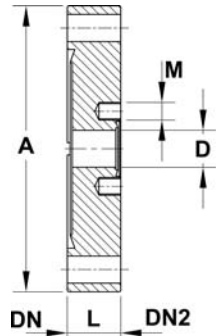
- Option radial connections

Order code		DN	A	D	L
St. steel 304	St. steel 316LN ESR				
F16D14	-	16	34	13	7
-	F16D16LNS	16	34	16	7
F35D38	F35D38LNS	35	70	38	13
F63D63	-	63	114	61	17
-	F63D66LNS	63	114	66	17
F100D100	F100D100LNS	100	152	100	20
F150D150	F150D150LNS	150	203	150	22

- A and L (basic dimensions) serve as orientation

## CF Fittings

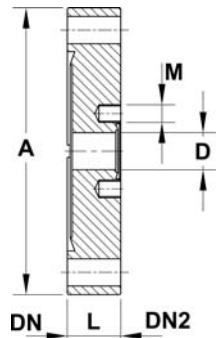
### CF Zero length flange adapters, stainless steel



Order code	DN	DN2	A	D	M	L
ZL1610	16	10	34	9	M3	10
ZL3510	35	10	70	9	M4	13
ZL3516	35	16	70	13	M4	13
ZL6316	63	16	114	13	M4	17
ZL6335	63	35	114	37	M6	17
ZL1035	100	35	152	37	M6	20
ZL1063	100	63	152	61	M8	20
ZL1535	150	35	203	37	M6	22
ZL1563	150	63	203	61	M8	22
ZL1510	150	100	203	100	M8	22
ZL2010	200	100	254	100	M8	25
ZL2015	200	150	254	150	M8	25

- Other reductions on request
- A and L (basic dimensions) serve as orientation

### CF Zero length flange adapters, stainless steel 316LN ESR



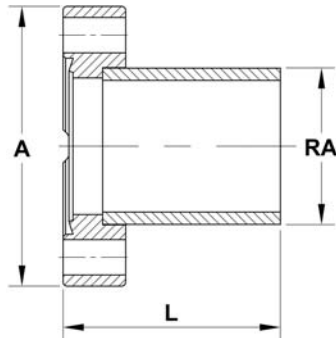
Order code	DN	DN2	A	D	M	L
ZL4016LNS	35	16	70	16	M4	13
ZL6316LNS	63	16	114	16	M4	17
ZL6340LNS	63	35	114	38	M6	17
ZL1040LNS	100	35	152	38	M6	20
ZL1063LNS	100	63	152	66	M8	20
ZL1510LNS	160	100	202	100	M8	22
ZL1540LNS	160	35	202	38	M6	22
ZL1563LNS	160	63	202	66	M8	22
ZL2010LNS	200	100	253	100	M8	25
ZL2016LNS	200	150	253	150	M8	25

- Other reductions on request
- A and L (basic dimensions) serve as orientation

## CF Fittings

1

### CF Tubulations (half nipples), fixed, stainless steel



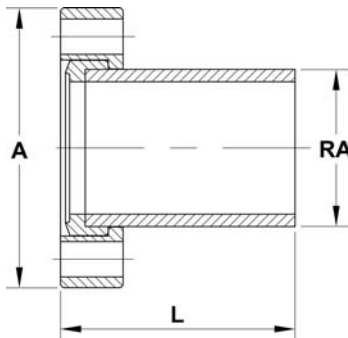
#### Technical data

■ Option

with tapped holes

Stainless steel 304	Order code	DN	A	L	RA
	Stainless steel 316LN ESR				
TU10	-	10	25	30	10
TU16	TU16LNS	16	34	38	19
TU38	TU38LNS	35	70	63	41
TU63	-	63	114	105	63
TU63-70	TU63LNS	63	114	105	70
TU100	-	100	152	135	101
TU100-104	TU100LNS	100	152	135	104
TU150	-	150	203	167	152
TU150-154	TU150LNS	150	203	167	154
TU200	-	200	254	167	203
TU200-204	TU200LNS	200	254	167	204

### CF Tubulations, rotatable, stainless steel



#### Technical data

■ Option

with tapped holes

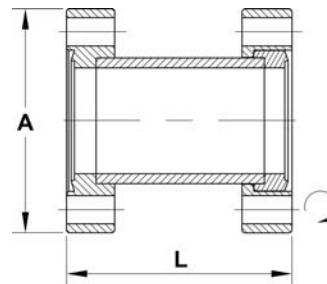
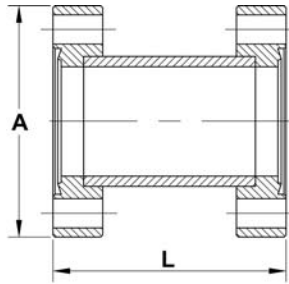
Stainless steel 304	Order code	DN	A	L	RA
	Stainless steel 316LN ESR				
TU16R	TU16RLNS	16	34	38	19
TU38R	TU38RLNS	35	70	63	41
TU63R	-	63	114	105	63
TU63R-70	TU63RLNS	63	114	105	70
TU100R	-	100	152	135	101
TU100R-104	TU100RLNS	100	152	135	104
TU150R	-	150	203	167	152
TU150R-154	TU150RLNS	150	203	167	154
TU200R	-	200	254	167	203
TU200R-204	TU200RLNS	200	254	167	204

# CF Components

## CF Fittings

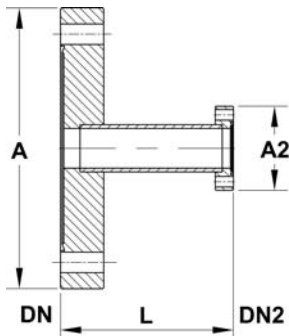
### CF Straight connectors

1



	Order code	DN	A	L
<b>Fixed flanges</b>	<b>1 Rotatable flange</b>			
<b>SC16</b>	<b>SC16R</b>	16	34	76
<b>SC38</b>	<b>SC38R</b>	35	70	126
<b>SC63</b>	<b>SC63R</b>	63	114	210
<b>SC100</b>	<b>SC100R</b>	100	152	270
<b>SC150</b>	<b>SC150R</b>	150	203	334
<b>SC200</b>	<b>SC200R</b>	200	254	334

### CF Tubulated reducing adapters, fixed



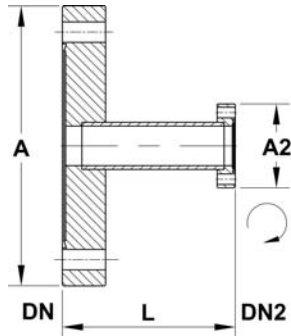
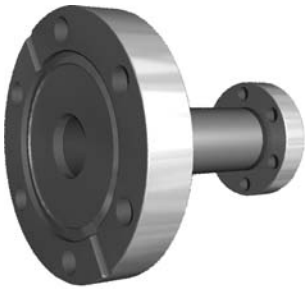
Order code	DN	DN2	A	A2	L	Bolt holes
<b>TA3516</b>	35	16	70	34	70	in-line
<b>TA6316</b>	63	16	114	34	70	in-line and straddled
<b>TA6338</b>	63	35	114	70	70	in-line and straddled
<b>TA1038</b>	100	35	152	70	70	in-line and straddled
<b>TA1063</b>	100	63	152	114	70	in-line
<b>TA1563</b>	150	63	203	114	127	in-line and straddled
<b>TA1510</b>	150	100	203	152	127	in-line and straddled

# CF Components

## CF Fittings

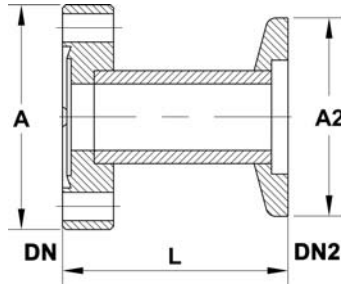
1

### CF Tubulated reducing adapters, small flange rotatable



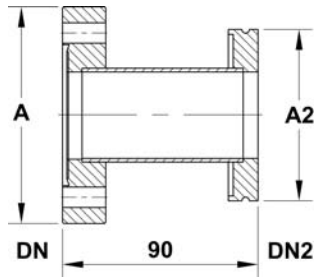
Order code	DN	DN2	A	A2	L
TA3516R	35	16	70	34	70
TA6316R	63	16	114	34	70
TA6338R	63	35	114	70	70
TA1038R	100	35	152	70	70
TA1063R	100	63	152	114	70
TA1563R	150	63	203	114	127
TA1510R	150	100	203	152	127

### CF-KF Adapter



Order code	DN	DN2	A	A2	L
KA1616	16	16	34	30	36
KA3516	35	16	70	30	36
KA3525	35	25	70	40	36
KA3540	35	40	70	55	50
KA6325	63	25	114	40	50
KA6340	63	40	114	55	50
KA6350	63	50	114	75	50
KA1025	100	25	152	40	50
KA1040	100	40	152	55	50

### CF-ISO-K Adapter



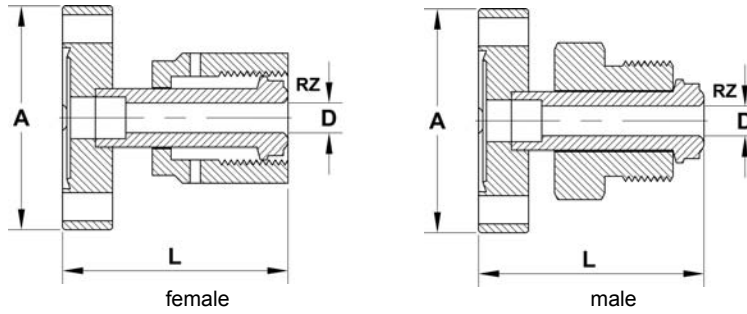
Order code	DN	DN2	A	A2
SA6363	63	63	114	95
SA1063	100	63	152	95
SA1010	100	100	152	130
SA1510	150	100	203	130
SA1516	150	160	203	180

# CF Components

## CF Fittings

### CF to VCR Adapters

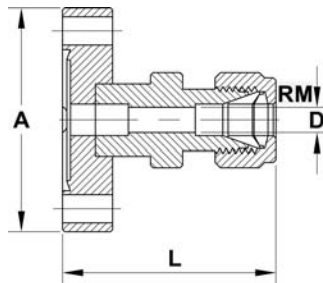
1



Order code		DN	A	D	L	RZ
Female	Male					
F16VCR6F	F16VCR6M	16	34	4.6	36	1/4"
F16VCR13F	F16VCR13M	16	34	10.1	41	1/2"
F35VCR6F	F35VCR6M	35	70	4.6	41	1/4"
F35VCR9F	F35VCR9M	35	70	7.1	46	3/8"
F35VCR13F	F35VCR13M	35	70	10.1	46	1/2"
F35VCR19F	F35VCR19M	35	70	15.7	53	3/4"
F35VCR25F	F35VCR25M	35	70	22	58	1"

- VCR compatible

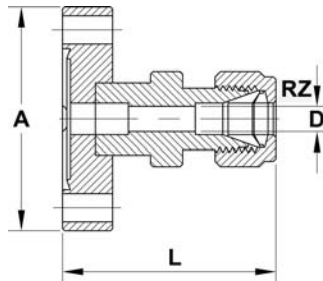
### CF to Swagelok adapters, metric



Order code	DN	A	D	L	RM
F16SWA6M	16	34	4.8	38	6
F16SWA8M	16	34	7.9	44	8
F16SWA10M	16	34	7.9	44	10
F35SWA6M	35	70	4.8	43	6
F35SWA8M	35	70	6.4	47	8
F35SWA10M	35	70	7.9	49	10

- Swagelok compatible

### CF to Swagelok adapters, imperial



Order code	DN	A	D	L	RZ
F16SWA7	16	34	4.8	38	1/4"
F35SWA7	35	70	4.8	43	1/4"
F35SWA9	35	70	7.1	48	3/8"
F35SWA13	35	70	10.4	52	1/2"

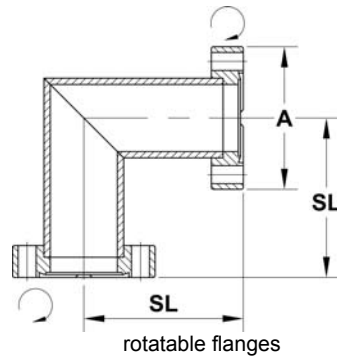
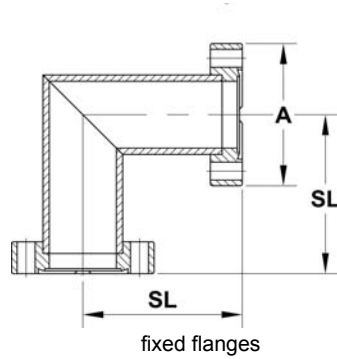
- Swagelok compatible

# CF Components

## CF Fittings

1

### CF Elbows 90°

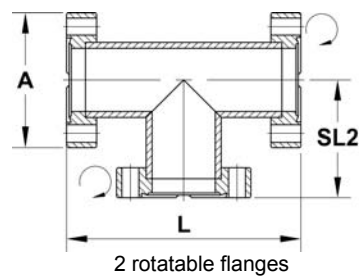
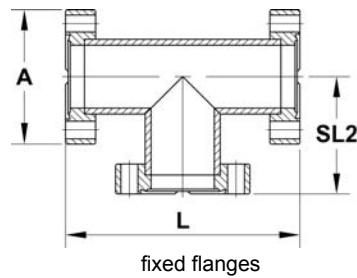


#### Technical data

- In-line bolt holes (straddled bolt holes on request)

Order code		DN	A	SL
Fixed flanges	2 Rotatable flanges			
EL16	EL16R	16	34	38
EL38	EL38R	35	70	63
EL63	EL63R	63	114	105
EL100	EL100R	100	152	135
EL150	EL150R	150	203	167
EL200	EL200R	200	254	203

### CF Tees



#### Technical data

- In-line bolt holes (straddled bolt holes on request)

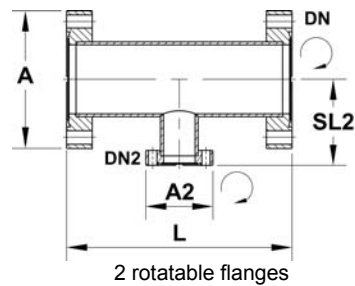
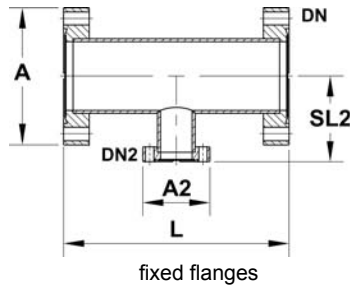
Order code		DN	A	L	SL2
Fixed flanges	2 Rotatable flanges				
TE16	TE16R	16	34	76	38
TE38	TE38R	38	70	126	63
TE63	TE63R	63	114	210	105
TE100	TE100R	100	152	270	135
TE150	TE150R	150	203	334	167
TE200	TE200R	200	254	406	203

# CF Components

## CF Fittings

### CF Unequal tees

1

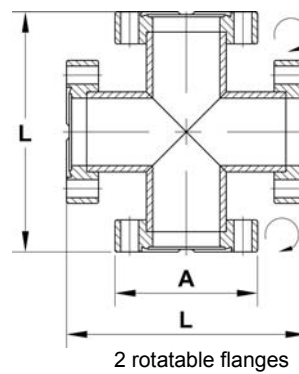
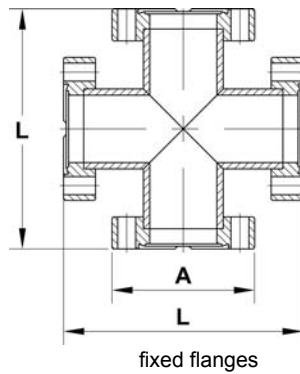


#### Technical data

- In-line bolt holes (straddled bolt holes on request)

Order code		DN	DN2	A	A2	L	SL2
Fixed flanges	2 Rotatable flanges						
UTE3516	UTE3516R	35	16	70	34	126	60
UTE6335	UTE6335R	63	35	114	70	210	77
UTE1035	UTE1035R	100	35	152	70	270	95
UTE1063	UTE1063R	100	63	152	114	270	95
UTE1563	UTE1563R	150	63	203	114	334	120
UTE1510	UTE1510R	150	100	203	152	334	120

### CF 4-way crosses



#### Technical data

- In-line bolt holes (straddled bolt holes on request)

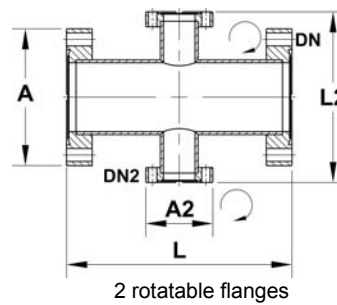
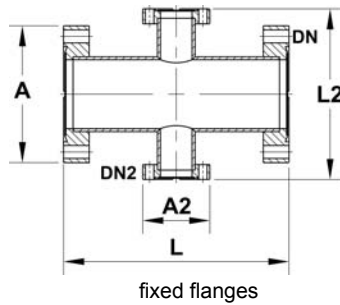
Order code		DN	A	L
Fixed flanges	2 Rotatable flanges			
X16	X16R	16	34	76
X38	X38R	35	70	126
X63	X63R	63	114	210
X100	X100R	100	152	270
X150	X150R	150	203	334
X200	X200R	200	254	406

# CF Components

## CF Fittings

1

### CF 4-way reducing crosses

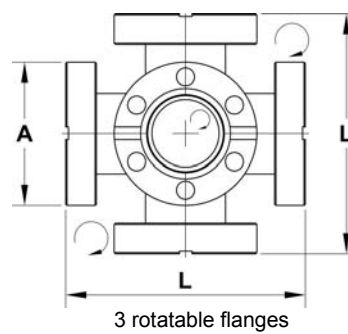
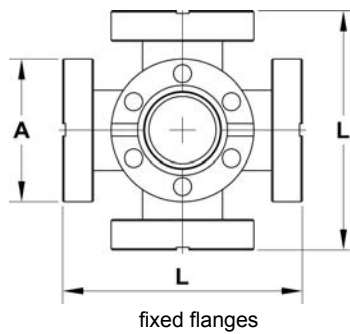


#### Technical data

- In-line bolt holes (straddled bolt holes on request)

Order code		DN	DN2	A	A2	L	L2
Fixed flanges	2 Rotatable flanges						
UX3516	UX3516R	35	16	70	34	126	120
UX6335	UX6335R	63	35	114	70	210	154
UX1063	UX1063R	100	63	152	114	270	190
UX1563	UX1563R	150	63	203	114	334	240
UX2010	UX2010R	200	100	254	152	406	290

### CF 6-way crosses



#### Technical data

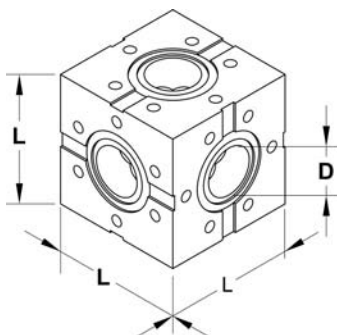
- In-line bolt holes (straddled bolt holes on request)

Order code		DN	A	L
Fixed flanges	3 Rotatable flanges			
XX16	XX16R	16	34	76
XX38	XX38R	35	70	126
XX63	XX63R	63	114	210
XX100	XX100R	100	152	270
XX150	XX150R	150	203	334
XX200	XX200R	200	254	406

# CF Components

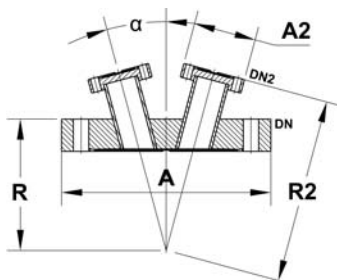
## CF Fittings

### CF Cubes



Order code	DN	D	L
CUBE16	16	15	35
CUBE35	35	38	70
CUBE63	63	63	114
CUBE100	100	101	152
CUBE150	150	152	203
CUBE200	200	200	254

### CF Cluster flanges



Order code	DN	DN2	No. of ports	A	A2	R	R2	$\alpha$
CF3P	100	35	3	152	70	135	208	11.9°
CF4P	150	35	4	203	70	167	250	13°

- Other versions on request

### CF Flange caps, plastics



#### Technical data

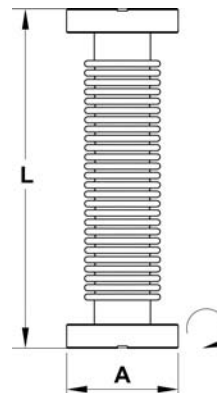
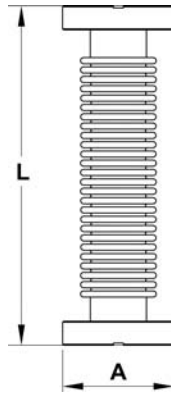
■ Packing unit 10 pieces

Order code	DN
CF16CAP	16
CF35CAP	35
CF63CAP	63
CF100CAP	100
CF150CAP	150

# CF Components

## CF Flexible hoses

### 1 CF Flexible hoses



#### Technical data

- Material flange stainless steel 304
- Material hose stainless steel 316L

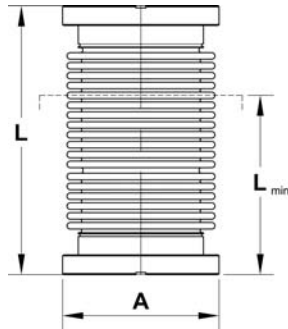
Fixed flanges	Order code	DN	A	L
	1 Rotatable flange			
FX16CF25	FX16CF25R	16	34	250
FX16CF50	FX16CF50R	16	34	500
FX16CF75	FX16CF75R	16	34	750
FX16CF100	FX16CF100R	16	34	1000
FX35CF25	FX35CF25R	35	70	250
FX35CF50	FX35CF50R	35	70	500
FX35CF75	FX35CF75R	35	70	750
FX35CF100	FX35CF100R	35	70	1000
FX63CF25	FX63CF25R	63	114	250
FX63CF50	FX63CF50R	63	114	500
FX63CF75	FX63CF75R	63	114	750
FX63CF100	FX63CF100R	63	114	1000
FX100CF25	FX100CF25R	100	152	250
FX100CF50	FX100CF50R	100	152	500
FX100CF75	FX100CF75R	100	152	750
FX100CF100	FX100CF100R	100	152	1000

# CF Components

## CF Flexible hoses

### CF Hydroformed bellows

1



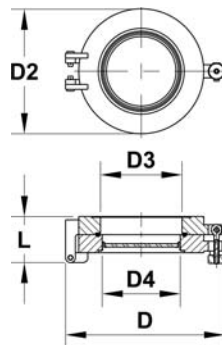
#### Technical data

- Material flange stainless steel 304
- Material bellows stainless steel 316L

	Order code	DN	A	L	Lmin
<b>Fixed flanges</b>	<b>1 Rotatable flange</b>				
<b>FXB16</b>	<b>FXB16R</b>	16	34	110	74
<b>FXB35</b>	<b>FXB35R</b>	35	70	175	121
<b>FXB63</b>	<b>FXB63R</b>	63	114	250	173
<b>FXB100</b>	<b>FXB100R</b>	100	152	250	178
<b>FXB150</b>	<b>FXB150R</b>	150	203	270	192

## CF Glass-to-metal connections and quick access doors

### CF Quick access doors with viewport



#### Technical data

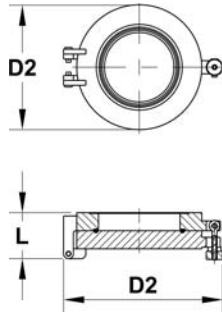
- Assembly directly on the chamber, (with allen screw)
- Sealing FPM
- Bakeout temperature to 200 °C

Order code	DN	D	D2	D3	D4	L
<b>QAD35LA</b>	35	101	70	39	40	36
<b>QAD63</b>	63	165	114	63	63	44
<b>QAD100</b>	100	206	152	100	63	63
<b>QAD150</b>	150	263	203	147	89	70

## CF Glass-to-metal connections and quick access doors

1

### CF Quick access doors without viewport

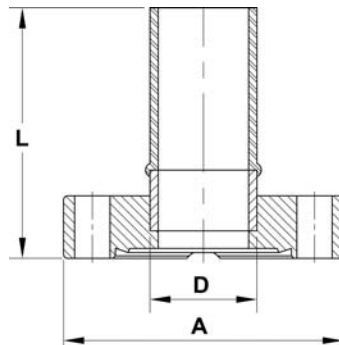


#### Technical data

- Assembly directly on the chamber, (with allen screw)
- Sealing FPM
- Bakeout temperature to 200 °C

Order code	DN	D	D2	L
QAD35BK	35	70	101	36
QAD63BK	63	114	165	44
QAD100BK	100	152	206	63
QAD150BK	150	203	263	70

### CF Glass-to-metal connections, Pyrex®

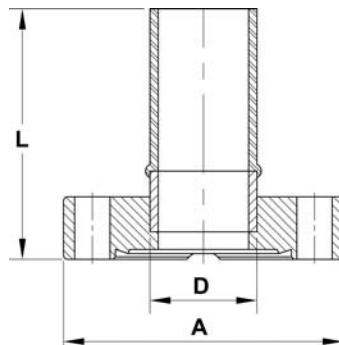


#### Technical data

- Material flange stainless steel 304
- Tolerances RA ±1 mm, L ±3 mm
- Bakeout temperature max. 200 °C
- Bakeout rate 2 - 3 °C/min
- Seal OFHC copper, vacuum annealed

Order code	DN	A	RA	L
T13P	16	34	13	104
T25P	35	70	25	104
T38P	35	70	38	104
T64P	63	114	64	190

### CF Glass-to-metal connections, quartz



#### Technical data

- Material flange stainless steel 304
- Tolerances RA ±1 mm, L ±3 mm
- Bakeout temperature max. 200 °C
- Bakeout rate 2 - 3 °C/min
- Seal OFHC copper, vacuum annealed
- Construction metal-to-quartz transition using intermediate glass layers

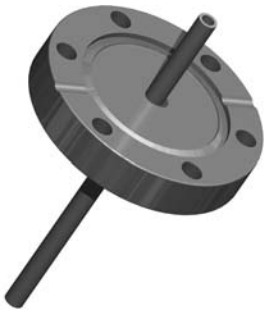
Order code	DN	A	RA	L
T13Q	16	34	13	143
T25Q	35	70	25	165
T38Q	35	70	38	165

# CF Components

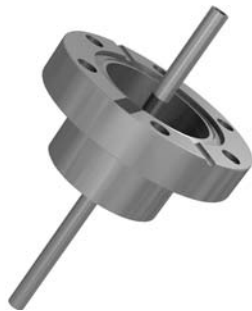
## CF Liquid feedthroughs

### CF Liquid feedthrough, stainless steel

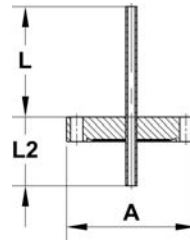
1



for liquid



for liquid nitrogen



Order code		DN	A	L	L2	Vacuum side	Atmosphere side
Liquid	Liquid nitrogen						
LF16PP	LNF16PP	16	34	75	45	tube 6 mm	tube 6 mm
LF16PS	LNF16PS	16	34	103	45	tube 6 mm	Swagelok 6 mm
LF35PP	LNF35PP	35	70	75	45	tube 6 mm	tube 6 mm
-	LNF35PS	35	70	103	45	tube 6 mm	Swagelok 6 mm
-	LNF35PPL	35	70	75	45	tube 12 mm	tube 12 mm
-	LNF35PSL	35	70	114	45	tube 12 mm	Swagelok 12 mm

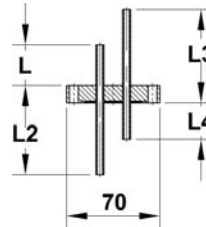
### CF Liquid feedthrough, double, stainless steel, of NW35CF- flange



for liquid



for liquid nitrogen



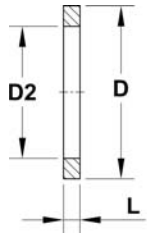
Order code		L	L2	L3	L4	Vacuum side	Atmosphere side
Liquid	Liquid nitrogen						
LF352PP	LNF352PP	75	45	45	75	tube 6 mm	tube 6 mm
LF352PS	LNF352PS	75	73	45	103	tube 6 mm	Swagelok 6 mm
LF352SP	LNF352SP	103	45	73	75	Swagelok 6 mm	Tube 6 mm
LF352SS	LNF352SS	103	73	73	103	Swagelok 6 mm	Swagelok 6 mm

# CF Micro Components

## CF Micro fittings

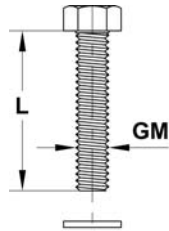
1

### CF Micro gaskets



Order code	DN	D	D2	L	Material
CU10	10	13.4	8.5	2	OFHC
VGF10	10	13.5	7.5	3	FPM

### CF Bolts

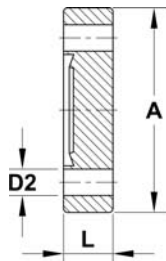


#### Technical data

■ Packing unit 25 pieces

Order code	DN	M	L	Screw type
NBW316	10	M3	16	hexagon
NBW635	35	M6	35	hexagon
BW312	10	M3	12	hexagon
CW416	16	M4	16	allen

### CF Blank flanges, fixed, stainless steel

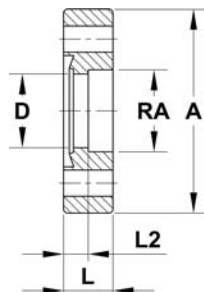


#### Technical data

■ Option with tapped holes

Order code	DN	A	D2	L
F10-316	10	25	3.2	6

### CF Bored flanges, fixed, stainless steel



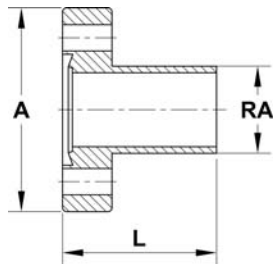
#### Technical data

■ Option with tapped holes

Order code	DN	A	D	L	L2	RA
F10B10-316	10	25	9	6	3	10

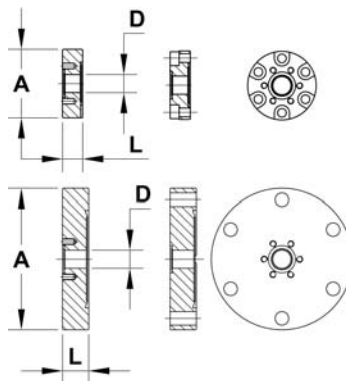
## CF Micro fittings

### CF Tubulations (half nipples), fixed, stainless steel



Order code	DN	A	L	RA
TU10	10	25	30	10

### CF Zero length flange adapters, stainless steel

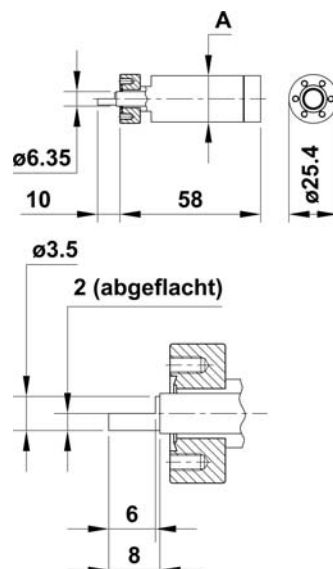


Order code	DN	DN2	A	D	L
ZL1610	16	10	34	9	10
ZL3510	35	10	70	9	13

ZL1610: applicable with 6 x M4 allen screws and 6 x M3 hexagon screws

## Mechanical CF micro feedthroughs

### CF Micro rotary feedthrough MD10



- Smallest rotary feedthrough
- Big torque
- Compact

#### Technical data

- Construction: one piece
- Housing material: stainless steel 316L
- Bellow type: blunt, Ø 3.5 mm, with flattening
- Brake-away torque: 0.18 Nm
- Maximum no load spin speed: 200 U/Min.
- Maximum shaft axial thrust: 20 N
- Bakeout temperature: 250 °C

Order code	Description
MD10TX000Z	MD10-feedthroughs

Other versions in chapter "Mechanical Feedthroughs"

## Mechanical CF micro feedthroughs

1

### CF Micro linear translator LSM10

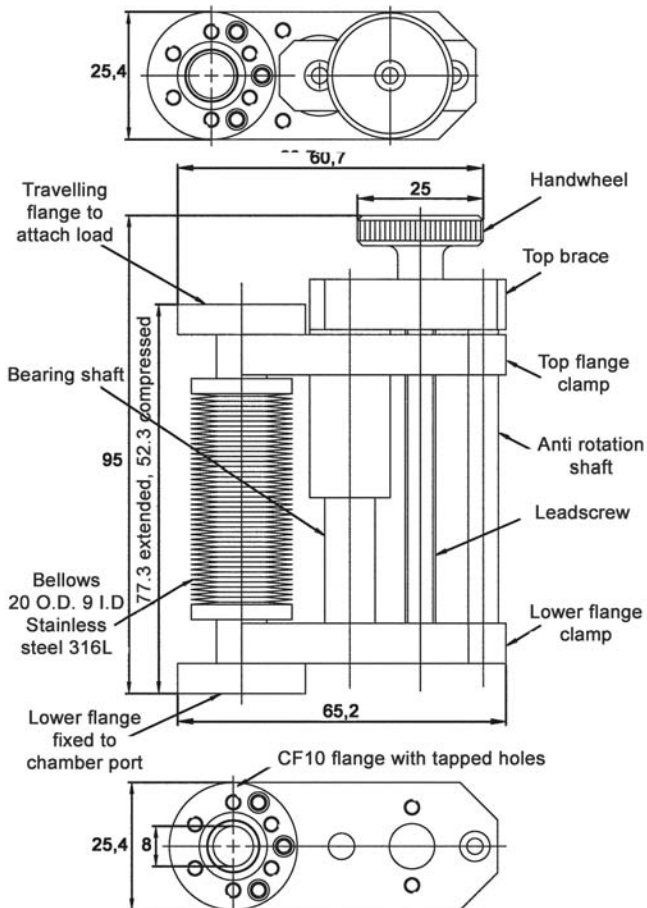


- High capability
- Rugged frame construction
- Smooth and precise motion along the Z axis (1 mm stroke / revolution of the handwheel)

#### Technical data

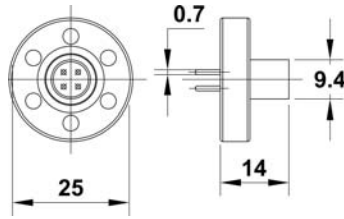
- Actuation manual handwheel
- Standard stroke 25 mm
- Material bellow stainless steel 316L
- Life cycle 10,000 cycles
- Bakeout temperature 250 °C

Order code	Description
LSM10-25H	LSM10 Micro linear translator



## Electrical CF micro feedthroughs

### Micro feedthrough, 4 pin, on a NW10CF flange



- Very compact
- Stainless steel housing, ceramic isolator, gold-plated Kovar contacts
- Atmosphere side standard MINI-SNAP connector, strain-relieved

#### Technical data

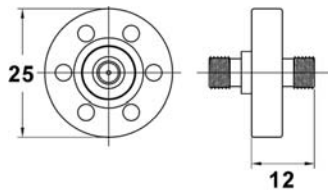
- Leakage rate < 1.0E-9 mbar l / s
- Temperature range -200 °C to 350 °C
- Current (all contacts loaded) 5.25 A
- Magnetic yes

#### Order code

**CF10-VB-0B-04**

Further information concerning connectors see chapter "Electrical Feedthroughs"

### Micro SMA feedthrough, on a NW10CF flange



- Very compact
- Stainless steel housing, ceramic isolator, gold-plated Kovar contacts
- Atmosphere and vacuum side standard MINI-SNAP connector, strain-relieved

#### Technical data

- Leakage rate < 1.0E-9 mbar l / s
- Impedance 50 Ohm
- Temperature range -200 °C to 350 °C
- Current 10 A
- Magnetic yes

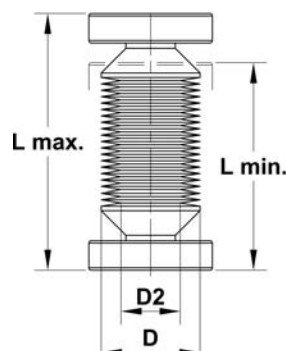
#### Order code

**CF10-VB-SMA2**

Further information concerning connectors see chapter "Electrical Feedthroughs"

## CF Micro welded bellows

### CF Micro welded bellows



#### Technical data

- Material flange stainless steel 316L
- Material bellows stainless steel 316L
- Bakeout temperature to 450 °C

Order code	DN	D	D2	Lmax	Lmin	Hub
<b>EWB10-10</b>	10	20	10	57	47	10

- Other lengths on request